HARKOTEK
Control the Motion

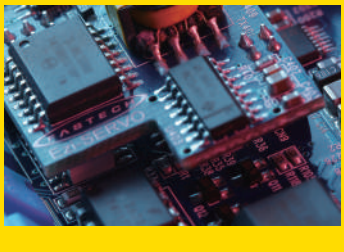
FASTECH

2023 / 2024
General Catalogue [English]









FASTECH

Brand Introduction

HARKOTEK
Control the Motion

Ezi-SERVO®

ST MINI BT ALL
EtherCAT EtherCAT TO EtherCAT MINI EtherCAT 4X EtherCAT ALL
Plus-E Plus-E MINI Plus-E ALL CC-Link HS

- Closed Loop System
- High Resolution (Max. 32,000P/R)
- Provide various motor sizes (20~86mm) based on NEMA standard
- Current control according to load
- Various line up of drives such as Pulse Input / Network type products
- DC/DC converter improves torque in high-speed range (except for MINI, BT, ALL, and EtherCAT 4X products)

Ezi-STEP®

ST MINI BT
EtherCAT EtherCAT MINI EtherCAT 4X
Plus-E Plus-E MINI Plus-E ALL CC-Link

- Microstepping System
- High precision microstep operation (Max. 50,000P/R)
- Vibration suppression and high speed operation by Software damping
- Various line up of drives such as Pulse Input / Network type products

Product Family	Series	Model	Specifications
Closed Loop Stepping Motor Unit	Ezi-SERVO	ST	Pulse Input Type, Standard
		MINI	Pulse Input Type, Miniaturized Compact Size
		BT	Pulse Input Type, Motor + Encoder + Drive Integrated
		ALL	RS-485 Type, Motor + Encoder + Drive + Motion Controller Integrated
		EtherCAT	EtherCAT Type, Standard, Motion Controller Embedded
		EtherCAT TO	EtherCAT Type, Torque-OFF Function, Motion Controller Embedded
		EtherCAT MINI	EtherCAT Type, Miniaturized Compact Size, Motion Controller Embedded
		EtherCAT 4X	EtherCAT Type, Multi-Axis Type, Motion Controller Embedded
		EtherCAT ALL	EtherCAT Type, Motor + Encoder + Drive + Motion Controller Integrated
		Plus-E	Ethernet Type, Standard, Motion Controller Embedded
		Plus-E MINI	Ethernet Type, Miniaturized Compact Size, Motion Controller Embedded
		Plus-E ALL	Ethernet Type, Motor + Encoder + Drive + Motion Controller Integrated
		CC-Link	CC-Link Type, Standard, Motion Controller Embedded
		HS	Hollow Shaft Motor with High Resolution Encoder
Microstepping Motor Unit	Ezi-STEP	ST	Pulse Input Type, Standard
		MINI	Pulse Input Type, Miniaturized Compact Size
		BT	Pulse Input Type, Motor + Drive Integrated
		EtherCAT	EtherCAT Type, Standard, Motion Controller Embedded
		EtherCAT MINI	EtherCAT Type, Miniaturized Compact Size, Motion Controller Embedded
		EtherCAT 4X	EtherCAT Type, Multi-Axis Type, Motion Controller Embedded
		Plus-E	Ethernet Type, Standard, Motion Controller Embedded
		Plus-E MINI	Ethernet Type, Miniaturized Compact Size, Motion Controller Embedded
		Plus-E ALL	Ethernet Type, Motor + Drive + Motion Controller Integrated
		CC-Link	CC-Link Type, Standard, Motion Controller Embedded

Ezi-IO®

EtherCAT DIO EtherCAT CNT Ethernet DA
EtherCAT AD Ethernet DIO Ethernet CNT
EtherCAT DA Ethernet AD CC-Link IE TSN DIO

- Digital I/O, Analog I/O, High Speed Counter Module
- Various Networks Supported (EtherCAT, Ethernet, CC-Link IE TSN)
- Simple Wiring
  (e-CON Connector Type and Push-in Terminal Block Type Available)

Ezi-MotionLink®

Plus-E

- Ethernet Type 1-Axis Motion Controller
- Compatible with Various Major Servo Drives
- Reduced Wiring

Ezi-MotionGate®

PROFINET EtherNet/IP
PROFIBUS DeviceNet

- Optimal Solution for Various Fieldbuses
- Cost Reduction with Simple Wiring and Simple Control
- Max. 16 Axis Drive Connection per Network

Ezi-Robo®

HG

- Unit Solution Combining Ezi-SERVO + Hollow Rotary Index Table
- Hollow Rotary Actuator with Large Diameter
- High Accuracy Position Control

Ezi-SPEED®

- AC Input BLDC Motor Speed Control System
- Wide Speed Control Range (50~4000r/min)
- Stable Speed Control by Vector Control

Product Family	Series	Model	Specifications
Remote I/O Module	Ezi-IO	**EtherCAT DIO**	EtherCAT Type, Digital I/O
		EtherCAT AD	EtherCAT Type, Analog Input
		EtherCAT DA	EtherCAT Type, Analog Output
		EtherCAT CNT	EtherCAT Type, High Speed Counter
		Ethernet DIO	Ethernet Type, Digital I/O
		Ethernet AD	Ethernet Type, Analog Input
		Ethernet DA	Ethernet Type, Analog Output
		Ethernet CNT	Ethernet Type, High Speed Counter
		CC-Link IE TSN DIO	CC-Link IE TSN Type, Digital I/O
1-Axis Motion Controller	Ezi-MOTIONLINK	**Plus-E**	Ethernet Type
Fieldbus Gateway	Ezi-MOTIONGATE	**PROFINET**	PROFINET to RS-485 Gateway
		PROFIBUS	PROFIBUS to RS-485 Gateway
		EtherNet/IP	EtherNet/IP to RS-485 Gateway
		DeviceNet	DeviceNet to RS-485 Gateway
Closed Loop Actuator Unit	Ezi-Robo	**HG**	Pulse Input, EtherCAT, Ethernet, CC-Link Precision Gear Driven Hollow Rotary Actuator
BLDC Motor Unit	Ezi-SPEED	-	Operation by External I/O Signal and Front Panel, AC Input, Standard Type

Ezi-SERVO Series (Pulse Input Type)

	Model	Product Image	Specifications
Pulse Input	**Ezi-SERVO** ST		• Closed-Loop Stepping System • Tuning Not Required / No Hunting • Low Heat Generation / High Torque • High Resolution / High Response
	Ezi-SERVO MINI		• Space Saving / Reduced Wiring by Compact Drive • Closed-Loop Stepping System • Tuning Not Required / No Hunting • Low Heat Generation • High Resolution / High Response
	Ezi-SERVO II BT		• Motor + High-Resolution Encoder + Drive • Space Saving / Reduced Wiring • Closed-Loop Stepping System • Tuning Not Required / No Hunting • High Resolution / High Response • Low Heat Generation

Ezi-SERVO Series (Network Type)

	Model	Product Image	Specifications
RS-485 Type	**Ezi-SERVO** ALL		• Space Saving / Reduced Wiring • Motion Controller Embedded • RS-485 Interface • Position Table • Closed-Loop Stepping System • Tuning Not Required / No Hunting • High Resolution / High Response

Closed Loop Stepping Motor Unit Ezi-SERVO®

Category	Available Motor Sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	62p		62p			62p		62p				62p			62p			62p		
BRAKE								602p				603p			604p			605p		
GEARBOX								635p	637p	639p	641p	643p	645p	647p	649p	651p	653p	655p	656p	657p
Standard	85p		85p			85p		85p												
BRAKE								602p												
GEARBOX								636p	638p	640p	642p									
Standard			103p					103p				103p			103p					
BRAKE								602p				603p			604p					
GEARBOX								636p	638p	640p	642p	644p	646p	648p	650p	652p	654p			

※ Please refer to the page in 00p for more details about motor sizes.

Closed Loop Stepping Motor Unit Ezi-SERVO®

Category	Available Motor Sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard			124p																	
BRAKE																				
GEARBOX																				

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series (Network Type)

	Model	Product Image	Specifications
EtherCAT Type	**Ezi-SERVO** Ⅱ EtherCAT		• CiA402 Drive Profile Support • Closed-Loop Stepping system • Tuning Not Required / No Hunting • Low Heat Generation / High Torque • High Resolution / High Response
	Ezi-SERVO Ⅱ EtherCAT TO		• CiA402 Drive Profile Support • Closed-Loop Stepping system • Tuning Not Required / No Hunting • Low Heat Generation / High Torque • High Resolution / High Response • Torque Off Function Supported
	Ezi-SERVO Ⅱ EtherCAT MINI		• CiA402 Drive Profile Support • Closed-Loop Stepping system • Tuning Not Required / No Hunting • Space Saving / Reduced Wiring by Compact Drive • Low Heat Generation / High Torque • High Resolution / High Response
	Ezi-SERVO Ⅱ EtherCAT 4X		• CiA402 Drive Profile Support • Closed-Loop Stepping system • Tuning Not Required / No Hunting • Compact Multi Axis Stepping Motor Drive • Space Saving / Reduced Wiring
	Ezi-SERVO Ⅱ EtherCAT ALL		• Motor + High Resolution Encoder + Drive + EtherCAT Interface • Space Saving / Reduced Wiring • CiA402 Drive Profile Support • Closed-Loop Stepping System • Tuning Not Required / No Hunting • Low Heat Generation / High Torque

Category	Available Motor Sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	142p		142p			142p		142p				142p			142p			142p		
BRAKE								602p				603p			604p			605p		
GEARBOX								635p	637p	639p	641p	643p	645p	647p	649p	651p	653p	655p	656p	657p
Standard	170p		170p			170p		170p				170p			170p			170p		
BRAKE								602p				603p			604p			605p		
GEARBOX								635p	637p	639p	641p	643p	645p	647p	649p	651p	653p	655p	656p	657p
Standard	193p		193p			193p		193p				193p			193p					
BRAKE								602p				603p			604p					
GEARBOX								636p	638p	640p	642p	644p	646p	648p	650p	652p	654p			
Standard	213p		213p			213p		213p				213p			213p					
BRAKE								602p				603p			604p					
GEARBOX								636p	638p	640p	642p	644p	646p	648p	650p	652p	654p			
Standard									236p			236p			236p				236p	
BRAKE									602p			603p			604p				605p	
GEARBOX									638p	640p	642p	644p	646p	648p	650p	652p	654p	655p	656p	657p

※ Please refer to the page in 00p for more details about motor sizes.

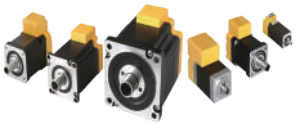
Ezi-SERVO Series (Network Type)

	Model	Product Image	Specifications
Ethernet Type	**Ezi-SERVO** Ⅱ Plus-E		• Embedded Motion Controller • Ethernet Interface • Position Table • Closed-Loop Stepping System • Tuning Not Required / No Hunting • High Resolution / High Response • Low Heat Generation / High Torque
	Ezi-SERVO Ⅱ Plus-E MINI		• Embedded Motion Controller • Ethernet Interface • Position Table • Closed-Loop Stepping System • Tuning Not Required / No Hunting • High Resolution / High Response • Space Saving / Reduced Wiring by Compact Drive
	Ezi-SERVO Ⅱ Plus-E ALL		• Motor + High Resolution Encoder + Drive + Motion Controller • Space Saving / Reduced Wiring • Ethernet Interface • Closed-Loop Stepping System • Tuning Not Required / No Hunting • Low Heat Generation / High Torque
CC-Link Type	**Ezi-SERVO** Ⅱ CC-Link		• Embedded Motion Controller • Position Table • Closed-Loop Stepping System • Tuning Not Required / No Hunting • Low Heat Generation / High Torque

Category	Available Motor Sizes																		
	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	264p		264p			264p		264p				264p			264p			264p		
BRAKE								602p				603p			604p			605p		
GEARBOX								635p	637p	639p	641p	643p	645p	647p	649p	651p	653p	655p	656p	657p
Standard	294p		294p			294p		294p				294p			294p					
BRAKE								602p				603p			604p					
GEARBOX								636p	638p	640p	642p	644p	646p	648p	650p	652p	654p			
Standard	318p		318p			318p		318p				318p			318p			318p		
BRAKE									602p			603p			604p			605p		
GEARBOX									638p	640p	642p	644p	646p	648p	650p	652p	654p	655p	656p	657p
Standard	345p		345p			345p		345p				345p			345p			345p		
BRAKE								602p				603p			604p			605p		
GEARBOX								635p	637p	639p	641p	643p	645p	647p	649p	651p	653p	655p	656p	657p

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-SERVO Series (Hollow Shaft Motor Type)

	Model	Product Image	Specifications
Pulse Input Type · Network Type Available	**Ezi-SERVO** HS		• Stepping Motor with High Resolution Encoder • Closed-Loop Stepping System • High Precision Position Control • Low Heat Generation / High Torque • EtherCAT, Ethernet, CC-Link Supported

Category	Available Motor Sizes										
	20M	20L	28S	28M	35M	35L	42S	42L	56S	56M	86M
Standard	373p		373p		373p		373p		373p		373p
BRAKE											
GEARBOX											

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-STEP Series (Pulse Input Type)

	Model	Product Image	Specifications
Pulse Input	**Ezi-STEP** ST		• Microstepping • Software Damping • High Torque • Run/Stop Signal Output
	Ezi-STEP MINI		• Microstepping • Space Saving / Reduced Wiring by Compact Drive • Software Damping • Run/Stop Signal Output
	Ezi-STEP BT		• Microstepping • Space Saving / Reduced Wiring • Software Damping • Run/Stop Signal Output

Category	Available Motor Sizes																	
	20M	20L	28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard						398p					398p			398p			398p	
BRAKE						602p					603p			604p			605p	
GEARBOX																		
Standard	418p			418p				418p										
BRAKE						602p												
GEARBOX																		
Standard						432p					432p					432p		
BRAKE						602p					603p					605p		
GEARBOX																		

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-STEP Series (Network Type)

	Model	Product Image	Specifications
EtherCAT Type	**Ezi-STEP** II EtherCAT		• CiA402 Drive Profile Support • Microstepping • Software Damping • High Torque
	Ezi-STEP II EtherCAT MINI		• CiA402 Drive Profile Support • Microstepping • Software Damping • Space Saving / Reduced Wiring by Compact Drive
	Ezi-STEP II EtherCAT 4X		• CiA402 Drive Profile Support • Microstepping • Software Damping • Compact Multi Axis Stepping Motor Drive • Space Saving / Reduced Wiring
Ethernet Type	**Ezi-STEP** II Plus-E		• Embedded Motion Controller • Ethernet Interface • Position Table • Microstepping • Software Damping • High Torque
	Ezi-STEP II Plus-E MINI		• Embedded Motion Controller • Ethernet Interface • Position Table • Microstepping • Software Damping • Space Saving / Reduced Wiring by Compact Drive
	Ezi-STEP II Plus-E ALL		• Motor + Drive + Motion Controller • Space Saving / Reduced Wiring • Ethernet Interface • Microstepping • Software Damping
CC-Link Type	**Ezi-STEP** II CC-Link		• Embedded Motion Controller • CC-Link Interface • Microstepping • Software Damping • High Torque

Category	Available Motor Sizes																	
	20M	20L	28S	28M	28L	42S	42M	42L	42XL	56S	56M	56L	60S	60M	60L	86M	86L	86XL
Standard	447p			447p			447p				447p			447p				
BRAKE						602p					603p			604p				
GEARBOX																		
Standard	470p			470p			470p				470p			470p				
BRAKE						602p					603p			604p				
GEARBOX																		
Standard	488p			488p			488p				488p			488p				
BRAKE						602p					603p			604p				
GEARBOX																		
Standard	508p			508p			508p				508p			508p			508p	
BRAKE						602p					603p			604p			605p	
GEARBOX																		
Standard	534p			534p			534p				534p			534p				
BRAKE						602p					603p			604p				
GEARBOX																		
Standard							554p				554p			554p			554p	
BRAKE							602p				603p			604p			605p	
GEARBOX																		
Standard	578p			578p			578p				578p			578p				
BRAKE						602p					603p			604p				
GEARBOX																		

※ Please refer to the page in 00p for more details about motor sizes.

Ezi-IO Series

	Model	Product Image	Specifications
Digital I/O Module	**Ezi-IO** EtherCAT DIO		• EtherCAT Based Digital I/O Module • All EtherCAT Synchronization Modes Supported • CiA 401 Profile Supported • Simple and Easy Wiring
	Ezi-IO Ethernet DIO		• Ethernet Based Digital I/O Module • Plus-E Series Communication Protocol Supported • Simple and Easy Wiring
	Ezi-IO CC-Link IE TSN DIO		• CC-Link IE TSN Based Digital I/O Module • CC-Link IE TSN Class B Certified • Input Filter Function • Simple and Easy Wiring
Analogue Input Module	**Ezi-IO** EtherCAT AD		• EtherCAT Based Analog Input Module • All EtherCAT Synchronization Modes Supported • CiA 401 Profile Supported • Simple and Easy Wiring • Input Mode and Range Configurable • Moving Average Filtering
	Ezi-IO Ethernet AD		• Ethernet Based Analog Input Module • Simple and Easy Wiring • Input Mode and Range Configurable • Moving Average Filtering
Analogue Output Module	**Ezi-IO** EtherCAT DA		• EtherCAT Based Analog Output Module • All EtherCAT Synchronization Modes Supported • CiA 401 Profile Supported • Simple and Easy Wiring • Output Range Configurable • Calibration for Output Deviation
	Ezi-IO Ethernet DA		• Ethernet Based Analog Output Module • Simple and Easy Wiring • Output Range Configurable • Calibration for Output Deviation
High Speed Counter Module	**Ezi-IO** EtherCAT CNT		• EtherCAT Based High Speed Counter Module • All EtherCAT Synchronization Modes Supported • Simple and Easy Wiring • Line Receiver and DC Input Type Available • Compare Output Function
	Ezi-IO Ethernet CNT		• Ethernet Based High Speed Counter Module • Simple and Easy Wiring • Line Receiver and DC Input Type Available • Compare Output Function

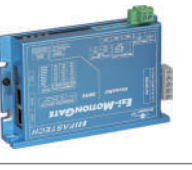
Category	Number of I/O Channels								
	2CH	4CH	8CH	16CH NPN	16CH PNP	32CH NPN	32CH PNP		Page
INPUT				○	○	○	○		
OUTPUT				○	○	○	○		681-684p
IN/OUT				○ *1	○ *1	○ *2	○ *2		
INPUT				○	○	○	○		
OUTPUT				○	○	○	○		761-762p
IN/OUT				○ *1	○ *1	○ *2	○ *2		
INPUT						○			
OUTPUT						○			
IN/OUT						○ *2			
INPUT			○						722p
			○						792p
OUTPUT		○							734p
		○							802p
INPUT	○								745p
IN/OUT	○								813p

*1: This model has 8 input channels and 8 output channels.
*2: This model has 16 input channels and 16 output channels.

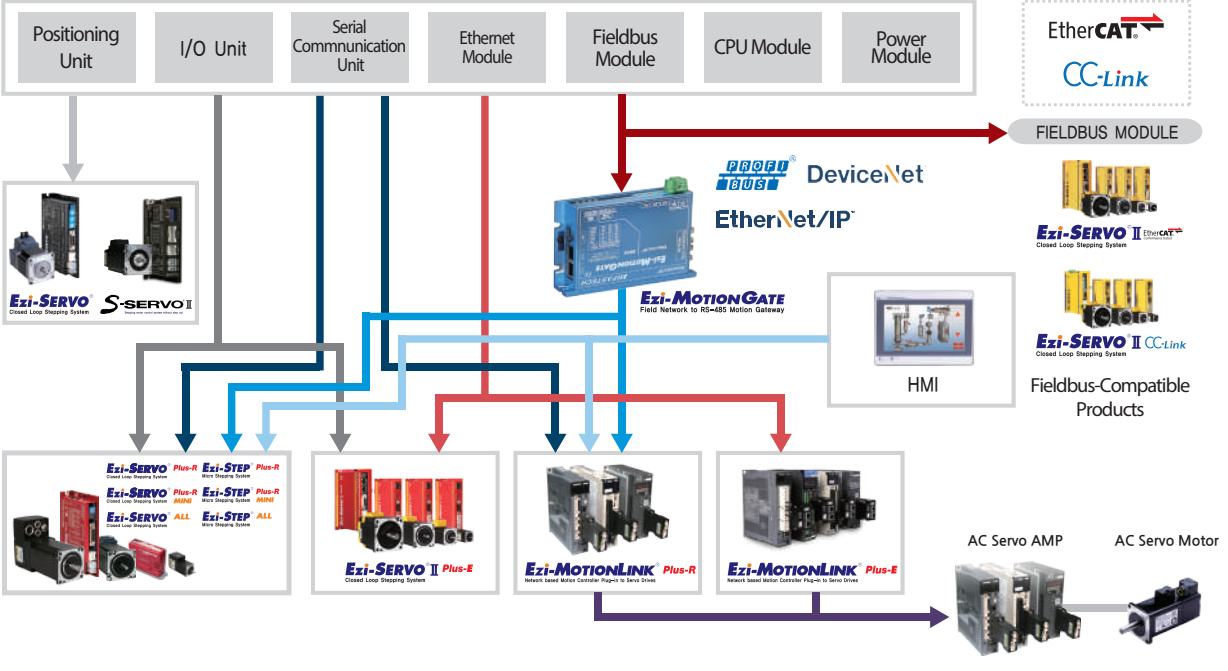
Ezi-MOTIONLINK Series

	Model	Product Image	Specifications
1-Axis Motion Controller	**Ezi-MOTIONLINK** Plus-E		• Ethernet Type Motion Controller • Compatible with Various Servo Drives • Various Motion Functions • Reduced Wiring

Ezi-MOTIONGATE Series

	Model	Product Image	Specifications
Fieldbus Gateway	**Ezi-MOTIONGATE** PROFINET		· Motion Gateway Compatible with PROFINET Network · Connection with Siemens, Rockwell, Beckhoff PLC · Max. 16 Axis Drive Connection · LED for Checking Status of Drive and Network
	Ezi-MOTIONGATE PROFIBUS		· Motion Gateway Compatible with PROFIBUS Network · Connection with Siemens, Rockwell, Mitsubishi, LS PLC · Max. 9 Axis Drive Connection · LED for Checking Status of Drive and Network
	Ezi-MOTIONGATE EtherNet/IP		· Motion Gateway Compatible with EtherNET/IP Network · Connection with Rockwell, Mitsubishi, OMRON PLC · Max. 16 Axis Drive Connection · LED for Checking Status of Drive and Network
	Ezi-MOTIONGATE DeviceNet		· Motion Gateway Compatible with DeviceNet Network · Connection with Rockwell, Mitsubishi, LS PLC · Max. 16 Axis Drive Connection · LED for Checking Status of Drive and Network

'Ezi-MotionNetwork' is a new solution for variety Motion Networks, and it enables simple connection and control.
Therefore it can shorten lead time for designing machine with reduced cost and wiring.



Ezi-SERVO II EtherCAT
Closed Loop Stepping System



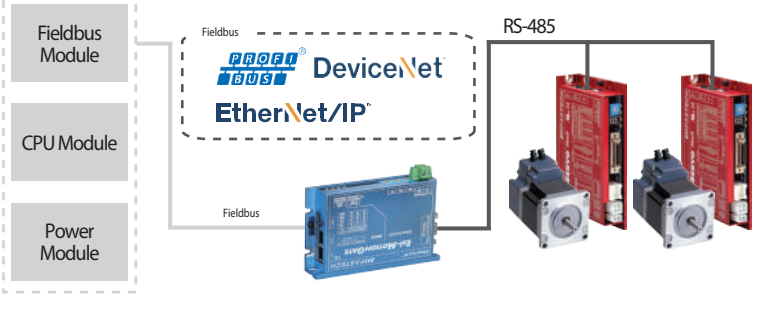
Ezi-SERVO II Plus-E
Closed Loop Stepping System



Ezi-SERVO II CC-Link
Closed Loop Stepping System

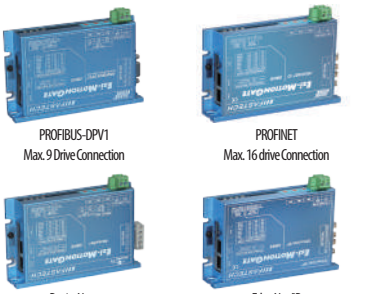


Ezi-MOTIONGATE is compatible with various Fieldbuses



* Ezi-MOTIONGATE for MECHATROLINKII, MECHATROLINK III, SERCOSIII will be also released.

Ezi-MotionGate®
Gateway Solution for Ezi-SERVO



PROFIBUS-DPV1
Max. 9 Drive Connection

PROFINET
Max. 16 drive Connection

DeviceNet
Max. 16 drive Connection

EtherNet/IP
Max. 16 drive Connection

Ezi-Robo Series

	Model	Product Image	Specifications
Pulse Input Type · Network Type Available	**Ezi-Robo** HG		• Ezi-SERVO + Hollow Rotary Index Table • Hollow Diameter : Max. Ø85mm • Permissible Torque : Max. 170N·m • Permissible Axial Load : Max. 4000N • Repeatability : ±10arcsec • EtherCAT, Ethernet, CC-Link Supported

Ezi-SPEED Series

	Model	Product Image	Specifications
BLDC Motor Unit	**Ezi-SPEED**		• Stable Speed by Vector Control (Speed Regulation 0.2%) • Wide Speed Control Range (50~4000r/min) • Easy Connection and Easy Operation

Closed Loop Actuator Unit Ezi-Robo®

Category	Available Motor Sizes					
	28M	42M	42XL	56L	60L	86L
Standard			881p		882-884, 886p	885, 887p
BRAKE						
GEARBOX						

※ Please refer to the page in 00p for more details about motor sizes

BLDC Motor Unit Ezi-SPEED®

Category	Available Motor Sizes				
	30W	60W	120W	200W	400W
Standard	921p	921p	921p	921p	921p
Parallel Gearbox	925p	925p	926p	926p	927p
Hollow Flat Gearbox	928p	928p	929p		

※ Please refer to the page in 00p for more details about motor sizes

FASTECH is







‘Fast’

FASTECH is







‘Accurate’

FASTECH is





‘Smooth’



FASTECH *is 'TRUST'*



FASTECH

Fast, Accurate, Smooth Motion

Contents

FASTECH

Fast, Accurate, Smooth Motion

Business Information

Brand Introduction ..... 002 - 003
Brand Summary Table ..... 004 - 021
Index1 (Entire Catalog Index) ..... 030 - 031
Precautions ..... 032 - 033
Company Introduction ..... 038 - 043
Index2 (Product Index) ..... 048 - 049

Product Information

Ezi-SERVO Series ***050***

Ezi-SERVO **ST** ..... *052 - 075*
Ezi-SERVO **MINI** ..... *076 - 093*
Ezi-SERVO II **BT** ..... *094 - 115*
Ezi-SERVO **ALL** ..... *116 - 131*
Ezi-SERVO II **EtherCAT** ..... *132 - 159*
Ezi-SERVO II **EtherCAT TO** ..... *160 - 181*
Ezi-SERVO II **EtherCAT MINI** ..... *182 - 203*
Ezi-SERVO II **EtherCAT 4X** ..... *204 - 223*
Ezi-SERVO II **EtherCAT ALL** ..... *224 - 251*
Ezi-SERVO II **Plus-E** ..... *252 - 281*
Ezi-SERVO II **Plus-E MINI** ..... *282 - 305*
Ezi-SERVO II **Plus-E ALL** ..... *306 - 333*
Ezi-SERVO II **CC-Link** ..... *334 - 363*
Ezi-SERVO **HS** ..... *364 - 389*

Ezi-STEP Series ***390***

Ezi-STEP **ST** ..... *392 - 411*
Ezi-STEP **MINI** ..... *412 - 425*
Ezi-STEP **BT** ..... *426 - 439*
Ezi-STEP II **EtherCAT** ..... *440 - 463*
Ezi-STEP II **EtherCAT MINI** ..... *464 - 481*
Ezi-STEP II **EtherCAT 4X** ..... *482 - 499*
Ezi-STEP II **Plus-E** ..... *500 - 525*
Ezi-STEP II **Plus-E MINI** ..... *526 - 545*
Ezi-STEP II **Plus-E ALL** ..... *546 - 569*
Ezi-STEP II **CC-Link** ..... *570 - 595*

Product Option ***596***

Option **Brake** ..... *598 - 629*
Option **Gearbox** ..... *630 - 673*

Ezi-IO Series ***674***

Ezi-IO **EtherCAT DIO** ..... *676 - 717*
Ezi-IO **EtherCAT AD** ..... *718 - 729*
Ezi-IO **EtherCAT DA** ..... *730 - 739*
Ezi-IO **EtherCAT CNT** ..... *740 - 755*
Ezi-IO **Ethernet DIO** ..... *756 - 787*
Ezi-IO **Ethernet AD** ..... *788 - 797*
Ezi-IO **Ethernet DA** ..... *798 - 807*
Ezi-IO **Ethernet CNT** ..... *808 - 823*
Ezi-IO **CC-Link IE TSN DIO** ..... *824 - 835*

Ezi-MOTIONLINK Series ***836***

Ezi-MOTIONLINK **Plus-E** ..... *838 - 849*

Ezi-MOTIONGATE Series ***850***

Ezi-MOTIONGATE **PROFINET** ..... *858 - 860*
Ezi-MOTIONGATE **PROFIBUS** ..... *861 - 863*
Ezi-MOTIONGATE **EtherNet/IP** .... *864 - 866*
Ezi-MOTIONGATE **DeviceNet** ..... *867 - 869*

Ezi-Robo Series ***870***

Ezi-Robo **HG** ..... *872 - 907*

Ezi-SPEED Series ***908***

Ezi-SPEED ..... *910 - 944*

If you open **colored page** of each product, immediate search will be available. Please refer to **page 046** for **detail contents** of product introduction section.

Before operation of FASTECH products, please check the contents as below

Precautions before Operation

- Before use, be sure to read the user manual and use the product safely and correctly.
- After reading the user manual, keep it where the person using the product can always see it.
- The contents of the user manual or product specifications may be changed without prior notice to improve performance. If you need the latest version of the user manual, please refer to our company website(www.fastech-motions.com).

Replacement and Returning Product

- FASTECH will be in charge for the products replaced which has damaged during transportation or any differences between delivered products and customer's order requests.
- For any case of replacement or returning products, please contact with distributor sold FASTECH products or sales department of FASTECH.

Product Waranty

- **Warranty period** : 12 months from the date of purchase
- **Waranty coverage**

  If a malfunction occurs within the warranty period, our company will repair it free of charge.
  However, in the following cases, we inform you that it will be charged even within the warranty period.

  1. In case of failure due to non-compliance with the contents such as 'precautions for safety' specified in the user manual or catalog
  2. In case of failure due to products not made by our company
  3. In case of malfunction while using in a way not specified by our company
  4. In case of malfunction due to repair or remodeling in a place not designated by our company
  5. In case of unpredictable reasons at the level of science and technology at the time of product shipment
  6. In case of failure due to natural disasters (lightning, fire, earthquake, wind and flood damage, salt damage, gas, etc.)

Precautions for Safety

- In order to use the products safely, you must read the information introduced in the user manual carefully. In particular, safety precautions are intended to prevent unexpected dangers or damages in advance, so be sure to check them.
- Precautions are divided into **Warning** and **Attention**, and the meaning of each is as follows.

⚠ **Warning**	Violation of instructions may result in death or serious injury to the user.
⚠ **Attention**	Violation of instructions may result in personal injury or property damage.

- Even if the contents described are cautions, be sure to observe them as they may cause serious consequences depending on the situation.

⚠ Warning

Common

- All work must be performed by persons with expertise in the field. Otherwise, it may cause fire, injury or damage to the device.
- Before starting work, be sure to turn off all power used by the system. Otherwise, it may result in electric shock.
- Do not use in an explosive environment, an environment with inflammable gas, an environment with corrosive gas, a place where water splashes, or near combustible materials. It may cause fire, electric shock or injury.
- If an alarm (protective function) occurs during use, remove the cause. If you ignore this and continue driving, there is a risk of injury or damage to the device due to malfunction of the product.

Installation

- Install the product inside the housing. Otherwise, it may result in injury or electric shock.
- Do not place objects on the product or subject it to impact.
- In order to suppress product temperature rise, install each product at appropriate intervals. Otherwise, it may result in fire or malfunction.

Wiring

- Be sure to ground each product. Otherwise, it may result in electric shock, fire or malfunction.
- Use the rated voltage for the product's power supply. Otherwise, it presents a risk of fire or electric shock.
- Do not excessively bend the cable or pull it too hard. It may cause fire or electric shock.
- Do not change wiring while power is on. Otherwise, it may result in electric shock or damage to the device.

Operation · Maintenance · Inspection

- When inspecting, turn off the main power, wait for at least 2 minutes, and check the voltage with a voltage tester. Otherwise, it may result in a shock hazard due to a residual charge voltage on the internal electrolytic capacitors.
- Do not disassemble or modify the product. Otherwise, it may result in injury or damage to the device.
- Do not touch the power connector while power is on. It may cause electric shock.
- When cleaning, loosening or tightening screws, be sure to turn off all power in the system. Otherwise, it may result in electric shock or malfunction.

⚠ Attention

Common

- Use the product according to the specified standards. Otherwise, it may result in electric shock, injury or damage to the device.
- Do not touch the product while the unit is in operation. Also, do not touch the product for a while even if it stops operating. It might cause burns.
- Do not forcefully bend or pull the cable connected to the product. There is a risk of damaging the device.

Installation

- Do not allow metallic foreign substances to enter the product. Otherwise, itmay result in fire, electric shock or injury.
- Do not drop the product. There is a risk of product damage or injury.
- Do not place combustible materials near the product. Otherwise, there is a risk of fire or burns.
- When using multiple products in an enclosed space, install a cooling device. There is a risk of fire due to overheating.

Wiring

- Connect securely according to the wiring diagram. Otherwise, it may result in fire or electric shock hazard.

Operation · Maintenance · Inspection

- For products that use DC power, use DC power with reinforced insulation on the primary and secondary sides. Otherwise, it may result in electric shock.
- When turning on the power, turn off all control input signals of the drive. Otherwise, it may cause the motor to run, resulting in injury or damage to the device.
- Use the drive and motor in the specified combination. Otherwise, there is a risk of fire.
- When manually moving a motor part, perform it in the Servo Off state. Otherwise, it may result in injury.
- The product has a default value at the time of shipment. When changing the settings, be sure to check the related contents in the user manual. Otherwise, the product or device may be damaged.
- In the event of an abnormality, immediately stop operation and cut off the power. Otherwise, it may result in fire, electric shock or injury.

Disposal

- When disposing of the product, treat it as industrial waste. There is a risk of toxic substance release.

FASTECH_

Business Information

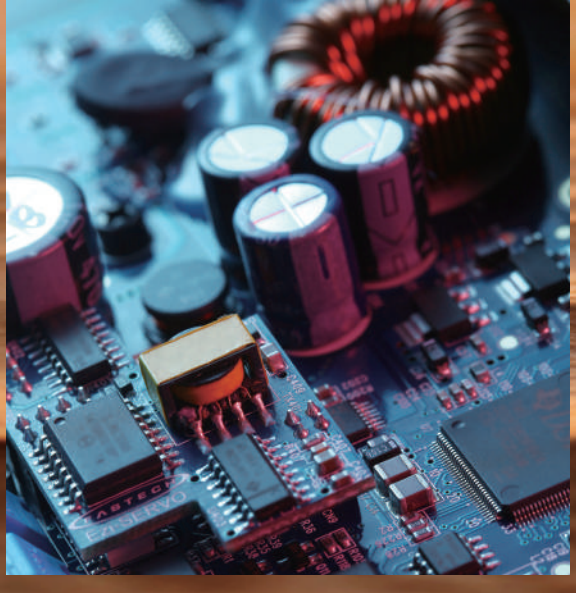
- Overview
- Service
- Application



*"Beyond The **Limit**"*











Create The Happiness For All!

“Create the happiness for all”

Company at a Glance



- **Company Name** : FASTECH Co., Ltd.
- **Established** : 10th Aug, 2001
- **Website** : www.fastech-motions.com
- **Headquarter** : Rm#1202, 401-dong, Bucheon Techno-Park, 655, Pyeongcheon-ro Bucheon-si Gyeonggi-do, Republic of Korea

Business Information

Professional motion control company

FASTECH has secured optimized management system by continuous challenge spirit and constant innovation based on FASTECH its own technology in a motion control business filed through long time experiences and achieved value of customer satisfaction with the best quality and competitiveness. By establishment of toehold, FASTECH will be grown up as worldwide motion control company.

Optimized total solution provider based on high level of technical skills

FASTECH provides total solutions mostly covers Closed Loop System, Open Loop Stepping System, various Field Network Solution and various Unit Product combine with Mechanisms are all required from motion control market field. In addition, through continuous technical research and product development, we build very concrete establishment to provide optimized total solution matching any requests from customers.

Leads the market with a constant innovation

FASTECH has been going ahead on the road not taken by anyone with continuous effort and innovation. Then now FASTECH has positioned as leading company in a Closed Loop Stepping market area since the establishment of the company and is ready to build maximized business growth through world-wide exports as a Global Brand. FASTECH will continue to generate infinite value with a product and quality fulfill customer's requirements based on continuous innovation, up-to-date idea and top level of technology.

Honest and trustful company

FASTECH will continue to do our best to realize stable management, strict quality control and customer first service to be a long term trustful partner shares value and target with all of customers. Also FASTECH will go forward as creditable company treasure value of craftmanship and partnership as motion control specialized company.

FASTECH is Trust



FASTECH realizes customer satisfaction

Quality Standard

Secure the quality system with global standard

FASTECH secures quality management system matching global standard for systematic quality management and implementation and set the target to provide zero defects product through strict self quality management system.



ISO 9001



ISO 14001

Service

Call Center **+82-32-234-6317**
Website www.fastech-motions.com
E-mail sales@fastech-motions.com

Various information providing and communication with customer

Website(www.fastech-motions.com)
Available to download all products catalogue, manual, video clip and drawing from FASTECH website includes product information.

Participate in domestic and global exhibitions
FASTECH does our best to maximize opportunity to meet customers through domestic and overseas exhibitions and introduce new technology and product.

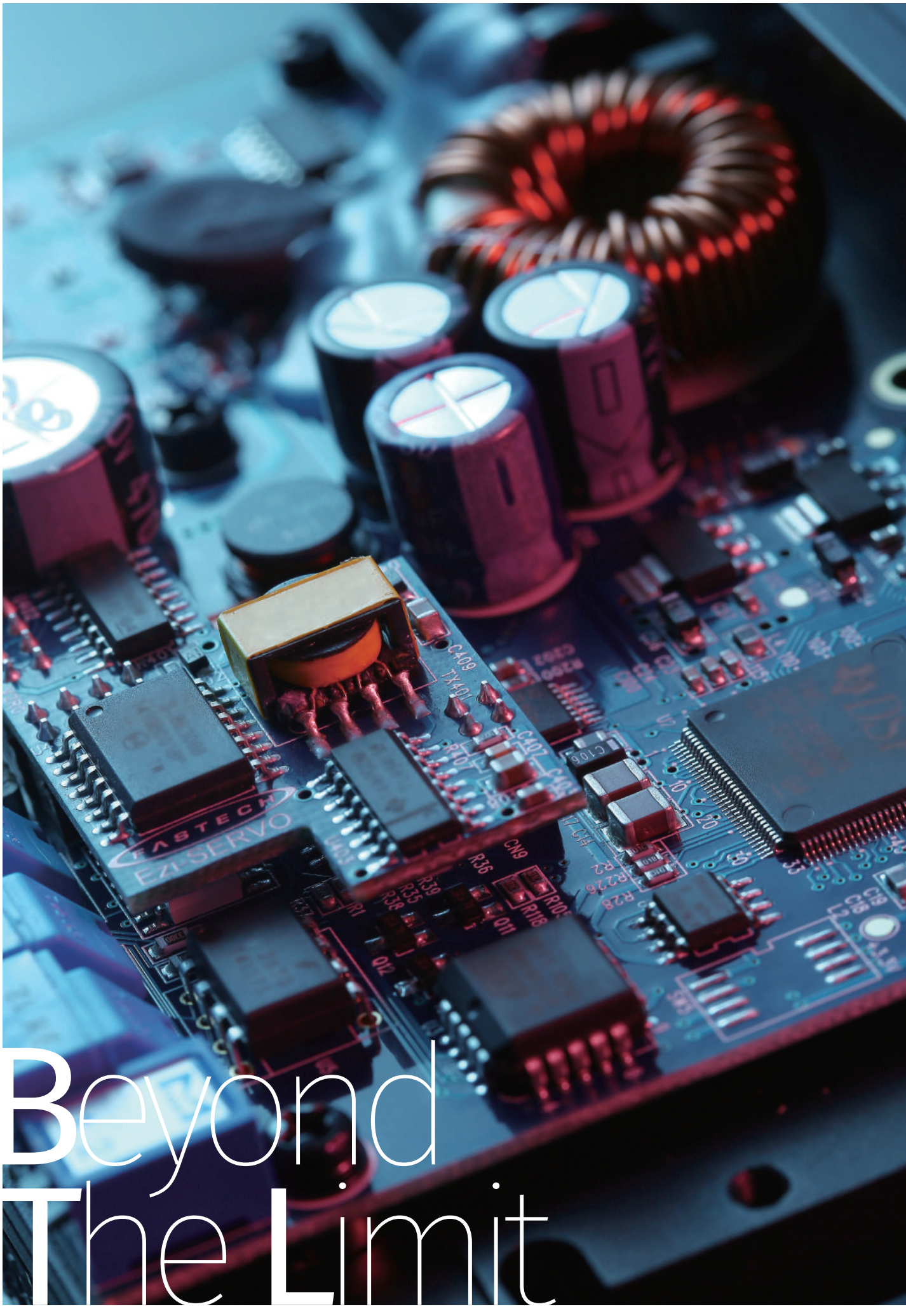
Technology consultation and supports

Technical consultation and motor selection service
Please call to main call center of FASTECH and will do our best to support on time.

Field technical support and technology seminar
Please call to main call center of FASTECH for any questionnaires or troubles about FASTECH products then we will execute field technical support and technology seminar.

Technical training
FASTECH prepares various customized training program for matching each different level of customers and implements technical training for our product. If need, please contact with our main phone number of FASTECH.





Beyond The Limit

FASTECH is beyond the confine of the limit

Applications

FASTECH supports the customers to adopt FASTECH products into various applications and expands experience of applications.

Factory Automation Field

PCB Mounting machine / Semicon processing machine / Surface mounting inspection / Printing machine / LCD, LED, OLED Manufacturing process / Die Bonder / Portable mobile device manufacturing / Scriber / Electronic component packaging / Pick & Place process / Automobile manufacturing process / Soldering Process / Dispensing / Etc

Basic Industry Field

CNC Engraving / Welding machine / Cutting machine / Drilling machine / Metal, Wood, Stone machining / Glass cutting / Bending machine / Laser marking machine / Etc

Bio Medical Field

Dental device / Dispensing equipment / Fluid control device / Laboratory device / Pump control device / Gene division machine / Power distribution device / Microscope / Etc

Mechanism / Robot Field

UVW Stage / Single, Multi-axis Stage / Table top robot / Cartesian robot / Etc

Military Industry Field

Night monitoring camera / Surveillance camera / Night vision thermo-tracking system / Etc

New Energy Industry Technology

Solar panel handling / Solar panel cutting / Solar tracking machine / Etc

Textile / Fashion Industry Field

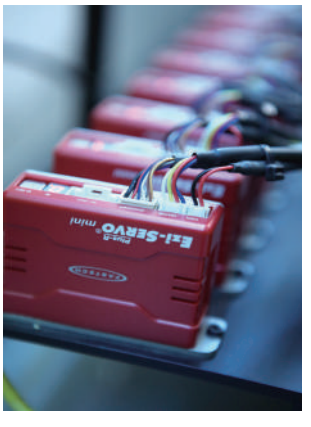
Textile machine / Embroidery machine / Cosmetic packaging and feeding machine / Etc

Entertainment Industry Field

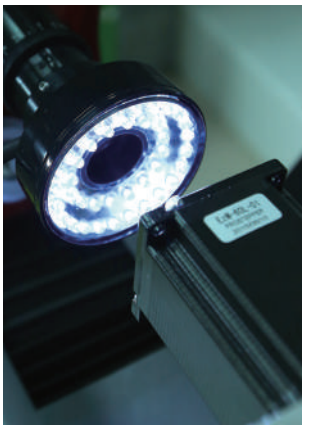
4D Theater dynamic seat / Kinetic Art / Water fountain nozzle control device / Professional broadcasting camera device / Etc

Agricultural Industry Field

Planting machine / Automatic seeding machine / other kinds of agricultural machine / Etc














"Make
the New Rule"

Product Contents

Ezi-SERVO
Series
050 ~ 389

Ezi-SERVO **ST** *052*
Features 054
Part Numbering 058
Standard Combination 058
Combination with Brake, Gearbox 059
Specifications of Drive 061
Specifications of Motor 062
Torque Characteristics of Motor 063
Dimensions of Motor 064
Settings and Operation 067
System Configuration 070
External Wiring Diagram 074

Ezi-SERVO **MINI** *076*
Features 078
Part Numbering 082
Standard Combination 082
Combination with Brake, Gearbox 083
Specifications of Drive 084
Specifications of Motor 085
Torque Characteristics of Motor 085
Dimensions of Motor 086
Settings and Operation 088
System Configuration 091
External Wiring Diagram 093

Ezi-SERVO II **BT** *094*
Features 096
Part Numbering 100
Standard Combination 100
Combination with Brake, Gearbox 101
Specifications of Drive 103
Specifications of Motor 104
Torque Characteristics of Motor 105
BT-28
Dimensions of Motor 106
Settings and Operation 106
System Configuration 108
External Wiring Diagram 109
BT-42/56/60
Dimensions of Motor 110
Settings and Operation 110
System Configuration 113
External Wiring Diagram 115

Ezi-SERVO **ALL** *116*
Features 118
Part Numbering 122
Specifications of Drive 123
Specifications of Motor 124
Torque Characteristics of Motor 124
Dimensions of Motor 125
Settings and Operation 126
System Configuration 128
External Wiring Diagram 130
GUI(Graphic User Interface) Program 131

Ezi-SERVO II **EtherCAT** *132*
Features 134
Part Numbering 138
Standard Combination 138
Combination with Brake, Gearbox 139
Specifications of Drive 141
Specifications of Motor 142
Torque Characteristics of Motor 143
Dimensions of Motor 144
Settings and Operation 147
System Configuration 150
External Wiring Diagram 158

Ezi-SERVO II **EtherCAT TO** *160*
Features 162
Part Numbering 166
Standard Combination 166
Combination with Brake, Gearbox 167
Specifications of Drive 169
Specifications of Motor 170
Torque Characteristics of Motor 171
Dimensions of Motor 172
Settings and Operation 174
System Configuration 177
External Wiring Diagram 181

Ezi-SERVO II **EtherCAT MINI** *182*
Features 184
Part Numbering 188
Standard Combination 188
Combination with Brake, Gearbox 189
Specifications of Drive 191
Specifications of Motor 192
Torque Characteristics of Motor 193
Dimensions of Motor 194
Settings and Operation 196
System Configuration 199
External Wiring Diagram 202

Ezi-SERVO II **EtherCAT 4X** *204*
Features 206
Part Numbering 210
Standard Combination 210
Combination with Brake, Gearbox 211
Specifications of Drive 212
Specifications of Motor 213
Torque Characteristics of Motor 214
Dimensions of Motor 215
Settings and Operation 217
System Configuration 220
External Wiring Diagram 223

Ezi-SERVO II **EtherCAT ALL** *224*
Features 226
Part Numbering 230
Standard Combination 230
Combination with Brake, Gearbox 231
Specifications of Drive 235
Specifications of Motor 236
Torque Characteristics of Motor 237
Dimensions of Motor 238
Settings and Operation 240
System Configuration 243
External Wiring Diagram 247

Ezi-SERVO II **Plus-E** *252*
Features 254
Motion Controller Features of Ezi-SERVO 258
Part Numbering 259
Standard Combination 259
Combination with Brake, Gearbox 260
Specifications of Drive 262
Specifications of Motor 264
Torque Characteristics of Motor 265
Dimensions of Motor 266
Settings and Operation 269
System Configuration 272
External Wiring Diagram 280

Ezi-SERVO II **Plus-E MINI** *282*
Features 284
Motion Controller Features of Ezi-SERVO 288
Part Numbering 289
Standard Combination 289
Combination with Brake, Gearbox 290
Specifications of Drive 292
Specifications of Motor 294
Torque Characteristics of Motor 295
Dimensions of Motor 296
Settings and Operation 298
System Configuration 301
External Wiring Diagram 304

Ezi-SERVO II **Plus-E ALL** *306*
Features 308
Part Numbering 312
Standard Combination 312
Combination with Brake, Gearbox 313
Specifications of Drive 317
Specifications of Motor 318
Torque Characteristics of Motor 319
Dimensions of Motor 320
Settings and Operation 322
System Configuration 325
External Wiring Diagram 329

Ezi-STEP Series *390 ~ 595*

Ezi-SERVO II **CC-Link** *334*

Features 336
Motion Controller Features of Ezi-SERVO 340
Part Numbering 341
Standard Combination 341
Combination with Brake, Gearbox 342
Specifications of Drive 344
Specifications of Motor 345
Torque Characteristics of Motor 346
Dimensions of Motor 347
Settings and Operation 350
System Configuration 354
External Wiring Diagram 363

Ezi-SERVO **HS** *364*

Features 366
Part Numbering 370
Applicable Product Series 370
Combination of Hollow Shaft Motor and Drive 371
Specifications of Hollow Shaft Motor 373
Torque Characteristics of Hollow Shaft Motor 374
Dimensions of Hollow Shaft Motor 376
System Configuration 378

Ezi-STEP **ST** *392*

Features 394
Part Numbering 396
Standard Combination 396
Combination with Brake 396
Specifications of Drive 397
Specifications of Motor 398
Torque Characteristics of Motor 399
Dimensions of Motor 400

Ezi-STEP MPB

Settings and Operation 401
System Configuration 403
External Wiring Diagram 405

Ezi-STEP HPB

Settings and Operation 406
System Configuration 408
External Wiring Diagram 410

Ezi-STEP **MINI** *412*

Features 414
Part Numbering 416
Standard Combination 416
Combination with Brake 416
Specifications of Drive 417
Specifications of Motor 418
Torque Characteristics of Motor 418
Dimensions of Motor 419
Settings and Operation 420
System Configuration 422
External Wiring Diagram 424

Ezi-STEP **BT** *426*

Features 428
Part Numbering 430
Standard Combination 430
Combination with Brake 430
Specifications of Drive 431
Specifications of Motor 432
Torque Characteristics of Motor 432
Dimensions of Motor 433
Settings and Operation 434
System Configuration 435
External Wiring Diagram 438

Ezi-STEP II **EtherCAT** *440*

Features 442
Part Numbering 445
Standard Combination 445
Combination with Brake 445
Specifications of Drive 446
Specifications of Motor 447
Torque Characteristics of Motor 448
Dimensions of Motor 449
Settings and Operation 451
System Configuration 454
External Wiring Diagram 462

Ezi-STEP II **EtherCAT MINI** *464*

Features 466
Part Numbering 468
Standard Combination 468
Combination with Brake 468
Specifications of Drive 469
Specifications of Motor 470
Torque Characteristics of Motor 471
Dimensions of Motor 472
Settings and Operation 474
System Configuration 477
External Wiring Diagram 480

Ezi-STEP II **EtherCAT 4X** *482*

Features 484
Part Numbering 486
Standard Combination 486
Combination with Brake 486
Specifications of Drive 487
Specifications of Motor 488
Torque Characteristics of Motor 489
Dimensions of Motor 490
Settings and Operation 492
System Configuration 495
External Wiring Diagram 498

Ezi-STEP II **Plus-E** *500*

Features 502
Motion Controller Features of Ezi-SERVO 505
Part Numbering 506
Standard Combination 506
Combination with Brake, Gearbox 506
Specifications of Drive 507
Specifications of Motor 508
Torque Characteristics of Motor 509
Dimensions of Motor 510
Settings and Operation 512
System Configuration 515
External Wiring Diagram 523

Ezi-STEP II **Plus-E MINI** *526*

Features 528
Motion Controller Features of Ezi-SERVO 531
Part Numbering 532
Standard Combination 532
Combination with Brake, Gearbox 532
Specifications of Drive 533
Specifications of Motor 534
Torque Characteristics of Motor 535
Dimensions of Motor 536
Settings and Operation 538
System Configuration 541
External Wiring Diagram 544

Ezi-STEP II **Plus-E ALL** *546*

Features 548
Motion Controller Features of Ezi-SERVO 551
Part Numbering 552
Standard Combination 552
Combination with Brake, Gearbox 552
Specifications of Drive 553
Specifications of Motor 554
Torque Characteristics of Motor 555
Dimensions of Motor 556
Settings and Operation 558
System Configuration 561
External Wiring Diagram 565

Ezi-STEP II **CC-Link** *570*

Features 572
Motion Controller Features of Ezi-SERVO 575
Part Numbering 576
Standard Combination 576
Combination with Brake, Gearbox 576
Specifications of Drive 577
Specifications of Motor 578
Torque Characteristics of Motor 579
Dimensions of Motor 580
Settings and Operation 582
System Configuration 586
External Wiring Diagram 594

OPTION
Brake /Gearbox *596 ~ 673*

Option **Brake** *598*

Features *600*
Permissible Radial & Axial Load *601*
Standard Combination *601*
Brake Operation Timing Chart *601*
Specifications and Torque Charcteristics *602*
Dimensions of Motor with Brake *606*
System Configuration *622*

Option **Gearbox** *630*

Features *632*
Permissible Radial & Axial Load *633*
Standard Combination *633*
How to Read Specifications *634*
Specifications and Torque Charcteristics *635*
Dimensions of Motor with Gearbox *658*

Ezi-IO
Series *674 ~ 835*

Ezi-IO **EtherCAT DIO** *676*

Features 678
Part Numbering 680
Product List 680
Specifications of Module 681
Dimensions of Module 685
Settings and Operation 687
System Configuration 702
External Wiring Diagram 708

Ezi-IO **EtherCAT AD** *718*

Features 720
Part Numbering 722
Product List 722
Specifications of Module 722
Dimensions of Module 723
Settings and Operation 723
System Configuration 727
External Wiring Diagram 728

Ezi-IO **EtherCAT DA** *730*

Features 732
Part Numbering 734
Product List 734
Specifications of Module 734
Dimensions of Module 735
Settings and Operation 735
System Configuration 738
External Wiring Diagram 739

Ezi-IO **EtherCAT CNT** *740*

Features 742
Part Numbering 744
Product List 744
Specifications of Module 745
Dimensions of Module 746
Settings and Operation 746
System Configuration 750
External Wiring Diagram 751

Ezi-IO **Ethernet DIO** *756*

Features 758
Part Numbering 760
Product List 760
Specifications of Module 761
Dimensions of Module 763
Settings and Operation 765
System Configuration 776
External Wiring Diagram 780
GUI(Graphic User Interface) Program 786

Ezi-MOTIONLINK Series 836~ 849

Ezi-IO **Ethernet AD** 788
Features 790
Part Numbering 792
Product List 792
Specifications of Module 792
Dimensions of Module 793
Settings and Operation 793
System Configuration 796
External Wiring Diagram 797

Ezi-IO **Ethernet DA** 798
Features 800
Part Numbering 802
Product List 802
Specifications of Module 802
Dimensions of Module 803
Settings and Operation 803
System Configuration 806
External Wiring Diagram 807

Ezi-IO **Ethernet CNT** 808
Features 810
Part Numbering 812
Product List 812
Specifications of Module 813
Dimensions of Module 814
Settings and Operation 814
System Configuration 818
External Wiring Diagram 819

Ezi-IO **CC-Link IE TSN DIO** 824
Features 826
Part Numbering 828
Product List 828
Specifications of Module 829
Dimensions of Module 830
Settings and Operation 831
System Configuration 834
External Wiring Diagram 835

Ezi-MOTIONLINK **Plus-E** 838
Features 840
Part Numbering 842
Product List 842
Specifications of Controller 843
Settings and Operation 844
System Configuration 845
External Wiring Diagram 847
GUI(Graphic User Interface) Program 848

Ezi-MOTIONGATE Series 850 ~ 869

Ezi-MOTIONGATE 852
Features 854
Part Numbering 856
Product Line-up 857
PROFINET Type Specifications 858
PROFIBUS Type Specifications 861
EtherNet/IP Type Specifications 864
DeviceNet Type Specifications 867

Ezi-Robo Series 870 ~ 907

Ezi-Robo **HG** 872
Features 874
Part Numbering 878
Applicable Product Series 878
Combination of Actuator Drive 879
How to Read Specifications 880
Specifications 881
Dimensions of Product 888
Home Sensor Set 891
System Configuration 893
Home Sensor Installation Dimensions 904

Ezi-SPEED Series 908 ~ 944

Ezi-SPEED 910
Features 912
Part Numbering 916
Standard Combination 916
Specifications of Drive 918
Specifications of Motor 921
Torque Characteristics of Motor 922
Dimensions of Motor 923
Specifications of Motor with Gearbox 925
Specifications of Motor with Hollow Shaft Gearbox 928
Dimensions of Motor with Gearbox 930
Dimensions of Motor with Hollow shaft Gearbox 933
Settings and Operation 935
System Configuration 937
External Wiring Diagram 943

FASTECH_
Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®

- ST
- MINI
- BT
- ALL
- EtherCAT
- EtherCAT TO
- EtherCAT MINI
- EtherCAT 4X
- EtherCAT ALL
- Plus-E
- Plus-E MINI
- Plus-E ALL
- CC-Link
- HS


Ezi-SERVO
EzS-PD-60L-A
FASTECH

Ezi-SERVO® ST

Closed Loop Stepping System

- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque
- High Resolution / High Response



FASTECH

Fast, Accurate, Smooth Motion

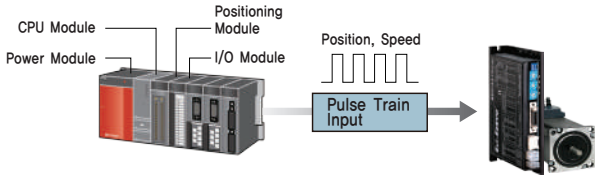
Ezi-SERVO® ST

Closed Loop Stepping System



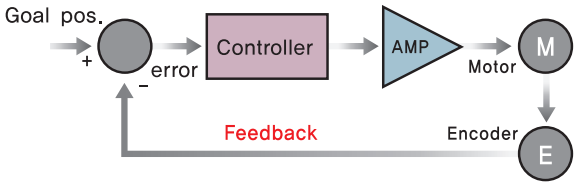
1 Standalone Motion Control

Ezi-SERVO ST is a standalone stepping motor control system that drives the motor by receiving pulse signals from the positioning module (pulse oscillator).



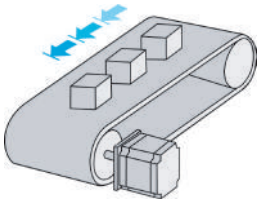
2 Closed-Loop System

Ezi-SERVO is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25μs. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



3 Tuning Not Required

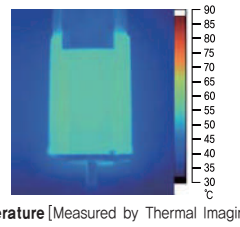
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



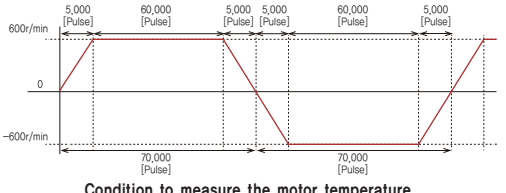
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

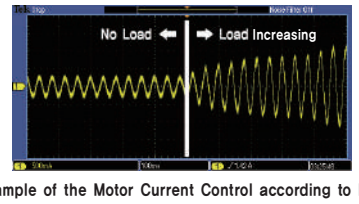
Ezi-SERVO automatically controls motor current according to load.
Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

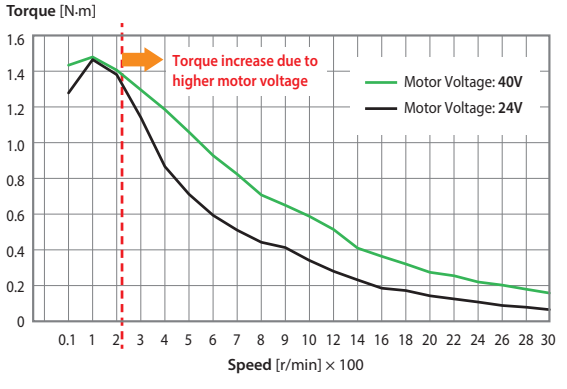


Example of the Motor Current Control according to load

5 High Torque

(Motor Voltage Increasing)

Ezi-SERVO boosts the voltage supplied to the motor to increase the torque at high speed. Since Ezi-SERVO has the function to increase the voltage supplied to the motor to compensate the torque reduction, the torque of motor at high speed can be improved about 30%.

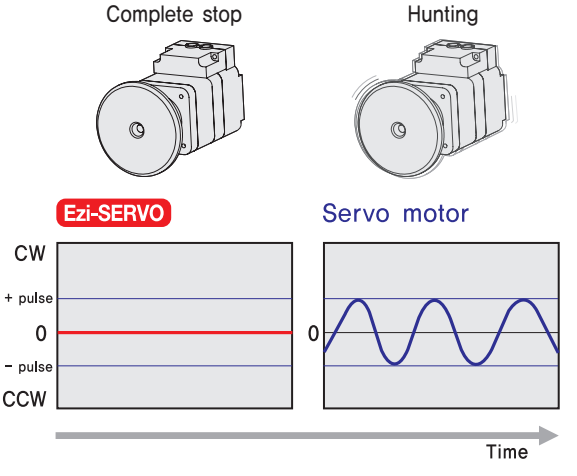


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-SERVO-ST-56L
Motor Voltage = DC40V
Input Voltage = DC24V

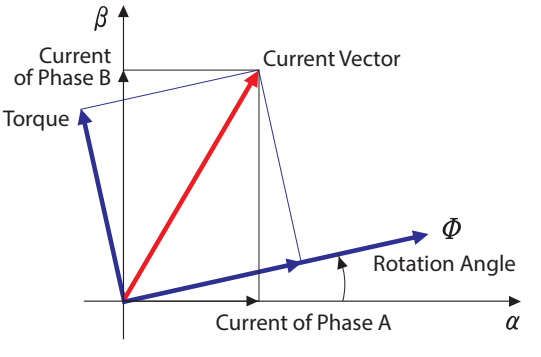
6 No Hunting

Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



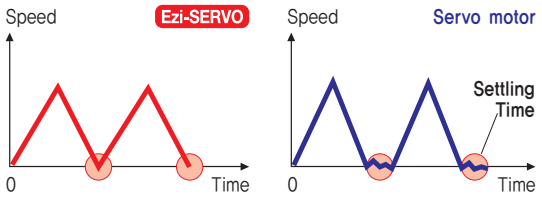
7 Smooth and Accurate Operation

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



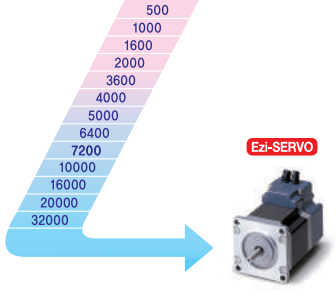
8 High Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



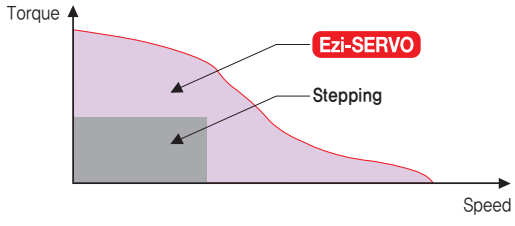
9 High Resolution

The unit of the position command can be divided precisely. (Max. 32,000 pulses/revolution)



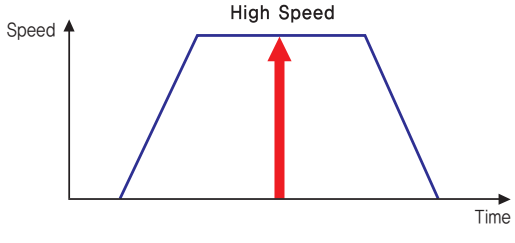
10 High Torque/Continuous Operation

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO ST Part Numbering

Ezi-SERVO-ST-56L-A-BK-PN5

Series Name

Type Name

ST : Stand Alone

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
C : 32,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-20M-F	EzM-20M-F	EzS-PD-20M-F
Ezi-SERVO-ST-20L-F	EzM-20L-F	EzS-PD-20L-F
Ezi-SERVO-ST-28S-D	EzM-28S-D	EzS-PD-28S-D
Ezi-SERVO-ST-28SM-D	EzM-28SM-D	EzS-PD-28S-D
Ezi-SERVO-ST-28M-D	EzM-28M-D	EzS-PD-28M-D
Ezi-SERVO-ST-28MM-D	EzM-28MM-D	EzS-PD-28M-D
Ezi-SERVO-ST-28L-D	EzM-28L-D	EzS-PD-28L-D
Ezi-SERVO-ST-28LM-D	EzM-28LM-D	EzS-PD-28L-D
Ezi-SERVO-ST-35M-D	EzM-35M-D	EzS-PD-35M-D
Ezi-SERVO-ST-35MM-D	EzM-35MM-D	EzS-PD-35M-D
Ezi-SERVO-ST-35L-D	EzM-35L-D	EzS-PD-35L-D
Ezi-SERVO-ST-35LM-D	EzM-35LM-D	EzS-PD-35L-D
Ezi-SERVO-ST-42S-A	EzM-42S-A	EzS-PD-42S-A
Ezi-SERVO-ST-42S-B	EzM-42S-B	EzS-PD-42S-B
Ezi-SERVO-ST-42S-C	EzM-42S-C	EzS-PD-42S-C
Ezi-SERVO-ST-42M-A	EzM-42M-A	EzS-PD-42M-A
Ezi-SERVO-ST-42M-B	EzM-42M-B	EzS-PD-42M-B
Ezi-SERVO-ST-42M-C	EzM-42M-C	EzS-PD-42M-C
Ezi-SERVO-ST-42L-A	EzM-42L-A	EzS-PD-42L-A
Ezi-SERVO-ST-42L-B	EzM-42L-B	EzS-PD-42L-B
Ezi-SERVO-ST-42L-C	EzM-42L-C	EzS-PD-42L-C
Ezi-SERVO-ST-42XL-A	EzM-42XL-A	EzS-PD-42XL-A
Ezi-SERVO-ST-42XL-B	EzM-42XL-B	EzS-PD-42XL-B
Ezi-SERVO-ST-42XL-C	EzM-42XL-C	EzS-PD-42XL-C
Ezi-SERVO-ST-56S-A	EzM-56S-A	EzS-PD-56S-A
Ezi-SERVO-ST-56S-B	EzM-56S-B	EzS-PD-56S-B
Ezi-SERVO-ST-56S-C	EzM-56S-C	EzS-PD-56S-C
Ezi-SERVO-ST-56M-A	EzM-56M-A	EzS-PD-56M-A
Ezi-SERVO-ST-56M-B	EzM-56M-B	EzS-PD-56M-B
Ezi-SERVO-ST-56M-C	EzM-56M-C	EzS-PD-56M-C
Ezi-SERVO-ST-56L-A	EzM-56L-A	EzS-PD-56L-A
Ezi-SERVO-ST-56L-B	EzM-56L-B	EzS-PD-56L-B
Ezi-SERVO-ST-56L-C	EzM-56L-C	EzS-PD-56L-C
Ezi-SERVO-ST-60S-A	EzM-60S-A	EzS-PD-60S-A
Ezi-SERVO-ST-60S-B	EzM-60S-B	EzS-PD-60S-B
Ezi-SERVO-ST-60S-C	EzM-60S-C	EzS-PD-60S-C
Ezi-SERVO-ST-60M-A	EzM-60M-A	EzS-PD-60M-A
Ezi-SERVO-ST-60M-B	EzM-60M-B	EzS-PD-60M-B
Ezi-SERVO-ST-60M-C	EzM-60M-C	EzS-PD-60M-C
Ezi-SERVO-ST-60L-A	EzM-60L-A	EzS-PD-60L-A
Ezi-SERVO-ST-60L-B	EzM-60L-B	EzS-PD-60L-B
Ezi-SERVO-ST-60L-C	EzM-60L-C	EzS-PD-60L-C
Ezi-SERVO-ST-86M-A	EzM-86M-A	EzS-PD-86M-A
Ezi-SERVO-ST-86M-B	EzM-86M-B	EzS-PD-86M-B
Ezi-SERVO-ST-86M-C	EzM-86M-C	EzS-PD-86M-C
Ezi-SERVO-ST-86L-A	EzM-86L-A	EzS-PD-86L-A
Ezi-SERVO-ST-86L-B	EzM-86L-B	EzS-PD-86L-B
Ezi-SERVO-ST-86L-C	EzM-86L-C	EzS-PD-86L-C
Ezi-SERVO-ST-86XL-A	EzM-86XL-A	EzS-PD-86XL-A
Ezi-SERVO-ST-86XL-B	EzM-86XL-B	EzS-PD-86XL-B
Ezi-SERVO-ST-86XL-C	EzM-86XL-C	EzS-PD-86XL-C

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(e.g., Ezi-SERVO-ST-28LM-D, Ezi-SERVO-ST-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-BK	EzM-42S-A-BK	EzS-PD-42S-A
Ezi-SERVO-ST-42S-B-BK	EzM-42S-B-BK	EzS-PD-42S-B
Ezi-SERVO-ST-42M-A-BK	EzM-42M-A-BK	EzS-PD-42M-A
Ezi-SERVO-ST-42M-B-BK	EzM-42M-B-BK	EzS-PD-42M-B
Ezi-SERVO-ST-42L-A-BK	EzM-42L-A-BK	EzS-PD-42L-A
Ezi-SERVO-ST-42L-B-BK	EzM-42L-B-BK	EzS-PD-42L-B
Ezi-SERVO-ST-42XL-A-BK	EzM-42XL-A-BK	EzS-PD-42XL-A
Ezi-SERVO-ST-42XL-B-BK	EzM-42XL-B-BK	EzS-PD-42XL-B
Ezi-SERVO-ST-56S-A-BK	EzM-56S-A-BK	EzS-PD-56S-A
Ezi-SERVO-ST-56S-B-BK	EzM-56S-B-BK	EzS-PD-56S-B
Ezi-SERVO-ST-56M-A-BK	EzM-56M-A-BK	EzS-PD-56M-A
Ezi-SERVO-ST-56M-B-BK	EzM-56M-B-BK	EzS-PD-56M-B
Ezi-SERVO-ST-56L-A-BK	EzM-56L-A-BK	EzS-PD-56L-A
Ezi-SERVO-ST-56L-B-BK	EzM-56L-B-BK	EzS-PD-56L-B
Ezi-SERVO-ST-60S-A-BK	EzM-60S-A-BK	EzS-PD-60S-A
Ezi-SERVO-ST-60S-B-BK	EzM-60S-B-BK	EzS-PD-60S-B
Ezi-SERVO-ST-60M-A-BK	EzM-60M-A-BK	EzS-PD-60M-A
Ezi-SERVO-ST-60M-B-BK	EzM-60M-B-BK	EzS-PD-60M-B
Ezi-SERVO-ST-60L-A-BK	EzM-60L-A-BK	EzS-PD-60L-A
Ezi-SERVO-ST-60L-B-BK	EzM-60L-B-BK	EzS-PD-60L-B
Ezi-SERVO-ST-86M-A-BK	EzM-86M-A-BK	EzS-PD-86M-A
Ezi-SERVO-ST-86M-B-BK	EzM-86M-B-BK	EzS-PD-86M-B
Ezi-SERVO-ST-86L-A-BK	EzM-86L-A-BK	EzS-PD-86L-A
Ezi-SERVO-ST-86L-B-BK	EzM-86L-B-BK	EzS-PD-86L-B
Ezi-SERVO-ST-86XL-A-BK	EzM-86XL-A-BK	EzS-PD-86XL-A
Ezi-SERVO-ST-86XL-B-BK	EzM-86XL-B-BK	EzS-PD-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO-ST-42S-A-PN3	EzM-42S-A-PN3	EzS-PD-42S-A	1:3
Ezi-SERVO-ST-42S-B-PN3	EzM-42S-B-PN3	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN5	EzM-42S-A-PN5	EzS-PD-42S-A	1:5
Ezi-SERVO-ST-42S-B-PN5	EzM-42S-B-PN5	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN8	EzM-42S-A-PN8	EzS-PD-42S-A	1:8
Ezi-SERVO-ST-42S-B-PN8	EzM-42S-B-PN8	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-42S-A	1:10
Ezi-SERVO-ST-42S-B-PN10	EzM-42S-B-PN10	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN15	EzM-42S-A-PN15	EzS-PD-42S-A	1:15
Ezi-SERVO-ST-42S-B-PN15	EzM-42S-B-PN15	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN25	EzM-42S-A-PN25	EzS-PD-42S-A	1:25
Ezi-SERVO-ST-42S-B-PN25	EzM-42S-B-PN25	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN40	EzM-42S-A-PN40	EzS-PD-42S-A	1:40
Ezi-SERVO-ST-42S-B-PN40	EzM-42S-B-PN40	EzS-PD-42S-B	
Ezi-SERVO-ST-42S-A-PN50	EzM-42S-A-PN50	EzS-PD-42S-A	1:50
Ezi-SERVO-ST-42S-B-PN50	EzM-42S-B-PN50	EzS-PD-42S-B	
Ezi-SERVO-ST-42M-A-PN3	EzM-42M-A-PN3	EzS-PD-42M-A	1:3
Ezi-SERVO-ST-42M-B-PN3	EzM-42M-B-PN3	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN5	EzM-42M-A-PN5	EzS-PD-42M-A	1:5
Ezi-SERVO-ST-42M-B-PN5	EzM-42M-B-PN5	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN8	EzM-42M-A-PN8	EzS-PD-42M-A	1:8
Ezi-SERVO-ST-42M-B-PN8	EzM-42M-B-PN8	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN10	EzM-42M-A-PN10	EzS-PD-42M-A	1:10
Ezi-SERVO-ST-42M-B-PN10	EzM-42M-B-PN10	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN15	EzM-42M-A-PN15	EzS-PD-42M-A	1:15
Ezi-SERVO-ST-42M-B-PN15	EzM-42M-B-PN15	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN25	EzM-42M-A-PN25	EzS-PD-42M-A	1:25
Ezi-SERVO-ST-42M-B-PN25	EzM-42M-B-PN25	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN40	EzM-42M-A-PN40	EzS-PD-42M-A	1:40
Ezi-SERVO-ST-42M-B-PN40	EzM-42M-B-PN40	EzS-PD-42M-B	
Ezi-SERVO-ST-42M-A-PN50	EzM-42M-A-PN50	EzS-PD-42M-A	1:50
Ezi-SERVO-ST-42M-B-PN50	EzM-42M-B-PN50	EzS-PD-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO-ST-42L-A-PN3	EzM-42L-A-PN3	EzS-PD-42L-A	1:3
Ezi-SERVO-ST-42L-B-PN3	EzM-42L-B-PN3	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN5	EzM-42L-A-PN5	EzS-PD-42L-A	1:5
Ezi-SERVO-ST-42L-B-PN5	EzM-42L-B-PN5	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN8	EzM-42L-A-PN8	EzS-PD-42L-A	1:8
Ezi-SERVO-ST-42L-B-PN8	EzM-42L-B-PN8	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN10	EzM-42L-A-PN10	EzS-PD-42L-A	1:10
Ezi-SERVO-ST-42L-B-PN10	EzM-42L-B-PN10	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN15	EzM-42L-A-PN15	EzS-PD-42L-A	1:15
Ezi-SERVO-ST-42L-B-PN15	EzM-42L-B-PN15	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN25	EzM-42L-A-PN25	EzS-PD-42L-A	1:25
Ezi-SERVO-ST-42L-B-PN25	EzM-42L-B-PN25	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN40	EzM-42L-A-PN40	EzS-PD-42L-A	1:40
Ezi-SERVO-ST-42L-B-PN40	EzM-42L-B-PN40	EzS-PD-42L-B	
Ezi-SERVO-ST-42L-A-PN50	EzM-42L-A-PN50	EzS-PD-42L-A	1:50
Ezi-SERVO-ST-42L-B-PN50	EzM-42L-B-PN50	EzS-PD-42L-B	
Ezi-SERVO-ST-42XL-A-PN3	EzM-42XL-A-PN3	EzS-PD-42XL-A	1:3
Ezi-SERVO-ST-42XL-B-PN3	EzM-42XL-B-PN3	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN5	EzM-42XL-A-PN5	EzS-PD-42XL-A	1:5
Ezi-SERVO-ST-42XL-B-PN5	EzM-42XL-B-PN5	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN8	EzM-42XL-A-PN8	EzS-PD-42XL-A	1:8
Ezi-SERVO-ST-42XL-B-PN8	EzM-42XL-B-PN8	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN10	EzM-42XL-A-PN10	EzS-PD-42XL-A	1:10
Ezi-SERVO-ST-42XL-B-PN10	EzM-42XL-B-PN10	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN15	EzM-42XL-A-PN15	EzS-PD-42XL-A	1:15
Ezi-SERVO-ST-42XL-B-PN15	EzM-42XL-B-PN15	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN25	EzM-42XL-A-PN25	EzS-PD-42XL-A	1:25
Ezi-SERVO-ST-42XL-B-PN25	EzM-42XL-B-PN25	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN40	EzM-42XL-A-PN40	EzS-PD-42XL-A	1:40
Ezi-SERVO-ST-42XL-B-PN40	EzM-42XL-B-PN40	EzS-PD-42XL-B	
Ezi-SERVO-ST-42XL-A-PN50	EzM-42XL-A-PN50	EzS-PD-42XL-A	1:50
Ezi-SERVO-ST-42XL-B-PN50	EzM-42XL-B-PN50	EzS-PD-42XL-B	
Ezi-SERVO-ST-56S-A-PN3	EzM-56S-A-PN3	EzS-PD-56S-A	1:3
Ezi-SERVO-ST-56S-B-PN3	EzM-56S-B-PN3	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN5	EzM-56S-A-PN5	EzS-PD-56S-A	1:5
Ezi-SERVO-ST-56S-B-PN5	EzM-56S-B-PN5	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN8	EzM-56S-A-PN8	EzS-PD-56S-A	1:8
Ezi-SERVO-ST-56S-B-PN8	EzM-56S-B-PN8	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN10	EzM-56S-A-PN10	EzS-PD-56S-A	1:10
Ezi-SERVO-ST-56S-B-PN10	EzM-56S-B-PN10	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN15	EzM-56S-A-PN15	EzS-PD-56S-A	1:15
Ezi-SERVO-ST-56S-B-PN15	EzM-56S-B-PN15	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN25	EzM-56S-A-PN25	EzS-PD-56S-A	1:25
Ezi-SERVO-ST-56S-B-PN25	EzM-56S-B-PN25	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN40	EzM-56S-A-PN40	EzS-PD-56S-A	1:40
Ezi-SERVO-ST-56S-B-PN40	EzM-56S-B-PN40	EzS-PD-56S-B	
Ezi-SERVO-ST-56S-A-PN50	EzM-56S-A-PN50	EzS-PD-56S-A	1:50
Ezi-SERVO-ST-56S-B-PN50	EzM-56S-B-PN50	EzS-PD-56S-B	
Ezi-SERVO-ST-56M-A-PN3	EzM-56M-A-PN3	EzS-PD-56M-A	1:3
Ezi-SERVO-ST-56M-B-PN3	EzM-56M-B-PN3	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN5	EzM-56M-A-PN5	EzS-PD-56M-A	1:5
Ezi-SERVO-ST-56M-B-PN5	EzM-56M-B-PN5	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN8	EzM-56M-A-PN8	EzS-PD-56M-A	1:8
Ezi-SERVO-ST-56M-B-PN8	EzM-56M-B-PN8	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN10	EzM-56M-A-PN10	EzS-PD-56M-A	1:10
Ezi-SERVO-ST-56M-B-PN10	EzM-56M-B-PN10	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN15	EzM-56M-A-PN15	EzS-PD-56M-A	1:15
Ezi-SERVO-ST-56M-B-PN15	EzM-56M-B-PN15	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN25	EzM-56M-A-PN25	EzS-PD-56M-A	1:25
Ezi-SERVO-ST-56M-B-PN25	EzM-56M-B-PN25	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN40	EzM-56M-A-PN40	EzS-PD-56M-A	1:40
Ezi-SERVO-ST-56M-B-PN40	EzM-56M-B-PN40	EzS-PD-56M-B	
Ezi-SERVO-ST-56M-A-PN50	EzM-56M-A-PN50	EzS-PD-56M-A	1:50
Ezi-SERVO-ST-56M-B-PN50	EzM-56M-B-PN50	EzS-PD-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO-ST-56L-A-PN3	EzM-56L-A-PN3	EzS-PD-56L-A	1:3
Ezi-SERVO-ST-56L-B-PN3	EzM-56L-B-PN3	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN5	EzM-56L-A-PN5	EzS-PD-56L-A	1:5
Ezi-SERVO-ST-56L-B-PN5	EzM-56L-B-PN5	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN8	EzM-56L-A-PN8	EzS-PD-56L-A	1:8
Ezi-SERVO-ST-56L-B-PN8	EzM-56L-B-PN8	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN10	EzM-56L-A-PN10	EzS-PD-56L-A	1:10
Ezi-SERVO-ST-56L-B-PN10	EzM-56L-B-PN10	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN15	EzM-56L-A-PN15	EzS-PD-56L-A	1:15
Ezi-SERVO-ST-56L-B-PN15	EzM-56L-B-PN15	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN25	EzM-56L-A-PN25	EzS-PD-56L-A	1:25
Ezi-SERVO-ST-56L-B-PN25	EzM-56L-B-PN25	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN40	EzM-56L-A-PN40	EzS-PD-56L-A	1:40
Ezi-SERVO-ST-56L-B-PN40	EzM-56L-B-PN40	EzS-PD-56L-B	
Ezi-SERVO-ST-56L-A-PN50	EzM-56L-A-PN50	EzS-PD-56L-A	1:50
Ezi-SERVO-ST-56L-B-PN50	EzM-56L-B-PN50	EzS-PD-56L-B	
Ezi-SERVO-ST-60S-A-PN3	EzM-60S-A-PN3	EzS-PD-60S-A	1:3
Ezi-SERVO-ST-60S-B-PN3	EzM-60S-B-PN3	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN5	EzM-60S-A-PN5	EzS-PD-60S-A	1:5
Ezi-SERVO-ST-60S-B-PN5	EzM-60S-B-PN5	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN8	EzM-60S-A-PN8	EzS-PD-60S-A	1:8
Ezi-SERVO-ST-60S-B-PN8	EzM-60S-B-PN8	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN10	EzM-60S-A-PN10	EzS-PD-60S-A	1:10
Ezi-SERVO-ST-60S-B-PN10	EzM-60S-B-PN10	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN15	EzM-60S-A-PN15	EzS-PD-60S-A	1:15
Ezi-SERVO-ST-60S-B-PN15	EzM-60S-B-PN15	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN25	EzM-60S-A-PN25	EzS-PD-60S-A	1:25
Ezi-SERVO-ST-60S-B-PN25	EzM-60S-B-PN25	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN40	EzM-60S-A-PN40	EzS-PD-60S-A	1:40
Ezi-SERVO-ST-60S-B-PN40	EzM-60S-B-PN40	EzS-PD-60S-B	
Ezi-SERVO-ST-60S-A-PN50	EzM-60S-A-PN50	EzS-PD-60S-A	1:50
Ezi-SERVO-ST-60S-B-PN50	EzM-60S-B-PN50	EzS-PD-60S-B	
Ezi-SERVO-ST-60M-A-PN3	EzM-60M-A-PN3	EzS-PD-60M-A	1:3
Ezi-SERVO-ST-60M-B-PN3	EzM-60M-B-PN3	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN5	EzM-60M-A-PN5	EzS-PD-60M-A	1:5
Ezi-SERVO-ST-60M-B-PN5	EzM-60M-B-PN5	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN8	EzM-60M-A-PN8	EzS-PD-60M-A	1:8
Ezi-SERVO-ST-60M-B-PN8	EzM-60M-B-PN8	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN10	EzM-60M-A-PN10	EzS-PD-60M-A	1:10
Ezi-SERVO-ST-60M-B-PN10	EzM-60M-B-PN10	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN15	EzM-60M-A-PN15	EzS-PD-60M-A	1:15
Ezi-SERVO-ST-60M-B-PN15	EzM-60M-B-PN15	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN25	EzM-60M-A-PN25	EzS-PD-60M-A	1:25
Ezi-SERVO-ST-60M-B-PN25	EzM-60M-B-PN25	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN40	EzM-60M-A-PN40	EzS-PD-60M-A	1:40
Ezi-SERVO-ST-60M-B-PN40	EzM-60M-B-PN40	EzS-PD-60M-B	
Ezi-SERVO-ST-60M-A-PN50	EzM-60M-A-PN50	EzS-PD-60M-A	1:50
Ezi-SERVO-ST-60M-B-PN50	EzM-60M-B-PN50	EzS-PD-60M-B	
Ezi-SERVO-ST-60L-A-PN3	EzM-60L-A-PN3	EzS-PD-60L-A	1:3
Ezi-SERVO-ST-60L-B-PN3	EzM-60L-B-PN3	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN5	EzM-60L-A-PN5	EzS-PD-60L-A	1:5
Ezi-SERVO-ST-60L-B-PN5	EzM-60L-B-PN5	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN8	EzM-60L-A-PN8	EzS-PD-60L-A	1:8
Ezi-SERVO-ST-60L-B-PN8	EzM-60L-B-PN8	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN10	EzM-60L-A-PN10	EzS-PD-60L-A	1:10
Ezi-SERVO-ST-60L-B-PN10	EzM-60L-B-PN10	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN15	EzM-60L-A-PN15	EzS-PD-60L-A	1:15
Ezi-SERVO-ST-60L-B-PN15	EzM-60L-B-PN15	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN25	EzM-60L-A-PN25	EzS-PD-60L-A	1:25
Ezi-SERVO-ST-60L-B-PN25	EzM-60L-B-PN25	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN40	EzM-60L-A-PN40	EzS-PD-60L-A	1:40
Ezi-SERVO-ST-60L-B-PN40	EzM-60L-B-PN40	EzS-PD-60L-B	
Ezi-SERVO-ST-60L-A-PN50	EzM-60L-A-PN50	EzS-PD-60L-A	1:50
Ezi-SERVO-ST-60L-B-PN50	EzM-60L-B-PN50	EzS-PD-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO-ST-86M-A-PN3	EzM-86M-A-PN3	EzS-PD-86M-A	1:3
Ezi-SERVO-ST-86M-B-PN3	EzM-86M-B-PN3	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN5	EzM-86M-A-PN5	EzS-PD-86M-A	1:5
Ezi-SERVO-ST-86M-B-PN5	EzM-86M-B-PN5	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN8	EzM-86M-A-PN8	EzS-PD-86M-A	1:8
Ezi-SERVO-ST-86M-B-PN8	EzM-86M-B-PN8	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN10	EzM-86M-A-PN10	EzS-PD-86M-A	1:10
Ezi-SERVO-ST-86M-B-PN10	EzM-86M-B-PN10	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN15	EzM-86M-A-PN15	EzS-PD-86M-A	1:15
Ezi-SERVO-ST-86M-B-PN15	EzM-86M-B-PN15	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN25	EzM-86M-A-PN25	EzS-PD-86M-A	1:25
Ezi-SERVO-ST-86M-B-PN25	EzM-86M-B-PN25	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN40	EzM-86M-A-PN40	EzS-PD-86M-A	1:40
Ezi-SERVO-ST-86M-B-PN40	EzM-86M-B-PN40	EzS-PD-86M-B	
Ezi-SERVO-ST-86M-A-PN50	EzM-86M-A-PN50	EzS-PD-86M-A	1:50
Ezi-SERVO-ST-86M-B-PN50	EzM-86M-B-PN50	EzS-PD-86M-B	
Ezi-SERVO-ST-86L-A-PN3	EzM-86L-A-PN3	EzS-PD-86L-A	1:3
Ezi-SERVO-ST-86L-B-PN3	EzM-86L-B-PN3	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN5	EzM-86L-A-PN5	EzS-PD-86L-A	1:5
Ezi-SERVO-ST-86L-B-PN5	EzM-86L-B-PN5	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN8	EzM-86L-A-PN8	EzS-PD-86L-A	1:8
Ezi-SERVO-ST-86L-B-PN8	EzM-86L-B-PN8	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN10	EzM-86L-A-PN10	EzS-PD-86L-A	1:10
Ezi-SERVO-ST-86L-B-PN10	EzM-86L-B-PN10	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN15	EzM-86L-A-PN15	EzS-PD-86L-A	1:15
Ezi-SERVO-ST-86L-B-PN15	EzM-86L-B-PN15	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN25	EzM-86L-A-PN25	EzS-PD-86L-A	1:25
Ezi-SERVO-ST-86L-B-PN25	EzM-86L-B-PN25	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN40	EzM-86L-A-PN40	EzS-PD-86L-A	1:40
Ezi-SERVO-ST-86L-B-PN40	EzM-86L-B-PN40	EzS-PD-86L-B	
Ezi-SERVO-ST-86L-A-PN50	EzM-86L-A-PN50	EzS-PD-86L-A	1:50
Ezi-SERVO-ST-86L-B-PN50	EzM-86L-B-PN50	EzS-PD-86L-B	
Ezi-SERVO-ST-86XL-A-PN3	EzM-86XL-A-PN3	EzS-PD-86XL-A	1:3
Ezi-SERVO-ST-86XL-B-PN3	EzM-86XL-B-PN3	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN5	EzM-86XL-A-PN5	EzS-PD-86XL-A	1:5
Ezi-SERVO-ST-86XL-B-PN5	EzM-86XL-B-PN5	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN8	EzM-86XL-A-PN8	EzS-PD-86XL-A	1:8
Ezi-SERVO-ST-86XL-B-PN8	EzM-86XL-B-PN8	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN10	EzM-86XL-A-PN10	EzS-PD-86XL-A	1:10
Ezi-SERVO-ST-86XL-B-PN10	EzM-86XL-B-PN10	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN15	EzM-86XL-A-PN15	EzS-PD-86XL-A	1:15
Ezi-SERVO-ST-86XL-B-PN15	EzM-86XL-B-PN15	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN25	EzM-86XL-A-PN25	EzS-PD-86XL-A	1:25
Ezi-SERVO-ST-86XL-B-PN25	EzM-86XL-B-PN25	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN40	EzM-86XL-A-PN40	EzS-PD-86XL-A	1:40
Ezi-SERVO-ST-86XL-B-PN40	EzM-86XL-B-PN40	EzS-PD-86XL-B	
Ezi-SERVO-ST-86XL-A-PN50	EzM-86XL-A-PN50	EzS-PD-86XL-A	1:50
Ezi-SERVO-ST-86XL-B-PN50	EzM-86XL-B-PN50	EzS-PD-86XL-B	

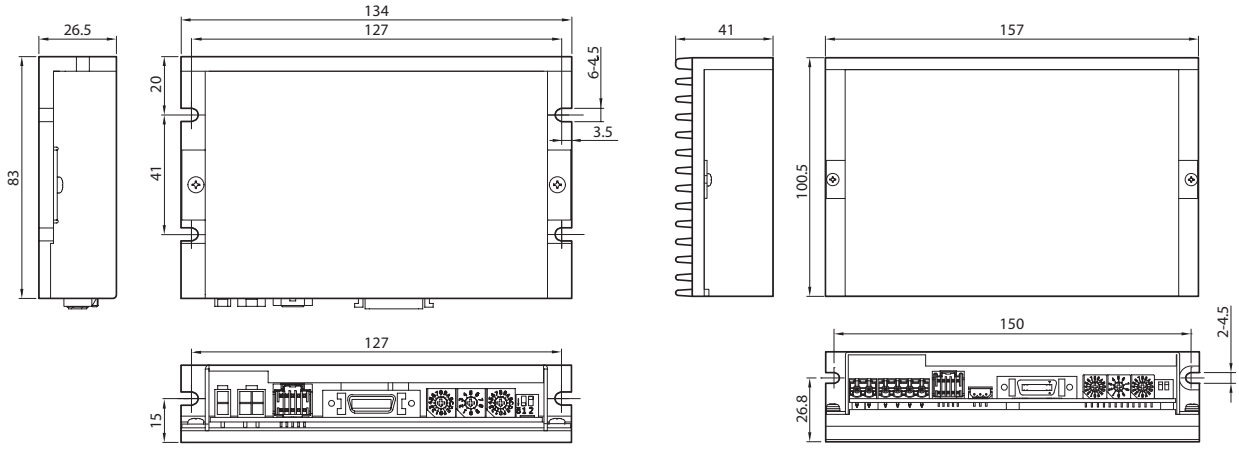
Specifications of Drive

Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series	EzM-56 series	EzM-60 series	EzM-86 series
Drive Model		EzS-PD-20 series	EzS-PD-28 series	EzS-PD-35 series	EzS-PD-42 series	EzS-PD-56 series	EzS-PD-60 series	EzS-PD-86 series
Input Voltage		DC24V±10%						DC40~70V
Control Method		Closed-loop control with 32 bit MCU						
Current Consumption		Max. 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000r/min *1						
	Resolution	(Set by Rotary Switch)						
	Max. Input Frequency	500kHz (Duty 50%)						
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error						
	LED Display	Power Status, In-Position Status, Servo ON Status, Alarm Status						
	In-Position Selection	0~F (Set by Rotary Switch)						
	Position Gain Selection	0~F (Set by Rotary Switch)						
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by DIP Switch)						
	Rotation Direction	CW/CCW (Set by DIP Switch)						
	Speed/Position Control Command	Pulse Train Input						
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset (Photocoupler Input)						
	Output Signals	In-Position, Alarm (Photocoupler Output) Encoder Signal (A+, A-, B+, B-, Z+, Z-, Line Driver Output Equivalent to 26C31), Brake Output						

Encoder Resolution [P/R]	Configurable Resolution [P/R]
4,000	500 1,000 1,600 2,000 3,600 4,000 5,000 6,400 7,200 10,000
10,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000
16,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000
20,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000
32,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



※ 86mm motor drive (EzS-PD-86 series)

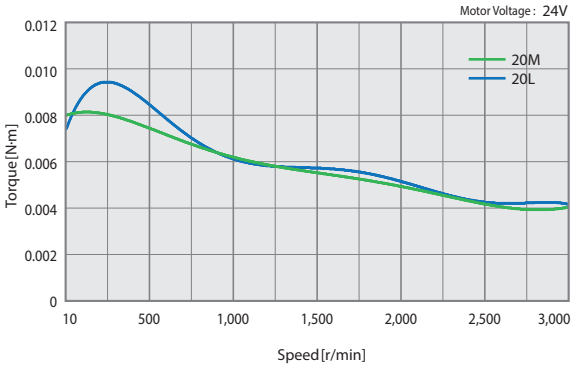
Specifications of Motor

MODEL			UNIT	EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.079	0.104	0.147	0.204	0.232	0.194	0.226	0.299	0.364	0.433	0.567
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

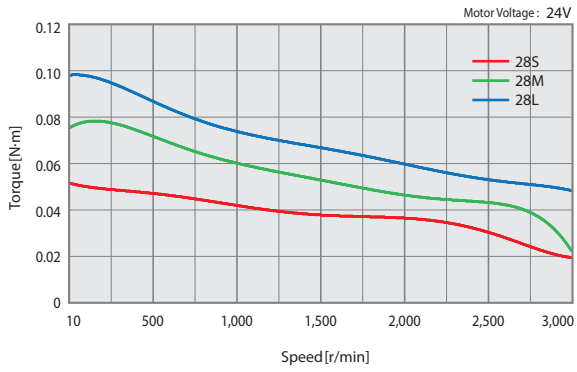
MODEL			UNIT	EzM-56 series			EzM-60 series			EzM-86 series		
				56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.613	0.784	1.231	0.697	0.862	1.422	2.412	3.956	5.486
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

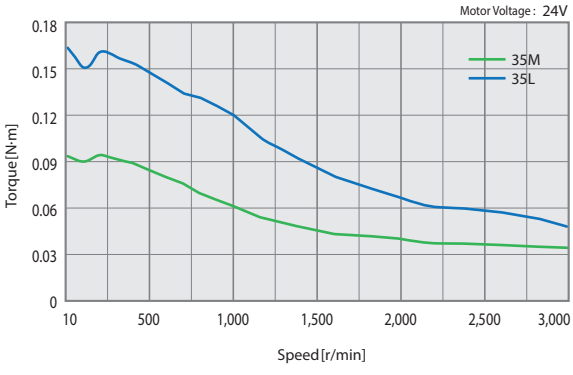
Ezi-SERVO-ST-20 series



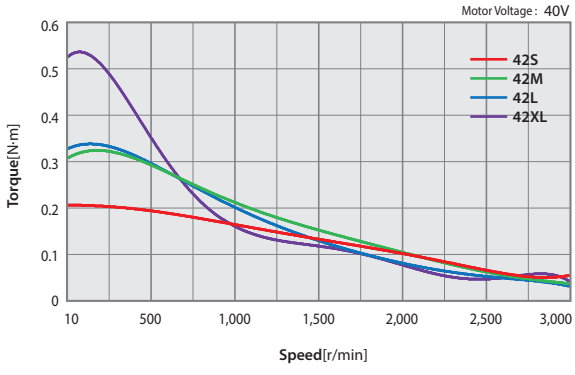
Ezi-SERVO-ST-28 series



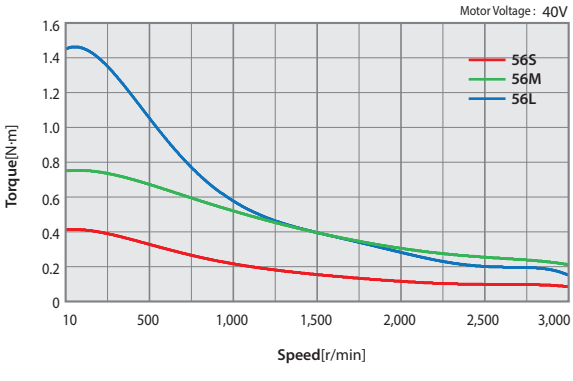
Ezi-SERVO-ST-35 series



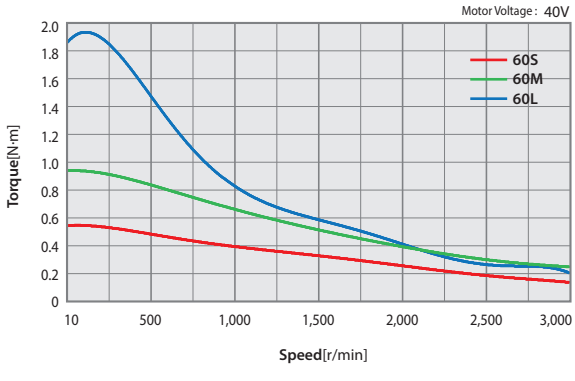
Ezi-SERVO-ST-42 series



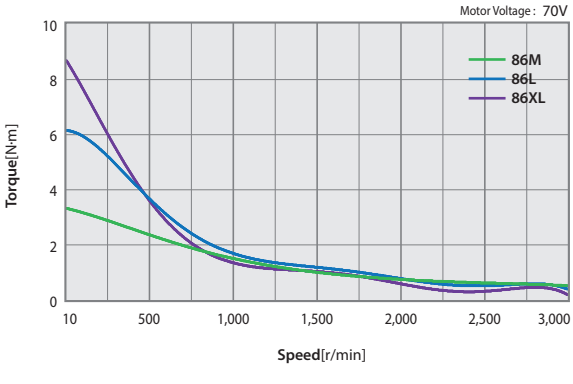
Ezi-SERVO-ST-56 series



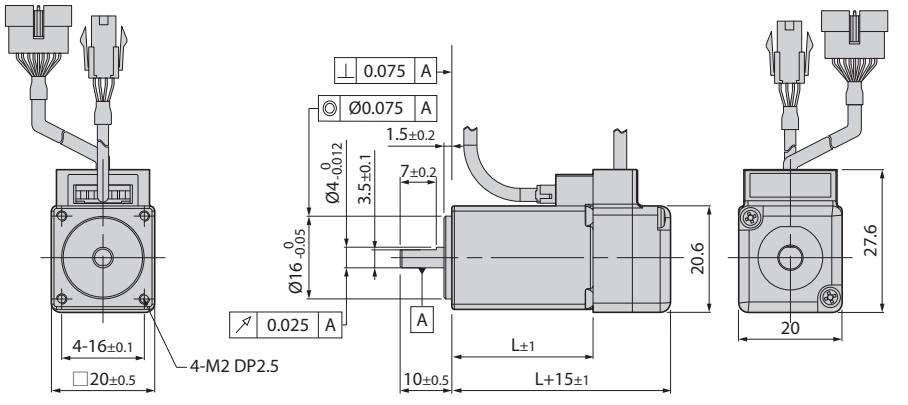
Ezi-SERVO-ST-60 series



Ezi-SERVO-ST-86 series

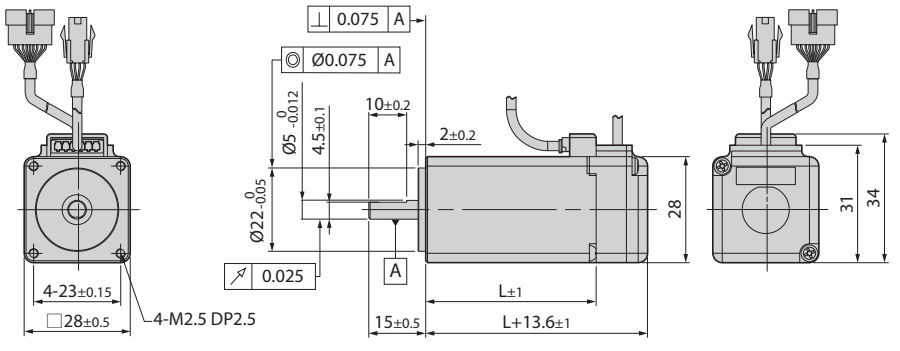


● Dimensions of Motor [mm]



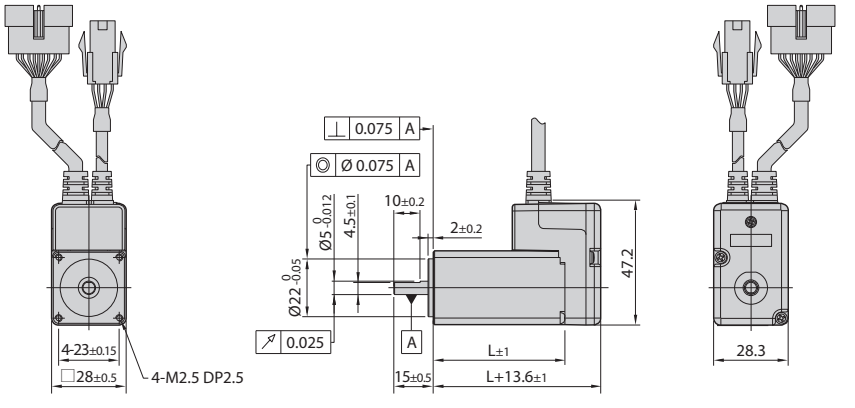
20mm

Model name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

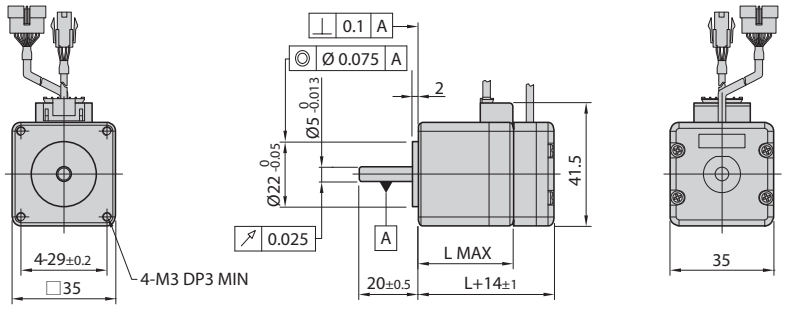
Model name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

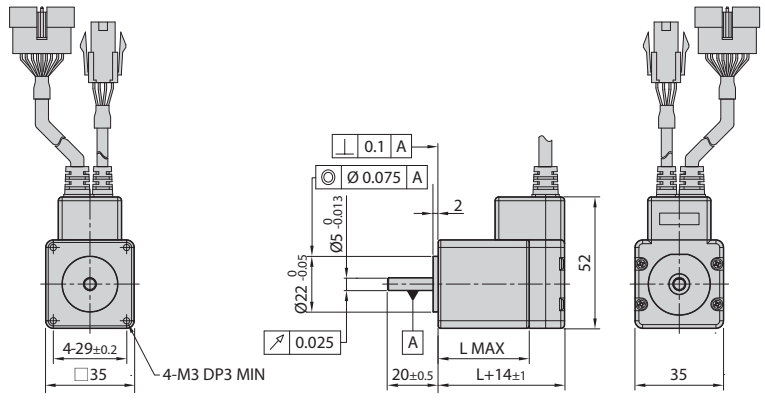
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM-35M	32
EzM-35L	36

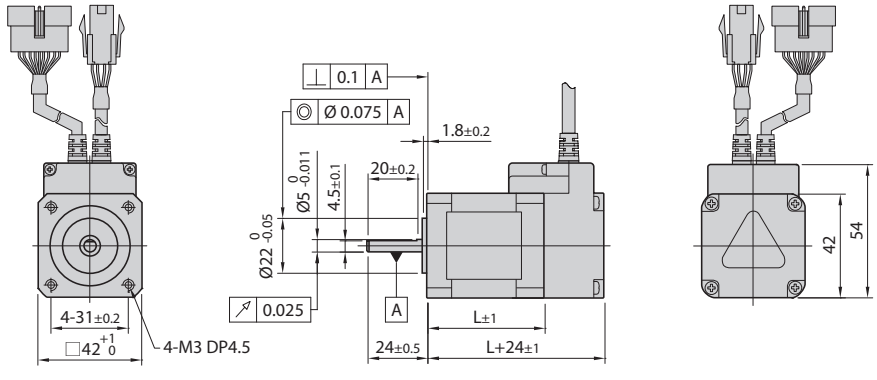
● Dimensions of Motor [mm]



35mm (Stopper type)

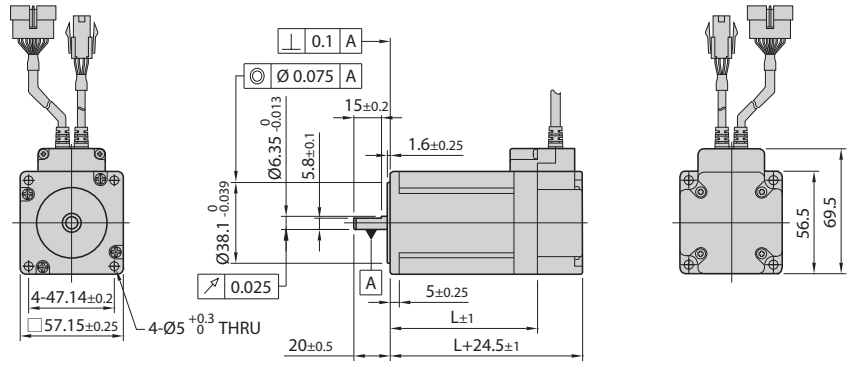
Model name	Length(L)
EzM-35MM	32
EzM-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

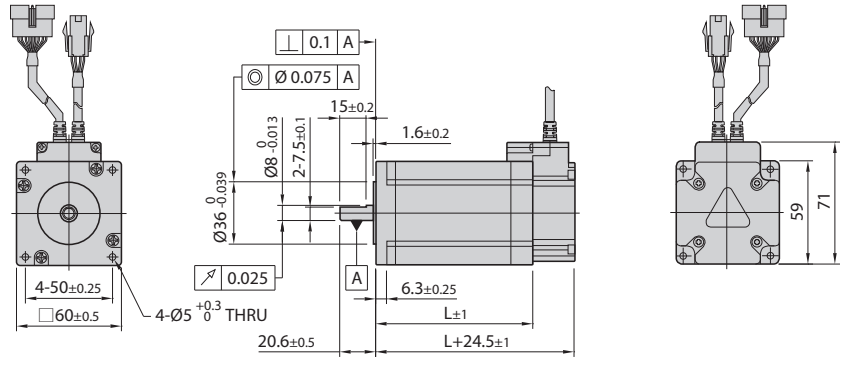
Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60



56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

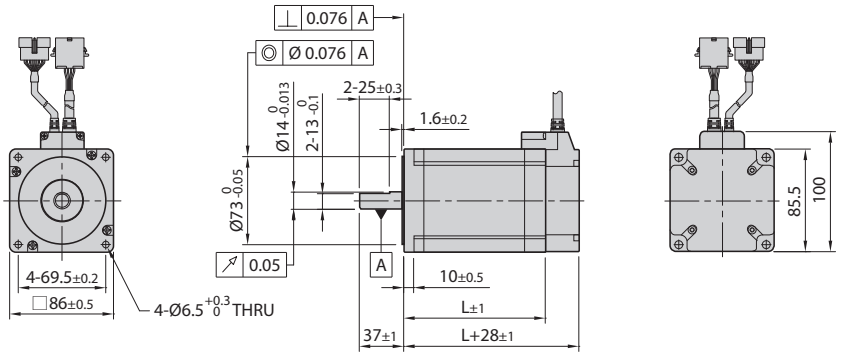
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6,35 and Ø8,0.



60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

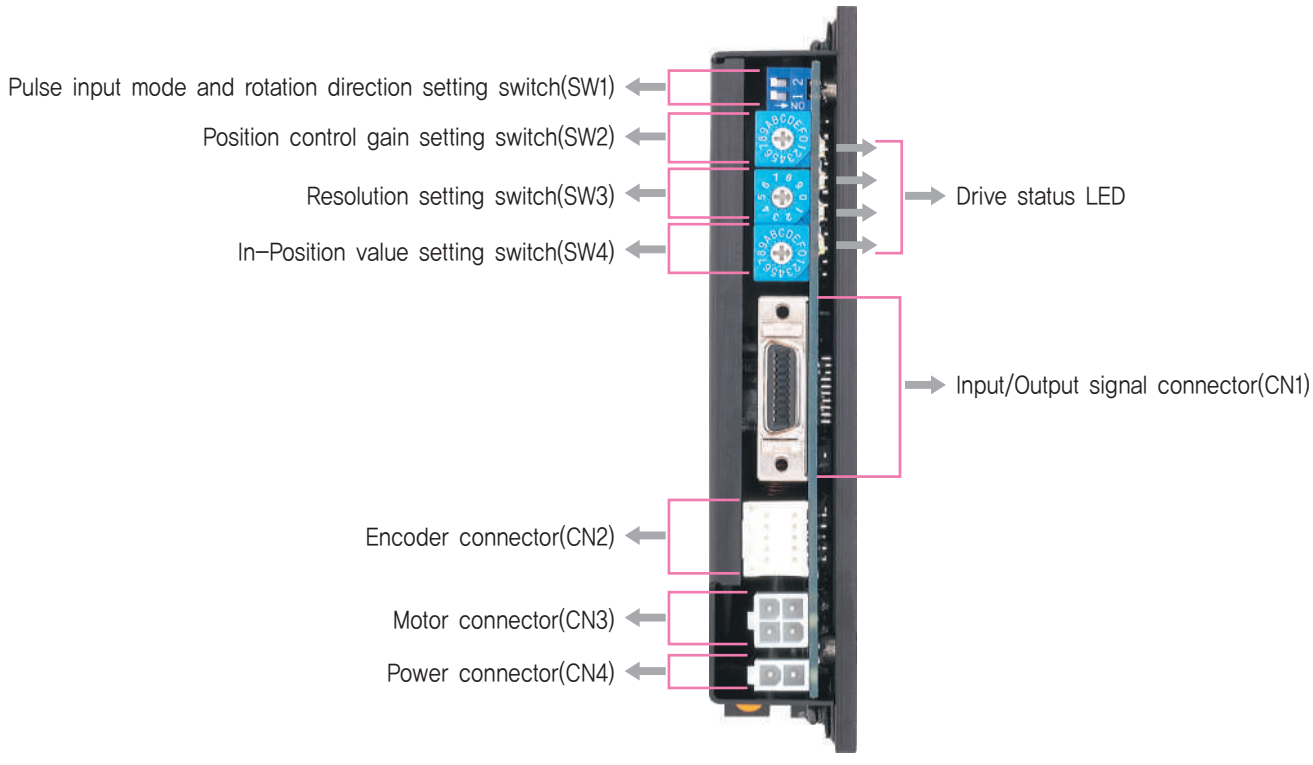
● Dimensions of Motor [mm]



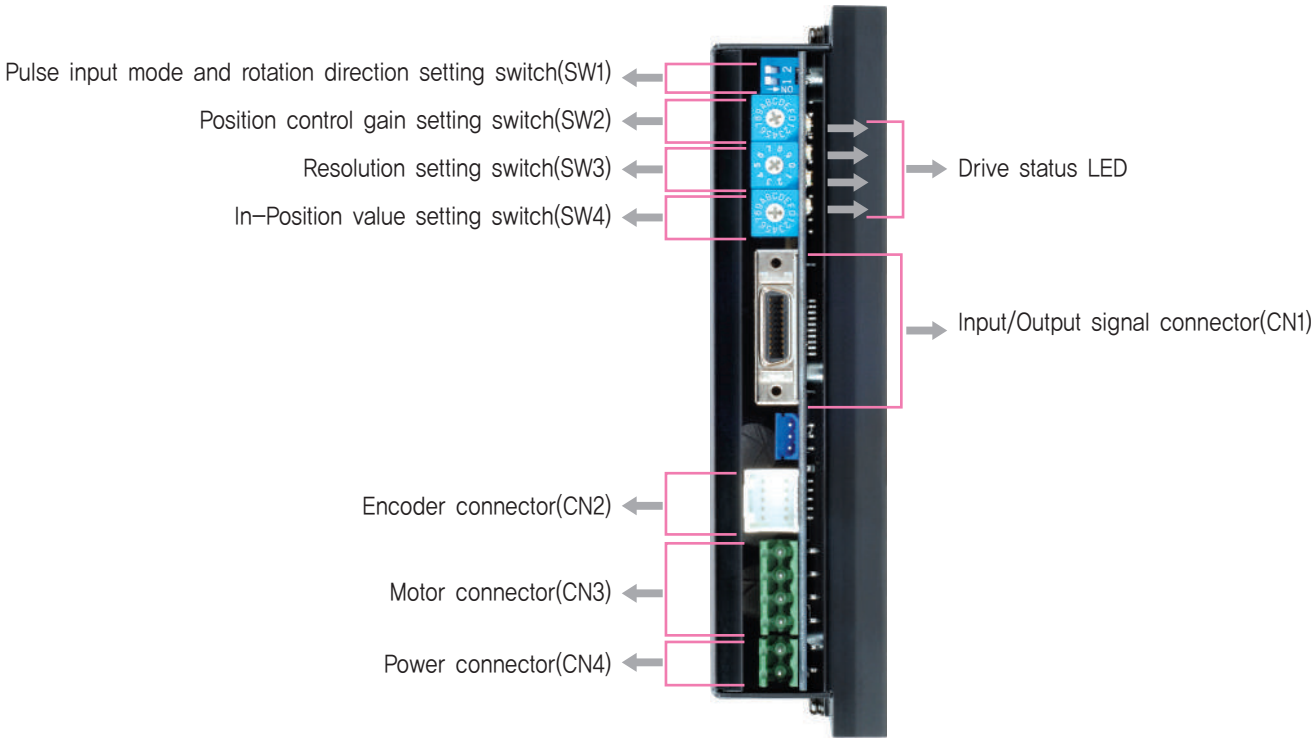
86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

● Settings and Operation



◆ 86mm Motor Drive(EzS-PD-86 series)



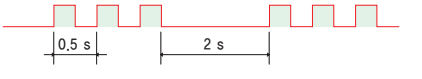
1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied.
INP	Yellow	Positioning Completion Indication	LED is turned ON when position error reaches within the preset value after the positioning is complete.
SON	Orange	SERVO On/Off Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of alarm LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	Over Speed Error	The motor speed exceeds 3,000r/min.
3	Position Tracking Error	Position error value is greater than 180° value while the motor is running.
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value.*2
7	Motor Connect Error	There is a problem with the connection between the drive and the motor.
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder.
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds.
11	System Error	There is a problem in the drive system (Watchdog Timer Out)
12	ROM Error	Error occurs in parameter storage device(ROM).
15	Position Overflow Error	Position error value is greater than 180° while the motor is stopped.

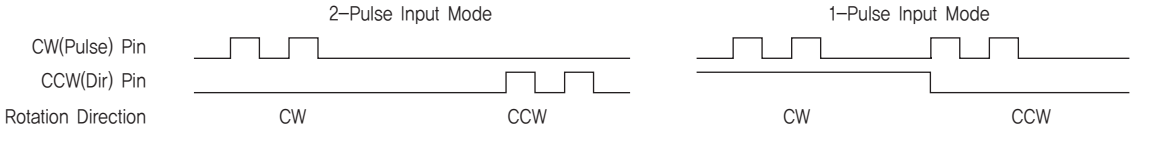
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

2. Pulse Input Mode Setting Switch(SW1.1)

Name	Function	Description
2P/1P	Pulse Input Mode Setting	1-Pulse Input Mode or 2-Pulse Input Mode can be selected. ON: 1-Pulse Mode OFF: 2-Pulse Mode



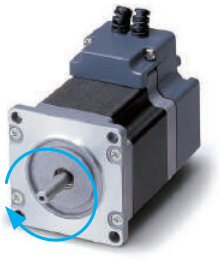
3. Rotation Direction Setting Switch(SW1.2)

Name	Function	Description
DIR	Motor Rotation Direction Setting	It determines the rotation direction of the motor. The rotation direction indicated in the catalog is based on CW input. ON: CCW(-Direction) OFF: CW(+Direction)

Rotation Direction Setting Switch: ON

CCW Direction



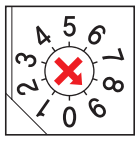


Rotation Direction Setting Switch: OFF

CW Direction

4. Resolution Setting Switch(SW3)

Value	P/R	Value	P/R
0	500 *1	5	3,600
1	500	6	5,000
2	1,000	7	6,400
3	1,600	8	7,200
4	2,000	9	10,000



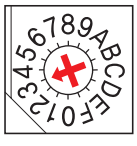
*1 : When the switch value is '0', the resolution differs depending on the encoder resolution.
If the encoder resolution is 10,000 P/R, the resolution is set to 500 P/R.

5. Position Control Gain Setting Switch(SW2)

This switch is used to adjust the position control gain so that the load connected to the motor can respond safely and quickly when the motor is stopped.

Value	Integral Time Constant	Proportional Gain*1
0	1	1
1	1	2
2	1	3
3	1	4
4	1	5
5	2	1
6	2	2
7	2	3
8	2	4
9	2	5
A	3	1
B	3	2
C	3	3
D	3	4
E	3	5
F	3	6

*1 : The gain values in the table above are relative values, not actual values used inside the drive.



6. In-Position Value Setting Switch(SW4)

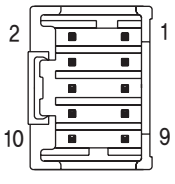
It sets the condition of the In-Position signal. If the position error is less than the set In-Position value after the position command pulse is completed, the In-Position signal is output.

Value	Inposition Value[Pulse] Fast Response	Value	Inposition Value[Pulse] Accurate Response
0	0	8	0
1	1	9	1
2	2	A	2
3	3	B	3
4	4	C	4
5	5	D	5
6	6	E	6
7	7	F	7



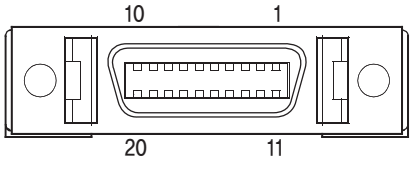
7. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	----
10	F.GND	----



8. Input/Output Signal Connector

No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	A+	Output
6	A-	Output
7	B+	Output
8	B-	Output
9	Z+	Output
10	Z-	Output
11	Alarm	Output
12	In-Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	Open Collector Input	Input
16	BRAKE+	Output
17	BRAKE-	Output
18	S-GND	Output
19	EXT_GND	Input
20	EXT_DC24V	Input

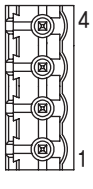


9. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



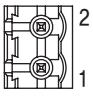
※ 86mm Motor Drive

10. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

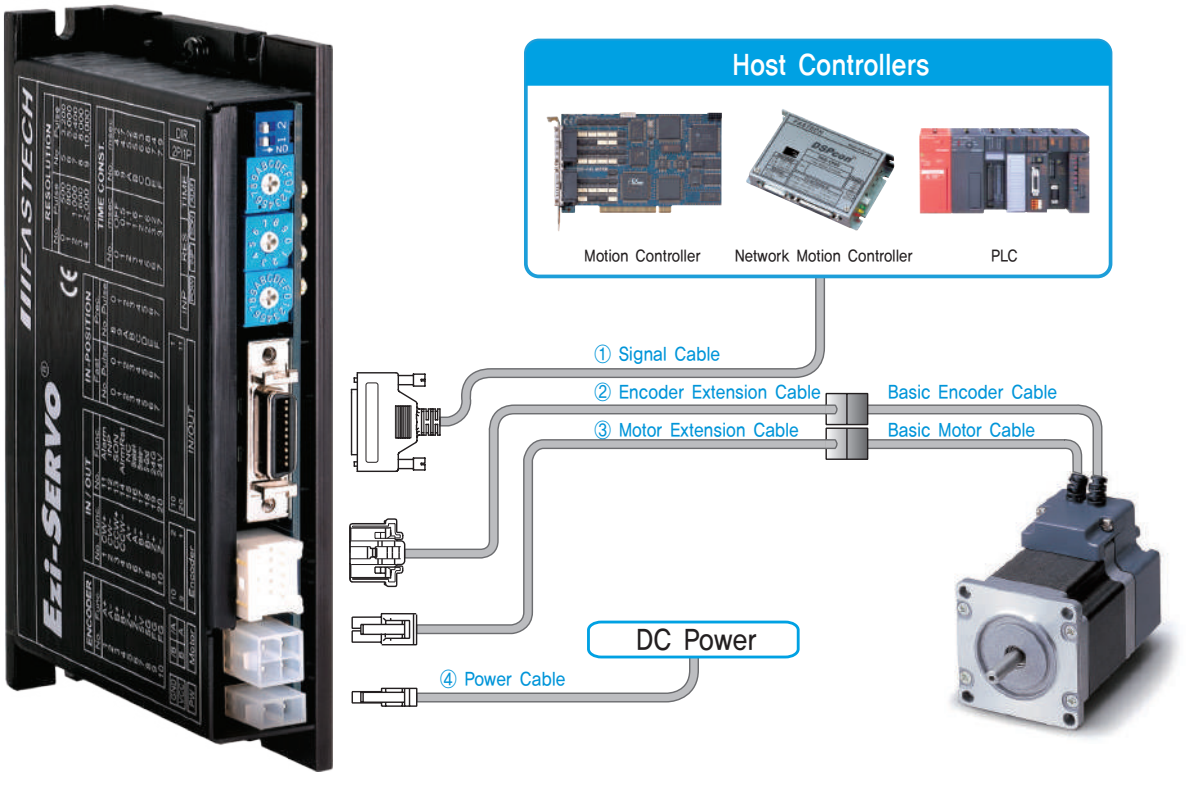


No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



※ 86mm Motor Drive

System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO ST drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVO-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-S-002F	2		
	CSVO-S-003F	3		
	CSVO-S-005F	5		
	CSVO-S-001M	1	Robot Cable	
	CSVO-S-002M	2		
	CSVO-S-003M	3		
	CSVO-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO ST drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO ST drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

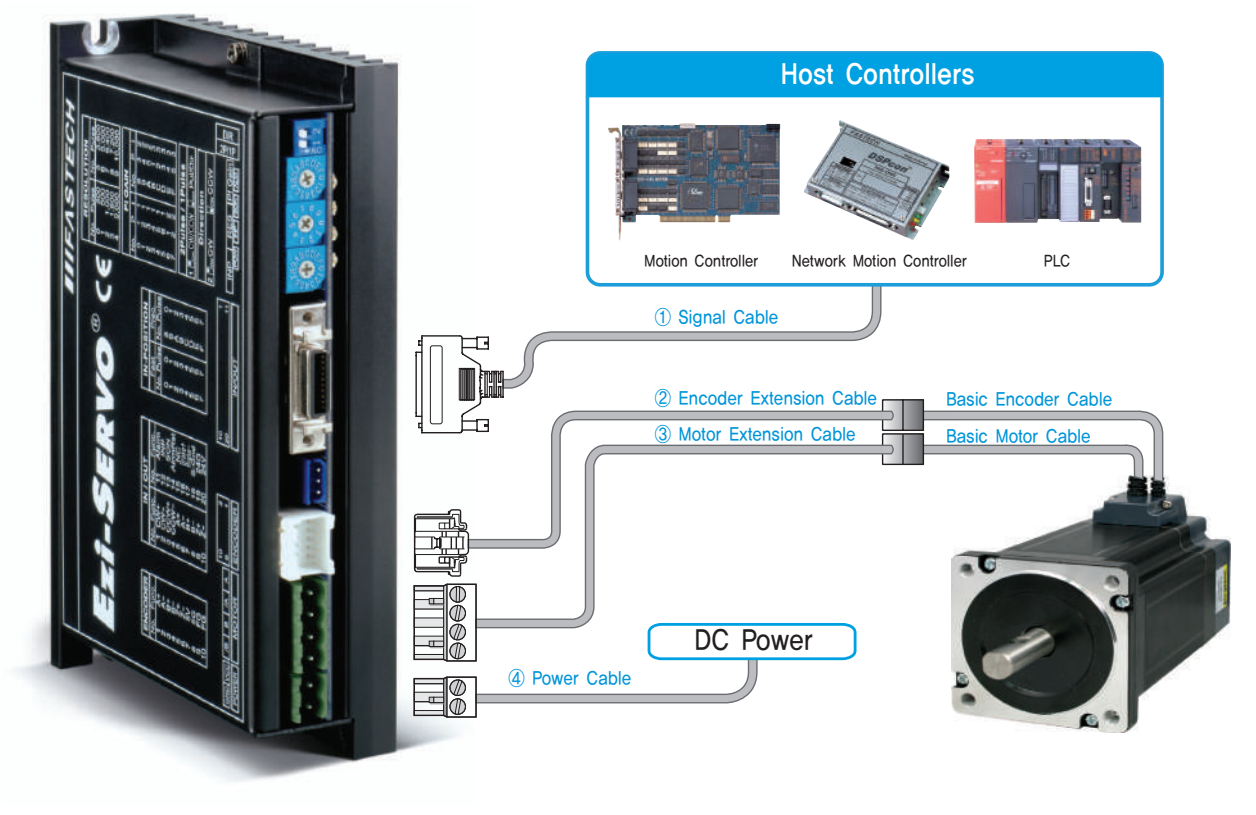
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO ST drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Terminal Block	AK950-2	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO ST [86mm] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVO-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-S-002F	2		
	CSVO-S-003F	3		
	CSVO-S-005F	5		
	CSVO-S-001M	1	Robot Cable	
	CSVO-S-002M	2		
	CSVO-S-003M	3		
	CSVO-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO ST [86mm] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E -002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO ST [86mm] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

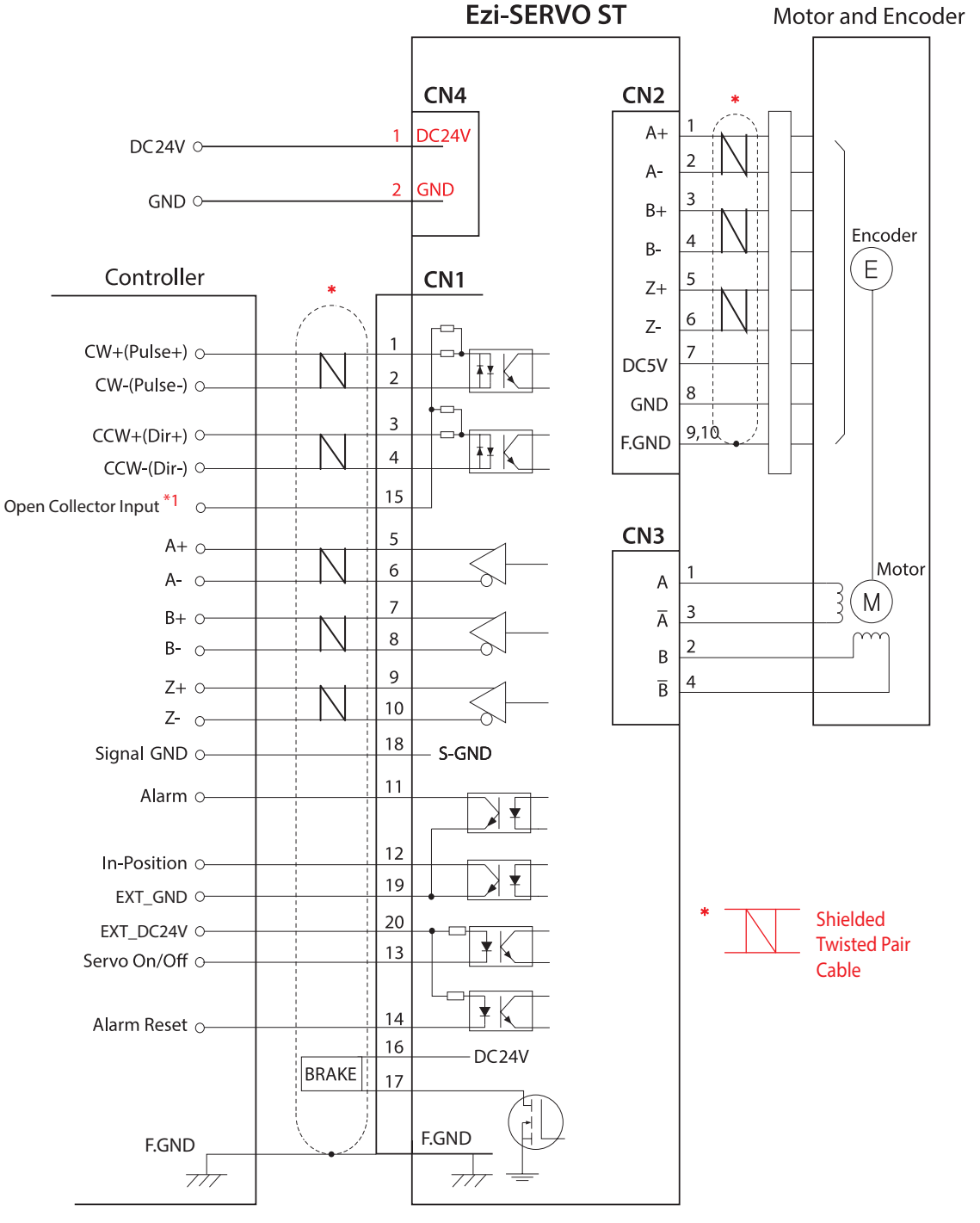
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO ST [86mm] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

External Wiring Diagram

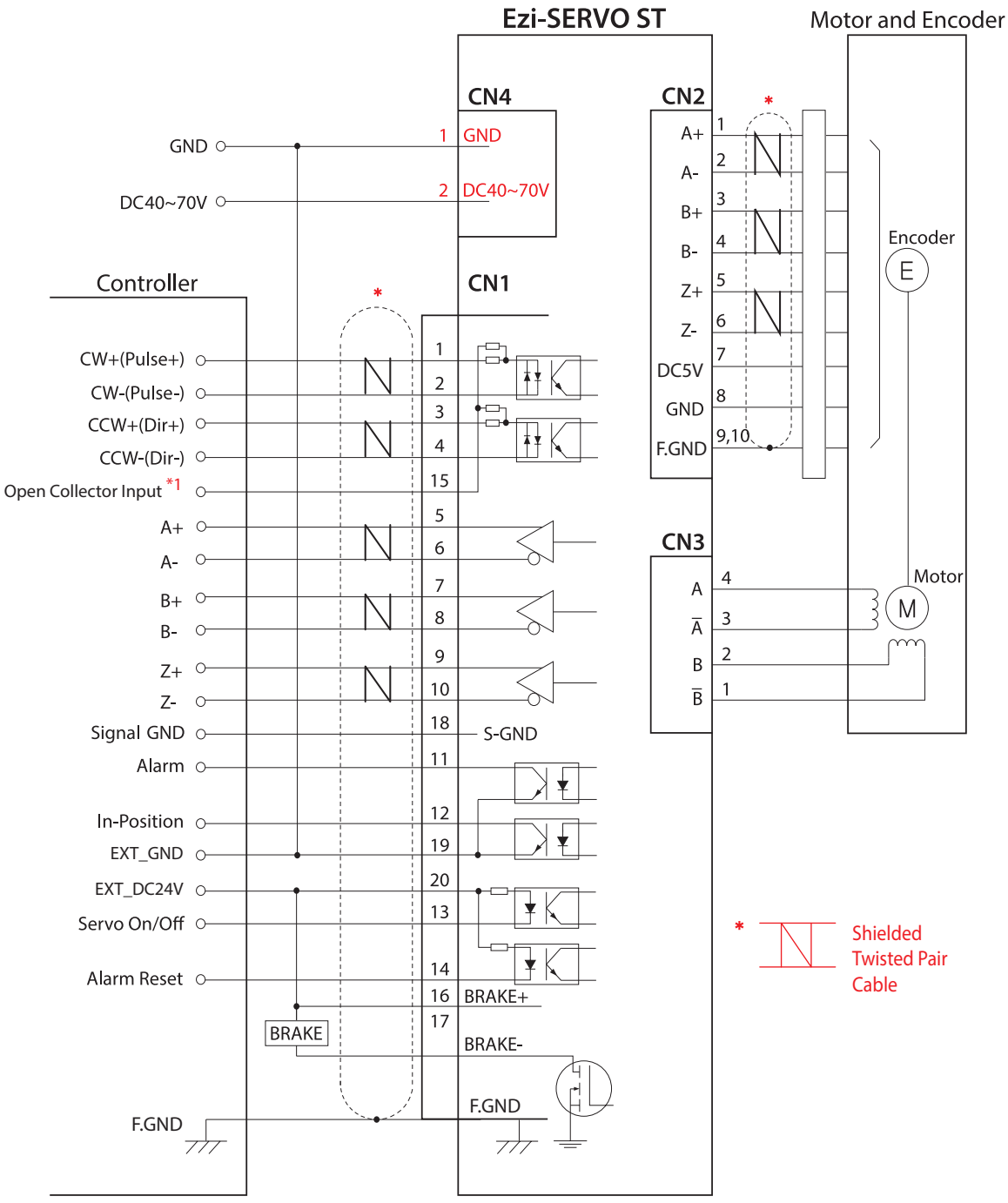


※ When connecting I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

External Wiring Diagram [86mm Motor Drive]



※ When connecting I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO® mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
INP
SON
PWR
ALM

Ezi-SERVO® MINI

Closed Loop Stepping System

- Space Saving / Reduced Wiring by Compact Drive
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation
- High Resolution / High Response



FASTECH

Fast, Accurate, Smooth Motion

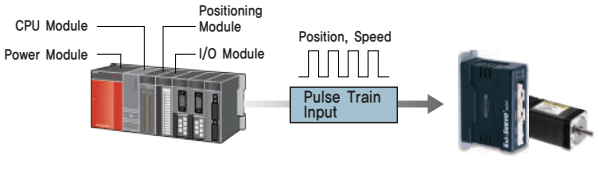
Ezi-SERVO® MINI

Closed Loop Stepping System



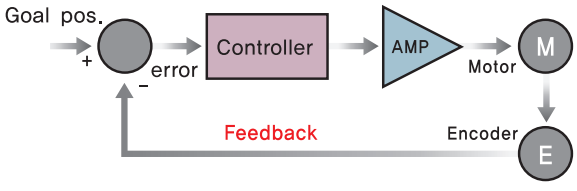
1 Standalone Motion Control

Ezi-SERVO MINI is a standalone stepping motor control system that drives the motor by receiving pulse signals from the positioning module (pulse oscillator).



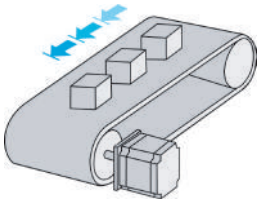
2 Closed-Loop System

Ezi-SERVO is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25μs. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



3 Tuning Not Required

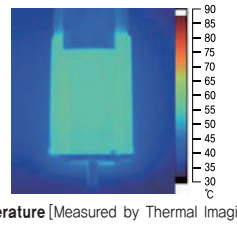
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



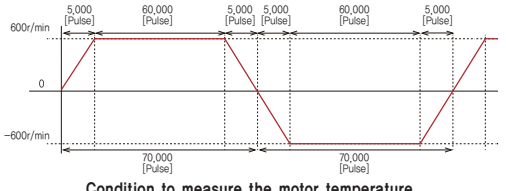
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

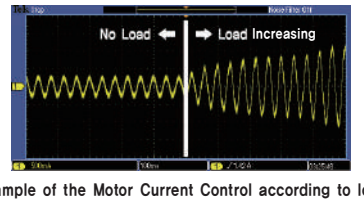
Ezi-SERVO automatically controls motor current according to load.
Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



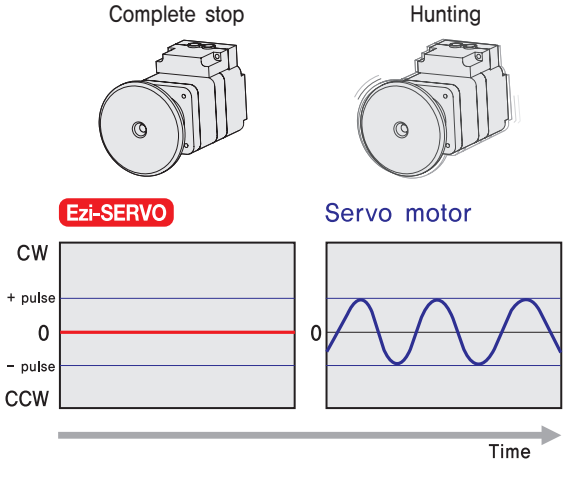
Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



Example of the Motor Current Control according to load

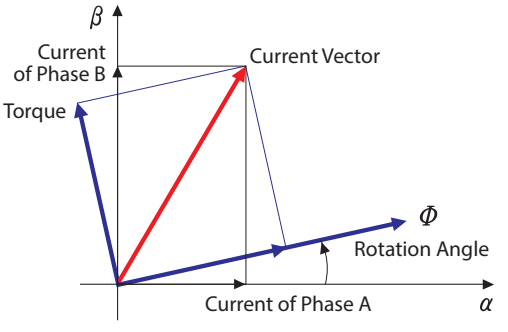
5 No Hunting

Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem..



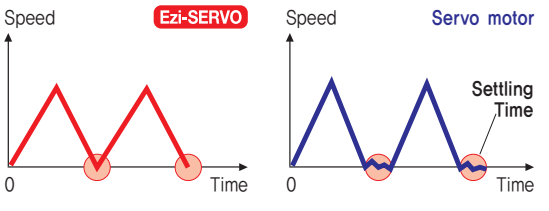
6 Smooth and Accurate Operation

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



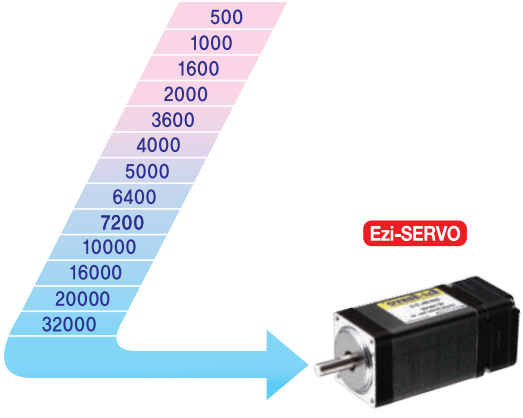
7 High Torque

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.



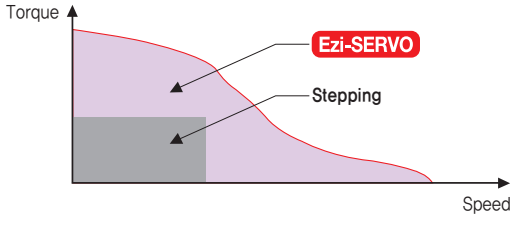
8 High Resolution

The unit of the position command can be divided precisely. (Max. 32,000 pulses/revolution)



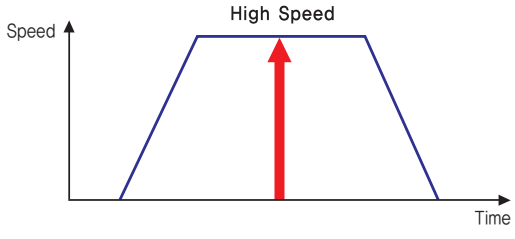
9 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



10 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO MINI Part Numbering

Ezi-SERVO-MI-42M-A-BK-PN5

Series Name

Type Name

MI : Mini Type

Drive Series

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
C : 32,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-MI-20M-F	EzM-20M-F	EzS-PD-MI-20M-F
Ezi-SERVO-MI-20L-F	EzM-20L-F	EzS-PD-MI-20L-F
Ezi-SERVO-MI-28S-D	EzM-28S-D	EzS-PD-MI-28S-D
Ezi-SERVO-MI-28SM-D	EzM-28SM-D	EzS-PD-MI-28S-D
Ezi-SERVO-MI-28M-D	EzM-28M-D	EzS-PD-MI-28M-D
Ezi-SERVO-MI-28MM-D	EzM-28MM-D	EzS-PD-MI-28M-D
Ezi-SERVO-MI-28L-D	EzM-28L-D	EzS-PD-MI-28L-D
Ezi-SERVO-MI-28LM-D	EzM-28LM-D	EzS-PD-MI-28L-D
Ezi-SERVO-MI-35M-D	EzM-35M-D	EzS-PD-MI-35M-D
Ezi-SERVO-MI-35MM-D	EzM-35MM-D	EzS-PD-MI-35M-D
Ezi-SERVO-MI-35L-D	EzM-35L-D	EzS-PD-MI-35L-D
Ezi-SERVO-MI-35LM-D	EzM-35LM-D	EzS-PD-MI-35L-D
Ezi-SERVO-MI-42S-A	EzM-42S-A	EzS-PD-MI-42S-A
Ezi-SERVO-MI-42S-B	EzM-42S-B	EzS-PD-MI-42S-B
Ezi-SERVO-MI-42S-C	EzM-42S-C	EzS-PD-MI-42S-C
Ezi-SERVO-MI-42M-A	EzM-42M-A	EzS-PD-MI-42M-A
Ezi-SERVO-MI-42M-B	EzM-42M-B	EzS-PD-MI-42M-B
Ezi-SERVO-MI-42M-C	EzM-42M-C	EzS-PD-MI-42M-C
Ezi-SERVO-MI-42L-A	EzM-42L-A	EzS-PD-MI-42L-A
Ezi-SERVO-MI-42L-B	EzM-42L-B	EzS-PD-MI-42L-B
Ezi-SERVO-MI-42L-C	EzM-42L-C	EzS-PD-MI-42L-C
Ezi-SERVO-MI-42XL-A	EzM-42XL-A	EzS-PD-MI-42XL-A
Ezi-SERVO-MI-42XL-B	EzM-42XL-B	EzS-PD-MI-42XL-B
Ezi-SERVO-MI-42XL-C	EzM-42XL-C	EzS-PD-MI-42XL-C

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(e.g., Ezi-SERVO-MI-28LM-D, Ezi-SERVO-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-MI-42S-A-BK	EzM-42S-A-BK	EzS-PD-MI-42S-A
Ezi-SERVO-MI-42S-B-BK	EzM-42S-B-BK	EzS-PD-MI-42S-B
Ezi-SERVO-MI-42M-A-BK	EzM-42M-A-BK	EzS-PD-MI-42M-A
Ezi-SERVO-MI-42M-B-BK	EzM-42M-B-BK	EzS-PD-MI-42M-B
Ezi-SERVO-MI-42L-A-BK	EzM-42L-A-BK	EzS-PD-MI-42L-A
Ezi-SERVO-MI-42L-B-BK	EzM-42L-B-BK	EzS-PD-MI-42L-B
Ezi-SERVO-MI-42XL-A-BK	EzM-42XL-A-BK	EzS-PD-MI-42XL-A
Ezi-SERVO-MI-42XL-B-BK	EzM-42XL-B-BK	EzS-PD-MI-42XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO-MI-42S-A-PN3	EzM-42S-A-PN3	EzS-PD-MI-42S-A	1:3
Ezi-SERVO-MI-42S-B-PN3	EzM-42S-B-PN3	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN5	EzM-42S-A-PN5	EzS-PD-MI-42S-A	1:5
Ezi-SERVO-MI-42S-B-PN5	EzM-42S-B-PN5	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN8	EzM-42S-A-PN8	EzS-PD-MI-42S-A	1:8
Ezi-SERVO-MI-42S-B-PN8	EzM-42S-B-PN8	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-MI-42S-A	1:10
Ezi-SERVO-MI-42S-B-PN10	EzM-42S-B-PN10	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN15	EzM-42S-A-PN15	EzS-PD-MI-42S-A	1:15
Ezi-SERVO-MI-42S-B-PN15	EzM-42S-B-PN15	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN25	EzM-42S-A-PN25	EzS-PD-MI-42S-A	1:25
Ezi-SERVO-MI-42S-B-PN25	EzM-42S-B-PN25	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN40	EzM-42S-A-PN40	EzS-PD-MI-42S-A	1:40
Ezi-SERVO-MI-42S-B-PN40	EzM-42S-B-PN40	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42S-A-PN50	EzM-42S-A-PN50	EzS-PD-MI-42S-A	1:50
Ezi-SERVO-MI-42S-B-PN50	EzM-42S-B-PN50	EzS-PD-MI-42S-B	
Ezi-SERVO-MI-42M-A-PN3	EzM-42M-A-PN3	EzS-PD-MI-42M-A	1:3
Ezi-SERVO-MI-42M-B-PN3	EzM-42M-B-PN3	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN5	EzM-42M-A-PN5	EzS-PD-MI-42M-A	1:5
Ezi-SERVO-MI-42M-B-PN5	EzM-42M-B-PN5	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN8	EzM-42M-A-PN8	EzS-PD-MI-42M-A	1:8
Ezi-SERVO-MI-42M-B-PN8	EzM-42M-B-PN8	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN10	EzM-42M-A-PN10	EzS-PD-MI-42M-A	1:10
Ezi-SERVO-MI-42M-B-PN10	EzM-42M-B-PN10	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN15	EzM-42M-A-PN15	EzS-PD-MI-42M-A	1:15
Ezi-SERVO-MI-42M-B-PN15	EzM-42M-B-PN15	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN25	EzM-42M-A-PN25	EzS-PD-MI-42M-A	1:25
Ezi-SERVO-MI-42M-B-PN25	EzM-42M-B-PN25	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN40	EzM-42M-A-PN40	EzS-PD-MI-42M-A	1:40
Ezi-SERVO-MI-42M-B-PN40	EzM-42M-B-PN40	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42M-A-PN50	EzM-42M-A-PN50	EzS-PD-MI-42M-A	1:50
Ezi-SERVO-MI-42M-B-PN50	EzM-42M-B-PN50	EzS-PD-MI-42M-B	
Ezi-SERVO-MI-42L-A-PN3	EzM-42L-A-PN3	EzS-PD-MI-42L-A	1:3
Ezi-SERVO-MI-42L-B-PN3	EzM-42L-B-PN3	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN5	EzM-42L-A-PN5	EzS-PD-MI-42L-A	1:5
Ezi-SERVO-MI-42L-B-PN5	EzM-42L-B-PN5	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN8	EzM-42L-A-PN8	EzS-PD-MI-42L-A	1:8
Ezi-SERVO-MI-42L-B-PN8	EzM-42L-B-PN8	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN10	EzM-42L-A-PN10	EzS-PD-MI-42L-A	1:10
Ezi-SERVO-MI-42L-B-PN10	EzM-42L-B-PN10	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN15	EzM-42L-A-PN15	EzS-PD-MI-42L-A	1:15
Ezi-SERVO-MI-42L-B-PN15	EzM-42L-B-PN15	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN25	EzM-42L-A-PN25	EzS-PD-MI-42L-A	1:25
Ezi-SERVO-MI-42L-B-PN25	EzM-42L-B-PN25	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN40	EzM-42L-A-PN40	EzS-PD-MI-42L-A	1:40
Ezi-SERVO-MI-42L-B-PN40	EzM-42L-B-PN40	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42L-A-PN50	EzM-42L-A-PN50	EzS-PD-MI-42L-A	1:50
Ezi-SERVO-MI-42L-B-PN50	EzM-42L-B-PN50	EzS-PD-MI-42L-B	
Ezi-SERVO-MI-42XL-A-PN3	EzM-42XL-A-PN3	EzS-PD-MI-42XL-A	1:3
Ezi-SERVO-MI-42XL-B-PN3	EzM-42XL-B-PN3	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN5	EzM-42XL-A-PN5	EzS-PD-MI-42XL-A	1:5
Ezi-SERVO-MI-42XL-B-PN5	EzM-42XL-B-PN5	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN8	EzM-42XL-A-PN8	EzS-PD-MI-42XL-A	1:8
Ezi-SERVO-MI-42XL-B-PN8	EzM-42XL-B-PN8	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN10	EzM-42XL-A-PN10	EzS-PD-MI-42XL-A	1:10
Ezi-SERVO-MI-42XL-B-PN10	EzM-42XL-B-PN10	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN15	EzM-42XL-A-PN15	EzS-PD-MI-42XL-A	1:15
Ezi-SERVO-MI-42XL-B-PN15	EzM-42XL-B-PN15	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN25	EzM-42XL-A-PN25	EzS-PD-MI-42XL-A	1:25
Ezi-SERVO-MI-42XL-B-PN25	EzM-42XL-B-PN25	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN40	EzM-42XL-A-PN40	EzS-PD-MI-42XL-A	1:40
Ezi-SERVO-MI-42XL-B-PN40	EzM-42XL-B-PN40	EzS-PD-MI-42XL-B	
Ezi-SERVO-MI-42XL-A-PN50	EzM-42XL-A-PN50	EzS-PD-MI-42XL-A	1:50
Ezi-SERVO-MI-42XL-B-PN50	EzM-42XL-B-PN50	EzS-PD-MI-42XL-B	

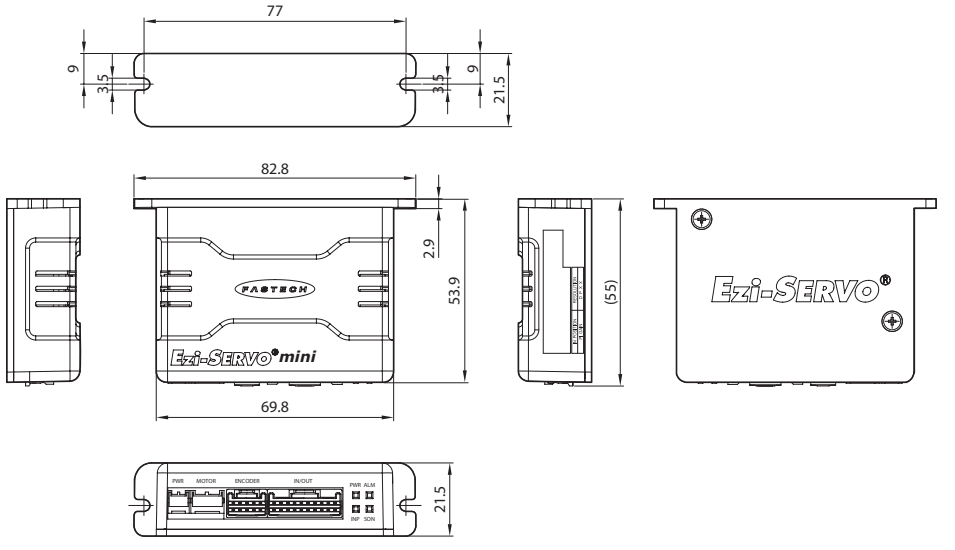
Specifications of Drive

Motor Model		EzM-20 series	EzM-28 series	EzM-35 series	EzM-42 series
Drive Model		EzS-PD-MI-20 series	EzS-PD-MI-28 series	EzS-PD-MI-35 series	EzS-PD-MI-42 series
Input Voltage		DC24V±10%			
Control Method		Closed-loop control with 32 bit MCU			
Current Consumption		Max. 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000r/min *1			
	Resolution	(Set by DIP Switch)			
	Max. Input Frequency	500kHz (Duty 50%)			
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, System Error, ROM Error, Position Overflow Error			
	LED Display	Power Status, In-Position Status, Servo ON Status, Alarm Status			
	In-Position Selection	0~F (Set by DIP Switch)			
	Position Gain Selection	0~F (Set by DIP Switch)			
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by DIP Switch)			
	Rotation Direction	CW/CCW (Set by DIP Switch)			
	Speed/Position Control Command	Pulse Train Input			
I/O Signal	Input Signals	Position Command Pulse, Servo On/Off, Alarm Reset (Photocoupler Input)			
	Output Signals	In-Position, Alarm (Photocoupler Output) Encoder Signal (A+, A-, B+, B-, Z+, Z-, Line Driver Output Equivalent to 26C31), Brake Output			

Encoder Resolution [P/R]	Configurable Resolution [P/R]
4,000	500 1,000 1,600 2,000 3,600 4,000 5,000 6,400 7,200 10,000
10,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000
16,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000
20,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000
32,000	500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 32,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]

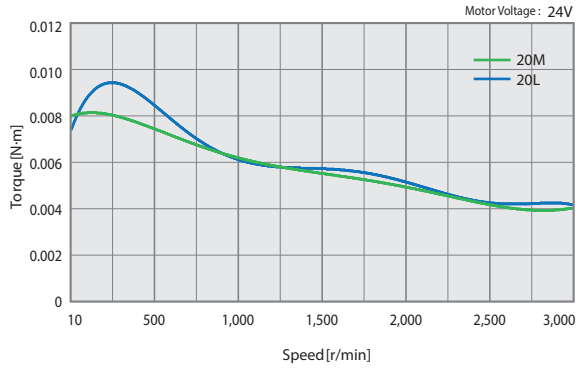


Specifications of Motor

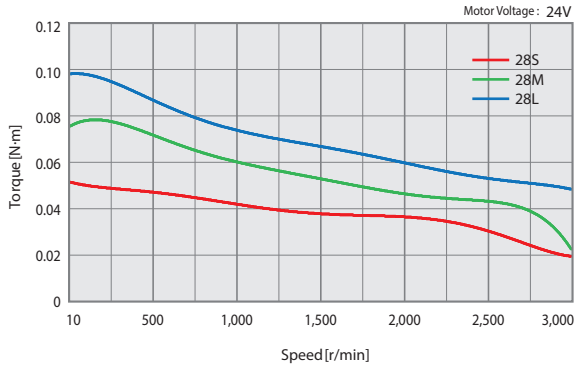
MODEL			UNIT	EzM-20 series		EzM-28 series			EzM-35 series		EzM-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.079	0.104	0.147	0.204	0.232	0.194	0.226	0.299	0.364	0.433	0.567
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit's Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

Torque Characteristics of Motor

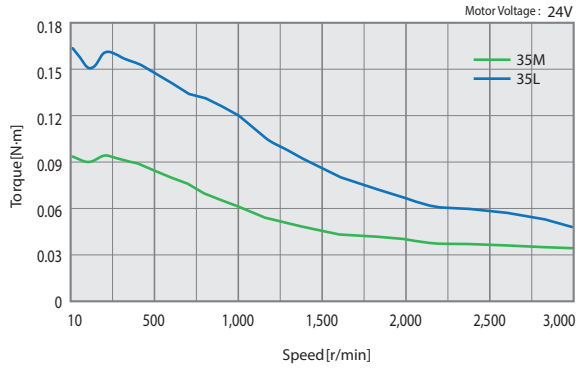
Ezi-SERVO-MI-20 series



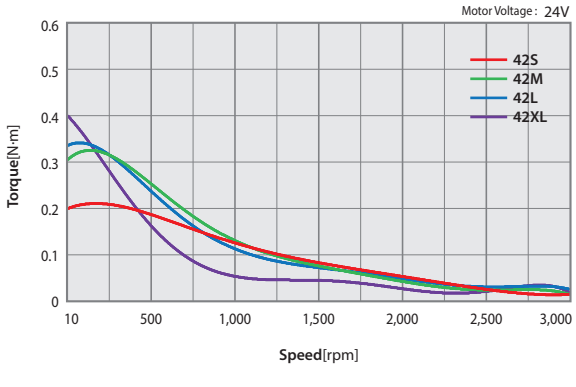
Ezi-SERVO-MI-28 series



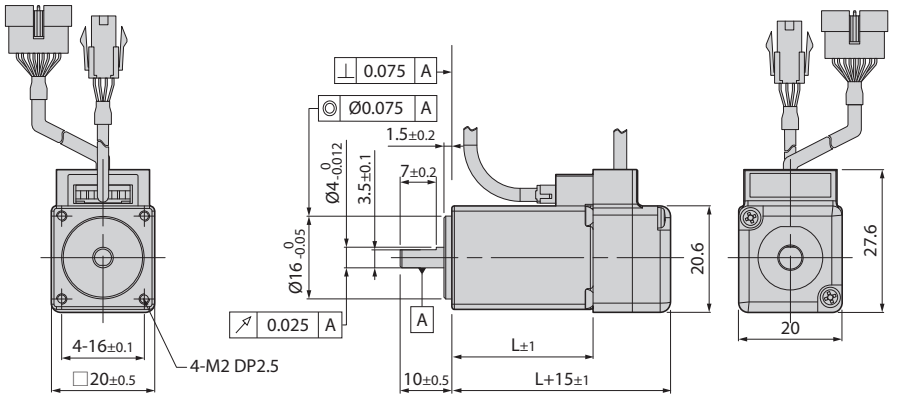
Ezi-SERVO-MI-35 series



Ezi-SERVO-MI-42 series

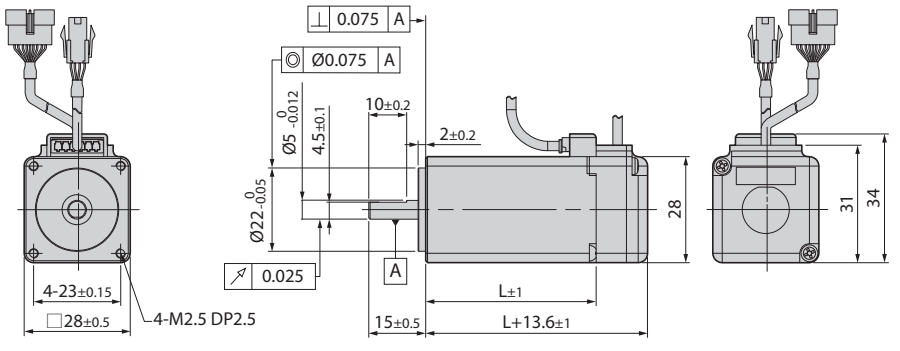


● Dimensions of Motor [mm]



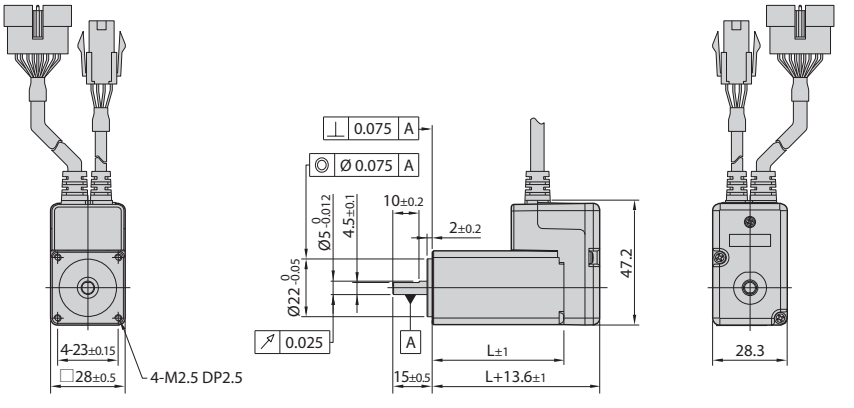
20mm

Model Name	Length(L)
EzM-20M	28
EzM-20L	38



28mm

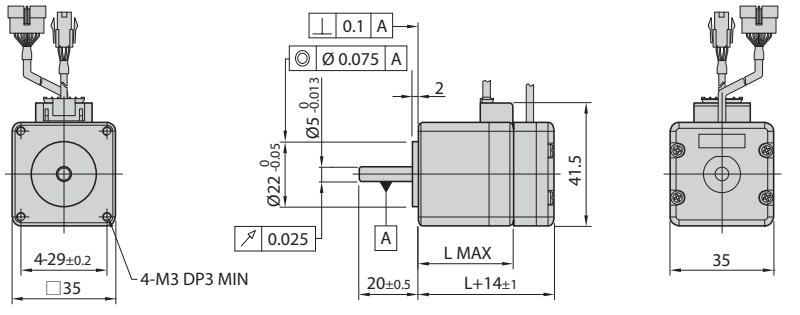
Model Name	Length(L)
EzM-28S	32
EzM-28M	45
EzM-28L	50



28mm *(Stopper type)*

Model Name	Length(L)
EzM-28SM	32
EzM-28MM	45
EzM-28LM	50

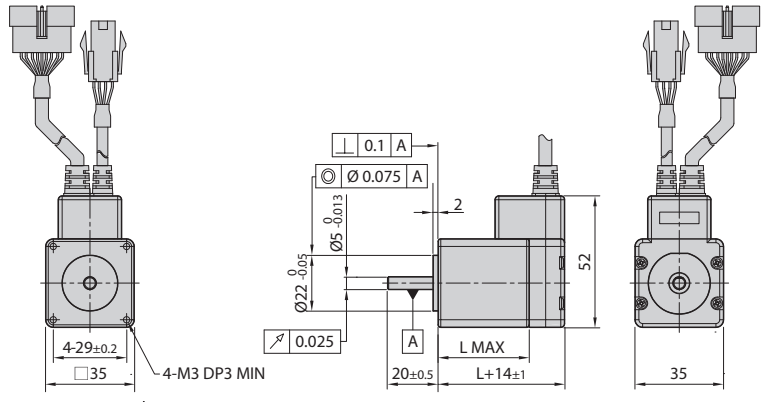
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model Name	Length(L)
EzM-35M	32
EzM-35L	36

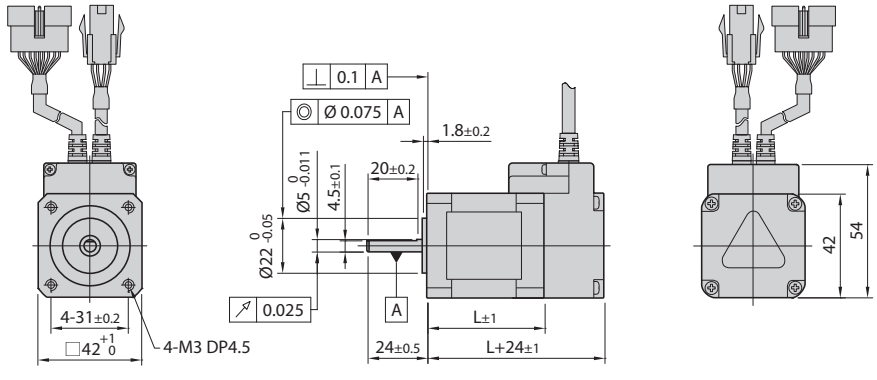
● Dimensions of Motor [mm]



35mm (Stopper type)

Model Name	Length(L)
EzM-35MM	32
EzM-35LM	36

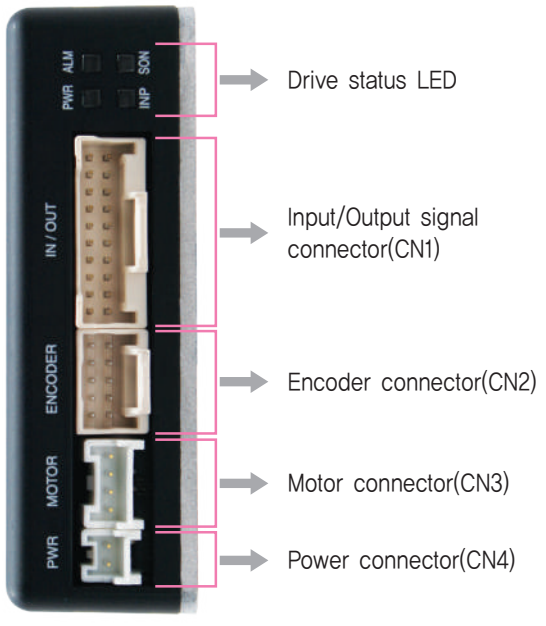
※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.

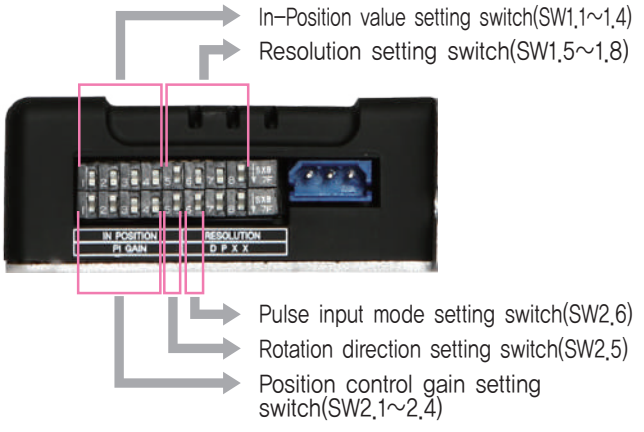


42mm

Model Name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

● Settings and Operation



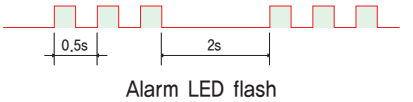


1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied.
INP	Yellow	Positioning Completion Indication	LED is turned ON when position error reaches within the preset value after the positioning is complete.
SON	Orange	SERVO On/Off Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of alarm LED blinking

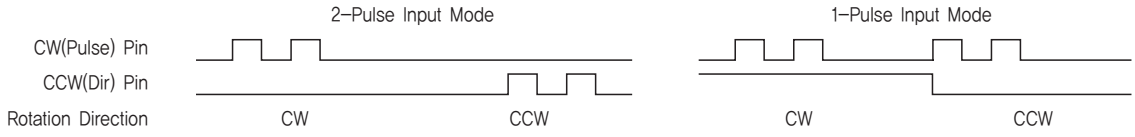
No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A.
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	Position error value is greater than 180 ° value while the motor is running.
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor.
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder.
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds.
11	System Error	There is a problem in the drive system (Watchdog Timer Out)
12	ROM Error	Error occurs in parameter storage device(ROM).
15	Position Overflow Error	Position error value is greater than 180° while the motor is stopped.



Alarm LED flash
(e.g., Position tracking error)

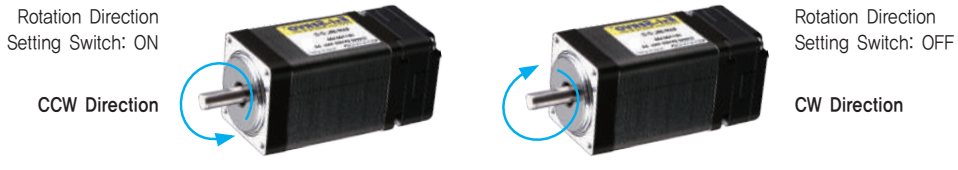
2. Pulse Input Mode Setting Switch(SW2.6)

Name	Function	Description
P	Pulse Input Mode Setting	1-Pulse Input Mode or 2-Pulse Input Mode can be selected. ON: 1-Pulse Mode OFF: 2-Pulse Mode



3. Rotation Direction Setting Switch(SW2.5)

Name	Function	Description
D	Motor Rotation Direc-tion Setting	It determines the rotation direction of the motor. The rotation direction indicated in the catalog is based on CW input. ON: CCW(-Direction) OFF: CW(+Direction)



4. Resolution Setting Switch(SW1.5~1.8)

Switch No.				P/R	Switch No.				P/R
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500*1	OFF	ON	ON	ON	7,200
ON	ON	ON	OFF	500	OFF	ON	ON	OFF	10,000
ON	ON	OFF	ON	1,000	OFF	ON	OFF	ON	NC
ON	ON	OFF	OFF	1,600	OFF	ON	OFF	OFF	NC
ON	OFF	ON	ON	2,000	OFF	OFF	ON	ON	NC
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	NC
ON	OFF	OFF	ON	5,000	OFF	OFF	OFF	ON	NC
ON	OFF	OFF	OFF	6,400	OFF	OFF	OFF	OFF	NC

*1 : This resolution differs depending on the encoder resolution. If the encoder resolution is 10,000 P/R, the resolution is set to 500 P/R.

5. Position Control Gain Setting Switch(SW2.1~2.4)

This switch is used to adjust the position control gain so that the load connected to the motor can respond safely and quickly when the motor is stopped.

Switch No.				Integral Time Constant	Proportional Gain*1
4	3	2	1		
ON	ON	ON	ON	1	1
ON	ON	ON	OFF	1	2
ON	ON	OFF	ON	1	3
ON	ON	OFF	OFF	1	4
ON	OFF	ON	ON	1	5
ON	OFF	ON	OFF	2	1
ON	OFF	OFF	ON	2	2
ON	OFF	OFF	OFF	2	3
OFF	ON	ON	ON	2	4
OFF	ON	ON	OFF	2	5
OFF	ON	OFF	ON	3	1
OFF	ON	OFF	OFF	3	2
OFF	OFF	ON	ON	3	3
OFF	OFF	ON	OFF	3	4
OFF	OFF	OFF	ON	3	5
OFF	OFF	OFF	OFF	3	6

*1 : The gain values in the table above are relative values, not actual values used inside the drive.

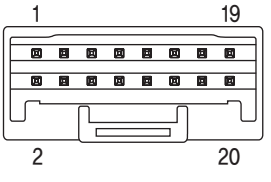
6. In-Position Value Setting Switch(SW1.1~1.4)

It sets the condition of the In-Position signal. If the position error is less than the set In-Position value after the position command pulse is completed, the In-Position signal is output.

Switch No.				Inposition Value [Pulse] Fast Response	Switch No.				Inposition Value [Pulse] Accurate Response
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	0	OFF	ON	ON	ON	0
ON	ON	ON	OFF	1	OFF	ON	ON	OFF	1
ON	ON	OFF	ON	2	OFF	ON	OFF	ON	2
ON	ON	OFF	OFF	3	OFF	ON	OFF	OFF	3
ON	OFF	ON	ON	4	OFF	OFF	ON	ON	4
ON	OFF	ON	OFF	5	OFF	OFF	ON	OFF	5
ON	OFF	OFF	ON	6	OFF	OFF	OFF	ON	6
ON	OFF	OFF	OFF	7	OFF	OFF	OFF	OFF	7

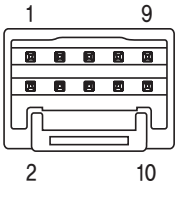
7. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	A+	Output
6	A-	Output
7	B+	Output
8	B-	Output
9	Z+	Output
10	Z-	Output
11	Alarm	Output
12	In-Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	NC	-----
16	BRAKE+	Output
17	BRAKE-	Output
18	S-GND	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



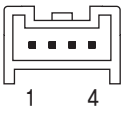
8. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



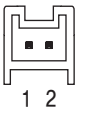
9. Motor Connector(CN3)

No.	Function	I/O
1	B Phase	Output
2	$\overline{B}$ Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output

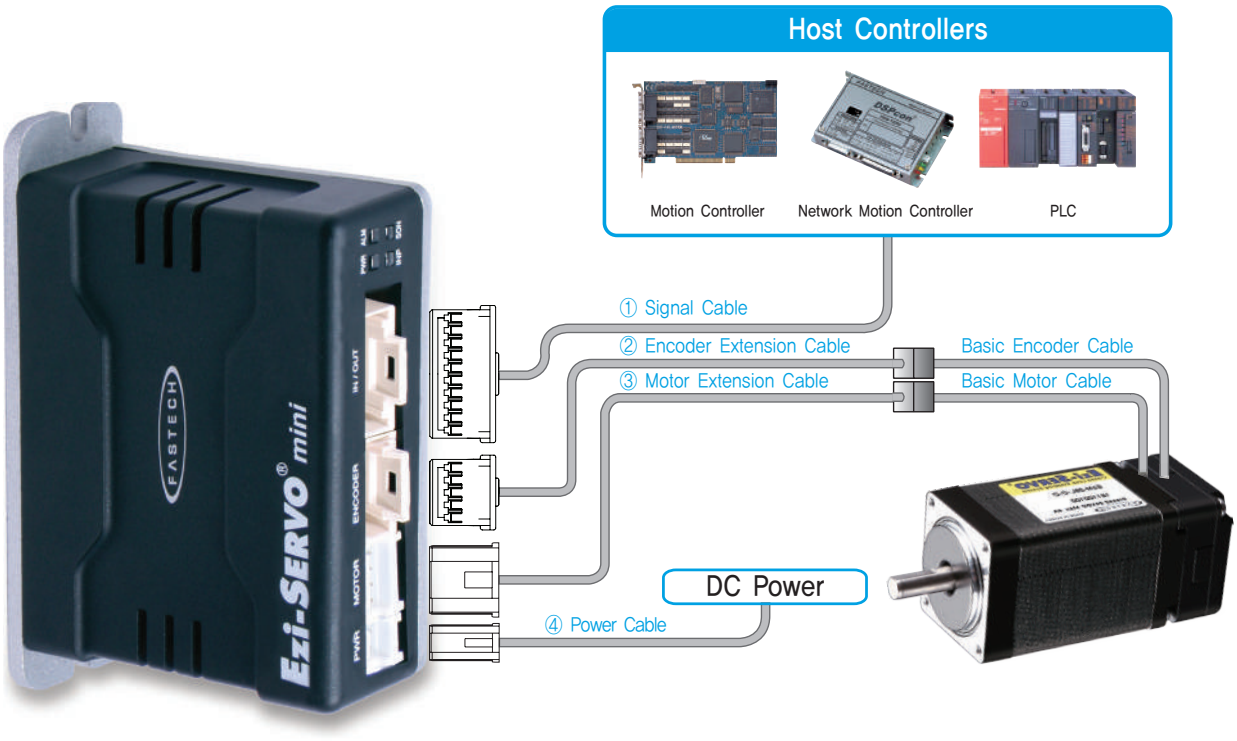


10. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-2000	MOLEX
		Terminal	501648-1000(AWG 26~28)	
Encoder	Drive Side (CN2)	Housing	501646-1000	MOLEX
		Terminal	501648-1000(AWG 26~28)	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	PAP-04V-S	JST
		Terminal	SPHD-001T-P0.5	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	PAP-02V-S	JST
		Terminal	SPHD-001T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVI-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVI-S-002F	2		
	CSVI-S-003F	3		
	CSVI-S-005F	5		
	CSVI-S-001M	1	Robot Cable	
	CSVI-S-002M	2		
	CSVI-S-003M	3		
	CSVI-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO MINI drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVI-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVI-E-002F	2		
	CSVI-E-003F	3		
	CSVI-E-005F	5		
	CSVI-E-001M	1	Robot Cable	
	CSVI-E-002M	2		
	CSVI-E-003M	3		
	CSVI-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO MINI drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CMNB-M-001F	1	Normal Cable	Maximum Length: 20m
	CMNB-M-002F	2		
	CMNB-M-003F	3		
	CMNB-M-005F	5		
	CMNB-M-001M	1	Robot Cable	
	CMNB-M-002M	2		
	CMNB-M-003M	3		
	CMNB-M-005M	5		

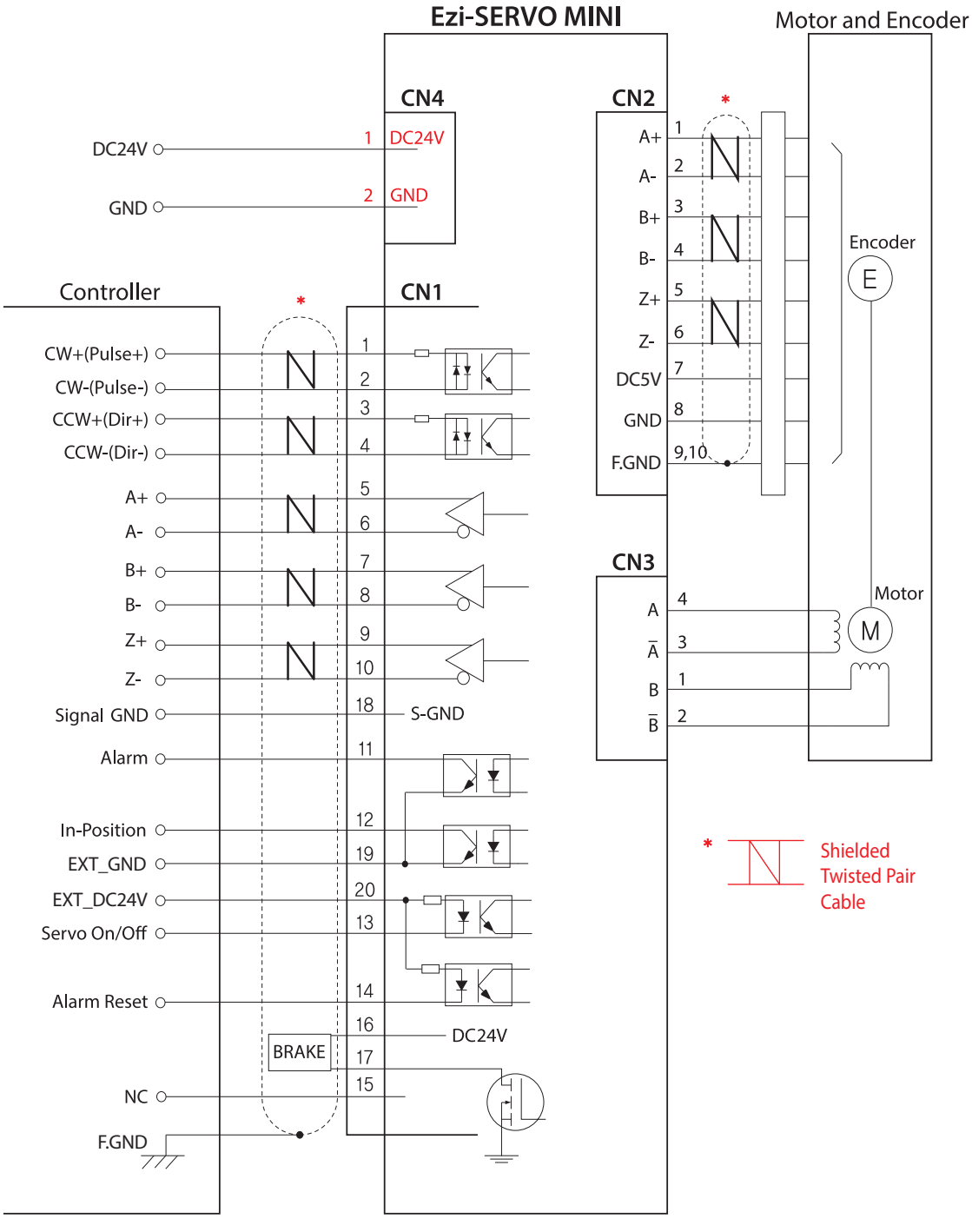
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO MINI drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CMNB-P-001F	1	Normal Cable	Maximum Length: 2m
	CMNB-P-002F	2		
	CMNB-P-001M	1	Robot Cable	
	CMNB-P-002M	2		

External Wiring Diagram



※ When connecting I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO II

Ezi-SERVO® II BT

Closed Loop Stepping System

- Motor + High-Resolution Encoder + Drive
- Space Saving / Reduced Wiring
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- High Resolution / High Response
- Low Heat Generation



FASTECH
Fast, Accurate, Smooth Motion

Ezi-SERVO® II BT

Closed Loop Stepping System

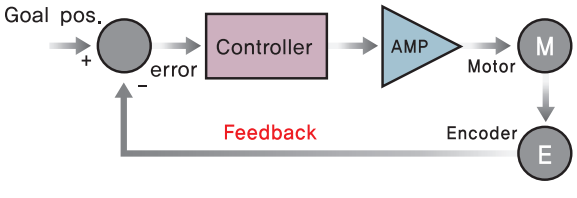


1 Integrated Solution

Ezi-SERVO II BT is a compact product that ntegrates a motor, high-resolution encoder, and drive, and provides an optimal solution to maximize the advantages of Ezi-SERVO II even in a narrow space.

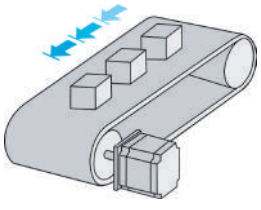
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

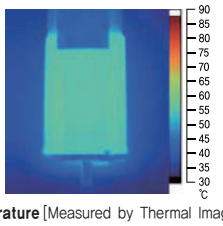
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



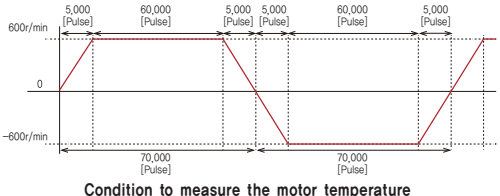
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

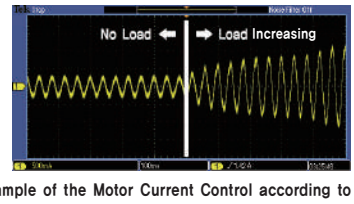
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

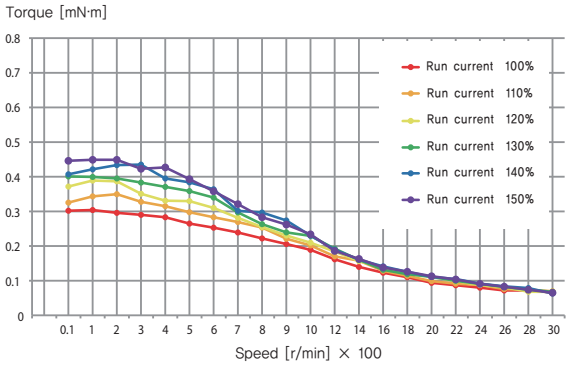


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter.
Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low spee-drange by about 30%.

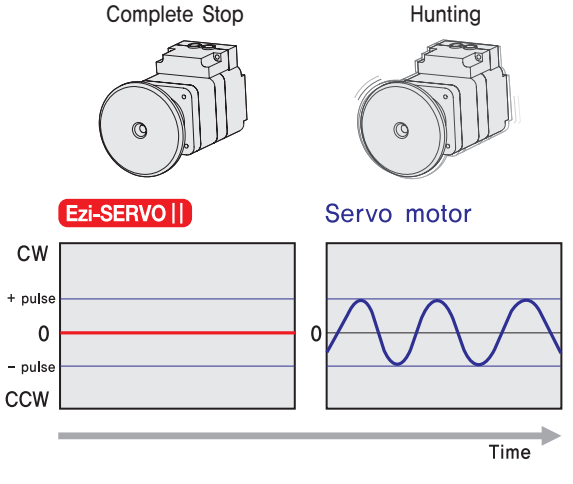


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-BT-42L
Motor Voltage = DC24V
Input Voltage = DC24V

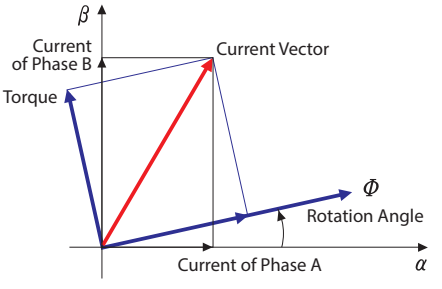
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



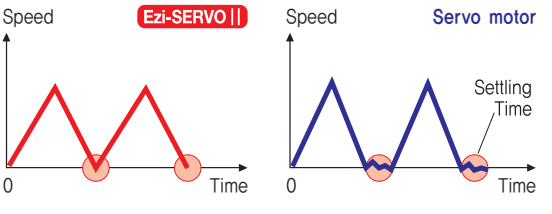
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



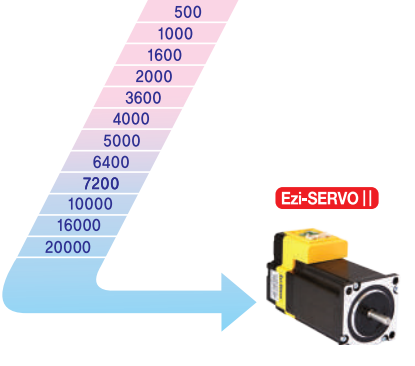
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVOII is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



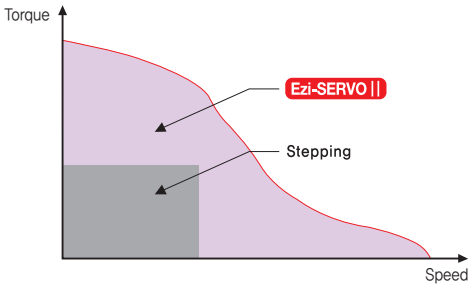
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



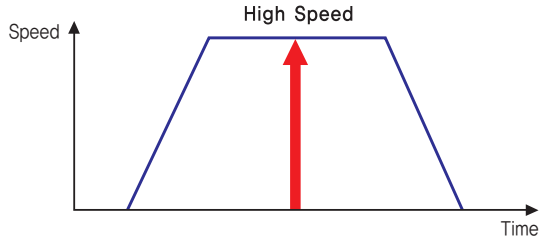
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability of continuous current position monitoring of enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II BT Part Numbering

Ezi-SERVO II-BT-42S-A-BK-PN10

Series Name

Type Name

BT : Built-in

Motor Flange Size

28 : 28mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-BT-28S-D		
Ezi-SERVO II-BT-28M-D		
Ezi-SERVO II-BT-28L-D		
Ezi-SERVO II-BT-42S-A		
Ezi-SERVO II-BT-42S-B		
Ezi-SERVO II-BT-42M-A		
Ezi-SERVO II-BT-42M-B		
Ezi-SERVO II-BT-42L-A		
Ezi-SERVO II-BT-42L-B		
Ezi-SERVO II-BT-42XL-A		
Ezi-SERVO II-BT-42XL-B		
Ezi-SERVO II-BT-56S-A	Motor & Drive Integrated	
Ezi-SERVO II-BT-56S-B		
Ezi-SERVO II-BT-56M-A		
Ezi-SERVO II-BT-56M-B		
Ezi-SERVO II-BT-56L-A		
Ezi-SERVO II-BT-56L-B		
Ezi-SERVO II-BT-60S-A		
Ezi-SERVO II-BT-60S-B		
Ezi-SERVO II-BT-60M-A		
Ezi-SERVO II-BT-60M-B		
Ezi-SERVO II-BT-60L-A		
Ezi-SERVO II-BT-60L-B		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-BT-42S-A-BK		
Ezi-SERVO II-BT-42S-B-BK		
Ezi-SERVO II-BT-42M-A-BK		
Ezi-SERVO II-BT-42M-B-BK		
Ezi-SERVO II-BT-42L-A-BK		
Ezi-SERVO II-BT-42L-B-BK		
Ezi-SERVO II-BT-42XL-A-BK		
Ezi-SERVO II-BT-42XL-B-BK		
Ezi-SERVO II-BT-56S-A-BK		
Ezi-SERVO II-BT-56S-B-BK		
Ezi-SERVO II-BT-56M-A-BK	Motor & Drive Integrated	
Ezi-SERVO II-BT-56M-B-BK		
Ezi-SERVO II-BT-56L-A-BK		
Ezi-SERVO II-BT-56L-B-BK		
Ezi-SERVO II-BT-60S-A-BK		
Ezi-SERVO II-BT-60S-B-BK		
Ezi-SERVO II-BT-60M-A-BK		
Ezi-SERVO II-BT-60M-B-BK		
Ezi-SERVO II-BT-60L-A-BK		
Ezi-SERVO II-BT-60L-B-BK		

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-BT-42S-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-42S-B-PN3			
Ezi-SERVO II-BT-42S-A-PN5			1:5
Ezi-SERVO II-BT-42S-B-PN5			
Ezi-SERVO II-BT-42S-A-PN8			1:8
Ezi-SERVO II-BT-42S-B-PN8			
Ezi-SERVO II-BT-42S-A-PN10			1:10
Ezi-SERVO II-BT-42S-B-PN10			
Ezi-SERVO II-BT-42S-A-PN15			1:15
Ezi-SERVO II-BT-42S-B-PN15			
Ezi-SERVO II-BT-42S-A-PN25			1:25
Ezi-SERVO II-BT-42S-B-PN25			
Ezi-SERVO II-BT-42S-A-PN40			1:40
Ezi-SERVO II-BT-42S-B-PN40			
Ezi-SERVO II-BT-42S-A-PN50			1:50
Ezi-SERVO II-BT-42S-B-PN50			
Ezi-SERVO II-BT-42M-A-PN3			1:3
Ezi-SERVO II-BT-42M-B-PN3			
Ezi-SERVO II-BT-42M-A-PN5			1:5
Ezi-SERVO II-BT-42M-B-PN5			
Ezi-SERVO II-BT-42M-A-PN8			1:8
Ezi-SERVO II-BT-42M-B-PN8			
Ezi-SERVO II-BT-42M-A-PN10			1:10
Ezi-SERVO II-BT-42M-B-PN10			
Ezi-SERVO II-BT-42M-A-PN15			1:15
Ezi-SERVO II-BT-42M-B-PN15			
Ezi-SERVO II-BT-42M-A-PN25			1:25
Ezi-SERVO II-BT-42M-B-PN25			
Ezi-SERVO II-BT-42M-A-PN40			1:40
Ezi-SERVO II-BT-42M-B-PN40			
Ezi-SERVO II-BT-42M-A-PN50			1:50
Ezi-SERVO II-BT-42M-B-PN50			
Ezi-SERVO II-BT-42L-A-PN3			1:3
Ezi-SERVO II-BT-42L-B-PN3			
Ezi-SERVO II-BT-42L-A-PN5			1:5
Ezi-SERVO II-BT-42L-B-PN5			
Ezi-SERVO II-BT-42L-A-PN8			1:8
Ezi-SERVO II-BT-42L-B-PN8			
Ezi-SERVO II-BT-42L-A-PN10			1:10
Ezi-SERVO II-BT-42L-B-PN10			
Ezi-SERVO II-BT-42L-A-PN15			1:15
Ezi-SERVO II-BT-42L-B-PN15			
Ezi-SERVO II-BT-42L-A-PN25			1:25
Ezi-SERVO II-BT-42L-B-PN25			
Ezi-SERVO II-BT-42L-A-PN40			1:40
Ezi-SERVO II-BT-42L-B-PN40			
Ezi-SERVO II-BT-42L-A-PN50			1:50
Ezi-SERVO II-BT-42L-B-PN50			
Ezi-SERVO II-BT-42XL-A-PN3			1:3
Ezi-SERVO II-BT-42XL-B-PN3			
Ezi-SERVO II-BT-42XL-A-PN5			1:5
Ezi-SERVO II-BT-42XL-B-PN5			
Ezi-SERVO II-BT-42XL-A-PN8			1:8
Ezi-SERVO II-BT-42XL-B-PN8			
Ezi-SERVO II-BT-42XL-A-PN10			1:10
Ezi-SERVO II-BT-42XL-B-PN10			
Ezi-SERVO II-BT-42XL-A-PN15			1:15
Ezi-SERVO II-BT-42XL-B-PN15			
Ezi-SERVO II-BT-42XL-A-PN25			1:25
Ezi-SERVO II-BT-42XL-B-PN25			
Ezi-SERVO II-BT-42XL-A-PN40			1:40
Ezi-SERVO II-BT-42XL-B-PN40			
Ezi-SERVO II-BT-42XL-A-PN50			1:50
Ezi-SERVO II-BT-42XL-B-PN50			

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-BT-56S-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-56S-B-PN3			
Ezi-SERVO II-BT-56S-A-PN5			1:5
Ezi-SERVO II-BT-56S-B-PN5			
Ezi-SERVO II-BT-56S-A-PN8			1:8
Ezi-SERVO II-BT-56S-B-PN8			
Ezi-SERVO II-BT-56S-A-PN10			1:10
Ezi-SERVO II-BT-56S-B-PN10			
Ezi-SERVO II-BT-56S-A-PN15			1:15
Ezi-SERVO II-BT-56S-B-PN15			
Ezi-SERVO II-BT-56S-A-PN25			1:25
Ezi-SERVO II-BT-56S-B-PN25			
Ezi-SERVO II-BT-56S-A-PN40			1:40
Ezi-SERVO II-BT-56S-B-PN40			
Ezi-SERVO II-BT-56S-A-PN50			1:50
Ezi-SERVO II-BT-56S-B-PN50			
Ezi-SERVO II-BT-56M-A-PN3			1:3
Ezi-SERVO II-BT-56M-B-PN3			
Ezi-SERVO II-BT-56M-A-PN5			1:5
Ezi-SERVO II-BT-56M-B-PN5			
Ezi-SERVO II-BT-56M-A-PN8			1:8
Ezi-SERVO II-BT-56M-B-PN8			
Ezi-SERVO II-BT-56M-A-PN10			1:10
Ezi-SERVO II-BT-56M-B-PN10			
Ezi-SERVO II-BT-56M-A-PN15			1:15
Ezi-SERVO II-BT-56M-B-PN15			
Ezi-SERVO II-BT-56M-A-PN25			1:25
Ezi-SERVO II-BT-56M-B-PN25			
Ezi-SERVO II-BT-56M-A-PN40			1:40
Ezi-SERVO II-BT-56M-B-PN40			
Ezi-SERVO II-BT-56M-A-PN50			1:50
Ezi-SERVO II-BT-56M-B-PN50			
Ezi-SERVO II-BT-56L-A-PN3			1:3
Ezi-SERVO II-BT-56L-B-PN3			
Ezi-SERVO II-BT-56L-A-PN5			1:5
Ezi-SERVO II-BT-56L-B-PN5			
Ezi-SERVO II-BT-56L-A-PN8			1:8
Ezi-SERVO II-BT-56L-B-PN8			
Ezi-SERVO II-BT-56L-A-PN10			1:10
Ezi-SERVO II-BT-56L-B-PN10			
Ezi-SERVO II-BT-56L-A-PN15			1:15
Ezi-SERVO II-BT-56L-B-PN15			
Ezi-SERVO II-BT-56L-A-PN25			1:25
Ezi-SERVO II-BT-56L-B-PN25			
Ezi-SERVO II-BT-56L-A-PN40			1:40
Ezi-SERVO II-BT-56L-B-PN40			
Ezi-SERVO II-BT-56L-A-PN50			1:50
Ezi-SERVO II-BT-56L-B-PN50			
Ezi-SERVO II-BT-60S-A-PN3			1:3
Ezi-SERVO II-BT-60S-B-PN3			
Ezi-SERVO II-BT-60S-A-PN5			1:5
Ezi-SERVO II-BT-60S-B-PN5			
Ezi-SERVO II-BT-60S-A-PN8			1:8
Ezi-SERVO II-BT-60S-B-PN8			
Ezi-SERVO II-BT-60S-A-PN10			1:10
Ezi-SERVO II-BT-60S-B-PN10			
Ezi-SERVO II-BT-60S-A-PN15			1:15
Ezi-SERVO II-BT-60S-B-PN15			
Ezi-SERVO II-BT-60S-A-PN25			1:25
Ezi-SERVO II-BT-60S-B-PN25			
Ezi-SERVO II-BT-60S-A-PN40			1:40
Ezi-SERVO II-BT-60S-B-PN40			
Ezi-SERVO II-BT-60S-A-PN50			1:50
Ezi-SERVO II-BT-60S-B-PN50			

● Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-BT-60M-A-PN3	Motor & Drive Integrated		1:3
Ezi-SERVO II-BT-60M-B-PN3			
Ezi-SERVO II-BT-60M-A-PN5			1:5
Ezi-SERVO II-BT-60M-B-PN5			
Ezi-SERVO II-BT-60M-A-PN8			1:8
Ezi-SERVO II-BT-60M-B-PN8			
Ezi-SERVO II-BT-60M-A-PN10			1:10
Ezi-SERVO II-BT-60M-B-PN10			
Ezi-SERVO II-BT-60M-A-PN15			1:15
Ezi-SERVO II-BT-60M-B-PN15			
Ezi-SERVO II-BT-60M-A-PN25			1:25
Ezi-SERVO II-BT-60M-B-PN25			
Ezi-SERVO II-BT-60M-A-PN40			1:40
Ezi-SERVO II-BT-60M-B-PN40			
Ezi-SERVO II-BT-60M-A-PN50			1:50
Ezi-SERVO II-BT-60M-B-PN50			
Ezi-SERVO II-BT-60L-A-PN3			1:3
Ezi-SERVO II-BT-60L-B-PN3			
Ezi-SERVO II-BT-60L-A-PN5			1:5
Ezi-SERVO II-BT-60L-B-PN5			
Ezi-SERVO II-BT-60L-A-PN8			1:8
Ezi-SERVO II-BT-60L-B-PN8			
Ezi-SERVO II-BT-60L-A-PN10			1:10
Ezi-SERVO II-BT-60L-B-PN10			
Ezi-SERVO II-BT-60L-A-PN15			1:15
Ezi-SERVO II-BT-60L-B-PN15			
Ezi-SERVO II-BT-60L-A-PN25			1:25
Ezi-SERVO II-BT-60L-B-PN25			
Ezi-SERVO II-BT-60L-A-PN40			1:40
Ezi-SERVO II-BT-60L-B-PN40			
Ezi-SERVO II-BT-60L-A-PN50			1:50
Ezi-SERVO II-BT-60L-B-PN50			

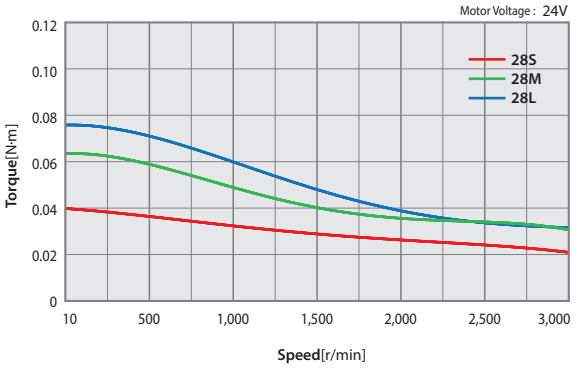
Specifications of Motor

MODEL			UNIT	Ezi-SERVOII-BT-28 series			Ezi-SERVOII-BT-42 series			
				28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar						
NUMBER OF PHASES			–	2 Phase						
CURRENT per PHASE			A/Phase	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.170	0.227	0.257	0.340	0.400	0.470	0.600
LENGTH(L)			mm	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	30	30	30	22	22	22	22
		8mm		38	38	38	26	26	26	26
		13mm		53	53	53	33	33	33	33
		18mm		–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight						
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)						
INSULATION CLASS			–	CLASS B(130℃)						
OPERATING TEMPERATURE			℃	0 ~ 55						

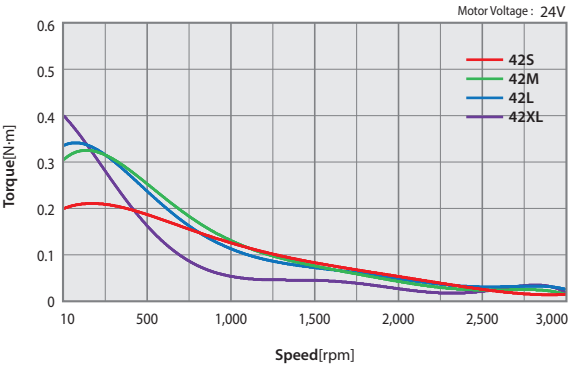
MODEL			UNIT	Ezi-SERVOII-BT-56 series			Ezi-SERVOII-BT-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690
WEIGHTS			kg	0.640	0.800	1.320	1.075	1.240	1.800
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

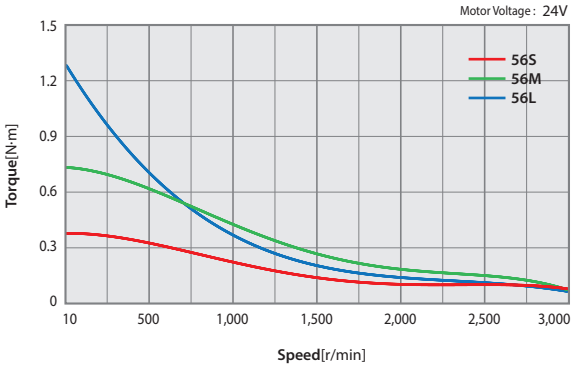
Ezi-SERVOII-BT-28 series



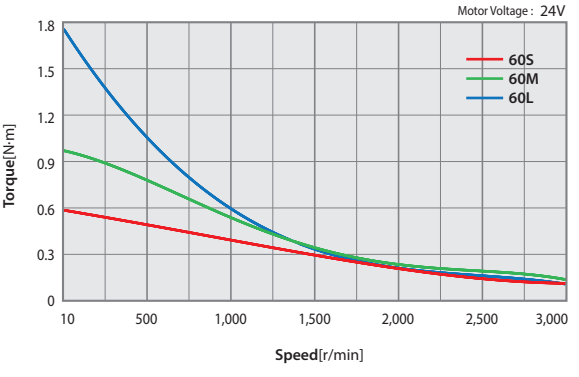
Ezi-SERVOII-BT-42 series



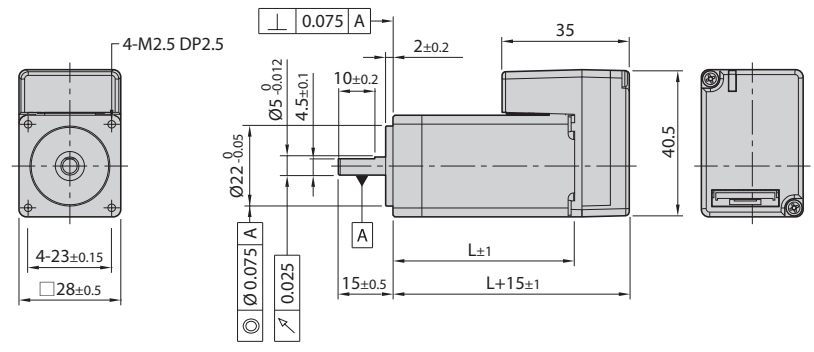
Ezi-SERVOII-BT-56 series



Ezi-SERVOII-BT-60 series

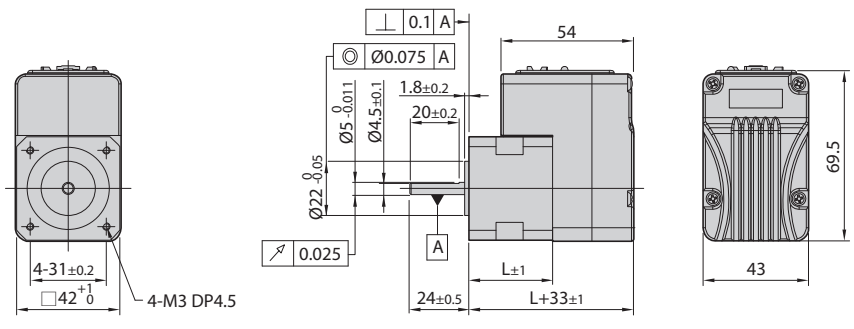


● Dimensions of Motor [mm]



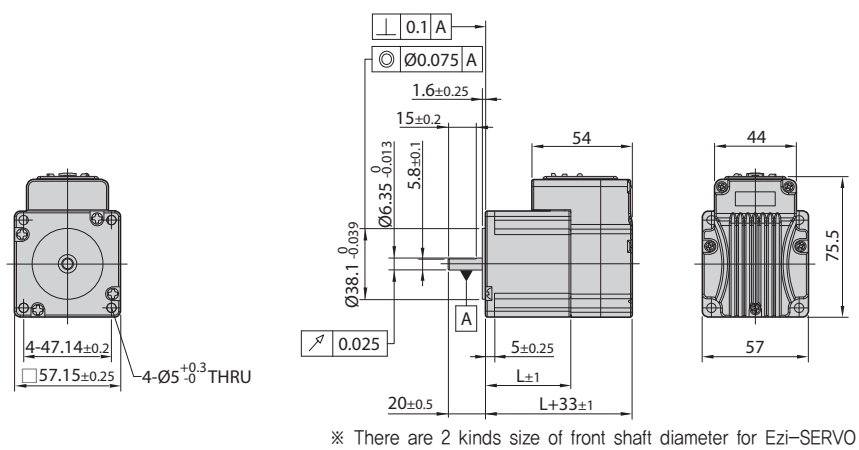
28mm

Model name	Length(L)
28S	32
28M	45
28L	50



42mm

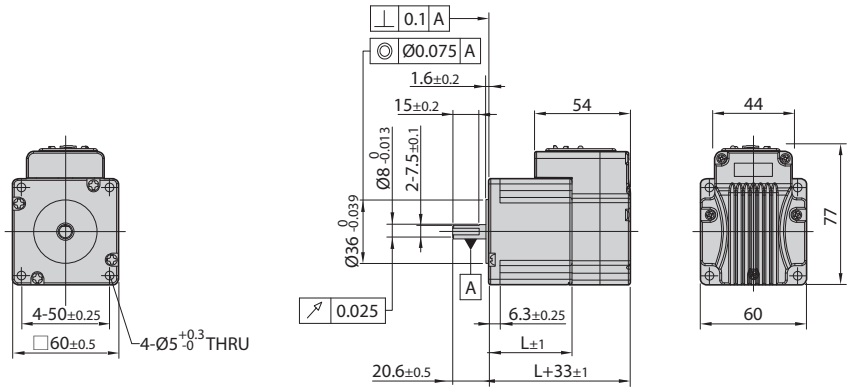
Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-BT-56 series as Ø6,35 and Ø8,0.

56mm

Model name	Length(L)
56S	46
56M	55
56L	80



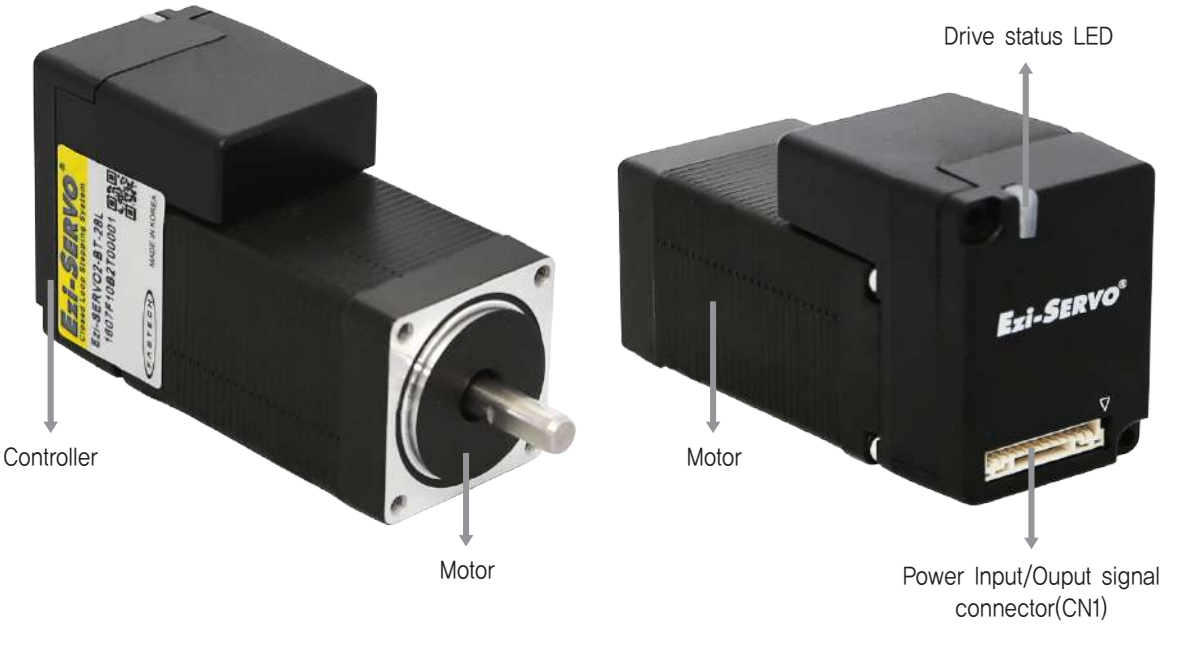
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Specifications of Drive [Ezi-SERVO II-BT-28 series]

Model		Ezi-SERVO II-BT-28 series
Input Voltage		DC24V±10%
Control Method		Closed-loop control with 32bit MCU
Current Consumption		Max. 500mA (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~40℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Rotation Speed	0~3,000r/min
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 (Selectable by parameter)
	Max. Input Pulse Frequency	500kHz (Duty 50%)
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	In-Position Selection	0~63 (Set by parameter)
	Position Gain Selection	0~63 (Set by parameter)
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by parameter)
	Rotation Direction	CW/CCW (Set by parameter)
	Speed/Position Control Command	Pulse Train Input
I/O Signal	Input Signals	Position Command Pulse (Photocoupler Input), Servo On/Off, Alarm Reset
	Output Signals	In-Position, Alarm

● Settings and Operation [Ezi-SERVO II-BT-28 series]



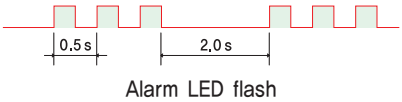
1. Drive Status LED

LEDs show the drive operation status.

LED Indication	LED Status	Description
Green : ▬ ▬ ▬ ▬ Red :	Green blinks, Red is OFF.	Servo ON
Green : ▬▬▬▬ Red :	Green is ON, Red is OFF.	Servo OFF
Green : ▬▬▬▬ Red : ▬▬▬▬	Green and Red are ON.	In motion
Green : ● ● ● ● ● ● Red : ● ● ● ● ● ●	Green and Red blink alternately.	A position error is greater than the set value (Inposition Value) while the motor is stopped.
Green : Red : ▬ ▬ ▬ ▬	Green is OFF, Red blinks repeatedly for a set number of times depending on the type of error	Error

◆ List of error types by the number of red LED blinking

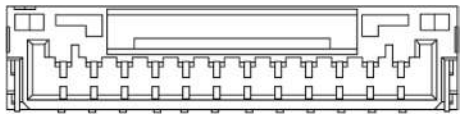
No.	Error Type	Causes
1	Over Current Error	The current through power devices in inverter exceeds 4.8A
2	Over Speed Error	The motor speed exceeds 3,000 r/min
3	Position Tracking Error	Position error value is greater than 180° while the motor is running
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	An error occurred inside the drive when the operating temperature of the drive exceeded 50℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than 180° while the motor is stopped



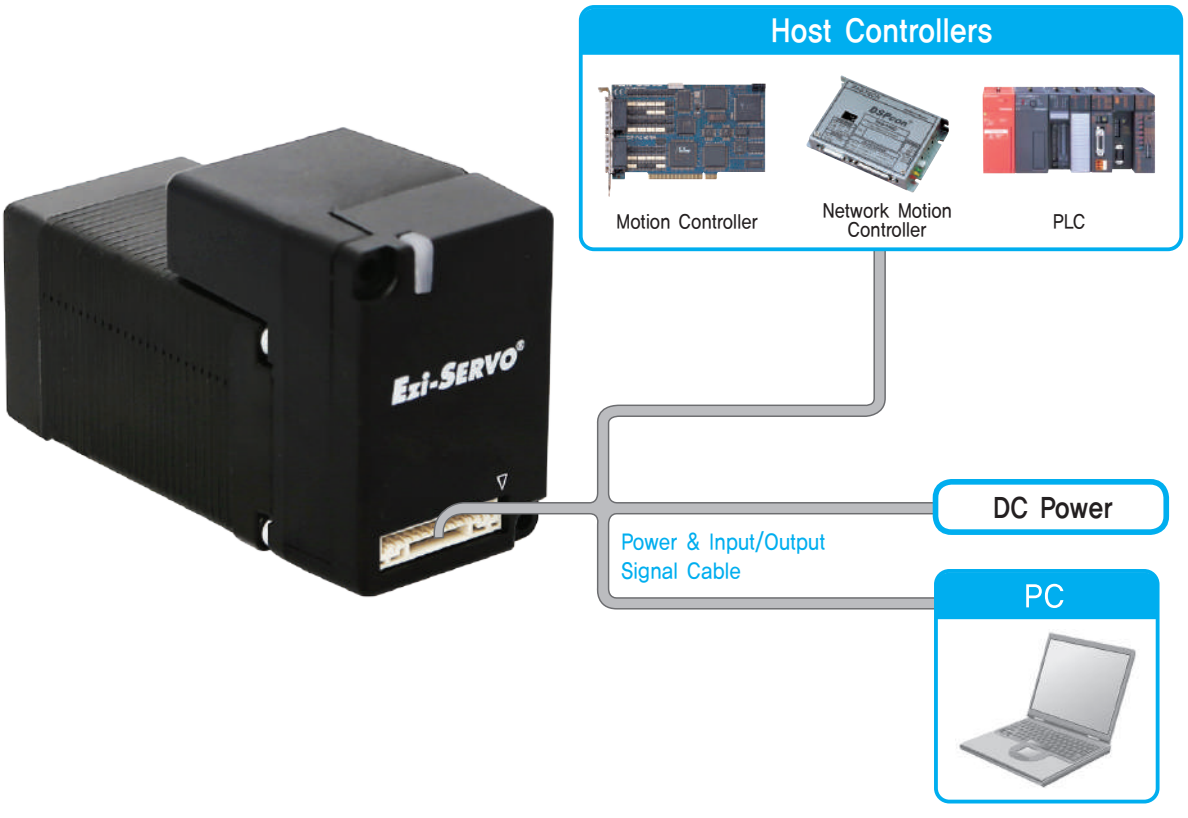
Alarm LED flash
(e.g., Position tracking error)

2. Power & Input/Output Signal Connector(CN1)

No.	Function	I/O
1	GND	Input
2	DC24V	Input
3	Tx	Output
4	Rx	Input
5	Alarm	Output
6	In-Position	Output
7	Servo On/Off	Input
8	Alarm Reset	Input
9	CCW+(Dir+)	Input
10	CCW-(Dir-)	Input
11	CW+(Pulse+)	Input
12	CW-(Pulse-)	Input



System Configuration [Ezi-SERVOII-BT-28 series]



1. Accessories

Connectors

These are connector specifications for drive cabling.

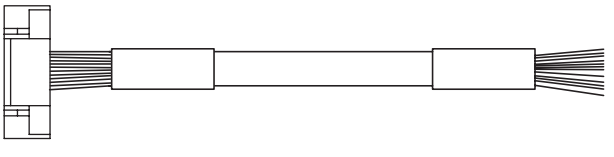
Purpose	Item	Part Number	Manufacturer
Power Input/Output Connection (CN1)	Housing	GHR-12V-S	JST
	Terminal	SSHL-002T-P0.2	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

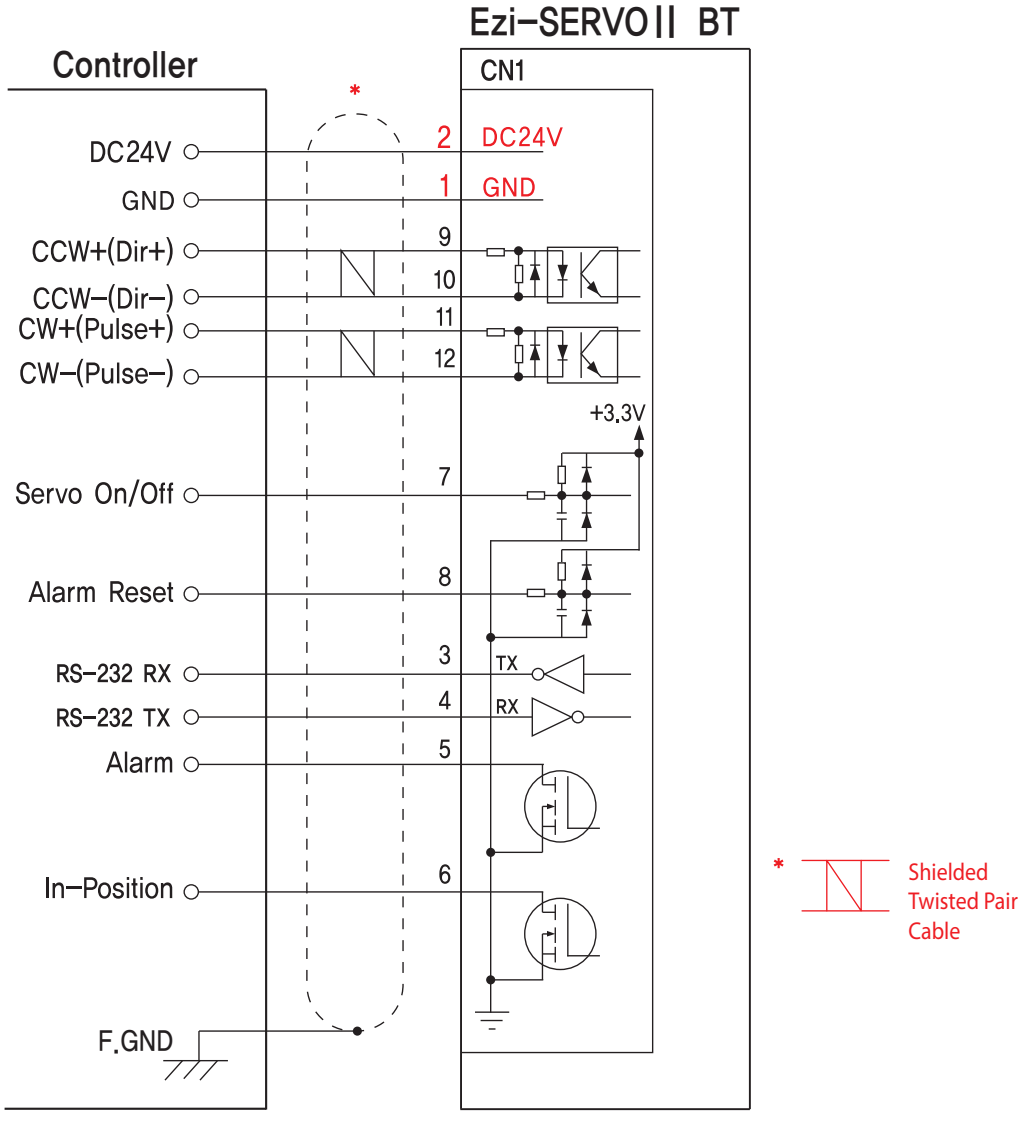
Power & Input/Output Cable

This is the cable to connect Ezi-SERVOII-BT-28 series, power and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power & I/O Device Connection	CSVB-A-OR4F	0.4	Normal Cable	Maximum Length: · Connection Cable: 20m · Power Cable: 2m · Parameter Setting Cable: 3m



● External Wiring Diagram [Ezi-SERVO II-BT-28 series]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

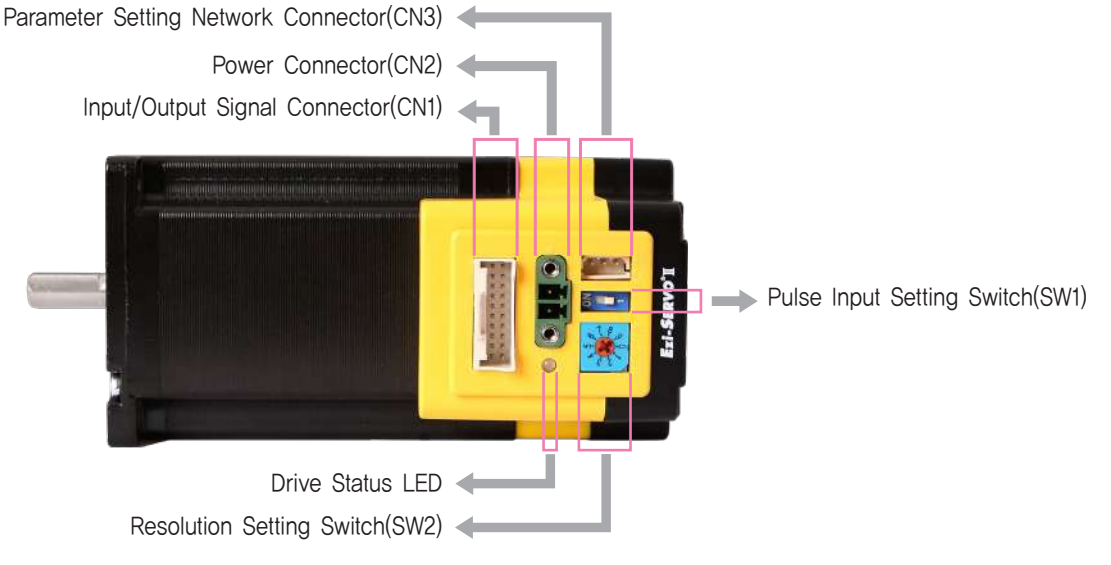
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● Specifications of Drive [Ezi-SERVO II-BT-42/56/60 series]

Model		Ezi-SERVO II-BT-42 series	Ezi-SERVO II-BT-56 series	Ezi-SERVO II-BT-60 series
Input Voltage		DC24V±10%		
Control Method		Closed-loop control with 32bit MCU		
Current Consumption		Max. 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000r/min *1		
	Resolution	Encoder Resolution [P/R] / Configurable Resolution [P/R] 10,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Set by Rotary Switch)		
	Max. Input Pulse Frequency	500kHz (Duty 50%)		
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error		
	In-Position Selection	0~63 (Set by parameter)		
	Position Gain Selection	0~63 (Set by parameter)		
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by DIP switch)		
	Speed/Position Control Command	Pulse Train Input		
I/O Signal	Input Signals	Position Command Pulse, Servo ON/OFF, Alarm Reset (Photocoupler Input)		
	Output Signals	In-Position, Alarm (Photocoupler Output) Encoder signal (A+, A-, B+, B-, Z+, Z-, Line Driver output equivalent to 26C31), Brake signal		

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

● Settings and Operation [Ezi-SERVO II-BT-42/56/60 series]



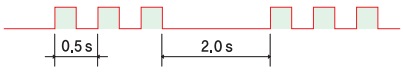
1. Drive Status LED

LEDs show the drive operation status.

Name	Color	Function	Description
PWR	Green	Power input indication	LED is turned ON when power is applied
ALM	Red	Alarm indication	LED blinks when an error occurs

◆ List of error types by the number of alarm LED blinking

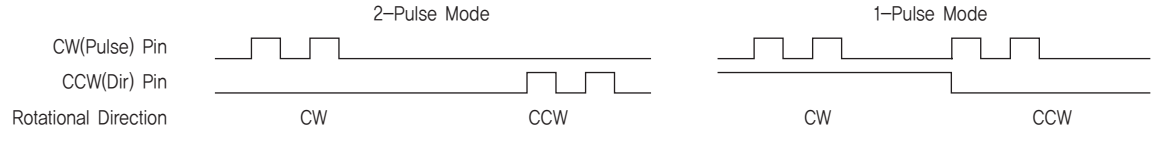
No.	Error Type	Causes
1	Over Current Error	The current through power devices in inverter exceeds the 4.8A
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	The difference between the actual position and the command position is greater than 180° while the motor is running
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than 180° while the motor is stopped



Alarm LED flash
(e.g., Position tracking error)

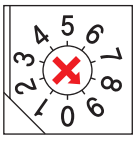
2. Pulse Input Setting Switch(SW1)

Name	Function	Description
2P/1P	Pulse Input Mode Setting	1-Pulse input mode or 2-Pulse input mode can be selected. ON: 1-Pulse mode OFF: 2-Pulse mode



3. Resolution Setting Switch(SW2)

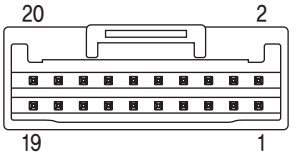
Value	P/R	Value	P/R
0	500 *1	5	3,600
1	500	6	5,000
2	1,000	7	6,400
3	1,600	8	7,200
4	2,000	9	10,000



*1 : Resolution of position "0" will be different according to the resolution of encoder applied to the product.
But in case of the encoder with 10,000P/R resolution, it will be set as 500.

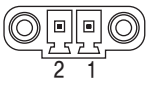
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	CW+(Pulse+)	Input
2	CW–(Pulse–)	Input
3	CCW+(Dir+)	Input
4	CCW–(Dir–)	Input
5	A+	Output
6	A–	Output
7	B+	Output
8	B–	Output
9	Z+	Output
10	Z–	Output
11	Alarm	Output
12	In–Position	Output
13	Servo On/Off	Input
14	Alarm Reset	Input
15	NC	----
16	BRAKE+	Output
17	BRAKE–	Output
18	S–GND	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



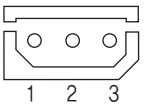
5. Power Connector(CN2)

NO.	Function	I/O
1	DC24V	Input
2	GND	Input



6. Parameter Setting Connector(CN3)

NO.	Function	I/O
1	Tx	Output
2	Rx	Input
3	GND	----



● System Configuration [Ezi-SERVO II-BT-42/56/60 series]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③ Parameter Setting Cable	3m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Housing	501646-2000	MOLEX
	Terminal	501648-1000 (AWG 26~28)	
Power (CN2)	Terminal Block	MC421-38102	DECA
Parameter Setting (CN3)	Housing	5264-03	MOLEX
	Terminal	5263PBTL	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II BT drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVB-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVB-S-002F	2		
	CSVB-S-003F	3		
	CSVB-S-005F	5		
	CSVB-S-001M	1	Robot Cable	
	CSVB-S-002M	2		
	CSVB-S-003M	3		
	CSVB-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Power Cable

These are the cables to connect Ezi-SERVO II BT drive and the power.

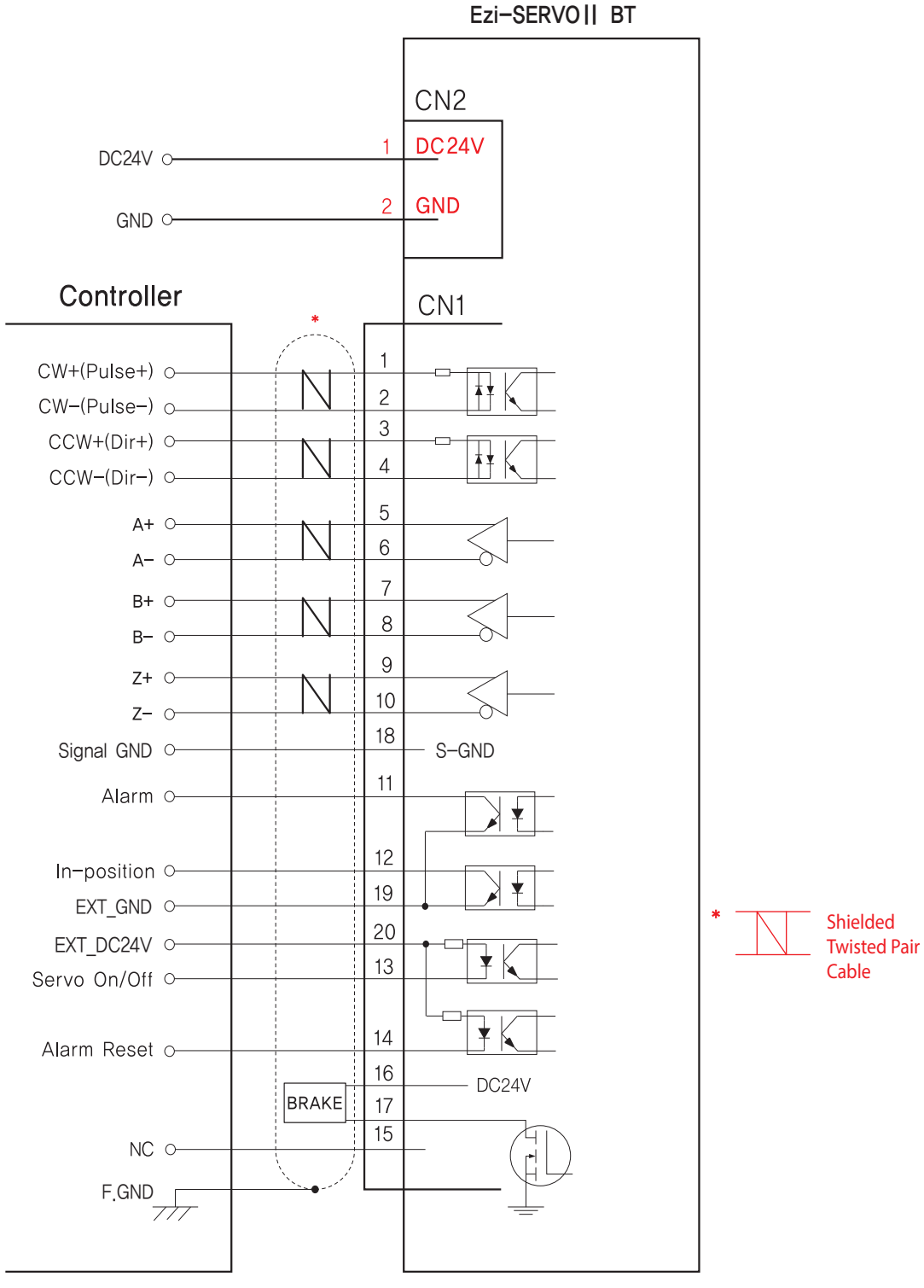
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVA-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVA-P-002F	2		
	CSVA-P-001M	1	Robot Cable	
	CSVA-P-002M	2		

③ Parameter Setting Cable

These are the cables to connect Ezi-SERVO II BT drive and PC. These cables are for changing the parameter of the drive.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Parameter Network Connection	CBTS-C-001F	1	Normal Cable	Maximum Length: 3m
	CBTS-C-002F	2		
	CBTS-C-003F	3		

● External Wiring Diagram [Ezi-SERVO II-BT-42/56/60 series]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

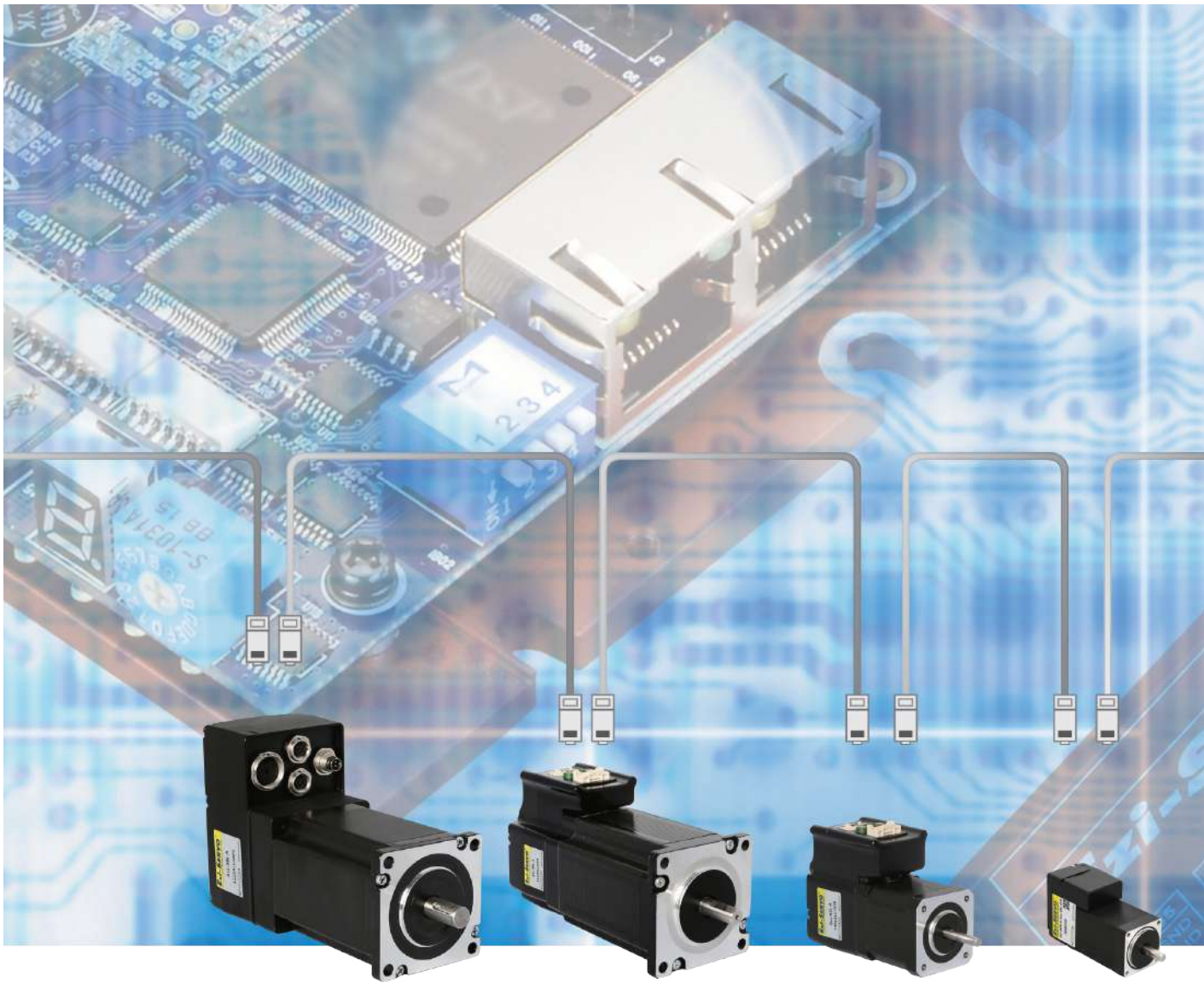
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


I/O
POWER
ON
Ezi-SERVO
ALL
Ezi-SERVO
ALL-42L-A-D

Ezi-SERVO® ALL

Closed Loop Stepping System

- Motor + High Resolution Encoder + Drive + Motion Controller
- Space Saving / Reduced Wiring
- RS-485 Interface
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque



FASTECH
Fast, Accurate, Smooth Motion

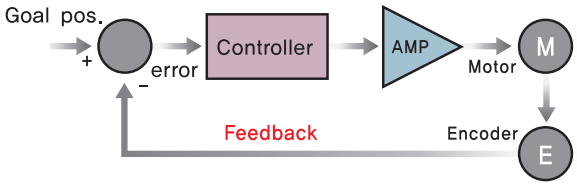
Ezi-SERVO® ALL

Closed Loop Stepping System



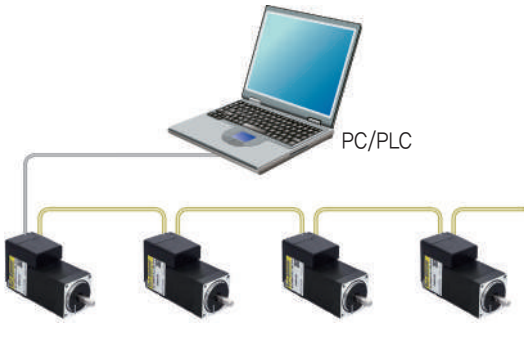
2 Closed-Loop System

Ezi-SERVO is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position every 25μs. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



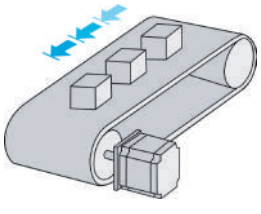
1 RS-485 Based Motion Control

A maximum of 16 axis can be operated from a PC through RS-485 communications. Also, motions are controlled by RS-485, and all of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.



3 Tuning Not Required

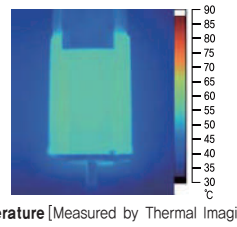
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



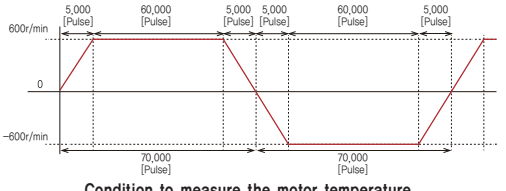
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

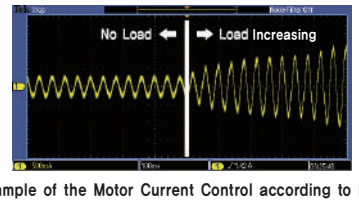
Ezi-SERVO automatically controls motor current according to load.
Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

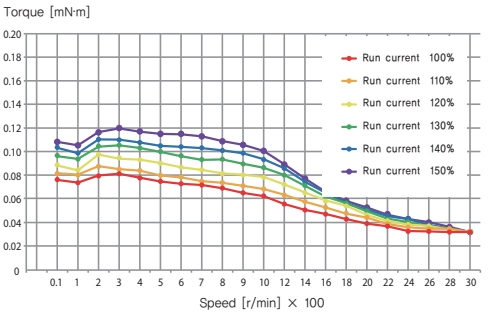


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO can increase the motor current up to 150% by setting the Run Current by parameter.
Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO can improve the torque in the low speed range by about 30%.

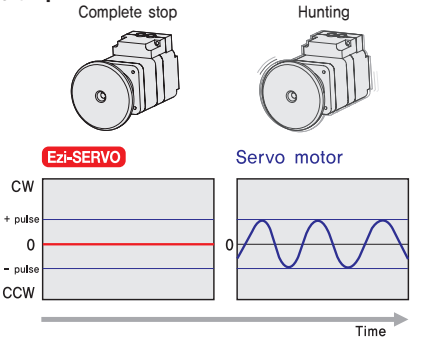


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO-ALL-28L
Motor Voltage = DC24V
Input Voltage = DC24V

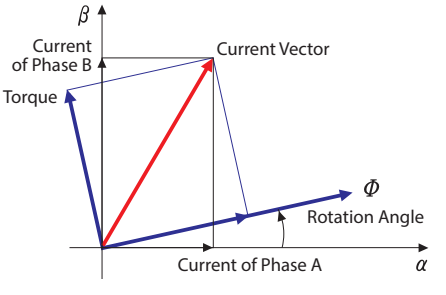
6 No Hunting

Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



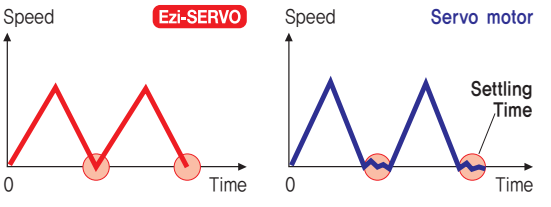
7 Smooth and Accurate Operation

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder with 32,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



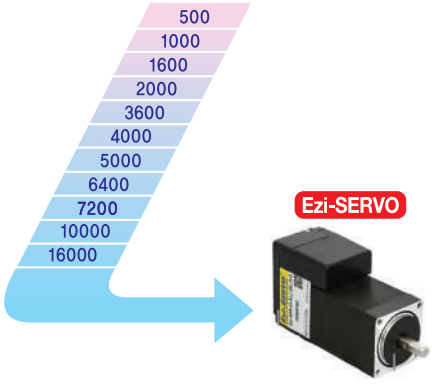
8 High Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



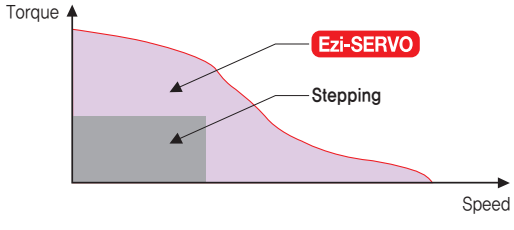
9 High Resolution

The unit of the position command can be divided precisely. (Max. 16,000 pulses/revolution)



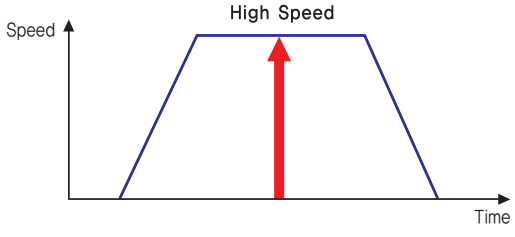
10 High Torque/Continuous Operation

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO ALL Part Numbering

Ezi-SERVO-ALL-42S-A-BK-PN5

Series Name

Type Name

ALL : ALL Type

Motor Flange Size

28 : 28mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
ABS : Absolute Encoder

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

* For products other than Ezi-SERVO-ALL-28, please refer to the Ezi-SERVO ALL catalog on our website(www.fastech-motions.com).

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ALL-28S-D	Motor & Drive Integrated	
Ezi-SERVO-ALL-28M-D		
Ezi-SERVO-ALL-28L-D		

● Specifications of Drive [Ezi-SERVO-ALL-28 Series]

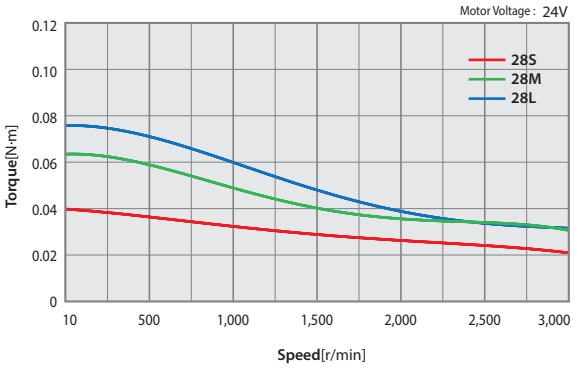
Model		Ezi-SERVO-ALL-28 series
Input Voltage		DC24V±10%
Control Method		Closed-loop control with 32 bit MCU
Multi Axis Drive		Max. 16 axis operating (Star Topology)
Position Table		Not supported
Current Consumption		Max. 500mA (Except motor current)
Operating Condition	Ambient Temperature	· In Use: 0~40℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Rotation Speed	0~3,000r/min
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 (Selectable by parameter)
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error
	In-Position Selection	0~63 (Set by parameter)
	Position Gain Selection	0~63 (Set by parameter)
	Rotation Direction	CW/CCW (Set by parameter)
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 1 programmable input (Photocoupler Input, NPN/PNP supported)
	Output Signals	None
Communication Interface		RS-485 Communication, Baud Rate: 112,500bps (Fixed)
Position Control		· Incremental mode / Absolute mode Data Range: -2,147,483,648~+2,147,483,647 [pulse] · Operating speed: Max. 3,000 r/min
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque
GUI		User Interface Program within Windows
Library		Motion Library (API) for Windows 7/8/10

Specifications of Motor

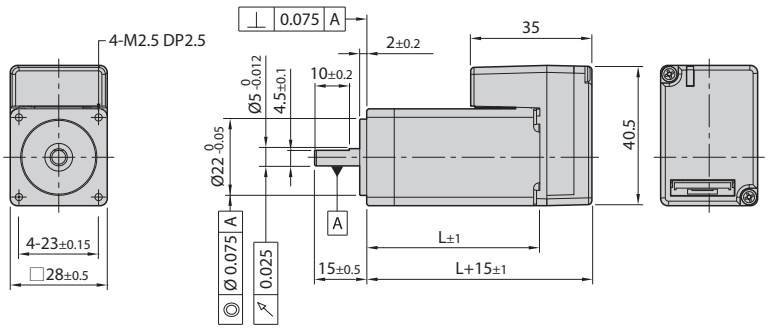
MODEL			UNIT	Ezi-SERVO-ALL-28 series 28S	28M	28L
DRIVE METHOD			–	Bipolar		
NUMBER OF PHASES			–	2 Phase		
CURRENT per PHASE			A/Phase	0.95	0.95	0.95
MAXIMUM HOLDING TORQUE			N·m	0.069	0.098	0.118
ROTOR INERTIA			g·cm^2	9.0	13	18
WEIGHTS			kg	0.170	0.227	0.257
LENGTH(L)			mm	32	45	50
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	30	30	30
		8mm		38	38	38
		13mm		53	53	53
		18mm		–	–	–
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight		
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)		
INSULATION CLASS			–	CLASS B(130℃)		
OPERATING TEMPERATURE			℃	0 ~ 55		

Torque Characteristics of Motor

Ezi-SERVO-ALL-28 series



● Dimensions of Motor [mm]



28mm

Model Name	Length(L)
28S	32
28M	45
28L	50

● Settings and Operation [Ezi-SERVO-ALL-28 Series]



1. Drive Status LED

LED informs operation status of the drive.

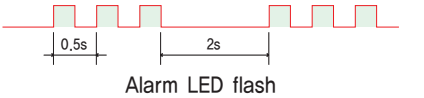
LED Indication	LED Status	Description
Green : ▬ ▬ ▬ ▬ Red :	Green blinks, Red is OFF.	Servo On
Green : ▬▬▬▬▬ Red :	Green is ON, Red is OFF.	Servo Off
Green : ▬▬▬▬▬ Red : ● ●	Green is ON, Red blinks.	Communicating while Servo Off
Green : ▬▬▬▬▬ Red : ▬▬▬▬▬	Green and Red are ON.	In motion
Green : ● ● ● ● ● ● Red : ● ● ● ● ● ●	Green and Red blink alternately.	A position error is greater than the set value (Inposition Value) while the motor is stopped.
Green : Red : ▬ ▬ ▬ ▬	Green is OFF, Red blinks repeatedly for a set number of times depending on the type of error	Error

◆ List of error types by the number of red LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A.
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *1
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	An error occurred inside the drive when the operating temperature of the drive exceeded 50℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped

*1 : The default setting value is 180 °, and it can be changed by parameter. (Refer to the Manual)

※ Please refer to user Manual for the details of protection functions.



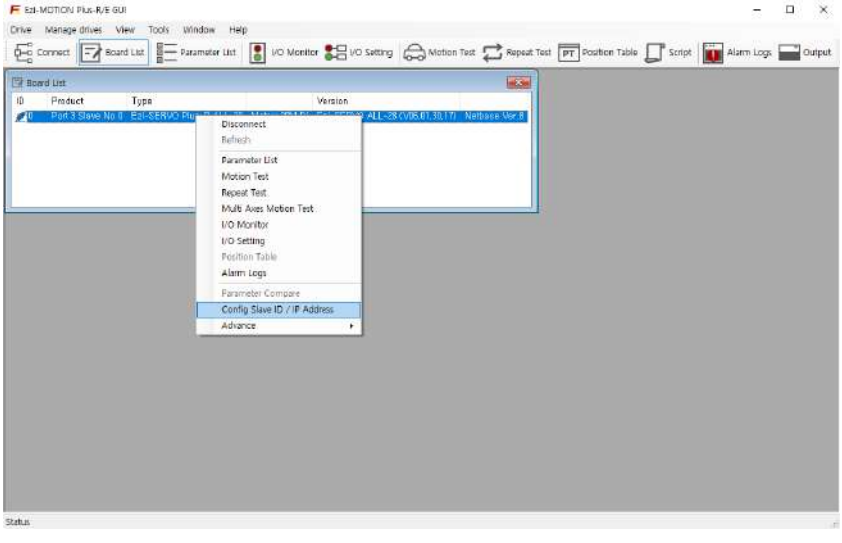
Alarm LED flash
(e.g., Position tracking error)

2. Termination Resistor Setting

A termination resistor prevents signal distortion caused by the signal rebound, and Ezi-SERVO ALL has a built-in termination resistor. To connect a terminating resistor, please connect pin 9 and 10 of the connector (CN1) of the drive installed at the end of the network.

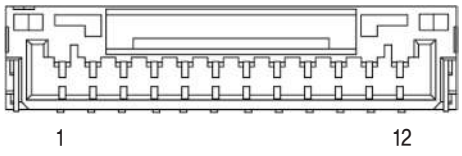
3. Network ID Setting

The network ID of Ezi-SERVO-ALL-28 series is set by the GUI program(Ezi-MOTION Plus-R, version 6.40.7.12 or higher).

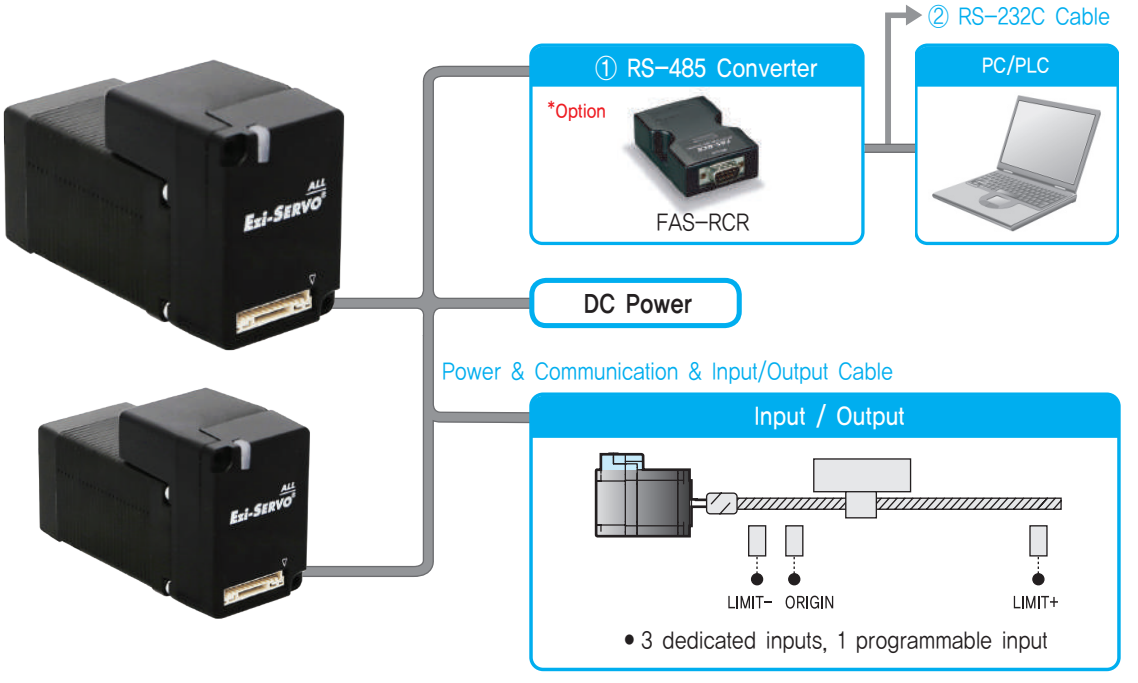


4. Power & Communication & Input/Output Connector(CN1)

No.	Function	I/O
1	GND	Input
2	DC24V	Input
3	IO COMMON	Input
4	ORIGIN	Input
5	LIMIT+	Input
6	LIMIT-	Input
7	In1	Input
9	Termination	Input
10	Data-	Communication Signal
11	Data+	Communication Signal
12	S.GND	Communication Ground



System Configuration [Ezi-SERVO-ALL-28 Series]



1. Accessories

◆ Connectors

These are connector specifications for drive cabling.

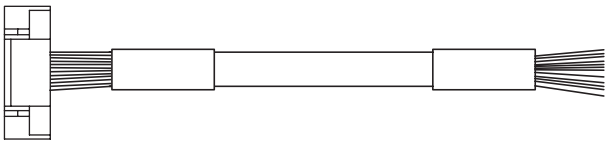
Purpose	Item	Part Number	Manufacturer
Power & Signal	Housing	GHR-12V-S	JST
	Terminal	SSHL-002T-P0.2	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

◆ Power & Communication & Input/Output Cable

It is the cable to connect Ezi-SERVO-ALL-28 drive, power, communication, and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power & Communication & Input/Output Connection	CSVB-A-OR4F	0.4	Normal Cable	Maximum Length: · Signal Cable: 20m · Power Cable: 2m · RS-485 Cable: 30m



2. Options

① RS-485 Converter

Purpose	Part Number	Specifications		Product Image
RS-232C to RS-485 Converter	FAS-RCR	Baud Rate	Max. 115.2kbps	
		Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km	
		Connector	RS-232C: DB9 Female RS-485: RJ-45	
		Dimensions	50X75X23mm	
		Weight	38g	
		Power	Power supplied by RS-232C (DC5~24V external power can be applied)	

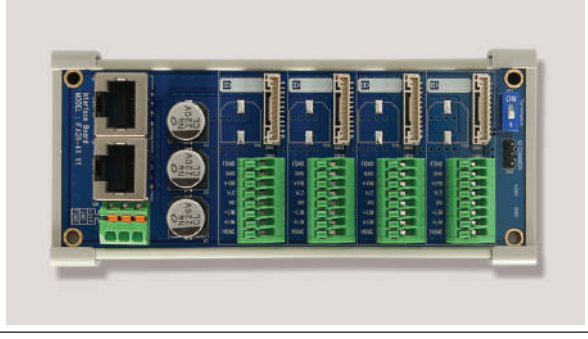
② RS-232C Cable

These are the cables to connect FAS-RCR and RS-232C port of the host controller.

Purpose	Part Number	Length [m]	Cable Type
FAS-RCR-RS-232C Connection	CGNR-C-002F	2	Normal Cable
	CGNR-C-003F	3	
	CGNR-C-005F	5	

③ IFA28-4X Interface Board

This is an interface board to connect Ezi-SERVO-ALL-28 drive and the host controller more conveniently. It supports up to 4 axis of Ezi-SERVO-ALL-28 products.

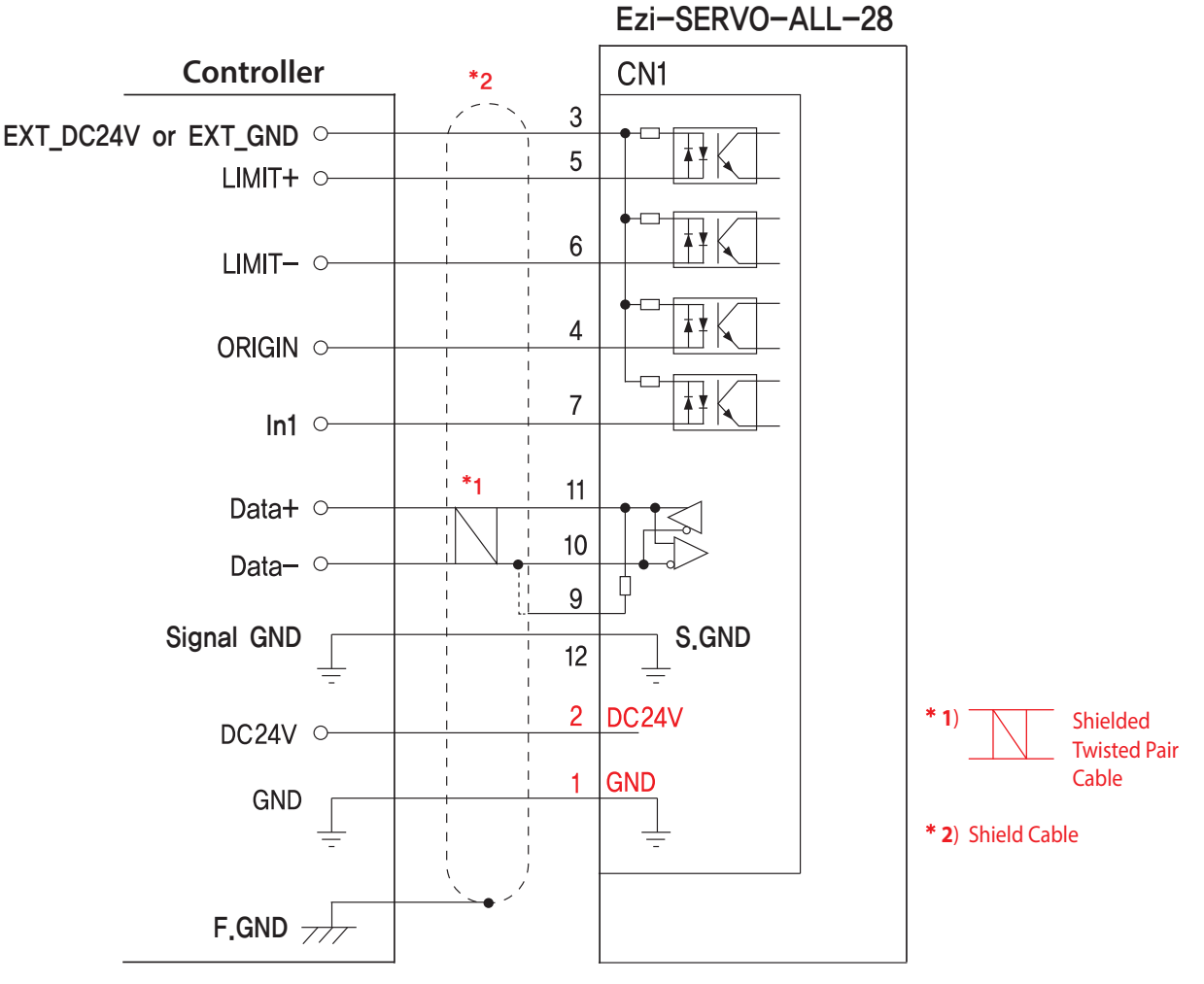
Purpose	Part Number	Product Image
Drive – Host Controller Connection Board	IFA28-4X	

④ IFA28-4X Interface Cable

These are the cables to connect Ezi-SERVO-ALL-28 drive and IFA28-4X interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(IFA28-4X) Connection	CSVA-A-001F	1	Normal Cable	Maximum Length: 5m
	CSVA-A-002F	2		
	CSVA-A-003F	3		
	CSVA-A-005F	5		

● External Wiring Diagram [Ezi-SERVO-ALL-28 Series]



※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

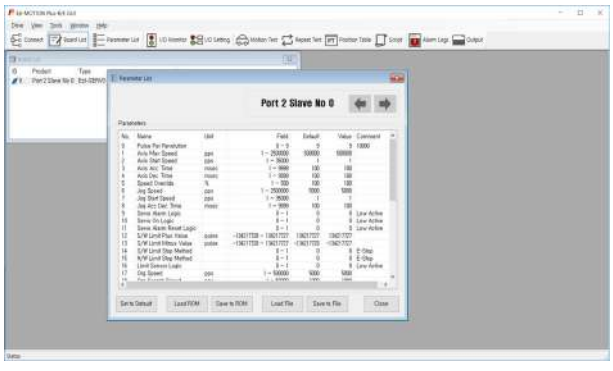
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● GUI(Graphic User Interface) Screenshot



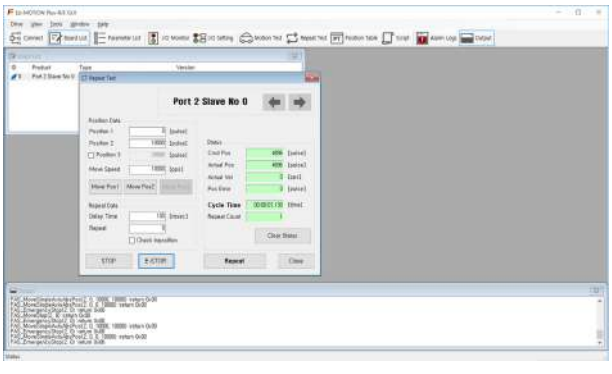
◆ Product List and Motion Test

The product list shows the products connected to the host controller. You can test single position movements, jog movements, and origin search operations, and monitor the operation status on the motion test window.



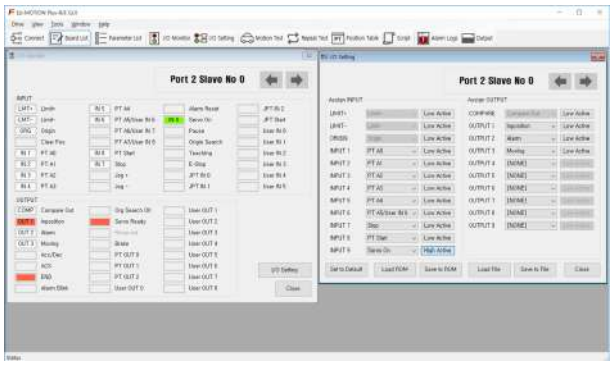
◆ Parameter List

All of the parameters are displayed and modified on this screen.



◆ Motion Repeat and Status Monitoring

You can set the target position value, speed, delay time and number of repetitions for repeated motion test. A motion libarry(API) is also displayed on the screen.



◆ I/O Monitoring and Setting

You can check the status of input/output signals related to the current operation status, and you can assign the signals to the desired input/output channels.

※ GUI Program(Ezi-MOTIONLINK Plus-R) can be downloaded from website. (www.fastech-motions.com)
※ GUI Program(Ezi-MOTIONLINK Plus-R) supports Windows 7/8/10.
※ GUI Program(Ezi-MOTIONLINK Plus-R) is subject to change without prior notice ofr performance improvement.


Ezi-SERVO II
FASTECH
EtherCAT
Conformance tested
PWR
MOTOR
ENCODER
IN / OUT
ECAT
RUN
ERR
PWR
INP
SON
ALM
ECAT ID

Ezi-SERVO® II

EtherCAT® Conformance tested

Closed Loop Stepping System

- CiA402 Drive Profile Support
- Closed-Loop Stepping system
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque
- High Resolution / High Response

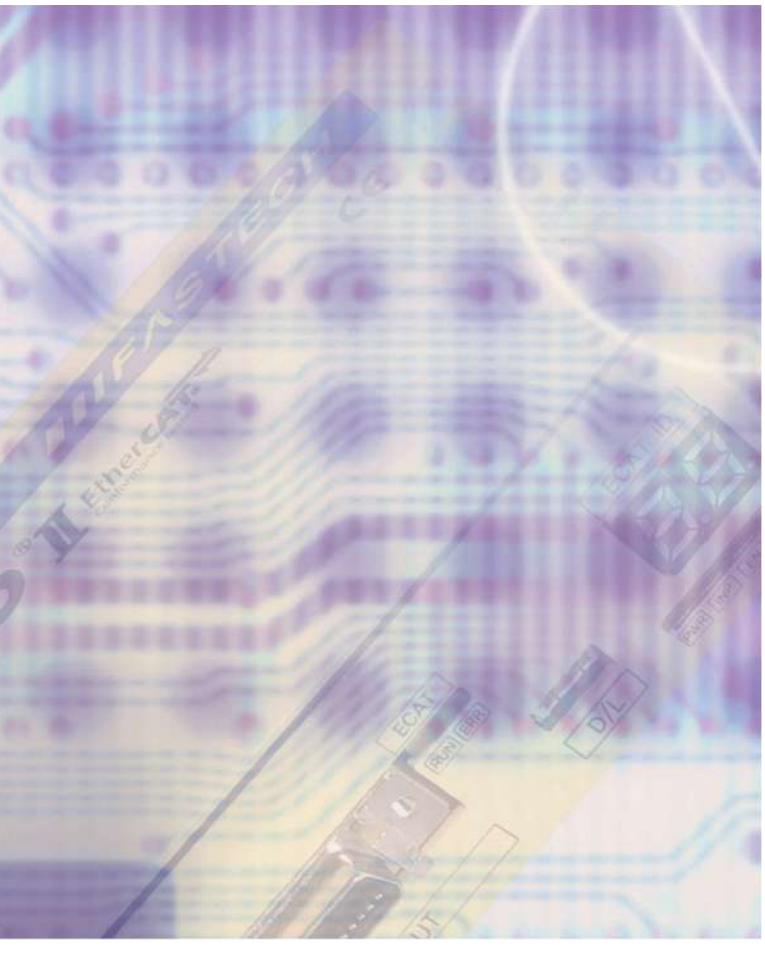


FASTECH
Fast, Accurate, Smooth Motion

Ezi-SERVO® II

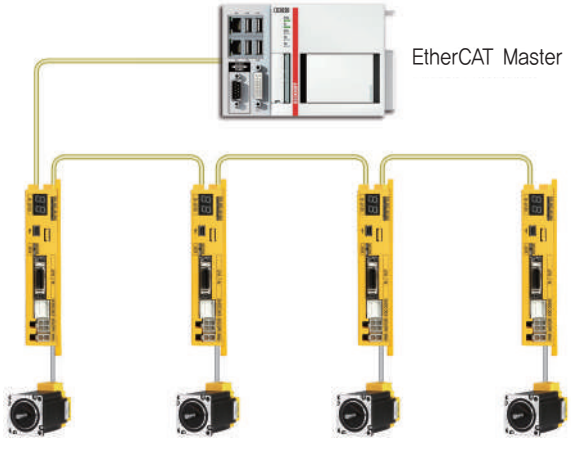
EtherCAT® Conformance tested

Closed Loop Stepping System



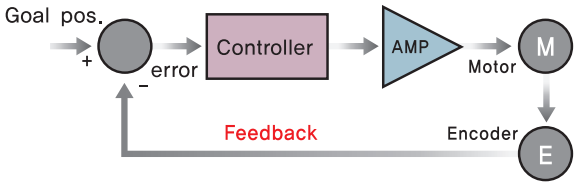
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



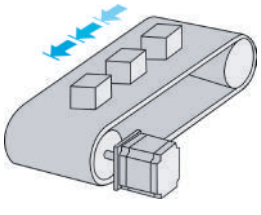
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

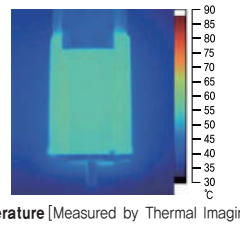
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



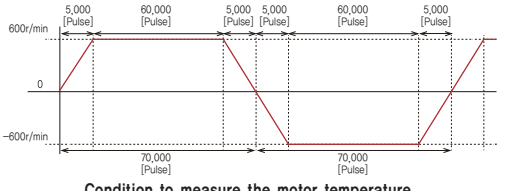
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

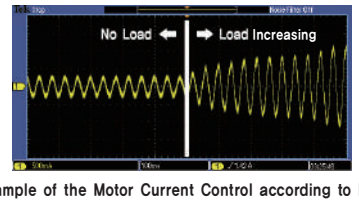
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

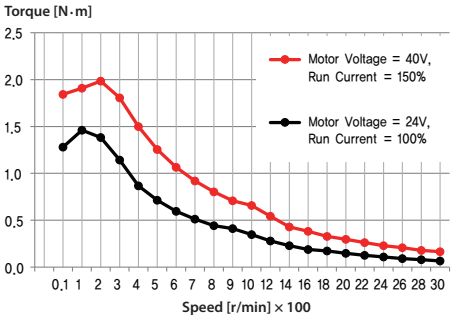


Example of the Motor Current Control according to load

5 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

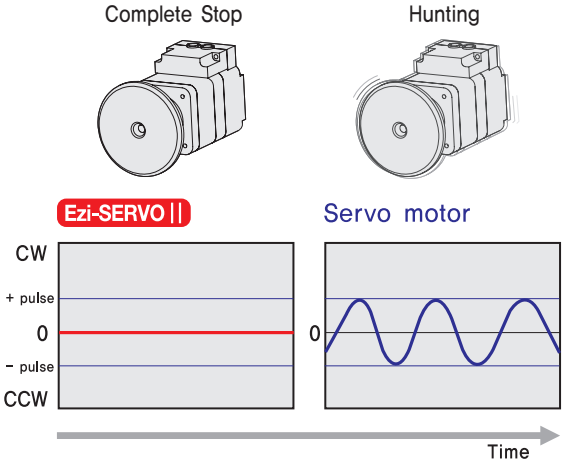


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-56L
Motor Voltage = DC40V
Input Voltage = DC24V

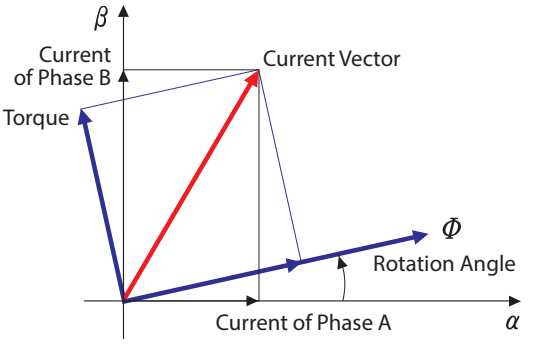
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



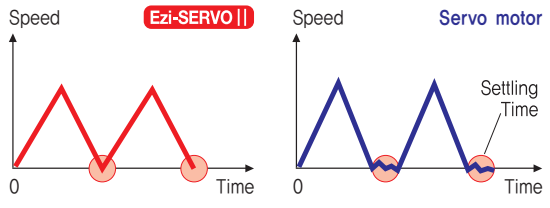
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



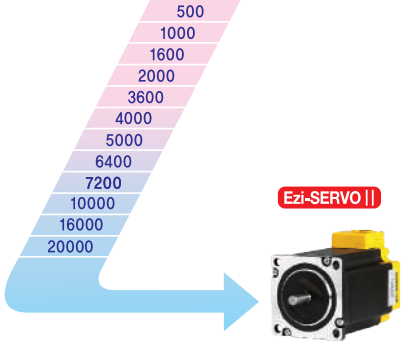
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



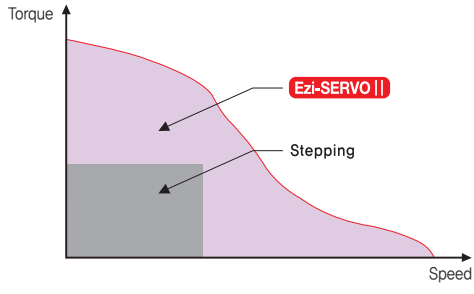
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



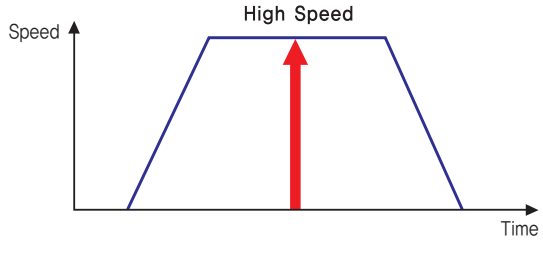
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II EtherCAT Part Numbering

Ezi-SERVO II -EC-56L-A-BK-PN5

Series Name

Type Name

EC : EtherCAT

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -EC-20M-F	EzM2-20M-F	EzS2-EC-20M-F
Ezi-SERVO II -EC-20L-F	EzM2-20L-F	EzS2-EC-20L-F
Ezi-SERVO II -EC-28S-D	EzM2-28S-D	EzS2-EC-28S-D
Ezi-SERVO II -EC-28SM-D	EzM2-28SM-D	EzS2-EC-28S-D
Ezi-SERVO II -EC-28M-D	EzM2-28M-D	EzS2-EC-28M-D
Ezi-SERVO II -EC-28MM-D	EzM2-28MM-D	EzS2-EC-28M-D
Ezi-SERVO II -EC-28L-D	EzM2-28L-D	EzS2-EC-28L-D
Ezi-SERVO II -EC-28LM-D	EzM2-28LM-D	EzS2-EC-28L-D
Ezi-SERVO II -EC-35M-D	EzM2-35M-D	EzS2-EC-35M-D
Ezi-SERVO II -EC-35MM-D	EzM2-35MM-D	EzS2-EC-35M-D
Ezi-SERVO II -EC-35L-D	EzM2-35L-D	EzS2-EC-35L-D
Ezi-SERVO II -EC-35LM-D	EzM2-35LM-D	EzS2-EC-35L-D
Ezi-SERVO II -EC-42S-A	EzM2-42S-A	EzS2-EC-42S-A
Ezi-SERVO II -EC-42S-B	EzM2-42S-B	EzS2-EC-42S-B
Ezi-SERVO II -EC-42M-A	EzM2-42M-A	EzS2-EC-42M-A
Ezi-SERVO II -EC-42M-B	EzM2-42M-B	EzS2-EC-42M-B
Ezi-SERVO II -EC-42L-A	EzM2-42L-A	EzS2-EC-42L-A
Ezi-SERVO II -EC-42L-B	EzM2-42L-B	EzS2-EC-42L-B
Ezi-SERVO II -EC-42XL-A	EzM2-42XL-A	EzS2-EC-42XL-A
Ezi-SERVO II -EC-42XL-B	EzM2-42XL-B	EzS2-EC-42XL-B
Ezi-SERVO II -EC-56S-A	EzM2-56S-A	EzS2-EC-56S-A
Ezi-SERVO II -EC-56S-B	EzM2-56S-B	EzS2-EC-56S-B
Ezi-SERVO II -EC-56M-A	EzM2-56M-A	EzS2-EC-56M-A
Ezi-SERVO II -EC-56M-B	EzM2-56M-B	EzS2-EC-56M-B
Ezi-SERVO II -EC-56L-A	EzM2-56L-A	EzS2-EC-56L-A
Ezi-SERVO II -EC-56L-B	EzM2-56L-B	EzS2-EC-56L-B
Ezi-SERVO II -EC-60S-A	EzM2-60S-A	EzS2-EC-60S-A
Ezi-SERVO II -EC-60S-B	EzM2-60S-B	EzS2-EC-60S-B
Ezi-SERVO II -EC-60M-A	EzM2-60M-A	EzS2-EC-60M-A
Ezi-SERVO II -EC-60M-B	EzM2-60M-B	EzS2-EC-60M-B
Ezi-SERVO II -EC-60L-A	EzM2-60L-A	EzS2-EC-60L-A
Ezi-SERVO II -EC-60L-B	EzM2-60L-B	EzS2-EC-60L-B
Ezi-SERVO II -EC-86M-A	EzM2-86M-A	EzS2-EC-86M-A
Ezi-SERVO II -EC-86M-B	EzM2-86M-B	EzS2-EC-86M-B
Ezi-SERVO II -EC-86L-A	EzM2-86L-A	EzS2-EC-86L-A
Ezi-SERVO II -EC-86L-B	EzM2-86L-B	EzS2-EC-86L-B
Ezi-SERVO II -EC-86XL-A	EzM2-86XL-A	EzS2-EC-86XL-A
Ezi-SERVO II -EC-86XL-B	EzM2-86XL-B	EzS2-EC-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(e.g., Ezi-SERVO II -EC-28LM-D, Ezi-SERVO II -EC-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-42S-A-BK	EzM2-42S-A-BK	EzS2-EC-42S-A
Ezi-SERVO II-EC-42S-B-BK	EzM2-42S-B-BK	EzS2-EC-42S-B
Ezi-SERVO II-EC-42M-A-BK	EzM2-42M-A-BK	EzS2-EC-42M-A
Ezi-SERVO II-EC-42M-B-BK	EzM2-42M-B-BK	EzS2-EC-42M-B
Ezi-SERVO II-EC-42L-A-BK	EzM2-42L-A-BK	EzS2-EC-42L-A
Ezi-SERVO II-EC-42L-B-BK	EzM2-42L-B-BK	EzS2-EC-42L-B
Ezi-SERVO II-EC-42XL-A-BK	EzM2-42XL-A-BK	EzS2-EC-42XL-A
Ezi-SERVO II-EC-42XL-B-BK	EzM2-42XL-B-BK	EzS2-EC-42XL-B
Ezi-SERVO II-EC-56S-A-BK	EzM2-56S-A-BK	EzS2-EC-56S-A
Ezi-SERVO II-EC-56S-B-BK	EzM2-56S-B-BK	EzS2-EC-56S-B
Ezi-SERVO II-EC-56M-A-BK	EzM2-56M-A-BK	EzS2-EC-56M-A
Ezi-SERVO II-EC-56M-B-BK	EzM2-56M-B-BK	EzS2-EC-56M-B
Ezi-SERVO II-EC-56L-A-BK	EzM2-56L-A-BK	EzS2-EC-56L-A
Ezi-SERVO II-EC-56L-B-BK	EzM2-56L-B-BK	EzS2-EC-56L-B
Ezi-SERVO II-EC-60S-A-BK	EzM2-60S-A-BK	EzS2-EC-60S-A
Ezi-SERVO II-EC-60S-B-BK	EzM2-60S-B-BK	EzS2-EC-60S-B
Ezi-SERVO II-EC-60M-A-BK	EzM2-60M-A-BK	EzS2-EC-60M-A
Ezi-SERVO II-EC-60M-B-BK	EzM2-60M-B-BK	EzS2-EC-60M-B
Ezi-SERVO II-EC-60L-A-BK	EzM2-60L-A-BK	EzS2-EC-60L-A
Ezi-SERVO II-EC-60L-B-BK	EzM2-60L-B-BK	EzS2-EC-60L-B
Ezi-SERVO II-EC-86M-A-BK	EzM2-86M-A-BK	EzS2-EC-86M-A
Ezi-SERVO II-EC-86M-B-BK	EzM2-86M-B-BK	EzS2-EC-86M-B
Ezi-SERVO II-EC-86L-A-BK	EzM2-86L-A-BK	EzS2-EC-86L-A
Ezi-SERVO II-EC-86L-B-BK	EzM2-86L-B-BK	EzS2-EC-86L-B
Ezi-SERVO II-EC-86XL-A-BK	EzM2-86XL-A-BK	EzS2-EC-86XL-A
Ezi-SERVO II-EC-86XL-B-BK	EzM2-86XL-B-BK	EzS2-EC-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-42S-A-PN3	EzM2-42S-A-PN3	EzS2-EC-42S-A	1:3
Ezi-SERVO II-EC-42S-B-PN3	EzM2-42S-B-PN3	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN5	EzM2-42S-A-PN5	EzS2-EC-42S-A	1:5
Ezi-SERVO II-EC-42S-B-PN5	EzM2-42S-B-PN5	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN8	EzM2-42S-A-PN8	EzS2-EC-42S-A	1:8
Ezi-SERVO II-EC-42S-B-PN8	EzM2-42S-B-PN8	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN10	EzM2-42S-A-PN10	EzS2-EC-42S-A	1:10
Ezi-SERVO II-EC-42S-B-PN10	EzM2-42S-B-PN10	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN15	EzM2-42S-A-PN15	EzS2-EC-42S-A	1:15
Ezi-SERVO II-EC-42S-B-PN15	EzM2-42S-B-PN15	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN25	EzM2-42S-A-PN25	EzS2-EC-42S-A	1:25
Ezi-SERVO II-EC-42S-B-PN25	EzM2-42S-B-PN25	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN40	EzM2-42S-A-PN40	EzS2-EC-42S-A	1:40
Ezi-SERVO II-EC-42S-B-PN40	EzM2-42S-B-PN40	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42S-A-PN50	EzM2-42S-A-PN50	EzS2-EC-42S-A	1:50
Ezi-SERVO II-EC-42S-B-PN50	EzM2-42S-B-PN50	EzS2-EC-42S-B	
Ezi-SERVO II-EC-42M-A-PN3	EzM2-42M-A-PN3	EzS2-EC-42M-A	1:3
Ezi-SERVO II-EC-42M-B-PN3	EzM2-42M-B-PN3	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN5	EzM2-42M-A-PN5	EzS2-EC-42M-A	1:5
Ezi-SERVO II-EC-42M-B-PN5	EzM2-42M-B-PN5	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN8	EzM2-42M-A-PN8	EzS2-EC-42M-A	1:8
Ezi-SERVO II-EC-42M-B-PN8	EzM2-42M-B-PN8	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN10	EzM2-42M-A-PN10	EzS2-EC-42M-A	1:10
Ezi-SERVO II-EC-42M-B-PN10	EzM2-42M-B-PN10	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN15	EzM2-42M-A-PN15	EzS2-EC-42M-A	1:15
Ezi-SERVO II-EC-42M-B-PN15	EzM2-42M-B-PN15	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN25	EzM2-42M-A-PN25	EzS2-EC-42M-A	1:25
Ezi-SERVO II-EC-42M-B-PN25	EzM2-42M-B-PN25	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN40	EzM2-42M-A-PN40	EzS2-EC-42M-A	1:40
Ezi-SERVO II-EC-42M-B-PN40	EzM2-42M-B-PN40	EzS2-EC-42M-B	
Ezi-SERVO II-EC-42M-A-PN50	EzM2-42M-A-PN50	EzS2-EC-42M-A	1:50
Ezi-SERVO II-EC-42M-B-PN50	EzM2-42M-B-PN50	EzS2-EC-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-42L-A-PN3	EzM2-42L-A-PN3	EzS2-EC-42L-A	1:3
Ezi-SERVO II-EC-42L-B-PN3	EzM2-42L-B-PN3	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN5	EzM2-42L-A-PN5	EzS2-EC-42L-A	1:5
Ezi-SERVO II-EC-42L-B-PN5	EzM2-42L-B-PN5	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN8	EzM2-42L-A-PN8	EzS2-EC-42L-A	1:8
Ezi-SERVO II-EC-42L-B-PN8	EzM2-42L-B-PN8	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN10	EzM2-42L-A-PN10	EzS2-EC-42L-A	1:10
Ezi-SERVO II-EC-42L-B-PN10	EzM2-42L-B-PN10	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN15	EzM2-42L-A-PN15	EzS2-EC-42L-A	1:15
Ezi-SERVO II-EC-42L-B-PN15	EzM2-42L-B-PN15	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN25	EzM2-42L-A-PN25	EzS2-EC-42L-A	1:25
Ezi-SERVO II-EC-42L-B-PN25	EzM2-42L-B-PN25	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN40	EzM2-42L-A-PN40	EzS2-EC-42L-A	1:40
Ezi-SERVO II-EC-42L-B-PN40	EzM2-42L-B-PN40	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42L-A-PN50	EzM2-42L-A-PN50	EzS2-EC-42L-A	1:50
Ezi-SERVO II-EC-42L-B-PN50	EzM2-42L-B-PN50	EzS2-EC-42L-B	
Ezi-SERVO II-EC-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-EC-42XL-A	1:3
Ezi-SERVO II-EC-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-EC-42XL-A	1:5
Ezi-SERVO II-EC-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-EC-42XL-A	1:8
Ezi-SERVO II-EC-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-EC-42XL-A	1:10
Ezi-SERVO II-EC-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-EC-42XL-A	1:15
Ezi-SERVO II-EC-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-EC-42XL-A	1:25
Ezi-SERVO II-EC-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-EC-42XL-A	1:40
Ezi-SERVO II-EC-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-EC-42XL-A	1:50
Ezi-SERVO II-EC-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-EC-42XL-B	
Ezi-SERVO II-EC-56S-A-PN3	EzM2-56S-A-PN3	EzS2-EC-56S-A	1:3
Ezi-SERVO II-EC-56S-B-PN3	EzM2-56S-B-PN3	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN5	EzM2-56S-A-PN5	EzS2-EC-56S-A	1:5
Ezi-SERVO II-EC-56S-B-PN5	EzM2-56S-B-PN5	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN8	EzM2-56S-A-PN8	EzS2-EC-56S-A	1:8
Ezi-SERVO II-EC-56S-B-PN8	EzM2-56S-B-PN8	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN10	EzM2-56S-A-PN10	EzS2-EC-56S-A	1:10
Ezi-SERVO II-EC-56S-B-PN10	EzM2-56S-B-PN10	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN15	EzM2-56S-A-PN15	EzS2-EC-56S-A	1:15
Ezi-SERVO II-EC-56S-B-PN15	EzM2-56S-B-PN15	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN25	EzM2-56S-A-PN25	EzS2-EC-56S-A	1:25
Ezi-SERVO II-EC-56S-B-PN25	EzM2-56S-B-PN25	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN40	EzM2-56S-A-PN40	EzS2-EC-56S-A	1:40
Ezi-SERVO II-EC-56S-B-PN40	EzM2-56S-B-PN40	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56S-A-PN50	EzM2-56S-A-PN50	EzS2-EC-56S-A	1:50
Ezi-SERVO II-EC-56S-B-PN50	EzM2-56S-B-PN50	EzS2-EC-56S-B	
Ezi-SERVO II-EC-56M-A-PN3	EzM2-56M-A-PN3	EzS2-EC-56M-A	1:3
Ezi-SERVO II-EC-56M-B-PN3	EzM2-56M-B-PN3	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN5	EzM2-56M-A-PN5	EzS2-EC-56M-A	1:5
Ezi-SERVO II-EC-56M-B-PN5	EzM2-56M-B-PN5	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN8	EzM2-56M-A-PN8	EzS2-EC-56M-A	1:8
Ezi-SERVO II-EC-56M-B-PN8	EzM2-56M-B-PN8	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN10	EzM2-56M-A-PN10	EzS2-EC-56M-A	1:10
Ezi-SERVO II-EC-56M-B-PN10	EzM2-56M-B-PN10	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN15	EzM2-56M-A-PN15	EzS2-EC-56M-A	1:15
Ezi-SERVO II-EC-56M-B-PN15	EzM2-56M-B-PN15	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN25	EzM2-56M-A-PN25	EzS2-EC-56M-A	1:25
Ezi-SERVO II-EC-56M-B-PN25	EzM2-56M-B-PN25	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN40	EzM2-56M-A-PN40	EzS2-EC-56M-A	1:40
Ezi-SERVO II-EC-56M-B-PN40	EzM2-56M-B-PN40	EzS2-EC-56M-B	
Ezi-SERVO II-EC-56M-A-PN50	EzM2-56M-A-PN50	EzS2-EC-56M-A	1:50
Ezi-SERVO II-EC-56M-B-PN50	EzM2-56M-B-PN50	EzS2-EC-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-56L-A	1:3
Ezi-SERVO II-EC-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-56L-A	1:5
Ezi-SERVO II-EC-56L-B-PN5	EzM2-56L-B-PN5	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN8	EzM2-56L-A-PN8	EzS2-EC-56L-A	1:8
Ezi-SERVO II-EC-56L-B-PN8	EzM2-56L-B-PN8	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN10	EzM2-56L-A-PN10	EzS2-EC-56L-A	1:10
Ezi-SERVO II-EC-56L-B-PN10	EzM2-56L-B-PN10	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN15	EzM2-56L-A-PN15	EzS2-EC-56L-A	1:15
Ezi-SERVO II-EC-56L-B-PN15	EzM2-56L-B-PN15	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN25	EzM2-56L-A-PN25	EzS2-EC-56L-A	1:25
Ezi-SERVO II-EC-56L-B-PN25	EzM2-56L-B-PN25	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN40	EzM2-56L-A-PN40	EzS2-EC-56L-A	1:40
Ezi-SERVO II-EC-56L-B-PN40	EzM2-56L-B-PN40	EzS2-EC-56L-B	
Ezi-SERVO II-EC-56L-A-PN50	EzM2-56L-A-PN50	EzS2-EC-56L-A	1:50
Ezi-SERVO II-EC-56L-B-PN50	EzM2-56L-B-PN50	EzS2-EC-56L-B	
Ezi-SERVO II-EC-60S-A-PN3	EzM2-60S-A-PN3	EzS2-EC-60S-A	1:3
Ezi-SERVO II-EC-60S-B-PN3	EzM2-60S-B-PN3	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN5	EzM2-60S-A-PN5	EzS2-EC-60S-A	1:5
Ezi-SERVO II-EC-60S-B-PN5	EzM2-60S-B-PN5	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN8	EzM2-60S-A-PN8	EzS2-EC-60S-A	1:8
Ezi-SERVO II-EC-60S-B-PN8	EzM2-60S-B-PN8	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN10	EzM2-60S-A-PN10	EzS2-EC-60S-A	1:10
Ezi-SERVO II-EC-60S-B-PN10	EzM2-60S-B-PN10	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN15	EzM2-60S-A-PN15	EzS2-EC-60S-A	1:15
Ezi-SERVO II-EC-60S-B-PN15	EzM2-60S-B-PN15	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN25	EzM2-60S-A-PN25	EzS2-EC-60S-A	1:25
Ezi-SERVO II-EC-60S-B-PN25	EzM2-60S-B-PN25	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN40	EzM2-60S-A-PN40	EzS2-EC-60S-A	1:40
Ezi-SERVO II-EC-60S-B-PN40	EzM2-60S-B-PN40	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60S-A-PN50	EzM2-60S-A-PN50	EzS2-EC-60S-A	1:50
Ezi-SERVO II-EC-60S-B-PN50	EzM2-60S-B-PN50	EzS2-EC-60S-B	
Ezi-SERVO II-EC-60M-A-PN3	EzM2-60M-A-PN3	EzS2-EC-60M-A	1:3
Ezi-SERVO II-EC-60M-B-PN3	EzM2-60M-B-PN3	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN5	EzM2-60M-A-PN5	EzS2-EC-60M-A	1:5
Ezi-SERVO II-EC-60M-B-PN5	EzM2-60M-B-PN5	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN8	EzM2-60M-A-PN8	EzS2-EC-60M-A	1:8
Ezi-SERVO II-EC-60M-B-PN8	EzM2-60M-B-PN8	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN10	EzM2-60M-A-PN10	EzS2-EC-60M-A	1:10
Ezi-SERVO II-EC-60M-B-PN10	EzM2-60M-B-PN10	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN15	EzM2-60M-A-PN15	EzS2-EC-60M-A	1:15
Ezi-SERVO II-EC-60M-B-PN15	EzM2-60M-B-PN15	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN25	EzM2-60M-A-PN25	EzS2-EC-60M-A	1:25
Ezi-SERVO II-EC-60M-B-PN25	EzM2-60M-B-PN25	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN40	EzM2-60M-A-PN40	EzS2-EC-60M-A	1:40
Ezi-SERVO II-EC-60M-B-PN40	EzM2-60M-B-PN40	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60M-A-PN50	EzM2-60M-A-PN50	EzS2-EC-60M-A	1:50
Ezi-SERVO II-EC-60M-B-PN50	EzM2-60M-B-PN50	EzS2-EC-60M-B	
Ezi-SERVO II-EC-60L-A-PN3	EzM2-60L-A-PN3	EzS2-EC-60L-A	1:3
Ezi-SERVO II-EC-60L-B-PN3	EzM2-60L-B-PN3	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN5	EzM2-60L-A-PN5	EzS2-EC-60L-A	1:5
Ezi-SERVO II-EC-60L-B-PN5	EzM2-60L-B-PN5	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN8	EzM2-60L-A-PN8	EzS2-EC-60L-A	1:8
Ezi-SERVO II-EC-60L-B-PN8	EzM2-60L-B-PN8	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN10	EzM2-60L-A-PN10	EzS2-EC-60L-A	1:10
Ezi-SERVO II-EC-60L-B-PN10	EzM2-60L-B-PN10	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN15	EzM2-60L-A-PN15	EzS2-EC-60L-A	1:15
Ezi-SERVO II-EC-60L-B-PN15	EzM2-60L-B-PN15	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN25	EzM2-60L-A-PN25	EzS2-EC-60L-A	1:25
Ezi-SERVO II-EC-60L-B-PN25	EzM2-60L-B-PN25	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN40	EzM2-60L-A-PN40	EzS2-EC-60L-A	1:40
Ezi-SERVO II-EC-60L-B-PN40	EzM2-60L-B-PN40	EzS2-EC-60L-B	
Ezi-SERVO II-EC-60L-A-PN50	EzM2-60L-A-PN50	EzS2-EC-60L-A	1:50
Ezi-SERVO II-EC-60L-B-PN50	EzM2-60L-B-PN50	EzS2-EC-60L-B	

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-86M-A-PN3	EzM2-86M-A-PN3	EzS2-EC-86M-A	1:3
Ezi-SERVO II-EC-86M-B-PN3	EzM2-86M-B-PN3	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN5	EzM2-86M-A-PN5	EzS2-EC-86M-A	1:5
Ezi-SERVO II-EC-86M-B-PN5	EzM2-86M-B-PN5	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN8	EzM2-86M-A-PN8	EzS2-EC-86M-A	1:8
Ezi-SERVO II-EC-86M-B-PN8	EzM2-86M-B-PN8	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN10	EzM2-86M-A-PN10	EzS2-EC-86M-A	1:10
Ezi-SERVO II-EC-86M-B-PN10	EzM2-86M-B-PN10	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN15	EzM2-86M-A-PN15	EzS2-EC-86M-A	1:15
Ezi-SERVO II-EC-86M-B-PN15	EzM2-86M-B-PN15	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN25	EzM2-86M-A-PN25	EzS2-EC-86M-A	1:25
Ezi-SERVO II-EC-86M-B-PN25	EzM2-86M-B-PN25	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN40	EzM2-86M-A-PN40	EzS2-EC-86M-A	1:40
Ezi-SERVO II-EC-86M-B-PN40	EzM2-86M-B-PN40	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86M-A-PN50	EzM2-86M-A-PN50	EzS2-EC-86M-A	1:50
Ezi-SERVO II-EC-86M-B-PN50	EzM2-86M-B-PN50	EzS2-EC-86M-B	
Ezi-SERVO II-EC-86L-A-PN3	EzM2-86L-A-PN3	EzS2-EC-86L-A	1:3
Ezi-SERVO II-EC-86L-B-PN3	EzM2-86L-B-PN3	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN5	EzM2-86L-A-PN5	EzS2-EC-86L-A	1:5
Ezi-SERVO II-EC-86L-B-PN5	EzM2-86L-B-PN5	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN8	EzM2-86L-A-PN8	EzS2-EC-86L-A	1:8
Ezi-SERVO II-EC-86L-B-PN8	EzM2-86L-B-PN8	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN10	EzM2-86L-A-PN10	EzS2-EC-86L-A	1:10
Ezi-SERVO II-EC-86L-B-PN10	EzM2-86L-B-PN10	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN15	EzM2-86L-A-PN15	EzS2-EC-86L-A	1:15
Ezi-SERVO II-EC-86L-B-PN15	EzM2-86L-B-PN15	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN25	EzM2-86L-A-PN25	EzS2-EC-86L-A	1:25
Ezi-SERVO II-EC-86L-B-PN25	EzM2-86L-B-PN25	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN40	EzM2-86L-A-PN40	EzS2-EC-86L-A	1:40
Ezi-SERVO II-EC-86L-B-PN40	EzM2-86L-B-PN40	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86L-A-PN50	EzM2-86L-A-PN50	EzS2-EC-86L-A	1:50
Ezi-SERVO II-EC-86L-B-PN50	EzM2-86L-B-PN50	EzS2-EC-86L-B	
Ezi-SERVO II-EC-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-EC-86XL-A	1:3
Ezi-SERVO II-EC-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-EC-86XL-A	1:5
Ezi-SERVO II-EC-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-EC-86XL-A	1:8
Ezi-SERVO II-EC-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-EC-86XL-A	1:10
Ezi-SERVO II-EC-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-EC-86XL-A	1:15
Ezi-SERVO II-EC-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-EC-86XL-A	1:25
Ezi-SERVO II-EC-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-EC-86XL-A	1:40
Ezi-SERVO II-EC-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-EC-86XL-B	
Ezi-SERVO II-EC-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-EC-86XL-A	1:50
Ezi-SERVO II-EC-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-EC-86XL-B	

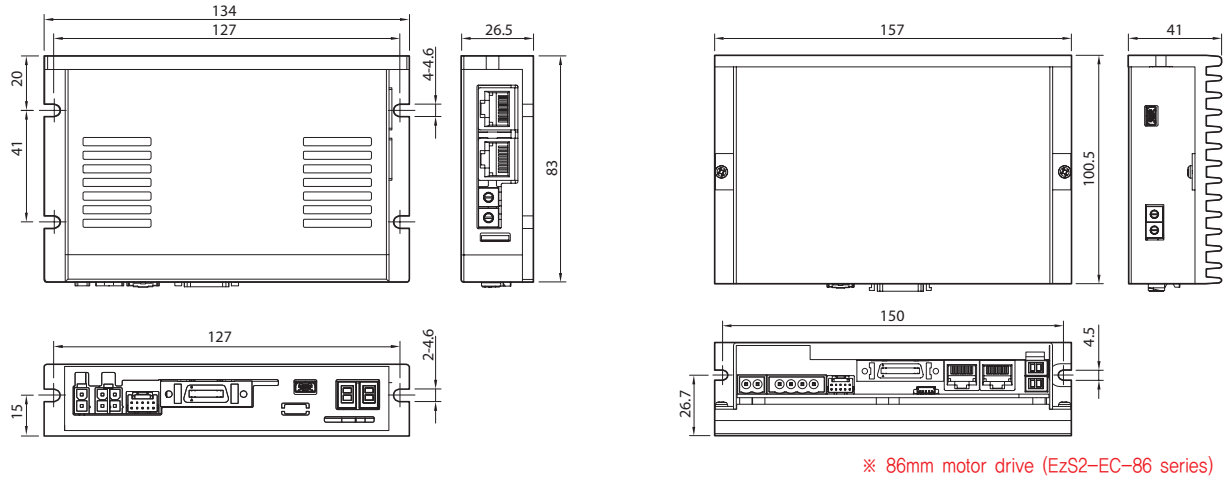
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Drive Model		EzS2-EC-20 series	EzS2-EC-28 series	EzS2-EC-35 series	EzS2-EC-42 series	EzS2-EC-56 series	EzS2-EC-60 series	EzS2-EC-86 series
Input Voltage		DC24V±10%						DC40~70V
Control Method		Closed-loop control with 32 bit MCU						
Current Consumption		Max. 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000r/min *1						
	Resolution	(Selectable by parameter)						
	Error Type	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power status, In-Position status, Servo On status, Alarm status						
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)						
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode						
	Synchronization	Free Run, SM Event, DC SYNC Event						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler Input)						
	Output Signals	6 programmable outputs (Photocoupler Output), 1 Brake output						

Encoder Resolution [P/R]	Configurable Resolution [P/R]									
4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000
10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	
16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000
20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



※ 86mm motor drive (EzS2-EC-86 series)

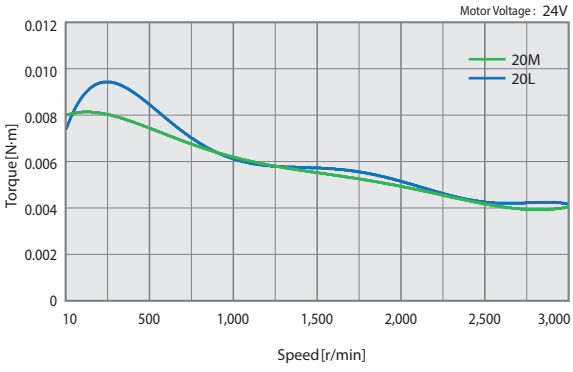
Specifications of Motor

MODEL				EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
			UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

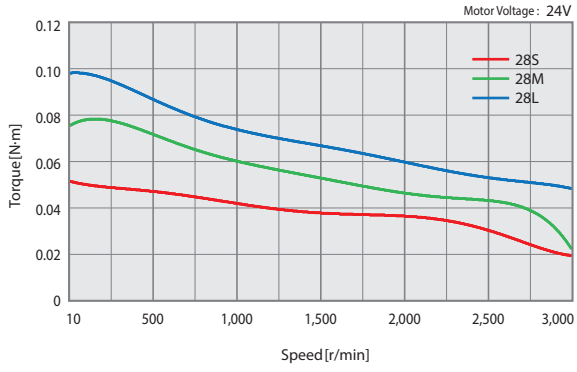
MODEL				EzM2-56 series			EzM2-60 series			EzM2-86 series		
			UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419	2.355	3.941	5.453
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

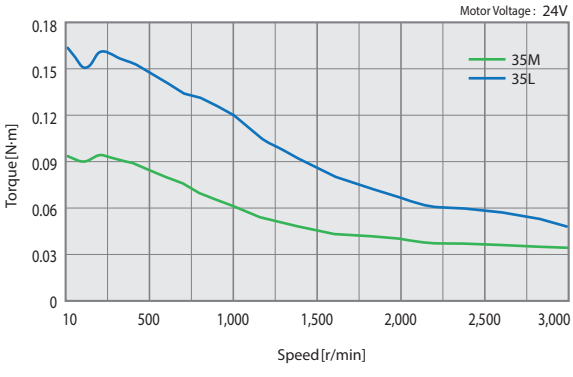
Ezi-SERVO II-EC-20 series



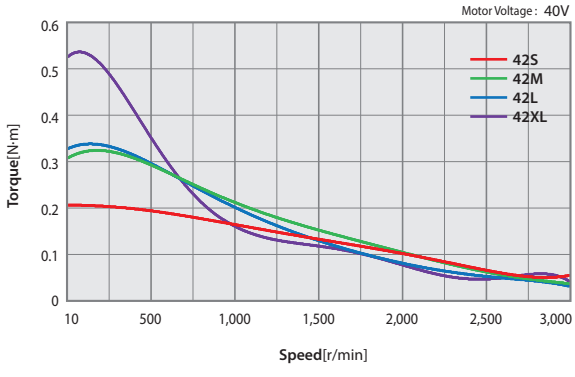
Ezi-SERVO II-EC-28 series



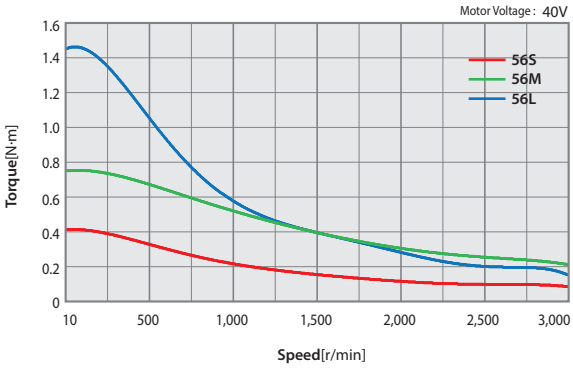
Ezi-SERVO II-EC-35 series



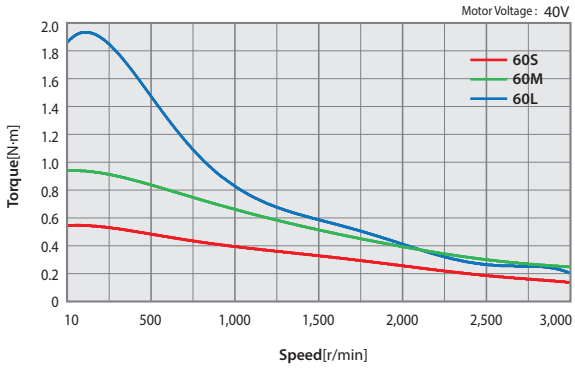
Ezi-SERVO II-EC-42 series



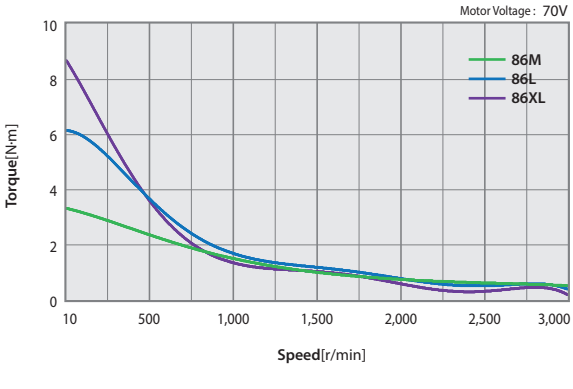
Ezi-SERVO II-EC-56 series



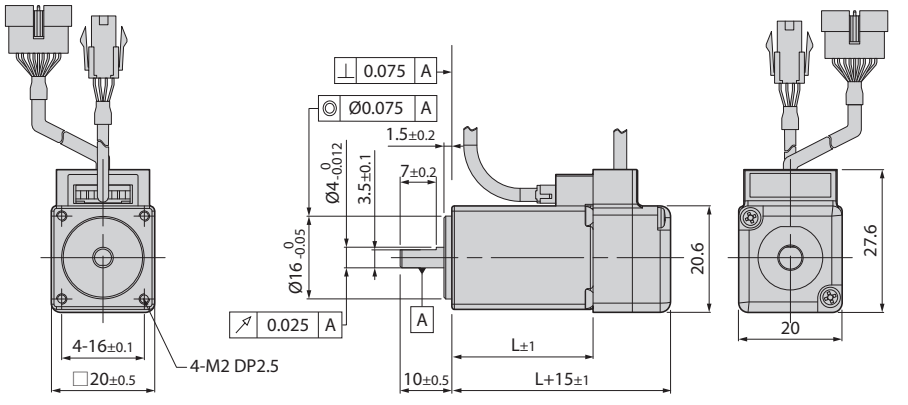
Ezi-SERVO II-EC-60 series



Ezi-SERVO II-EC-86 series

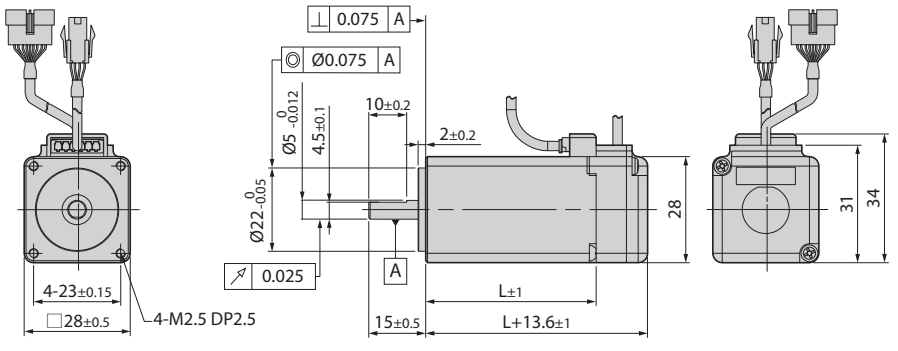


● Dimensions of Motor [mm]



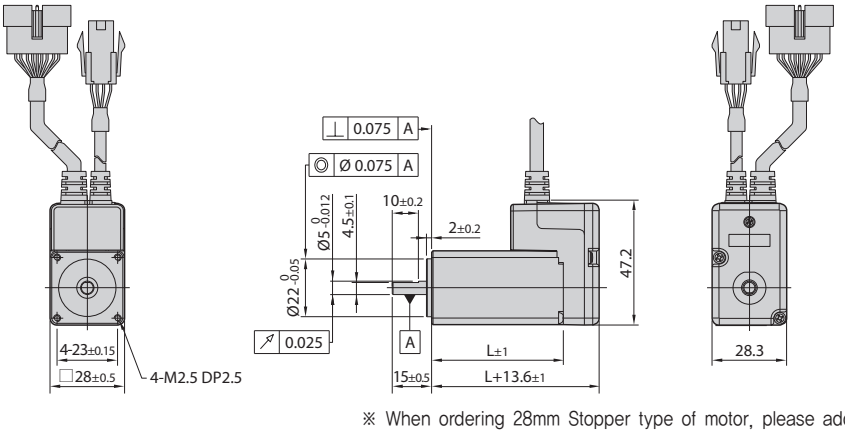
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

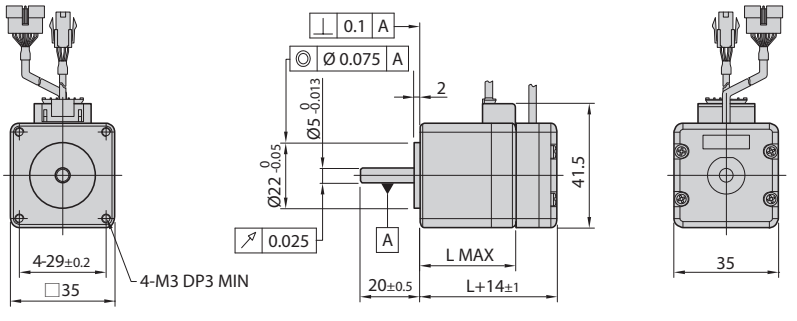
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

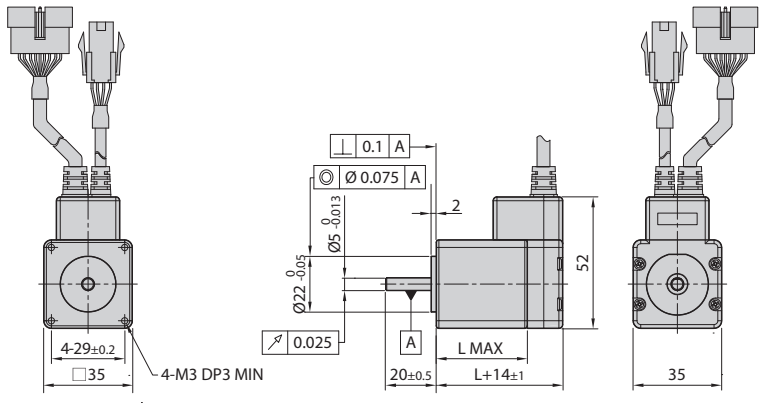
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

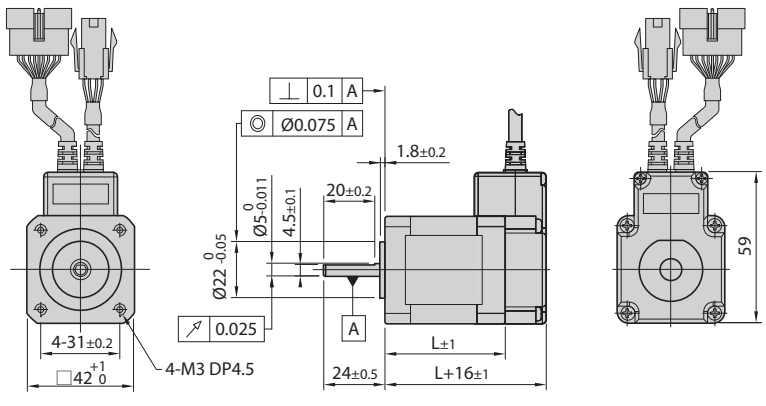
● Dimensions of Motor [mm]



35mm (Stopper type)

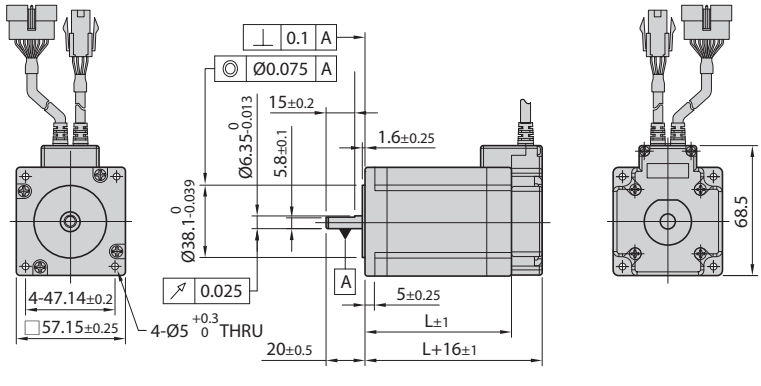
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

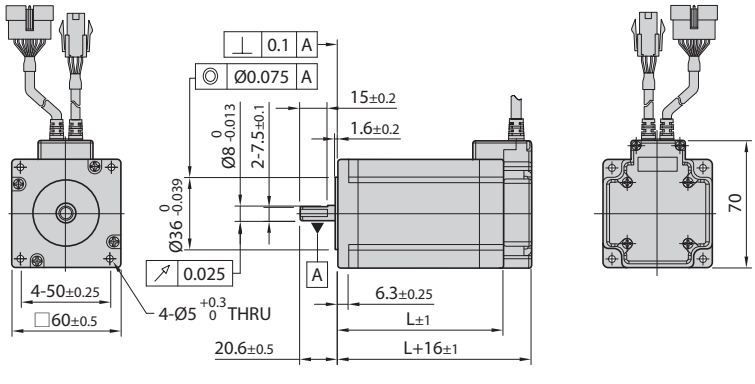
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

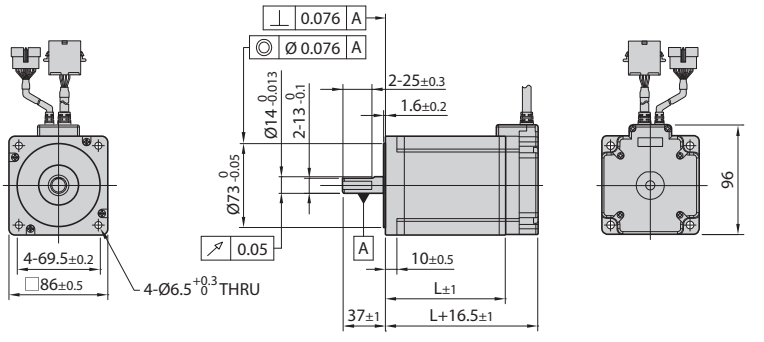
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

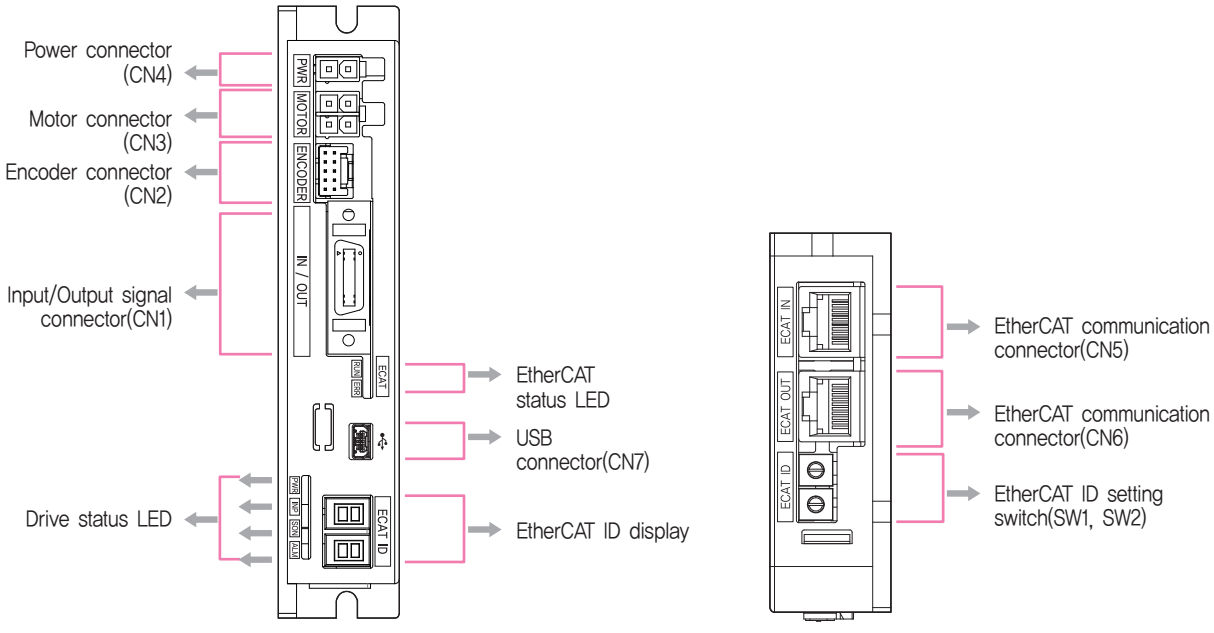
● Dimensions of Motor [mm]



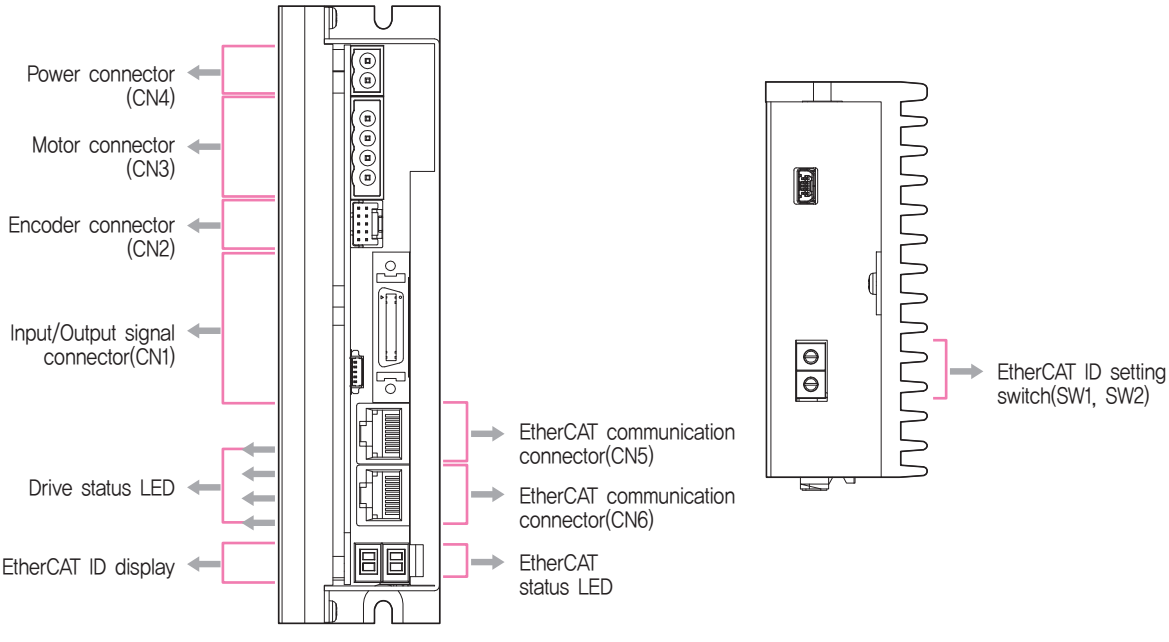
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

Settings and Operation

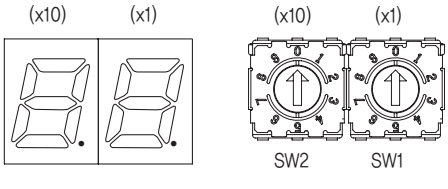


◆ 86mm Motor Drive (EzS2-EC-86 series)



1. EtherCAT ID Display and Setting Switch(SW1, SW2)

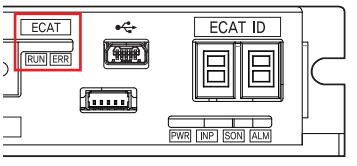
Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).



2. EtherCAT Status LED

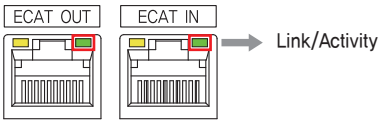
LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP



Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Communication Data Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Description
Link/ Activity	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



3. Drive Status LED

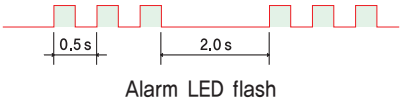
LED informs operation status of the drive.

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	LED is turned ON when Positioning error reaches within the preset pulse after the positioning is complete
SON	Orange	Servo ON / OFF Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the the number of LED blinking

No.	Error Code *4	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
3	E-003	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	E-008	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	E-010	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

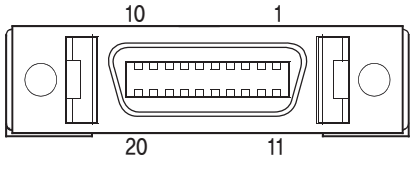
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default setting value is 180 °, and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of EtherCAT ID.
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

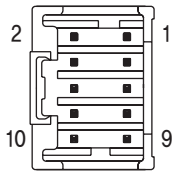
4. Input/Output Signal Connector (CN1)

NO.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE−	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



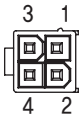
5. Encoder Connector (CN2)

NO.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

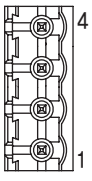


6. Motor Connector (CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



NO.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



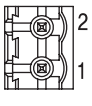
※ 86mm motor drive.

7. Power Connector (CN4)

NO.	Function	I/O
1	DC24V	Input
2	GND	Input



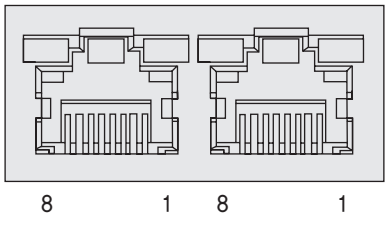
NO.	Function	I/O
1	GND	Input
2	DC40~70V	Input



※ 86mm motor drive.

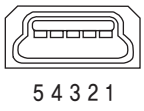
8. EtherCAT Communication Connector (CN5, CN6)

NO.	Function	NO.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connection hood	F.GND
5	-----		

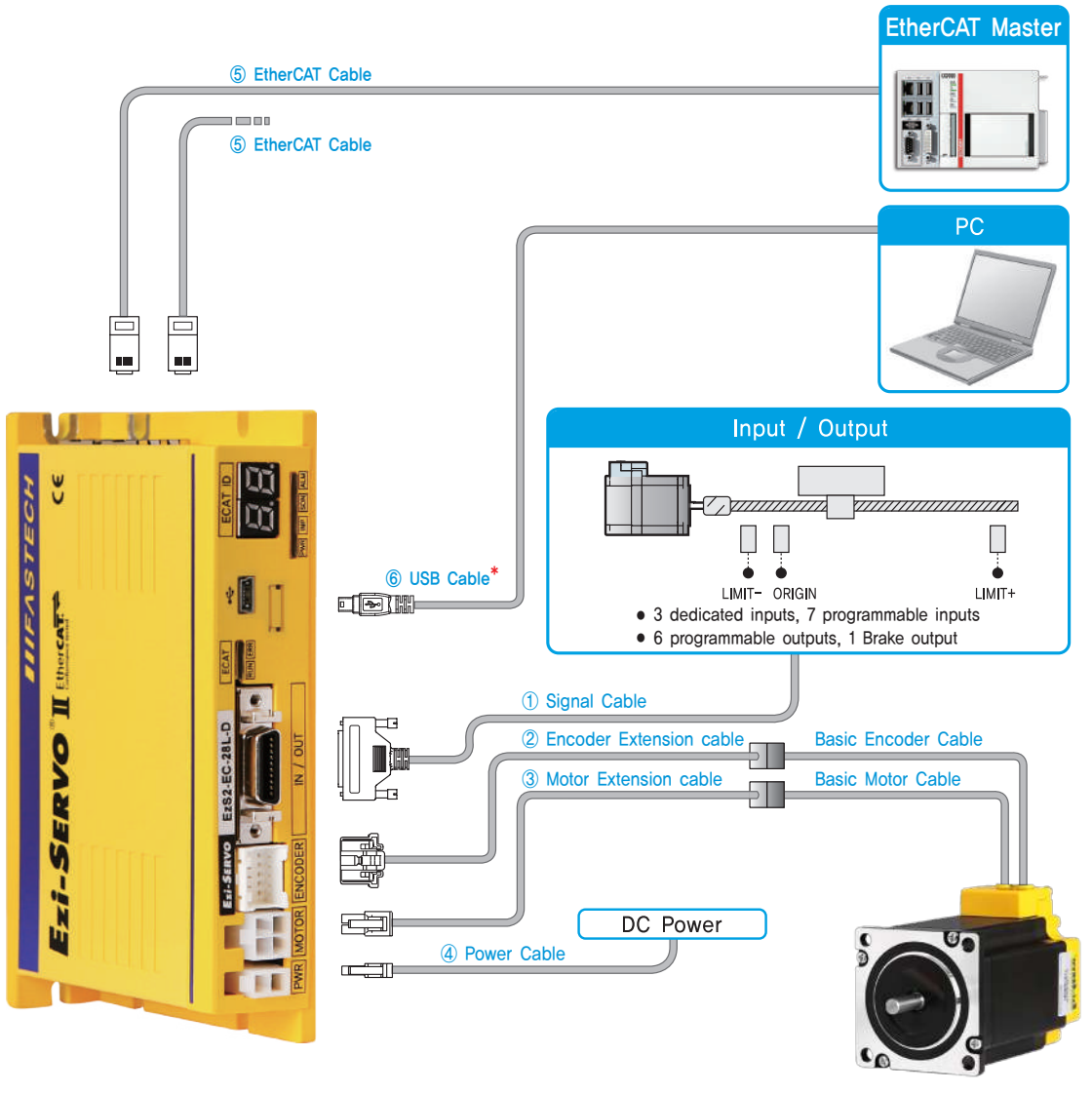


9. USB Connector (CN7)

NO.	Function
1	VBUS
2	D−
3	D+
4	---
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II EtherCAT drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

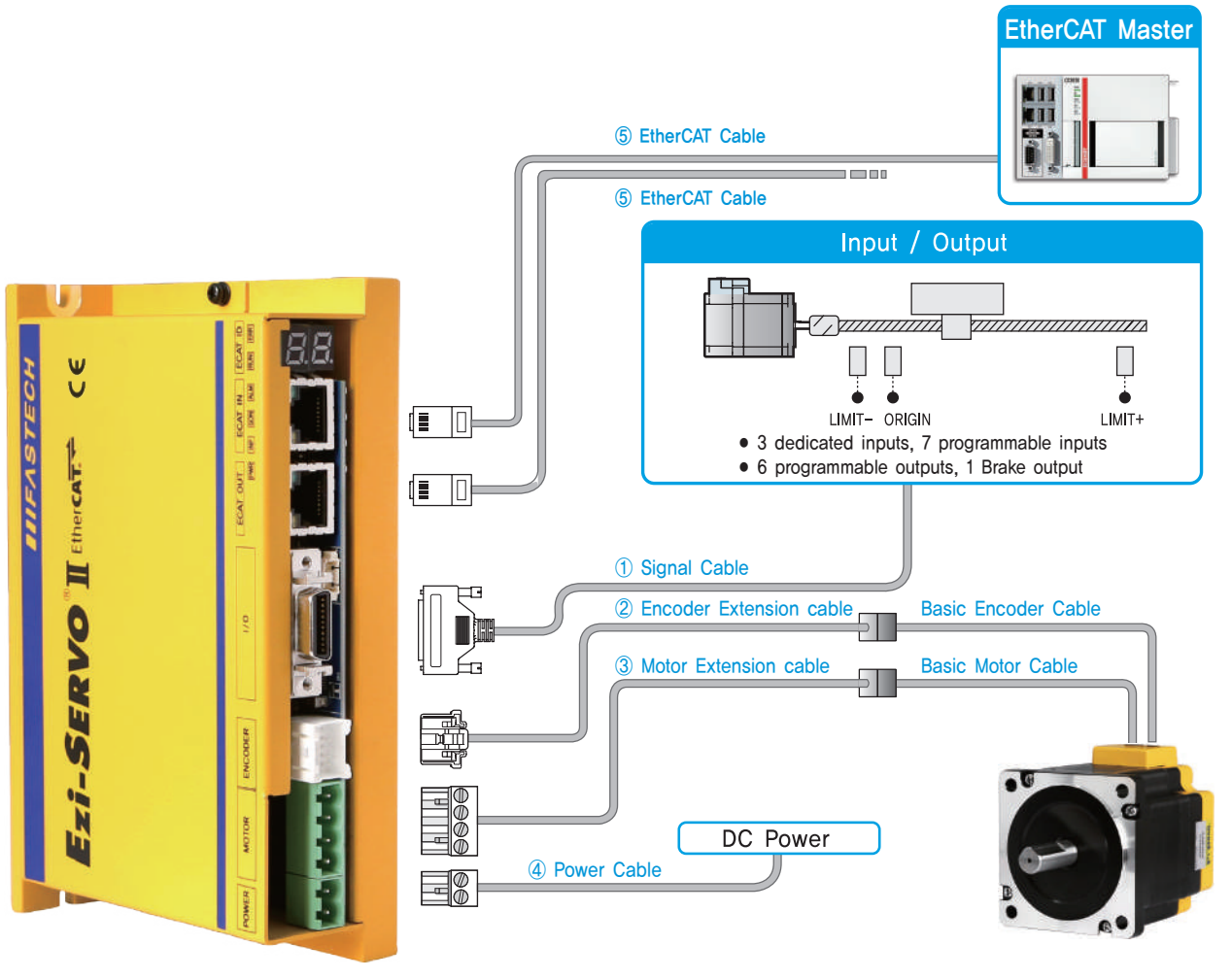
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II EtherCAT and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	3191-4R1	MOLEX
		Terminal	1381T	
Power (CN4)		Terminal Block	AK950-2	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT [86mm motor] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT [86mm motor] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

⑤ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II EtherCAT [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

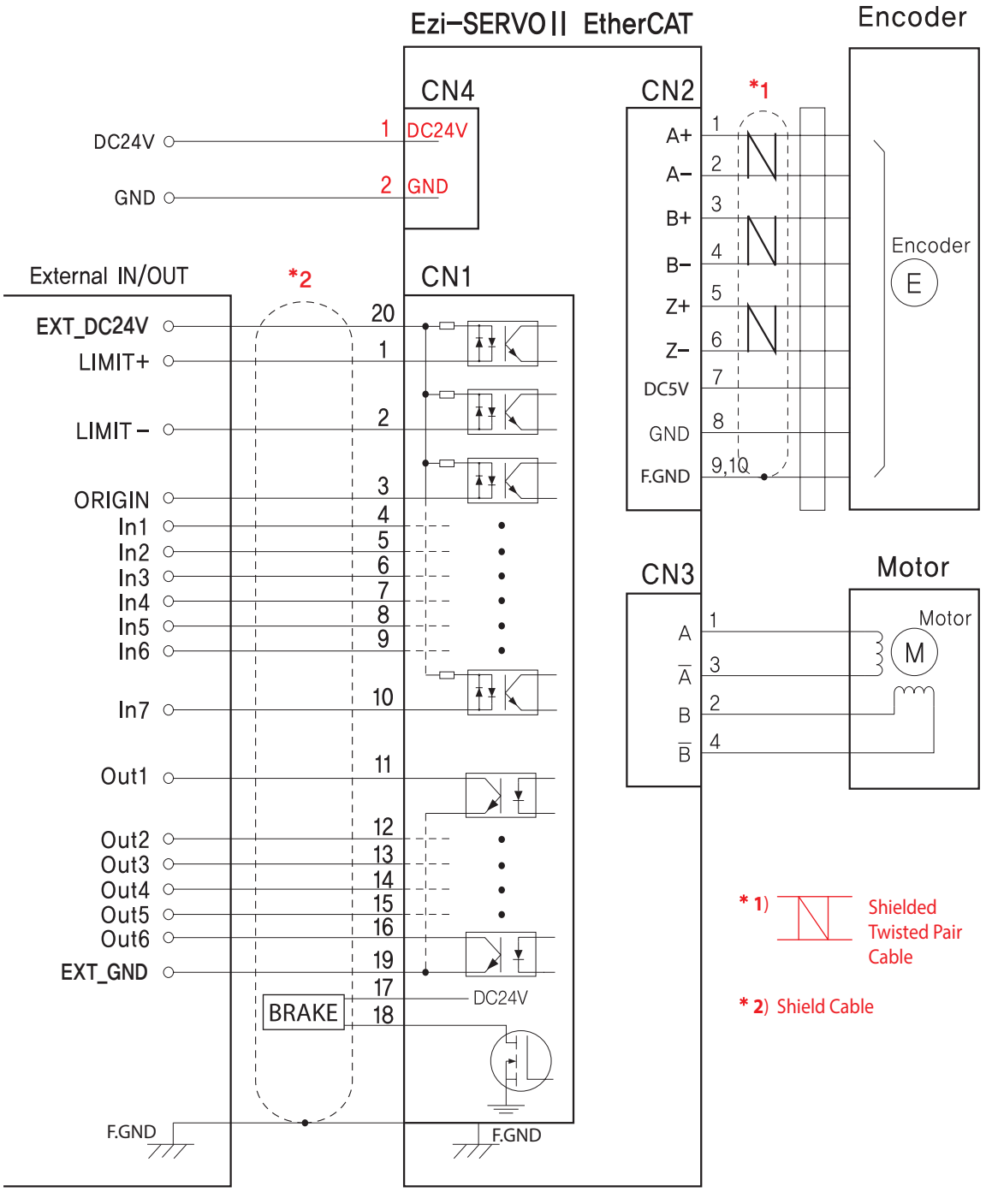
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II EtherCAT and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

External Wiring Diagram

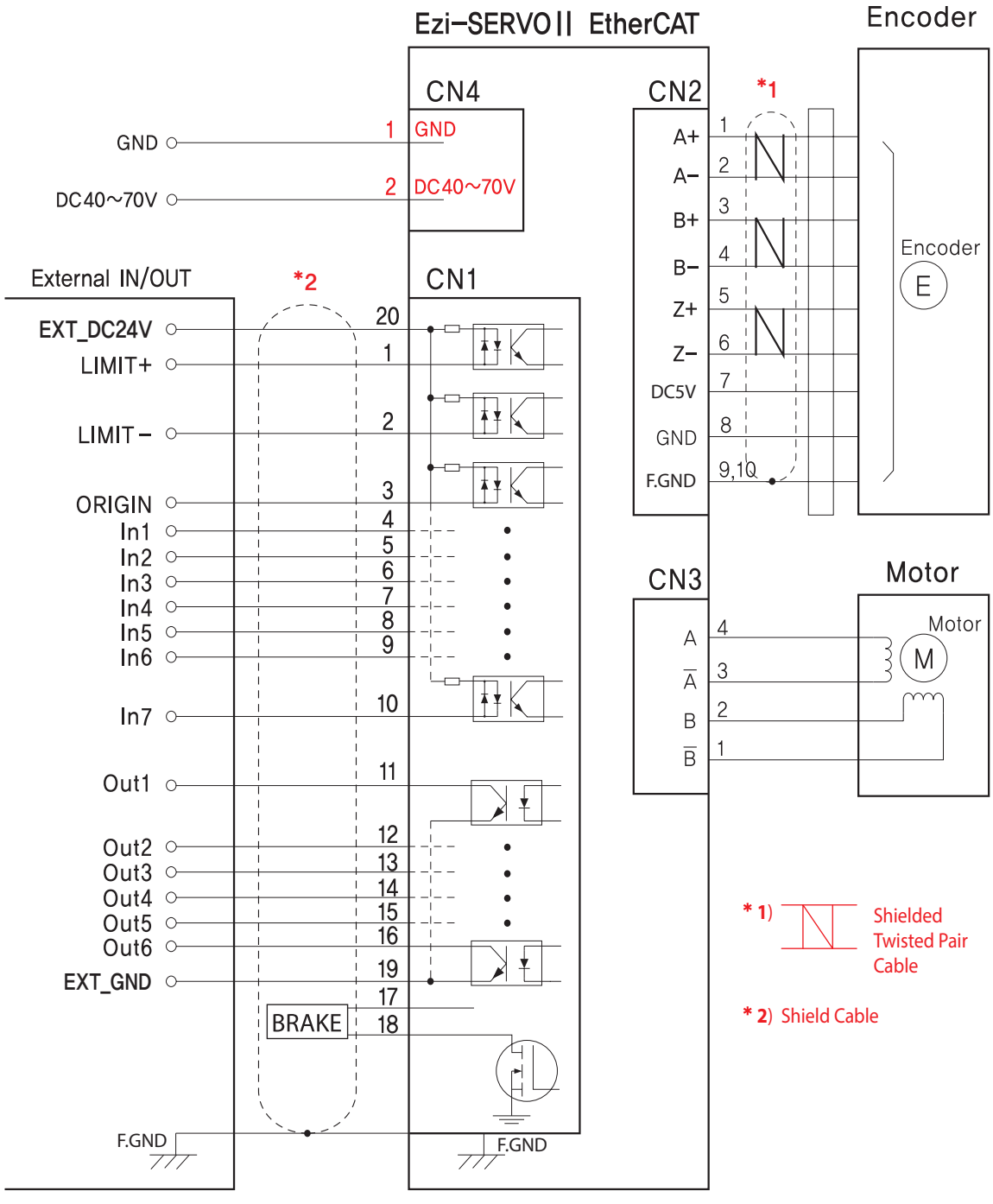


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

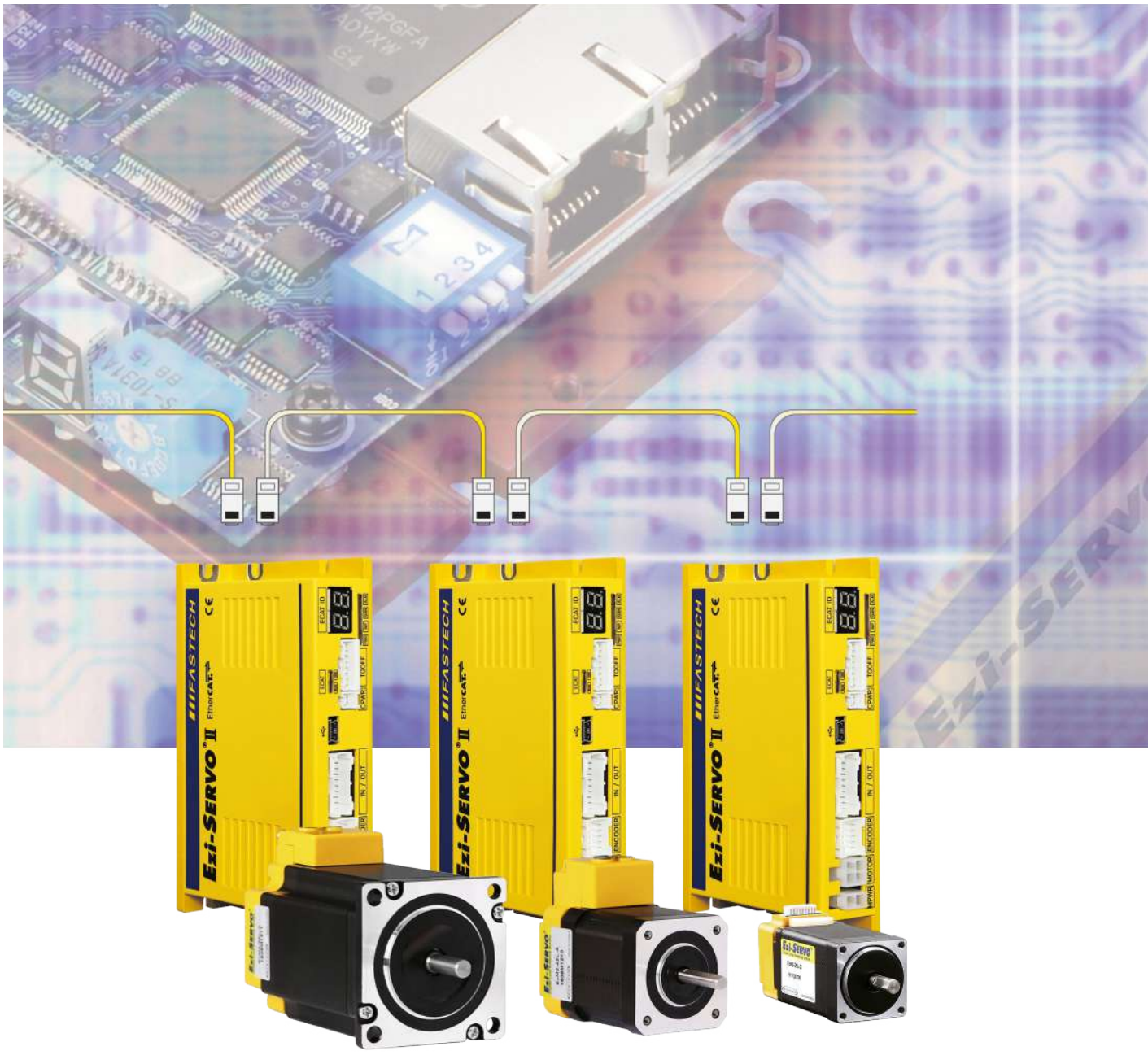
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO® II
EtherCAT.
FASTECH
MPWR
MOTOR
ENCODER
IN / OUT
ECAT
RUN
ERR
CPWR
IOOFF
PWR
INP
SON
ALM
ECAT ID

Ezi-SERVO® II EtherCAT TO

Closed Loop Stepping System

- CiA402 Drive Profile Support
- Closed-Loop Stepping system
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque
- High Resolution / High Response
- Torque Off Function Supported

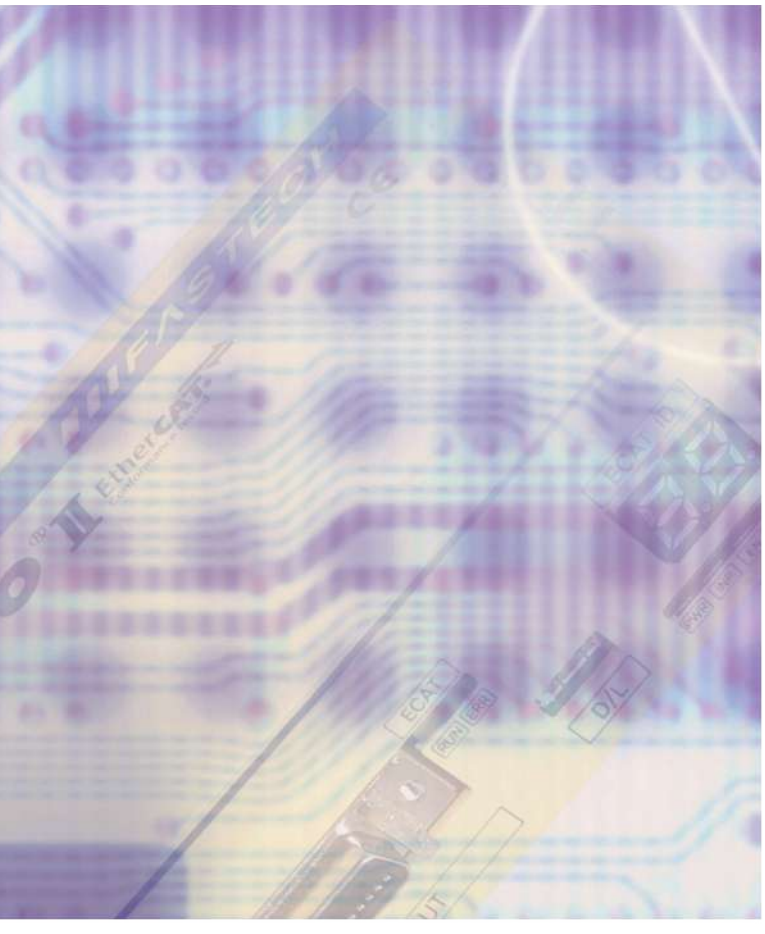


FASTECH

Fast, Accurate, Smooth Motion

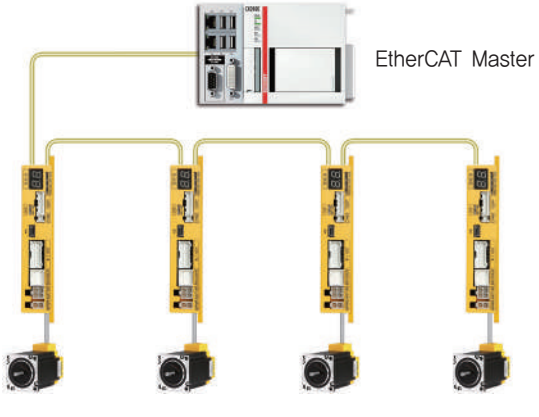
Ezi-SERVO® II EtherCAT® TO

Closed Loop Stepping System



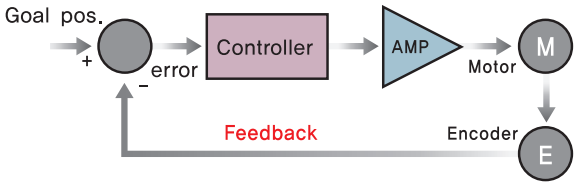
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT TO is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT TO is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



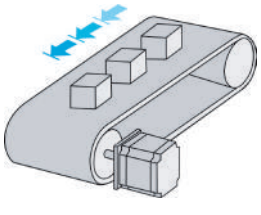
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

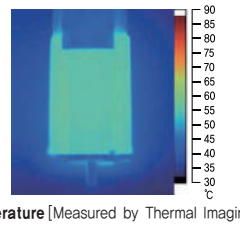
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



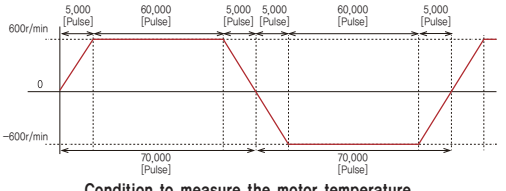
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

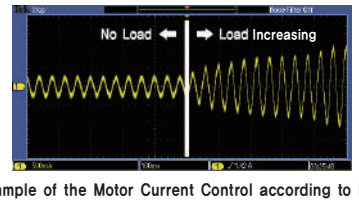
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

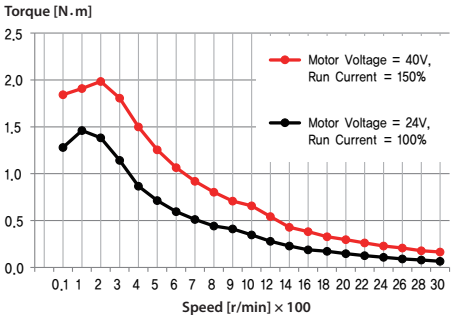


Example of the Motor Current Control according to load

5 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

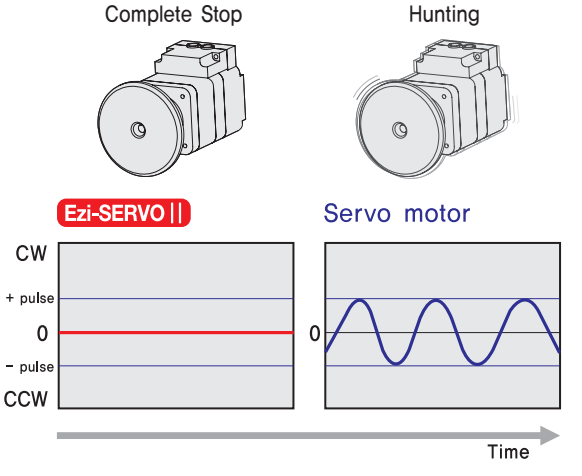


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-TO-56L
Motor Voltage = DC40V
Input Voltage = DC24V

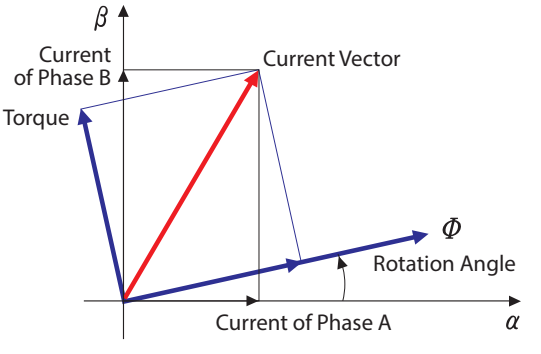
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



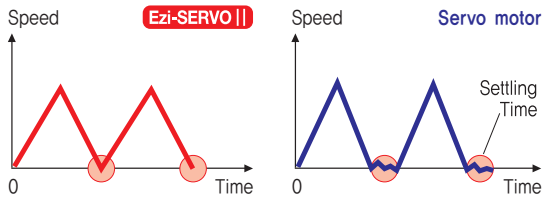
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



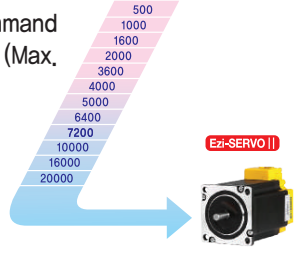
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



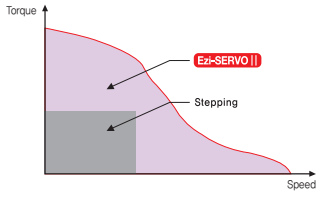
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



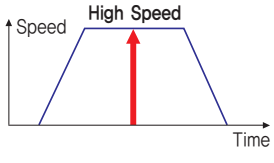
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



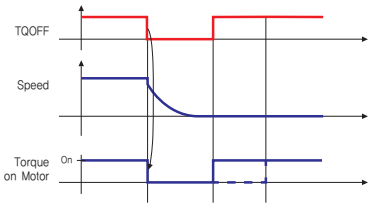
11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



12 Torque Off Function

Ezi-SERVO II EtherCAT TO has an input connector (TQOFF) that can Servo OFF through an external signal, regardless of EtherCAT communication, to stop and protect the motor in an emergency. When the TQOFF signal is detected, the drive immediately turns off the servo, and the motor stops.



CAUTION

DO NOT use the Torque Off function to stop or decelerate motors.

● Advantages over Open-Loop Stepping Systems

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping drive that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drives use a constant current control at all speed ranges without considering load variations.

● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II EtherCAT TO Part Numbering

Ezi-SERVO II -EC-TO-56L-A-BK-PN5

Series Name

Type Name

EC-TO : EtherCAT Torque Off

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-TO-20M-F	EzM2-20M-F	EzS2-EC-TO-20M-F
Ezi-SERVO II-EC-TO-20L-F	EzM2-20L-F	EzS2-EC-TO-20L-F
Ezi-SERVO II-EC-TO-28S-D	EzM2-28S-D	EzS2-EC-TO-28S-D
Ezi-SERVO II-EC-TO-28SM-D	EzM2-28SM-D	EzS2-EC-TO-28S-D
Ezi-SERVO II-EC-TO-28M-D	EzM2-28M-D	EzS2-EC-TO-28M-D
Ezi-SERVO II-EC-TO-28MM-D	EzM2-28MM-D	EzS2-EC-TO-28M-D
Ezi-SERVO II-EC-TO-28L-D	EzM2-28L-D	EzS2-EC-TO-28L-D
Ezi-SERVO II-EC-TO-28LM-D	EzM2-28LM-D	EzS2-EC-TO-28L-D
Ezi-SERVO II-EC-TO-35M-D	EzM2-35M-D	EzS2-EC-TO-35M-D
Ezi-SERVO II-EC-TO-35MM-D	EzM2-35MM-D	EzS2-EC-TO-35M-D
Ezi-SERVO II-EC-TO-35L-D	EzM2-35L-D	EzS2-EC-TO-35L-D
Ezi-SERVO II-EC-TO-35LM-D	EzM2-35LM-D	EzS2-EC-TO-35L-D
Ezi-SERVO II-EC-TO-42S-A	EzM2-42S-A	EzS2-EC-TO-42S-A
Ezi-SERVO II-EC-TO-42S-B	EzM2-42S-B	EzS2-EC-TO-42S-B
Ezi-SERVO II-EC-TO-42M-A	EzM2-42M-A	EzS2-EC-TO-42M-A
Ezi-SERVO II-EC-TO-42M-B	EzM2-42M-B	EzS2-EC-TO-42M-B
Ezi-SERVO II-EC-TO-42L-A	EzM2-42L-A	EzS2-EC-TO-42L-A
Ezi-SERVO II-EC-TO-42L-B	EzM2-42L-B	EzS2-EC-TO-42L-B
Ezi-SERVO II-EC-TO-42XL-A	EzM2-42XL-A	EzS2-EC-TO-42XL-A
Ezi-SERVO II-EC-TO-42XL-B	EzM2-42XL-B	EzS2-EC-TO-42XL-B
Ezi-SERVO II-EC-TO-56S-A	EzM2-56S-A	EzS2-EC-TO-56S-A
Ezi-SERVO II-EC-TO-56S-B	EzM2-56S-B	EzS2-EC-TO-56S-B
Ezi-SERVO II-EC-TO-56M-A	EzM2-56M-A	EzS2-EC-TO-56M-A
Ezi-SERVO II-EC-TO-56M-B	EzM2-56M-B	EzS2-EC-TO-56M-B
Ezi-SERVO II-EC-TO-56L-A	EzM2-56L-A	EzS2-EC-TO-56L-A
Ezi-SERVO II-EC-TO-56L-B	EzM2-56L-B	EzS2-EC-TO-56L-B
Ezi-SERVO II-EC-TO-60S-A	EzM2-60S-A	EzS2-EC-TO-60S-A
Ezi-SERVO II-EC-TO-60S-B	EzM2-60S-B	EzS2-EC-TO-60S-B
Ezi-SERVO II-EC-TO-60M-A	EzM2-60M-A	EzS2-EC-TO-60M-A
Ezi-SERVO II-EC-TO-60M-B	EzM2-60M-B	EzS2-EC-TO-60M-B
Ezi-SERVO II-EC-TO-60L-A	EzM2-60L-A	EzS2-EC-TO-60L-A
Ezi-SERVO II-EC-TO-60L-B	EzM2-60L-B	EzS2-EC-TO-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit product number.
(e.g., Ezi-SERVO II-EC-TO-28LM-D, Ezi-SERVO II-EC-TO-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-TO-42S-A-BK	EzM2-42S-A-BK	EzS2-EC-TO-42S-A
Ezi-SERVO II-EC-TO-42S-B-BK	EzM2-42S-B-BK	EzS2-EC-TO-42S-B
Ezi-SERVO II-EC-TO-42M-A-BK	EzM2-42M-A-BK	EzS2-EC-TO-42M-A
Ezi-SERVO II-EC-TO-42M-B-BK	EzM2-42M-B-BK	EzS2-EC-TO-42M-B
Ezi-SERVO II-EC-TO-42L-A-BK	EzM2-42L-A-BK	EzS2-EC-TO-42L-A
Ezi-SERVO II-EC-TO-42L-B-BK	EzM2-42L-B-BK	EzS2-EC-TO-42L-B
Ezi-SERVO II-EC-TO-42XL-A-BK	EzM2-42XL-A-BK	EzS2-EC-TO-42XL-A
Ezi-SERVO II-EC-TO-42XL-B-BK	EzM2-42XL-B-BK	EzS2-EC-TO-42XL-B
Ezi-SERVO II-EC-TO-56S-A-BK	EzM2-56S-A-BK	EzS2-EC-TO-56S-A
Ezi-SERVO II-EC-TO-56S-B-BK	EzM2-56S-B-BK	EzS2-EC-TO-56S-B
Ezi-SERVO II-EC-TO-56M-A-BK	EzM2-56M-A-BK	EzS2-EC-TO-56M-A
Ezi-SERVO II-EC-TO-56M-B-BK	EzM2-56M-B-BK	EzS2-EC-TO-56M-B
Ezi-SERVO II-EC-TO-56L-A-BK	EzM2-56L-A-BK	EzS2-EC-TO-56L-A
Ezi-SERVO II-EC-TO-56L-B-BK	EzM2-56L-B-BK	EzS2-EC-TO-56L-B
Ezi-SERVO II-EC-TO-60S-A-BK	EzM2-60S-A-BK	EzS2-EC-TO-60S-A
Ezi-SERVO II-EC-TO-60S-B-BK	EzM2-60S-B-BK	EzS2-EC-TO-60S-B
Ezi-SERVO II-EC-TO-60M-A-BK	EzM2-60M-A-BK	EzS2-EC-TO-60M-A
Ezi-SERVO II-EC-TO-60M-B-BK	EzM2-60M-B-BK	EzS2-EC-TO-60M-B
Ezi-SERVO II-EC-TO-60L-A-BK	EzM2-60L-A-BK	EzS2-EC-TO-60L-A
Ezi-SERVO II-EC-TO-60L-B-BK	EzM2-60L-B-BK	EzS2-EC-TO-60L-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-TO-42S-A-PN3	EzM2-42S-A-PN3	EzS2-EC-TO-42S-A	1:3
Ezi-SERVO II-EC-TO-42S-B-PN3	EzM2-42S-B-PN3	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN5	EzM2-42S-A-PN5	EzS2-EC-TO-42S-A	1:5
Ezi-SERVO II-EC-TO-42S-B-PN5	EzM2-42S-B-PN5	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN8	EzM2-42S-A-PN8	EzS2-EC-TO-42S-A	1:8
Ezi-SERVO II-EC-TO-42S-B-PN8	EzM2-42S-B-PN8	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN10	EzM2-42S-A-PN10	EzS2-EC-TO-42S-A	1:10
Ezi-SERVO II-EC-TO-42S-B-PN10	EzM2-42S-B-PN10	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN15	EzM2-42S-A-PN15	EzS2-EC-TO-42S-A	1:15
Ezi-SERVO II-EC-TO-42S-B-PN15	EzM2-42S-B-PN15	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN25	EzM2-42S-A-PN25	EzS2-EC-TO-42S-A	1:25
Ezi-SERVO II-EC-TO-42S-B-PN25	EzM2-42S-B-PN25	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN40	EzM2-42S-A-PN40	EzS2-EC-TO-42S-A	1:40
Ezi-SERVO II-EC-TO-42S-B-PN40	EzM2-42S-B-PN40	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42S-A-PN50	EzM2-42S-A-PN50	EzS2-EC-TO-42S-A	1:50
Ezi-SERVO II-EC-TO-42S-B-PN50	EzM2-42S-B-PN50	EzS2-EC-TO-42S-B	
Ezi-SERVO II-EC-TO-42M-A-PN3	EzM2-42M-A-PN3	EzS2-EC-TO-42M-A	1:3
Ezi-SERVO II-EC-TO-42M-B-PN3	EzM2-42M-B-PN3	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN5	EzM2-42M-A-PN5	EzS2-EC-TO-42M-A	1:5
Ezi-SERVO II-EC-TO-42M-B-PN5	EzM2-42M-B-PN5	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN8	EzM2-42M-A-PN8	EzS2-EC-TO-42M-A	1:8
Ezi-SERVO II-EC-TO-42M-B-PN8	EzM2-42M-B-PN8	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN10	EzM2-42M-A-PN10	EzS2-EC-TO-42M-A	1:10
Ezi-SERVO II-EC-TO-42M-B-PN10	EzM2-42M-B-PN10	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN15	EzM2-42M-A-PN15	EzS2-EC-TO-42M-A	1:15
Ezi-SERVO II-EC-TO-42M-B-PN15	EzM2-42M-B-PN15	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN25	EzM2-42M-A-PN25	EzS2-EC-TO-42M-A	1:25
Ezi-SERVO II-EC-TO-42M-B-PN25	EzM2-42M-B-PN25	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN40	EzM2-42M-A-PN40	EzS2-EC-TO-42M-A	1:40
Ezi-SERVO II-EC-TO-42M-B-PN40	EzM2-42M-B-PN40	EzS2-EC-TO-42M-B	
Ezi-SERVO II-EC-TO-42M-A-PN50	EzM2-42M-A-PN50	EzS2-EC-TO-42M-A	1:50
Ezi-SERVO II-EC-TO-42M-B-PN50	EzM2-42M-B-PN50	EzS2-EC-TO-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-TO-42L-A-PN3	EzM2-42L-A-PN3	EzS2-EC-TO-42L-A	1:3
Ezi-SERVO II-EC-TO-42L-B-PN3	EzM2-42L-B-PN3	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN5	EzM2-42L-A-PN5	EzS2-EC-TO-42L-A	1:5
Ezi-SERVO II-EC-TO-42L-B-PN5	EzM2-42L-B-PN5	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN8	EzM2-42L-A-PN8	EzS2-EC-TO-42L-A	1:8
Ezi-SERVO II-EC-TO-42L-B-PN8	EzM2-42L-B-PN8	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN10	EzM2-42L-A-PN10	EzS2-EC-TO-42L-A	1:10
Ezi-SERVO II-EC-TO-42L-B-PN10	EzM2-42L-B-PN10	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN15	EzM2-42L-A-PN15	EzS2-EC-TO-42L-A	1:15
Ezi-SERVO II-EC-TO-42L-B-PN15	EzM2-42L-B-PN15	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN25	EzM2-42L-A-PN25	EzS2-EC-TO-42L-A	1:25
Ezi-SERVO II-EC-TO-42L-B-PN25	EzM2-42L-B-PN25	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN40	EzM2-42L-A-PN40	EzS2-EC-TO-42L-A	1:40
Ezi-SERVO II-EC-TO-42L-B-PN40	EzM2-42L-B-PN40	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42L-A-PN50	EzM2-42L-A-PN50	EzS2-EC-TO-42L-A	1:50
Ezi-SERVO II-EC-TO-42L-B-PN50	EzM2-42L-B-PN50	EzS2-EC-TO-42L-B	
Ezi-SERVO II-EC-TO-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-EC-TO-42XL-A	1:3
Ezi-SERVO II-EC-TO-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-EC-TO-42XL-A	1:5
Ezi-SERVO II-EC-TO-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-EC-TO-42XL-A	1:8
Ezi-SERVO II-EC-TO-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-EC-TO-42XL-A	1:10
Ezi-SERVO II-EC-TO-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-EC-TO-42XL-A	1:15
Ezi-SERVO II-EC-TO-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-EC-TO-42XL-A	1:25
Ezi-SERVO II-EC-TO-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-EC-TO-42XL-A	1:40
Ezi-SERVO II-EC-TO-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-EC-TO-42XL-A	1:50
Ezi-SERVO II-EC-TO-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-EC-TO-42XL-B	
Ezi-SERVO II-EC-TO-56S-A-PN3	EzM2-56S-A-PN3	EzS2-EC-TO-56S-A	1:3
Ezi-SERVO II-EC-TO-56S-B-PN3	EzM2-56S-B-PN3	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN5	EzM2-56S-A-PN5	EzS2-EC-TO-56S-A	1:5
Ezi-SERVO II-EC-TO-56S-B-PN5	EzM2-56S-B-PN5	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN8	EzM2-56S-A-PN8	EzS2-EC-TO-56S-A	1:8
Ezi-SERVO II-EC-TO-56S-B-PN8	EzM2-56S-B-PN8	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN10	EzM2-56S-A-PN10	EzS2-EC-TO-56S-A	1:10
Ezi-SERVO II-EC-TO-56S-B-PN10	EzM2-56S-B-PN10	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN15	EzM2-56S-A-PN15	EzS2-EC-TO-56S-A	1:15
Ezi-SERVO II-EC-TO-56S-B-PN15	EzM2-56S-B-PN15	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN25	EzM2-56S-A-PN25	EzS2-EC-TO-56S-A	1:25
Ezi-SERVO II-EC-TO-56S-B-PN25	EzM2-56S-B-PN25	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN40	EzM2-56S-A-PN40	EzS2-EC-TO-56S-A	1:40
Ezi-SERVO II-EC-TO-56S-B-PN40	EzM2-56S-B-PN40	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56S-A-PN50	EzM2-56S-A-PN50	EzS2-EC-TO-56S-A	1:50
Ezi-SERVO II-EC-TO-56S-B-PN50	EzM2-56S-B-PN50	EzS2-EC-TO-56S-B	
Ezi-SERVO II-EC-TO-56M-A-PN3	EzM2-56M-A-PN3	EzS2-EC-TO-56M-A	1:3
Ezi-SERVO II-EC-TO-56M-B-PN3	EzM2-56M-B-PN3	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN5	EzM2-56M-A-PN5	EzS2-EC-TO-56M-A	1:5
Ezi-SERVO II-EC-TO-56M-B-PN5	EzM2-56M-B-PN5	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN8	EzM2-56M-A-PN8	EzS2-EC-TO-56M-A	1:8
Ezi-SERVO II-EC-TO-56M-B-PN8	EzM2-56M-B-PN8	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN10	EzM2-56M-A-PN10	EzS2-EC-TO-56M-A	1:10
Ezi-SERVO II-EC-TO-56M-B-PN10	EzM2-56M-B-PN10	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN15	EzM2-56M-A-PN15	EzS2-EC-TO-56M-A	1:15
Ezi-SERVO II-EC-TO-56M-B-PN15	EzM2-56M-B-PN15	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN25	EzM2-56M-A-PN25	EzS2-EC-TO-56M-A	1:25
Ezi-SERVO II-EC-TO-56M-B-PN25	EzM2-56M-B-PN25	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN40	EzM2-56M-A-PN40	EzS2-EC-TO-56M-A	1:40
Ezi-SERVO II-EC-TO-56M-B-PN40	EzM2-56M-B-PN40	EzS2-EC-TO-56M-B	
Ezi-SERVO II-EC-TO-56M-A-PN50	EzM2-56M-A-PN50	EzS2-EC-TO-56M-A	1:50
Ezi-SERVO II-EC-TO-56M-B-PN50	EzM2-56M-B-PN50	EzS2-EC-TO-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-TO-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-TO-56L-A	1:3
Ezi-SERVO II-EC-TO-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-TO-56L-A	1:5
Ezi-SERVO II-EC-TO-56L-B-PN5	EzM2-56L-B-PN5	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN8	EzM2-56L-A-PN8	EzS2-EC-TO-56L-A	1:8
Ezi-SERVO II-EC-TO-56L-B-PN8	EzM2-56L-B-PN8	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN10	EzM2-56L-A-PN10	EzS2-EC-TO-56L-A	1:10
Ezi-SERVO II-EC-TO-56L-B-PN10	EzM2-56L-B-PN10	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN15	EzM2-56L-A-PN15	EzS2-EC-TO-56L-A	1:15
Ezi-SERVO II-EC-TO-56L-B-PN15	EzM2-56L-B-PN15	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN25	EzM2-56L-A-PN25	EzS2-EC-TO-56L-A	1:25
Ezi-SERVO II-EC-TO-56L-B-PN25	EzM2-56L-B-PN25	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN40	EzM2-56L-A-PN40	EzS2-EC-TO-56L-A	1:40
Ezi-SERVO II-EC-TO-56L-B-PN40	EzM2-56L-B-PN40	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-56L-A-PN50	EzM2-56L-A-PN50	EzS2-EC-TO-56L-A	1:50
Ezi-SERVO II-EC-TO-56L-B-PN50	EzM2-56L-B-PN50	EzS2-EC-TO-56L-B	
Ezi-SERVO II-EC-TO-60S-A-PN3	EzM2-60S-A-PN3	EzS2-EC-TO-60S-A	1:3
Ezi-SERVO II-EC-TO-60S-B-PN3	EzM2-60S-B-PN3	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN5	EzM2-60S-A-PN5	EzS2-EC-TO-60S-A	1:5
Ezi-SERVO II-EC-TO-60S-B-PN5	EzM2-60S-B-PN5	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN8	EzM2-60S-A-PN8	EzS2-EC-TO-60S-A	1:8
Ezi-SERVO II-EC-TO-60S-B-PN8	EzM2-60S-B-PN8	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN10	EzM2-60S-A-PN10	EzS2-EC-TO-60S-A	1:10
Ezi-SERVO II-EC-TO-60S-B-PN10	EzM2-60S-B-PN10	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN15	EzM2-60S-A-PN15	EzS2-EC-TO-60S-A	1:15
Ezi-SERVO II-EC-TO-60S-B-PN15	EzM2-60S-B-PN15	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN25	EzM2-60S-A-PN25	EzS2-EC-TO-60S-A	1:25
Ezi-SERVO II-EC-TO-60S-B-PN25	EzM2-60S-B-PN25	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN40	EzM2-60S-A-PN40	EzS2-EC-TO-60S-A	1:40
Ezi-SERVO II-EC-TO-60S-B-PN40	EzM2-60S-B-PN40	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60S-A-PN50	EzM2-60S-A-PN50	EzS2-EC-TO-60S-A	1:50
Ezi-SERVO II-EC-TO-60S-B-PN50	EzM2-60S-B-PN50	EzS2-EC-TO-60S-B	
Ezi-SERVO II-EC-TO-60M-A-PN3	EzM2-60M-A-PN3	EzS2-EC-TO-60M-A	1:3
Ezi-SERVO II-EC-TO-60M-B-PN3	EzM2-60M-B-PN3	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN5	EzM2-60M-A-PN5	EzS2-EC-TO-60M-A	1:5
Ezi-SERVO II-EC-TO-60M-B-PN5	EzM2-60M-B-PN5	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN8	EzM2-60M-A-PN8	EzS2-EC-TO-60M-A	1:8
Ezi-SERVO II-EC-TO-60M-B-PN8	EzM2-60M-B-PN8	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN10	EzM2-60M-A-PN10	EzS2-EC-TO-60M-A	1:10
Ezi-SERVO II-EC-TO-60M-B-PN10	EzM2-60M-B-PN10	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN15	EzM2-60M-A-PN15	EzS2-EC-TO-60M-A	1:15
Ezi-SERVO II-EC-TO-60M-B-PN15	EzM2-60M-B-PN15	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN25	EzM2-60M-A-PN25	EzS2-EC-TO-60M-A	1:25
Ezi-SERVO II-EC-TO-60M-B-PN25	EzM2-60M-B-PN25	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN40	EzM2-60M-A-PN40	EzS2-EC-TO-60M-A	1:40
Ezi-SERVO II-EC-TO-60M-B-PN40	EzM2-60M-B-PN40	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60M-A-PN50	EzM2-60M-A-PN50	EzS2-EC-TO-60M-A	1:50
Ezi-SERVO II-EC-TO-60M-B-PN50	EzM2-60M-B-PN50	EzS2-EC-TO-60M-B	
Ezi-SERVO II-EC-TO-60L-A-PN3	EzM2-60L-A-PN3	EzS2-EC-TO-60L-A	1:3
Ezi-SERVO II-EC-TO-60L-B-PN3	EzM2-60L-B-PN3	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN5	EzM2-60L-A-PN5	EzS2-EC-TO-60L-A	1:5
Ezi-SERVO II-EC-TO-60L-B-PN5	EzM2-60L-B-PN5	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN8	EzM2-60L-A-PN8	EzS2-EC-TO-60L-A	1:8
Ezi-SERVO II-EC-TO-60L-B-PN8	EzM2-60L-B-PN8	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN10	EzM2-60L-A-PN10	EzS2-EC-TO-60L-A	1:10
Ezi-SERVO II-EC-TO-60L-B-PN10	EzM2-60L-B-PN10	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN15	EzM2-60L-A-PN15	EzS2-EC-TO-60L-A	1:15
Ezi-SERVO II-EC-TO-60L-B-PN15	EzM2-60L-B-PN15	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN25	EzM2-60L-A-PN25	EzS2-EC-TO-60L-A	1:25
Ezi-SERVO II-EC-TO-60L-B-PN25	EzM2-60L-B-PN25	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN40	EzM2-60L-A-PN40	EzS2-EC-TO-60L-A	1:40
Ezi-SERVO II-EC-TO-60L-B-PN40	EzM2-60L-B-PN40	EzS2-EC-TO-60L-B	
Ezi-SERVO II-EC-TO-60L-A-PN50	EzM2-60L-A-PN50	EzS2-EC-TO-60L-A	1:50
Ezi-SERVO II-EC-TO-60L-B-PN50	EzM2-60L-B-PN50	EzS2-EC-TO-60L-B	

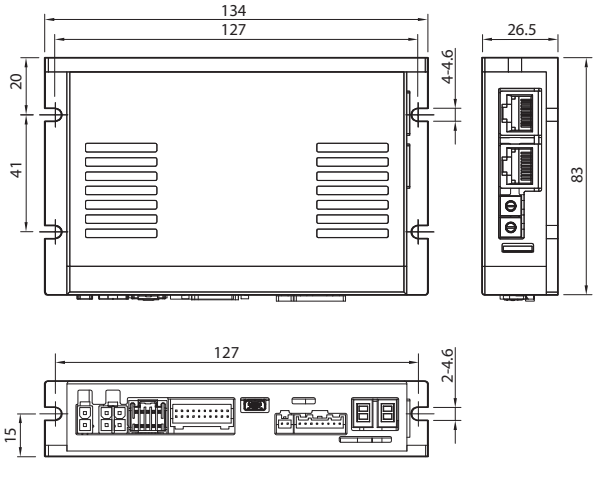
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Drive Model		EzS2-EC-TO-20 series	EzS2-EC-TO-28 series	EzS2-EC-TO-35 series	EzS2-EC-TO-42 series	EzS2-EC-TO-56 series	EzS2-EC-TO-60 series
Input Voltage		DC24V±10%					
Control Method		Closed loop control with 32bit MCU					
Current Consumption		Max. 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min *1					
	Resolution	(Selectable by parameter)					
	Error Type	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, Main Power Voltage Error, In-Position Error, ROM Error, Position Overflow Error, Torque Off Circuit Error					
	LED Display	Power status, In-Position status, Servo On status, Alarm status					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Operation Mode	Cyclic Synchronous Position Mode, Profile Position Mode, Homing Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 6 user inputs (photocoupler inputs), 2 Torque Off signal inputs (TQOFF)					
	Output Signals	5 user outputs (photocoupler outputs), 1 Brake signal output, 1 Torque Off status output (TQMON)					

Encoder Resolution [P/R]	Configurable Resolution [P/R]									
4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000
10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	
16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000
20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



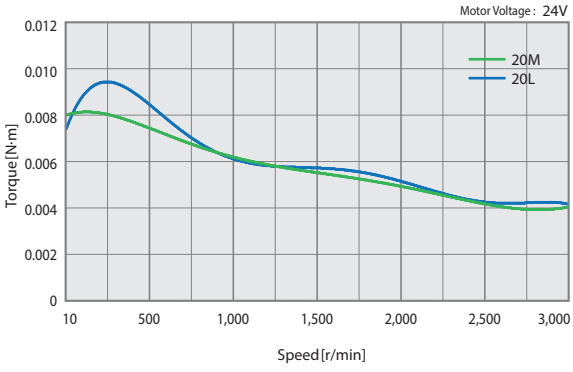
Specifications of Motor

MODEL			UNIT	EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

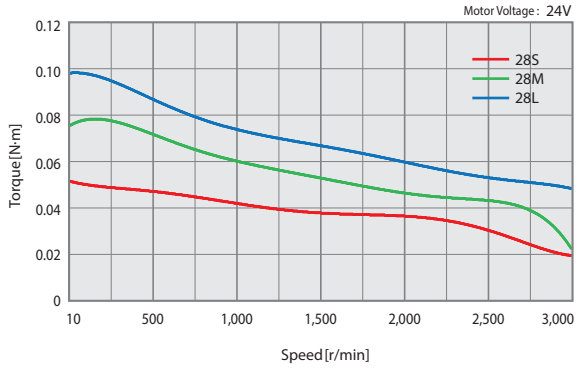
MODEL			UNIT	EzM2-56 series			EzM2-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

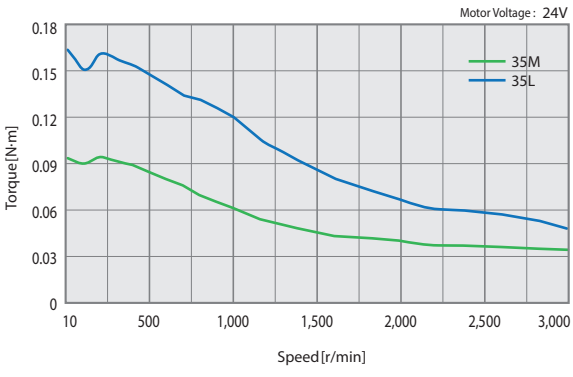
Ezi-SERVO II-EC-TO-20 series



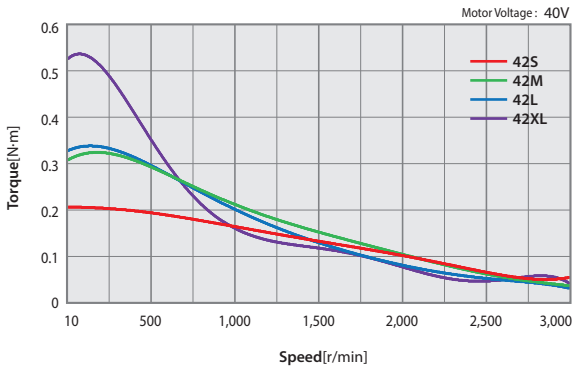
Ezi-SERVO II-EC-TO-28 series



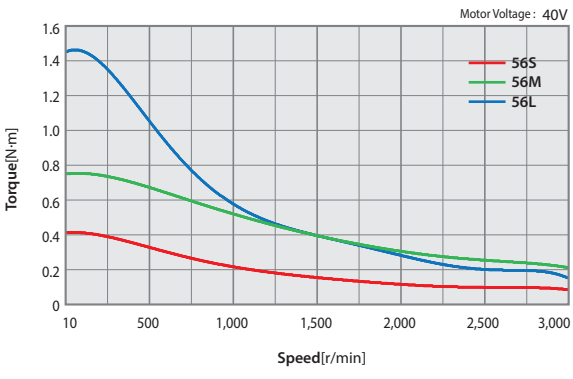
Ezi-SERVO II-EC-TO-35 series



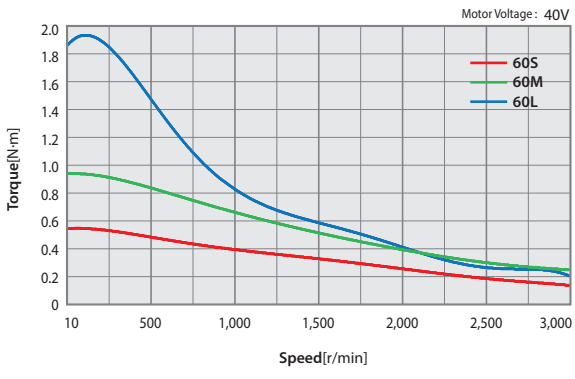
Ezi-SERVO II-EC-TO-42 series



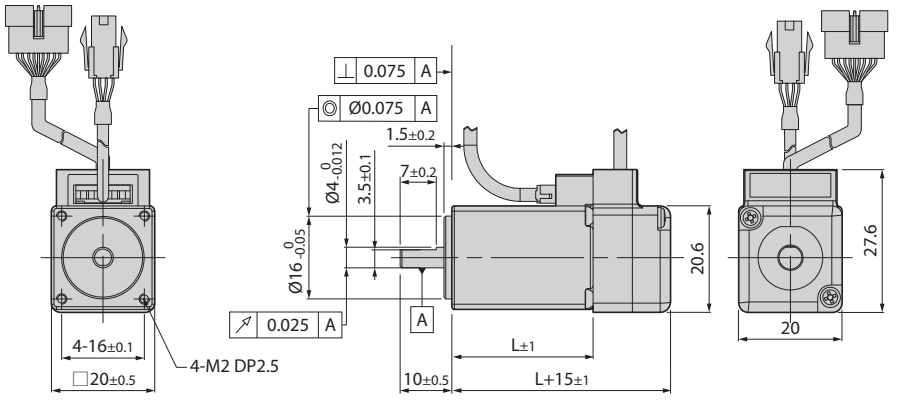
Ezi-SERVO II-EC-TO-56 series



Ezi-SERVO II-EC-TO-60 series

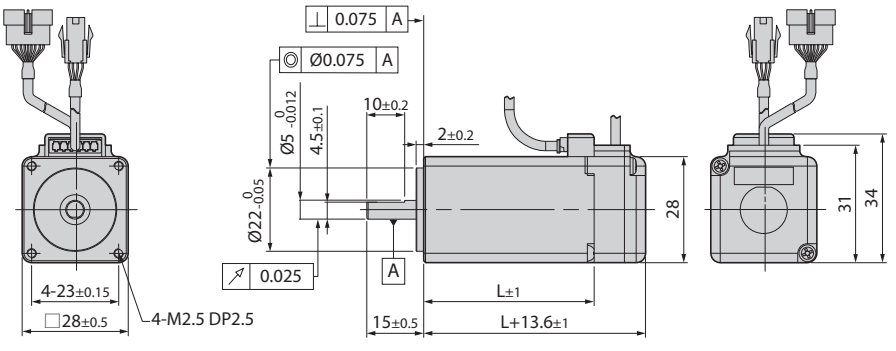


● Dimensions of Motor [mm]



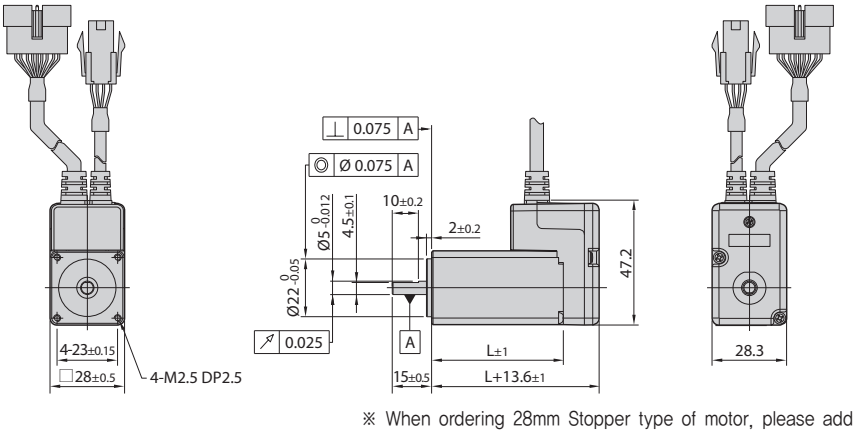
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

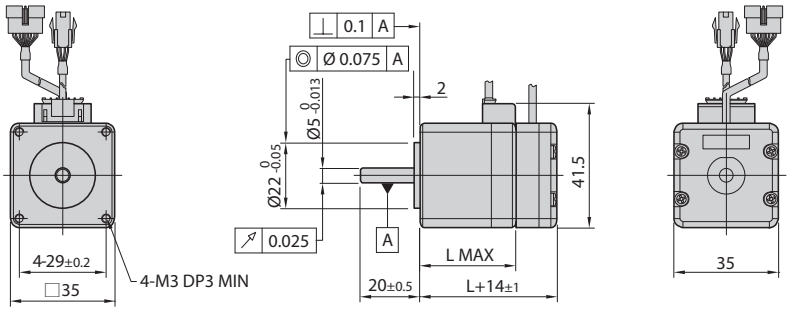
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

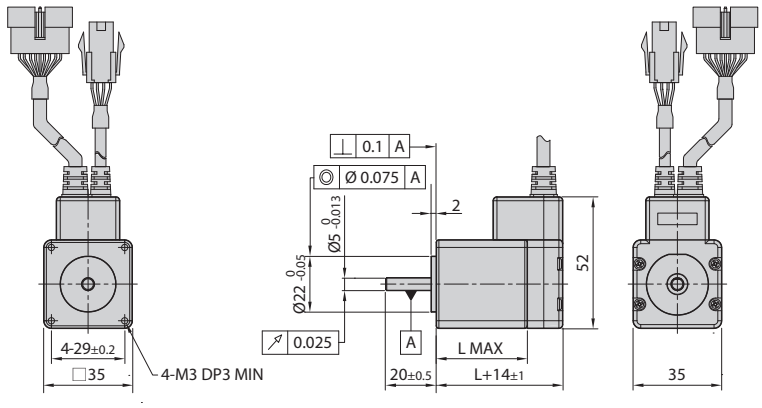
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

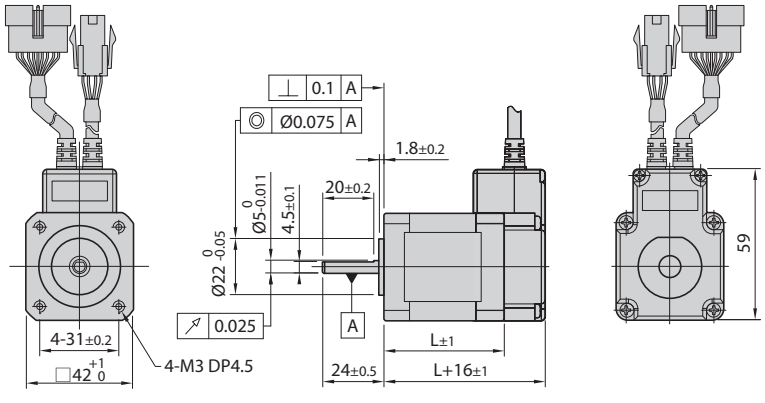
● Dimensions of Motor [mm]



35mm (Stopper type)

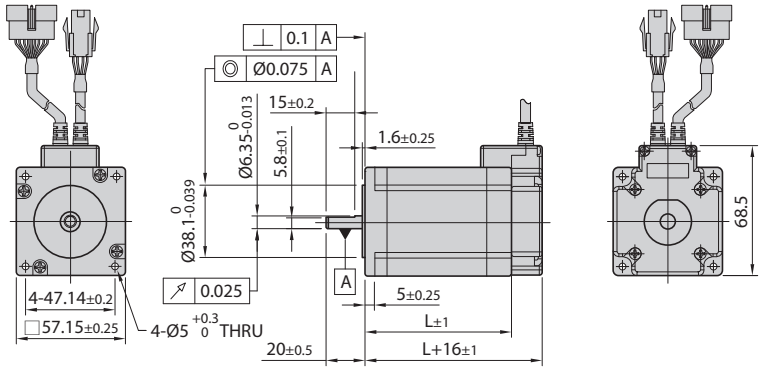
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

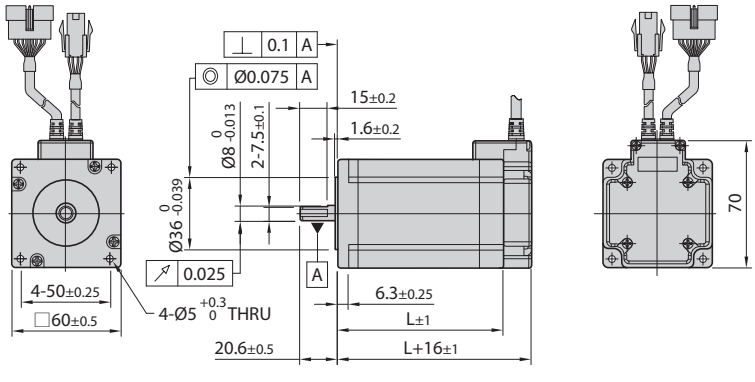
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

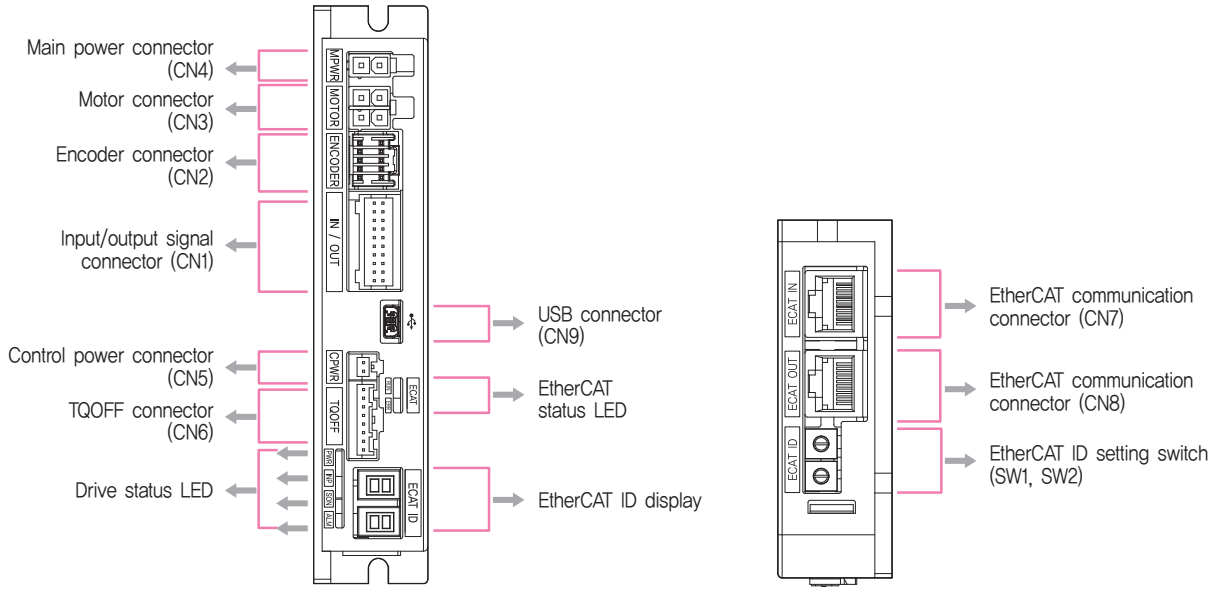
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

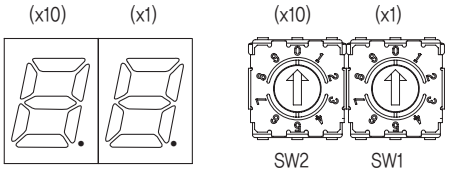
Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation



1. EtherCAT ID Display and Setting Switch (SW1, SW2)

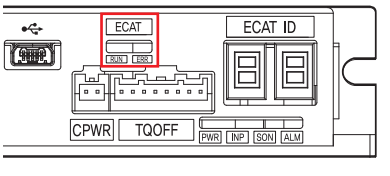
Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).



2. EtherCAT Status LED

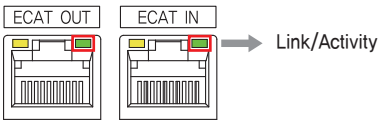
LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP



Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Description
Link/ Activity	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



3. Drive Status LED

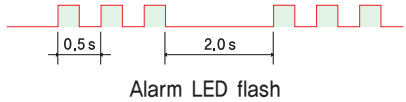
LED informs operation status of the drive.

Indication	Color	Function	Description
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	Lights On when Positioning error reaches within the preset pulse selected by parameter
SON	Orange	Servo On/Off Indication	Servo On: Lights On, Servo Off: Lights Off
ALM	Red	Alarm indication	Flash when an error occurs

◆ List of error types by the the number of LED blinking

No.	Error Code *4	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
3	E-003	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	E-008	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	E-010	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

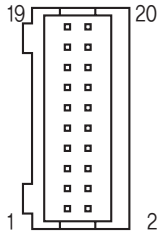
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default setting value is 180 °, and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of EtherCAT ID.
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

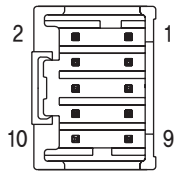
4. Input/Output Signal Connector (CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT-	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital Out1	Output
11	Digital Out2	Output
12	Digital Out3	Output
13	Digital Out4	Output
14	Digital Out5	Output
15	BRAKE+	Output
16	BRAKE-	Output
17	EXT_GND	Output
18	EXT_DC24V	Output
19	F.GND	---
20	F.GND	---



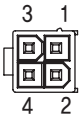
5. Encoder Connector (CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



6. Motor Connector (CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



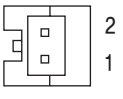
7. Main Power Connector (CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



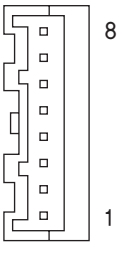
8. Control Power Connector (CN5)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



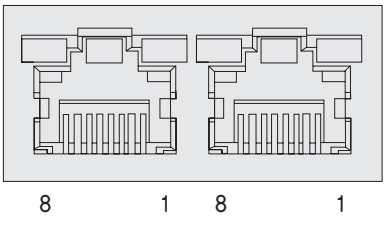
9. TQOFF Connector (CN6)

No.	Function	I/O
1	TQOFF1_P	Input
2	TQOFF1_N	Input
3	TQOFF2_P	Input
4	TQOFF2_N	Input
5	TQMON_P	Output
6	TQMON_N	Output
7	OVRTQ	Input
8	GND	Output



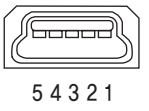
10. EtherCAT Communication Connector (CN7, CN8)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		

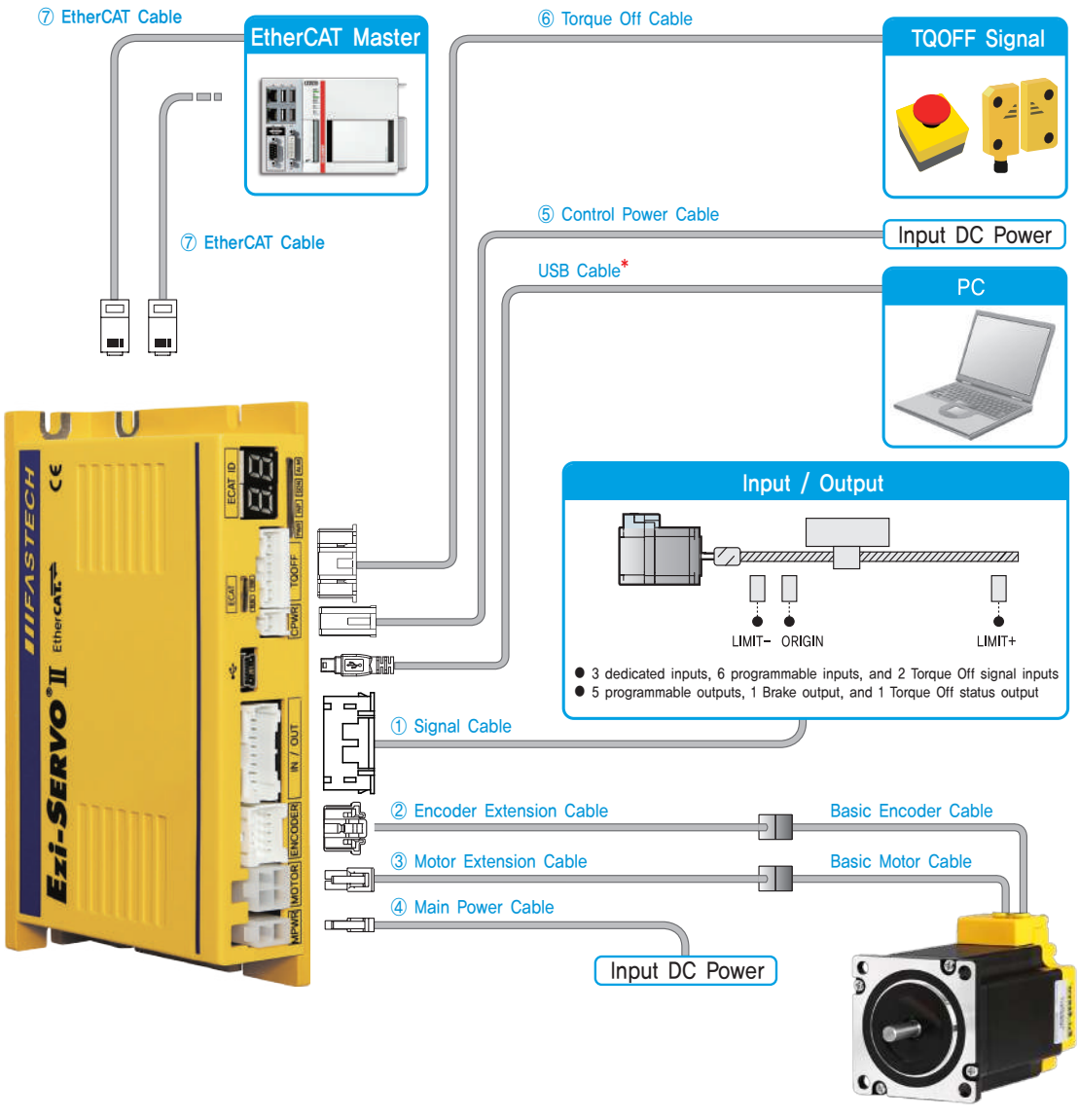


11. USB Connector (CN9)

No.	Function
1	VBUS
2	D−
3	D+
4	----
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Main Power Cable	2m	
⑤ Control Power Cable	2m	
⑥ Torque Off Cable	20m	
⑦ EtherCAT Cable	100m	
Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	PADP-20V-1-S	JST
		Terminal	SPH-002T-P0.5L	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Main Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	
Control Power (CN5)		Housing	PAP-02V-S	JST
		Terminal	SPHD-001T-P0.5	
Torque Off Signal (CN6)		Housing	PAP-08V-S	JST
		Terminal	SPHD-001T-P0.5 or SPHD-002T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVS-S-001F	1	Normal Cable	Max. cable length: 20m
	CSVS-S-002F	2		
	CSVS-S-003F	3		
	CSVS-S-005F	5		
	CSVS-S-001M	1	Robot Cable	
	CSVS-S-002M	2		
	CSVS-S-003M	3		
	CSVS-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Max. cable length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Max. cable length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Main Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO drive and the main power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Main Power Connection	CSVO-P-001F	1	Normal Cable	Max. cable length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ Control Power Cable

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Control Power Connection	CMNB-P-001F	1	Normal Cable	Max. cable length: 2m
	CMNB-P-002F	2		
	CMNB-P-001M	1	Robot Cable	
	CMNB-P-002M	2		

⑥ Torque Off Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO drive and sensors or switches for Torque Off signal.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Torque Off Signal Connection	CSVT-S-001F	1	Normal Cable	Max. cable length: 20m
	CSVT-S-002F	2		
	CSVT-S-003F	3		
	CSVT-S-005F	5		
	CSVT-S-001M	1	Robot Cable	
	CSVT-S-002M	2		
	CSVT-S-003M	3		
	CSVT-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

⑦ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II EtherCAT TO drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Interface Board between Drive and I/O Signals	TB-Plus	

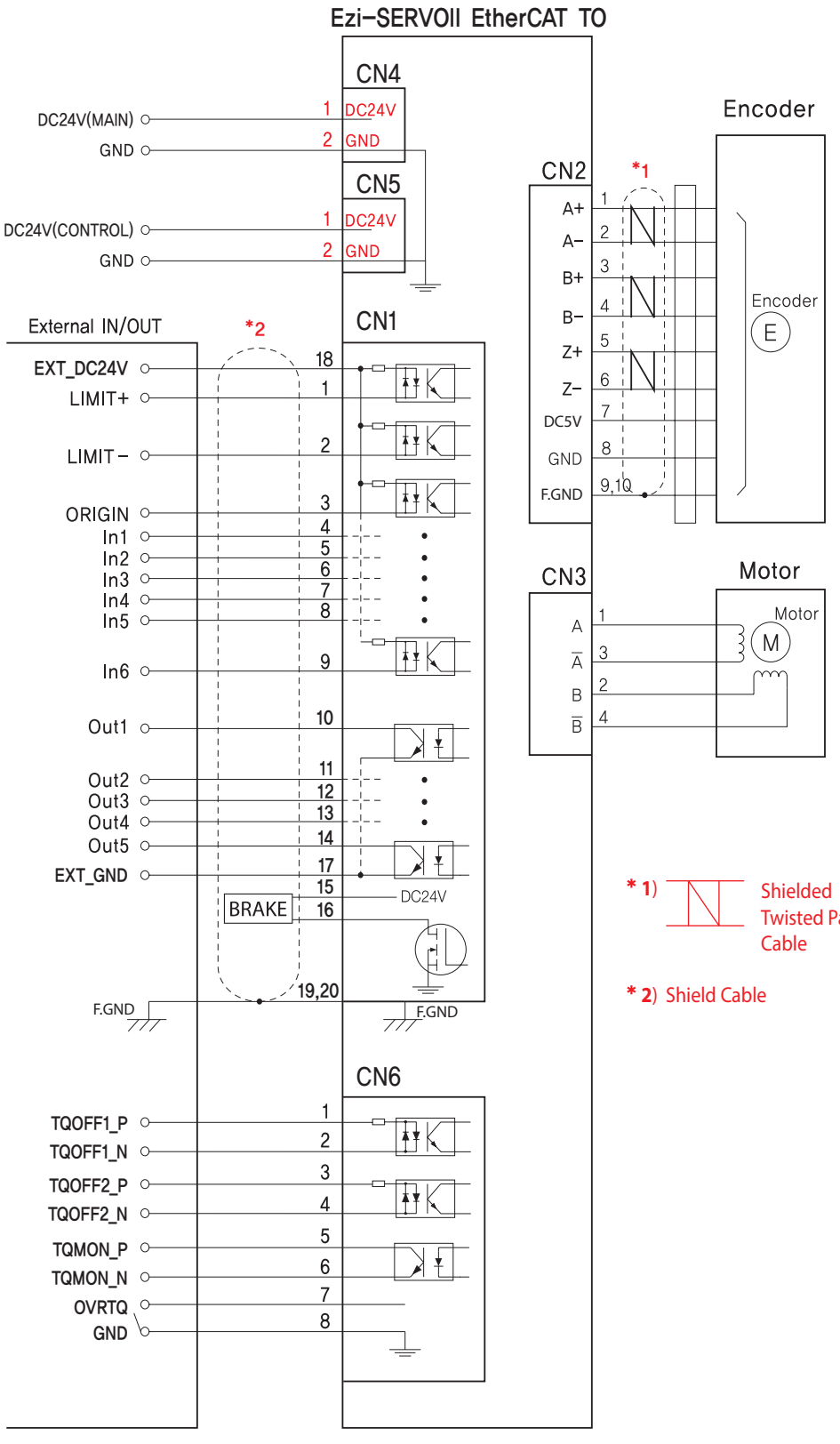
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II EtherCAT TO and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFT-S-001F	1	Normal Cable	Max. cable length: 20m
	CIFT-S-002F	2		
	CIFT-S-003F	3		
	CIFT-S-005F	5		
	CIFT-S-001M	1	Robot Cable	
	CIFT-S-002M	2		
	CIFT-S-003M	3		
	CIFT-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



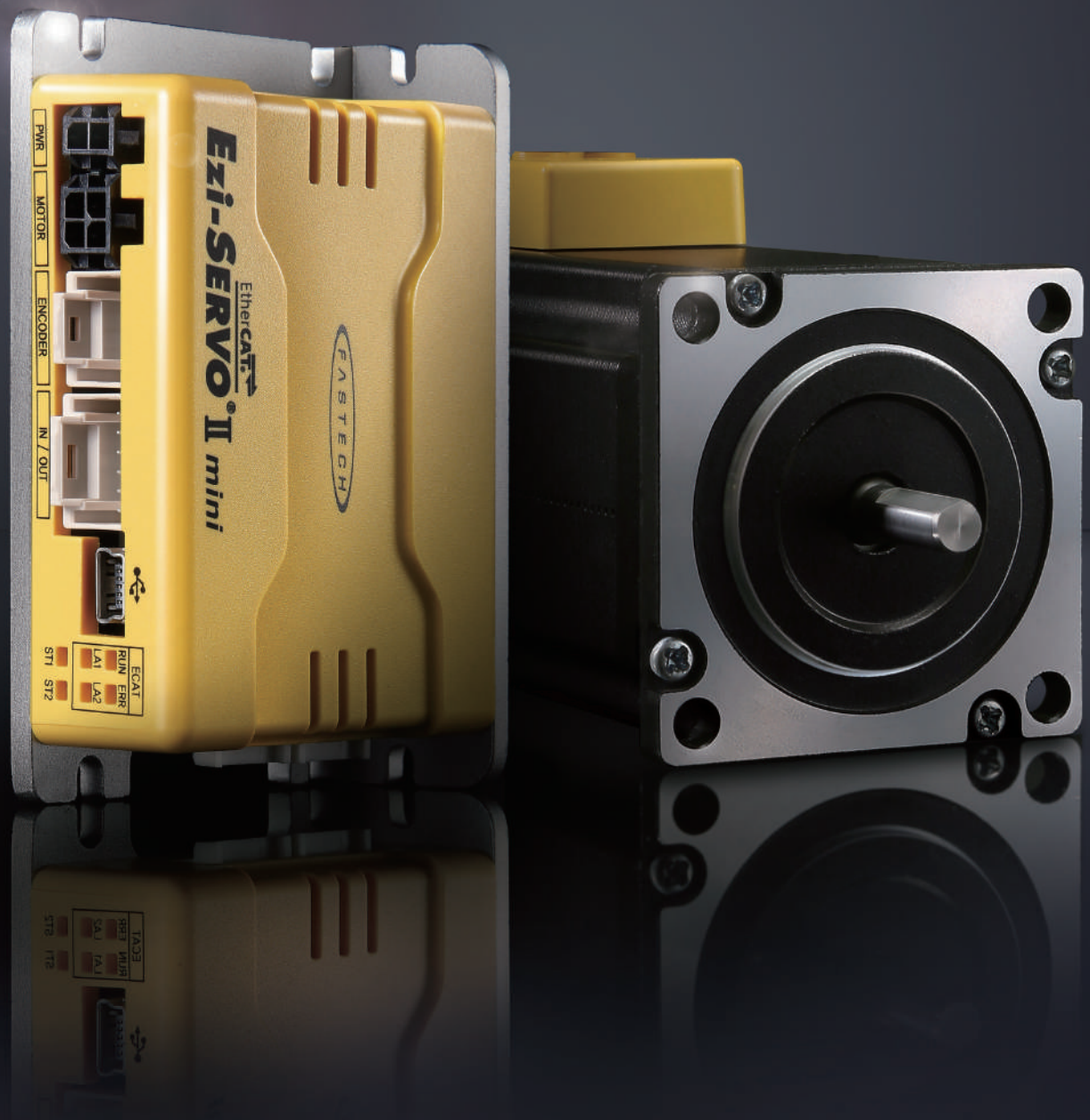
* 1) Shielded Twisted Pair Cable

* 2) Shield Cable

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.


EtherCAT
Ezi-SERVO II mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ECAT
RUN
ERR
LA1
LA2
ST1
ST2

Ezi-SERVO® II EtherCAT MINI

Closed Loop Stepping System

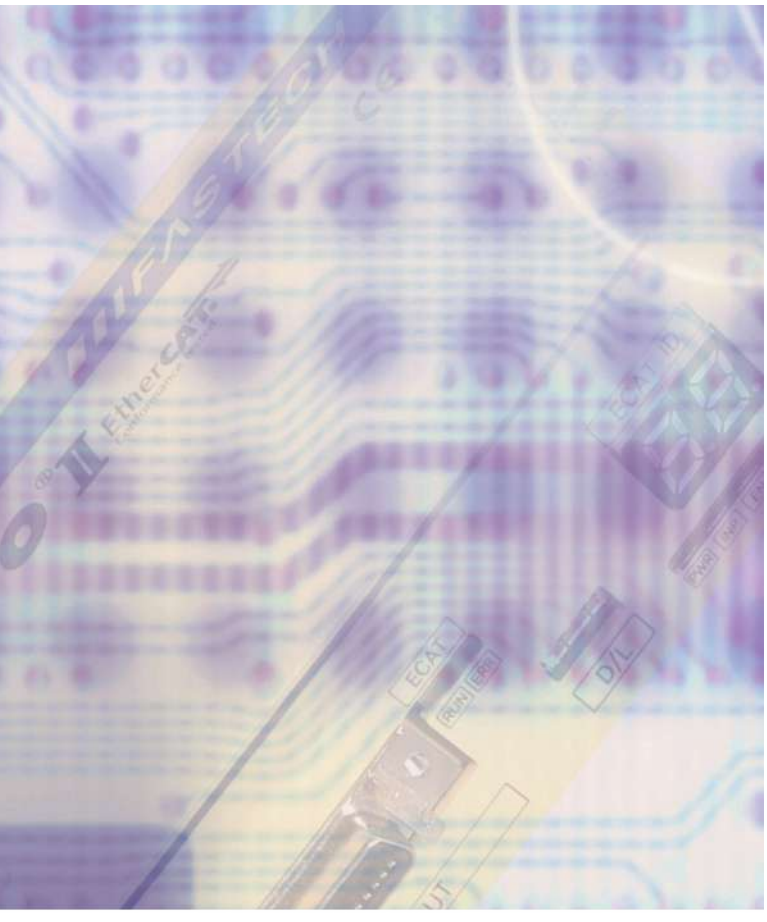
- CiA402 Drive Profile Support
- Closed-Loop Stepping system
- Tuning Not Required / No Hunting
- Space Saving / Reduced Wiring by Compact Drive
- Low Heat Generation / High Torque
- High Resolution / High Response



FASTECH
Fast, Accurate, Smooth Motion

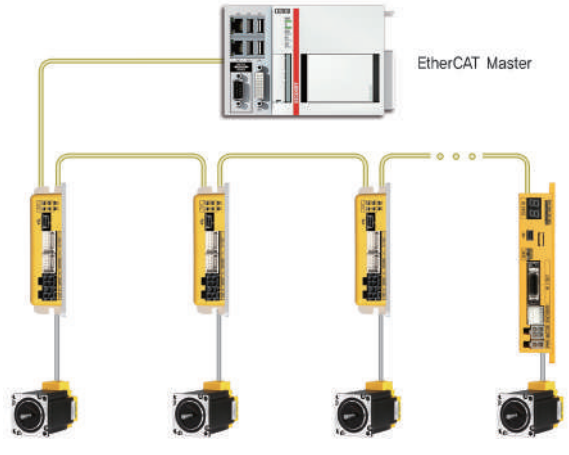
Ezi-SERVO® II
Closed Loop Stepping System

EtherCAT®
MINI



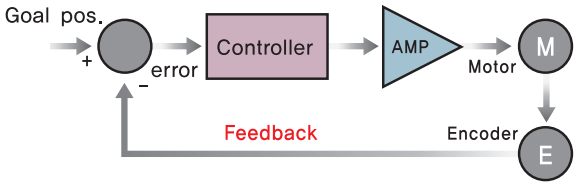
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



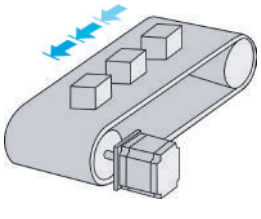
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

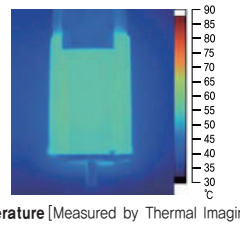
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



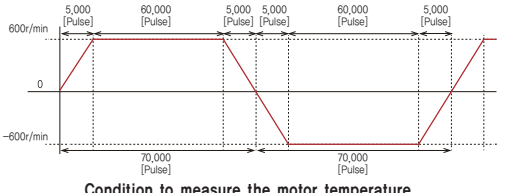
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

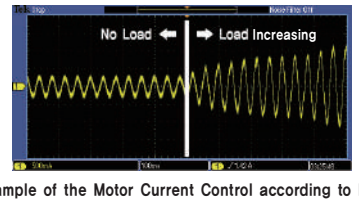
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

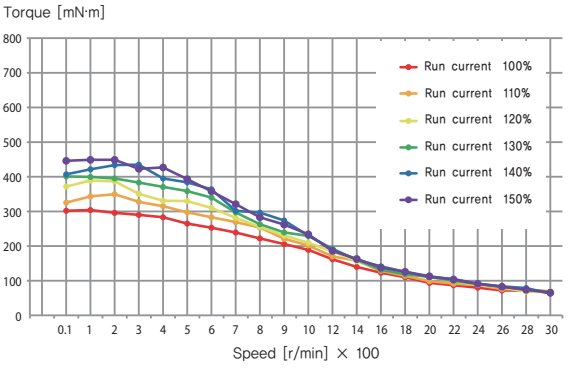


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter.
Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

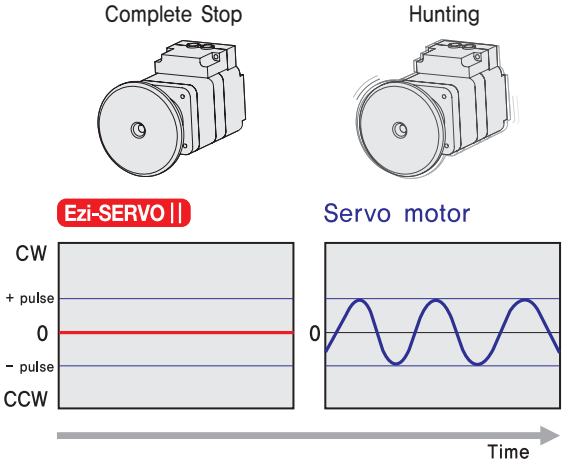


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-MI-56L
Motor Voltage = DC24V
Input Voltage = DC24V

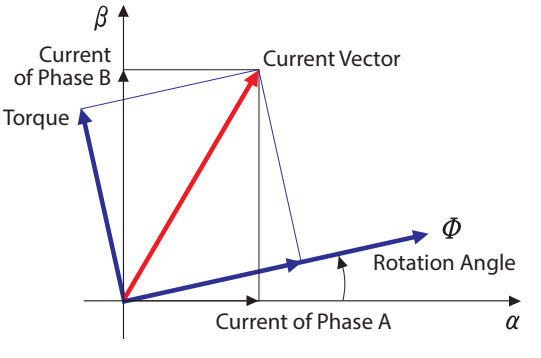
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



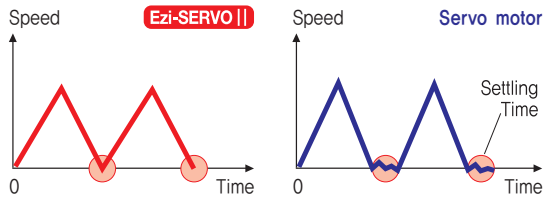
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



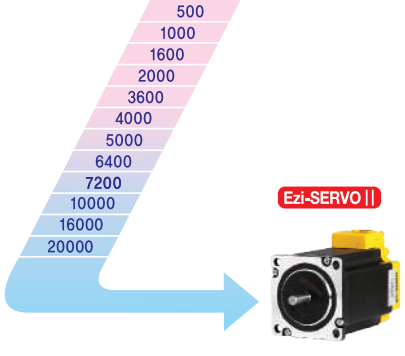
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



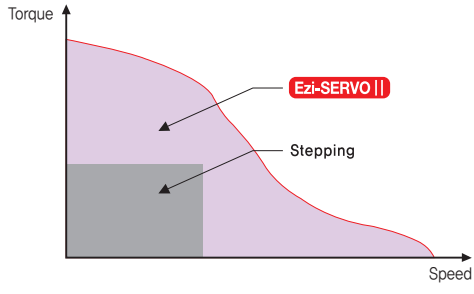
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



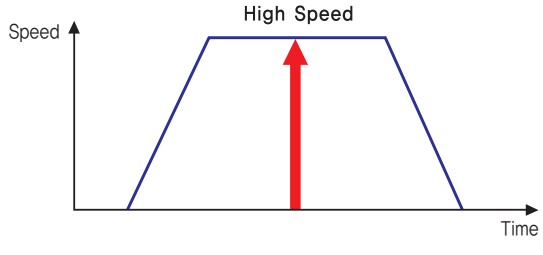
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVO II EtherCAT MINI Part Numbering

Ezi-SERVO II -EC-MI-42S-A-BK-PN10

Series Name

Type Name

EC-MI : EtherCAT Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-MI-20M-F	EzM2-20M-F	EzS2-EC-MI-20M-F
Ezi-SERVO II-EC-MI-20L-F	EzM2-20L-F	EzS2-EC-MI-20L-F
Ezi-SERVO II-EC-MI-28S-D	EzM2-28S-D	EzS2-EC-MI-28S-D
Ezi-SERVO II-EC-MI-28SM-D	EzM2-28SM-D	EzS2-EC-MI-28S-D
Ezi-SERVO II-EC-MI-28M-D	EzM2-28M-D	EzS2-EC-MI-28M-D
Ezi-SERVO II-EC-MI-28MM-D	EzM2-28MM-D	EzS2-EC-MI-28M-D
Ezi-SERVO II-EC-MI-28L-D	EzM2-28L-D	EzS2-EC-MI-28L-D
Ezi-SERVO II-EC-MI-28LM-D	EzM2-28LM-D	EzS2-EC-MI-28L-D
Ezi-SERVO II-EC-MI-35M-D	EzM2-35M-D	EzS2-EC-MI-35M-D
Ezi-SERVO II-EC-MI-35MM-D	EzM2-35MM-D	EzS2-EC-MI-35M-D
Ezi-SERVO II-EC-MI-35L-D	EzM2-35L-D	EzS2-EC-MI-35L-D
Ezi-SERVO II-EC-MI-35LM-D	EzM2-35LM-D	EzS2-EC-MI-35L-D
Ezi-SERVO II-EC-MI-42S-A	EzM2-42S-A	EzS2-EC-MI-42S-A
Ezi-SERVO II-EC-MI-42S-B	EzM2-42S-B	EzS2-EC-MI-42S-B
Ezi-SERVO II-EC-MI-42M-A	EzM2-42M-A	EzS2-EC-MI-42M-A
Ezi-SERVO II-EC-MI-42M-B	EzM2-42M-B	EzS2-EC-MI-42M-B
Ezi-SERVO II-EC-MI-42L-A	EzM2-42L-A	EzS2-EC-MI-42L-A
Ezi-SERVO II-EC-MI-42L-B	EzM2-42L-B	EzS2-EC-MI-42L-B
Ezi-SERVO II-EC-MI-42XL-A	EzM2-42XL-A	EzS2-EC-MI-42XL-A
Ezi-SERVO II-EC-MI-42XL-B	EzM2-42XL-B	EzS2-EC-MI-42XL-B
Ezi-SERVO II-EC-MI-56S-A	EzM2-56S-A	EzS2-EC-MI-56S-A
Ezi-SERVO II-EC-MI-56S-B	EzM2-56S-B	EzS2-EC-MI-56S-B
Ezi-SERVO II-EC-MI-56M-A	EzM2-56M-A	EzS2-EC-MI-56M-A
Ezi-SERVO II-EC-MI-56M-B	EzM2-56M-B	EzS2-EC-MI-56M-B
Ezi-SERVO II-EC-MI-56L-A	EzM2-56L-A	EzS2-EC-MI-56L-A
Ezi-SERVO II-EC-MI-56L-B	EzM2-56L-B	EzS2-EC-MI-56L-B
Ezi-SERVO II-EC-MI-60S-A	EzM2-60S-A	EzS2-EC-MI-60S-A
Ezi-SERVO II-EC-MI-60S-B	EzM2-60S-B	EzS2-EC-MI-60S-B
Ezi-SERVO II-EC-MI-60M-A	EzM2-60M-A	EzS2-EC-MI-60M-A
Ezi-SERVO II-EC-MI-60M-B	EzM2-60M-B	EzS2-EC-MI-60M-B
Ezi-SERVO II-EC-MI-60L-A	EzM2-60L-A	EzS2-EC-MI-60L-A
Ezi-SERVO II-EC-MI-60L-B	EzM2-60L-B	EzS2-EC-MI-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(e.g., Ezi-SERVO II-EC-MI-28LM-D, Ezi-SERVO II-EC-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-MI-42S-A-BK	EzM2-42S-A-BK	EzS2-EC-MI-42S-A
Ezi-SERVO II-EC-MI-42S-B-BK	EzM2-42S-B-BK	EzS2-EC-MI-42S-B
Ezi-SERVO II-EC-MI-42M-A-BK	EzM2-42M-A-BK	EzS2-EC-MI-42M-A
Ezi-SERVO II-EC-MI-42M-B-BK	EzM2-42M-B-BK	EzS2-EC-MI-42M-B
Ezi-SERVO II-EC-MI-42L-A-BK	EzM2-42L-A-BK	EzS2-EC-MI-42L-A
Ezi-SERVO II-EC-MI-42L-B-BK	EzM2-42L-B-BK	EzS2-EC-MI-42L-B
Ezi-SERVO II-EC-MI-42XL-A-BK	EzM2-42XL-A-BK	EzS2-EC-MI-42XL-A
Ezi-SERVO II-EC-MI-42XL-B-BK	EzM2-42XL-B-BK	EzS2-EC-MI-42XL-B
Ezi-SERVO II-EC-MI-56S-A-BK	EzM2-56S-A-BK	EzS2-EC-MI-56S-A
Ezi-SERVO II-EC-MI-56S-B-BK	EzM2-56S-B-BK	EzS2-EC-MI-56S-B
Ezi-SERVO II-EC-MI-56M-A-BK	EzM2-56M-A-BK	EzS2-EC-MI-56M-A
Ezi-SERVO II-EC-MI-56M-B-BK	EzM2-56M-B-BK	EzS2-EC-MI-56M-B
Ezi-SERVO II-EC-MI-56L-A-BK	EzM2-56L-A-BK	EzS2-EC-MI-56L-A
Ezi-SERVO II-EC-MI-56L-B-BK	EzM2-56L-B-BK	EzS2-EC-MI-56L-B
Ezi-SERVO II-EC-MI-60S-A-BK	EzM2-60S-A-BK	EzS2-EC-MI-60S-A
Ezi-SERVO II-EC-MI-60S-B-BK	EzM2-60S-B-BK	EzS2-EC-MI-60S-B
Ezi-SERVO II-EC-MI-60M-A-BK	EzM2-60M-A-BK	EzS2-EC-MI-60M-A
Ezi-SERVO II-EC-MI-60M-B-BK	EzM2-60M-B-BK	EzS2-EC-MI-60M-B
Ezi-SERVO II-EC-MI-60L-A-BK	EzM2-60L-A-BK	EzS2-EC-MI-60L-A
Ezi-SERVO II-EC-MI-60L-B-BK	EzM2-60L-B-BK	EzS2-EC-MI-60L-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-MI-42S-A-PN3	EzM2-42S-A-PN3	EzS2-EC-MI-42S-A	1:3
Ezi-SERVO II-EC-MI-42S-B-PN3	EzM2-42S-B-PN3	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN5	EzM2-42S-A-PN5	EzS2-EC-MI-42S-A	1:5
Ezi-SERVO II-EC-MI-42S-B-PN5	EzM2-42S-B-PN5	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN8	EzM2-42S-A-PN8	EzS2-EC-MI-42S-A	1:8
Ezi-SERVO II-EC-MI-42S-B-PN8	EzM2-42S-B-PN8	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN10	EzM2-42S-A-PN10	EzS2-EC-MI-42S-A	1:10
Ezi-SERVO II-EC-MI-42S-B-PN10	EzM2-42S-B-PN10	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN15	EzM2-42S-A-PN15	EzS2-EC-MI-42S-A	1:15
Ezi-SERVO II-EC-MI-42S-B-PN15	EzM2-42S-B-PN15	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN25	EzM2-42S-A-PN25	EzS2-EC-MI-42S-A	1:25
Ezi-SERVO II-EC-MI-42S-B-PN25	EzM2-42S-B-PN25	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN40	EzM2-42S-A-PN40	EzS2-EC-MI-42S-A	1:40
Ezi-SERVO II-EC-MI-42S-B-PN40	EzM2-42S-B-PN40	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42S-A-PN50	EzM2-42S-A-PN50	EzS2-EC-MI-42S-A	1:50
Ezi-SERVO II-EC-MI-42S-B-PN50	EzM2-42S-B-PN50	EzS2-EC-MI-42S-B	
Ezi-SERVO II-EC-MI-42M-A-PN3	EzM2-42M-A-PN3	EzS2-EC-MI-42M-A	1:3
Ezi-SERVO II-EC-MI-42M-B-PN3	EzM2-42M-B-PN3	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN5	EzM2-42M-A-PN5	EzS2-EC-MI-42M-A	1:5
Ezi-SERVO II-EC-MI-42M-B-PN5	EzM2-42M-B-PN5	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN8	EzM2-42M-A-PN8	EzS2-EC-MI-42M-A	1:8
Ezi-SERVO II-EC-MI-42M-B-PN8	EzM2-42M-B-PN8	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN10	EzM2-42M-A-PN10	EzS2-EC-MI-42M-A	1:10
Ezi-SERVO II-EC-MI-42M-B-PN10	EzM2-42M-B-PN10	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN15	EzM2-42M-A-PN15	EzS2-EC-MI-42M-A	1:15
Ezi-SERVO II-EC-MI-42M-B-PN15	EzM2-42M-B-PN15	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN25	EzM2-42M-A-PN25	EzS2-EC-MI-42M-A	1:25
Ezi-SERVO II-EC-MI-42M-B-PN25	EzM2-42M-B-PN25	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN40	EzM2-42M-A-PN40	EzS2-EC-MI-42M-A	1:40
Ezi-SERVO II-EC-MI-42M-B-PN40	EzM2-42M-B-PN40	EzS2-EC-MI-42M-B	
Ezi-SERVO II-EC-MI-42M-A-PN50	EzM2-42M-A-PN50	EzS2-EC-MI-42M-A	1:50
Ezi-SERVO II-EC-MI-42M-B-PN50	EzM2-42M-B-PN50	EzS2-EC-MI-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-MI-42L-A-PN3	EzM2-42L-A-PN3	EzS2-EC-MI-42L-A	1:3
Ezi-SERVO II-EC-MI-42L-B-PN3	EzM2-42L-B-PN3	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN5	EzM2-42L-A-PN5	EzS2-EC-MI-42L-A	1:5
Ezi-SERVO II-EC-MI-42L-B-PN5	EzM2-42L-B-PN5	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN8	EzM2-42L-A-PN8	EzS2-EC-MI-42L-A	1:8
Ezi-SERVO II-EC-MI-42L-B-PN8	EzM2-42L-B-PN8	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN10	EzM2-42L-A-PN10	EzS2-EC-MI-42L-A	1:10
Ezi-SERVO II-EC-MI-42L-B-PN10	EzM2-42L-B-PN10	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN15	EzM2-42L-A-PN15	EzS2-EC-MI-42L-A	1:15
Ezi-SERVO II-EC-MI-42L-B-PN15	EzM2-42L-B-PN15	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN25	EzM2-42L-A-PN25	EzS2-EC-MI-42L-A	1:25
Ezi-SERVO II-EC-MI-42L-B-PN25	EzM2-42L-B-PN25	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN40	EzM2-42L-A-PN40	EzS2-EC-MI-42L-A	1:40
Ezi-SERVO II-EC-MI-42L-B-PN40	EzM2-42L-B-PN40	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42L-A-PN50	EzM2-42L-A-PN50	EzS2-EC-MI-42L-A	1:50
Ezi-SERVO II-EC-MI-42L-B-PN50	EzM2-42L-B-PN50	EzS2-EC-MI-42L-B	
Ezi-SERVO II-EC-MI-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-EC-MI-42XL-A	1:3
Ezi-SERVO II-EC-MI-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-EC-MI-42XL-A	1:5
Ezi-SERVO II-EC-MI-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-EC-MI-42XL-A	1:8
Ezi-SERVO II-EC-MI-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-EC-MI-42XL-A	1:10
Ezi-SERVO II-EC-MI-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-EC-MI-42XL-A	1:15
Ezi-SERVO II-EC-MI-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-EC-MI-42XL-A	1:25
Ezi-SERVO II-EC-MI-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-EC-MI-42XL-A	1:40
Ezi-SERVO II-EC-MI-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-EC-MI-42XL-A	1:50
Ezi-SERVO II-EC-MI-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-EC-MI-42XL-B	
Ezi-SERVO II-EC-MI-56S-A-PN3	EzM2-56S-A-PN3	EzS2-EC-MI-56S-A	1:3
Ezi-SERVO II-EC-MI-56S-B-PN3	EzM2-56S-B-PN3	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN5	EzM2-56S-A-PN5	EzS2-EC-MI-56S-A	1:5
Ezi-SERVO II-EC-MI-56S-B-PN5	EzM2-56S-B-PN5	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN8	EzM2-56S-A-PN8	EzS2-EC-MI-56S-A	1:8
Ezi-SERVO II-EC-MI-56S-B-PN8	EzM2-56S-B-PN8	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN10	EzM2-56S-A-PN10	EzS2-EC-MI-56S-A	1:10
Ezi-SERVO II-EC-MI-56S-B-PN10	EzM2-56S-B-PN10	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN15	EzM2-56S-A-PN15	EzS2-EC-MI-56S-A	1:15
Ezi-SERVO II-EC-MI-56S-B-PN15	EzM2-56S-B-PN15	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN25	EzM2-56S-A-PN25	EzS2-EC-MI-56S-A	1:25
Ezi-SERVO II-EC-MI-56S-B-PN25	EzM2-56S-B-PN25	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN40	EzM2-56S-A-PN40	EzS2-EC-MI-56S-A	1:40
Ezi-SERVO II-EC-MI-56S-B-PN40	EzM2-56S-B-PN40	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56S-A-PN50	EzM2-56S-A-PN50	EzS2-EC-MI-56S-A	1:50
Ezi-SERVO II-EC-MI-56S-B-PN50	EzM2-56S-B-PN50	EzS2-EC-MI-56S-B	
Ezi-SERVO II-EC-MI-56M-A-PN3	EzM2-56M-A-PN3	EzS2-EC-MI-56M-A	1:3
Ezi-SERVO II-EC-MI-56M-B-PN3	EzM2-56M-B-PN3	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN5	EzM2-56M-A-PN5	EzS2-EC-MI-56M-A	1:5
Ezi-SERVO II-EC-MI-56M-B-PN5	EzM2-56M-B-PN5	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN8	EzM2-56M-A-PN8	EzS2-EC-MI-56M-A	1:8
Ezi-SERVO II-EC-MI-56M-B-PN8	EzM2-56M-B-PN8	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN10	EzM2-56M-A-PN10	EzS2-EC-MI-56M-A	1:10
Ezi-SERVO II-EC-MI-56M-B-PN10	EzM2-56M-B-PN10	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN15	EzM2-56M-A-PN15	EzS2-EC-MI-56M-A	1:15
Ezi-SERVO II-EC-MI-56M-B-PN15	EzM2-56M-B-PN15	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN25	EzM2-56M-A-PN25	EzS2-EC-MI-56M-A	1:25
Ezi-SERVO II-EC-MI-56M-B-PN25	EzM2-56M-B-PN25	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN40	EzM2-56M-A-PN40	EzS2-EC-MI-56M-A	1:40
Ezi-SERVO II-EC-MI-56M-B-PN40	EzM2-56M-B-PN40	EzS2-EC-MI-56M-B	
Ezi-SERVO II-EC-MI-56M-A-PN50	EzM2-56M-A-PN50	EzS2-EC-MI-56M-A	1:50
Ezi-SERVO II-EC-MI-56M-B-PN50	EzM2-56M-B-PN50	EzS2-EC-MI-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-MI-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-MI-56L-A	1:3
Ezi-SERVO II-EC-MI-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-MI-56L-A	1:5
Ezi-SERVO II-EC-MI-56L-B-PN5	EzM2-56L-B-PN5	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN8	EzM2-56L-A-PN8	EzS2-EC-MI-56L-A	1:8
Ezi-SERVO II-EC-MI-56L-B-PN8	EzM2-56L-B-PN8	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN10	EzM2-56L-A-PN10	EzS2-EC-MI-56L-A	1:10
Ezi-SERVO II-EC-MI-56L-B-PN10	EzM2-56L-B-PN10	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN15	EzM2-56L-A-PN15	EzS2-EC-MI-56L-A	1:15
Ezi-SERVO II-EC-MI-56L-B-PN15	EzM2-56L-B-PN15	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN25	EzM2-56L-A-PN25	EzS2-EC-MI-56L-A	1:25
Ezi-SERVO II-EC-MI-56L-B-PN25	EzM2-56L-B-PN25	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN40	EzM2-56L-A-PN40	EzS2-EC-MI-56L-A	1:40
Ezi-SERVO II-EC-MI-56L-B-PN40	EzM2-56L-B-PN40	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-56L-A-PN50	EzM2-56L-A-PN50	EzS2-EC-MI-56L-A	1:50
Ezi-SERVO II-EC-MI-56L-B-PN50	EzM2-56L-B-PN50	EzS2-EC-MI-56L-B	
Ezi-SERVO II-EC-MI-60S-A-PN3	EzM2-60S-A-PN3	EzS2-EC-MI-60S-A	1:3
Ezi-SERVO II-EC-MI-60S-B-PN3	EzM2-60S-B-PN3	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN5	EzM2-60S-A-PN5	EzS2-EC-MI-60S-A	1:5
Ezi-SERVO II-EC-MI-60S-B-PN5	EzM2-60S-B-PN5	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN8	EzM2-60S-A-PN8	EzS2-EC-MI-60S-A	1:8
Ezi-SERVO II-EC-MI-60S-B-PN8	EzM2-60S-B-PN8	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN10	EzM2-60S-A-PN10	EzS2-EC-MI-60S-A	1:10
Ezi-SERVO II-EC-MI-60S-B-PN10	EzM2-60S-B-PN10	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN15	EzM2-60S-A-PN15	EzS2-EC-MI-60S-A	1:15
Ezi-SERVO II-EC-MI-60S-B-PN15	EzM2-60S-B-PN15	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN25	EzM2-60S-A-PN25	EzS2-EC-MI-60S-A	1:25
Ezi-SERVO II-EC-MI-60S-B-PN25	EzM2-60S-B-PN25	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN40	EzM2-60S-A-PN40	EzS2-EC-MI-60S-A	1:40
Ezi-SERVO II-EC-MI-60S-B-PN40	EzM2-60S-B-PN40	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60S-A-PN50	EzM2-60S-A-PN50	EzS2-EC-MI-60S-A	1:50
Ezi-SERVO II-EC-MI-60S-B-PN50	EzM2-60S-B-PN50	EzS2-EC-MI-60S-B	
Ezi-SERVO II-EC-MI-60M-A-PN3	EzM2-60M-A-PN3	EzS2-EC-MI-60M-A	1:3
Ezi-SERVO II-EC-MI-60M-B-PN3	EzM2-60M-B-PN3	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN5	EzM2-60M-A-PN5	EzS2-EC-MI-60M-A	1:5
Ezi-SERVO II-EC-MI-60M-B-PN5	EzM2-60M-B-PN5	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN8	EzM2-60M-A-PN8	EzS2-EC-MI-60M-A	1:8
Ezi-SERVO II-EC-MI-60M-B-PN8	EzM2-60M-B-PN8	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN10	EzM2-60M-A-PN10	EzS2-EC-MI-60M-A	1:10
Ezi-SERVO II-EC-MI-60M-B-PN10	EzM2-60M-B-PN10	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN15	EzM2-60M-A-PN15	EzS2-EC-MI-60M-A	1:15
Ezi-SERVO II-EC-MI-60M-B-PN15	EzM2-60M-B-PN15	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN25	EzM2-60M-A-PN25	EzS2-EC-MI-60M-A	1:25
Ezi-SERVO II-EC-MI-60M-B-PN25	EzM2-60M-B-PN25	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN40	EzM2-60M-A-PN40	EzS2-EC-MI-60M-A	1:40
Ezi-SERVO II-EC-MI-60M-B-PN40	EzM2-60M-B-PN40	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60M-A-PN50	EzM2-60M-A-PN50	EzS2-EC-MI-60M-A	1:50
Ezi-SERVO II-EC-MI-60M-B-PN50	EzM2-60M-B-PN50	EzS2-EC-MI-60M-B	
Ezi-SERVO II-EC-MI-60L-A-PN3	EzM2-60L-A-PN3	EzS2-EC-MI-60L-A	1:3
Ezi-SERVO II-EC-MI-60L-B-PN3	EzM2-60L-B-PN3	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN5	EzM2-60L-A-PN5	EzS2-EC-MI-60L-A	1:5
Ezi-SERVO II-EC-MI-60L-B-PN5	EzM2-60L-B-PN5	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN8	EzM2-60L-A-PN8	EzS2-EC-MI-60L-A	1:8
Ezi-SERVO II-EC-MI-60L-B-PN8	EzM2-60L-B-PN8	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN10	EzM2-60L-A-PN10	EzS2-EC-MI-60L-A	1:10
Ezi-SERVO II-EC-MI-60L-B-PN10	EzM2-60L-B-PN10	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN15	EzM2-60L-A-PN15	EzS2-EC-MI-60L-A	1:15
Ezi-SERVO II-EC-MI-60L-B-PN15	EzM2-60L-B-PN15	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN25	EzM2-60L-A-PN25	EzS2-EC-MI-60L-A	1:25
Ezi-SERVO II-EC-MI-60L-B-PN25	EzM2-60L-B-PN25	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN40	EzM2-60L-A-PN40	EzS2-EC-MI-60L-A	1:40
Ezi-SERVO II-EC-MI-60L-B-PN40	EzM2-60L-B-PN40	EzS2-EC-MI-60L-B	
Ezi-SERVO II-EC-MI-60L-A-PN50	EzM2-60L-A-PN50	EzS2-EC-MI-60L-A	1:50
Ezi-SERVO II-EC-MI-60L-B-PN50	EzM2-60L-B-PN50	EzS2-EC-MI-60L-B	

Specifications of Drive

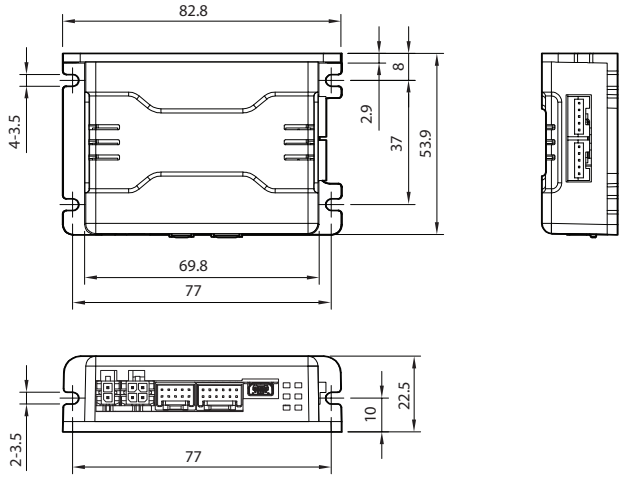
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Drive Model		EzS2-EC-MI-20 series	EzS2-EC-MI-28 series	EzS2-EC-MI-35 series	EzS2-EC-MI-42 series	EzS2-EC-MI-56 series	EzS2-EC-MI-60 series
Input Voltage		DC24V±10%					
Control Method		Closed-loop control with 32 bit MCU					
Current Consumption		Max. 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *2 · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min *1					
	Resolution	(Selectable by parameter)					
	Error Type	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)					
	Output Signals	2 programmable outputs (Photocoupler Output), 1 Brake output					

Encoder Resolution [P/R]	Configurable Resolution [P/R]									
4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000
10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	
16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000
20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

*2 : EzS2-EC-MI-56, 60 series should be installed on a heat sink or a structure capable of heat dissipation.

Dimensions of Drive [mm]



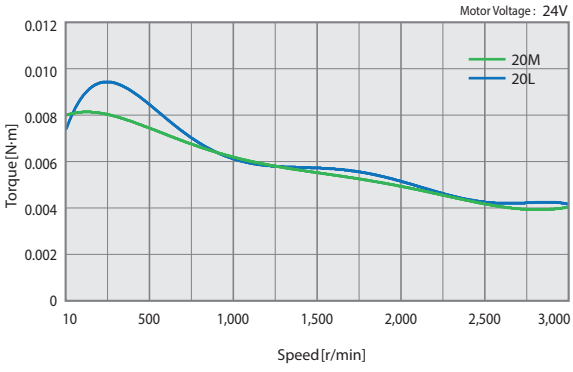
Specifications of Motor

MODEL			UNIT	EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit's Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

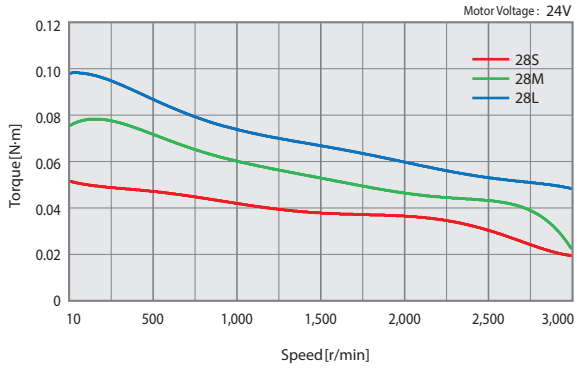
MODEL			UNIT	EzM2-56 series			EzM2-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

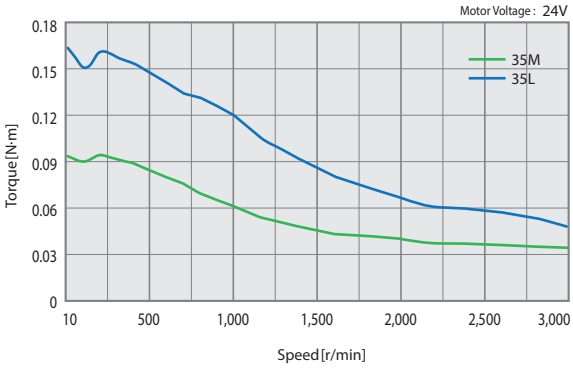
Ezi-SERVO II-EC-MI-20 series



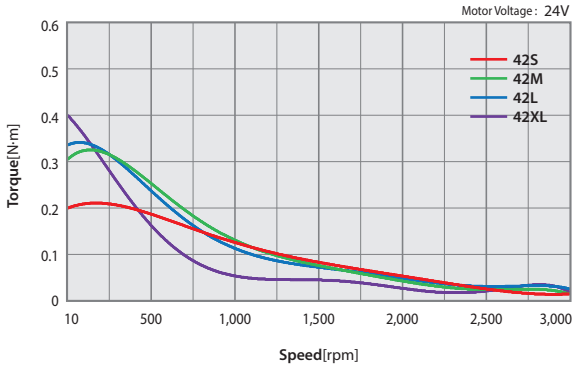
Ezi-SERVO II-EC-MI-28 series



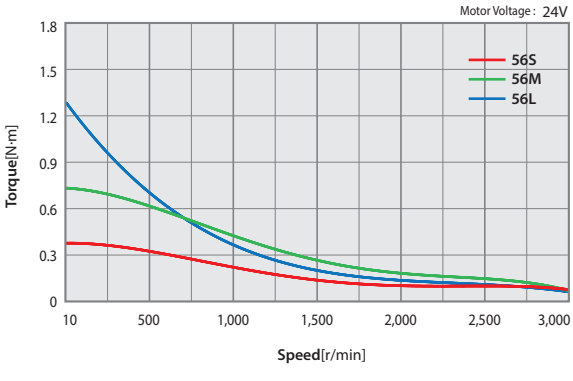
Ezi-SERVO II-EC-MI-35 series



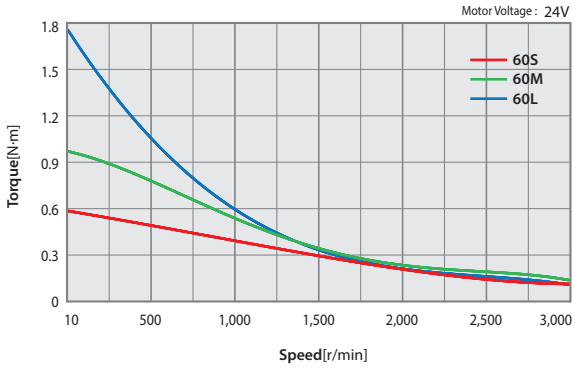
Ezi-SERVO II-EC-MI-42 series



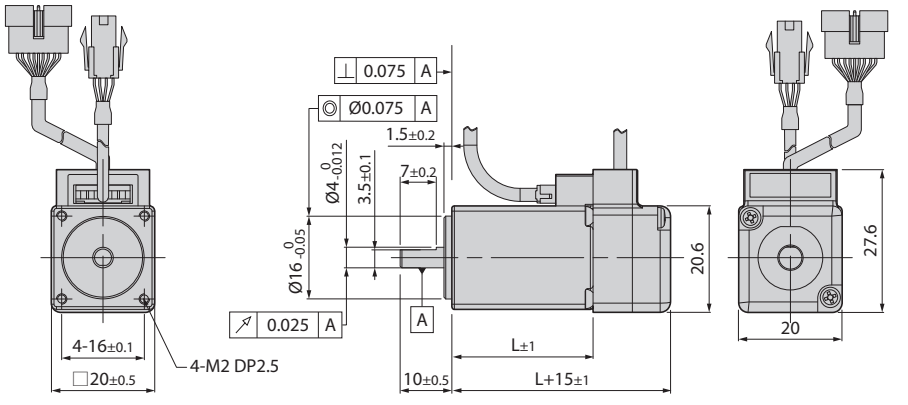
Ezi-SERVO II-EC-MI-56 series



Ezi-SERVO II-EC-MI-60 series

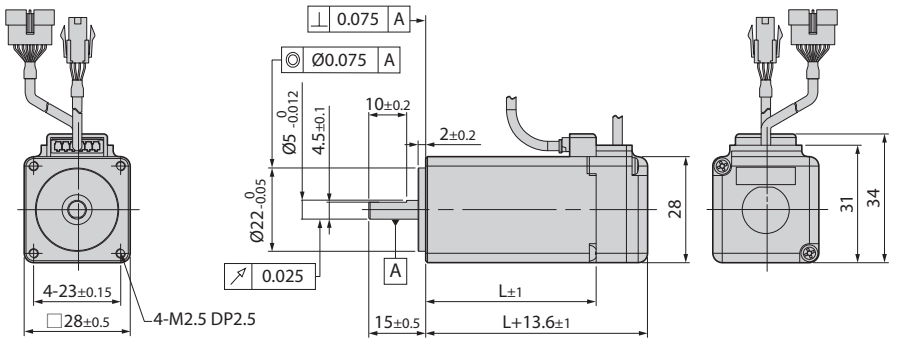


● Dimensions of Motor [mm]



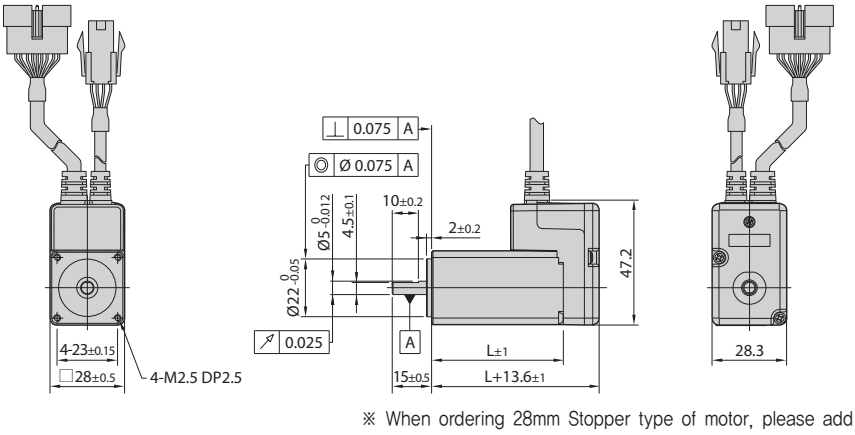
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

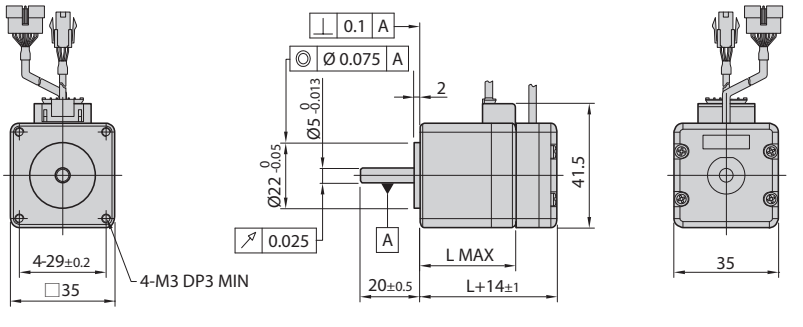
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

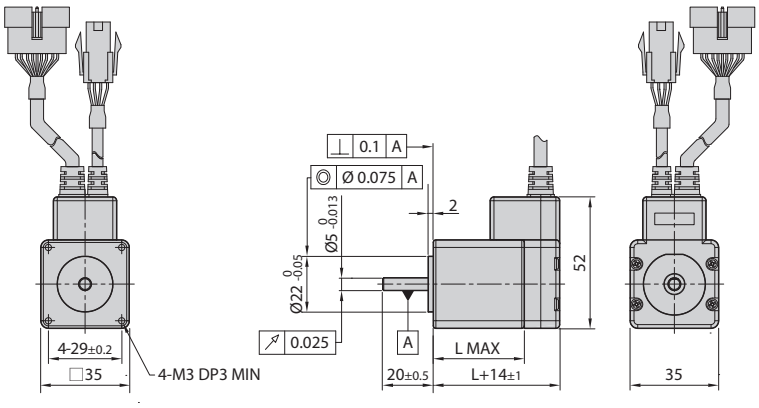
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

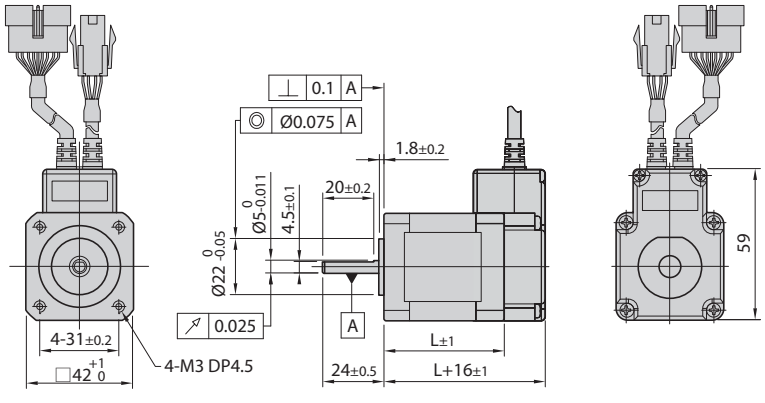
Dimensions of Motor [mm]



35mm (Stopper type)

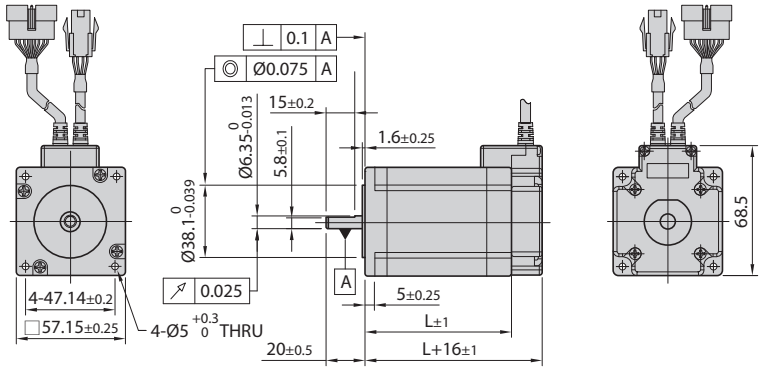
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

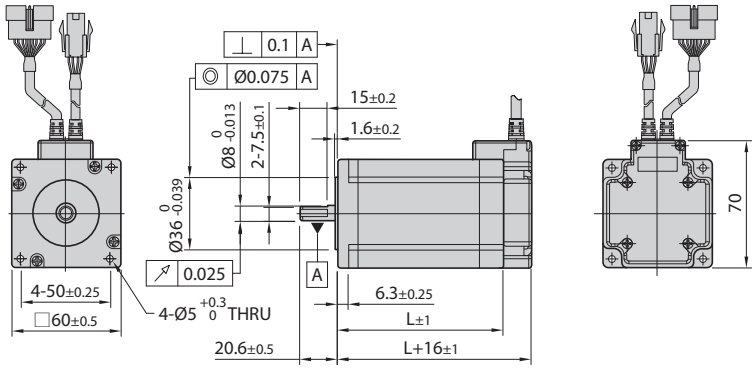
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

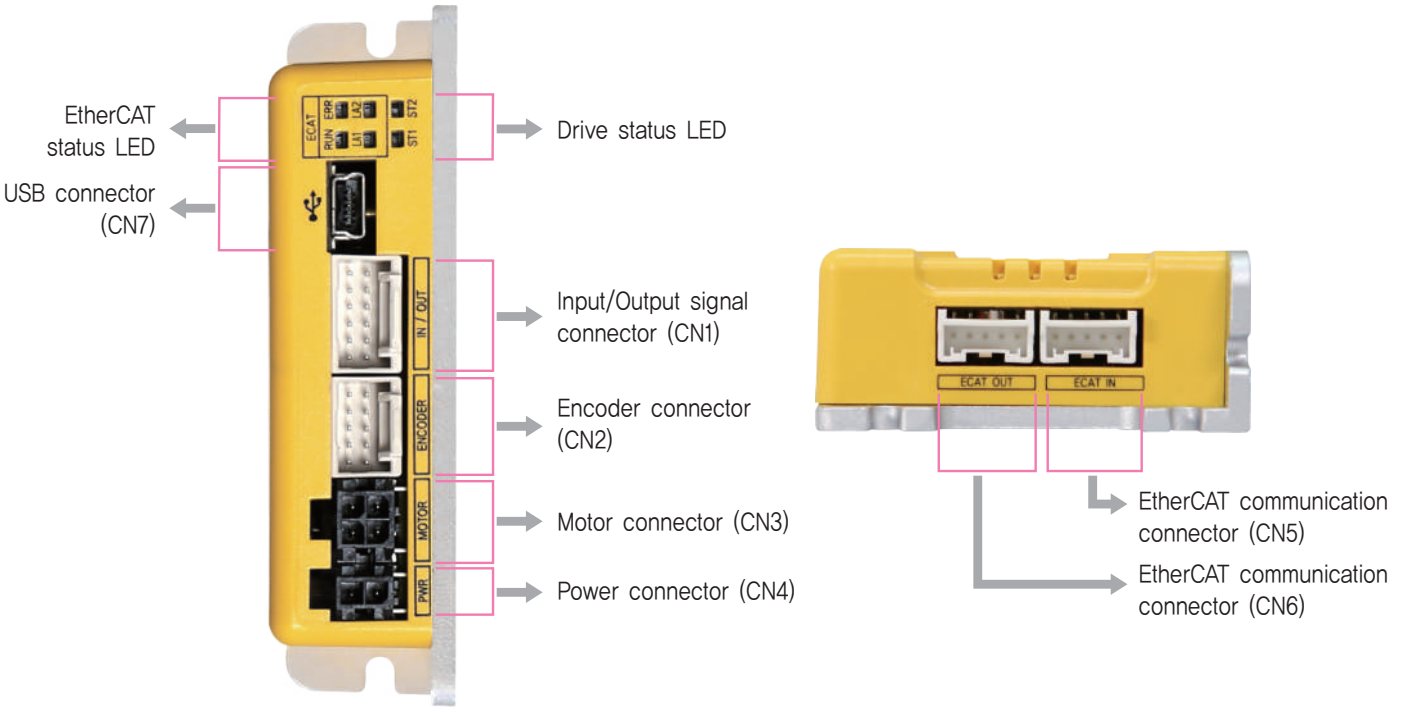
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

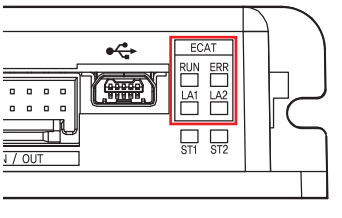
Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation



1. EtherCAT Status LED

LED indicates communication status of EtherCAT.



Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

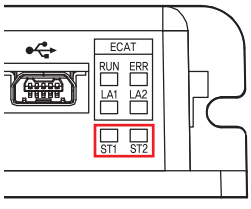
Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Description
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

2. Drive Status LED

LED informs operation status of the drive.

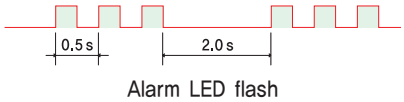
LED Indication	LED Status	Description
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF	Servo On
ST1 : ▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF	Servo Off
ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 and ST2 are ON	In motion
ST1 : ● ● ● ● ● ● ST2 : ● ● ● ● ● ●	ST1 and ST2 blink alternately	A position error is greater than the set value (Inposition Value) while the motor is stopped.
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



◆ List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

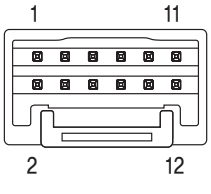
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default setting value is 180 ° , and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

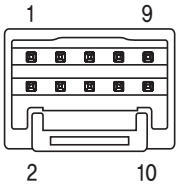
3. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output



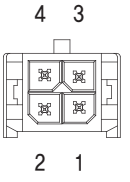
4. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



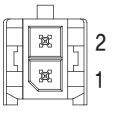
5. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



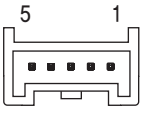
6. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



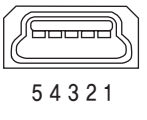
7. EtherCAT Communication Connector(CN5, CN6)

No.	Function
1	TD+
2	TD−
3	RD+
4	RD−
5	F.GND

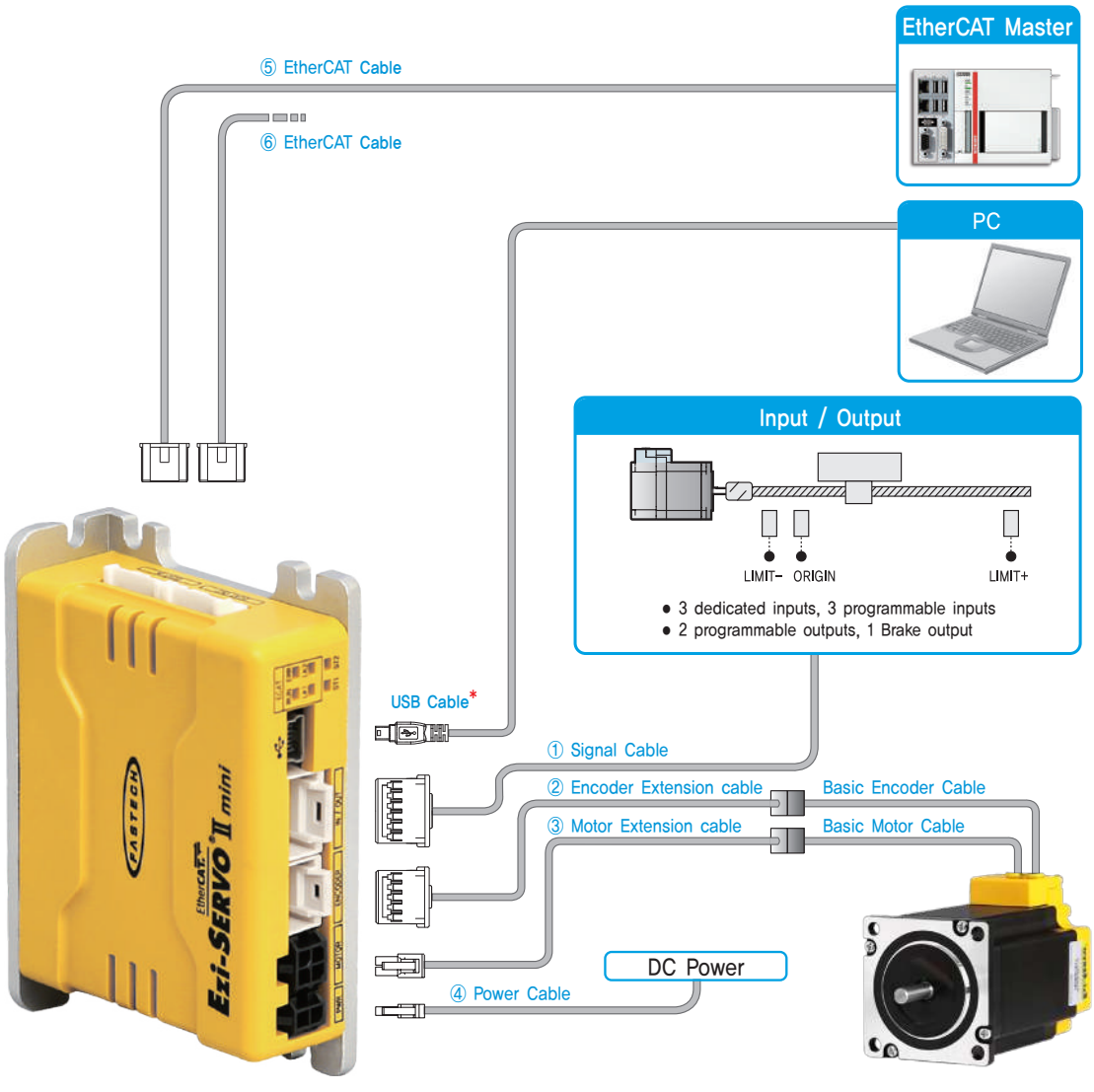


8. USB Connector(CN7)

No.	Function
1	V_{BUS}
2	D−
3	D+
4	−−−
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-1200	MOLEX
		Terminal	501648-1000 (AWG 26~28)	
Encoder	Drive Side (CN2)	Housing	501646-1000	MOLEX
		Terminal	501648-1000 (AWG 26~28)	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	43025-0400	MOLEX
		Terminal	43030-0001	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
EtherCAT (CN5, CN6)		Housing	PAP-05V-S	JST
		Terminal	SPHD-001T-P0.5	
Power (CN4)		Housing	43025-0200	MOLEX
		Terminal	43030-0001	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSNR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSNR-S-002F	2		
	CSNR-S-003F	3		
	CSNR-S-005F	5		
	CSNR-S-001M	1	Robot Cable	
	CSNR-S-002M	2		
	CSNR-S-003M	3		
	CSNR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT MINI drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVI-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVI-E-002F	2		
	CSVI-E-003F	3		
	CSVI-E-005F	5		
	CSVI-E-001M	1	Robot Cable	
	CSVI-E-002M	2		
	CSVI-E-003M	3		
	CSVI-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT MINI drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSMI-M-001F	1	Normal Cable	Maximum Length: 20m
	CSMI-M-002F	2		
	CSMI-M-003F	3		
	CSMI-M-005F	5		
	CSMI-M-001M	1	Robot Cable	
	CSMI-M-002M	2		
	CSMI-M-003M	3		
	CSMI-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT MINI drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSMI-P-001F	1	Normal Cable	Maximum Length: 2m
	CSMI-P-002F	2		
	CSMI-P-001M	1	Robot Cable	
	CSMI-P-002M	2		

⑤ EtherCAT Cable (5 pin connector – RJ45)

These are the cables to connect Ezi-SERVO II EtherCAT MINI drive and Ezi-SERVO II EtherCAT, Ezi-SERVO II EtherCAT ALL R type with EtherCAT network.

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNE-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNE-EC-002F	2	
	CGNE-EC-003F	3	
	CGNE-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

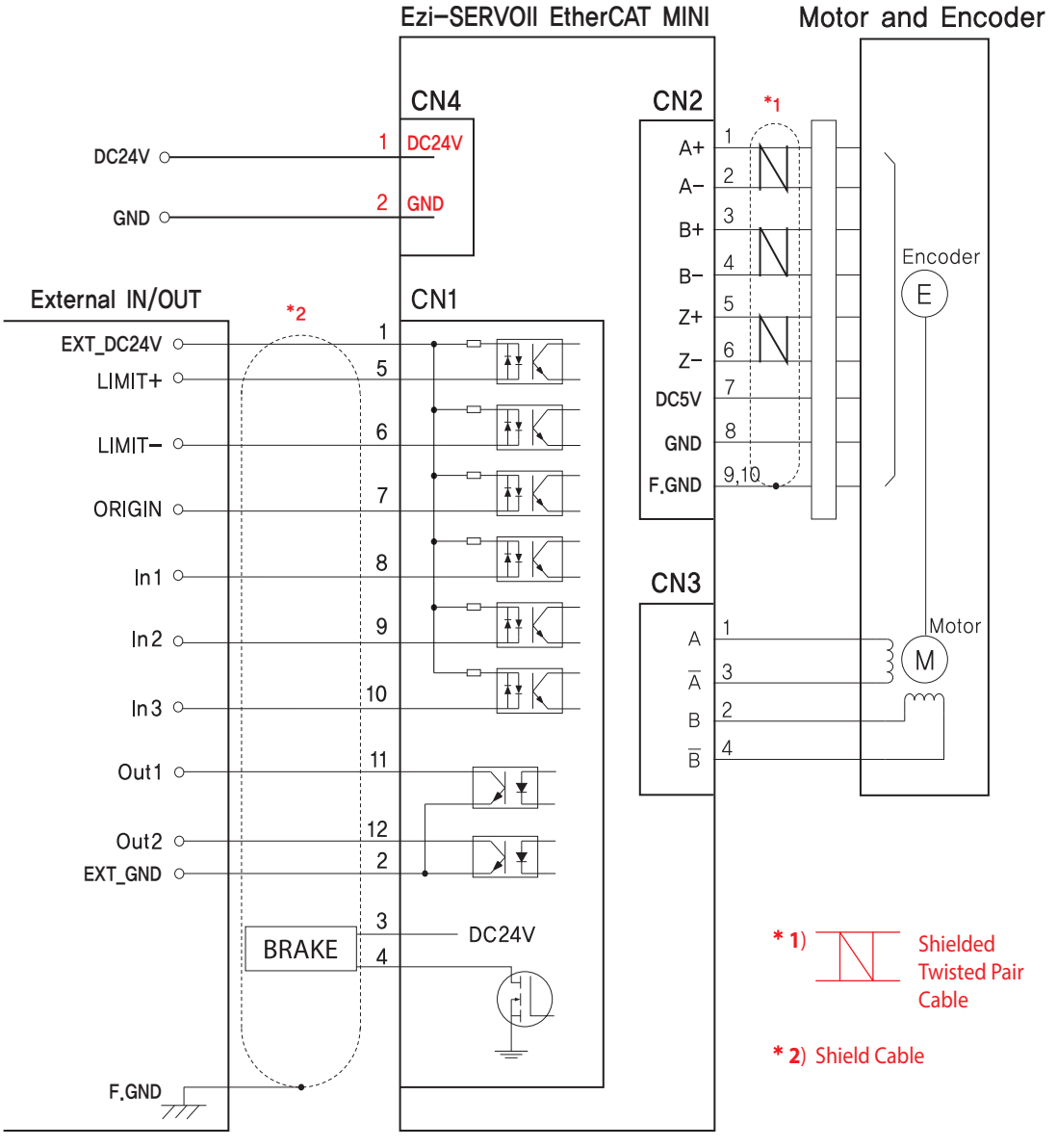
⑥ EtherCAT Cable (5 pin connector – 5 pin connector)

These are the cables to connect between Ezi-SERVO II EtherCAT MINI drives with EtherCAT network.

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNI-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNI-EC-002F	2	
	CGNI-EC-003F	3	
	CGNI-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


C.P
M.P
EtherCAT. 4X
M.P
C.P
ECAT OUT
ECAT IN
PWR INP SON ALM
RUN ERR LA1 LA2
MOTOR
ENCODER
I/O
Ezi-SERVO II EtherCAT.

Ezi-SERVO® II

Closed Loop Stepping System

EtherCAT® 4X

- CiA402 Drive Profile Support
- Closed-Loop Stepping system
- Tuning Not Required / No Hunting
- Compact Multi Axis Stepping Motor Drive
- Space Saving / Reduced Wiring

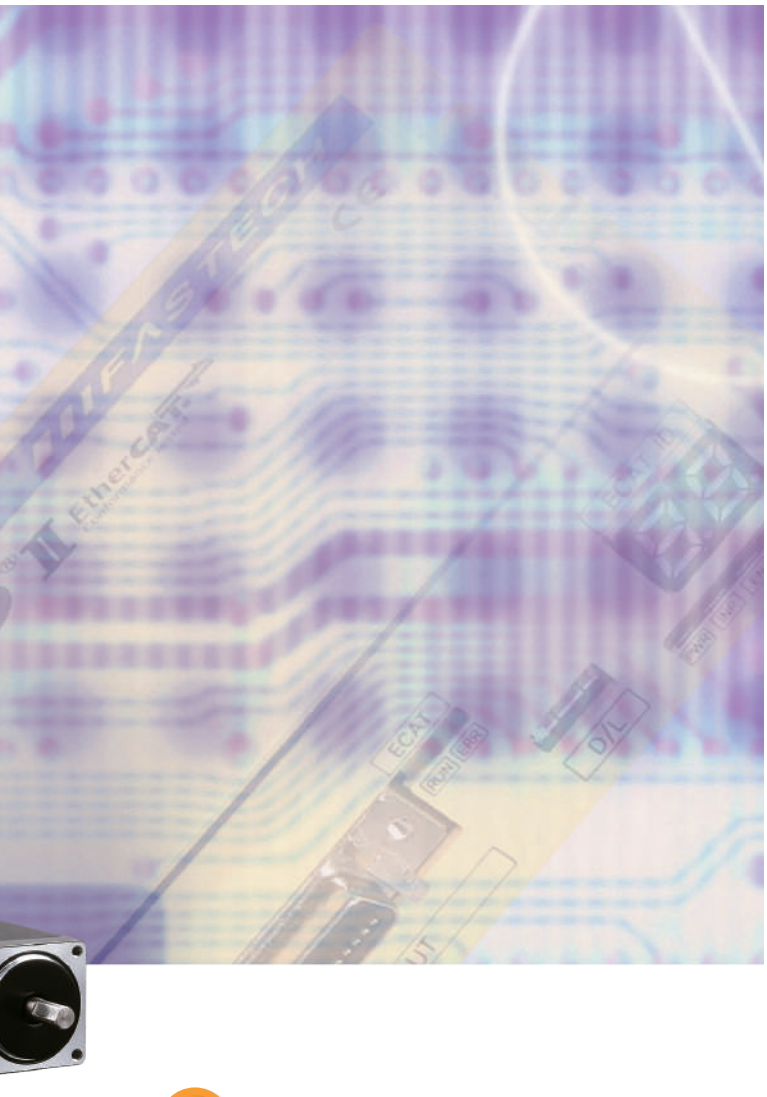


FASTECH

Fast, Accurate, Smooth Motion

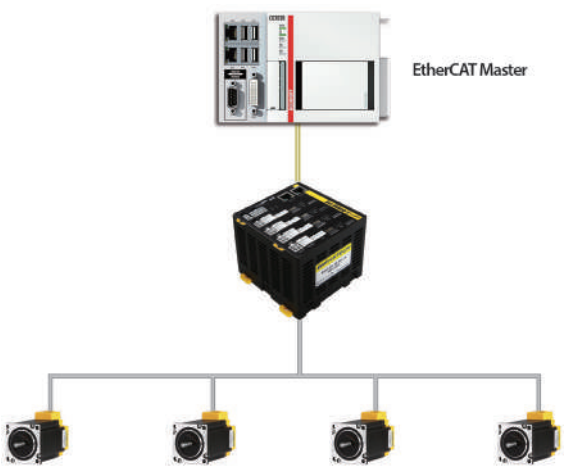
Ezi-SERVO® II EtherCAT® 4X

Closed Loop Stepping System



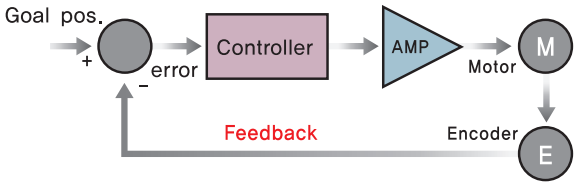
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



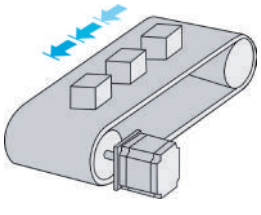
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

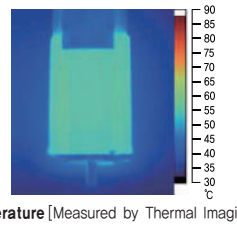
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



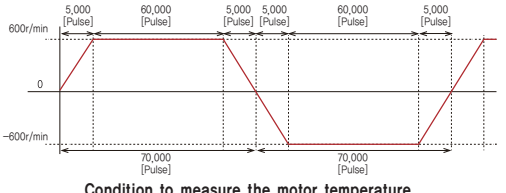
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

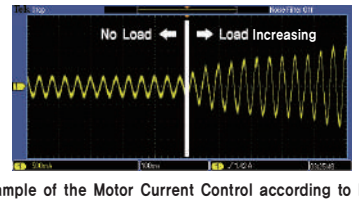
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

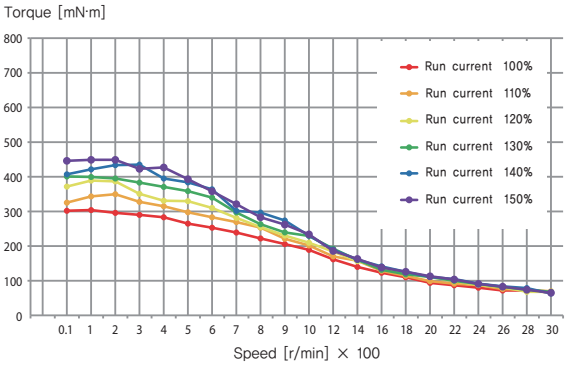


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased. Ezi-SERVO II can improve the torque in the low speed range by about 30%.

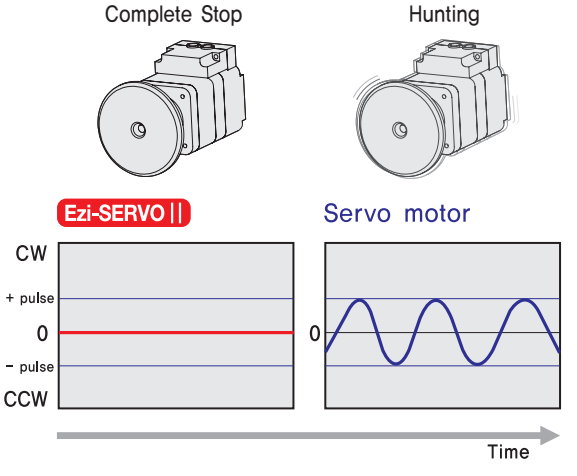


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-4X-42L
Motor Voltage = DC24V
Input Voltage = DC24V

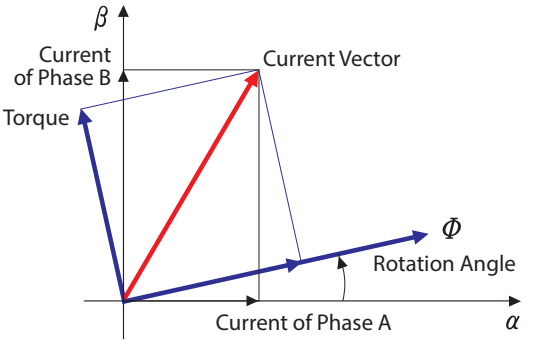
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



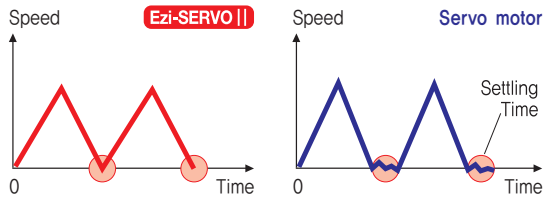
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



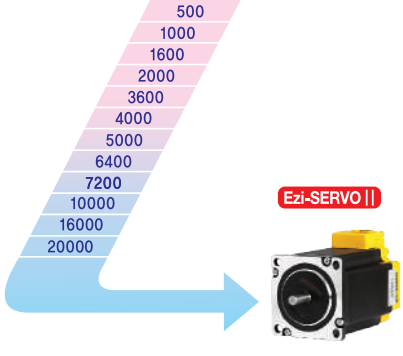
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



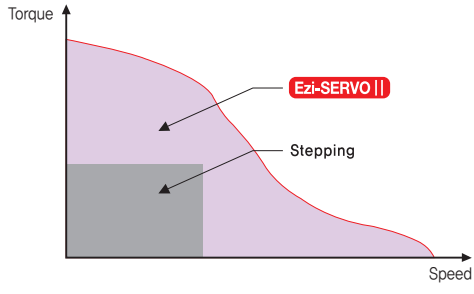
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



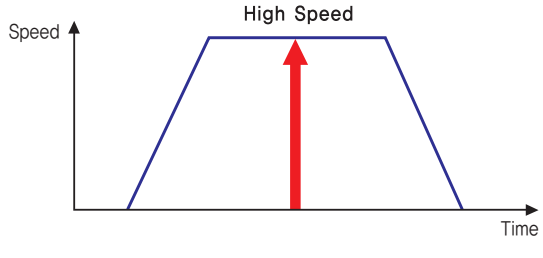
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II EtherCAT 4X Part Numbering

Ezi-SERVO II -EC-4X

- Series Name
- Type Name
  - EC-4X : EtherCAT 4axis
  - EC-3X : EtherCAT 3axis

* Ezi-SERVO II EtherCAT 4X can connect up to 4 motors to one drive. Standard motors, motors with brake, and motors with gearbox can be connected, and different types of motors can be connected to each axis.

Standard Motor

Motor Model Number
EzM2-20M-F
EzM2-20L-F
EzM2-28S-D
EzM2-28SM-D
EzM2-28M-D
EzM2-28MM-D
EzM2-28L-D
EzM2-28LM-D
EzM2-35M-D
EzM2-35MM-D
EzM2-35L-D
EzM2-35LM-D
EzM2-42S-A
EzM2-42S-B
EzM2-42M-A
EzM2-42M-B
EzM2-42L-A
EzM2-42L-B
EzM2-42XL-A
EzM2-42XL-B

Motor Model Number
EzM2-56S-A
EzM2-56S-B
EzM2-56M-A
EzM2-56M-B
EzM2-56L-A
EzM2-56L-B
EzM2-60S-A
EzM2-60S-B
EzM2-60M-A
EzM2-60M-B
EzM2-60L-A
EzM2-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(e.g., Ezi-SERVO II -EC-4X-28LM-D, Ezi-SERVO II -EC-4X-35LM-D)

Combination with Brake

Motor Model Number with Brake
EzM2-42S-A-BK
EzM2-42S-B-BK
EzM2-42M-A-BK
EzM2-42M-B-BK
EzM2-42L-A-BK
EzM2-42L-B-BK
EzM2-42XL-A-BK
EzM2-42XL-B-BK
EzM2-56S-A-BK
EzM2-56S-B-BK
EzM2-56M-A-BK
EzM2-56M-B-BK
EzM2-56L-A-BK
EzM2-56L-B-BK
EzM2-60S-A-BK
EzM2-60S-B-BK
EzM2-60M-A-BK
EzM2-60M-B-BK
EzM2-60L-A-BK
EzM2-60L-B-BK

Combination with Gearbox

Motor Model Number	Gear Ratio
EzM2-42S-A-PN3	1:3
EzM2-42S-B-PN3	
EzM2-42S-A-PN5	1:5
EzM2-42S-B-PN5	
EzM2-42S-A-PN8	1:8
EzM2-42S-B-PN8	
EzM2-42S-A-PN10	1:10
EzM2-42S-B-PN10	
EzM2-42S-A-PN15	1:15
EzM2-42S-B-PN15	
EzM2-42S-A-PN25	1:25
EzM2-42S-B-PN25	
EzM2-42S-A-PN40	1:40
EzM2-42S-B-PN40	
EzM2-42S-A-PN50	1:50
EzM2-42S-B-PN50	
EzM2-42M-A-PN3	1:3
EzM2-42M-B-PN3	
EzM2-42M-A-PN5	1:5
EzM2-42M-B-PN5	
EzM2-42M-A-PN8	1:8
EzM2-42M-B-PN8	
EzM2-42M-A-PN10	1:10
EzM2-42M-B-PN10	
EzM2-42M-A-PN15	1:15
EzM2-42M-B-PN15	
EzM2-42M-A-PN25	1:25
EzM2-42M-B-PN25	
EzM2-42M-A-PN40	1:40
EzM2-42M-B-PN40	
EzM2-42M-A-PN50	1:50
EzM2-42M-B-PN50	
EzM2-42L-A-PN3	1:3
EzM2-42L-B-PN3	
EzM2-42L-A-PN5	1:5
EzM2-42L-B-PN5	
EzM2-42L-A-PN8	1:8
EzM2-42L-B-PN8	
EzM2-42L-A-PN10	1:10
EzM2-42L-B-PN10	
EzM2-42L-A-PN15	1:15
EzM2-42L-B-PN15	
EzM2-42L-A-PN25	1:25
EzM2-42L-B-PN25	
EzM2-42L-A-PN40	1:40
EzM2-42L-B-PN40	
EzM2-42L-A-PN50	1:50
EzM2-42L-B-PN50	
EzM2-42XL-A-PN3	1:3
EzM2-42XL-B-PN3	
EzM2-42XL-A-PN5	1:5
EzM2-42XL-B-PN5	
EzM2-42XL-A-PN8	1:8
EzM2-42XL-B-PN8	
EzM2-42XL-A-PN10	1:10
EzM2-42XL-B-PN10	
EzM2-42XL-A-PN15	1:15
EzM2-42XL-B-PN15	
EzM2-42XL-A-PN25	1:25
EzM2-42XL-B-PN25	
EzM2-42XL-A-PN40	1:40
EzM2-42XL-B-PN40	
EzM2-42XL-A-PN50	1:50
EzM2-42XL-B-PN50	

Motor Model Number	Gear Ratio
EzM2-56S-A-PN3	1:3
EzM2-56S-B-PN3	
EzM2-56S-A-PN5	1:5
EzM2-56S-B-PN5	
EzM2-56S-A-PN8	1:8
EzM2-56S-B-PN8	
EzM2-56S-A-PN10	1:10
EzM2-56S-B-PN10	
EzM2-56S-A-PN15	1:15
EzM2-56S-B-PN15	
EzM2-56S-A-PN25	1:25
EzM2-56S-B-PN25	
EzM2-56S-A-PN40	1:40
EzM2-56S-B-PN40	
EzM2-56S-A-PN50	1:50
EzM2-56S-B-PN50	
EzM2-56M-A-PN3	1:3
EzM2-56M-B-PN3	
EzM2-56M-A-PN5	1:5
EzM2-56M-B-PN5	
EzM2-56M-A-PN8	1:8
EzM2-56M-B-PN8	
EzM2-56M-A-PN10	1:10
EzM2-56M-B-PN10	
EzM2-56M-A-PN15	1:15
EzM2-56M-B-PN15	
EzM2-56M-A-PN25	1:25
EzM2-56M-B-PN25	
EzM2-56M-A-PN40	1:40
EzM2-56M-B-PN40	
EzM2-56M-A-PN50	1:50
EzM2-56M-B-PN50	
EzM2-56L-A-PN3	1:3
EzM2-56L-B-PN3	
EzM2-56L-A-PN5	1:5
EzM2-56L-B-PN5	
EzM2-56L-A-PN8	1:8
EzM2-56L-B-PN8	
EzM2-56L-A-PN10	1:10
EzM2-56L-B-PN10	
EzM2-56L-A-PN15	1:15
EzM2-56L-B-PN15	
EzM2-56L-A-PN25	1:25
EzM2-56L-B-PN25	
EzM2-56L-A-PN40	1:40
EzM2-56L-B-PN40	
EzM2-56L-A-PN50	1:50
EzM2-56L-B-PN50	

Motor Model Number	Gear Ratio
EzM2-60S-A-PN3	1:3
EzM2-60S-B-PN3	
EzM2-60S-A-PN5	1:5
EzM2-60S-B-PN5	
EzM2-60S-A-PN8	1:8
EzM2-60S-B-PN8	
EzM2-60S-A-PN10	1:10
EzM2-60S-B-PN10	
EzM2-60S-A-PN15	1:15
EzM2-60S-B-PN15	
EzM2-60S-A-PN25	1:25
EzM2-60S-B-PN25	
EzM2-60S-A-PN40	1:40
EzM2-60S-B-PN40	
EzM2-60S-A-PN50	1:50
EzM2-60S-B-PN50	
EzM2-60M-A-PN3	1:3
EzM2-60M-B-PN3	
EzM2-60M-A-PN5	1:5
EzM2-60M-B-PN5	
EzM2-60M-A-PN8	1:8
EzM2-60M-B-PN8	
EzM2-60M-A-PN10	1:10
EzM2-60M-B-PN10	
EzM2-60M-A-PN15	1:15
EzM2-60M-B-PN15	
EzM2-60M-A-PN25	1:25
EzM2-60M-B-PN25	
EzM2-60M-A-PN40	1:40
EzM2-60M-B-PN40	
EzM2-60M-A-PN50	1:50
EzM2-60M-B-PN50	
EzM2-60L-A-PN3	1:3
EzM2-60L-B-PN3	
EzM2-60L-A-PN5	1:5
EzM2-60L-B-PN5	
EzM2-60L-A-PN8	1:8
EzM2-60L-B-PN8	
EzM2-60L-A-PN10	1:10
EzM2-60L-B-PN10	
EzM2-60L-A-PN15	1:15
EzM2-60L-B-PN15	
EzM2-60L-A-PN25	1:25
EzM2-60L-B-PN25	
EzM2-60L-A-PN40	1:40
EzM2-60L-B-PN40	
EzM2-60L-A-PN50	1:50
EzM2-60L-B-PN50	

Specifications of Drive

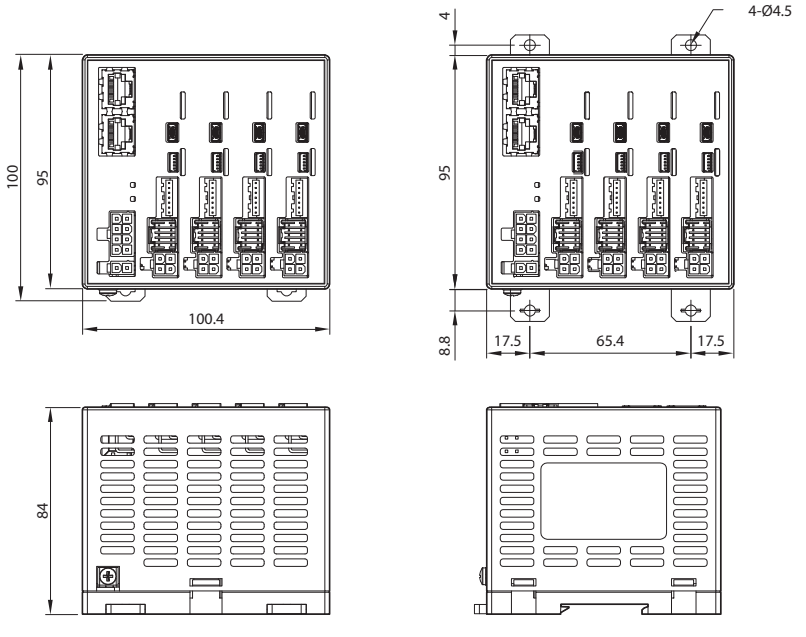
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Drive Model		EzS2-EC-4X, 3X series					
Input Voltage		DC24V±10%					
Control Method		Closed-loop control with 32 bit MCU					
Current Consumption		Max. 500mA/axis (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min *1					
	Resolution						
	Error Type	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
	LED Display	Power status, In-Position status, Servo On status, Alarm status					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN) for each axis					
	Output Signals	1 Brake output for each axis					

Encoder Resolution [P/R]	Configurable Resolution [P/R]									
4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000
10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	
16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000
20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000

(Selectable by parameter)

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



※ Can be installed on DIN Rail. (35mm)

※ Outer dimension of Ezi-SERVOII EtherCAT 3X drive is the same as EtherCAT 4X drive.

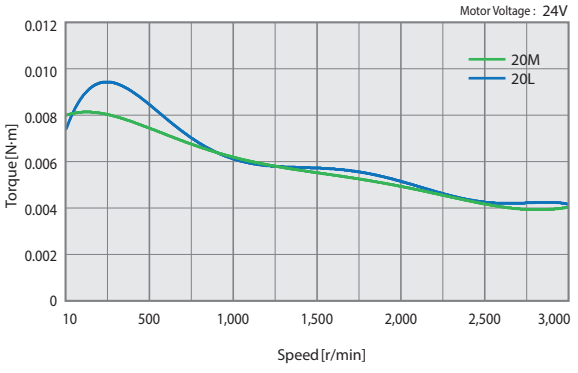
Specifications of Motor

MODEL			UNIT	EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

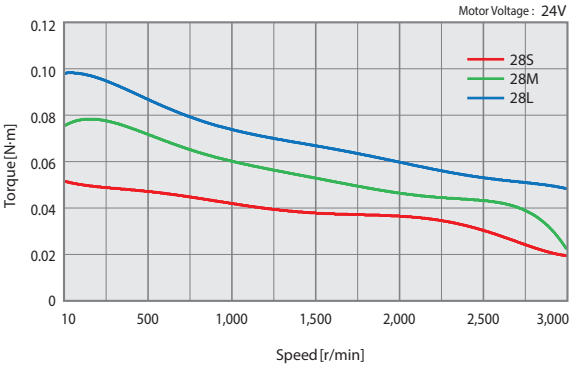
MODEL			UNIT	EzM2-56 series			EzM2-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

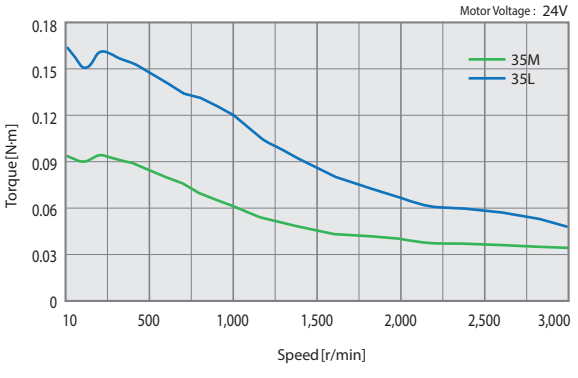
Ezi-SERVOII-EC-4X-20 series



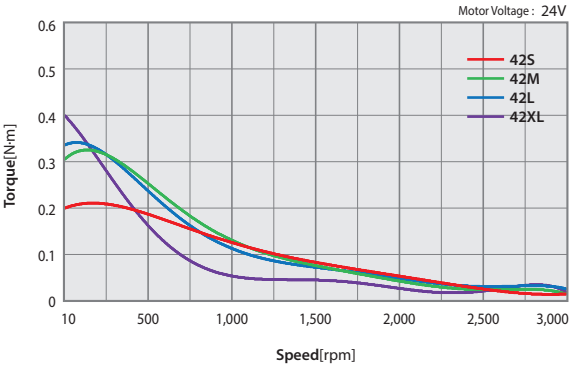
Ezi-SERVOII-EC-4X-28 series



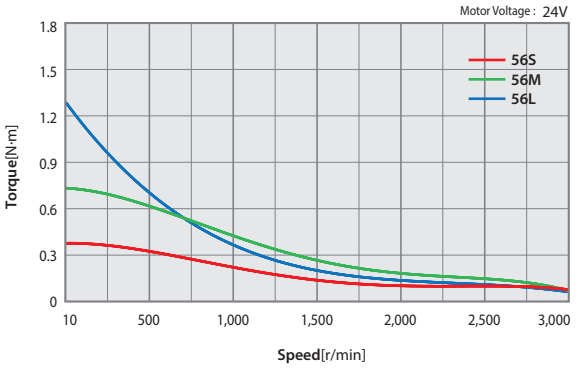
Ezi-SERVOII-EC-4X-35 series



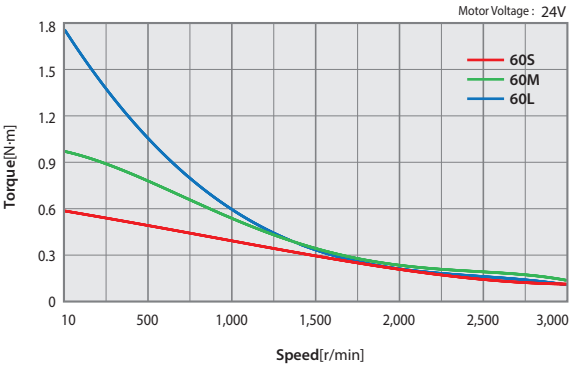
Ezi-SERVOII-EC-4X-42 series



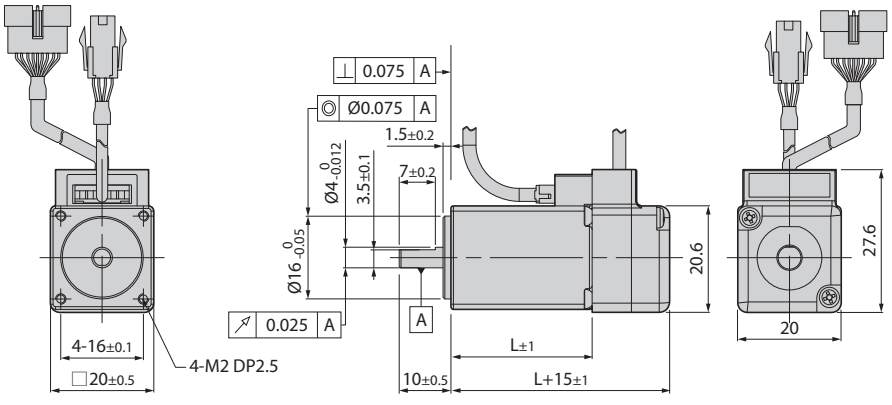
Ezi-SERVOII-EC-4X-56 series



Ezi-SERVOII-EC-4X-60 series

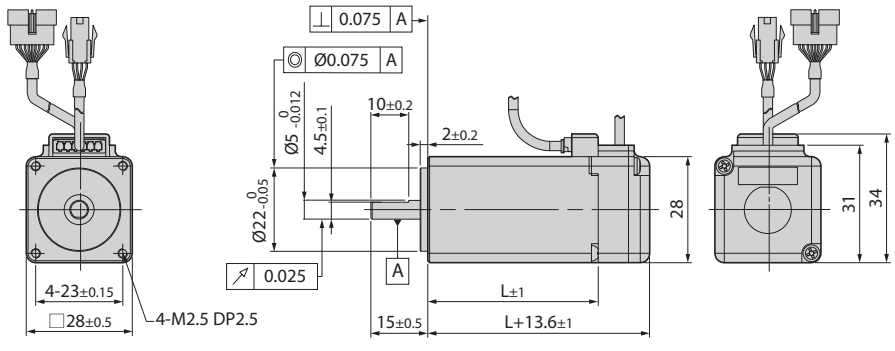


● Dimensions of Motor [mm]



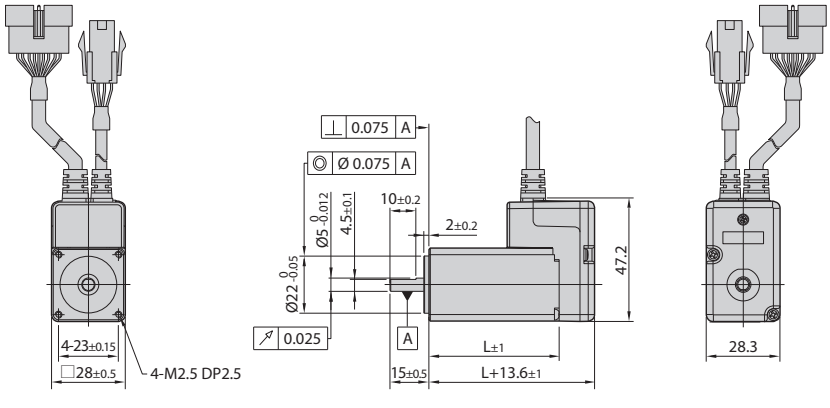
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

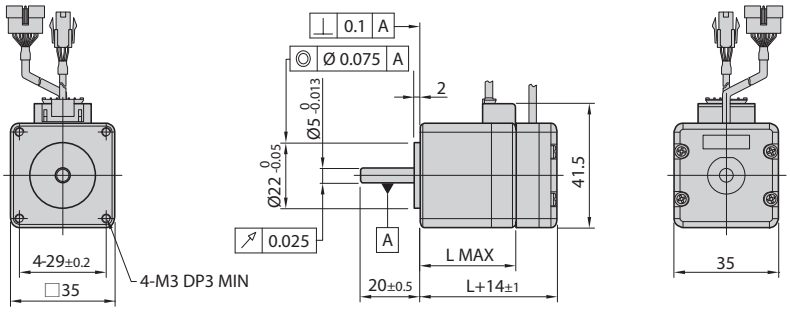
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

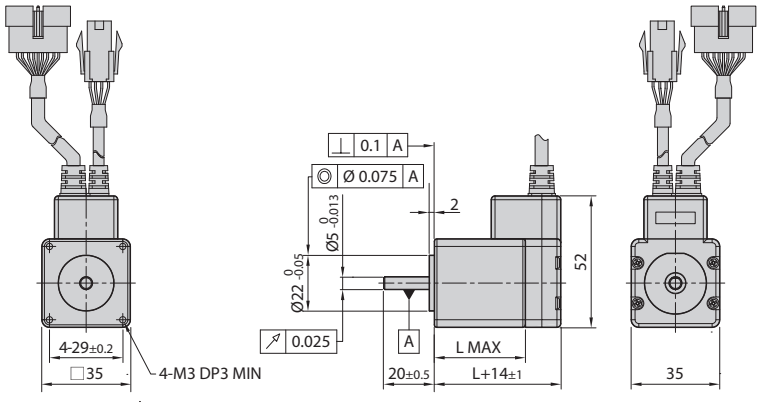
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

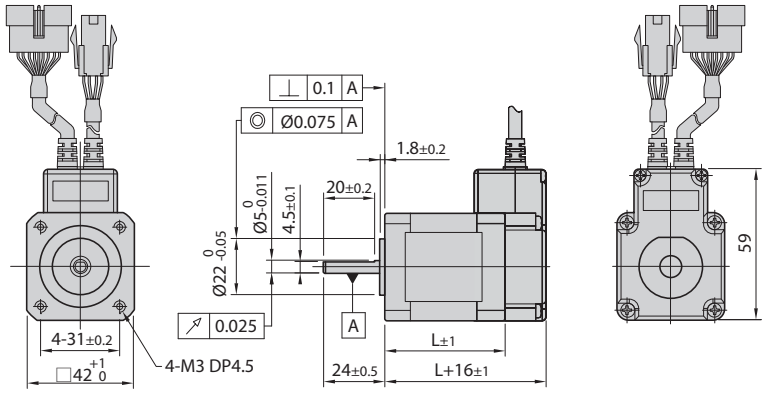
● Dimensions of Motor [mm]



35mm (Stopper type)

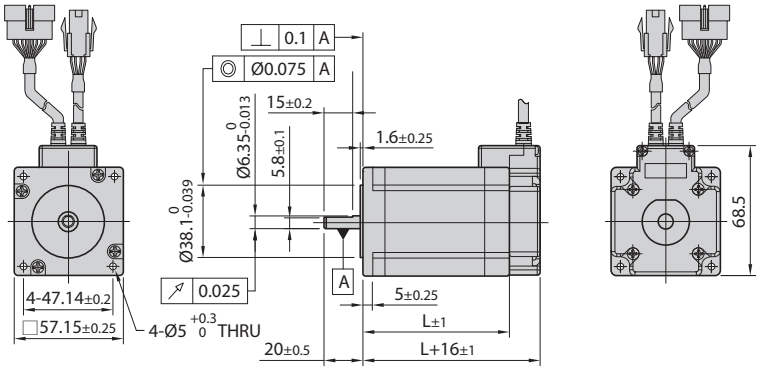
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

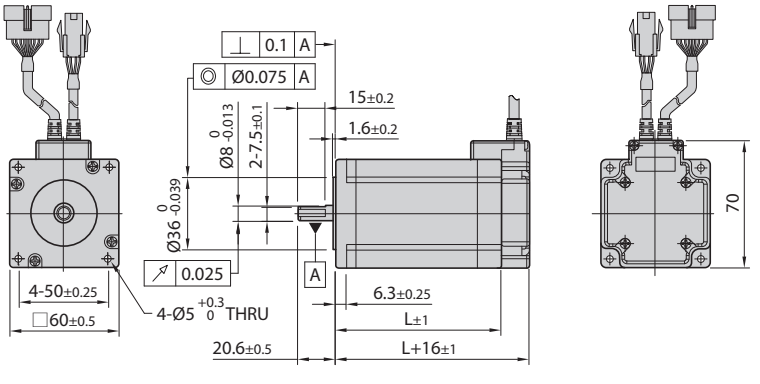
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

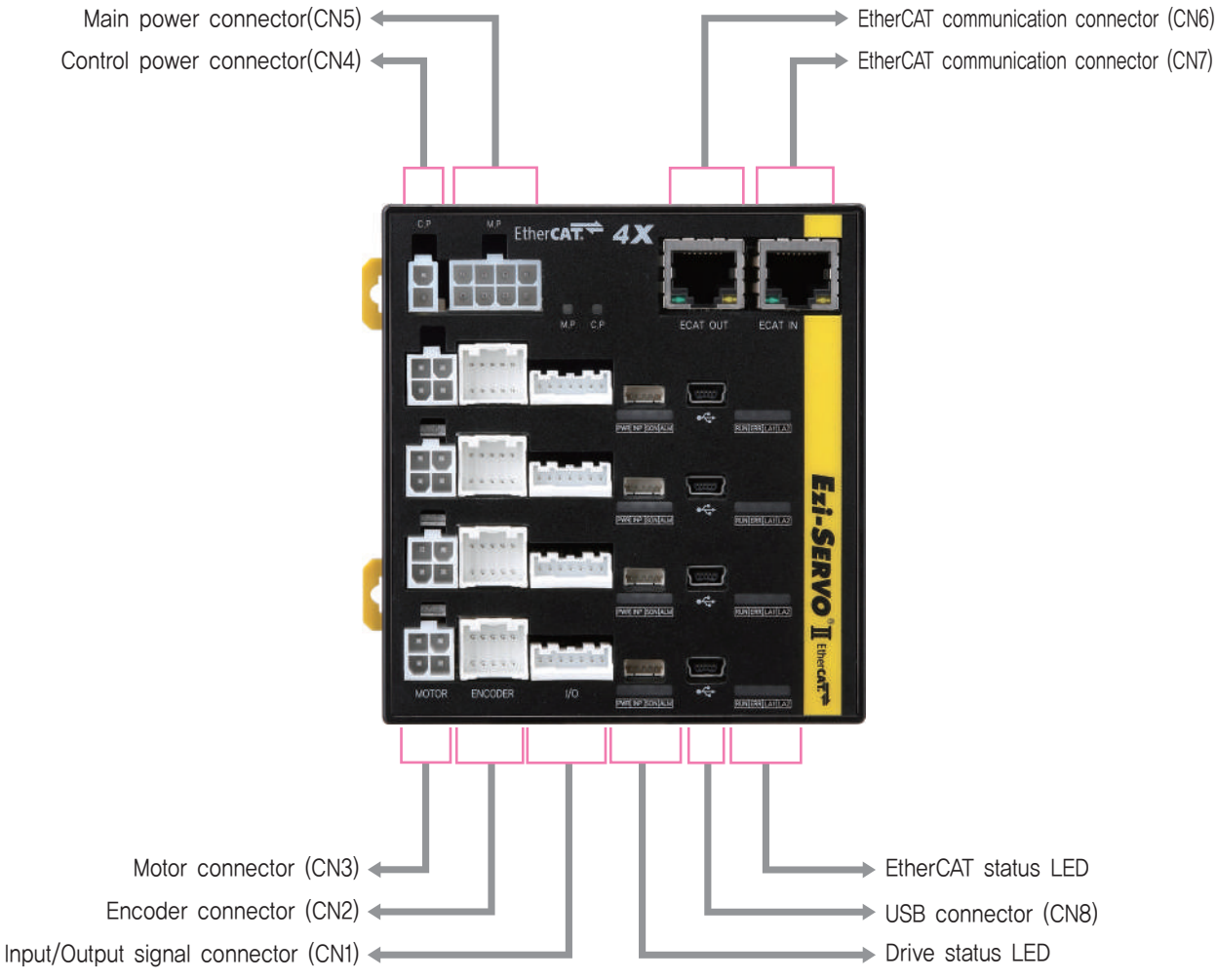
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.

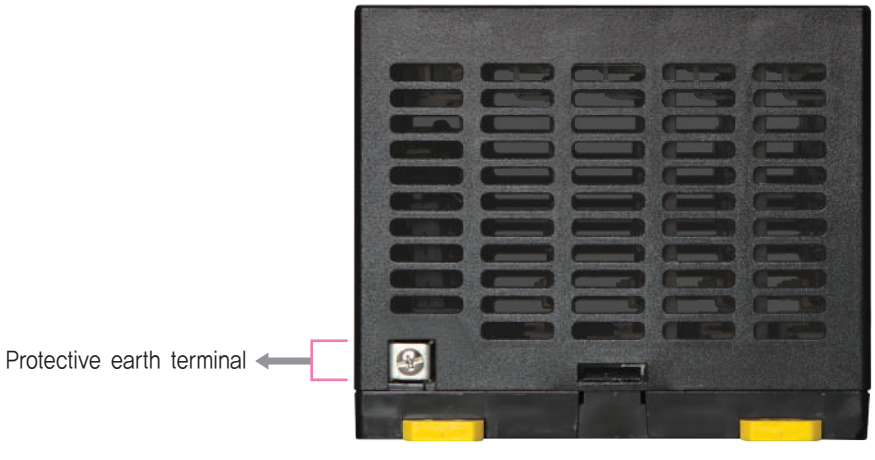


60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation





※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Indication	Color	Status	Description
Run	RUN	Green	OFF	State INIT or Power OFF
			Blinking	State PRE-OPERATIONAL
			Single Flash	State SAFE-OPERATIONAL
			ON	State OPERATIONAL
			Flickering	State BOOTSTRAP



Name	Indication	Color	Status	Description
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

Name	Indication	Color	Status	Description
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

2. Drive Status LED

LED informs operation status of the drive.

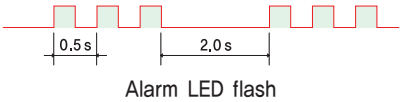
Indication	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	LED is turned ON when Positioning error reaches within the preset pulse after the positioning is complete
SON	Orange	Servo ON / OFF Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the the number of LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

*1 : The default setting value is 180 °, and it can be changed by parameter. (Refer to the Manual)

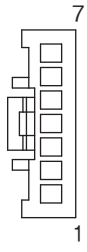
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

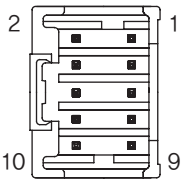
3. Input/Output Signal Connector (CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



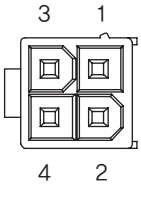
4. Encoder Connector (CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



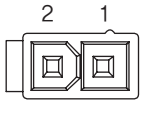
5. Motor Connector (CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



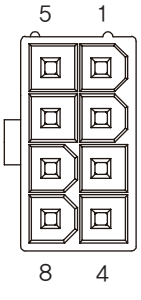
6. Control Power Connector (CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



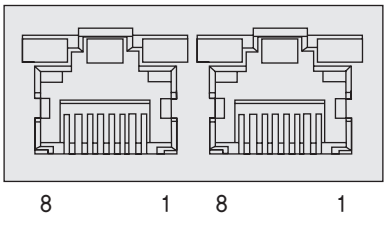
7. Main Power Connector (CN5)

No.	Function	I/O
1	DC24V	Input
2	DC24V	Input
3	DC24V	Input
4	F.GND	-----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	-----



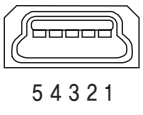
8. EtherCAT Communication Connector(CN6, CN7)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		

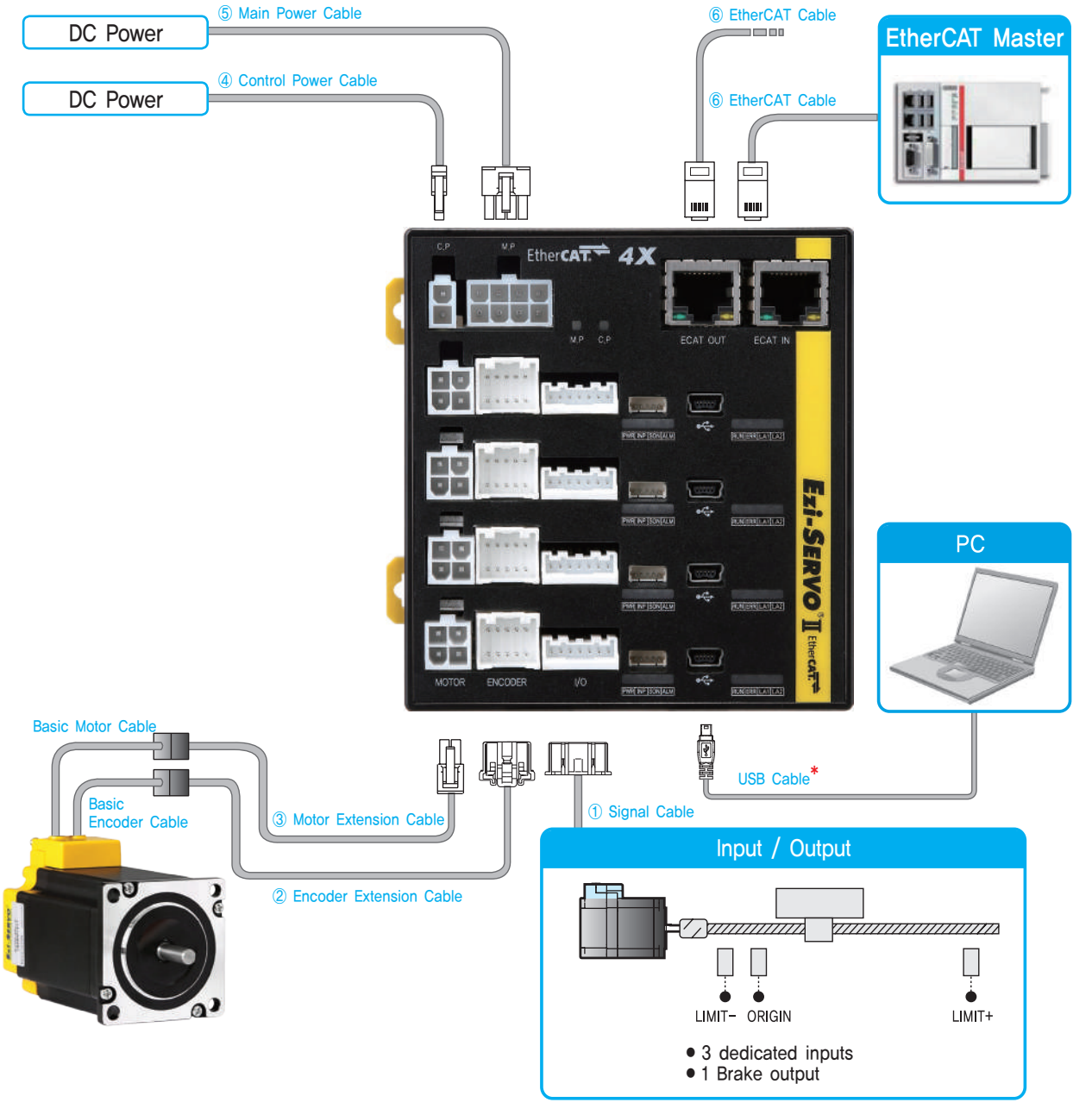


9. USB Connector (CN8)

No.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	PAP-07V-S	JST
		Terminal	SPHD-001T-P0.5	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Control Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	
Main Power (CN5)		Housing	5557-08R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT 4X drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CECM-S-001F	1	Normal Cable	Maximum Length: 20m
	CECM-S-002F	2		
	CECM-S-003F	3		
	CECM-S-005F	5		
	CECM-S-001M	1	Robot Cable	
	CECM-S-002M	2		
	CECM-S-003M	3		
	CECM-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT 4X drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II EtherCAT 4X drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Control Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT 4X drive and the control power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Control Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ Main Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT 4X drive and the main power.

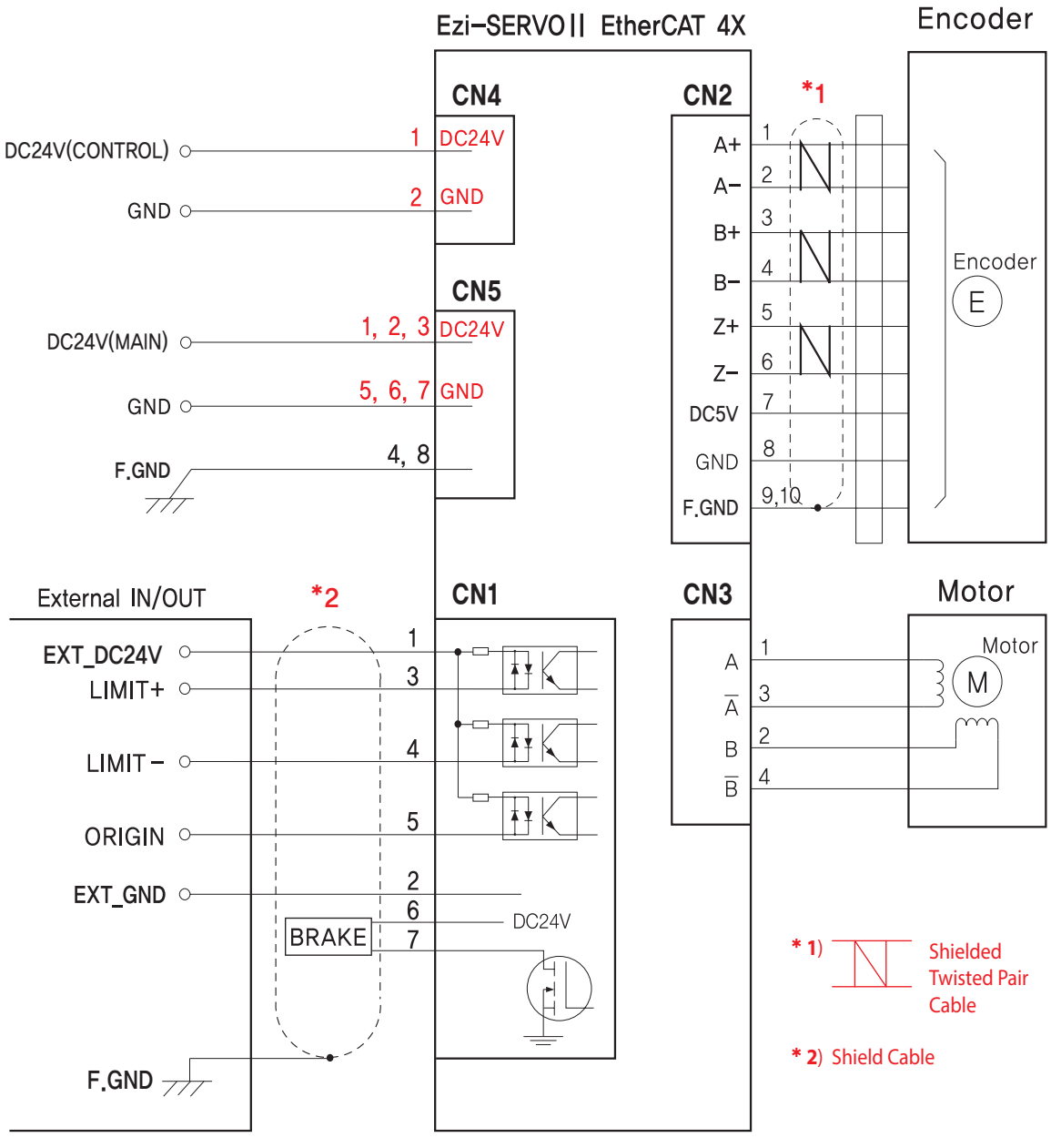
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Main Power Cable Connection	CECM-P-001F	1	Normal Cable	Maximum Length: 2m
	CECM-P-002F	2		
	CECM-P-001M	1	Robot Cable	
	CECM-P-002M	2		

⑥ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

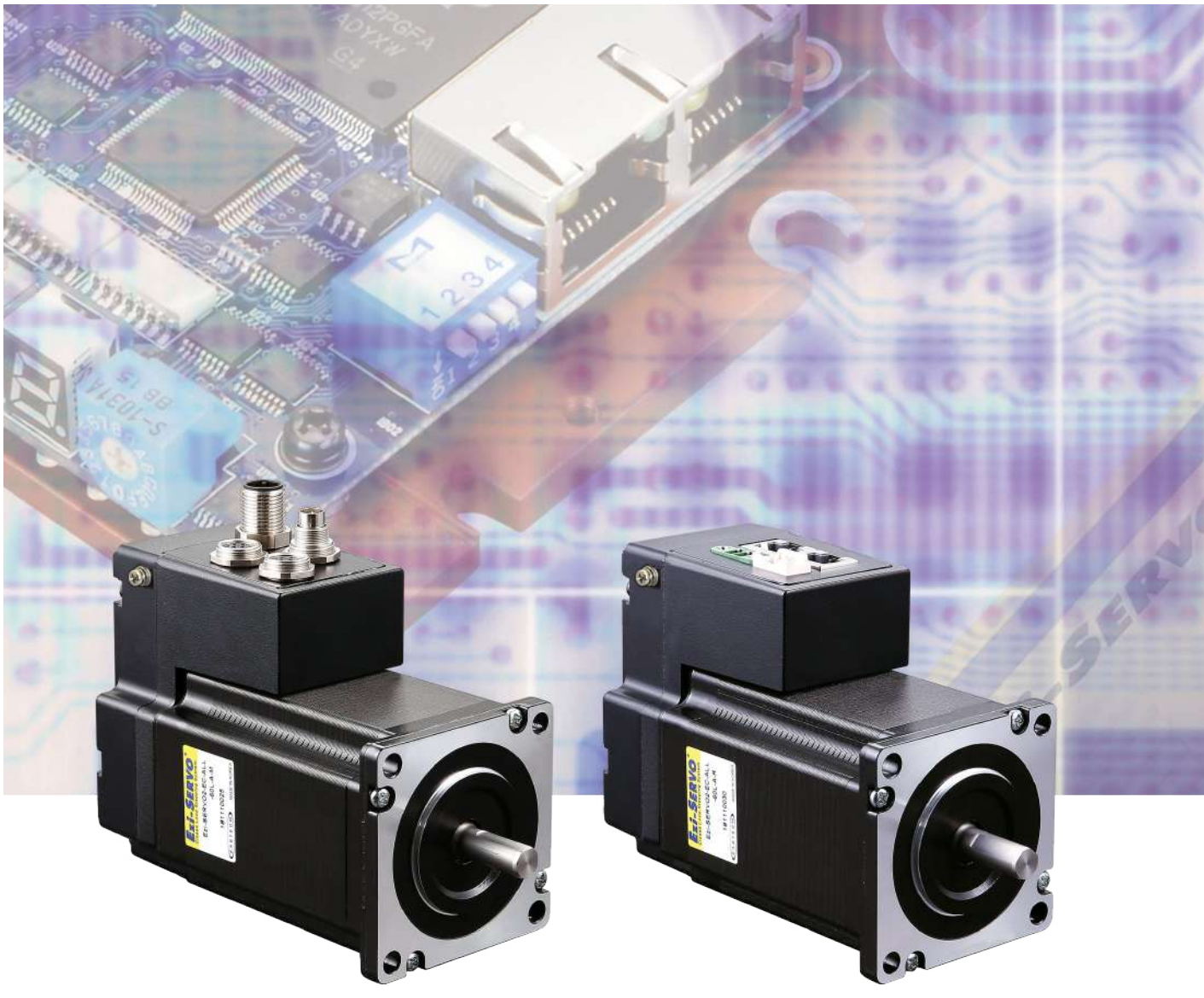
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


EzM2-60L
Ezi-SERVO II

Ezi-SERVO® II EtherCAT ALL

Closed Loop Stepping System

- Motor + High Resolution Encoder + Drive + EtherCAT Interface
- Space Saving / Reduced Wiring
- CiA402 Drive Profile Support
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque



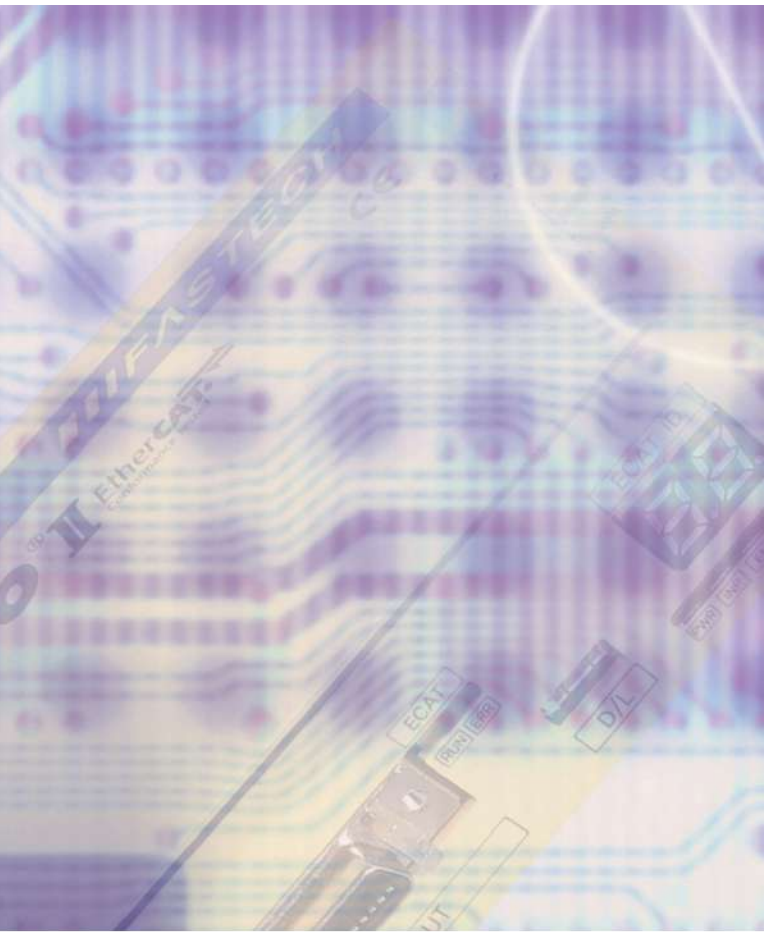
FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II

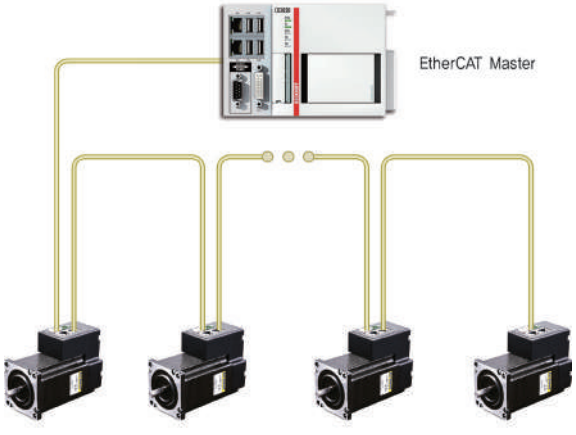
EtherCAT® ALL

Closed Loop Stepping System



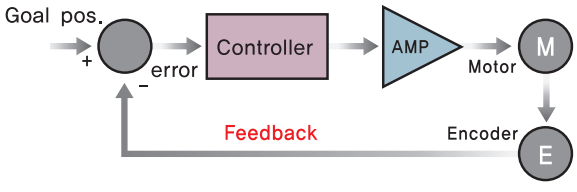
1 EtherCAT Based Motion Control

Ezi-SERVO II EtherCAT ALL is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT ALL is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



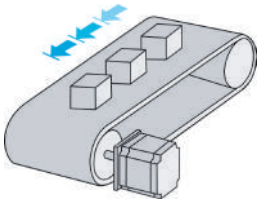
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

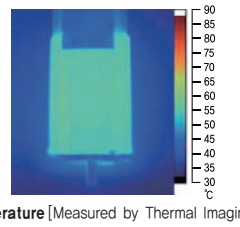
To ensure machine performance, conventional servo systems require the adjustment of its servo' s gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed. Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



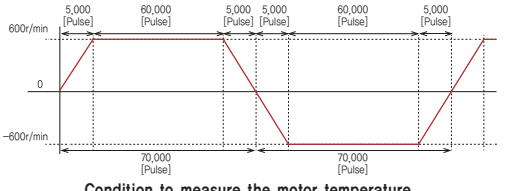
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

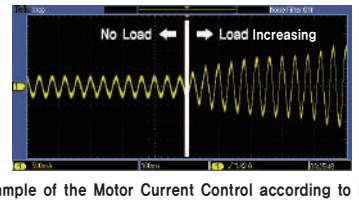
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

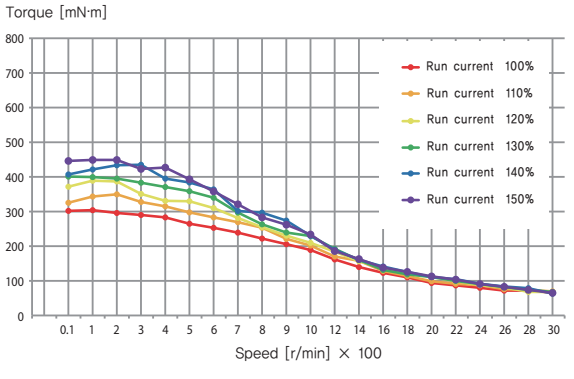


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased. Ezi-SERVO II can improve the torque in the low speed range by about 30%.

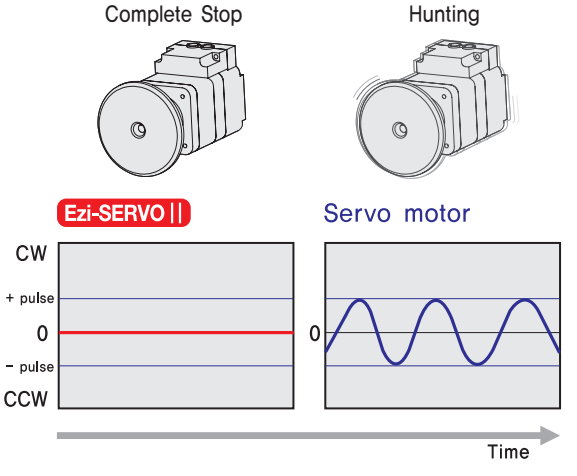


※ The torque at low speed is improved about 30%

Measured Condition : Drive = Ezi-SERVO II-EC-ALL-42L

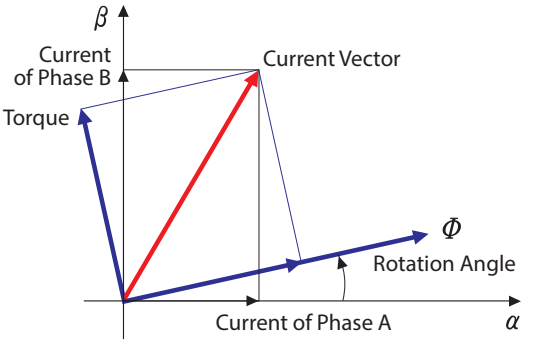
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



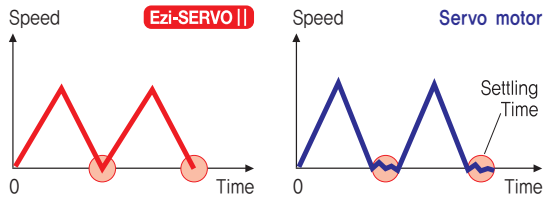
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



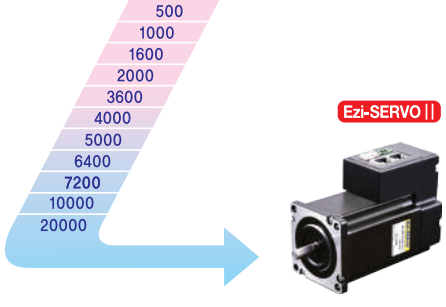
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



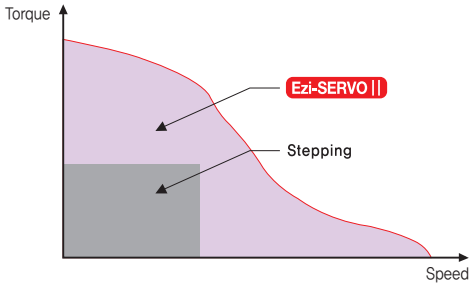
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



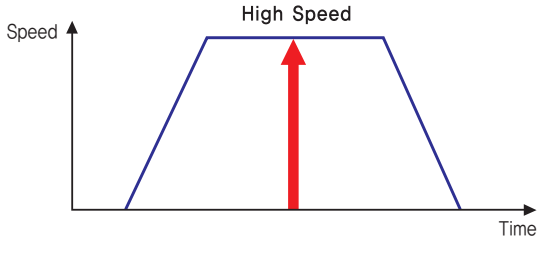
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Ezi-SERVOII EtherCAT ALL Part Numbering

Ezi-SERVOII-EC-ALL-56L-A-BK-PN5-M

Series Name

Type Name

EC-ALL : EtherCAT ALL

Motor Flange Size

42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

Connector Type

M : M Connector
R : RJ45 Connector

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVOII-EC-ALL-42M-A-M		
Ezi-SERVOII-EC-ALL-42M-B-M		
Ezi-SERVOII-EC-ALL-42M-A-R		
Ezi-SERVOII-EC-ALL-42M-B-R		
Ezi-SERVOII-EC-ALL-42L-A-M		
Ezi-SERVOII-EC-ALL-42L-B-M		
Ezi-SERVOII-EC-ALL-42L-A-R		
Ezi-SERVOII-EC-ALL-42L-B-R		
Ezi-SERVOII-EC-ALL-42XL-A-M		
Ezi-SERVOII-EC-ALL-42XL-B-M		
Ezi-SERVOII-EC-ALL-42XL-A-R		
Ezi-SERVOII-EC-ALL-42XL-B-R		
Ezi-SERVOII-EC-ALL-56S-A-M		
Ezi-SERVOII-EC-ALL-56S-B-M		
Ezi-SERVOII-EC-ALL-56S-A-R		
Ezi-SERVOII-EC-ALL-56S-B-R		
Ezi-SERVOII-EC-ALL-56M-A-M		
Ezi-SERVOII-EC-ALL-56M-B-M		
Ezi-SERVOII-EC-ALL-56M-A-R		
Ezi-SERVOII-EC-ALL-56M-B-R		
Ezi-SERVOII-EC-ALL-56L-A-M		
Ezi-SERVOII-EC-ALL-56L-B-M		
Ezi-SERVOII-EC-ALL-56L-A-R		
Ezi-SERVOII-EC-ALL-56L-B-R	Motor & Drive Integrated	
Ezi-SERVOII-EC-ALL-60S-A-M		
Ezi-SERVOII-EC-ALL-60S-B-M		
Ezi-SERVOII-EC-ALL-60S-A-R		
Ezi-SERVOII-EC-ALL-60S-B-R		
Ezi-SERVOII-EC-ALL-60M-A-M		
Ezi-SERVOII-EC-ALL-60M-B-M		
Ezi-SERVOII-EC-ALL-60M-A-R		
Ezi-SERVOII-EC-ALL-60M-B-R		
Ezi-SERVOII-EC-ALL-60L-A-M		
Ezi-SERVOII-EC-ALL-60L-B-M		
Ezi-SERVOII-EC-ALL-60L-A-R		
Ezi-SERVOII-EC-ALL-60L-B-R		
Ezi-SERVOII-EC-ALL-86M-A-M		
Ezi-SERVOII-EC-ALL-86M-B-M		
Ezi-SERVOII-EC-ALL-86M-A-R		
Ezi-SERVOII-EC-ALL-86M-B-R		
Ezi-SERVOII-EC-ALL-86L-A-M		
Ezi-SERVOII-EC-ALL-86L-B-M		
Ezi-SERVOII-EC-ALL-86L-A-R		
Ezi-SERVOII-EC-ALL-86L-B-R		
Ezi-SERVOII-EC-ALL-86XL-A-M		
Ezi-SERVOII-EC-ALL-86XL-B-M		
Ezi-SERVOII-EC-ALL-86XL-A-R		
Ezi-SERVOII-EC-ALL-86XL-B-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-EC-ALL-42M-A-BK-M	Motor & Drive Integrated	
Ezi-SERVO II-EC-ALL-42M-B-BK-M		
Ezi-SERVO II-EC-ALL-42M-A-BK-R		
Ezi-SERVO II-EC-ALL-42M-B-BK-R		
Ezi-SERVO II-EC-ALL-42L-A-BK-M		
Ezi-SERVO II-EC-ALL-42L-B-BK-M		
Ezi-SERVO II-EC-ALL-42L-A-BK-R		
Ezi-SERVO II-EC-ALL-42L-B-BK-R		
Ezi-SERVO II-EC-ALL-42XL-A-BK-M		
Ezi-SERVO II-EC-ALL-42XL-B-BK-M		
Ezi-SERVO II-EC-ALL-42XL-A-BK-R		
Ezi-SERVO II-EC-ALL-42XL-B-BK-R		
Ezi-SERVO II-EC-ALL-56S-A-BK-M		
Ezi-SERVO II-EC-ALL-56S-B-BK-M		
Ezi-SERVO II-EC-ALL-56S-A-BK-R		
Ezi-SERVO II-EC-ALL-56S-B-BK-R		
Ezi-SERVO II-EC-ALL-56M-A-BK-M		
Ezi-SERVO II-EC-ALL-56M-B-BK-M		
Ezi-SERVO II-EC-ALL-56M-A-BK-R		
Ezi-SERVO II-EC-ALL-56M-B-BK-R		
Ezi-SERVO II-EC-ALL-56L-A-BK-M		
Ezi-SERVO II-EC-ALL-56L-B-BK-M		
Ezi-SERVO II-EC-ALL-56L-A-BK-R		
Ezi-SERVO II-EC-ALL-56L-B-BK-R		
Ezi-SERVO II-EC-ALL-60S-A-BK-M		
Ezi-SERVO II-EC-ALL-60S-B-BK-M		
Ezi-SERVO II-EC-ALL-60S-A-BK-R		
Ezi-SERVO II-EC-ALL-60S-B-BK-R		
Ezi-SERVO II-EC-ALL-60M-A-BK-M		
Ezi-SERVO II-EC-ALL-60M-B-BK-M		
Ezi-SERVO II-EC-ALL-60M-A-BK-R		
Ezi-SERVO II-EC-ALL-60M-B-BK-R		
Ezi-SERVO II-EC-ALL-60L-A-BK-M		
Ezi-SERVO II-EC-ALL-60L-B-BK-M		
Ezi-SERVO II-EC-ALL-60L-A-BK-R		
Ezi-SERVO II-EC-ALL-60L-B-BK-R		
Ezi-SERVO II-EC-ALL-86M-A-BK-M		
Ezi-SERVO II-EC-ALL-86M-B-BK-M		
Ezi-SERVO II-EC-ALL-86M-A-BK-R		
Ezi-SERVO II-EC-ALL-86M-B-BK-R		
Ezi-SERVO II-EC-ALL-86L-A-BK-M		
Ezi-SERVO II-EC-ALL-86L-B-BK-M		
Ezi-SERVO II-EC-ALL-86L-A-BK-R		
Ezi-SERVO II-EC-ALL-86L-B-BK-R		
Ezi-SERVO II-EC-ALL-86XL-A-BK-M		
Ezi-SERVO II-EC-ALL-86XL-B-BK-M		
Ezi-SERVO II-EC-ALL-86XL-A-BK-R		
Ezi-SERVO II-EC-ALL-86XL-B-BK-R		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-42M-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-42M-B-PN3-M			
Ezi-SERVO II-EC-ALL-42M-A-PN3-R			
Ezi-SERVO II-EC-ALL-42M-B-PN3-R			
Ezi-SERVO II-EC-ALL-42M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42M-B-PN5-M			
Ezi-SERVO II-EC-ALL-42M-A-PN5-R			
Ezi-SERVO II-EC-ALL-42M-B-PN5-R			
Ezi-SERVO II-EC-ALL-42M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42M-B-PN8-M			
Ezi-SERVO II-EC-ALL-42M-A-PN8-R			
Ezi-SERVO II-EC-ALL-42M-B-PN8-R			
Ezi-SERVO II-EC-ALL-42M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42M-B-PN10-M			
Ezi-SERVO II-PE-ALL-42M-A-PN10-R			
Ezi-SERVO II-EC-ALL-42M-B-PN10-R			
Ezi-SERVO II-EC-ALL-42M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42M-B-PN15-M			
Ezi-SERVO II-EC-ALL-42M-A-PN15-R			
Ezi-SERVO II-EC-ALL-42M-B-PN15-R			
Ezi-SERVO II-EC-ALL-42M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42M-B-PN25-M			
Ezi-SERVO II-EC-ALL-42M-A-PN25-R			
Ezi-SERVO II-EC-ALL-42M-B-PN25-R			
Ezi-SERVO II-EC-ALL-42M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42M-B-PN40-M			
Ezi-SERVO II-EC-ALL-42M-A-PN40-R			
Ezi-SERVO II-EC-ALL-42M-B-PN40-R			
Ezi-SERVO II-EC-ALL-42M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42M-B-PN50-M			
Ezi-SERVO II-EC-ALL-42M-A-PN50-R			
Ezi-SERVO II-EC-ALL-42M-B-PN50-R			
Ezi-SERVO II-EC-ALL-42L-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-42L-B-PN3-M			
Ezi-SERVO II-EC-ALL-42L-A-PN3-R			
Ezi-SERVO II-EC-ALL-42L-B-PN3-R			
Ezi-SERVO II-EC-ALL-42L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42L-B-PN5-M			
Ezi-SERVO II-EC-ALL-42L-A-PN5-R			
Ezi-SERVO II-EC-ALL-42L-B-PN5-R			
Ezi-SERVO II-EC-ALL-42L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42L-B-PN8-M			
Ezi-SERVO II-EC-ALL-42L-A-PN8-R			
Ezi-SERVO II-EC-ALL-42L-B-PN8-R			
Ezi-SERVO II-EC-ALL-42L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42L-B-PN10-M			
Ezi-SERVO II-EC-ALL-42L-A-PN10-R			
Ezi-SERVO II-EC-ALL-42L-B-PN10-R			
Ezi-SERVO II-EC-ALL-42L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42L-B-PN15-M			
Ezi-SERVO II-EC-ALL-42L-A-PN15-R			
Ezi-SERVO II-EC-ALL-42L-B-PN15-R			
Ezi-SERVO II-EC-ALL-42L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42L-B-PN25-M			
Ezi-SERVO II-EC-ALL-42L-A-PN25-R			
Ezi-SERVO II-EC-ALL-42L-B-PN25-R			
Ezi-SERVO II-EC-ALL-42L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42L-B-PN40-M			
Ezi-SERVO II-EC-ALL-42L-A-PN40-R			
Ezi-SERVO II-EC-ALL-42L-B-PN40-R			
Ezi-SERVO II-EC-ALL-42L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42L-B-PN50-M			
Ezi-SERVO II-EC-ALL-42L-A-PN50-R			
Ezi-SERVO II-EC-ALL-42L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-42XL-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-42XL-B-PN3-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN3-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN3-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-42XL-B-PN5-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN5-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN5-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-42XL-B-PN8-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN8-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN8-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-42XL-B-PN10-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN10-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN10-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-42XL-B-PN15-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN15-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN15-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-42XL-B-PN25-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN25-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN25-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-42XL-B-PN40-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN40-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN40-R			
Ezi-SERVO II-EC-ALL-42XL-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-42XL-B-PN50-M			
Ezi-SERVO II-EC-ALL-42XL-A-PN50-R			
Ezi-SERVO II-EC-ALL-42XL-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-EC-ALL-56S-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-56S-B-PN3-M			
Ezi-SERVO II-EC-ALL-56S-A-PN3-R			
Ezi-SERVO II-EC-ALL-56S-B-PN3-R			
Ezi-SERVO II-EC-ALL-56S-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56S-B-PN5-M			
Ezi-SERVO II-EC-ALL-56S-A-PN5-R			
Ezi-SERVO II-EC-ALL-56S-B-PN5-R			
Ezi-SERVO II-EC-ALL-56S-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56S-B-PN8-M			
Ezi-SERVO II-EC-ALL-56S-A-PN8-R			
Ezi-SERVO II-EC-ALL-56S-B-PN8-R			
Ezi-SERVO II-EC-ALL-56S-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56S-B-PN10-M			
Ezi-SERVO II-EC-ALL-56S-A-PN10-R			
Ezi-SERVO II-EC-ALL-56S-B-PN10-R			
Ezi-SERVO II-EC-ALL-56S-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56S-B-PN15-M			
Ezi-SERVO II-EC-ALL-56S-A-PN15-R			
Ezi-SERVO II-EC-ALL-56S-B-PN15-R			
Ezi-SERVO II-EC-ALL-56S-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56S-B-PN25-M			
Ezi-SERVO II-EC-ALL-56S-A-PN25-R			
Ezi-SERVO II-EC-ALL-56S-B-PN25-R			
Ezi-SERVO II-EC-ALL-56S-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56S-B-PN40-M			
Ezi-SERVO II-EC-ALL-56S-A-PN40-R			
Ezi-SERVO II-EC-ALL-56S-B-PN40-R			
Ezi-SERVO II-EC-ALL-56S-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56S-B-PN50-M			
Ezi-SERVO II-EC-ALL-56S-A-PN50-R			
Ezi-SERVO II-EC-ALL-56S-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-56M-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-56M-B-PN3-M			
Ezi-SERVO II-EC-ALL-56M-A-PN3-R			
Ezi-SERVO II-EC-ALL-56M-B-PN3-R			
Ezi-SERVO II-EC-ALL-56M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56M-B-PN5-M			
Ezi-SERVO II-EC-ALL-56M-A-PN5-R			
Ezi-SERVO II-EC-ALL-56M-B-PN5-R			
Ezi-SERVO II-EC-ALL-56M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56M-B-PN8-M			
Ezi-SERVO II-EC-ALL-56M-A-PN8-R			
Ezi-SERVO II-EC-ALL-56M-B-PN8-R			
Ezi-SERVO II-EC-ALL-56M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56M-B-PN10-M			
Ezi-SERVO II-EC-ALL-56M-A-PN10-R			
Ezi-SERVO II-EC-ALL-56M-B-PN10-R			
Ezi-SERVO II-EC-ALL-56M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56M-B-PN15-M			
Ezi-SERVO II-EC-ALL-56M-A-PN15-R			
Ezi-SERVO II-EC-ALL-56M-B-PN15-R			
Ezi-SERVO II-EC-ALL-56M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56M-B-PN25-M			
Ezi-SERVO II-EC-ALL-56M-A-PN25-R			
Ezi-SERVO II-EC-ALL-56M-B-PN25-R			
Ezi-SERVO II-EC-ALL-56M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56M-B-PN40-M			
Ezi-SERVO II-EC-ALL-56M-A-PN40-R			
Ezi-SERVO II-EC-ALL-56M-B-PN40-R			
Ezi-SERVO II-EC-ALL-56M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56M-B-PN50-M			
Ezi-SERVO II-EC-ALL-56M-A-PN50-R			
Ezi-SERVO II-EC-ALL-56M-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-EC-ALL-56L-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-56L-B-PN3-M			
Ezi-SERVO II-EC-ALL-56L-A-PN3-R			
Ezi-SERVO II-EC-ALL-56L-B-PN3-R			
Ezi-SERVO II-EC-ALL-56L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-56L-B-PN5-M			
Ezi-SERVO II-EC-ALL-56L-A-PN5-R			
Ezi-SERVO II-EC-ALL-56L-B-PN5-R			
Ezi-SERVO II-EC-ALL-56L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-56L-B-PN8-M			
Ezi-SERVO II-EC-ALL-56L-A-PN8-R			
Ezi-SERVO II-EC-ALL-56L-B-PN8-R			
Ezi-SERVO II-EC-ALL-56L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-56L-B-PN10-M			
Ezi-SERVO II-EC-ALL-56L-A-PN10-R			
Ezi-SERVO II-EC-ALL-56L-B-PN10-R			
Ezi-SERVO II-EC-ALL-56L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-56L-B-PN15-M			
Ezi-SERVO II-EC-ALL-56L-A-PN15-R			
Ezi-SERVO II-EC-ALL-56L-B-PN15-R			
Ezi-SERVO II-EC-ALL-56L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-56L-B-PN25-M			
Ezi-SERVO II-EC-ALL-56L-A-PN25-R			
Ezi-SERVO II-EC-ALL-56L-B-PN25-R			
Ezi-SERVO II-EC-ALL-56L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-56L-B-PN40-M			
Ezi-SERVO II-EC-ALL-56L-A-PN40-R			
Ezi-SERVO II-EC-ALL-56L-B-PN40-R			
Ezi-SERVO II-EC-ALL-56L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-56L-B-PN50-M			
Ezi-SERVO II-EC-ALL-56L-A-PN50-R			
Ezi-SERVO II-EC-ALL-56L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-60S-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-60S-B-PN3-M			
Ezi-SERVO II-EC-ALL-60S-A-PN3-R			
Ezi-SERVO II-EC-ALL-60S-B-PN3-R			
Ezi-SERVO II-EC-ALL-60S-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60S-B-PN5-M			
Ezi-SERVO II-EC-ALL-60S-A-PN5-R			
Ezi-SERVO II-EC-ALL-60S-B-PN5-R			
Ezi-SERVO II-EC-ALL-60S-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60S-B-PN8-M			
Ezi-SERVO II-EC-ALL-60S-A-PN8-R			
Ezi-SERVO II-EC-ALL-60S-B-PN8-R			
Ezi-SERVO II-EC-ALL-60S-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60S-B-PN10-M			
Ezi-SERVO II-EC-ALL-60S-A-PN10-R			
Ezi-SERVO II-EC-ALL-60S-B-PN10-R			
Ezi-SERVO II-EC-ALL-60S-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60S-B-PN15-M			
Ezi-SERVO II-EC-ALL-60S-A-PN15-R			
Ezi-SERVO II-EC-ALL-60S-B-PN15-R			
Ezi-SERVO II-EC-ALL-60S-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60S-B-PN25-M			
Ezi-SERVO II-EC-ALL-60S-A-PN25-R			
Ezi-SERVO II-EC-ALL-60S-B-PN25-R			
Ezi-SERVO II-EC-ALL-60S-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60S-B-PN40-M			
Ezi-SERVO II-EC-ALL-60S-A-PN40-R			
Ezi-SERVO II-EC-ALL-60S-B-PN40-R			
Ezi-SERVO II-EC-ALL-60S-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60S-B-PN50-M			
Ezi-SERVO II-EC-ALL-60S-A-PN50-R			
Ezi-SERVO II-EC-ALL-60S-B-PN50-R			
Ezi-SERVO II-EC-ALL-60M-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-60M-B-PN3-M			
Ezi-SERVO II-EC-ALL-60M-A-PN3-R			
Ezi-SERVO II-EC-ALL-60M-B-PN3-R			
Ezi-SERVO II-EC-ALL-60M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60M-B-PN5-M			
Ezi-SERVO II-EC-ALL-60M-A-PN5-R			
Ezi-SERVO II-EC-ALL-60M-B-PN5-R			
Ezi-SERVO II-EC-ALL-60M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60M-B-PN8-M			
Ezi-SERVO II-EC-ALL-60M-A-PN8-R			
Ezi-SERVO II-EC-ALL-60M-B-PN8-R			
Ezi-SERVO II-EC-ALL-60M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60M-B-PN10-M			
Ezi-SERVO II-EC-ALL-60M-A-PN10-R			
Ezi-SERVO II-EC-ALL-60M-B-PN10-R			
Ezi-SERVO II-EC-ALL-60M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60M-B-PN15-M			
Ezi-SERVO II-EC-ALL-60M-A-PN15-R			
Ezi-SERVO II-EC-ALL-60M-B-PN15-R			
Ezi-SERVO II-EC-ALL-60M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60M-B-PN25-M			
Ezi-SERVO II-EC-ALL-60M-A-PN25-R			
Ezi-SERVO II-EC-ALL-60M-B-PN25-R			
Ezi-SERVO II-EC-ALL-60M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60M-B-PN40-M			
Ezi-SERVO II-EC-ALL-60M-A-PN40-R			
Ezi-SERVO II-EC-ALL-60M-B-PN40-R			
Ezi-SERVO II-EC-ALL-60M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60M-B-PN50-M			
Ezi-SERVO II-EC-ALL-60M-A-PN50-R			
Ezi-SERVO II-EC-ALL-60M-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-60L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-EC-ALL-60L-B-PN3-M			
Ezi-SERVO II-EC-ALL-60L-A-PN3-R			
Ezi-SERVO II-EC-ALL-60L-B-PN3-R			
Ezi-SERVO II-EC-ALL-60L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-60L-B-PN5-M			
Ezi-SERVO II-EC-ALL-60L-A-PN5-R			
Ezi-SERVO II-EC-ALL-60L-B-PN5-R			
Ezi-SERVO II-EC-ALL-60L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-60L-B-PN8-M			
Ezi-SERVO II-EC-ALL-60L-A-PN8-R			
Ezi-SERVO II-EC-ALL-60L-B-PN8-R			
Ezi-SERVO II-EC-ALL-60L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-60L-B-PN10-M			
Ezi-SERVO II-EC-ALL-60L-A-PN10-R			
Ezi-SERVO II-EC-ALL-60L-B-PN10-R			
Ezi-SERVO II-EC-ALL-60L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-60L-B-PN15-M			
Ezi-SERVO II-EC-ALL-60L-A-PN15-R			
Ezi-SERVO II-EC-ALL-60L-B-PN15-R			
Ezi-SERVO II-EC-ALL-60L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-60L-B-PN25-M			
Ezi-SERVO II-EC-ALL-60L-A-PN25-R			
Ezi-SERVO II-EC-ALL-60L-B-PN25-R			
Ezi-SERVO II-EC-ALL-60L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-60L-B-PN40-M			
Ezi-SERVO II-EC-ALL-60L-A-PN40-R			
Ezi-SERVO II-EC-ALL-60L-B-PN40-R			
Ezi-SERVO II-EC-ALL-60L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-60L-B-PN50-M			
Ezi-SERVO II-EC-ALL-60L-A-PN50-R			
Ezi-SERVO II-EC-ALL-60L-B-PN50-R			
Ezi-SERVO II-EC-ALL-86M-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-86M-B-PN3-M			
Ezi-SERVO II-EC-ALL-86M-A-PN3-R			
Ezi-SERVO II-EC-ALL-86M-B-PN3-R			
Ezi-SERVO II-EC-ALL-86M-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86M-B-PN5-M			
Ezi-SERVO II-EC-ALL-86M-A-PN5-R			
Ezi-SERVO II-EC-ALL-86M-B-PN5-R			
Ezi-SERVO II-EC-ALL-86M-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86M-B-PN8-M			
Ezi-SERVO II-EC-ALL-86M-A-PN8-R			
Ezi-SERVO II-EC-ALL-86M-B-PN8-R			
Ezi-SERVO II-EC-ALL-86M-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86M-B-PN10-M			
Ezi-SERVO II-EC-ALL-86M-A-PN10-R			
Ezi-SERVO II-EC-ALL-86M-B-PN10-R			
Ezi-SERVO II-EC-ALL-86M-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86M-B-PN15-M			
Ezi-SERVO II-EC-ALL-86M-A-PN15-R			
Ezi-SERVO II-EC-ALL-86M-B-PN15-R			
Ezi-SERVO II-EC-ALL-86M-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86M-B-PN25-M			
Ezi-SERVO II-EC-ALL-86M-A-PN25-R			
Ezi-SERVO II-EC-ALL-86M-B-PN25-R			
Ezi-SERVO II-EC-ALL-86M-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86M-B-PN40-M			
Ezi-SERVO II-EC-ALL-86M-A-PN40-R			
Ezi-SERVO II-EC-ALL-86M-B-PN40-R			
Ezi-SERVO II-EC-ALL-86M-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86M-B-PN50-M			
Ezi-SERVO II-EC-ALL-86M-A-PN50-R			
Ezi-SERVO II-EC-ALL-86M-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-EC-ALL-86L-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-86L-B-PN3-M			
Ezi-SERVO II-EC-ALL-86L-A-PN3-R			
Ezi-SERVO II-EC-ALL-86L-B-PN3-R			
Ezi-SERVO II-EC-ALL-86L-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86L-B-PN5-M			
Ezi-SERVO II-EC-ALL-86L-A-PN5-R			
Ezi-SERVO II-EC-ALL-86L-B-PN5-R			
Ezi-SERVO II-EC-ALL-86L-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86L-B-PN8-M			
Ezi-SERVO II-EC-ALL-86L-A-PN8-R			
Ezi-SERVO II-EC-ALL-86L-B-PN8-R			
Ezi-SERVO II-EC-ALL-86L-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86L-B-PN10-M			
Ezi-SERVO II-EC-ALL-86L-A-PN10-R			
Ezi-SERVO II-EC-ALL-86L-B-PN10-R			
Ezi-SERVO II-EC-ALL-86L-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86L-B-PN15-M			
Ezi-SERVO II-EC-ALL-86L-A-PN15-R			
Ezi-SERVO II-EC-ALL-86L-B-PN15-R			
Ezi-SERVO II-EC-ALL-86L-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86L-B-PN25-M			
Ezi-SERVO II-EC-ALL-86L-A-PN25-R			
Ezi-SERVO II-EC-ALL-86L-B-PN25-R			
Ezi-SERVO II-EC-ALL-86L-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86L-B-PN40-M			
Ezi-SERVO II-EC-ALL-86L-A-PN40-R			
Ezi-SERVO II-EC-ALL-86L-B-PN40-R			
Ezi-SERVO II-EC-ALL-86L-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86L-B-PN50-M			
Ezi-SERVO II-EC-ALL-86L-A-PN50-R			
Ezi-SERVO II-EC-ALL-86L-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-EC-ALL-86XL-A-PN3-M			1:3
Ezi-SERVO II-EC-ALL-86XL-B-PN3-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN3-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN3-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN5-M			1:5
Ezi-SERVO II-EC-ALL-86XL-B-PN5-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN5-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN5-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN8-M			1:8
Ezi-SERVO II-EC-ALL-86XL-B-PN8-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN8-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN8-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN10-M			1:10
Ezi-SERVO II-EC-ALL-86XL-B-PN10-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN10-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN10-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN15-M			1:15
Ezi-SERVO II-EC-ALL-86XL-B-PN15-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN15-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN15-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN25-M			1:25
Ezi-SERVO II-EC-ALL-86XL-B-PN25-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN25-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN25-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN40-M			1:40
Ezi-SERVO II-EC-ALL-86XL-B-PN40-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN40-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN40-R			
Ezi-SERVO II-EC-ALL-86XL-A-PN50-M			1:50
Ezi-SERVO II-EC-ALL-86XL-B-PN50-M			
Ezi-SERVO II-EC-ALL-86XL-A-PN50-R			
Ezi-SERVO II-EC-ALL-86XL-B-PN50-R			

Specifications of Drive

Model		Ezi-SERVO II-EC-ALL-42 series	Ezi-SERVO II-EC-ALL-56 series	Ezi-SERVO II-EC-ALL-60 series	Ezi-SERVO II-EC-ALL-86 series
Input Voltage		DC24V±10%			DC48V±10%
Control Method		Closed-loop control with 32bit MCU			
Current Consumption		Max. 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000r/min *1			0~2,000r/min *2
	Resolution	Encoder Resolution [P/R] / Configurable Resolution [P/R] 10,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)			
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error			
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)			
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode			
	Synchronization	Free Run, SM Event, DC SYNC Event			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)			
	Output Signals	2 programmable outputs (Photocoupler Output), 1 Brake output			

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

*2 : Up to the resolution of 10,000P/R, maximum speed can be reached by 2,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

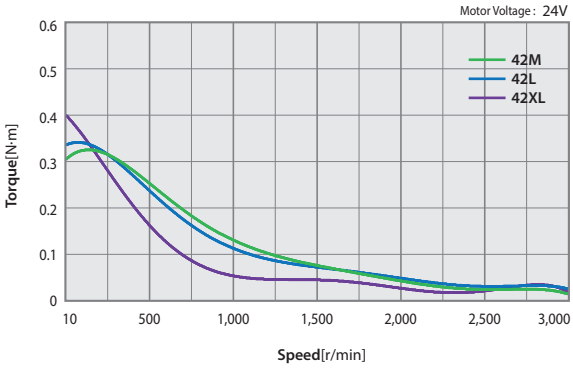
● Specifications of Motor

MODEL			UNIT	Ezi-SERVOII-EC-ALL-42 series			Ezi-SERVOII-EC-ALL-56 series		
				42M	42L	42XL	56S	56M	56L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	1.2	1.2	1.2	3.0	3.0	3.0
MAXIMUM HOLDING TORQUE			N·m	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA			g·cm^2	54	77	114	180	280	520
WEIGHTS			kg	0.440	0.520	0.660	0.760	0.920	1.360
LENGTH(L)			mm	40	48	60	46	55	80
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	22	52	52	52
		8mm		26	26	26	65	65	65
		13mm		33	33	33	85	85	85
		18mm		46	46	46	123	123	123
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

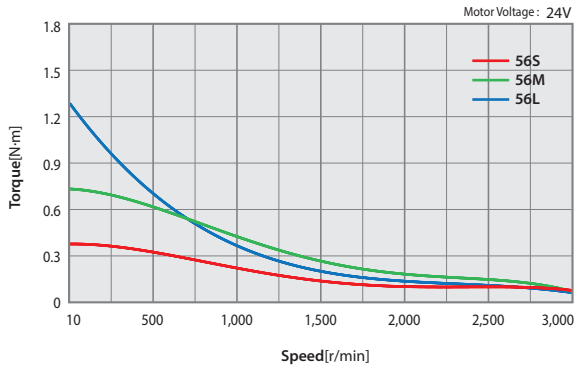
MODEL			UNIT	Ezi-SERVOII-EC-ALL-60 series			Ezi-SERVOII-EC-ALL-86 series		
				60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	240	490	690	1800	3600	5400
WEIGHTS			kg	0.840	0.980	1.540	2.682	4.226	5.756
LENGTH(L)			mm	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	70	70	70	270	270	270
		8mm		87	87	87	300	300	300
		13mm		114	114	114	350	350	350
		18mm		165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

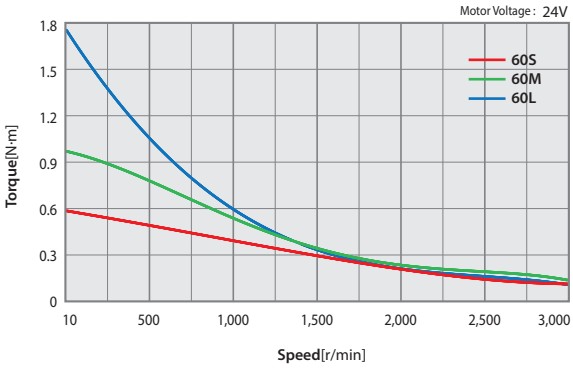
Ezi-SERVO II-EC-ALL-42 series



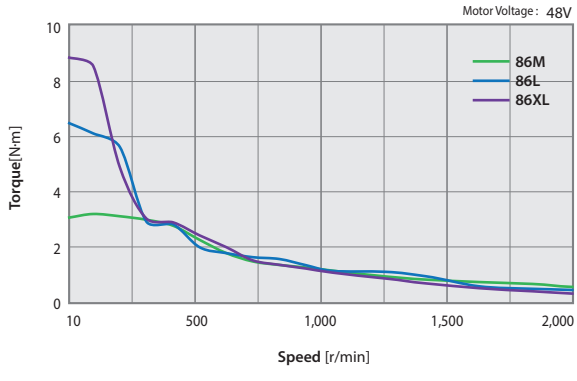
Ezi-SERVO II-EC-ALL-56 series



Ezi-SERVO II-EC-ALL-60 series

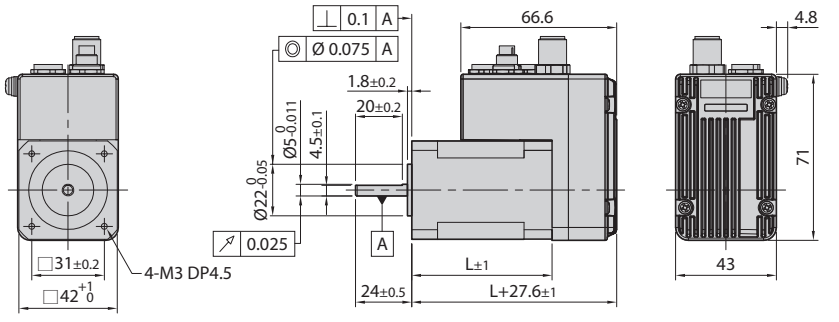


Ezi-SERVO II-EC-ALL-86 series

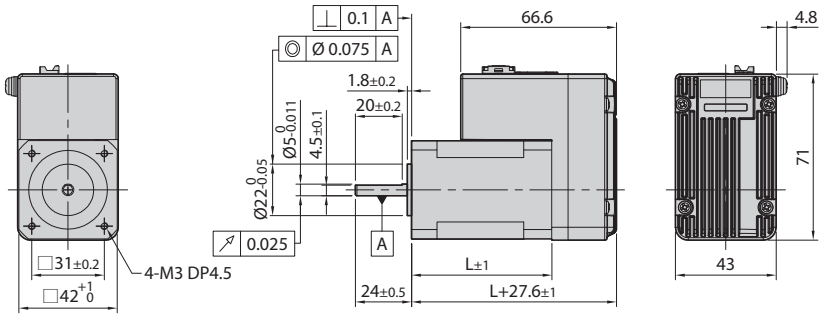


Dimensions of Motor [mm]

◆ M Type



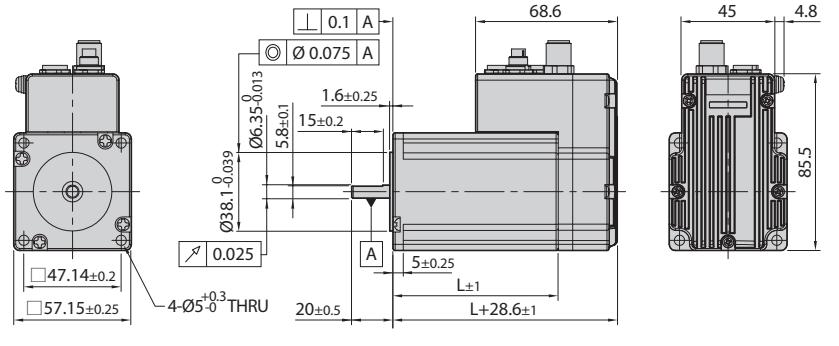
◆ R Type



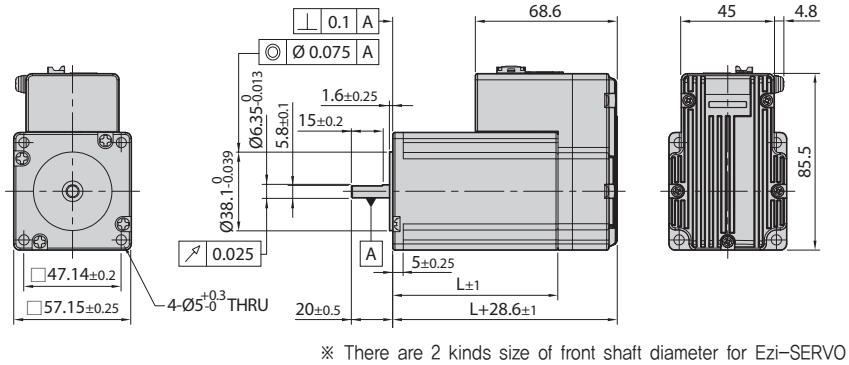
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

◆ M Type



◆ R Type



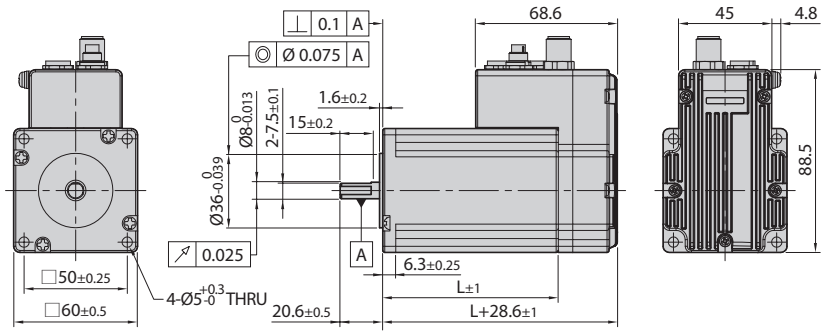
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

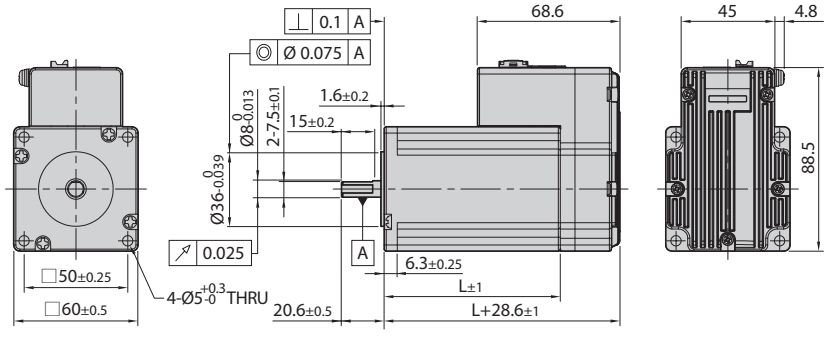
※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-EC-ALL-56 type as Ø6.35 and Ø8.0.

● Dimensions of Motor [mm]

◆ M Type



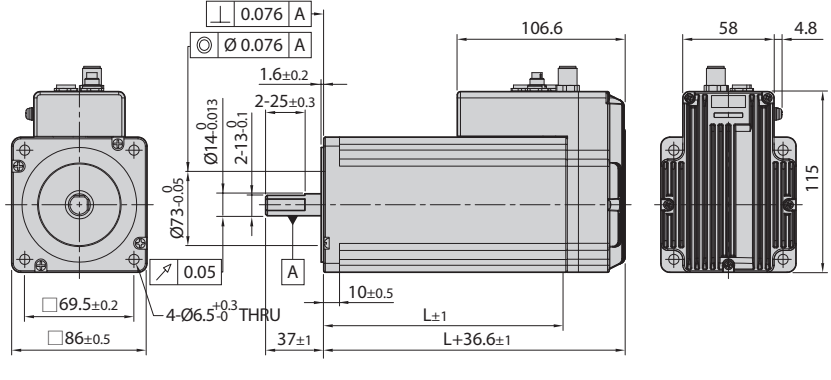
◆ R Type



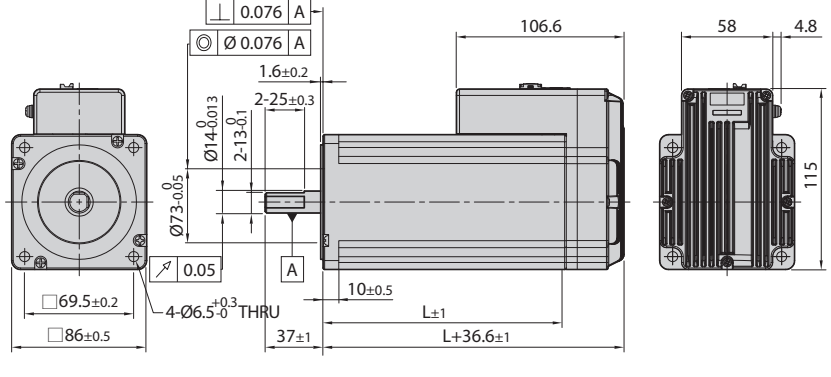
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

◆ M Type



◆ R Type

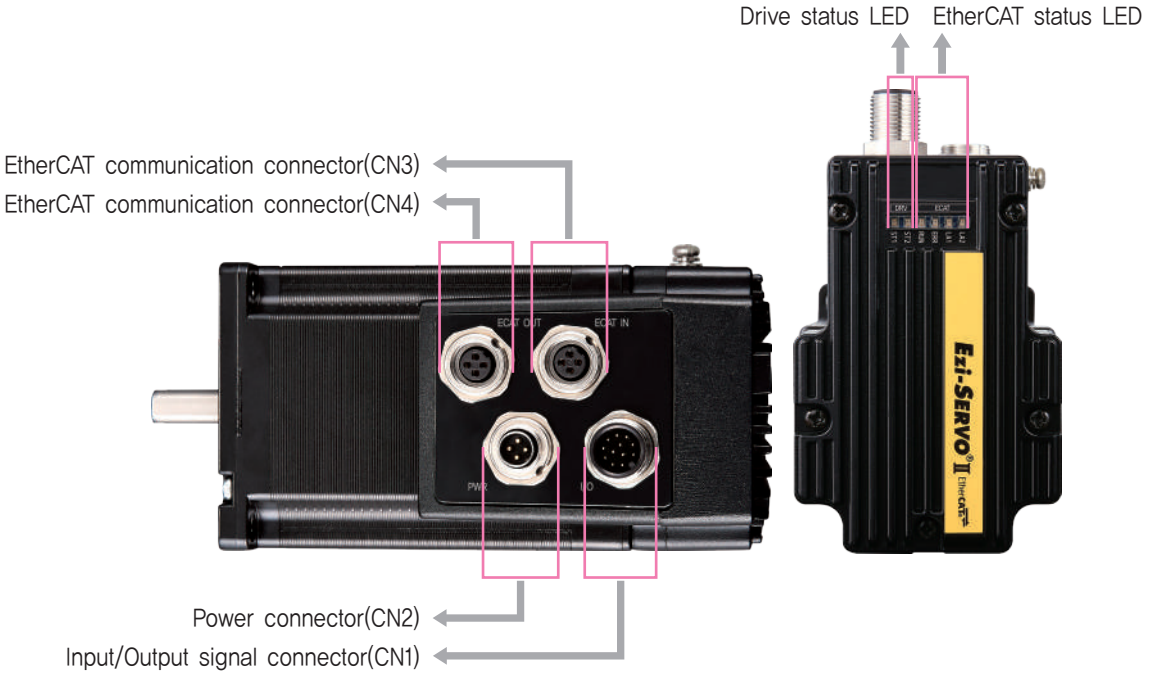


86mm

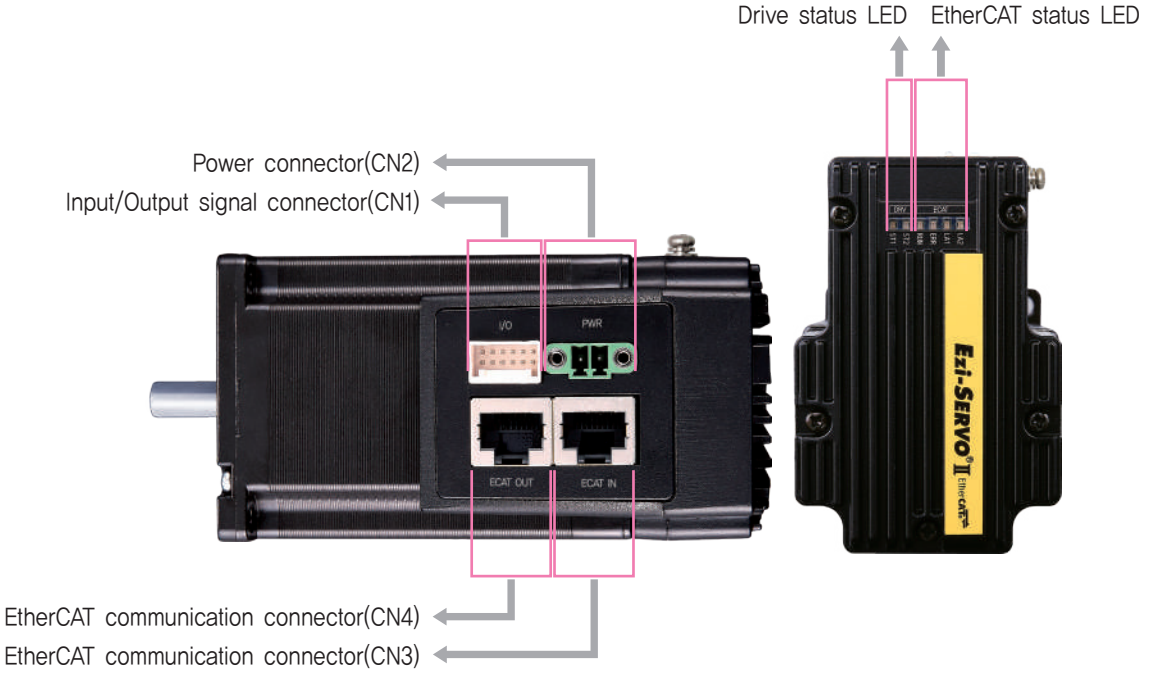
Model name	Length(L)
86M	78
86L	117
86XL	155

● Settings and Operation

◆ M Type



◆ R Type



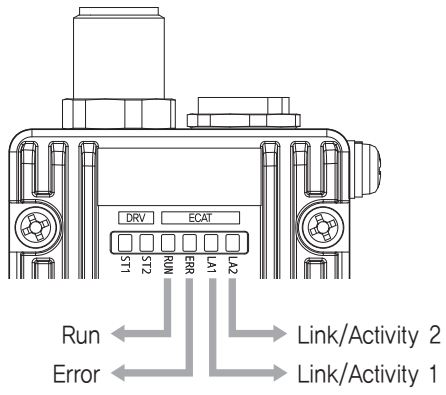
1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Communication Data Error
		Double Flash	Watchdog Time Out

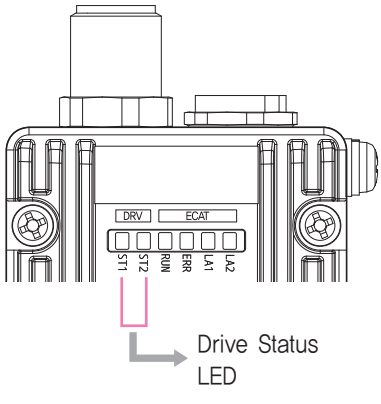
Name	Color	Status	Description
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



2. Drive Status LED

LED informs operation status of the drive.

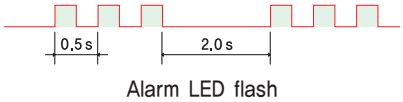
LED Indication	LED Status	Description
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF.	Servo On
ST1 : ▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF.	Servo Off
ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 and ST2 are ON.	In motion
ST1 : ● ● ● ● ● ● ST2 : ● ● ● ● ● ●	ST1 and ST2 blink alternately.	A position error is greater than the set value (Inposition Value) while the motor is stopped.
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error	Error



◆ List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000r/min *2
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *3
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *4
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
14	Input Voltage Error	Input voltage exceeds the limit value *5
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *3

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The speed limit of Ezi-SERVOII-EC-ALL 86 model is 2,000r/min.
*3 : The default setting value is 180˚, and it can be changed by parameter. (Refer to the Manual)
*4 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*5 : Applied model : Ezi-SERVOII-EC-ALL-86, limit value = DC53V
※ Please refer to user Manual for the details of protection functions.

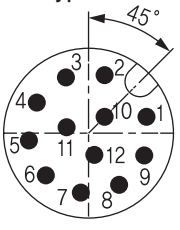


Alarm LED flash
(e.g., Position tracking error)

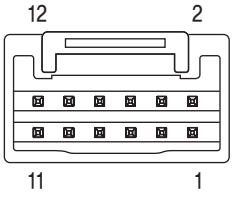
3. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE−	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output

◆ M Type



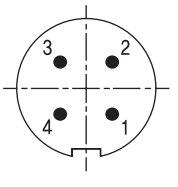
◆ R Type



4. Power Connector(CN2)

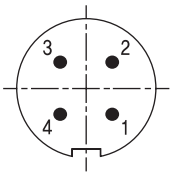
◆ M Type

No.	Function	I/O
1	DC24V	Input
2	DC24V	Input
3	GND	Input
4	GND	Input



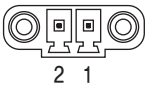
◆ M Type(86mm)

No.	Function	I/O
1	DC48V	Input
2	DC48V	Input
3	GND	Input
4	GND	Input



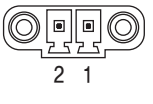
◆ R Type

No.	Function	I/O
1	DC24V	Input
2	GND	Input



◆ R Type(86mm)

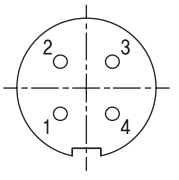
No.	Function	I/O
1	DC48V	Input
2	GND	Input



5. EtherCAT Communication Connector(CN3, CN4)

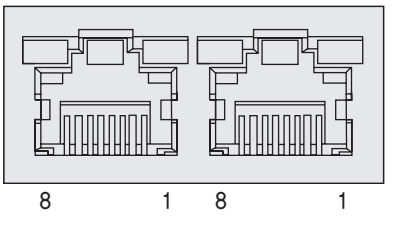
◆ M Type

No.	Function
1	TD+
2	TD−
3	RD+
4	RD−
Connection hood	F.GND

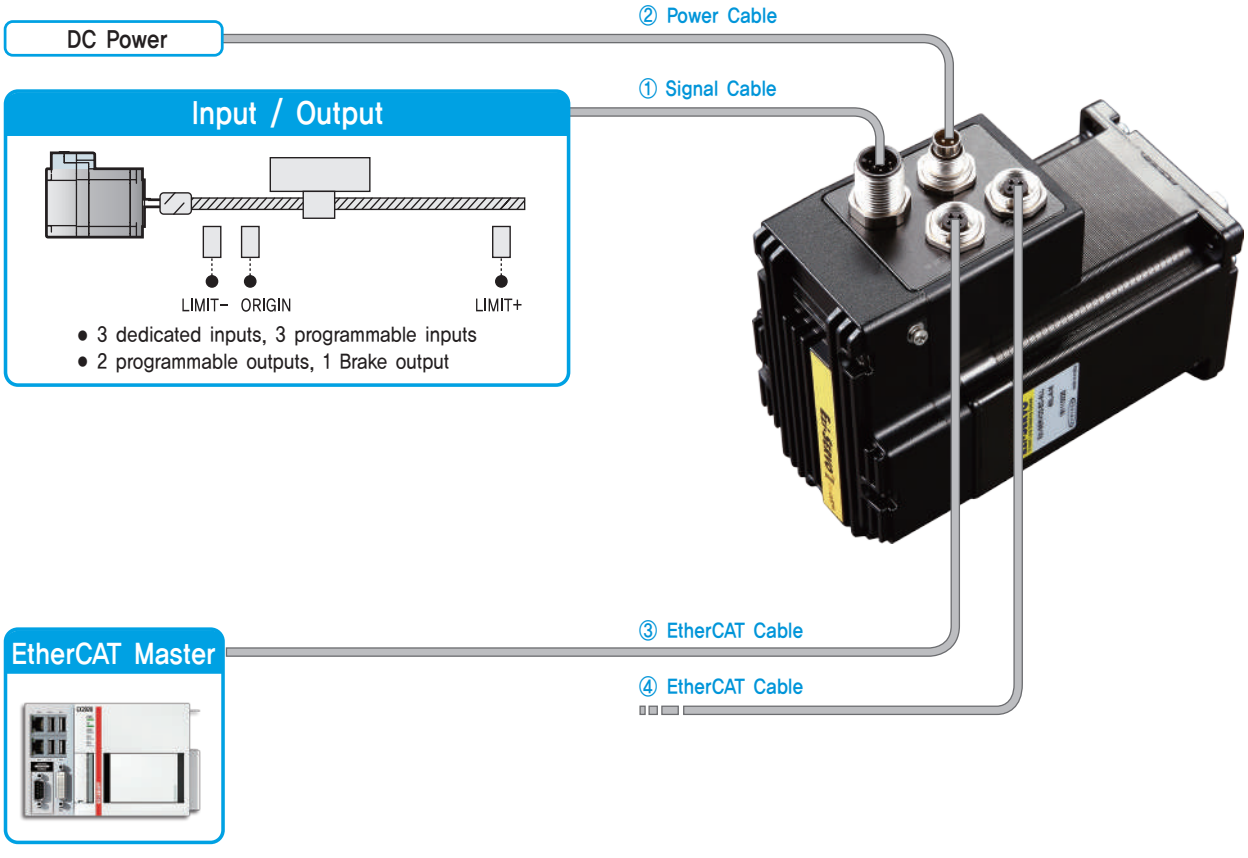


◆ R Type

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connection hood	F.GND
5	-----		



System Configuration [M Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③/④ EtherCAT Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Connector	99 0492 52 12	BINDER
Power (CN2)	Connector	99 0410 75 04	BINDER
EtherCAT (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT ALL [M Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSNM-S-001F	1	Normal Cable	Maximum Length: 20m
	CSNM-S-002F	2		
	CSNM-S-003F	3		
	CSNM-S-005F	5		
	CSNM-S-001M	1	Robot Cable	
	CSNM-S-002M	2		
	CSNM-S-003M	3		
	CSNM-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT ALL [M Type] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CWPA-P-001F	1	Normal Cable	Maximum Length: 2m
	CWPA-P-002F	2		
	CWPA-P-001M	1	Robot Cable	
	CWPA-P-002M	2		

③ EtherCAT Cable (M Type Connector – RJ45)

These are the cables to connect Ezi-SERVO II EtherCAT ALL M Type and Ezi-SERVO II EtherCAT, Ezi-SERVO II EtherCAT ALL R Type with EtherCAT network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
EtherCAT Connection	CGNM-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNM-EC-002F	2		
	CGNM-EC-003F	3		
	CGNM-EC-005F	5		
	CGNM-EC-001M	1	Robot Cable	
	CGNM-EC-002M	2		
	CGNM-EC-003M	3		
	CGNM-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

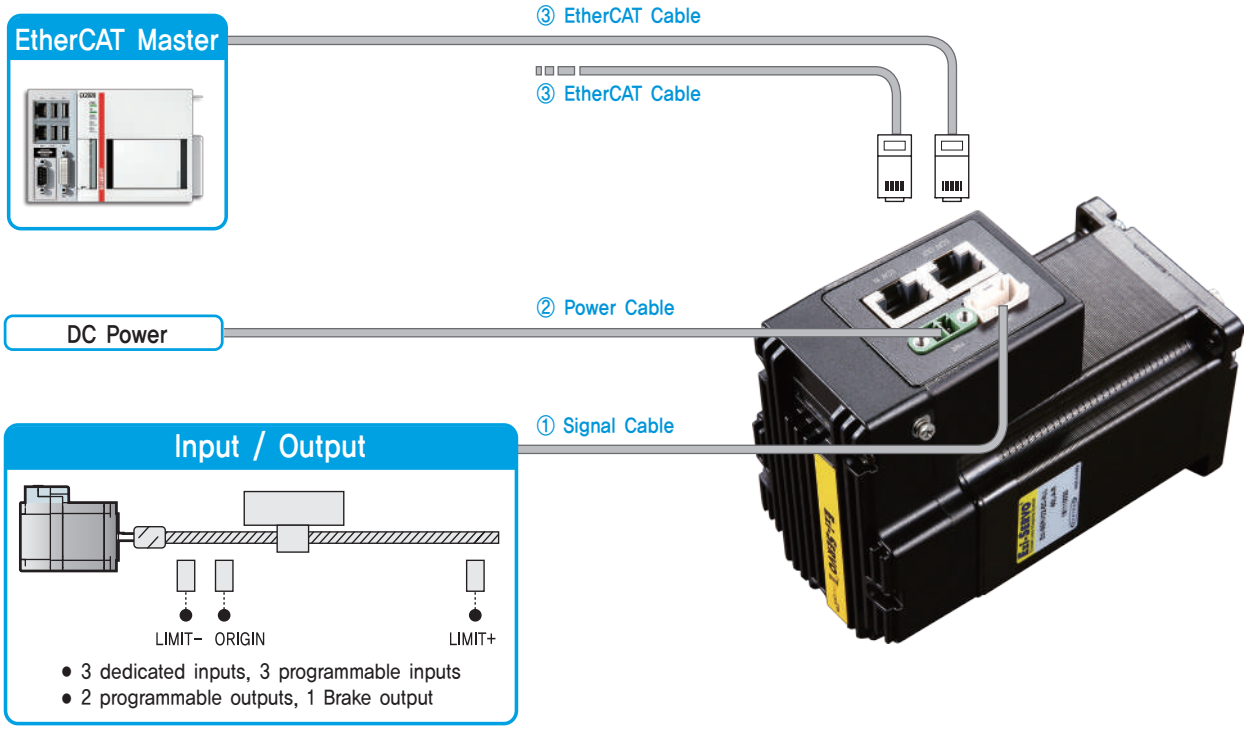
④ EtherCAT Cable (M Type Connector – M Type Connector)

These are the cables to connect between Ezi-SERVO II EtherCAT ALL M Type products with EtherCAT network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
EtherCAT Connection	CWMD-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CWMD-EC-002F	2		
	CWMD-EC-003F	3		
	CWMD-EC-005F	5		
	CWMD-EC-001M	1	Robot Cable	
	CWMD-EC-002M	2		
	CWMD-EC-003M	3		
	CWMD-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● System Configuration [R Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③ EtherCAT Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Housing	501646-1200	MOLEX
	Terminal	501648-1000 (AWG 26~28)	
Power (CN2)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II EtherCAT ALL [R Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSNR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSNR-S-002F	2		
	CSNR-S-003F	3		
	CSNR-S-005F	5		
	CSNR-S-001M	1	Robot Cable	
	CSNR-S-002M	2		
	CSNR-S-003M	3		
	CSNR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Drive Power Cable

These are the cables to connect Ezi-SERVO II EtherCAT ALL [R Type] drive and the power.

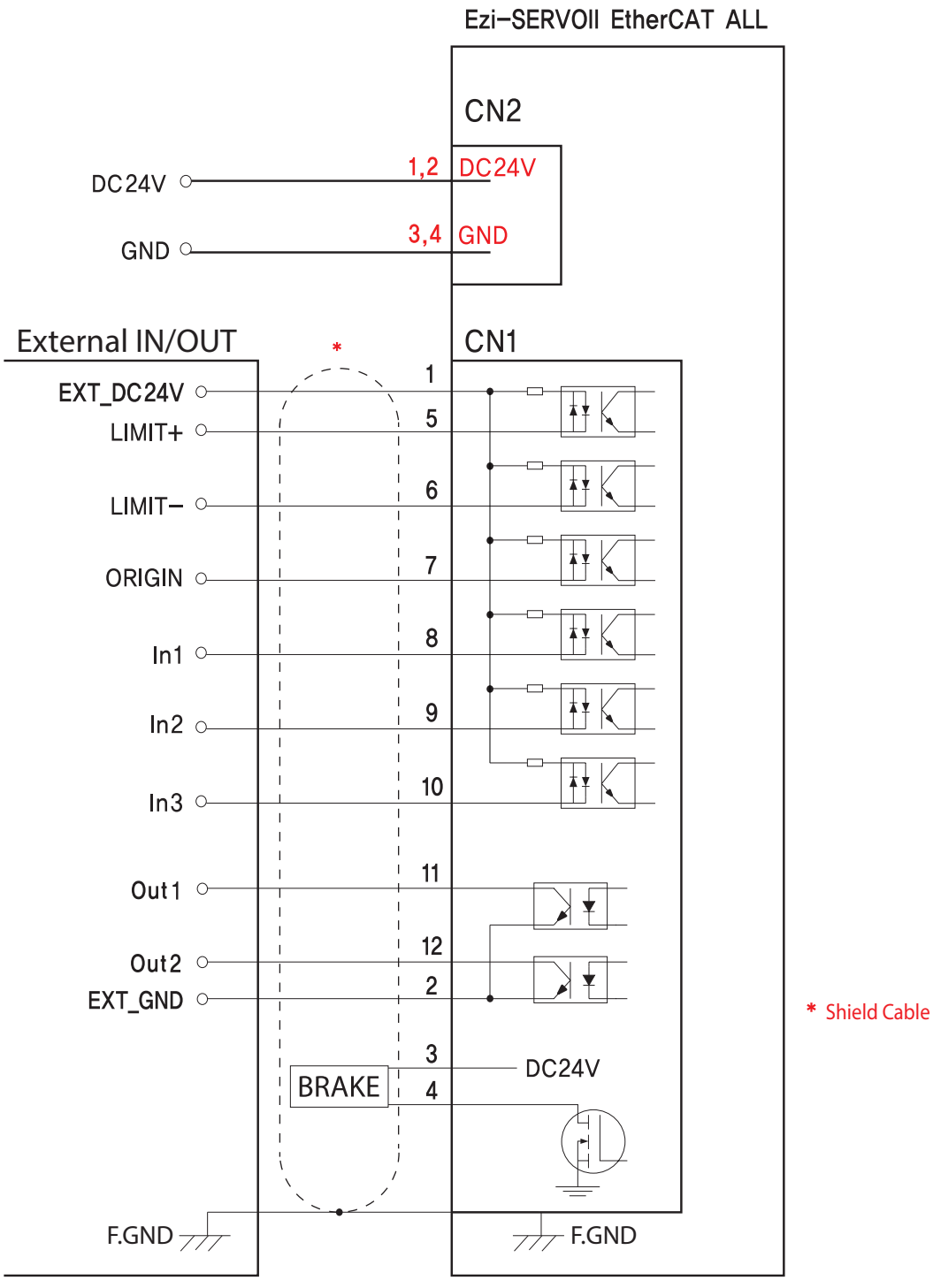
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVA-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVA-P-002F	2		
	CSVA-P-001M	1	Robot Cable	
	CSVA-P-002M	2		
R Type 86mm products Drive – Power Connection	CSPA-P-001F	1	Normal Cable	
	CSPA-P-002F	2		
	CSPA-P-001M	1	Robot Cable	
	CSPA-P-002M	2		

③ EtherCAT Cable

Purpose	Part Number	Length [m]	Cable Type	Remarks
EtherCAT Connection	CGNR-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNR-EC-002F	2		
	CGNR-EC-003F	3		
	CGNR-EC-005F	5		
	CGNR-EC-001M	1	Robot Cable	
	CGNR-EC-002M	2		
	CGNR-EC-003M	3		
	CGNR-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● External Wiring Diagram [M Type]



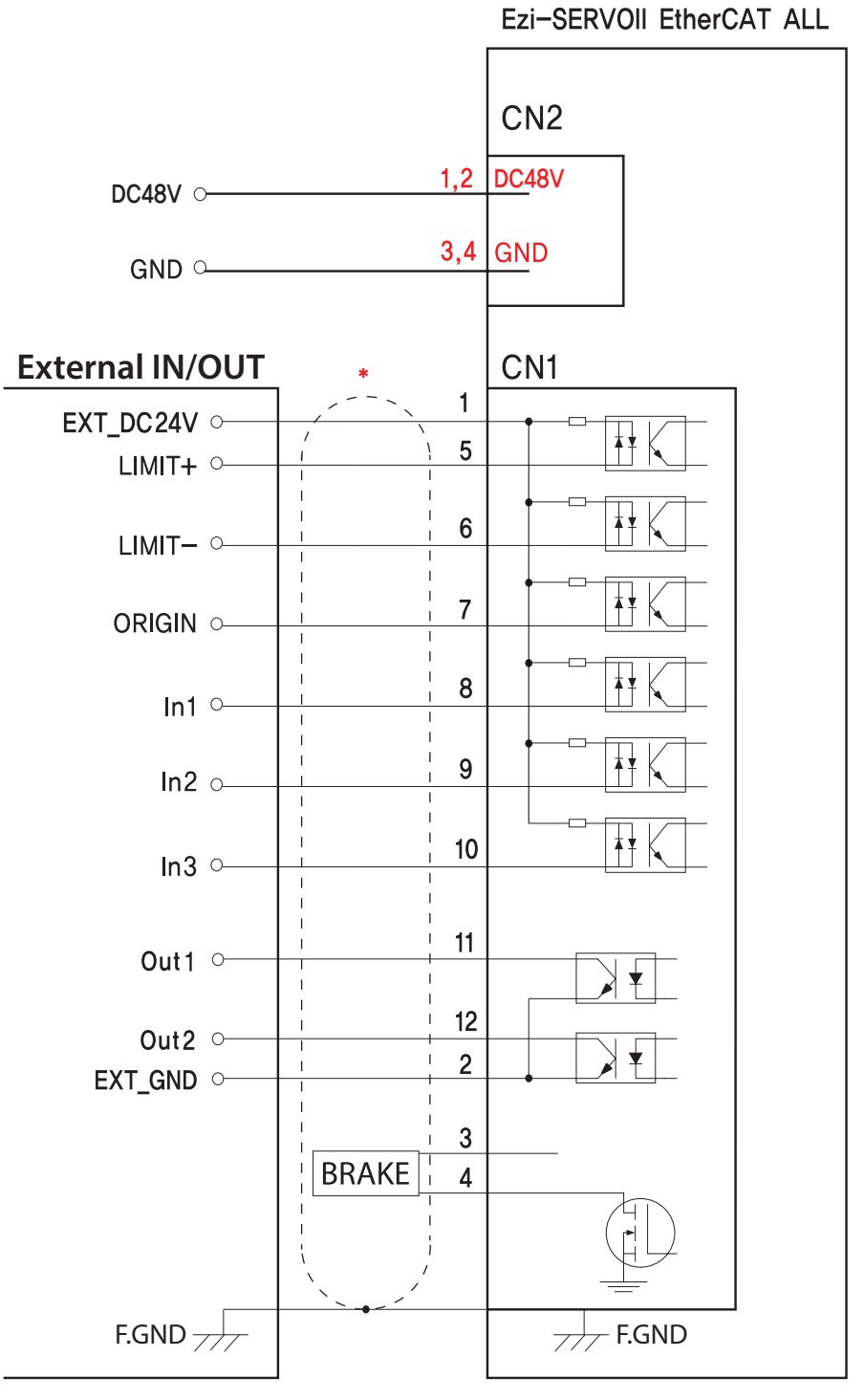
* Shield Cable

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

● External Wiring Diagram [M Type 86mm]



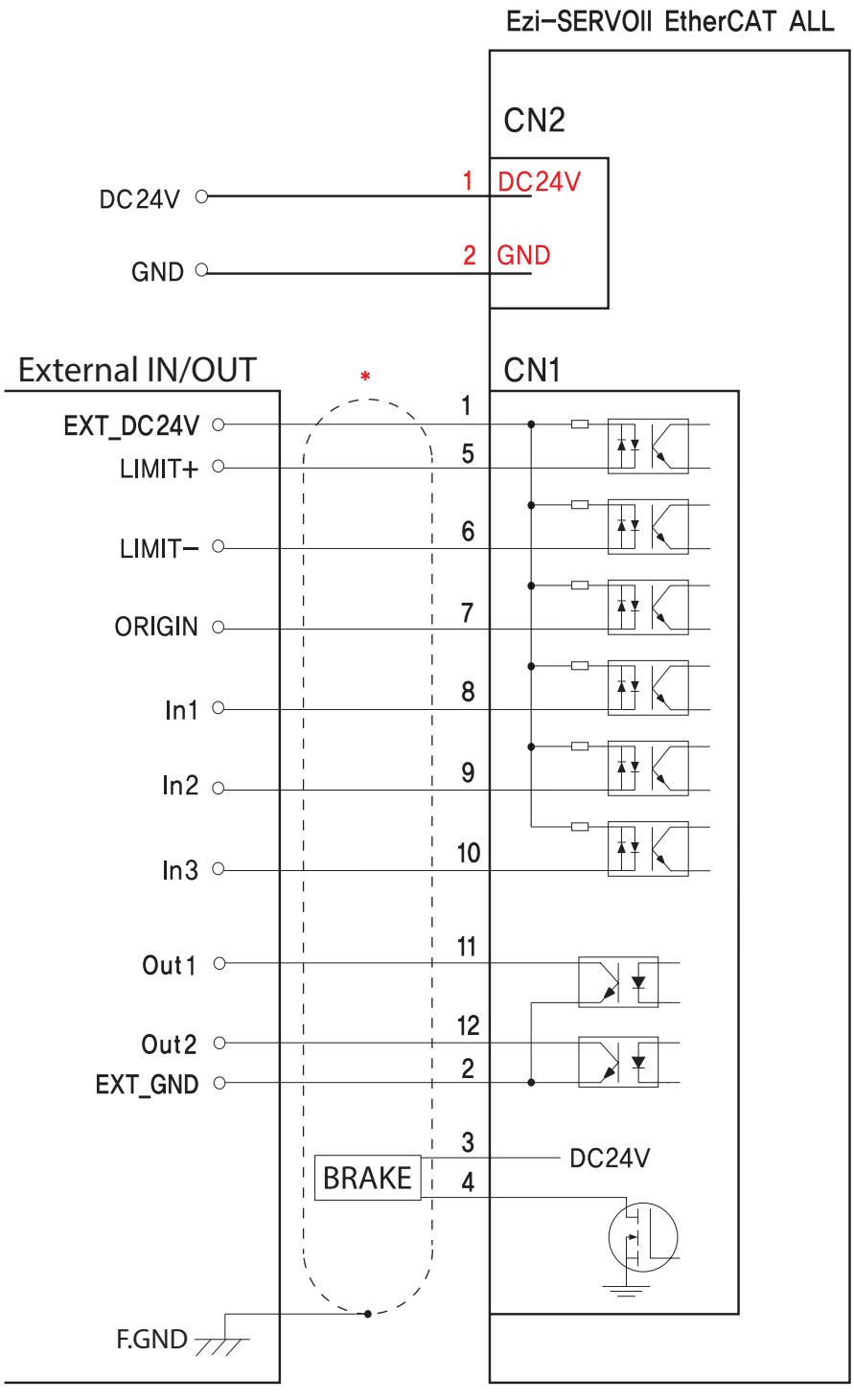
* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [R Type]



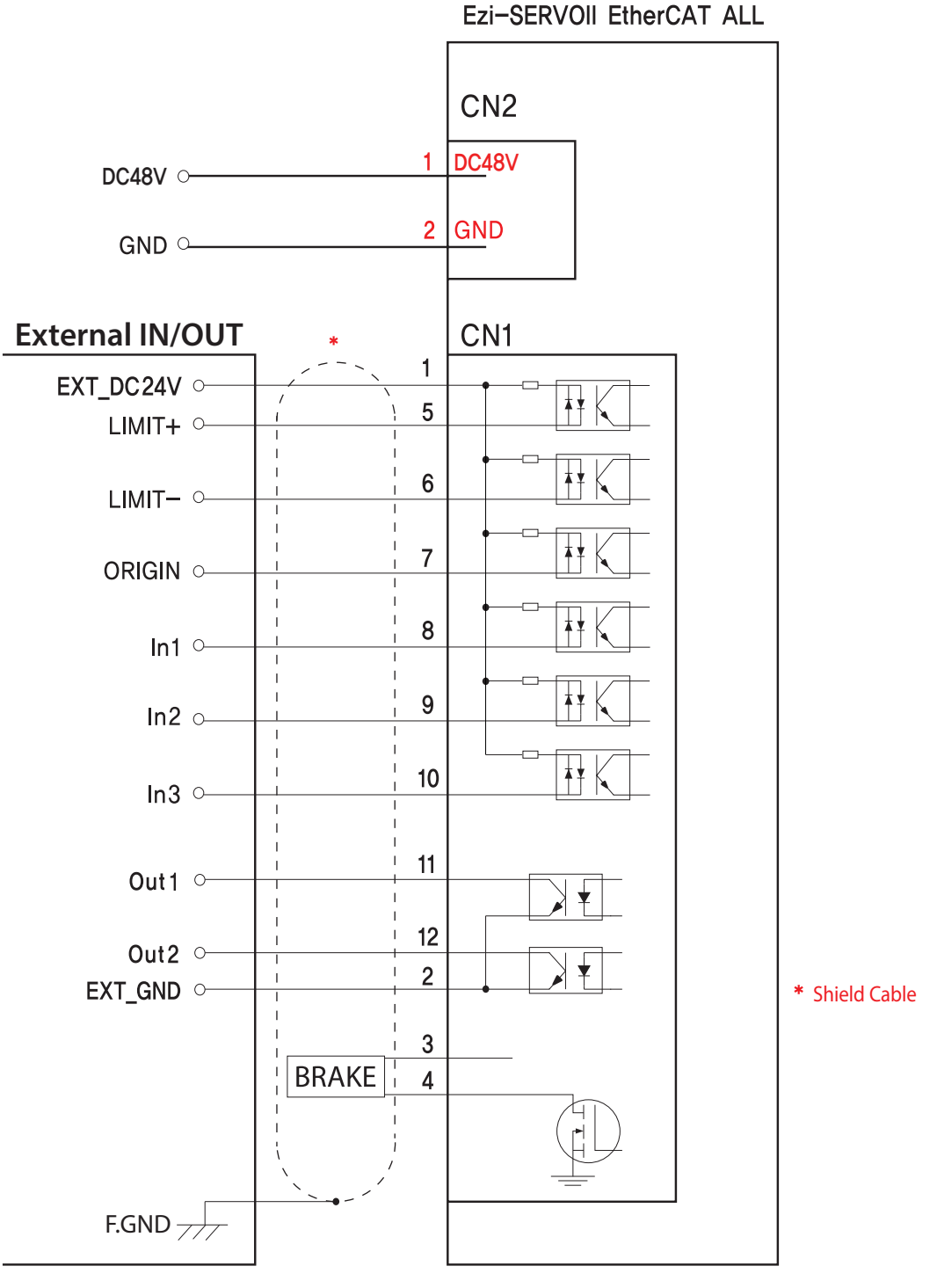
* Shield Cable

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

● External Wiring Diagram [R Type 86mm]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO® II Plus-E
PWR
MOTOR
ENCODER
Ezi-SERVO
EzS2-PE-56L-A
RUN
ERR
D/L
NET ID

Ezi-SERVO® II Plus-E

Closed Loop Stepping System

- Embedded Motion Controller
- Ethernet Interface
- Position Table
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- High Resolution / High Response
- Low Heat Generation / High Torque

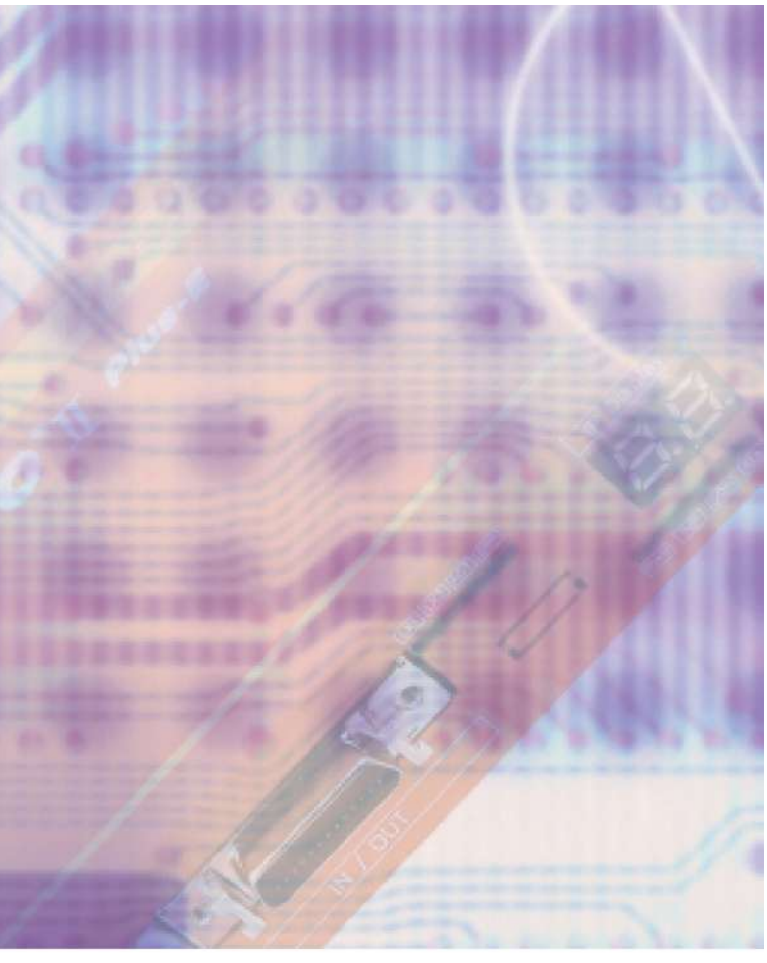


FASTECH

Fast, Accurate, Smooth Motion

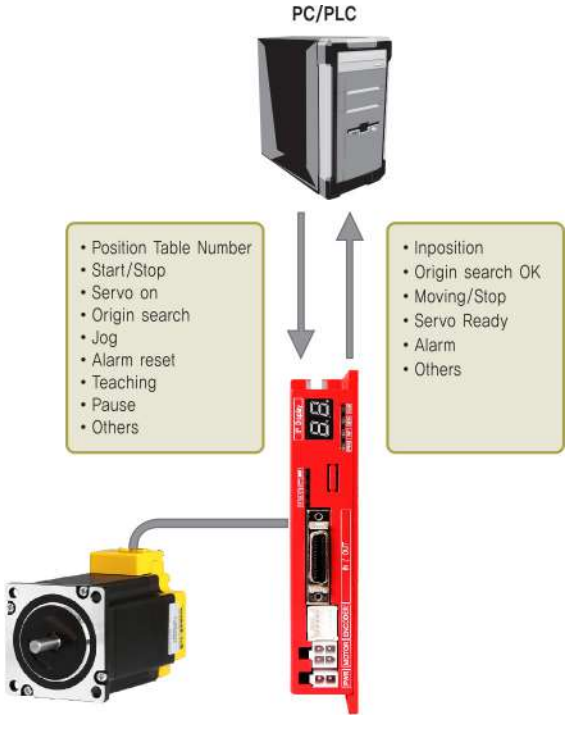
Ezi-SERVO® II Plus-E

Closed Loop Stepping System



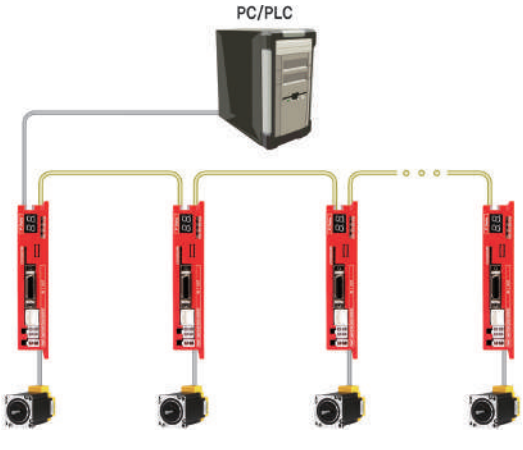
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



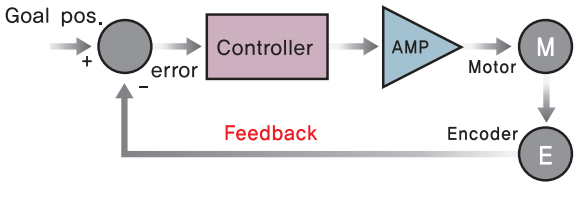
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.



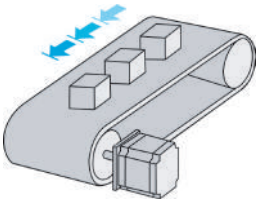
3 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



4 Tuning Not Required

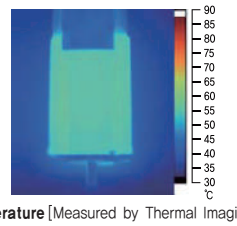
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



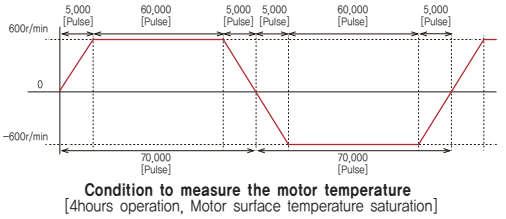
5 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

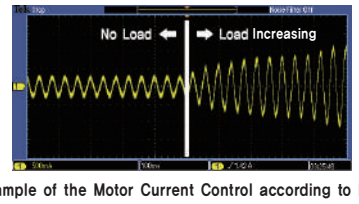
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

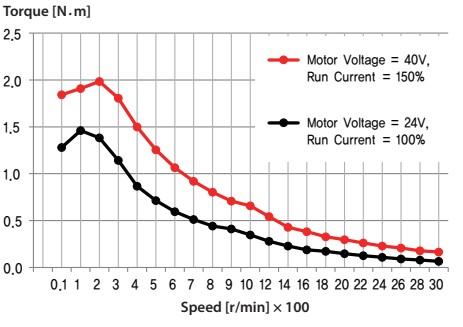


Example of the Motor Current Control according to load

6 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

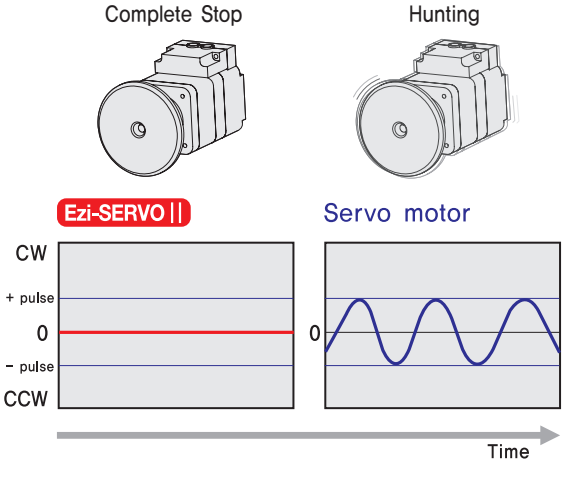


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-56L
Motor Voltage = DC40V
Input Voltage = DC24V

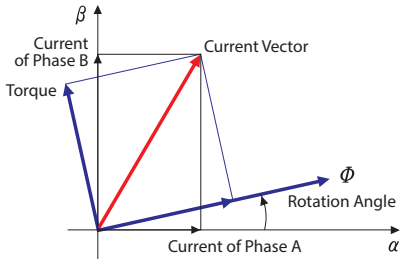
7 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



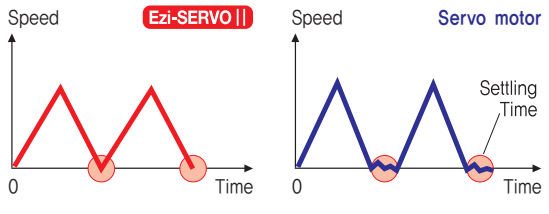
8 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVOII is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



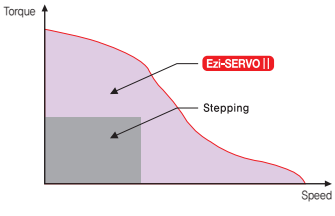
10 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



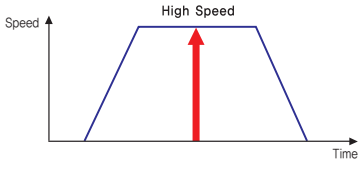
11 High Torque / Continuous Operation

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

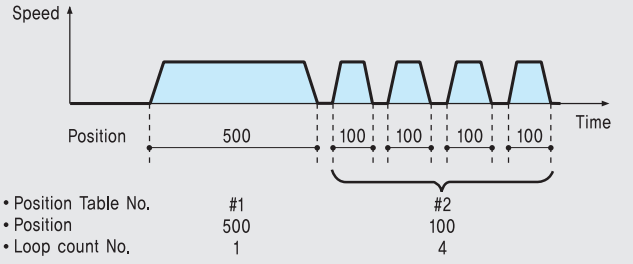
● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

● Motion Controller Features of Ezi-SERVO

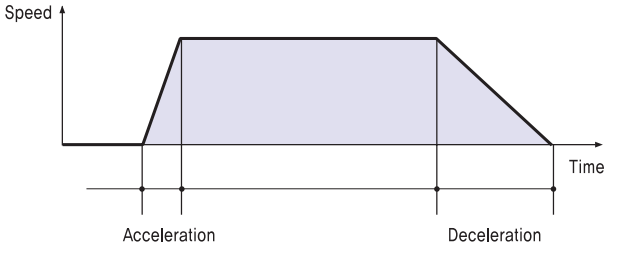
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



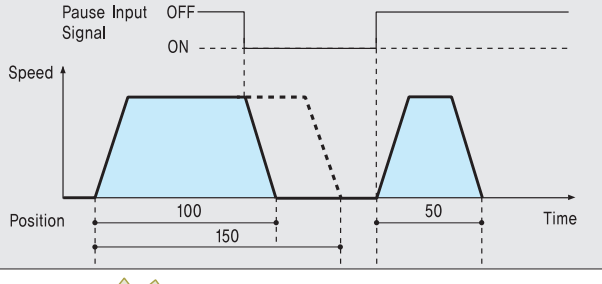
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



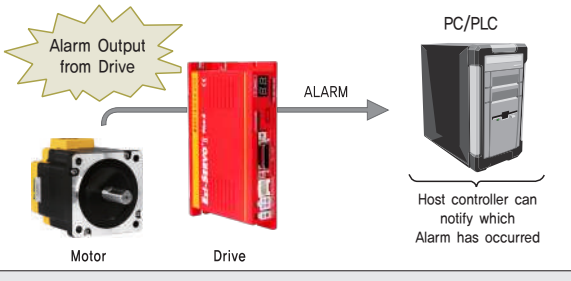
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



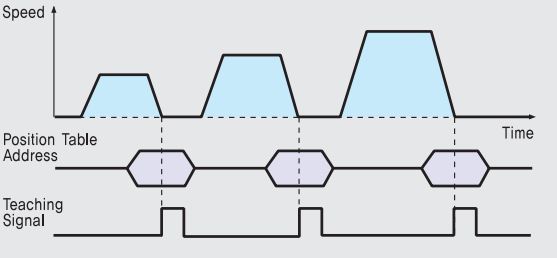
4. Alarm

The number of LED flashing time and information displayed on the 7-segment LED display indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

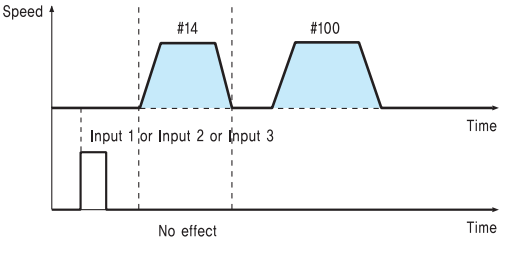


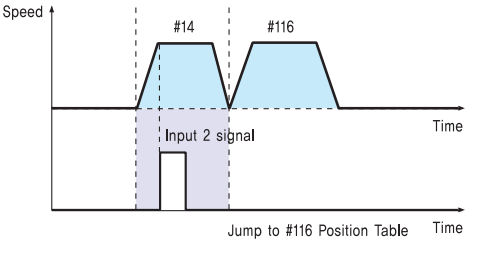
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO II Plus-E Part Numbering

Ezi-SERVO II -PE-42S-A-BK-PN10

Series Name

Type Name

PE : Plus Ethernet

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -PE-20M-F	EzM2-20M-F	EzS2-PE-20M-F
Ezi-SERVO II -PE-20L-F	EzM2-20L-F	EzS2-PE-20L-F
Ezi-SERVO II -PE-28S-D	EzM2-28S-D	EzS2-PE-28S-D
Ezi-SERVO II -PE-28SM-D	EzM2-28SM-D	EzS2-PE-28S-D
Ezi-SERVO II -PE-28M-D	EzM2-28M-D	EzS2-PE-28M-D
Ezi-SERVO II -PE-28MM-D	EzM2-28MM-D	EzS2-PE-28M-D
Ezi-SERVO II -PE-28L-D	EzM2-28L-D	EzS2-PE-28L-D
Ezi-SERVO II -PE-28LM-D	EzM2-28LM-D	EzS2-PE-28L-D
Ezi-SERVO II -PE-35M-D	EzM2-35M-D	EzS2-PE-35M-D
Ezi-SERVO II -PE-35MM-D	EzM2-35MM-D	EzS2-PE-35M-D
Ezi-SERVO II -PE-35L-D	EzM2-35L-D	EzS2-PE-35L-D
Ezi-SERVO II -PE-35LM-D	EzM2-35LM-D	EzS2-PE-35L-D
Ezi-SERVO II -PE-42S-A	EzM2-42S-A	EzS2-PE-42S-A
Ezi-SERVO II -PE-42S-B	EzM2-42S-B	EzS2-PE-42S-B
Ezi-SERVO II -PE-42M-A	EzM2-42M-A	EzS2-PE-42M-A
Ezi-SERVO II -PE-42M-B	EzM2-42M-B	EzS2-PE-42M-B
Ezi-SERVO II -PE-42L-A	EzM2-42L-A	EzS2-PE-42L-A
Ezi-SERVO II -PE-42L-B	EzM2-42L-B	EzS2-PE-42L-B
Ezi-SERVO II -PE-42XL-A	EzM2-42XL-A	EzS2-PE-42XL-A
Ezi-SERVO II -PE-42XL-B	EzM2-42XL-B	EzS2-PE-42XL-B
Ezi-SERVO II -PE-56S-A	EzM2-56S-A	EzS2-PE-56S-A
Ezi-SERVO II -PE-56S-B	EzM2-56S-B	EzS2-PE-56S-B
Ezi-SERVO II -PE-56M-A	EzM2-56M-A	EzS2-PE-56M-A
Ezi-SERVO II -PE-56M-B	EzM2-56M-B	EzS2-PE-56M-B
Ezi-SERVO II -PE-56L-A	EzM2-56L-A	EzS2-PE-56L-A
Ezi-SERVO II -PE-56L-B	EzM2-56L-B	EzS2-PE-56L-B
Ezi-SERVO II -PE-60S-A	EzM2-60S-A	EzS2-PE-60S-A
Ezi-SERVO II -PE-60S-B	EzM2-60S-B	EzS2-PE-60S-B
Ezi-SERVO II -PE-60M-A	EzM2-60M-A	EzS2-PE-60M-A
Ezi-SERVO II -PE-60M-B	EzM2-60M-B	EzS2-PE-60M-B
Ezi-SERVO II -PE-60L-A	EzM2-60L-A	EzS2-PE-60L-A
Ezi-SERVO II -PE-60L-B	EzM2-60L-B	EzS2-PE-60L-B
Ezi-SERVO II -PE-86M-A	EzM2-86M-A	EzS2-PE-86M-A
Ezi-SERVO II -PE-86M-B	EzM2-86M-B	EzS2-PE-86M-B
Ezi-SERVO II -PE-86L-A	EzM2-86L-A	EzS2-PE-86L-A
Ezi-SERVO II -PE-86L-B	EzM2-86L-B	EzS2-PE-86L-B
Ezi-SERVO II -PE-86XL-A	EzM2-86XL-A	EzS2-PE-86XL-A
Ezi-SERVO II -PE-86XL-B	EzM2-86XL-B	EzS2-PE-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit part number.
(Ex : Ezi-SERVO II -PE-28LM-D, Ezi-SERVO II -PE-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-42S-A-BK	EzM2-42S-A-BK	EzS2-PE-42S-A
Ezi-SERVO II-PE-42S-B-BK	EzM2-42S-B-BK	EzS2-PE-42S-B
Ezi-SERVO II-PE-42M-A-BK	EzM2-42M-A-BK	EzS2-PE-42M-A
Ezi-SERVO II-PE-42M-B-BK	EzM2-42M-B-BK	EzS2-PE-42M-B
Ezi-SERVO II-PE-42L-A-BK	EzM2-42L-A-BK	EzS2-PE-42L-A
Ezi-SERVO II-PE-42L-B-BK	EzM2-42L-B-BK	EzS2-PE-42L-B
Ezi-SERVO II-PE-42XL-A-BK	EzM2-42XL-A-BK	EzS2-PE-42XL-A
Ezi-SERVO II-PE-42XL-B-BK	EzM2-42XL-B-BK	EzS2-PE-42XL-B
Ezi-SERVO II-PE-56S-A-BK	EzM2-56S-A-BK	EzS2-PE-56S-A
Ezi-SERVO II-PE-56S-B-BK	EzM2-56S-B-BK	EzS2-PE-56S-B
Ezi-SERVO II-PE-56M-A-BK	EzM2-56M-A-BK	EzS2-PE-56M-A
Ezi-SERVO II-PE-56M-B-BK	EzM2-56M-B-BK	EzS2-PE-56M-B
Ezi-SERVO II-PE-56L-A-BK	EzM2-56L-A-BK	EzS2-PE-56L-A
Ezi-SERVO II-PE-56L-B-BK	EzM2-56L-B-BK	EzS2-PE-56L-B
Ezi-SERVO II-PE-60S-A-BK	EzM2-60S-A-BK	EzS2-PE-60S-A
Ezi-SERVO II-PE-60S-B-BK	EzM2-60S-B-BK	EzS2-PE-60S-B
Ezi-SERVO II-PE-60M-A-BK	EzM2-60M-A-BK	EzS2-PE-60M-A
Ezi-SERVO II-PE-60M-B-BK	EzM2-60M-B-BK	EzS2-PE-60M-B
Ezi-SERVO II-PE-60L-A-BK	EzM2-60L-A-BK	EzS2-PE-60L-A
Ezi-SERVO II-PE-60L-B-BK	EzM2-60L-B-BK	EzS2-PE-60L-B
Ezi-SERVO II-PE-86M-A-BK	EzM2-86M-A-BK	EzS2-PE-86M-A
Ezi-SERVO II-PE-86M-B-BK	EzM2-86M-B-BK	EzS2-PE-86M-B
Ezi-SERVO II-PE-86L-A-BK	EzM2-86L-A-BK	EzS2-PE-86L-A
Ezi-SERVO II-PE-86L-B-BK	EzM2-86L-B-BK	EzS2-PE-86L-B
Ezi-SERVO II-PE-86XL-A-BK	EzM2-86XL-A-BK	EzS2-PE-86XL-A
Ezi-SERVO II-PE-86XL-B-BK	EzM2-86XL-B-BK	EzS2-PE-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-42S-A-PN3	EzM2-42S-A-PN3	EzS2-PE-42S-A	1:3
Ezi-SERVO II-PE-42S-B-PN3	EzM2-42S-B-PN3	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN5	EzM2-42S-A-PN5	EzS2-PE-42S-A	1:5
Ezi-SERVO II-PE-42S-B-PN5	EzM2-42S-B-PN5	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN8	EzM2-42S-A-PN8	EzS2-PE-42S-A	1:8
Ezi-SERVO II-PE-42S-B-PN8	EzM2-42S-B-PN8	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN10	EzM2-42S-A-PN10	EzS2-PE-42S-A	1:10
Ezi-SERVO II-PE-42S-B-PN10	EzM2-42S-B-PN10	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN15	EzM2-42S-A-PN15	EzS2-PE-42S-A	1:15
Ezi-SERVO II-PE-42S-B-PN15	EzM2-42S-B-PN15	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN25	EzM2-42S-A-PN25	EzS2-PE-42S-A	1:25
Ezi-SERVO II-PE-42S-B-PN25	EzM2-42S-B-PN25	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN40	EzM2-42S-A-PN40	EzS2-PE-42S-A	1:40
Ezi-SERVO II-PE-42S-B-PN40	EzM2-42S-B-PN40	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42S-A-PN50	EzM2-42S-A-PN50	EzS2-PE-42S-A	1:50
Ezi-SERVO II-PE-42S-B-PN50	EzM2-42S-B-PN50	EzS2-PE-42S-B	
Ezi-SERVO II-PE-42M-A-PN3	EzM2-42M-A-PN3	EzS2-PE-42M-A	1:3
Ezi-SERVO II-PE-42M-B-PN3	EzM2-42M-B-PN3	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN5	EzM2-42M-A-PN5	EzS2-PE-42M-A	1:5
Ezi-SERVO II-PE-42M-B-PN5	EzM2-42M-B-PN5	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN8	EzM2-42M-A-PN8	EzS2-PE-42M-A	1:8
Ezi-SERVO II-PE-42M-B-PN8	EzM2-42M-B-PN8	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN10	EzM2-42M-A-PN10	EzS2-PE-42M-A	1:10
Ezi-SERVO II-PE-42M-B-PN10	EzM2-42M-B-PN10	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN15	EzM2-42M-A-PN15	EzS2-PE-42M-A	1:15
Ezi-SERVO II-PE-42M-B-PN15	EzM2-42M-B-PN15	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN25	EzM2-42M-A-PN25	EzS2-PE-42M-A	1:25
Ezi-SERVO II-PE-42M-B-PN25	EzM2-42M-B-PN25	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN40	EzM2-42M-A-PN40	EzS2-PE-42M-A	1:40
Ezi-SERVO II-PE-42M-B-PN40	EzM2-42M-B-PN40	EzS2-PE-42M-B	
Ezi-SERVO II-PE-42M-A-PN50	EzM2-42M-A-PN50	EzS2-PE-42M-A	1:50
Ezi-SERVO II-PE-42M-B-PN50	EzM2-42M-B-PN50	EzS2-PE-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-42L-A-PN3	EzM2-42L-A-PN3	EzS2-PE-42L-A	1:3
Ezi-SERVO II-PE-42L-B-PN3	EzM2-42L-B-PN3	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN5	EzM2-42L-A-PN5	EzS2-PE-42L-A	1:5
Ezi-SERVO II-PE-42L-B-PN5	EzM2-42L-B-PN5	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN8	EzM2-42L-A-PN8	EzS2-PE-42L-A	1:8
Ezi-SERVO II-PE-42L-B-PN8	EzM2-42L-B-PN8	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN10	EzM2-42L-A-PN10	EzS2-PE-42L-A	1:10
Ezi-SERVO II-PE-42L-B-PN10	EzM2-42L-B-PN10	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN15	EzM2-42L-A-PN15	EzS2-PE-42L-A	1:15
Ezi-SERVO II-PE-42L-B-PN15	EzM2-42L-B-PN15	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN25	EzM2-42L-A-PN25	EzS2-PE-42L-A	1:25
Ezi-SERVO II-PE-42L-B-PN25	EzM2-42L-B-PN25	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN40	EzM2-42L-A-PN40	EzS2-PE-42L-A	1:40
Ezi-SERVO II-PE-42L-B-PN40	EzM2-42L-B-PN40	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42L-A-PN50	EzM2-42L-A-PN50	EzS2-PE-42L-A	1:50
Ezi-SERVO II-PE-42L-B-PN50	EzM2-42L-B-PN50	EzS2-PE-42L-B	
Ezi-SERVO II-PE-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-PE-42XL-A	1:3
Ezi-SERVO II-PE-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-PE-42XL-A	1:5
Ezi-SERVO II-PE-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-PE-42XL-A	1:8
Ezi-SERVO II-PE-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-PE-42XL-A	1:10
Ezi-SERVO II-PE-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-PE-42XL-A	1:15
Ezi-SERVO II-PE-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-PE-42XL-A	1:25
Ezi-SERVO II-PE-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-PE-42XL-A	1:40
Ezi-SERVO II-PE-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-PE-42XL-A	1:50
Ezi-SERVO II-PE-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-PE-42XL-B	
Ezi-SERVO II-PE-56S-A-PN3	EzM2-56S-A-PN3	EzS2-PE-56S-A	1:3
Ezi-SERVO II-PE-56S-B-PN3	EzM2-56S-B-PN3	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN5	EzM2-56S-A-PN5	EzS2-PE-56S-A	1:5
Ezi-SERVO II-PE-56S-B-PN5	EzM2-56S-B-PN5	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN8	EzM2-56S-A-PN8	EzS2-PE-56S-A	1:8
Ezi-SERVO II-PE-56S-B-PN8	EzM2-56S-B-PN8	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN10	EzM2-56S-A-PN10	EzS2-PE-56S-A	1:10
Ezi-SERVO II-PE-56S-B-PN10	EzM2-56S-B-PN10	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN15	EzM2-56S-A-PN15	EzS2-PE-56S-A	1:15
Ezi-SERVO II-PE-56S-B-PN15	EzM2-56S-B-PN15	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN25	EzM2-56S-A-PN25	EzS2-PE-56S-A	1:25
Ezi-SERVO II-PE-56S-B-PN25	EzM2-56S-B-PN25	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN40	EzM2-56S-A-PN40	EzS2-PE-56S-A	1:40
Ezi-SERVO II-PE-56S-B-PN40	EzM2-56S-B-PN40	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56S-A-PN50	EzM2-56S-A-PN50	EzS2-PE-56S-A	1:50
Ezi-SERVO II-PE-56S-B-PN50	EzM2-56S-B-PN50	EzS2-PE-56S-B	
Ezi-SERVO II-PE-56M-A-PN3	EzM2-56M-A-PN3	EzS2-PE-56M-A	1:3
Ezi-SERVO II-PE-56M-B-PN3	EzM2-56M-B-PN3	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN5	EzM2-56M-A-PN5	EzS2-PE-56M-A	1:5
Ezi-SERVO II-PE-56M-B-PN5	EzM2-56M-B-PN5	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN8	EzM2-56M-A-PN8	EzS2-PE-56M-A	1:8
Ezi-SERVO II-PE-56M-B-PN8	EzM2-56M-B-PN8	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN10	EzM2-56M-A-PN10	EzS2-PE-56M-A	1:10
Ezi-SERVO II-PE-56M-B-PN10	EzM2-56M-B-PN10	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN15	EzM2-56M-A-PN15	EzS2-PE-56M-A	1:15
Ezi-SERVO II-PE-56M-B-PN15	EzM2-56M-B-PN15	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN25	EzM2-56M-A-PN25	EzS2-PE-56M-A	1:25
Ezi-SERVO II-PE-56M-B-PN25	EzM2-56M-B-PN25	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN40	EzM2-56M-A-PN40	EzS2-PE-56M-A	1:40
Ezi-SERVO II-PE-56M-B-PN40	EzM2-56M-B-PN40	EzS2-PE-56M-B	
Ezi-SERVO II-PE-56M-A-PN50	EzM2-56M-A-PN50	EzS2-PE-56M-A	1:50
Ezi-SERVO II-PE-56M-B-PN50	EzM2-56M-B-PN50	EzS2-PE-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-56L-A-PN3	EzM2-56L-A-PN3	EzS2-PE-56L-A	1:3
Ezi-SERVO II-PE-56L-B-PN3	EzM2-56L-B-PN3	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN5	EzM2-56L-A-PN5	EzS2-PE-56L-A	1:5
Ezi-SERVO II-PE-56L-B-PN5	EzM2-56L-B-PN5	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN8	EzM2-56L-A-PN8	EzS2-PE-56L-A	1:8
Ezi-SERVO II-PE-56L-B-PN8	EzM2-56L-B-PN8	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN10	EzM2-56L-A-PN10	EzS2-PE-56L-A	1:10
Ezi-SERVO II-PE-56L-B-PN10	EzM2-56L-B-PN10	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN15	EzM2-56L-A-PN15	EzS2-PE-56L-A	1:15
Ezi-SERVO II-PE-56L-B-PN15	EzM2-56L-B-PN15	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN25	EzM2-56L-A-PN25	EzS2-PE-56L-A	1:25
Ezi-SERVO II-PE-56L-B-PN25	EzM2-56L-B-PN25	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN40	EzM2-56L-A-PN40	EzS2-PE-56L-A	1:40
Ezi-SERVO II-PE-56L-B-PN40	EzM2-56L-B-PN40	EzS2-PE-56L-B	
Ezi-SERVO II-PE-56L-A-PN50	EzM2-56L-A-PN50	EzS2-PE-56L-A	1:50
Ezi-SERVO II-PE-56L-B-PN50	EzM2-56L-B-PN50	EzS2-PE-56L-B	
Ezi-SERVO II-PE-60S-A-PN3	EzM2-60S-A-PN3	EzS2-PE-60S-A	1:3
Ezi-SERVO II-PE-60S-B-PN3	EzM2-60S-B-PN3	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN5	EzM2-60S-A-PN5	EzS2-PE-60S-A	1:5
Ezi-SERVO II-PE-60S-B-PN5	EzM2-60S-B-PN5	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN8	EzM2-60S-A-PN8	EzS2-PE-60S-A	1:8
Ezi-SERVO II-PE-60S-B-PN8	EzM2-60S-B-PN8	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN10	EzM2-60S-A-PN10	EzS2-PE-60S-A	1:10
Ezi-SERVO II-PE-60S-B-PN10	EzM2-60S-B-PN10	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN15	EzM2-60S-A-PN15	EzS2-PE-60S-A	1:15
Ezi-SERVO II-PE-60S-B-PN15	EzM2-60S-B-PN15	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN25	EzM2-60S-A-PN25	EzS2-PE-60S-A	1:25
Ezi-SERVO II-PE-60S-B-PN25	EzM2-60S-B-PN25	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN40	EzM2-60S-A-PN40	EzS2-PE-60S-A	1:40
Ezi-SERVO II-PE-60S-B-PN40	EzM2-60S-B-PN40	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60S-A-PN50	EzM2-60S-A-PN50	EzS2-PE-60S-A	1:50
Ezi-SERVO II-PE-60S-B-PN50	EzM2-60S-B-PN50	EzS2-PE-60S-B	
Ezi-SERVO II-PE-60M-A-PN3	EzM2-60M-A-PN3	EzS2-PE-60M-A	1:3
Ezi-SERVO II-PE-60M-B-PN3	EzM2-60M-B-PN3	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN5	EzM2-60M-A-PN5	EzS2-PE-60M-A	1:5
Ezi-SERVO II-PE-60M-B-PN5	EzM2-60M-B-PN5	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN8	EzM2-60M-A-PN8	EzS2-PE-60M-A	1:8
Ezi-SERVO II-PE-60M-B-PN8	EzM2-60M-B-PN8	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN10	EzM2-60M-A-PN10	EzS2-PE-60M-A	1:10
Ezi-SERVO II-PE-60M-B-PN10	EzM2-60M-B-PN10	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN15	EzM2-60M-A-PN15	EzS2-PE-60M-A	1:15
Ezi-SERVO II-PE-60M-B-PN15	EzM2-60M-B-PN15	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN25	EzM2-60M-A-PN25	EzS2-PE-60M-A	1:25
Ezi-SERVO II-PE-60M-B-PN25	EzM2-60M-B-PN25	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN40	EzM2-60M-A-PN40	EzS2-PE-60M-A	1:40
Ezi-SERVO II-PE-60M-B-PN40	EzM2-60M-B-PN40	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60M-A-PN50	EzM2-60M-A-PN50	EzS2-PE-60M-A	1:50
Ezi-SERVO II-PE-60M-B-PN50	EzM2-60M-B-PN50	EzS2-PE-60M-B	
Ezi-SERVO II-PE-60L-A-PN3	EzM2-60L-A-PN3	EzS2-PE-60L-A	1:3
Ezi-SERVO II-PE-60L-B-PN3	EzM2-60L-B-PN3	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN5	EzM2-60L-A-PN5	EzS2-PE-60L-A	1:5
Ezi-SERVO II-PE-60L-B-PN5	EzM2-60L-B-PN5	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN8	EzM2-60L-A-PN8	EzS2-PE-60L-A	1:8
Ezi-SERVO II-PE-60L-B-PN8	EzM2-60L-B-PN8	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN10	EzM2-60L-A-PN10	EzS2-PE-60L-A	1:10
Ezi-SERVO II-PE-60L-B-PN10	EzM2-60L-B-PN10	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN15	EzM2-60L-A-PN15	EzS2-PE-60L-A	1:15
Ezi-SERVO II-PE-60L-B-PN15	EzM2-60L-B-PN15	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN25	EzM2-60L-A-PN25	EzS2-PE-60L-A	1:25
Ezi-SERVO II-PE-60L-B-PN25	EzM2-60L-B-PN25	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN40	EzM2-60L-A-PN40	EzS2-PE-60L-A	1:40
Ezi-SERVO II-PE-60L-B-PN40	EzM2-60L-B-PN40	EzS2-PE-60L-B	
Ezi-SERVO II-PE-60L-A-PN50	EzM2-60L-A-PN50	EzS2-PE-60L-A	1:50
Ezi-SERVO II-PE-60L-B-PN50	EzM2-60L-B-PN50	EzS2-PE-60L-B	

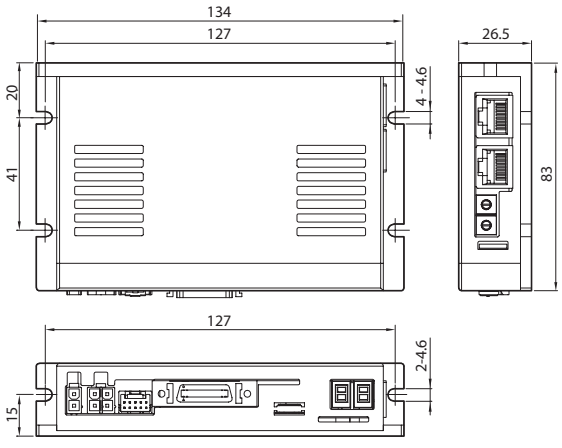
Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-86M-A-PN3	EzM2-86M-A-PN3	EzS2-PE-86M-A	1:3
Ezi-SERVO II-PE-86M-B-PN3	EzM2-86M-B-PN3	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN5	EzM2-86M-A-PN5	EzS2-PE-86M-A	1:5
Ezi-SERVO II-PE-86M-B-PN5	EzM2-86M-B-PN5	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN8	EzM2-86M-A-PN8	EzS2-PE-86M-A	1:8
Ezi-SERVO II-PE-86M-B-PN8	EzM2-86M-B-PN8	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN10	EzM2-86M-A-PN10	EzS2-PE-86M-A	1:10
Ezi-SERVO II-PE-86M-B-PN10	EzM2-86M-B-PN10	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN15	EzM2-86M-A-PN15	EzS2-PE-86M-A	1:15
Ezi-SERVO II-PE-86M-B-PN15	EzM2-86M-B-PN15	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN25	EzM2-86M-A-PN25	EzS2-PE-86M-A	1:25
Ezi-SERVO II-PE-86M-B-PN25	EzM2-86M-B-PN25	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN40	EzM2-86M-A-PN40	EzS2-PE-86M-A	1:40
Ezi-SERVO II-PE-86M-B-PN40	EzM2-86M-B-PN40	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86M-A-PN50	EzM2-86M-A-PN50	EzS2-PE-86M-A	1:50
Ezi-SERVO II-PE-86M-B-PN50	EzM2-86M-B-PN50	EzS2-PE-86M-B	
Ezi-SERVO II-PE-86L-A-PN3	EzM2-86L-A-PN3	EzS2-PE-86L-A	1:3
Ezi-SERVO II-PE-86L-B-PN3	EzM2-86L-B-PN3	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN5	EzM2-86L-A-PN5	EzS2-PE-86L-A	1:5
Ezi-SERVO II-PE-86L-B-PN5	EzM2-86L-B-PN5	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN8	EzM2-86L-A-PN8	EzS2-PE-86L-A	1:8
Ezi-SERVO II-PE-86L-B-PN8	EzM2-86L-B-PN8	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN10	EzM2-86L-A-PN10	EzS2-PE-86L-A	1:10
Ezi-SERVO II-PE-86L-B-PN10	EzM2-86L-B-PN10	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN15	EzM2-86L-A-PN15	EzS2-PE-86L-A	1:15
Ezi-SERVO II-PE-86L-B-PN15	EzM2-86L-B-PN15	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN25	EzM2-86L-A-PN25	EzS2-PE-86L-A	1:25
Ezi-SERVO II-PE-86L-B-PN25	EzM2-86L-B-PN25	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN40	EzM2-86L-A-PN40	EzS2-PE-86L-A	1:40
Ezi-SERVO II-PE-86L-B-PN40	EzM2-86L-B-PN40	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86L-A-PN50	EzM2-86L-A-PN50	EzS2-PE-86L-A	1:50
Ezi-SERVO II-PE-86L-B-PN50	EzM2-86L-B-PN50	EzS2-PE-86L-B	
Ezi-SERVO II-PE-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-PE-86XL-A	1:3
Ezi-SERVO II-PE-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-PE-86XL-A	1:5
Ezi-SERVO II-PE-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-PE-86XL-A	1:8
Ezi-SERVO II-PE-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-PE-86XL-A	1:10
Ezi-SERVO II-PE-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-PE-86XL-A	1:15
Ezi-SERVO II-PE-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-PE-86XL-A	1:25
Ezi-SERVO II-PE-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-PE-86XL-A	1:40
Ezi-SERVO II-PE-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-PE-86XL-B	
Ezi-SERVO II-PE-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-PE-86XL-A	1:50
Ezi-SERVO II-PE-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-PE-86XL-B	

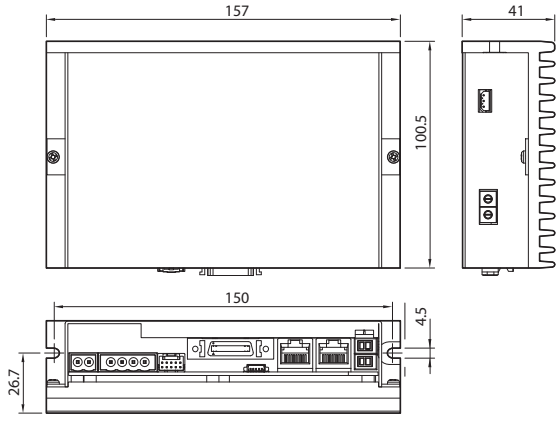
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Driver Model		EzS2-PE-20 series	EzS2-PE-28 series	EzS2-PE-35 series	EzS2-PE-42 series	EzS2-PE-56 series	EzS2-PE-60 series	EzS2-PE-86 series
Input Voltage		DC24V±10%						DC40~70V
Control Method		Closed-loop control with 32 bit MCU						
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)						
Position Table		256 motion command steps						
Current Consumption		Max 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000r/min *1						
	Resolution	Encoder Resolution [P/R] / Configurable Resolution [P/R] 4,000 / 500 1,000 1,600 2,000 3,600 4,000 5,000 6,400 7,200 10,000 10,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)						
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power status, In-Position status, Servo ON status, Alarm status						
	In-Position Selection	0~63 (Set by parameter)						
	Position Gain Selection	0~63 (Set by parameter)						
	Rotational Direction	CW/CCW (Set by parameter)						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler Input)						
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler Output), 1 Brake output						
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded						
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min						
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque						
GUI		User Interface Program within Windows						
Library		Motion Library (API) for windows 7/8/10						

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

● Dimensions of Drive [mm]





※ 86mm motor drive (EzS2-PE-86 series)

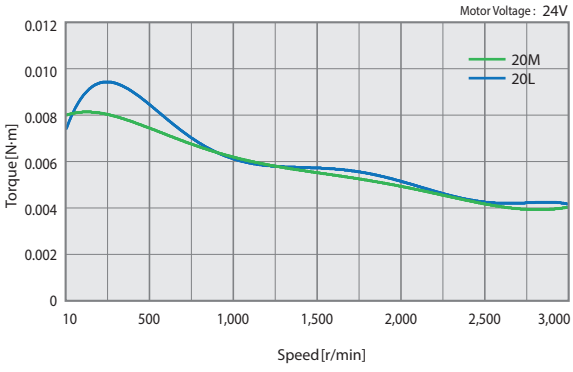
Specifications of Motor

MODEL				EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
			UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit' s Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

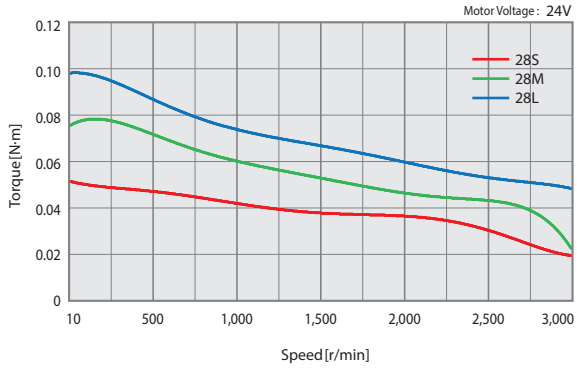
MODEL				EzM2-56 series			EzM2-60 series			EzM2-86 series		
			UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419	2.355	3.941	5.453
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

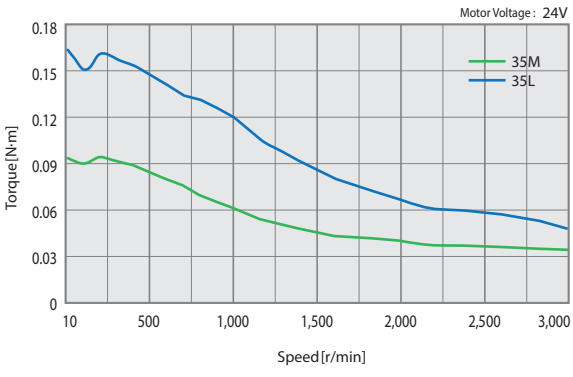
Ezi-SERVO II-PE-20 series



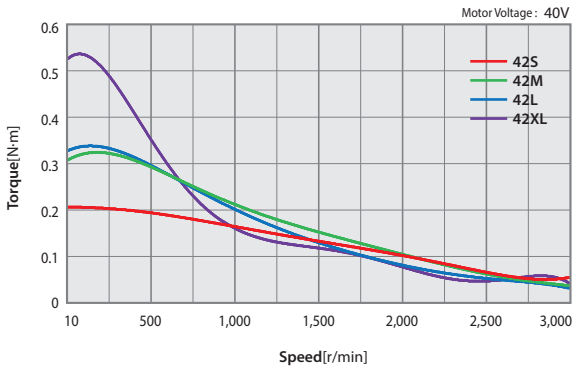
Ezi-SERVO II-PE-28 series



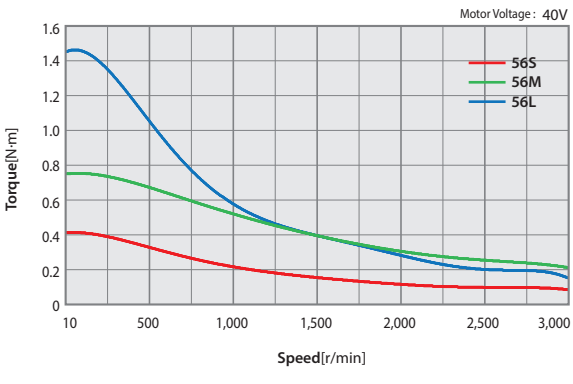
Ezi-SERVO II-PE-35 series



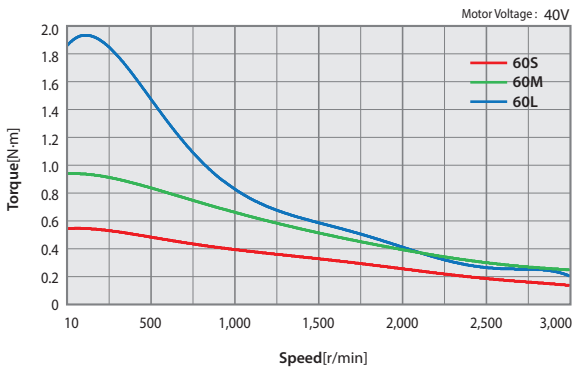
Ezi-SERVO II-PE-42 series



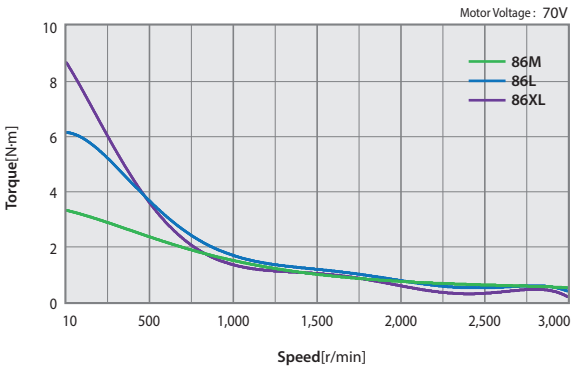
Ezi-SERVO II-PE-56 series



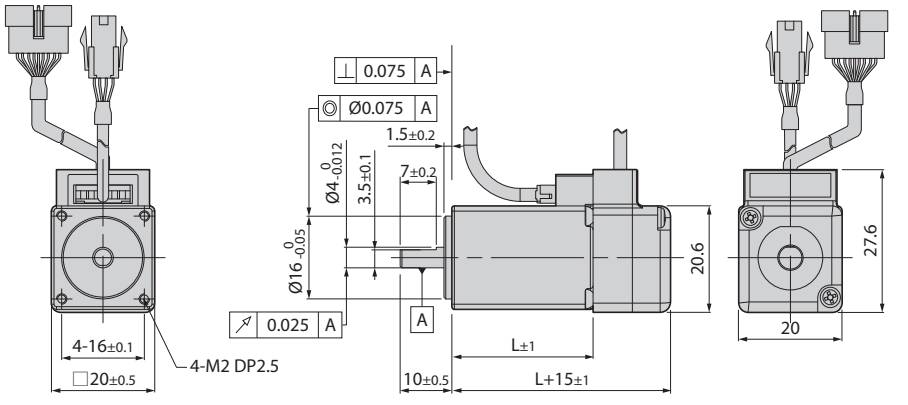
Ezi-SERVO II-PE-60 series



Ezi-SERVO II-PE-86 series

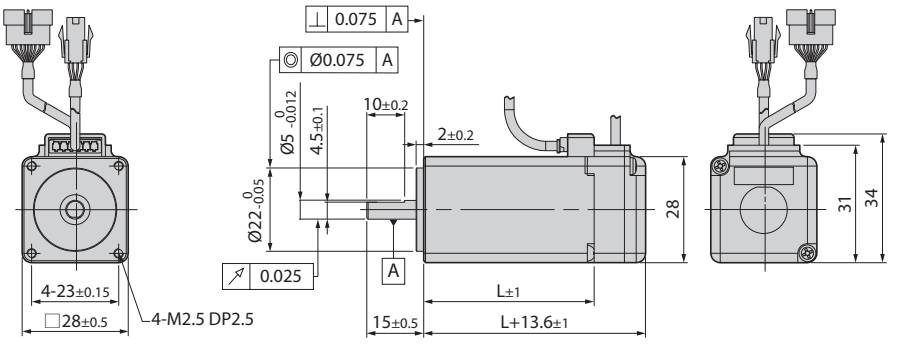


Dimensions of Motor [mm]



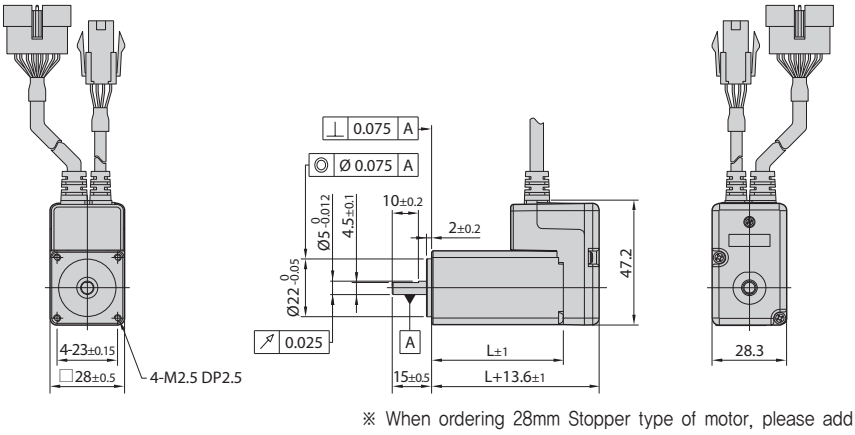
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

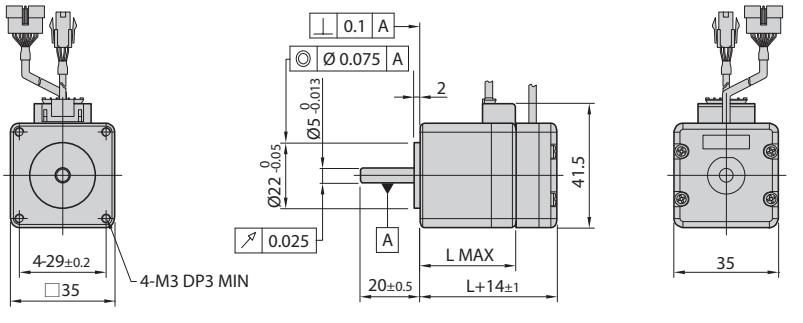
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

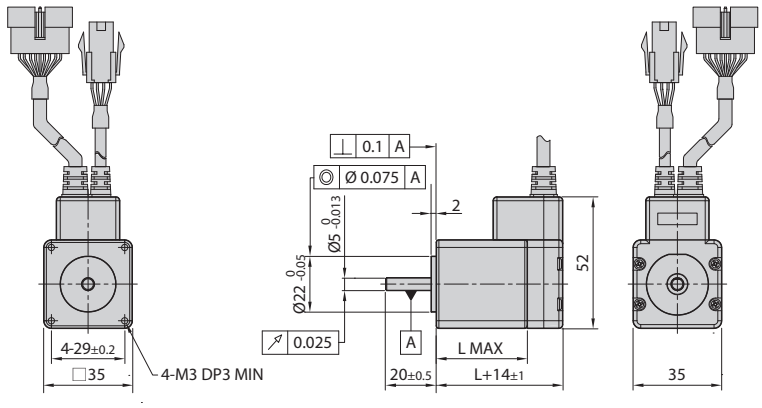
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

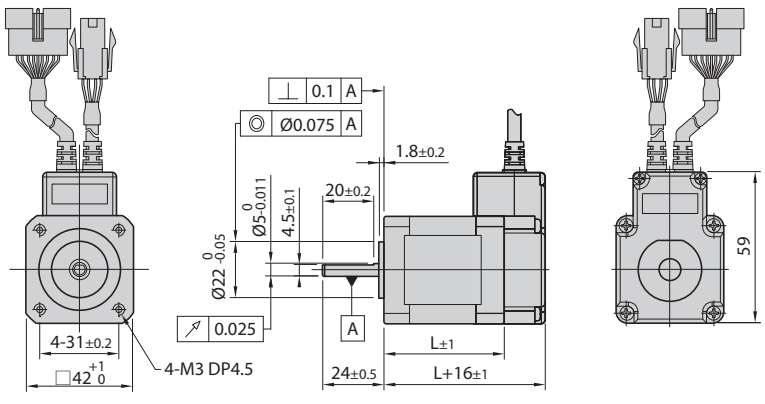
● Dimensions of Motor [mm]



35mm (Stopper type)

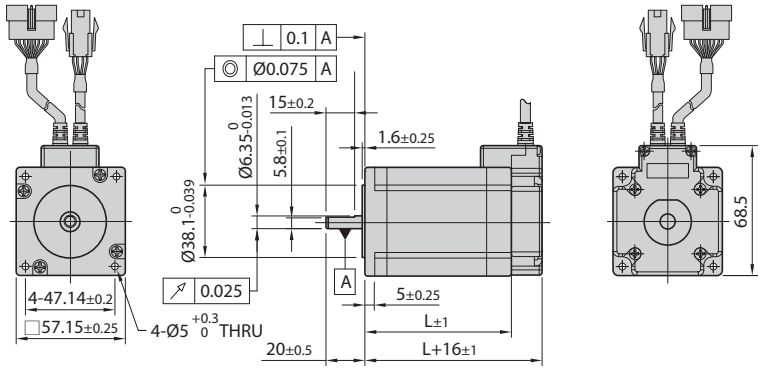
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

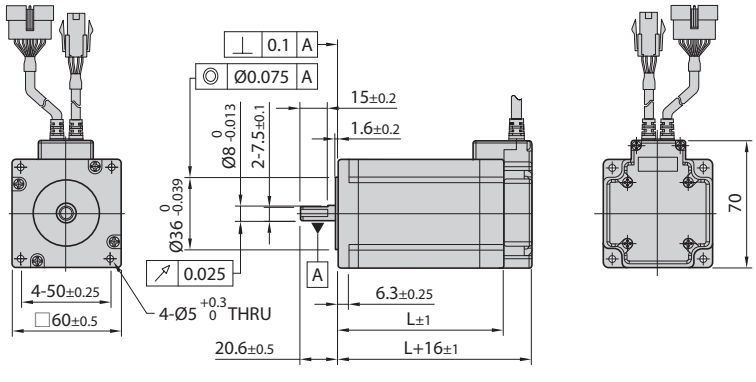
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

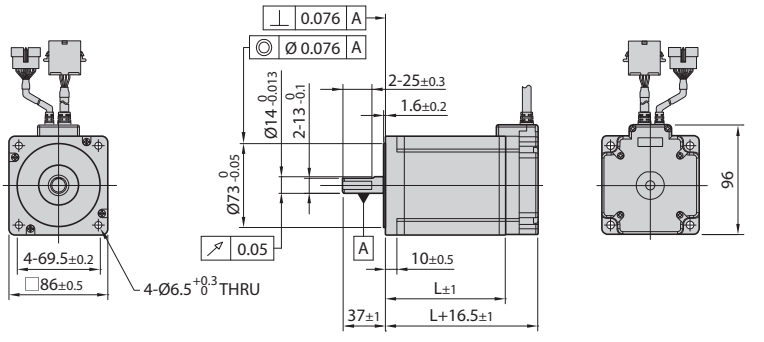
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

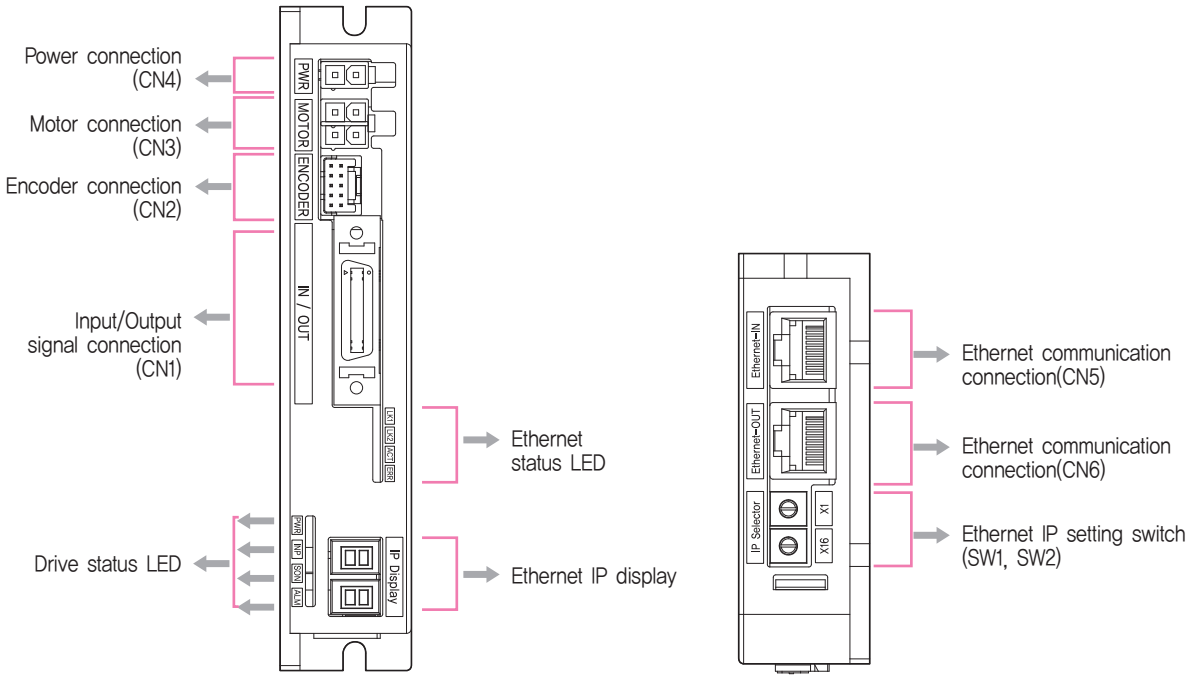
Dimensions of Motor [mm]



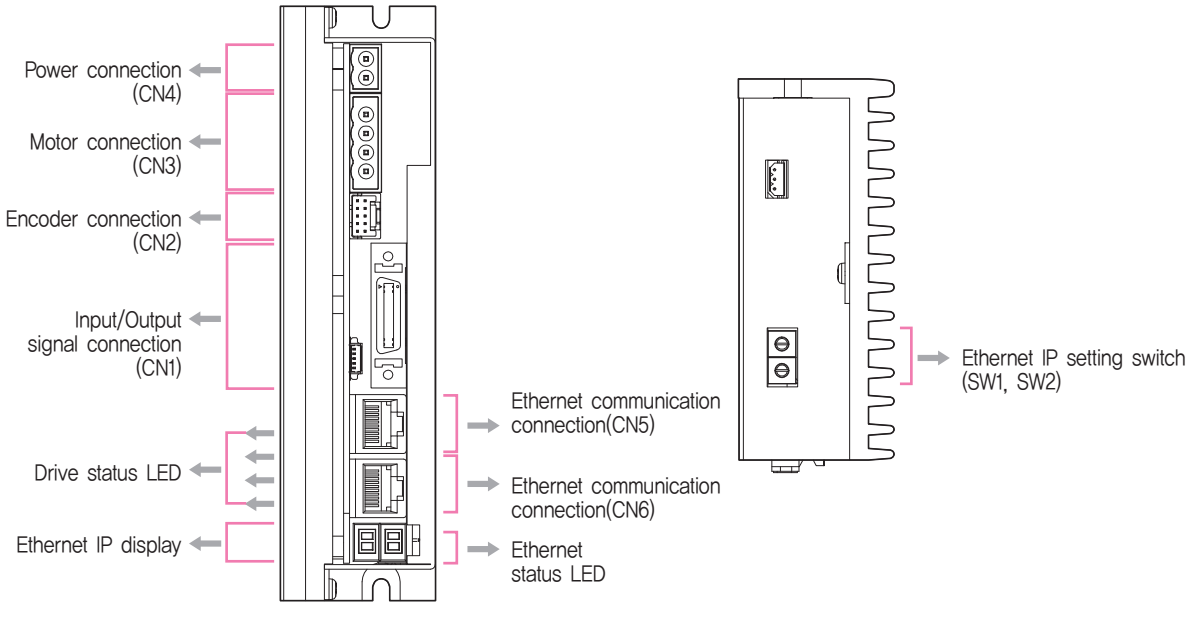
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Settings and Operation

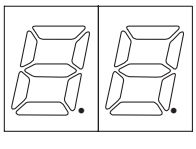


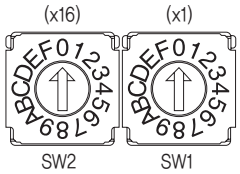
◆ 86mm Motor Drive (EzS2-PE-86 Series)



1. Ethernet IP Display and Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP, and the value is shown in 7-segment LED display. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)





e.g.,) In case of SW2 : **5** and SW1 : **7**
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

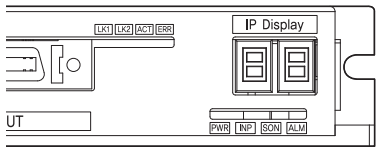
2. Ethernet Status LED

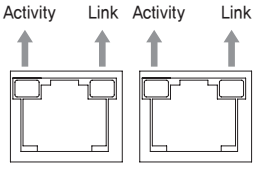
LED indicates communication status of Ethernet. Link/Activity LED exists on each port of Ethernet.

Name	Color	Status	Description
Error	Red	OFF	No Error status
		ON	Communication Data Error

Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link deactivated
		ON	Link activated

Name	Color	Status	Description
Activity	Yellow	OFF	Stand-by
		Flickering	In operation





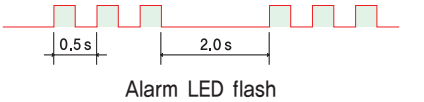
3. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power input indication	LED is turned ON when power is applied
INP	Yellow	Complete Positioning Motion	LED is turned ON when Positioning error reaches within the preset pulse selected by parameter after the positioning is complete
SON	Orange	Servo ON / OFF Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm indication	LED blinks when an error occurs.

◆ List of error types by the number of alarm LED blinking

No.	Error Code *4	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
3	E-003	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	E-008	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	E-010	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

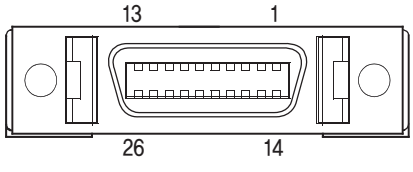
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default reference value is 180 ° , and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of Ethernet IP.
※ Please refer to uer Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

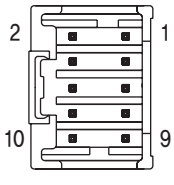
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_DC24V	Input



5. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

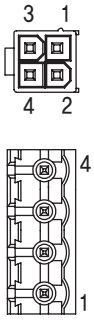


6. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output

No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output

※ 86mm motor drive.

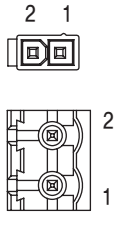


7. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

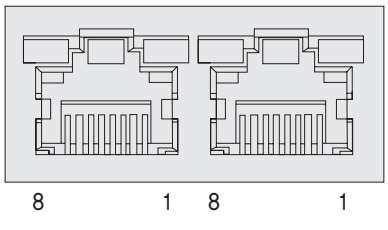
No.	Function	I/O
1	GND	Input
2	DC40~70V	Input

※ 86mm motor drive.

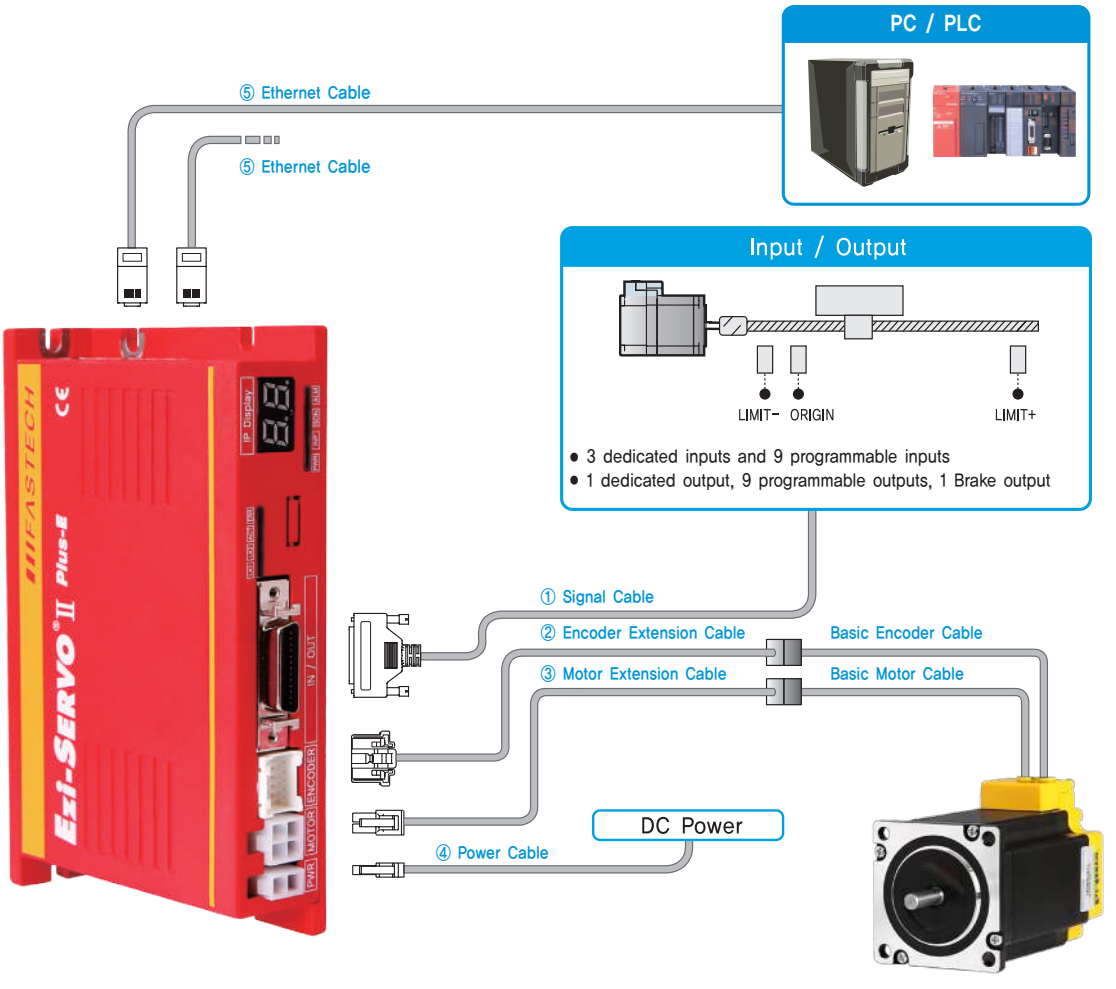


8. Ethernet Communication Connector(CN5, CN6)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connection hood	F.GND
5	-----		



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10126-3000PE	3M
		Connector Cover	10326-52F0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVR-S-002F	2		
	CSVR-S-003F	3		
	CSVR-S-005F	5		
	CSVR-S-001M	1	Robot Cable	
	CSVR-S-002M	2		
	CSVR-S-003M	3		
	CSVR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II Plus-E drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II Plus-E drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

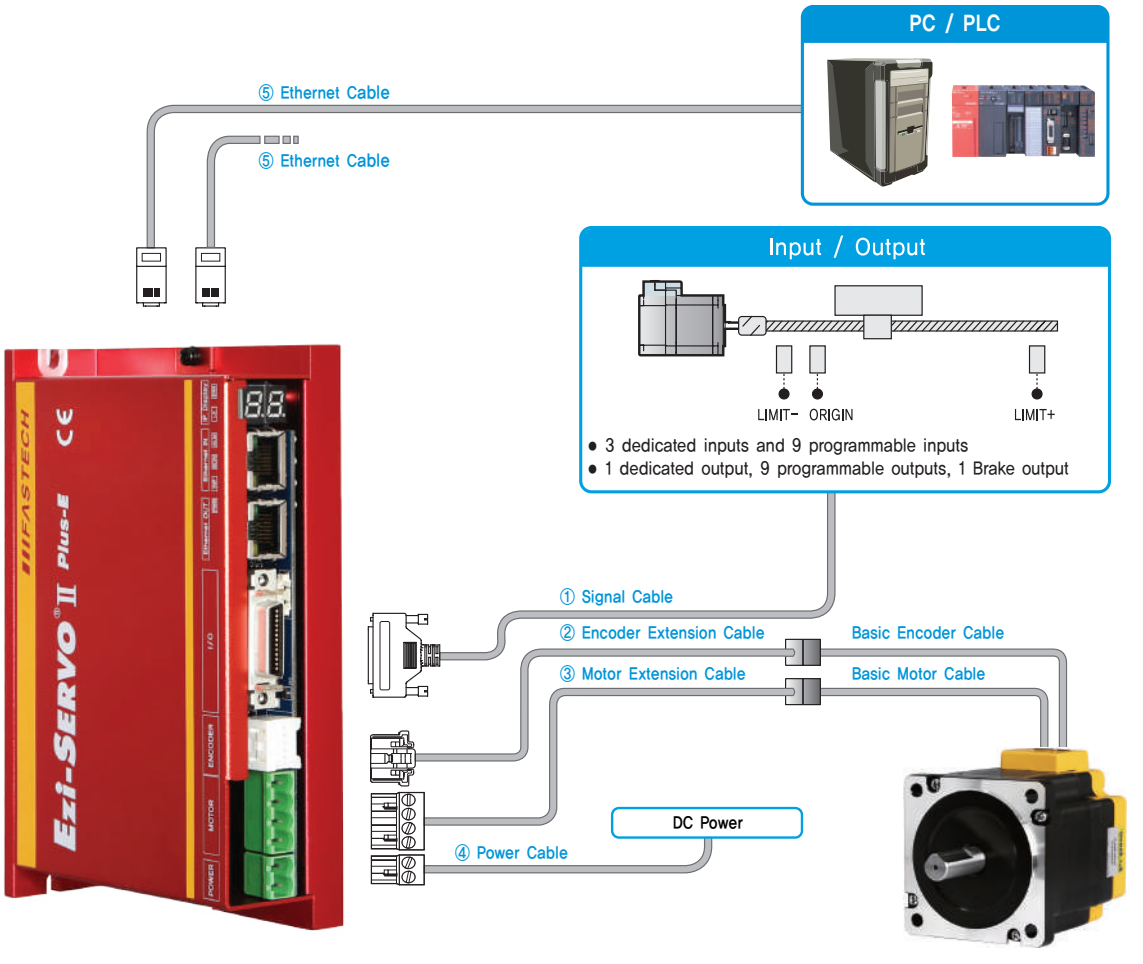
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II Plus-E and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFD-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFD-S-002F	2		
	CIFD-S-003F	3		
	CIFD-S-005F	5		
	CIFD-S-001M	1	Robot Cable	
	CIFD-S-002M	2		
	CIFD-S-003M	3		
	CIFD-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10126-3000PE	3M
		Connector Cover	10326-52F0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	3191-4R1	MOLEX
		Terminal	1381T	
Power (CN4)		Terminal Block	AK950-2	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVR-S-002F	2		
	CSVR-S-003F	3		
	CSVR-S-005F	5		
	CSVR-S-001M	1	Robot Cable	
	CSVR-S-002M	2		
	CSVR-S-003M	3		
	CSVR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E [86mm motor] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II Plus-E [86mm motor] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

⑤ Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II Plus-E [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

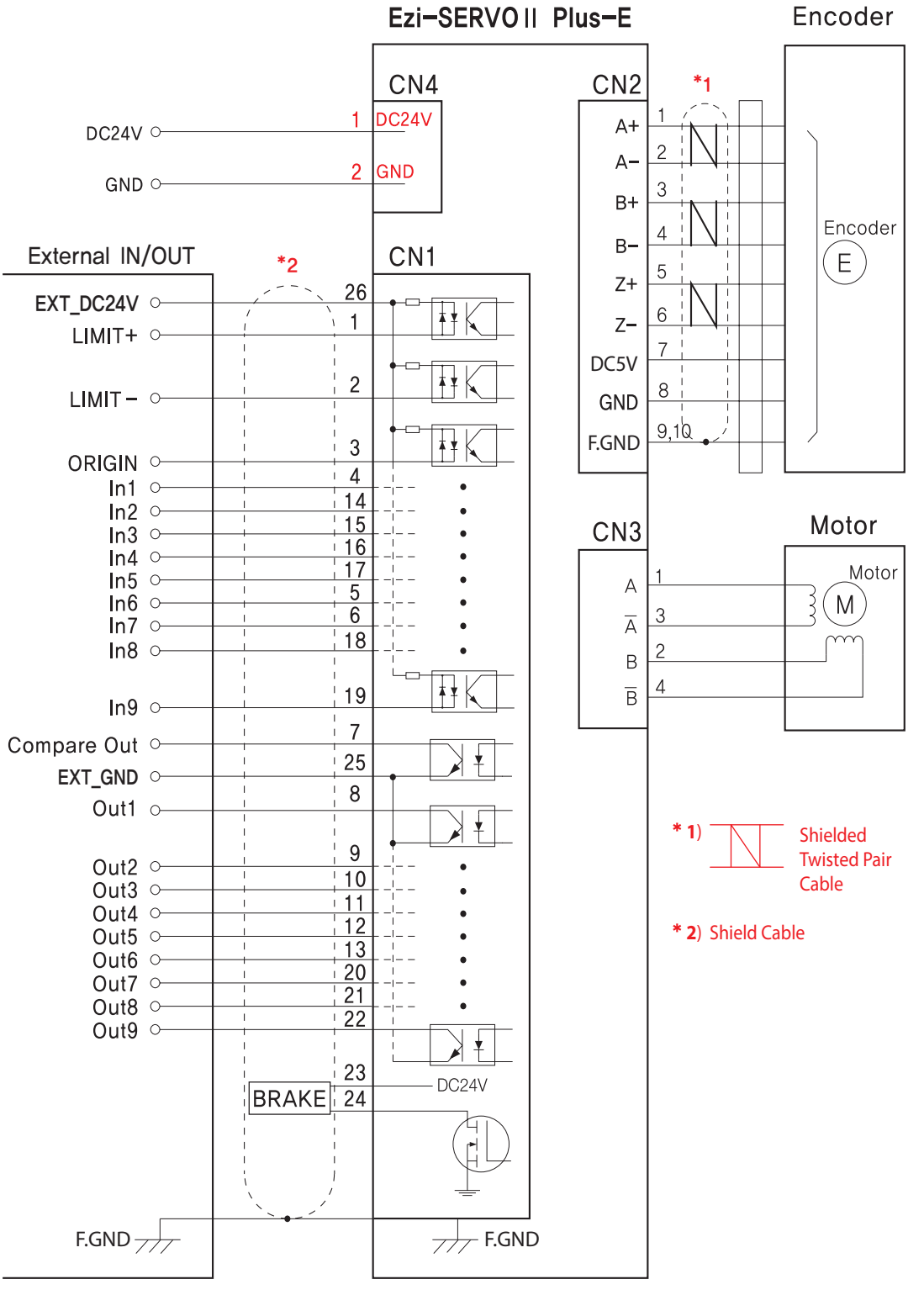
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II Plus-E [86mm motor] and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFD-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFD-S-002F	2		
	CIFD-S-003F	3		
	CIFD-S-005F	5		
	CIFD-S-001M	1	Robot Cable	
	CIFD-S-002M	2		
	CIFD-S-003M	3		
	CIFD-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

External Wiring Diagram

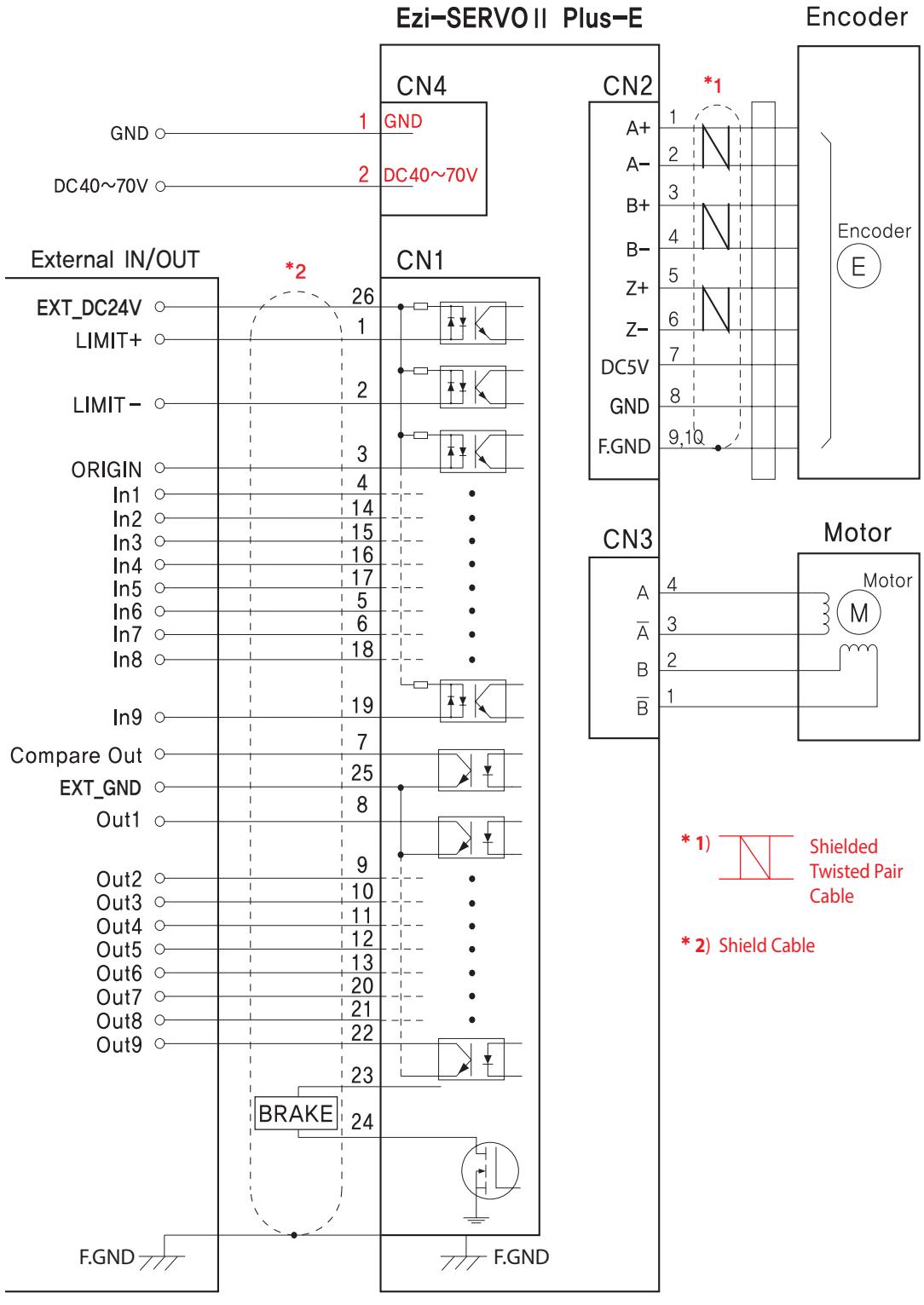


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [86mm Motor Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO Plus-E II mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT

Ezi-SERVO® II Plus-E MINI

Closed Loop Stepping System

- Embedded Motion Controller
- Ethernet Interface
- Position Table
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- High Resolution / High Response
- Space Saving / Reduced Wiring by Compact Drive

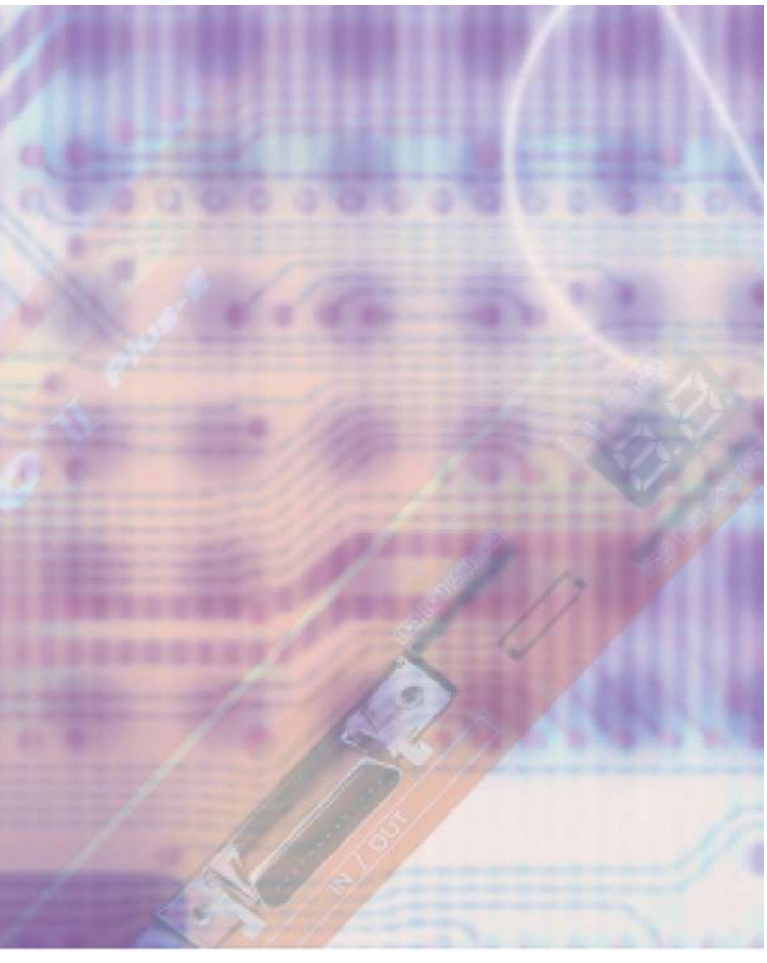


FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II Plus-E MINI

Closed Loop Stepping System



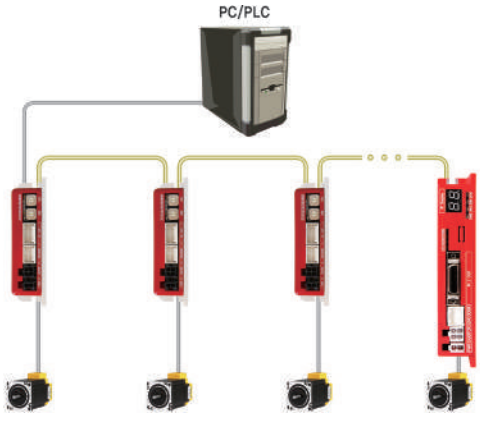
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



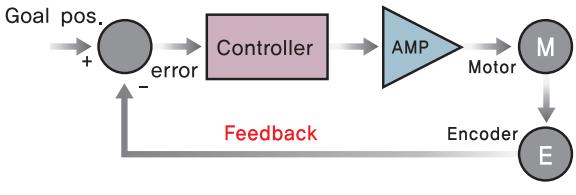
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.



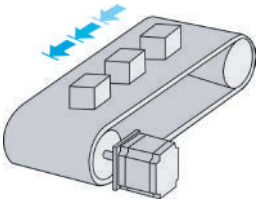
3 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



4 Tuning Not Required

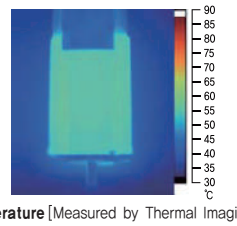
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



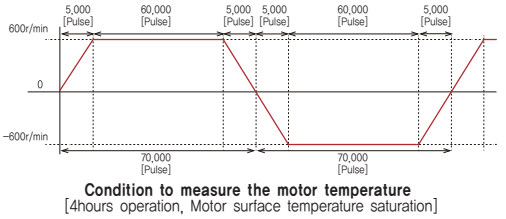
5 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

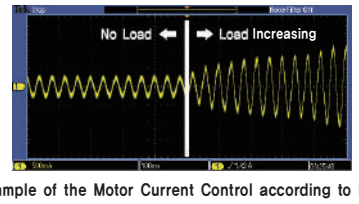
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

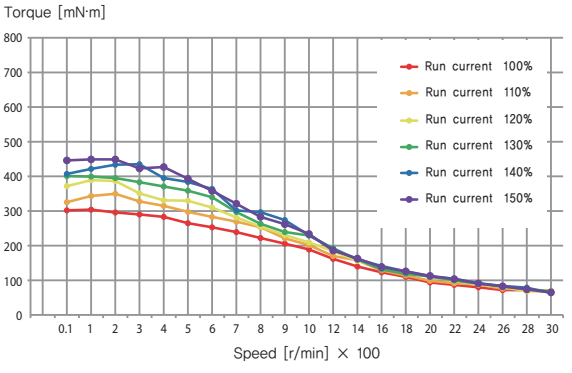


Example of the Motor Current Control according to load

6 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter.
Therefore acceleration and deceleration characteris-tics and torque characteristics at low speed can be increased.
Ezi-SERVO II can improve the torque in the low speed range by about 30%.

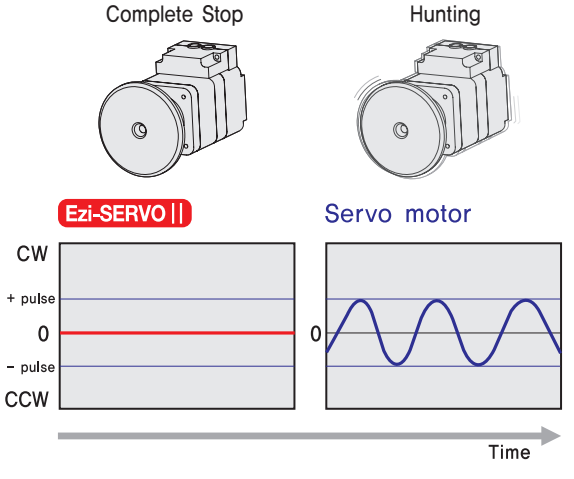


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-MI-42L
Motor Voltage = DC24V
Input Voltage = DC24V

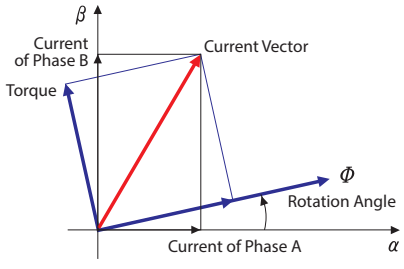
7 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



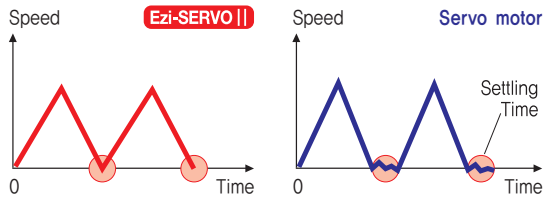
8 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



9 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVOII is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



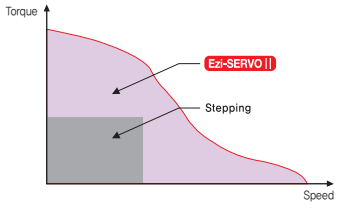
10 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



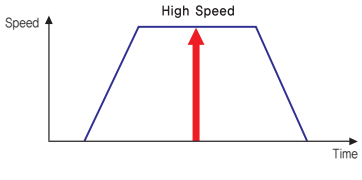
11 High Torque / Continuous Operation

Compared with common step motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

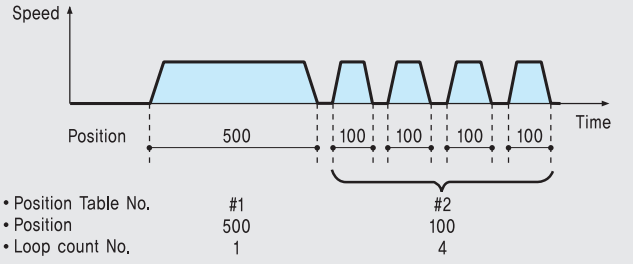
● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

Motion Controller Features of Ezi-SERVO

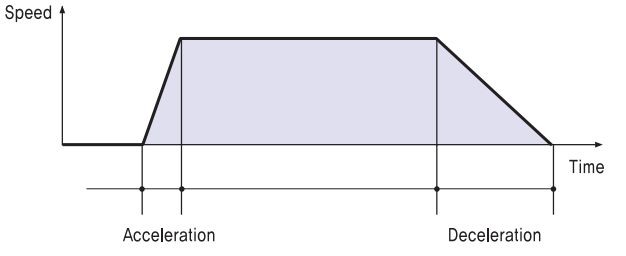
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



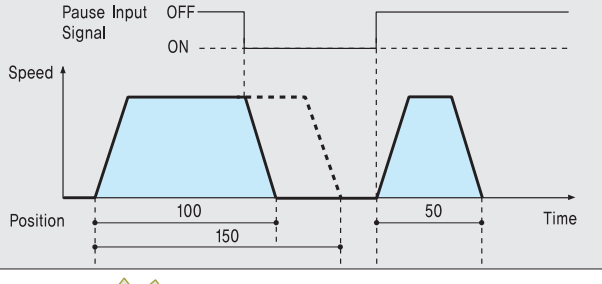
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



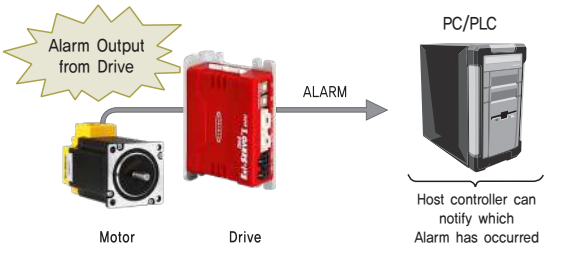
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



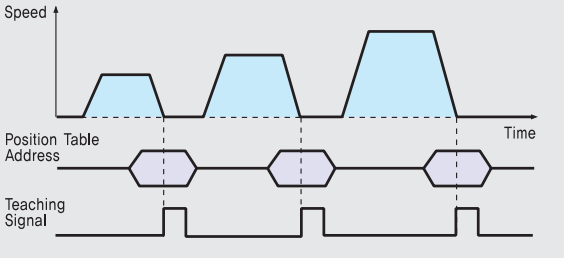
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

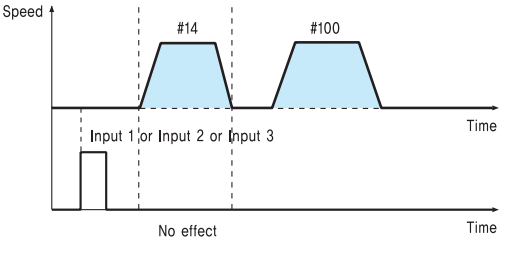


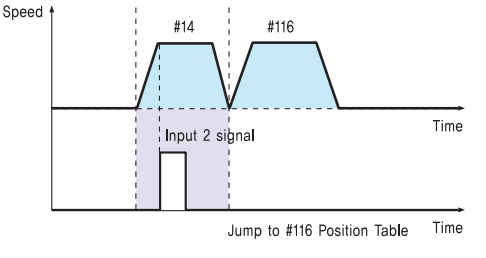
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





Ezi-SERVO II Plus-E MINI Part Numbering

Ezi-SERVO II -PE-MI-42S-A-BK-PN10

Series Name

Type Name

PE-MI : Plus Ethernet Mini Type

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-MI-20M-F	EzM2-20M-F	EzS2-PE-MI-20M-F
Ezi-SERVO II-PE-MI-20L-F	EzM2-20L-F	EzS2-PE-MI-20L-F
Ezi-SERVO II-PE-MI-28S-D	EzM2-28S-D	EzS2-PE-MI-28S-D
Ezi-SERVO II-PE-MI-28SM-D	EzM2-28SM-D	EzS2-PE-MI-28S-D
Ezi-SERVO II-PE-MI-28M-D	EzM2-28M-D	EzS2-PE-MI-28M-D
Ezi-SERVO II-PE-MI-28MM-D	EzM2-28MM-D	EzS2-PE-MI-28M-D
Ezi-SERVO II-PE-MI-28L-D	EzM2-28L-D	EzS2-PE-MI-28L-D
Ezi-SERVO II-PE-MI-28LM-D	EzM2-28LM-D	EzS2-PE-MI-28L-D
Ezi-SERVO II-PE-MI-35M-D	EzM2-35M-D	EzS2-PE-MI-35M-D
Ezi-SERVO II-PE-MI-35MM-D	EzM2-35MM-D	EzS2-PE-MI-35M-D
Ezi-SERVO II-PE-MI-35L-D	EzM2-35L-D	EzS2-PE-MI-35L-D
Ezi-SERVO II-PE-MI-35LM-D	EzM2-35LM-D	EzS2-PE-MI-35L-D
Ezi-SERVO II-PE-MI-42S-A	EzM2-42S-A	EzS2-PE-MI-42S-A
Ezi-SERVO II-PE-MI-42S-B	EzM2-42S-B	EzS2-PE-MI-42S-B
Ezi-SERVO II-PE-MI-42M-A	EzM2-42M-A	EzS2-PE-MI-42M-A
Ezi-SERVO II-PE-MI-42M-B	EzM2-42M-B	EzS2-PE-MI-42M-B
Ezi-SERVO II-PE-MI-42L-A	EzM2-42L-A	EzS2-PE-MI-42L-A
Ezi-SERVO II-PE-MI-42L-B	EzM2-42L-B	EzS2-PE-MI-42L-B
Ezi-SERVO II-PE-MI-42XL-A	EzM2-42XL-A	EzS2-PE-MI-42XL-A
Ezi-SERVO II-PE-MI-42XL-B	EzM2-42XL-B	EzS2-PE-MI-42XL-B
Ezi-SERVO II-PE-MI-56S-A	EzM2-56S-A	EzS2-PE-MI-56S-A
Ezi-SERVO II-PE-MI-56S-B	EzM2-56S-B	EzS2-PE-MI-56S-B
Ezi-SERVO II-PE-MI-56M-A	EzM2-56M-A	EzS2-PE-MI-56M-A
Ezi-SERVO II-PE-MI-56M-B	EzM2-56M-B	EzS2-PE-MI-56M-B
Ezi-SERVO II-PE-MI-56L-A	EzM2-56L-A	EzS2-PE-MI-56L-A
Ezi-SERVO II-PE-MI-56L-B	EzM2-56L-B	EzS2-PE-MI-56L-B
Ezi-SERVO II-PE-MI-60S-A	EzM2-60S-A	EzS2-PE-MI-60S-A
Ezi-SERVO II-PE-MI-60S-B	EzM2-60S-B	EzS2-PE-MI-60S-B
Ezi-SERVO II-PE-MI-60M-A	EzM2-60M-A	EzS2-PE-MI-60M-A
Ezi-SERVO II-PE-MI-60M-B	EzM2-60M-B	EzS2-PE-MI-60M-B
Ezi-SERVO II-PE-MI-60L-A	EzM2-60L-A	EzS2-PE-MI-60L-A
Ezi-SERVO II-PE-MI-60L-B	EzM2-60L-B	EzS2-PE-MI-60L-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit product number.
(e.g., Ezi-SERVO II-PE-MI-28LM-D, Ezi-SERVO II-PE-MI-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-MI-42S-A-BK	EzM2-42S-A-BK	EzS2-PE-MI-42S-A
Ezi-SERVO II-PE-MI-42S-B-BK	EzM2-42S-B-BK	EzS2-PE-MI-42S-B
Ezi-SERVO II-PE-MI-42M-A-BK	EzM2-42M-A-BK	EzS2-PE-MI-42M-A
Ezi-SERVO II-PE-MI-42M-B-BK	EzM2-42M-B-BK	EzS2-PE-MI-42M-B
Ezi-SERVO II-PE-MI-42L-A-BK	EzM2-42L-A-BK	EzS2-PE-MI-42L-A
Ezi-SERVO II-PE-MI-42L-B-BK	EzM2-42L-B-BK	EzS2-PE-MI-42L-B
Ezi-SERVO II-PE-MI-42XL-A-BK	EzM2-42XL-A-BK	EzS2-PE-MI-42XL-A
Ezi-SERVO II-PE-MI-42XL-B-BK	EzM2-42XL-B-BK	EzS2-PE-MI-42XL-B
Ezi-SERVO II-PE-MI-56S-A-BK	EzM2-56S-A-BK	EzS2-PE-MI-56S-A
Ezi-SERVO II-PE-MI-56S-B-BK	EzM2-56S-B-BK	EzS2-PE-MI-56S-B
Ezi-SERVO II-PE-MI-56M-A-BK	EzM2-56M-A-BK	EzS2-PE-MI-56M-A
Ezi-SERVO II-PE-MI-56M-B-BK	EzM2-56M-B-BK	EzS2-PE-MI-56M-B
Ezi-SERVO II-PE-MI-56L-A-BK	EzM2-56L-A-BK	EzS2-PE-MI-56L-A
Ezi-SERVO II-PE-MI-56L-B-BK	EzM2-56L-B-BK	EzS2-PE-MI-56L-B
Ezi-SERVO II-PE-MI-60S-A-BK	EzM2-60S-A-BK	EzS2-PE-MI-60S-A
Ezi-SERVO II-PE-MI-60S-B-BK	EzM2-60S-B-BK	EzS2-PE-MI-60S-B
Ezi-SERVO II-PE-MI-60M-A-BK	EzM2-60M-A-BK	EzS2-PE-MI-60M-A
Ezi-SERVO II-PE-MI-60M-B-BK	EzM2-60M-B-BK	EzS2-PE-MI-60M-B
Ezi-SERVO II-PE-MI-60L-A-BK	EzM2-60L-A-BK	EzS2-PE-MI-60L-A
Ezi-SERVO II-PE-MI-60L-B-BK	EzM2-60L-B-BK	EzS2-PE-MI-60L-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-MI-42S-A-PN3	EzM2-42S-A-PN3	EzS2-PE-MI-42S-A	1:3
Ezi-SERVO II-PE-MI-42S-B-PN3	EzM2-42S-B-PN3	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN5	EzM2-42S-A-PN5	EzS2-PE-MI-42S-A	1:5
Ezi-SERVO II-PE-MI-42S-B-PN5	EzM2-42S-B-PN5	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN8	EzM2-42S-A-PN8	EzS2-PE-MI-42S-A	1:8
Ezi-SERVO II-PE-MI-42S-B-PN8	EzM2-42S-B-PN8	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN10	EzM2-42S-A-PN10	EzS2-PE-MI-42S-A	1:10
Ezi-SERVO II-PE-MI-42S-B-PN10	EzM2-42S-B-PN10	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN15	EzM2-42S-A-PN15	EzS2-PE-MI-42S-A	1:15
Ezi-SERVO II-PE-MI-42S-B-PN15	EzM2-42S-B-PN15	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN25	EzM2-42S-A-PN25	EzS2-PE-MI-42S-A	1:25
Ezi-SERVO II-PE-MI-42S-B-PN25	EzM2-42S-B-PN25	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN40	EzM2-42S-A-PN40	EzS2-PE-MI-42S-A	1:40
Ezi-SERVO II-PE-MI-42S-B-PN40	EzM2-42S-B-PN40	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42S-A-PN50	EzM2-42S-A-PN50	EzS2-PE-MI-42S-A	1:50
Ezi-SERVO II-PE-MI-42S-B-PN50	EzM2-42S-B-PN50	EzS2-PE-MI-42S-B	
Ezi-SERVO II-PE-MI-42M-A-PN3	EzM2-42M-A-PN3	EzS2-PE-MI-42M-A	1:3
Ezi-SERVO II-PE-MI-42M-B-PN3	EzM2-42M-B-PN3	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN5	EzM2-42M-A-PN5	EzS2-PE-MI-42M-A	1:5
Ezi-SERVO II-PE-MI-42M-B-PN5	EzM2-42M-B-PN5	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN8	EzM2-42M-A-PN8	EzS2-PE-MI-42M-A	1:8
Ezi-SERVO II-PE-MI-42M-B-PN8	EzM2-42M-B-PN8	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN10	EzM2-42M-A-PN10	EzS2-PE-MI-42M-A	1:10
Ezi-SERVO II-PE-MI-42M-B-PN10	EzM2-42M-B-PN10	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN15	EzM2-42M-A-PN15	EzS2-PE-MI-42M-A	1:15
Ezi-SERVO II-PE-MI-42M-B-PN15	EzM2-42M-B-PN15	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN25	EzM2-42M-A-PN25	EzS2-PE-MI-42M-A	1:25
Ezi-SERVO II-PE-MI-42M-B-PN25	EzM2-42M-B-PN25	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN40	EzM2-42M-A-PN40	EzS2-PE-MI-42M-A	1:40
Ezi-SERVO II-PE-MI-42M-B-PN40	EzM2-42M-B-PN40	EzS2-PE-MI-42M-B	
Ezi-SERVO II-PE-MI-42M-A-PN50	EzM2-42M-A-PN50	EzS2-PE-MI-42M-A	1:50
Ezi-SERVO II-PE-MI-42M-B-PN50	EzM2-42M-B-PN50	EzS2-PE-MI-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-MI-42L-A-PN3	EzM2-42L-A-PN3	EzS2-PE-MI-42L-A	1:3
Ezi-SERVO II-PE-MI-42L-B-PN3	EzM2-42L-B-PN3	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN5	EzM2-42L-A-PN5	EzS2-PE-MI-42L-A	1:5
Ezi-SERVO II-PE-MI-42L-B-PN5	EzM2-42L-B-PN5	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN8	EzM2-42L-A-PN8	EzS2-PE-MI-42L-A	1:8
Ezi-SERVO II-PE-MI-42L-B-PN8	EzM2-42L-B-PN8	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN10	EzM2-42L-A-PN10	EzS2-PE-MI-42L-A	1:10
Ezi-SERVO II-PE-MI-42L-B-PN10	EzM2-42L-B-PN10	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN15	EzM2-42L-A-PN15	EzS2-PE-MI-42L-A	1:15
Ezi-SERVO II-PE-MI-42L-B-PN15	EzM2-42L-B-PN15	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN25	EzM2-42L-A-PN25	EzS2-PE-MI-42L-A	1:25
Ezi-SERVO II-PE-MI-42L-B-PN25	EzM2-42L-B-PN25	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN40	EzM2-42L-A-PN40	EzS2-PE-MI-42L-A	1:40
Ezi-SERVO II-PE-MI-42L-B-PN40	EzM2-42L-B-PN40	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42L-A-PN50	EzM2-42L-A-PN50	EzS2-PE-MI-42L-A	1:50
Ezi-SERVO II-PE-MI-42L-B-PN50	EzM2-42L-B-PN50	EzS2-PE-MI-42L-B	
Ezi-SERVO II-PE-MI-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-PE-MI-42XL-A	1:3
Ezi-SERVO II-PE-MI-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-PE-MI-42XL-A	1:5
Ezi-SERVO II-PE-MI-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-PE-MI-42XL-A	1:8
Ezi-SERVO II-PE-MI-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-PE-MI-42XL-A	1:10
Ezi-SERVO II-PE-MI-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-PE-MI-42XL-A	1:15
Ezi-SERVO II-PE-MI-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-PE-MI-42XL- B	
Ezi-SERVO II-PE-MI-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-PE-MI-42XL-A	1:25
Ezi-SERVO II-PE-MI-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-PE-MI-42XL-A	1:40
Ezi-SERVO II-PE-MI-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-PE-MI-42XL-A	1:50
Ezi-SERVO II-PE-MI-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-PE-MI-42XL-B	
Ezi-SERVO II-PE-MI-56S-A-PN3	EzM2-56S-A-PN3	EzS2-PE-MI-56S-A	1:3
Ezi-SERVO II-PE-MI-56S-B-PN3	EzM2-56S-B-PN3	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN5	EzM2-56S-A-PN5	EzS2-PE-MI-56S-A	1:5
Ezi-SERVO II-PE-MI-56S-B-PN5	EzM2-56S-B-PN5	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN8	EzM2-56S-A-PN8	EzS2-PE-MI-56S-A	1:8
Ezi-SERVO II-PE-MI-56S-B-PN8	EzM2-56S-B-PN8	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN10	EzM2-56S-A-PN10	EzS2-PE-MI-56S-A	1:10
Ezi-SERVO II-PE-MI-56S-B-PN10	EzM2-56S-B-PN10	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN15	EzM2-56S-A-PN15	EzS2-PE-MI-56S-A	1:15
Ezi-SERVO II-PE-MI-56S-B-PN15	EzM2-56S-B-PN15	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN25	EzM2-56S-A-PN25	EzS2-PE-MI-56S-A	1:25
Ezi-SERVO II-PE-MI-56S-B-PN25	EzM2-56S-B-PN25	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN40	EzM2-56S-A-PN40	EzS2-PE-MI-56S-A	1:40
Ezi-SERVO II-PE-MI-56S-B-PN40	EzM2-56S-B-PN40	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56S-A-PN50	EzM2-56S-A-PN50	EzS2-PE-MI-56S-A	1:50
Ezi-SERVO II-PE-MI-56S-B-PN50	EzM2-56S-B-PN50	EzS2-PE-MI-56S-B	
Ezi-SERVO II-PE-MI-56M-A-PN3	EzM2-56M-A-PN3	EzS2-PE-MI-56M-A	1:3
Ezi-SERVO II-PE-MI-56M-B-PN3	EzM2-56M-B-PN3	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN5	EzM2-56M-A-PN5	EzS2-PE-MI-56M-A	1:5
Ezi-SERVO II-PE-MI-56M-B-PN5	EzM2-56M-B-PN5	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN8	EzM2-56M-A-PN8	EzS2-PE-MI-56M-A	1:8
Ezi-SERVO II-PE-MI-56M-B-PN8	EzM2-56M-B-PN8	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN10	EzM2-56M-A-PN10	EzS2-PE-MI-56M-A	1:10
Ezi-SERVO II-PE-MI-56M-B-PN10	EzM2-56M-B-PN10	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN15	EzM2-56M-A-PN15	EzS2-PE-MI-56M-A	1:15
Ezi-SERVO II-PE-MI-56M-B-PN15	EzM2-56M-B-PN15	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN25	EzM2-56M-A-PN25	EzS2-PE-MI-56M-A	1:25
Ezi-SERVO II-PE-MI-56M-B-PN25	EzM2-56M-B-PN25	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN40	EzM2-56M-A-PN40	EzS2-PE-MI-56M-A	1:40
Ezi-SERVO II-PE-MI-56M-B-PN40	EzM2-56M-B-PN40	EzS2-PE-MI-56M-B	
Ezi-SERVO II-PE-MI-56M-A-PN50	EzM2-56M-A-PN50	EzS2-PE-MI-56M-A	1:50
Ezi-SERVO II-PE-MI-56M-B-PN50	EzM2-56M-B-PN50	EzS2-PE-MI-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-MI-56L-A-PN3	EzM2-56L-A-PN3	EzS2-PE-MI-56L-A	1:3
Ezi-SERVO II-PE-MI-56L-B-PN3	EzM2-56L-B-PN3	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN5	EzM2-56L-A-PN5	EzS2-PE-MI-56L-A	1:5
Ezi-SERVO II-PE-MI-56L-B-PN5	EzM2-56L-B-PN5	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN8	EzM2-56L-A-PN8	EzS2-PE-MI-56L-A	1:8
Ezi-SERVO II-PE-MI-56L-B-PN8	EzM2-56L-B-PN8	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN10	EzM2-56L-A-PN10	EzS2-PE-MI-56L-A	1:10
Ezi-SERVO II-PE-MI-56L-B-PN10	EzM2-56L-B-PN10	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN15	EzM2-56L-A-PN15	EzS2-PE-MI-56L-A	1:15
Ezi-SERVO II-PE-MI-56L-B-PN15	EzM2-56L-B-PN15	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN25	EzM2-56L-A-PN25	EzS2-PE-MI-56L-A	1:25
Ezi-SERVO II-PE-MI-56L-B-PN25	EzM2-56L-B-PN25	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN40	EzM2-56L-A-PN40	EzS2-PE-MI-56L-A	1:40
Ezi-SERVO II-PE-MI-56L-B-PN40	EzM2-56L-B-PN40	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-56L-A-PN50	EzM2-56L-A-PN50	EzS2-PE-MI-56L-A	1:50
Ezi-SERVO II-PE-MI-56L-B-PN50	EzM2-56L-B-PN50	EzS2-PE-MI-56L-B	
Ezi-SERVO II-PE-MI-60S-A-PN3	EzM2-60S-A-PN3	EzS2-PE-MI-60S-A	1:3
Ezi-SERVO II-PE-MI-60S-B-PN3	EzM2-60S-B-PN3	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN5	EzM2-60S-A-PN5	EzS2-PE-MI-60S-A	1:5
Ezi-SERVO II-PE-MI-60S-B-PN5	EzM2-60S-B-PN5	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN8	EzM2-60S-A-PN8	EzS2-PE-MI-60S-A	1:8
Ezi-SERVO II-PE-MI-60S-B-PN8	EzM2-60S-B-PN8	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN10	EzM2-60S-A-PN10	EzS2-PE-MI-60S-A	1:10
Ezi-SERVO II-PE-MI-60S-B-PN10	EzM2-60S-B-PN10	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN15	EzM2-60S-A-PN15	EzS2-PE-MI-60S-A	1:15
Ezi-SERVO II-PE-MI-60S-B-PN15	EzM2-60S-B-PN15	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN25	EzM2-60S-A-PN25	EzS2-PE-MI-60S-A	1:25
Ezi-SERVO II-PE-MI-60S-B-PN25	EzM2-60S-B-PN25	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN40	EzM2-60S-A-PN40	EzS2-PE-MI-60S-A	1:40
Ezi-SERVO II-PE-MI-60S-B-PN40	EzM2-60S-B-PN40	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60S-A-PN50	EzM2-60S-A-PN50	EzS2-PE-MI-60S-A	1:50
Ezi-SERVO II-PE-MI-60S-B-PN50	EzM2-60S-B-PN50	EzS2-PE-MI-60S-B	
Ezi-SERVO II-PE-MI-60M-A-PN3	EzM2-60M-A-PN3	EzS2-PE-MI-60M-A	1:3
Ezi-SERVO II-PE-MI-60M-B-PN3	EzM2-60M-B-PN3	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN5	EzM2-60M-A-PN5	EzS2-PE-MI-60M-A	1:5
Ezi-SERVO II-PE-MI-60M-B-PN5	EzM2-60M-B-PN5	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN8	EzM2-60M-A-PN8	EzS2-PE-MI-60M-A	1:8
Ezi-SERVO II-PE-MI-60M-B-PN8	EzM2-60M-B-PN8	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN10	EzM2-60M-A-PN10	EzS2-PE-MI-60M-A	1:10
Ezi-SERVO II-PE-MI-60M-B-PN10	EzM2-60M-B-PN10	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN15	EzM2-60M-A-PN15	EzS2-PE-MI-60M-A	1:15
Ezi-SERVO II-PE-MI-60M-B-PN15	EzM2-60M-B-PN15	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN25	EzM2-60M-A-PN25	EzS2-PE-MI-60M-A	1:25
Ezi-SERVO II-PE-MI-60M-B-PN25	EzM2-60M-B-PN25	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN40	EzM2-60M-A-PN40	EzS2-PE-MI-60M-A	1:40
Ezi-SERVO II-PE-MI-60M-B-PN40	EzM2-60M-B-PN40	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60M-A-PN50	EzM2-60M-A-PN50	EzS2-PE-MI-60M-A	1:50
Ezi-SERVO II-PE-MI-60M-B-PN50	EzM2-60M-B-PN50	EzS2-PE-MI-60M-B	
Ezi-SERVO II-PE-MI-60L-A-PN3	EzM2-60L-A-PN3	EzS2-PE-MI-60L-A	1:3
Ezi-SERVO II-PE-MI-60L-B-PN3	EzM2-60L-B-PN3	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN5	EzM2-60L-A-PN5	EzS2-PE-MI-60L-A	1:5
Ezi-SERVO II-PE-MI-60L-B-PN5	EzM2-60L-B-PN5	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN8	EzM2-60L-A-PN8	EzS2-PE-MI-60L-A	1:8
Ezi-SERVO II-PE-MI-60L-B-PN8	EzM2-60L-B-PN8	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN10	EzM2-60L-A-PN10	EzS2-PE-MI-60L-A	1:10
Ezi-SERVO II-PE-MI-60L-B-PN10	EzM2-60L-B-PN10	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN15	EzM2-60L-A-PN15	EzS2-PE-MI-60L-A	1:15
Ezi-SERVO II-PE-MI-60L-B-PN15	EzM2-60L-B-PN15	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN25	EzM2-60L-A-PN25	EzS2-PE-MI-60L-A	1:25
Ezi-SERVO II-PE-MI-60L-B-PN25	EzM2-60L-B-PN25	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN40	EzM2-60L-A-PN40	EzS2-PE-MI-60L-A	1:40
Ezi-SERVO II-PE-MI-60L-B-PN40	EzM2-60L-B-PN40	EzS2-PE-MI-60L-B	
Ezi-SERVO II-PE-MI-60L-A-PN50	EzM2-60L-A-PN50	EzS2-PE-MI-60L-A	1:50
Ezi-SERVO II-PE-MI-60L-B-PN50	EzM2-60L-B-PN50	EzS2-PE-MI-60L-B	

Specifications of Drive

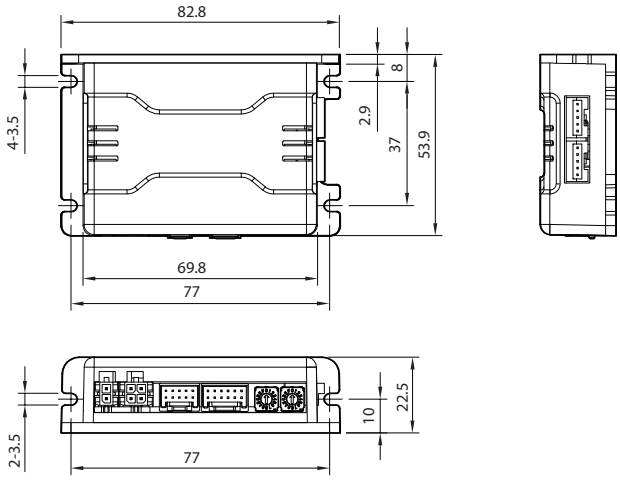
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-PE-MI-20 series	EzS2-PE-MI-28 series	EzS2-PE-MI-35 series	EzS2-PE-MI-42 series	EzS2-PE-MI-56 series	EzS2-PE-MI-60 series
Input Voltage		DC24V±10%					
Control Method		Closed-loop control with 32 bit MCU					
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)					
Position Table		256 motion command steps					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *2 · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min *1					
	Resolution	(Selectable by parameter)					
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error					
	In-Position Selection	0~63 (Set by parameter)					
	Position Gain Selection	0~63 (Set by parameter)					
	Rotational Direction	CW/CCW (Set by parameter)					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)					
	Output Signals	1 dedicated output (Compare Out), 1 programmable outputs (Photocoupler Output), 1 Brake output					
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded					
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min					
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque					
GUI		User Interface Program within Windows					
Library		Motion Library (API) for windows 7/8/10					

Encoder Resolution [P/R]	Configurable Resolution [P/R]									
4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000
10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	
16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000
20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

*2 : EzS2-PE-MI-56, 60 series should be installed on a heat sink or a structure capable of heat dissipation.

Dimensions of Drive [mm]



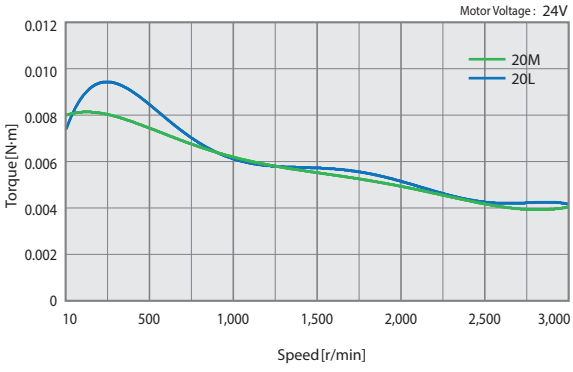
Specifications of Motor

MODEL				EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
			UNIT	20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			$g \cdot cm^2$	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

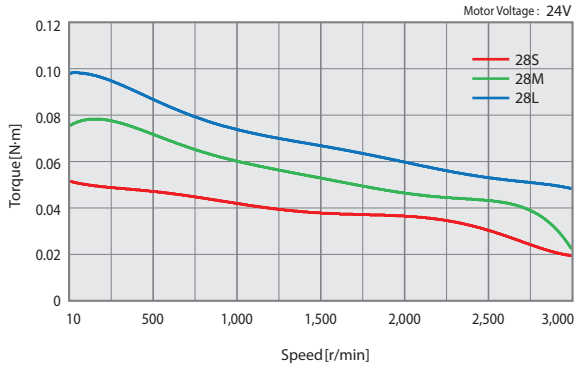
MODEL				EzM2-56 series			EzM2-60 series		
			UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

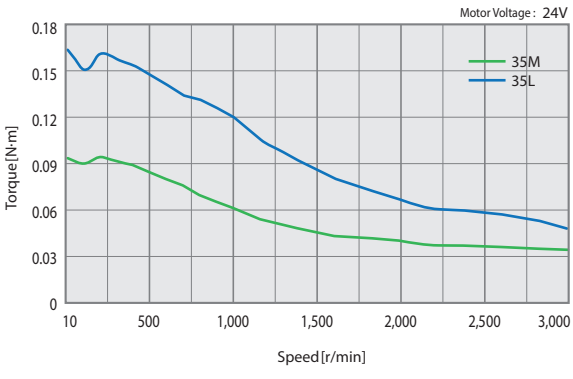
Ezi-SERVO II-PE-MI-20 series



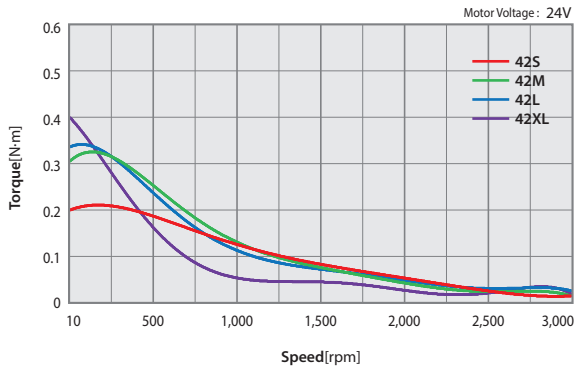
Ezi-SERVO II-PE-MI-28 series



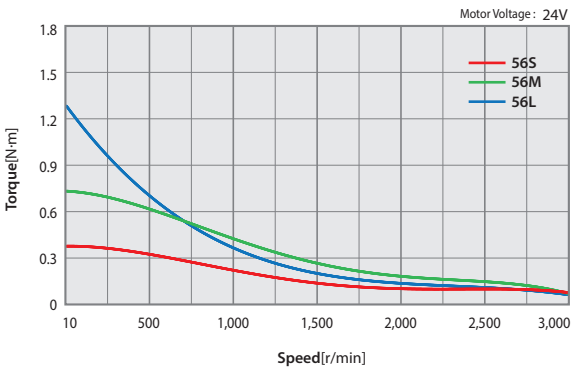
Ezi-SERVO II-PE-MI-35 series



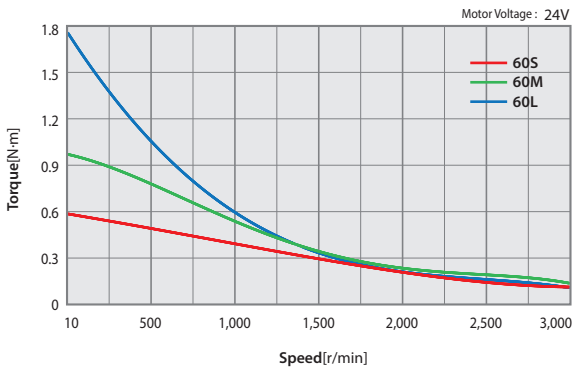
Ezi-SERVO II-PE-MI-42 series



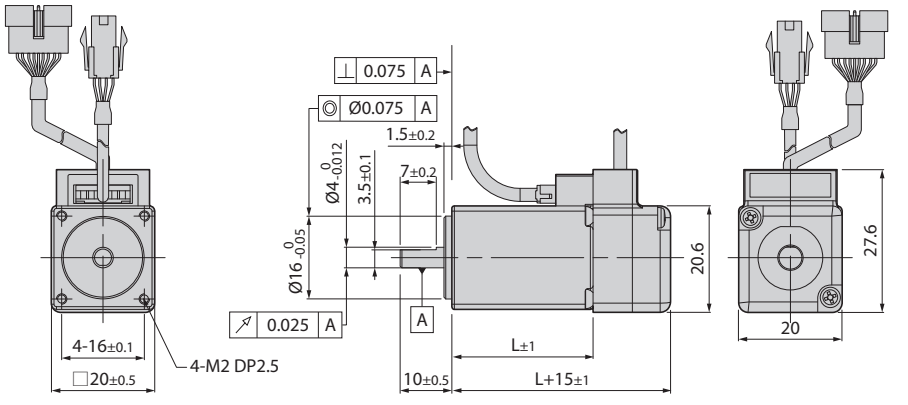
Ezi-SERVO II-PE-MI-56 series



Ezi-SERVO II-PE-MI-60 series

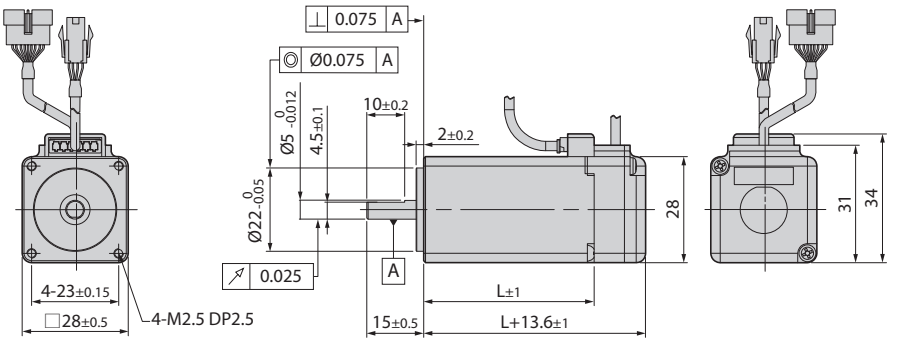


Dimensions of Motor [mm]



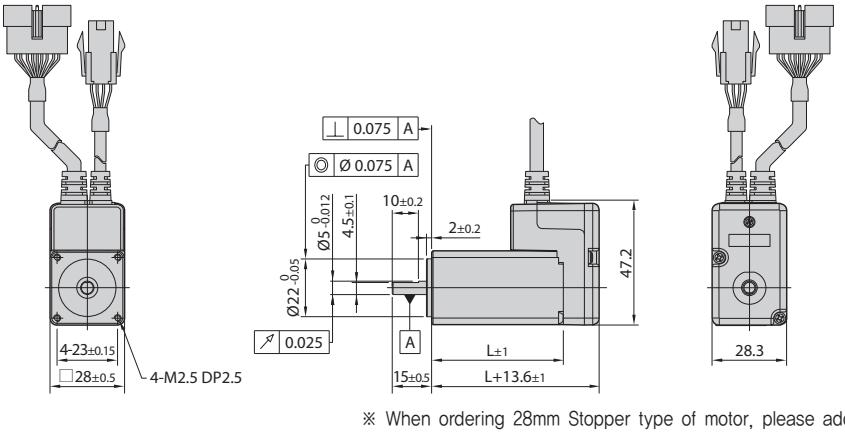
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

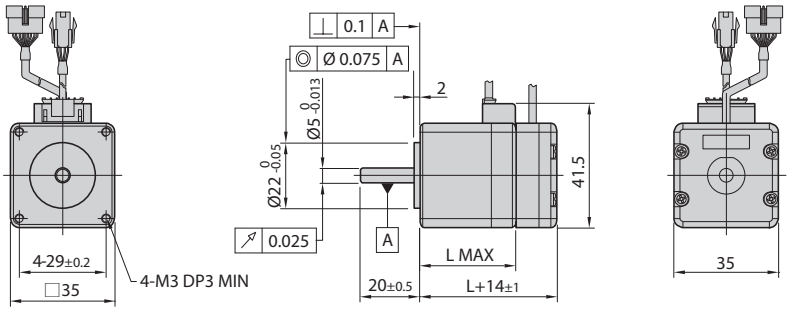
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

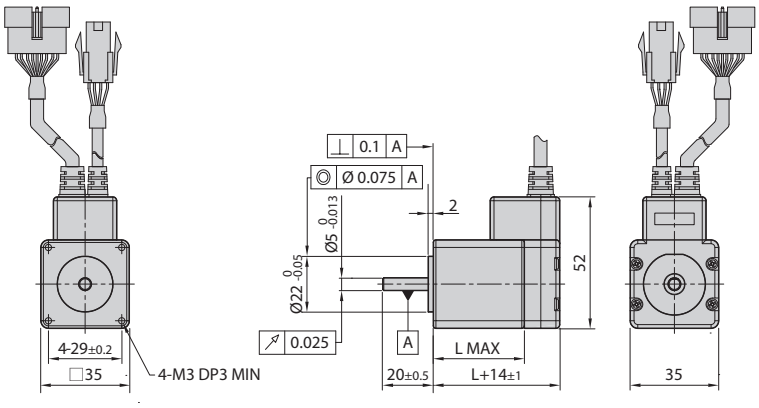
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

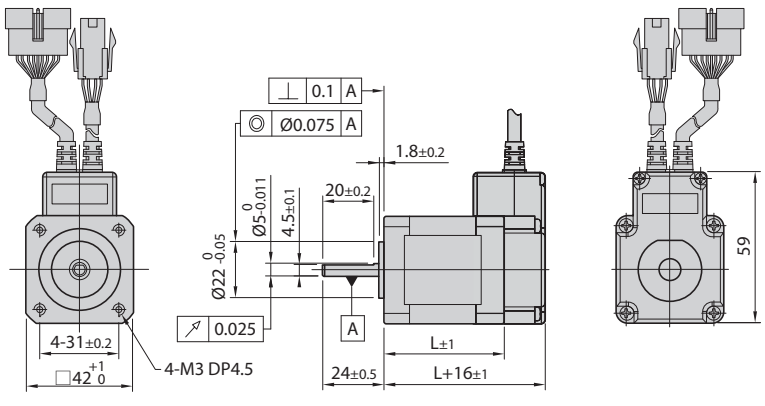
Dimensions of Motor [mm]



35mm (Stopper type)

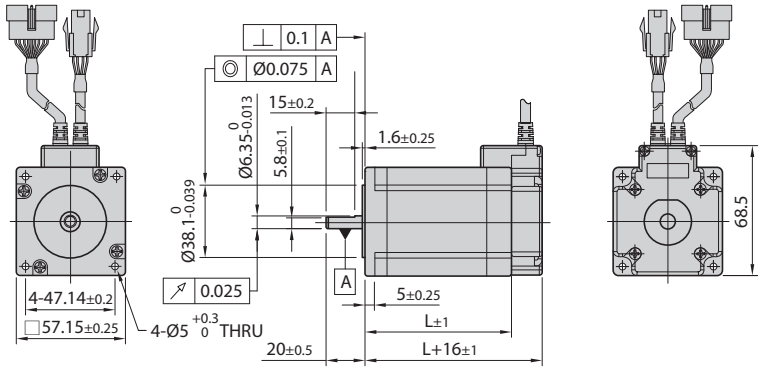
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

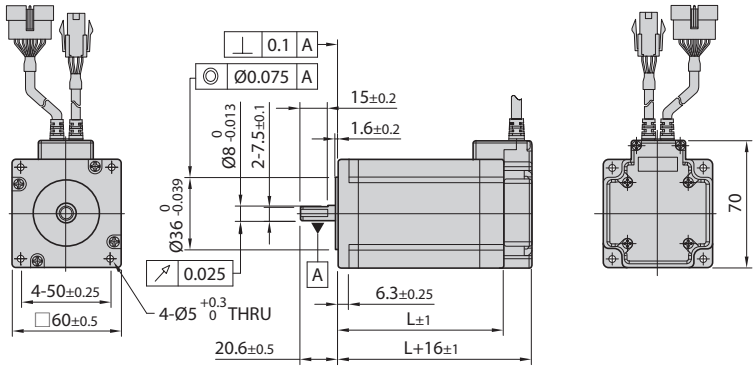
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

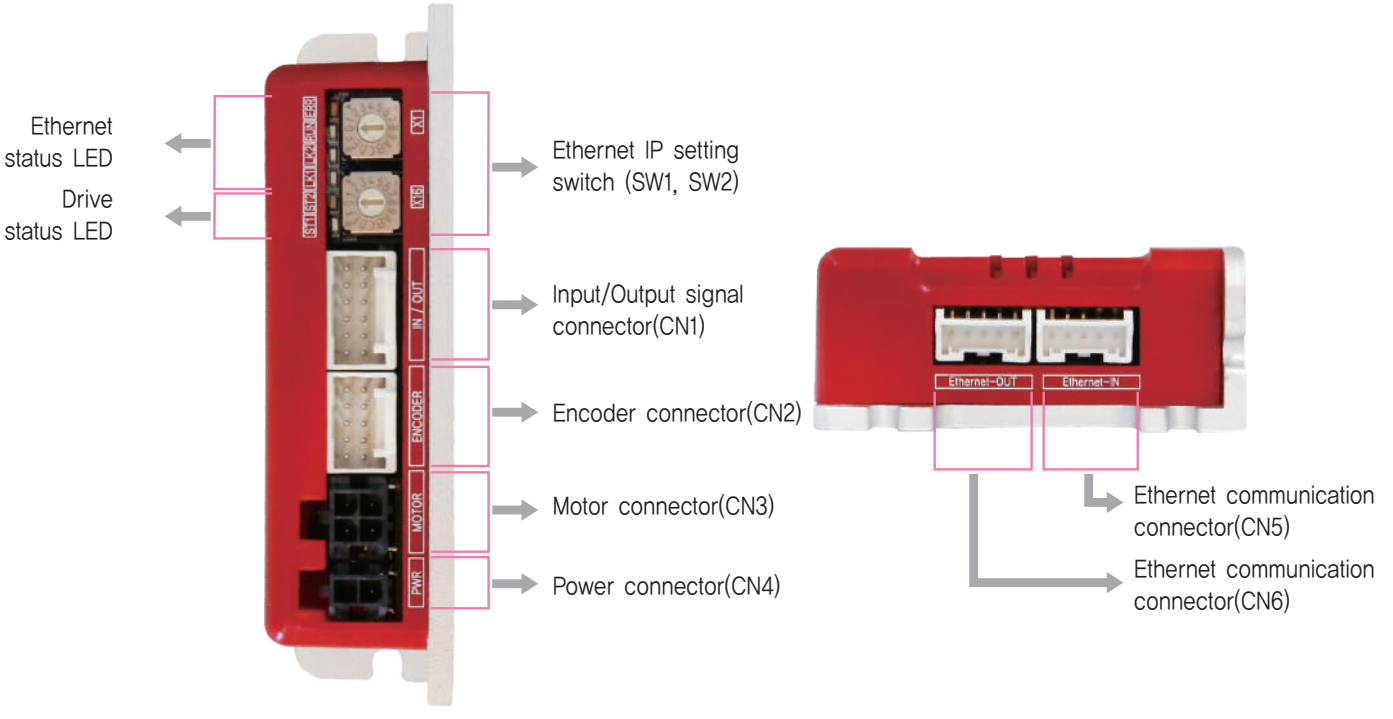
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

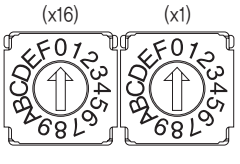
Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Settings and Operation



1. Ethernet IP Display and Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

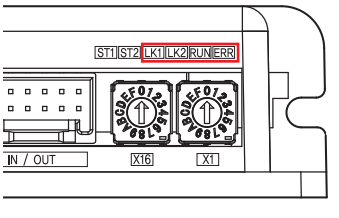
2. Ethernet Status LED

LED indicates communication status of Ethernet.

Name	Color	Status	Description
ERR	Red	OFF	No Error
		ON	Local Error

Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link not Established
		ON	Link Established

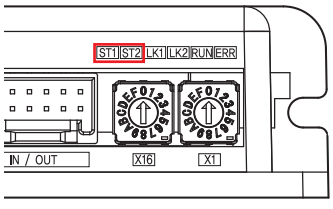
Name	Color	Status	Description
RUN	Orange	Blinking	Operating Normally



3. Drive Status LED

LED informs operation status of the drive.

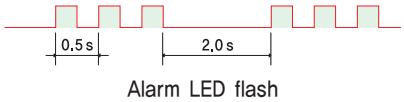
LED Indication	LED Status	Description
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF	Servo On
ST1 : ▬▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF	Servo Off
ST1 : ▬▬▬▬▬ ST2 : ▬▬▬▬▬	ST1 and ST2 are ON	In motion
ST1 : ● ● ● ● ● ● ST2 : ● ● ● ● ● ●	ST1 and ST2 blink alternately	A position error is greater than the set value (Inposition Value) while the motor is stopped.
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



◆ List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000r/min
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *2
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

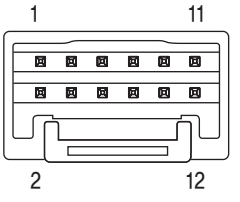
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default setting value is 180 ˚, and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Position tracking error)

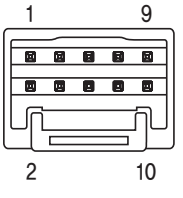
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output



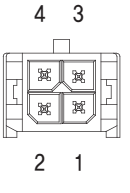
5. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A–	Input
3	B+	Input
4	B–	Input
5	Z+	Input
6	Z–	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



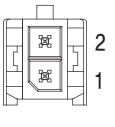
6. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



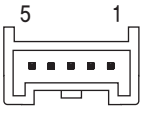
7. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

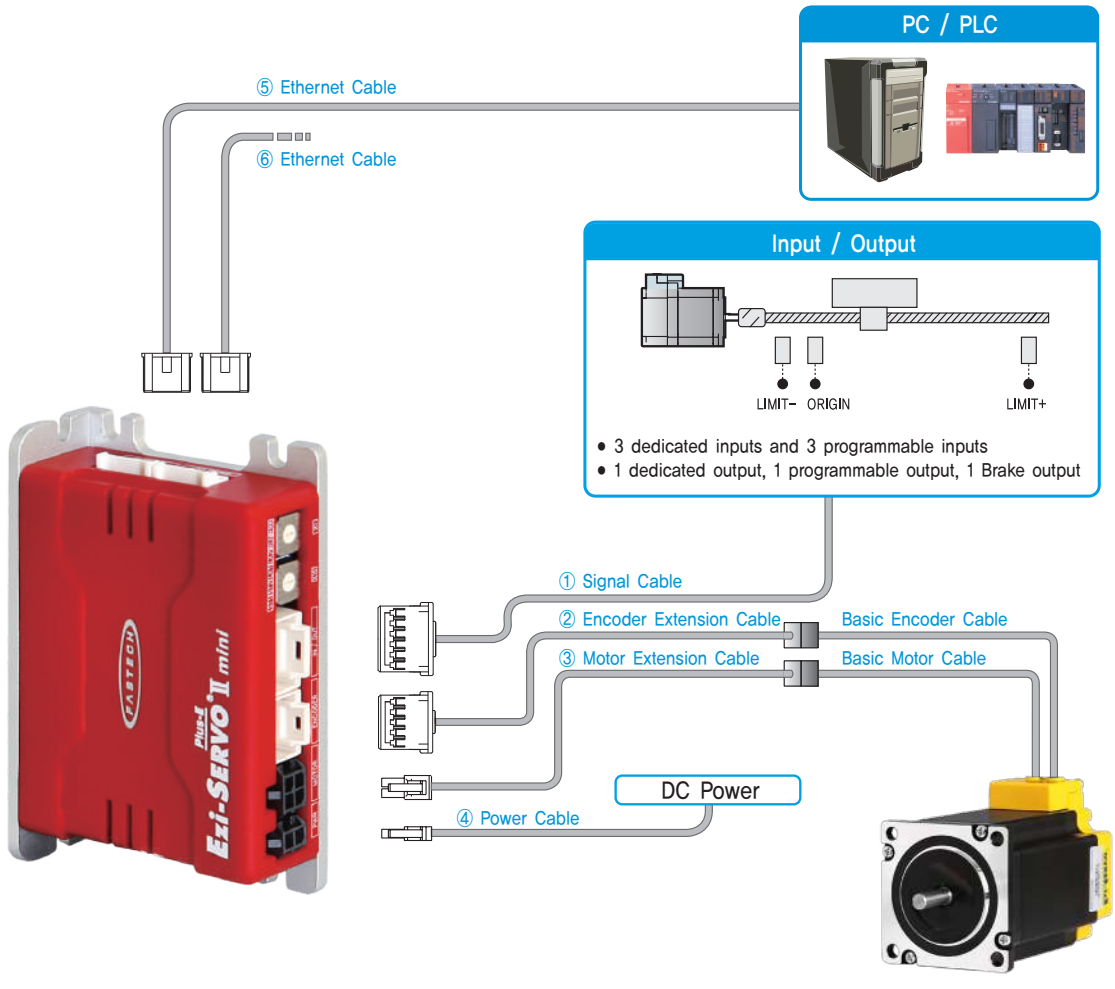


8. Ethernet Communication Connector(CN5, CN6)

No.	Function
1	TD+
2	TD–
3	RD+
4	RD–
5	F.GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-1200	MOLEX
		Terminal	501648-1000(AWG 26~28)	
Encoder	Drive Side (CN2)	Housing	501646-1000	MOLEX
		Terminal	501648-1000(AWG 26~28)	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	43025-0400	MOLEX
		Terminal	43030-0001	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	43025-0200	MOLEX
		Terminal	43030-0001	
Ethernet (CN5, CN6)		Housing	PAP-05V-S	JST
		Terminal	SPHD-001T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSER-S-001F	1	Normal Cable	Maximum Length: 20m
	CSER-S-002F	2		
	CSER-S-003F	3		
	CSER-S-005F	5		
	CSER-S-001M	1	Robot Cable	
	CSER-S-002M	2		
	CSER-S-003M	3		
	CSER-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E MINI drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVI-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVI-E-002F	2		
	CSVI-E-003F	3		
	CSVI-E-005F	5		
	CSVI-E-001M	1	Robot Cable	
	CSVI-E-002M	2		
	CSVI-E-003M	3		
	CSVI-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II Plus-E MINI drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSMI-M-001F	1	Normal Cable	Maximum Length: 20m
	CSMI-M-002F	2		
	CSMI-M-003F	3		
	CSMI-M-005F	5		
	CSMI-M-001M	1	Robot Cable	
	CSMI-M-002M	2		
	CSMI-M-003M	3		
	CSMI-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II Plus-E MINI drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSMI-P-001F	1	Normal Cable	Maximum Length: 2m
	CSMI-P-002F	2		
	CSMI-P-001M	1	Robot Cable	
	CSMI-P-002M	2		

⑤ Ethernet Cable (5 pin connector – RJ45)

These are the cables to connect Ezi-SERVO II Plus-E MINI drive and Ezi-SERVO II Plus-E, Ezi-SERVO II Plus-E ALL R Type with Ethernet network.

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNE-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNE-EC-002F	2	
	CGNE-EC-003F	3	
	CGNE-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

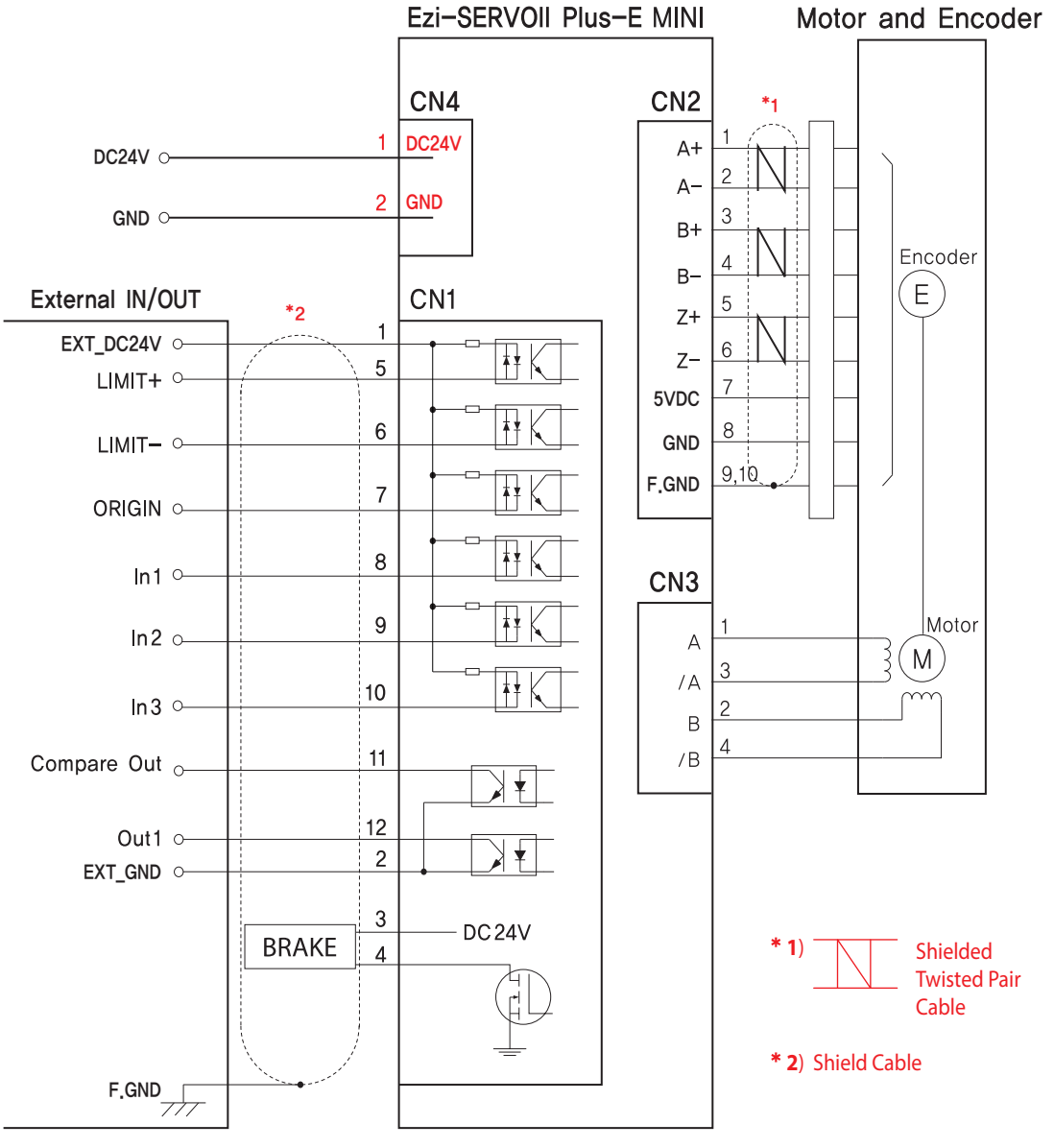
⑥ Ethernet Cable (5 pin connector – 5pin connector)

These are the cables to connect between Ezi-SERVO II Plus-E MINI drives with Ethernet network.

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNI-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNI-EC-002F	2	
	CGNI-EC-003F	3	
	CGNI-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

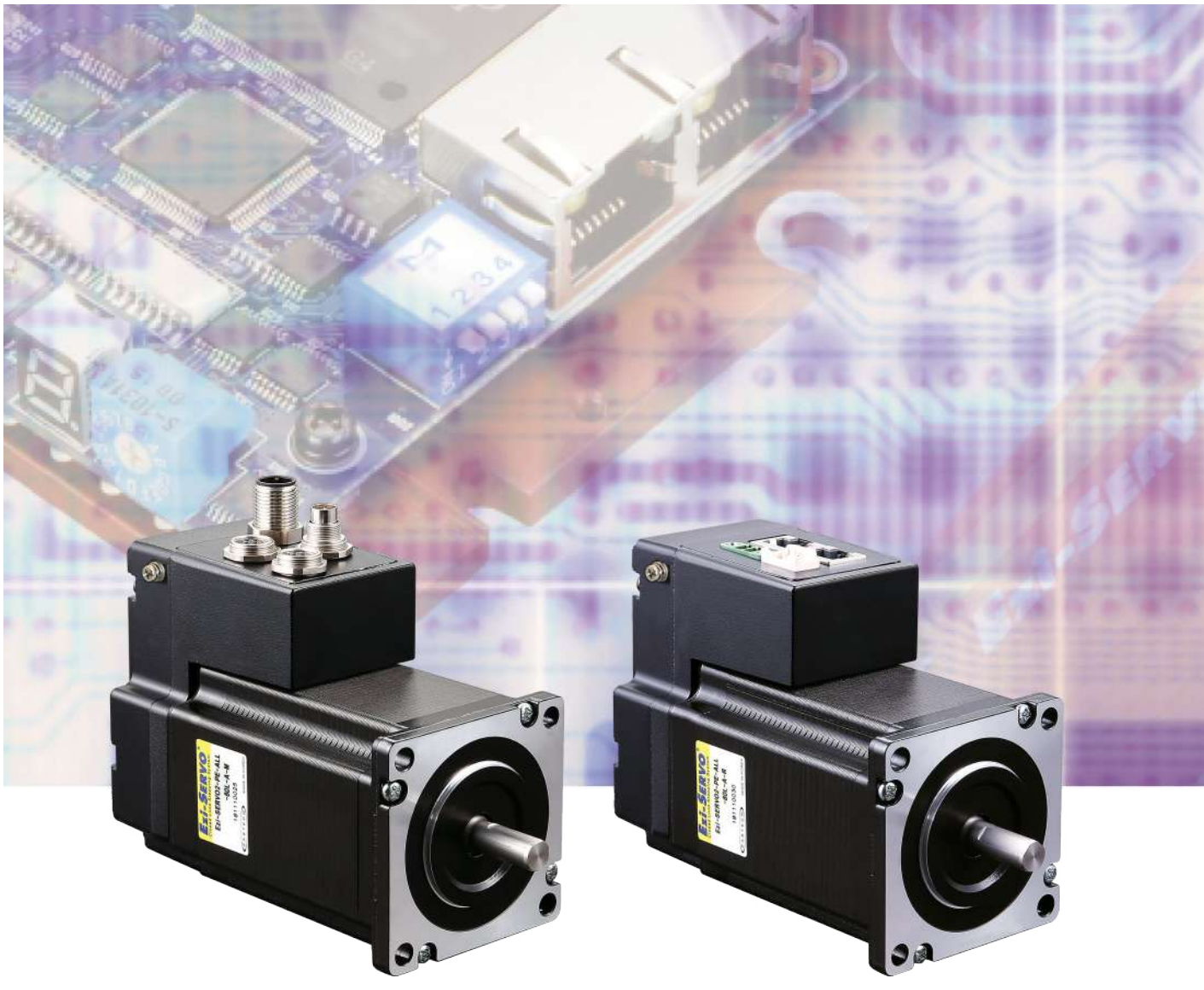
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


EzM2-60L
Ezi-SERVO II Plus-E

Ezi-SERVO® II Plus-E ALL

Closed Loop Stepping System

- Motor + High Resolution Encoder + Drive + Motion Controller
- Space Saving / Reduced Wiring
- Ethernet Interface
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque

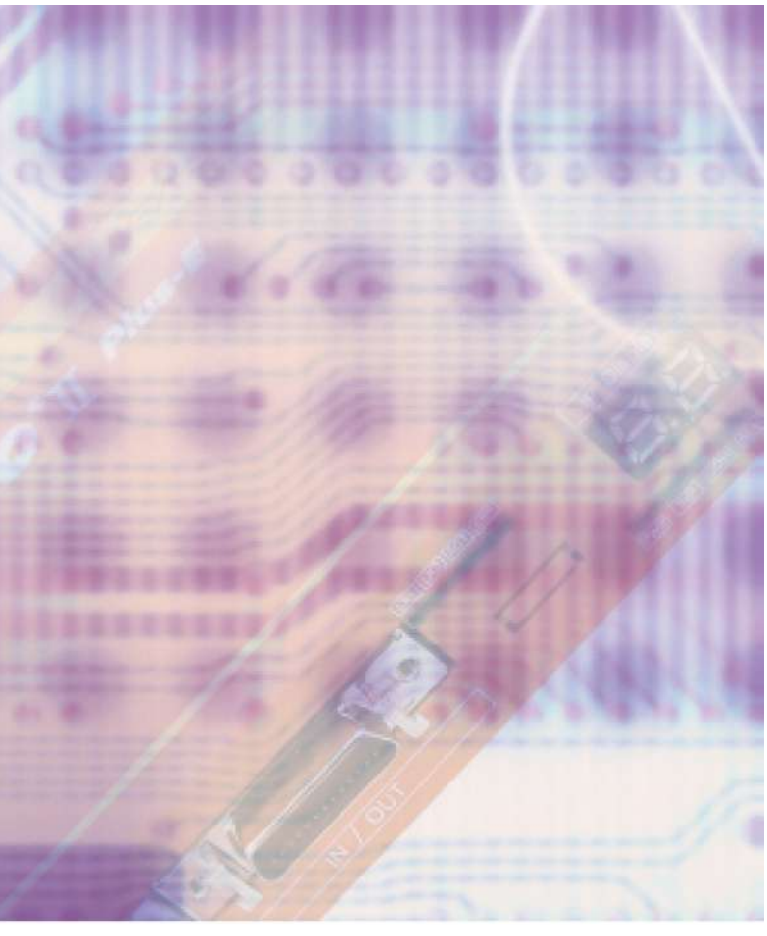


FASTECH

Fast, Accurate, Smooth Motion

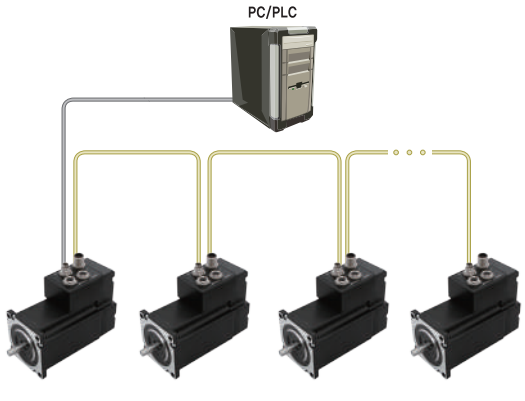
Ezi-SERVO® II Plus-E ALL

Closed Loop Stepping System



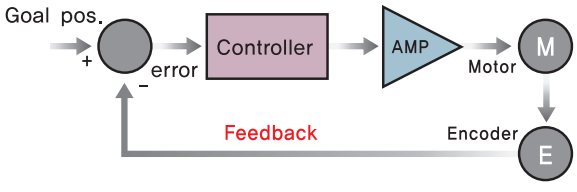
1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.



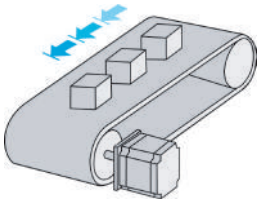
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

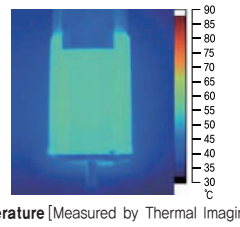
To ensure machine performance, conventional servo systems require the adjustment of its servo' s gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed. Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



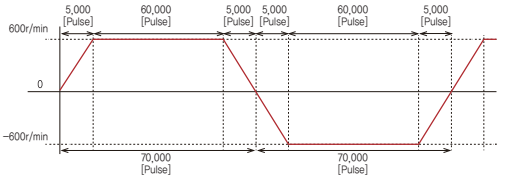
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

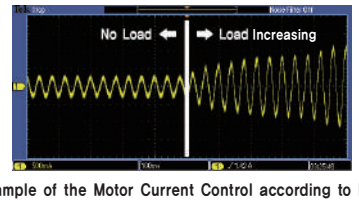
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

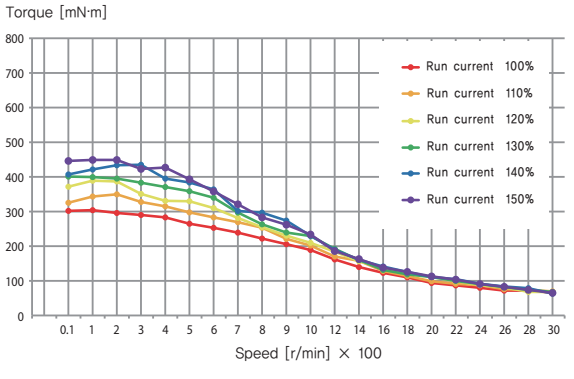


Example of the Motor Current Control according to load

5 High Torque

(Motor Current Setting)

Ezi-SERVO II can increase the motor current up to 150% by setting the Run Current by parameter. Therefore acceleration and deceleration characteristics and torque characteristics at low speed can be increased. Ezi-SERVO II can improve the torque in the low speed range by about 30%.

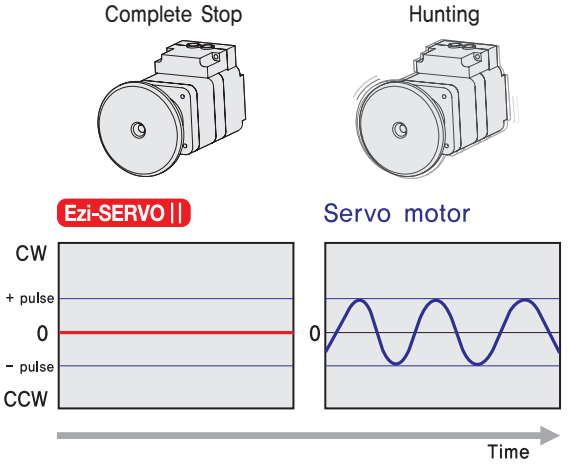


※ The torque at low speed is improved about 30%

Measured Condition : Drive = Ezi-SERVO II-PE-ALL-42L

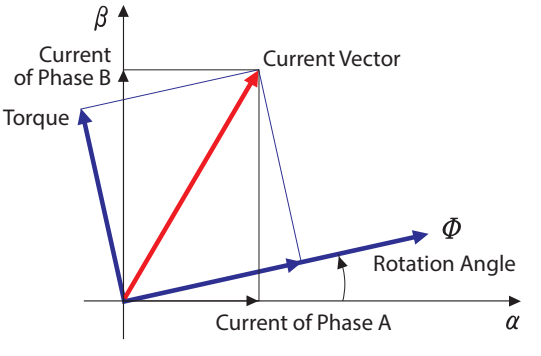
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



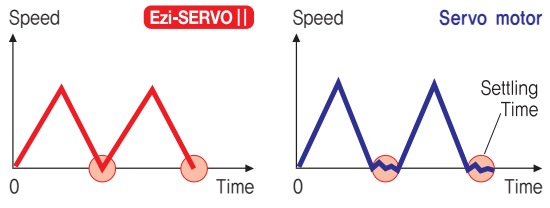
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



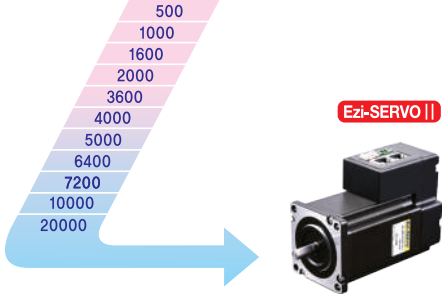
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



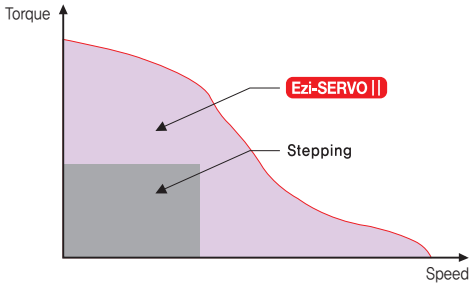
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



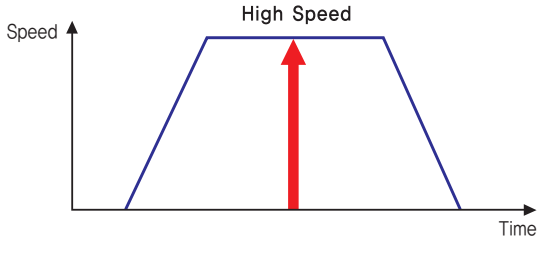
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping System Drive

1. Positioning is reliable without loss of synchronism.
2. It can hold stable position and automatically recover to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of rated motor torque, contrary to a conventional open-loop stepping driver that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Ezi-SERVO II can operate at high speed due to load-dependent current control, while open-loop stepping drives use a constant current control at all speed ranges without considering load variations. (Max Speed : 3,000r/min)

● Advantages over Servo Motor Controller

1. Tuning is not required. (Automatic gain adjustment in response to a load change)
2. It can maintain the stable holding position without oscillation after completion of positioning.
3. Positioning is fast due to the independent control by on-board MCU.
4. Operation is constant during rapid short-stroke movement due to instantaneous positioning.

Ezi-SERVO II Plus-E ALL Part Numbering

Ezi-SERVO II -PE-ALL-56L-A-BK-PN5-M

Series Name

Type Name

PE-ALL : Ethernet ALL

Motor Flange Size

42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

Connector Type

M : M Connector
R : RJ45 Connector

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-ALL-42M-A-M		
Ezi-SERVO II-PE-ALL-42M-B-M		
Ezi-SERVO II-PE-ALL-42M-A-R		
Ezi-SERVO II-PE-ALL-42M-B-R		
Ezi-SERVO II-PE-ALL-42L-A-M		
Ezi-SERVO II-PE-ALL-42L-B-M		
Ezi-SERVO II-PE-ALL-42L-A-R		
Ezi-SERVO II-PE-ALL-42L-B-R		
Ezi-SERVO II-PE-ALL-42XL-A-M		
Ezi-SERVO II-PE-ALL-42XL-B-M		
Ezi-SERVO II-PE-ALL-42XL-A-R		
Ezi-SERVO II-PE-ALL-42XL-B-R		
Ezi-SERVO II-PE-ALL-56S-A-M		
Ezi-SERVO II-PE-ALL-56S-B-M		
Ezi-SERVO II-PE-ALL-56S-A-R		
Ezi-SERVO II-PE-ALL-56S-B-R		
Ezi-SERVO II-PE-ALL-56M-A-M		
Ezi-SERVO II-PE-ALL-56M-B-M		
Ezi-SERVO II-PE-ALL-56M-A-R		
Ezi-SERVO II-PE-ALL-56M-B-R		
Ezi-SERVO II-PE-ALL-56L-A-M		
Ezi-SERVO II-PE-ALL-56L-B-M		
Ezi-SERVO II-PE-ALL-56L-A-R		
Ezi-SERVO II-PE-ALL-56L-B-R	Motor & Drive Integrated	
Ezi-SERVO II-PE-ALL-60S-A-M		
Ezi-SERVO II-PE-ALL-60S-B-M		
Ezi-SERVO II-PE-ALL-60S-A-R		
Ezi-SERVO II-PE-ALL-60S-B-R		
Ezi-SERVO II-PE-ALL-60M-A-M		
Ezi-SERVO II-PE-ALL-60M-B-M		
Ezi-SERVO II-PE-ALL-60M-A-R		
Ezi-SERVO II-PE-ALL-60M-B-R		
Ezi-SERVO II-PE-ALL-60L-A-M		
Ezi-SERVO II-PE-ALL-60L-B-M		
Ezi-SERVO II-PE-ALL-60L-A-R		
Ezi-SERVO II-PE-ALL-60L-B-R		
Ezi-SERVO II-PE-ALL-86M-A-M		
Ezi-SERVO II-PE-ALL-86M-B-M		
Ezi-SERVO II-PE-ALL-86M-A-R		
Ezi-SERVO II-PE-ALL-86M-B-R		
Ezi-SERVO II-PE-ALL-86L-A-M		
Ezi-SERVO II-PE-ALL-86L-B-M		
Ezi-SERVO II-PE-ALL-86L-A-R		
Ezi-SERVO II-PE-ALL-86L-B-R		
Ezi-SERVO II-PE-ALL-86XL-A-M		
Ezi-SERVO II-PE-ALL-86XL-B-M		
Ezi-SERVO II-PE-ALL-86XL-A-R		
Ezi-SERVO II-PE-ALL-86XL-B-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-PE-ALL-42M-A-BK-M		
Ezi-SERVO II-PE-ALL-42M-B-BK-M		
Ezi-SERVO II-PE-ALL-42M-A-BK-R		
Ezi-SERVO II-PE-ALL-42M-B-BK-R		
Ezi-SERVO II-PE-ALL-42L-A-BK-M		
Ezi-SERVO II-PE-ALL-42L-B-BK-M		
Ezi-SERVO II-PE-ALL-42L-A-BK-R		
Ezi-SERVO II-PE-ALL-42L-B-BK-R		
Ezi-SERVO II-PE-ALL-42XL-A-BK-M		
Ezi-SERVO II-PE-ALL-42XL-B-BK-M		
Ezi-SERVO II-PE-ALL-42XL-A-BK-R		
Ezi-SERVO II-PE-ALL-42XL-B-BK-R		
Ezi-SERVO II-PE-ALL-56S-A-BK-M		
Ezi-SERVO II-PE-ALL-56S-B-BK-M		
Ezi-SERVO II-PE-ALL-56S-A-BK-R		
Ezi-SERVO II-PE-ALL-56S-B-BK-R		
Ezi-SERVO II-PE-ALL-56M-A-BK-M		
Ezi-SERVO II-PE-ALL-56M-B-BK-M		
Ezi-SERVO II-PE-ALL-56M-A-BK-R		
Ezi-SERVO II-PE-ALL-56M-B-BK-R		
Ezi-SERVO II-PE-ALL-56L-A-BK-M		
Ezi-SERVO II-PE-ALL-56L-B-BK-M		
Ezi-SERVO II-PE-ALL-56L-A-BK-R		
Ezi-SERVO II-PE-ALL-56L-B-BK-R	Motor & Drive Integrated	
Ezi-SERVO II-PE-ALL-60S-A-BK-M		
Ezi-SERVO II-PE-ALL-60S-B-BK-M		
Ezi-SERVO II-PE-ALL-60S-A-BK-R		
Ezi-SERVO II-PE-ALL-60S-B-BK-R		
Ezi-SERVO II-PE-ALL-60M-A-BK-M		
Ezi-SERVO II-PE-ALL-60M-B-BK-M		
Ezi-SERVO II-PE-ALL-60M-A-BK-R		
Ezi-SERVO II-PE-ALL-60M-B-BK-R		
Ezi-SERVO II-PE-ALL-60L-A-BK-M		
Ezi-SERVO II-PE-ALL-60L-B-BK-M		
Ezi-SERVO II-PE-ALL-60L-A-BK-R		
Ezi-SERVO II-PE-ALL-60L-B-BK-R		
Ezi-SERVO II-PE-ALL-86M-A-BK-M		
Ezi-SERVO II-PE-ALL-86M-B-BK-M		
Ezi-SERVO II-PE-ALL-86M-A-BK-R		
Ezi-SERVO II-PE-ALL-86M-B-BK-R		
Ezi-SERVO II-PE-ALL-86L-A-BK-M		
Ezi-SERVO II-PE-ALL-86L-B-BK-M		
Ezi-SERVO II-PE-ALL-86L-A-BK-R		
Ezi-SERVO II-PE-ALL-86L-B-BK-R		
Ezi-SERVO II-PE-ALL-86XL-A-BK-M		
Ezi-SERVO II-PE-ALL-86XL-B-BK-M		
Ezi-SERVO II-PE-ALL-86XL-A-BK-R		
Ezi-SERVO II-PE-ALL-86XL-B-BK-R		

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-42M-A-PN3-M			
Ezi-SERVO II-PE-ALL-42M-B-PN3-M			1:3
Ezi-SERVO II-PE-ALL-42M-A-PN3-R			
Ezi-SERVO II-PE-ALL-42M-B-PN3-R			
Ezi-SERVO II-PE-ALL-42M-A-PN5-M			
Ezi-SERVO II-PE-ALL-42M-B-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42M-A-PN5-R			
Ezi-SERVO II-PE-ALL-42M-B-PN5-R			
Ezi-SERVO II-PE-ALL-42M-A-PN8-M			
Ezi-SERVO II-PE-ALL-42M-B-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42M-A-PN8-R			
Ezi-SERVO II-PE-ALL-42M-B-PN8-R			
Ezi-SERVO II-PE-ALL-42M-A-PN10-M			
Ezi-SERVO II-PE-ALL-42M-B-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42M-A-PN10-R			
Ezi-SERVO II-PE-ALL-42M-B-PN10-R			
Ezi-SERVO II-PE-ALL-42M-A-PN15-M			
Ezi-SERVO II-PE-ALL-42M-B-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42M-A-PN15-R			
Ezi-SERVO II-PE-ALL-42M-B-PN15-R			
Ezi-SERVO II-PE-ALL-42M-A-PN25-M			
Ezi-SERVO II-PE-ALL-42M-B-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42M-A-PN25-R			
Ezi-SERVO II-PE-ALL-42M-B-PN25-R			
Ezi-SERVO II-PE-ALL-42M-A-PN40-M			
Ezi-SERVO II-PE-ALL-42M-B-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42M-A-PN40-R			
Ezi-SERVO II-PE-ALL-42M-B-PN40-R			
Ezi-SERVO II-PE-ALL-42M-A-PN50-M			
Ezi-SERVO II-PE-ALL-42M-B-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42M-A-PN50-R			
Ezi-SERVO II-PE-ALL-42M-B-PN50-R			
Ezi-SERVO II-PE-ALL-42L-A-PN3-M	Motor & Drive Integrated		
Ezi-SERVO II-PE-ALL-42L-B-PN3-M			1:3
Ezi-SERVO II-PE-ALL-42L-A-PN3-R			
Ezi-SERVO II-PE-ALL-42L-B-PN3-R			
Ezi-SERVO II-PE-ALL-42L-A-PN5-M			
Ezi-SERVO II-PE-ALL-42L-B-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42L-A-PN5-R			
Ezi-SERVO II-PE-ALL-42L-B-PN5-R			
Ezi-SERVO II-PE-ALL-42L-A-PN8-M			
Ezi-SERVO II-PE-ALL-42L-B-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42L-A-PN8-R			
Ezi-SERVO II-PE-ALL-42L-B-PN8-R			
Ezi-SERVO II-PE-ALL-42L-A-PN10-M			
Ezi-SERVO II-PE-ALL-42L-B-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42L-A-PN10-R			
Ezi-SERVO II-PE-ALL-42L-B-PN10-R			
Ezi-SERVO II-PE-ALL-42L-A-PN15-M			
Ezi-SERVO II-PE-ALL-42L-B-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42L-A-PN15-R			
Ezi-SERVO II-PE-ALL-42L-B-PN15-R			
Ezi-SERVO II-PE-ALL-42L-A-PN25-M			
Ezi-SERVO II-PE-ALL-42L-B-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42L-A-PN25-R			
Ezi-SERVO II-PE-ALL-42L-B-PN25-R			
Ezi-SERVO II-PE-ALL-42L-A-PN40-M			
Ezi-SERVO II-PE-ALL-42L-B-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42L-A-PN40-R			
Ezi-SERVO II-PE-ALL-42L-B-PN40-R			
Ezi-SERVO II-PE-ALL-42L-A-PN50-M			
Ezi-SERVO II-PE-ALL-42L-B-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42L-A-PN50-R			
Ezi-SERVO II-PE-ALL-42L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-42XL-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-42XL-B-PN3-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN3-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN3-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-42XL-B-PN5-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN5-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN5-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-42XL-B-PN8-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN8-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN8-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-42XL-B-PN10-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN10-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN10-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-42XL-B-PN15-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN15-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN15-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-42XL-B-PN25-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN25-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN25-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-42XL-B-PN40-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN40-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN40-R			
Ezi-SERVO II-PE-ALL-42XL-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-42XL-B-PN50-M			
Ezi-SERVO II-PE-ALL-42XL-A-PN50-R			
Ezi-SERVO II-PE-ALL-42XL-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-PE-ALL-56S-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-56S-B-PN3-M			
Ezi-SERVO II-PE-ALL-56S-A-PN3-R			
Ezi-SERVO II-PE-ALL-56S-B-PN3-R			
Ezi-SERVO II-PE-ALL-56S-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56S-B-PN5-M			
Ezi-SERVO II-PE-ALL-56S-A-PN5-R			
Ezi-SERVO II-PE-ALL-56S-B-PN5-R			
Ezi-SERVO II-PE-ALL-56S-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56S-B-PN8-M			
Ezi-SERVO II-PE-ALL-56S-A-PN8-R			
Ezi-SERVO II-PE-ALL-56S-B-PN8-R			
Ezi-SERVO II-PE-ALL-56S-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56S-B-PN10-M			
Ezi-SERVO II-PE-ALL-56S-A-PN10-R			
Ezi-SERVO II-PE-ALL-56S-B-PN10-R			
Ezi-SERVO II-PE-ALL-56S-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56S-B-PN15-M			
Ezi-SERVO II-PE-ALL-56S-A-PN15-R			
Ezi-SERVO II-PE-ALL-56S-B-PN15-R			
Ezi-SERVO II-PE-ALL-56S-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56S-B-PN25-M			
Ezi-SERVO II-PE-ALL-56S-A-PN25-R			
Ezi-SERVO II-PE-ALL-56S-B-PN25-R			
Ezi-SERVO II-PE-ALL-56S-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56S-B-PN40-M			
Ezi-SERVO II-PE-ALL-56S-A-PN40-R			
Ezi-SERVO II-PE-ALL-56S-B-PN40-R			
Ezi-SERVO II-PE-ALL-56S-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56S-B-PN50-M			
Ezi-SERVO II-PE-ALL-56S-A-PN50-R			
Ezi-SERVO II-PE-ALL-56S-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-56M-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-56M-B-PN3-M			
Ezi-SERVO II-PE-ALL-56M-A-PN3-R			
Ezi-SERVO II-PE-ALL-56M-B-PN3-R			
Ezi-SERVO II-PE-ALL-56M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56M-B-PN5-M			
Ezi-SERVO II-PE-ALL-56M-A-PN5-R			
Ezi-SERVO II-PE-ALL-56M-B-PN5-R			
Ezi-SERVO II-PE-ALL-56M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56M-B-PN8-M			
Ezi-SERVO II-PE-ALL-56M-A-PN8-R			
Ezi-SERVO II-PE-ALL-56M-B-PN8-R			
Ezi-SERVO II-PE-ALL-56M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56M-B-PN10-M			
Ezi-SERVO II-PE-ALL-56M-A-PN10-R			
Ezi-SERVO II-PE-ALL-56M-B-PN10-R			
Ezi-SERVO II-PE-ALL-56M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56M-B-PN15-M			
Ezi-SERVO II-PE-ALL-56M-A-PN15-R			
Ezi-SERVO II-PE-ALL-56M-B-PN15-R			
Ezi-SERVO II-PE-ALL-56M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56M-B-PN25-M			
Ezi-SERVO II-PE-ALL-56M-A-PN25-R			
Ezi-SERVO II-PE-ALL-56M-B-PN25-R			
Ezi-SERVO II-PE-ALL-56M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56M-B-PN40-M			
Ezi-SERVO II-PE-ALL-56M-A-PN40-R			
Ezi-SERVO II-PE-ALL-56M-B-PN40-R			
Ezi-SERVO II-PE-ALL-56M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56M-B-PN50-M			
Ezi-SERVO II-PE-ALL-56M-A-PN50-R			
Ezi-SERVO II-PE-ALL-56M-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-PE-ALL-56L-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-56L-B-PN3-M			
Ezi-SERVO II-PE-ALL-56L-A-PN3-R			
Ezi-SERVO II-PE-ALL-56L-B-PN3-R			
Ezi-SERVO II-PE-ALL-56L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-56L-B-PN5-M			
Ezi-SERVO II-PE-ALL-56L-A-PN5-R			
Ezi-SERVO II-PE-ALL-56L-B-PN5-R			
Ezi-SERVO II-PE-ALL-56L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-56L-B-PN8-M			
Ezi-SERVO II-PE-ALL-56L-A-PN8-R			
Ezi-SERVO II-PE-ALL-56L-B-PN8-R			
Ezi-SERVO II-PE-ALL-56L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-56L-B-PN10-M			
Ezi-SERVO II-PE-ALL-56L-A-PN10-R			
Ezi-SERVO II-PE-ALL-56L-B-PN10-R			
Ezi-SERVO II-PE-ALL-56L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-56L-B-PN15-M			
Ezi-SERVO II-PE-ALL-56L-A-PN15-R			
Ezi-SERVO II-PE-ALL-56L-B-PN15-R			
Ezi-SERVO II-PE-ALL-56L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-56L-B-PN25-M			
Ezi-SERVO II-PE-ALL-56L-A-PN25-R			
Ezi-SERVO II-PE-ALL-56L-B-PN25-R			
Ezi-SERVO II-PE-ALL-56L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-56L-B-PN40-M			
Ezi-SERVO II-PE-ALL-56L-A-PN40-R			
Ezi-SERVO II-PE-ALL-56L-B-PN40-R			
Ezi-SERVO II-PE-ALL-56L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-56L-B-PN50-M			
Ezi-SERVO II-PE-ALL-56L-A-PN50-R			
Ezi-SERVO II-PE-ALL-56L-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-60S-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-60S-B-PN3-M			
Ezi-SERVO II-PE-ALL-60S-A-PN3-R			
Ezi-SERVO II-PE-ALL-60S-B-PN3-R			
Ezi-SERVO II-PE-ALL-60S-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60S-B-PN5-M			
Ezi-SERVO II-PE-ALL-60S-A-PN5-R			
Ezi-SERVO II-PE-ALL-60S-B-PN5-R			
Ezi-SERVO II-PE-ALL-60S-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60S-B-PN8-M			
Ezi-SERVO II-PE-ALL-60S-A-PN8-R			
Ezi-SERVO II-PE-ALL-60S-B-PN8-R			
Ezi-SERVO II-PE-ALL-60S-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60S-B-PN10-M			
Ezi-SERVO II-PE-ALL-60S-A-PN10-R			
Ezi-SERVO II-PE-ALL-60S-B-PN10-R			
Ezi-SERVO II-PE-ALL-60S-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60S-B-PN15-M			
Ezi-SERVO II-PE-ALL-60S-A-PN15-R			
Ezi-SERVO II-PE-ALL-60S-B-PN15-R			
Ezi-SERVO II-PE-ALL-60S-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60S-B-PN25-M			
Ezi-SERVO II-PE-ALL-60S-A-PN25-R			
Ezi-SERVO II-PE-ALL-60S-B-PN25-R			
Ezi-SERVO II-PE-ALL-60S-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60S-B-PN40-M			
Ezi-SERVO II-PE-ALL-60S-A-PN40-R			
Ezi-SERVO II-PE-ALL-60S-B-PN40-R			
Ezi-SERVO II-PE-ALL-60S-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60S-B-PN50-M			
Ezi-SERVO II-PE-ALL-60S-A-PN50-R			
Ezi-SERVO II-PE-ALL-60S-B-PN50-R			
Ezi-SERVO II-PE-ALL-60M-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-60M-B-PN3-M			
Ezi-SERVO II-PE-ALL-60M-A-PN3-R			
Ezi-SERVO II-PE-ALL-60M-B-PN3-R			
Ezi-SERVO II-PE-ALL-60M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60M-B-PN5-M			
Ezi-SERVO II-PE-ALL-60M-A-PN5-R			
Ezi-SERVO II-PE-ALL-60M-B-PN5-R			
Ezi-SERVO II-PE-ALL-60M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60M-B-PN8-M			
Ezi-SERVO II-PE-ALL-60M-A-PN8-R			
Ezi-SERVO II-PE-ALL-60M-B-PN8-R			
Ezi-SERVO II-PE-ALL-60M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60M-B-PN10-M			
Ezi-SERVO II-PE-ALL-60M-A-PN10-R			
Ezi-SERVO II-PE-ALL-60M-B-PN10-R			
Ezi-SERVO II-PE-ALL-60M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60M-B-PN15-M			
Ezi-SERVO II-PE-ALL-60M-A-PN15-R			
Ezi-SERVO II-PE-ALL-60M-B-PN15-R			
Ezi-SERVO II-PE-ALL-60M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60M-B-PN25-M			
Ezi-SERVO II-PE-ALL-60M-A-PN25-R			
Ezi-SERVO II-PE-ALL-60M-B-PN25-R			
Ezi-SERVO II-PE-ALL-60M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60M-B-PN40-M			
Ezi-SERVO II-PE-ALL-60M-A-PN40-R			
Ezi-SERVO II-PE-ALL-60M-B-PN40-R			
Ezi-SERVO II-PE-ALL-60M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60M-B-PN50-M			
Ezi-SERVO II-PE-ALL-60M-A-PN50-R			
Ezi-SERVO II-PE-ALL-60M-B-PN50-R			

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-60L-A-PN3-M	Motor & Drive Integrated		1:3
Ezi-SERVO II-PE-ALL-60L-B-PN3-M			
Ezi-SERVO II-PE-ALL-60L-A-PN3-R			
Ezi-SERVO II-PE-ALL-60L-B-PN3-R			
Ezi-SERVO II-PE-ALL-60L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-60L-B-PN5-M			
Ezi-SERVO II-PE-ALL-60L-A-PN5-R			
Ezi-SERVO II-PE-ALL-60L-B-PN5-R			
Ezi-SERVO II-PE-ALL-60L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-60L-B-PN8-M			
Ezi-SERVO II-PE-ALL-60L-A-PN8-R			
Ezi-SERVO II-PE-ALL-60L-B-PN8-R			
Ezi-SERVO II-PE-ALL-60L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-60L-B-PN10-M			
Ezi-SERVO II-PE-ALL-60L-A-PN10-R			
Ezi-SERVO II-PE-ALL-60L-B-PN10-R			
Ezi-SERVO II-PE-ALL-60L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-60L-B-PN15-M			
Ezi-SERVO II-PE-ALL-60L-A-PN15-R			
Ezi-SERVO II-PE-ALL-60L-B-PN15-R			
Ezi-SERVO II-PE-ALL-60L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-60L-B-PN25-M			
Ezi-SERVO II-PE-ALL-60L-A-PN25-R			
Ezi-SERVO II-PE-ALL-60L-B-PN25-R			
Ezi-SERVO II-PE-ALL-60L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-60L-B-PN40-M			
Ezi-SERVO II-PE-ALL-60L-A-PN40-R			
Ezi-SERVO II-PE-ALL-60L-B-PN40-R			
Ezi-SERVO II-PE-ALL-60L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-60L-B-PN50-M			
Ezi-SERVO II-PE-ALL-60L-A-PN50-R			
Ezi-SERVO II-PE-ALL-60L-B-PN50-R			
Ezi-SERVO II-PE-ALL-86M-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-86M-B-PN3-M			
Ezi-SERVO II-PE-ALL-86M-A-PN3-R			
Ezi-SERVO II-PE-ALL-86M-B-PN3-R			
Ezi-SERVO II-PE-ALL-86M-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86M-B-PN5-M			
Ezi-SERVO II-PE-ALL-86M-A-PN5-R			
Ezi-SERVO II-PE-ALL-86M-B-PN5-R			
Ezi-SERVO II-PE-ALL-86M-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86M-B-PN8-M			
Ezi-SERVO II-PE-ALL-86M-A-PN8-R			
Ezi-SERVO II-PE-ALL-86M-B-PN8-R			
Ezi-SERVO II-PE-ALL-86M-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86M-B-PN10-M			
Ezi-SERVO II-PE-ALL-86M-A-PN10-R			
Ezi-SERVO II-PE-ALL-86M-B-PN10-R			
Ezi-SERVO II-PE-ALL-86M-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86M-B-PN15-M			
Ezi-SERVO II-PE-ALL-86M-A-PN15-R			
Ezi-SERVO II-PE-ALL-86M-B-PN15-R			
Ezi-SERVO II-PE-ALL-86M-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86M-B-PN25-M			
Ezi-SERVO II-PE-ALL-86M-A-PN25-R			
Ezi-SERVO II-PE-ALL-86M-B-PN25-R			
Ezi-SERVO II-PE-ALL-86M-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86M-B-PN40-M			
Ezi-SERVO II-PE-ALL-86M-A-PN40-R			
Ezi-SERVO II-PE-ALL-86M-B-PN40-R			
Ezi-SERVO II-PE-ALL-86M-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86M-B-PN50-M			
Ezi-SERVO II-PE-ALL-86M-A-PN50-R			
Ezi-SERVO II-PE-ALL-86M-B-PN50-R			

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-PE-ALL-86L-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-86L-B-PN3-M			
Ezi-SERVO II-PE-ALL-86L-A-PN3-R			
Ezi-SERVO II-PE-ALL-86L-B-PN3-R			
Ezi-SERVO II-PE-ALL-86L-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86L-B-PN5-M			
Ezi-SERVO II-PE-ALL-86L-A-PN5-R			
Ezi-SERVO II-PE-ALL-86L-B-PN5-R			
Ezi-SERVO II-PE-ALL-86L-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86L-B-PN8-M			
Ezi-SERVO II-PE-ALL-86L-A-PN8-R			
Ezi-SERVO II-PE-ALL-86L-B-PN8-R			
Ezi-SERVO II-PE-ALL-86L-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86L-B-PN10-M			
Ezi-SERVO II-PE-ALL-86L-A-PN10-R			
Ezi-SERVO II-PE-ALL-86L-B-PN10-R			
Ezi-SERVO II-PE-ALL-86L-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86L-B-PN15-M			
Ezi-SERVO II-PE-ALL-86L-A-PN15-R			
Ezi-SERVO II-PE-ALL-86L-B-PN15-R			
Ezi-SERVO II-PE-ALL-86L-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86L-B-PN25-M			
Ezi-SERVO II-PE-ALL-86L-A-PN25-R			
Ezi-SERVO II-PE-ALL-86L-B-PN25-R			
Ezi-SERVO II-PE-ALL-86L-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86L-B-PN40-M			
Ezi-SERVO II-PE-ALL-86L-A-PN40-R			
Ezi-SERVO II-PE-ALL-86L-B-PN40-R			
Ezi-SERVO II-PE-ALL-86L-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86L-B-PN50-M			
Ezi-SERVO II-PE-ALL-86L-A-PN50-R			
Ezi-SERVO II-PE-ALL-86L-B-PN50-R	Motor & Drive Integrated		
Ezi-SERVO II-PE-ALL-86XL-A-PN3-M			1:3
Ezi-SERVO II-PE-ALL-86XL-B-PN3-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN3-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN3-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN5-M			1:5
Ezi-SERVO II-PE-ALL-86XL-B-PN5-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN5-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN5-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN8-M			1:8
Ezi-SERVO II-PE-ALL-86XL-B-PN8-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN8-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN8-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN10-M			1:10
Ezi-SERVO II-PE-ALL-86XL-B-PN10-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN10-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN10-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN15-M			1:15
Ezi-SERVO II-PE-ALL-86XL-B-PN15-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN15-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN15-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN25-M			1:25
Ezi-SERVO II-PE-ALL-86XL-B-PN25-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN25-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN25-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN40-M			1:40
Ezi-SERVO II-PE-ALL-86XL-B-PN40-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN40-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN40-R			
Ezi-SERVO II-PE-ALL-86XL-A-PN50-M			1:50
Ezi-SERVO II-PE-ALL-86XL-B-PN50-M			
Ezi-SERVO II-PE-ALL-86XL-A-PN50-R			
Ezi-SERVO II-PE-ALL-86XL-B-PN50-R			

Specifications of Drive

Model		Ezi-SERVO II-PE-ALL -42 series	Ezi-SERVO II-PE-ALL -56 series	Ezi-SERVO II-PE-ALL -60 series	Ezi-SERVO II-PE-ALL -86 series
Input Voltage		DC24V±10%			DC48V±10%
Control Method		Closed-loop control with 32 bit MCU			
Current Consumption		Max. 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000r/min *1			0~2,000r/min *1
	Resolution	Encoder Resolution [P/R] / Configurable Resolution [P/R] 10,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)			
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error			
	In-Position Selection	0~63 (Set by parameter)			
	Position Gain Selection	0~63 (Set by parameter)			
	Rotational Direction	CW/CCW (Set by parameter)			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)			
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler Output), 1 Brake output			
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded			
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min			
Return to Origin		Origin Sensor, Z phase, ±Limit sensor, Torque			
GUI		User Interface Program within Windows			
Library		Motion Library (API) for windows 7/8/10			

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

*2 : Up to the resolution of 10,000P/R, maximum speed can be reached by 2,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

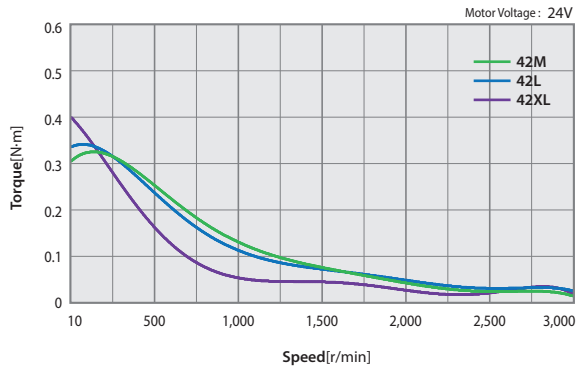
Specifications of Motor

MODEL			UNIT	Ezi-SERVOII-PE-ALL-42 series			Ezi-SERVOII-PE -ALL-56 series		
				42M	42L	42XL	56S	56M	56L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	1.2	1.2	1.2	3.0	3.0	3.0
MAXIMUM HOLDING TORQUE			N·m	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA			g·cm^2	54	77	114	180	280	520
WEIGHTS			kg	0.440	0.520	0.660	0.760	0.920	1.360
LENGTH(L)			mm	40	48	60	46	55	80
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	22	52	52	52
		8mm		26	26	26	65	65	65
		13mm		33	33	33	85	85	85
		18mm		46	46	46	123	123	123
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

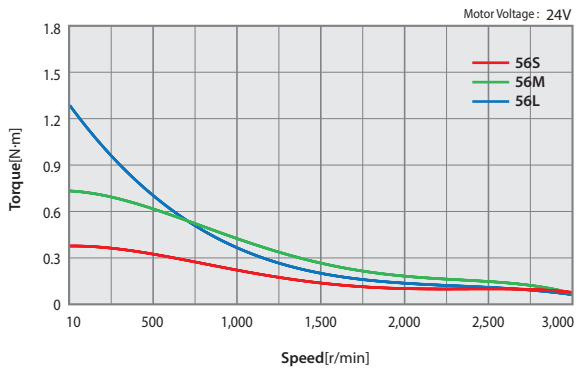
MODEL			UNIT	Ezi-SERVOII-PE-ALL-60 series			Ezi-SERVOII-PE-ALL-86 series		
				60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	240	490	690	1800	3600	5400
WEIGHTS			kg	0.840	0.980	1.540	2.682	4.226	5.756
LENGTH(L)			mm	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	70	70	70	270	270	270
		8mm		87	87	87	300	300	300
		13mm		114	114	114	350	350	350
		18mm		165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

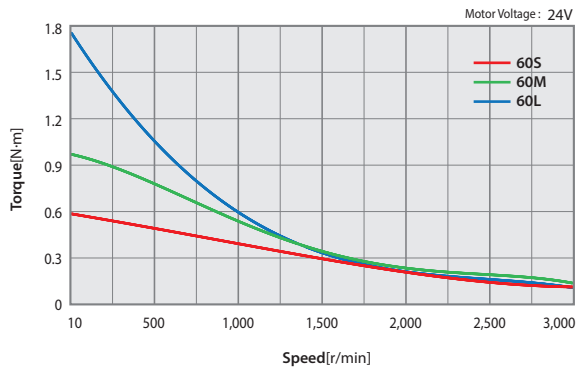
Ezi-SERVO II-PE-ALL-42 series



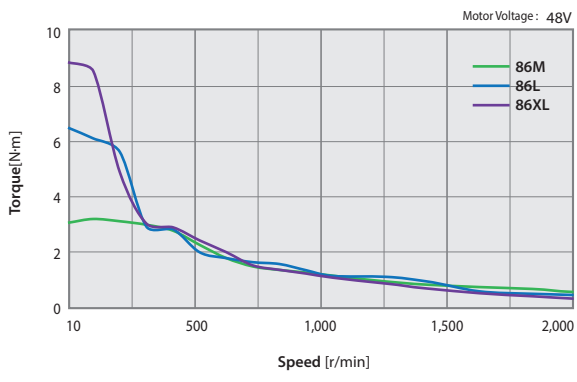
Ezi-SERVO II-PE-ALL-56 series



Ezi-SERVO II-PE-ALL-60 series

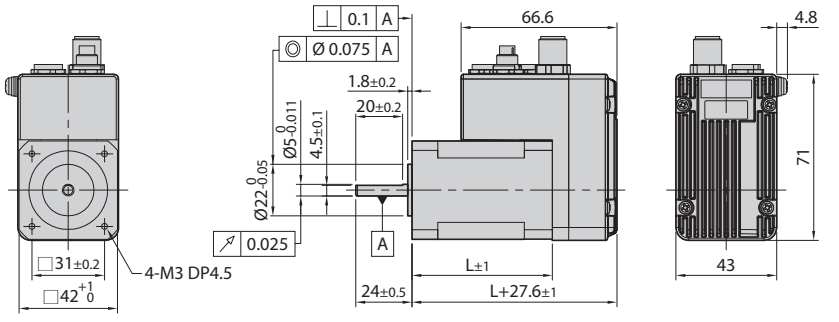


Ezi-SERVO II-PE-ALL-86 series



Dimensions of Motor [mm]

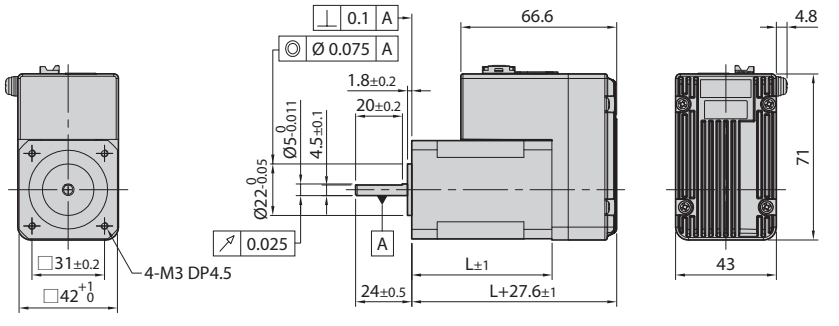
◆ M Type



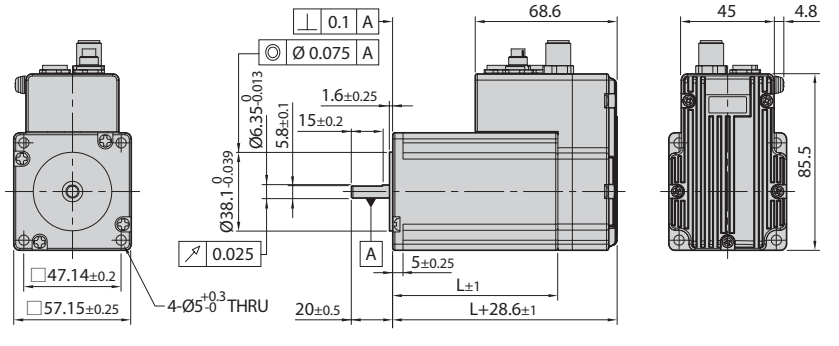
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

◆ R Type



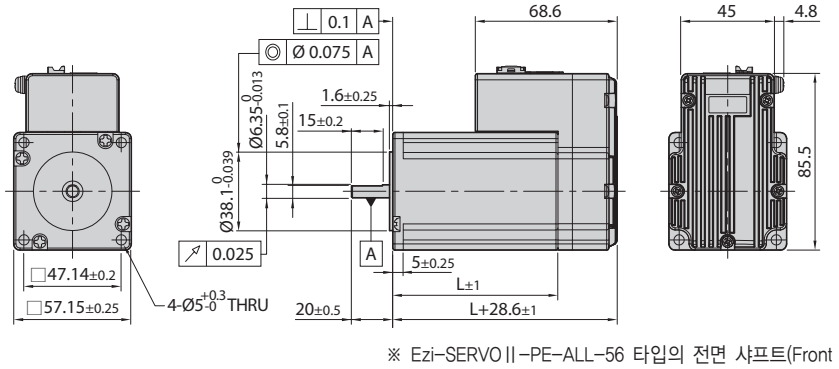
◆ M Type



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

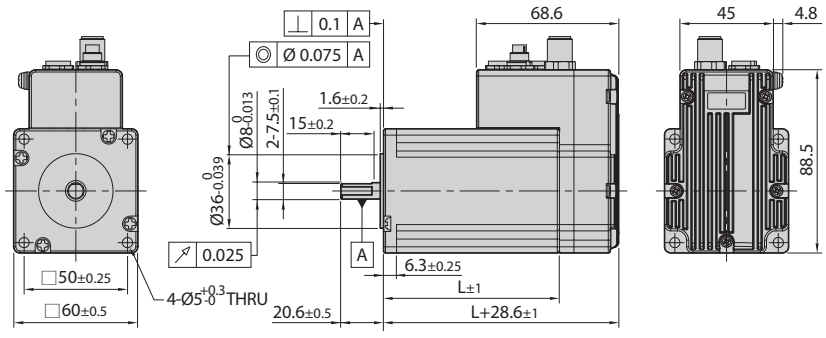
◆ R Type



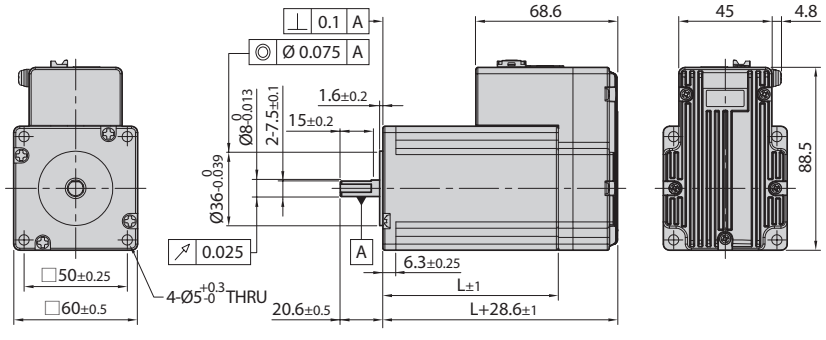
※ Ezi-SERVO II-PE-ALL-56 타입의 전면 샤프트(Front Shaft) 직경은 Ø6.35와 Ø8.0 두 종류입니다

● Dimensions of Motor [mm]

◆ M Type



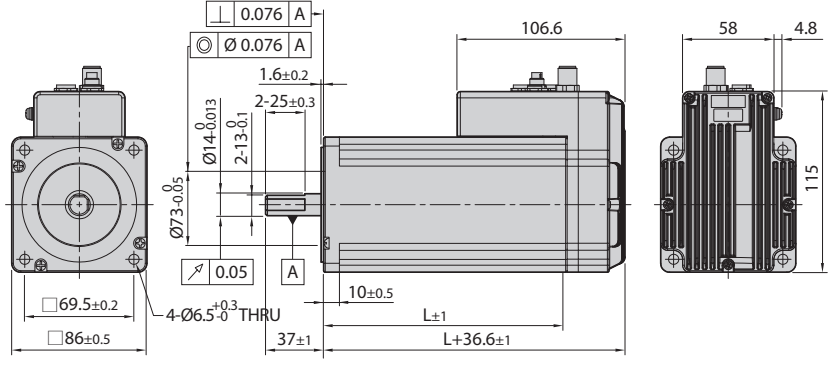
◆ R Type



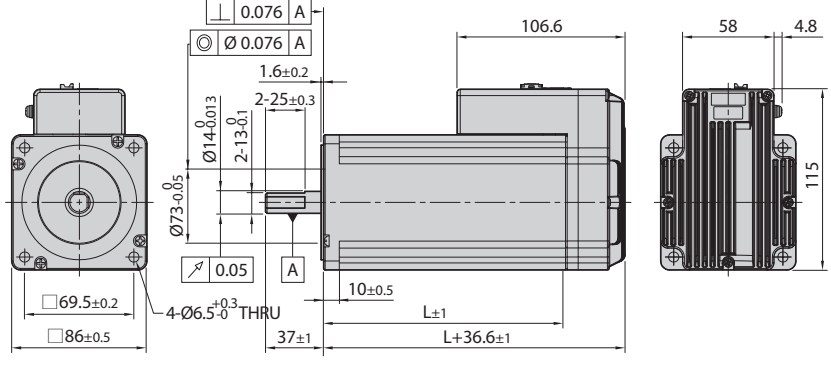
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

◆ M Type



◆ R Type

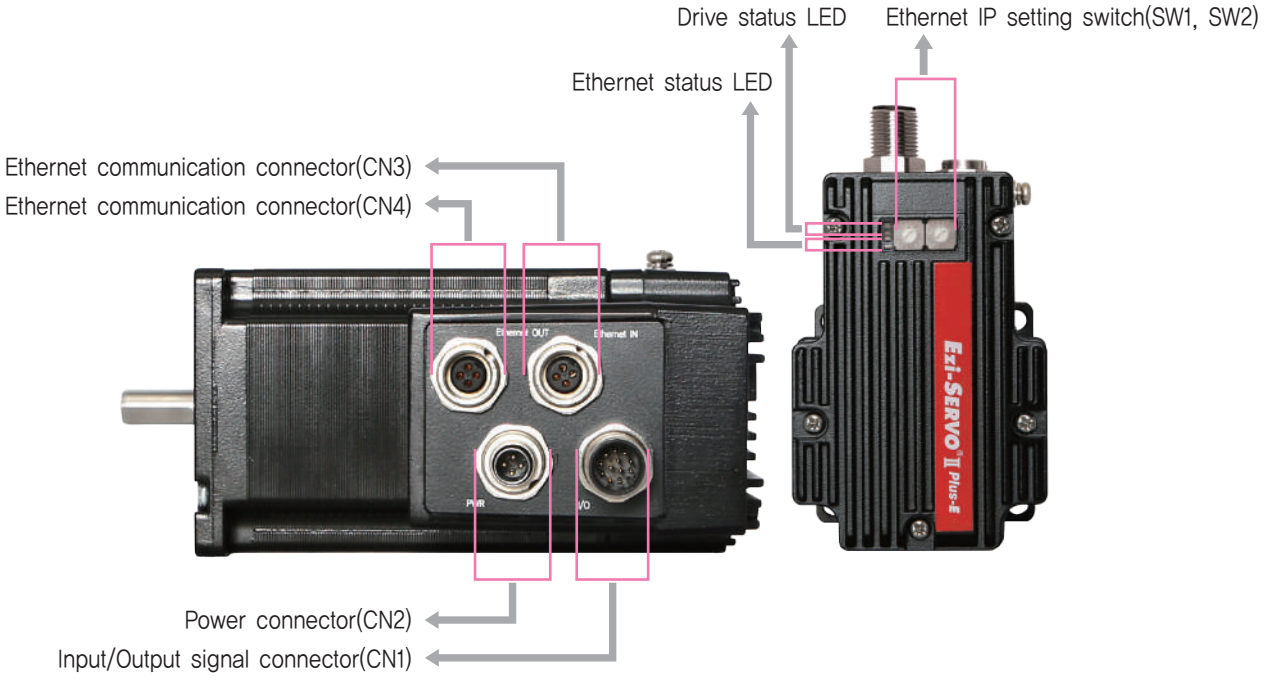


86mm

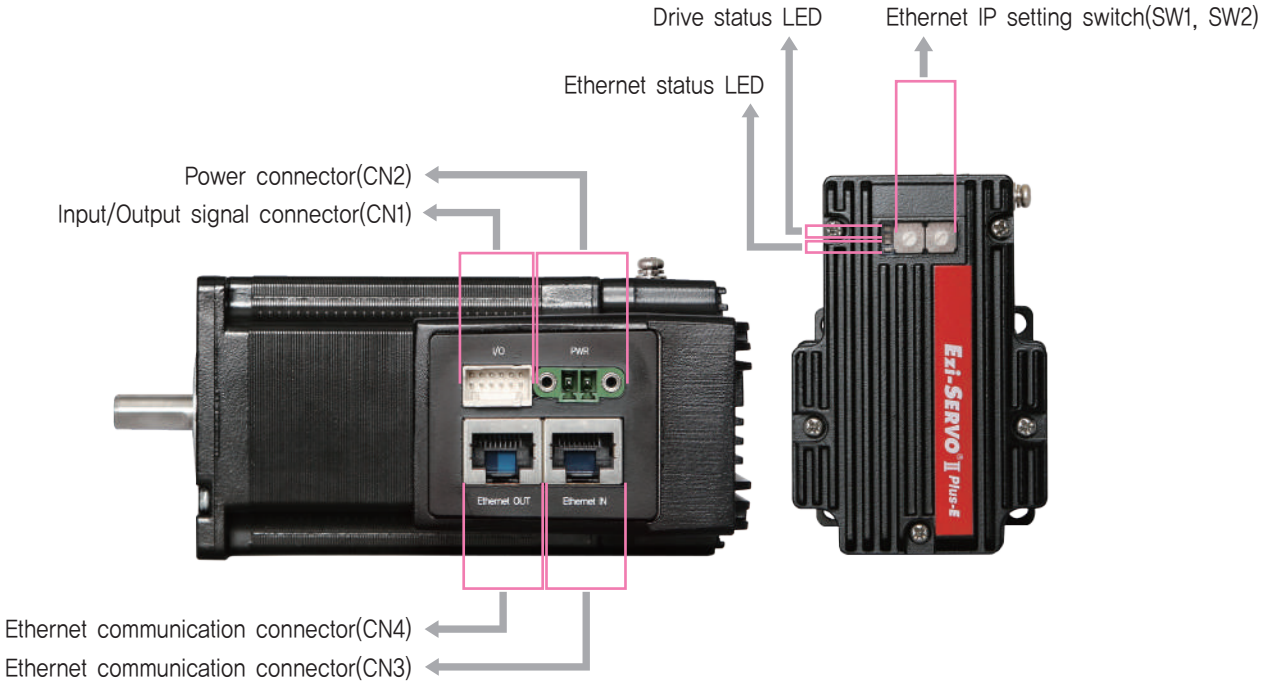
Model name	Length(L)
86M	78
86L	117
86XL	155

● Settings and Operation

◆ M Type

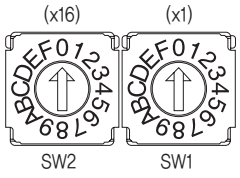


◆ R Type



1. Ethernet IP Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)

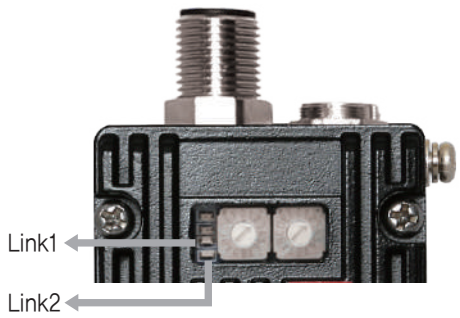


e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Ethernet Status LED

LED indicates communication status of Ethernet.

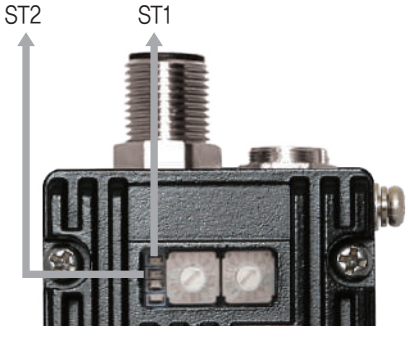
Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link not Established
		ON	Link Established



3. Drive Status LED

LED informs operation status of the drive.

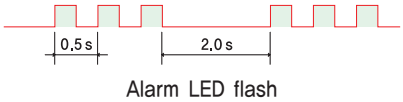
LED Indication	LED Status	Description
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF.	Servo On
ST1 : ▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF.	Servo Off
ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 and ST2 are ON.	A position error is greater than the set value (Inposition Value) while the motor is stopped.
ST1 : ● ● ● ● ● ● ST2 : ● ● ● ● ● ●	ST1 and ST2 blink alternately.	A position error is greater than the set value (Inposition Value) while the motor is stopped.
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error	Error



◆ List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	Over Speed Error	The motor speed exceeds 3,000r/min *2
3	Position Tracking Error	Position error value is greater than the reference value while the motor is running *3
4	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *4
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	ROM Error	Error occurs in parameter storage device(ROM)
14	Input Voltage Error	Input voltage exceeds the limit value *5
15	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *3

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The speed limit of Ezi-SERVOII-PE-ALL 86 model is 2,000r/min.
*3 : The default setting value is 180˚, and it can be changed by parameter. (Refer to the Manual)
*4 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*5 : Applied model : Ezi-SERVOII-PE-ALL-86, limit value = DC53V
※ Please refer to user Manual for the details of protection functions.

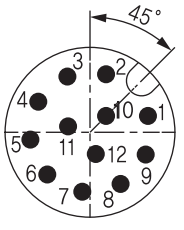


Alarm LED flash
(e.g., Position tracking error)

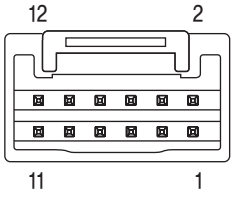
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE–	Output
5	LIMIT+	Input
6	LIMIT–	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output

◆ M Type



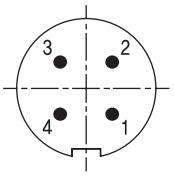
◆ R Type



5. Power Connector(CN2)

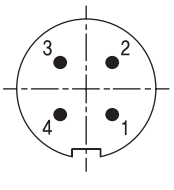
◆ M Type

No.	Function	I/O
1	DC24V	Input
2	DC24V	Input
3	GND	Input
4	GND	Input



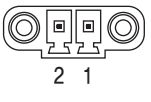
◆ M Type(86mm)

No.	Function	I/O
1	DC48V	Input
2	DC48V	Input
3	GND	Input
4	GND	Input



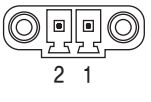
◆ R Type

No.	Function	I/O
1	DC24V	Input
2	GND	Input



◆ R Type(86mm)

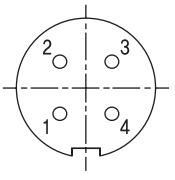
No.	Function	I/O
1	DC48V	Input
2	GND	Input



6. EtherCAT Communication Connector(CN3, CN4)

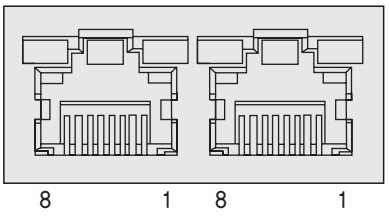
◆ M Type

No.	Function
1	TD+
2	TD–
3	RD+
4	RD–
Connector hood	F.GND

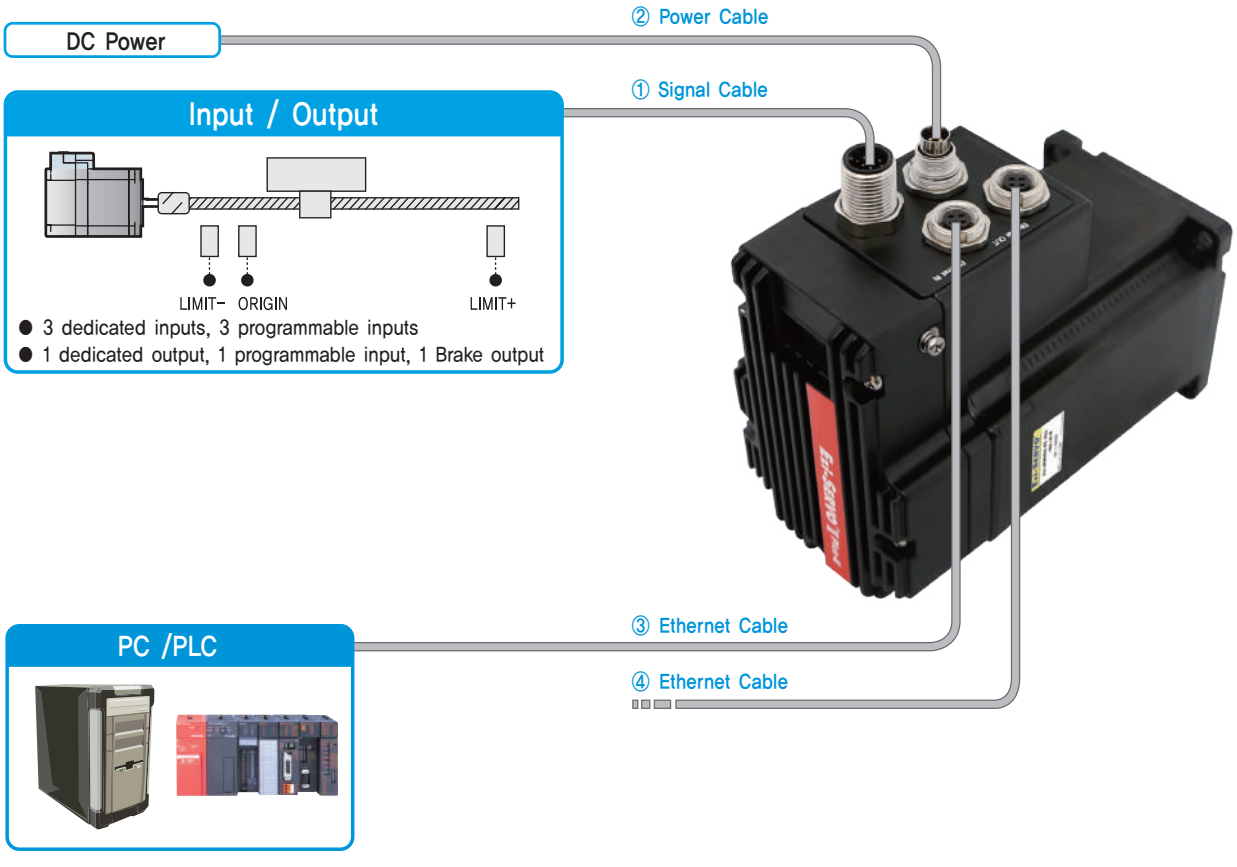


◆ R Type

No.	Function	No.	Function
1	TD+	6	RD–
2	TD–	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		



● System Configuration [M Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③/④ Ethernet Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Connector	99 0492 52 12	BINDER
Power (CN2)	Connector	99 0410 75 04	BINDER
Ethernet (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E ALL [M Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSEM-S-001F	1	Normal Cable	Maximum Length: 20m
	CSEM-S-002F	2		
	CSEM-S-003F	3		
	CSEM-S-005F	5		
	CSEM-S-001M	1	Robot Cable	
	CSEM-S-002M	2		
	CSEM-S-003M	3		
	CSEM-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E ALL [M Type] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CWPA-P-001F	1	Normal Cable	Maximum Length: 2m
	CWPA-P-002F	2		
	CWPA-P-001M	1	Robot Cable	
	CWPA-P-002M	2		

③ Ethernet Cable (M Type Connector – RJ45)

These are the cables to connect Ezi-SERVO II Plus-E ALL M Type and Ethernet Master, Ezi-SERVO II Plus-E, Ezi-SERVO II Plus-E ALL R Type with Ethernet network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CGNM-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNM-EC-002F	2		
	CGNM-EC-003F	3		
	CGNM-EC-005F	5		
	CGNM-EC-001M	1	Robot Cable	
	CGNM-EC-002M	2		
	CGNM-EC-003M	3		
	CGNM-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

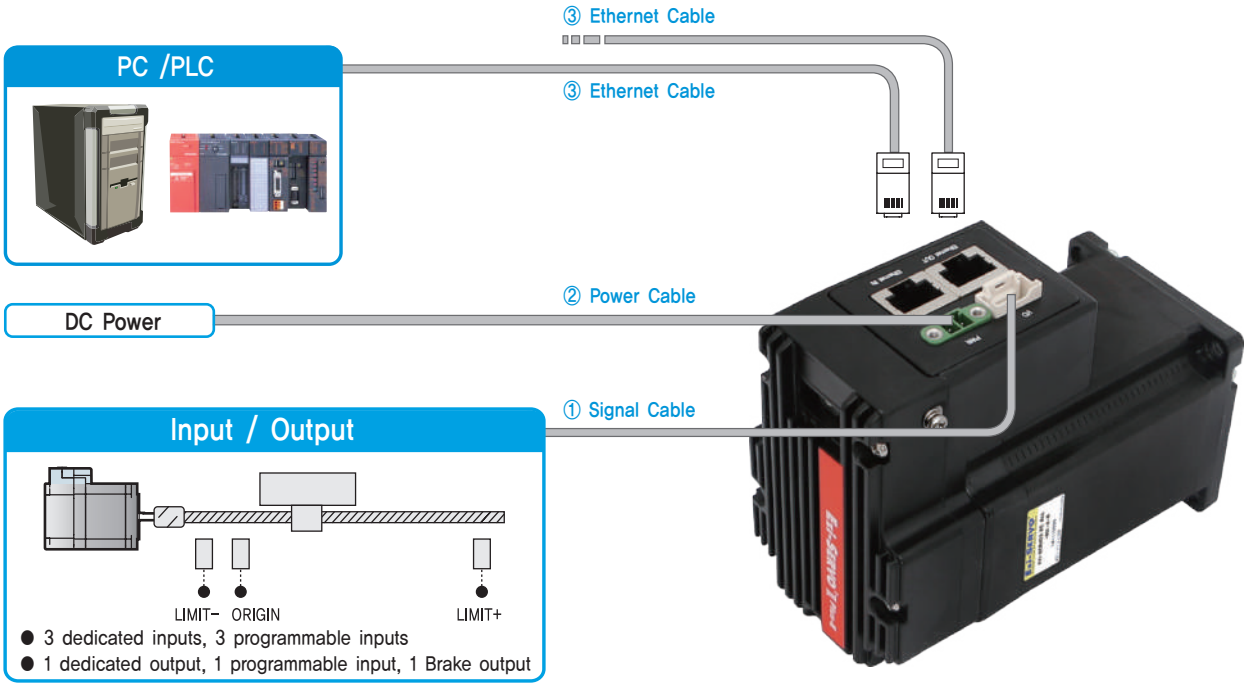
④ Ethernet Cable (M Type Connector – M Type Connector)

These are the cables to connect between Ezi-SERVO II Plus-E ALL M Type products with Ethernet network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CWMD-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CWMD-EC-002F	2		
	CWMD-EC-003F	3		
	CWMD-EC-005F	5		
	CWMD-EC-001M	1	Robot Cable	
	CWMD-EC-002M	2		
	CWMD-EC-003M	3		
	CWMD-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● System Configuration [R Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③ EtherCAT Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Housing	501646-1200	MOLEX
	Terminal	501648-1000 (AWG 26~28)	
Power (CN2)	Terminal Block	AKZ1550/2F-3.81	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II Plus-E ALL [R Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSER-S-001F	1	Normal Cable	Maximum Length: 20m
	CSER-S-002F	2		
	CSER-S-003F	3		
	CSER-S-005F	5		
	CSER-S-001M	1	Robot Cable	
	CSER-S-002M	2		
	CSER-S-003M	3		
	CSER-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Drive Power Cable

These are the cables to connect Ezi-SERVO II Plus-E ALL [R Type] drive and the power.

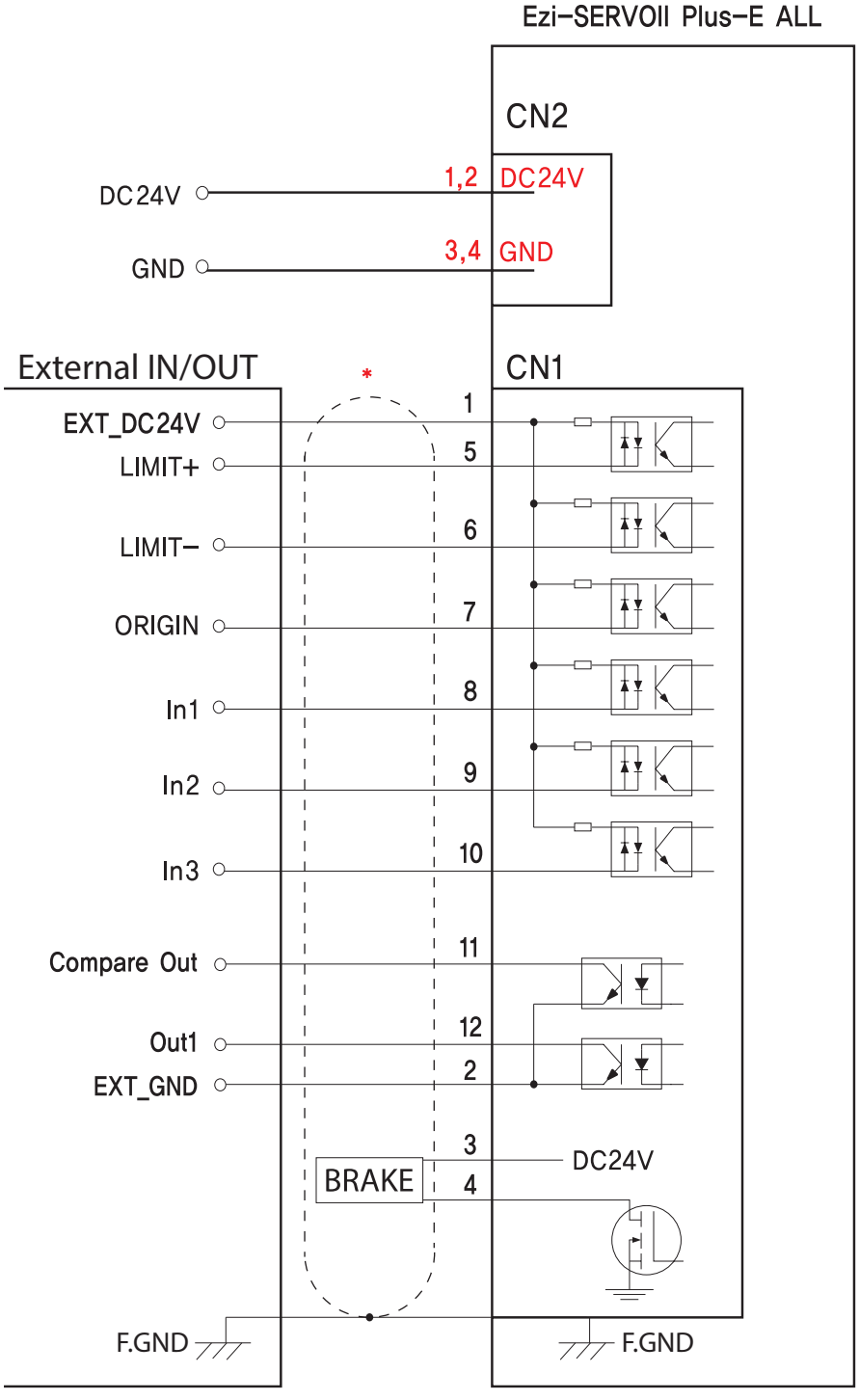
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVA-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVA-P-002F	2		
	CSVA-P-001M	1	Robot Cable	
	CSVA-P-002M	2		
R Type 86mm products Drive – Power Connection	CSPA-P-001F	1	Normal Cable	
	CSPA-P-002F	2		
	CSPA-P-001M	1	Robot Cable	
	CSPA-P-002M	2		

③ Ethernet Cable

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CGNR-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNR-EC-002F	2		
	CGNR-EC-003F	3		
	CGNR-EC-005F	5		
	CGNR-EC-001M	1	Robot Cable	
	CGNR-EC-002M	2		
	CGNR-EC-003M	3		
	CGNR-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● External Wiring Diagram [M Type]



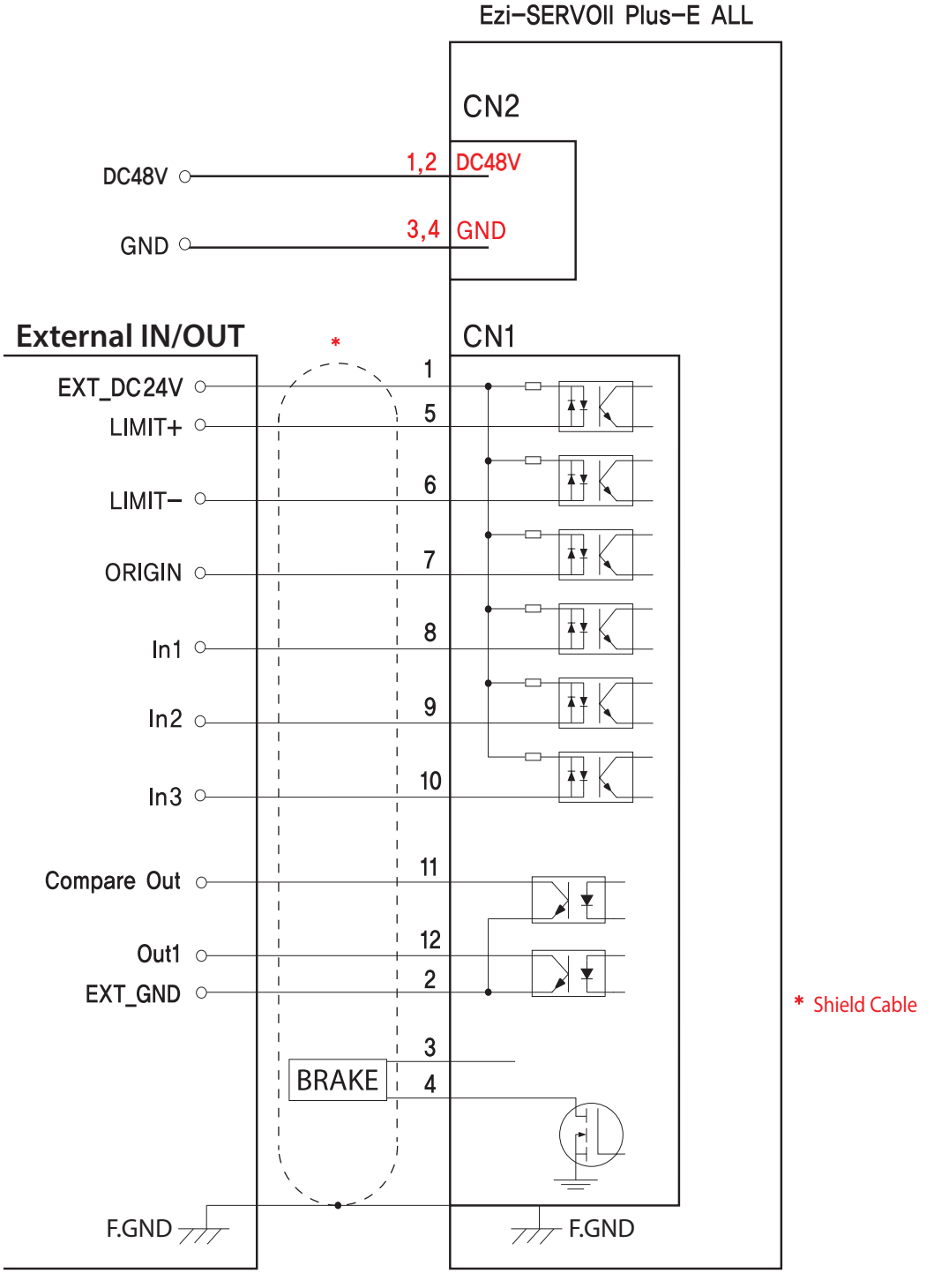
* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [M Type 86mm]



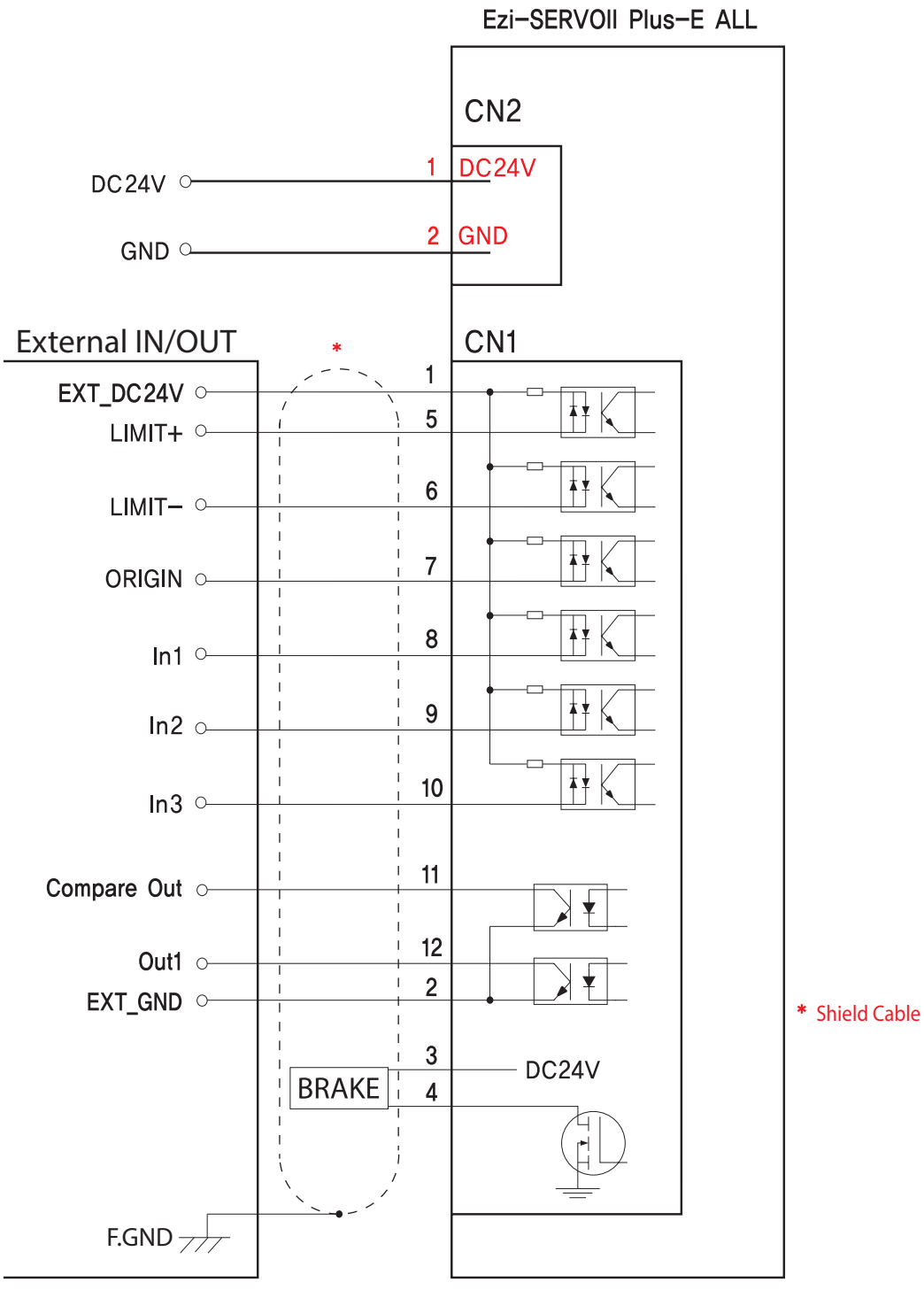
* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

External Wiring Diagram [R Type]



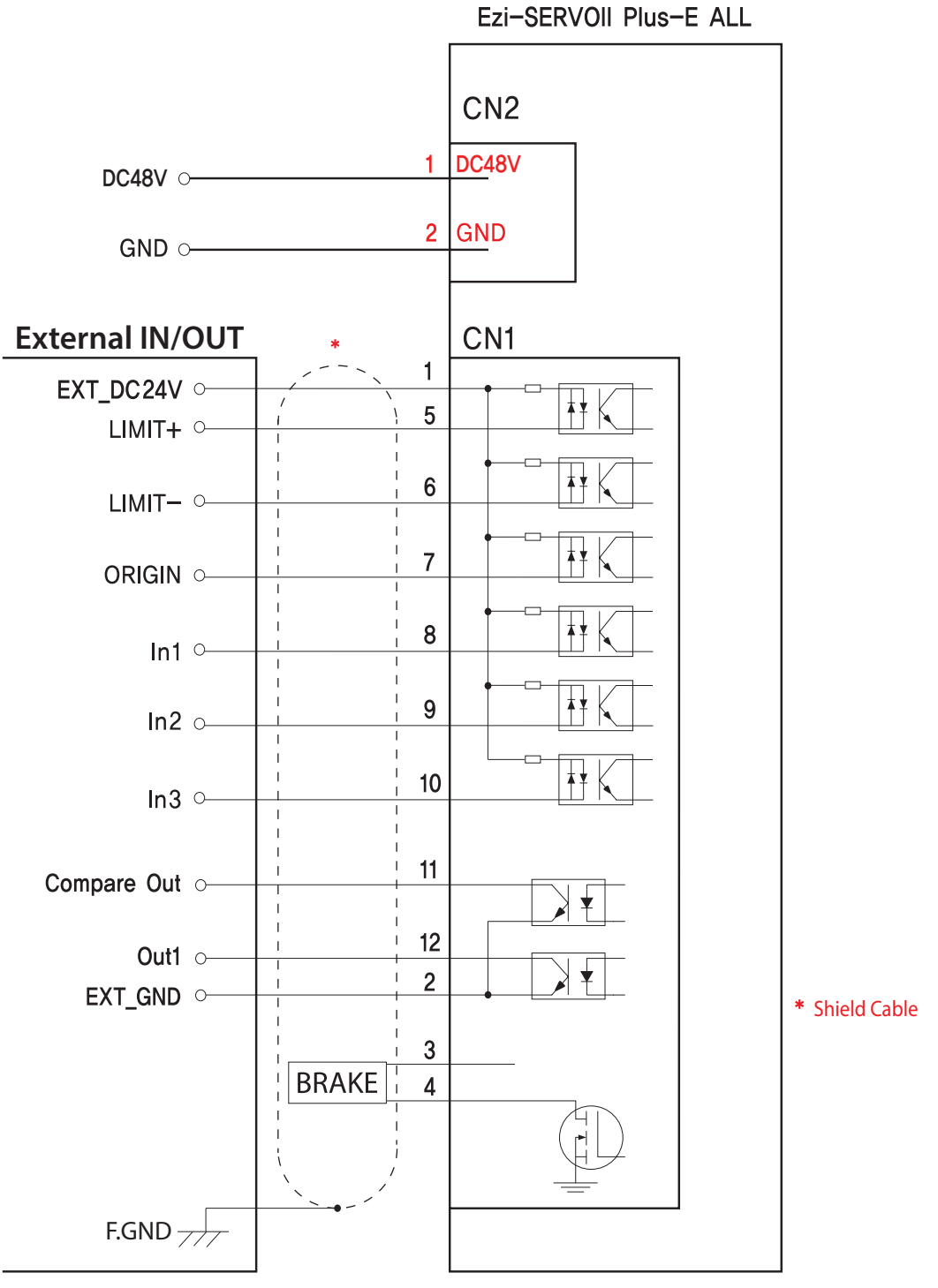
* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [R Type 86mm]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

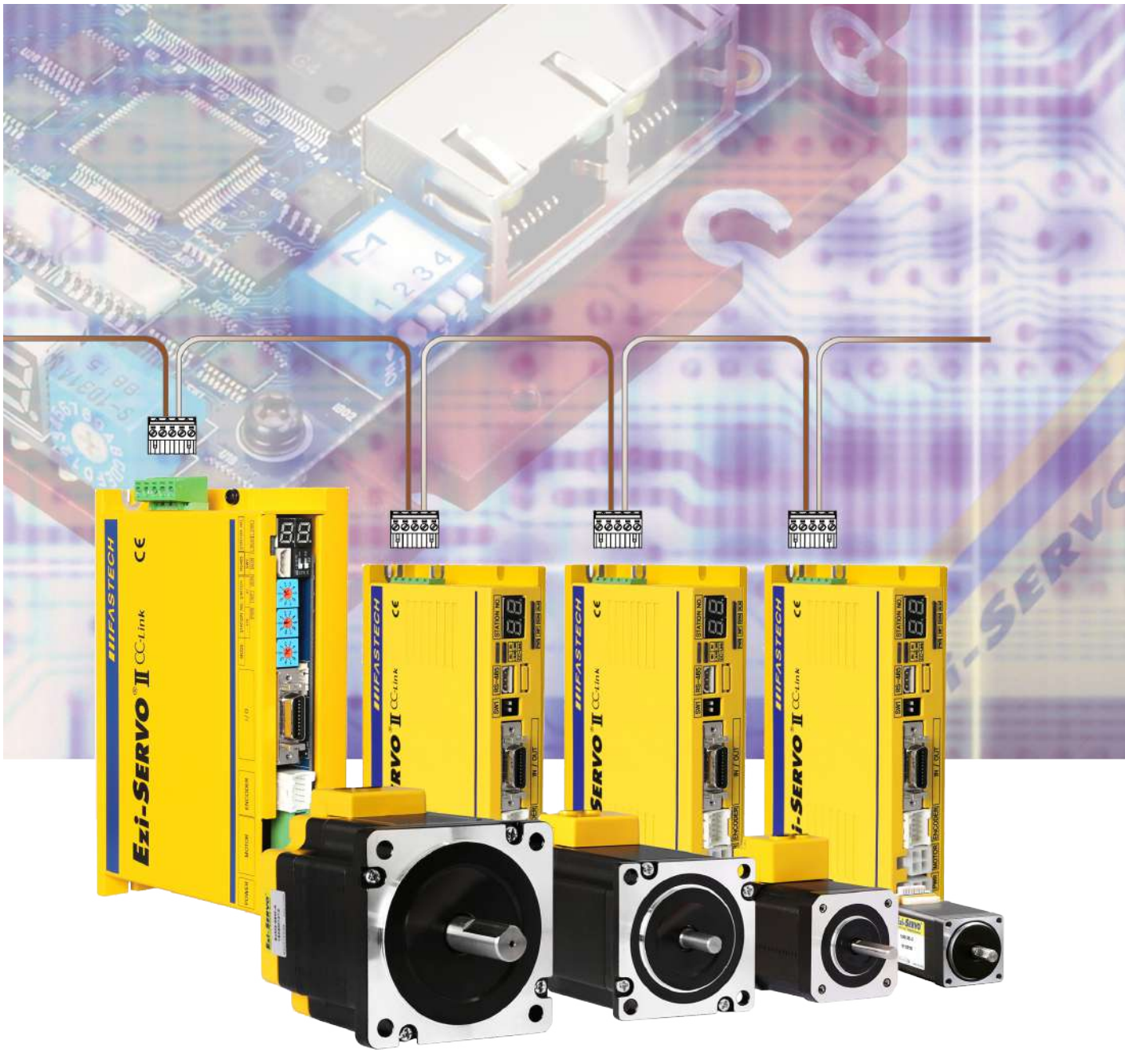
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO® II CC-Link
FASTECH
Ezi-SERVO
EzS2-CL-42XL-A
MOTOR
ENCODER
SW1
RS-485
STATION NO.
PWR
INP
SON
ALM

Ezi-SERVO® II CC-Link

Closed Loop Stepping System

- Embedded Motion Controller
- Position Table
- Closed-Loop Stepping System
- Tuning Not Required / No Hunting
- Low Heat Generation / High Torque



FASTECH

Fast, Accurate, Smooth Motion

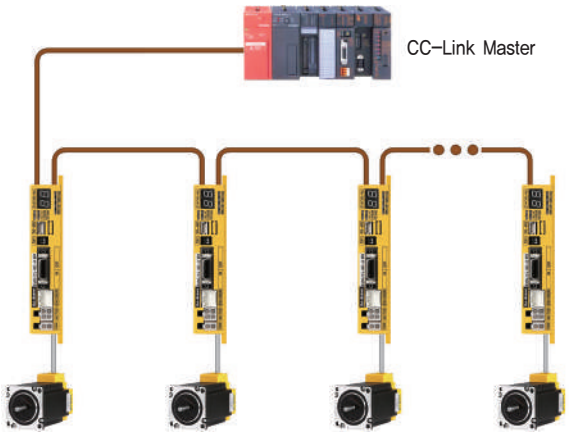
Ezi-SERVO® II CC-Link

Closed Loop Stepping System



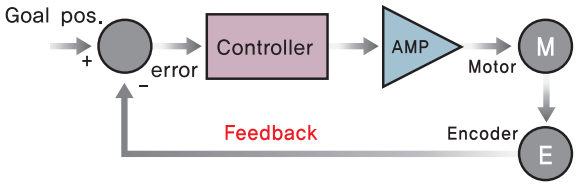
1 CC-Link Based Motion Control

Ezi-SERVO II CC-Link is a stepping motor control system that supports CC-Link, an open field network based on RS-485.
Ezi-SERVO II CC-Link is a remote device station connected to the CC-Link system. It performs various controls and processes motion and monitoring functions with device commands.



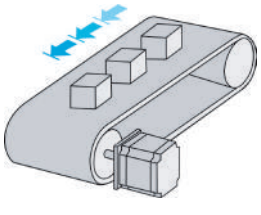
2 Closed-Loop System

Ezi-SERVO II is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO II to update the current position every 50μs. It allows the Ezi-SERVO II drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 Tuning Not Required

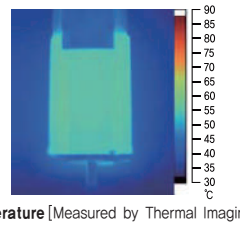
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO II employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO II is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



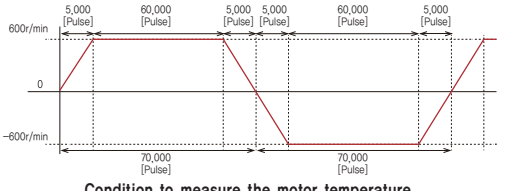
4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

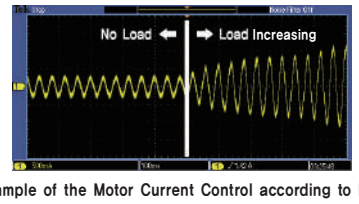
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

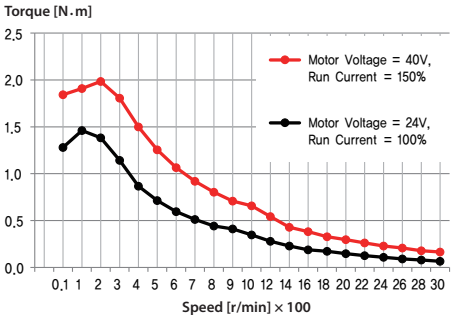


Example of the Motor Current Control according to load

5 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

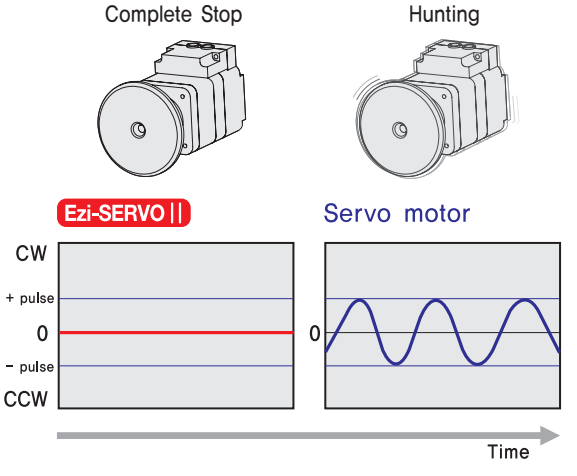


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-CL-56L
Motor Voltage = DC40V
Input Voltage = DC24V

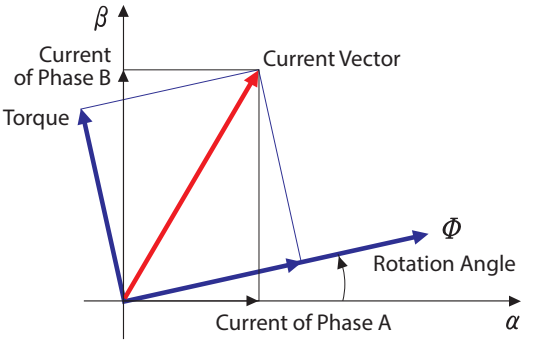
6 No Hunting

Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



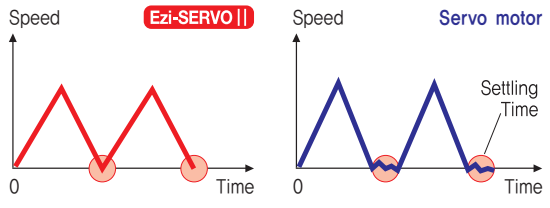
7 Smooth and Accurate Operation

Ezi-SERVO II is a high-precision servo drive, using a high-resolution encoder with 20,000 pulses/revolution. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



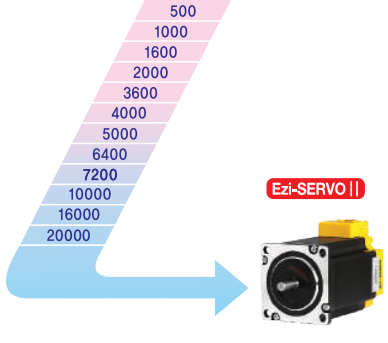
8 High Response

Similar to conventional stepping motors, Ezi-SERVO II instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO II is the optimum choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



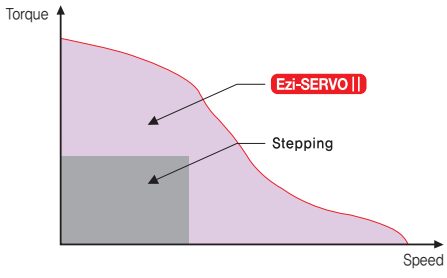
9 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



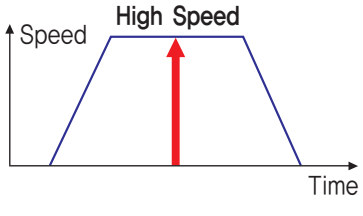
10 High Torque / Continuous Operation

Compared with common stepping motors and drives, Ezi-SERVO II motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO II continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO II exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



11 High Speed

The Ezi-SERVO II operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO II's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



● Advantages over Open-Loop Stepping Systems

1. Reliable positioning without loss of synchronism.
2. Holding stable position and automatically recovering to the original position even after experiencing positioning error due to external forces, such as mechanical vibration or vertical positional holding.
3. Ezi-SERVO II utilizes 100% of the full range of rated motor torque, contrary to a conventional open-loop stepping drive that can use up to 50% of the rated motor torque due to the loss of synchronism.
4. Capability to operate at high speed due to load-dependent current control, open-loop stepping drives use a constant current control at all speed ranges without considering load variations.

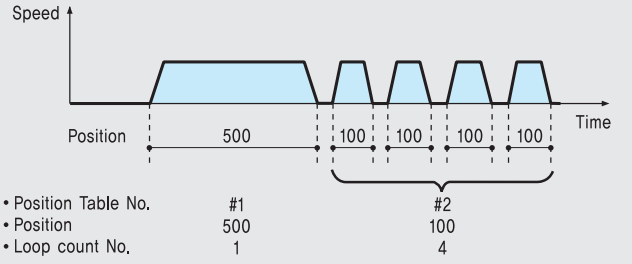
● Advantages over Servo Motor Controller

1. No gain tuning. (Automatic gain adjustment in response to a load change)
2. Maintains the stable holding position without oscillation after completion of positioning.
3. Fast positioning due to the independent control by on-board MCU.
4. Continuous operation during rapid short-stroke movement due to instantaneous positioning.

● Motion Controller Features of Ezi-SERVO II

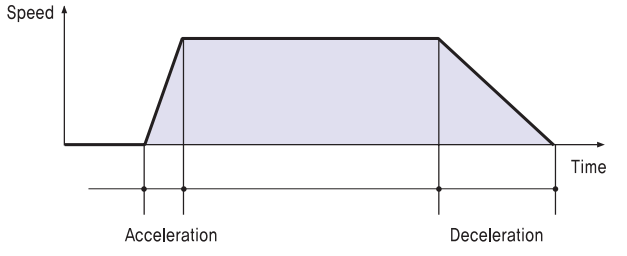
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



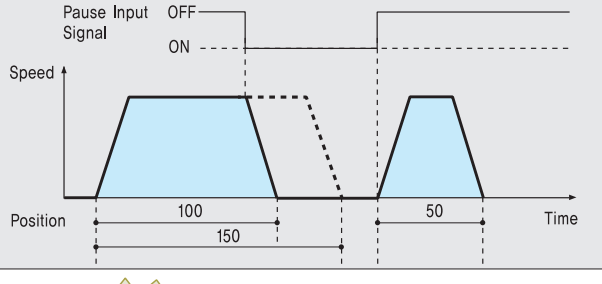
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



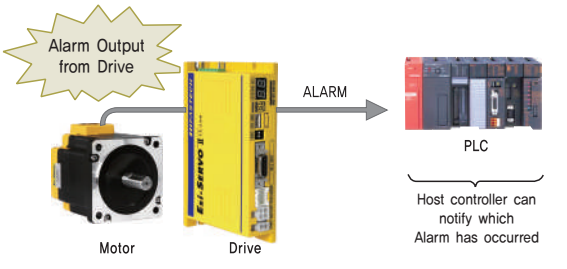
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



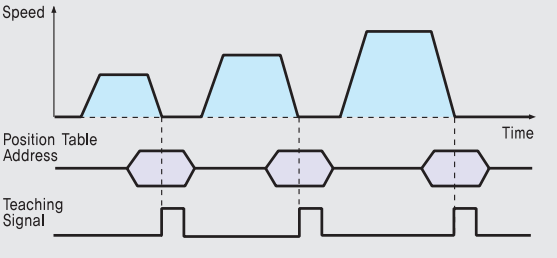
4. Alarm

The number of LED flashing time and information on the 7-Segment LED display indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

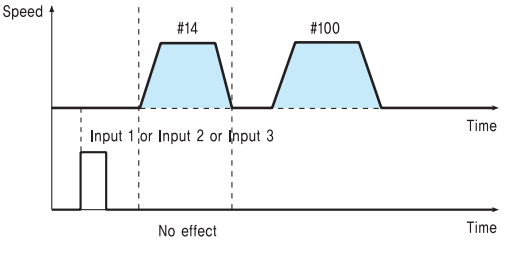


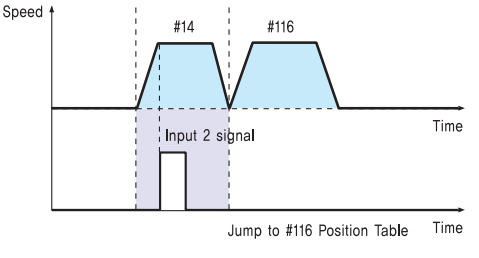
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





● Ezi-SERVO II CC-Link Part Numbering

Ezi-SERVO II -CL-56L-A-BK-PN5

Series Name

Type Name

CL : CC-Link

Motor Flange Size

20 : 20mm
28 : 28mm
35 : 35mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Encoder Resolution

A : 10,000P/R
B : 20,000P/R
D : 16,000P/R
F : 4,000P/R

Brake

Blank : Without Brake
BK : Brake

Gear Ratio

Blank : Without Gear
PN3 : 1:3
PN5 : 1:5
PN8 : 1:8
PN10 : 1:10
PN15 : 1:15
PN25 : 1:25
PN40 : 1:40
PN50 : 1:50

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-CL-20M-F	EzM2-20M-F	EzS2-CL-20M-F
Ezi-SERVO II-CL-20L-F	EzM2-20L-F	EzS2-CL-20L-F
Ezi-SERVO II-CL-28S-D	EzM2-28S-D	EzS2-CL-28S-D
Ezi-SERVO II-CL-28SM-D	EzM2-28SM-D	EzS2-CL-28S-D
Ezi-SERVO II-CL-28M-D	EzM2-28M-D	EzS2-CL-28M-D
Ezi-SERVO II-CL-28MM-D	EzM2-28MM-D	EzS2-CL-28M-D
Ezi-SERVO II-CL-28L-D	EzM2-28L-D	EzS2-CL-28L-D
Ezi-SERVO II-CL-28LM-D	EzM2-28LM-D	EzS2-CL-28L-D
Ezi-SERVO II-CL-35M-D	EzM2-35M-D	EzS2-CL-35M-D
Ezi-SERVO II-CL-35MM-D	EzM2-35MM-D	EzS2-CL-35M-D
Ezi-SERVO II-CL-35L-D	EzM2-35L-D	EzS2-CL-35L-D
Ezi-SERVO II-CL-35LM-D	EzM2-35LM-D	EzS2-CL-35L-D
Ezi-SERVO II-CL-42S-A	EzM2-42S-A	EzS2-CL-42S-A
Ezi-SERVO II-CL-42S-B	EzM2-42S-B	EzS2-CL-42S-B
Ezi-SERVO II-CL-42M-A	EzM2-42M-A	EzS2-CL-42M-A
Ezi-SERVO II-CL-42M-B	EzM2-42M-B	EzS2-CL-42M-B
Ezi-SERVO II-CL-42L-A	EzM2-42L-A	EzS2-CL-42L-A
Ezi-SERVO II-CL-42L-B	EzM2-42L-B	EzS2-CL-42L-B
Ezi-SERVO II-CL-42XL-A	EzM2-42XL-A	EzS2-CL-42XL-A
Ezi-SERVO II-CL-42XL-B	EzM2-42XL-B	EzS2-CL-42XL-B
Ezi-SERVO II-CL-56S-A	EzM2-56S-A	EzS2-CL-56S-A
Ezi-SERVO II-CL-56S-B	EzM2-56S-B	EzS2-CL-56S-B
Ezi-SERVO II-CL-56M-A	EzM2-56M-A	EzS2-CL-56M-A
Ezi-SERVO II-CL-56M-B	EzM2-56M-B	EzS2-CL-56M-B
Ezi-SERVO II-CL-56L-A	EzM2-56L-A	EzS2-CL-56L-A
Ezi-SERVO II-CL-56L-B	EzM2-56L-B	EzS2-CL-56L-B
Ezi-SERVO II-CL-60S-A	EzM2-60S-A	EzS2-CL-60S-A
Ezi-SERVO II-CL-60S-B	EzM2-60S-B	EzS2-CL-60S-B
Ezi-SERVO II-CL-60M-A	EzM2-60M-A	EzS2-CL-60M-A
Ezi-SERVO II-CL-60M-B	EzM2-60M-B	EzS2-CL-60M-B
Ezi-SERVO II-CL-60L-A	EzM2-60L-A	EzS2-CL-60L-A
Ezi-SERVO II-CL-60L-B	EzM2-60L-B	EzS2-CL-60L-B
Ezi-SERVO II-CL-86M-A	EzM2-86M-A	EzS2-CL-86M-A
Ezi-SERVO II-CL-86M-B	EzM2-86M-B	EzS2-CL-86M-B
Ezi-SERVO II-CL-86L-A	EzM2-86L-A	EzS2-CL-86L-A
Ezi-SERVO II-CL-86L-B	EzM2-86L-B	EzS2-CL-86L-B
Ezi-SERVO II-CL-86XL-A	EzM2-86XL-A	EzS2-CL-86XL-A
Ezi-SERVO II-CL-86XL-B	EzM2-86XL-B	EzS2-CL-86XL-B

* When places an order for Stopper type 28mm, 35mm motor, please write "M" additionally after motor length of unit product number.
(e.g., Ezi-SERVO II-CL-28LM-D, Ezi-SERVO II-CL-35LM-D)

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II-CL-42S-A-BK	EzM2-42S-A-BK	EzS2-CL-42S-A
Ezi-SERVO II-CL-42S-B-BK	EzM2-42S-B-BK	EzS2-CL-42S-B
Ezi-SERVO II-CL-42M-A-BK	EzM2-42M-A-BK	EzS2-CL-42M-A
Ezi-SERVO II-CL-42M-B-BK	EzM2-42M-B-BK	EzS2-CL-42M-B
Ezi-SERVO II-CL-42L-A-BK	EzM2-42L-A-BK	EzS2-CL-42L-A
Ezi-SERVO II-CL-42L-B-BK	EzM2-42L-B-BK	EzS2-CL-42L-B
Ezi-SERVO II-CL-42XL-A-BK	EzM2-42XL-A-BK	EzS2-CL-42XL-A
Ezi-SERVO II-CL-42XL-B-BK	EzM2-42XL-B-BK	EzS2-CL-42XL-B
Ezi-SERVO II-CL-56S-A-BK	EzM2-56S-A-BK	EzS2-CL-56S-A
Ezi-SERVO II-CL-56S-B-BK	EzM2-56S-B-BK	EzS2-CL-56S-B
Ezi-SERVO II-CL-56M-A-BK	EzM2-56M-A-BK	EzS2-CL-56M-A
Ezi-SERVO II-CL-56M-B-BK	EzM2-56M-B-BK	EzS2-CL-56M-B
Ezi-SERVO II-CL-56L-A-BK	EzM2-56L-A-BK	EzS2-CL-56L-A
Ezi-SERVO II-CL-56L-B-BK	EzM2-56L-B-BK	EzS2-CL-56L-B
Ezi-SERVO II-CL-60S-A-BK	EzM2-60S-A-BK	EzS2-CL-60S-A
Ezi-SERVO II-CL-60S-B-BK	EzM2-60S-B-BK	EzS2-CL-60S-B
Ezi-SERVO II-CL-60M-A-BK	EzM2-60M-A-BK	EzS2-CL-60M-A
Ezi-SERVO II-CL-60M-B-BK	EzM2-60M-B-BK	EzS2-CL-60M-B
Ezi-SERVO II-CL-60L-A-BK	EzM2-60L-A-BK	EzS2-CL-60L-A
Ezi-SERVO II-CL-60L-B-BK	EzM2-60L-B-BK	EzS2-CL-60L-B
Ezi-SERVO II-CL-86M-A-BK	EzM2-86M-A-BK	EzS2-CL-86M-A
Ezi-SERVO II-CL-86M-B-BK	EzM2-86M-B-BK	EzS2-CL-86M-B
Ezi-SERVO II-CL-86L-A-BK	EzM2-86L-A-BK	EzS2-CL-86L-A
Ezi-SERVO II-CL-86L-B-BK	EzM2-86L-B-BK	EzS2-CL-86L-B
Ezi-SERVO II-CL-86XL-A-BK	EzM2-86XL-A-BK	EzS2-CL-86XL-A
Ezi-SERVO II-CL-86XL-B-BK	EzM2-86XL-B-BK	EzS2-CL-86XL-B

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-CL-42S-A-PN3	EzM2-42S-A-PN3	EzS2-CL-42S-A	1:3
Ezi-SERVO II-CL-42S-B-PN3	EzM2-42S-B-PN3	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN5	EzM2-42S-A-PN5	EzS2-CL-42S-A	1:5
Ezi-SERVO II-CL-42S-B-PN5	EzM2-42S-B-PN5	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN8	EzM2-42S-A-PN8	EzS2-CL-42S-A	1:8
Ezi-SERVO II-CL-42S-B-PN8	EzM2-42S-B-PN8	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN10	EzM2-42S-A-PN10	EzS2-CL-42S-A	1:10
Ezi-SERVO II-CL-42S-B-PN10	EzM2-42S-B-PN10	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN15	EzM2-42S-A-PN15	EzS2-CL-42S-A	1:15
Ezi-SERVO II-CL-42S-B-PN15	EzM2-42S-B-PN15	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN25	EzM2-42S-A-PN25	EzS2-CL-42S-A	1:25
Ezi-SERVO II-CL-42S-B-PN25	EzM2-42S-B-PN25	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN40	EzM2-42S-A-PN40	EzS2-CL-42S-A	1:40
Ezi-SERVO II-CL-42S-B-PN40	EzM2-42S-B-PN40	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42S-A-PN50	EzM2-42S-A-PN50	EzS2-CL-42S-A	1:50
Ezi-SERVO II-CL-42S-B-PN50	EzM2-42S-B-PN50	EzS2-CL-42S-B	
Ezi-SERVO II-CL-42M-A-PN3	EzM2-42M-A-PN3	EzS2-CL-42M-A	1:3
Ezi-SERVO II-CL-42M-B-PN3	EzM2-42M-B-PN3	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN5	EzM2-42M-A-PN5	EzS2-CL-42M-A	1:5
Ezi-SERVO II-CL-42M-B-PN5	EzM2-42M-B-PN5	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN8	EzM2-42M-A-PN8	EzS2-CL-42M-A	1:8
Ezi-SERVO II-CL-42M-B-PN8	EzM2-42M-B-PN8	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN10	EzM2-42M-A-PN10	EzS2-CL-42M-A	1:10
Ezi-SERVO II-CL-42M-B-PN10	EzM2-42M-B-PN10	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN15	EzM2-42M-A-PN15	EzS2-CL-42M-A	1:15
Ezi-SERVO II-CL-42M-B-PN15	EzM2-42M-B-PN15	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN25	EzM2-42M-A-PN25	EzS2-CL-42M-A	1:25
Ezi-SERVO II-CL-42M-B-PN25	EzM2-42M-B-PN25	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN40	EzM2-42M-A-PN40	EzS2-CL-42M-A	1:40
Ezi-SERVO II-CL-42M-B-PN40	EzM2-42M-B-PN40	EzS2-CL-42M-B	
Ezi-SERVO II-CL-42M-A-PN50	EzM2-42M-A-PN50	EzS2-CL-42M-A	1:50
Ezi-SERVO II-CL-42M-B-PN50	EzM2-42M-B-PN50	EzS2-CL-42M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-CL-42L-A-PN3	EzM2-42L-A-PN3	EzS2-CL-42L-A	1:3
Ezi-SERVO II-CL-42L-B-PN3	EzM2-42L-B-PN3	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN5	EzM2-42L-A-PN5	EzS2-CL-42L-A	1:5
Ezi-SERVO II-CL-42L-B-PN5	EzM2-42L-B-PN5	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN8	EzM2-42L-A-PN8	EzS2-CL-42L-A	1:8
Ezi-SERVO II-CL-42L-B-PN8	EzM2-42L-B-PN8	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN10	EzM2-42L-A-PN10	EzS2-CL-42L-A	1:10
Ezi-SERVO II-CL-42L-B-PN10	EzM2-42L-B-PN10	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN15	EzM2-42L-A-PN15	EzS2-CL-42L-A	1:15
Ezi-SERVO II-CL-42L-B-PN15	EzM2-42L-B-PN15	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN25	EzM2-42L-A-PN25	EzS2-CL-42L-A	1:25
Ezi-SERVO II-CL-42L-B-PN25	EzM2-42L-B-PN25	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN40	EzM2-42L-A-PN40	EzS2-CL-42L-A	1:40
Ezi-SERVO II-CL-42L-B-PN40	EzM2-42L-B-PN40	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42L-A-PN50	EzM2-42L-A-PN50	EzS2-CL-42L-A	1:50
Ezi-SERVO II-CL-42L-B-PN50	EzM2-42L-B-PN50	EzS2-CL-42L-B	
Ezi-SERVO II-CL-42XL-A-PN3	EzM2-42XL-A-PN3	EzS2-CL-42XL-A	1:3
Ezi-SERVO II-CL-42XL-B-PN3	EzM2-42XL-B-PN3	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN5	EzM2-42XL-A-PN5	EzS2-CL-42XL-A	1:5
Ezi-SERVO II-CL-42XL-B-PN5	EzM2-42XL-B-PN5	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN8	EzM2-42XL-A-PN8	EzS2-CL-42XL-A	1:8
Ezi-SERVO II-CL-42XL-B-PN8	EzM2-42XL-B-PN8	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN10	EzM2-42XL-A-PN10	EzS2-CL-42XL-A	1:10
Ezi-SERVO II-CL-42XL-B-PN10	EzM2-42XL-B-PN10	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN15	EzM2-42XL-A-PN15	EzS2-CL-42XL-A	1:15
Ezi-SERVO II-CL-42XL-B-PN15	EzM2-42XL-B-PN15	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN25	EzM2-42XL-A-PN25	EzS2-CL-42XL-A	1:25
Ezi-SERVO II-CL-42XL-B-PN25	EzM2-42XL-B-PN25	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN40	EzM2-42XL-A-PN40	EzS2-CL-42XL-A	1:40
Ezi-SERVO II-CL-42XL-B-PN40	EzM2-42XL-B-PN40	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-42XL-A-PN50	EzM2-42XL-A-PN50	EzS2-CL-42XL-A	1:50
Ezi-SERVO II-CL-42XL-B-PN50	EzM2-42XL-B-PN50	EzS2-CL-42XL-B	
Ezi-SERVO II-CL-56S-A-PN3	EzM2-56S-A-PN3	EzS2-CL-56S-A	1:3
Ezi-SERVO II-CL-56S-B-PN3	EzM2-56S-B-PN3	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN5	EzM2-56S-A-PN5	EzS2-CL-56S-A	1:5
Ezi-SERVO II-CL-56S-B-PN5	EzM2-56S-B-PN5	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN8	EzM2-56S-A-PN8	EzS2-CL-56S-A	1:8
Ezi-SERVO II-CL-56S-B-PN8	EzM2-56S-B-PN8	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN10	EzM2-56S-A-PN10	EzS2-CL-56S-A	1:10
Ezi-SERVO II-CL-56S-B-PN10	EzM2-56S-B-PN10	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN15	EzM2-56S-A-PN15	EzS2-CL-56S-A	1:15
Ezi-SERVO II-CL-56S-B-PN15	EzM2-56S-B-PN15	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN25	EzM2-56S-A-PN25	EzS2-CL-56S-A	1:25
Ezi-SERVO II-CL-56S-B-PN25	EzM2-56S-B-PN25	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN40	EzM2-56S-A-PN40	EzS2-CL-56S-A	1:40
Ezi-SERVO II-CL-56S-B-PN40	EzM2-56S-B-PN40	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56S-A-PN50	EzM2-56S-A-PN50	EzS2-CL-56S-A	1:50
Ezi-SERVO II-CL-56S-B-PN50	EzM2-56S-B-PN50	EzS2-CL-56S-B	
Ezi-SERVO II-CL-56M-A-PN3	EzM2-56M-A-PN3	EzS2-CL-56M-A	1:3
Ezi-SERVO II-CL-56M-B-PN3	EzM2-56M-B-PN3	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN5	EzM2-56M-A-PN5	EzS2-CL-56M-A	1:5
Ezi-SERVO II-CL-56M-B-PN5	EzM2-56M-B-PN5	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN8	EzM2-56M-A-PN8	EzS2-CL-56M-A	1:8
Ezi-SERVO II-CL-56M-B-PN8	EzM2-56M-B-PN8	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN10	EzM2-56M-A-PN10	EzS2-CL-56M-A	1:10
Ezi-SERVO II-CL-56M-B-PN10	EzM2-56M-B-PN10	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN15	EzM2-56M-A-PN15	EzS2-CL-56M-A	1:15
Ezi-SERVO II-CL-56M-B-PN15	EzM2-56M-B-PN15	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN25	EzM2-56M-A-PN25	EzS2-CL-56M-A	1:25
Ezi-SERVO II-CL-56M-B-PN25	EzM2-56M-B-PN25	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN40	EzM2-56M-A-PN40	EzS2-CL-56M-A	1:40
Ezi-SERVO II-CL-56M-B-PN40	EzM2-56M-B-PN40	EzS2-CL-56M-B	
Ezi-SERVO II-CL-56M-A-PN50	EzM2-56M-A-PN50	EzS2-CL-56M-A	1:50
Ezi-SERVO II-CL-56M-B-PN50	EzM2-56M-B-PN50	EzS2-CL-56M-B	

Combination with Gearbox

Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-CL-56L-A-PN3	EzM2-56L-A-PN3	EzS2-CL-56L-A	1:3
Ezi-SERVO II-CL-56L-B-PN3	EzM2-56L-B-PN3	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN5	EzM2-56L-A-PN5	EzS2-CL-56L-A	1:5
Ezi-SERVO II-CL-56L-B-PN5	EzM2-56L-B-PN5	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN8	EzM2-56L-A-PN8	EzS2-CL-56L-A	1:8
Ezi-SERVO II-CL-56L-B-PN8	EzM2-56L-B-PN8	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN10	EzM2-56L-A-PN10	EzS2-CL-56L-A	1:10
Ezi-SERVO II-CL-56L-B-PN10	EzM2-56L-B-PN10	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN15	EzM2-56L-A-PN15	EzS2-CL-56L-A	1:15
Ezi-SERVO II-CL-56L-B-PN15	EzM2-56L-B-PN15	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN25	EzM2-56L-A-PN25	EzS2-CL-56L-A	1:25
Ezi-SERVO II-CL-56L-B-PN25	EzM2-56L-B-PN25	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN40	EzM2-56L-A-PN40	EzS2-CL-56L-A	1:40
Ezi-SERVO II-CL-56L-B-PN40	EzM2-56L-B-PN40	EzS2-CL-56L-B	
Ezi-SERVO II-CL-56L-A-PN50	EzM2-56L-A-PN50	EzS2-CL-56L-A	1:50
Ezi-SERVO II-CL-56L-B-PN50	EzM2-56L-B-PN50	EzS2-CL-56L-B	
Ezi-SERVO II-CL-60S-A-PN3	EzM2-60S-A-PN3	EzS2-CL-60S-A	1:3
Ezi-SERVO II-CL-60S-B-PN3	EzM2-60S-B-PN3	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN5	EzM2-60S-A-PN5	EzS2-CL-60S-A	1:5
Ezi-SERVO II-CL-60S-B-PN5	EzM2-60S-B-PN5	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN8	EzM2-60S-A-PN8	EzS2-CL-60S-A	1:8
Ezi-SERVO II-CL-60S-B-PN8	EzM2-60S-B-PN8	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN10	EzM2-60S-A-PN10	EzS2-CL-60S-A	1:10
Ezi-SERVO II-CL-60S-B-PN10	EzM2-60S-B-PN10	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN15	EzM2-60S-A-PN15	EzS2-CL-60S-A	1:15
Ezi-SERVO II-CL-60S-B-PN15	EzM2-60S-B-PN15	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN25	EzM2-60S-A-PN25	EzS2-CL-60S-A	1:25
Ezi-SERVO II-CL-60S-B-PN25	EzM2-60S-B-PN25	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN40	EzM2-60S-A-PN40	EzS2-CL-60S-A	1:40
Ezi-SERVO II-CL-60S-B-PN40	EzM2-60S-B-PN40	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60S-A-PN50	EzM2-60S-A-PN50	EzS2-CL-60S-A	1:50
Ezi-SERVO II-CL-60S-B-PN50	EzM2-60S-B-PN50	EzS2-CL-60S-B	
Ezi-SERVO II-CL-60M-A-PN3	EzM2-60M-A-PN3	EzS2-CL-60M-A	1:3
Ezi-SERVO II-CL-60M-B-PN3	EzM2-60M-B-PN3	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN5	EzM2-60M-A-PN5	EzS2-CL-60M-A	1:5
Ezi-SERVO II-CL-60M-B-PN5	EzM2-60M-B-PN5	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN8	EzM2-60M-A-PN8	EzS2-CL-60M-A	1:8
Ezi-SERVO II-CL-60M-B-PN8	EzM2-60M-B-PN8	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN10	EzM2-60M-A-PN10	EzS2-CL-60M-A	1:10
Ezi-SERVO II-CL-60M-B-PN10	EzM2-60M-B-PN10	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN15	EzM2-60M-A-PN15	EzS2-CL-60M-A	1:15
Ezi-SERVO II-CL-60M-B-PN15	EzM2-60M-B-PN15	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN25	EzM2-60M-A-PN25	EzS2-CL-60M-A	1:25
Ezi-SERVO II-CL-60M-B-PN25	EzM2-60M-B-PN25	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN40	EzM2-60M-A-PN40	EzS2-CL-60M-A	1:40
Ezi-SERVO II-CL-60M-B-PN40	EzM2-60M-B-PN40	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60M-A-PN50	EzM2-60M-A-PN50	EzS2-CL-60M-A	1:50
Ezi-SERVO II-CL-60M-B-PN50	EzM2-60M-B-PN50	EzS2-CL-60M-B	
Ezi-SERVO II-CL-60L-A-PN3	EzM2-60L-A-PN3	EzS2-CL-60L-A	1:3
Ezi-SERVO II-CL-60L-B-PN3	EzM2-60L-B-PN3	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN5	EzM2-60L-A-PN5	EzS2-CL-60L-A	1:5
Ezi-SERVO II-CL-60L-B-PN5	EzM2-60L-B-PN5	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN8	EzM2-60L-A-PN8	EzS2-CL-60L-A	1:8
Ezi-SERVO II-CL-60L-B-PN8	EzM2-60L-B-PN8	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN10	EzM2-60L-A-PN10	EzS2-CL-60L-A	1:10
Ezi-SERVO II-CL-60L-B-PN10	EzM2-60L-B-PN10	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN15	EzM2-60L-A-PN15	EzS2-CL-60L-A	1:15
Ezi-SERVO II-CL-60L-B-PN15	EzM2-60L-B-PN15	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN25	EzM2-60L-A-PN25	EzS2-CL-60L-A	1:25
Ezi-SERVO II-CL-60L-B-PN25	EzM2-60L-B-PN25	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN40	EzM2-60L-A-PN40	EzS2-CL-60L-A	1:40
Ezi-SERVO II-CL-60L-B-PN40	EzM2-60L-B-PN40	EzS2-CL-60L-B	
Ezi-SERVO II-CL-60L-A-PN50	EzM2-60L-A-PN50	EzS2-CL-60L-A	1:50
Ezi-SERVO II-CL-60L-B-PN50	EzM2-60L-B-PN50	EzS2-CL-60L-B	

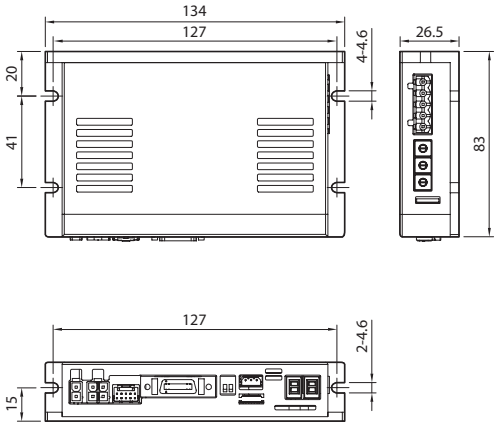
Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II-CL-86M-A-PN3	EzM2-86M-A-PN3	EzS2-CL-86M-A	1:3
Ezi-SERVO II-CL-86M-B-PN3	EzM2-86M-B-PN3	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN5	EzM2-86M-A-PN5	EzS2-CL-86M-A	1:5
Ezi-SERVO II-CL-86M-B-PN5	EzM2-86M-B-PN5	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN8	EzM2-86M-A-PN8	EzS2-CL-86M-A	1:8
Ezi-SERVO II-CL-86M-B-PN8	EzM2-86M-B-PN8	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN10	EzM2-86M-A-PN10	EzS2-CL-86M-A	1:10
Ezi-SERVO II-CL-86M-B-PN10	EzM2-86M-B-PN10	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN15	EzM2-86M-A-PN15	EzS2-CL-86M-A	1:15
Ezi-SERVO II-CL-86M-B-PN15	EzM2-86M-B-PN15	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN25	EzM2-86M-A-PN25	EzS2-CL-86M-A	1:25
Ezi-SERVO II-CL-86M-B-PN25	EzM2-86M-B-PN25	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN40	EzM2-86M-A-PN40	EzS2-CL-86M-A	1:40
Ezi-SERVO II-CL-86M-B-PN40	EzM2-86M-B-PN40	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86M-A-PN50	EzM2-86M-A-PN50	EzS2-CL-86M-A	1:50
Ezi-SERVO II-CL-86M-B-PN50	EzM2-86M-B-PN50	EzS2-CL-86M-B	
Ezi-SERVO II-CL-86L-A-PN3	EzM2-86L-A-PN3	EzS2-CL-86L-A	1:3
Ezi-SERVO II-CL-86L-B-PN3	EzM2-86L-B-PN3	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN5	EzM2-86L-A-PN5	EzS2-CL-86L-A	1:5
Ezi-SERVO II-CL-86L-B-PN5	EzM2-86L-B-PN5	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN8	EzM2-86L-A-PN8	EzS2-CL-86L-A	1:8
Ezi-SERVO II-CL-86L-B-PN8	EzM2-86L-B-PN8	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN10	EzM2-86L-A-PN10	EzS2-CL-86L-A	1:10
Ezi-SERVO II-CL-86L-B-PN10	EzM2-86L-B-PN10	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN15	EzM2-86L-A-PN15	EzS2-CL-86L-A	1:15
Ezi-SERVO II-CL-86L-B-PN15	EzM2-86L-B-PN15	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN25	EzM2-86L-A-PN25	EzS2-CL-86L-A	1:25
Ezi-SERVO II-CL-86L-B-PN25	EzM2-86L-B-PN25	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN40	EzM2-86L-A-PN40	EzS2-CL-86L-A	1:40
Ezi-SERVO II-CL-86L-B-PN40	EzM2-86L-B-PN40	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86L-A-PN50	EzM2-86L-A-PN50	EzS2-CL-86L-A	1:50
Ezi-SERVO II-CL-86L-B-PN50	EzM2-86L-B-PN50	EzS2-CL-86L-B	
Ezi-SERVO II-CL-86XL-A-PN3	EzM2-86XL-A-PN3	EzS2-CL-86XL-A	1:3
Ezi-SERVO II-CL-86XL-B-PN3	EzM2-86XL-B-PN3	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN5	EzM2-86XL-A-PN5	EzS2-CL-86XL-A	1:5
Ezi-SERVO II-CL-86XL-B-PN5	EzM2-86XL-B-PN5	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN8	EzM2-86XL-A-PN8	EzS2-CL-86XL-A	1:8
Ezi-SERVO II-CL-86XL-B-PN8	EzM2-86XL-B-PN8	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN10	EzM2-86XL-A-PN10	EzS2-CL-86XL-A	1:10
Ezi-SERVO II-CL-86XL-B-PN10	EzM2-86XL-B-PN10	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN15	EzM2-86XL-A-PN15	EzS2-CL-86XL-A	1:15
Ezi-SERVO II-CL-86XL-B-PN15	EzM2-86XL-B-PN15	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN25	EzM2-86XL-A-PN25	EzS2-CL-86XL-A	1:25
Ezi-SERVO II-CL-86XL-B-PN25	EzM2-86XL-B-PN25	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN40	EzM2-86XL-A-PN40	EzS2-CL-86XL-A	1:40
Ezi-SERVO II-CL-86XL-B-PN40	EzM2-86XL-B-PN40	EzS2-CL-86XL-B	
Ezi-SERVO II-CL-86XL-A-PN50	EzM2-86XL-A-PN50	EzS2-CL-86XL-A	1:50
Ezi-SERVO II-CL-86XL-B-PN50	EzM2-86XL-B-PN50	EzS2-CL-86XL-B	

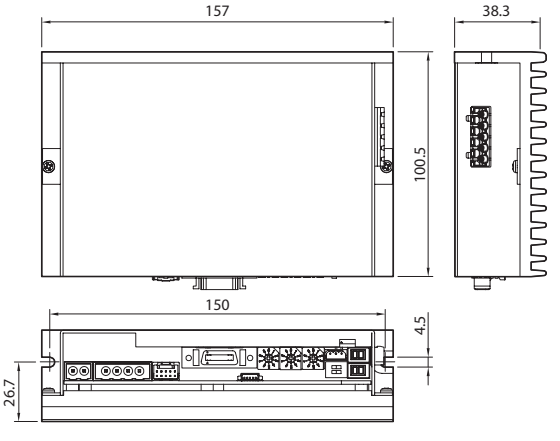
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Drive Model		EzS2-CL-20 series	EzS2-CL-28 series	EzS2-CL-35 series	EzS2-CL-42 series	EzS2-CL-56 series	EzS2-CL-60 series	EzS2-CL-86 series
Input Voltage		DC24V±10%						DC40~70V
Control Method		Closed loop control with 32bit MCU						
Current Consumption		Max. 500mA (Except motor current)						
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃						
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)						
	Vib. Resist.	0.5g						
Function	Rotation Speed	0~3,000r/min *1						
	Resolution	Encoder Resolution [P/R] / Configurable Resolution [P/R] 4,000 / 500 1,000 1,600 2,000 3,600 4,000 5,000 6,400 7,200 10,000 10,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000 / 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)						
	Error Types	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, In-Position Error, ROM Error, Position Overflow Error						
	LED Display	Power Status, In-Position Status, Servo ON Status, Alarm Status						
	In-Position Selection	0~63 (Set by parameter)						
	Position Gain Selection	0~63 (Set by parameter)						
	Rotation Direction	CW/CCW (Set by parameter)						
CC-Link	Station Type	Remote Device Station						
	No. of Occupied Station	1~3 Station						
	Max. No. of Connectable Axis	· 1 Station Occupied: 42 axis · 2 Station Occupied: 32 axis · 3 Station Occupied: 24 axis						
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler Input)						
	Output Signals	6 programmable outputs (Photocoupler Output), 1 Brake output						

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]





※ 86mm motor drive (EzS2-CL-86 series)

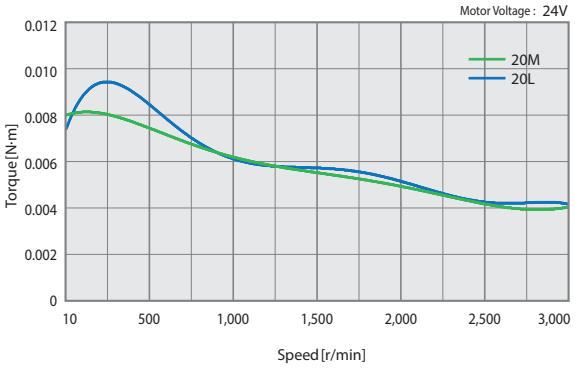
Specifications of Motor

MODEL			UNIT	EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series			
				20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar										
NUMBER OF PHASES			–	2 Phase										
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	15	20	35	54	77	114
WEIGHTS			kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564
LENGTH(L)			mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight										
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)										
INSULATION CLASS			–	CLASS B(130℃)										
OPERATING TEMPERATURE			℃	0 ~ 55										

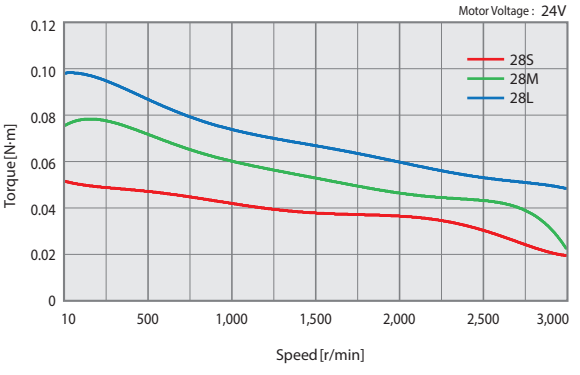
MODEL			UNIT	EzM2-56 series			EzM2-60 series			EzM2-86 series		
				56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.608	0.784	1.230	0.693	0.856	1.419	2.355	3.941	5.453
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

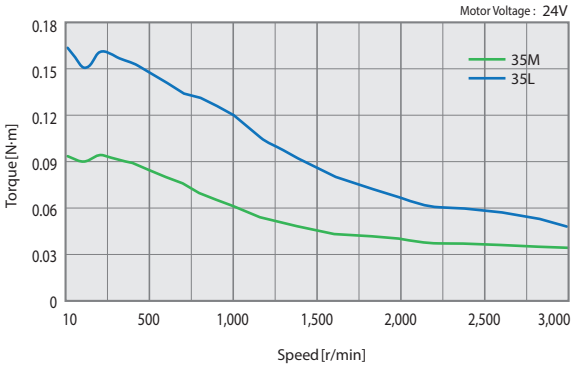
Ezi-SERVOII-CL-20 series



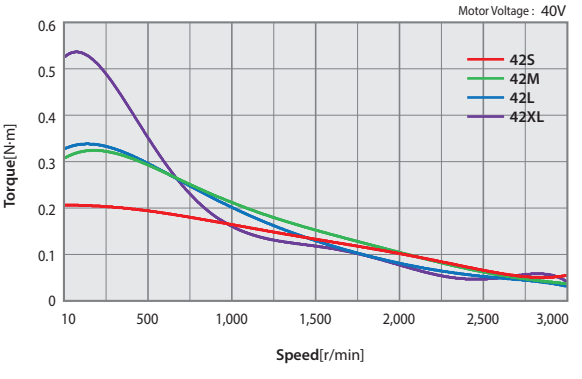
Ezi-SERVOII-CL-28 series



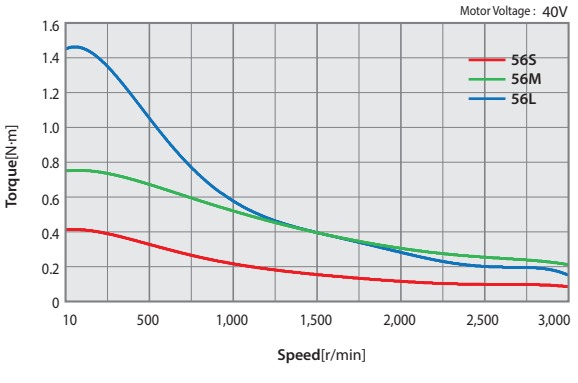
Ezi-SERVOII-CL-35 series



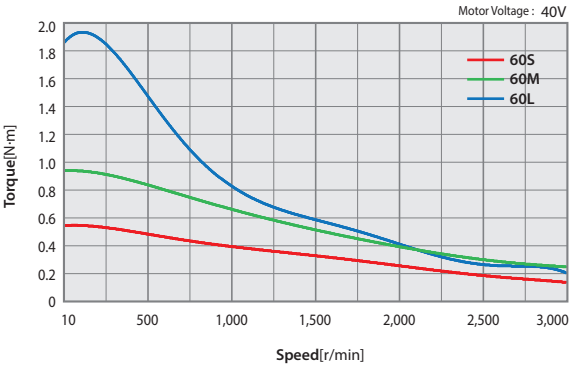
Ezi-SERVOII-CL-42 series



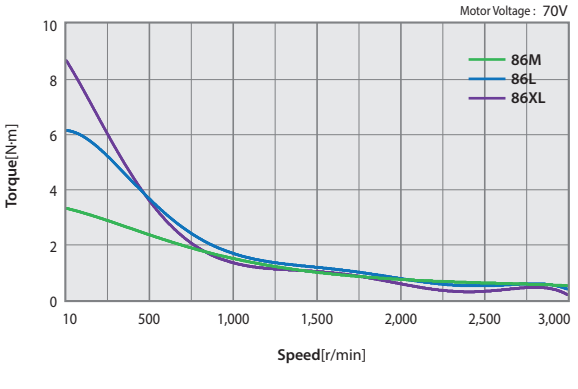
Ezi-SERVOII-CL-56 series



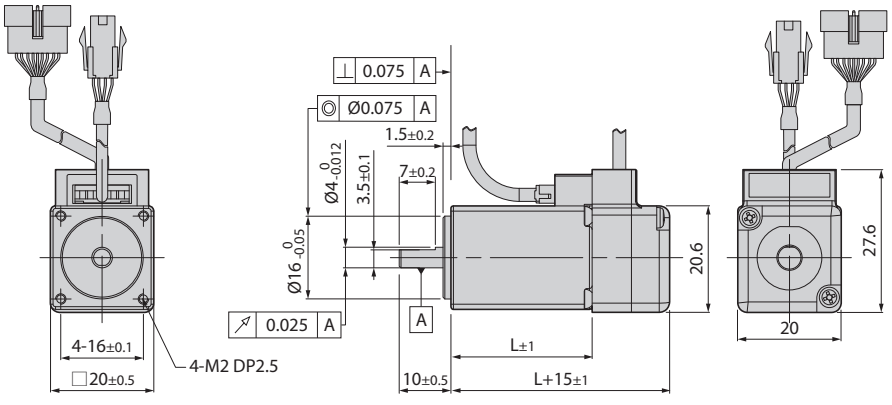
Ezi-SERVOII-CL-60 series



Ezi-SERVOII-CL-86 series

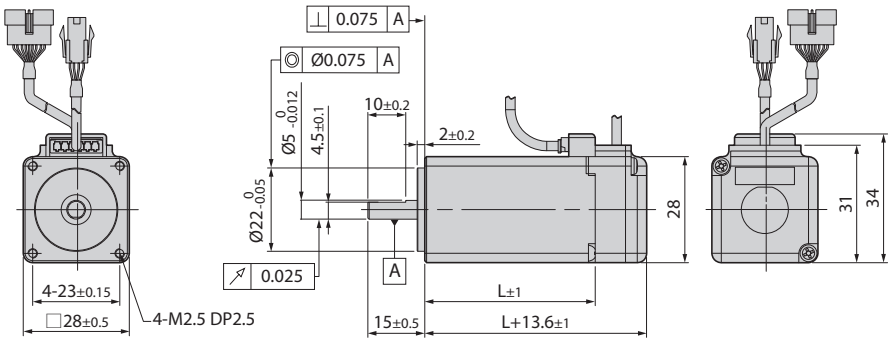


● Dimensions of Motor [mm]



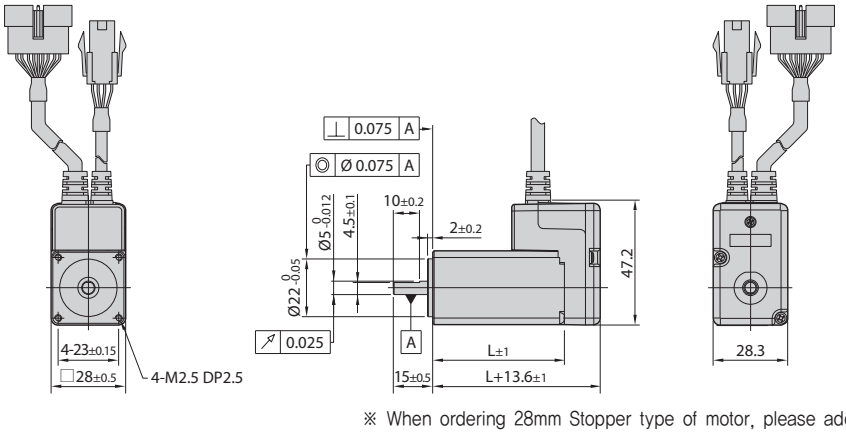
20mm

Model name	Length(L)
EzM2-20M	28
EzM2-20L	38



28mm

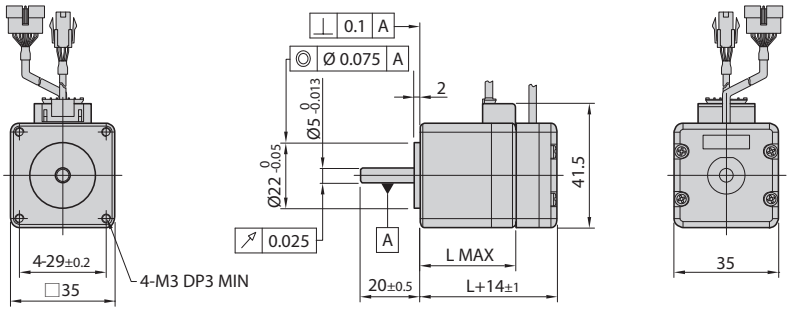
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

Model name	Length(L)
EzM2-28SM	32
EzM2-28MM	45
EzM2-28LM	50

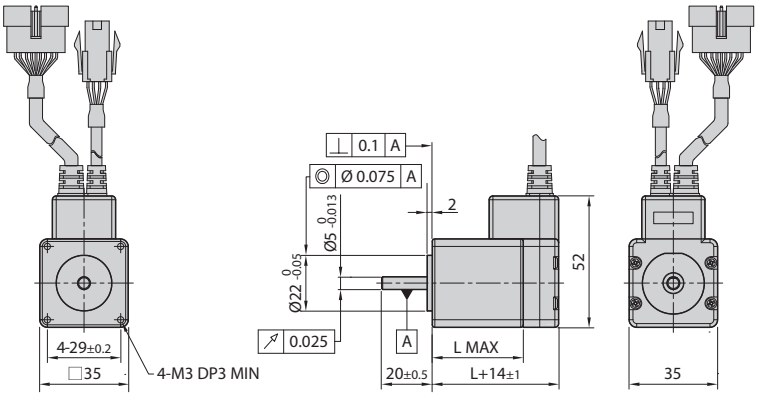
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	32
EzM2-35L	36

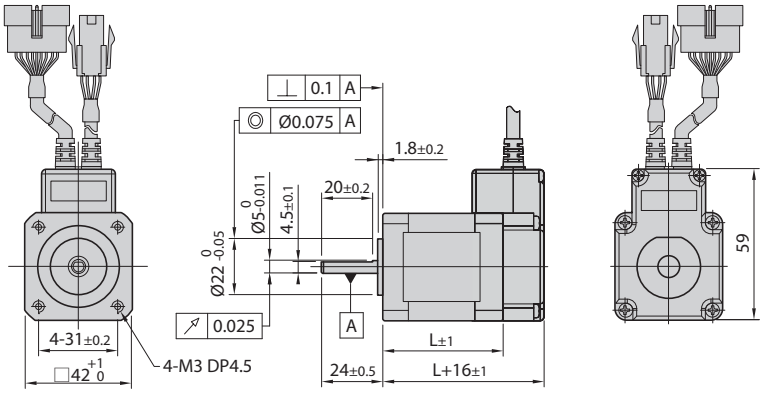
● Dimensions of Motor [mm]



35mm (Stopper type)

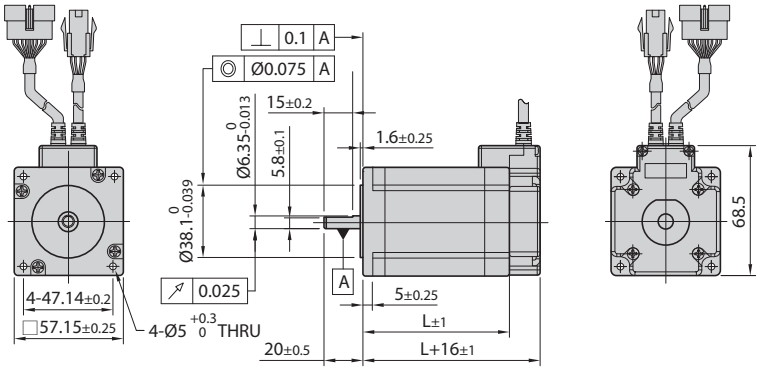
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

※ When ordering 35mm Stopper type of motor, please add "M" after standard motor model number.



42mm

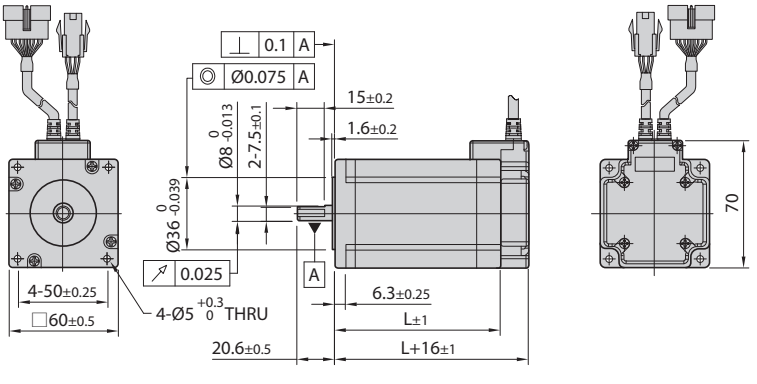
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

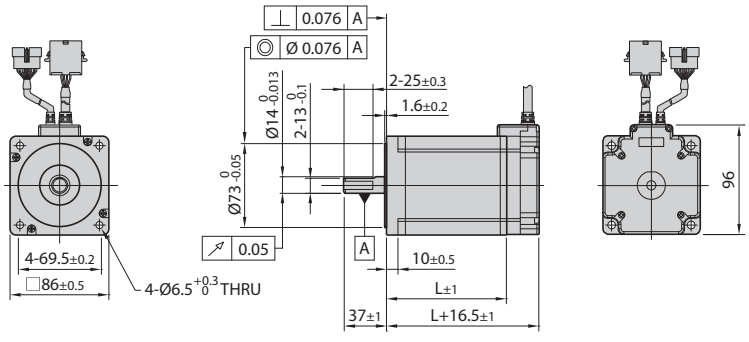
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

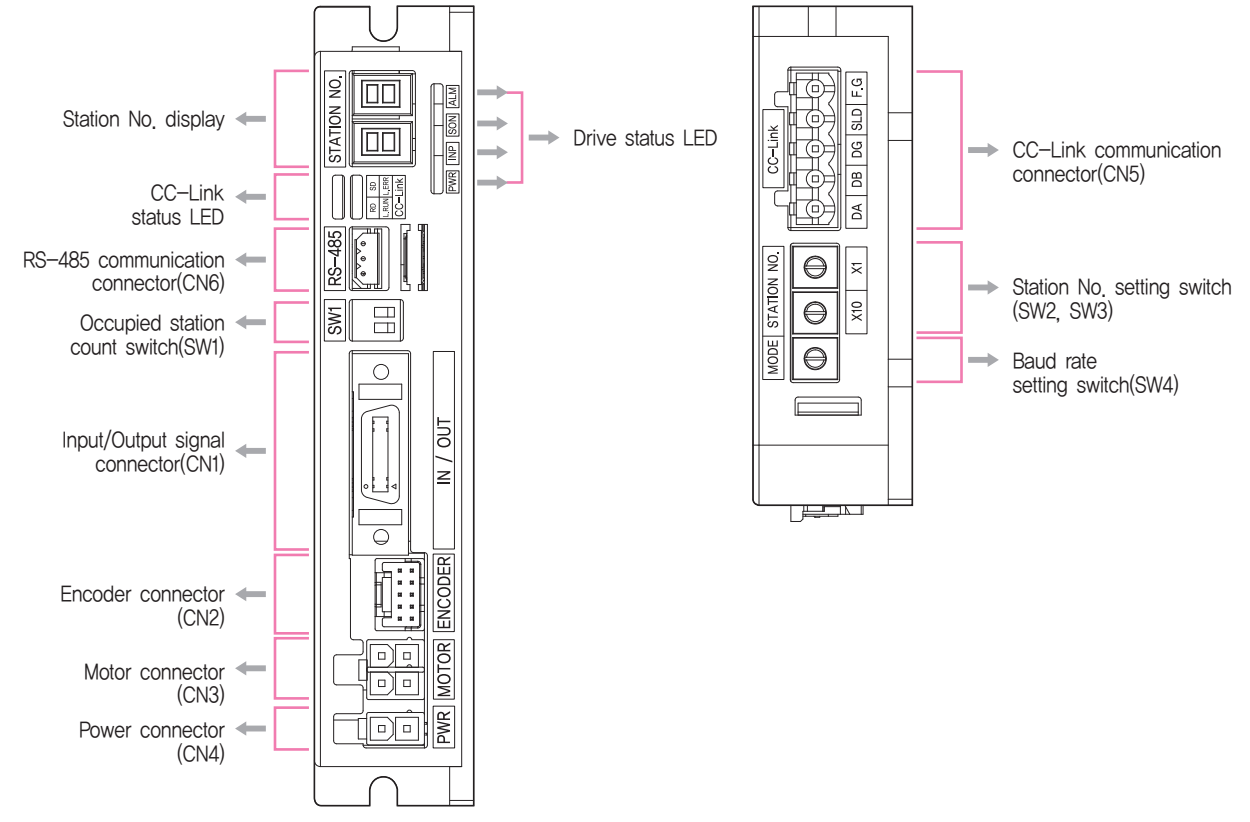
Dimensions of Motor [mm]



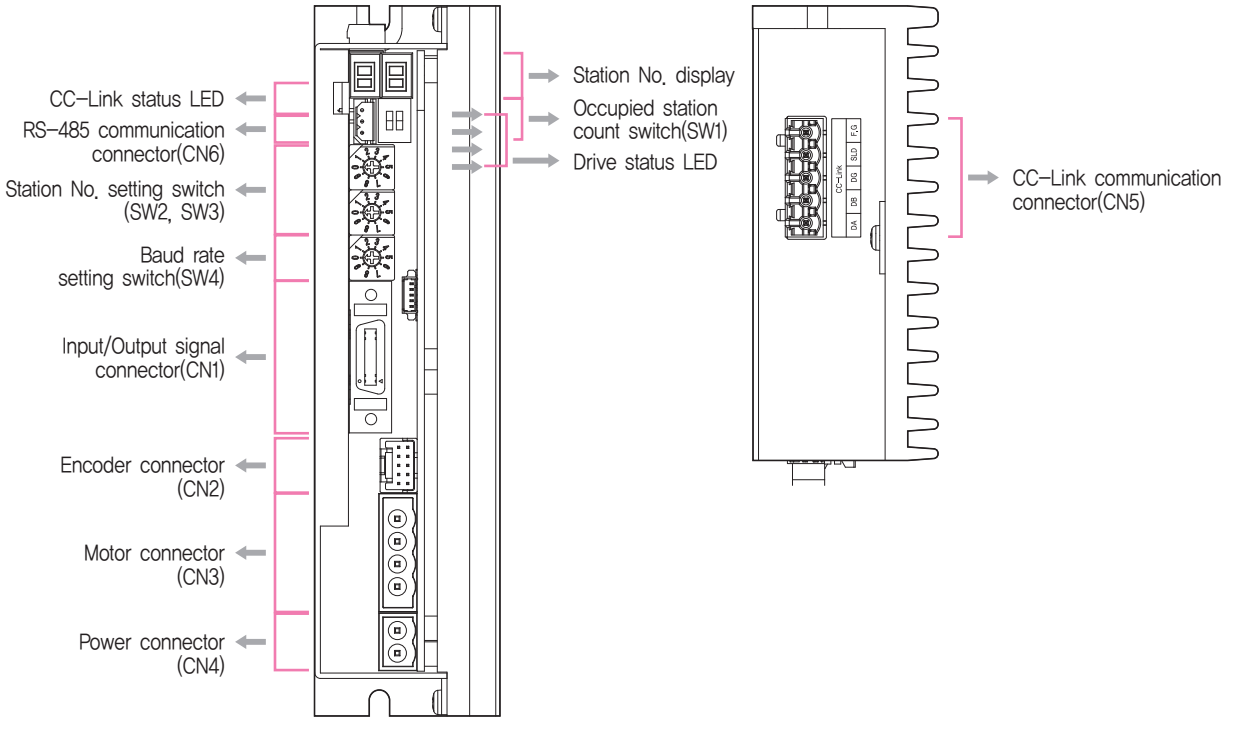
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Settings and Operation

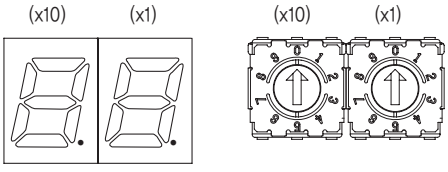


◆ 86mm Motor Drive (EzS2-CL-86 Series)



1. Station No. Display and Setting Switch(SW2, SW3)

These switches set the station number of the device station in decimal number. SW2 sets the units digit (X1) and SW3 sets the tens digit (X10).



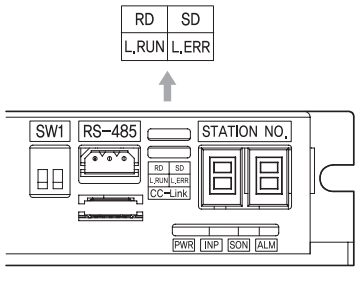
2. CC-Link Status LED

Name	Color	Status	Description
L.RUN	Green	OFF	Power OFF or Data Link is not running
		ON	Data Link is running

Name	Color	Status	Description
L.ERR	Red	OFF	No Error
		ON	Data Link Error
		Flashing at regular intervals	Communication Error
		Flashing at irregular intervals	CRC Error or Network Cable Error

Name	Color	Status	Description
RD	Orange	OFF	Not Receiving Data
		ON	Receiving Data

Name	Color	Status	Description
SD	Yellow	OFF	Not Transmitting Data
		ON	Transmitting Data



3. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied.
INP	Yellow	Positioning Completion Indication	LED is turned ON when Positioning error reaches within the preset pulse after the positioning is complete.
SON	Orange	Servo ON / OFF Indication	Servo ON: Lights ON, Servo OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of alarm LED blinking

No.	Error Code *4	Error Type	Causes
1	E-□01	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-□02	Over Speed Error	The motor speed exceeds 3,000r/min.
3	E-□03	Position Tracking Error	Position error value is greater than the reference value while the motor is running. *2
4	E-□04	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque.
5	E-□05	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	E-□06	Over Regenerative Voltage Error	Back-EMF is higher than limit value. *3
7	E-□07	Motor Connect Error	There is a problem with the connection between the drive and the motor.
8	E-□08	Encoder Connect Error	There is a problem with the connection between the drive and the encoder.
10	E-□0A	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds.
12	E-□0C	ROM Error	Error occurs in parameter storage device(ROM).
15	E-□0F	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped *2

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : The default reference value is 180 ° , and it can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of Station No.
※ Please refer to user Manual for the details of protection functions.
※ □ refers to CC-Link error code.

◆ CC-Link Error Code

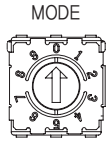
Error Code	Description
E-0□□.	Operation is normal.
E-1□□.	Station No. switch setting is incorrect.
E-2□□.	Baud rate setting is incorrect.
E-3□□.	Station No. is changed during the operation.
E-4□□.	Baud rate is changed during the operation.
E-5□□.	CRC error
E-6□□.	Timeout error occurred during the communication with the master.
E-7□□.	Communication with master is disconnected.
E-8□□.	CC-Link Processor Error 1
E-9□□.	CC-Link Processor Error 2
E-A□□.	Data link error
E-B□□.	Remote I/O error
E-C□□.	Remote register error

※ □□ refers to drive alarm status.

4. Baud Rate Setting Switch(SW4)

This switch sets the baud rate.
('MODE' is marked on the case.)

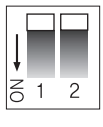
MODE	Baud Rate
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
5	NONE
6	NONE
7	NONE
8	NONE
9	NONE



5. Occupied Station Count Switch(SW1)

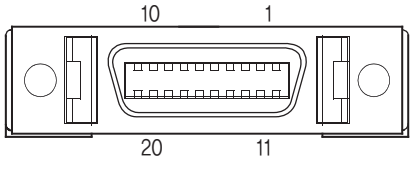
This switch sets the number of occupied stations.

SW1.1	SW1.2	No. of Occupied Station
OFF	OFF	1 Station Occupied
ON	OFF	2 Station Occupied
OFF	ON	3 Station Occupied



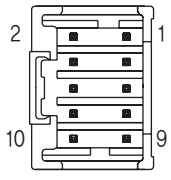
6. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT-	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE-	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



7. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

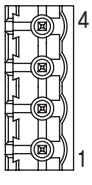


8. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



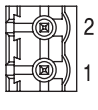
※ 86mm Motor Drive

9. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



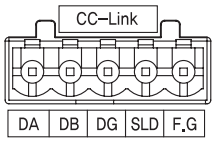
No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



※ 86mm Motor Drive

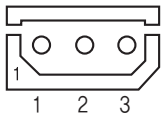
10. CC-Link Communication Connector(CN5)

No.	Function
1	DA
2	DB
3	DG
4	SLD
5	F.GND

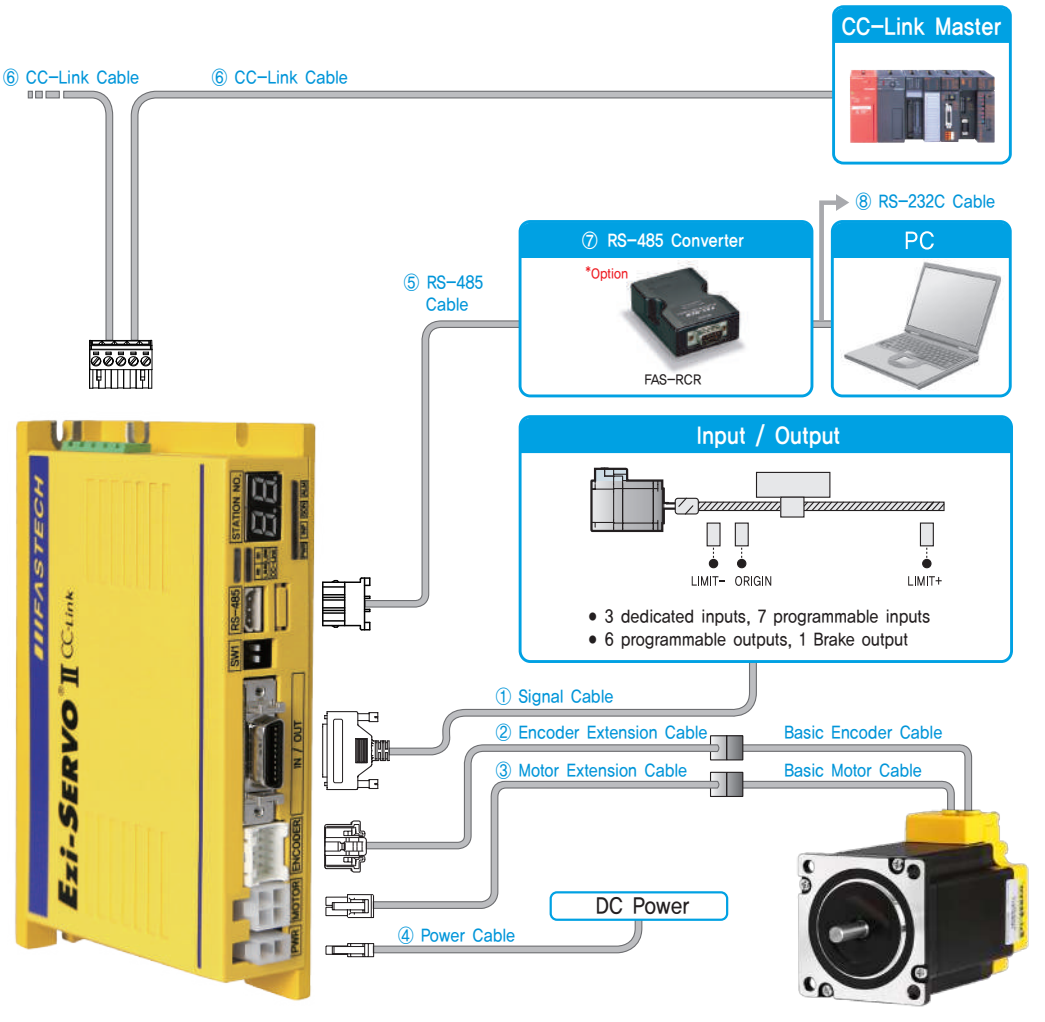


11. RS-485 Communication Connector(CN6)

No.	Function
1	Data+
2	Data−
3	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ CC-Link Cable	100m	
⑥ RS-485 Cable	2m	
Basic Encoder Cable	0.3m (Basic Length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic Length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	
CC-Link (CN5)		Terminal Block	AK950-5	PTR
RS-485 (CN6)		Housing	5264-03	MOLEX
		Terminal	5263PBT	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II CC-Link drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II CC-Link drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II CC-Link drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II CC-Link drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ RS-485 Cable

Purpose	Part Number	Length [m]	Remarks
RS-485 Connection	CGNR-RT-001F	1	Normal Cable
	CGNR-RT-002F	2	
	CGNR-RT-003F	3	
	CGNR-RT-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

⑥ CC-Link Cable

It is the cable to connect Ezi-SERVO II CC-Link drive and the CC-Link system.

* This cable is not provided by FASTECH. It is recommended to use the standard cable specified by the CC-Link Association.

⑦ RS-485 Converter

Purpose	Part Number	Specifications		Product Image
RS-232C to RS-485 Converter	FAS-RCR	Baud Rate	Max. 115.2kbps	
		Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km	
		Connector	RS-232C: DB9 Female RS-485: RJ-45	
		Dimensions	50X75X23mm	
		Weight	38g	
		Power	Power supplied by RS-232C (DC5~24V external power can be applied)	

⑧ RS-232C Cable

These are the cables to connect FAS-RCR and RS-232C port of the host controller.

Purpose	Part Number	Length [m]	Cable Type
FAS-RCR – RS-232C Connection	CGNR-C-002F	2	Normal Cable
	CGNR-C-003F	3	
	CGNR-C-005F	5	

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II CC-Link drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

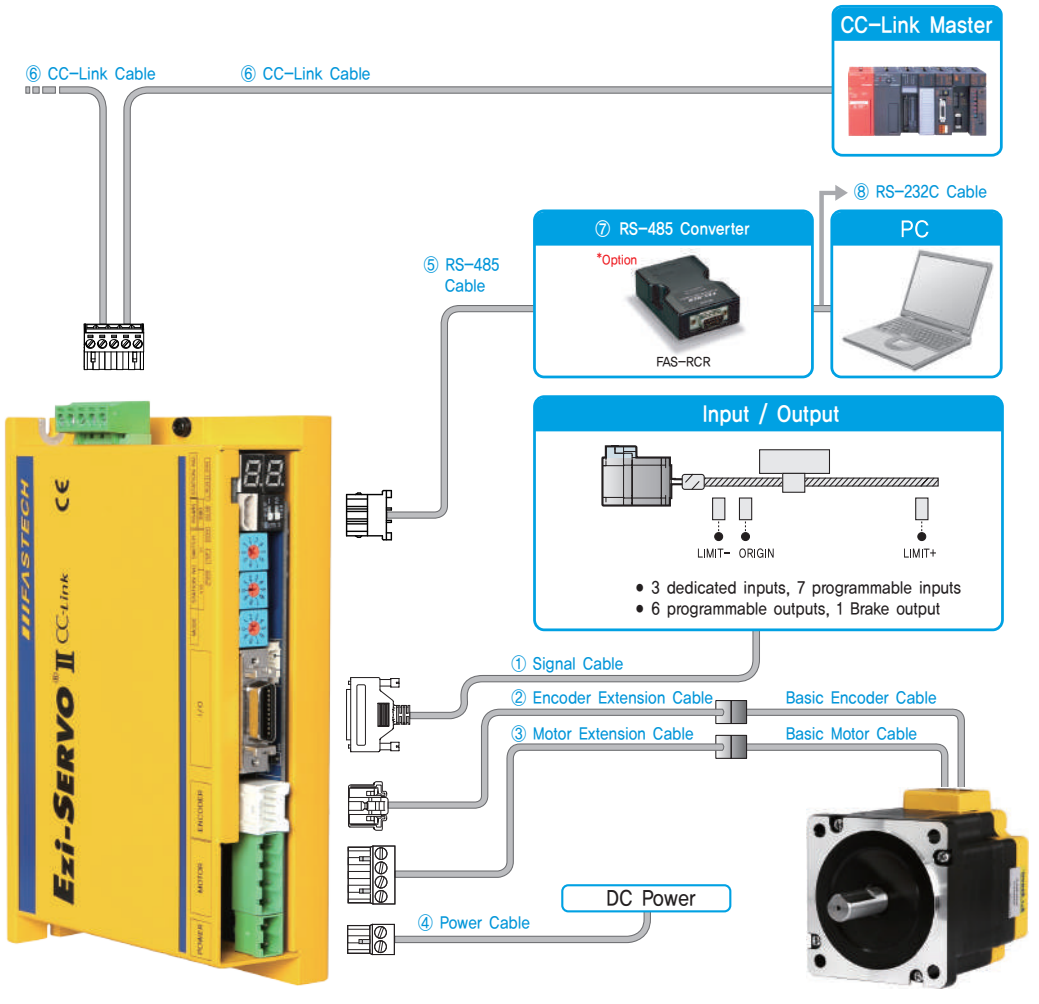
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II CC-Link and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ CC-Link Cable	100m	
⑥ RS-485 Cable	2m	
Basic Encoder Cable	0.3m (Basic Length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic Length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
	Encoder Side	Housing	SMP-09V-NC	JST
		Terminal	SHF-001T-0.8BS	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Terminal Block	AK950-2	PTR
CC-Link (CN5)		Terminal Block	AK950-5	PTR
RS-485 (CN6)		Housing	5264-03	MOLEX
		Terminal	5263PBT	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-SERVO II CC-Link [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-SERVO II CC-Link [86mm motor] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
드라이브-인코더 기본 케이블 연결	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-SERVO II CC-Link [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-SERVO II CC-Link [86mm motor] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

⑤ RS-485 Cable

Purpose	Part Number	Length [m]	Remarks
RS-485 Connection	CGNR-RT-001F	1	Normal Cable
	CGNR-RT-002F	2	
	CGNR-RT-003F	3	
	CGNR-RT-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

⑥ CC-Link Cable

It is the cable to connect Ezi-SERVO II CC-Link [86mm motor] drive and the CC-Link system.

* This cable is not provided by FASTECH. It is recommended to use the standard cable specified by the CC-Link Association.

⑦ RS-485 Converter

Purpose	Part Number	Specifications		Product Image
RS-232C to RS-485 Converter	FAS-RCR	Baud Rate	Max. 115.2kbps	
		Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km	
		Connector	RS-232C: DB9 Female RS-485: RJ-45	
		Dimensions	50X75X23mm	
		Weight	38g	
		Power	Power supplied by RS-232C (DC5~24V external power can be applied)	

⑧ RS-232C Cable

These are the cables to connect FAS-RCR and RS-232C port of the host controller.

Purpose	Part Number	Length [m]	Cable Type
FAS-RCR – RS-232C Connection	CGNR-C-002F	2	Normal Cable
	CGNR-C-003F	3	
	CGNR-C-005F	5	

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-SERVO II CC-Link [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

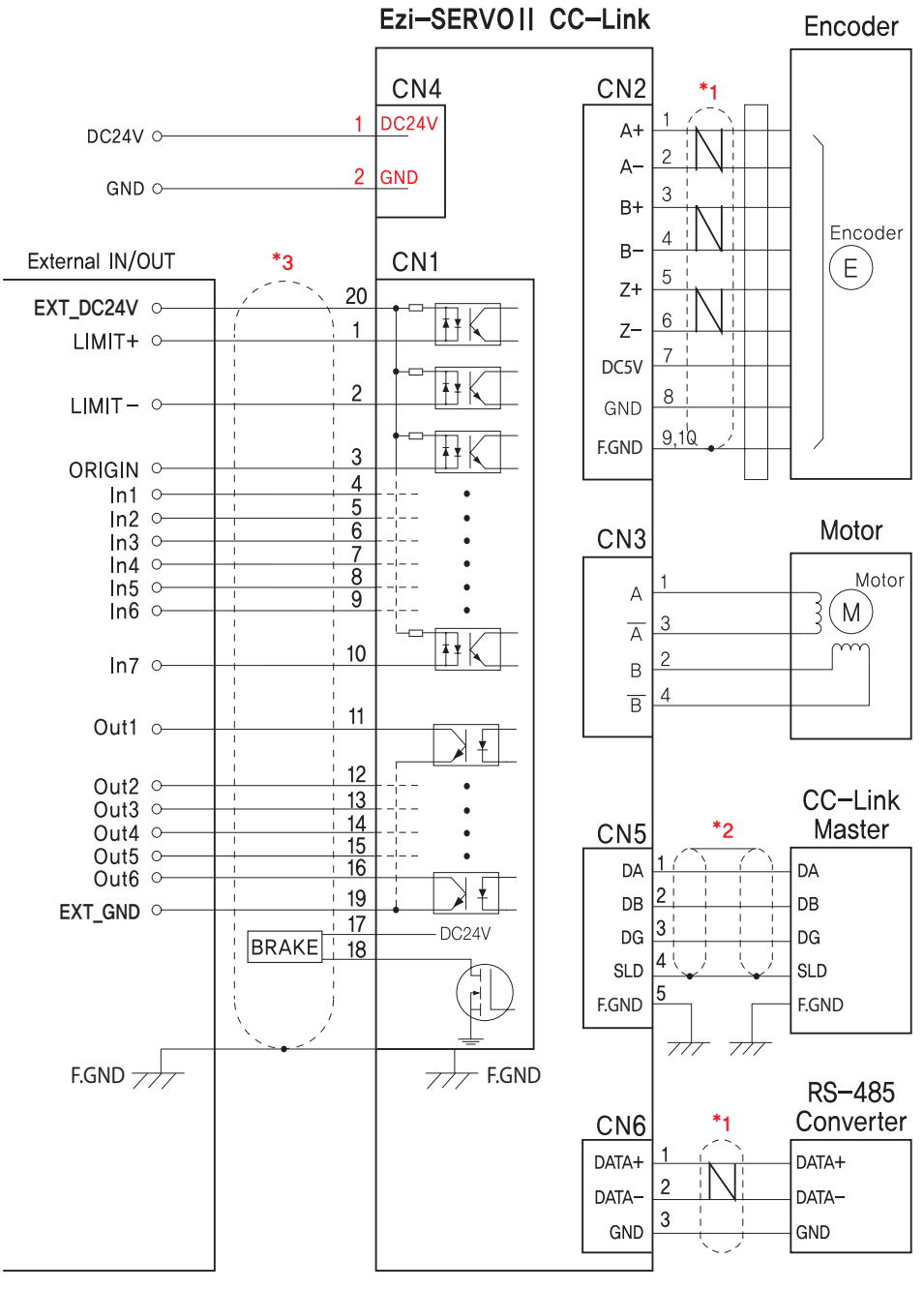
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-SERVO II CC-Link [86mm motor] and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

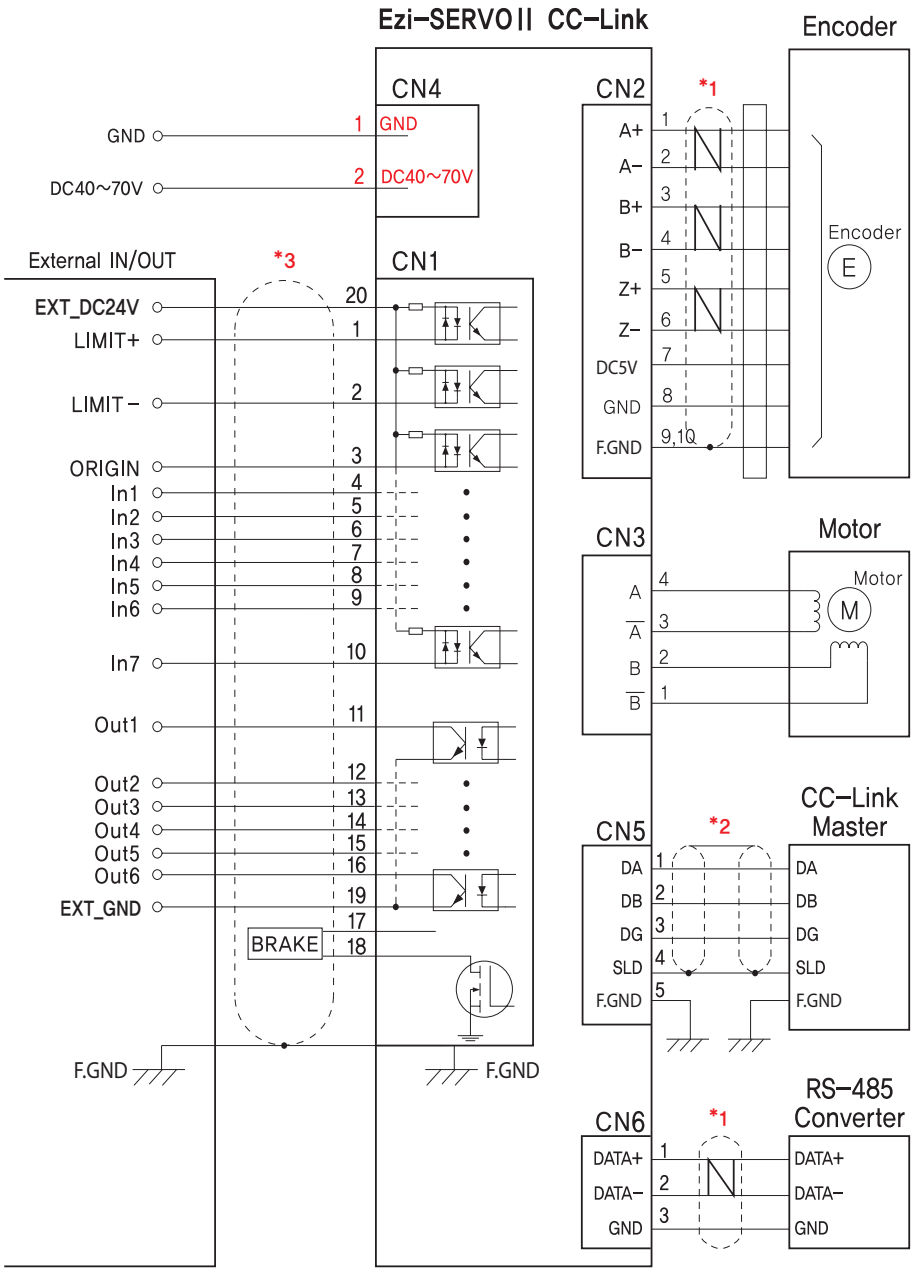
* 3) Shield Cable

※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [86mm Motor Drive]



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

* 3) Shield Cable

※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

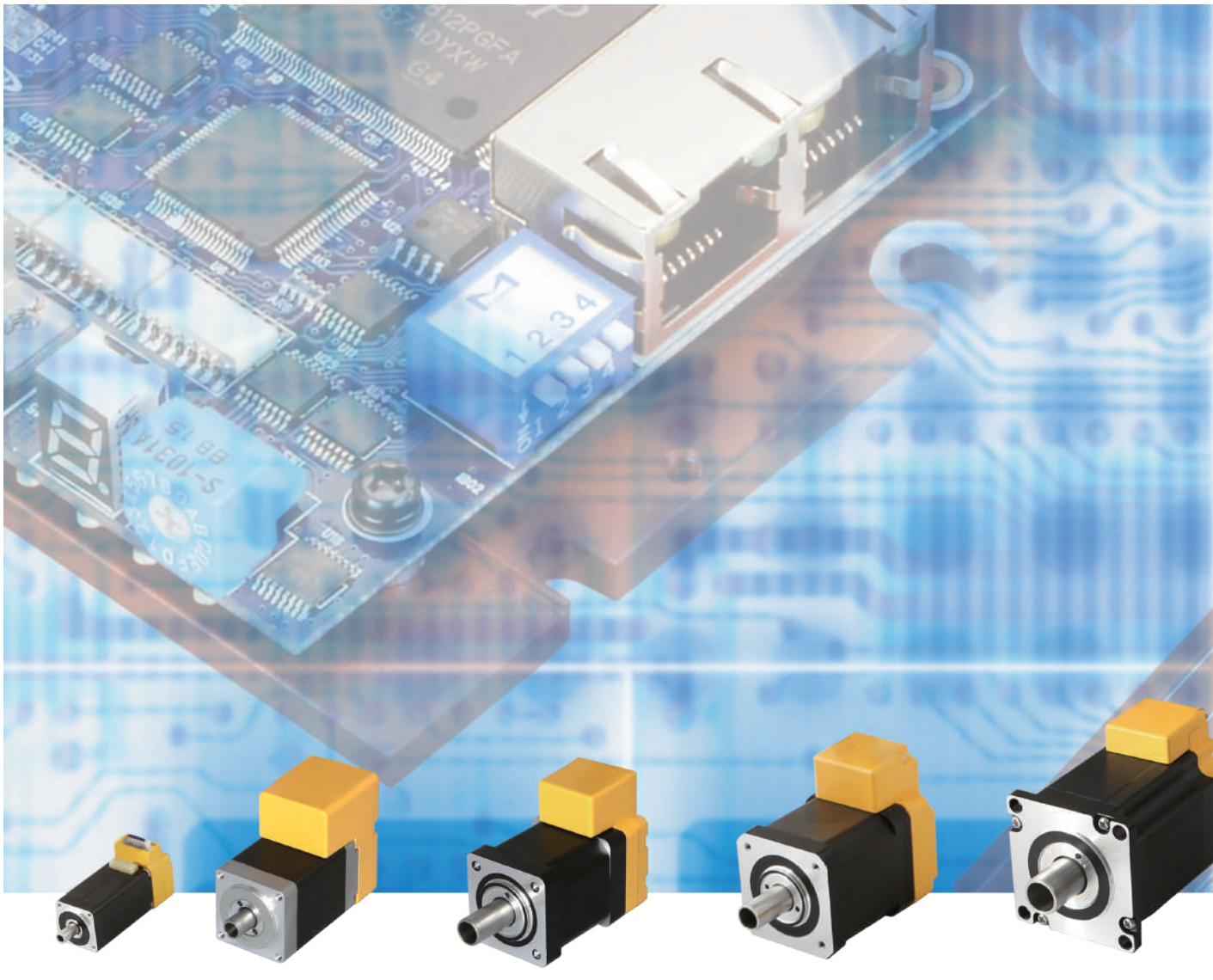
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-SERVO
E3E-28L-F
190500001
Ezi-SERVO
E6E-42L-A
190300860
Ezi-SERVO
Ezi-SERVO
Ezi-SERVO

Ezi-SERVO® HS

Closed Loop Stepping System

- Stepping Motor with High Resolution Encoder
- Closed-Loop Stepping System
- High Precision Position Control
- Low Heat Generation / High Torque
- EtherCAT, Ethernet, CC-Link Supported

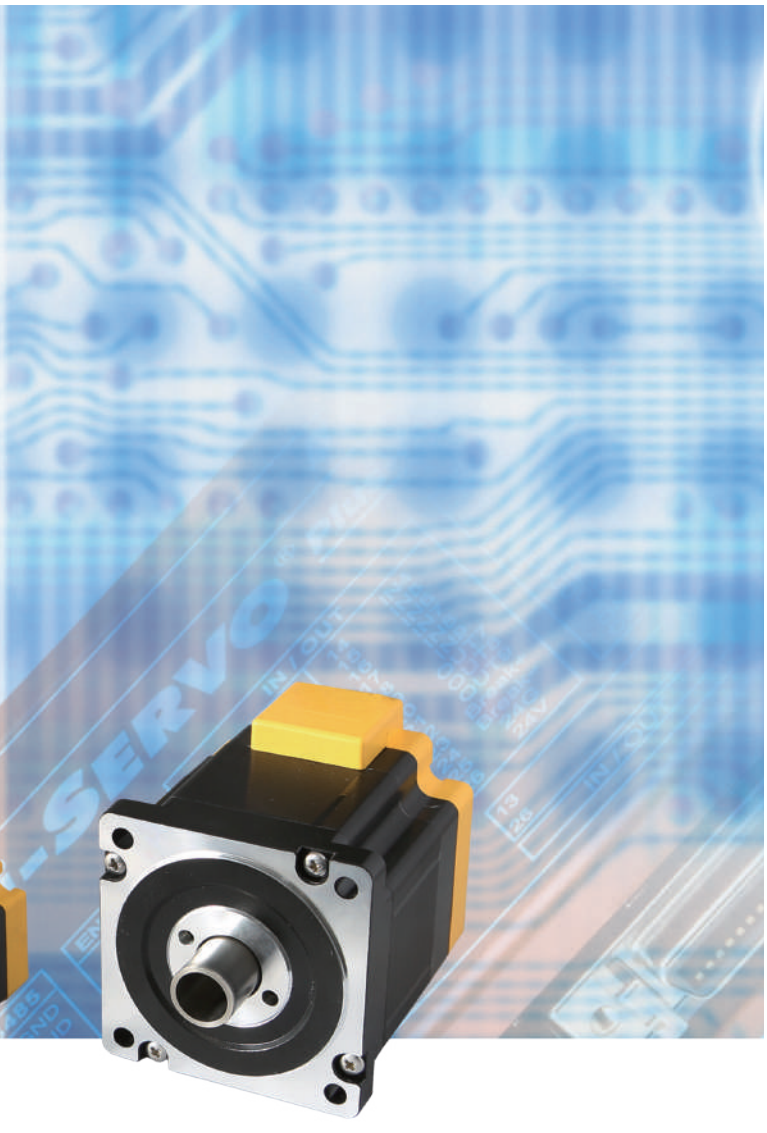


FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® HS

Closed Loop Stepping System



1 Hollow Shaft Motor

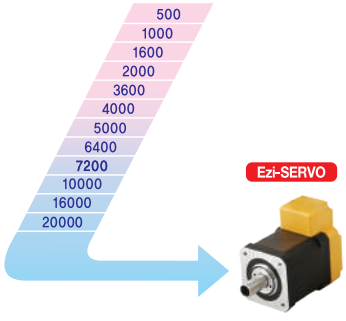
A hollow shaft motor is a type of product in which a cable or tube can be inserted into the shaft because the motor shaft is hollow. The use of this motor allows the device to be miniaturized and lightweight, thus significantly reducing the cost.

Motor Size	Hollow Shaft Inner Diameter [mm]	Hollow Shaft Outer Diameter [mm]
20mm	Ø3	Ø5
28mm	Ø5	Ø7
35mm	Ø8	Ø10
42mm	Ø8	Ø10
56mm	Ø12	Ø15
86mm	Ø16	Ø20



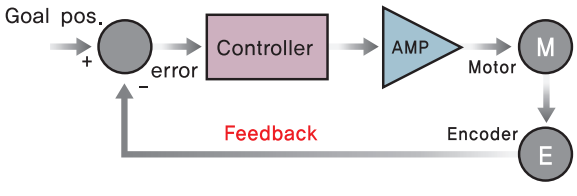
2 High Resolution

The unit of the position command can be divided precisely. (Max. 20,000 pulses/revolution)



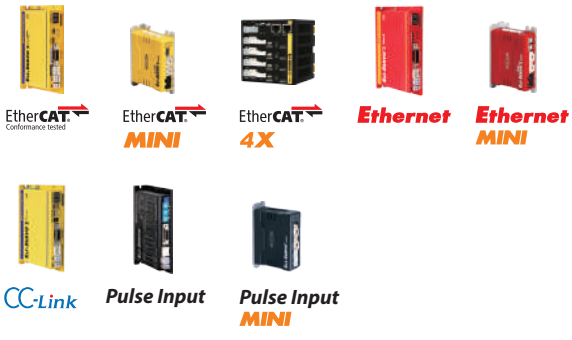
3 Closed-Loop System

Ezi-SERVO is an innovative Closed-Loop System that utilizes a high-resolution motor mounted encoder constantly to monitor the current position. The encoder feedback allows the Ezi-SERVO to update the current position. It allows the Ezi-SERVO drive to compensate for the loss of position, ensuring accurate positioning. For example, due to a sudden load change, a conventional stepping motor and drive could lose a step but Ezi-SERVO automatically correct the position by encoder feedback.



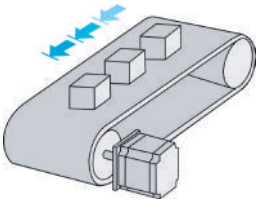
4 Various Network Supported

Ezi-SERVO HS is a unit product that combines a hollow shaft motor and various drives, and can be connected to a host controller through field networks such as EtherCAT, Ethernet, and CC-Link.
For Ezi-SERVOII Plus-E products, Windows 7/8/10 motion library (DLL) is provided.



5 Tuning Not Required

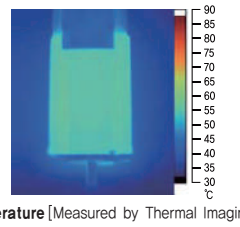
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-SERVO is especially well suited for low-rigidity loads (e.g., a belt and pulley system) that sometimes require conventional servo systems to use the additional bulky and expensive gearbox.



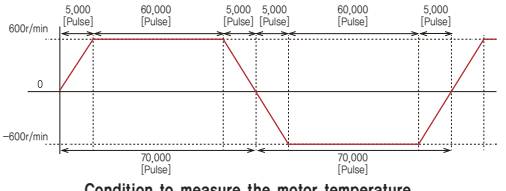
6 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

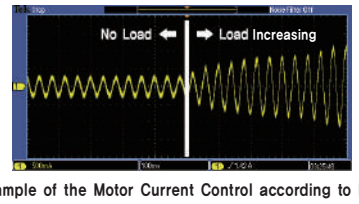
Ezi-SERVO automatically controls motor current according to load.
Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]

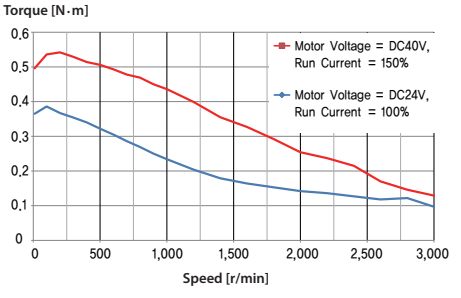


Example of the Motor Current Control according to load

7 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.

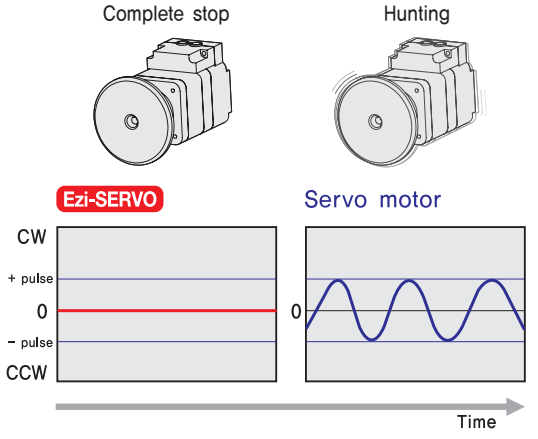


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO-HS-PE-42L
Motor Voltage = DC40V
Input Voltage = DC24V

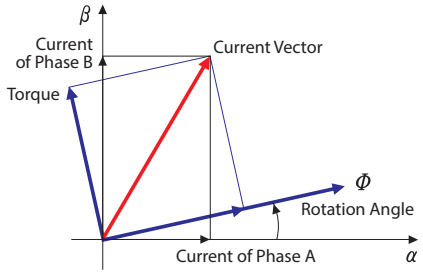
8 No Hunting

Ezi-SERVO utilizes the unique characteristics of stepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.
This feature is especially useful in applications such as vision systems in which system oscillation and vibration could be a problem.



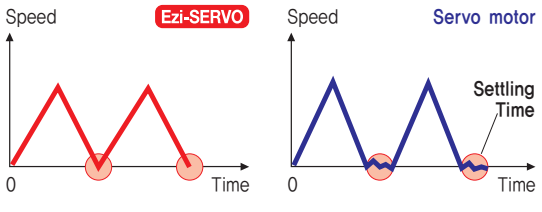
9 Smooth and Accurate Operation

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



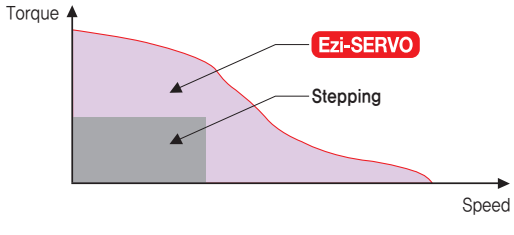
10 High Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



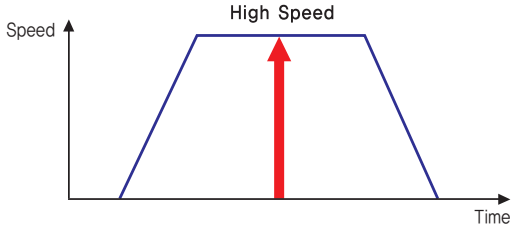
11 High Torque/Continuous Operation

Compared with common step motors and drives, Ezi-SERVO motion control systems can maintain a high torque state over relatively long period of time. This means that Ezi-SERVO continuously operates without loss of position under 100% of the load. Unlike conventional Microstep drives, Ezi-SERVO exploits continuous high torque operation during high speed motion due to its innovative optimum current phase control.



12 High Speed

The Ezi-SERVO operates well at high speed without the loss of synchronism or positioning error. Ezi-SERVO's ability to monitor current position continuously enables the stepping motor to generate high torque, even under a 100% load condition.



13 Examples

Optical Instrument



Feed Through Cabling



Dispensing System



Ezi-SERVO HS Part Numbering

Ezi-SERVO-HS-ST-56L-A

Series Name

Type Name
EC : EtherCAT EC-MI : EtherCAT Mini Type EC-4X : EtherCAT 4 Axis Type PE : Plus Ethernet PE-MI : Plus Ethernet Mini Type CL : CC-Link ST : Pulse Input MI : Pulse Input Mini Type

Motor Flange Size
20 : 20mm 28 : 28mm 35 : 35mm 42 : 42mm 56 : 56mm 86 : 86mm

Motor Length
S : Small M : Medium L : Large

Encoder Resolution
A : 10,000P/R B : 20,000P/R D : 16,000P/R F : 4,000P/R

Applicable Product Series

Product	Specifications
Ezi-SERVO II EtherCAT	EtherCAT Based Product
Ezi-SERVO II EtherCAT MINI	EtherCAT Based Mini Type Product
Ezi-SERVO II EtherCAT 4X	EyherCAT Based 4 Axis Type Product
Ezi-SERVO II Plus-E	Ethernet Based Product
Ezi-SERVO II Plus-E MINI	Ethernet Based Mini Type Product
Ezi-SERVO II CC-Link	CC-Link Based Product
Ezi-SERVO ST	Pulse Input Type Product
Ezi-SERVO MINI	Pulse Input Mini Type Product



Ezi-SERVO II EtherCAT



Ezi-SERVO II EtherCAT MINI



Ezi-SERVO II EtherCAT 4X



Ezi-SERVO II Plus-E



Ezi-SERVO II Plus-E MINI



Ezi-SERVO II CC-Link



Ezi-SERVO ST



Ezi-SERVO MINI

● Combination of Hollow Shaft Motor and Drive

· Ezi-SERVO II EtherCAT

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-EC-20M-F	HSE-20M-F	EzS2-EC-HS20M-F
Ezi-SERVO-HS-EC-20L-F	HSE-20L-F	EzS2-EC-HS20L-F
Ezi-SERVO-HS-EC-28SM-D	HSE-28SM-D	EzS2-EC-HS28S-D
Ezi-SERVO-HS-EC-28MM-D	HSE-28MM-D	EzS2-EC-HS28M-D
Ezi-SERVO-HS-EC-35MM-D	HSE-35MM-D	EzS2-EC-HS35M-D
Ezi-SERVO-HS-EC-35LM-D	HSE-35LM-D	EzS2-EC-HS35L-D
Ezi-SERVO-HS-EC-42S-A	HSE-42S-A	EzS2-EC-HS42S-A
Ezi-SERVO-HS-EC-42S-B	HSE-42S-B	EzS2-EC-HS42S-B
Ezi-SERVO-HS-EC-42L-A	HSE-42L-A	EzS2-EC-HS42L-A
Ezi-SERVO-HS-EC-42L-B	HSE-42L-B	EzS2-EC-HS42L-B
Ezi-SERVO-HS-EC-56S-A	HSE-56S-A	EzS2-EC-HS56S-A
Ezi-SERVO-HS-EC-56S-B	HSE-56S-B	EzS2-EC-HS56S-B
Ezi-SERVO-HS-EC-56M-A	HSE-56M-A	EzS2-EC-HS56M-A
Ezi-SERVO-HS-EC-56M-B	HSE-56M-B	EzS2-EC-HS56M-B
Ezi-SERVO-HS-EC-86M-A	HSE-86M-A	EzS2-EC-HS86M-A
Ezi-SERVO-HS-EC-86M-B	HSE-86M-B	EzS2-EC-HS86M-B

· Ezi-SERVO II Plus-E

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-PE-20M-F	HSE-20M-F	EzS2-PE-HS20M-F
Ezi-SERVO-HS-PE-20L-F	HSE-20L-F	EzS2-PE-HS20L-F
Ezi-SERVO-HS-PE-28SM-D	HSE-28SM-D	EzS2-PE-HS28S-D
Ezi-SERVO-HS-PE-28MM-D	HSE-28MM-D	EzS2-PE-HS28M-D
Ezi-SERVO-HS-PE-35MM-D	HSE-35MM-D	EzS2-PE-HS35M-D
Ezi-SERVO-HS-PE-35LM-D	HSE-35LM-D	EzS2-PE-HS35L-D
Ezi-SERVO-HS-PE-42S-A	HSE-42S-A	EzS2-PE-HS42S-A
Ezi-SERVO-HS-PE-42S-B	HSE-42S-B	EzS2-PE-HS42S-B
Ezi-SERVO-HS-PE-42L-A	HSE-42L-A	EzS2-PE-HS42L-A
Ezi-SERVO-HS-PE-42L-B	HSE-42L-B	EzS2-PE-HS42L-B
Ezi-SERVO-HS-PE-56S-A	HSE-56S-A	EzS2-PE-HS56S-A
Ezi-SERVO-HS-PE-56S-B	HSE-56S-B	EzS2-PE-HS56S-B
Ezi-SERVO-HS-PE-56M-A	HSE-56M-A	EzS2-PE-HS56M-A
Ezi-SERVO-HS-PE-56M-B	HSE-56M-B	EzS2-PE-HS56M-B
Ezi-SERVO-HS-PE-86M-A	HSE-86M-A	EzS2-PE-HS86M-A
Ezi-SERVO-HS-PE-86M-B	HSE-86M-B	EzS2-PE-HS86M-B

· Ezi-SERVO II EtherCAT MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-EC-MI-20M-F	HSE-20M-F	EzS2-EC-MI-HS20M-F
Ezi-SERVO-HS-EC-MI-20L-F	HSE-20L-F	EzS2-EC-MI-HS20L-F
Ezi-SERVO-HS-EC-MI-28SM-D	HSE-28SM-D	EzS2-EC-MI-HS28S-D
Ezi-SERVO-HS-EC-MI-28MM-D	HSE-28MM-D	EzS2-EC-MI-HS28M-D
Ezi-SERVO-HS-EC-MI-35MM-D	HSE-35MM-D	EzS2-EC-MI-HS35M-D
Ezi-SERVO-HS-EC-MI-35LM-D	HSE-35LM-D	EzS2-EC-MI-HS35L-D
Ezi-SERVO-HS-EC-MI-42S-A	HSE-42S-A	EzS2-EC-MI-HS42S-A
Ezi-SERVO-HS-EC-MI-42S-B	HSE-42S-B	EzS2-EC-MI-HS42S-B
Ezi-SERVO-HS-EC-MI-42L-A	HSE-42L-A	EzS2-EC-MI-HS42L-A
Ezi-SERVO-HS-EC-MI-42L-B	HSE-42L-B	EzS2-EC-MI-HS42L-B
Ezi-SERVO-HS-EC-MI-56S-A	HSE-56S-A	EzS2-EC-MI-HS56S-A
Ezi-SERVO-HS-EC-MI-56S-B	HSE-56S-B	EzS2-EC-MI-HS56S-B
Ezi-SERVO-HS-EC-MI-56M-A	HSE-56M-A	EzS2-EC-MI-HS56M-A
Ezi-SERVO-HS-EC-MI-56M-B	HSE-56M-B	EzS2-EC-MI-HS56M-B

· Ezi-SERVO II Plus-E MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-PE-MI-20M-F	HSE-20M-F	EzS2-PE-MI-HS20M-F
Ezi-SERVO-HS-PE-MI-20L-F	HSE-20L-F	EzS2-PE-MI-HS20L-F
Ezi-SERVO-HS-PE-MI-28SM-D	HSE-28SM-D	EzS2-PE-MI-HS28S-D
Ezi-SERVO-HS-PE-MI-28MM-D	HSE-28MM-D	EzS2-PE-MI-HS28M-D
Ezi-SERVO-HS-PE-MI-35MM-D	HSE-35MM-D	EzS2-PE-MI-HS35M-D
Ezi-SERVO-HS-PE-MI-35LM-D	HSE-35LM-D	EzS2-PE-MI-HS35L-D
Ezi-SERVO-HS-PE-MI-42S-A	HSE-42S-A	EzS2-PE-MI-HS42S-A
Ezi-SERVO-HS-PE-MI-42S-B	HSE-42S-B	EzS2-PE-MI-HS42S-B
Ezi-SERVO-HS-PE-MI-42L-A	HSE-42L-A	EzS2-PE-MI-HS42L-A
Ezi-SERVO-HS-PE-MI-42L-B	HSE-42L-B	EzS2-PE-MI-HS42L-B
Ezi-SERVO-HS-PE-MI-56S-A	HSE-56S-A	EzS2-PE-MI-HS56S-A
Ezi-SERVO-HS-PE-MI-56S-B	HSE-56S-B	EzS2-PE-MI-HS56S-B
Ezi-SERVO-HS-PE-MI-56M-A	HSE-56M-A	EzS2-PE-MI-HS56M-A
Ezi-SERVO-HS-PE-MI-56M-B	HSE-56M-B	EzS2-PE-MI-HS56M-B

· Ezi-SERVO II EtherCAT 4X

For motor and drive combinations, please contact local dealer or FASTECH sales department.
Ezi-SERVO II EtherCAT 4X product is basically a 4 axis type product, and you can also select Ezi-SERVO II EtherCAT 3X, a 3 axis type product.

· Ezi-SERVO II CC-Link

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-CL-20M-F	HSE-20M-F	EzS2-CL-HS20M-F
Ezi-SERVO-HS-CL-20L-F	HSE-20L-F	EzS2-CL-HS20L-F
Ezi-SERVO-HS-CL-28SM-D	HSE-28SM-D	EzS2-CL-HS28S-D
Ezi-SERVO-HS-CL-28MM-D	HSE-28MM-D	EzS2-CL-HS28M-D
Ezi-SERVO-HS-CL-35MM-D	HSE-35MM-D	EzS2-CL-HS35M-D
Ezi-SERVO-HS-CL-35LM-D	HSE-35LM-D	EzS2-CL-HS35L-D
Ezi-SERVO-HS-CL-42S-A	HSE-42S-A	EzS2-CL-HS42S-A
Ezi-SERVO-HS-CL-42S-B	HSE-42S-B	EzS2-CL-HS42S-B
Ezi-SERVO-HS-CL-42L-A	HSE-42L-A	EzS2-CL-HS42L-A
Ezi-SERVO-HS-CL-42L-B	HSE-42L-B	EzS2-CL-HS42L-B
Ezi-SERVO-HS-CL-56S-A	HSE-56S-A	EzS2-CL-HS56S-A
Ezi-SERVO-HS-CL-56S-B	HSE-56S-B	EzS2-CL-HS56S-B
Ezi-SERVO-HS-CL-56M-A	HSE-56M-A	EzS2-CL-HS56M-A
Ezi-SERVO-HS-CL-56M-B	HSE-56M-B	EzS2-CL-HS56M-B
Ezi-SERVO-HS-CL-86M-A	HSE-86M-A	EzS2-CL-HS86M-A
Ezi-SERVO-HS-CL-86M-B	HSE-86M-B	EzS2-CL-HS86M-B

● Combination of Hollow Shaft Motor and Drive

· Ezi-SERVO ST

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-ST-20M-F	HSE-20M-F	EzS-PD-HS20M-F
Ezi-SERVO-HS-ST-20L-F	HSE-20L-F	EzS-PD-HS20L-F
Ezi-SERVO-HS-ST-28SM-D	HSE-28SM-D	EzS-PD-HS28S-D
Ezi-SERVO-HS-ST-28MM-D	HSE-28MM-D	EzS-PD-HS28M-D
Ezi-SERVO-HS-ST-35MM-D	HSE-35MM-D	EzS-PD-HS35M-D
Ezi-SERVO-HS-ST-35LM-D	HSE-35LM-D	EzS-PD-HS35L-D
Ezi-SERVO-HS-ST-42S-A	HSE-42S-A	EzS-PD-HS42S-A
Ezi-SERVO-HS-ST-42S-B	HSE-42S-B	EzS-PD-HS42S-B
Ezi-SERVO-HS-ST-42L-A	HSE-42L-A	EzS-PD-HS42L-A
Ezi-SERVO-HS-ST-42L-B	HSE-42L-B	EzS-PD-HS42L-B
Ezi-SERVO-HS-ST-56S-A	HSE-56S-A	EzS-PD-HS56S-A
Ezi-SERVO-HS-ST-56S-B	HSE-56S-B	EzS-PD-HS56S-B
Ezi-SERVO-HS-ST-56M-A	HSE-56M-A	EzS-PD-HS56M-A
Ezi-SERVO-HS-ST-56M-B	HSE-56M-B	EzS-PD-HS56M-B
Ezi-SERVO-HS-ST-86M-A	HSE-86M-A	EzS-PD-HS86M-A
Ezi-SERVO-HS-ST-86M-B	HSE-86M-B	EzS-PD-HS86M-B

· Ezi-SERVO MINI

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-HS-MI-20M-F	HSE-20M-F	EzS-PD-MI-HS20M-F
Ezi-SERVO-HS-MI-20L-F	HSE-20L-F	EzS-PD-MI-HS20L-F
Ezi-SERVO-HS-MI-28SM-D	HSE-28SM-D	EzS-PD-MI-HS28S-D
Ezi-SERVO-HS-MI-28MM-D	HSE-28MM-D	EzS-PD-MI-HS28M-D
Ezi-SERVO-HS-MI-35MM-D	HSE-35MM-D	EzS-PD-MI-HS35M-D
Ezi-SERVO-HS-MI-35LM-D	HSE-35LM-D	EzS-PD-MI-HS35L-D
Ezi-SERVO-HS-MI-42S-A	HSE-42S-A	EzS-PD-MI-HS42S-A
Ezi-SERVO-HS-MI-42S-B	HSE-42S-B	EzS-PD-MI-HS42S-B
Ezi-SERVO-HS-MI-42L-A	HSE-42L-A	EzS-PD-MI-HS42L-A
Ezi-SERVO-HS-MI-42L-B	HSE-42L-B	EzS-PD-MI-HS42L-B

Specifications of Hollow Shaft Motor

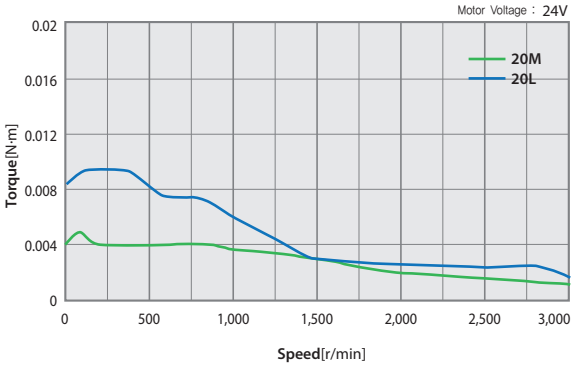
MODEL			UNIT	HSE-20 series 20M	HSE-20 series 20L	HSE-28 series 28S	HSE-28 series 28M	HSE-35 series 35M	HSE-35 series 35L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	0.5	0.5	1.0	1.0	1.0	1.0
MAXIMUM HOLDING TORQUE			N·m	0.014	0.02	0.053	0.117	0.19	0.36
ROTOR INERTIA			g·cm^2	2.45	3.7	6.23	11	17	28
WEIGHTS			kg	0.080	0.100	0.159	0.212	0.211	0.289
LENGTH(L)			mm	27.2	38.1	33.35	45	33.6	45.6
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	38	38	22	22
		8mm		30	30	53	53	26	26
		13mm		–	–	–	–	33	33
		18mm		–	–	–	–	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

MODEL			UNIT	HSE-42 series 42S	HSE-42 series 42L	HSE-56 series 56S	HSE-56 series 56M	HSE-86 series 86M
DRIVE METHOD			–	Bipolar				
NUMBER OF PHASES			–	2 Phase				
CURRENT per PHASE			A/Phase	1.0	2.5	2.0	2.5	3.0
MAXIMUM HOLDING TORQUE			N·m	0.31	0.56	1.2	2.1	4.5
ROTOR INERTIA			g·cm^2	30.3	58.1	147.1	281.2	1265.3
WEIGHTS			kg	0.281	0.420	0.566	0.880	2.226
LENGTH(L)			mm	34.1	48.1	45	65	76
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	52	52	270
		8mm		26	26	65	65	300
		13mm		33	33	85	85	350
		18mm		46	46	123	123	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight				
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)				
INSULATION CLASS			–	CLASS B(130℃)				
OPERATING TEMPERATURE			℃	0 ~ 55				

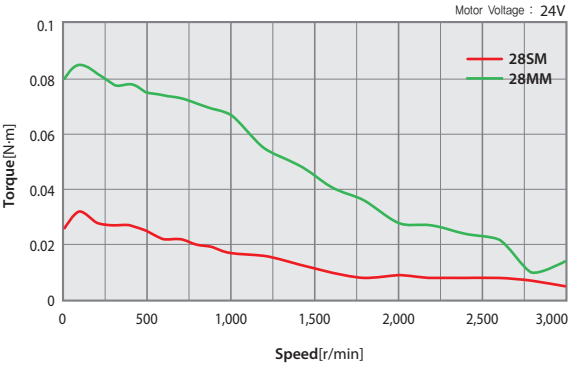
● Torque Characteristics of Hollow Shaft Motor

Applied Drive Series			
Ezi-SERVO-HS-EC	Ezi-SERVO-HS-PE	Ezi-SERVO-HS-CL	Ezi-SERVO-HS-ST

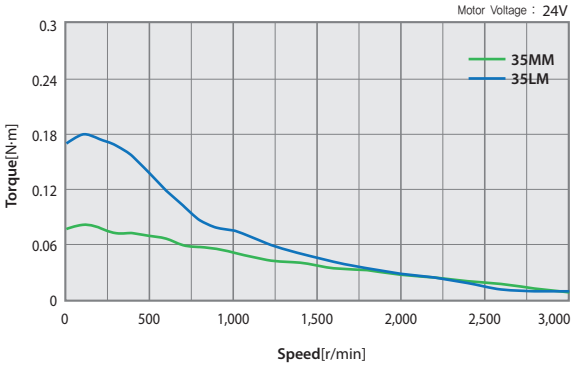
Ezi-SERVO-HS-□-20 series



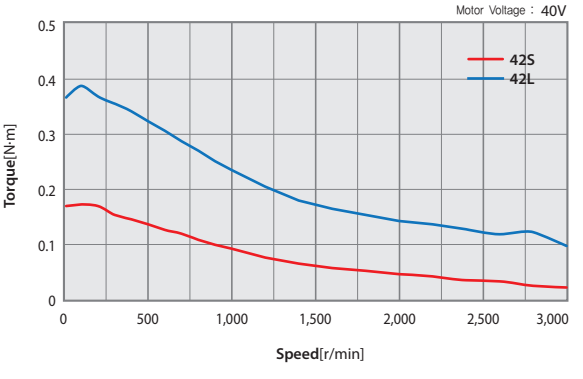
Ezi-SERVO-HS-□-28 series



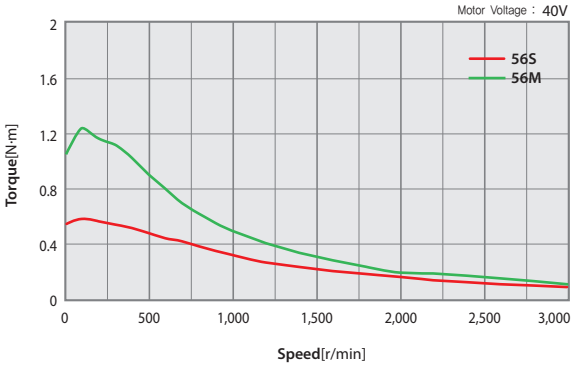
Ezi-SERVO-HS-□-35 series



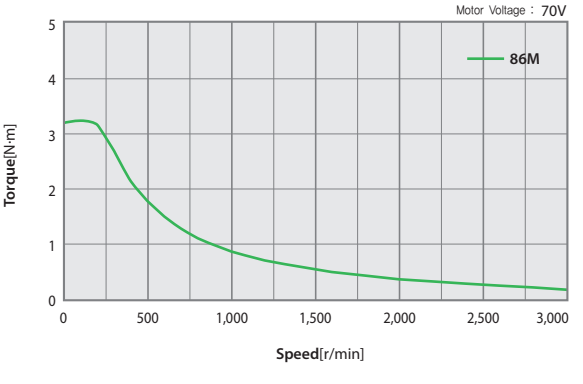
Ezi-SERVO-HS-□-42 series



Ezi-SERVO-HS-□-56 series



Ezi-SERVO-HS-□-86 series

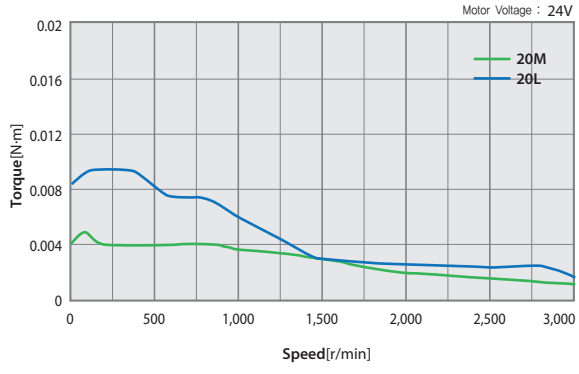


※ □ Drive Series

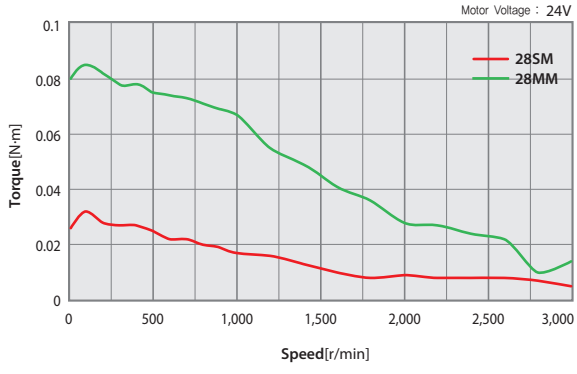
● Torque Characteristics of Hollow Shaft Motor

Applied Drive Series			
Ezi-SERVO-HS-EC-MI	Ezi-SERVO-HS-EC-4X	Ezi-SERVO-HS-PE-MI	Ezi-SERVO-HS-MI

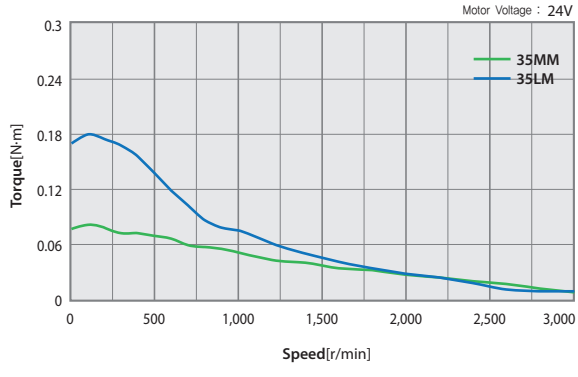
Ezi-SERVO-HS-□-20 series



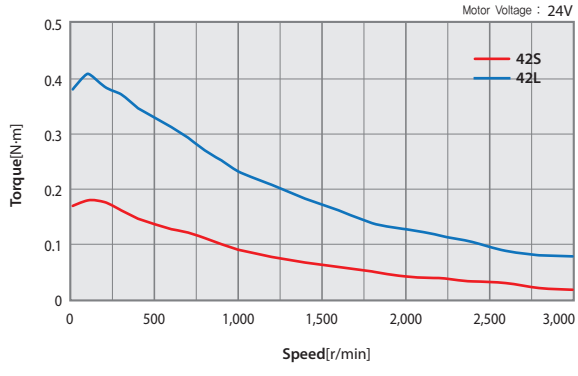
Ezi-SERVO-HS-□-28 series



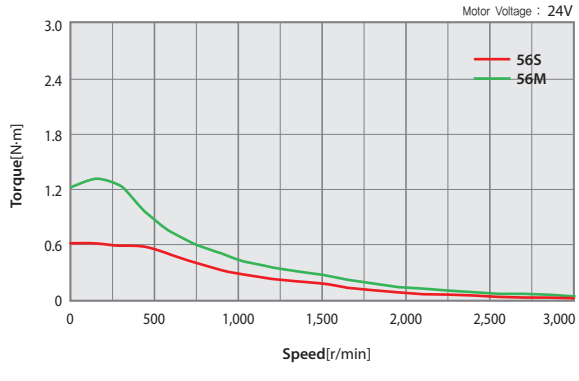
Ezi-SERVO-HS-□-35 series



Ezi-SERVO-HS-□-42 series

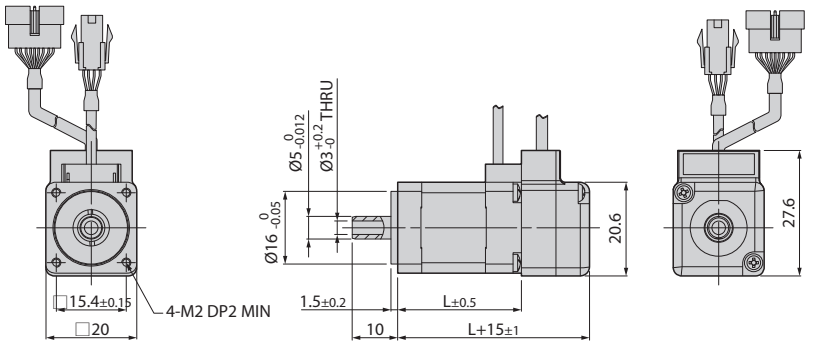


Ezi-SERVO-HS-□-56 series



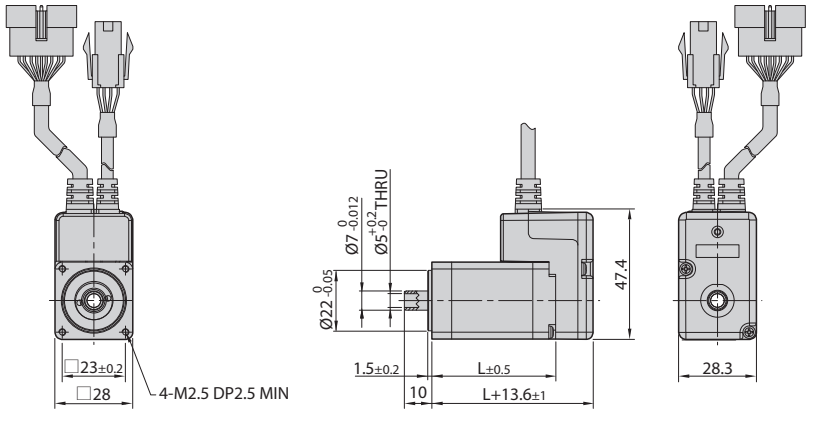
※ □ Drive Series
※ Ezi-SERVO-HS-MI doesn't have 56 series.

● Dimensions of Hollow Shaft Motor [mm]



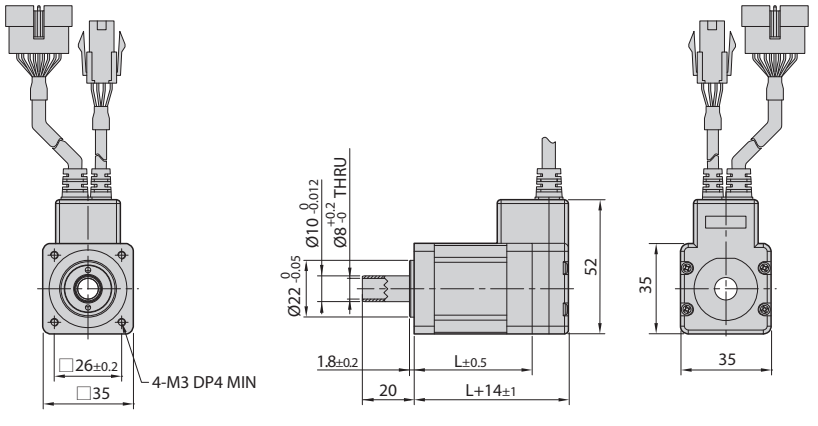
20mm

Model name	Length(L)
HSE-20M	27.2
HSE-20L	39.7



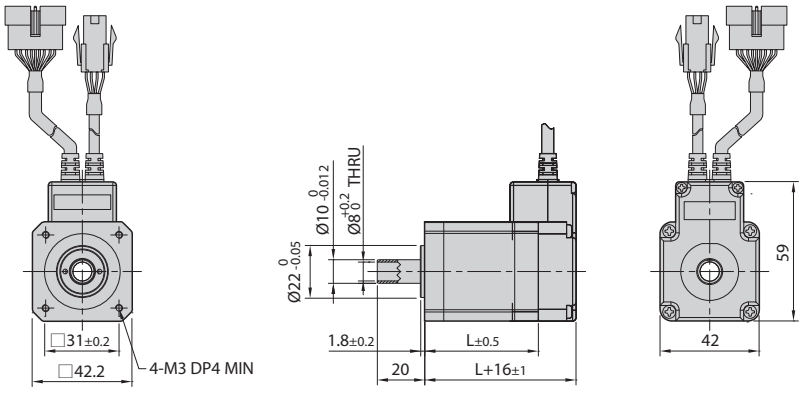
28mm

Model name	Length(L)
HSE-28SM	33.35
HSE-28MM	45



35mm

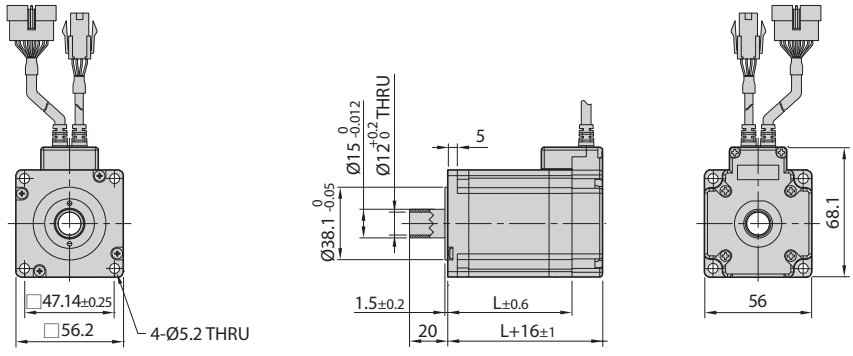
Model name	Length(L)
HSE-35MM	33.6
HSE-35LM	45.6



42mm

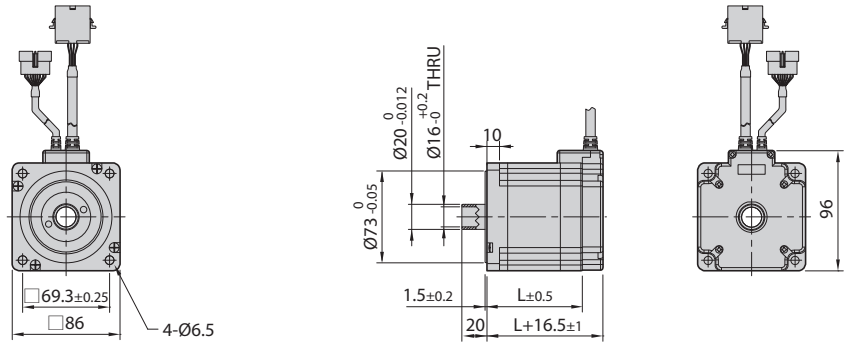
Model name	Length(L)
HSE-42S	34.1
HSE-42L	48.1

● Dimensions of Hollow Shaft Motor [mm]



56mm

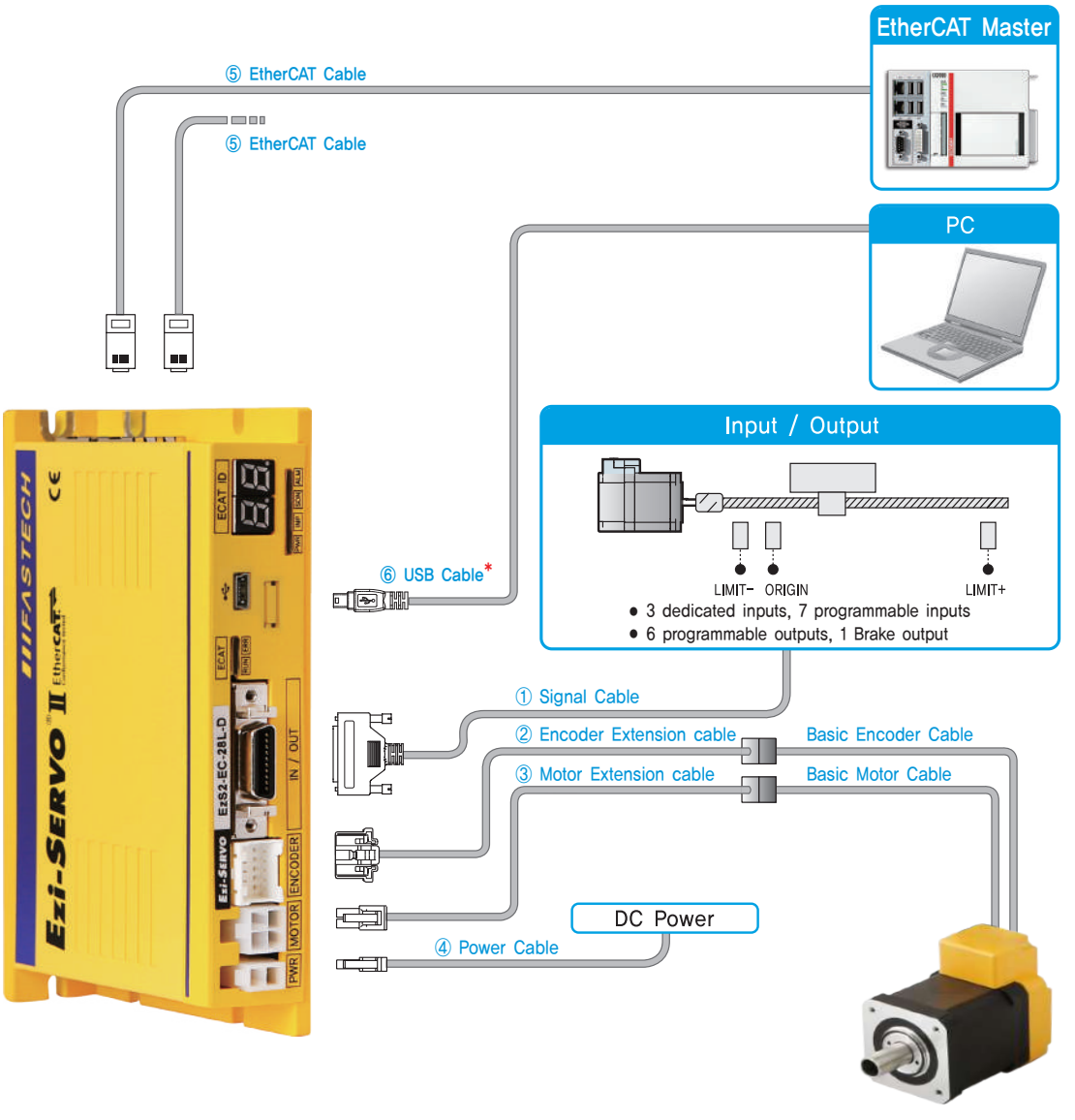
Model name	Length(L)
HSE-56S	45
HSE-56M	65



86mm

Model name	Length(L)
HSE-86M	76

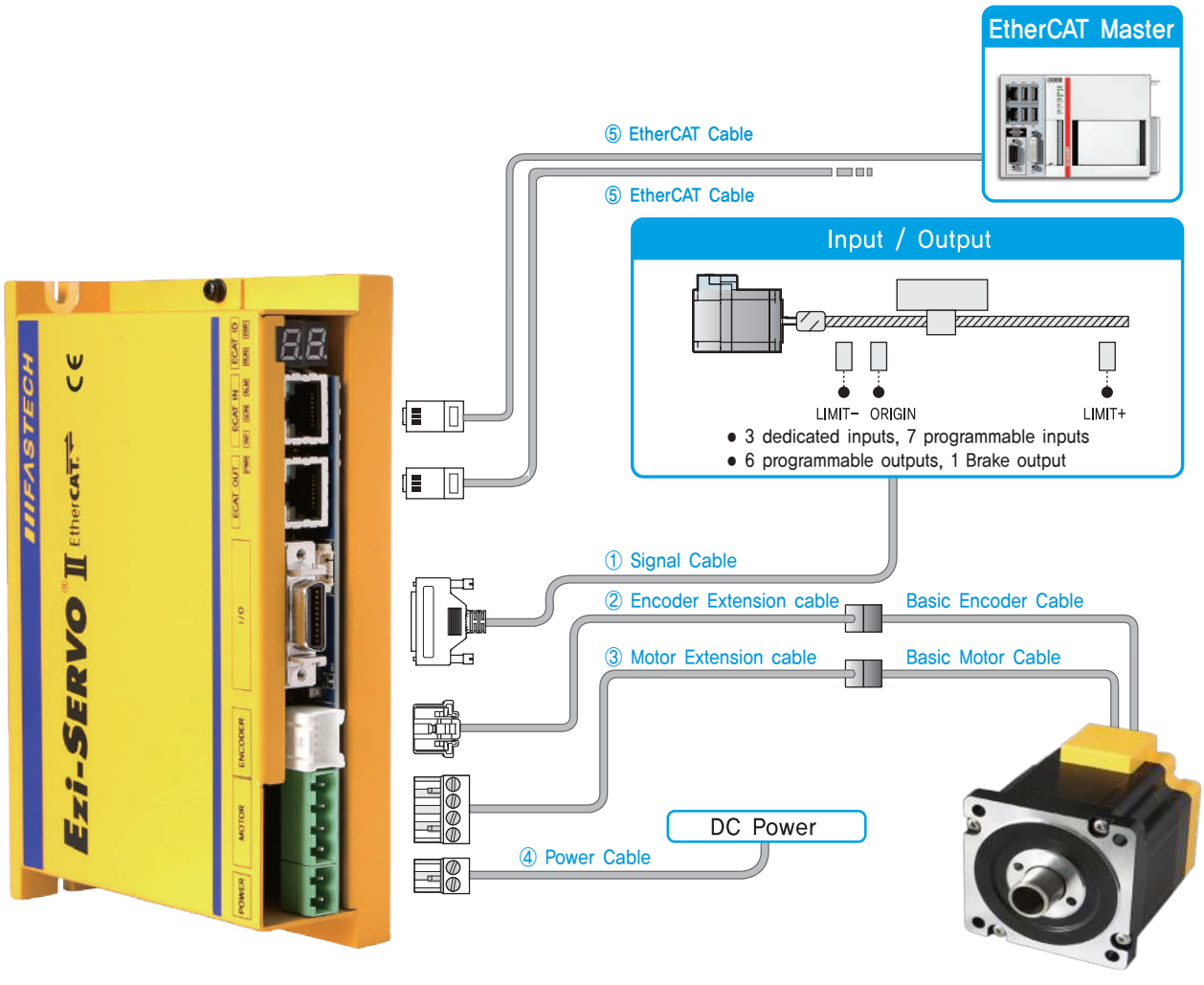
System Configuration [Ezi-SERVO II EtherCAT]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT catalog for more detailed information about Ezi-SERVO II EtherCAT drive.

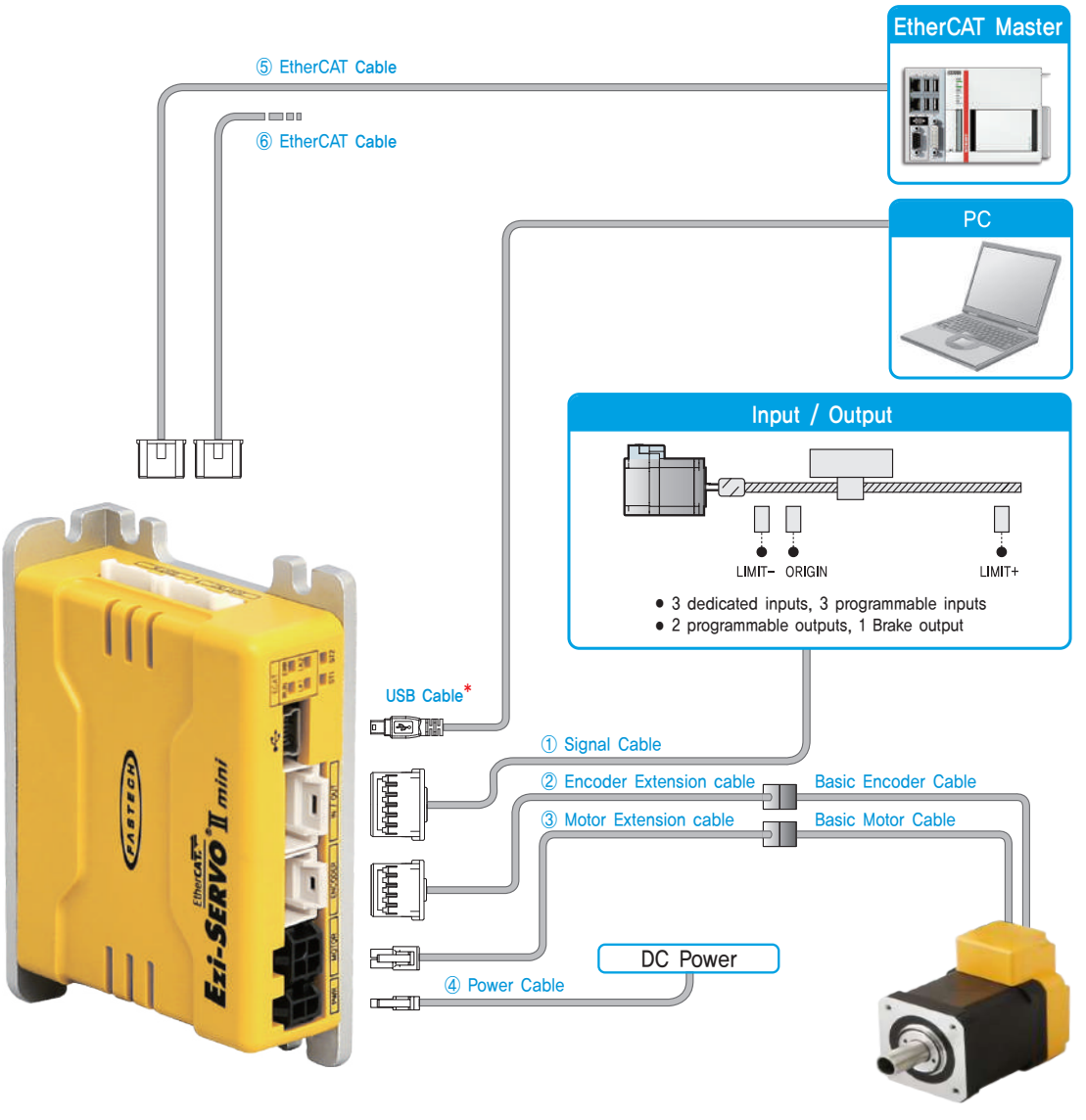
● System Configuration [Ezi-SERVO II EtherCAT 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT catalog for more detailed information about Ezi-SERVO II EtherCAT drive.

● System Configuration [Ezi-SERVO II EtherCAT MINI]

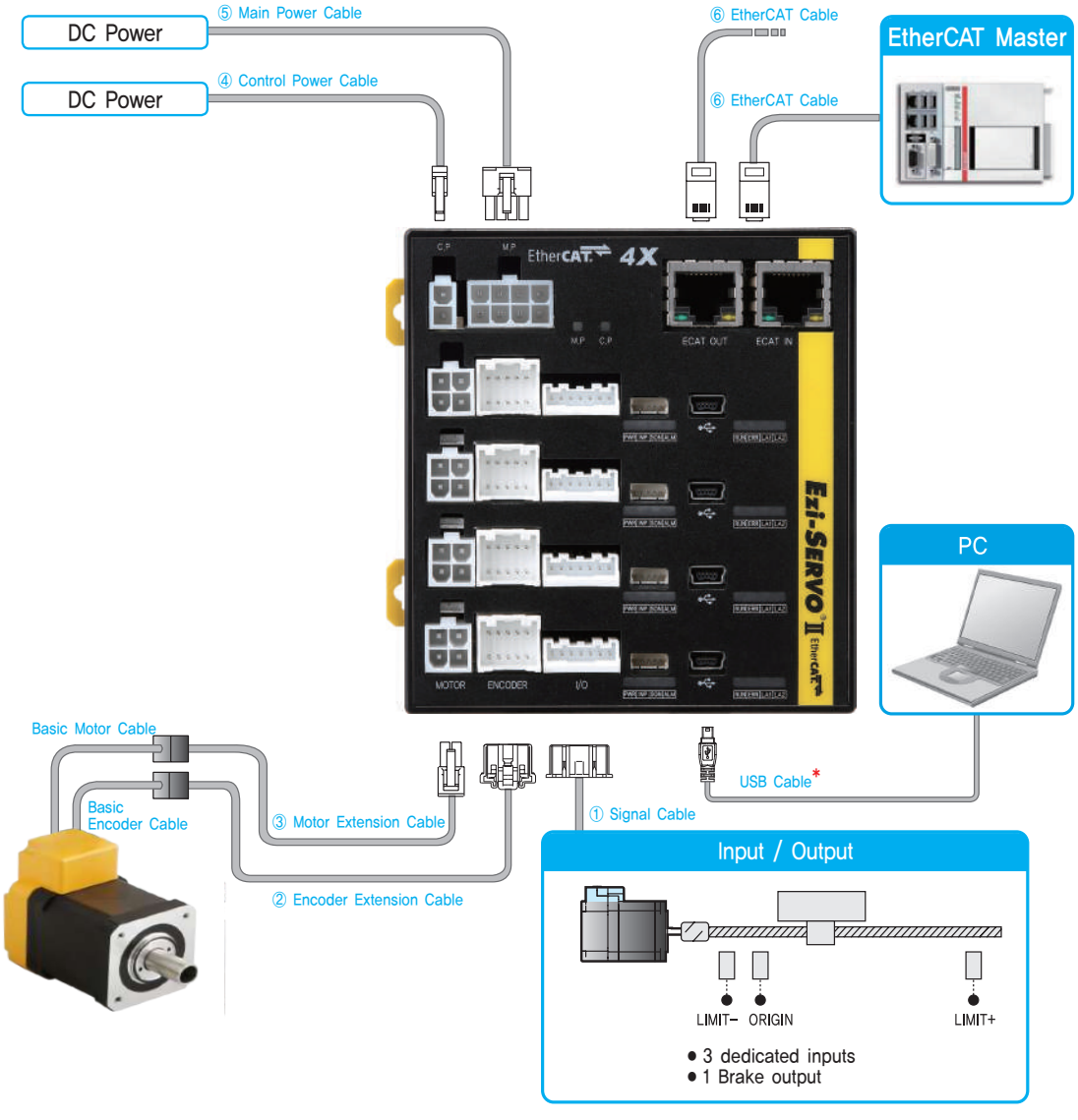


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

● Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.

● Please refer to Ezi-SERVO II EtherCAT MINI catalog for more detailed information about Ezi-SERVO II EtherCAT MINI drive.

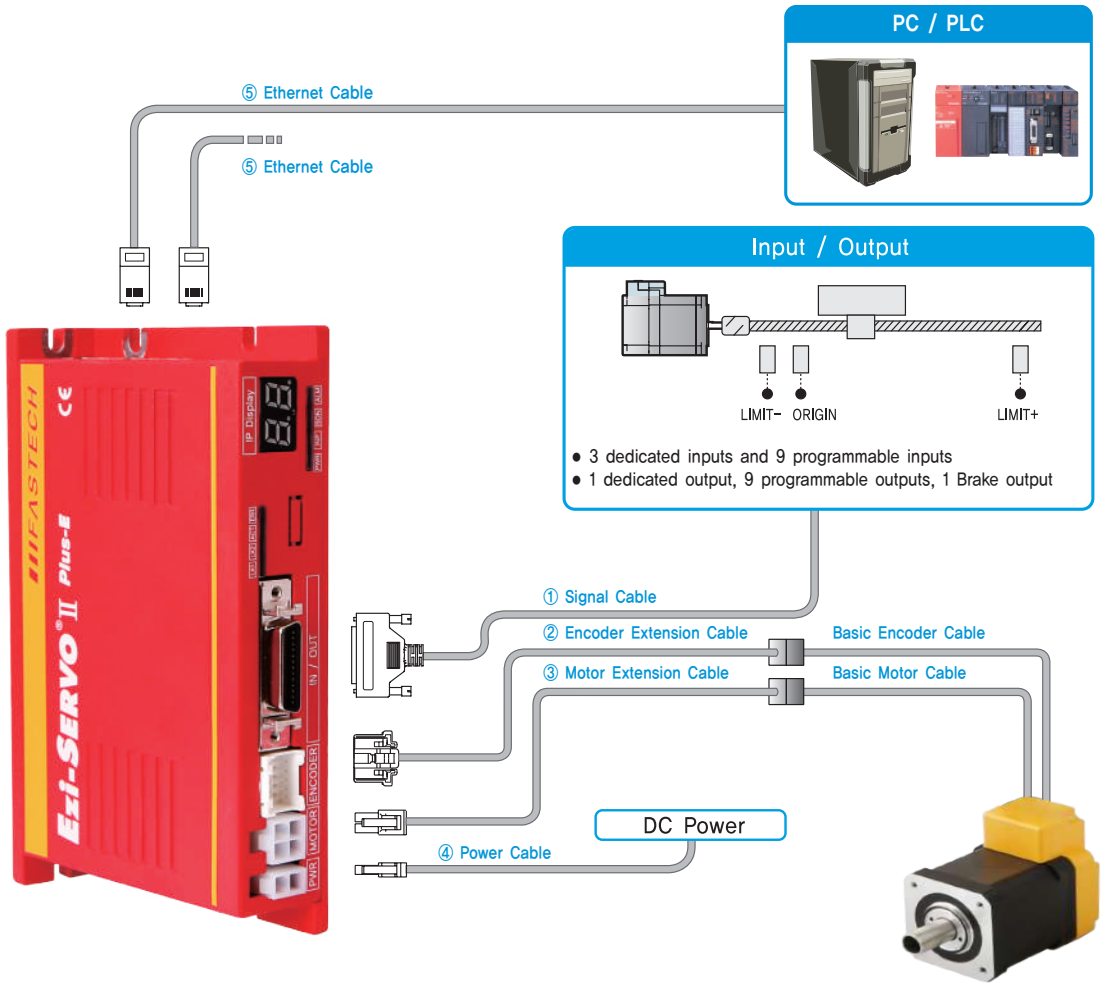
● System Configuration [Ezi-SERVO II EtherCAT 4X]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Cable	20m	
③ Motor Extension Cable	20m	
④ Control Power Cable	2m	
⑤ Main Power Cable	2m	
⑥ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

- Ezi-SERVO II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employes CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT 4X catalog for more detailed information about Ezi-SERVO II EtherCAT 4X drive.

System Configuration [Ezi-SERVO II Plus-E]

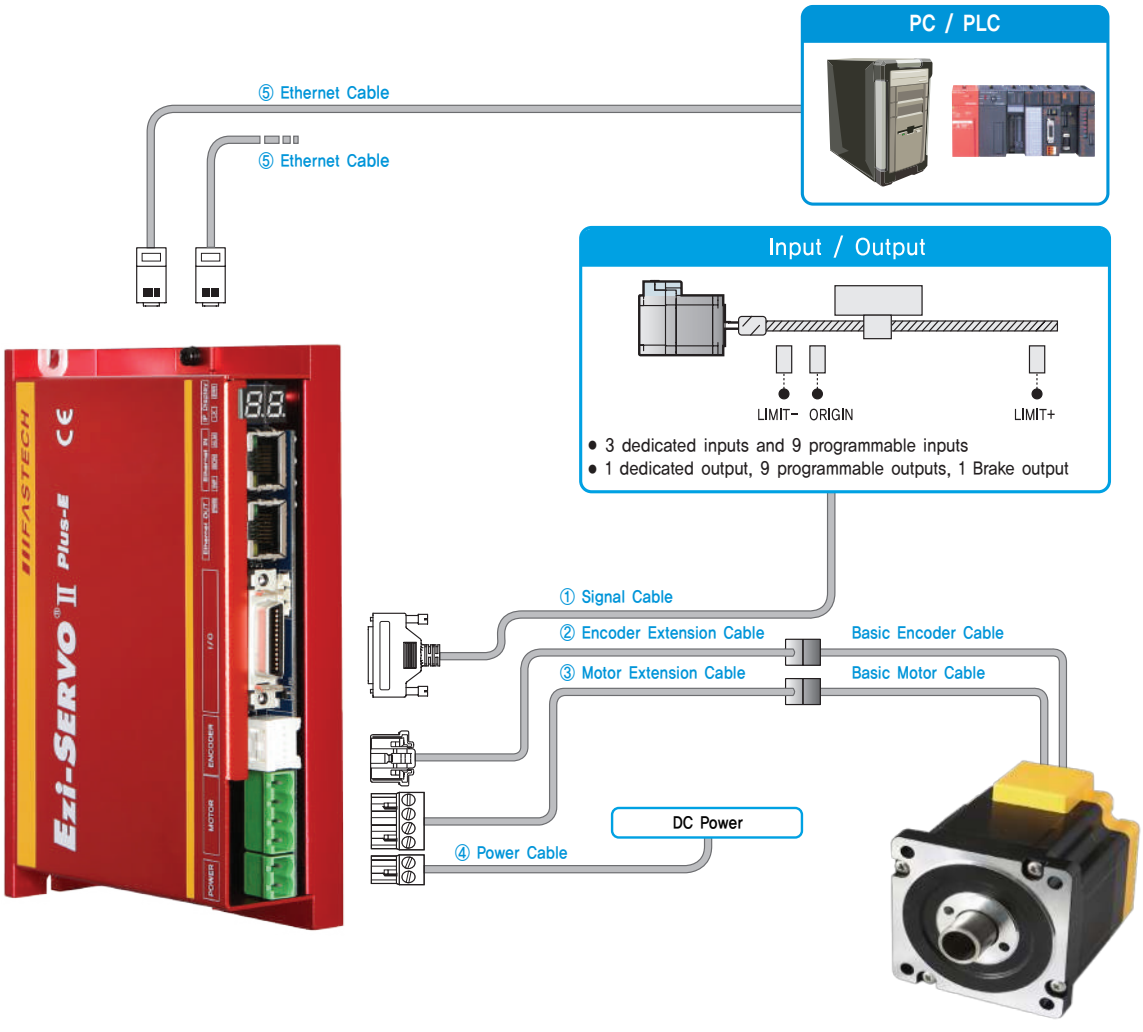


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

• Ezi-SERVO II Plus-E is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E provides a motion library(API) for programming in Windows 7/8/10.

• Please refer to Ezi-SERVO II Plus-E catalog for more detailed information about Ezi-SERVO II Plus-E drive.

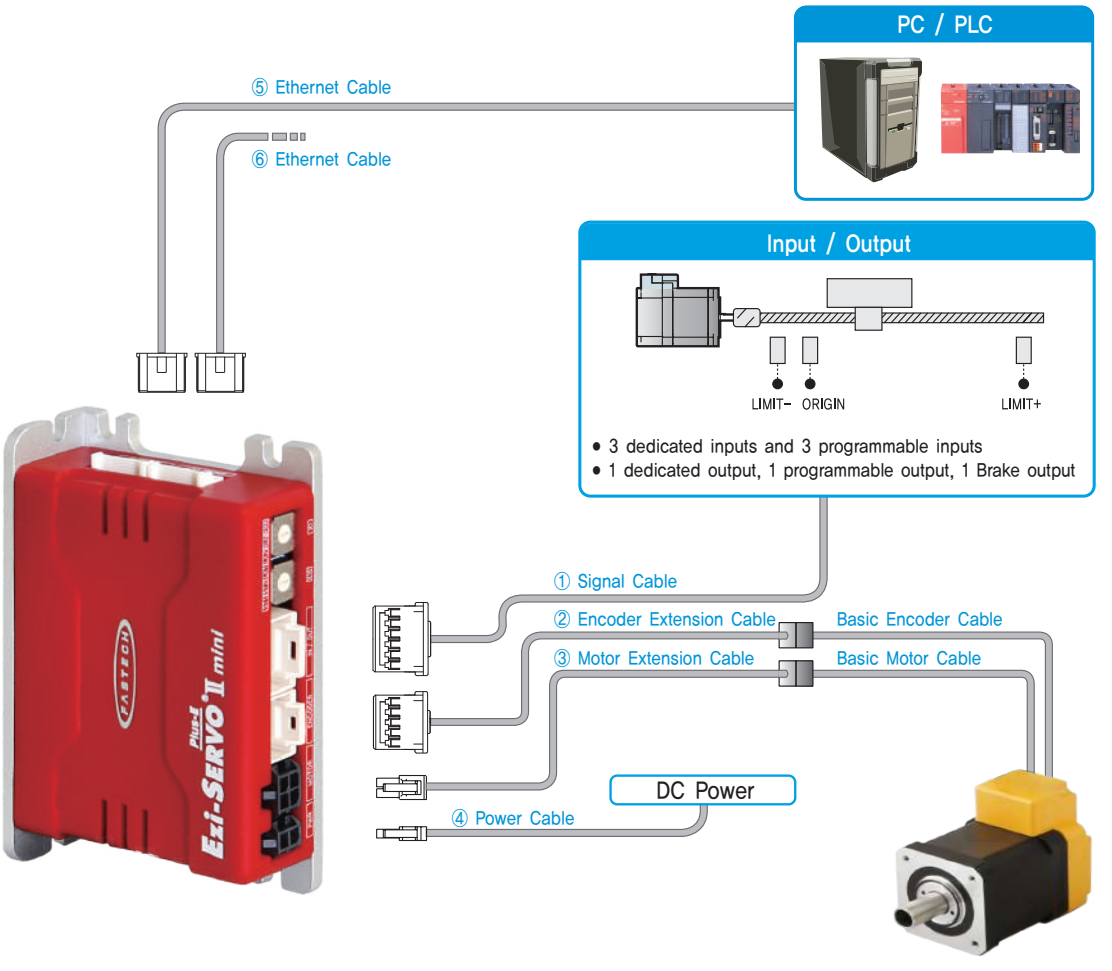
System Configuration [Ezi-SERVO II Plus-E 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II Plus-E is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E provides a motion library(API) for programming in Windows 7/8/10.
- Please refer to Ezi-SERVO II Plus-E catalog for more detailed information about Ezi-SERVO II Plus-E drive.

System Configuration [Ezi-SERVO II Plus-E MINI]

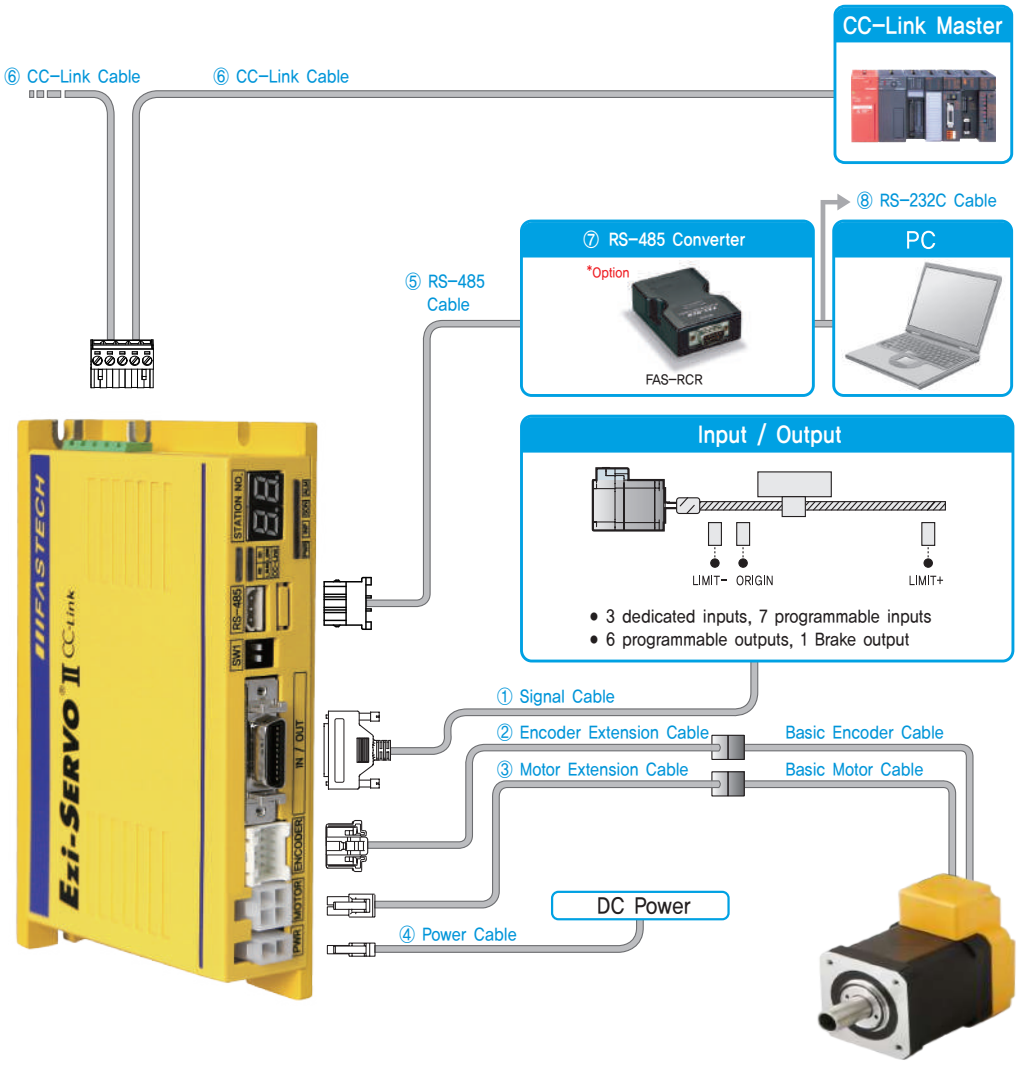


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

• Ezi-SERVO II Plus-E MINI is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E MINI provides a motion library(API) for programming in Windows 7/8/10.

• Please refer to Ezi-SERVO II Plus-E MINI catalog for more detailed information about Ezi-SERVO II Plus-E MINI drive.

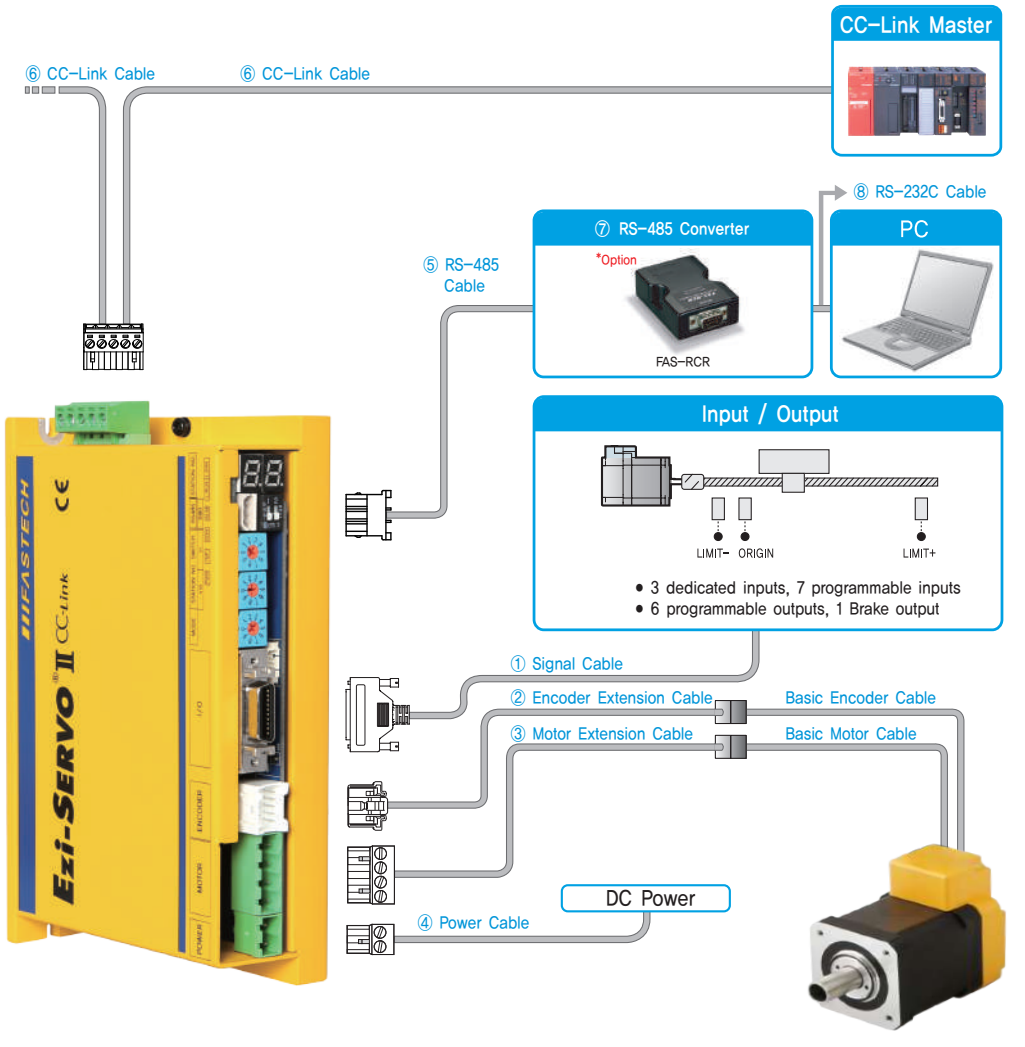
System Configuration [Ezi-SERVO II CC-Link]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ RS-485 Cable	2m	
⑥ CC-Link Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II CC-Link is a remote device module that supports high speed Fieldbus(Max. 10Mbps) network. It occupies 1 to 3 station in CC-Link, enabling multi-function control, and processes motion and monitoring functions with device commands.
- Please refer to Ezi-SERVO II CC-Link catalog for more detailed information about Ezi-SERVO II CC-Link drive.

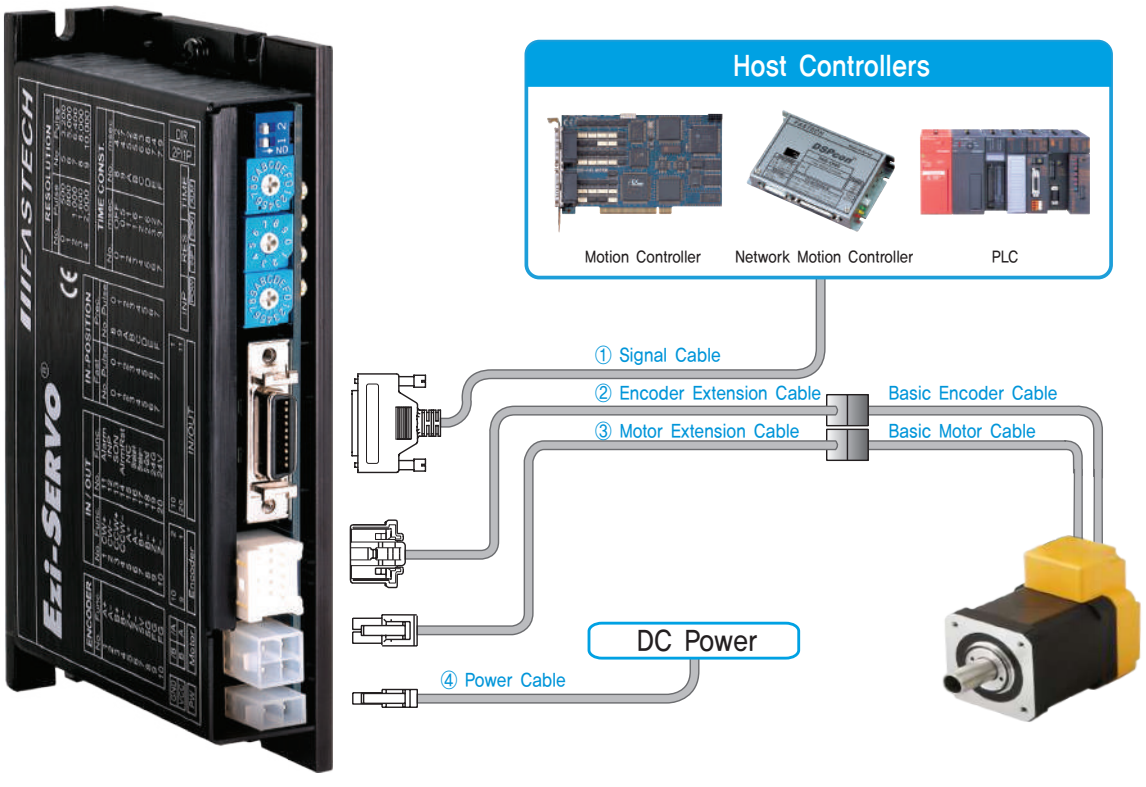
System Configuration [Ezi-SERVO II CC-Link 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ RS-485 Cable	2m	
⑥ CC-Link Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II CC-Link is a remote device module that supports high speed Fieldbus(Max. 10Mbps) network. It occupies 1 to 3 station in CC-Link, enabling multi-function control, and processes motion and monitoring functions with device commands.
- Please refer to Ezi-SERVO II CC-Link catalog for more detailed information about Ezi-SERVO II CC-Link drive.

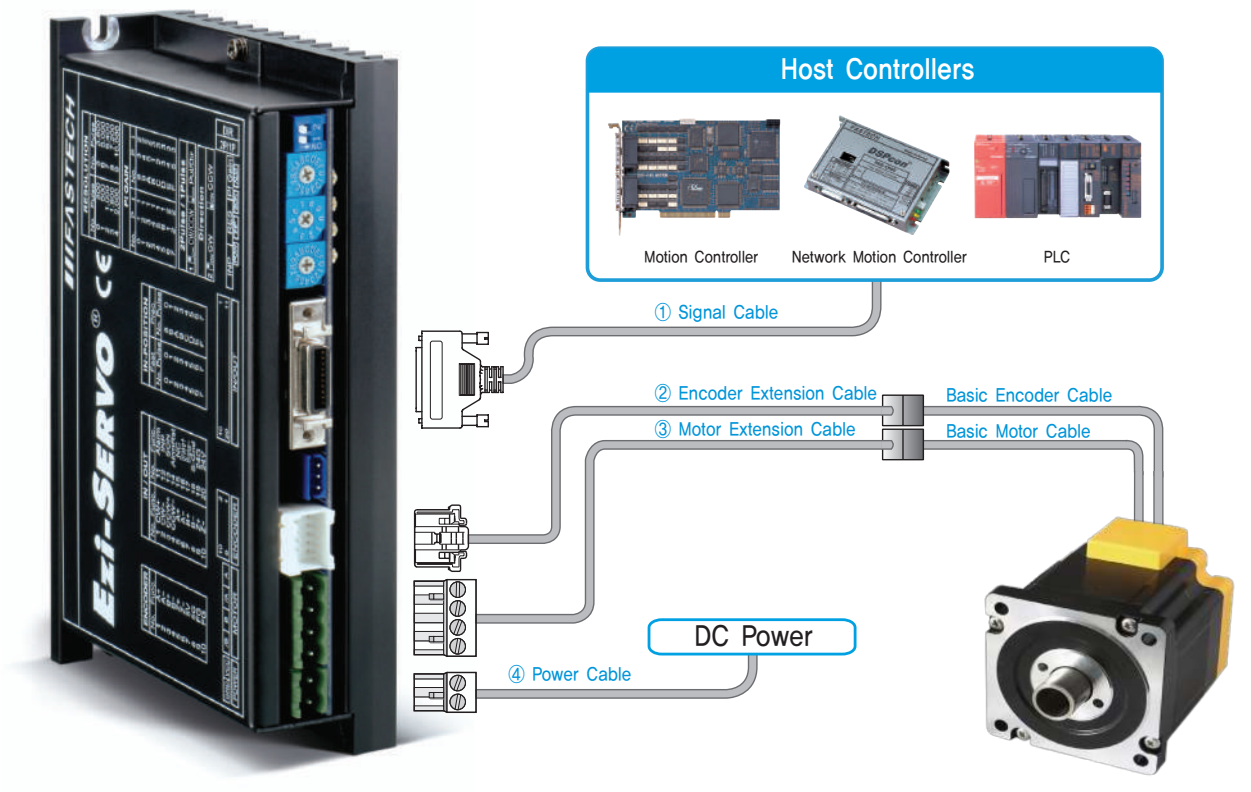
System Configuration [Ezi-SERVO ST]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO ST is a pulse input type drive.
- Please refer to Ezi-SERVO ST catalog for more detailed information about Ezi-SERVO ST drive.

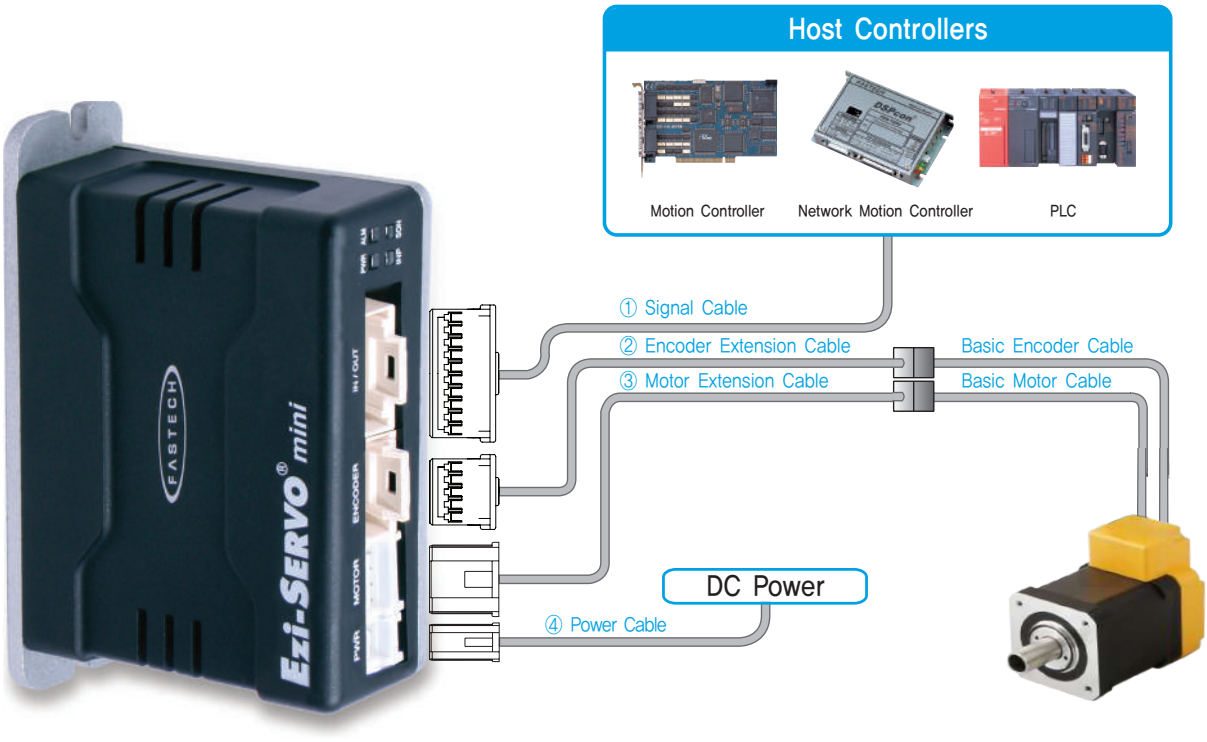
System Configuration [Ezi-SERVO ST 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO ST is a pulse input type drive.
- Please refer to Ezi-SERVO ST catalog for more detailed information about Ezi-SERVO ST drive.

System Configuration [Ezi-SERVO MINI]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO MINI is a pulse input type drive.
- Please refer to Ezi-SERVO MINI catalog for more detailed information about Ezi-SERVO ST drive.

FASTECH_
Product Information

Ezi-SERVO®

Ezi-STEP®

- ST
- MINI
- BT
- EtherCAT
- EtherCAT MINI
- EtherCAT 4X
- Plus-E
- Plus-E MINI
- Plus-E ALL
- CC-Link

OPTION

Ezi-IO®

Ezi-MotionLink®

Ezi-MotionGate®

Ezi-Robo®

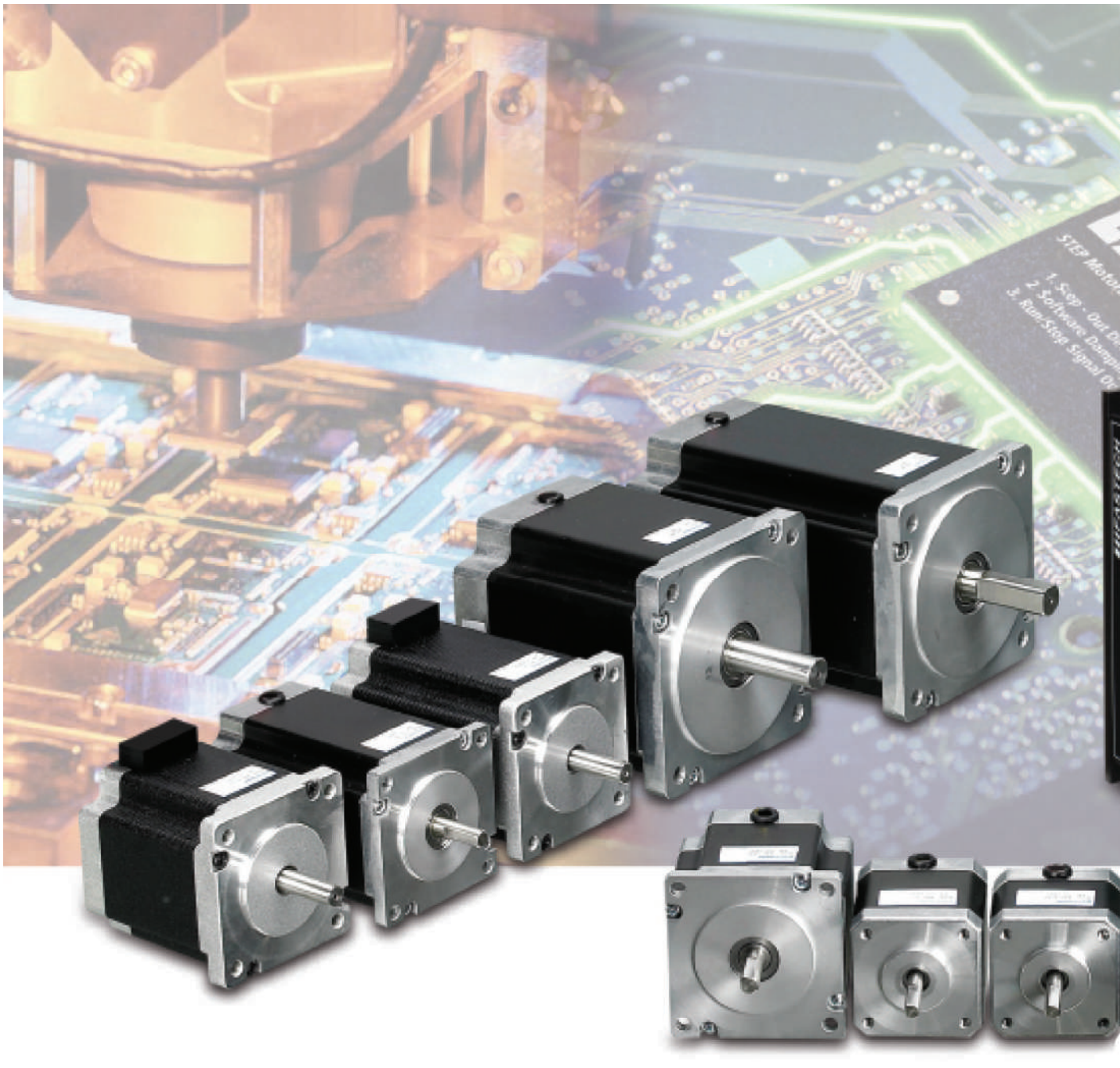
Ezi-SPEED®


Ezi-STEP
Bipolar Step Drive
MPB-80L
Ezi-STEP MiniPower
Bipolar Step Drive
MPB-86XL

Ezi-STEP® ST

Micro Stepping System

- Microstepping
- Software Damping
- High Torque
- Run/Stop Signal Output



FASTECH

Fast, Accurate, Smooth Motion

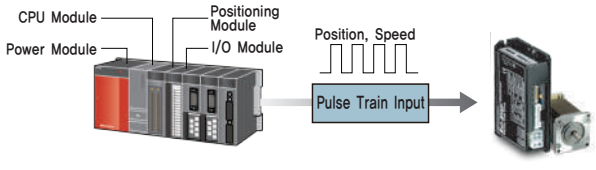
Ezi-STEP® ST

Micro Stepping System



1 Standalone Motion Control

Ezi-STEP ST is a standalone stepping motor control system that drives the motor by receiving pulse signals from the positioning module (pulse oscillator).

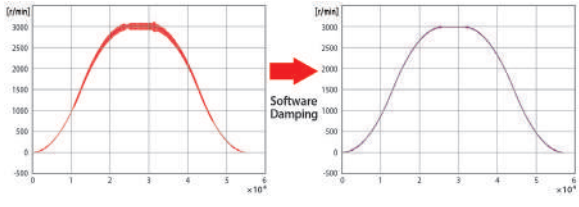


2 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP applies filtering control to enable smooth operation even at very low-speed.

3 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

4 Signal Output for Motion Monitoring

Ezi-STEP outputs the Run/Stop signal during operation, so you can check whether the motor is operating normally through the host controller.

5 Improved high-speed operation performance

Depending on the speed of a stepping motor, Ezi-STEP automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

※ Applicable model : Ezi-STEP-MPB-42 Series
Ezi-STEP-MPB-56 Series
Ezi-STEP-MPB-60 Series
Ezi-STEP-HPB-86 Series

Ezi-STEP ST Part Numbering

Ezi-STEP-MPB-56L-BK

- **Series Name**
- **Type Name**
  - [ST: Stand Alone]
  - MPB: Mini Power
  - HPB: High Power
- **Motor Flange Size**
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MPB-42S	BM-42S	EzStep-MPB-42S
Ezi-STEP-MPB-42M	BM-42M	EzStep-MPB-42M
Ezi-STEP-MPB-42L	BM-42L	EzStep-MPB-42L
Ezi-STEP-MPB-42XL	BM-42XL	EzStep-MPB-42XL
Ezi-STEP-MPB-56S	BM-56S	EzStep-MPB-56S
Ezi-STEP-MPB-56M	BM-56M	EzStep-MPB-56M
Ezi-STEP-MPB-56L	BM-56L	EzStep-MPB-56L
Ezi-STEP-MPB-60S	BM-60S	EzStep-MPB-60S
Ezi-STEP-MPB-60M	BM-60M	EzStep-MPB-60M
Ezi-STEP-MPB-60L	BM-60L	EzStep-MPB-60L
Ezi-STEP-HPB-86M	BM-86M	EzStep-HPB-86M
Ezi-STEP-HPB-86L	BM-86L	EzStep-HPB-86L
Ezi-STEP-HPB-86XL	BM-86XL	EzStep-HPB-86XL

Combination with Brake

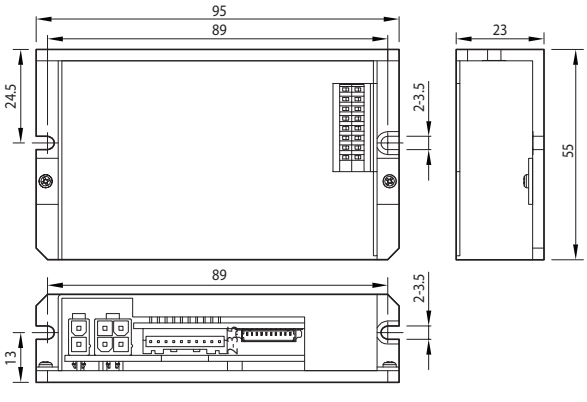
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MPB-42S-BK	BM-42S-BK	EzStep-MPB-42S
Ezi-STEP-MPB-42M-BK	BM-42M-BK	EzStep-MPB-42M
Ezi-STEP-MPB-42L-BK	BM-42L-BK	EzStep-MPB-42L
Ezi-STEP-MPB-42XL-BK	BM-42XL-BK	EzStep-MPB-42XL
Ezi-STEP-MPB-56S-BK	BM-56S-BK	EzStep-MPB-56S
Ezi-STEP-MPB-56M-BK	BM-56M-BK	EzStep-MPB-56M
Ezi-STEP-MPB-56L-BK	BM-56L-BK	EzStep-MPB-56L
Ezi-STEP-MPB-60S-BK	BM-60S-BK	EzStep-MPB-60S
Ezi-STEP-MPB-60M-BK	BM-60M-BK	EzStep-MPB-60M
Ezi-STEP-MPB-60L-BK	BM-60L-BK	EzStep-MPB-60L
Ezi-STEP-HPB-86M-BK	BM-86M-BK	EzStep-HPB-86M
Ezi-STEP-HPB-86L-BK	BM-86L-BK	EzStep-HPB-86L
Ezi-STEP-HPB-86XL-BK	BM-86XL-BK	EzStep-HPB-86XL

Specifications of Drive

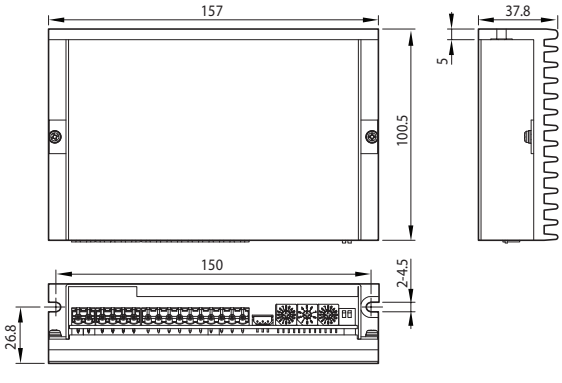
Motor Model		BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzStep-MPB-42 series	EzStep-MPB-56 series	EzStep-MPB-60 series	EzStep-HPB-86 series
Input Voltage		DC24V±10%			DC40~70V
Control Method		Bipolar PWM drive with 32bit MCU			
Current Consumption		Max. 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000r/min			
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Set by DIP Switch)			
	Max. Input Frequency	500kHz (Duty 50%)			
	Error Types	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error			
	LED Display	Power Status, Alarm Status, Motor Rotation Direction			
	STOP Current Selection	10~100% (Set by DIP Switch)			
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by DIP Switch)			
	Rotation Direction	CW/CCW (Set by DIP Switch)			
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)			
I/O Signal	Input Signals	Position Command Pulse, Alarm Reset/Motor Free (Photocoupler Input)			
	Output Signals	Alarm, Run/Stop (Photocoupler Output)			

Dimensions of Drive [mm]

◆ Ezi-STEP-MPB Drive



◆ Ezi-STEP-HPB Drive



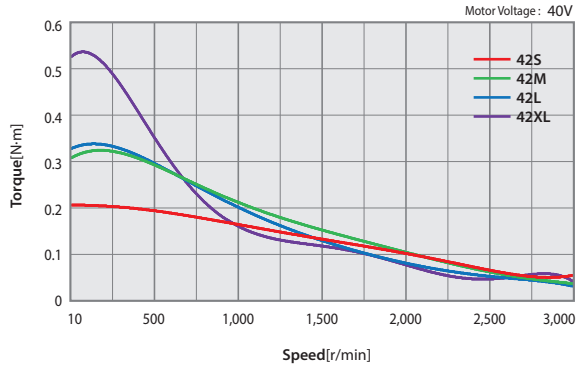
● Specifications of Motor

MODEL			UNIT	BM-42 series 42S	42M	42L	42XL	BM-56 series 56S	56M	56L
DRIVE METHOD			–	Bipolar						
NUMBER OF PHASES			–	2 Phase						
CURRENT per PHASE			A/Phase	1.2	1.2	1.2	1.2	3.0	3.0	3.0
MAXIMUM HOLDING TORQUE			N·m	0.32	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA			g·cm^2	35	54	77	114	180	280	520
WEIGHTS			kg	0.238	0.303	0.374	0.508	0.548	0.726	1.159
LENGTH(L)			mm	34	40	48	60	46	55	80
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	22	22	52	52	52
		8mm		26	26	26	26	65	65	65
		13mm		33	33	33	33	85	85	85
		18mm		46	46	46	46	123	123	123
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit' s Weight						
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)						
INSULATION CLASS			–	CLASS B(130℃)						
OPERATING TEMPERATURE			℃	0 ~ 55						

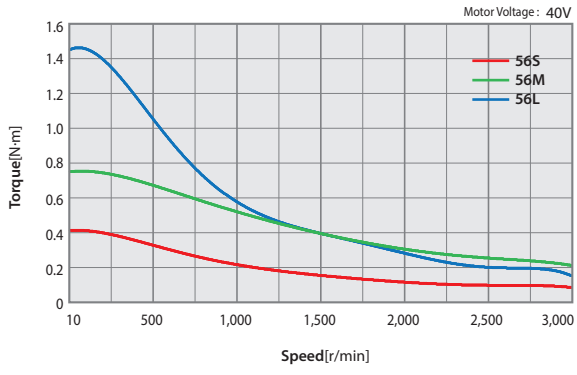
MODEL			UNIT	BM-60 series 60S	60M	60L	BM-86 series 86M	86L	86XL
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	240	490	690	1800	3600	5400
WEIGHTS			kg	0.616	0.793	1.349	2.275	3.808	5.330
LENGTH(L)			mm	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	70	70	70	270	270	270
		8mm		87	87	87	300	300	300
		13mm		114	114	114	350	350	350
		18mm		165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

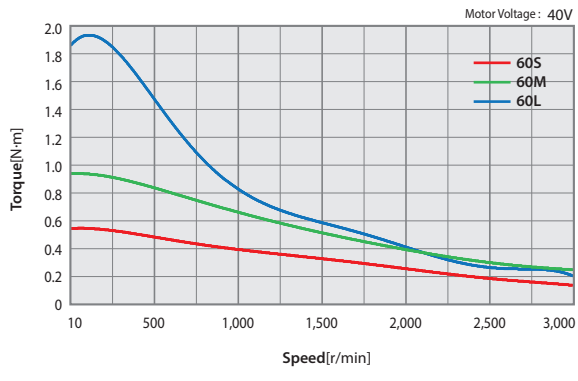
Ezi-STEP-MPB-42 Series



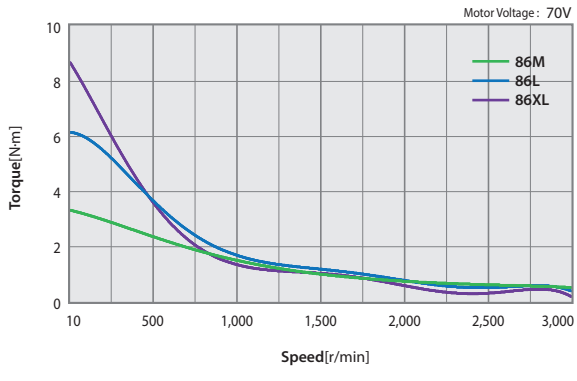
Ezi-STEP-MPB-56 Series



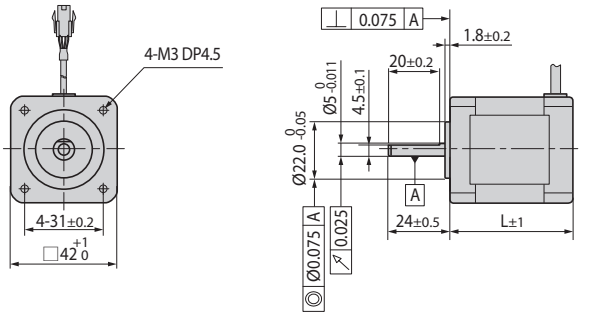
Ezi-STEP-MPB-60 Series



Ezi-STEP-HPB-86 Series

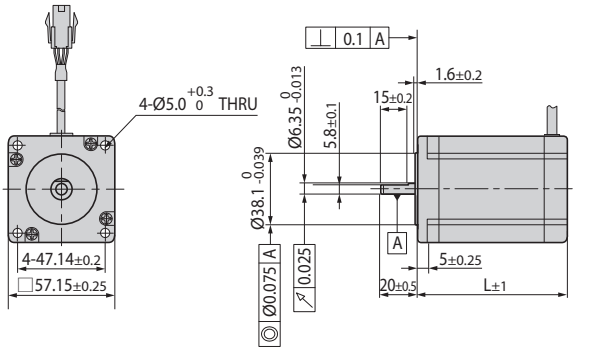


Dimensions of Motor [mm]



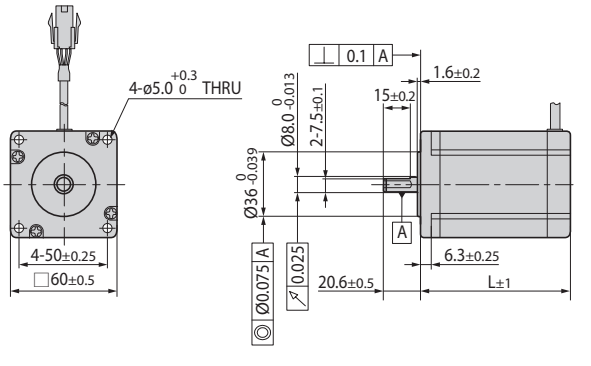
42mm

Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



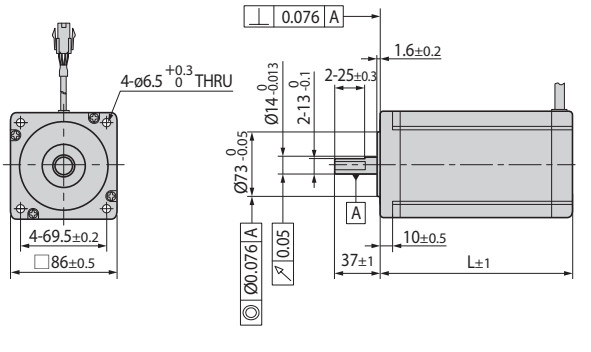
56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80



60mm

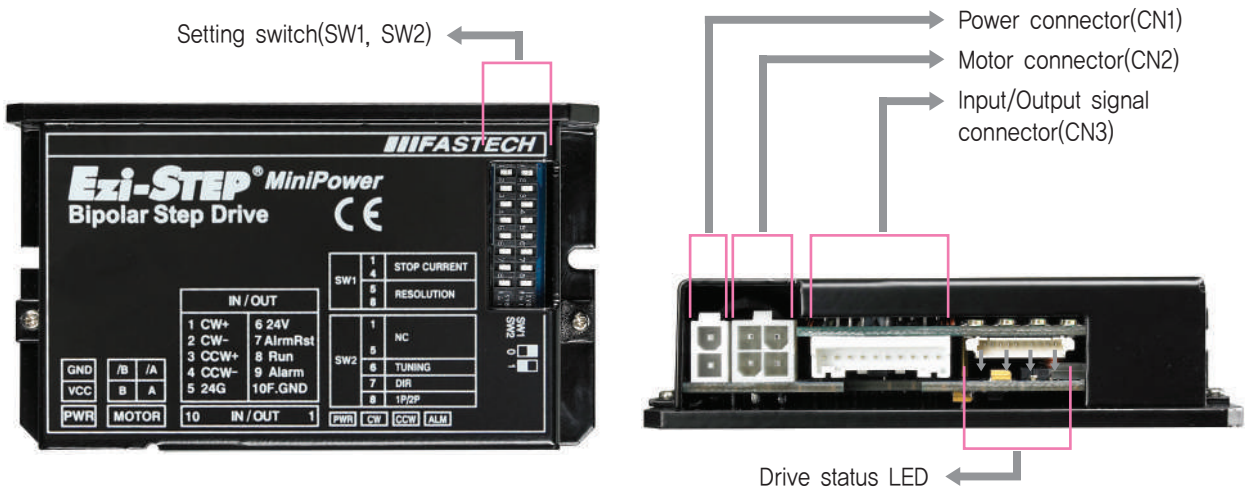
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation [Ezi-STEP-MPB Series]

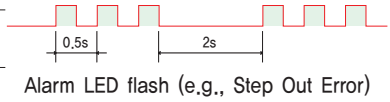


1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
ALM	Red	Alarm Indication	LED blinks when an error occurs.
CW	Yellow	Rotation Direction Indication	LED is turned on when the motor rotates CW.
CCW	Orange	Rotation Direction Indication	LED is turned on when the motor rotates CCW.

◆ List of error types by the number of LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	Over Speed Error	The motor speed exceeds 3,000r/min.
3	Step Out Error	The motor does not follow the pulse input normally.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 70V.
7	Motor Power Error	There is a problem with the connection between the drive and the motor.
9	Motor Voltage Error	The voltage supplied to the motor is lower than 36V.
11	System Error	There is a problem in the drive system (Watchdog Timer Out).
12	ROM Error	Error occurs in parameter storage device(ROM).



Alarm LED flash (e.g., Step Out Error)

*1 : Limit value depends on motor model. (Refer to the Manual)

2. STOP Current Setting Switch(SW1.1~SW1.4)

Switch No.				STOP Current (%)	Switch No.				STOP Current (%)
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	10	OFF	ON	ON	ON	90
ON	ON	ON	OFF	20	OFF	ON	ON	OFF	100
ON	ON	OFF	ON	30	OFF	ON	OFF	ON	10
ON	ON	OFF	OFF	40	OFF	ON	OFF	OFF	10
ON	OFF	ON	ON	50	OFF	OFF	ON	ON	10
ON	OFF	ON	OFF	60	OFF	OFF	ON	OFF	10
ON	OFF	OFF	ON	70	OFF	OFF	OFF	ON	10
ON	OFF	OFF	OFF	80	OFF	OFF	OFF	OFF	10

3. Resolution Setting Switch(SW1.5~1.8)

Switch No.				P/R	Switch No.				P/R
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000

4. Rotation Direction Setting Switch(SW2.7)

Name	Function	Description
DIR	Motor Rotation Direction Setting	It determines the rotation direction of the motor. The rotation direction indicated in the catalog is based on CW input. ON: CCW(–Direction) OFF: CW(+Direction)

Rotation Direction Setting Switch: ON

CCW Direction



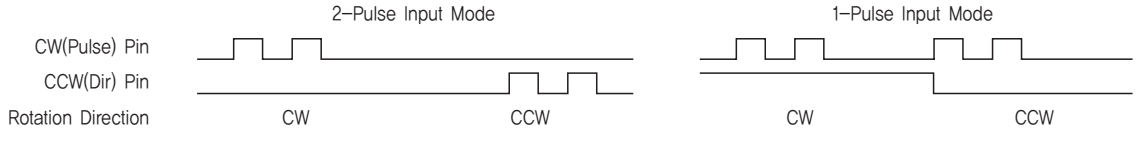


Rotation Direction Setting Switch: OFF

CW Direction

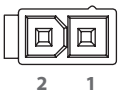
5. Pulse Input Mode Setting Switch(SW2.8)

Name	Function	Description
1P/2P	Pulse Input Mode Setting	1–Pulse Input Mode or 2–Pulse Input Mode can be selected. ON: 1–Pulse Mode OFF: 2–Pulse Mode



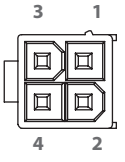
6. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



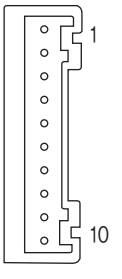
7. Motor Connector(CN2)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output

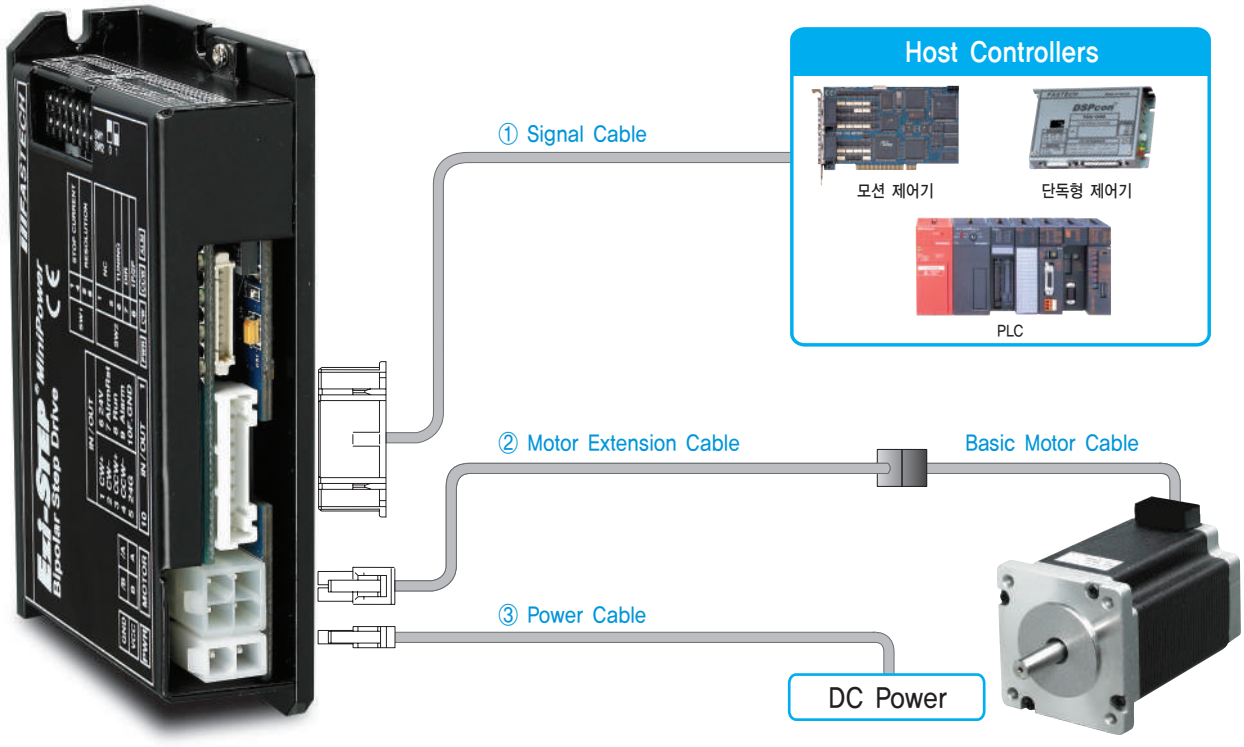


8. Input/Output Signal Connector(CN3)

No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW–(Pulse–)	Input
3	CCW+(Dir+)	Input
4	CCW–(Dir–)	Input
5	EXT_GND	Input
6	EXT_DC24V	Input
7	Alarm Reset / Motor Free	Input
8	Run/Stop	Output
9	Alarm	Output
10	F.GND	-----



● System Configuration [Ezi-STEP-MPB Series]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Motor Extension Cable	20m	
③ Power Cable	2m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Housing	5557-02R	MOLEX
		Terminal	5556T	
Motor	Drive Side (CN2)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Signal (CN3)		Housing	PAP-10V-S	JST
		Terminal	SPHD-002T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP MPB drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CMNB-S-001F	1	Normal Cable	Maximum Length: 20m
	CMNB-S-002F	2		
	CMNB-S-003F	3		
	CMNB-S-005F	5		
	CMNB-S-001M	1	Robot Cable	
	CMNB-S-002M	2		
	CMNB-S-003M	3		
	CMNB-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Motor Extension Cable

These are the cables to connect Ezi-STEP MPB drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

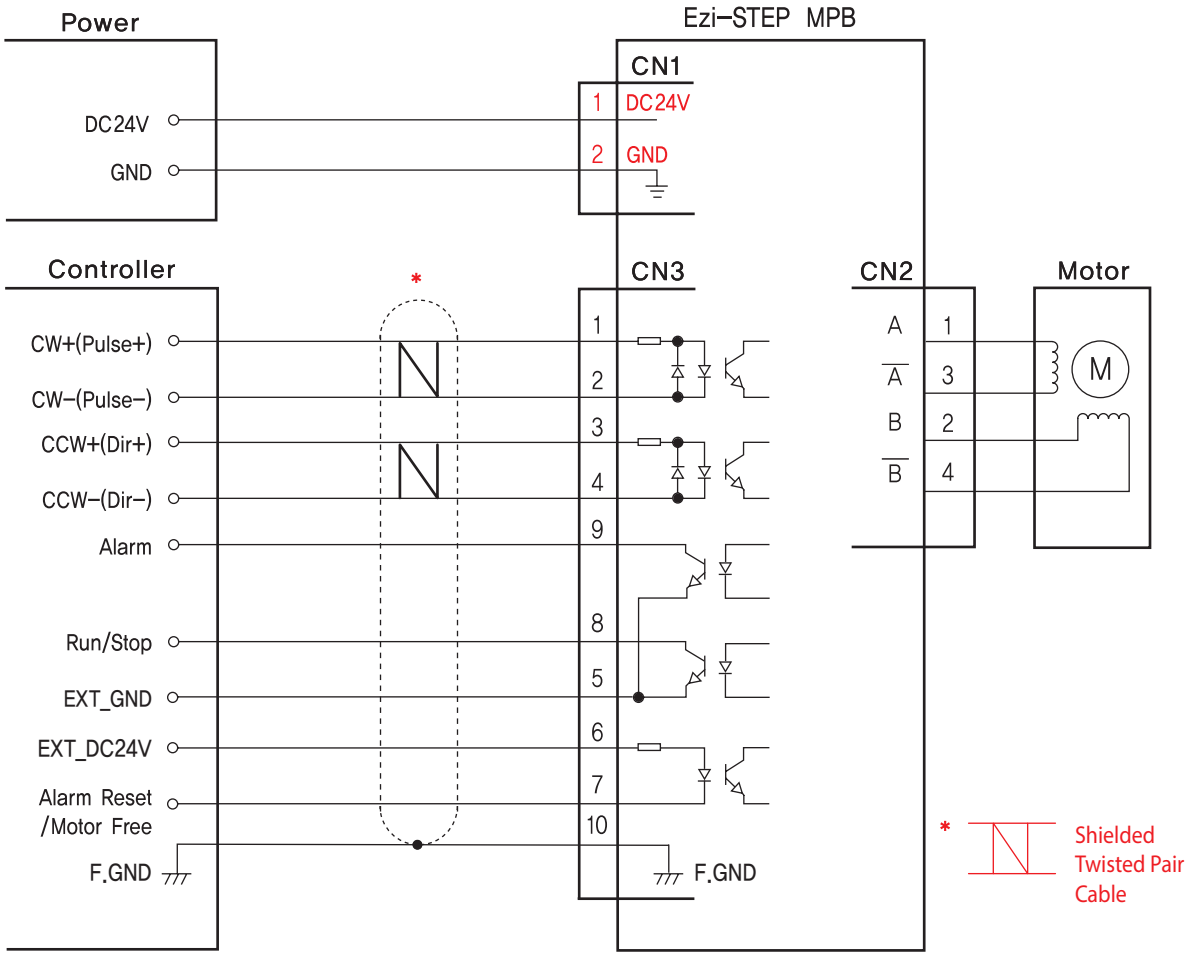
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Drive Power Cable

These are the cables to connect Ezi-STEP MPB drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

● External Wiring Diagram [Ezi-STEP-MPB Series]

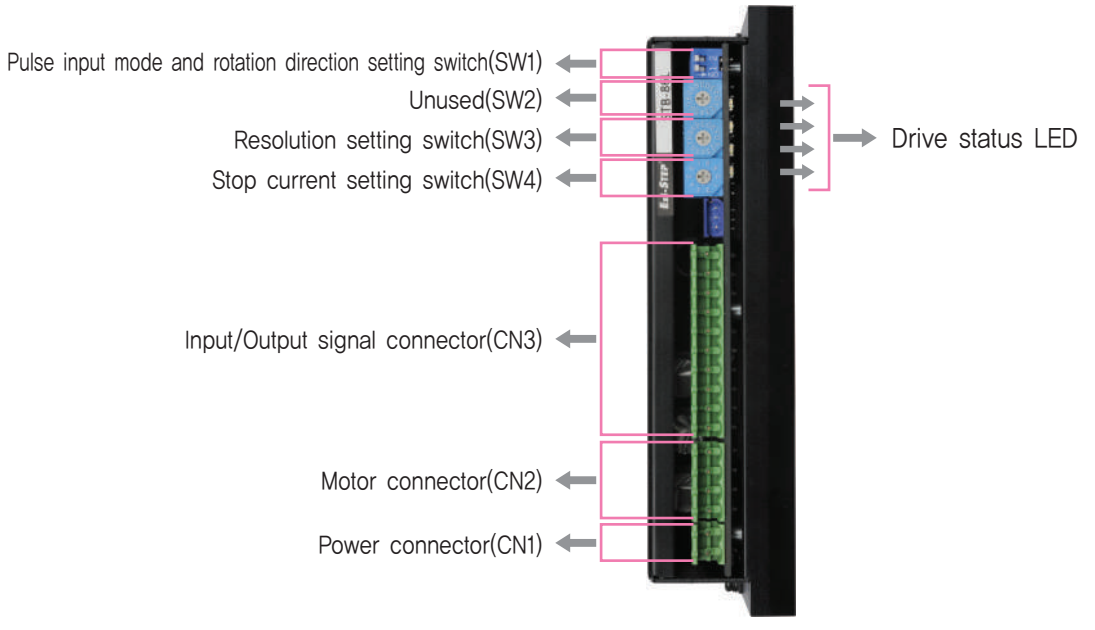


※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● Settings and Operation [Ezi-STEP-HPB Series]

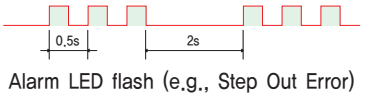


1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
ALM	Red	Alarm Indication	LED blinks when an error occurs.
CW	Yellow	Rotation Direction Indication	LED is turned on when the motor rotates CW.
CCW	Orange	Rotation Direction Indication	LED is turned on when the motor rotates CCW.

◆ List of error types by the number of LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	Over Speed Error	The motor speed exceeds 3,000r/min.
3	Step Out Error	The motor does not follow the pulse input normally.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 90V
7	Motor Power Error	There is a problem with the connection between the drive and the motor.
9	Motor Voltage Error	The voltage supplied to the motor is lower than 36V.
11	System Error	There is a problem in the drive system (Watchdog Timer Out).
12	ROM Error	Error occurs in parameter storage device(ROM).

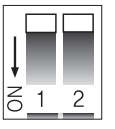


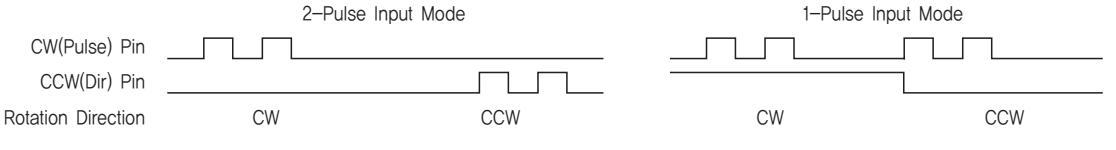
Alarm LED flash (e.g., Step Out Error)

*1 : Limit value depends on motor model. (Refer to the Manual)

2. Pulse Input Mode Setting Switch(SW1.1)

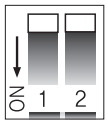
Name	Function	Description
2P/1P	Pulse Input Mode Setting	1-Pulse Input Mode or 2-Pulse Input Mode can be selected. ON: 1-Pulse Mode OFF: 2-Pulse Mode





3. Rotation Direction Setting Switch(SW1,2)

Name	Function	Description
DIR	Motor Rotation Direc–tion Setting	It determines the rotation direction of the motor. The rotation direction indicated in the catalog is based on CW input. ON: CCW(–Direction) OFF: CW(+Direction)



Rotation Direction Setting Switch: ON

CCW Direction





Rotation Direction Setting Switch: OFF

CW Direction

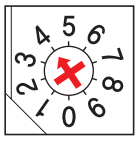
4. Resolution Setting Switch(SW3)

Value	P/R	Value	P/R
0	500	8	6,400
1	1,000	9	8,000
2	1,600	A	10,000
3	2,000	B	20,000
4	3,200	C	25,000
5	3,600	D	36,000
6	4,000	E	40,000
7	5,000	F	50,000



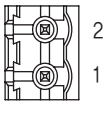
5. STOP Current Setting Switch(SW4)

Value	STOP Current (%)	Value	STOP Current (%)
0	10	5	60
1	20	6	70
2	30	7	80
3	40	8	90
4	50	9	100



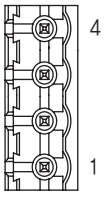
6. Power Connector(CN1)

No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



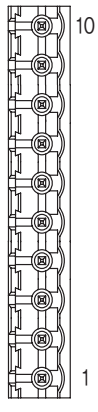
7. Motor Connector(CN2)

No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output

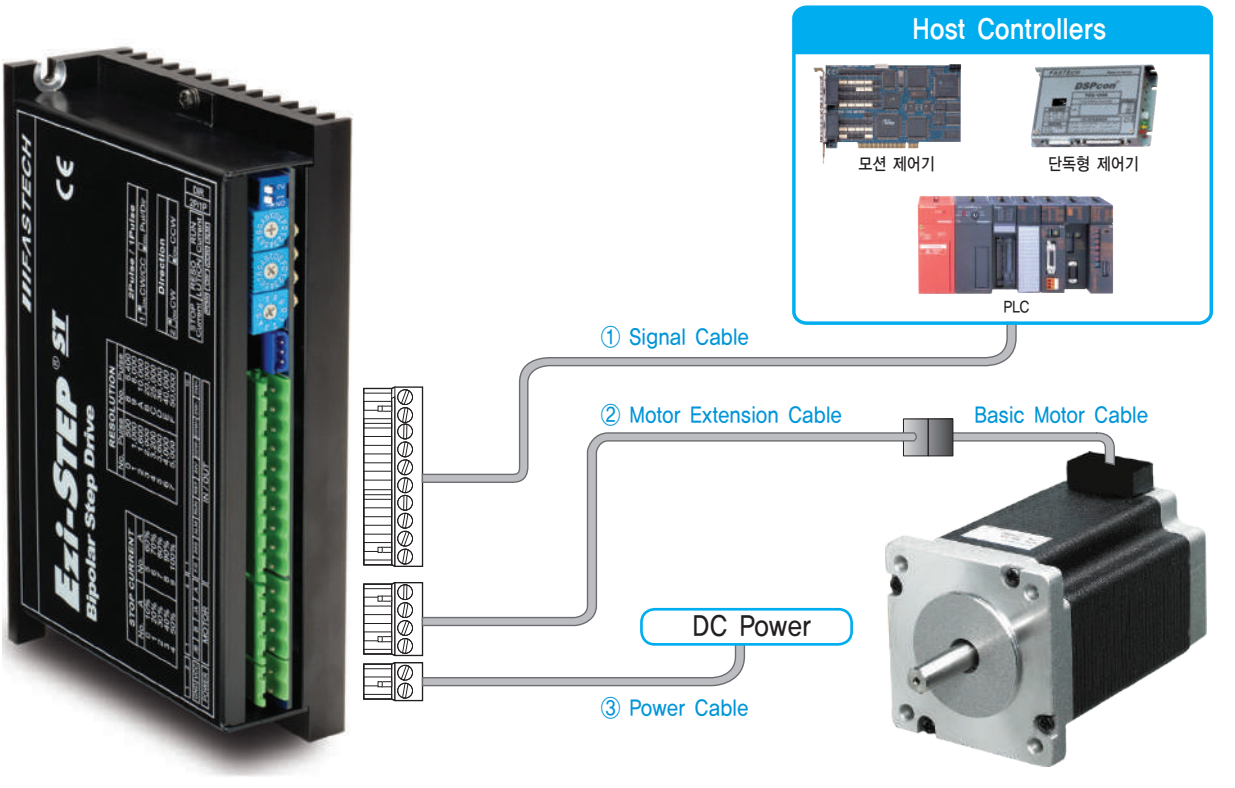


8. Input/Output Signal Connector(CN3)

No.	Function	I/O
1	F.GND	-----
2	EXT_GND	Input
3	Alarm	Output
4	Run/Stop	Output
5	Alarm Reset / Motor Free	Input
6	EXT_DC24V	Input
7	CCW–(Dir–)	Input
8	CCW+(Dir+)	Input
9	CW–(Pulse–)	Input
10	CW+(Pulse+)	Input



System Configuration [Ezi-STEP-HPB Series]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Motor Extension Cable	20m	
③ Power Cable	2m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	AK950-2	PTR
Motor	Drive Side (CN2)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	3191-4R1	MOLEX
		Terminal Block	1381T	
Signal (CN3)		Terminal Block	AK950-10	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP HPB drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CHPB-S-001F	1	Normal Cable	Maximum Length: 20m
	CHPB-S-002F	2		
	CHPB-S-003F	3		
	CHPB-S-005F	5		
	CHPB-S-001M	1	Robot Cable	
	CHPB-S-002M	2		
	CHPB-S-003M	3		
	CHPB-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Motor Extension Cable

These are the cables to connect Ezi-STEP HPB drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CHPB-M-001F	1	Normal Cable	Maximum Length: 20m
	CHPB-M-002F	2		
	CHPB-M-003F	3		
	CHPB-M-005F	5		
	CHPB-M-001M	1	Robot Cable	
	CHPB-M-002M	2		
	CHPB-M-003M	3		
	CHPB-M-005M	5		

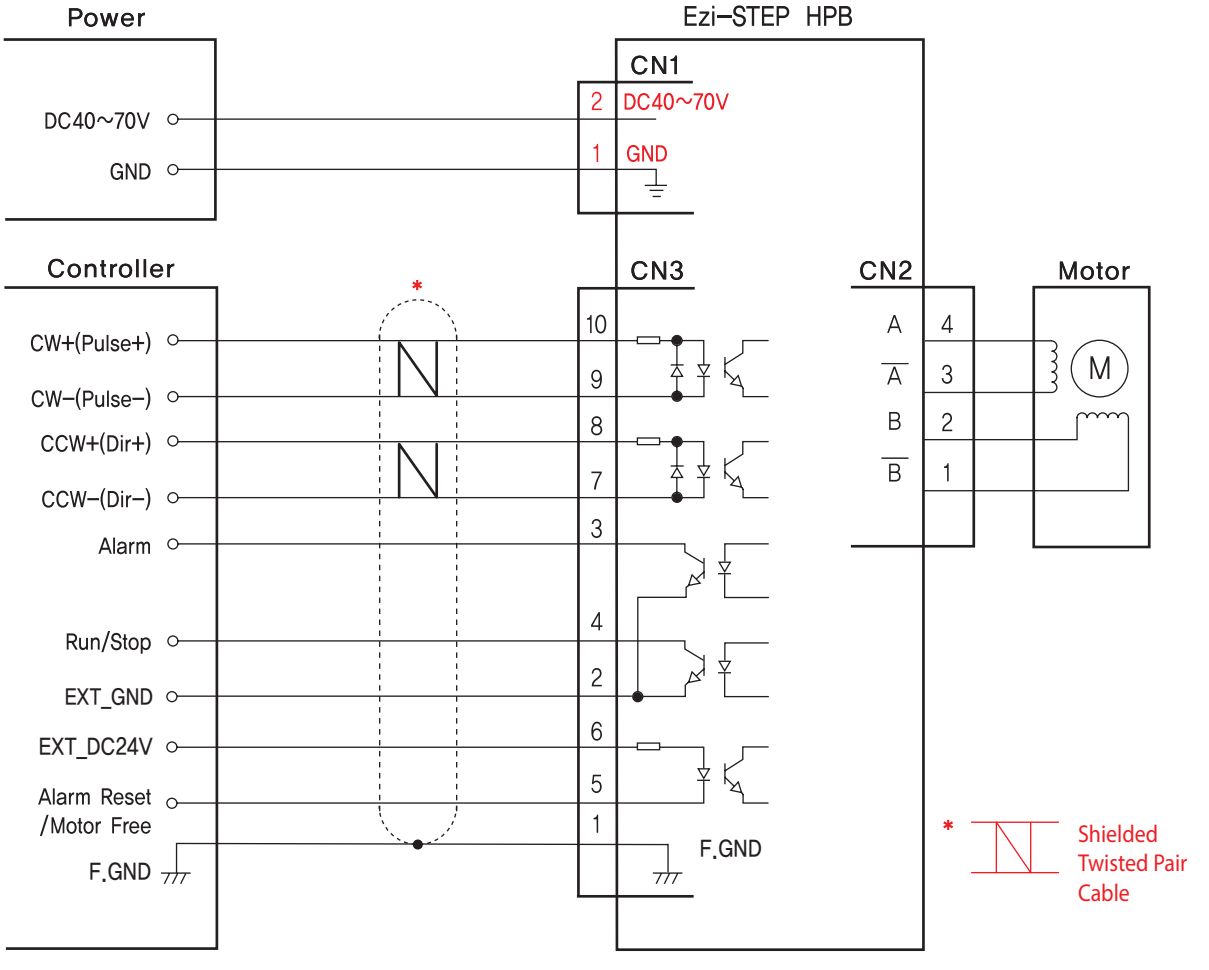
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Drive Power Cable

These are the cables to connect Ezi-STEP HPB drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

● External Wiring Diagram [Ezi-STEP-HPB Series]



※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-STEP® mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
CW
CCW
PWR
ALM

Ezi-STEP® MINI

Micro Stepping System

- Microstepping
- Space Saving / Reduced Wiring by Compact Drive
- Software Damping
- Run/Stop Signal Output



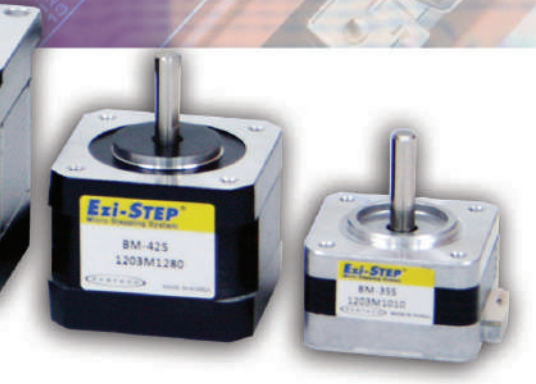
FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® MINI

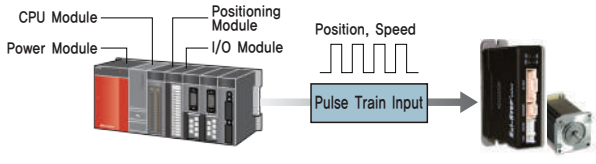
Micro Stepping System





1 Standalone Motion Control

Ezi-STEP MINI is a standalone stepping motor control system that drives the motor by receiving pulse signals from the positioning module (pulse oscillator).

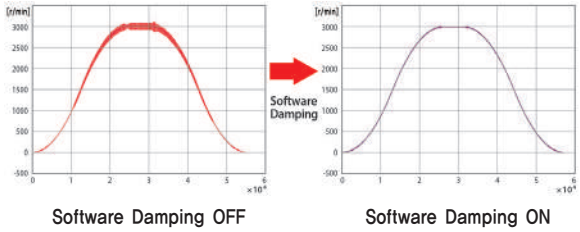


2 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP applies filtering control to enable smooth operation even at very low-speed.

3 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

4 Signal Output for Motion Monitoring

Ezi-STEP outputs the Run/Stop signal during operation, so you can check whether the motor is operating normally through the host controller.

Ezi-STEP MINI Part Numbering

Ezi-STEP-MI-42M-BK

- Series Name
- Type Name
  - MI : Mini Type
- Motor Flange Size
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MI-20M	BM-20M	EzStep-MI-20M
Ezi-STEP-MI-20L	BM-20L	EzStep-MI-20L
Ezi-STEP-MI-28S	BM-28S	EzStep-MI-28S
Ezi-STEP-MI-28M	BM-28M	EzStep-MI-28M
Ezi-STEP-MI-28L	BM-28L	EzStep-MI-28L
Ezi-STEP-MI-42S	BM-42S	EzStep-MI-42S
Ezi-STEP-MI-42M	BM-42M	EzStep-MI-42M
Ezi-STEP-MI-42L	BM-42L	EzStep-MI-42L
Ezi-STEP-MI-42XL	BM-42XL	EzStep-MI-42XL

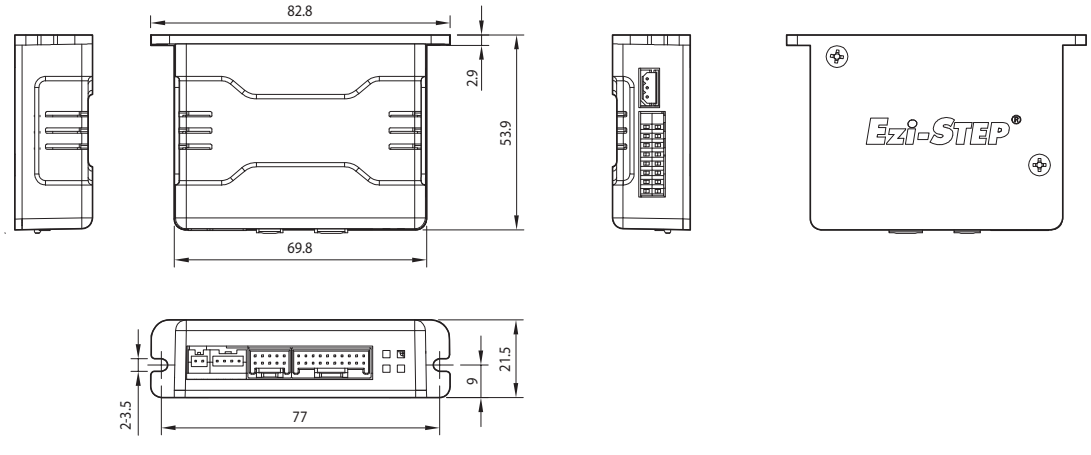
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-MI-42S-BK	BM-42S-BK	EzStep-MI-42S
Ezi-STEP-MI-42M-BK	BM-42M-BK	EzStep-MI-42M
Ezi-STEP-MI-42L-BK	BM-42L-BK	EzStep-MI-42L
Ezi-STEP-MI-42XL-BK	BM-42XL-BK	EzStep-MI-42XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series
Driver Model		EzStep-MI-20 series	EzStep-MI-28 series	EzStep-MI-42 series
Input Voltage		DC24V±10%		
Control Method		Bipolar PWM drive with 32bit MCU		
Current Consumption		Max. 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000r/min		
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Set by DIP Switch)		
	Max. Input Frequency	500kHz (Duty 50%)		
	Error Types	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error		
	LED Display	Power Status, Alarm Status, Motor Rotation Direction		
	STOP Current Selection	10~100% (Set by DIP Switch)		
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by DIP Switch)		
	Rotation Direction	CW/CCW (Set by DIP Switch)		
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)		
I/O Signal	Input Signals	Position Command Pulse, Alarm Reset/Motor Free (Photocoupler Input)		
	Output Signals	Alarm, Run/Stop (Photocoupler Output)		

Dimensions of Drive [mm]

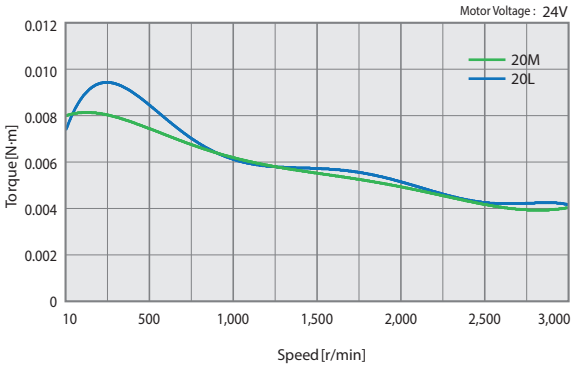


Specifications of Motor

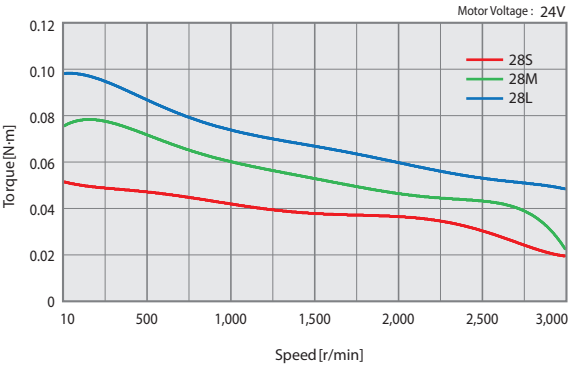
MODEL			UNIT	BM-20 series		BM-28 series			BM-42 series			
				20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

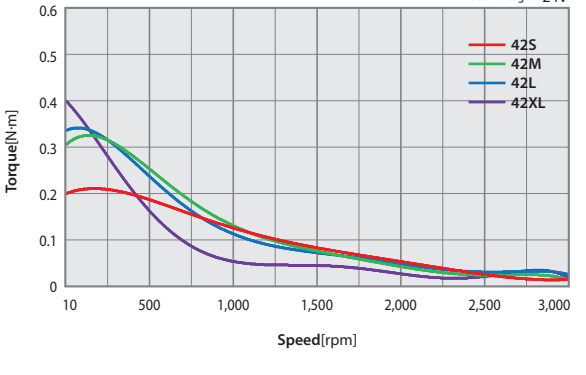
Ezi-STEP-MI-20 series



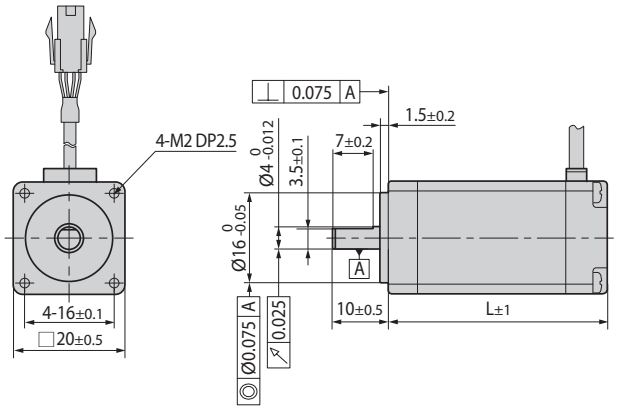
Ezi-STEP-MI-28 series



Ezi-STEP-MI-42 series

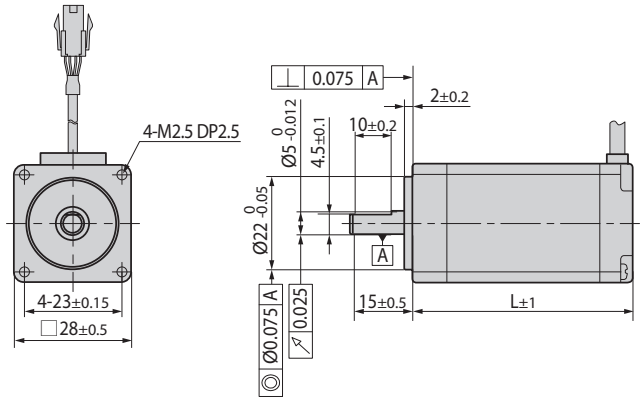


● Dimensions of Motor [mm]



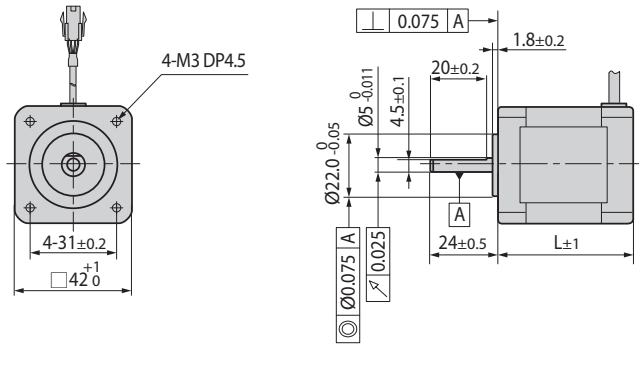
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



28mm

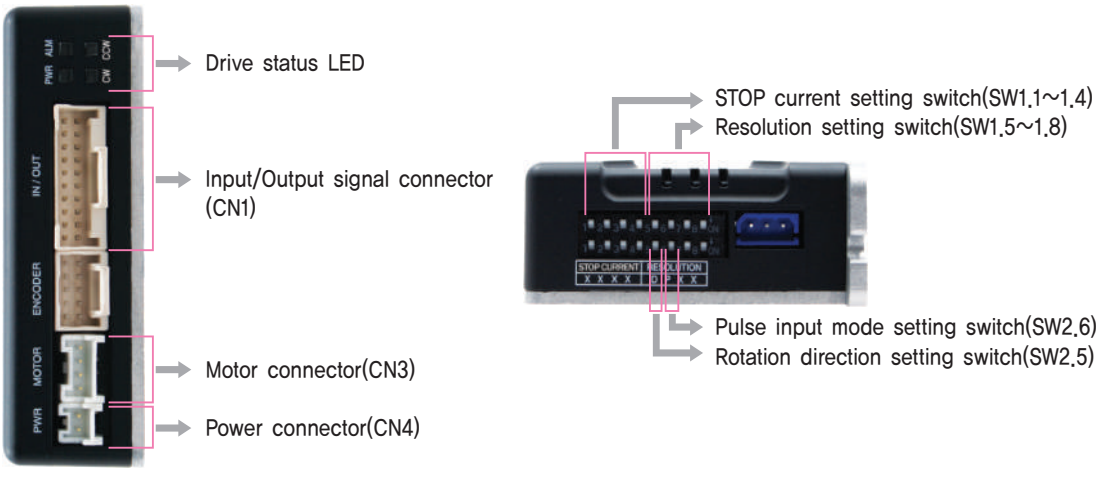
Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60

● Settings and Operation

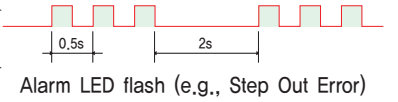


1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
ALM	Red	Alarm Indication	LED blinks when an error occurs.
CW	Yellow	Rotation Direction Indication	LED is turned on when the motor rotates CW.
CCW	Orange	Rotation Direction Indication	LED is turned on when the motor rotates CCW.

◆ List of error types by the number of LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	Over Speed Error	The motor speed exceeds 3,000r/min.
3	Step Out Error	The motor does not follow the pulse input normally.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 50V.
7	Motor Power Error	There is a problem with the connection between the drive and the motor.
9	Motor Voltage Error	The voltage supplied to the motor is lower than 20V.
11	System Error	There is a problem in the drive system (Watchdog Timer Out).
12	ROM Error	Error occurs in parameter storage device(ROM).



Alarm LED flash (e.g., Step Out Error)

*1 : Limit value depends on motor model. (Refer to the Manual)

2. STOP Current Setting Switch(SW1.1~SW1.4)

Switch No.				STOP Current (%)	Switch No.				STOP Current (%)
4	3	2	1		4	3	2	1	
ON	ON	ON	ON	10	OFF	ON	ON	ON	90
ON	ON	ON	OFF	20	OFF	ON	ON	OFF	100
ON	ON	OFF	ON	30	OFF	ON	OFF	ON	10
ON	ON	OFF	OFF	40	OFF	ON	OFF	OFF	10
ON	OFF	ON	ON	50	OFF	OFF	ON	ON	10
ON	OFF	ON	OFF	60	OFF	OFF	ON	OFF	10
ON	OFF	OFF	ON	70	OFF	OFF	OFF	ON	10
ON	OFF	OFF	OFF	80	OFF	OFF	OFF	OFF	10

3. Resolution Setting Switch(SW1.5~1.8)

Switch No.				P/R	Switch No.				P/R
8	7	6	5		8	7	6	5	
ON	ON	ON	ON	500	OFF	ON	ON	ON	6,400
ON	ON	ON	OFF	1,000	OFF	ON	ON	OFF	8,000
ON	ON	OFF	ON	1,600	OFF	ON	OFF	ON	10,000
ON	ON	OFF	OFF	2,000	OFF	ON	OFF	OFF	20,000
ON	OFF	ON	ON	3,200	OFF	OFF	ON	ON	25,000
ON	OFF	ON	OFF	3,600	OFF	OFF	ON	OFF	36,000
ON	OFF	OFF	ON	4,000	OFF	OFF	OFF	ON	40,000
ON	OFF	OFF	OFF	5,000	OFF	OFF	OFF	OFF	50,000

4. Rotation Direction Setting Switch(SW2.5)

Name	Function	Description
D	Motor Rotation Direction Setting	It determines the rotation direction of the motor. The rotation direction indicated in the catalog is based on CW input. ON: CCW(−Direction) OFF: CW(+Direction)

Rotation Direction Setting Switch: ON

CCW Direction



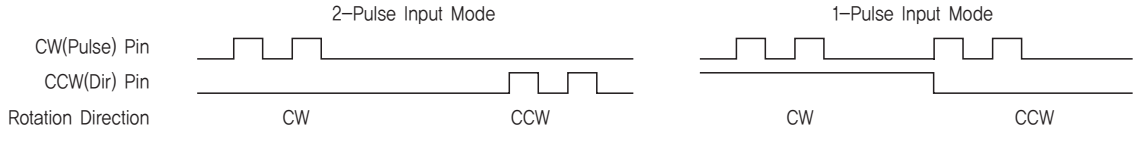


Rotation Direction Setting Switch: OFF

CW Direction

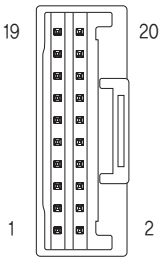
5. Pulse Input Mode Setting Switch(SW2.6)

Name	Function	Description
P	Pulse Input Mode Setting	1−Pulse Input Mode or 2−Pulse Input Mode can be selected. ON: 1−Pulse Mode OFF: 2−Pulse Mode



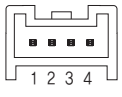
6. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW−(Pulse−)	Input
3	CCW+(Dir+)	Input
4	CCW−(Dir−)	Input
11	Alarm	Output
12	Run/Stop	Output
14	Alarm Reset / Motor Free	Input
19	EXT_GND	Input
20	EXT_DC24V	Input



7. Motor Connector(CN3)

No.	Function	I/O
1	B Phase	Output
2	$\overline{B}$ Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output

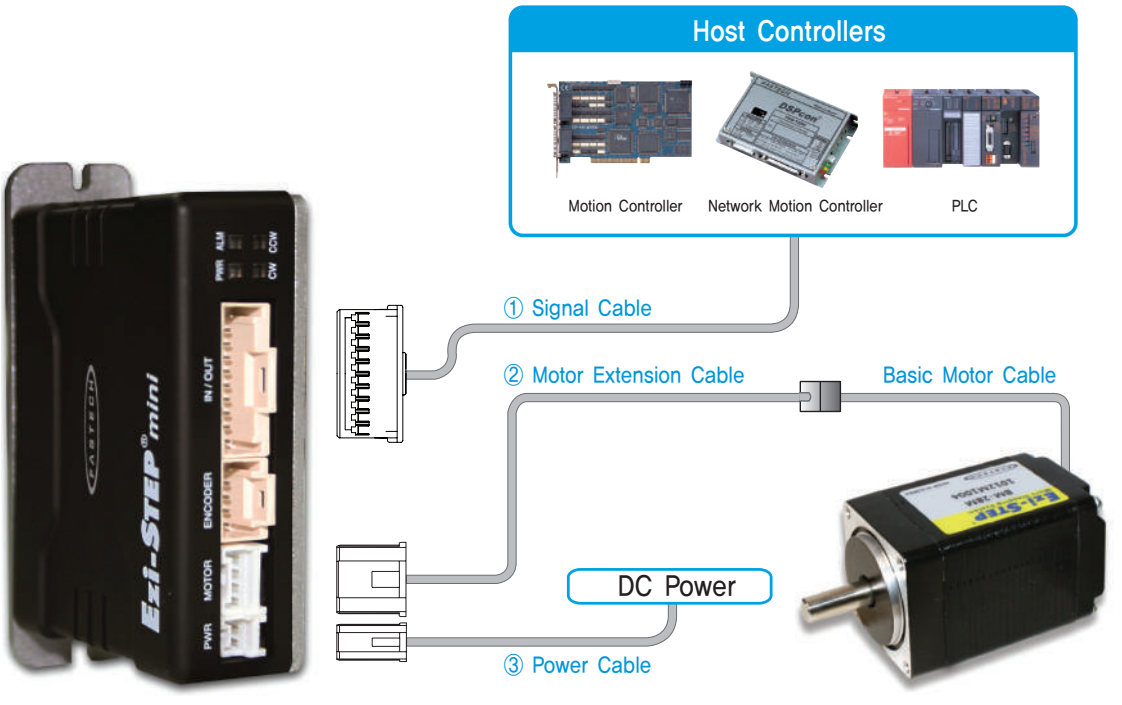


8. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Motor Extension Cable	20m	
③ Power Cable	2m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-2000	MOLEX
		Terminal	501648-1000(AWG 26~28)	
Motor	Drive Side (CN3)	Housing	PAP-04V-S	JST
		Terminal	SPHD-001T-P0.5	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	PAP-02V-S	JST
		Terminal	SPHD-001T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVI-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVI-S-002F	2		
	CSVI-S-003F	3		
	CSVI-S-005F	5		
	CSVI-S-001M	1	Robot Cable	
	CSVI-S-002M	2		
	CSVI-S-003M	3		
	CSVI-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Motor Extension Cable

These are the cables to connect Ezi-STEP MINI drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CMNB-M-001F	1	Normal Cable	Maximum Length: 20m
	CMNB-M-002F	2		
	CMNB-M-003F	3		
	CMNB-M-005F	5		
	CMNB-M-001M	1	Robot Cable	
	CMNB-M-002M	2		
	CMNB-M-003M	3		
	CMNB-M-005M	5		

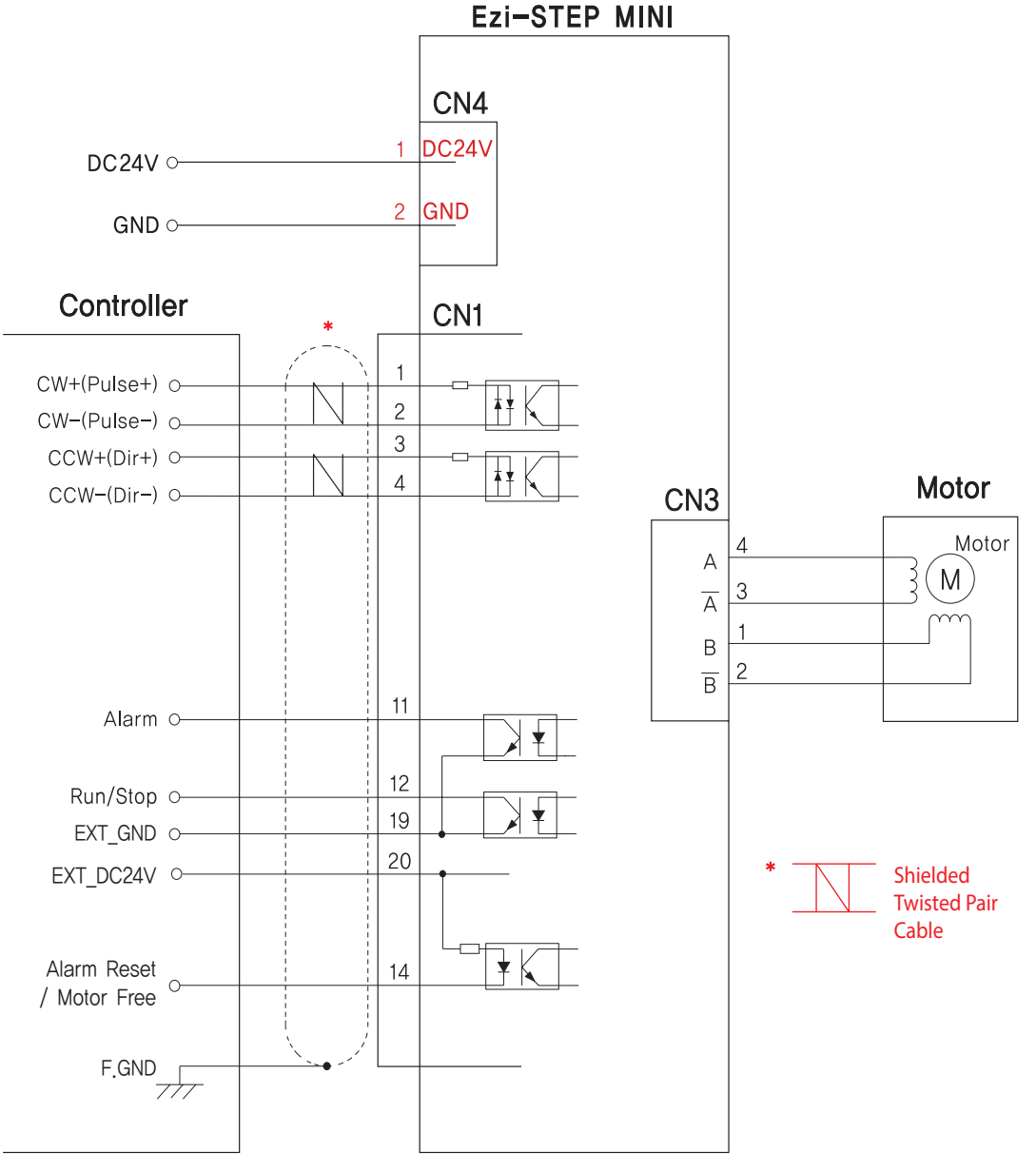
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Drive Power Cable

These are the cables to connect Ezi-STEP MINI drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CMNB-P-001F	1	Normal Cable	Maximum Length: 2m
	CMNB-P-002F	2		
	CMNB-P-001M	1	Robot Cable	
	CMNB-P-002M	2		

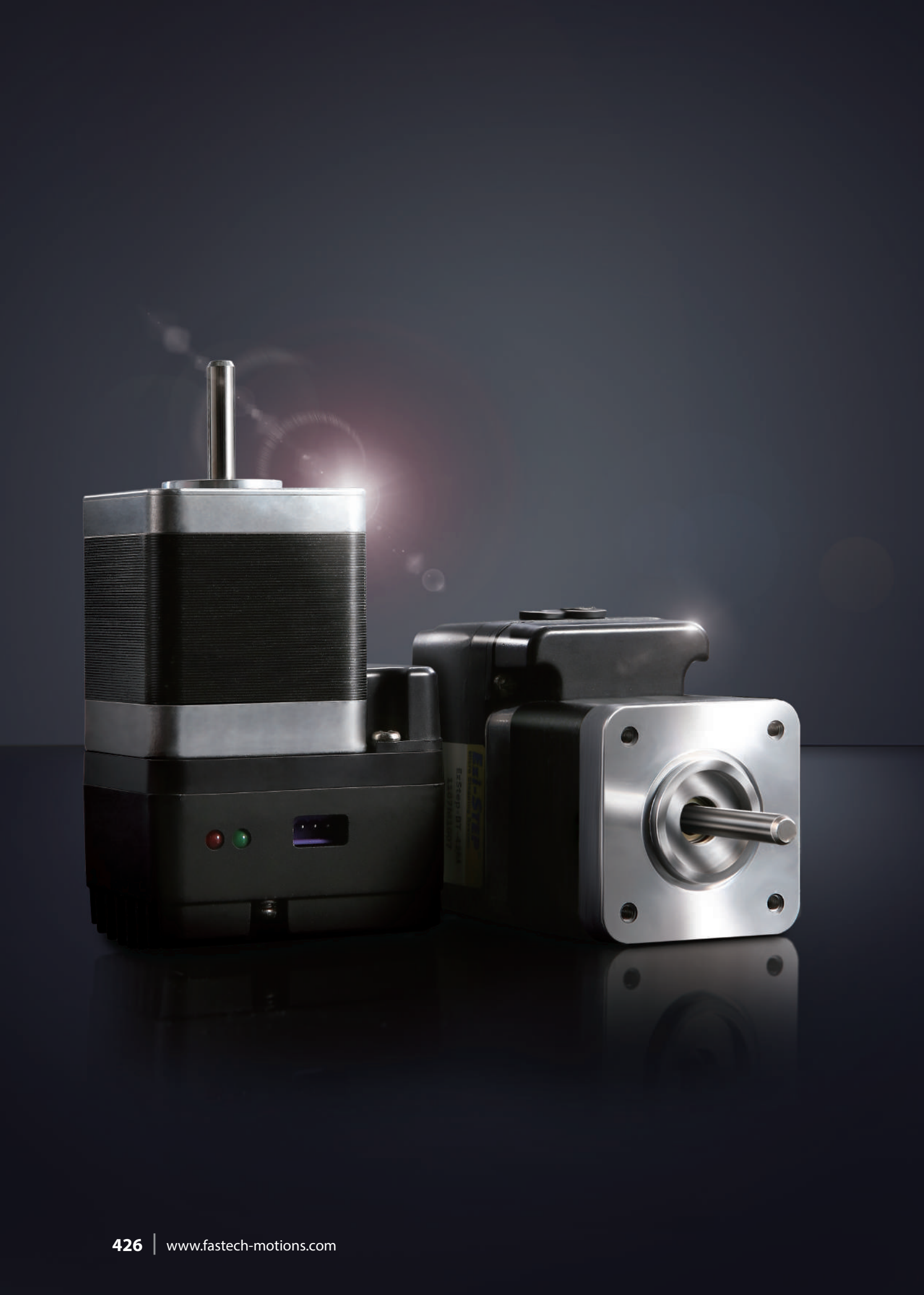
External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

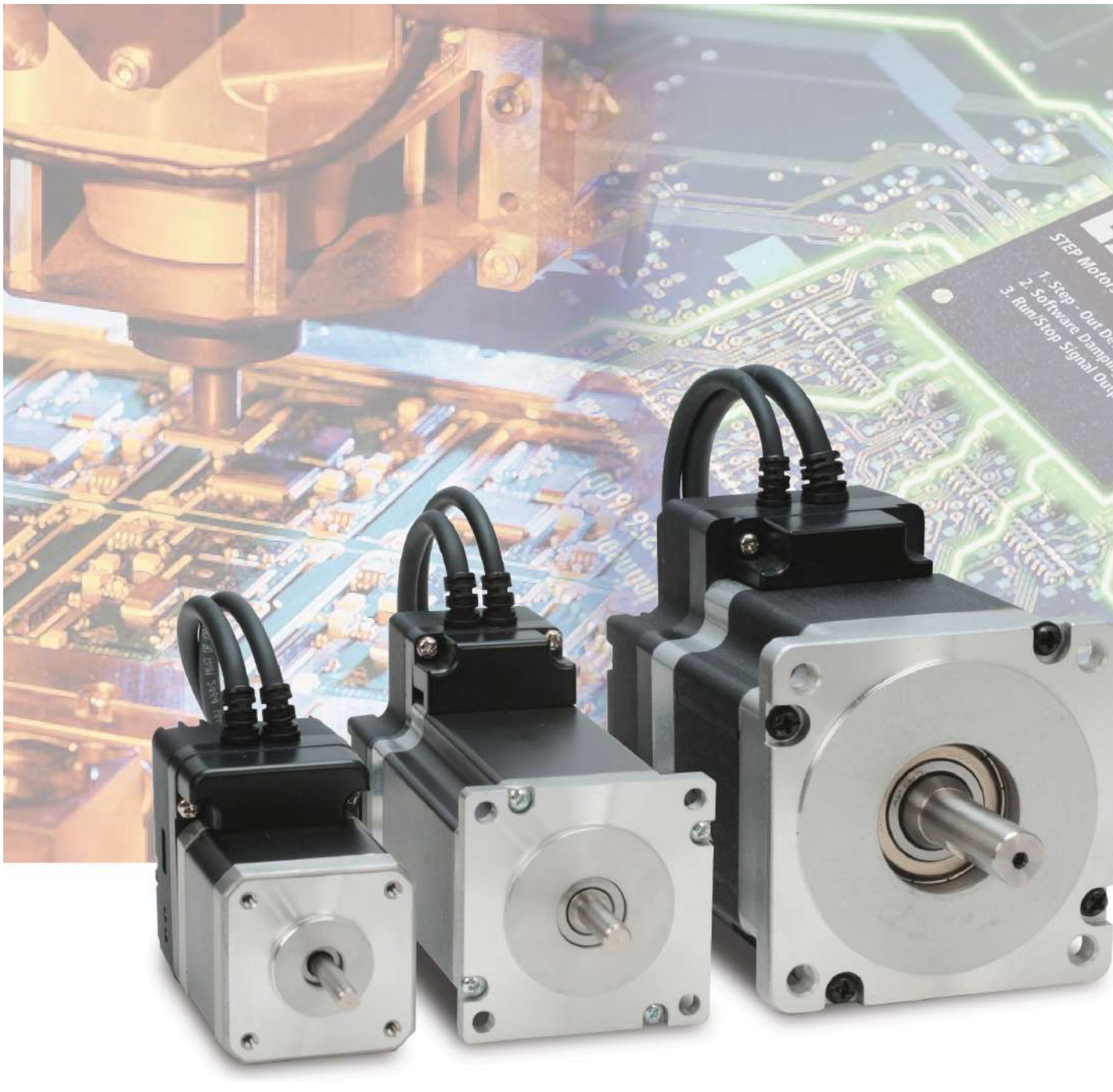
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.



Ezi-STEP® BT

Micro Stepping System

- Microstepping
- Space Saving / Reduced Wiring
- Software Damping
- Run/Stop Signal Output

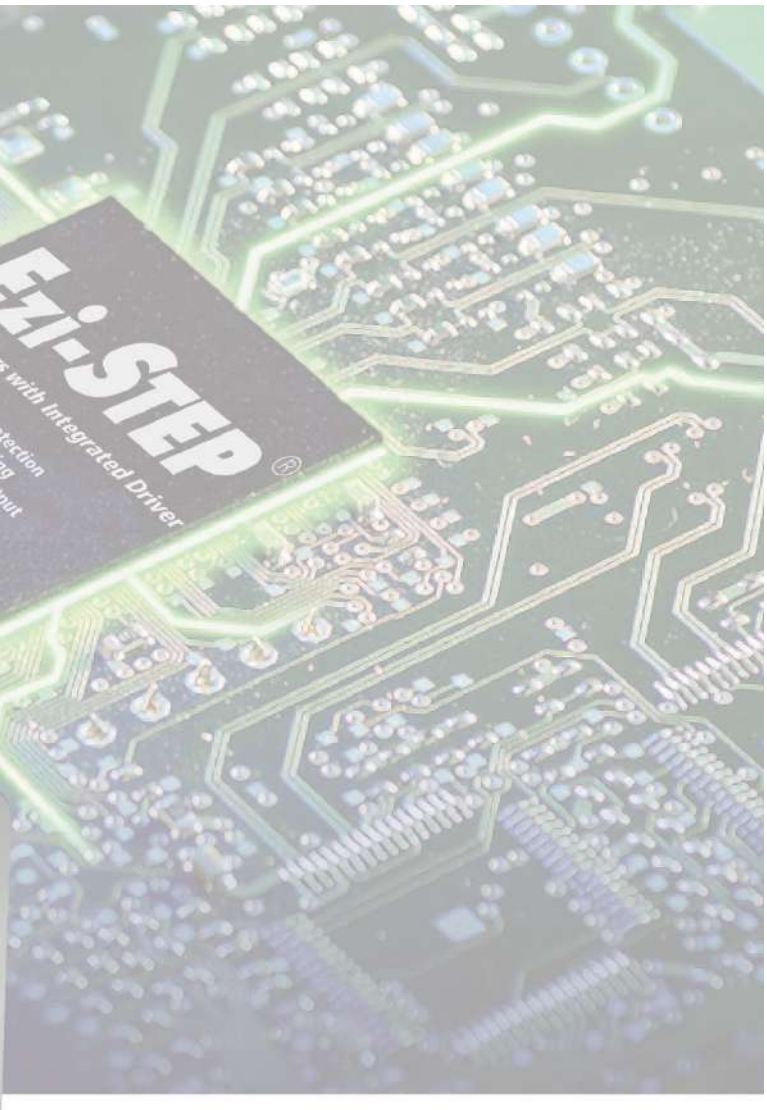


FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® BT

Micro Stepping System



1 Integrated Solution

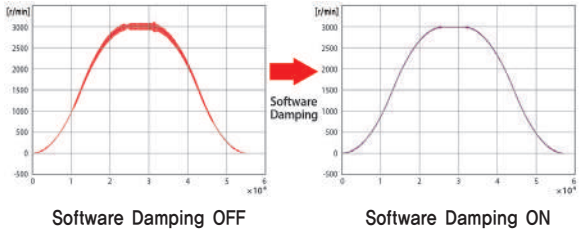
Ezi-STEP BT is a compact product that integrates a motor and drive, and provides an optimal solution to maximize the advantages of Ezi-STEP even in a narrow space.

2 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP adjusts PWM control signal in every 25μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP applies filtering control to enable smooth operation even at very low-speed.

3 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

4 Signal Output for Motion Monitoring

Ezi-STEP outputs the Run/Stop signal during operation, so you can check whether the motor is operating normally through the host controller.

Ezi-STEP BT Part Numbering

Ezi-STEP-BT-42S-BK

- Series Name
- Type Name
  - BT : Built-in
- Motor Flange Size
  - 42 : 42mm
  - 56 : 56mm
  - 86 : 86mm
- Motor Length
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- Brake
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-BT-42S	Motor & Drive Integrated	
Ezi-STEP-BT-42M		
Ezi-STEP-BT-42L		
Ezi-STEP-BT-42XL		
Ezi-STEP-BT-56S		
Ezi-STEP-BT-56M		
Ezi-STEP-BT-56L		
Ezi-STEP-BT-86M		
Ezi-STEP-BT-86L		
Ezi-STEP-BT-86XL		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP-BT-42S-BK	Motor & Drive Integrated	
Ezi-STEP-BT-42M-BK		
Ezi-STEP-BT-42L-BK		
Ezi-STEP-BT-42XL-BK		
Ezi-STEP-BT-56S-BK		
Ezi-STEP-BT-56M-BK		
Ezi-STEP-BT-56L-BK		
Ezi-STEP-BT-86M-BK		
Ezi-STEP-BT-86L-BK		
Ezi-STEP-BT-86XL-BK		

Specifications of Drive

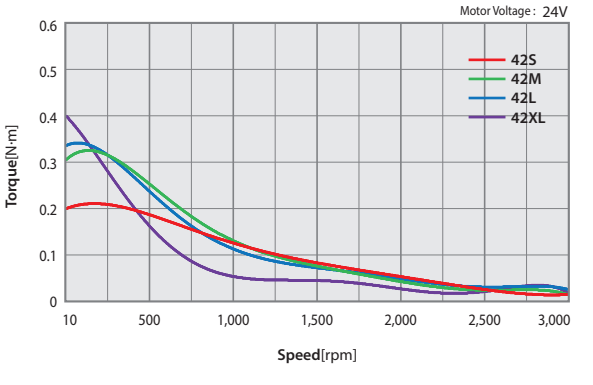
Model		BT-42 series	BT-56 series	BT-86 series
Input Voltage		DC24V±10%		DC40~70V
Control Method		Bipolar PWM drive with 32bit MCU		
Current Consumption		Max. 500mA (Except motor current)		
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.	0.5g		
Function	Rotation Speed	0~3,000r/min		
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)		
	Max. Input Frequency	500kHz (Duty 50%)		
	Error Types	Over Current Error, Over Speed Error, Step Out Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Motor Voltage Error, System Error, ROM Error		
	LED Display	Power Status, Alarm Status		
	STOP Current Selection	20~100% (Set by parameter)		
	Pulse Input Mode	1-Pulse / 2-Pulse (Set by parameter)		
	Rotation Direction	CW/CCW (Set by parameter)		
	Speed/Position Control Command	Pulse Train Input (Photocoupler Input)		
I/O Signal	Input Signals	Position Command Pulse, Alarm Reset/Motor Free (Photocoupler Input)		
	Output Signals	Alarm, Run/Stop (Photocoupler Output)		

Specifications of Motor

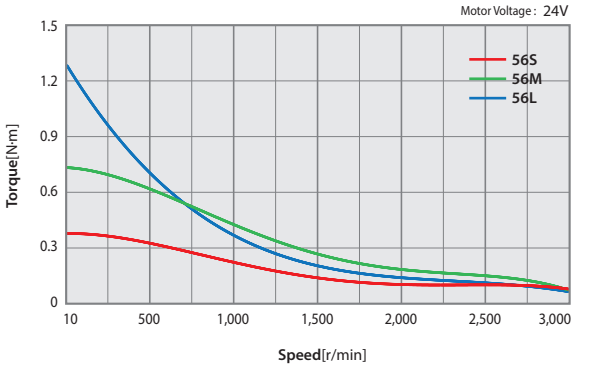
MODEL			UNIT	Ezi-STEP-BT-42 series				Ezi-STEP-BT-56 series			Ezi-STEP-BT-86 series		
				42S	42M	42L	42XL	56S	56M	56L	86M	86L	86XL
DRIVE METHOD			–	Bipolar									
NUMBER OF PHASES			–	2 Phase									
CURRENT per PHASE			A/Phase	1.2	1.2	1.2	1.2	3.0	3.0	3.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.32	0.44	0.5	0.65	0.64	1.0	1.5	4.5	8.5	12
ROTOR INERTIA			$g \cdot cm^2$	35	54	77	114	180	280	520	1800	3600	5400
WEIGHTS			kg	0.309	0.373	0.480	0.570	0.614	0.773	1.261	2.566	4.127	5.617
LENGTH(L)			mm	34	40	48	60	46	55	80	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	22	22	52	52	52	270	270	270
		8mm		26	26	26	26	65	65	65	300	300	300
		13mm		33	33	33	33	85	85	85	350	350	350
		18mm		46	46	46	46	123	123	123	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight									
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)									
INSULATION CLASS			–	CLASS B(130℃)									
OPERATING TEMPERATURE			℃	0 ~ 55									

Torque Characteristics of Motor

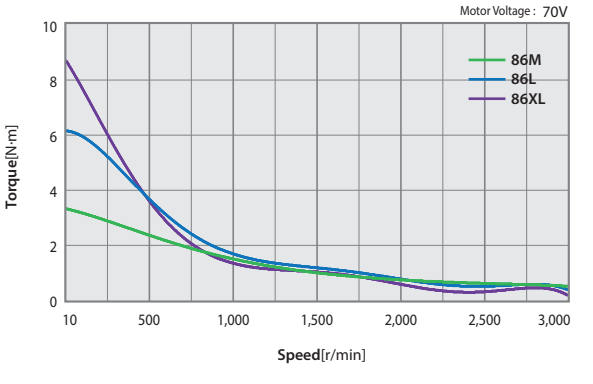
Ezi-STEP-BT-42 series



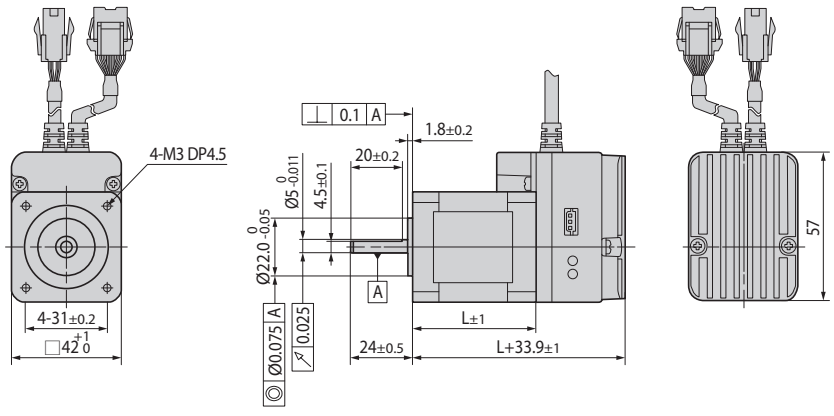
Ezi-STEP-BT-56 series



Ezi-STEP-BT-86 series

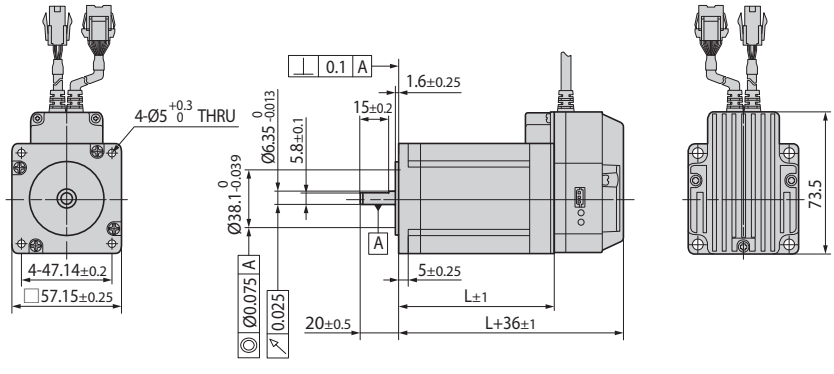


● Dimensions of Motor [mm]



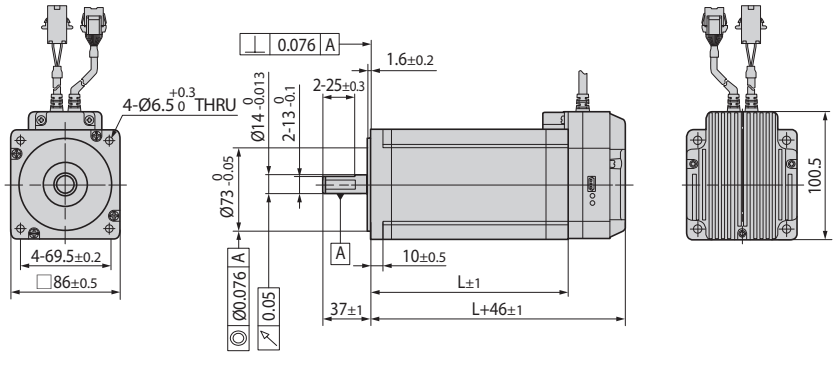
42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60



56mm

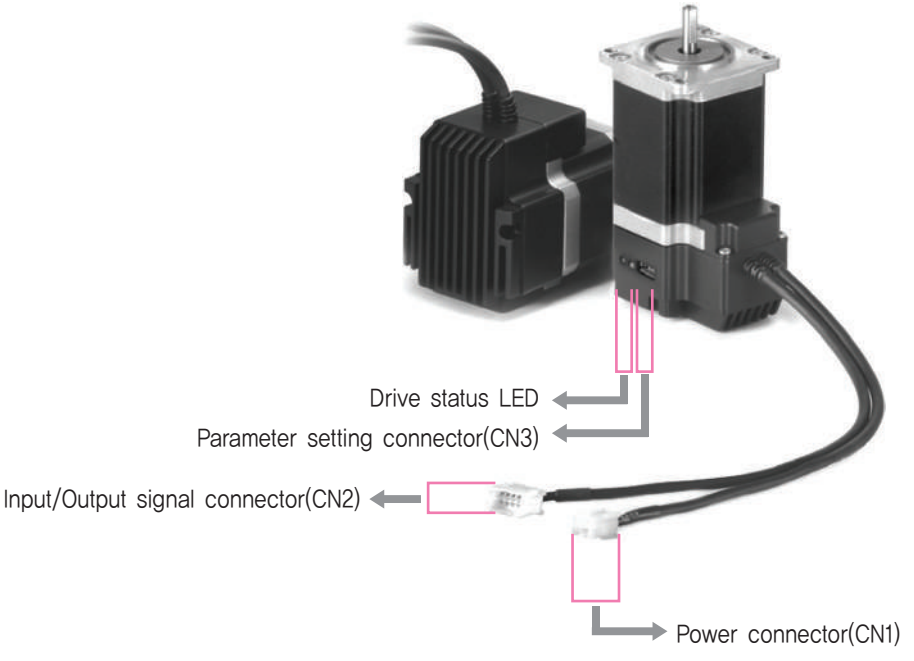
Model name	Length(L)
56S	46
56M	55
56L	80



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

● Settings and Operation

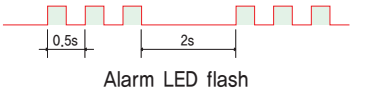


1. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	Over Speed Error	The motor speed exceeds 3,000r/min.
3	Step Out Error	The motor does not follow the pulse input normally.
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value.*2
7	Motor Connect Error	There is a problem with the connection between the drive and the motor.
9	Motor Voltage Error	The voltage supplied to the motor is lower than the lower limit.*3
11	System Error	There is a problem in the drive system (Watchdog Timer Out).
12	ROM Error	Error occurs in parameter storage device(ROM).



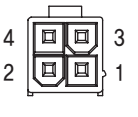
Alarm LED flash
(e.g., Step Out Error)

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : The lower limit of the voltage supplied to the motor depends on the drive and motor model. (Refer to the Manual)

2. Power Connector(CN1)

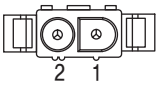
No.	Function	I/O
1	DC24V	Input
2	GND	Input
3	F.GND	Input
4	NC	----

※ BT-42, BT-56 Series



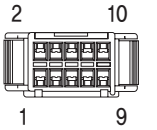
No.	Function	I/O
1	DC40~70V	Input
2	GND	Input

※ BT-86 Series



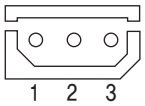
3. Input/Output Signal Connector(CN2)

No.	Function	I/O
1	CW+(Pulse+)	Input
2	CW-(Pulse-)	Input
3	CCW+(Dir+)	Input
4	CCW-(Dir-)	Input
5	Alarm	Output
6	EXT_GND	Input
7	EXT_DC24V	Input
8	Alarm Reset / Motor Free	Input
9	Run/Stop	Output
10	F.GND	----

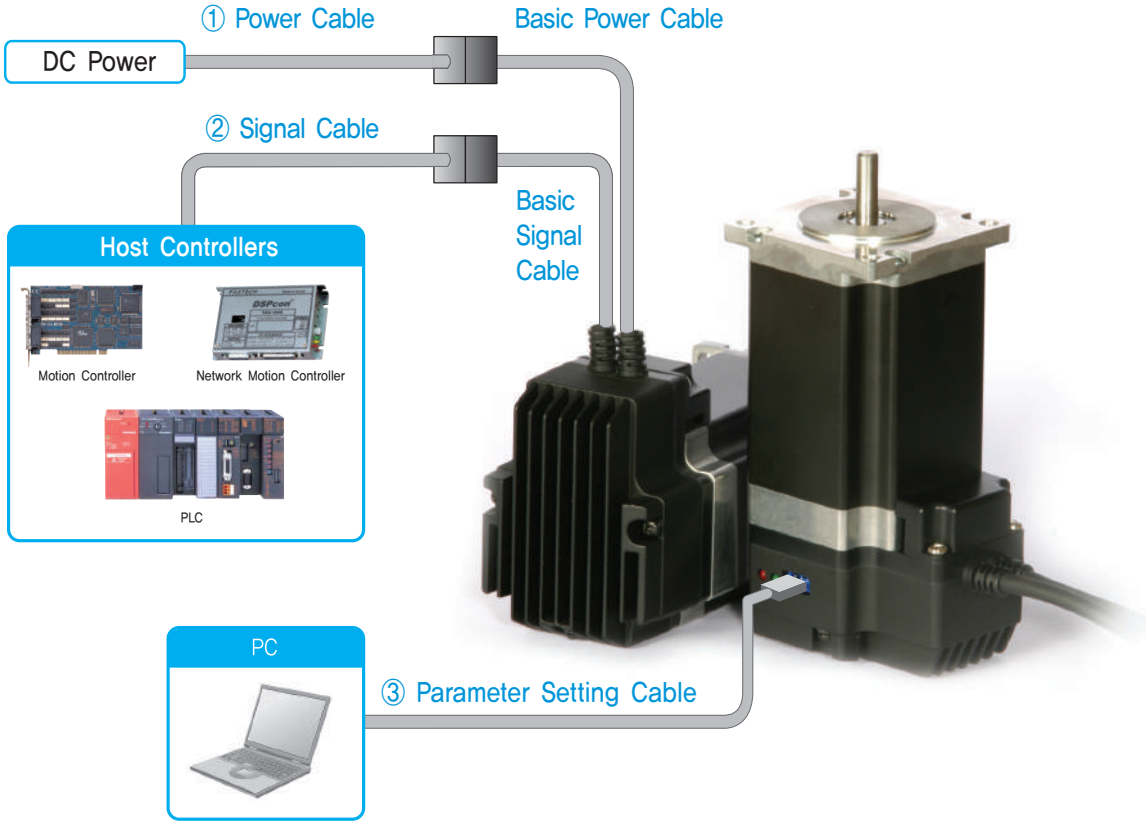


4. Parameter Setting Connector(CN3)

No.	Function
1	Tx
2	Rx
3	GND



System Configuration



Cable Type	Max. Length	Remarks
① Power Cable	2m	Options (Sold separately)
② Signal Cable	20m	
③ Parameter Setting Cable	3m	
Basic Power Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Signal Cable	0.3m (Basic length)	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Power (CN1)	BT-42/56 series	Housing	5557-04R	MOLEX
		Terminal	5556T	
	BT-86 series	Housing	3191-2R	MOLEX
		Terminal	1381T	
Signal (CN2)		Housing	51353-1000	JST
		Terminal	56134-9000	
Parameter Setting	Drive Side (CN3)	Housing	5264-03	MOLEX
		Terminal	5263	
	PC Side	D-SUB Connector	717SD-ESD9S	AMPHENOL
		Terminal	7E-1675-09	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Drive Power Cable

These are the cables to connect Ezi-STEP BT drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection *1	CBTS-P-001F	1	Normal Cable	Maximum Length: 2m
	CBTS-P-002F	2		
	CBTS-P-003F	3		
	CBTS-P-005F	5		
	CBTS-P-001M	1	Robot Cable	
	CBTS-P-002M	2		
	CBTS-P-003M	3		
	CBTS-P-005M	5		
Drive – Power Connection *2	CBTL-P-001F	1	Normal Cable	Maximum Length: 2m
	CBTL-P-002F	2		
	CBTL-P-003F	3		
	CBTL-P-005F	5		
	CBTL-P-001M	1	Robot Cable	
	CBTL-P-002M	2		
	CBTL-P-003M	3		
	CBTL-P-005M	5		

*1 : Ezi-STEP-BT-42/56 series
*2 : Ezi-STEP-BT-86 series

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Signal Cable

These are the cables to connect Ezi-STEP BT drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CBTS-S-001F	1	Normal Cable	Maximum Length: 20m
	CBTS-S-002F	2		
	CBTS-S-003F	3		
	CBTS-S-005F	5		
	CBTS-S-001M	1	Robot Cable	
	CBTS-S-002M	2		
	CBTS-S-003M	3		
	CBTS-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

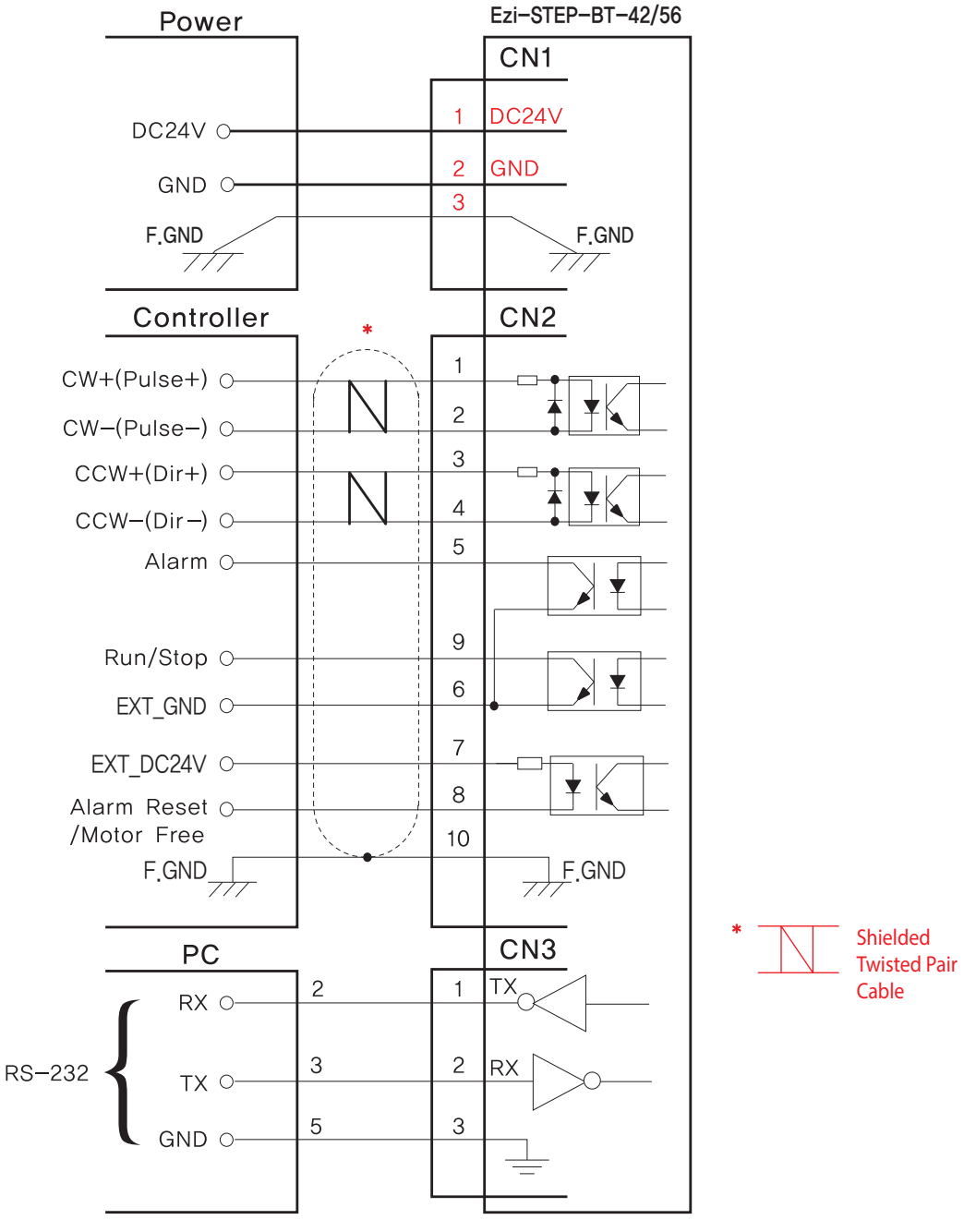
③ Parameter Setting Cable

These are the cables to connect Ezi-STEP BT drive and PC.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – PC Connection	CBTS-C-001F	1	Normal Cable	Maximum Length: 3m
	CBTS-C-002F	2		
	CBTS-C-003F	3		
	CBTS-C-005F	5		
	CBTS-C-001M	1	Robot Cable	
	CBTS-C-002M	2		
	CBTS-C-003M	3		
	CBTS-C-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● External Wiring Diagram [Ezi-STEP-BT-42/56 Series]

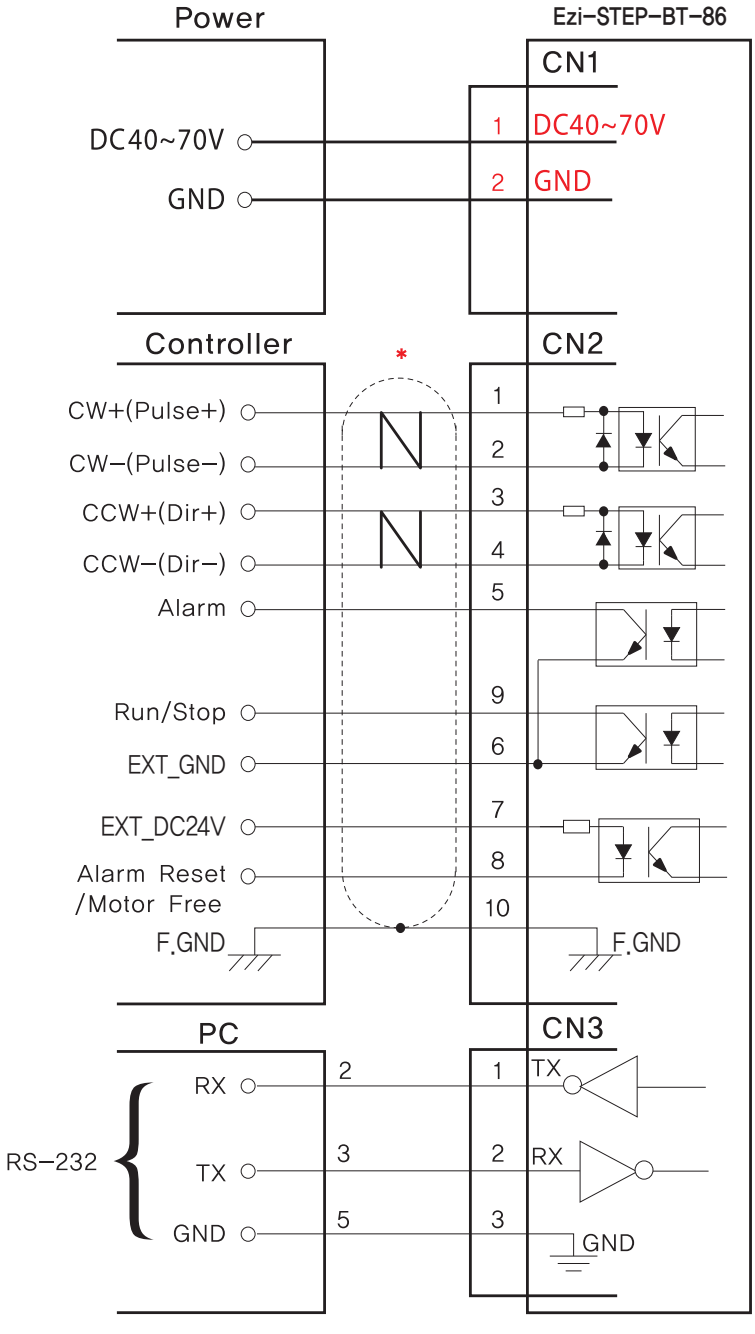


※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [Ezi-STEP-BT-86 Series]



* Shielded Twisted Pair Cable

※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-STEP® II
EtherCAT
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
RUN
ERR
ECAT
PWR
RUN
SON
ALM
ECAT ID

Ezi-STEP® II EtherCAT®

Micro Stepping System

- CiA402 Drive Profile Support
- Microstepping
- Software Damping
- High Torque



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® II EtherCAT®

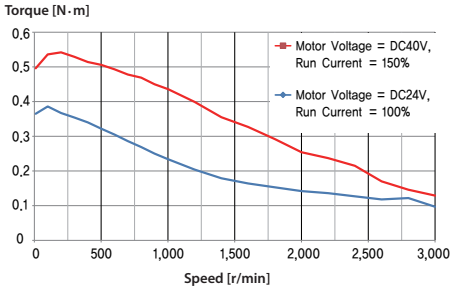
Micro Stepping System



2 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-STEP II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high-speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low-speed is increased.
Torque can be improved by about 30% over the entire speed range.

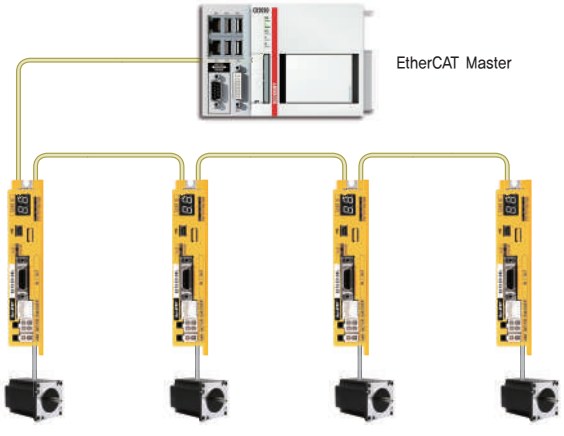


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-STEP II-EC-42L
Motor Voltage = DC40V
Input Voltage = DC24V

1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.

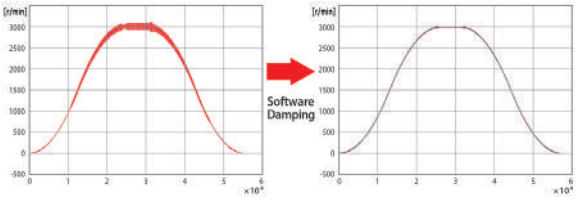


3 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

4 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration. This allows the smooth operation of the motor at high-speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

5 Improved high-speed operation performance

Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

Applicable model : Ezi-STEP II-EC-42 Series
Ezi-STEP II-EC-56 Series
Ezi-STEP II-EC-60 Series

● Ezi-STEP II EtherCAT Part Numbering

Ezi-STEP II -EC-42S-BK

Series Name

Type Name

EC : EtherCAT

Motor Flange Size

20 : 20mm
28 : 28mm
42 : 42mm
56 : 56mm
60 : 60mm
86 : 86mm

Motor Length

S : Small
M : Medium
L : Large
XL : Extra Large

Brake

Blank : Without Brake
BK : Brake

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -EC-20M	BM-20M	EzT2-EC-20M
Ezi-STEP II -EC-20L	BM-20L	EzT2-EC-20L
Ezi-STEP II -EC-28S	BM-28S	EzT2-EC-28S
Ezi-STEP II -EC-28M	BM-28M	EzT2-EC-28M
Ezi-STEP II -EC-28L	BM-28L	EzT2-EC-28L
Ezi-STEP II -EC-42S	BM-42S	EzT2-EC-42S
Ezi-STEP II -EC-42M	BM-42M	EzT2-EC-42M
Ezi-STEP II -EC-42L	BM-42L	EzT2-EC-42L
Ezi-STEP II -EC-42XL	BM-42XL	EzT2-EC-42XL
Ezi-STEP II -EC-56S	BM-56S	EzT2-EC-56S
Ezi-STEP II -EC-56M	BM-56M	EzT2-EC-56M
Ezi-STEP II -EC-56L	BM-56L	EzT2-EC-56L
Ezi-STEP II -EC-60S	BM-60S	EzT2-EC-60S
Ezi-STEP II -EC-60M	BM-60M	EzT2-EC-60M
Ezi-STEP II -EC-60L	BM-60L	EzT2-EC-60L
Ezi-STEP II -EC-86M	BM-86M	EzT2-EC-86M
Ezi-STEP II -EC-86L	BM-86L	EzT2-EC-86L
Ezi-STEP II -EC-86XL	BM-86XL	EzT2-EC-86XL

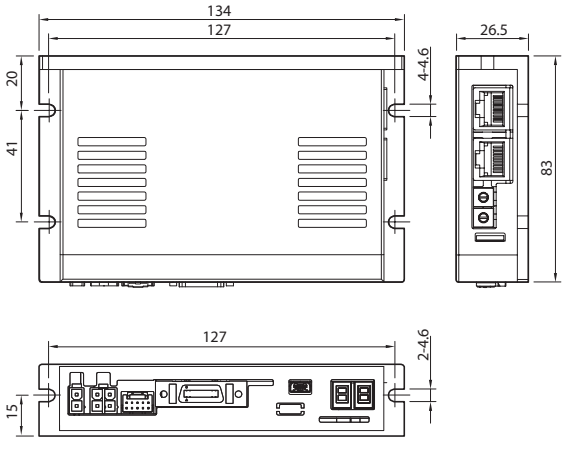
● Combination with Brake

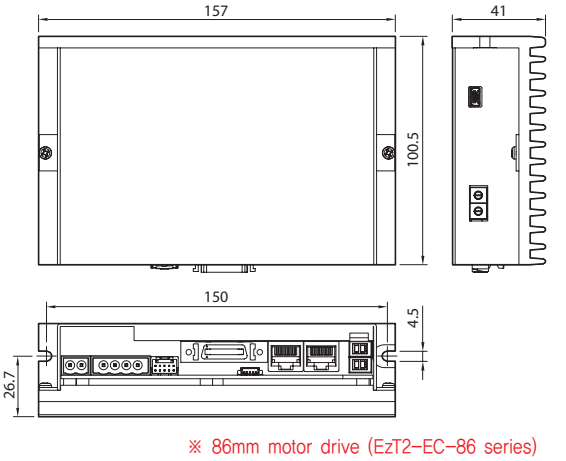
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -EC-42S-BK	BM-42S-BK	EzT2-EC-42S
Ezi-STEP II -EC-42M-BK	BM-42M-BK	EzT2-EC-42M
Ezi-STEP II -EC-42L-BK	BM-42L-BK	EzT2-EC-42L
Ezi-STEP II -EC-42XL-BK	BM-42XL-BK	EzT2-EC-42XL
Ezi-STEP II -EC-56S-BK	BM-56S-BK	EzT2-EC-56S
Ezi-STEP II -EC-56M-BK	BM-56M-BK	EzT2-EC-56M
Ezi-STEP II -EC-56L-BK	BM-56L-BK	EzT2-EC-56L
Ezi-STEP II -EC-60S-BK	BM-60S-BK	EzT2-EC-60S
Ezi-STEP II -EC-60M-BK	BM-60M-BK	EzT2-EC-60M
Ezi-STEP II -EC-60L-BK	BM-60L-BK	EzT2-EC-60L
Ezi-STEP II -EC-86M-BK	BM-86M-BK	EzT2-EC-86M
Ezi-STEP II -EC-86L-BK	BM-86L-BK	EzT2-EC-86L
Ezi-STEP II -EC-86XL-BK	BM-86XL-BK	EzT2-EC-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Drive Model		EzT2-EC-20 series	EzT2-EC-28 series	EzT2-EC-42 series	EzT2-EC-56 series	EzT2-EC-60 series	EzT2-EC-86 series
Input Voltage		DC24V±10%					DC40~70V
Control Method		Bipolar PWM drive with 32bit MCU					
Current Consumption		Max. 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min					
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)					
	Error Type	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power status, Alarm status, Run status, STEP On status					
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)					
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode					
	Synchronization	Free Run, SM Event, DC SYNC Event					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler Input)					
	Output Signals	6 programmable outputs (Photocoupler Output), 1 Brake output					

Dimensions of Drive [mm]





※ 86mm motor drive (EzT2-EC-86 series)

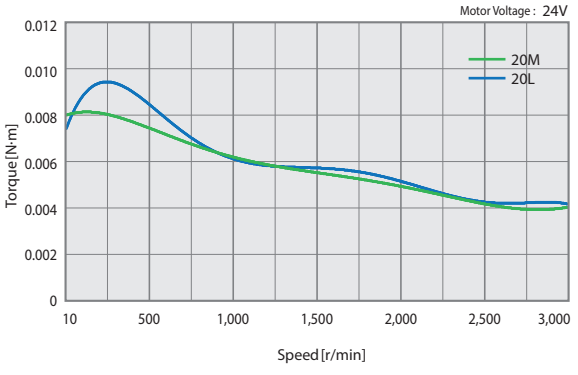
● Specifications of Motor

MODEL			UNIT	BM-20 series 20M	BM-20 series 20L	BM-28 series 28S	BM-28 series 28M	BM-28 series 28L	BM-42 series 42S	BM-42 series 42M	BM-42 series 42L	BM-42 series 42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Unit' s Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

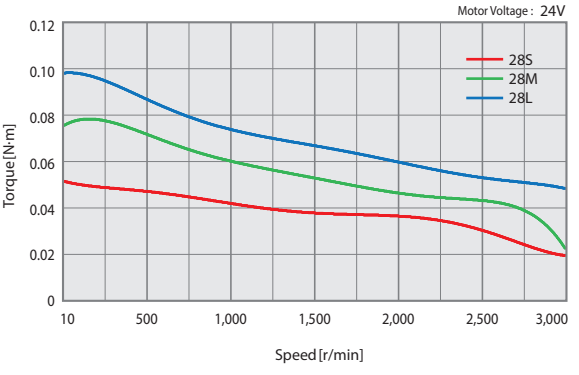
MODEL			UNIT	BM-56 series 56S	BM-56 series 56M	BM-56 series 56L	BM-60 series 60S	BM-60 series 60M	BM-60 series 60L	BM-86 series 86M	BM-86 series 86L	BM-86 series 86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349	2.275	3.808	5.330
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Unit' s Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

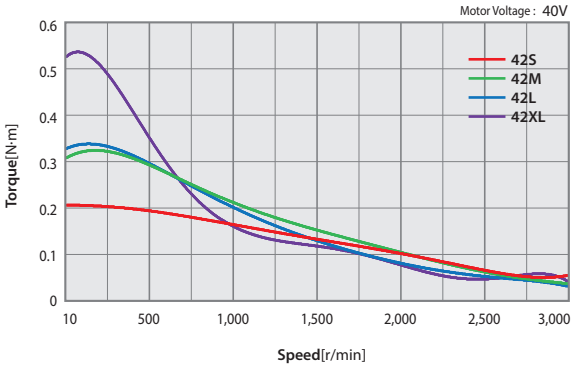
Ezi-STEP II-EC-20 series



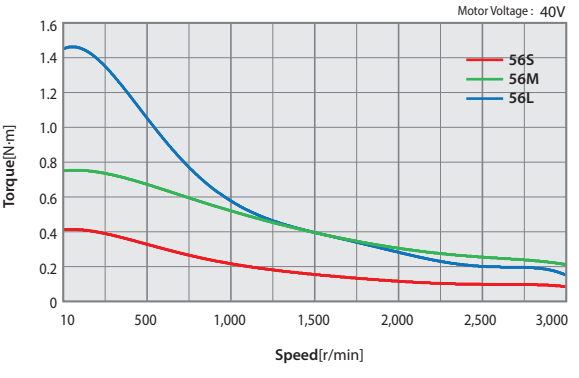
Ezi-STEP II-EC-28 series



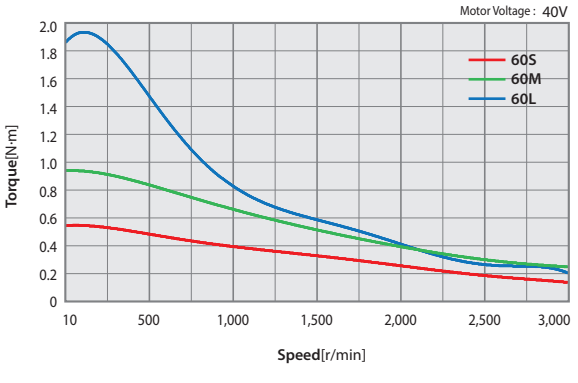
Ezi-STEP II-EC-42 series



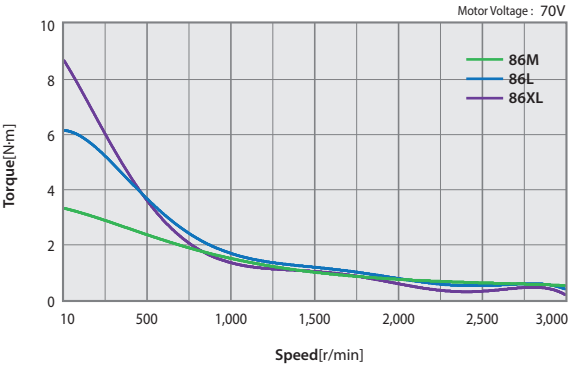
Ezi-STEP II-EC-56 series



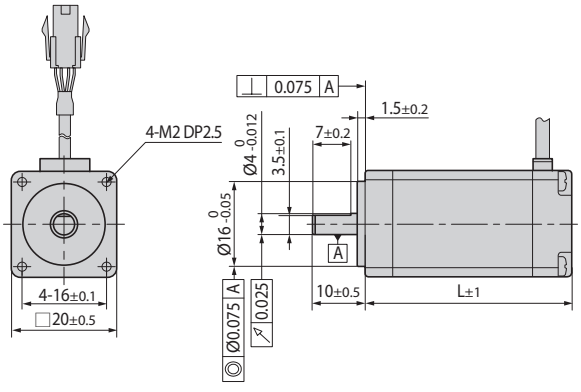
Ezi-STEP II-EC-60 series



Ezi-STEP II-EC-86 series

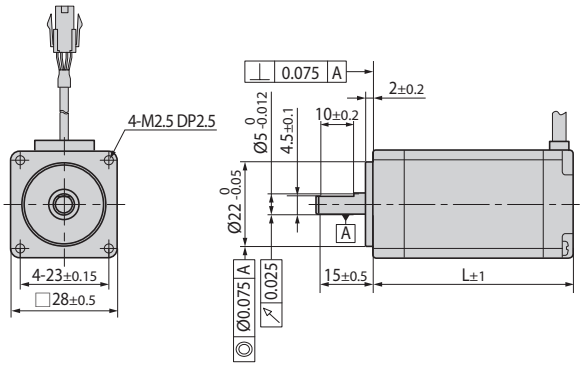


● Dimensions of Motor [mm]



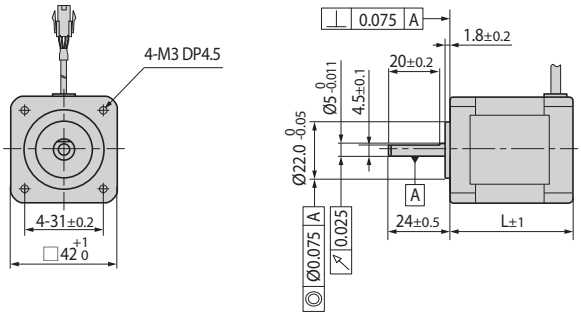
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



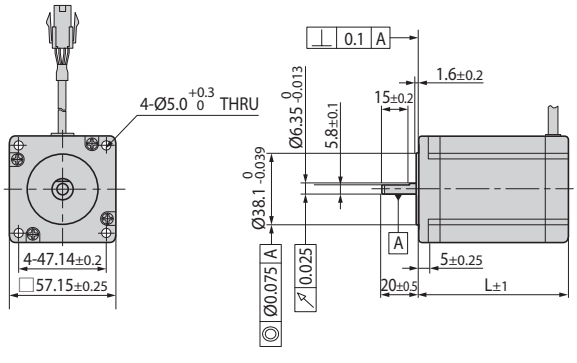
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

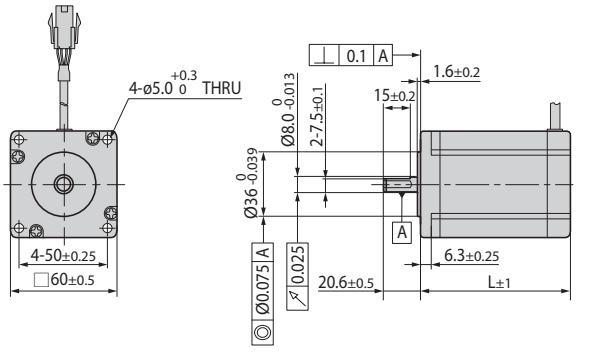
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

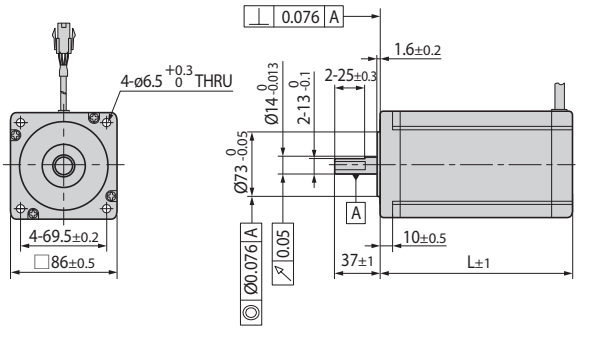
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

Dimensions of Motor [mm]



60mm

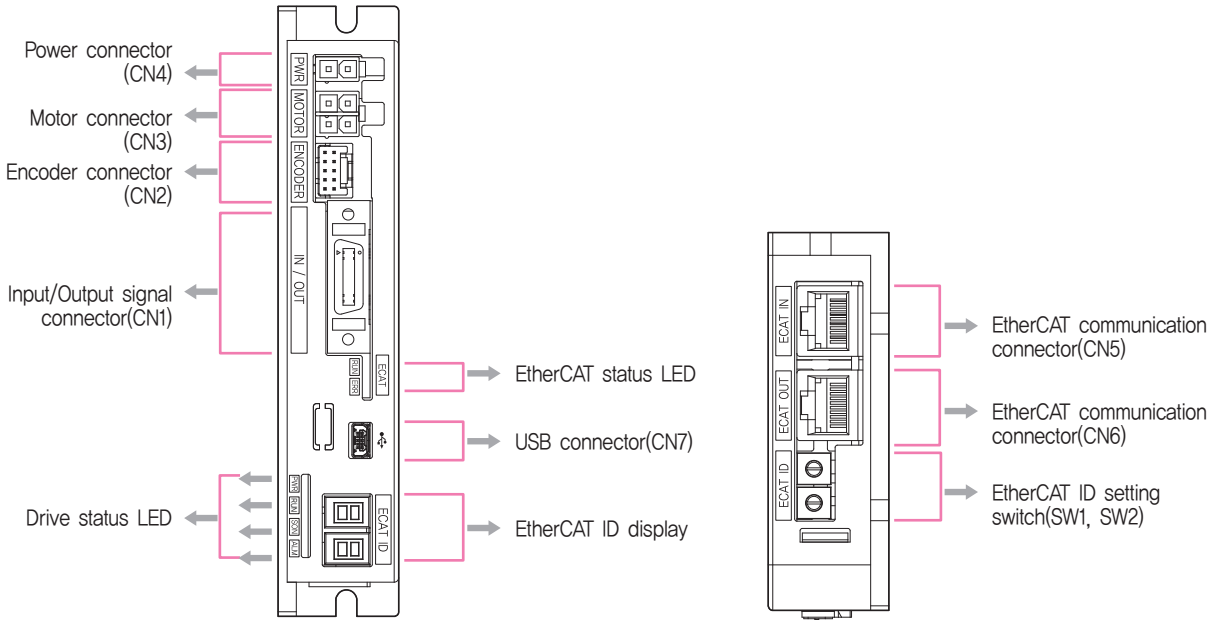
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



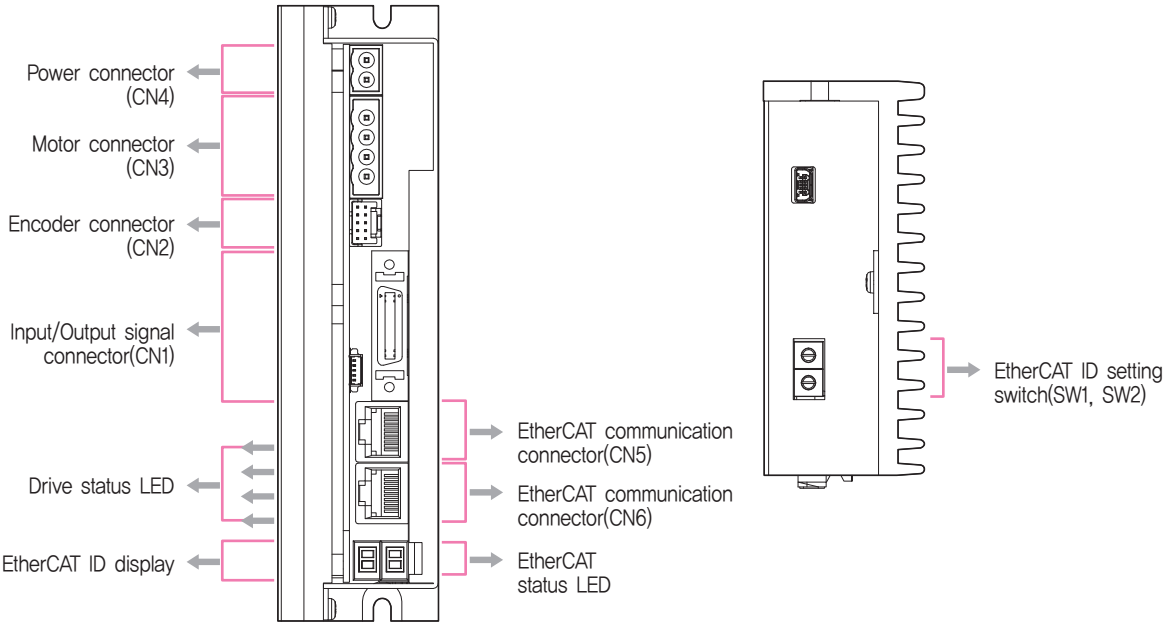
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation

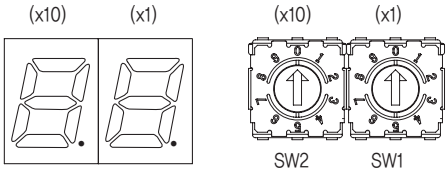


◆ 86mm Motor Drive (EzT2-EC-86 series)



1. EtherCAT ID Display and Setting Switch(SW1, SW2)

Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).



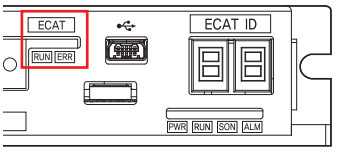
2. EtherCAT Status LED

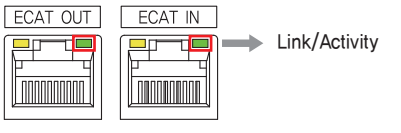
LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Description
Link/ Activity	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation





3. Drive Status LED

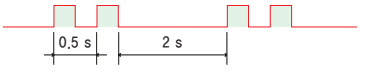
LED informs operation status of the drive.

Indication	Color	Function	Explanation
PWR	Green	Power Input Indication	LED is turned ON when power is applied
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	STEP ON / OFF Indication	STEP ON: Lights ON, STEP OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the the number of LED blinking

No.	Error Code *3	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *2
7	E-007	Motor Connect Error	There is a problem with the connection between the drive and the motor
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)

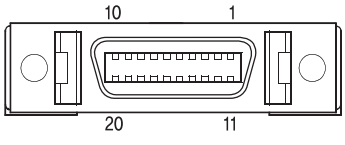
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of EtherCAT ID.
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Over Speed Error)

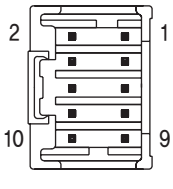
4. Input/Output Signal Connector (CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE−	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



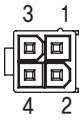
5. Encoder Connector (CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

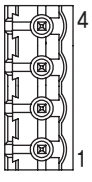


6. Motor Connector (CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



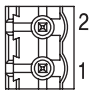
※ 86mm motor drive

7. Power Connector (CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



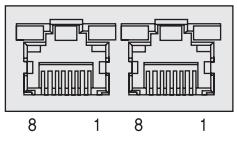
No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



※ 86mm motor drive

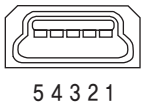
8. EtherCAT Communication Connector (CN5, CN6)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		

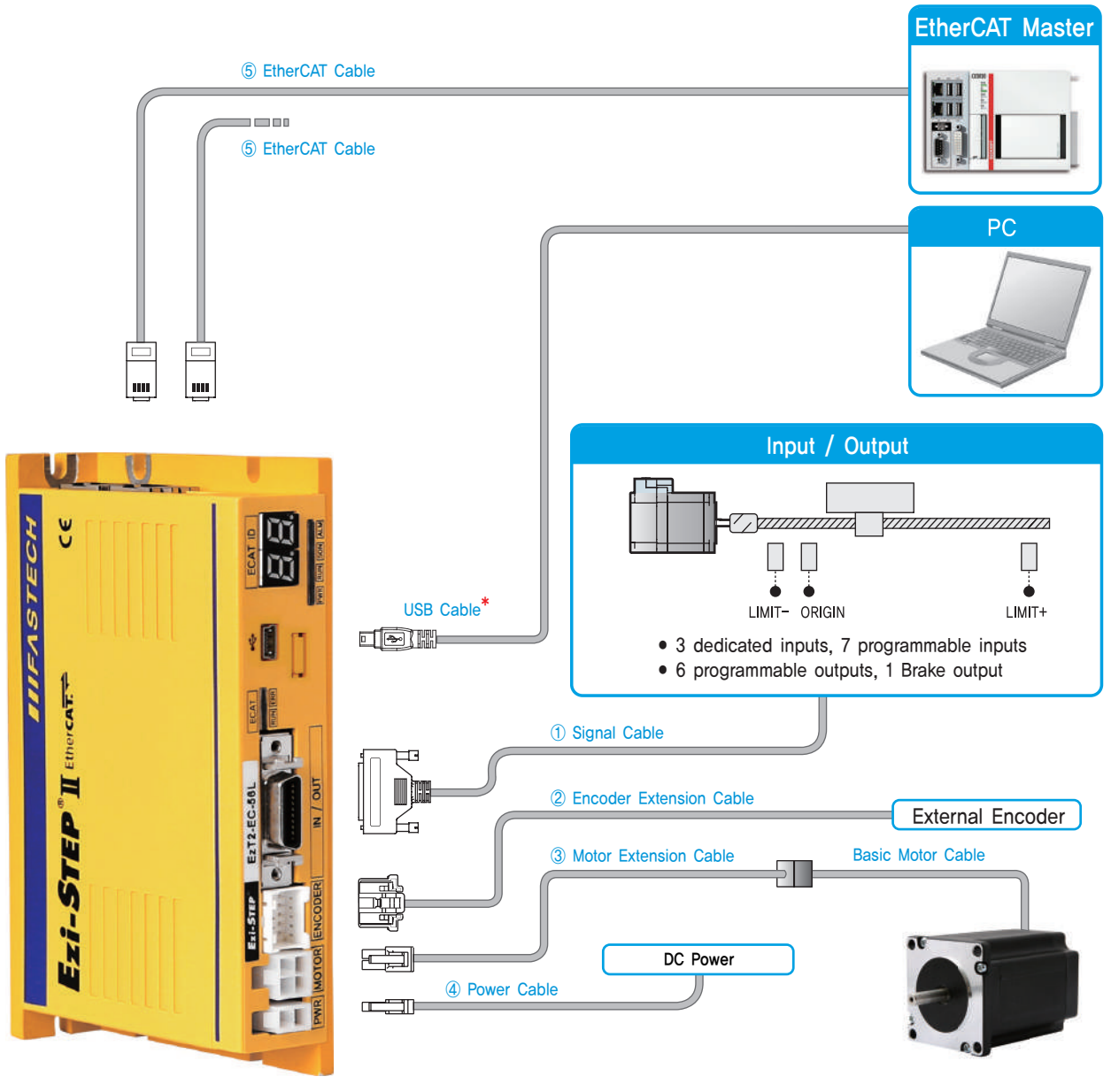


9. USB Connector (CN7)

No.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II EtherCAT drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

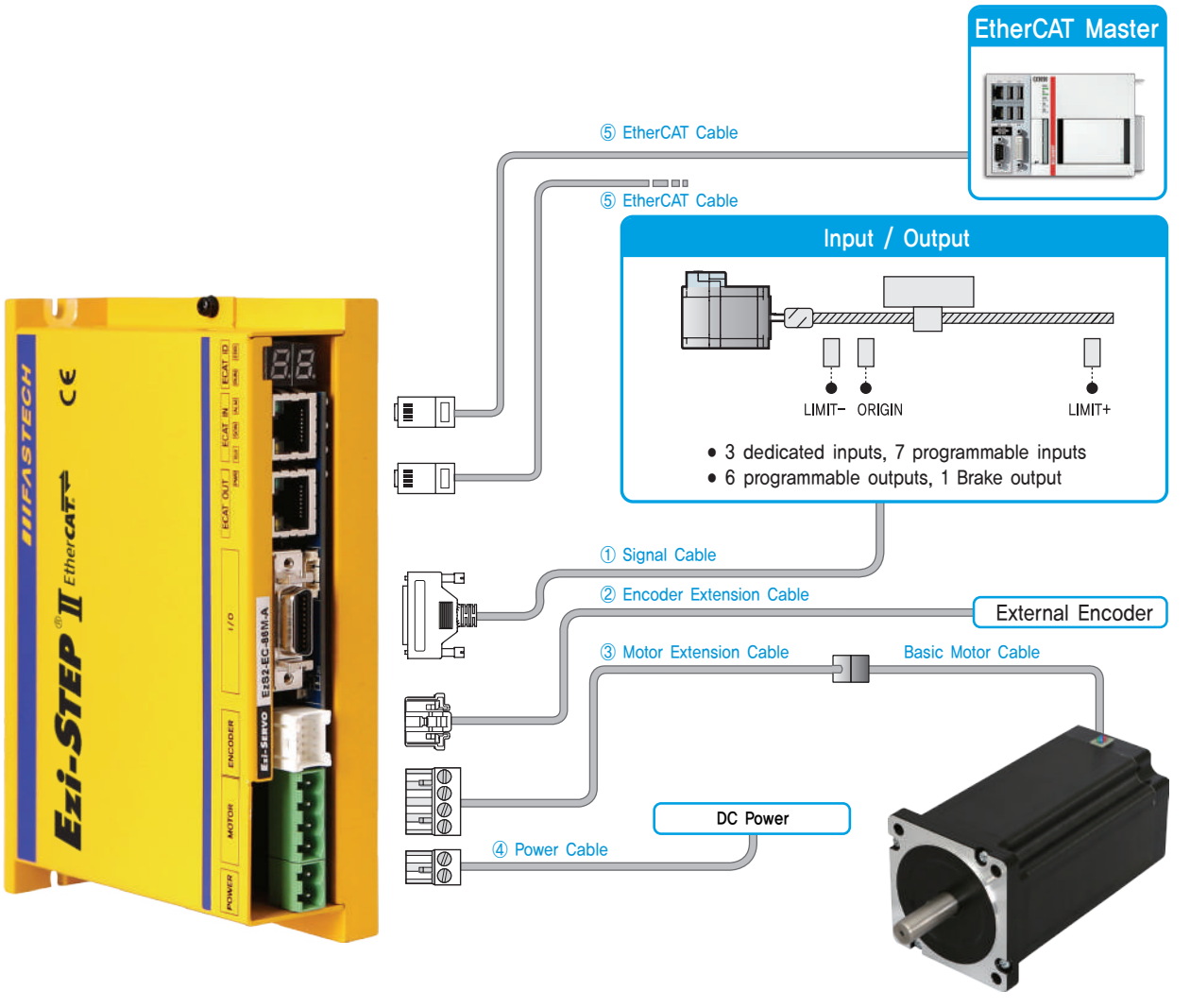
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-STEP II EtherCAT and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	3191-4R1	MOLEX
		Terminal	1381T	
Power (CN4)		Terminal Block	AK950-2	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II EtherCAT [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT [86mm motor] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CSVO-E-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-E-002F	2		
	CSVO-E-003F	3		
	CSVO-E-005F	5		
	CSVO-E-001M	1	Robot Cable	
	CSVO-E-002M	2		
	CSVO-E-003M	3		
	CSVO-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II EtherCAT [86mm motor] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

⑤ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II EtherCAT [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

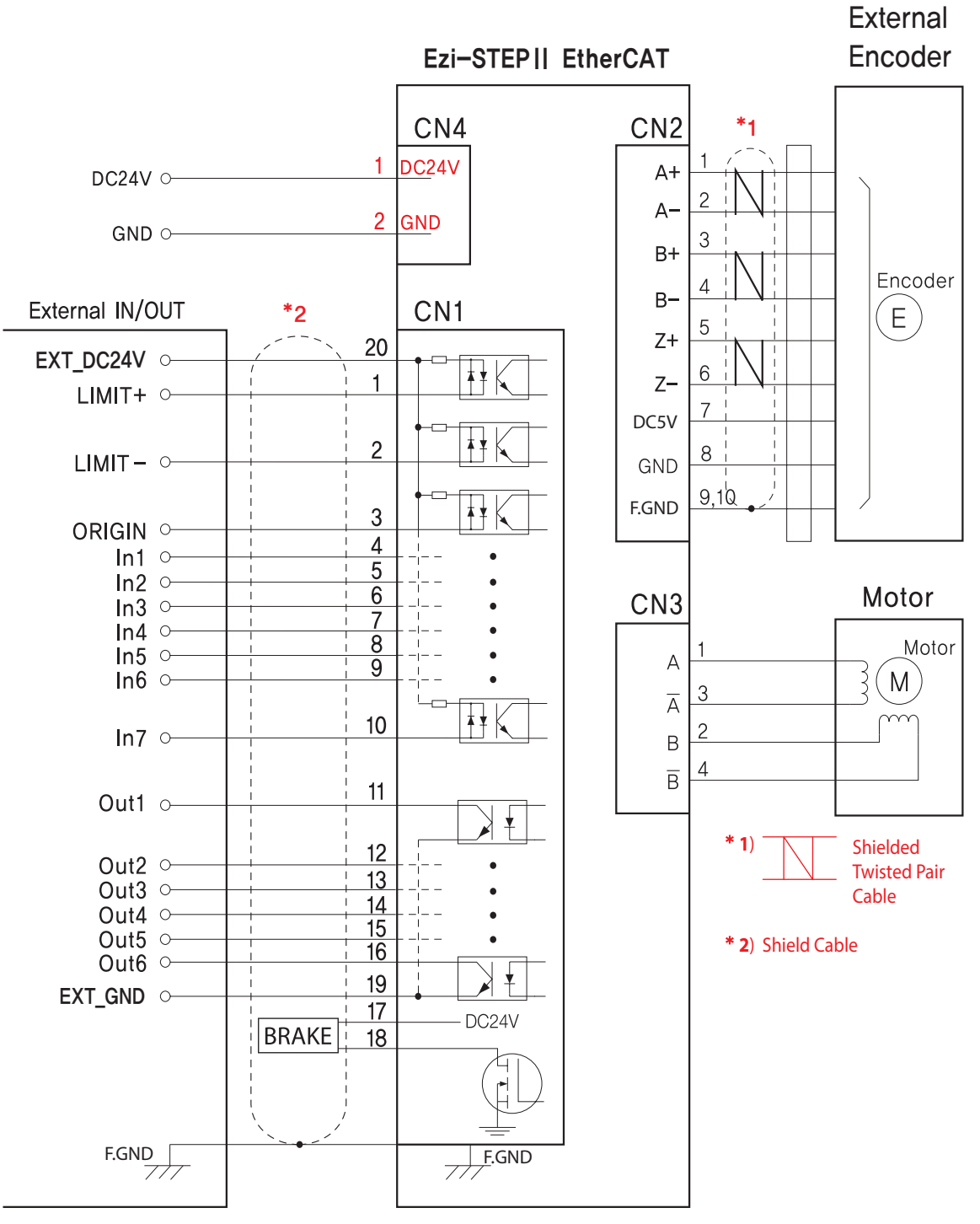
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-STEP II EtherCAT [86mm motor] and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram

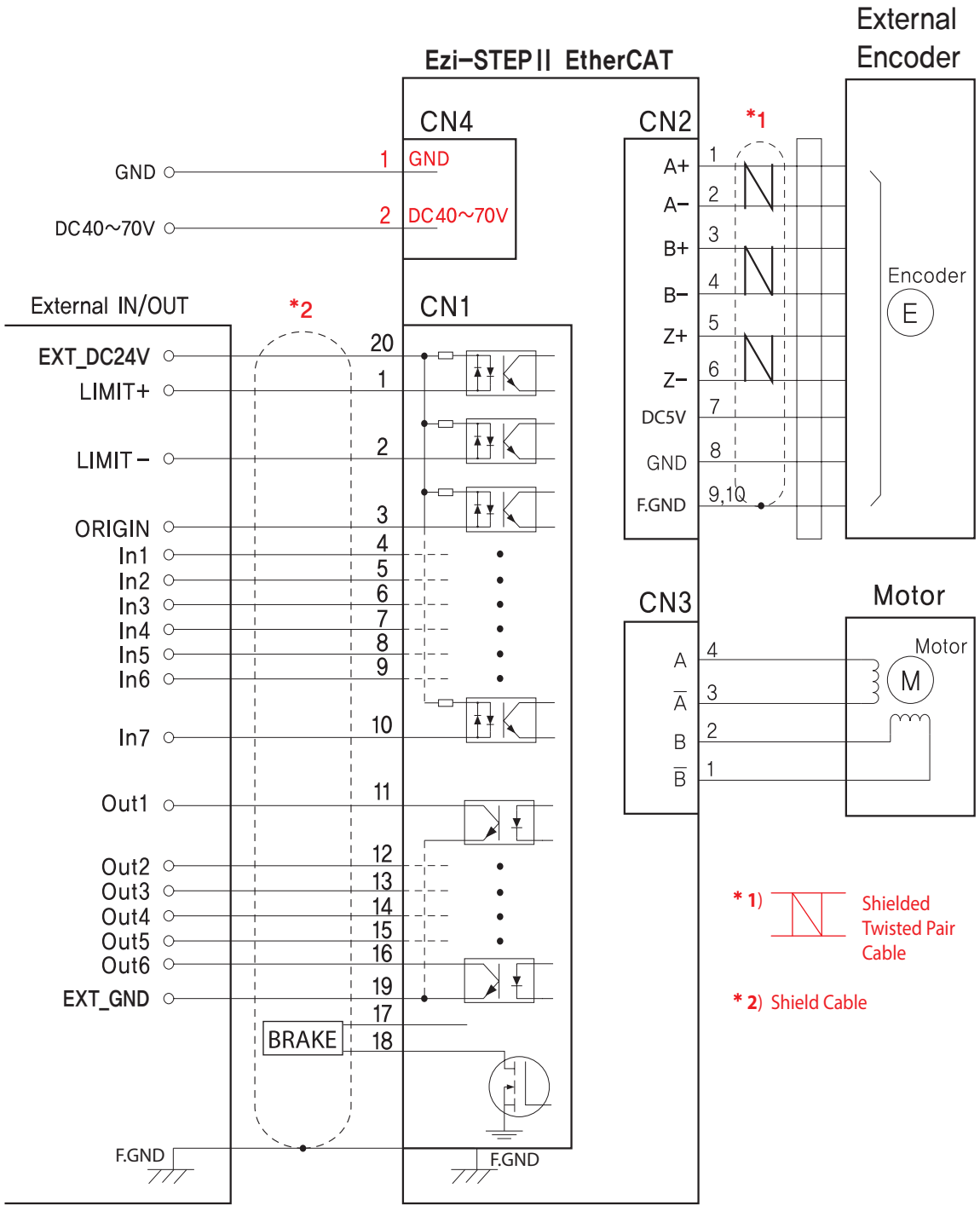


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [86mm Motor Drive]



*1) Shielded Twisted Pair Cable

*2) Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


EtherCAT
Ezi-STEP II mini
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ST1
ST2
ECAT
RUN
ERR
LA1
LA2

Ezi-STEP® II Micro Stepping System

EtherCAT® MINI

- CiA402 Drive Profile Support
- Microstepping
- Software Damping
- Space Saving / Reduced Wiring by Compact Drive

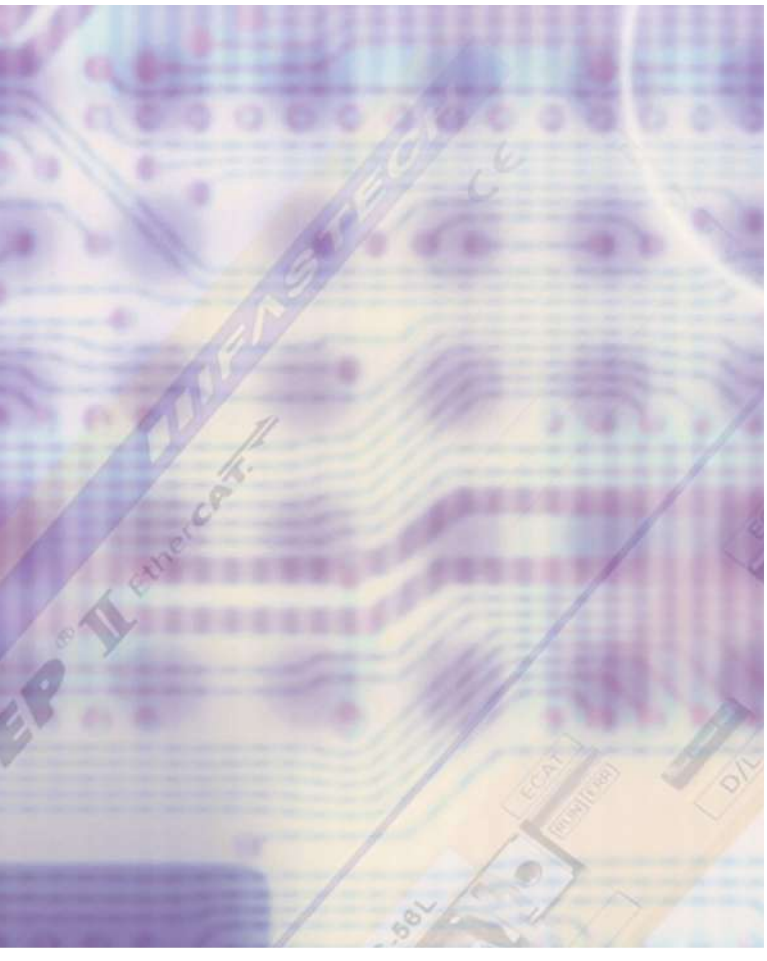


FASTECH

Fast, Accurate, Smooth Motion

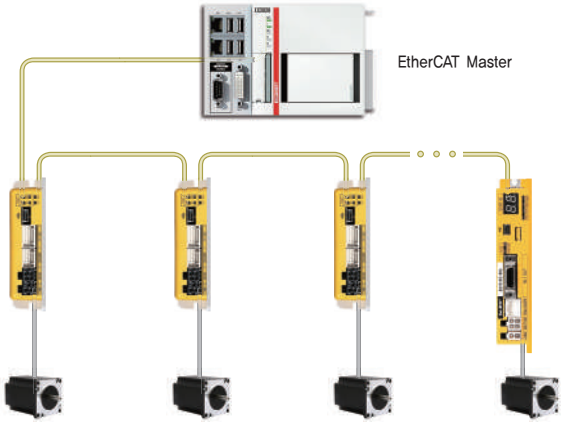
Ezi-STEP® II Micro Stepping System

EtherCAT® MINI



1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT MINI is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.

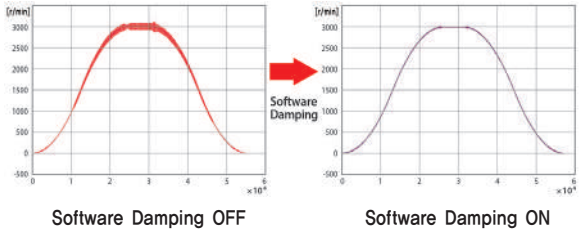


2 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

3 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration. This allows the smooth operation of the motor at high-speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

Ezi-STEPII EtherCAT MINI Part Numbering

Ezi-STEP II-EC-MI-42S-BK

- **Series Name**
- **Type Name**
  - EC-MI : EtherCAT Mini Type
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-EC-MI-20M	BM-20M	EzT2-EC-MI-20M
Ezi-STEP II-EC-MI-20L	BM-20L	EzT2-EC-MI-20L
Ezi-STEP II-EC-MI-28S	BM-28S	EzT2-EC-MI-28S
Ezi-STEP II-EC-MI-28M	BM-28M	EzT2-EC-MI-28M
Ezi-STEP II-EC-MI-28L	BM-28L	EzT2-EC-MI-28L
Ezi-STEP II-EC-MI-42S	BM-42S	EzT2-EC-MI-42S
Ezi-STEP II-EC-MI-42M	BM-42M	EzT2-EC-MI-42M
Ezi-STEP II-EC-MI-42L	BM-42L	EzT2-EC-MI-42L
Ezi-STEP II-EC-MI-42XL	BM-42XL	EzT2-EC-MI-42XL
Ezi-STEP II-EC-MI-56S	BM-56S	EzT2-EC-MI-56S
Ezi-STEP II-EC-MI-56M	BM-56M	EzT2-EC-MI-56M
Ezi-STEP II-EC-MI-56L	BM-56L	EzT2-EC-MI-56L
Ezi-STEP II-EC-MI-60S	BM-60S	EzT2-EC-MI-60S
Ezi-STEP II-EC-MI-60M	BM-60M	EzT2-EC-MI-60M
Ezi-STEP II-EC-MI-60L	BM-60L	EzT2-EC-MI-60L

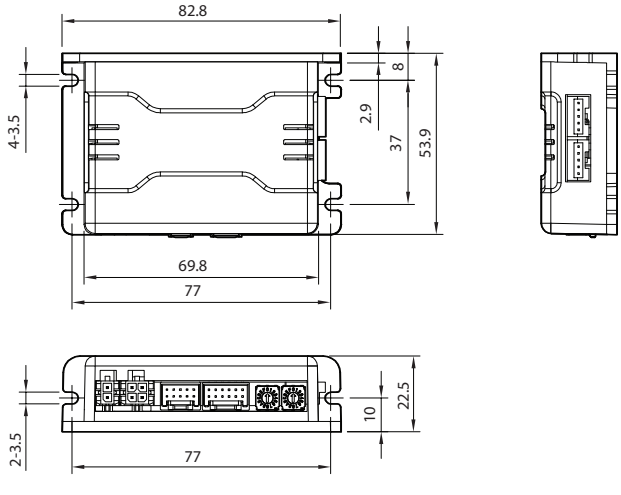
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-EC-MI-42S-BK	BM-42S-BK	EzT2-EC-MI-42S
Ezi-STEP II-EC-MI-42M-BK	BM-42M-BK	EzT2-EC-MI-42M
Ezi-STEP II-EC-MI-42L-BK	BM-42L-BK	EzT2-EC-MI-42L
Ezi-STEP II-EC-MI-42XL-BK	BM-42XL-BK	EzT2-EC-MI-42XL
Ezi-STEP II-EC-MI-56S-BK	BM-56S-BK	EzT2-EC-MI-56S
Ezi-STEP II-EC-MI-56M-BK	BM-56M-BK	EzT2-EC-MI-56M
Ezi-STEP II-EC-MI-56L-BK	BM-56L-BK	EzT2-EC-MI-56L
Ezi-STEP II-EC-MI-60S-BK	BM-60S-BK	EzT2-EC-MI-60S
Ezi-STEP II-EC-MI-60M-BK	BM-60M-BK	EzT2-EC-MI-60M
Ezi-STEP II-EC-MI-60L-BK	BM-60L-BK	EzT2-EC-MI-60L

● Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Drive Model		EzT2-EC-MI-20 series	EzT2-EC-MI-28 series	EzT2-EC-MI-42 series	EzT2-EC-MI-56 series	EzT2-EC-MI-60 series
Input Voltage		DC24V±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Current Consumption		Max. 500mA (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃				
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000r/min				
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)				
	Error Type	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)				
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode				
	Synchronization	Free Run, SM Event, DC SYNC Event				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)				
	Output Signals	2 programmable outputs (Photocoupler Output), 1 Brake output				

● Dimensions of Drive [mm]



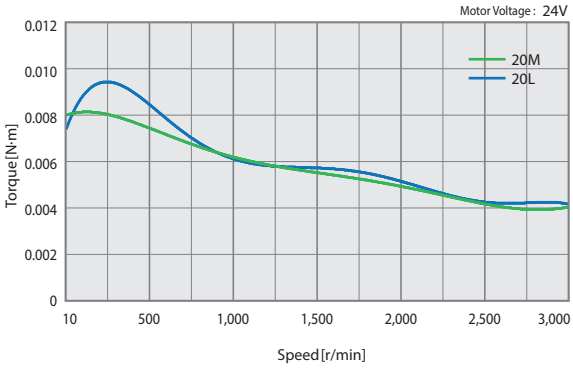
Specifications of Motor

MODEL			UNIT	BM-20 series		BM-28 series			BM-42 series			
				20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

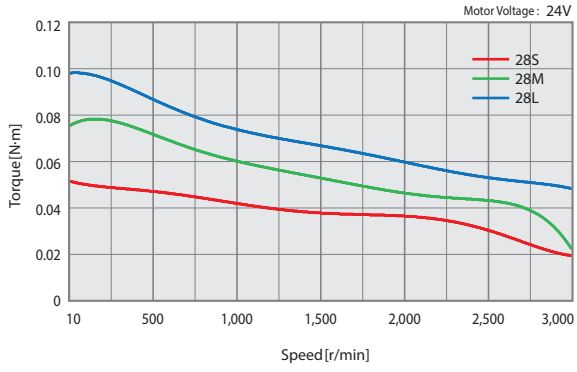
MODEL			UNIT	BM-56 series			BM-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

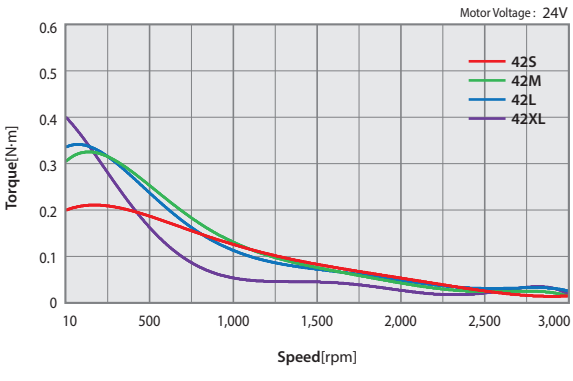
Ezi-STEP II-EC-MI-20 series



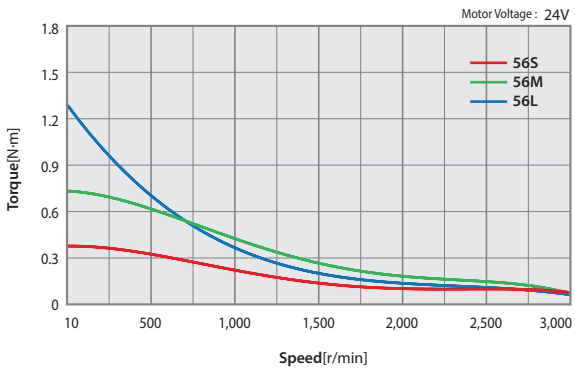
Ezi-STEP II-EC-MI-28 series



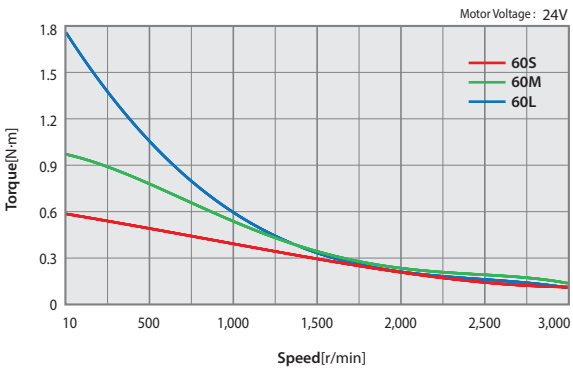
Ezi-STEP II-EC-MI-42 series



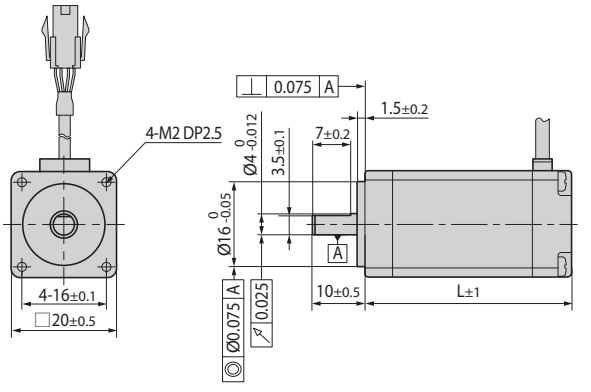
Ezi-STEP II-EC-MI-56 series



Ezi-STEP II-EC-MI-60 series

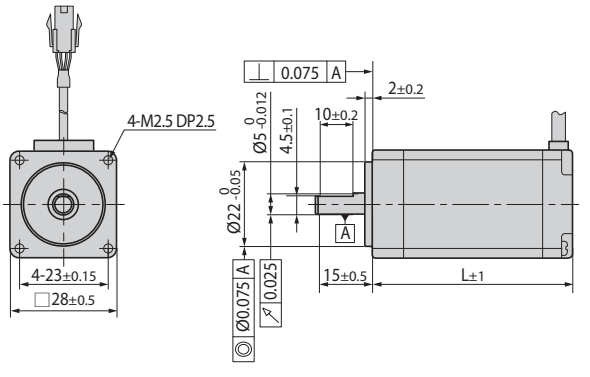


● Dimensions of Motor [mm]



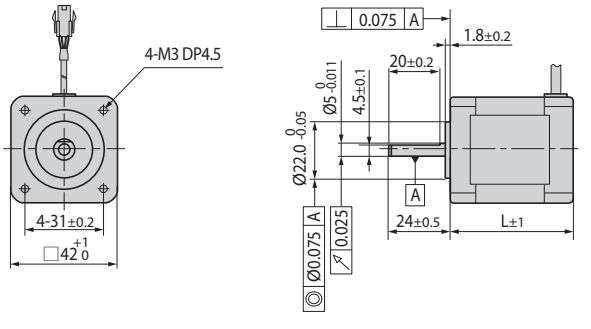
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



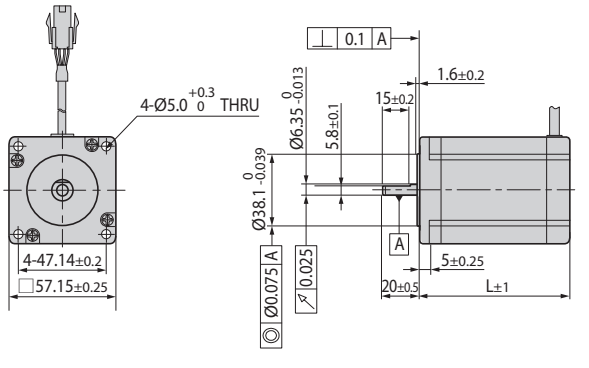
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

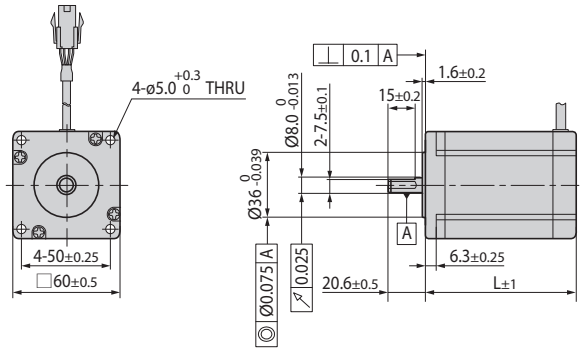
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

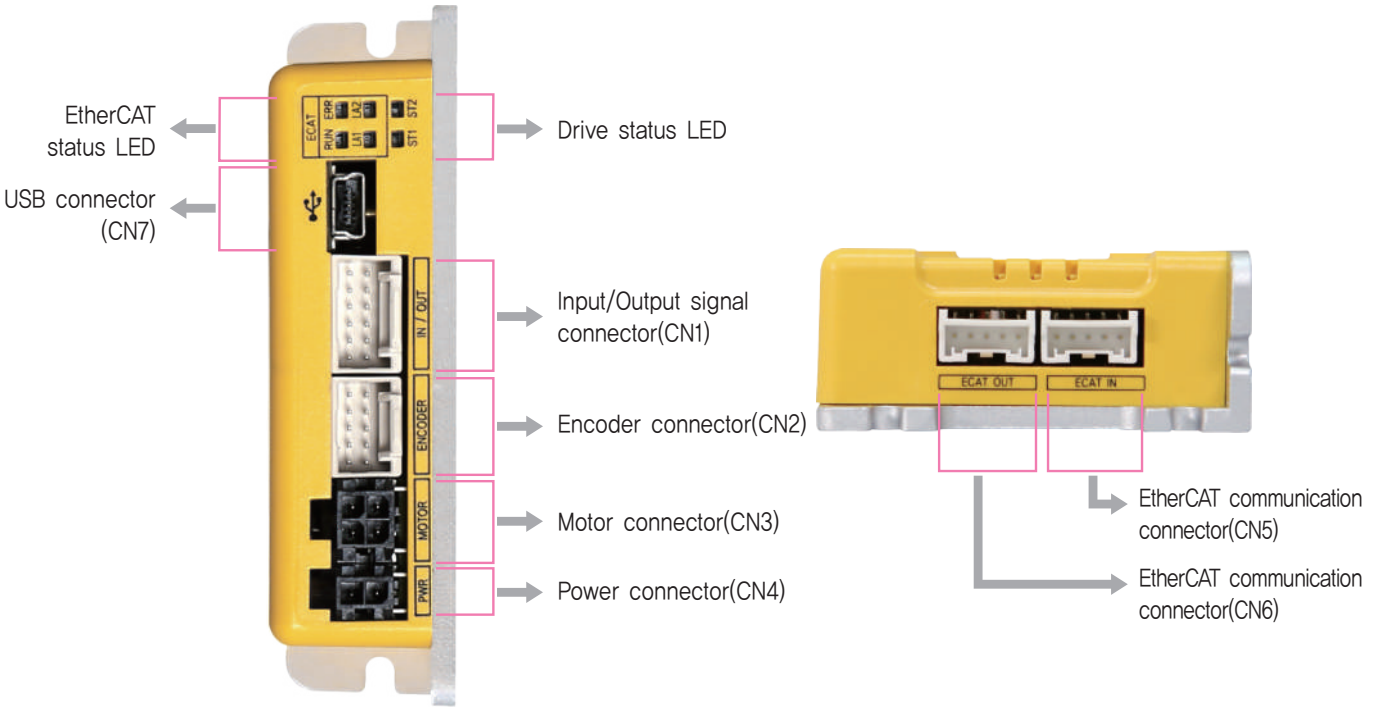
● Dimensions of Motor [mm]



60mm

Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

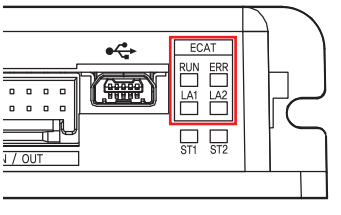
Settings and Operation



1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP



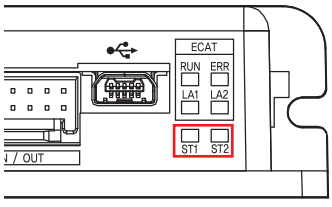
Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

Name	Color	Status	Description
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

2. Drive Status LED

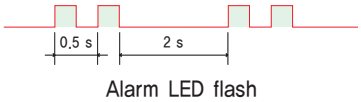
LED informs operation status of the drive.

LED Indication	LED Status	Explanation
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF	STEP On
ST1 : ▬▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF	STEP Off
ST1 : ▬▬▬▬▬ ST2 : ▬▬▬▬▬	ST1 and ST2 are ON	In motion
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



◆ List of error types by the number of ST2 LED blinking

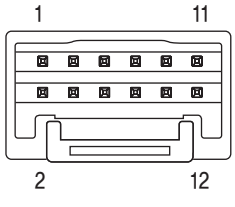
No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	The motor speed exceeds 3,000r/min
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED flash
(e.g., Over Speed Error)

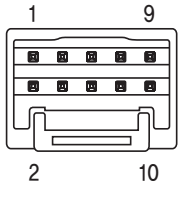
3. Input/Output Signal Connector (CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Digital Out1	Output
12	Digital Out2	Output



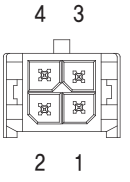
4. Encoder Connector (CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



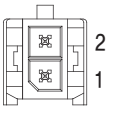
5. Motor Connector (CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



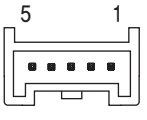
6. Power Connector (CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



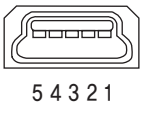
7. EtherCAT Communication Connector (CN5, CN6)

No.	Function
1	TD+
2	TD−
3	RD+
4	RD−
5	F.GND

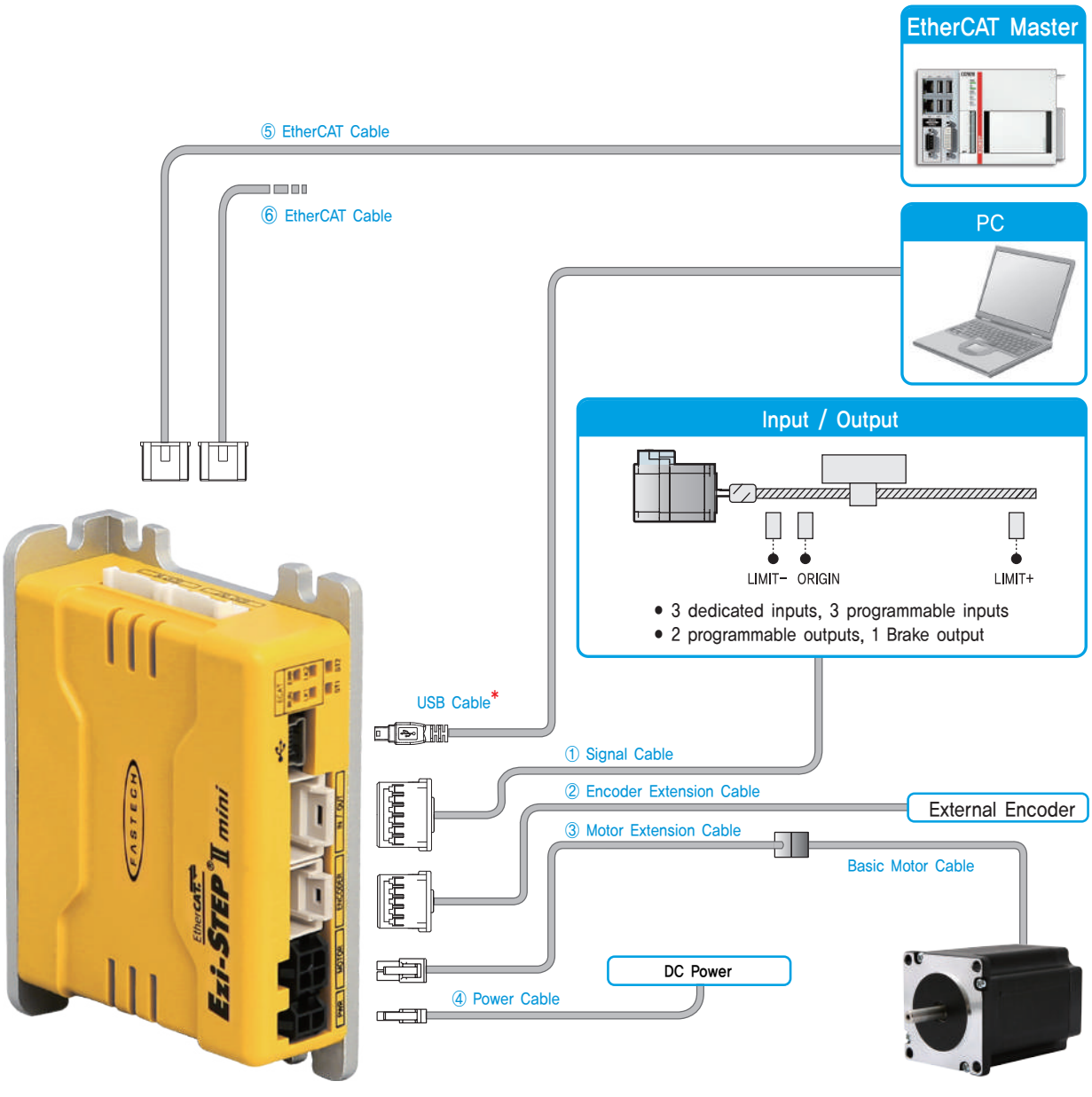


8. USB Connector (CN7)

No.	Function
1	V_{BUS}
2	D−
3	D+
4	−−−
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ EtherCAT Cable	100m	
Basic Motora Cable	0.3m (Basic length)	Basic cables are attached to motors.
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-1200	MOLEX
		Terminal	501648-1000 (AWG 26~28)	
Encoder	Drive Side (CN2)	Housing	501646-1000	MOLEX
		Terminal	501648-1000 (AWG 26~28)	
Motor	Drive Side (CN3)	Housing	43025-0400	MOLEX
		Terminal	43030-0001	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	43025-0200	MOLEX
		Terminal	43030-0001	
EtherCAT (CN5, CN6)		Housing	PAP-05V-S	JST
		Terminal	SPHD-001T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II EtherCAT MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSNR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSNR-S-002F	2		
	CSNR-S-003F	3		
	CSNR-S-005F	5		
	CSNR-S-001M	1	Robot Cable	
	CSNR-S-002M	2		
	CSNR-S-003M	3		
	CSNR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT MINI drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPM-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPM-E-002F	2		
	CTPM-E-003F	3		
	CTPM-E-005F	5		
	CTPM-E-001M	1	Robot Cable	
	CTPM-E-002M	2		
	CTPM-E-003M	3		
	CTPM-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSMI-M-001F	1	Normal Cable	Maximum Length: 20m
	CSMI-M-002F	2		
	CSMI-M-003F	3		
	CSMI-M-005F	5		
	CSMI-M-001M	1	Robot Cable	
	CSMI-M-002M	2		
	CSMI-M-003M	3		
	CSMI-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II EtherCAT drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSMI-P-001F	1	Normal Cable	Maximum Length: 2m
	CSMI-P-002F	2		
	CSMI-P-001M	1	Robot Cable	
	CSMI-P-002M	2		

⑤ EtherCAT Cable (5 pin connector – RJ45)

These are the cables to connect Ezi-STEP II EtherCAT MINI drive and Ezi-STEP II EtherCAT with EtherCAT network.

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNE-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNE-EC-002F	2	
	CGNE-EC-003F	3	
	CGNE-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

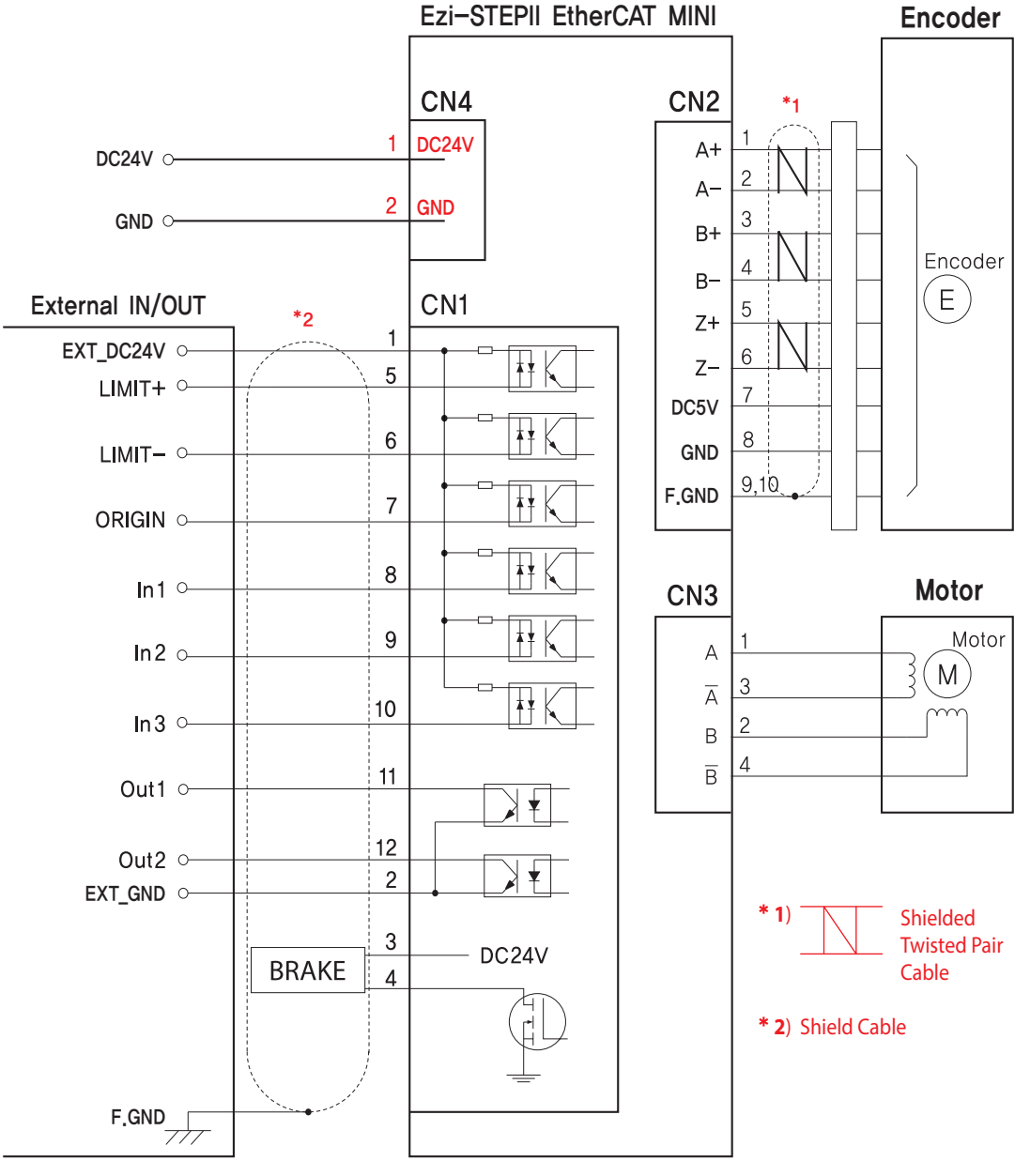
⑥ EtherCAT Cable (5 pin connector – 5 pin connector)

These are the cables to connect between Ezi-STEP II EtherCAT MINI drives with EtherCAT network.

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNI-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNI-EC-002F	2	
	CGNI-EC-003F	3	
	CGNI-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


C,P
M,P
EtherCAT. 4X
M,P
C,P
ECAT OUT
ECAT IN
PWR RUN SON ALM
RUN ERR LA1 LA2
MOTOR
ENCODER
I/O
Ezi-STEP II EtherCAT.

Ezi-STEP® II Micro Stepping System

EtherCAT® 4X

- CiA402 Drive Profile Support
- Microstepping
- Software Damping
- Compact Multi Axis Stepping Motor Drive
- Space Saving / Reduced Wiring



FASTECH
Fast, Accurate, Smooth Motion

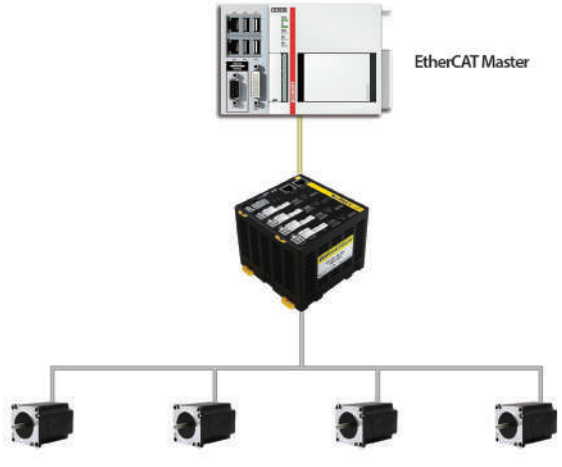
Ezi-STEP® II
Micro Stepping System

EtherCAT® 4X



1 EtherCAT Based Motion Control

Ezi-STEP II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-STEP II EtherCAT 4X is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.

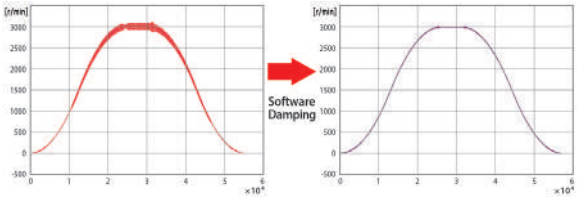


2 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

3 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

● Ezi-STEP II EtherCAT 4X Part Numbering

Ezi-STEP II - EC-4X

- Series Name
- Type Name
  - EC-4X : EtherCAT 4axis
  - EC-3X : EtherCAT 3axis

* Ezi-STEPII EtherCAT 4X can connect up to 4 motors to one drive. Standard motors, motors with brake, and motors with gearbox can be connected, and different types of motors can be connected to each axis.

● Standard Motor

Motor Model Number
BM-20M
BM-20L
BM-28S
BM-28M
BM-28L
BM-42S
BM-42M
BM-42L
BM-42XL
BM-56S
BM-56M
BM-56L
BM-60S
BM-60M
BM-60L

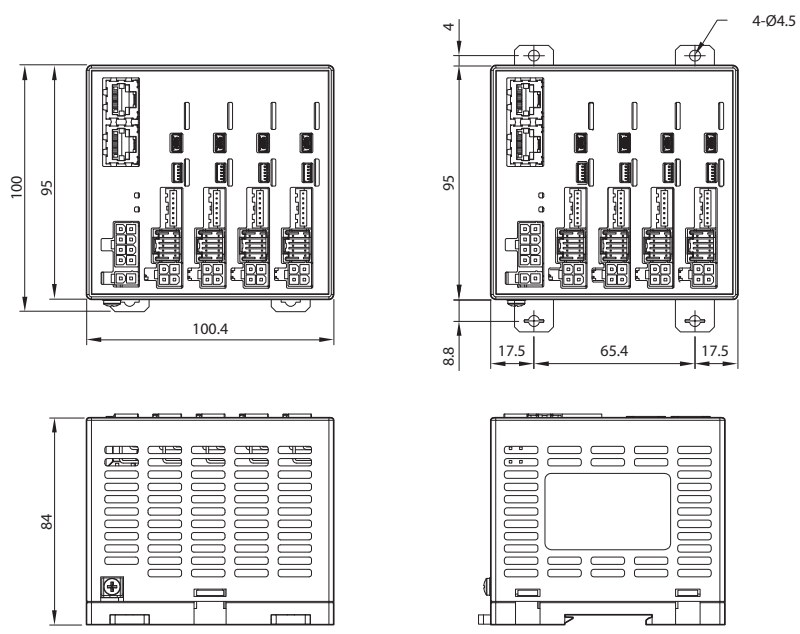
● Combination with Brake

Motor Model Number with Brake
BM-42S-BK
BM-42M-BK
BM-42L-BK
BM-42XL-BK
BM-56S-BK
BM-56M-BK
BM-56L-BK
BM-60S-BK
BM-60M-BK
BM-60L-BK

● Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Driver Model		EzT2-EC-4X, 3X series				
Input Voltage		DC24V±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Current Consumption		Max. 500mA/axis (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃				
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000r/min				
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable with Parameter)				
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
	LED Display	Power Status, Alarm Status, Run Status, STEP On Status				
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)				
	Supported Mode	Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode				
	Synchronization	Free Run, SM Event, DC SYNC Event				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN) for each axis				
	Output Signals	1 Brake output for each axis				

● Dimensions of Drive [mm]



※ Can be installed on DIN Rail. (35mm)

※ Outer dimension of Ezi-STEPII EtherCAT 3X drive is the same as EtherCAT 4X drive.

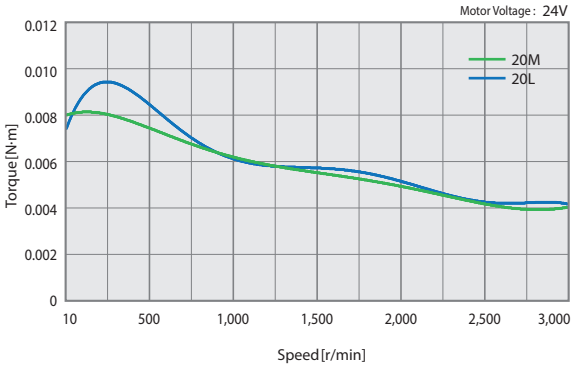
● Specifications of Motor

MODEL				BM-20 series		BM-28 series			BM-42 series			
			UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

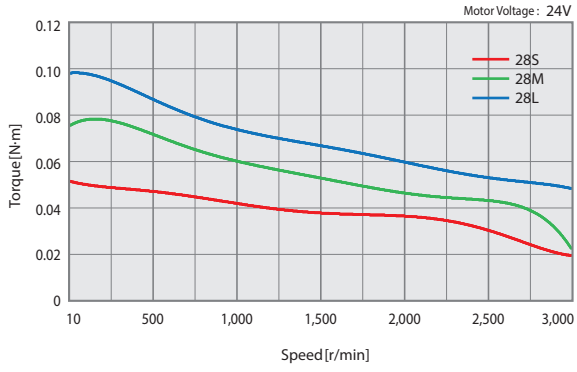
MODEL				BM-56 series			BM-60 series		
			UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

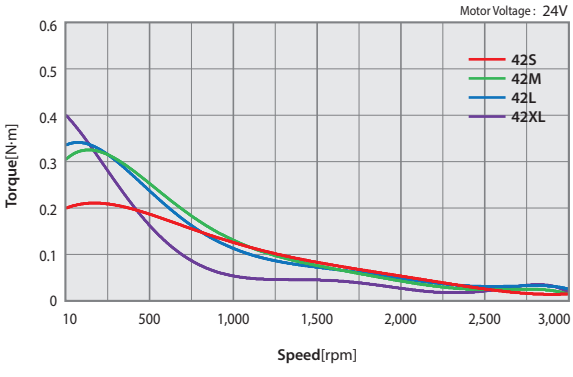
Ezi-STEP II-EC-4X-20 series



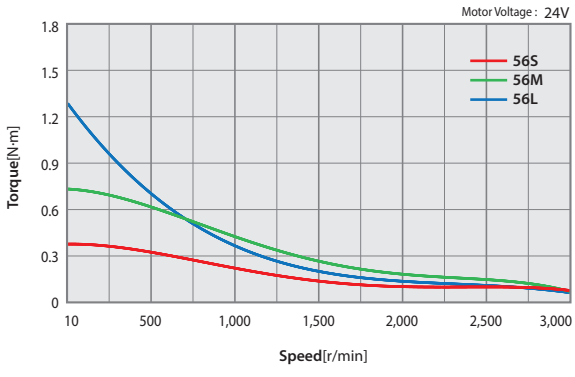
Ezi-STEP II-EC-4X-28 series



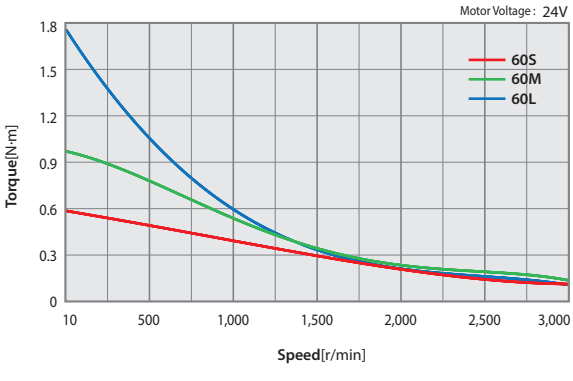
Ezi-STEP II-EC-4X-42 series



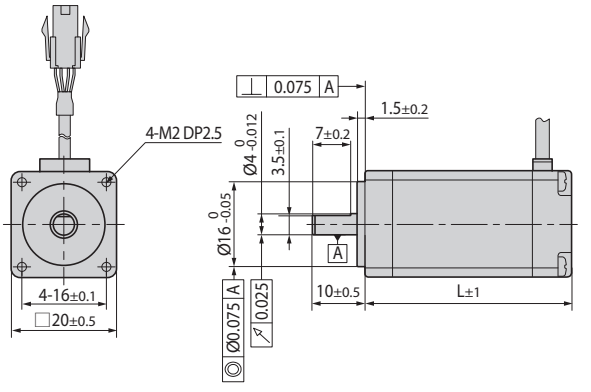
Ezi-STEP II-EC-4X-56 series



Ezi-STEP II-EC-4X-60 series

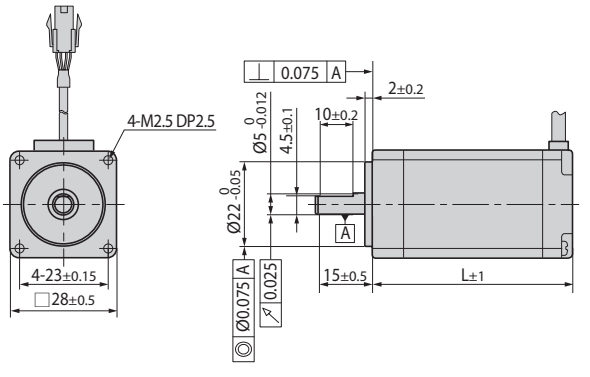


● Dimensions of Motor [mm]



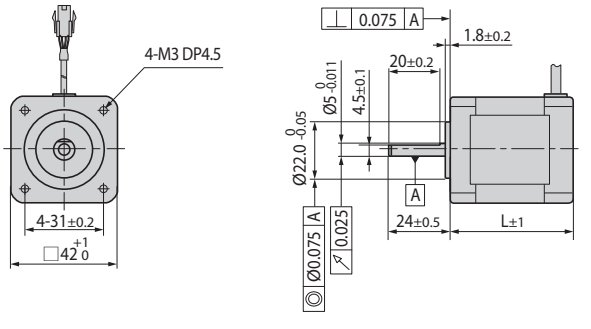
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



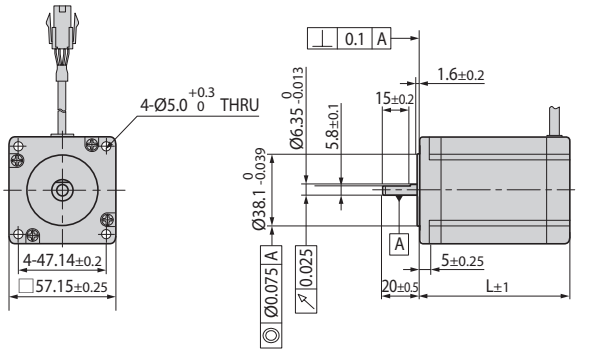
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

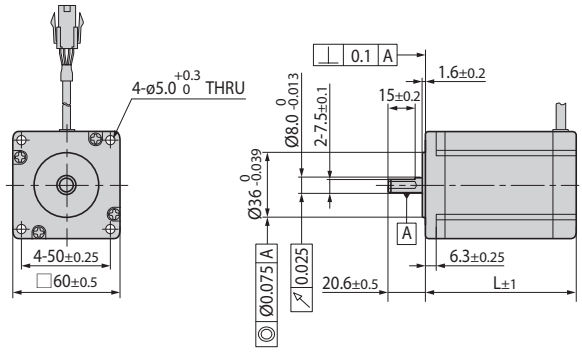
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

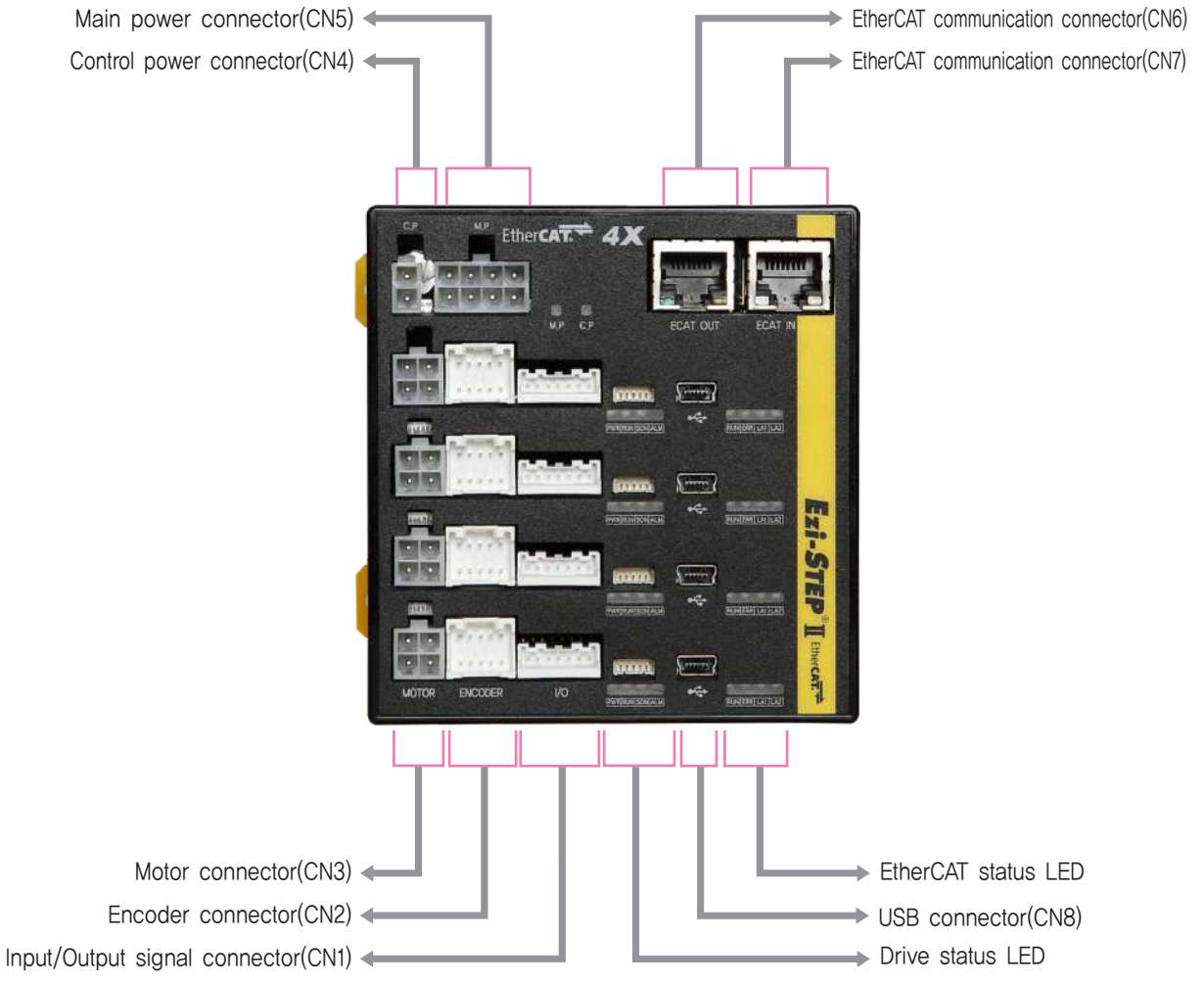
● Dimensions of Motor [mm]

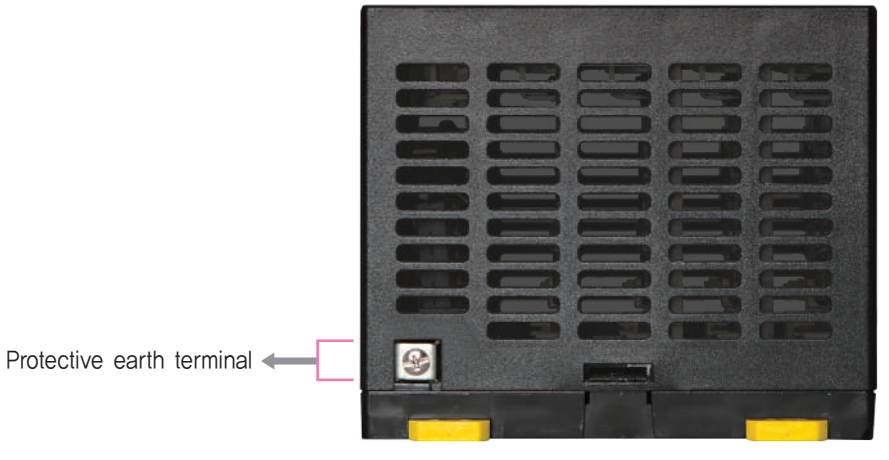


60mm

Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

Settings and Operation





※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

Name	Indication	Color	Status	Description
Run	RUN	Green	OFF	State INIT or Power OFF
			Blinking	State PRE-OPERATIONAL
			Single Flash	State SAFE-OPERATIONAL
			ON	State OPERATIONAL
			Flickering	State BOOTSTRAP



Name	Indication	Color	Status	Description
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

Name	Indication	Color	Status	Description
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

2. Drive Status LED

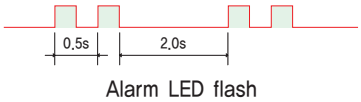
LED informs operation status of the drive.

Indication	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
RUN	Yellow	Motor Running Indication	LED is turned ON while motor is rotating
SON	Orange	STEP ON / OFF Indication	STEP ON: Lights ON, STEP OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.



◆ List of error types by the the number of LED blinking

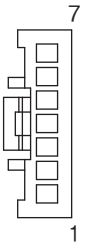
No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	The motor speed exceeds 3,000r/min
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Over Regenerative Voltage Error	There is a problem with the connection between the drive and the motor
9	Motor Power Error	The input voltage of the motor power is too low or disconnected
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED flash
(e.g., Over Speed error)

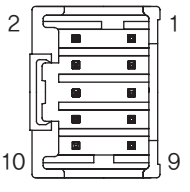
3. Input/Output Signal Connector (CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



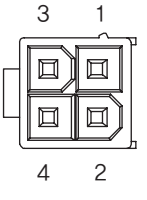
4. Encoder Connector (CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



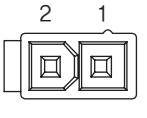
5. Motor Connector (CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



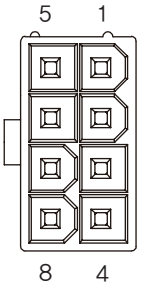
6. Control Power Connector (CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



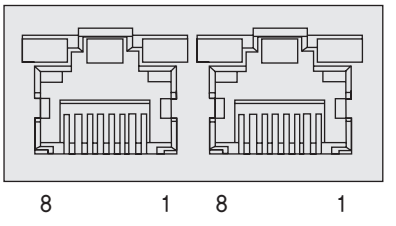
7. Main Power Connector (CN5)

No.	Function	I/O
1	DC24V	Input
2	DC24V	Input
3	DC24V	Input
4	F.GND	-----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	-----



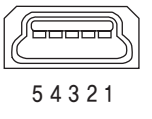
8. EtherCAT Communication Connector(CN6, CN7)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		

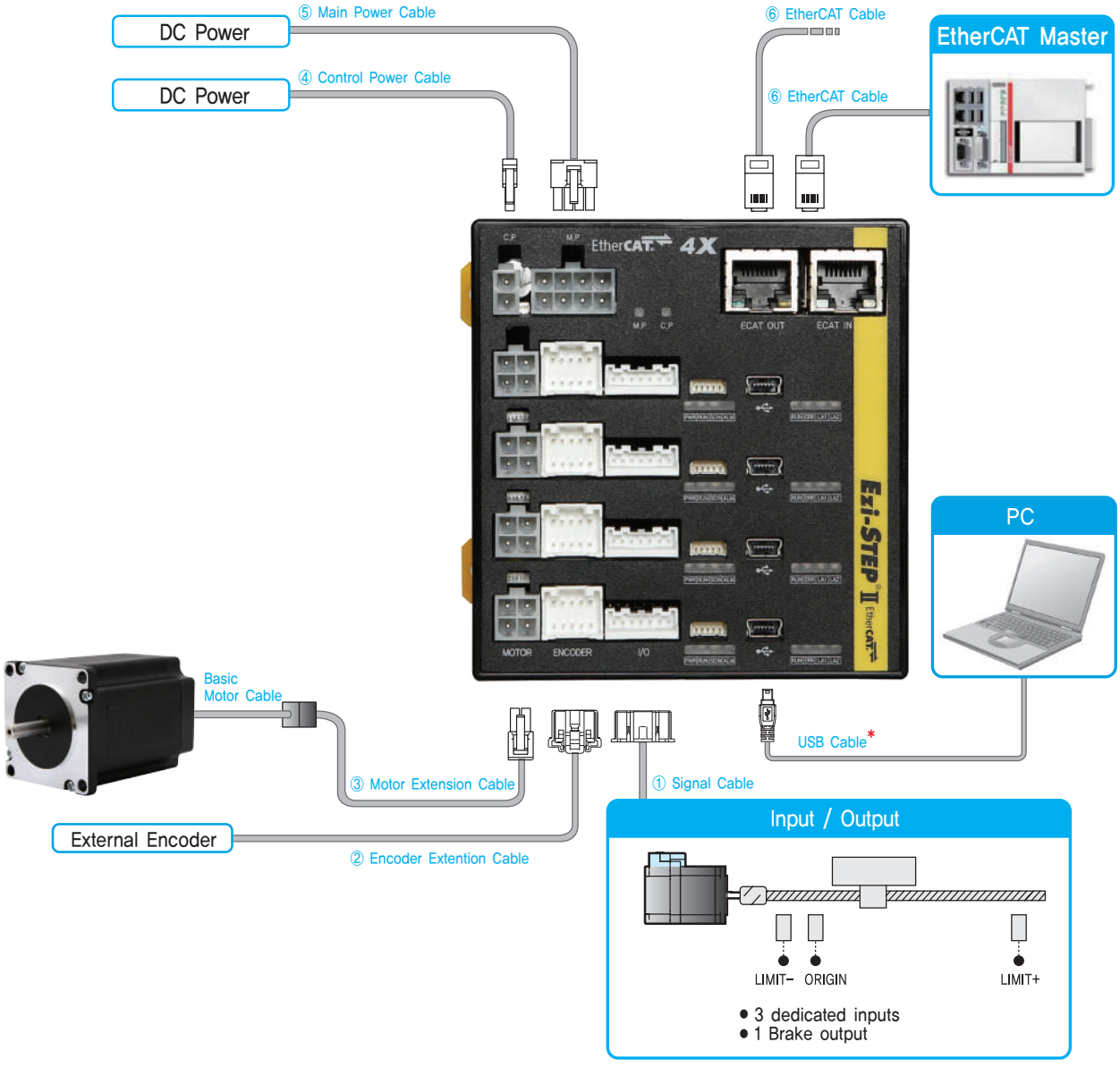


9. USB Connector (CN8)

No.	Function
1	V_{BUS}
2	D−
3	D+
4	---
5	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Control Power Cable	2m	
⑤ Main Power Cable	2m	
⑥ EtherCAT Cable	100m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

※ Basic configuration of 3X drive is the same as 4X and only difference is number of axis.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	PAP-07V-S	JST
		Terminal	SPHD-001T-P0.5	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Control Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	
Main Power (CN5)		Housing	5557-08R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEPII EtherCAT 4X drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CECM-S-001F	1	Normal Cable	Maximum Length: 20m
	CECM-S-002F	2		
	CECM-S-003F	3		
	CECM-S-005F	5		
	CECM-S-001M	1	Robot Cable	
	CECM-S-002M	2		
	CECM-S-003M	3		
	CECM-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT 4X drive and the encoder

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II EtherCAT 4X drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Control Power Cable

These are the cables to connect Ezi-STEP II EtherCAT 4X drive and the control power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Control Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ Main Power Cable

These are the cables to connect Ezi-STEP II EtherCAT 4X drive and the main power.

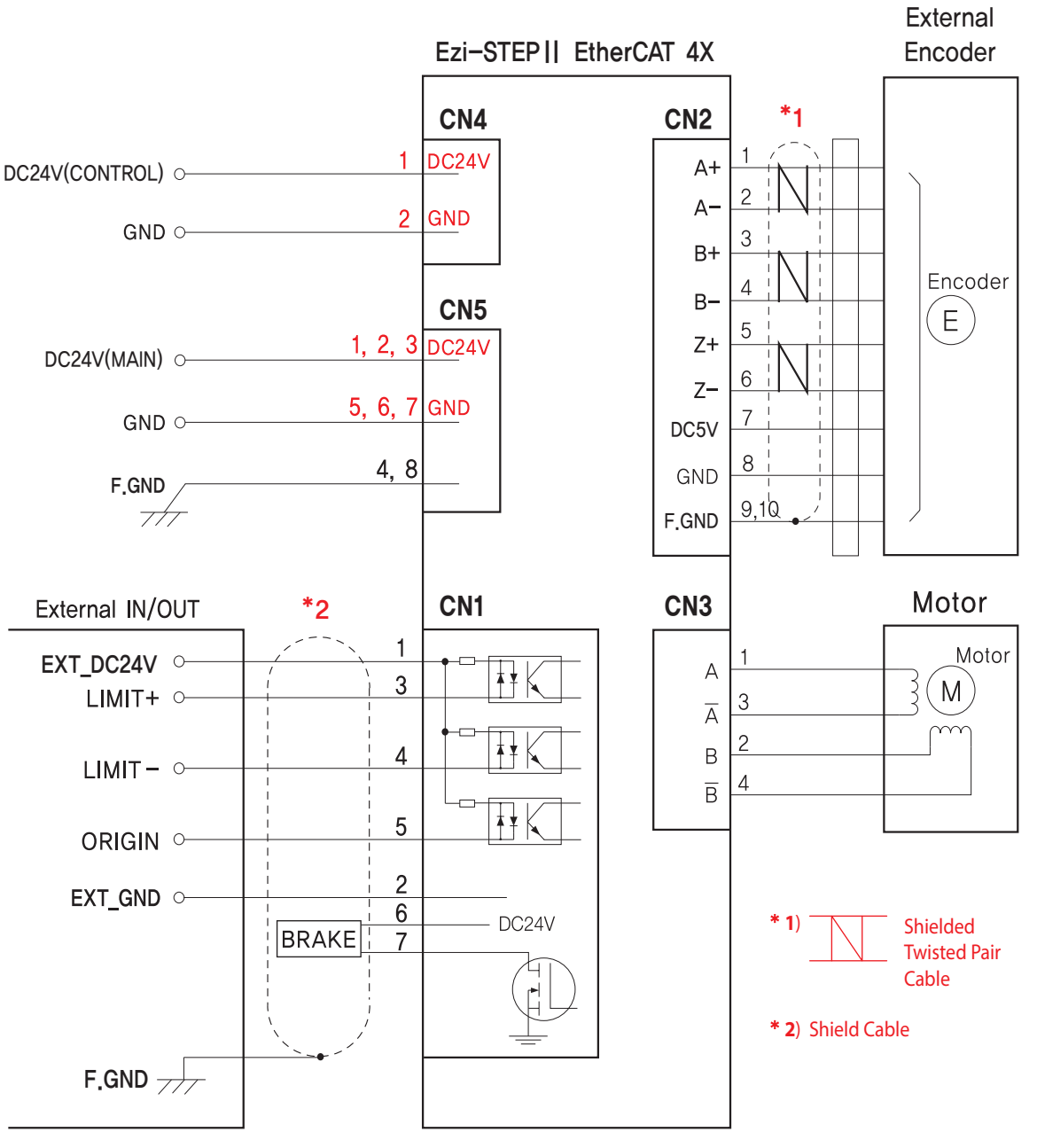
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Main Power Cable Connection	CECM-P-001F	1	Normal Cable	Maximum Length: 2m
	CECM-P-002F	2		
	CECM-P-001M	1	Robot Cable	
	CECM-P-002M	2		

⑥ EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


PWR
MOTOR
ENCODER
IN / OUT
LK1
LK2
ACT
ERR
PWR
RUN
SON
ALM
IP Display
Ezi-STEP® II Plus-E
FASTECH
CE

Ezi-STEP® II Plus-E

Micro Stepping System

- Embedded Motion Controller
- Ethernet Interface
- Position Table
- Microstepping
- Software Damping
- High Torque

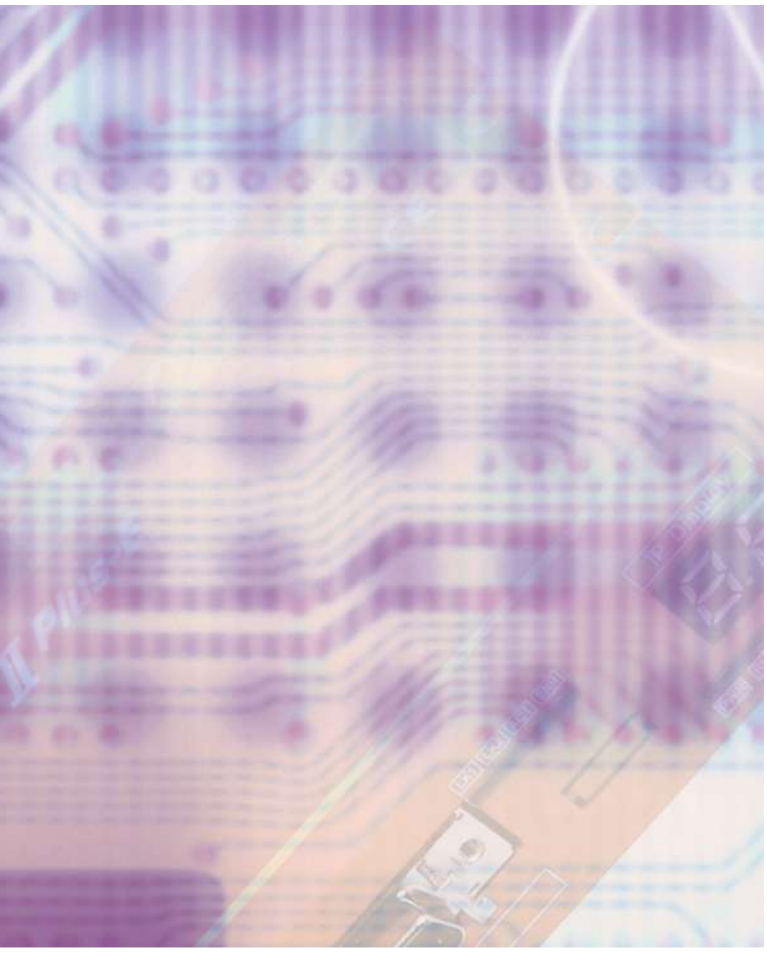


FASTECH

Fast, Accurate, Smooth Motion

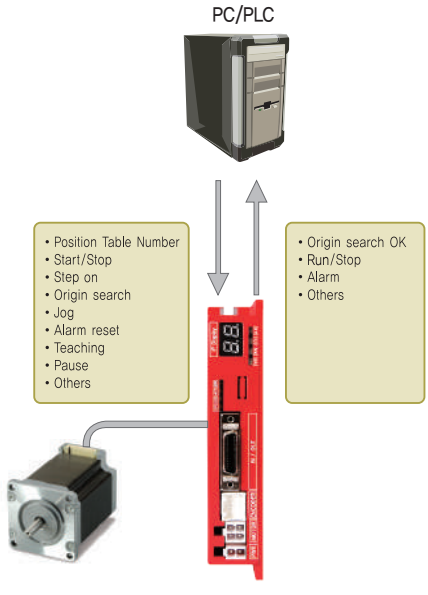
Ezi-STEP® II Plus-E

Micro Stepping System



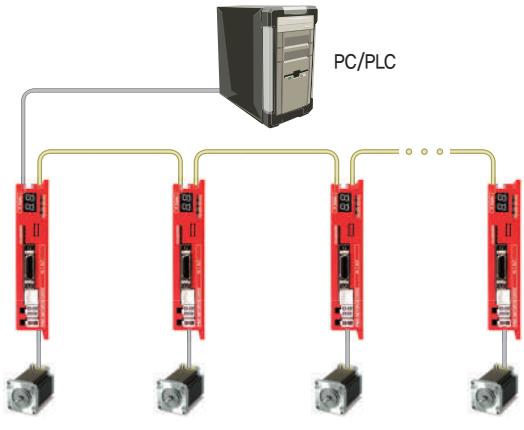
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.

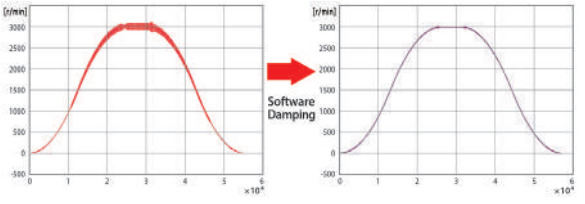


3 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

4 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

5 Improved high-speed operation performance

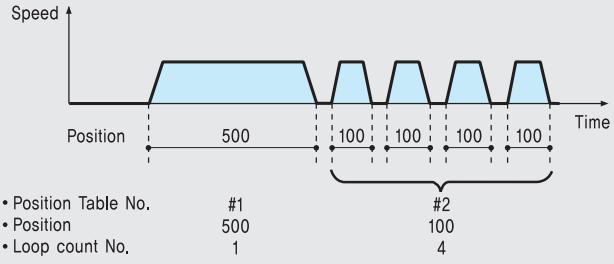
Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation.
Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

※ Applicable model : Ezi-STEP II-PE-42 Series
Ezi-STEP II-PE-56 Series
Ezi-STEP II-PE-60 Series

● Motion Controller Features of Ezi-SERVO

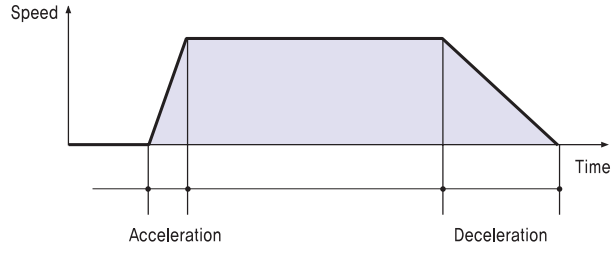
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



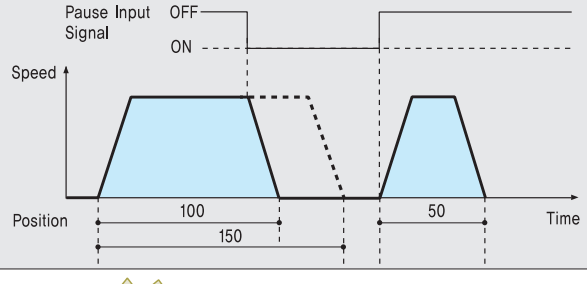
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



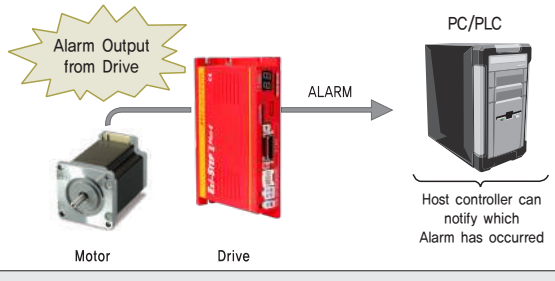
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



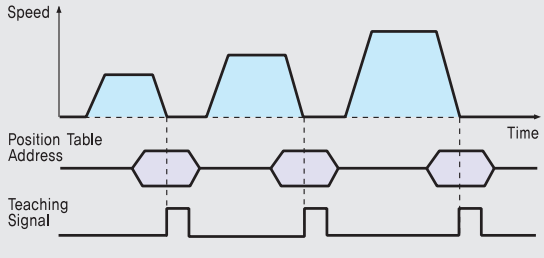
4. Alarm

The number of LED flashing time and information displayed on the 7-segment LED display indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

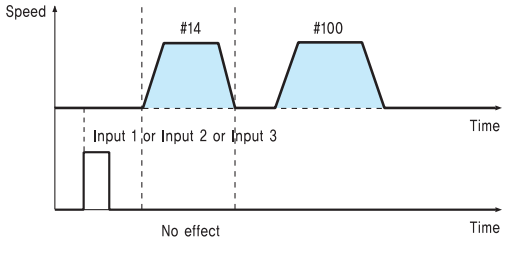


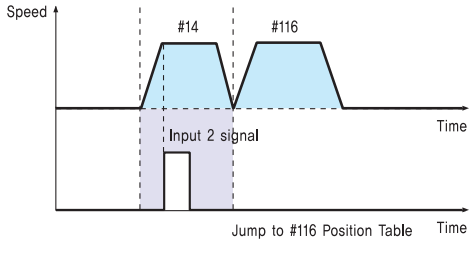
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





Ezi-STEPII Plus-E Part Numbering

Ezi-STEP II-PE-42S-BK

- **Series Name**
- **Type Name**
  - PE : Plus Ethernet
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-PE-20M	BM-20M	EzT2-PE-20M
Ezi-STEP II-PE-20L	BM-20L	EzT2-PE-20L
Ezi-STEP II-PE-28S	BM-28S	EzT2-PE-28S
Ezi-STEP II-PE-28M	BM-28M	EzT2-PE-28M
Ezi-STEP II-PE-28L	BM-28L	EzT2-PE-28L
Ezi-STEP II-PE-42S	BM-42S	EzT2-PE-42S
Ezi-STEP II-PE-42M	BM-42M	EzT2-PE-42M
Ezi-STEP II-PE-42L	BM-42L	EzT2-PE-42L
Ezi-STEP II-PE-42XL	BM-42XL	EzT2-PE-42XL
Ezi-STEP II-PE-56S	BM-56S	EzT2-PE-56S
Ezi-STEP II-PE-56M	BM-56M	EzT2-PE-56M
Ezi-STEP II-PE-56L	BM-56L	EzT2-PE-56L
Ezi-STEP II-PE-60S	BM-60S	EzT2-PE-60S
Ezi-STEP II-PE-60M	BM-60M	EzT2-PE-60M
Ezi-STEP II-PE-60L	BM-60L	EzT2-PE-60L
Ezi-STEP II-PE-86M	BM-86M	EzT2-PE-86M
Ezi-STEP II-PE-86L	BM-86L	EzT2-PE-86L
Ezi-STEP II-PE-86XL	BM-86XL	EzT2-PE-86XL

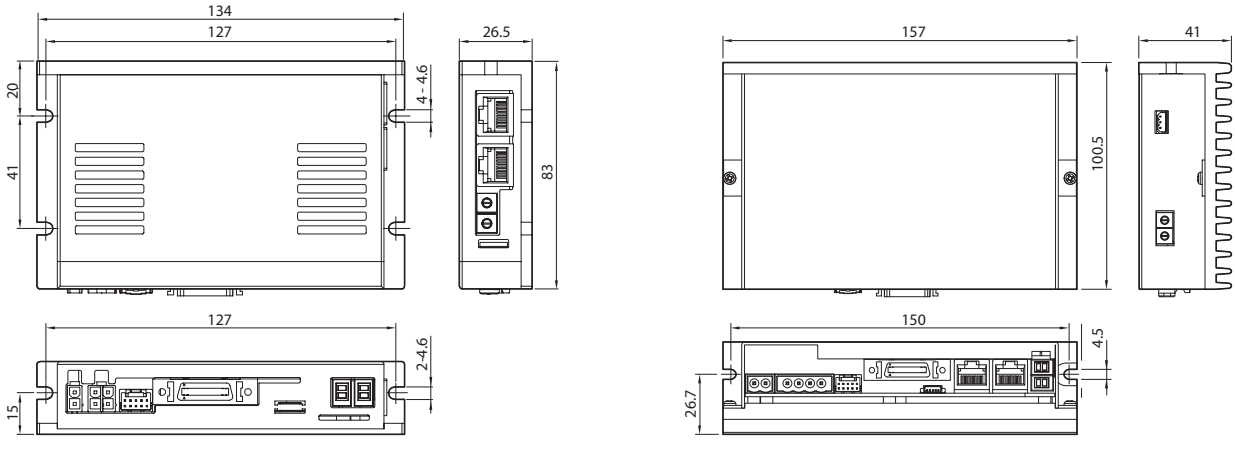
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-PE-42S-BK	BM-42S-BK	EzT2-PE-42S
Ezi-STEP II-PE-42M-BK	BM-42M-BK	EzT2-PE-42M
Ezi-STEP II-PE-42L-BK	BM-42L-BK	EzT2-PE-42L
Ezi-STEP II-PE-42XL-BK	BM-42XL-BK	EzT2-PE-42XL
Ezi-STEP II-PE-56S-BK	BM-56S-BK	EzT2-PE-56S
Ezi-STEP II-PE-56M-BK	BM-56M-BK	EzT2-PE-56M
Ezi-STEP II-PE-56L-BK	BM-56L-BK	EzT2-PE-56L
Ezi-STEP II-PE-60S-BK	BM-60S-BK	EzT2-PE-60S
Ezi-STEP II-PE-60M-BK	BM-60M-BK	EzT2-PE-60M
Ezi-STEP II-PE-60L-BK	BM-60L-BK	EzT2-PE-60L
Ezi-STEP II-PE-86M-BK	BM-86M-BK	EzT2-PE-86M
Ezi-STEP II-PE-86L-BK	BM-86L-BK	EzT2-PE-86L
Ezi-STEP II-PE-86XL-BK	BM-86XL-BK	EzT2-PE-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Driver Model		EzT2-PE-20 series	EzT2-PE-28 series	EzT2-PE-42 series	EzT2-PE-56 series	EzT2-PE-60 series	EzT2-PE-86 series
Input Voltage		DC24V±10%					DC40~70V
Control Method		Bipolar PWM drive with 32bit MCU					
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)					
Position Table		256 motion command steps					
Current Consumption		Max. 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min					
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)					
	Error Types	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power Status, Alarm Status, Run Status, STEP ON Status					
	Rotational Direction	CW/CCW (Set by parameter)					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 9 programmable inputs (Photocoupler Input)					
	Output Signals	1 dedicated output (Compare Out), 9 programmable outputs (Photocoupler Output), 1 Brake output					
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded					
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min					
Return to Origin		Origin Sensor, ±Limit sensor, Z phase(with external encoder)					
GUI		User Interface Program within Windows					
Library		Motion Library (API) for windows 7/8/10					

Dimensions of Drive [mm]



※ 86mm motor drive (EzT2-PE-86 series)

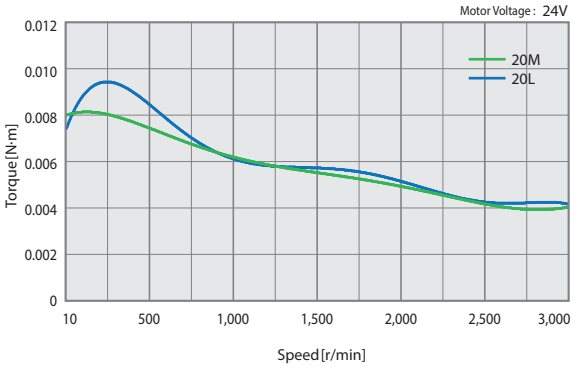
Specifications of Motor

MODEL				BM-20 series		BM-28 series			BM-42 series			
			UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit' s Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

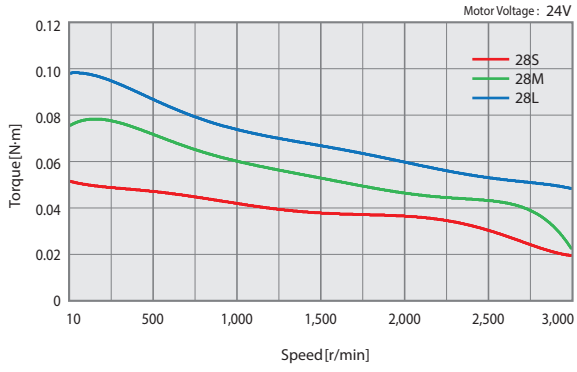
MODEL				BM-56 series			BM-60 series			BM-86 series		
			UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349	2.275	3.808	5.330
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower then Motor Unit' s Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

● Torque Characteristics of Motor

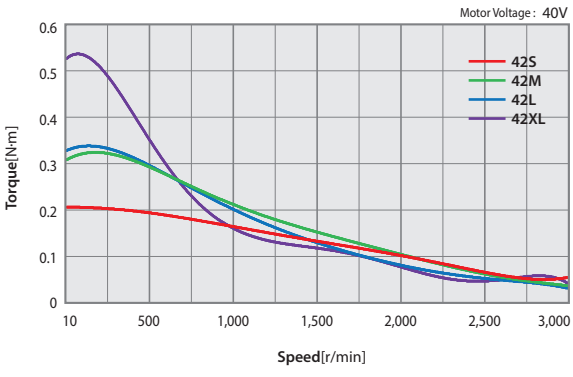
Ezi-STEP II-PE-20 series



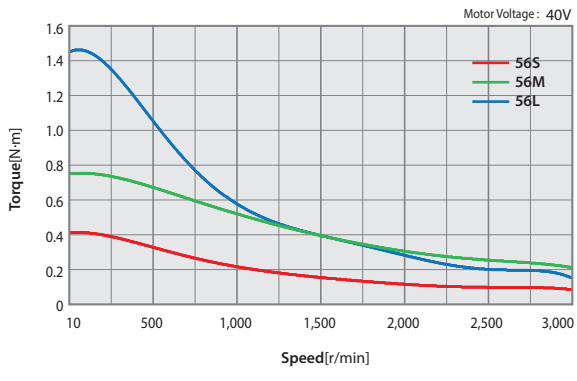
Ezi-STEP II-PE-28 series



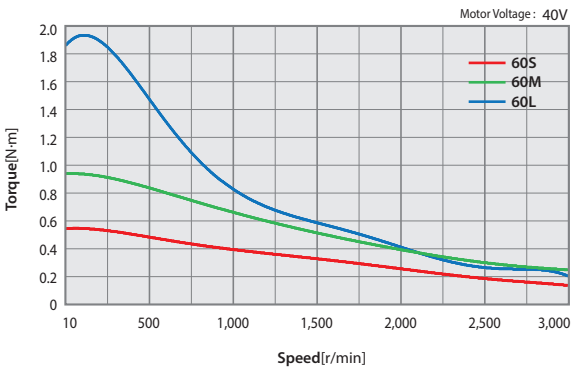
Ezi-STEP II-PE-42 series



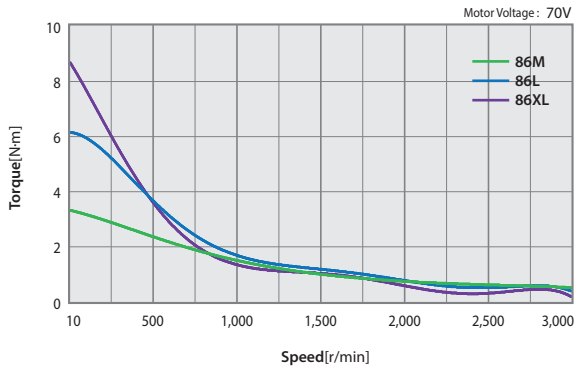
Ezi-STEP II-PE-56 series



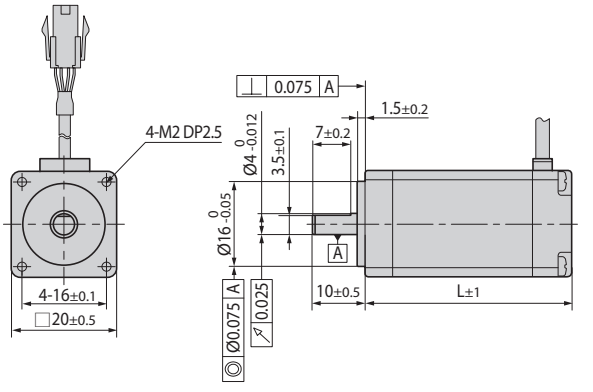
Ezi-STEP II-PE-60 series



Ezi-STEP II-PE-86 series

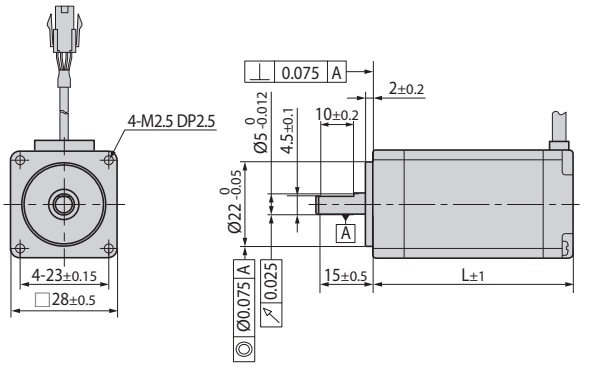


● Dimensions of Motor [mm]



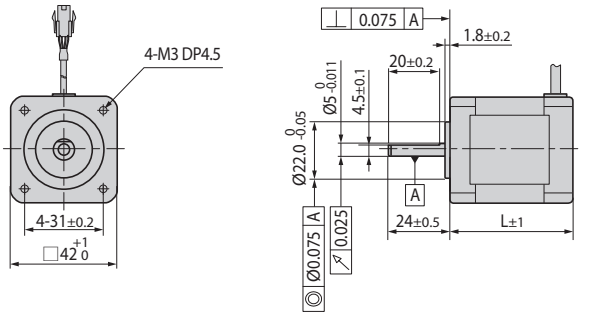
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



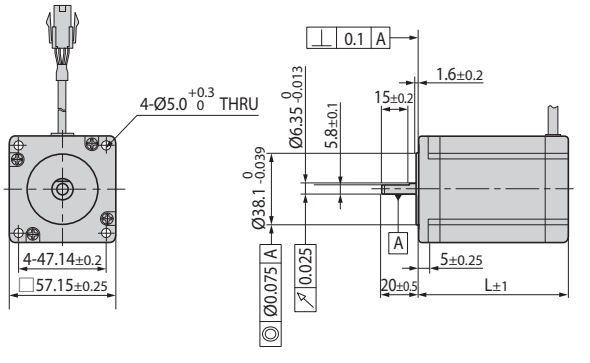
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

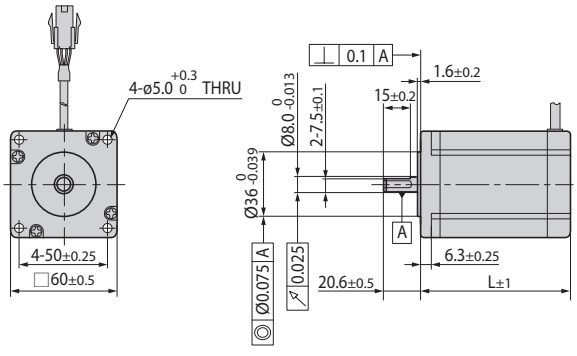
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

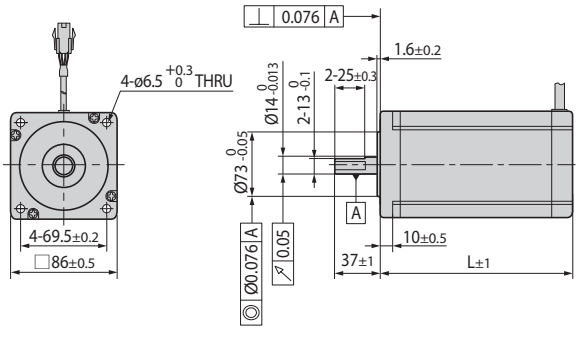
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

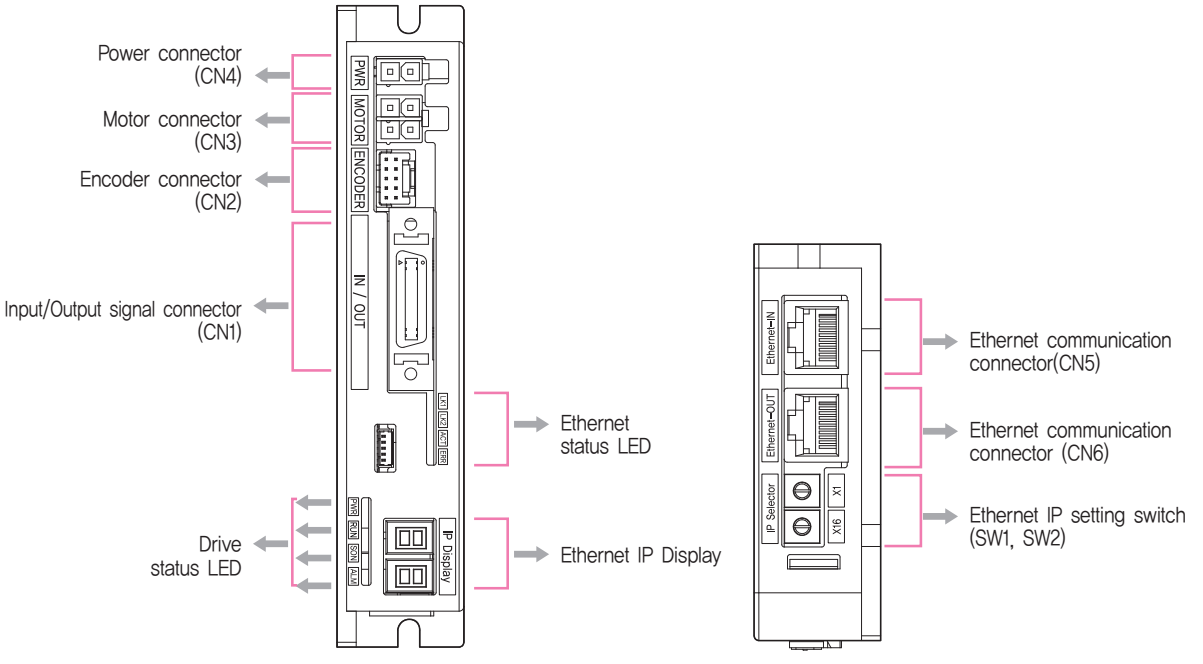
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



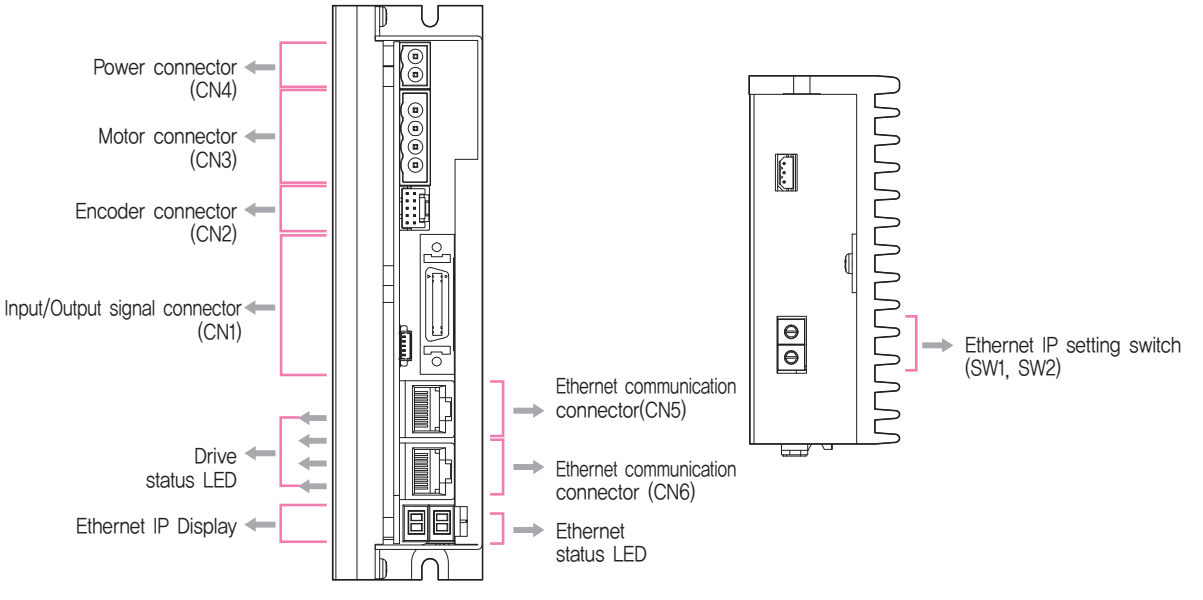
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation

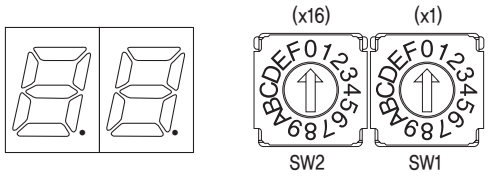


◆ 86mm motor drive (EzT2-PE-86 series)



1. Ethernet IP Display and Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP, and the value is shown in 7-segment LED display. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

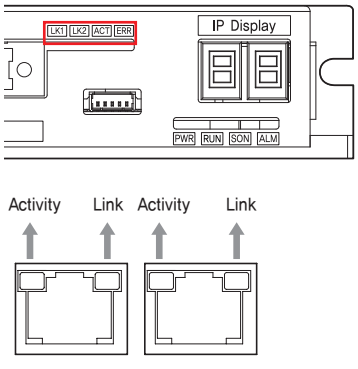
2. Ethernet Status LED

LED indicates communication status of Ethernet. Link/Activity LED exists on each port of Ethernet.

Name	Color	Status	Description
Error	Red	OFF	No Error
		ON	Local Error

Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link not Established
		ON	Link Established

Name	Color	Status	Description
Activity	Yellow	OFF	Stand-by
		Flickering	In operation



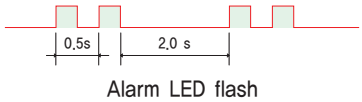
3. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied
RUN	Yellow	Motor Running Indication	LED is turned ON while motor is rotating
SON	Orange	STEP ON / OFF Indication	STEP ON: Lights ON, STEP OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of LED blinking

No.	Error Code *3	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value *2
7	E-007	Motor Power Error	There is a problem with the connection between the drive and the motor
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)

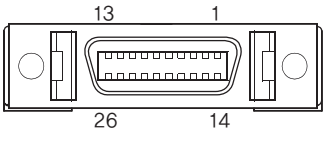
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of Ethernet IP.
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(e.g., Over Speed Error)

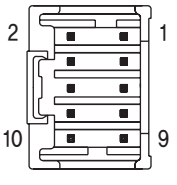
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT−	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In6	Input
6	Digital In7	Input
7	Compare Out1	Output
8	Digital Out1	Output
9	Digital Out2	Output
10	Digital Out3	Output
11	Digital Out4	Output
12	Digital Out5	Output
13	Digital Out6	Output
14	Digital In2	Input
15	Digital In3	Input
16	Digital In4	Input
17	Digital In5	Input
18	Digital In8	Input
19	Digital In9	Input
20	Digital Out7	Output
21	Digital Out8	Output
22	Digital Out9	Output
23	BRAKE+	Output
24	BRAKE−	Output
25	EXT_GND	Input
26	EXT_DC24V	Input



5. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----

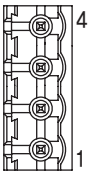


6. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



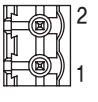
※ 86mm motor drive

7. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



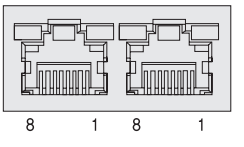
No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



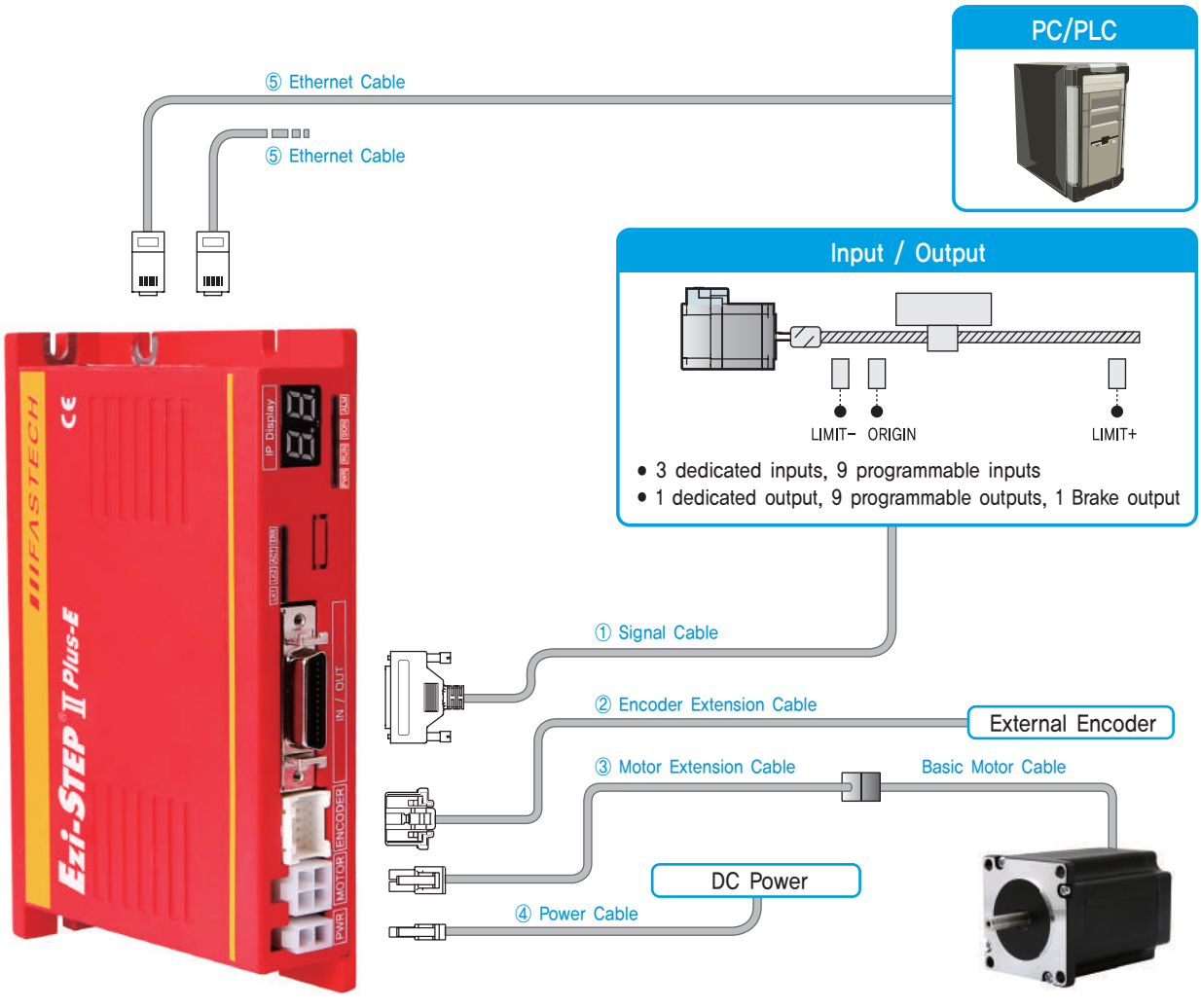
※ 86mm motor drive

8. Ethernet Communication Connector(CN5, CN6)

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10126-3000PE	3M
		Connector Cover	10326-52F0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II Plus-E drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVR-S-002F	2		
	CSVR-S-003F	3		
	CSVR-S-005F	5		
	CSVR-S-001M	1	Robot Cable	
	CSVR-S-002M	2		
	CSVR-S-003M	3		
	CSVR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II Plus-E drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II Plus-E drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II Plus-E drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

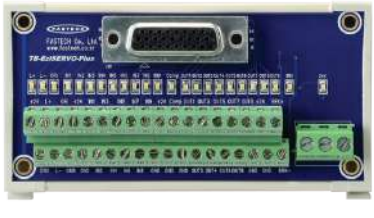
⑤ Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II Plus-E drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

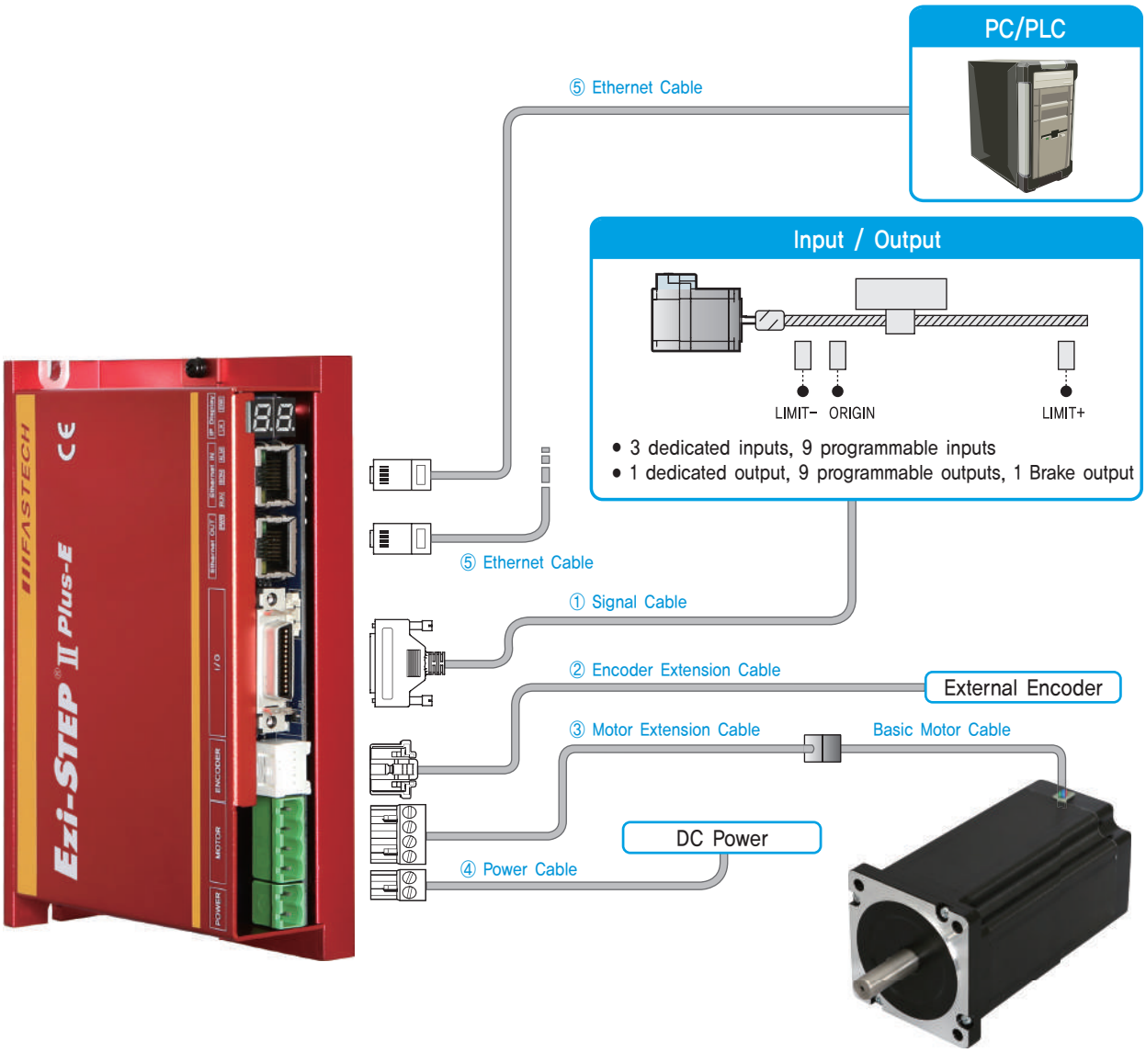
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-STEP II Plus-E and TB-Plus interface board.

Purpose	Part Number	Part Number	Part Number	Remarks
Drive – Interface(TB-Plus) Connection	CIFD-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFD-S-002F	2		
	CIFD-S-003F	3		
	CIFD-S-005F	5		
	CIFD-S-001M	1	Robot Cable	
	CIFD-S-002M	2		
	CIFD-S-003M	3		
	CIFD-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Ethernet Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10126-3000PE	3M
		Connector Cover	10326-52F0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	3191-4R1	MOLEX
		Terminal	1381T	
Power (CN4)		Terminal Block	AK950-2	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEPII Plus-E [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVR-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVR-S-002F	2		
	CSVR-S-003F	3		
	CSVR-S-005F	5		
	CSVR-S-001M	1	Robot Cable	
	CSVR-S-002M	2		
	CSVR-S-003M	3		
	CSVR-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II Plus-E [86mm motor] drive and the encoder

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II Plus-E [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II Plus-E [86mm motor] drive and the control power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Control Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

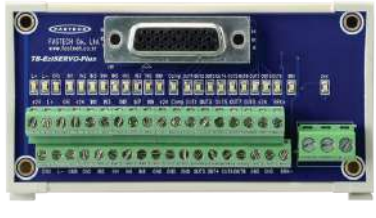
⑤ Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II Plus-E [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

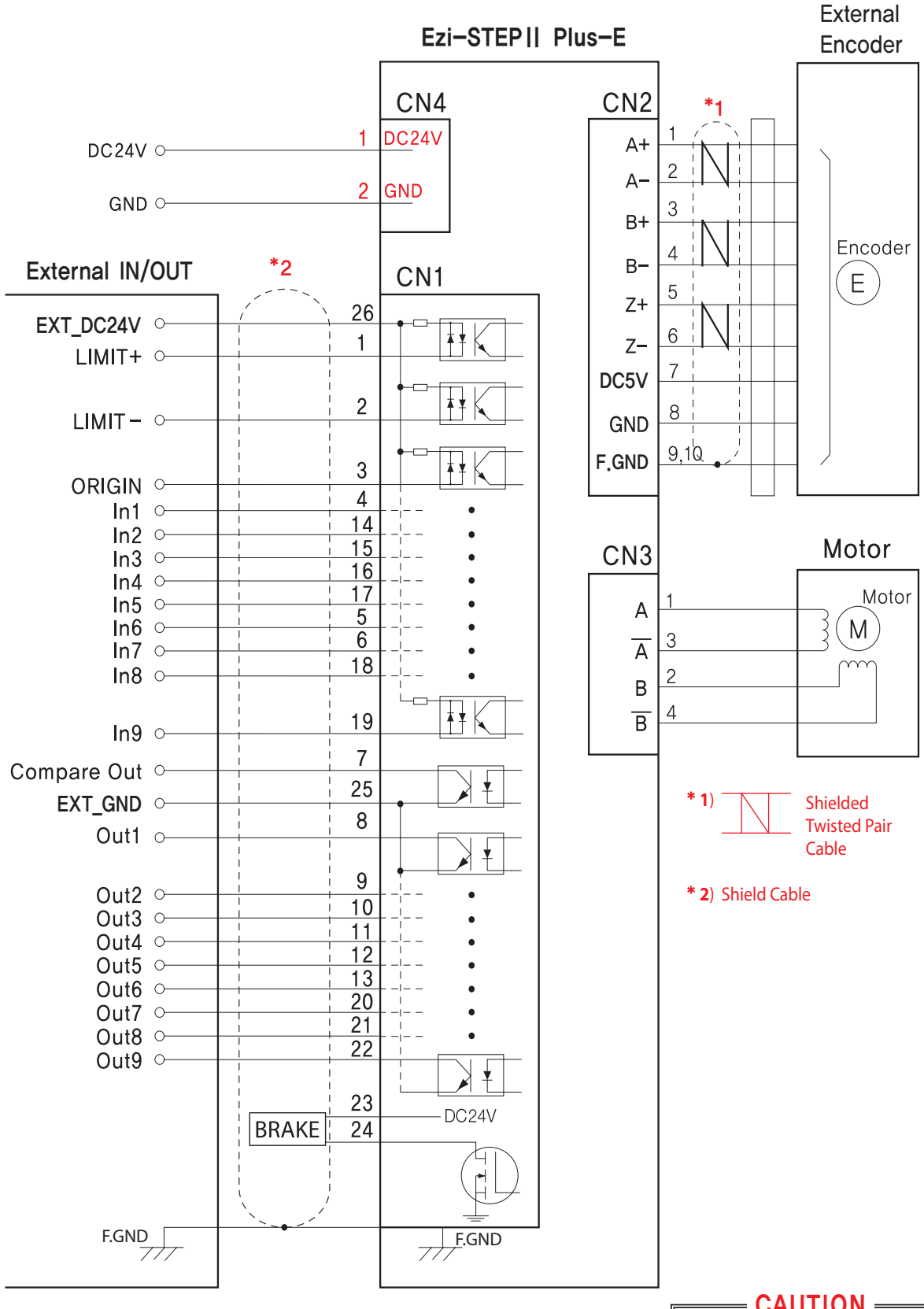
[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II Plus-E [86mm motor] drive and I/O signals more conveniently.

Part Number	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFD-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFD-S-002F	2		
	CIFD-S-003F	3		
	CIFD-S-005F	5		
	CIFD-S-001M	1	Robot Cable	
	CIFD-S-002M	2		
	CIFD-S-003M	3		
	CIFD-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

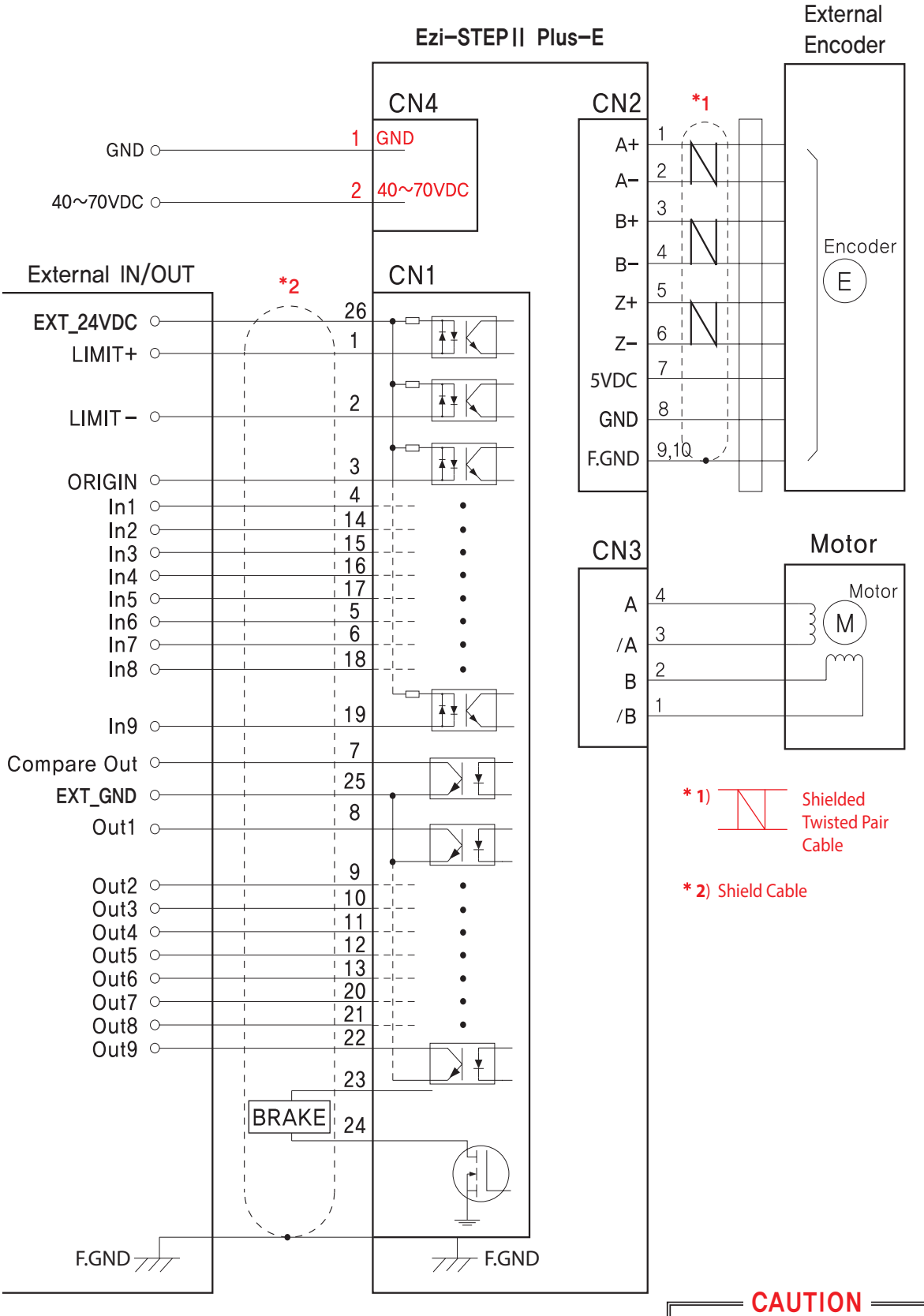
* 2) Shield Cable

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

※ When connects I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

● External Wiring Diagram [86mm motor drive]



※ When connects I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-STEP Plus-E II mini
FASTECH
PWR
MOTOR
ENCODER
I/O
S1
S2
CLK1
CLK2
RUN
ER

Ezi-STEP® II Plus-E MINI

Micro Stepping System

- Embedded Motion Controller
- Ethernet Interface
- Position Table
- Microstepping
- Software Damping
- Space Saving / Reduced Wiring by Compact Drive

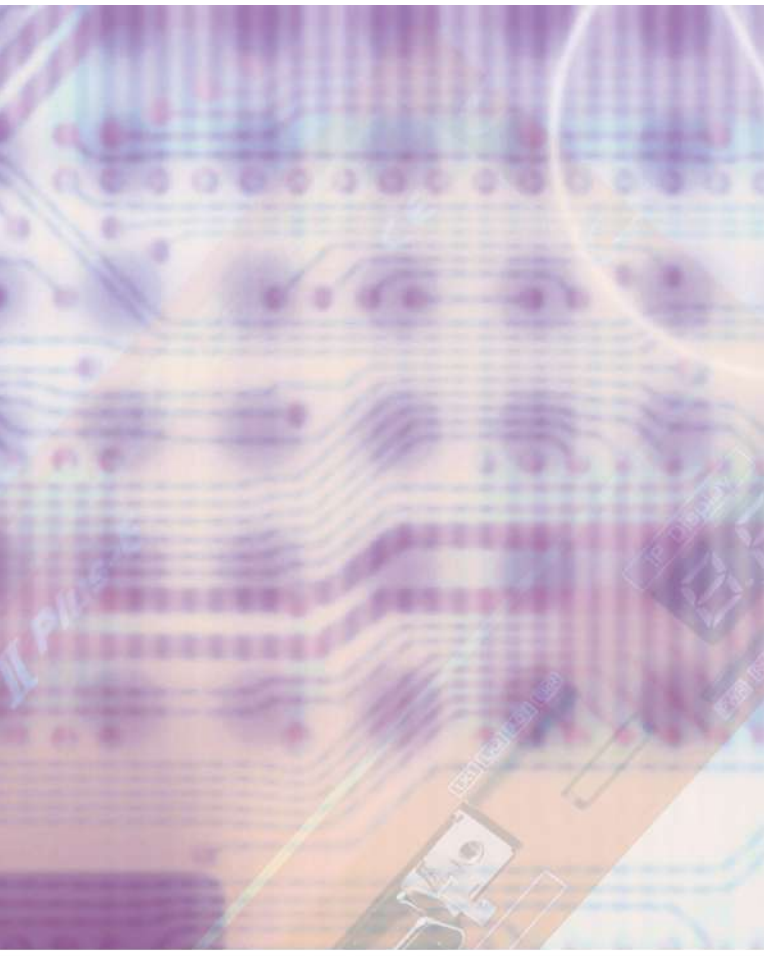


FASTECH

Fast, Accurate, Smooth Motion

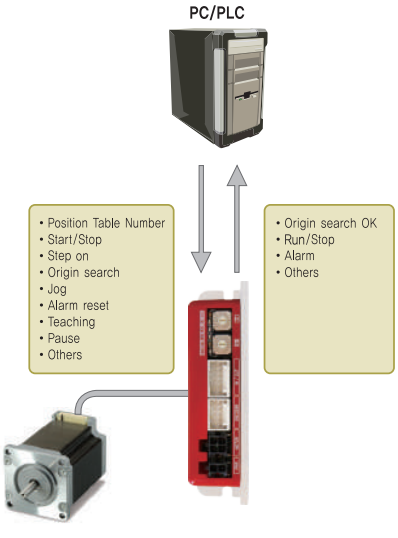
Ezi-STEP® II Plus-E MINI

Micro Stepping System



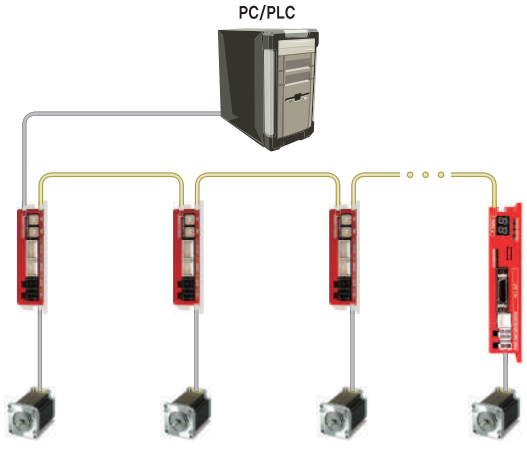
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller. You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC. The PC can monitor the origin search, moving/stop, step ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.

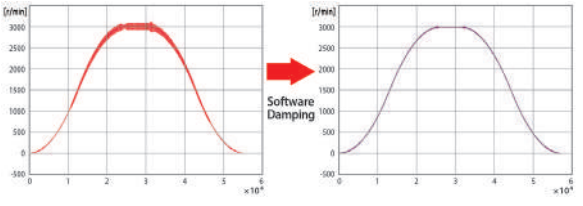


3 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

4 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high-speeds.



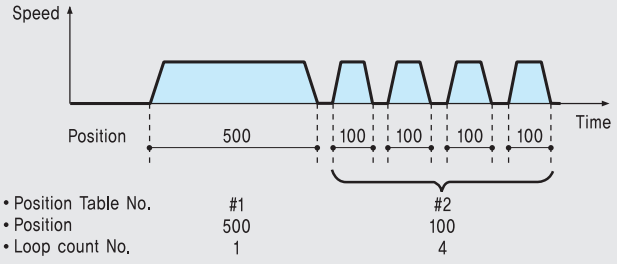
Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

● Motion Controller Features of Ezi-SERVO

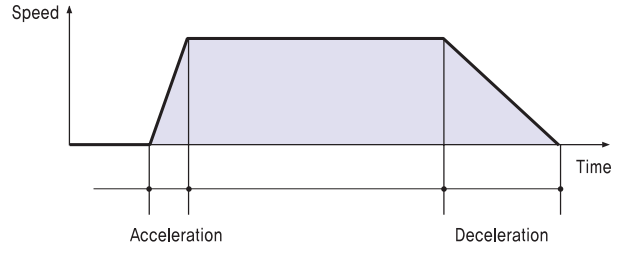
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



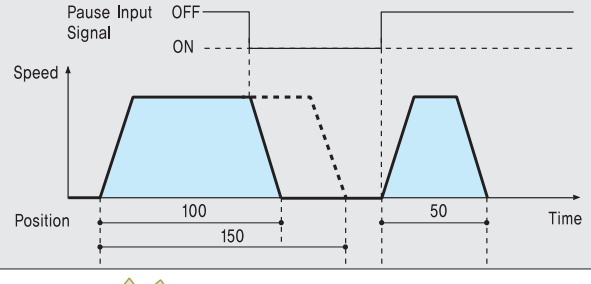
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



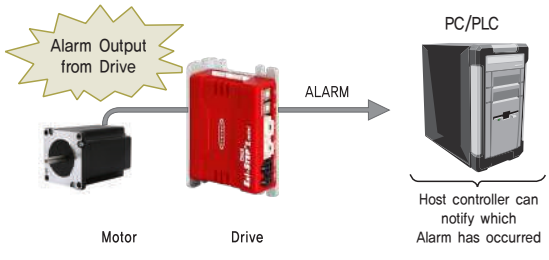
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



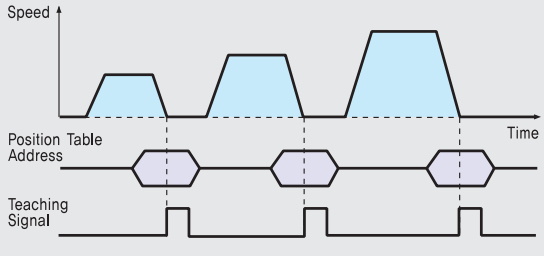
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

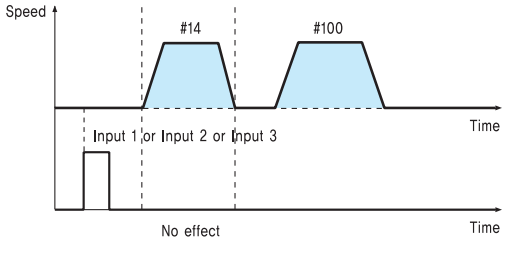


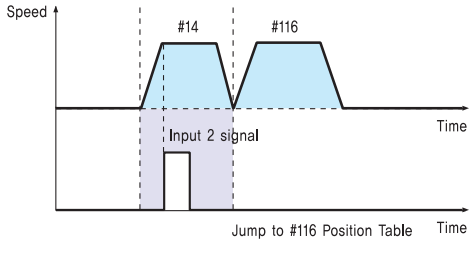
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

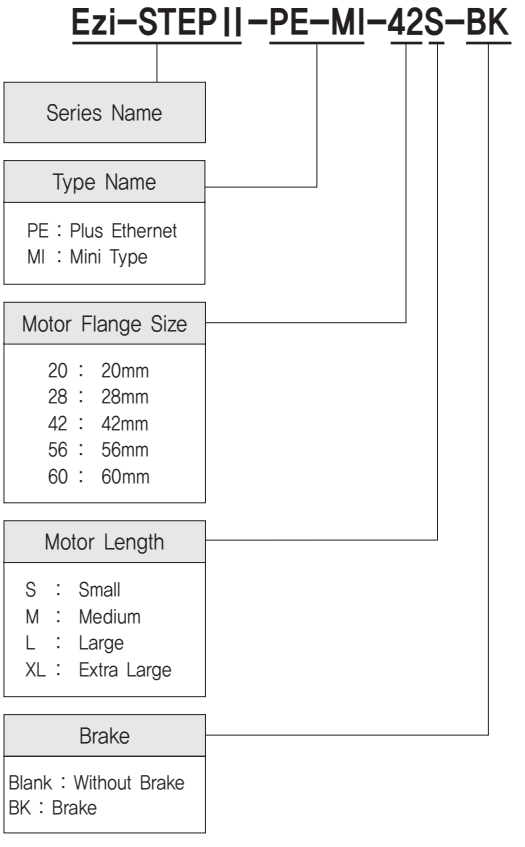
◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





Ezi-STEPII Plus-E MINI Part Numbering



Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-PE-MI-20M	BM-20M	EzT2-PE-MI-20M
Ezi-STEP II-PE-MI-20L	BM-20L	EzT2-PE-MI-20L
Ezi-STEP II-PE-MI-28S	BM-28S	EzT2-PE-MI-28S
Ezi-STEP II-PE-MI-28M	BM-28M	EzT2-PE-MI-28M
Ezi-STEP II-PE-MI-28L	BM-28L	EzT2-PE-MI-28L
Ezi-STEP II-PE-MI-42S	BM-42S	EzT2-PE-MI-42S
Ezi-STEP II-PE-MI-42M	BM-42M	EzT2-PE-MI-42M
Ezi-STEP II-PE-MI-42L	BM-42L	EzT2-PE-MI-42L
Ezi-STEP II-PE-MI-42XL	BM-42XL	EzT2-PE-MI-42XL
Ezi-STEP II-PE-MI-56S	BM-56S	EzT2-PE-MI-56S
Ezi-STEP II-PE-MI-56M	BM-56M	EzT2-PE-MI-56M
Ezi-STEP II-PE-MI-56L	BM-56L	EzT2-PE-MI-56L
Ezi-STEP II-PE-MI-60S	BM-60S	EzT2-PE-MI-60S
Ezi-STEP II-PE-MI-60M	BM-60M	EzT2-PE-MI-60M
Ezi-STEP II-PE-MI-60L	BM-60L	EzT2-PE-MI-60L

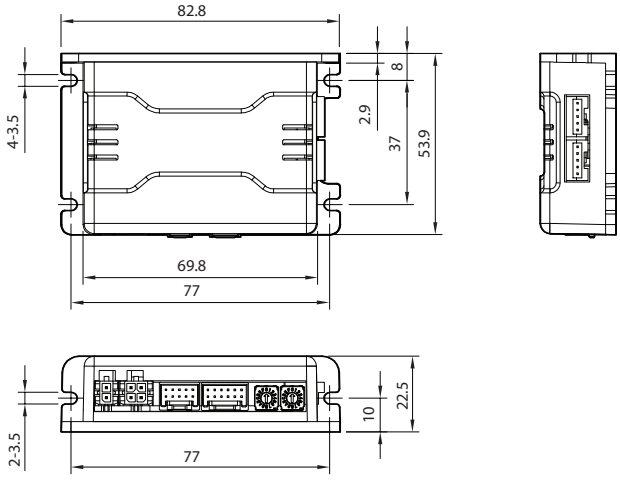
Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-PE-MI-42S-BK	BM-42S-BK	EzT2-PE-MI-42S
Ezi-STEP II-PE-MI-42M-BK	BM-42M-BK	EzT2-PE-MI-42M
Ezi-STEP II-PE-MI-42L-BK	BM-42L-BK	EzT2-PE-MI-42L
Ezi-STEP II-PE-MI-42XL-BK	BM-42XL-BK	EzT2-PE-MI-42XL
Ezi-STEP II-PE-MI-56S-BK	BM-56S-BK	EzT2-PE-MI-56S
Ezi-STEP II-PE-MI-56M-BK	BM-56M-BK	EzT2-PE-MI-56M
Ezi-STEP II-PE-MI-56L-BK	BM-56L-BK	EzT2-PE-MI-56L
Ezi-STEP II-PE-MI-60S-BK	BM-60S-BK	EzT2-PE-MI-60S
Ezi-STEP II-PE-MI-60M-BK	BM-60M-BK	EzT2-PE-MI-60M
Ezi-STEP II-PE-MI-60L-BK	BM-60L-BK	EzT2-PE-MI-60L

● Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Drive Model		EzT2-PE-MI-20 series	EzT2-PE-MI-28 series	EzT2-PE-MI-42 series	EzT2-PE-MI-56 series	EzT2-PE-MI-60 series
Input Voltage		DC24V±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)				
Position Table		256 motion command steps				
Current Consumption		Max. 500mA (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃				
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)				
	Vib. Resist.	0.5g				
Function	Rotation Speed	0~3,000r/min				
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)				
	Error Types	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
	LED Display	Power Status, Alarm Status, Run Status, STEP ON Status				
	Rotational Direction	CW/CCW (Set by parameter)				
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)				
	Output Signals	1 dedicated output (Compare Out), 1 programmable outputs (Photocoupler Output), 1 Brake output				
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded				
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min				
Return to Origin		Origin Sensor, ±Limit sensor, Z phase(with external encoder)				
GUI		User Interface Program within Windows				
Library		Motion Library (API) for windows 7/8/10				

● Dimensions of Drive [mm]



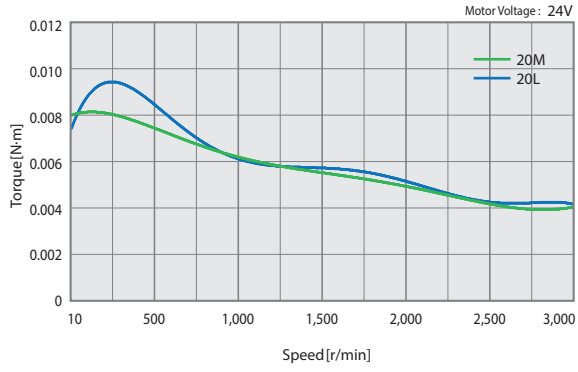
● Specifications of Motor

MODEL			UNIT	BM-20 series		BM-28 series			BM-42 series			
				20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

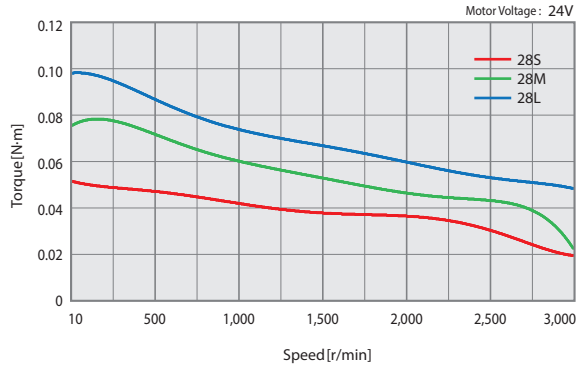
MODEL			UNIT	BM-56 series			BM-60 series		
				56S	56M	56L	60S	60M	60L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349
LENGTH(L)			mm	46	55	80	47	56	85
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70
		8mm		65	65	65	87	87	87
		13mm		85	85	85	114	114	114
		18mm		123	123	123	165	165	165
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

Torque Characteristics of Motor

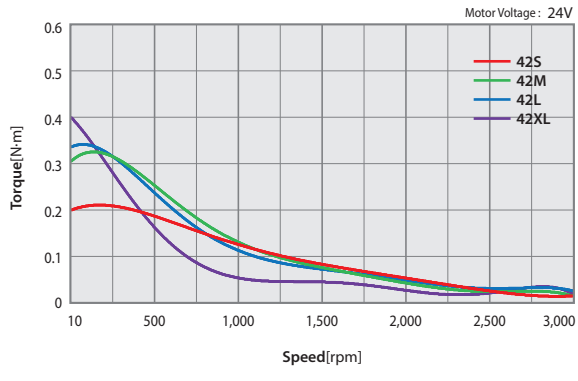
Ezi-STEP II-PE-MI-20 series



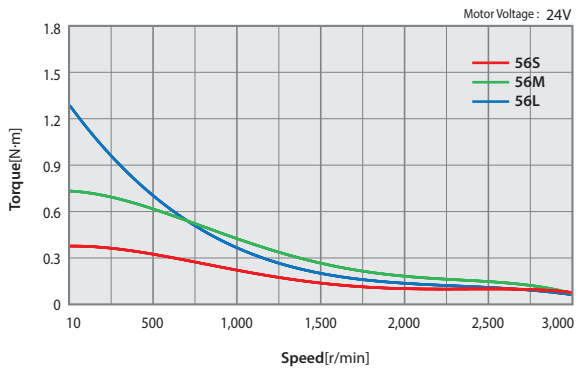
Ezi-STEP II-PE-MI-28 series



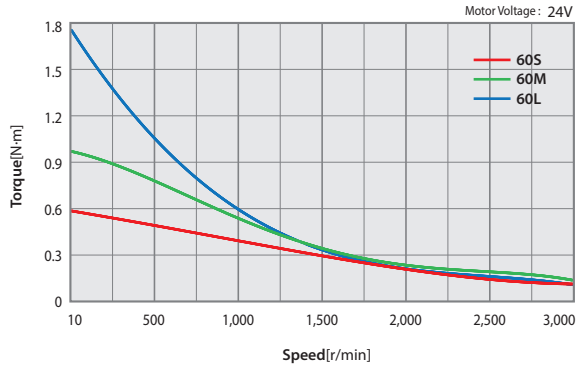
Ezi-STEP II-PE-MI-42 series



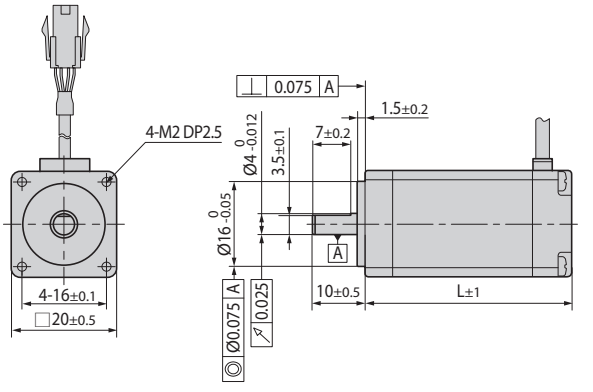
Ezi-STEP II-PE-MI-56 series



Ezi-STEP II-PE-MI-60 series

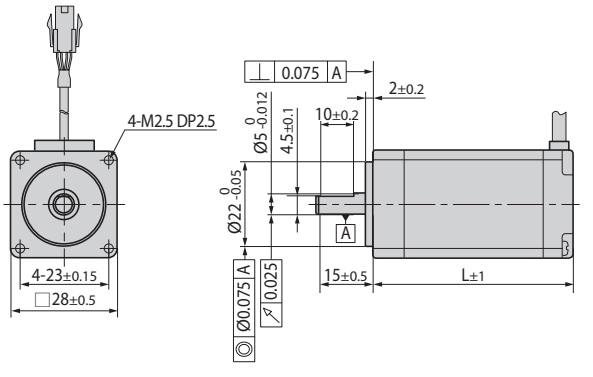


Dimensions of Motor [mm]



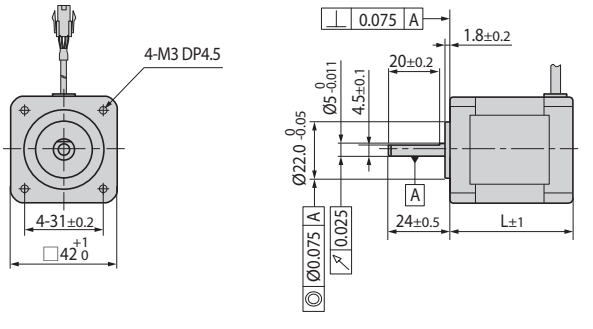
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



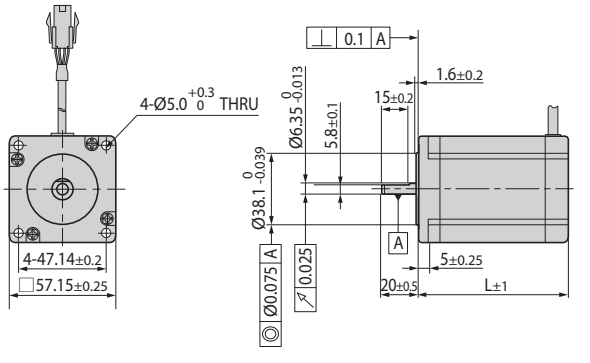
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

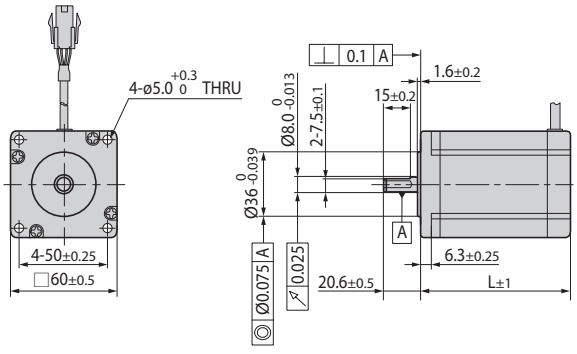
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

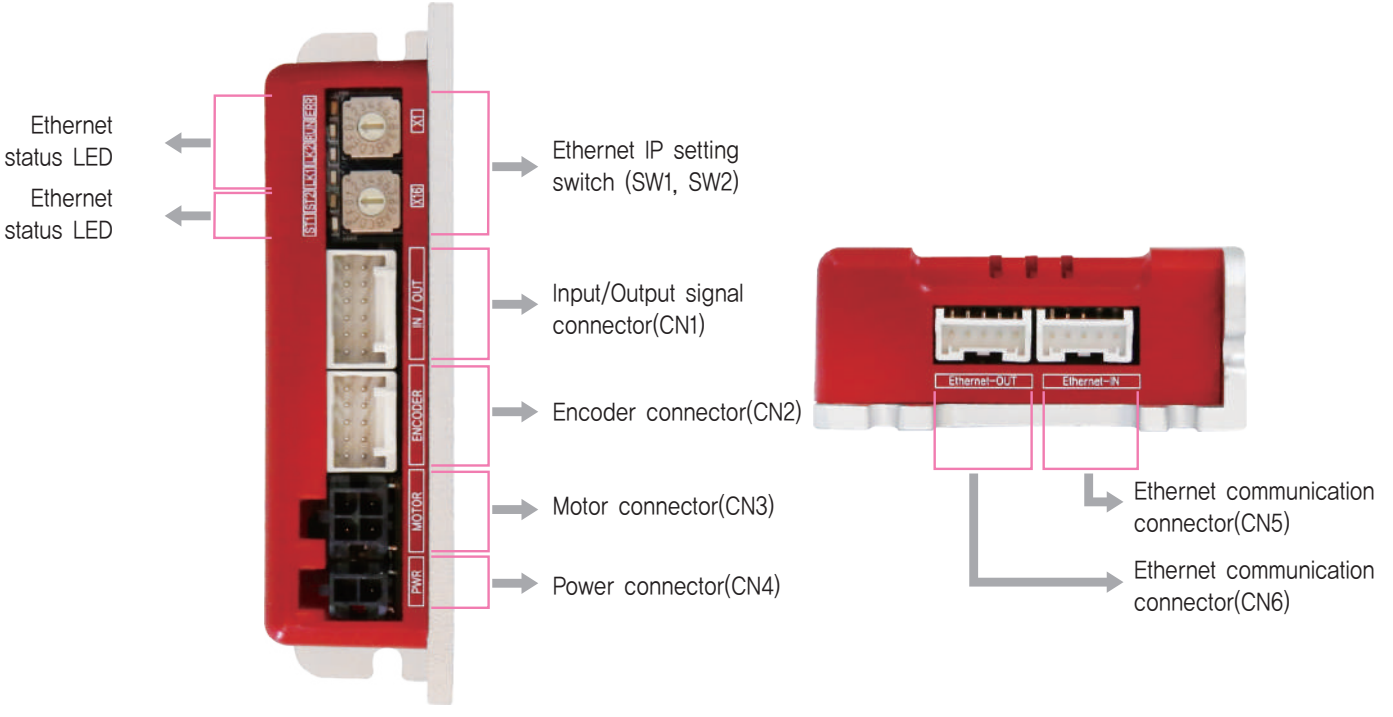
● Dimensions of Motor [mm]



60mm

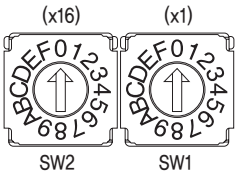
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

Settings and Operation



1. Ethernet IP Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP. The 1st octet,the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

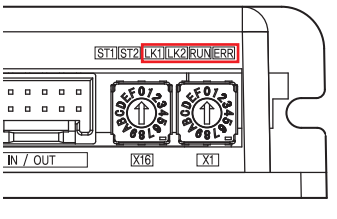
2. Ethernet Status LED

LED indicates communication status of Ethernet.

Name	Color	Status	Description
Error	Red	OFF	No Error
		ON	Local Error

Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link not Established
		ON	Link Established

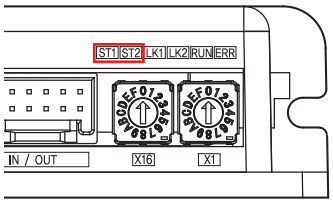
Name	Color	Status	Description
RUN	Orange	Blinking	Operating Normally



3. Drive Status LED

LED informs operation status of the drive.

LED Indication	LED Status	Description
ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 blinks, ST2 is OFF	STEP On
ST1 : ▬▬▬▬ ST2 :	ST1 is ON, ST2 is OFF	STEP Off
ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 and ST2 are ON	In motion
ST1 : ST2 : ▬ ▬ ▬ ▬	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



◆ List of error types by the number of ST2 LED blinking

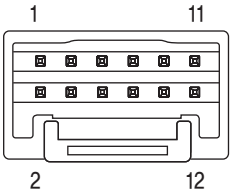
No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	The motor speed exceeds 3,000r/min
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	There is a problem with the connection between the drive and the motor
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED flash
(e.g., Over Speed Error)

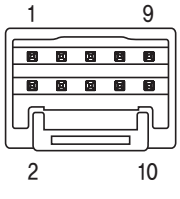
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE-	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output



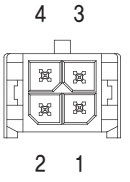
5. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	DC5V	Output
8	GND	Output
9	F.GND	-----
10	F.GND	-----



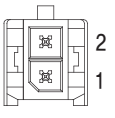
6. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



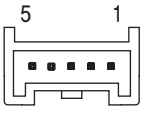
7. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

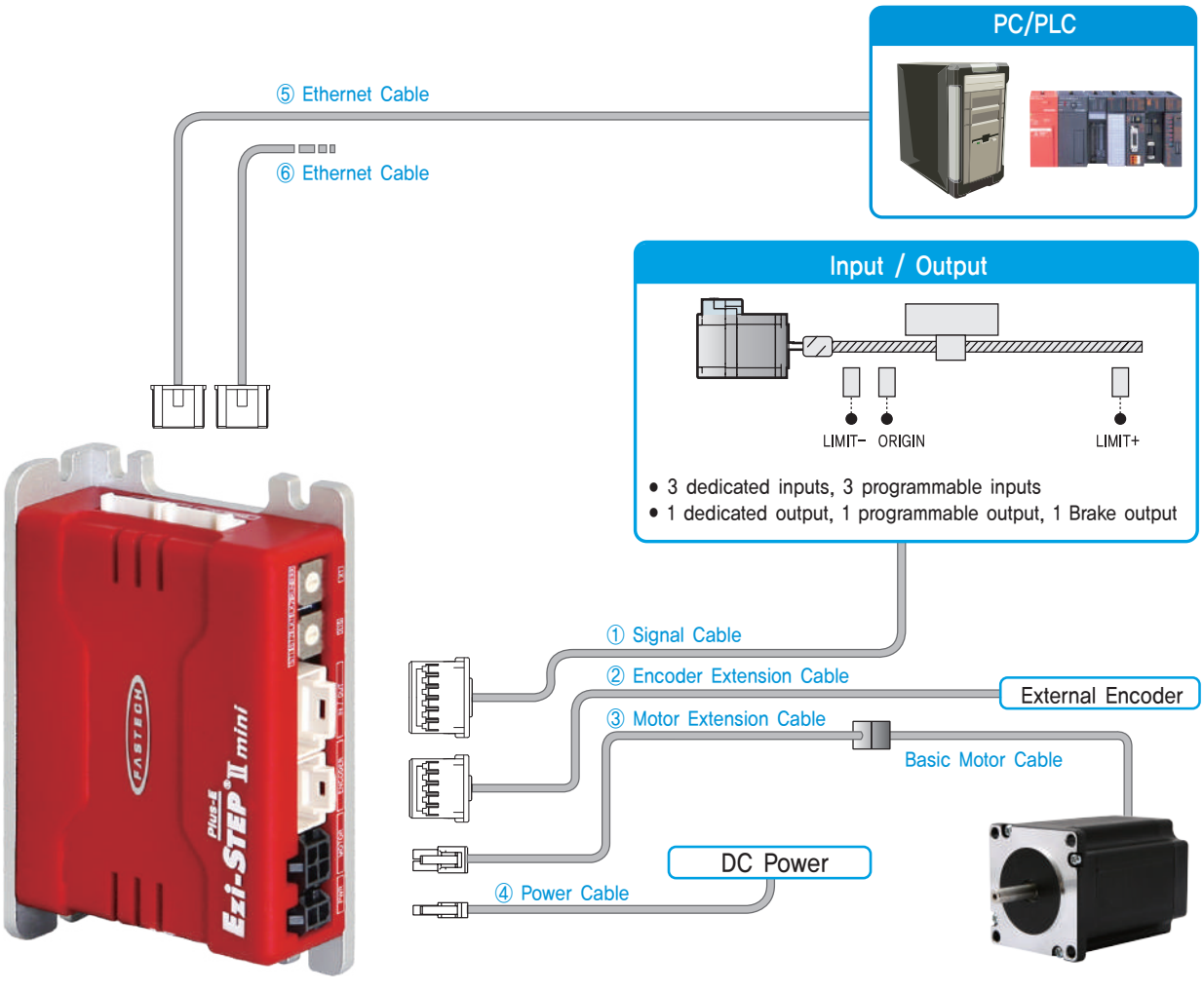


8. Ethernet Communication Connector(CN5, CN6)

No.	Function
1	TD+
2	TD−
3	RD+
4	RD−
5	F.GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ Ethernet Cable	100m	
Basic Motor Cable	0.3m (Basic length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Housing	501646-1200	MOLEX
		Terminal	501648-1000(AWG 26~28)	
Encoder	Drive Side (CN2)	Housing	501646-1000	MOLEX
		Terminal	501648-1000(AWG 26~28)	
Motor	Drive Side (CN3)	Housing	43025-0400	MOLEX
		Terminal	43030-0001	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	43025-0200	MOLEX
		Terminal	43030-0001	
Ethernet (CN5, CN6)		Housing	PAP-05V-S	JST
		Terminal	SPHD-001T-P0.5	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II Plus-E MINI drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSER-S-001F	1	Normal Cable	Maximum Length: 20m
	CSER-S-002F	2		
	CSER-S-003F	3		
	CSER-S-005F	5		
	CSER-S-001M	1	Robot Cable	
	CSER-S-002M	2		
	CSER-S-003M	3		
	CSER-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II Plus-E MINI drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Encoder Cable Connection	CTPM-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPM-E-002F	2		
	CTPM-E-003F	3		
	CTPM-E-005F	5		
	CTPM-E-001M	1	Robot Cable	
	CTPM-E-002M	2		
	CTPM-E-003M	3		
	CTPM-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II Plus-E MINI drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSMI-M-001F	1	Normal Cable	Maximum Length: 20m
	CSMI-M-002F	2		
	CSMI-M-003F	3		
	CSMI-M-005F	5		
	CSMI-M-001M	1	Robot Cable	
	CSMI-M-002M	2		
	CSMI-M-003M	3		
	CSMI-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II Plus-E MINI drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSMI-P-001F	1	Normal Cable	Maximum Length: 2m
	CSMI-P-002F	2		
	CSMI-P-001M	1	Robot Cable	
	CSMI-P-002M	2		

⑤ Ethernet Cable (5 pin connector – RJ45)

These are the cables to connect Ezi-STEP II Plus-E MINI drive and Ezi-STEP II Plus-E with Ethernet network.

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNE-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNE-EC-002F	2	
	CGNE-EC-003F	3	
	CGNE-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

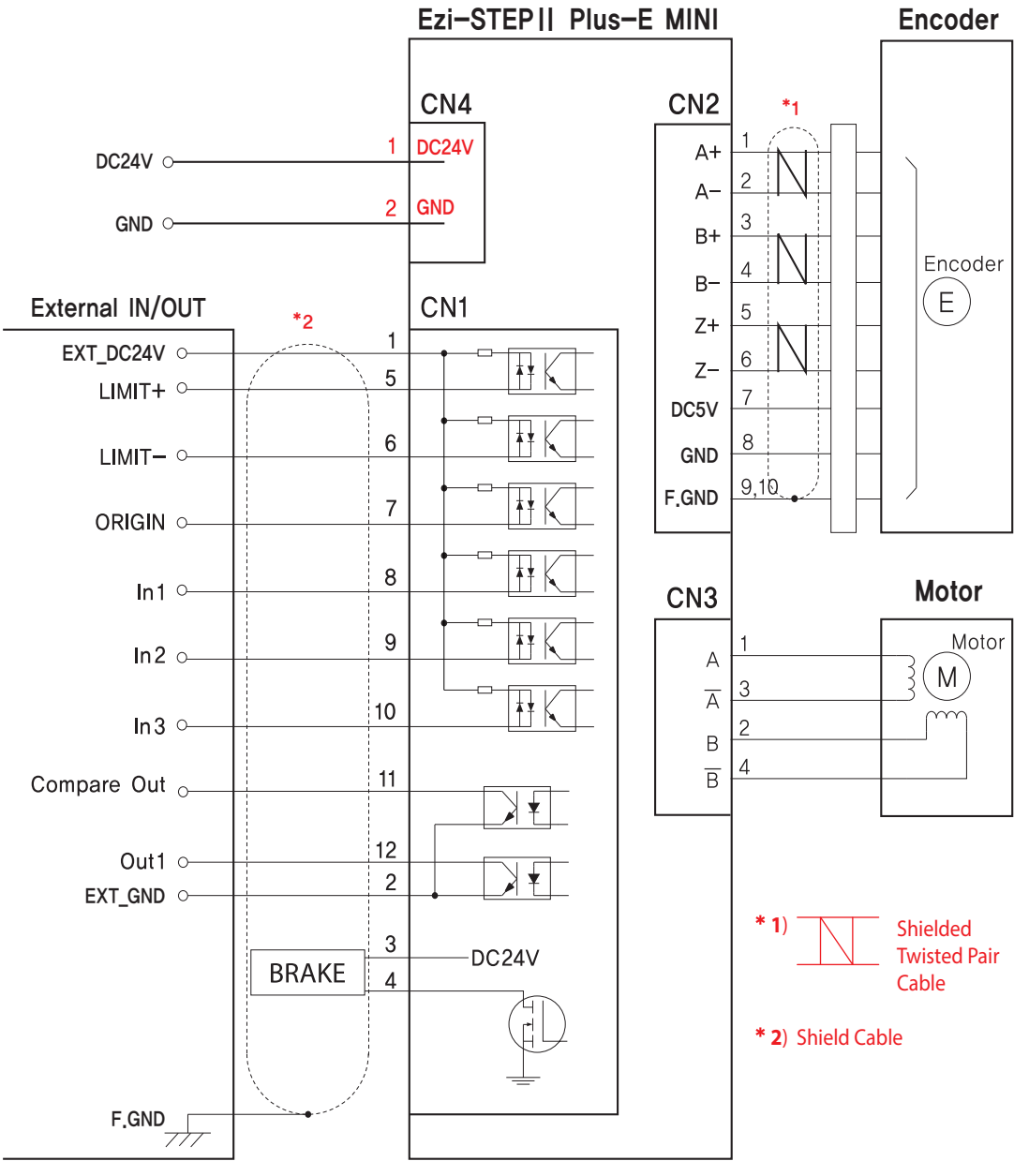
⑥ Ethernet Cable (5 pin connector – 5 pin connector)

These are the cables to connect between Ezi-STEP II Plus-E MINI drives with Ethernet network.

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNI-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNI-EC-002F	2	
	CGNI-EC-003F	3	
	CGNI-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

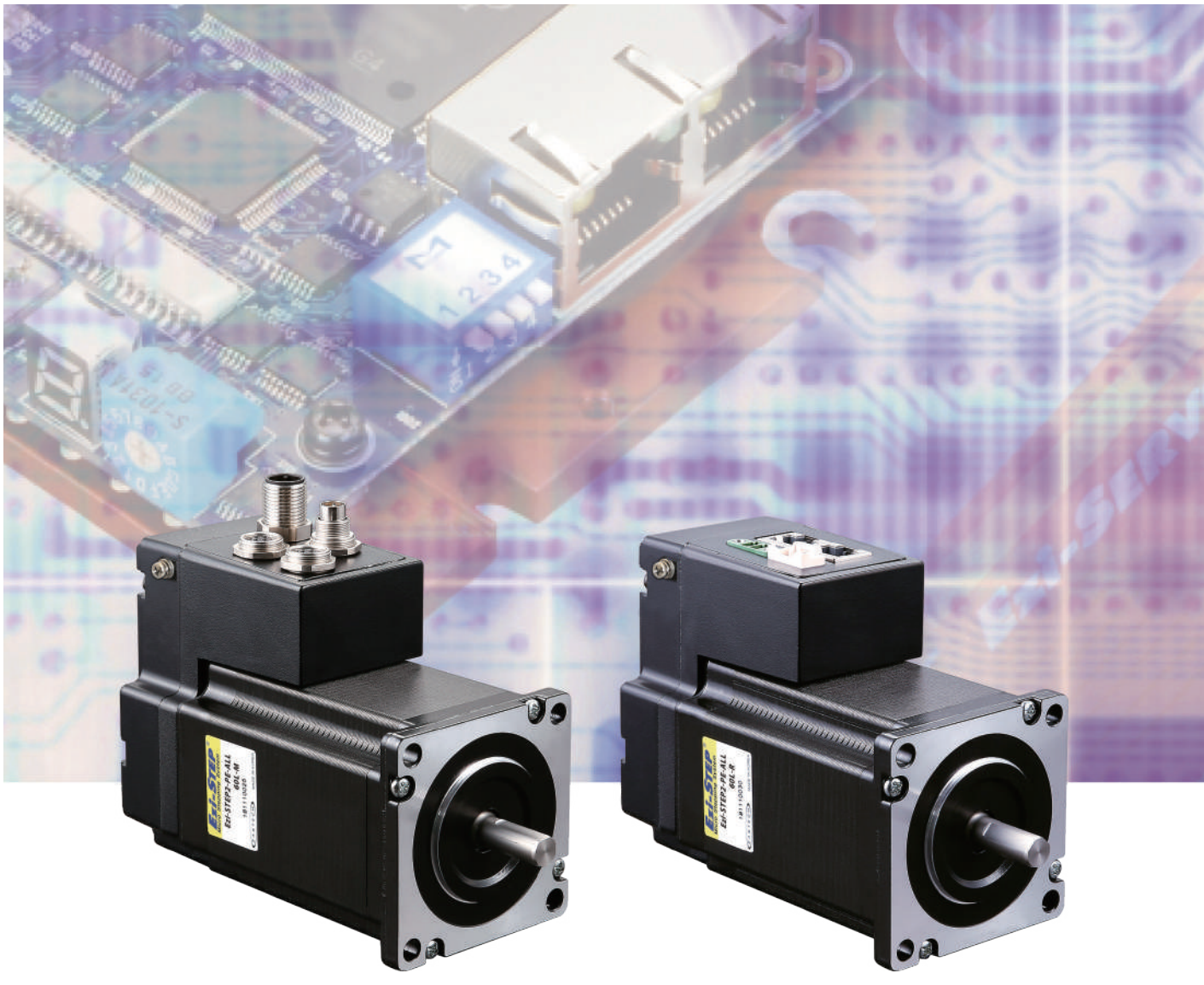
In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


EzM2-60L
Ezi-STEP II Plus-E

Ezi-STEP® II Plus-E ALL

Micro Stepping System

- Motor + Drive + Motion Controller
- Space Saving / Reduced Wiring
- Ethernet Interface
- Microstepping
- Software Damping

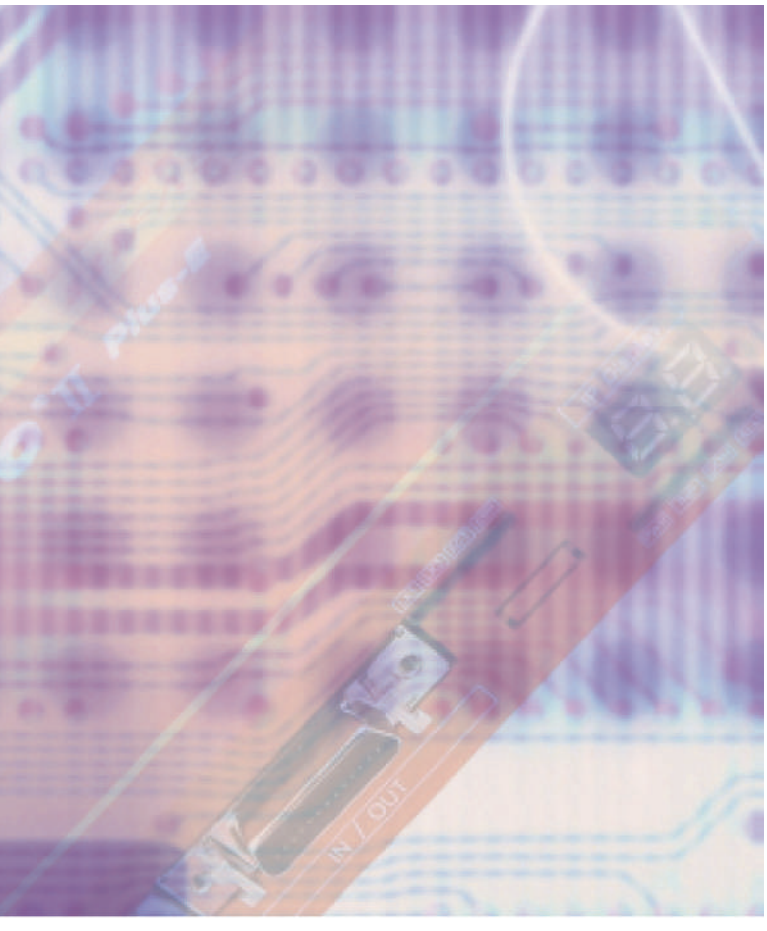


FASTECH

Fast, Accurate, Smooth Motion

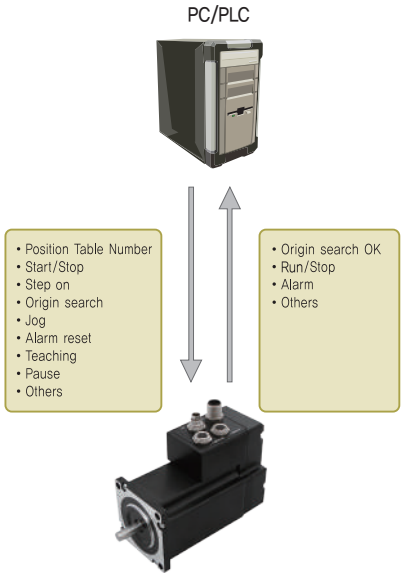
Ezi-STEP® II Plus-E ALL

Micro Stepping System



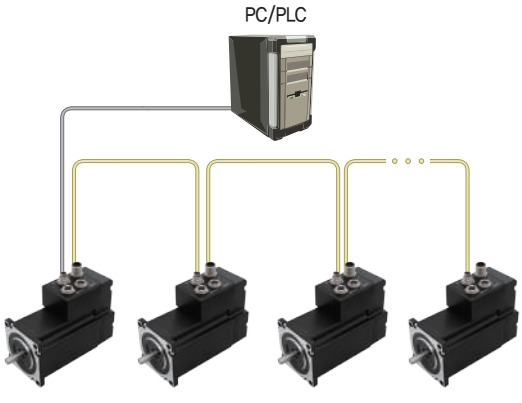
2 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller.
You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.



1 Network Based Motion Control

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter.
Motion Library(API) is provided for programming under Windows 7/8/10.

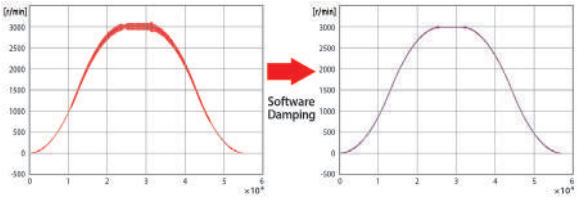


3 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

4 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high speeds.



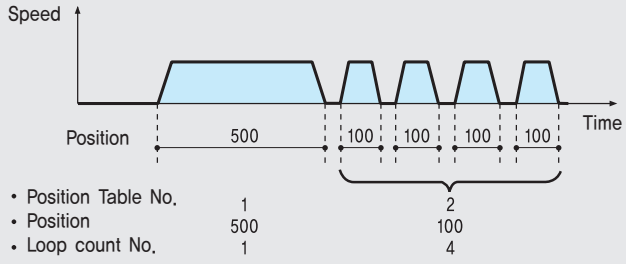
Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

● Motion Controller Features of Ezi-SERVO

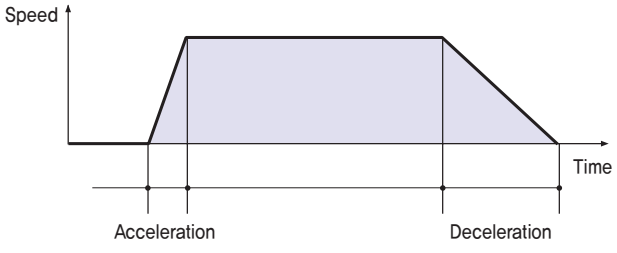
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



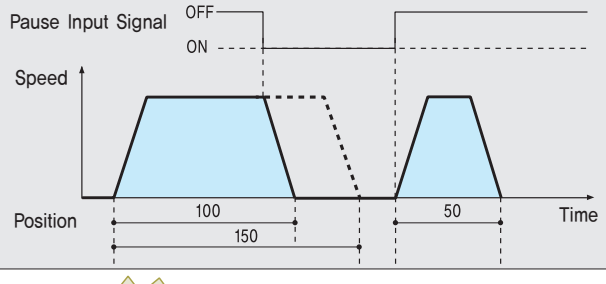
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



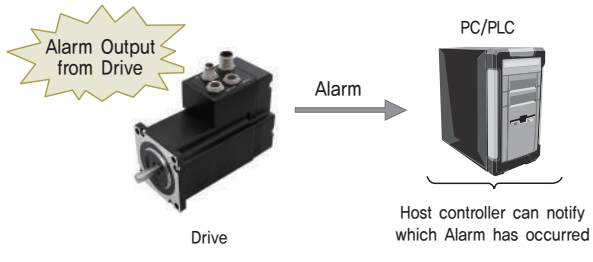
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



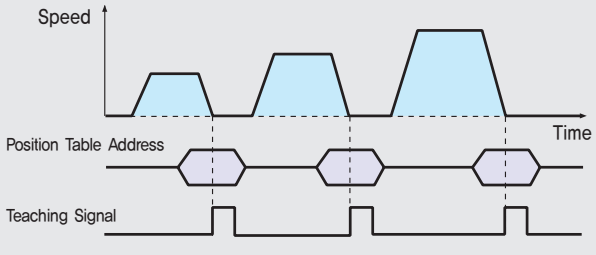
4. Alarm

The number of LED flashing time indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

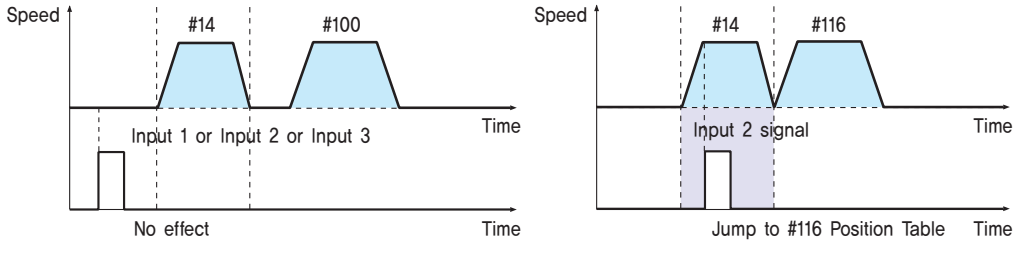


6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	



Ezi-STEPII Plus-E ALL Part Numbering

Ezi-STEP II -PE-ALL-56L-BK-M

- **Series Name**
- **Type Name**
  - PE-ALL : Ethernet ALL
- **Motor Flange Size**
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake
- **Connector Type**
  - M : M Connector
  - R : RJ45 Connector

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-ALL-42M-M	Motor & Drive Integrated	
Ezi-STEP II -PE-ALL-42M-R		
Ezi-STEP II -PE-ALL-42L-M		
Ezi-STEP II -PE-ALL-42L-R		
Ezi-STEP II -PE-ALL-42XL-M		
Ezi-STEP II -PE-ALL-42XL-R		
Ezi-STEP II -PE-ALL-56S-M		
Ezi-STEP II -PE-ALL-56S-R		
Ezi-STEP II -PE-ALL-56M-M		
Ezi-STEP II -PE-ALL-56M-R		
Ezi-STEP II -PE-ALL-56L-M		
Ezi-STEP II -PE-ALL-56L-R		
Ezi-STEP II -PE-ALL-60S-M		
Ezi-STEP II -PE-ALL-60S-R		
Ezi-STEP II -PE-ALL-60M-M		
Ezi-STEP II -PE-ALL-60M-R		
Ezi-STEP II -PE-ALL-60L-M		
Ezi-STEP II -PE-ALL-60L-R		
Ezi-STEP II -PE-ALL-86M-M		
Ezi-STEP II -PE-ALL-86M-R		
Ezi-STEP II -PE-ALL-86L-M		
Ezi-STEP II -PE-ALL-86L-R		
Ezi-STEP II -PE-ALL-86XL-M		
Ezi-STEP II -PE-ALL-86XL-R		

Combination with Brake

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II -PE-ALL-42M-BK-M	Motor & Drive Integrated	
Ezi-STEP II -PE-ALL-42M-BK-R		
Ezi-STEP II -PE-ALL-42L-BK-M		
Ezi-STEP II -PE-ALL-42L-BK-R		
Ezi-STEP II -PE-ALL-42XL-BK-M		
Ezi-STEP II -PE-ALL-42XL-BK-R		
Ezi-STEP II -PE-ALL-56S-BK-M		
Ezi-STEP II -PE-ALL-56S-BK-R		
Ezi-STEP II -PE-ALL-56M-BK-M		
Ezi-STEP II -PE-ALL-56M-BK-R		
Ezi-STEP II -PE-ALL-56L-BK-M		
Ezi-STEP II -PE-ALL-56L-BK-R		
Ezi-STEP II -PE-ALL-60S-BK-M		
Ezi-STEP II -PE-ALL-60S-BK-R		
Ezi-STEP II -PE-ALL-60M-BK-M		
Ezi-STEP II -PE-ALL-60M-BK-R		
Ezi-STEP II -PE-ALL-60L-BK-M		
Ezi-STEP II -PE-ALL-60L-BK-R		
Ezi-STEP II -PE-ALL-86M-BK-M		
Ezi-STEP II -PE-ALL-86M-BK-R		
Ezi-STEP II -PE-ALL-86L-BK-M		
Ezi-STEP II -PE-ALL-86L-BK-R		
Ezi-STEP II -PE-ALL-86XL-BK-M		
Ezi-STEP II -PE-ALL-86XL-BK-R		

Specifications of Drive

Model		Ezi-STEP II-PE-ALL -42 series	Ezi-STEP II-PE-ALL -56 series	Ezi-STEP II-PE-ALL -60 series	Ezi-STEP II-PE-ALL -86 series
Input Voltage		DC24V±10%			DC48±10%
Control Method		Bipolar PWM drive with 32bit MCU			
Current Consumption		Max. 500mA (Except motor current)			
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃			
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)			
	Vib. Resist.	0.5g			
Function	Rotation Speed	0~3,000r/min *1			0~2,000r/min *2
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)			
	Error Types	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error			
	Rotational Direction	CW/CCW (Set by parameter)			
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 3 programmable inputs (Photocoupler Input)			
	Output Signals	1 dedicated output (Compare Out), 1 programmable output (Photocoupler Output), 1 Brake output			
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded			
Position Control		· Incremental mode / Absolute mode Data Range: -2,147,483,648 to +2,147,483,647 [pulse] · Operating speed: Max. 3,000 r/min			
Return to Origin		Origin Sensor, ±Limit sensor			
GUI		User Interface Program within Windows			
Library		Motion Library (API) for windows 7/8/10			

*1 : Up to the resolution of 10,000P/R, maximum speed can be reached by 3,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

*2 : Up to the resolution of 10,000P/R, maximum speed can be reached by 2,000r/min and with the resolution more than 10,000P/R, maximum speed shall be reduced accordingly.

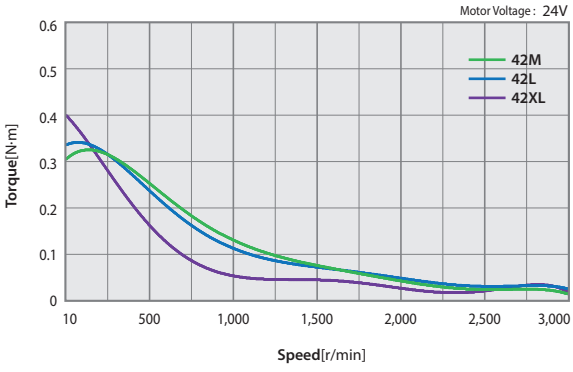
Specifications of Motor

MODEL				Ezi-STEP II-PE-ALL-42 series			Ezi-STEP II-PE-ALL-56 series		
			UNIT	42M	42L	42XL	56S	56M	56L
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	1.2	1.2	1.2	3.0	3.0	3.0
MAXIMUM HOLDING TORQUE			N·m	0.44	0.5	0.65	0.64	1.0	1.5
ROTOR INERTIA			$g \cdot cm^2$	54	77	114	180	280	520
WEIGHTS			kg	0.440	0.520	0.660	0.760	0.920	1.360
LENGTH(L)			mm	40	48	60	46	55	80
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	22	22	22	52	52	52
		8mm		26	26	26	65	65	65
		13mm		33	33	33	85	85	85
		18mm		46	46	46	123	123	123
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

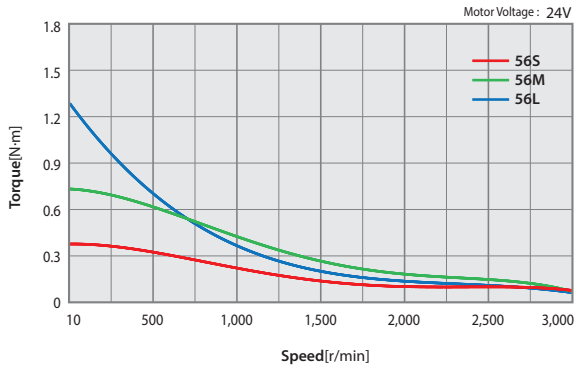
MODEL				Ezi-STEP II-PE-ALL-60 series			Ezi-STEP II-PE-ALL-86 series		
			UNIT	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar					
NUMBER OF PHASES			–	2 Phase					
CURRENT per PHASE			A/Phase	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			$g \cdot cm^2$	240	490	690	1800	3600	5400
WEIGHTS			kg	0.840	0.980	1.540	2.682	4.226	5.756
LENGTH(L)			mm	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	70	70	70	270	270	270
		8mm		87	87	87	300	300	300
		13mm		114	114	114	350	350	350
		18mm		165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than motor Unit' s Weight					
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)					
INSULATION CLASS			–	CLASS B(130℃)					
OPERATING TEMPERATURE			℃	0 ~ 55					

● Torque Characteristics of Motor

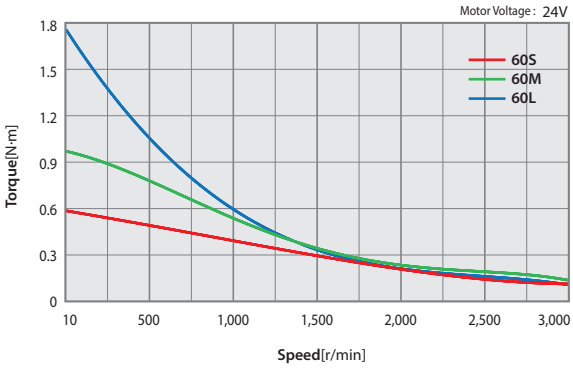
Ezi-STEP II-PE-ALL-42 series



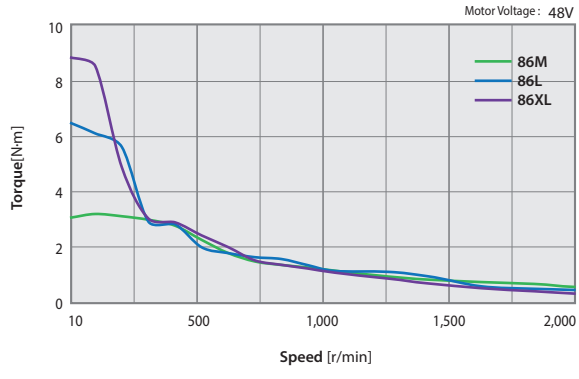
Ezi-STEP II-PE-ALL-56 series



Ezi-STEP II-PE-ALL-60 series

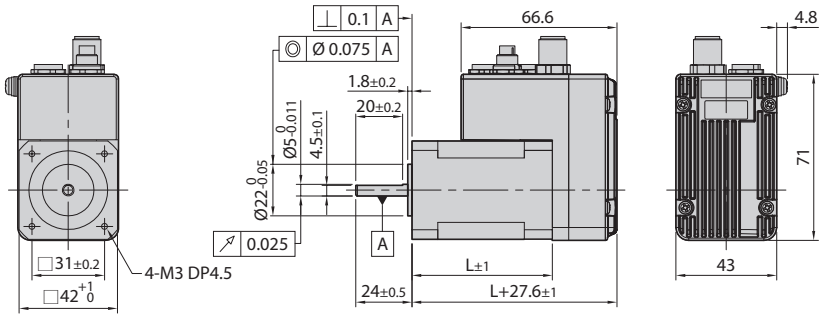


Ezi-STEP II-PE-ALL-86 series



Dimensions of Motor [mm]

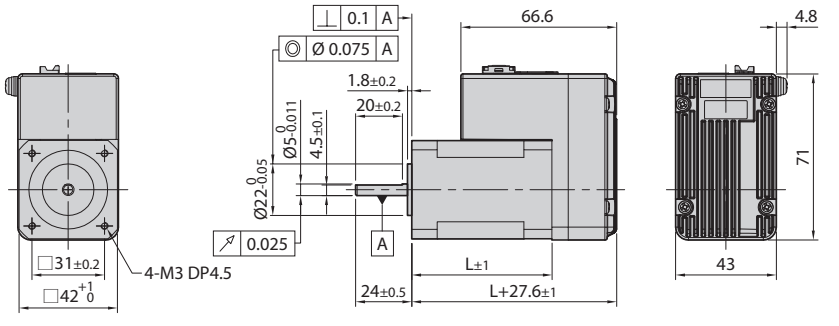
◆ M Type



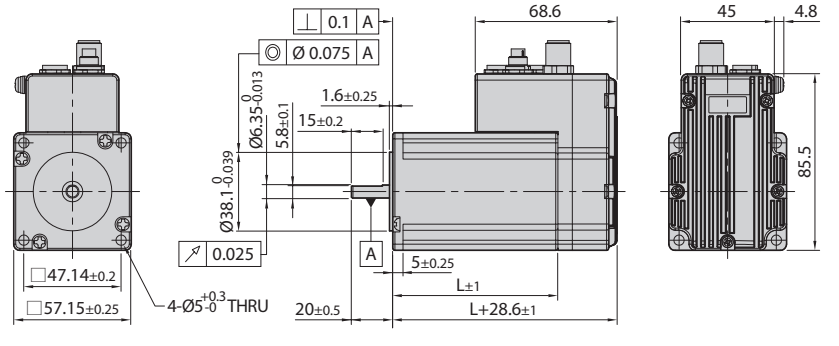
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

◆ R Type



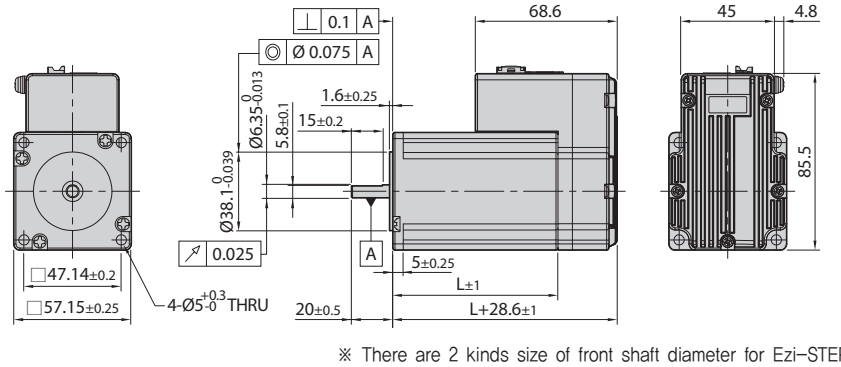
◆ M Type



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

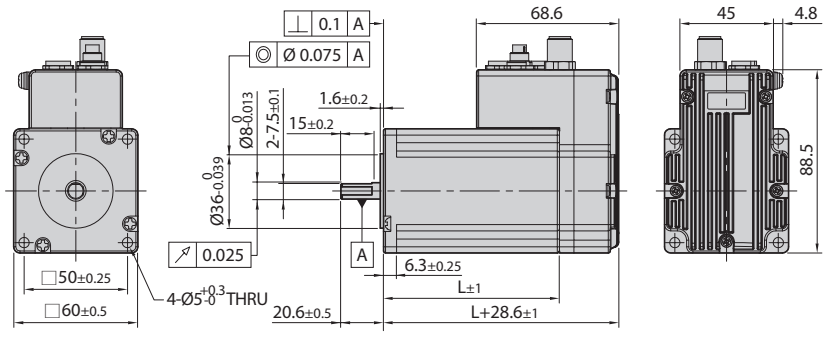
◆ R Type



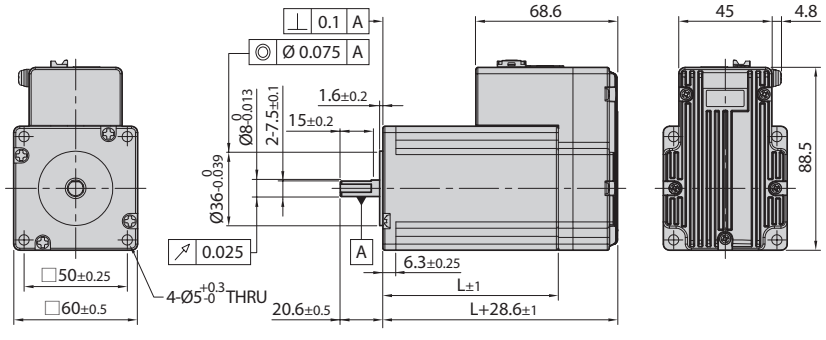
※ There are 2 kinds size of front shaft diameter for Ezi-STEPII-PE-ALL-56 series as Ø6.35 and Ø8.0

● Dimensions of Motor [mm]

◆ M Type



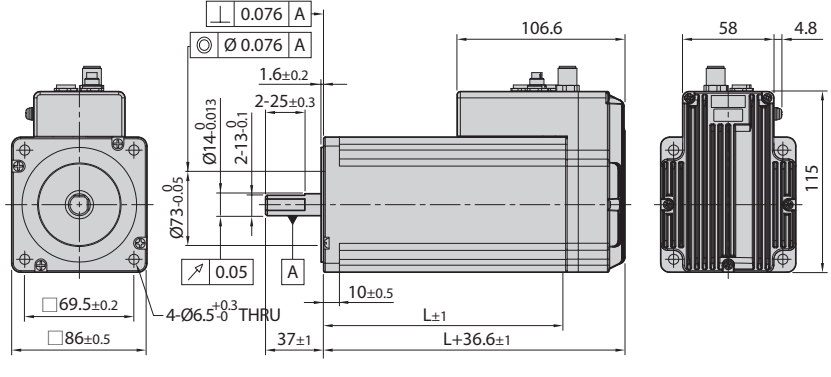
◆ R Type



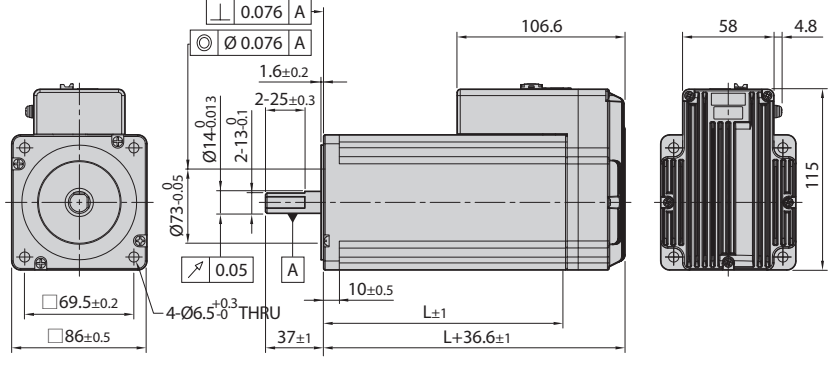
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

◆ M Type



◆ R Type

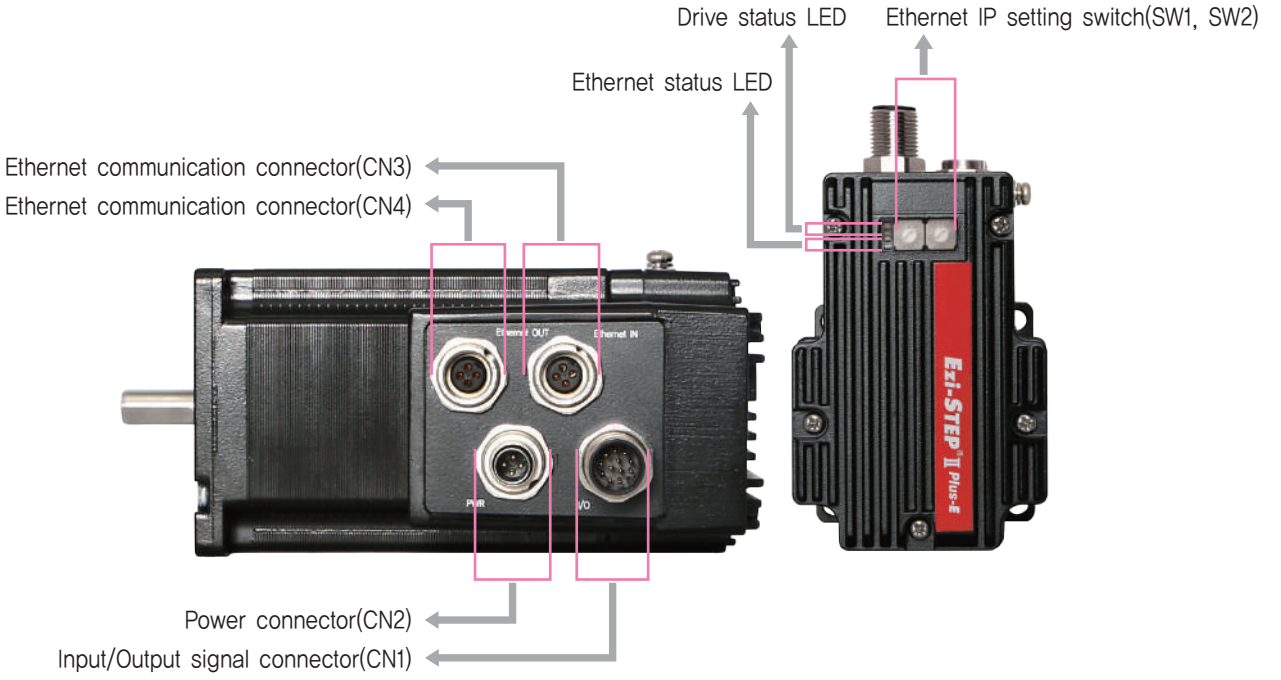


86mm

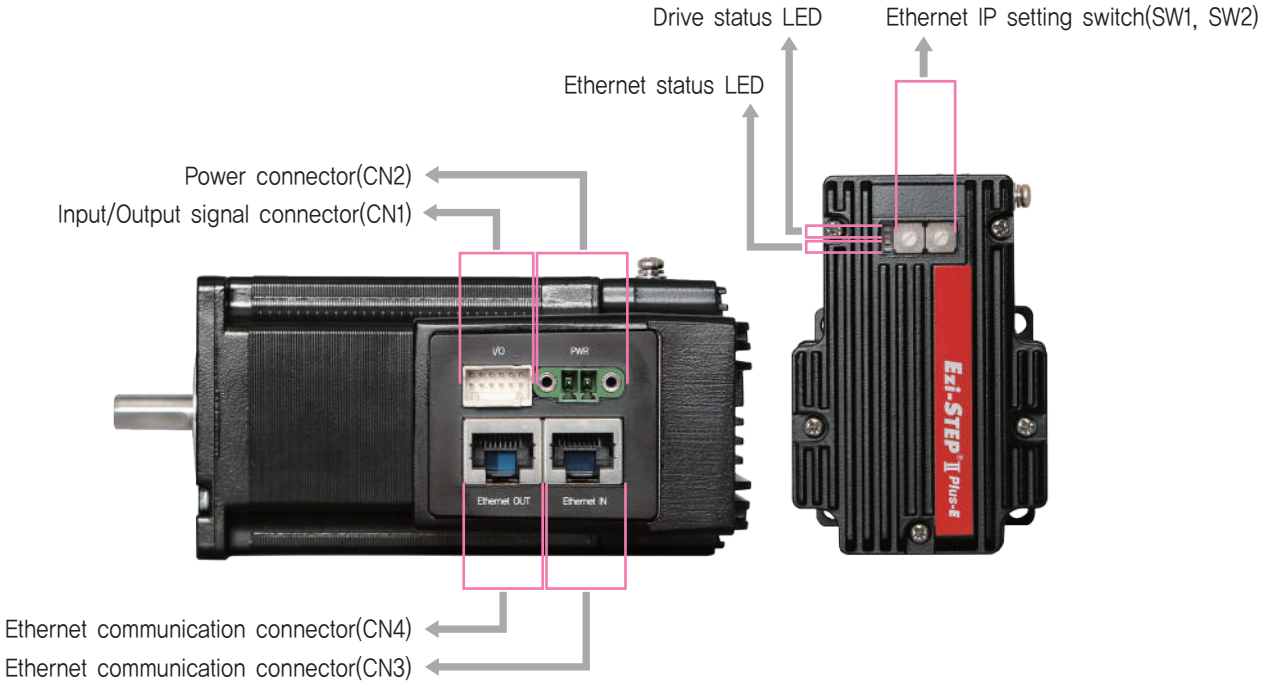
Model name	Length(L)
86M	78
86L	117
86XL	155

● Settings and Operation

◆ M Type

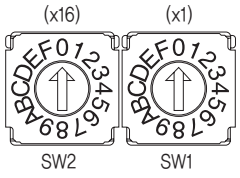


◆ R Type



1. Ethernet IP Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)

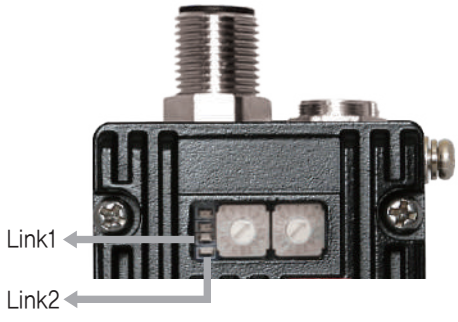


e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Ethernet Status LED

LED indicates communication status of Ethernet.

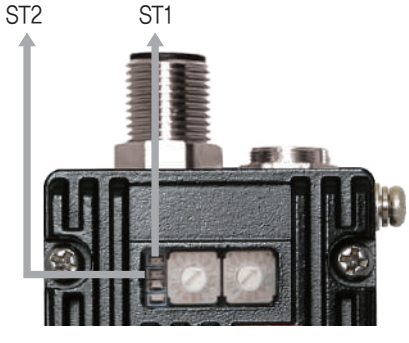
Name	Color	Status	Description
LK1/ LK2	Green	OFF	Link not Established
		ON	Link Established



3. Drive Status LED

LED informs operation status of the drive.

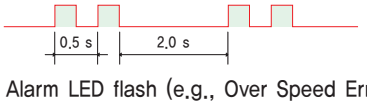
LED Indication	LED Status	Description
ST1 : ST2 :	ST1 blinks, ST2 is OFF.	STEP ON
ST1 : ST2 :	ST1 is ON, ST2 is OFF.	STEP OFF
ST1 : ST2 :	ST1 and ST2 are ON.	Motor Running
ST1 : ST2 :	ST1 is OFF, ST2 blinks repeatedly for a set number of times depending on the type of error.	Error



◆ List of error types by the number of ST2 LED blinking

No.	Error Type	Causes
1	Over Current Error	The current through power devices in drive exceeds 4.8A.
2	Over Speed Error	The motor speed exceeds 3,000r/min. *1
5	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V.
7	Motor Connect Error	There is a problem with the connection between the drive and the motor.
12	ROM Error	Error occurs in parameter storage device(ROM).

*1 : The speed limit of Ezi-STEPII-PE-ALL 86 model is 2,000r/min.

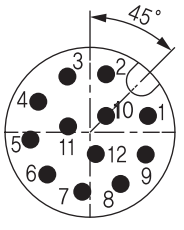


Alarm LED flash (e.g., Over Speed Error)

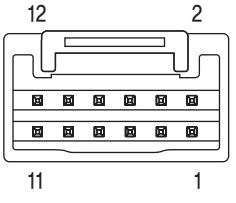
4. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_GND	Input
3	BRAKE+	Output
4	BRAKE−	Output
5	LIMIT+	Input
6	LIMIT−	Input
7	ORIGIN	Input
8	Digital In1	Input
9	Digital In2	Input
10	Digital In3	Input
11	Compare Out	Output
12	Digital Out1	Output

◆ M Type



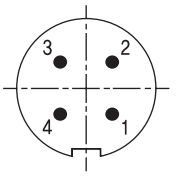
◆ R Type



5. Power Connector(CN2)

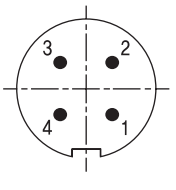
◆ M Type

No.	Function	I/O
1	DC24V	Input
2	DC24V	Input
3	GND	Input
4	GND	Input



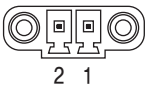
◆ M Type(86mm)

No.	Function	I/O
1	DC48V	Input
2	DC48V	Input
3	GND	Input
4	GND	Input



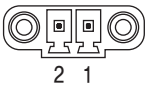
◆ R Type

No.	Function	I/O
1	DC24V	Input
2	GND	Input



◆ R Type(86mm)

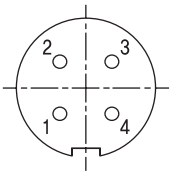
No.	Function	I/O
1	DC48V	Input
2	GND	Input



6. Ethernet Communication Connector(CN3, CN4)

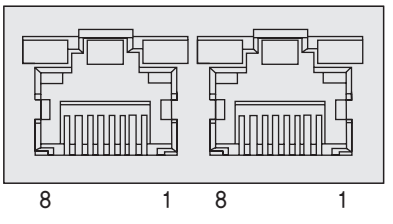
◆ M Type

No.	Function
1	TD+
2	TD−
3	RD+
4	RD−
Connector hood	F.GND

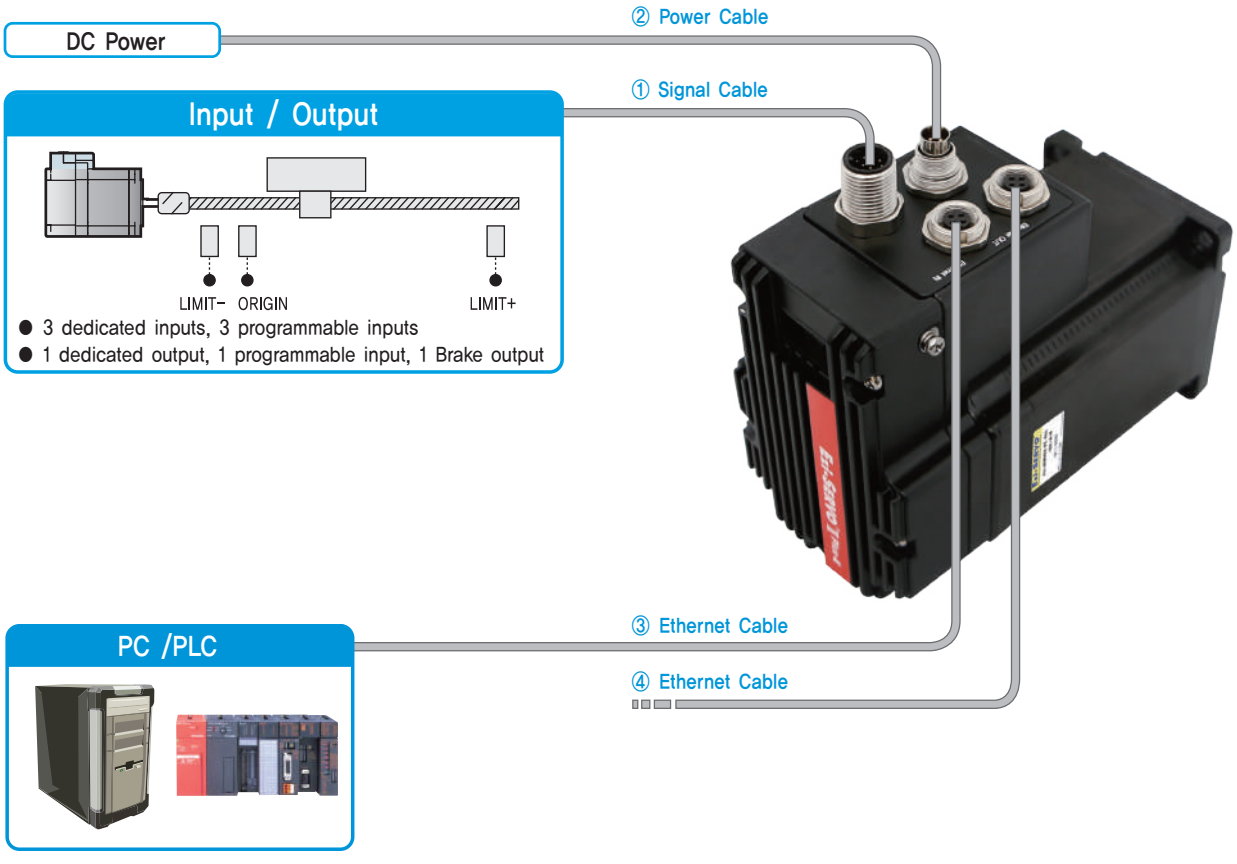


◆ R Type

No.	Function	No.	Function
1	TD+	6	RD−
2	TD−	7	----
3	RD+	8	----
4	----	Connector hood	F.GND
5	----		



● System Configuration [M Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③/④ Ethernet Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Connector	99 0492 52 12	BINDER
Power (CN2)	Connector	99 0410 75 04	BINDER
Ethernet (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II Plus-E ALL [M Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSEM-S-001F	1	Normal Cable	Maximum Length: 20m
	CSEM-S-002F	2		
	CSEM-S-003F	3		
	CSEM-S-005F	5		
	CSEM-S-001M	1	Robot Cable	
	CSEM-S-002M	2		
	CSEM-S-003M	3		
	CSEM-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

② Signal Cable

These are the cables to connect Ezi-STEP II Plus-E ALL [M Type] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CWPA-P-001F	1	Normal Cable	Maximum Length: 20m
	CWPA-P-002F	2		
	CWPA-P-001M	1	Robot Cable	
	CWPA-P-002M	2		

③ Ethernet Cable (M Type Connector – RJ45)

These are the cables to connect Ezi-STEP II Plus-E ALL M Type and Ethernet Master, Ezi-STEP II Plus-E, Ezi-STEP II Plus-E ALL R Type with Ethernet network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CGNM-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNM-EC-002F	2		
	CGNM-EC-003F	3		
	CGNM-EC-005F	5		
	CGNM-EC-001M	1	Robot Cable	
	CGNM-EC-002M	2		
	CGNM-EC-003M	3		
	CGNM-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

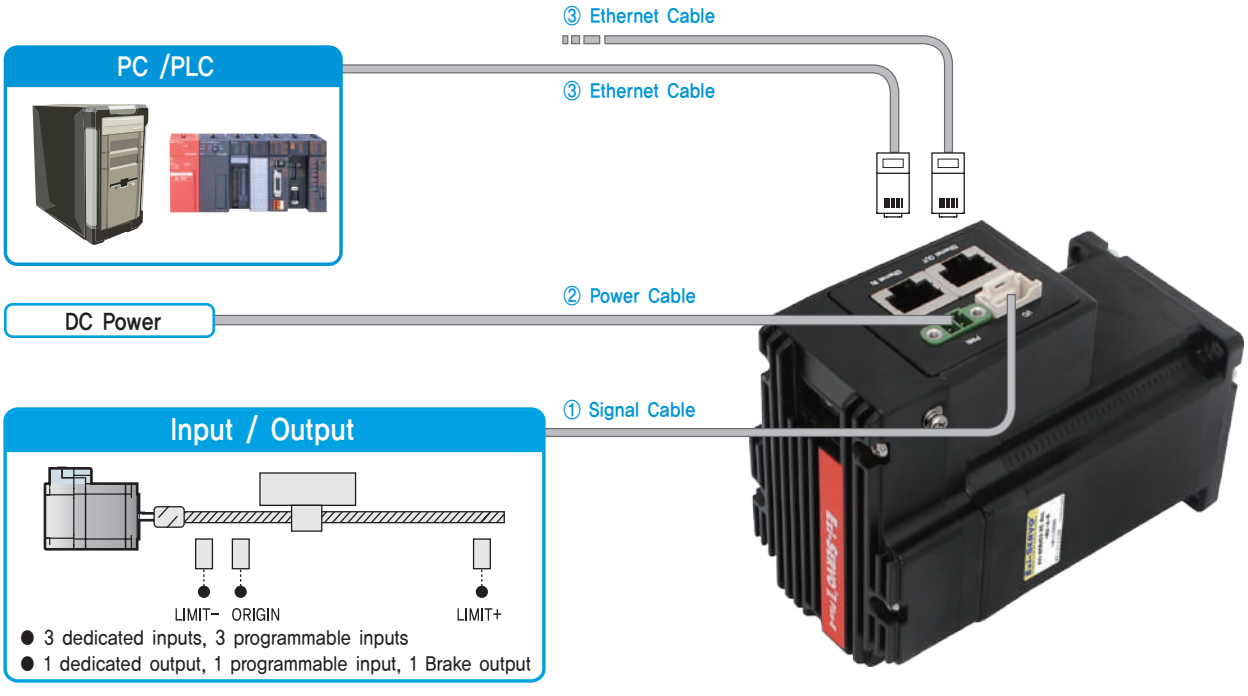
④ Ethernet Cable (M Type Connector – M Type Connector)

These are the cables to connect between Ezi-STEP II Plus-E ALL M Type products with Ethernet network.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CWMD-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CWMD-EC-002F	2		
	CWMD-EC-003F	3		
	CWMD-EC-005F	5		
	CWMD-EC-001M	1	Robot Cable	
	CWMD-EC-002M	2		
	CWMD-EC-003M	3		
	CWMD-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● System Configuration [R Type]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Power Cable	2m	
③ Ethernet Cable	100m	

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose	Item	Part Number	Manufacturer
Signal (CN1)	Housing	501646-1200	MOLEX
	Terminal	501648-1000 (AWG 26~28)	
Power (CN2)	Terminal Block	AKZ1550/2F-3.81	PTR

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II Plus-E ALL [R Type] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSER-S-001F	1	Normal Cable	Maximum Length: 20m
	CSER-S-002F	2		
	CSER-S-003F	3		
	CSER-S-005F	5		
	CSER-S-001M	1	Robot Cable	
	CSER-S-002M	2		
	CSER-S-003M	3		
	CSER-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Drive Power Cable

These are the cables to connect Ezi-STEP II Plus-E ALL [R Type] drive and the power.

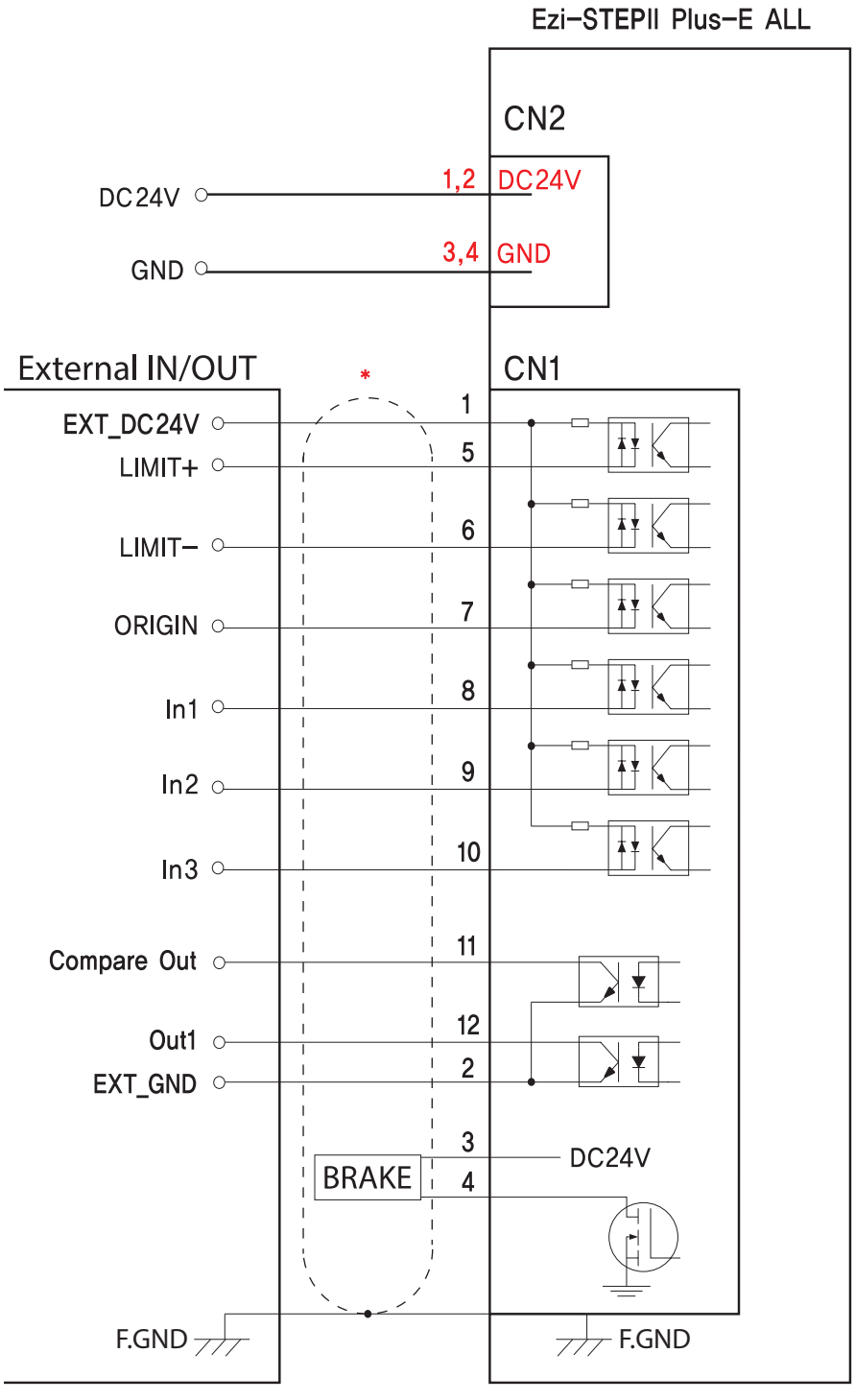
Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVA-P-001F	1	Normal Cable	Maximum Length: 20m
	CSVA-P-002F	2		
	CSVA-P-001M	1	Robot Cable	
	CSVA-P-002M	2		
R Type 86mm products Drive – Power Connection	CSPA-P-001F	1	Normal Cable	
	CSPA-P-002F	2		
	CSPA-P-001M	1	Robot Cable	
	CSPA-P-002M	2		

③ Ethernet Cable

Purpose	Part Number	Length [m]	Cable Type	Remarks
Ethernet Connection	CGNR-EC-001F	1	Normal Cable	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m
	CGNR-EC-002F	2		
	CGNR-EC-003F	3		
	CGNR-EC-005F	5		
	CGNR-EC-001M	1	Robot Cable	
	CGNR-EC-002M	2		
	CGNR-EC-003M	3		
	CGNR-EC-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

● External Wiring Diagram [M Type]



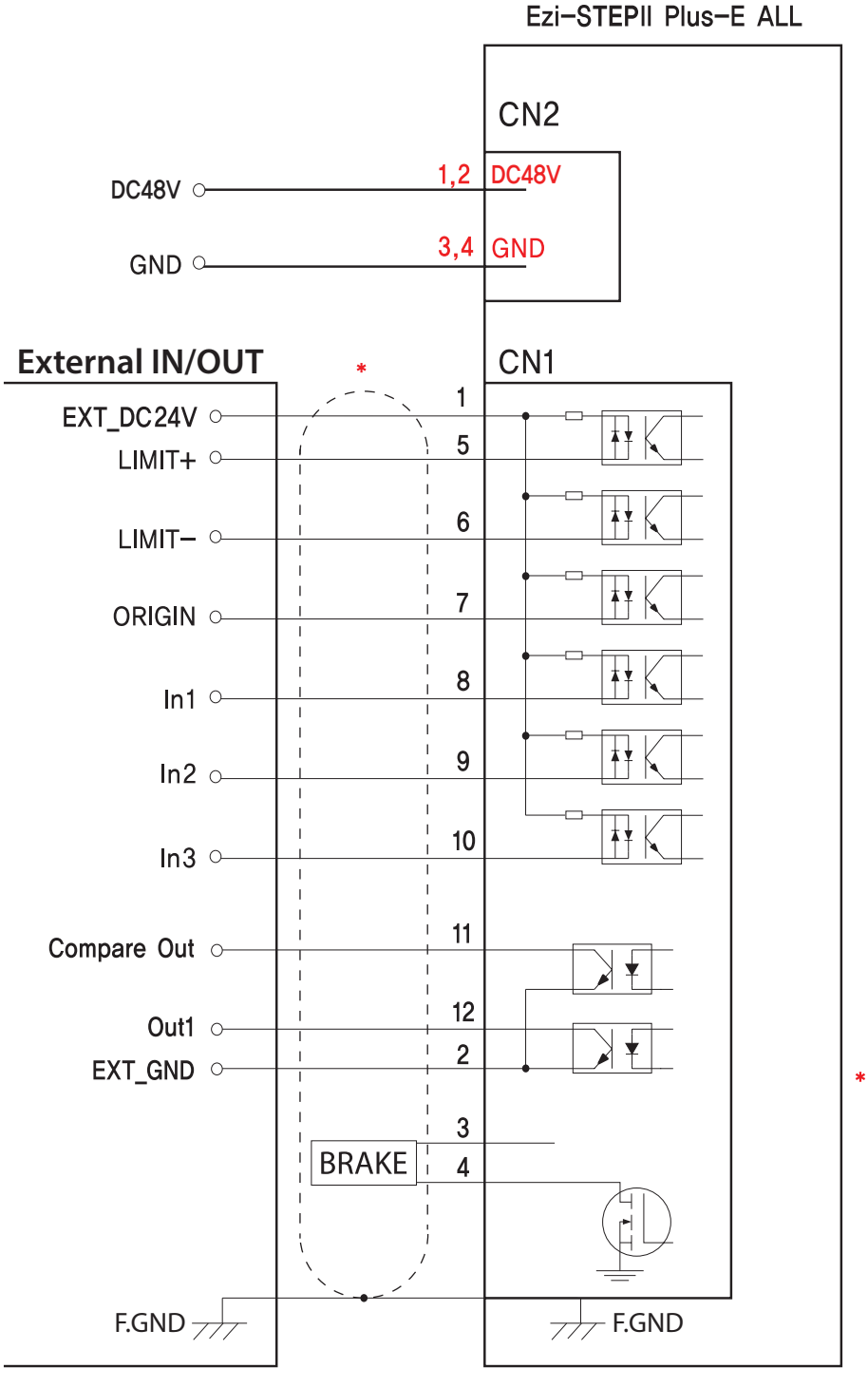
* Shield Cable

※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [M Type 86mm]

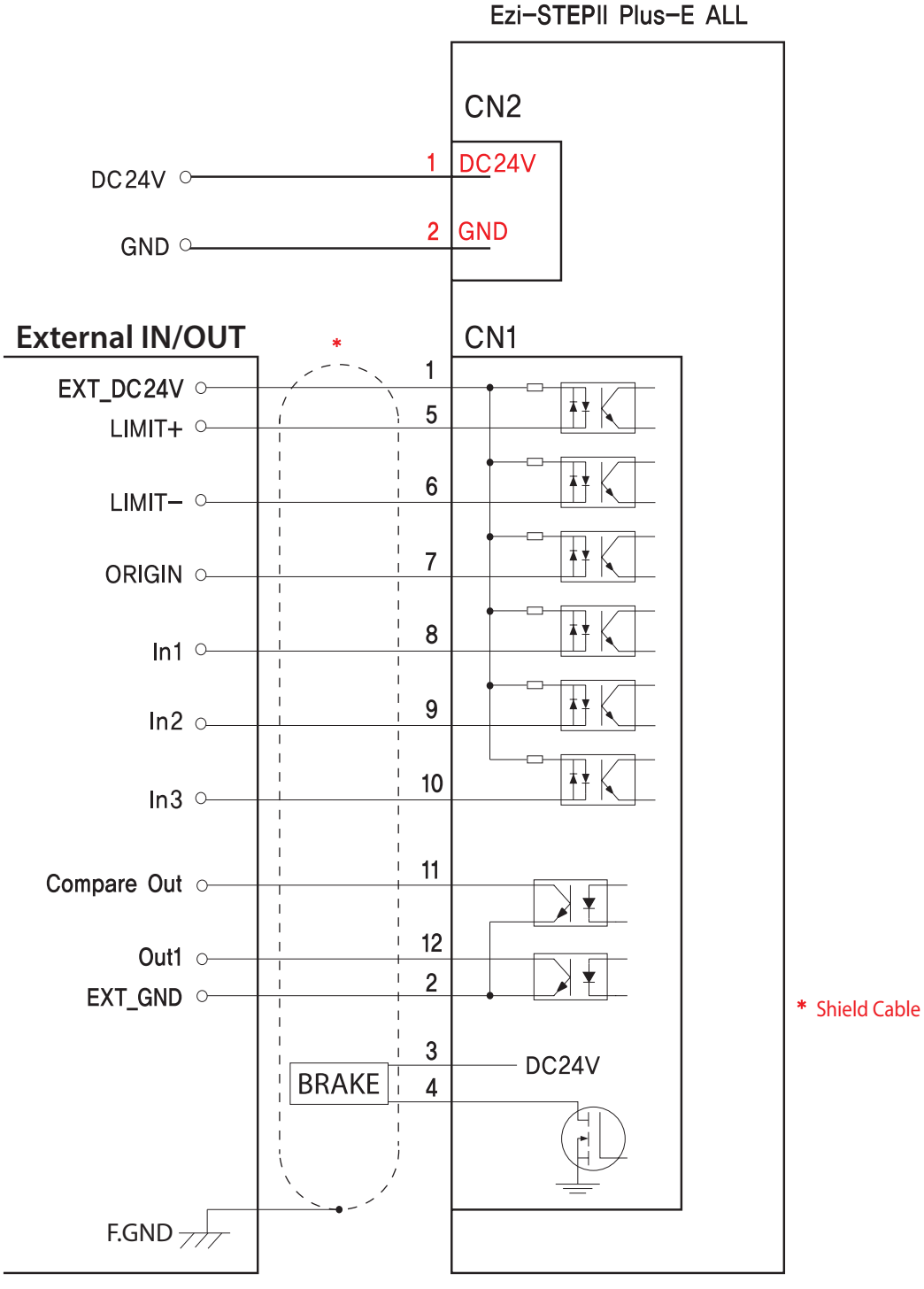


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [R Type]

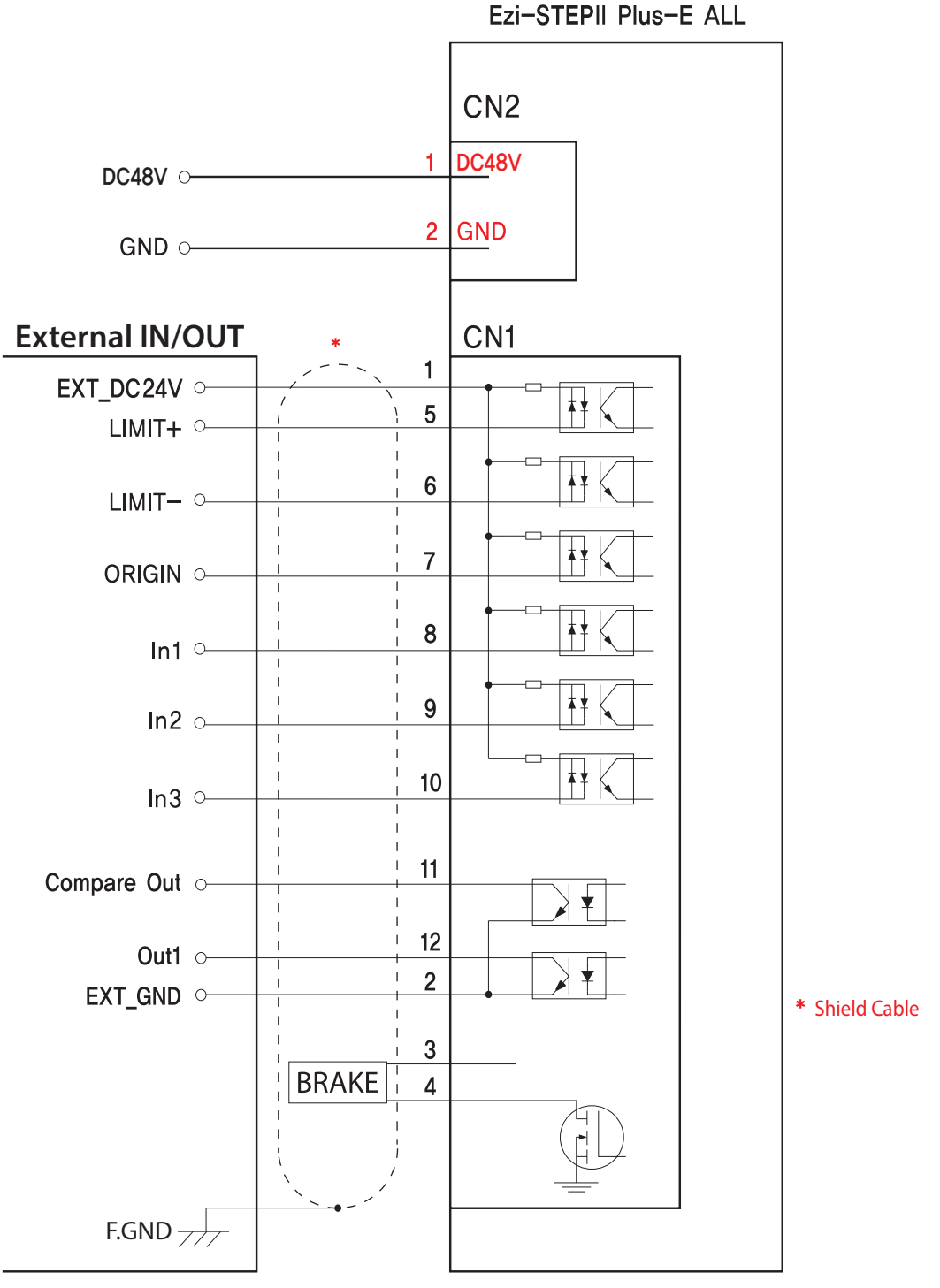


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [R Type 86mm]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.


Ezi-STEP® II CC-Link
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
SW1
RS-485
STATION NO.
PWR
RUN
SDN
ALM

Ezi-STEP® II CC-Link

Micro Stepping System

- Embedded Motion Controller
- CC-Link Interface
- Microstepping
- Software Damping
- High Torque



FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® II CC-Link

Micro Stepping System

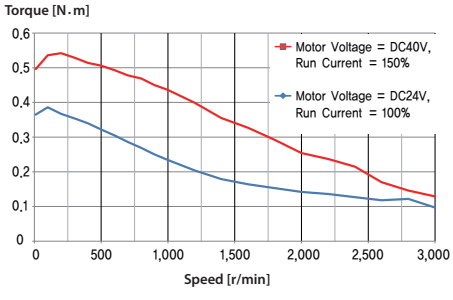


2 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-STEP II boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high-speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low-speed is increased.

Torque can be improved by about 30% over the entire speed range.

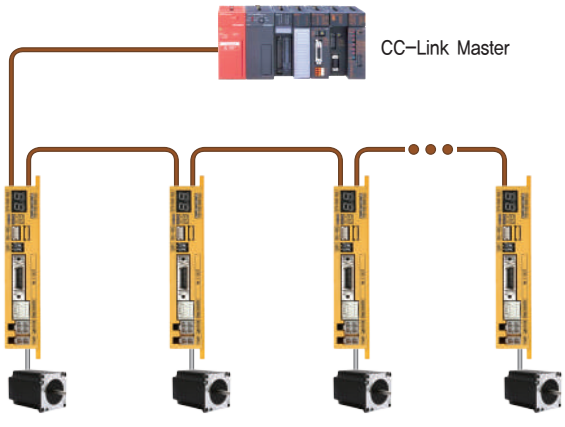


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-STEP II-CL-42L
Motor Voltage = DC40V
Input Voltage = DC24V

1 CC-Link Based Motion Control

Ezi-STEP II CC-Link is a stepping motor control system that supports CC-Link, an open field network based on RS-485.
Ezi-STEP II CC-Link is a remote device station connected to the CC-Link system. It performs various controls and processes motion and monitoring functions with device commands.

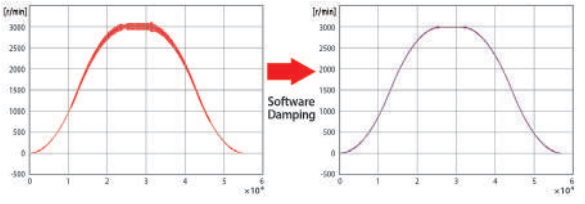


3 Microstep and Filtering

The high-performance MCU operates at step resolutions of 1.8° up to maximum 0.0072° (1/250 steps) and Ezi-STEP II adjusts PWM control signal in every 50μ sec, which makes it possible for more precise current control, resulting in high-precision Microstep operation. In addition, Ezi-STEP II applies filtering control to enable smooth operation even at very low-speed.

4 Software Damping

Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the MCU adjusts the phase of the current according to the pole position of the motor, drastically suppressing vibration.
This allows the smooth operation of the motor at high-speeds.



Software Damping OFF　　Software Damping ON

※ This is real measured speed that using 100,000 P/R encoder.

5 Improved high-speed operation performance

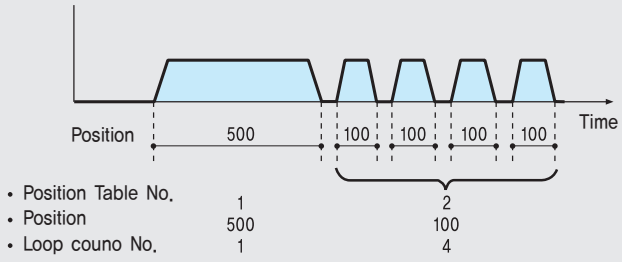
Depending on the speed of a stepping motor, Ezi-STEP II automatically increases the supply voltage and prevents the torque lowering due to the low operating voltage to the motor caused by back-emf voltage, this enables high-speed operation. Additionally, the software damping algorithm minimizes the vibration and prevents the loss-of-synchronization at high-speed.

※ Applicable model : Ezi-STEP II-CL-42 Series
Ezi-STEP II-CL-56 Series
Ezi-STEP II-CL-60 Series

● Motion Controller Features of Ezi-SERVO

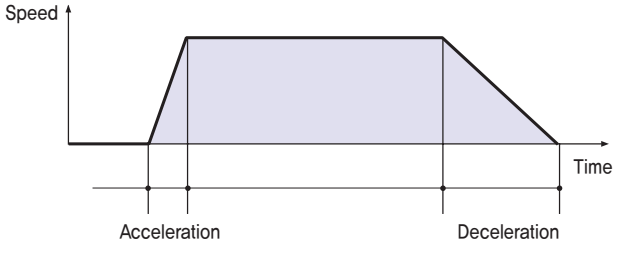
1. Loop Count

This function allows positioning repeatedly according to the Loop Count Number.



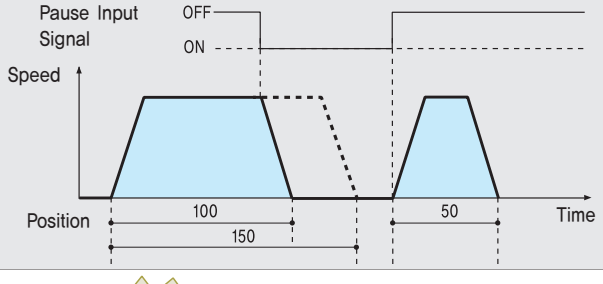
2. Acceleration/Deceleration

For quick acceleration and gradual deceleration, you can set each acceleration and deceleration time separately.



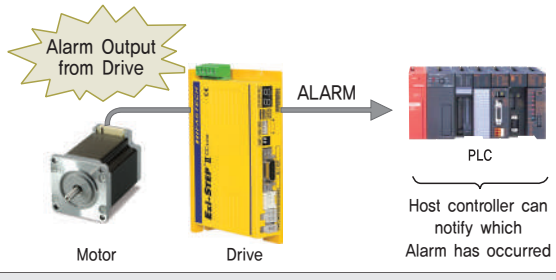
3. Pause

You can pause the motion upon the input of an external signal. When Pause signal change to OFF, the motor will restart to original target position.



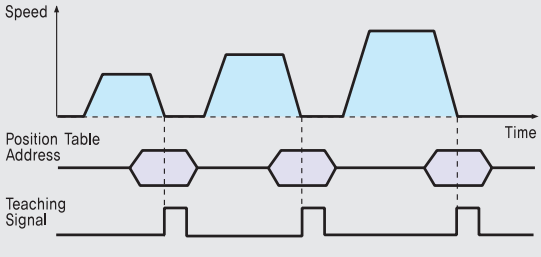
4. Alarm

The number of LED flashing time and information on the 7-Segment LED display indicates which Alarm has occurred.



5. Teaching

Teaching signal is used to memorize current Position data into the selected Position Table item.

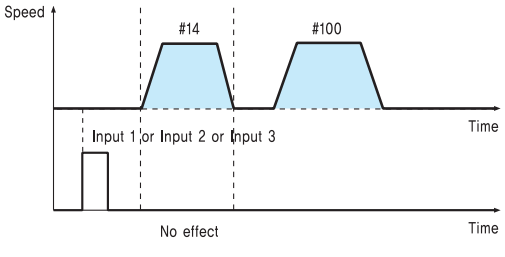


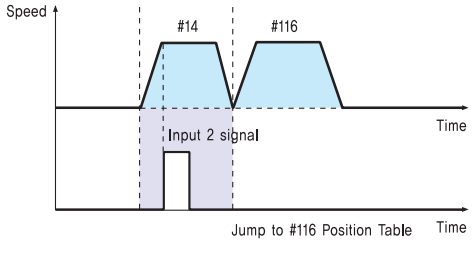
6. Jump

Within one Position Table, you can select various Position Table numbers that you want to jump.
With three external input signal during movement, the next jump Position Table number can be select.

◆ Position Table #14

Position	– – –	Next	– – –	Input 1	Input 2	Input 3	– – –
10000		100		115	116	117	





Ezi-STEPII CC-Link Part Numbering

Ezi-STEPII-CL-42S-BK

- **Series Name**
- **Type Name**
  - CL : CC-Link
- **Motor Flange Size**
  - 20 : 20mm
  - 28 : 28mm
  - 42 : 42mm
  - 56 : 56mm
  - 60 : 60mm
  - 86 : 86mm
- **Motor Length**
  - S : Small
  - M : Medium
  - L : Large
  - XL : Extra Large
- **Brake**
  - Blank : Without Brake
  - BK : Brake

Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEPII-CL-20M	BM-20M	EzT2-CL-20M
Ezi-STEPII-CL-20L	BM-20L	EzT2-CL-20L
Ezi-STEPII-CL-28S	BM-28S	EzT2-CL-28S
Ezi-STEPII-CL-28M	BM-28M	EzT2-CL-28M
Ezi-STEPII-CL-28L	BM-28L	EzT2-CL-28L
Ezi-STEPII-CL-42S	BM-42S	EzT2-CL-42S
Ezi-STEPII-CL-42M	BM-42M	EzT2-CL-42M
Ezi-STEPII-CL-42L	BM-42L	EzT2-CL-42L
Ezi-STEPII-CL-42XL	BM-42XL	EzT2-EC-42XL
Ezi-STEPII-CL-56S	BM-56S	EzT2-CL-56S
Ezi-STEPII-CL-56M	BM-56M	EzT2-CL-56M
Ezi-STEPII-CL-56L	BM-56L	EzT2-CL-56L
Ezi-STEPII-CL-60S	BM-60S	EzT2-CL-60S
Ezi-STEPII-CL-60M	BM-60M	EzT2-CL-60M
Ezi-STEPII-CL-60L	BM-60L	EzT2-CL-60L
Ezi-STEPII-CL-86M	BM-86M	EzT2-CL-86M
Ezi-STEPII-CL-86L	BM-86L	EzT2-CL-86L
Ezi-STEPII-CL-86XL	BM-86XL	EzT2-CL-86XL

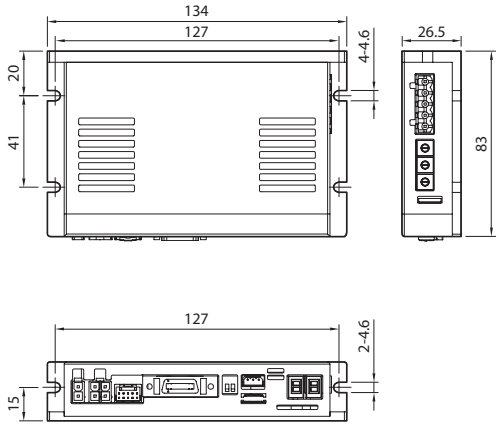
Combination with Brake

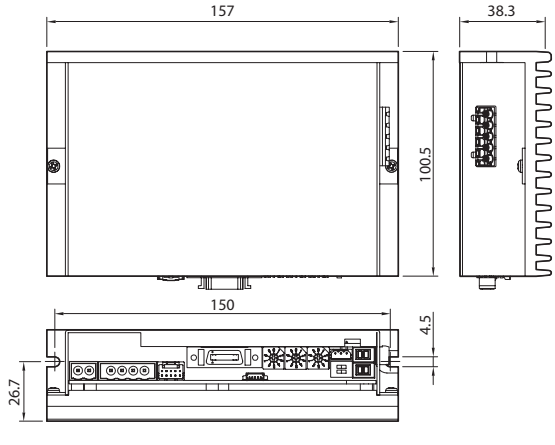
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEPII-CL-42S-BK	BM-42S-BK	EzT2-CL-42S
Ezi-STEPII-CL-42M-BK	BM-42M-BK	EzT2-CL-42M
Ezi-STEPII-CL-42L-BK	BM-42L-BK	EzT2-CL-42L
Ezi-STEPII-CL-42XL-BK	BM-42XL-BK	EzT2-CL-42XL
Ezi-STEPII-CL-56S-BK	BM-56S-BK	EzT2-CL-56S
Ezi-STEPII-CL-56M-BK	BM-56M-BK	EzT2-CL-56M
Ezi-STEPII-CL-56L-BK	BM-56L-BK	EzT2-CL-56L
Ezi-STEPII-CL-60S-BK	BM-60S-BK	EzT2-CL-60S
Ezi-STEPII-CL-60M-BK	BM-60M-BK	EzT2-CL-60M
Ezi-STEPII-CL-60L-BK	BM-60L-BK	EzT2-CL-60L
Ezi-STEPII-CL-86M-BK	BM-86M-BK	EzT2-CL-86M
Ezi-STEPII-CL-86L-BK	BM-86L-BK	EzT2-CL-86L
Ezi-STEPII-CL-86XL-BK	BM-86XL-BK	EzT2-CL-86XL

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series	BM-86 series
Drive Model		EzT2-CL-20 series	EzT2-CL-28 series	EzT2-CL-42 series	EzT2-CL-56 series	EzT2-CL-60 series	EzT2-CL-86 series
Input Voltage		DC24V±10%					DC40~70V
Control Method		Bipolar PWM drive with 32bit MCU					
Current Consumption		Max. 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Rotation Speed	0~3,000r/min					
	Resolution	Configurable Resolution [P/R] 500 1,000 1,600 2,000 3,200 3,600 4,000 5,000 6,400 8,000 10,000 20,000 25,000 36,000 40,000 50,000 (Selectable by parameter)					
	Error Types	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error					
	LED Display	Power Status, Alarm Status, RUN Status, STEP ON Status					
CC-Link	Station Type	Remote Device Station					
	No. of Occupied Station	1~2 Station					
	Max. No. of Connectable Axis	· 1 Station Occupied: 42 axis · 2 Station Occupied: 32 axis					
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 7 programmable inputs (Photocoupler Input)					
	Output Signals	6 programmable outputs (Photocoupler Output), 1 Brake output					

Dimensions of Drive [mm]





※ 86mm motor drive (EzT2-CL-86 series)

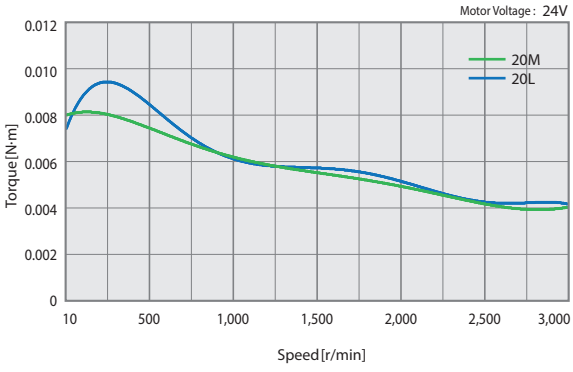
● Specifications of Motor

MODEL				BM-20 series		BM-28 series			BM-42 series			
			UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
MAXIMUM HOLDING TORQUE			N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA			g·cm^2	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS			kg	0.053	0.078	0.115	0.174	0.202	0.238	0.303	0.374	0.508
LENGTH(L)			mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	18	18	30	30	30	22	22	22	22
		8mm		30	30	38	38	38	26	26	26	26
		13mm		–	–	53	53	53	33	33	33	33
		18mm		–	–	–	–	–	46	46	46	46
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

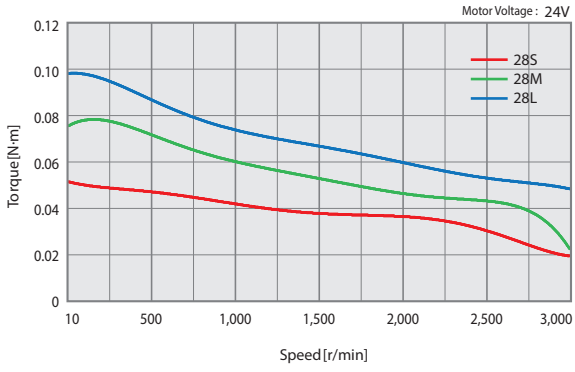
MODEL				BM-56 series			BM-60 series			BM-86 series		
			UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD			–	Bipolar								
NUMBER OF PHASES			–	2 Phase								
CURRENT per PHASE			A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
MAXIMUM HOLDING TORQUE			N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA			g·cm^2	180	280	520	240	490	690	1800	3600	5400
WEIGHTS			kg	0.548	0.726	1.159	0.616	0.793	1.349	2.275	3.808	5.330
LENGTH(L)			mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE RADIAL LOAD	DISTANCE FROM END OF SHAFT	3mm	N	52	52	52	70	70	70	270	270	270
		8mm		65	65	65	87	87	87	300	300	300
		13mm		85	85	85	114	114	114	350	350	350
		18mm		123	123	123	165	165	165	400	400	400
PERMISSIBLE AXIAL LOAD			N	Lower than Motor Unit's Weight								
INSULATION RESISTANCE			MΩ	Min. 100(When measured with a DC500V insulation resistance meter)								
INSULATION CLASS			–	CLASS B(130℃)								
OPERATING TEMPERATURE			℃	0 ~ 55								

Torque Characteristics of Motor

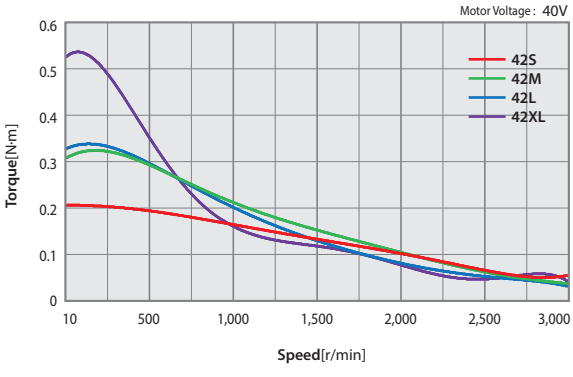
Ezi-STEP II-CL-20 series



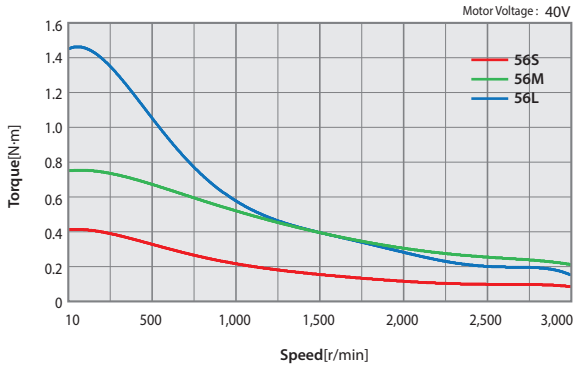
Ezi-STEP II-CL-28 series



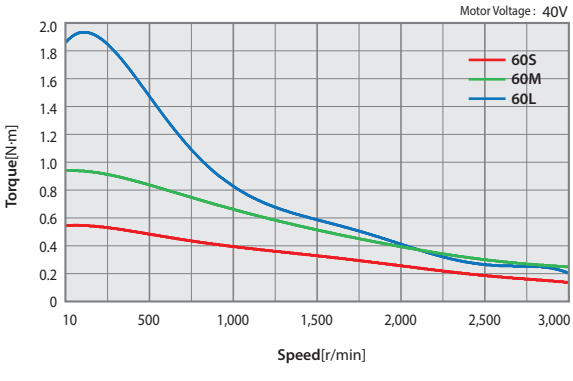
Ezi-STEP II-CL-42 series



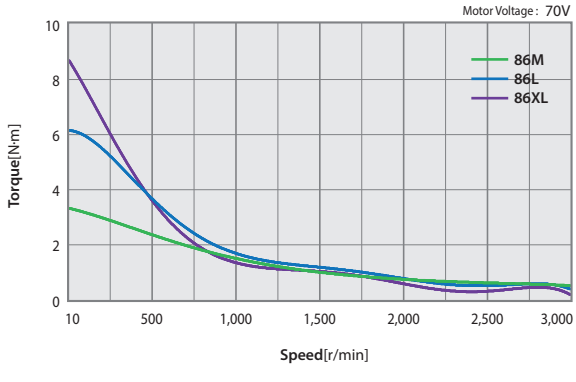
Ezi-STEP II-CL-56 series



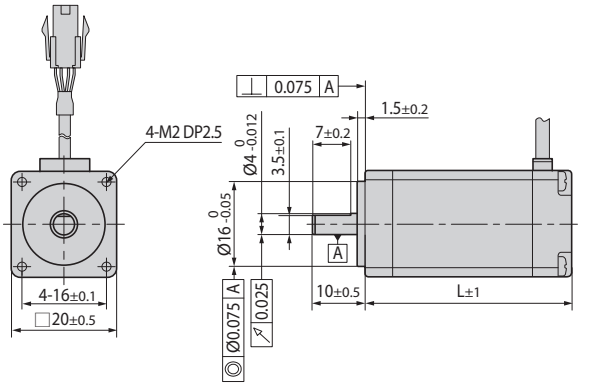
Ezi-STEP II-CL-60 series



Ezi-STEP II-CL-86 series

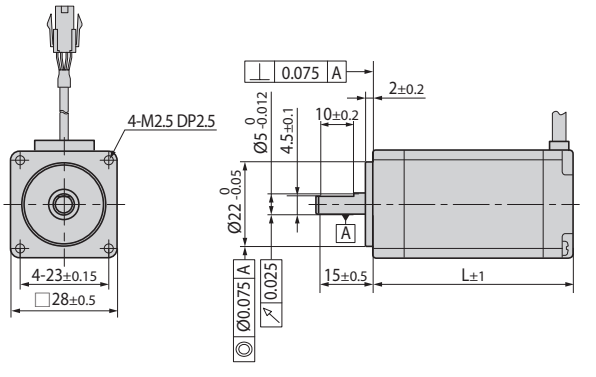


Dimensions of Motor [mm]



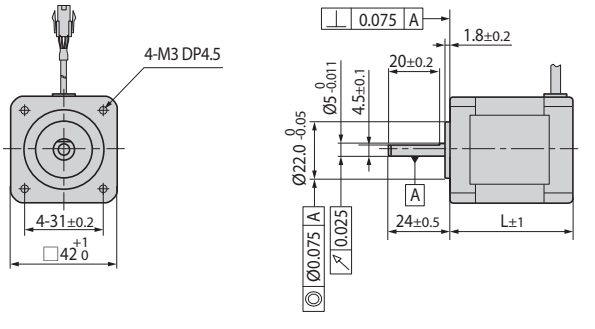
20mm

Model name	Length(L)
BM-20M	28
BM-20L	38



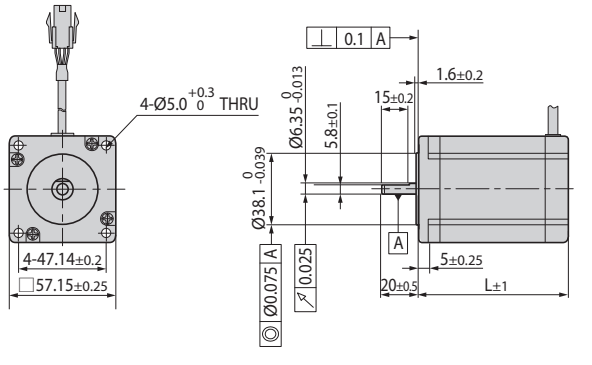
28mm

Model name	Length(L)
BM-28S	32
BM-28M	45
BM-28L	50



42mm

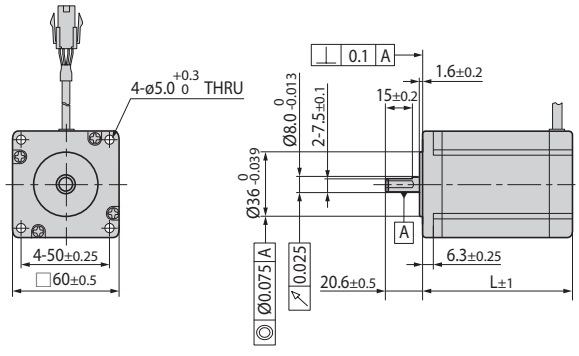
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

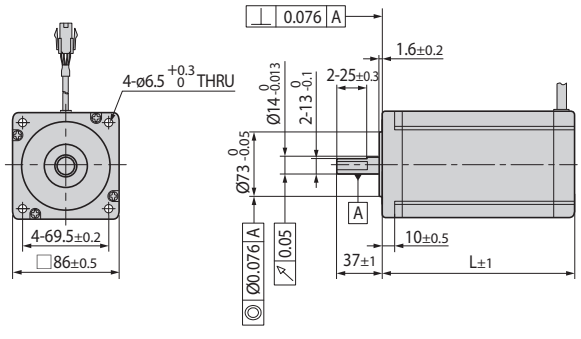
Model name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor [mm]



60mm

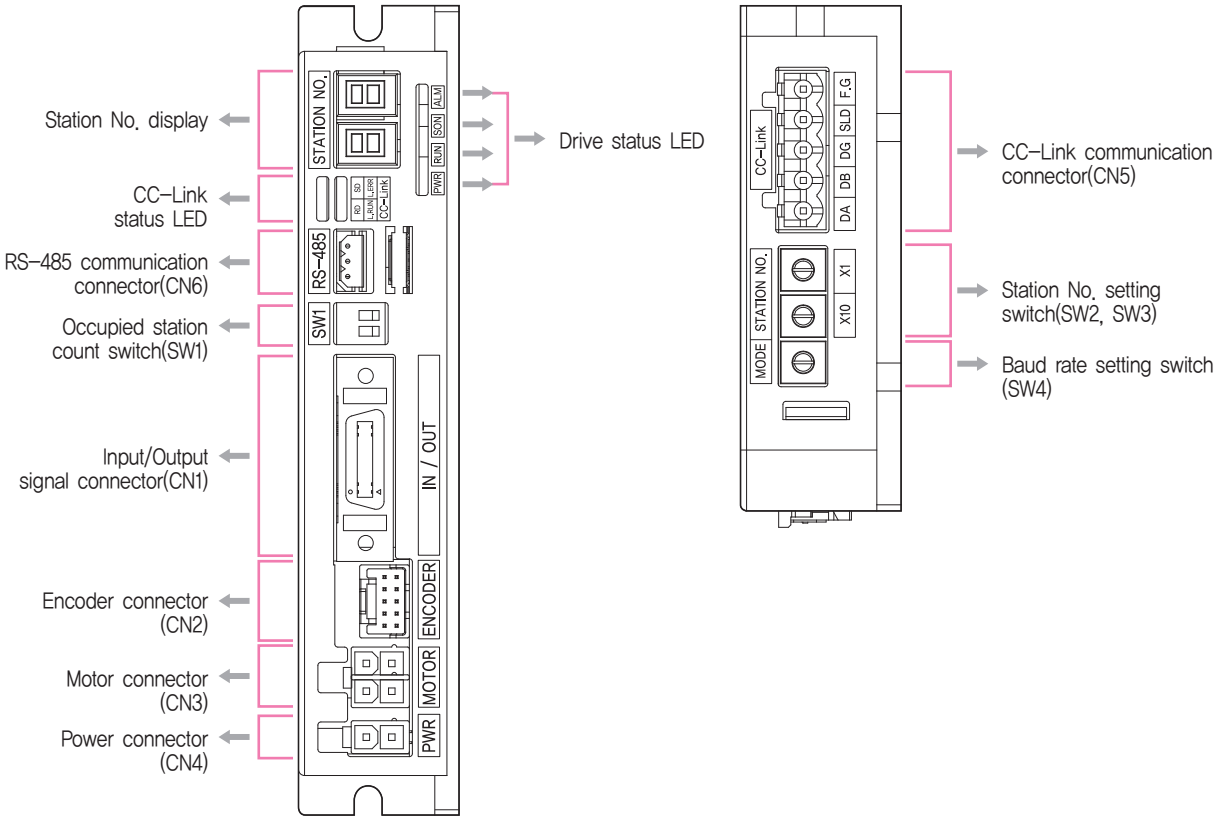
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85



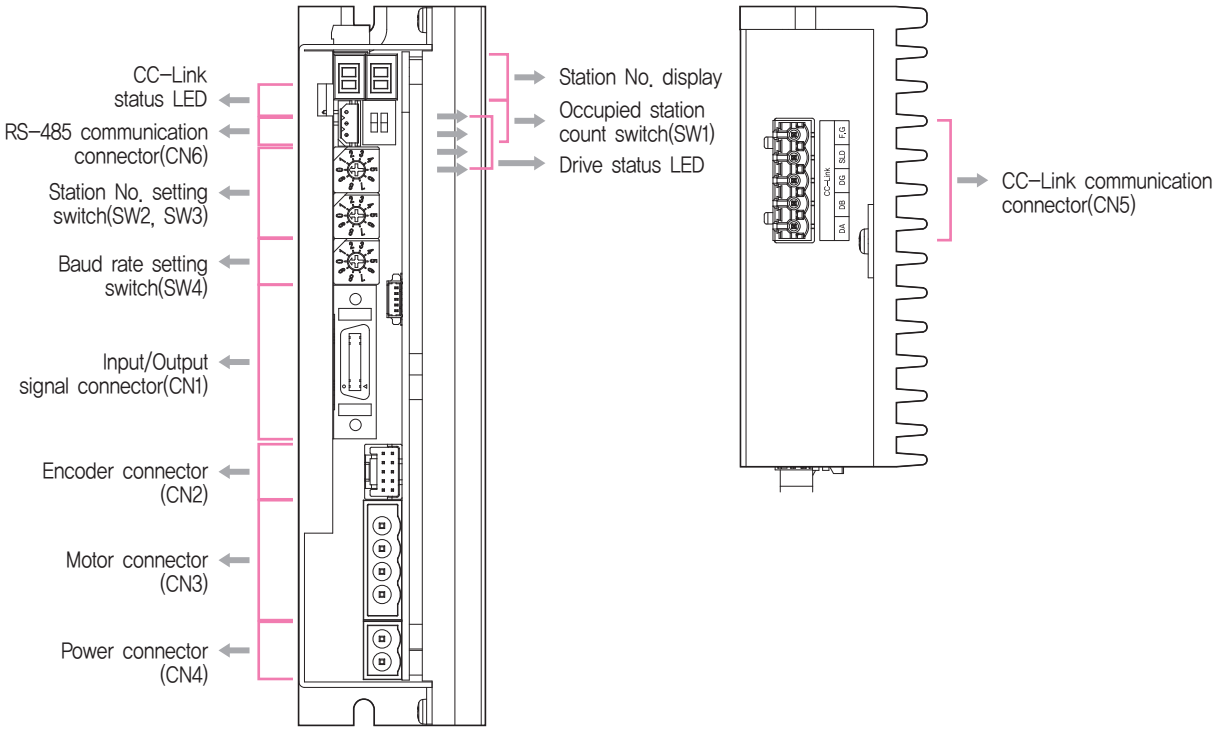
86mm

Model name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

● Settings and Operation

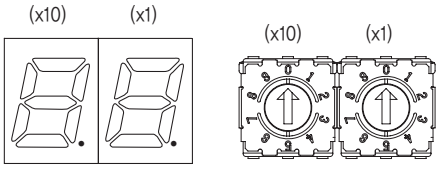


◆ 86mm Motor Drive (EzT2-CL-86 Series)



1. Station No. Display and Setting Switch(SW2, SW3)

These switches set the station number of the device station in decimal number. SW2 sets the units digit (X1) and SW3 sets the tens digit (X10).



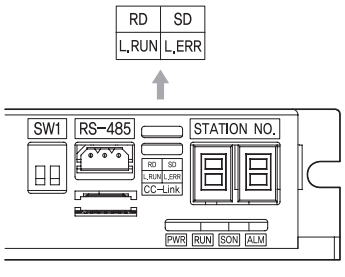
2. CC-Link Status LED

Name	Color	Status	Description
L.RUN	Green	OFF	Power OFF or Data Link is not running
		ON	Data Link is running

Name	Color	Status	Description
L.ERR	Red	OFF	No Error
		ON	Data Link Error
		Flashing at regular intervals	Communication Error
		Flashing at irregular intervals	CRC Error or Network Cable Error

Name	Color	Status	Description
RD	Orange	OFF	Not Receiving Data
		ON	Receiving Data

Name	Color	Status	Description
SD	Yellow	OFF	Not Transmitting Data
		ON	Transmitting Data



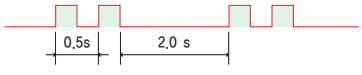
3. Drive Status LED

Name	Color	Function	Description
PWR	Green	Power Input Indication	LED is turned ON when power is applied.
RUN	Yellow	Motor running indication	LED is turned ON while motor is rotating
SON	Orange	STEP ON / OFF Indication	STEP ON: Lights ON, STEP OFF: Lights OFF
ALM	Red	Alarm Indication	LED blinks when an error occurs.

◆ List of error types by the number of alarm LED blinking

No.	Error Code *3	Error Type	Causes
1	E-□01	Over Current Error	The current through power devices in drive exceeds the limit. *1
2	E-□02	Over Speed Error	The motor speed exceeds 3,000r/min.
5	E-□05	Over Temperature Error	Internal temperature of the drive exceeds 85℃.
6	E-□06	Over Regenerative Voltage Error	Back-EMF is higher than limit value. *2
7	E-□07	Motor Connect Error	There is a problem with the connection between the drive and the motor.
12	E-□0C	ROM Error	Error occurs in parameter storage device(ROM).

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of Station No.
※ Please refer to user Manual for the details of protection functions.
※ □ refers to CC-Link error code.



Alarm LED flash
(e.g., Over Speed Error)

◆ CC-Link Error Code

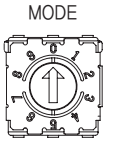
Error Code	Description
E-0□□.	Operation is normal.
E-1□□.	Station No. switch setting is incorrect.
E-2□□.	Baud rate setting is incorrect.
E-3□□.	Station No. is changed during the operation.
E-4□□.	Baud rate is changed during the operation.
E-5□□.	CRC error
E-6□□.	Timeout error occurred during the communication with the master.
E-7□□.	Communication with master is disconnected.
E-8□□.	CC-Link Processor Error 1
E-9□□.	CC-Link Processor Error 2
E-A□□.	Data link error
E-B□□.	Remote I/O error
E-C□□.	Remote register error

※ □□ refers to drive alarm status.

4. Baud Rate Setting Switch(SW4)

This switch sets the baud rate.
('MODE' is marked on the case.)

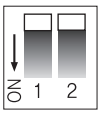
MODE	Baud Rate
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
5	NONE
6	NONE
7	NONE
8	NONE
9	NONE



5. Occupied Station Count Switch(SW1)

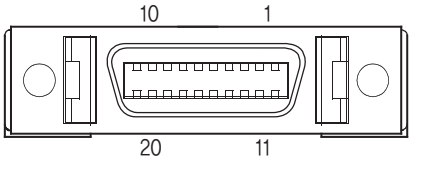
This switch sets the number of occupied stations.

SW1.1	SW1.2	No. of Occupied Station
OFF	OFF	1 Station Occupied
ON	OFF	2 Station Occupied



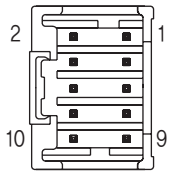
6. Input/Output Signal Connector(CN1)

No.	Function	I/O
1	LIMIT+	Input
2	LIMIT-	Input
3	ORIGIN	Input
4	Digital In1	Input
5	Digital In2	Input
6	Digital In3	Input
7	Digital In4	Input
8	Digital In5	Input
9	Digital In6	Input
10	Digital In7	Input
11	Digital Out1	Output
12	Digital Out2	Output
13	Digital Out3	Output
14	Digital Out4	Output
15	Digital Out5	Output
16	Digital Out6	Output
17	BRAKE+	Output
18	BRAKE-	Output
19	EXT_GND	Input
20	EXT_DC24V	Input



7. Encoder Connector(CN2)

No.	Function	I/O
1	A+	Input
2	A−	Input
3	B+	Input
4	B−	Input
5	Z+	Input
6	Z−	Input
7	DC5V	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

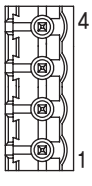


8. Motor Connector(CN3)

No.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	$\overline{B}$ Phase	Output



No.	Function	I/O
1	$\overline{B}$ Phase	Output
2	B Phase	Output
3	$\overline{A}$ Phase	Output
4	A Phase	Output



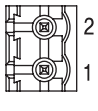
※ 86mm Motor Drive

9. Power Connector(CN4)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



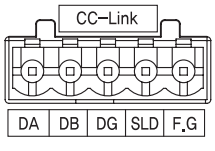
No.	Function	I/O
1	GND	Input
2	DC40~70V	Input



※ 86mm Motor Drive

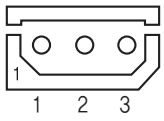
10. CC-Link Communication Connector(CN5)

No.	Function
1	DA
2	DB
3	DG
4	SLD
5	F.GND

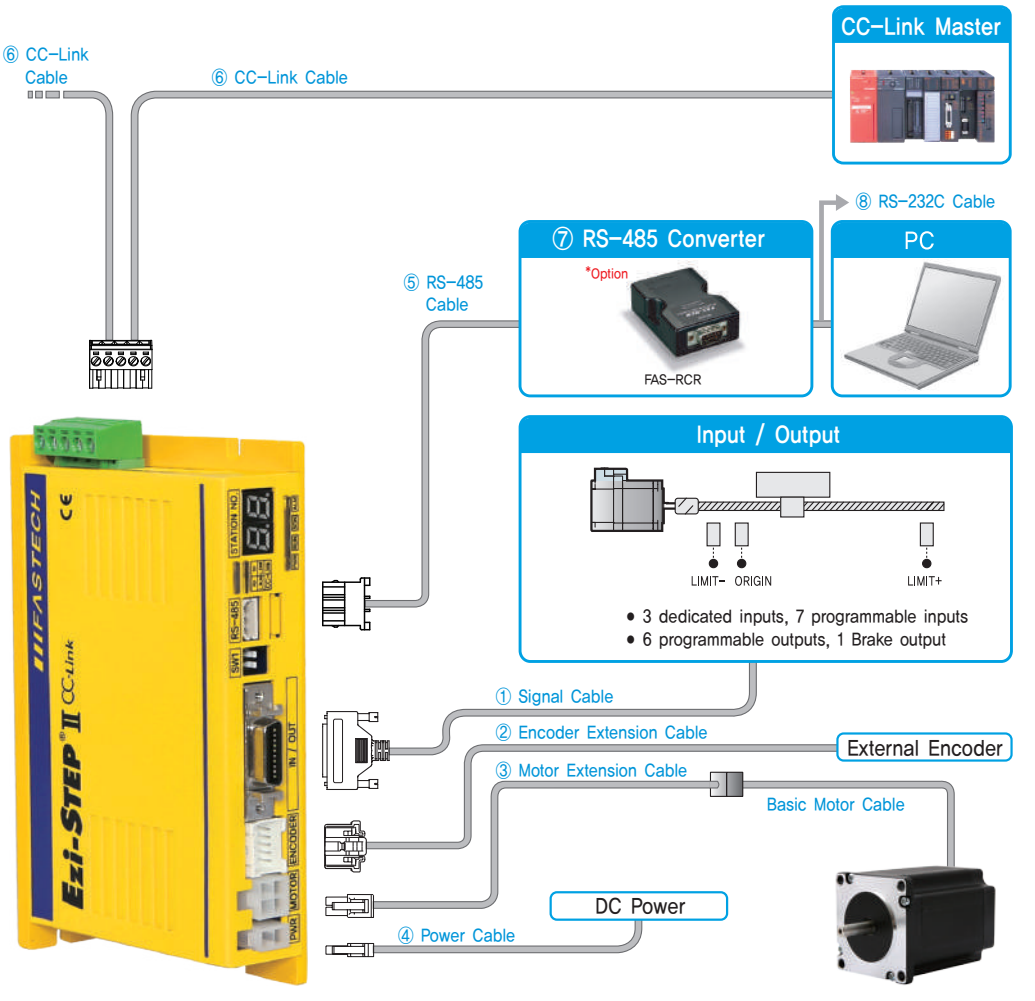


11. RS-485 Communication Connector(CN6)

No.	Function
1	Data+
2	Data−
3	GND



System Configuration



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ CC-Link Cable	100m	
⑥ RS-485 Cable	2m	
Basic Motor Cable	0.3m (Basic Length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Housing	5557-02R	MOLEX
		Terminal	5556T	
CC-Link (CN5)		Terminal Block	AK950-5	PTR
RS-485 (CN6)		Housing	5264-03	MOLEX
		Terminal	5263PBT	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II CC-Link drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II CC-Link drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II CC-Link drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVO-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVO-M-002F	2		
	CSVO-M-003F	3		
	CSVO-M-005F	5		
	CSVO-M-001M	1	Robot Cable	
	CSVO-M-002M	2		
	CSVO-M-003M	3		
	CSVO-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II CC-Link drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVO-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVO-P-002F	2		
	CSVO-P-001M	1	Robot Cable	
	CSVO-P-002M	2		

⑤ RS-485 Cable

Purpose	Part Number	Length [m]	
RS-485 Connection	CGNR-RT-001F	1	Normal Cable
	CGNR-RT-002F	2	
	CGNR-RT-003F	3	
	CGNR-RT-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

⑥ CC-Link Cable

It is the cable to connect Ezi-STEP II CC-Link drive and the CC-Link system.

* This cable is not provided by FASTECH. It is recommended to use the standard cable specified by the CC-Link Association.

⑦ RS-485 Converter

Purpose	Part Number	Specifications		Product Image
RS-232C to RS-485 Converter	FAS-RCR	Baud Rate	Max. 115.2kbps	
		Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km	
		Connector	RS-232C: DB9 Female RS-485: RJ-45	
		Dimensions	50X75X23mm	
		Weight	38g	
		Power	Power supplied by RS-232C (DC5~24V external power can be applied)	

⑧ RS-232C Cable

These are the cables to connect FAS-RCR and RS-232C port of the host controller.

Purpose	Part Number	Length [m]	Cable Type
FAS-RCR – RS-232C Connection	CGNR-C-002F	2	Normal Cable
	CGNR-C-003F	3	
	CGNR-C-005F	5	

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II CC-Link drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

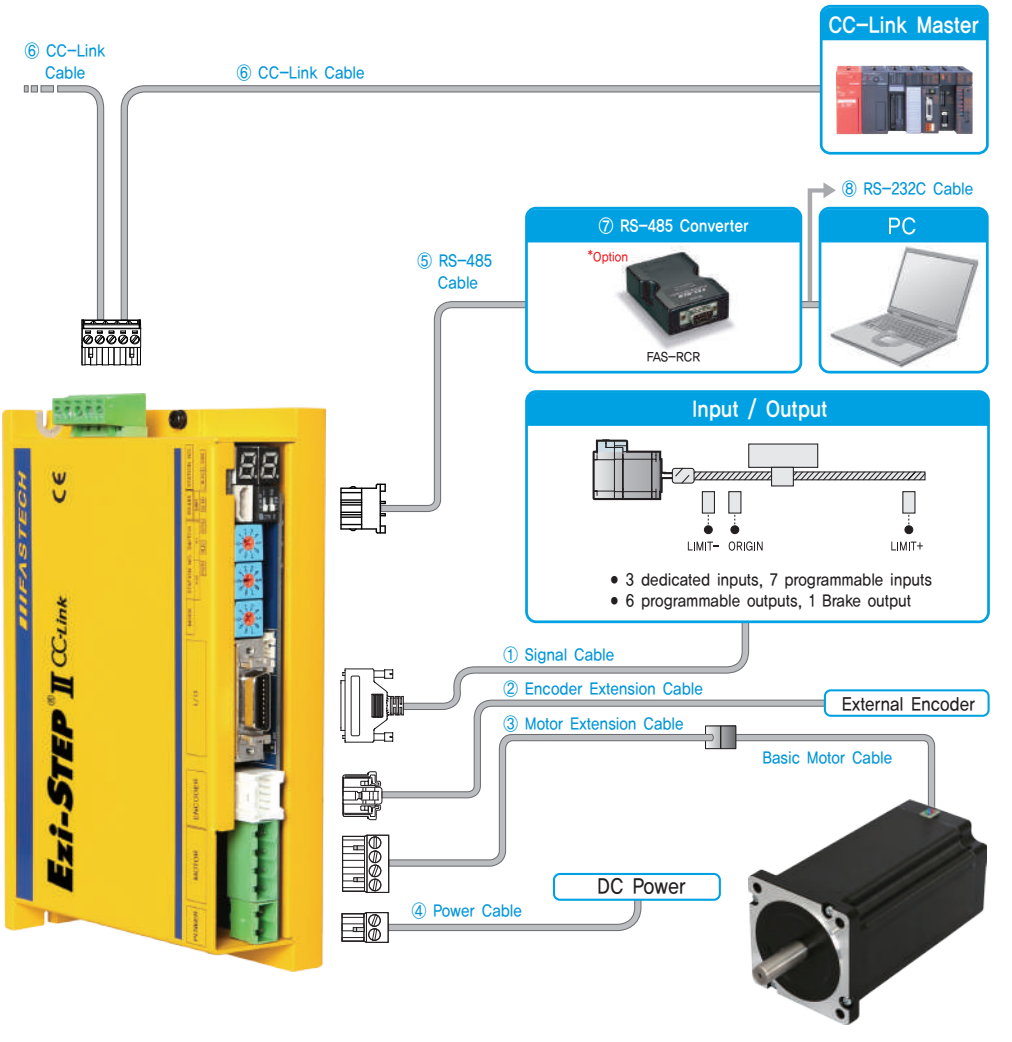
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-STEP II CC-Link and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

System Configuration [86mm Motor Drive]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ CC-Link Cable	100m	
⑥ RS-485 Cable	2m	
Basic Motor Cable	0.3m (Basic Length)	Basic cables are attached to motors.

1. Accessories

Connectors

These are connector specifications for drive cabling.

Purpose		Item	Part Number	Manufacturer
Signal (CN1)		Connector	10120-3000PE	3M
		Connector Cover	10320-52A0-008	
Encoder	Drive Side (CN2)	Housing	51353-1000	MOLEX
		Terminal	56134-9000	
Motor	Drive Side (CN3)	Terminal Block	AK950-4	PTR
	Motor Side	Housing	5557-04R	MOLEX
		Terminal	5556T	
Power (CN4)		Terminal Block	AK950-2	PTR
CC-Link (CN5)		Terminal Block	AK950-5	PTR
RS-485 (CN6)		Housing	5264-03	MOLEX
		Terminal	5263PBT	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Signal Cable

These are the cables to connect Ezi-STEP II CC-Link [86mm motor] drive and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – I/O Device Connection	CSVN-S-001F	1	Normal Cable	Maximum Length: 20m
	CSVN-S-002F	2		
	CSVN-S-003F	3		
	CSVN-S-005F	5		
	CSVN-S-001M	1	Robot Cable	
	CSVN-S-002M	2		
	CSVN-S-003M	3		
	CSVN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Encoder Extension Cable

These are the cables to connect Ezi-STEP II CC-Link [86mm motor] drive and the encoder.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – External Encoder Connection	CTPR-E-001F	1	Normal Cable	Maximum Length: 20m
	CTPR-E-002F	2		
	CTPR-E-003F	3		
	CTPR-E-005F	5		
	CTPR-E-001M	1	Robot Cable	
	CTPR-E-002M	2		
	CTPR-E-003M	3		
	CTPR-E-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

③ Motor Extension Cable

These are the cables to connect Ezi-STEP II CC-Link [86mm motor] drive and the motor.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Basic Motor Cable Connection	CSVP-M-001F	1	Normal Cable	Maximum Length: 20m
	CSVP-M-002F	2		
	CSVP-M-003F	3		
	CSVP-M-005F	5		
	CSVP-M-001M	1	Robot Cable	
	CSVP-M-002M	2		
	CSVP-M-003M	3		
	CSVP-M-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

④ Drive Power Cable

These are the cables to connect Ezi-STEP II CC-Link [86mm motor] drive and the power.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Power Connection	CSVP-P-001F	1	Normal Cable	Maximum Length: 2m
	CSVP-P-002F	2		
	CSVP-P-001M	1	Robot Cable	
	CSVP-P-002M	2		

⑤ RS-485 Cable

Purpose	Part Number	Length [m]	Remarks
RS-485 Connection	CGNR-RT-001F	1	Normal Cable
	CGNR-RT-002F	2	
	CGNR-RT-003F	3	
	CGNR-RT-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

⑥ CC-Link Cable

It is the cable to connect Ezi-STEP II CC-Link [86mm motor] drive and the CC-Link system.

* This cable is not provided by FASTECH. It is recommended to use the standard cable specified by the CC-Link Association.

⑦ RS-485 Converter

Purpose	Part Number	Specifications		Product Image
RS-232C to RS-485 Converter	FAS-RCR	Baud Rate	Max. 115.2kbps	
		Comm. Distance	RS-232C: Max. 15m RS-485: Max. 1.2km	
		Connector	RS-232C: DB9 Female RS-485: RJ-45	
		Dimensions	50X75X23mm	
		Weight	38g	
		Power	Power supplied by RS-232C (DC5~24V external power can be applied)	

⑧ RS-232C Cable

These are the cables to connect FAS-RCR and RS-232C port of the host controller.

Purpose	Part Number	Length [m]	Cable Type
FAS-RCR – RS-232C Connection	CGNR-C-002F	2	Normal Cable
	CGNR-C-003F	3	
	CGNR-C-005F	5	

[Option] TB-Plus Interface Board

This is an interface board to connect Ezi-STEP II CC-Link [86mm motor] drive and I/O signals more conveniently.

Purpose	Part Number	Product Image
Drive – I/O signal Connection Board	TB-Plus	

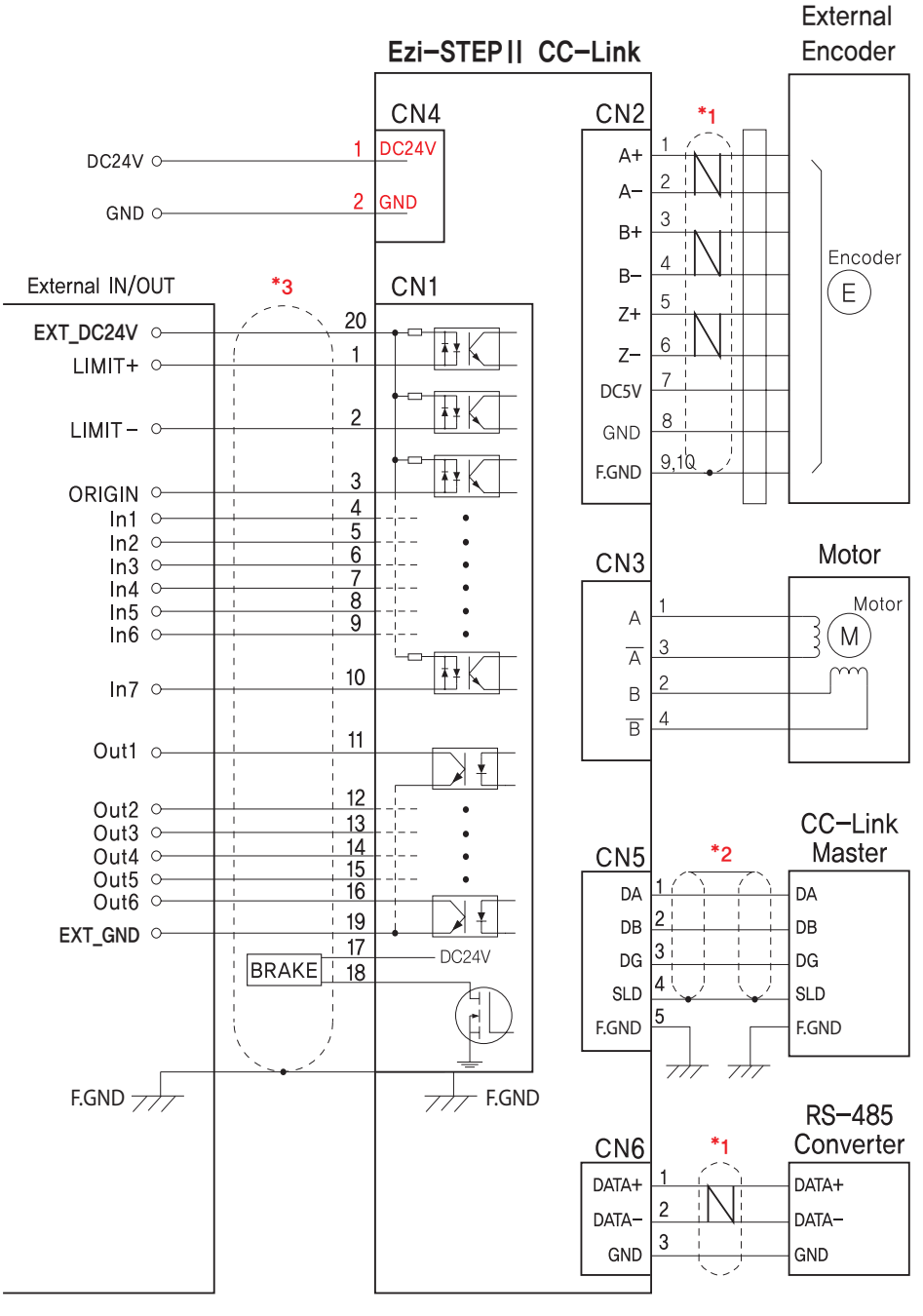
[Option] TB-Plus Interface Cable

These are the cables to connect Ezi-STEP II CC-Link [86mm motor] and TB-Plus interface board.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Drive – Interface(TB-Plus) Connection	CIFN-S-001F	1	Normal Cable	Maximum Length: 20m
	CIFN-S-002F	2		
	CIFN-S-003F	3		
	CIFN-S-005F	5		
	CIFN-S-001M	1	Robot Cable	
	CIFN-S-002M	2		
	CIFN-S-003M	3		
	CIFN-S-005M	5		

* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

External Wiring Diagram



* 1) Shielded Twisted Pair Cable

* 2) CC-Link Cable

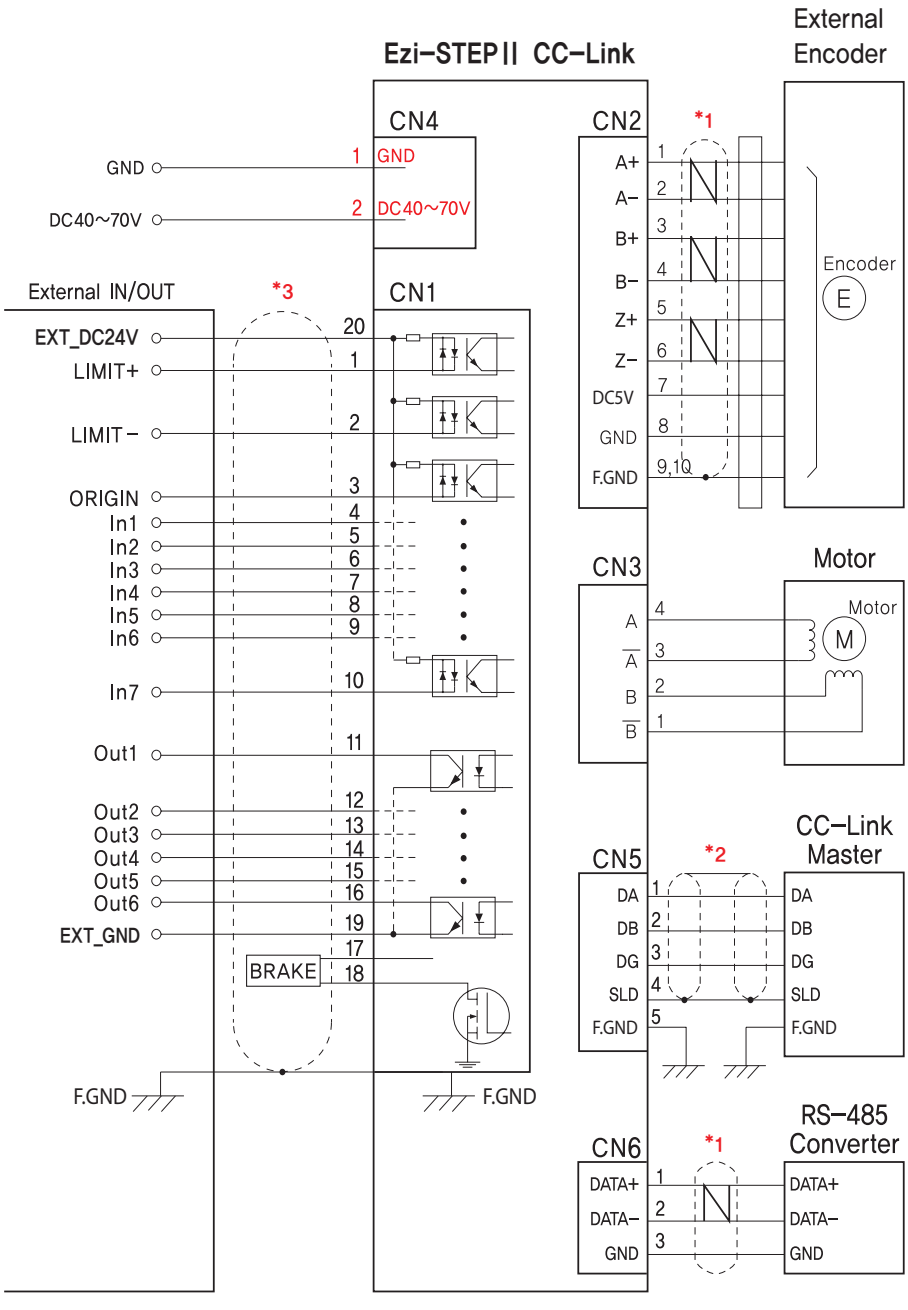
* 3) Shield Cable

※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [86mm Motor Drive]



*** 1)** Shielded Twisted Pair Cable

*** 2)** CC-Link Cable

*** 3)** Shield Cable

※ When connecting I/O cable between controller and drive, please turn off the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

FASTECH_

Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Brake
Gearbox

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®



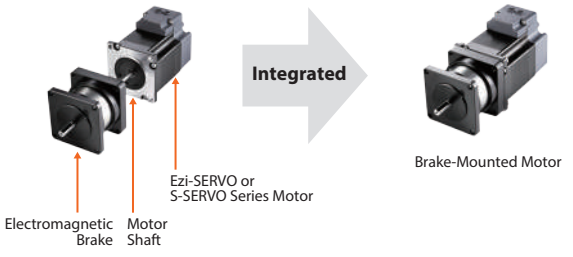
OPTION Brake

Overall Table of **Brake**

Name of Product	Motor Brake Size			
	42mm	56mm	60mm	86mm
Ezi-SERVO ST	■	■	■	■
Ezi-SERVO MINI	■			
Ezi-SERVO II EtherCAT	■	■	■	■
Ezi-SERVO II EtherCAT TO	■	■	■	
Ezi-SERVO II EtherCAT MINI	■	■	■	
Ezi-SERVO II EtherCAT 4X	■	■	■	
Ezi-SERVO II EtherCAT ALL	■	■	■	■
Ezi-SERVO II Plus-E	■	■	■	■
Ezi-SERVO II Plus-E MINI	■	■	■	
Ezi-SERVO II Plus-E ALL	■	■	■	■
Ezi-SERVO II CC-Link	■	■	■	■
Ezi-SERVO II BT	■	■	■	
Ezi-STEP ST	■	■	■	■
Ezi-STEP MINI	■			
Ezi-STEP BT	■	■		■
Ezi-STEP II EtherCAT	■	■	■	■
Ezi-STEP II EtherCAT MINI	■	■	■	
Ezi-STEP II EtherCAT 4X	■	■	■	
Ezi-STEP II Plus-E	■	■	■	■
Ezi-STEP II Plus-E MINI	■	■	■	
Ezi-STEP II Plus-E ALL	■	■	■	■
Ezi-STEP II CC-Link	■	■	■	■

1 Characteristic

Ezi-SERVO BK series, FASTECH's new unit product, maximizes User's operational convenience with integration between Ezi-SERVO series of stepping motor and non-excitation electromagnetic brake that has big friction of brake torque and rapid brake timing.



2 Apply non-excitation electromagnetic brake

Different from excitation type of brake that only generates braking-power by electromagnetic-power when power supplies at brake and loses brake power when power cutoff, Ezi-SERVO BK series adopts non-excitation electromagnetic brake that immediately generate friction of brake torque by inner spring's binding post-tensioning force once power cut off. So Ezi-SERVO BK series enables complete stopping of stepping motor and can forestall risks with brake's mechanical braking-power under emergency situation as like sudden blackout in machine operation.

3 Automatic Braking during power cutoff or blackout

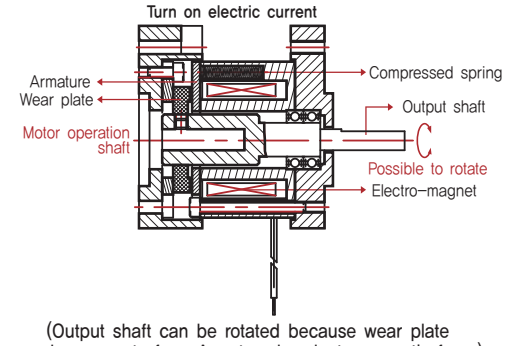
Ezi-SERVO BK series, Unit product, integrated between high performance of non-excitation electromagnetic brake and step motor that enables immediate braking to keep holding point and prevent falling under power cut off or blackout during operation so customer can be flexible in responding to sudden situation.

4 Long Durability

Brake integrated into Ezi-SERVO BK series applies long durability of brake wear plate(Brake Lining) so it guarantees high durability and long life cycle.

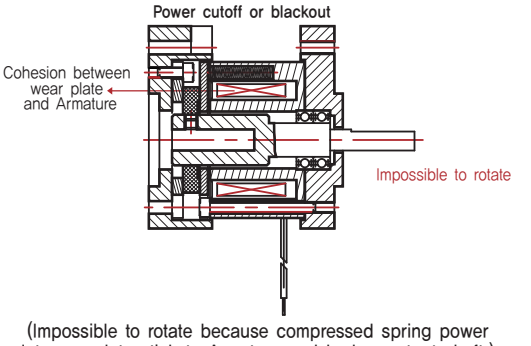
5 Rapid Brake Timing

Ezi-SERVO BK series, non-excitation electromagneic brake, enables rapid braking because loaded spring closed brake can quicken rising of brake torque.



(Output shaft can be rotated because wear plate can be separate from Armature by electromagnetic force)

POWER OFF



(Impossible to rotate because compressed spring power let wear plate stick to Armature and brakes output shaft.)

● Permissible Radial & Axial Load

Motor Size	Allowable Overhung Load [N] Based on Center of Shaft				Allowable Thrust Load [N]
	3	8	13	18	
42mm	22	26	33	46	Must be lower than Unit's weight
56mm	52	65	85	123	
60mm	70	87	114	165	
86mm	270	300	350	400	

1. Drive Specification and Size

Please refer to the individual catalogue to check drive specification and size.

2. System Configuration and Setting/Operation

Please refer to the individual catalogue to check series' system configuration, Name and Function.

3. External Wiring Diagram

Please refer to the individual catalogue to check series' external wiring diagram.

● Standard Combination

◆ In Case of Ezi-SERVO series

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-□-□-□-BK	EzM-□-□-BK	Not Changed

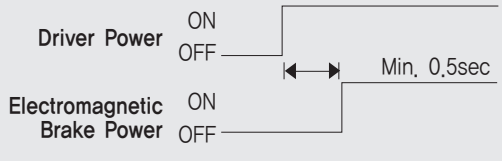
※ It can be added BK at the end of model name of each series. (The name of drive model is not changed.)

ex) The Part numbering method for in case of brake is adopted on 42mm of Ezi-SERVO ST series.

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-BK	EzM-42S-A-BK	EzS-PD-42S-A

● Brake Operation Timing Chart

Please release electromagnetic brake at least 0.5 sec later power input to the drive. If not, work can be falling



- Please use Cable at least thicker than AWG24(0.2m²) when connect electromagnetic brake and power.
- Electromagnetic Brake is non-polar so there is no polarity in Brake Cable
- Over input voltage can induce high temperature of electro-magnetic brake and motor so it can be main reason of failure
- Reversely too low input voltage will cause non-operation of electromagnetic brake.

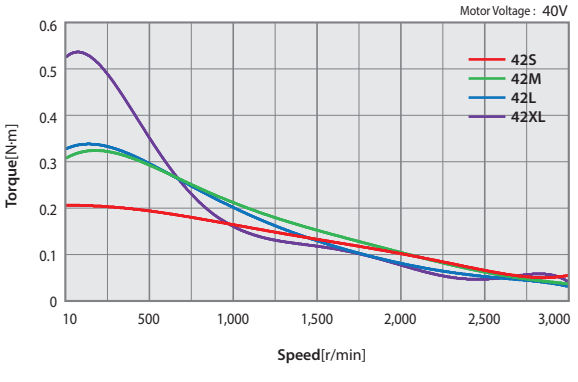
● Specifications of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT
Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link
Ezi-STEP MPB	Ezi-STEP MINI	Ezi-STEP BT	Ezi-STEP II EtherCAT
Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI
Ezi-STEP II Plus-E ALL	Ezi-STEP II CC-Link		

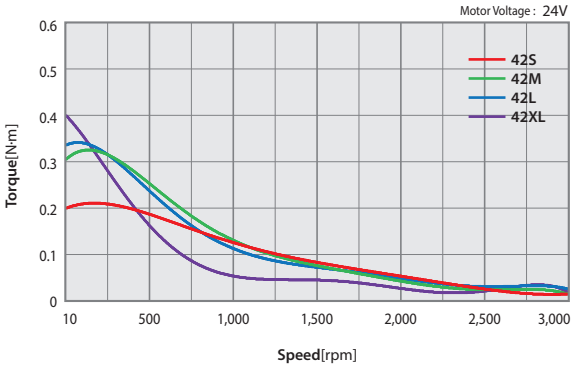
Model	Unit	42			
		42S	42M	42L	42XL
Electromagnetic Brake	-	Non-Excitation Type			
Input Voltage	V	DC24V±10%			
Rated Current	A	0.2			
Power Consumption	W	5			
Friction Torque	N·m	0.2			

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

● Torque Charcteristics of Motor with Brake [42mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO II EtherCAT
Ezi-SERVO II EtherCAT TO	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	



Applicable Model	
Ezi-SERVO MINI	Ezi-SERVO II BT
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI
Ezi-SERVO II Plus-E ALL	Ezi-STEP MINI
Ezi-STEP BT	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E MINI
Ezi-STEP II Plus-E ALL	

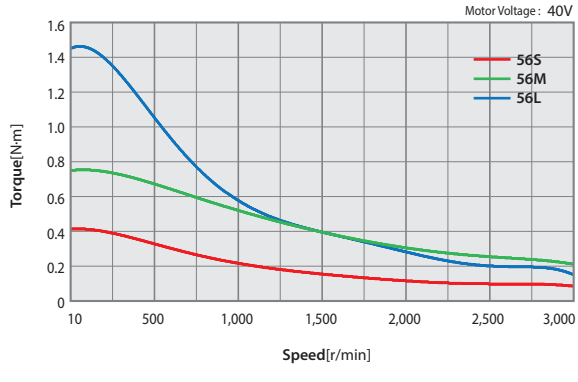
● Specifications of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP BT	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X
Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II Plus-E ALL	Ezi-STEP II CC-Link

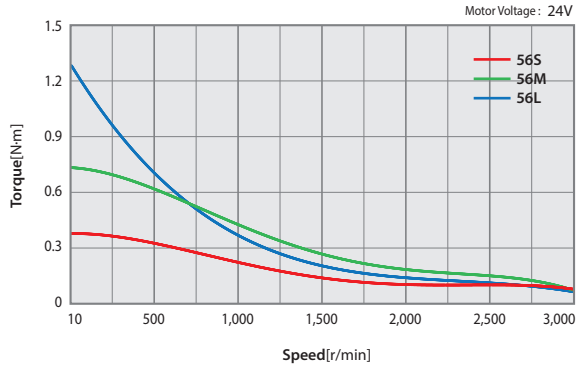
Model	Unit	56		
		56S	56M	56L
Electromagnetic Brake	-	Non-Excitation Type		
Input Voltage	V	DC24V±10%		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

● Torque Charcteristics of Motor with Brake [56mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO II EtherCAT
Ezi-SERVO II EtherCAT TO	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	



Applicable Model	
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI
Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL
Ezi-STEP BT	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E MINI
Ezi-STEP II Plus-E ALL	

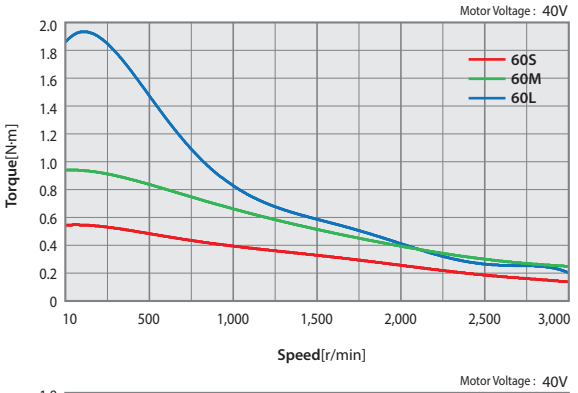
● Specifications of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E
Ezi-STEP II Plus-E MINI	Ezi-STEP II Plus-E ALL	Ezi-STEP II CC-Link	

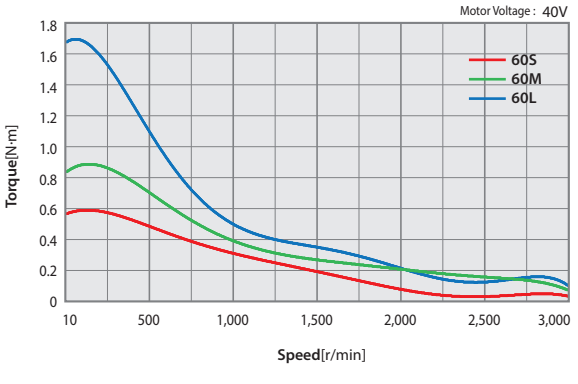
Model	Unit	60		
		60S	60M	60L
Electromagnetic Brake	-	Non-Excitation Type		
Input Voltage	V	DC24V±10%		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

● Torque Charcteristics of Motor with Brake [60mm]



Applicable Model	
Ezi-SERVO ST	Ezi-SERVO II EtherCAT
Ezi-SERVO II EtherCAT TO	Ezi-SERVO II Plus-E
Ezi-SERVO II CC-Link	Ezi-STEP MPB
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	



Applicable Model	
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI
Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL
Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X
Ezi-STEP II Plus-E MINI	Ezi-STEP II Plus-E ALL

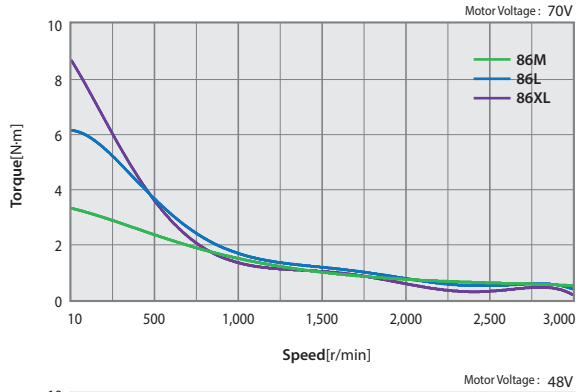
● Specifications of Motor with Brake [86mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E
Ezi-SERVO II Plus-E ALL	Ezi-SERVO II CC-Link	Ezi-STEP HPB	Ezi-STEP BT
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E ALL	Ezi-STEP II CC-Link

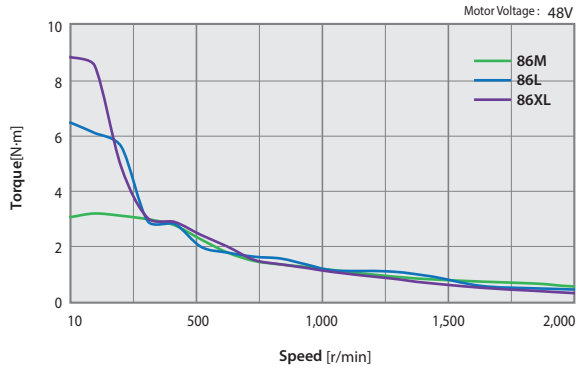
Model	Unit	86		
		86M	86L	86XL
Electromagnetic Brake	–	Non-Excitation Type		
Input Voltage	V	DC24V±10%		
Rated Current	A	0.54		
Power Consumption	W	13.0		
Friction Torque	N·m	4.0		

※ Electromagnetic brake will not be using for braking but for holding position when power-off.

● Torque Charcteristics of Motor with Brake [86mm]



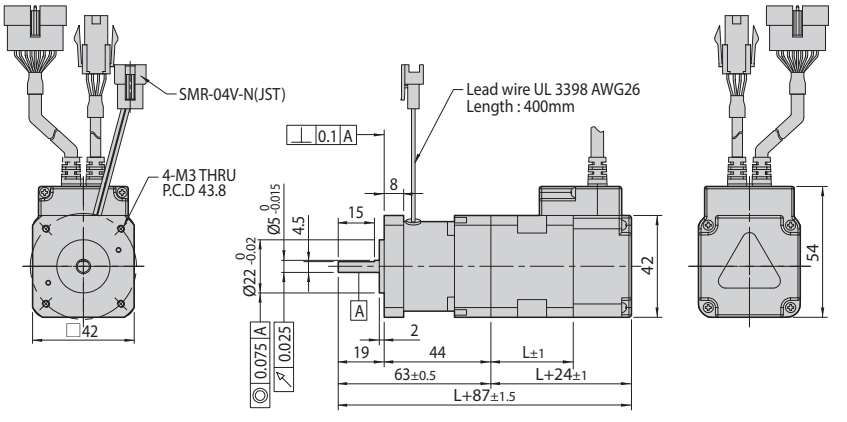
Applicable Model	
Ezi-SERVO ST	Ezi-SERVO II EtherCAT
Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link
Ezi-STEP HPB	Ezi-STEP BT
Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E
Ezi-STEP II CC-Link	



Applicable Model	
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL
Ezi-STEP II Plus-E ALL	

● Dimensions of Motor with Brake [42mm]

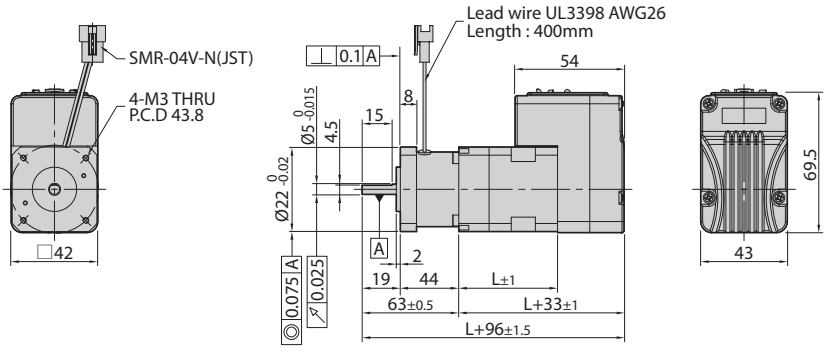
Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI		



42mm

Model Name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

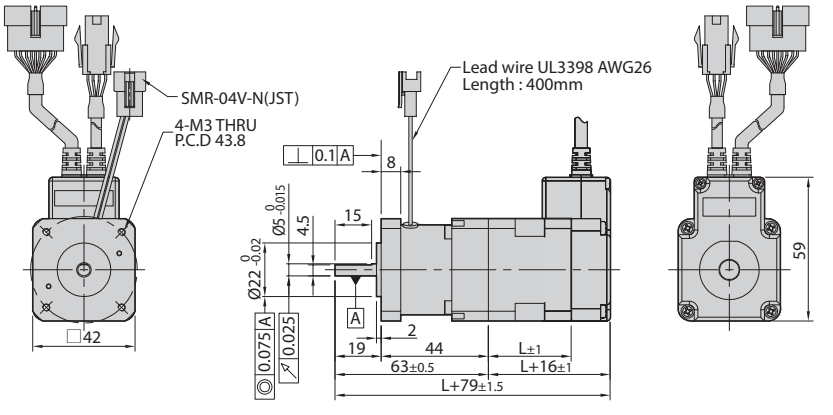
Applicable Model			
Ezi-SERVO II BT			



42mm

Model Name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	



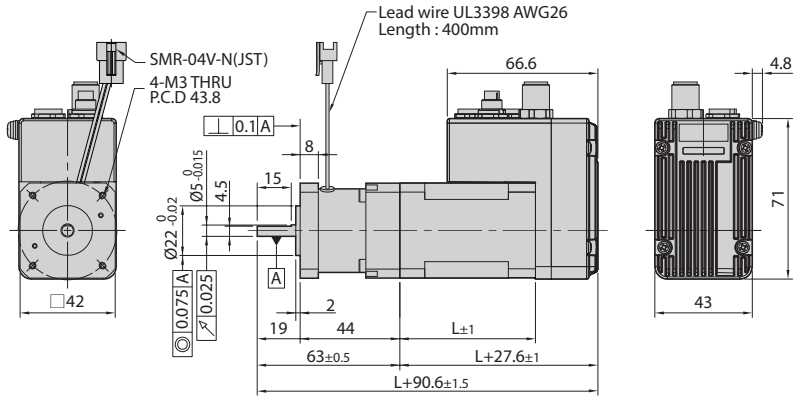
42mm

Model Name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60

● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

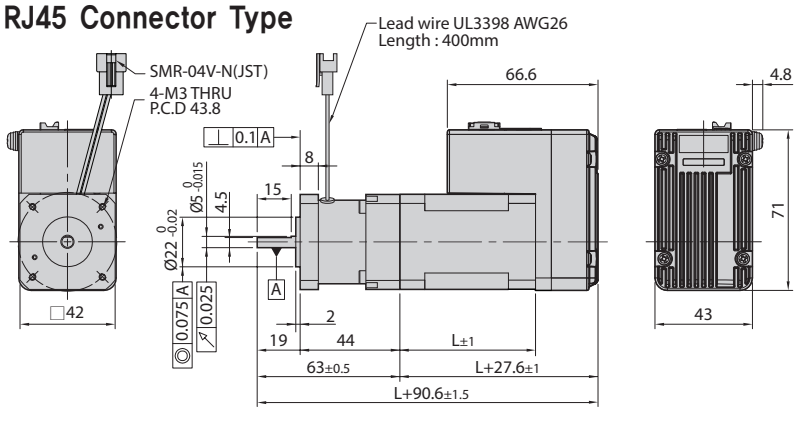
◆ M Connector Type



42mm

Model Name	Length(L)
42M	40
42L	48
42XL	60

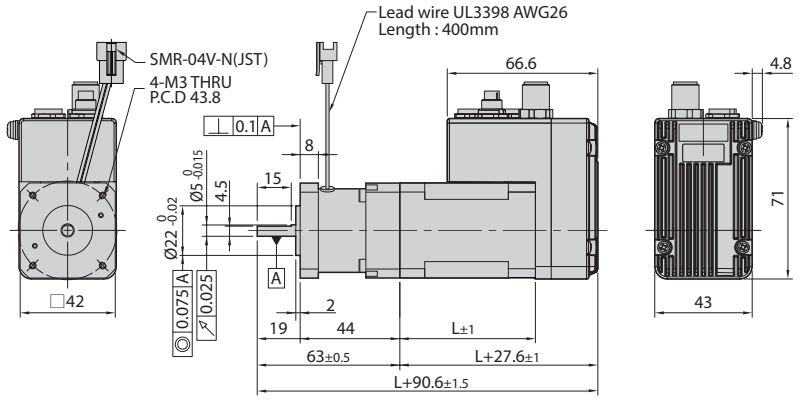
◆ RJ45 Connector Type



● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

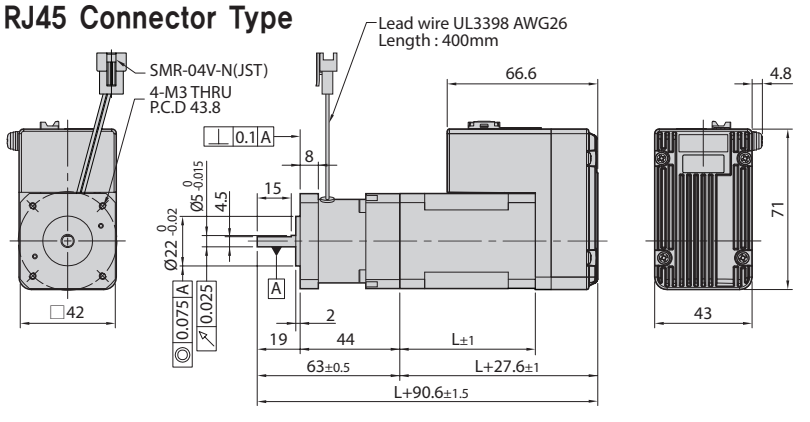
◆ M Connector Type



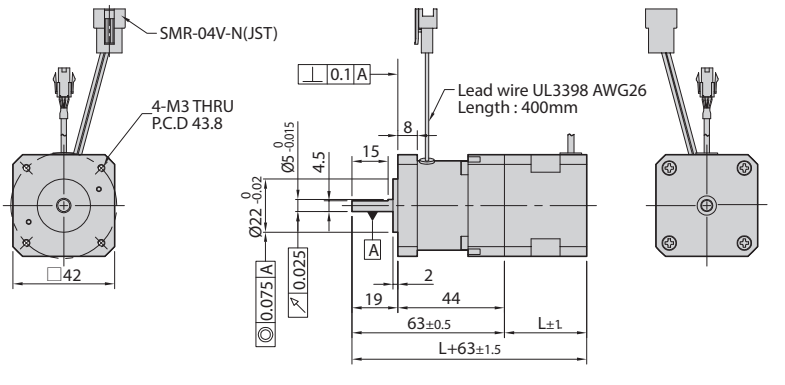
42mm

Model Name	Length(L)
42M	40
42L	48
42XL	60

◆ RJ45 Connector Type



Applicable Model			
Ezi-STEP ST	Ezi-STEP MINI	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link

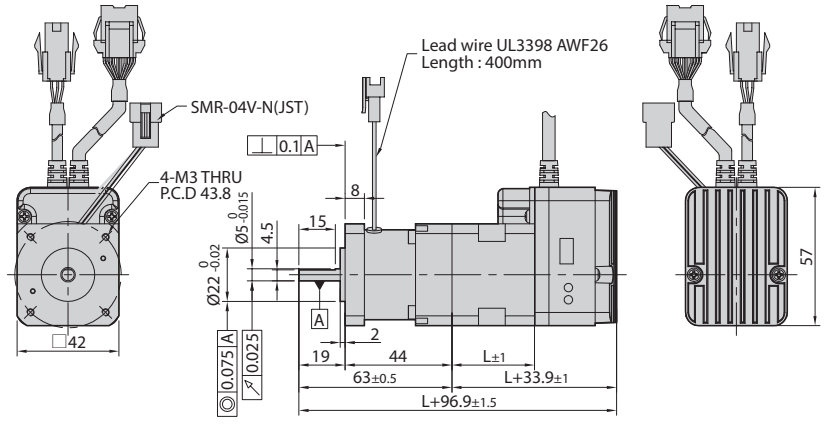


42mm

Model Name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60

● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-STEP BT			

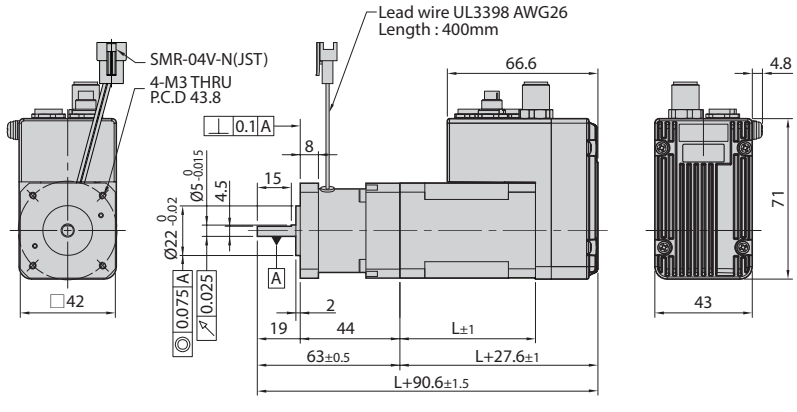


42mm

Model Name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-STEP II Plus-E ALL			

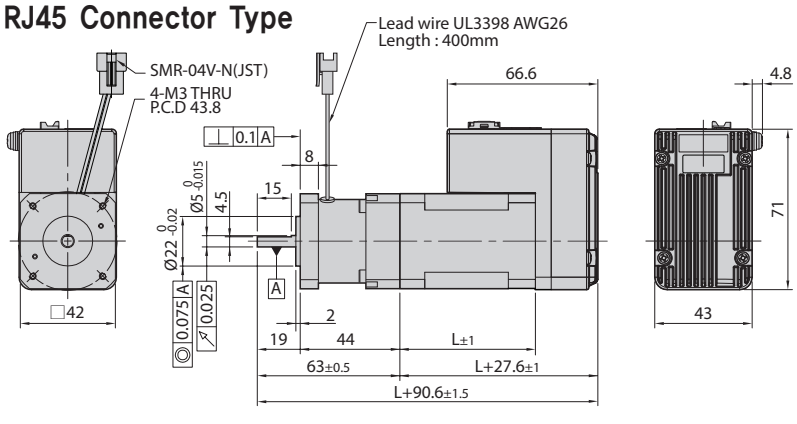
◆ M Connector Type



42mm

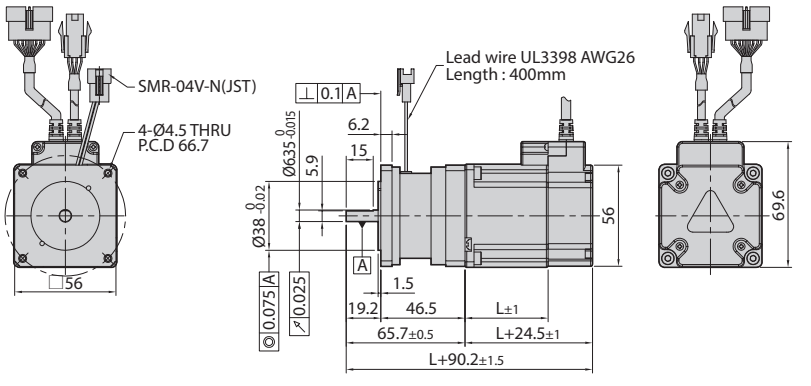
Model Name	Length(L)
42M	40
42L	48
42XL	60

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [56mm]

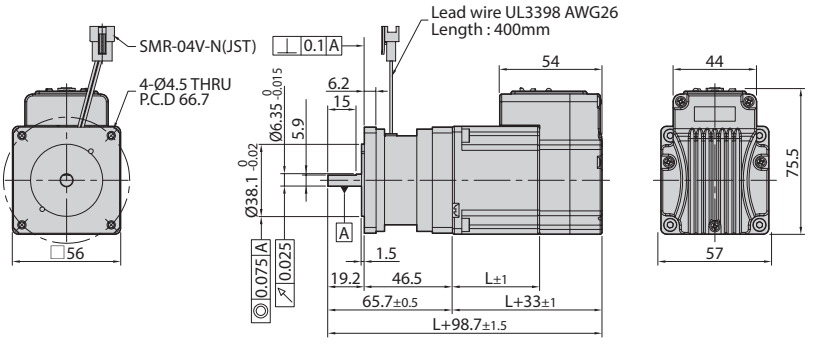
Applicable Model			
Ezi-SERVO ST			



56mm

Model Name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

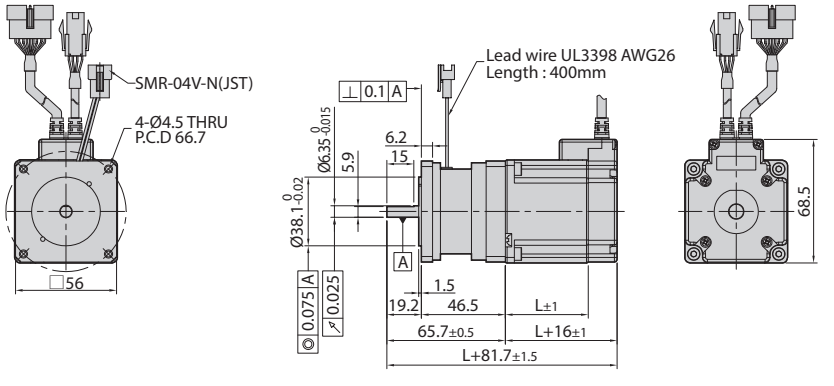
Applicable Model			
Ezi-SERVO II BT			



56mm

Model Name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	



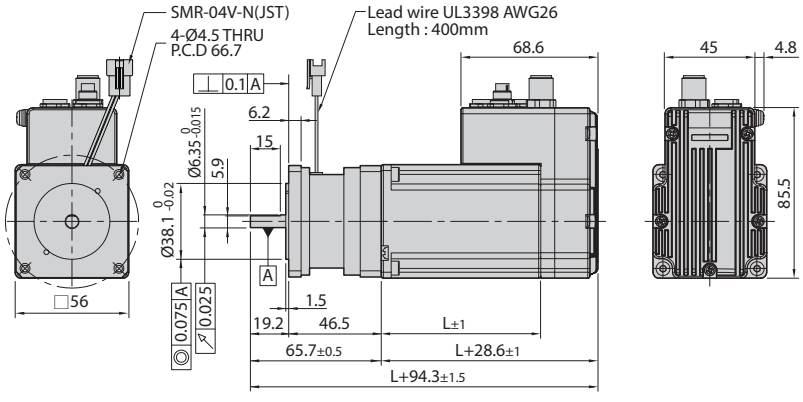
56mm

Model Name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

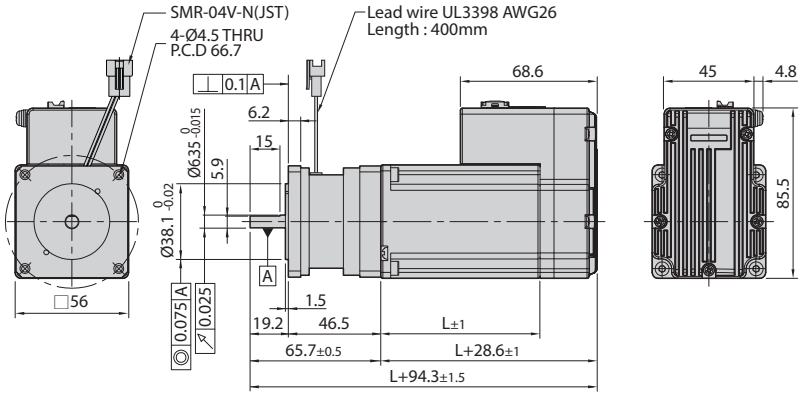
● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ M Connector Type



◆ RJ45 Connector Type



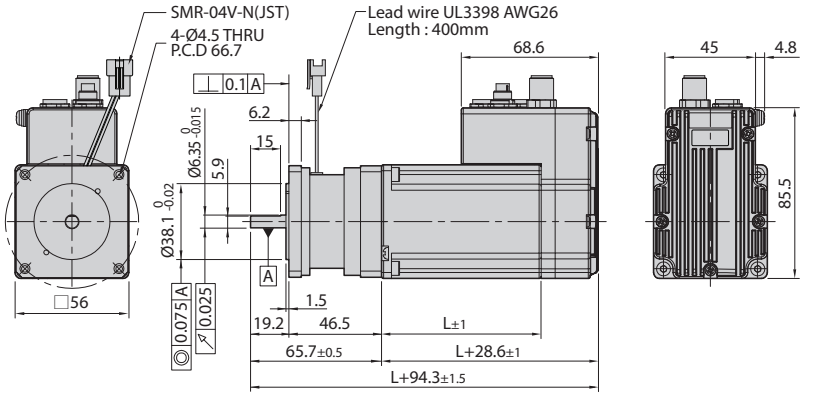
56mm

Model Name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

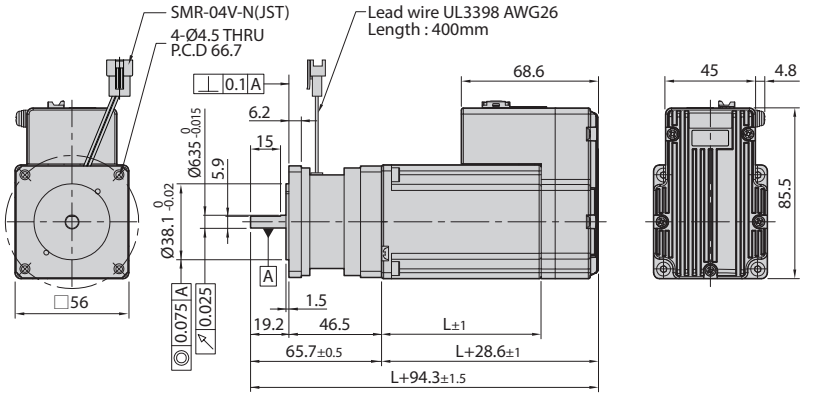
◆ M Connector Type



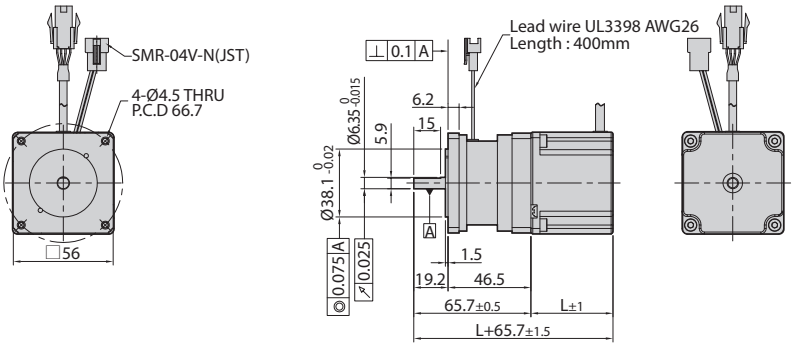
56mm

Model Name	Length(L)
56S	46
56M	55
56L	80

◆ RJ45 Connector Type



Applicable Model			
Ezi-STEP ST	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X
Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link	

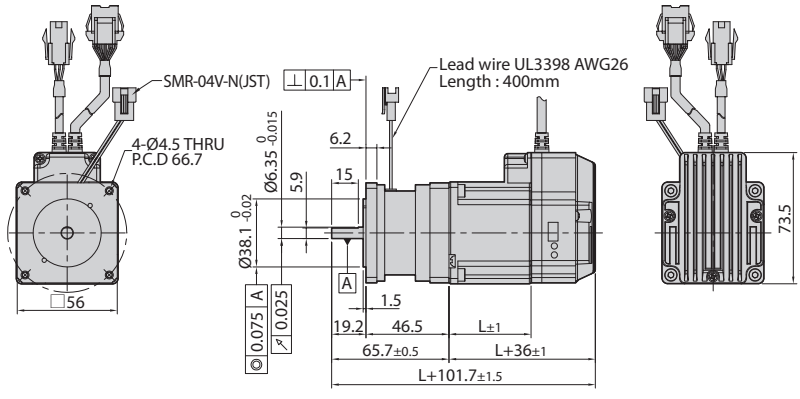


56mm

Model Name	Length(L)
BM-56S	46
BM-56M	55
BM-56L	80

● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-STEP BT			

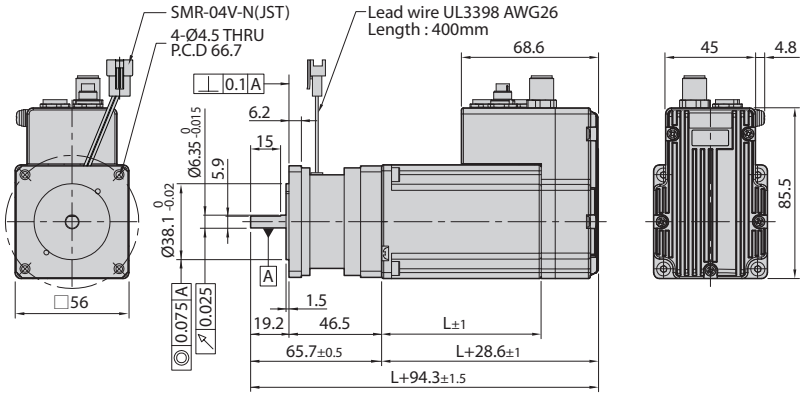


56mm

Model Name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-STEP II Plus-E ALL			

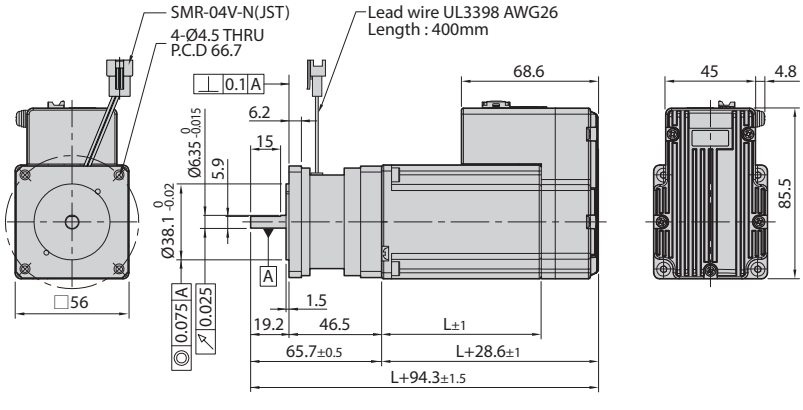
◆ M Connector Type



56mm

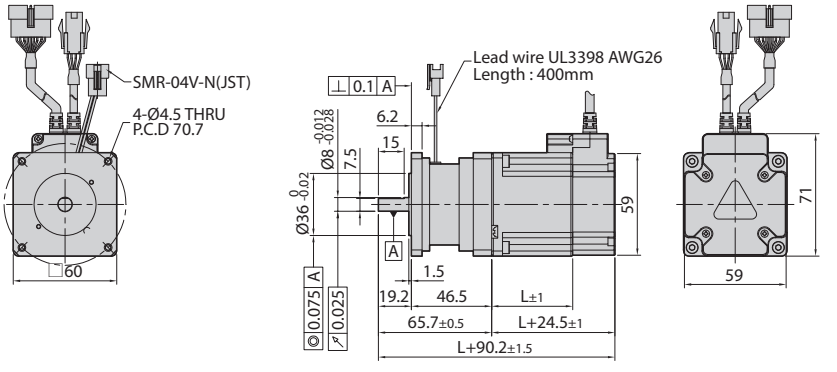
Model Name	Length(L)
56S	46
56M	55
56L	80

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [60mm]

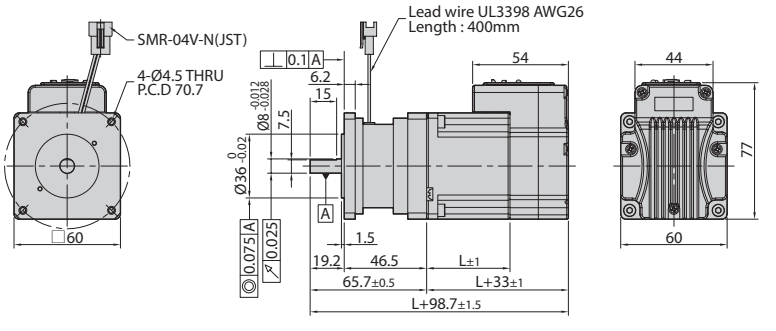
Applicable Model			
Ezi-SERVO ST			



60mm

Model Name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

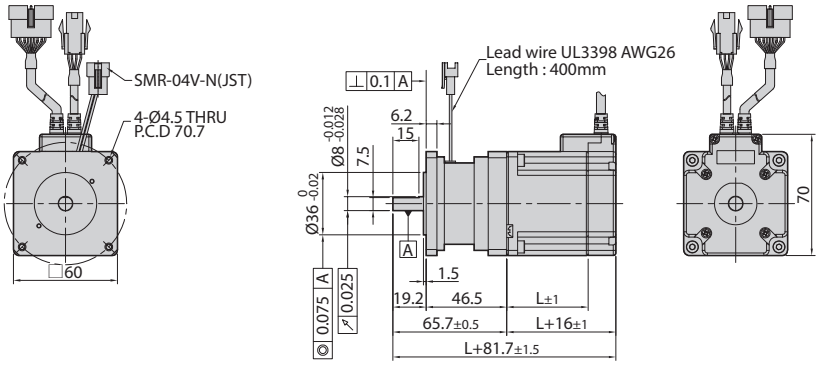
Applicable Model			
Ezi-SERVO II BT			



60mm

Model Name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	



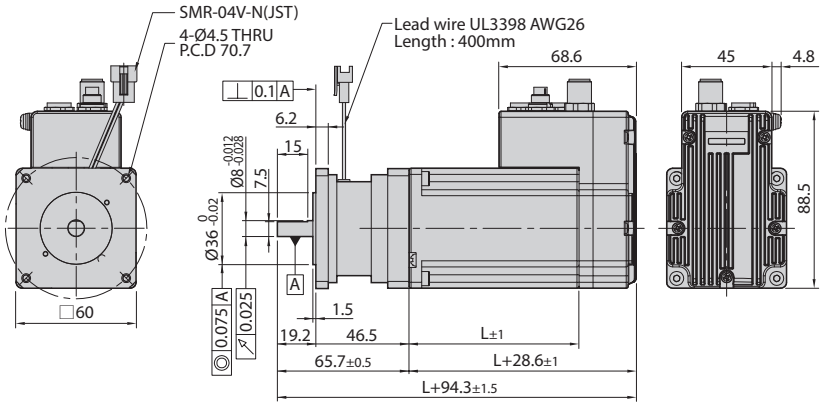
60mm

Model Name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

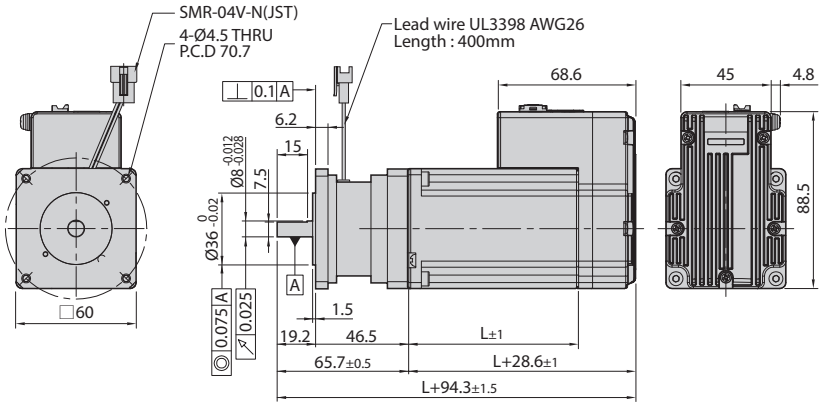
● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ M Connector Type



◆ RJ45 Connector Type



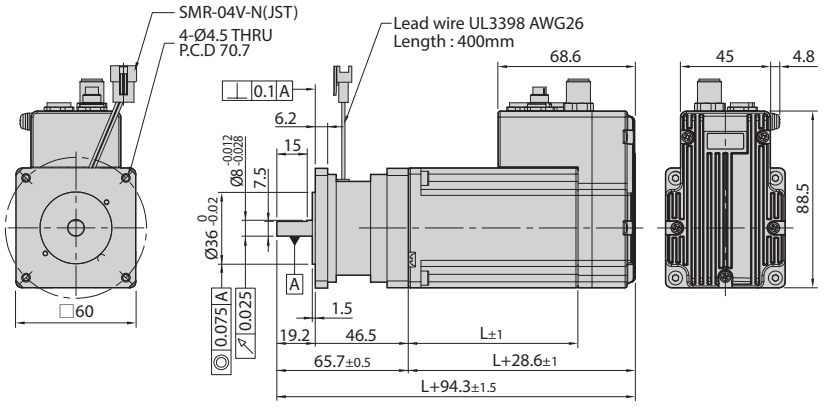
60mm

Model Name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

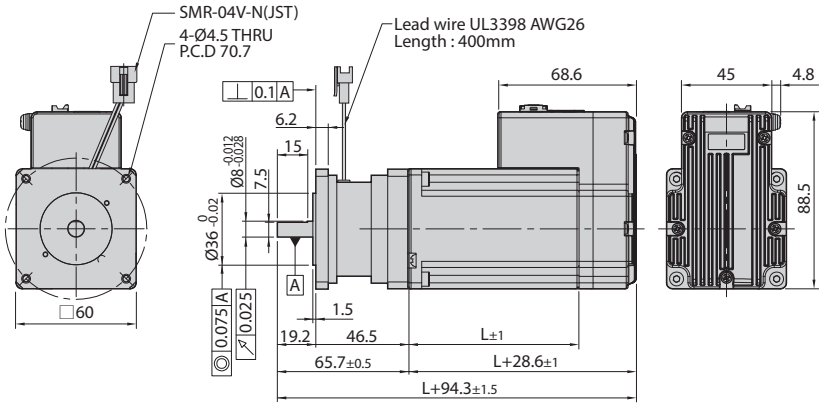
◆ M Connector Type



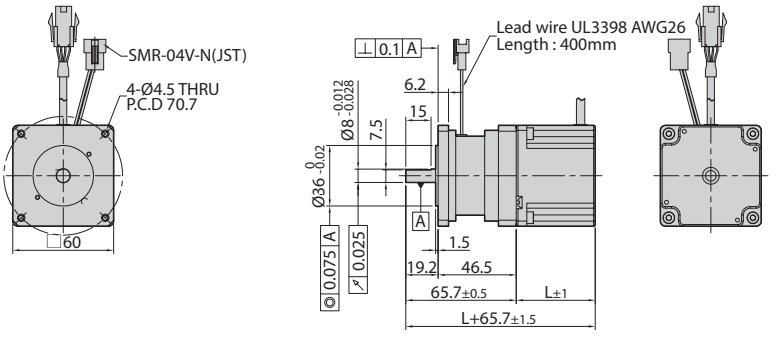
60mm

Model Name	Length(L)
60S	47
60M	56
60L	85

◆ RJ45 Connector Type



Applicable Model			
Ezi-STEP ST	Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X
Ezi-STEP II Plus-E	Ezi-STEP II Plus-E MINI	Ezi-STEP II CC-Link	



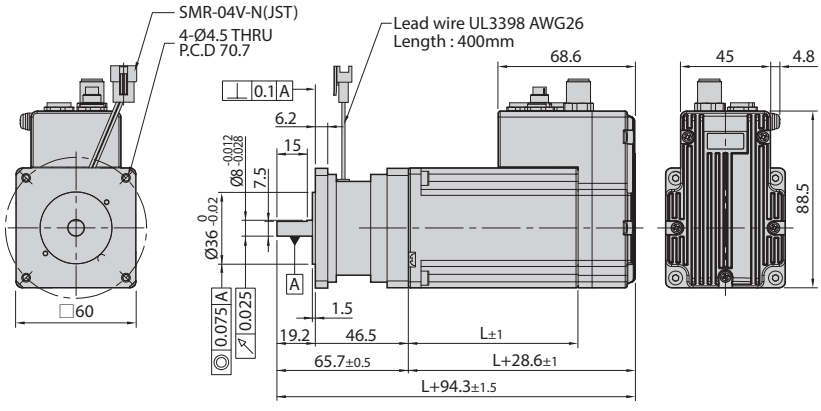
60mm

Model Name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

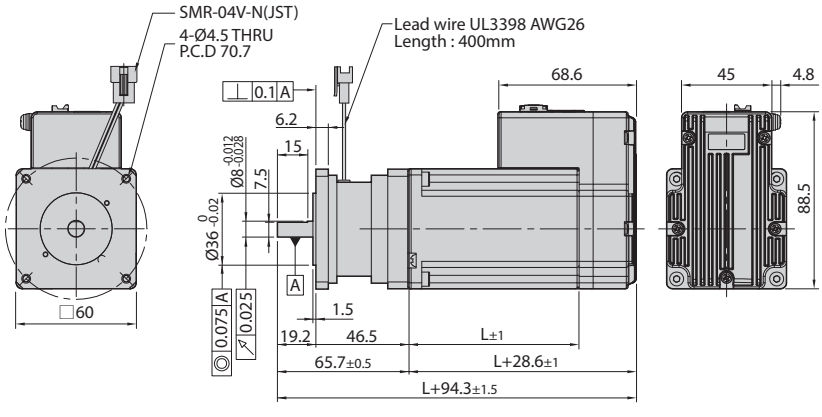
● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-STEP II Plus-E ALL			

◆ M Connector Type



◆ RJ45 Connector Type

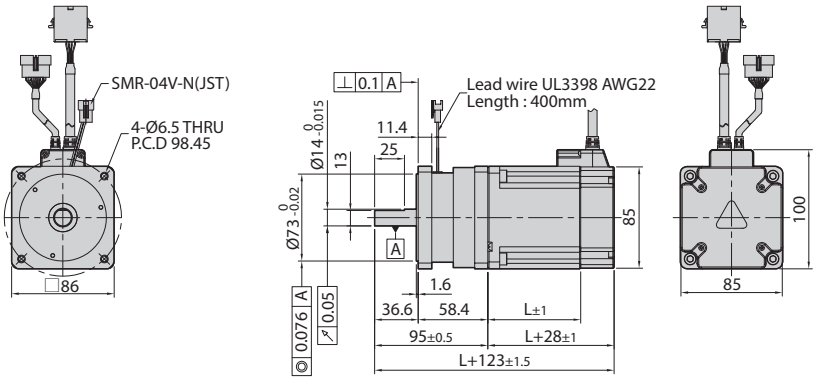


60mm

Model Name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Brake [86mm]

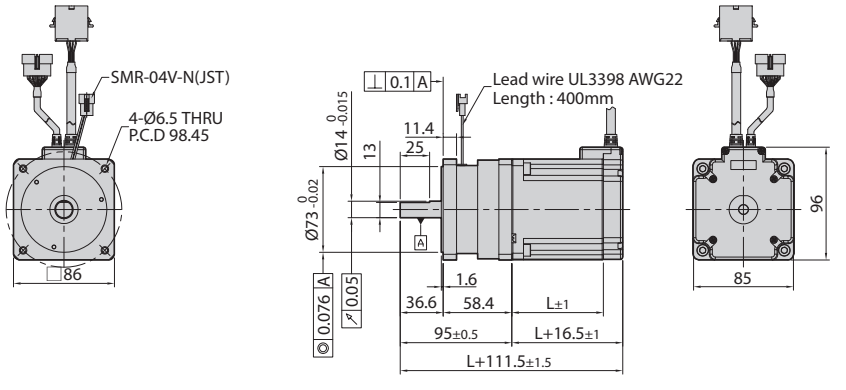
Applicable Model			
Ezi-SERVO ST			



86mm

Model Name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	

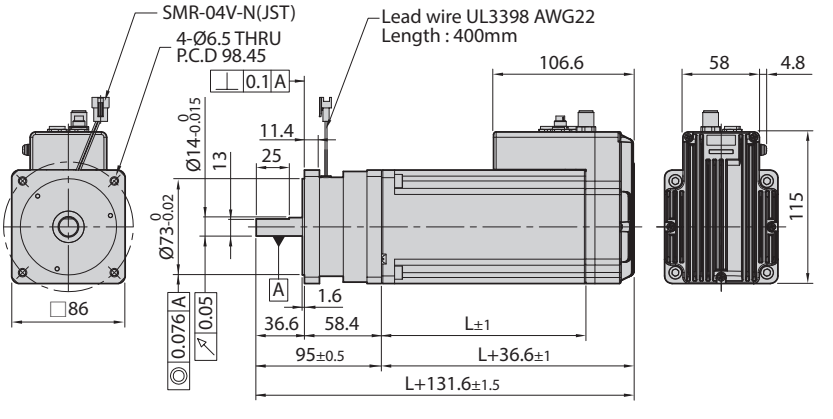


86mm

Model Name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ M Connector Type



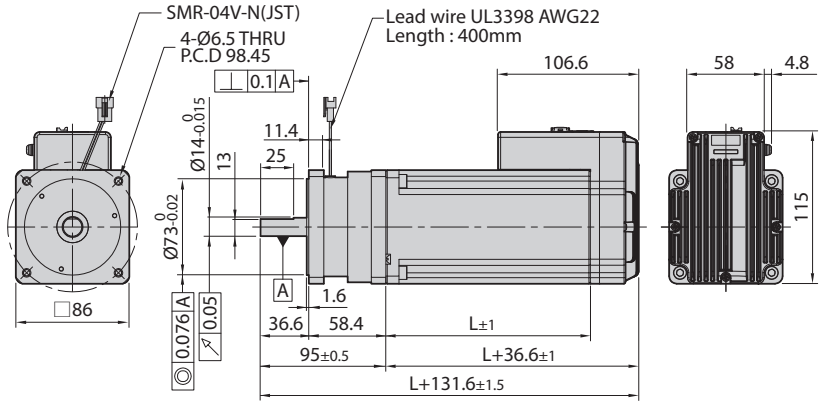
86mm

Model Name	Length(L)
86M	78
86L	117
86XL	155

● Dimensions of Motor with Brake [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

◆ RJ45 Connector Type

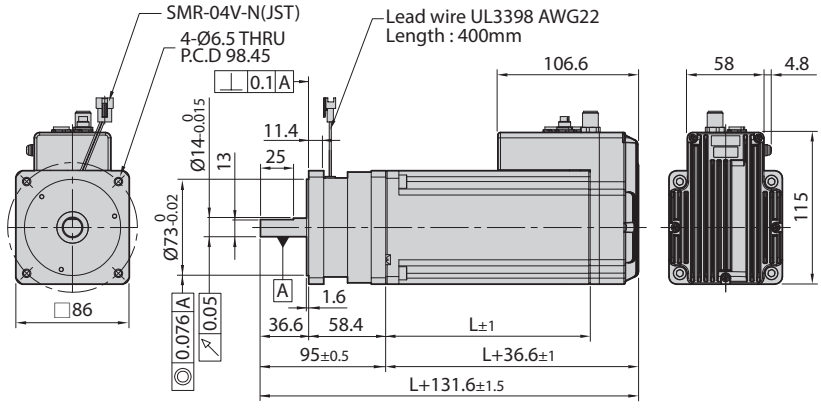


86mm

Model Name	Length(L)
86M	78
86L	117
86XL	155

Applicable Model			
Ezi-SERVO II Plus-E ALL			

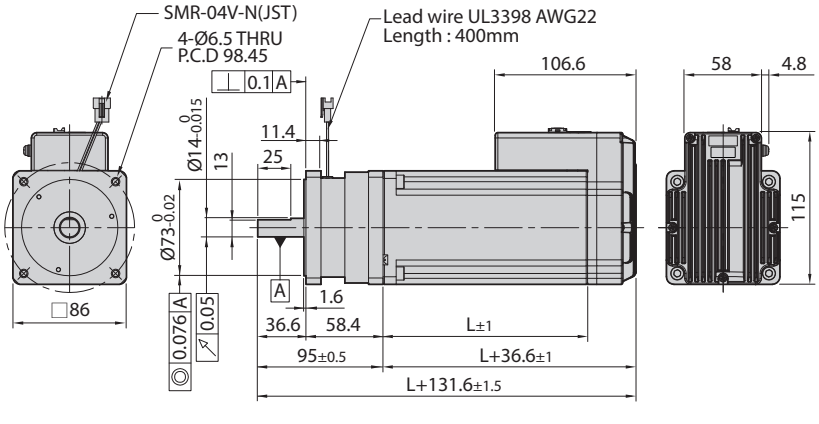
◆ M Connector Type



86mm

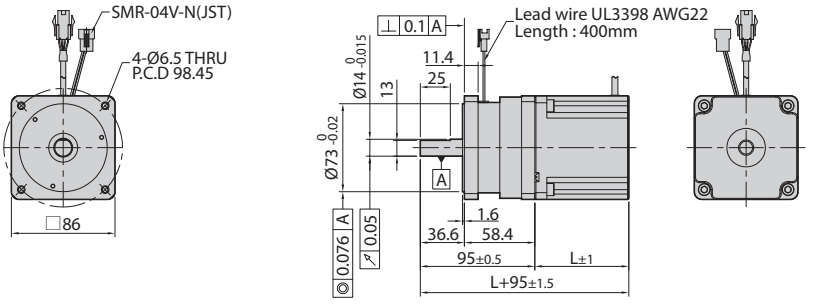
Model Name	Length(L)
86M	78
86L	117
86XL	155

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [86mm]

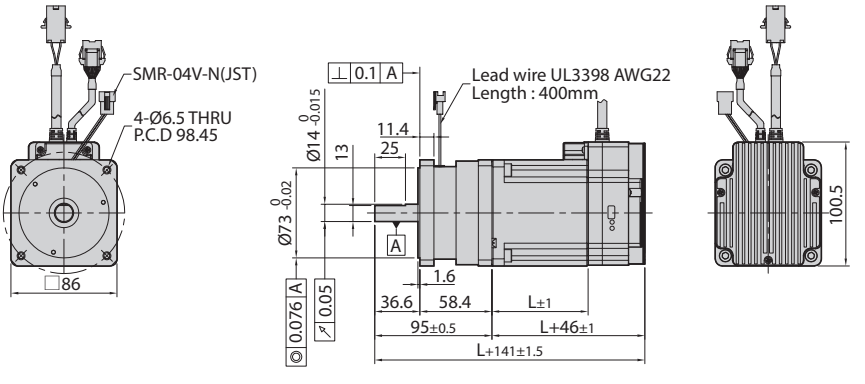
Applicable Model			
Ezi-STEP ST	Ezi-STEP II EtherCAT	Ezi-STEP II Plus-E	Ezi-STEP II CC-Link



86mm

Model Name	Length(L)
BM-86M	78
BM-86L	117
BM-86XL	155

Applicable Model			
Ezi-STEP BT			



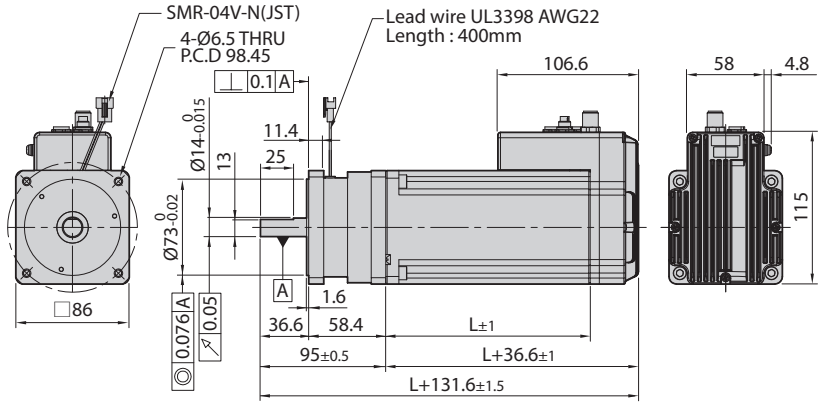
86mm

Model Name	Length(L)
86M	78
86L	117
86XL	155

● Dimensions of Motor with Brake [86mm]

Applicable Model			
Ezi-STEP II Plus-E ALL			

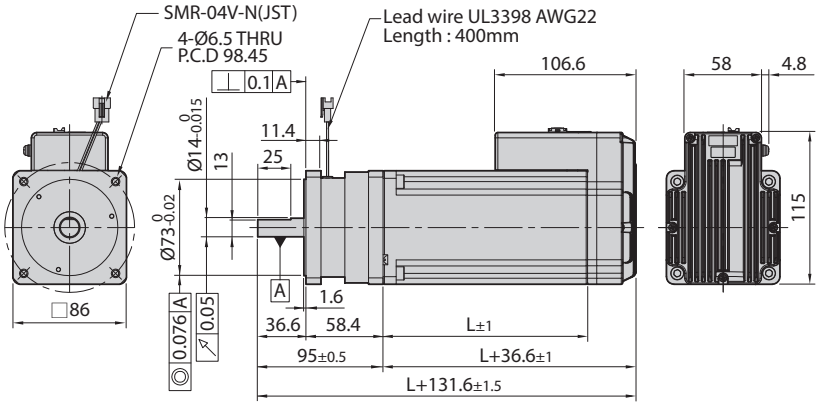
◆ M Connector Type



86mm

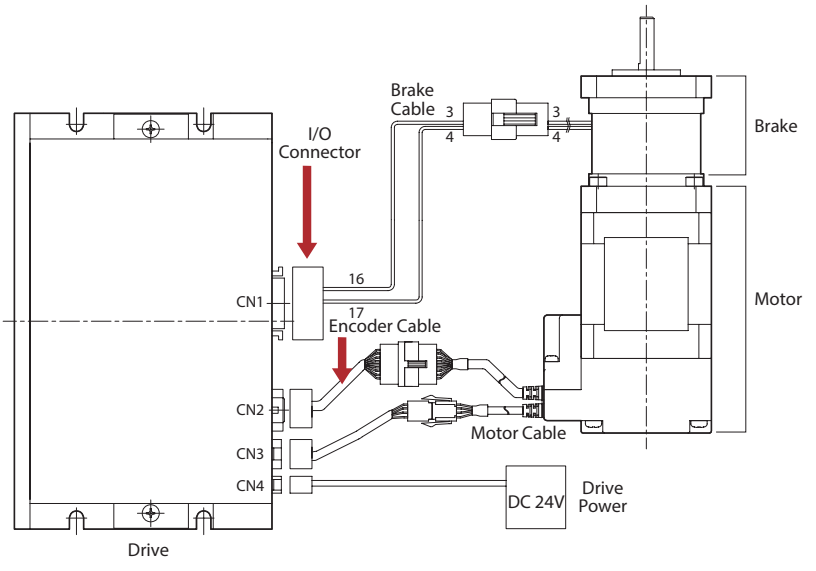
Model Name	Length(L)
86M	78
86L	117
86XL	155

◆ RJ45 Connector Type

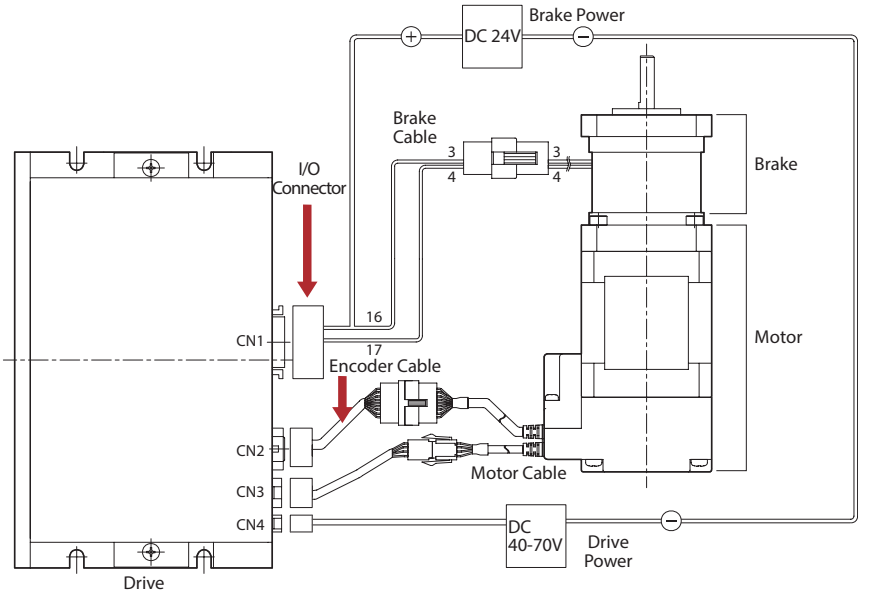


● Electrical Brake and Power Connection

Ezi-SERVO ST

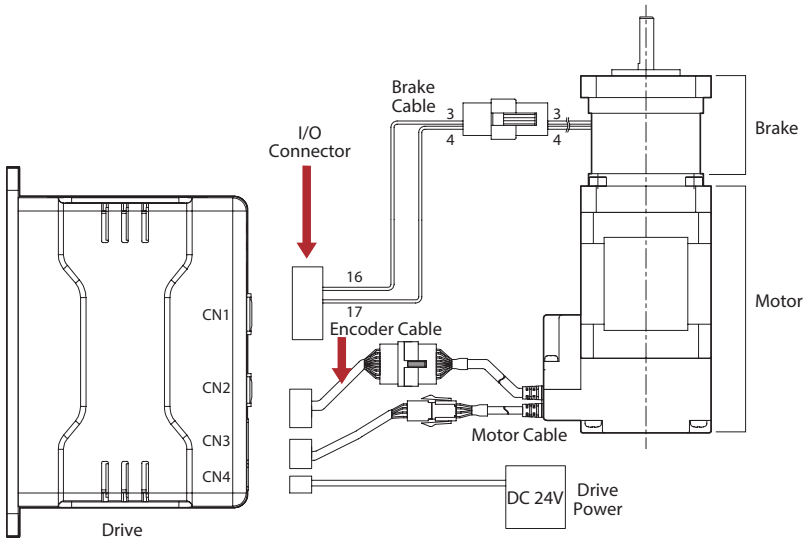


Ezi-SERVO ST_ 86mm

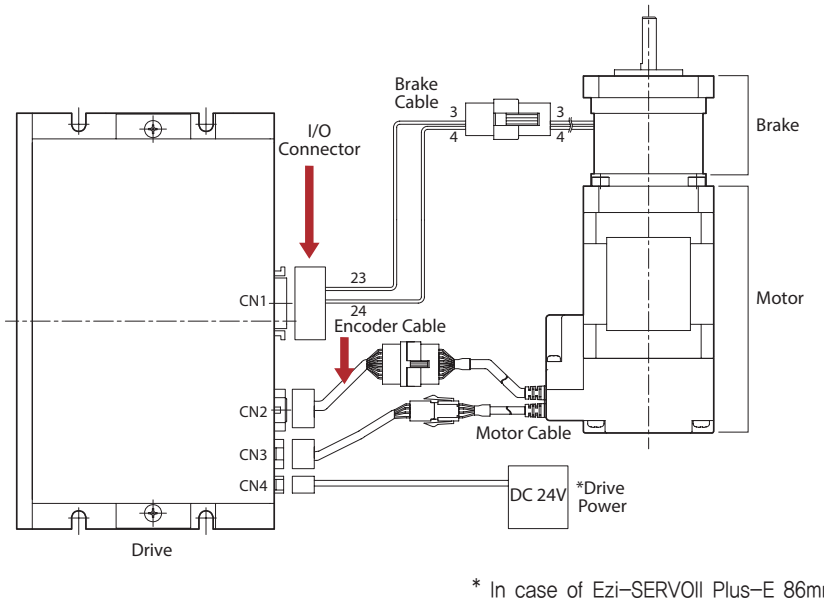


● Electrical Brake and Power Connection

Ezi-SERVO MINI



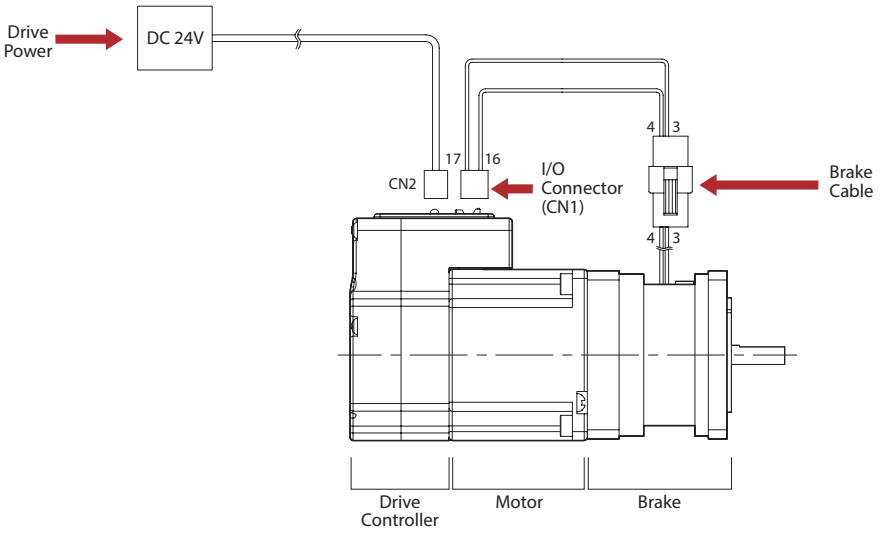
Ezi-SERVOII Plus-E, Ezi-SERVOII Plus-E_86mm



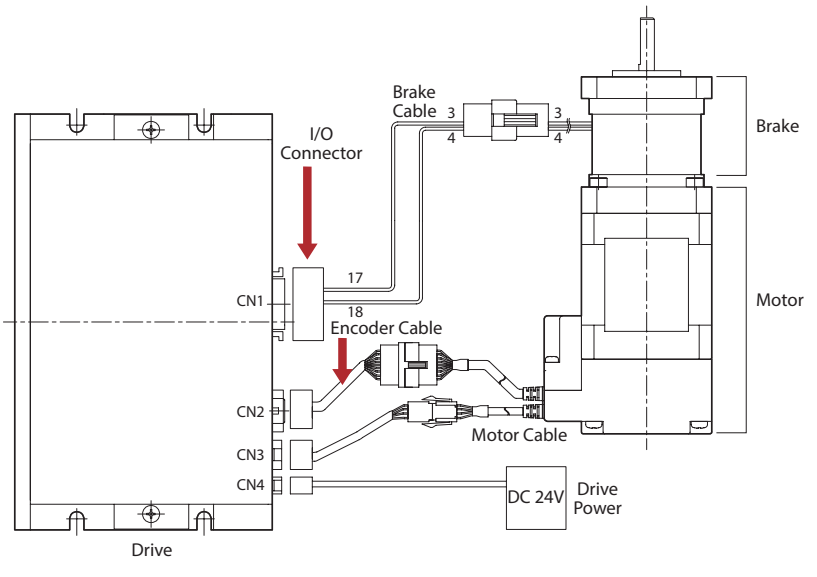
* In case of Ezi-SERVOII Plus-E 86mm, DC40~ 70V.

● Electrical Brake and Power Connection

Ezi-SERVO II BT

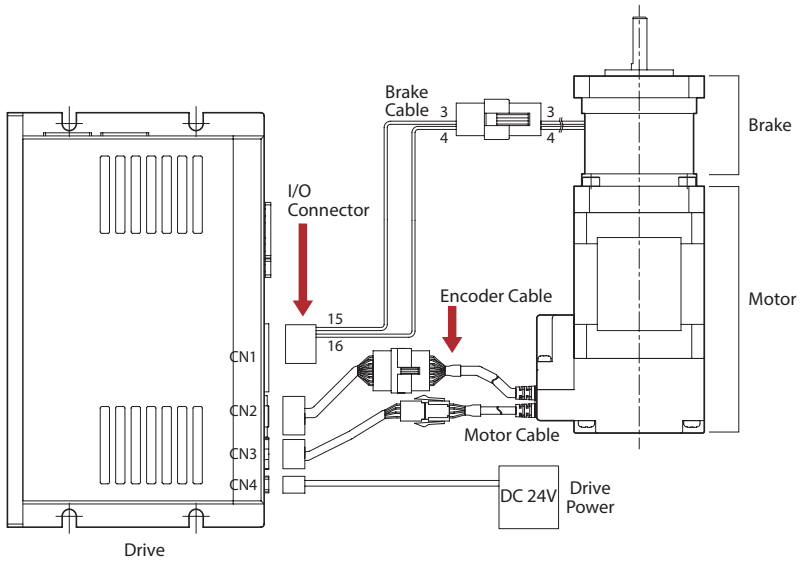


Ezi-SERVO II EtherCAT, Ezi-SERVO II CC-Link

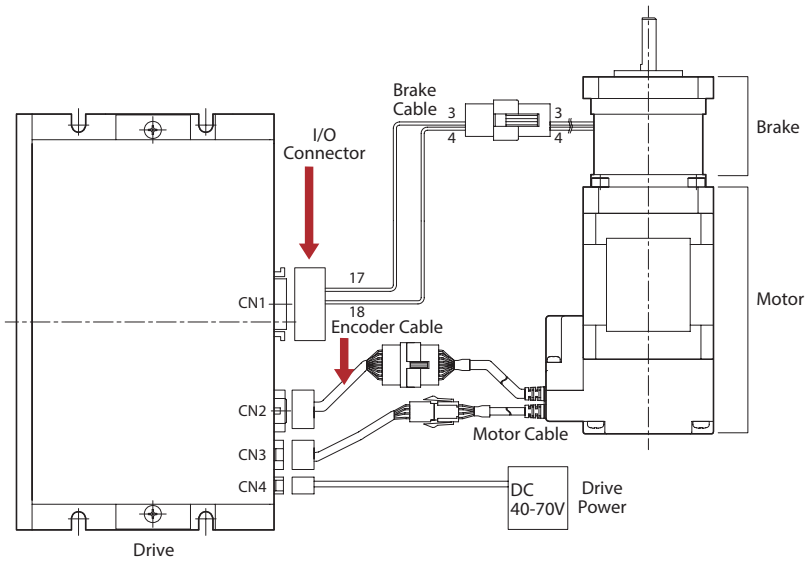


● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT TO

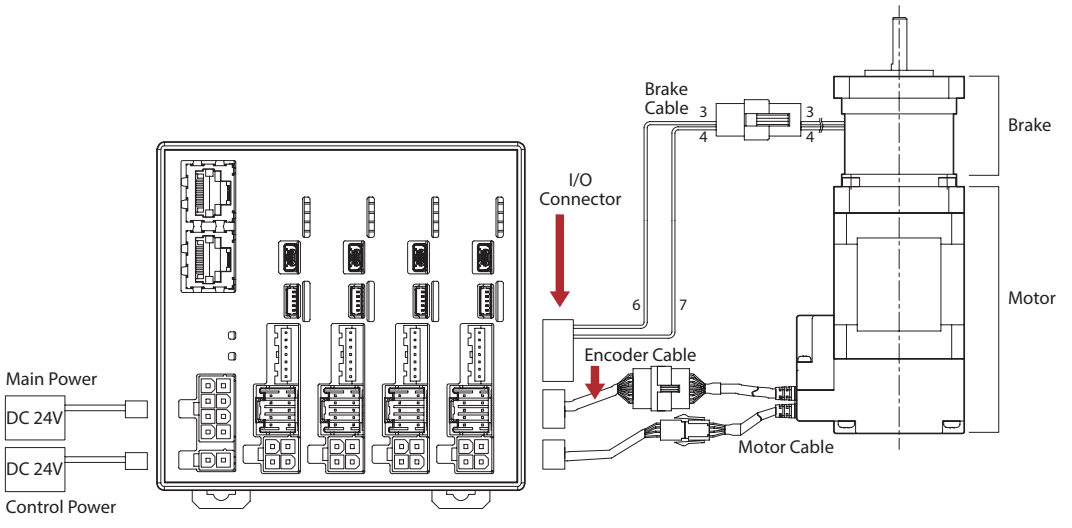


Ezi-SERVO II EtherCAT_ 86mm, Ezi-SERVO II CC-Link_86mm

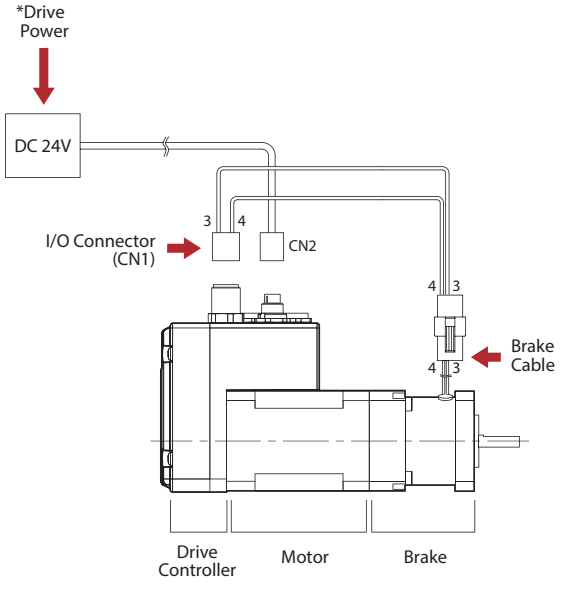


● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT 4X, 3X

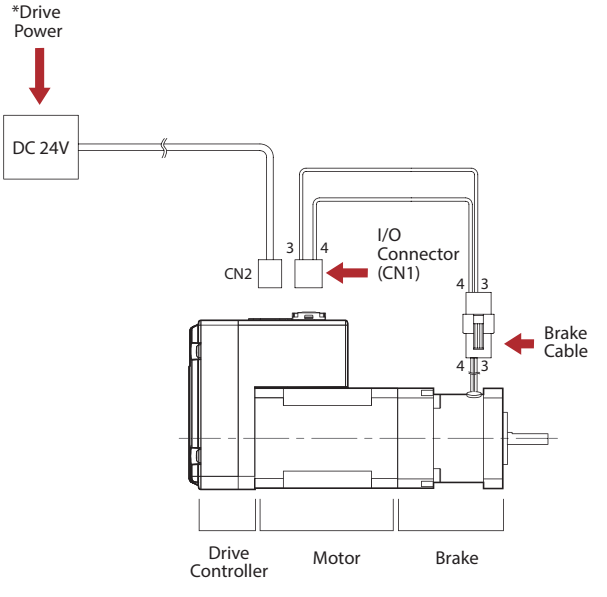


Ezi-SERVO II EtherCAT ALL, Plus-E ALL_ M Type



* In case of 86mm, DC48V.

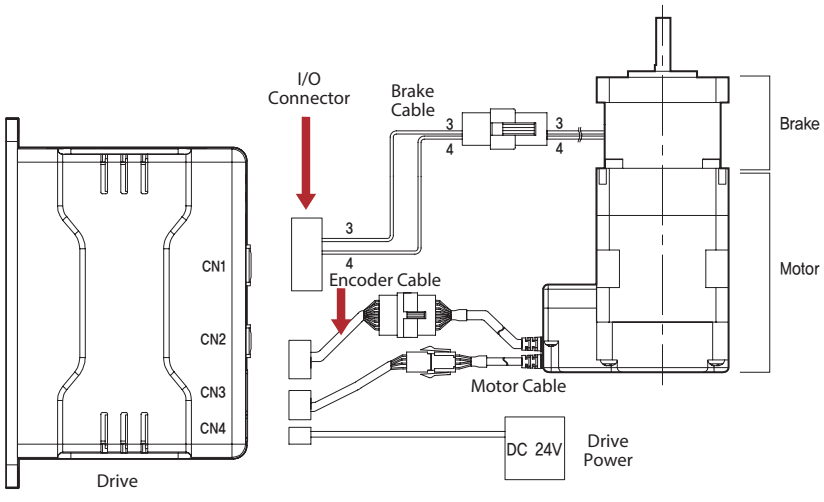
Ezi-SERVO II EtherCAT ALL, Plus-E ALL_ R Type



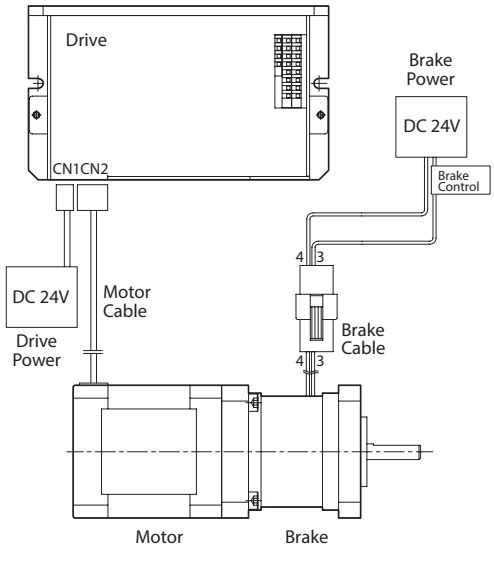
* In case of 86mm, DC48V.

● Electrical Brake and Power Connection

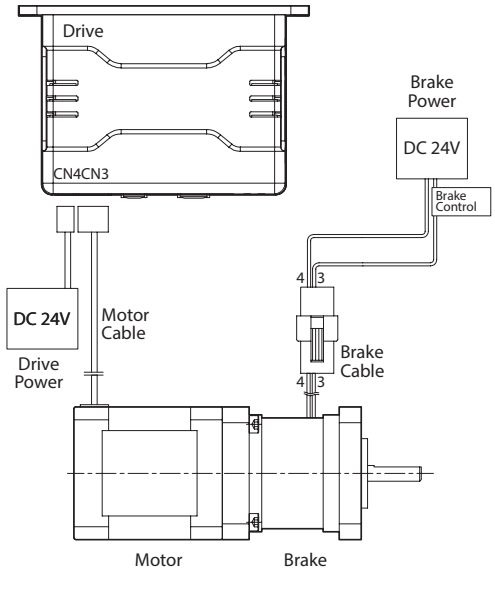
Ezi-SERVO II EtherCAT MINI, Plus-E MINI



Ezi-STEP ST

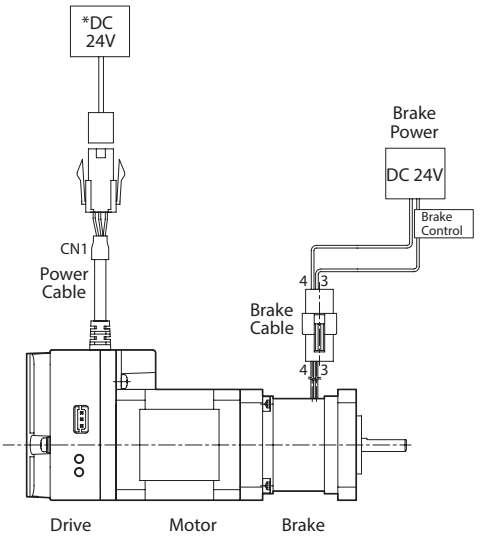


Ezi-STEP MINI



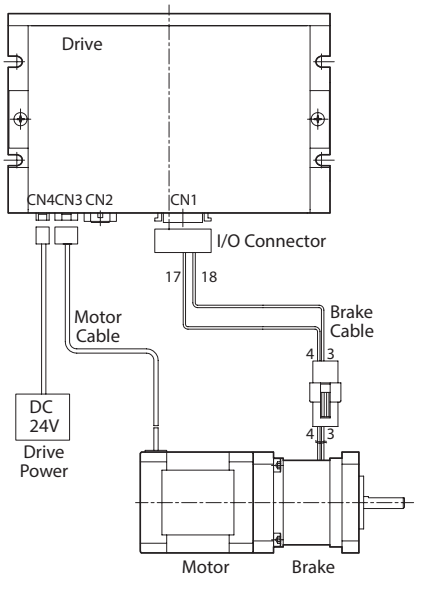
● Electrical Brake and Power Connection

Ezi-STEP BT



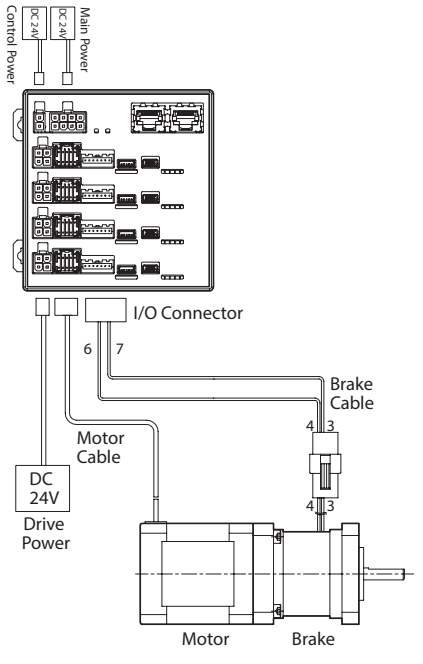
* In case of 86mm, DC48V.

Ezi-STEPII EtherCAT / Ezi-STEPII EtherCAT_ 86mm

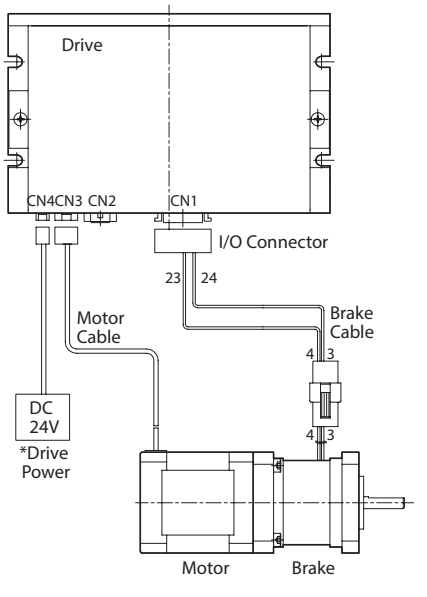


* In case of 86mm, DC48V.

Ezi-STEPII EtherCAT 4X, 3X



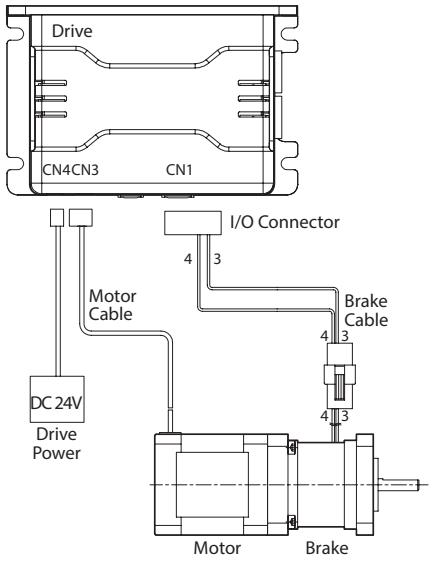
Ezi-STEPII Plus-E / Ezi-STEPII Plus-E_ 86mm



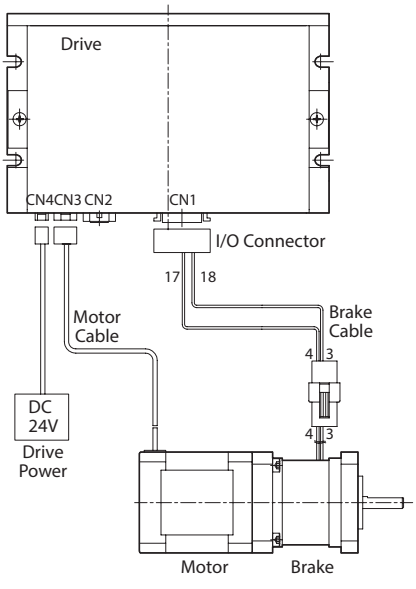
* In case of 86mm, DC48V.

● Electrical Brake and Power Connection

Ezi-STEPII EtherCAT MINI, Plus-E MINI

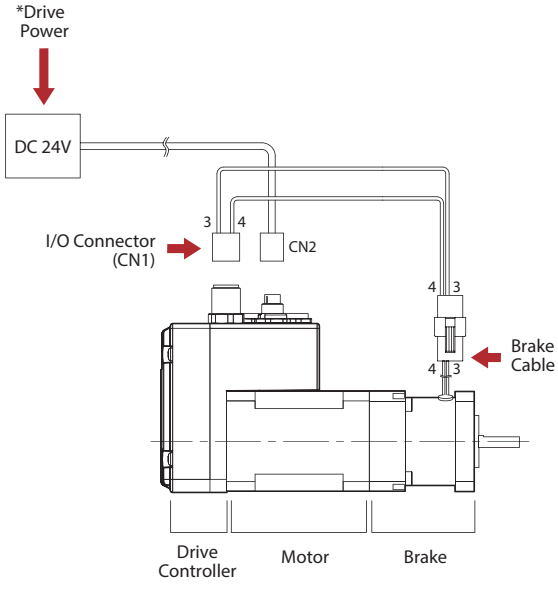


Ezi-STEPII CC-Link / Ezi-STEPII CC-Link_ 86mm



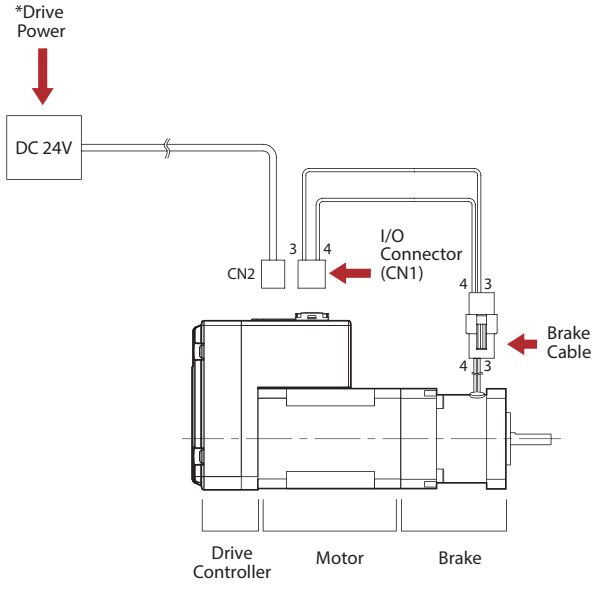
* In case of 86mm, DC40~70V.

Ezi-STEPII Plus-E ALL_ M Type



* In case of 86mm, DC48V.

Ezi-STEPII Plus-E ALL_ R Type



* In case of 86mm, DC48V.



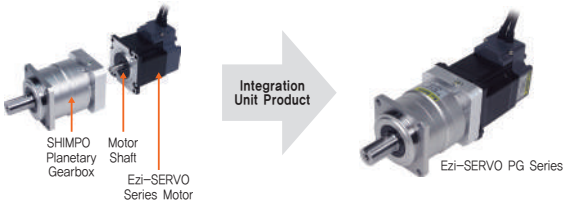
OPTION Gearbox

Overall Table of ***Gearbox***

Name of Product	Gearbox Frame Size			
	42mm	60mm		86mm
	Motor Frame Size			
	42mm	56mm	60mm	86mm
Ezi-SERVO ST				
Ezi-SERVO MINI				
Ezi-SERVO II EtherCAT				
Ezi-SERVO II EtherCAT TO				
Ezi-SERVO II EtherCAT MINI				
Ezi-SERVO II EtherCAT 4X				
Ezi-SERVO II EtherCAT ALL				
Ezi-SERVO II Plus-E				
Ezi-SERVO II Plus-E MINI				
Ezi-SERVO II Plus-E ALL				
Ezi-SERVO II CC-Link				
Ezi-SERVO II BT				

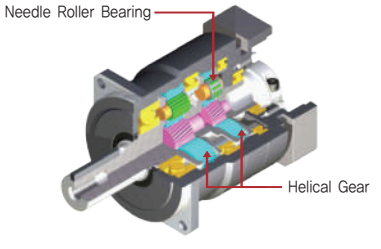
1 Adopt SHIMPO's high accuracy planetary gearbox

Ezi-SERVO PG series, FASTECH's new Planetary Geared Step Motor unit product maximizes User's operational convenience with integration between Closed Loop System, Ezi-SERVO and Helical Gear structure of SHIMPO's high accuracy planetary gearbox has 3 min less Backlash.



2 Vibration, Low Noise

Ezi-SERVO PG series, a High Precision of Helical Gear structured SHIMPO planetary gearbox developed for low vibration and extremely low noise of operation and both of single and double stage of gearboxes generates backlash less than 3 min so it would be the best solution for high accuracy of positioning.



3 High Rigidity, High Torque

SHIMPO Planetary Gearbox, combined with Ezi-SERVO PG series, maximized allowable torque with using Needle Roller bearing and machined body to be internal gear so it enables compact design of gearbox and maximized durability.

4 Long Life & Maintenance Free

Ezi-SERVO PG Series is Maintenance-free product. No risk of grease leakage because of high viscosity of Anti-separation grease and it is maintenance free products because of lack of necessity for grease replacement.

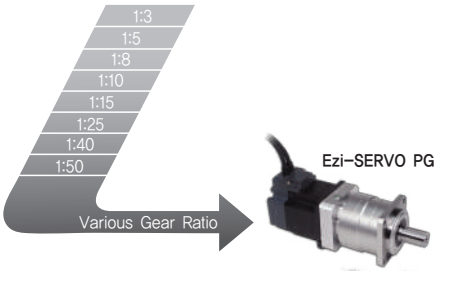


5 Resonance Minimization

Ezi-SERVO PG series by applying the planetary gearbox, gear ratio corres ponding to the overall operation speed of the stepper motor so low speed that occurs mainly in the resonance of a stepper motor can drive the motor to avoid the band itself and the system is very effective in reducing the vibration.

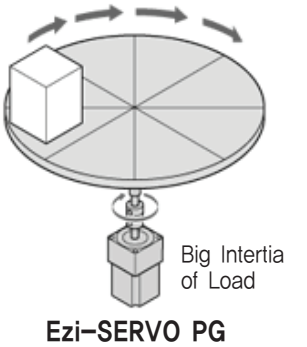
6 Various Gear Ratio

Ezi-SERVO series, Unit product between a variety of gear ratio of gearbox with closed loop stepper motor, enables to generate various high torque as small capacity of stepper and also can respond under any load with flexibility



7 Optimized Solution for Big Inertia of Rotation

Allowable load moment of inertia is proportional to the square of the gear ratio, Gearbox united Ezi-SERVO PG series enables fast positioning and smooth operation even under big intertia moment of load.



Ezi-SERVO PG

● Permissible Radial & Axial Load

Motor Size	Gear Ratio	Allowable Overhung Load [N] Based on Center of Shaft	Allowable Thrust Load [N]
42mm	1:03	240	270
	1:05	290	330
	1:08	340	410
	1:10	360	450
	1:15	410	540
	1:25	490	640
	1:40	570	640
	1:50	620	640
56, 60mm	1:03	430	310
	1:05	510	390
	1:08	600	480
	1:10	640	530
	1:15	740	630
	1:25	870	790
	1:40	1000	970
	1:50	1100	1100
86mm	1:03	810	930
	1:05	960	1200
	1:08	1100	1400
	1:10	1200	1600
	1:15	1400	1900
	1:25	1600	2200
	1:40	1900	2200
	1:50	2100	2200

1. Drive Specification and Size

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check drive specification and size of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series

2. System Configuration and Setting/Operation

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check Series' system configuration, Name and Function of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series.

3. External Wiring Diagram

Please refer to the individual catalogue(Ezi-SERVO ST, Ezi-SERVO Plus R, Ezi-SERVOII BT and Ezi-SERVO ALL) to check Series' external wiring diagram of Ezi-SERVO ST / Plus-R / BT / ALL of Ezi-SERVO PG Series.

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-□-□-□-PN□	EzM-□-□-PN□	Not Changed

※ It can be added PN□ at the end of model name of each series.(The name of drive model is not changed)

ex) Numbering method when 1:10 reducer attached on 42mm of Ezi-SERVO ST series.

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-ST-42S-A-PN10	EzM-42S-A-PN10	EzS-PD-42S-A

● How to Read Specifications

Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
① Maximum Holding Torque	N·m	0.57	0.95	1.52	1.90	2.76	4.60	7.36	9
② Rotor Inertia Moment	$kg \cdot m^2$	35×10^{-7}							
③ Backlash	arcmin	3				5			
④ Angle Transmission Error	arcmin	5				7			
⑤ Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
⑥ Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
⑦ Permissible Torque	N·m	6	9	9	6	6	9	9	9
⑧ Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
⑨ Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
⑩ Unit Weight	kg	0.89				0.99			

Description of Specification Items

No.	Item	Description
①	Maximum Holding Torque	This is the maximum torque that can be exerted through the gearbox when the motor is stopped. (Based on 100% of stop current) Use the torque below the permissible torque of the gearbox.
②	Rotor Inertia Moment	It is the value of the moment of inertia of the motor.
③	Backlash	It is the gap between the gear and the gear, and it is the angle at which the gearbox shaft moves without external force when stopped.
④	Angle Transmission Error	This is the transmission characteristic of the gearbox, which means the difference between the theoretical rotation angle and the actual rotation angle of the output shaft.
⑤	Gear Ratio	It is the value obtained by dividing the number of output rotation by the number of input rotation.
⑥	Resolution	This is the angle at which the gearbox output shaft moves when the motor is driven by 1 pulse.
⑦	Permissible Torque	It refers to the maximum value of the torque that can be continuously applied to the output shaft of the gearbox during constant speed operation. (When the input rotation speed is 3,000r/min and the lifetime of the motor becomes 20,000 hours)
⑧	Instantaneous Maximum Torque	This is the maximum torque allowed to the output shaft of the gearbox during acceleration/deceleration.
⑨	Permissible Speed Range	It is the range of rotation speed based on the output shaft of the gearbox.
⑩	Unit Weight	It is the sum of the weight of the gearbox and the motor.

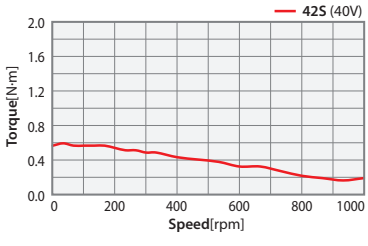
● Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

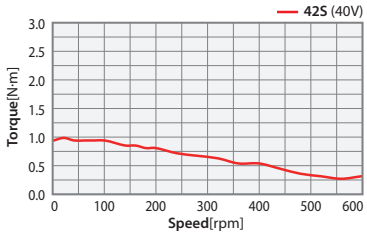
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.57	0.95	1.52	1.90	2.76	4.60	7.36	9
Rotor Inertia Moment	kg·m^2	35X10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

● Torque Charcteristics of Motor with Gearbox

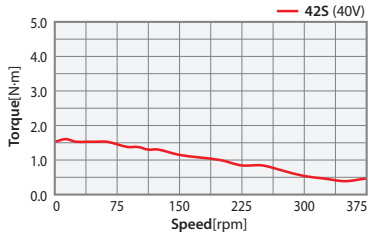
42S-PN3 Series



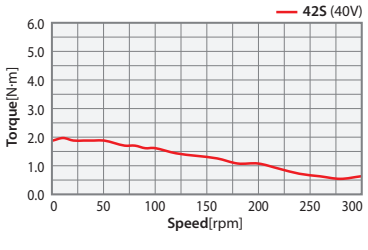
42S-PN5 Series



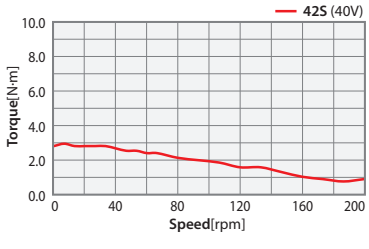
42S-PN8 Series



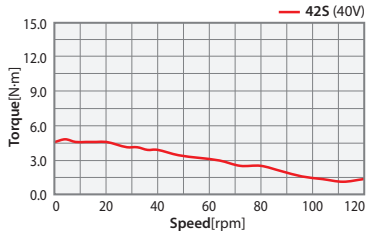
42S-PN10 Series



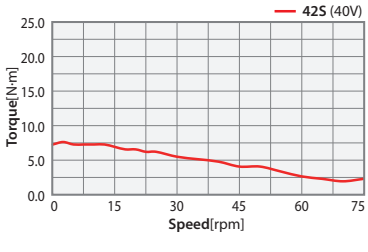
42S-PN15 Series



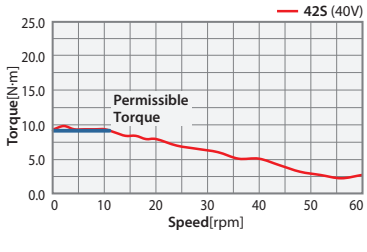
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



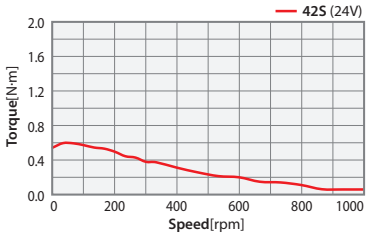
Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E MINI			

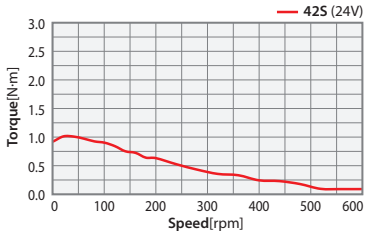
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.55	0.92	1.47	1.84	2.67	4.46	7.13	9
Rotor Inertia Moment	kg·m^2	35×10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

Torque Charcteristics of Motor with Gearbox

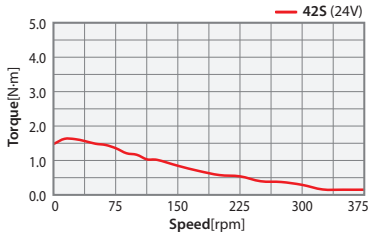
42S-PN3 Series



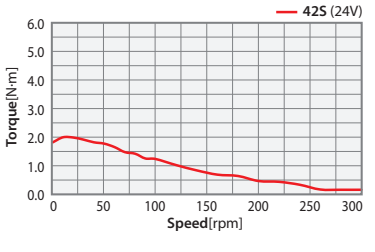
42S-PN5 Series



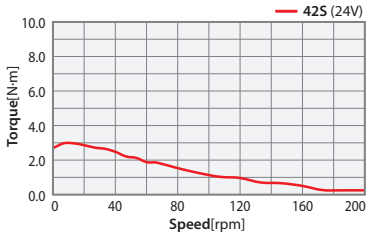
42S-PN8 Series



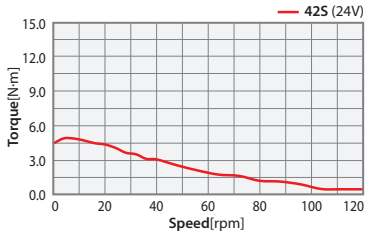
42S-PN10 Series



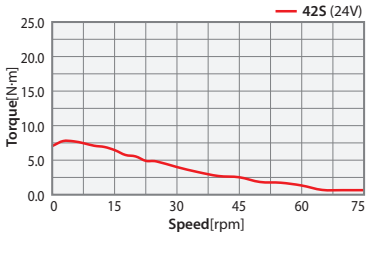
42S-PN15 Series



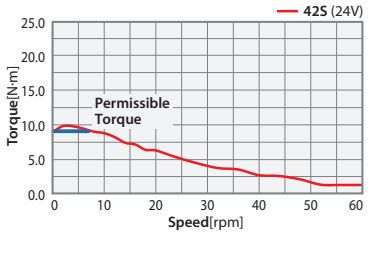
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



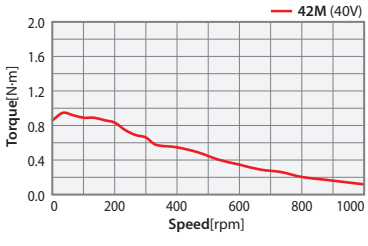
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

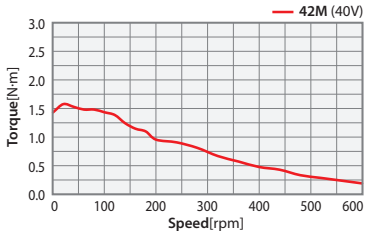
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m²	54X10⁻⁷							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Charcteristics of Motor with Gearbox

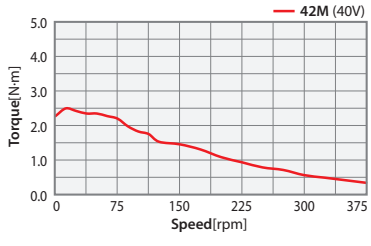
42M-PN3 Series



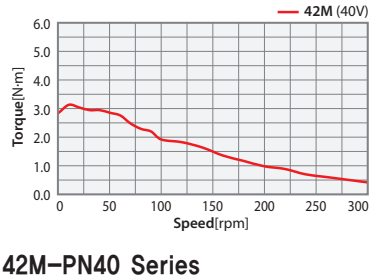
42M-PN5 Series



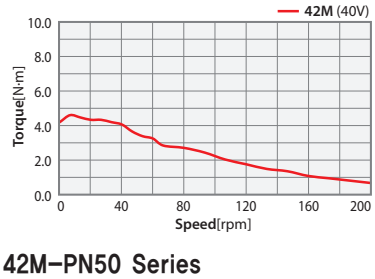
42M-PN8 Series



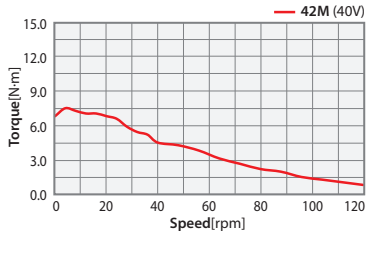
42M-PN10 Series



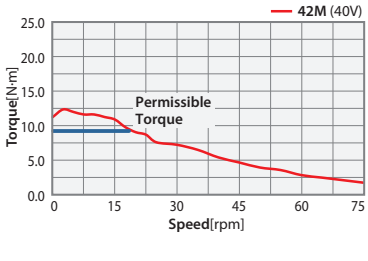
42M-PN15 Series



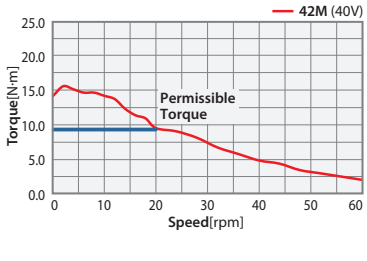
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



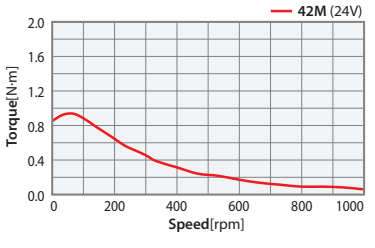
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

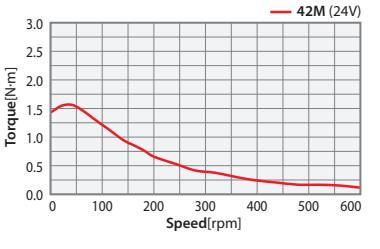
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m^2	54X10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Charcteristics of Motor with Gearbox

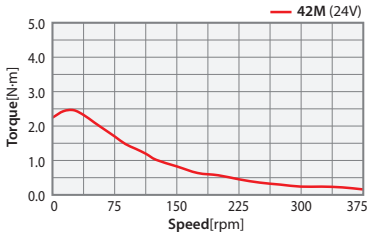
42M-PN3 Series



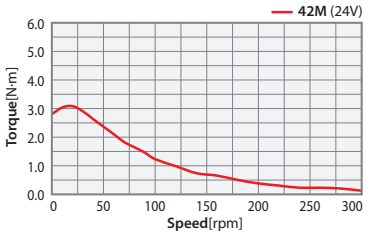
42M-PN5 Series



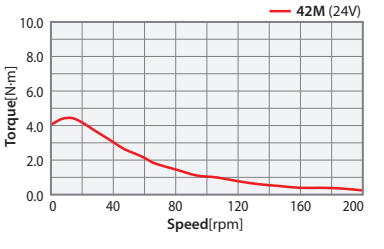
42M-PN8 Series



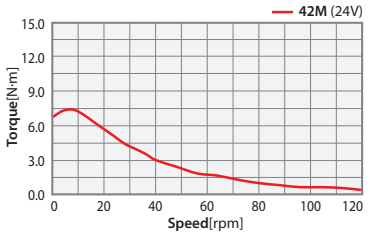
42M-PN10 Series



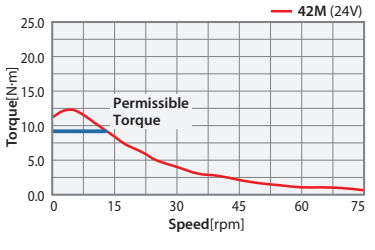
42M-PN15 Series



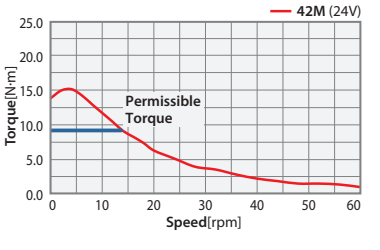
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



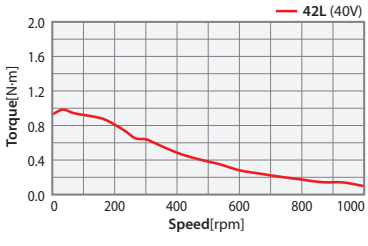
● Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

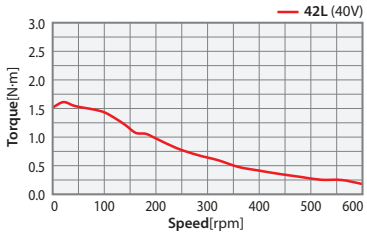
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.92	1.54	2.47	3.09	4.49	7.49	9	9
Rotor Inertia Moment	kg·m²	77X10⁻⁷							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Charcteristics of Motor with Gearbox

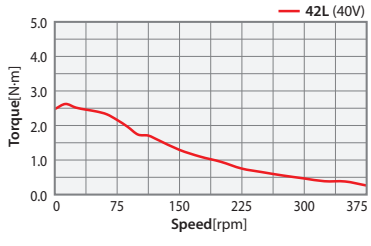
42L-PN3 Series



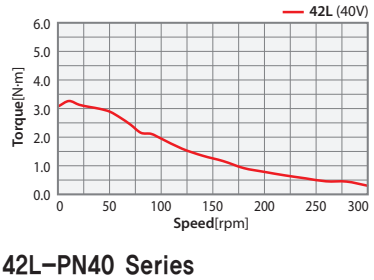
42L-PN5 Series



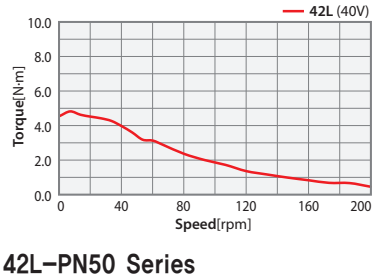
42L-PN8 Series



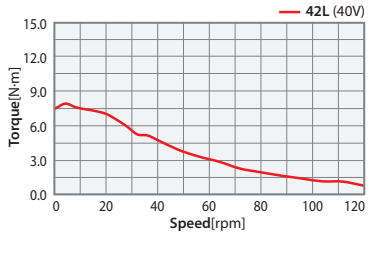
42L-PN10 Series



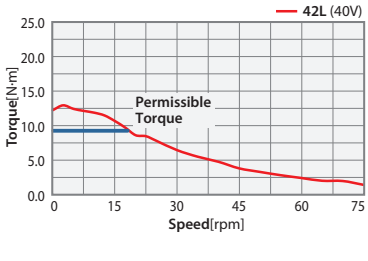
42L-PN15 Series



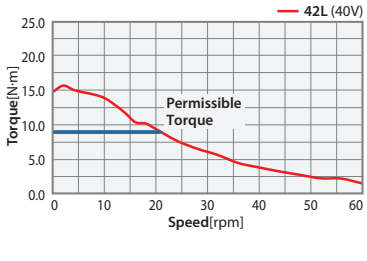
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



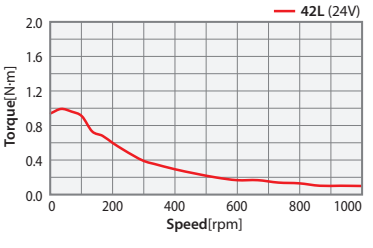
Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

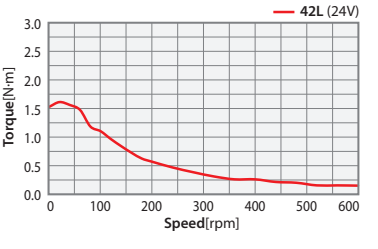
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.93	1.55	2.48	3.1	4.51	7.52	9	9
Rotor Inertia Moment	kg·m^2	77×10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

Torque Charcteristics of Motor with Gearbox

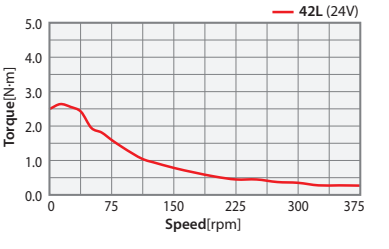
42L-PN3 Series



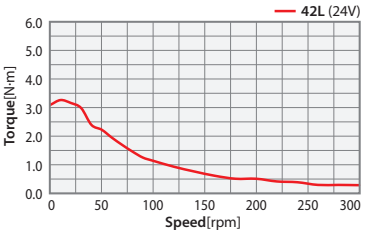
42L-PN5 Series



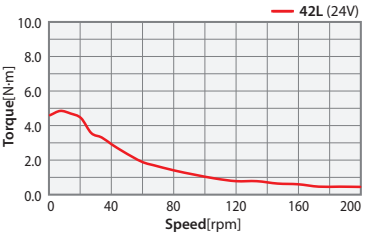
42L-PN8 Series



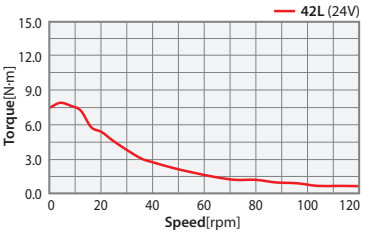
42L-PN10 Series



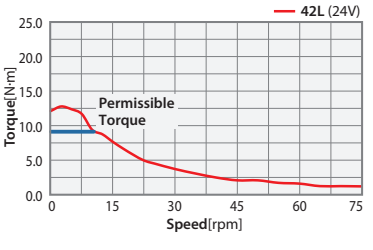
42L-PN15 Series



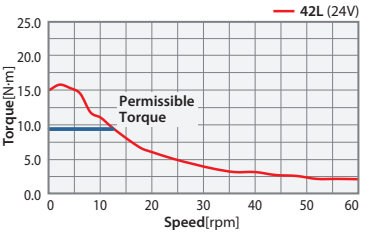
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



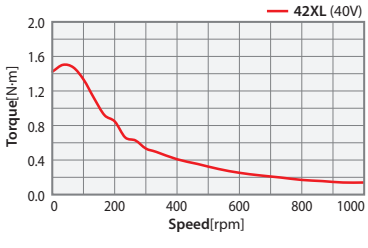
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

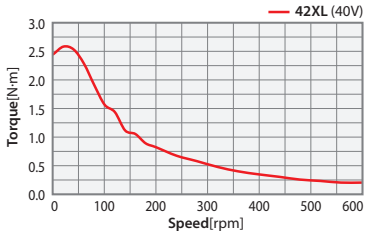
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.45	2.42	3.87	4.84	6	9	9	9
Rotor Inertia Moment	kg·m^2	114X10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Charcteristics of Motor with Gearbox

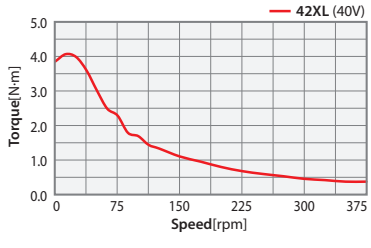
42XL-PN3 Series



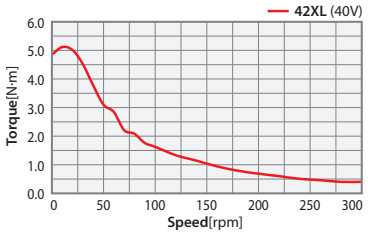
42XL-PN5 Series



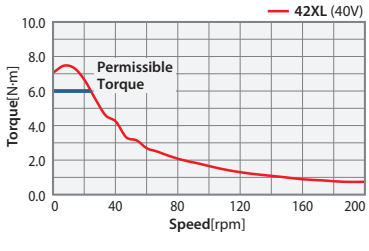
42XL-PN8 Series



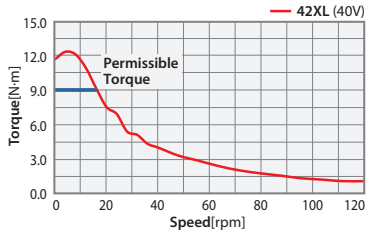
42XL-PN10 Series



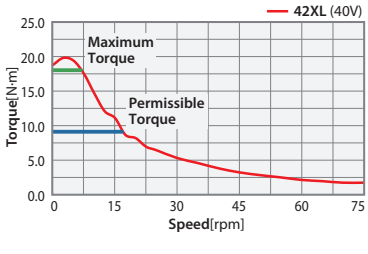
42XL-PN15 Series



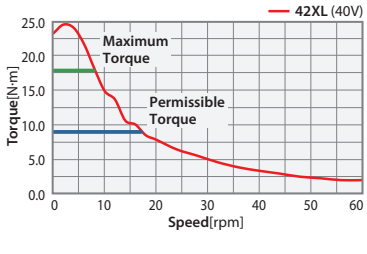
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



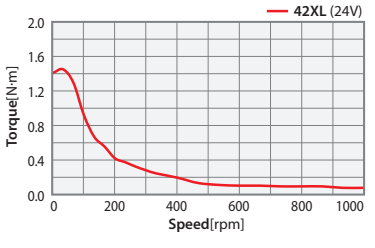
Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO MINI	Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL	

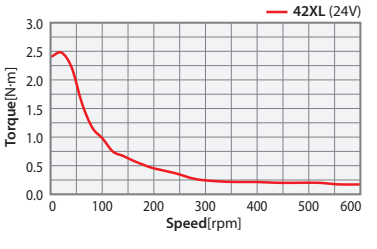
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.42	2.38	3.8	4.76	6	9	9	9
Rotor Inertia Moment	kg·m^2	114X10^{-7}							
Backlash	arcmin	3				5			
Angle Transmission Error	arcmin	5				7			
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	6	9	9	6	6	9	9	9
Instantaneous Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

Torque Charcteristics of Motor with Gearbox

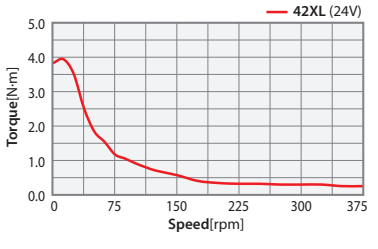
42XL-PN3 Series



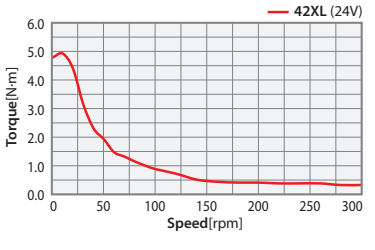
42XL-PN5 Series



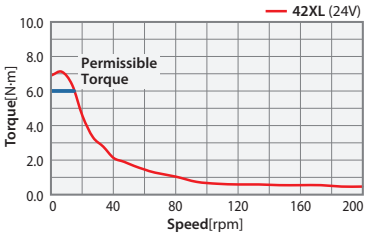
42XL-PN8 Series



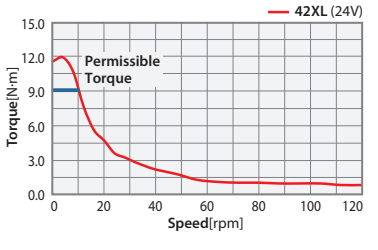
42XL-PN10 Series



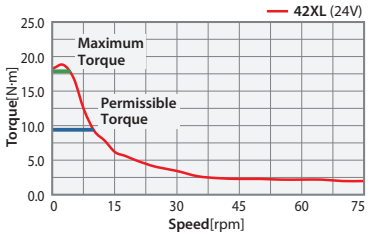
42XL-PN15 Series



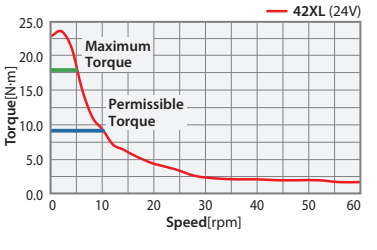
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



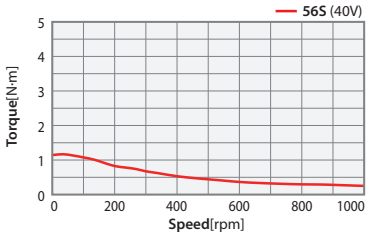
● Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

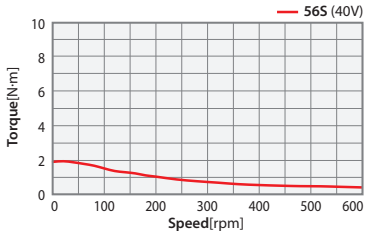
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.1	1.9	3.0	3.8	5.5	9.3	14.9	18.6
Rotor Inertia Moment	kg·m^2	180×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.94				2.14			

● Torque Charcteristics of Motor with Gearbox

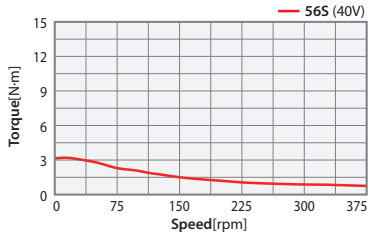
56S-PN3 Series



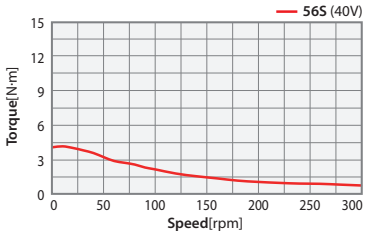
56S-PN5 Series



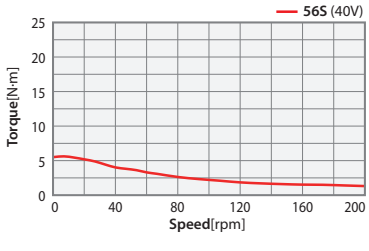
56S-PN8 Series



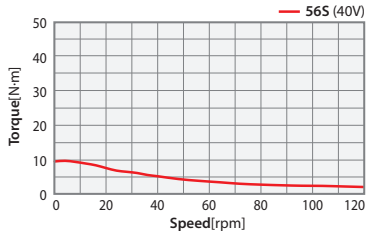
56S-PN10 Series



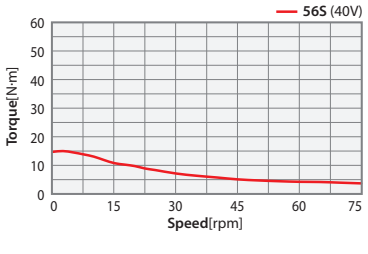
56S-PN15 Series



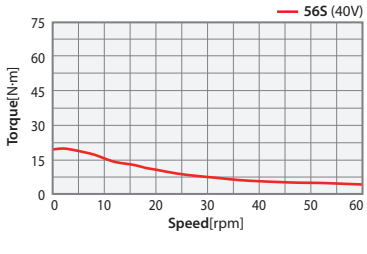
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



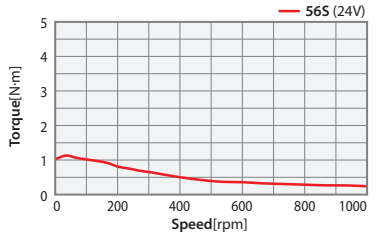
Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

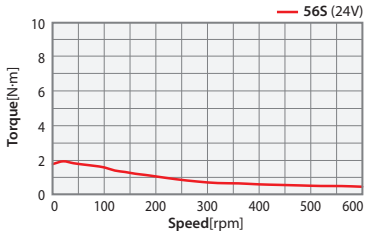
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1	1.7	2.8	3.5	5.1	8.6	13.8	17.2
Rotor Inertia Moment	kg·m^2	180×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.9				2.1			

Torque Charcteristics of Motor with Gearbox

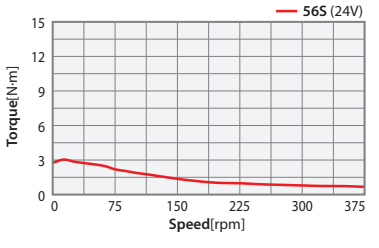
56S-PN3 Series



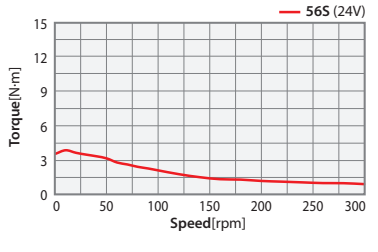
56S-PN5 Series



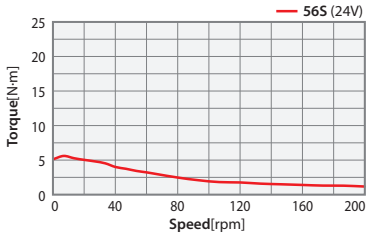
56S-PN8 Series



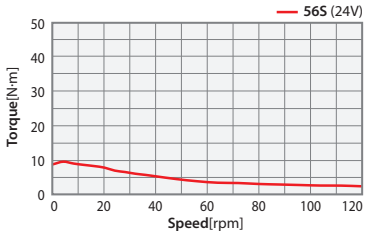
56S-PN10 Series



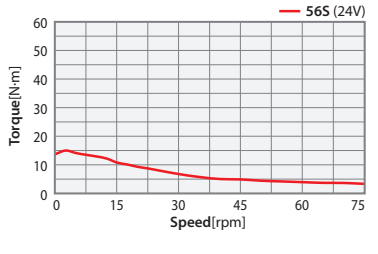
56S-PN15 Series



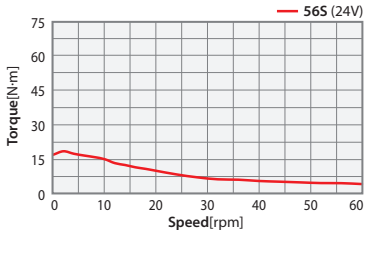
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



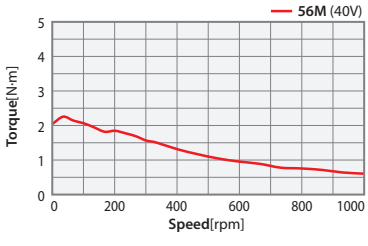
● Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

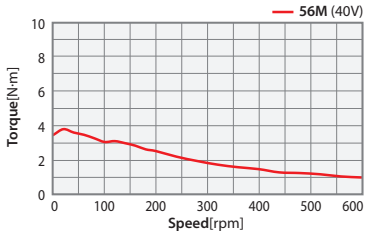
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.0	3.4	5.4	6.8	9.9	16.6	27	27
Rotor Inertia Moment	kg·m^2	280×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.15				2.35			

● Torque Charcteristics of Motor with Gearbox

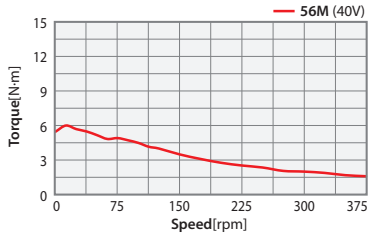
56M-PN3 Series



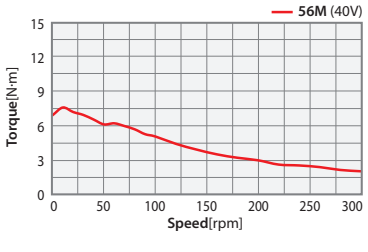
56M-PN5 Series



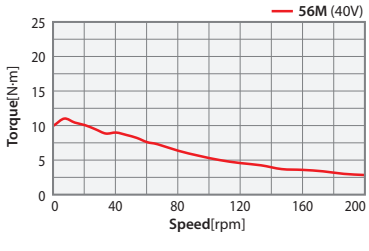
56M-PN8 Series



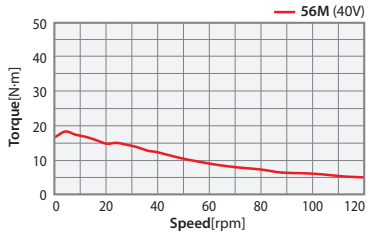
56M-PN10 Series



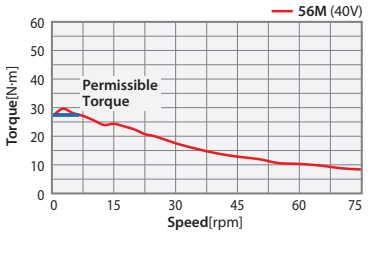
56M-PN15 Series



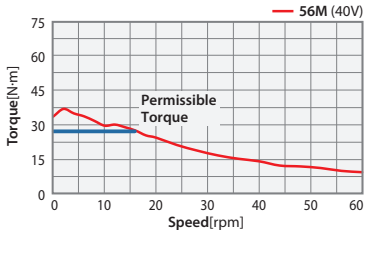
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



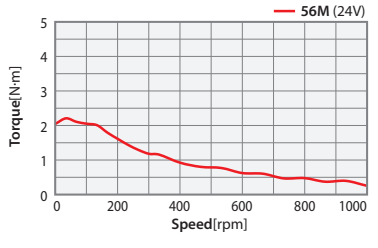
Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

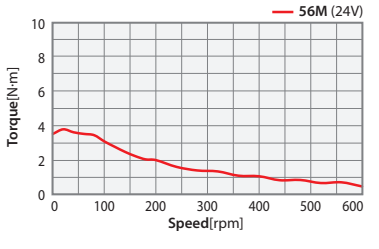
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2	3.4	5.5	6.9	10	16.7	27	27
Rotor Inertia Moment	kg·m^2	280×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:03	1:05	1:08	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.1				2.3			

Torque Charcteristics of Motor with Gearbox

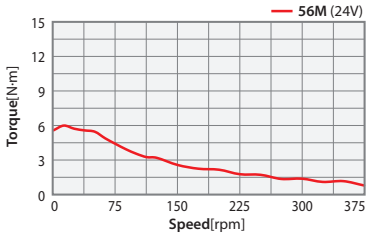
56M-PN3 Series



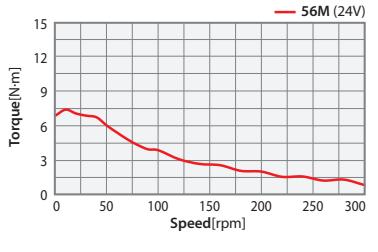
56M-PN5 Series



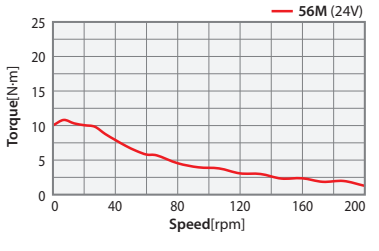
56M-PN8 Series



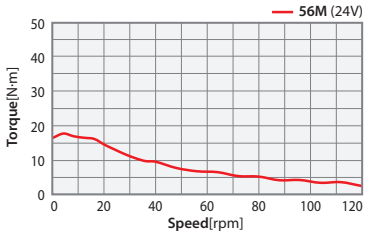
56M-PN10 Series



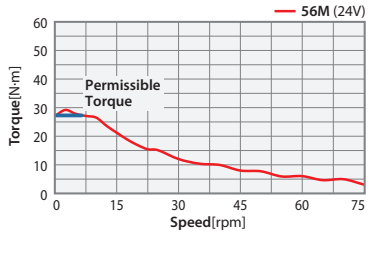
56M-PN15 Series



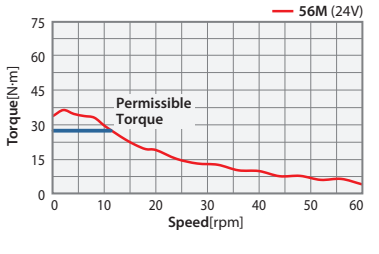
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



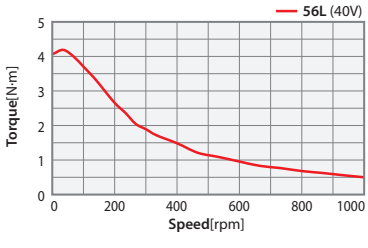
● Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

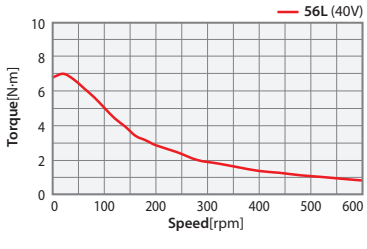
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.0	6.8	10.8	13.6	18	27	27	27
Rotor Inertia Moment	kg·m^2	520×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.52				2.72			

● Torque Charcteristics of Motor with Gearbox

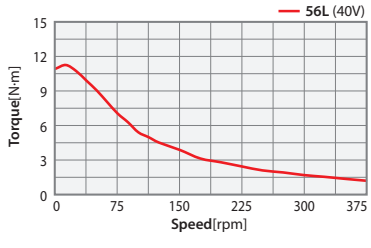
56L-PN3 Series



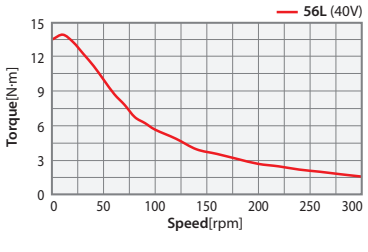
56L-PN5 Series



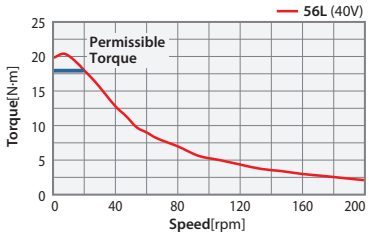
56L-PN8 Series



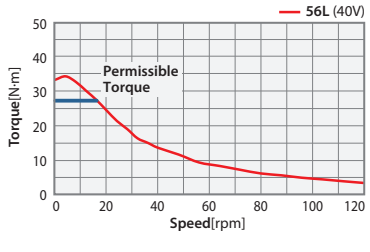
56L-PN10 Series



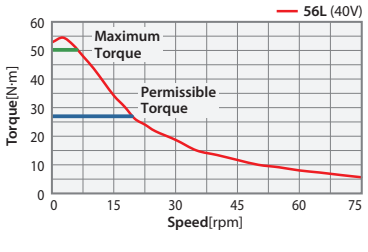
56L-PN15 Series



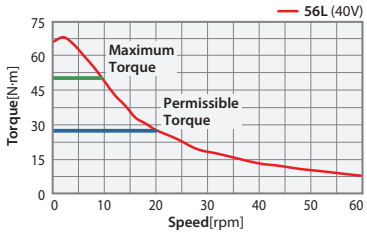
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



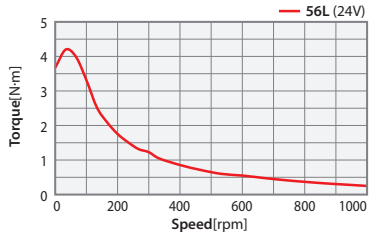
Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

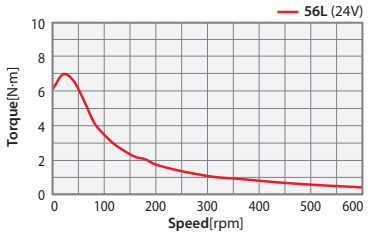
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	3.6	6	9.7	12.1	18	27	27	27
Rotor Inertia Moment	kg·m²	520×10⁻⁷							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.55				2.75			

Torque Charcteristics of Motor with Gearbox

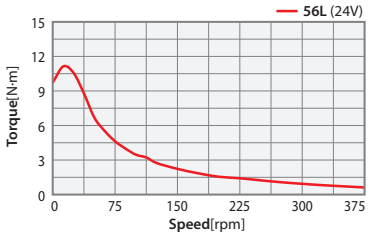
56L-PN3 Series



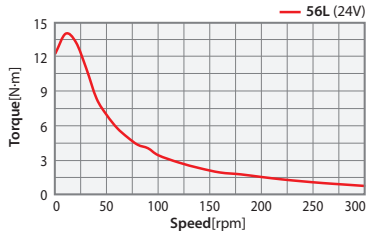
56L-PN5 Series



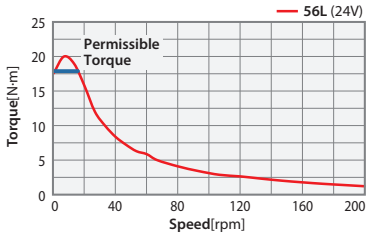
56L-PN8 Series



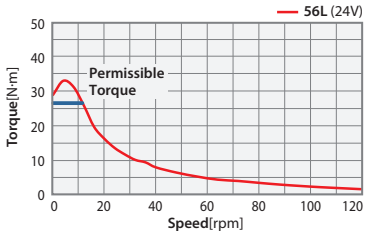
56L-PN10 Series



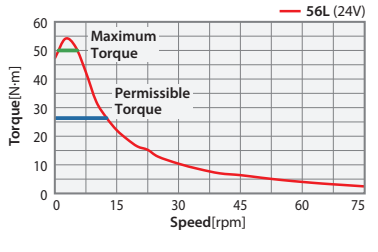
56L-PN15 Series



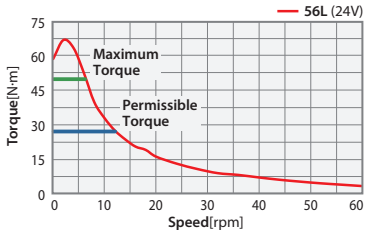
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



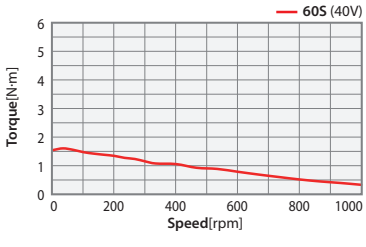
● Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

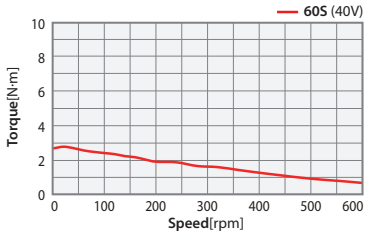
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.5	2.5	4.0	5.1	7.4	12.3	19.8	24.7
Rotor Inertia Moment	kg·m^2	240×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Charcteristics of Motor with Gearbox

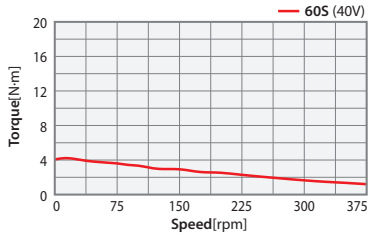
60S-PN3 Series



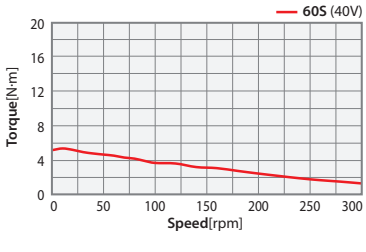
60S-PN5 Series



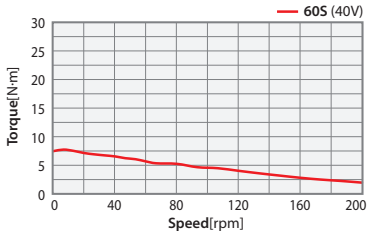
60S-PN8 Series



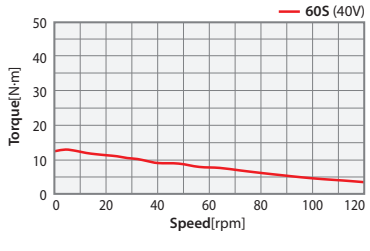
60S-PN10 Series



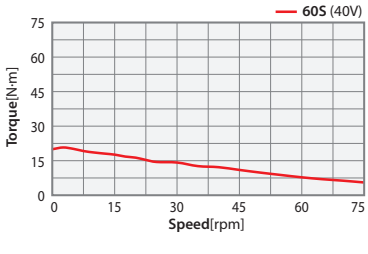
60S-PN15 Series



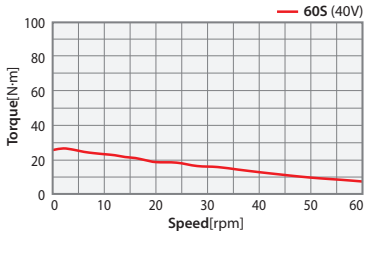
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



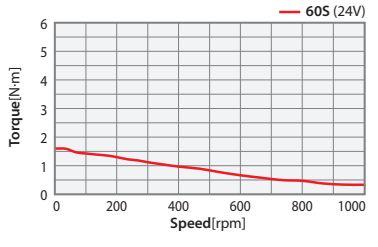
Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

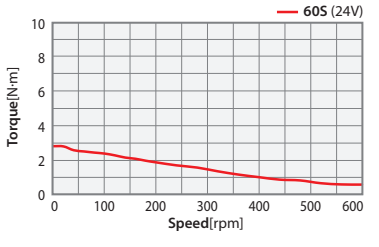
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.6	2.7	4.4	5.5	8	13.4	21.4	26.8
Rotor Inertia Moment	kg·m^2	240×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

Torque Charcteristics of Motor with Gearbox

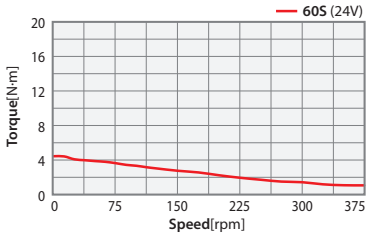
60S-PN3 Series



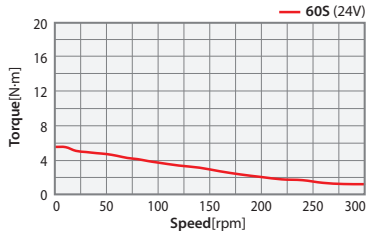
60S-PN5 Series



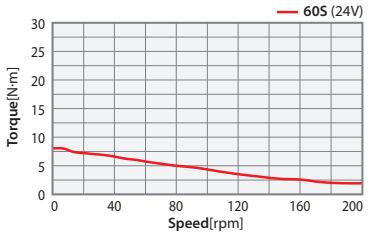
60S-PN8 Series



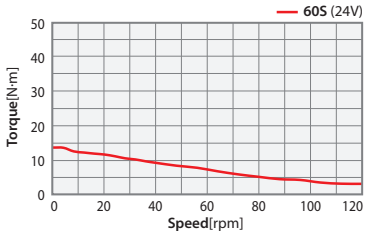
60S-PN10 Series



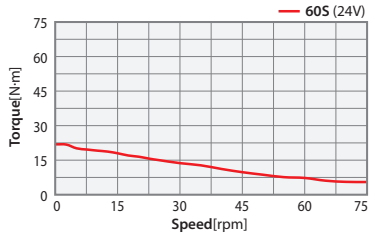
60S-PN15 Series



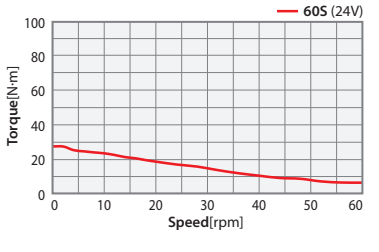
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



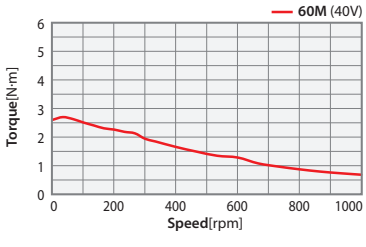
● Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

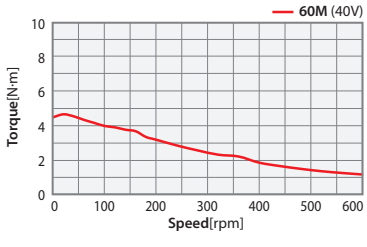
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	kg·m^2	490X10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.3				2.5			

● Torque Charcteristics of Motor with Gearbox

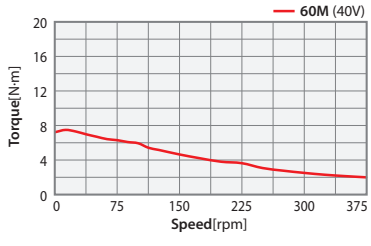
60M-PN3 Series



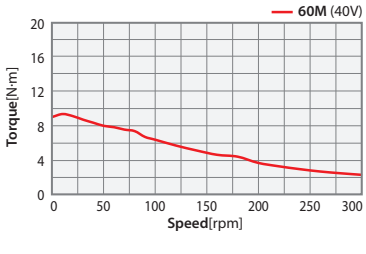
60M-PN5 Series



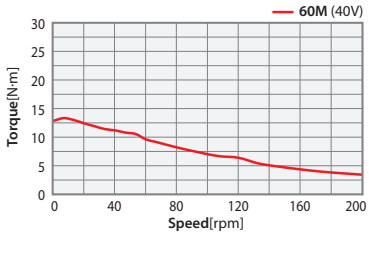
60M-PN8 Series



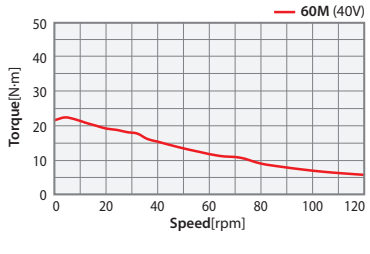
60M-PN10 Series



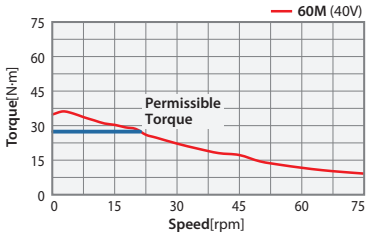
60M-PN15 Series



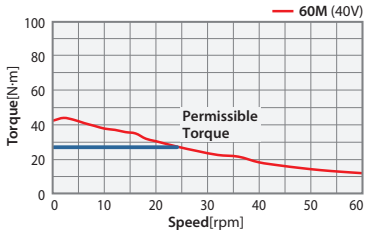
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



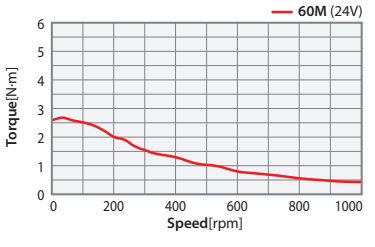
● Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

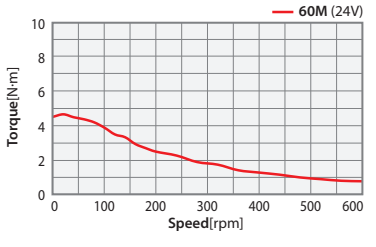
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	kg·m^2	490×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.3				2.5			

● Torque Charcteristics of Motor with Gearbox

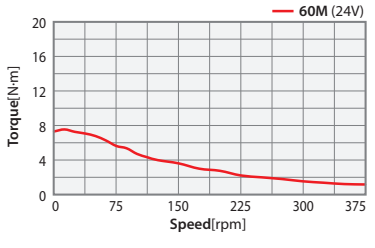
60M-PN3 Series



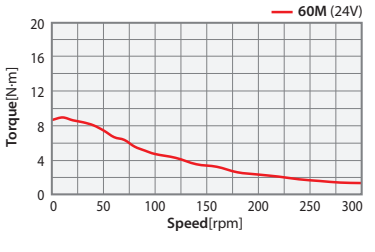
60M-PN5 Series



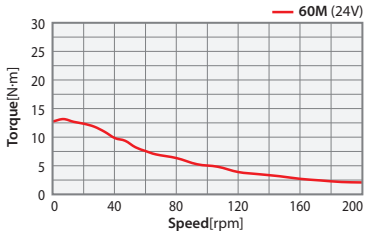
60M-PN8 Series



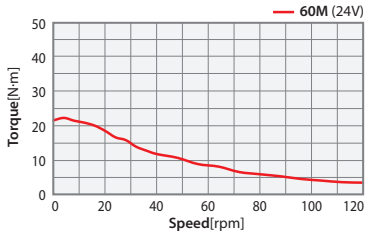
60M-PN10 Series



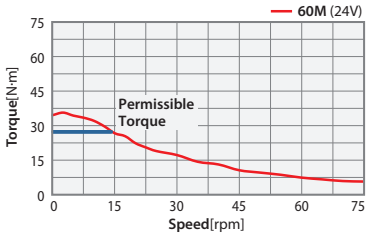
60M-PN15 Series



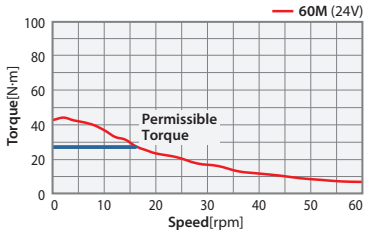
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



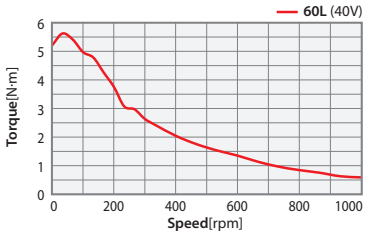
● Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO
Ezi-SERVO II CC-Link			

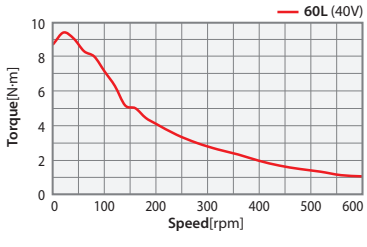
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	5.2	8.7	13.9	18	18	27	27	27
Rotor Inertia Moment	kg·m²	690X10⁻⁷							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Charcteristics of Motor with Gearbox

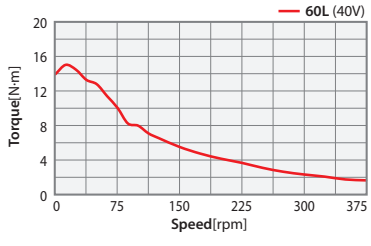
60L-PN3 Series



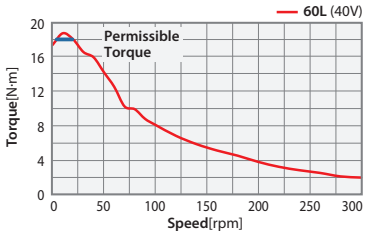
60L-PN5 Series



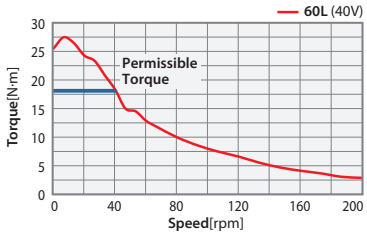
60L-PN8 Series



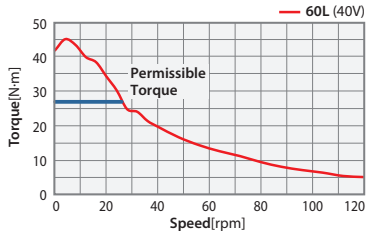
60L-PN10 Series



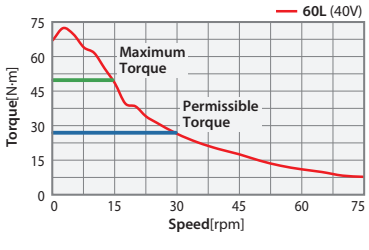
60L-PN15 Series



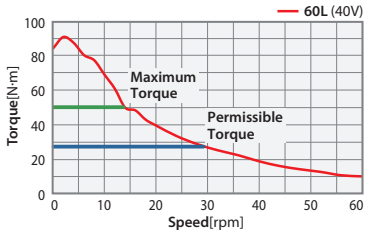
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



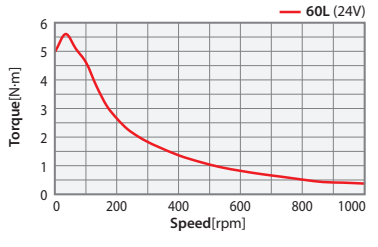
Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO II BT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-SERVO II Plus-E MINI	Ezi-SERVO II Plus-E ALL		

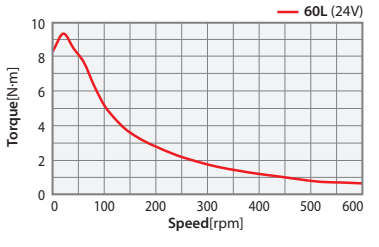
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.9	8.3	13.2	16.6	18	27	27	27
Rotor Inertia Moment	kg·m^2	690×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	18	27	27	18	18	27	27	27
Instantaneous Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

Torque Charcteristics of Motor with Gearbox

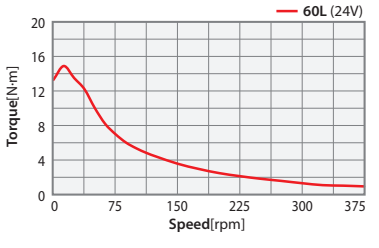
60L-PN3 Series



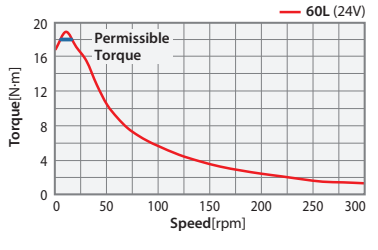
60L-PN5 Series



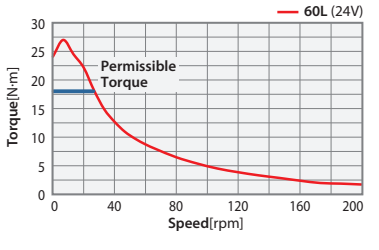
60L-PN8 Series



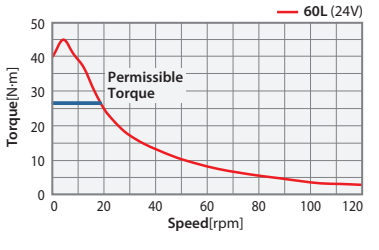
60L-PN10 Series



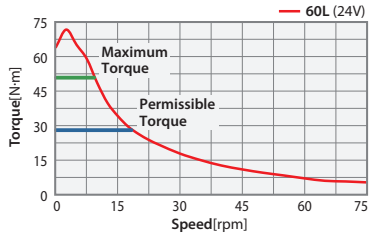
60L-PN15 Series



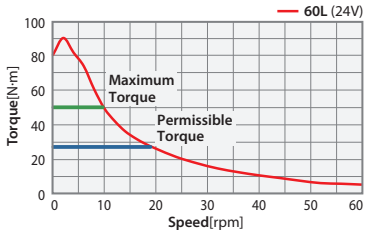
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



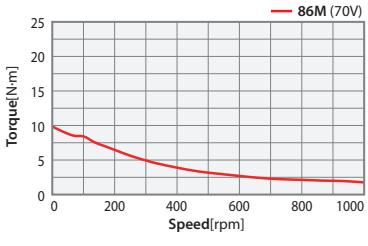
● Specifications of Motor with Gearbox [86M]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL		

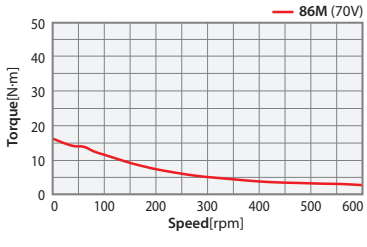
Model	Unit	86M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	9.6	16	25.7	32.1	46.6	75	75	75
Rotor Inertia Moment	kg·m^2	1800×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Instantaneous Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	6				6.5			

● Torque Charcteristics of Motor with Gearbox

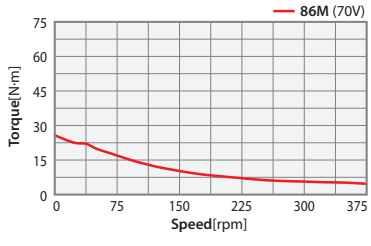
86M-PN3 Series



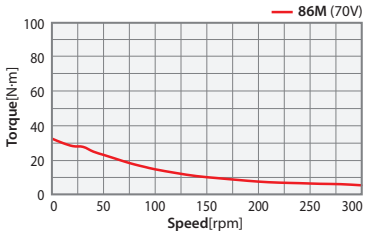
86M-PN5 Series



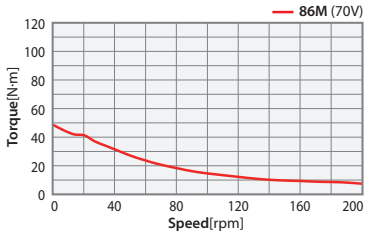
86M-PN8 Series



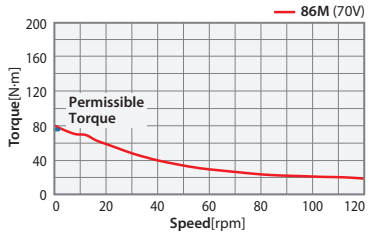
86M-PN10 Series



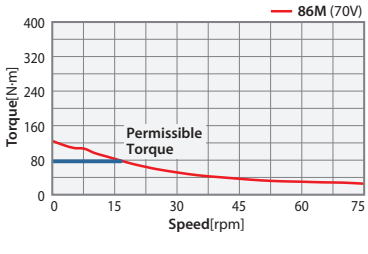
86M-PN15 Series



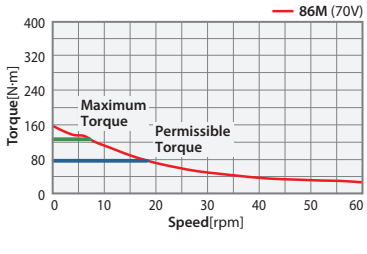
86M-PN25 Series



86M-PN40 Series



86M-PN50 Series



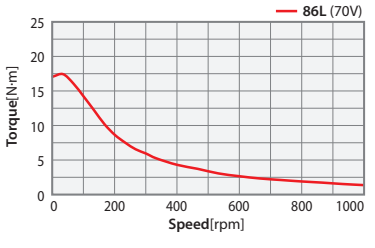
● Specifications of Motor with Gearbox [86L]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL		

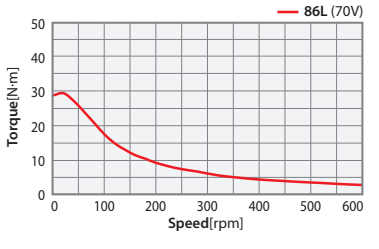
Model	Unit	86L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	17.1	28.5	45.6	50	50	75	75	75
Rotor Inertia Moment	kg·m^2	3600×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Instantaneous Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	7.5				8			

● Torque Charcteristics of Motor with Gearbox

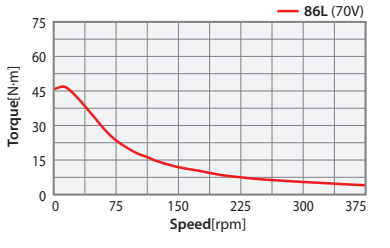
86L-PN3 Series



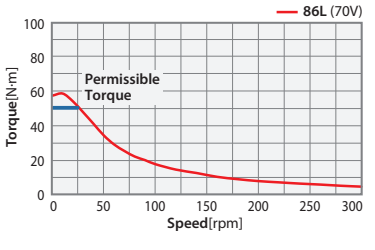
86L-PN5 Series



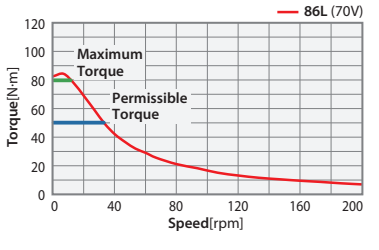
86L-PN8 Series



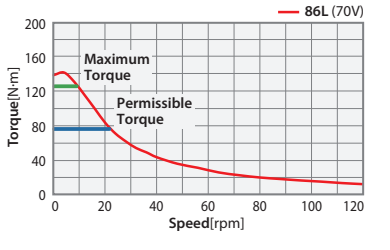
86L-PN10 Series



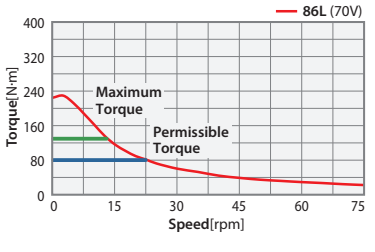
86L-PN15 Series



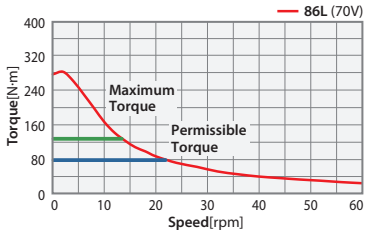
86L-PN25 Series



86L-PN40 Series



86L-PN50 Series



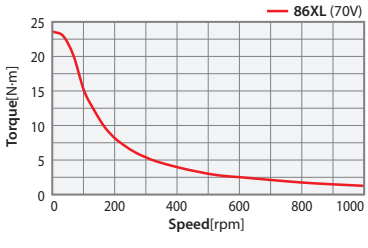
● Specifications of Motor with Gearbox [86XL]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link
Ezi-SERVO II EtherCAT ALL	Ezi-SERVO II Plus-E ALL		

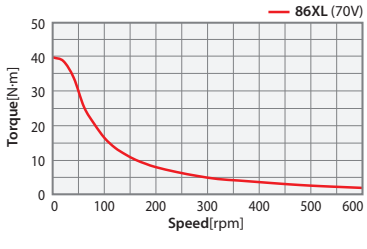
Model	Unit	86XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	23.6	39.4	63.0	50	50	75	75	75
Rotor Inertia Moment	kg·m^2	5400×10^{-7}							
Backlash	arcmin	3							
Angle Transmission Error	arcmin	5							
Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000 P/R Standard)	°	0.012	0.0072	0.0045	0.0036	0.0024	0.00144	0.0009	0.00072
Permissible Torque	N·m	50	75	75	50	50	75	75	75
Instantaneous Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permissible Speed Range	r/min	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	9				9.5			

● Torque Charcteristics of Motor with Gearbox

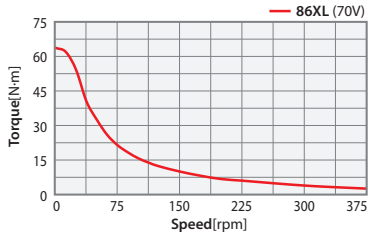
86XL-PN3 Series



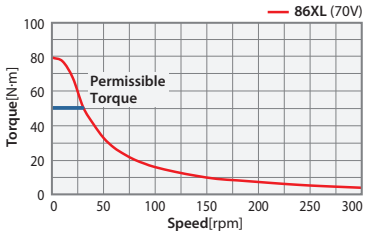
86XL-PN5 Series



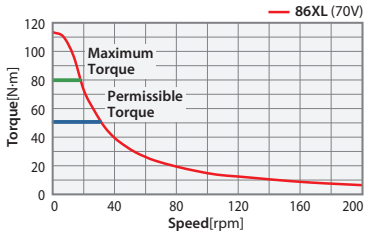
86XL-PN8 Series



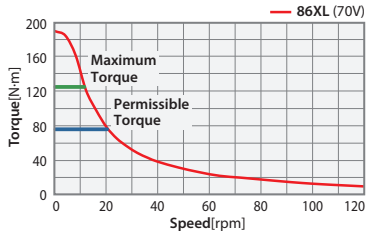
86XL-PN10 Series



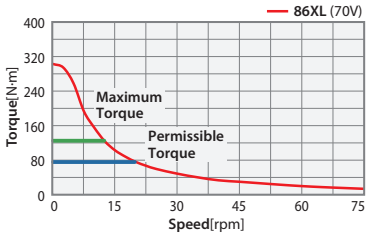
86XL-PN15 Series



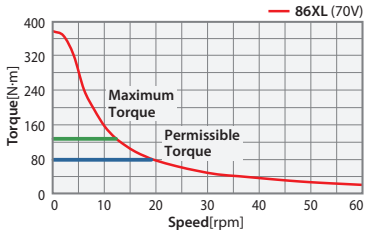
86XL-PN25 Series



86XL-PN40 Series



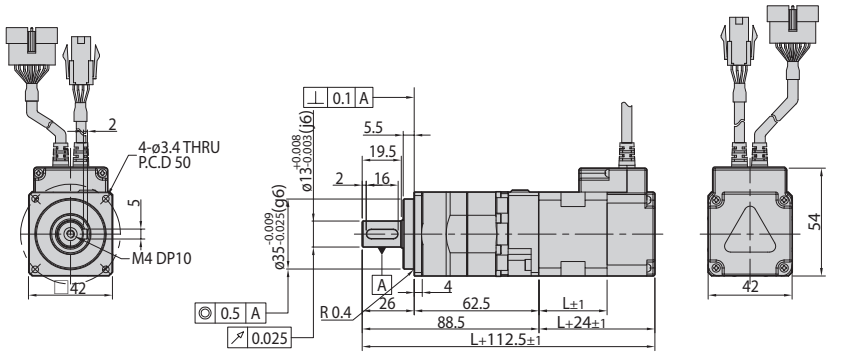
86XL-PN50 Series



● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO ST	Ezi-SERVO MINI		

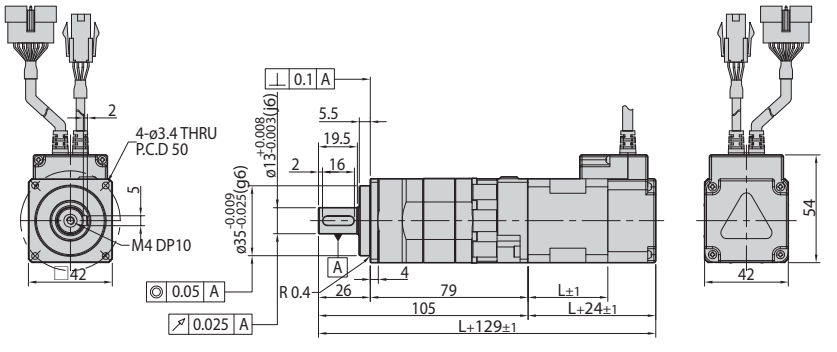
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Gear Ratio 15, 25, 40, 50 : Double

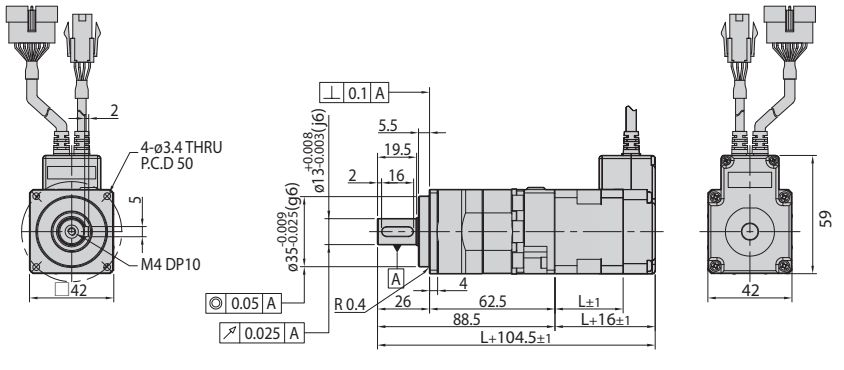


42mm

Model name	Length(L)
EzM-42S	34
EzM-42M	40
EzM-42L	48
EzM-42XL	60

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	

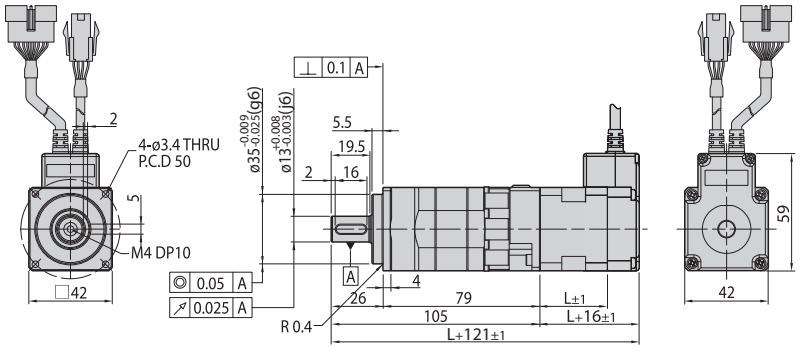
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60

Gear Ratio 15, 25, 40, 50 : Double



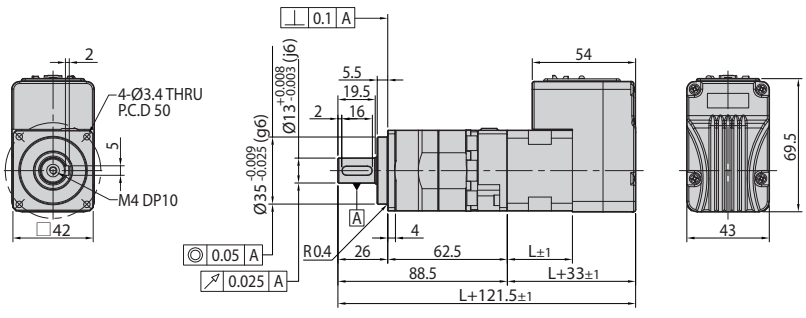
42mm

Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II BT			

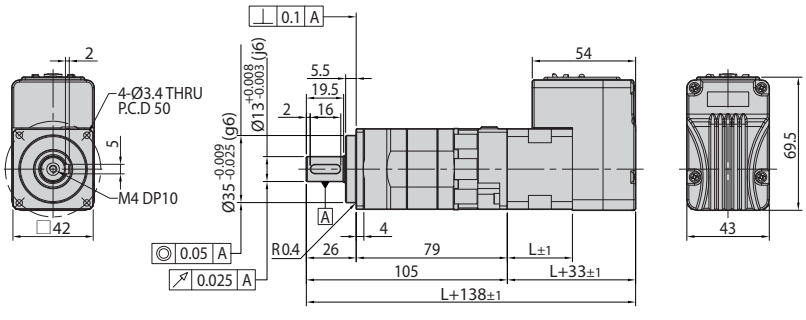
Gear Ratio 3, 5, 8, 10 : Single



42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double

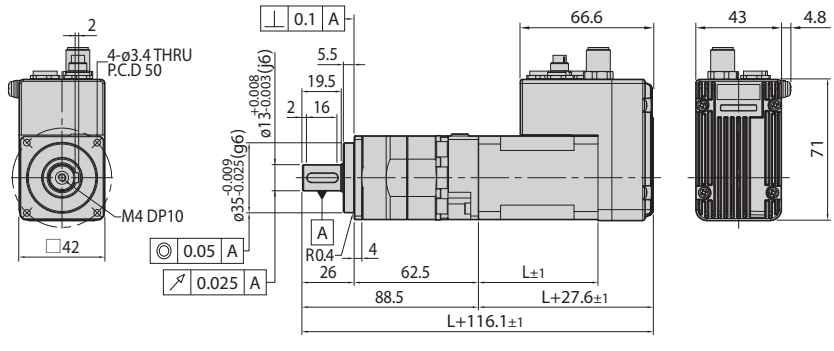


42mm

Model name	Length(L)
42S	34
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

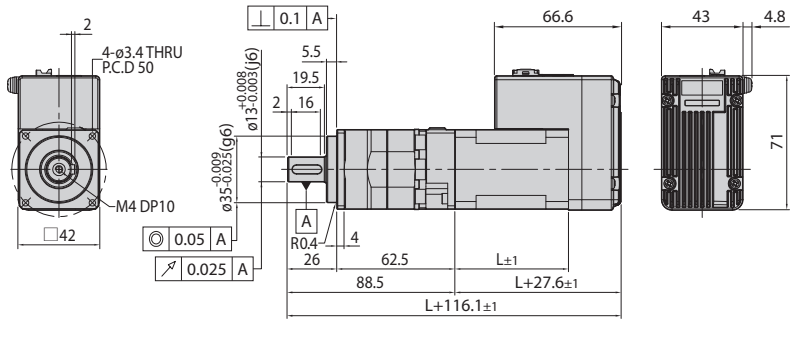
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



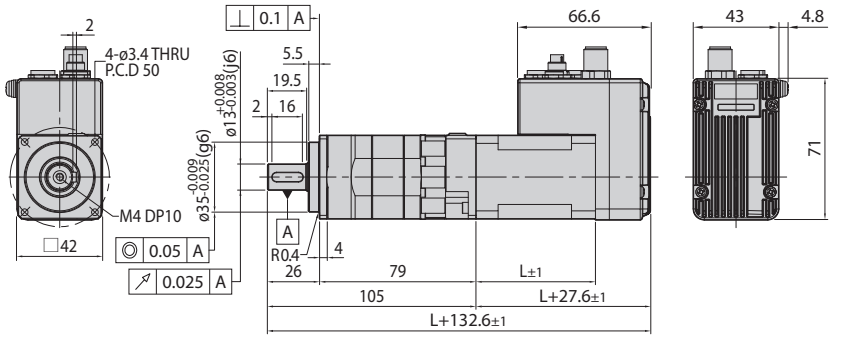
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

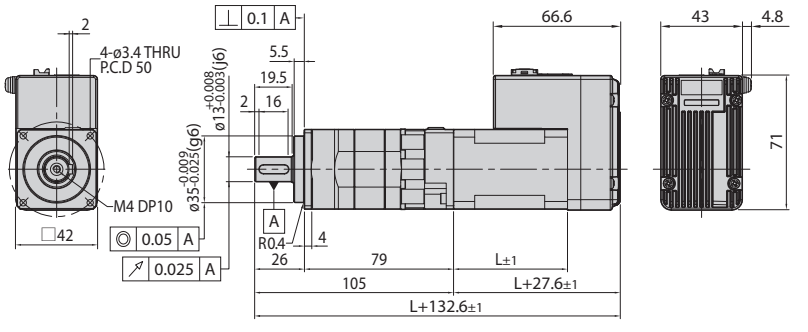
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)

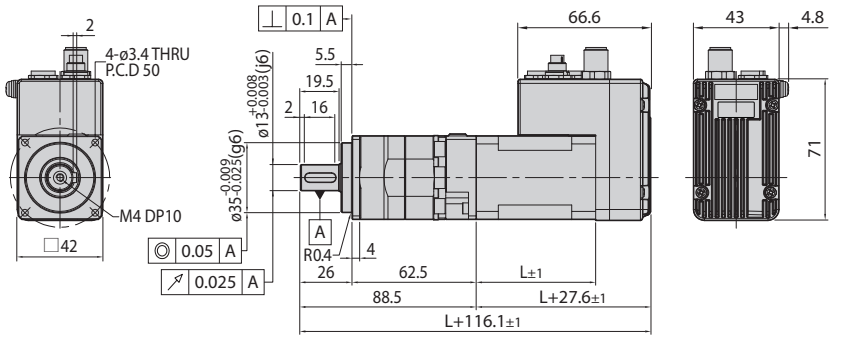


42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Applicable Model			
Ezi-SERVO II Plus-E ALL			

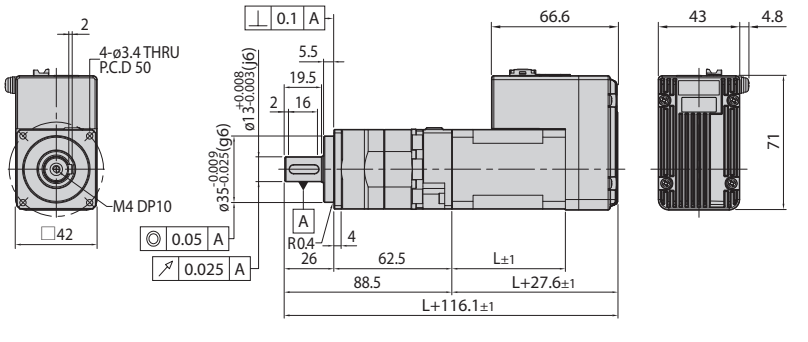
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



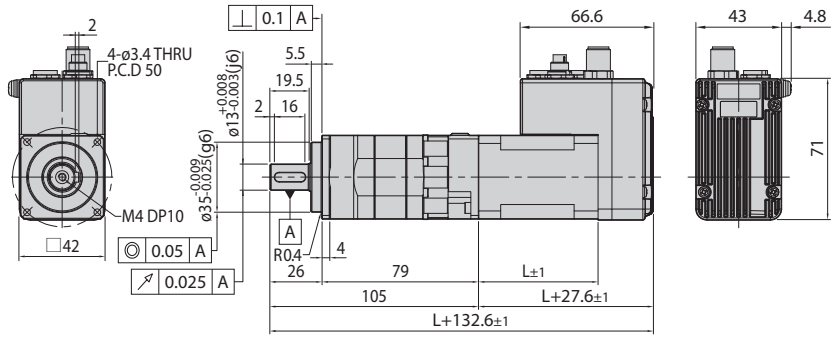
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

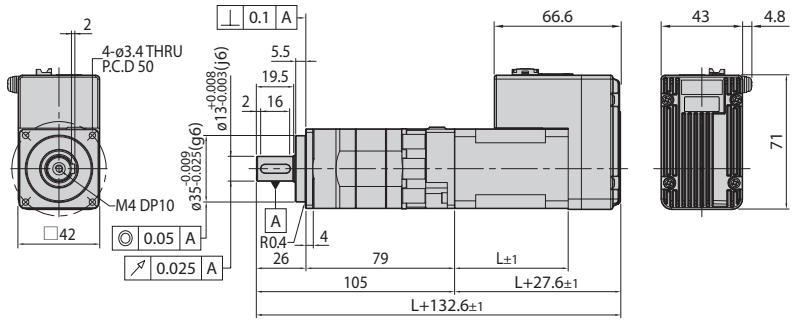
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



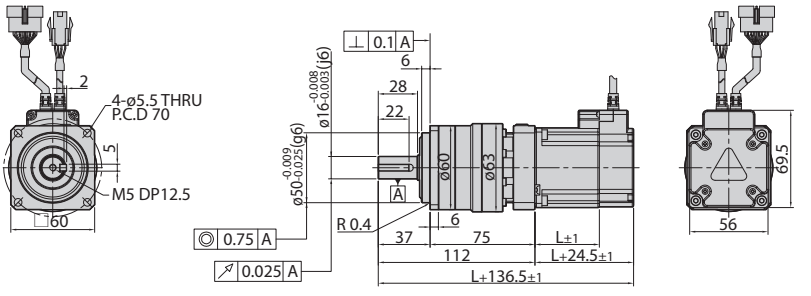
42mm

Model name	Length(L)
42M	40
42L	48
42XL	60

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO ST			

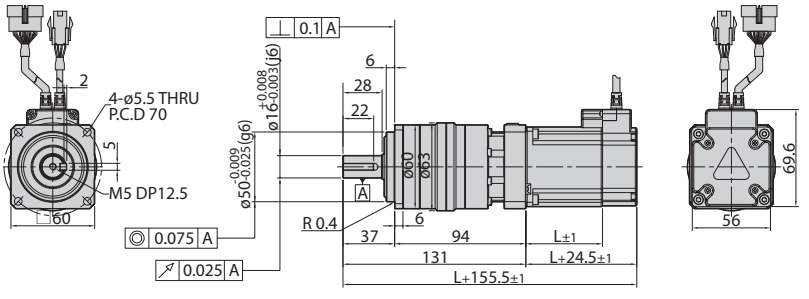
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

Gear Ratio 15, 25, 40, 50 : Double

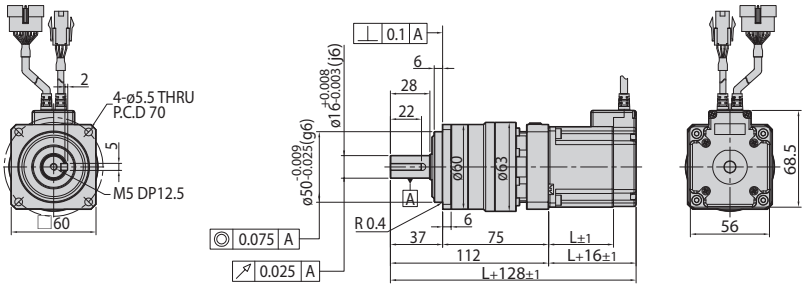


56mm

Model name	Length(L)
EzM-56S	46
EzM-56M	55
EzM-56L	80

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	

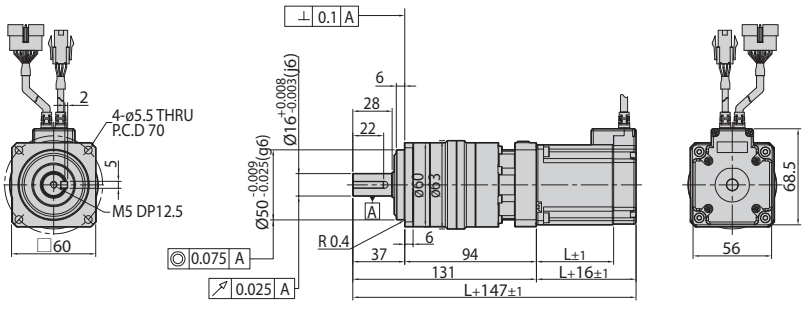
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

Gear Ratio 15, 25, 40, 50 : Double



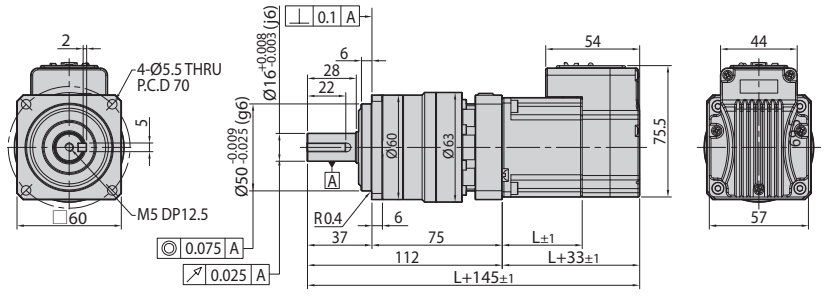
56mm

Model name	Length(L)
EzM2-56S	46
EzM2-56M	55
EzM2-56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II BT			

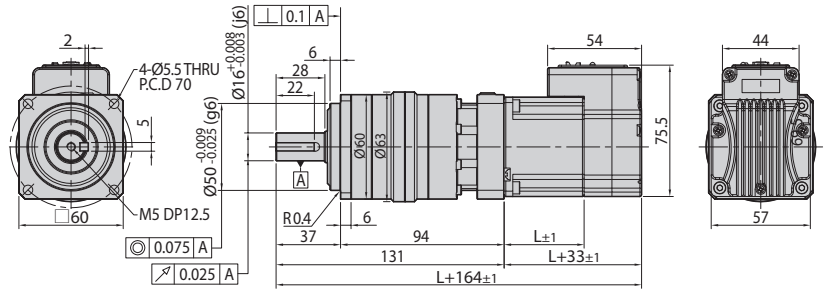
Gear Ratio 3, 5, 8, 10 : Single



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double

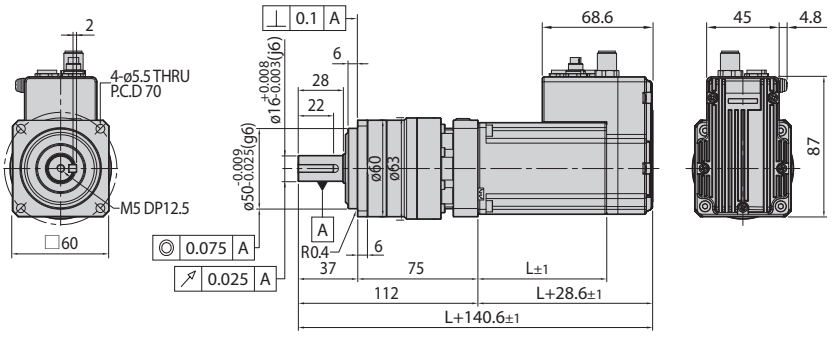


56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

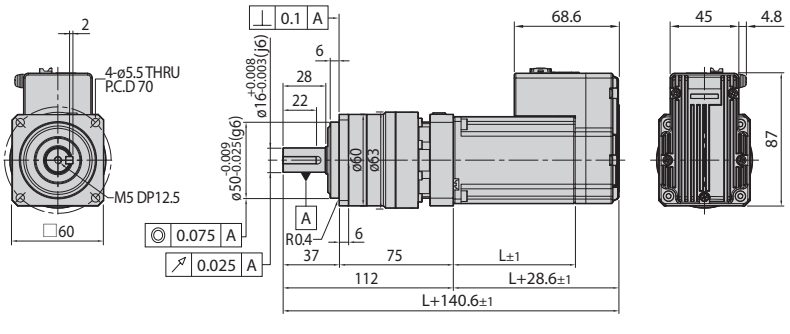
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



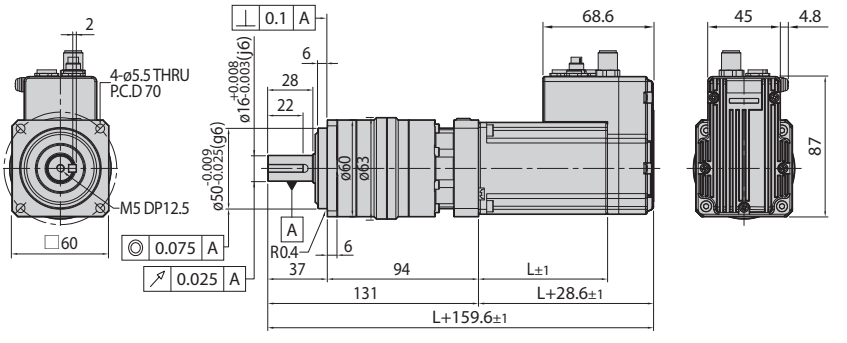
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

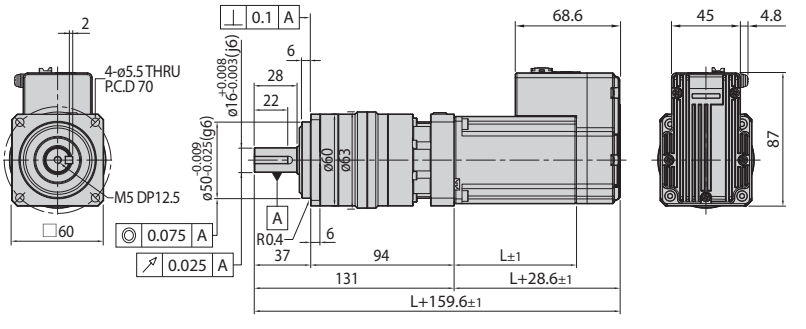
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)

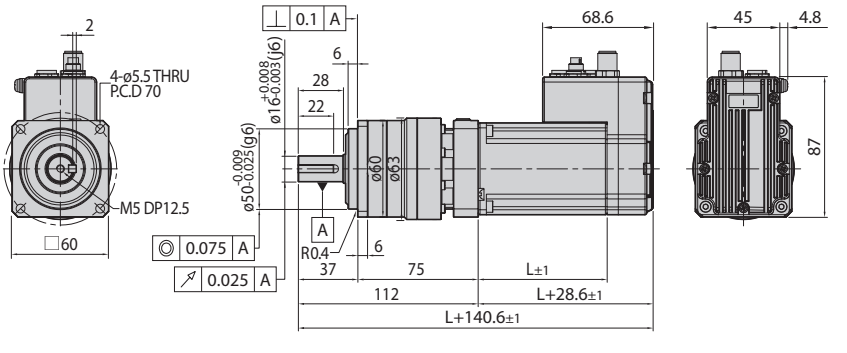


56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Applicable Model			
Ezi-SERVO II Plus-E ALL			

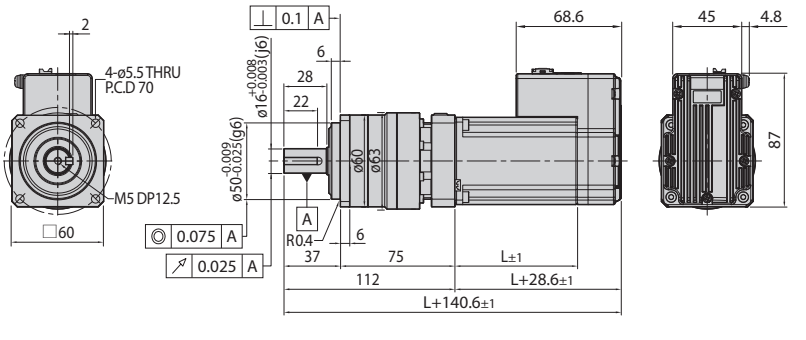
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



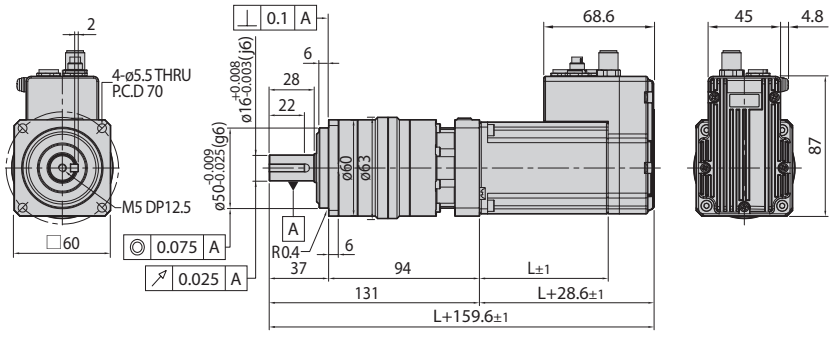
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

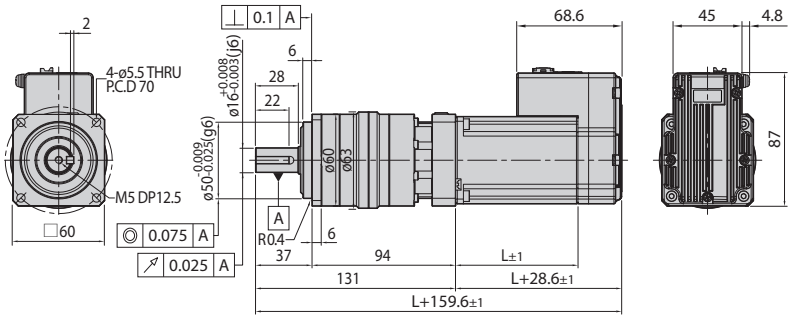
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



56mm

Model name	Length(L)
56S	46
56M	55
56L	80

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



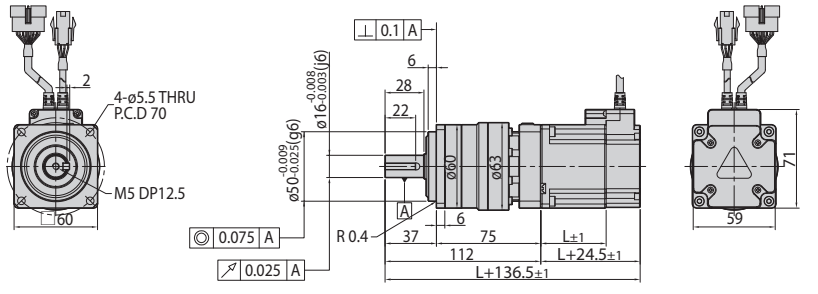
56mm

Model name	Length(L)
56S	46
56M	55
56L	80

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO ST			

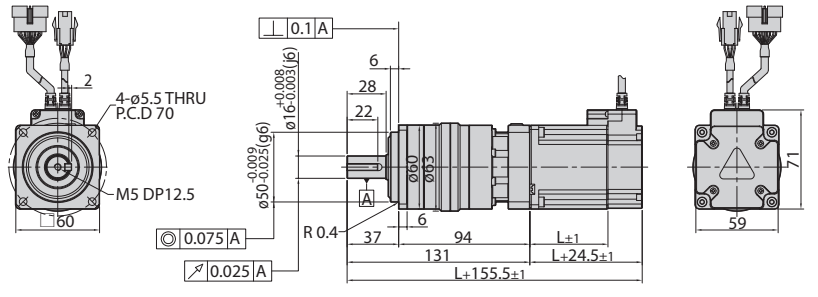
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

Gear Ratio 15, 25, 40, 50 : Double

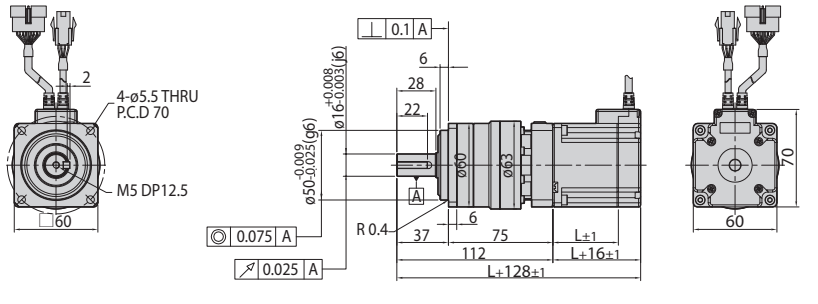


60mm

Model name	Length(L)
EzM-60S	47
EzM-60M	56
EzM-60L	85

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT TO	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link	

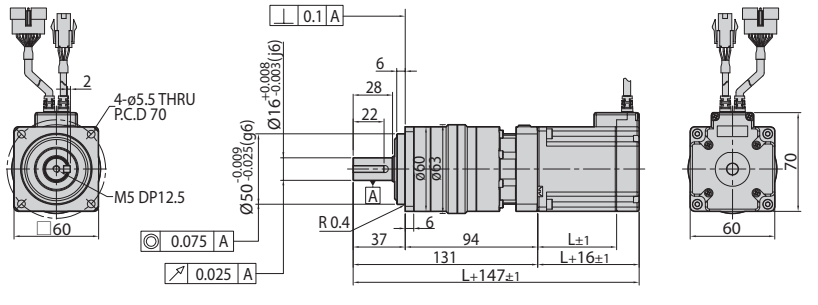
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

Gear Ratio 15, 25, 40, 50 : Double



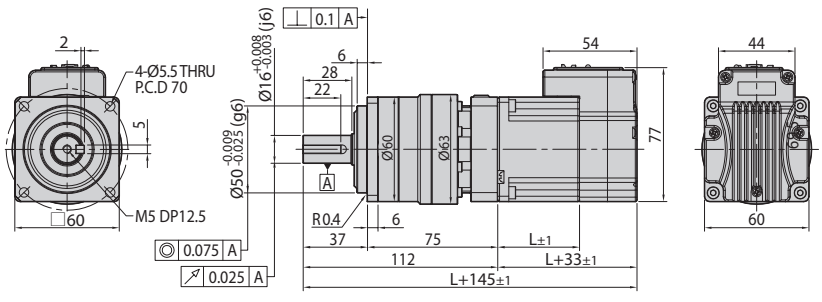
60mm

Model name	Length(L)
EzM2-60S	47
EzM2-60M	56
EzM2-60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II BT			

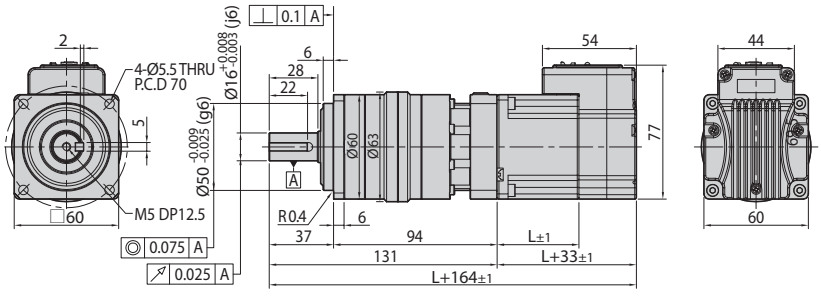
Gear Ratio 3, 5, 8, 10 : Single



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double

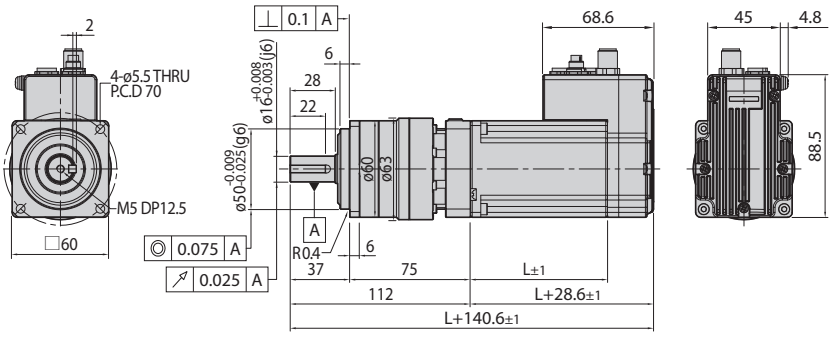


60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

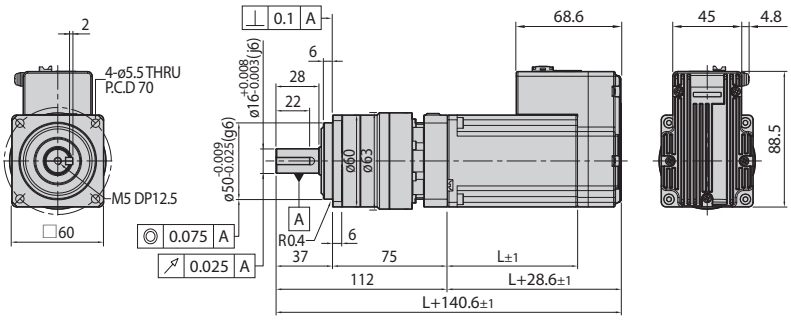
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



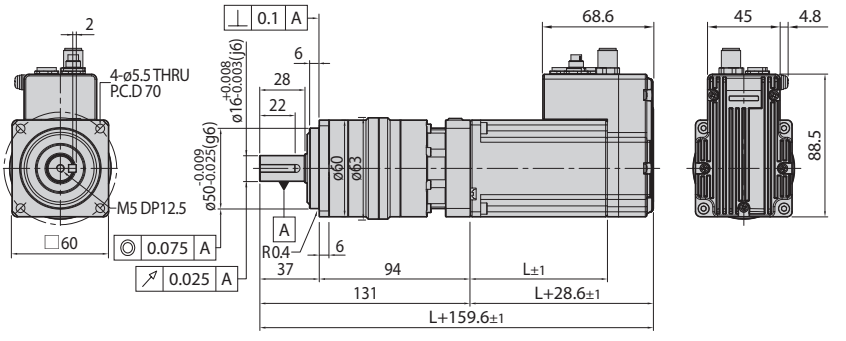
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

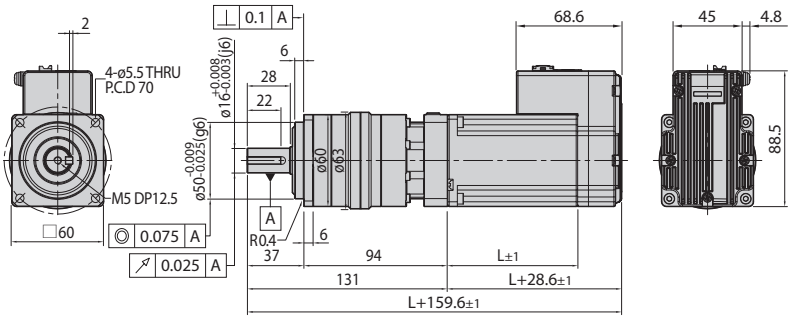
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)

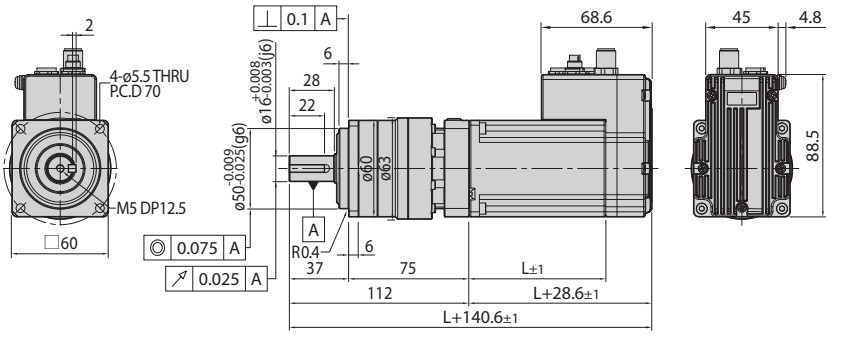


60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Applicable Model			
Ezi-SERVO II Plus-E ALL			

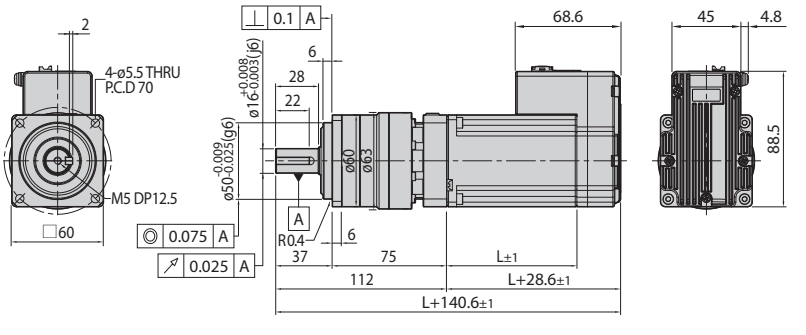
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



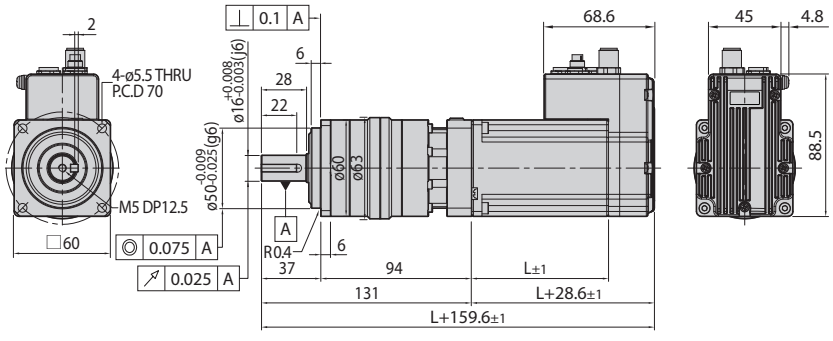
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

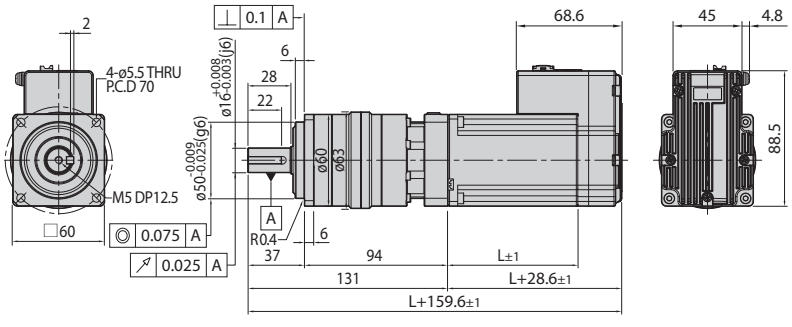
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



60mm

Model name	Length(L)
60S	47
60M	56
60L	85

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



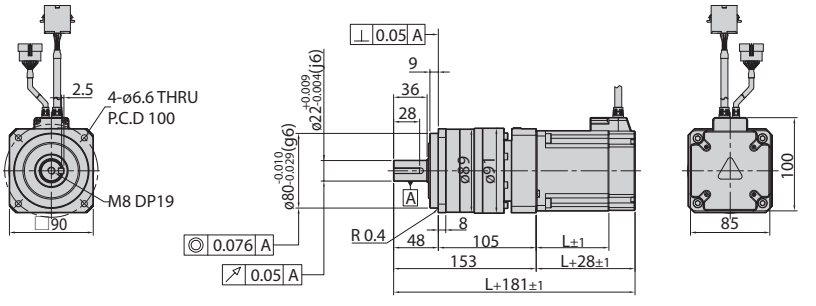
60mm

Model name	Length(L)
60S	47
60M	56
60L	85

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO ST			

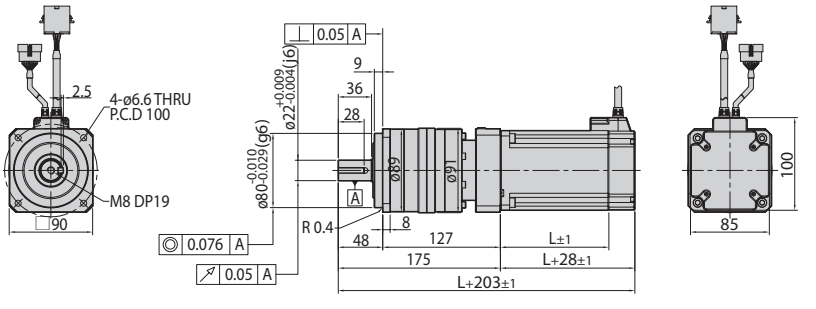
Gear Ratio 3, 5, 8, 10 : Single



86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

Gear Ratio 15, 25, 40, 50 : Double

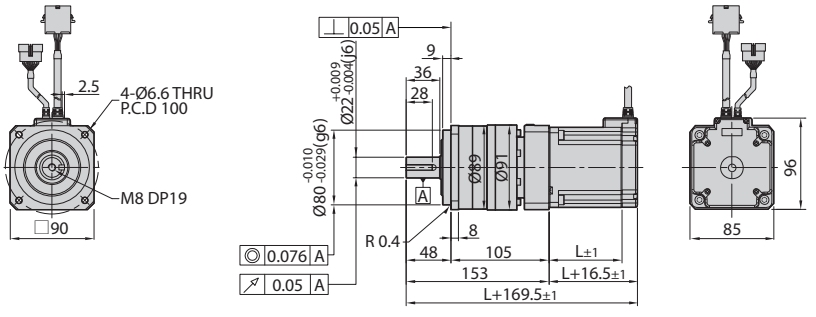


86mm

Model name	Length(L)
EzM-86M	78
EzM-86L	117
EzM-86XL	155

Applicable Model			
Ezi-SERVO II Plus-E	Ezi-SERVO II EtherCAT	Ezi-SERVO II CC-Link	

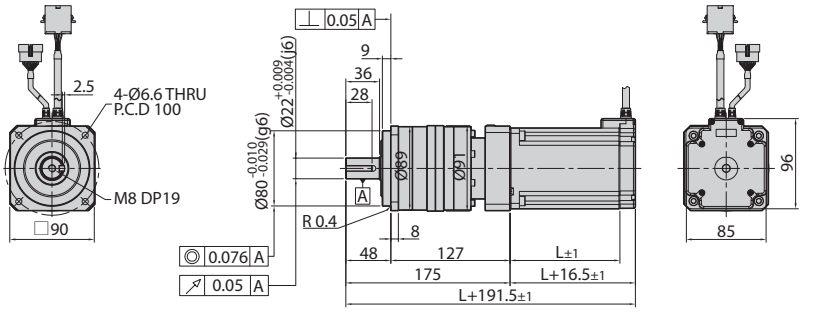
Gear Ratio 3, 5, 8, 10 : Single



86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

Gear Ratio 15, 25, 40, 50 : Double



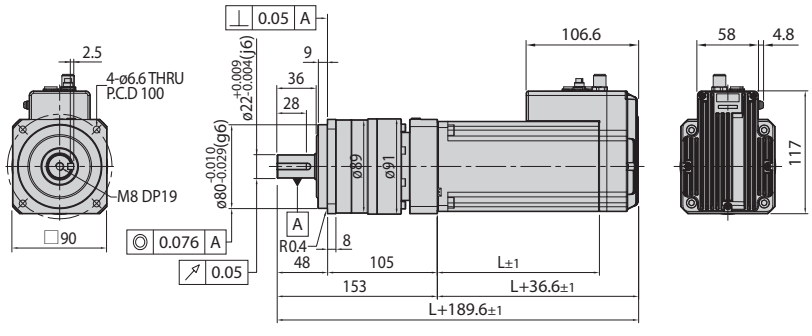
86mm

Model name	Length(L)
EzM2-86M	78
EzM2-86L	117
EzM2-86XL	155

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

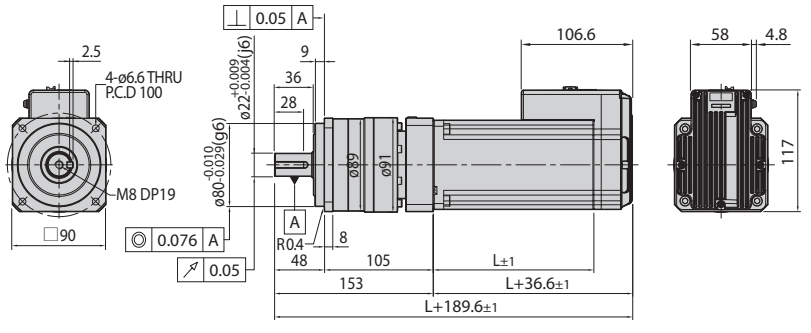
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

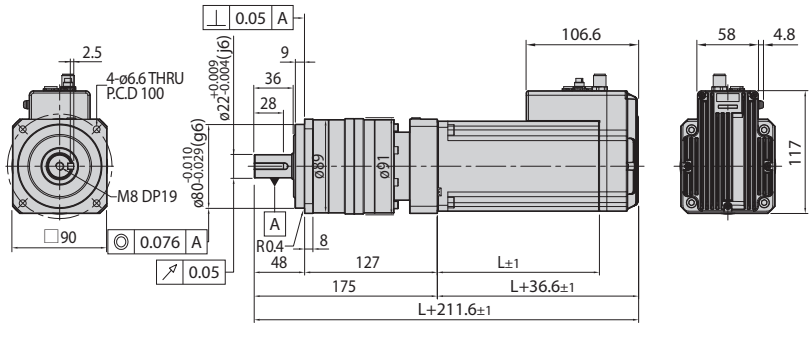


86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

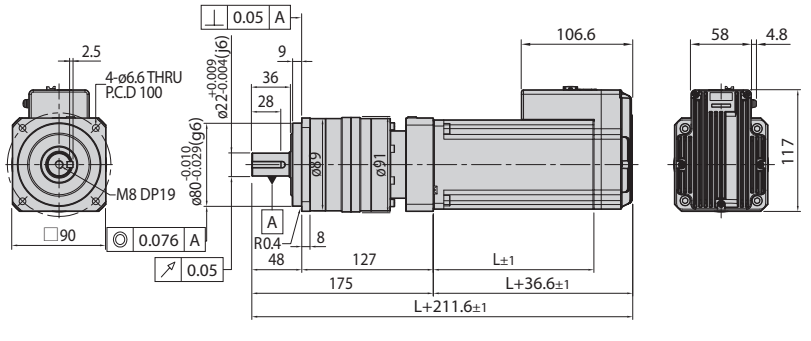
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



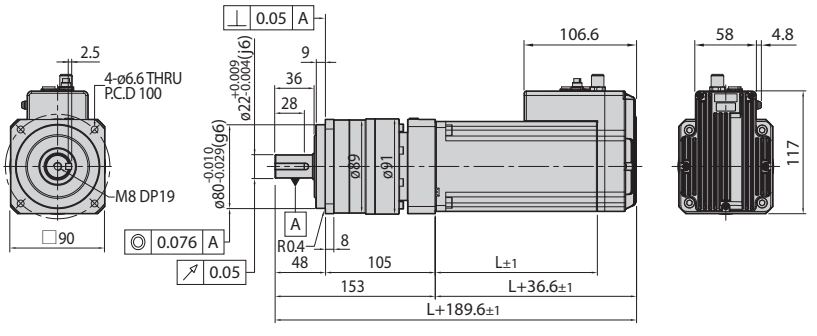
86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II Plus-E ALL			

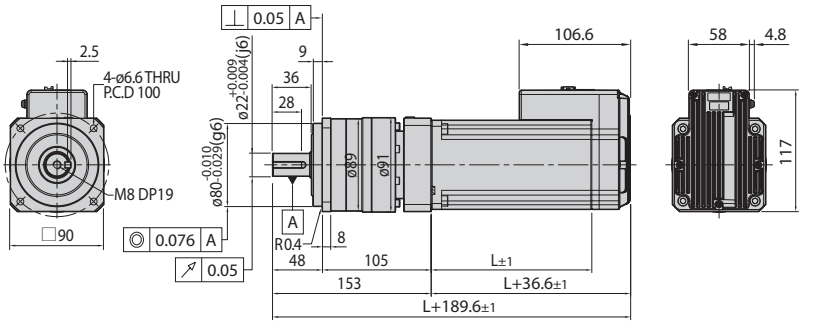
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)

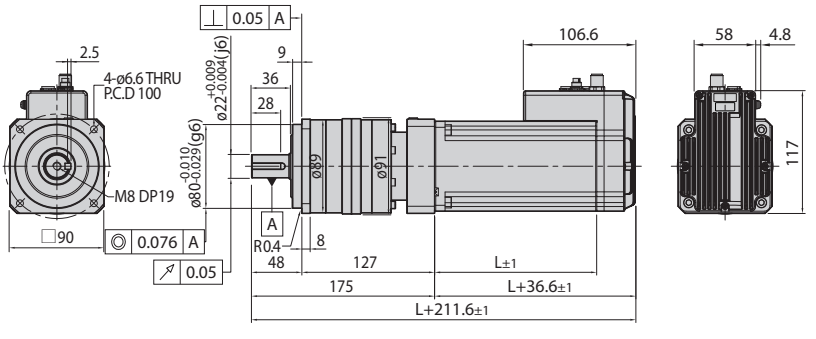


86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Applicable Model			
Ezi-SERVO II Plus-E ALL			

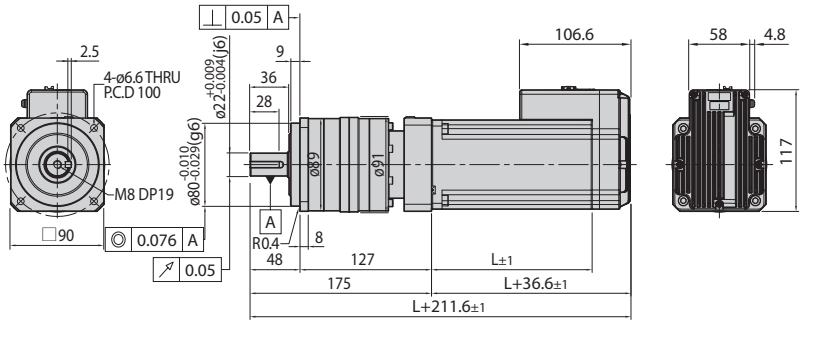
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



86mm

Model name	Length(L)
86M	78
86L	117
86XL	155

FASTECH_
Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

- EtherCAT DIO
- EtherCAT AD
- EtherCAT DA
- EtherCAT CNT
- Ethernet DIO
- Ethernet AD
- Ethernet DA
- Ethernet CNT
- CC-Link IE TSN DIO

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

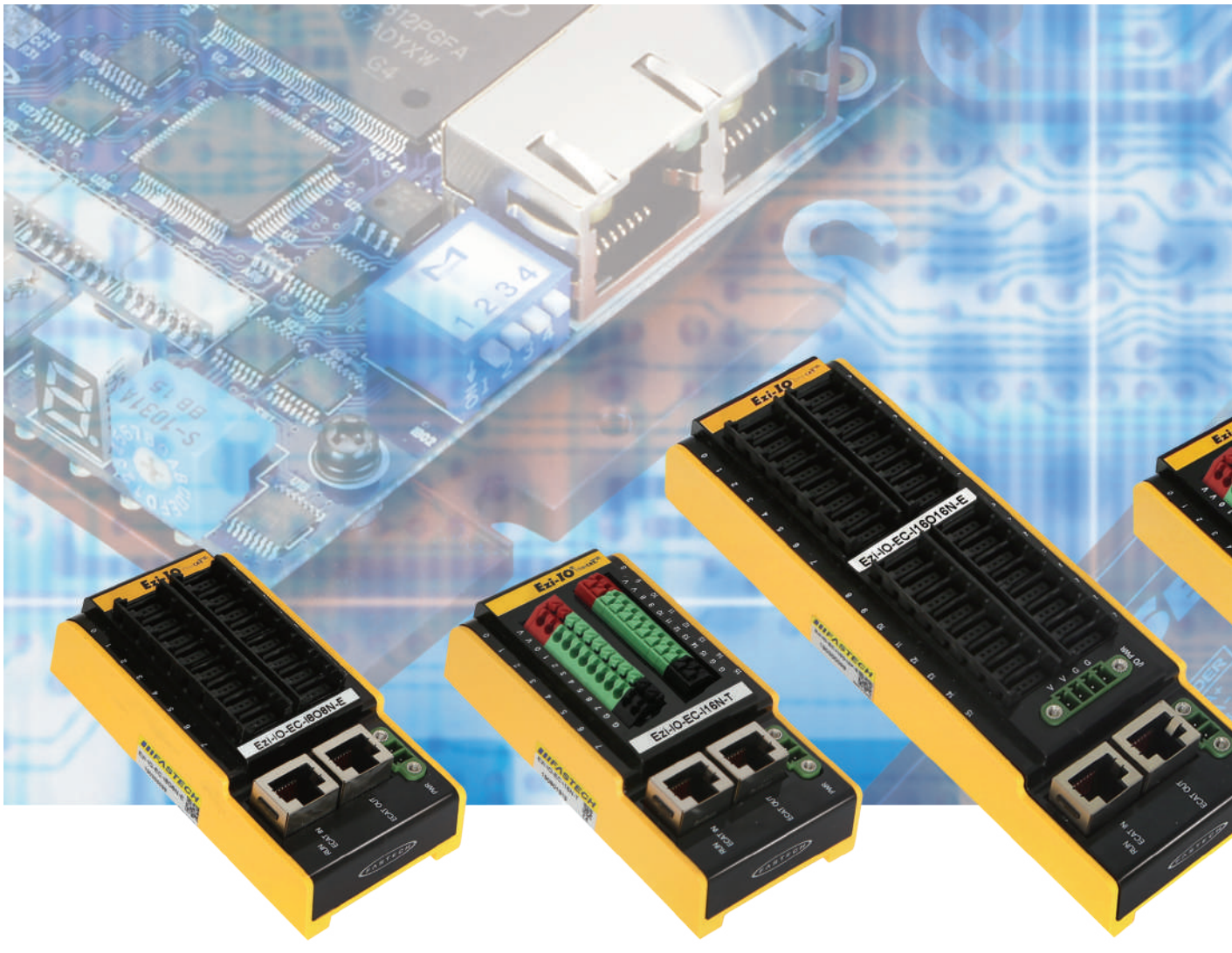
Ezi-SPEED®


Ez-IO
EZ-IO-EC-180BN-E
EZ-IO-EC-16N-T
EZ-IO-EC-32P-T
FASTECH

Ezi-IO® Input/Output Module

EtherCAT® DIO

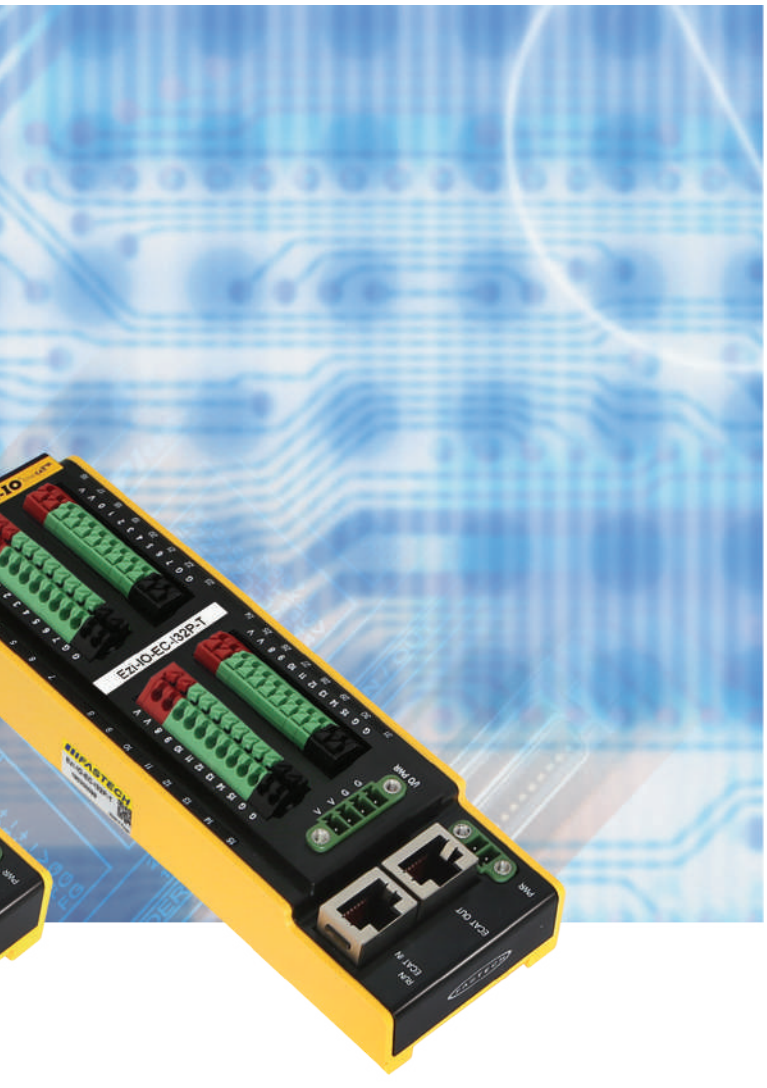
- EtherCAT Based Digital I/O Module
- All EtherCAT Synchronization Modes Supported
- CiA 401 Profile Supported
- Simple and Easy Wiring



FASTECH
Fast, Accurate, Smooth Motion

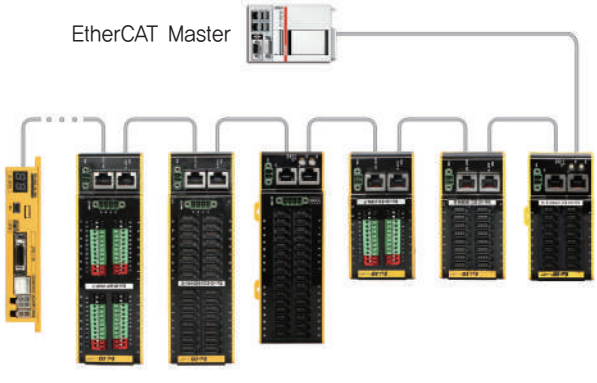
Ezi-IO®
Input/Output Module

EtherCAT®
DIO



1 EtherCAT Based Digital I/O Module

Ezi-IO EtherCAT DIO is a digital I/O module which supports EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex). Ezi-IO EtherCAT DIO is an EtherCAT Slave module which supports CoE(-CAN Application layer over EtherCAT). It supports CiA 401 profile, and can be connected to the EtherCAT master without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT DIO provides e-CON connector type and push-in terminal block type products, so you can select them according to the needs.
The e-CON connector is widely used in the sensor connector industry, and the push-in type terminal block can be easily connected to various devices using ferrule terminals, making the wiring much simpler and easier.

3 EtherCAT Synchronization Modes

Ezi-IO EtherCAT DIO supports all EtherCAT synchronization modes. You can select from Free Run, SM Event, DC SYNC Event synchronization mode according to the purpose of use. (Only for Option A Type)

4 Various I/O module

Ezi-IO EtherCAT DIO provides 16CH and 32CH modules. There are 16CH DC input module, 16CH transistor output module, and 8CH DC input/8CH transistor output mixed module for 16CH type products.
In addition, therer are 32CH DC input module, 32CH transistor output module, 16CH DC input/16CH transistor output mixed module for 32CH type products.
Also, Ezi-IO EtherCAT DIO provides NPN/PNP compatible modules to support various I/O devices.

Ezi-IO EtherCAT DIO Part Numbering

Ezi-IO-EC-I16N-E-A

- **Series Name**
- **Network Type**
  - EC : EtherCAT
- **Option**
  - A : Address Selectable
- **I/O Connection Method**
  - E : e-CON
  - T : Terminal Block
- **I/O Type**[*1]
  - I16N : 16CH DC Input, NPN
  - I16P : 16CH DC Input, PNP
  - O16N : 16CH Transistor Output, NPN
  - O16P : 16CH Transistor Output, PNP
  - I8O8N : 8CH DC Input / 8CH Transistor Output, NPN
  - I8O8P : 8CH DC Input / 8CH Transistor Output, PNP
  - I32N : 32CH DC Input, NPN
  - I32P : 32CH DC Input, PNP
  - O32N : 32CH Transistor Output, NPN
  - O32P : 32CH Transistor Output, PNP
  - I16O16N : 16CH DC Input / 16CH Transistor Output, NPN
  - I16O16P : 16CH DC Input / 16CH Transistor Output, PNP

*1: NPN and PNP are classified as follows according to I/O type.

DC Input	NPN	Positive Common Type
	PNP	Negative Common Type
Transistor Output	NPN	Sink Output
	PNP	Source Output

Ezi-IO EtherCAT DIO Part Number

Part Number	Remarks
Ezi-IO-EC-I16N-E	16CH e-CON Type
Ezi-IO-EC-I16P-E	
Ezi-IO-EC-O16N-E	
Ezi-IO-EC-O16P-E	
Ezi-IO-EC-I8O8N-E	
Ezi-IO-EC-I8O8P-E	
Ezi-IO-EC-I16N-T	16CH Terminal Block Type
Ezi-IO-EC-I16P-T	
Ezi-IO-EC-O16N-T	
Ezi-IO-EC-O16P-T	
Ezi-IO-EC-I8O8N-T	
Ezi-IO-EC-I8O8P-T	
Ezi-IO-EC-I16N-E-A	16CH Option A Type (e-CON Type only)
Ezi-IO-EC-I16P-E-A	
Ezi-IO-EC-O16N-E-A	
Ezi-IO-EC-O16P-E-A	
Ezi-IO-EC-I8O8N-E-A	
Ezi-IO-EC-I8O8P-E-A	

Part Number	Remarks
Ezi-IO-EC-I32N-E	32CH e-CON Type
Ezi-IO-EC-I32P-E	
Ezi-IO-EC-O32N-E	
Ezi-IO-EC-O32P-E	
Ezi-IO-EC-I16O16N-E	
Ezi-IO-EC-I16O16P-E	
Ezi-IO-EC-I32N-T	32CH Terminal Block Type
Ezi-IO-EC-I32P-T	
Ezi-IO-EC-O32N-T	
Ezi-IO-EC-O32P-T	
Ezi-IO-EC-I16O16N-T	
Ezi-IO-EC-I16O16P-T	
Ezi-IO-EC-I32N-E-A	32CH Option A Type (e-CON Type only)
Ezi-IO-EC-I32P-E-A	
Ezi-IO-EC-O32N-E-A	
Ezi-IO-EC-O32P-E-A	
Ezi-IO-EC-I16O16N-E-A	
Ezi-IO-EC-I16O16P-E-A	

● Specifications of Module

Model			Ezi-IO-EC-I16□-■	Ezi-IO-EC-O16□-■	Ezi-IO-EC-I808□-■
Input Voltage			DC24V±10%		
Current Consumption			Max. 150mA (Except load current)		
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	16CH	–	8CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	None		None
		Common Method	16CH/COM		8CH/COM
		Off→On Response Time	10μs or lower		10μs or lower
		On→Off Response Time	70μs or lower		70μs or lower
	Output	Number of Output Channels	–	16CH	8CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.2A/CH	0.2A/CH
		Isolation Method		None	None
		Common Method		16CH/COM	8CH/COM
		Off→On Response Time		4μs or lower	4μs or lower
		On→Off Response Time		140μs or lower	140μs or lower
LED Display			· Power Status(PWR) · EtherCAT Status(RUN) · EtherCAT Connection(ECAT IN, ECAT OUT) · I/O Status(0~15)		· Power Status(PWR) · EtherCAT Status(RUN) · EtherCAT Connection (ECAT IN, ECAT OUT) · I/O Status(0~7/0~7)
EtherCAT	Synchronization		Free RUN, SM Event		
	Bus Interface		2×RJ45 Connector		
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m		

* □: NPN / PNP Type
■: e-CON / Terminal Block Type

● Specifications of Module

Model			Ezi-IO-EC-I16□-E-A	Ezi-IO-EC-O16□-E-A	Ezi-IO-EC-I8O8□-E-A
Input Voltage			DC24V±10%		
Current Consumption			Max. 200mA (Except load current)		
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	16CH	–	8CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	None		None
		Common Method	16CH/COM		8CH/COM
		Input Filter	Max. 40ms (Filter Resolution : 200μs)		Max. 40ms (Filter Resolution : 200μs)
		Off→On Response Time	30μs or lower		30μs or lower
		On→Off Response Time	90μs or lower		90μs or lower
	Output	Number of Output Channels	–	16CH	8CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.5A/CH (3A/COM)	0.5A/CH (2A/COM)
		Isolation Method		None	None
		Common Method		16CH/COM	8CH/COM
		Off→On Response Time		20μs or lower	20μs or lower
		On→Off Response Time		180μs or lower	180μs or lower
LED Display			· Power Status(PWR) · EtherCAT Status(RUN) · Operation Error(ERR) · EtherCAT Connection(LA IN, LA OUT) · I/O Status(0~15)		· Power Status(PWR) · EtherCAT Status(RUN) · Operation Error(ERR) · EtherCAT Connection (LA IN, LA OUT) · I/O Status(0~7/0~7)
EtherCAT	Protocol		CoE (CiA 401 I/O Profile), FoE (Firmware Download)		
	Synchronization		Free Run, SM Event, DC SYNC Event		
	Bus Interface		2×RJ45 Connector		
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m		

* □: NPN / PNP Type

● Specifications of Module

Model			Ezi-IO-EC-I32□-■	Ezi-IO-EC-O32□-■	Ezi-IO-EC-I16O16□-■
Input Voltage			DC24V±10%		
Current Consumption			· Control Power : Max. 140mA · I/O Power : Max. 110mA (Except Load Current)	· Control Power : Max. 200mA · I/O Power : Max. 70mA (Except Load Current)	· Control Power : Max. 170mA · I/O Power : Max. 90mA (Except Load Current)
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	32CH	–	16CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	Photocoupler Isolation		Photocoupler Isolation
		Common Method	16CH/COM		16CH/COM
		Off→On Response Time	10μs or lower		10μs or lower
		On→Off Response Time	70μs or lower		70μs or lower
	Output	Number of Output Channels	–	32CH	16CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.2A/CH	0.2A/CH
		Isolation Method		Photocoupler Isolation	Photocoupler Isolation
		Common Method		16CH/COM	16CH/COM
		Off→On Response Time		4μs or lower	4μs or lower
		On→Off Response Time		140μs or lower	140μs or lower
LED Display			· Power Status(PWR) · EtherCAT Status(RUN) · EtherCAT Connection(ECAT IN, ECAT OUT) · I/O Status(0~31)		· Power Status(PWR) · EtherCAT Status(RUN) · EtherCAT Connection (ECAT IN, ECAT OUT) · I/O Status(0~15/0~15)
EtherCAT	Synchronization		Free RUN, SM Event		
	Bus Interface		2×RJ45 Connector		
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m		

* □: NPN / PNP Type
■: e-CON / Terminal Block Type

● Specifications of Module

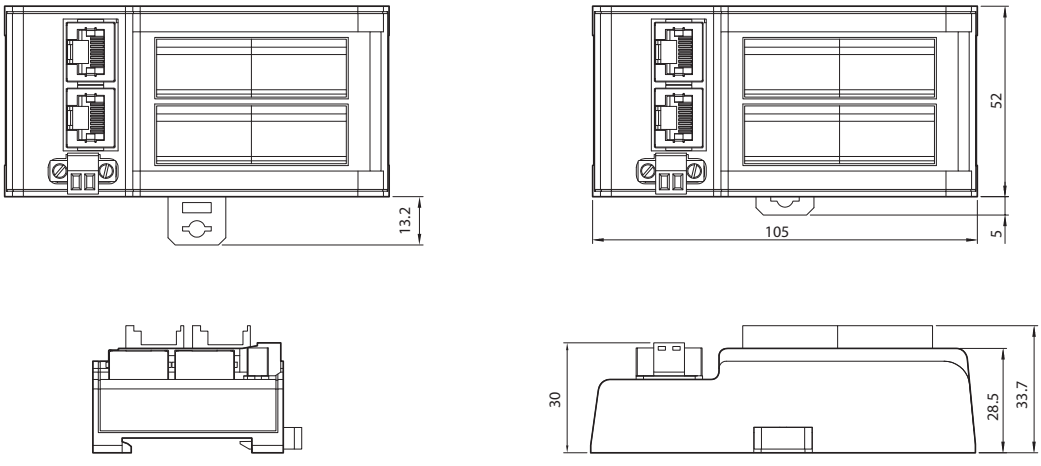
Model			Ezi-IO-EC-I32□-E-A	Ezi-IO-EC-O32□-E-A	Ezi-IO-EC-I16O16□-E-A
Input Voltage			DC24V±10%		
Current Consumption			· Control Power : Max. 180mA · I/O Power : Max. 110mA (Except Load Current)	· Control Power : Max. 240mA · I/O Power : Max. 70mA (Except Load Current)	· Control Power : Max. 220mA · I/O Power : Max. 90mA (Except Load Current)
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	32CH	–	16CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	Photocoupler Isolation		Photocoupler Isolation
		Common Method	16CH/COM		16CH/COM
		Input Filter	Max. 40ms (Filter Resolution : 200μs)		Max. 40ms (Filter Resolution : 200μs)
		Off→On Response Time	30μs or lower		30μs or lower
		On→Off Response Time	90μs or lower		90μs or lower
	Output	Number of Output Channels	–	32CH	16CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.5A/CH (3A/COM)	0.5A/CH (3A/COM)
		Isolation Method		Photocoupler Isolation	Photocoupler Isolation
		Common Method		16CH/COM	16CH/COM
		Off→On Response Time		20μs or lower	20μs or lower
		On→Off Response Time		180μs or lower	180μs or lower
LED Display			· Power Status(PWR) · EtherCAT Status(RUN) · Operation Error(ERR) · EtherCAT Connection(LA IN, LA OUT) · I/O Status(0~31)		· Power Status(PWR) · EtherCAT Status(RUN) · Operation Error(ERR) · EtherCAT Connection (LA IN, LA OUT) · I/O Status(0~15/0~15)
EtherCAT	Protocol		CoE (CiA 401 I/O Profile), FoE (Firmware Download)		
	Synchronization		Free Run, SM Event, DC SYNC Event		
	Bus Interface		2×RJ45 Connector		
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m		

* □: NPN / PNP Type

● Dimensions of Module [mm]

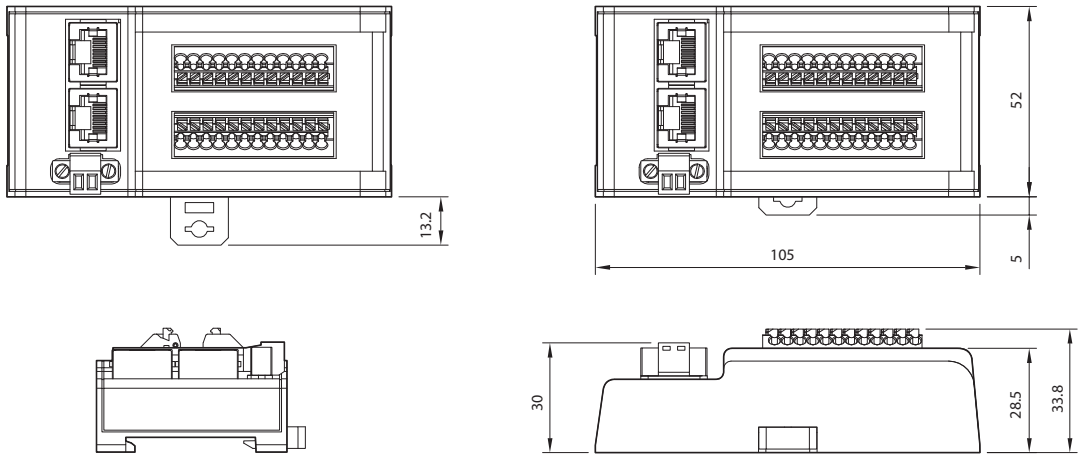
◆ 16CH e-CON Type

- Model : Ezi-IO-EC-I16□-E, Ezi-IO-EC-O16□-E, Ezi-IO-EC-I8O8□-E



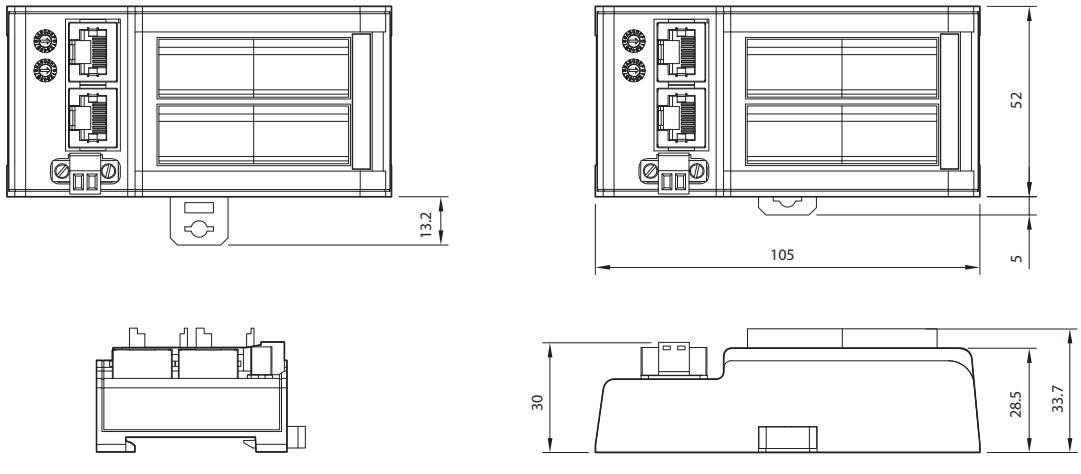
◆ 16CH Terminal Block Type

- Model : Ezi-IO-EC-I16□-T, Ezi-IO-EC-O16□-T, Ezi-IO-EC-I8O8□-T



◆ 16CH Option A Type

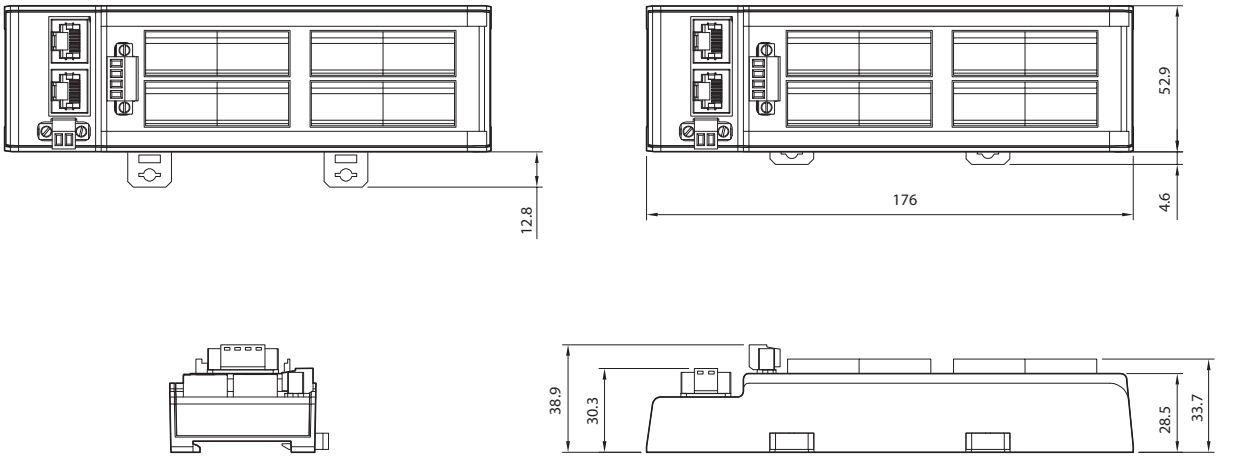
- Model : Ezi-IO-EC-I16□-E-A, Ezi-IO-EC-O16□-E-A, Ezi-IO-EC-I8O8□-E-A



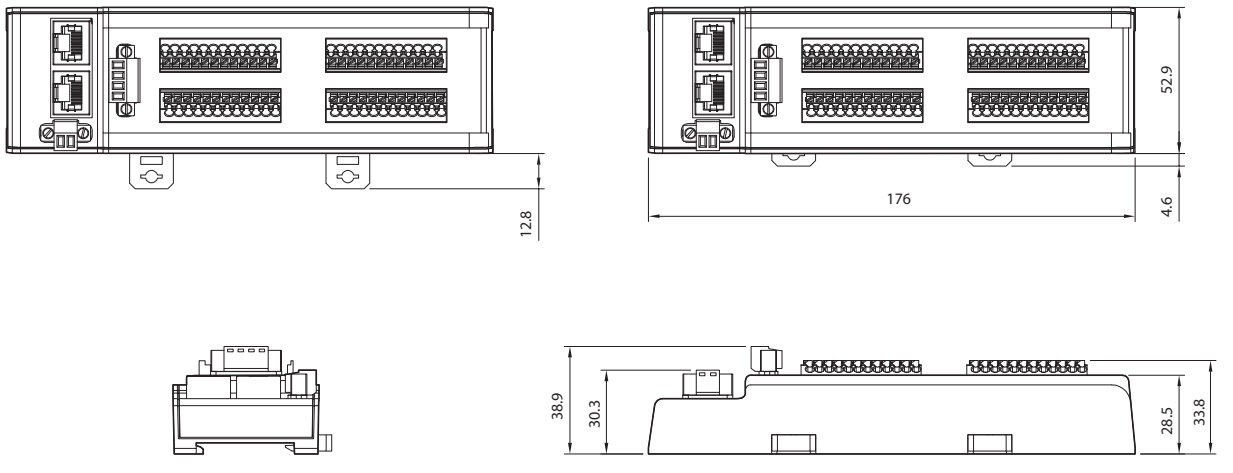
* □ : NPN / PNP Type
* Install the product on a din rail with a width of 35 mm.

● Dimensions of Module [mm]

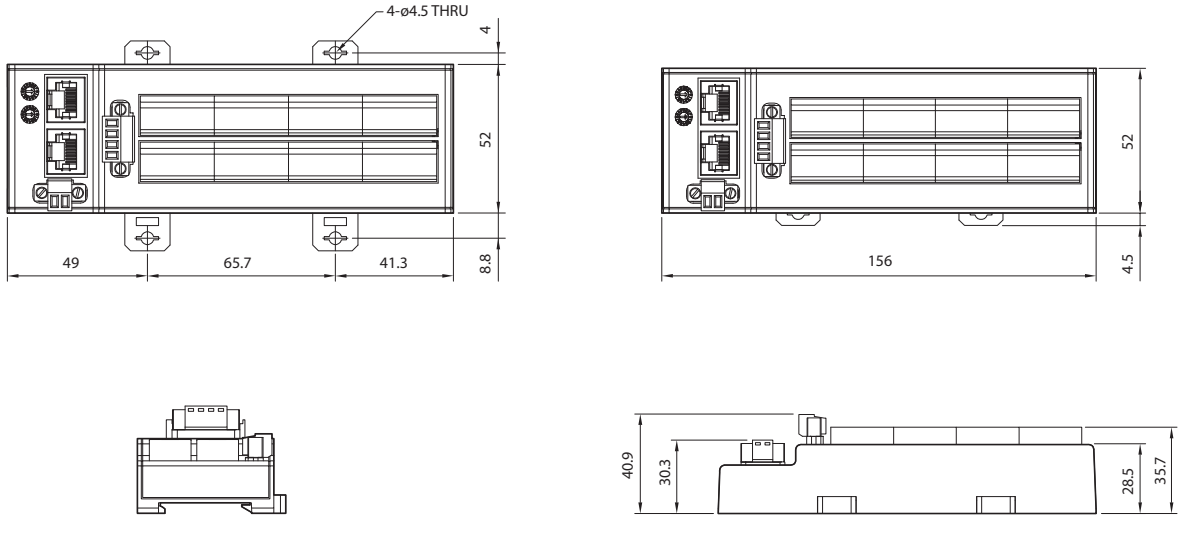
◆ 32CH e-CON Type
– Model : Ezi-IO-EC-I32□-E, Ezi-IO-EC-O32□-E, Ezi-IO-EC-I16O16□-E



◆ 32CH Terminal Block Type
– Model : Ezi-IO-EC-I32□-T, Ezi-IO-EC-O32□-T, Ezi-IO-EC-I16O16□-T

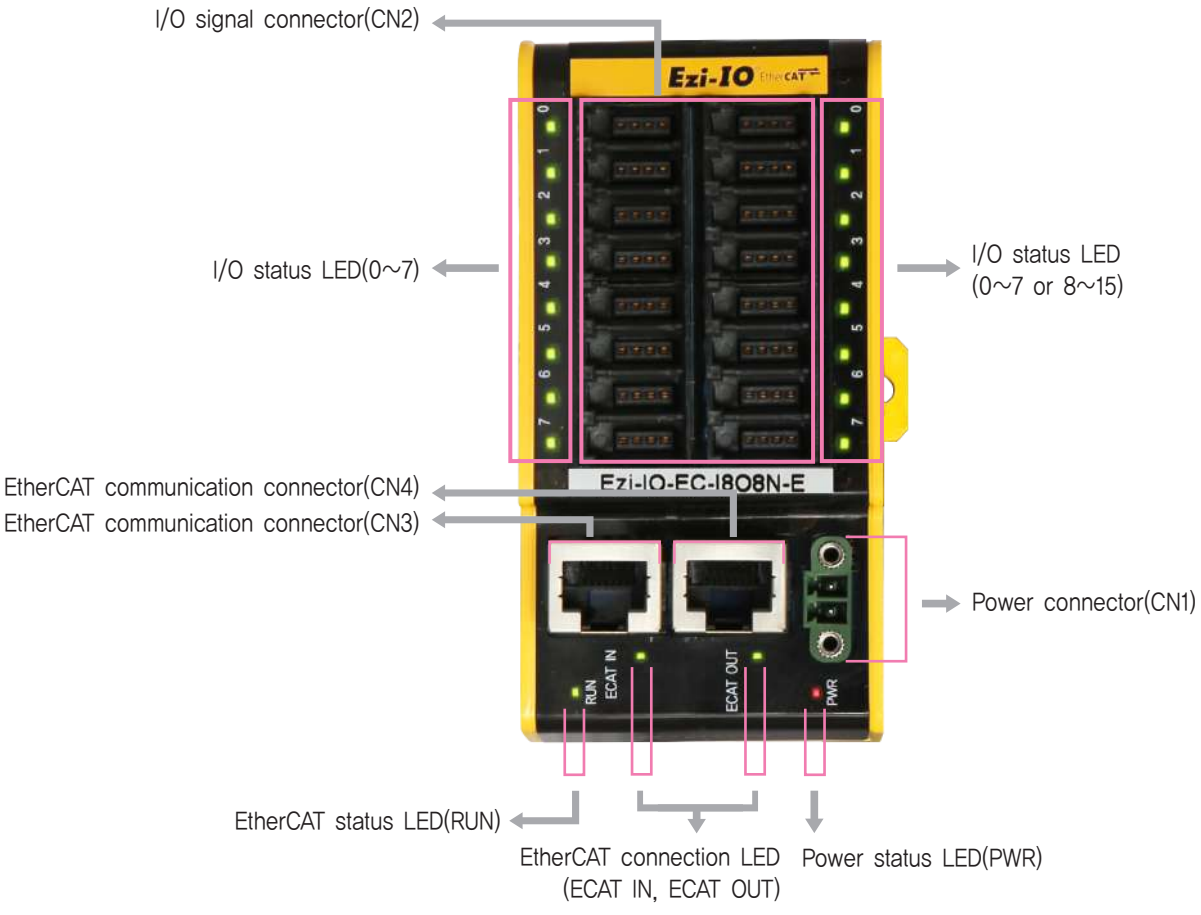


◆ 32CH Option A Type
– Model : Ezi-IO-EC-I32□-E-A, Ezi-IO-EC-O32□-E-A, Ezi-IO-EC-I16O16□-E-A



* □ : NPN / PNP Type
* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [16CH e-CON Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- EtherCAT Connection LED

Name	Color	Status	Description
ECAT IN / ECAT OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

• I/O Status LED

Name*	Color	Status	Description
0~15 0~7 / 0~7	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I808N-E and Ezi-IO-EC-I808P-E modules, the name is written as 0~7 / 0~7 .

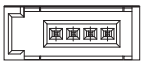
2. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



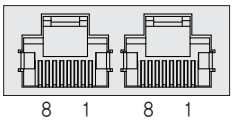
3. I/O Signal Connector(CN2)

No.	Function	I/O
1	DC24V	Output
2	NC	----
3	GND	Output
4	SIGNAL	I/O

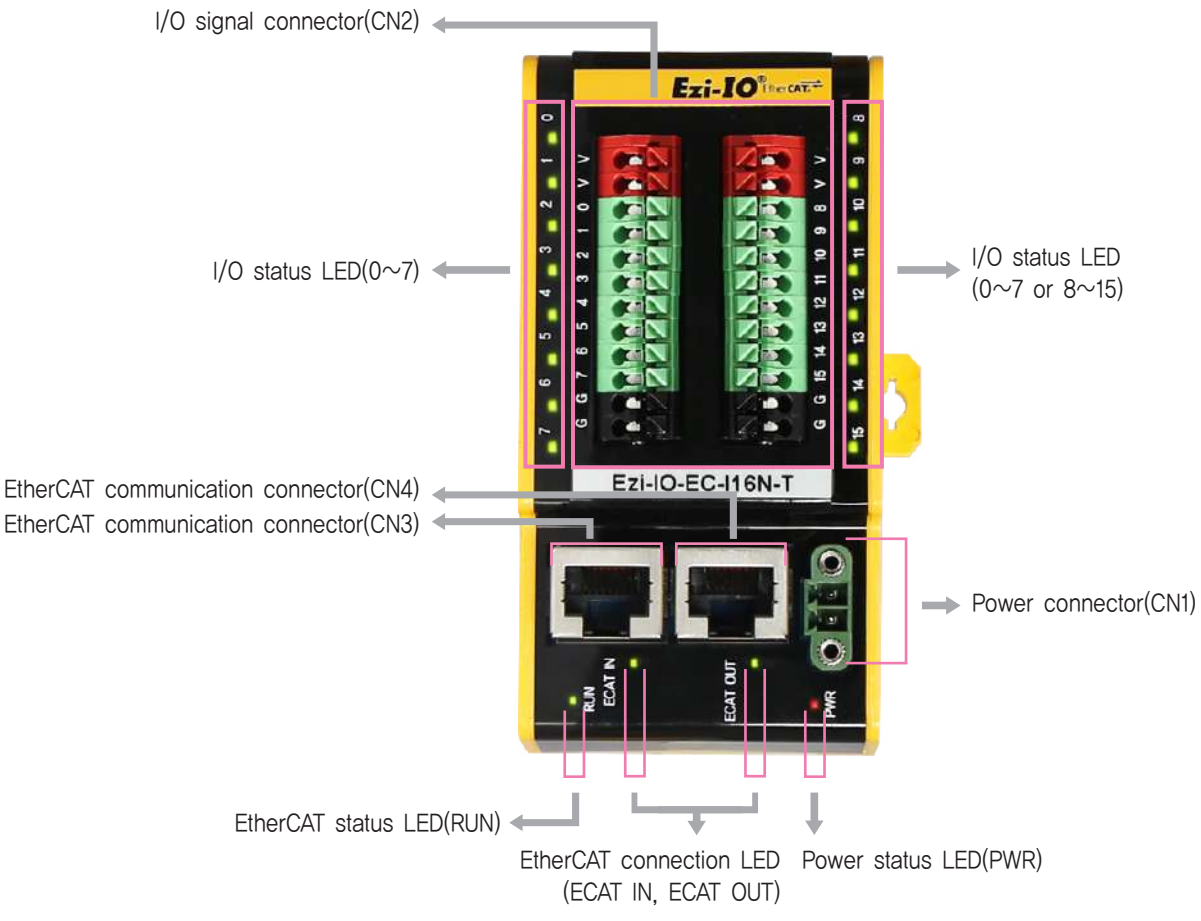


4. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector Hood	F.GND



● Settings and Operation [16CH Terminal Block Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- EtherCAT Connection LED

Name	Color	Status	Description
ECAT IN / ECAT OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

• I/O Status LED

Name*	Color	Status	Description
0~15 0~7 / 0~7	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I808N-T and Ezi-IO-EC-I808P-T modules, the name is written as 0~7 / 0~7 .

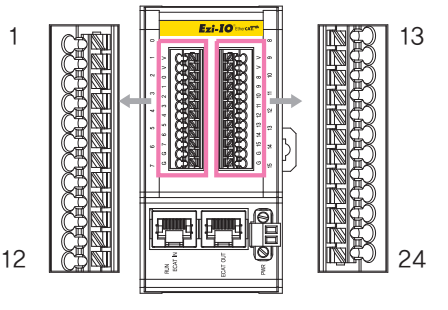
2. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



3. I/O Signal Connector(CN2)

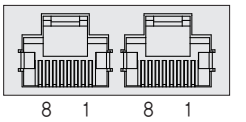
No.	Name*	Function	I/O
1	V	DC24V	Output
2	V	DC24V	Output
3	0	SIGNAL	I/O
4	1	SIGNAL	I/O
5	2	SIGNAL	I/O
6	3	SIGNAL	I/O
7	4	SIGNAL	I/O
8	5	SIGNAL	I/O
9	6	SIGNAL	I/O
10	7	SIGNAL	I/O
11	G	GND	Output
12	G	GND	Output
13	V	DC24V	Output
14	V	DC24V	Output
15	8(0)	SIGNAL	I/O
16	9(1)	SIGNAL	I/O
17	10(2)	SIGNAL	I/O
18	11(3)	SIGNAL	I/O
19	12(4)	SIGNAL	I/O
20	13(5)	SIGNAL	I/O
21	14(6)	SIGNAL	I/O
22	15(7)	SIGNAL	I/O
23	G	GND	Output
24	G	GND	Output



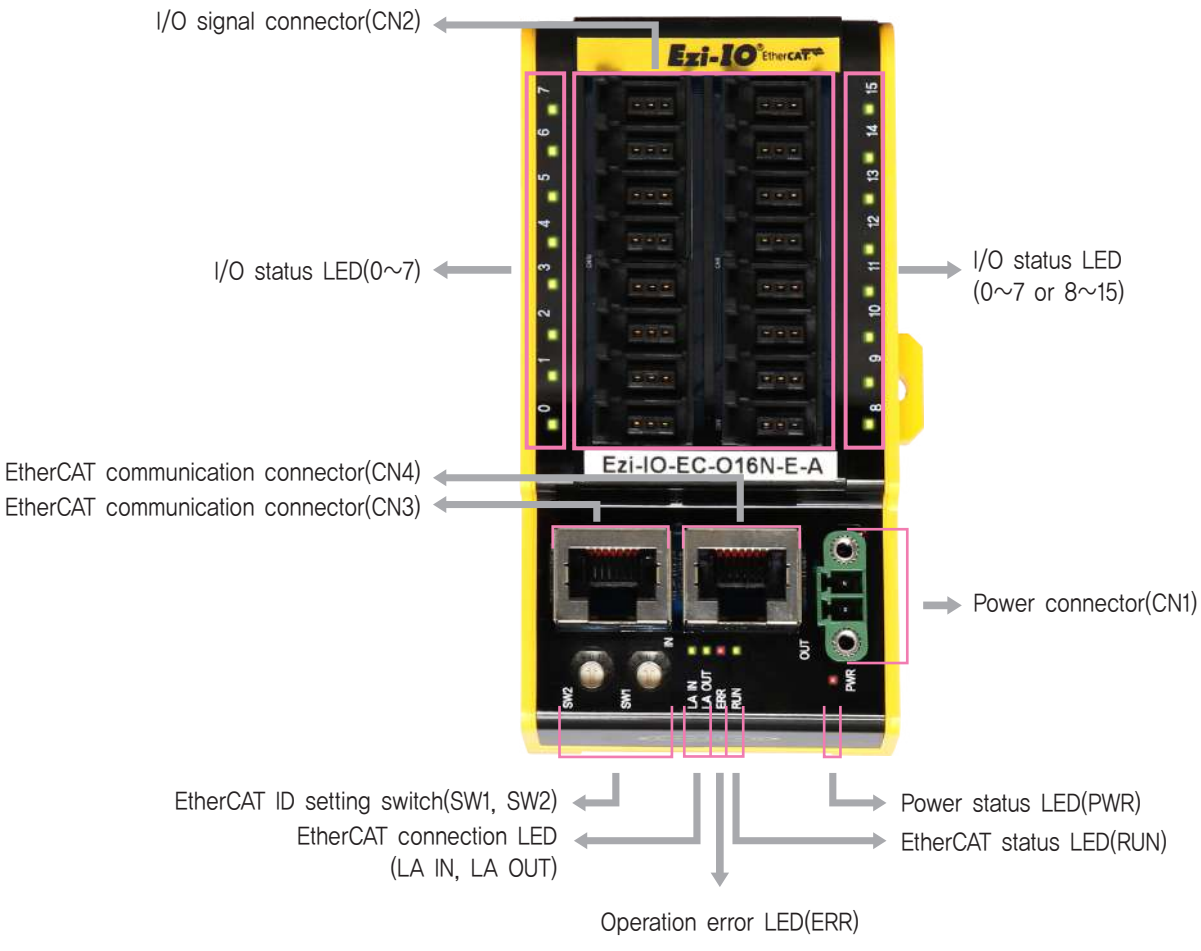
* For Ezi-IO-EC-I808N-T and Ezi-IO-EC-I808P-T modules, the name is written as 0~7 / 0~7 .

4. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector Hood	F.GND

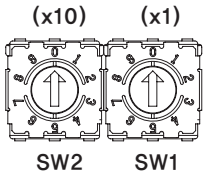


● Settings and Operation [16CH Option A Type]



1. Switch Setting

- EtherCAT ID Setting Switch (SW1, SW2)



They are switches to set the EtherCAT ID (ECAT Device ID) node address, and they represent a decimal number.
SW1 indicates the units digit (×1), and SW2 indicates the tens digit (×10).

2. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

• EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

• Operation Error LED

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

• EtherCAT Connection LED

Name	Color	Status	Description
LA IN / LA OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

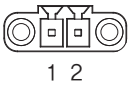
• I/O Status LED

Name*	Color	Status	Description
0~15 0~7 / 0~7	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I808N-E-A and Ezi-IO-EC-I808P-E-A modules, the name is written as 0~7 / 0~7 .

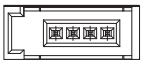
3. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



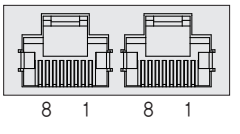
4. I/O Signal Connector(CN2)

No.	Function	I/O
1	DC24V	Output
2	SIGNAL	I/O
3	GND	Output

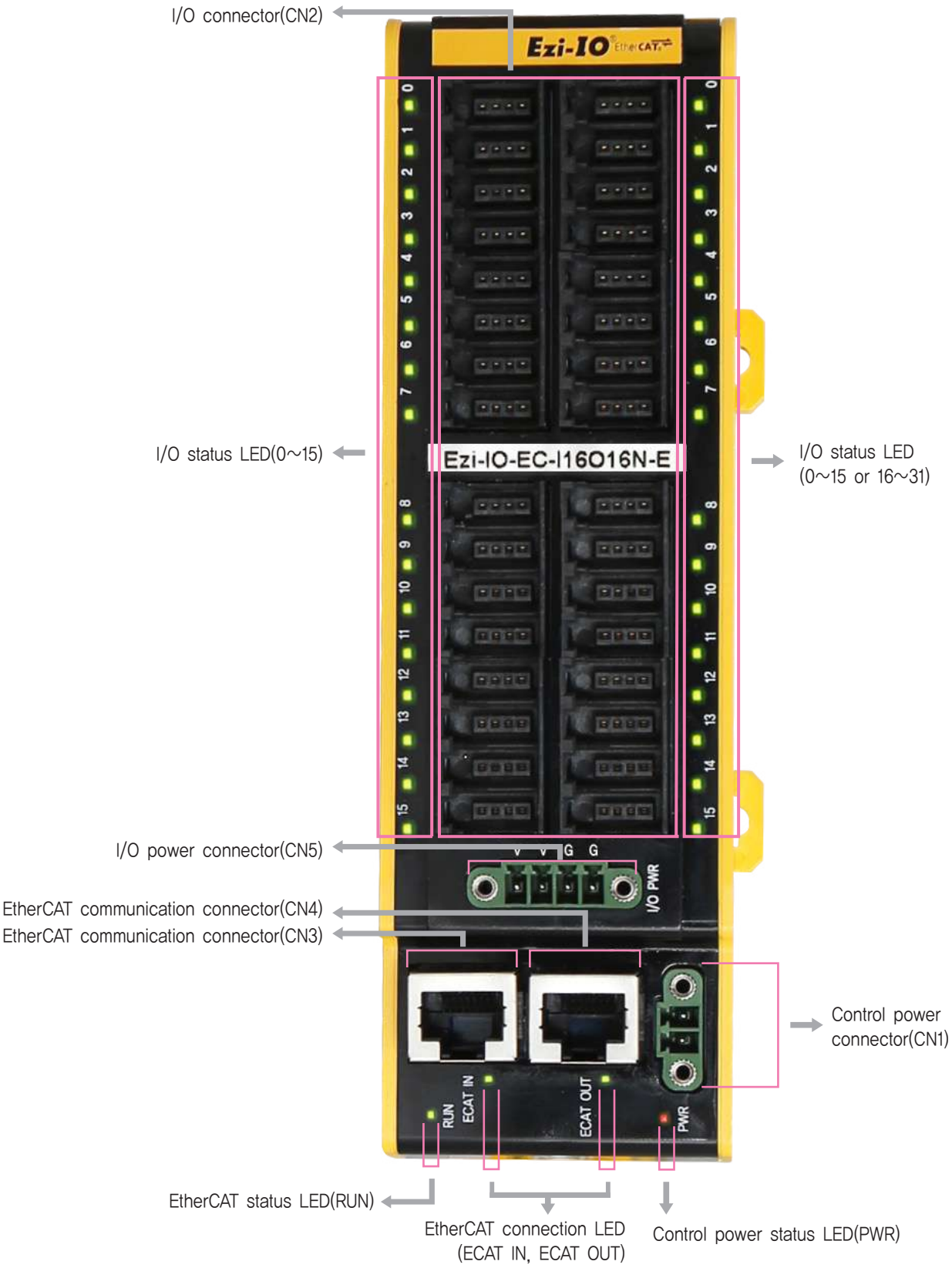


5. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector Hood	F.GND



● Settings and Operation [32CH e-CON Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- EtherCAT Connection LED

Name	Color	Status	Description
ECAT IN / ECAT OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

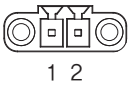
- I/O Status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I16O16N-E and Ezi-IO-EC-I16O16P-E modules, the name is written as 0~15 / 0~15 .

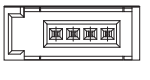
2. Control Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



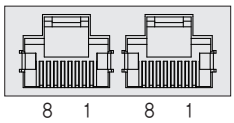
3. I/O Signal Connector(CN2)

No.	Function	I/O
1	EXT_DC24V	Output
2	NC	-----
3	EXT_GND	Output
4	SIGNAL	I/O



4. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD−
3	RD+
4	----
5	----
6	RD−
7	----
8	----
Connector Hood	F.GND

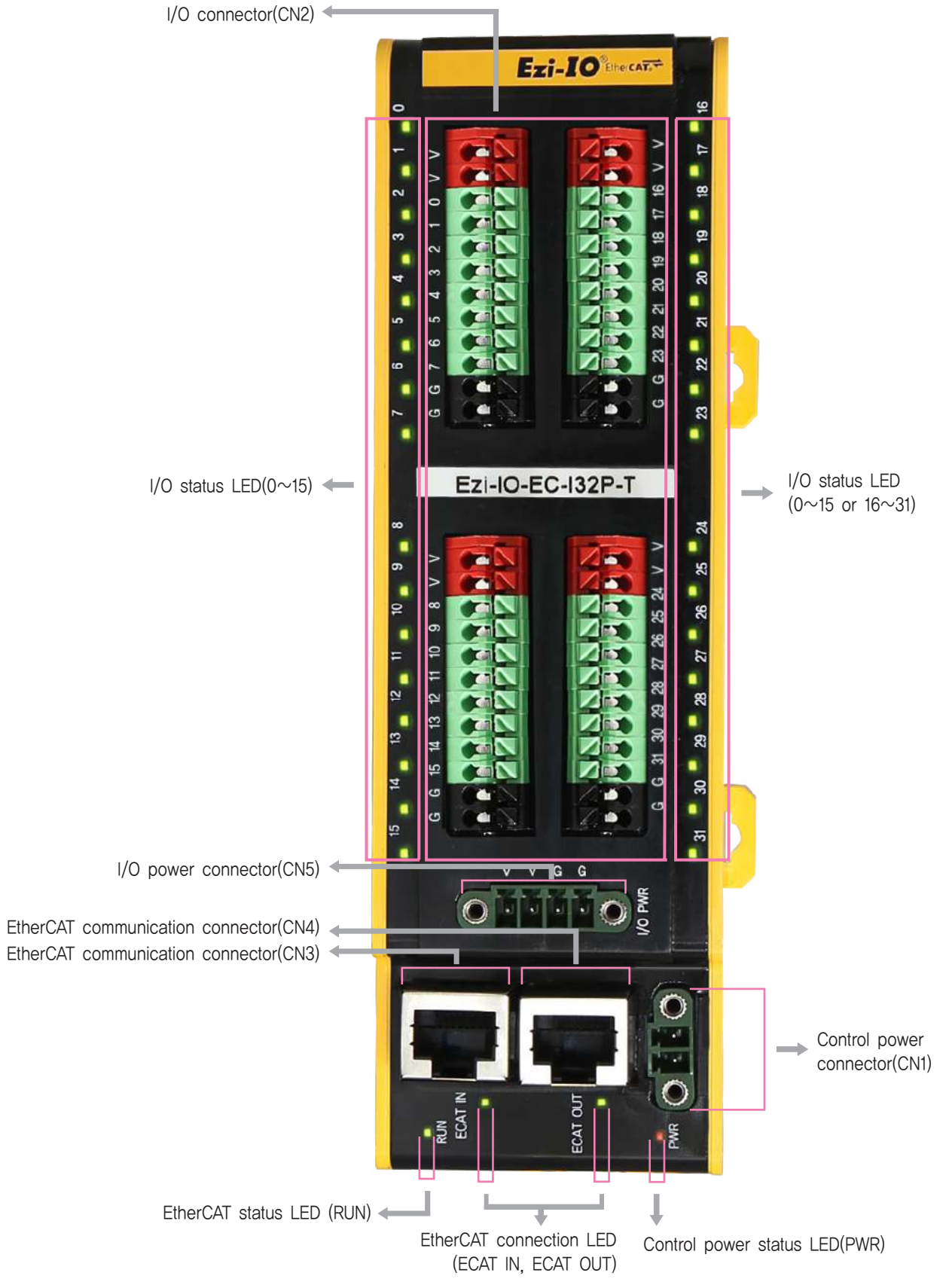


5. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



● Settings and Operation [32CH Terminal Block Type]



1. Status LED

• Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

• EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

• EtherCAT Connection LED

Name	Color	Status	Description
ECAT IN / ECAT OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

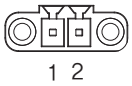
• I/O Status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I16O16N-T and Ezi-IO-EC-I16O16P-T modules, the name is written as 0~15 / 0~15 .

2. Control Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

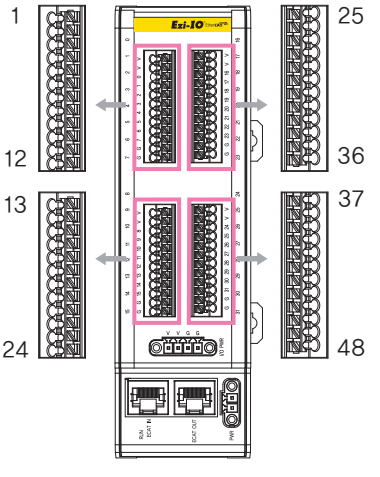


3. I/O Signal Connector(CN2)

No.	Name*	Function	I/O
1	V	EXT_DC24V	Output
2	V	EXT_DC24V	Output
3	0	SIGNAL	I/O
4	1	SIGNAL	I/O
5	2	SIGNAL	I/O
6	3	SIGNAL	I/O
7	4	SIGNAL	I/O
8	5	SIGNAL	I/O
9	6	SIGNAL	I/O
10	7	SIGNAL	I/O
11	G	EXT_GND	Output
12	G	EXT_GND	Output
13	V	EXT_DC24V	Output
14	V	EXT_DC24V	Output
15	8	SIGNAL	I/O
16	9	SIGNAL	I/O
17	10	SIGNAL	I/O
18	11	SIGNAL	I/O
19	12	SIGNAL	I/O
20	13	SIGNAL	I/O
21	14	SIGNAL	I/O
22	15	SIGNAL	I/O
23	G	EXT_GND	Output
24	G	EXT_GND	Output

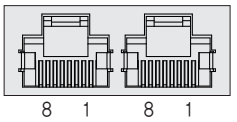
No.	Name*	Function	I/O
25	V	EXT_DC24V	Output
26	V	EXT_DC24V	Output
27	16(0)	SIGNAL	I/O
28	17(1)	SIGNAL	I/O
29	18(2)	SIGNAL	I/O
30	19(3)	SIGNAL	I/O
31	20(4)	SIGNAL	I/O
32	21(5)	SIGNAL	I/O
33	22(6)	SIGNAL	I/O
34	23(7)	SIGNAL	I/O
35	G	EXT_GND	Output
36	G	EXT_GND	Output
37	V	EXT_DC24V	Output
38	V	EXT_DC24V	Output
39	24(8)	SIGNAL	I/O
40	25(9)	SIGNAL	I/O
41	26(10)	SIGNAL	I/O
42	27(11)	SIGNAL	I/O
43	28(12)	SIGNAL	I/O
44	29(13)	SIGNAL	I/O
45	30(14)	SIGNAL	I/O
46	31(15)	SIGNAL	I/O
47	G	EXT_GND	Output
48	G	EXT_GND	Output

* For Ezi-IO-EC-I16016N-T and Ezi-IO-EC-I16016P-T modules, the name is written as 0~15 / 0~15 .



4. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector Hood	F.GND



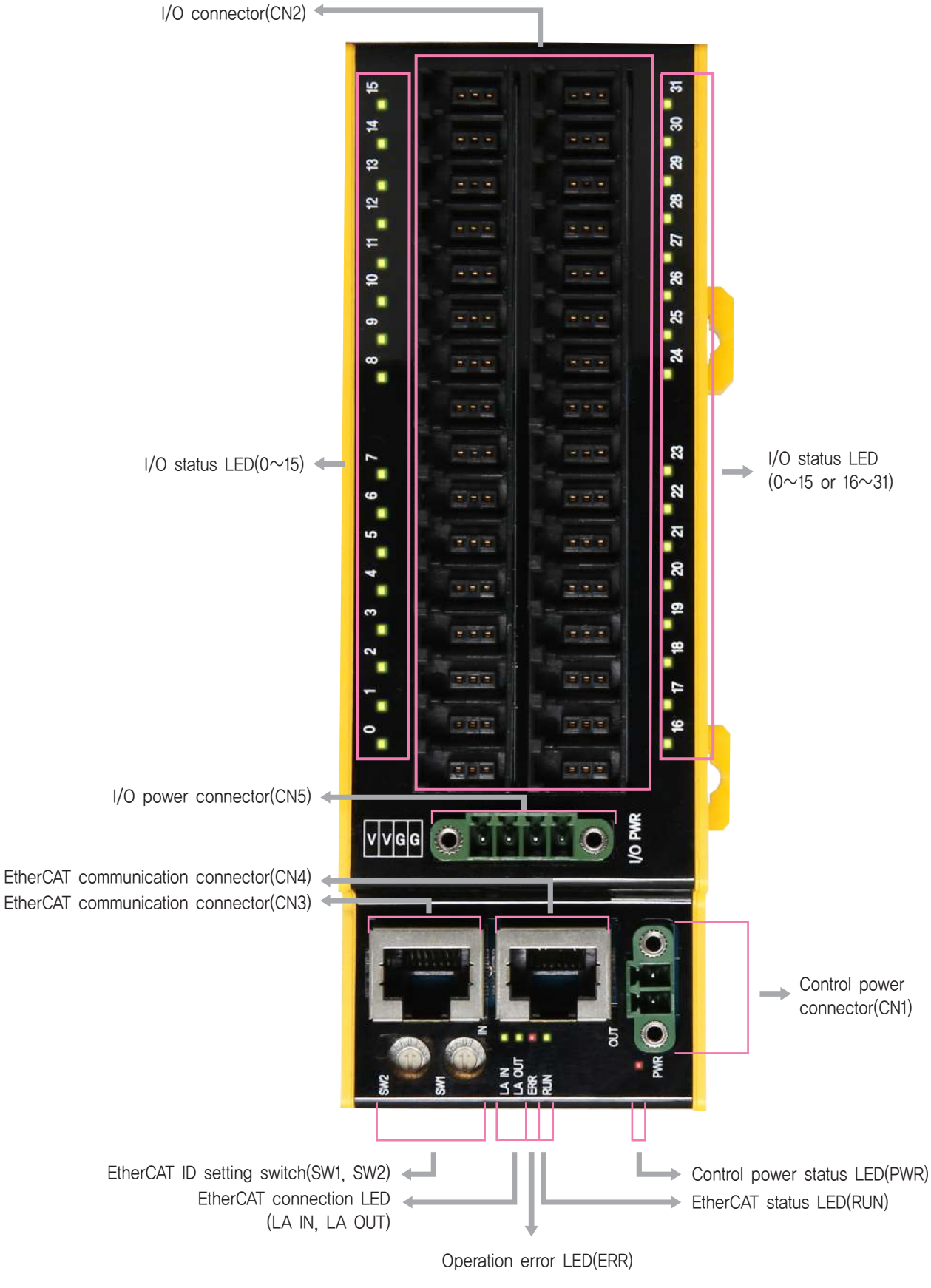
5. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



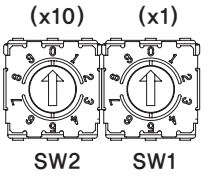
1 2 3 4

● Settings and Operation [32CH Option A Type]



1. Switch Setting

- EtherCAT ID Setting Switch (SW1, SW2)



They are switches to set the EtherCAT ID (ECAT Device ID) node address, and they represent a decimal number.
SW1 indicates the units digit (×1), and SW2 indicates the tens digit (×10).

2. Status LED

- Power status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- Operation Error LED

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

- EtherCAT Connection LED

Name	Color	Status	Description
LA IN / LA OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

- I/O Status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EC-I16O16N-E-A and Ezi-IO-EC-I16O16P-E-A modules, the name is written as 0~15 / 0~15 .

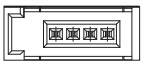
3. Control Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



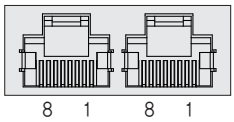
4. I/O Signal Connector(CN2)

No.	Function	I/O
1	EXT_DC24V	Output
2	SIGNAL	I/O
3	EXT_GND	Output



5. EtherCAT Communication Connection(CN3, CN4)

No.	Function
1	TD+
2	TD–
3	RD+
4	-----
5	-----
6	RD–
7	-----
8	-----
Connector Hood	F.GND

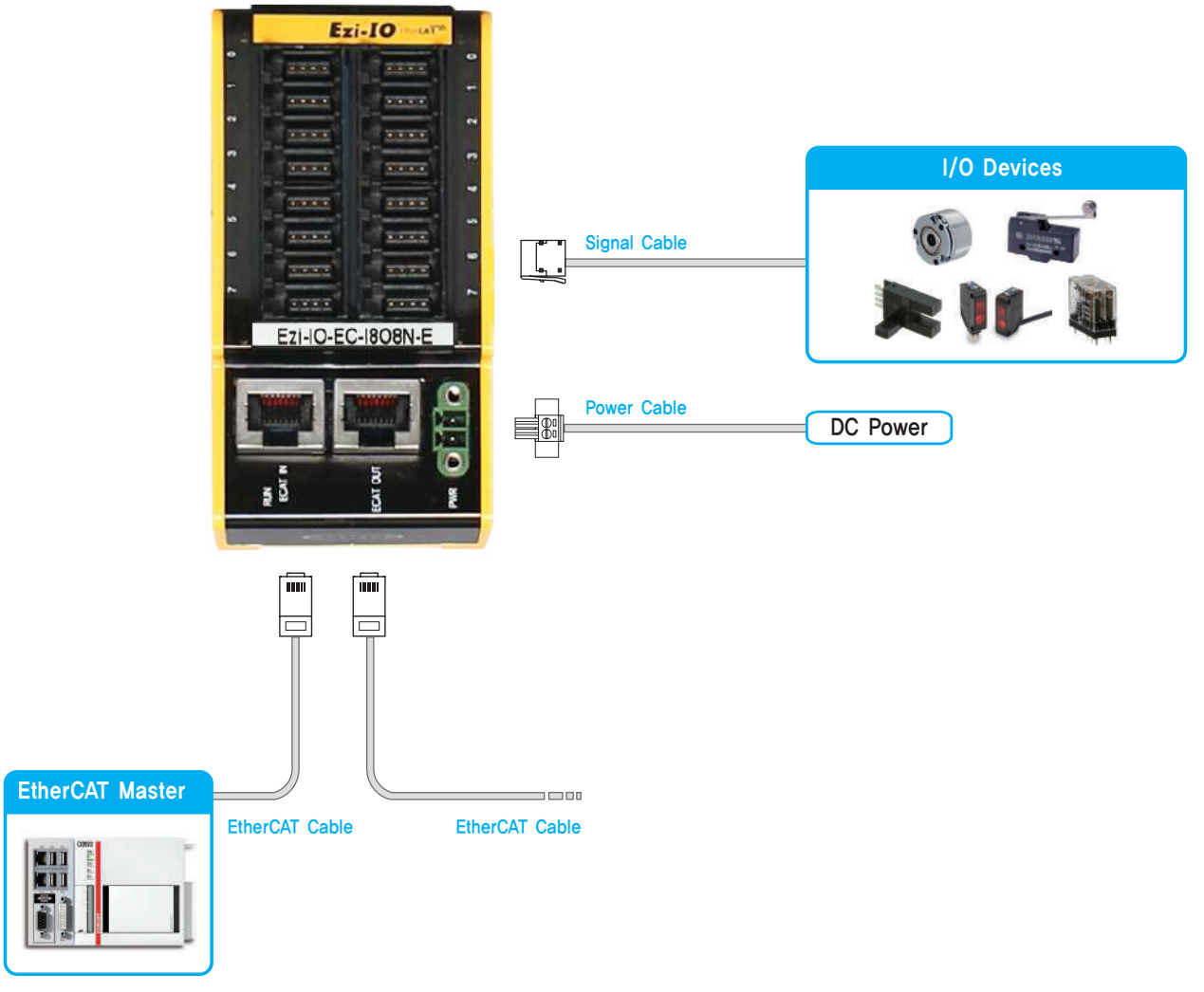


6. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



System Configuration [16CH e-CON Type]



1. Accessories

- Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

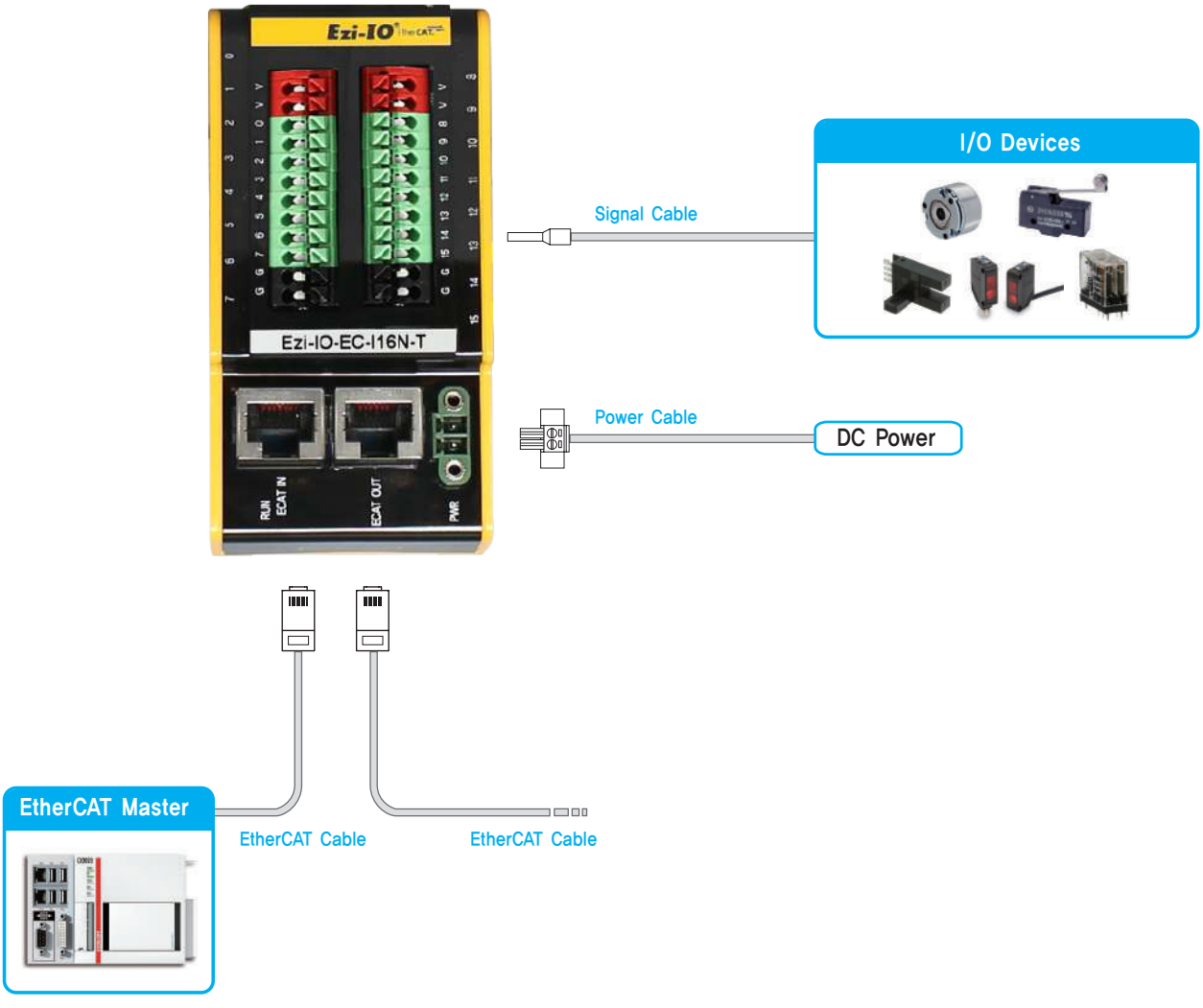
2. Options

- EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [16CH Terminal Block Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

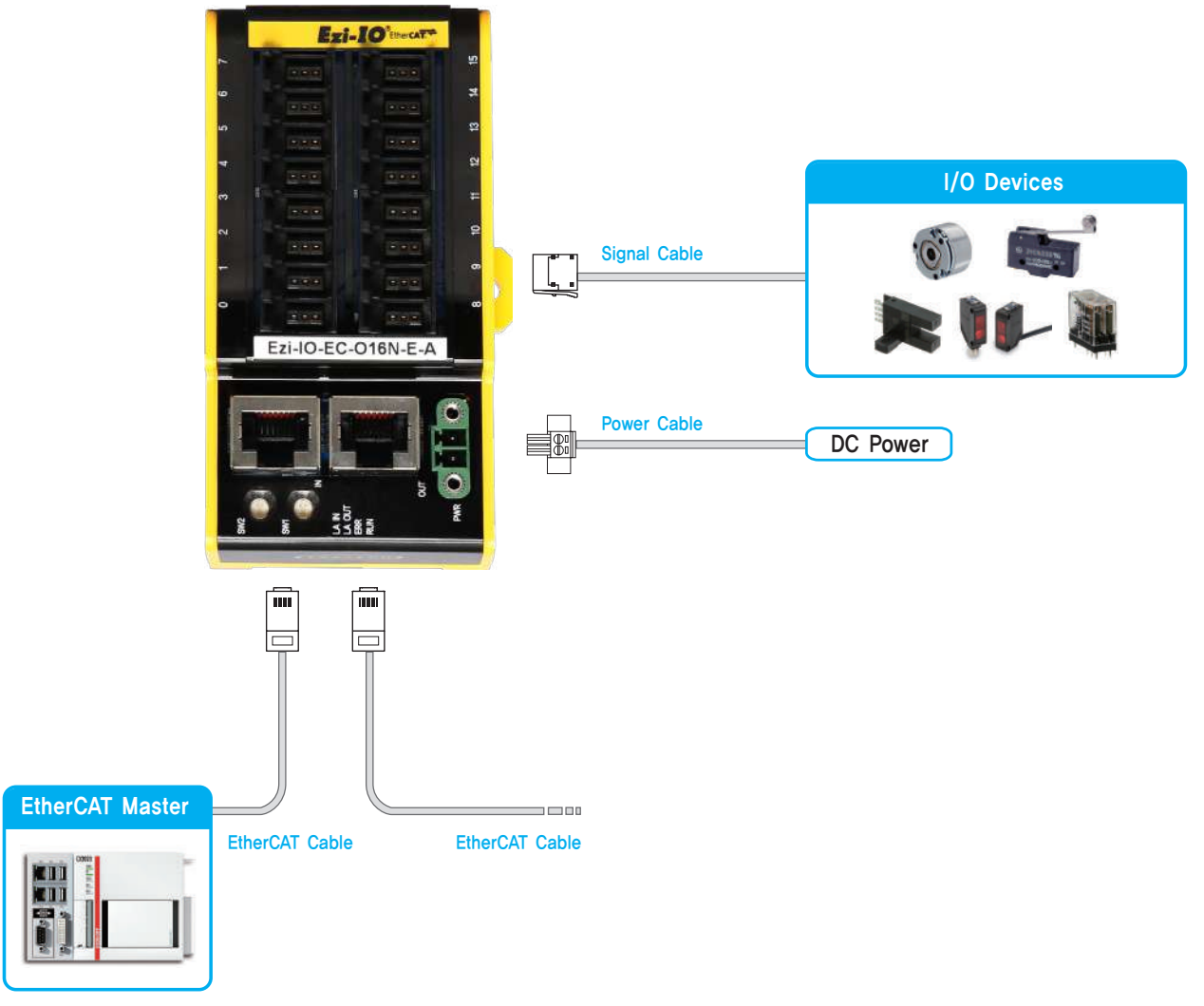
2. Options

● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [16CH Option A Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P03-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

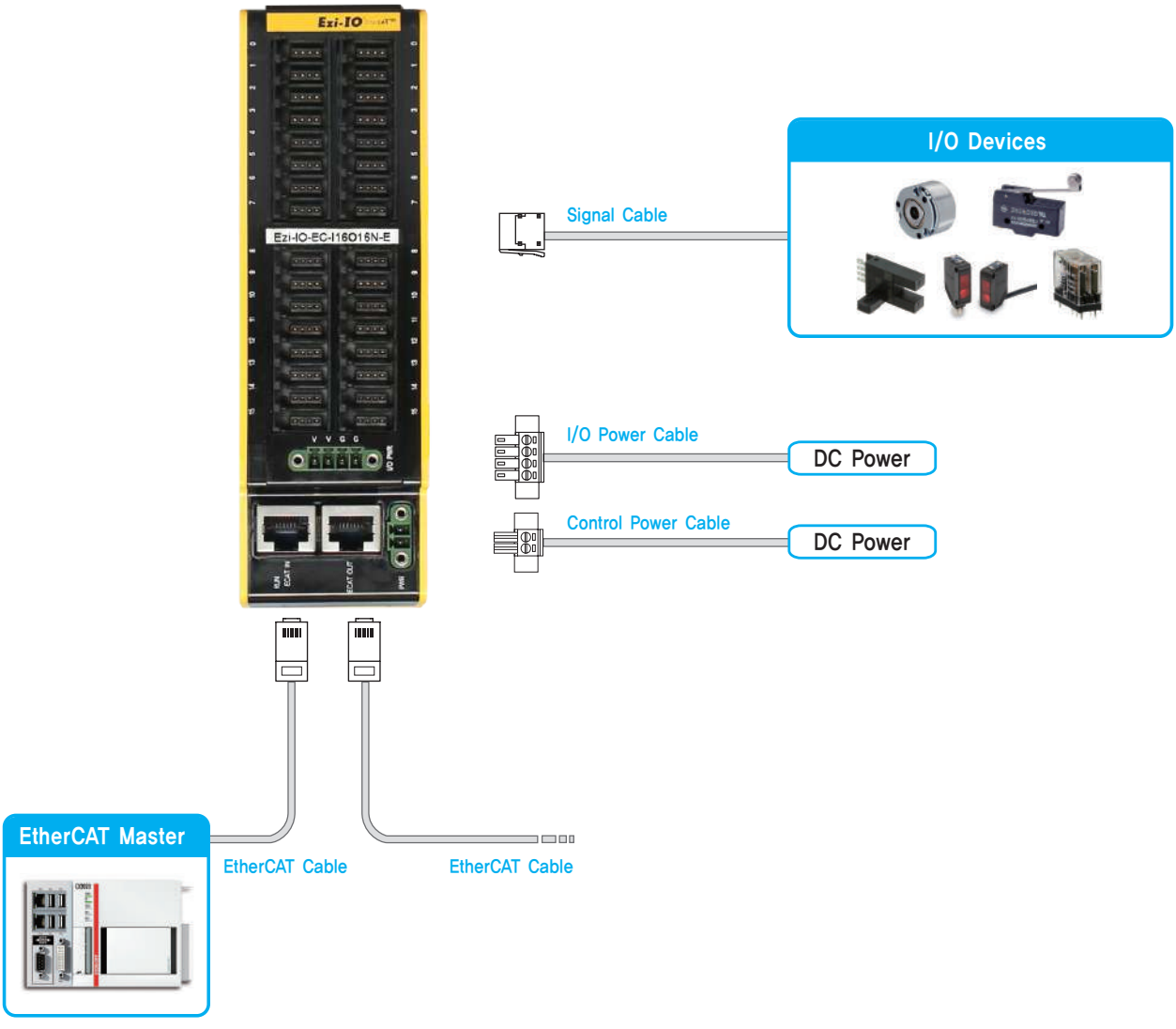
2. Options

● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [32CH e-CON Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Control Power (CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

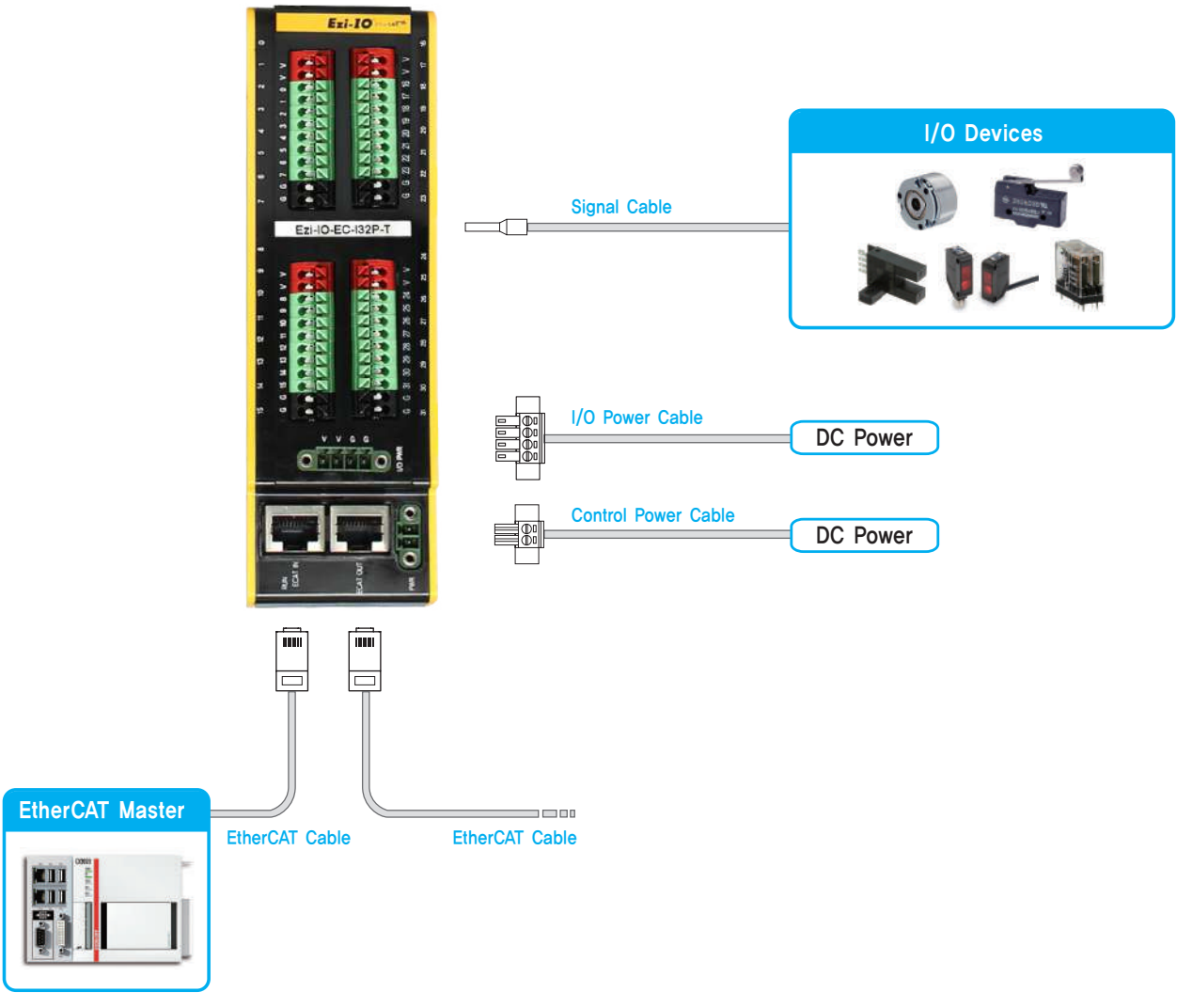
2. Options

● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [32CH Terminal Block Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Control Power (CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

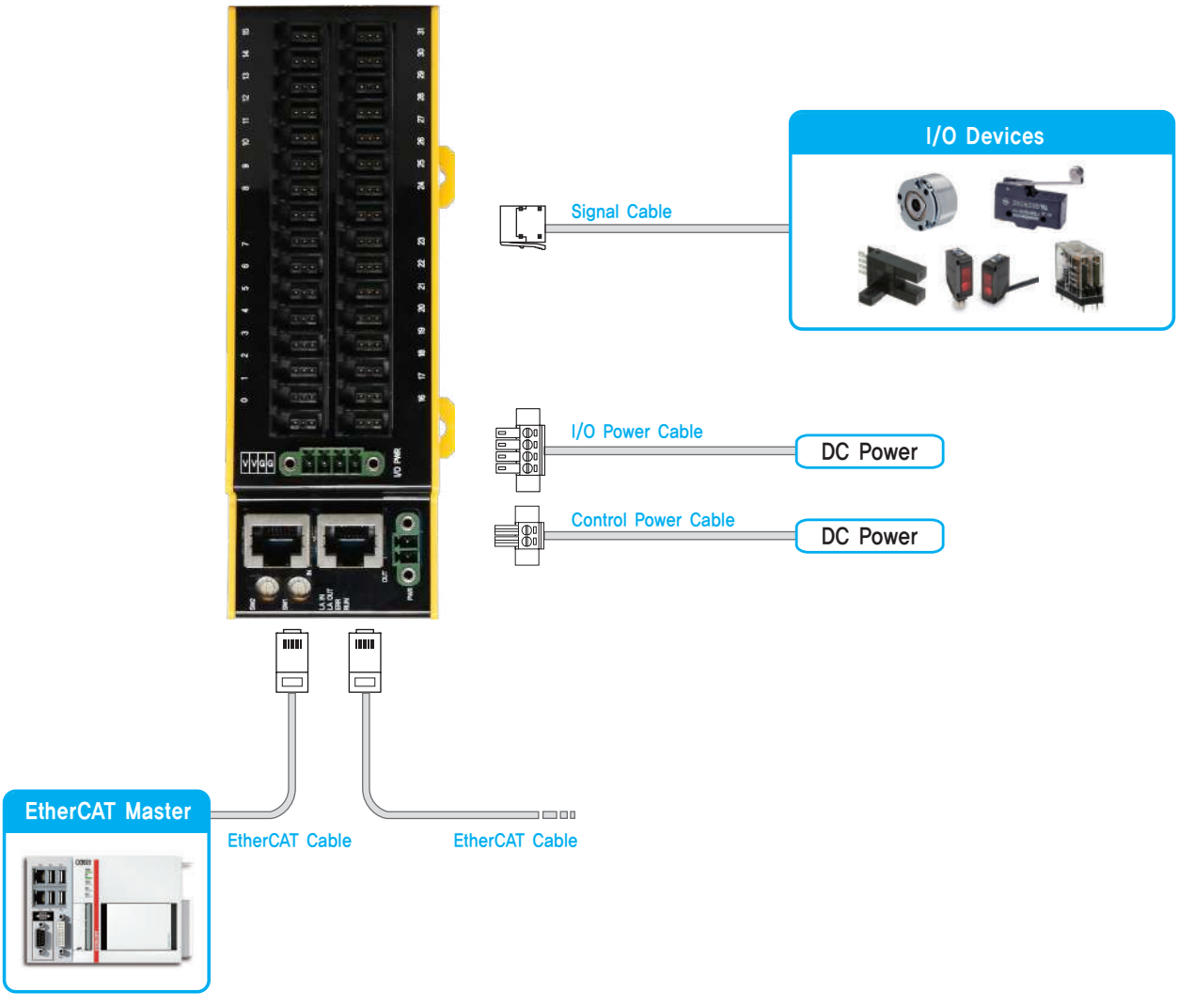
2. Options

● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [32CH Option A Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Control Power (CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P03-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

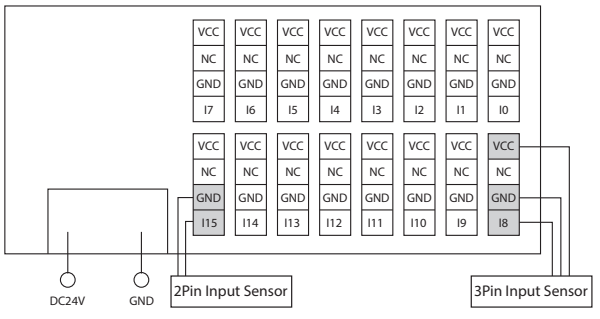
● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

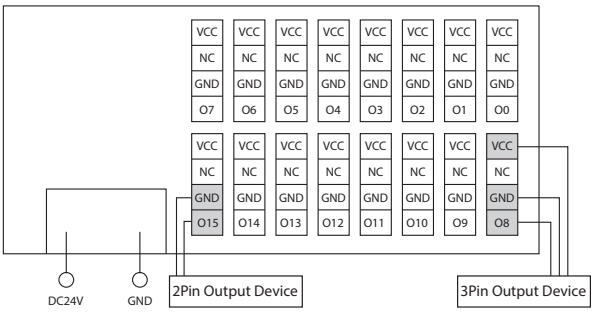
※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [16CH e-CON Type]

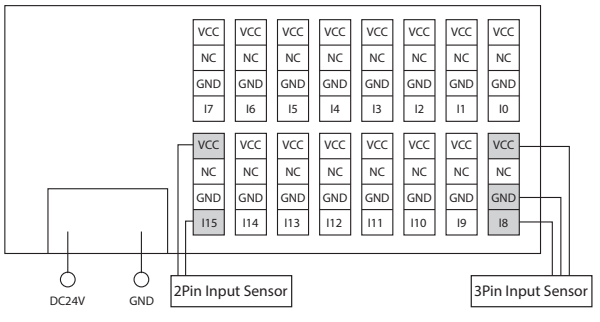
1 Ezi-IO-EC-I16N-E(NPN)



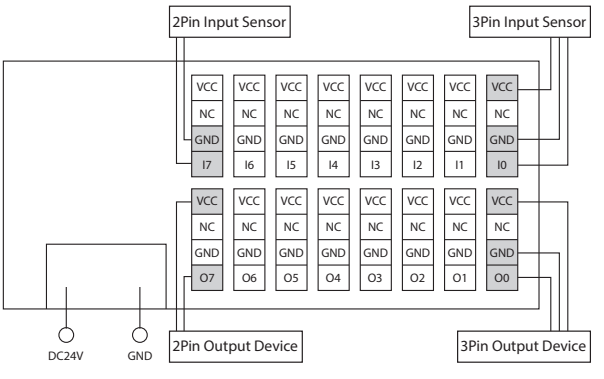
4 Ezi-IO-EC-O16P-E(PNP)



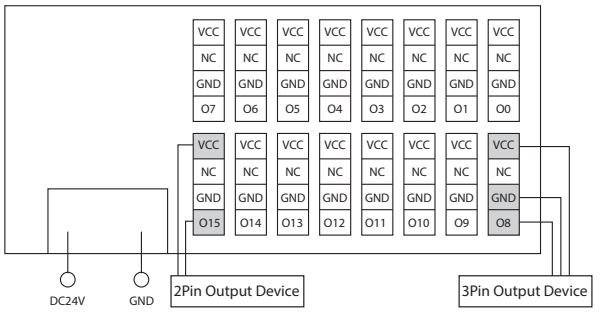
2 Ezi-IO-EC-I16P-E(PNP)



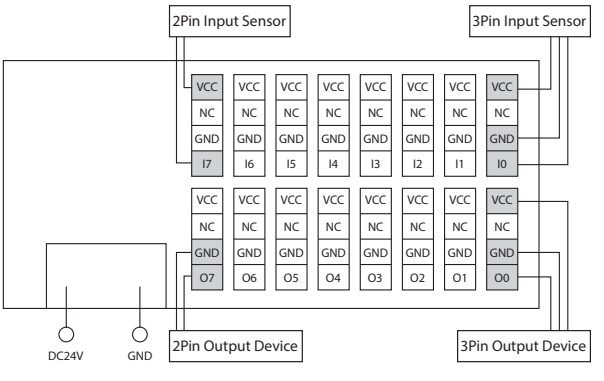
5 Ezi-IO-EC-I8O8N-E(NPN)



3 Ezi-IO-EC-O16N-E(NPN)



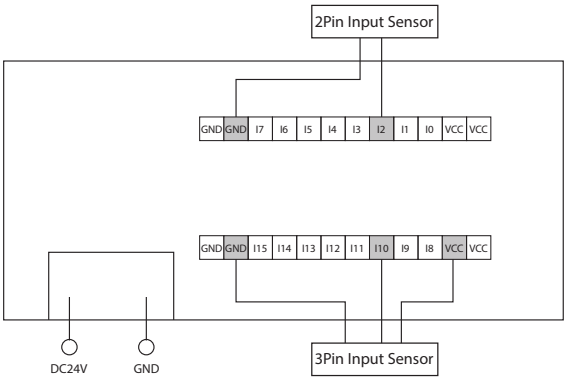
6 Ezi-IO-EC-I8O8P-E(PNP)



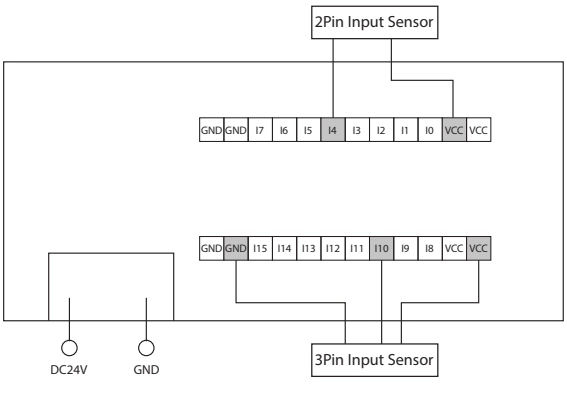
※ VCC is DC24V output.
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [16CH Terminal Block Type]

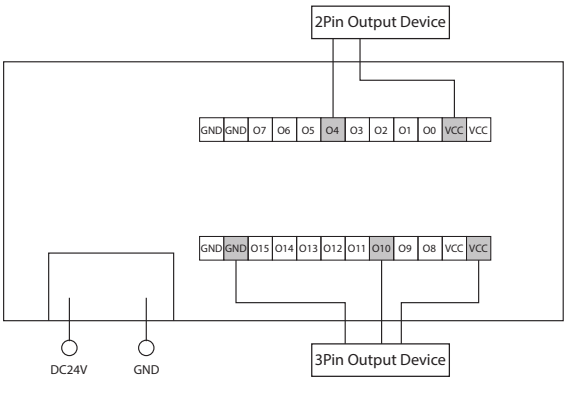
1 Ezi-IO-EC-I16N-T(NPN)



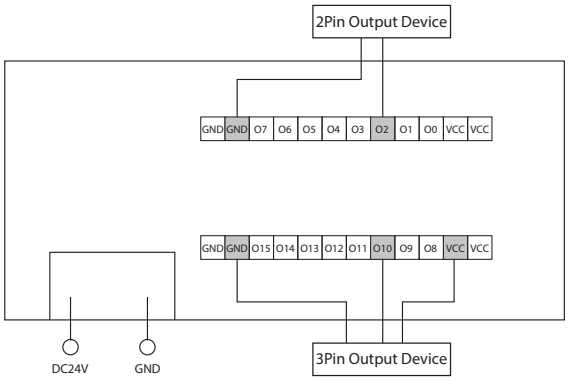
2 Ezi-IO-EC-I16P-T(PNP)



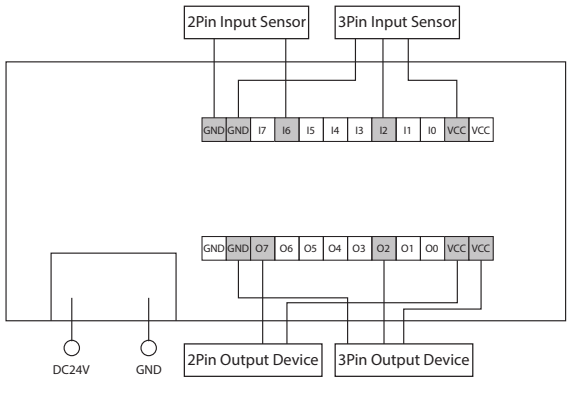
3 Ezi-IO-EC-O16N-T(NPN)



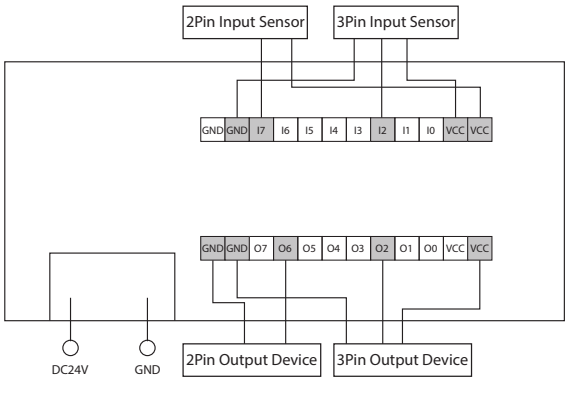
4 Ezi-IO-EC-O16P-T(PNP)



5 Ezi-IO-EC-I8O8N-T(NPN)



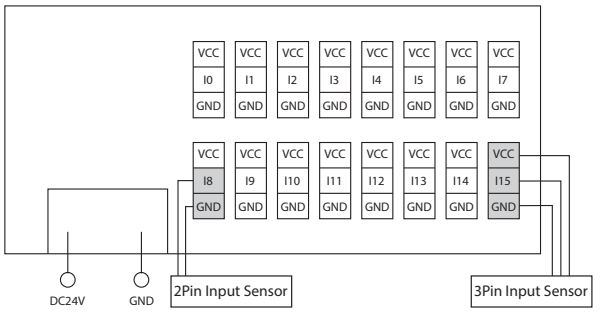
6 Ezi-IO-EC-I8O8P-T(PNP)



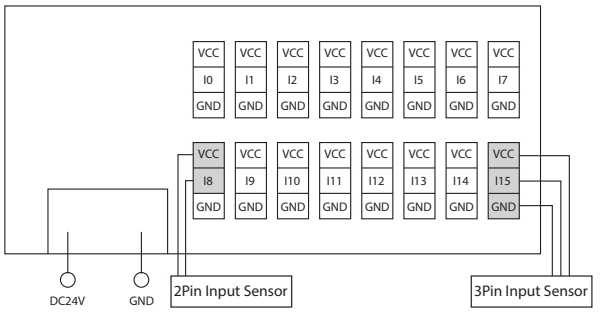
※ VCC is DC24V output.
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [16CH Option A Type]

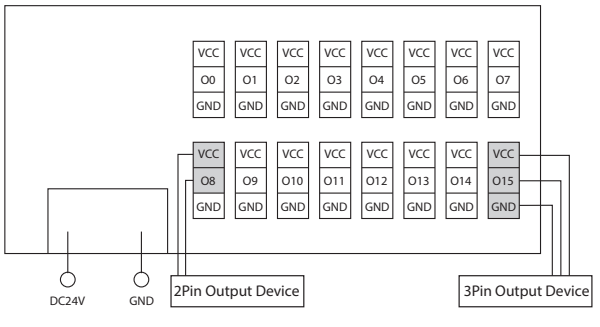
1 Ezi-IO-EC-I16N-E-A(NPN)



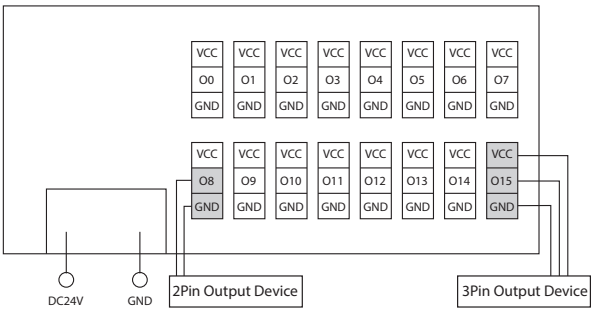
2 Ezi-IO-EC-I16P-E-A(PNP)



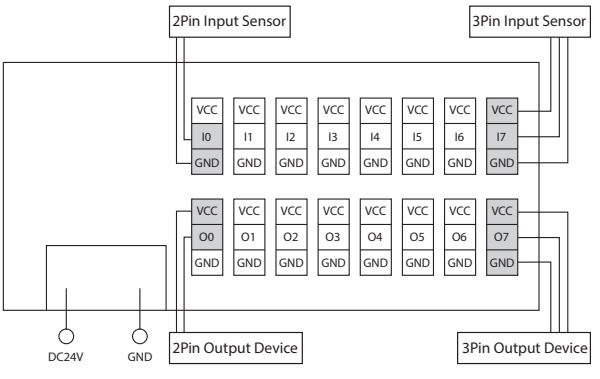
3 Ezi-IO-EC-O16N-E-A(NPN)



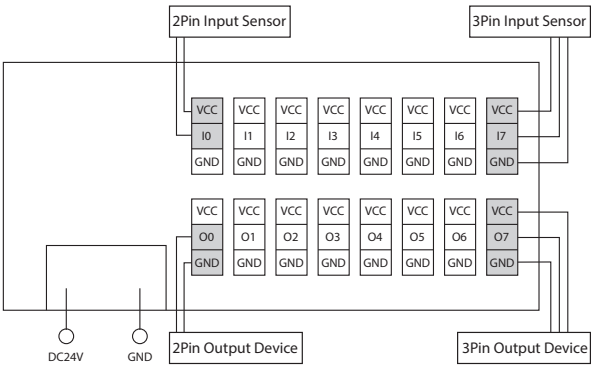
4 Ezi-IO-EC-O16P-E-A(PNP)



5 Ezi-IO-EC-I8O8N-E-A(NPN)



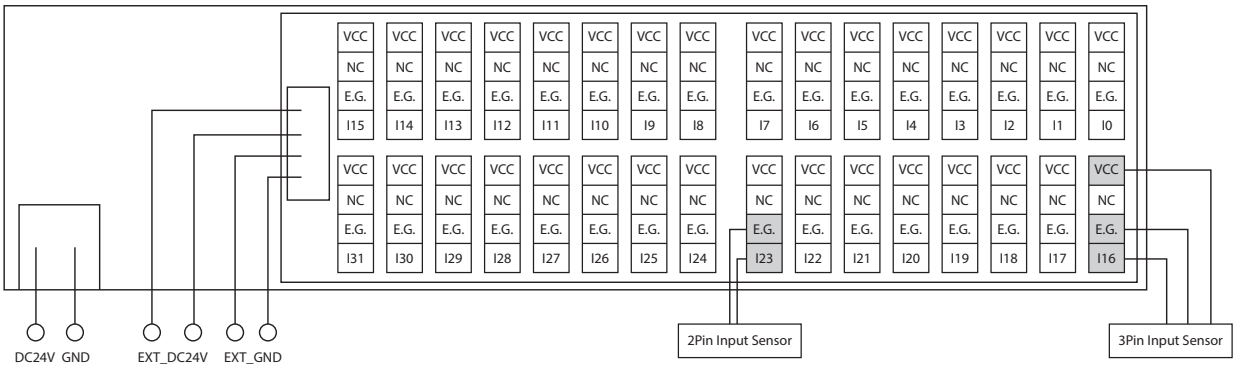
6 Ezi-IO-EC-I8O8P-E-A(PNP)



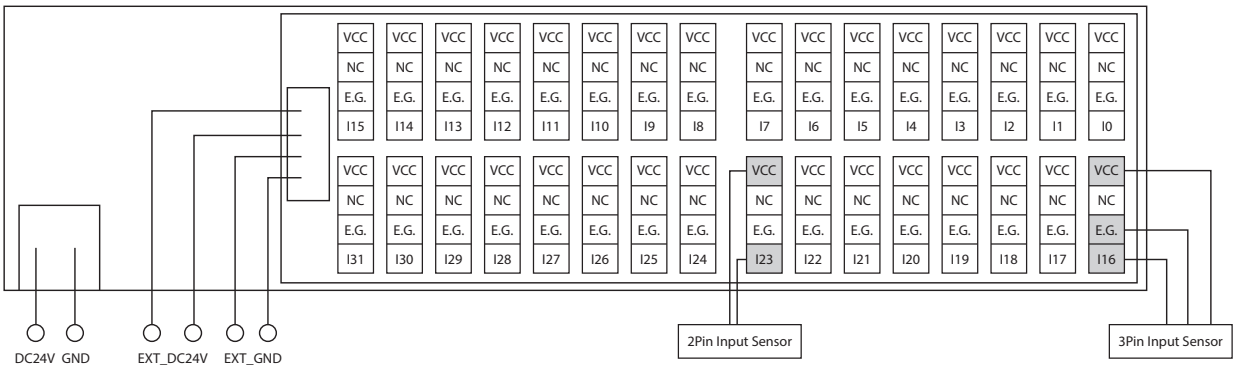
※ VCC is DC24V output.
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH e-CON Type]

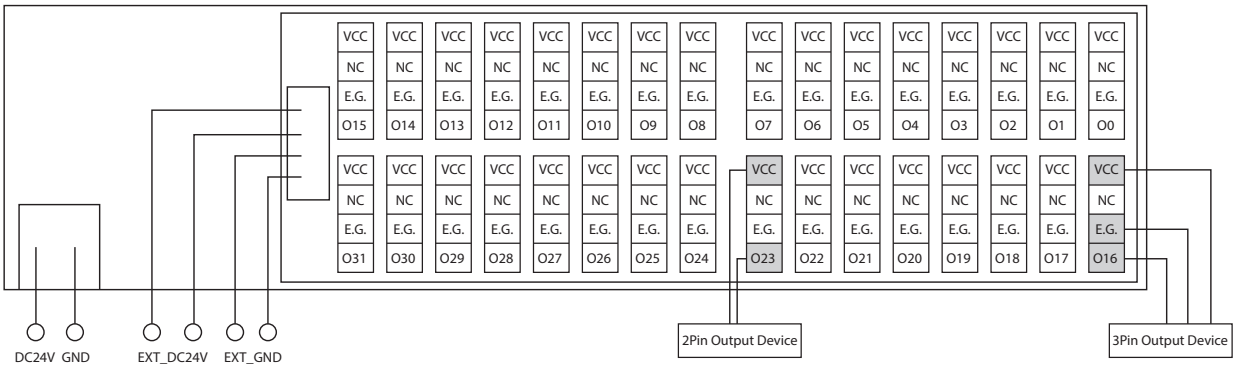
1 Ezi-IO-EC-I32N-E(NPN)



2 Ezi-IO-EC-I32P-E(PNP)



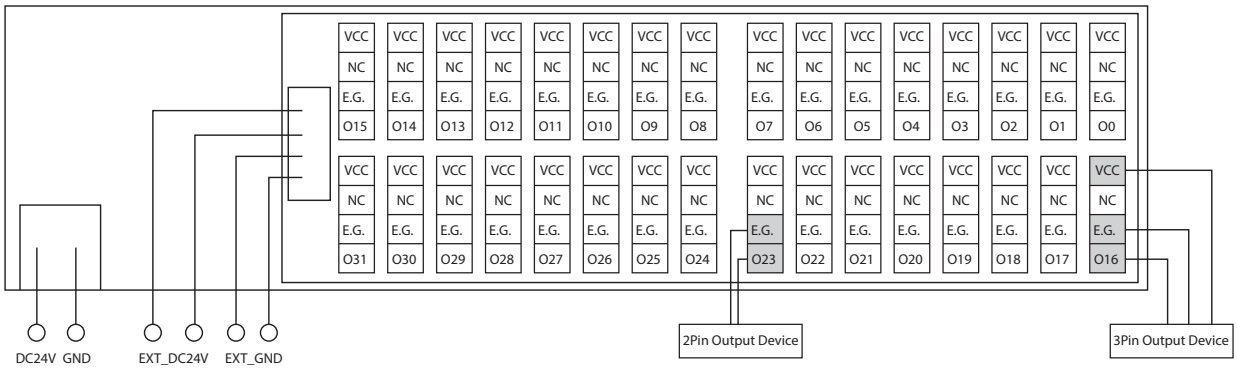
3 Ezi-IO-EC-O32N-E(NPN)



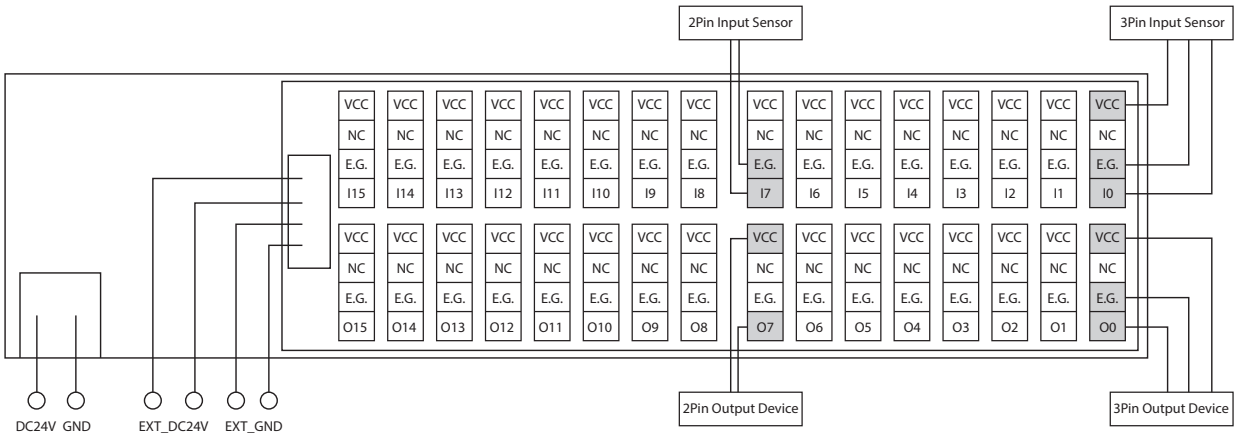
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH e-CON Type]

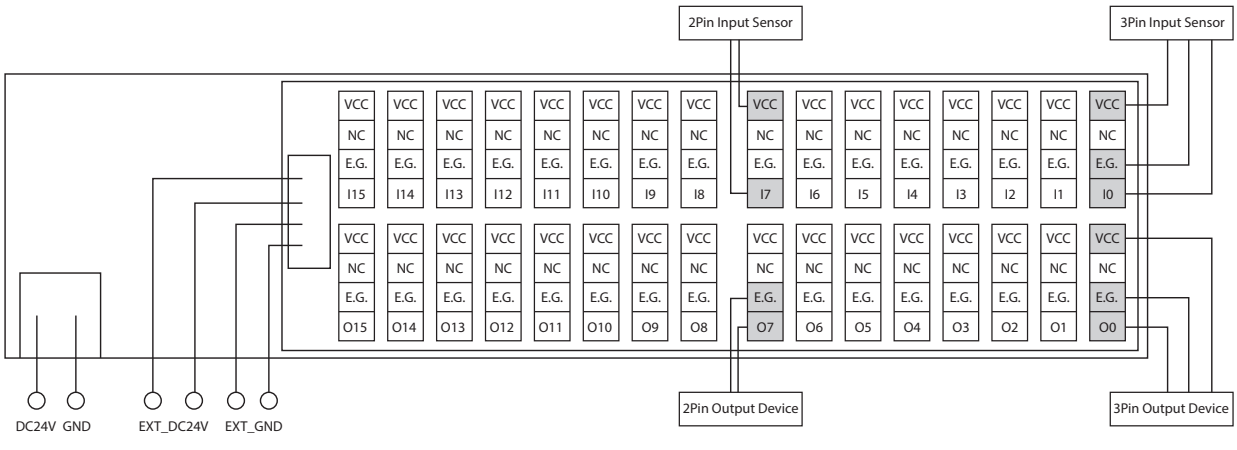
4 Ezi-IO-EC-O32P-E(PNP)



5 Ezi-IO-EC-I16O16N-E(NPN)



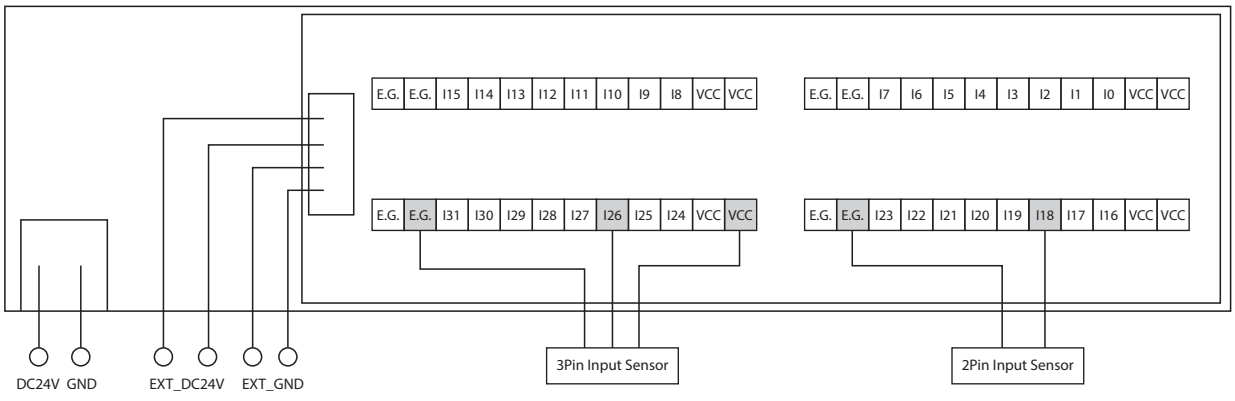
6 Ezi-IO-EC-I16O16P-E(PNP)



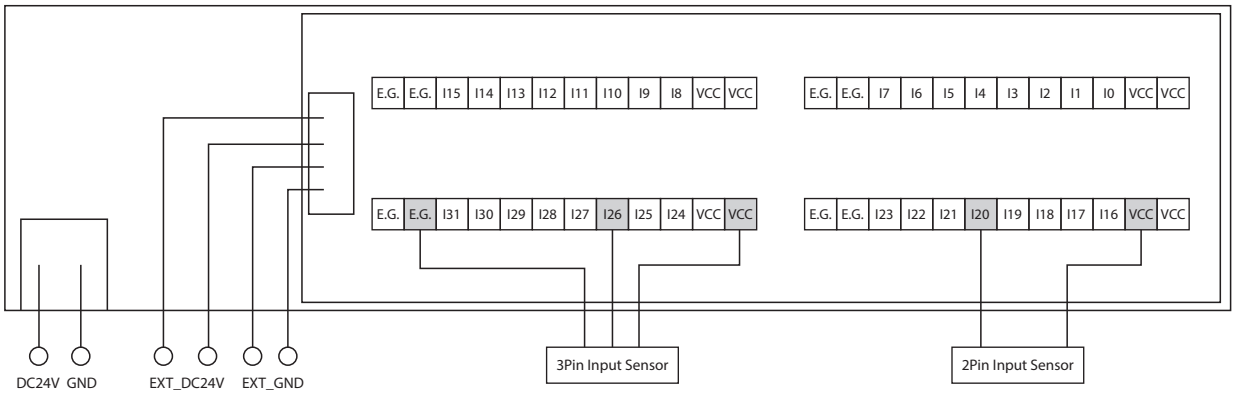
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Terminal Block Type]

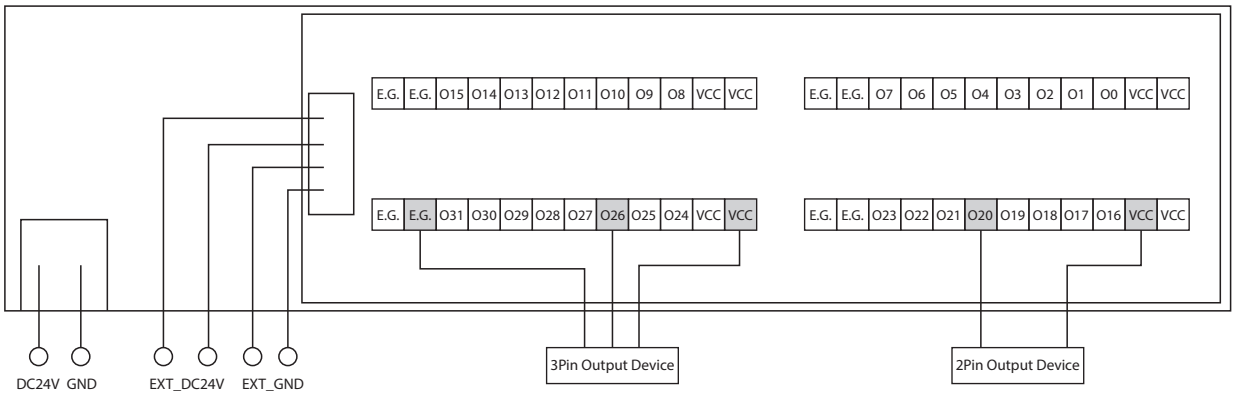
1 Ezi-IO-EC-I32N-T(NPN)



2 Ezi-IO-EC-I32P-T(PNP)



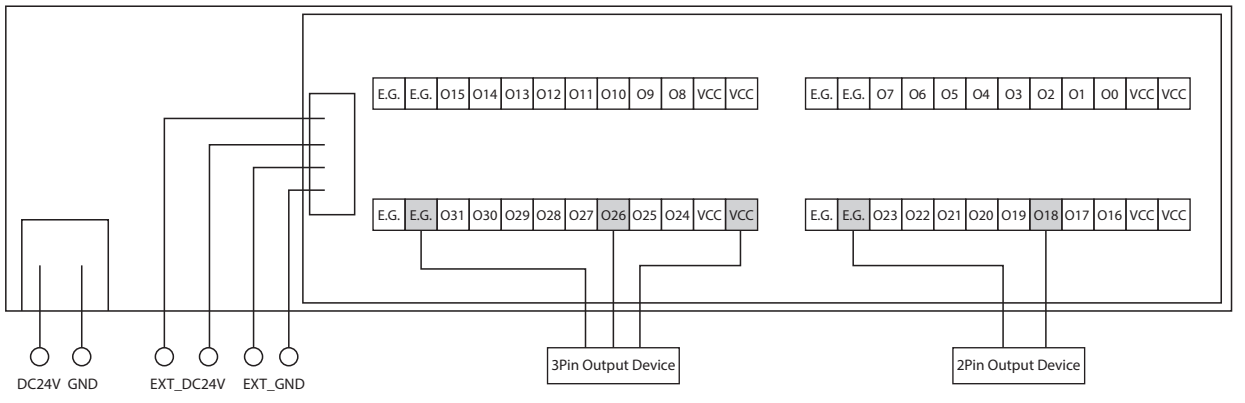
3 Ezi-IO-EC-O32N-T(NPN)



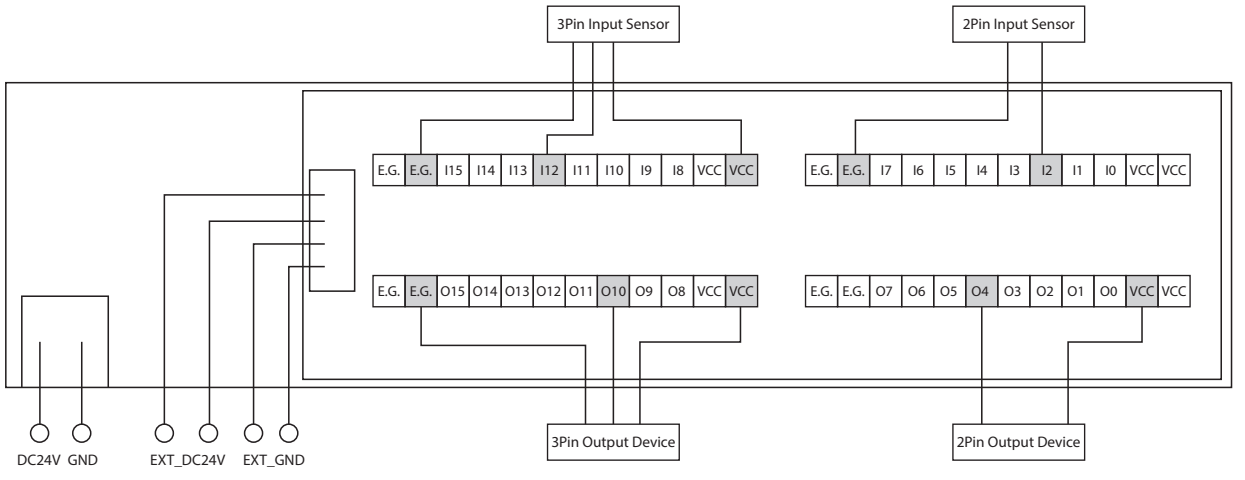
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Terminal Block Type]

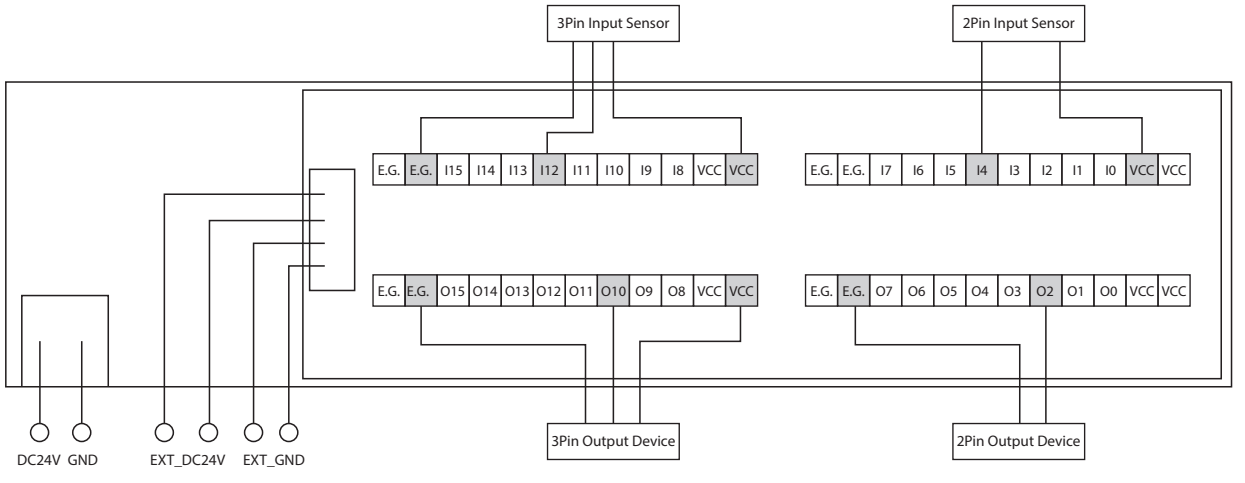
4 Ezi-IO-EC-O32P-T(PNP)



5 Ezi-IO-EC-I16O16N-T(NPN)



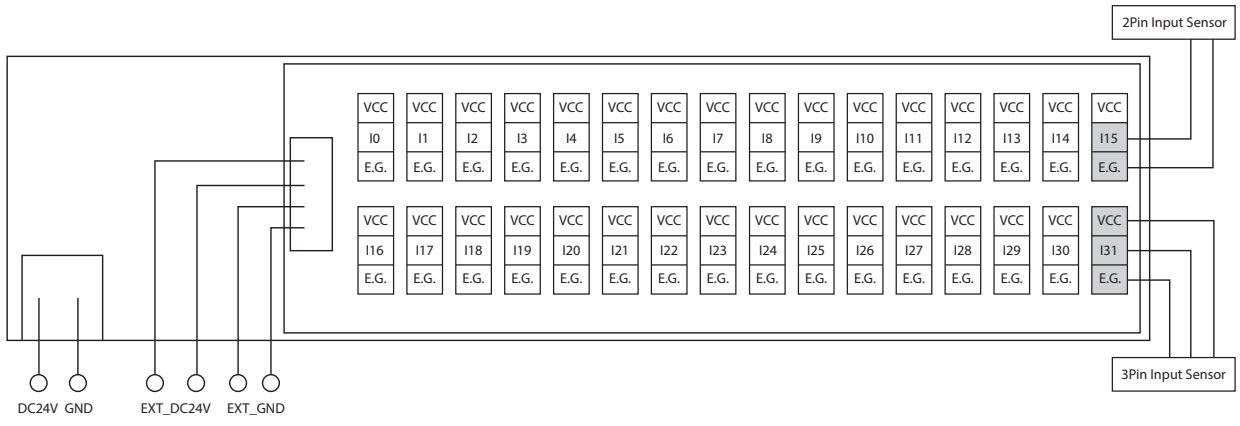
6 Ezi-IO-EC-I16O16P-T(PNP)



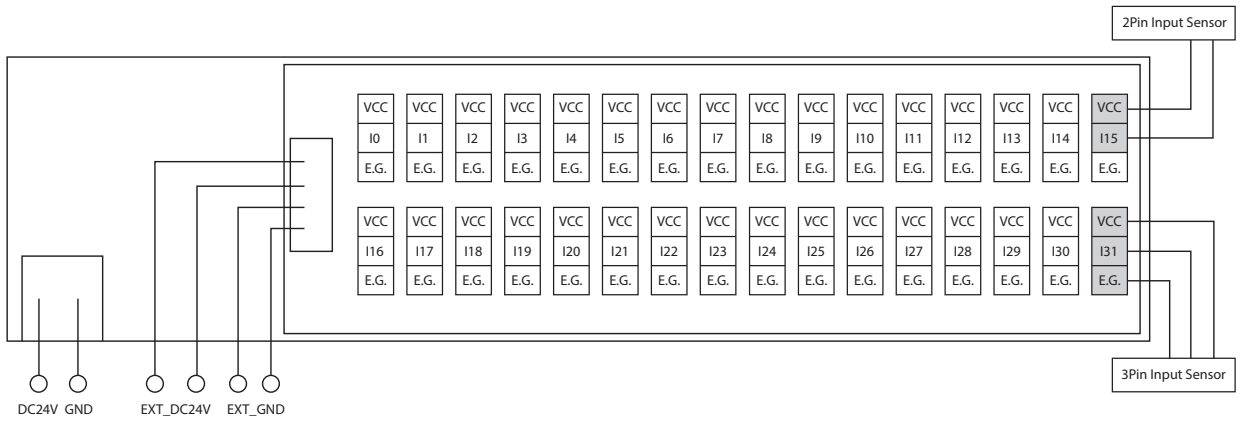
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Option A Type]

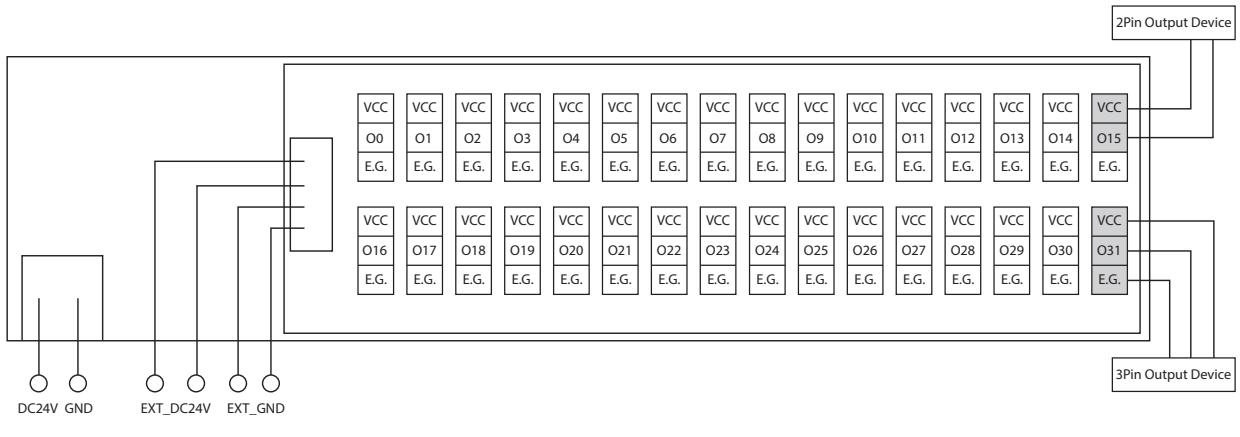
1 Ezi-IO-EC-I32N-E-A(NPN)



2 Ezi-IO-EC-I32P-E-A(PNP)



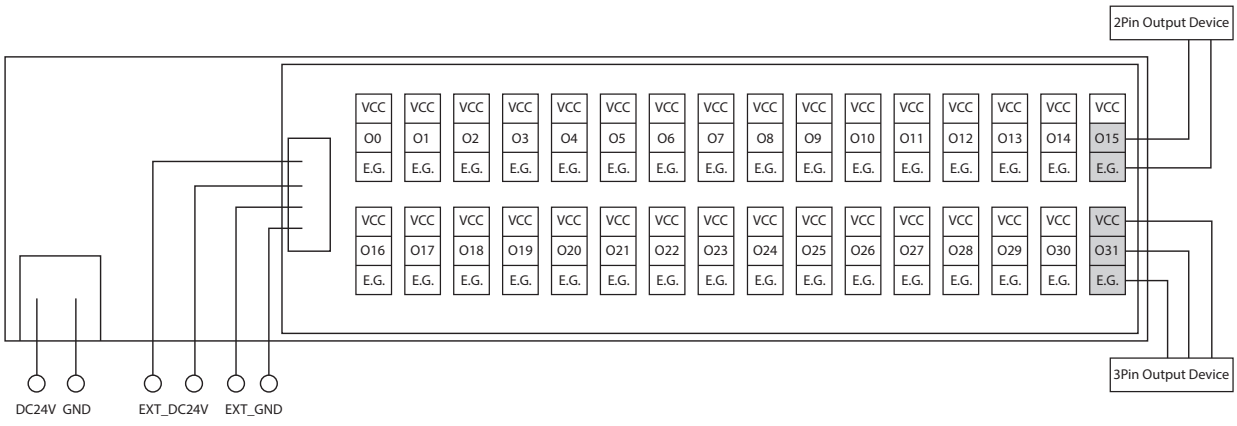
3 Ezi-IO-EC-O32N-E-A(NPN)



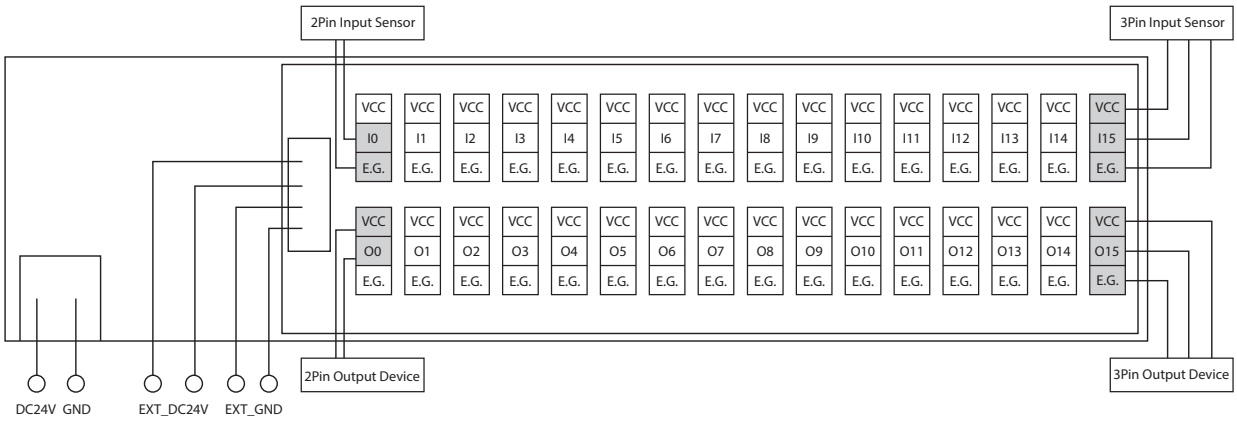
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Option A Type]

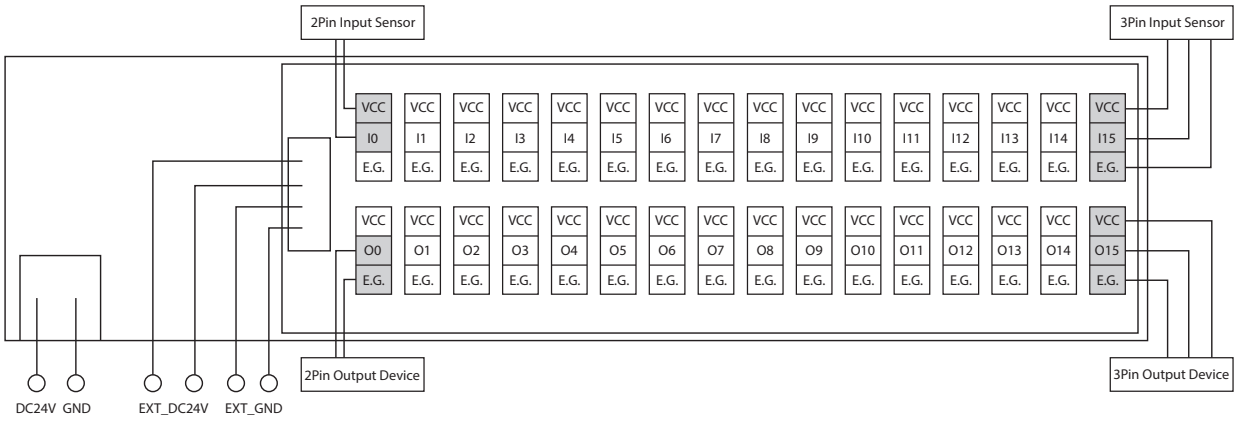
4 Ezi-IO-EC-O32P-E-A(PNP)



5 Ezi-IO-EC-I16O16N-E-A(NPN)



6 Ezi-IO-EC-I16O16P-E-A(PNP)



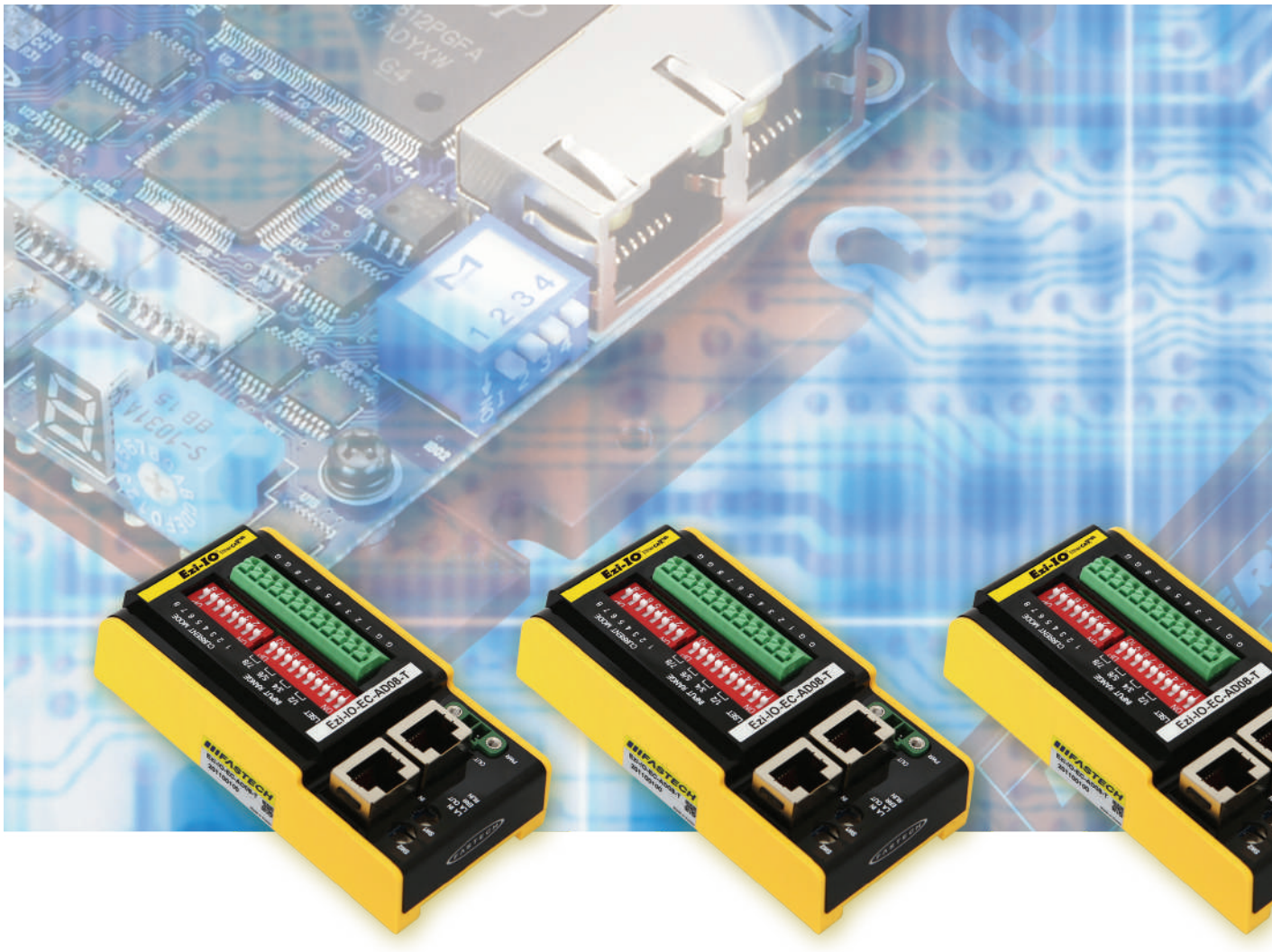
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.


Ezi-IO
Ezi-IO-EC-AD08-T
FASTECH
Ezi-IO
Ezi-IO-EC-AD08-T
FASTECH

Ezi-IO® Input/Output Module

EtherCAT® AD

- EtherCAT Based Analog Input Module
- All EtherCAT Synchronization Modes Supported
- CiA401 Profile Supported
- Simple and Easy Wiring
- Input Mode and Range Configurable
- Moving Average Filtering



FASTECH
Fast, Accurate, Smooth Motion

Ezi-IO®

EtherCAT®

Input/Output Module

AD



2 Simple and Easy Wiring

Ezi-IO EtherCAT AD uses a push-in type terminal block. The push-in type terminal block can be easily connected to various devices using ferrule terminals, making the wiring much simpler and easier.

3 EtherCAT Synchronization Modes

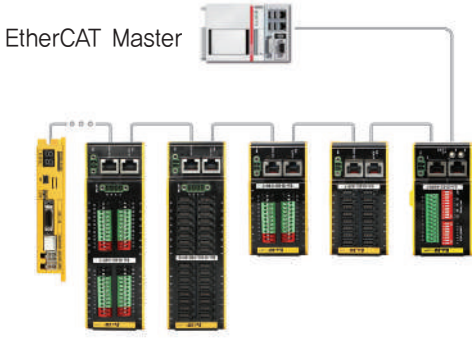
Ezi-IO EtherCAT AD supports all EtherCAT synchronization modes. You can select from Free Run, SM Event, DC SYNC Event synchronization mode according to the purpose of use.

4 Easy Setup with Switches

Ezi-IO EtherCAT AD can easily set EtherCAT ID with rotary switches and identify EtherCAT address easily. In addition, the voltage or current input mode can be easily selected with the DIP switches, and the input signal range can be easily set in the voltage input mode.

1 EtherCAT Based Analog Input Module

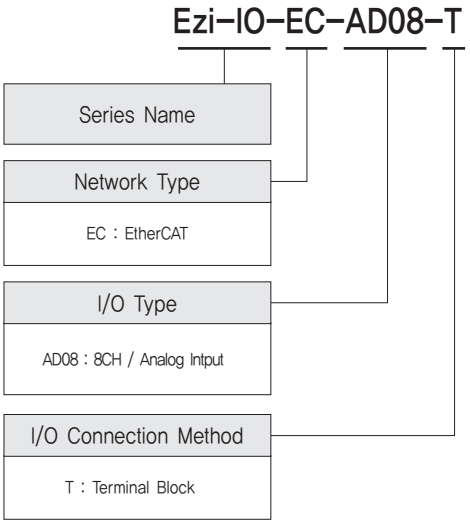
Ezi-IO EtherCAT AD is an analog input module which supports EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex).
Ezi-IO EtherCAT AD is an EtherCAT Slave module which supports CoE(CAN Application layer over EtherCAT). It supports CiA 401 profile, and can be connected to the EtherCAT master without topology limitation.



5 Moving Average Filtering

Ezi-IO EtherCAT AD provides the moving average filter to remove the noise mixed in the analog signal and suppress the fluctuation of the analog input value.
The range of the moving average filter can be set between 0~100ms.

● Ezi-IO EtherCAT AD Part Numbering



● Ezi-IO EtherCAT AD Part Number

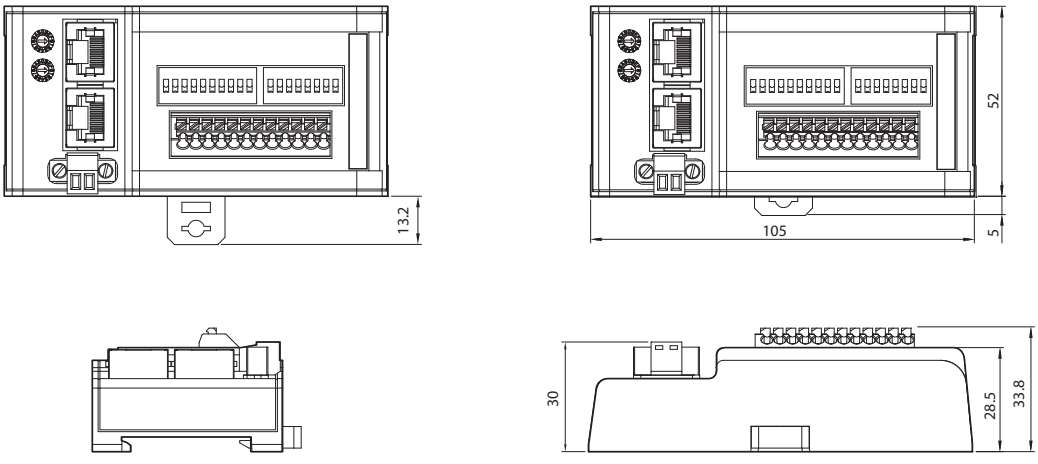
Part Number
Ezi-IO-EC-AD08-T

● Specifications of Module

Model			Ezi-IO-EC-AD08-T	
Input Mode			Voltage Input	Current Input
Input Voltage			DC24V±10%	
Current Consumption			Max. 120mA	
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Input Channels		8CH	
	Max. Signal Input		±15V	±30mA
	Input Range		· -10~10V · -5~5V · -2.5~2.5V · 0~10V	· 0~20mA
	Input Range Setting Method		· SDO Communications (Separate settings for CH1~8) · DIP Switch (Separate settings for CH1/CH2, CH3/CH4, CH5/CH6, CH7/CH8)	
	Input Impedance		1MΩ	249Ω
	Max. Resolution		1/8,191 (Full Scale)	
	Accuracy	25℃	±0.3% (Full Scale)	±0.3% (Full Scale)
		0~50℃	±0.4% (Full Scale)	±0.6% (Full Scale)
	Analog Conversion Cycle		200μs/8CH	
	A/D Converted Data		· -10~10V : -4,096~4,095 · -5~5V: -4,096~4,095 · -2.5~2.5V: -4,096~4,095 · 0~10V: 0~8,191	· 0~20mA: 0~8,191
	Isolation Method		Between analog input and communication connections : Digital isolation (Between channels : Non-isolated)	
LED Display			· Power Status (PWR) · EtherCAT Status (RUN) · Operation Error (ERR) · EtherCAT Connection (LA IN, LA OUT)	
EtherCAT	Protocol		CoE (CiA 401 I/O Profile), FoE (Firmware Download)	
	Synchronization		Free Run, SM Event, DC SYNC Event	
	Bus Interface		2×RJ45 Connector	
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m	

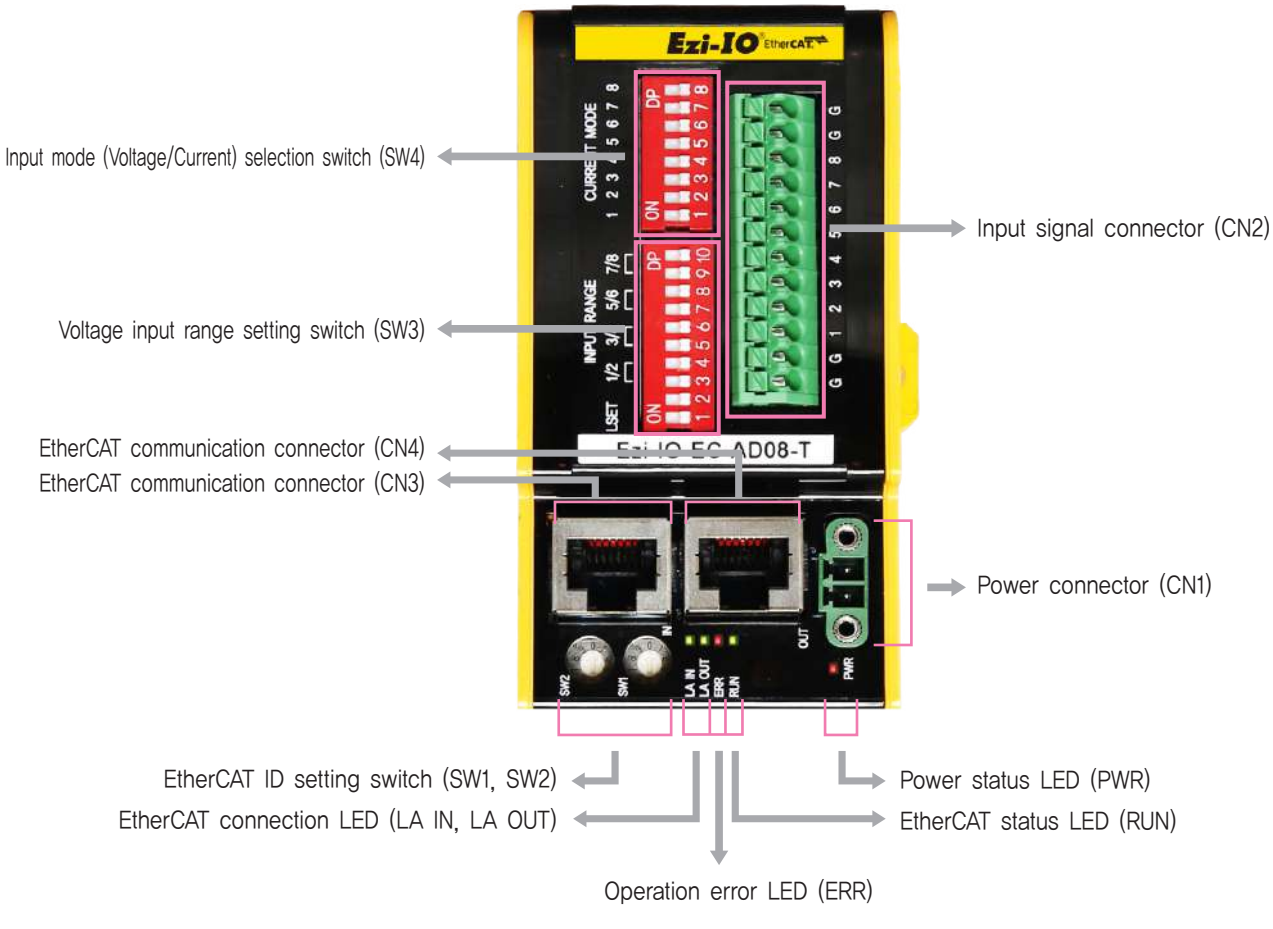
● Dimensions of Module [mm]

◆ Ezi-IO-EC-AD08-T



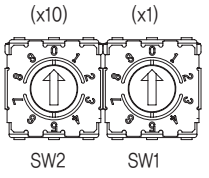
* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EC-AD08-T]

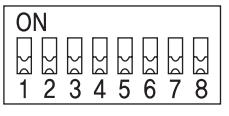


1. EtherCAT ID Setting Switch (SW1, SW2)

They are switches to set the EtherCAT ID (ECAT Device ID) node address, and they represent a decimal number. SW1 indicates the units digit (×1), and SW2 indicates the tens digit (×10).



2. Input Mode (Voltage/Current) Selection Switch (SW4)

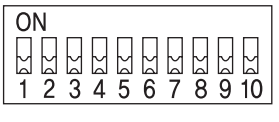


SW4 is a switch that selects voltage/current mode for each channel.
Refer to the following chart for how to use SW4.

Switch / Mode	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
	SW4.1	SW4.2	SW4.3	SW4.4	SW4.5	SW4.6	SW4.7	SW4.8
Voltage Input	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Current Input	ON	ON	ON	ON	ON	ON	ON	ON

* Select the input mode for each channel with the Input Mode Selection Switch (SW4) before supplying power to the module.

3. Voltage Input Range Setting Switch (SW3)



SW3 is a switch for setting the input range. You can set the range with the combination of the switches.

● Selecting Input Setting Method

You can select the input setting method with the LSET (SW3.1) switch as follows.

Switch / Setting Method	LSET	Description
	SW3.1	
DIP Switch	ON	Setting voltage input range with DIP switches (SW3.3~SW3.10)
SDO Communication	OFF	Setting voltage/current input range with EtherCAT SDO communication

* If you use any channels in current input mode, select the SDO Communication for setting method (SW3.1=OFF).
* Set SW3.1 before supplying power to the module.
* SW3.2 is not used.

● Voltage Input Setting

When using the DIP Switch for setting (SW3.1 = ON), the voltage input is set as shown in the table below.

Switch / Input Range	CH1/CH2		CH3/CH4		CH5/CH6		CH7/CH8	
	SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
−10~10V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
−5~5V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
−2.5~2.5V	ON	OFF	ON	OFF	ON	OFF	ON	OFF
0~10V	ON	ON	ON	ON	ON	ON	ON	ON

4. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- Operation Error LED

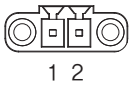
Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

- EtherCAT Connection LED

Name	Color	Status	Description
LA IN / LA OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

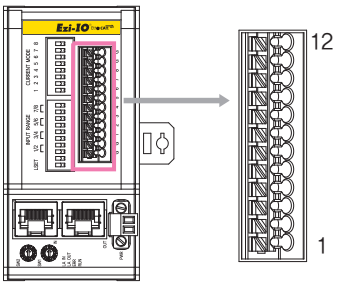
5. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



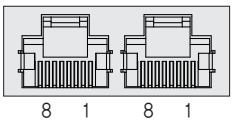
6. Input Signal Connector (CN2)

No.	Name	Function	I/O
1	G	Analog GND	Input
2	G	Analog GND	Input
3	1	Analog In 1	Input
4	2	Analog In 2	Input
5	3	Analog In 3	Input
6	4	Analog In 4	Input
7	5	Analog In 5	Input
8	6	Analog In 6	Input
9	7	Analog In 7	Input
10	8	Analog In 8	Input
11	G	Analog GND	Input
12	G	Analog GND	Input

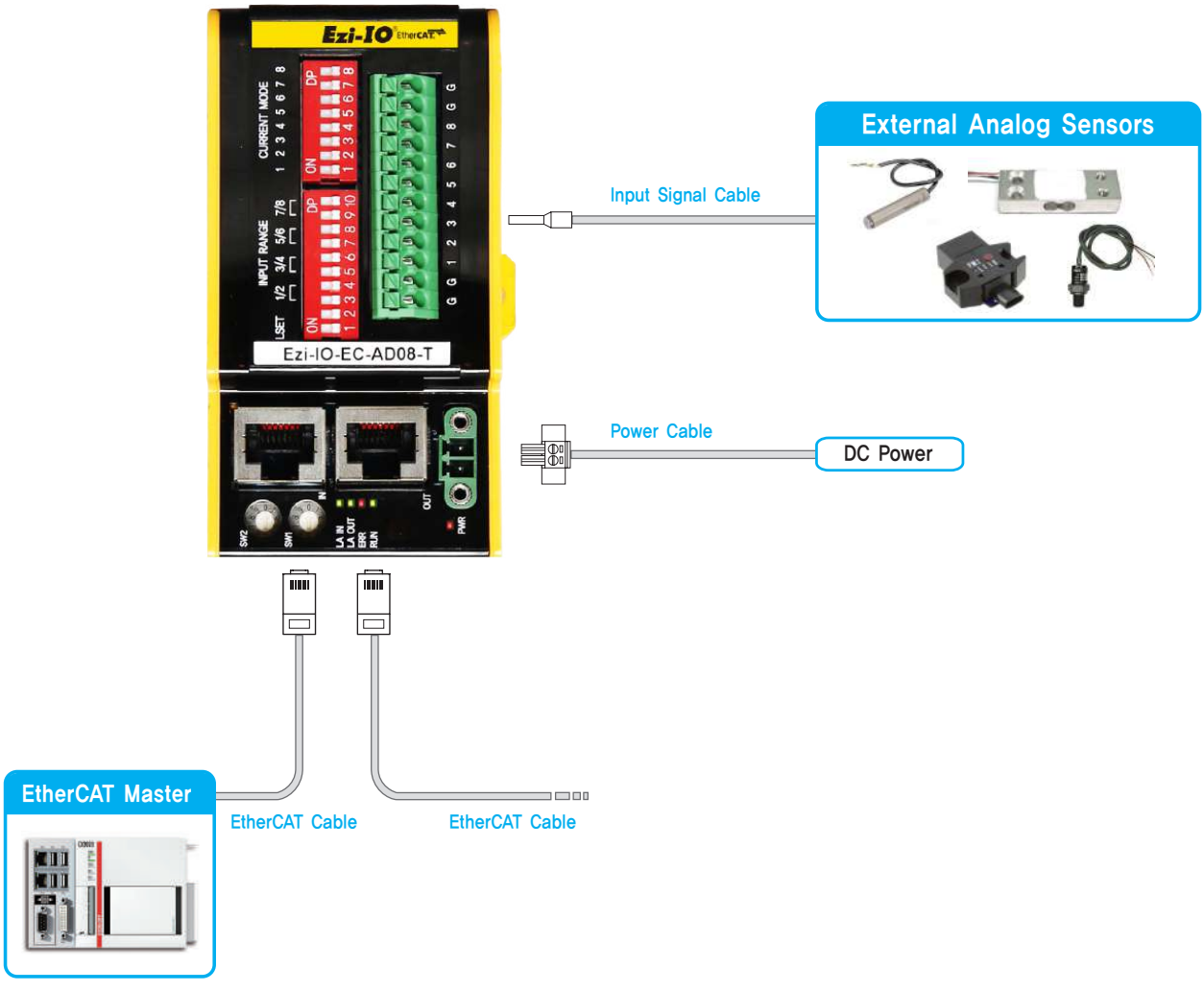


7. EtherCAT Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD–
3	RD+
4	----
5	----
6	RD–
7	----
8	----
Connector hood	F.GND



● System Configuration [Ezi-IO-EC-AD08-T]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

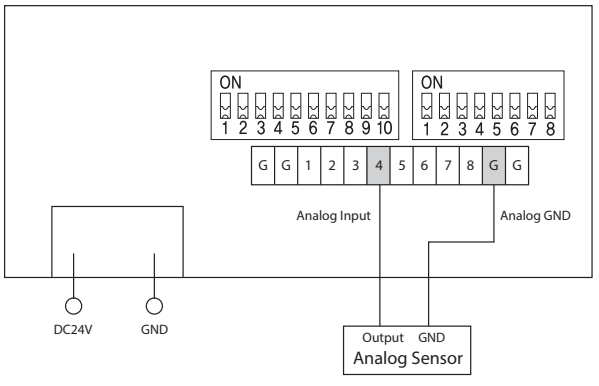
● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [Ezi-IO-EC-AD08-T]

1 Ezi-IO-EC-AD08-T

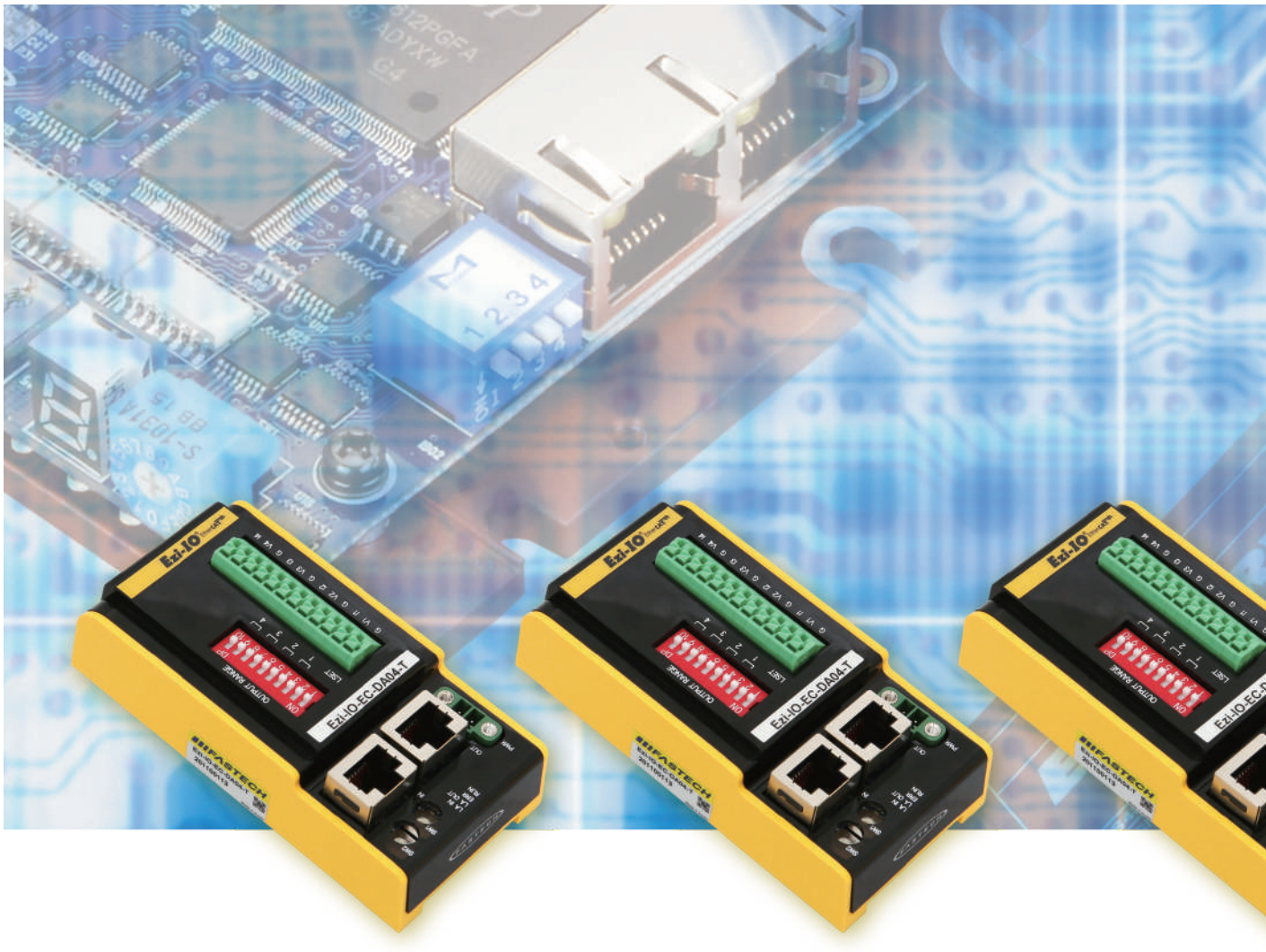



E-HIO-EC-DA04-T
E-HIO-EC-DA04-T

Ezi-IO® EtherCAT DA

Input/Output Module

- EtherCAT Based Analog Output Module
- All EtherCAT Synchronization Modes Supported
- CiA401 Profile Supported
- Simple and Easy Wiring
- Output Range Configurable
- Calibration for Output Deviation



FASTECH

Fast, Accurate, Smooth Motion

Ezi-IO®

Input/Output Module

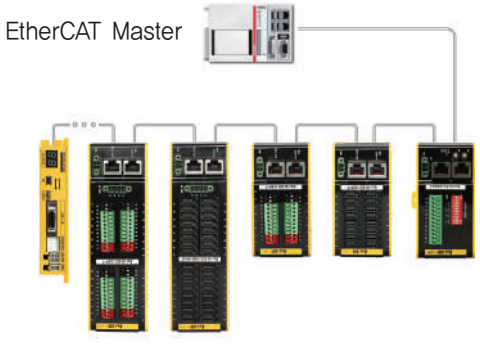
EtherCAT®

DA



1 EtherCAT Based Analog Output Module

Ezi-IO EtherCAT DA is an analog output module which supports EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex).
Ezi-IO EtherCAT DA is an EtherCAT Slave module which supports CoE(CAN Application layer over EtherCAT). It supports CiA 401 profile, and can be connected to the EtherCAT master without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT DA uses a push-in type terminal block. The push-in type terminal block can be easily connected to various devices using ferrule terminals, making the wiring much simpler and easier.

3 EtherCAT Synchronization Modes

Ezi-IO EtherCAT DA supports all EtherCAT synchronization modes. You can select from Free Run, SM Event, DC SYNC Event synchronization mode according to the purpose of use.

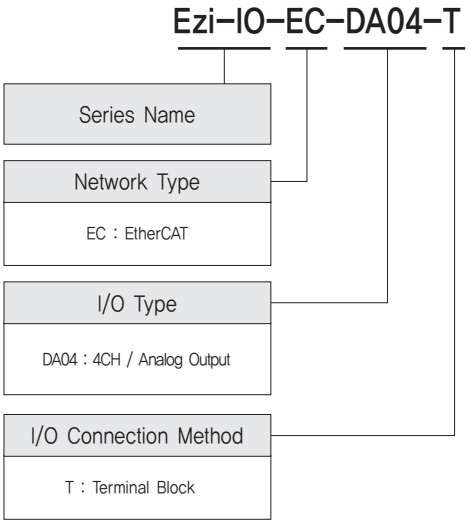
4 Easy Setup with Switches

Ezi-IO EtherCAT DA can easily set EtherCAT ID with rotary switches and identify EtherCAT address easily. In addition, the output signal range can be easily set with the DIP switches.

5 Calibration for Output Deviation

Ezi-IO EtherCAT DA provides an output deviation calibration function as a countermeasure against deviations in the output signal due to the type of connection device, the characteristics of the cable, and the difference in the connection method.

Ezi-IO EtherCAT DA Part Numbering



Ezi-IO EtherCAT DA Part Number

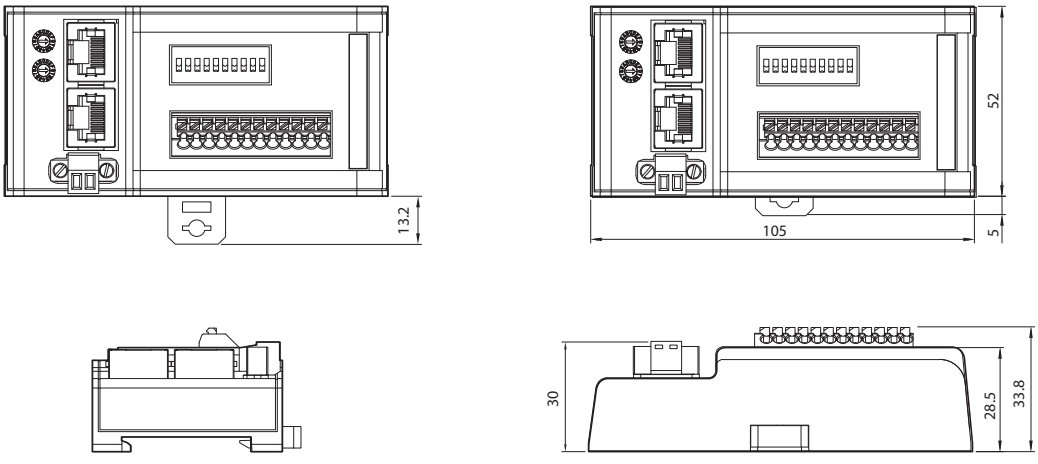
Part Number
Ezi-IO-EC-DA04-T

Specifications of Module

Model			Ezi-IO-EC-DA04-T	
Output Mode			Voltage Output	Current Output
Input VoltageInput Voltage			DC24V±10%	
Current Consumption			Max. 180mA	
Operation Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Output Channels		4CH	
	Output Range		· 0~5V · 1~5V · 0~10V · -10~10V	· 0~20mA · 4~20mA
	Output Range Setting Method		· SDO Communications (Separate settings for CH1~4) · DIP Switch (Separate settings for CH1~4)	
	External Load Resistance		1kΩ or higher	400Ω or lower
	Max. Resolution		1/50,000 (Full Scale)	
	Accuracy	25℃	±0.3% (Full Scale)	
		0~50℃	±0.4% (Full Scale)	
	Analog Conversion Cycle		500μs/4CH	
	D/A Converted Data		· -25,000~25,000 (-10~10V output range) · 0~25,000 (Other output ranges except -10~10V)	0~25,000
	Isolation Method		Between analog output and communication connections : Digital isolation (Between channels : Non-isolated)	
LED Display			· Power Status (PWR) · EtherCAT Status (RUN) · Operation Error (ERR) · EtherCAT Connection (LA IN, LA OUT)	
EtherCAT	Protocol		CoE (CiA 401 I/O Profile), FoE (Firmware Download)	
	Synchronization		Free Run, SM Event, DC SYNC Event	
	Bus Interface		2×RJ45 Connector	
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m	

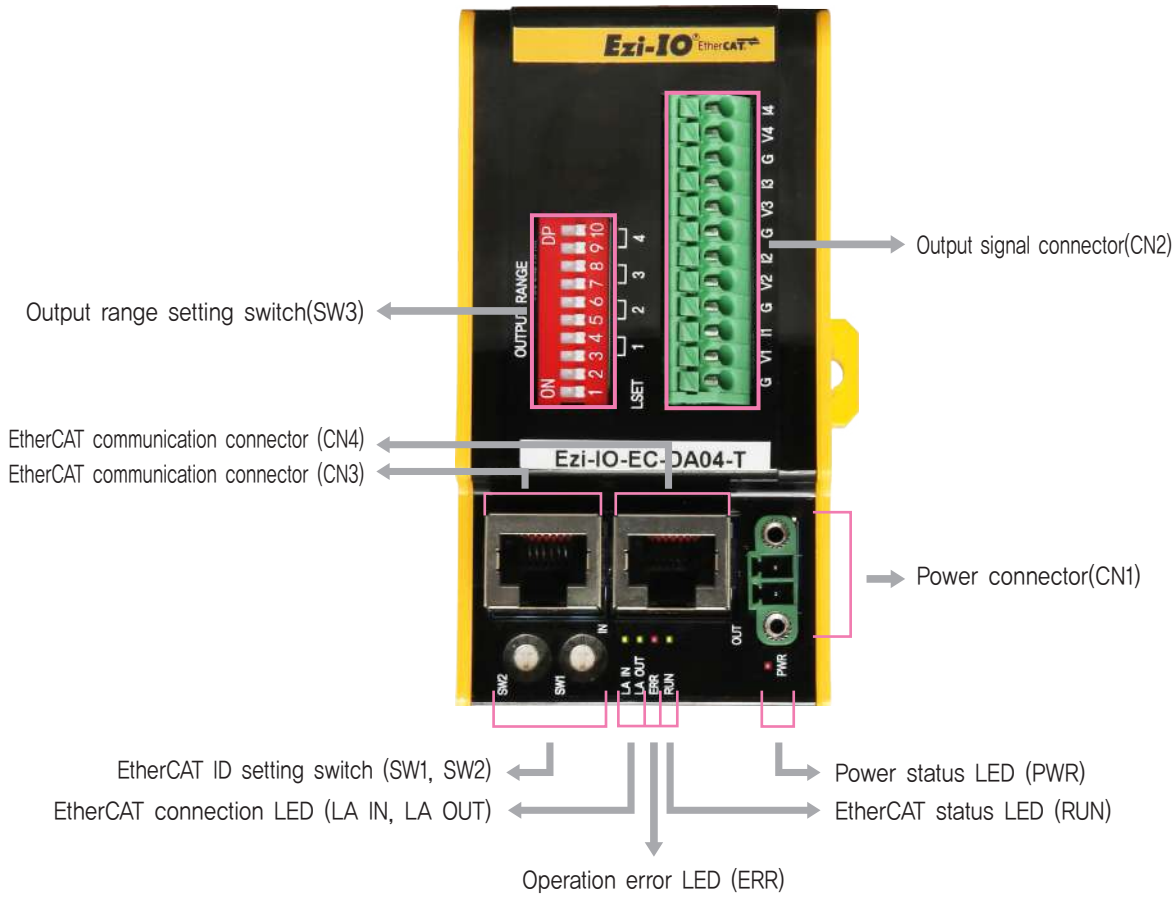
● Dimensions of Module [mm]

◆ Ezi-IO-EC-DA04-T

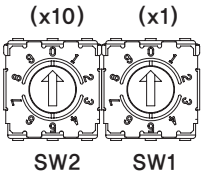


* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EC-DA04-T]

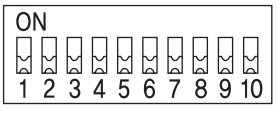


1. EtherCAT ID Setting Switch (SW1, SW2)



They are switches to set the EtherCAT ID (ECAT Device ID) node address, and they represent a decimal number.
SW1 indicates the units digit (×1), and SW2 indicates the tens digit (×10).

2. Output Range Setting Switch(SW3)



SW3 is a switch for setting the output range. You can set the range with the combination of the switches.

● Selecting Output Setting Method

You can select the output setting method with the LSET (SW3.1) switch as follows.

Switch / Setting Method	LSET SW3.1	Description
DIP Switch	ON	Setting output range with DIP switches (SW3.3~SW3.10)
SDO Communication	OFF	Setting output range with EtherCAT SDO communication

* Set SW3.1 before supplying power to the module.
* SW3.2 is not used.

● Output Range Setting

When using the DIP Switch for setting (SW3.1 = ON), the output range is set as shown in the table below.

Switch / Output Range	CH1		CH2		CH3		CH4	
	SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
0~5V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
−10~10V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
0~20mA	ON	OFF	ON	OFF	ON	OFF	ON	OFF
4~20mA	ON	ON	ON	ON	ON	ON	ON	ON

* Output range of 1~5V and 0~10V can only be set by SDO communication.

3. Status LED

● Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

● EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

• Operation Error LED

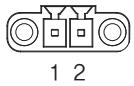
Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

• EtherCAT Connection LED

Name	Color	Status	Description
LA IN / LA OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

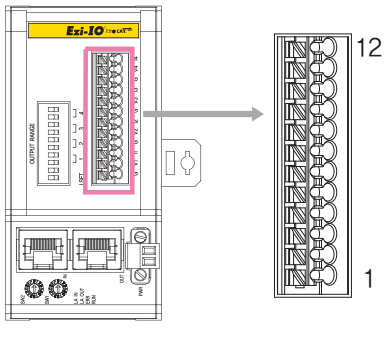
4. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



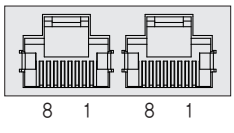
5. Output Signal Connector(CN2)

No.	Name	Function	I/O
1	G	Analog GND	Output
2	V1	Voltage Out 1	Output
3	I1	Current Out 1	Output
4	G	Analog GND	Output
5	V2	Voltage Out 2	Output
6	I2	Current Out 2	Output
7	G	Analog GND	Output
8	V3	Voltage Out 3	Output
9	I3	Current Out 3	Output
10	G	Analog GND	Output
11	V4	Voltage Out 4	Output
12	I4	Current Out 4	Output

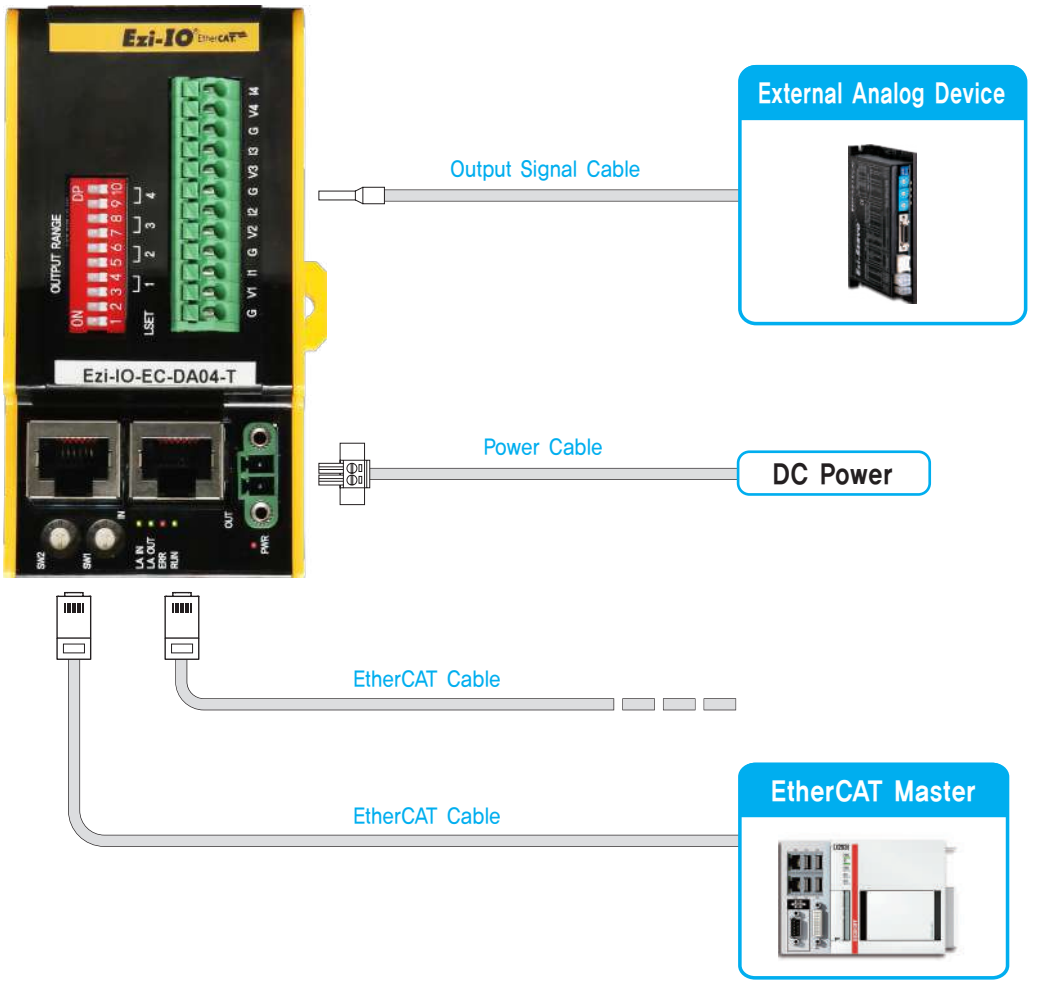


6. EtherCAT Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD–
3	RD+
4	----
5	----
6	RD–
7	----
8	----
Connector hood	F.GND



● System Configuration [Ezi-IO-EC-DA04-T]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

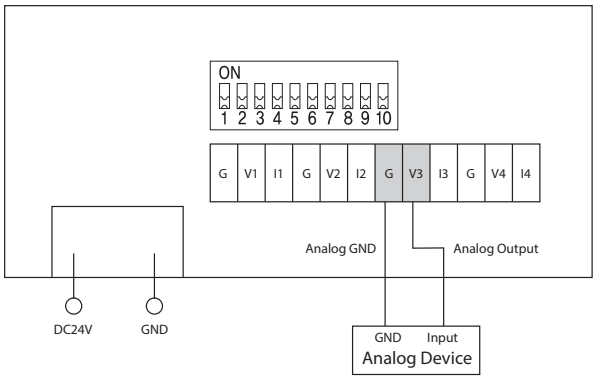
● EtherCAT Cable

Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

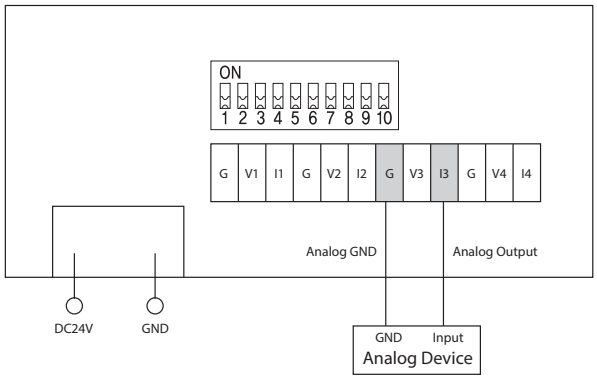
※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [Ezi-IO-EC-DA04-T]

1 Voltage Output Mode



2 Current Output Mode

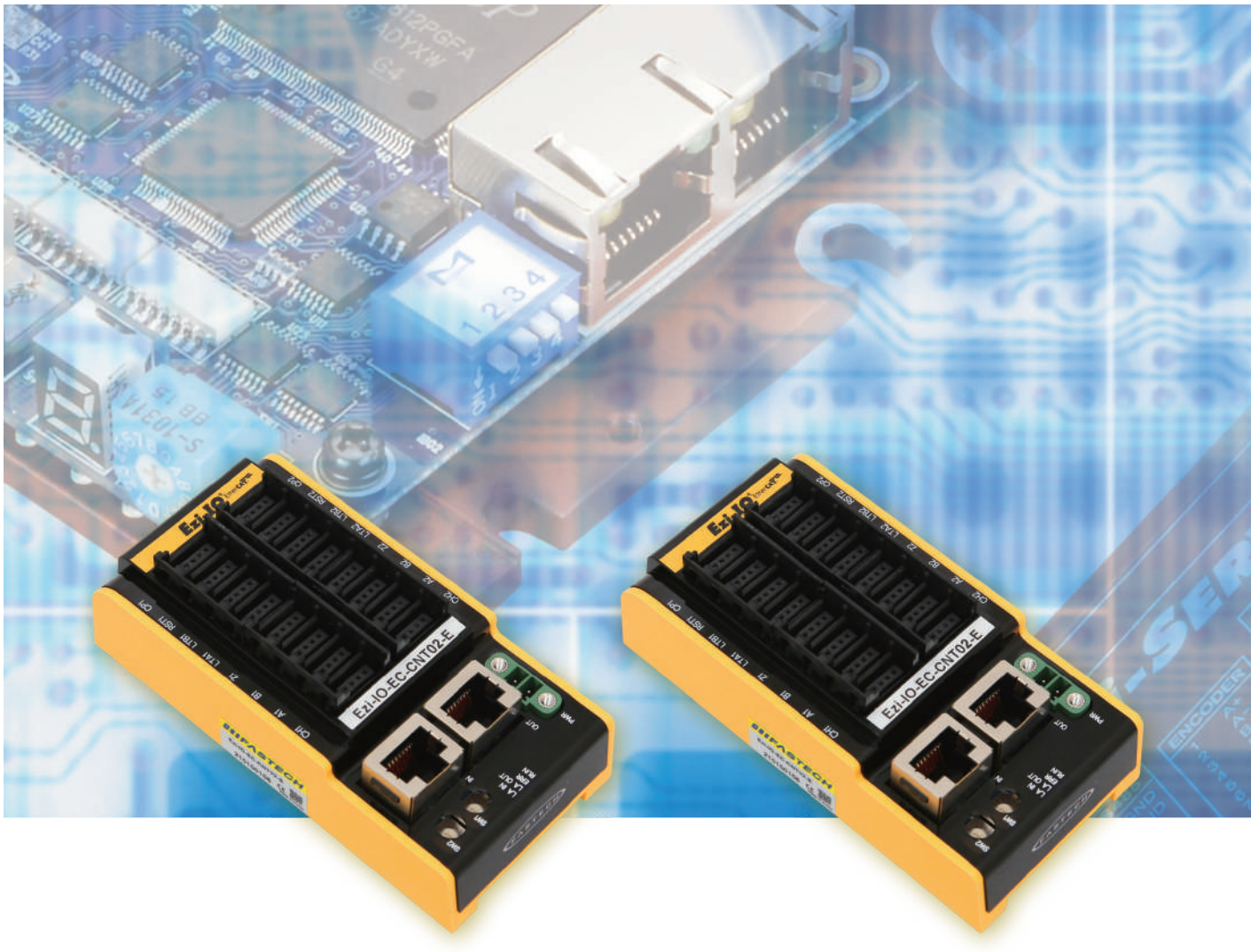



FASTECH
FASTECH

Ezi-IO® Input/Output Module

EtherCAT® CNT

- EtherCAT Based High Speed Counter Module
- All EtherCAT Synchronization Modes Supported
- Simple and Easy Wiring
- Line Receiver and DC Input Type Provided
- Equipped with Comparison Output Function



FASTECH
Fast, Accurate, Smooth Motion

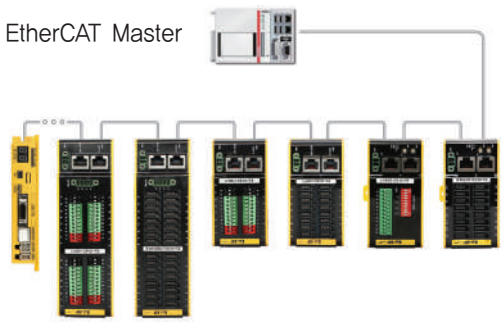
Ezi-IO®
Input/Output Module

EtherCAT®
CNT



1 EtherCAT Based High Speed Counter Module

Ezi-IO EtherCAT CNT is a Counter module which supports EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex). Ezi-IO EtherCAT CNT is an EtherCAT Slave module which supports CoE(-CAN Application layer over EtherCAT). It can be connected to the EtherCAT master without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT CNT uses 4-pin e-CON connectors. The e-CON connector is widely used in the sensor connector industry, and making the wiring much simpler and easier.

3 EtherCAT Synchronization Modes

Ezi-IO EtherCAT CNT supports all EtherCAT synchronization modes. You can select from Free Run, SM Event, DC SYNC Event synchronization mode according to the purpose of use.

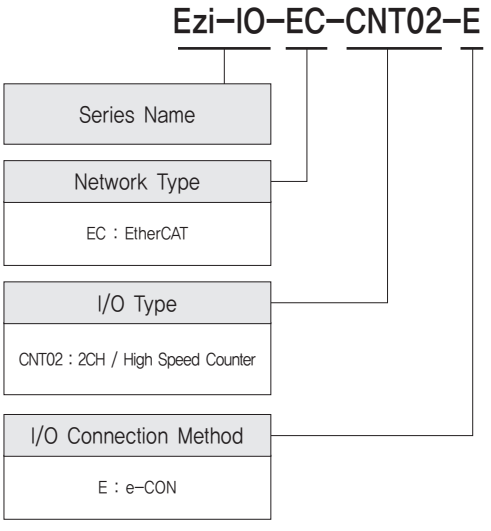
4 Various Input Types Supported

Ezi-IO EtherCAT CNT can be connected to various external devices without special input setting because the count input circuit of Ezi-IO EtherCAT CNT supports both open collector output and line drive output.

5 Compare Output Available

By using the Compare Output function, you can output a signal at a specific comparison position. Up to 60 comparison position values can be set for each channel. Comparison output function supports TTL output and open collector output.

● Ezi-IO EtherCAT CNT Part Numbering



● Ezi-IO EtherCAT CNT Part Number

Part Number
Ezi-IO-EC-CNT02-E

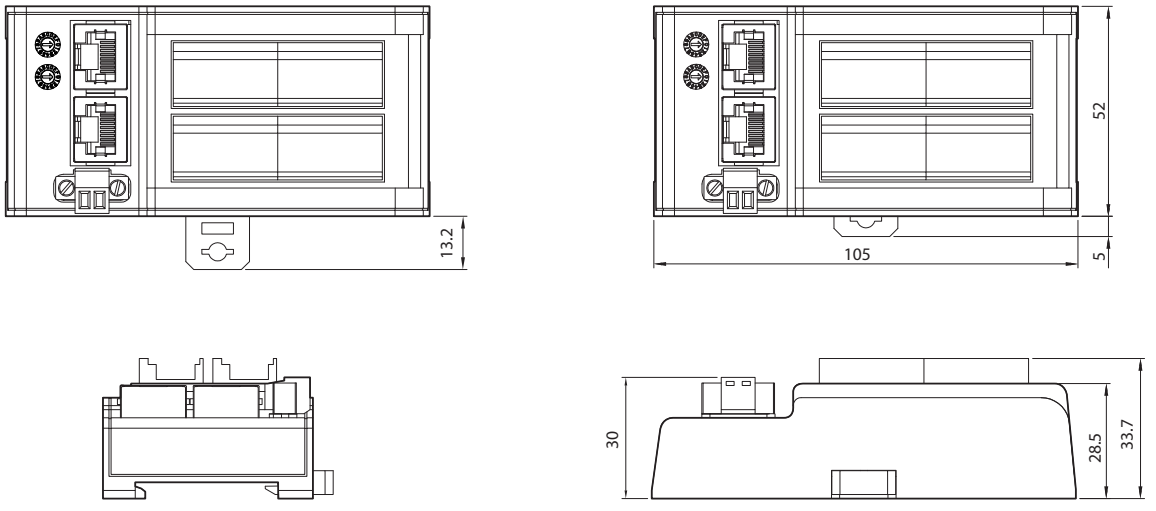
● Specifications of Module

Model			Ezi-IO-EC-CNT02-E	
Input Voltage			DC24V±10%	
Current Consumption			Max. 160mA (DC5V Encoder supply current and Except load current)	
Operating Condition	Ambient Temperature		· In Use : 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use : 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Channels		2CH	
	Count Range		0~4,294,967,295 (32bit)	
	Count Function		· Counter Value Latch · Counter Value Reset · Counter Value Preset · Pulse Rate Measurement · Compare Output	
	Pulse Input	Input Signal	3 dedicated Inputs (A phase, B phase, Z phase) for each channel	
		Input Type	Line Receiver Input	DC Input (NPN/PNP Open Collector Output Supported)
		Rated Input Voltage	DC5V	DC24V, DC5V
		Rated Input Current	6.3mA	
		Pulse Input Method	· Quadrature Pulse · 1 Pulse · 2 Pulse	
		Max Response Frequency	· A Phase, B Phase: – Quadrature Pulse Input: 2MHz (When quadrupled, 8MHz) – 1 Pulse / 2 Pulse Input: 4MHz · Z Phase: 100kHz	
		Isolation Method	Photocoupler Isolation	
	Control Input	Input Signal	3 dedicated Inputs (Latch A, Latch B, Reset) for each channel	
		Input Type	DC Input (NPN/PNP Open Collector Output Supported)	
		Rated Input Voltage	DC24V	DC5V
		Rated Input Current	4.4mA	4.6mA
		Off→On Response Time	3μs or lower	
		On→Off Response Time	3μs or lower	
		Isolation Method	Photocoupler Isolation	
	Compare Output	Output Signal	1 dedicated Input (Compare Output) for each channel	
		Output Type	TTL Output	Open Collector Output (Transistor Output)
		Rated Output Voltage	DC5V	DC30V or lower
		Rated Output Current	Max. 20mA	Max. 20mA
		Off→On Response Time	150ns or lower	About 20μs*
		On→Off Response Time	150ns or lower	About 20μs*
		Isolation Method	None	Photocoupler Isolation
LED Display			· Power Status (PWR) · EtherCAT Status (RUN) · Operation Error (ERR) · EtherCAT Connection (LA IN, LA OUT) · Counter Established Status (CH1, CH2) · I/O Status (A1, B1, Z1, LTA1, LTB1, RST1, CP1, A2, B2, Z2, LTA2, LTB2, RST2, CP2)	
EtherCAT	Protocol		CoE, FoE (Firmware Download)	
	Synchronization		Free Run, SM Event, DC SYNC Event	
	Bus Interface		2×RJ45 Connector	
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m	

* This is the value when 24V DC power and a load resistance of 2kΩ are connected, and the value may change depending on the circuit configuration.

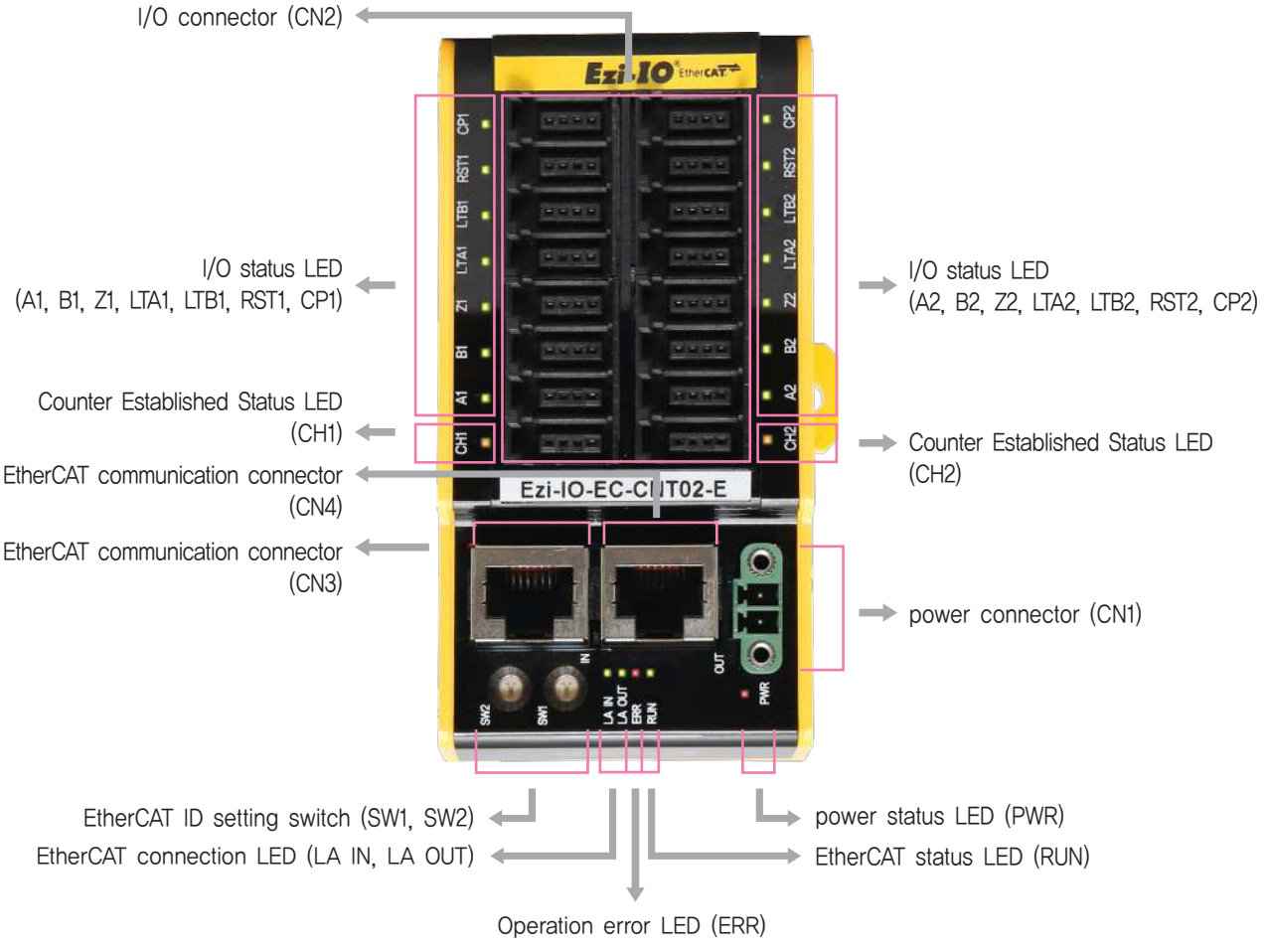
● Dimensions of Module [mm]

◆ Ezi-IO-EC-CNT02-E

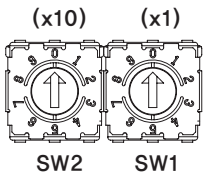


* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EC-CNT02-E]



1. EtherCAT ID Setting Switch (SW1, SW2)



They are switches to set the EtherCAT ID (ECAT Device ID) node address, and they represent a decimal number.
SW1 indicates the units digit (×1), and SW2 indicates the tens digit (×10).

2. Status LED

- Power status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- EtherCAT Status LED

Name	Color	Status	Description
RUN	Green	OFF	State INIT or Power OFF
		Blinking	State PRE-OPERATIONAL
		Single Flash	State SAFE-OPERATIONAL
		ON	State OPERATIONAL
		Flickering	State BOOTSTRAP

- Operation Error LED

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

- EtherCAT Connection LED

Name	Name	Status	Description
LA IN / LA OUT	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation

- Counter Established Status LED

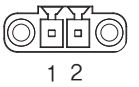
Name	Name	Status	Description
CH1 / CH2	Yellow	OFF	Counter is Disable
		ON	Counter is Enable

• I/O Status LED

Name	Color	Status	Description
A1 / A2	Green	OFF	A signal is OFF
		ON	A signal is ON
B1 / B2	Green	OFF	B signal is OFF
		ON	B signal is ON
Z1 / Z2	Green	OFF	Z signal is OFF
		ON	Z signal is ON
LTA1 / LTA2	Green	OFF	LTA(Latch A) signal is OFF
		ON	LTA(Latch A) signal is ON
LTB1 / LTB2	Green	OFF	LTB(Latch B) signal is OFF
		ON	LTB(Latch B) signal is ON
RST1 / RST2	Green	OFF	RST(Reset) signal is OFF
		ON	RST(Reset) signal is ON
CP1 / CP2	Green	OFF	CP(Compare Out) signal is OFF
		ON	CP(Compare Out) signal is ON

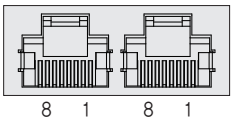
3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

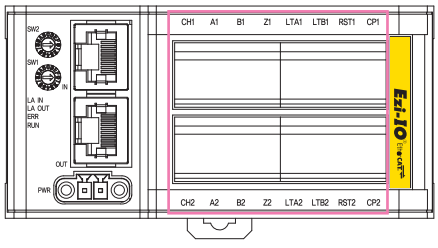


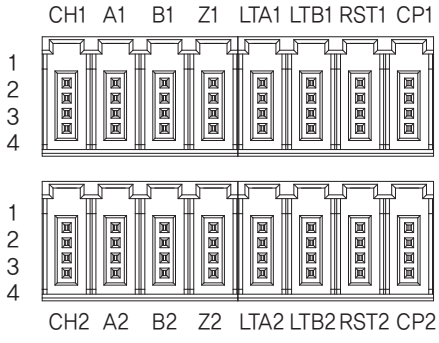
4. EtherCAT Communication Connection (CN3, CN4)

No.	Function
1	TD+
2	TD–
3	RD+
4	----
5	----
6	RD–
7	----
8	----
Connector Hood	F.GND



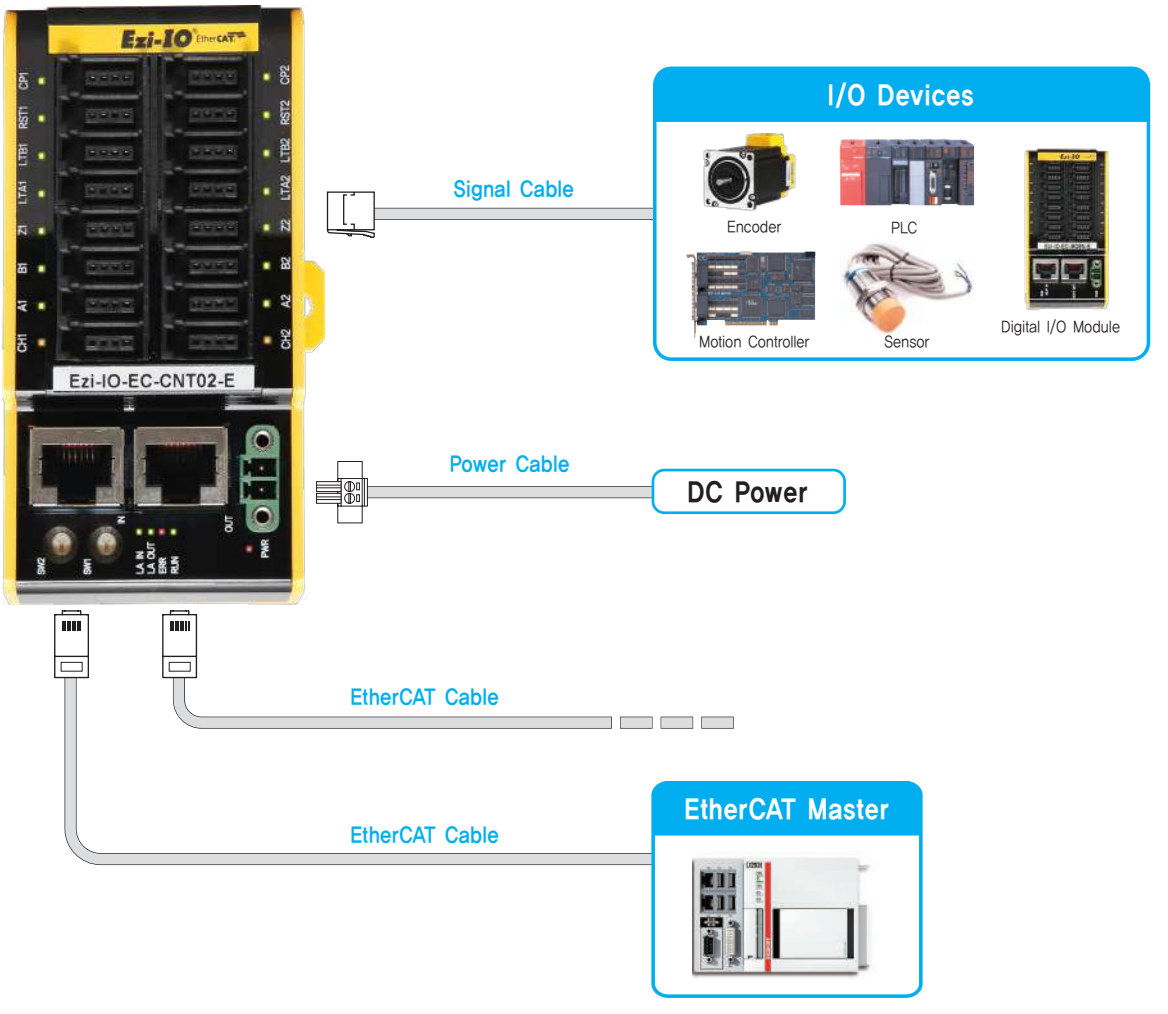
5. I/O Signal Connector (CN2)





CN1					CN2				
Mark	No.	Name	Function	I/O	Mark	No.	Name	Function	I/O
CH1	1	NC	----	----	CH2	1	NC	----	----
	2	5V	DC5V	Output		2	5V	DC5V	Output
	3	GND	GND	Output		3	GND	GND	Output
	4	NC	----	----		4	NC	----	----
A1	1	AV1	A Pulse Input Power (24V)	Input	A2	1	AV2	A Pulse Input Power (24V)	Input
	2	A1+	A+	Input		2	A2+	A+	Input
	3	A1–	A–	Input		3	A2–	A–	Input
	4	AG1	A Pulse Input GND	Input		4	AG2	A Pulse Input GND	Input
B1	1	BV1	B Pulse Input Power (24V)	Input	B2	1	BV2	B Pulse Input Power (24V)	Input
	2	B1+	B+	Input		2	B2+	B+	Input
	3	B1–	B–	Input		3	B2–	B–	Input
	4	BG1	B Pulse Input GND	Input		4	BG2	B Pulse Input GND	Input
Z1	1	ZV1	Z Pulse Input Power (24V)	Input	Z2	1	ZV2	Z Pulse Input Power (24V)	Input
	2	Z1+	Z+	Input		2	Z2+	Z+	Input
	3	Z1–	Z–	Input		3	Z2–	Z–	Input
	4	ZG1	Z Pulse Input GND	Input		4	ZG2	Z Pulse Input GND	Input
LTA1	1	LAV1	Latch A Input Power (24V)	Input	LTA2	1	LAV2	Latch A Input Power (24V)	Input
	2	LTA1+	Latch A(+)	Input		2	LTA2+	Latch A(+)	Input
	3	LTA1–	Latch A(–)	Input		3	LTA2–	Latch A(–)	Input
	4	LAG1	Latch A Input GND	Input		4	LAG2	Latch A Input GND	Input
LTB1	1	LBV1	Latch B Input Power (24V)	Input	LTB2	1	LBV2	Latch B Input Power (24V)	Input
	2	LTB1+	Latch B(+)	Input		2	LTB2+	Latch B(+)	Input
	3	LTB1–	Latch B(–)	Input		3	LTB2–	Latch B(–)	Input
	4	LBG1	Latch B Input GND	Input		4	LBG2	Latch B Input GND	Input
RST1	1	RV1	Reset Input Power (24V)	Input	RST2	1	RV2	Reset Input Power (24V)	Input
	2	RST1+	Reset(+)	Input		2	RST2+	Reset(+)	Input
	3	RST1–	Reset(–)	Input		3	RST2–	Reset(–)	Input
	4	RG1	Reset Input GND	Input		4	RG2	Reset Input GND	Input
CP1	1	UCP1+	User Compare Output(+)	Output	CP2	1	UCP2+	User Compare Output(+)	Output
	2	5CP1	5V Compare Output	Output		2	5CP2	5V Compare Output	Output
	3	GND	GND	Output		3	GND	GND	Output
	4	UCP1–	User Compare Output(–)	Output		4	UCP2–	User Compare Output(–)	Output

● System Configuration [Ezi-IO-EC-CNT02-E]



1. Accessories

• Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

• EtherCAT Cable

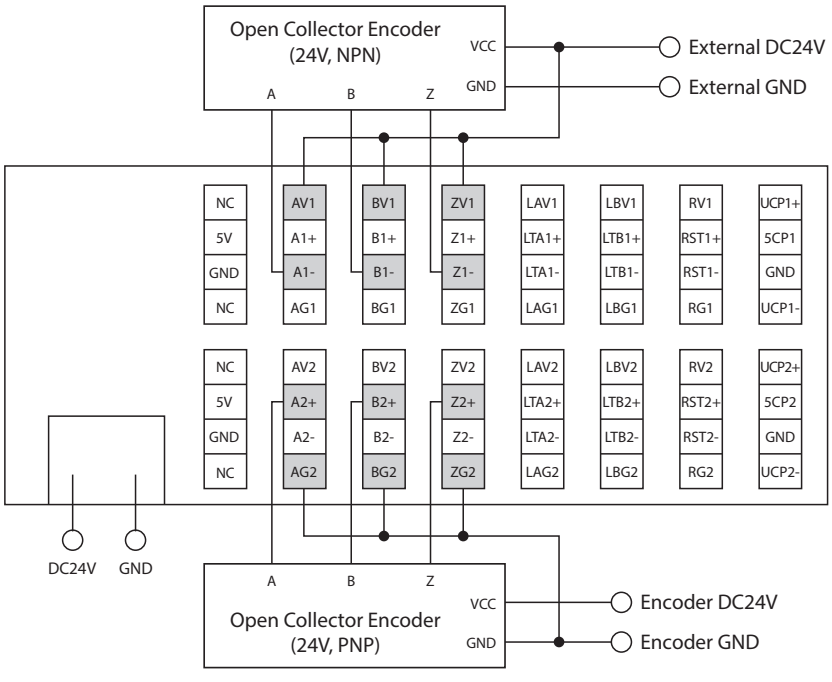
Purpose	Part Number	Length [m]	Remarks
EtherCAT Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● External Wiring Diagram [Ezi-IO-EC-CNT02-E]

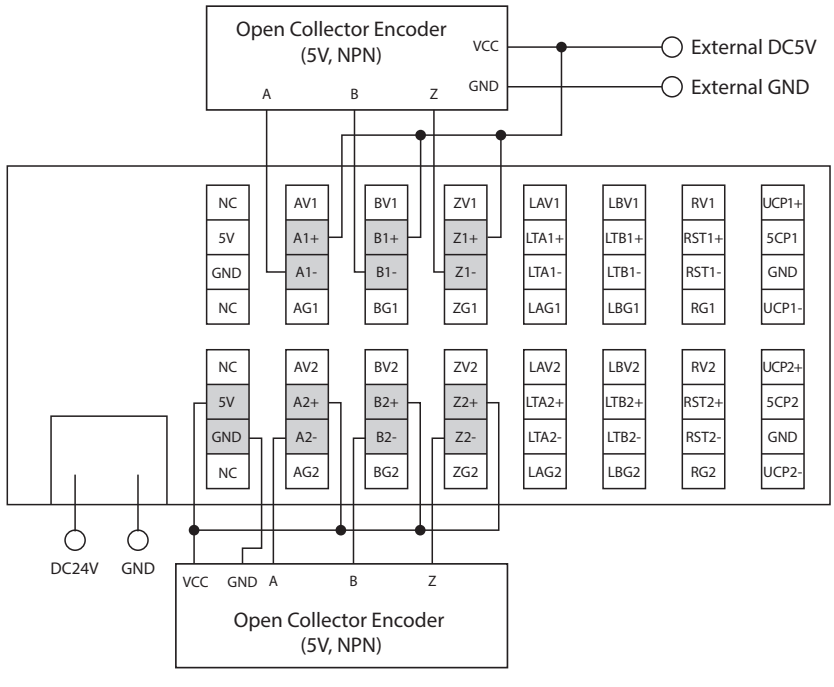
1 Pulse Input Part

1. When connecting with DC24V open collector output type encoder



※ If the module and the encoder use the same power supply, the photocoupler isolation is not possible.

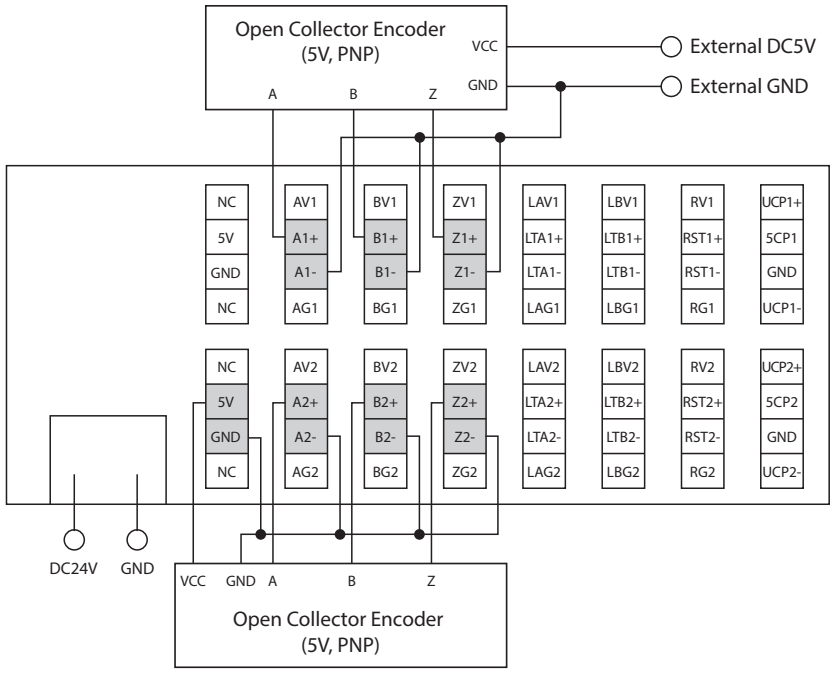
2. When connecting with DC5V NPN open collector output type encoder



※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

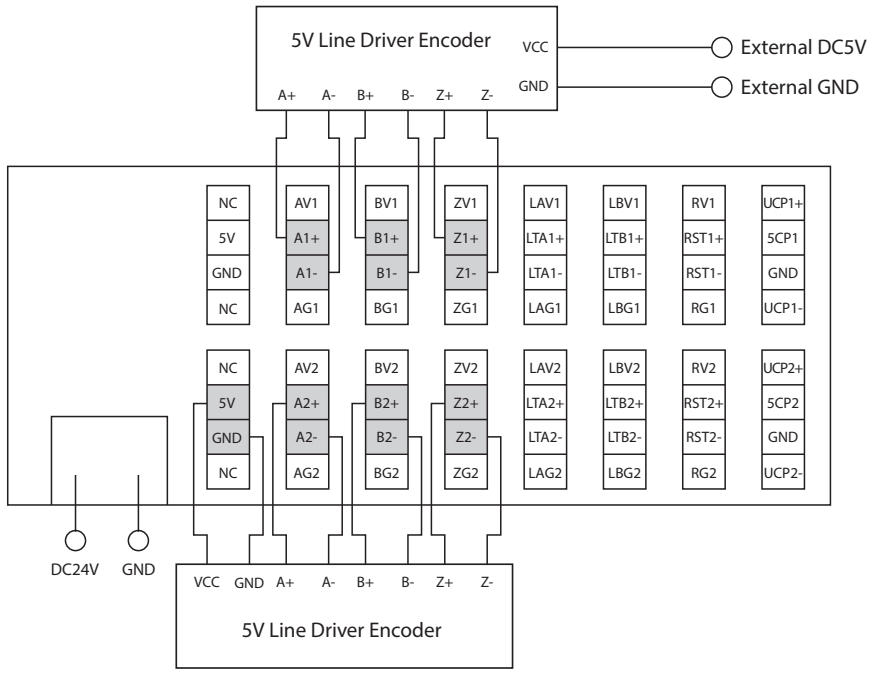
● External Wiring Diagram [Ezi-IO-EC-CNT02-E]

3. When connecting with DC5V PNP open collector output type encoder



※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

4. When connecting with DC5V line driver output type encoder

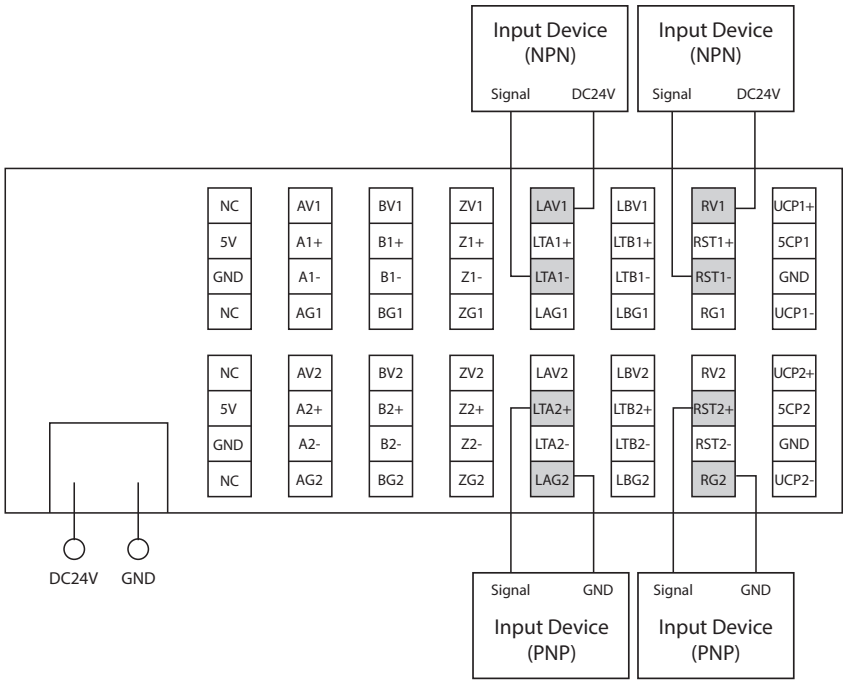


※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

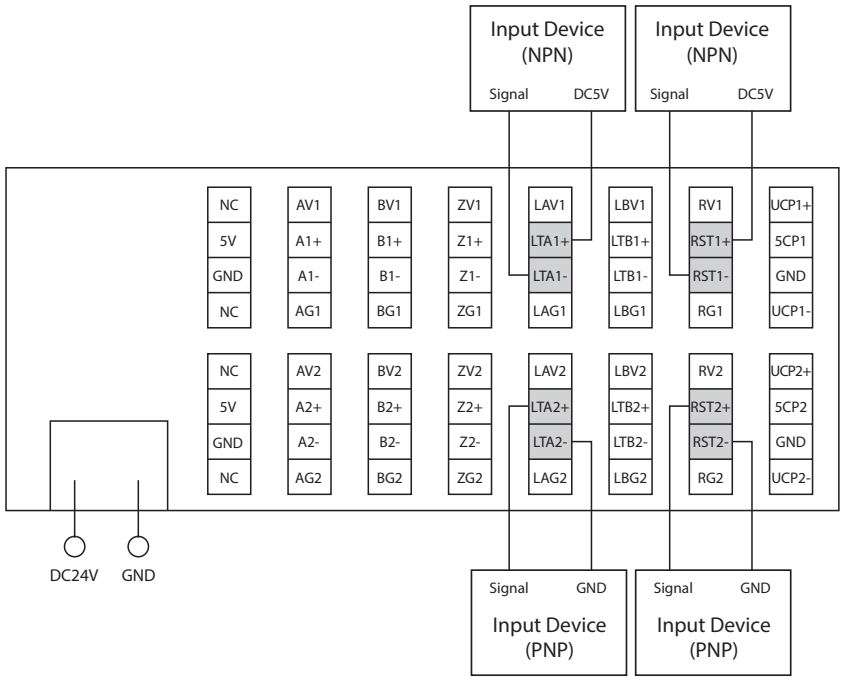
● External Wiring Diagram [Ezi-IO-EC-CNT02-E]

2 Control Input Part

1. When connecting with DC24V open collector output type input device



2. When connecting with DC5V open collector output type input device

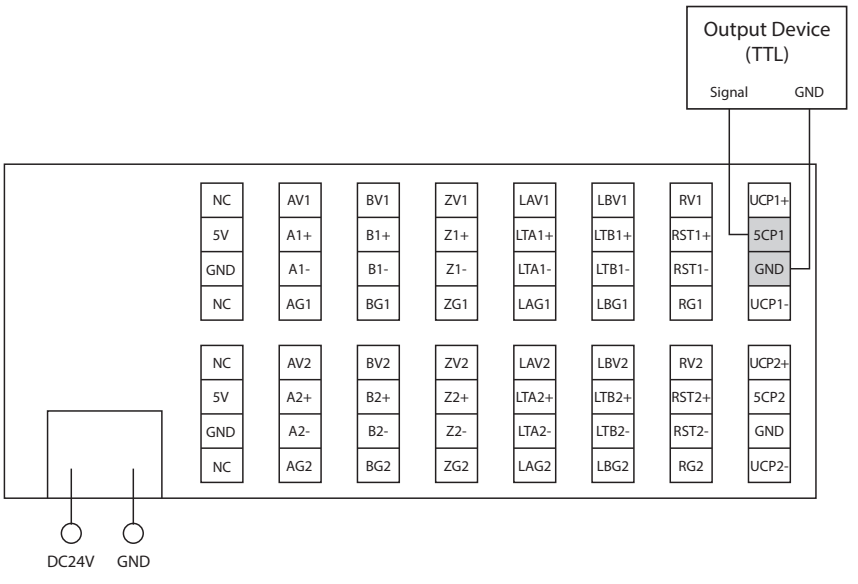


※ e.g.) Input Device : PLC, Motion Controller, Digital Output Module, Limit Sensor , Proximity Sensor, etc.

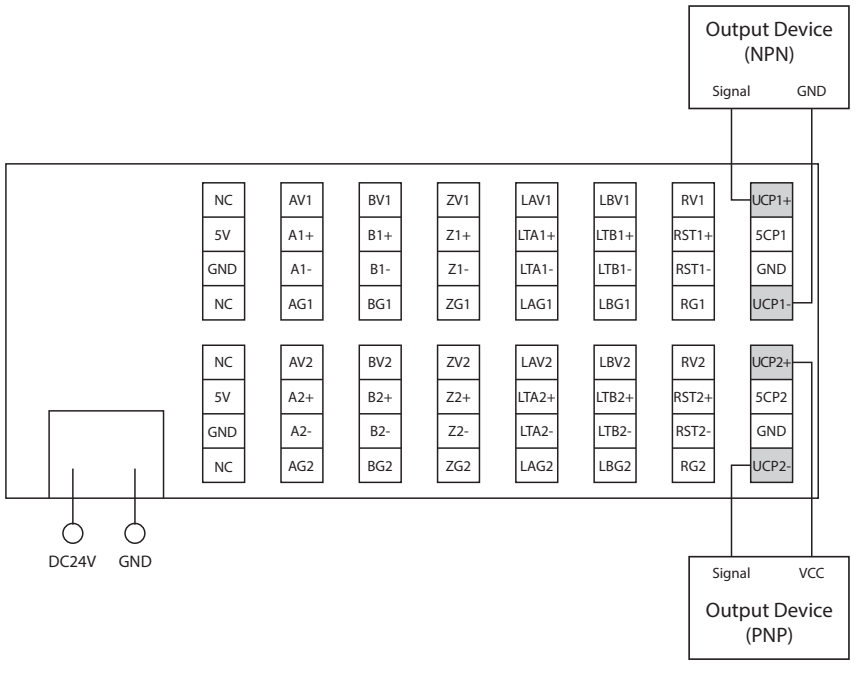
● External Wiring Diagram [Ezi-IO-EC-CNT02-E]

3 Comparison Output Part

1. TTL Output



2. Open Collector Output

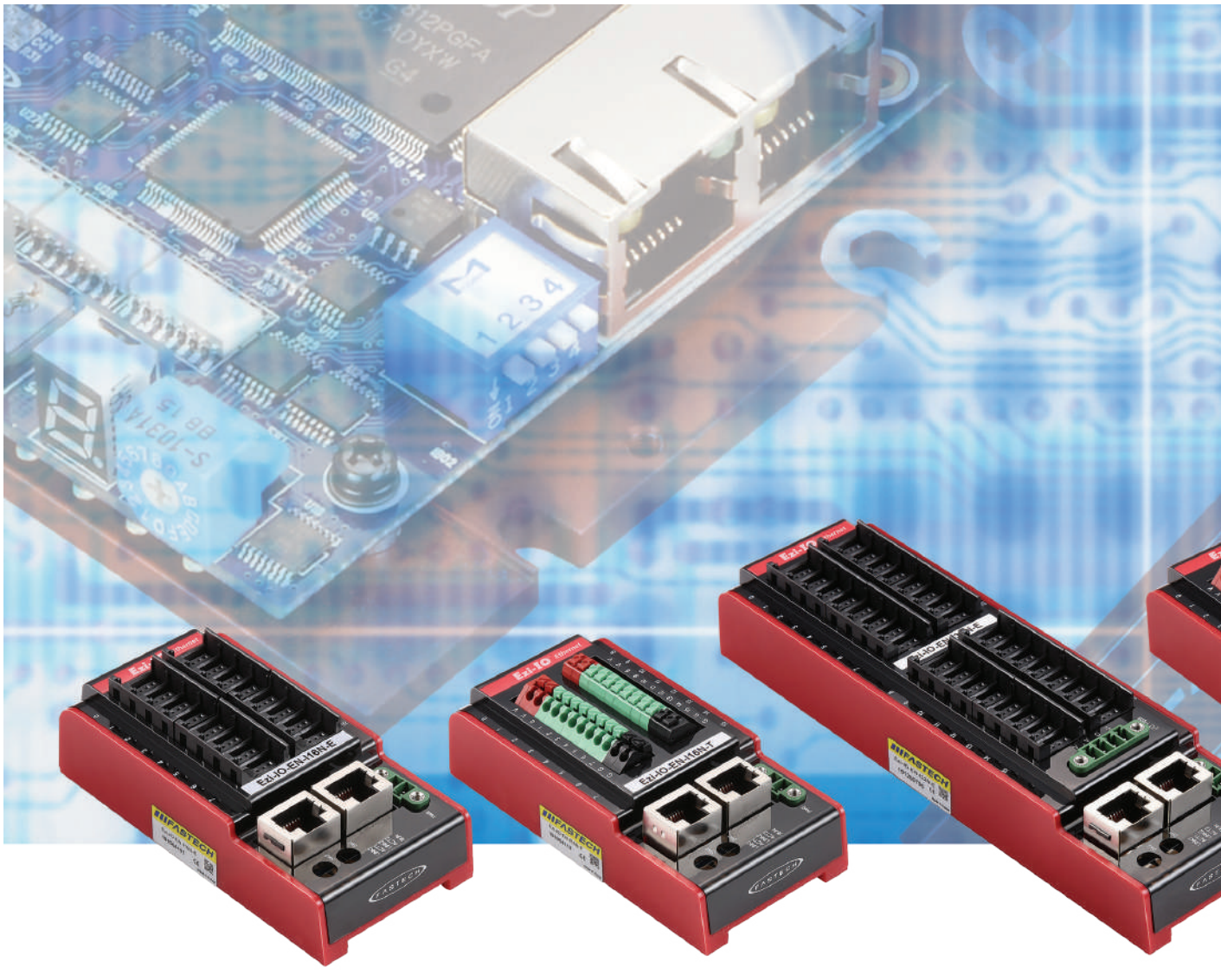


※ e.g. Output Device: PLC, Motion Controller, Digital Input Module, etc.


EZLIO-PE-H32N-T
EZLIO-PE-H16N-T
EZLIO-PE-H08N-E

Ezi-IO® Input/Output Module Ethernet DIO

- Ethernet Based Digital I/O Module
- Plus-E Series Communication Protocol Supported
- Simple and Easy Wiring

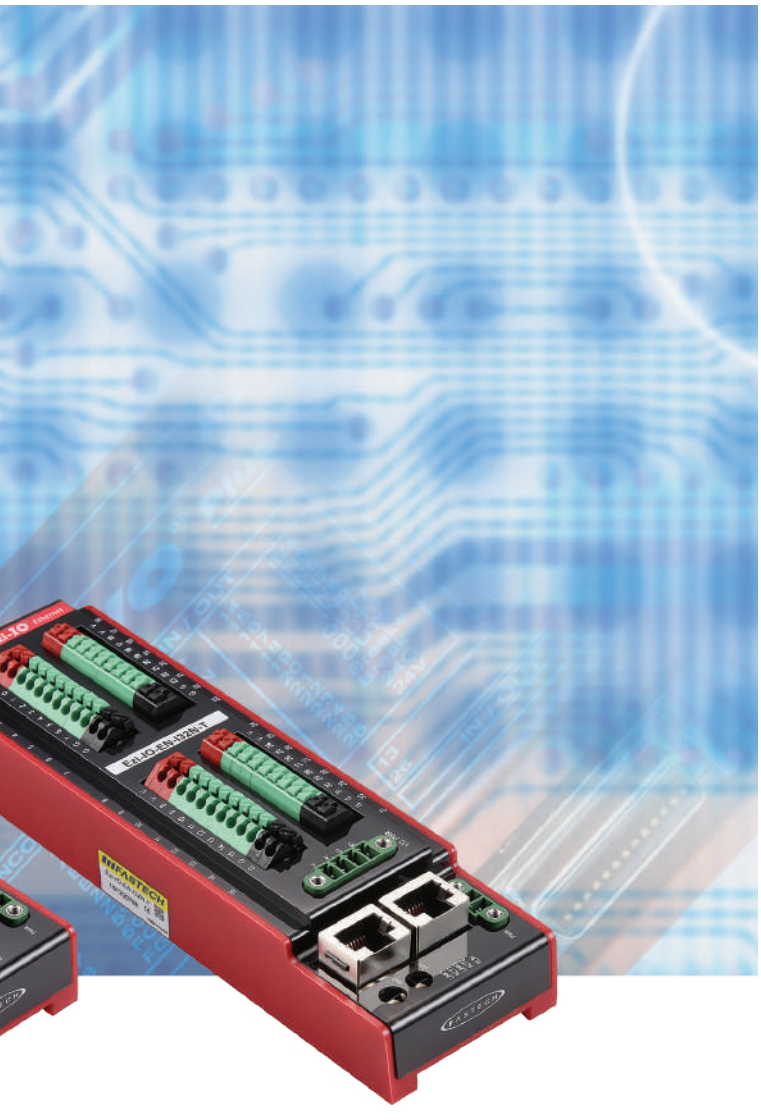


FASTECH

Fast, Accurate, Smooth Motion

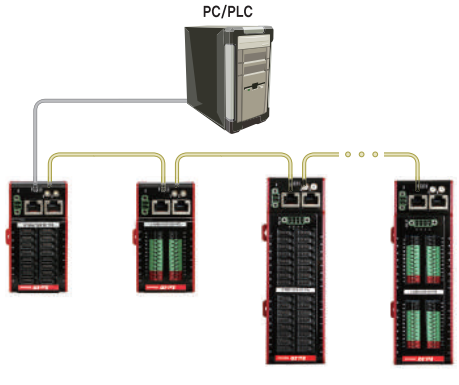
Ezi-IO® Ethernet DIO

Input/Output Module



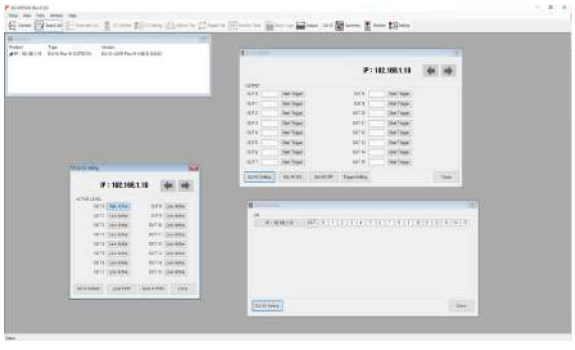
1 Ethernet Based Digital I/O Module

Ezi-IO Ethernet DIO is a digital I/O module controlled with Ethernet. Since it uses the same communication protocol as FASTECH's other Ethernet products, it can be applied very easily to the customers who have experiences using FASTECH's Ethernet products. Motion Library(API) is provided for programming under Windows 7/8/10.



2 GUI(Graphic User Interface) Program

You can easily monitor I/O status or set input signal level of Ezi-IO Ethernet DIO with GUI (Graphical User Interface) software provided by FASTECH.



3 Various I/O Module

Ezi-IO Ethernet DIO provides 16CH and 32CH modules. There are 16CH DC input module, 16CH transistor output module, and 8CH DC input/8CH transistor output mixed module for 16CH type products.
In addition, therer are 32CH DC input module, 32CH transistor output module, 16CH DC input/16CH transistor output mixed module for 32CH type products.
Also, Ezi-IO Ethernet DIO provides NPN/PNP compatible modules to support various I/O devices.

4 Advanced Functions for I/O Signal Processing

The input module can detect and count very fast signals by using the latch function and the latch count function. The output module can use the trigger output function to set the signal output conditions according to the purpose.

Ezi-IO Ethernet DIO Part Numbering

Ezi-IO-EN-I16N-E

- **Series Name**
- **Network Type**
  - EN : Ethernet
- **I/O Connection Method**
  - E : e-CON
  - T : Terminal Block
- **I/O Type**[*1]
  - I16N : 16CH DC Input, NPN
  - I16P : 16CH DC Input, PNP
  - O16N : 16CH Transistor Output, NPN
  - O16P : 16CH Transistor Output, PNP
  - I8O8N : 8CH DC Input / 8CH Transistor Output, NPN
  - I8O8P : 8CH DC Input / 8CH Transistor Output, PNP
  - I32N : 32CH DC Input, NPN
  - I32P : 32CH DC Input, PNP
  - O32N : 32CH Transistor Output, NPN
  - O32P : 32CH Transistor Output, PNP
  - I16O16N : 16CH DC Input / 16CH Transistor Output, NPN
  - I16O16P : 16CH DC Input / 16CH Transistor Output, PNP

*1: NPN and PNP are classified as follows according to I/O type.

DC Input	NPN	Positive Common Type
	PNP	Negative Common Type
Transistor Output	NPN	Sink Output
	PNP	Source Output

Ezi-IO Ethernet DIO Part Number

Part Number	Remarks
Ezi-IO-EN-I16N-E	16CH e-CON Type
Ezi-IO-EN-I16P-E	
Ezi-IO-EN-O16N-E	
Ezi-IO-EN-O16P-E	
Ezi-IO-EN-I8O8N-E	
Ezi-IO-EN-I8O8P-E	
Ezi-IO-EN-I16N-T	16CH Terminal Block Type
Ezi-IO-EN-I16P-T	
Ezi-IO-EN-O16N-T	
Ezi-IO-EN-O16P-T	
Ezi-IO-EN-I8O8N-T	
Ezi-IO-EN-I8O8P-T	

Part Number	Remarks
Ezi-IO-EN-I32N-E	32CH e-CON Type
Ezi-IO-EN-I32P-E	
Ezi-IO-EN-O32N-E	
Ezi-IO-EN-O32P-E	
Ezi-IO-EN-I16O16N-E	
Ezi-IO-EN-I16O16P-E	
Ezi-IO-EN-I32N-T	32CH Terminal Block Type
Ezi-IO-EN-I32P-T	
Ezi-IO-EN-O32N-T	
Ezi-IO-EN-O32P-T	
Ezi-IO-EN-I16O16N-T	
Ezi-IO-EN-I16O16P-T	

● Specifications of Module

Model			Ezi-IO-EN-I16□-■	Ezi-IO-EN-O16□-■	Ezi-IO-EN-I808□-■
Input Voltage			DC24V±10%		
Current Consumption			Max. 150mA (Except load current)		
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	16CH	–	8CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	None		None
		Common Method	16CH/COM		8CH/COM
		Off→On Response Time	10㎲ or lower		10㎲ or lower
		On→Off Response Time	70㎲ or lower		70㎲ or lower
	Output	Number of Output Channels	–	16CH	8CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.2A/CH	0.2A/CH
		Isolation Method		None	None
		Common Method		16CH/COM	8CH/COM
		Off→On Response Time		4㎲ or lower	4㎲ or lower
		On→Off Response Time		190㎲ or lower	190㎲ or lower
LED Display			· Power Status (PWR) · Run Status (RUN) · Ethernet Status (Link, Activity) · I/O Status (0~15)		· Power Status (PWR) · Run Status (RUN) · Ethernet Status (Link, Activity) · I/O Status (0~7/0~7)
Communication Interface			· Ethernet UDP/TCP Communication · Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex		
GUI			User Interface Program within Windows		
Library			Motion Library (API) for windows 7/8/10		

* □: NPN / PNP Type
■: e-CON / Terminal Block Type

Specifications of Module

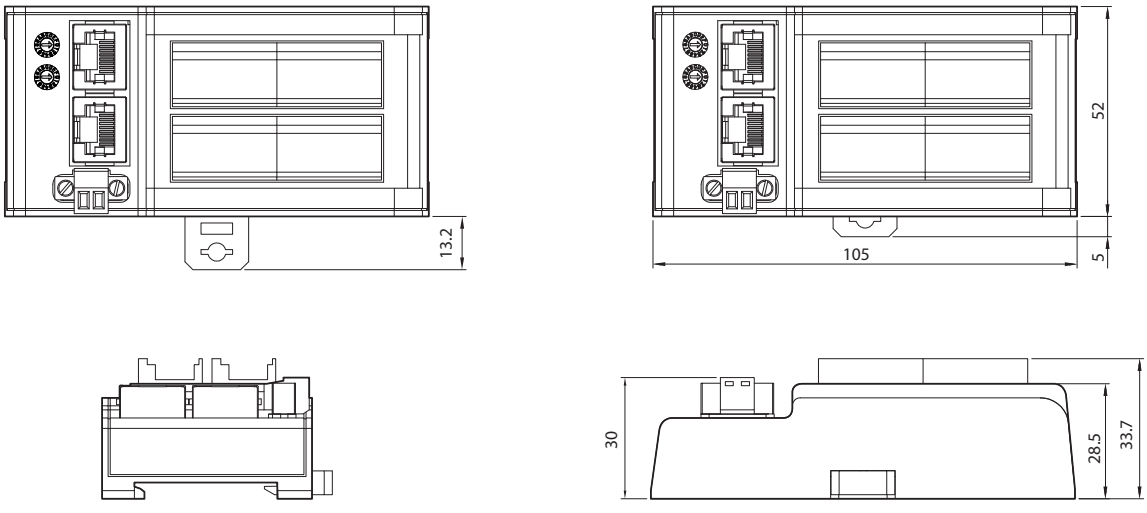
Model			Ezi-IO-EN-I32□-■	Ezi-IO-EN-O32□-■	Ezi-IO-EN-I16O16□-■
Input Voltage			DC24V±10%		
Current Consumption			· Control Power : Max. 140mA · I/O Power : Max. 110mA (Except Load Current)	· Control Power : Max. 200mA · I/O Power : Max. 70mA (Except Load Current)	· Control Power : Max. 170mA · I/O Power : Max. 90mA (Except Load Current)
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	32CH	–	16CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	Photocoupler Isolation		Photocoupler Isolation
		Common Method	16CH/COM		16CH/COM
		Off→On Response Time	10μs or lower		10μs or lower
		On→Off Response Time	70μs or lower		70μs or lower
	Output	Number of Output Channels	–	32CH	16CH
		Rated Output Voltage		DC24V	DC24V
		Rated Output Current		0.2A/CH	0.2A/CH
		Isolation Method		Photocoupler Isolation	Photocoupler Isolation
		Common Method		16CH/COM	16CH/COM
		Off→On Response Time		4μs or lower	4μs or lower
		On→Off Response Time		190μs or lower	190μs or lower
LED Display			· Power Status (PWR) · Run Status (RUN) · Ethernet Status (Link, Activity) · I/O Status (0~31)		· Power Status (PWR) · Run Status (RUN) · Ethernet Status (Link, Activity) · I/O Status (0~15/0~15)
Communication Interface			· Ethernet UDP/TCP Communication · Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex		
GUI			User Interface Program within Windows		
Library			Motion Library (API) for windows 7/8/10		

* □: NPN / PNP Type
■: e-CON / Terminal Block Type

● Dimensions of Module [mm]

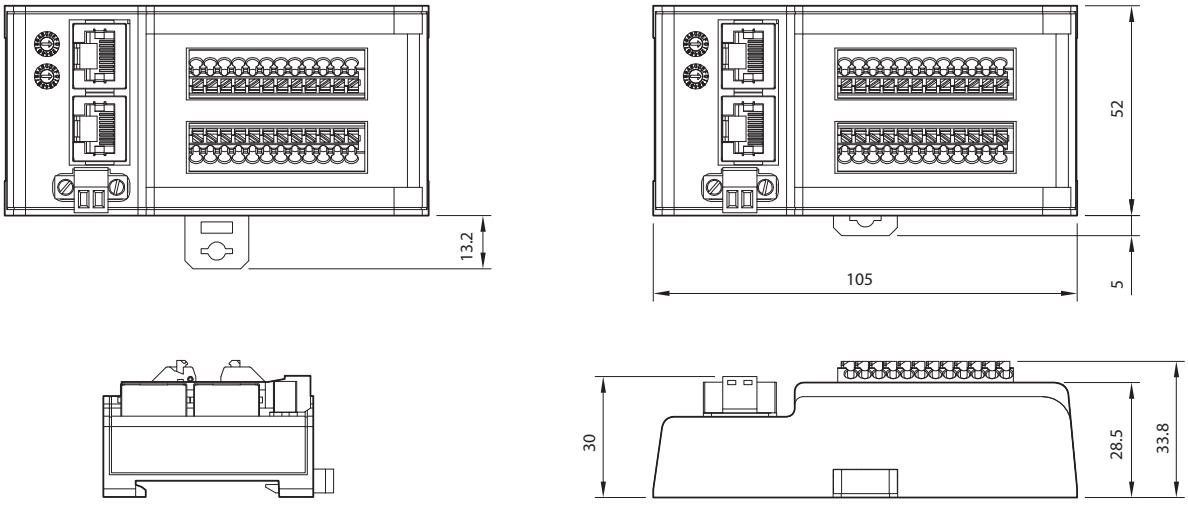
◆ 16CH e-CON Type

- Model : Ezi-IO-EN-I16□-E, Ezi-IO-EN-O16□-E, Ezi-IO-EN-I808□-E



◆ 16CH Terminal Block Type

- Model : Ezi-IO-EN-I16□-T, Ezi-IO-EN-O16□-T, Ezi-IO-EN-I808□-T

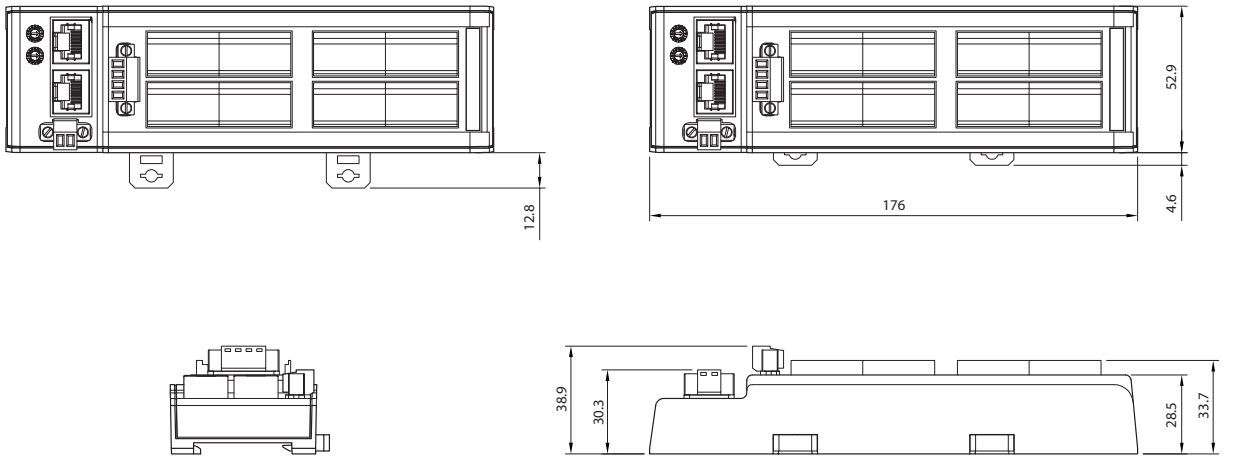


* □ : NPN / PNP Type
* Install the product on a din rail with a width of 35 mm.

● Dimensions of Module [mm]

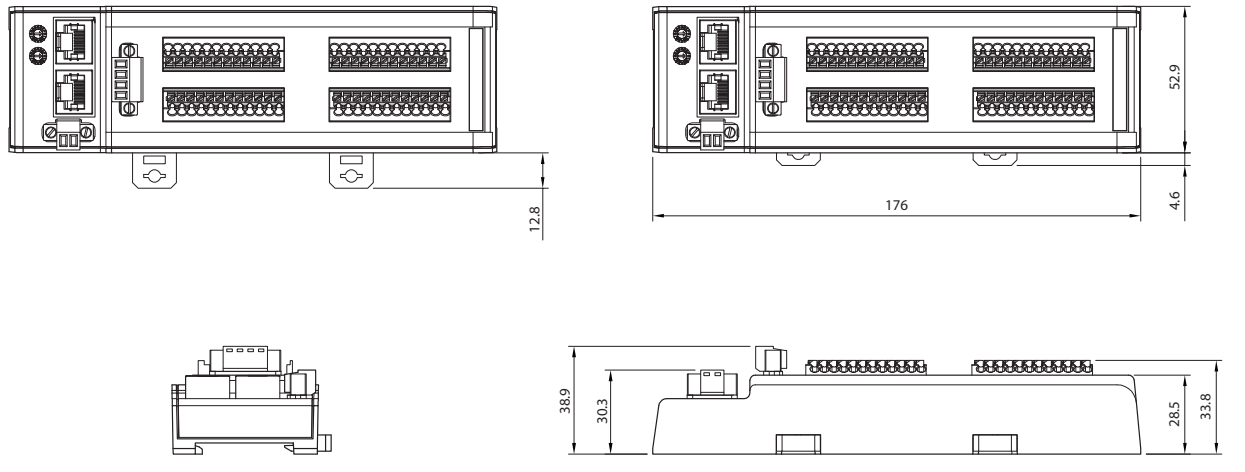
◆ 32CH e-CON Type

- Model : Ezi-IO-EN-I32□-E, Ezi-IO-EN-O32□-E, Ezi-IO-EN-I16O16□-E



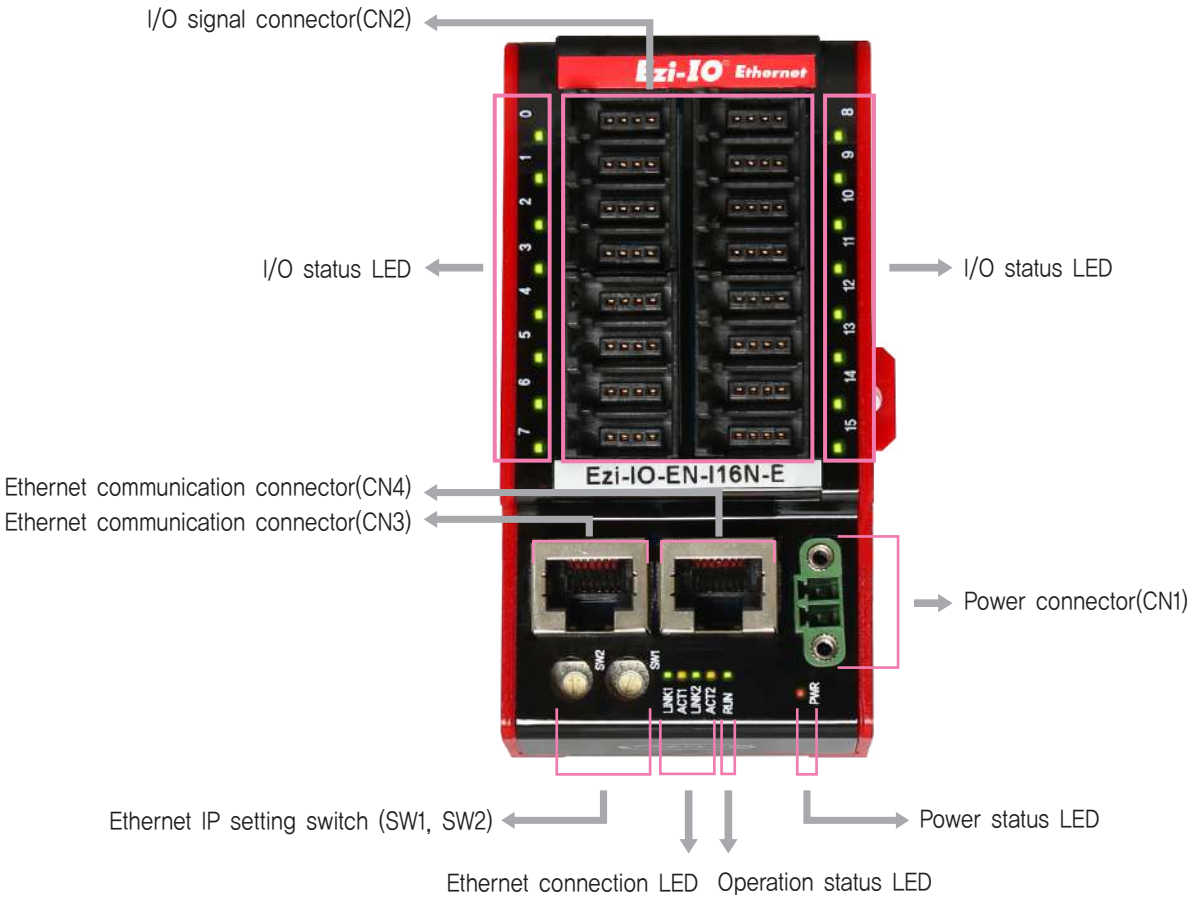
◆ 32CH Terminal Block Type

- Model : Ezi-IO-EN-I32□-T, Ezi-IO-EN-O32□-T, Ezi-IO-EN-I16O16□-T



* □ : NPN / PNP Type
* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [16CH e-CON Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

- Ethernet Connection LED

Name	Color	Status	Description
LINK1/LINK2	Green	OFF	Link not Established
		ON	Link Established

• Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

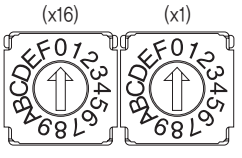
• I/O status LED

Name*	Color	Status	Description
0~15 0~7 / 0~7	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EN-I8O8N-E and Ezi-IO-EN-I8O8P-E modules, the name is written as 0~7 / 0~7 .

2. Ethernet IP Setting Switch (SW1, SW2)

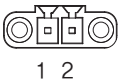
These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



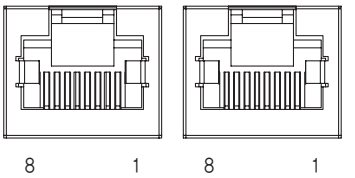
4. I/O Signal Connector (CN2)

No.	Function	I/O
1	DC24V	Output
2	NC	----
3	GND	Output
4	SIGNAL	I/O

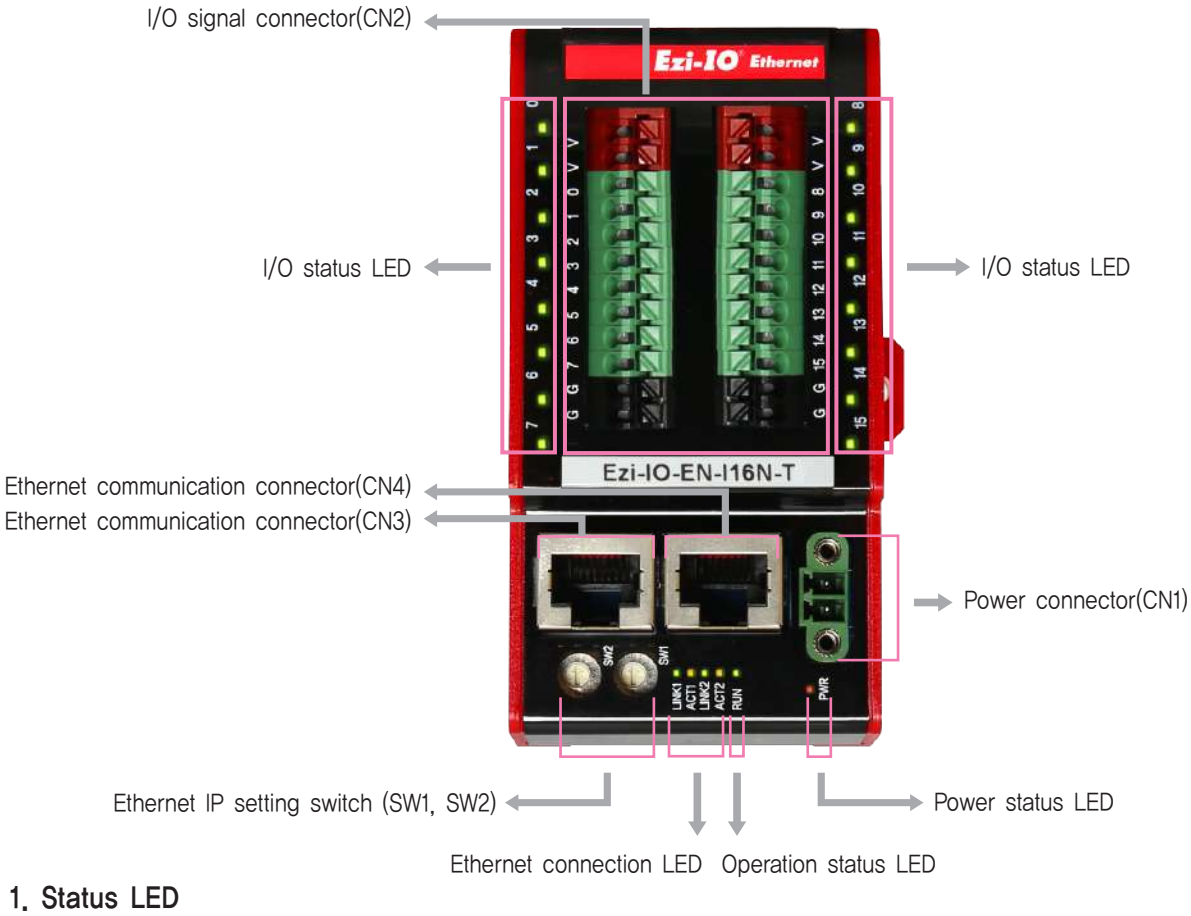


5. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector hood	F.GND



● Settings and Operation [16CH Terminal Block Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

- Ethernet Connection LED

Name	Color	Status	Description
LINK1/LINK2	Green	OFF	Link not Established
		ON	Link Established

- Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

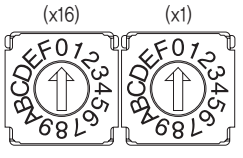
• I/O status LED

Name*	Color	Status	Description
0~15 0~7 / 0~7	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-EN-I808N-T and Ezi-IO-EN-I808P-T modules, the name is written as 0~7 / 0~7 .

2. Ethernet IP Setting Switch (SW1, SW2)

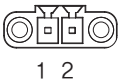
These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

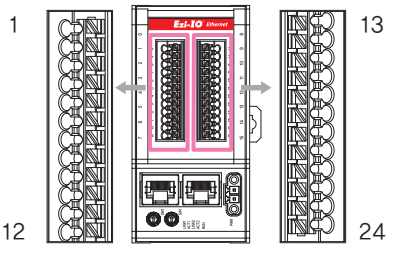
3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



4. I/O Signal Connector (CN2)

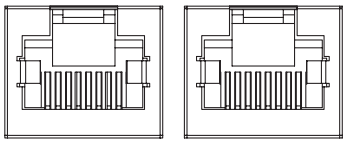
No.	Name*	Function	I/O
1	V	DC24V	Output
2	V	DC24V	Output
3	0	SIGNAL	I/O
4	1	SIGNAL	I/O
5	2	SIGNAL	I/O
6	3	SIGNAL	I/O
7	4	SIGNAL	I/O
8	5	SIGNAL	I/O
9	6	SIGNAL	I/O
10	7	SIGNAL	I/O
11	G	GND	Output
12	G	GND	Output
13	V	DC24V	Output
14	V	DC24V	Output
15	8(0)	SIGNAL	I/O
16	9(1)	SIGNAL	I/O
17	10(2)	SIGNAL	I/O
18	11(3)	SIGNAL	I/O
19	12(4)	SIGNAL	I/O
20	13(5)	SIGNAL	I/O
21	14(6)	SIGNAL	I/O
22	15(7)	SIGNAL	I/O
23	G	GND	Output
24	G	GND	Output



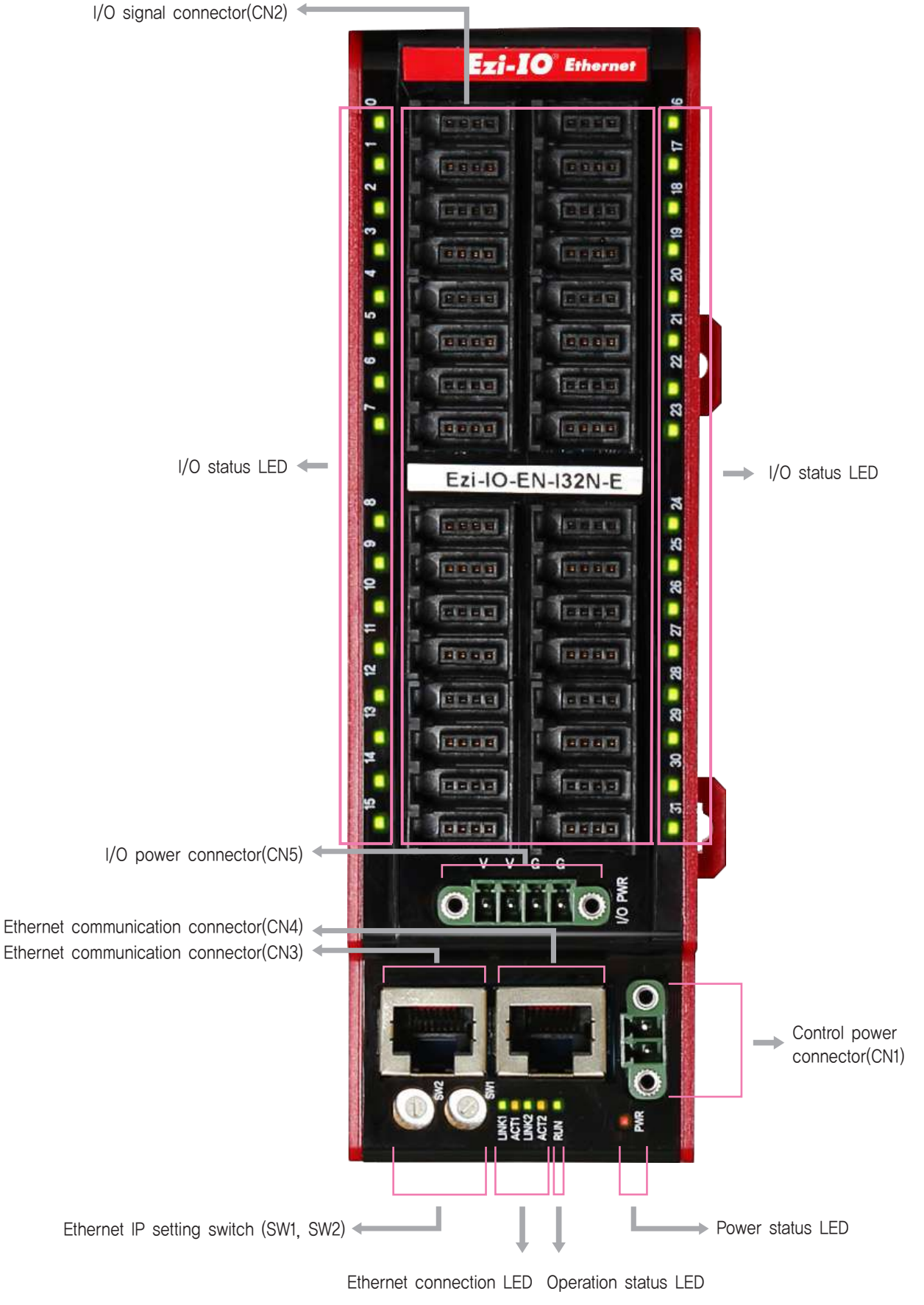
* For Ezi-IO-EN-I808N-T and Ezi-IO-EN-I808P-T modules, the name is written as 0~7 / 0~7 .

5. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD−
3	RD+
4	----
5	----
6	RD−
7	----
8	----
Connector hood	F.GND



● Settings and Operation [32CH e-CON Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

- Ethernet Connection LED

Name	Color	Status	Description
LINK1/LINK2	Green	OFF	Link not Established
		ON	Link Established

- Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

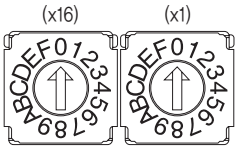
- I/O status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-PE-I16O16N-E and Ezi-IO-PE-I16O16P-E modules, the name is written as 0~15 / 0~15 .

2. Ethernet IP Setting Switch (SW1, SW2)

These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= **87**
IP is to be set as 192.168.0.**87**

3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



4. I/O Signal Connector (CN2)

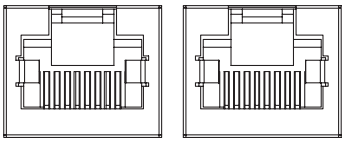
No.	Function	I/O
1	EXT_DC24V	Output
2	NC	-----
3	EXT_GND	Output
4	SIGNAL	I/O



1 2 3 4

5. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	-----
5	-----
6	RD-
7	-----
8	-----
Connector hood	F.GND



8 1 8 1

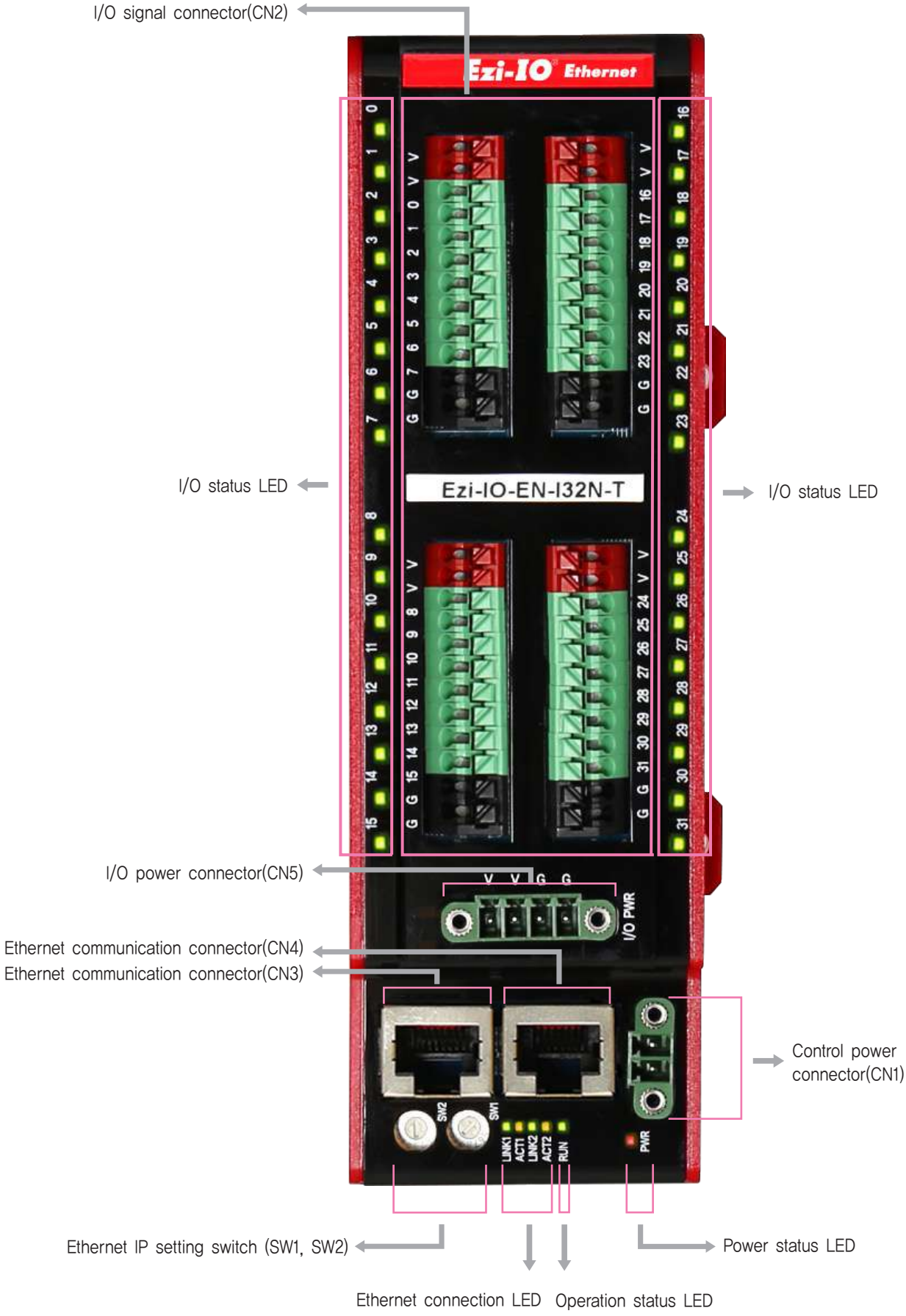
6. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



1 2 3 4

● Settings and Operation [32CH Terminal Block Type]



1. Status LED

- Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

- Ethernet Connection LED

Name	Color	Status	Description
LINK1/LINK2	Green	OFF	Link not Established
		ON	Link Established

- Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

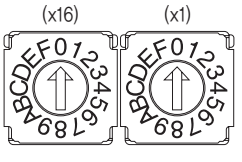
- I/O status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-PE-I16O16N-T and Ezi-IO-PE-I16O16P-T modules, the name is written as 0~15 / 0~15 .

2. Ethernet IP Setting Switch (SW1, SW2)

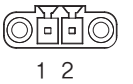
These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)



e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

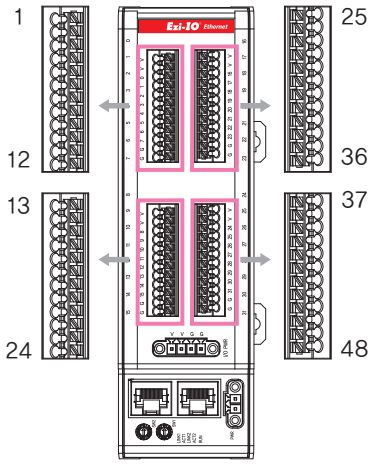


4. I/O Signal Connector (CN2)

No.	Name*	Function	I/O
1	V	EXT_DC24V	Output
2	V	EXT_DC24V	Output
3	0	SIGNAL	I/O
4	1	SIGNAL	I/O
5	2	SIGNAL	I/O
6	3	SIGNAL	I/O
7	4	SIGNAL	I/O
8	5	SIGNAL	I/O
9	6	SIGNAL	I/O
10	7	SIGNAL	I/O
11	G	EXT_GND	Output
12	G	EXT_GND	Output
13	V	EXT_DC24V	Output
14	V	EXT_DC24V	Output
15	8	SIGNAL	I/O
16	9	SIGNAL	I/O
17	10	SIGNAL	I/O
18	11	SIGNAL	I/O
19	12	SIGNAL	I/O
20	13	SIGNAL	I/O
21	14	SIGNAL	I/O
22	15	SIGNAL	I/O
23	G	EXT_GND	Output
24	G	EXT_GND	Output

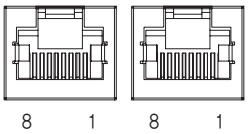
No.	Name*	Function	I/O
25	V	EXT_DC24V	Output
26	V	EXT_DC24V	Output
27	16(0)	SIGNAL	I/O
28	17(1)	SIGNAL	I/O
29	18(2)	SIGNAL	I/O
30	19(3)	SIGNAL	I/O
31	20(4)	SIGNAL	I/O
32	21(5)	SIGNAL	I/O
33	22(6)	SIGNAL	I/O
34	23(7)	SIGNAL	I/O
35	G	EXT_GND	Output
36	G	EXT_GND	Output
37	V	EXT_DC24V	Output
38	V	EXT_DC24V	Output
39	24(8)	SIGNAL	I/O
40	25(9)	SIGNAL	I/O
41	26(10)	SIGNAL	I/O
42	27(11)	SIGNAL	I/O
43	28(12)	SIGNAL	I/O
44	29(13)	SIGNAL	I/O
45	30(14)	SIGNAL	I/O
46	31(15)	SIGNAL	I/O
47	G	EXT_GND	Output
48	G	EXT_GND	Output

* For Ezi-IO-PE-I16016N-T and Ezi-IO-PE-I16016P-T modules, the name is written as 0~15 / 0~15 .



5. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	-----
5	-----
6	RD-
7	-----
8	-----
Connector hood	F.GND

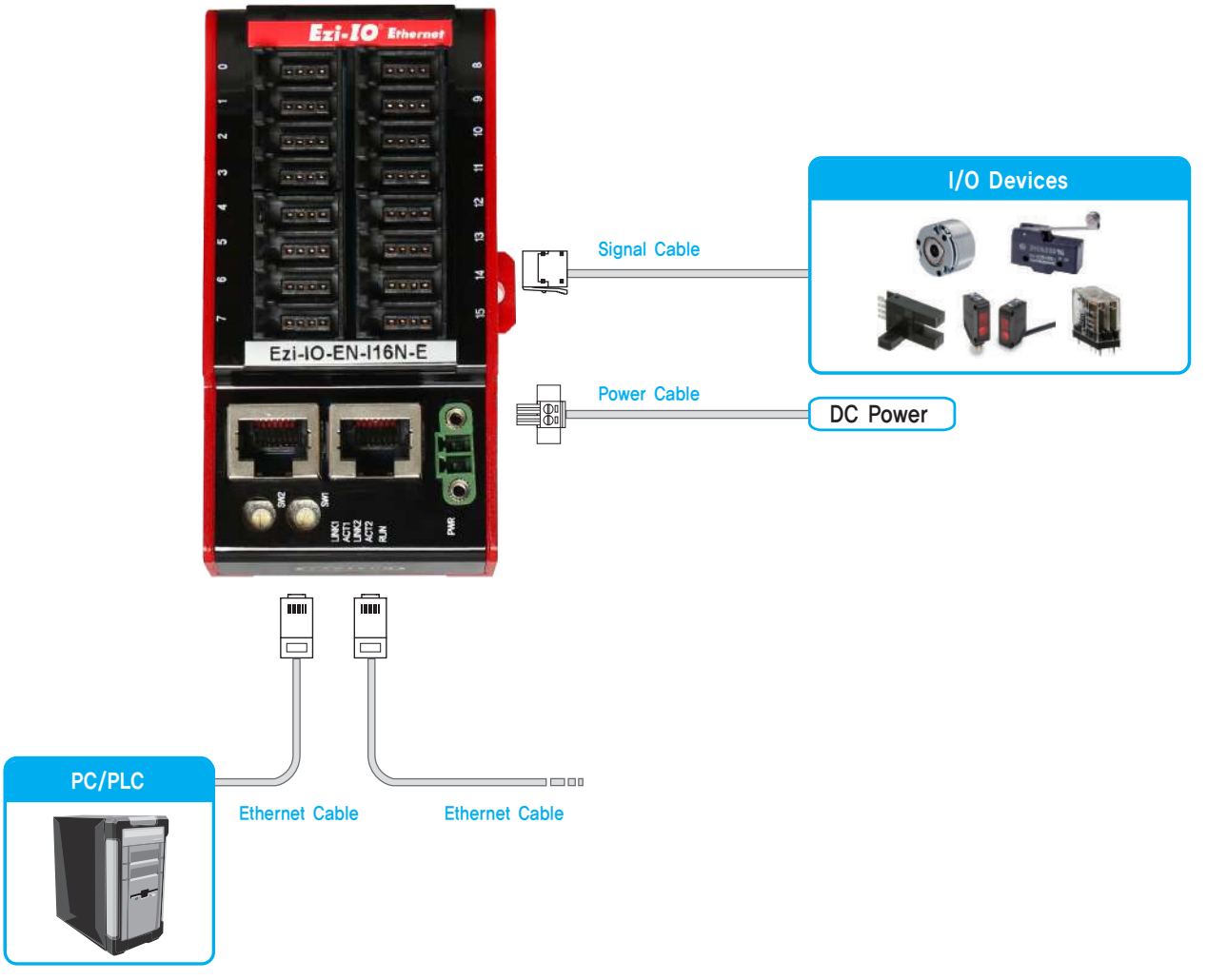


6. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



● System Configuration [16CH e-CON Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

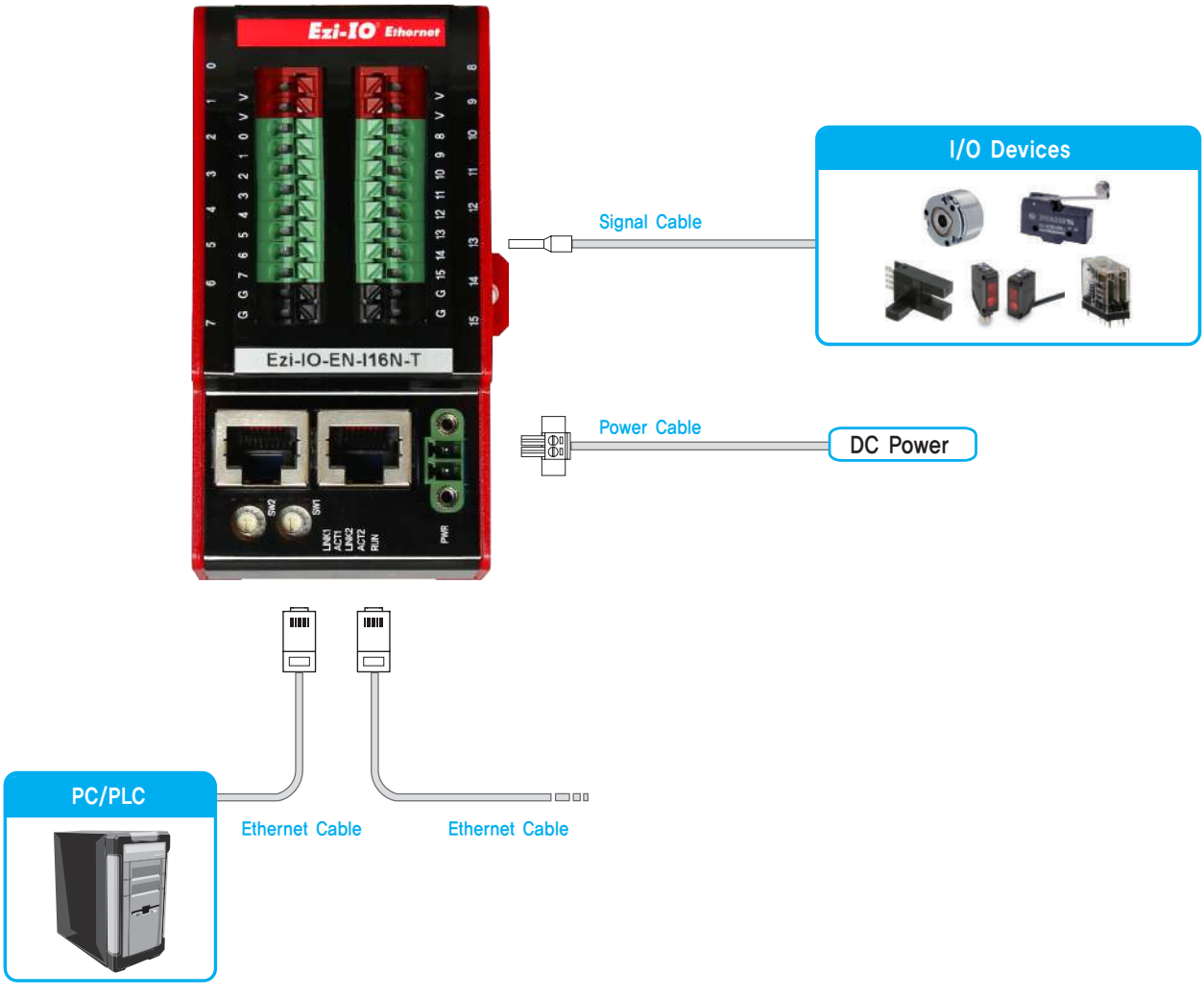
2. Options

● Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [16CH Terminal Block Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

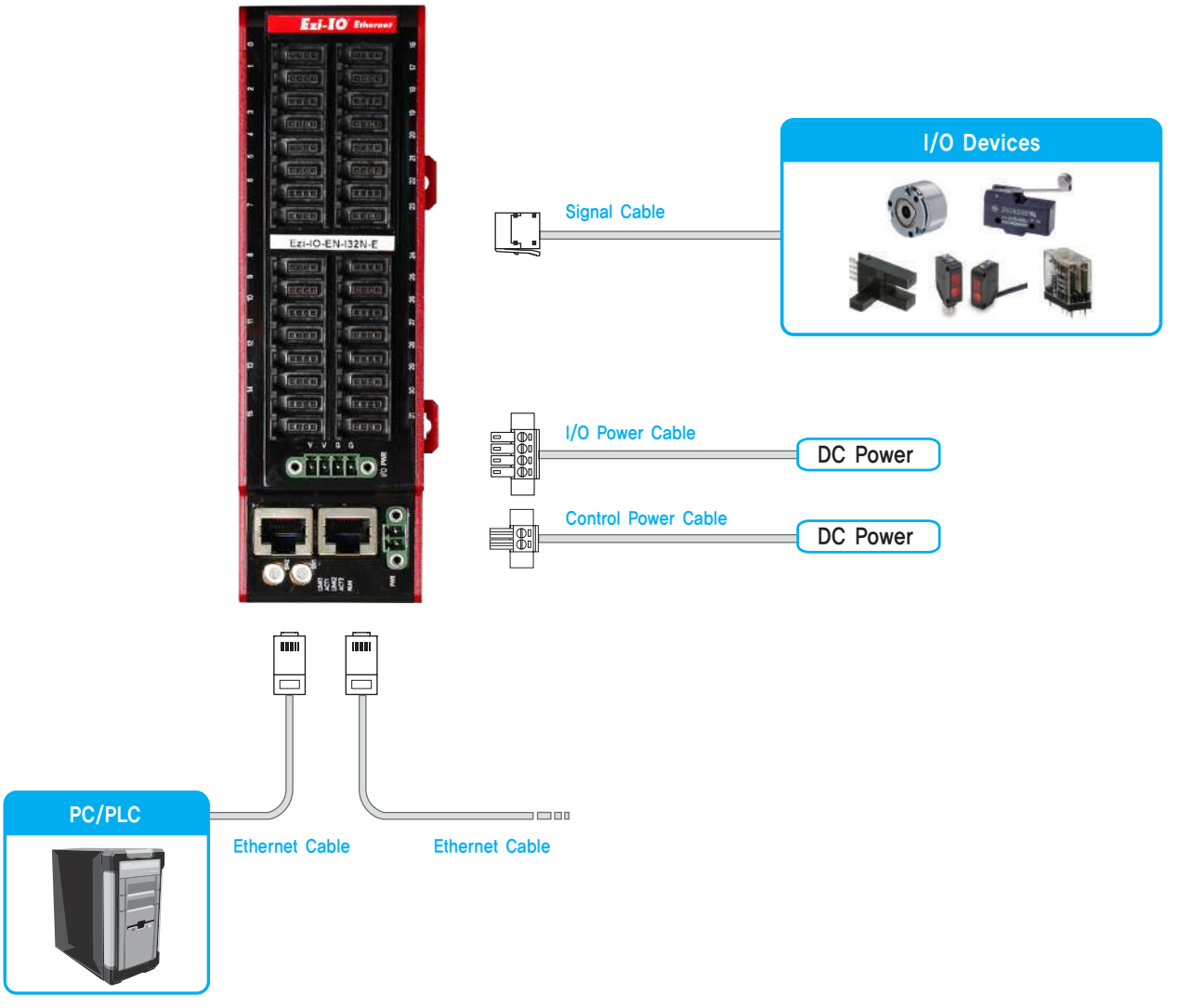
2. Options

● Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [32CH e-CON Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

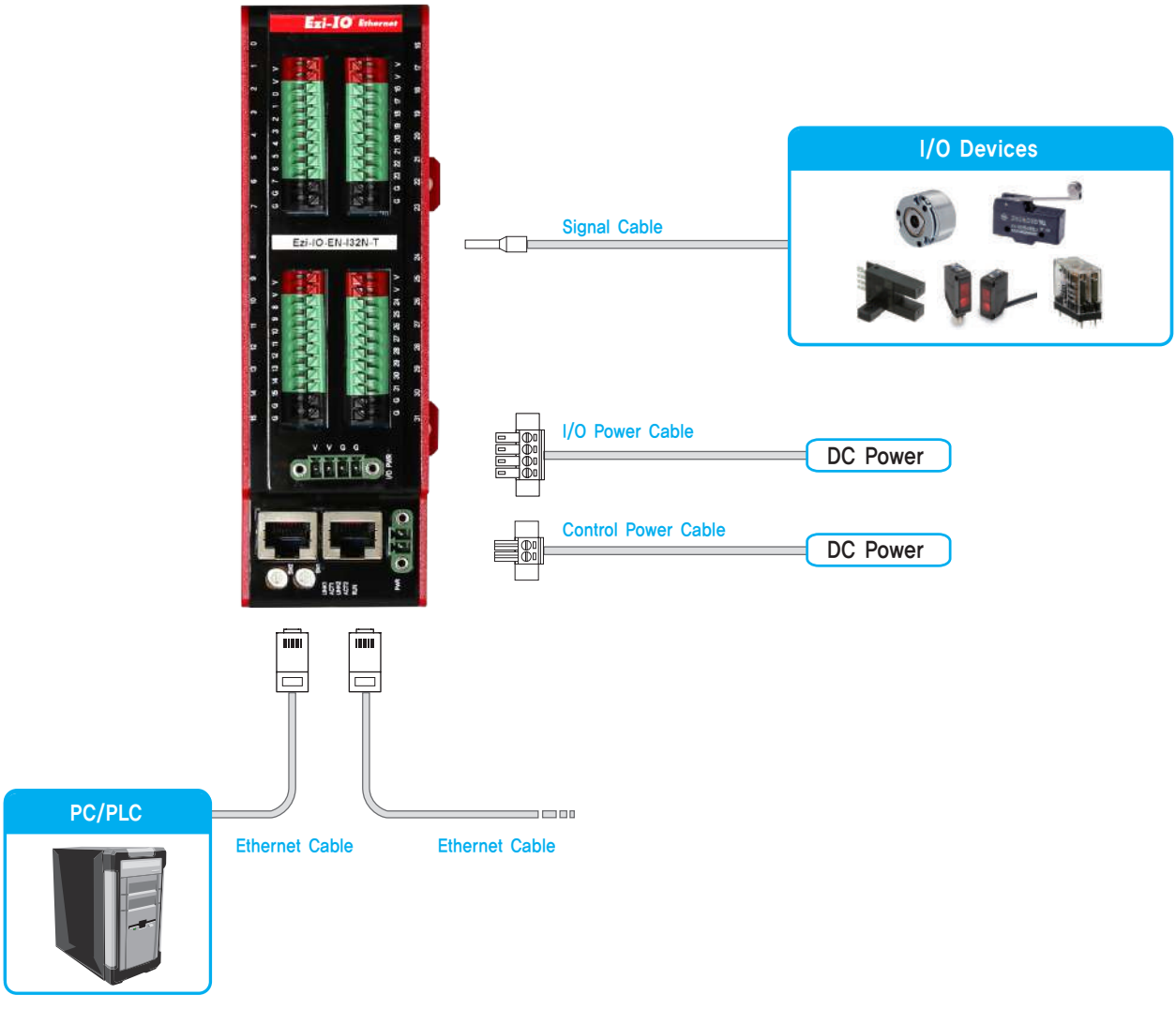
2. Options

● Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● System Configuration [32CH Terminal Block Type]



1. Accessories

● Connectors

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

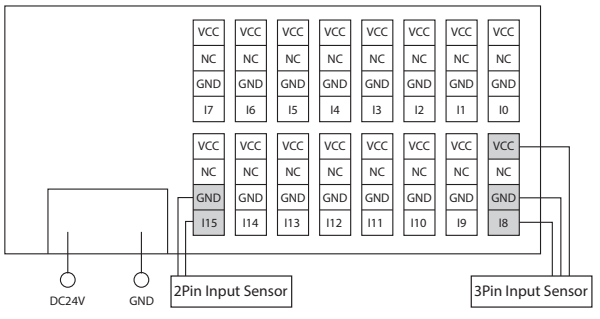
● Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

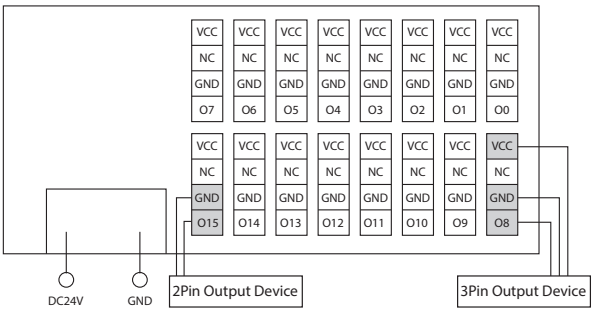
* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [16CH e-CON Type]

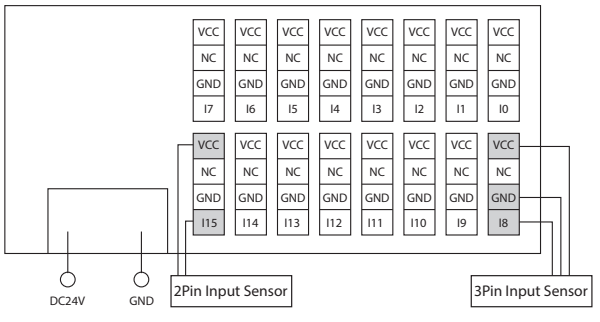
1 Ezi-IO-EN-I16N-E(NPN)



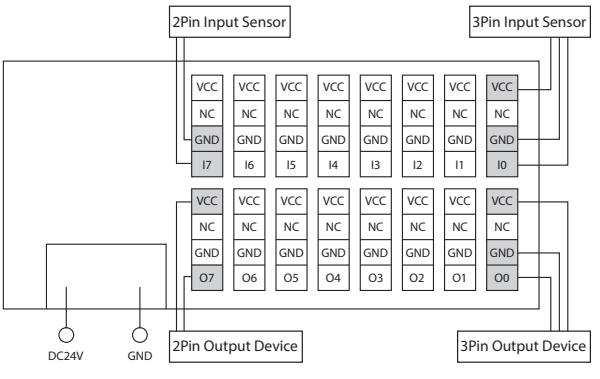
4 Ezi-IO-EN-O16P-E(PNP)



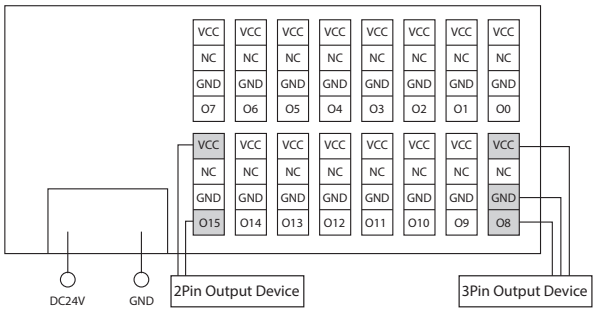
2 Ezi-IO-EN-I16P-E(PNP)



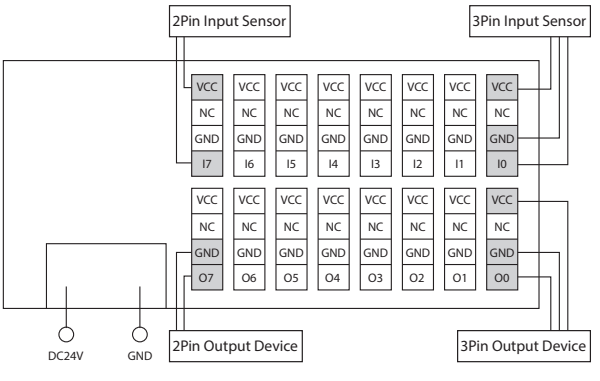
5 Ezi-IO-EN-I8O8N-E(NPN)



3 Ezi-IO-EN-O16N-E(NPN)



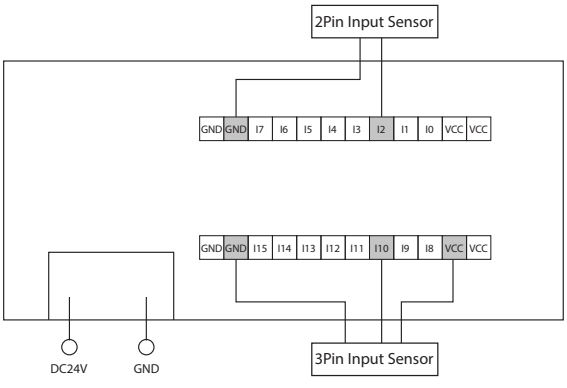
6 Ezi-IO-EN-I8O8P-E(PNP)



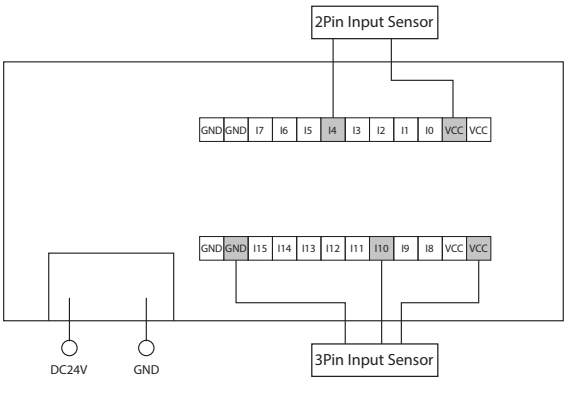
※ VCC is DC24V output.
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [16CH Terminal Block Type]

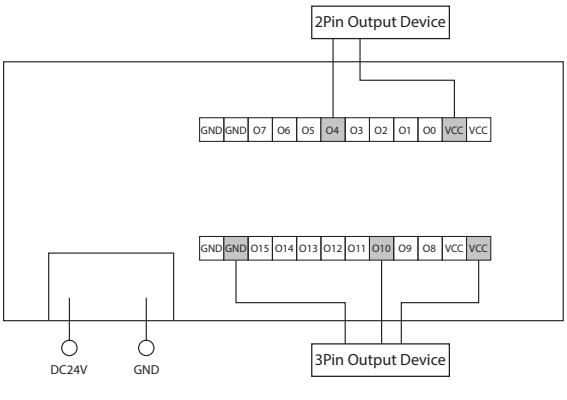
1 Ezi-IO-EN-I16N-T(NPN)



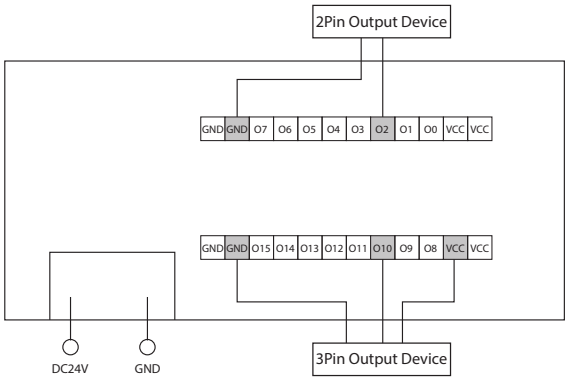
2 Ezi-IO-EN-I16P-T(PNP)



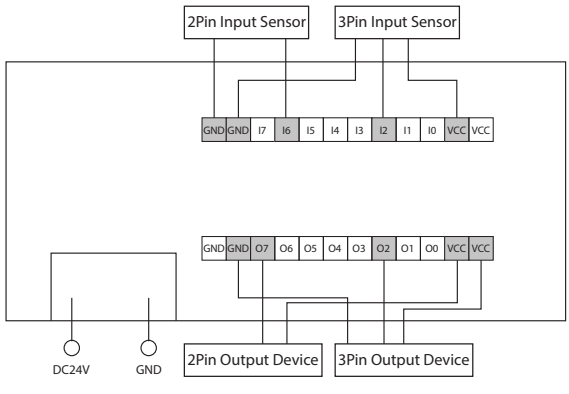
3 Ezi-IO-EN-O16N-T(NPN)



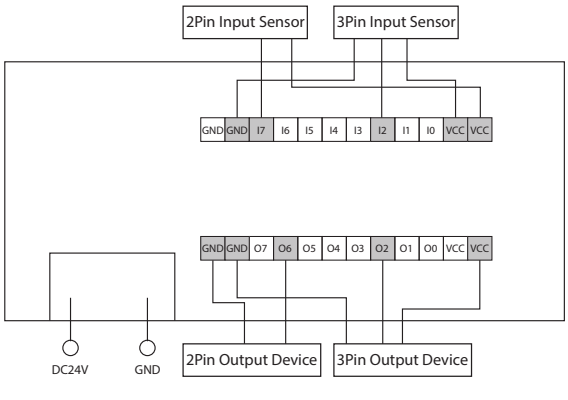
4 Ezi-IO-EN-O16P-T(PNP)



5 Ezi-IO-EN-I8O8N-T(NPN)



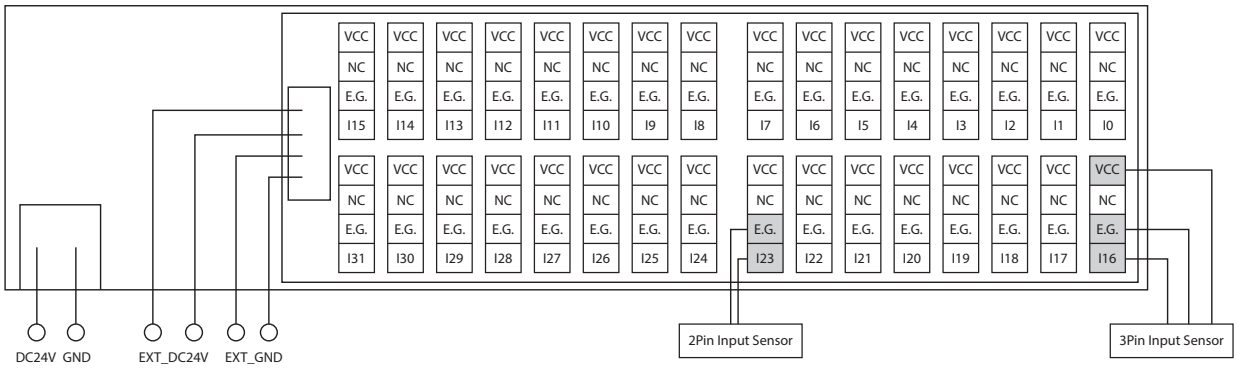
6 Ezi-IO-EN-I8O8P-T(PNP)



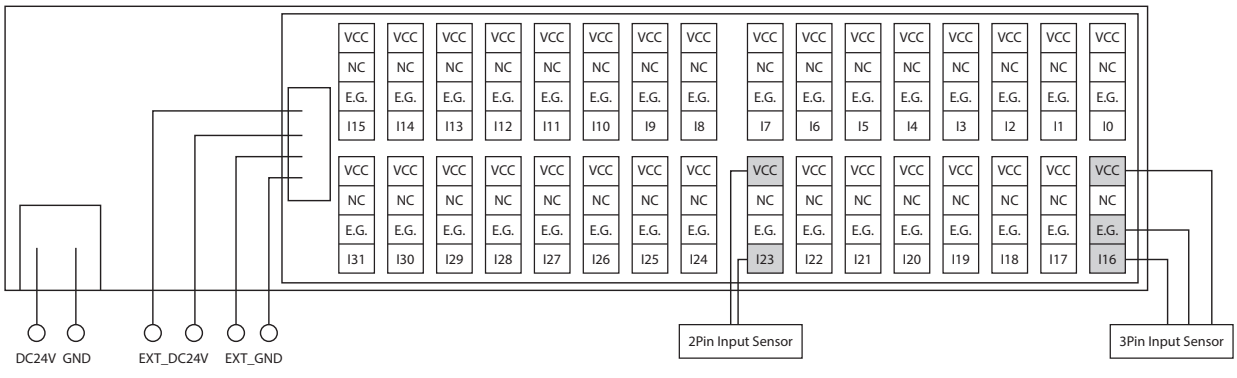
※ VCC is DC24V output.
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH e-CON Type]

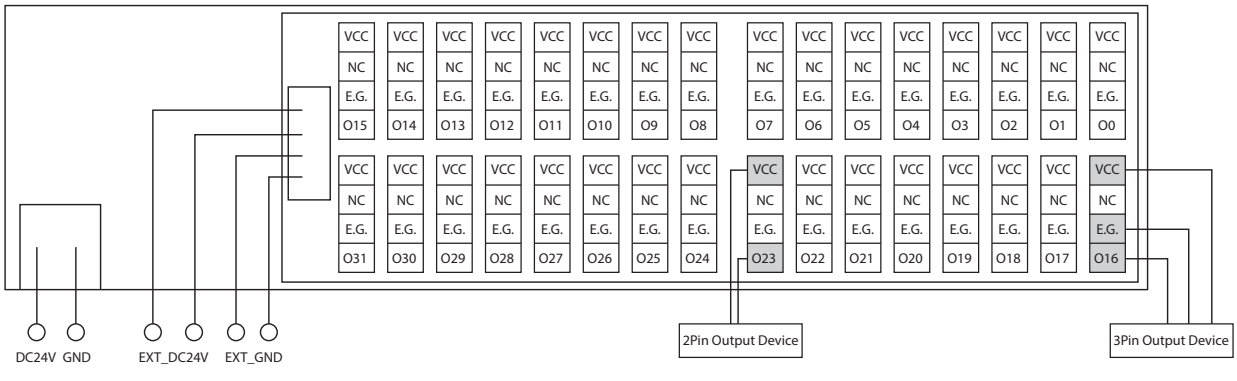
1 Ezi-IO-EN-I32N-E(NPN)



2 Ezi-IO-EN-I32P-E(PNP)



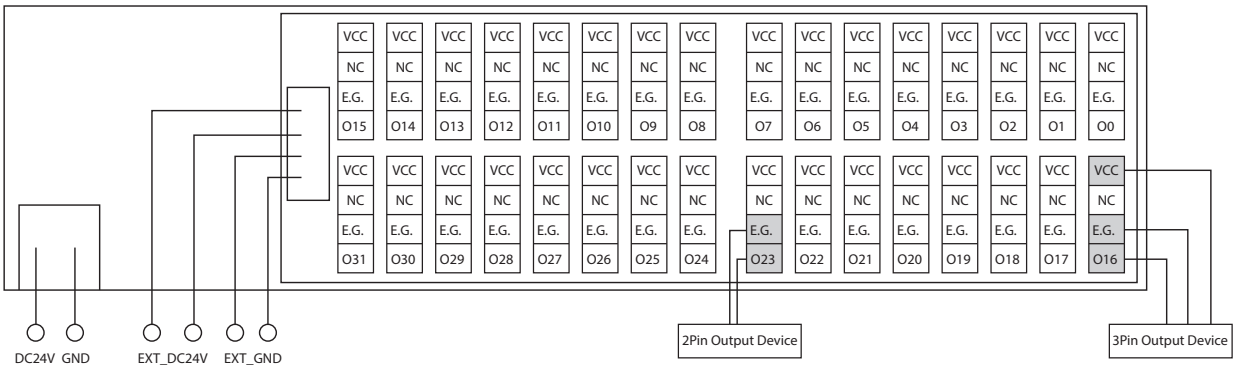
3 Ezi-IO-EN-O32N-E(NPN)



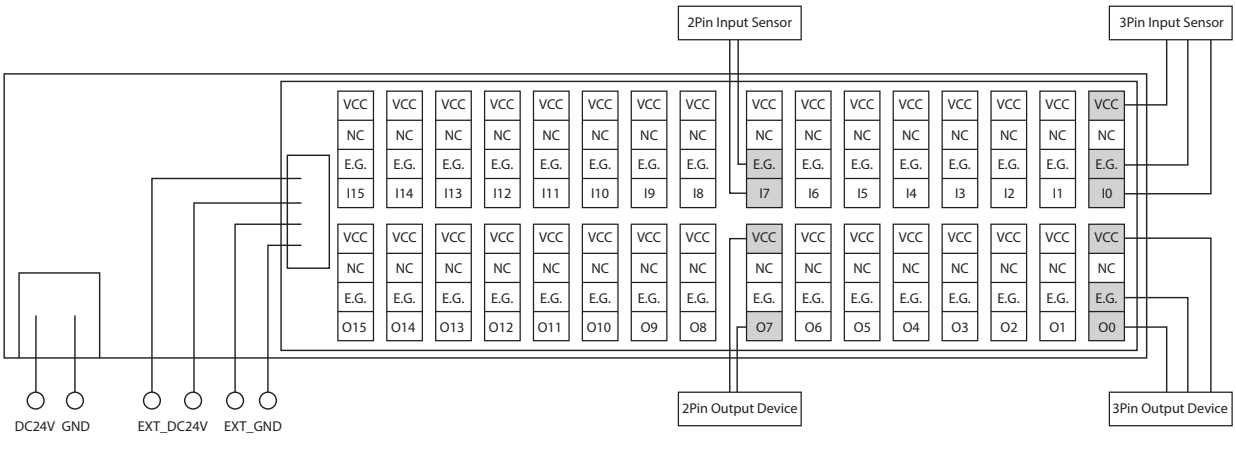
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [32CH e-CON Type]

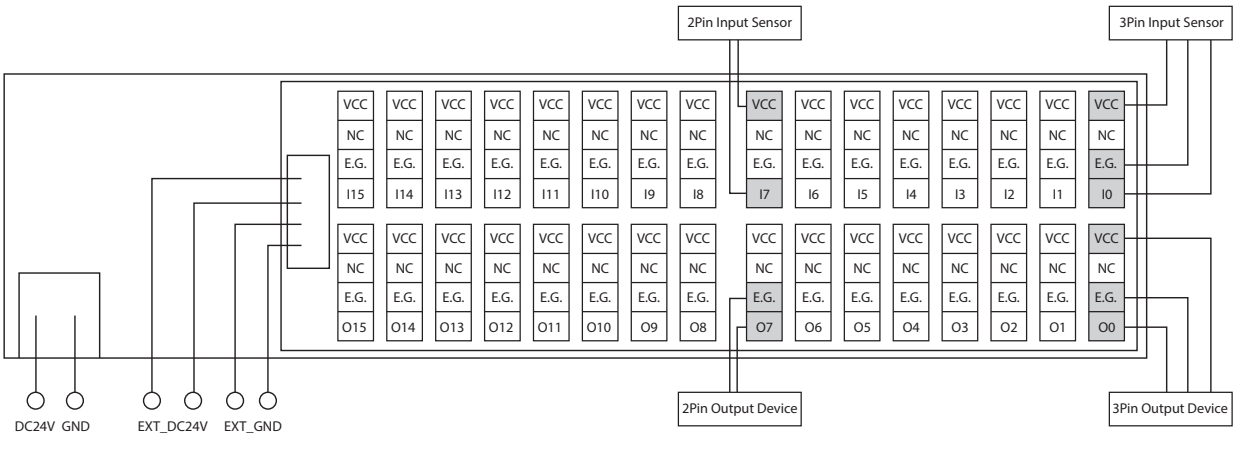
4 Ezi-IO-EN-O32P-E(PNP)



5 Ezi-IO-EN-I16O16N-E(NPN)



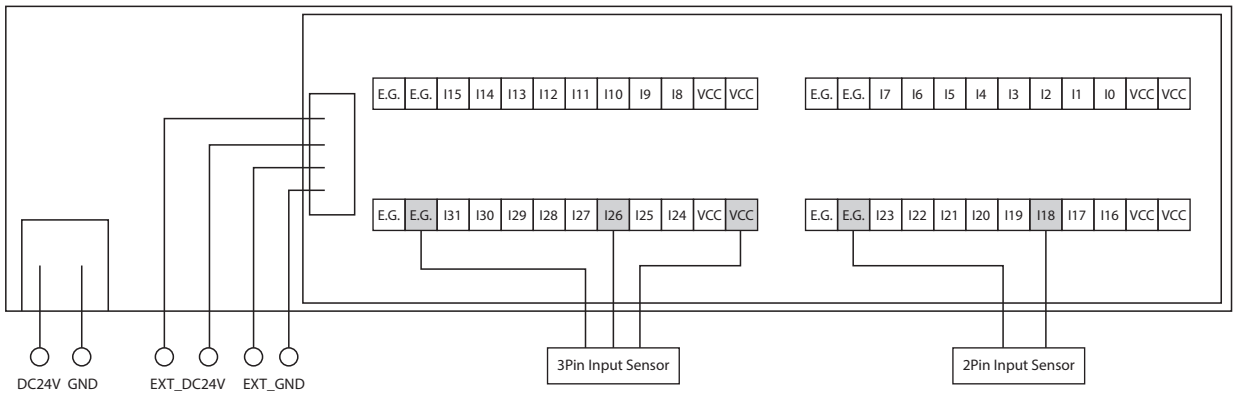
6 Ezi-IO-EN-I16O16P-E(PNP)



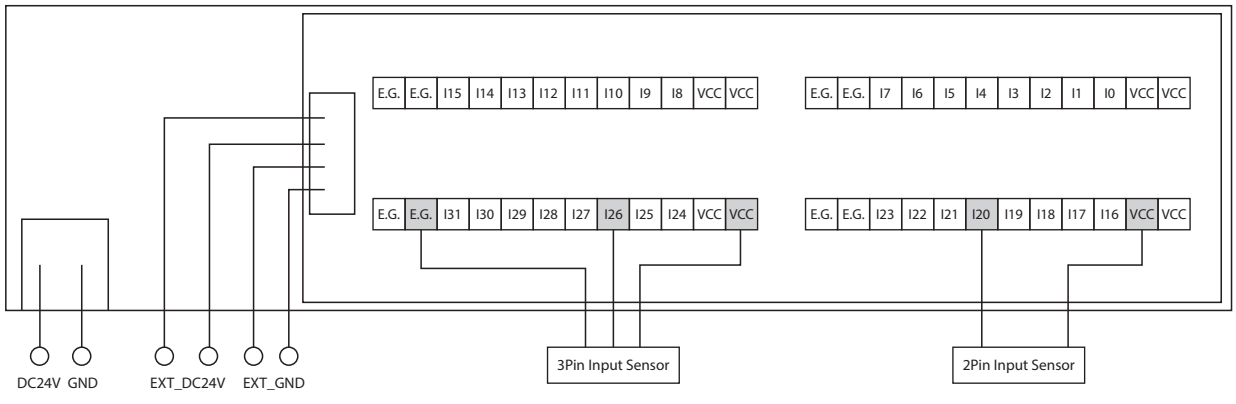
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Terminal Block Type]

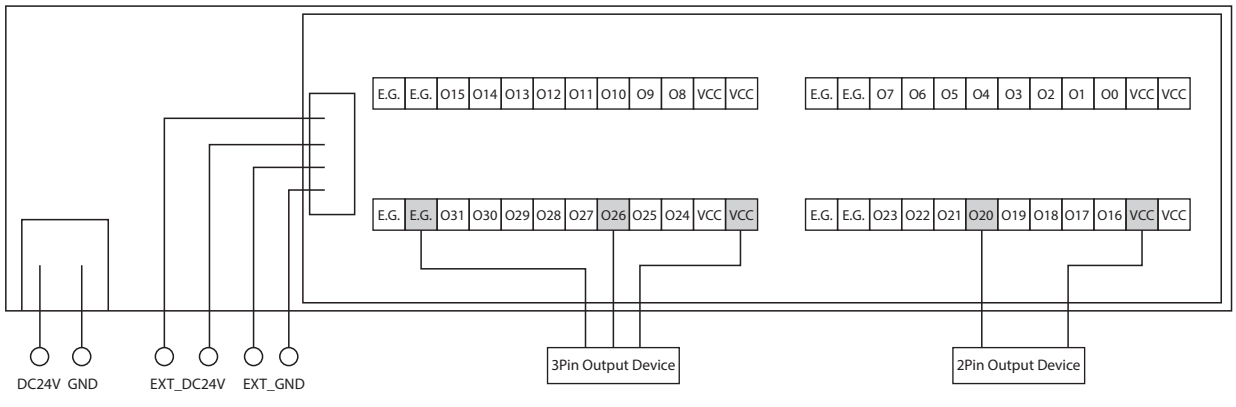
1 Ezi-IO-EN-I32N-T(NPN)



2 Ezi-IO-EN-I32P-T(PNP)



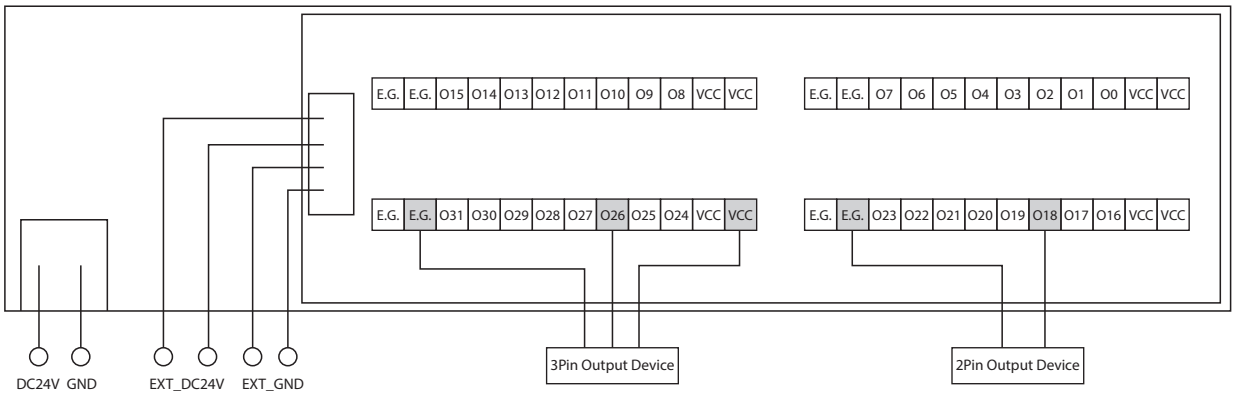
3 Ezi-IO-EN-O32N-T(NPN)



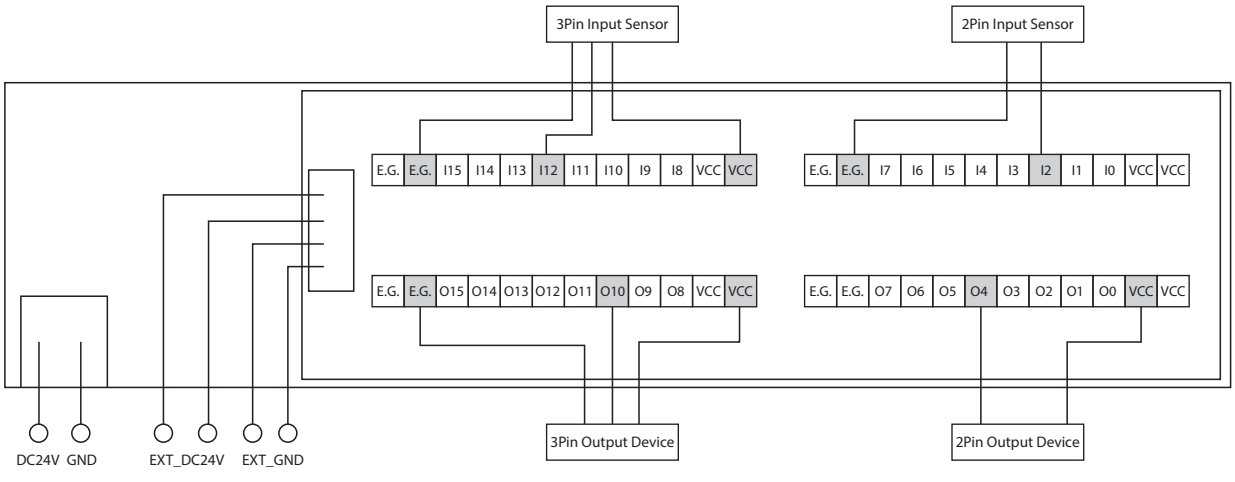
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [32CH Terminal Block Type]

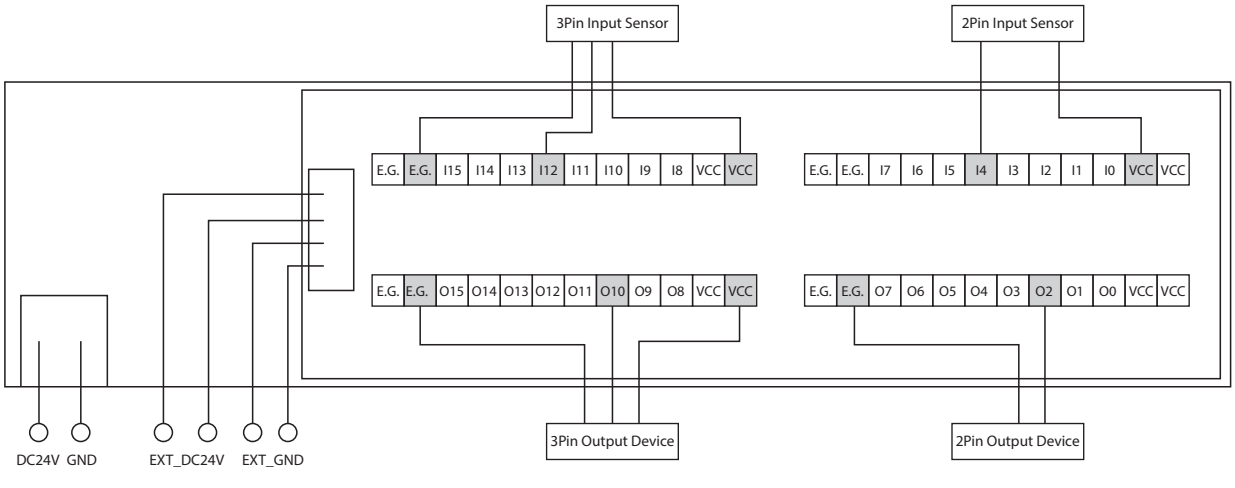
4 Ezi-IO-EN-O32P-T(PNP)



5 Ezi-IO-EN-I16O16N-T(NPN)



6 Ezi-IO-EN-I16O16P-T(PNP)



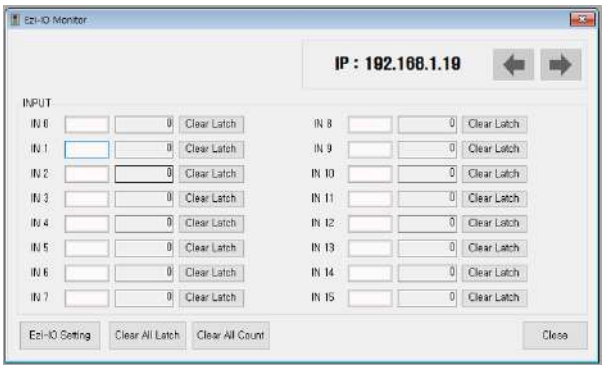
※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● GUI(Graphic User Interface) Program



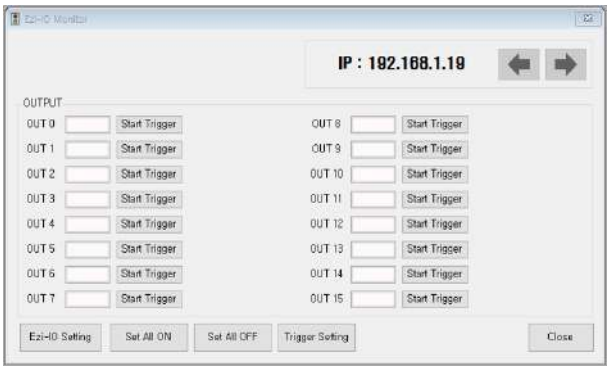
◆ Ezi-IO Ethernet DIO Summary

The operation status of the connected I/O modules can be monitored at once.



◆ Input Module Monitor

You can check the input status and latch status of each input channels.



◆ Output Module Monitor

You can check the output status and trigger status of each output channels.



◆ I/O Logic Setting

This function selects the level of the actual signal to recognize the I/O signal as [ON]. All changes can be saved and restored when needed.

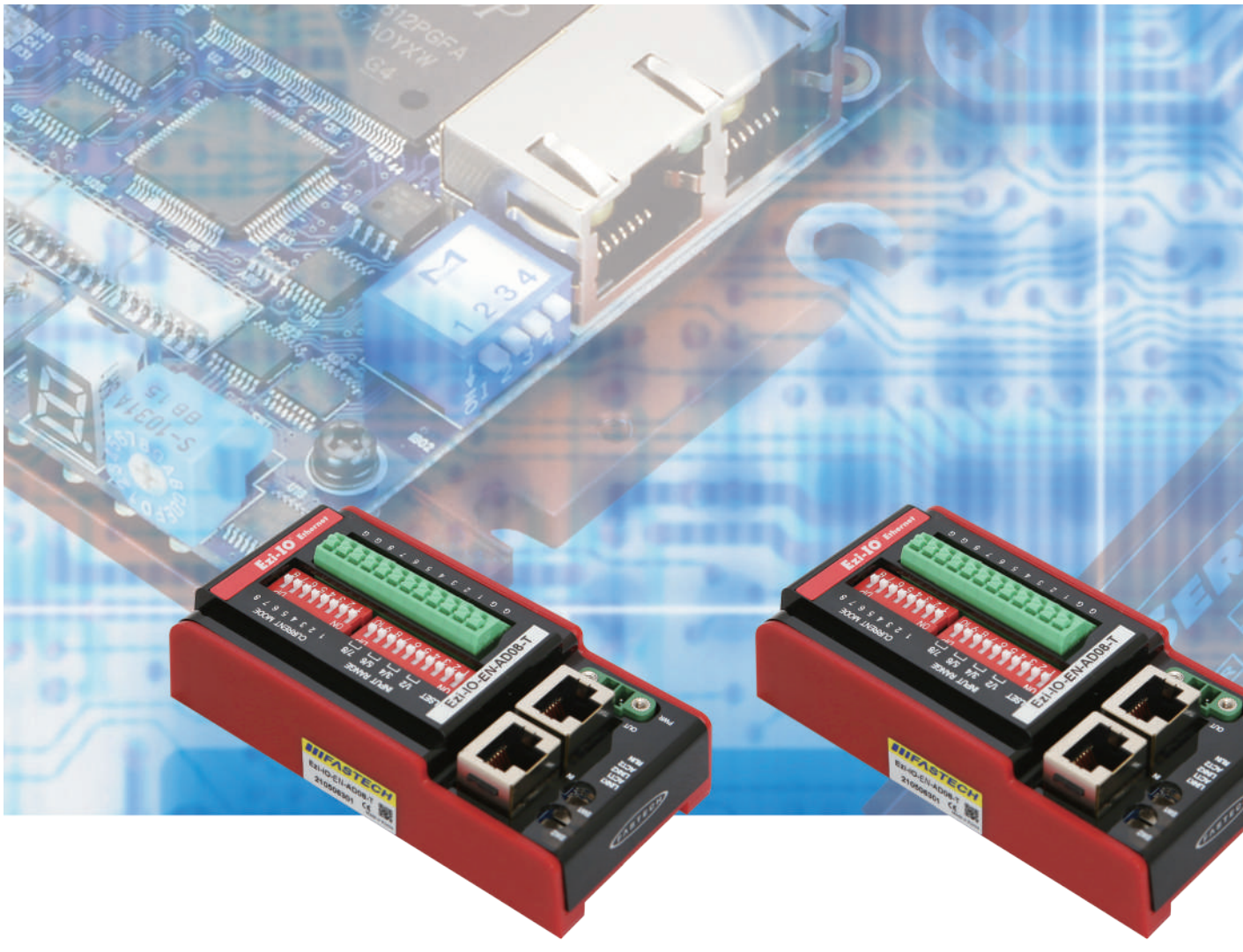
※ GUI Program(Ezi-MOTIONLINK Plus-E) can be downloaded from website. (www.fastech-motions.com)
※ GUI Program(Ezi-MOTIONLINK Plus-E) supports Windows 7/8/10.
※ GUI Program(Ezi-MOTIONLINK Plus-E) is subject to change without prior notice for performance improvement.


EZI-IO
EZI-IO-EN-AD08-T
FASTECH

Ezi-IO® Ethernet AD

Input/Output Module

- Ethernet Based Analog Input Module
- Simple and Easy Wiring
- Input Mode and Range Configurable
- Moving Average Filtering



FASTECH

Fast, Accurate, Smooth Motion

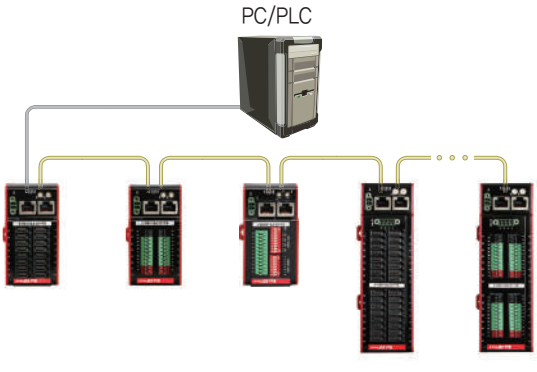
Ezi-IO® Ethernet AD

Input/Output Module



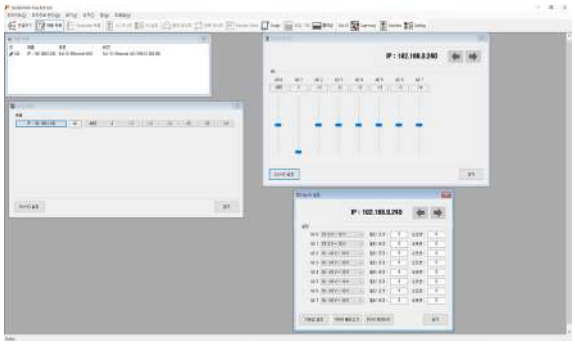
1 Ethernet Based Analog Input Module

Since Ezi-IO Ethernet AD uses the same communication protocol as FASTECH's other Ethernet products, it can be applied very easily to the customers who have experiences using FASTECH's Ethernet products. Motion Library(API) is provided for programming under Windows 7/8/10.



2 GUI and Library(API) Provided

FASTECH provides the libraries(API) and the graphic user interface(GUI) program for Windows 7/8/10, for the convenience of customers using PC to control the products.



3 Simple and Easy Wiring

Ezi-IO Ethernet AD uses a push-in type terminal block. The push-in type terminal block can be easily connected to various devices using ferrule terminals, making the wiring much simpler and easier.

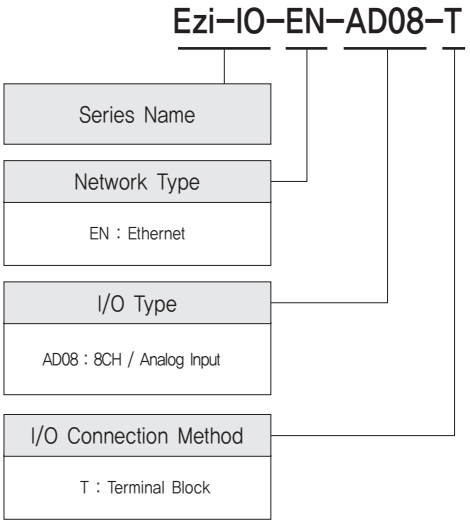
4 Easy Setup with Switches

The voltage or current input mode can be easily selected with the DIP switches, and the input signal range can be easily set in the voltage input mode.

5 Moving Average Filtering

Ezi-IO Ethernet AD provides the moving average filter to remove the noise mixed in the analog signal and suppress the fluctuation of the analog input value.
The range of the moving average filter can be set between 0~200ms.

Ezi-IO Ethernet AD Part Numbering



Ezi-IO Ethernet AD Part Number

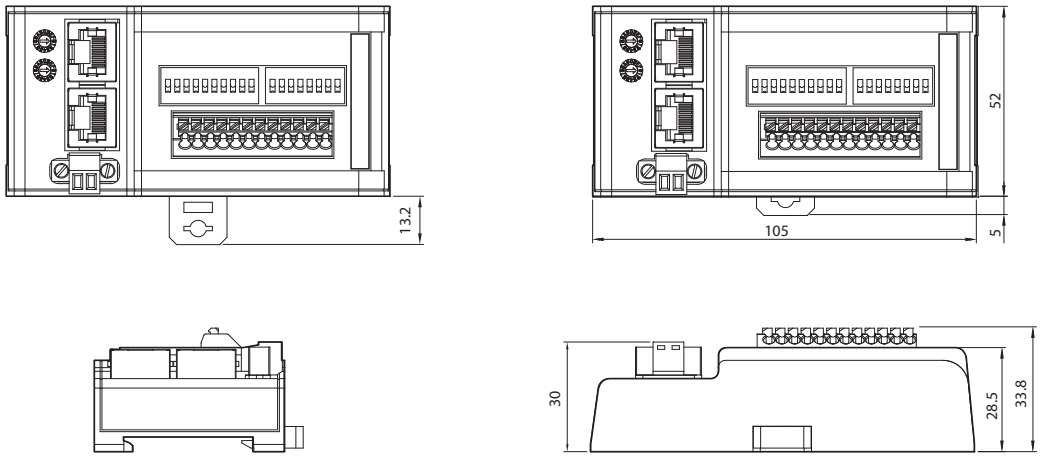
Part Number
Ezi-IO-EN-AD08-T

Specifications of Module

Model			Ezi-IO-EN-AD08-T	
Input Mode			Voltage Input	Current Input
Input Voltage			DC24V±10%	
Current Consumption			Max. 120mA	
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Input Channels		8CH	
	Max. Signal Input		±15V	±30mA
	Input Range		· -10~10V · -5~5V · -2.5~2.5V · 0~10V	· 0~20mA
	Input Range Setting Method		· Parameter (Separate Settings for each channel) · DIP Switch (Separate Settings for each channel)	
	Input Impedance		1MΩ	249Ω
	Max. Resolution		1/8,191 (Full Scale)	
	Accuracy	25℃	±0.3% (Full Scale)	±0.3% (Full Scale)
		0~50℃	±0.4% (Full Scale)	±0.6% (Full Scale)
	Analog Conversion Cycle		200μs/8CH	
	A/D Converted Data		· -10~10V : -4096~4095 · -5~5V : -4096~4095 · -2.5~2.5V : -4096~4095 · 0~10V : 0~8191	· 0~20mA : 0~8191
	Isolation Method		Digtal isolation between analog input and communication connection	
LED Display			· Power Status (PWR) · Run Status · Ethernet Status (Link, Activity)	
Communication Interface			· Ethernet UDP/TCP Communication · Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex	
GUI			User Interface Program within Windows	
Library			Motion Library (API) for windows 7/8/10	

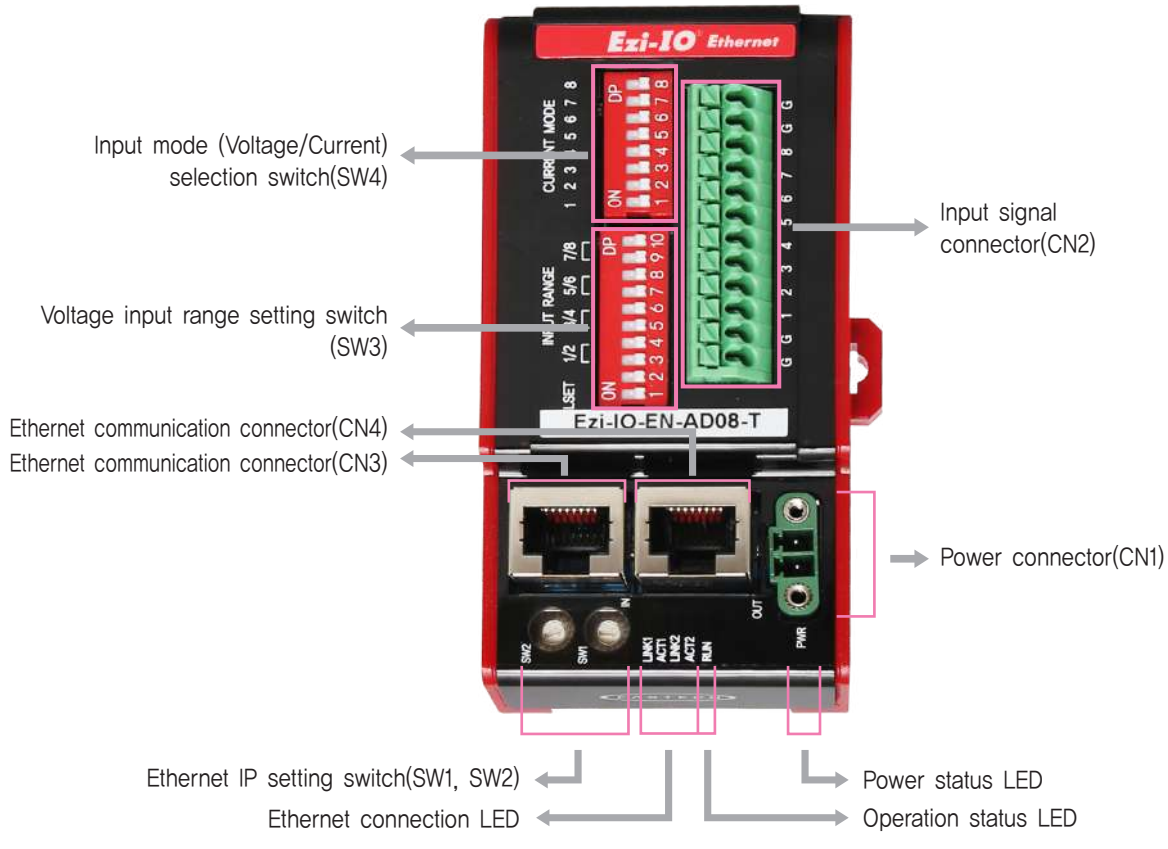
● Dimensions of Module [mm]

◆ Ezi-IO-EN-AD08-T

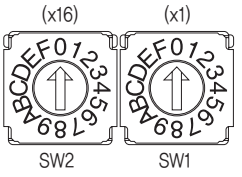


* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EN-AD08-T]



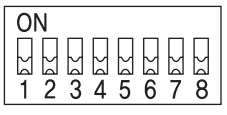
1. Ethernet IP Setting Switch (SW1, SW2)



These switches set the 4th octet of Ethernet IP. The 1st octet,the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)

e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Input Mode (Voltage/Current) Selection Switch (SW4)

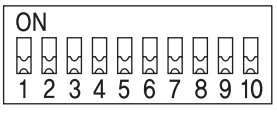


SW4 is a switch that selects voltage/current mode for each channel.
Refer to the following chart for how to use SW4.

Mode \ Switch	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
	SW4.1	SW4.2	SW4.3	SW4.4	SW4.5	SW4.6	SW4.7	SW4.8
Voltage Input	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Current Input	ON	ON	ON	ON	ON	ON	ON	ON

* Select the input mode for each channel with the Input Mode Selection Switch (SW4) before supplying power to the module.

3. Voltage Input Range Setting Switch (SW3)



SW3 is a switch for setting the input range. You can set the range with the combination of the switches.

● Selecting Input Setting Method

You can select the input seting method with the LSET (SW3.1) switch as follows.

Mode \ Switch	LSET	Description
	SW3.1	
DIP Switch	ON	Setting voltage input range with DIP switches (SW3.3~SW3.10)
Parameter	OFF	Setting voltage/current input range with parameters through Ethernet communication.

* If you use any channels in current input mode, the setting method has to be the parameter through Ethernet Communication (SW3.1=OFF).
* Set SW3.1 before supplying power to the module.
* SW3.2 is not used.

● Voltage Input Setting

When using the DIP Switch for setting (SW3.1 = ON), the voltage input is set as shown in the table below.

Input Range \ Switch	CH1/CH2		CH3/CH4		CH5/CH6		CH7/CH8	
	SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
–10~10V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
–5~5V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
–2.5~2.5V	ON	OFF	ON	OFF	ON	OFF	ON	OFF
0~10V	ON	ON	ON	ON	ON	ON	ON	ON

4. Status LED

• Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

• Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinkig	Normal Operation

• Ethernet Connection LED

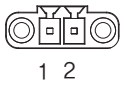
Name	Color	Status	Description
LINK1,2	Green	OFF	Link not Established
		ON	Link Established

• Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

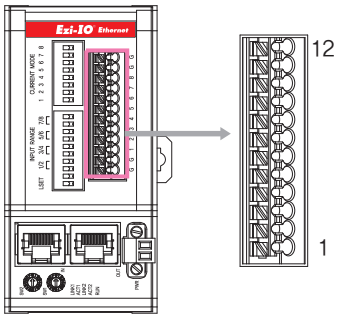
5. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



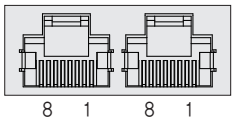
6. Input Signal Connector (CN2)

No.	Name	Function	I/O
1	G	Analog GND	Input
2	G	Analog GND	Input
3	1	Analog In 1	Input
4	2	Analog In 2	Input
5	3	Analog In 3	Input
6	4	Analog In 4	Input
7	5	Analog In 5	Input
8	6	Analog In 6	Input
9	7	Analog In 7	Input
10	8	Analog In 8	Input
11	G	Analog GND	Input
12	G	Analog GND	Input

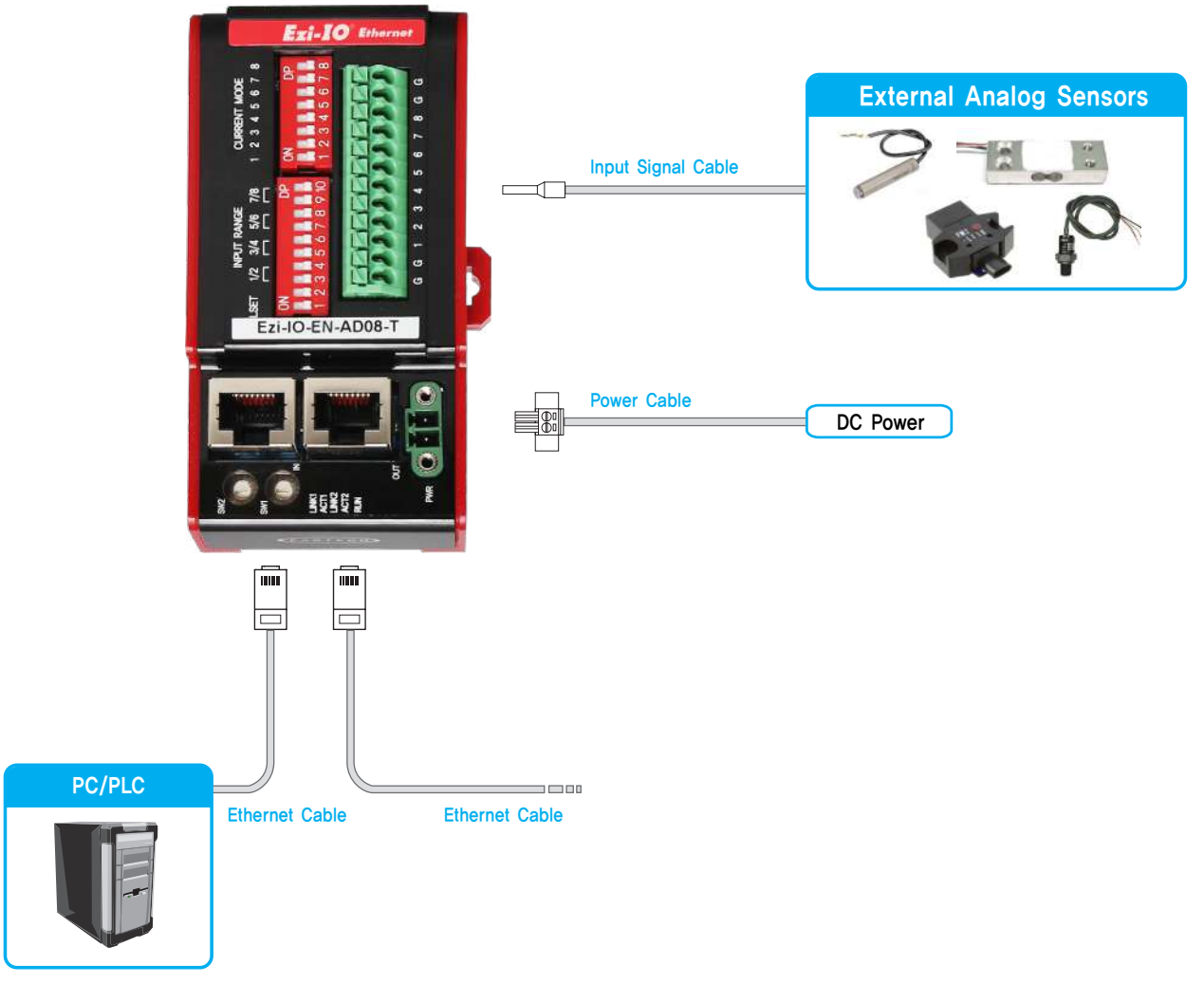


7. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector hood	F.GND



System Configuration [Ezi-IO-EN-AD08-T]



1. Accessories

- Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

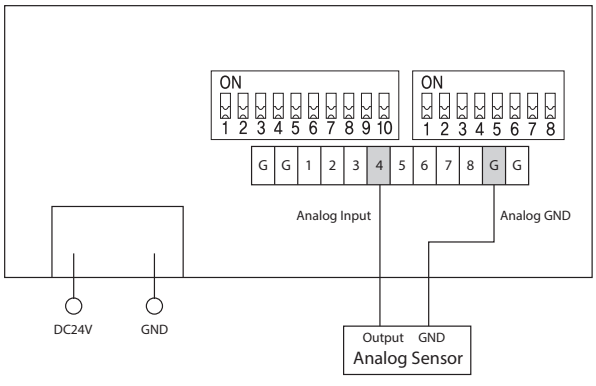
- Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [Ezi-IO-EN-AD08-T]

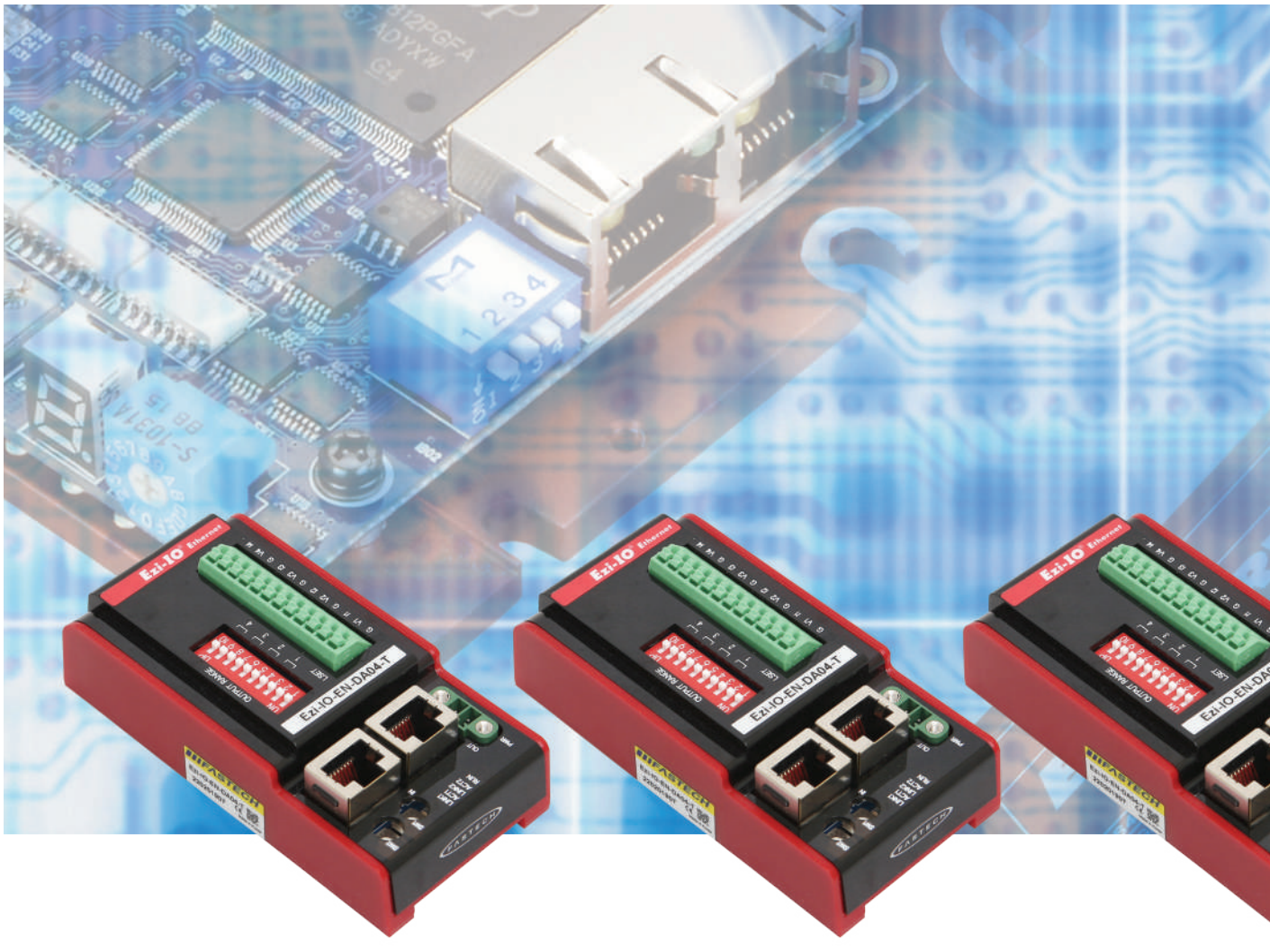
1 Ezi-IO-EN-AD08-T




Ex-IO Ethernet
Ex-IO-EN-DAQ-4-T
FASTECH

Ezi-IO® Input/Output Module Ethernet DA

- Ethernet Based Analog Output Module
- Simple and Easy Wiring
- Output Range Configurable
- Calibration for Output Deviation



FASTECH

Fast, Accurate, Smooth Motion

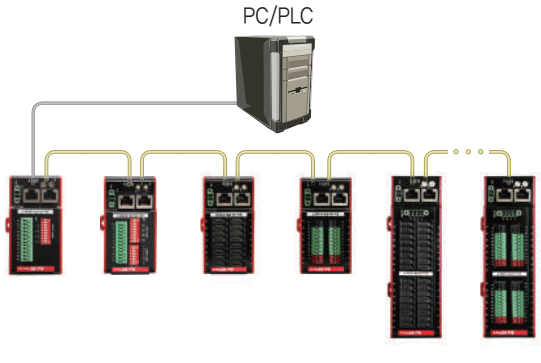
Ezi-IO® Ethernet DA

Input/Output Module



1 Ethernet Based Analog Output Module

Since Ezi-IO Ethernet AD uses the same communication protocol as FASTECH's other Ethernet products, it can be applied very easily to the customers who have experiences using FASTECH's Ethernet products. Motion Library(API) is provided for programming under Windows 7/8/10.



2 GUI and Library(API) Provided

FASTECH provides the libraries(API) and the graphic user interface(GUI) program for Windows 7/8/10, for the convenience of customers using PC to control the products.



3 Simple and Easy Wiring

Ezi-IO Ethernet DA uses a push-in type terminal block. The push-in type terminal block can be easily connected to various devices using ferrule terminals, making the wiring much simpler and easier.

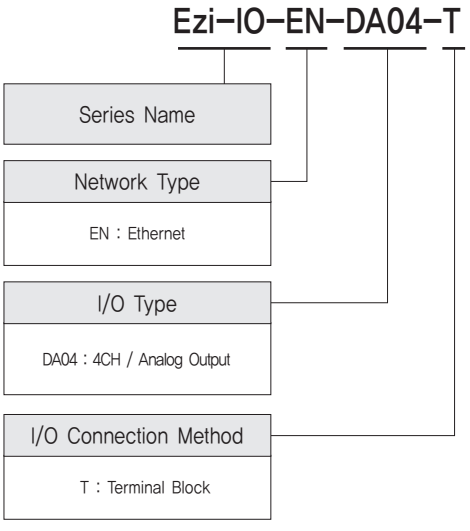
4 Easy Setup with Switches

The output signal range can be easily set with the DIP switches.

5 Calibration for Output Deviation

Ezi-IO Ethernet DA provides an output deviation calibration function as a countermeasure against deviations in the output signal due to the type of connection device, the characteristics of the cable, and the difference in the connection method.

Ezi-IO Ethernet DA Part Numbering



Ezi-IO Ethernet DA Part Number

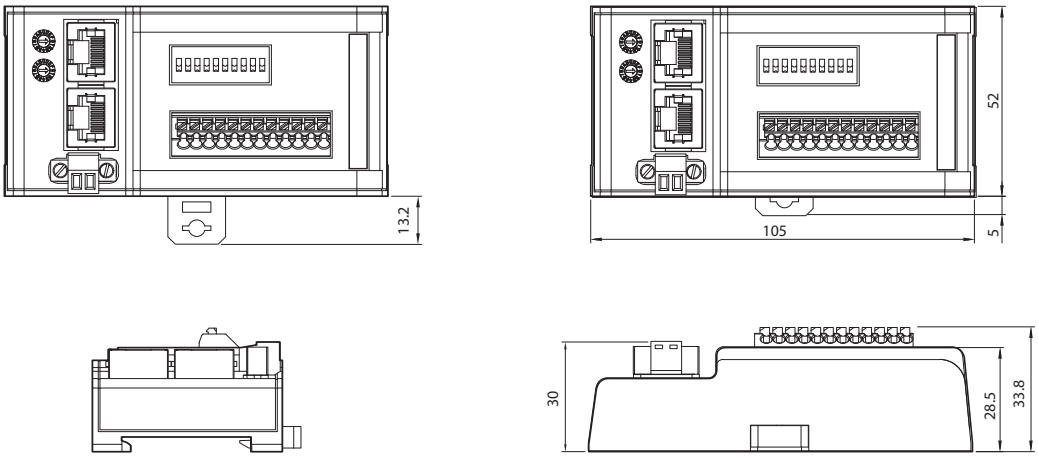
Part Number
Ezi-IO-EN-DA04-T

Specifications of Module

Model			Ezi-IO-EN-DA04-T	
Output Mode			Voltage Output	Current Output
Input Voltage			DC24V±10%	
Current Consumption			Max. 180mA	
Operating Condition	Ambient Temperature		· In Use: 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use: 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Output Channels		4CH	
	Output Range		· 0~5V · 1~5V · 0~10V · -10~10V	· 0~20mA · 4~20mA
	Output Range Setting Method		· SDO Communications (Separate settings for CH1~4) · DIP Switch (Separate settings for CH1~4)	
	External Load Resistance		1kΩ or higher	400Ω or lower
	Max. Resolution		1/50,000 (Full Scale)	
	Accuracy	25℃	±0.3% (Full Scale)	
		0~50℃	±0.4% (Full Scale)	
	Analog Conversion Cycle		500μs/4CH	
	D/A Converted Data		· -25,000~25,000 (-10~10V output range) · 0~25,000 (Other output ranges except -10~10V)	0~25,000
	Isolation Method		Between analog output and communication connections : Digital isolation (Between channels : Non-isolated)	
LED Display			· Power Status (PWR) · Run Status (RUN) · Ethernet Status (Link, Activity)	
Communication Interface			· Ethernet UDP/TCP Communication · Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex	
GUI			User Interface Program within Windows	
Library			Motion Library (API) for windows 7/8/10	

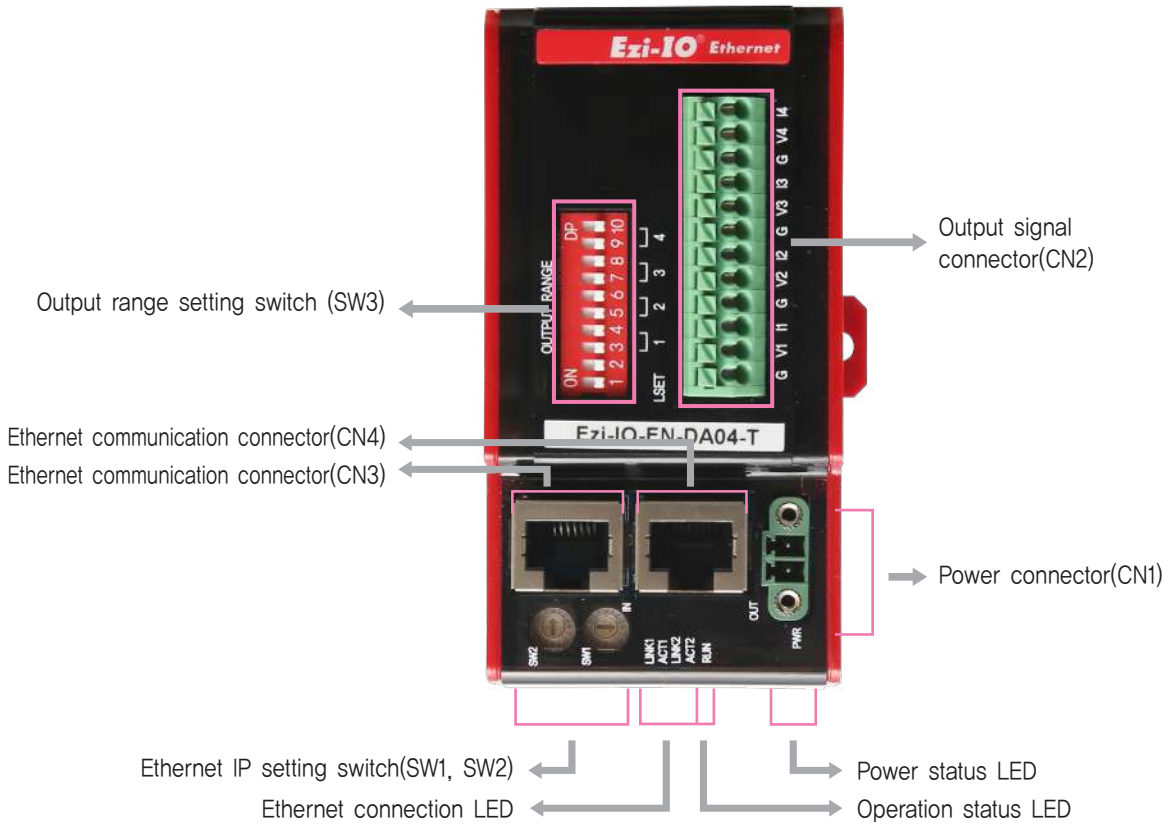
● Dimensions of Module [mm]

◆ Ezi-IO-EC-DA04-T

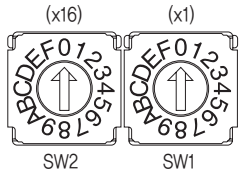


* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EN-DA04-T]



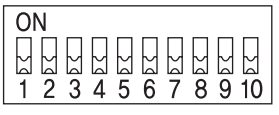
1. Ethernet IP Setting Switch (SW1, SW2)



These switches set the 4th octet of Ethernet IP. The 1st octet,the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)

e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Output Range Setting Switch (SW3)



SW3 is a switch for setting the output range. You can set the range with the combination of the switches.

● Selecting Input Setting Method

You can select the output setting method with the LSET (SW3.1) switch as follows.

Switch / Mode	LSET SW3.1	Description
DIP Switch	ON	Setting output range with DIP switches (SW3.3~SW3.10)
Parameter	OFF	Setting output range with Ethernet communication

* Set SW3.1 before supplying power to the module
* SW3.2 is not used.

● Output Range Setting

When using the DIP Switch for setting (SW3.1 = ON), the output range is set as shown in the table below.

Switch / Output Range	CH1		CH2		CH3		CH4	
	SW3.3	SW3.4	SW3.5	SW3.6	SW3.7	SW3.8	SW3.9	SW3.10
0~5V	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
–10~10V	OFF	ON	OFF	ON	OFF	ON	OFF	ON
0~20mA	ON	OFF	ON	OFF	ON	OFF	ON	OFF
4~20mA	ON	ON	ON	ON	ON	ON	ON	ON

* Output range of 1~5V and 0~10V can only be set by parameters with Ethernet communication.

3. Status LED

● Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

● Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

• Ethernet Connection LED

Name	Color	Status	Description
LINK1,2	Green	OFF	Link not Established
		ON	Link Established

• Ethernet Connection LED

Name	Color	Status	Description
ACT1/ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

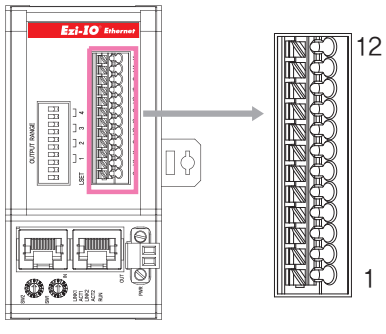
4. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



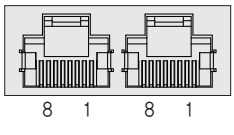
5. Output Signal Connector (CN2)

No.	Name	Function	I/O
1	G	Analog GND	Output
2	V1	Voltage Out 1	Output
3	I1	Current Out 1	Output
4	G	Analog GND	Output
5	V2	Voltage Out 2	Output
6	I2	Current Out 2	Output
7	G	Analog GND	Output
8	V3	Voltage Out 3	Output
9	I3	Current Out 3	Output
10	G	Analog GND	Output
11	V4	Voltage Out 4	Output
12	I4	Current Out 4	Output

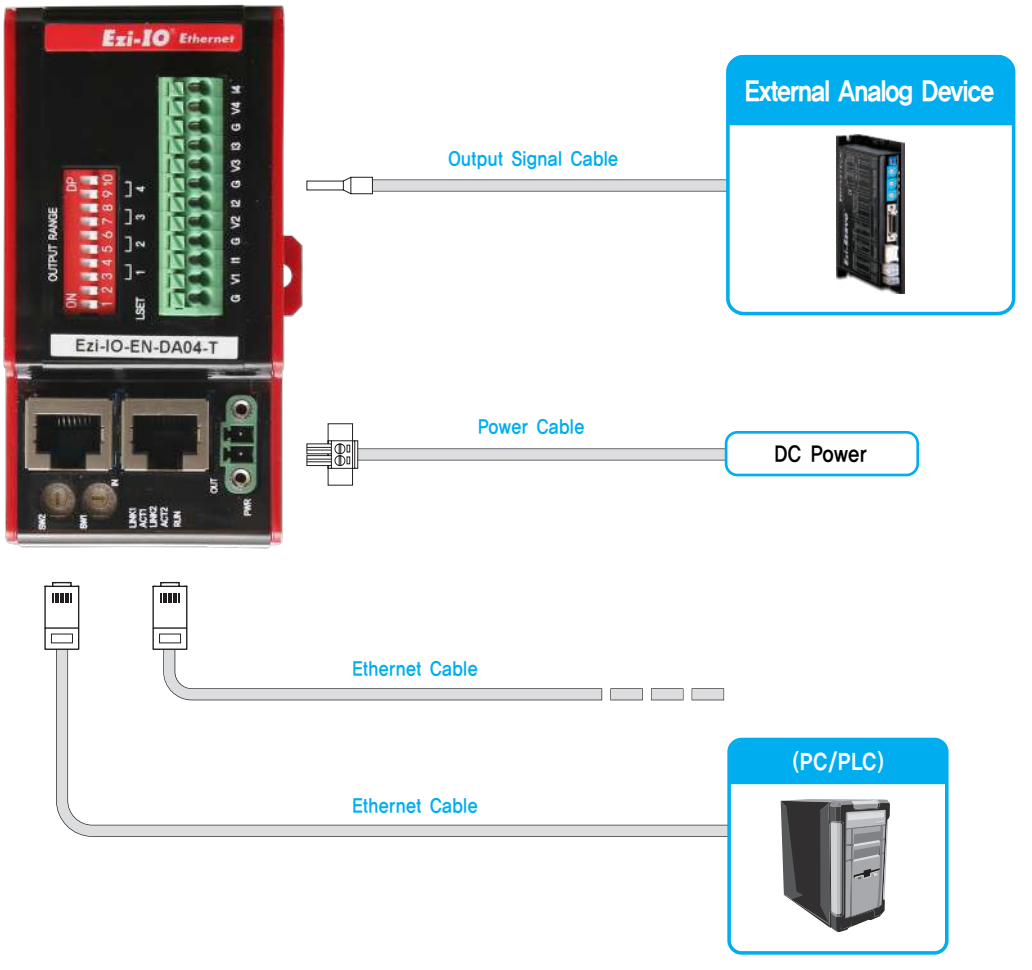


6. Ethernet Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD-
3	RD+
4	----
5	----
6	RD-
7	----
8	----
Connector hood	F.GND



● System Configuration [Ezi-IO-EN-DA04-T]



1. Accessories

• Connectors

Purpose	Item	Part Number	Manufacturer
Power (CN1)	Terminal Block	MC421-38102	DECA

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

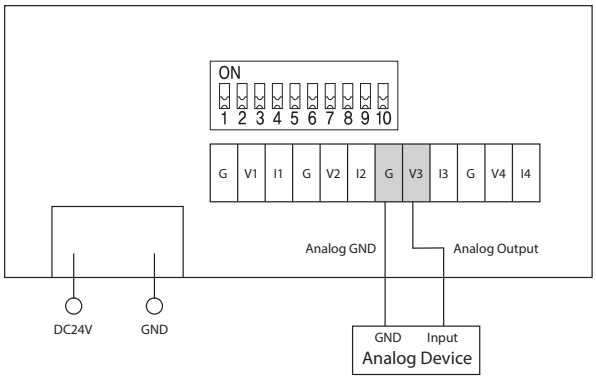
• Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

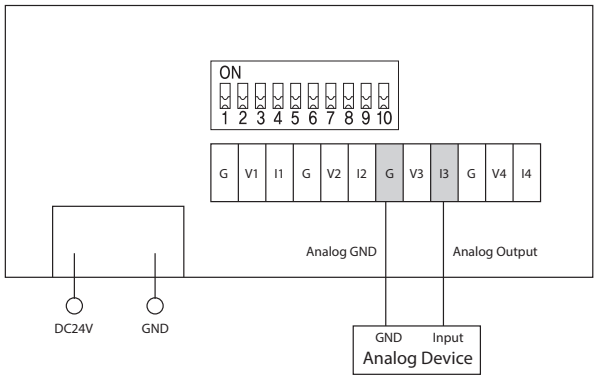
※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram [Ezi-IO-EN-DA04-T]

1 Voltage Output Mode



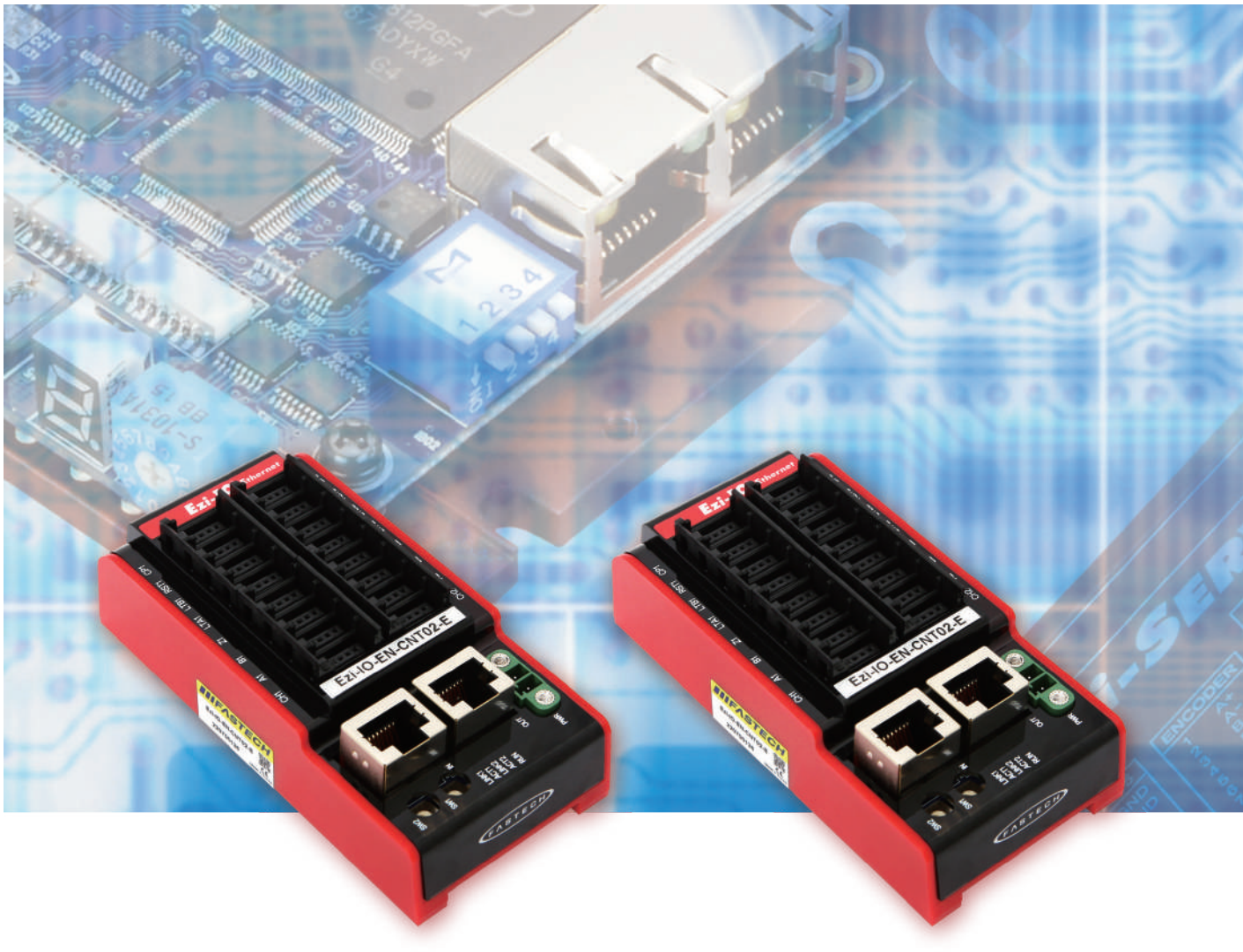
2 Current Output Mode





Ezi-IO® Input/Output Module Ethernet CNT

- Ethernet Based High Speed Counter Module
- Simple and Easy Wiring
- Line Receiver and DC Input Type Provided
- Equipped with Comparison Output Function



FASTECH
Fast, Accurate, Smooth Motion

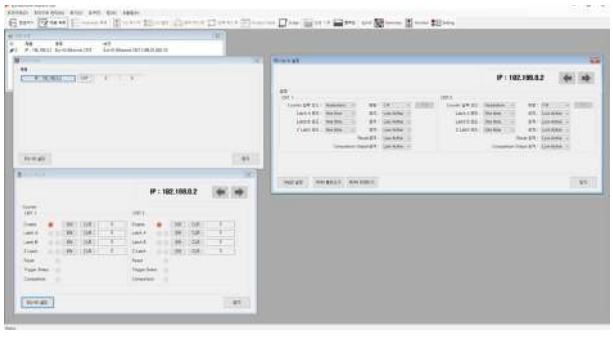
Ezi-IO® Ethernet CNT

Input/Output Module



2 GUI(Graphical User Interface) Program

You can easily set the function and monitor the counter value of Ezi-IO Ethernet CNT with GUI (Graphical User Interface) software provided by FASTECH.



3 Simple and Easy Wiring

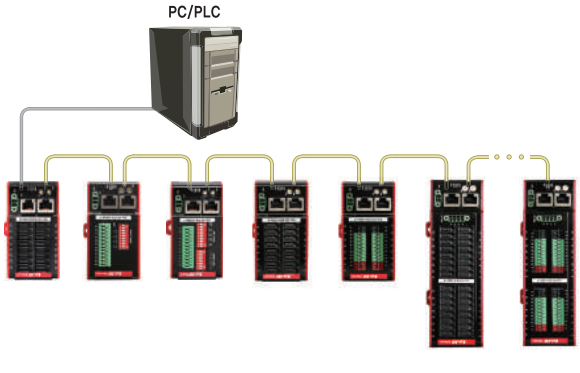
Ezi-IO Ethernet CNT uses 4-pin e-CON connectors. The e-CON connector is widely used in the sensor connector industry, and making the wiring much simpler and easier.

4 Various Input Types Supported

Ezi-IO Ethernet CNT can be connected to various external devices without special input setting because the counter input circuit of Ezi-IO Ethernet CNT supports both open collector output and line drive output.

1 Ethernet Based High Speed Counter Module

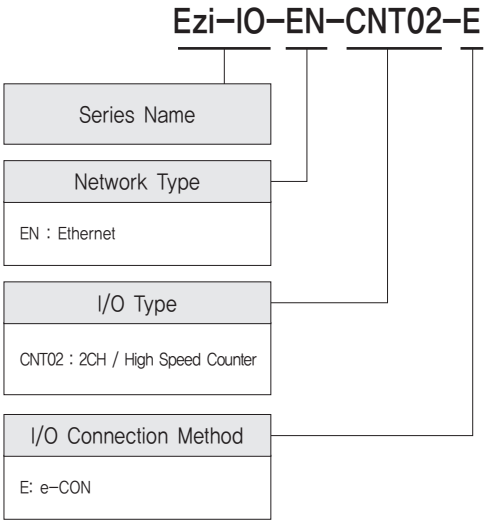
Ezi-IO Ethernet CNT is a high speed counter module with Ethernet. Since it uses the same communication protocol as FASTECH's other Ethernet products, it can be applied very easily to the customers who have experiences using FASTECH's Ethernet products. Motion Library(API) is provided for programming under Windows 7/8/10.



5 Comparison Output Available

Comparison output function outputs ON/OFF signals by comparing the reference value and the current value of the counter. Up to 60 comparison position values can be set for each channel. Comparison output function supports TTL output and open collector output.

Ezi-IO Ethernet CNT Part Numbering



Ezi-IO Ethernet CNT Part Number

Part Number
Ezi-IO-EN-CNT02-E

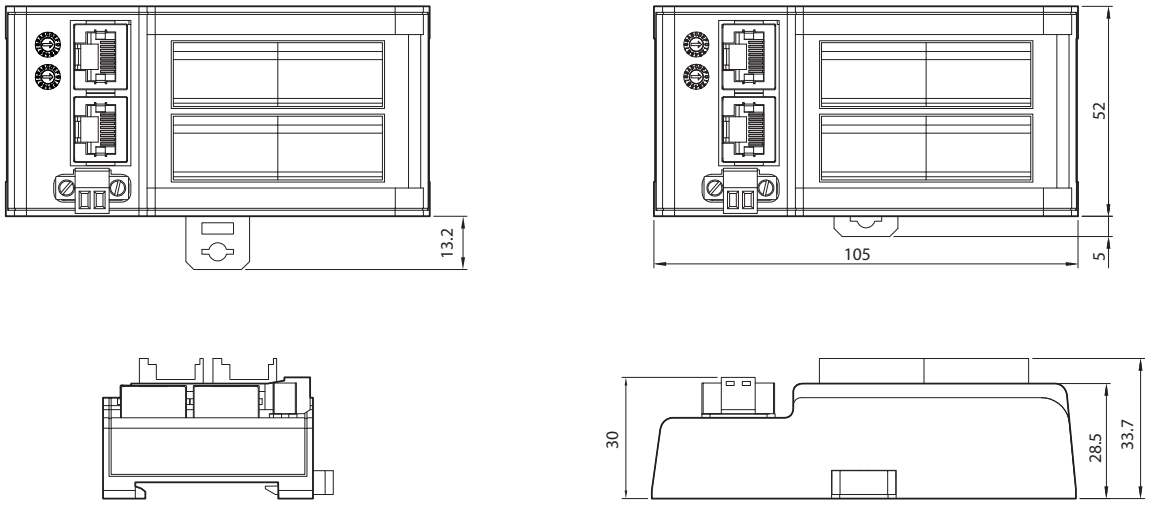
● Specifications of Module

Model			Ezi-IO-EN-CNT02-E	
Input Voltage			DC24V±10%	
Current Consumption			Max. 160mA (DC5V Encoder supply current and Except load current)	
Operating Condition	Ambient Temperature		· In Use : 0~50℃ · In Storage: -20~70℃	
	Humidity		· In Use : 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)	
	Vib. Resist.		0.5g	
Function	Number of Channels		2CH	
	Count Range		-2,147,483,648 ~ 2,147,483,647 (32bit)	
	Counter Function		· Counter Value Latch · Counter Value Reset · Counter Value Preset · Comparison Output	
	Pulse Input	Input Signal	3 dedicated Inputs (A phase, B phase, Z phase) for each channel	
		Input Type	Line Receiver Input (Line Driver Output Support)	DC Input (NPN/PNP Open Collector Output Supported)
		Rated Input Voltage	DC5V	DC24V, DC5V
		Rated Input Current	6.3mA	
		Pulse Input Method	· Phase Differential Pulse Input (Multiplication X2, X4) · 1 Pulse Input (Pulse/Direction Input) · 2 Pulse (CW/CCW Input)	
		Max. Response Frequency	· A Phase, B Phase: – Phase Differential Pulse Input: 1MHz (When multiplied by 4, 4MHz) – 1 Pulse / 2 Pulse Input: 1MHz · Z Phase: 100kHz	
		Isolation Method	Photocoupler Isolation	
	Control Input	Input Signal	3 dedicated Inputs (Latch A, Latch B, Reset) for each channel	
		Input Type	DC Input (NPN/PNP Open Collector Output Supported)	
		Rated Input Voltage	DC24V	DC5V
		Rated Input Current	4.4mA	4.6mA
		Off→On Response Time	3μs or lower	
		On→Off Response Time	3μs or lower	
		Isolation Method	Photocoupler Isolation	
	Comparison Output	Input Signal	1 dedicated Input (Comparison Output) for each channel	
		Input Type	TTL Output	Open Collector Output (Transistor Output)
		Rated Input Voltage	DC5V	DC30V or lower
		Rated Input Current	Max. 20mA	Max. 20mA
		Off→On Response Time	150ns or lower	About 20μs*
		On→Off Response Time	150ns or lower	About 20μs*
		Isolation Method	None	Photocoupler Isolation
LED Display			· Power Status (PWR) · Operation Status (RUN) · Ethernet Status (Link, Activity) · Counter Operation Status (CH1, CH2) · I/O Status · (A1, B1, Z1, LTA1, LTB1, RST1, CP1, A2, B2, Z2, LTA2, LTB2, RST2, CP2)	
Communication Interface			· Ethernet UDP/TCP Communication · Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex	
GUI			User Interface Program within Windows	
Library			Motion Library (API) for windows 7/8/10	

* This is the value when 24V DC power and a load resistance of 2kΩ are connected, and the value may change depending on the circuit configuration.

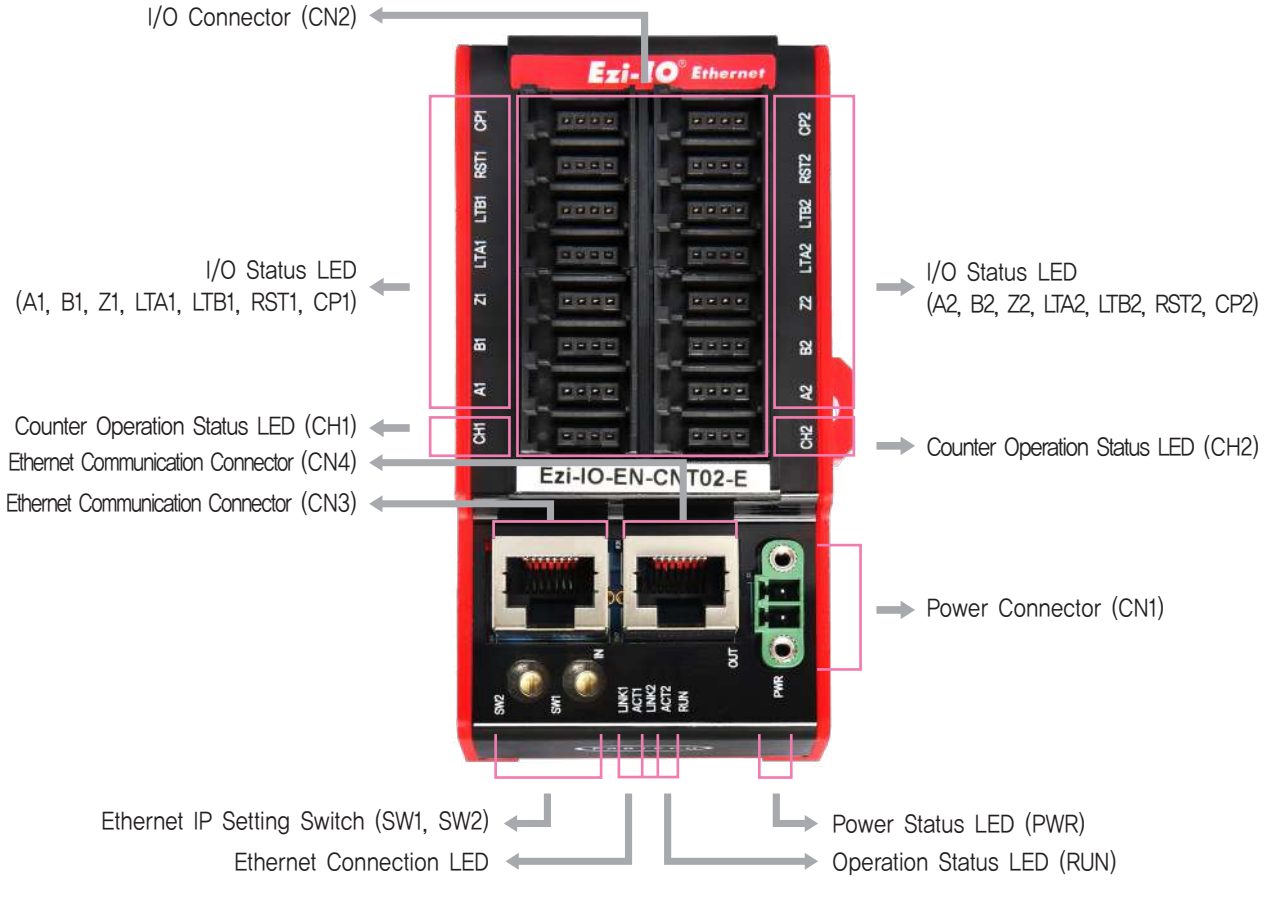
● Dimensions of Module [mm]

◆ Ezi-IO-EN-CNT02-E

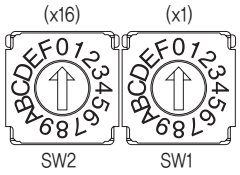


* Install the product on a din rail with a width of 35 mm.

● Settings and Operation [Ezi-IO-EN-CNT02-E]



1. Ethernet IP Setting Switch (SW1, SW2)



These switches set the 4th octet of Ethernet IP. The 1st octet, the 2nd octet, and the 3rd octet are set by GUI. If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value.
(Please refer to the manual for details.)

e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Status LED

• Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

• Operation Status LED

Name	Color	Status	Description
RUN	Green	OFF	Abnormal Operation
		Blinking	Normal Operation

• Ethernet Connection LED

Name	Color	Status	Description
LINK1, LINK2	Green	OFF	Link not Established
		ON	Link Established

• Ethernet Connection LED

Name	Color	Status	Description
ACT1, ACT2	Yellow	OFF	Stand-by
		Flickering	In Operation

• Counter Operation Status LED

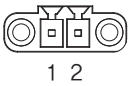
Name	Color	Status	Description
CH1 / CH2	Yellow	OFF	CH1 / CH2 is not ready to count
		ON	CH1 / CH2 is ready to count

• I/O Status LED

Name	Color	Status	Description
A1 / A2	Green	OFF	A signal is OFF
		ON	A signal is ON
B1 / B2	Green	OFF	B signal is OFF
		ON	B signal is ON
Z1 / Z2	Green	OFF	Z signal is OFF
		ON	Z signal is ON
LTA1 / LTA2	Green	OFF	LTA(Latch A) signal is OFF
		ON	LTA(Latch A) signal is ON
LTB1 / LTB2	Green	OFF	LTB(Latch B) signal is OFF
		ON	LTB(Latch B) signal is ON
RST1 / RST2	Green	OFF	RST(Reset) signal is OFF
		ON	RST(Reset) signal is ON
CP1 / CP2	Green	OFF	CP(Comparison Out) signal is OFF
		ON	CP(Comparison Out) signal is ON

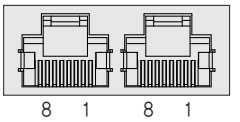
3. Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input

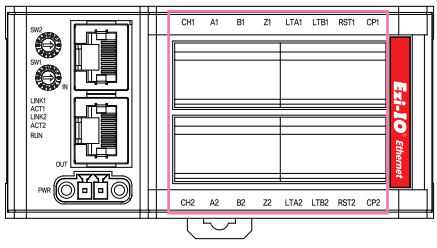


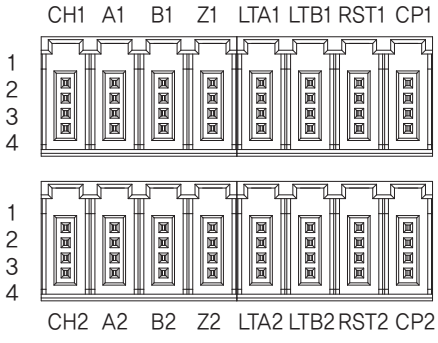
4. Ethernet Communication Connection (CN3, CN4)

No.	Function
1	TD+
2	TD−
3	RD+
4	----
5	----
6	RD−
7	----
8	----
Connector Hood	F.GND



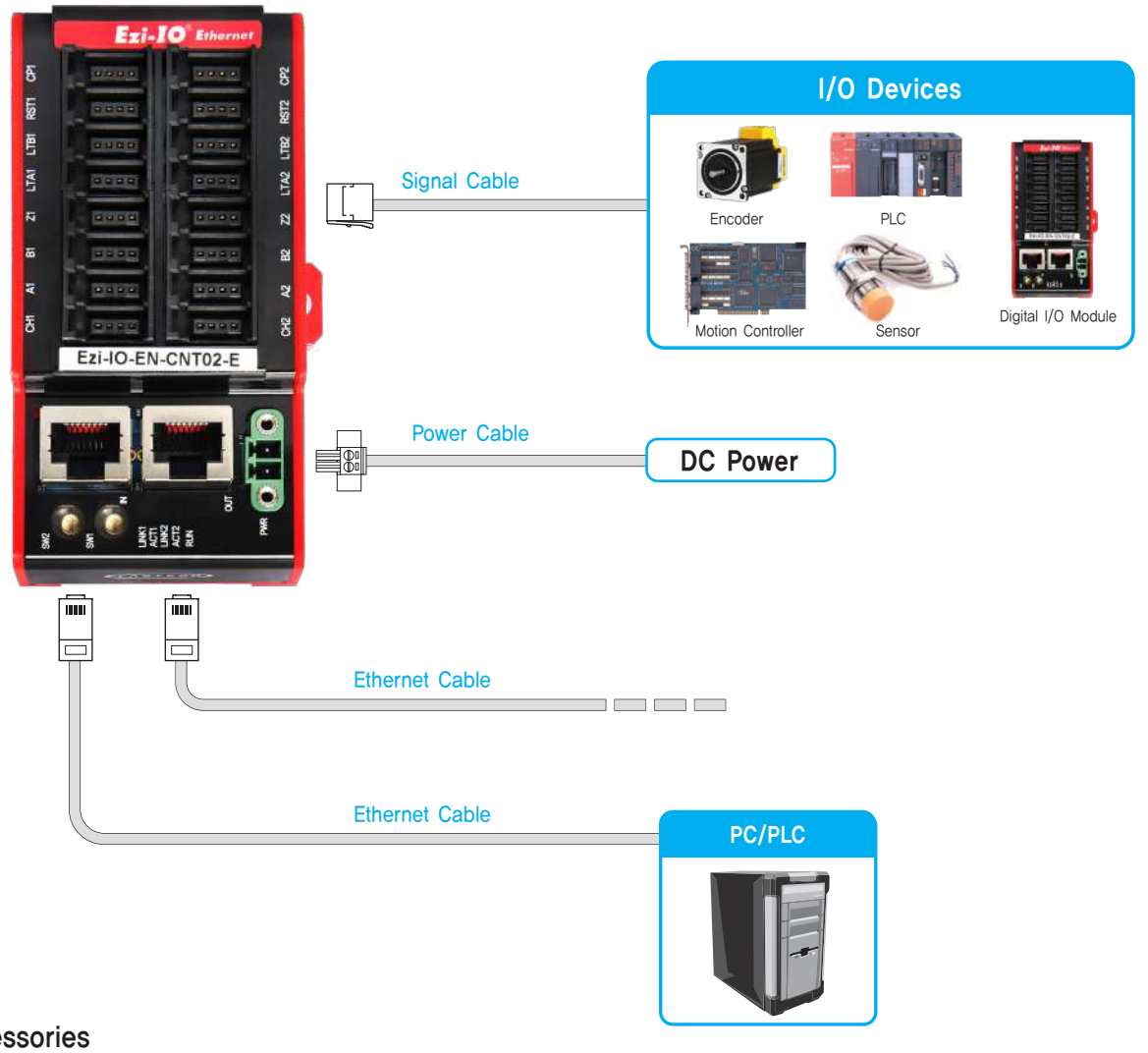
5. I/O Signal Connector (CN2)





CN1					CN2				
Mark	No.	Name	Function	I/O	Mark	No.	Name	Function	I/O
CH1	1	NC	----	----	CH2	1	NC	----	----
	2	5V	DC5V	Output		2	5V	DC5V	Output
	3	GND	GND	Output		3	GND	GND	Output
	4	NC	----	----		4	NC	----	----
A1	1	AV1	A Pulse Input Power (24V)	Input	A2	1	AV2	A Pulse Input Power (24V)	Input
	2	A1+	A+	Input		2	A2+	A+	Input
	3	A1–	A–	Input		3	A2–	A–	Input
	4	AG1	A Pulse Input GND	Input		4	AG2	A Pulse Input GND	Input
B1	1	BV1	B Pulse Input Power (24V)	Input	B2	1	BV2	B Pulse Input Power (24V)	Input
	2	B1+	B+	Input		2	B2+	B+	Input
	3	B1–	B–	Input		3	B2–	B–	Input
	4	BG1	B Pulse Input GND	Input		4	BG2	B Pulse Input GND	Input
Z1	1	ZV1	Z Pulse Input Power (24V)	Input	Z2	1	ZV2	Z Pulse Input Power (24V)	Input
	2	Z1+	Z+	Input		2	Z2+	Z+	Input
	3	Z1–	Z–	Input		3	Z2–	Z–	Input
	4	ZG1	Z Pulse Input GND	Input		4	ZG2	Z Pulse Input GND	Input
LTA1	1	LAV1	Latch A Input Power (24V)	Input	LTA2	1	LAV2	Latch A Input Power (24V)	Input
	2	LTA1+	Latch A(+)	Input		2	LTA2+	Latch A(+)	Input
	3	LTA1–	Latch A(–)	Input		3	LTA2–	Latch A(–)	Input
	4	LAG1	Latch A Input GND	Input		4	LAG2	Latch A Input GND	Input
LTB1	1	LBV1	Latch B Input Power (24V)	Input	LTB2	1	LBV2	Latch B Input Power (24V)	Input
	2	LTB1+	Latch B(+)	Input		2	LTB2+	Latch B(+)	Input
	3	LTB1–	Latch B(–)	Input		3	LTB2–	Latch B(–)	Input
	4	LBG1	Latch B Input GND	Input		4	LBG2	Latch B Input GND	Input
RST1	1	RV1	Reset Input Power (24V)	Input	RST2	1	RV2	Reset Input Power (24V)	Input
	2	RST1+	Reset(+)	Input		2	RST2+	Reset(+)	Input
	3	RST1–	Reset(–)	Input		3	RST2–	Reset(–)	Input
	4	RG1	Reset Input GND	Input		4	RG2	Reset Input GND	Input
CP1	1	UCP1+	User Comparison Output(+)	Output	CP2	1	UCP2+	User Comparison Output(+)	Output
	2	5CP1	5V Comparison Output	Output		2	5CP2	5V Comparison Output	Output
	3	GND	GND	Output		3	GND	GND	Output
	4	UCP1–	User Comparison Output(–)	Output		4	UCP2–	User Comparison Output(–)	Output

System Configuration [Ezi-IO-EN-CNT02-E]



1. Accessories

- Connectors

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA
Signal(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

- Ethernet Cable

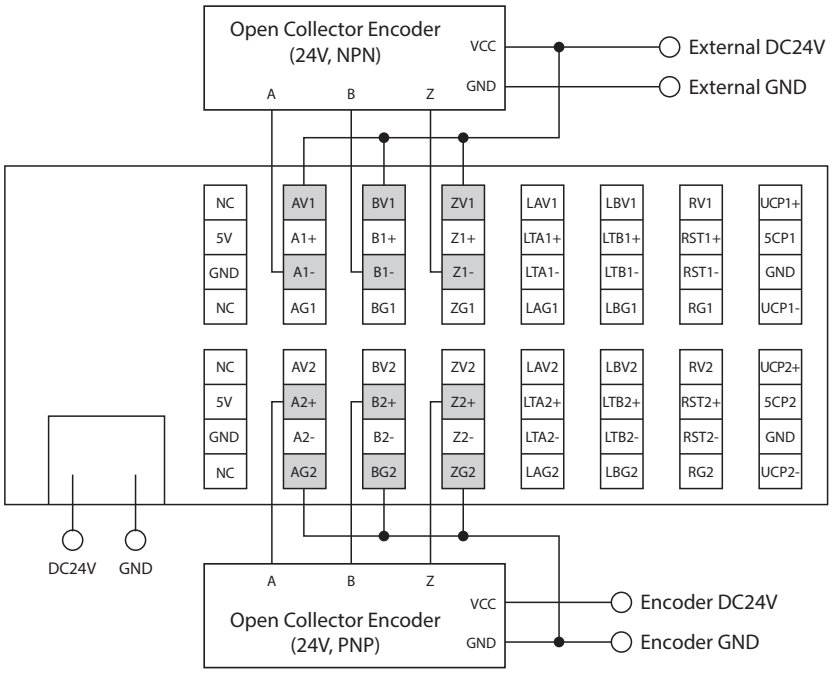
Purpose	Part Number	Length [m]	Remarks
Ethernet Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

● External Wiring Diagram [Ezi-IO-EN-CNT02-E]

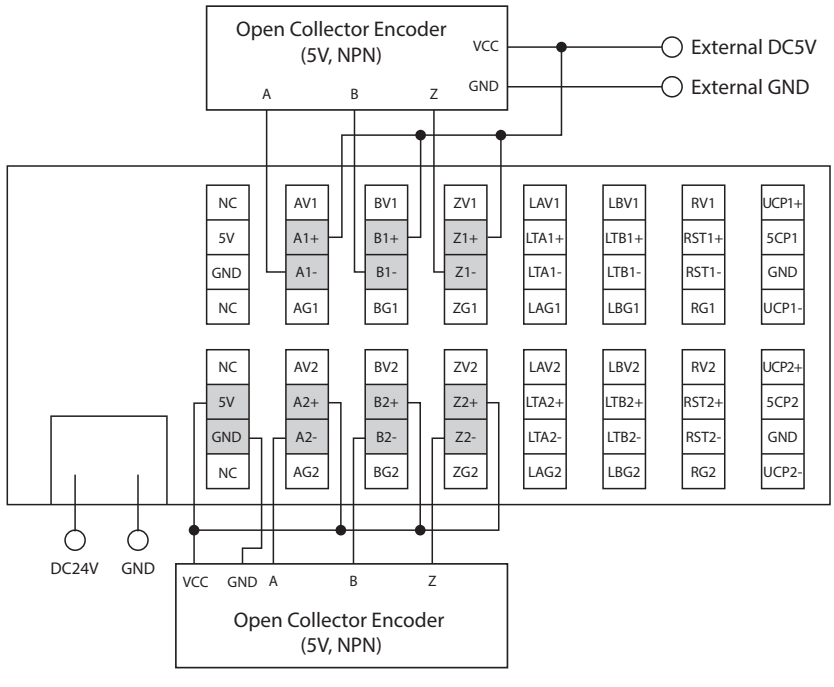
1 Pulse Input Part

1. When connecting with DC24V open collector output type encoder



※ If the module and the encoder use the same power supply, the photocoupler isolation is not possible.

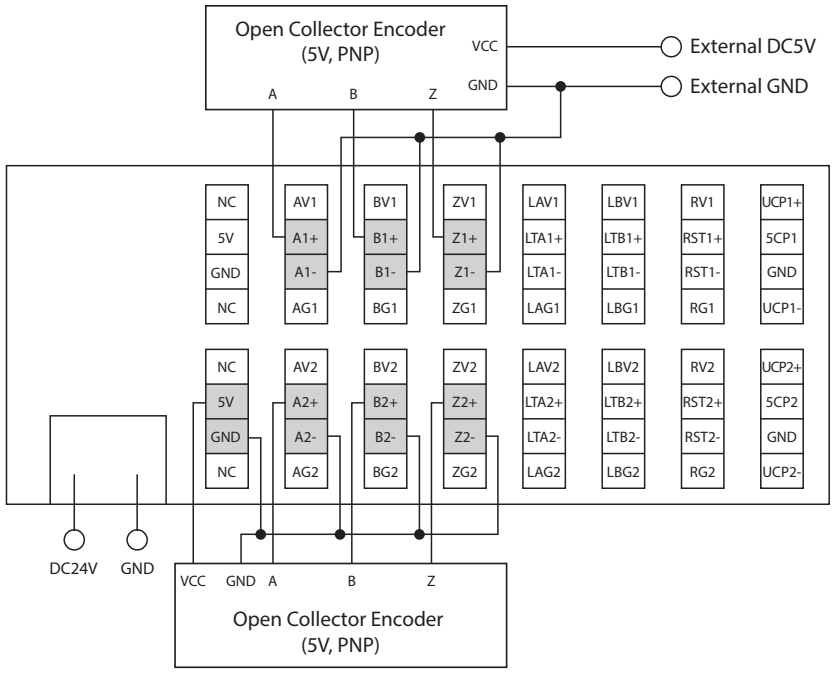
2. When connecting with DC5V NPN open collector output type encoder



※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

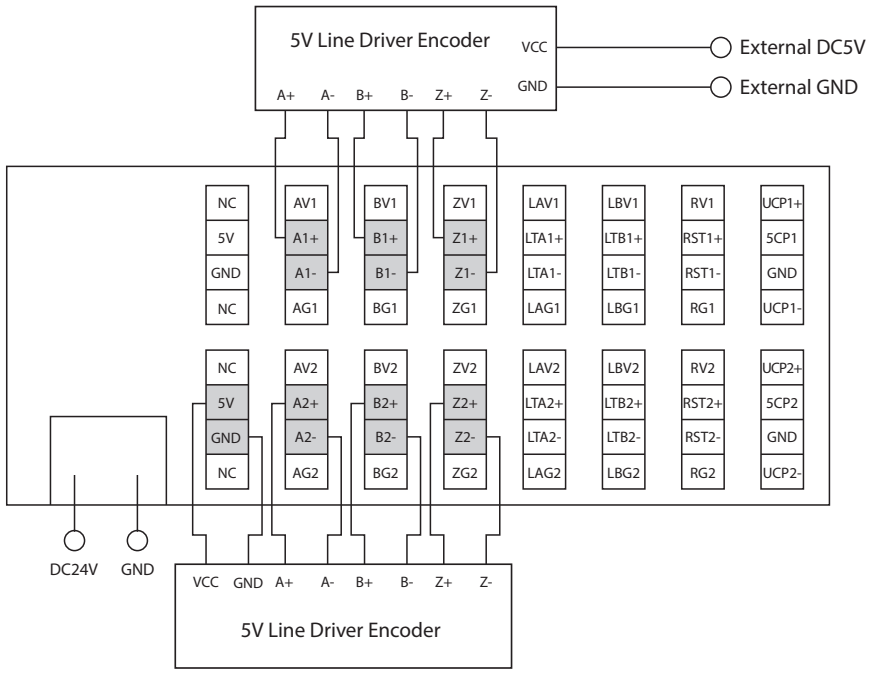
● External Wiring Diagram [Ezi-IO-EN-CNT02-E]

3. When connecting with DC5V PNP open collector output type encoder



※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

4. When connecting with DC5V line driver output type encoder

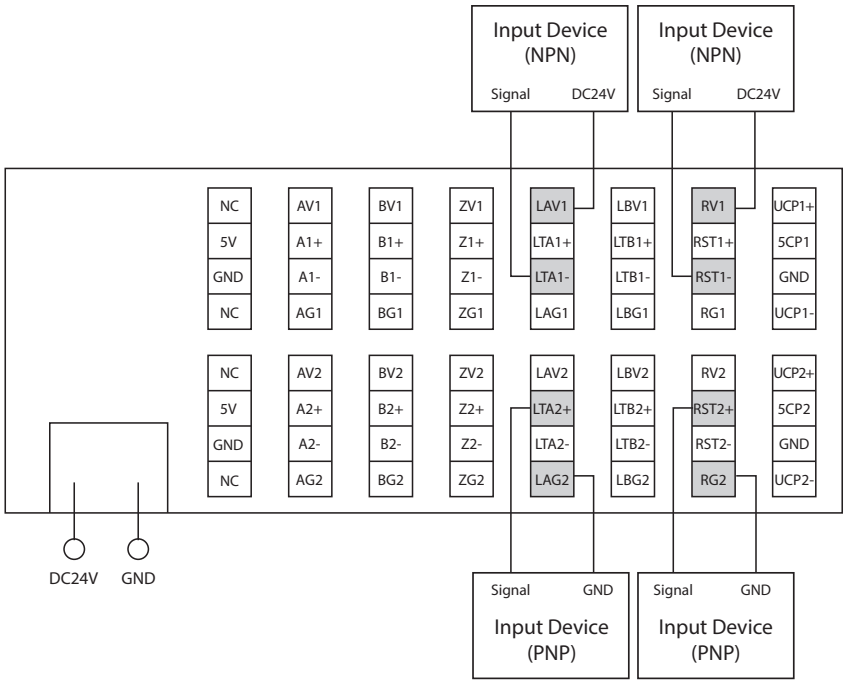


※ If the DC5V output inside the product is used as the encoder power, photocoupler isolation is not possible.

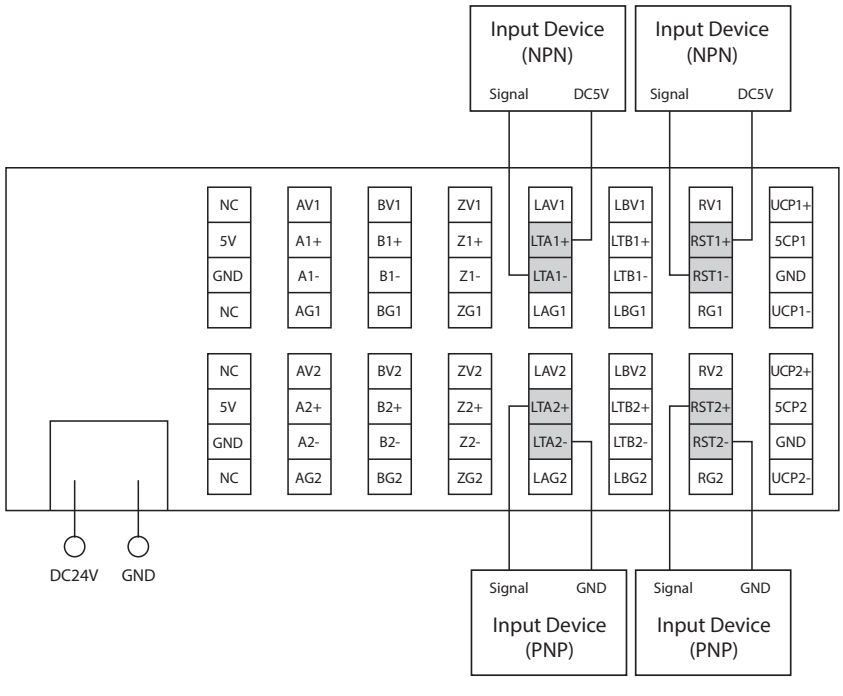
● External Wiring Diagram [Ezi-IO-EN-CNT02-E]

2 Control Input Part

1. When connecting with DC24V open collector output type input device



2. When connecting with DC5V open collector output type input device

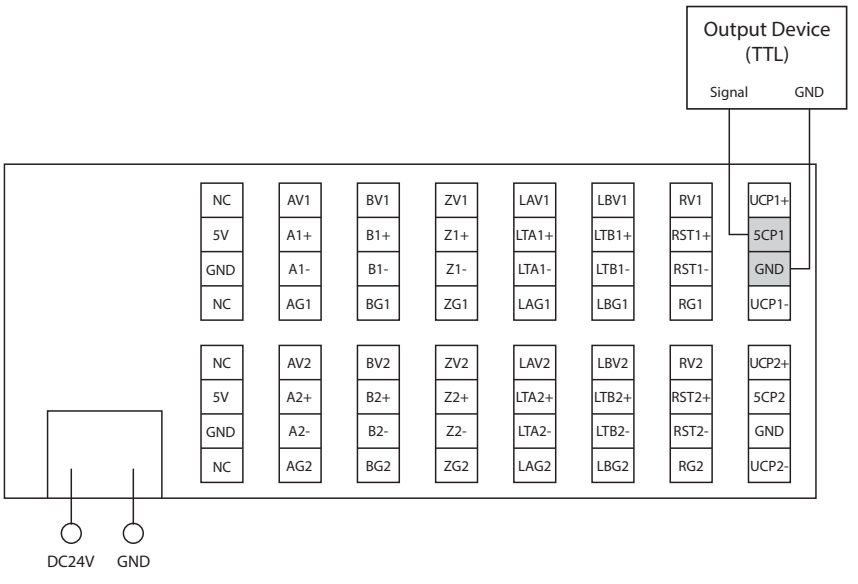


※ e.g.) Input Device : PLC, Motion Controller, Digital Output Module, Limit Sensor, Proximity Sensor, etc.

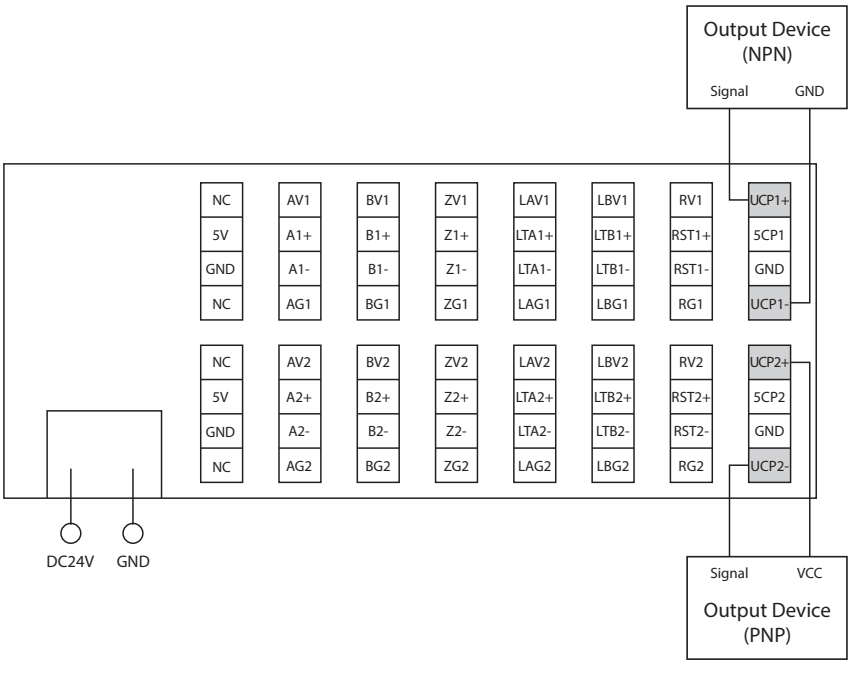
External Wiring Diagram [Ezi-IO-EN-CNT02-E]

3 Comparison Output Part

1. TTL Output



2. Open Collector Output



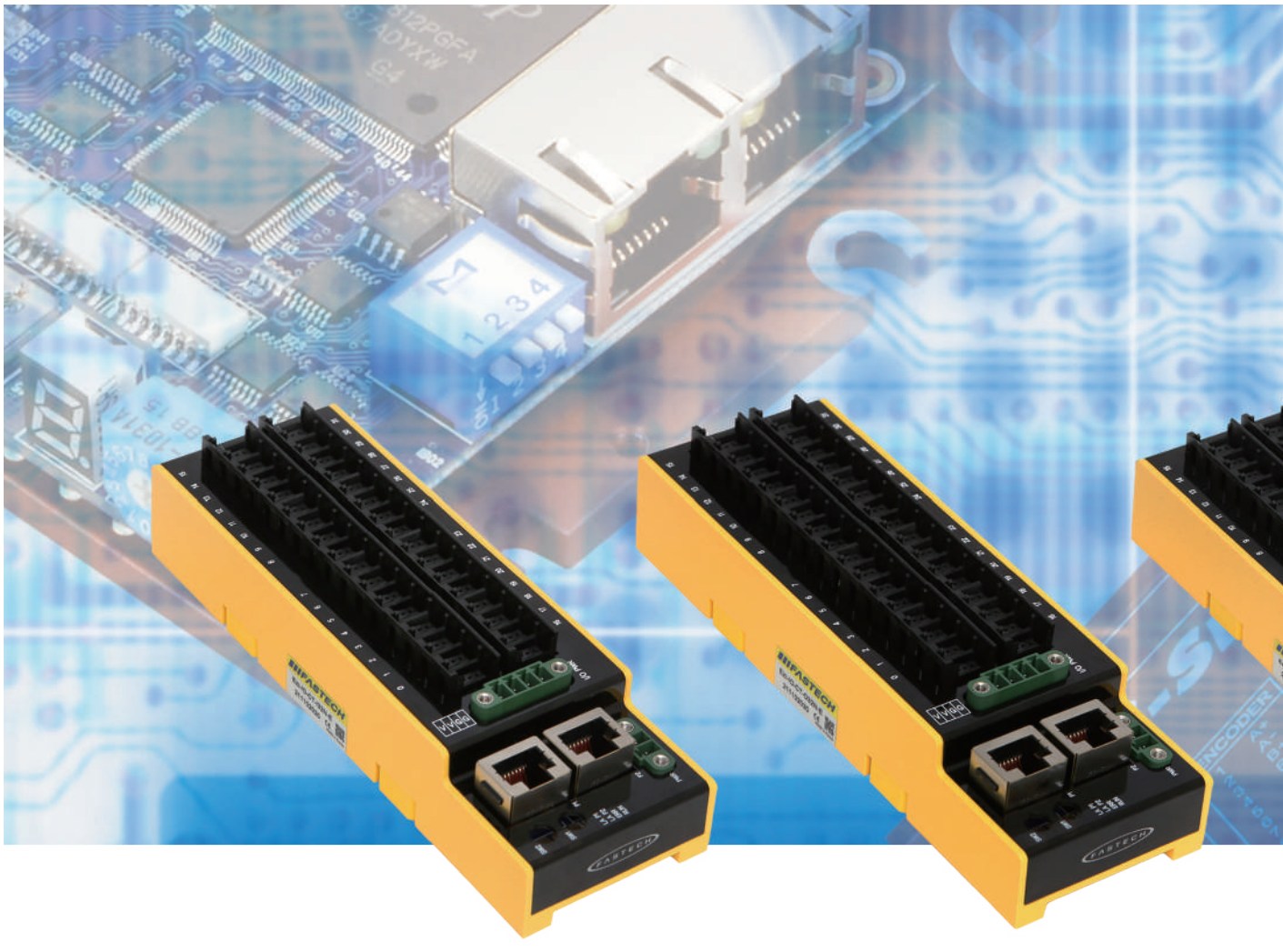
※ e.g. Output Device: PLC, Motion Controller, Digital Input Module, etc.


FASTECH
FASTECH

Ezi-IO® Input/Output Module

CC-Link IE TSN DIO

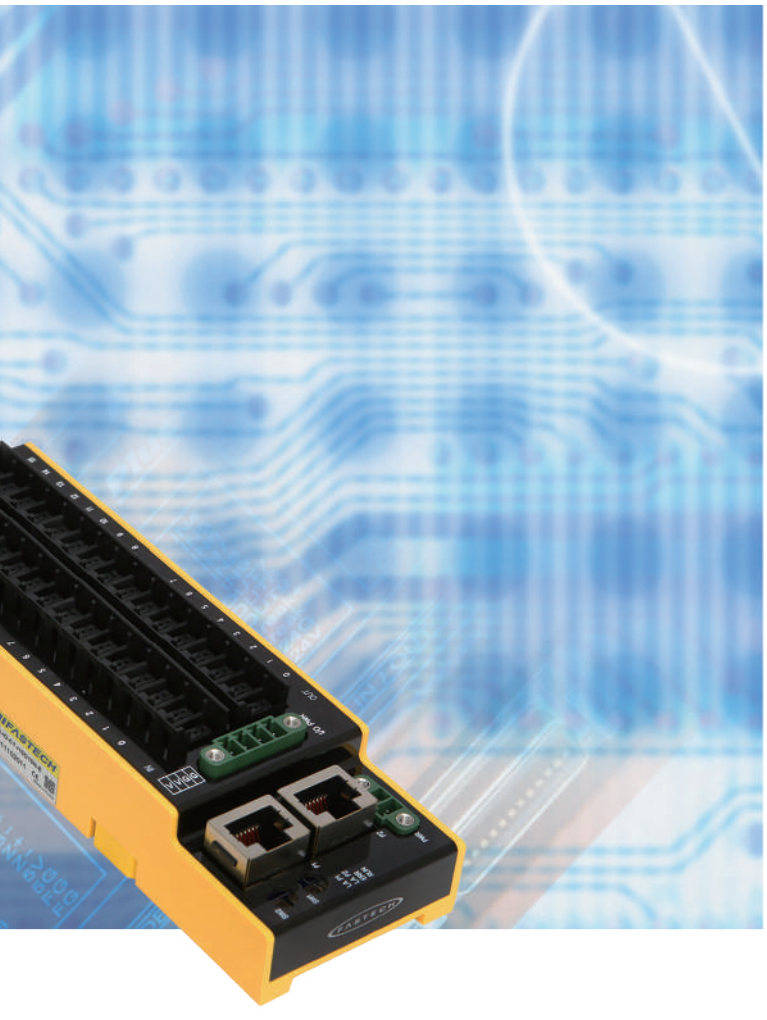
- CC-Link IE TSN Based Digital I/O Module
- CC-Link IE TSN Authentication Class B
- Input Filter Function
- Simple and Easy Wiring



FASTECH
Fast, Accurate, Smooth Motion

Ezi-IO® CC-Link IE TSN DIO

Input/Output Module



2 Simple and Easy Wiring

Ezi-IO CC-Link IE TSN DIO uses e-CON connectors. The e-CON connector is widely used in the sensor connector industry, and making the wiring much simpler and easier.

3 Various I/O Module Supported

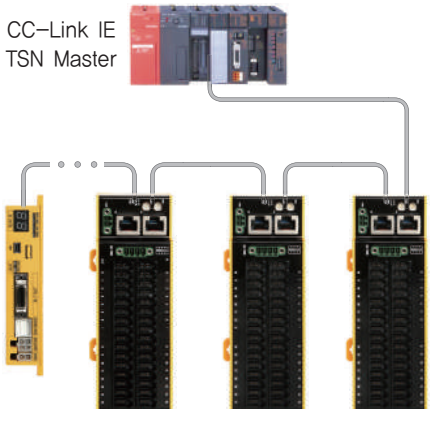
Ezi-IO CC-Link IE TSN DIO provides 32CH DC input module, 32CH transistor output module, and 16CH DC input/8CH transistor output module.

4 Input Filter Function

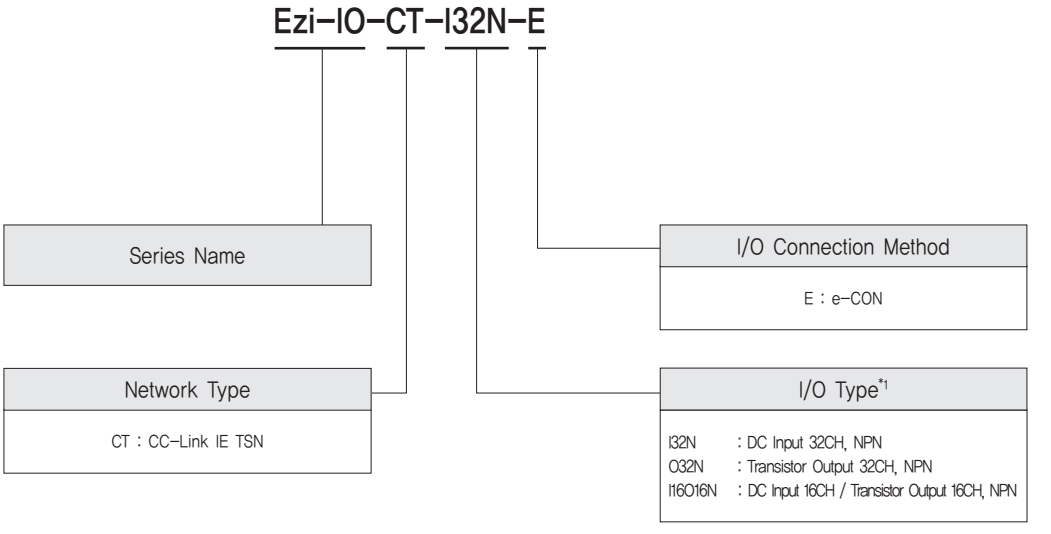
The input module can prevent unstable operation of the input signal due to chattering or noise with the input filter function.

1 CC-Link IE TSN Based Digital I/O Module

Ezi-IO CC-Link IE TSN DIO is Digital I/O Module which supports CC-Link IE TSN, a fieldbus based on high speed Ethernet(1Gbps, Full-Duplex). Ezi-IO CC-Link IE TSN DIO is a remote device station connected to the CC-Link IE TSN system. It supports various topologies to configure the system flexibly.



● Ezi-IO CC-Link IE TSN DIO Part Numbering



*1: NPN and PNP are classified as follows according to I/O type.

DC Input	NPN	Positive Common Type
	PNP	Negative Common Type
Transistor Output	NPN	Sink Type
	PNP	Source Type

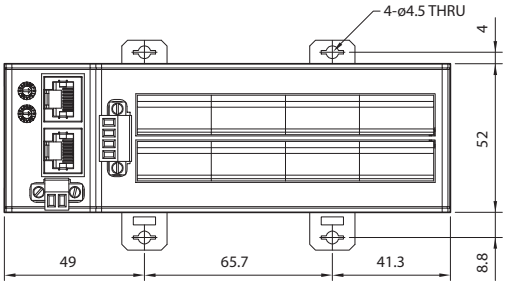
● Ezi-IO CC-Link IE TSN DIO Part Number

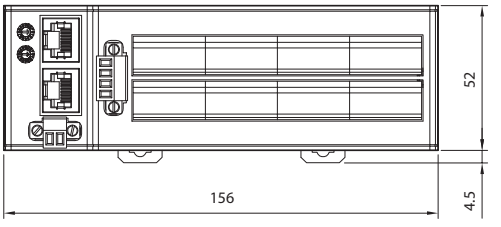
Part Number	Remarks
Ezi-IO-CT-I32N-E	32CH e-CON Connector type
Ezi-IO-CT-O32N-E	
Ezi-IO-CT-I16O16N-E	

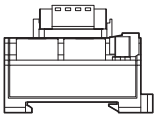
● Specifications of Module

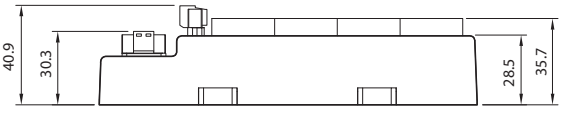
Model			Ezi-IO-CT-I32N-E	Ezi-IO-CT-O32N-E	Ezi-IO-CT-I16O16N-E
Input Voltage			DC24V±10%		
Current Consumption			· Control Power : Max. 150mA · I/O Power: Max. 110mA (Except Load Current)	· Control Power : Max. 180mA · I/O Power: Max. 70mA (Except Load Current)	· Control Power : Max. 170mA · I/O Power: Max. 90mA (Except Load Current)
Operating Condition	Ambient Temperature		· In Use : 0~50℃ · In Storage: -20~70℃		
	Humidity		· In Use : 35~85%RH (Non-Condensing) · In Storage: 10~90%RH (Non-Condensing)		
	Vib. Resist.		0.5g		
Function	Input	Number of Input Channels	32CH	–	16CH
		Rated Input Voltage	DC24V		DC24V
		Rated Input Current	5mA/CH		5mA/CH
		Isolation Method	Photocoupler Isolation		Photocoupler Isolation
		Common Method	16CH/COM		16CH/COM
		Input filter	Max. 40ms (Filter Resolution: 200μs)		Max. 40ms (Filter Resolution: 200μs)
		Off→On Response Time	10μs or lower		10μs or lower
		On→Off Response Time	70μs or lower		70μs or lower
	Output	Number of Output Channels	–	32CH	16CH
		Rated Input Voltage		DC24V	DC24V
		Rated Input Current		0.5A/CH (3A/COM)	0.5A/CH (3A/COM)
		Isolation Method		Photocoupler Isolation	Photocoupler Isolation
		Common Method		16CH/COM	16CH/COM
		Off→On Response Time		4μs or lower	4μs or lower
		On→Off Response Time		190μs or lower	190μs or lower
LED Display			· Control Power Status (PWR) · Module Status (RUN) · Operation Error (ERR) · CC-Link IE TSN Connection (LA P1, LA P2) · I/O Status (0~31)		· Control Power Status (PWR) · Module Status (RUN) · Operation Error (ERR) · CC-Link IE TSN Status (LA P1, LA P2) · I/O Status (0~15/0~15)
CC-Link IE TSN	Station Type		Remote Device Station		
	Authentication Class		Class B		
	Communication Speed		1 Gbps		
	Bus Interface		2×RJ45 Connector		
	Cable		STP (Shielded Twisted Pair) Cable, Category 5e or higher / Max. 100m		

● Dimensions of Module [mm]



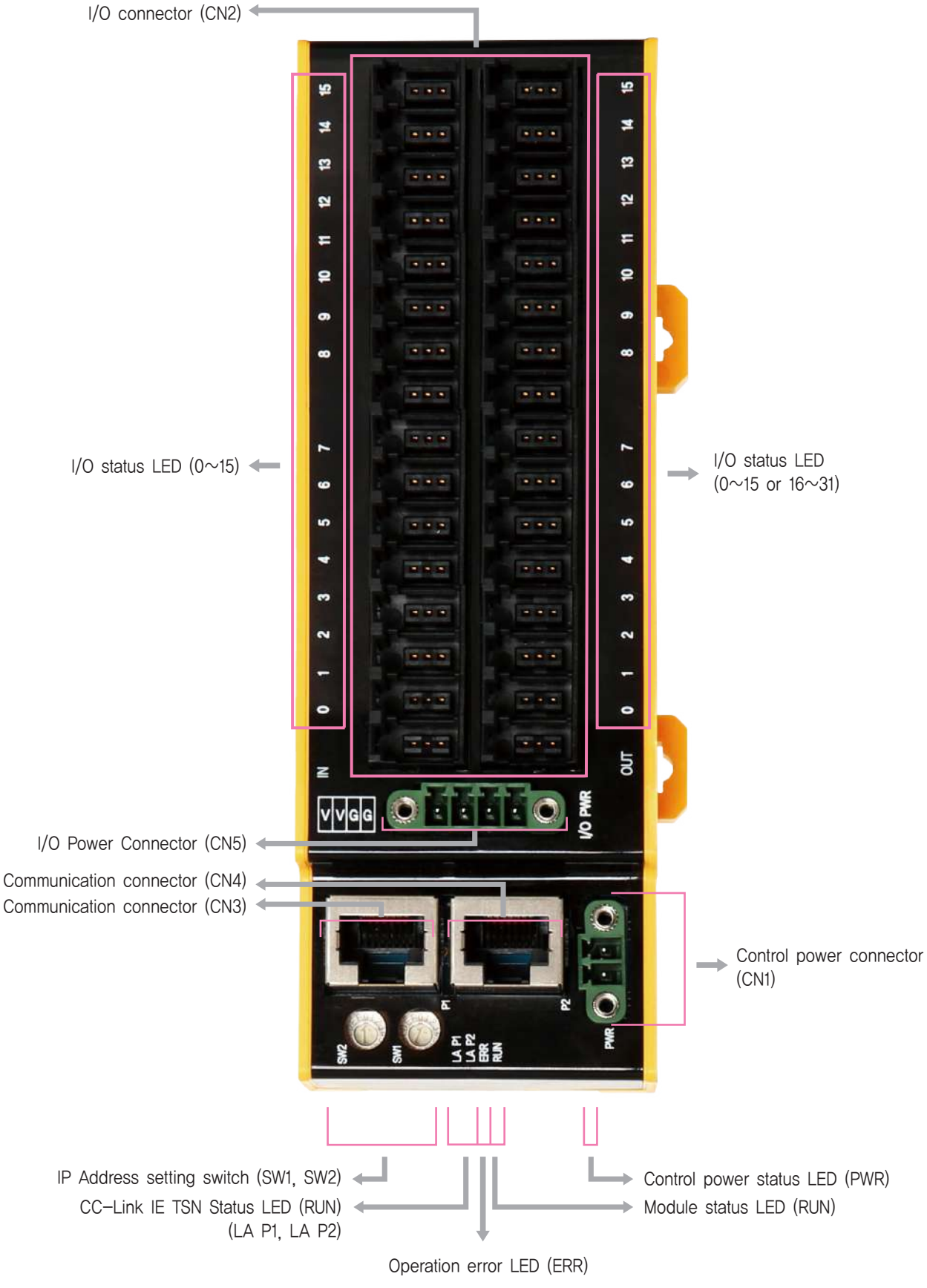






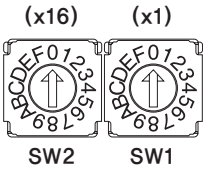
* Install the product on a din rail with a width of 35 mm.

Settings and Operation



1. IP Address Setting Switch (SW1, SW2)

These switches set the 4th octet of IP address for CC-Link IE TSN communication.



e.g.) In case of SW2 : 5 and SW1 :
(5×16) + (7×1) = **87**
IP is to be set as 192.168.3.87

2. Status LED

- Control Power Status LED

Name	Color	Status	Description
PWR	Red	OFF	Power is OFF
		ON	Power is ON

- Module Status LED

Name	Color	Status	Description
RUN	Green	OFF	Initialized or Power is OFF
		ON	Normal Operation

- Operation Error LED

Name	Color	Status	Description
ERR	Red	OFF	No Error or Power is OFF
		ON	Data Link Error

- CC-Link IE TSN Status LED

Name	Color	Status	Description
LA P1 / LA P2	Green	OFF	Link not Established
		ON	Link Established

- I/O Status LED

Name*	Color	Status	Description
0~31 0~15 / 0~15	Green	OFF	Input Module : Input is OFF Output Module : Output is OFF
		ON	Input Module : Input is ON Output Module : Output is ON

* For Ezi-IO-CT-I16O16N-E module, the name is writen as 0~15 / 0~15.

3. Control Power Connector (CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



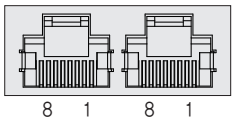
4. I/O Connector (CN2)

No.	Function	I/O
1	EXT_DC24V	Input
2	SIGNAL	I/O
3	EXT_GND	Input



5. Communication Connector (CN3, CN4)

No.	Function
1	TD+
2	TD−
3	RD+
4	-----
5	-----
6	RD−
7	-----
8	-----
Connector Hood	F.GND

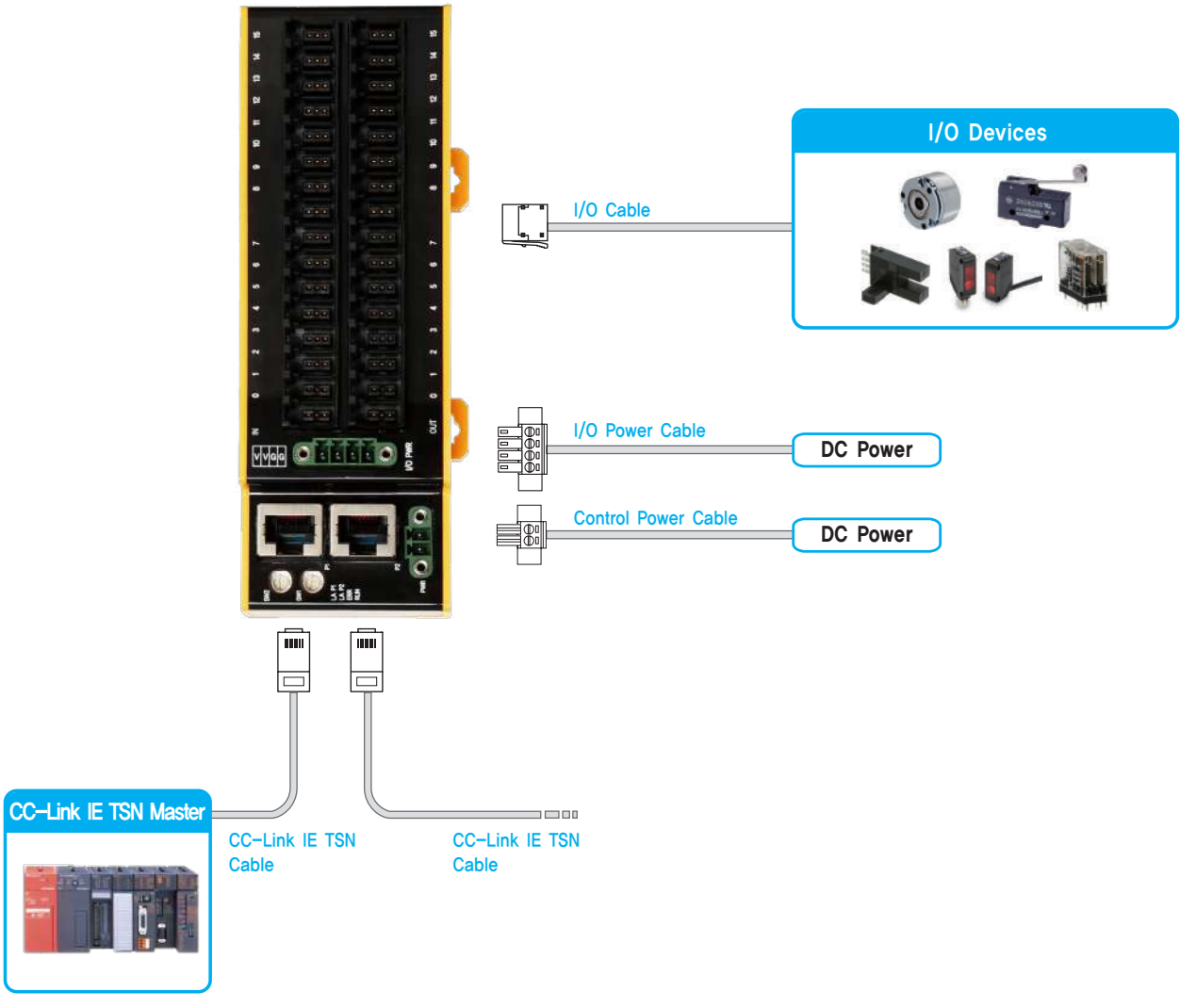


6. I/O Power Connector (CN5)

No.	Function	I/O
1	EXT_DC24V	Input
2	EXT_DC24V	Input
3	EXT_GND	Input
4	EXT_GND	Input



System Configuration



1. Accessories

- Connectors

Purpose	Item	Part Number	Manufacturer
Control Power (CN1)	Terminal Block	MC421-38102	DECA
I/O Power (CN5)	Terminal Block	MC421-38104	DECA
Signal (CN2)	e-CON Plug Connector	CNE-P03-YW	Autonics

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

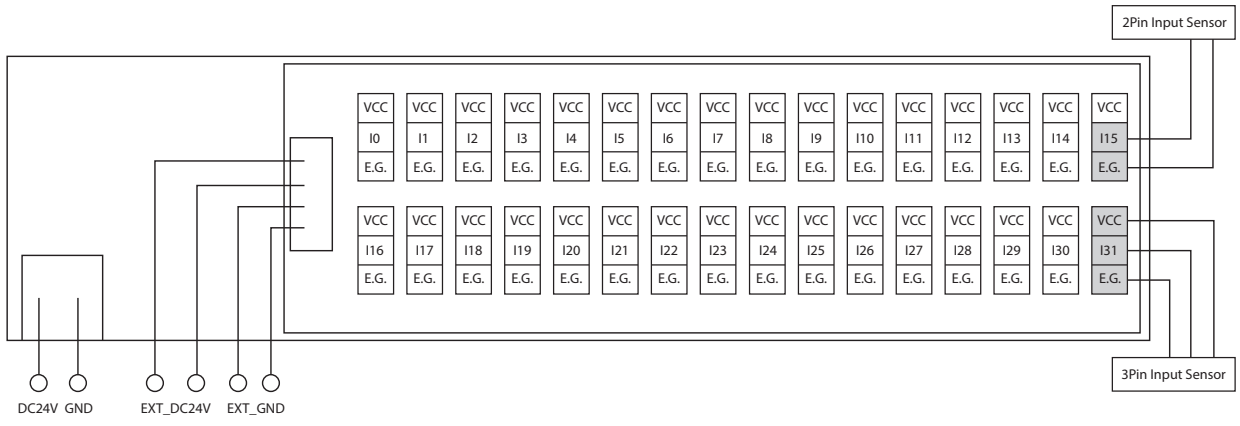
- CC-Link IE TSN Cable

Purpose	Part Number	Length [m]	Remarks
CC-Link IE TSN Connection (CN3, CN4)	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

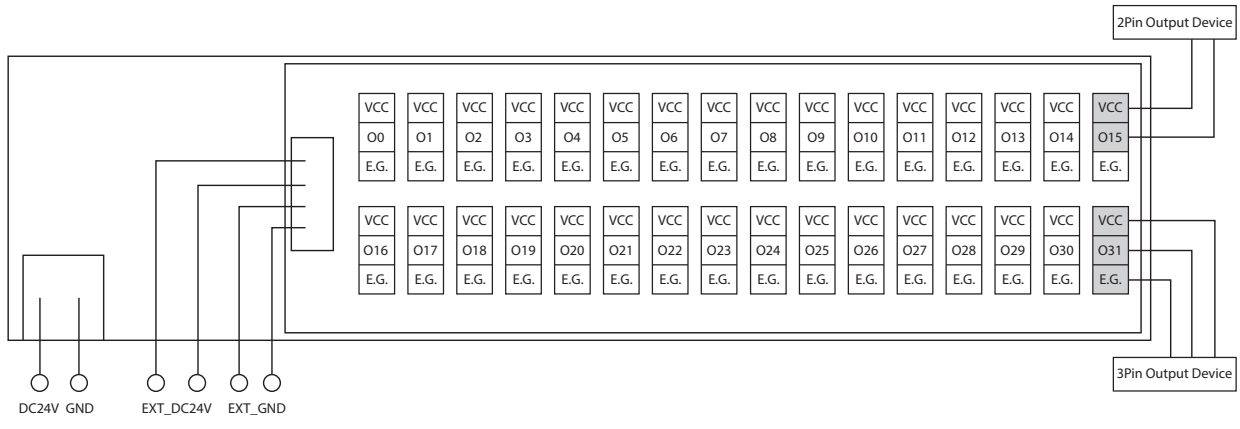
※ If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram

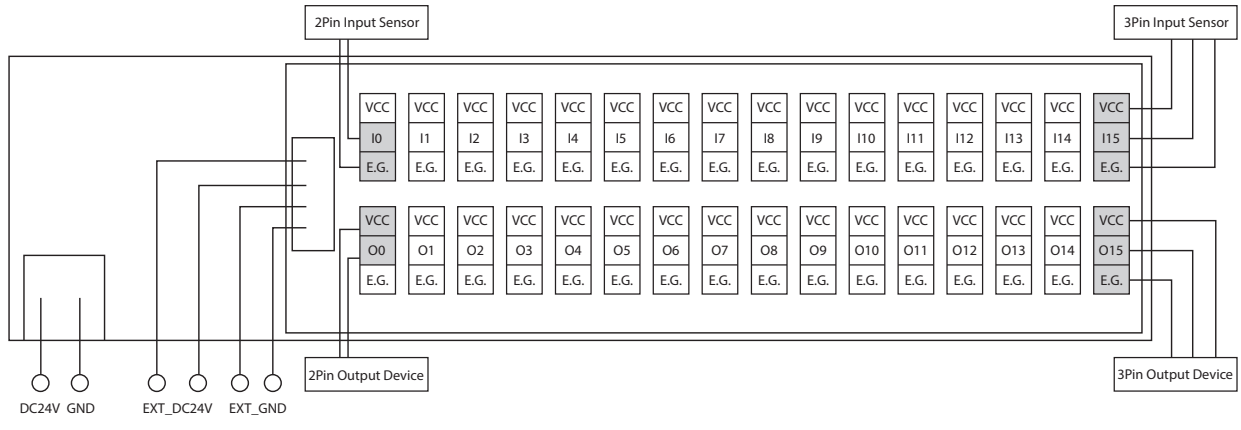
1 Ezi-IO-CT-I32N-E (NPN)



2 Ezi-IO-CT-O32N-E (NPN)



3 Ezi-IO-CT-I16O16N-E (NPN)



※ VCC and E.G are supplied from I/O Power Connector(CN5).
※ e.g.) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

FASTECH_

Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK® Plus-E

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®


MITSUBISHI
YASKAWA
SERVOPACK
Panasonic
SANMOTION
SANYO DENKI
CHARGE
POWER
Ethernet-IN
Ethernet-OUT

Ezi-MOTIONLINK® Plus-E

Network based Motion Controller Plug-in to Servo Drives

- Ethernet Type Motion Controller
- Compatible with Various Servo Drives
- Various Motion Functions
- Reduced Wiring



FASTECH

Fast, Accurate, Smooth Motion

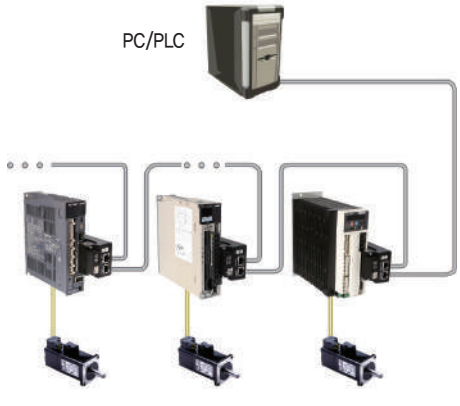
Ezi-MotionLink® Plus-E

Network based Motion Controller Plug-in to Servo Drives



1 Network Based Motion Controller

A maximum of 254 axis can be operated from a PC through Ethernet communications. And daisy-chain connection is available thru internally equipped Ethernet HUB. All of the Motion conditions are set through the network and saved in Flash ROM as a parameter. Motion Library(API) is provided for programming under Windows 7/8/10.



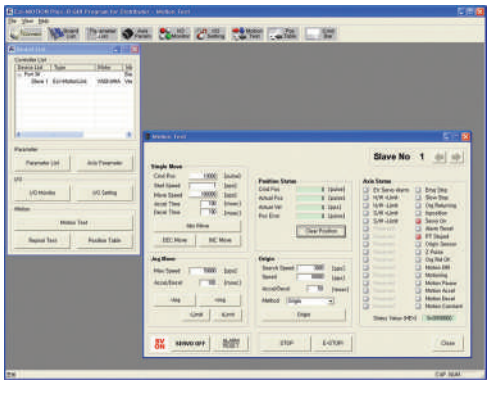
2 Flexible System Construction

Ezi-MOTIONLINK Plus-E can be directly connected to the servo drive through the attached connector, so you can easily install the product without additional wiring. In addition, since it is compatible with servo drives of various companies, the system can be built flexibly.



3 Various Motion Function

Ezi-MOTIONLINK Plus-E has various functions required for motion control system, and you can set up motions simply and conveniently by using the provided GUI (Graphical User Interface) software.



Ezi-MOTIONLINK Plus-E Part Numbering

Ez-ML-PE-YAS

Series Name

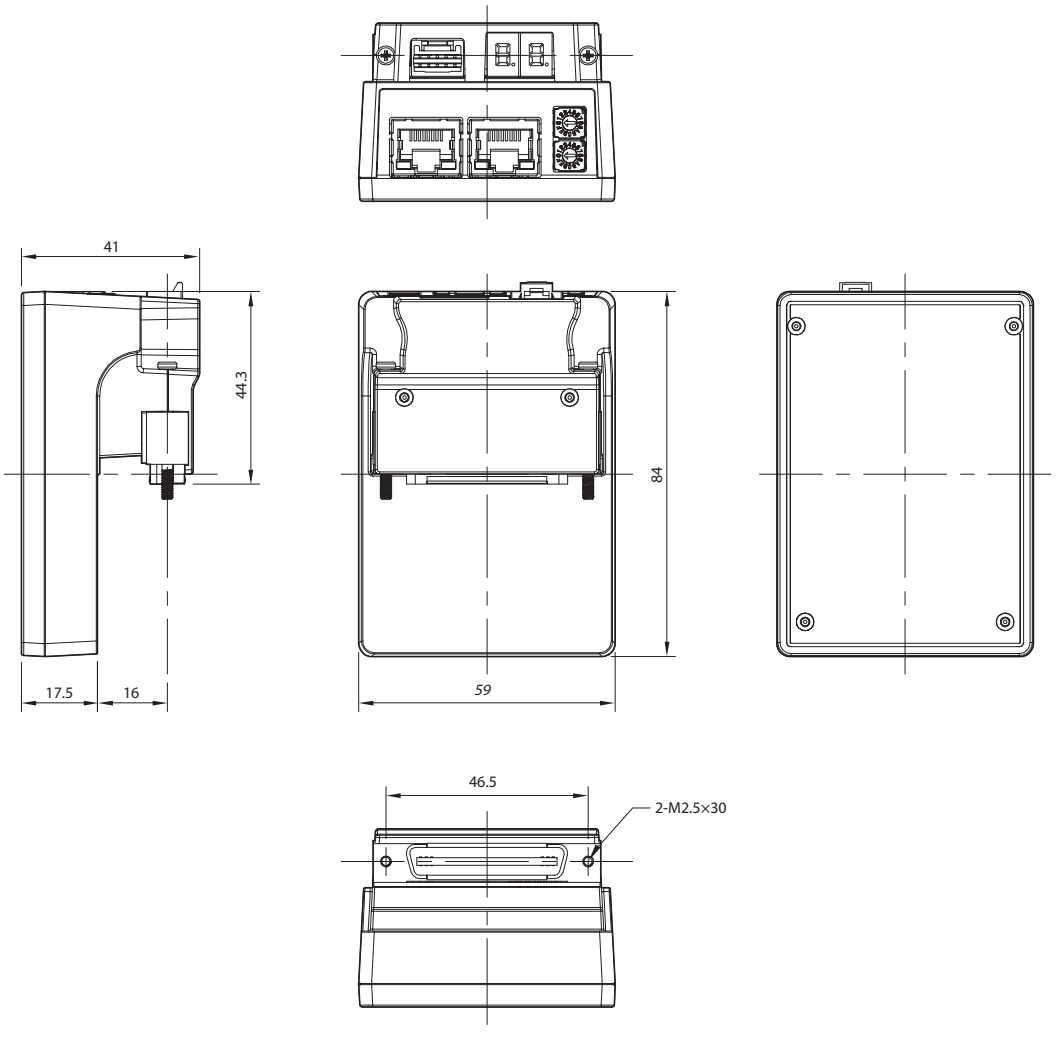
Type Name
PE : Plus Ethernet

Drive Series	
YAS	: Yaskawa Sigma 2, 3, 5, 7
MIT	: Mitsubishi MR-J3, J4, J5
PAN	: Panasonic Minas A, A3, A4, A5, A6
SAN	: Sanyo Denki
RSA	: RS Automation CSD7
LSS	: LS Mecapion L7S
DEL	: DELTA ASD-A2
DEL A3	: DELTA ASD-A3

Part Number

Part Number
Ez-ML-PE-YAS
Ez-ML-PE-MIT
Ez-ML-PE-PAN
Ez-ML-PE-SAN
Ez-ML-PE-RSA
Ez-ML-PE-LSS
Ez-ML-PE-DEL
Ez-ML-PE-DEL A3

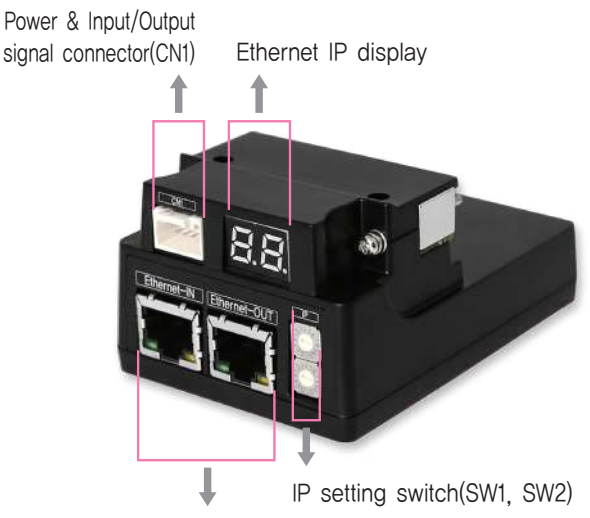
Dimensions of Controller [mm]

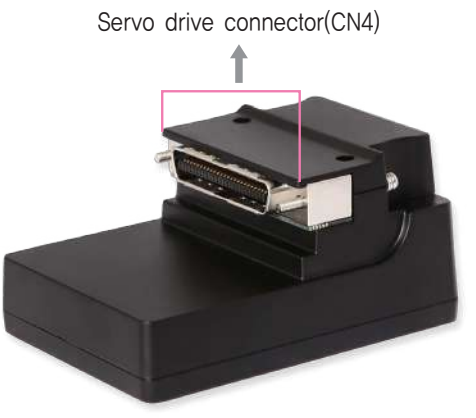


● Specifications of Controller

Input Voltage		DC24V±10%
Multi Axis Drive		Maximum 254 axis operating (Selectable IP: 1~254)
Current Consumption		Max. 500mA
Operating Condition	Ambient Temperature	· In Use: 0~55℃ · In Storage: -20~70℃
	Humidity	· In Use: 35~85% RH (Non-Condensing) · In Storage: 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	LED Display	IP address, Alarm status
	Rotational Direction	CW/CCW (Set by parameter)
	Data Range	-134,217,728 ~ +134,217,727 [pulse] (28bit)
	ACC/DEC Process	Symmetric / Asymmetric trapezoidal acceleration & deceleration
	Command Pulse Output Method	2 pulse mode (CW/CCW) or 1 pulse mode (Pulse/Dir) (Set by parameter)
	Max. Output Frequency	5MHz
	Encoder Max. Input Frequency	4MHz
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 1 programmable input (Photocoupler Input)
	Output Signals	1 programmable output (Photocoupler Output), 1 Brake output
Communication Interface		· Ethernet standard: 10BASE-T, 100BASE-TX · Full-Duplex · Dual port Ethernet switch embedded
Position Control		· Incremental mode / Absolute mode Data Range: -134,217,728 to +134,217,727 [pulse] · Operating speed: Max. 3,000 r/min
Return to Origin		Origin Sensor, Z phase, ±Limit sensor
GUI		User Interface Program within Windows
Library		Motion Library (API) for windows 7/8/10

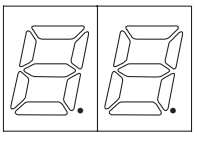
Settings and Operation

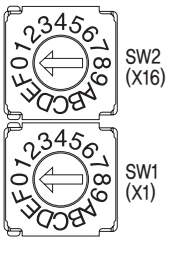




1. Ethernet IP Display and Setting Switch(SW1, SW2)

These switches set the 4th octet of Ethernet IP, and the value is shown in 7-segment LED display(Default setting is "192.168.0.xxx-" and xxx is set by switches). If the switches are set to 255(FF), DHCP function is activated, and IP is automatically set, ignoring the set value. (Please refer to the manual for details.)

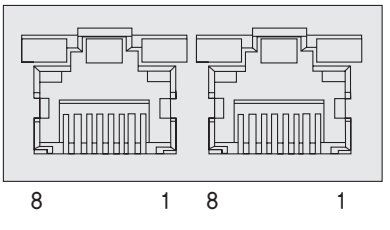




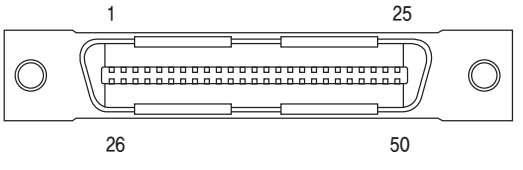
e.g.,) In case of SW2 : 5 and SW1 : 7
(5×16) + (7×1)= 87
IP is to be set as 192.168.0.87

2. Ethernet Communication Connector(CN2, CN3)

No.	Function	No.	Function
1	TD+	6	RD-
2	TD-	7	-----
3	RD+	8	-----
4	-----	Connector hood	F.GND
5	-----		



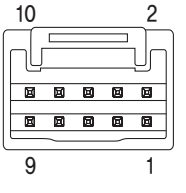
3. Servo Drive Connector(CN4)



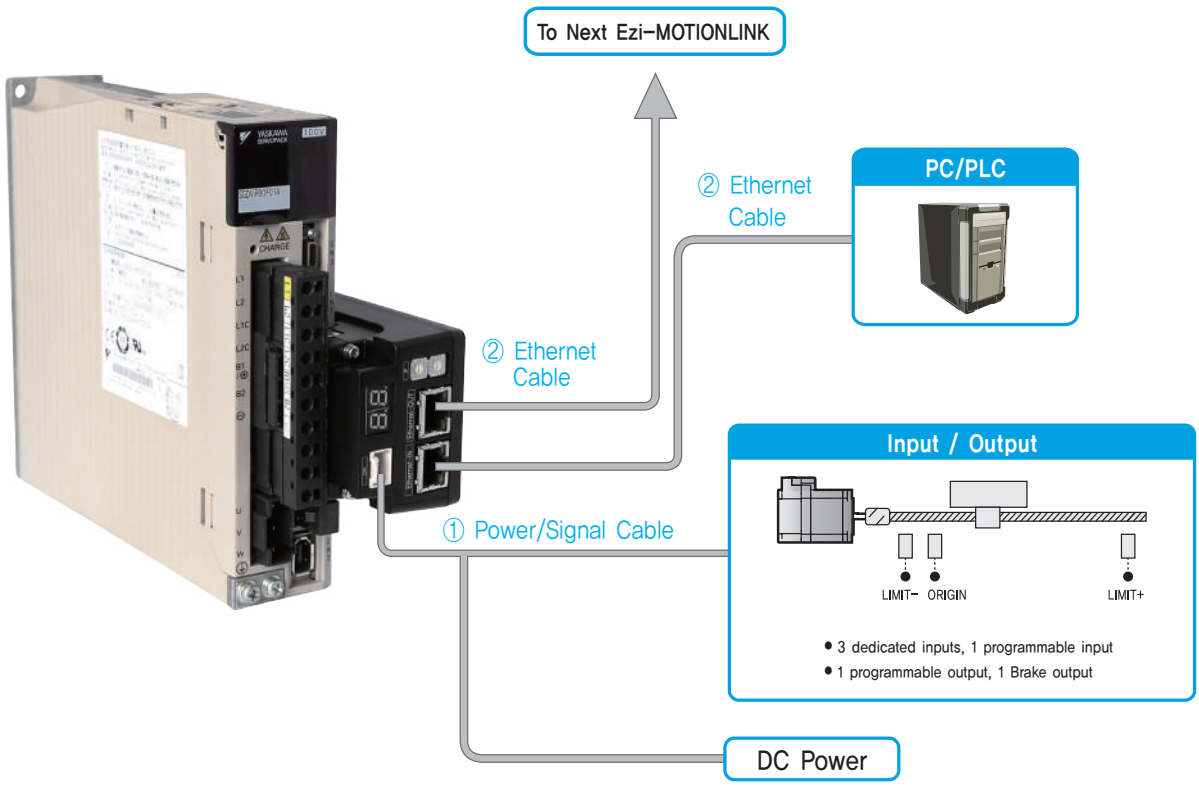
The pin map of servo drive connector differs depending on the servo drive type. (Please refer to the manual for details.)

4. Power & Input/Output Signal Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input
3	EXT_DC24V	Output
4	EXT_GND	Output
5	LIMIT+	Input
6	LIMIT-	Input
7	ORIGIN	Input
8	Digital In1	Input
9	BRAKE	Output
10	Digital Out1	Output



System Configuration



1. Accessories

Connectors

These are connector specifications for controller cabling.

Purpose	Item	Part Number	Manufacturer
Power/Signal (CN1)	Housing	501646-1000	MOLEX
	Terminal	501648-1000 (AWG 26~28)	

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications.

2. Options

① Power/Signal Cable

These are the cables to connect Ezi-MOTIONLINK Plus-E, power, and other input/output devices.

Purpose	Part Number	Length [m]	Cable Type	Remarks
Controller – Power & I/O Device Connection	CSPE-S-001F	1	Normal Cable	Maximum Length: 20m
	CSPE-S-002F	2		
	CSPE-S-003F	3		
	CSPE-S-005F	5		
	CSPE-S-001M	1	Robot Cable	
	CSPE-S-002M	2		
	CSPE-S-003M	3		
	CSPE-S-005M	5		

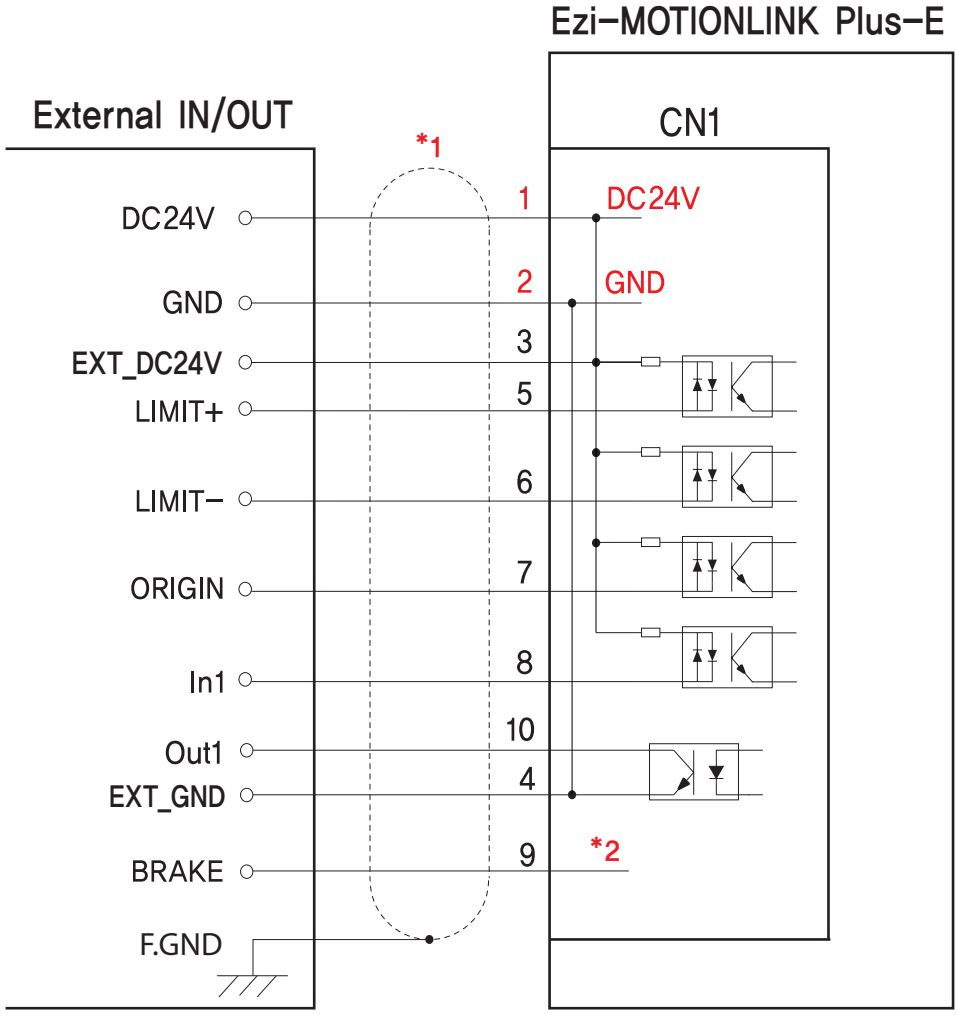
* If you need cables with length(in units of 1m) not listed on the table, please contact FASTECH for more information.

② Ethernet Cable

Purpose	Part Number	Length [m]	Remarks
Ethernet Connection	CGNR-EC-001F	1	· STP(Shielded Twisted Pair) Cable · Category 5e or higher · Maximum Length: 100m · Normal Cable
	CGNR-EC-002F	2	
	CGNR-EC-003F	3	
	CGNR-EC-005F	5	

* If you need cables with length(in units of 1m) not listed on the table or robot cables, please contact FASTECH for more information.

External Wiring Diagram



* 1) Shield Cable

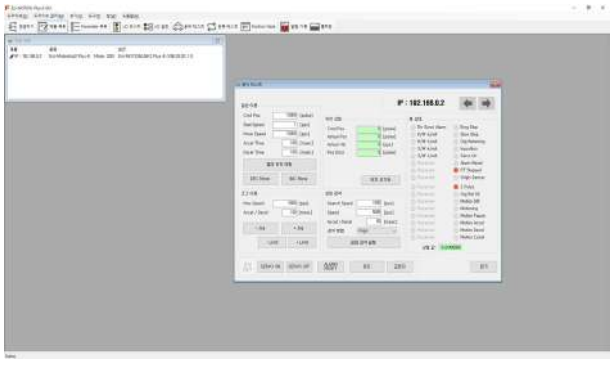
* 2) The brake terminal is an extension of the brake signal line of the servo drive. Therefor, when connecting the brake, refer to the user's manual of the servo drive.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

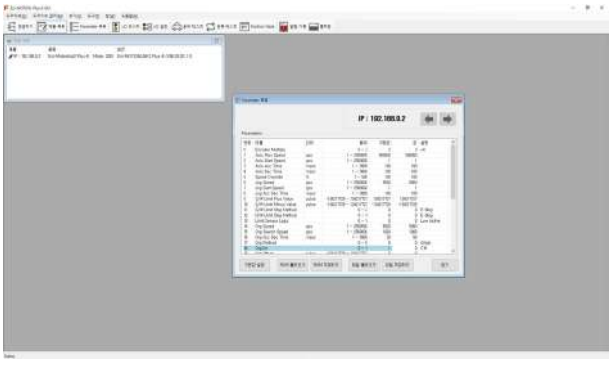
※ When connecting I/O cable between controller and drive, please turn of the power of both controller and drive to prevent electric shock or to protect the drive from any damage.

● GUI(Graphic User Interface) Program



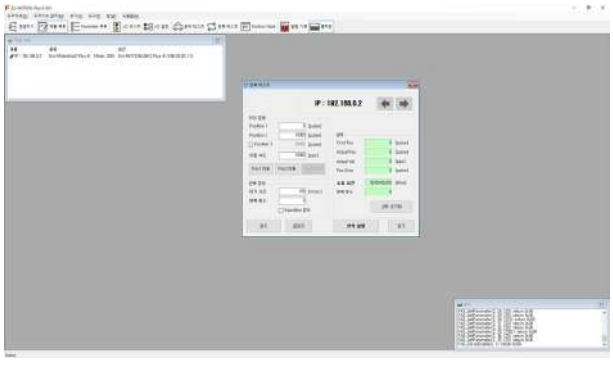
◆ Product List and Motion Test

The product list shows the products connected to the host controller.
You can test single position movements, jog movements, and origin search operations, and monitor the operation status on the motion test window.



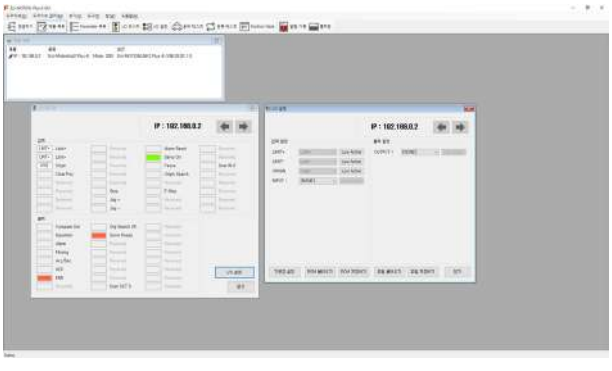
◆ Parameter List

All of the parameters are displayed and modified on this screen.



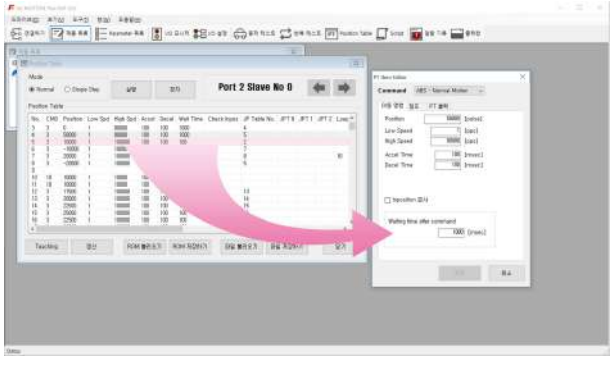
◆ Motion Repeat and Status Monitoring

You can set the target position value, speed, delay time and number of repe-titions for repeated motion test.
A motion library(API) is also displayed on the screen.



◆ I/O Monitoring and Setting

You can check the status of input/output signals related to the current operation status, and you can assign the signals to the desired input/output channels.



◆ Position Table

You can configure the data for the position table function or drive the motor with the position table.
The position table is a function that allows you to easily operate the motor with motion data stored in memory in advance.

※ GUI Program(Ezi-MOTIONLINK Plus-E) can be downloaded from website. (www.fastech-motions.com)
※ GUI Program(Ezi-MOTIONLINK Plus-E) supports Windows 7/8/10.
※ GUI Program(Ezi-MOTIONLINK Plus-E) is subject to change without prior notice for performance improvement.

FASTECH_

Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

PROFINET
PROFIBUS
EtherNet/IP
DeviceNet

Ezi-Robo®

Ezi-SPEED®


Ezi-MotionGate
DeviceNet
DRIVE
FASTECH
Ezi-MotionGate
EtherNet/IP
DRIVE
FASTECH
Ezi-MotionGate
PROFIBUS-DPV1
DRIVE
FASTECH
Ezi-MotionGate
PROFINET IO
DRIVE
FASTECH

Ezi-MotionGate®

Gateway Solution for Ezi-SERVO

- Optimal Solution for I/O Data Exchange between Different Fieldbuses
- PROFINET, PROFIBUS, EtherNet/IP, DeviceNet Supported
- Max. 16 Axis Drive Connection per Network



FASTECH
Fast, Accurate, Smooth Motion

Ezi-MotionGate®

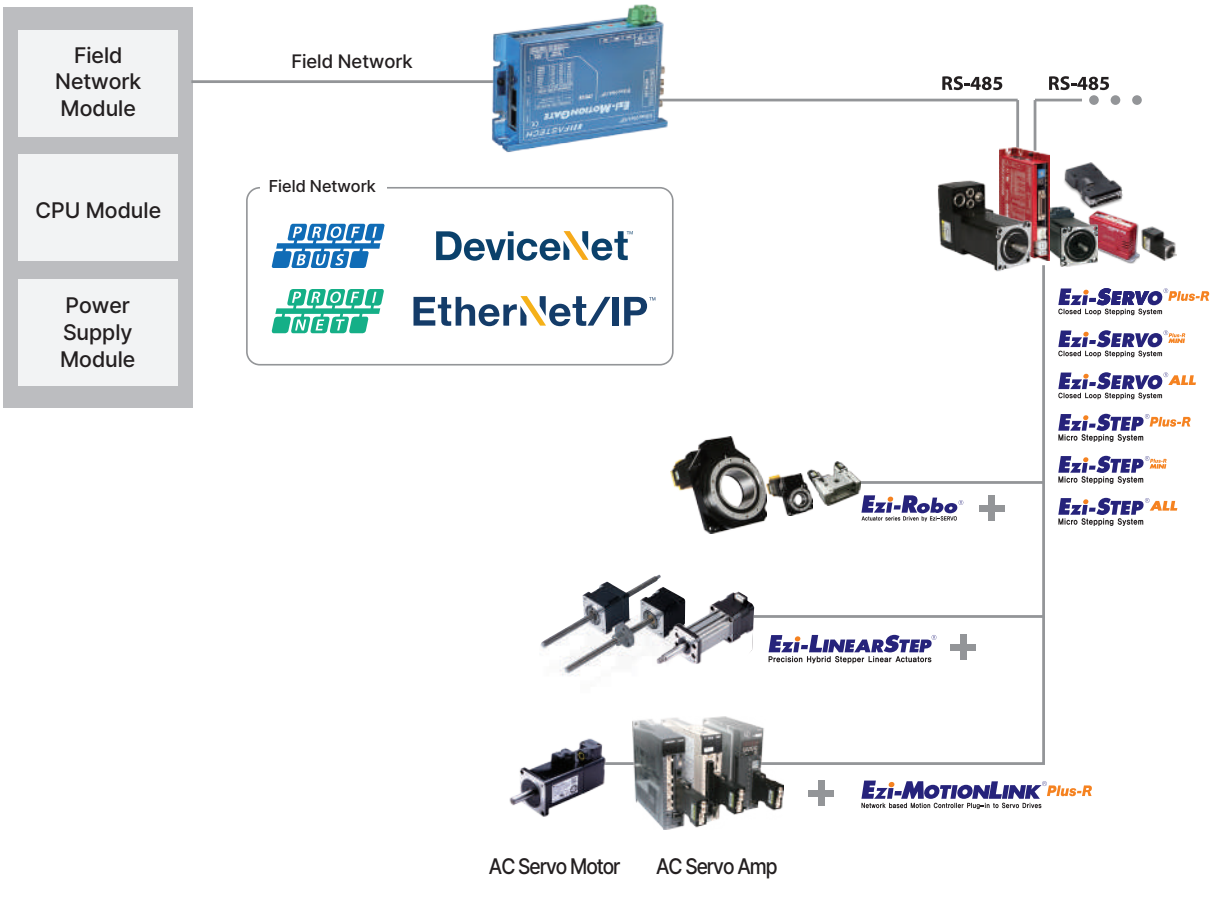
Gateway Solution for Ezi-SERVO



1 Gateway Solution for Various Networks

The Ezi-MOTIONGATE series is a gateway used to connect RS-485 network to various other field networks.
Ezi-MOTIONGATE series supports PROFINET, PROFIBUS-DPV1, EtherNet/IP, and DeviceNet networks.※ The slave connected to Ezi-MOTIONGATE plays a very important role in composing various actuator systems together with the Ezi-Robo series. By applying Ezi-MOTIONGATE, you can check motion commands, parameter settings, status information and alarm information through the master, and you can configure the system flexibly, so you can greatly shorten the machine development period.

※ New products compatible with MECHATROLINK-II, MECHTROLINK-III and SERCOS Ⅲ networks will be also released.



2 Multi-Axis Control Supported

Ezi-MOTIONGATE enables easy and convenient multi-axis control.
The maximum number of axis available for each network is as follows.

- PROFINET : Max. 16 Axis
- PROFIBUS-DPV1 : Max. 9 Axis
- EtherNet/IP : Max. 16 Axis
- DeviceNet : Max. 16 Axis



● Ezi-MOTIONGATE Part Numbering

Ezi-MOTIONGATE-PNET-P□□

Series Name

Type Name

PNET : PROFINET
DPV1 : PROFIBUS
ENIP : EtherNet/IP
DNET : DeviceNet

Protocol Version

P6 : Ver.6
P8 : Ver.8 *1

Byte Order

L : Little Endian
B : Big Endian *2

*1 : Ezi-SERVO ALL-ABS product uses Ver.8 protocol.
Therefore, when configuring the system with Ezi-SERVO ALL-ABS, designate the protocol version as P8.

*2 : To use MOTIONGATE with SIEMENS PLC, the data type must be Big Endian.
※ The default setting for PROFINET and PROFIBUS is Big Endian.

● Part Number

Part Number	Remarks
Ezi-MOTIONGATE-PNET-P6L	PROFINET Type
Ezi-MOTIONGATE-PNET-P6B	
Ezi-MOTIONGATE-PNET-P8L	
Ezi-MOTIONGATE-PNET-P8B	
Ezi-MOTIONGATE-DPV1-P6L	PROFIBUS-DPV1 Type
Ezi-MOTIONGATE-DPV1-P6B	
Ezi-MOTIONGATE-DPV1-P8L	
Ezi-MOTIONGATE-DPV1-P8B	
Ezi-MOTIONGATE-ENIP-P6L	EtherNet/IP Type
Ezi-MOTIONGATE-ENIP-P6B	
Ezi-MOTIONGATE-ENIP-P8L	
Ezi-MOTIONGATE-ENIP-P6B	
Ezi-MOTIONGATE-DNET-P6L	DeviceNet Type
Ezi-MOTIONGATE-DNET-P6B	
Ezi-MOTIONGATE-DNET-P8L	
Ezi-MOTIONGATE-DNET-P8B	

● Product Lineup [Ezi-MOTIONGATE Series]

Ezi-MOTIONGATE PROFINET

This product is a device that can integrate Siemens/Rockwell/Beckhoff PLC system and Ezi-MotionNetwork system consisting of Ezi-SERVO Plus-R, Ezi-STEP Plus-R, and Ezi-MOTIONLINK Plus-R into one using PROFINET network.



Ezi-MOTIONGATE PROFIBUS-DPV1

This product is a device that can integrate Siemens/Rockwell/Mitsubishi/LS PLC system and Ezi-MotionNetw-ork system consisting of Ezi-SERVO Plus-R, Ezi-STEP Plus-R, and Ezi-MOTIONLINK Plus-R into one using PROFIBUS network.



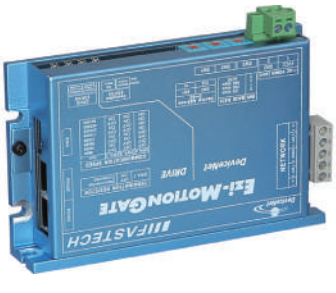
Ezi-MOTIONGATE EtherNet/IP

This product is a device that can integrate Rockwell/Mitsubishi/OMRON/LS PLC system and Ezi-MotionNetwork system consisting of Ezi-SERVO Plus-R, Ezi-STEP Plus-R, and Ezi-MOTIONLINK Plus-R into one using EtherNET/IP network.



Ezi-MOTIONGATE DeviceNet

This product is a device that can integrate Rockwell/Mitsubishi/LS PLC system and Ezi-MotionNetwork system consisting of Ezi-SERVO Plus-R, Ezi-STEP Plus-R, and Ezi-MOTIONLINK Plus-R into one using DeviceNet network.

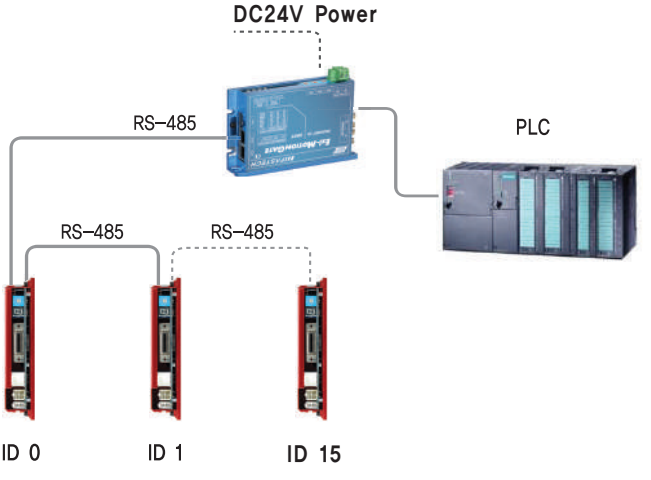


Product Overview [Ezi-MOTIONGATE PROFINET]

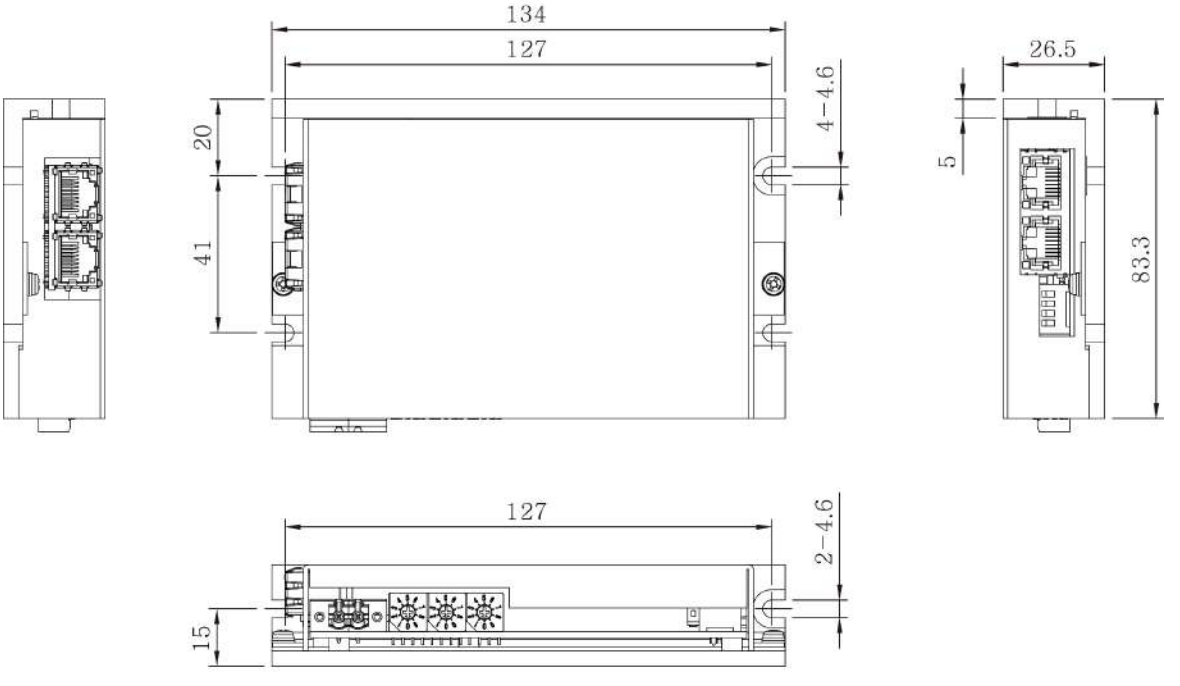
Ezi-MOTIONGATE PROFINET can easily connect major PLCs around the world with FASTECH products using PROFINET network.

Applicable PLC Brands	Applicable Products
Siemens, Rockwell, Beckhoff	• Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL • Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL • Ezi-MOTIONLINK Plus-R



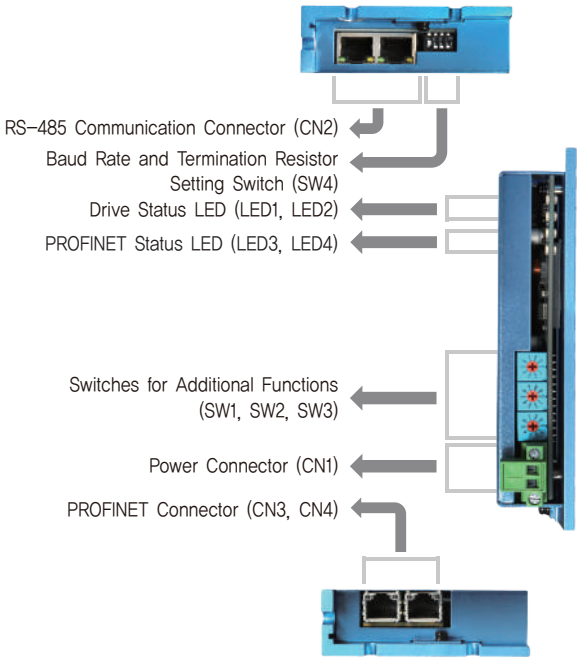


Dimensions of Product [mm]

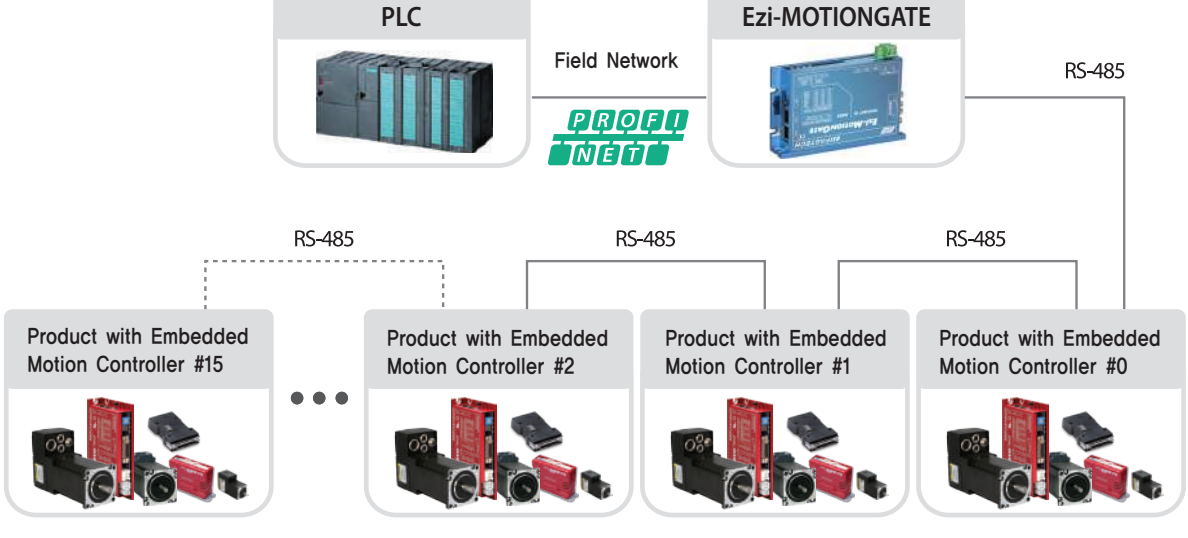


Specifications of Product [Ezi-MOTIONGATE PROFINET]

Category		PROFINET
Physical Layer		Ethernet – 100 base
Station Type		Slave Device Station
Max. Axis Connection		16 Axis
Data Size		IN : 128 bytes (64 words) OUT : 128 bytes (64 words)
PROFINET GSD Information		DeviceID : 0x64 Slot · Input – 1..32 · Output – 33..64
Operating Condition	Temperature	· In Use : 0~55℃ · In Storage : –20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Selection Switch	For Additional Functions
	LED Indication	Network Status, Drive Status, Servo ON Status, Alarm Status
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance



System Configuration [Ezi-MOTIONGATE PROFINET]



1. Drive Status LED

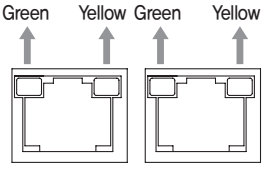
Name	Indication	Color	Description
LED1	ENABLE	Green	Operation Status of Ezi-MOTIONGATE
	ALARM	Red	Error Indication
LED2	CONNECT	Green	Drive Connection Status
	ERROR	Red	Error Indication

2. PROFINET Status LED

Name	Indication	Color	Description
LED3	NS	Green	Network Status
	ERR1	Red	Error Indication
LED4	NS	Green	Module Status
	ERR2	Red	Error Indication

3. PROFINET Connection Status LED

Name	Color	Status	Description
LINK/ Activity	Yellow	ON	Ethernet Link Connected
	Green	ON	Ethernet Link is set, but communication is not executed
	Green	Flickering	Normal Connection with Master



4. Switches for Additional Functions (SW1, SW2, SW3)

There are currently no configurable functions.

5. Baud Rate and Termination Resistor Setting Switch(SW4)

Termination Resistor Setting Switch(SW4.1)

When using multiple drives, set a termination resistor for the drive installed at the end of the network for stable operation.

· SW4.1 ON : Termination resistor is set

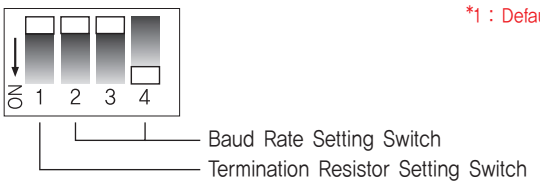
· SW4.1 OFF : Termination resistor is not set

Baud Rate Setting Switch(SW4.2~SW4.4)

Baud rate is set by SW4.2~SW4.4 as follows.

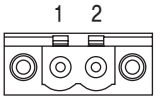
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default Value



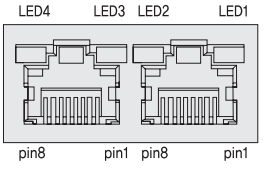
6. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



7. RS-485 Communication Connector(CN2)

No.	Function	No.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receive Status
5	GND	LED 2, 4	Transmitt Status

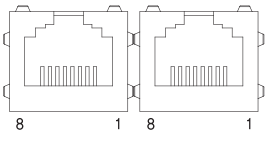


8. PROFINET Connector(CN3, CN4)

PROFINET network is compatible with Ethernet cables made of TIA/EIA-568-B (T568B).

No.	Function	No.	Function
1	TD+	6	RD–
2	TD–	7	-----
3	RD+	8	-----
4	-----	Connector Hood	F.GND
5	-----		

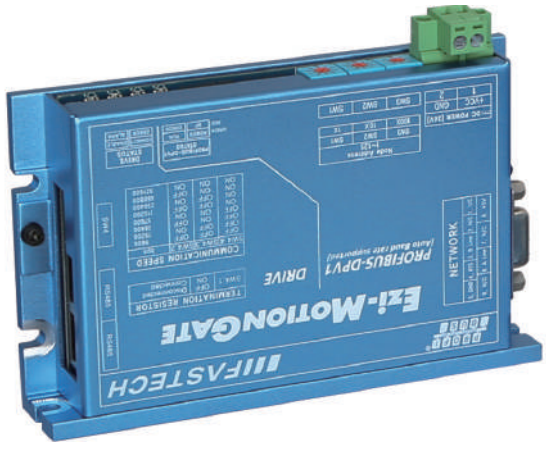
* Please use STP/FTP Cables with Category 5e or higher

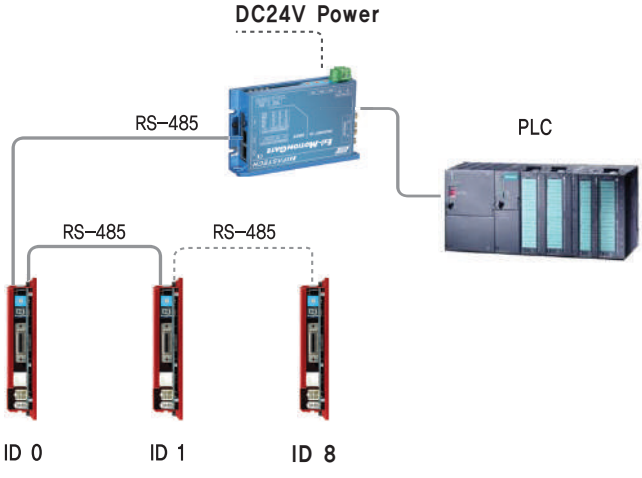


Product Overview [Ezi-MOTIONGATE PROFIBUS-DPV1]

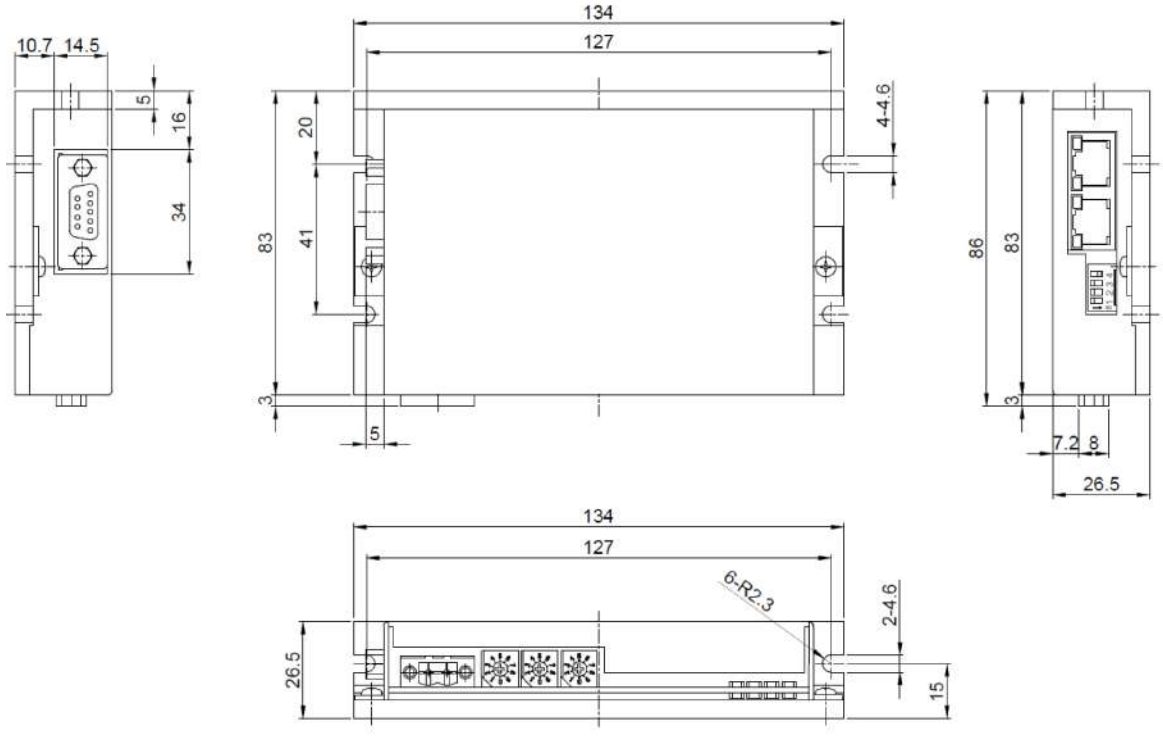
Ezi-MOTIONGATE PROFIBUS-DPV1 can easily connect major PLCs around the world with FASTECH products using PROFIBUS network.

Applicable PLC Brands	Applicable Products
Siemens, Rockwell, Mitsubishi, LS	• Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL • Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL • Ezi-MOTIONLINK Plus-R



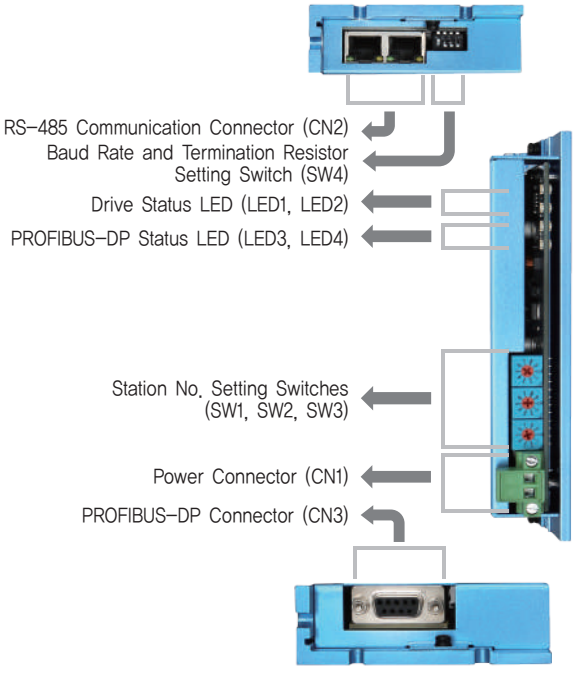


Dimensions of Product [mm]

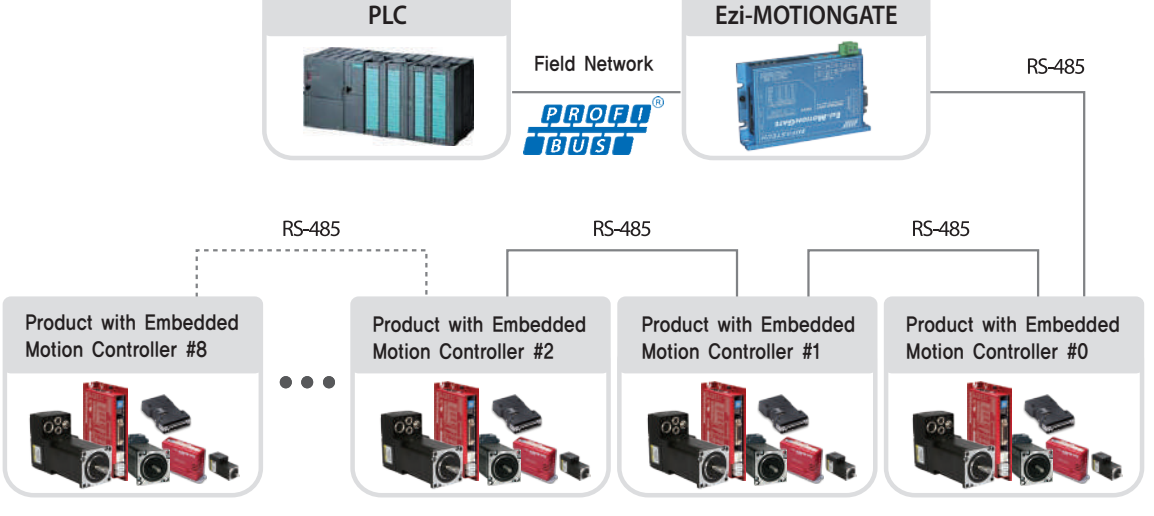


Specifications of Product [Ezi-MOTIONGATE PROFIBUS-DPV1]

Category		PROFIBUS-DPV1
Network Speed		9.6kbps / 19.2kbps / 93.75kbps / 187.5kbps / 0.5Mbps / 1.5Mbps / 12Mbps Auto Baud Rate Connection
Station Type		Slave Device Station
Max. Axis Connection		9 Axis
Station Occupation (Output/Input)		72 bytes / 72 bytes (When 9 drives are connected)
Max. MOTIONGATE Connection (PROFIBUS-DPV1)		125 Gateway
Operating Condition	Temperature	· In Use : 0~55℃ · In Storage : -20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Selection Switch	Network Station No. Setting
	LED Indication	Network Status, Drive Status, Servo ON Status, Alarm Status
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance



System Configuration [Ezi-MOTIONGATE PROFIBUS-DPV1]



1. Drive Status LED

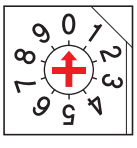
Name	Indication	Color	Description
LED1	ENABLE	Green	Operation Status of Ezi-MOTIONGATE
	ALARM	Red	Error Indication
LED2	CONNECT	Green	Drive Connection Status
	ERROR	Red	Error Indication

2. PROFIBUS-DP Status LED

Name	Indication	Color	Description
LED3	RUN	Green	Network Status
	ERROR	Red	Error Indication
LED4	POWER	Green	Network Connection Status and Power Status
	BF	Red	Waiting for Communication or Wrong Parameter Settings

3. Station No. Setting Switches(SW1, SW2, SW3)

Value (SW3)	ID No. X100 (Hundreds)	Value (SW2)	ID No. X10 (Tens)	Value (SW1)	ID No. X1 (Units)
0	000	0	00	0	0
1	100	1	10	1	1
2	-----	2	20	2	2
3	-----	3	30	3	3
4	-----	4	40	4	4
5	-----	5	50	5	5
6	-----	6	60	6	6
7	-----	7	70	7	7
8	-----	8	80	8	8
9	-----	9	90	9	9



4. Baud Rate and Termination Resistor Setting Switch(SW4)

Termination Resistor Setting Switch(SW4.1)

When using multiple drives, set a termination resistor for the drive installed at the end of the network for stable operation.

- SW4.1 ON : Termination resistor is set
- SW4.1 OFF : Termination resistor is not set

Baud Rate Setting Switch(SW4.2~SW4.4)

Baud rate is set by SW4.2~SW4.4 as follows.

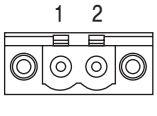
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate [bps]
-	OFF	OFF	OFF	9,600
-	ON	OFF	OFF	19,200
-	OFF	ON	OFF	38,400
-	ON	ON	OFF	57,600
-	OFF	OFF	ON	115,200*1
-	ON	OFF	ON	230,400
-	OFF	ON	ON	460,800
-	ON	ON	ON	921,600

*1 : Default Value



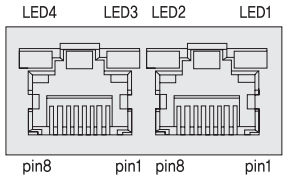
5. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



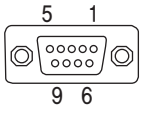
6. RS-485 Communication Connector(CN2)

No.	Function	No.	Function
1	GND	6	Data-
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receive Status
5	GND	LED 2, 4	Transmitt Status



7. PROFIBUS-DP Connector(CN3)

No.	Function
1	-----
2	-----
3	B Line
4	RTS.
5	GND
6	5V
7	-----
8	A Line
10	-----

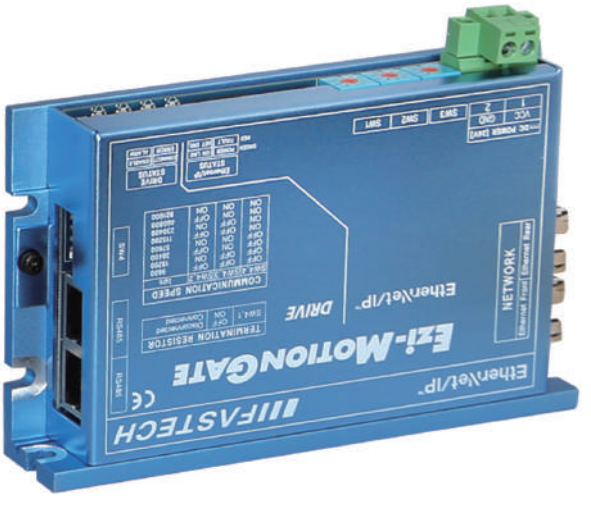


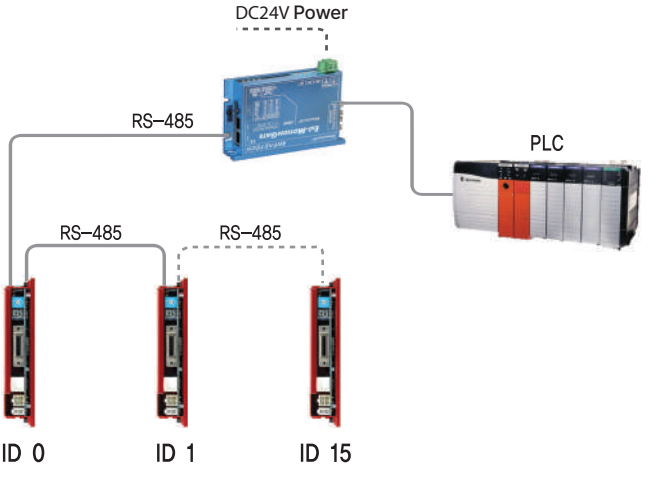
※ When connecting the PROFIBUS cable, use the dedicated DP cable connector.

Product Overview [Ezi-MOTIONGATE EtherNet/IP]

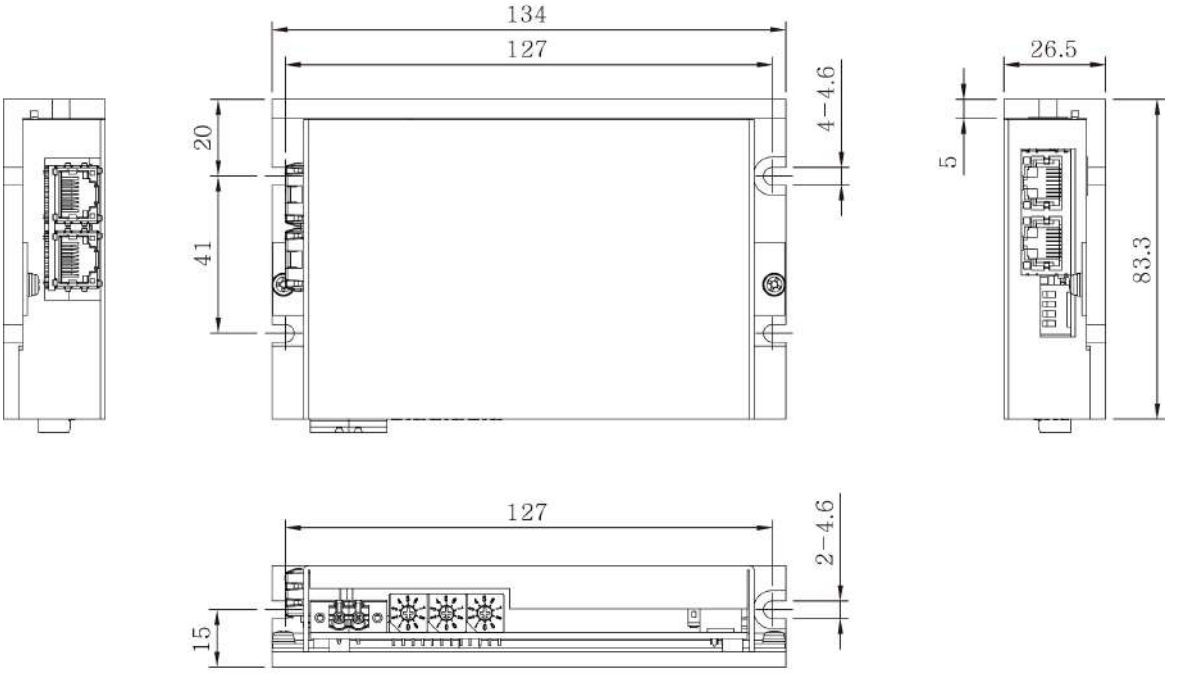
Ezi-MOTIONGATE EtherNET/IP can easily connect major PLCs around the world with FASTECH products using EtherNET/IP network.

Applicable PLC Brands	Applicable Products
Rockwell, Mitsubishi, OMRON, LS	• Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL • Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL • Ezi-MOTIONLINK Plus-R



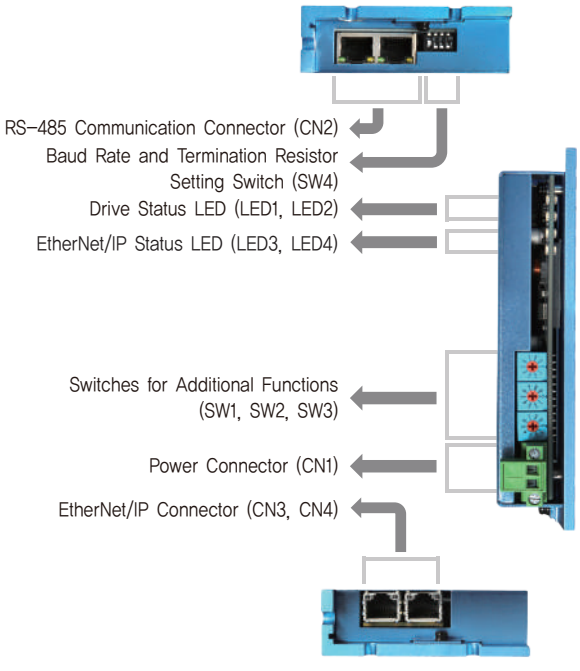


Dimensions of Product [mm]

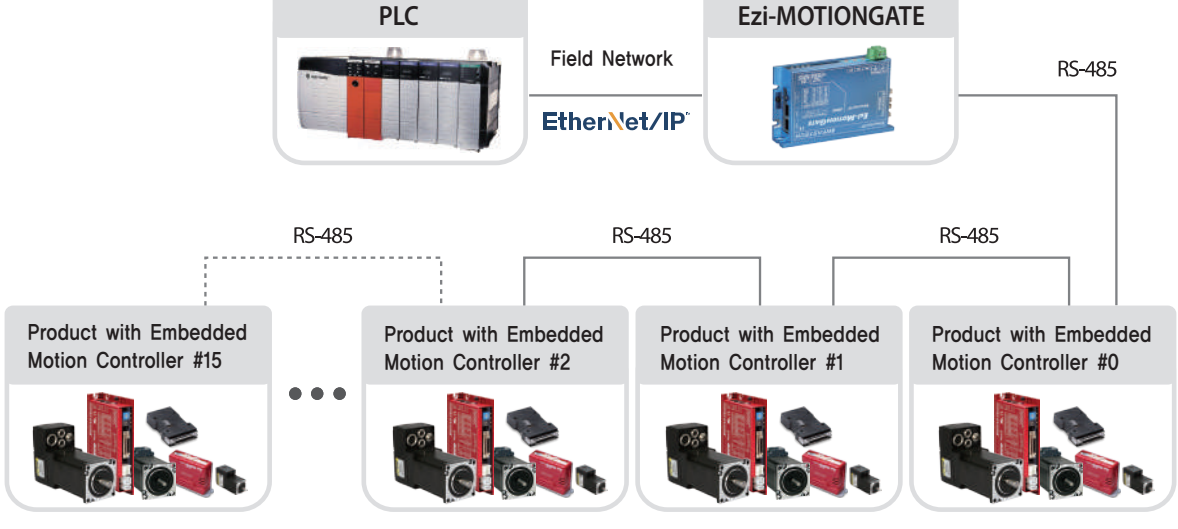


Specifications of Product [Ezi-MOTIONGATE EtherNet/IP]

Category		EtherNet/IP
Physical Layer		Ethernet – 100 base
Station Type		Slave Device Station
Max. Axis Connection		16 Axis
Data Size		IN : 128 bytes (64 words) OUT : 128 bytes (64 words)
EtherNet/IP Information		Product Code : 501 Assembly Instance · Input – 100 · Output – 150
Operating Condition	Temperature	· In Use : 0~55℃ · In Storage : –20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Function	Selection Switch	For Additional Functions
	LED Indication	Network Status, Drive Status, Servo ON Status, Alarm Status
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance



System Configuration [Ezi-MOTIONGATE EtherNet/IP]



1. Drive Status LED

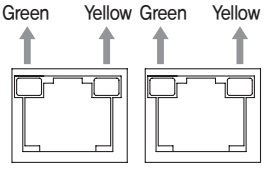
Name	Indication	Color	Description
LED1	ENABLE	Green	Operation Status of Ezi-MOTIONGATE
	ALARM	Red	Error Indication
LED2	CONNECT	Green	Drive Connection Status
	ERROR	Red	Error Indication

2. EtherNet/IP Status LED

Name	Indication	Color	Description
LED3	ON LINE	Green	Network Status
	NET ERR	Red	Error Indication
LED4	POWER	Green	Module Status
	FAULT	Red	Error Indication

3. EtherNet/IP Connection Status LED

Name	Color	Status	Description
LINK/ Activity	Green	ON	100Mbps Link Set
		Flickering	100Mbps Link Activated
	Yellow	ON	10Mbps Link Set
		Flickering	10Mbps Link Activated



4. Switches for Additional Functions (SW1, SW2, SW3)

There are currently no configurable functions.

5. Baud Rate and Termination Resistor Setting Switch(SW4)

Termination Resistor Setting Switch(SW4.1)

When using multiple drives, set a termination resistor for the drive installed at the end of the network for stable operation.

· SW4.1 ON : Termination resistor is set

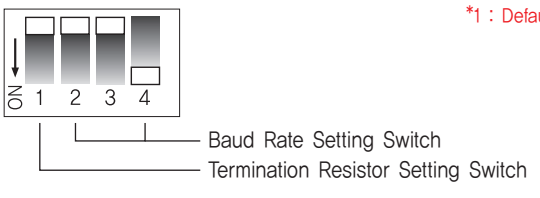
· SW4.1 OFF : Termination resistor is not set

Baud Rate Setting Switch(SW4.2~SW4.4)

Baud rate is set by SW4.2~SW4.4 as follows.

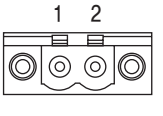
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default Value



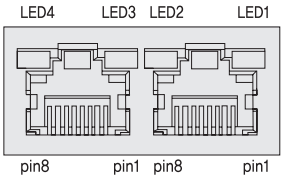
6. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



7. RS-485 Communication Connector(CN2)

No.	Function	No.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receive Status
5	GND	LED 2, 4	Receive Status

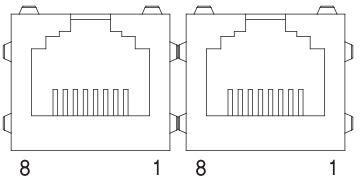


8. EtherNet/IP Connector(CN3, CN4)

EtherNet/IP network is compatible with Ethernet cables made of TIA/EIA-568-B (T568B).

No.	Function	No.	Function
1	TD+	6	RD–
2	TD–	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		

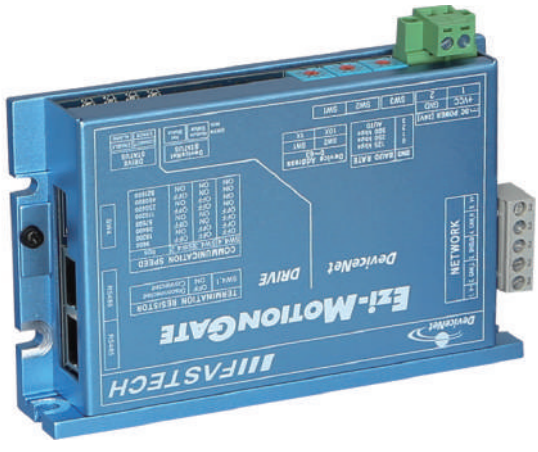
* Please use STP/FTP Cables with Category 5e or higher

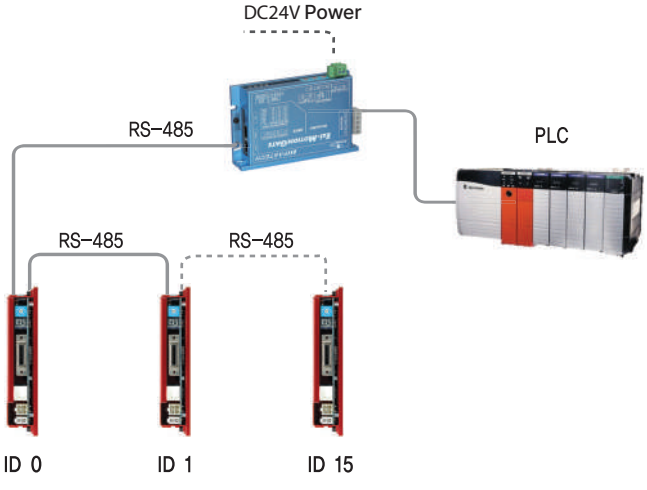


Product Overview [Ezi-MOTIONGATE DeviceNet]

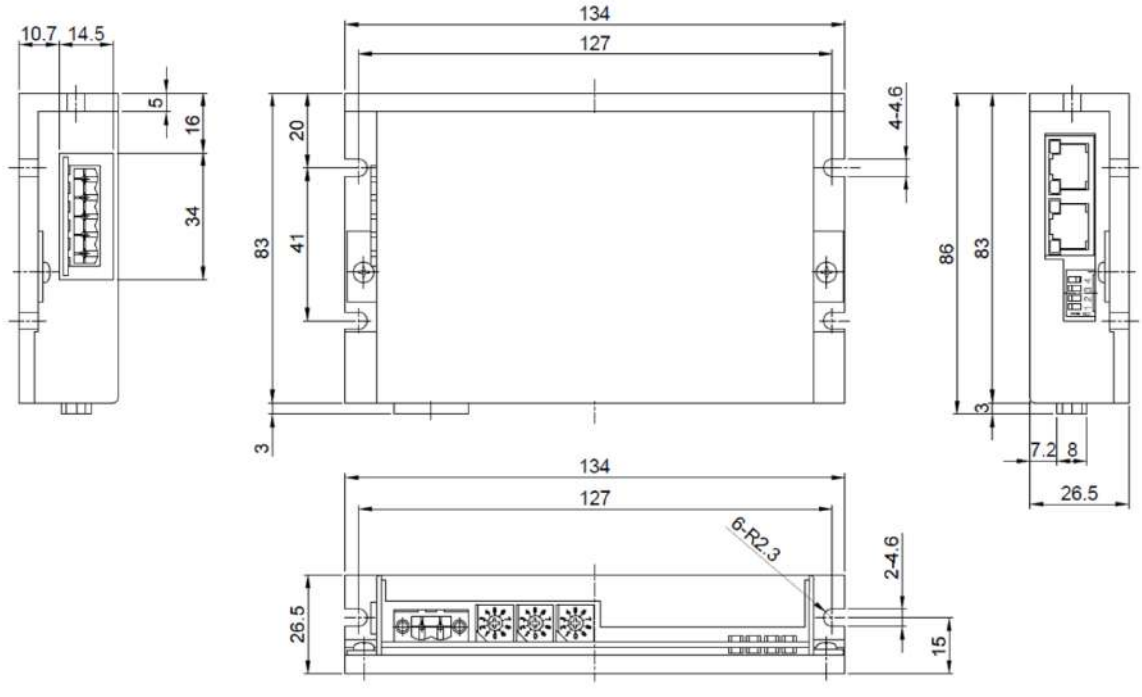
Ezi-MOTIONGATE DeviceNet can easily connect major PLCs around the world with FASTECH products using DeviceNet network.

Applicable PLC Brands	Applicable Products
Rockwell, Mitsubishi, LS	• Ezi-SERVO Plus-R, Ezi-SERVO Plus-R MINI, Ezi-SERVO ALL • Ezi-STEP Plus-R, Ezi-STEP Plus-R MINI, Ezi-STEP ALL • Ezi-MOTIONLINK Plus-R



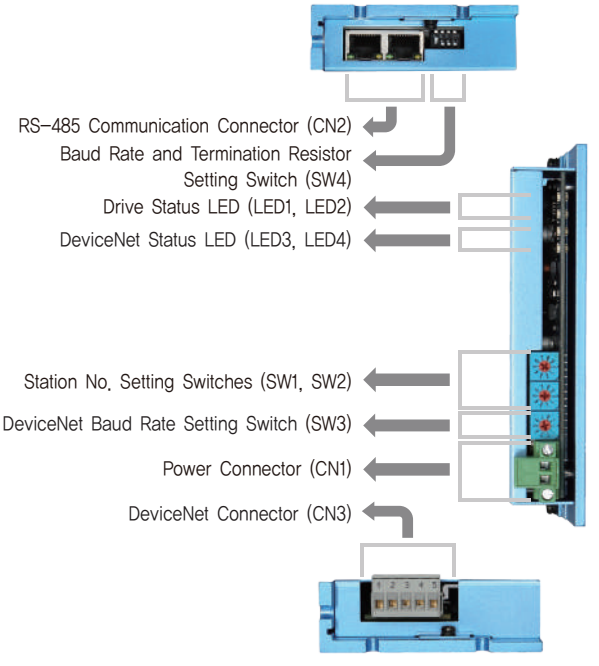


Dimensions of Product [mm]

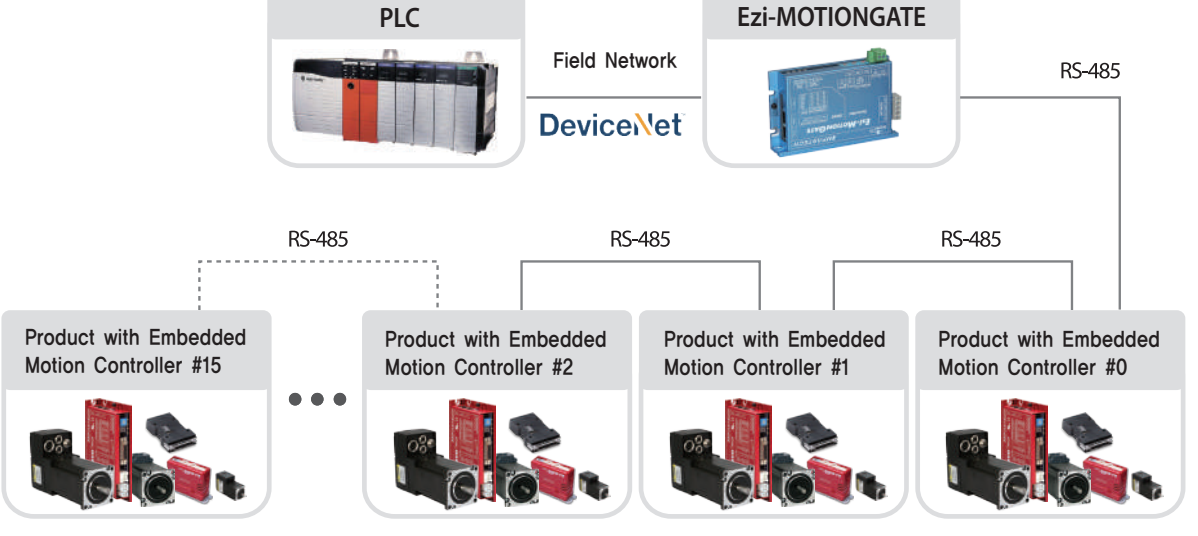


Specifications of Product [Ezi-MOTIONGATE DeviceNet]

Category		DeviceNet
Baud Rate		125kbps / 150kbps / 500kbps
Station Type		Slave Device Station
Max. Axis Connection		16 Axis
Data Size		IN : 128 bytes (64 words) OUT : 128 bytes (64 words)
Max. MOTIONGATE Connection (DeviceNet)		63 Gateway
Operating Condition	Temperature	· In Use : 0~55℃ · In Storage : -20~70℃
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)
	Vib. Resist.	0.5g
Selection Switch	Selection Switch	Network Station No. Setting, Baud Rate Setting
	LED Indication	Network Status, Drive Status, Servo ON Status, Alarm Status
Special Function	Jog Control	4-Speed Step, Speed Ratio
	Step Move Control	4-Step Distance



System Configuration [Ezi-MOTIONGATE DeviceNet]



1. Drive Status LED

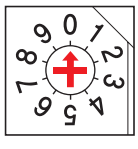
Name	Indication	Color	Description
LED1	ENABLE	Green	Operation Status of Ezi-MOTIONGATE
	ALARM	Red	Error Indication
LED2	CONNECT	Green	Drive Connection Status
	ERROR	Red	Error Indication

2. DeviceNet Status LED

Name	Indication	Color	Description
LED3	Net Status	Green	Network Status
		Red	Error Indication
LED4	Module Status	Green	Module Status
		Red	Error Indication

3. Station No. Setting Switches(SW1, SW2)

Value (SW2)	ID No. X10 (Tens)	Value (SW1)	ID No. X1 (Units)
0	00	0	0
1	10	1	1
2	20	2	2
3	30	3	3
4	40	4	4
5	50	5	5
6	60	6	6
7	-----	7	7
8	-----	8	8
9	-----	9	9



4. DeviceNet Baud Rate Setting Switch(SW3)

Value (SW3)	Baud Rate[kbps]
0	125
1	250
2	500
3	Auto Baud Rate
4···9	-----

5. Baud Rate and Termination Resistor Setting Switch(SW4)

Termination Resistor Setting Switch(SW4.1)

When using multiple drives, set a termination resistor for the drive installed at the end of the network for stable operation.

· SW4.1 ON : Termination resistor is set

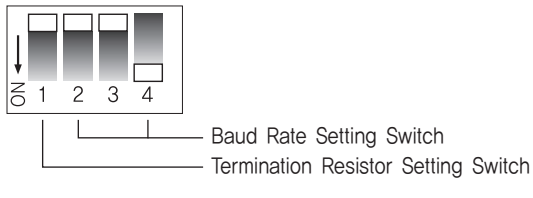
· SW4.1 OFF : Termination resistor is not set

Baud Rate Setting Switch(SW4.2~SW4.4)

Baud rate is set by SW4.2~SW4.4 as follows.

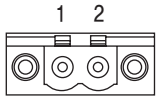
SW4.1	SW4.2	SW4.3	SW4.4	Baud Rate [bps]
–	OFF	OFF	OFF	9,600
–	ON	OFF	OFF	19,200
–	OFF	ON	OFF	38,400
–	ON	ON	OFF	57,600
–	OFF	OFF	ON	115,200*1
–	ON	OFF	ON	230,400
–	OFF	ON	ON	460,800
–	ON	ON	ON	921,600

*1 : Default Value



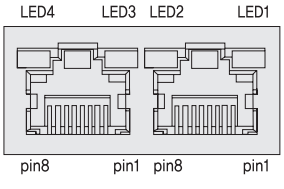
6. Power Connector(CN1)

No.	Function	I/O
1	DC24V	Input
2	GND	Input



7. RS-485 Communication Connector (CN2)

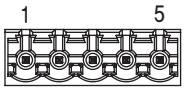
No.	Function	No.	Function
1	GND	6	Data–
2	GND	7	GND
3	Data+	8	GND
4	GND	LED 1, 3	Receive Status
5	GND	LED 2, 4	Transmitt Status



8. DeviceNet Connector(CN3)

The power of Ezi-MOTIONGATE is used independently of the power of DeviceNet cable. Therefore, if power is connected only to the DeviceNet connector, Ezi-MOTIONGATE will not be turned ON.
Also, if DeviceNet power is not connected to the network connector of Ezi-MOTIONGATE, it will not operate.

No.	Function	Color
1	GND	Black
2	CAN_L	Blue
3	DRAIN	Shield
4	CAN_H	White
5	24VDC	Red



※ Please use a dedicated DeviceNet cable.

FASTECH_

Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo® HG

Ezi-SPEED®

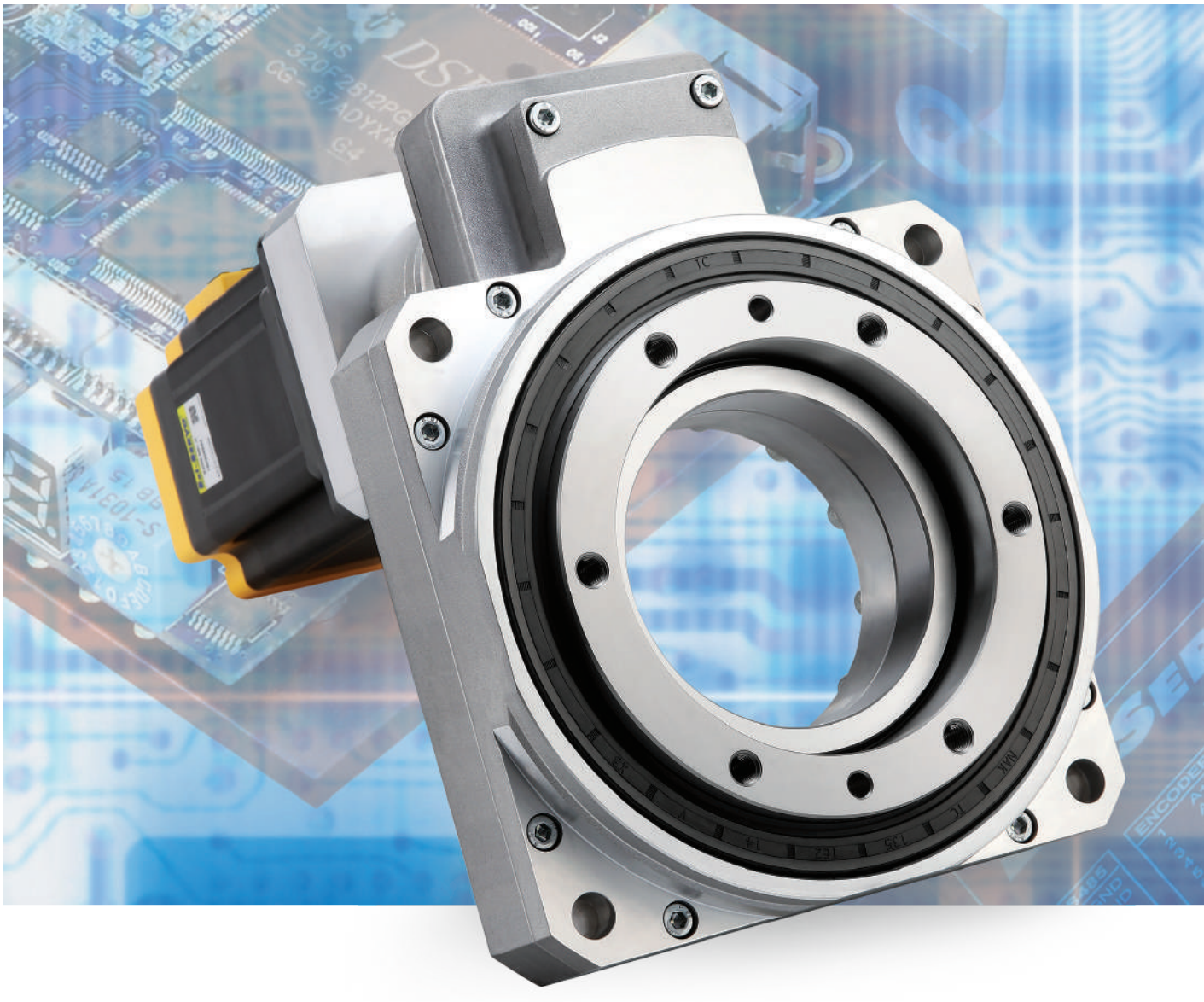




Ezi-Robo® HG

Actuator series Driven by Ezi-SERVO

- Ezi-SERVO + Hollow Rotary Index Table
- Hollow Diameter : Max. Ø85mm
- Maximum Torque : Max. 170N·m
- Permissible Axial Load : Max. 4000N
- Repeatability : Min. ±10arcsec
- EtherCAT, Ethernet, CC-Link Support



FASTECH
Fast, Accurate, Smooth Motion

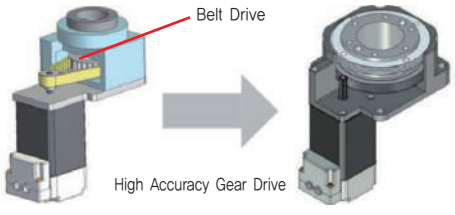
Ezi-Robo® HG

Actuator series Driven by Ezi-SERVO



2 High Accuracy Position Control

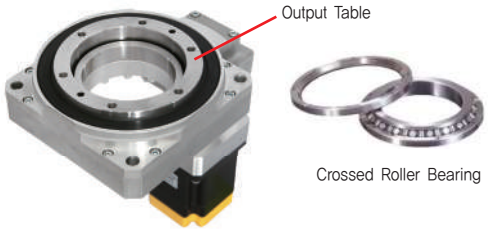
Because Ezi-Robo HG uses gears with extremely low backlash, it has high repeatability and low lost motion, enabling high accuracy position control. Also, Ezi-Robo HG does not have mechanical parts such as belts and pulleys, there is no need to adjust belt tension, so maintenance is convenient and costs can be greatly reduced.



3 High Rigidity · High Load

The hollow rotary index table is integrated with a cross roller bearing to maximize the actuator's rigidity, so it can be applied to various applications requiring high rigidity.

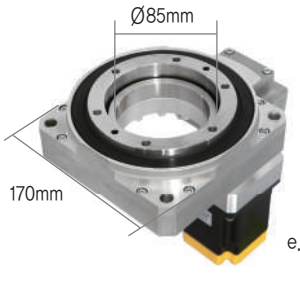
※ For HG170S type
- Permissible Axial Load : 4000N
- Permissible Moment Load : 200N · m



1 Large Diameter Hollow Rotary Actuator

The hollow rotary actuator is a product that integrates a hollow rotary index table and a stepping motor. The large-diameter hollow can be used for wiring and piping with complicated installation, providing flexibility and convenience when designing a machine.

Model Name	Table Frame Size [mm]	Hollow Shaft [mm]
HG60	60	Ø20
HG100	100	Ø29
HG130S	130	Ø56
HG170S	170	Ø85



e.g., HG170S Series

4 Simple Homing

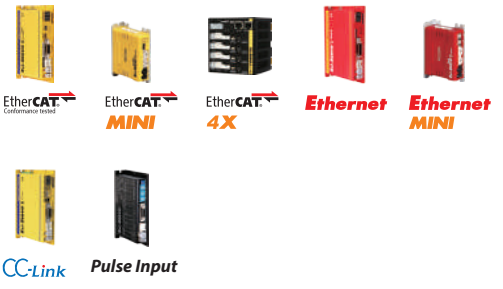
A home sensor set is provided as an option to simplify the homing, which is often used in rotary index tables. This set includes all the parts necessary for homing, saving you the trouble of installing the home sensor.



e.g., HG100 Series

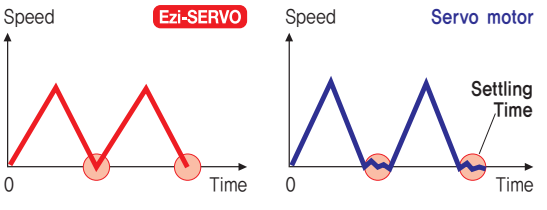
5 Various Network Supported

Ezi-Robo HG is a unit product that combines a hollow rotary actuator and various drives, and can be connected to a host controller through field networks such as EtherCAT, Ethernet, and CC-Link.



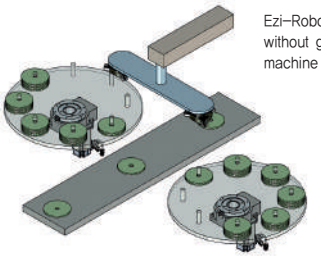
6 High Response

Similar to conventional stepping motors, Ezi-SERVO instantly synchronizes with command pulses providing fast positional response. Ezi-SERVO is the optimal choice when zero-speed stability and rapid motions within a short distance are required. Traditional servo motor systems have a natural delay called settling time between the command input signals and the resultant motion because of the constant monitoring of the current position.



7 Tuning Not Required

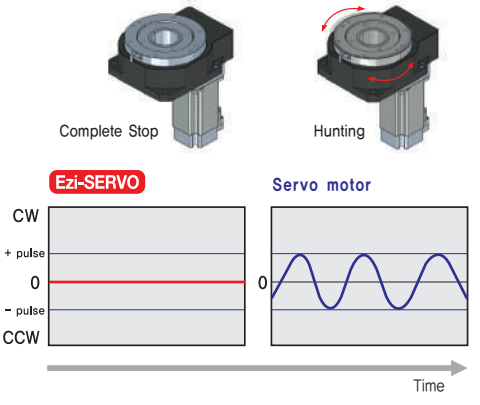
To ensure machine performance, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed.
Ezi-SERVO employs the best characteristics of the stepping motor to eliminate the need of tedious gain tuning required for conventional closed-loop servo systems. Ezi-Robo HG does not require gain tuning even with sudden load fluctuation or rapid acceleration because it is opearted by Ezi-SERVO.



Ezi-Robo HG operates stably without gain tuining in the machine with load fluctuation.

8 No Hunting

Ezi-SERVO utilizes the unique characteristics of tepping motors and locks itself into the desired target position, preventing vibration and eliminating Null Hunt which happens to the conventional servo systems.



9 Position Table Function

Position Table can be used for motion control by digital input and output signals of host controller. You can operate the motor directly by sending the position table number, start/stop, origin search and other digital input values from a PC.
The PC can monitor the In-Position, origin search, moving/stop, servo ready and other digital output signals from a drive. A maximum of 256 positioning points can be set from PC.

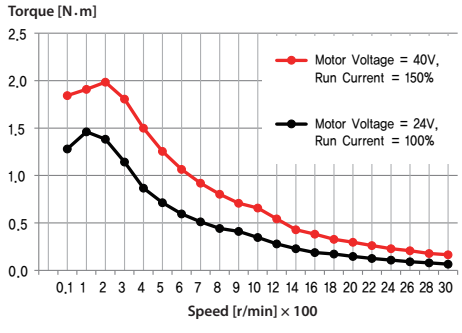


* For Ethernet, CC-Link series only.

10 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVO boosts the voltage supplied to the motor by internal DC-DC Converter. The torque at the high speed is increased. In addition, it is possible to set the Run Current up to 150%, whereby the torque at low speed is increased.
Torque can be improved by about 30% over the entire speed range.



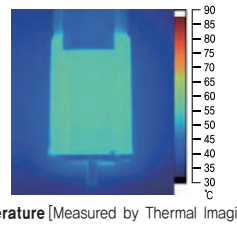
※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-PE-56L
Motor Voltage = DC40V
Input Voltage = DC24V

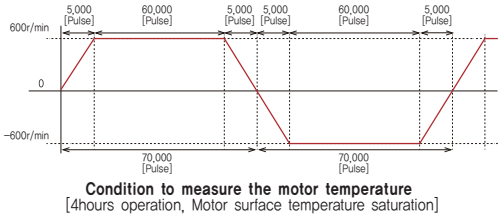
11 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

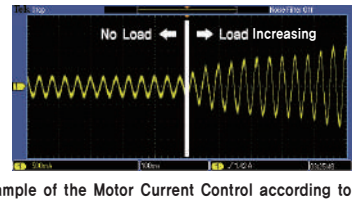
Ezi-SERVO automatically controls motor current according to load.
Ezi-SERVO reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



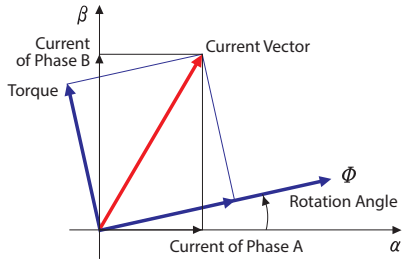
Condition to measure the motor temperature
[4hours operation, Motor surface temperature saturation]



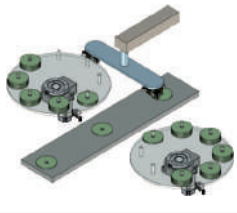
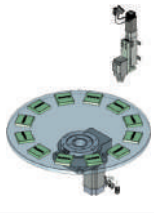
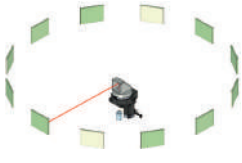
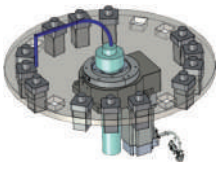
Example of the Motor Current Control according to load

12 Smooth and Accurate Operation

Ezi-SERVO is a high-precision servo drive, using a high-resolution encoder. Unlike a conventional Microstep drive, the on-board high performance MCU (Micro Controller Unit) performs vector control and filtering, producing a smooth rotational control with minimum ripples.



13 Examples

Applications Subject to Changing Load Inertia	High Position Accuracy Applications
	
Applications Where a Moment Load is Applied	**Optical Applications Using the Hollow Hole**
	
High Position Accuracy Applications Using the Hollow Hole	
	

Ezi-Robo HG Part Number

RB-HG130S-18-60L-EC

Series Name
RB : Robot
HG : Hollow Gearbox

Frame Size
60 : 60mm
100 : 100mm
130 : 130mm
170 : 170mm

Grade
Blank : Standard Type
S : Premium Type

Gear Ratio
05 – 1:5
08 – 1:8
18 – 1:18
20 – 1:20
36 – 1:36

Motor Flange Size
42 : 42mm
60 : 60mm
86 : 86mm

Motor Length
L : Large
XL : Extra Large

Drive Series
EC : EtherCAT
EC-MI : EtherCAT Mini Type
EC-4X : EtherCAT 4 Axis Type
PE : Plus Ethernet
PE-MI : Plus Ethernet Mini Type
CL : CC-Link
ST : Pulse Input

Applicable Product Series

Product	Specifications
Ezi-SERVO II EtherCAT	EtherCAT Based Product
Ezi-SERVO II EtherCAT MINI	EtherCAT Based Mini Type Product
Ezi-SERVO II EtherCAT 4X	EtherCAT Based 4 Axis Type Product
Ezi-SERVO II Plus-E	Ethernet Based Product
Ezi-SERVO II Plus-E MINI	Ethernet Based Mini Type Product
Ezi-SERVO II CC-Link	CC-Link Based Product
Ezi-SERVO ST	Pulse Input Type Product


Ezi-SERVO II EtherCAT


Ezi-SERVO II EtherCAT MINI


Ezi-SERVO II EtherCAT 4X


Ezi-SERVO II Plus-E


Ezi-SERVO II Plus-E MINI


Ezi-SERVO II CC-Link


Ezi-SERVO ST

● Combination of Actuator and Drive

Unit Part Number	Gear Part Number	Motor Model Number	Drive Series						
			Ezi-SERVO ST	Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E	Ezi-SERVO II Plus-E MINI	Ezi-SERVO II CC-Link
RB-HG60-05-42XL-□	HG60-05	EzM2-42XL-A	O	O	O	O	O	O	O
RB-HG100-08-60L-□	HG100-08	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG130S-18-60L-□	HG130S-18	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-20-60L-□	HG170S-20	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-36-60L-□	HG170S-36	EzM2-60L-A	O	O	O	O	O	O	O
RB-HG170S-20-86L-□	HG170S-20	EzM2-86L-A	●	●			●		●
RB-HG170S-36-86L-□	HG170S-36	EzM2-86L-A	●	●			●		●

※ □ is a type of a drive.
● is for 86mm drives.

How to Read Specifications

Model Name		RB-HG60-05-42XL
① Output Table Supporting Bearing		Ball Bearing
② Permissible Torque	[N·m]	4.5
③ Inertia Moment	[kg·m^2]	2,330 × 10^{-7}
④ Permissible Speed	[r/min]	300
⑤ Gear Ratio		1:5
⑥ Holding Torque*1	[N·m]	2.2
⑦ Repeatability	[arcsec]	±10(±0.0028°)
⑧ Lost Motion	[arcmin]	2(0.033°)
⑨ Angular Transmission Accuracy	[arcmin]	4(0.067°)
⑩ Permissible Axial Load	[N]	100
⑪ Permissible Moment Load	[N·m]	2
⑫ Runout of Output Table Surface	[mm]	0.015
⑬ Runout of Output Table Inner (Outer) Diameter	[mm]	0.015
⑭ Parallelism of Output Table	[mm]	0.03
⑮ Degree of Protection*2		P40
⑯ Mass of Actuator Unit	[kg]	1.6

*1 : When Stop Current is 100%
*2 : IP20 for motor connector

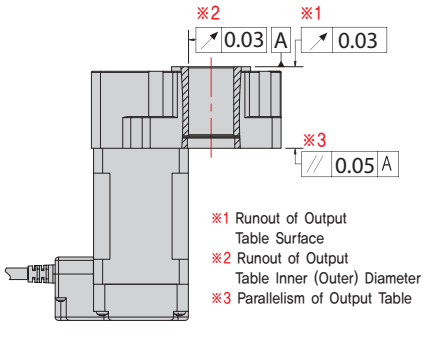
Description of Specification Items

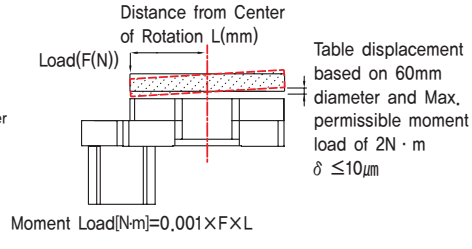
No.	Item		Description
①	Output Table Supporting Bearing		The type of the bearing used for the output table.
②	Permissible Torque	[N·m]	This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration.
③	Inertia Moment	[kg·m^2]	The total sum of the rotor inertial moment of the motor and the inertial moment of the speed reduction mechanism converted to a moment on the output table.
④	Permissible Speed	[rpm]	The output table speed that can be tolerated by the mechanical strength of the speed reduction mechanism.
⑤	Gear Ratio		The rate at which the actuator reduces the rotation speed of the motor.
⑥	Holding Torque	[N·m]	The maximum torque with which to hold the output table in position if it stops while the power is still on.
⑦	Repeatability	[arcsec]	A value indicating the degree of error that generates when positioning is performed repeatedly to the same position in the same direction.
⑧	Lost Motion	[arcmin]	The difference between stopped angles achieved when the output table is positioned to the same position in the forward and reverse directions
⑨	Angular Transmission Accuracy	[arcmin]	The difference between the theoretical rotation angle of the output table as calculated from the input pulse counter, and the actual rotation angle.
⑩	Permissible Axial Load	[N]	The permissible value of thrust load applied to the output table in the axial direction.
⑪	Permissible Moment Load	[N·m]	When a load is applied to a position away from the center of the output table, the output table receives a tilting force. The permissible moment load refers to the permissible value of moment load calculated by the eccentricity from the center by the applied load.
⑫	Runout of Output Table Surface	[mm]	The max. value of runout of the installation surface of the output table when the output table is rotated under no load.
⑬	Runout of Output Table Inner (Outer) Diameter	[mm]	The max. value of runout of the inner diameter or outer diameter of the table when the output table is rotated under no load.
⑭	Parallelism of Output Table	[mm]	The inclination of the installation surface of the output table compared with the actuator installation surface on the equipment side.
⑮	Degree of Protection		Based on IEC60529 and EN60034-5 (=IEC60034-5), dust resistance and waterproofing regarding the degree of protection of the device is classified using a grade.
⑯	Mass of Actuator Unit	[kg]	The total weight of all parts, including the output table, reduction mechanism, motor and so on that make up the actuator.

● Specifications [HG60 Series]

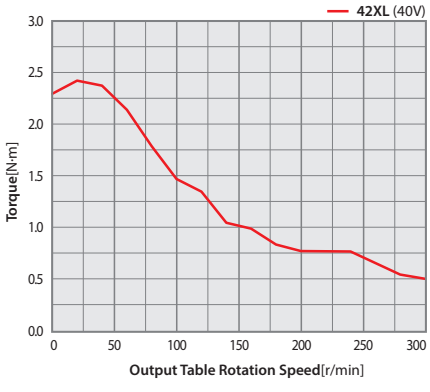
Model Name		RB-HG60-05-42XL
Output Table Supporting Bearing		Ball Bearing
Permissible Torque	[N·m]	4.5
Inertia Moment	[kg·m^2]	2,330 × 10^{-7}
Permissible Speed	[r/min]	300
Gear Ratio		1:5
Holding Torque*1	[N·m]	2.2
Repeatability	[arcsec]	±10(±0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	100
Permissible Moment Load	[N·m]	2
Runout of Output Table Surface	[mm]	0.03
Runout of Output Table Inner (Outer) Diameter	[mm]	0.03
Parallelism of Output Table	[mm]	0.05
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	1.6

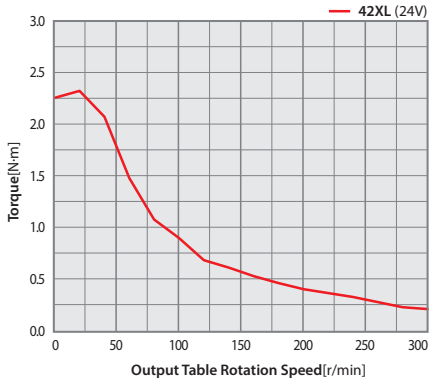
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

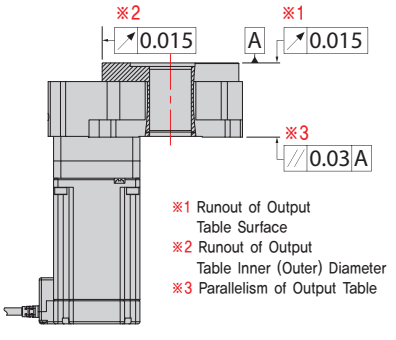


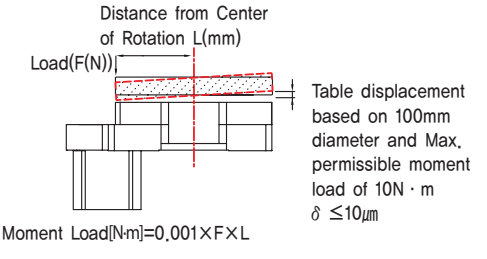


Specifications [HG100 Series]

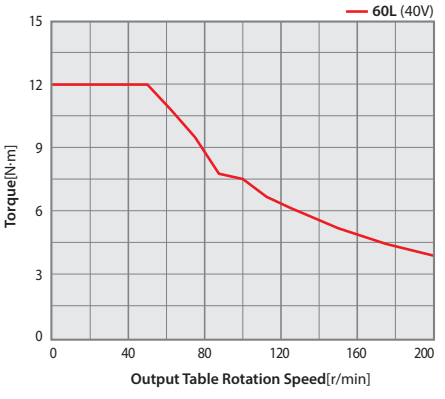
Model Name		RB-HG100-08-60L
Output Table Supporting Bearing		Tapered Roller Bearing + Ball Bearing
Permissible Torque	[N·m]	12
Inertia Moment	[kg·m^2]	3,898×10^{-6}
Permissible Speed	[r/min]	200
Gear Ratio		1:8
Holding Torque*1	[N·m]	12
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	500
Permissible Moment Load	[N·m]	10
Runout of Output Table Surface	[mm]	0.015
Runout of Output Table Inner (Outer) Diameter	[mm]	0.015
Parallelism of Output Table	[mm]	0.03
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	4.0

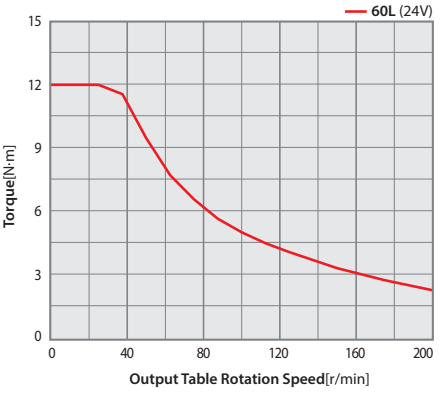
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

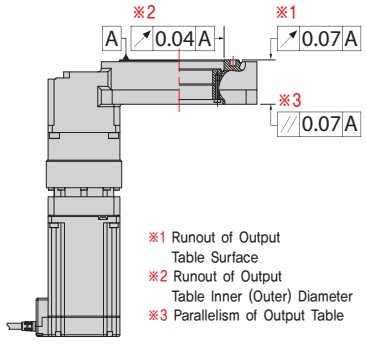


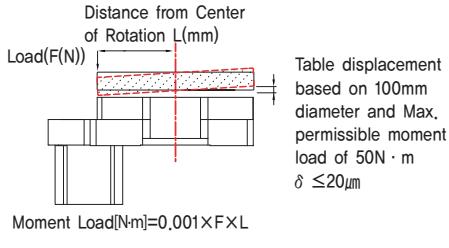


● Specifications [HG130S Series]

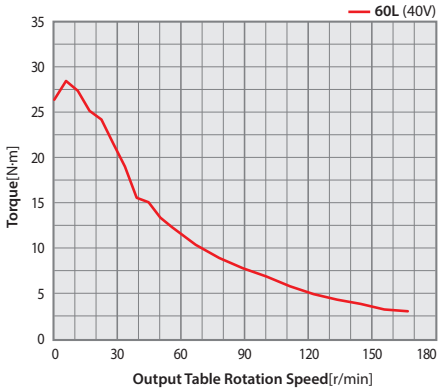
Model Name		RB-HG130S-18-60L
Output Table Supporting Bearing		Crossed Roller Bearing
Permissible Torque	[N·m]	34
Inertia Moment	[kg·m^2]	3,127×10^{-5}
Permissible Speed	[r/min]	200
Gear Ratio		1:18
Holding Torque*1	[N·m]	25.1
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	2,000
Permissible Moment Load	[N·m]	50
Runout of Output Table Surface	[mm]	0.07
Runout of Output Table Inner (Outer) Diameter	[mm]	0.04
Parallelism of Output Table	[mm]	0.07
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	6.3

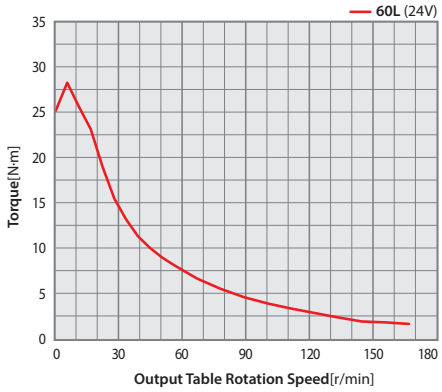
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

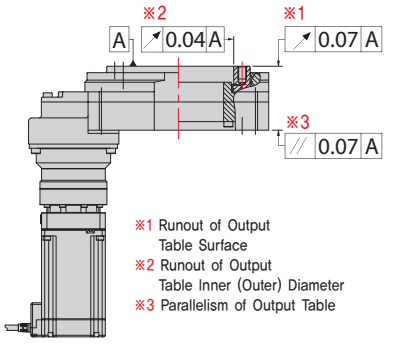


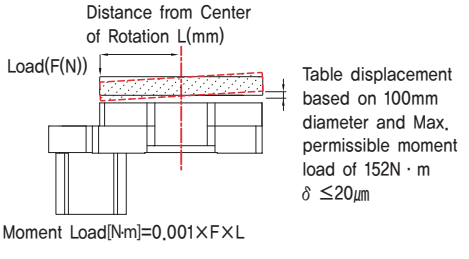


● Specifications [HG170S Series (Gear Ratio 1:20)]

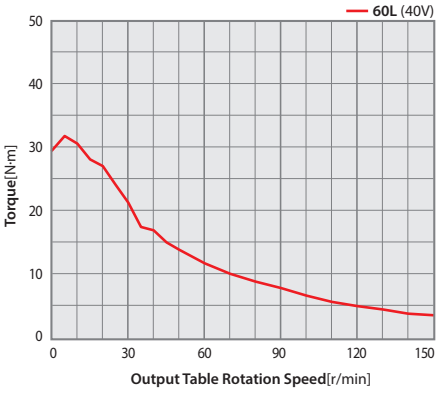
Model Name		RB-HG170S-20-60L
Output Table Supporting Bearing		Crossed Roller Bearing
Permissible Torque	[N·m]	170
Inertia Moment	[kg·m^2]	4,752×10^{-5}
Permissible Speed	[r/min]	150
Gear Ratio		1:20
Holding Torque*1	[N·m]	27.8
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	3,900
Permissible Moment Load	[N·m]	152
Runout of Output Table Surface	[mm]	0.07
Runout of Output Table Inner (Outer) Diameter	[mm]	0.04
Parallelism of Output Table	[mm]	0.07
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	8.7

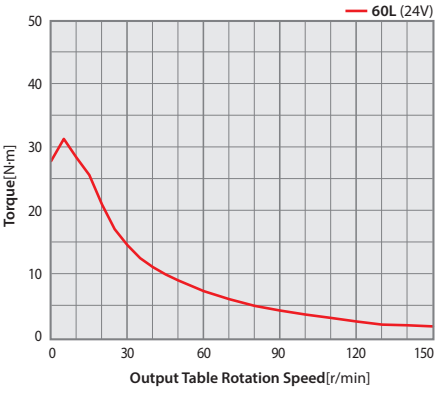
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

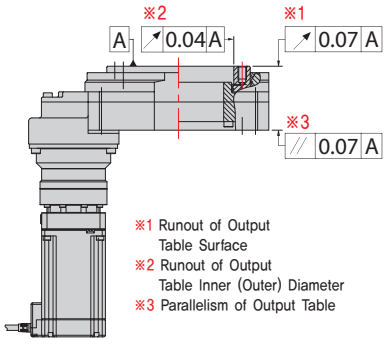


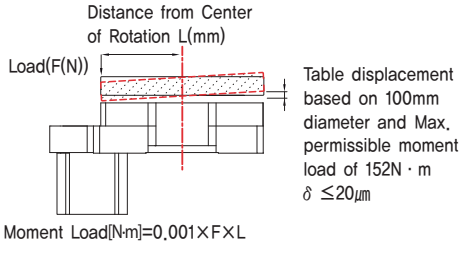


● Specifications [HG170S Series (Gear Ratio 1:20)]

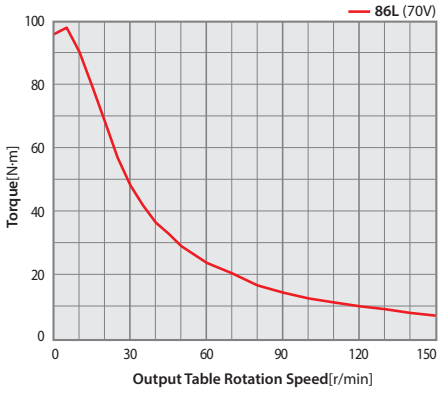
Model Name		RB-HG170S-20-86L
Output Table Supporting Bearing		Crossed Roller Bearing
Permissible Torque	[N·m]	170
Inertia Moment	[kg·m^2]	7,484×10^{-5}
Permissible Speed	[r/min]	150
Gear Ratio		1:20
Holding Torque*1	[N·m]	96.1
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	3,900
Permissible Moment Load	[N·m]	152
Runout of Output Table Surface	[mm]	0.07
Runout of Output Table Inner (Outer) Diameter	[mm]	0.04
Parallelism of Output Table	[mm]	0.07
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	11.9

*1 : When Stop Current is 100%
*2 : IP20 for motor connector





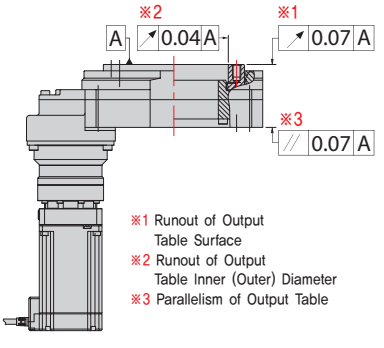
Applicable Model			
70V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST

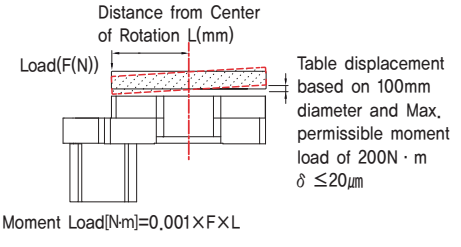


● Specifications [HG170S Series (Gear Ratio 1:36)]

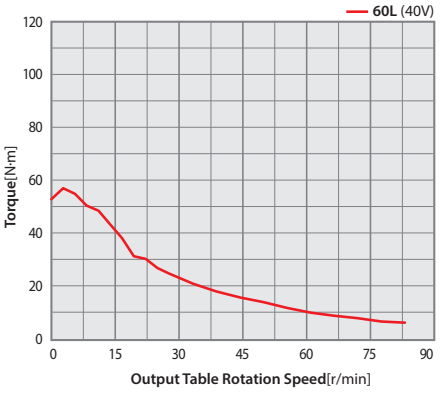
Model Name		RB-HG170S-36-60L
Output Table Supporting Bearing		Crossed Roller Bearing
Permissible Torque	[N·m]	107
Inertia Moment	[kg·m^2]	12,351×10^{-5}
Permissible Speed	[r/min]	150
Gear Ratio		1:36
Holding Torque*1	[N·m]	50.2
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	4,000
Permissible Moment Load	[N·m]	200
Runout of Output Table Surface	[mm]	0.07
Runout of Output Table Inner (Outer) Diameter	[mm]	0.04
Parallelism of Output Table	[mm]	0.07
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	8.7

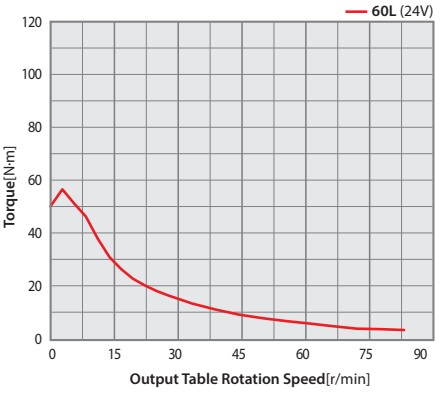
*1 : When Stop Current is 100%
*2 : IP20 for motor connector





Applicable Model			
40V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST
24V			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II Plus-E MINI	

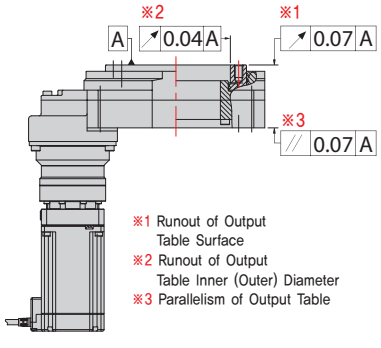


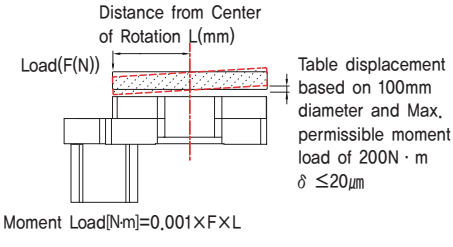


● Specifications [HG170S Series (Gear Ratio 1:36)]

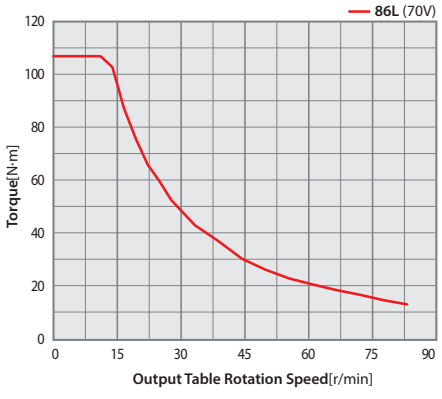
Model Name		RB-HG170S-36-86L
Output Table Supporting Bearing		Crossed Roller Bearing
Permissible Torque	[N·m]	107
Inertia Moment	[kg·m^2]	21,203×10^{-5}
Permissible Speed	[r/min]	150
Gear Ratio		1:36
Holding Torque*1	[N·m]	107
Repeatability	[arcsec]	±10(0.0028°)
Lost Motion	[arcmin]	2(0.033°)
Angular Transmission Accuracy	[arcmin]	4(0.067°)
Permissible Axial Load	[N]	4,000
Permissible Moment Load	[N·m]	200
Runout of Output Table Surface	[mm]	0.07
Runout of Output Table Inner (Outer) Diameter	[mm]	0.04
Parallelism of Output Table	[mm]	0.07
Degree of Protection*2		IP40
Mass of Actuator Unit	[kg]	11.9

*1 : When Stop Current is 100%
*2 : IP20 for motor connector

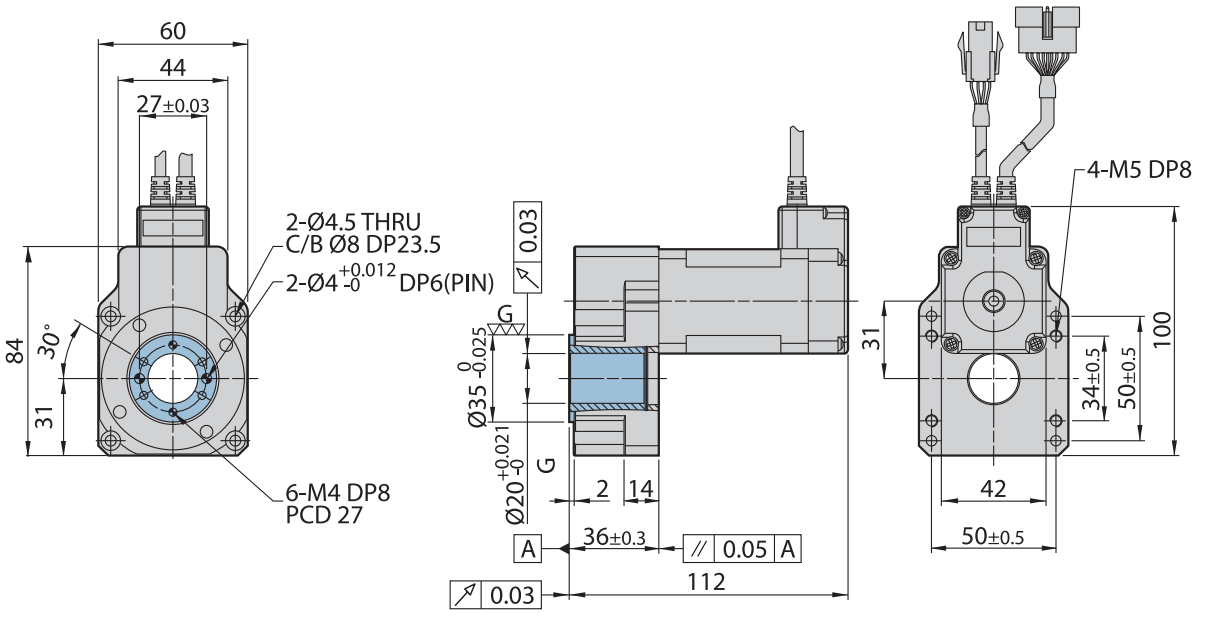




Applicable Model			
70V			
Ezi-SERVO II EtherCAT	Ezi-SERVO II Plus-E	Ezi-SERVO II CC-Link	Ezi-SERVO ST

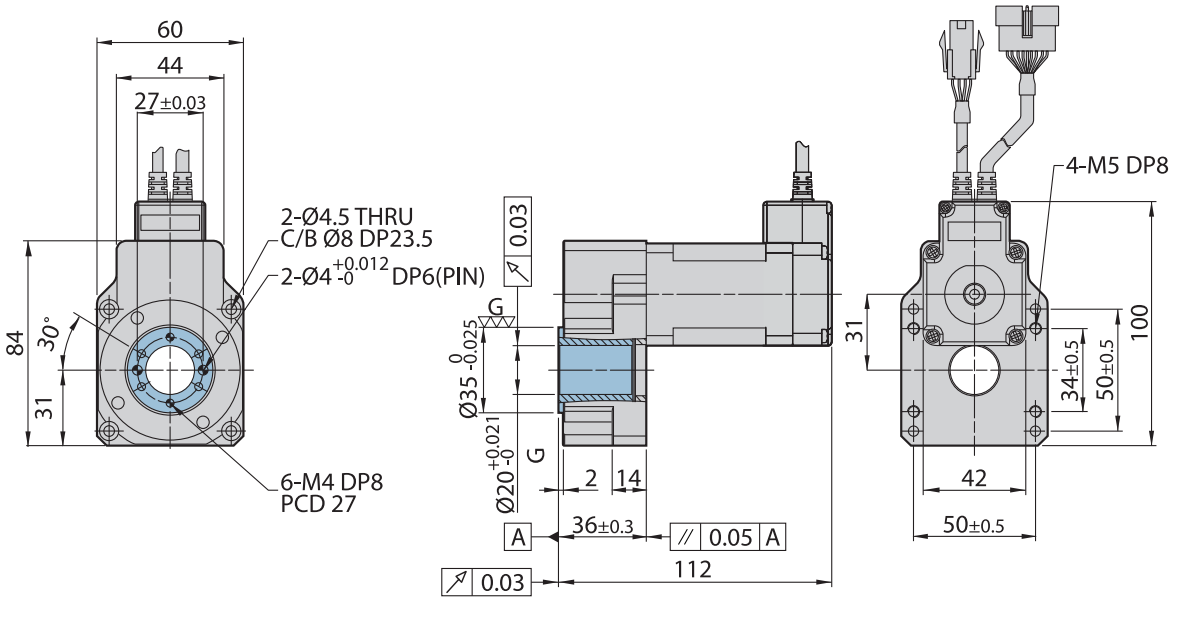


RB-HG60-05-42XL-□



※ □ is a drive type.

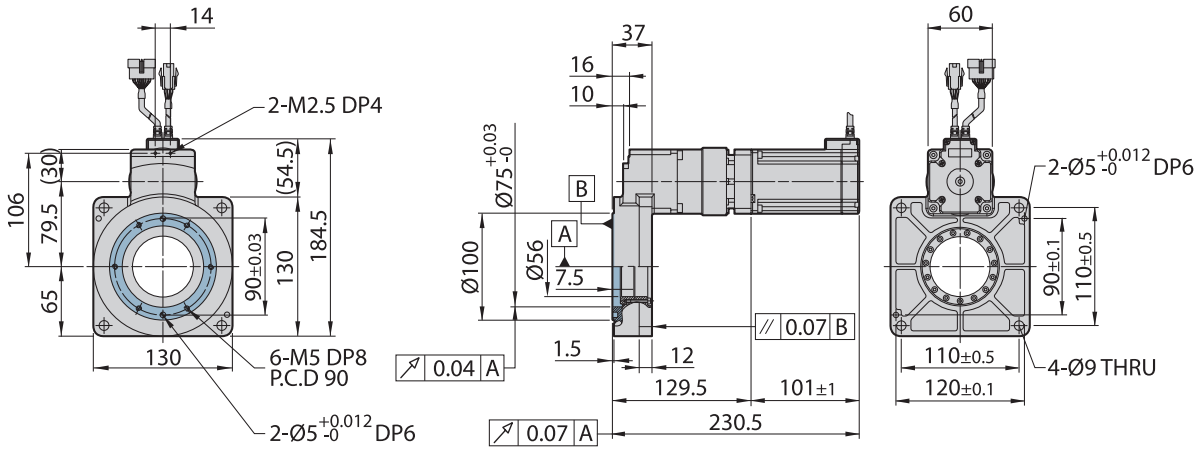
RB-HG100-08-60L-□



※ □ is a drive type.

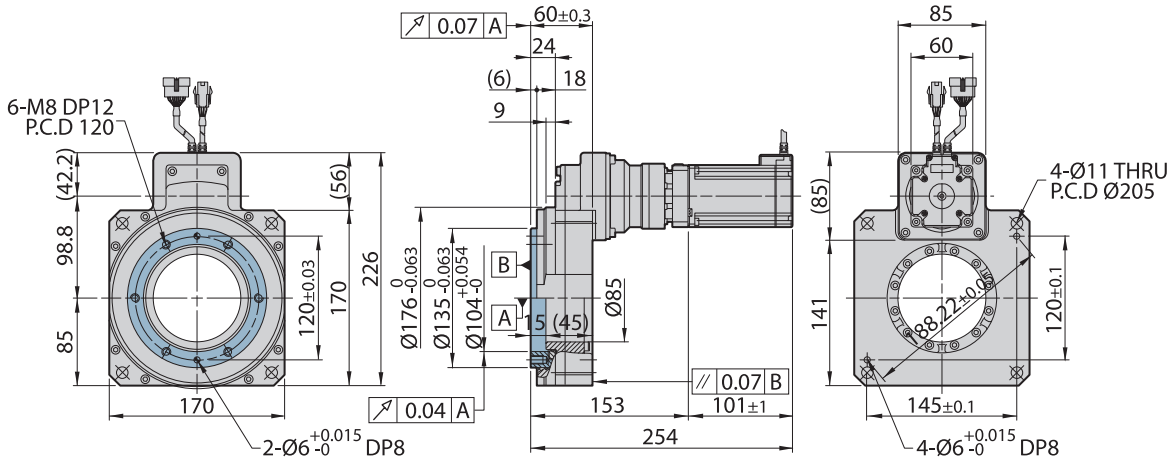
● Dimensions of Product [mm]

RB-HG130S-18-60L-□



※ □ is a drive type.

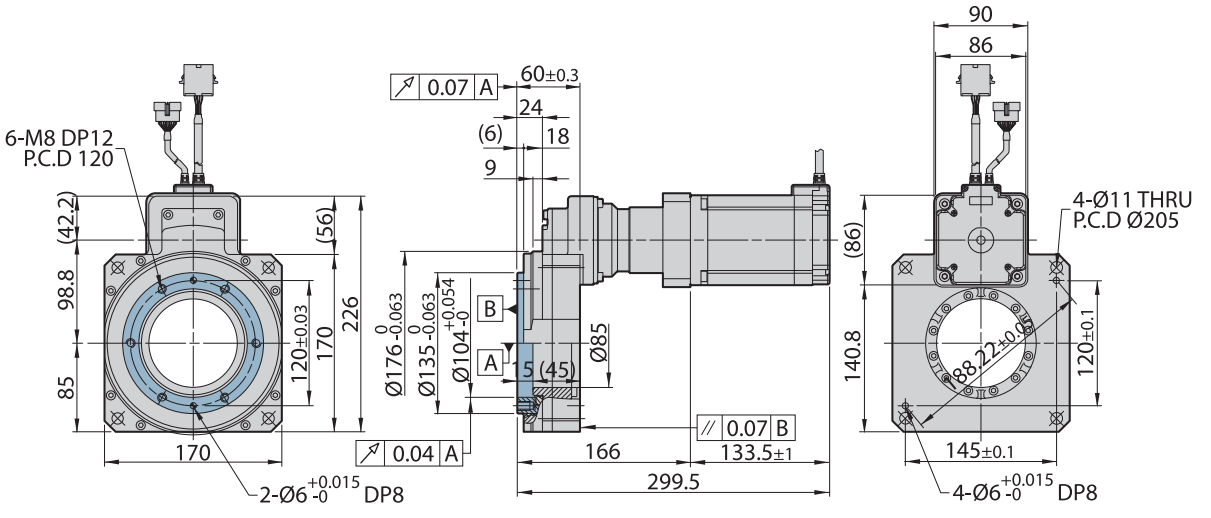
RB-HG170S-20-60L-□
RB-HG170S-36-60L-□



※ □ is a drive type.

● Dimensions of Product [mm]

RB-HG170S-20-86L-□
RB-HG170S-36-86L-□



※ □ is a drive type.

● Home Sensor Set

1. Type

Part Number	Sensor Output	Applicable Product
OSHG-A	NPN	HG60, HG100, HG130S, HG170S
OSHG-AY	PNP	

2. Components (OSHG-A)



3. Specifications

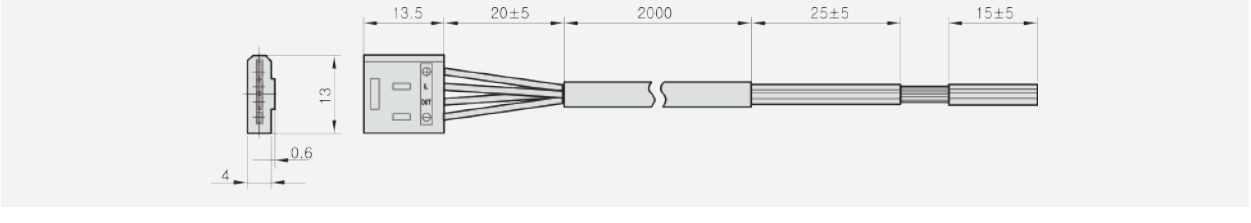
Type	NPN Type	PNP Type
Sensor Part Number	EE-SX672A(OMRON Product)	EE-SX672R(OMRON Product)
Power Supply Voltage	DC5~24V±10%, Ripple (P-P) 10% or less	DC5~24V±10%, Ripple (P-P) 10% or less
Current Consumption	35mA or less	30mA or less
Control Output	NPN Open-Collector Output DC5~24V 100mA or less Residual Voltage 0.8V or less (Load current of 100mA)	PNP Open-Collector Output DC5~24V 100mA or less Residual Voltage 1.3V or less (Load current of 100mA)
Indicator LED	Detection Display (Red)	Detection Display (Red)
Sensor Logic	Normally Open / Normally Closed (Selectable depending on connection)	Normally Open / Normally Closed (Selectable depending on connection)

4. Cable with Connector(OMRON Robot Code Attached Connector EE1010-R)

· Terminal Layout

①	⊕	Brown
②	L	Pink
③	OUT	Black
④	⊖	Blue





5. When Installing the Home Sensor Set

· Set the operating conditions so that the operating ambient temperature stays under 40˚C, and the surface temperature of the actuator motor stays under 90˚C.

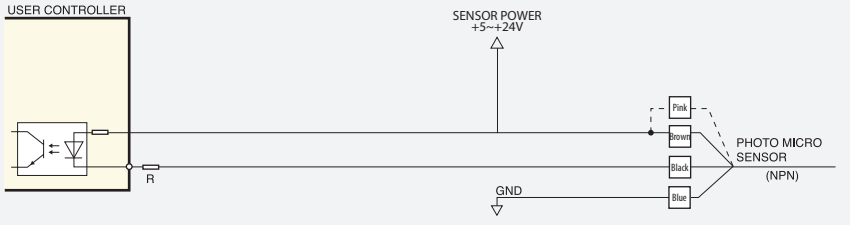
6. When Extending the Sensor Cable

Use shielded cable when extending the sensor cable 2 m or more, and the cable must be grounded.

Home Sensor Cable Installation

1. NPN Type

· With User's Controller

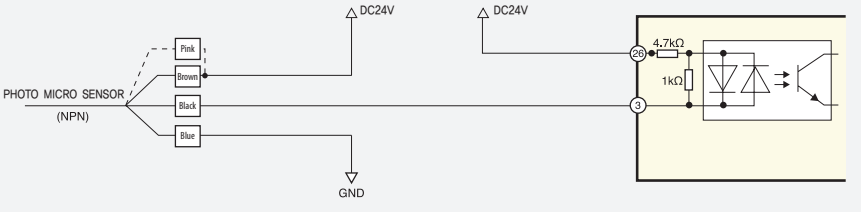


Connect the pink lead wire to the brown lead wire when the sensor logic is N.C(Normally Closed).

The pink lead wire is not connected when the sensor logic is N.O(normally open).

The power supply voltage for the sensor is DC5~24V, and the signal current of the sensor can be used up to 50mA. For details, refer to the controller specifications for wiring. If the signal current of the sensor exceeds the current range of the controller or sensor, connect a current limiting resistor (R).

· With Embedded Motion Controller Type Products (e.g., Ezi-SERVOII Plus-E)

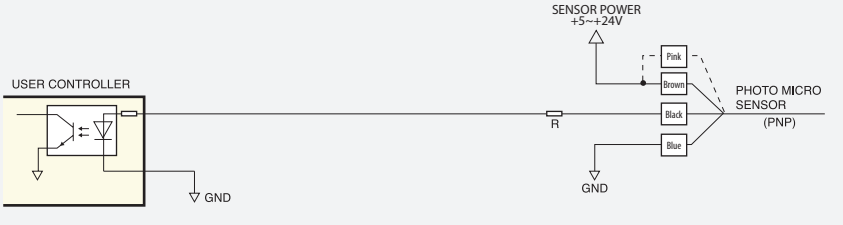


Connect the pink lead wire to the brown lead wire when the sensor logic is N.C(Normally Closed).

The pink lead wire is not connected when the sensor logic is N.O(normally open).

2. PNP Type

· With User's Controller

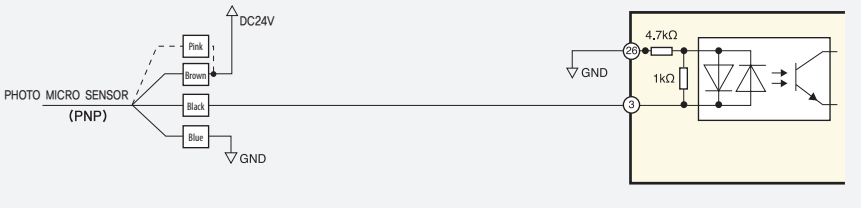


Connect the pink lead wire to the brown lead wire when the sensor logic is N.C(Normally Closed).

The pink lead wire is not connected when the sensor logic is N.O(normally open).

The power supply voltage for the sensor is DC5~24V, and the signal current of the sensor can be used up to 50mA. For details, refer to the controller specifications for wiring. If the signal current of the sensor exceeds the current range of the controller or sensor, connect a current limiting resistor (R).

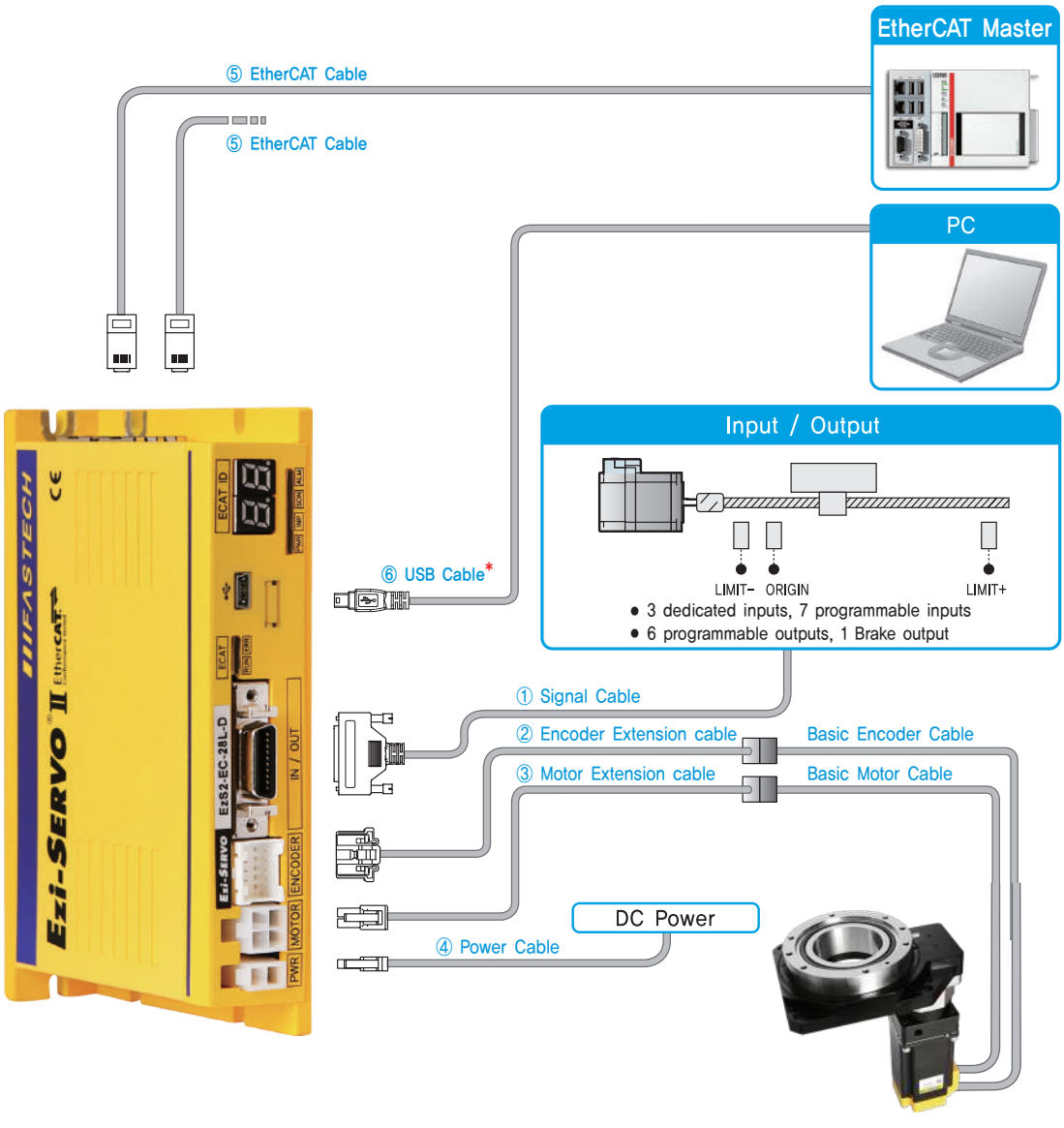
· With Embedded Motion Controller Type Products (e.g., Ezi-SERVOII Plus-E)



Connect the pink lead wire to the brown lead wire when the sensor logic is N.C(Normally Closed).

The pink lead wire is not connected when the sensor logic is N.O(normally open).

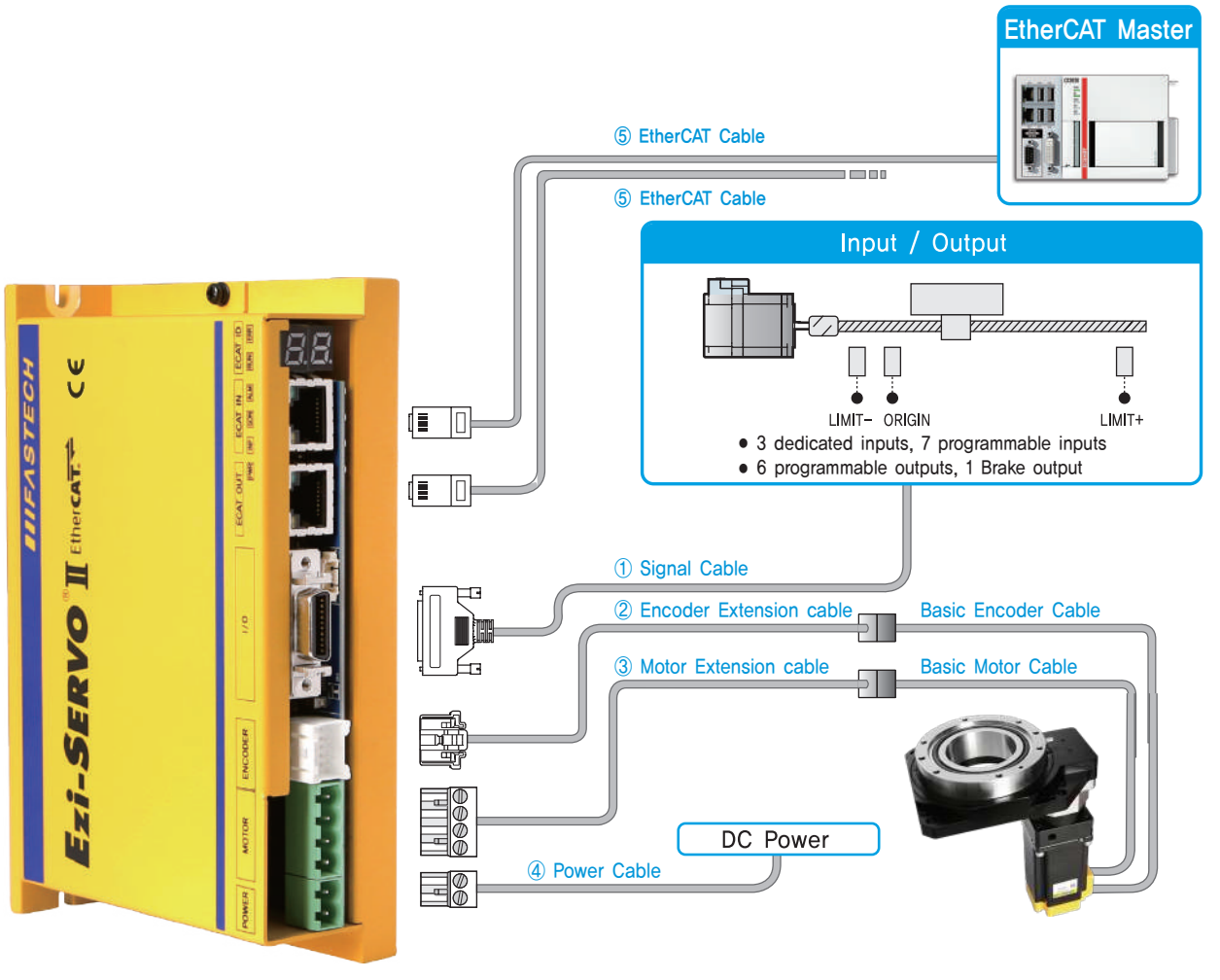
System Configuration [Ezi-SERVO II EtherCAT]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT catalog for more detailed information about Ezi-SERVO II EtherCAT drive.

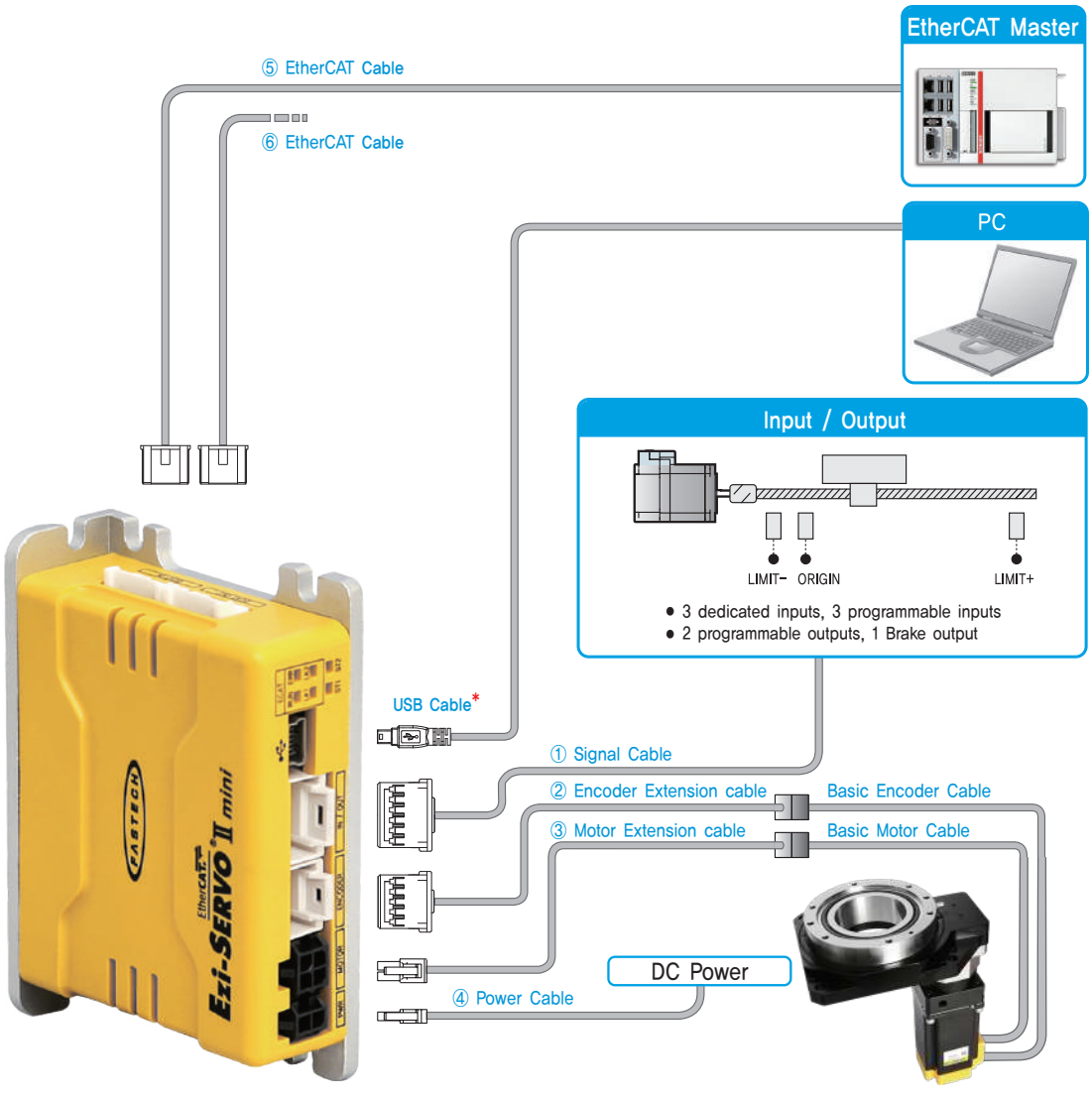
System Configuration [Ezi-SERVO II EtherCAT 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II EtherCAT is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT catalog for more detailed information about Ezi-SERVO II EtherCAT drive.

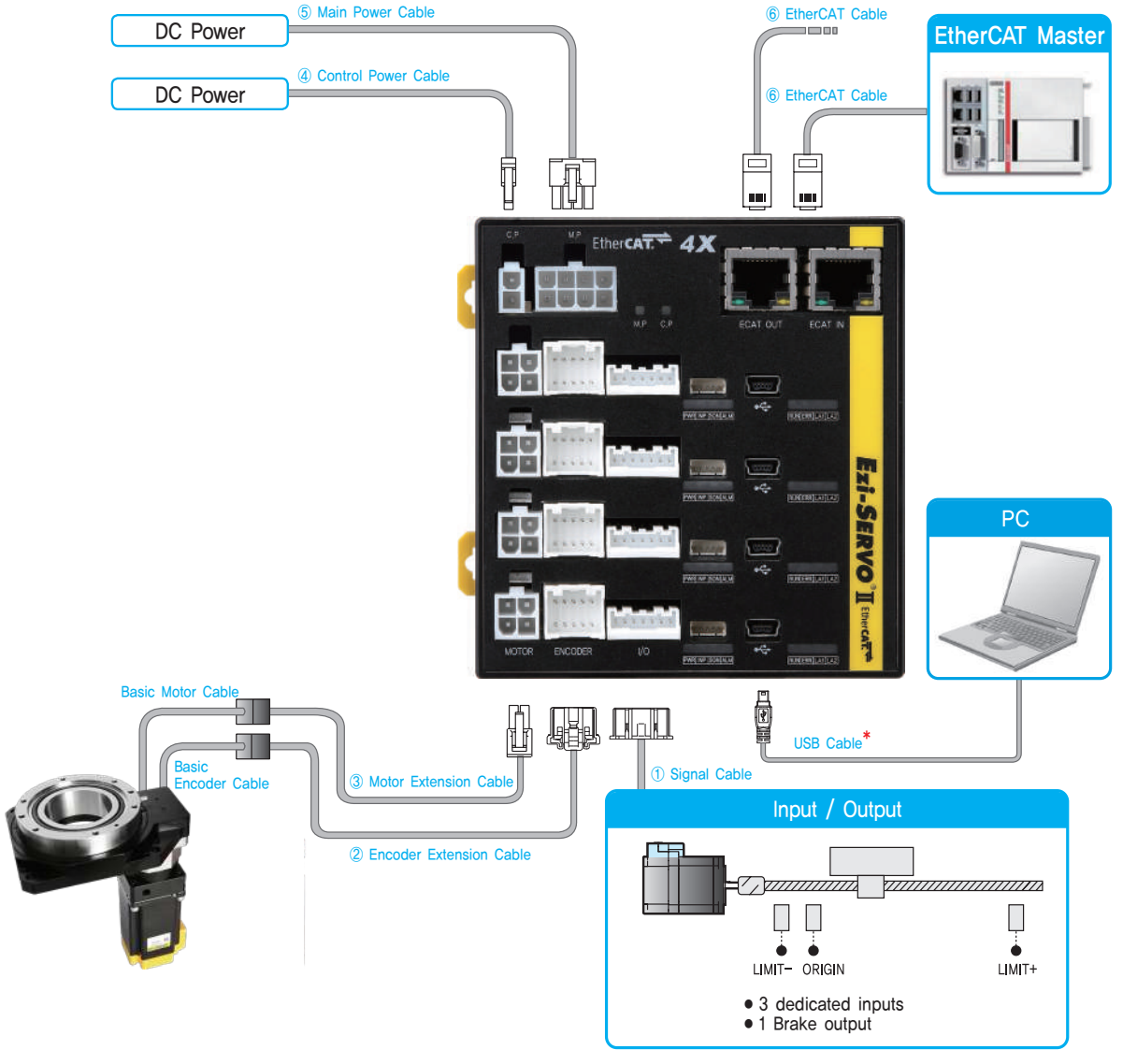
System Configuration [Ezi-SERVO II EtherCAT MINI]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

- Ezi-SERVO II EtherCAT MINI is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT MINI is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employs CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT MINI catalog for more detailed information about Ezi-SERVO II EtherCAT MINI drive.

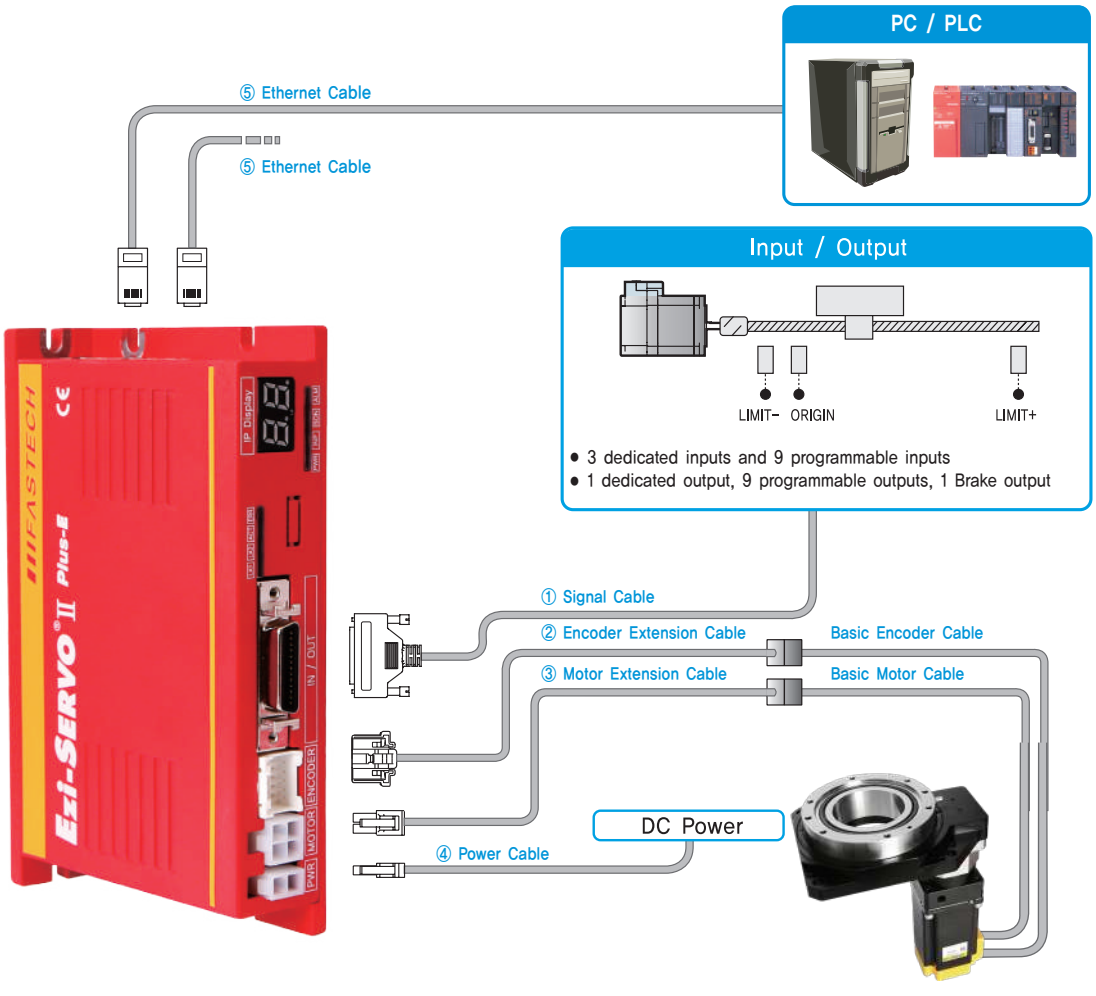
System Configuration [Ezi-SERVO II EtherCAT 4X]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Cable	20m	
③ Motor Extension Cable	20m	
④ Control Power Cable	2m	
⑤ Main Power Cable	2m	
⑥ EtherCAT Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	
USB Cable	5m	* USB cables are not provided by FASTECH. We recommend using a standard USB cable (USB 2.0 Mini Type B).

- Ezi-SERVO II EtherCAT 4X is stepping motor control system using EtherCAT, high speed ethernet (100Mbps Full-Duplex) based fieldbus. Ezi-SERVO II EtherCAT 4X is EtherCAT slave module which supports CAN application layer over EtherCAT (CoE). It employes CiA 402 Drive Profile and supports Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.
- Please refer to Ezi-SERVO II EtherCAT 4X catalog for more detailed information about Ezi-SERVO II EtherCAT 4X drive.

● System Configuration [Ezi-SERVO II Plus-E]

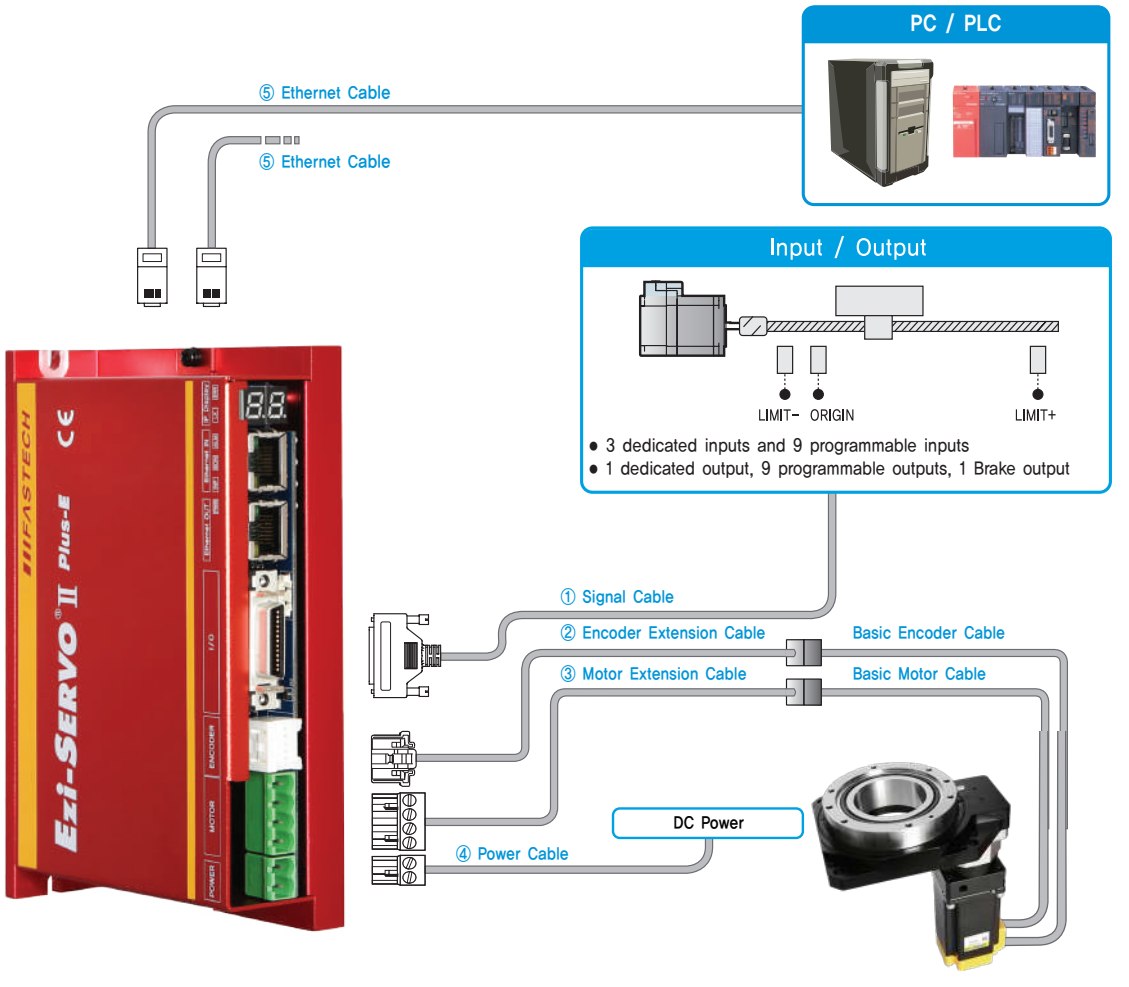


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

• Ezi-SERVO II Plus-E is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E provides a motion library(API) for programming in Windows 7/8/10.

• Please refer to Ezi-SERVO II Plus-E catalog for more detailed information about Ezi-SERVO II Plus-E drive.

System Configuration [Ezi-SERVO II Plus-E 86mm]

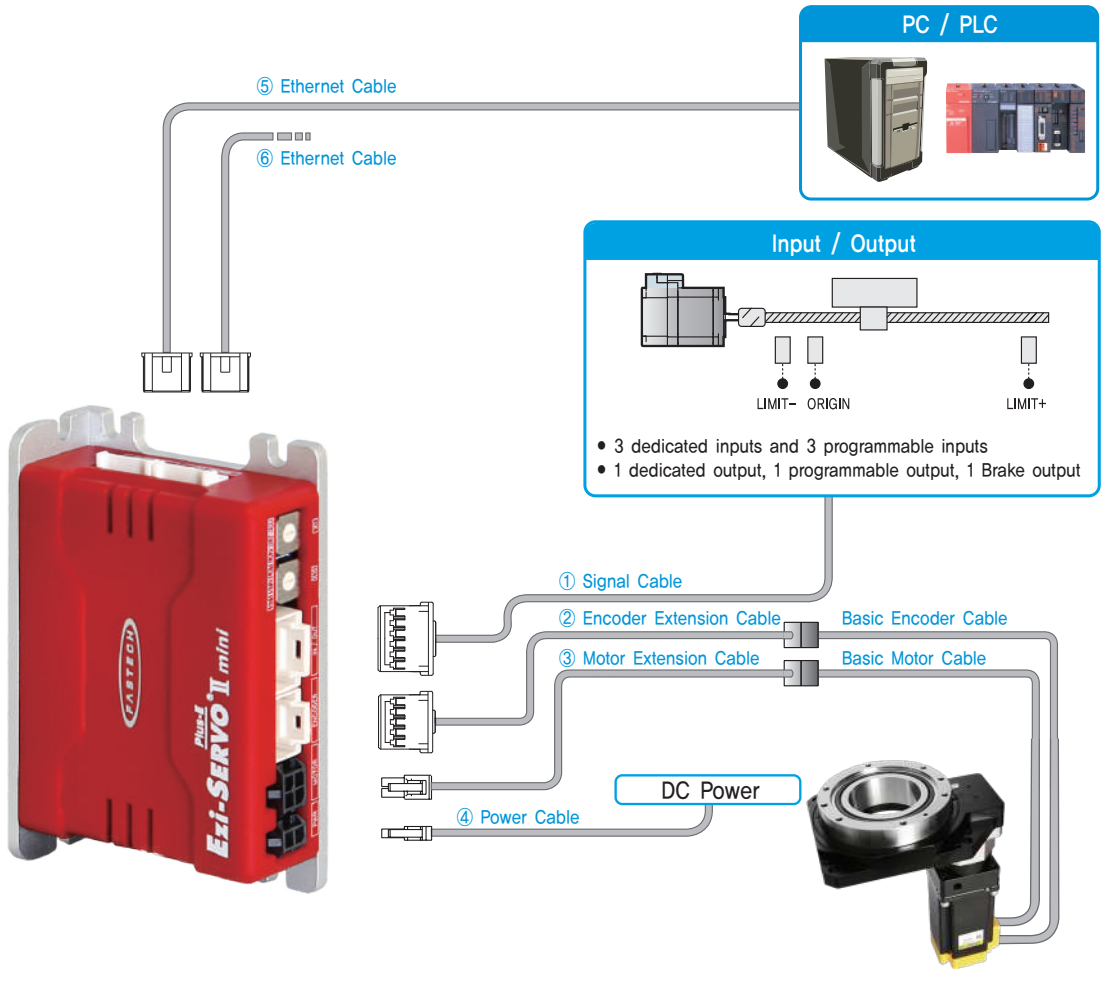


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

• Ezi-SERVO II Plus-E is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E provides a motion library(API) for programming in Windows 7/8/10.

• Please refer to Ezi-SERVO II Plus-E catalog for more detailed information about Ezi-SERVO II Plus-E drive.

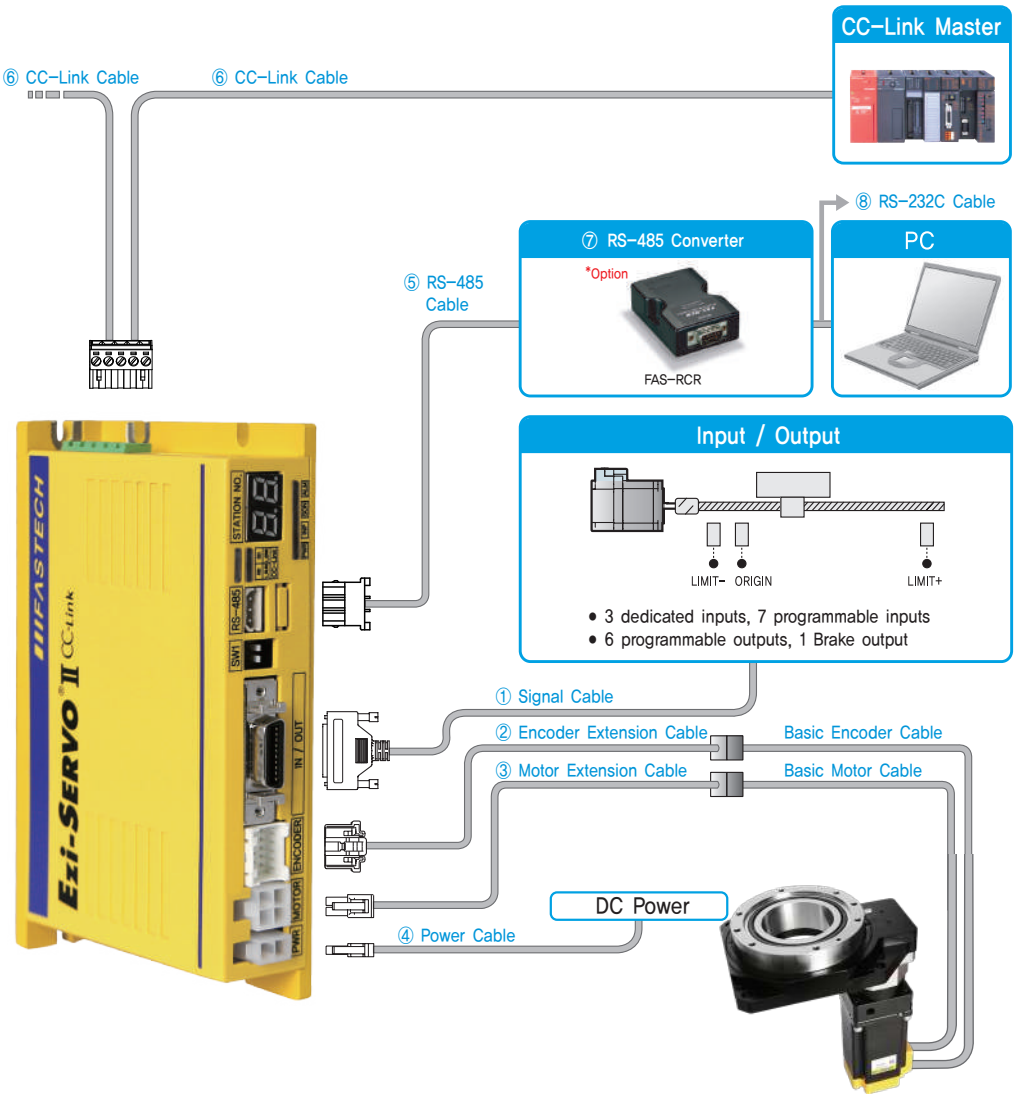
System Configuration [Ezi-SERVO II Plus-E MINI]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤/⑥ Ethernet Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II Plus-E MINI is a stepping motor control system that can drive up to 254 axis through Ethernet. It has a built-in Ethernet switch, so the system can be built in a daisy chain method. All motions can be controlled by Ethernet communication, and the conditions related to motions are stored in ROM as parameters. In addition, Ezi-SERVO II Plus-E MINI provides a motion library(API) for programming in Windows 7/8/10.
- Please refer to Ezi-SERVO II Plus-E MINI catalog for more detailed information about Ezi-SERVO II Plus-E MINI drive.

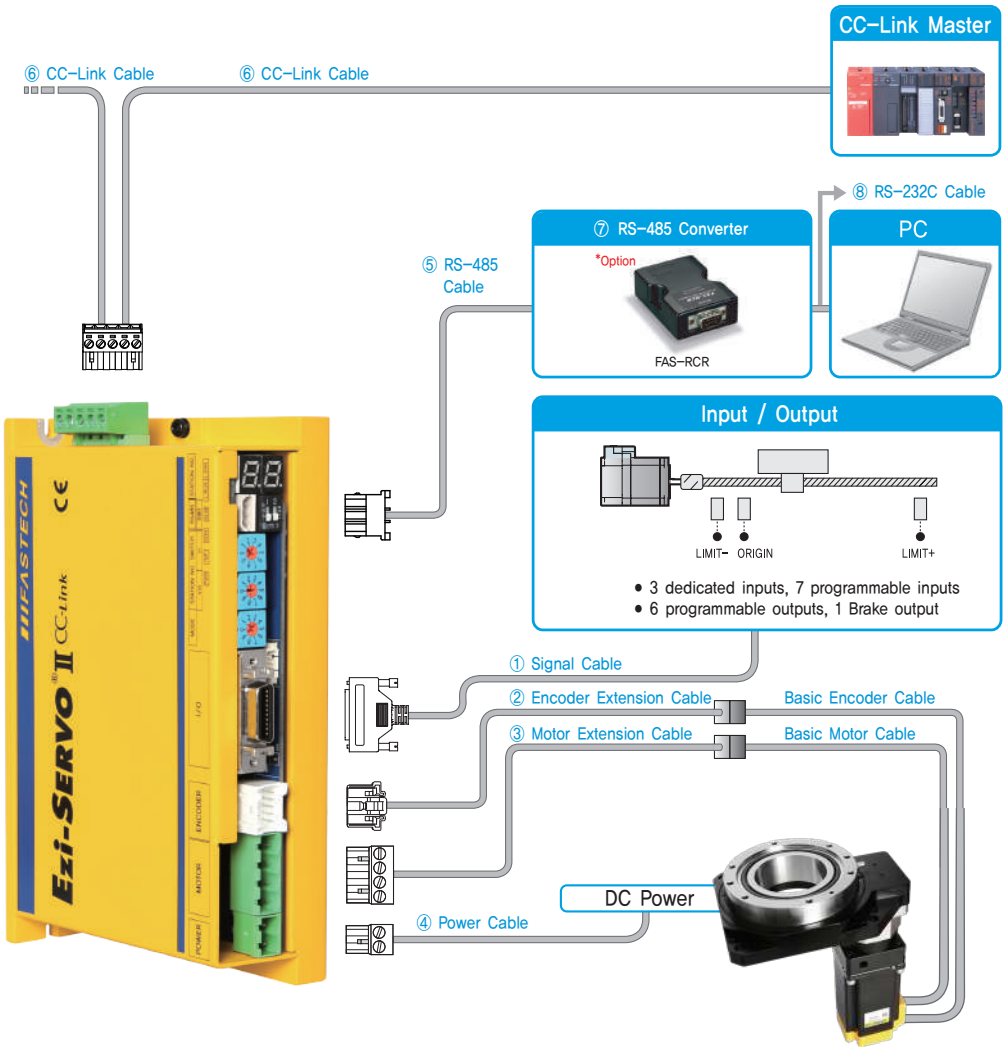
System Configuration [Ezi-SERVO II CC-Link]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ RS-485 Cable	2m	
⑥ CC-Link Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II CC-Link is a remote device module that supports high speed Fieldbus(Max. 10Mbps) network. It occupies 1 to 3 station in CC-Link, enabling multi-function control, and processes motion and monitoring functions with device commands.
- Please refer to Ezi-SERVO II CC-Link catalog for more detailed information about Ezi-SERVO II CC-Link drive.

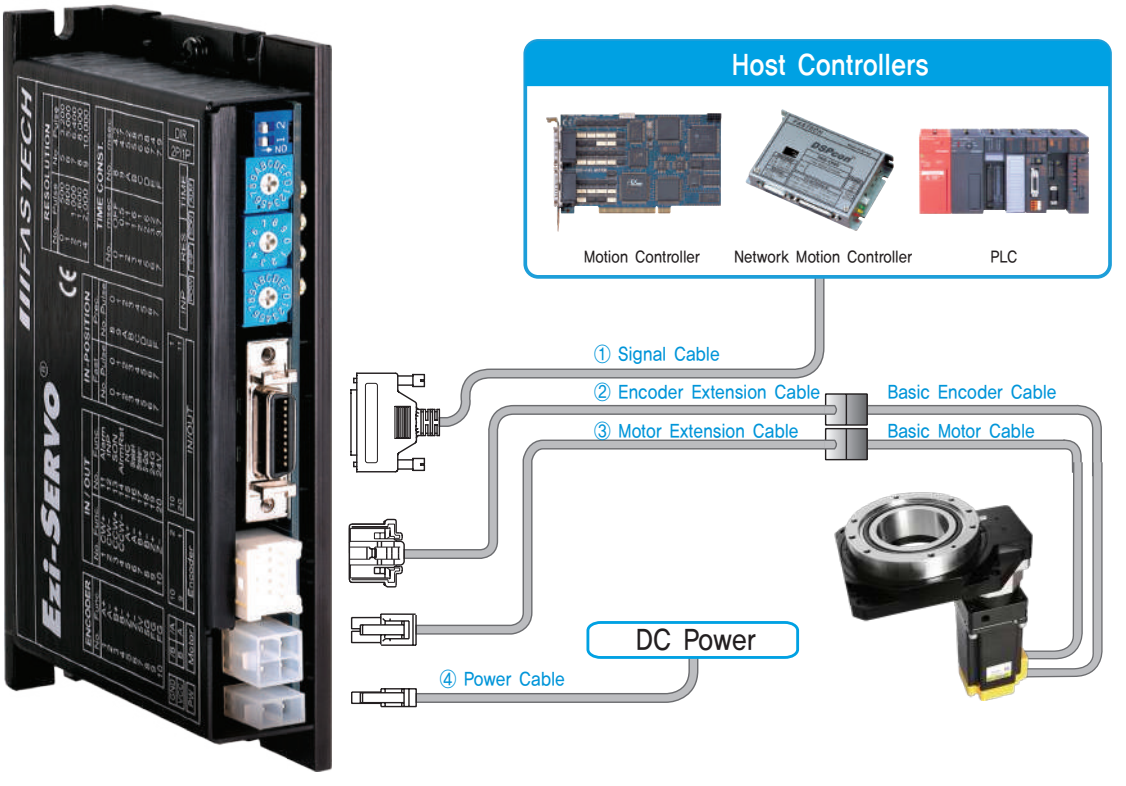
● System Configuration [Ezi-SERVO II CC-Link 86mm]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
⑤ RS-485 Cable	2m	
⑥ CC-Link Cable	100m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO II CC-Link is a remote device module that supports high speed Fieldbus(Max. 10Mbps) network. It occupies 1 to 3 station in CC-Link, enabling multi-function control, and processes motion and monitoring functions with device commands.
- Please refer to Ezi-SERVO II CC-Link catalog for more detailed information about Ezi-SERVO II CC-Link drive.

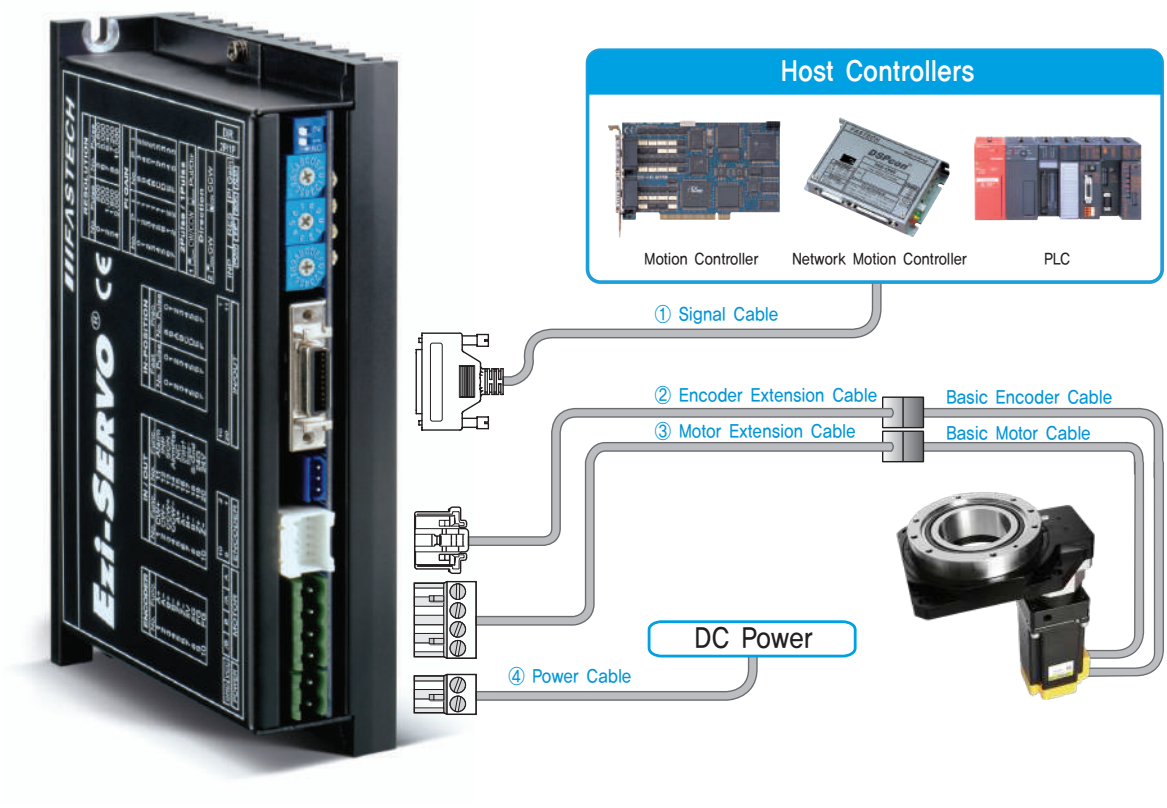
System Configuration [Ezi-SERVO ST]



Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

- Ezi-SERVO ST is a pulse input type drive.
- Please refer to Ezi-SERVO ST catalog for more detailed information about Ezi-SERVO ST drive.

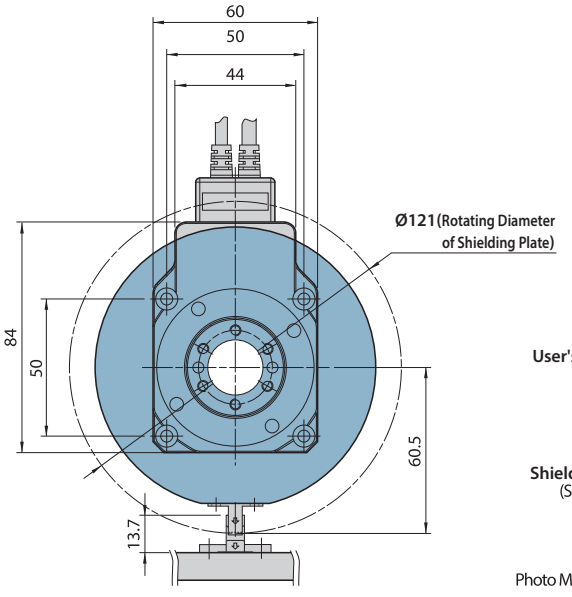
● System Configuration [Ezi-SERVO ST 86mm]

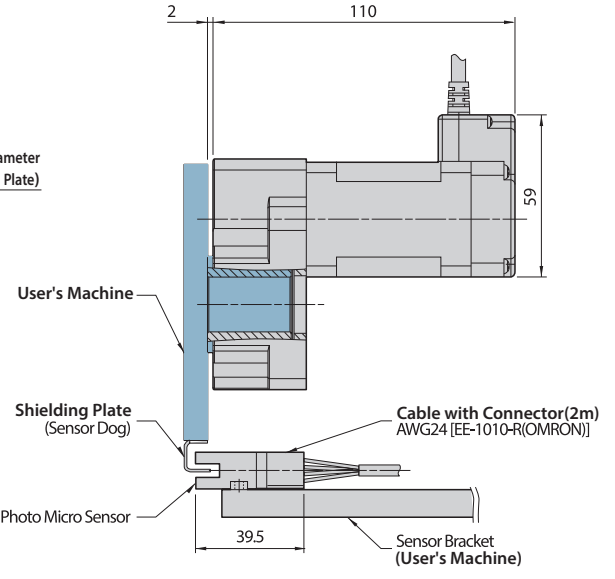


Cable Type	Max. Length	Remarks
① Signal Cable	20m	Options (Sold separately)
② Encoder Extension Cable	20m	
③ Motor Extension Cable	20m	
④ Power Cable	2m	
Basic Encoder Cable	0.3m (Basic length)	Basic cables are attached to motors.
Basic Motor Cable	0.3m (Basic length)	

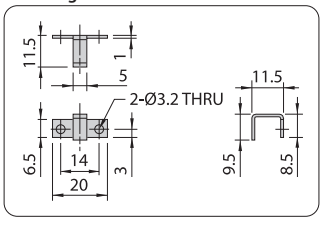
- Ezi-SERVO ST is a pulse input type drive.
- Please refer to Ezi-SERVO ST catalog for more detailed information about Ezi-SERVO ST drive.

Home Sensor Installation Dimensions [RB-HG60]

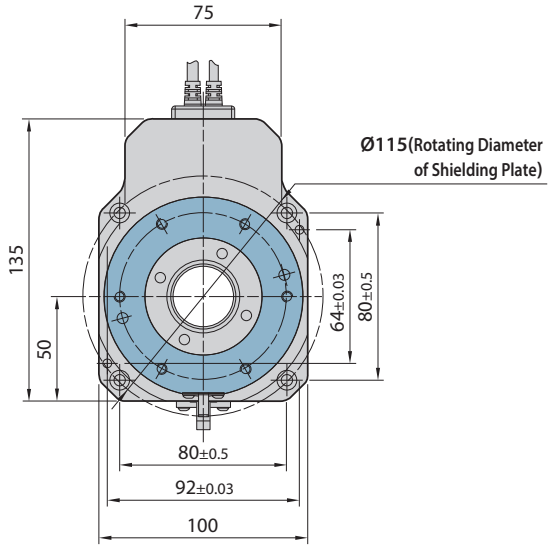


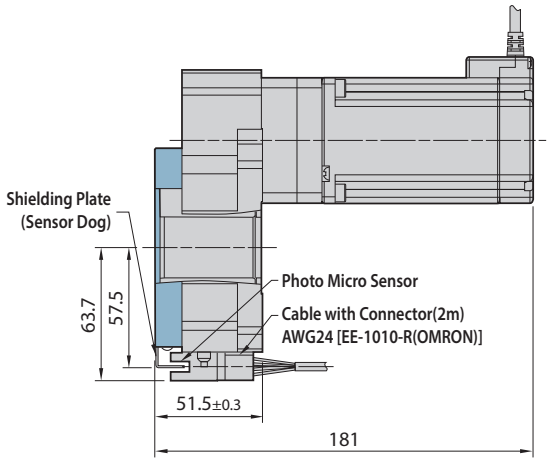


Shielding Plate Dimensions

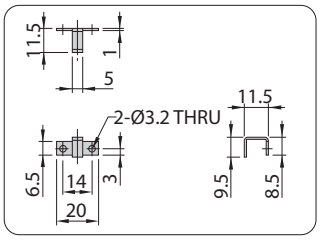


● Home Sensor Installation Dimensions [RB-HG100]

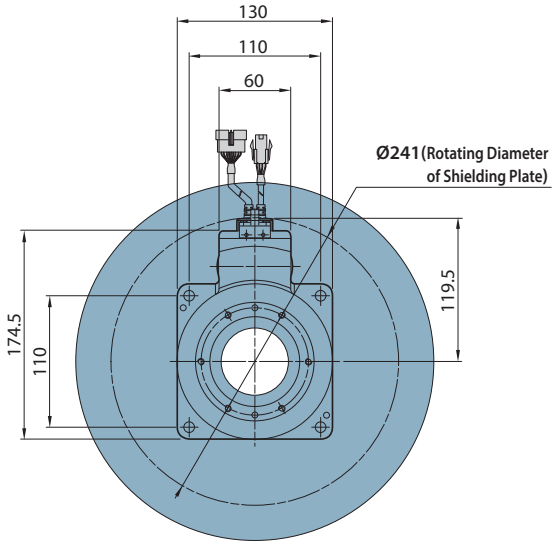


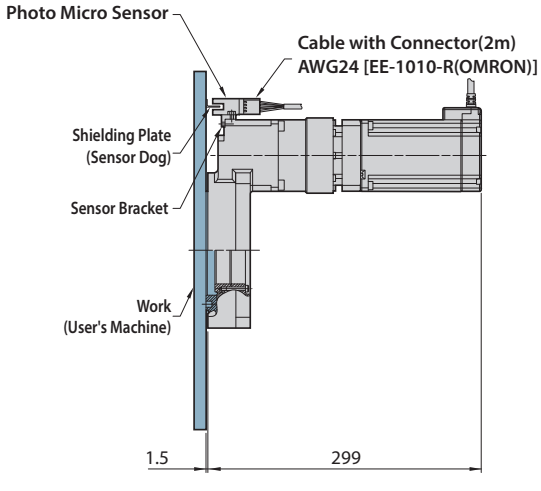


Shielding Plate Dimensions

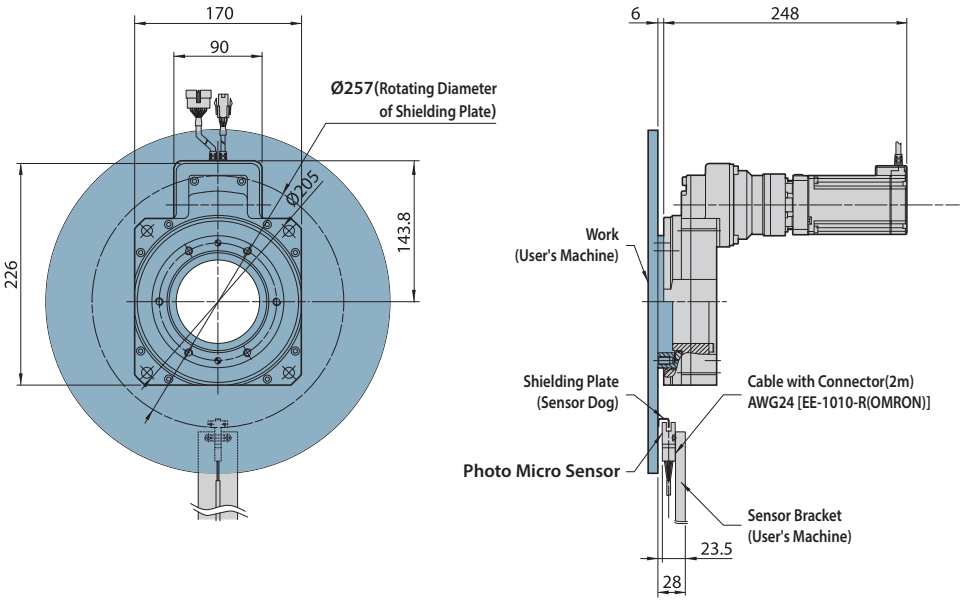


● Home Sensor Installation Dimensions [RB-HG130S]

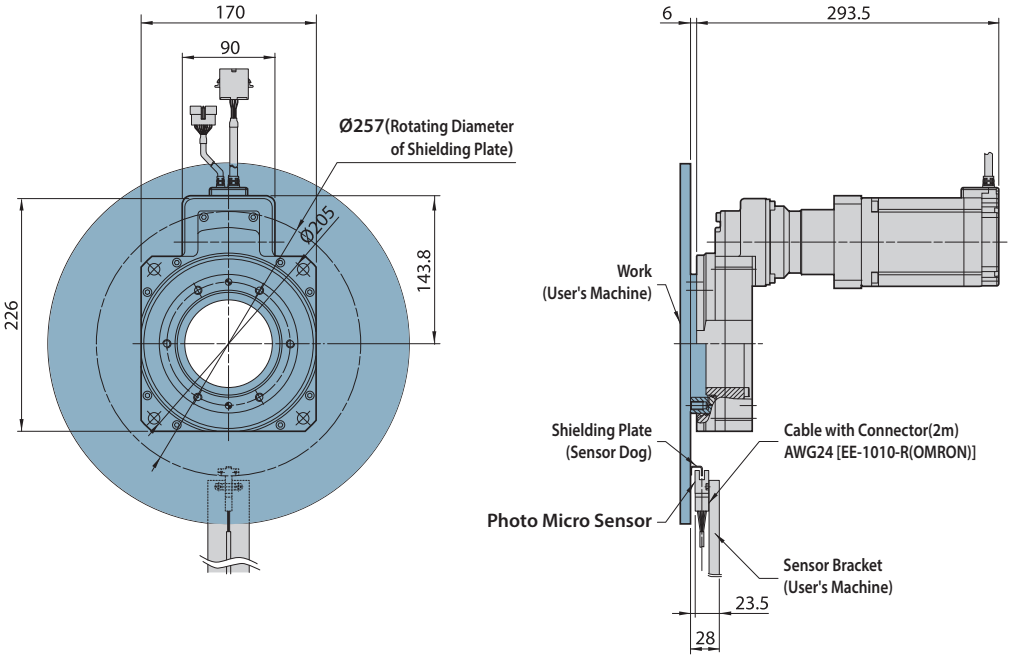




Home Sensor Installation Dimensions [RB-HG170S-60L]



Home Sensor Installation Dimensions [RB-HG170S-86L]



FASTECH_

Product Information

Ezi-SERVO®

Ezi-STEP®

OPTION

Ezi-IO®

Ezi-MOTIONLINK®

Ezi-MOTIONGATE®

Ezi-Robo®

Ezi-SPEED®

Ezi-SPEED


Ezi-SPEED
STAND-BY
RUN
FWD
REV
FASTECH
GGM

Ezi-SPEED®

BLDC Motor Speed Control System

- AC Input (110V, 220V) BLDC Motor Speed Control System
- Compact · Light Weight · High Power · High Efficiency Brushless Motor
- Wide Speed Control Range (50~4000r/min)
- Stable Speed Control by Vector Control (Speed Regulation within 0.2%)
- Easy Connection, Easy Operation
- Various Product Line-Up (30, 60, 120, 200, 400W)



FASTECH

Fast, Accurate, Smooth Motion

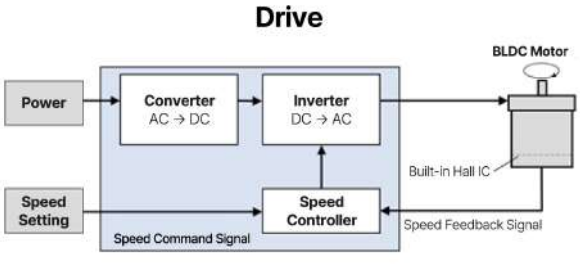
Ezi-SPEED®

BLDC Motor Speed Control System



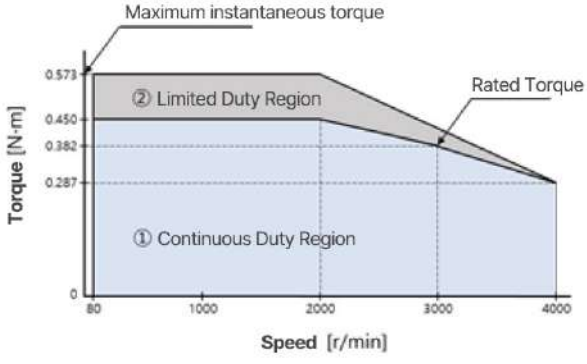
1 BLDC Motor Unit

A typical DC motor is rotated using a brush and rectifier. Therefore, maintenance is required on a regular basis. On the other hand, BLDC (Brushless DC) motors do not use mechanical contacts and rotate through a driving circuit made of semiconductors, so they have a long lifespan and excellent maintainability. A permanent magnet is built into the rotor to increase efficiency, and the torque characteristics are maintained constant in all speed ranges by automatically controlling the motor current. In addition, since feedback control is performed using Hall IC, the speed can be accurately controlled according to the command from low speed to high speed.



〈 Control Block Diagram 〉

The BLDC motor has a constant torque from low speed to rated rotational speed.
Therefore, it rotates at a stable speed no matter how the load changes in size. BLDC motor has continuous duty region (①) and limited duty region (②). Limited region can be used as the acceleration torque when starting the inertial stuff. However, in this region, if it's used for more than 40 seconds, overload protection is protected and the motor stops.



〈 Example of torque characteristics according to speed of BLDC motor 〉

2 High Precision Speed Control

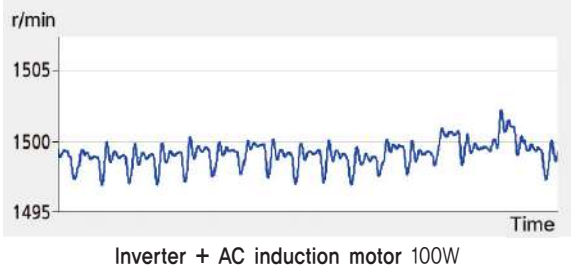
(Speed Regulation 0.2%)

Ezi-SPEED compares the setting speed with the speed feedback signals from the motor at all time, and adjusts the motor current using vector control algorithm. So, even if the load changes, stable rotation is maintained from low speed to high speed. Inverter controlled AC induction motor does not perform feedback control, so the speed will be reduced significantly when load increases.
Ezi-SPEED is recommended for applications that require stable speed.

Speed measuring value



Ezi-SPEED 120W



Inverter + AC induction motor 100W

* Load factor : 95% * Setting speed : 1,500r/min
* Resolution of external encoder for measuring velocity ripple : 32,000P/R

3 Wide Speed Control Range

(Speed Ratio: 1:80)

Ezi-SPEED has wide speed control range compared to AC induction motor with inverter. Because torque is not restricted at low speed, Ezi-SPEED is recommended for application that requires stable torque over from low to high speed.

Product	Speed Control Range [r/min]	Speed Ratio
Ezi-SPEED	50~4,000	1:80
Inverter + AC induction motor	200~2,400	1:12

* Speed range of Inverter + AC induction motor varies depending on model type.

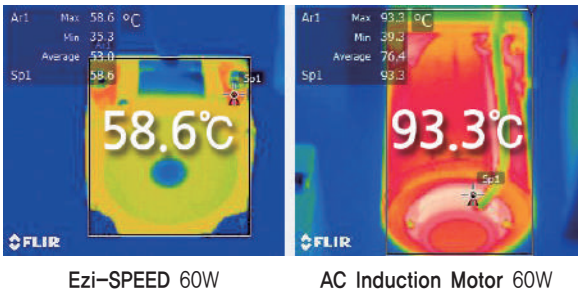
4 Compact / Light Weight / High Power / High Efficiency

Unlike AC induction motors, BLDC motors use permanent magnets in the rotor so that it could prevent secondary loss from rotor.
Therefore, BLDC motors has higher efficiency than inverter controlled AC induction motor so that customers can save energy.



Ezi-SPEED 60W **AC Induction Motor** 60W

● Comparison of motor temperature after 4 hours continuous operation when load factor is 100% and Setting speed is 1,500r/min.



Ezi-SPEED 60W **AC Induction Motor** 60W

5 Easy Wiring

The motor and sensor connector can be easily connected to drive. There is no need for soldering or special tools when connecting the power and I/O cables. For power connector, just insert the lead wire and fix using screw driver. For I/O connector, just insert the lead wire while pushing the orange button.



Motor Connector Wiring

6 Easy to Use

(Front Panel)



• Control of Operation and Stop

The motor starts when switch is in the "RUN" position, and stops after deceleration when it is moved to the "STAND-BY" position.



• Control of rotation direction

Changing the rotation direction during the operation.

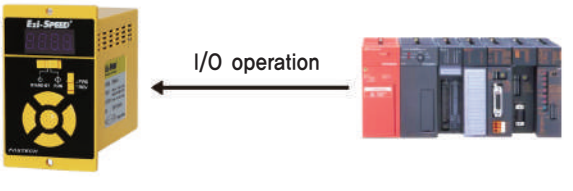


• Control of Speed

The speed control buttons allow you to use simple speed control and many functions.
Pushing + button increases the speed and pushing − button reduces the speed.
When the desired speed is reached, simply push the S button to set the speed value.

7 Operation by External I/O

External I/O can control Start/Stop, Changing rotation direction and Multi speed operation.



Ezi-SPEED **PLC**

8 Display Load Factor and Actual Speed

Load factor is displayed as percentage like 100% for rated torque. User can check the load during operating the motor and can maintain the motor in optimal condition by checking load changes due to the secular change.
Also the actual speed can be displayed.
(Motor speed, Gearbox speed, Linear speed)



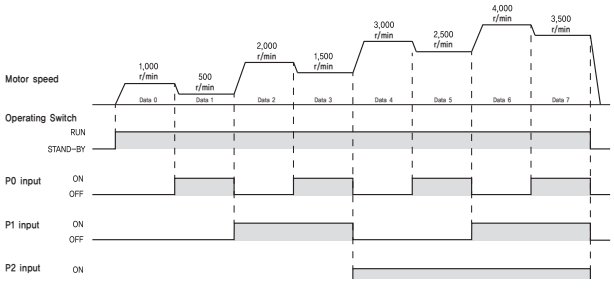
Indication at load factor of 100%



Actual speed at setting speed of 1,500r/min

9 8-Speed Settings

8 steps speed operation can be done by setting No.0 ~ No.7 data using inputs P0, P1, P2. We can do this only with Ezi-SPEED without any extra controller.



10 Various Functions can be Set on the Drive

- Motor Start/Stop
- Setting the operation speed
- Changing the rotation direction
- Changing the indication
- Operation speed indication when the speed decreasing or increasing ratio is set
- Setting the acceleration/deceleration time
- Button operation lock
- Speed setting for 8-speed operation
- Speed limits setting
- Validating the external operation signals
- External I/O signal allocation
- Setting the overload alarm detection time

11 Protection Function

- Ezi-SPEED detect abnormal situations like overload, over voltage etc. When this happens, the operation is stopped and alarm is displayed.
- A regenerative resistor can be used when the deceleration time is short or when the large inertia load is used. Also the protection function can be activated for the excessive external force acting on the motor shaft.

Ezi-SPEED Part Numbering

Ezi-SPEED-60-H-30-C-R5-P

Series Name

Motor Flange Size

60 : 61×61mm
80 : 81×81mm
90 : 90×90mm
104 : 104.5×104.5mm

Gearbox Size

60 : 60×60mm
80 : 80×80mm
90 : 90×90mm
104 : 110×110mm

Hollow Shaft Gearbox size

60 : 60×120.5mm
80 : 80×160.5mm
90 : 90×180mm
104 : Not applicable

Shaft Figuration

S : Straight
(Single unit, D-cut shape)
H : High Strength
(Gearbox coupling, gear tooth shape)

Output Power

30 : 30W
60 : 60W
120 : 120W
200 : 200W
400 : 400W

Power Supply Voltage

A : Single-Phase
100~120V
C : Single-Phase,
Three-Phase
200~240V

Gear Ratio

Blank – Without Gear
R5 – 1:5
R10 – 1:10
R15 – 1:15
R20 – 1:20
R30 – 1:30
R50 – 1:50
R100 – 1:100
R200 – 1:200

Gearbox (Shape)

Blank – Without Gear
P – Parallel Gearbox
H – Hollow Shaft Gearbox

Standard Combination

Output Power	Unit Part Number	Motor Model Number	Drive Model Number
30W	Ezi-SPEED-60-S-30-A	ESM-60-S-30	ESD-30-A
	Ezi-SPEED-60-S-30-C		ESD-30-C
60W	Ezi-SPEED-80-S-60-A	ESM-80-S-60	ESD-60-A
	Ezi-SPEED-80-S-60-C		ESD-60-C
120W	Ezi-SPEED-90-S-120-A	ESM-90-S-120	ESD-120-A
	Ezi-SPEED-90-S-120-C		ESD-120-C
200W	Ezi-SPEED-104-S-200-C	ESM-104-S-200	ESD-200-C
400W	Ezi-SPEED-104-S-400-C	ESM-104-S-400	ESD-400-C

Combination with Gearbox

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
30W	Ezi-SPEED-60-H-30-A-R5-P	ESM-60-H-30	ESD-30-A	ESG-60-H-R5-P	1:5
	Ezi-SPEED-60-H-30-C-R5-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R5-H		ESD-30-A	ESG-60-H-R5-H	
	Ezi-SPEED-60-H-30-C-R5-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R10-P		ESD-30-A	ESG-60-H-R10-P	1:10
	Ezi-SPEED-60-H-30-C-R10-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R10-H		ESD-30-A	ESG-60-H-R10-H	
	Ezi-SPEED-60-H-30-C-R10-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R15-P		ESD-30-A	ESG-60-H-R15-P	1:15
	Ezi-SPEED-60-H-30-C-R15-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R15-H		ESD-30-A	ESG-60-H-R15-H	
	Ezi-SPEED-60-H-30-C-R15-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R20-P		ESD-30-A	ESG-60-H-R20-P	1:20
	Ezi-SPEED-60-H-30-C-R20-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R20-H		ESD-30-A	ESG-60-H-R20-H	
	Ezi-SPEED-60-H-30-C-R20-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R30-P		ESD-30-A	ESG-60-H-R30-P	1:30
	Ezi-SPEED-60-H-30-C-R30-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R30-H		ESD-30-A	ESG-60-H-R30-H	
	Ezi-SPEED-60-H-30-C-R30-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R50-P		ESD-30-A	ESG-60-H-R50-P	1:50
	Ezi-SPEED-60-H-30-C-R50-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R50-H		ESD-30-A	ESG-60-H-R50-H	
	Ezi-SPEED-60-H-30-C-R50-H		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R100-P		ESD-30-A	ESG-60-H-R100-P	1:100
	Ezi-SPEED-60-H-30-C-R100-P		ESD-30-C		
	Ezi-SPEED-60-H-30-A-R100-H		ESD-30-A	ESG-60-H-R100-H	
	Ezi-SPEED-60-H-30-C-R100-H		ESD-30-C		
	Ezi-SPEED-60-H-30-C-R200-P		ESD-30-A	ESG-60-H-R200-P	1:200
	Ezi-SPEED-60-H-30-C-R200-P		ESD-30-C		
	Ezi-SPEED-60-H-30-C-R200-H		ESD-30-A	ESG-60-H-R200-H	
	Ezi-SPEED-60-H-30-C-R200-H		ESD-30-C		

Combination with Gearbox

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
60W	Ezi-SPEED-80-H-60-A-R5-P	ESM-80-H-60	ESD-60-A	ESG-80-H-R5-P	1:5
	Ezi-SPEED-80-H-60-C-R5-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R5-H		ESD-60-A	ESG-80-H-R5-H	
	Ezi-SPEED-80-H-60-C-R5-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R10-P		ESD-60-A	ESG-80-H-R10-P	1:10
	Ezi-SPEED-80-H-60-C-R10-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R10-H		ESD-60-A	ESG-80-H-R10-H	
	Ezi-SPEED-80-H-60-C-R10-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R15-P		ESD-60-A	ESG-80-H-R15-P	1:15
	Ezi-SPEED-80-H-60-C-R15-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R15-H		ESD-60-A	ESG-80-H-R15-H	
	Ezi-SPEED-80-H-60-C-R15-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R20-P		ESD-60-A	ESG-80-H-R20-P	1:20
	Ezi-SPEED-80-H-60-C-R20-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R20-H		ESD-60-A	ESG-80-H-R20-H	
	Ezi-SPEED-80-H-60-C-R20-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R30-P		ESD-60-A	ESG-80-H-R30-P	1:30
	Ezi-SPEED-80-H-60-C-R30-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R30-H		ESD-60-A	ESG-80-H-R30-H	
	Ezi-SPEED-80-H-60-C-R30-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R50-P		ESD-60-A	ESG-80-H-R50-P	1:50
	Ezi-SPEED-80-H-60-C-R50-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R50-H		ESD-60-A	ESG-80-H-R50-H	
	Ezi-SPEED-80-H-60-C-R50-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R100-P		ESD-60-A	ESG-80-H-R100-P	1:100
	Ezi-SPEED-80-H-60-C-R100-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R100-H		ESD-60-A	ESG-80-H-R100-H	
	Ezi-SPEED-80-H-60-C-R100-H		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R200-P		ESD-60-A	ESG-80-H-R200-P	1:200
	Ezi-SPEED-80-H-60-C-R200-P		ESD-60-C		
	Ezi-SPEED-80-H-60-A-R200-H		ESD-60-A	ESG-80-H-R200-H	
	Ezi-SPEED-80-H-60-C-R200-H		ESD-60-C		
120W	Ezi-SPEED-90-H-120-A-R5-P	ESM-90-H-120	ESD-120-A	ESG-90-H-R5-P	1:5
	Ezi-SPEED-90-H-120-C-R5-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R5-H		ESD-120-A	ESG-90-H-R5-H	
	Ezi-SPEED-90-H-120-C-R5-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R10-P		ESD-120-A	ESG-90-H-R10-P	1:10
	Ezi-SPEED-90-H-120-C-R10-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R10-H		ESD-120-A	ESG-90-H-R10-H	
	Ezi-SPEED-90-H-120-C-R10-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R15-P		ESD-120-A	ESG-90-H-R15-P	1:15
	Ezi-SPEED-90-H-120-C-R15-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R15-H		ESD-120-A	ESG-90-H-R15-H	
	Ezi-SPEED-90-H-120-C-R15-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R20-P		ESD-120-A	ESG-90-H-R20-P	1:20
	Ezi-SPEED-90-H-120-C-R20-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R20-H		ESD-120-A	ESG-90-H-R20-H	
	Ezi-SPEED-90-H-120-C-R20-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R30-P		ESD-120-A	ESG-90-H-R30-P	1:30
	Ezi-SPEED-90-H-120-C-R30-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R30-H		ESD-120-A	ESG-90-H-R30-H	
	Ezi-SPEED-90-H-120-C-R30-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R50-P		ESD-120-A	ESG-90-H-R50-P	1:50
	Ezi-SPEED-90-H-120-C-R50-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R50-H		ESD-120-A	ESG-90-H-R50-H	
	Ezi-SPEED-90-H-120-C-R50-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R100-P		ESD-120-A	ESG-90-H-R100-P	1:100
	Ezi-SPEED-90-H-120-C-R100-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R100-H		ESD-120-A	ESG-90-H-R100-H	
	Ezi-SPEED-90-H-120-C-R100-H		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R200-P		ESD-120-A	ESG-90-H-R200-P	1:200
	Ezi-SPEED-90-H-120-C-R200-P		ESD-120-C		
	Ezi-SPEED-90-H-120-A-R200-H		ESD-120-A	ESG-90-H-R200-H	
	Ezi-SPEED-90-H-120-C-R200-H		ESD-120-C		

Output Power	Unit Part Number	Motor Model Number	Drive Model Number	Gearbox Model Number	Gear Ratio
200W	Ezi-SPEED-104-H-200-C-R5-P	ESM-104-H-200	ESD-200-C	ESG-104-H-R5-P	1:5
	Ezi-SPEED-104-H-200-C-R10-P			ESG-104-H-R10-P	1:10
	Ezi-SPEED-104-H-200-C-R15-P			ESG-104-H-R15-P	1:15
	Ezi-SPEED-104-H-200-C-R20-P			ESG-104-H-R20-P	1:20
	Ezi-SPEED-104-H-200-C-R30-P			ESG-104-H-R30-P	1:30
	Ezi-SPEED-104-H-200-C-R50-P			ESG-104-H-R50-P	1:50
	Ezi-SPEED-104-H-200-C-R100-P			ESG-104-H-R100-P	1:100
	Ezi-SPEED-104-H-200-C-R200-P			ESG-104-H-R200-P	1:200
400W	Ezi-SPEED-104-H-400-C-R5-P	ESM-104-H-400	ESD-400-C	ESG-104-H-R5-P	1:5
	Ezi-SPEED-104-H-400-C-R10-P			ESG-104-H-R10-P	1:10
	Ezi-SPEED-104-H-400-C-R15-P			ESG-104-H-R15-P	1:15
	Ezi-SPEED-104-H-400-C-R20-P			ESG-104-H-R20-P	1:20
	Ezi-SPEED-104-H-400-C-R30-P			ESG-104-H-R30-P	1:30
	Ezi-SPEED-104-H-400-C-R50-P			ESG-104-H-R50-P	1:50
	Ezi-SPEED-104-H-400-C-R100-P			ESG-104-H-R100-P	1:100
	Ezi-SPEED-104-H-400-C-R200-P			ESG-104-H-R200-P	1:200

● Specifications of Drive

1. AC110V Input Type Specifications

Unit Part Number		ESD-30-A	ESD-60-A	ESD-120-A
Rated Output Power		30W	60W	120W
Power Supply Input		Single-Phase 100~120V		
Frequency		50/60Hz		
Permissible Frequency Range		±5%		
Rated Input Current		0.95A	1.56A	2.89A
Maximum Input Current		2.85A	4.68A	8.07A
Environment	Temperature	· In Use : 0~40℃ · In Storage : -20~70℃		
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)		
	Vibration resistant	0.5g		
Function	Speed Control Range	50~4,000r/min		
	Rated Speed	3,000r/min		
	Speed Regulation	0.2% or less / Conditions: 0~Rated Torque, Rated Speed, Rated Voltage, normal Temperature		
	Rated Torque	0.096Nm	0.192Nm	0.382Nm
	Maximum Instantaneous Torque	0.288Nm	0.576Nm	1.146Nm
	Rated Output Current	0.21A	0.36A	0.85A
	Error Types	Under voltage Error, Over voltage Error, Over heat Error, Over current Error, Speed feedback Error, Sensor Error, Over speed Error, Over load Error, Operation at power-on Error, External Error		
I/O Signal	Input Signal Function	5 user inputs (Photocoupler)		
	Output Signal Function	3 user outputs (Photocoupler)		

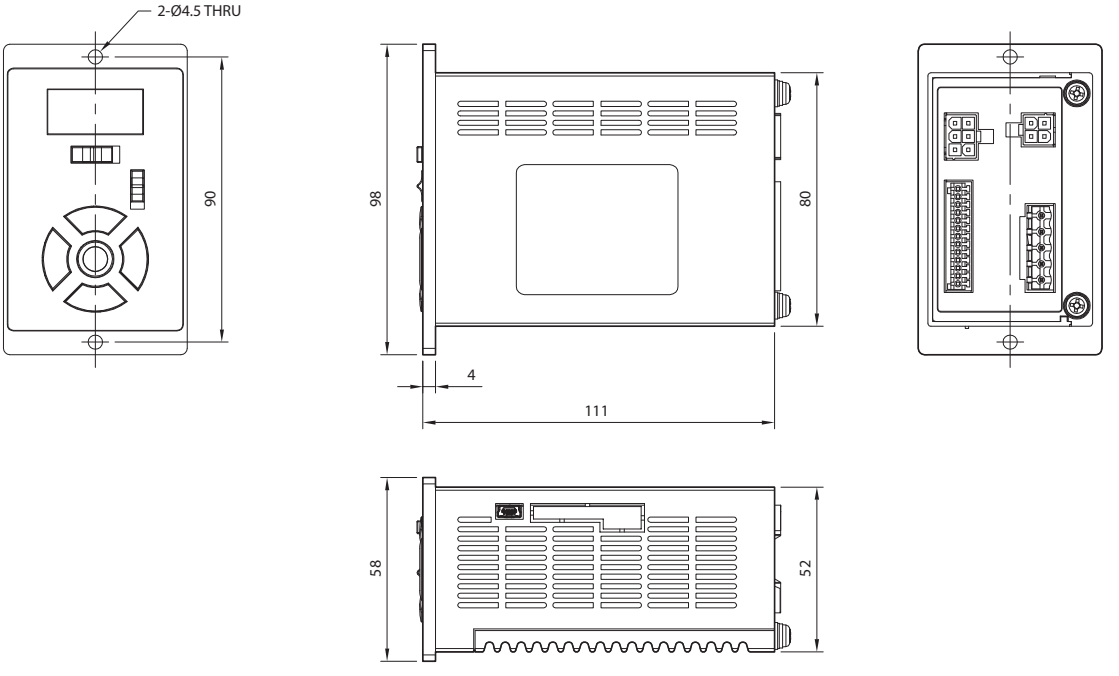
● Specifications of Drive

2. AC220V Input Type Specifications

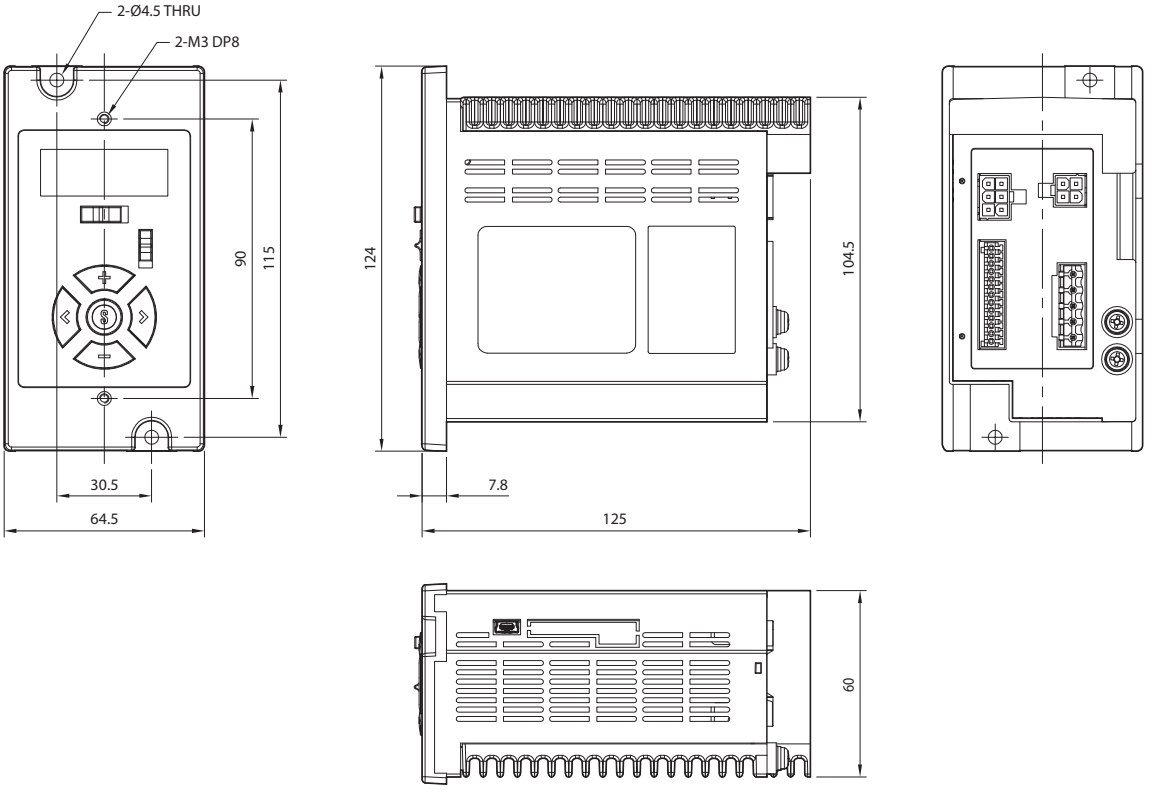
Unit Part Number		ESD-30-C	ESD-60-C	ESD-120-C	ESD-200-C	ESD-400-C
Rated Output Power		30W	60W	120W	200W	400W
Power Supply Input		Single-Phase 200~240V / Three-Phase 200~240V				
Frequency		50/60Hz				
Permissible Frequency Range		±5%				
Rated Input Current		Single-Phase : 0.55A Three-Phase : 0.32A	Single-Phase : 0.92A Three-Phase : 0.53A	Single-Phase : 1.61A Three-Phase : 0.93A	Single-Phase : 2.34A Three-Phase : 1.35A	Single-Phase : 3.88A Three-Phase : 2.24A
Maximum Input Current		Single-Phase : 1.65A Three-Phase : 0.95A	Single-Phase : 2.76A Three-Phase : 1.59A	Single-Phase : 4.83A Three-Phase : 2.79A	Single-Phase : 7.02A Three-Phase : 4.05A	Single-Phase : 11.64A Three-Phase : 6.72A
Environment	Temperature	· In Use : 0~40℃ · In Storage : -20~70℃				
	Humidity	· In Use : 35~85% RH (Non-Condensing) · In Storage : 10~90% RH (Non-Condensing)				
	Vibration resistant	0.5g				
Function	Speed Control Range	50~4,000r/min				
	Rated Speed	3,000r/min				
	Speed Regulation	0.2% or less / Conditions: 0~Rated Torque, Rated Speed, Rated Voltage, normal Temperature				
	Rated Torque	0.096N·m	0.192N·m	0.382N·m	0.637N·m	1.272N·m
	Maximum Instantaneous Torque	0.288N·m	0.576N·m	0.1.146N·m	1.911N·m	3.816N·m
	Rated Output Current	0.21A	0.36A	0.85A	1.65A	2.37A
	Error Types	Under voltage Error, Over voltage Error, Over heat Error, Over current Error, Speed feedback Error, Sensor Error, Over speed Error, Over load Error, Operation at power-on Error, External Error				
I/O Signal	Input Signal Function	5 user inputs (Photocoupler)				
	Output Signal Function	3 user outputs (Photocoupler)				

● Dimensions of Drive [mm]

1. 30, 60, 120W Drive



2. 200, 400W Drive

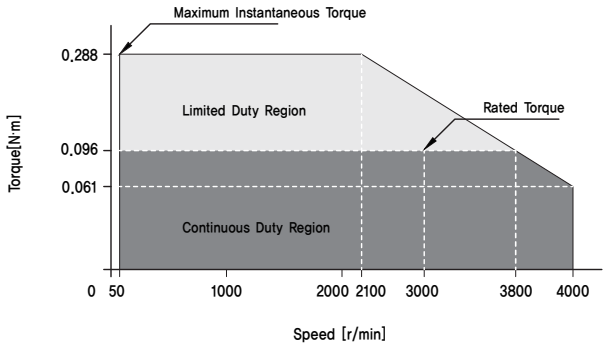


● Specifications of Motor

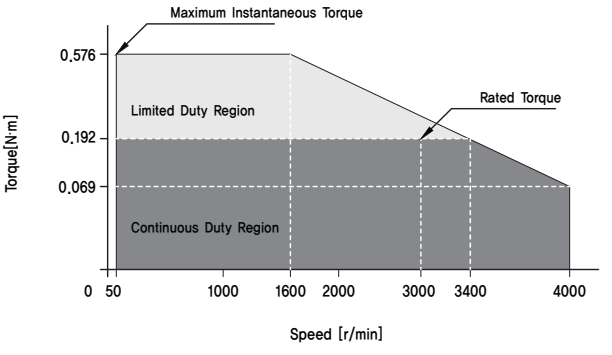
MODEL			UNIT	ESM-60-S-30	ESM-80-S-60	ESM-90-S-120	ESM-104-S-200	ESM-104-S-400
RATED OUTPUT POWER (CONTINUOUS)			W	30	60	120	200	400
RATED TORQUE			N·m	0.096	0.192	0.382	0.637	1.272
RATED INPUT CURRENT			A	0.21	0.36	0.85	1.65	2.37
RATED SPEED			r/min	3,000				
PERMISSIBLE LOAD INERTIA MOMENT			$10^{-4}kg \cdot m^2$	0.5	1.8	5.8	5.8	8.75
INERTIA MOMENT			$10^{-4}kg \cdot m^2$	0.086	0.234	0.61	0.61	0.66
WEIGHT			kg	0.5	0.8	1.3	2.4	2.4
LENGTH			mm	62	74	94	156	156
PERMISSIBLE OVERHUNG LOAD	DISTANCE FROM SHAFT END	10mm	N	70	120	160	160	160
		20mm		100	140	170	170	170

Torque Characteristics of Motor

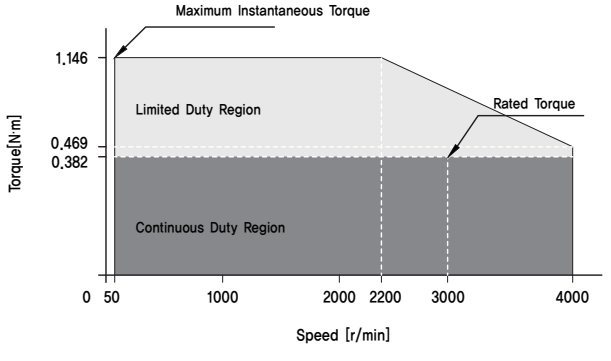
Ezi-SPEED-30W



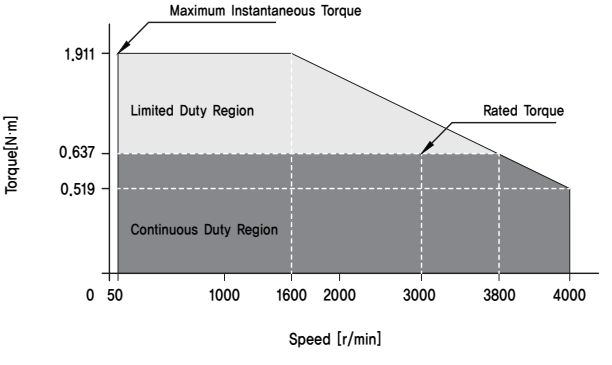
Ezi-SPEED-60W



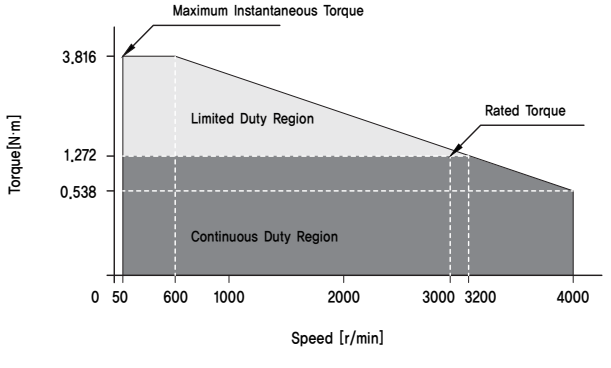
Ezi-SPEED-120W



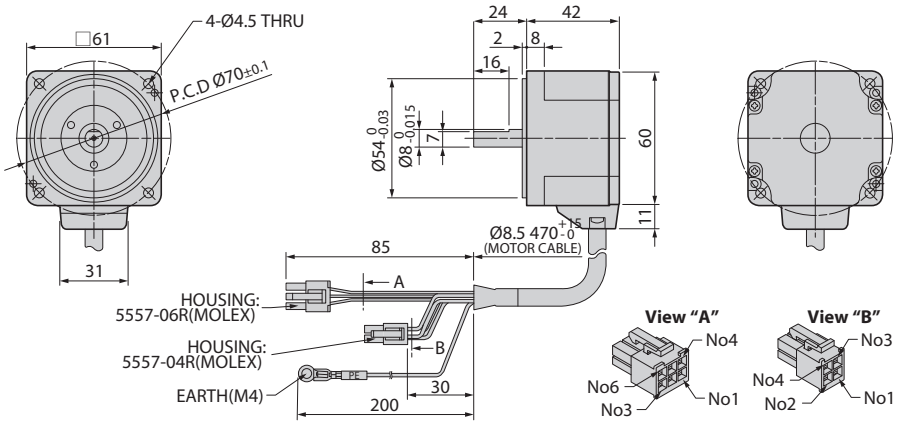
Ezi-SPEED-200W



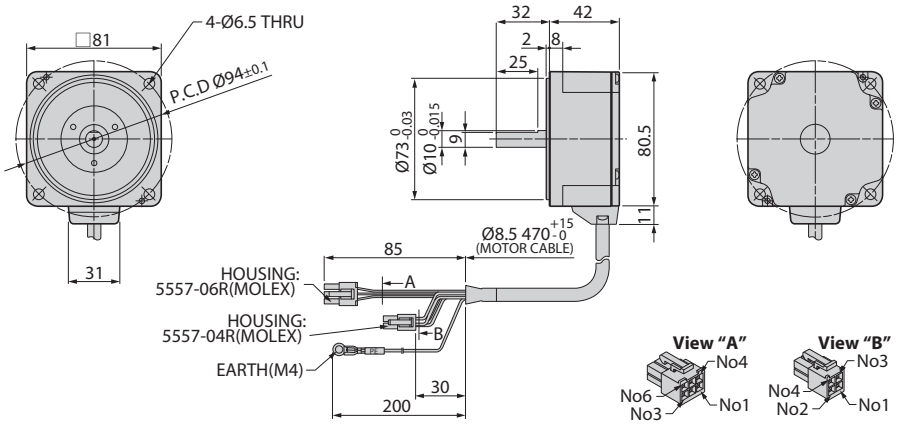
Ezi-SPEED-400W



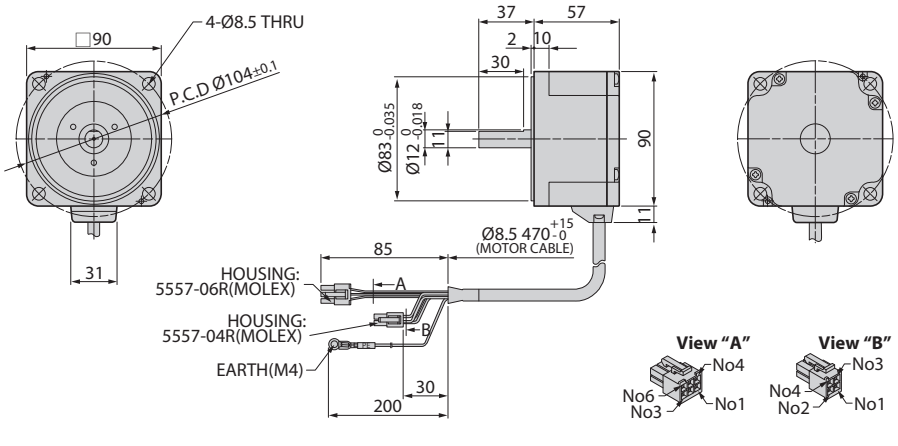
● Dimensions of Motor [mm]



30W
ESM-60-S-30

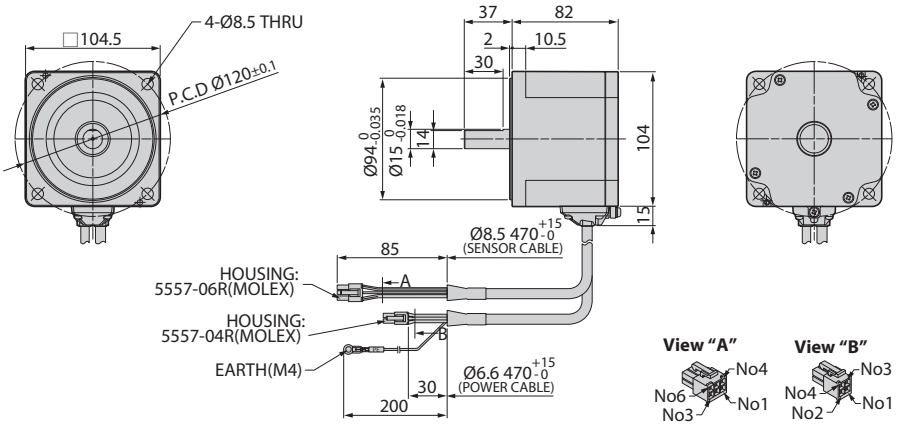


60W
ESM-80-S-60

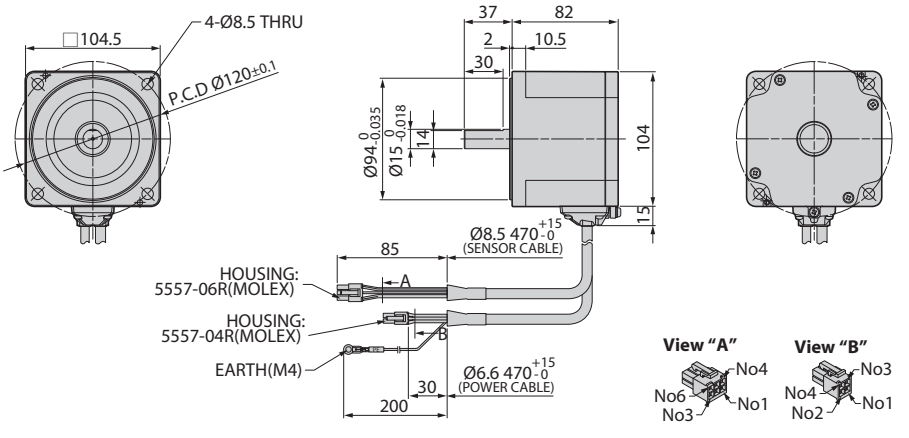


120W
ESM-90-S-120

● Dimensions of Motor [mm]



200W
ESM-104-S-200



400W
ESM-104-S-400

● Specifications of Motor with Gearbox

30W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-60-H-30-A-R5-P	5	0.45	0.34	10~800	0.9	100	150	40
Ezi-SPEED-60-H-30-C-R5-P								
Ezi-SPEED-60-H-30-A-R10-P	10	0.9	0.68	5~400		150	200	
Ezi-SPEED-60-H-30-C-R10-P								
Ezi-SPEED-60-H-30-A-R15-P	15	1.35	1	3.3~266.7				
Ezi-SPEED-60-H-30-C-R15-P								
Ezi-SPEED-60-H-30-A-R20-P	20	1.8	1.4	2.5~200				
Ezi-SPEED-60-H-30-C-R20-P								
Ezi-SPEED-60-H-30-A-R30-P	30	2.6	1.9	1.7~133.3		200	300	
Ezi-SPEED-60-H-30-C-R30-P								
Ezi-SPEED-60-H-30-A-R50-P	50	4.3	3.2	1~80				
Ezi-SPEED-60-H-30-C-R50-P								
Ezi-SPEED-60-H-30-A-R100-P	100	6	5.4	0.5~40				
Ezi-SPEED-60-H-30-C-R100-P								
Ezi-SPEED-60-H-30-A-R200-P	200	6	5.4	0.25~20				
Ezi-SPEED-60-H-30-C-R200-P								

60W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-80-H-60-A-R5-P	5	0.9	0.68	10~800	1.6	200	250	100
Ezi-SPEED-80-H-60-C-R5-P								
Ezi-SPEED-80-H-60-A-R10-P	10	1.8	1.4	5~400		300	350	
Ezi-SPEED-80-H-60-C-R10-P								
Ezi-SPEED-80-H-60-A-R15-P	15	2.7	2	3.3~266.7				
Ezi-SPEED-80-H-60-C-R15-P								
Ezi-SPEED-80-H-60-A-R20-P	20	3.6	2.7	2.5~200				
Ezi-SPEED-80-H-60-C-R20-P								
Ezi-SPEED-80-H-60-A-R30-P	30	5.2	3.9	1.7~133.3		450	550	
Ezi-SPEED-80-H-60-C-R30-P								
Ezi-SPEED-80-H-60-A-R50-P	50	8.6	6.5	1~80				
Ezi-SPEED-80-H-60-C-R50-P								
Ezi-SPEED-80-H-60-A-R100-P	100	16	12.9	0.5~40				
Ezi-SPEED-80-H-60-C-R100-P								
Ezi-SPEED-80-H-60-A-R200-P	200	16	14	0.25~20				
Ezi-SPEED-80-H-60-C-R200-P								

● Specifications of Motor with Gearbox

120w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-90-H-120-A-R5-P	5	1.8	1.4	10~800	2.7	300	400	150
Ezi-SPEED-90-H-120-C-R5-P								
Ezi-SPEED-90-H-120-A-R10-P	10	3.6	2.7	5~400		400	500	
Ezi-SPEED-90-H-120-C-R10-P								
Ezi-SPEED-90-H-120-A-R15-P	15	5.4	4.1	3.3~266.7				
Ezi-SPEED-90-H-120-C-R15-P								
Ezi-SPEED-90-H-120-A-R20-P	20	7.2	5.4	2.5~200				
Ezi-SPEED-90-H-120-C-R20-P								
Ezi-SPEED-90-H-120-A-R30-P	30	10.3	7.7	1.7~133.3		500	650	
Ezi-SPEED-90-H-120-C-R30-P								
Ezi-SPEED-90-H-120-A-R50-P	50	17.2	12.9	1~80				
Ezi-SPEED-90-H-120-C-R50-P								
Ezi-SPEED-90-H-120-A-R100-P	100	30	25.8	0.5~40				
Ezi-SPEED-90-H-120-C-R100-P								
Ezi-SPEED-90-H-120-A-R200-P	200	30	27	0.25~20				
Ezi-SPEED-90-H-120-C-R200-P								

200w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-104-H-200-C-R5-P	5	2.9	2	10~800	4.2	300	400	150
Ezi-SPEED-104-H-200-C-R10-P	10	5.9	4.1	5~400		400	500	
Ezi-SPEED-104-H-200-C-R15-P	15	8.8	6.1	3.3~266.7				
Ezi-SPEED-104-H-200-C-R20-P	20	11.7	8.1	2.5~200				
Ezi-SPEED-104-H-200-C-R30-P	30	16.8	11.6	1.7~133.3		500	650	
Ezi-SPEED-104-H-200-C-R50-P	50	28	19.4	1~80				
Ezi-SPEED-104-H-200-C-R100-P	100	52.7	36.5	0.5~40				
Ezi-SPEED-104-H-200-C-R200-P	200	70	63	0.25~20				

● Specifications of Motor with Gearbox

400w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-104-H-400-C-R5-P	5	5.9	4.3	10~800	4.2	300	400	150
Ezi-SPEED-104-H-400-C-R10-P	10	11.7	8.6	5~400		400	500	
Ezi-SPEED-104-H-400-C-R15-P	15	17.6	12.8	3.3~266.7				
Ezi-SPEED-104-H-400-C-R20-P	20	23.4	17.1	2.5~200				
Ezi-SPEED-104-H-400-C-R30-P	30	33.5	24.5	1.7~133.3		500	650	
Ezi-SPEED-104-H-400-C-R50-P	50	55.9	40.9	1~80				
Ezi-SPEED-104-H-400-C-R100-P	100	70	63	0.5~40				
Ezi-SPEED-104-H-400-C-R200-P	200	70	63	0.25~20				

● Specifications of Motor with Hollow Shaft Gearbox

30w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-60-H-30-A-R5-H	5	0.4	0.3	10~800	1.2	450	370	200
Ezi-SPEED-60-H-30-C-R5-H								
Ezi-SPEED-60-H-30-A-R10-H	10	0.85	0.64	5~400		500	400	
Ezi-SPEED-60-H-30-C-R10-H								
Ezi-SPEED-60-H-30-A-R15-H	15	1.3	0.96	3.3~266.7				
Ezi-SPEED-60-H-30-C-R15-H								
Ezi-SPEED-60-H-30-A-R20-H	20	1.7	1.3	2.5~200				
Ezi-SPEED-60-H-30-C-R20-H								
Ezi-SPEED-60-H-30-A-R30-H	30	2.6	1.9	1.7~133.3				
Ezi-SPEED-60-H-30-C-R30-H								
Ezi-SPEED-60-H-30-A-R50-H	50	4.3	3.2	1~80				
Ezi-SPEED-60-H-30-C-R50-H								
Ezi-SPEED-60-H-30-A-R100-H	100	8.5	6.4	0.5~40				
Ezi-SPEED-60-H-30-C-R100-H								
Ezi-SPEED-60-H-30-A-R200-H	200	17	12.8	0.25~20				
Ezi-SPEED-60-H-30-C-R200-H								

60w

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-80-H-60-A-R5-H	5	0.85	0.64	10~800	2.2	800	660	400
Ezi-SPEED-80-H-60-C-R5-H								
Ezi-SPEED-80-H-60-A-R10-H	10	1.7	1.3	5~400		1,200	1,000	
Ezi-SPEED-80-H-60-C-R10-H								
Ezi-SPEED-80-H-60-A-R15-H	15	2.6	1.9	3.3~266.7				
Ezi-SPEED-80-H-60-C-R15-H								
Ezi-SPEED-80-H-60-A-R20-H	20	3.4	2.6	2.5~200				
Ezi-SPEED-80-H-60-C-R20-H								
Ezi-SPEED-80-H-60-A-R30-H	30	5.1	3.8	1.7~133.3				
Ezi-SPEED-80-H-60-C-R30-H								
Ezi-SPEED-80-H-60-A-R50-H	50	8.5	6.4	1~80				
Ezi-SPEED-80-H-60-C-R50-H								
Ezi-SPEED-80-H-60-A-R100-H	100	17	12.8	0.5~40				
Ezi-SPEED-80-H-60-C-R100-H								
Ezi-SPEED-80-H-60-A-R200-H	200	34	25	0.25~20				
Ezi-SPEED-80-H-60-C-R200-H								

● Specifications of Motor with Hollow Shaft Gearbox

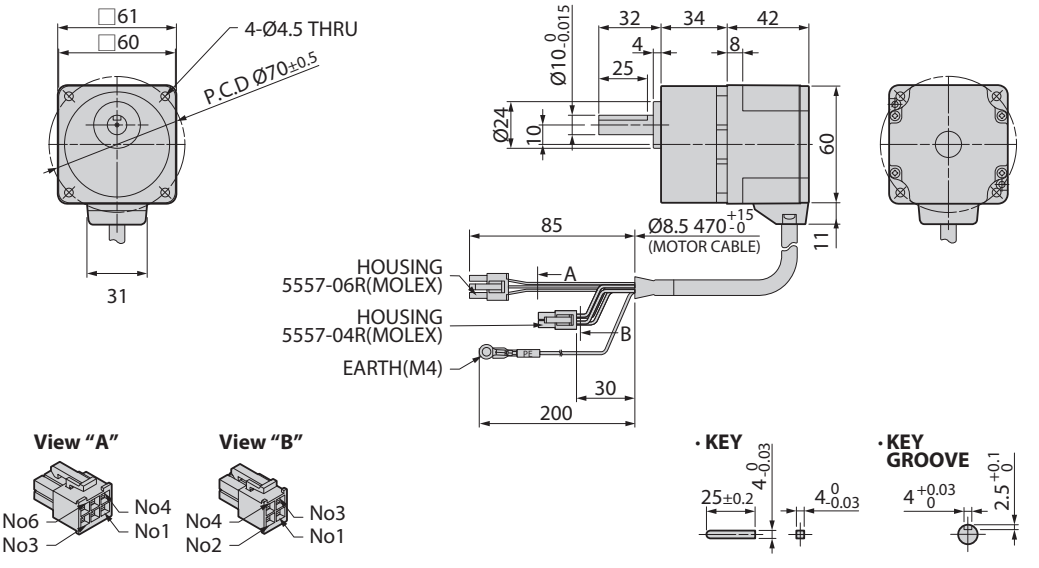
120W

Unit Part Number	Gear Ratio	Permitted Torque [N·m]		Permitted Speed Range [r/min]	Unit Weight [kg]	Permitted Overhung Load [N]		Permitted Thrust Load [N]
		50~3,000 [r/min]	4,000 [r/min]			Distance From Shaft End [mm]		
						10	20	
Ezi-SPEED-90-H-120-A-R5-H	5	1.7	1.3	10~800	3.3	900	770	500
Ezi-SPEED-90-H-120-C-R5-H								
Ezi-SPEED-90-H-120-A-R10-H	10	3.4	2.6	5~400		1,300	1,110	
Ezi-SPEED-90-H-120-C-R10-H								
Ezi-SPEED-90-H-120-A-R15-H	15	5.1	3.8	3.3~266.7				
Ezi-SPEED-90-H-120-C-R15-H								
Ezi-SPEED-90-H-120-A-R20-H	20	6.8	5.1	2.5~200				
Ezi-SPEED-90-H-120-C-R20-H								
Ezi-SPEED-90-H-120-A-R30-H	30	10.2	7.7	1.7~133.3		1,500	1,280	
Ezi-SPEED-90-H-120-C-R30-H								
Ezi-SPEED-90-H-120-A-R50-H	50	17	12.8	1~80				
Ezi-SPEED-90-H-120-C-R50-H								
Ezi-SPEED-90-H-120-A-R100-H	100	34	25.5	0.5~40				
Ezi-SPEED-90-H-120-C-R100-H								
Ezi-SPEED-90-H-120-A-R200-H	200	68	51	0.25~20				
Ezi-SPEED-90-H-120-C-R200-H								

● Dimensions of Motor with Gearbox [mm]

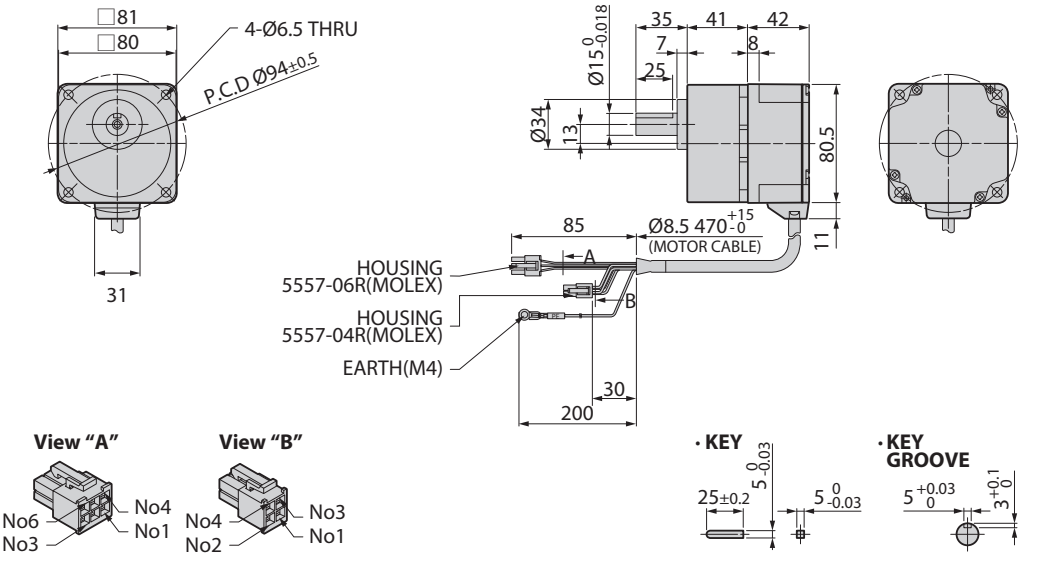
30w

Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt	L [mm]
Ezi-SPEED-60-H-30-A-R□-P Ezi-SPEED-60-H-30-C-R□-P	ESG-60-H-R□-P	5, 10, 15, 20	M4×50	34
		30, 50, 100	M4×55	38
		200	M4×60	43



60w

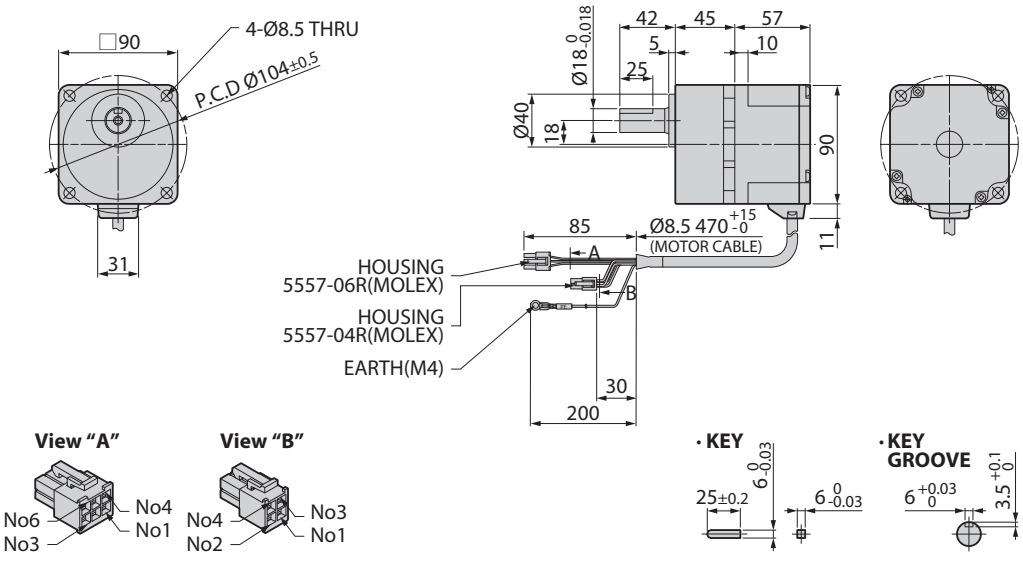
Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt	L [mm]
Ezi-SPEED-80-H-60-A-R□-P Ezi-SPEED-80-H-60-C-R□-P	ESG-80-H-R□-P	5, 10, 15, 20	M4×65	41
		30, 50, 100	M4×70	46
		200	M4×75	51



● Dimensions of Motor with Gearbox [mm]

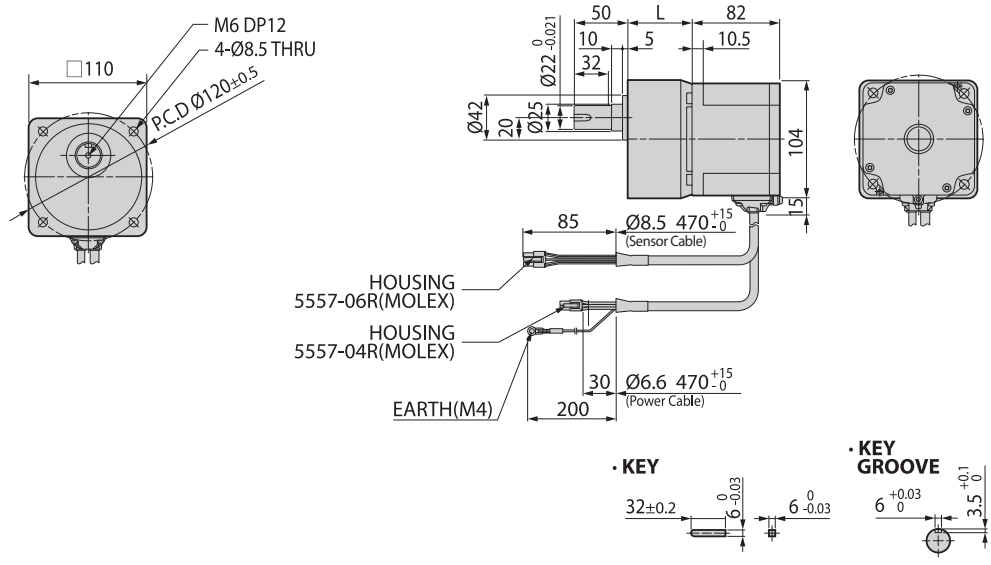
120W

Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt	L [mm]
Ezi-SPEED-90-H-120-A-R□-P Ezi-SPEED-90-H-120-C-R□-P	ESG-90-H-R□-P	5, 10, 15, 20	M8×75	45
		30, 50, 100	M8×90	58
		200	M8×95	64



200W

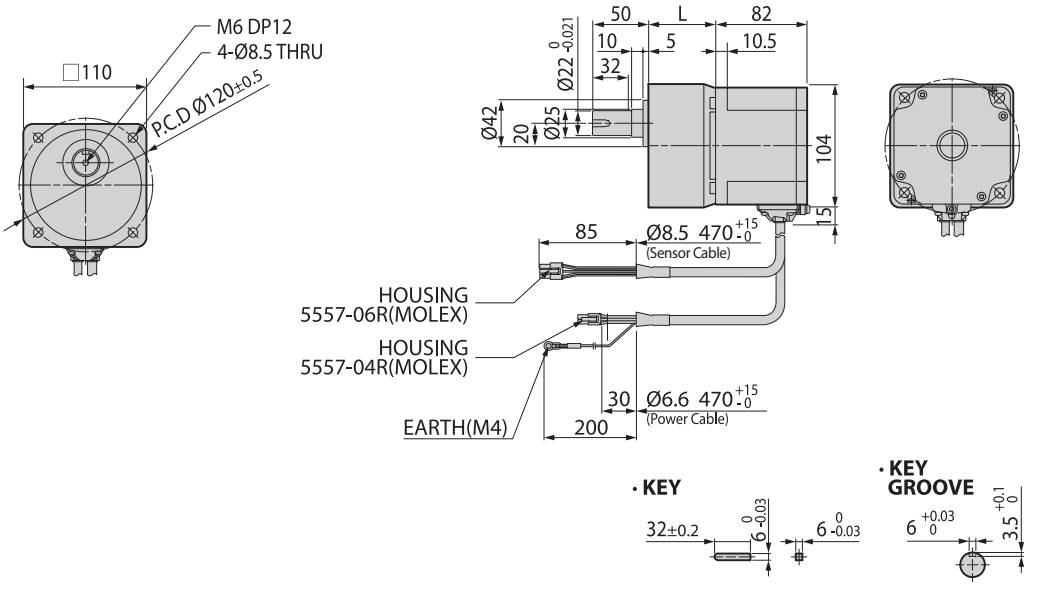
Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt	L [mm]
Ezi-SPEED-104-H-200-C-R□-P	ESG-104-H-R□-P	5, 10, 15, 20	M8×95	60
		30, 50, 100	M8×110	72
		200	M8×120	86



● Dimensions of Motor with Gearbox [mm]

400w

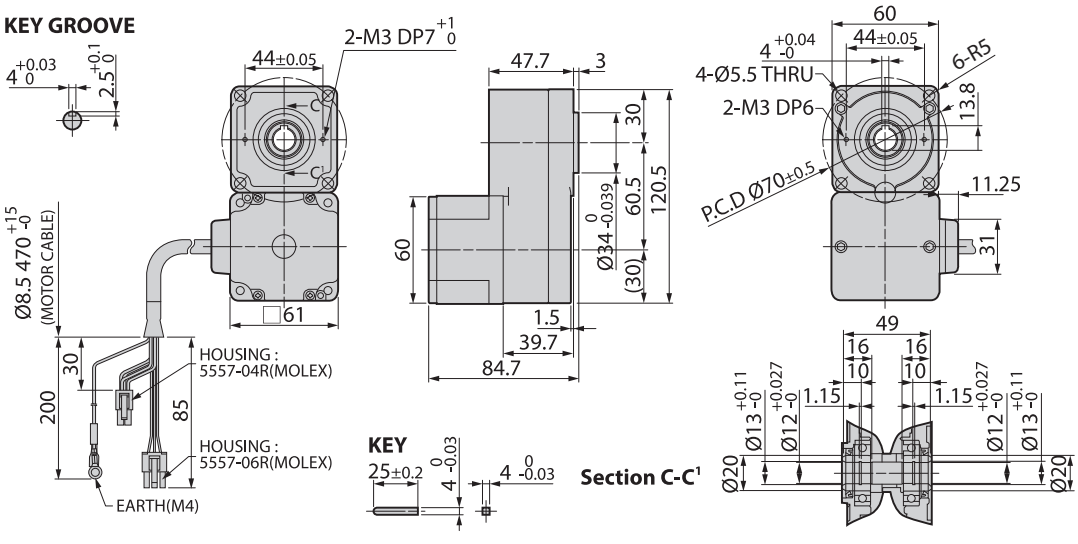
Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt	L [mm]
Ezi-SPEED-104-H-400-C-R□-P	ESG-104-H-R□-P	5, 10, 15, 20	M8×95	60
		30, 50, 100	M8×110	72
		200	M8×120	86



● Dimensions of Motor with Hollow Shaft Gearbox [mm]

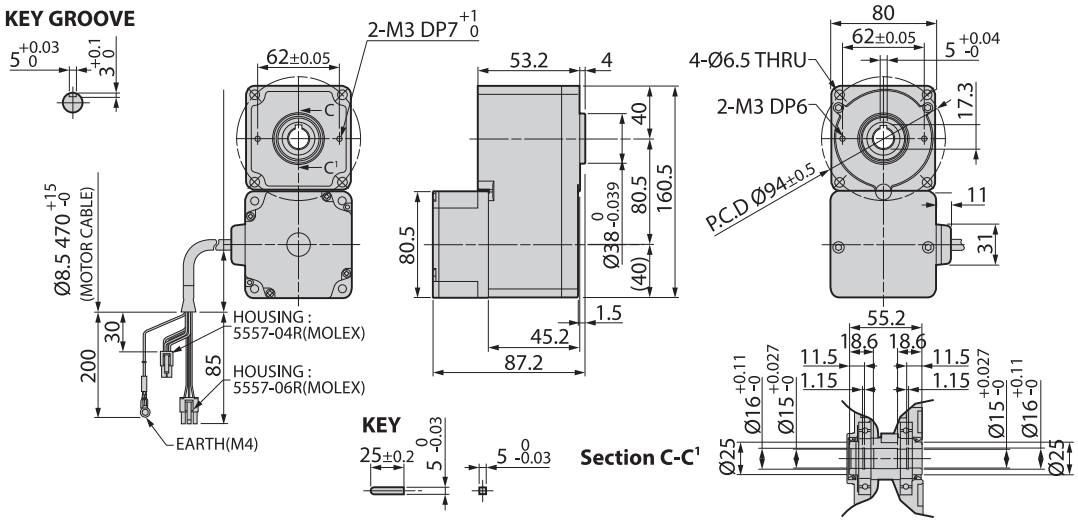
30W

Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt
Ezi-SPEED-60-H-30-A-R□-H Ezi-SPEED-60-H-30-C-R□-H	ESG-60-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M5×65



60W

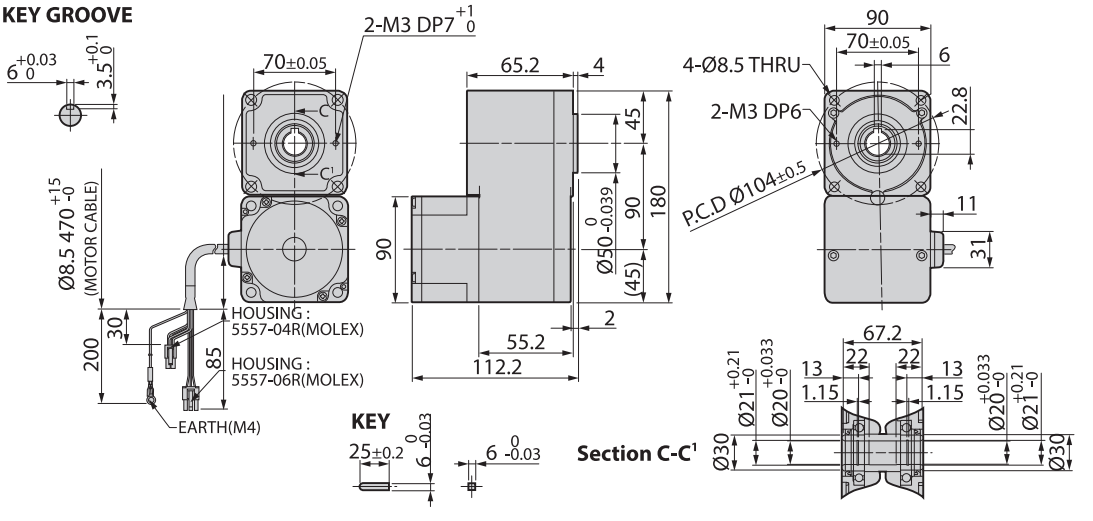
Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt
Ezi-SPEED-80-H-60-A-R□-H Ezi-SPEED-80-H-60-C-R□-H	ESG-80-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M6×70



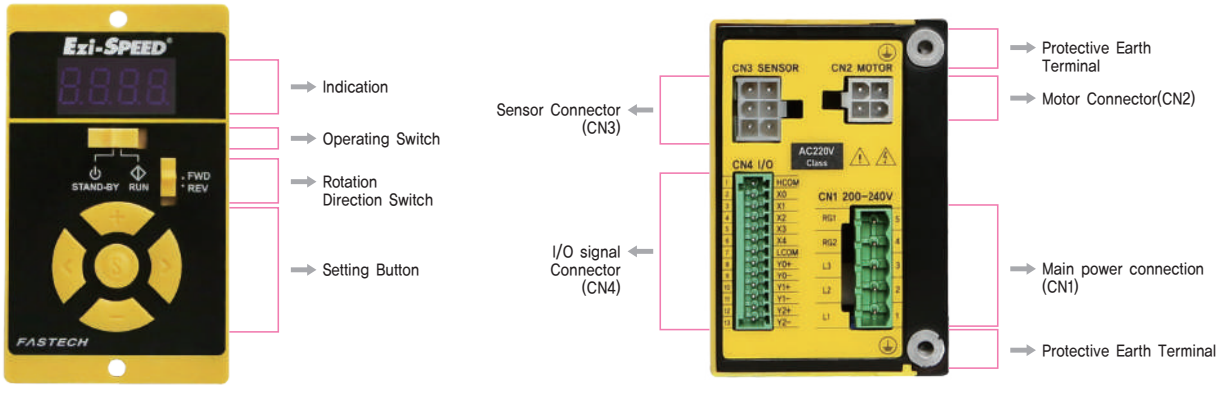
● Dimensions of Motor with Hollow Shaft Gearbox [mm]

120W

Unit Part Number	Gearbox Part Number	□Gear Ratio	Mounting Bolt
Ezi-SPEED-90-H-120-A-R□-H Ezi-SPEED-90-H-120-C-R□-H	ESG-90-H-R□-H	5, 10, 15, 20, 30, 50, 100, 200	M8×90



Settings and Operation



1. Setting

Indication	Conditions
Indication	Display the monitoring items, parameter, alarm, warning, etc
Operating Switch	The motor is started by setting it to the"RUN"position Setting it to the"STAND-BY"position stop the motor
Rotation Direction Switch	Change the rotation direction of the motor with rotation direction switch
Setting Button	Changes the speed and parameters The value is set when the"S"button is pressed after changes are made
Protective Earth Terminal	Ground either one of the protective earth terminals
Sensor Connection(CN3)	Connects to the signal Connection of the motor
Motor Connection(CN2)	Connects to the power Connection of the motor
I/O Signal Connection(CN4)	Connects with the I/O signals
Main Power Connec-tion(CN1)	Connects to the main power supply and regenerative resistor

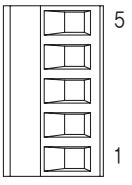
• Extended Functions

Ezi-SPEED can be perform various setting by operation button

Operating Mode	Conditions
Monitor Mode	Speed, Actual speed, Load factor, Alarm record and reset, Warning record and reset, Operating data number, I/O monitor
Data Mode	Data 8 points, Operating speed, Acceleration time, Deceleration time, Operating data reset
Parameter Mode	The acceleration/deceleration time, The overload alarm detection time, The speed upper limit and lower limit, Speed reduction ratio, Speed increasing ratio, Panel initial view, Alarm of" Run" condition at power on, External operation signal input, External input function, External output function, Speed atainment width, Parameter mode reset
NVM Saving Mode	Parameter save to NVM(Non-Volatile Memory)

2. Main Power Connector(CN1)

NO.	Function	I/O
1	L1	Input
2	L2	Input
3	L3	Input
4	RG2	Input
5	RG1	Input

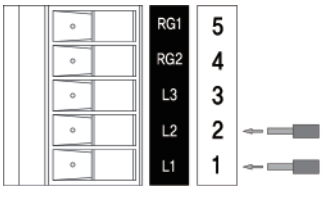


* Use RG1, RG2 terminals when connecting a regenerative resistor. A regenerative resistor can be used when the deceleration time is short or large inertia is used

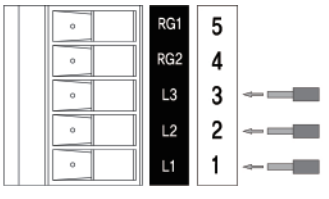
* Please refer to the manual for details of regenerative resister specification

• Main Power Connection(CN1)

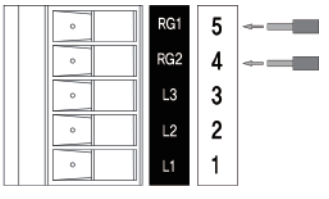
Single-Phase : 100-120V / 200-240V



Three-Phase : 200-240V



Regenerative Resistor

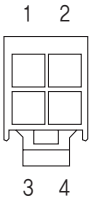


• Applicable Lead Wire Size

AWG18~14 (0.75~2.0mm²)

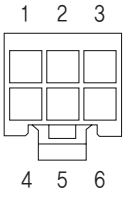
3. Motor Connector(CN2)

NO.	Function	I/O
1	–	–
2	BLDC_U	Output
3	BLDC_W	Output
4	BLDC_V	Output



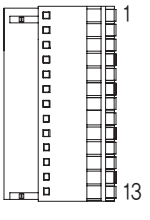
4. Sensor Connector(CN3)

NO.	Function	I/O
1	DC5V	Output
2	GND	–
3	GND	Output
4	HALL_U	Input
5	HALL_V	Input
6	HALL_W	Input



5. I/O Signal Connector(CN4)

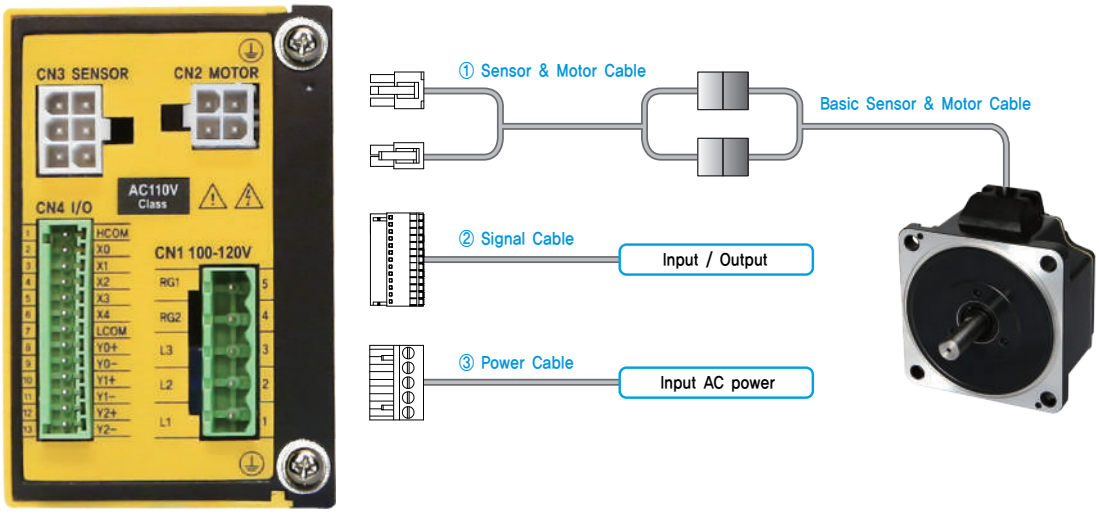
NO.	Function	I/O
1	HCOM	Common
2	X0	Input
3	X1	Input
4	X2	Input
5	X3	Input
6	X4	Input
7	LCOM	Common
8	Y0+	Output
9	Y0–	Output
10	Y1+	Output
11	Y1–	Output
12	Y2+	Output
13	Y2–	Output



• Applicable Lead Wire Size

AWG26~20 (0.14~0.5mm²)

● System Configuration [30, 60, 120W - AC110V]



Cable Type	Max. Length	Remarks
① Sensor & Motor Cable	10m	Options (Sold separately)
② Signal Cable	20m	This cable is not provided or sold by FASTECH.
③ Power Cable	3m	
Basic Sensor & Motor Cable	0.5m	Basic cables are attached to motors.

1. Accessories

Connectors

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive Side (CN2)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-04P	MOLEX
		Terminal	5558T	
Sensor (CN3)	Drive Side (CN3)	Housing	5557-06R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-06P	MOLEX
		Terminal	5558T	
Signal (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications

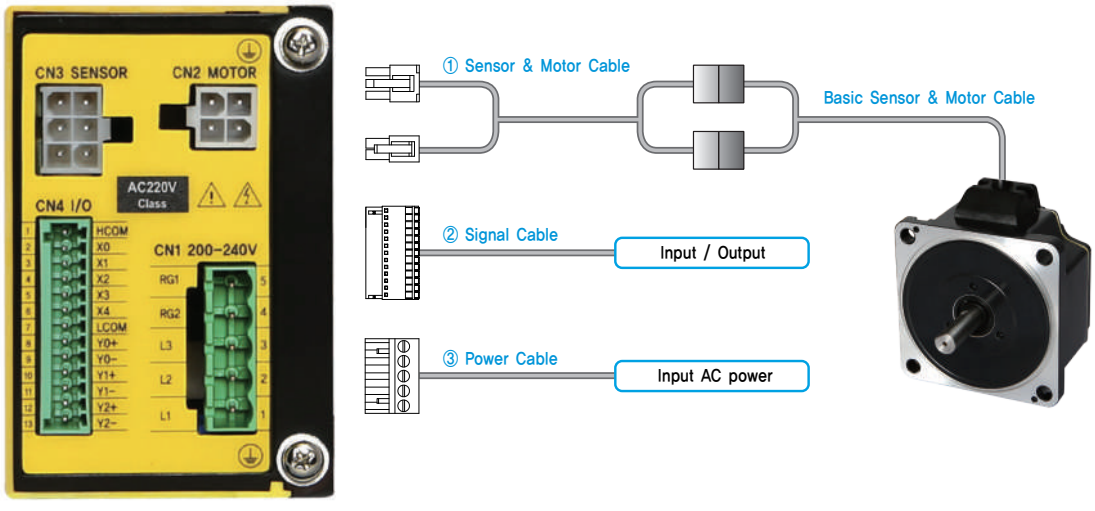
2. Options

Sensor/Motor Extension Cable

These are the cables to connect the drive for 30W, 60W and 120W to a sensor and a motor.

Purpose	Item	Length [m]	Cable Type	Remarks
Drive – Basic Sensor/Motor Cable Connection	CSPD-A-0001F	1	Normal Cable	Max. Length : 10m
	CSPD-A-0002F	2		
	CSPD-A-0003F	3		
	CSPD-A-0005F	5		
	CSPD-A-0007F	7		
	CSPD-A-0010F	10		

● System Configuration [30, 60, 120W - AC220V]



Cable Type	Max. Length	Remarks
① Sensor & Motor Cable	10m	Options (Sold separately)
② Signal Cable	20m	This cable is not provided or sold by FASTECH.
③ Power Cable	3m	
Basic Sensor & Motor Cable	0.5m	Basic cables are attached to motors.

1. Accessories

Connectors

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive Side (CN2)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-04P	MOLEX
		Terminal	5558T	
Sensor (CN3)	Drive Side (CN3)	Housing	5557-06R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-06P	MOLEX
		Terminal	5558T	
Signal (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications

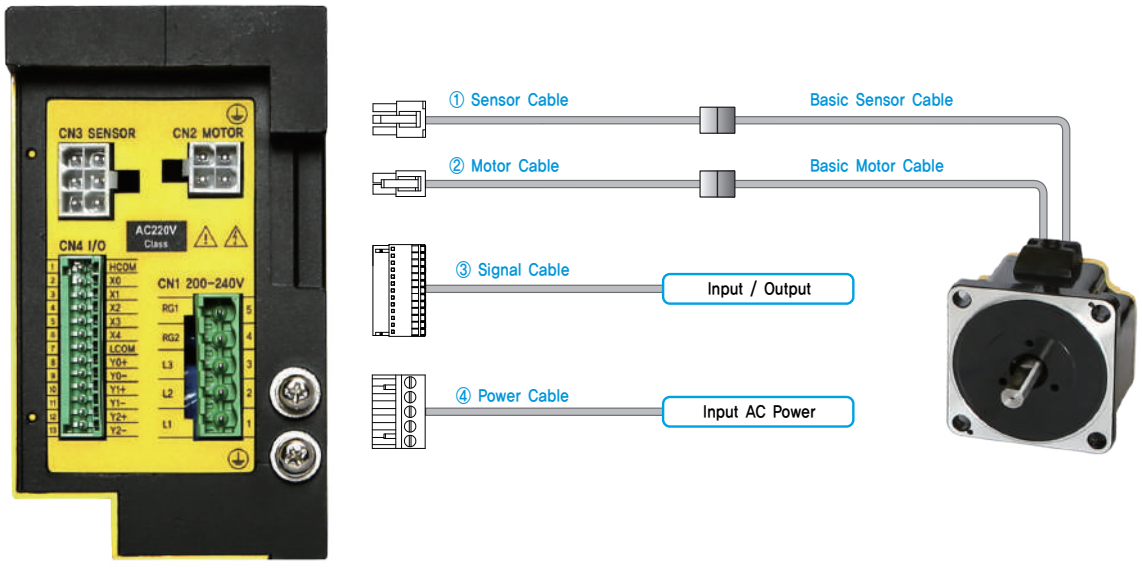
2. Options

Sensor/Motor Extension Cable

These are the cables to connect the drive for 30W, 60W and 120W to a sensor and a motor.

Purpose	Item	Length [m]	Cable Type	Remarks
Drive – Basic Sensor/Motor Cable Connection	CSPD-S-0001F	1	Normal Cable	Max. Length : 10m
	CSPD-S-0002F	2		
	CSPD-S-0003F	3		
	CSPD-S-0005F	5		
	CSPD-S-0007F	7		
	CSPD-S-0010F	10		

● System Configuration [200, 400W - AC220V]



Cable Type	Max. Length	Remarks
① Sensor Cable	10m	Options (Sold separately)
② Motor Cable	10m	
③ Signal Cable	20m	This cable is not provided or sold by FASTECH.
④ Power Cable	3m	
Basic Sensor Cable	0.5m	Basic cables are attached to motors.
Basic Motor Cable	0.5m	

1. Accessories

Connectors

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN1)		Terminal Block	CPF5.08-05P	STELVIO
Motor (CN2)	Drive Side (CN2)	Housing	5557-04R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-04P	MOLEX
		Terminal	5558T	
Sensor (CN3)	Drive Side (CN3)	Housing	5557-06R	MOLEX
		Terminal	5556T	
	Motor Side	Housing	5559-06P	MOLEX
		Terminal	5558T	
Signal (CN4)		Terminal Block	15EDGKD-13P	DEGSON

※ The connectors above are supplied with the product. If you are using other parts, please make sure they meet the specifications

2. Options

① Sensor Extension Cable

These are the cables to connect the drive for 200W, 400 and the sensor.

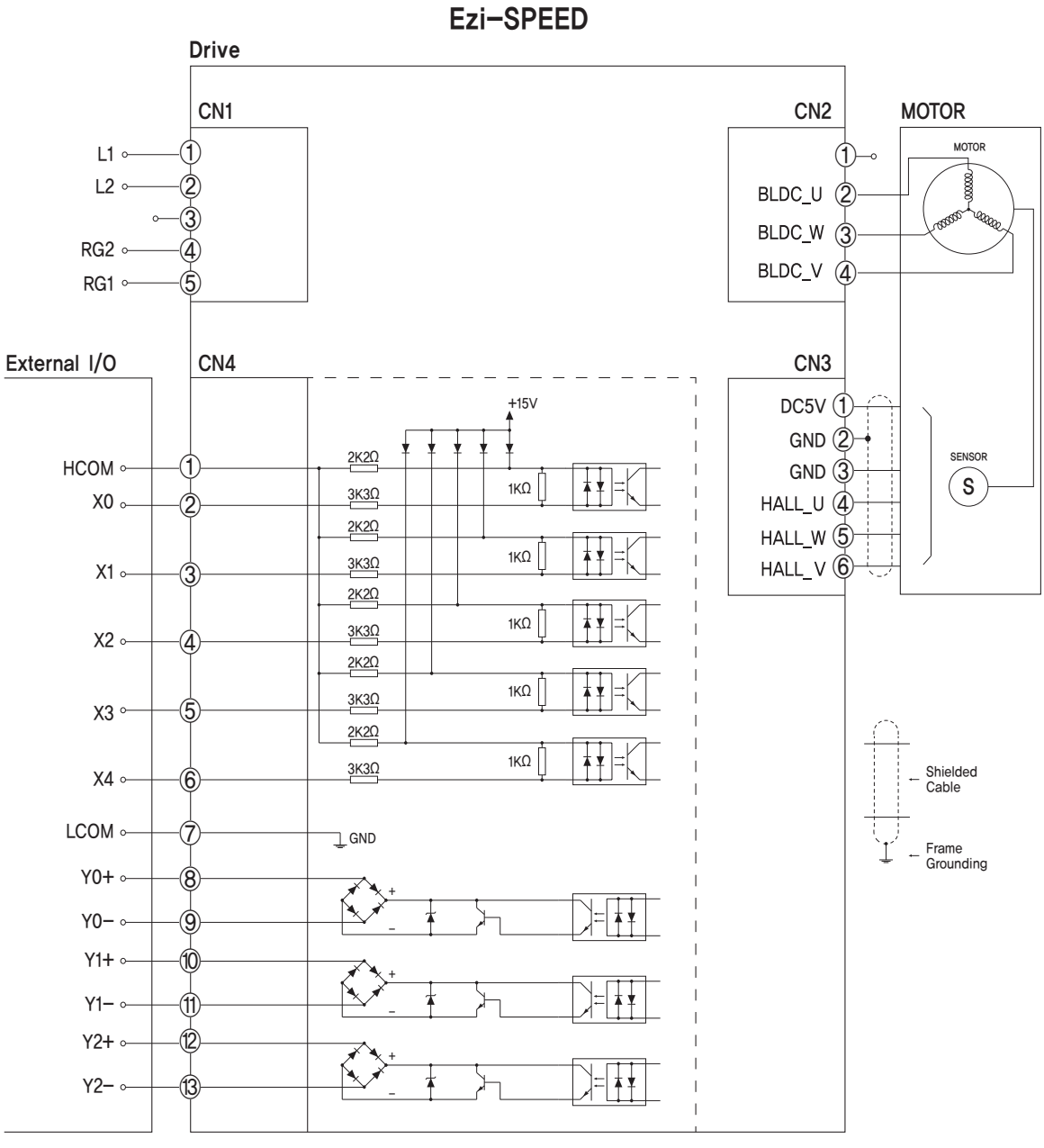
Purpose	Item	Length [m]	Cable Type	Remarks
Drive – Basic Sensor/Motor Cable Connection	CSPD-S-0001F	1	Normal Cable	Max. Length : 10m
	CSPD-S-0002F	2		
	CSPD-S-0003F	3		
	CSPD-S-0005F	5		
	CSPD-S-0007F	7		
	CSPD-S-0010F	10		

② Motor Extension Cable

These are the cables to connect the drive for 200W, 400W and the motor.

Purpose	Item	Length [m]	Cable Type	Remarks
Drive – Basic Sensor/Motor Cable Connection	CSPD-M-0001F	1	Normal Cable	Max. Length : 10m
	CSPD-M-0002F	2		
	CSPD-M-0003F	3		
	CSPD-M-0005F	5		
	CSPD-M-0007F	7		
	CSPD-M-0010F	10		

● External Wiring Diagram [AC110V Drive]

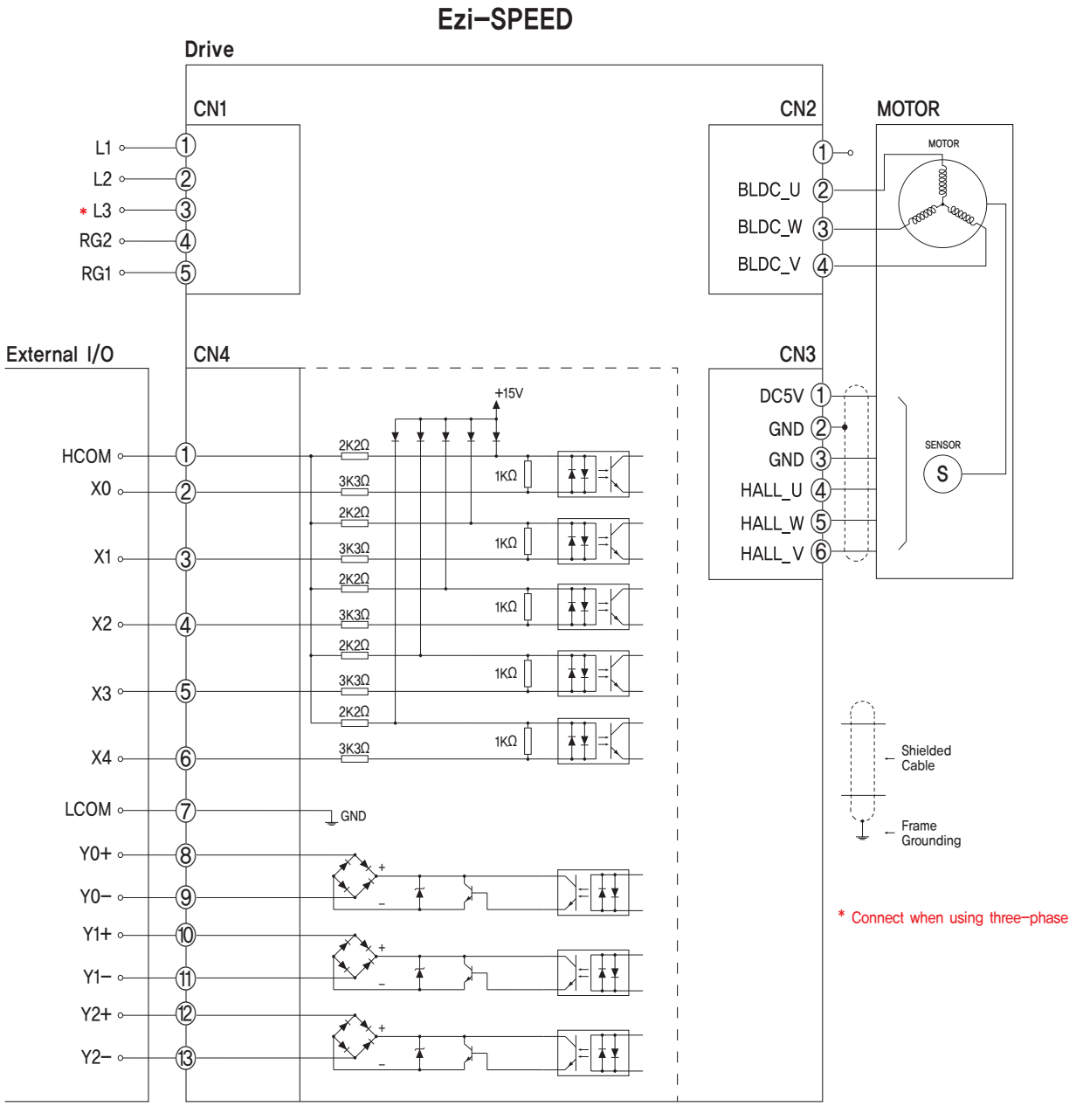


※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

● External Wiring Diagram [AC220V Drive]



※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

In order to use the products listed in this catalog safely and correctly, be sure to read the instruction manual before using the product.

Ver. March_ 2023

FASTECH

Fast, Accurate, Smooth Motion

(Postal Code:14502) Rm#1202, 401-dong, Bucheon Techno-Park, 655, Pyeongcheon-ro Bucheon-si Gyeonggi-do, Republic of Korea
TEL : **+82-32-234-6317** / FAX : +82-32-234-6302
E-mail : sales@fastech-motions.com

※ Please note that the color and size of the products in this catalog may different depending on the measurement method and the specifications can be changed without prior notice for quality improvement.

Ver. **MARCH_ 2023**

FASTECH

Fast, Accurate, Smooth Motion

www.fastech-motions.com