

Ezi-SERVO® II

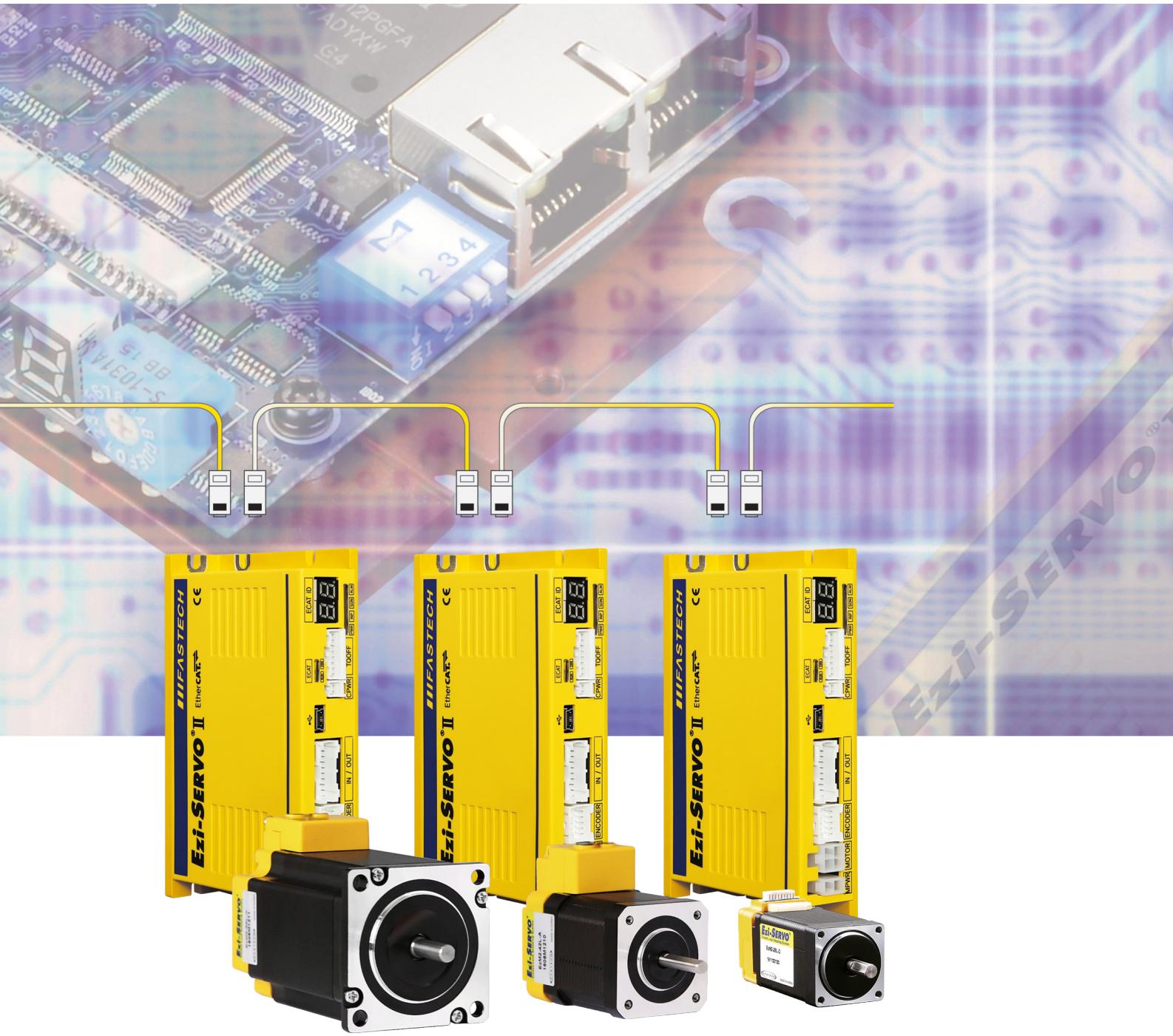
Closed Loop Stepping System

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

EtherCAT®
TO



CE RoHS
COMPLIANT



Fast, Accurate, Smooth Motion

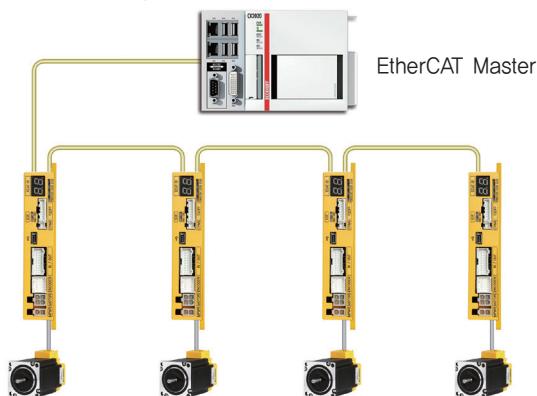
Ezi-SERVO[®] II EtherCAT[®] TO

Closed Loop Stepping System



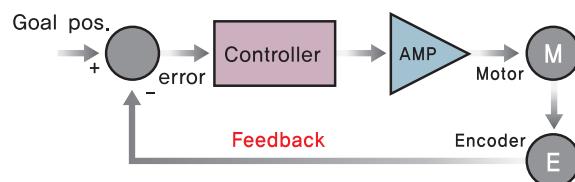
1 EtherCAT Based Motion Control

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



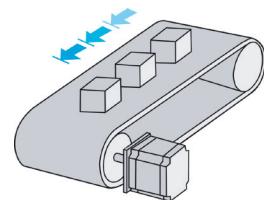
2 Closed-Loop System

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



3 Tuning Not Required

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

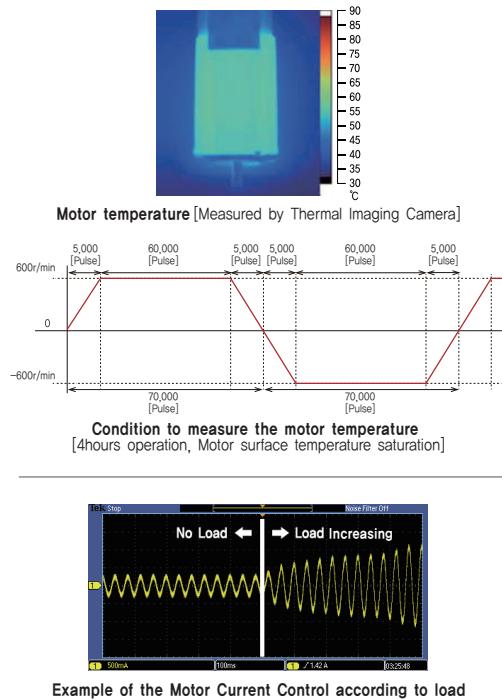


4 Low Heat Generation / Energy Savings

(Motor Current Control according to load)

Ezi-SERVOII automatically controls motor current according to load.

Ezi-SERVOII 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.

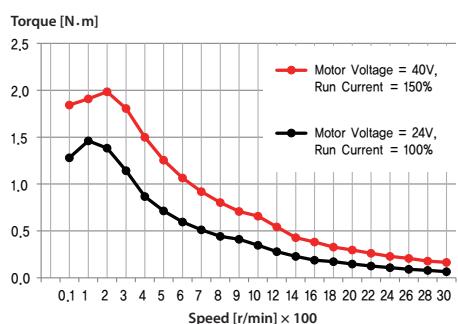


5 High Torque

(Motor Voltage Increasing and Motor Current Setting)

Ezi-SERVOII 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.

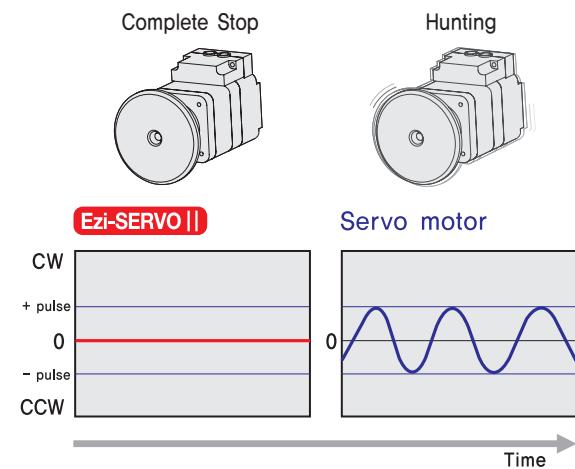


* The torque at low speed and high speed is improved about 30%.

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

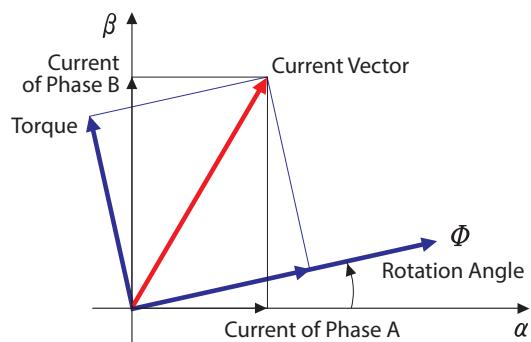
6 No Hunting

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



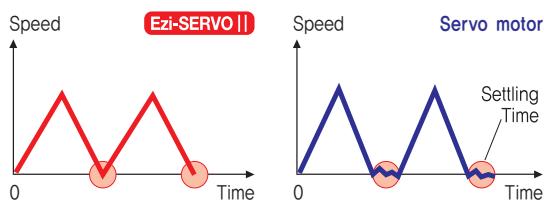
7 Smooth and Accurate Operation

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



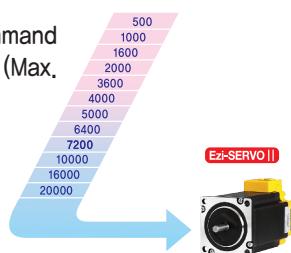
8 High Response

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



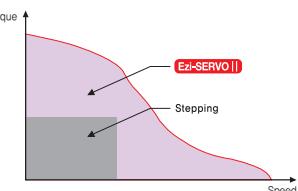
9 High Resolution

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



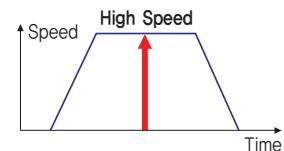
10 High Torque / Continuous Operation

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



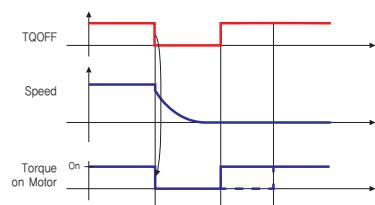
11 High Speed

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



12 Torque Off Function

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



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

● Advantages over Open-Loop Stepping Systems

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

● Advantages over Servo Motor Controller

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

● Ezi-SERVOII EtherCAT TO Part Numbering

Ezi-SERVOII-EC-TO-56L-A-BK-PN05

Product Name	
Drive Series	
EC-TO : EtherCAT Torque Off	
Motor Flange Size	
20 : 20mm 28 : 28mm 35 : 35mm 42 : 42mm 56 : 56mm 60 : 60mm	
Motor Length	
S : Small M : Medium L : Large XL : Extra Large	
Encoder Resolution	
A : 10,000P/R B : 20,000P/R D : 16,000P/R F : 4,000P/R	
Brake	
Blank : Without Brake BK : Brake	
Gear Ratio	
Blank : Without Gear PN03 : 1:3 PN05 : 1:5 PN08 : 1:8 PN10 : 1:10 PN15 : 1:15 PN25 : 1:25 PN40 : 1:40 PN50 : 1:50	

FASTECH Ezi-SERVOII EtherCAT TO

● Standard Combination

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

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

● Combination with Brake

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

● Combination with Gearbox

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

● Combination with Gearbox

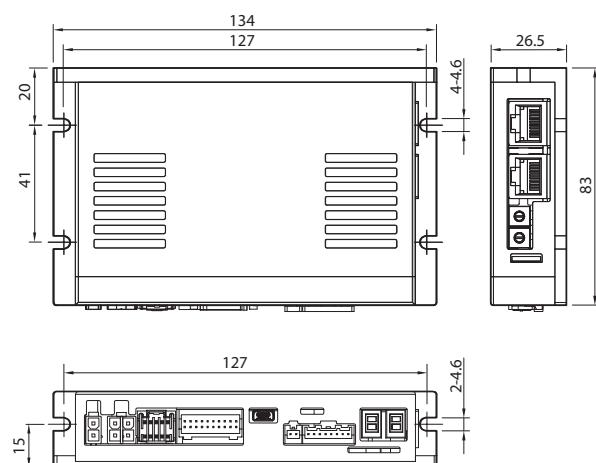
Unit Part Number	Motor Model Number	Drive Model Number	Gear Ratio
Ezi-SERVO II -EC-TO-56L-A-PN3	EzM2-56L-A-PN3	EzS2-EC-TO-56L-A	1:3
Ezi-SERVO II -EC-TO-56L-B-PN3	EzM2-56L-B-PN3	EzS2-EC-TO-56L-B	
Ezi-SERVO II -EC-TO-56L-A-PN5	EzM2-56L-A-PN5	EzS2-EC-TO-56L-A	1:5
Ezi-SERVO II -EC-TO-56L-B-PN5	EzM2-56L-B-PN5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

● Specifications of Drive

Motor Model	EzM2-20 series	EzM2-28 series	EzM2-35 series	EzM2-42 series	EzM2-56 series	EzM2-60 series								
Drive Model	EzS2-EC-TO-20 series	EzS2-EC-TO-28 series	EzS2-EC-TO-35 series	EzS2-EC-TO-42 series	EzS2-EC-TO-56 series	EzS2-EC-TO-60 series								
Input Voltage	DC24V±10%													
Control Method	Closed loop control with 32bit MCU													
Current Consumption	Max. 500mA (Except motor current)													
Operating Condition	Ambient Temperature	<ul style="list-style-type: none"> In Use: 0~50°C In Storage: -20~70°C 												
	Humidity	<ul style="list-style-type: none"> In Use: 35~85%RH (Non-Condensing) In Storage: 10~90%RH (Non-Condensing) 												
	Vib. Resist.	0.5g												
Function	Rotation Speed	0~3,000r/min *1												
	Resolution	Encoder Resolution [P/R]	Configurable Resolution [P/R]											
		4,000	500	1,000	1,600	2,000	3,600	4,000	5,000	6,400	7,200	10,000		
		10,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000			
		16,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	16,000		
		20,000	500	1,000	1,600	2,000	3,600	5,000	6,400	7,200	10,000	20,000		
	(Selectable by parameter)													
Error Type	Over Current Error, Over Speed Error, Position Tracking Error, Over Load Error, Over Temperature Error, Over Regenerated Voltage Error, Motor Connect Error, Encoder Connect Error, Main Power Voltage Error, In-Position Error, ROM Error, Position Overflow Error, Torque Off Circuit Error													
	LED Display	Power status, In-Position status, Servo On status, Alarm status												
EtherCAT	Supported Protocol	CoE (CiA 402 Drive Profile), FoE (Firmware Download)												
	Operation Mode	Cyclic Synchronous Position Mode, Profile Position Mode, Homing Mode												
	Synchronization	Free Run, SM Event, DC SYNC Event												
I/O Signal	Input Signals	3 dedicated inputs (LIMIT+, LIMIT-, ORIGIN), 6 user inputs (photocoupler inputs), 2 Torque Off signal inputs (TQOFF)												
	Output Signals	5 user outputs (photocoupler outputs), 1 Brake signal output, 1 Torque Off status output (TQMON)												

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

● Dimensions of Drive [mm]



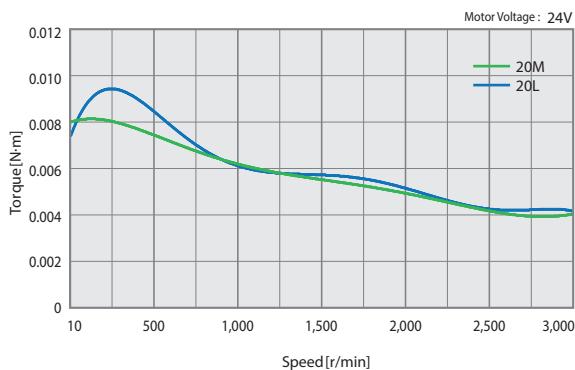
● Specifications of Motor

MODEL		UNIT	EzM2-20 series		EzM2-28 series			EzM2-35 series		EzM2-42 series				
			20M	20L	28S	28M	28L	35M	35L	42S	42M	42L	42XL	
DRIVE METHOD		-	Bipolar											
NUMBER OF PHASES		-	2 Phase											
CURRENT per PHASE		A/Phase	0.5	0.5	0.95	0.95	0.95	1.5	1.5	1.2	1.2	1.2	1.2	
MAXIMUM HOLDING TORQUE		N·m	0.016	0.025	0.069	0.098	0.118	0.13	0.23	0.32	0.44	0.5	0.65	
ROTOR INERTIA		g·cm ²	2,5	3,3	9,0	13	18	15	20	35	54	77	114	
WEIGHTS		kg	0.080	0.104	0.147	0.204	0.232	0.194	0.226	0.294	0.357	0.426	0.564	
LENGTH(L)		mm	28	38	32	45	50	32	36	34	40	48	60	
PERMISSIBLE RADIAL LOAD	DIS-TANCE FROM END OF SHAFT	3mm	18	18	30	30	30	22	22	22	22	22	22	
		8mm	30	30	38	38	38	26	26	26	26	26	26	
		13mm	-	-	53	53	53	33	33	33	33	33	33	
		18mm	-	-	-	-	-	46	46	46	46	46	46	
PERMISSIBLE AXIAL LOAD		N	Lower than motor Unit's Weight											
INSULATION RESISTANCE		MΩ	Min. 100(When measured with a DC500V insulation resistance meter)											
INSULATION CLASS		-	CLASS B(130°C)											
OPERATING TEMPERATURE		°C	0 ~ 55											

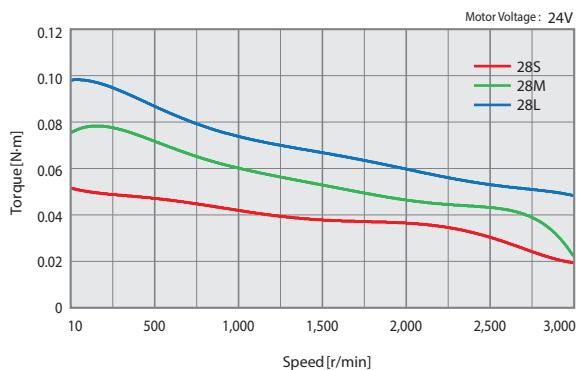
MODEL		UNIT	EzM2-56 series			EzM2-60 series			
			56S	56M	56L	60S	60M	60L	
DRIVE METHOD		-	Bipolar						
NUMBER OF PHASES		-	2 Phase						
CURRENT per PHASE		A/Phase	3.0	3.0	3.0	4.0	4.0	4.0	
MAXIMUM HOLDING TORQUE		N·m	0.64	1.0	1.5	0.88	1.28	2.4	
ROTOR INERTIA		g·cm ²	180	280	520	240	490	690	
WEIGHTS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

● Torque Characteristics of Motor

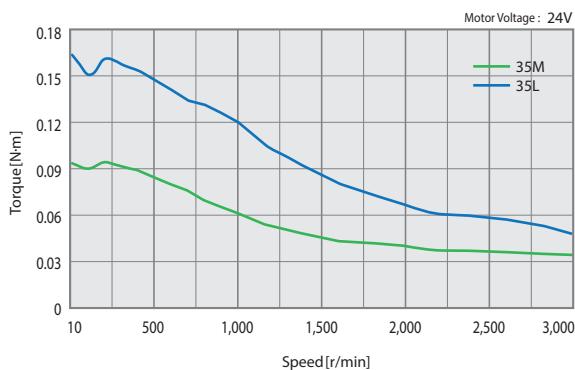
Ezi-SERVO II-EC-TO-20 series



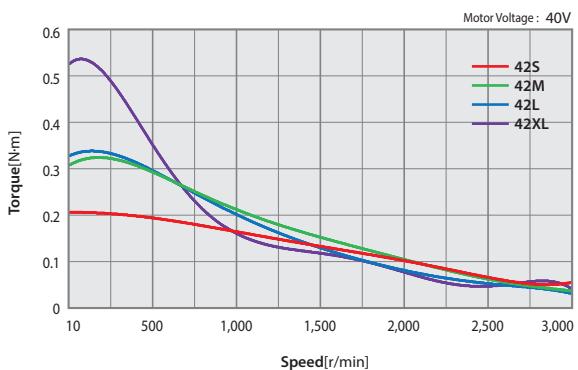
Ezi-SERVO II-EC-TO-28 series



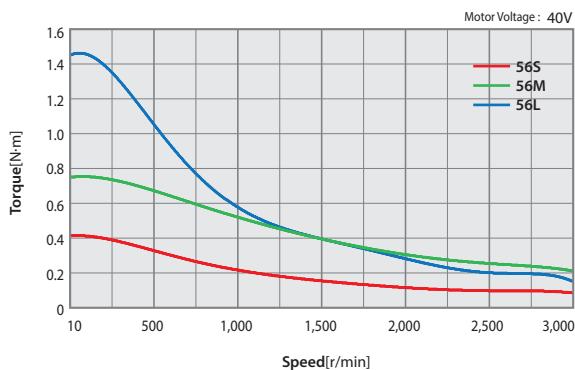
Ezi-SERVO II-EC-TO-35 series



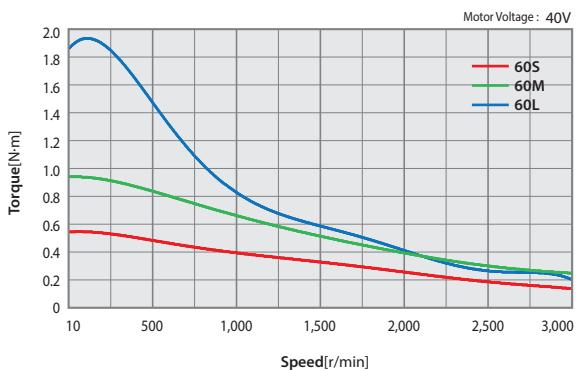
Ezi-SERVO II-EC-TO-42 series



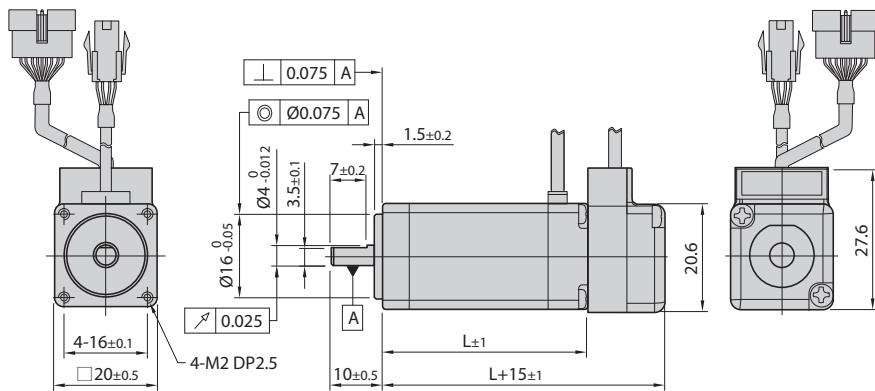
Ezi-SERVO II-EC-TO-56 series



Ezi-SERVO II-EC-TO-60 series

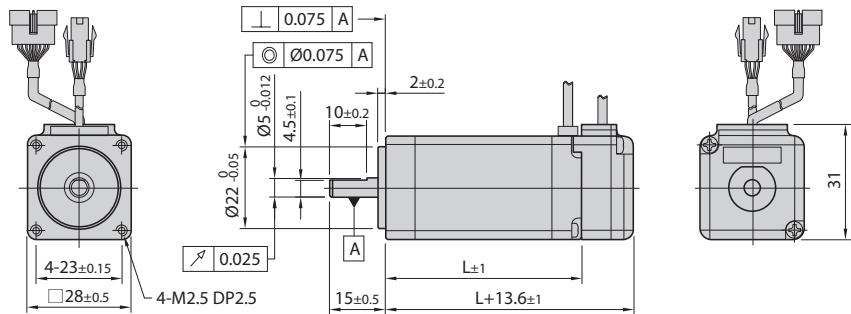


● Dimensions of Motor [mm]



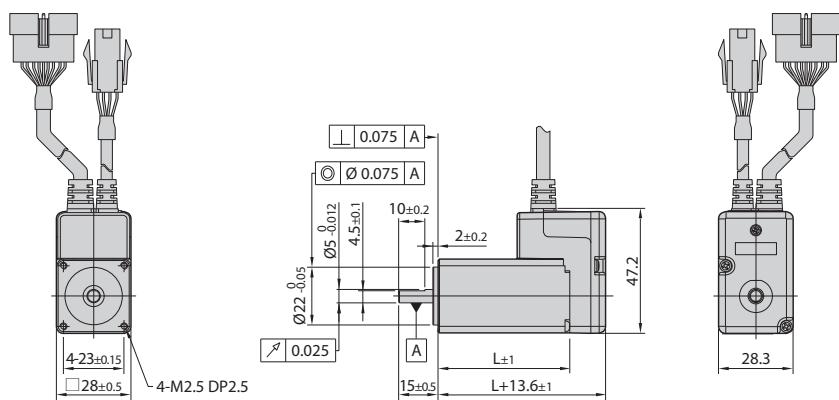
20mm

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



28mm

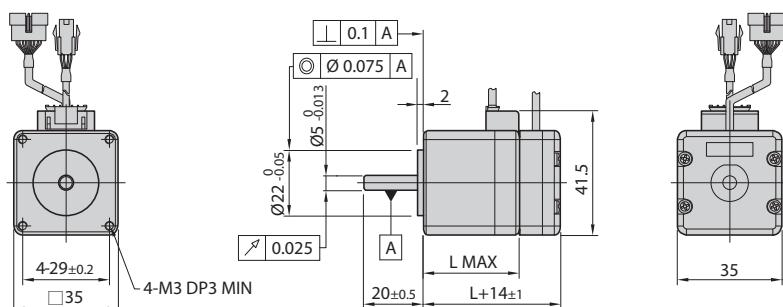
Model name	Length(L)
EzM2-28S	32
EzM2-28M	45
EzM2-28L	50



**28mm
(Stopper type)**

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

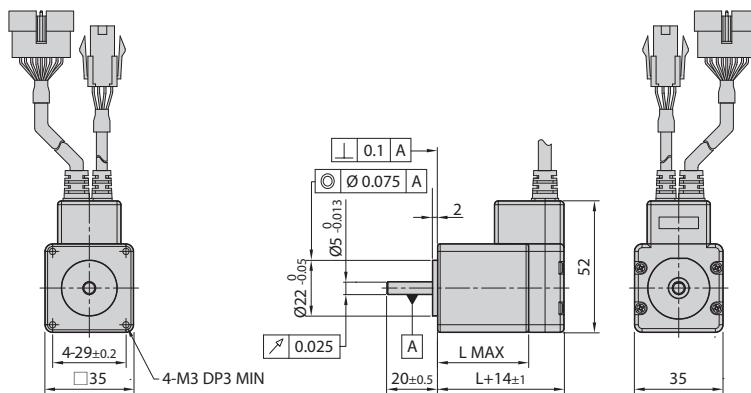
※ When ordering 28mm Stopper type of motor, please add "M" after standard motor model number.



35mm

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

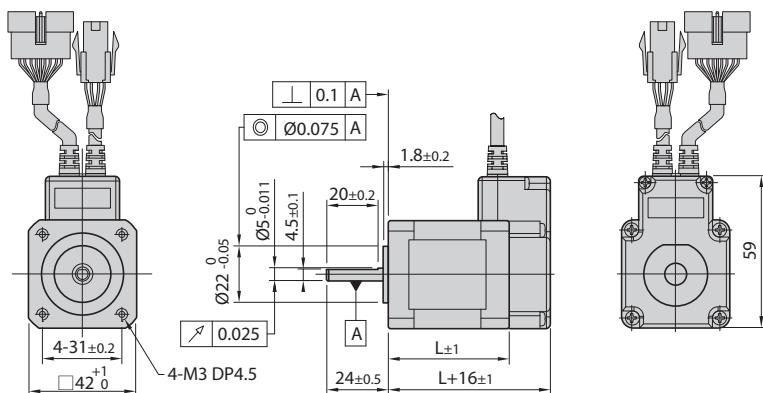
● Dimensions of Motor [mm]



35mm
(Stopper type)

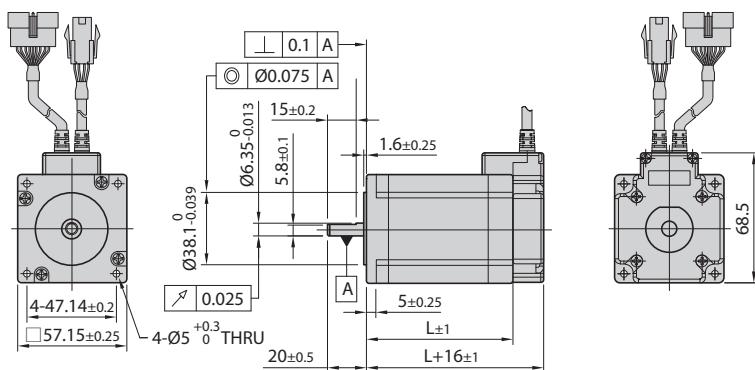
Model name	Length(L)
EzM2-35MM	32
EzM2-35LM	36

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



42mm

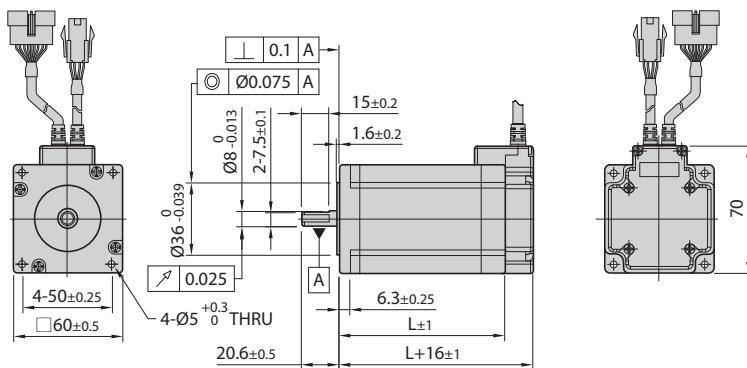
Model name	Length(L)
EzM2-42S	34
EzM2-42M	40
EzM2-42L	48
EzM2-42XL	60



56_{mm}

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.



60_{mm}

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

● Specifications of Motor with Brake

Unit Part Number	Motor Model Number	Electromagnetic Brake					Motor Unit Weight [kg]	Permissible Radial Load [N]		Permissible Axial Load [N]			
		Type	Voltage Input [V]	Rated Current [A]	Power Consumption [W]	Static Friction Torque [N·m]		Distance from End of Shaft [mm]					
								3	8	13	18		
Ezi-SERVO II-EC-TO-42S-■-BK	EzM2-42S-■-BK	Non-excitation run Type	DC24V ±10%	0.2	5	0.2	0.55	22	26	33	46	Must be Lower than Motor Unit Weight	
Ezi-SERVO II-EC-TO-42M-■-BK	EzM2-42M-■-BK						0.62						
Ezi-SERVO II-EC-TO-42L-■-BK	EzM2-42L-■-BK						0.69						
Ezi-SERVO II-EC-TO-42XL-■-BK	EzM2-42XL-■-BK						0.82						
Ezi-SERVO II-EC-TO-56S-■-BK	EzM2-56S-■-BK			0.27	6.6	0.7	1.03	52	65	85	123		
Ezi-SERVO II-EC-TO-56M-■-BK	EzM2-56M-■-BK						1.20						
Ezi-SERVO II-EC-TO-56L-■-BK	EzM2-56L-■-BK						1.65						
Ezi-SERVO II-EC-TO-60S-■-BK	EzM2-60S-■-BK						1.11	70	87	114	165		
Ezi-SERVO II-EC-TO-60M-■-BK	EzM2-60M-■-BK						1.30						
Ezi-SERVO II-EC-TO-60L-■-BK	EzM2-60L-■-BK						1.86						

* The code of encoder resolution is marked in “■”.

* Electromagnetic Brake cannot be used for braking. Position hold purpose only when power OFF.

* The weight means Motor Unit Weight including Motor and Electromagnetic Brake.

* Motor Model Number is combined model name of Motor and Brake.

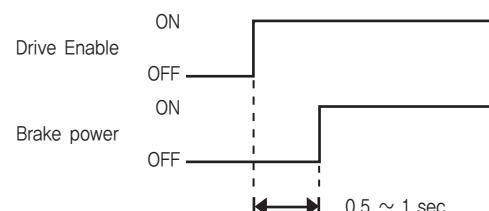
* Motor specification and torque characteristic are same as Standard Motor.

* Brake Operation Timing Chart

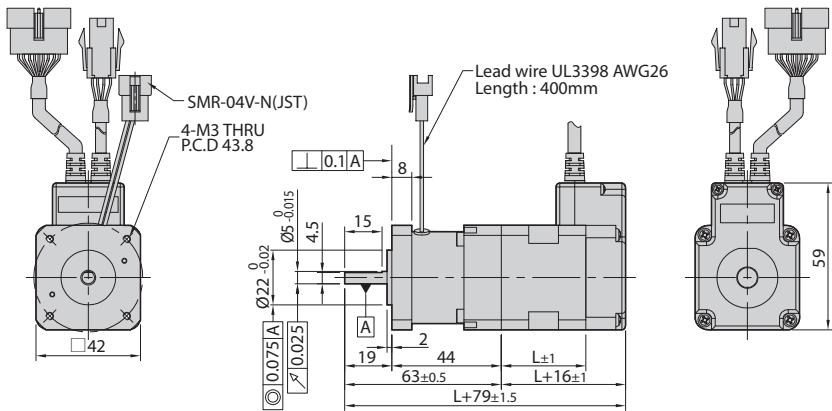
Ezi-SERVO II EtherCAT TO controls Brake by Drive automatically.

Please refer to below Timing Chart when Brake is controlled by the upper controller other than using Ezi-SERVO II EtherCAT TO Brake control. Otherwise, Drive might malfunction and loads might fall down.

Also, please do not operate Brake during motor operation to prevent damage.

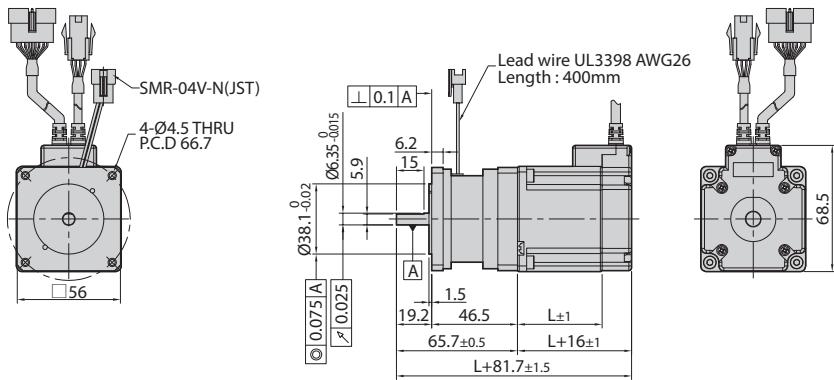


● Dimensions of Motor with Brake [mm]



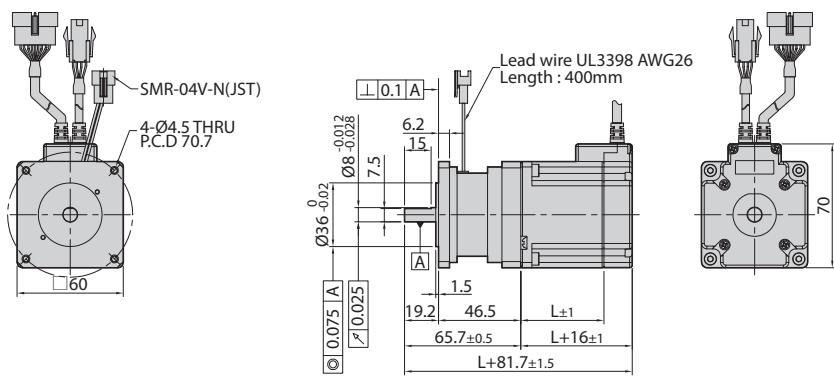
42mm

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



60_{mm}

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

● How to Read Specifications

Unit Part Number	① Maximum Holding Torque [N·m]	② Rotor Inertia Moment [kg·m ²]	③ Back-lash [arcmin]	④ Angle Transmission Error [arcmin]	⑤ Gear Ratio	⑥ Resolution (10,000 P/R Standard)	⑦ Permissible Torque [N·m]	⑧ Instantaneous Maximum Torque [N·m]	⑨ Permissible Speed Range [r/min]	⑩ Unit Weight [kg]	⑪ Permissible Radial Load (At Center of Axis) [N]	⑫ Permissible Axial Load [N]
Ezi-SERVO II -EC-TO-42S-■-PN3	0.57	35x10 ⁻⁷	3	5	3	0.012°	6	12	0~1000	0.76	240	270
Ezi-SERVO II -EC-TO-42S-■-PN5	0.95				5	0.0072°	9	18	0~600		290	330
Ezi-SERVO II -EC-TO-42S-■-PN8	1.52				8	0.0045°	9	18	0~375		340	410
Ezi-SERVO II -EC-TO-42S-■-PN10	1.90				10	0.0036°	6	12	0~300		360	450
Ezi-SERVO II -EC-TO-42S-■-PN15	2.76		5	7	15	0.0024°	6	12	0~200	0.91	410	540
Ezi-SERVO II -EC-TO-42S-■-PN25	4.60				25	0.00144°	9	18	0~120		490	640
Ezi-SERVO II -EC-TO-42S-■-PN40	7.36				40	0.0009°	9	18	0~75		570	640
Ezi-SERVO II -EC-TO-42S-■-PN50	9.00				50	0.00072°	9	18	0~60		620	640

Description of Specification Items

No.	Item	Description
①	Maximum Holding Torque	This is the maximum torque that can be exerted through the gearbox when the motor is stopped. (Based on 100% of stop current) Use the torque below the permissible torque of the gearbox.
②	Rotor Inertia Moment	It is the value of the moment of inertia of the motor.
③	Backlash	It is the gap between the gear and the gear, and it is the angle at which the gearbox shaft moves without external force when stopped.
④	Angle Transmission Error	This is the transmission characteristic of the gearbox, which means the difference between the theoretical rotation angle and the actual rotation angle of the output shaft.
⑤	Gear Ratio	It is the value obtained by dividing the number of output rotation by the number of input rotation.
⑥	Resolution	This is the angle at which the gearbox output shaft moves when the motor is driven by 1 pulse.
⑦	Permissible Torque	It refers to the maximum value of the torque that can be continuously applied to the output shaft of the gearbox during constant speed operation. (When the input rotation speed is 3,000r/min and the lifetime of the motor becomes 20,000 hours)
⑧	Instantaneous Maximum Torque	This is the maximum torque allowed to the output shaft of the gearbox during acceleration/deceleration.
⑨	Permissible Speed Range	It is the range of rotation speed based on the output shaft of the gearbox.
⑩	Unit Weight	It is the sum of the weight of the gearbox and the motor.
⑪	Permissible Radial Load	It is the maximum value of the load applied in the direction perpendicular to the gearbox output shaft.
⑫	Permissible Axial Load	It is the maximum value of the load applied in the axial direction to the gearbox output shaft.

● Specifications of Motor with Gearbox

42mm

Unit Part Number	Maximum Holding Torque [N·m]	Rotor Inertia Moment [kg·m ²]	Back-lash [arcmin]	Angle Transmission Error [arcmin]	Gear Ratio	Resolution (10,000 P/R Standard)	Permissible Torque [N·m]	Instantaneous Maximum Torque [N·m]	Permissible Speed Range [r/min]	Unit Weight [kg]	Permissible Radial Load (At Center of Axis) [N]	Permissible Axial Load [N]
Ezi-SERVO II -EC-TO-42S-■-PN3	0.57	35x10 ⁻⁷	3	5	3	0,012°	6	12	0~1000	0.76	240	270
Ezi-SERVO II -EC-TO-42S-■-PN5	0.95				5	0,0072°	9	18	0~600		290	330
Ezi-SERVO II -EC-TO-42S-■-PN8	1.52				8	0,0045°	9	18	0~375		340	410
Ezi-SERVO II -EC-TO-42S-■-PN10	1.90				10	0,0036°	6	12	0~300		360	450
Ezi-SERVO II -EC-TO-42S-■-PN15	2.76		5	7	15	0,0024°	6	12	0~200	0.91	410	540
Ezi-SERVO II -EC-TO-42S-■-PN25	4.60				25	0,00144°	9	18	0~120		490	640
Ezi-SERVO II -EC-TO-42S-■-PN40	7.36				40	0,0009°	9	18	0~75		570	640
Ezi-SERVO II -EC-TO-42S-■-PN50	9.00				50	0,00072°	9	18	0~60		620	640
Ezi-SERVO II -EC-TO-42M-■-PN3	0.85	54x10 ⁻⁷	3	5	3	0,012°	6	12	0~1000	0.81	240	270
Ezi-SERVO II -EC-TO-42M-■-PN5	1.42				5	0,0072°	9	18	0~600		290	330
Ezi-SERVO II -EC-TO-42M-■-PN8	2.28				8	0,0045°	9	18	0~375		340	410
Ezi-SERVO II -EC-TO-42M-■-PN10	2.85				10	0,0036°	6	12	0~300		360	450
Ezi-SERVO II -EC-TO-42M-■-PN15	4.14		5	7	15	0,0024°	6	12	0~200	0.97	410	540
Ezi-SERVO II -EC-TO-42M-■-PN25	6.90				25	0,00144°	9	18	0~120		490	640
Ezi-SERVO II -EC-TO-42M-■-PN40	9.00				40	0,0009°	9	18	0~75		570	640
Ezi-SERVO II -EC-TO-42M-■-PN50	9.00				50	0,00072°	9	18	0~60		620	640
Ezi-SERVO II -EC-TO-42L-■-PN3	0.92	77x10 ⁻⁷	3	5	3	0,012°	6	12	0~1000	0.89	240	270
Ezi-SERVO II -EC-TO-42L-■-PN5	1.54				5	0,0072°	9	18	0~600		290	330
Ezi-SERVO II -EC-TO-42L-■-PN8	2.47				8	0,0045°	9	18	0~375		340	410
Ezi-SERVO II -EC-TO-42L-■-PN10	3.09				10	0,0036°	6	12	0~300		360	450
Ezi-SERVO II -EC-TO-42L-■-PN15	4.49		5	7	15	0,0024°	6	12	0~200	1.04	410	540
Ezi-SERVO II -EC-TO-42L-■-PN25	7.49				25	0,00144°	9	18	0~120		490	640
Ezi-SERVO II -EC-TO-42L-■-PN40	9.00				40	0,0009°	9	18	0~75		570	640
Ezi-SERVO II -EC-TO-42L-■-PN50	9.00				50	0,00072°	9	18	0~60		620	640
Ezi-SERVO II -EC-TO-42XL-■-PN3	1.45	114x10 ⁻⁷	3	5	3	0,012°	6	12	0~1000	1.03	240	270
Ezi-SERVO II -EC-TO-42XL-■-PN5	2.42				5	0,0072°	9	18	0~600		290	330
Ezi-SERVO II -EC-TO-42XL-■-PN8	3.87				8	0,0045°	9	18	0~375		340	410
Ezi-SERVO II -EC-TO-42XL-■-PN10	4.84				10	0,0036°	6	12	0~300		360	450
Ezi-SERVO II -EC-TO-42XL-■-PN15	6.00		5	7	15	0,0024°	6	12	0~200	1.18	410	540
Ezi-SERVO II -EC-TO-42XL-■-PN25	9.00				25	0,00144°	9	18	0~120		490	640
Ezi-SERVO II -EC-TO-42XL-■-PN40	9.00				40	0,0009°	9	18	0~75		570	640
Ezi-SERVO II -EC-TO-42XL-■-PN50	9.00				50	0,00072°	9	18	0~60		620	640

* The code of encoder resolution will be marked in “■”

● Specifications of Motor with Gearbox

56mm

Unit Part Number	Maximum Holding Torque [N·m]	Rotor Inertia Moment [kg·m ²]	Back-lash [arcmin]	Angle Transmission Error [arcmin]	Gear Ratio	Resolution (10,000 P/R Standard)	Permissible Torque [N·m]	Instantaneous Maximum Torque [N·m]	Permissible Speed Range [r/min]	Unit Weight [kg]	Permissible Radial Load (At Center of Axis) [N]	Permissible Axial Load [N]
Ezi-SERVO II-EC-TO-56S-■-PN3	1,1	180x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	1,75	430	310
Ezi-SERVO II-EC-TO-56S-■-PN5	1,9				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II-EC-TO-56S-■-PN8	3,0				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II-EC-TO-56S-■-PN10	3,8				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II-EC-TO-56S-■-PN15	5,5				15	0,0024°	18	35	0~200	2,05	740	630
Ezi-SERVO II-EC-TO-56S-■-PN25	9,3				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II-EC-TO-56S-■-PN40	14,9				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II-EC-TO-56S-■-PN50	18,6				50	0,00072°	27	50	0~60		1100	1100
Ezi-SERVO II-EC-TO-56M-■-PN3	2,0	280x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	1,92	430	310
Ezi-SERVO II-EC-TO-56M-■-PN5	3,4				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II-EC-TO-56M-■-PN8	5,4				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II-EC-TO-56M-■-PN10	6,8				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II-EC-TO-56M-■-PN15	9,9				15	0,0024°	18	35	0~200	2,23	740	630
Ezi-SERVO II-EC-TO-56M-■-PN25	16,6				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II-EC-TO-56M-■-PN40	27,0				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II-EC-TO-56M-■-PN50	27,0				50	0,00072°	27	50	0~60		1100	1100
Ezi-SERVO II-EC-TO-56L-■-PN3	4,0	520x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	2,37	430	310
Ezi-SERVO II-EC-TO-56L-■-PN5	6,8				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II-EC-TO-56L-■-PN8	10,8				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II-EC-TO-56L-■-PN10	13,6				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II-EC-TO-56L-■-PN15	18,0				15	0,0024°	18	35	0~200	2,67	740	630
Ezi-SERVO II-EC-TO-56L-■-PN25	27,0				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II-EC-TO-56L-■-PN40	27,0				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II-EC-TO-56L-■-PN50	27,0				50	0,00072°	27	50	0~60		1100	1100

* The code of encoder resolution will be marked in “■”

● Specifications of Motor with Gearbox

60mm

Unit Part Number	Maximum Holding Torque [N·m]	Rotor Inertia Moment [kg·m ²]	Back-lash [arcmin]	Angle Transmission Error [arcmin]	Gear Ratio	Resolution (10,000 P/R Standard)	Permissible Torque [N·m]	Instantaneous Maximum Torque [N·m]	Permissible Speed Range [r/min]	Unit Weight [kg]	Permissible Radial Load (At Center of Axis) [N]	Permissible Axial Load [N]
Ezi-SERVO II -EC-TO-60S-■-PN3	1,5	240x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	1,84	430	310
Ezi-SERVO II -EC-TO-60S-■-PN5	2,5				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II -EC-TO-60S-■-PN8	4,0				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II -EC-TO-60S-■-PN10	5,1				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II -EC-TO-60S-■-PN15	7,4				15	0,0024°	18	35	0~200	2,13	740	630
Ezi-SERVO II -EC-TO-60S-■-PN25	12,3				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II -EC-TO-60S-■-PN40	19,8				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II -EC-TO-60S-■-PN50	24,7				50	0,00072°	27	50	0~60		1100	1100
Ezi-SERVO II -EC-TO-60M-■-PN3	2,6	490x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	1,20	430	310
Ezi-SERVO II -EC-TO-60M-■-PN5	4,4				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II -EC-TO-60M-■-PN8	7,0				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II -EC-TO-60M-■-PN10	8,8				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II -EC-TO-60M-■-PN15	12,8				15	0,0024°	18	35	0~200	2,30	740	630
Ezi-SERVO II -EC-TO-60M-■-PN25	21,4				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II -EC-TO-60M-■-PN40	27,0				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II -EC-TO-60M-■-PN50	27,0				50	0,00072°	27	50	0~60		1100	1100
Ezi-SERVO II -EC-TO-60L-■-PN3	5,2	690x10 ⁻⁷	3	5	3	0,012°	18	35	0~1000	2,61	430	310
Ezi-SERVO II -EC-TO-60L-■-PN5	8,7				5	0,0072°	27	50	0~600		510	390
Ezi-SERVO II -EC-TO-60L-■-PN8	13,9				8	0,0045°	27	50	0~375		600	480
Ezi-SERVO II -EC-TO-60L-■-PN10	18,0				10	0,0036°	18	35	0~300		640	530
Ezi-SERVO II -EC-TO-60L-■-PN15	18,0				15	0,0024°	18	35	0~200	2,86	740	630
Ezi-SERVO II -EC-TO-60L-■-PN25	27,0				25	0,00144°	27	50	0~120		870	790
Ezi-SERVO II -EC-TO-60L-■-PN40	27,0				40	0,0009°	27	50	0~75		1000	970
Ezi-SERVO II -EC-TO-60L-■-PN50	27,0				50	0,00072°	27	50	0~60		1100	1100

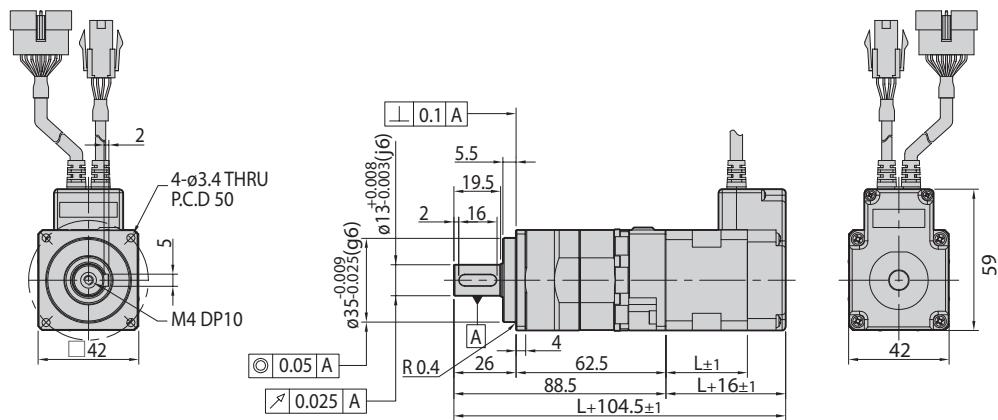
* The code of encoder resolution will be marked in “■”

● Dimensions of Motor with Gearbox [mm]

42mm

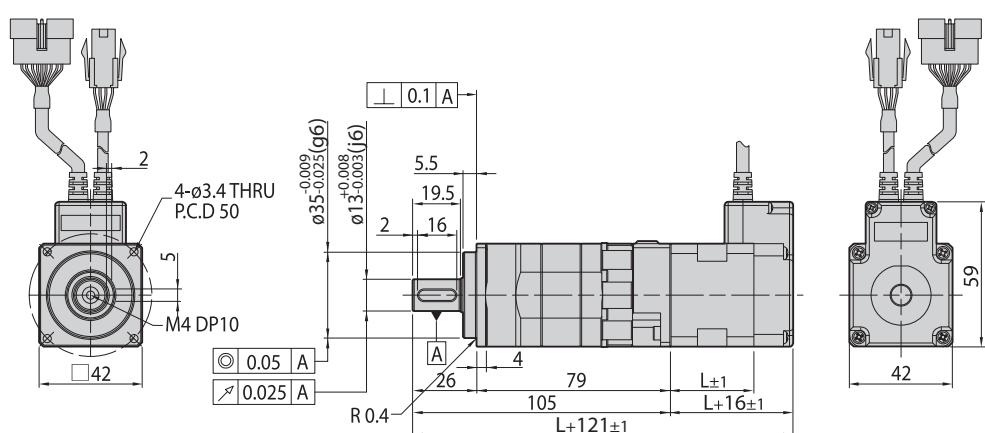
Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II-EC-TO-42S-■-PN□	EzM2-42S-■-PN□	Single Stage	3, 5, 8, 10	34
Ezi-SERVO II-EC-TO-42M-■-PN□	EzM2-42M-■-PN□		3, 5, 8, 10	40
Ezi-SERVO II-EC-TO-42L-■-PN□	EzM2-42L-■-PN□		3, 5, 8, 10	48
Ezi-SERVO II-EC-TO-42XL-■-PN□	EzM2-42XL-■-PN□		3, 5, 8, 10	60

* The code of encoder resolution will be marked in “■”



Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II-EC-TO-42S-■-PN□	EzM2-42S-■-PN□	Double Stage	15, 25, 40, 50	34
Ezi-SERVO II-EC-TO-42M-■-PN□	EzM2-42M-■-PN□		15, 25, 40, 50	40
Ezi-SERVO II-EC-TO-42L-■-PN□	EzM2-42L-■-PN□		15, 25, 40, 50	48
Ezi-SERVO II-EC-TO-42XL-■-PN□	EzM2-42XL-■-PN□		15, 25, 40, 50	60

* The code of encoder resolution will be marked in “■”

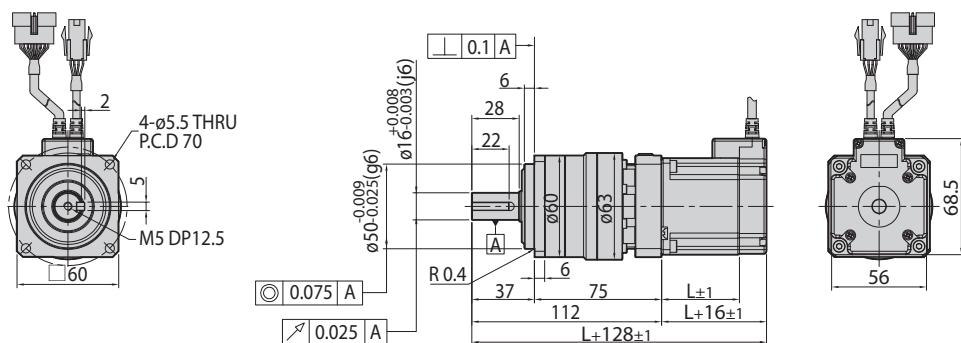


● Dimensions of Motor with Gearbox [mm]

56mm

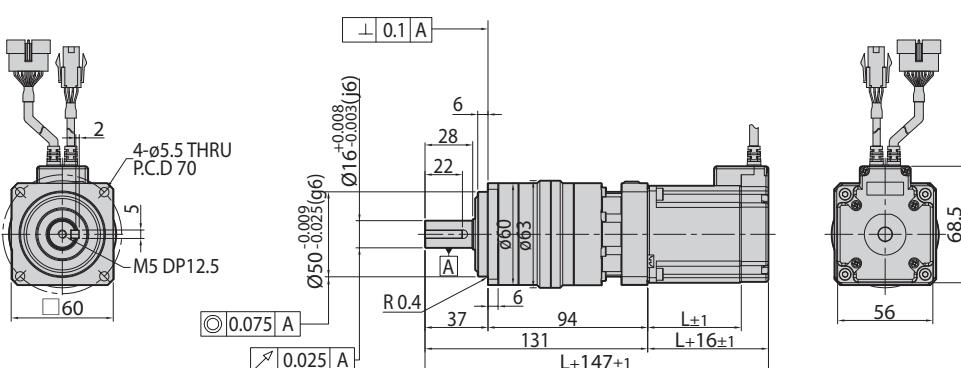
Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II -EC-TO-56S-■-PN	EzM2-56S-■-PN	Single Stage	3, 5, 8, 10	46
Ezi-SERVO II -EC-TO-56M-■-PN	EzM2-56M-■-PN		3, 5, 8, 10	55
Ezi-SERVO II -EC-TO-56L-■-PN	EzM2-56L-■-PN		3, 5, 8, 10	80

* The code of encoder resolution will be marked in “■”



Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II -EC-TO-56S-■-PN	EzM2-56S-■-PN	Double Stage	15, 25, 40, 50	46
Ezi-SERVO II -EC-TO-56M-■-PN	EzM2-56M-■-PN		15, 25, 40, 50	55
Ezi-SERVO II -EC-TO-56L-■-PN	EzM2-56L-■-PN		15, 25, 40, 50	80

* The code of encoder resolution will be marked in “■”

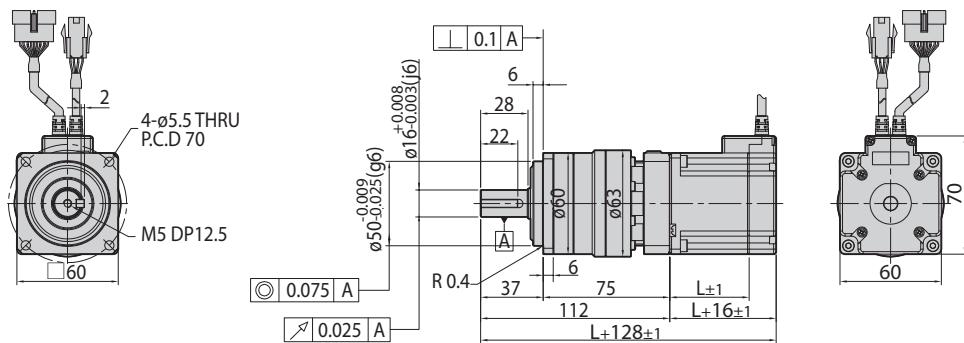


● Dimensions of Motor with Gearbox [mm]

60mm

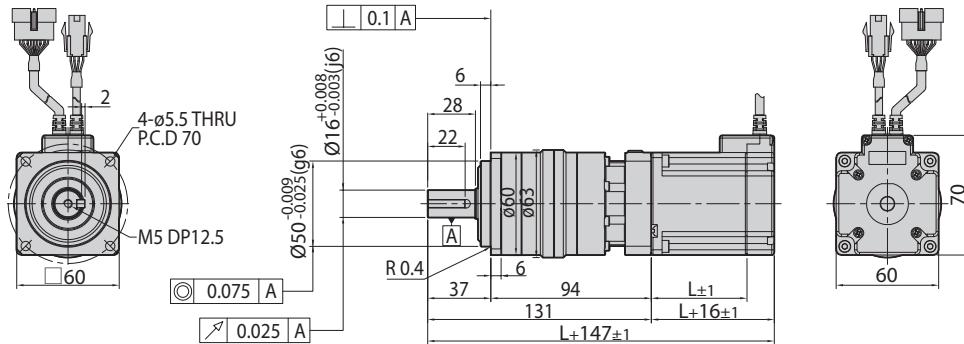
Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II-EC-TO-60S-■-PN □	EzM2-60S-■-PN □	Single Stage	3, 5, 8, 10	47
Ezi-SERVO II-EC-TO-60M-■-PN □	EzM2-60M-■-PN □		3, 5, 8, 10	56
Ezi-SERVO II-EC-TO-60L-■-PN □	EzM2-60L-■-PN □		3, 5, 8, 10	85

* The code of encoder resolution will be marked in “■”

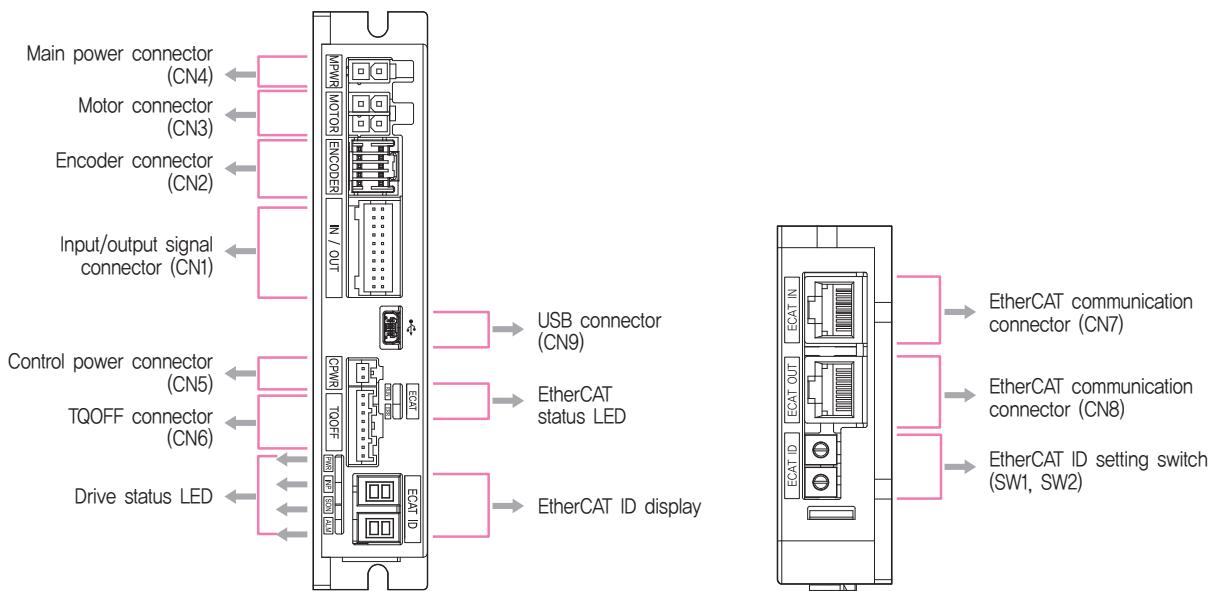


Unit Part Number	Motor	Stage	Gear Ratio	L [mm]
Ezi-SERVO II-EC-TO-60S-■-PN □	EzM2-60S-■-PN □	Double Stage	15, 25, 40, 50	47
Ezi-SERVO II-EC-TO-60M-■-PN □	EzM2-60M-■-PN □		15, 25, 40, 50	56
Ezi-SERVO II-EC-TO-60L-■-PN □	EzM2-60L-■-PN □		15, 25, 40, 50	85

* The code of encoder resolution will be marked in “■”

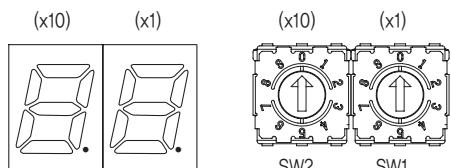


● Settings and Operation



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

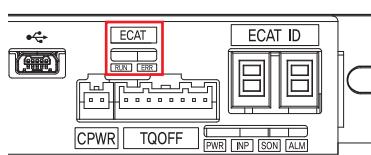
Use two rotary switches to set EtherCAT ID (ECAT Device ID). Set ones digit (x1) of EtherCAT ID on the right rotary switch (SW1), and set tens digit (x10) of EtherCAT ID on the left rotary switch (SW2).



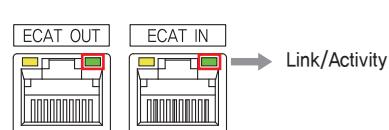
2. EtherCAT Status LED

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

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



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



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

3. Drive Status LED

LED informs operation status of the drive.

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

◆ List of error types by the number of LED blinking

No.	Error Code *4	Error Type	Causes
1	E-001	Over Current Error	The current through power devices in drive exceeds the limit.*1
2	E-002	Over Speed Error	The motor speed exceeds 3,000r/min
3	E-003	Position Tracking Error	Position error value is greater than the reference value while the motor is running.*2
4	E-004	Over Load Error	The motor is continuously operated more than 5 seconds under a load exceeding the max. torque,
5	E-005	Over Temperature Error	Internal temperature of the drive exceeds 85°C
6	E-006	Over Regenerative Voltage Error	Back-EMF is higher than limit value.*3
7	E-007	Motor Connect Error	There is a problem with the connection between the drive and the motor
8	E-008	Encoder Connect Error	There is a problem with the connection between the drive and the encoder
10	E-010	In-Position Error	After operation is finished, position error larger than 1 pulse is continued for more than 3 seconds
12	E-012	ROM Error	Error occurs in parameter storage device(ROM)
15	E-015	Position Overflow Error	Position error value is greater than the reference value while the motor is stopped.*2
16	E-016	Abnormal Safety State Error	Input states of TQOFF1 and TQOFF2 are different from each other.

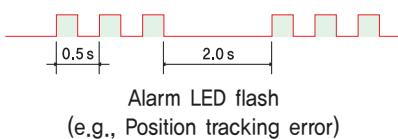
*1 : Limit value depends on motor model, (Refer to the Manual)

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

*3 : Voltage limit of Back-EMF depends on motor model, (Refer to the Manual)

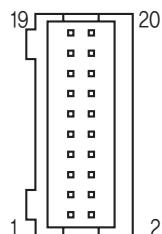
*4 : When an alarm occurs, error code is displayed on the 7-segment LED display instead of EtherCAT ID.

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



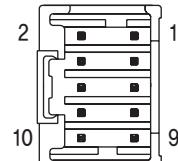
4. Input/Output Signal Connector (CN1)

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



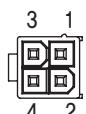
5. Encoder Connector (CN2)

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



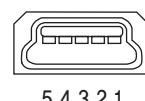
6. Motor Connector (CN3)

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



11. USB Connector (CN9)

No.	Function
1	V _{BUS}
2	D-
3	D+
4	---
5	GND



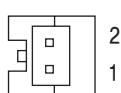
7. Main Power Connector (CN4)

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



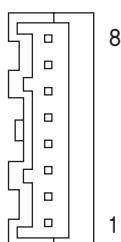
8. Control Power Connector (CN5)

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



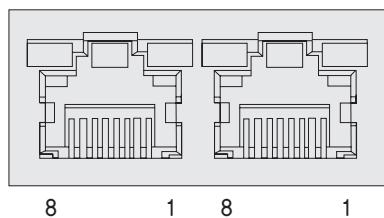
9. TQOFF Connector (CN6)

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



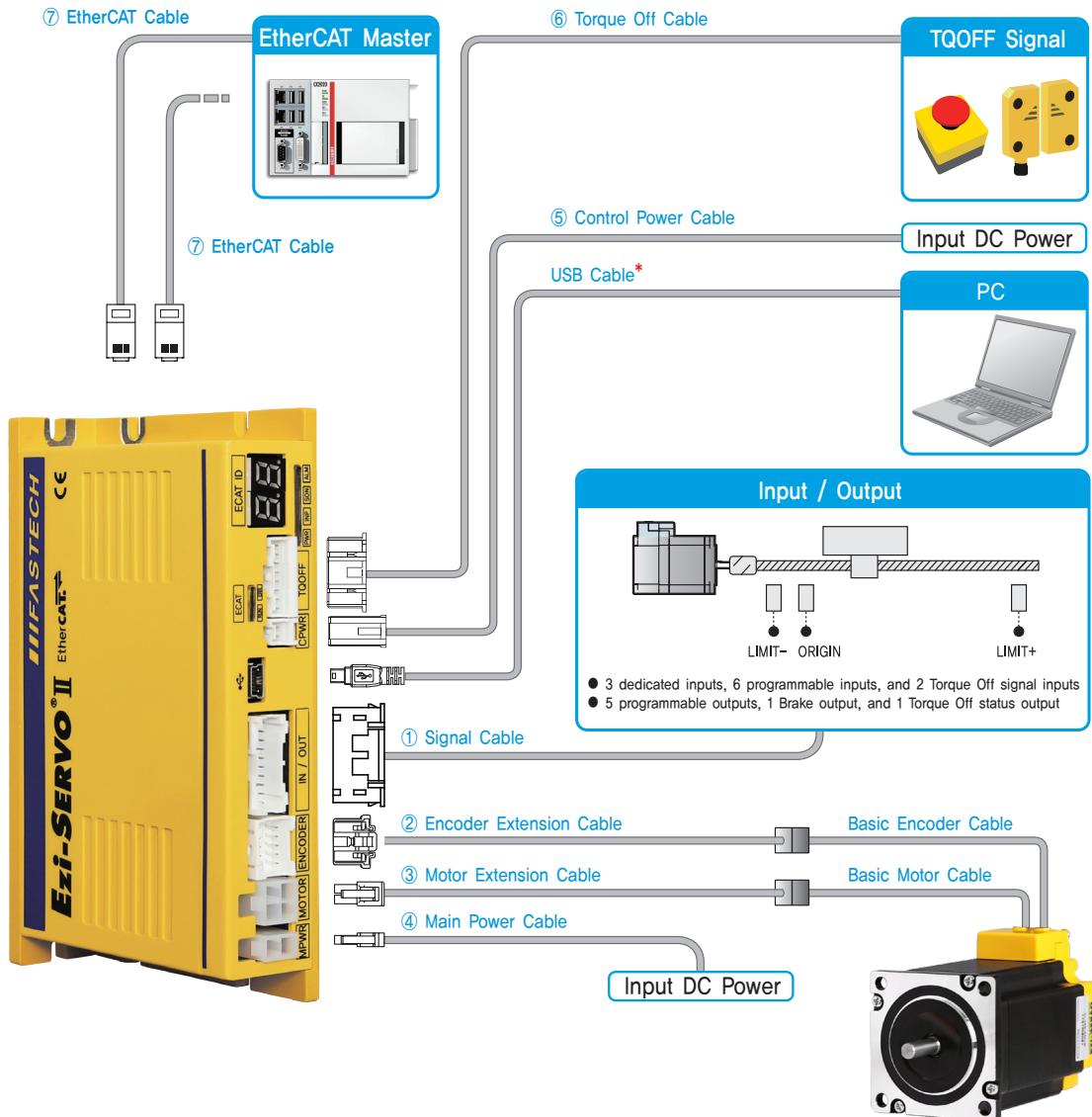
10. EtherCAT Communication Connector (CN7, CN8)

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



● System Configuration

FASTECH Ezi-SERVOII EtherCAT TO



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

1. Accessories

Connectors

These are connector specifications for drive cabling.

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

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

2. Options

① Signal Cable

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

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

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

② Encoder Extension Cable

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

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

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

③ Motor Extension Cable

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

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

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

④ Main Power Cable

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

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

⑤ Control Power Cable

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

⑥ Torque Off Cable

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

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

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

⑦ EtherCAT Cable

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

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

[Option] TB-Plus Interface Board

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

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

[Option] TB-Plus Interface Cable

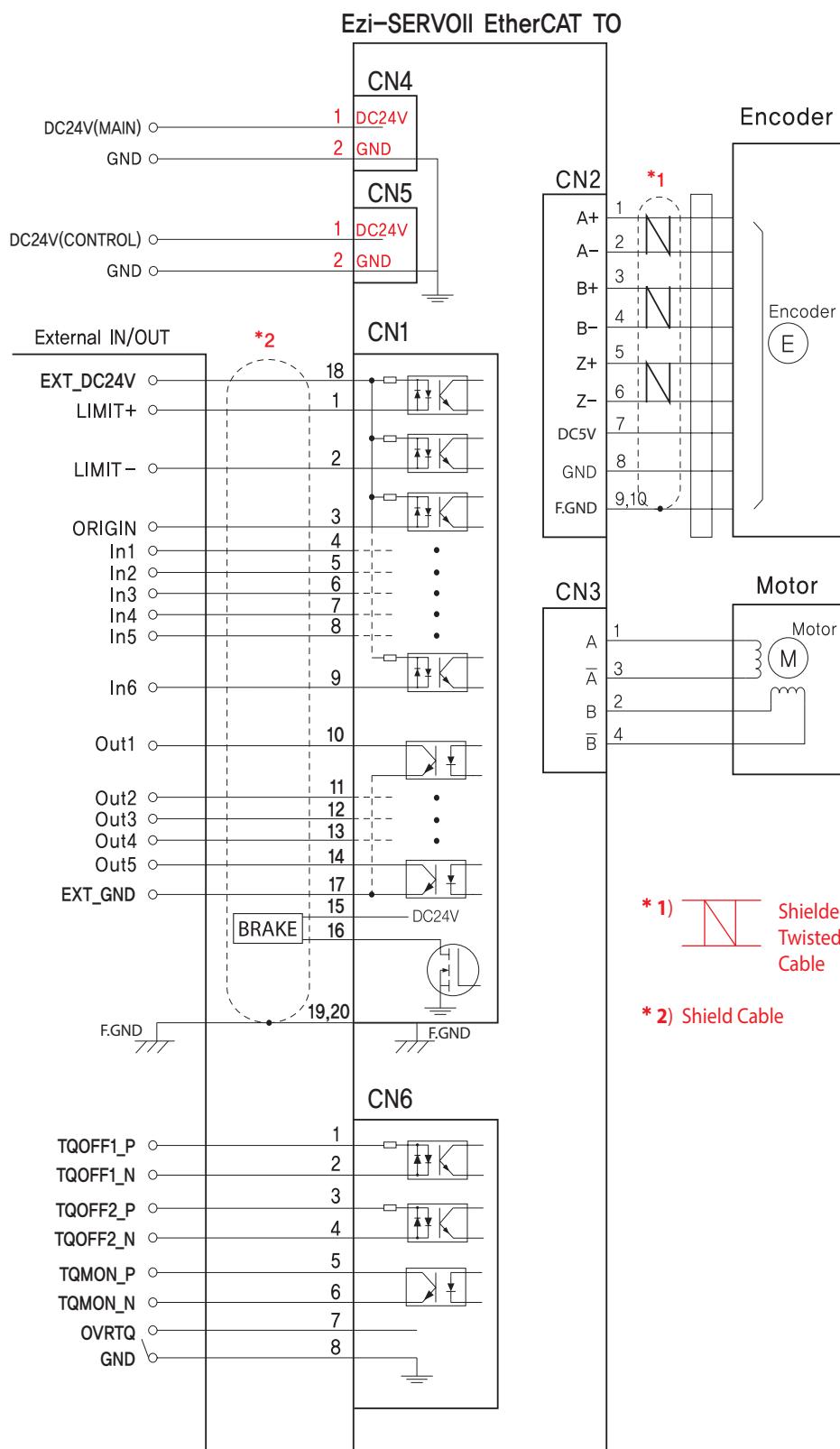
These are the cables to connect Ezi-SERVO II EtherCAT TO and TB-Plus interface board.

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

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

● External Wiring Diagram

FASTECH Ezi-SERVOII EtherCAT TO



* 1) Shielded Twisted Pair Cable

* 2) Shield Cable

CAUTION

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

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

MEMO



Fast, Accurate, Smooth Motion

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