

Orientalmotor

**NEW
PRODUCTS**

Motorized Cylinders
EZ limo
EZCII Series



Stroke 150 mm



Advancing Positioning Applications

Oriental Motor's Motorized Cylinders

The **EZCII** Series motorized cylinder is designed to achieve greater convenience and performance in positioning applications.

The drive motor adopts a closed-loop *αSTEP* stepping motor that eliminates misstep and hunting. **EZCII** Series is combined with a user-friendly controller.

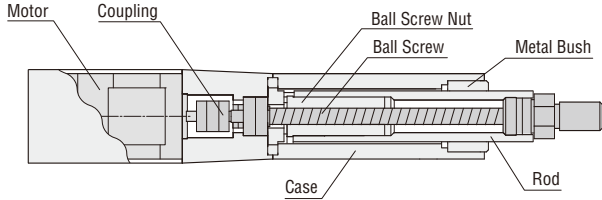
The teaching pendant, editing software, cables and other optional parts can be available.

INDEX

Introduction	P.2~P.6
Selection	P.7
EZCII Series	P.8~P.21
Controller	P.22~P.31
Accessories	P.32~P.35
Selection Calculations	P.36~P.37

EZCII Series

The ball screw is rotated by a closed loop *αSTEP* to position even heavy works with high accuracy. Integrating a motor with a linear motion mechanism, this type of actuator is ideal for applications where the work is pushed or pulled.



Drive Method: Ball screw

Maximum Stroke **300** mm

Maximum Speed **600** mm/s

Maximum Transportable Mass* Horizontal **60** kg / Vertical **30** kg

Repetitive Positioning Accuracy **±0.02** mm

Power Supply Voltage **24 VDC, Single-Phase 200-230 VAC**

* The value when an external guide is used.

● The above figures are representative values. For details, refer to the product information page.

Accessories

A teaching pendant and data editing software etc.



Combining All Functions Needed to Operate a Motorized Cylinder in Positioning Operations

This controller lets you operate all the functions required of a motorized cylinder, in easy steps.



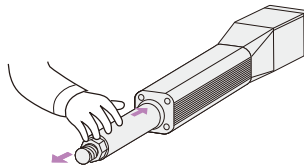
Teaching Function

Positioning data can be set in one of three methods, as specified below.

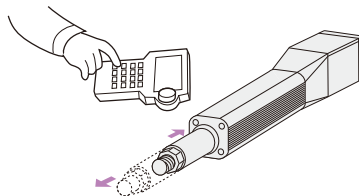
① Enter the desired travel amount (mm) directly.



② Direct teaching
Move the table to the target position manually, and store the achieved position as positioning data.



③ Remote teaching
Move the table to the target position using a teaching pendant or data editing software, and store the achieved position as positioning data.



Positioning Data of up to 63 Points

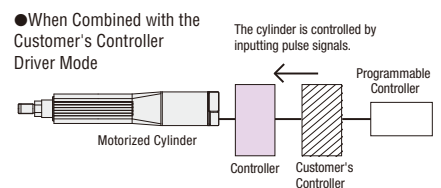
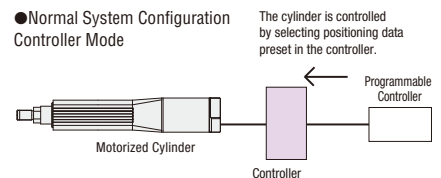
Up to 63 points of positioning data can be set in simple steps. The positioning operation can be performed in one of two ways: using the selective positioning method, where desired data is selected and executed by the signals from the host controller; or the sequential positioning method, in which all data is executed sequentially when a start signal is input.

Controller Mode/ Driver Mode

The EZ limo can be combined with your existing controller to serve as a driver controlling the cylinder by pulse input.

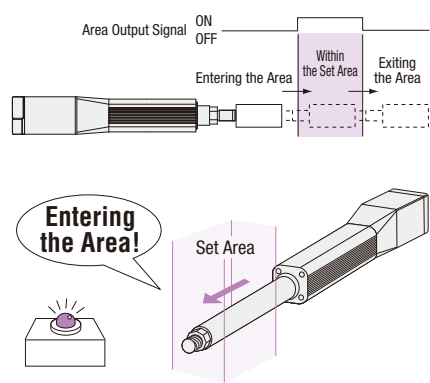
	Controller Mode	Driver Mode*
Teaching Function	●	×
Monitoring Function	●	×
Area Output Function	●	×
Return to Home	●	●

*Certain functions cannot be used in the driver mode.



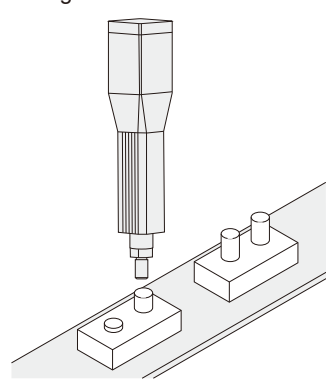
Area Output Function

A signal is output when the rod enters a set area arbitrarily set along the stroke. One set area can be set.



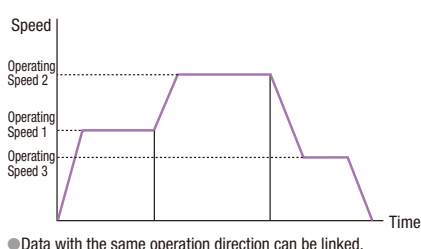
Push-Motion Function

The rod can be held in a state of being pushed against the work or similar object, as with an air cylinder. The force used to push the work (push force) can be changed.



Linked Operation

Up to four operation data can be linked, thereby allowing the cylinder to change speeds without stopping.

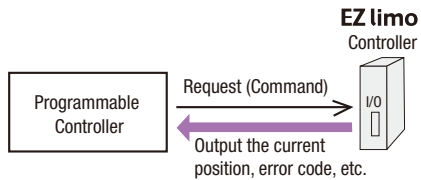


Choice of Two Return to Home Methods

- **Sensorless Return to Home**
Return to home is performed without the use of home sensors. The home position and return to home speed (maximum of 100 mm/s) can be adjusted. (This cylinder returns to home only towards the motor.)
- **Return to Home Using Sensors**
Return to home is performed using home sensors.

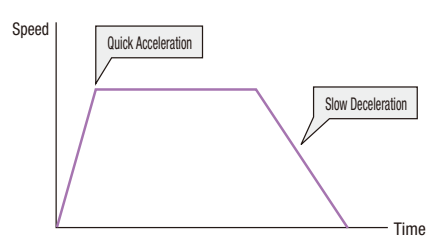
Output of Current Position and Error Code

The current position, error code and other data can be output to an external device.



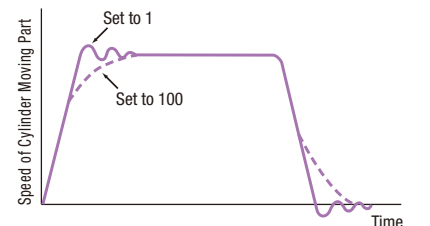
Extensive Adjustment Functions

- **Acceleration/Deceleration**
Four patterns of acceleration/ deceleration setting are possible according to your operating conditions. Acceleration and deceleration can be set separately.



- **Speed Filter**
Use this filter to suppress shocks at starting and stopping or to reduce vibration during low-speed operation. With the speed filter function you can control the motor to minimize speed fluctuations even when switching the speed rapidly between operation commands. The set value can be adjusted digitally (over a range of 1 to 100). Increasing the set value makes the movement smoother while decreasing the synchronism with the command.

The difference in characteristics made by the speed filter



Easy Editing of Positioning Data

The teaching pendant and data editing software are available.

Choose an appropriate accessory based on the required functions.



Functions of Teaching Pendant (EZT1) and Data Editing Software (EZED2)

The table below summarizes the functions available with the teaching pendant (EZT1) and data editing software (EZED2).

Choose an appropriate tool based on the required functions.

Function	Item	
	Teaching Pendant (Model: EZT1)	Data Editing Software (Model: EZED2)
Cable Length	5 m	5 m ^{*1}
Display	LCD 17 characters×4 lines	PC screen
Emergency Stop Button	○	×
Operation Data Setting	○	○
Parameter Setting	○	○
Teaching Function (Direct/Remote)	○	○
Operation Data Monitoring	○	○
I/O & Alarm History Monitoring	○	○
Waveform Monitoring	×	○
Test Operation	○	○
Data Copy	×	○
Printing Function	×	○ ^{*2}

*1 PC interface cable (included) is used.

*2 The printing function is not available on computers running Windows® 98/Me.

Teaching Pendant (Sold separately)

Model: **EZT1**



- All functions required for operation and adjustment, including setting of positioning data, test operation, and I/O monitoring, are provided.
- The dialogue-type user interface ensures easy operation. All you need is to enter values in the necessary fields.
- No dedicated power supply is necessary. Simply connect the cable to the controller.

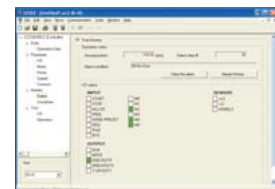
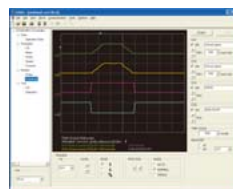
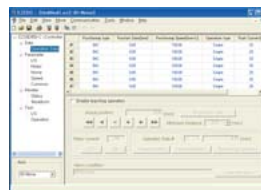


Data Editing Software (Sold separately)

Model: **EZED2**



- All functions required for operation and adjustment, including setting of positioning data, test operation and I/O monitoring, are provided.
- Running on any Windows computer, the software is a graphic navigation tool that guides you through various operations in easy steps. This user-friendly feature makes this ideal accessory for editing large volumes of data.
- You can also access waveform monitoring, data copy and other features not available on the teaching pendant.



Selection of Motorized Cylinders **EZCII** Series

Cylinder Size		EZC4				EZC6			
Cylinder Width × Hight		42 mm × 42 mm				60 mm × 60 mm			
Screw Type		Ball Screw							
Power Supply Voltage		24 VDC		Single-Phase 200-230 VAC		24 VDC		Single-Phase 200-230 VAC	
Lead	[mm]	12	6	12	6	12	6	12	6
Thrust Force	[N]	~70	~140	~70	~140	~200	~400	~200	~400
Push Force*1	[N]	100	200	100	200	400	500	400	500
Maximum Transportable Mass in Horizontal Direction*2 [kg]	60								
	50								
Maximum Transportable Mass in Vertical Direction*2 [kg]	30								
	25								
Maximum Speed [mm/s]	600								
	500								
Repetitive Positioning Accuracy [mm]	400								
	300								
Stroke [mm]	200								
	100								
50 mm increments	50								
	50								
Electromagnetic Brake		With electromagnetic brake and without electromagnetic brake are available							

*1 Maximum speed of push-motion operation is 25 mm/s.

*2 The value when an external guide is used.

RoHS RoHS-Compliant Motorized Cylinders **EZ limo EZCII Series**

The structure of this motorized cylinder has been optimized to achieve greater convenience and performance in positioning applications. The compact design facilitates installation and wiring to your system.



Large Transportable Mass

The **EZCII** Series can perform positioning with large transportable mass.

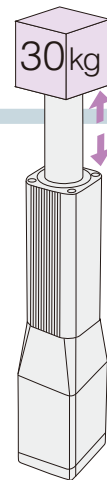
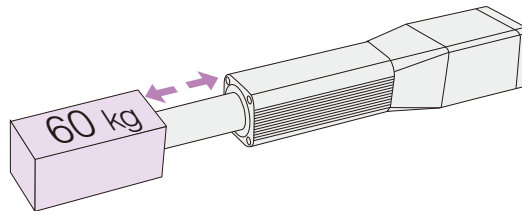
EZC6 (Lead 6 mm)

- Maximum Transportable Mass*: Horizontal **60 kg**
Vertical **30 kg**

* The value when an external guide is used.

- Maximum Thrust Force: **400 N**

- Maximum Push Force: **500 N**



High Speed

The **EZCII** Series can perform positioning at high speed. **EZC4 / EZC6** (Lead 12 mm)

- Maximum Speed: **600 mm/s**
- Sensorless Return to Home at Speed of **100 mm/s**

We have developed a dedicated stop buffer to achieve the sensorless return to home operation at a maximum speed of 100 mm/s.

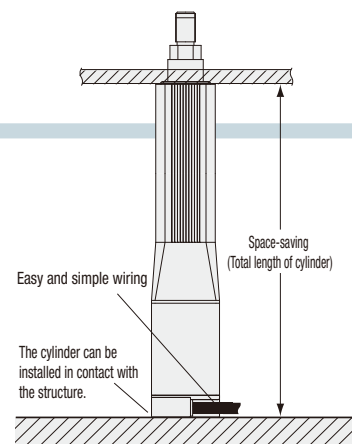
Space-Saving

The shape of the motor cable outlet was changed to eliminate the dead space.

The total length of cylinder is shorter for every stroke or model, which enables space-saving design of your equipment.

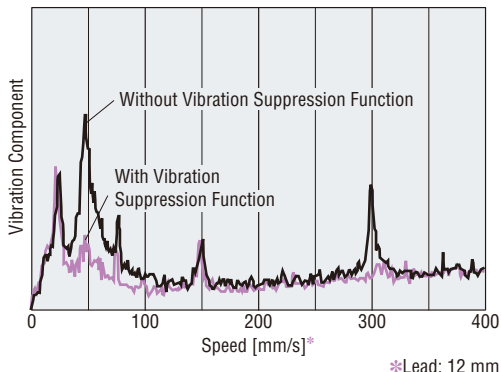
$$\text{Stroke} + 185 \text{ mm} = \text{Total length of cylinder}$$

Since the space outside the cylinder's operating range is minimized, the overall system size can be reduced.



Vibration Suppression Function

The newly developed control method achieves low vibration even at the speed range where large vibration occurs normally.



Lightweight Rod

Use of an aluminum rod reduced the weight by 25%* compared to a conventional model.

*EZC6: Stroke 300 mm

RoHS Compliant

The **EZCII** Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium.

Maintenance-Free for Long-Term Performance

The ball screw employs the QZ™ lubrication system

* QZ™ lubrication system: High-density fiber net supplies appropriate amounts of oil, thereby preventing oil wastage and reducing environmental burden.

● QZ are registered trademarks of THK Co., Ltd.

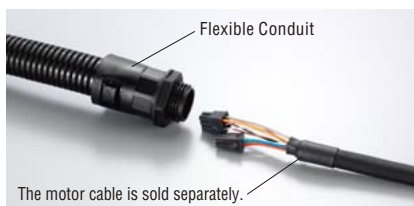
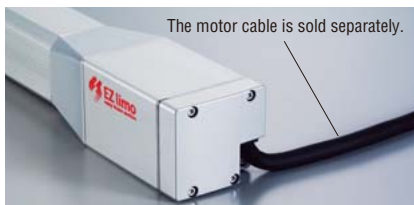


EZC4D015-A Stroke 150 mm

Easy Wiring

The cylinder and controller are connected via a single cable, and the wiring distance can be extended to a maximum of 20 m*. The cable is fitted with a connector for quick connection.

* Maximum of 10 m for 24 VDC products



The cable can be placed in a flexible conduit or cable gland with an inner diameter of ϕ 16.5 mm.

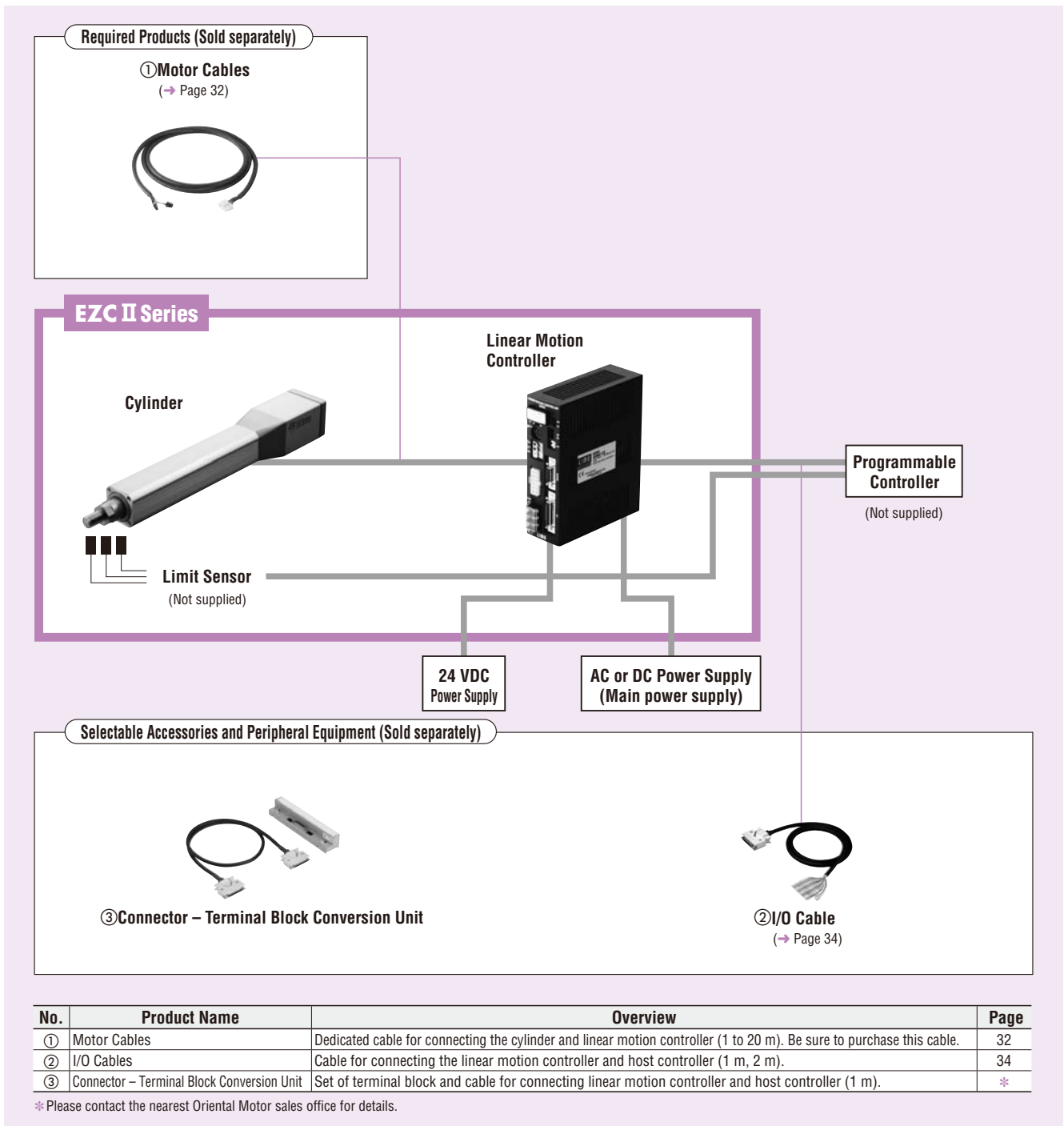
Motorized linear slides are available using common controller. For details, please contact the nearest Oriental Motor sales office. The PDF data of this catalogue can be downloaded from the website of Oriental Motor.

<http://www.orientalmotor.de>

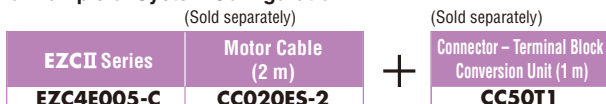


● Driver Mode

When performing return to home operation using the linear motion controller, refer to system configuration on page 10. Teaching pendant or data editing software is required to change parameters (I/O logic, speed filter, etc.) of the linear motion controller.



● Example of System Configuration



● The system configuration shown above is an example. Other combinations are available.

Product Number Code

EZC 4 D 030 M - K

① ② ③ ④ ⑤ ⑥

①	Series	EZC: EZCII Series
②	Cylinder Size	4: Frame Size 42 mm × 42 mm 6: Frame Size 60 mm × 60 mm
③	Lead	D: 12 mm E: 6 mm
④	Stroke	005: 50 mm 010: 100 mm 015: 150 mm 020: 200 mm 025: 250 mm 030: 300 mm
⑤	Electromagnetic Brake	Blank: Without Electromagnetic Brake M: With Electromagnetic Brake
⑥	Power Supply Voltage	K: 24 VDC C: Single-Phase 200-230 VAC

Product Line

● EZC4

◇ Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 200-230 VAC
	Model	Model
50 mm	EZC4□005-K	EZC4□005-C
100 mm	EZC4□010-K	EZC4□010-C
150 mm	EZC4□015-K	EZC4□015-C
200 mm	EZC4□020-K	EZC4□020-C
250 mm	EZC4□025-K	EZC4□025-C
300 mm	EZC4□030-K	EZC4□030-C

● Enter the lead length **D** (12 mm) or **E** (6 mm) in the box (□) within the model name.

◇ With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 200-230 VAC
	Model	Model
50 mm	EZC4□005M-K	EZC4□005M-C
100 mm	EZC4□010M-K	EZC4□010M-C
150 mm	EZC4□015M-K	EZC4□015M-C
200 mm	EZC4□020M-K	EZC4□020M-C
250 mm	EZC4□025M-K	EZC4□025M-C
300 mm	EZC4□030M-K	EZC4□030M-C

● Enter the lead length **D** (12 mm) or **E** (6 mm) in the box (□) within the model name.

● EZC6

◇ Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 200-230 VAC
	Model	Model
50 mm	EZC6□005-K	EZC6□005-C
100 mm	EZC6□010-K	EZC6□010-C
150 mm	EZC6□015-K	EZC6□015-C
200 mm	EZC6□020-K	EZC6□020-C
250 mm	EZC6□025-K	EZC6□025-C
300 mm	EZC6□030-K	EZC6□030-C

● Enter the lead length **D** (12 mm) or **E** (6 mm) in the box (□) within the model name.

◇ With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 200-230 VAC
	Model	Model
50 mm	EZC6□005M-K	EZC6□005M-C
100 mm	EZC6□010M-K	EZC6□010M-C
150 mm	EZC6□015M-K	EZC6□015M-C
200 mm	EZC6□020M-K	EZC6□020M-C
250 mm	EZC6□025M-K	EZC6□025M-C
300 mm	EZC6□030M-K	EZC6□030M-C

● Enter the lead length **D** (12 mm) or **E** (6 mm) in the box (□) within the model name.

The following items are included in each product.

Cylinder, Controller, Mounting Bracket for Controller, Hexagonal Nut, User I/O Connector, Sensor I/O Connector, Operating Manual

General Specifications of Motor ● General specifications of controller → Page 23

This is the value after rated operation under normal ambient temperature and humidity.

● 24 VDC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: ·Motor case – Motor/Sensor windings ·Motor case – Windings of electromagnetic brake (Only for electromagnetic brake type)
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings 0.5 kVAC 50 Hz ·Motor case – Windings of electromagnetic brake (Only for electromagnetic brake type) 0.5 kVAC 50 Hz
Ambient Temperature	0~+40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

Note:

- Do not measure insulation resistance or perform the dielectric strength test while the cylinder and controller are connected.

● Single-Phase 200-230 VAC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: ·Motor case – Motor/Sensor windings ·Motor case – Windings of electromagnetic brake (Only for electromagnetic brake type)
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings EZC4: 1.0 kVAC 50 Hz EZC6: 1.5 kVAC 50 Hz ·Motor case – Windings of electromagnetic brake (Only for electromagnetic brake type) 1.0 kVAC 50 Hz
Ambient Temperature	0~+40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

Note:

- Do not measure insulation resistance or perform the dielectric strength test while the cylinder and controller are connected.

Safety Standards and CE Marking

Power Supply Voltage	Product	CE Marking
24 VDC	Cylinder	EMC Directives
	Controller	
Single-Phase 200-230 VAC	Cylinder	Low Voltage Directives
	Controller	EMC Directives

- The EMC value changes according to the wiring and layout. Therefore, the final EMC level must be checked with the cylinder/controller incorporated in the user's equipment. If you require EMC data of cylinders or controllers, please contact the nearest Oriental Motor sales office.

● Machinery Directive (98/37/EC)

The cylinders, controllers and teaching pendants are designed and manufactured for use in general industrial equipment as an internal component, and therefore need not comply with the Machinery Directive. However, each product has been evaluated under the following standards to ensure proper operation:

EN ISO 12100-1, EN ISO 12100-2, EN 1050, EN 60204-1

◇ Emergency Stop Function

The emergency stop circuit in the teaching pendant or controller is designed in accordance with the requirements of Category 1 under EN 954-1.

Refer to page 26 for a connection example that conforms to Stop Category 0 (non-controlled stop) under EN 60204-1.

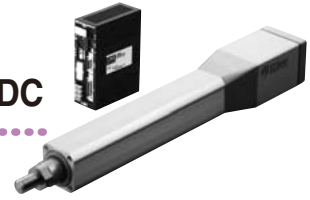
◇ Emergency Stop Circuit

The customer must provide an appropriate emergency stop circuit by conducting risk assessment based on your system.

EZCII Series Adopting α STEP Motor

EZC4: Frame Size 42 mm × 42 mm 24 VDC

Maximum Transportable Mass: Horizontal 30 kg/Vertical 14 kg
 Stroke: 50 to 300 mm (in 50 mm increments)



Specifications of Cylinder (RoHS)



Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]		±0.02	Resolution [mm]	0.01	
Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
EZC4D □-K	12	~15	-	~70	100	-	600
EZC4D □M-K			~6.5			70	
EZC4E □-K	6	~30	-	~140	200	-	300
EZC4E □M-K			~14			140	

- Enter the stroke length in the box (□) within the model name.
- *1 The value when an external guide is used.
- *2 Maximum speed of push-motion operation is 25 mm/s.

Notes:

- Avoid using the cylinder in such a way that the rod receives an overhung load or angular load moment. Provide a guide or other appropriate mechanism to prevent the rod from receiving a load other than in the axial direction. (Some simple external anti-spin mechanism is provided.)
- The cylinder returns to home only towards the motor in sensorless return to home.

Product Number Code

EZC 4 D 030 M - K

- ①
- ②
- ③
- ④
- ⑤
- ⑥

①	Series EZC: EZCII Series
②	Cylinder Size 4 : Frame Size 42 mm
③	Lead D : 12 mm E : 6 mm
④	Stroke 005 (50 mm)~ 030 (300 mm)
⑤	Electromagnetic Brake Blank: Without Electromagnetic Brake M : With Electromagnetic Brake
⑥	Power Supply Voltage K : 24 VDC

Cylinder/Controller Combinations

Model names for cylinder and controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	EZC4D □-K	EZCM4D□K	ESMC-K2
	EZC4E □-K	EZCM4E□K	
Equipped	EZC4D □M-K	EZCM4D□MK	
	EZC4E □M-K	EZCM4E□MK	

- Enter the stroke length in the box (□) within the model name.

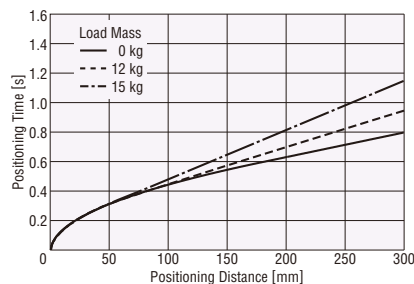
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
 For the operating speed and acceleration, refer to "selection calculations" on page 36.

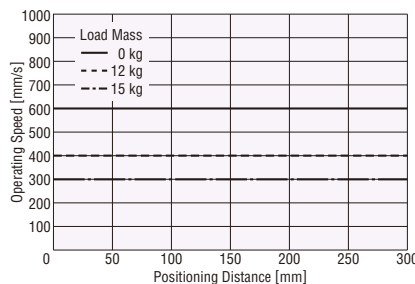
● EZC4D (Lead: 12 mm)

◇ Horizontal Installation

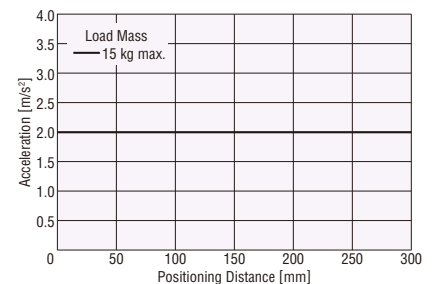
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

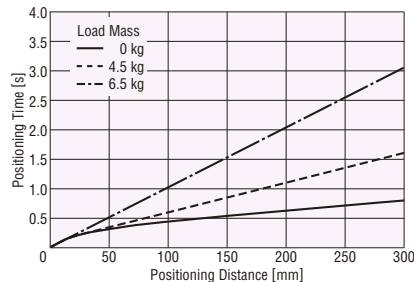


● Positioning Distance – Acceleration

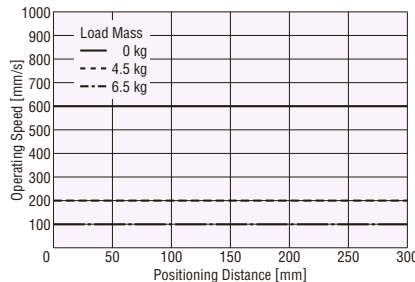


◇ Vertical Installation

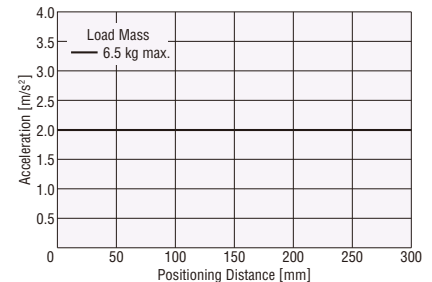
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration



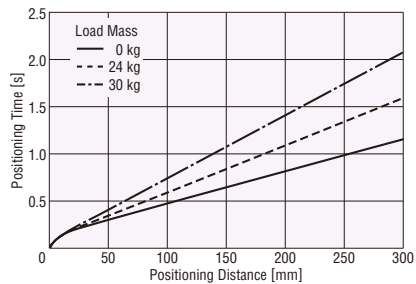
Notes:

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

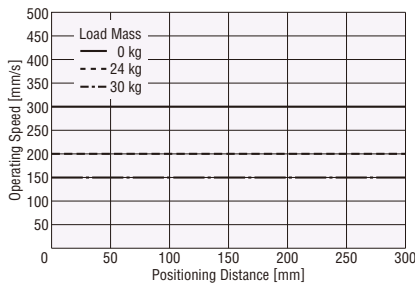
● **EZC4E (Lead: 6 mm)**

◇ **Horizontal Installation**

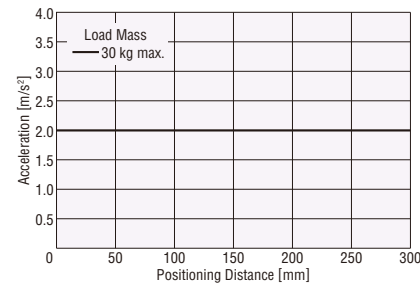
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**

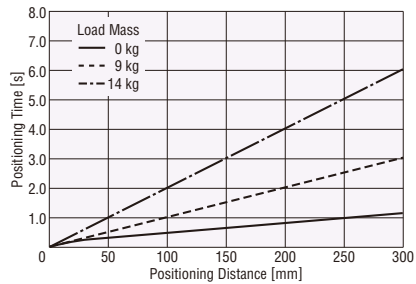


● **Positioning Distance – Acceleration**

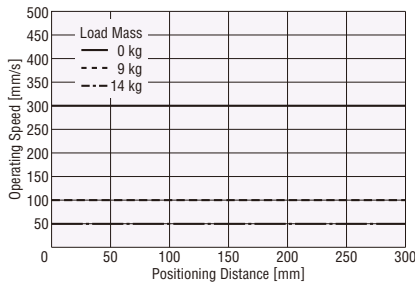


◇ **Vertical Installation**

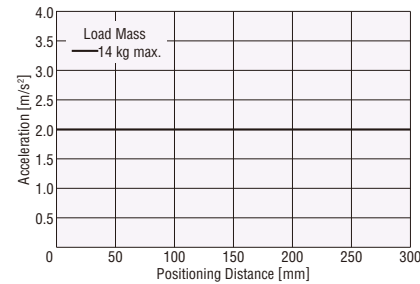
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**



● **Positioning Distance – Acceleration**

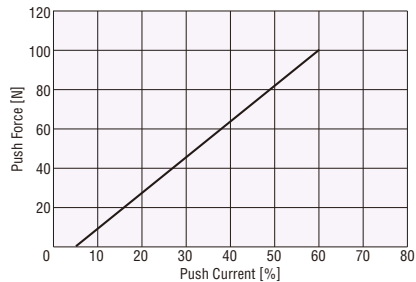


Notes:

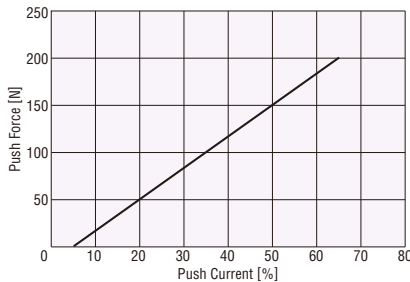
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■ **Push Force**

● **EZC4D (Lead: 12 mm)**



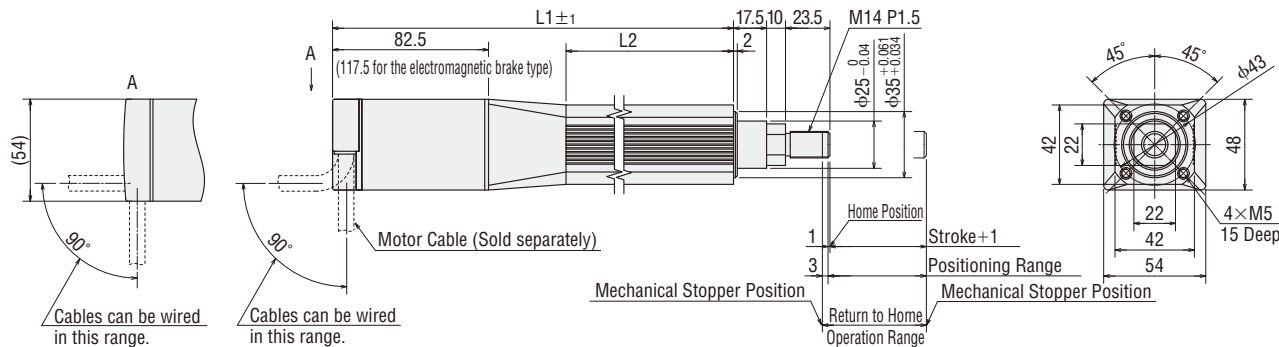
● **EZC4E (Lead: 6 mm)**



Notes:

- When the cylinder is used in a vertical direction, an external force calculated by multiplying the weight of the carried object by the rate of gravitational acceleration must be considered. Measure the push force and set an appropriate push current. The graph shows a reference value of external force at horizontal operation.
- Operate the cylinder within the push current showing this graph.

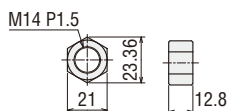
■ **Dimensions of Cylinder (Unit = mm)**



Cylinder Model: EZC4D□K, EZC4E□K (Without electromagnetic brake)
EZC4D□MK, EZC4E□MK (With electromagnetic brake)

	Electromagnetic Brake	Numbers Specifiable in the Box (□) within the cylinder Model Name					
		005	010	015	020	025	030
Stroke	Not Equipped/Equipped	50	100	150	200	250	300
L1	Not Equipped	235	285	335	385	435	485
	Equipped	270	320	370	420	470	520
L2	Not Equipped/Equipped	111.5	161.5	211.5	261.5	311.5	361.5
Mass [kg]	Not Equipped	1.3	1.5	1.7	1.9	2.0	2.2
	Equipped	1.5	1.7	1.9	2.1	2.2	2.4

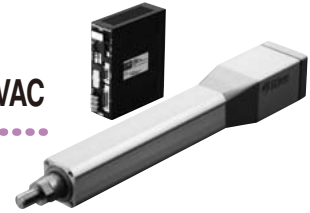
● Nut (1 piece, included)



EZCII Series Adopting α STEP Motor

EZC4: Frame Size 42 mm × 42 mm Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 30 kg/Vertical 14 kg
 Stroke: 50 to 300 mm (in 50 mm increments)



Specifications of Cylinder (RoHS)



Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]		±0.02	Resolution [mm]	0.01	
Model	Lead [mm]	Transportable Mass [kg] ^{*1}		Thrust [N]	Push Force [N] ^{*2}	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
EZC4D□-□ EZC4D□M-□	12	Horizontal	Vertical	~70	100	—	600
		~15	~6.5			70	
EZC4E□-□ EZC4E□M-□	6	Horizontal	Vertical	~140	200	—	300
		~30	~14			140	

- Enter the stroke length in the box (□) within the model name.
- Enter the power supply voltage **C** in the box (□) within the model name.
- *1 The value when an external guide is used.
- *2 Maximum speed of push-motion operation is 25 mm/s.

Notes:

- Avoid using the cylinder in such a way that the rod receives an overhung load or angular load moment. Provide a guide or other appropriate mechanism to prevent the rod from receiving a load other than in the axial direction. (Some simple external anti-spin mechanism is provided.)
- The cylinder returns to home only towards the motor in sensorless return to home.

Product Number Code

EZC 4 D 030 M - C

- ① ② ③ ④ ⑤ ⑥

① Series	EZC: EZCII Series
② Cylinder Size	4: Frame Size 42 mm
③ Lead	D: 12 mm E: 6 mm
④ Stroke	005 (50 mm)~ 030 (300 mm)
⑤ Electromagnetic Brake	Blank: Without Electromagnetic Brake M: With Electromagnetic Brake
⑥ Power Supply Voltage	C: Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	EZC4D□-C	EZCM4D□C	ESMC-C2
	EZC4E□-C	EZCM4E□C	
Equipped	EZC4D□M-C	EZCM4D□MC	
	EZC4E□M-C	EZCM4E□MC	

- Enter the stroke length in the box (□) within the model name.

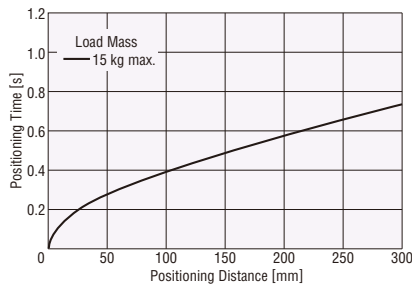
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
 For the operating speed and acceleration, refer to "selection calculations" on page 36.

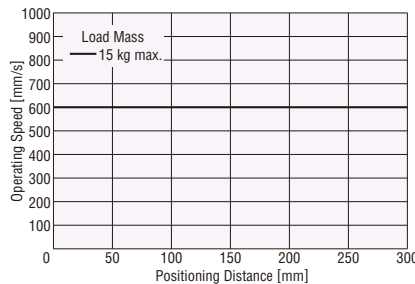
● EZC4D (Lead: 12 mm)

◇ Horizontal Installation

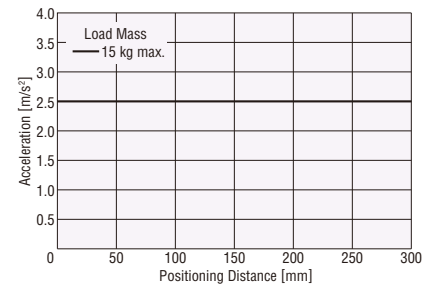
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

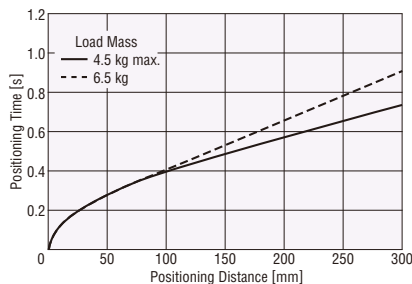


● Positioning Distance – Acceleration

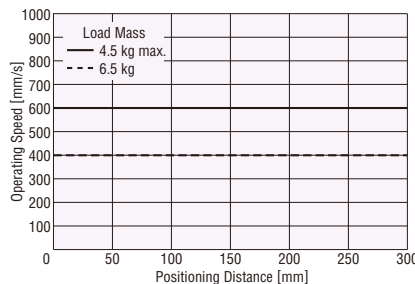


◇ Vertical Installation

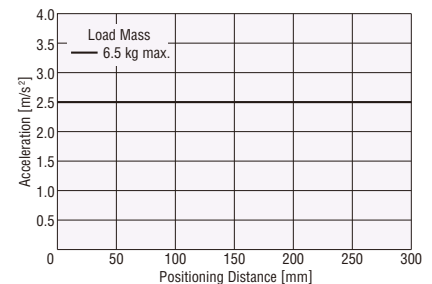
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration



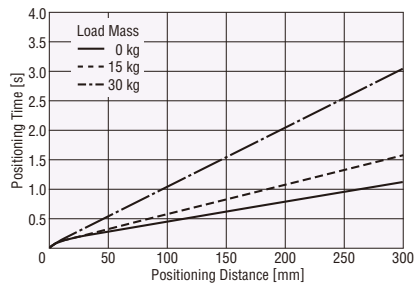
Notes:

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

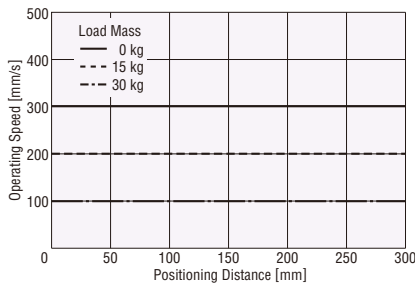
● **EZC4E (Lead: 6 mm)**

◇ **Horizontal Installation**

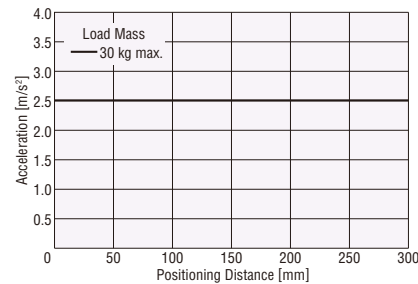
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**

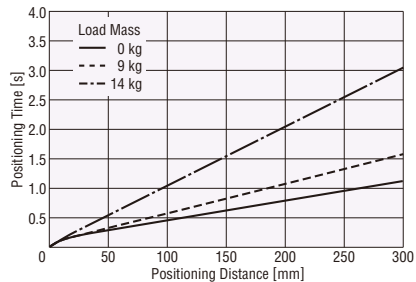


● **Positioning Distance – Acceleration**

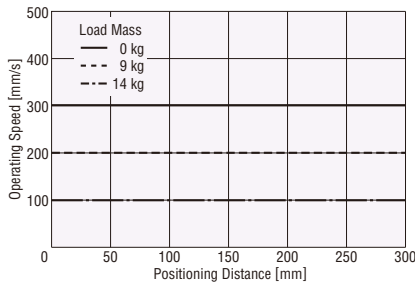


◇ **Vertical Installation**

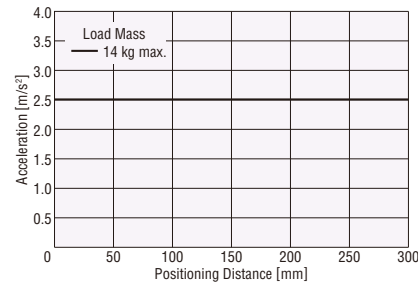
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**



● **Positioning Distance – Acceleration**

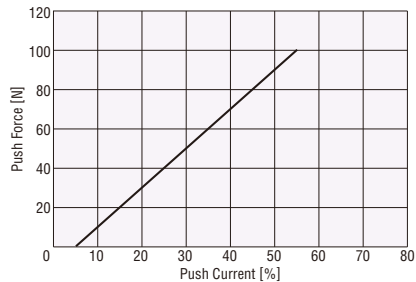


Notes:

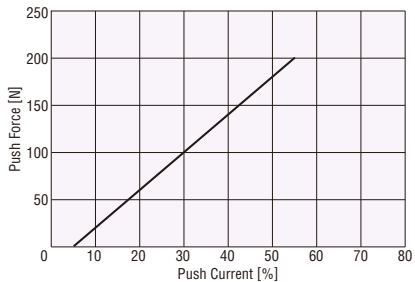
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■ **Push Force**

● **EZC4D (Lead: 12 mm)**



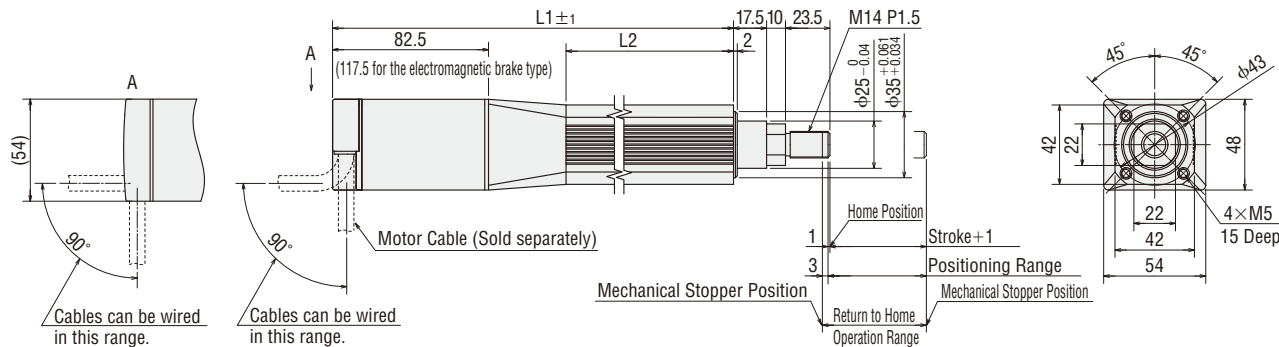
● **EZC4E (Lead: 6 mm)**



Notes:

- When the cylinder is used in a vertical direction, an external force calculated by multiplying the weight of the carried object by the rate of gravitational acceleration must be considered. Measure the push force and set an appropriate push current. The graph shows a reference value of external force at horizontal operation.
- Operate the cylinder within the push current showing this graph.

■ **Dimensions of Cylinder (Unit = mm)**

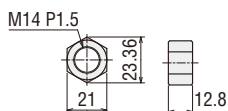


Cylinder Model: EZC4D□C, EZC4E□C (Without electromagnetic brake)

EZC4D□MC, EZC4E□MC (With electromagnetic brake)

	Electromagnetic Brake	Numbers Specifiable in the Box (□) within the Cylinder Model Name					
		005	010	015	020	025	030
Stroke	Not Equipped/Equipped	50	100	150	200	250	300
L1	Not Equipped	235	285	335	385	435	485
	Equipped	270	320	370	420	470	520
L2	Not Equipped/Equipped	111.5	161.5	211.5	261.5	311.5	361.5
Mass [kg]	Not Equipped	1.3	1.5	1.7	1.9	2.0	2.2
	Equipped	1.5	1.7	1.9	2.1	2.2	2.4

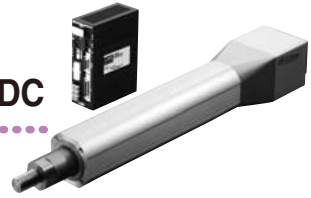
● Nut (1 piece, included)



EZCII Series Adopting α STEP Motor

EZC6: Frame Size 60 mm × 60 mm 24 VDC

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
 Stroke: 50 to 300 mm (in 50 mm increments)



Specifications of Cylinder (RoHS)



Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]		±0.02	Resolution [mm]	0.01	
Model	Lead [mm]	Transportable Mass [kg] ^{*1}		Thrust [N]	Push Force [N] ^{*2}	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZC6D □-K	12	~30	—	~200	400	—	600
EZC6D □M-K		—	~15			200	
EZC6E □-K	6	~60	—	~400	500	—	300
EZC6E □M-K		—	~30			400	

● Enter the stroke length in the box (□) within the model name.

*1 The value when an external guide is used.

*2 Maximum speed of push-motion operation is 25 mm/s.

Notes:

● Avoid using the cylinder in such a way that the rod receives an overhung load or angular load moment.

Provide a guide or other appropriate mechanism to prevent the rod from receiving a load other than in the axial direction. (Some simple external anti-spin mechanism is provided.)

● The cylinder returns to home only towards the motor in sensorless return to home.

Product Number Code

EZC 6 D 030 M - K

① ② ③ ④ ⑤ ⑥

①	Series EZC: EZCII Series
②	Cylinder Size 6 : Frame Size 60 mm
③	Lead D : 12 mm E : 6 mm
④	Stroke 005 (50 mm)~ 030 (300 mm)
⑤	Electromagnetic Brake Blank: Without Electromagnetic Brake M : With Electromagnetic Brake
⑥	Power Supply Voltage K : 24 VDC

Cylinder/Controller Combinations

Model names for cylinder and controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	EZC6D □-K	EZCM6D□K	ESMC-K2
	EZC6E □-K	EZCM6E□K	
Equipped	EZC6D □M-K	EZCM6D□MK	
	EZC6E □M-K	EZCM6E□MK	

● Enter the stroke length in the box (□) within the model name.

Check the Positioning Time

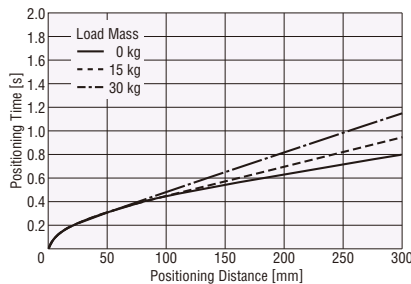
Check the (approximate) positioning time from the positioning distance.

For the operating speed and acceleration, refer to "selection calculations" on page 36.

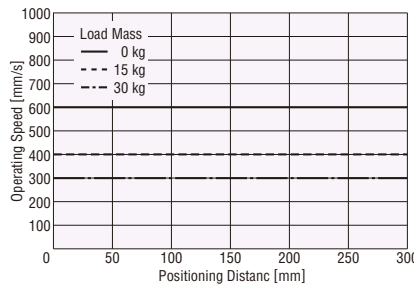
● EZC6D (Lead: 12 mm)

◇ Horizontal Installation

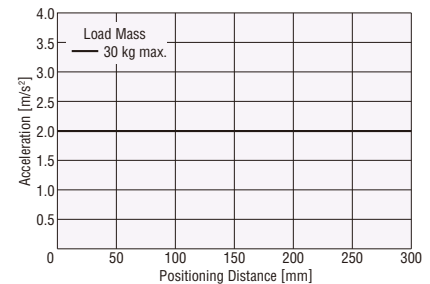
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

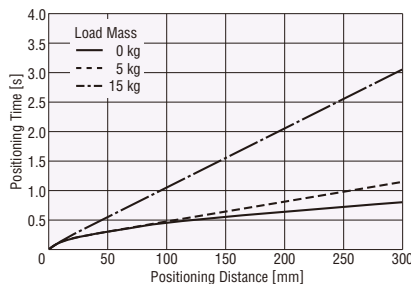


● Positioning Distance – Acceleration

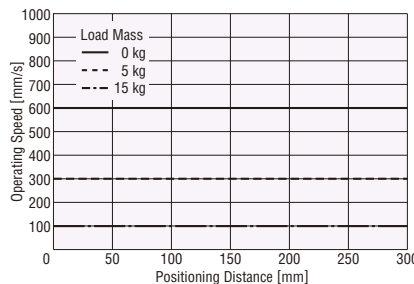


◇ Vertical Installation

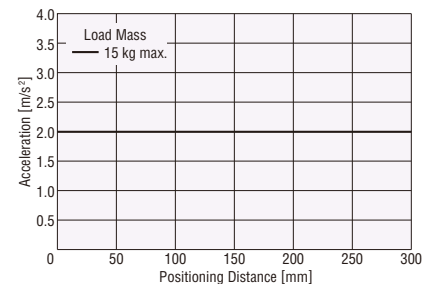
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration



Notes:

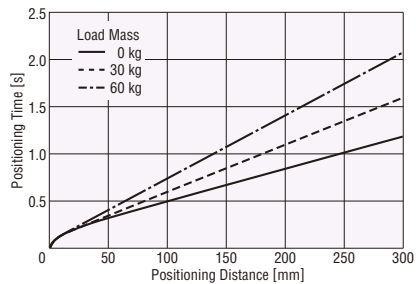
● The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)

● The starting speed should be 6 mm/s or less.

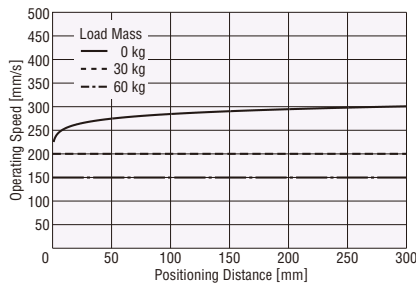
● **EZC6E (Lead: 6 mm)**

◇ **Horizontal Installation**

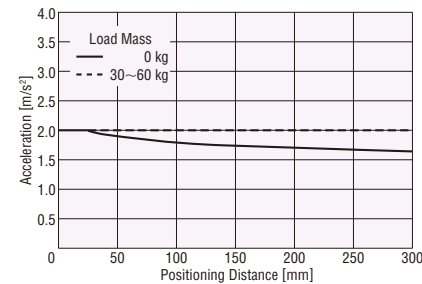
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**

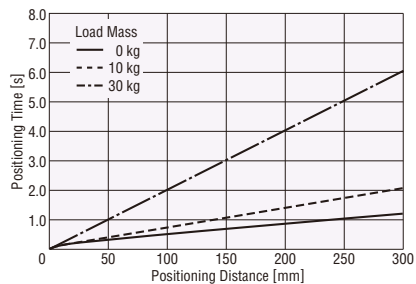


● **Positioning Distance – Acceleration**

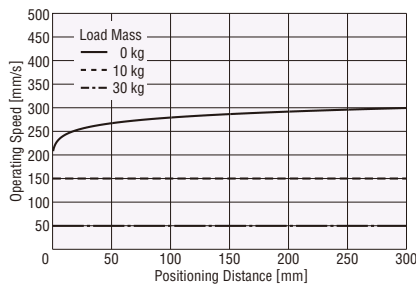


◇ **Vertical Installation**

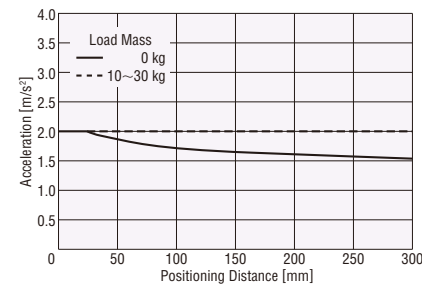
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**



● **Positioning Distance – Acceleration**

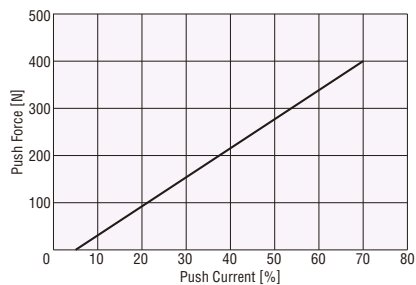


Notes:

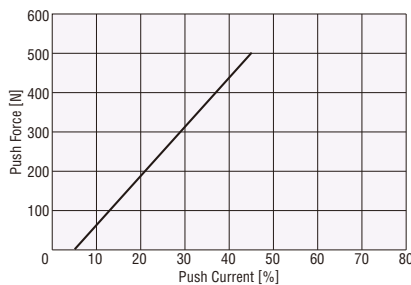
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■ **Push Force**

● **EZC6D (Lead: 12 mm)**



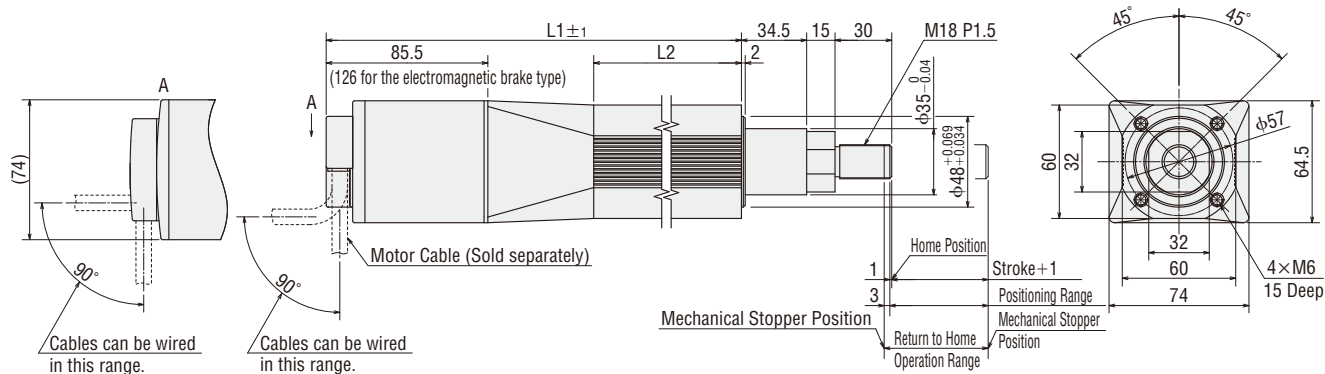
● **EZC6E (Lead: 6 mm)**



Notes:

- When the cylinder is used in a vertical direction, an external force calculated by multiplying the weight of the carried object by the rate of gravitational acceleration must be considered. Measure the push force and set an appropriate push current. The graph shows a reference value of external force at horizontal operation.
- Operate the cylinder within the push current showing this graph.

■ **Dimensions of Cylinder (Unit = mm)**

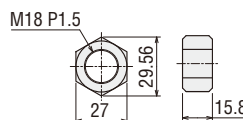


Cylinder Model: EZC6D□K, EZC6E□K (Without electromagnetic brake)

EZC6D□MK, EZC6E□MK (With electromagnetic brake)

	Electromagnetic Brake	Numbers Specifiable in the Box (□) within the Cylinder Model Name					
		005	010	015	020	025	030
Stroke	Not Equipped/Equipped	50	100	150	200	250	300
L1	Not Equipped	253.5	303.5	353.5	403.5	453.5	503.5
	Equipped	294	344	394	444	494	544
L2	Not Equipped/Equipped	112	162	212	262	312	362
Mass [kg]	Not Equipped	2.7	3.0	3.3	3.6	3.9	4.2
	Equipped	3.1	3.4	3.7	4.0	4.3	4.6

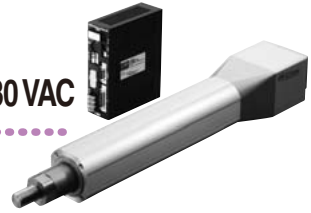
● Nut (1 piece, included)



EZCII Series Adopting α STEP Motor

EZC6: Frame Size 60 mm × 60 mm Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 60 kg/Vertical 30 kg
Stroke: 50 to 300 mm (in 50 mm increments)



Specifications of Cylinder (RoHS)



Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]		±0.02	Resolution [mm]	0.01	
Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
EZC6D □-□	12	~30	—	~200	400	—	600
EZC6D □ M -□			~15			200	
EZC6E □-□	6	~60	—	~400	500	—	300
EZC6E □ M -□			~30			400	

- Enter the stroke length in the box (□) within the model name.
- Enter the power supply voltage **C** in the box (□) within the model name.
- *1 The value when an external guide is used.
- *2 Maximum speed of push-motion operation is 25 mm/s.

Notes:

- Avoid using the cylinder in such a way that the rod receives an overhung load or angular load moment. Provide a guide or other appropriate mechanism to prevent the rod from receiving a load other than in the axial direction. (Some simple external anti-spin mechanism is provided.)
- The cylinder returns to home only towards the motor in sensorless return to home.

Product Number Code

EZC 6 D 030 M - C

① ② ③ ④ ⑤ ⑥

①	Series EZC: EZCII Series
②	Cylinder Size 6 : Frame Size 60 mm
③	Lead D : 12 mm E : 6 mm
④	Stroke 005 (50 mm) ~ 030 (300 mm)
⑤	Electromagnetic Brake Blank: Without Electromagnetic Brake M : With Electromagnetic Brake
⑥	Power Supply Voltage C : Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	EZC6D □- C	EZCM6D□C	ESMC-C2
	EZC6E □- C	EZCM6E□C	
Equipped	EZC6D □ M - C	EZCM6D□MC	
	EZC6E □ M - C	EZCM6E□MC	

- Enter the stroke length in the box (□) within the model name.

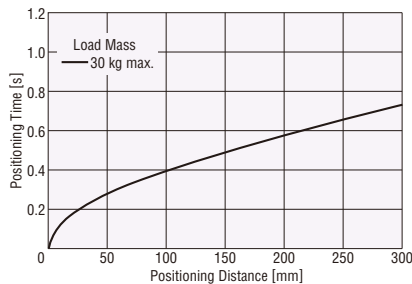
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 36.

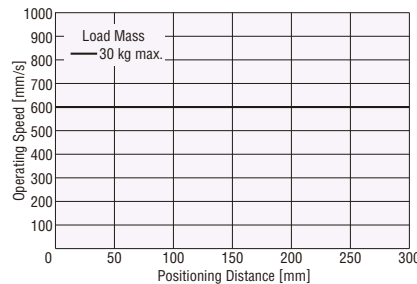
● EZC6D (Lead: 12 mm)

◇ Horizontal Installation

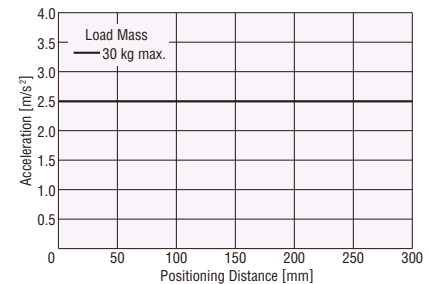
● Positioning Distance - Positioning Time



● Positioning Distance - Operating Speed

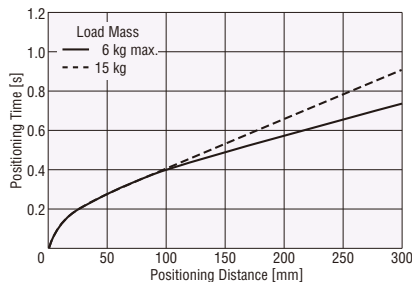


● Positioning Distance - Acceleration

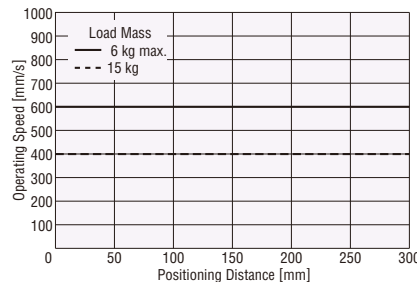


◇ Vertical Installation

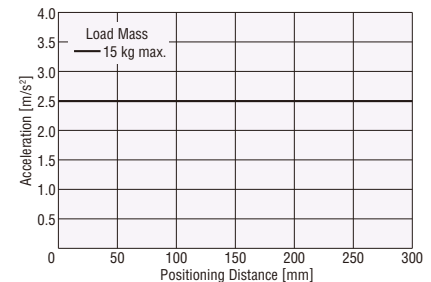
● Positioning Distance - Positioning Time



● Positioning Distance - Operating Speed



● Positioning Distance - Acceleration



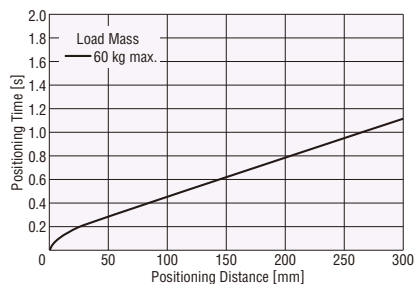
Notes:

- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

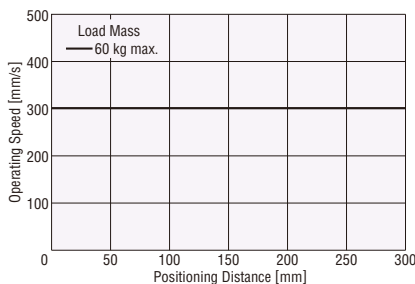
● **EZC6E** (Lead: 6 mm)

◇ **Horizontal Installation**

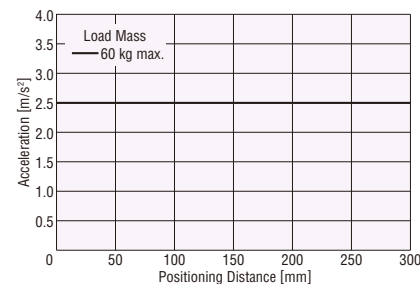
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**

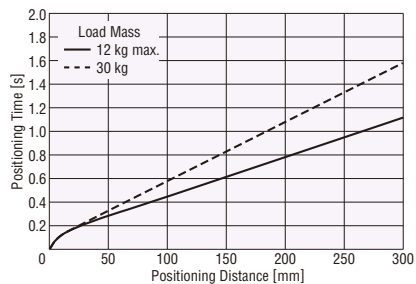


● **Positioning Distance – Acceleration**

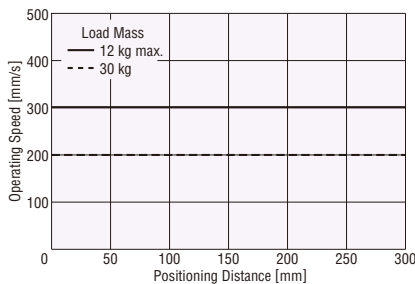


◇ **Vertical Installation**

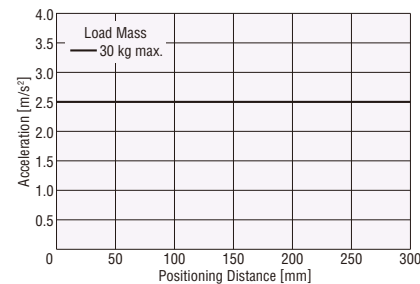
● **Positioning Distance – Positioning Time**



● **Positioning Distance – Operating Speed**



● **Positioning Distance – Acceleration**

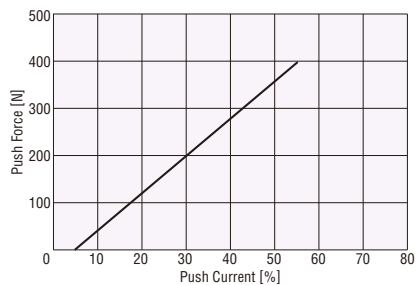


Notes:

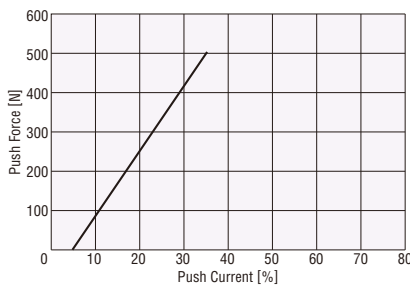
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■ **Push Force**

● **EZC6D** (Lead: 12 mm)



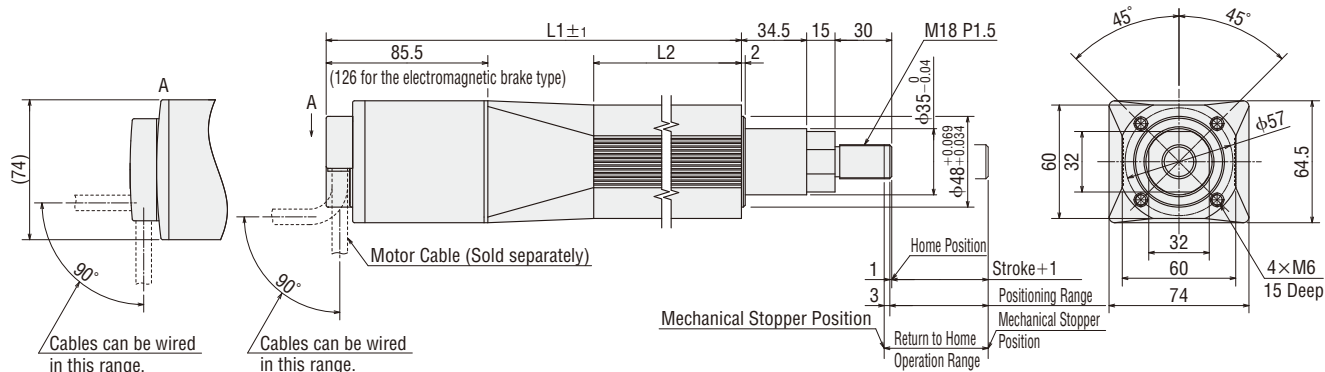
● **EZC6E** (Lead: 6 mm)



Notes:

- When the cylinder is used in a vertical direction, an external force calculated by multiplying the weight of the carried object by the rate of gravitational acceleration must be considered. Measure the push force and set an appropriate push current. The graph shows a reference value of external force at horizontal operation.
- Operate the cylinder within the push current showing this graph.

■ **Dimensions of Cylinder (Unit = mm)**

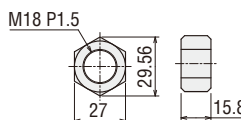


Cylinder Model: EZC6D□C, EZC6E□C (Without electromagnetic brake)

EZC6D□MC, EZC6E□MC (With electromagnetic brake)

	Electromagnetic Brake	Numbers Specifiable in the Box (□) within the Cylinder Model Name					
		005	010	015	020	025	030
Stroke	Not Equipped/Equipped	50	100	150	200	250	300
L1	Not Equipped	253.5	303.5	353.5	403.5	453.5	503.5
	Equipped	294	344	394	444	494	544
L2	Not Equipped/Equipped	112	162	212	262	312	362
Mass [Kg]	Not Equipped	2.7	3.0	3.3	3.6	3.9	4.2
	Equipped	3.1	3.4	3.7	4.0	4.3	4.6

● Nut (1 piece, included)



EZCII Series Controller

Specifications of Controller

Controller Mode

Item	Controller Model		
	ESMC-K2	ESMC-C2	
Type	Stored data type		
Power Supply Input	Control Power 24 VDC±5% 1.0 A [Controller only: 0.5 A (Take into account safety margin of +0.2 A for the teaching pendant, and/or +0.3 A for the electromagnetic brake type.)]		
	Main Power	Voltage	24 VDC±10%
		Frequency	Single-Phase 200-230 VAC -15~+10%
		Current	50/60 Hz
		4.0 A ^{*1}	
Positioning Data	Setting Mode	Absolute mode (absolute-position specification), Incremental mode (relative-position specification)	
	Number	63	
	Setting Method	Data is set using the accessory teaching pendant (EZT1) or data editing software (EZED2) (Stored in EEPROM).	
Positioning Control	Mode	Selective positioning Sequential positioning	
	Travel Amount Setting Range	-83886.08~+83886.07 mm (value set in units of 0.01 mm)	
	Starting Speed Setting Range	0.01~200.00 mm/s (value set in units of 0.01 mm/s)	
	Operating Speed Setting Range	0.01~600.00 mm/s (value set in units of 0.01 mm/s)	
	Acceleration/Deceleration Rate Setting Range	0.01~20.00 m/s ² (value set in units of 0.01 m/s ²)	
Control Mode	<ul style="list-style-type: none"> External input mode (EXT): In this mode, operation by external signal, command position, I/O condition and alarm condition can be monitored. Program mode (PRG): In this mode, operation data can be created, changed or cleared. Parameter mode (PAR): In this mode, operation parameters and function setting parameters can be set or changed. Test mode (TST): In this mode, manual operation and I/O check can be performed. 		
Operation Mode	Positioning operation, Return to home operation, Linked operation (a maximum of 4 data), Continuous operation, Push-motion operation		
Input Signal/Input Mode	START, STOP, HOME/PRESET, FREE, M0~M5, REQ, ACL/CK 24 VDC Photocoupler input, Input resistance 4.7 kΩ FWD, RVS 5 VDC Photocoupler input, Input resistance 180 Ω or 24 VDC Photocoupler input, Input resistance 2.7 kΩ +LS, -LS, HOMELS 24 VDC Photocoupler input, Input resistance 4.7 kΩ		
Output Signal/Output Mode	ALM, END/OUTR, MOVE, AREA/OUTO, OUT1 Photocoupler, Open-collector output (24 VDC, 10 mA or less) ASG1, BSG1 Photocoupler, Open-collector output (24 VDC, 15 mA or less) ^{*2} ASG2, BSG2 Line driver output ^{*2}		
Protective Function	Excessive position deviation, Overcurrent protection, Overvoltage protection, Overheat protection, Overload, Sensor error, Overspeed, Nonvolatile memory error, etc.		
Indicator (LED)	PWR, ALM	PWR, ALM, CHARGE	
Cooling Method	Natural ventilation		
Mass	0.44 kg	0.77 kg	

Driver Mode

Item	Controller Model		
	ESMC-K2	ESMC-C2	
Power Supply Input	Control Power 24 VDC±5% 1.0 A [Controller only: 0.5 A (Take into account safety margin of +0.2 A for the teaching pendant, and/or +0.3 A for the electromagnetic brake type.)]		
	Main Power	Voltage	24 VDC±10%
		Frequency	Single-Phase 200-230 VAC -15~+10%
		Current	50/60 Hz
		4.0 A ^{*1}	
Maximum Response Frequency	1-pulse input mode, 2-pulse input mode: 80 kHz, Phase difference input mode: 20 kHz		
Operation Mode	Return to home operation, Pulse input operation (1-pulse input mode, 2-pulse input mode, Phase difference input mode)		
Input Signal/Input Mode	ACL/CK, FREE, C.OFF, HOME/PRESET, REQ, HMSTOP 24 VDC Photocoupler input, Input resistance 4.7 kΩ FP, RP 5 VDC Photocoupler input, Input resistance 180 Ω or 24 VDC Photocoupler input, Input resistance 2.7 kΩ +LS, -LS, HOMELS 24 VDC Photocoupler input, Input resistance 4.7 kΩ		
Output Signal/Output Mode	MOVE, END/OUTR, ALM, TIM/OUTO, OUT1 Photocoupler, Open-collector output (24 VDC, 10 mA or less) ASG1, BSG1 Photocoupler, Open-collector output (24 VDC, 15 mA or less) ^{*2} ASG2, BSG2 Line driver output ^{*2}		
Protective Function	Excessive position deviation, Overcurrent protection, Overvoltage protection, Overheat protection, Overload, Sensor error, Overspeed, Nonvolatile memory error, etc.		
Indicator (LED)	PWR, ALM	PWR, ALM, CHARGE	
Cooling Method	Natural ventilation		
Mass	0.44 kg	0.77 kg	

*1 The maximum current varies depending on the connected cylinder.

[ESMC-K2] EZCM4: 1.7 A EZCM6: 4.0 A
[ESMC-C2] EZCM4: 2.1 A EZCM6: 3.0 A

*2 Pulse output is subject to a maximum delay of 1ms with respect to the actual movement of the motorized cylinder. These signals are only for position verification when the cylinder has stopped.

General Specifications of Controller

This is the value after rated operation under normal ambient temperature and humidity

24 VDC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: · FG – Main power supply input terminal · FG – I/O connector
Dielectric Strength	Sufficient to withstand the following for 1 minute: · FG – Main power supply input terminal 0.5 kVAC 50 Hz · FG – I/O connector 0.5 kVAC 50 Hz
Ambient Temperature	0 ~ +40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

Note:

- Do not measure insulation resistance or perform the dielectric strength test while the cylinder and controller are connected.

Single-Phase 200-230 VAC

Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: · I/O connector – Main power supply input terminal, Motor connector, Battery connector · Control power supply input terminal – Main power supply input terminal, Motor connector, Battery connector · PE – Main power supply input terminal, Motor connector, Battery connector
Dielectric Strength	Sufficient to withstand the following terminals for 1 minute: · Signal I/O, Control power supply input – Main power supply input 1.8 kVAC 50 Hz · Signal I/O, Control power supply input – Motor output 1.8 kVAC 50 Hz · Signal I/O, Control power supply input – Battery input 1.8 kVAC 50 Hz · PE – Main power supply input 1.5 kVAC 50 Hz · PE – Motor output 1.5 kVAC 50 Hz · PE – Battery input 1.5 kVAC 50 Hz
Ambient Temperature	0 ~ +40°C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

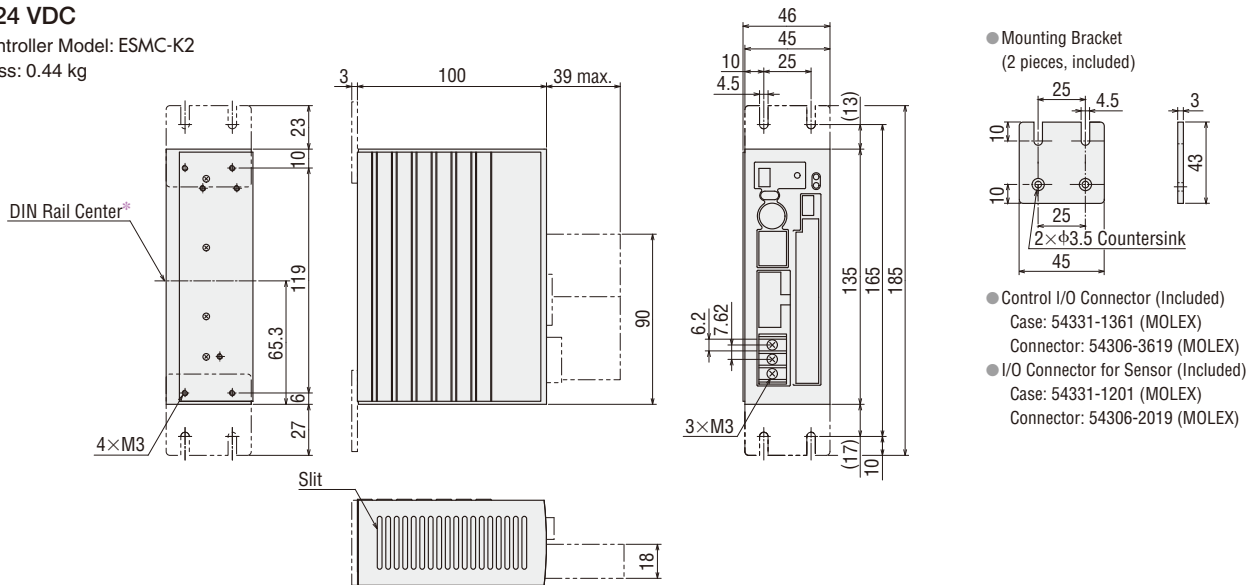
Note:

- Do not measure insulation resistance or perform the dielectric strength test while the cylinder and controller are connected.

Controller Dimensions (Unit = mm)

24 VDC

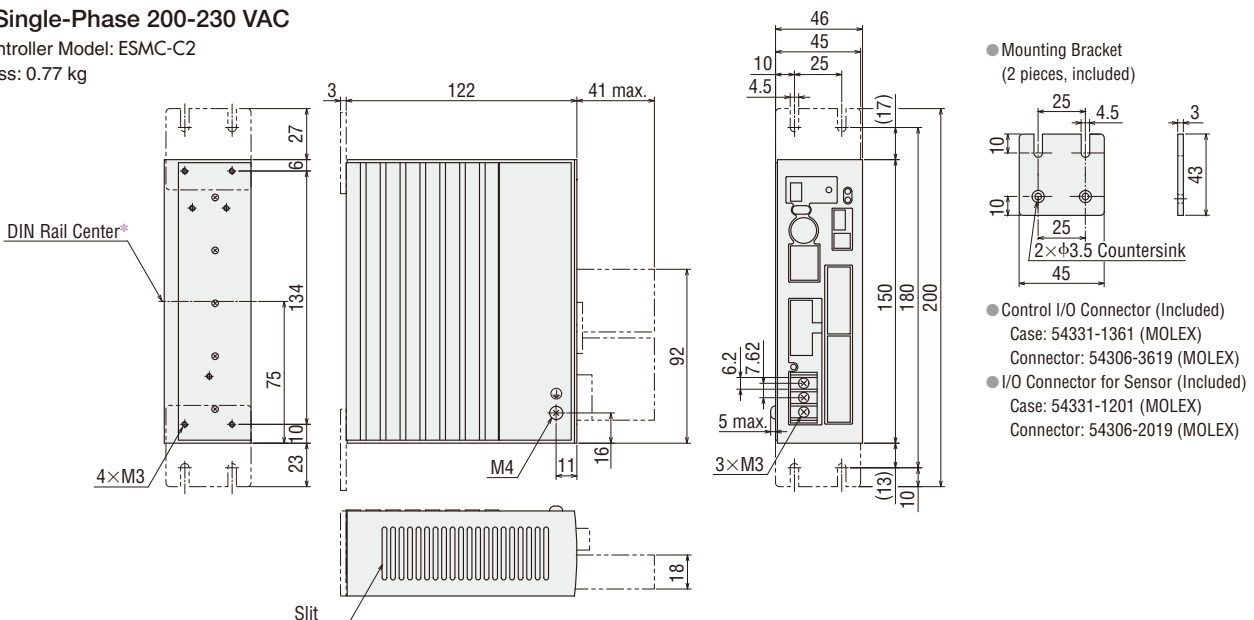
Controller Model: ESMC-K2
 Mass: 0.44 kg



*The center of the DIN rail when a DIN rail mounting plate (**PADP01**, sold separately) is used for installation.

Single-Phase 200-230 VAC

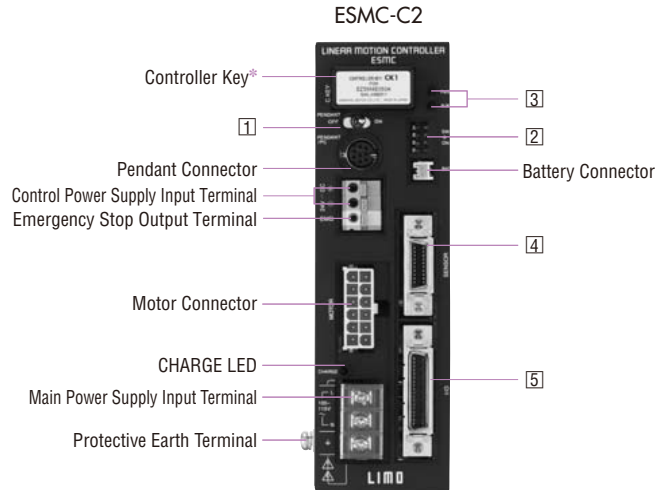
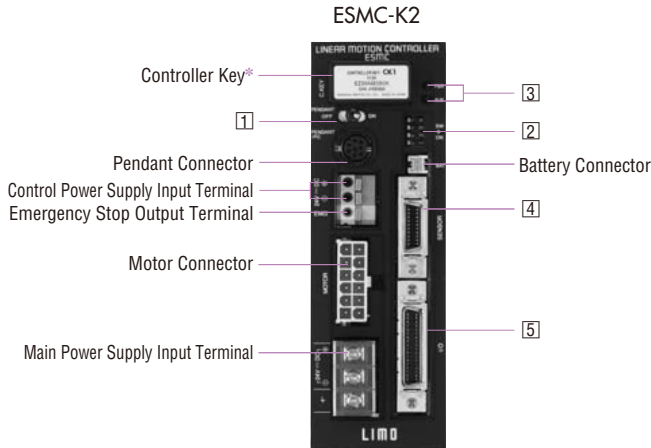
Controller Model: ESMC-C2
 Mass: 0.77 kg



*The center of the DIN rail when a DIN rail mounting plate (**PADP01**, sold separately) is used for installation.

Connection and Operation

Names and Functions of Controller Parts



1 Teaching Pendant Switch

Indication	Function
PENDANT	Enable/disable the teaching pendant ON: Enable the teaching pendant OFF: Disable the teaching pendant (The emergency stop button on the teaching pendant is also disabled.)

2 Mode Switch

Indication	Function
4	Invalid (not used)
3	Switch ABS/INC ON: Absolute type OFF: Incremental type
2	Set pulse input mode (in driver mode) ON: 1-pulse input mode OFF: 2-pulse input mode
1	Switch modes ON: Driver mode OFF: Controller mode

● All switches are set to OFF at the time of shipment.

3 LED Indicator

Indication	Color	Name
PWR	Green	Control power supply indicator
ALM	Red	Alarm indicator

4 Sensor I/O Connector

Indication	Input	Pin No.	Signal Name	Function
SENSOR	Input	1	IN-COM2	Power supply for sensor
		11		
		19		
		13	+LS	+ coordinate limit sensor
		14	-LS	- coordinate limit sensor
		15	HOMELS	Mechanical home sensor

* Make sure the cylinder model name on the controller key matches the model name of the connected cylinder. If the names do not match, the cylinder cannot be operated as specified.

5 I/O Connector

● Controller Mode

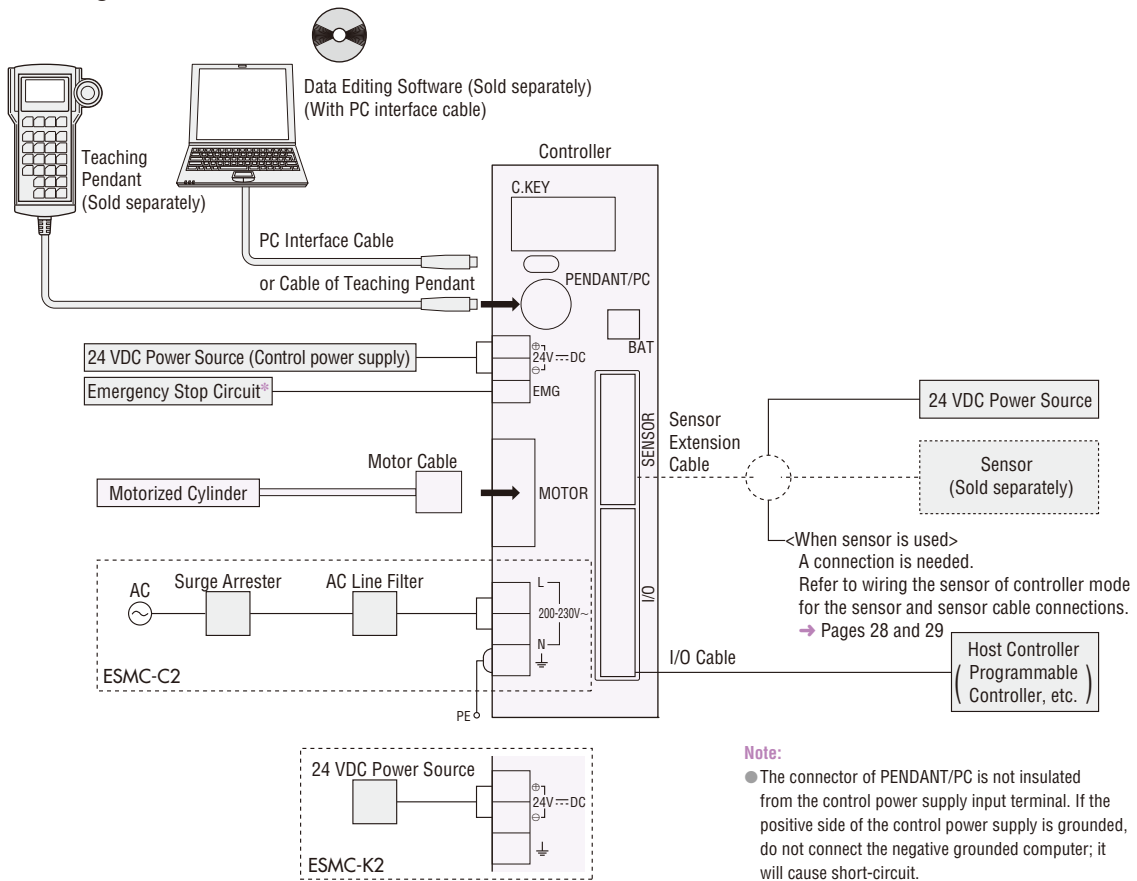
Indication	I/O	Pin No.	Signal Name	Function	
I/O	Input	18	IN-COM1	Power supply for input signals	
		19	GND	Power supply for I/O signals	
		1	OUT-COM	Power supply for output signals	
	Output	2	ALM	This signal is output when a protective function has been activated.	
		3	MOVE	This signal is output while the cylinder is operating.	
		4	END/ OUTR	END: This signal is output when a positioning operation or return to home operation has been completed. OUTR: Output the current position	
		5	AREA/ OUTO	AREA: This output notifies that the table of the cylinder is staying inside a specified area. OUTO: Output the current position	
		6	T-UP/ OUT1	T-UP: This signal is output when a push-motion operation has been completed. OUT1: Output the current position	
		20	ASG1	A-phase pulse output (Open-collector)	
		21	BSG1	B-phase pulse output (Open-collector)	
		22	ASG2	A-phase pulse output (Line driver)	
		23	ASG2		
		24	BSG2	B-phase pulse output (Line driver)	
		25	BSG2		
		Input	7	START	Start the positioning operation
			8	ACL/CK	ACL: Cancel the protective function currently active CK: Output the current position
			9	FREE	Stop motor excitation and release the electromagnetic brake
			10	STOP	Stop a positioning operation, return to home operation and continuous operation
	11		M0	Select the positioning operation No.	
	12		M1		
	13		M2		
	14		M3		
	15		M4		
	16		M5		
	17		HOME/ PRESET	HOME: Start return to home operation PRESET: Preset the current position	
	30		REQ	Request the current position output	
	31		FWD+	FWD: Move the cylinder rod in the + coordinate direction	
	32		FWD-		
	33		P24-FWD		
	34		RVS+	RVS: Move the cylinder rod in the - coordinate direction	
	35		RVS-		
	36		P24-RVS		

● Driver Mode

Indication	I/O	Pin No.	Signal Name	Function	
I/O	Input	18	IN-COM1	Power supply for input signals	
		19	GND	Power supply for I/O signals	
		1	OUT-COM	Power supply for output signals	
	Output	2	ALM	This signal is output when a protective function has been activated.	
		3	MOVE	This signal is output while the cylinder is operating.	
		4	END/ OUTR	END: This signal is output when a positioning operation or return to home operation has been completed. OUTR: Output the current position	
		5	TIM/ OUTO	TIM: This signal is output when the excitation sequence is at step "0." OUTO: Output the current position	
		6	OUT1	Output the current position	
		20	ASG1	A-phase pulse output (Open-collector)	
		21	BSG1	B-phase pulse output (Open-collector)	
		22	ASG2	A-phase pulse output (Line driver)	
		23	ASG2		
		24	BSG2	B-phase pulse output (Line driver)	
		25	BSG2		
		Input	8	ACL/CK	ACL: Cancel the protective function currently active CK: Output the current position
			9	FREE	Stop motor excitation and release the electromagnetic brake
			10	C.OFF	Stop motor excitation and hold the electromagnetic brake
			11	HMSTOP	Stop return to home operation
	17		HOME/ PRESET*	HOME: Start return to home operation PRESET: Preset the current position	
	30		REQ	Request the current position output	
	31		FP+	FP: Operation command pulse input in the + coordinate direction (The operation command pulse input in the 1-pulse input mode)	
	32		FP-		
	33		P24-FP		
	34		RP+	RP: Operation command pulse input in the - coordinate direction (The direction of movement input in the 1-pulse input mode)	
	35		RP-		
	36		P24-RP		

* Teaching pendant (**EZT1**) or data editing software (**EZED2**) is required when switching the HOME/PRESET input or changing parameters in the driver mode.

● Connection Diagram



*For the circuit configuration, refer to "Emergency stop circuit" below.

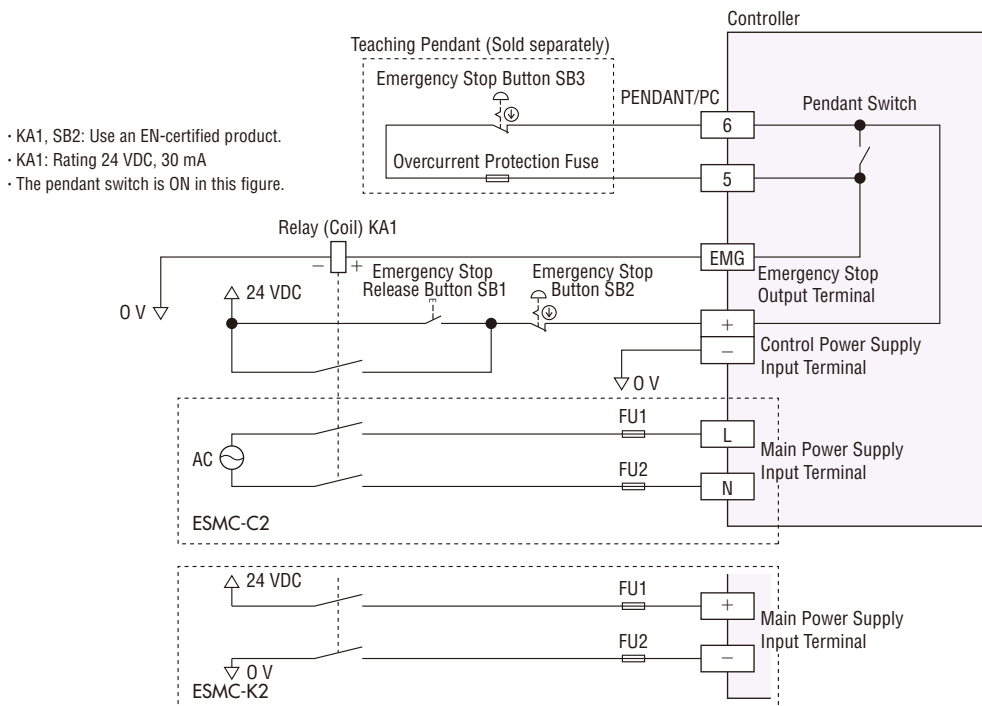
● Emergency Stop Circuit

If an emergency stop function is used, provide a circuit that will cut off the main power supply and control power supply upon pressing of the emergency stop button.

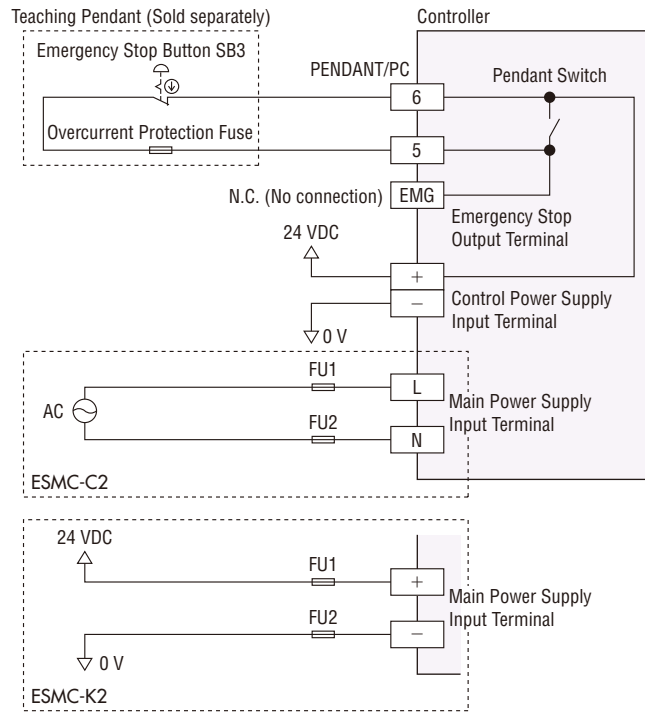
- When providing an emergency stop circuit, examine an appropriate circuit configuration based on the result of risk assessment of the equipment you are manufacturing.
- If the risk assessment result indicates that no emergency stop function is necessary, the circuit configuration shown in "Connection example when an emergency stop function is not used" can be used.
- Do not connect the emergency stop output terminal directly to GND (0 V). Doing so will blow the overcurrent protection fuse in the teaching pendant, in which case the emergency stop can no longer be canceled.
- Provide a measure on the machine side so that the machine will operate safely when the motorized cylinder is stopped.

◇ Connection Example When an Emergency Stop Function is Used

A connection example of controller power system and emergency stop system is given below, which conforms to Category 1 under the EN 954-1 safety standard and Stop Category 0 under the EN 60204-1 safety standard.



◇ Connection Example When an Emergency Stop Function is Not Used



Note:

- When the emergency stop button (SB3) on the teaching pendant is pressed, an emergency stop alarm (Err68) will generate and the motorized cylinder will stop operating. This stopping method is based on software control. It does not meet the emergency stop requirements specified in safety standards.

◇ **Power Source**

- Two types of power source, main power and control power are required. Both power sources must at least have the specified capacity.
- **Specifications of controller** → Page 22
- If the power capacity is insufficient, motor output may drop, which may cause the cylinder to malfunction (due to lack of thrust force).

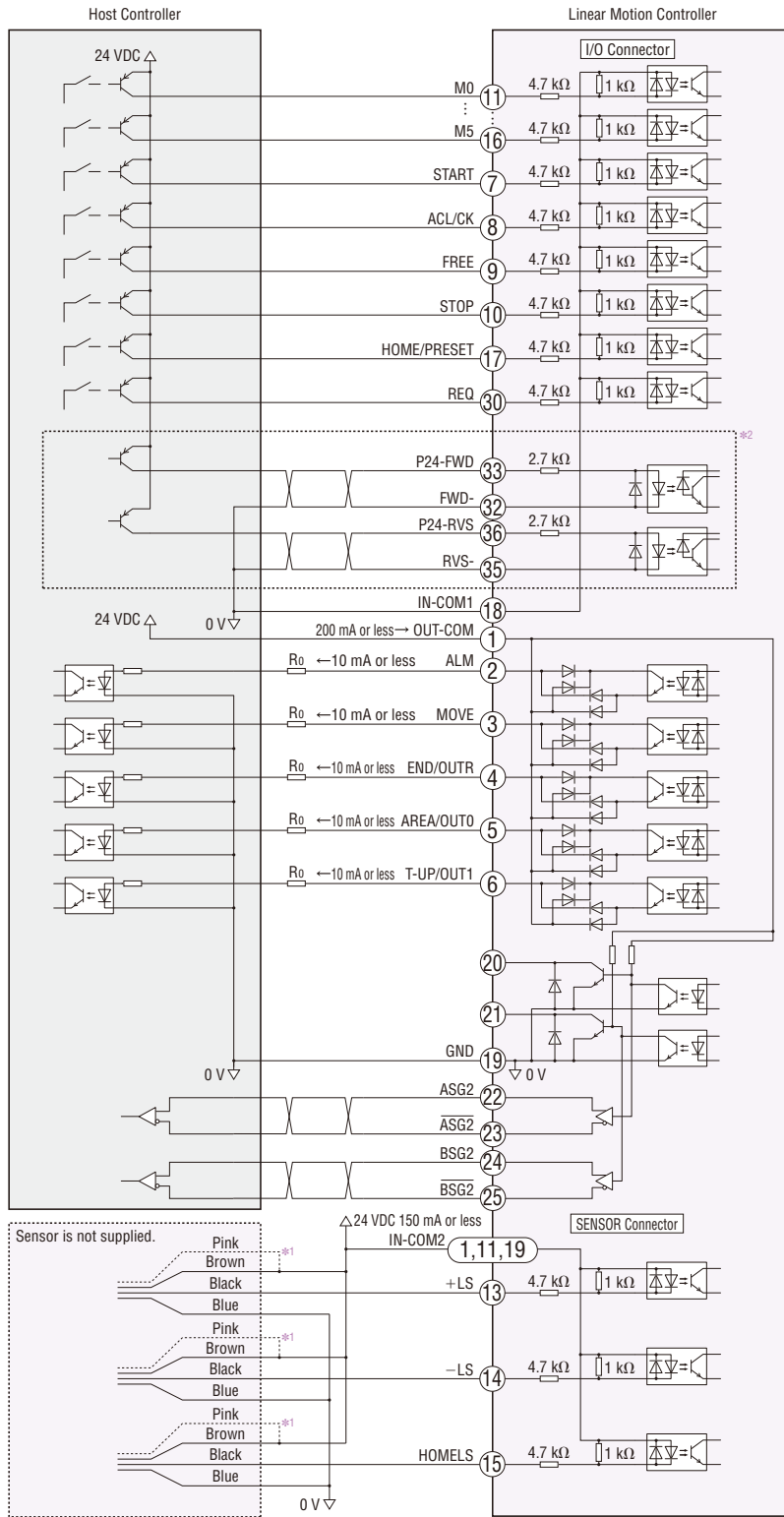
◇ **Notes on Wiring**

- Wire the control I/O signal lines over as short a distance as possible, using a shield cable AWG28 (0.08 mm²) or thicker.
- Be sure to use an accessory motor cable to wire the motorized cylinder and controller.
- Wire the control I/O signal lines by providing a minimum distance of 30 cm from the power lines (large-current circuits such as the power supply line and motor line). Do not wire the control I/O signal lines with the power lines in the same duct or bundle them together.

● Connection to Host Controller

◇ Controller Mode

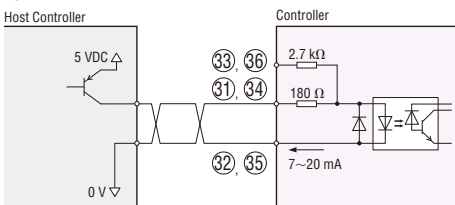
● Source Logic (PNP) Specification



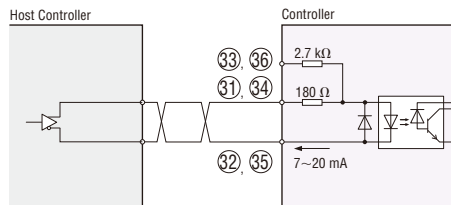
*1 Connect this line if the normally closed (NC) logic is used.
 *2 For connection of 31 to 36 pins, refer to "FWD (FP) and RVS (RP) Signals."

◇ FWD (FP) and RVS (RP) Signals

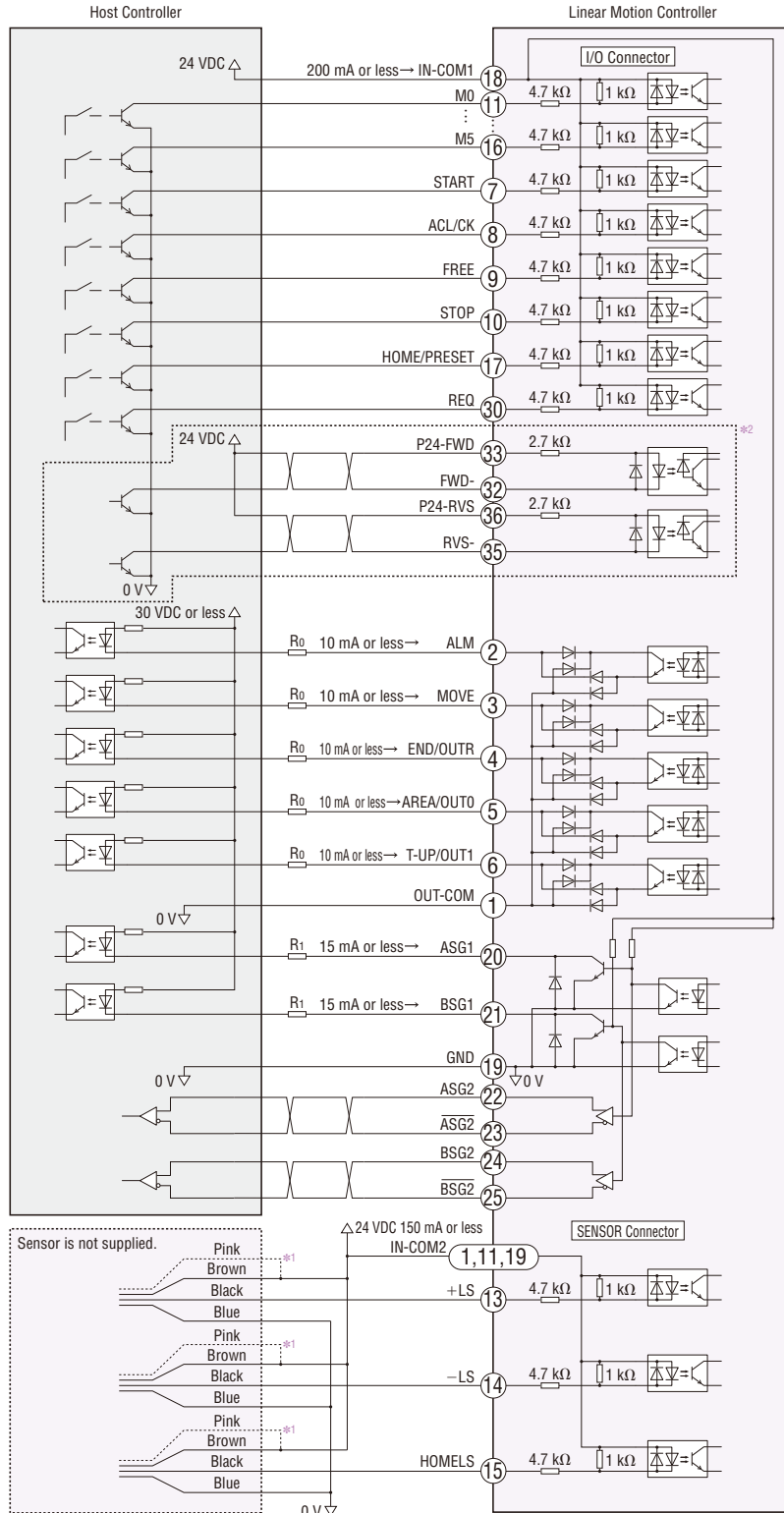
When connecting to sink logic (PNP) specification of 5 VDC



When connecting to a line driver output circuit

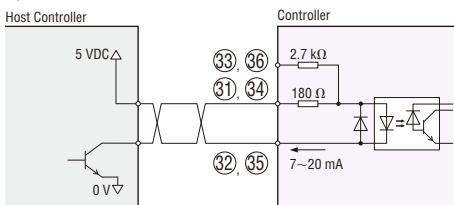


- ◇ Controller Mode
- Sink Logic (NPN) Specification

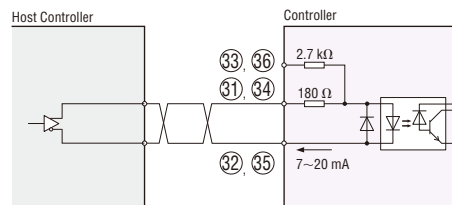


*1 Connect this line if the normally closed (NC) logic is used.
 *2 For connection of 31 to 36 pins, refer to "FWD (FP) and RVS (RP) Signals."

◇ FWD (FP) and RVS (RP) Signals
 When connecting to sink logic (NPN) specification of 5 VDC

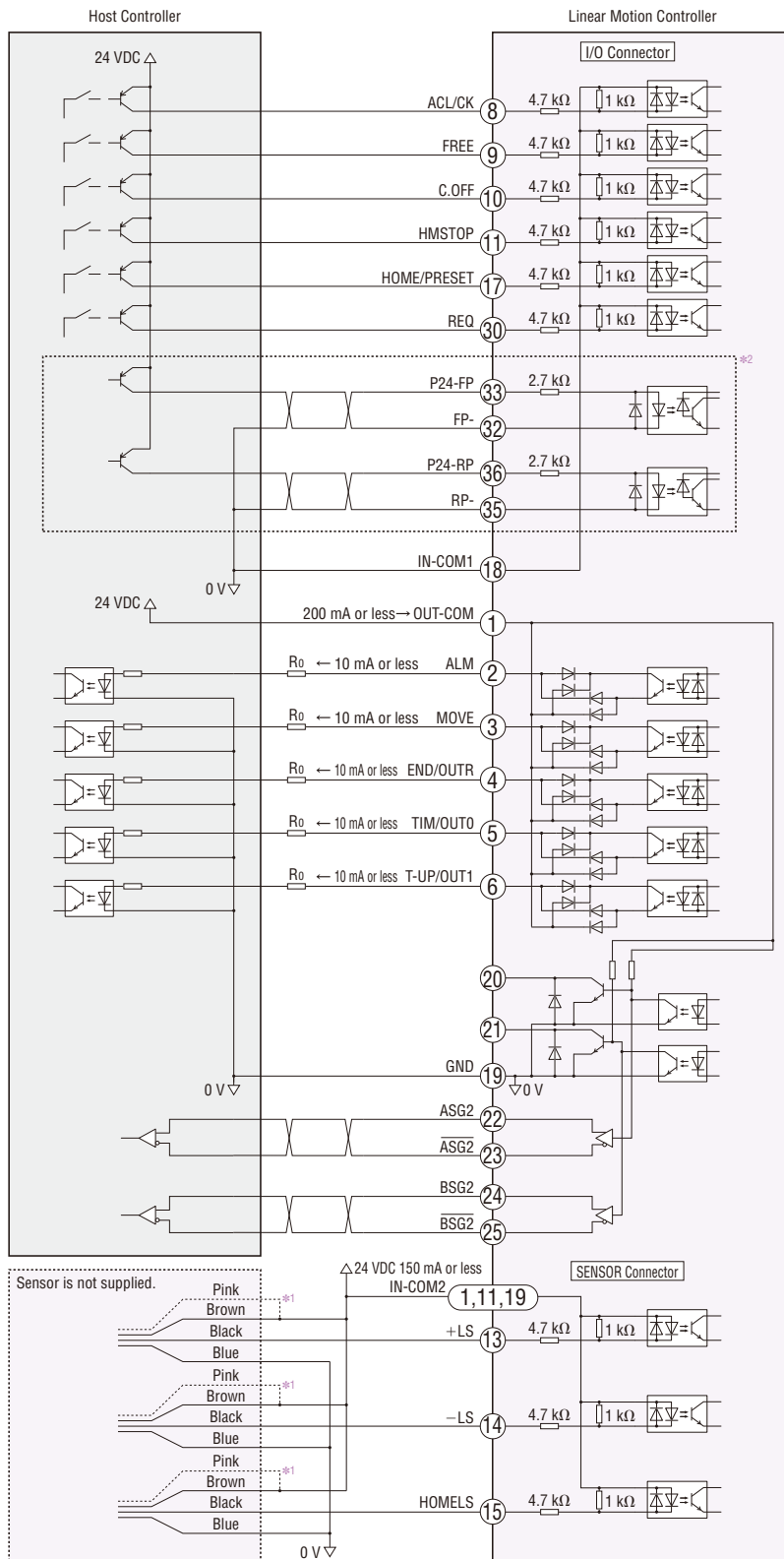


When connecting to a line driver output circuit



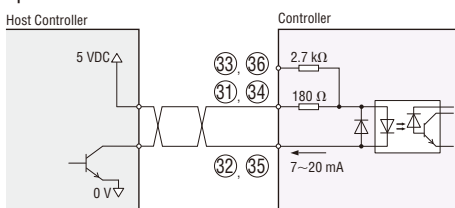
◇ Driver Mode

● Source Logic (PNP) Specification

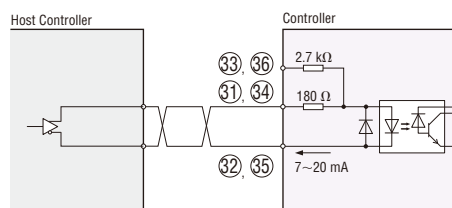


◇ FWD (FP) and RVS (RP) Signals

When connecting to sink logic (PNP) specification of 5 VDC

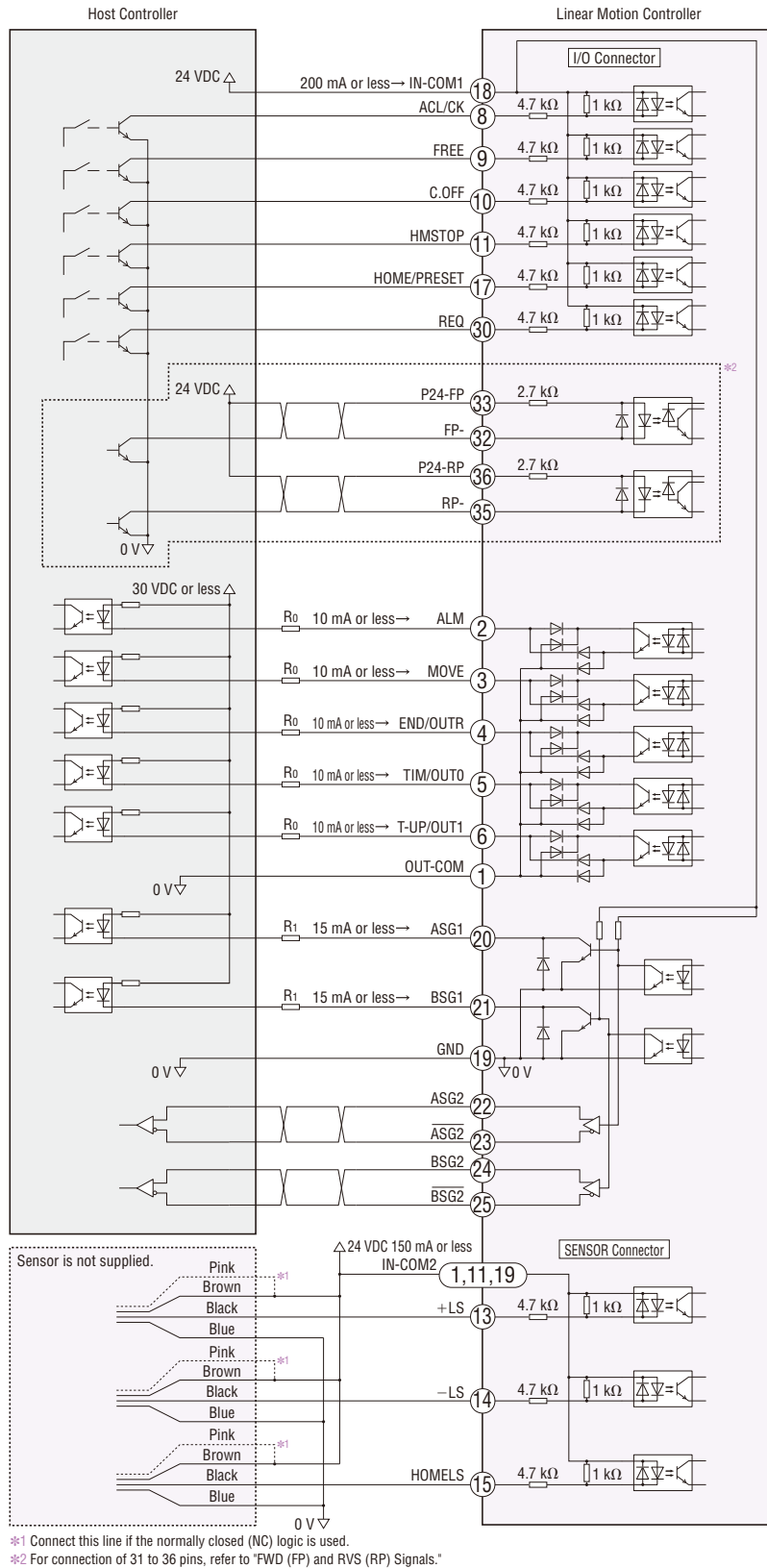


When connecting to a line driver output circuit



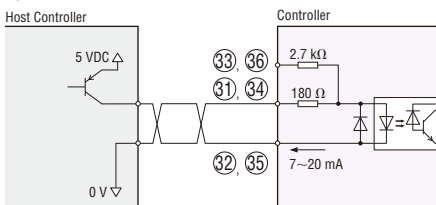
◇ Driver Mode

• Sink Logic (NPN) Specification

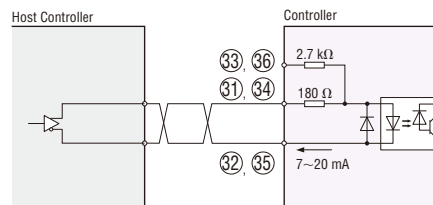


◇ FWD (FP) and RVS (RP) Signals

When connecting to sink logic (NPN) specification of 5 VDC



When connecting to a line driver output circuit



Accessories (Sold separately)

Motor Cables RoHS

These dedicated cables are used to connect the cylinder of the **EZCII** Series with the controller. Use flexible cables in applications where the cables will flex repeatedly. (For both the electromagnetic brake type and non-electromagnetic brake type.)



Product Line

Standard Cables (Without electromagnetic brake/with electromagnetic brake)

Model	Length (L)
CC010ES-2	1 m
CC020ES-2	2 m
CC030ES-2	3 m
CC050ES-2	5 m
CC070ES-2	7 m
CC100ES-2	10 m
CC150ES-2	15 m*
CC200ES-2	20 m*

*Keep the cable length to 10 m or below for 24 VDC cylinder.

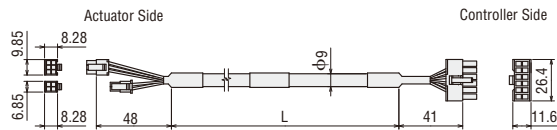
Flexible Cables (Without electromagnetic brake/with electromagnetic brake)

Model	Length (L)
CC010ESR-2	1 m
CC020ESR-2	2 m
CC030ESR-2	3 m
CC050ESR-2	5 m
CC070ESR-2	7 m
CC100ESR-2	10 m
CC150ESR-2	15 m*
CC200ESR-2	20 m*

*Keep the cable length to 10 m or below for 24 VDC cylinder.

Dimensions (Unit = mm)

CC□ES-2/CC□ESR-2



Sensor Extension Cables RoHS

These cables are used for connection between the linear motion controller and the sensors.

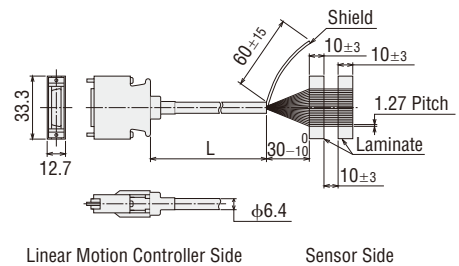
Product Line

Model	Length (L)
CC20D1-1	1 m
CC20D2-1	2 m



Dimensions (Unit = mm)

Conductor: AWG28 (0.08 mm²)



Teaching Pendant

The teaching pendant allows you to set and operate various data on hand, as well as to monitor the set data, current position and I/O status in real time.

Product Line

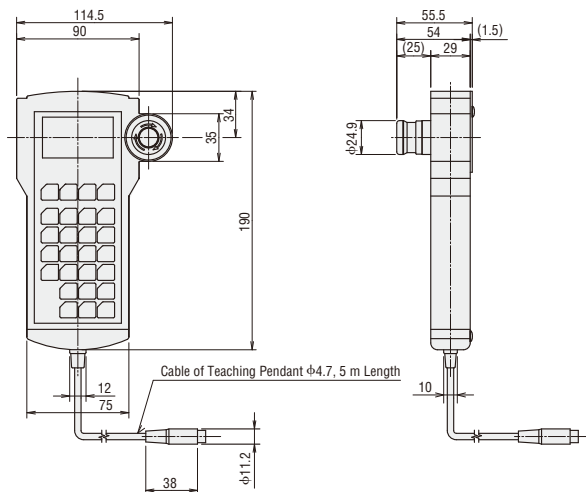
Model	EZT1
-------	-------------



Specifications

Display	LCD with 2-colored back light
Cable Length	5 m
Mass	0.37 kg
Ambient Temperature	0~+40°C (non-freezing)

Dimensions (Unit = mm)



Teaching Pendant (EZT1)/Data Editing Software (EZED2) Function Comparison Table

Function	Item	
	Teaching Pendant (Model: EZT1)	Data Editing Software (Model: EZED2)
Cable Length	5 m	5 m ^{*1}
Display	LCD 17 characters × 4 lines	PC screen
Emergency Stop Button	○	×
Operation Data Setting	○	○
Parameter Setting	○	○
Teaching Function (Direct/Remote)	○	○
Operation Data Monitoring	○	○
I/O & Alarm History Monitoring	○	○
Waveform Monitoring	×	○
Test Operation	○	○
Data Copy	×	○
Printing Function	×	○ ^{*2}

*1 PC interface cable (included) is used.

*2 The printing function is not available on computers running Windows® 98/Me.

Data Editing Software (RoHS)

With this software you can set and edit various data on a PC. It comes with a PC interface cable for connecting the controller and PC. The software also provides various monitoring functions.

Product Line

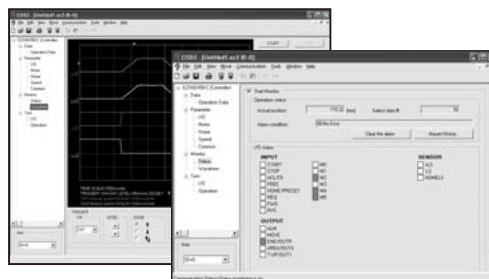
Model	EZED2
-------	--------------

● Ver 1.33 or later



PC Interface Cable

Cable Length	5 m
PC Connector Type	D-sub 9-pin
Communication Port	One RS-232C communication port



Specifications (Operating environment)

Item	Model: EZED2
Operating Software	Microsoft® Windows® 2000 Professional Service Pack 4 or later (hereinafter referred to as "Windows® 2000") Microsoft® Windows® XP Home Edition Service Pack 2 or later (hereinafter referred to as "Windows® XP") Microsoft® Windows® XP Professional Edition Service Pack 2 or later (hereinafter referred to as "Windows® XP") Microsoft® Windows® XP Media Center Edition 2004 Service Pack 2 or later (hereinafter referred to as "Windows® XP") Microsoft® Windows® XP Media Center Edition 2005 Service Pack 2 or later (hereinafter referred to as "Windows® XP") Microsoft® Windows® 98 Service Pack 1 or later* (hereinafter referred to as "Windows® 98") Microsoft® Windows® 98 Second Edition* (hereinafter referred to as "Windows® 98") Microsoft® Windows® Millennium Edition* (hereinafter referred to as "Windows® Me")
Memory	Windows® 2000: 128 MB or more (192 MB or more is recommended.) Windows® XP Home Edition or Professional Edition: 256 MB or more Windows® XP Media Center Edition 2004 or 2005: 320 MB or more Windows® 98: 64 MB or more (128 MB or more is recommended.) Windows® 98 Second Edition: 64 MB or more (128 MB or more is recommended.) Windows® Me: 96 MB or more (160 MB or more is recommended.)
Computer	Pentium® III 500 MHz or more (The OS must be supported.) Compatible with only single-core processor
Display Resolution	XGA (1024×768) or higher resolution video adapter and monitor
Free Hard Disk Space	Free disk space of 60 MB or more
Serial Port	RS-232C port, 1 channel
Disk Device	CD-ROM drive

* Microsoft® Internet Explorer 5.01 or later is also required.

● Service Pack signifies a service pack provided by Microsoft Corporation.

● Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other countries.

● Pentium is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and other countries.

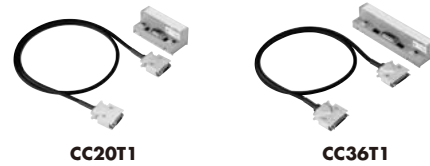
Connector – Terminal Block Conversion Unit RoHS

A conversion unit that connects a linear motion controller to a sensor or host controller using a terminal block.

- With a signal name plate for easy, one-glance identification of driver signal names
- DIN-rail mountable
- Cable length: 1 m

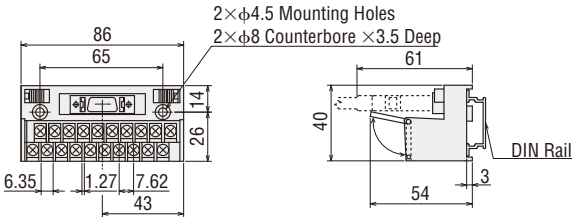
Product Line

Model	Connector	Length L (m)
CC20T1	For sensor I/O connector	1
CC36T1	For I/O connector	

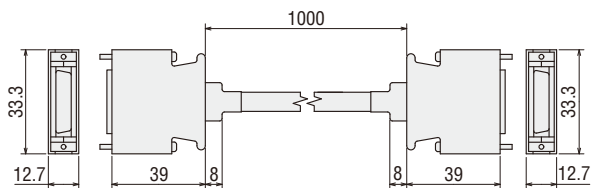


Dimensions (Unit = mm)

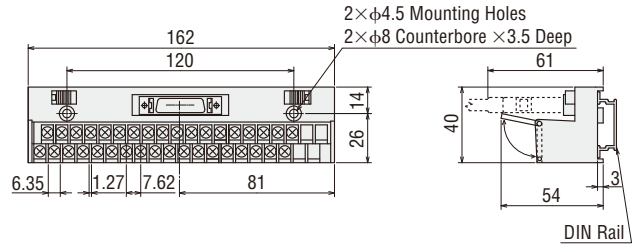
CC20T1



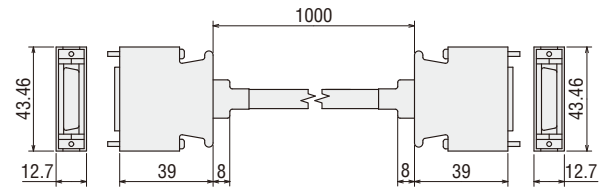
Terminal Block Pin No.
11 12 13 14 15 16 17 18 19 20
1 2 3 4 5 6 7 8 9 10



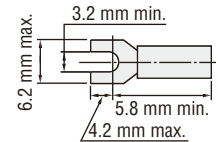
CC36T1



Terminal Block Pin No.
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



- Recommended Crimp Terminals
- Terminal screw size: M3
- Tightening torque: 1.2 N·m
- Applicable minimum lead wire: AWG22 (0.3 mm²)



I/O Cables RoHS

This cable is used for connection between the linear motion controller and the host controller. A half-pitch connector allowing one-touch connection to the controller is attached at one end of the flat cable.

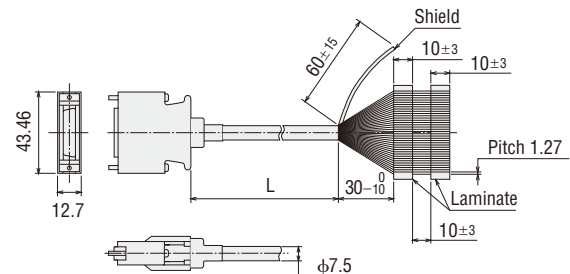
Product Line

Model	Length (L)
CC36D1-1	1 m
CC36D2-1	2 m



Dimensions (Unit = mm)

Conductor: AWG28 (0.08 mm²)



Linear Motion Controller Side Host Controller Side

DIN Rail Mounting Plate RoHS

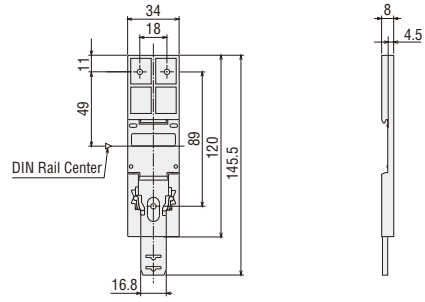
This mounting plate is convenient for installing the linear motion controller on DIN rails easily. (Mounting screws are included.)

Product Line

Model	PADP01
-------	--------



Dimensions (Unit = mm)



- Screws (Included)
M3 P0.5 Length 8 mm
3 pieces

Selection Calculations

After you have determined which series to use, select an appropriate model. Select a cylinder of the size that satisfies your desired condition.

Select an appropriate model by following the steps below.

(1) Select a Cylinder Satisfying the Transportable Mass

By referring to "■ specifications of cylinder," select a cylinder satisfying the transportable mass.

Condition: Drive a work of 14 kg over a horizontal distance of 200 mm within 5 seconds.

EZC4: Specifications of Frame Size 42 mm × 42 mm, 24 VDC Cylinder

■ Specifications of Cylinder (RoHS)		CE					
Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm] ±0.02		Resolution [mm]	0.01		
Model	Lead [mm]	Transportable Mass [kg] ^{※1}		Thrust [N]	Push Force [N] ^{※2}	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZC4D □-K	12	~15	—	~70	100	—	600
EZC4D □M-K			~6.5			70	
EZC4E □-K	6	~30	—	~140	200	—	300
EZC4E □M-K			~14			140	

● Enter the stroke length in the box (□) within the model name.

Based on the "condition" and "specifications of cylinder," select **EZC4D020-K**.

(2) Check the Positioning Time

From the graph "● positioning distance – positioning time" below, check if the selected cylinder satisfies the desired positioning time.

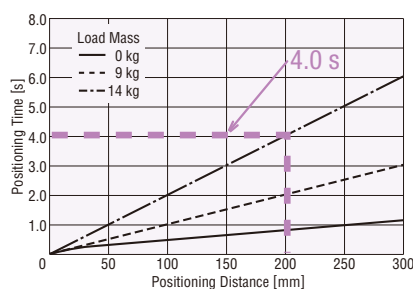
From the graph, find the "positioning time of 4.0 s" for the "positioning distance of 200 mm."

Notes:

- The calculated positioning time does not include the settling time. Use a settling time of 0.15 s as a reference.
- The running duty, which represents the relationship of running time and stopping time, should be kept to 50% or less (reference).
Running duty [%] = running time [s] × 100 / (running time [s] + stopping time [s])

■ Check the Positioning Time

- **EZC4E (Lead: 6 mm)**
- ◇ Vertical Installation
- Positioning Distance – Positioning Time



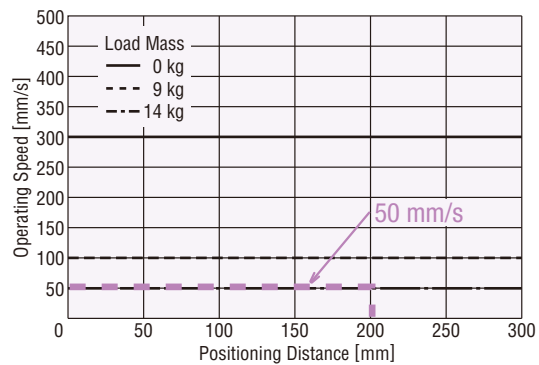
(3) Check the Operating Speed and Acceleration of the Cylinder

The time calculated from "■ check the positioning time" assumes the operating speed and acceleration that achieve the shortest positioning time. Check the specific operating speed and acceleration at which to drive the cylinder based on the time calculated in step (2).

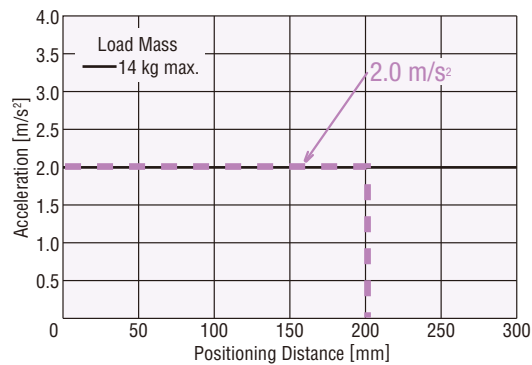
Check the operating speed and acceleration by referring to "● positioning distance – operating speed" and "● positioning distance – acceleration."

Example) For a positioning distance of 200 mm on the graph, the operating speed is 50 mm/s, and the acceleration is 2.0 m/s².

EZC4E040-K "● Positioning Distance – Operating Speed"



EZC4E040-K "● Positioning Distance – Acceleration"



This product is manufactured at a plant certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** (for systems of environmental management).

Orientalmotor

Specifications are subject to change without notice.
This catalogue was published in October, 2009.

ORIENTAL MOTOR (EUROPA) GmbH

www.orientalmotor.de

European Headquarters and Düsseldorf Office

Schießstraße 74
40549 Düsseldorf, Germany
Tel: +49-0211-5206700 Fax: +49-0211-52067099

Munich Office

Carl-von-Linde-Straße 42
5716 Unterschleißheim, Germany
Tel: +49-089-3181225-00 Fax: +49-089-3181225-25

Hamburg Office

Meckelfelder Weg 2
21079 Hamburg, Germany
Tel: +49-040-76910443 Fax: +49-040-76910445

Jena Office

Wildenbruchstraße 15
07745 Jena, Germany
Tel: +49-03641-675280 Fax: +49-03641-675288

Stuttgart Office

Tel: +49-07335-924853 Fax: +49-07335-924854

ORIENTAL MOTOR (UK) LTD.

www.oriental-motor.co.uk

Unit 5 Faraday Office Park,
Rankine Road, Basingstoke,
Hampshire RG24 8AH U.K.
Tel: +44-01256-347090 Fax: +44-01256-347099

ORIENTAL MOTOR (FRANCE) SARL

www.orientalmotor.fr

France Headquarters

32, Avenue de l'île Saint Martin
92737 Nanterre Cedex, France
Tel: +33-1 47 86 97 50 Fax: +33-1 47 82 45 16

Lyon Office

10, Allée des Sorbiers
69673 Bron Cedex, France
Tel: +33-4 78 41 15 02 Fax: +33-4 78 41 15 90

ORIENTAL MOTOR ITALIA s.r.l.

www.orientalmotor.it

Italy Headquarters

Via A. De Gasperi, 85
20017 Mazzo di Rho (MI), Italy
Tel: +39-02-93906346 Fax: +39-02-93906348

Bologna Office

Via mori, 6
40054 Prunaro di Budrio (BO), Italy
Tel: +39-051-6931249 Fax: +39-051-6939266

Verona Office

Piazza Roma, 3A
37066 Sommacampagna (VR), Italy
Tel: +39-045-8961049 Fax: +39-045-8971978

Customer Center (Support in German & English)

00800 22 55 66 22*

CA LL OM CC * Free Call Europe

Mon-Thu: 08:00-17:30 CET Friday: 08:00-16:00 CET

Mail to: tech@orientalmotor.de

SINGAPORE ORIENTAL MOTOR PTE LTD

www.orientalmotor.com.sg

31 Kaki Bukit Road 3, #04-02/04
Techlink, Singapore 417818
Tel: +65-6745-7344 FAX: +65-6745-9405

ORIENTAL MOTOR (MALAYSIA) SDN. BHD.

www.orientalmotor.com.my

Headquarters & Kuala Lumpur Office

A-13-1, North Point Offices, Mid Valley City,
No. 1 Medan Syed Putra Utala 59200
Kuala Lumpur, Malaysia
Tel: +60-3-22875778 Fax: +60-3-22875528

Penang Office

Tel: +60-4-6423788 Fax: +60-4-6425788

ORIENTAL MOTOR (THAILAND) CO., LTD.

www.orientalmotor.co.th

900, 8th Floor Zone C, Tonson Tower,
Ploenchit Road, Lumpini, Pathumwan,
Bangkok 10330 Thailand
Tel: +66-2-251-1871 Fax: +662-251-1872

Customer Support Centre (Support in English & Chinese)

For Singapore: 1800-842 0280* * Free Call Mon-Fri: 09:00-17:30 Singapore Time

For Malaysia: 1800-806 161* * Free Call

For Other Countries: +65-6842-0280

Mail to: support@orientalmotor.com.sg

Japanese Customer Support Centre (Asia and Oceania Areas)

+65-6745-3008

Mon-Fri: 09:00-17:30 Singapore Time

Mail to: j-support@orientalmotor.com.sg

ORIENTAL MOTOR CO., LTD.

www.orientalmotor.co.jp

Headquarters

16-17, Ueno 6-chome
Taito-ku, Tokyo 110-8536, Japan
Tel: +81-3-3835-0684 Fax: +81-3-3835-1890

For more information please contact:

©Copyright ORIENTAL MOTOR CO., LTD. 2008-2009



This printed material uses ECF (Elementary Chlorine Free) paper and soy inks.
This combination is environmentally friendly.

Printed in Japan 09X 7K 8119T L-003E