FASTECH

Ezi-SERVO®
Closed Loop Stepping System

2020 / 2021
EtherCAT General Catalogue [English]

Ezi-SERVO® II EtherCAT MINI
Closed Loop Stepping System

Ezi-SERVO® II EtherCAT Conformance tested
Closed Loop Stepping System

Ezi-STEP® II EtherCAT
Micro Stepping System

Ezi-SERVO® II EtherCAT 4X
Closed Loop Stepping System

EtherCAT®
Conformance tested

Ezi-STEP® II EtherCAT MINI
Micro Stepping System

Ezi-SERVO® II EtherCAT ALL
Closed Loop Stepping System

Ezi-IO® EtherCAT
Input/Output Module

Ezi-STEP® II EtherCAT 4X
Micro Stepping System

EtherCAT Information

Closed Loop Stepping solutions **certified by ETC**

Cert. ✔	**FASTECH**	Ezi-SERVO II EtherCAT	Drive Technology-Stepper
	Hivertec	HES-F400 Sereis	Drive Technology-Stepper
Cert. ✔	**Hivertec**	HES-M400	Drive Technology-Stepper
	IAI	EtherCAT Field Network Controllers PCON-CA/CFA	Drive Technology-Stepper
	Kendrion Kuhnke Automation	Kuhnke FIO Drive Control	Drive Technology-Stepper
Cert. ✔	**Leadshine Technology**	DM3E-556	Drive Technology-Stepper
	ORIENTAL MOTOR	Rotary Actuator DGII Series	Drive Technology-Stepper

※ Cert.✔ Certified Products

Additional to the mandatory in-house test with the Conformance Test Tool (CTT),
these slave devices passed the enhanced test at an official EtherCAT Test Center (ETC).

website - https://www.ethercat.org/en/products.html

Completion of **EtherCAT master compatibility** test

Maker		
EtherCAT Master	CX2020	SPiiPlusEC
NJ501-1320	MC4N	Gold Maestro
PAC	WMX	NI CompactRIO-903x
CPS-PC341EC-1	PCI-1203	µRMC2
MXP V2.0	PCI-L221-B1D0	

Product Contents

Ezi-SERVO II EtherCAT Series

Ezi-STEP II EtherCAT Series

Ezi-IO EtherCAT Series

OPTION


Ezi-SERVO II
FASTECH
EtherCAT
PWR
MOTOR
ENCODER
IN / OUT
ECAT
ECAT ID

Ezi-SERVO II

EtherCAT®
Conformance tested

Ezi-SERVO II EtherCAT

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Heat Reduction / Torque Improvement
- High Resolution / Fast Response

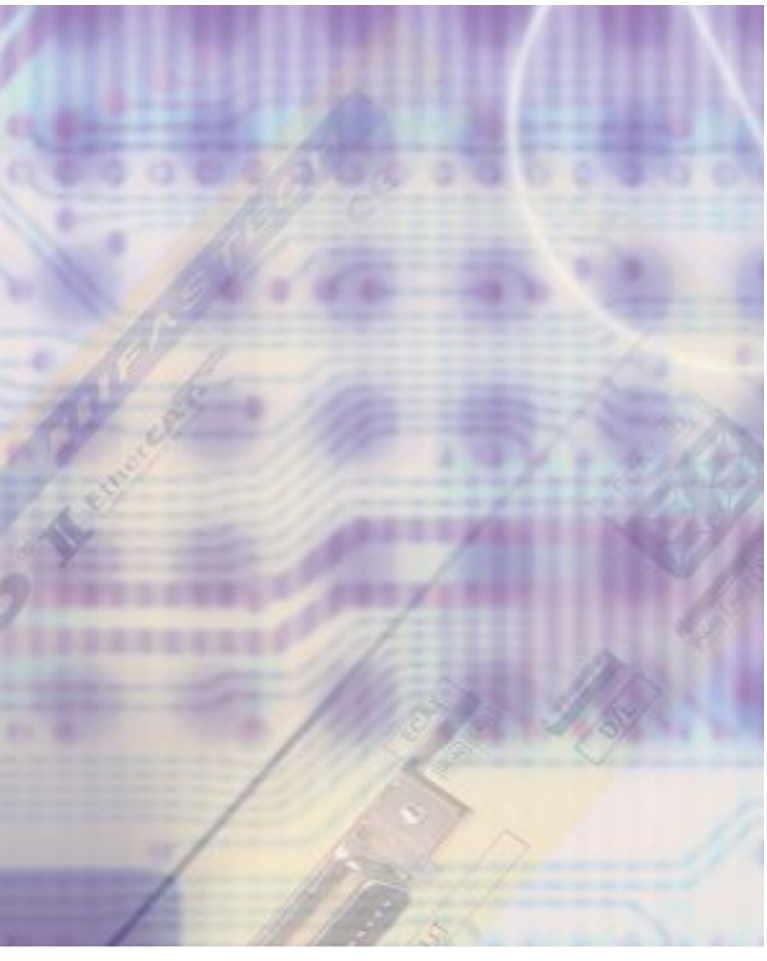
FASTECH

Fast, Accurate, Smooth Motion

Ezi-SERVO® II EtherCAT®

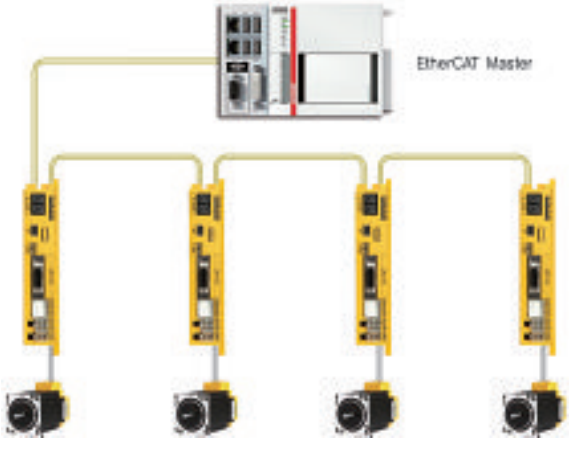
Conformance tested

Closed Loop Stepping System



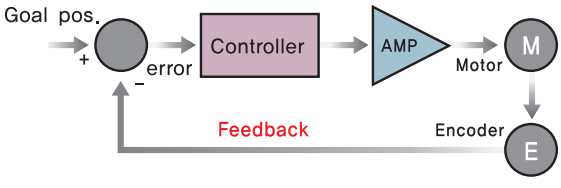
1 EtherCAT Based Motion Control

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



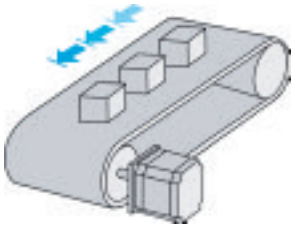
2 Closed Loop System

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 50 μsec. 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 stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

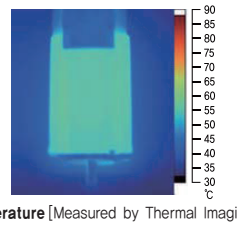
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



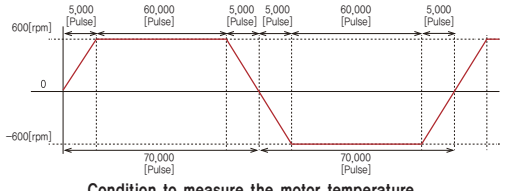
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

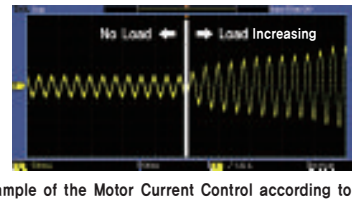
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



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

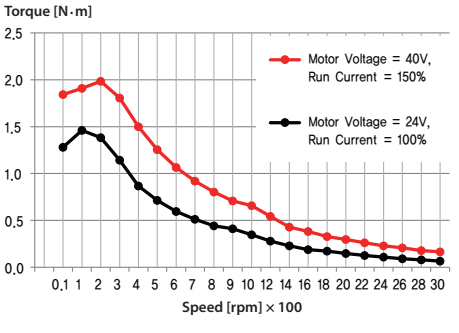


Example of the Motor Current Control according to load

5 Torque Improvement

(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.

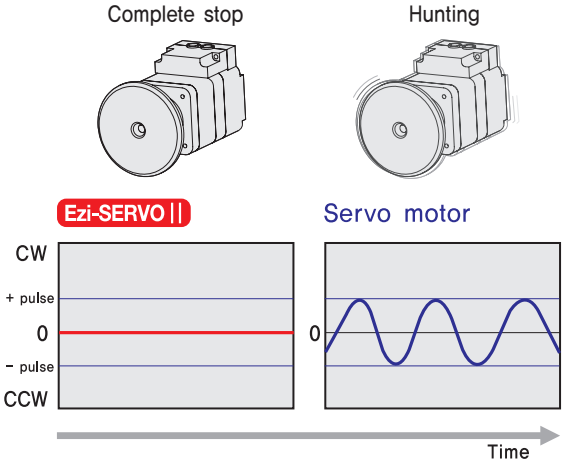


※ The torque at low speed and high speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-56L
Motor Voltage = 40VDC
Input Voltage = 24VDC

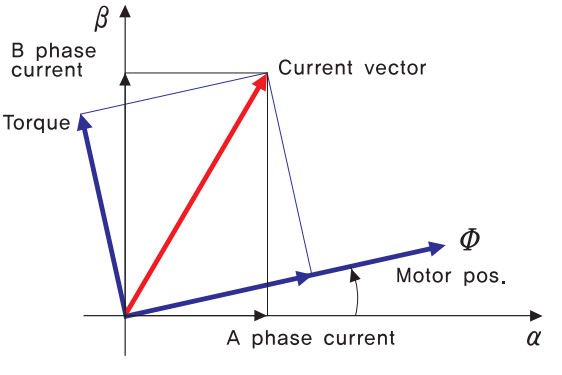
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



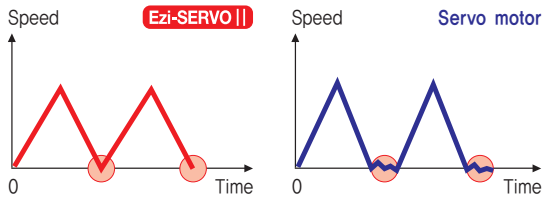
7 Smooth and Accurate

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.



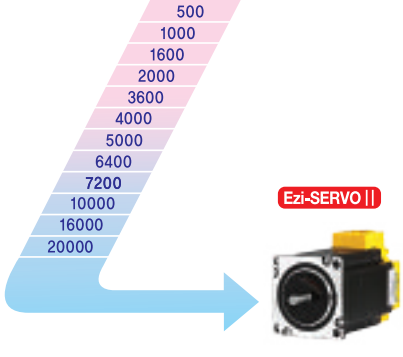
8 Fast Response

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.



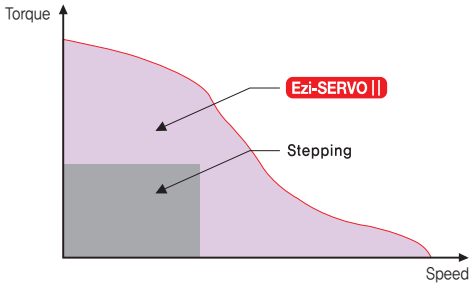
9 High Resolution

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



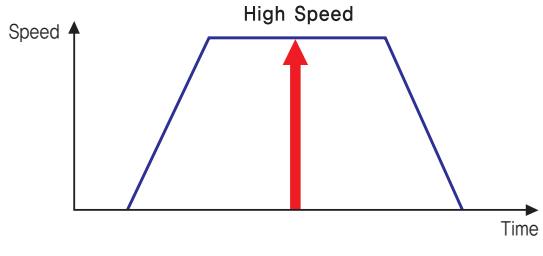
10 High Torque

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.



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 Control Stepping Drive

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 driver 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-dependant current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load varitions.

● 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 Part Numbering

Ezi-SERVO II -EC-56L-A-BK-PN05-□

Product Name

Drive Series Type

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 : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

● 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.
(Ex: 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	Reduction 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	Reduction 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	Reduction 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	Reduction 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	

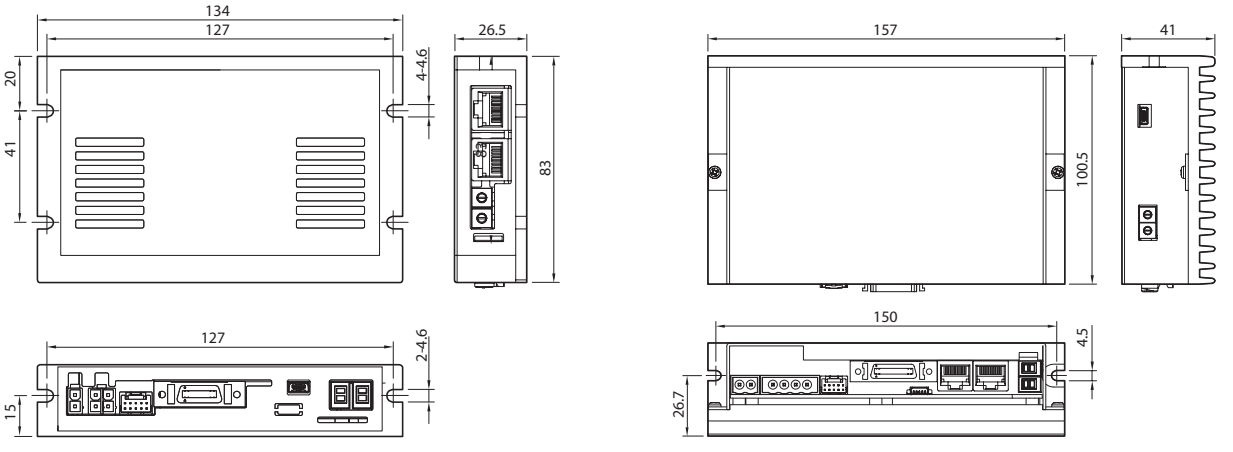
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series	EzM2-86 series
Driver 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		24VDC ±10%						40~70VDC
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	0~3,000 [rpm] *1						
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2						
	Protection Functions	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 user inputs (Photocoupler Input)						
	Output Signals	6 user outputs (Photocoupler Output), Brake						

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]



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

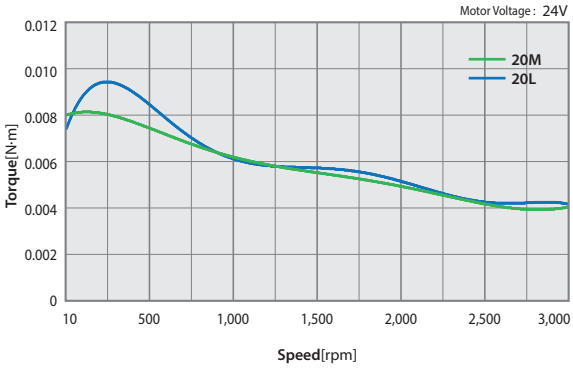
Specifications of Motor

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		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
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		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

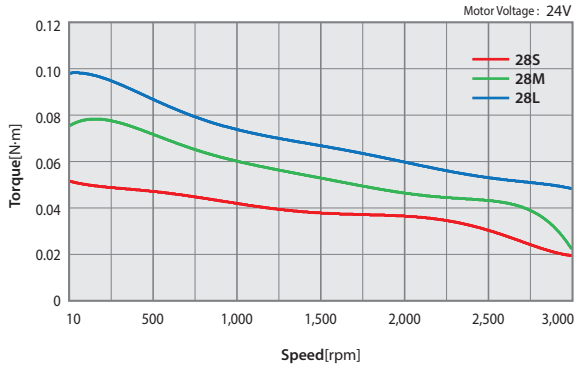
MODEL			EzM2-56 series			EzM2-60 series			EzM2-86 series		
		UNIT	56S	56M	56L	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		$g \cdot cm^2$	180	280	520	240	490	690	1800	3600	5400
WEIGHTS		g	608	784	1230	693	856	1419	2355	3941	5453
LENGTH(L)		mm	46	55	80	47	56	85	78	117	155
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

Torque Characteristics of Motor

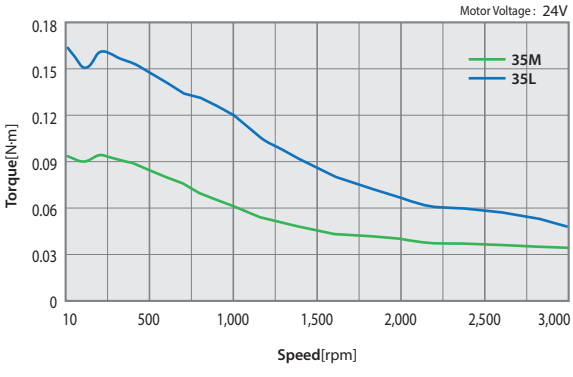
Ezi-SERVO II-EC-20 series



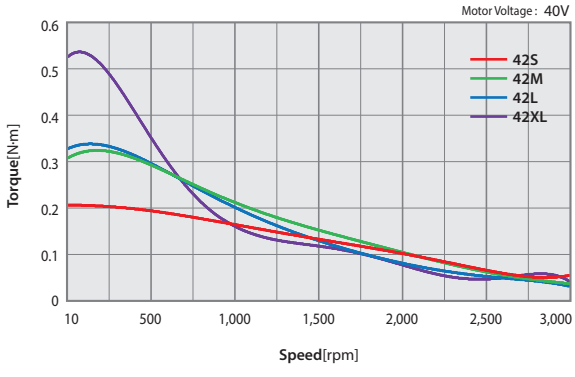
Ezi-SERVO II-EC-28 series



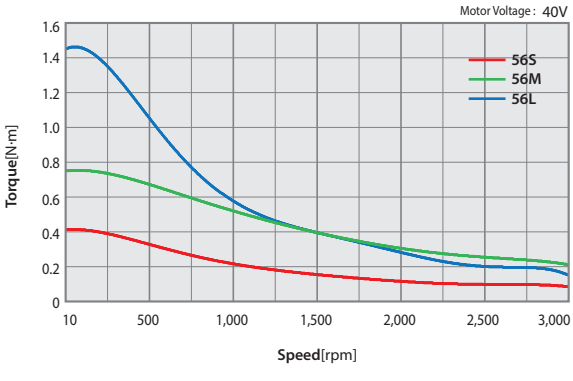
Ezi-SERVO II-EC-35 series



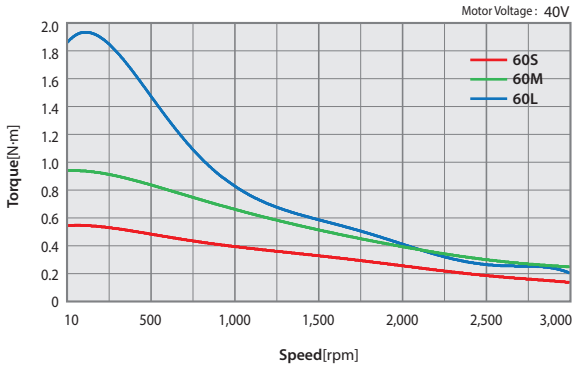
Ezi-SERVO II-EC-42 series



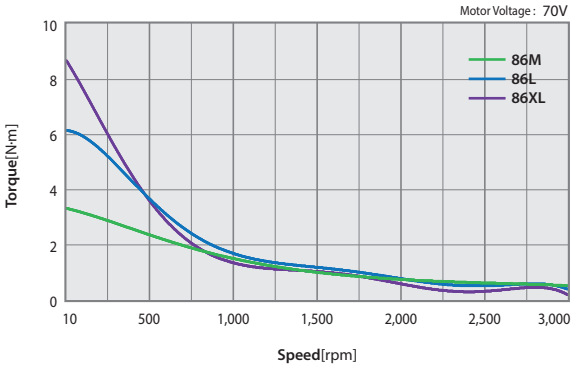
Ezi-SERVO II-EC-56 series



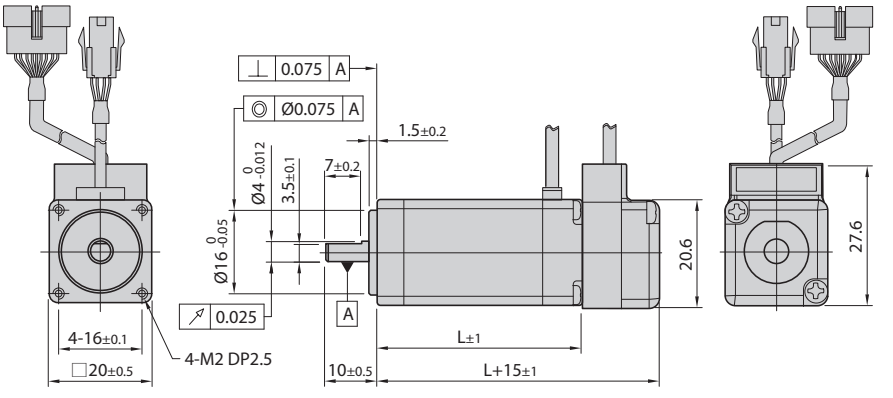
Ezi-SERVO II-EC-60 series



Ezi-SERVO II-EC-86 series

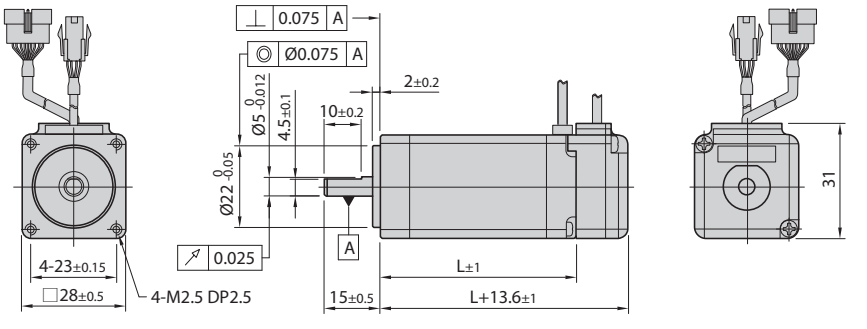


Dimensions of Motor [mm]



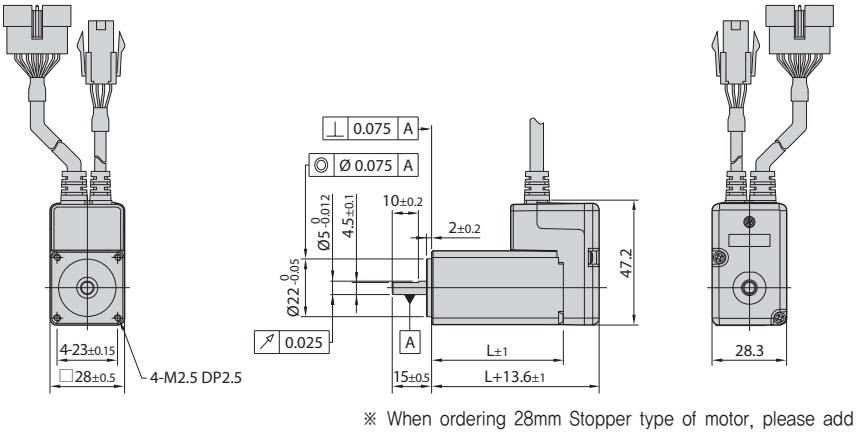
20mm

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



28mm

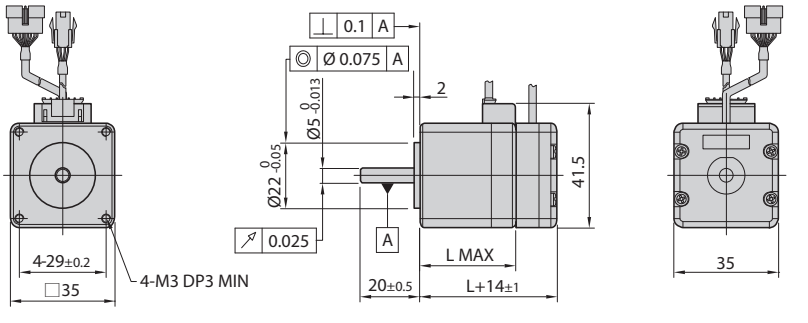
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

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

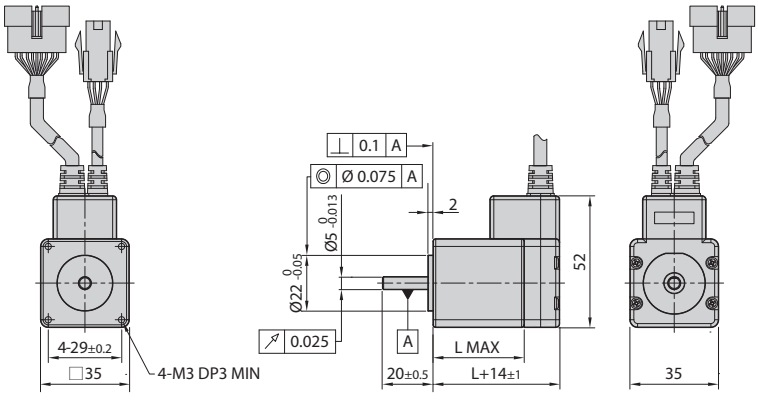
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

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

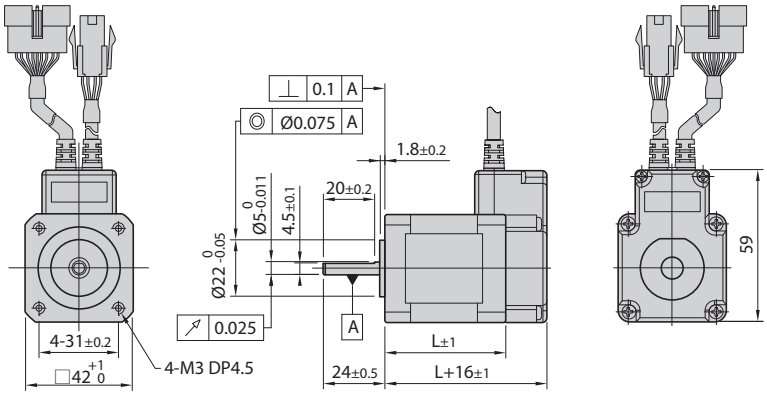
● Dimensions of Motor [mm]



35mm (Stopper type)

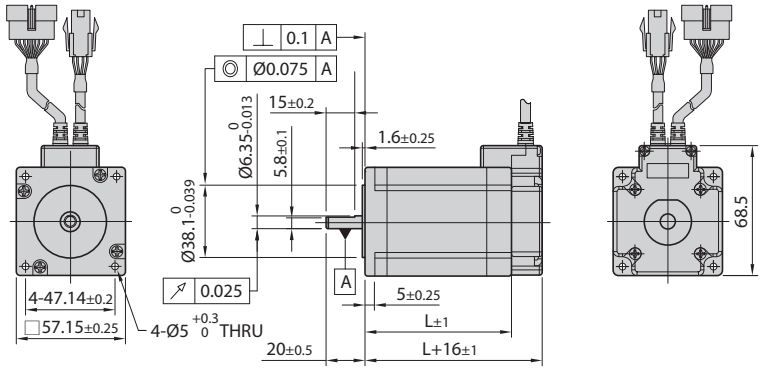
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

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



42mm

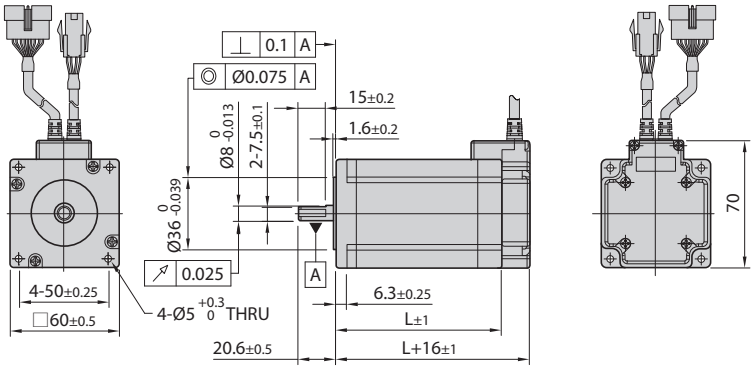
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

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

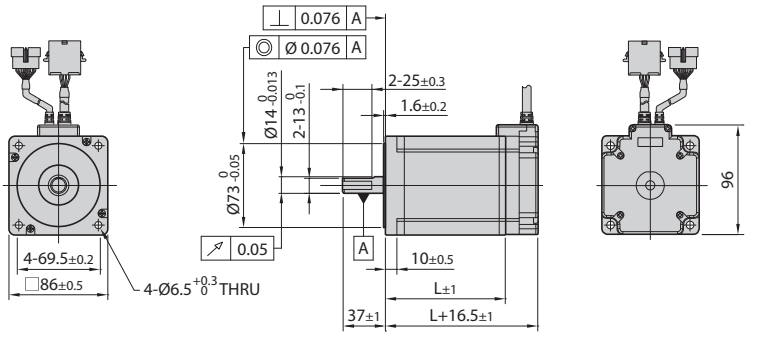
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6,35 and Ø8,0.



60mm

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

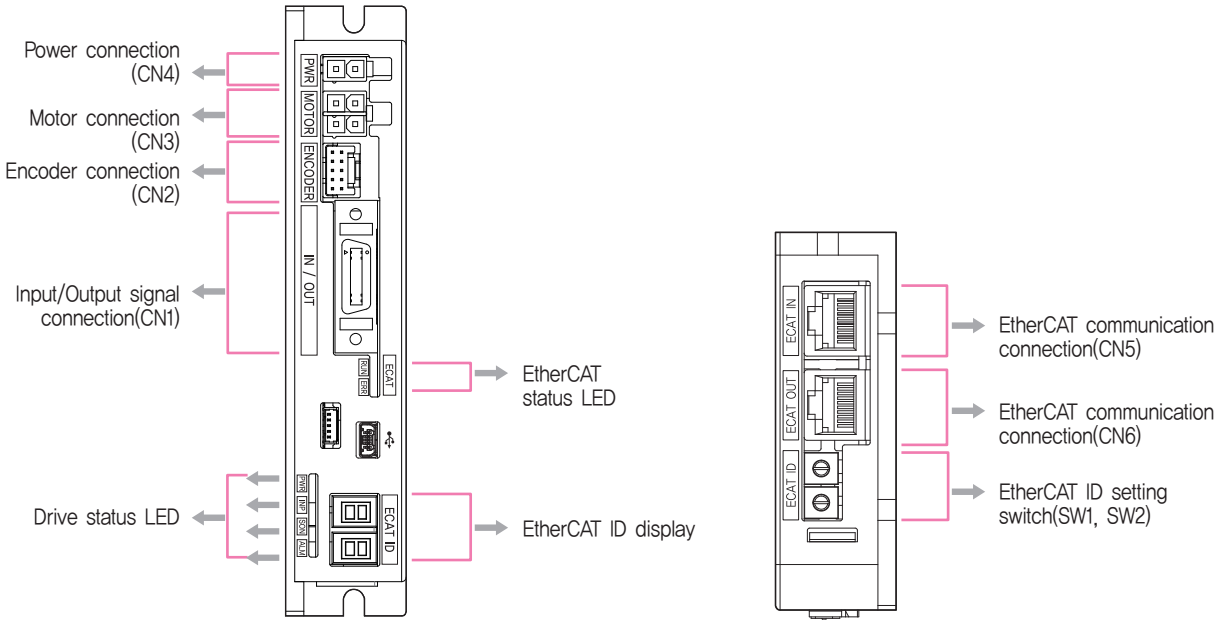
● Dimensions of Motor [mm]



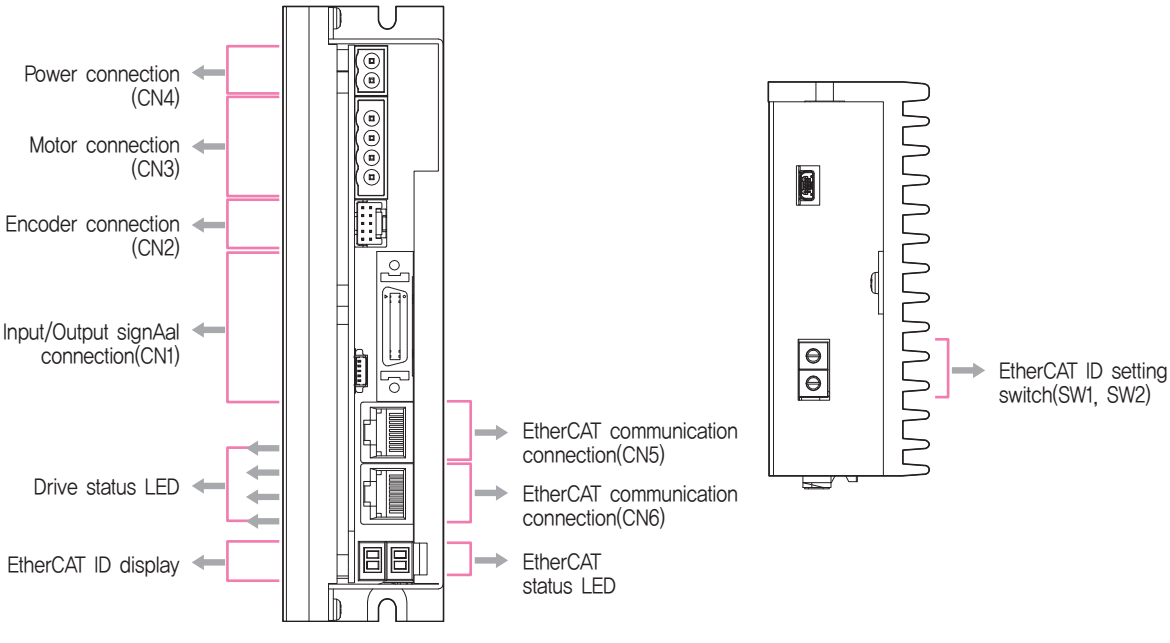
86mm

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

Settings and Operation

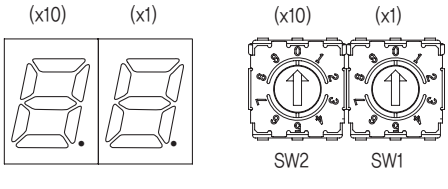


◆ 86mm Motor Drive (EzS2-EC-86 series)



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

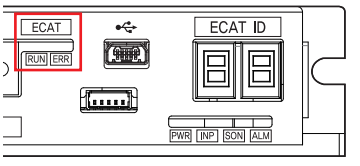
There are two Rotary Switches to set value of EtherCAT ID (ECAT Device ID). Switch on the right side indicates the ones' place(X1) and Switch on the left side indicates the tens' place(X10).



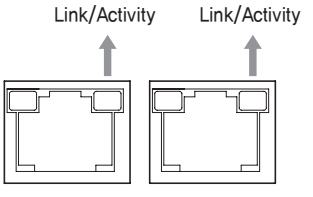
2. EtherCAT Status LED

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

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



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

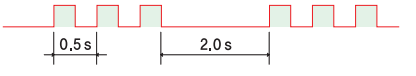
3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
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 protection function is activated

◆ Protection functions and LED flash times

Times	Error Code *4	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	E-002	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	E-003	Position Tracking Error	Position error value is higher than 180° in motor run state *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	Inside temperature of drive exceeds 85℃
6	E-006	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *3
7	E-007	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	E-008	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	E-010	In-Position Error	After operation is finished, position error more 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 higher than 180° in motor stop state *2

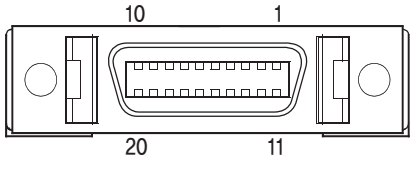
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*4 : When an alarm occurs, error code is displayed on the 7-segment instead of EtherCAT ID.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



Alarm LED flash
(Ex, Position tracking error)

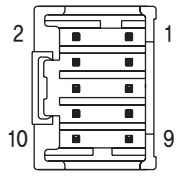
4. Input/Output Signal Connector(CN1)

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_24VDC	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	5VDC	Output
8	GND	Output
9	F.GND	----
10	F.GND	----

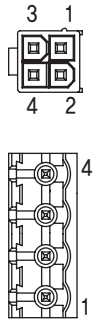


6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output

NO.	Function	I/O
1	/B Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	A Phase	Output

※ 86mm motor drive.

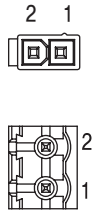


7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

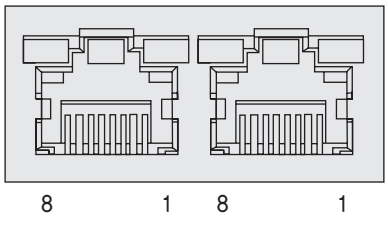
NO.	Function	I/O
1	GND	Input
2	40~70VDC	Input

※ 86mm motor drive.

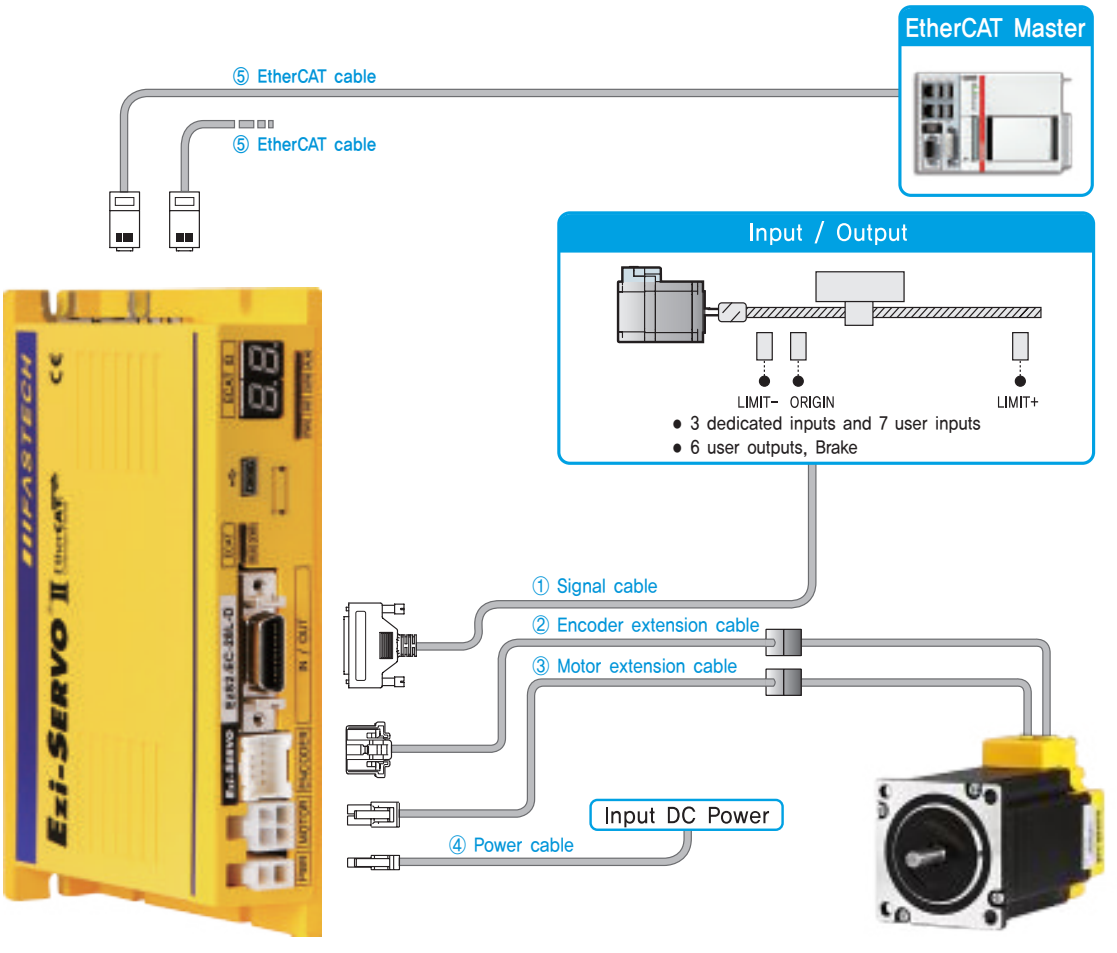


8. EtherCAT Communication Connector(CN5, CN6)

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



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

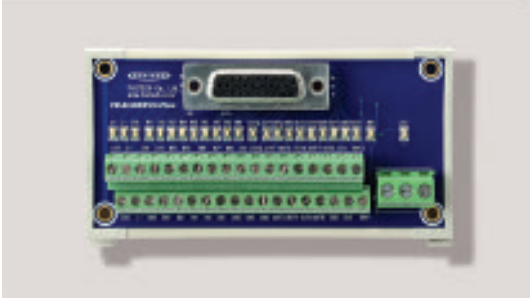
STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

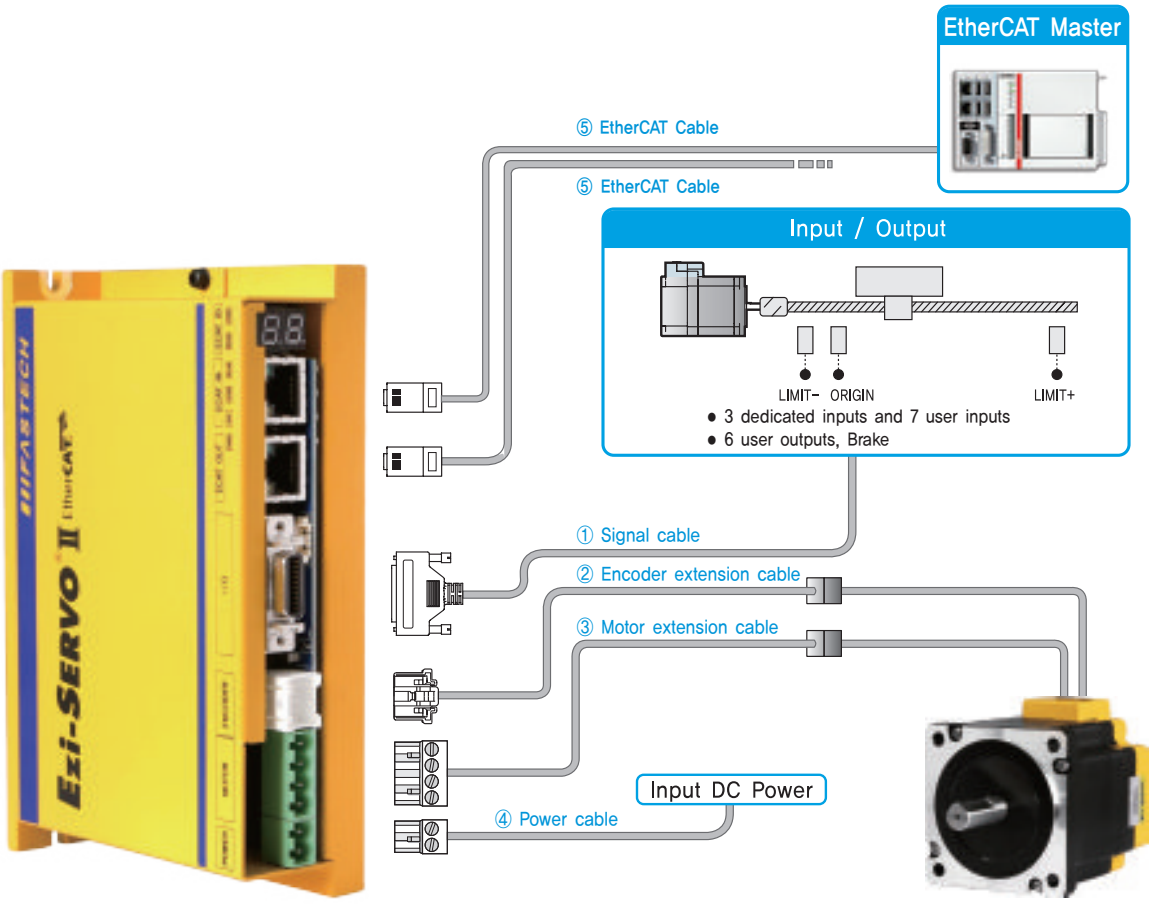
2. Connector Specifications

Connector specifications for cabling to drive.

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

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

System Configuration [86mm Motor Drive]



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVP-M-□□□F	□□□	Normal Cable
CSVP-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CSVP-P-□□□F	□□□	Normal Cable
CSVP-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

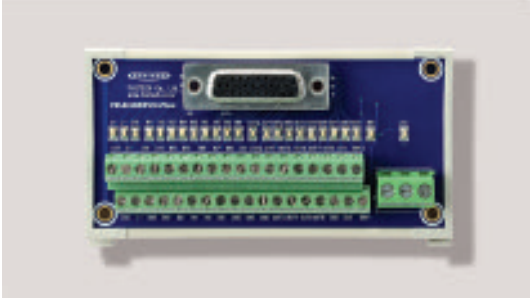
STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/Output signal and Ezi-SERVO II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-SERVO II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

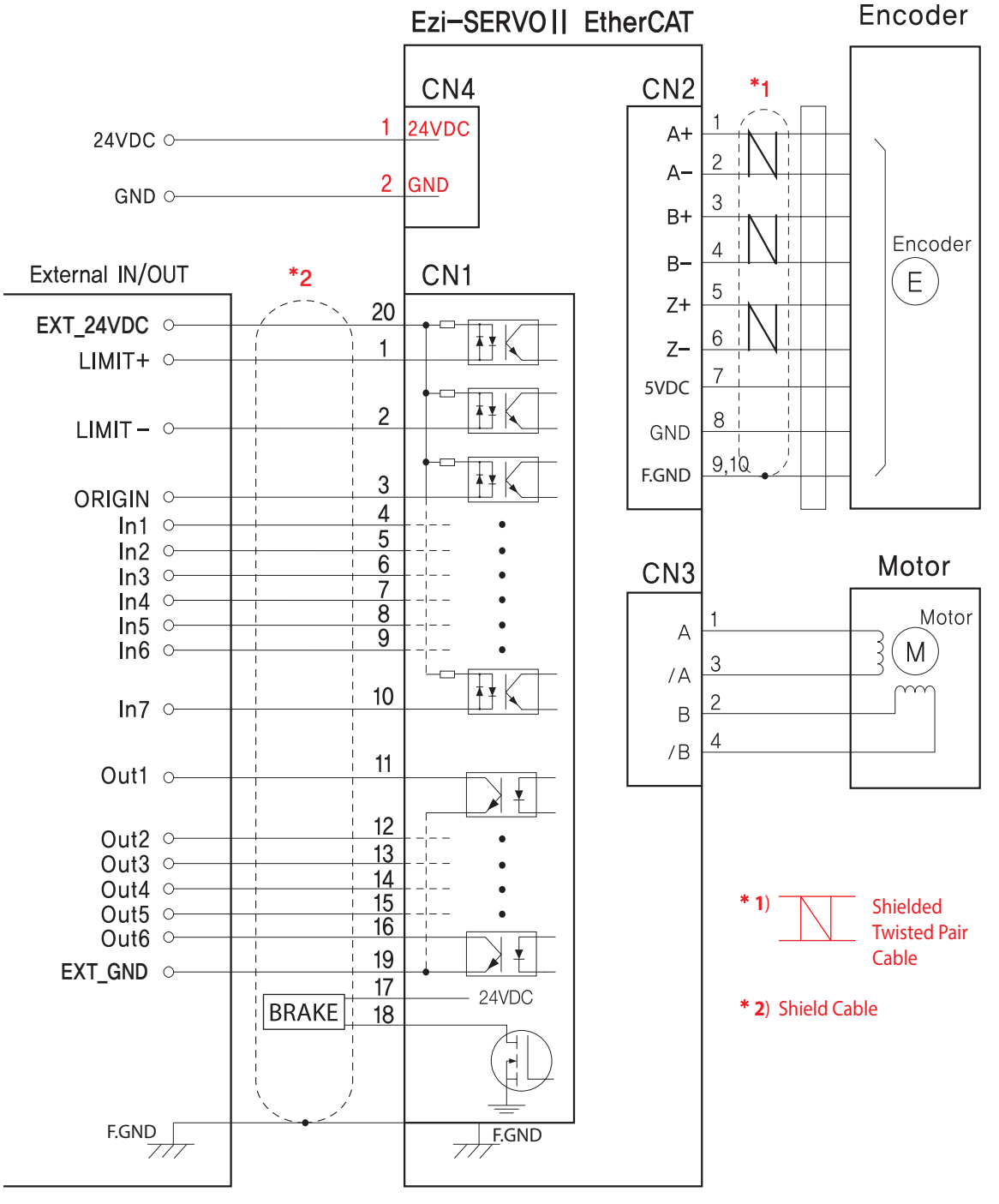
2. Connector Specifications

Connector specifications for cabling to drive.

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

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



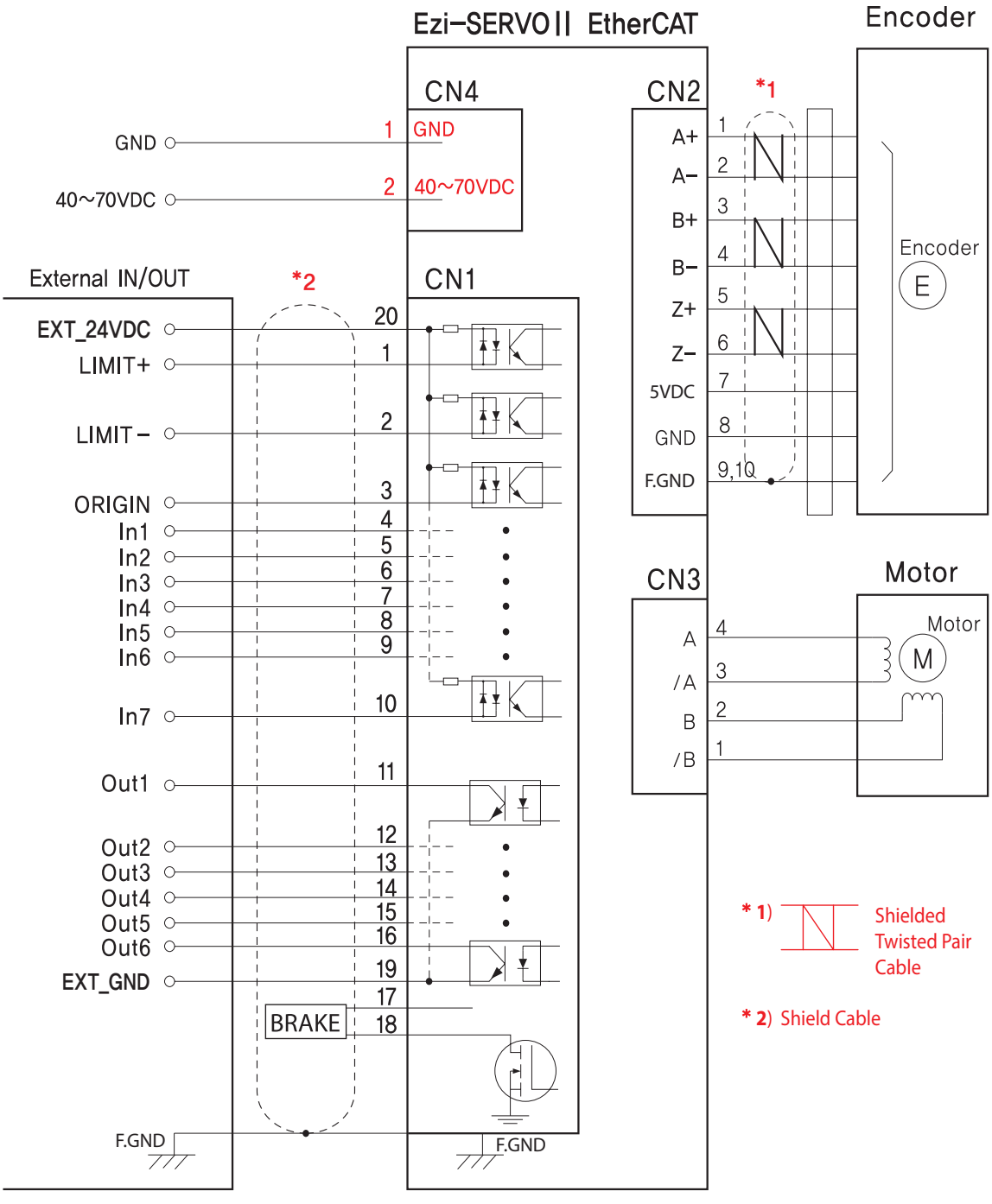
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

● 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, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT
Ezi-SERVO II mini
FASTECH
PWR
MOTOR
ENCODER
I/O
ST1
ST2

Ezi-SERVO II EtherCAT MINI

Ezi-SERVO II EtherCAT MINI

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Miniaturized Compact Size
- High Resolution / Fast Response

FASTECH

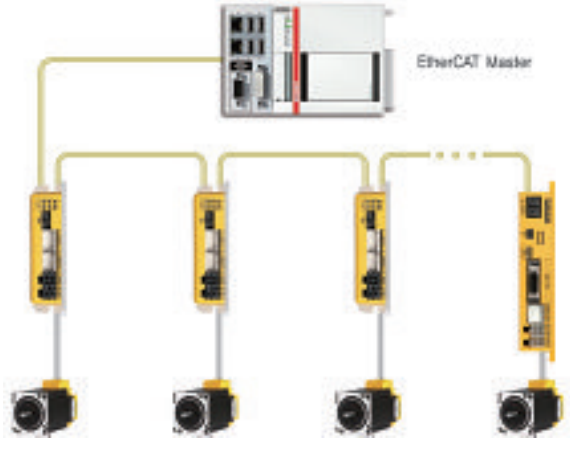
Fast, Accurate, Smooth Motion

Ezi-SERVO® II EtherCAT® MINI

Closed Loop Stepping System

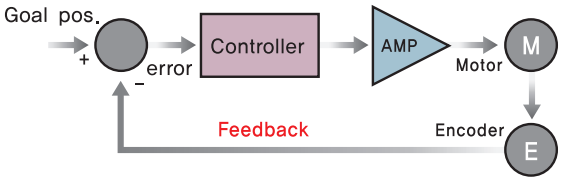
1 EtherCAT Based Motion Control

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



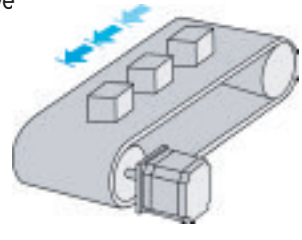
2 Closed Loop System

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 50 μsec. 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 stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

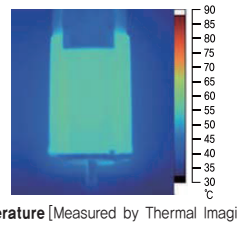
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo' s gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additional expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



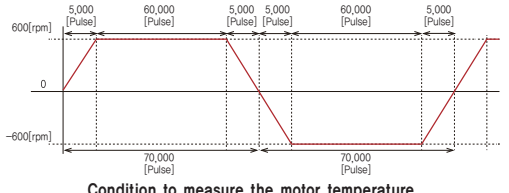
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

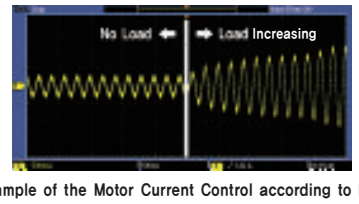
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



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

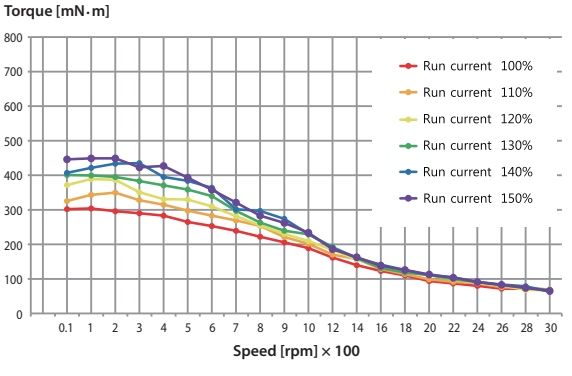


Example of the Motor Current Control according to load

5 Torque Improvement

(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%.

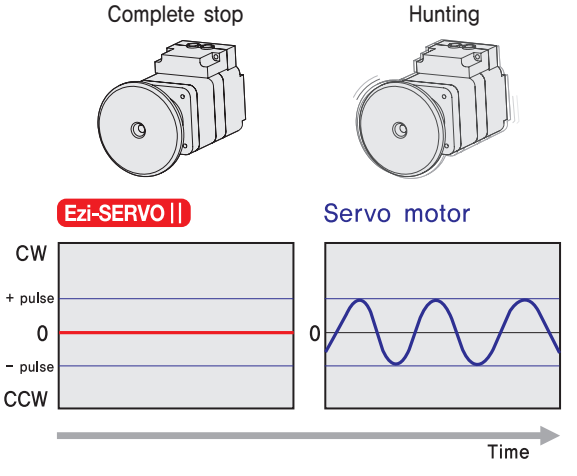


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-MI-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

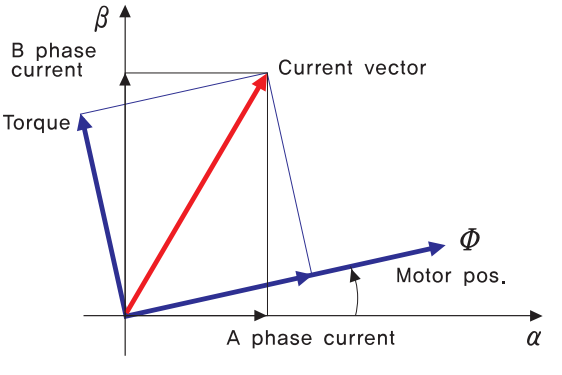
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



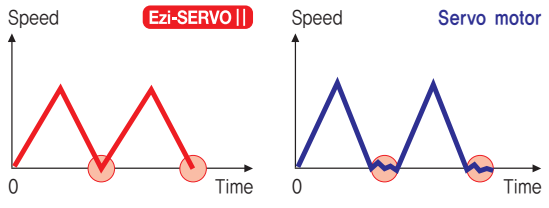
7 Smooth and Accurate

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.



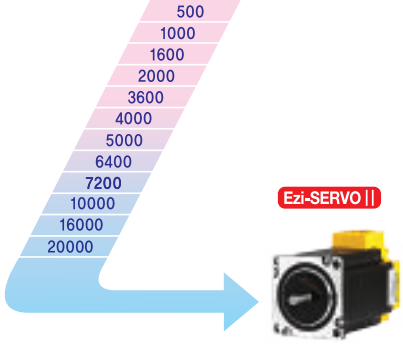
8 Fast Response

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.



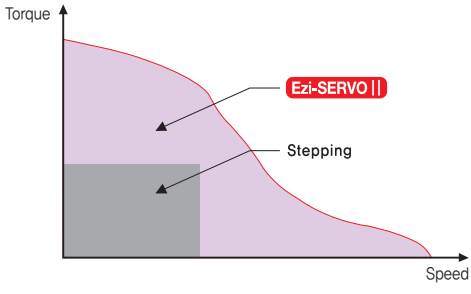
9 High Resolution

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



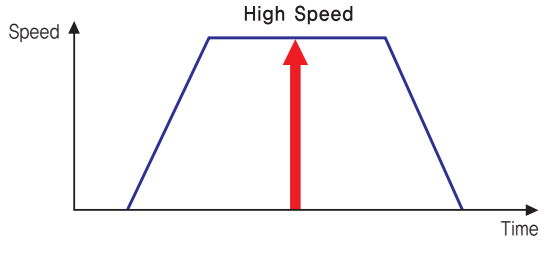
10 High Torque

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.



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 Control Stepping Drive

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 driver 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-dependant current control, open-loop stepping drivers 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 MINI Part Numbering

Ezi-SERVO II -EC-MI-42S-A-BK-PN10-□

Product Name

Drive Series Type

EC : EtherCAT
MI : 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 : 10,000[ppr]
B : 20,000[ppr]
D : 16,000[ppr]
F : 4,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

User Code

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.
(Ex : 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	Reduction 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	Reduction 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	Reduction 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

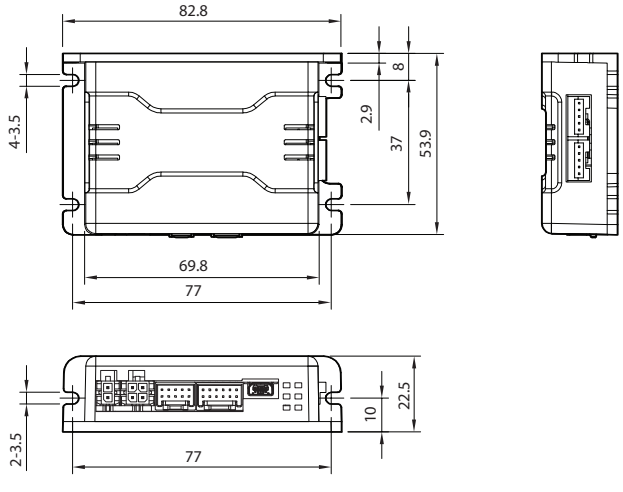
Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-EC-MI-20 series	EzS2-EC-MI-28 series	EzS2-EC-MI-35 series	EzS2-EC-MI-42 series	EzS2-EC-MI-56 series	EzS2-EC-MI-60 series
Input Voltage		24VDC ±10%					
Control Method		Closed loop control with 32bit MCU					
Current Consumption		Max 500mA (Except motor current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *3 · 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	0~3,000 [rpm] *1					
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2					
	Protection Functions	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 user inputs (Photocoupler Input)					
	Output Signals	2 user outputs (Photocoupler Output), Brake					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

*3 : The EzS2-EC-MI-56, 60 series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

Dimensions of Drive [mm]



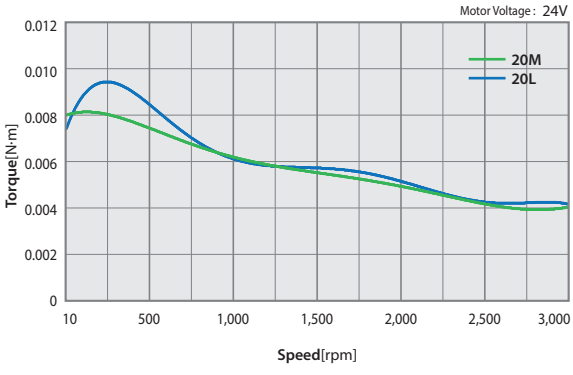
Specifications of Motor

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		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
VOLTAGE		VDC	2.75	3.0	3.0	3.0	3.0	1.8	2.7	3.36	4.32	4.56	7.2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
RESISTANCE per PHASE		Ohm	5.5	6.0	3.2	3.2	3.2	1.2	1.8	2.8	3.6	3.8	6.0
INDUCTANCE per PHASE		mH	2.0	2.6	2.0	2.7	3.2	1.2	2.6	5.4	7.2	8.0	15.6
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		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

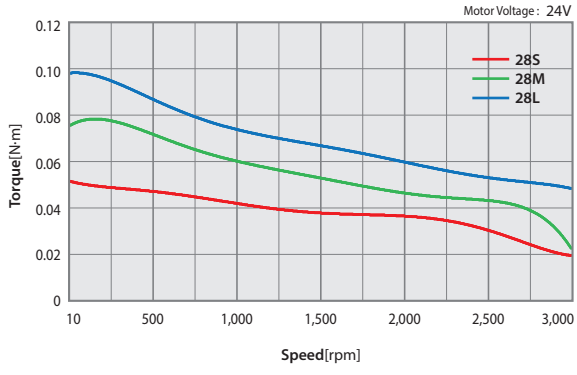
MODEL			EzM2-56 series			EzM2-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
VOLTAGE		VDC	1.56	1.62	2.64	1.32	1.48	2.2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
RESISTANCE per PHASE		Ohm	0.52	0.54	0.88	0.33	0.37	0.55
INDUCTANCE per PHASE		mH	1.2	2.0	4.0	0.75	1.1	2.7
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		g	608	784	1230	693	856	1419
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

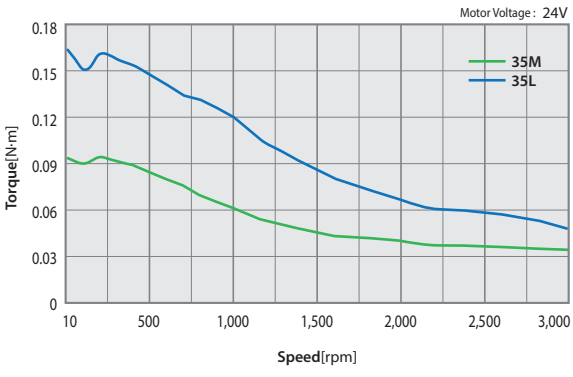
Ezi-SERVO II-EC-MI-20 series



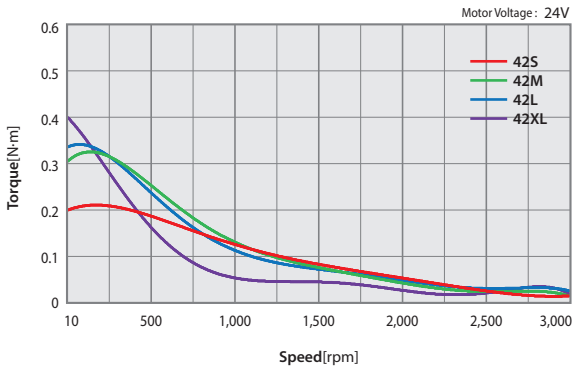
Ezi-SERVO II-EC-MI-28 series



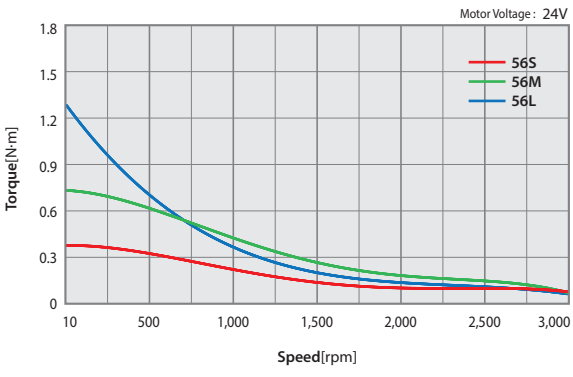
Ezi-SERVO II-EC-MI-35 series



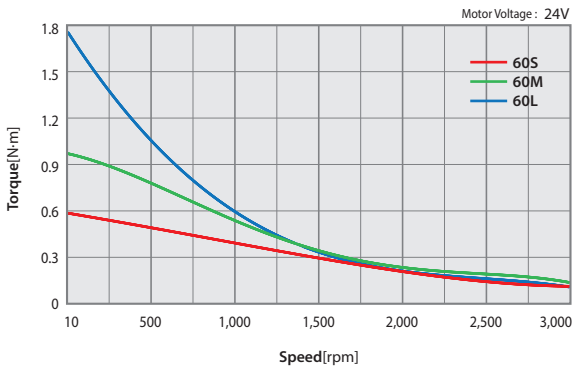
Ezi-SERVO II-EC-MI-42 series



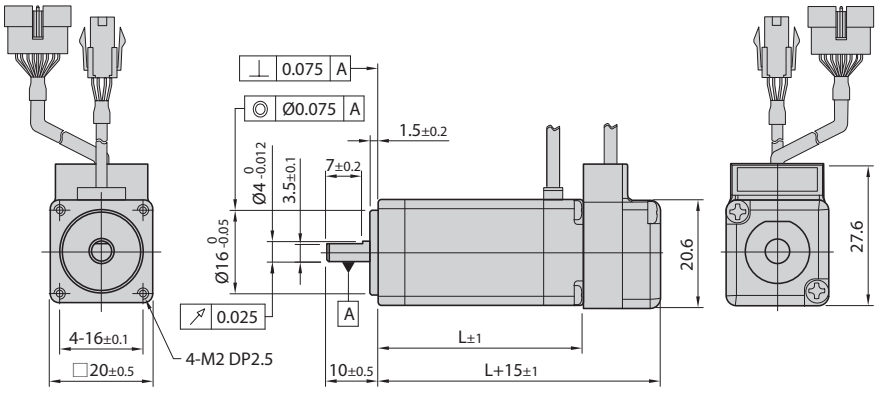
Ezi-SERVO II-EC-MI-56 series



Ezi-SERVO II-EC-MI-60 series

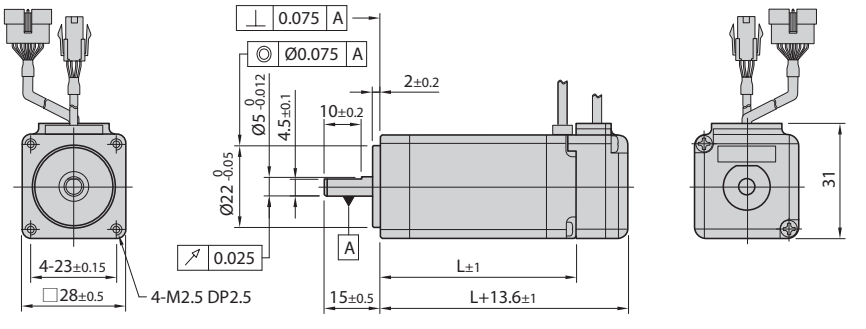


Dimensions of Motor [mm]



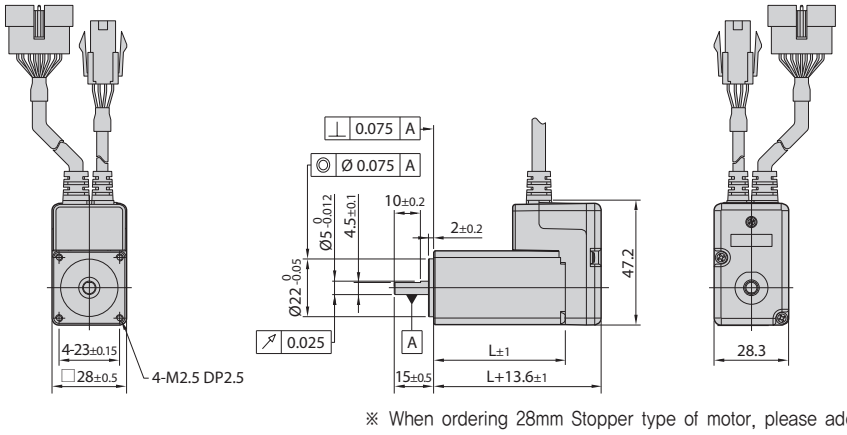
20mm

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



28mm

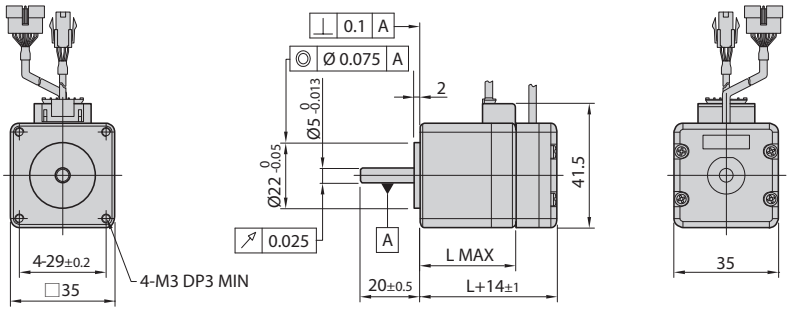
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

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

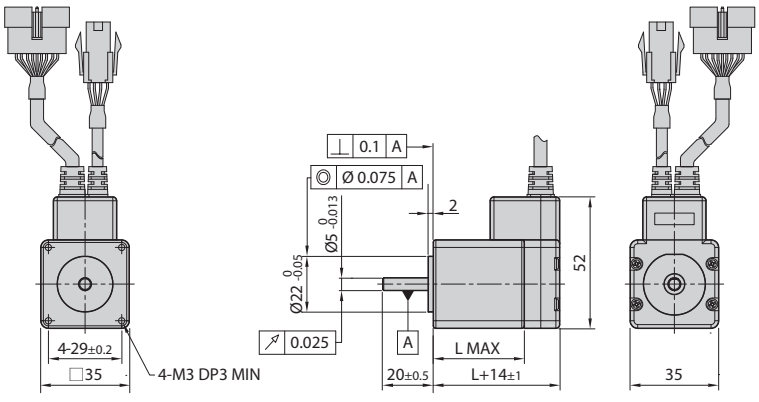
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

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

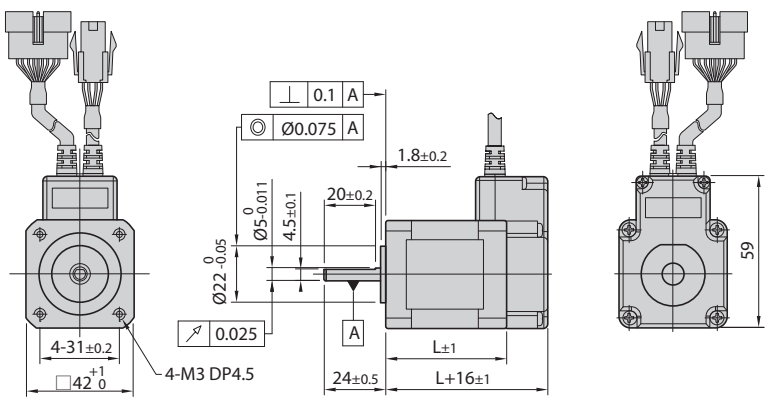
● Dimensions of Motor [mm]



35mm (Stopper type)

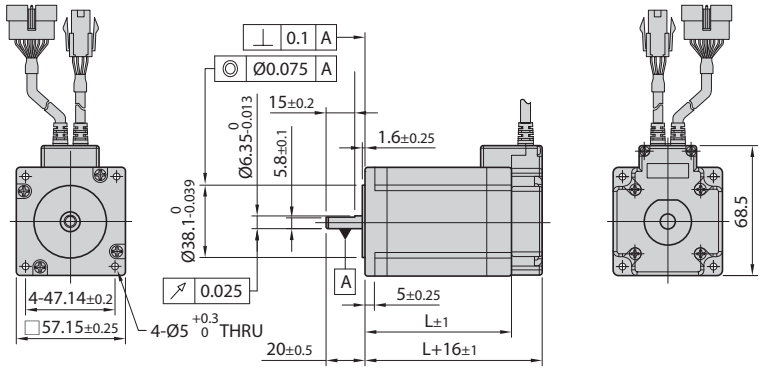
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

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



42mm

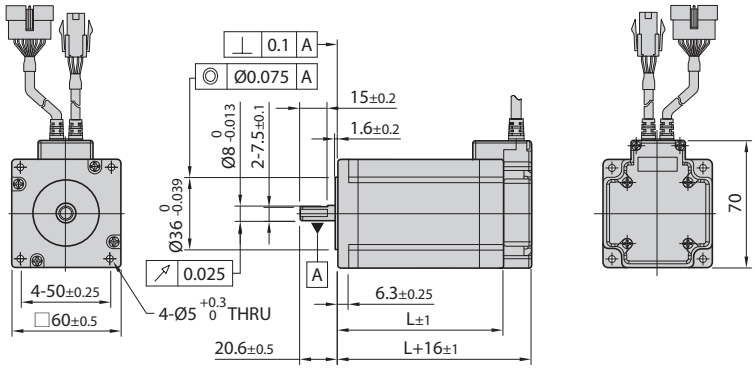
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

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

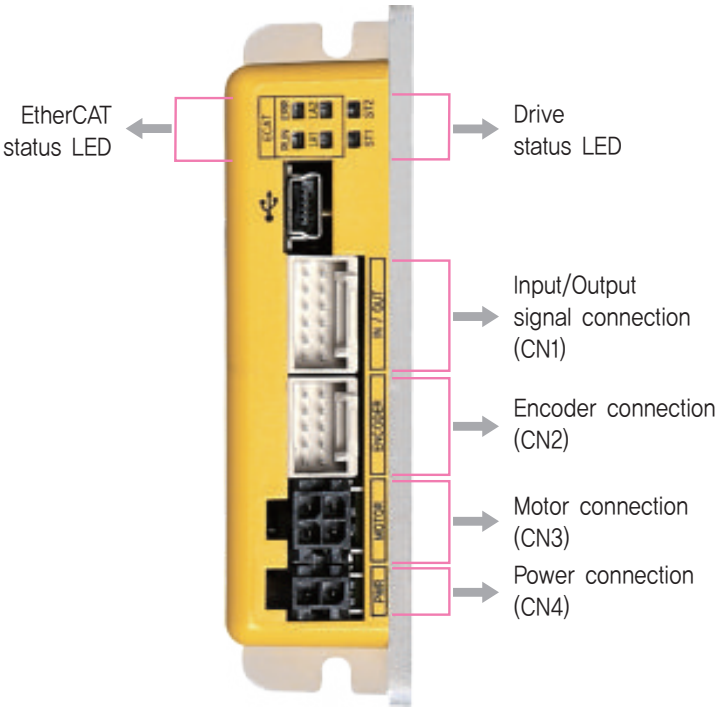
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.



60mm

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

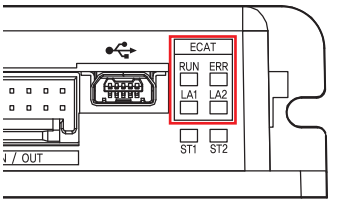
Settings and Operation



2. EtherCAT Status LED

LED indicates communication status of EtherCAT.

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



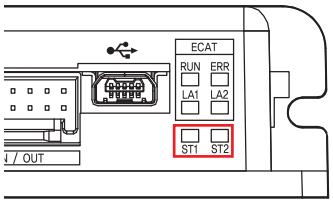
Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

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

2. Drive Status LED

In the case of Ezi-SERVO II EtherCAT MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

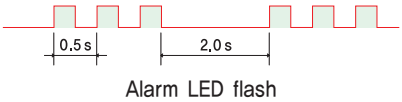
Status	LED	Description
Disable	ST1 : ▬ ▬ ▬ ▬ ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ▬▬▬▬ ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ▬▬▬▬ ST2 : ▬▬▬▬	ST1 light on, ST2 light on
In-position deviation	ST1 : ● ● ● ● ● ● ST2 : ● ● ● ● ● ●	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 : ▬ ▬ ▬ ▬	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *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	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more 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 higher than 180° in motor stop state *2

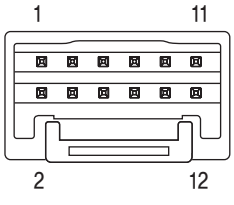
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value can be changed by parameter. (Refer to the Manual)
*3 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
※ Please refer to user Manual for the details of protection functions.



Alarm LED flash
(Ex, Position tracking error)

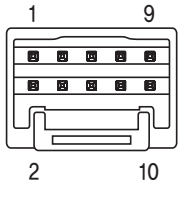
4. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	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



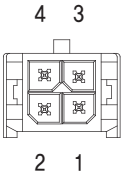
5. Encoder Connector(CN2)

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



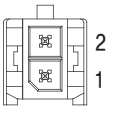
6. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



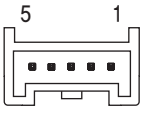
7. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

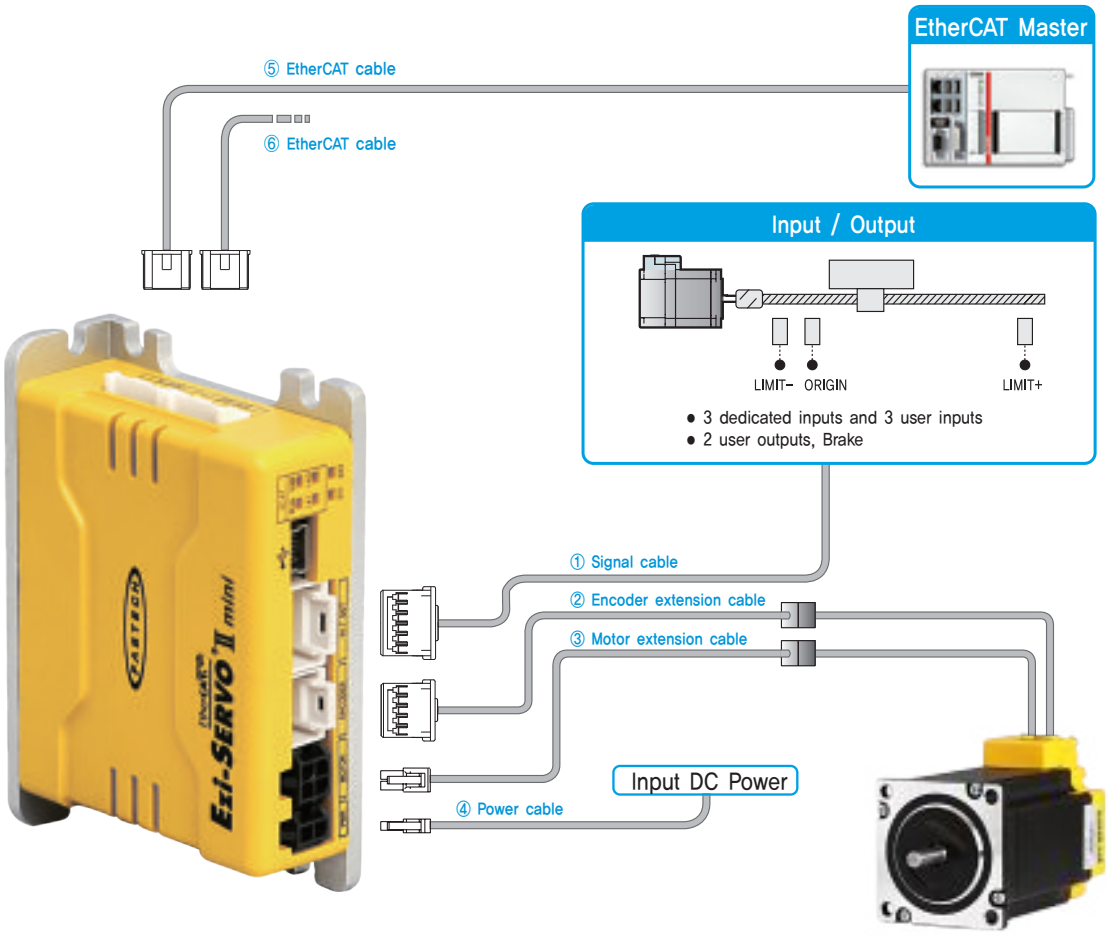


8. EtherCAT Communication Connector(CN5, CN6)

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



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–
Max. Length	20m	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSVI-E-□□□F	□□□	Normal Cable
CSVI-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-M-□□□F	□□□	Normal Cable
CSMI-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-P-□□□F	□□□	Normal Cable
CSMI-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II EtherCAT MINI to the controller, Ezi-SERVO II EtherCAT, and Ezi-SERVO II EtherCAT ALL R type with a network.
  This cable is composed of a 5-pin connector (Ezi-SERVO II EtherCAT MINI side) and an RJ45 connector.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-SERVO II EtherCAT MINI to Ezi-SERVO II EtherCAT MINI with the network.

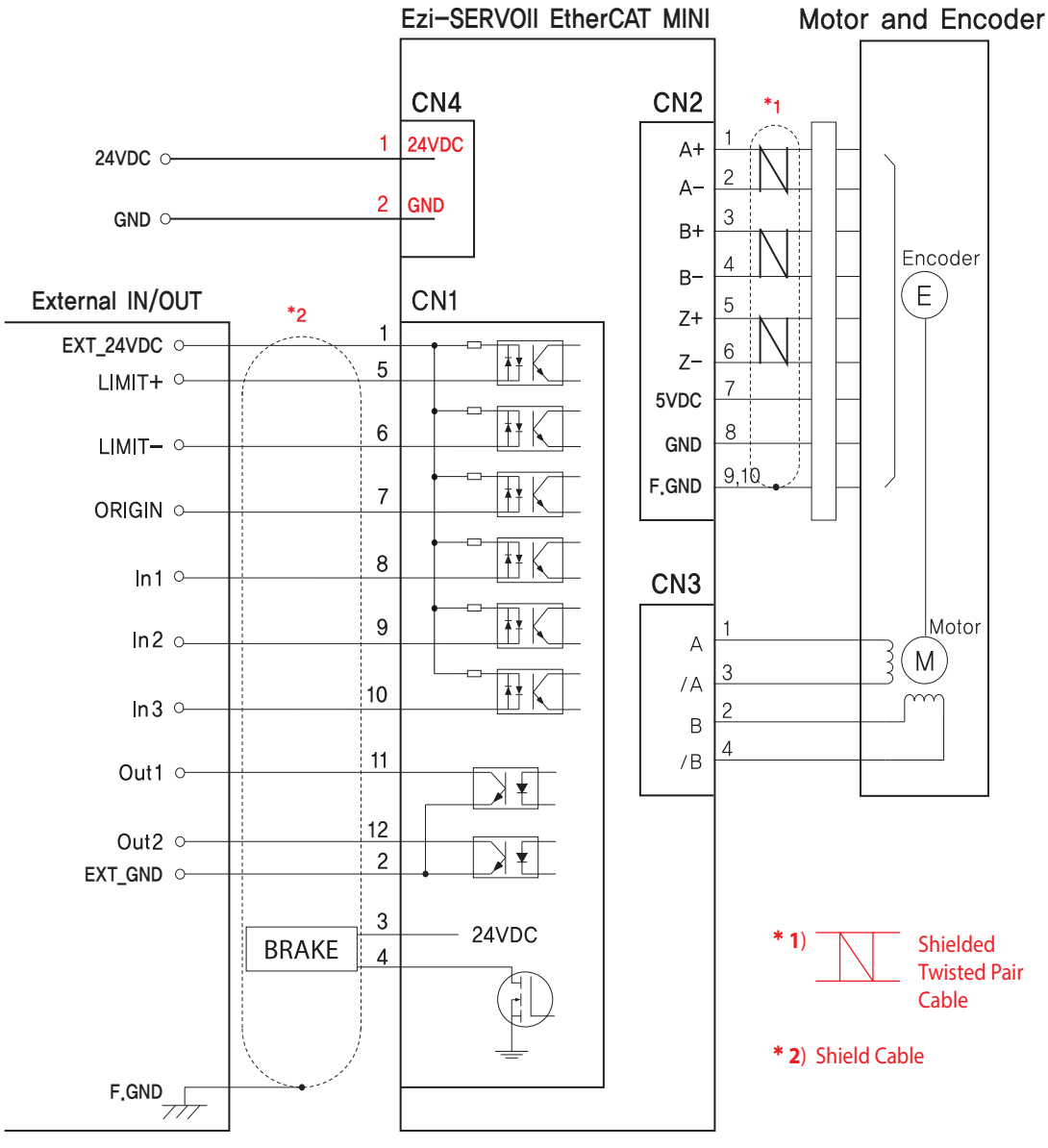
2. Connector Specifications

Connector specifications for cabling to drive.

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

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ 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

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT 4X
MP
CP
ECAT OUT
ECAT IN
MOTOR
ENCODER
I/O
Ezi-SERVO II EtherCAT

Ezi-SERVO II EtherCAT 4X

- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning / No Hunting
- Compact 4 Axes Stepping Motor Drive
- Save Space / Reduce Wiring (Reduce Cost)

FASTECH

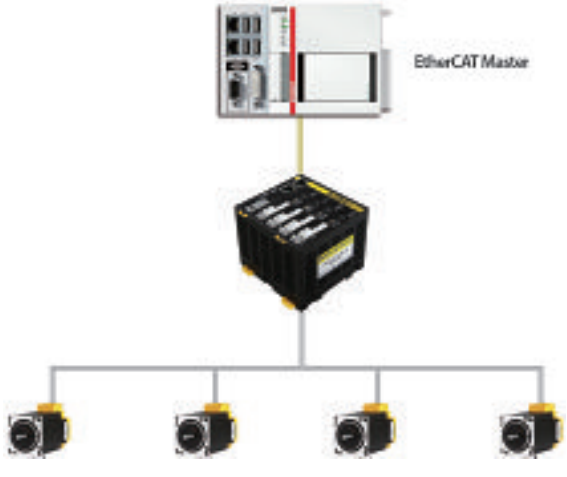
Fast, Accurate, Smooth Motion

Ezi-SERVO® II EtherCAT 4X

Closed Loop Stepping System

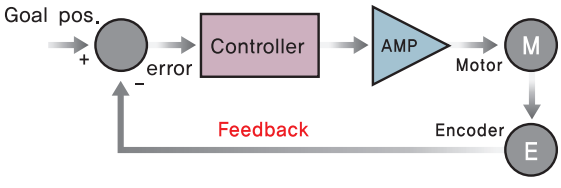
1 EtherCAT Based Motion Control

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



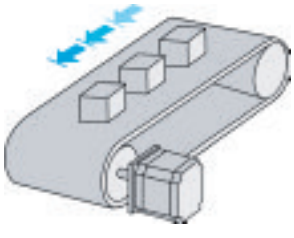
2 Closed Loop System

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 50 μsec. 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 stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

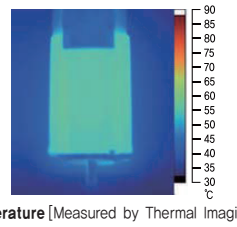
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox. Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



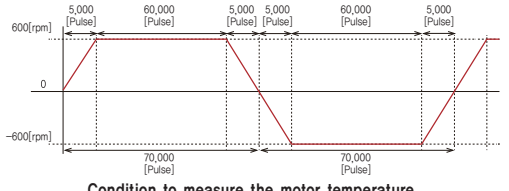
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

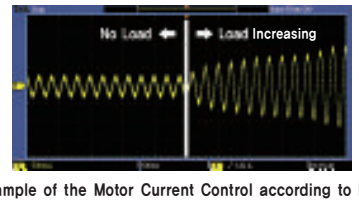
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



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

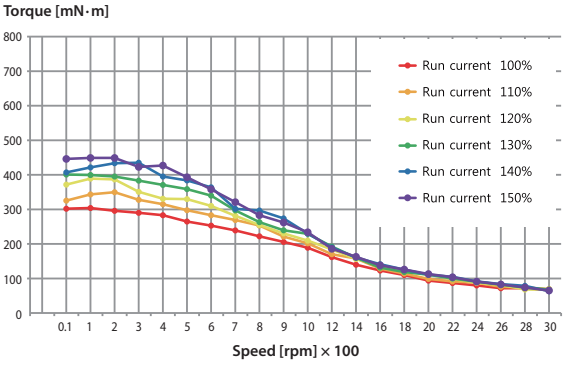


Example of the Motor Current Control according to load

5 Torque Improvement

(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%.

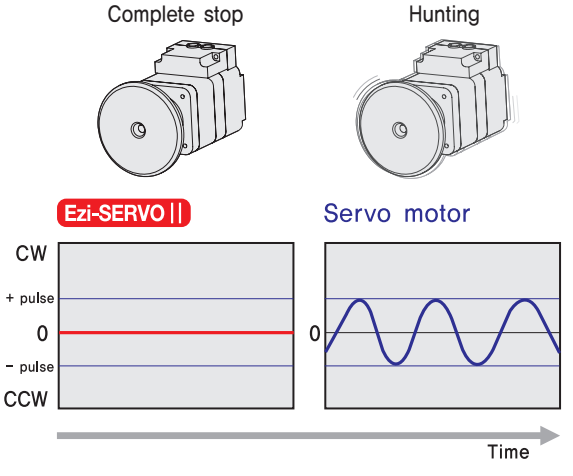


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-4X-42L
Motor Voltage = 24VDC
Input Voltage = 24VDC

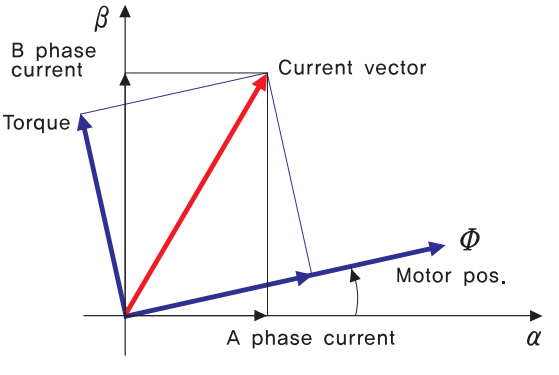
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



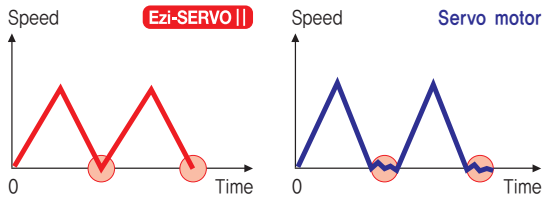
7 Smooth and Accurate

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.



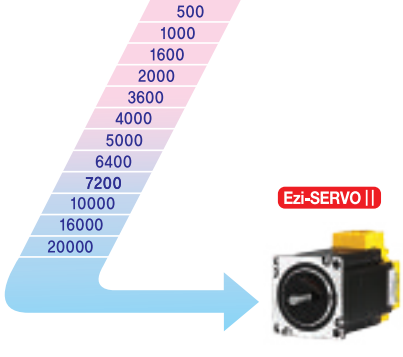
8 Fast Response

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.



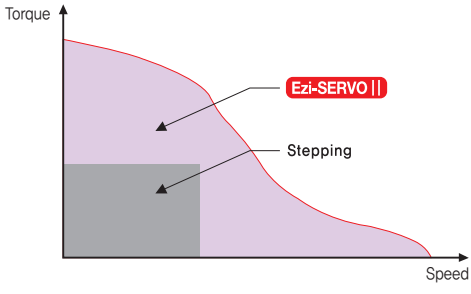
9 High Resolution

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



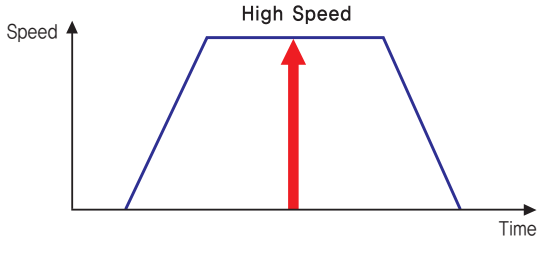
10 High Torque

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.



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.



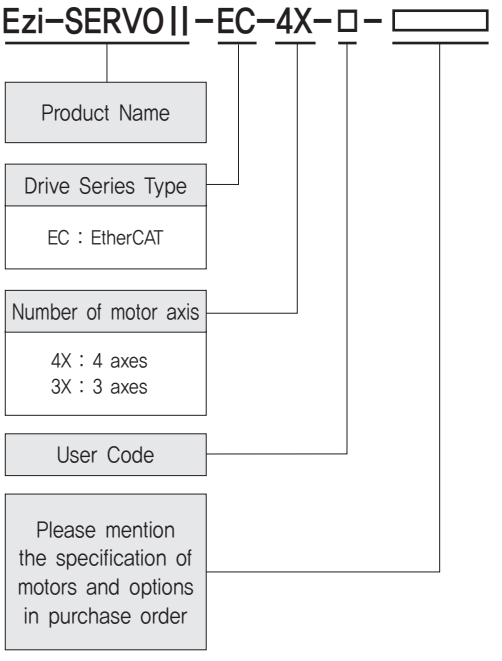
● Advantages over Open-Loop Control Stepping Drive

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 driver 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-dependant current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load varitions.

● 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 4X Part Numbering



● Combination with Standard Motor / Brake

Ezi-SERVO II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake and Motor with Gearbox. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

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

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

* When places an order for Stopper type 28mm motor, please write "M" additionally after motor length of unit part number.(Ex: EzM2-28LM-D, EzM2-35LM-D)

Motor Model Number with Gearbox

Ezi-SERVO II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake and Motor with Gearbox. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

Motor Model Number	Reduction 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	Reduction 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	Reduction 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	

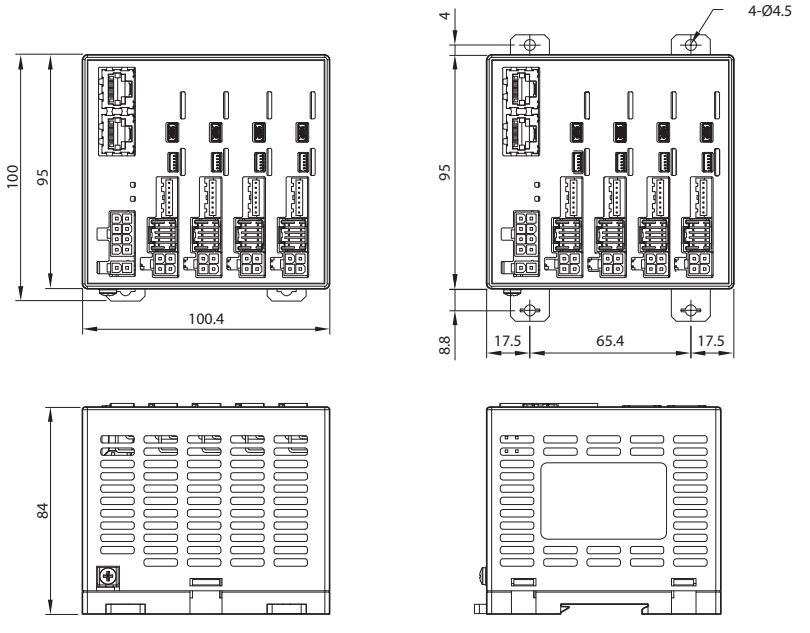
Specifications of Drive

Motor Model		EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series
Driver Model		EzS2-EC-4X, 3X series					
Input Voltage		24VDC ±10%					
Control Method		Closed loop control 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	0~3,000 [rpm] *1					
	Resolution [ppr]	4,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 4,000 10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 16,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter) *2					
	Protection Functions	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)					
	Output Signals	Brake					

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

*2 : When selected resolution is more than encoder resolution, motor shall be operated by microstep between pulses.

Dimensions of Drive [mm]



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

※ Outer dimension of 3X drive is the same as 4X.

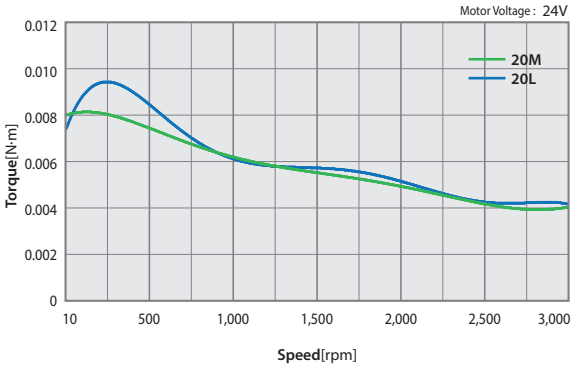
Specifications of Motor

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		–	BI-POLAR										
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2
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		g	80	104	147	204	232	194	226	294	357	426	564
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight										
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)										
INSULATION CLASS		–	CLASS B(130℃)										
OPERATING TEMPERATURE		℃	0 to 55										

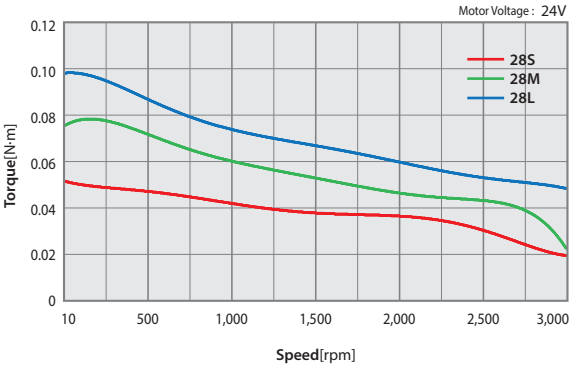
MODEL			EzM2-56 series			EzM2-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		g·cm^2	180	280	520	240	490	690
WEIGHTS		g	608	784	1230	693	856	1419
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

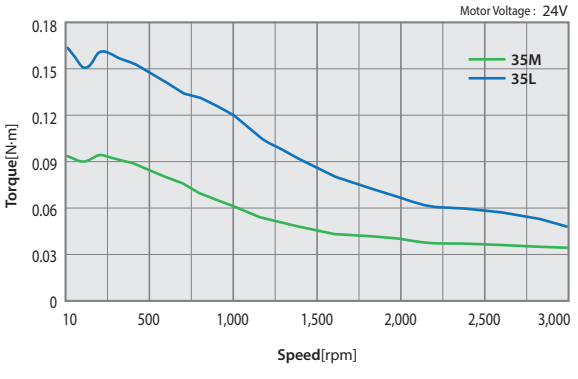
Ezi-SERVO II-EC-4X-20 series



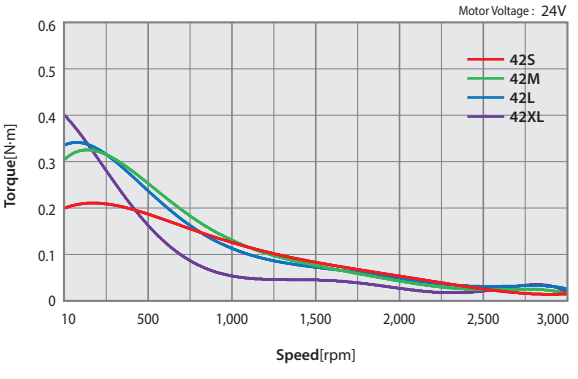
Ezi-SERVO II-EC-4X-28 series



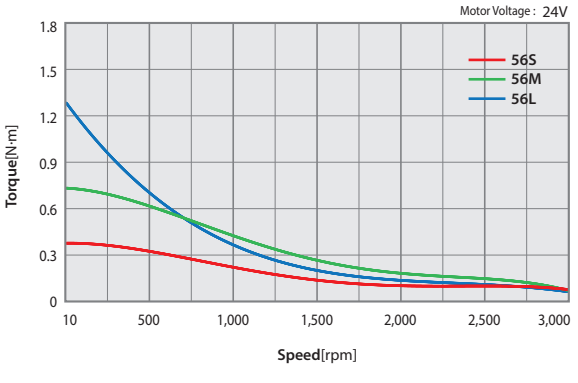
Ezi-SERVO II-EC-4X-35 series



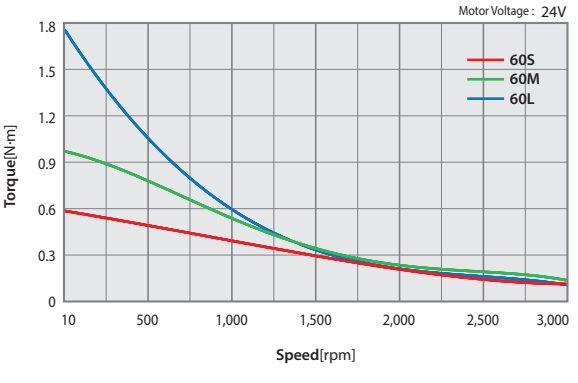
Ezi-SERVO II-EC-4X-42 series



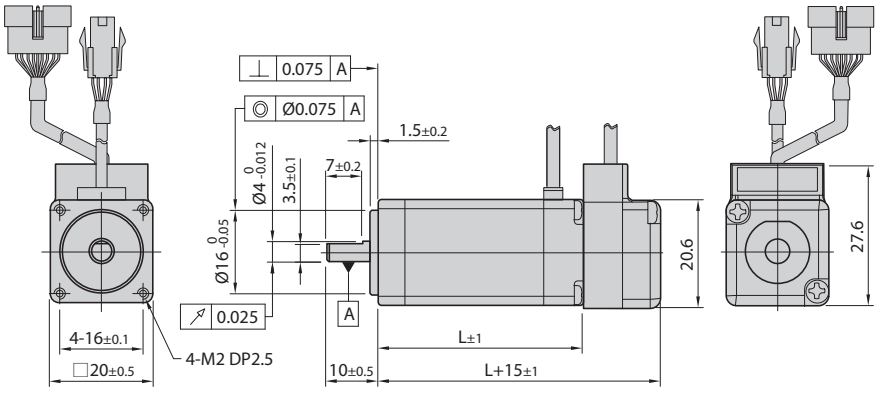
Ezi-SERVO II-EC-4X-56 series



Ezi-SERVO II-EC-4X-60 series

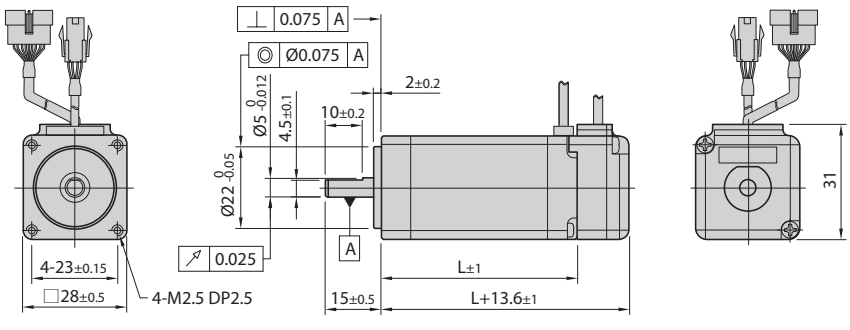


● Dimensions of Motor [mm]



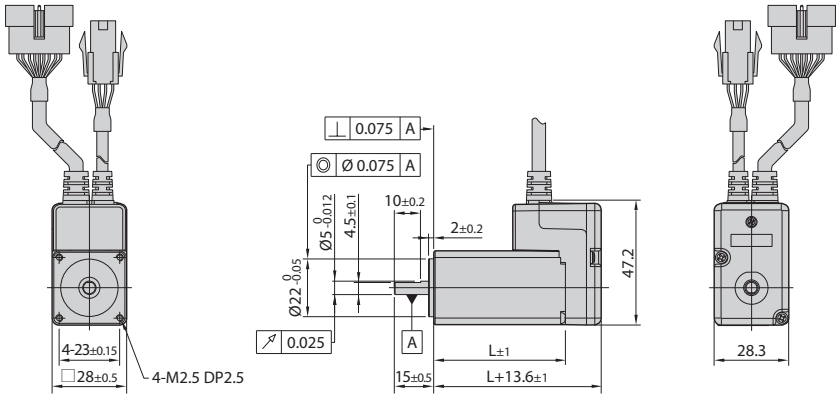
20mm

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



28mm

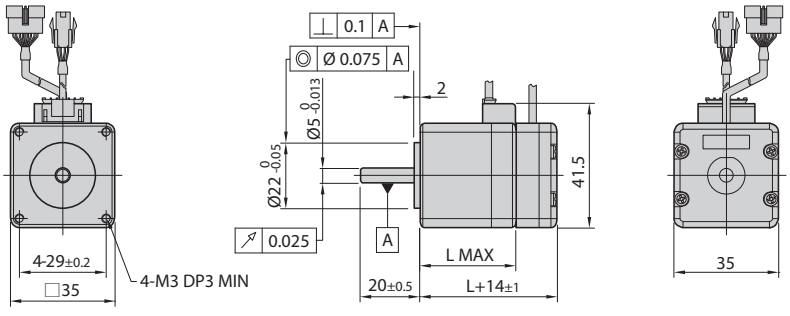
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



28mm *(Stopper type)*

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

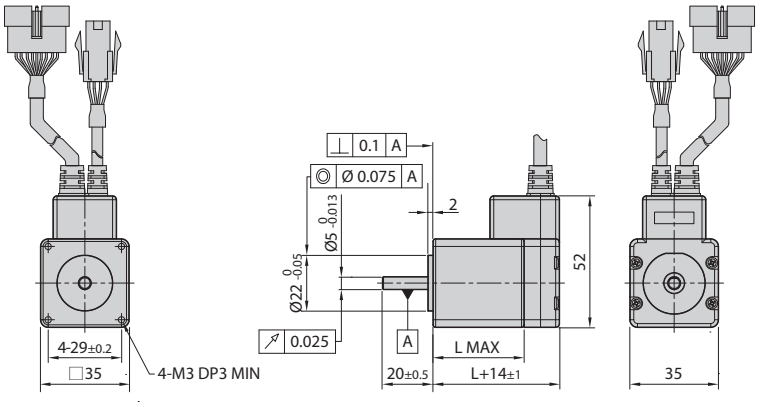
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

Model name	Length(L)
EzM2-35M	26
EzM2-35L	38

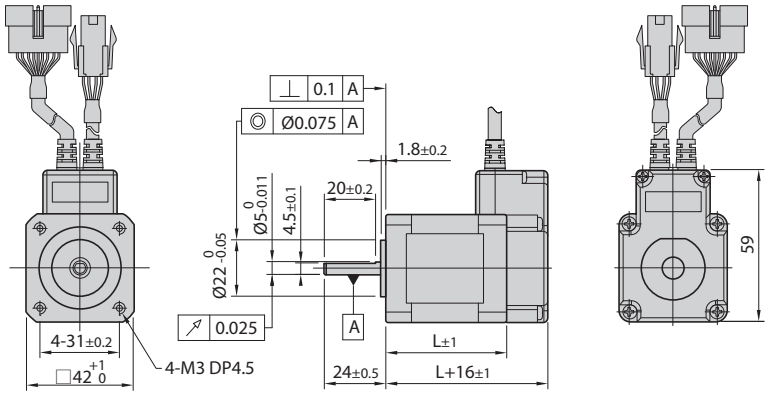
● Dimensions of Motor [mm]



35mm (Stopper type)

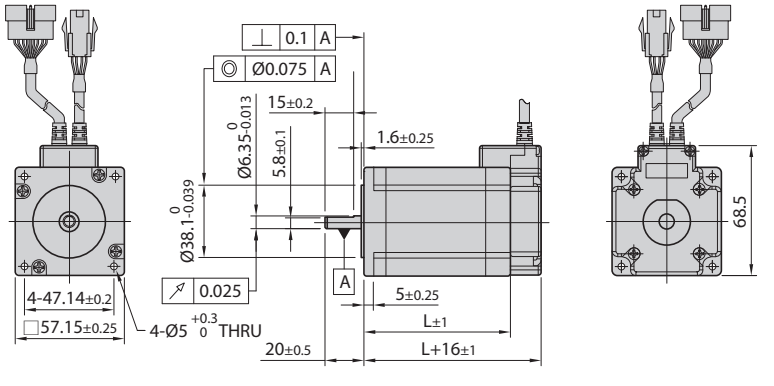
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

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



42mm

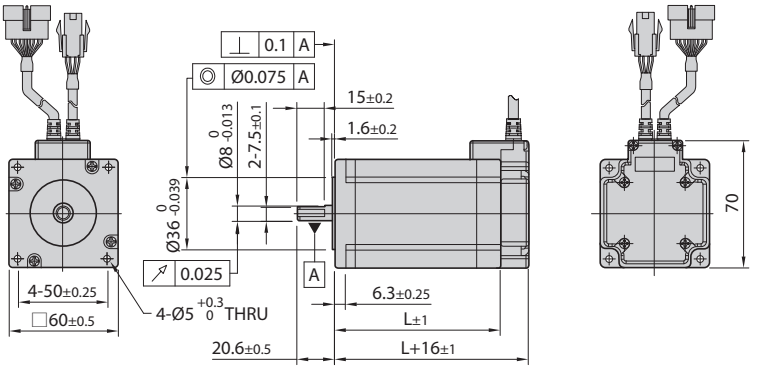
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56mm

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

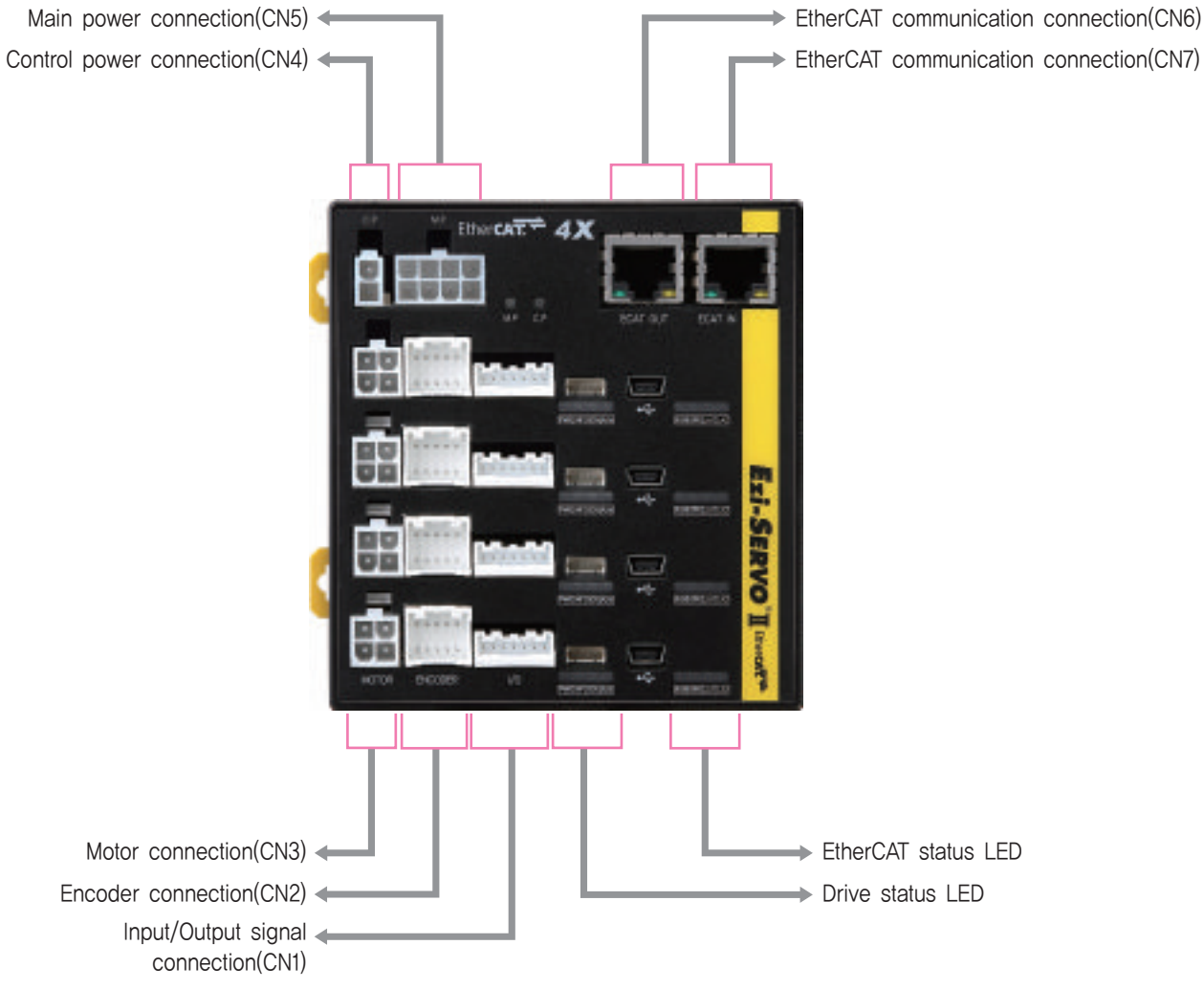
※ There are 2 kinds size of front shaft diameter for EzM2-56 series as Ø6.35 and Ø8.0.

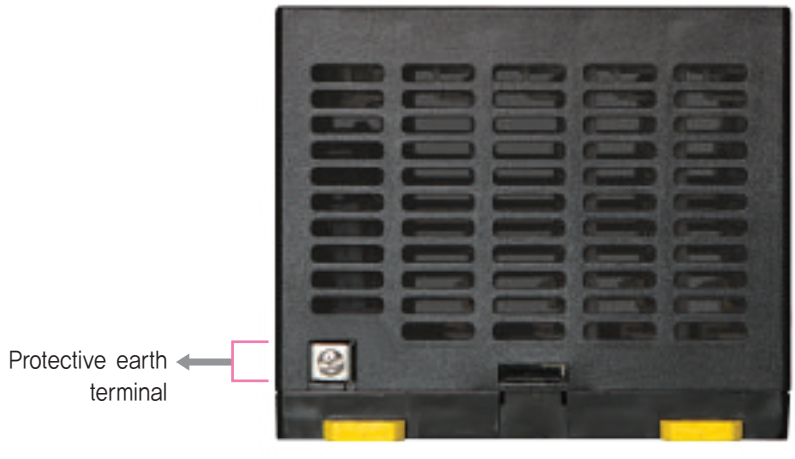


60mm

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	Explanation
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	Explanation
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

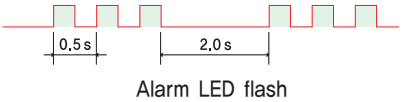
Name	Indication	Color	Status	Explanation
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

2. Drive Status LED

Indication	Color	Function	ON/OFF Condition
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 protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds 4.8A
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *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	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more 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 higher than 180° in motor stop state *1



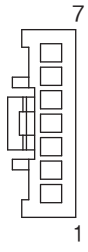
Alarm LED flash
(Ex, Position Tracking Error)

*1 : Default value can be changed by parameter. (Refer to the Manual)

※ For the details, please refer to the Manual.

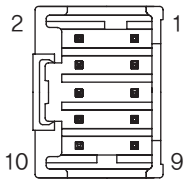
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



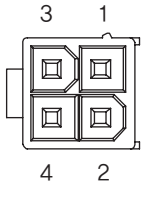
4. Encoder Connector(CN2)

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



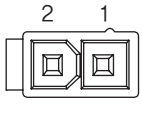
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



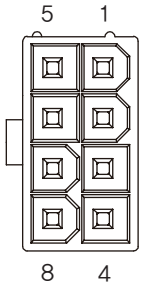
6. Control Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



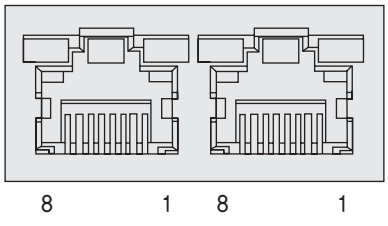
7. Main Power Connector(CN5)

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	24VDC	Input
4	F.GND	----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	----

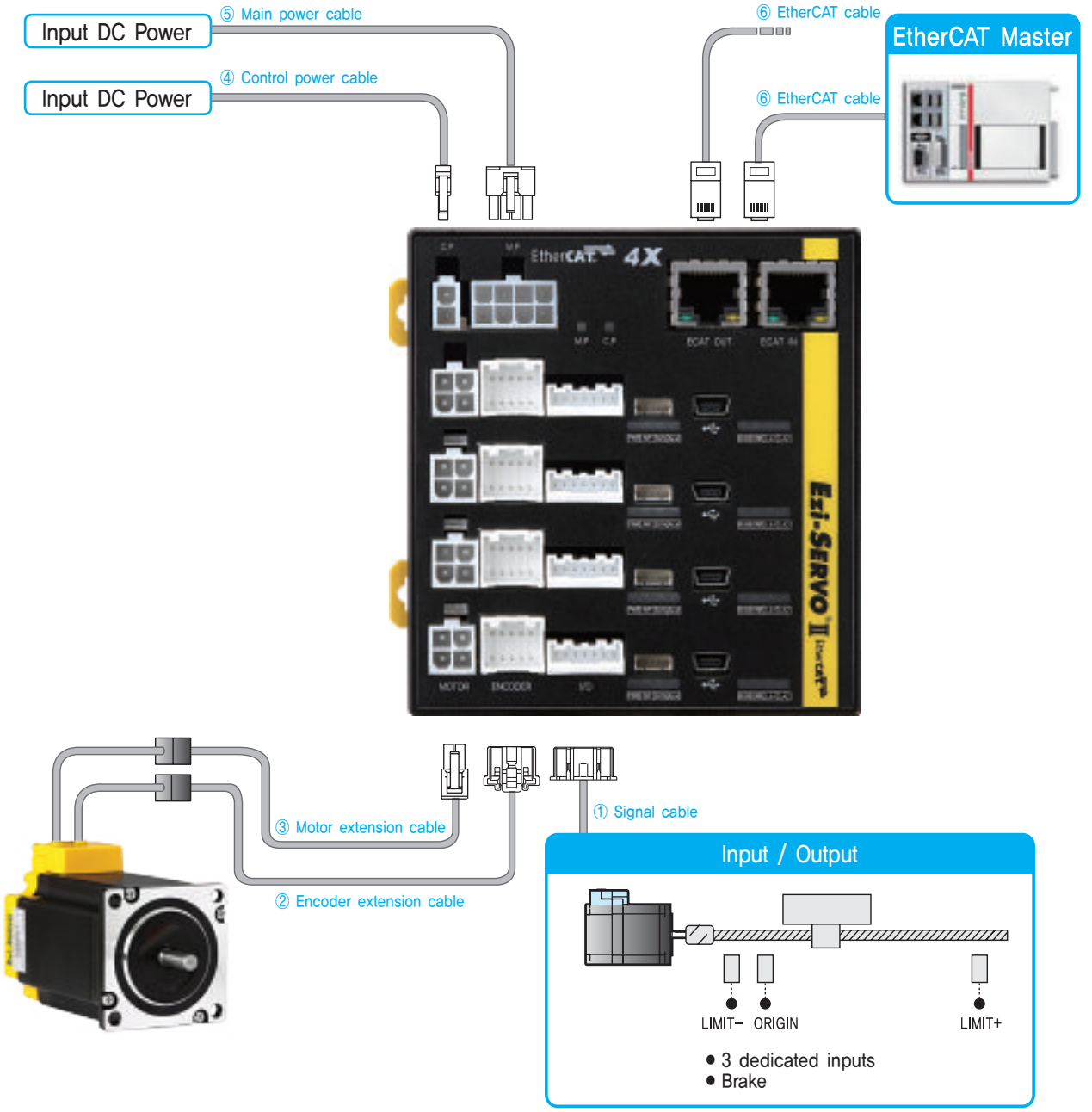


8. EtherCAT Communication Connector(CN6, CN7)

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



System Configuration



Type	Signal Cable	Encoder Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	30cm	–	–	–
Max. Length	20m	20m	20m	2m	2m	100m

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

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CECM-S-□□□F	□□□	Normal Cable
CECM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-E-□□□F	□□□	Normal Cable
CSVO-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Control Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Main Power Cable

Available to connect between Main Power and Ezi-SERVO II EtherCAT 4X.

Item	Length [m]	Remark
CECM-P-□□□F	□□□	Normal Cable
CECM-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

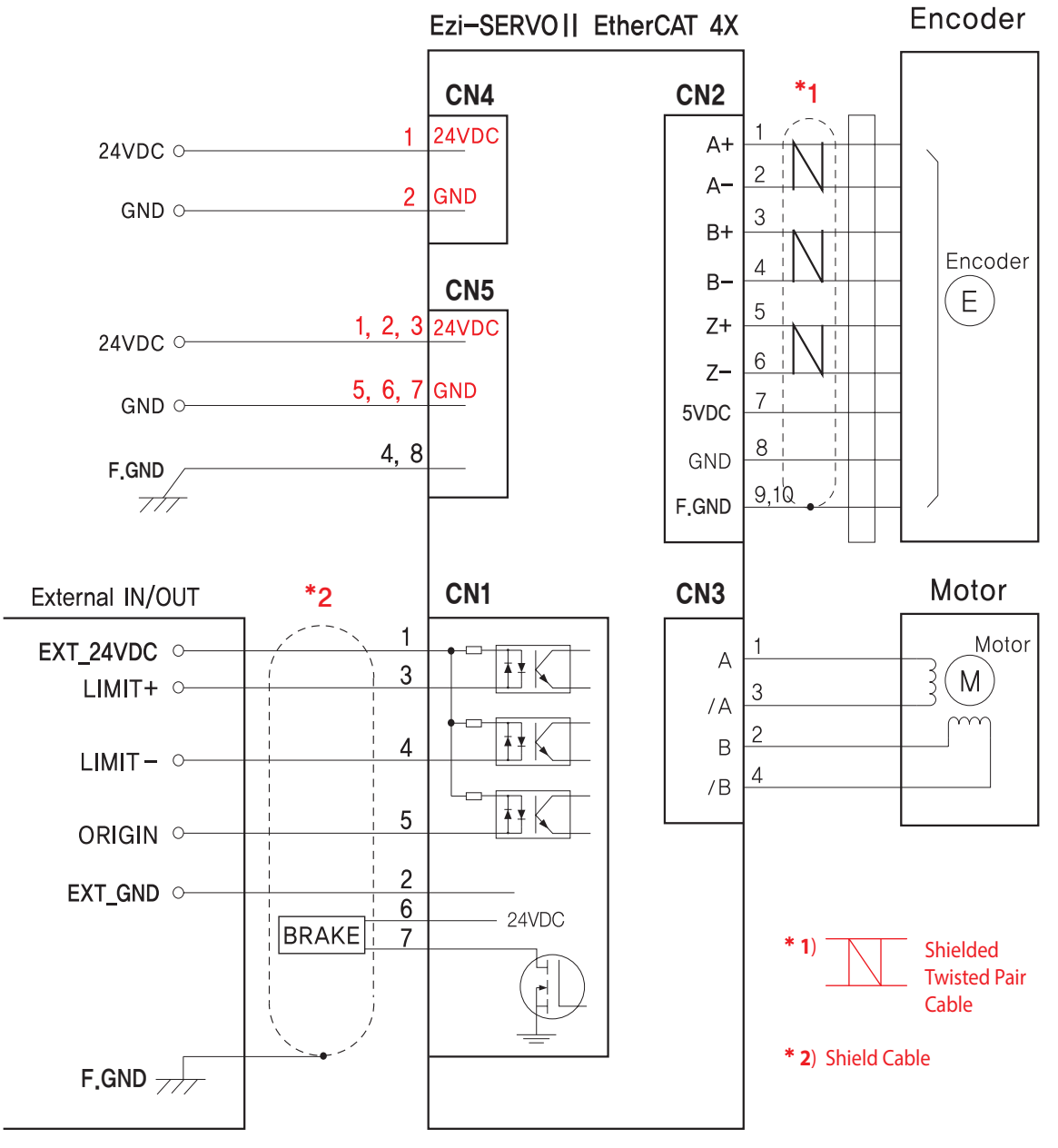
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Main Power (CN5)		Housing Terminal	5557-08R 5556T	MOLEX
Control Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
	Encoder Side	Housing Terminal	SMP-09V-NC SHF-001T-0.8BS	JST
Signal (CN1)		Housing Terminal	PAP-07V-S SPHD-001T-P0.5	JST

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



※ 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

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EzM2-60L
Ezi-SERVO II

Ezi-SERVO II EtherCAT ALL

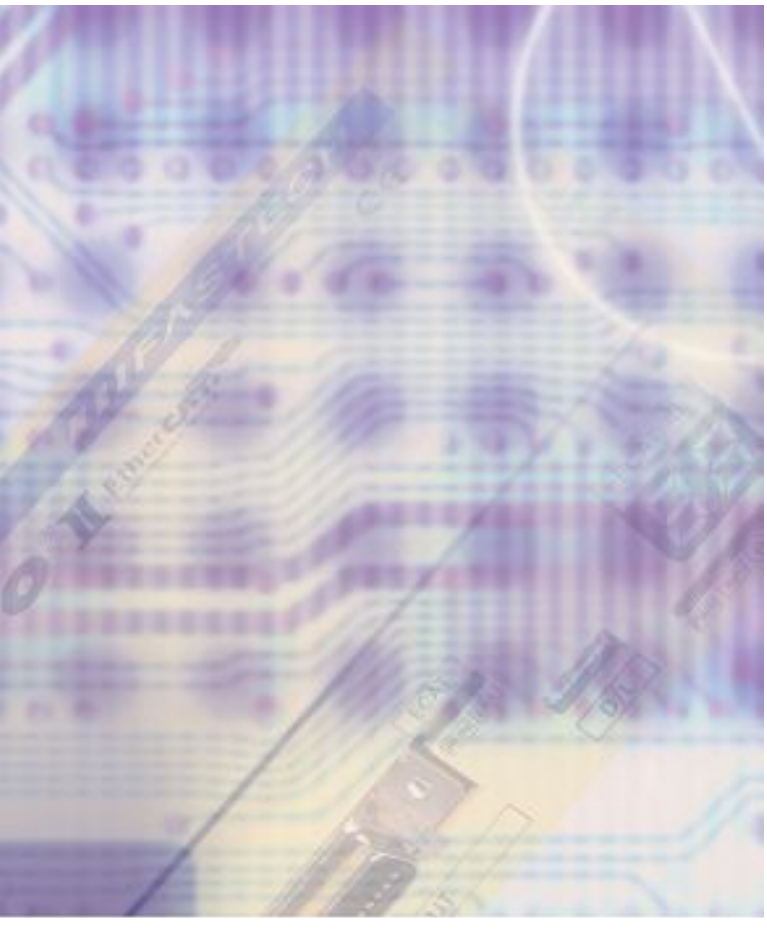
- Motor + Encoder + Drive + EtherCAT Interface
- CiA 402 Drive Profile Support
- Closed Loop System
- No Gain Tuning
- No Hunting
- Heat Reduction
- Torque Improvement

FASTECH

Fast, Accurate, Smooth Motion

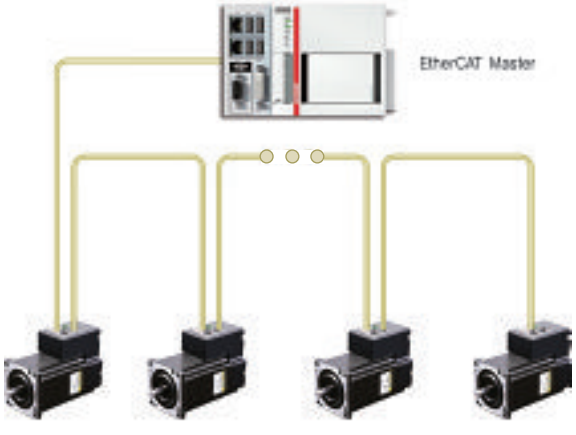
Ezi-SERVO® II EtherCAT® ALL

Closed Loop Stepping System



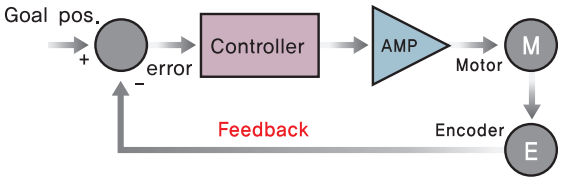
1 EtherCAT Based Motion Control

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented.
Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



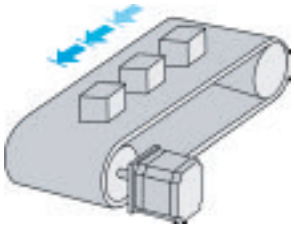
2 Closed Loop System

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 50 μsec. 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 stepper motor and drive could lose a step but Ezi-SERVO II automatically correct the position by encoder feedback.



3 No Gain Tuning

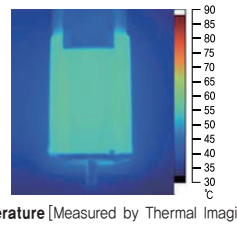
To ensure machine performance, smoothness, positional error and low servo noise, conventional servo systems require the adjustment of its servo's gains as an initial crucial step. Even systems that employ auto-tuning require manual tuning after the system is installed, especially if more that one axis are interdependent. Ezi-SERVO II employs the best characteristics of stepper, closed loop motion controls and algorithms to eliminate the need of tedious gain tuning required for conventional closed loop servo systems. This means that Ezi-SERVO II is optimized for the application and ready to work right out of the box. The Ezi-SERVO II system employs the unique characteristics of the closed loop stepping motor control, eliminating these cumbersome steps and giving the engineer a high performance servo system without wasting setup time. Ezi-SERVO II is especially well suited for low stiffness loads (for example, a belt and pulley system) that sometime require conventional servo systems to inertia match with the additimal expensive and bulky gearbox.
Ezi-SERVO II also performs exceptionally, even under heavy loads and high speeds.



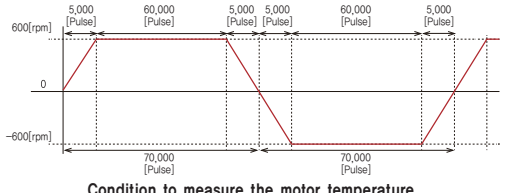
4 Heat Reduction / Energy Saving

(Motor Current Control according to load)

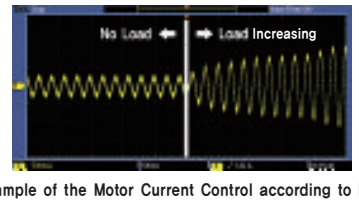
Ezi-SERVO II automatically controls motor current according to load.
Ezi-SERVO II reduces motor current when motor load is low and increases motor current when load is high. By optimizing the motor current, motor heat can be minimized and energy can be saved.



Motor temperature [Measured by Thermal Imaging Camera]



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

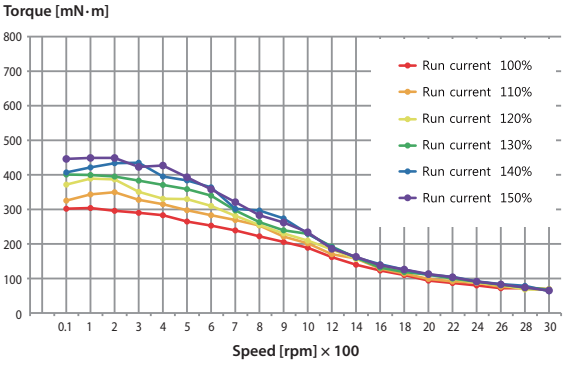


Example of the Motor Current Control according to load

5 Torque Improvement

(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%.

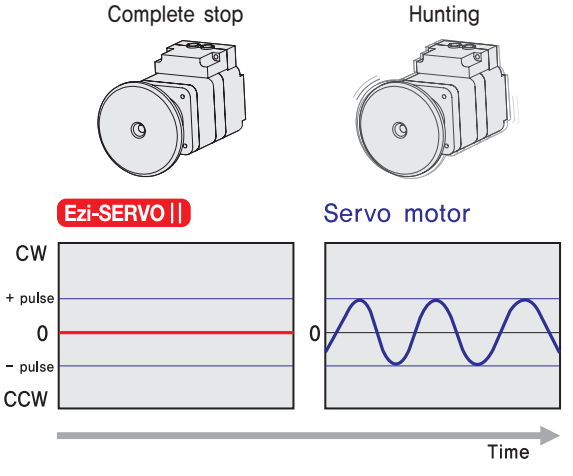


※ The torque at low speed is improved about 30%.

Measured Condition : Drive = Ezi-SERVO II-EC-ALL-42L

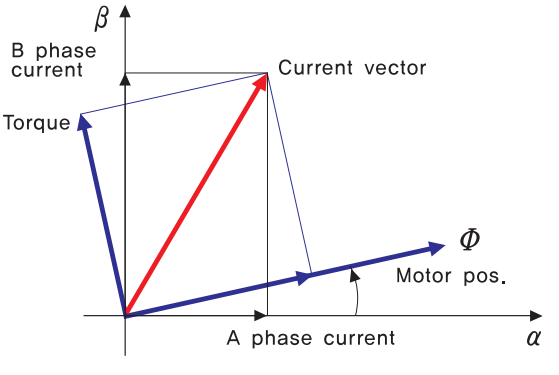
6 No Hunting

Traditional servo motor drives overshoot their position and try to correct by overshooting the opposite direction, especially in high gain applications. This is called null hunt and is especially prevalent in systems that the break away or static friction is significantly higher than the running friction. The cure is lowering the gain, which affects accuracy or using Ezi-SERVO II Motion Control System. Ezi-SERVO II utilizes the unique characteristics of stepping motors and locks itself into the desired target position, eliminating Null Hunt. This feature is especially useful in applications such as nanotech manufacturing, semiconductor fabrication, vision systems and ink jet printing in which system oscillation and vibration could be a problem.



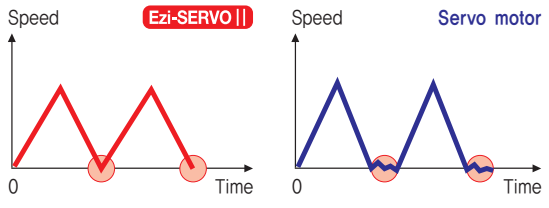
7 Smooth and Accurate

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.



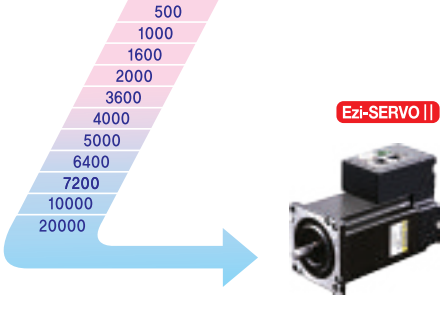
8 Fast Response

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.



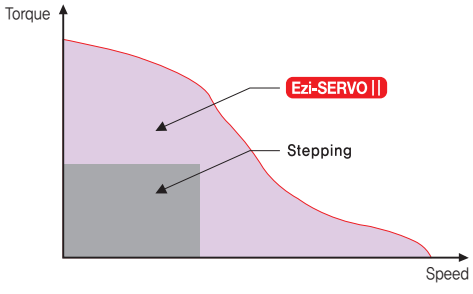
9 High Resolution

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



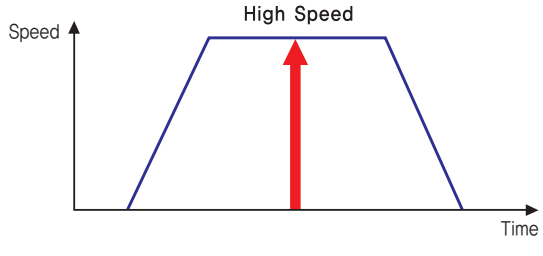
10 High Torque

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.



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 Control Stepping Drive

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 driver 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-dependant current control, open-loop stepping drivers use a constant current control at all speed ranges without considering load varitions.

● 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 ALL Part Numbering

Ezi-SERVO II -EC-ALL-56L-A-BK-PN05-M-□

Product Name

Drive Series Type

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 : 10,000[ppr]
B : 20,000[ppr]

Brake

Blank : Without Brake
BK : Brake

Reduction Gear Ratio

Blank – Without Gear
PN03 – 1:3
PN05 – 1:5
PN08 – 1:8
PN10 – 1:10
PN15 – 1:15
PN25 – 1:25
PN40 – 1:40
PN50 – 1:50

Connector Type

M : M Connector Type
R : RJ45 Connector Type

User Code

● Standard Combination

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO II -EC-ALL-42M-A-M	Motor & Drive Integrated	
Ezi-SERVO II -EC-ALL-42M-B-M		
Ezi-SERVO II -EC-ALL-42M-A-R		
Ezi-SERVO II -EC-ALL-42M-B-R		
Ezi-SERVO II -EC-ALL-42L-A-M		
Ezi-SERVO II -EC-ALL-42L-B-M		
Ezi-SERVO II -EC-ALL-42L-A-R		
Ezi-SERVO II -EC-ALL-42L-B-R		
Ezi-SERVO II -EC-ALL-42XL-A-M		
Ezi-SERVO II -EC-ALL-42XL-B-M		
Ezi-SERVO II -EC-ALL-42XL-A-R		
Ezi-SERVO II -EC-ALL-42XL-B-R		
Ezi-SERVO II -EC-ALL-56S-A-M		
Ezi-SERVO II -EC-ALL-56S-B-M		
Ezi-SERVO II -EC-ALL-56S-A-R		
Ezi-SERVO II -EC-ALL-56S-B-R		
Ezi-SERVO II -EC-ALL-56M-A-M		
Ezi-SERVO II -EC-ALL-56M-B-M		
Ezi-SERVO II -EC-ALL-56M-A-R		
Ezi-SERVO II -EC-ALL-56M-B-R		
Ezi-SERVO II -EC-ALL-56L-A-M		
Ezi-SERVO II -EC-ALL-56L-B-M		
Ezi-SERVO II -EC-ALL-56L-A-R		
Ezi-SERVO II -EC-ALL-56L-B-R		
Ezi-SERVO II -EC-ALL-60S-A-M		
Ezi-SERVO II -EC-ALL-60S-B-M		
Ezi-SERVO II -EC-ALL-60S-A-R		
Ezi-SERVO II -EC-ALL-60S-B-R		
Ezi-SERVO II -EC-ALL-60M-A-M		
Ezi-SERVO II -EC-ALL-60M-B-M		
Ezi-SERVO II -EC-ALL-60M-A-R		
Ezi-SERVO II -EC-ALL-60M-B-R		
Ezi-SERVO II -EC-ALL-60L-A-M		
Ezi-SERVO II -EC-ALL-60L-B-M		
Ezi-SERVO II -EC-ALL-60L-A-R		
Ezi-SERVO II -EC-ALL-60L-B-R		
Ezi-SERVO II -EC-ALL-86M-A-M		
Ezi-SERVO II -EC-ALL-86M-B-M		
Ezi-SERVO II -EC-ALL-86M-A-R		
Ezi-SERVO II -EC-ALL-86M-B-R		
Ezi-SERVO II -EC-ALL-86L-A-M		
Ezi-SERVO II -EC-ALL-86L-B-M		
Ezi-SERVO II -EC-ALL-86L-A-R		
Ezi-SERVO II -EC-ALL-86L-B-R		
Ezi-SERVO II -EC-ALL-86XL-A-M		
Ezi-SERVO II -EC-ALL-86XL-B-M		
Ezi-SERVO II -EC-ALL-86XL-A-R		
Ezi-SERVO II -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	Reduction 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	Reduction gear ratio
Ezi-SERVO II-EC-ALL-42XL-A-PN3-M	Motor & Drive Integrated		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			
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	Reduction gear ratio
Ezi-SERVO II-EC-ALL-56M-A-PN3-M	Motor & Drive Integrated		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			
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	감속비
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	Reduction 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	Reduction gear ratio
Ezi-SERVO II-EC-ALL-86L-A-PN3-M	Motor & Drive Integrated		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			
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

Driver Model		Ezi-SERVOII-EC-ALL -42 series	Ezi-SERVOII-EC-ALL -56 series	Ezi-SERVOII-EC-ALL -60 series	Ezi-SERVOII-EC-ALL -86 series
Input Voltage		24VDC ±10%			40~70VDC
Control Method		Closed loop control with 32bit ARM			
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	0~3,000 [rpm] *1			
	Resolution [ppr]	10,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000/Rev. Encoder model: 500 1,000 1,600 2,000 3,600 5,000 6,400 7,200 10,000 20,000 (Selectable by parameter)			
	Protection Functions	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 user inputs (Photocoupler Input)			
	Output Signals	2 user outputs (Photocoupler Output), Brake			

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

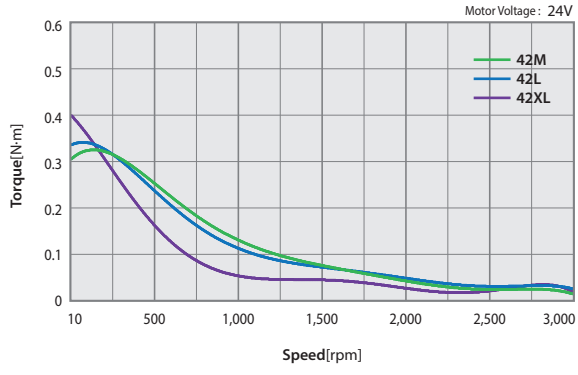
Specifications of Motor

MODEL			Ezi-SERVOII-EC-ALL -42 series			Ezi-SERVOII-EC-ALL -56 series		
		UNIT	42M	42L	42XL	56S	56M	56L
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	1.2	1.2	1.2	3.0	3.0	3.0
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		g	280	350	500	500	720	1150
LENGTH(L)		mm	40	48	60	46	55	80
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

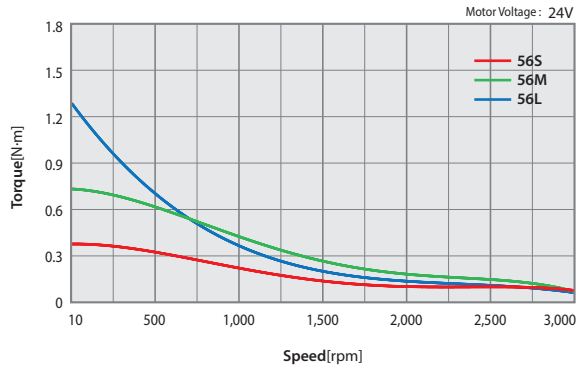
MODEL			Ezi-SERVOII-EC-ALL -60 series			Ezi-SERVOII-EC-ALL -86 series		
		UNIT	60S	60M	60L	86M	86L	86XL
DRIVE METHOD		-	BI-POLAR					
NUMBER OF PHASES		-	2	2	2	2	2	2
CURRENT per PHASE		A	4.0	4.0	4.0	6.0	6.0	6.0
HOLDING TORQUE		N·m	0.88	1.28	2.4	4.5	8.5	12
ROTOR INERTIA		$g \cdot cm^2$	240	490	690	1800	3600	5400
WEIGHTS		g	600	1000	1300	2300	3800	5300
LENGTH(L)		mm	47	56	85	78	117	155
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		-	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

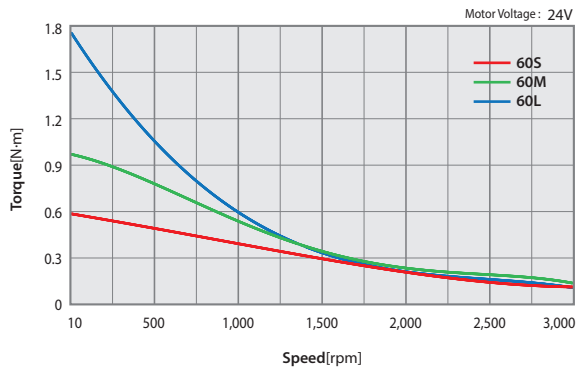
Ezi-SERVO II-EC-ALL-42 series



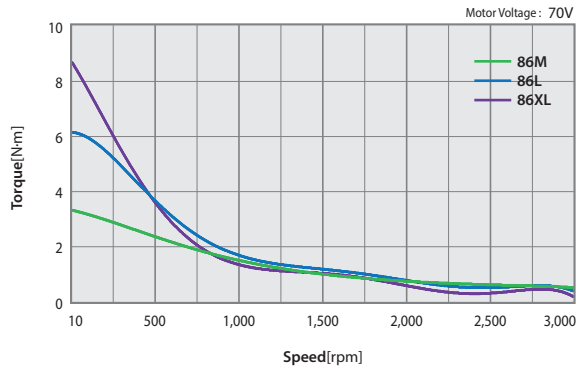
Ezi-SERVO II-EC-ALL-56 series



Ezi-SERVO II-EC-ALL-60 series

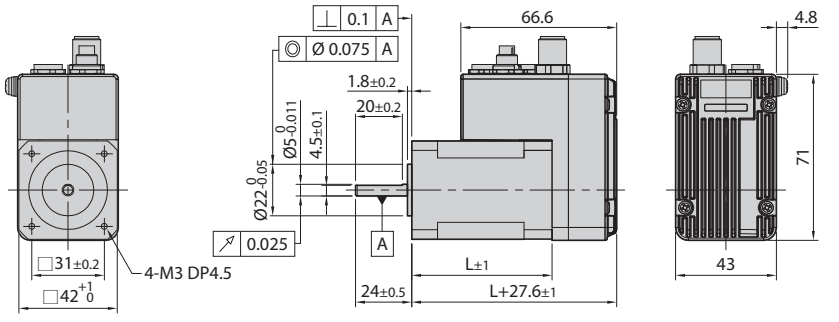


Ezi-SERVO II-EC-ALL-86 series

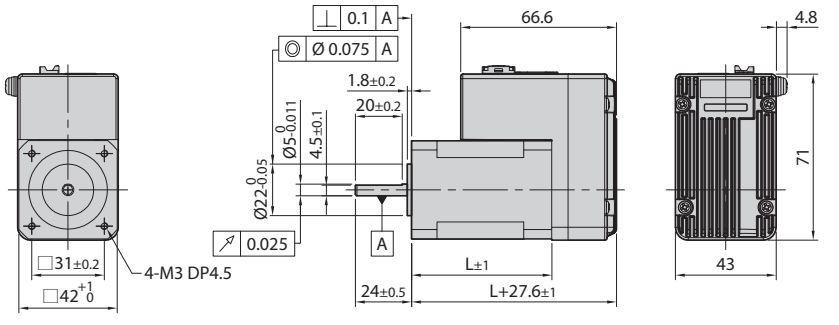


● Dimensions of Motor [mm]

◆ M Type



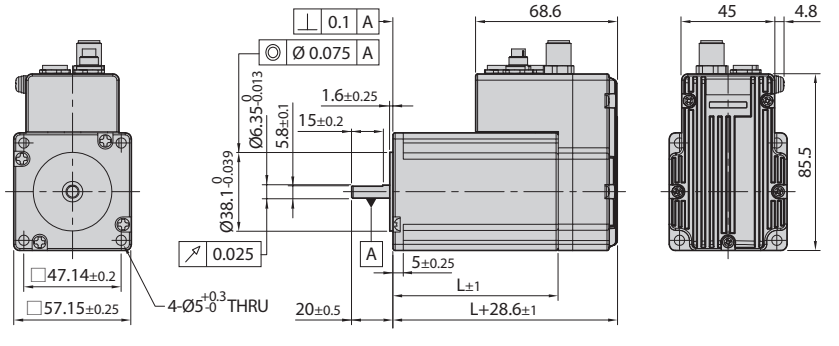
◆ R Type



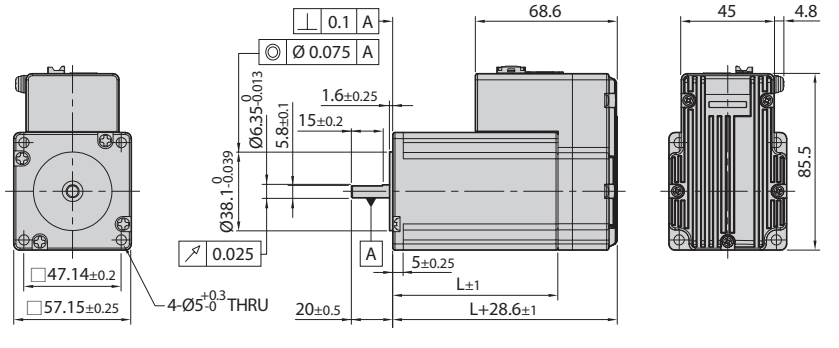
42mm

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

◆ M Type



◆ R Type



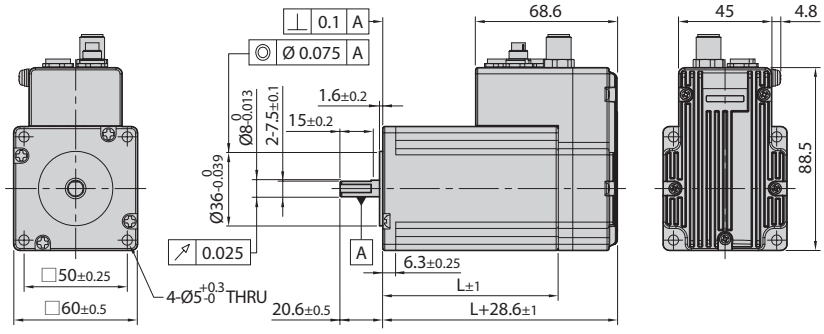
56mm

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

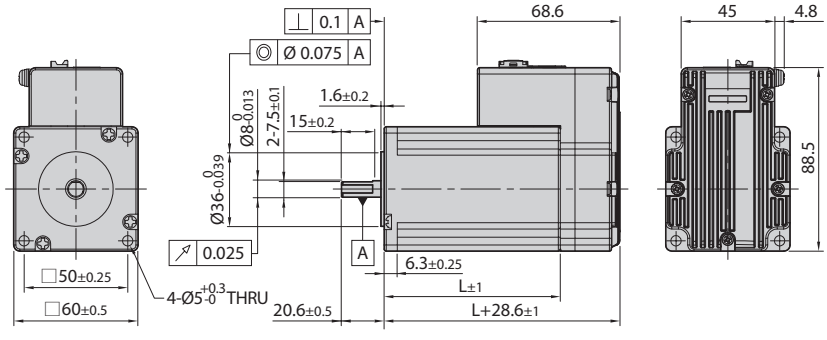
※ There are 2 kinds size of front shaft diameter for Ezi-SERVO II-EC-ALL-56 series as Ø6.35 and Ø8.0.

● Dimensions of Motor [mm]

◆ M Type



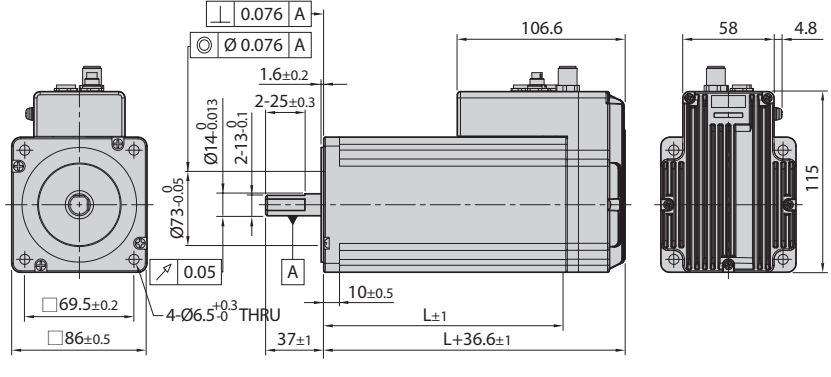
◆ R Type



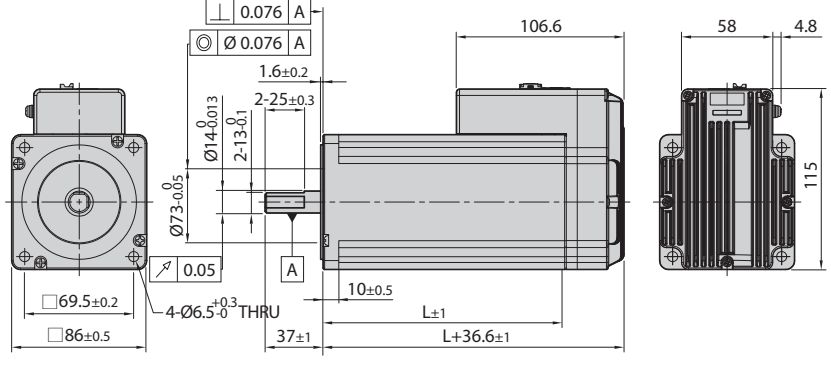
60mm

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

◆ M Type



◆ R Type

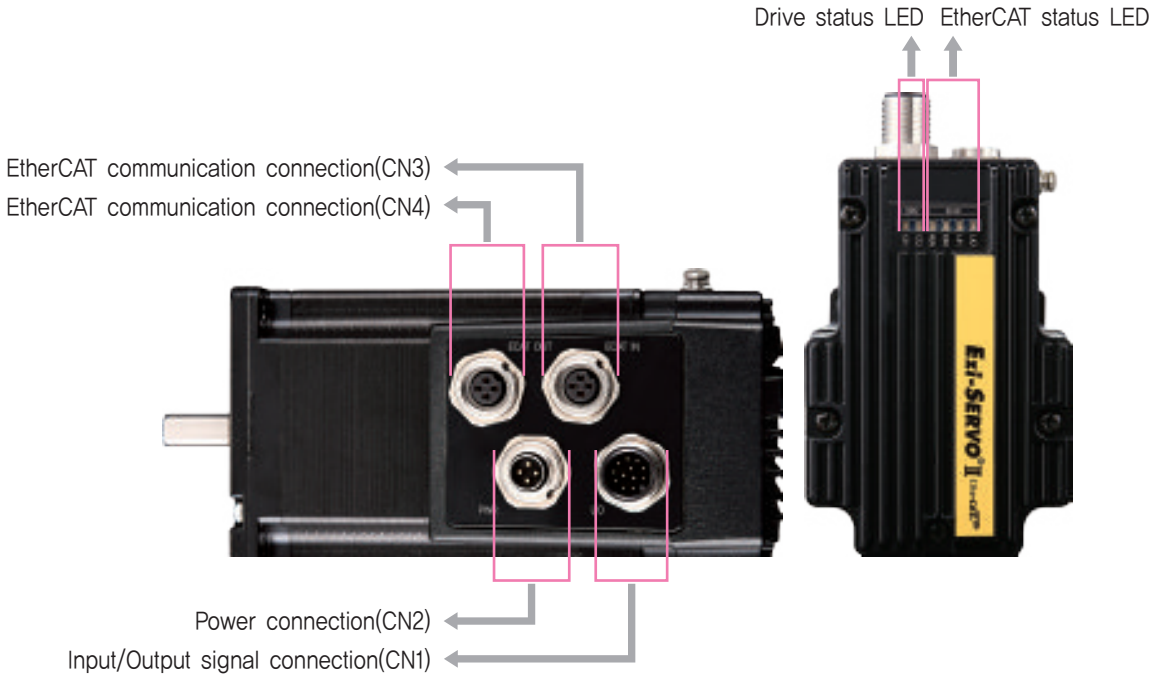


86mm

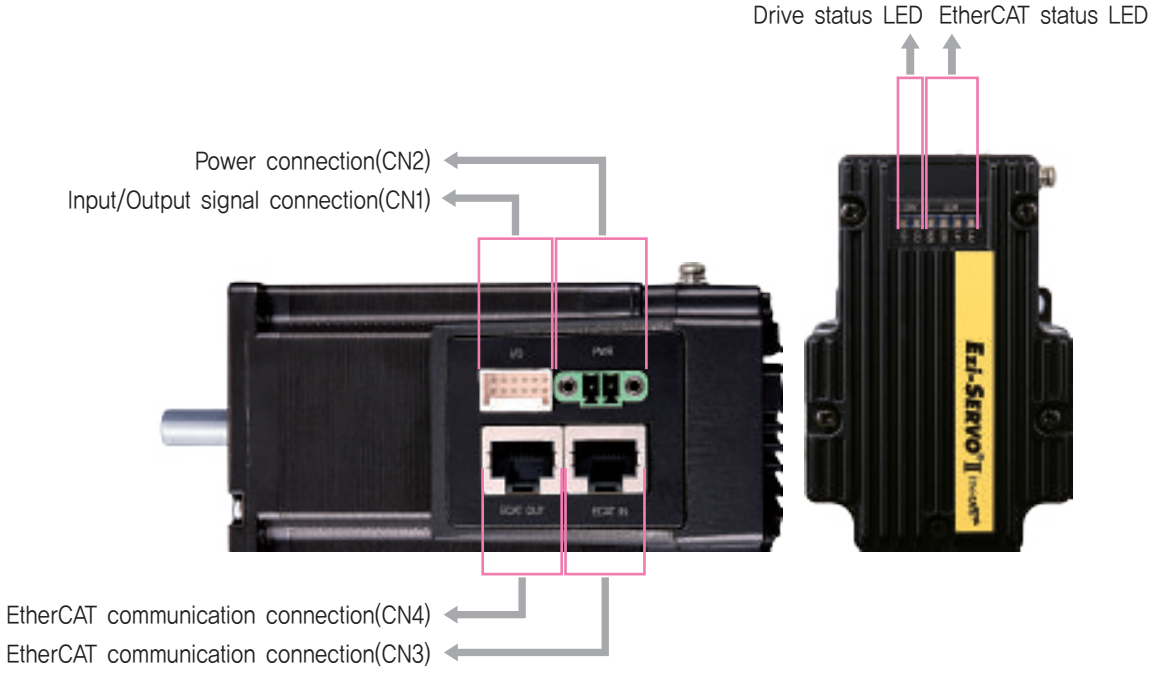
Model name	Length(L)
86M	78
86L	117
86XL	155

Settings and Operation

◆ M Type



◆ R Type



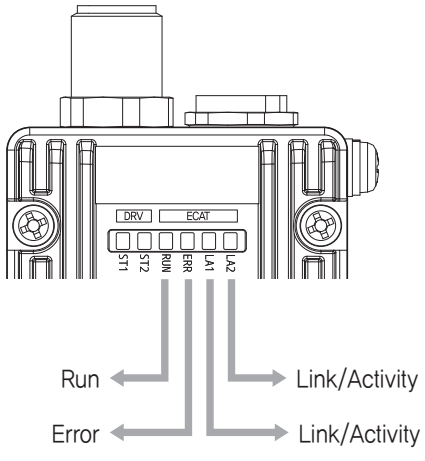
1. EtherCAT Status LED

LED indicates communication status of EtherCAT.

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

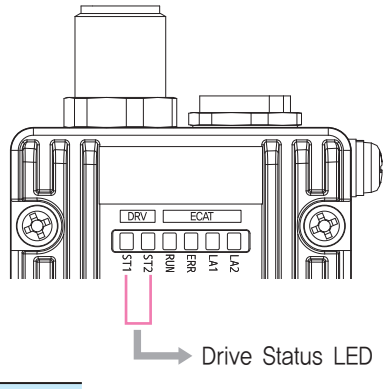
Name	Color	Status	Explanation
LA1/ LA2	Green	OFF	Link not Established
		ON	Link Established
		Flickering	Link Established and in Operation



2. Drive Status LED

In the case of Ezi-SERVO II EtherCAT ALL series products, LED can be checked by LED color, lighting, On/Off and blinking.

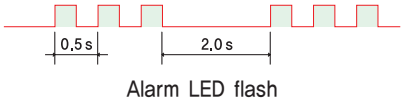
Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
In-position deviation	ST1 : ST2 :	ST1 and ST2 light alternately flashing
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

Times	Protection	Conditions
1	Over Current Error	The current through power devices in inverter exceeds the limit value *1
2	Over Speed Error	Motor speed exceeds 3,000 [rpm]
3	Position Tracking Error	Position error value is higher than 180° in motor run state *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	Inside temperature of drive exceeds 85℃
6	Over Regeneratived Voltage Error	Back-EMF is higher than limit value *3
7	Motor Connect Error	The power is ON without connection of the motor cable to drive
8	Encoder Connect Error	Cable connection error in Encoder connection of drive
10	In-Position Error	After operation is finished, position error more 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 higher than 180° in motor stop state *2

*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Default value 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 uer Manual for the details of protection functions.

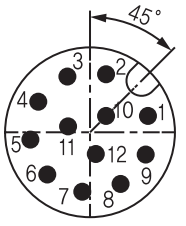


Alarm LED flash
(Ex: Position tracking error)

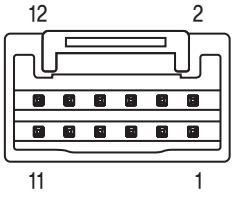
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	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



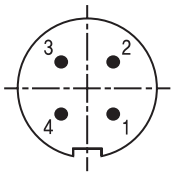
◆ R Type



4. Power Connector(CN2)

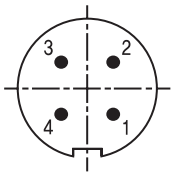
◆ M Type

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	GND	Input
4	GND	Input



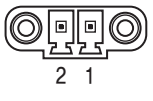
◆ M Type(86mm)

NO.	Function	I/O
1	40~70VDC	Input
2	40~70VDC	Input
3	GND	Input
4	GND	Input



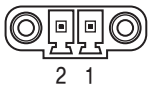
◆ R Type

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



◆ R Type(86mm)

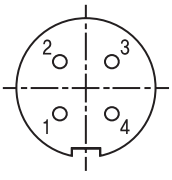
NO.	Function	I/O
1	40~70VDC	Input
2	GND	Input



5. EtherCAT Communication Connector(CN3, CN4)

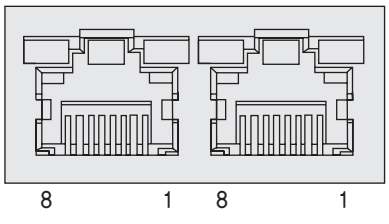
◆ M Type

NO.	Function
1	TD+
2	TD−
3	RD+
4	RD−
Connection hood	F.GND

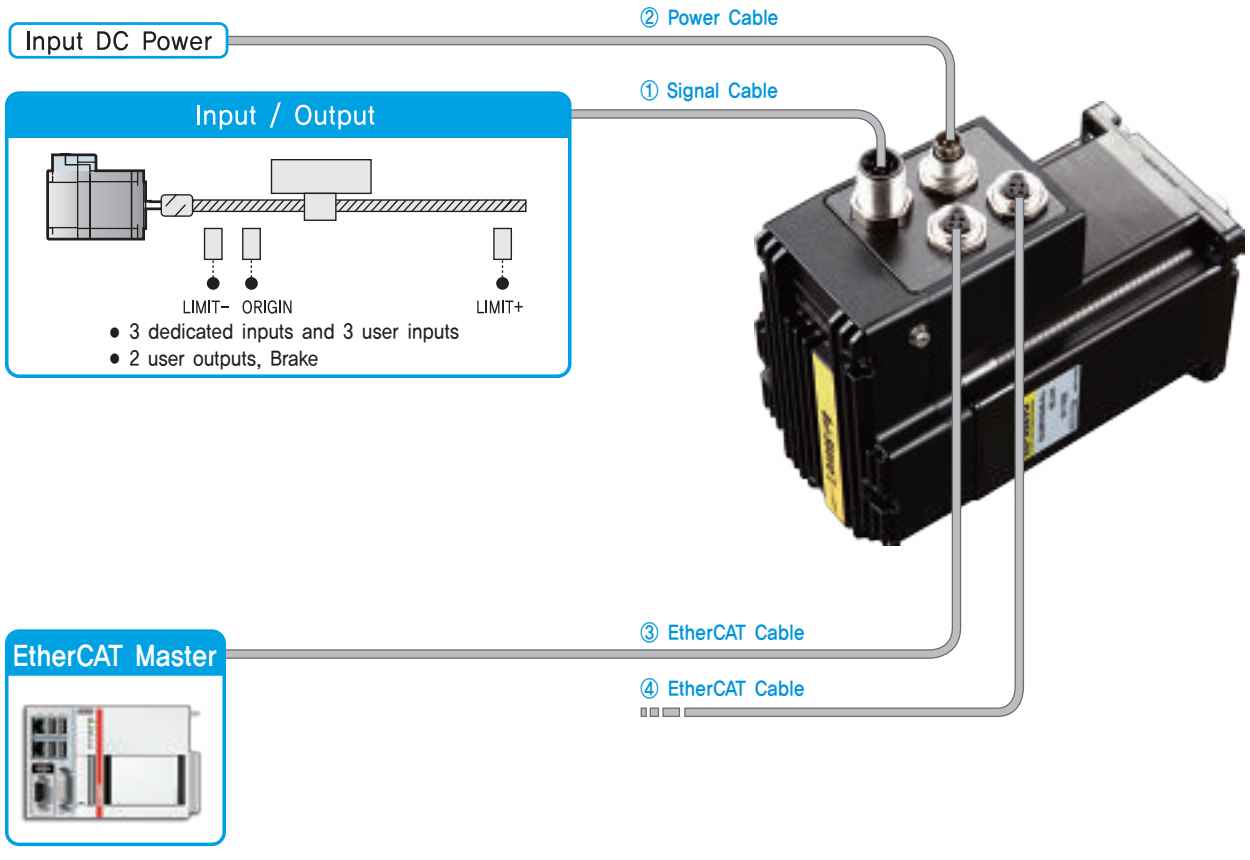


◆ R Type

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



● System Configuration [M Type]



Type	Signal Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSNM-S-□□□F	□□□	Normal Cable
CSNM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CWPA-P-□□□F	□□□	Normal Cable
CWPA-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

③ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNM-EC-□□□F	□□□	Normal Cable
CGNM-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II EtherCAT ALL M type to EtherCAT Master, Ezi-SERVO II EtherCAT, and Ezi-SERVO II EtherCAT ALL R type in a network. It is composed of M type connector and RJ45 connector.

④ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CWMD-EC-□□□F	□□□	Normal Cable
CWMD-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This is a cable that connects Ezi-SERVO II EtherCAT ALL M type to Ezi-SERVO II EtherCAT ALL M type in a network.

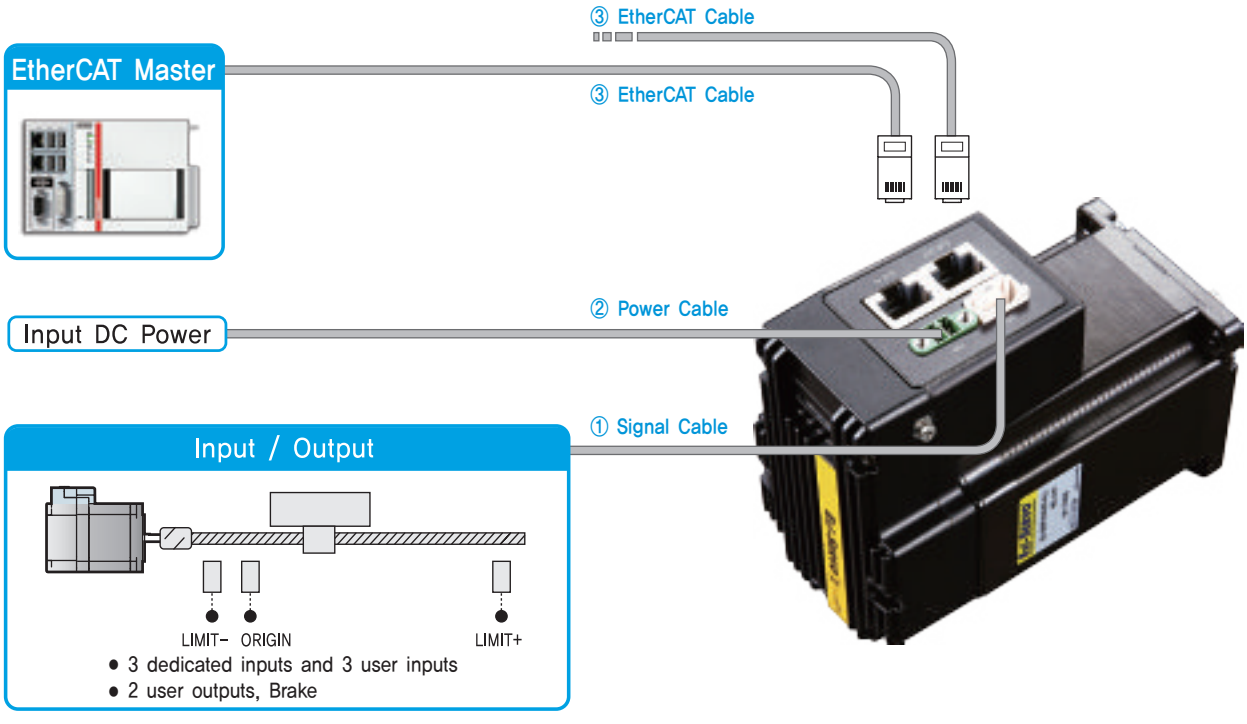
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Connector	99 0410 75 04	BINDER
Signal (CN1)	Connector	99 0492 52 12	BINDER
EtherCAT Communication (CN3, CN4)	Connector	99 0409 75 04	BINDER

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

System Configuration [R Type]



Type	Signal Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Power Cable

Available to connect between Power and Ezi-SERVO II EtherCAT ALL.

Item	Length [m]	Remark
CSVA-P-□□□F	□□□	Normal Cable
CSVA-P-□□□M	□□□	Robot Cable
CSPA-P-□□□F*1	□□□	Normal Cable
CSPA-P-□□□M*1	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

*1 : R Type 86mm

③ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable
CGNR-EC-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

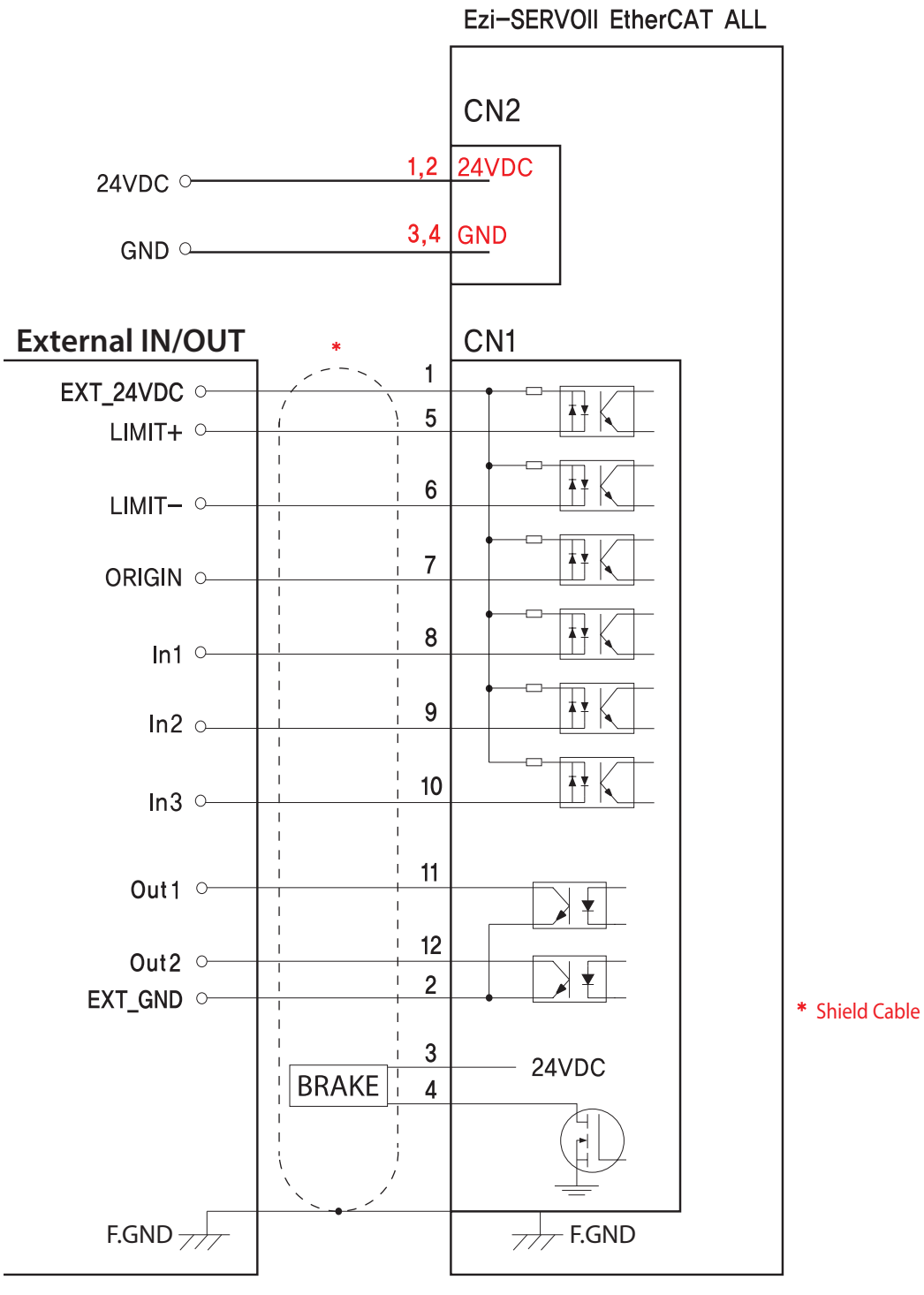
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose	Item	Part Number	Manufacturer
Power (CN2)	Terminal Block	MC421-38102	DECA
Signal (CN1)	Housing Terminal	501646-1200 501648-1000(AWG 26~28)	MOLEX

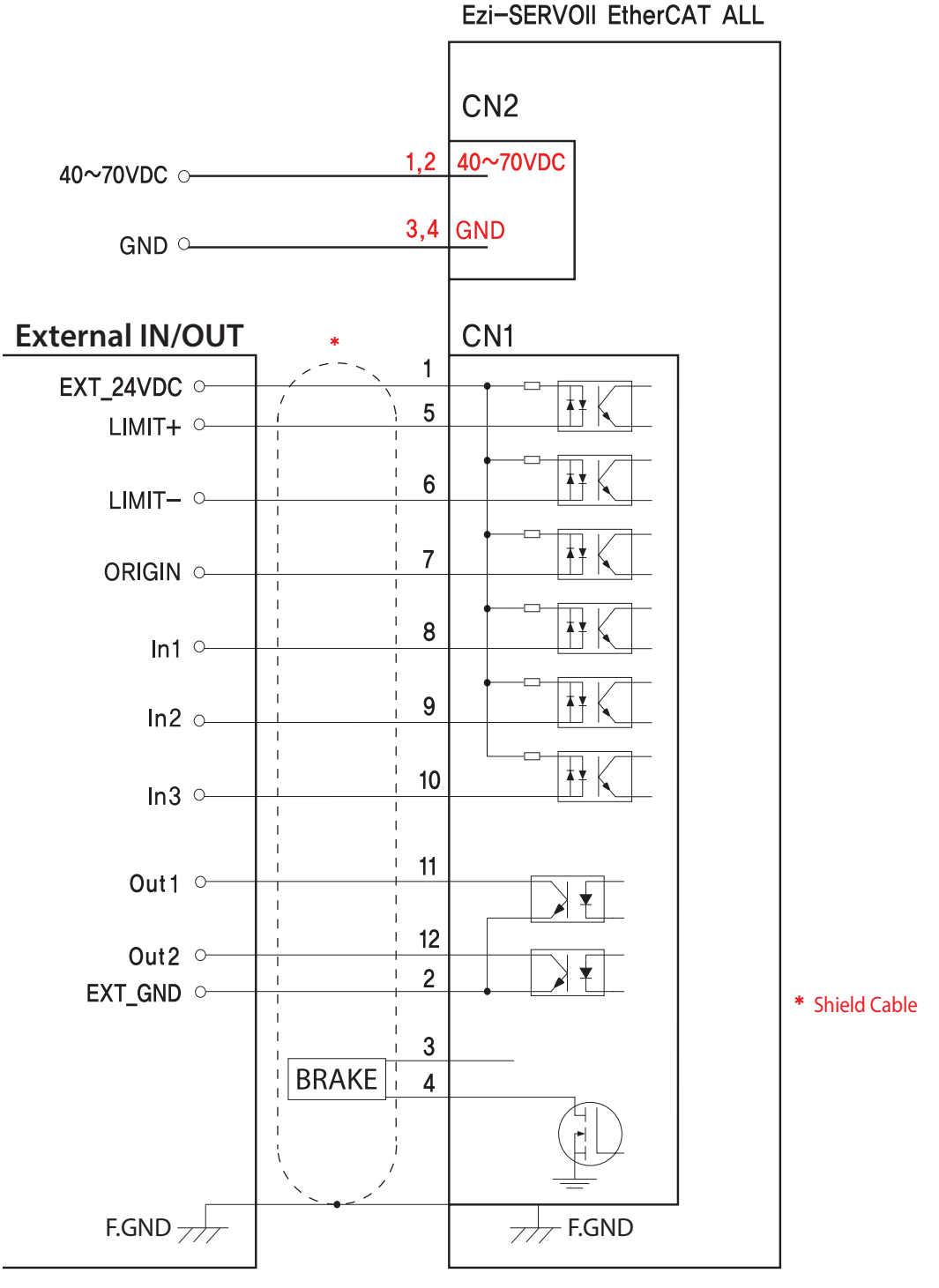
※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram [M Type]



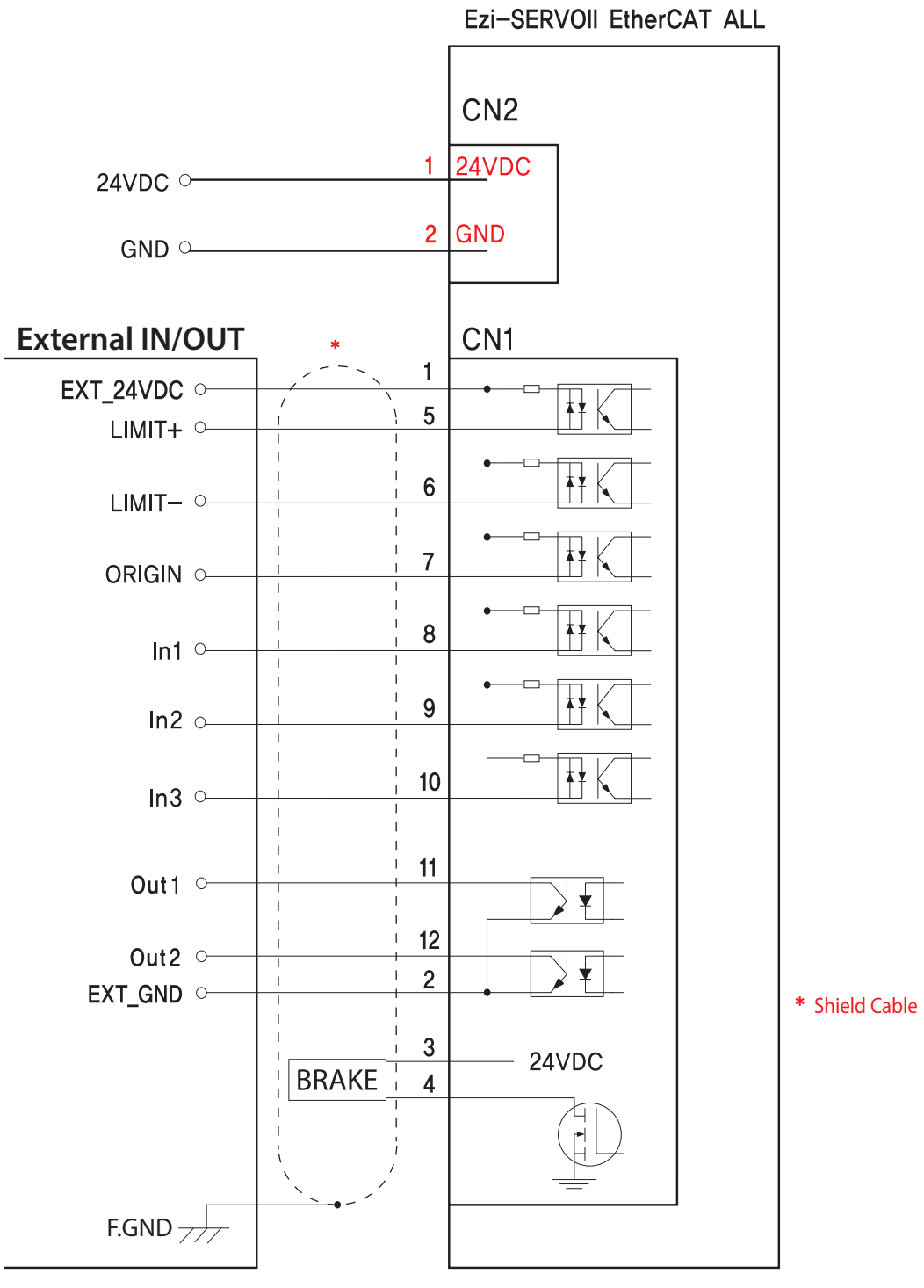
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

● External Wiring Diagram [M Type 86mm]



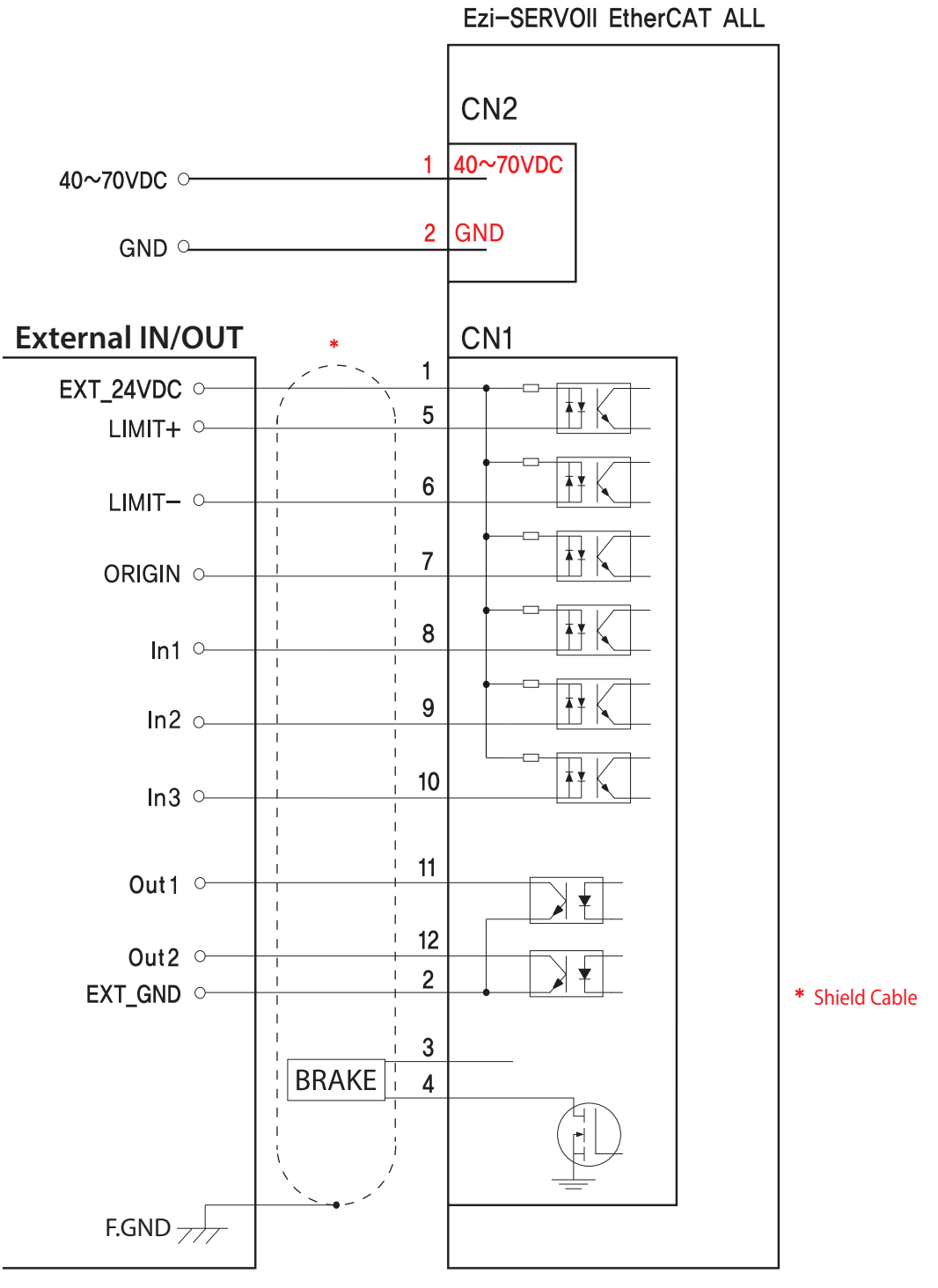
※ When connects I/O cable between controller and drive, please turn off the power of both controller and drive, in order to protect the drive from any damage.

External Wiring Diagram [R Type]



※ 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.

● 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, in order to protect the drive from any damage.


Ezi-STEP® II EtherCAT
FASTECH
PWR
MOTOR
ENCODER
IN / OUT
ECAT
ECAT ID

Ezi-STEP II EtherCAT

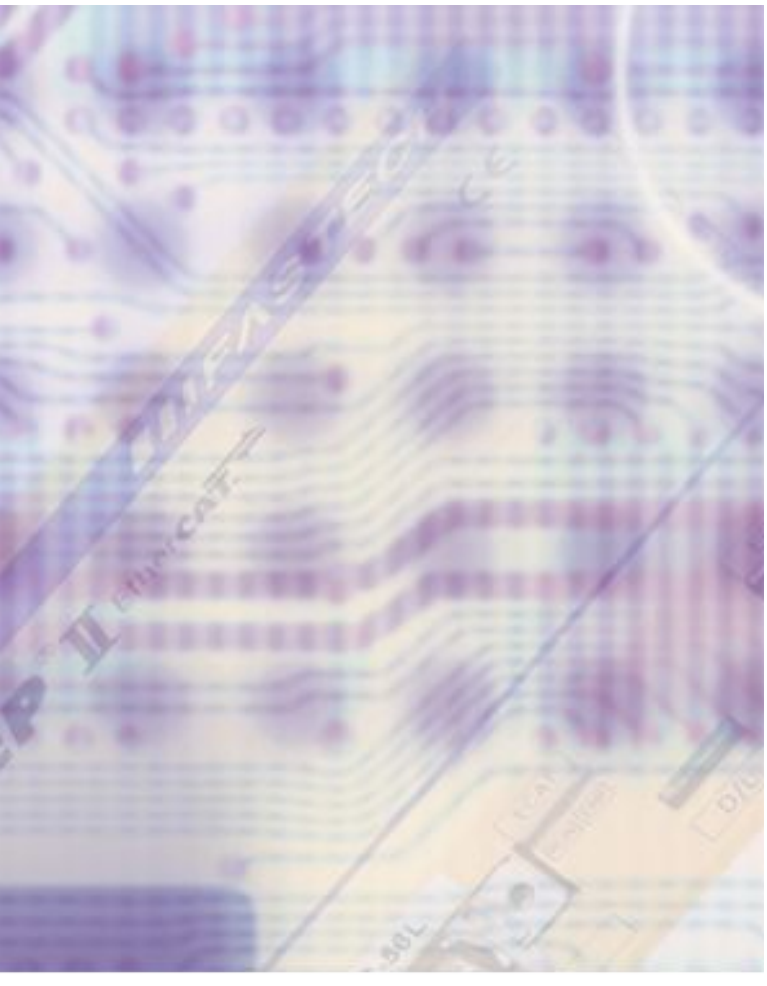
- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Torque Improvement

FASTECH

Fast, Accurate, Smooth Motion

Ezi-STEP® II EtherCAT®

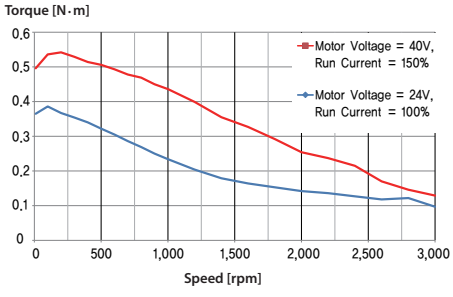
Micro Stepping System



2 Torque Improvement

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.

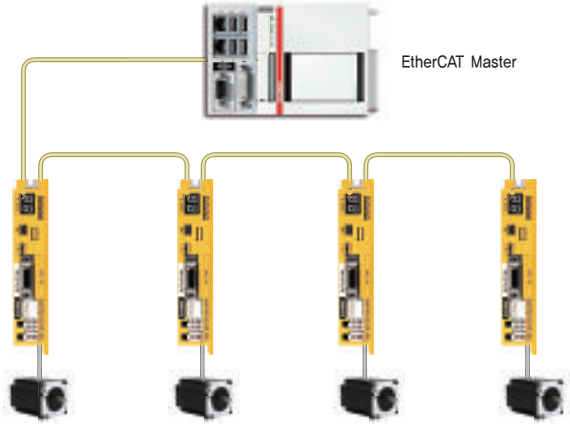


※ The torque at high speed is improved about 30%

Measured Condition : Drive = Ezi-STEP II-EC-42L
Motor Voltage = 40VDC
Input Voltage = 24VDC

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode



3 Microstep and Filtering

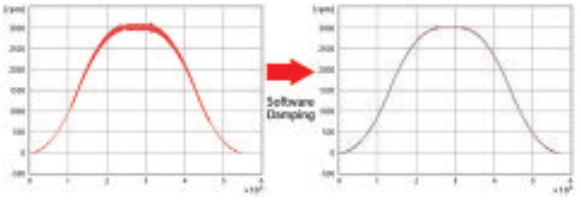
High precision Microstep function and Filtering

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 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

4 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) 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 [pulse/rev] encoder.

5 Improvement of High-Speed Driving

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-□

- **Product Name**
- **Drive Series Type**
  - EC : EtherCAT
- **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
- **User Code**

● 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

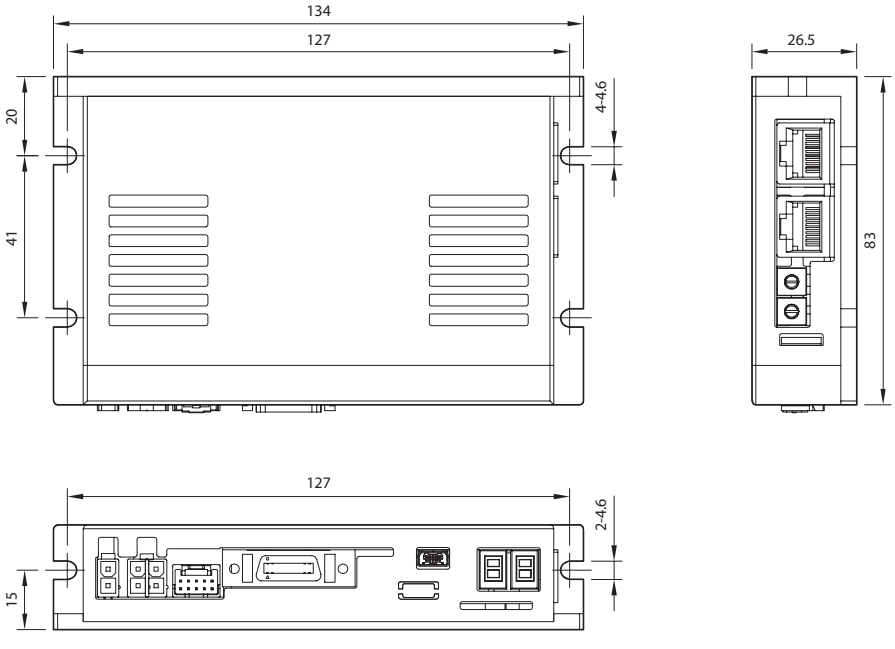
● Combination with Brake

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

Specifications of Drive

Motor Model		BM-20 series	BM-28 series	BM-42 series	BM-56 series	BM-60 series
Driver Model		EzT2-EC-20 series	EzT2-EC-28 series	EzT2-EC-42 series	EzT2-EC-56 series	EzT2-EC-60 series
Input Voltage		24VDC ±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	0~3,000 [rpm]				
	Resolution [ppr]	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) * Default: 10,000				
	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 (CiA402 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 user inputs				
	Output Signals	6 user outputs (Photocoupler), Brake				

Dimensions of Drive [mm]



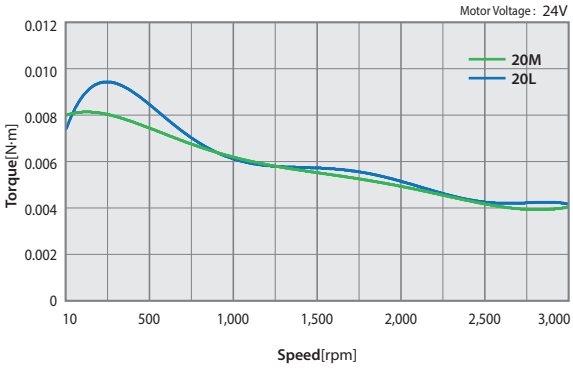
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		$g \cdot cm^2$	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

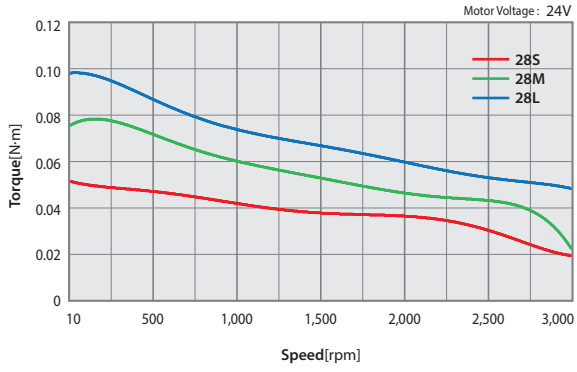
MODEL			BM-56 series			BM-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS		g	548	726	1159	616	793	1349
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

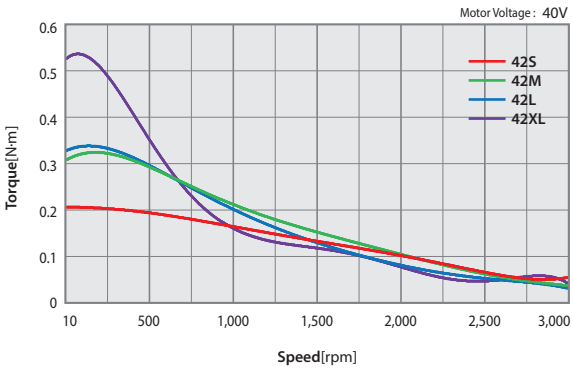
Ezi-STEP II-EC-20 series



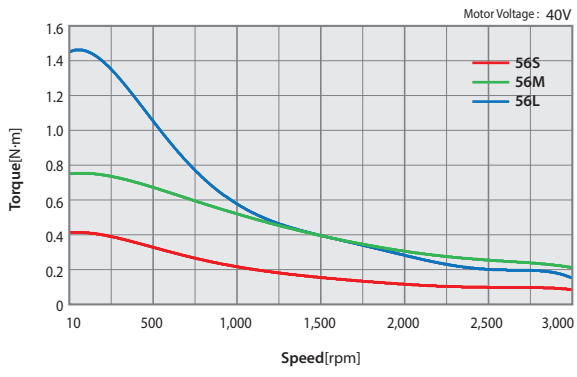
Ezi-STEP II-EC-28 series



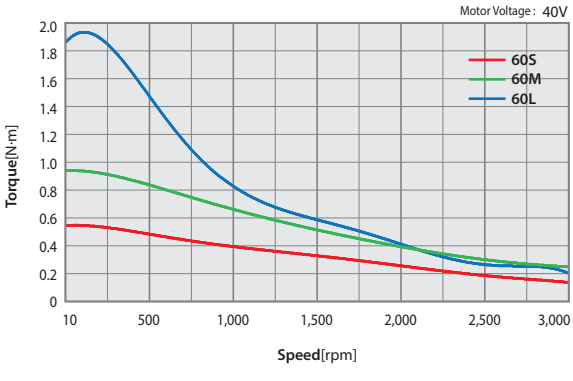
Ezi-STEP II-EC-42 series



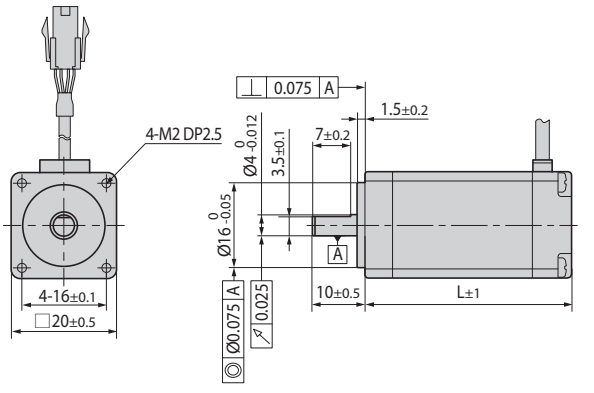
Ezi-STEP II-EC-56 series



Ezi-STEP II-EC-60 series

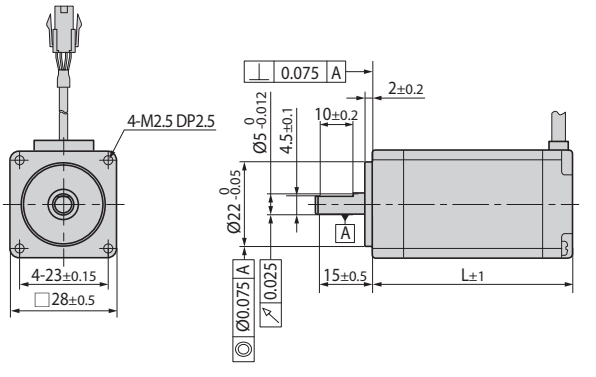


● Dimensions of Motor [mm]



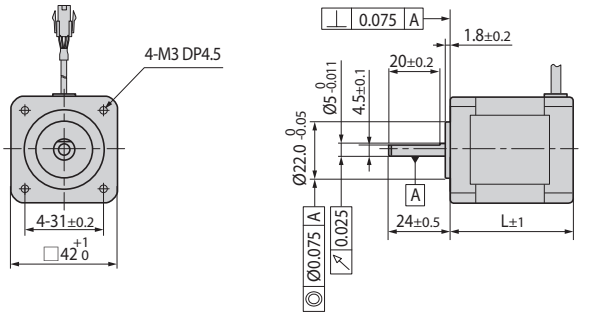
20mm

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



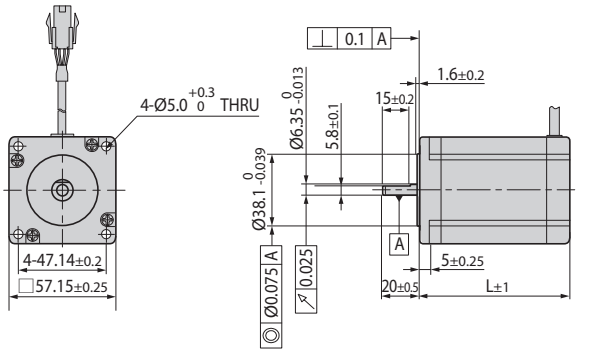
28mm

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



42mm

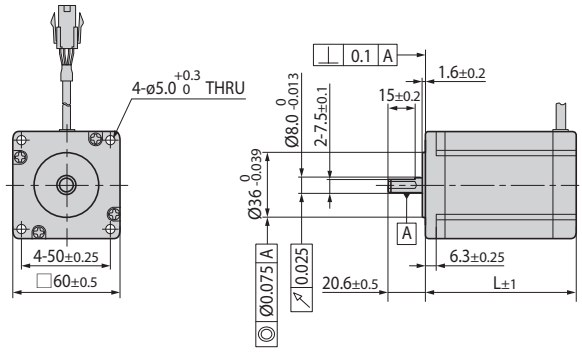
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

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

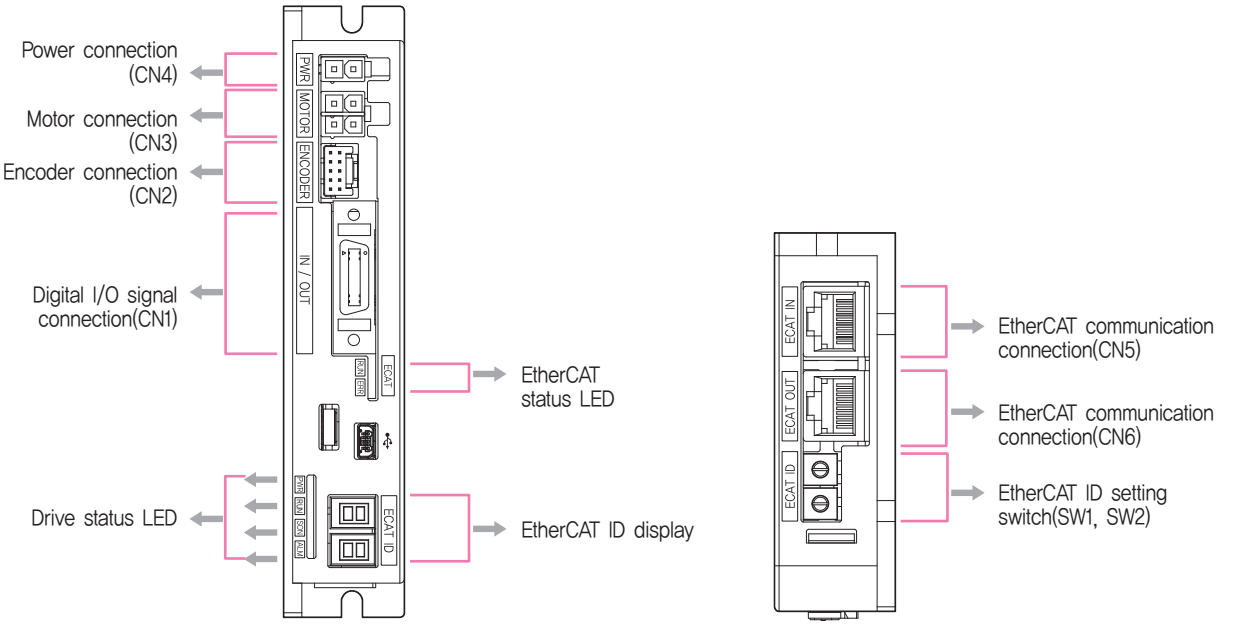
● Dimensions of Motor [mm]



60mm

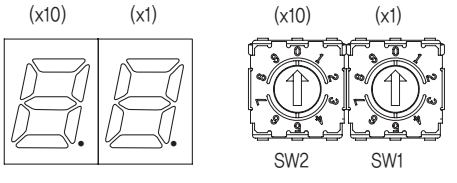
Model name	Length(L)
BM-60S	47
BM-60M	56
BM-60L	85

Settings and Operation



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

There are two Rotary Switches to set value of EtherCAT ID (ECAT Device ID). Switch on the right side indicates the ones' place(×1) and Switch on the left side indicates the tens' place(×10).



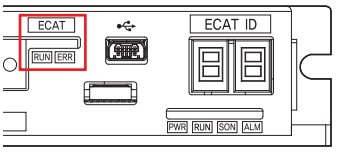
2. EtherCAT Status LED

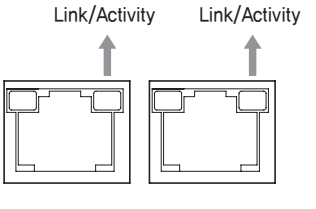
LED indicates communication status of EtherCAT. Link/Activity LED exists on each port of EtherCAT.

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

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





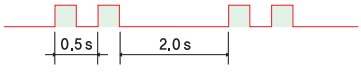
3. Drive Status LED

Indication	Color	Function	ON/OFF Condition
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	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

Times	Error Code *3	Protection	Conditions
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit value *1
2	E-002	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	E-005	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	E-006	Over Regenerative Voltage Error	Back-EMF more high limit value *2
7	E-007	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)

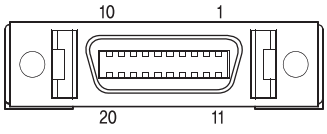
*1 : Limit value depends on motor model. (Refer to the Manual)
*2 : Voltage limit of Back-EMF depends on motor model. (Refer to the Manual)
*3 : When an alarm occurs, error code is displayed on the 7-segment instead of EtherCAT ID.
※ Please refer to uer Manual for the details of protection functions.



Alarm LED Flash
(Ex, Over Speed Error)

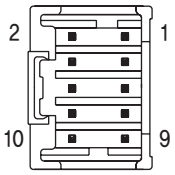
4. Input/Output Signal Connector(CN1)

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_24VDC	Input



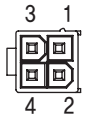
5. Encoder Connector(CN2)

NO.	Function	I/O
1	A+	Input
2	A-	Input
3	B+	Input
4	B-	Input
5	Z+	Input
6	Z-	Input
7	5VDC	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	/A Phase	Output
4	/B Phase	Output

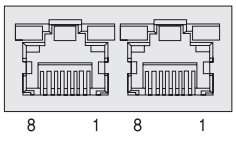


7. Power Connector(CN4)

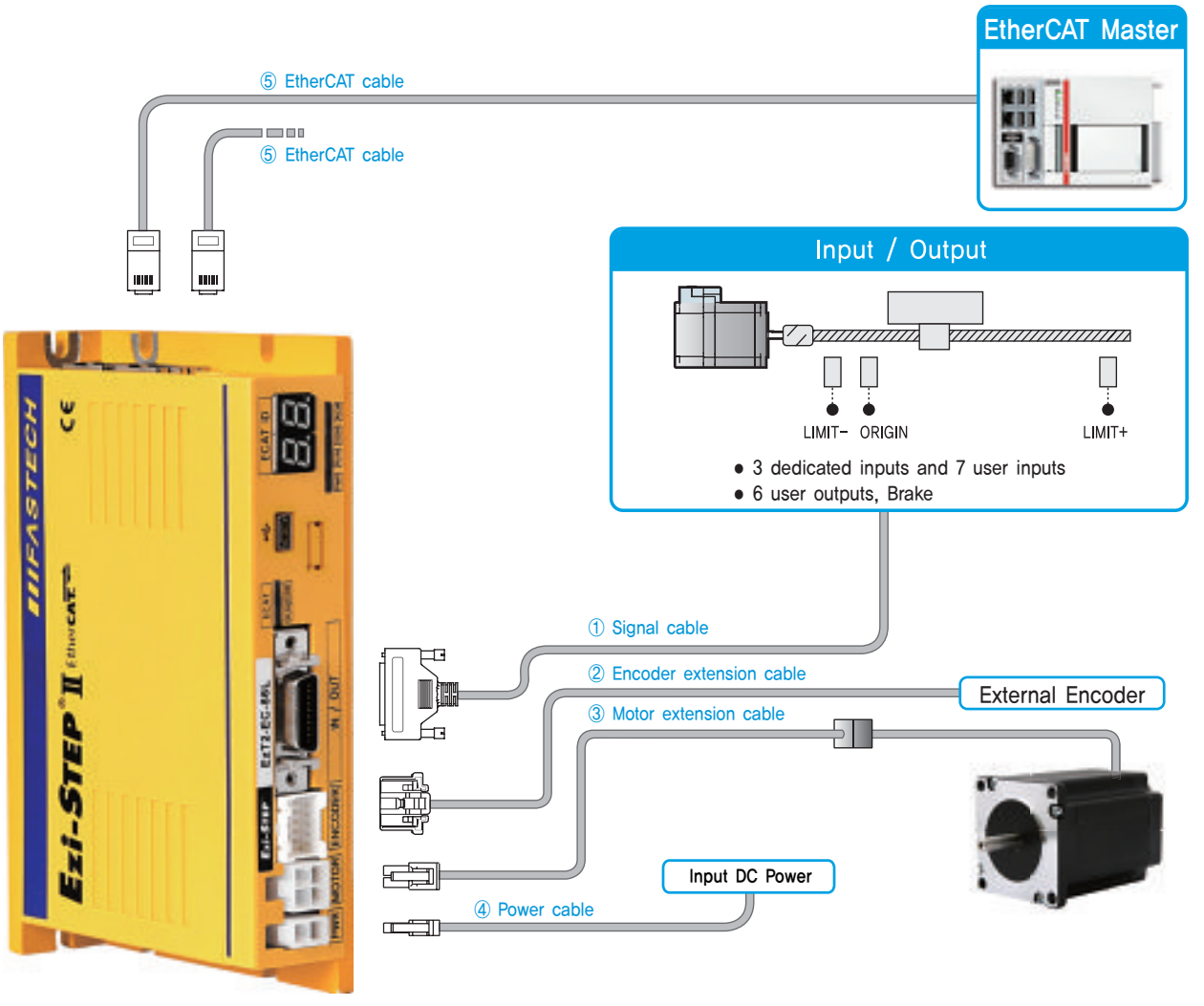
NO.	Function	I/O
1	24VDC	Input
2	GND	Input

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	----		



System Configuration



Type	Signal Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	–	–
Max. Length	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVN-S-□□□F	□□□	Normal Cable
CSVN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to connect between motor and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

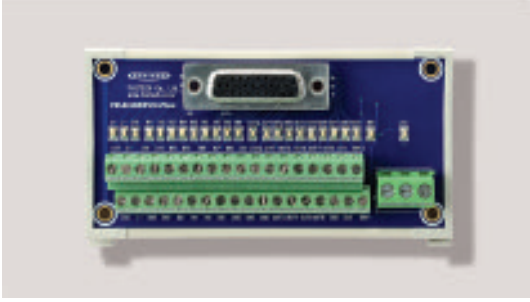
STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

⑥ TB-Plus(Interface Board)

Available to connect more conveniently between Input/ Output signal and Ezi-STEP II EtherCAT.



⑦ Interface Cable for TB-Plus

Available to Connect between TB-Plus Interface Board and Ezi-STEP II EtherCAT.

Item	Length [m]	Remark
CIFN-S-□□□F	□□□	Normal Cable
CIFN-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

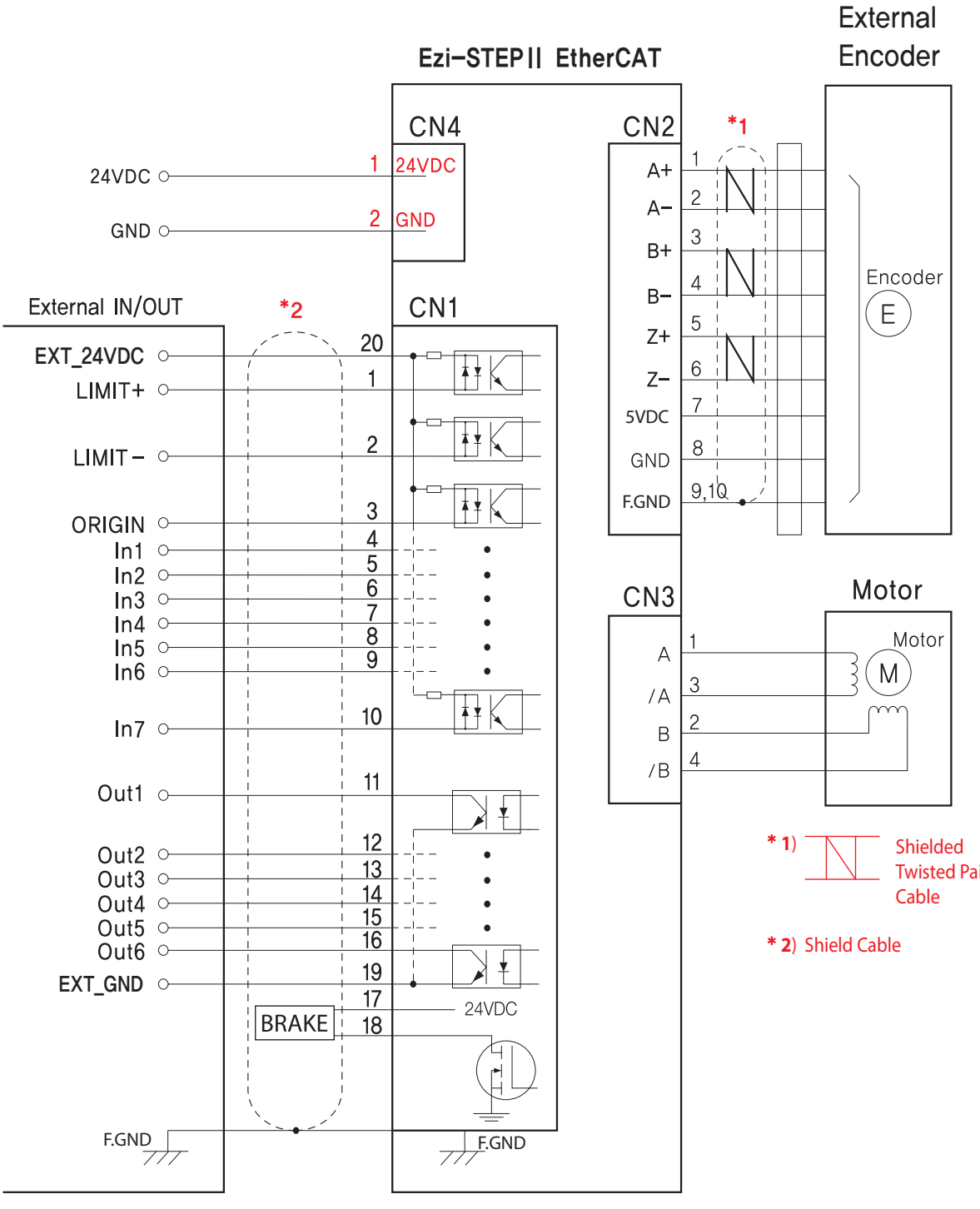
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Connector Backshell	10120-3000PE 10320-52A0-008	3M

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



* 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, in order to protect the drive from any damage.

CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT
Ezi-STEP II mini
FASTECH
PWR
MOTOR
ENCODER
RUN
ECAT
STA
L/A1
L/A2
ST1
ST2

Ezi-STEP II EtherCAT MINI

Ezi-STEP II EtherCAT MINI

- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Miniaturized Compact Size

FASTECH

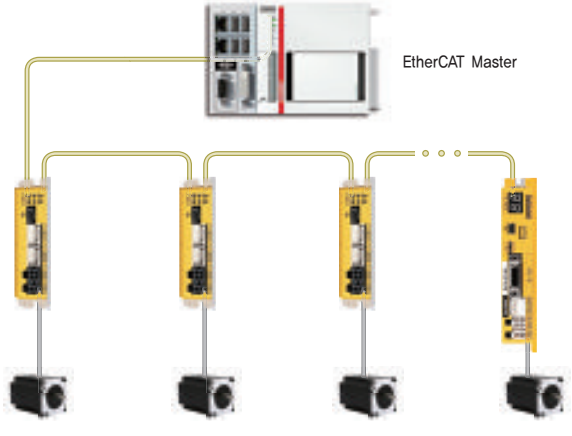
Fast, Accurate, Smooth Motion

Ezi-STEP® II EtherCAT® MINI

Micro Stepping System

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode



2 Microstep and Filtering

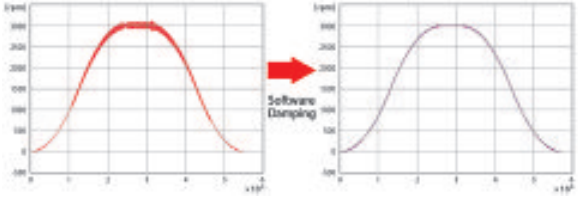
High precision Microstep function and Filtering

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 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

3 Software Damping

Vibration suppression and high-speed operation

Vibration suppression and High-speed operation (Patent pending) 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 [pulse/rev] encoder.

● Ezi-STEP II EtherCAT MINI Part Numbering

Ezi-STEP II -EC-MI-42S-BK-□

- **Product Name**
- **Drive Series Type**
  - EC : EtherCAT
  - MI : 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
- **User Code**

● 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

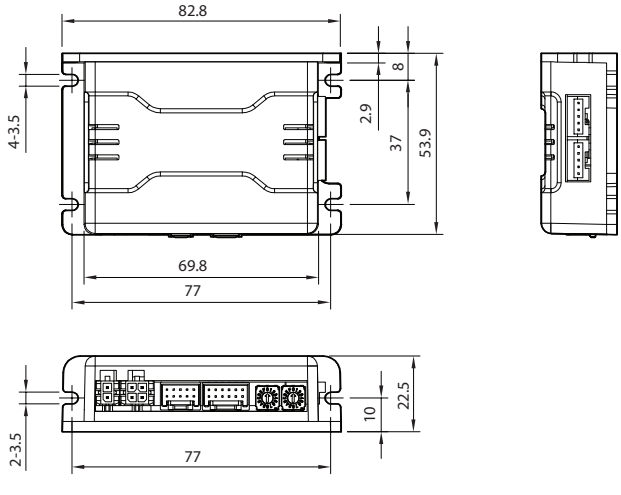
Unit Part Number	Motor Model Number	Drive Model Number
Ezi-STEP II-EC-MI-42S-BK	BM-42S-BK	EzT2-EC-MI-42S
Ezi-STEP II-EC-MI-42M-BK	BM-42M-BK	EzT2-EC-MI-42M
Ezi-STEP II-EC-MI-42L-BK	BM-42L-BK	EzT2-EC-MI-42L
Ezi-STEP II-EC-MI-42XL-BK	BM-42XL-BK	EzT2-EC-MI-42XL
Ezi-STEP II-EC-MI-56S-BK	BM-56S-BK	EzT2-EC-MI-56S
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
Driver 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		24VDC ±10%				
Control Method		Bipolar PWM drive with 32bit MCU				
Current Consumption		Max 500mA (Except motor current)				
Operating Condition	Ambient Temperature	· In Use: 0~50℃ *1 · 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	0~3,000 [rpm]				
	Resolution [ppr]	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) * Default: 10,000				
	Protection Functions	Over Current Error, Over Speed Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, ROM Error				
EtherCAT	Supported Protocol	CoE (CiA402 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 user inputs (Photocoupler Input)				
	Output Signals	2 user outputs (Photocoupler Output), Brake				

*1 : EzT2-EC-MI-56, 60 Series are needed to be mounted on an external heat sink or a structure capable of dissipating heat.

Dimensions of Drive [mm]



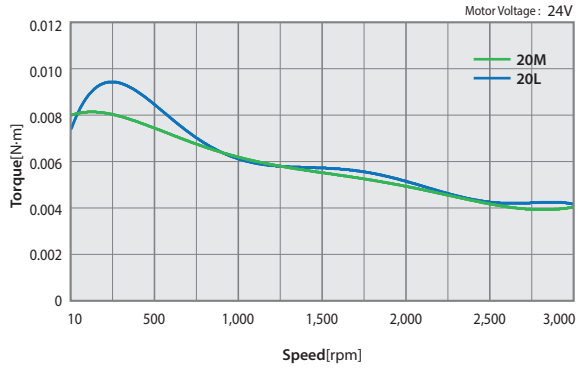
Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		$g \cdot cm^2$	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

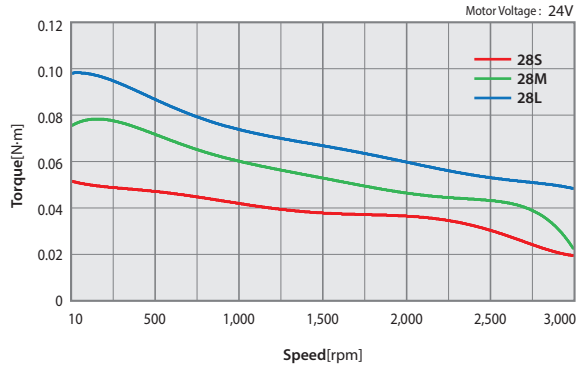
MODEL			BM-56 series			BM-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS		g	548	726	1159	616	793	1349
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

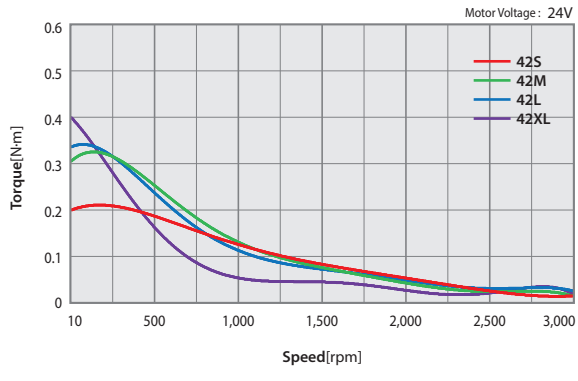
Ezi-STEP II-EC-MI-20 series



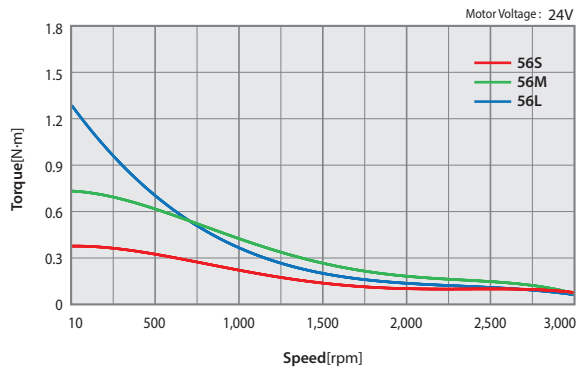
Ezi-STEP II-EC-MI-28 series



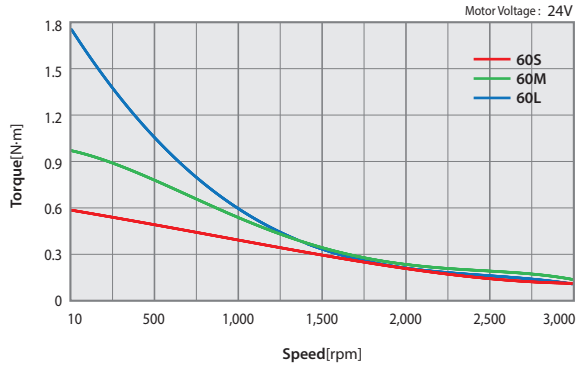
Ezi-STEP II-EC-MI-42 series



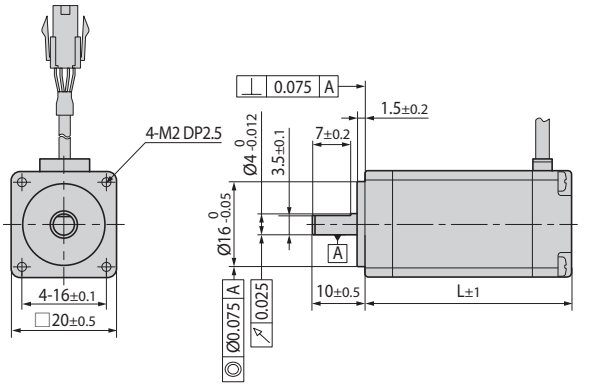
Ezi-STEP II-EC-MI-56 series



Ezi-STEP II-EC-MI-60 series

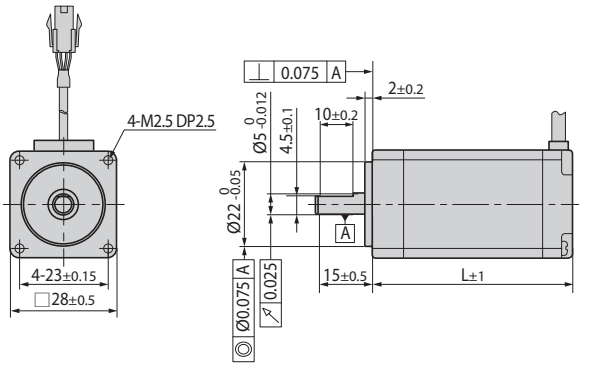


● Dimensions of Motor [mm]



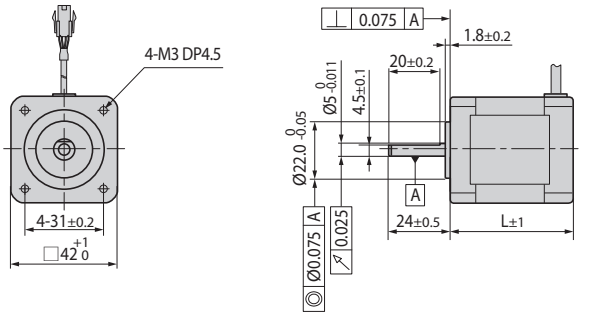
20mm

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



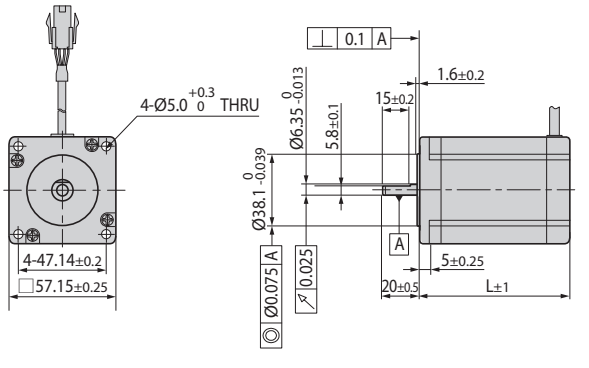
28mm

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



42mm

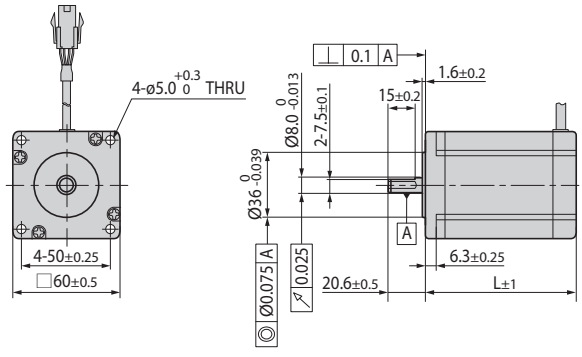
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

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

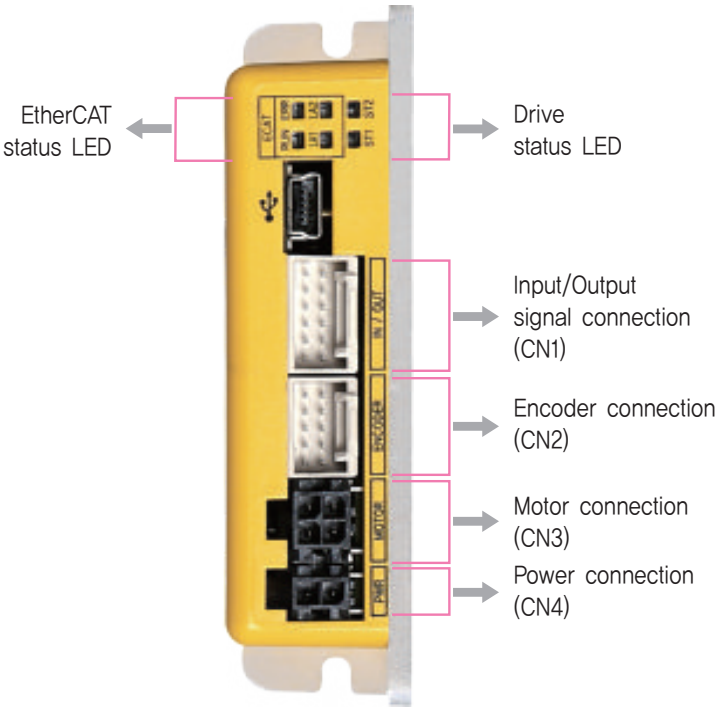
● Dimensions of Motor [mm]

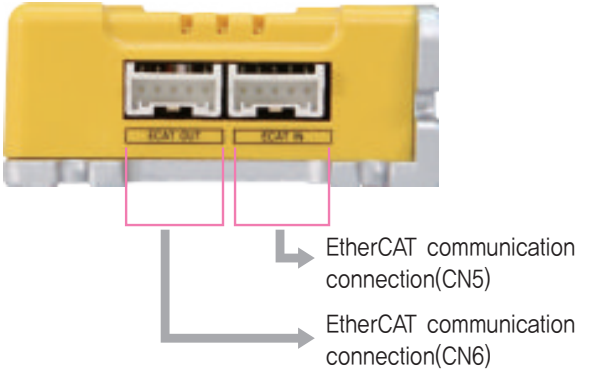


60mm

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

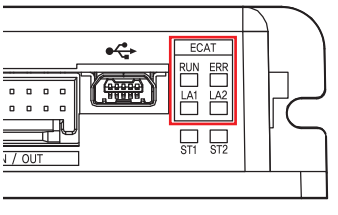
Settings and Operation





1. EtherCAT Status LED

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



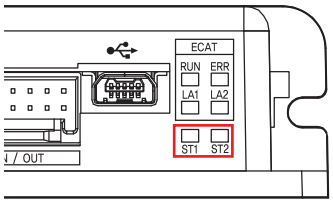
Name	Color	Status	Explanation
ERR	Red	OFF	No Error or Power OFF
		Blinking	Invalid Configuration
		Single Flash	Local Error
		Double Flash	Watchdog Time Out

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

2. Drive Status LED

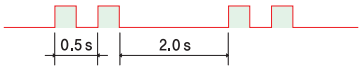
In the case of Ezi-STEP II EtherCAT MINI series products, LED can be checked by LED color, lighting, On/Off and blinking.

Status	LED	Description
Disable	ST1 : ST2 :	ST1 light flashing, ST2 light off
Enable	ST1 : ST2 :	ST1 light on, ST2 light off
In motion	ST1 : ST2 :	ST1 light on, ST2 light on
Alarm	ST1 : ST2 :	ST2 light flashing repeatedly as many as alarm number



◆ Protection functions and LED flash times

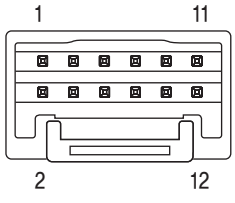
Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash
(Ex, Over Speed Error)

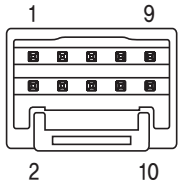
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	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



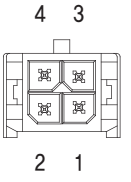
4. Encoder Connector(CN2)

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



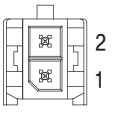
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



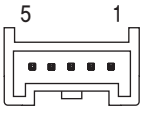
6. Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

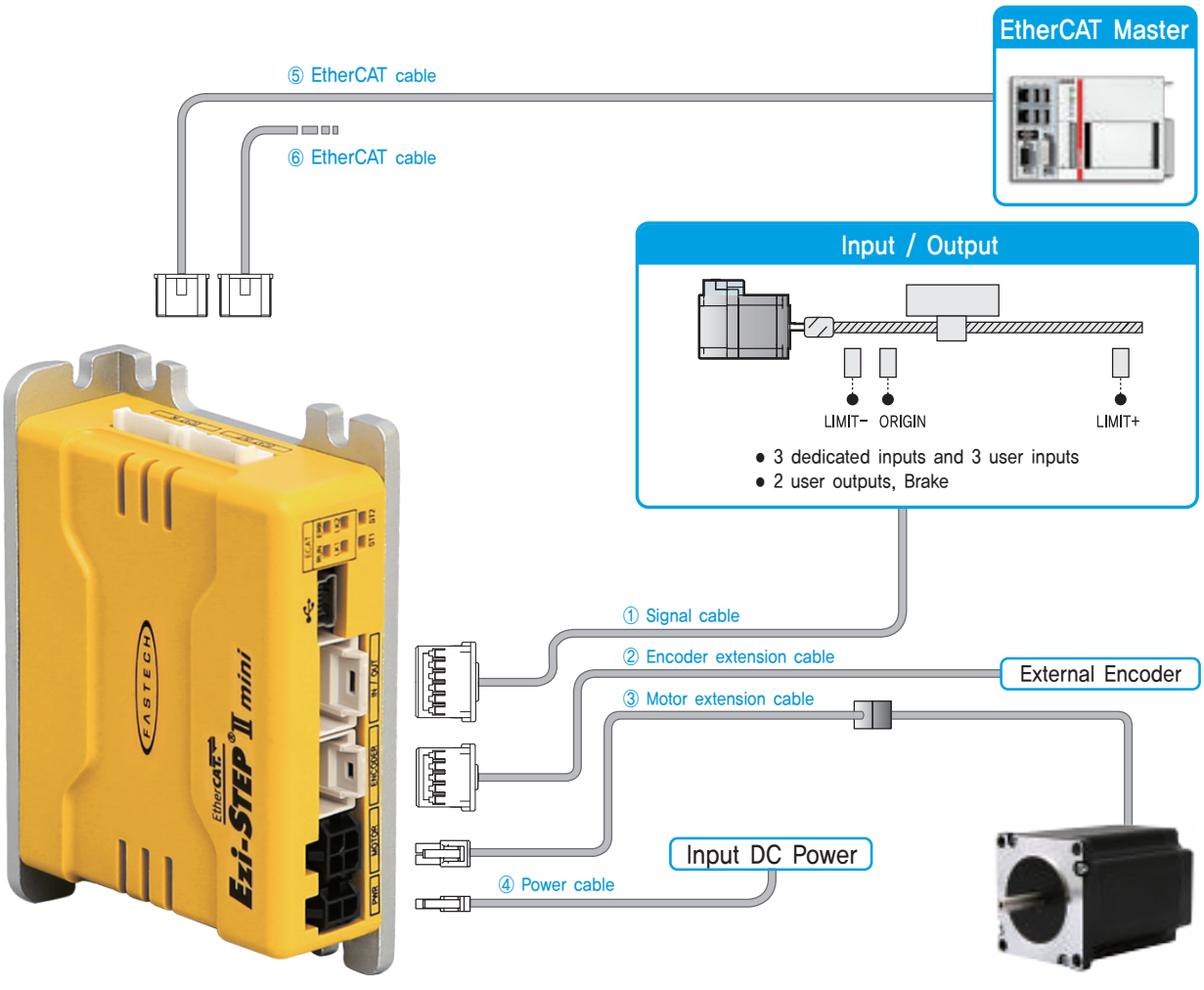


7. EtherCAT Communication Connector(CN5, CN6)

NO.	Function
1	TD+
2	TD–
3	RD+
4	RD–
5	F.GND



System Configuration



Type	Signal Cable	Motor Cable	Power Cable	EtherCAT Cable
Length supplied	–	30cm	–	–
Max. Length	20m	20m	2m	100m

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSNR-S-□□□F	□□□	Normal Cable
CSNR-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CTPM-E-□□□F	□□□	Normal Cable
CTPM-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-M-□□□F	□□□	Normal Cable
CSMI-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT MINI.

Item	Length [m]	Remark
CSMI-P-□□□F	□□□	Normal Cable
CSMI-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNE-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II EtherCAT MINI to the controller, Ezi-STEP II EtherCAT, and Ezi-STEP II EtherCAT ALL R type with a network.
This cable is composed of a 5-pin connector (Ezi-STEP II EtherCAT MINI side) and an RJ45 connector.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNI-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

* This cable connects Ezi-STEP II EtherCAT MINI to Ezi-STEP II EtherCAT MINI with the network.

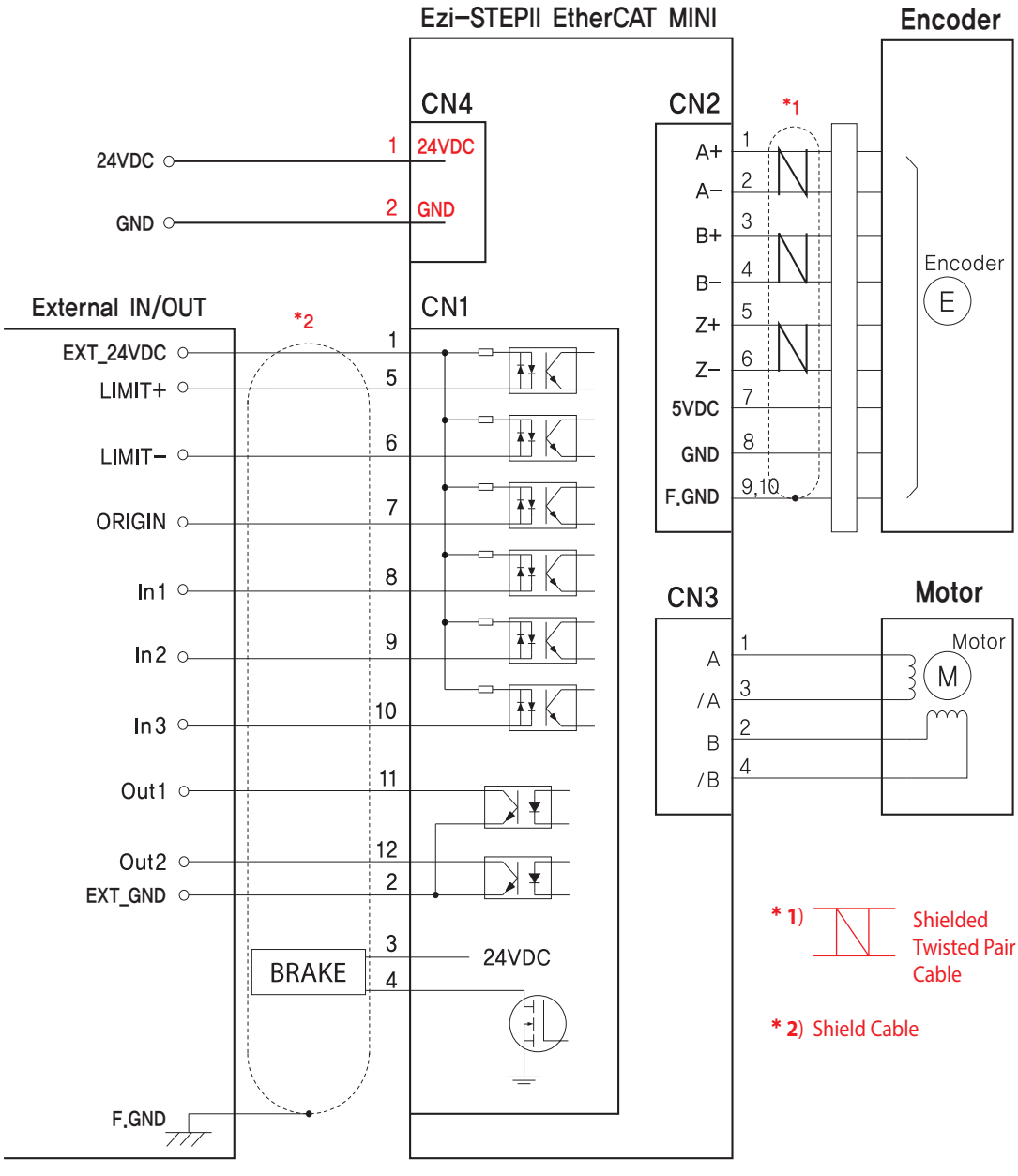
2. Connector Specifications

Connector specifications for cabling to drive.

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

※ Above connector is the most suitable product for the drive applied. Another equivalent connector can be used.

External Wiring Diagram



※ 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

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.


EtherCAT 4X
ECAT OUT
ECAT IN
MOTOR
ENCODER
I/O
Ezi-STEP II EtherCAT

Ezi-STEP II EtherCAT 4X

Ezi-STEP II EtherCAT 4X

- CiA 402 Drive Profile Support
- Micro Stepping
- Software Damping
- Compact 4 Axes Stepping Motor Drive
- Save Space / Reduce Wiring (Reduce Cost)

FASTECH

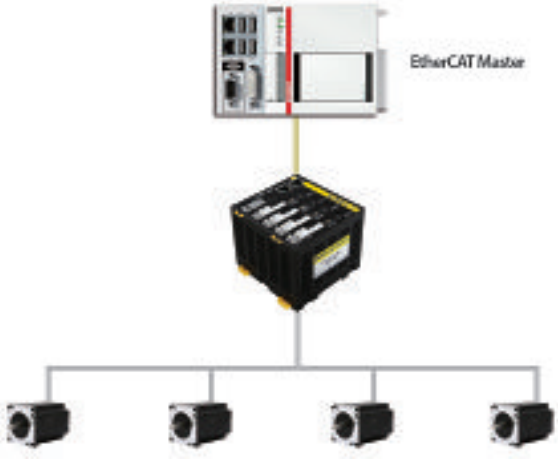
Fast, Accurate, Smooth Motion

Ezi-STEP® II EtherCAT® 4X

Micro Stepping System

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 support CAN application layer over EtherCAT (CoE). CiA 402 Drive Profile implemented. Supported modes are Profile Position Mode, Homing Mode, Cyclic Synchronous Position Mode.



2 Microstep and Filtering

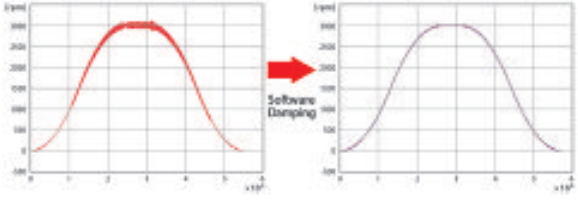
High precision Microstep function and Filtering

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 50 μsec, which makes it possible for more precise current control, resulting in high-precision Microstep operation.

3 Software Damping

Vibration suppression and high-speed operation

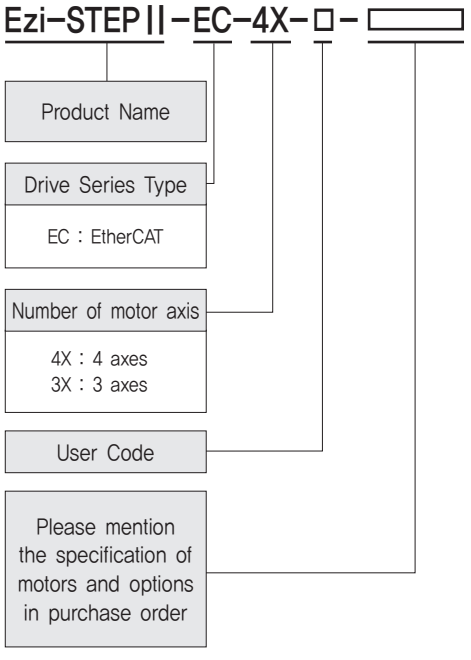
Vibration suppression and High-speed operation (Patent pending) Motor vibration is created by magnetic flux variations of the motor, lower current from the drive due to back-emf from the motor at high speeds and lowering of phase voltages from the drive.
Ezi-STEP II drive detects these problems and the 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 [pulse/rev] encoder.

● Ezi-STEP II EtherCAT 4X Part Numbering



● Combination with Standard Motor / Brake

Ezi-STEP II EtherCAT 4X can use up to 4 motors in one drive. Available motors include Standard Motor, Motor with Brake. Different Motor Number can be used for each axis. Refer to the Motor Model Number below.

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

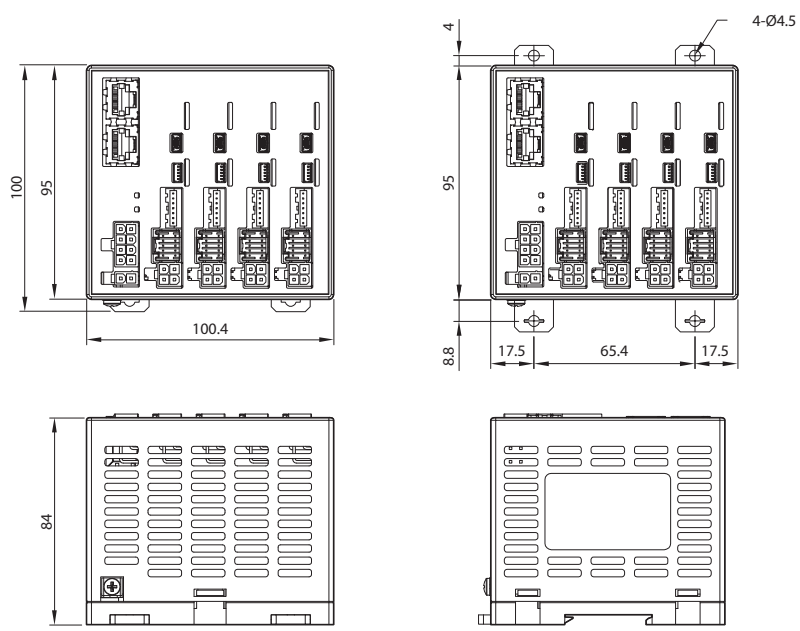
Motor Model Number with Brake
BM-42S-BK
BM-42M-BK
BM-42L-BK
BM-42XL-BK
BM-56S-BK
BM-56M-BK
BM-56L-BK
BM-60S-BK
BM-60M-BK
BM-60L-BK

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		24VDC ±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	0~3,000 [rpm] *1				
	Resolution [ppr]	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) * Default: 10,000				
	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)				
	Output Signals	Brake				

*1 : Up to the resolution of 10,000[ppr], maximum speed can be reached by 3,000[rpm] and with the resolution more than 10,000[ppr], maximum speed shall be reduced accordingly.

Dimensions of Drive [mm]



※ Can be installed on DIN Rail. (35mm)
※ Outer dimension of 3X drive is the same as 4X.

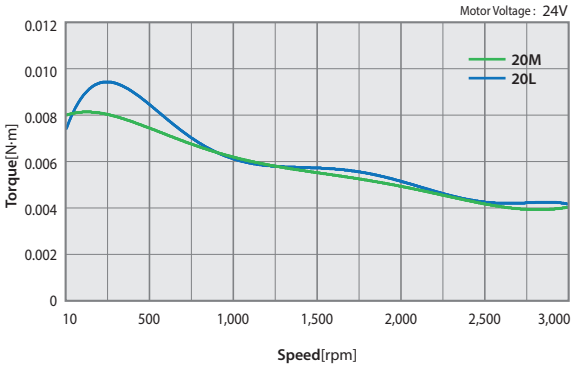
● Specifications of Motor

MODEL			BM-20 series		BM-28 series			BM-42 series			
		UNIT	20M	20L	28S	28M	28L	42S	42M	42L	42XL
DRIVE METHOD		–	BI-POLAR								
NUMBER OF PHASES		–	2	2	2	2	2	2	2	2	2
CURRENT per PHASE		A	0.5	0.5	0.95	0.95	0.95	1.2	1.2	1.2	1.2
HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.32	0.44	0.5	0.65
ROTOR INERTIA		$g \cdot cm^2$	2.5	3.3	9.0	13	18	35	54	77	114
WEIGHTS		g	53	78	115	174	202	238	303	374	508
LENGTH(L)		mm	28	38	32	45	50	34	40	48	60
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight								
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)								
INSULATION CLASS		–	CLASS B(130℃)								
OPERATING TEMPERATURE		℃	0 to 55								

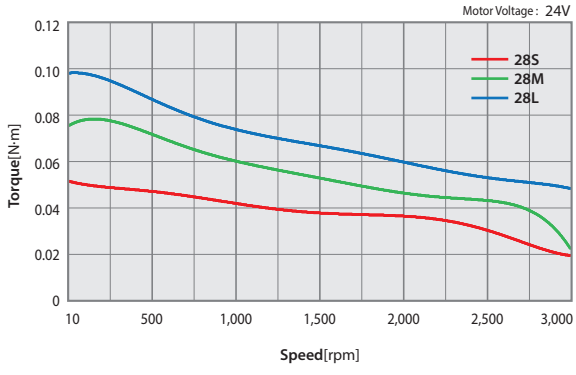
MODEL			BM-56 series			BM-60 series		
		UNIT	56S	56M	56L	60S	60M	60L
DRIVE METHOD		–	BI-POLAR					
NUMBER OF PHASES		–	2	2	2	2	2	2
CURRENT per PHASE		A	3.0	3.0	3.0	4.0	4.0	4.0
HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4
ROTOR INERTIA		$g \cdot cm^2$	180	280	520	240	490	690
WEIGHTS		g	548	726	1159	616	793	1349
LENGTH(L)		mm	46	55	80	47	56	85
PERMISSIBLE OVERHUNG 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 THRUST LOAD		N	Lower than motor weight					
INSULATION RESISTANCE		Mohm	100 MIN.(at 500VDC)					
INSULATION CLASS		–	CLASS B(130℃)					
OPERATING TEMPERATURE		℃	0 to 55					

Torque Characteristics of Motor

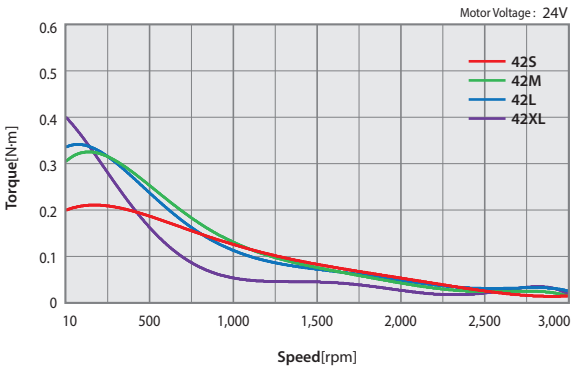
Ezi-STEP II-EC-4X-20 series



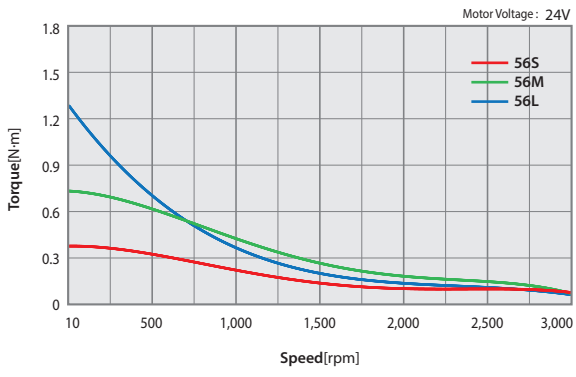
Ezi-STEP II-EC-4X-28 series



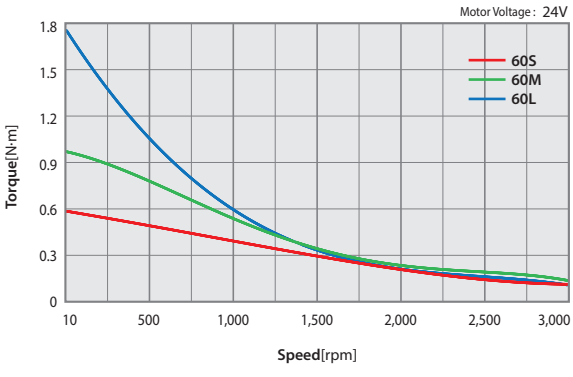
Ezi-STEP II-EC-4X-42 series



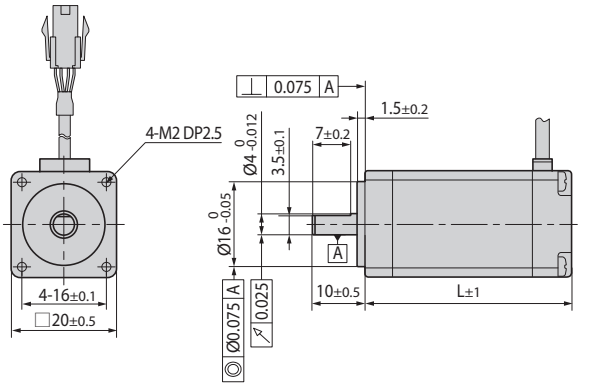
Ezi-STEP II-EC-4X-56 series



Ezi-STEP II-EC-4X-60 series

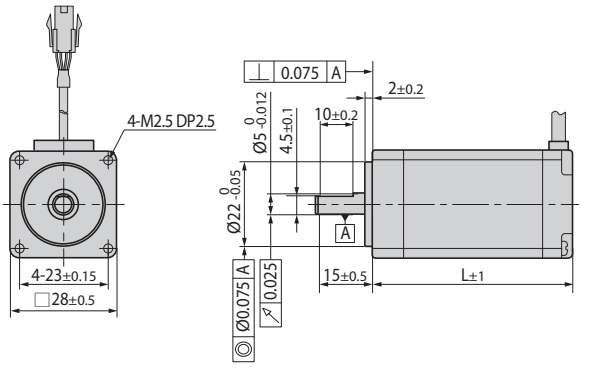


Dimensions of Motor [mm]



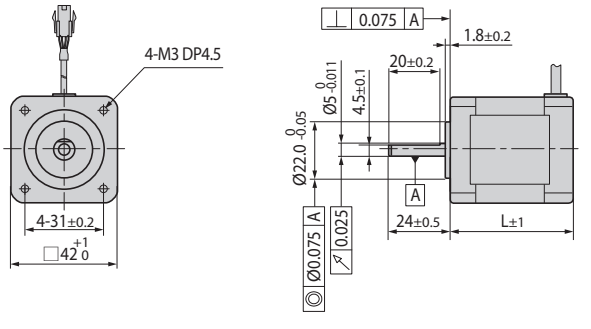
20mm

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



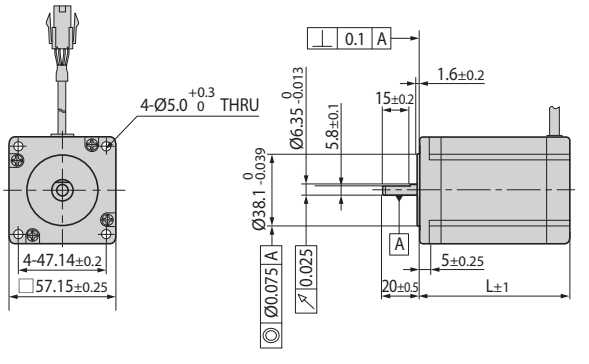
28mm

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



42mm

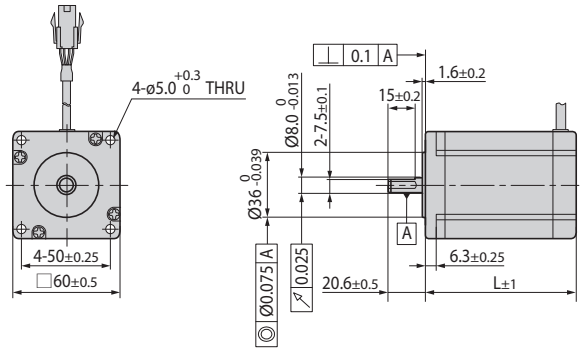
Model name	Length(L)
BM-42S	34
BM-42M	40
BM-42L	48
BM-42XL	60



56mm

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

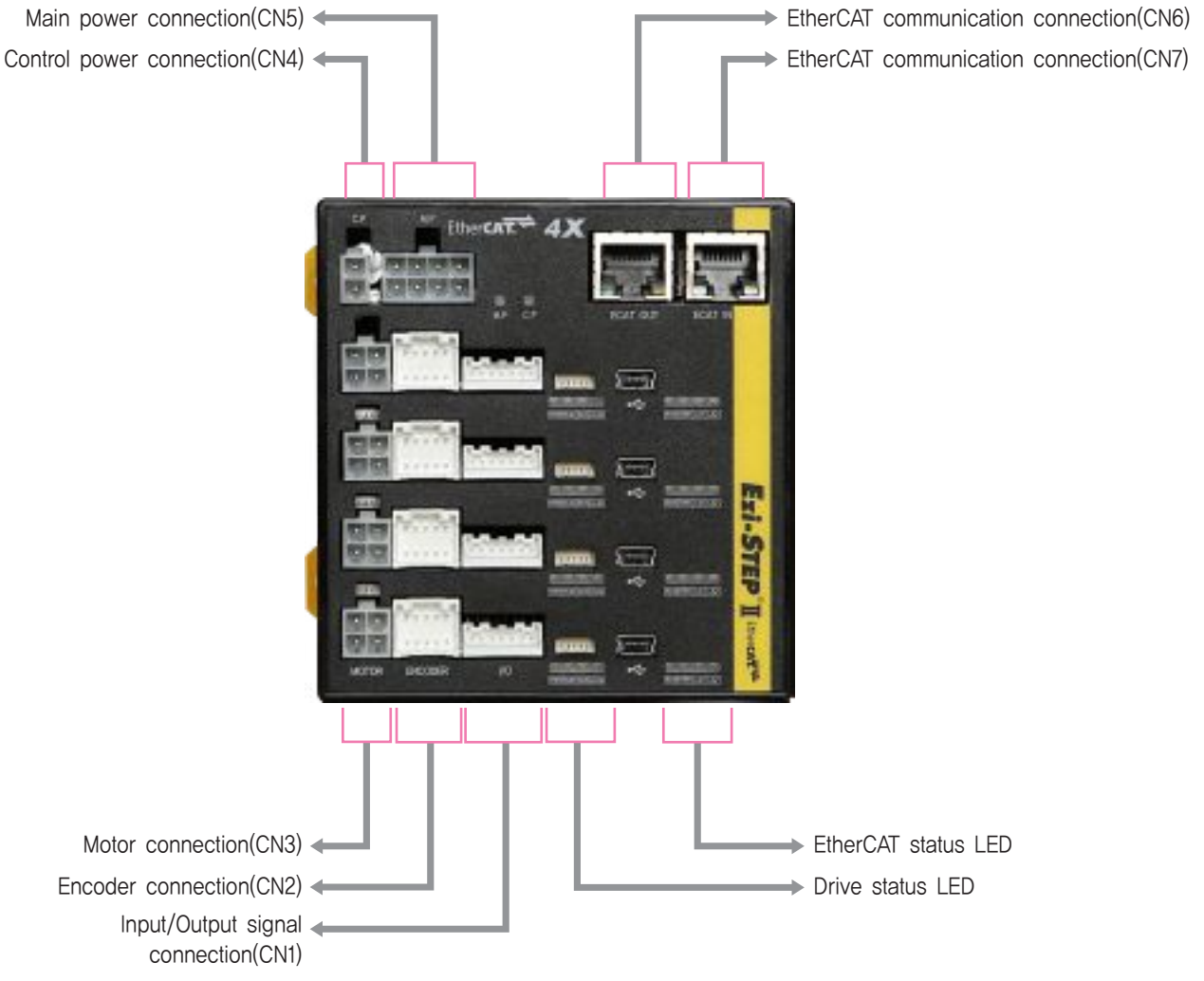
● Dimensions of Motor [mm]

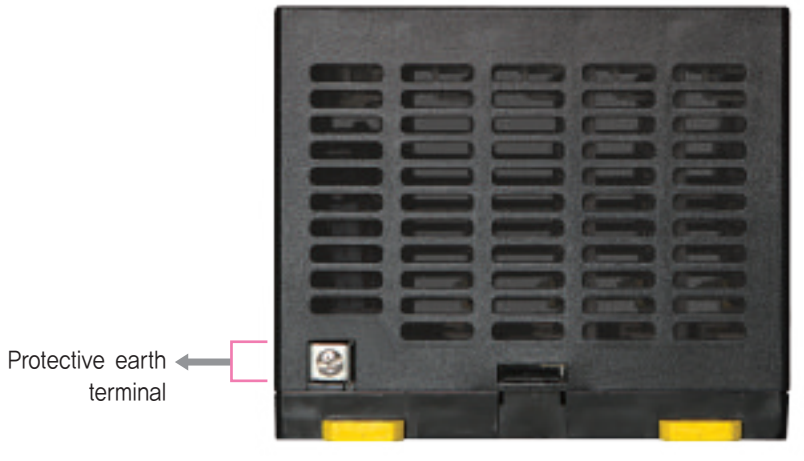


60mm

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	Explanation
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	Explanation
Error	ERR	Red	OFF	No Error or Power OFF
			Blinking	Invalid Configuration
			Single Flash	Local Error
			Double Flash	Watchdog Time Out

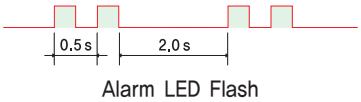
Name	Indication	Color	Status	Explanation
Link/ Activity	LA1 LA2	Green	OFF	Link not Established
			ON	Link Established
			Flickering	Link Established and in Operation

2. Drive Status LED

Indication	Color	Function	ON/OFF Condition
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	Flash when protection function is activated (Identifiable which protection mode is activated by counting the blinking times)

◆ Protection functions and LED flash times

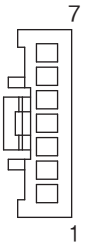
Times	Protection	Conditions
1	Over Current Error	The current through power devices in drive exceeds 4.8A
2	Over Speed Error	Motor speed exceed 3,000 [rpm]
5	Over Temperature Error	Inside temperature of drive exceeds 85℃
6	Over Regenerative Voltage Error	Back-EMF is higher than 48V
7	Motor Connect Error	The drive does STEP ON without connection of the motor cable to drive.
12	ROM Error	Error occurs in parameter storage device(ROM)



Alarm LED Flash
(Ex, Over Speed Error)

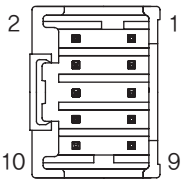
3. Input/Output Signal Connector(CN1)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_GND	Input
3	LIMIT+	Input
4	LIMIT−	Input
5	ORIGIN	Input
6	BRAKE+	Output
7	BRAKE−	Output



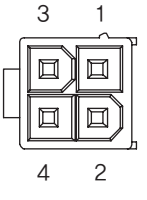
4. Encoder Connector(CN2)

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



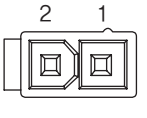
5. Motor Connector(CN3)

NO.	Function	I/O
1	A Phase	Output
2	B Phase	Output
3	/A Phase	Output
4	/B Phase	Output



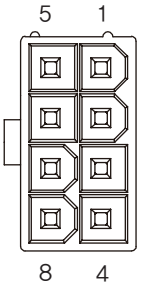
6. Control Power Connector(CN4)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input



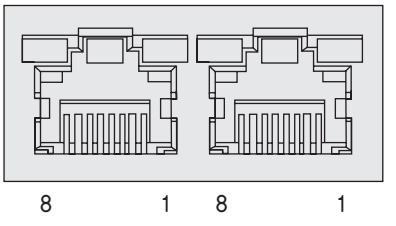
7. Main Power Connector(CN5)

NO.	Function	I/O
1	24VDC	Input
2	24VDC	Input
3	24VDC	Input
4	F.GND	----
5	GND	Input
6	GND	Input
7	GND	Input
8	F.GND	----

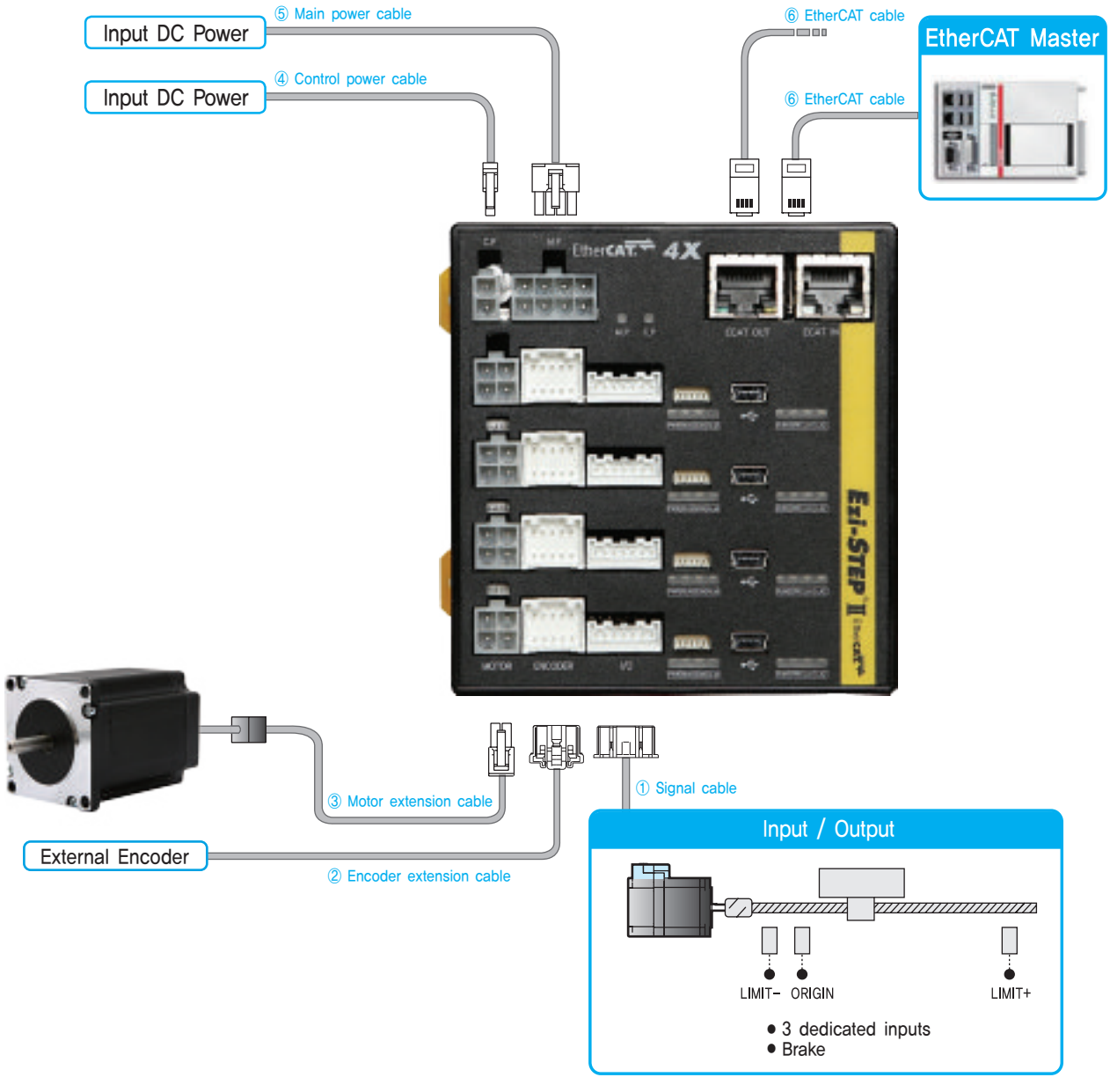


8. EtherCAT Communication Connector(CN6, CN7)

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



System Configuration



Type	Signal Cable	Motor Cable	Control Power Cable	Main Power Cable	EtherCAT Cable
Length supplied	–	30cm	–	–	–
Max. Length	20m	20m	2m	2m	100m

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

1. Options

① Signal Cable

Available to connect between Input/Output signals and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CECM-S-□□□F	□□□	Normal Cable
CECM-S-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

② Encoder Extension Cable

Available to extended connection between Encoder and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CTPR-E-□□□F	□□□	Normal Cable
CTPR-E-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

③ Motor Extension Cable

Available to extended connection between motor and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-M-□□□F	□□□	Normal Cable
CSVO-M-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 20m length.

④ Control Power Cable

Available to connect between Power and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CSVO-P-□□□F	□□□	Normal Cable
CSVO-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑤ Main Power Cable

Available to connect between Main Power and Ezi-STEP II EtherCAT 4X.

Item	Length [m]	Remark
CECM-P-□□□F	□□□	Normal Cable
CECM-P-□□□M	□□□	Robot Cable

□ is for Cable Length. The unit is 1m and Max. 2m length.

⑥ EtherCAT Cable

STP(Shielded twisted pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal Cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

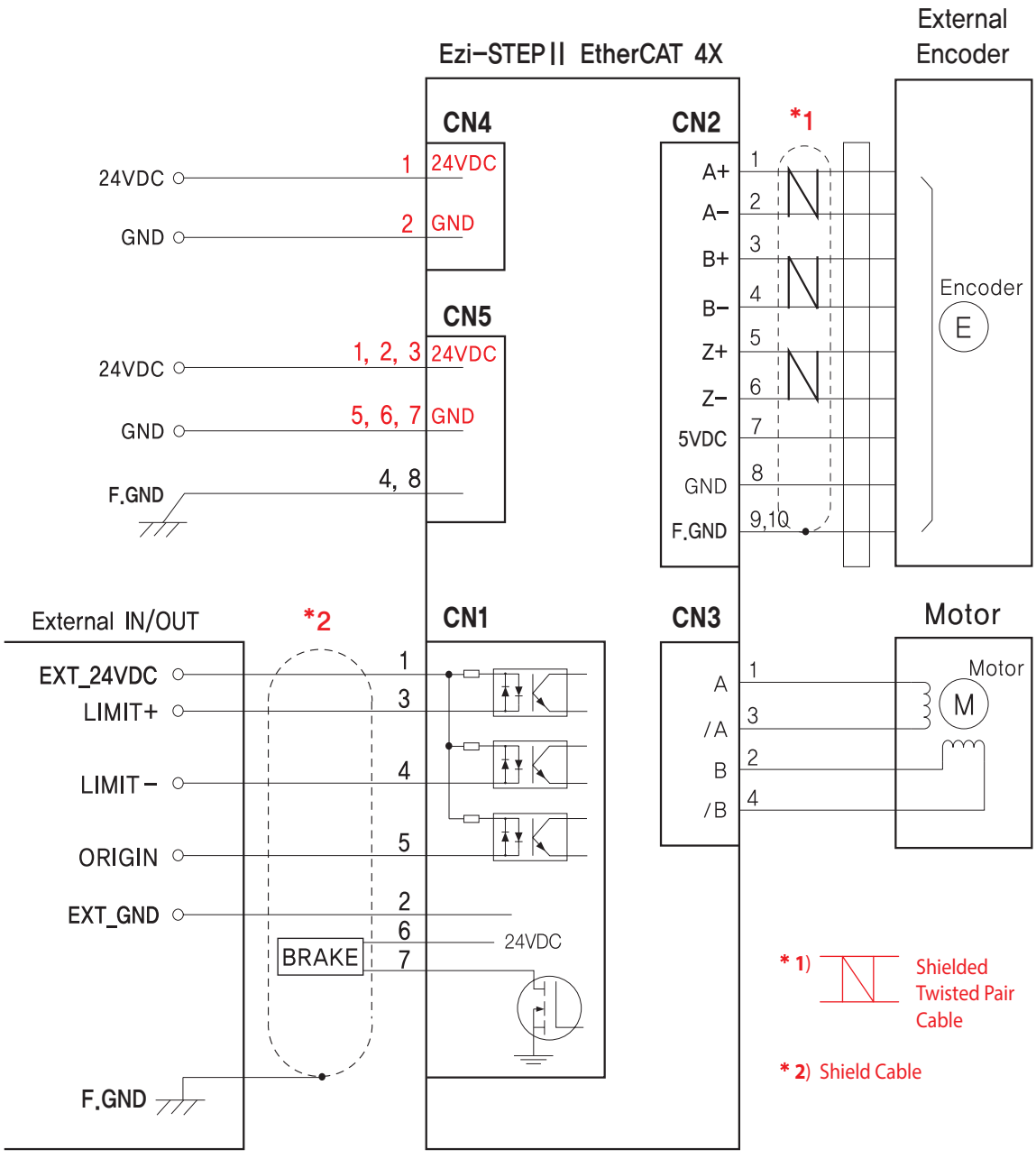
2. Connector Specifications

Connector specifications for cabling to drive.

Purpose		Item	Part Number	Manufacturer
Main Power (CN5)		Housing Terminal	5557-08R 5556T	MOLEX
Control Power (CN4)		Housing Terminal	5557-02R 5556T	MOLEX
Motor	Drive Side (CN3)	Housing Terminal	5557-04R 5556T	MOLEX
	Motor Side	Housing Terminal	5557-04R 5556T	MOLEX
Encoder	Drive Side (CN2)	Housing Terminal	51353-1000 56134-9000	MOLEX
Signal (CN1)		Housing Terminal	PAP-07V-S SPHD-001T-P0.5	JST

※ Above Connector is the most suitable product for the drive applied. Another equivalent Connector can be used.

External Wiring Diagram



※ 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.

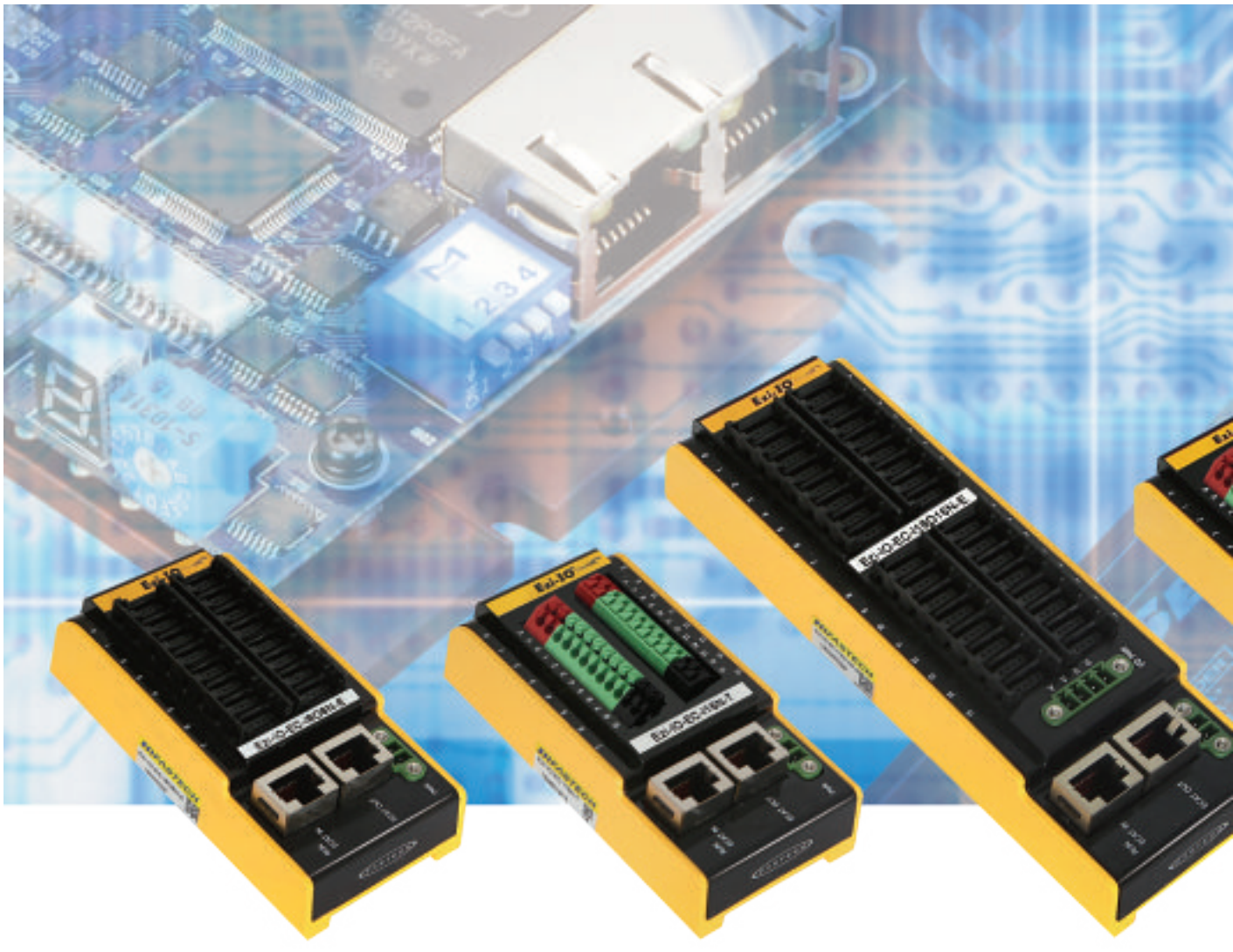
CAUTION

Please refer to the Manual when connects motor extension cable.

Careful connection will be required to protect the drive from any damages.

Digital Input / Output Module_ Ezi-IO EtherCAT

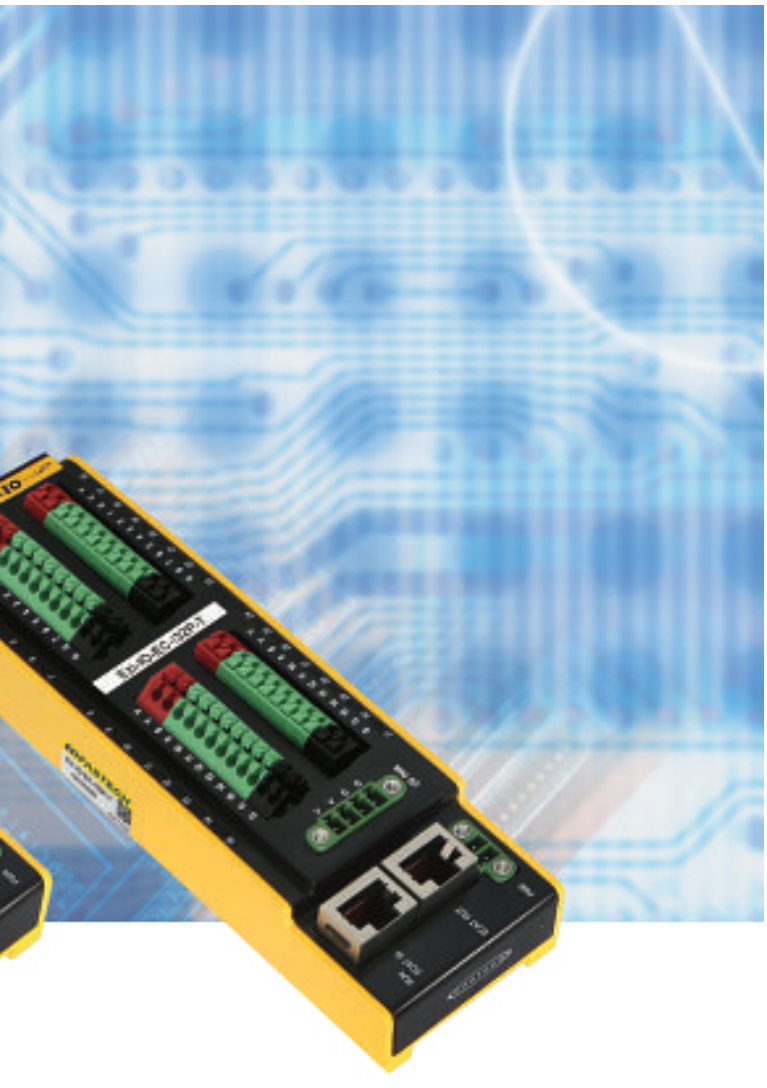
- EtherCAT Based Digital I/O Module
- Simple and Easy Wiring (e-CON / Terminal Block type)
- Various 16CH & 32CH I/O Module (NPN / PNP type)
- Digital I/O Photocoupler Isolation



FASTECH
Fast, Accurate, Smooth Motion

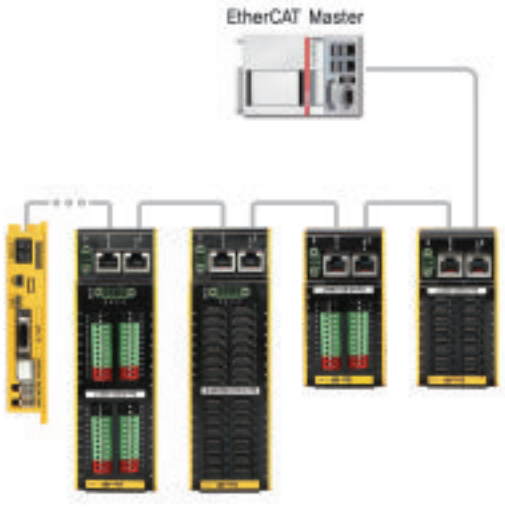
Ezi-IO® EtherCAT®

Input/Output Module



1 EtherCAT Based Digital I/O module

Ezi-IO EtherCAT is a Digital I/O module supporting EtherCAT, a fieldbus based on high speed Ethernet (100Mbps, Full-Duplex). EtherCAT enables fast data transfer with peripheral devices and supports connection of various devices without topology limitation.



2 Simple and Easy Wiring

Ezi-IO EtherCAT offers e-CON connector type and terminal block type products. The e-CON connector type makes it easy to attach and detach peripheral devices. The terminal block type allows easy wiring of peripheral devices in a one-touch method. Therefore peripherals can be easily and simply connected to the EtherCAT network for control.

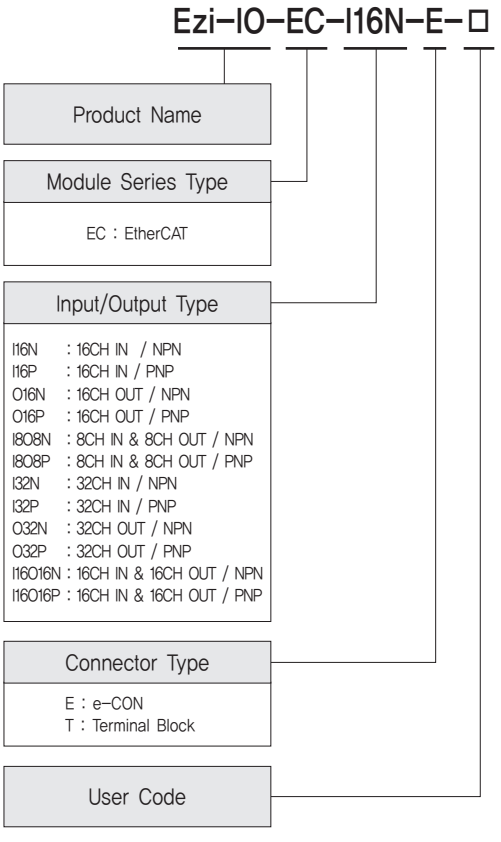
3 Various 16CH & 32CH I/O module

Ezi-IO EtherCAT offers 16CH and 32CH products. 16CH types are provided with 16CH input, 16CH output, 8CH input + 8CH output products and 32CH types are provided with 32CH input, 32CH output, 16CH input + 16CH output. Ezi-IO EtherCAT offers NPN and PNP products to support various peripheral I/O methods.

4 Digital I/O Photocoupler Isolation

Ezi-IO EtherCAT is isolated with photocoupler for input and output, makes easy connection to peripherals without additional circuit. (32CH module only)

● Ezi-IO EtherCAT Part Numbering



● Ezi-IO EtherCAT Part Number

Part Number	Series
Ezi-IO-EC-I16N-E	Ezi-IO-EC-■16□-E
Ezi-IO-EC-I16P-E	
Ezi-IO-EC-O16N-E	
Ezi-IO-EC-O16P-E	
Ezi-IO-EC-I8O8N-E	Ezi-IO-EC-I8O8□-E
Ezi-IO-EC-I8O8P-E	
Ezi-IO-EC-I16N-T	Ezi-IO-EC-■16□-T
Ezi-IO-EC-I16P-T	
Ezi-IO-EC-O16N-T	
Ezi-IO-EC-O16P-T	
Ezi-IO-EC-I8O8N-T	Ezi-IO-EC-I8O8□-T
Ezi-IO-EC-I8O8P-T	
Ezi-IO-EC-I32N-E	Ezi-IO-EC-■32□-E
Ezi-IO-EC-I32P-E	
Ezi-IO-EC-O32N-E	
Ezi-IO-EC-O32P-E	
Ezi-IO-EC-I16O16N-E	Ezi-IO-EC-I16O16□-E
Ezi-IO-EC-I16O16P-E	
Ezi-IO-EC-I32N-T	Ezi-IO-EC-■32□-T
Ezi-IO-EC-I32P-T	
Ezi-IO-EC-O32N-T	
Ezi-IO-EC-O32P-T	
Ezi-IO-EC-I16O16N-T	Ezi-IO-EC-I16O16□-T
Ezi-IO-EC-I16O16P-T	

* ■ : Input / Output Type
□ : NPN / PNP Type

● Specifications of Module

Model		Ezi-IO-EC-I16N-□	Ezi-IO-EC-I16P-□	Ezi-IO-EC-O16N-□	Ezi-IO-EC-O16P-□	Ezi-IO-EC-I8O8N-□	Ezi-IO-EC-I8O8P-□
Input Voltage		24VDC ±10%					
Current Consumption		Max. 150mA (Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% (Non-Condensing) · In Storage: 10~90% (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 16CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH		-		· 8CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH	
	Output signal	-		· 16CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH		· 8CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH	
	Signal Isolation Method	No Isolation					
LED Display		· Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~15)				· Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (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 of category 5e or higher / Max. Length 100m					

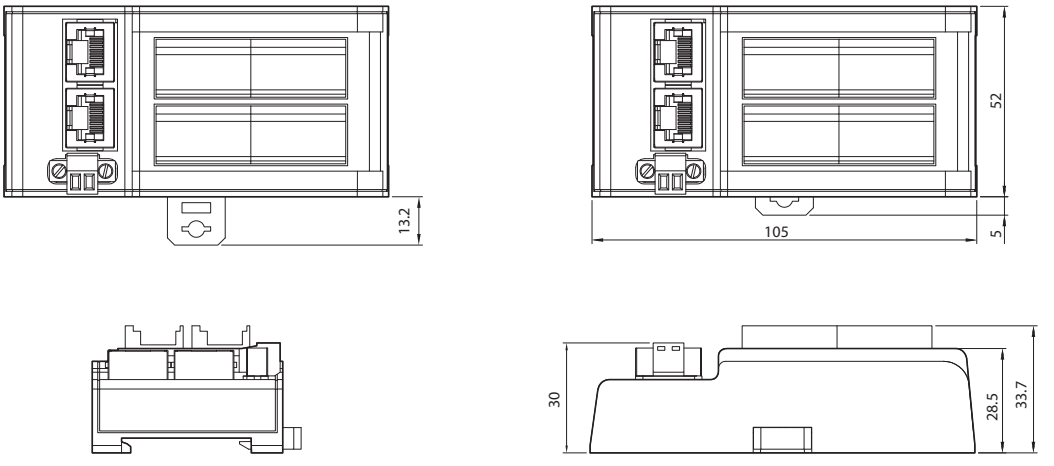
* □ : Connector Type

Model		Ezi-IO-EC-I32N-□	Ezi-IO-EC-I32P-□	Ezi-IO-EC-O32N-□	Ezi-IO-EC-O32P-□	Ezi-IO-EC-I16O16N-□	Ezi-IO-EC-I16O16P-□
Input Voltage		24VDC ±10%					
Current Consumption		Max. 300mA (Except I/O current)					
Operating Condition	Ambient Temperature	· In Use: 0~50℃ · In Storage: -20~70℃					
	Humidity	· In Use: 35~85% (Non-Condensing) · In Storage: 10~90% (Non-Condensing)					
	Vib. Resist.	0.5g					
Function	Input Signal	· 32CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH		-		· 16CH Input (Photocoupler Input, NPN/PNP) · 24VDC · Max. 15mA/CH	
	Output signal	-		· 32CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH		· 16CH Output (FET Output, NPN/PNP) · 24VDC · Max. 200mA/CH	
	Signal Isolation Method	Photocoupler Isolation					
LED Display		· Control Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (ECAT IN, ECAT OUT) · I/O status (0~31)				· Control Power status (PWR) · EtherCAT Communication status (RUN) · EtherCAT Communication connection status (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 of category 5e or higher / Max. Length 100m					

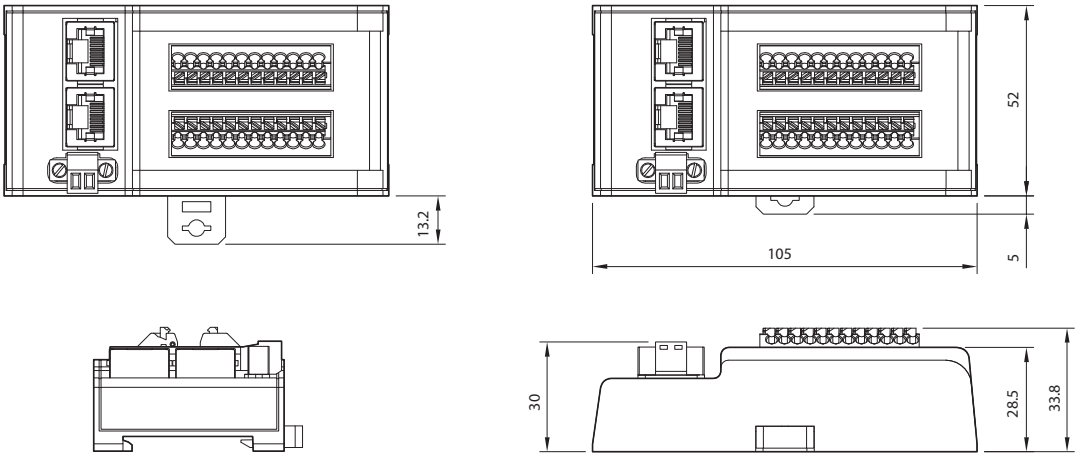
* □ : Connector Type

● Dimensions of Module [mm]

◆ Ezi-IO-EC-■16□-E / Ezi-IO-EC-I808□-E Series



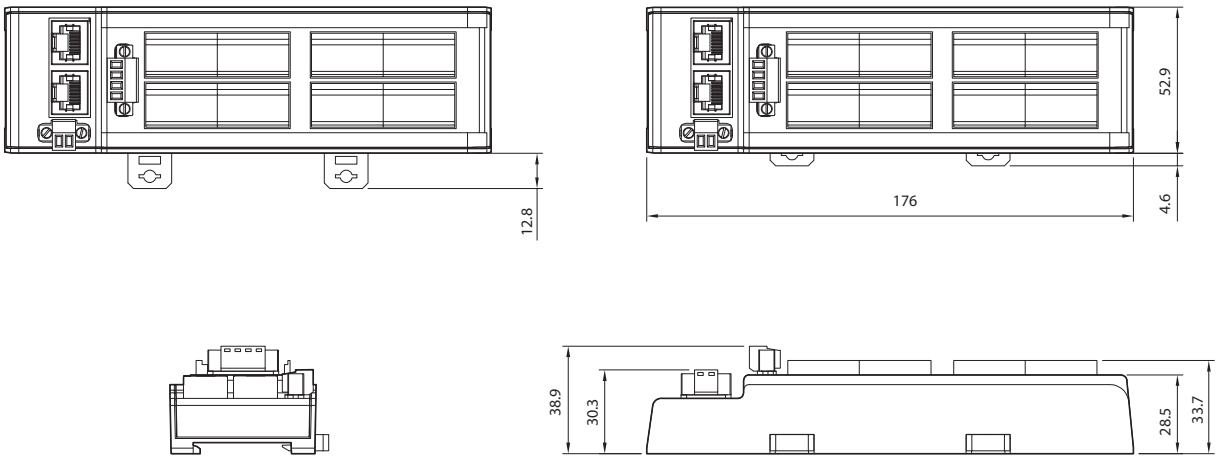
◆ Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series



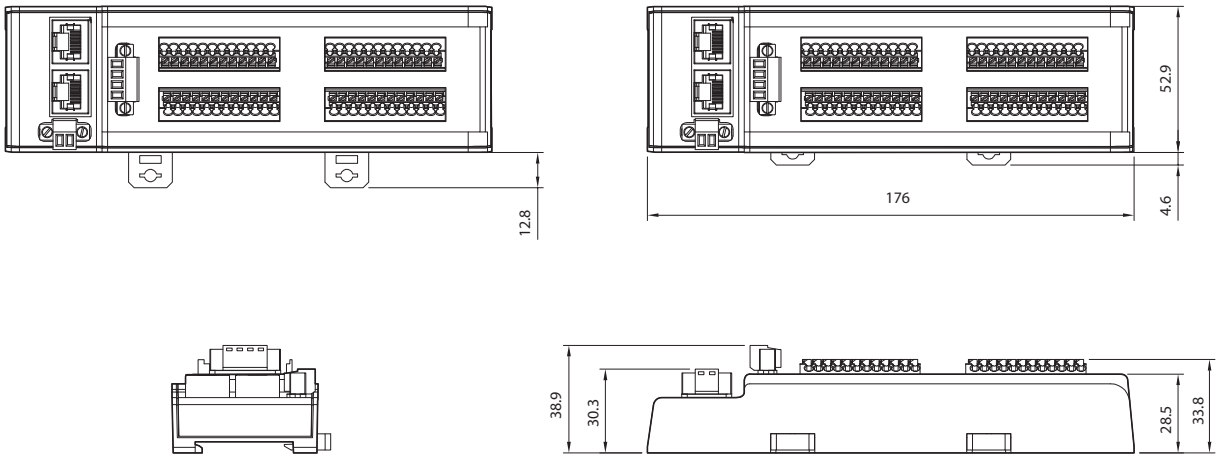
* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Dimensions of Module [mm]

◆ Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series

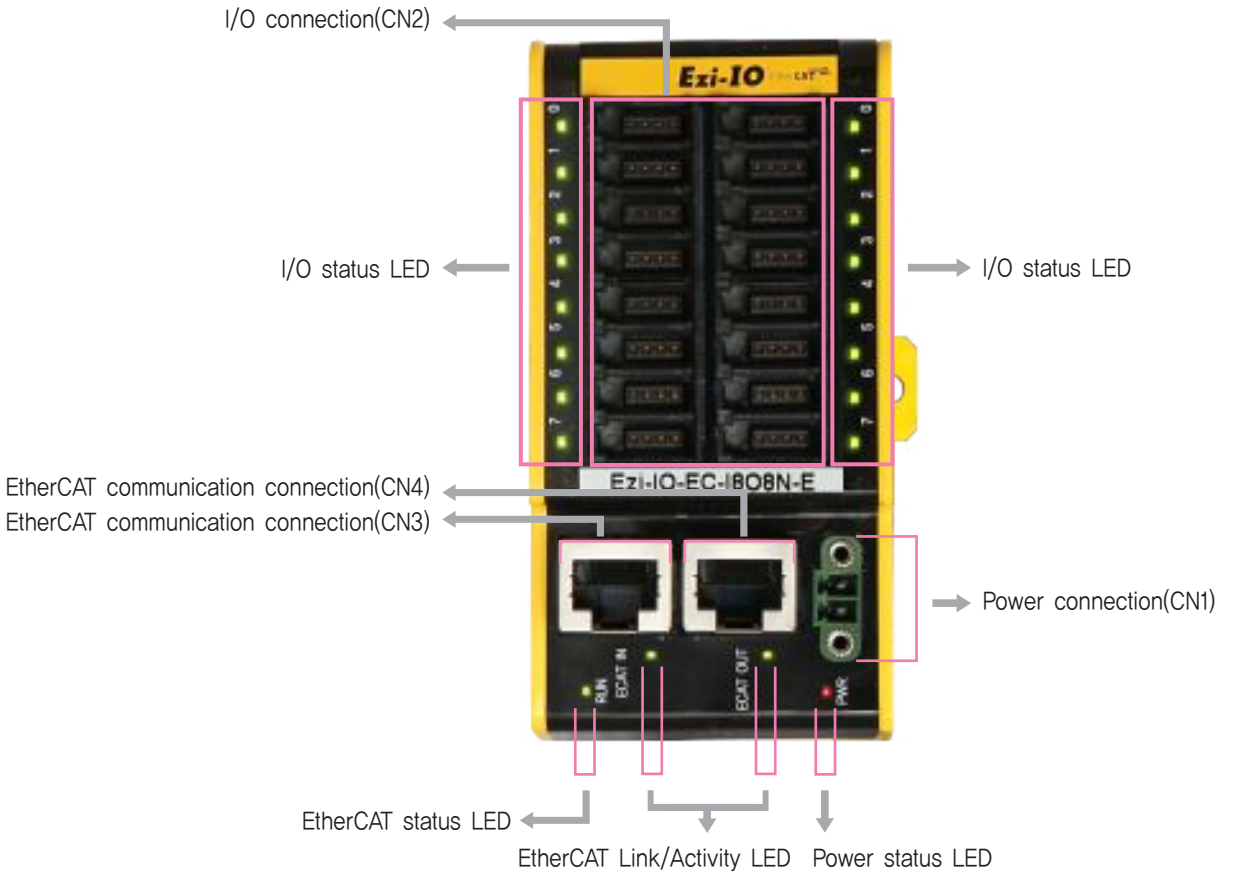


◆ Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series



* ■ : Input / Output Type
  □ : NPN / PNP Type
* Can be installed on 35mm DIN Rail.

● Settings and Operation [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I8O8□-E Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

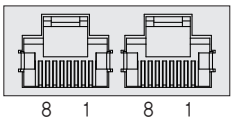
* Be sure to supply power which is suitable for the load of I/O and control.

3. I/O Connector(CN2)

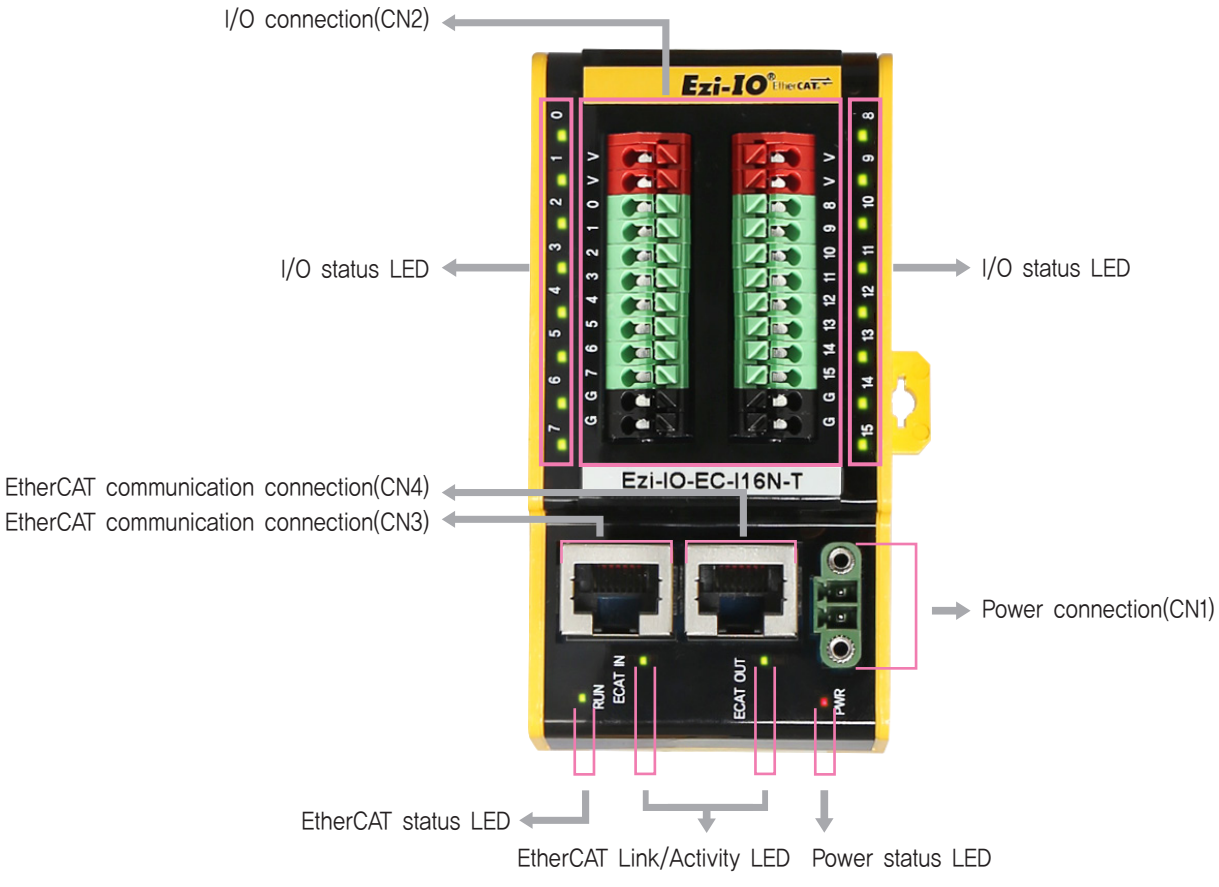
NO.	Function	I/O
1	24VDC	Output
2	NC	-----
3	GND	Output
4	SIGNAL	I/O

4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		



● Settings and Operation [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Power input indication	Turn on when power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~15 0~7/0~7	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

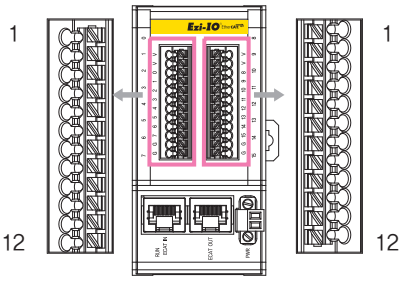
2. Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

* Be sure to supply power which is suitable for the load of I/O and control.

3. I/O Connector(CN2)

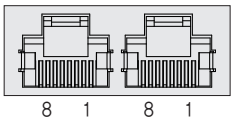
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output



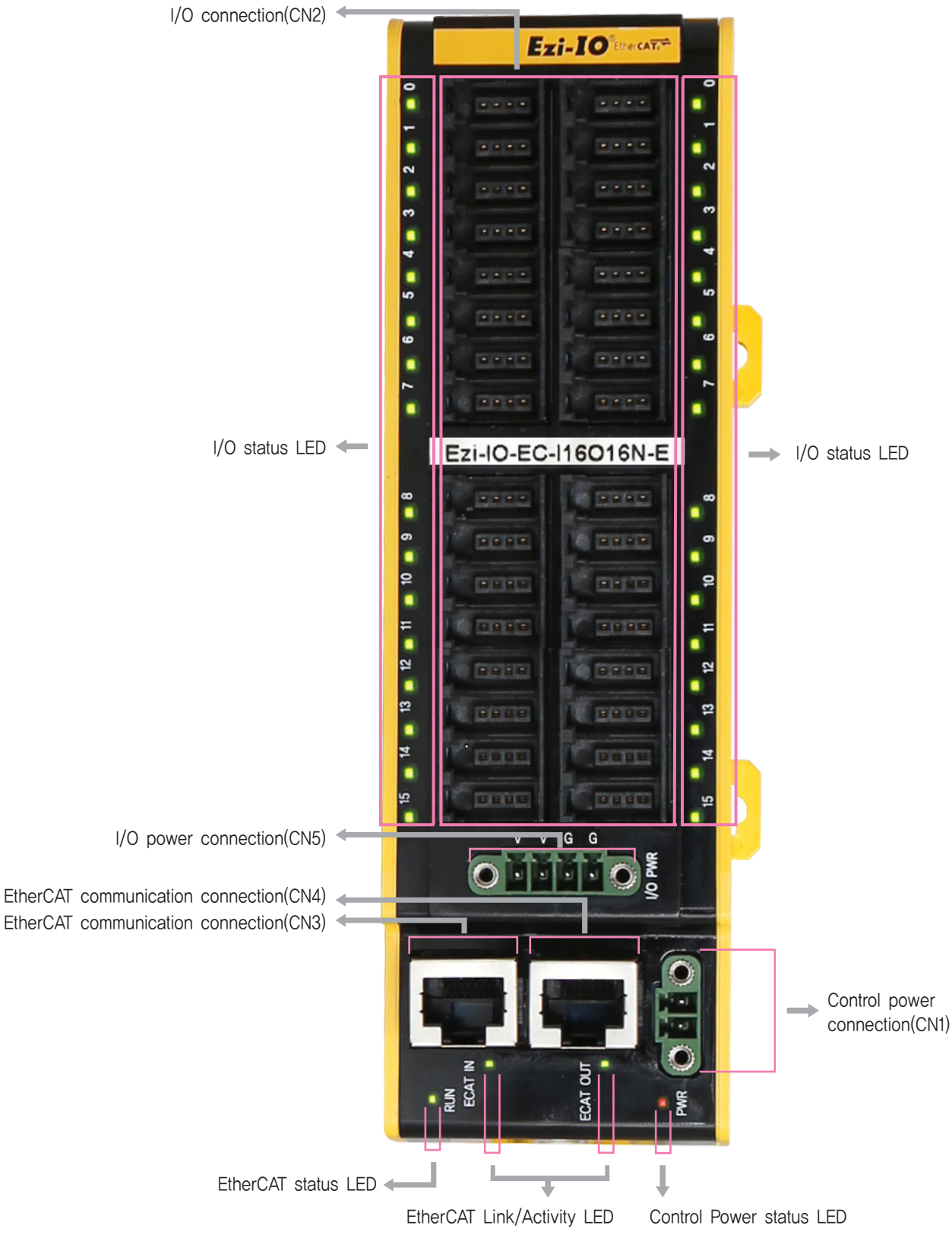
NO.	Function	I/O
1	24VDC	Output
2	24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	GND	Output
12	GND	Output

4. EtherCAT Communication Connector(CN3, CN4)

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



● Settings and Operation [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]



1. Status LED

Indication	Color	Function	ON/OFF Condition
PWR	Red	Control power input indication	Turn on when control power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~31 0~15 / 0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Control Power Connector(CN1)

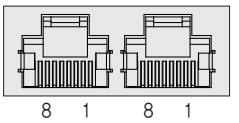
NO.	Function	I/O
1	24VDC	Input
2	GND	Input

3. I/O Connector(CN2)

NO.	Function	I/O
1	EXT_24VDC	Output
2	NC	----
3	EXT_GND	Output
4	SIGNAL	I/O

4. EtherCAT Communication Connector(CN3, CN4)

NO.	Function	NO.	Function
1	TD+	6	RD-
2	TD-	7	----
3	RD+	8	----
4	----	Connector Hood	F.GND
5	----		

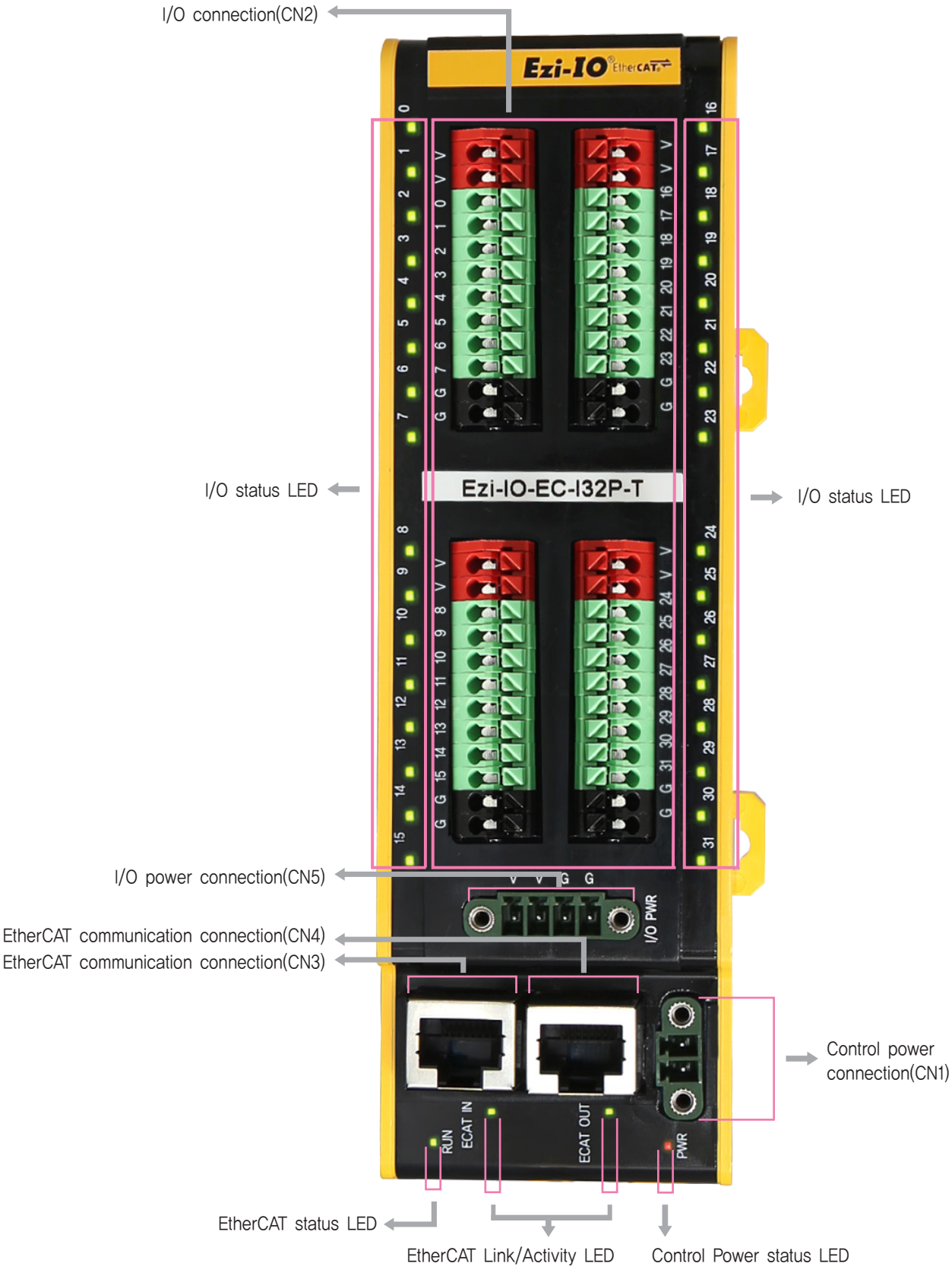


5. I/O Power Connector(CN5)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input

* Be sure to supply a power source which is suitable for the load of I/O.

● Settings and Operation [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16016□-T Series]



1. Status LED

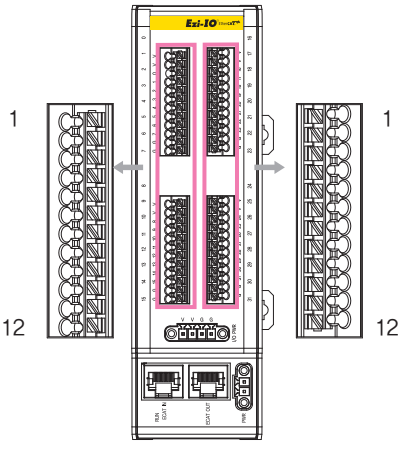
Indication	Color	Function	ON/OFF Condition
PWR	Red	Control power input indication	Turn on when control power is applied
RUN	Green	EtherCAT communication status indication	Turn on when EtherCAT Communication status is active
ECAT IN	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT IN link active
ECAT OUT	Green	EtherCAT Link/Activity LED indication	Flashing when EtherCAT OUT link active
0~31 0~15 / 0~15	Green	I/O status indication	Input Module : Turn on when input signal is ON Output Module : Turn on when output signal is ON

2. Control Power Connector(CN1)

NO.	Function	I/O
1	24VDC	Input
2	GND	Input

3. I/O Connector(CN2)

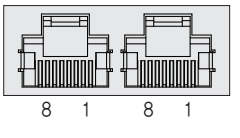
NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output



NO.	Function	I/O
1	EXT_24VDC	Output
2	EXT_24VDC	Output
3	SIGNAL	I/O
4	SIGNAL	I/O
5	SIGNAL	I/O
6	SIGNAL	I/O
7	SIGNAL	I/O
8	SIGNAL	I/O
9	SIGNAL	I/O
10	SIGNAL	I/O
11	EXT_GND	Output
12	EXT_GND	Output

4. EtherCAT Communication Connector(CN3, CN4)

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

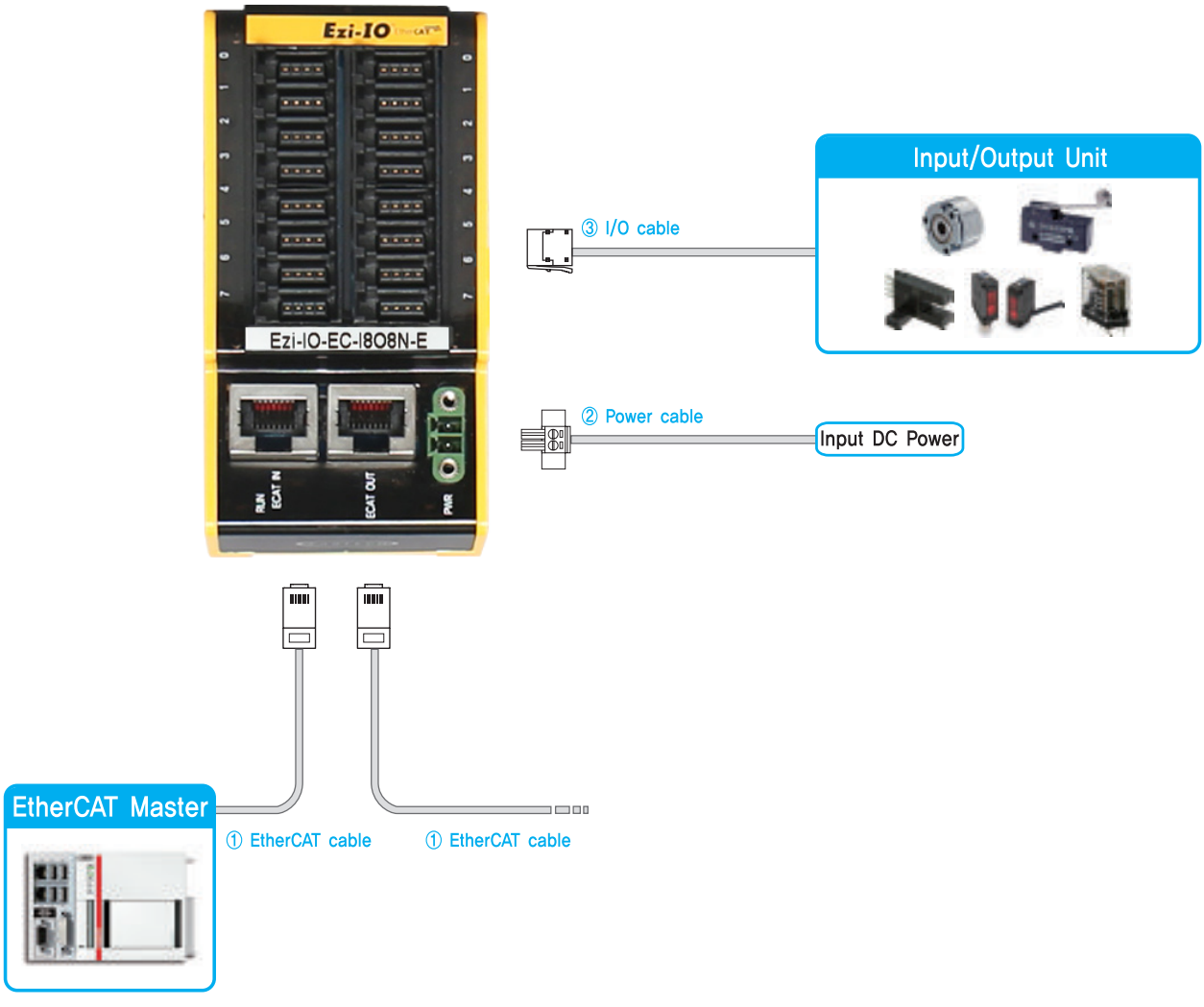


5. I/O Power Connector(CN5)

NO.	Function	I/O
1	EXT_24VDC	Input
2	EXT_24VDC	Input
3	EXT_GND	Input
4	EXT_GND	Input

* Be sure to supply a power source which is suitable for the load of I/O.

● System Configuration [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I808□-E Series]



Type	I/O Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

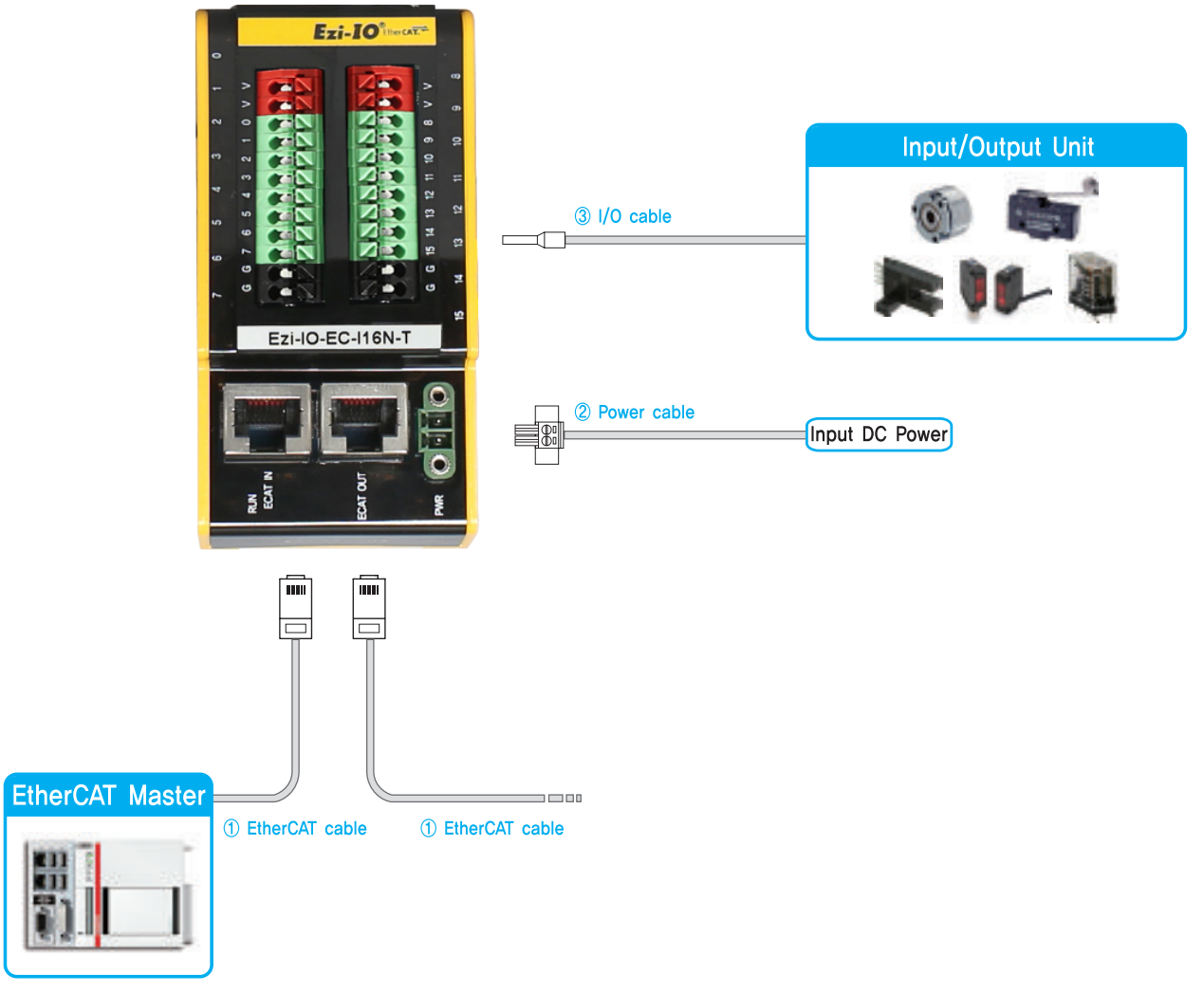
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I808□-T Series]



Type	I/O Cable	Power Cable	EtherCAT Cable
Length supplied	–	–	–
Max. Length	20m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

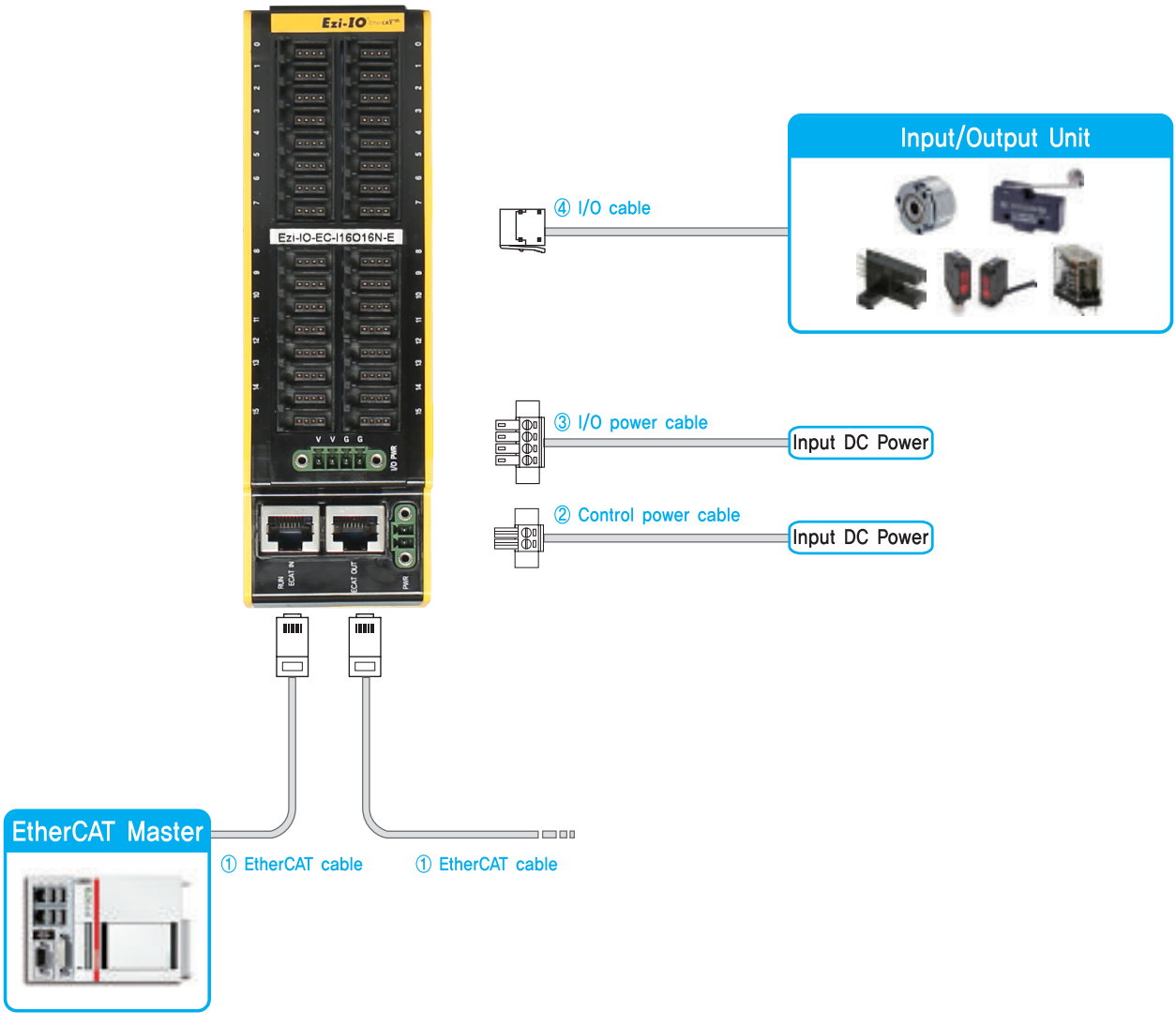
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Power(CN1)	Terminal Block	MC421-38102	DECA

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16016□-E Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	EtherCAT Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

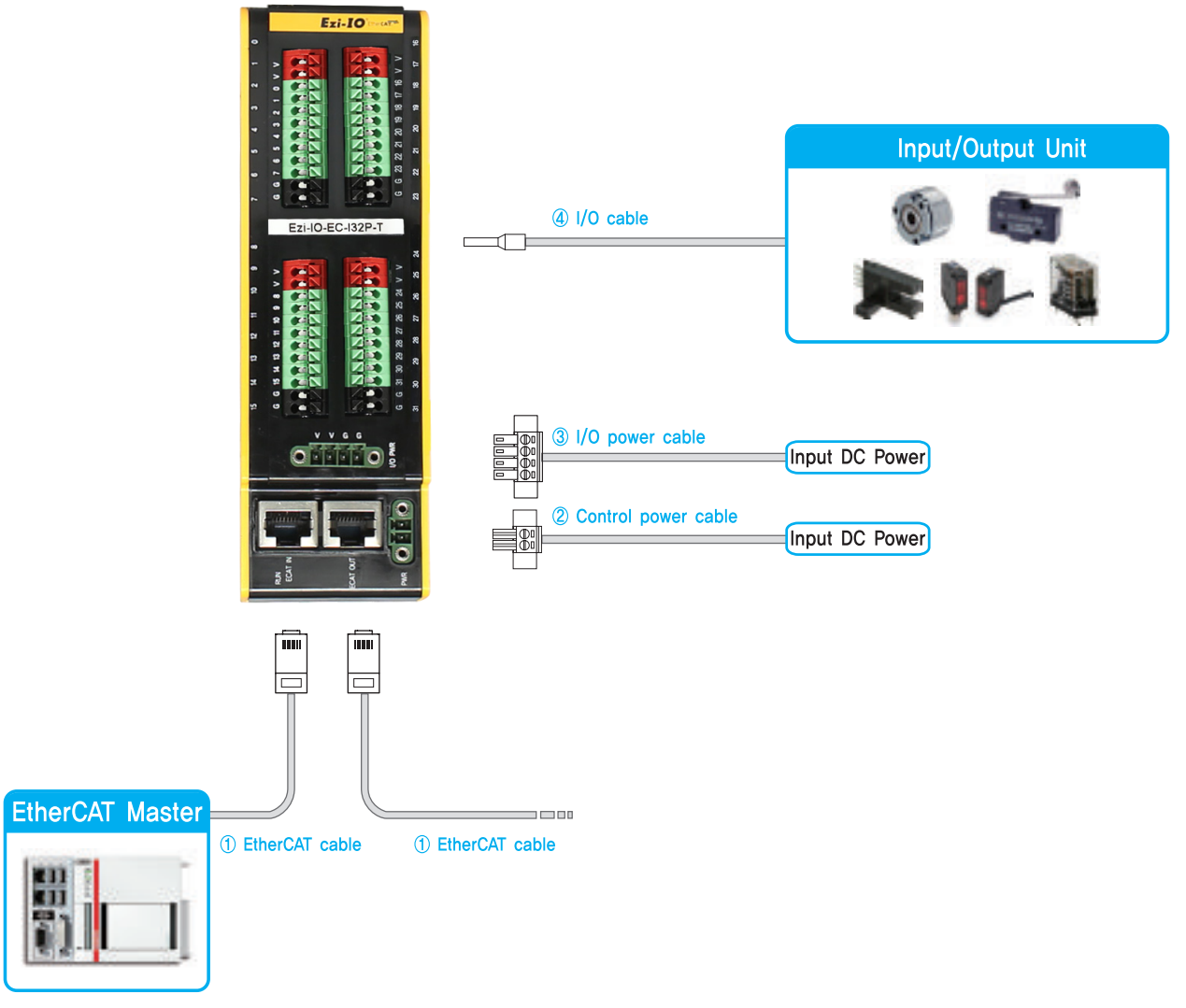
2. Connector Specifications

Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA
I/O(CN2)	e-CON Plug Connector	CNE-P04-YW	Autonics

※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● System Configuration [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series]



Type	I/O Cable	Control Power Cable	I/O Power Cable	EtherCAT Cable
Length supplied	–	–	–	–
Max. Length	20m	2m	2m	100m

1. Options

① EtherCAT Cable

STP (Shielded Twisted Pair) cable of category 5e or higher.

Item	Length [m]	Remark
CGNR-EC-□□□F	□□□	Normal cable

□ is for Cable Length. The unit is 1m and Max. 100m length.

2. Connector Specifications

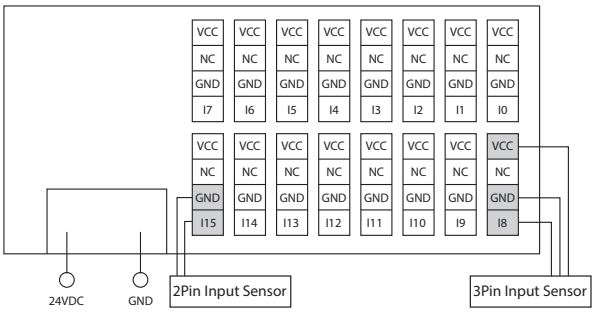
Connector specifications for cabling to module.

Purpose	Item	Part Number	Manufacturer
Control Power(CN1)	Terminal Block	MC421-38102	DECA
I/O Power(CN5)	Terminal Block	MC421-38104	DECA

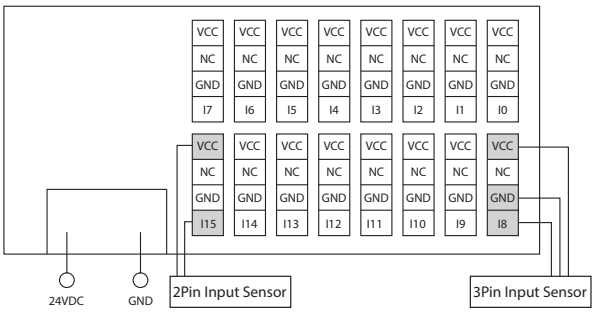
※ Above connector is the most suitable product for the module applied. Another equivalent connector can be used.

● External Wiring Diagram [Ezi-IO-EC-■16□-E / Ezi-IO-EC-I8O8□-E Series]

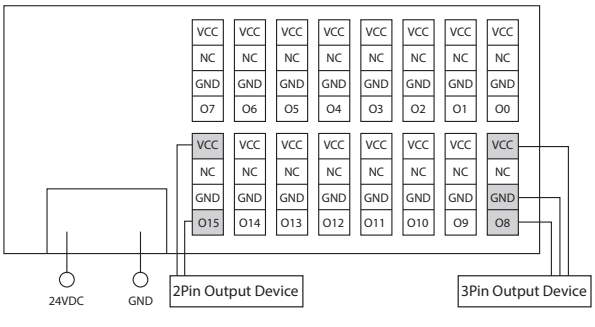
1 Ezi-IO-EC-I16N-E(NPN)



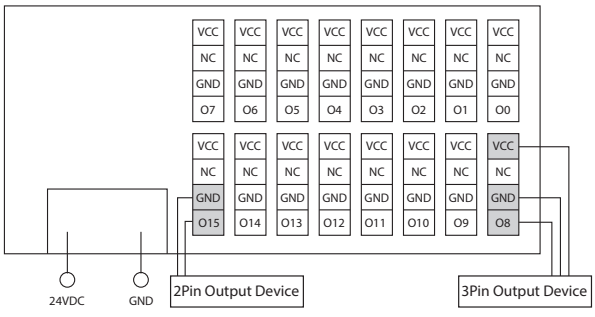
2 Ezi-IO-EC-I16P-E(PNP)



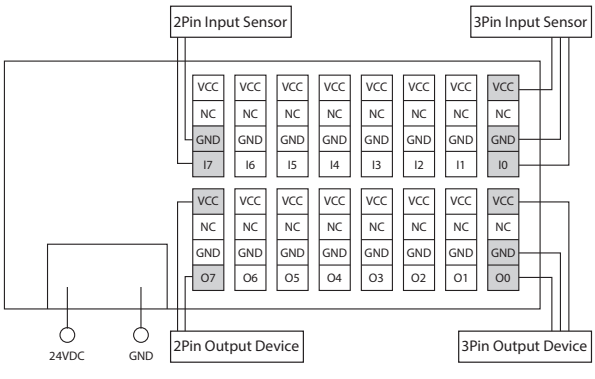
3 Ezi-IO-EC-O16N-E(NPN)



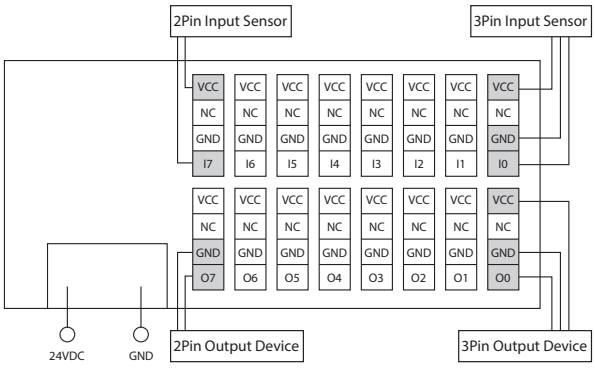
4 Ezi-IO-EC-O16P-E(PNP)



5 Ezi-IO-EC-I8O8N-E(NPN)



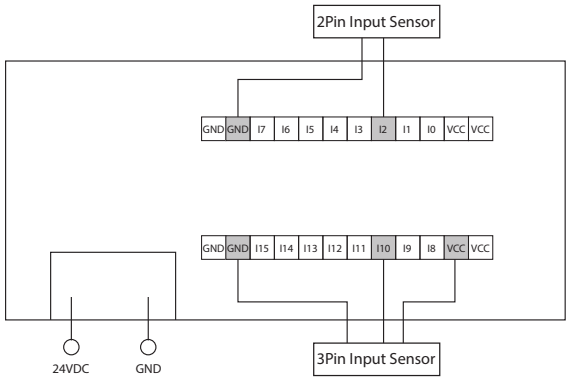
6 Ezi-IO-EC-I8O8P-E(PNP)



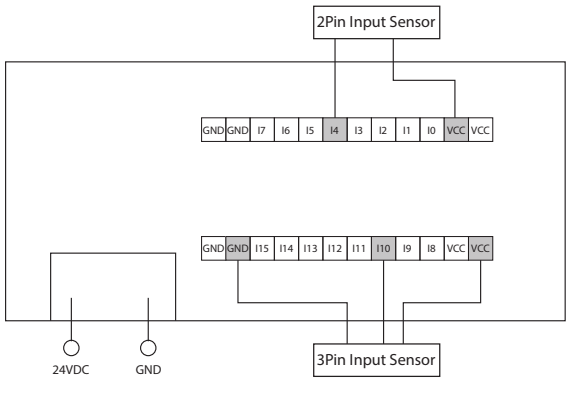
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

External Wiring Diagram [Ezi-IO-EC-■16□-T / Ezi-IO-EC-I8O8□-T Series]

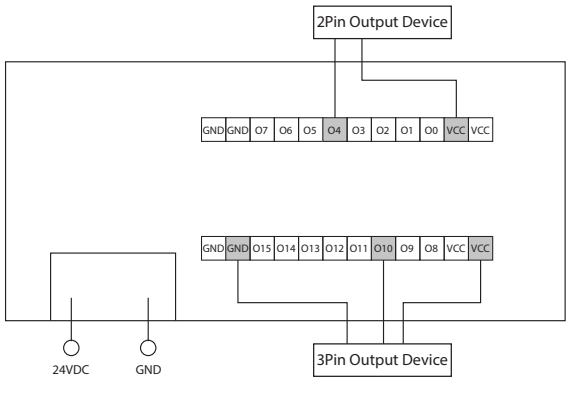
1 Ezi-IO-EC-I16N-T(NPN)



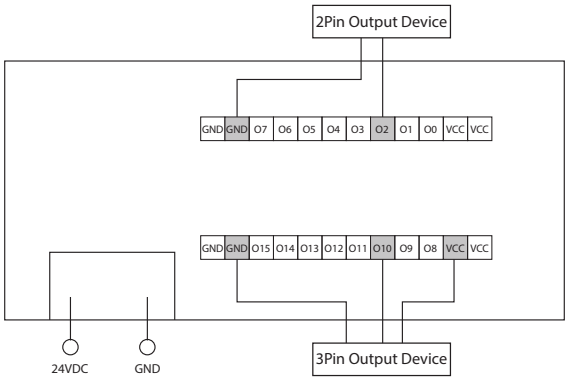
2 Ezi-IO-EC-I16P-T(PNP)



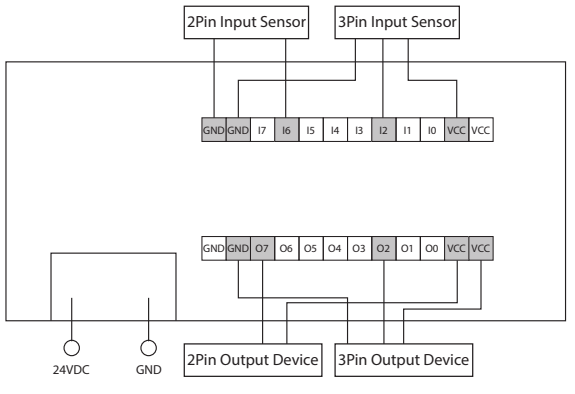
3 Ezi-IO-EC-O16N-T(NPN)



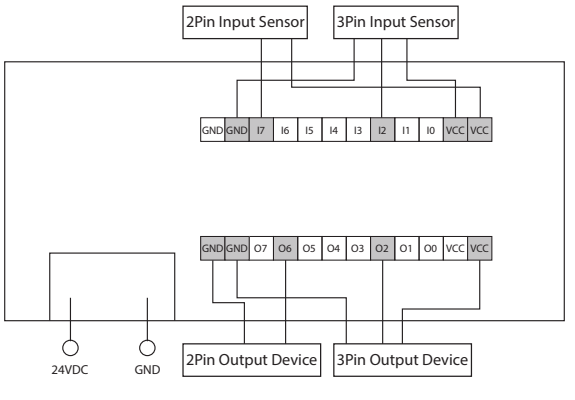
4 Ezi-IO-EC-O16P-T(PNP)



5 Ezi-IO-EC-I8O8N-T(NPN)



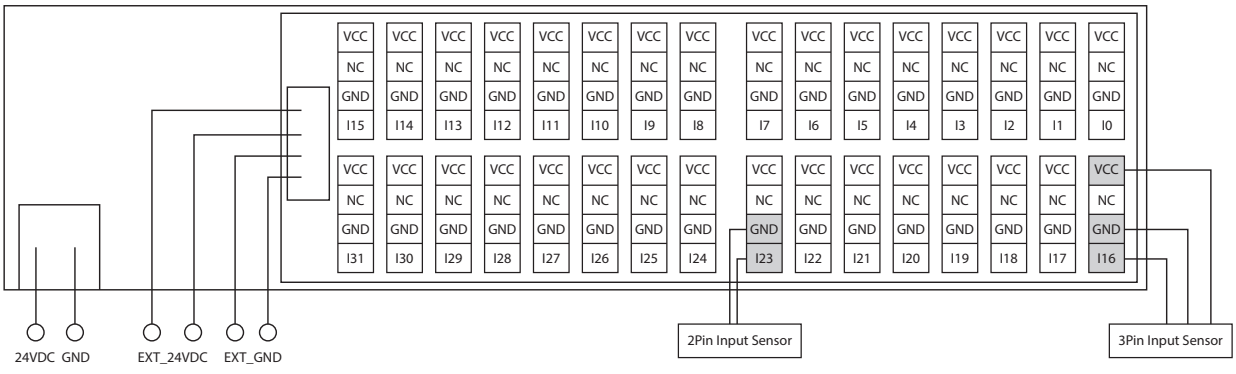
6 Ezi-IO-EC-I8O8P-T(PNP)



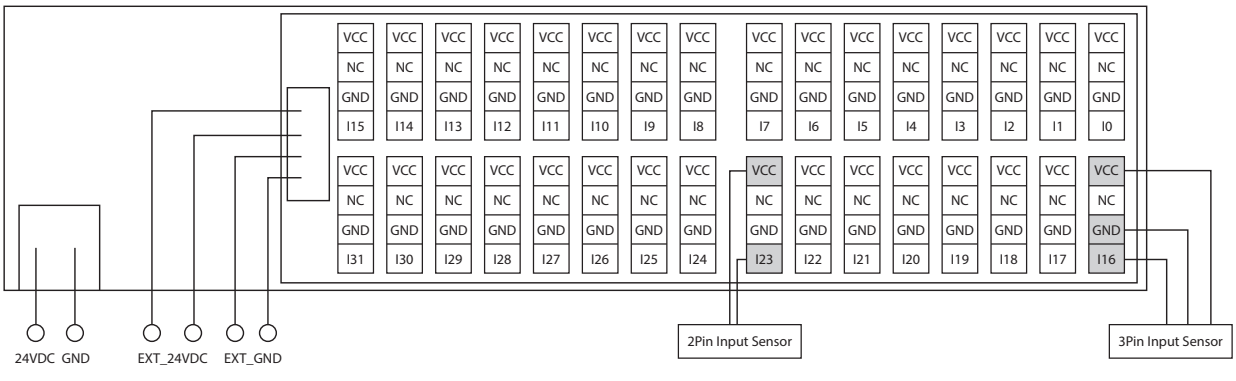
※ VCC is 24VDC output.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]

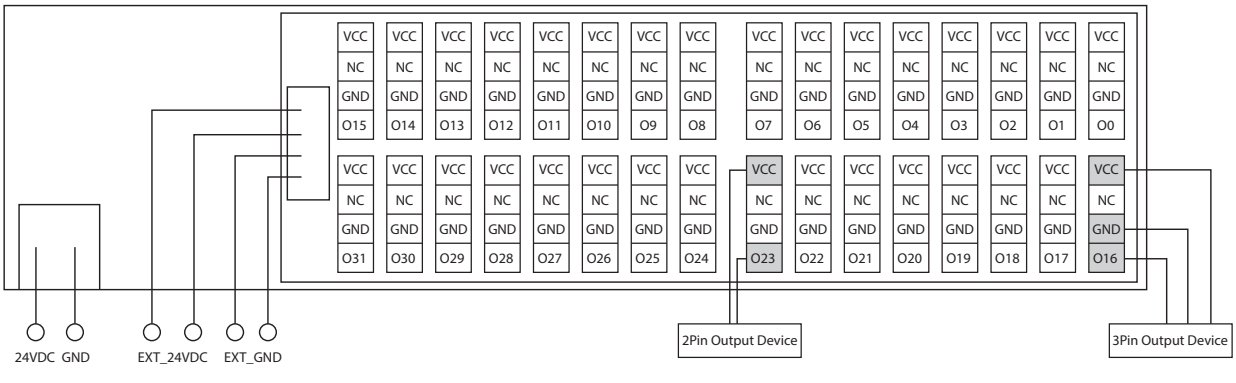
1 Ezi-IO-EC-I32N-E(NPN)



2 Ezi-IO-EC-I32P-E(PNP)



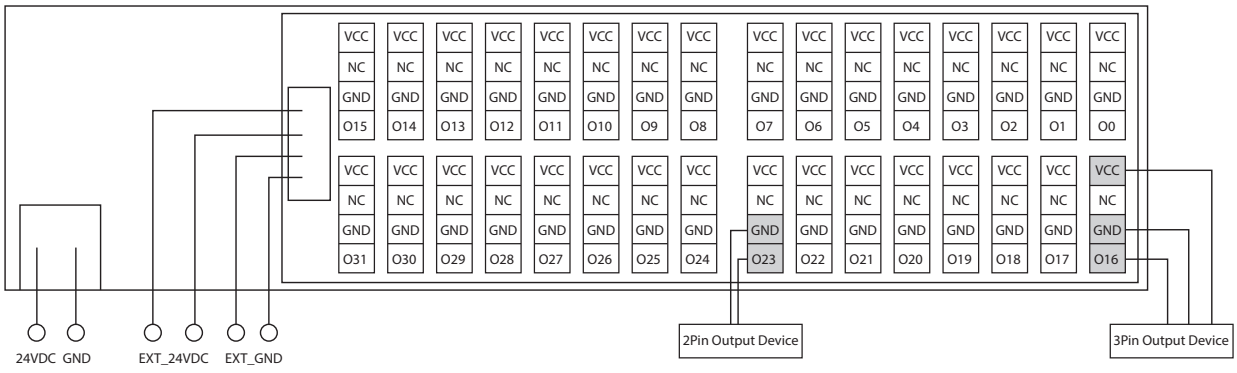
3 Ezi-IO-EC-O32N-E(NPN)



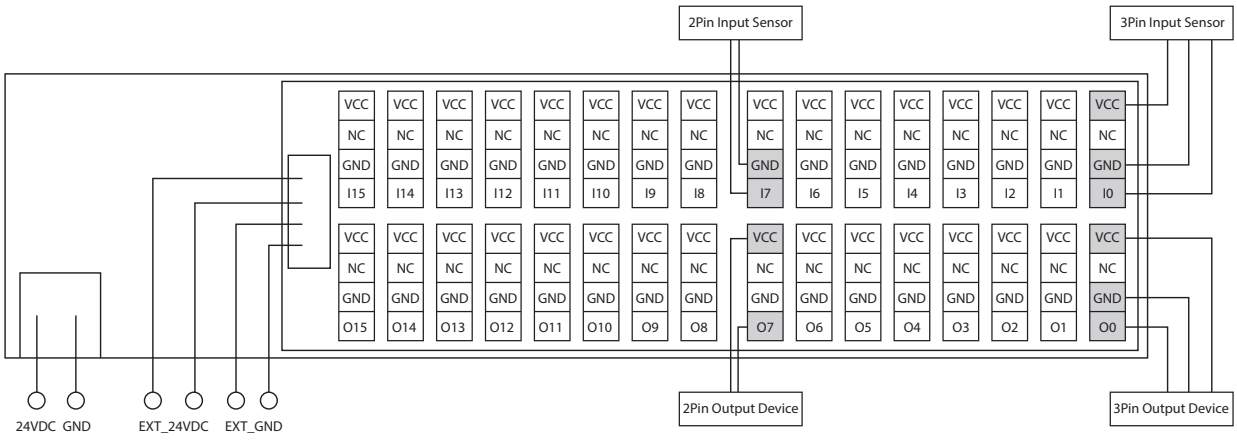
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-E / Ezi-IO-EC-I16O16□-E Series]

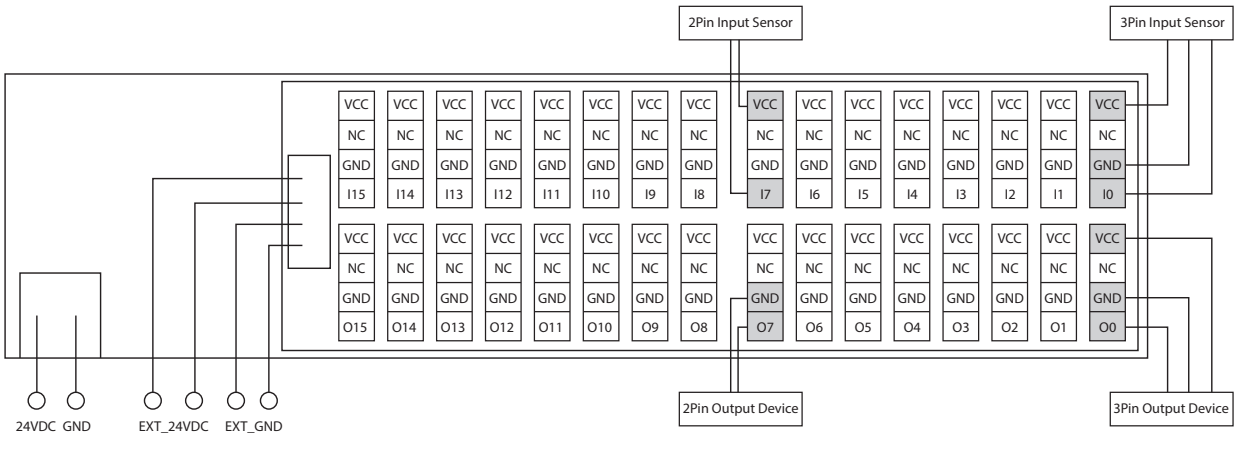
4 Ezi-IO-EC-O32P-E(PNP)



5 Ezi-IO-EC-I16O16N-E(NPN)



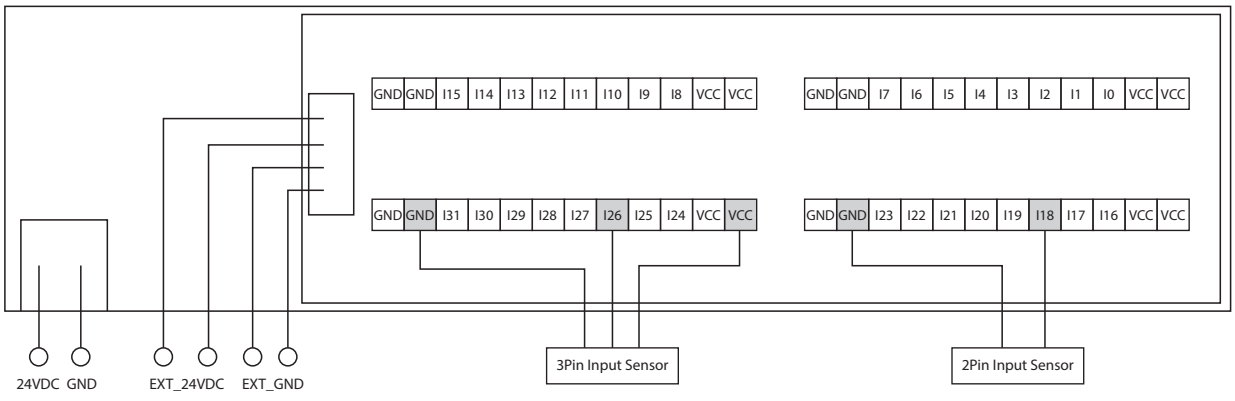
6 Ezi-IO-EC-I16O16P-E(PNP)



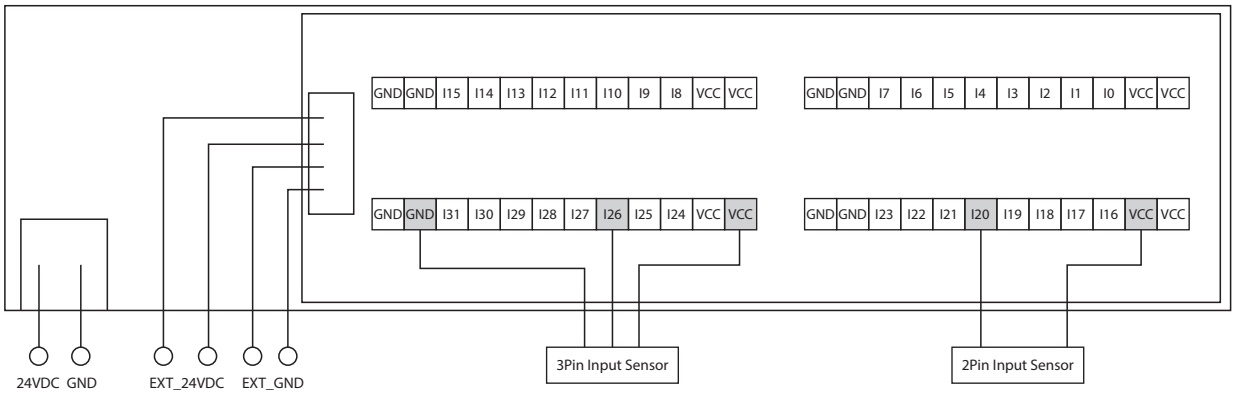
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series]

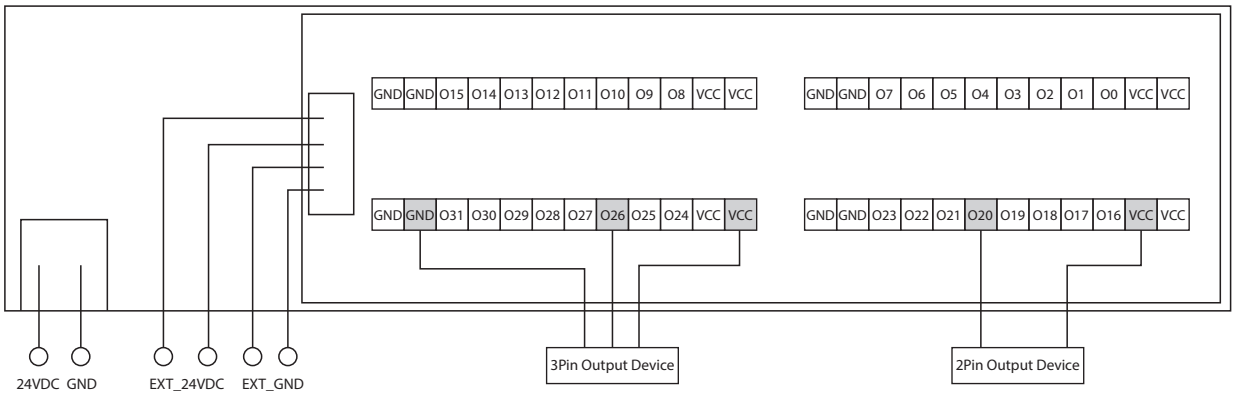
1 Ezi-IO-EC-I32N-T(NPN)



2 Ezi-IO-EC-I32P-T(PNP)



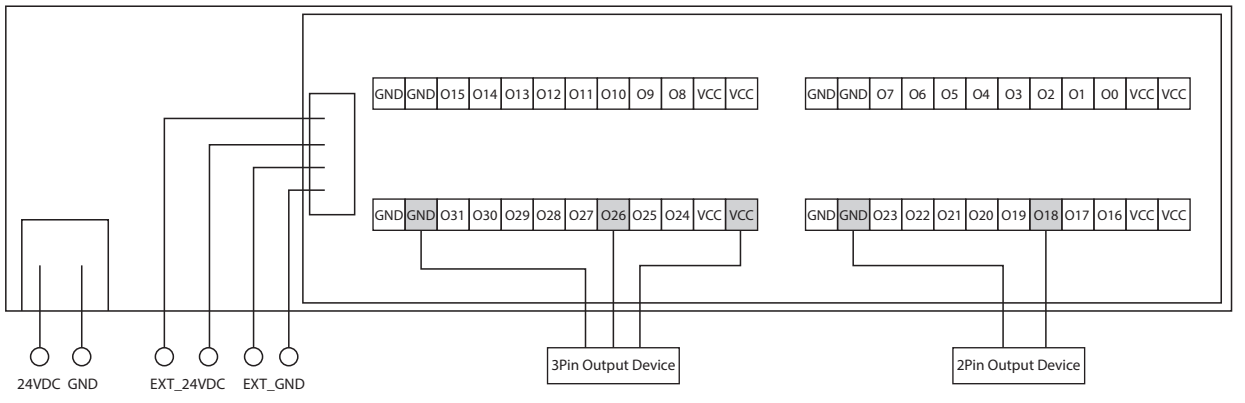
3 Ezi-IO-EC-O32N-T(NPN)



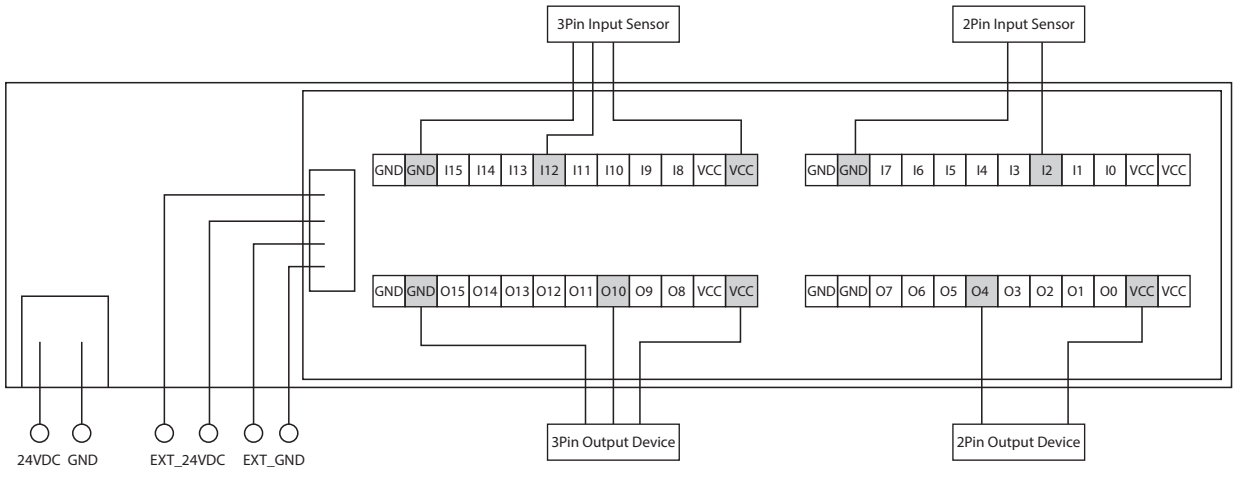
※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

● External Wiring Diagram [Ezi-IO-EC-■32□-T / Ezi-IO-EC-I16O16□-T Series]

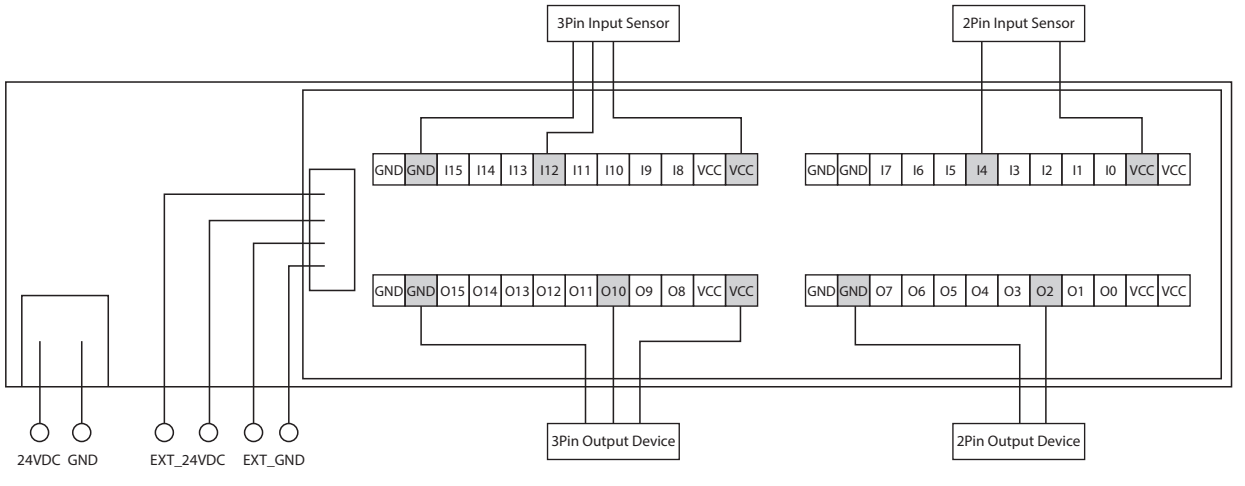
4 Ezi-IO-EC-O32P-T(PNP)



5 Ezi-IO-EC-I16O16N-T(NPN)



6 Ezi-IO-EC-I16O16P-T(PNP)

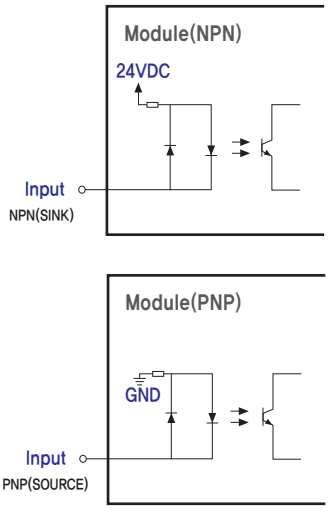


※ VCC is supplied from I/O Power Connector(CN5).
※ Be sure to supply power to I/O Power Connector(CN5) which is suitable for the load of I/O.
※ ex) · 2Pin Input Sensor : Limit Sensor, etc.
· 3Pin Input Sensor : Position Sensor, Photo Sensor, Proximity Sensor, etc.
· 2Pin Output Device : Brake, Solenoid, Photocoupler, etc.

Control Signal Input/Output Description

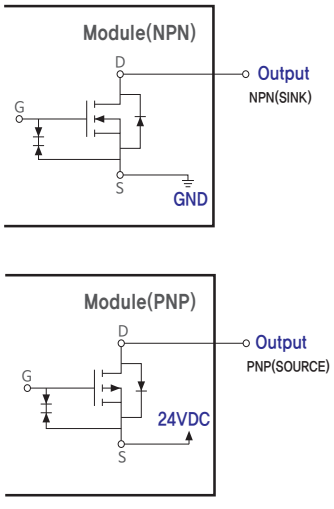
1 Input signal

The inputs of the Ezi-IO EtherCAT are all photocouplers. The signal shows the status of internal photocouplers [ON: conduction], [OFF: Non-conduction], not displaying the voltage levels of the signal.
Depending on the output method of peripheral devices, there are NPN(SINK) type or PNP(SOURCE) type module products. The input circuit for this is based on 24V and the input current is 15mA maximum for each channel.



2 Output signal

The outputs of the Ezi-IO EtherCAT are all transistors. Depending on the input method of peripheral devices, there are NPN(SINK) type or PNP(SOURCE) type module products. The output current is 200mA maximum per channel.



Remark (NPN / PNP / SINK / SOURCE)

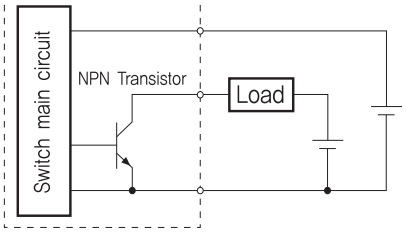


Fig1. NPN Out type interface

Fig1. shows example of NPN out interface.
When Transistor is on, Load current is flew into inside of NPN out which we call it as SINK type or NPN open collector type. Please connect (+) voltage into the load which connects output.

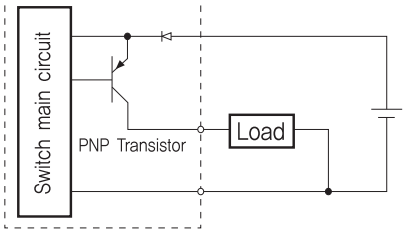


Fig2. PNP Out type interface

Fig2. shows example of PNP out interface.
When Transistor is on, Load current is flew out to outside load. We call it as SOURCE type or PNP open collector type. Please connect (-) voltage into other side of load which connects output.

OPTION Brake

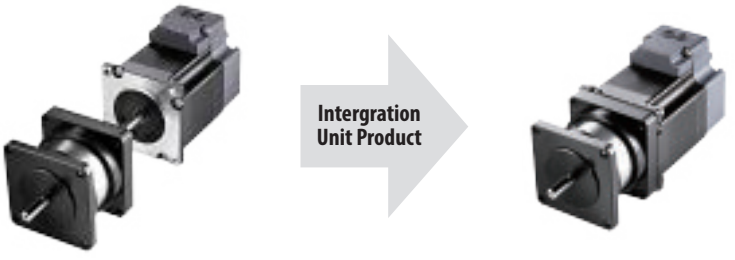
Overall Table of ***Brake***

Name of Product	Motor Brake Size			
	42mm	56mm	60mm	86mm
Ezi-SERVO II EtherCAT	■	■	■	■
Ezi-SERVO II EtherCAT MINI	■	■	■	
Ezi-SERVO II EtherCAT 4X	■	■	■	
Ezi-SERVO II EtherCAT ALL	■	■	■	■
Ezi-STEP II EtherCAT	■	■	■	
Ezi-STEP II EtherCAT MINI	■	■	■	
Ezi-STEP II EtherCAT 4X	■	■	■	

Features

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.



Advantage

◆ 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 cut-off, 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.

◆ Automatic Braking during power cutoff or blackout

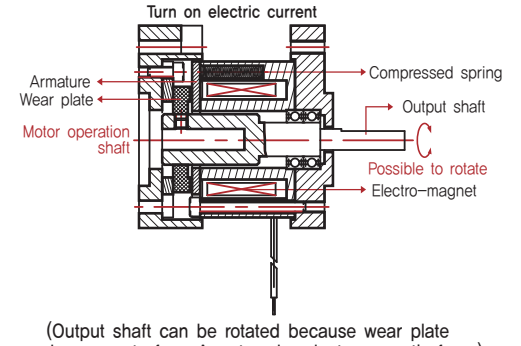
Ezi-SERVO BK series, Unit product, integrated between high performance of non-excitation electromagnetic brake and step motor that enables immediate braking to keep holding point and prevent falling under power cut off or blackout during operation so customer can be flexible in responding to sudden situation.

◆ 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.

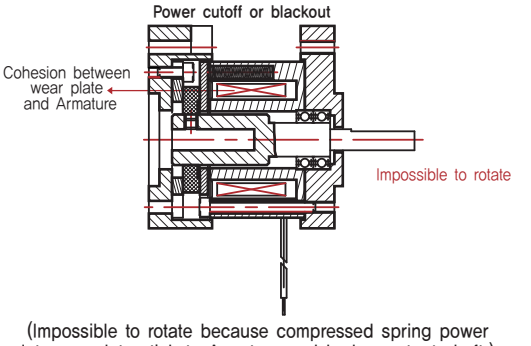
◆ Rapid Brake Timing

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.)

● Allowable Overhung Load and Allowable Thrust Load of BK series

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.

● Part Numbering

◆ In Case of Ezi-SERVO series

Unit Part Number	Motor Model Number	Drive Model Number
Ezi-SERVO-□-□-□-BK	EzM-□-□-BK	Not Changed

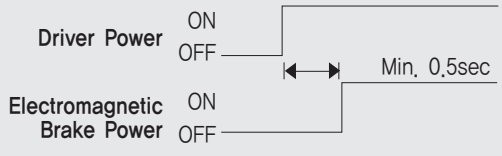
※ It can be added BK at the end of model name of each series. (The name of drive model is not changed.)

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

● Electromagnetic 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.

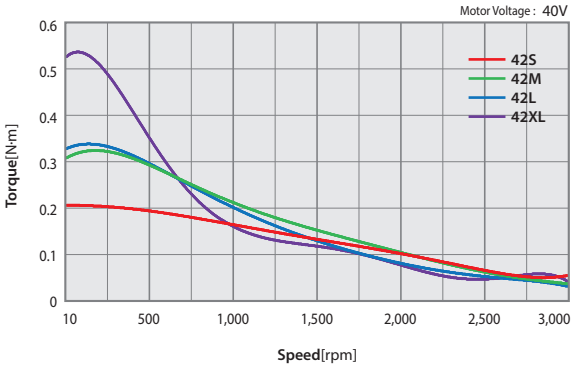
● Specifications of Brake [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	

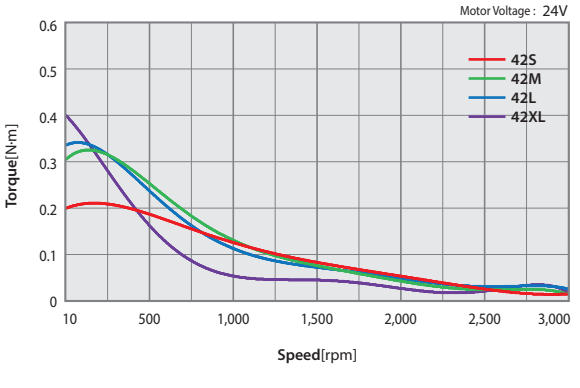
Model	Unit	42			
		42S	42M	42L	42XL
Electromagnetic Brake	Form	Non-Excitation Type			
Input Voltage	V	24VDC			
Rated Current	A	0.2			
Power Consumption	W	5			
Friction Torque	N·m	0.2			

※ 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 II EtherCAT	Ezi-STEP II EtherCAT



Applicable Model	
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	

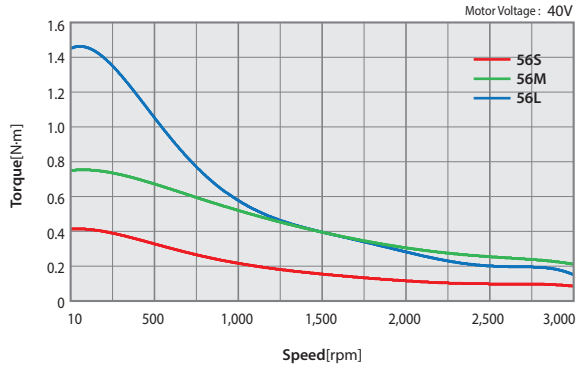
● Specifications of Brake [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	

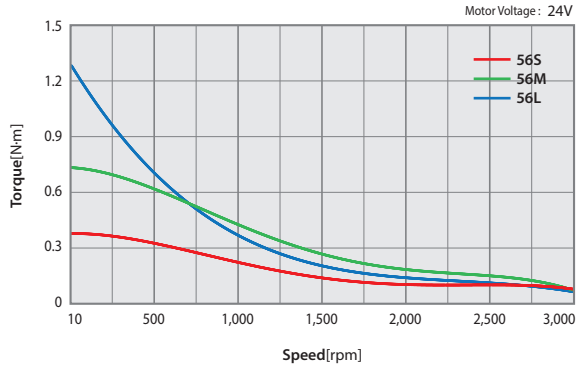
Model	Unit	56		
		56S	56M	56L
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC ±10%		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ 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 II EtherCAT	Ezi-STEP II EtherCAT



Applicable Model	
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	

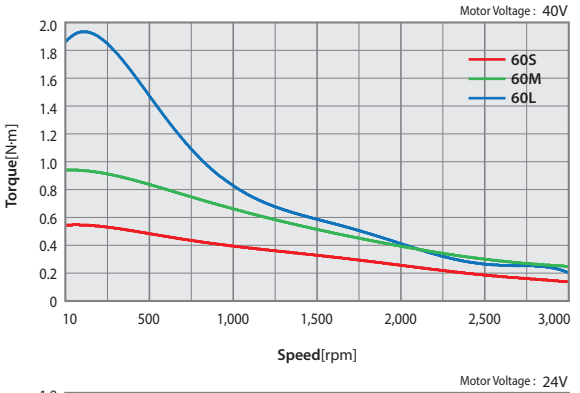
● Specifications of Brake [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	

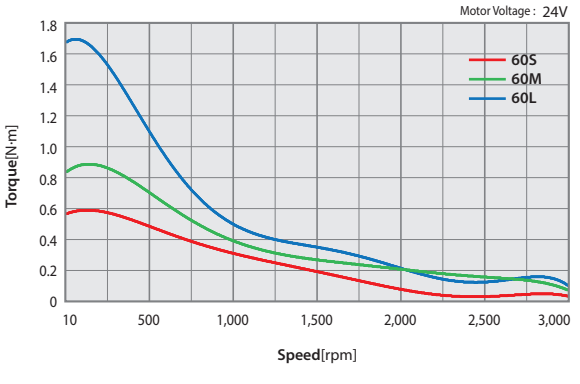
Model	Unit	60		
		60S	60M	60L
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC		
Rated Current	A	0.27		
Power Consumption	W	6.6		
Friction Torque	N·m	0.7		

※ 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 II EtherCAT	Ezi-STEP II EtherCAT



Applicable Model	
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X
Ezi-SERVO II EtherCAT ALL	Ezi-STEP II EtherCAT MINI
Ezi-STEP II EtherCAT 4X	

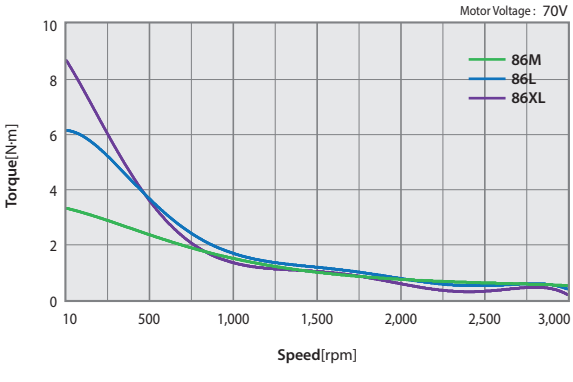
● Specifications of Brake [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL		

Model	Unit	86		
		86M	86L	86XL
Electromagnetic Brake	Form	Non-Excitation Type		
Input Voltage	V	24VDC		
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.

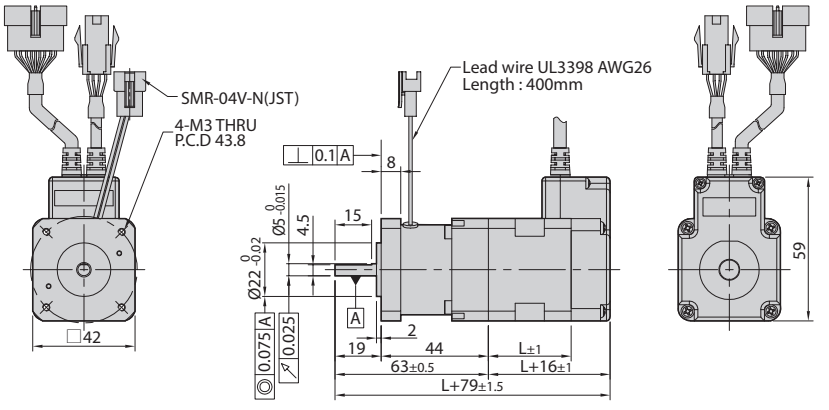
● Torque Charcteristics of Motor with Brake [86mm]



Applicable Model	
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL

● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

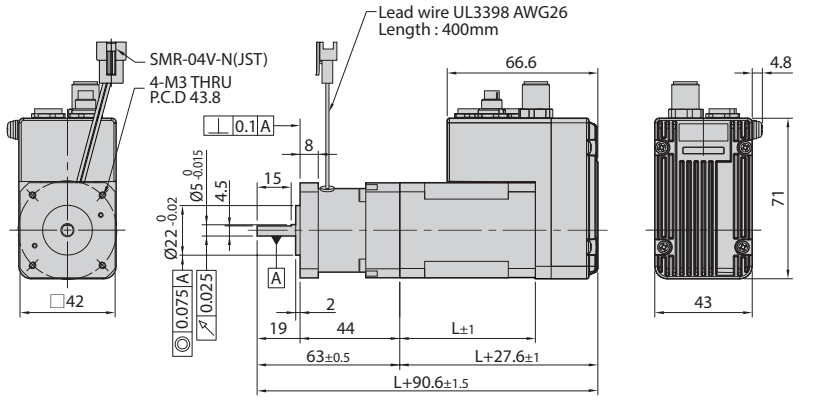


42mm

Model Name	Length(L)	Weight(kg)
EzM2-42S	34	0.55
EzM2-42M	40	0.62
EzM2-42L	48	0.69
EzM2-42XL	60	0.82

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

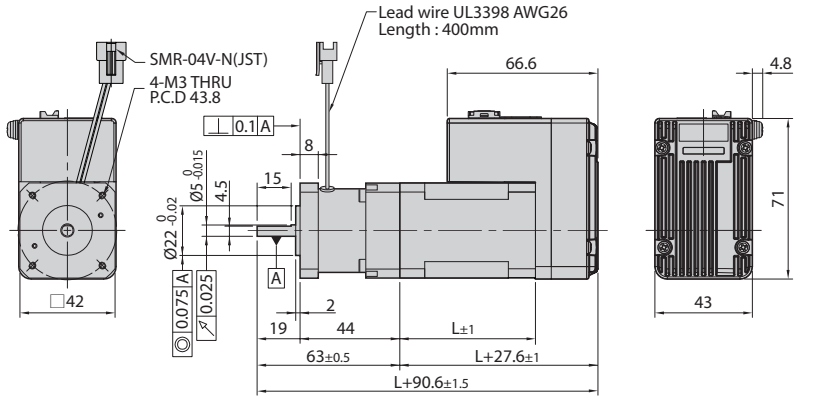
◆ M Connector Type



42mm

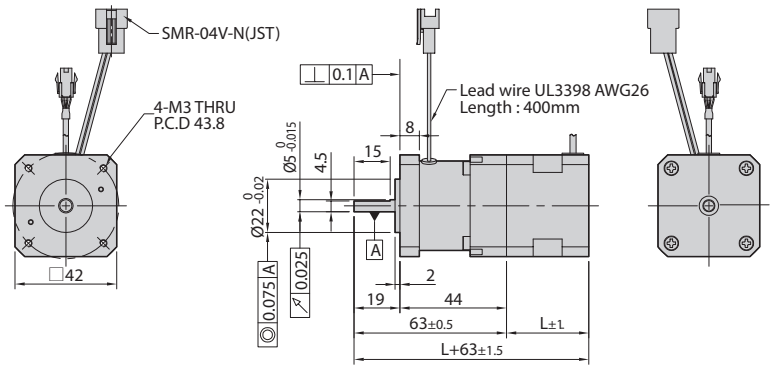
Model Name	Length(L)	Weight(kg)
42M	40	0.57
42L	48	0.64
42XL	60	0.77

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [42mm]

Applicable Model			
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	

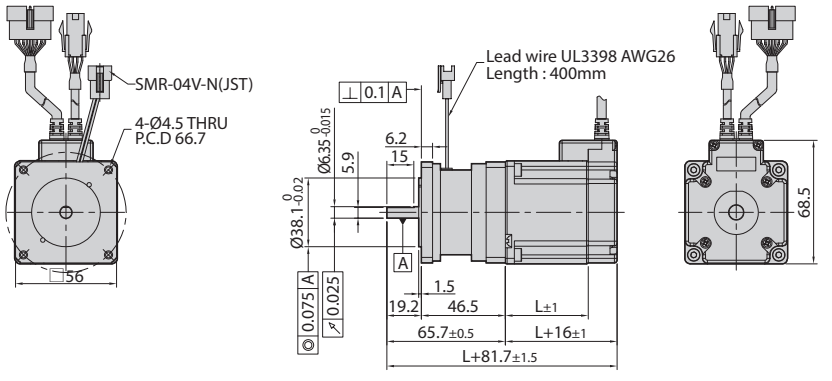


42mm

Model Name	Length(L)	Weight(kg)
BM-42S	34	0.50
BM-42M	40	0.56
BM-42L	48	0.63
BM-42XL	60	0.77

● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

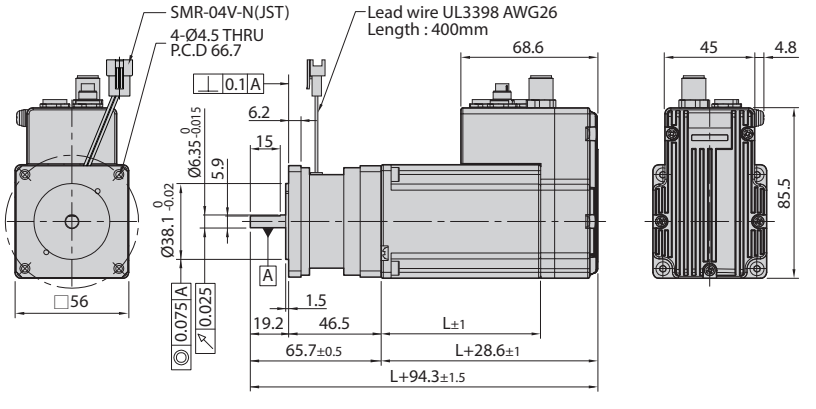


56mm

Model Name	Length(L)	Weight(kg)
EzM2-56S	46	1.03
EzM2-56M	55	1.20
EzM2-56L	80	1.65

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

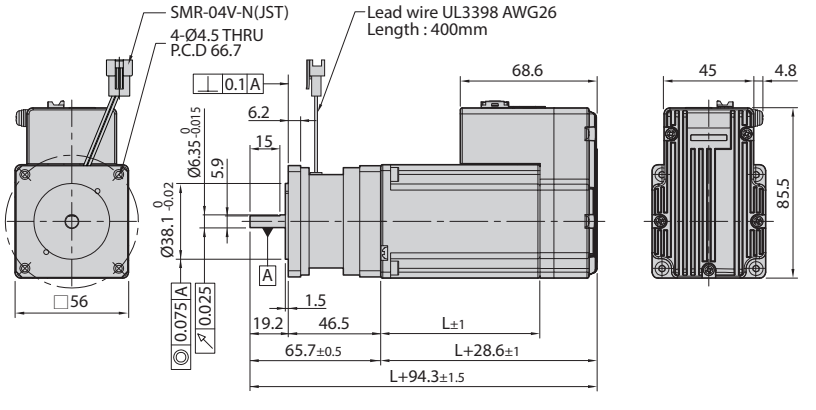
◆ M Connector Type



56mm

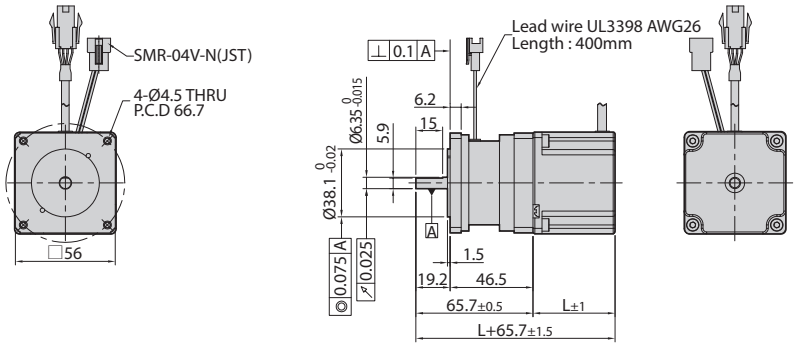
Model Name	Length(L)	Weight(kg)
56S	46	1.03
56M	55	1.19
56L	80	1.63

◆ RJ45 Connector Type



● Dimensions of Motor with Brake [56mm]

Applicable Model			
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	

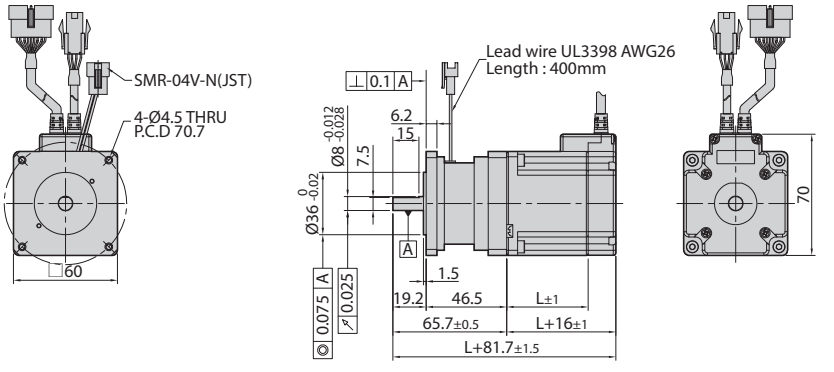


56mm

Model Name	Length(L)	Weight(kg)
BM-56S	46	0.97
BM-56M	55	1.15
BM-56L	80	1.58

● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

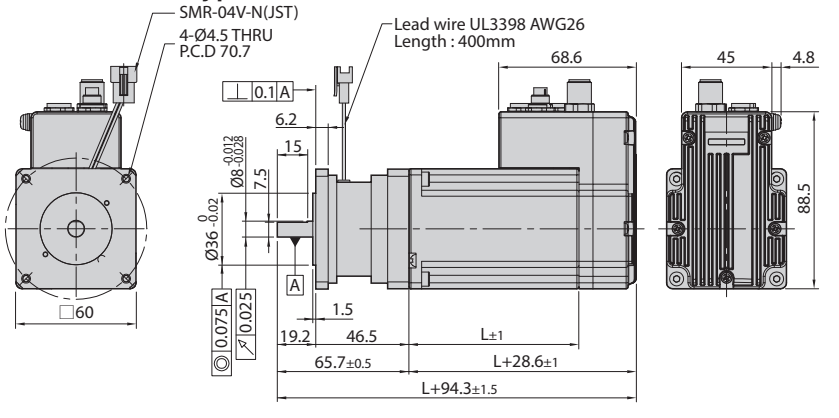


60mm

Model Name	Length(L)	Weight(kg)
EzM2-60S	47	1.11
EzM2-60M	56	1.30
EzM2-60L	85	1.86

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

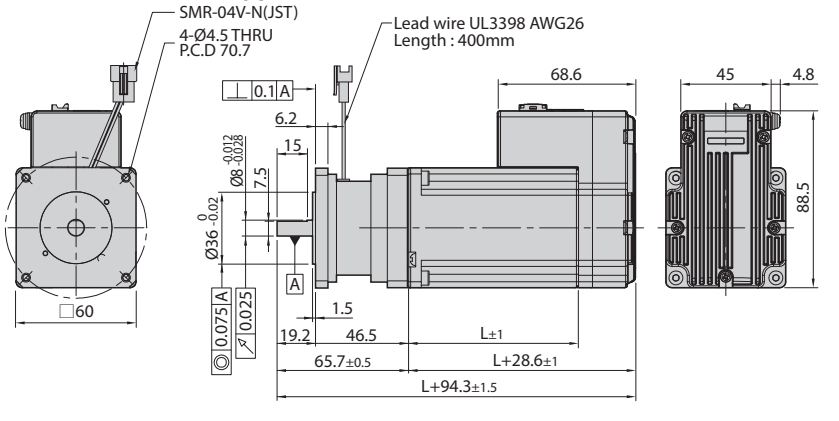
◆ M Connector Type



60mm

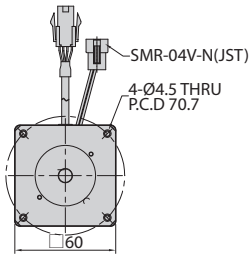
Model Name	Length(L)	Weight(kg)
60S	47	1.15
60M	56	1.35
60L	85	1.96

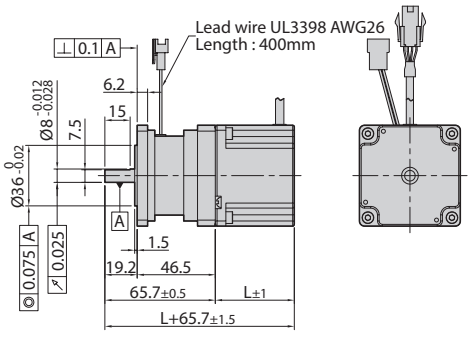
◆ RJ45 Connector Type



● Dimensions of Motor with Brake [60mm]

Applicable Model			
Ezi-STEP II EtherCAT	Ezi-STEP II EtherCAT MINI	Ezi-STEP II EtherCAT 4X	



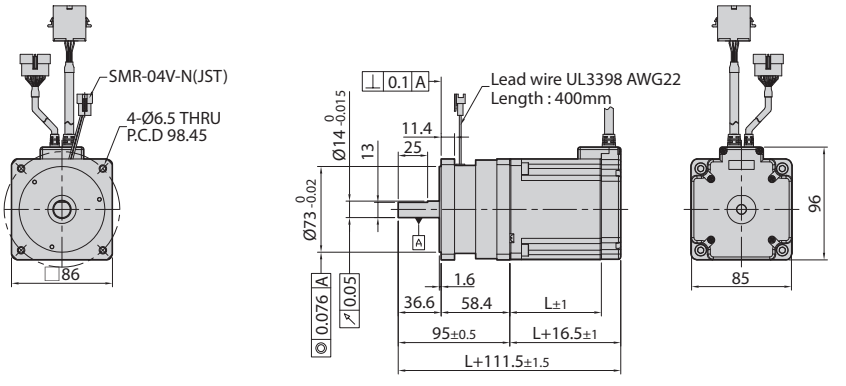


60mm

Model Name	Length(L)	Weight(kg)
BM-60S	47	1.06
BM-60M	56	1.23
BM-60L	85	1.79

● Dimensions of Motor with Brake [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT			

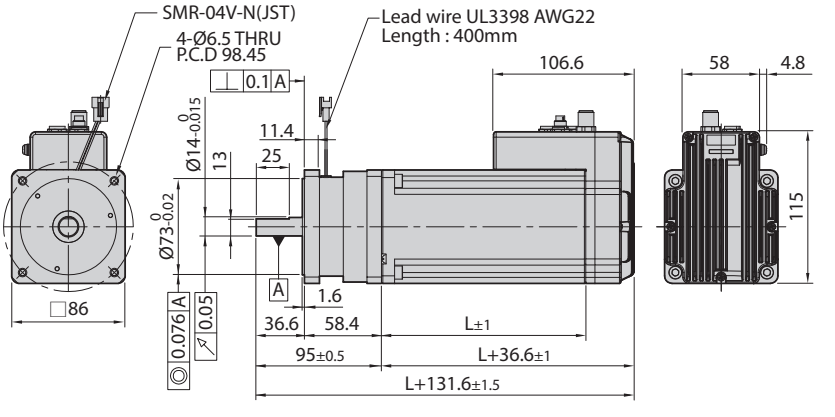


86mm

Model Name	Length(L)	Weight(kg)
EzM2-86M	78	3.66
EzM2-86L	117	5.24
EzM2-86XL	155	6.75

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

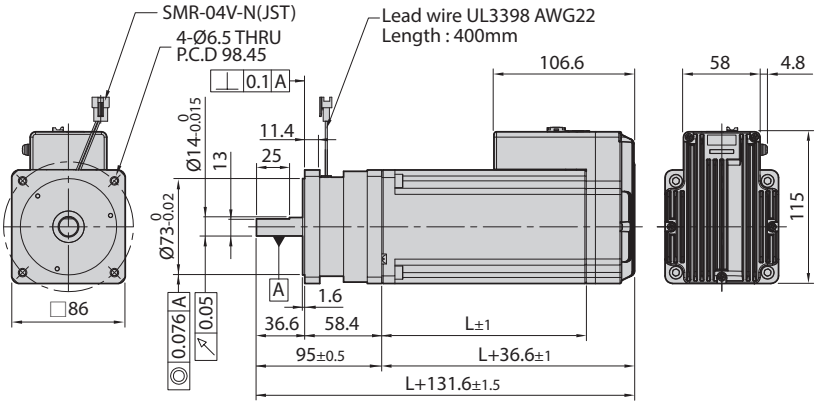
◆ M Connector Type



86mm

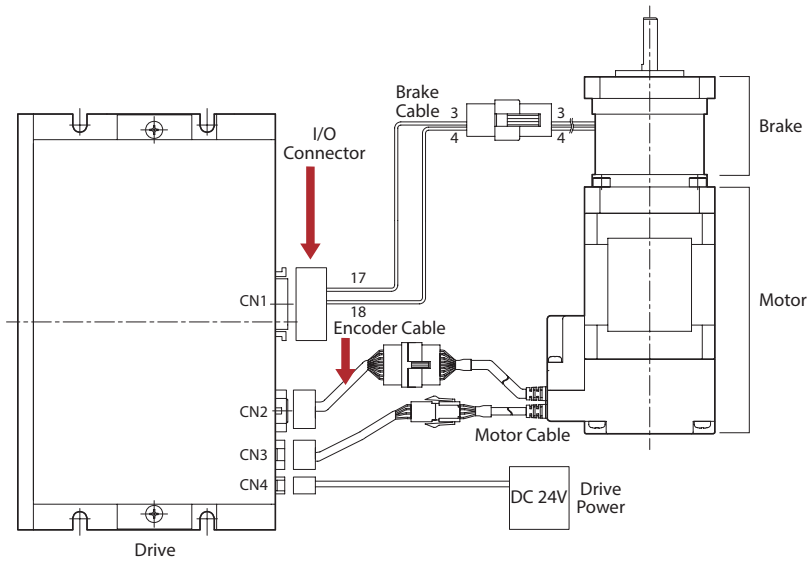
Model Name	Length(L)	Weight(kg)
86M	78	3.60
86L	117	5.10
86XL	155	6.60

◆ RJ45 Connector Type

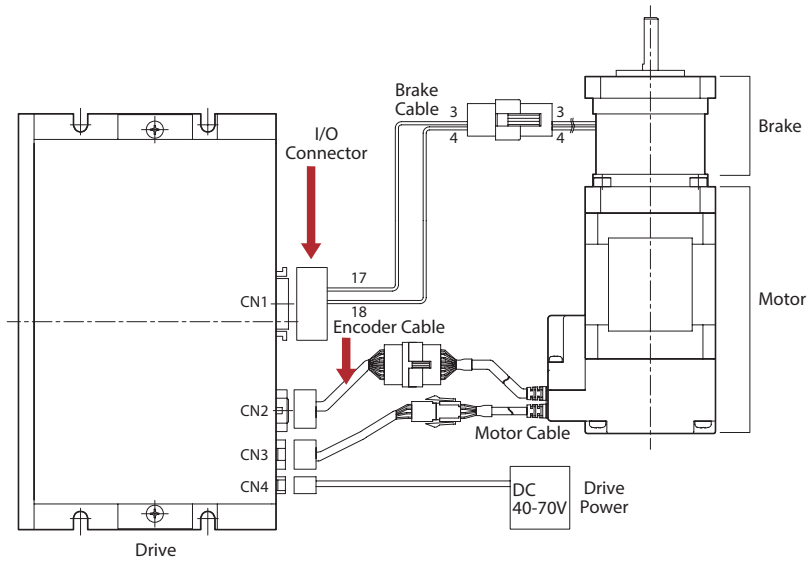


● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT

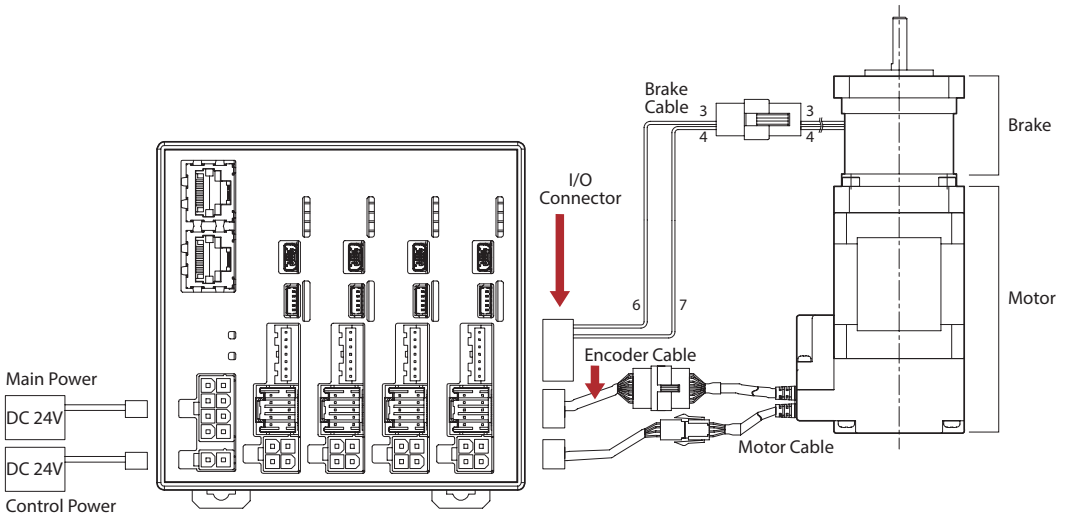


Ezi-SERVO II EtherCAT_ 86mm

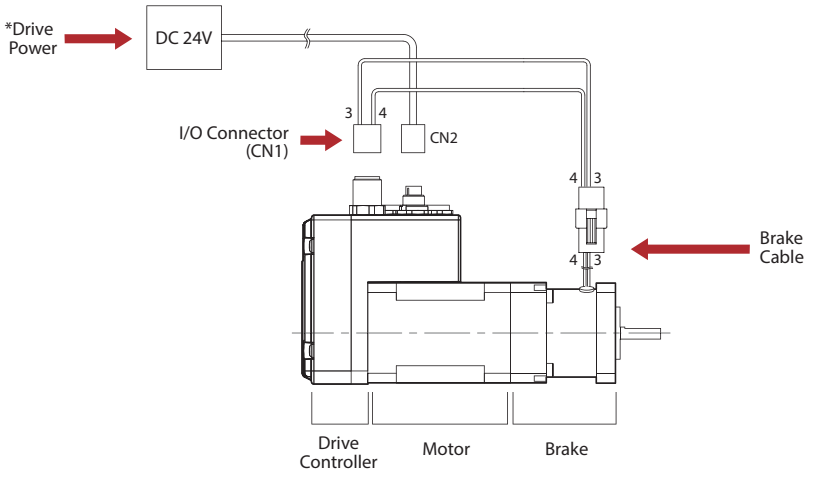


● Electrical Brake and Power Connection

Ezi-SERVOII EtherCAT 4X, 3X, 2X



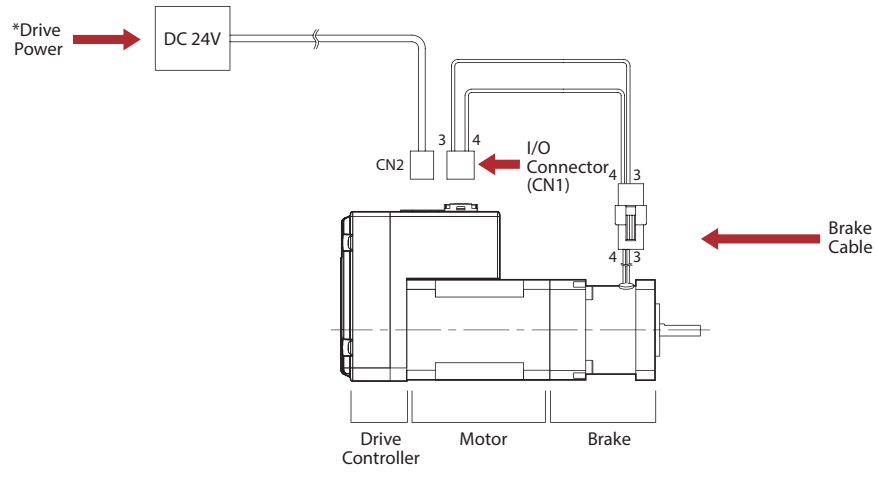
Ezi-SERVOII EtherCAT ALL_ M Type



* In case of 86mm, the voltage of power supply is DC40~ 70V.

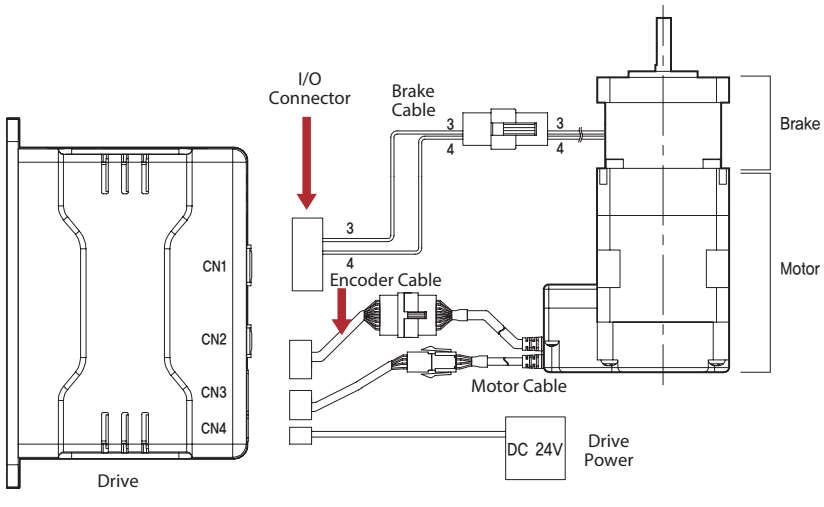
● Electrical Brake and Power Connection

Ezi-SERVO II EtherCAT ALL_ R Type



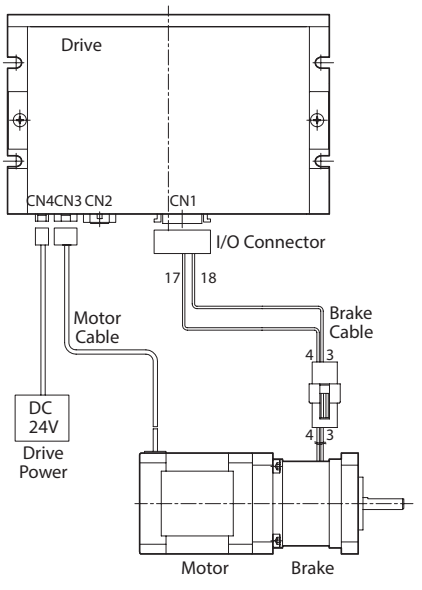
* In case of 86mm, the voltage of power supply is DC40~ 70V.

Ezi-SERVO II EtherCAT MINI

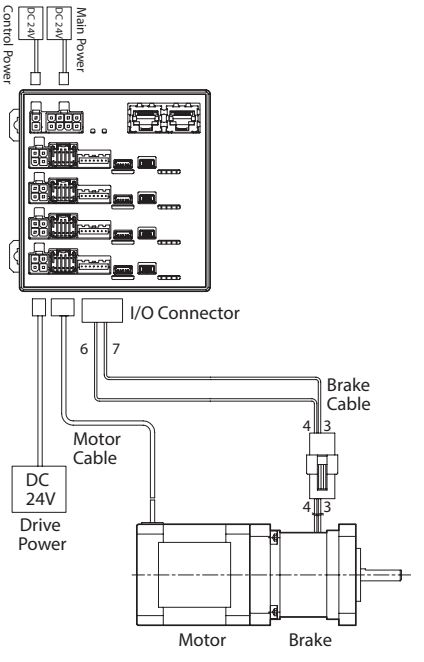


● Electrical Brake and Power Connection

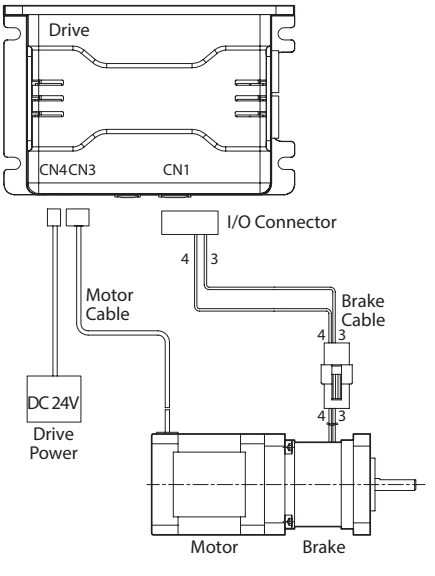
Ezi-STEPII EtherCAT



Ezi-STEPII EtherCAT 4X



Ezi-STEPII EtherCAT MINI



OPTION Gearbox

Overall Table of ***Gearbox***

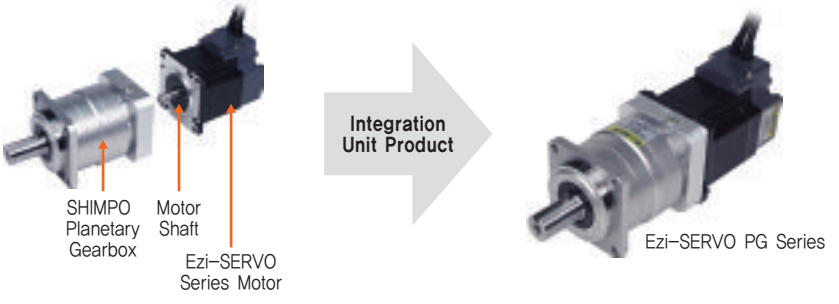
Name of Product	Gearbox frame size			
	42mm	60mm		86mm
	Motor frame size			
	42mm	56mm	60mm	86mm
Ezi-SERVO II EtherCAT				
Ezi-SERVO II EtherCAT MINI				
Ezi-SERVO II EtherCAT 4X				
Ezi-SERVO II EtherCAT ALL				

Features

Characteristic

◆ Adopt SHIMPO's high accuracy planetary gearbox

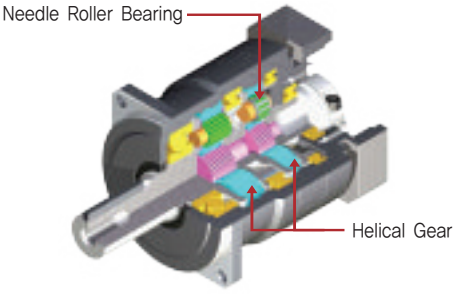
Ezi-SERVO PG series, FASTECH's new Planetary Geared Step Motor unit product maximizes User's operational convenience with integration between Closed Loop System, Ezi-SERVO and Helical Gear structure of SHIMPO's high accuracy planetary gearbox has 3 min less Backlash.



Advantage

◆ 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.



◆ 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.

◆ Long Life & Maintenance Free

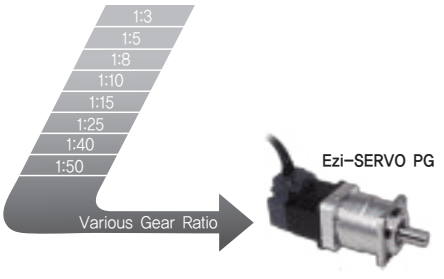
Ezi-SERVO PG Series is Maintenance-free product. No risk of grease leakage because of high viscosity of Anti-separation grease and it is maintenance free products because of lack of necessity for grease replacement.

◆ 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.

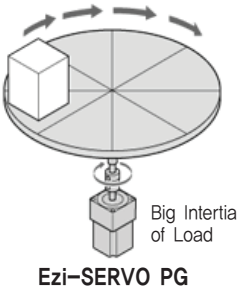
◆ Various Gear Ratio

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



◆ 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

● Allowable Overhung Load and Allowable Thrust Load of PG series

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.

● Part Numbering

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

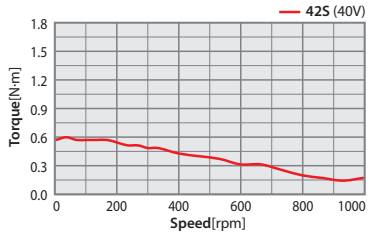
● Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO II EtherCAT			

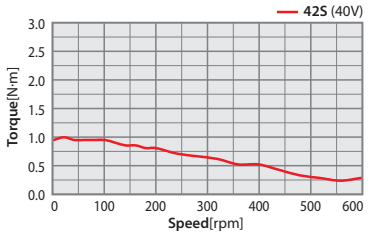
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.57	0.95	1.52	1.90	2.76	4.60	7.36	9
Rotor Inertia Moment	kg·m²	35×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

● Torque Graph with Gearbox

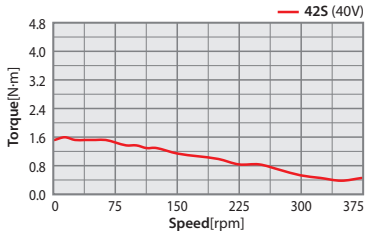
42S-PN3 Series



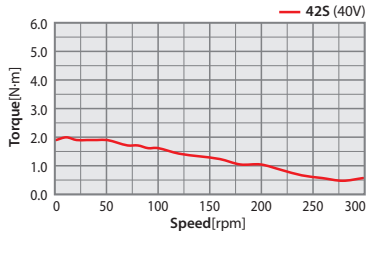
42S-PN5 Series



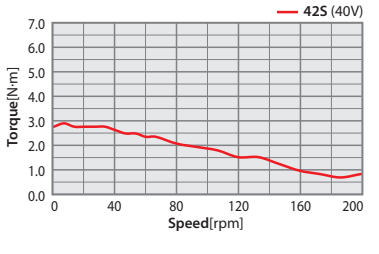
42S-PN8 Series



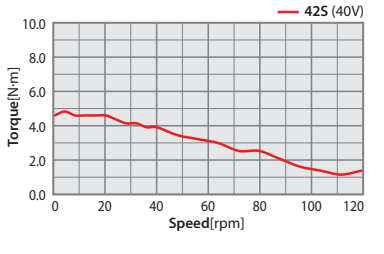
42S-PN10 Series



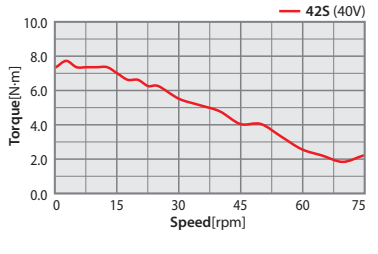
42S-PN15 Series



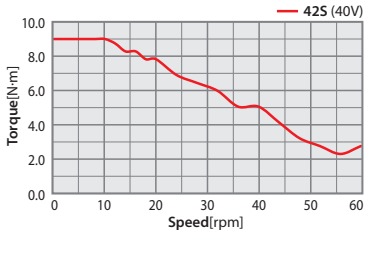
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



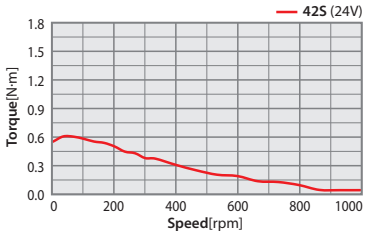
● Specifications of Motor with Gearbox [42S]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X		

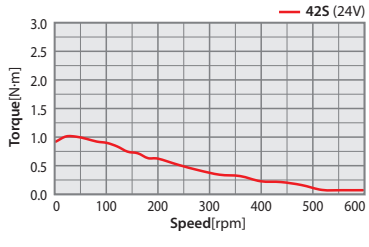
Model	Unit	42S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.55	0.92	1.47	1.84	2.67	4.46	7.13	9
Rotor Inertia Moment	kg·m²	35×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.89				0.99			

● Torque Graph with Gearbox

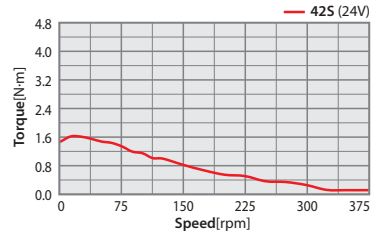
42S-PN3 Series



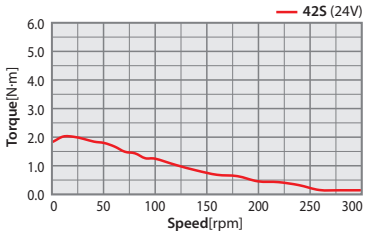
42S-PN5 Series



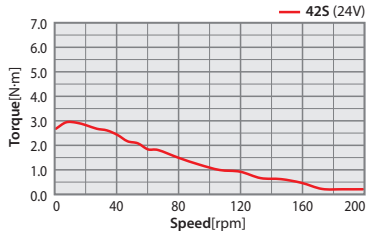
42S-PN8 Series



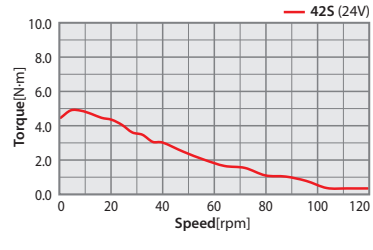
42S-PN10 Series



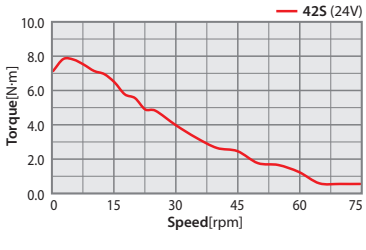
42S-PN15 Series



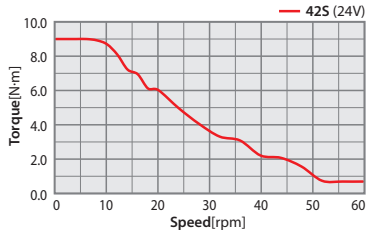
42S-PN25 Series



42S-PN40 Series



42S-PN50 Series



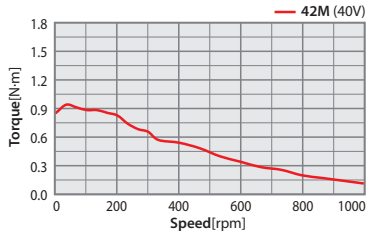
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO II EtherCAT			

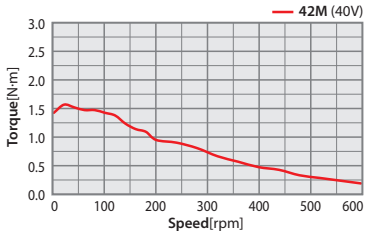
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m^2	54×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Graph with Gearbox

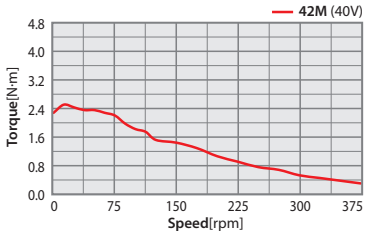
42M-PN3 Series



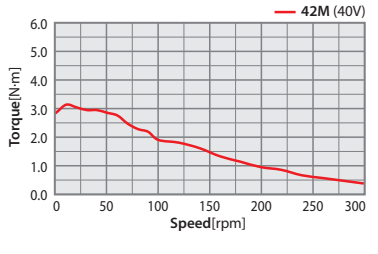
42M-PN5 Series



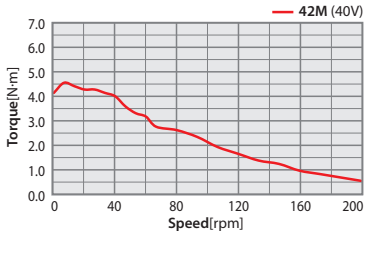
42M-PN8 Series



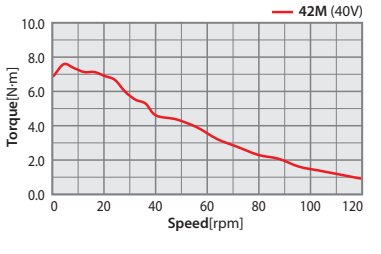
42M-PN10 Series



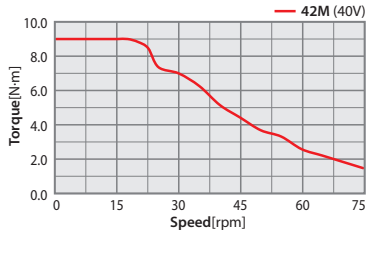
42M-PN15 Series



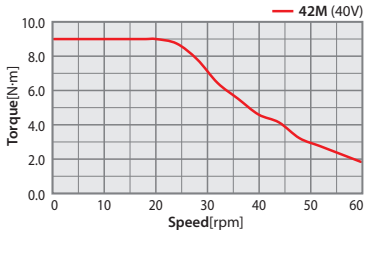
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



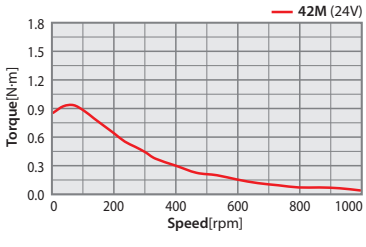
● Specifications of Motor with Gearbox [42M]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

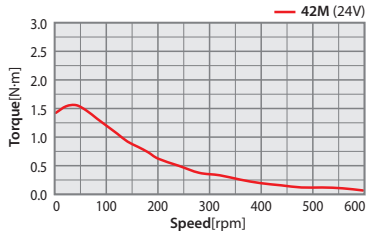
Model	Unit	42M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.85	1.42	2.28	2.85	4.14	6.9	9	9
Rotor Inertia Moment	kg·m²	54×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	0.96				1.06			

● Torque Graph with Gearbox

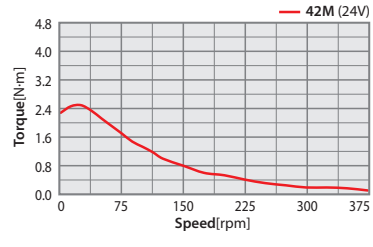
42M-PN3 Series



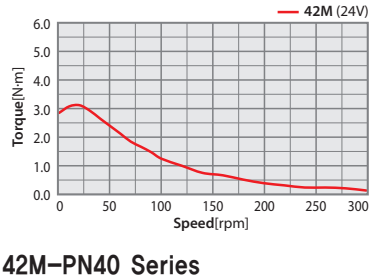
42M-PN5 Series



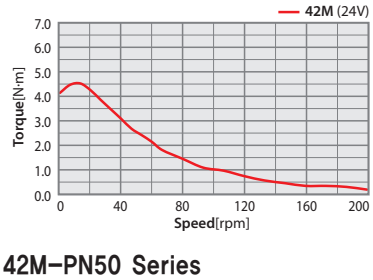
42M-PN8 Series



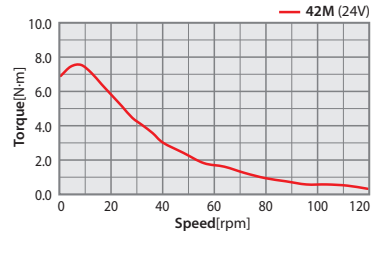
42M-PN10 Series



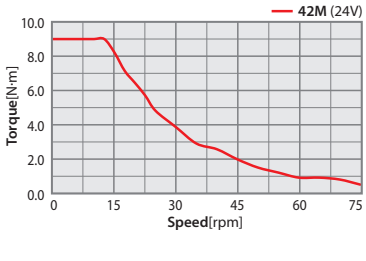
42M-PN15 Series



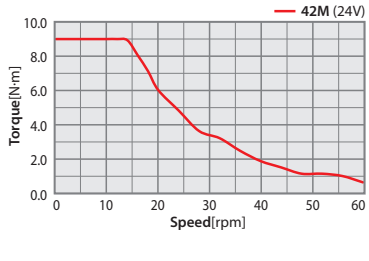
42M-PN25 Series



42M-PN40 Series



42M-PN50 Series



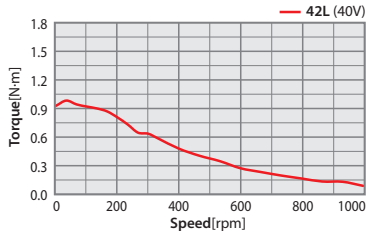
● Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO II EtherCAT			

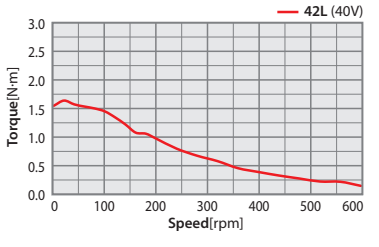
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.92	1.54	2.47	3.09	4.49	7.49	9	9
Rotor Inertia Moment	$kg \cdot m^2$	77×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Graph with Gearbox

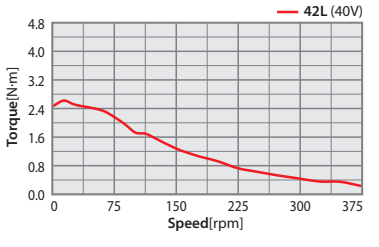
42L-PN3 Series



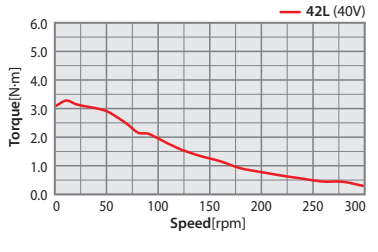
42L-PN5 Series



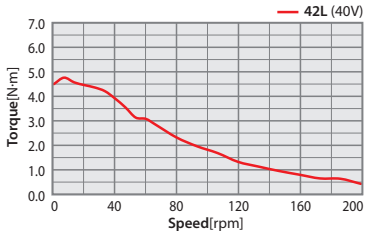
42L-PN8 Series



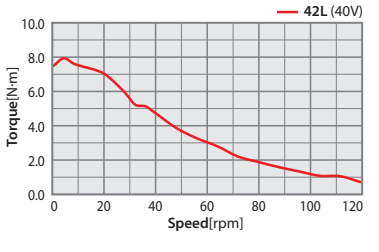
42L-PN10 Series



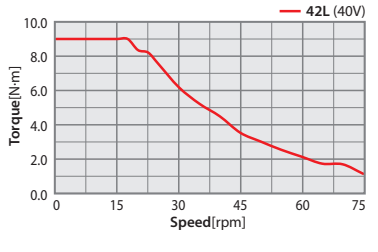
42L-PN15 Series



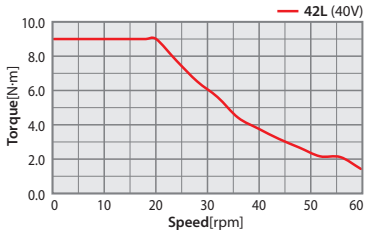
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



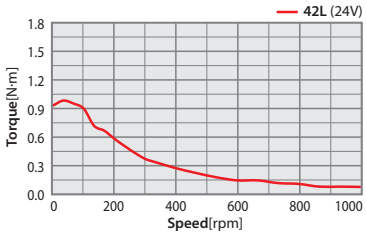
● Specifications of Motor with Gearbox [42L]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

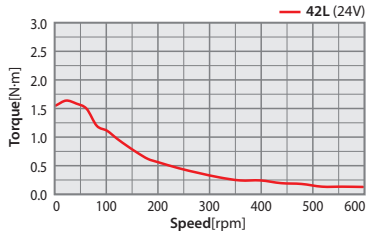
Model	Unit	42L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	0.93	1.55	2.48	3.1	4.51	7.52	9	9
Rotor Inertia Moment	kg·m²	77×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.02				1.12			

● Torque Graph with Gearbox

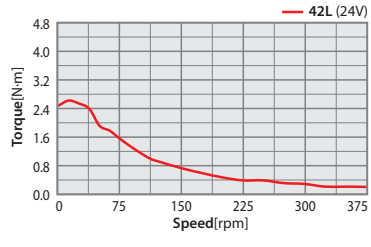
42L-PN3 Series



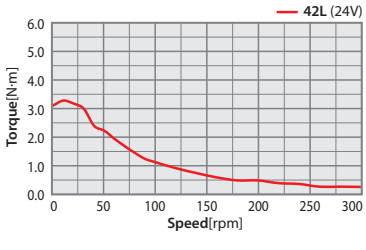
42L-PN5 Series



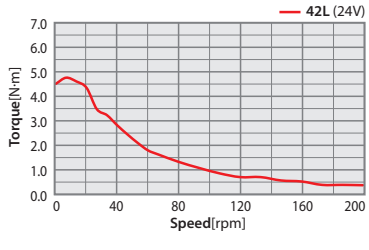
42L-PN8 Series



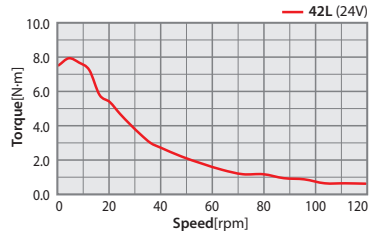
42L-PN10 Series



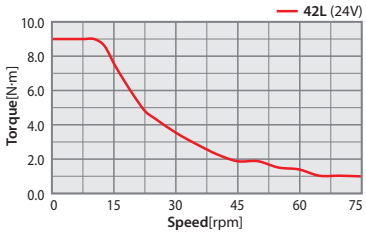
42L-PN15 Series



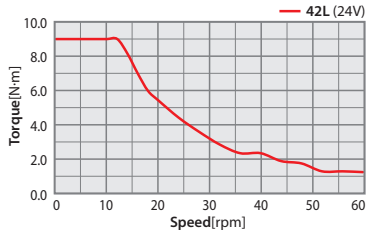
42L-PN25 Series



42L-PN40 Series



42L-PN50 Series



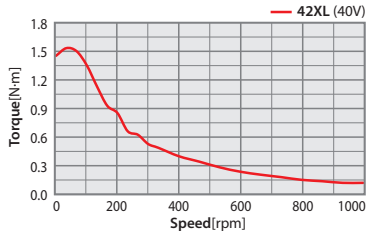
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO II EtherCAT			

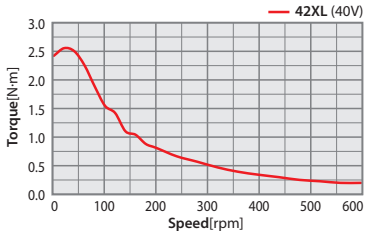
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.45	2.42	3.87	4.84	6	9	9	9
Rotor Inertia Moment	$kg \cdot m^2$	114×10^{-7}							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Graph with Gearbox

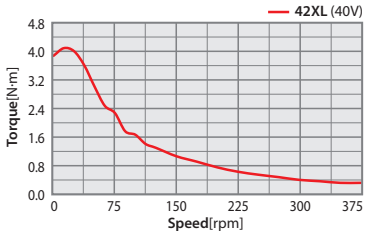
42XL-PN3 Series



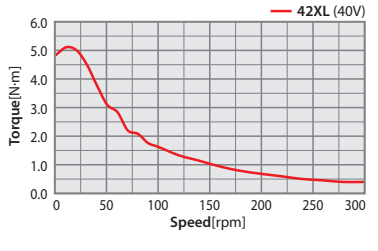
42XL-PN5 Series



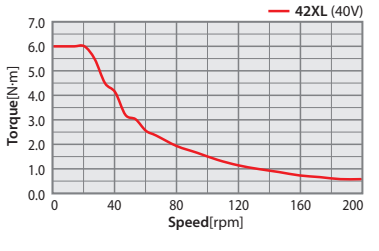
42XL-PN8 Series



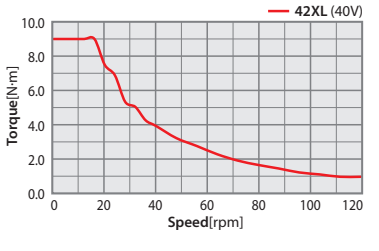
42XL-PN10 Series



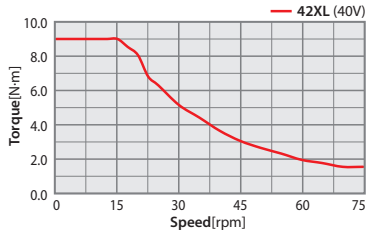
42XL-PN15 Series



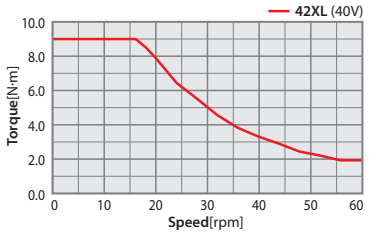
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



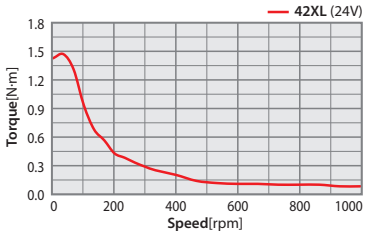
● Specifications of Motor with Gearbox [42XL]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

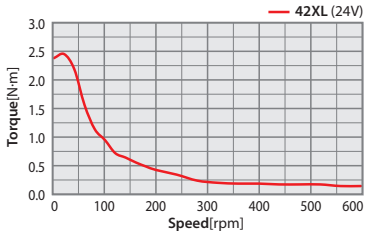
Model	Unit	42XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.42	2.38	3.8	4.76	6	9	9	9
Rotor Inertia Moment	kg·m²	114×10⁻⁷							
Backlash	min	3				5			
Angle Transmission Error	min	5				7			
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	12	18	18	12	12	18	18	18
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.15				1.25			

● Torque Graph with Gearbox

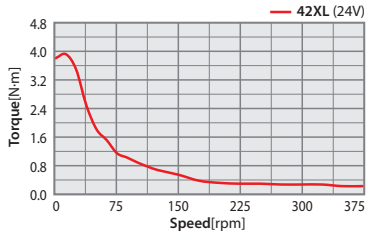
42XL-PN3 Series



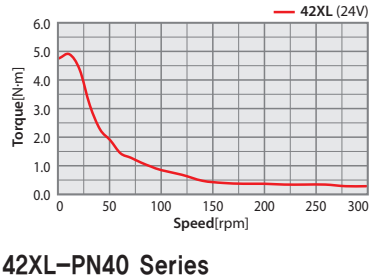
42XL-PN5 Series



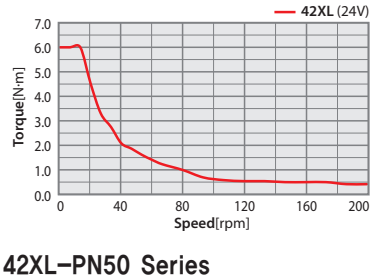
42XL-PN8 Series



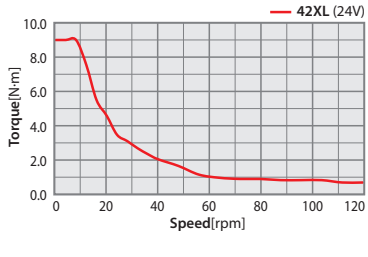
42XL-PN10 Series



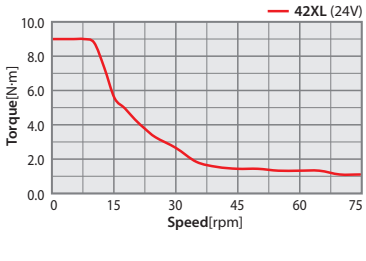
42XL-PN15 Series



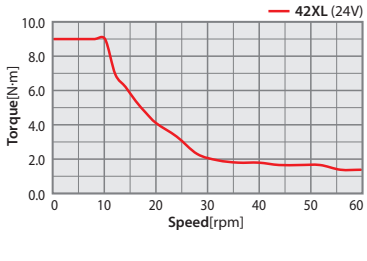
42XL-PN25 Series



42XL-PN40 Series



42XL-PN50 Series



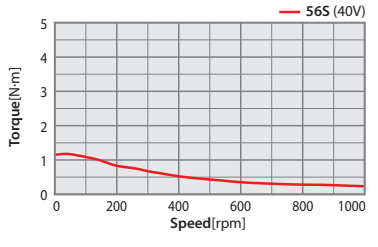
● Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO II EtherCAT			

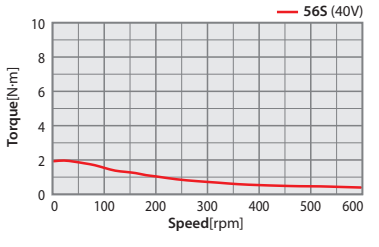
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.1	1.9	3.0	3.8	5.5	9.3	14.9	18.6
Rotor Inertia Moment	kg·m^2	180×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.94				2.14			

● Torque Graph with Gearbox

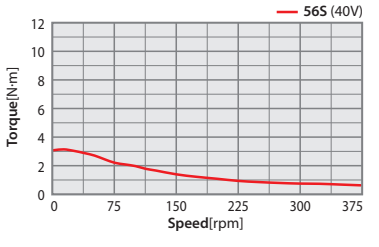
56S-PN3 Series



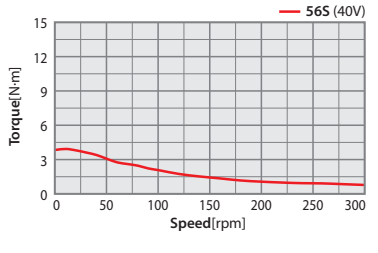
56S-PN5 Series



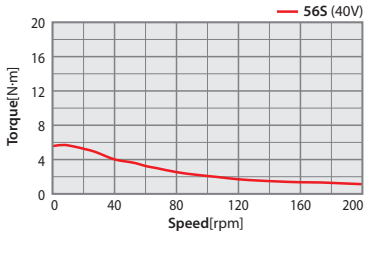
56S-PN8 Series



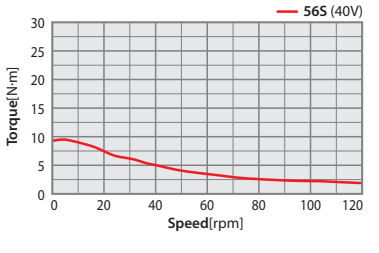
56S-PN10 Series



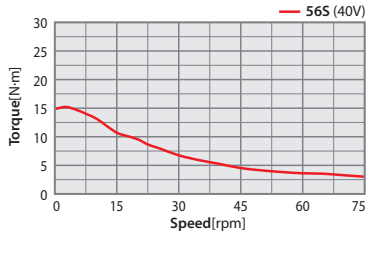
56S-PN15 Series



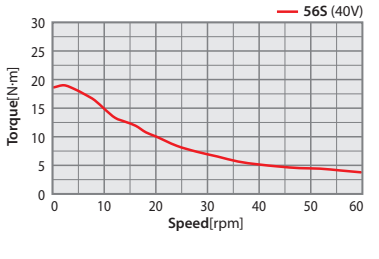
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



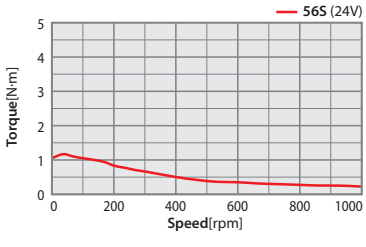
Specifications of Motor with Gearbox [56S]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

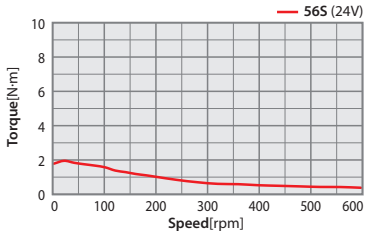
Model	Unit	56S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1	1.7	2.8	3.5	5.1	8.6	13.8	17.2
Rotor Inertia Moment	kg·m²	180×10⁻⁷							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	1.9				2.1			

Torque Graph with Gearbox

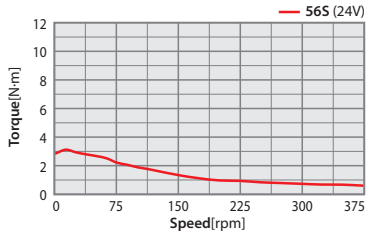
56S-PN3 Series



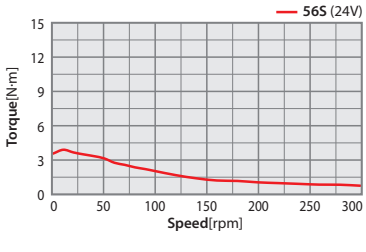
56S-PN5 Series



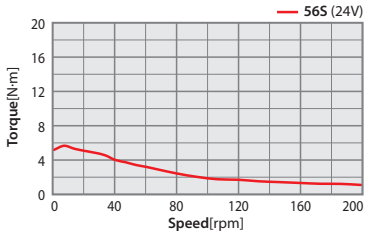
56S-PN8 Series



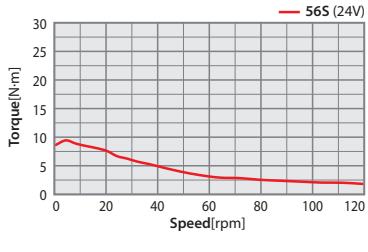
56S-PN10 Series



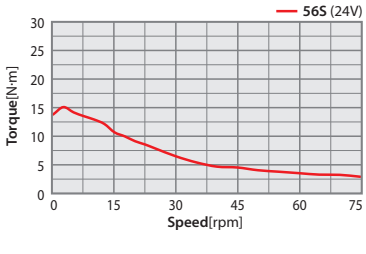
56S-PN15 Series



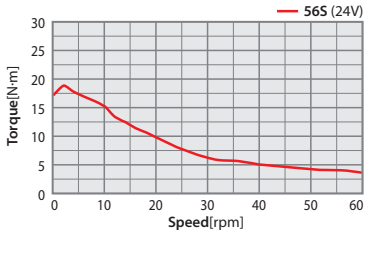
56S-PN25 Series



56S-PN40 Series



56S-PN50 Series



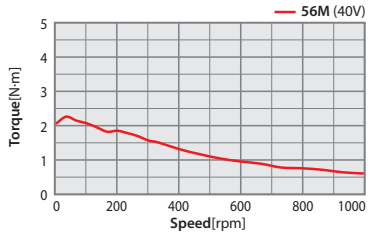
Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO II EtherCAT			

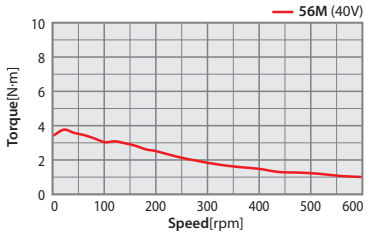
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.0	3.4	5.4	6.8	9.9	16.6	27	27
Rotor Inertia Moment	kg·m^2	280×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.15				2.35			

Torque Graph with Gearbox

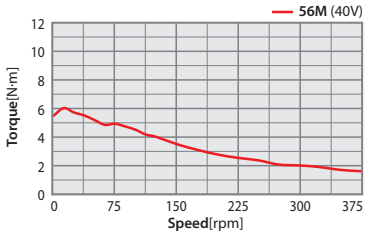
56M-PN3 Series



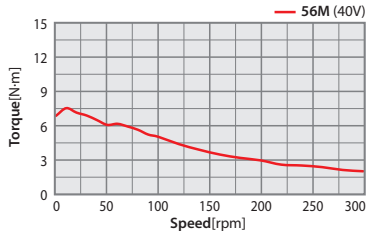
56M-PN5 Series



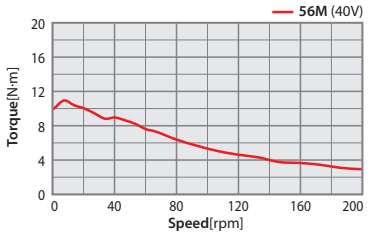
56M-PN8 Series



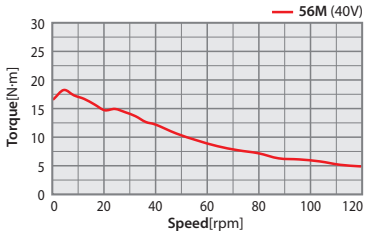
56M-PN10 Series



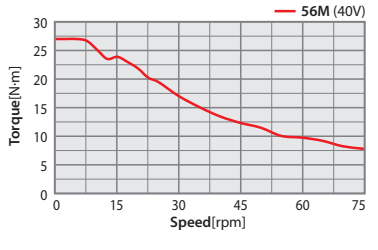
56M-PN15 Series



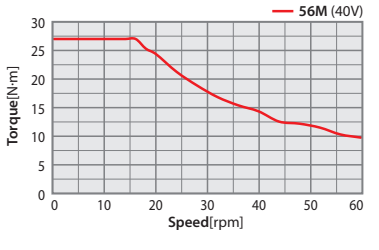
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



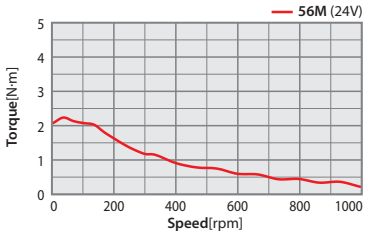
● Specifications of Motor with Gearbox [56M]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

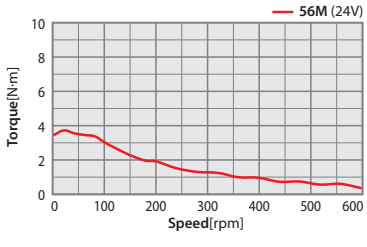
Model	Unit	56M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2	3.4	5.5	6.9	10	16.7	27	27
Rotor Inertia Moment	kg·m²	280×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:03	1:05	1:08	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.1				2.3			

● Torque Graph with Gearbox

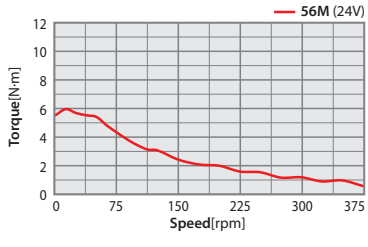
56M-PN3 Series



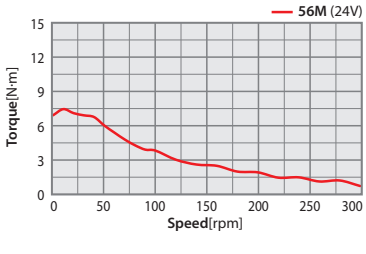
56M-PN5 Series



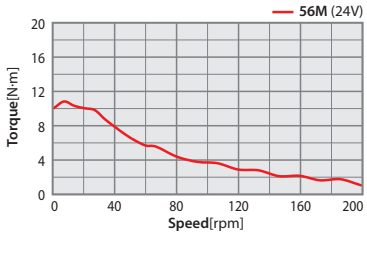
56M-PN8 Series



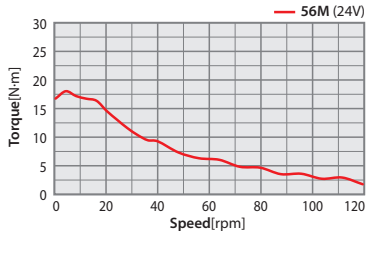
56M-PN10 Series



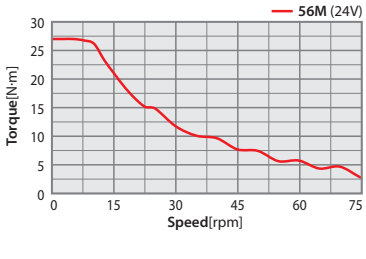
56M-PN15 Series



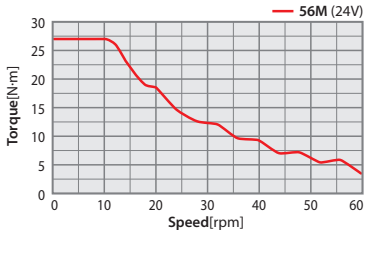
56M-PN25 Series



56M-PN40 Series



56M-PN50 Series



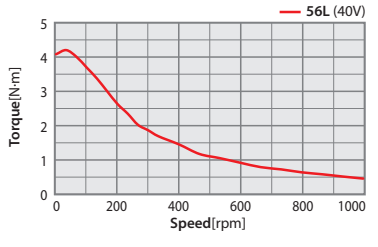
● Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO II EtherCAT			

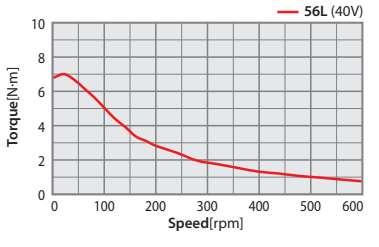
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.0	6.8	10.8	13.6	18	27	27	27
Rotor Inertia Moment	kg·m^2	520×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.52				2.72			

● Torque Graph with Gearbox

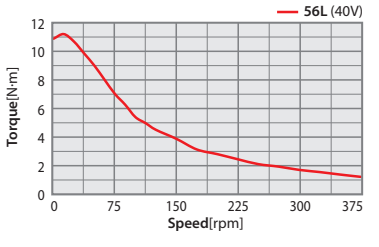
56L-PN3 Series



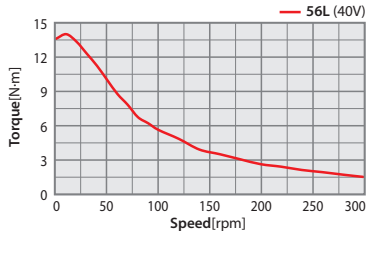
56L-PN5 Series



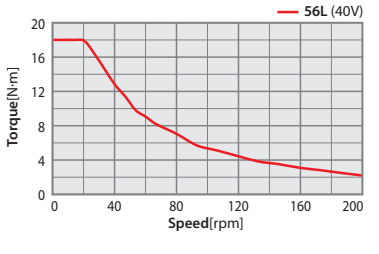
56L-PN8 Series



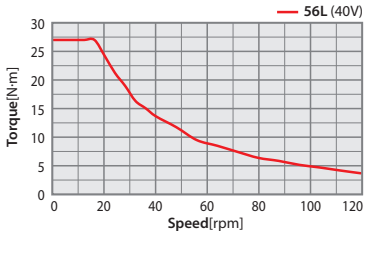
56L-PN10 Series



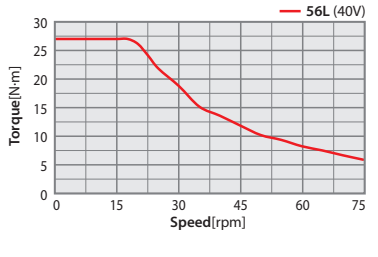
56L-PN15 Series



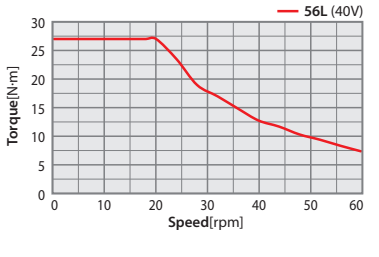
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



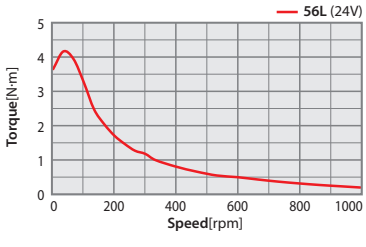
● Specifications of Motor with Gearbox [56L]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

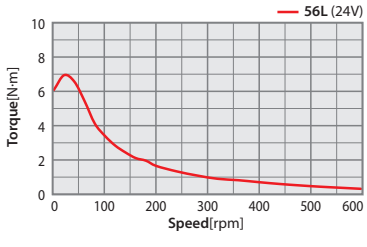
Model	Unit	56L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	3.6	6	9.7	12.1	18	27	27	27
Rotor Inertia Moment	kg·m²	520×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.55				2.75			

● Torque Graph with Gearbox

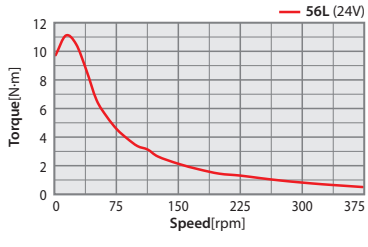
56L-PN3 Series



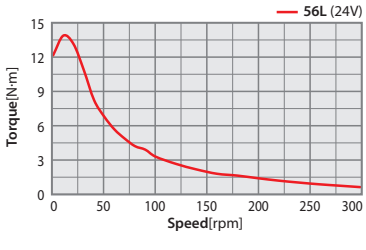
56L-PN5 Series



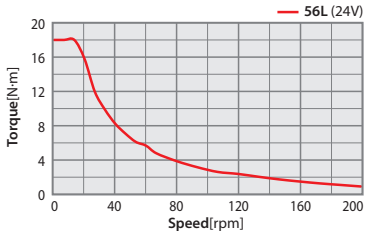
56L-PN8 Series



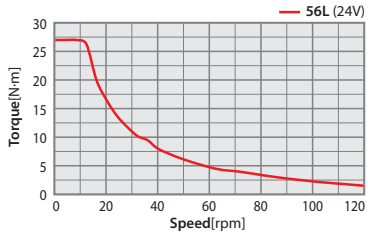
56L-PN10 Series



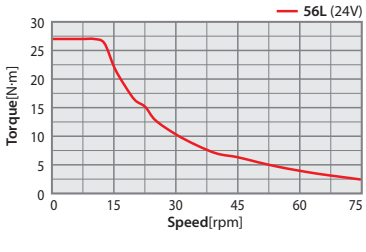
56L-PN15 Series



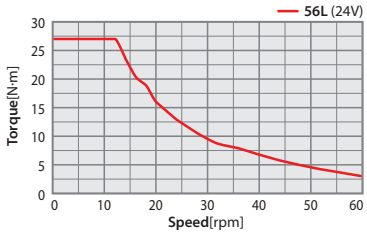
56L-PN25 Series



56L-PN40 Series



56L-PN50 Series



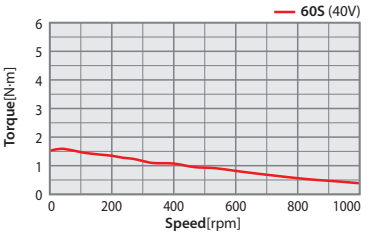
● Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO II EtherCAT			

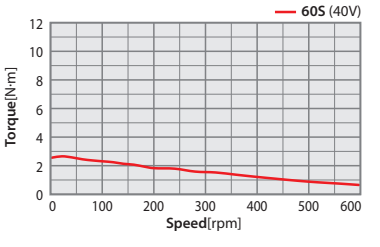
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.5	2.5	4.0	5.1	7.4	12.3	19.8	24.7
Rotor Inertia Moment	kg·m^2	240×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

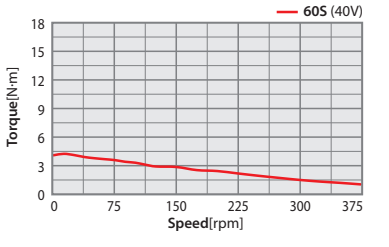
60S-PN3 Series



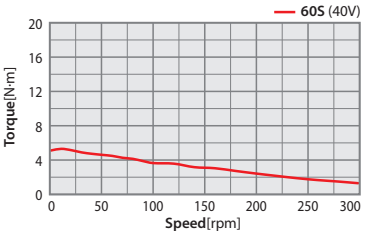
60S-PN5 Series



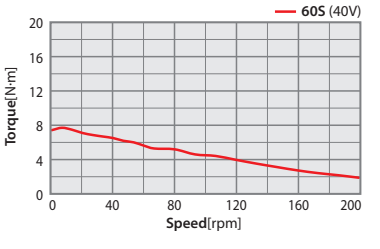
60S-PN8 Series



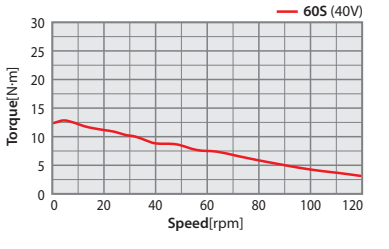
60S-PN10 Series



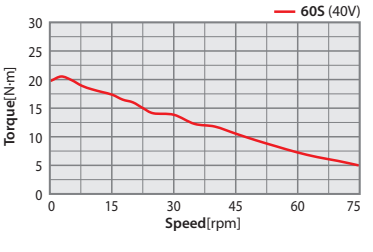
60S-PN15 Series



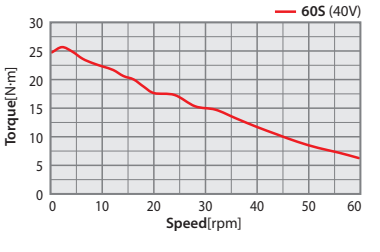
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



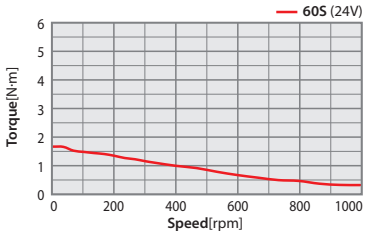
● Specifications of Motor with Gearbox [60S]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

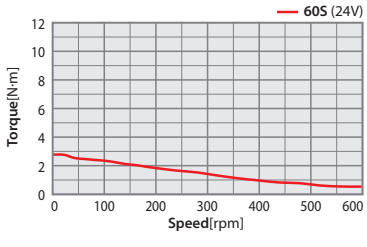
Model	Unit	60S							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	1.6	2.7	4.4	5.5	8	13.4	21.4	26.8
Rotor Inertia Moment	kg·m²	240×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

● Torque Graph with Gearbox

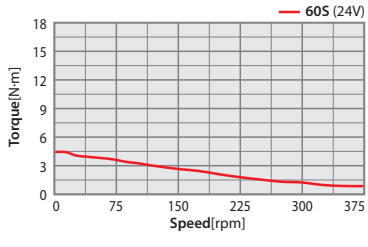
60S-PN3 Series



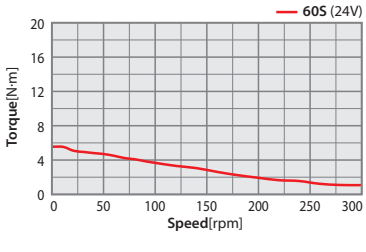
60S-PN5 Series



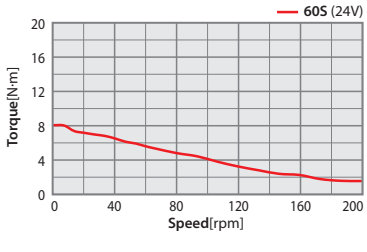
60S-PN8 Series



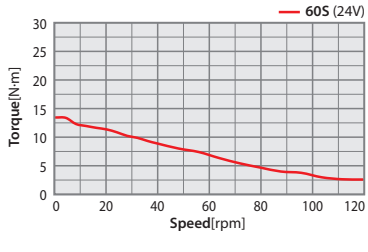
60S-PN10 Series



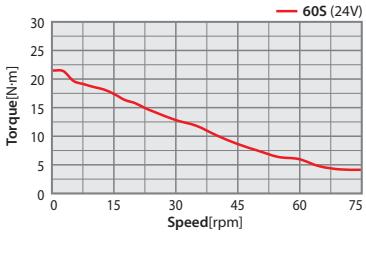
60S-PN15 Series



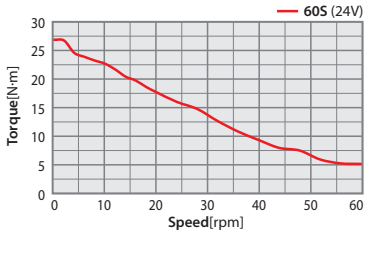
60S-PN25 Series



60S-PN40 Series



60S-PN50 Series



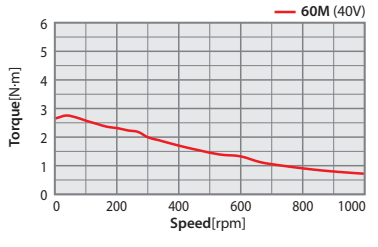
● Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO II EtherCAT			

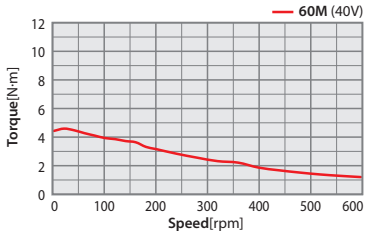
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	kg·m^2	490×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2.3				2.5			

● Torque Graph with Gearbox

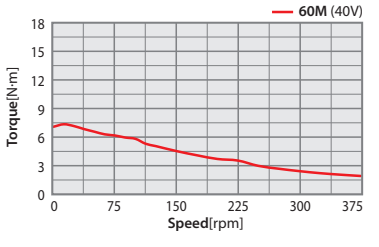
60M-PN3 Series



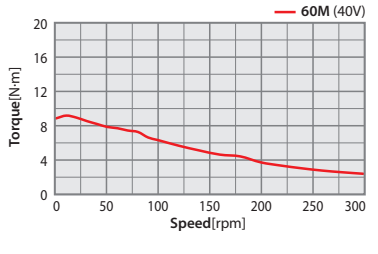
60M-PN5 Series



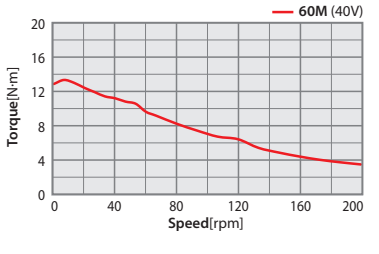
60M-PN8 Series



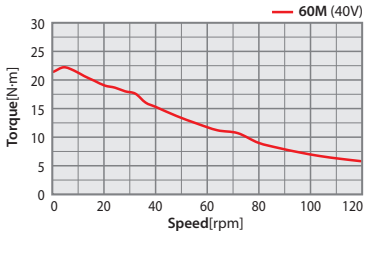
60M-PN10 Series



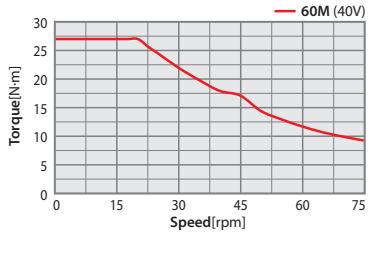
60M-PN15 Series



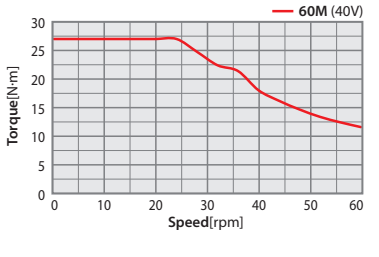
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



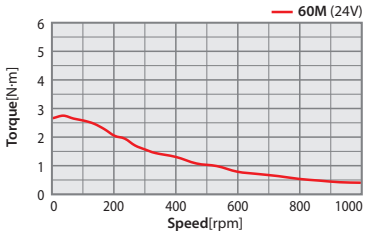
Specifications of Motor with Gearbox [60M]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

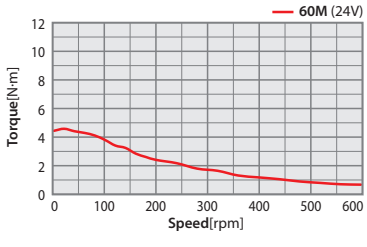
Model	Unit	60M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	2.6	4.4	7.0	8.8	12.8	21.4	27	27
Rotor Inertia Moment	kg·m^2	490×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	2				2.2			

Torque Graph with Gearbox

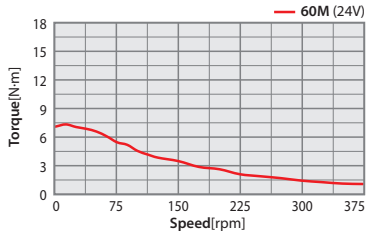
60M-PN3 Series



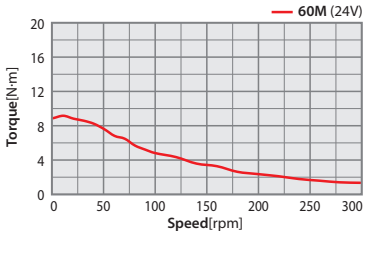
60M-PN5 Series



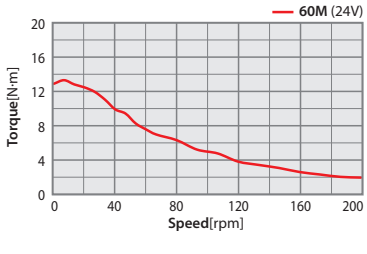
60M-PN8 Series



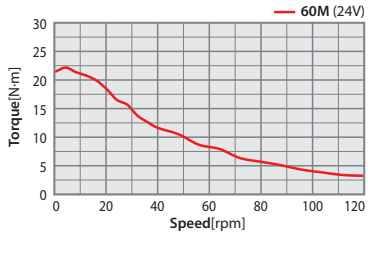
60M-PN10 Series



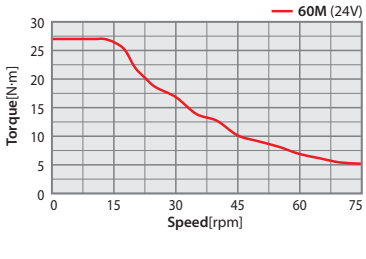
60M-PN15 Series



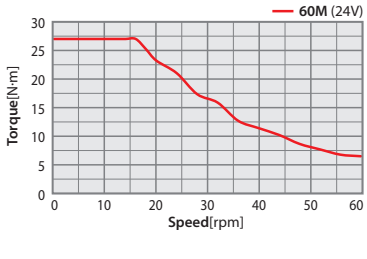
60M-PN25 Series



60M-PN40 Series



60M-PN50 Series



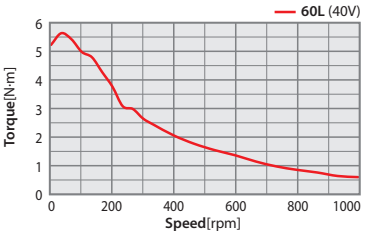
● Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO II EtherCAT			

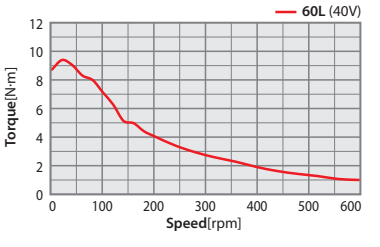
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	5.2	8.7	13.9	18	18	27	27	27
Rotor Inertia Moment	kg·m²	690×10⁻⁷							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Graph with Gearbox

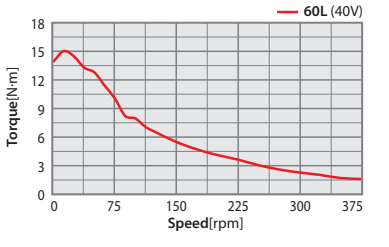
60L-PN3 Series



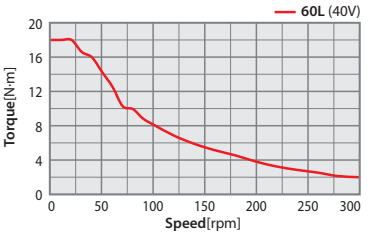
60L-PN5 Series



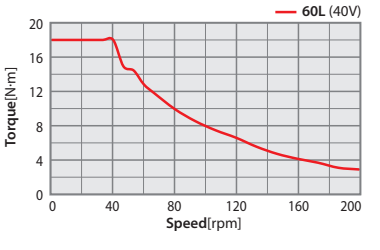
60L-PN8 Series



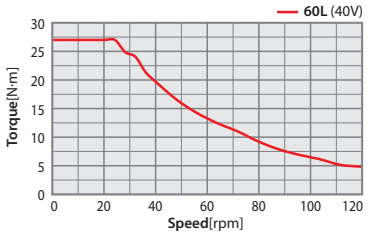
60L-PN10 Series



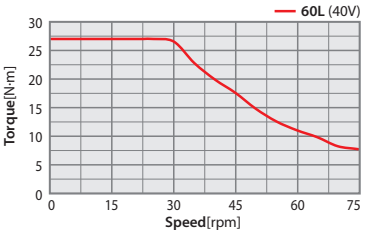
60L-PN15 Series



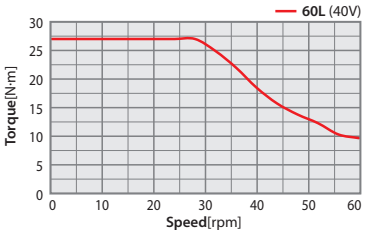
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



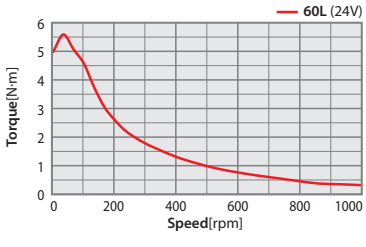
● Specifications of Motor with Gearbox [60L]

Applicable Model			
Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	Ezi-SERVO II EtherCAT ALL	

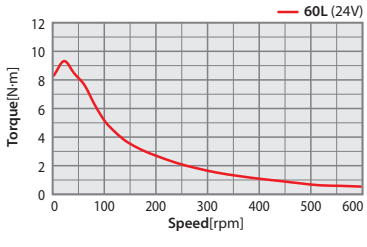
Model	Unit	60L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	4.9	8.3	13.2	16.6	18	27	27	27
Rotor Inertia Moment	kg·m²	690×10⁻⁷							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	35	50	50	35	35	50	50	50
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	3				3.2			

● Torque Graph with Gearbox

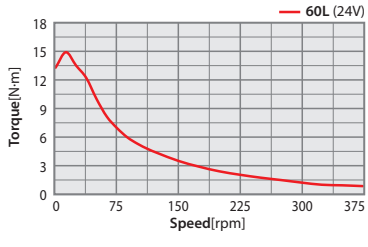
60L-PN3 Series



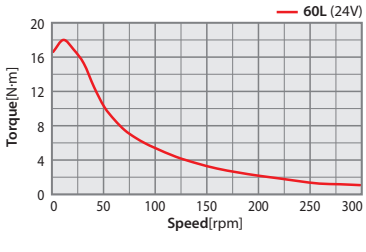
60L-PN5 Series



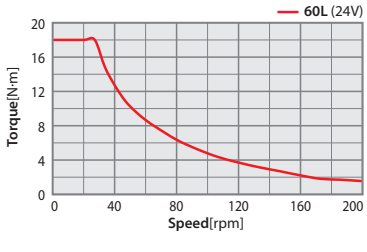
60L-PN8 Series



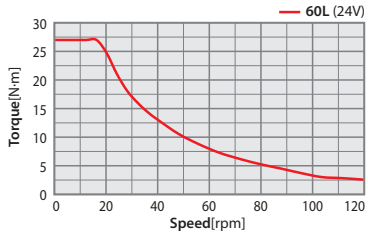
60L-PN10 Series



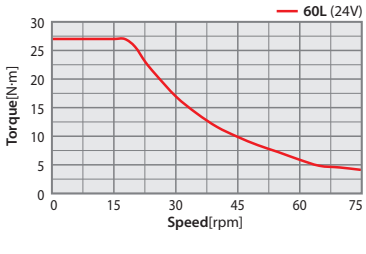
60L-PN15 Series



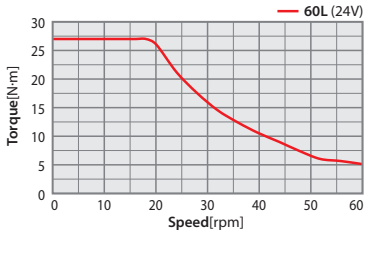
60L-PN25 Series



60L-PN40 Series



60L-PN50 Series



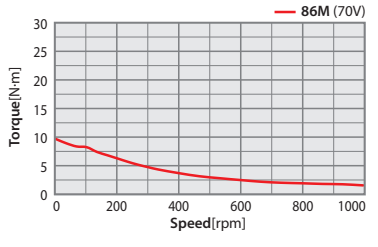
● Specifications of Motor with Gearbox [86M]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL		

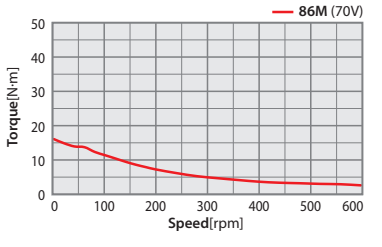
Model	Unit	86M							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	9.6	16	25.7	32.1	46.6	75	75	75
Rotor Inertia Moment	kg·m^2	1800×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	6				6.5			

● Torque Graph with Gearbox

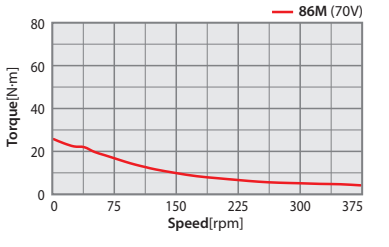
86M-PN3 Series



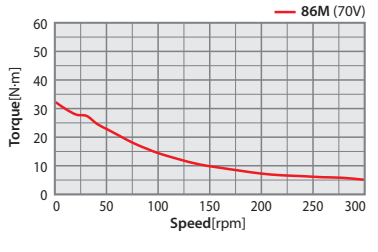
86M-PN5 Series



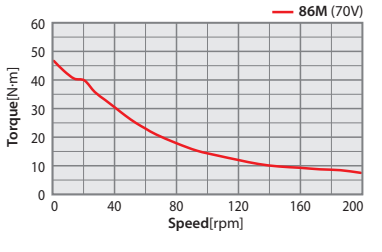
86M-PN8 Series



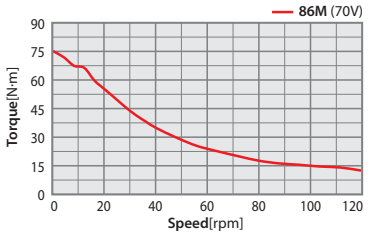
86M-PN10 Series



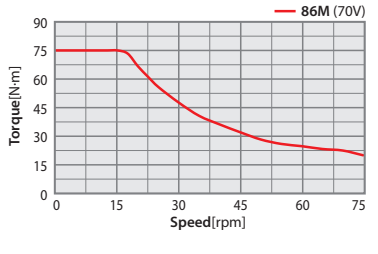
86M-PN15 Series



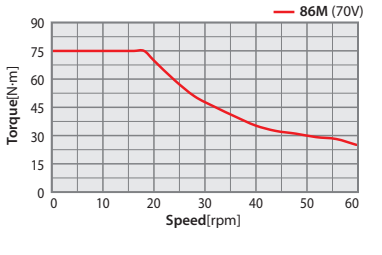
86M-PN25 Series



86M-PN40 Series



86M-PN50 Series



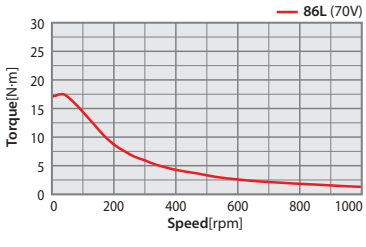
● Specifications of Motor with Gearbox [86L]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL		

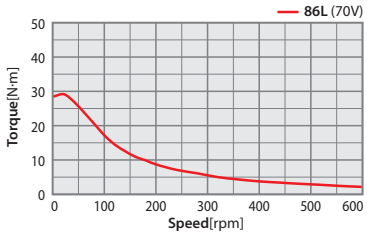
Model	Unit	86L							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	17.1	28.5	45.6	50	50	75	75	75
Rotor Inertia Moment	kg·m^2	3600×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	7.5				8			

● Torque Graph with Gearbox

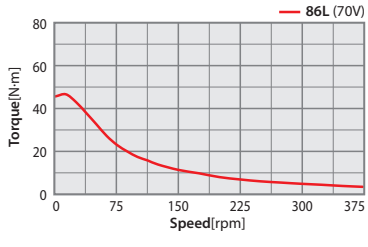
86L-PN3 Series



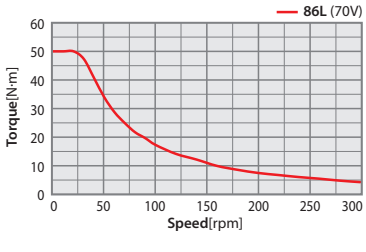
86L-PN5 Series



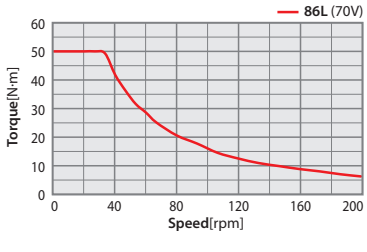
86L-PN8 Series



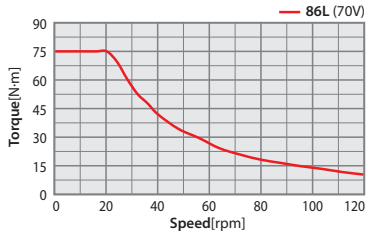
86L-PN10 Series



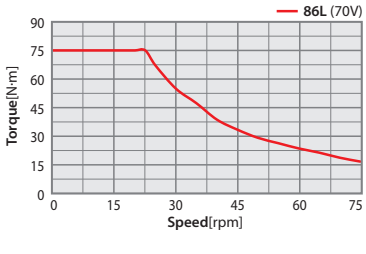
86L-PN15 Series



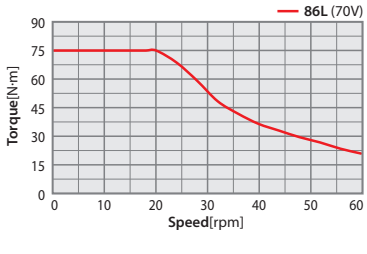
86L-PN25 Series



86L-PN40 Series



86L-PN50 Series



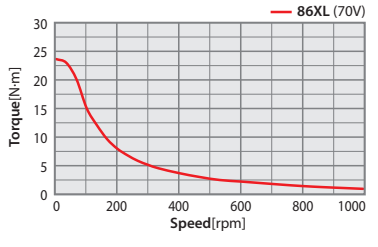
Specifications of Motor with Gearbox [86XL]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT ALL		

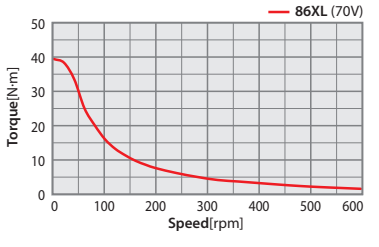
Model	Unit	86XL							
		PN3	PN5	PN8	PN10	PN15	PN25	PN40	PN50
Maximum Holding Torque	N·m	23.6	39.4	63.0	50	50	75	75	75
Rotor Inertia Moment	kg·m^2	5400×10^{-7}							
Backlash	min	3							
Angle Transmission Error	min	5							
Reduction Gear Ratio		1:3	1:5	1:8	1:10	1:15	1:25	1:40	1:50
Resolution(10,000[ppr] 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
Maximum Torque	N·m	80	125	125	80	80	125	125	125
Permitted Speed Range	rpm	0~1000	0~600	0~375	0~300	0~200	0~120	0~75	0~60
Unit Weight	kg	9				9.5			

Torque Graph with Gearbox

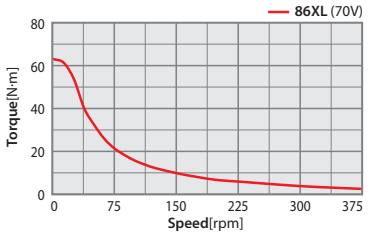
86XL-PN3 Series



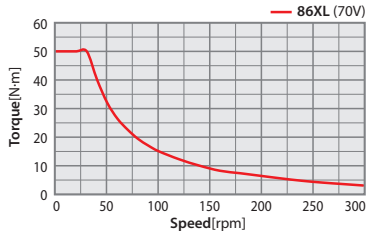
86XL-PN5 Series



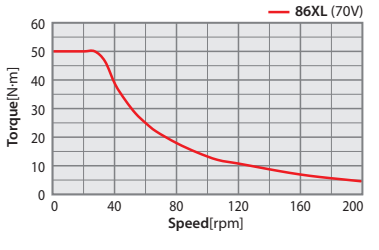
86XL-PN8 Series



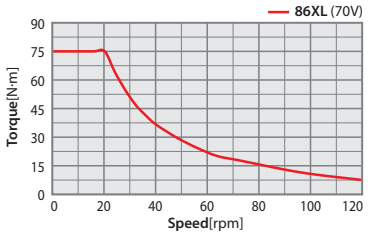
86XL-PN10 Series



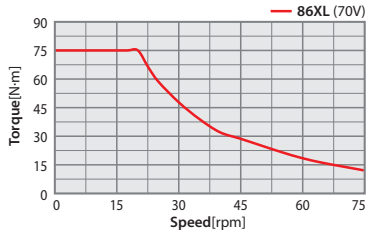
86XL-PN15 Series



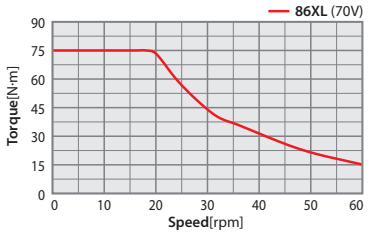
86XL-PN25 Series



86XL-PN40 Series



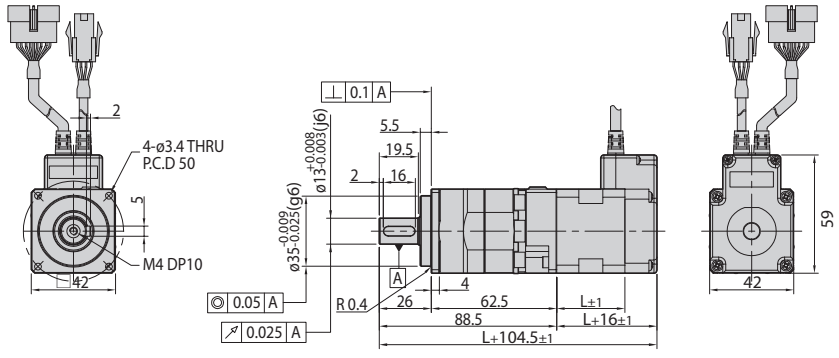
86XL-PN50 Series



● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

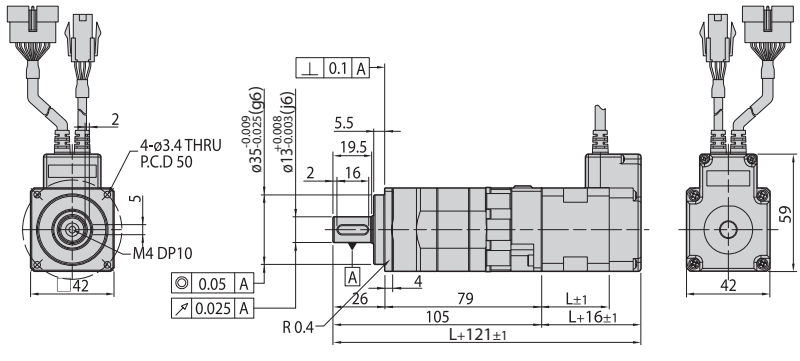
Gear Ratio 3, 5, 8, 10 : Single



42mm

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

Gear Ratio 15, 25, 40, 50 : Double

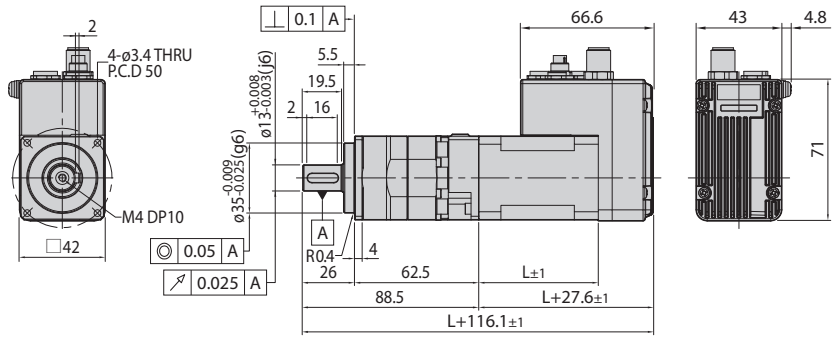


42mm

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

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

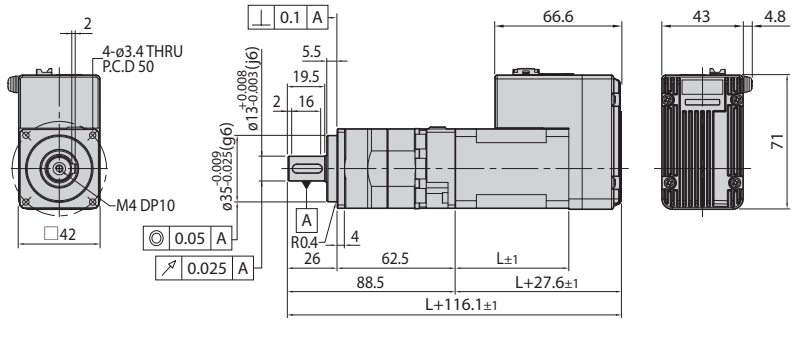
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



42mm

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

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



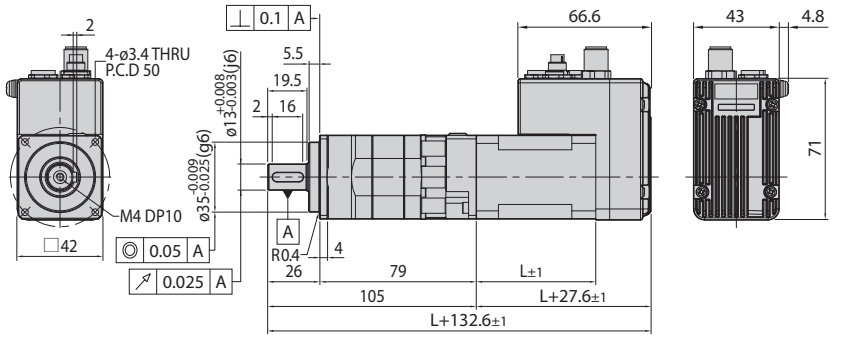
42mm

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

● Dimensions of Motor with Gearbox [42mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

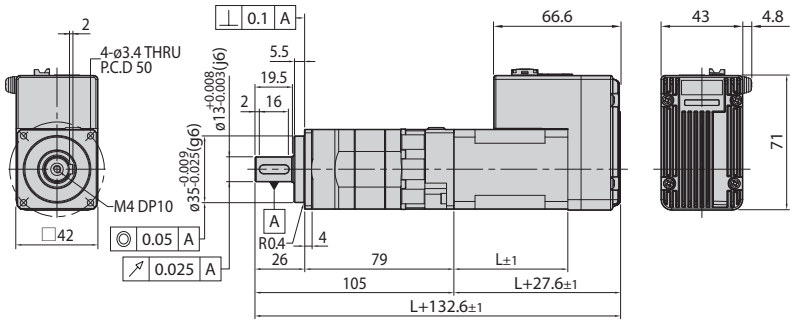
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



42mm

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

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



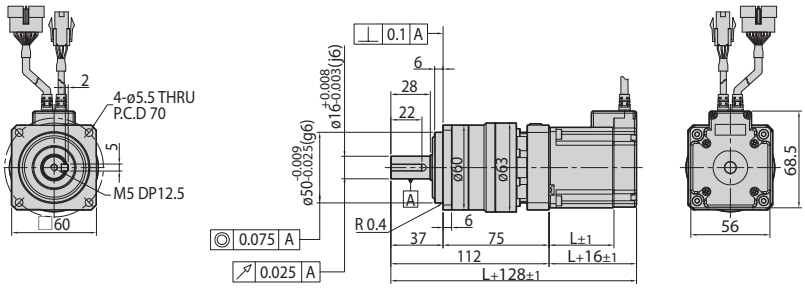
42mm

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

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

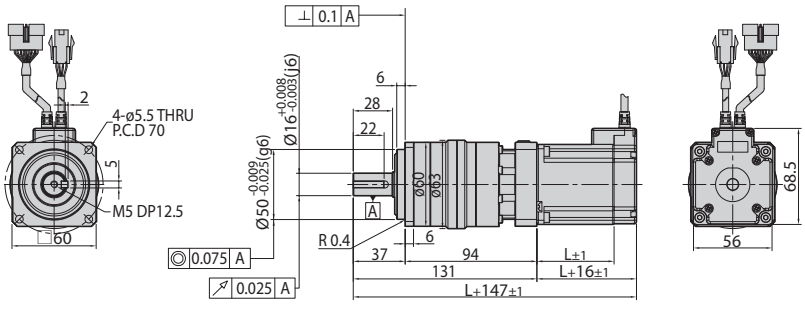
Gear Ratio 3, 5, 8, 10 : Single



56mm

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

Gear Ratio 15, 25, 40, 50 : Double

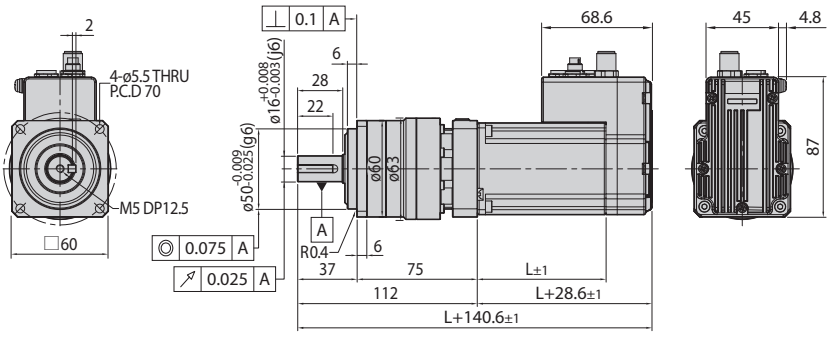


56mm

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

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

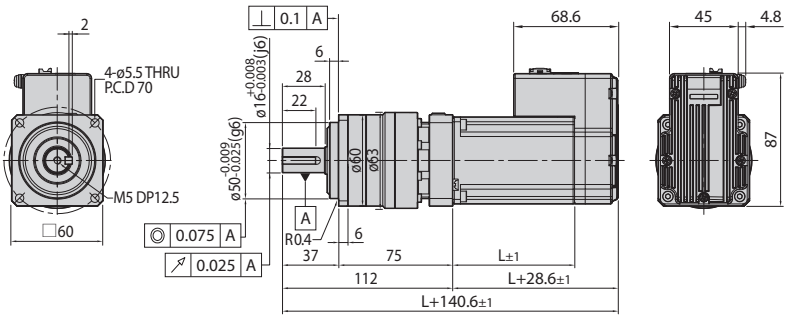
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



56mm

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

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



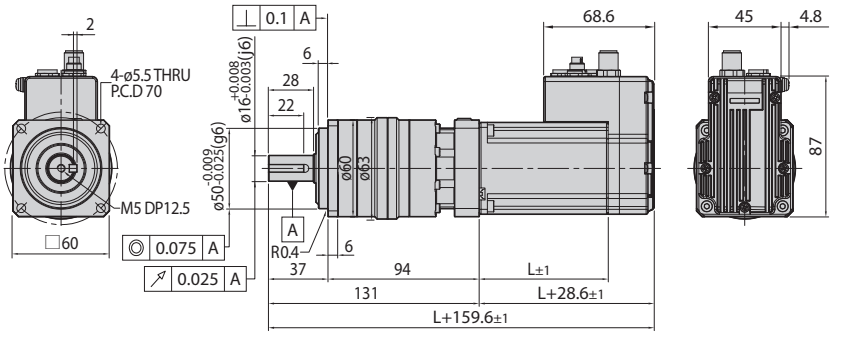
56mm

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

● Dimensions of Motor with Gearbox [56mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

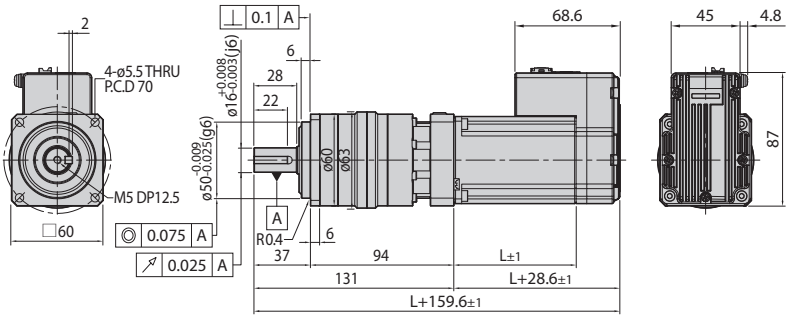
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



56mm

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

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



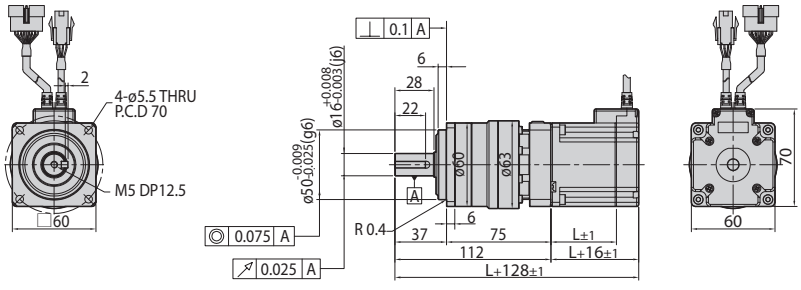
56mm

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

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT	Ezi-SERVO II EtherCAT MINI	Ezi-SERVO II EtherCAT 4X	

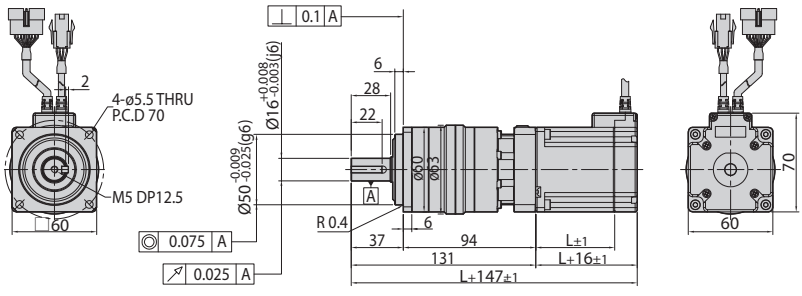
Gear Ratio 3, 5, 8, 10 : Single



60mm

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

Gear Ratio 15, 25, 40, 50 : Double

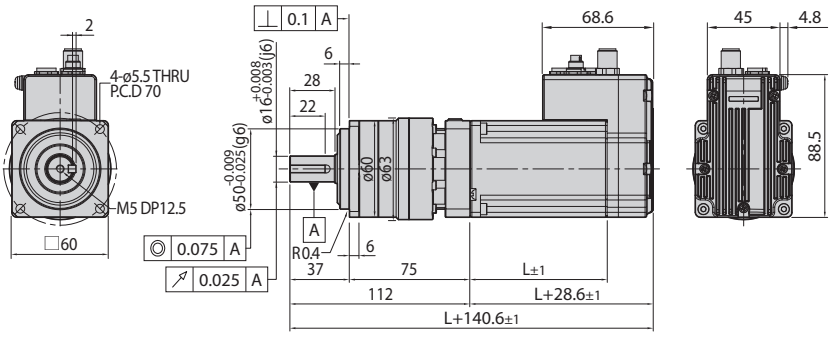


60mm

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

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

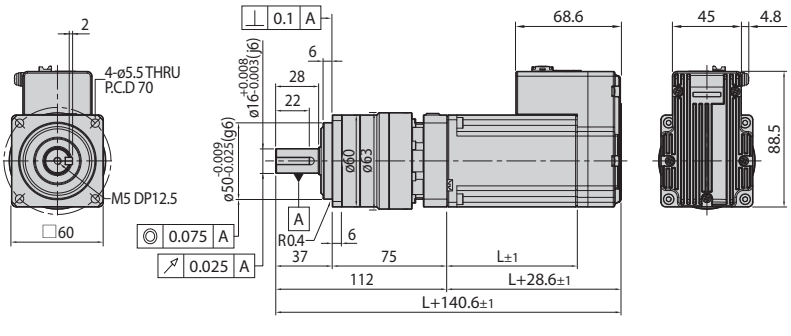
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



60mm

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

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



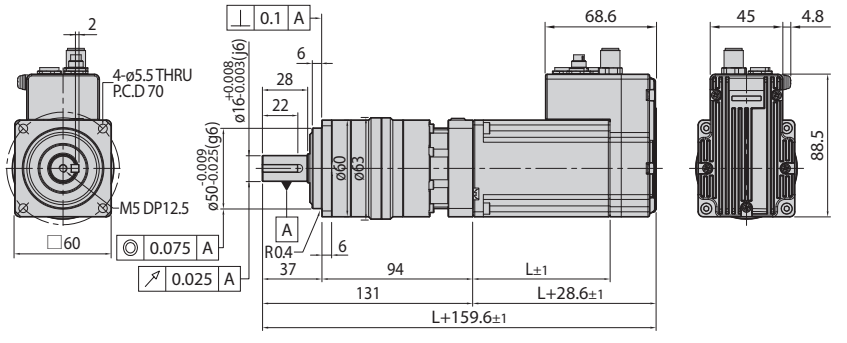
60mm

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

● Dimensions of Motor with Gearbox [60mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

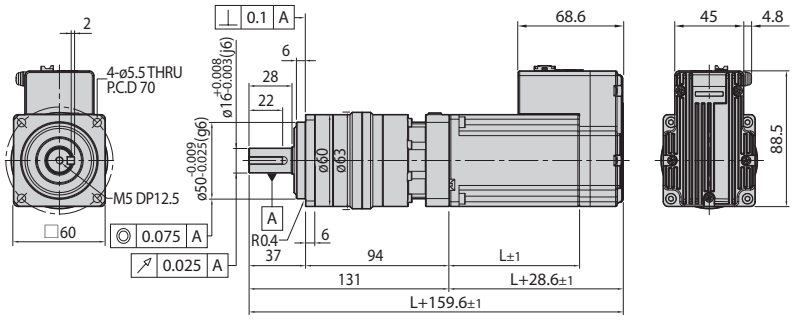
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



60mm

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

Gear Ratio 15, 25, 40, 50 : Double (RJ45 Connector Type)



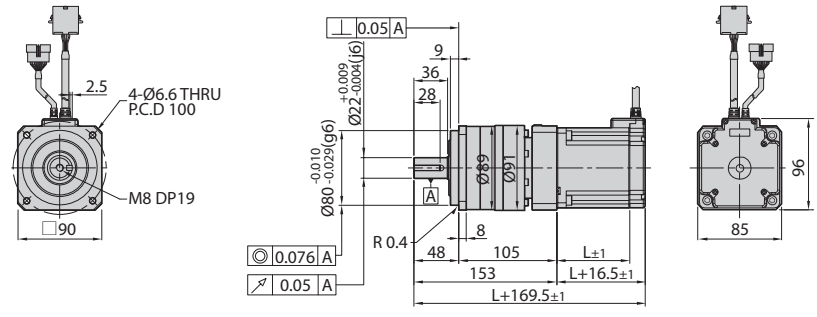
60mm

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

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT			

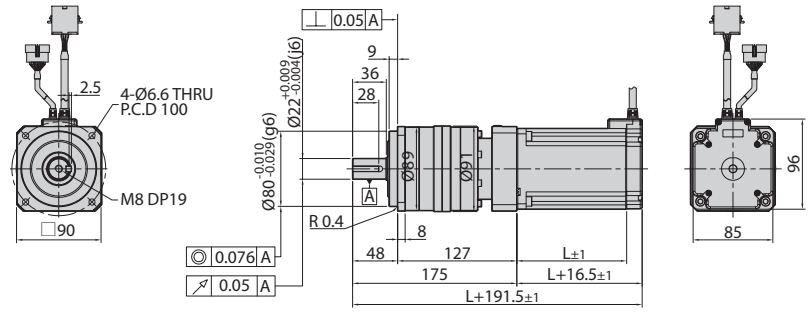
Gear Ratio 3, 5, 8, 10 : Single



86mm

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

Gear Ratio 15, 25, 40, 50 : Double

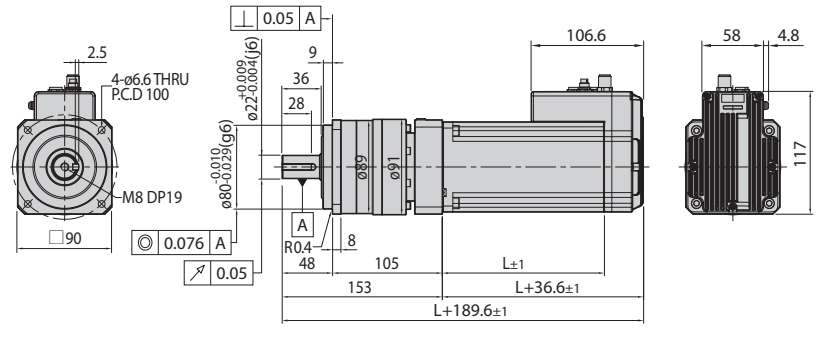


86mm

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

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

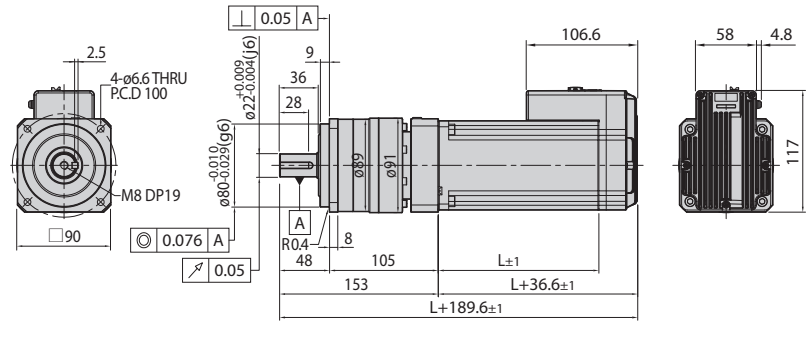
Gear Ratio 3, 5, 8, 10 : Single (M Connector Type)



86mm

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

Gear Ratio 3, 5, 8, 10 : Single (RJ45 Connector Type)



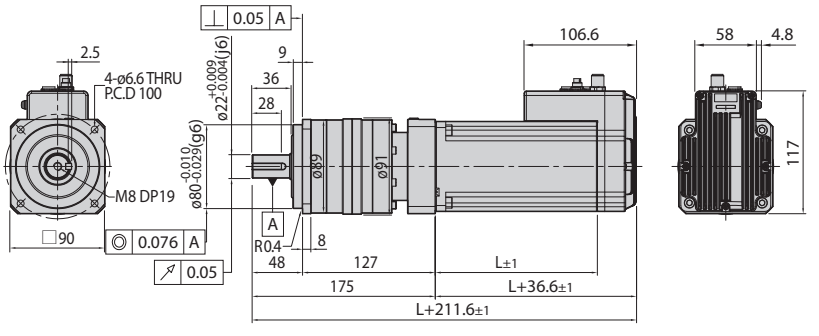
86mm

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

● Dimensions of Motor with Gearbox [86mm]

Applicable Model			
Ezi-SERVO II EtherCAT ALL			

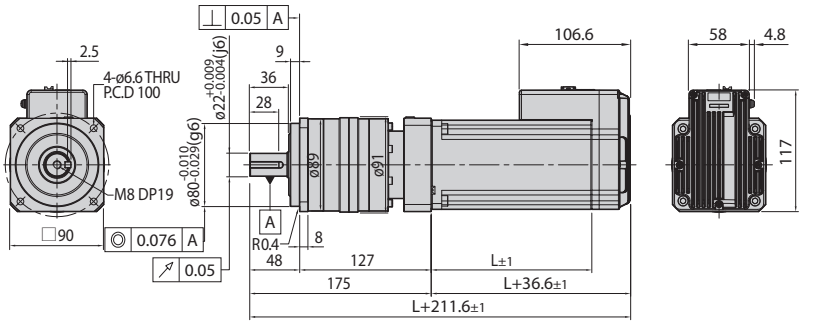
Gear Ratio 15, 25, 40, 50 : Double (M Connector Type)



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

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