Orientalmotor

NEW
PRODUCTS

Motorized Linear Actuators

EZ limo

EZSⅡ Series **SPV** Series **EZCⅡ** Series **EZA** Series **PWAⅡ** Series

Advancing Positioning Applications

Oriental Motor's Motorized Actuators
EZ limo

Oriental Motor offers a broad lineup of motorized actuators, designed for greater ease and higher performance in positioning applications.
The drive motor for all models uses a closed loop αSTEP stepping motor.
The common controller incorporates features that let the user effortlessly set all functions needed to operate a motorized actuator. Other accessories, such as the teaching pendant, editing software and cables, are common to all EZ limo models.

A Wide Lineup of Motorized Actuators EZ limo

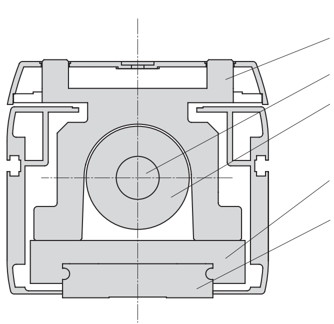
EZSⅡ Series

EZSⅡ Series (Using αSTEP)

Drive Method: Ball screw
Maximum Stroke 850 mm
Maximum Speed 800 mm/s
Maximum Transportable Mass Horizontal 60 kg/Vertical 30 kg
Repetitive Positioning Accuracy ±0.02 mm

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

A compact, lightweight linear slide using an LM Guide® as a frame.
Because an accurate LM Guide® is used as a reference when the linear slide is installed, an excellent traveling parallelism of 0.03 mm or below can be achieved.



●LM Guide is registered trademark of THK Co., Ltd.

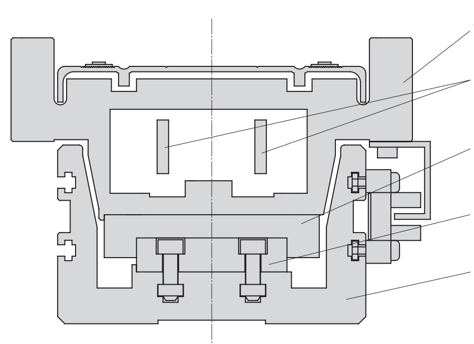
SPV Series

SPV Series (Using αSTEP)

Drive Method: Belt
Maximum Stroke 1500 mm
Maximum Speed 1500 mm/s
Maximum Transportable Mass Horizontal 20 kg
Repetitive Positioning Accuracy ±0.05 mm

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

Employing an aluminum frame structure and a belt-and-pulley mechanism, the **SPV6** and **SPV8** support long strokes up to 1000 mm and 1500 mm, respectively.
All models are capable of high-speed operation, achieving a maximum speed of 1500 mm/s.



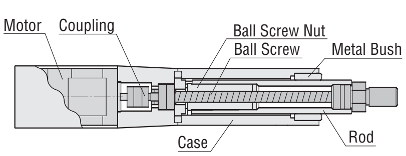
EZCⅡ Series

EZCⅡ Series (Using αSTEP)

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

*The value when an external guide is used.
●The above figures are representative values. For details, refer to the product information page.

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



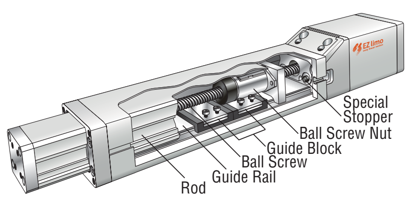
EZA Series

EZA Series (Using αSTEP)

Drive Method: Ball screw
Maximum Stroke 300 mm
Maximum Speed 600 mm/s
Maximum Transportable Mass Horizontal 9 kg */Vertical 30 kg
Repetitive Positioning Accuracy ±0.02 mm

*Maximum horizontal transportable mass is 60 kg when an external guide is used.
*Maximum horizontal transportable mass varies with the moment.
●The above figures are representative values. For details, refer to the product information page.

With a built-in LM Guide®, the **EZA** Series offers improved performance and greater ease of use while maintaining a compact size. There is no need for a guide mechanism, such as an external guide, requiring cumbersome installation.



●LM Guide is registered trademark of THK Co., Ltd.

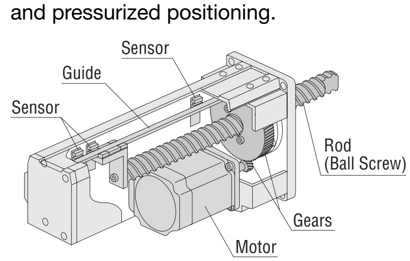
PWAⅡ Series

PWAⅡ Series (Using αSTEP)

Drive Method: Ball screw + Gear
Maximum Stroke 100 mm
Maximum Speed 200 mm/s
Maximum Push Force 5000 N
Repetitive Positioning Accuracy ±0.02 mm

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

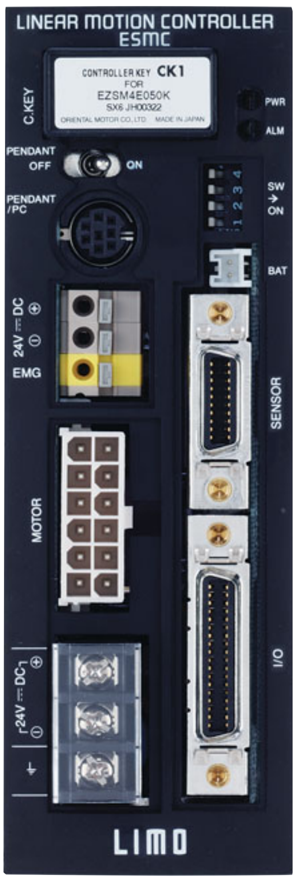
An αSTEP motor is used to turn the gears, thus driving the ball screw back and forth.
With the folded motor configuration, the **PWAⅡ** Series provides high thrust force while maintaining a compact size. It's perfect for applications with push motion and pressurized positioning.



Combining All Functions Needed to Operate a Linear Actuator in Positioning Operations

Each function is common to **EZSⅡ** Series, **SPV** Series, **EZCⅡ** Series, **EZA** Series and **PWAⅡ** Series.

This controller lets you operate all the functions required of a motorized linear actuator easily.



Common Controller

A removable controller key is used that stores the parameters for the various models. This means that the same controller can be used with the **EZSⅡ** Series, **SPV** Series, **EZCⅡ** Series, **EZA** Series and **PWAⅡ** Series.

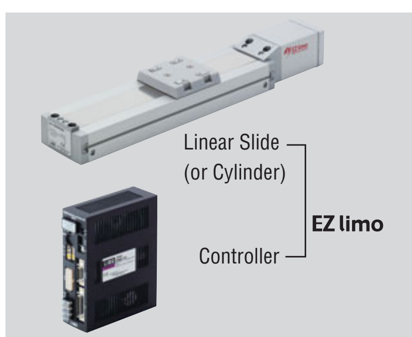
Three Types of Controllers

The controllers are available for three power supply voltages: 24 VDC, single-phase 100-115 VAC and single-phase 200-230 VAC.

Select the controller type that suits your equipment.

Incremental Mode/ Absolute Mode

Specifically, the controller can be used as an absolute unit by connecting an accessory battery (sold separately).

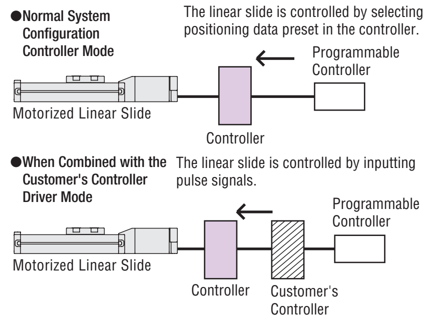


Controller Mode/ Driver Mode

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

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

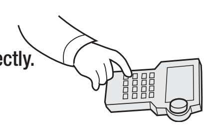
*Certain functions cannot be used in the driver mode.



Teaching Function

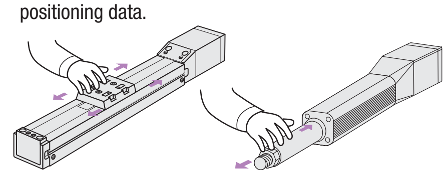
Positioning data can be set in one of three methods, as specified below.

①Enter the desired travel amount (mm) directly.



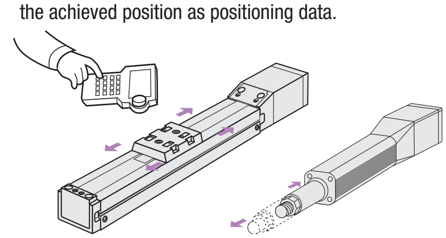
②Direct teaching

Move the table or the rod to the target position manually, and store the achieved position as positioning data.



③Remote teaching

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

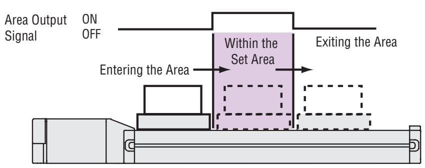


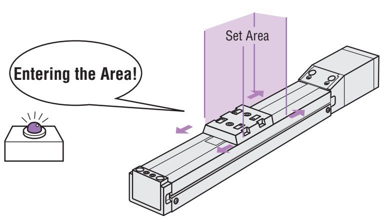
Up to 63 Points of Positioning Data

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.

Area Output Function

A signal is output when the linear slide table or the cylinder rod enters a set area arbitrarily set along the stroke. One set area can be set.

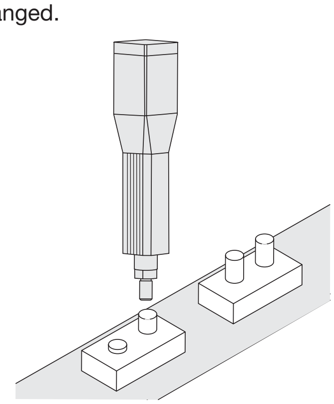




Push-Motion Function

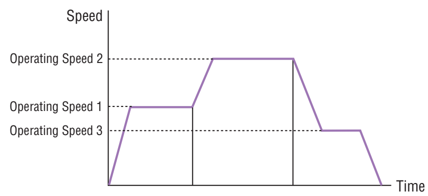
(Only for EZCⅡ/EZA/PWAⅡ Series Cylinders)

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



Linked Operation

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



·Data with the same operation direction can be linked.

Choice of Two Return to Home Methods

●Sensorless Return to Home
(Only for EZSⅡ/EZCⅡ/EZA Series)

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, and the direction of return to home can also be changed.

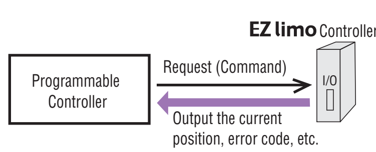
●Return to Home Using Sensors

Return to home is performed using home sensors.

With **SPV** Series, sensors are included in the product.

Output of Current Position and Error Code

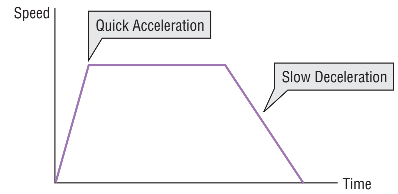
The current position, error code and other data can be output to an external device.



Extensive Adjustment Functions

●Acceleration/Deceleration

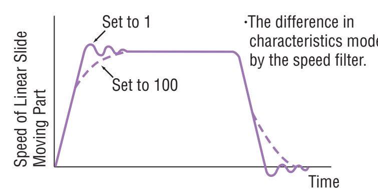
Four patterns of acceleration/deceleration setting are possible according to your operating conditions. Acceleration and deceleration can be set separately.



●Speed Filter

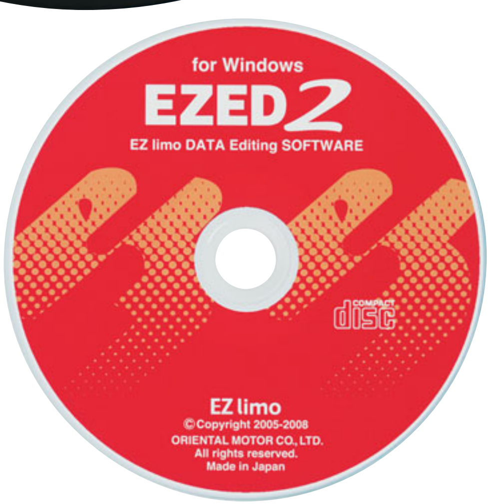
Use this filter to suppress disturbances during starting and stopping or to reduce vibration during low-speed operation. With the speed filter function you can control the motor to minimize speed fluctuations even when switching the speed rapidly between operation commands.

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.



Easy Editing of Positioning Data

A teaching pendant and data editing software are available.
Choose the 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 the 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.

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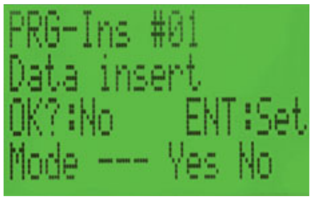
Teaching Pendant (Sold separately) (Model: **EZT1**)

● 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.



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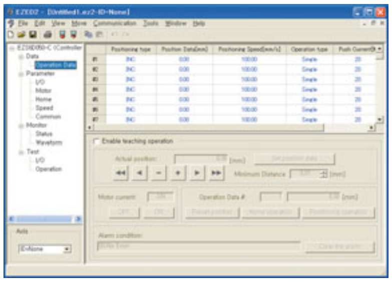
Data Editing Software (Sold separately) (Model: **EZED2**)

● All functions required for operation and adjustment, including setting of positioning data, test operation and I/O monitoring, are provided.

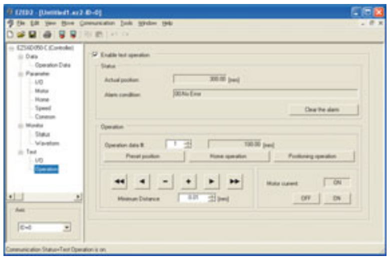
● Running on any Windows computer, the software is a graphic navigation tool that guides you through various operations in easy steps. This user-friendly feature makes this an ideal accessory for editing large volumes of data.

● You can also access waveform monitoring, data copy and other features not available on the teaching pendant.

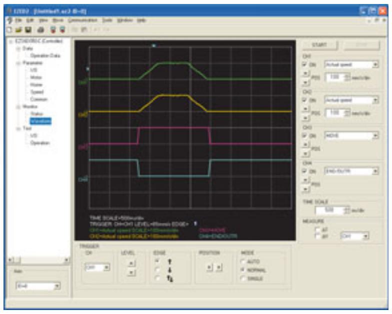
Data Editing



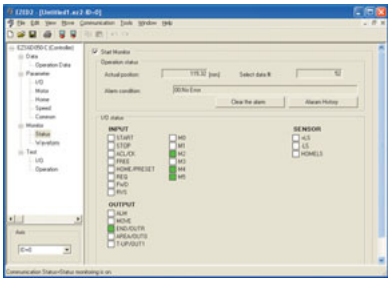
Test Operation



Waveform Monitoring



Status Monitoring



Product Specifications of Motorized Linear Slides EZ limo

●For details of product specifications, check the pages where each product is listed.
✻For the product specifications of **EZS II** Series, please refer to the relevant "ORIENTAL MOTOR GENERAL CATALOG 2009/2010" pages.

Series	Linear Slide Size [Width×Height]	Power Supply Voltage	Lead [mm]	Maximum Load Moment [N·m] MP	MY	MR	Maximum Transportable Mass in Horizontal Direction [kg]	Maximum Transportable Mass in Vertical Direction [kg]
EZS II Series Drive Method: Ball screw 	**EZS3** [54 mm×50 mm]	24 VDC	12	4.2	4.2	10.5	7.5	3.5
			6				15	7
		Single-Phase 100-115 VAC Single-Phase 200-230 VAC	12				7.5	3.5
			6				15	7
	EZS4 [74 mm×50 mm]	24 VDC	12	8	8	27.8	15	7
			6				30	14
		Single-Phase 100-115 VAC Single-Phase 200-230 VAC	12				15	7
			6				30	14
	EZS6 [74 mm×66.5 mm]	24 VDC	12	45.7	37.5	55.6	30	15
			6				60	30
		Single-Phase 100-115 VAC Single-Phase 200-230 VAC	12				30	15
			6				60	30
SPV Series Drive Method: Belt 	**SPV6** [60 mm×67 mm]	24 VDC	75	18	16	9	10	
		Single-Phase 100-115 VAC Single-Phase 200-230 VAC	75				10	
	SPV8 [86 mm×80 mm]	Single-Phase 100-115 VAC Single-Phase 200-230 VAC	90	33	29	40	20	

Maximum Speed [mm/s]	Repetitive Positioning Accuracy [mm]	Stroke [mm]	Electromagnetic Brake: Not Equipped	Electromagnetic Brake: Equipped	Page
600	±0.02	50~700 (50 mm increments)	●	●	*
300		50~700 (50 mm increments)	●	●	
800		50~700 (50 mm increments)	●	●	*
400		50~700 (50 mm increments)	●	●	
600		50~700 (50 mm increments)	●	●	*
300		50~700 (50 mm increments)	●	●	
800		50~700 (50 mm increments)	●	●	*
400		50~700 (50 mm increments)	●	●	
600		50~850 (50 mm increments)	●	●	*
300		50~850 (50 mm increments)	●	●	
800		50~850 (50 mm increments)	●	●	*
400		50~850 (50 mm increments)	●	●	
400	±0.05	100~1000 (100 mm increments)	●	–	22
1500		100~1000 (100 mm increments)	●	–	24
1500		100~1500 (100 mm increments)	●	–	26

Product Specifications of Motorized Cylinders EZ limo

●For details of product specifications, check the pages where each relevant product is listed.

Series	Cylinder Size [Frame Size]	Power Supply Voltage	Lead [mm]	Thrust Force [N]	Push Power*1 [N]	Maximum Transportable Mass in Horizontal Direction*2 [kg]	Maximum Transportable Mass in Vertical Direction*2 [kg]
EZC II Series Drive Method: Ball screw 	**EZC4** [42 mm×42 mm]	24 VDC	12	~70	100	15	6.5
			6	~140	200	30	14
		Single-Phase 100-115 VAC	12	~70	100	15	6.5
		Single-Phase 200-230 VAC	6	~140	200	30	14
	EZC6 [60 mm×60 mm]	24 VDC	12	~200	400	30	15
			6	~400	500	60	30
		Single-Phase 100-115 VAC	12	~200	400	30	15
		Single-Phase 200-230 VAC	6	~400	500	60	30
EZA Series Drive Method: Ball screw 	**EZA4** [42 mm×42 mm]	24 VDC	12	~70	100	15	6.5
			6	~140	200	30	14
		Single-Phase 100-115 VAC	12	~70	100	15	6.5
		Single-Phase 200-230 VAC	6	~140	200	30	14
	EZA6 [60 mm×60 mm]	24 VDC	12	~200	400	30	15
			6	~400	500	60	30
		Single-Phase 100-115 VAC	12	~200	400	30	15
		Single-Phase 200-230 VAC	6	~400	500	60	30
PWA II Series Drive Method: Ball screw+Gears 	**PWA6** [130mm×87mm]	Single-Phase 100-115 VAC Single-Phase 200-230 VAC	5	1000	~600	100	
	PWA8 [200mm×130mm]	Single-Phase 100-115 VAC Single-Phase 200-230 VAC	1.6	5000	~3500	500	

*1 Maximum speed of push-motion operation of the **EZC II**/**EZA** Series and **PWA II** Series are 25 mm/s and 6 mm/s, respectively.
*2 The value when an external guide is used.

	Maximum Speed [mm/s]	Repetitive Positioning Accuracy [mm]	Stroke [mm]	Electromagnetic Brake Not Equipped	Electromagnetic Brake Equipped	Page
	600	±0.02	50~300 (50 mm increments)	●	●	34
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	36
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	38
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	40
	300		50~300 (50 mm increments)	●	●	
	600	±0.02	50~300 (50 mm increments)	●	●	48
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	50
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	52
	300		50~300 (50 mm increments)	●	●	
	600		50~300 (50 mm increments)	●	●	54
	300		50~300 (50 mm increments)	●	●	
	200	±0.02	100	●	●	60
	70		100	●	●	62

RoHS RoHS-Compliant

Motorized Linear Slides

EZ limo EZSⅡ Series

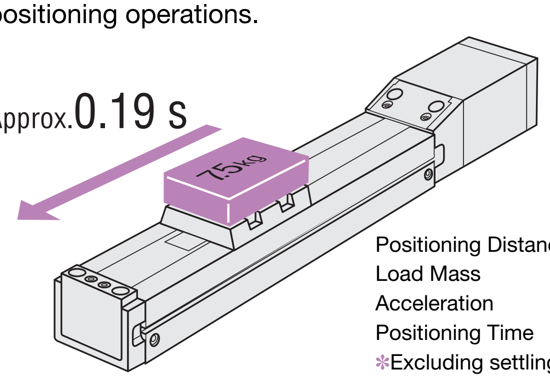
The structure of this motorized linear slide has been optimized to achieve greater convenience and performance in positioning applications.
The compact design facilitates simpler installation and wiring to your system.

Actual Size **EZS3D015-A** Stroke 150 mm Without Electromagnetic Brake

Quick Positioning

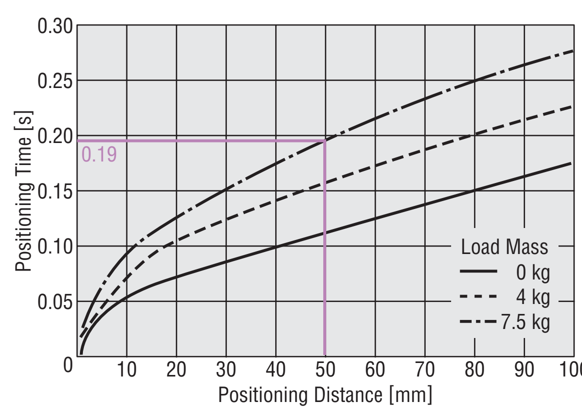
The **EZSⅡ** Series uses the *αSTEP* stepping motor characterized by its high response and ability to eliminate missteps. By fully utilizing the performance of the *αSTEP*, the **EZSⅡ** Series is capable of performing quick positioning operations.

Approx.0.19 s



Positioning Distance	50 mm
Load Mass	7.5 kg
Acceleration	8 m/s^2 (0.8 G)
Positioning Time	Approx. 0.19 s✻

✻Excluding settling time

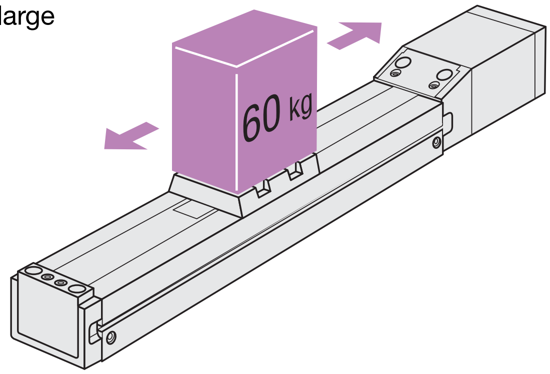


Large Transportable Mass

The **EZSII** Series can perform positioning at high speeds, supporting large transportable mass.

●Maximum Transportable Mass: Horizontal **60** kg Vertical **30** kg
EZS6 (Lead 6 mm)

●Maximum Speed: **800** mm/s
EZS3, **EZS4**, **EZS6**
(Lead 12 mm, single-phase 100-115 VAC/200-230 VAC input)

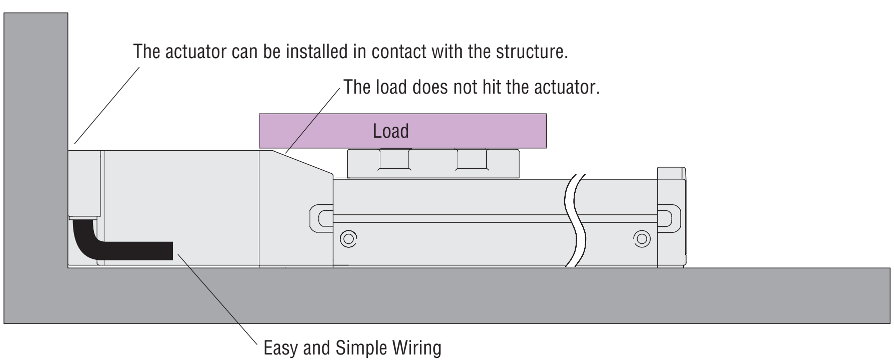


Space-Saving

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

Stroke + 209.5 mm = **Total length of linear slide**

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



Easy to Use

Common Controller

A removable controller key is used that stores the parameters of various models.
This means that the same controller can be used with all models and series.

Incremental Mode and Absolute Mode in One Model

One controller supports both the incremental and absolute functions. Specifically, the controller can be used as an absolute unit by connecting an accessory battery (sold separately).

Three Types of Controllers

The controllers are available for three power supply voltages: 24 VDC, single-phase 100-115 VAC and single-phase 200-230 VAC.
Select the controller type that suits your equipment.

RoHS RoHS-Compliant

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

Actual Size **EZS3D015-A** Stroke 150 mm Without Electromagnetic Brake

Easy Stroke Selection

A desired stroke can be selected in 50 mm increments over the following ranges:

EZS3, **EZS4**: 50 to 700 mm

EZS6: 50 to 850 mm

Maintenance-Free for Long-Term Performance

The ball screw employs the QZ™ lubrication system, while the LM Guide® uses the Ball Retainer® to retain the coupled rolling elements.
The ball screw and LM Guide® use AFF grease with reduced dust-raising property, which is designed for use in clean rooms.

For the specifications and characteristics of the **EZSII** Series, please refer to the general catalog or contact the nearest Oriental Motor sales office.

Wear Prevention

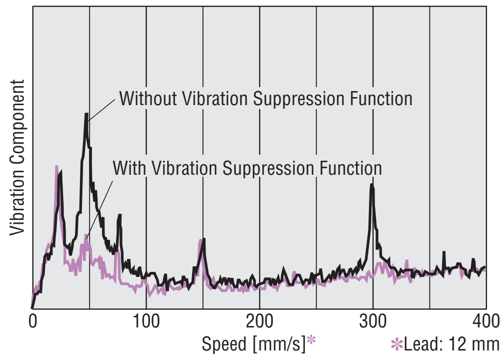
A simple roller mechanism is used to prevent the stainless sheet from wearing quickly. The roller structure suppresses dust generation caused by rubbing of the stainless sheet and the table.

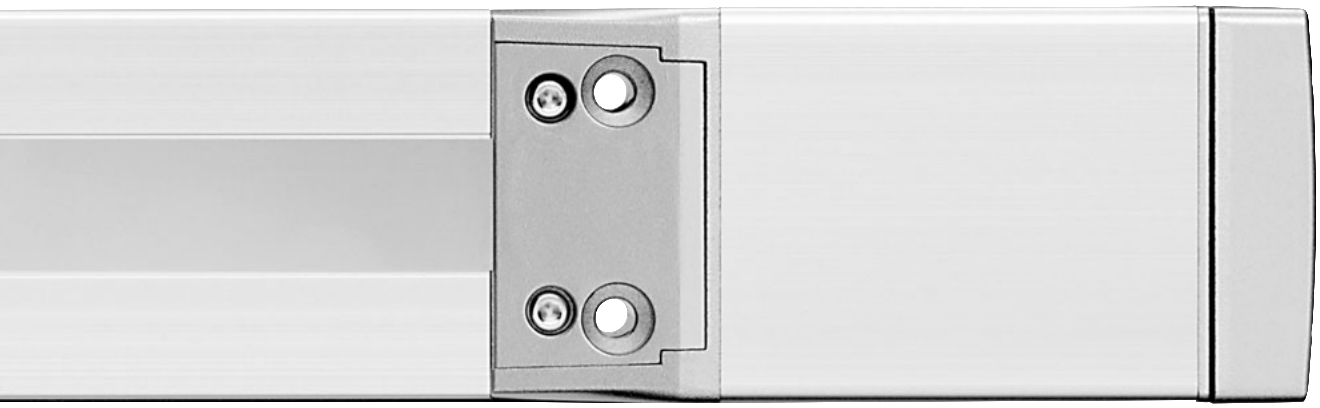
Traveling Parallelism 0.03 mm

A traveling parallelism of 0.03 mm is achieved by the direct installation of the guide.

Vibration Suppression Function

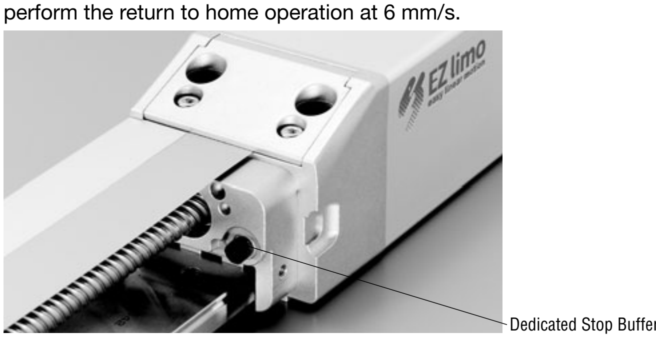
The newly developed control method achieves low vibration even at the speed range where large vibration occurs normally.





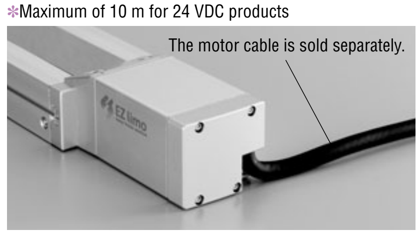
Sensorless High-Speed Return to Home Operation at Speeds up to 100 mm/s

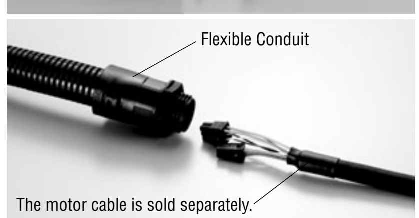
We have developed a dedicated stop buffer to allow the sensorless return to home operation at a maximum speed of 100 mm/s.
Once the motor detects table contact with the stop buffer, it will perform the return to home operation at 6 mm/s.



Easy Wiring

The linear slide 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 ϕ16.5 mm.

Motorized Linear Slides

EZ limo SPV Series

The **SPV** Series employs an αSTEP stepping motor and controller system for tuning-free, misstep-free operation.
The belt driven actuator allows the load to be transferred at high-speed and long strokes.


Motor Installed on Top   Motor Installed on Bottom

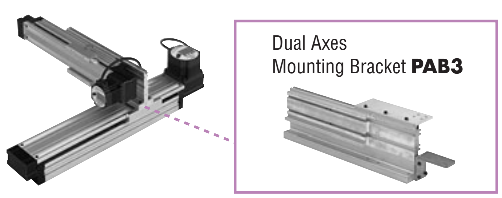
■Features

●Adopting a Closed Loop αSTEP Stepping Motor, This Linear Slide Eliminates Misstep and Hunting, While Attaining High-Speed and High-Response Operation.

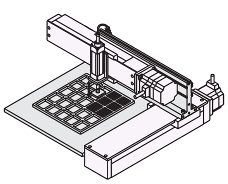
The linear slide has no hunting problem upon stopping. The vibration and noise levels have been lowered by employing advanced technology that produces smoothness comparable to a microstep driver.

●Dual Axes Combination Can be Easily Implemented

The X and Y axes can be installed easily using the **PAB3** dual axes mounting bracket as an accessory. It is also possible to directly assemble the linear slides of both axes.
(Accessories **PAB3** ➜ Page 79)
Only products with a motor at the top can be installed as the Y-axis. Products with a motor at the bottom cannot be installed as the Y-axis.



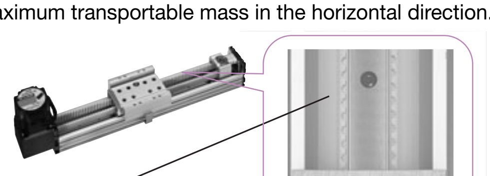
Using a Mounting Bracket


Positioning Operation of Load


Direct Installation

●Drivable at a Maximum Speed of 1500 mm/s and Acceleration of 5 m/s² (Single-phase 100-115 VAC/ 200-230 VAC)

The **SPV** Series boasts a maximum speed of 1500 mm/s. It also achieves an acceleration of 5 m/s² when carrying a load corresponding to the maximum transportable mass in the horizontal direction.



●The photograph shows the actuator without its cover.

●Long Stroke

The belt drive supports long strokes up to 1500 mm (the 1500 mm stroke is supported by the **SPV8** only).

●Easy Wiring between the Linear Slide and Controller

The linear slide 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 ϕ16.5 mm.*
*Except for the single-phase 200-230 VAC product

■Safety Standards and CE Marking (Only for 24 VDC product)

Power Supply Voltage	Product	CE Marking
24 VDC	Linear Slide	EMC Directives
	Controller	

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

●Machinery Directive (98/37/EC)

The linear slides, 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 76 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.

Product Number Code

SPV 6 K 080 U - K

① ② ③ ④ ⑤ ⑥

①	Series **SPV**: **SPV** Series
②	Linear Slide Size **6**: Width: 60 mm Height: 67 mm **8**: Width: 86 mm Height: 80 mm
③	Lead **K**: 75 mm **L**: 90 mm
④	Stroke **010**: 100 mm **020**: 200 mm **030**: 300 mm **040**: 400 mm **050**: 500 mm **060**: 600 mm **070**: 700 mm **080**: 800 mm **090**: 900 mm **100**: 1000 mm **110**: 1100 mm **120**: 1200 mm **130**: 1300 mm **140**: 1400 mm **150**: 1500 mm
⑤	Motor Installation Direction **U**: Motor Installed on Top **D**: Motor Installed on Bottom
⑥	Power Supply Voltage **K**: 24 VDC **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Product Line

●SPV6

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
100 mm	**SPV6K010□-K**	**SPV6K010□-A**	**SPV6K010□-C**
200 mm	**SPV6K020□-K**	**SPV6K020□-A**	**SPV6K020□-C**
300 mm	**SPV6K030□-K**	**SPV6K030□-A**	**SPV6K030□-C**
400 mm	**SPV6K040□-K**	**SPV6K040□-A**	**SPV6K040□-C**
500 mm	**SPV6K050□-K**	**SPV6K050□-A**	**SPV6K050□-C**
600 mm	**SPV6K060□-K**	**SPV6K060□-A**	**SPV6K060□-C**
700 mm	**SPV6K070□-K**	**SPV6K070□-A**	**SPV6K070□-C**
800 mm	**SPV6K080□-K**	**SPV6K080□-A**	**SPV6K080□-C**
900 mm	**SPV6K090□-K**	**SPV6K090□-A**	**SPV6K090□-C**
1000 mm	**SPV6K100□-K**	**SPV6K100□-A**	**SPV6K100□-C**

●Enter the motor installation direction **U** (motor Installed on top) or **D** (motor Installed on bottom) in the box (□) within the model name.

●SPV8

Stroke	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model
100 mm	**SPV8L010□-A**	**SPV8L010□-C**
200 mm	**SPV8L020□-A**	**SPV8L020□-C**
300 mm	**SPV8L030□-A**	**SPV8L030□-C**
400 mm	**SPV8L040□-A**	**SPV8L040□-C**
500 mm	**SPV8L050□-A**	**SPV8L050□-C**
600 mm	**SPV8L060□-A**	**SPV8L060□-C**
700 mm	**SPV8L070□-A**	**SPV8L070□-C**
800 mm	**SPV8L080□-A**	**SPV8L080□-C**
900 mm	**SPV8L090□-A**	**SPV8L090□-C**
1000 mm	**SPV8L100□-A**	**SPV8L100□-C**
1100 mm	**SPV8L110□-A**	**SPV8L110□-C**
1200 mm	**SPV8L120□-A**	**SPV8L120□-C**
1300 mm	**SPV8L130□-A**	**SPV8L130□-C**
1400 mm	**SPV8L140□-A**	**SPV8L140□-C**
1500 mm	**SPV8L150□-A**	**SPV8L150□-C**

●Enter the motor installation direction **U** (motor Installed on top) or **D** (motor Installed on bottom) in the box (□) within the model name.

The following items are included in each product.

Linear Slide, Frame Cover, Sensor with Cable, Sensor Cable Holder, Hexagonal Socket Head Screws, Controller, Mounting Bracket for Controller, User I/O Connector, Sensor I/O Connector, Operating Manual

General Specifications of Motor

●**General specifications of controller** ➜ Page 65

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
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings 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 linear slide and controller are connected.

●Single-Phase 100-115 VAC/Single-Phase 200-230 VAC

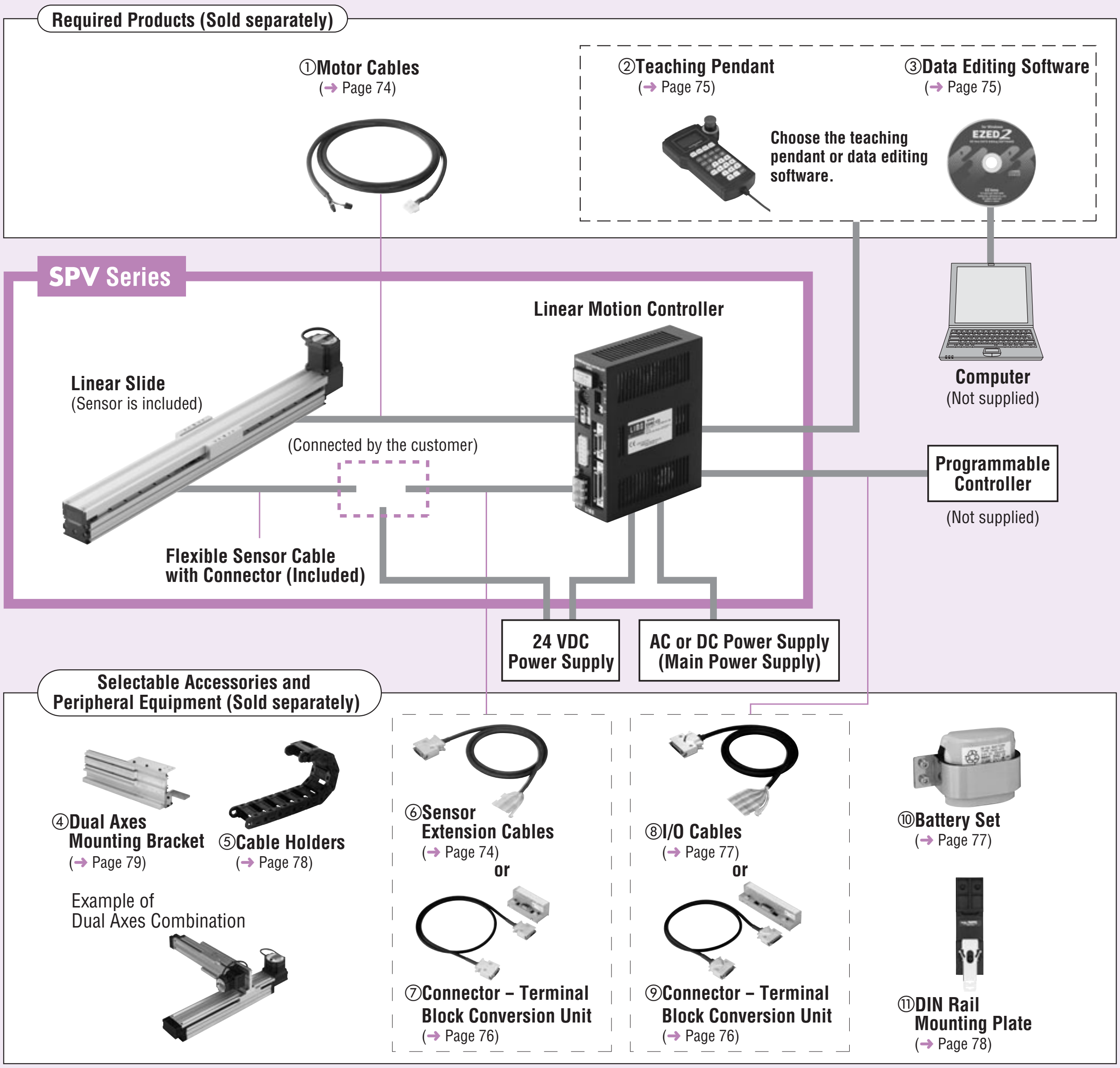
Item	Specification
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: ·Motor case – Motor/Sensor windings
Dielectric Strength	Sufficient to withstand the following for 1 minute: ·Motor case – Motor/Sensor windings 1.5 kVAC 50 Hz
Ambient Temperature	0～+40˚C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

Note:

●Do not measure insulation resistance or perform the dielectric strength test while the linear slide and controller are connected.

System Configuration

Controller Mode



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the linear slide and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Teaching Pendant	Various data can be set and operated at your fingertips. The cable length is 5 m.	75
③	Data Editing Software	Various data can be set and edited on a personal computer. A dedicated communication cable is included (5 m).	75
④	Dual Axes Mounting Bracket	Biaxial configuration can be easily implemented using the mounting bracket.	79
⑤	Cable Holders	This cable holder can be used to protect and guide cables in two or three axes combinations.	78
⑥	Sensor Extension Cables	Cable for connecting the linear motion controller and sensors (1 m, 2 m).	74
⑦	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and sensors (1 m).	76
⑧	I/O Cables	Cable for connecting the linear motion controller and programmable controller (1 m, 2 m).	77
⑨	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and programmable controller (1 m).	76
⑩	Battery Set	Required for use in the absolute mode.	77
⑪	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

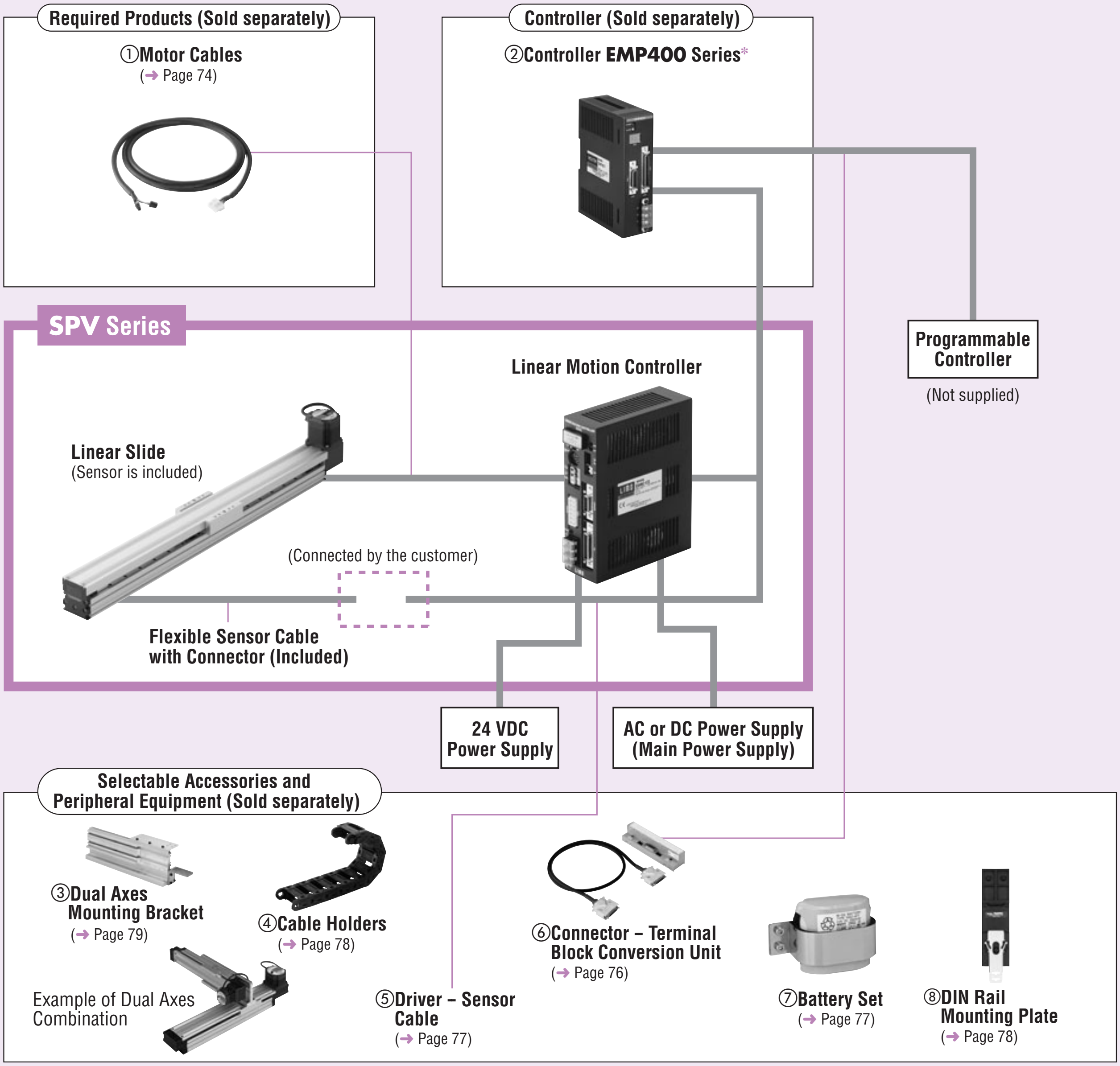
Example of System Configuration

	(Sold separately)			(Sold separately)	
SPV Series	Motor Cable (2 m)	Teaching Pendant	+	I/O Cable (1 m)	Sensor Extension Cable (2 m)
SPV6K010U-A	CC020ES-3	EZT1		CC36D1-1	CC20D2-1

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

● Driver Mode

An example of a single-axis system configuration with the **EMP400** Series controller.



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the linear slide and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Controller	This controller gives commands needed to drive the linear slide.	*
③	Dual Axes Mounting Bracket	Biaxial configuration can be easily implemented using the mounting bracket.	79
④	Cable Holders	This cable holder can be used to protect and guide cables in dual or three axes combinations.	78
⑤	Driver – Sensor Cable	Cable for connecting the linear motion controller and **EMP** Series controller (0.5 m).	77
⑥	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the **EMP** Series controller and programmable controller (1 m).	76
⑦	Battery Set	Required for use in the absolute mode.	77
⑧	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

● Example of System Configuration

	(Sold separately)		(Sold separately)		
SPV Series	Motor Cable (2 m)	+	Controller	Driver – Sensor Cable (0.5 m)	Connector – Terminal Block Conversion Unit (1 m)
SPV6K010U-A	CC020ES-3		EMP401-1	CC005EZ6-EMPD	CC50T1

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

SPV Series Using αSTEP Motor

SPV6: 60 mm (W) × 67 mm (H) 24 VDC

Maximum Transportable Mass: Horizontal 10 kg
Stroke: 100 to 1000 mm (in 100 mm increments)

Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Maximum Load Moment [N·m]	MP: 18 MY: 16 MR: 9

Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical			
SPV6K□U-K	75	~10	–	~60	~40	400
SPV6K□D-K						

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

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

Product Number Code

SPV 6 K 080 U - K

① ② ③ ④ ⑤ ⑥

①	Series **SPV**: **SPV** Series
②	Linear Slide Size **6**: Width: 60 mm Height: 67 mm
③	Lead **K**: 75 mm
④	Stroke **010** (100 mm) ~ **100** (1000 mm)
⑤	Motor Installation Direction **U**: Motor Installed on Top **D**: Motor Installed on Bottom
⑥	Power Supply Voltage **K**: 24 VDC

Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	**SPV6K□U-K**	SPVM6K□UK	ESMC-K2
Motor Installed on Bottom	**SPV6K□D-K**	SPVM6K□DK	

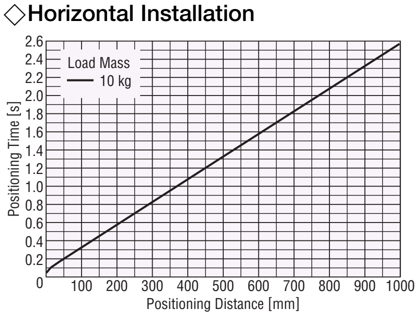
● Enter the stroke length in the box (□) within the model name.

Positioning Distance – Positioning Time

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

● **SPV6K** (Lead: 75 mm)

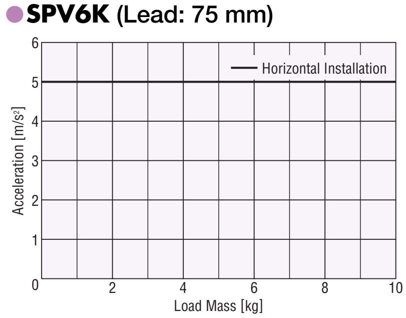
◇Horizontal Installation



Load Mass – Acceleration

Approximate acceleration settable by a controller can be checked from the load mass.

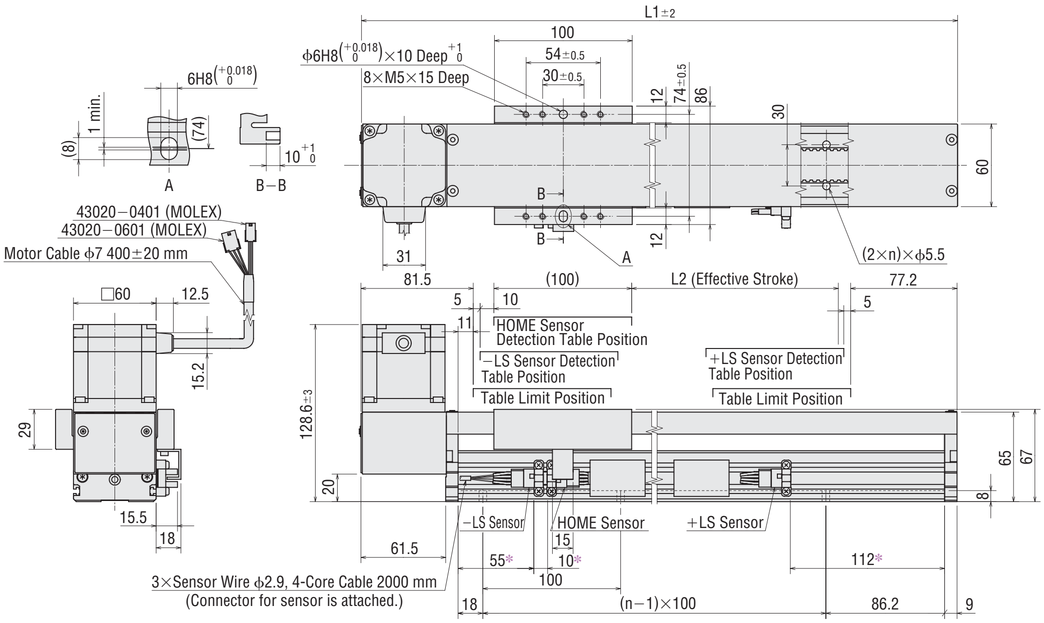
● **SPV6K** (Lead: 75 mm)



Notes:
● The positioning time in the graph does not include the settling time. Use a settling time of 0.2 s as a reference (settling time is adjustable by speed filter function).
● The starting speed should be 37.5 mm/s or less.

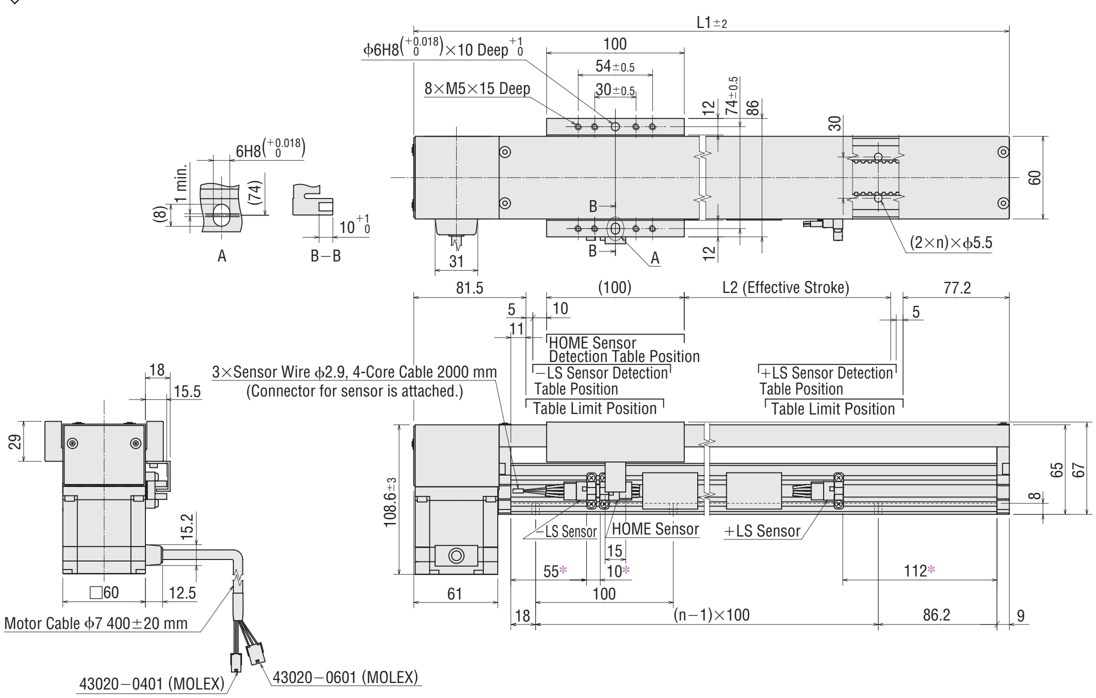
Dimensions of Linear Slide (Unit = mm)

◇Motor Installed on Top



* The settings "55," "10" and "112" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

◇Motor Installed on Bottom



* The settings "55," "10" and "112" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

Linear Slide Model: SPVM6K□UK (Motor Installed on Top)
SPVM6K□DK (Motor Installed on Bottom)

		Numbers Specifiable in the Box (□) within the Linear Slide Model Name									
		010	020	030	040	050	060	070	080	090	100
Stroke		100	200	300	400	500	600	700	800	900	1000
L1		383.7	483.7	583.7	683.7	783.7	883.7	983.7	1083.7	1183.7	1283.7
L2		100	200	300	400	500	600	700	800	900	1000
n		3	4	5	6	7	8	9	10	11	12
Mass [kg]		3.8	4.2	4.5	4.9	5.2	5.6	5.9	6.3	6.6	7.0
DXF	Motor Installed on Top	D745	D746	D747	D748	D749	D750	D751	D752	D753	D754
	Motor Installed on Bottom	D765	D766	D767	D768	D769	D770	D771	D772	D773	D774

Number of Holes (2×n)

Stroke [mm]	2×n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24

Product Line Page 19 | Specifications, Dimensions of Controller Page 64 | Connection and Operation Page 66

SPV Series Using αSTEP Motor

SPV6: 60 mm (W) × 67 mm (H) Single-Phase 100-115 VAC Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 10 kg
Stroke: 100 to 1000 mm (in 100 mm increments)

■Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Maximum Load Moment [N·m]	MP: 18 MY: 16 MR: 9

Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical			
SPV6K□U-■	75	~10	–	~60	~40	1500
SPV6K□D-■						

●Enter the stroke length in the box (□) within the model name.
Enter the power supply voltage **A** or **C** in the box (■) within the model name.

■Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

■Product Number Code

SPV 6 K 080 U - A

① ② ③ ④ ⑤ ⑥

①	Series **SPV**: **SPV** Series
②	Linear Slide Size **6**: Width: 60 mm Height: 67 mm
③	Lead **K**: 75 mm
④	Stroke **010** (100 mm) ~ **100** (1000 mm)
⑤	Motor Installation Direction **U**: Motor Installed on Top **D**: Motor Installed on Bottom
⑥	Power Supply Voltage **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

■Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	**SPV6K□U-A**	SPVM6K□UA	ESMC-A2
	SPV6K□U-C	SPVM6K□UC	ESMC-C2
Motor Installed on Bottom	**SPV6K□D-A**	SPVM6K□DA	ESMC-A2
	SPV6K□D-C	SPVM6K□DC	ESMC-C2

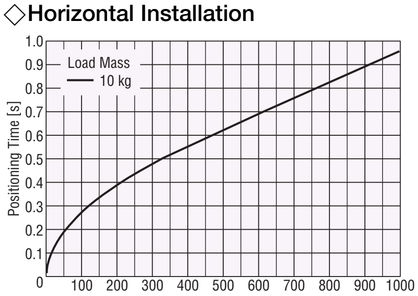
●Enter the stroke length in the box (□) within the model name.

■Positioning Distance – Positioning Time

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

●**SPV6K** (Lead: 75 mm)

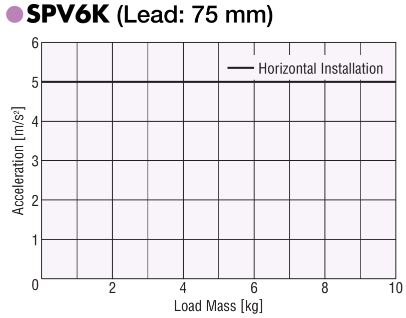
◇Horizontal Installation



■Load Mass – Acceleration

Approximate acceleration settable by a controller can be checked from the load mass.

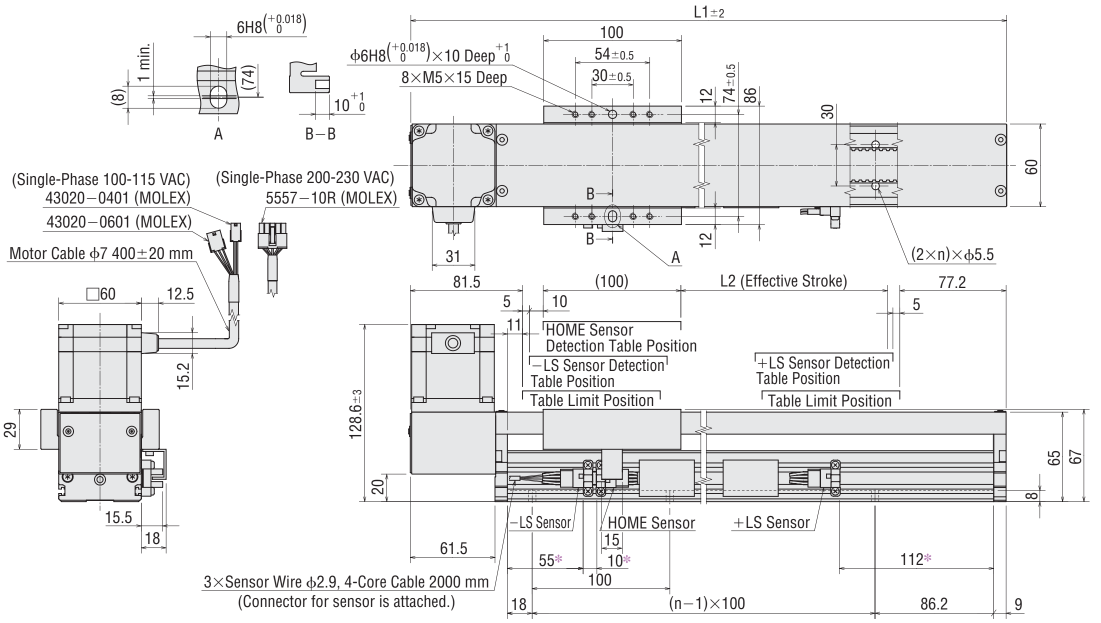
●**SPV6K** (Lead: 75 mm)



Notes:
●The positioning time in the graph does not include the settling time. Use a settling time of 0.2 s as a reference (settling time is adjustable by speed filter function).
●The starting speed should be 37.5 mm/s or less.

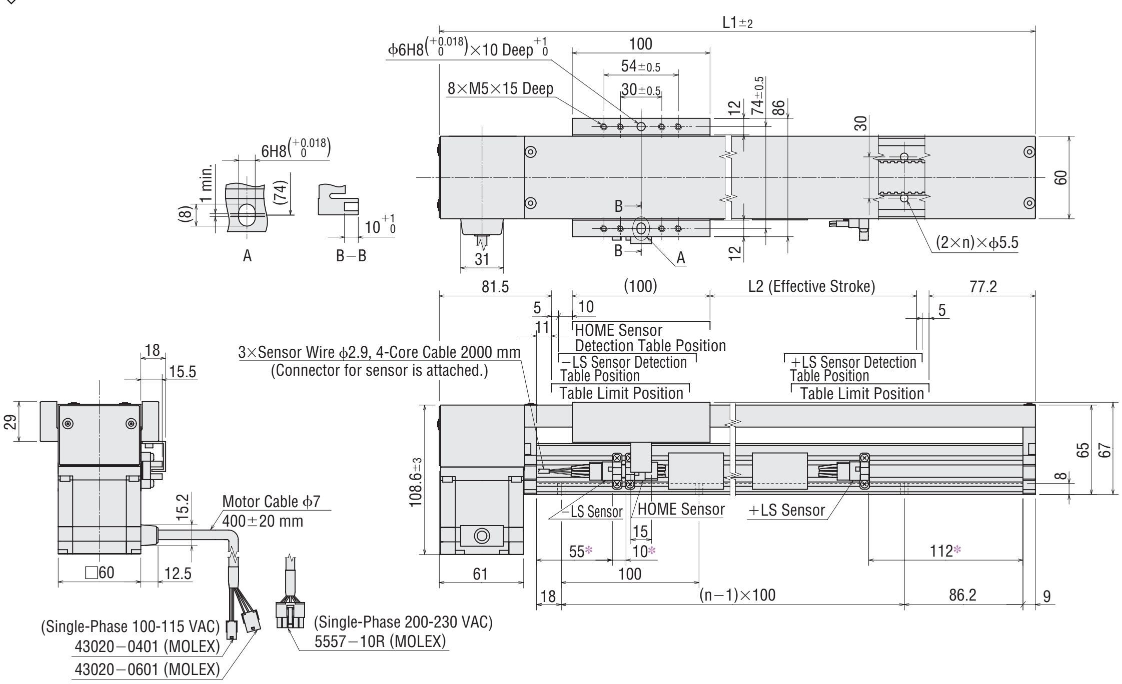
Dimensions of Linear Slide (Unit = mm)

◇Motor Installed on Top



* The settings "55," "10" and "112" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

◇Motor Installed on Bottom



* The settings "55," "10" and "112" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.

Linear Slide Model: SPVM6K□UA, SPVM6K□UC (Motor Installed on Top)
SPVM6K□DA, SPVM6K□DC (Motor Installed on Bottom)

		Numbers Specifiable in the Box (□) within the Linear Slide Model Name									
		010	020	030	040	050	060	070	080	090	100
Stroke		100	200	300	400	500	600	700	800	900	1000
L1		383.7	483.7	583.7	683.7	783.7	883.7	983.7	1083.7	1183.7	1283.7
L2		100	200	300	400	500	600	700	800	900	1000
n		3	4	5	6	7	8	9	10	11	12
Mass [kg]		3.8	4.2	4.5	4.9	5.2	5.6	5.9	6.3	6.6	7.0
DXF	Motor Installed on Top	D745	D746	D747	D748	D749	D750	D751	D752	D753	D754
	Motor Installed on Bottom	D765	D766	D767	D768	D769	D770	D771	D772	D773	D774

Number of Holes (2×n)

Stroke [mm]	2×n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24

Product Line Page 19 | Specifications, Dimensions of Controller Page 64 | Connection and Operation Page 66

SPV Series Using αSTEP Motor

SPV8: 86 mm (W) × 80 mm (H)

Single-Phase 100-115 VAC
Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 20 kg
Stroke: 100 to 1500 mm (in 100 mm increments)

■Specifications of Linear Slide

Drive Method	Belt	Repetitive Positioning Accuracy [mm]	±0.05	Resolution [mm]	0.01 (Driver Mode: 0.05)	Maximum Load Moment [N·m]	MP: 33 MY: 29 MR: 40

Model	Lead [mm]	Transportable Mass [kg]		Thrust [N]	Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical			
SPV8L□U-■	90	~15 [20: Speed 750 mm/s or less]	–	~70	~50	1500
SPV8L□D-■						

● Enter the stroke length in the box (□) within the model name.
Enter the power supply voltage **A** or **C** in the box (■) within the model name.

■Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, included
Movement	Possible

■Product Number Code

SPV 8 L 080 U - A
① ② ③ ④ ⑤ ⑥

①	Series **SPV**: **SPV** Series
②	Linear Slide Size **8**: Width: 86 mm Height: 80 mm
③	Lead **L**: 90 mm
④	Stroke **010** (100 mm) ~ **150** (1500 mm)
⑤	Motor Installation Direction **U**: Motor Installed on Top **D**: Motor Installed on Bottom
⑥	Power Supply Voltage **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

■Linear Slide/Controller Combinations

Model names for linear slide and linear motion controller combinations are shown below.

Motor Installation Direction	Model	Linear Slide Model	Controller Model
Motor Installed on Top	**SPV8L□U-A**	SPVM8L□UA	ESMC-A2
	SPV8L□U-C	SPVM8L□UC	ESMC-C2
Motor Installed on Bottom	**SPV8L□D-A**	SPVM8L□DA	ESMC-A2
	SPV8L□D-C	SPVM8L□DC	ESMC-C2

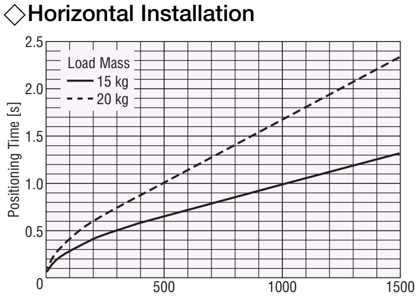
● Enter the stroke length in the box (□) within the model name.

■Positioning Distance – Positioning Time

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

● **SPV8L** (Lead: 90 mm)

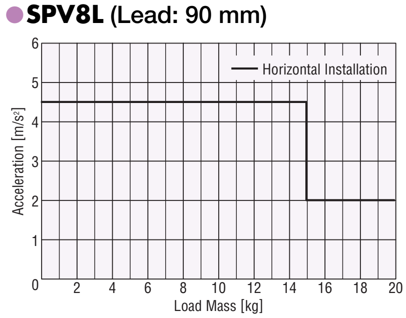
◇Horizontal Installation



■Load Mass – Acceleration

Approximate acceleration settable by a controller can be checked from the load mass.

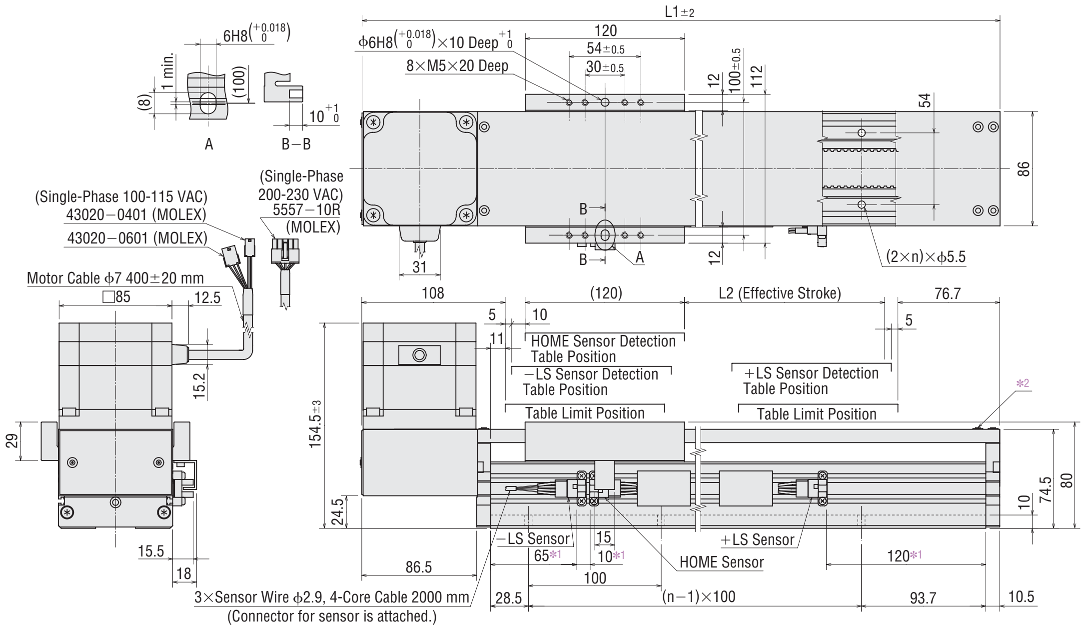
● **SPV8L** (Lead: 90 mm)



Notes:
● The positioning time in the graph does not include the settling time. Use a settling time of 0.2 s as a reference (settling time is adjustable by speed filter function).
● The starting speed should be 45 mm/s or less.

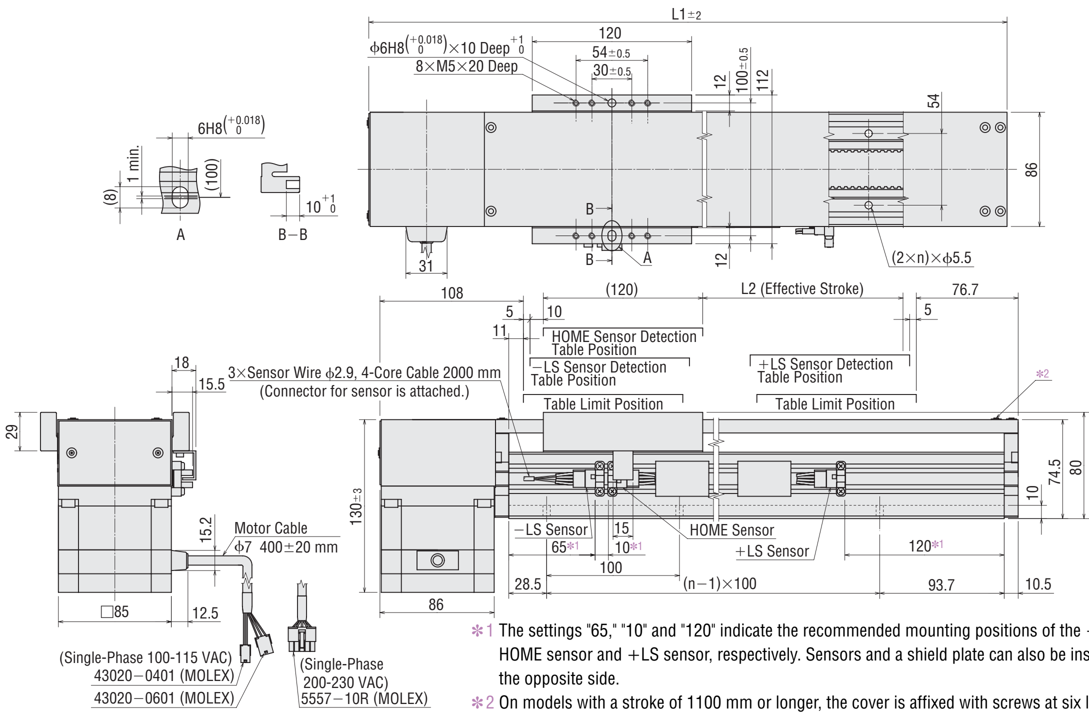
Dimensions of Linear Slide (Unit = mm)

◇Motor Installed on Top



✻1 The settings "65," "10" and "120" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.
✻2 On models with a stroke of 1100 mm or longer, the cover is affixed with screws at six locations.

◇Motor Installed on Bottom



✻1 The settings "65," "10" and "120" indicate the recommended mounting positions of the −LS sensor, HOME sensor and +LS sensor, respectively. Sensors and a shield plate can also be installed on the opposite side.
✻2 On models with a stroke of 1100 mm or longer, the cover is affixed with screws at six locations.

Linear Slide Model: SPVM8L□UA, SPVM8L□UC (Motor Installed on Top)
SPVM8L□DA, SPVM8L□DC (Motor Installed on Bottom)

		Numbers Specifiable in the Box (□) within the Linear Slide Model Name														
		010	020	030	040	050	060	070	080	090	100	110	120	130	140	150
Stroke		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
L1		429.7	529.7	629.7	729.7	829.7	929.7	1029.7	1129.7	1229.7	1329.7	1429.7	1529.7	1629.7	1729.7	1829.7
L2		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
n		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mass [kg]		7.3	8.1	8.9	9.7	10.4	11.2	12.0	12.8	13.5	14.3	15.1	15.9	16.6	17.4	18.2
DXF	Motor Installed on Top	D785	D786	D787	D788	D789	D790	D791	D792	D793	D794	D795	D796	D797	D798	D799
	Motor Installed on Bottom	D815	D816	D817	D818	D819	D820	D821	D822	D823	D824	D825	D826	D827	D828	D829

Number of Holes (2×n)

Stroke [mm]	2×n
100	6
200	8
300	10
400	12
500	14
600	16
700	18
800	20
900	22
1000	24
1100	26
1200	28
1300	30
1400	32
1500	34

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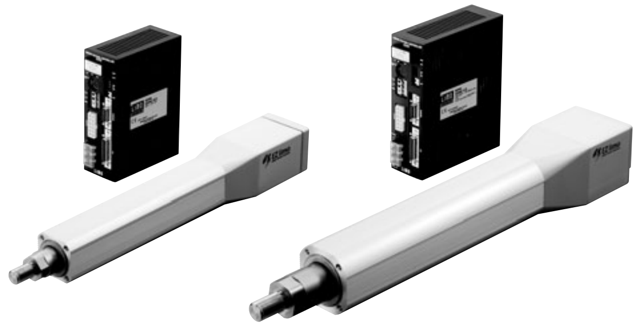
RoHS **RoHS-Compliant**

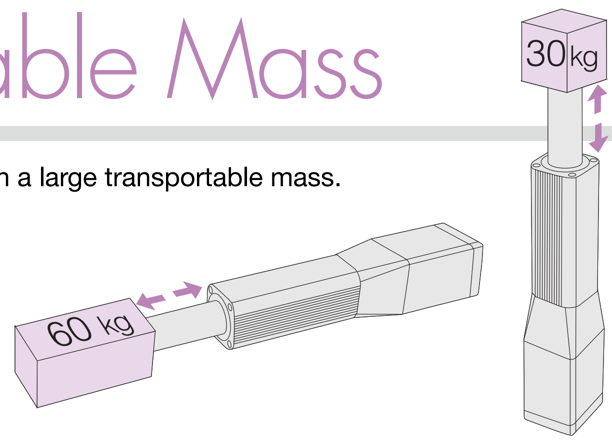
Motorized Cylinders

EZ limo EZC II Series

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



Large Transportable Mass



The **EZCII** Series can perform positioning of loads with a 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)

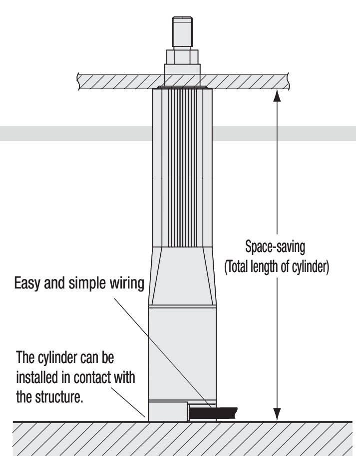
- Maximum Speed: **600** mm/s
- Sensorless Return to Home at Speed of **100** mm/s
  We have developed a dedicated stop buffer to achieve sensorless return to home operation at a maximum speed of 100 mm/s.

Space-Saving

The shape of the motor cable outlet was changed to eliminate dead space.
The total length of cylinder is shorter for every stroke or model, which enables space-saving design of your equipment.

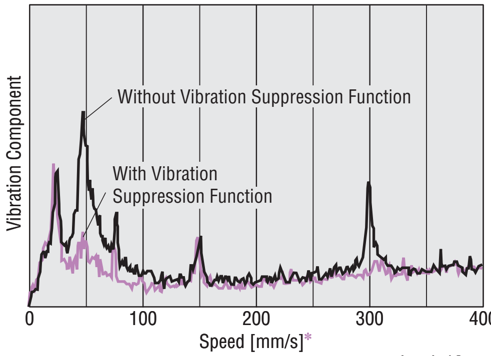
Stroke + 185 mm = Total length of cylinder

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.



*Lead: 12 mm

Lightweight Rod

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

***EZC6**: Stroke 300 mm

RoHS 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.

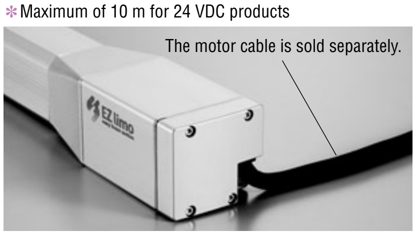
● QZ are registered trademarks of THK Co., Ltd.

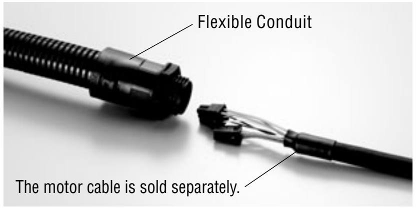
EZC4D015-A Stroke 150 mm

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

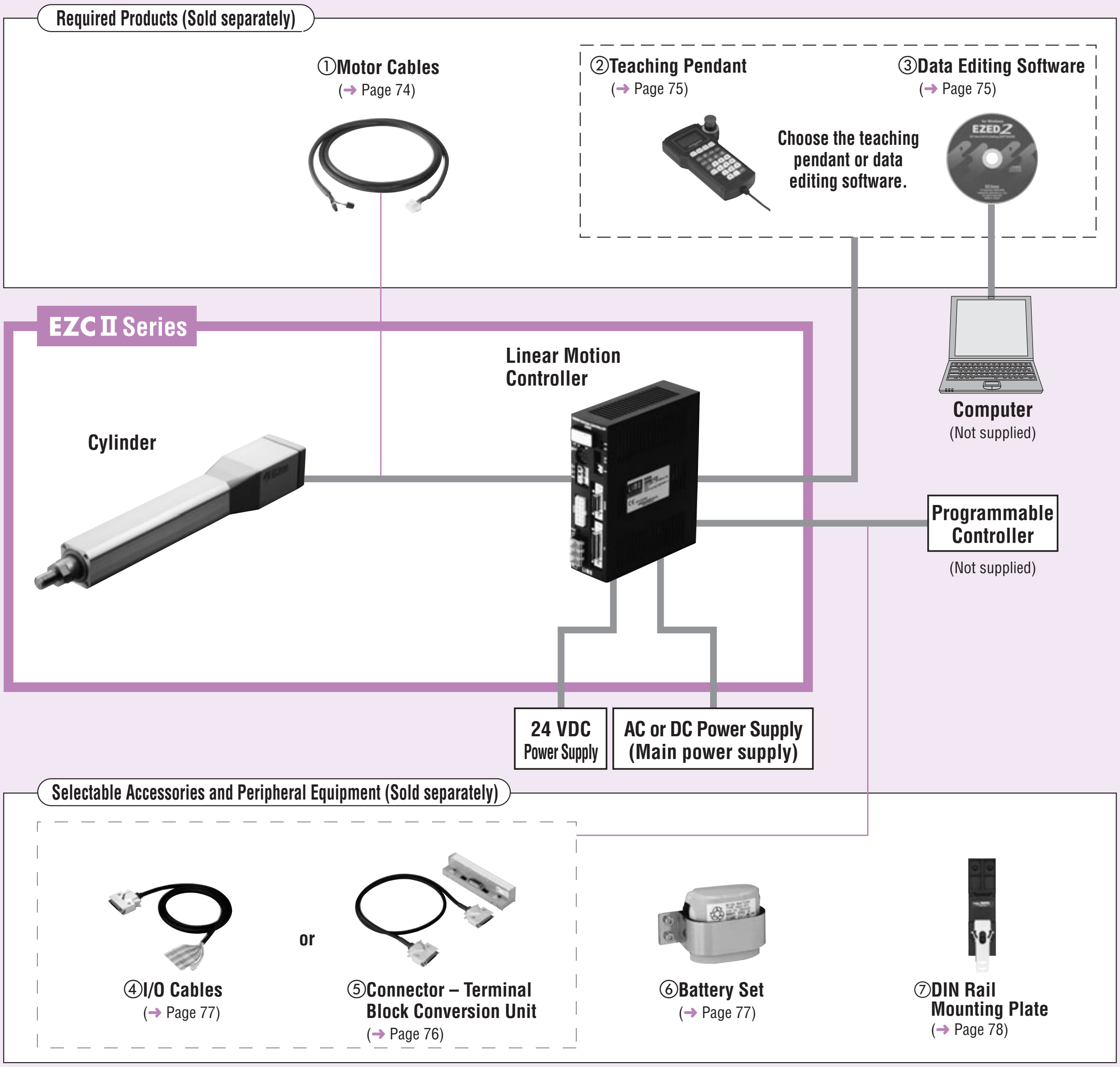




The cable can be placed in a flexible conduit or cable gland with an inner diameter of ϕ16.5 mm.

System Configuration

Controller Mode



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Teaching Pendant	Various data can be set and operated at your fingertips. The cable length is 5 m.	75
③	Data Editing Software	Various data can be set and edited on a personal computer. A dedicated communication cable is included (5 m).	75
④	I/O Cables	Cable for connecting the linear motion controller and programmable controller (1 m, 2 m).	77
⑤	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and programmable controller (1 m).	76
⑥	Battery Set	Required for use in the absolute mode.	77
⑦	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

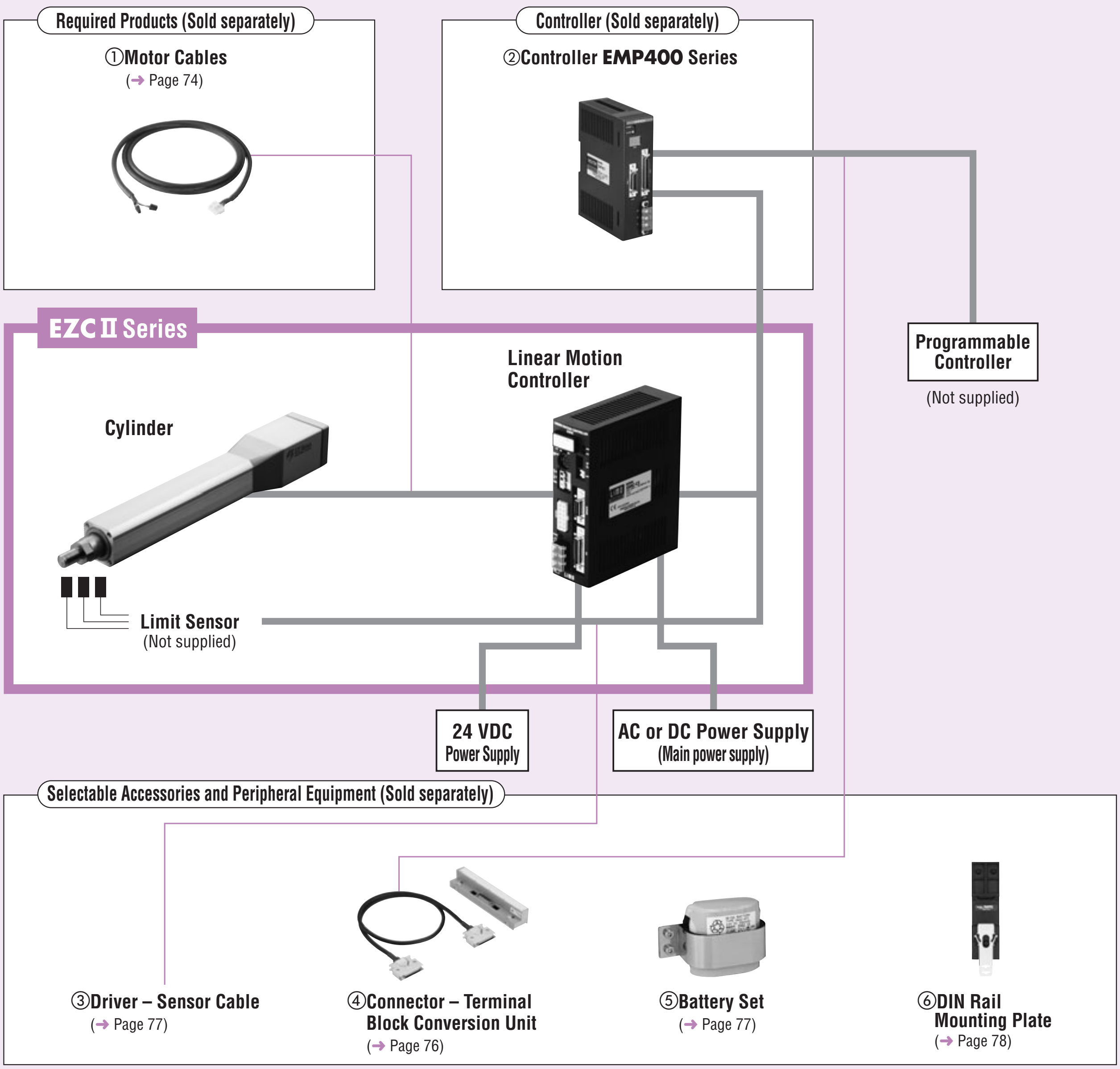
●Example of System Configuration

EZCⅡ Series	Motor Cable (2 m) (Sold separately)	Teaching Pendant (Sold separately)	+	I/O Cable (1 m) (Sold separately)
EZC4E005-A	CC020ES-2	EZT1	+	CC36D1-1

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

●Driver Mode

An example of a single-axis system configuration with the **EMP400** Series controller.
When performing a return to home operation using the linear motion controller, refer to the system configuration on page 30.
Teaching pendant or data editing software is required to change parameters (I/O logic, speed filter, etc.) of the linear motion controller.



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Controller	This controller gives commands needed to drive the cylinder.	✻
③	Driver – Sensor Cable	Cable for connecting the linear motion controller and **EMP** Series controller (0.5 m).	77
④	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the **EMP** Series controller and programmable controller (1 m).	76
⑤	Battery Set	Required for use in the absolute mode.	77
⑥	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

●Example of System Configuration

	(Sold separately)		(Sold separately)		
EZCⅡ Series	Motor Cable (2 m)	+	Controller	Driver – Sensor Cable (0.5 m)	Connector – Terminal Block Conversion Unit (1 m)
EZC4E005-A	CC020ES-2		EMP401-1	CC005EZ6-EMPD	CC50T1

●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 **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Product Line

●EZC4

◇Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZC4□005-K**	**EZC4□005-A**	**EZC4□005-C**
100 mm	**EZC4□010-K**	**EZC4□010-A**	**EZC4□010-C**
150 mm	**EZC4□015-K**	**EZC4□015-A**	**EZC4□015-C**
200 mm	**EZC4□020-K**	**EZC4□020-A**	**EZC4□020-C**
250 mm	**EZC4□025-K**	**EZC4□025-A**	**EZC4□025-C**
300 mm	**EZC4□030-K**	**EZC4□030-A**	**EZC4□030-C**

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

◇With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZC4□005M-K**	**EZC4□005M-A**	**EZC4□005M-C**
100 mm	**EZC4□010M-K**	**EZC4□010M-A**	**EZC4□010M-C**
150 mm	**EZC4□015M-K**	**EZC4□015M-A**	**EZC4□015M-C**
200 mm	**EZC4□020M-K**	**EZC4□020M-A**	**EZC4□020M-C**
250 mm	**EZC4□025M-K**	**EZC4□025M-A**	**EZC4□025M-C**
300 mm	**EZC4□030M-K**	**EZC4□030M-A**	**EZC4□030M-C**

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

●EZC6

◇Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZC6□005-K**	**EZC6□005-A**	**EZC6□005-C**
100 mm	**EZC6□010-K**	**EZC6□010-A**	**EZC6□010-C**
150 mm	**EZC6□015-K**	**EZC6□015-A**	**EZC6□015-C**
200 mm	**EZC6□020-K**	**EZC6□020-A**	**EZC6□020-C**
250 mm	**EZC6□025-K**	**EZC6□025-A**	**EZC6□025-C**
300 mm	**EZC6□030-K**	**EZC6□030-A**	**EZC6□030-C**

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

◇With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZC6□005M-K**	**EZC6□005M-A**	**EZC6□005M-C**
100 mm	**EZC6□010M-K**	**EZC6□010M-A**	**EZC6□010M-C**
150 mm	**EZC6□015M-K**	**EZC6□015M-A**	**EZC6□015M-C**
200 mm	**EZC6□020M-K**	**EZC6□020M-A**	**EZC6□020M-C**
250 mm	**EZC6□025M-K**	**EZC6□025M-A**	**EZC6□025M-C**
300 mm	**EZC6□030M-K**	**EZC6□030M-A**	**EZC6□030M-C**

●Enter the lead **D** (12 mm) or **E** (6 mm) in the box (M) 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 65

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 100-115 VAC/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 100-115 VAC Single-Phase 200-230 VAC	Cylinder Controller	Low Voltage Directives 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

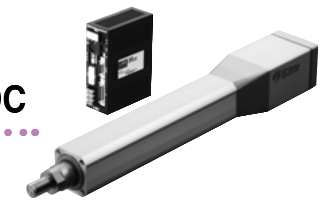
◇Emergency Stop Function

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.

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 CE

Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.01

Model	Lead [mm]	Transportable Mass [kg]*1 Horizontal	Transportable Mass [kg]*1 Vertical	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 linear motion 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.

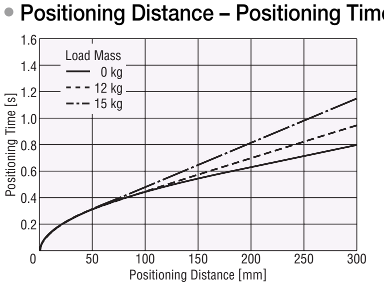
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

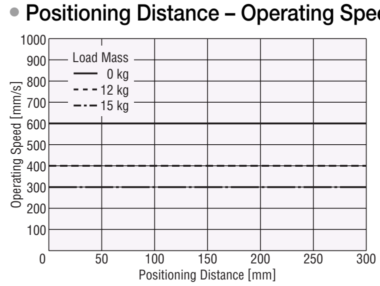
● EZC4D (Lead: 12 mm)

◇Horizontal Installation

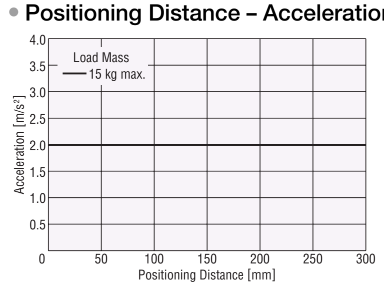
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

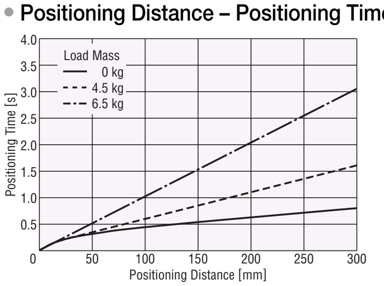


● Positioning Distance – Acceleration

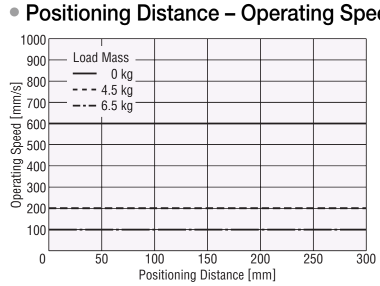


◇Vertical Installation

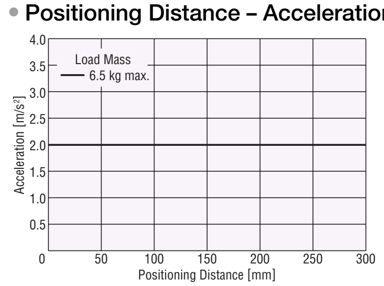
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration

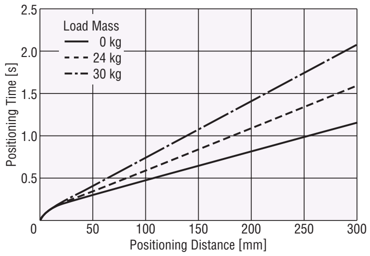


Notes:
● The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
● The starting speed should be 6 mm/s or less.

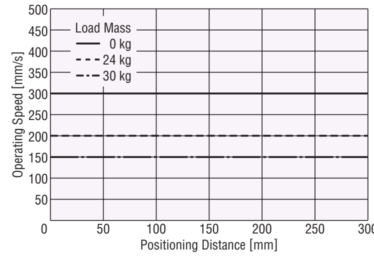
●EZC4E (Lead: 6 mm)

◇Horizontal Installation

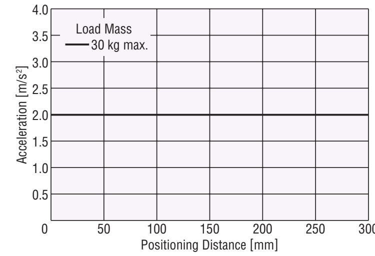
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

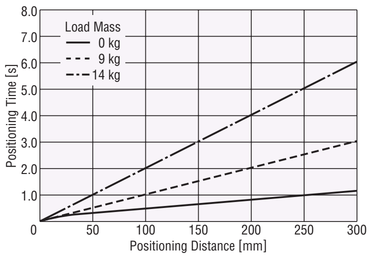


● Positioning Distance – Acceleration

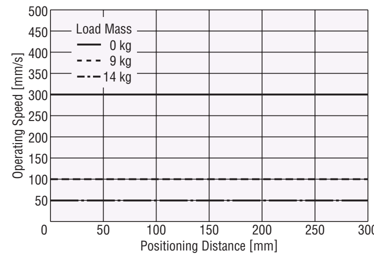


◇Vertical Installation

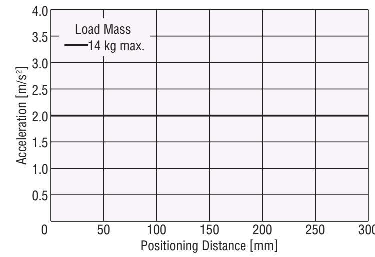
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



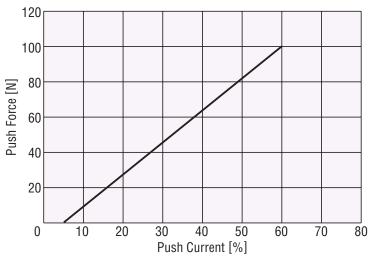
● Positioning Distance – Acceleration



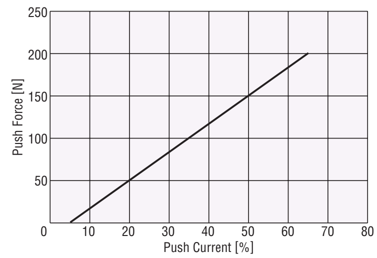
Notes:
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■Push Force

●EZC4D (Lead: 12 mm)

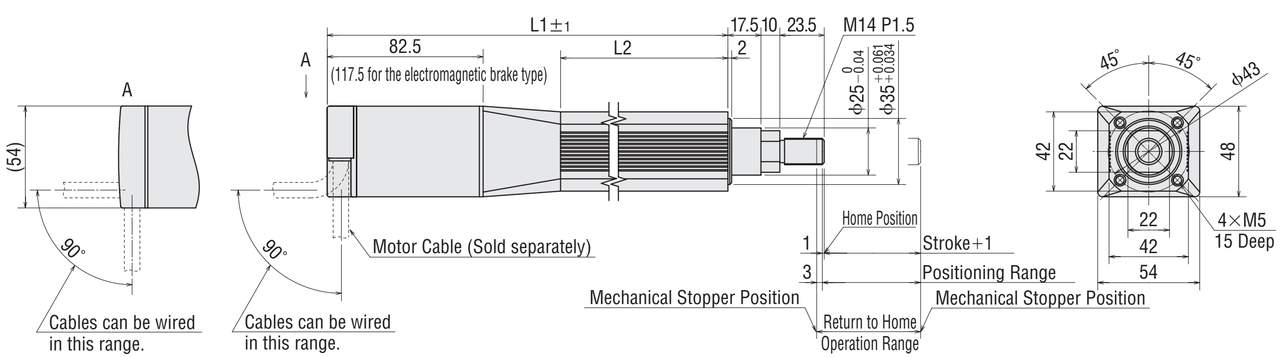


●EZC4E (Lead: 6 mm)



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.

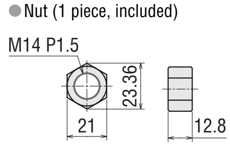
■Dimensions of Cylinder (Unit = mm)



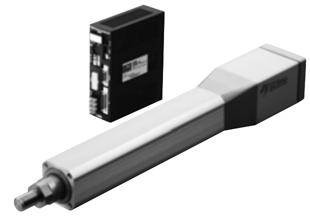
Cylinder Model: EZCM4D□K, EZCM4E□K (Without electromagnetic brake)
EZCM4D□MK, EZCM4E□MK (With electromagnetic brake)

	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
DXF	Not Equipped	D1294	D1295	D1296	D1297	D1298	D1299
	Equipped	D1300	D1301	D1302	D1303	D1304	D1305

● Nut (1 piece, included)



Product Line Page 32 | Specifications, Dimensions of Controller Page 64 | Connection and Operation Page 66



EZC4: Frame Size 42 mm × 42 mm Single-Phase 100-115 VAC 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) CE

Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.01

Model	Lead [mm]	Transportable Mass [kg]*1 Horizontal	Transportable Mass [kg]*1 Vertical	Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
EZC4D□-■	12	~15	–	~70	100	–	600
EZC4D□M-■			~6.5			70	
EZC4E□-■	6	~30	–	~140	200	–	300
EZC4E□M-■			~14			140	

● Enter the stroke length in the box (□) within the model name.
● Enter the power supply voltage **A** or **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 - A

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	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZC4D□-A**	EZCM4D□A	ESMC-A2
	EZC4D□-C	EZCM4D□C	ESMC-C2
	EZC4E□-A	EZCM4E□A	ESMC-A2
	EZC4E□-C	EZCM4E□C	ESMC-C2
Equipped	**EZC4D□M-A**	EZCM4D□MA	ESMC-A2
	EZC4D□M-C	EZCM4D□MC	ESMC-C2
	EZC4E□M-A	EZCM4E□MA	ESMC-A2
	EZC4E□M-C	EZCM4E□MC	ESMC-C2

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

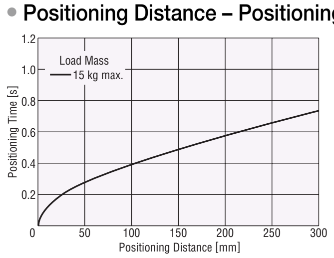
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

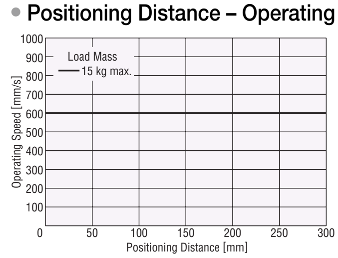
● EZC4D (Lead: 12 mm)

◇Horizontal Installation

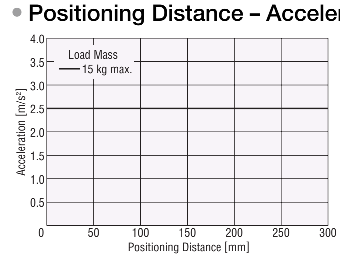
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

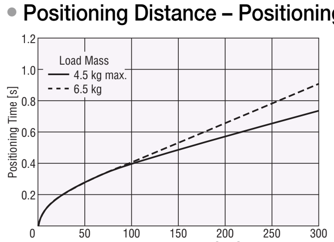


● Positioning Distance – Acceleration

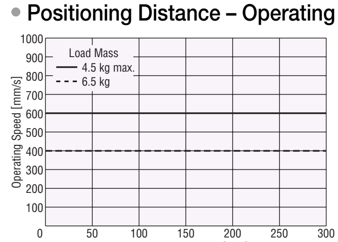


◇Vertical Installration

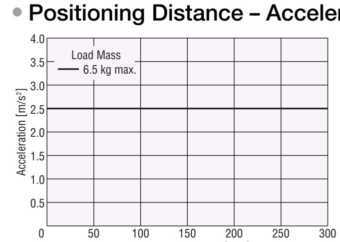
● Positioning Distance – Positioning Time



● 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.

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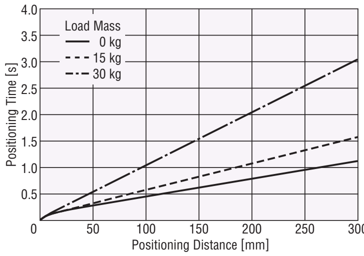
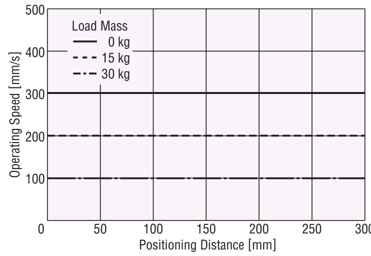
●**EZC4E** (Lead: 6 mm)

◇Horizontal Installation

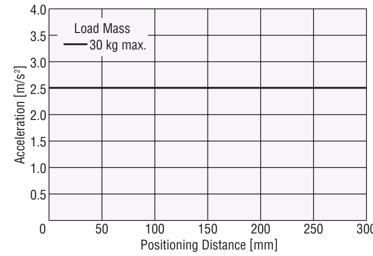
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

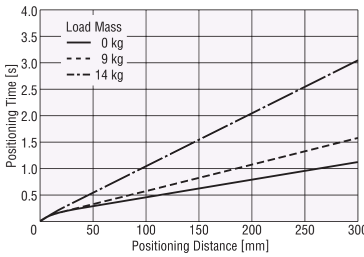


● Positioning Distance – Acceleration

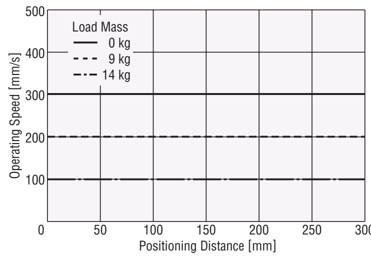


◇Vertical Installration

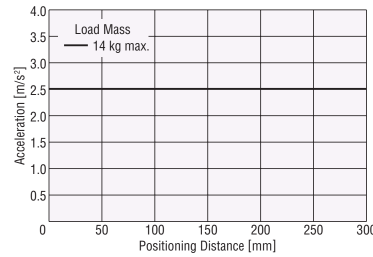
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



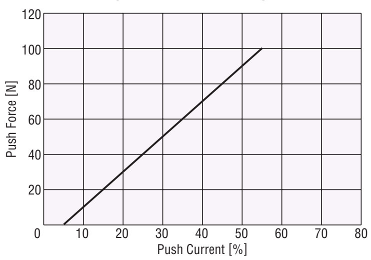
● Positioning Distance – Acceleration



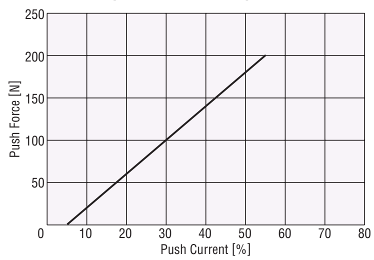
Notes:
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

Push Force

●**EZC4D** (Lead: 12 mm)

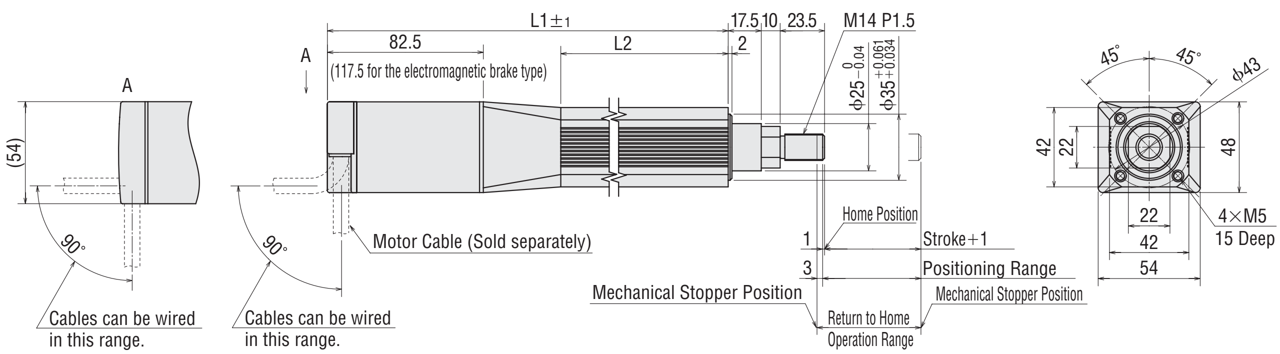


●**EZC4E** (Lead: 6 mm)



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.

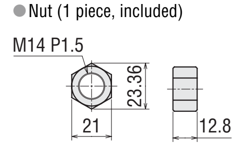
Dimensions of Cylinder (Unit = mm)



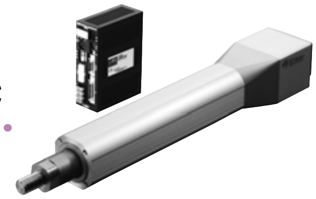
Cylinder Model: EZCM4D□A, EZCM4E□A, EZCM4D□C, EZCM4E□C (Without electromagnetic brake)
EZCM4D□MA, EZCM4E□MA, EZCM4D□MC, EZCM4E□MC (With electromagnetic brake)

	Electromagnetic Brake	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
DXF	Not Equipped	D1294	D1295	D1296	D1297	D1298	D1299
	Equipped	D1300	D1301	D1302	D1303	D1304	D1305

● Nut (1 piece, included)



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 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				
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 linear motion 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.

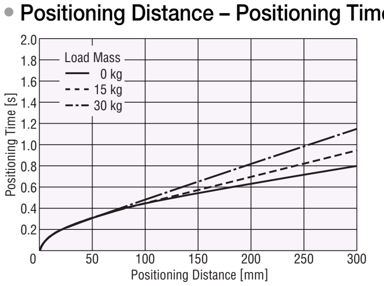
■Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

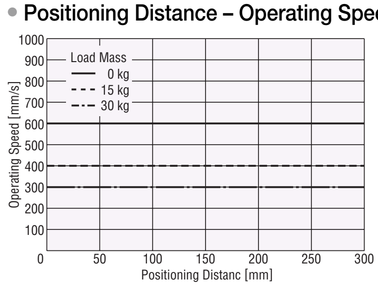
● EZC6D (Lead: 12 mm)

◇Horizontal Installation

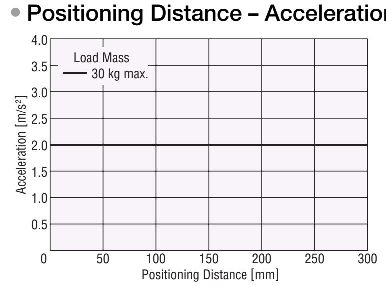
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

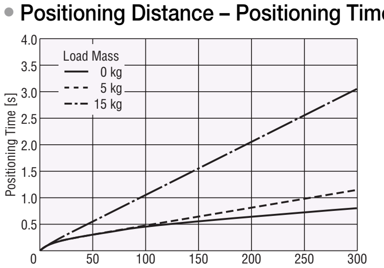


● Positioning Distance – Acceleration

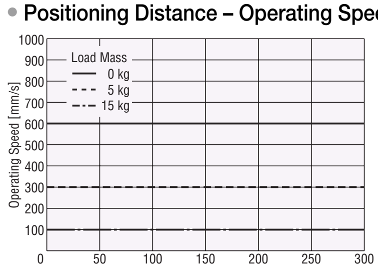


◇Vertical Installration

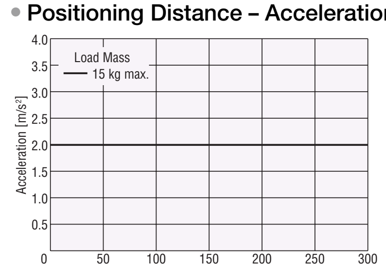
● Positioning Distance – Positioning Time



● 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.

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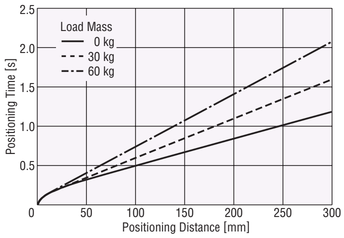
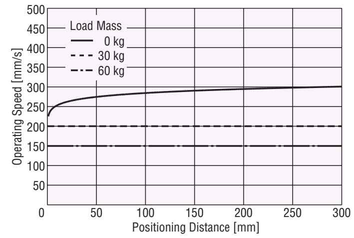
EZC6E (Lead: 6 mm)

◇Horizontal Installation

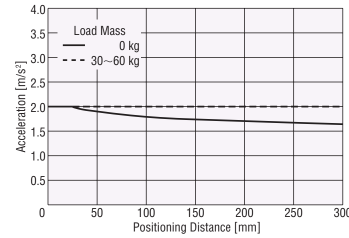
- Positioning Distance – Positioning Time



- Positioning Distance – Operating Speed

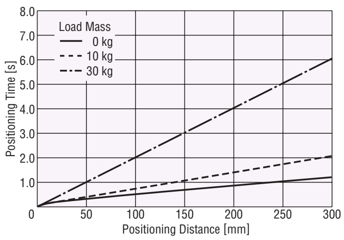


- Positioning Distance – Acceleration

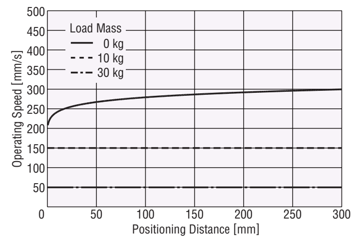


◇Vertical Installration

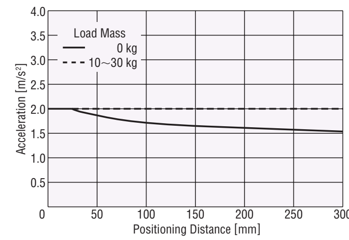
- Positioning Distance – Positioning Time



- Positioning Distance – Operating Speed



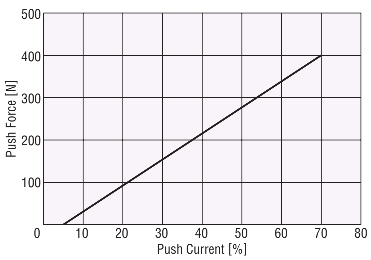
- Positioning Distance – Acceleration



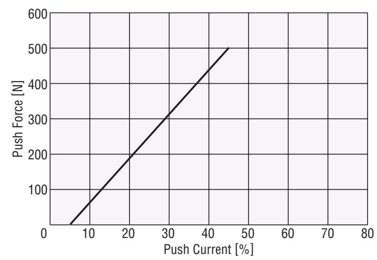
Notes:
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

Push Force

EZC6D (Lead: 12 mm)

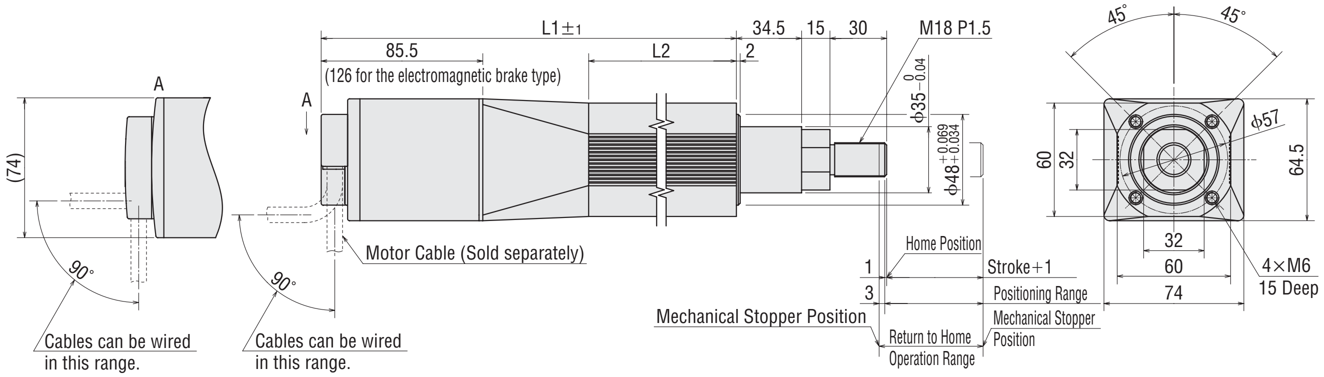


EZC6E (Lead: 6 mm)



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.

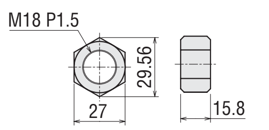
Dimensions of Cylinder (Unit = mm)



Cylinder Model: EZCM6D□K, EZCM6E□K (Without electromagnetic brake)
EZCM6D□MK, EZCM6E□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
DXF	Not Equipped	D1306	D1307	D1308	D1309	D1310	D1311
	Equipped	D1312	D1313	D1314	D1315	D1316	D1317

- Nut (1 piece, included)



Product Line Page 32 | Specifications, Dimensions of Controller Page 64 | Connection and Operation Page 66

EZCⅡ Series Using αSTEP Motor

EZC6: Frame Size 60 mm × 60 mm

Single-Phase 100-115 VAC
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) 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				
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 **A** or **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 - A
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	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

■Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZC6D□-A**	EZCM6D□A	ESMC-A2
	EZC6D□-C	EZCM6D□C	ESMC-C2
	EZC6E□-A	EZCM6E□A	ESMC-A2
	EZC6E□-C	EZCM6E□C	ESMC-C2
Equipped	**EZC6D□M-A**	EZCM6D□MA	ESMC-A2
	EZC6D□M-C	EZCM6D□MC	ESMC-C2
	EZC6E□M-A	EZCM6E□MA	ESMC-A2
	EZC6E□M-C	EZCM6E□MC	ESMC-C2

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

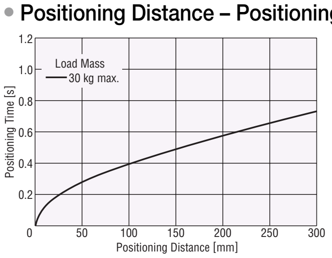
■Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

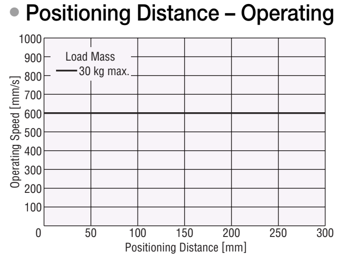
●EZC6D (Lead: 12 mm)

◇Horizontal Installation

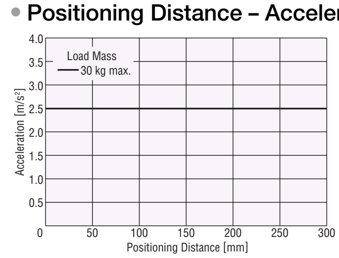
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

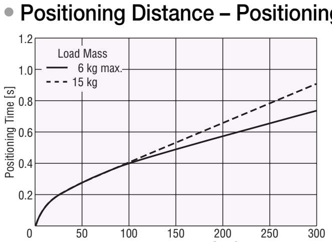


● Positioning Distance – Acceleration

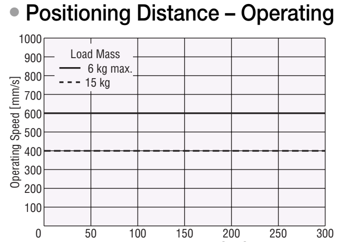


◇Vertical Installration

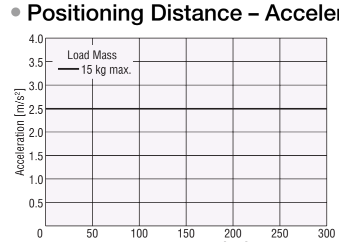
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



● Positioning Distance – Acceleration

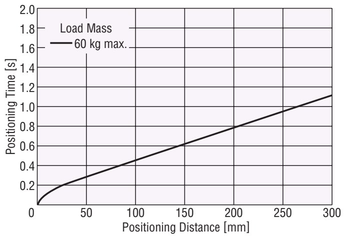


Notes:
● The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
● The starting speed should be 6 mm/s or less.

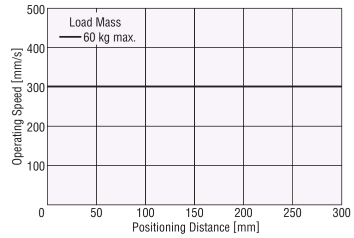
●EZC6E (Lead: 6 mm)

◇Horizontal Installation

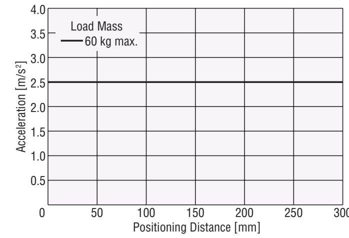
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed

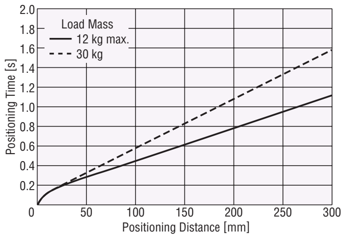


● Positioning Distance – Acceleration

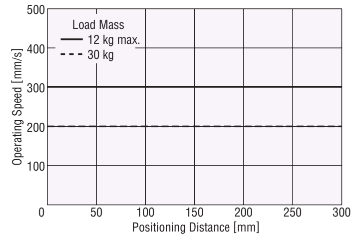


◇Vertical Installration

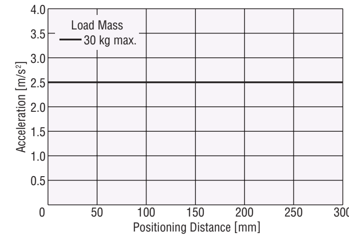
● Positioning Distance – Positioning Time



● Positioning Distance – Operating Speed



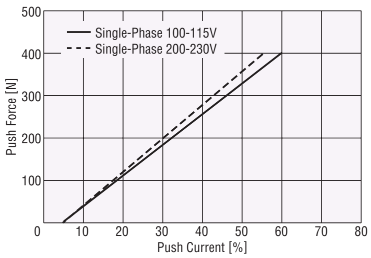
● Positioning Distance – Acceleration



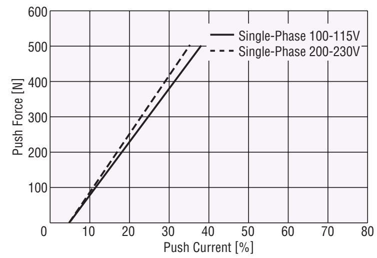
Notes:
- The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
- The starting speed should be 6 mm/s or less.

■Push Force

●EZC6D (Lead: 12 mm)

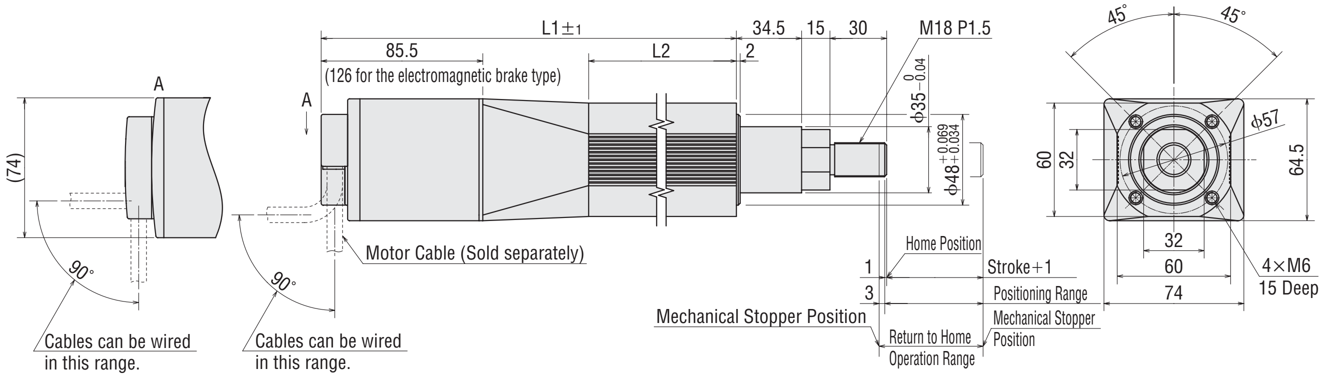


●EZC6E (Lead: 6 mm)



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.

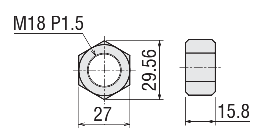
■Dimensions of Cylinder (Unit = mm)



Cylinder Model: EZCM6D□A, EZCM6E□A, EZCM6D□C, EZCM6E□C (Without electromagnetic brake)
EZCM6D□MA, EZCM6E□MA, EZCM6D□MC, EZCM6E□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
DXF	Not Equipped	D1306	D1307	D1308	D1309	D1310	D1311
	Equipped	D1312	D1313	D1314	D1315	D1316	D1317

● Nut (1 piece, included)



RoHS **RoHS-Compliant**

Motorized Cylinders

EZ limo EZA Series

With a built-in LM Guide®, the **EZA** Series Motorized Cylinder offers improved performance and greater ease of use while maintaining a compact size. There is no need for the guide mechanism, such as an external guide, requiring cumbersome installation. Simply install a load directly onto the rod, and this motorized cylinder will perform the push-motion and transfer operations.

Space-Saving

Space-Saving

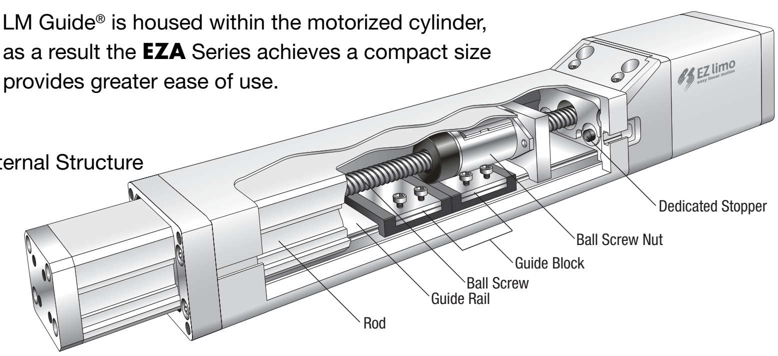
The shape of the motor cable outlet was changed to eliminate dead space.
The total length of cylinder is shorter for every stroke or model, which enables space-saving design of your equipment,

Stroke + 280.5 mm = Total length of cylinder

Built-In LM Guide®

The LM Guide® is housed within the motorized cylinder, and as a result the **EZA** Series achieves a compact size and provides greater ease of use.

●Internal Structure

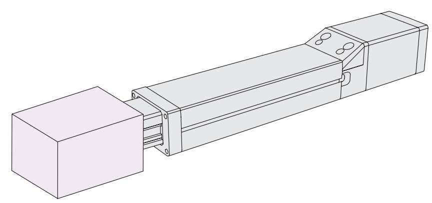


AFF grease, which is designed for use in clean rooms and features low particle emissions, is used for the ball screw and LM Guide®.

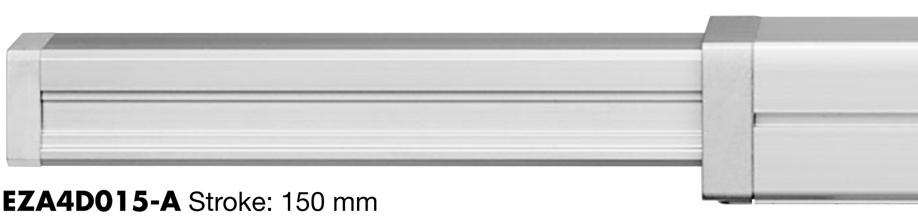
●"LM Guide" is a registered trademark of THK Co., Ltd.

●**No External Guide Required**

There is no need for a guide mechanism such as an external guide. This cylinder provides a direct way to perform transferring of a load and a push-motion (pressurized) operation.



No external guide is required.

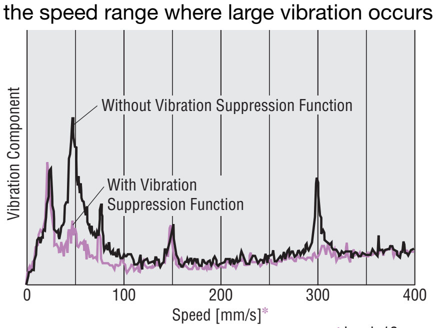


EZA4D015-A Stroke: 150 mm

Easy to Use

Vibration Suppression Function

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



*Lead: 12 mm

Easy Stroke Selection

A desired stroke can be selected in 50 mm increments over the following ranges:

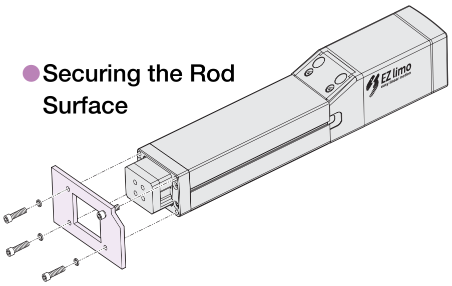
50 to **300** mm

Easy to Install

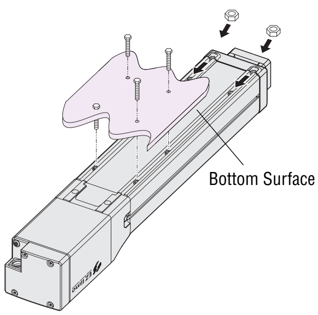
Freedom of Installation

The installation method can be chosen from securing the cylinder's rod surface or base surface. An optional mounting plate for two-axis type, etc. is sold separately.

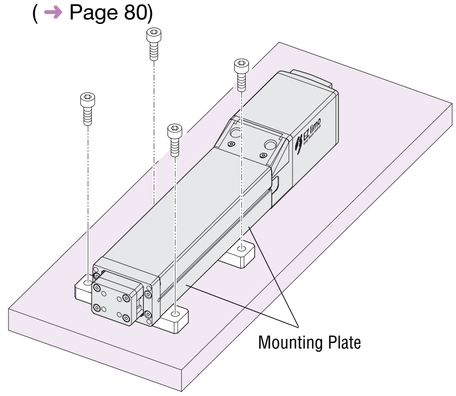
● Securing the Rod Surface



● Securing the Base Surface

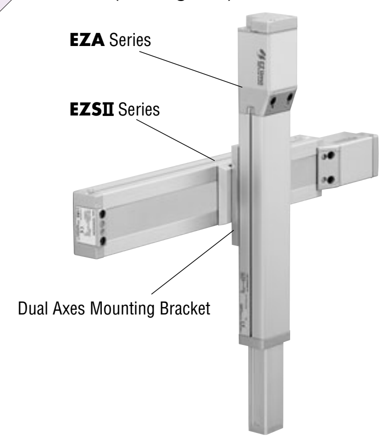


● Installation with a Mounting Plate (Sold separately)
(➜ Page 80)



● Easy Dual Axes (X-Y) Configuration with **EZSII** Series Motorized Slider

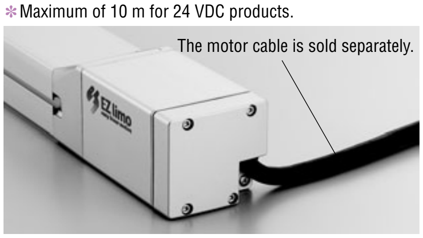
A plate (sold separately) is available for easy installation of the **EZA** Series on the table of the **EZSII** Series Motorized Slider.(➜ Page 80)

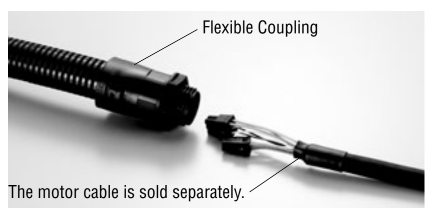


Easy Wiring

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

*Maximum of 10 m for 24 VDC products.





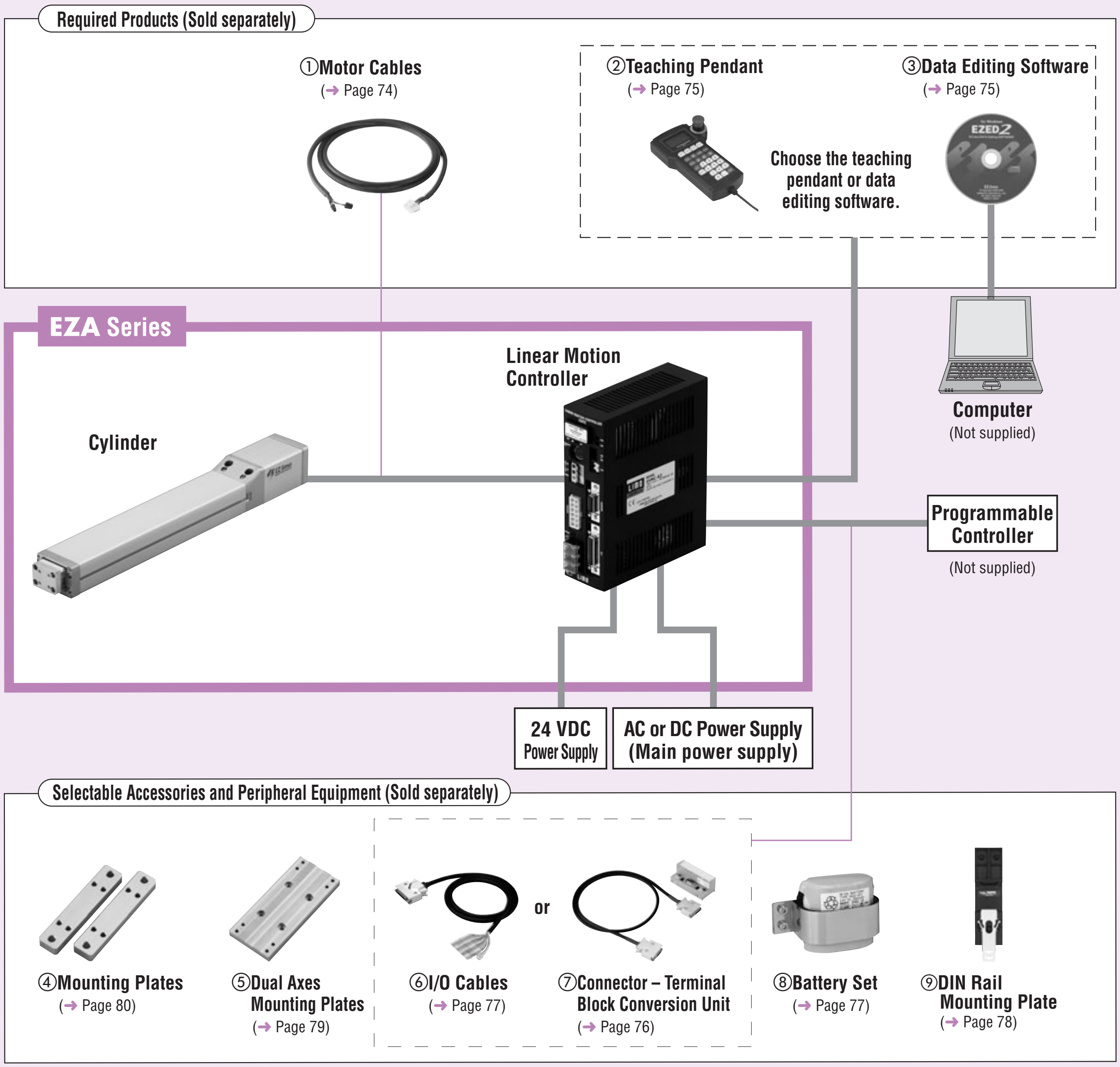
The cable can be placed in a flexible conduit or cable gland with an inner diameter of ϕ16.5 mm.

RoHS- Compliant

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

System Configuration

Controller Mode



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Teaching Pendant	Various data can be set and operated at your fingertips. The cable length is 5 m.	75
③	Data Editing Software	Various data can be set and edited on a personal computer. A dedicated communication cable is included (5 m).	75
④	Mounting Plates	The plates that secure the cylinder with screws mounted from above.	80
⑤	Dual Axes Mounting Plates	Bracket that makes dual axes combination easy.	79
⑥	I/O Cables	Cable for connecting the linear motion controller and programmable controller (1 m, 2 m).	77
⑦	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and programmable controller (1 m).	76
⑧	Battery Set	Required for use in the absolute mode.	77
⑨	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

Example of System Configuration

(Sold separately)

EZASeries	Motor Cable (2 m)	Teaching Pendant
EZA4E005-A	CC020ES-2	EZT1

+

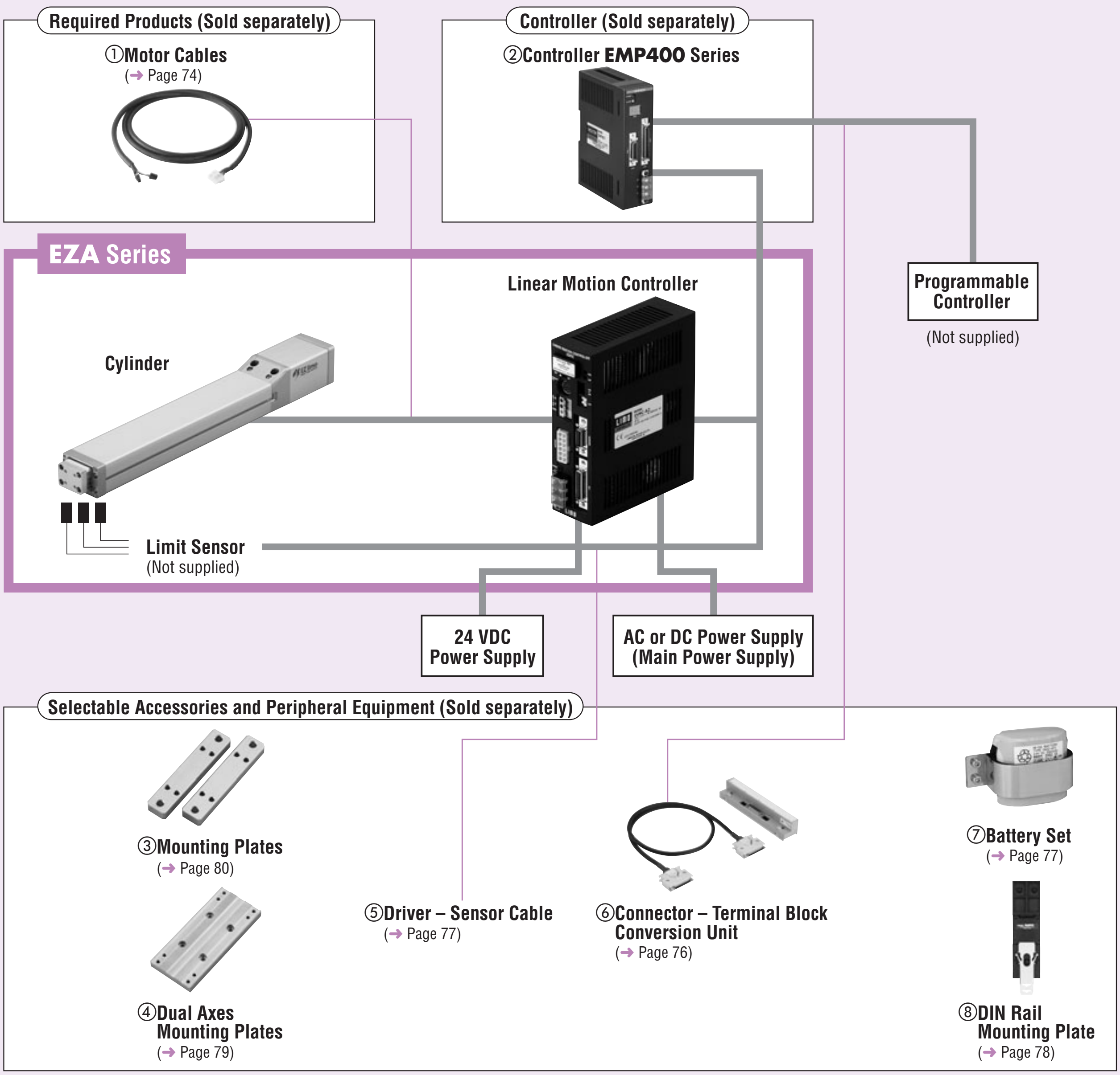
(Sold separately)

Mounting Plate	I/O Cable (1 m)
PTP-4A	CC36D1-1

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

●Driver Mode

An example of a single-axis system configuration with the **EMP400** Series controller.
When performing a return to home operation using the linear motion controller, refer to the system configuration on page 44.
Teaching pendant or data editing software is required to change parameters (I/O logic, speed filter, etc.) of the linear motion controller.



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Controller	This controller gives commands needed to drive the cylinder.	*
③	Mounting Plates	The plates that secure the cylinder with screws mounted from above.	80
④	Dual Axes Mounting Plates	Bracket that makes dual axes combination easy.	79
⑤	Driver – Sensor Cable	Cable for connecting the linear motion controller and **EMP** Series controller (0.5 m).	77
⑥	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the **EMP** Series controller and programmable controller (1 m).	76
⑦	Battery Set	Required for use in the absolute mode.	77
⑧	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

●Example of System Configuration

	(Sold separately)		(Sold separately)		
EZA Series	Motor Cable (2 m)	+	Controller	Driver – Sensor Cable (0.5 m)	Connector – Terminal Block Conversion Unit (1 m)
EZA4E005-A	CC020ES-2		EMP401-1	CC005EZ6-EMPD	CC50T1

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

Product Number Code

EZA 4 D 005 M - K

① ② ③ ④ ⑤ ⑥

①	Series	**EZA**: **EZA** Series
②	Cylinder Size	**4**: Frame Size 54 mm × 38 mm **6**: Frame Size 74 mm × 52.5 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 **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Product Line

●EZA4

◇Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50mm	**EZA4□005-K**	**EZA4□005-A**	**EZA4□005-C**
100mm	**EZA4□010-K**	**EZA4□010-A**	**EZA4□010-C**
150mm	**EZA4□015-K**	**EZA4□015-A**	**EZA4□015-C**
200mm	**EZA4□020-K**	**EZA4□020-A**	**EZA4□020-C**
250mm	**EZA4□025-K**	**EZA4□025-A**	**EZA4□025-C**
300mm	**EZA4□030-K**	**EZA4□030-A**	**EZA4□030-C**

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

◇With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZA4□005M-K**	**EZA4□005M-A**	**EZA4□005M-C**
100 mm	**EZA4□010M-K**	**EZA4□010M-A**	**EZA4□010M-C**
150 mm	**EZA4□015M-K**	**EZA4□015M-A**	**EZA4□015M-C**
200 mm	**EZA4□020M-K**	**EZA4□020M-A**	**EZA4□020M-C**
250 mm	**EZA4□025M-K**	**EZA4□025M-A**	**EZA4□025M-C**
300 mm	**EZA4□030M-K**	**EZA4□030M-A**	**EZA4□030M-C**

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

●EZA6

◇Without Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZA6□005-K**	**EZA6□005-A**	**EZA6□005-C**
100 mm	**EZA6□010-K**	**EZA6□010-A**	**EZA6□010-C**
150 mm	**EZA6□015-K**	**EZA6□015-A**	**EZA6□015-C**
200 mm	**EZA6□020-K**	**EZA6□020-A**	**EZA6□020-C**
250 mm	**EZA6□025-K**	**EZA6□025-A**	**EZA6□025-C**
300 mm	**EZA6□030-K**	**EZA6□030-A**	**EZA6□030-C**

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

◇With Electromagnetic Brake

Stroke	24 VDC	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model	Model
50 mm	**EZA6□005M-K**	**EZA6□005M-A**	**EZA6□005M-C**
100 mm	**EZA6□010M-K**	**EZA6□010M-A**	**EZA6□010M-C**
150 mm	**EZA6□015M-K**	**EZA6□015M-A**	**EZA6□015M-C**
200 mm	**EZA6□020M-K**	**EZA6□020M-A**	**EZA6□020M-C**
250 mm	**EZA6□025M-K**	**EZA6□025M-A**	**EZA6□025M-C**
300 mm	**EZA6□030M-K**	**EZA6□030M-A**	**EZA6□030M-C**

●Enter the lead **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 65

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 100-115 VAC/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 **EZA4**: 1.0 kVAC 50 Hz **EZA6**: 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 100-115 VAC Single-Phase 200-230 VAC	Cylinder Controller	Low Voltage Directives 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.

EZA Series Using αSTEP Motor

EZA4: Frame Size 54 mm × 38 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)

CE

Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.01	Maximum Load Moment [N·m]	MP: 7.5 MY: 7.5 MR: 2.6

Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZA4D□-K	12	~15	–	~70	100	–	600
EZA4D□M-K			~6.5			70	
EZA4E□-K	6	~30	–	~140	200	–	300
EZA4E□M-K			~14			140	

●Enter the stroke length in the box (□) within the model name.
*1 The value when an external guide is used. Moment calculations are required when transferring a load directly. See "Selection Calculations" on page 82.
*2 Maximum speed of push-motion operation is 25 mm/s.

■Product Number Code

EZA 4 D 030 M - K
① ② ③ ④ ⑤ ⑥

①	Series **EZA**: **EZA** Series
②	Cylinder Size **4**: Frame Size 54 mm × 38 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 linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZA4D□-K**	EZAM4D□K	ESMC-K2
	EZA4E□-K	EZAM4E□K	
Equipped	**EZA4D□M-K**	EZAM4D□MK	
	EZA4E□M-K	EZAM4E□MK	

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

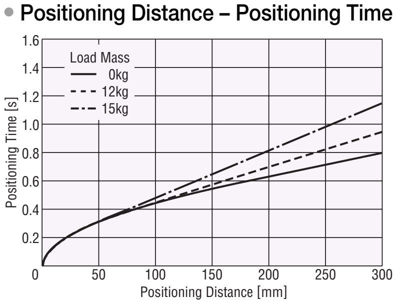
■Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

●EZA4D (Lead: 12 mm)

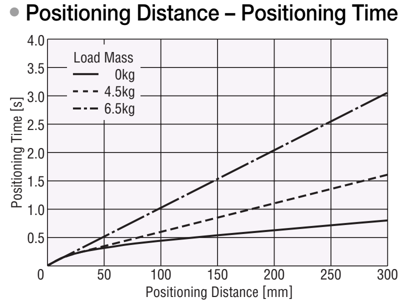
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

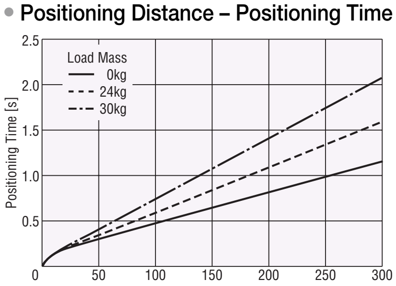
● Positioning Distance – Positioning Time



●EZA4E (Lead: 6 mm)

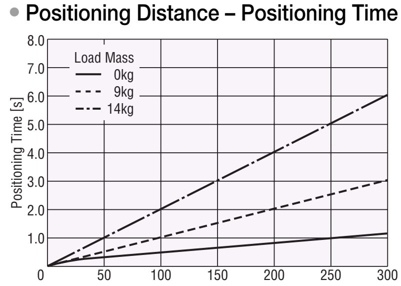
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

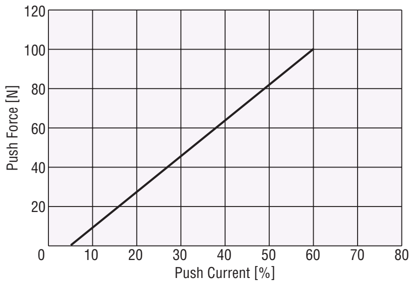
● Positioning Distance – Positioning Time



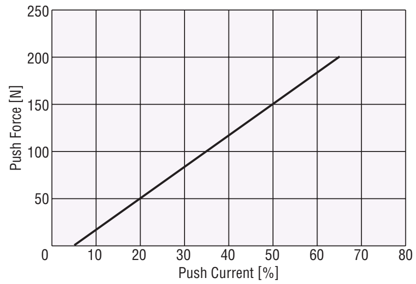
Notes:
●The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
●The starting speed should be 6 mm/s or less.

Push Force

●EZA4D (Lead: 12 mm)

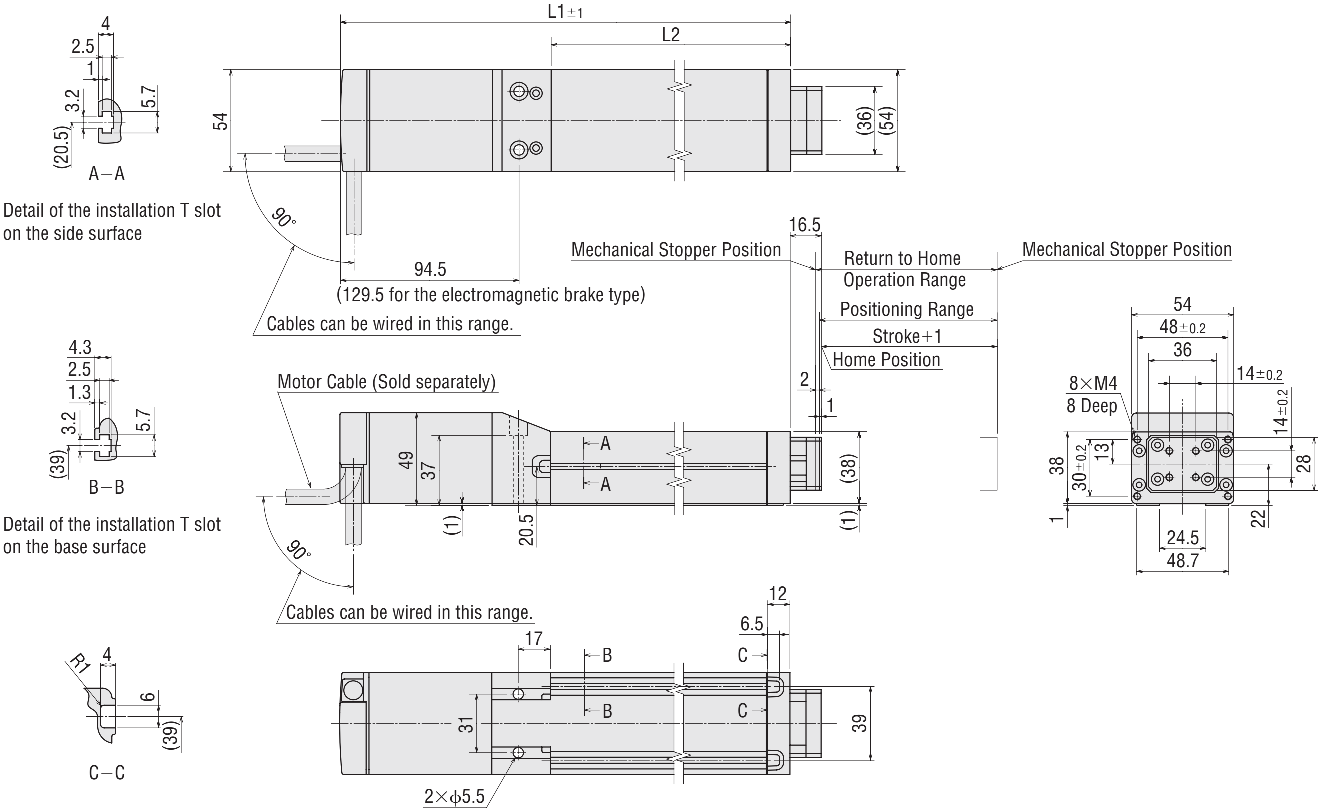


●EZA4E (Lead: 6 mm)



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: EZAM4D□K, EZAM4E□K (Without electromagnetic brake)
EZAM4D□MK, EZAM4E□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	292	342	392	442	492	542
	Equipped	327	377	427	477	527	577
L2	Not Equipped/Equipped	180.5	230.5	280.5	330.5	380.5	430.5
Mass [kg]	Not Equipped	1.7	1.8	1.9	2.0	2.1	2.2
	Equipped	1.9	2.0	2.1	2.2	2.3	2.4
DXF	Not Equipped	D1331	D1332	D1333	D1334	D1335	D1336
	Equipped	D1337	D1338	D1339	D1340	D1341	D1342

EZA Series Using αSTEP Motor

EZA4: Frame Size 54 mm × 38 mm

Single-Phase 100-115 VAC
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

CE

Drive Method	Ball Screw	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.01	Maximum Load Moment [N·m]	M_P: 7.5 M_Y: 7.5 M_R: 2.6

Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZA4D□-■	12	~15	–	~70	100	–	600
EZA4D□M-■			~6.5			70	
EZA4E□-■	6	~30	–	~140	200	–	300
EZA4E□M-■			~14			140	

● Enter the stroke length in the box (□) within the model name.
Enter the power supply voltage **A** or **C** in the box (■) within the model name.
*1 The value when an external guide is used. Moment calculations are required when transferring a load directly. See "Selection Calculations" on page 82.
*2 Maximum speed of push-motion operation is 25 mm/s.

Product Number Code

EZA 4 D 030 M - A
① ② ③ ④ ⑤ ⑥

①	Series	**EZA**: **EZA** Series
②	Cylinder Size	**4**: Frame Size 54 mm × 38 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	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZA4D□-A**	EZAM4D□A	ESMC-A2
	EZA4D□-C	EZAM4D□C	ESMC-C2
	EZA4E□-A	EZAM4E□A	ESMC-A2
	EZA4E□-C	EZAM4E□C	ESMC-C2
Equipped	**EZA4D□M-A**	EZAM4D□MA	ESMC-A2
	EZA4D□M-C	EZAM4D□MC	ESMC-C2
	EZA4E□M-A	EZAM4E□MA	ESMC-A2
	EZA4E□M-C	EZAM4E□MC	ESMC-C2

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

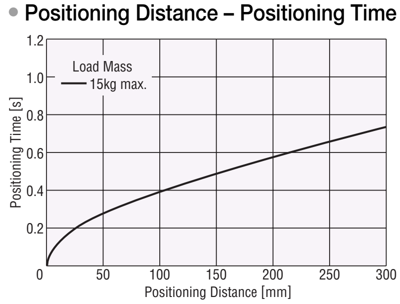
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

● EZA4D (Lead: 12 mm)

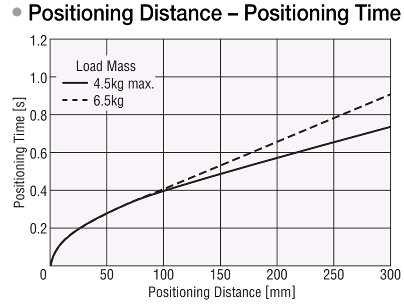
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

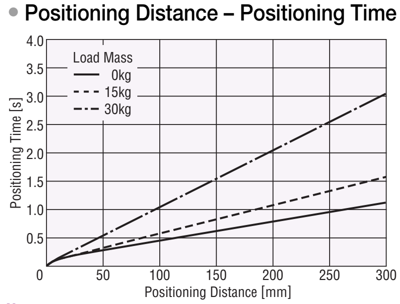
● Positioning Distance – Positioning Time



● EZA4E (Lead: 6 mm)

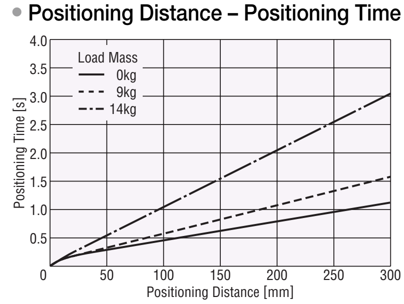
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

● Positioning Distance – Positioning Time

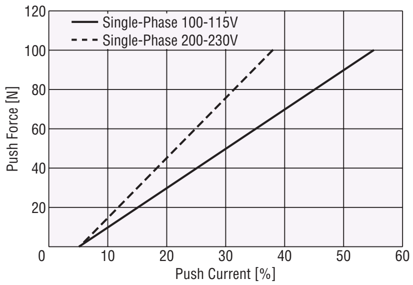


Notes:
● The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
● The starting speed should be 6 mm/s or less.

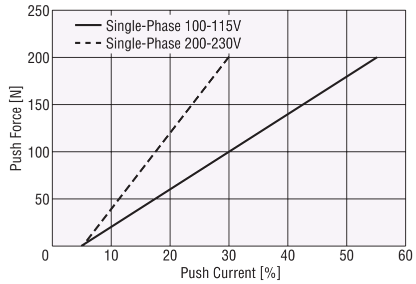
Features Page 42 | Safety Standards and CE Marking Page 43 | General Specifications of Motor Page 47 | System Configuration Page 44

Push Force

● EZA4D (Lead: 12 mm)

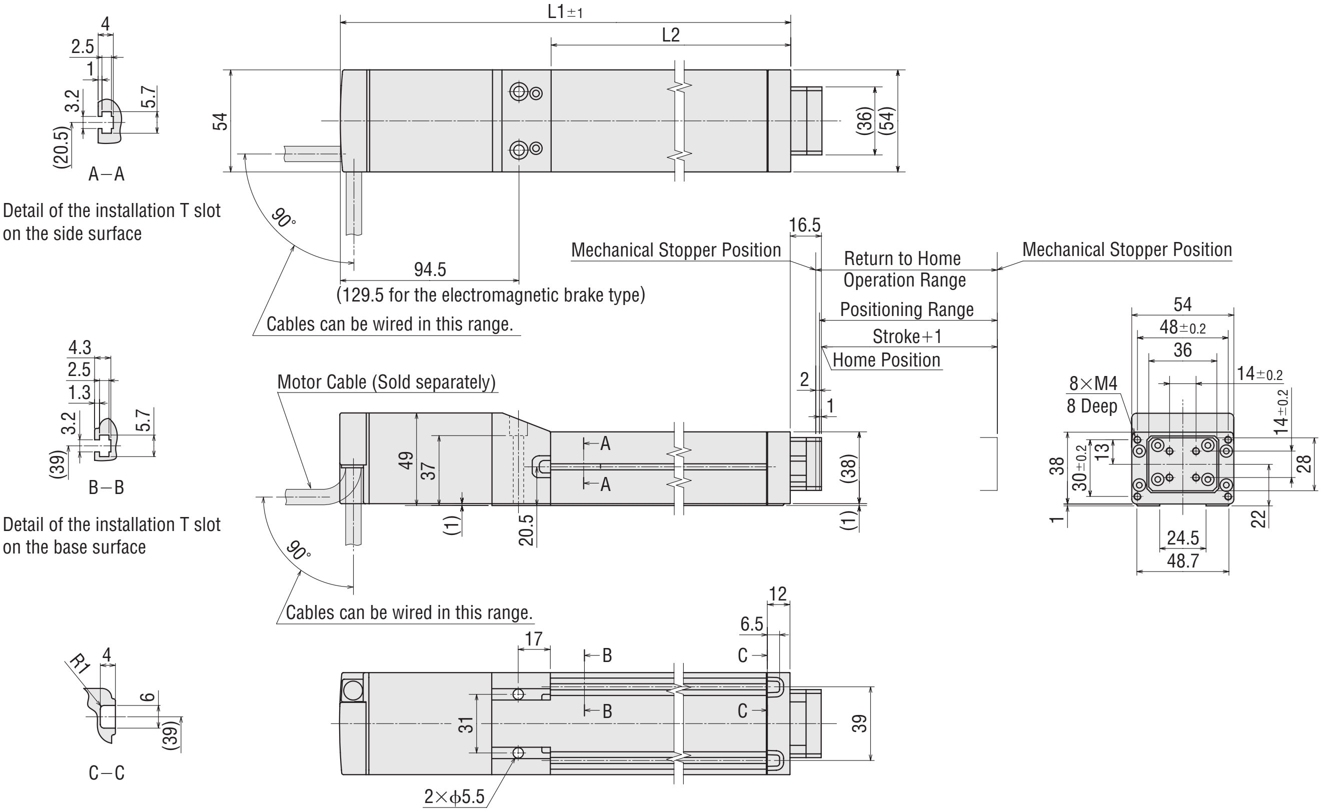


● EZA4E (Lead: 6 mm)



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: EZAM4D□A, EZAM4E□A, EZAM4D□C, EZAM4E□C (Without electromagnetic brake)
EZAM4D□MA, EZAM4E□MA, EZAM4D□MC, EZAM4E□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	292	342	392	442	492	542
	Equipped	327	377	427	477	527	577
L2	Not Equipped/Equipped	180.5	230.5	280.5	330.5	380.5	430.5
Mass [kg]	Not Equipped	1.7	1.8	1.9	2.0	2.1	2.2
	Equipped	1.9	2.0	2.1	2.2	2.3	2.4
DXF	Not Equipped	D1331	D1332	D1333	D1334	D1335	D1336
	Equipped	D1337	D1338	D1339	D1340	D1341	D1342

EZA6: Frame Size 74 mm × 52.5 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	Maximum Load Moment [N·m]	MP: 13.0 MY: 13.0 MR: 6.2

Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZA6D□-K	12	~30	–	~200	400	–	600
EZA6D□M-K			~15			200	
EZA6E□-K	6	~60	–	~400	500	–	300
EZA6E□M-K			~30			400	

●Enter the stroke length in the box (□) within the model name.
*1 The value when an external guide is used. Moment calculations are required when transferring a load directly. See "Selection Calculations" on page 82.
*2 Maximum speed of push-motion operation is 25 mm/s.

■Product Number Code

EZA 6 D 030 M - K
① ② ③ ④ ⑤ ⑥

①	Series	**EZA**: **EZA** Series
②	Cylinder Size	**6**: Frame Size 74 mm × 52.5 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 linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZA6D□-K**	EZAM6D□K	ESMC-K2
	EZA6E□-K	EZAM6E□K	
Equipped	**EZA6D□M-K**	EZAM6D□MK	
	EZA6E□M-K	EZAM6E□MK	

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

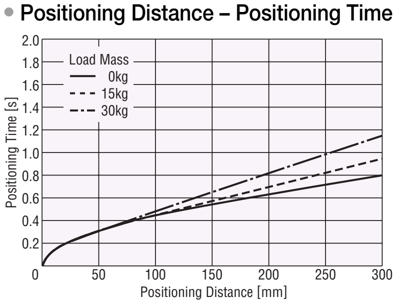
■Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

●EZA6D (Lead: 12 mm)

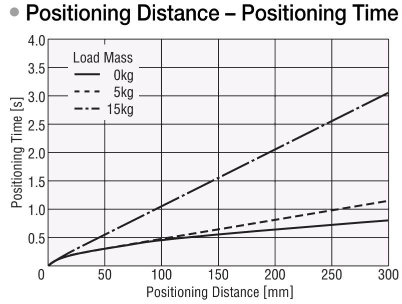
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

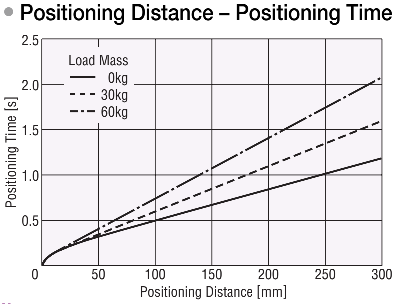
● Positioning Distance – Positioning Time



●EZA6E (Lead: 6 mm)

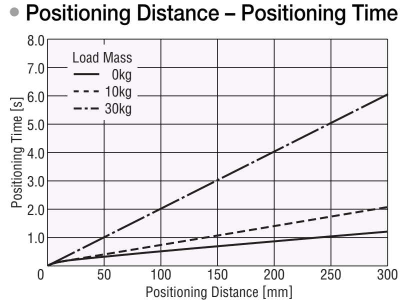
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

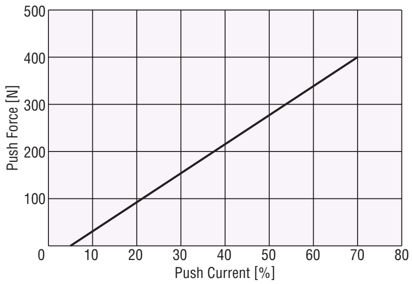
● Positioning Distance – Positioning Time



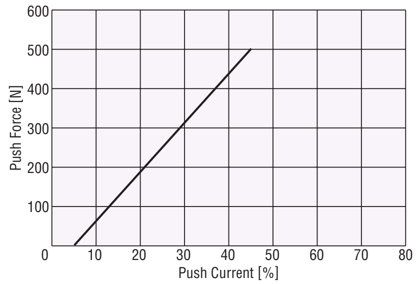
Notes:
●The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
●The starting speed should be 6 mm/s or less.

Push Force

● **EZA6D** (Lead: 12 mm)

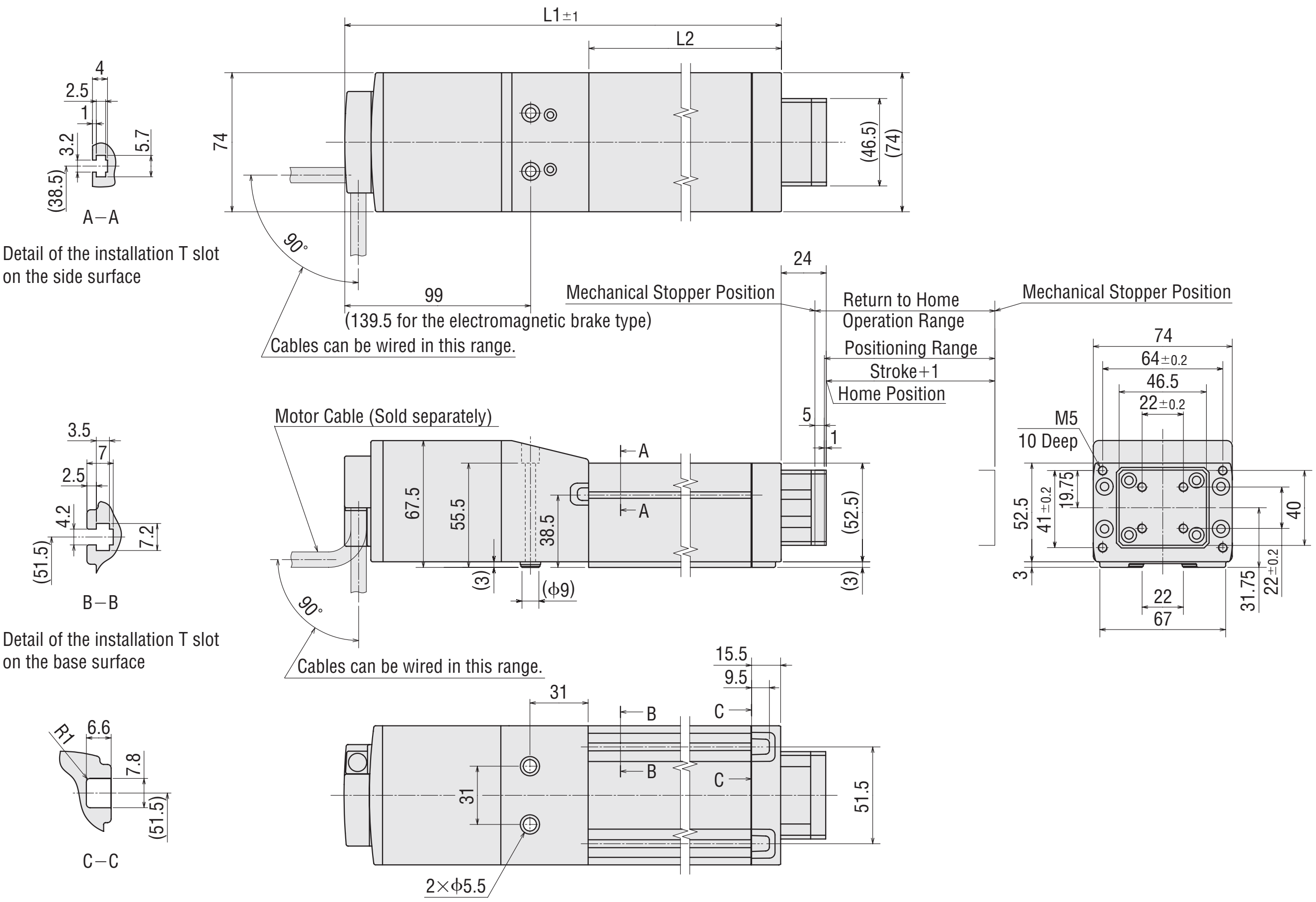


● **EZA6E** (Lead: 6 mm)



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: EZAM6D□K, EZAM6E□K (Without electromagnetic brake)
EZAM6D□MK, EZAM6E□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	330.5	380.5	430.5	480.5	530.5	580.5
	Equipped	371	421	471	521	571	621
L2	Not Equipped/Equipped	200.5	250.5	300.5	350.5	400.5	450.5
Mass [kg]	Not Equipped	2.4	2.8	3.2	3.6	4.0	4.4
	Equipped	2.8	3.2	3.6	4.0	4.4	4.8
DXF	Not Equipped	D1343	D1344	D1345	D1346	D1347	D1348
	Equipped	D1349	D1350	D1351	D1352	D1353	D1354

EZA Series Using αSTEP Motor

EZA6: Frame Size 74 mm × 52.5 mm

Single-Phase 100-115 VAC
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	Maximum Load Moment [N·m]	M_P: 13.0 M_Y: 13.0 M_R: 6.2

Model	Lead [mm]	Transportable Mass [kg]*1		Thrust [N]	Push Force [N]*2	Electromagnetic Brake Holding Force [N]	Maximum Speed [mm/s]
		Horizontal	Vertical				
EZA6D☐-■	12	~30	–	~200	400	–	600
EZA6D☐M-■			~15			200	
EZA6E☐-■	6	~60	–	~400	500	–	300
EZA6E☐M-■			~30			400	

●Enter the stroke length in the box (☐) within the model name.
Enter the power supply voltage **A** or **C** in the box (■) within the model name.
*1 The value when an external guide is used. Moment calculations are required when transferring a load directly. See "Selection Calculations" on page 82.
*2 Maximum speed of push-motion operation is 25 mm/s.

Product Number Code

EZA 6 D 030 M - A
① ② ③ ④ ⑤ ⑥

①	Series	**EZA**: **EZA** Series
②	Cylinder Size	**6**: Frame Size 74 mm × 52.5 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	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**EZA6D☐-A**	EZAM6D☐A	ESMC-A2
	EZA6D☐-C	EZAM6D☐C	ESMC-C2
	EZA6E☐-A	EZAM6E☐A	ESMC-A2
	EZA6E☐-C	EZAM6E☐C	ESMC-C2
Equipped	**EZA6D☐M-A**	EZAM6D☐MA	ESMC-A2
	EZA6D☐M-C	EZAM6D☐MC	ESMC-C2
	EZA6E☐M-A	EZAM6E☐MA	ESMC-A2
	EZA6E☐M-C	EZAM6E☐MC	ESMC-C2

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

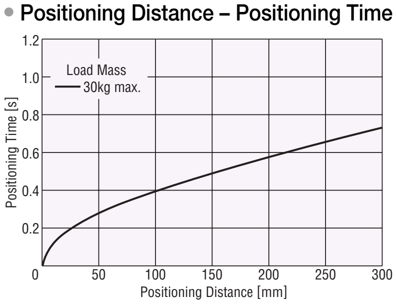
Check the Positioning Time

Check the (approximate) positioning time from the positioning distance.
For the operating speed and acceleration, refer to "selection calculations" on page 82.

●EZA6D (Lead: 12 mm)

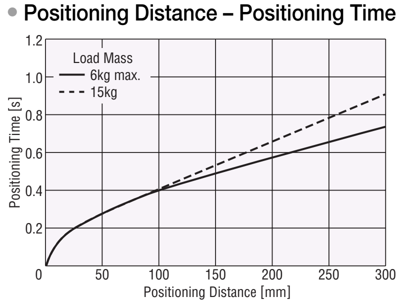
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

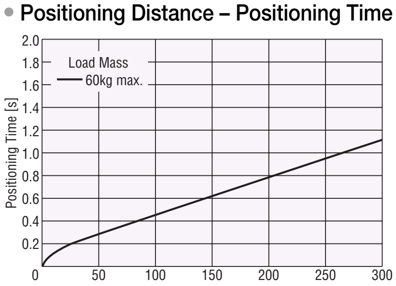
● Positioning Distance – Positioning Time



●EZA6E (Lead: 6 mm)

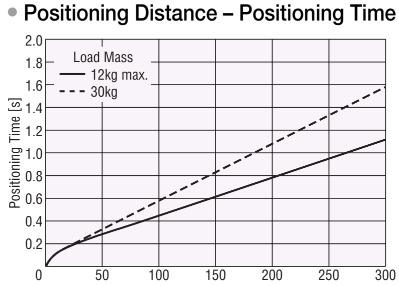
◇Horizontal Installation

● Positioning Distance – Positioning Time



◇Vertical Installation

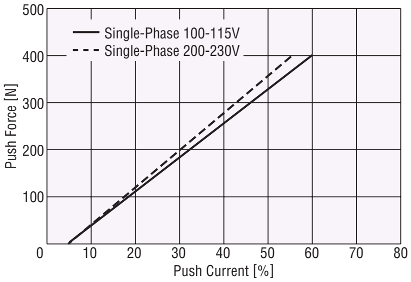
● Positioning Distance – Positioning Time



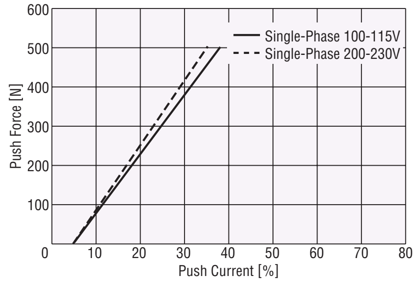
Notes:
●The positioning time in the graph does not include the settling time. Use a settling time of 0.15 s as a reference. (Settling time is adjustable by speed filter function.)
●The starting speed should be 6 mm/s or less.

Push Force

● EZA6D (Lead: 12 mm)

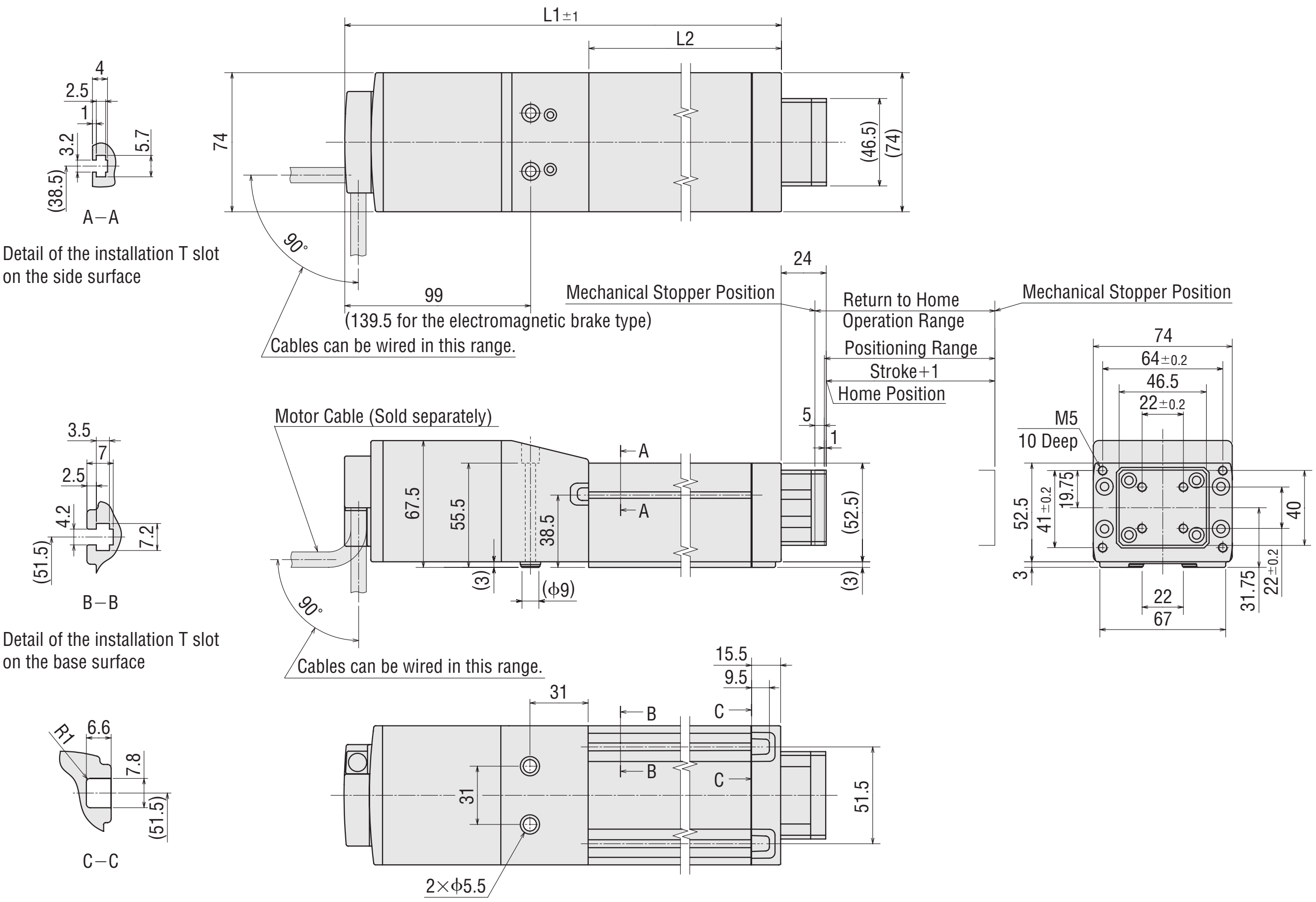


● EZA6E (Lead: 6 mm)



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)



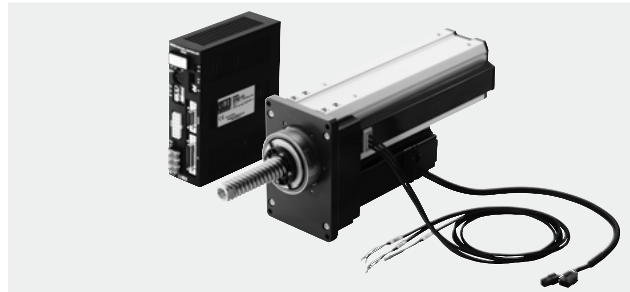
Cylinder Model: EZAM6D□A, EZAM6E□A, EZAM6D□C, EZAM6E□C (Without electromagnetic brake)
EZAM6D□MA, EZAM6E□MA, EZAM6D□MC, EZAM6E□MC (With electromagnetic brake)

	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	330.5	380.5	430.5	480.5	530.5	580.5
	Equipped	371	421	471	521	571	621
L2	Not Equipped/Equipped	200.5	250.5	300.5	350.5	400.5	450.5
Mass [kg]	Not Equipped	2.4	2.8	3.2	3.6	4.0	4.4
	Equipped	2.8	3.2	3.6	4.0	4.4	4.8
DXF	Not Equipped	D1343	D1344	D1345	D1346	D1347	D1348
	Equipped	D1349	D1350	D1351	D1352	D1353	D1354

High Power Motorized Cylinders

EZ limo PWA Ⅱ Series

With the use of gears and a ball screw, along with the folded motor configuration, the **PWAⅡ** Series cylinders achieve a compact size and provide high thrust force. With the αSTEP motor used as a motor of the cylinder, this cylinder offers a full range of convenient functions such as teaching, area output and absolute mode.

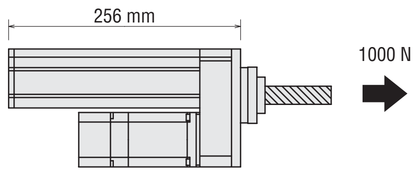


■Features

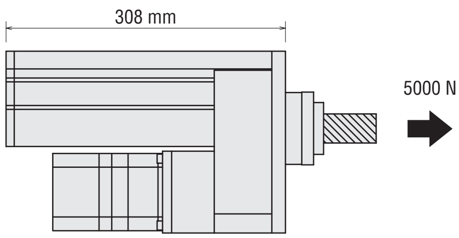
●Achieving a Compact Size and High Thrust Force

The **PWAⅡ** Series cylinders provide high thrust force. The maximum thrust forces of the **PWA6** and **PWA8** are 1000 N (600 N in push-motion operation) and 5000 N (3500 N in push-motion operation), respectively.

The **PWA6** is 256 mm in total length, with 1000 N.

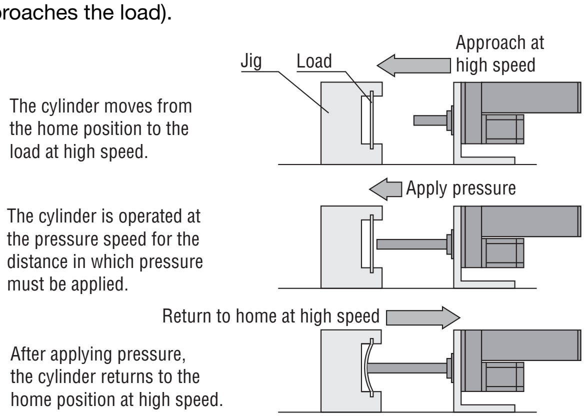


The **PWA8** is 308 mm in total length, with 5000 N.



●Short Cycle Operation That Can Be Achieved by Linked-Motion Operations

The time required for an operating cycle can be reduced by linking the pressure speed and the approach speed (when the rod approaches the load).



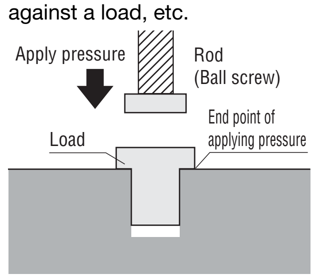
●High Accuracy and Positioning

With the αSTEP motor and the ball screw mechanism, a highly accurate pressurized positioning can be performed. The repetitive positioning accuracy is ±0.02 mm.

●A Wide Range of Operating Patterns

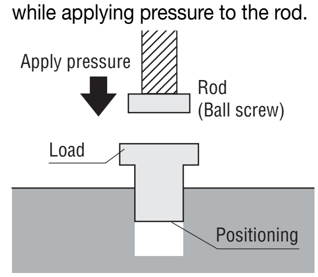
Push-Motion Operation

In this operation, the cylinder can keep the rod pushed against a load, etc.



Pressurized Positioning Operation

In this operation, the cylinder can perform high-accuracy positioning while applying pressure to the rod.

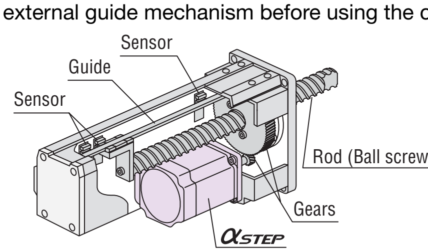


●Built-In Home/Limit Sensors

The built-in home/limit sensors in the cylinder save the customer from the trouble of having to install sensors.

●Built-In Guide Mechanism in Cylinder

The built-in guide mechanism in the cylinder eliminates the need to provide an external guide mechanism before using the cylinder.



Note:

●When a moment load is applied in a direction other than that in which the rod moves straight, provide an external guide mechanism.

Product Number Code

PWA 6 H 010 M R - A

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	**PWA**: **PWA Ⅱ** Series
②	Cylinder Size	**6**: Frame Width 87 mm **8**: Frame Width 130 mm
③	Lead	**H**: 5 mm **J**: 1.6 mm
④	Stroke	**010**: 100 mm
⑤	Electromagnetic Brake	Blank: Without Electromagnetic Brake **M**: With Electromagnetic Brake
⑥	Motor	**R**: Folded Type
⑦	Power Supply Voltage	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Product Line

◇Without Electromagnetic Brake

Stroke	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model
100 mm	**PWA6H010R-A**	**PWA6H010R-C**
	PWA8J010R-A	**PWA8J010R-C**

◇With Electromagnetic Brake

Stroke	Single-Phase 100-115 VAC	Single-Phase 200-230 VAC
	Model	Model
100 mm	**PWA6H010MR-A**	**PWA6H010MR-C**
	PWA8J010MR-A	**PWA8J010MR-C**

The following items are included in each product.
Cylinder, Controller, Mounting Bracket for Controller, User I/O Connector, Sensor I/O Connector, Operating Manual

General Specifications of Motor

●**General specifications of controller** ➜ Page 65

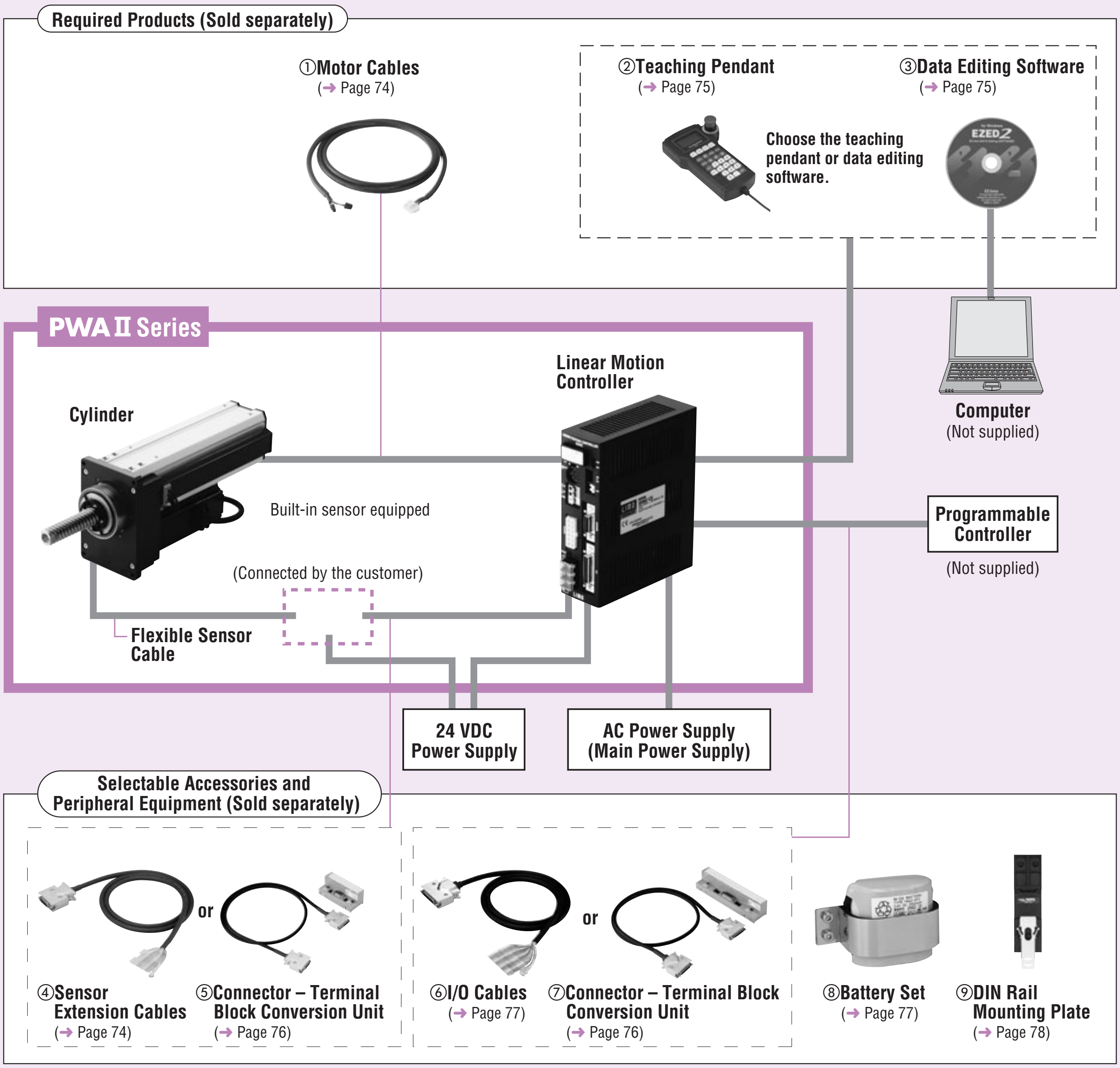
This is a value after rated operation under normal ambient temperature and humidity.

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 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 linear slide and controller are connected.

System Configuration

●Controller Mode



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Teaching Pendant	Various data can be set and operated at your fingertips. The cable length is 5 m.	75
③	Data Editing Software	Various data can be set and edited on a personal computer. A dedicated communication cable is included (5 m).	75
④	Sensor Extension Cables	Cable for connecting the linear motion controller and sensors (1 m, 2 m).	74
⑤	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and sensors (1 m).	76
⑥	I/O Cables	Cable for connecting the linear motion controller and programmable controller (1 m, 2 m).	77
⑦	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the linear motion controller and programmable controller (1 m).	76
⑧	Battery Set	Required for use in the absolute mode.	77
⑨	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

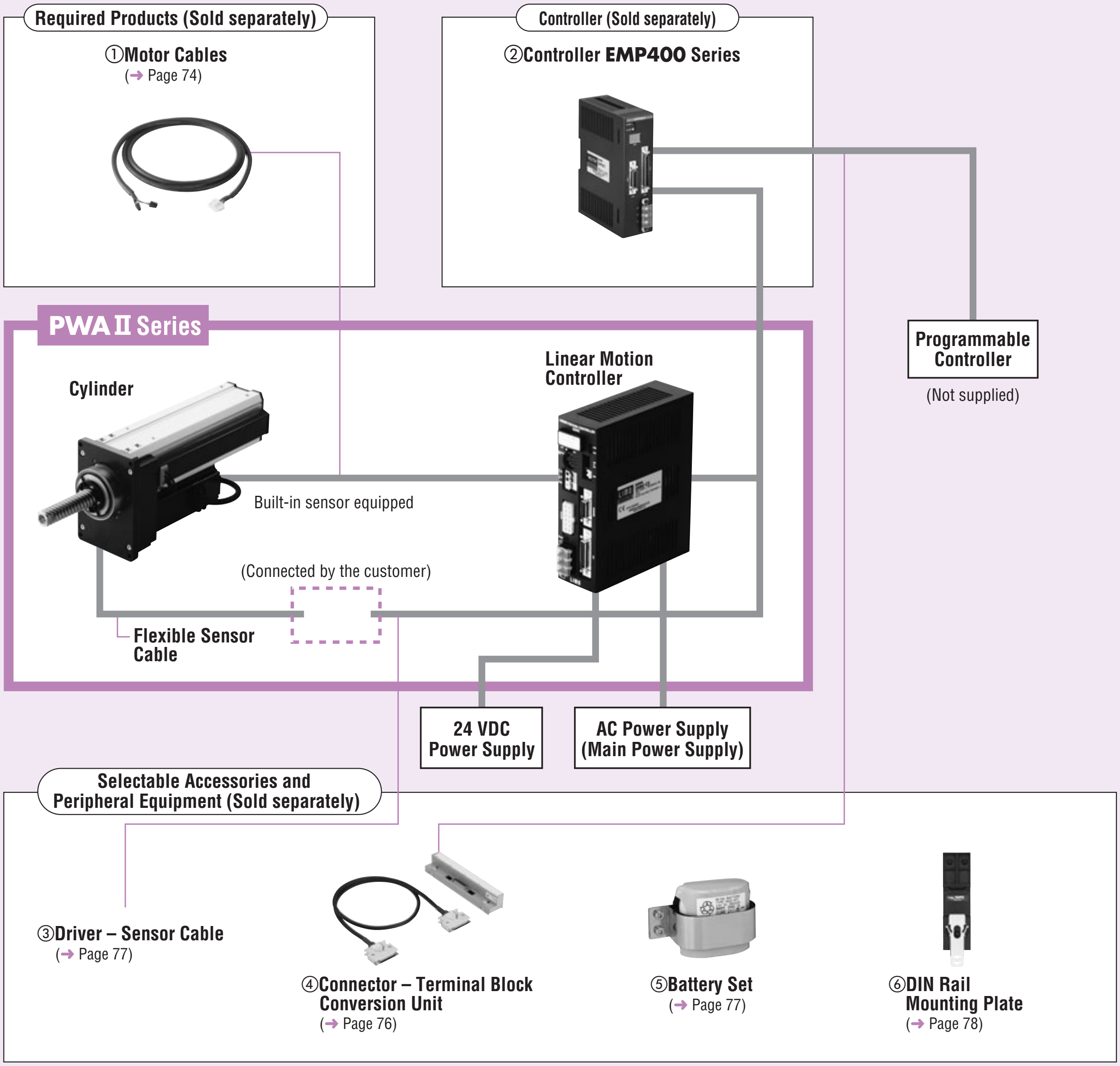
●Example of System Configuration

	(Sold separately)			(Sold separately)	
PWA II Series	Motor Cable (2 m)	Teaching Pendant	+	I/O Cable (1 m)	Sensor Extension Cable (2 m)
PWA6H010R-A	CC020ES-2	EZT1		CC36D1-1	CC20D2-1

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

●Driver Mode

An example of a single-axis system configuration with the **EMP400** Series controller.



No.	Product Name	Overview	Page
①	Motor Cables	This dedicated cable connects the cylinder and linear motion controller (1 to 20 m). Be sure to purchase this cable.	74
②	Controller	This controller gives commands needed to drive the cylinder.	✻
③	Driver – Sensor Cable	Cable for connecting the linear motion controller and **EMP** Series controller (0.5 m).	77
④	Connector – Terminal Block Conversion Unit	Set of terminal block and cable for connecting the **EMP** Series controller and programmable controller (1 m).	76
⑤	Battery Set	Required for use in the absolute mode.	77
⑥	DIN Rail Mounting Plate	Use this when installing the linear motion controller to a DIN rail.	78

●Example of System Configuration

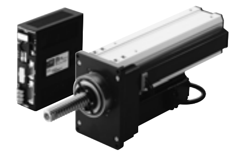
PWA II Series	Motor Cable (2 m) (Sold separately)		Controller (Sold separately)	Driver – Sensor Cable (0.5 m)	Connector – Terminal Block Conversion Unit (1 m)
PWA6H010R-A	CC020ES-2	+	EMP401-1	CC005EZ6-EMPD	CC50T1

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

PWA6: Frame Size 130 mm × 87 mm

Single-Phase 100-115 VAC
Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 100 kg
Stroke: 100 mm



Specifications of Cylinder

Drive Method	Ball Screw + Gear	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.01	Stroke [mm]	100

Model	Lead [mm]	Positioning Operation		Push Operation		Maximum Holding Force		
		Maximum Thrust Force [N]	Speed Range [mm/s]	Push Force [N]	Speed Range [mm/s]	Power ON	Power OFF	Electromagnetic Brake
PWA6H010R-□	5	1000	~50	~600	~6	1000	50	–
		200	~200					
PWA6H010MR-□		1000	~50					1000
		200	~200					

●Enter the power supply voltage **A** or **C** in the box (□) within the model name.

Product Number Code

PWA 6 H 010 M R - A

① ② ③ ④ ⑤ ⑥ ⑦

①	Series **PWA**: **PWA II** Series
②	Cylinder Size **6**: Width 87 mm
③	Lead **H**: 5 mm
④	Stroke **010** (100 mm)
⑤	Electromagnetic Brake Blank: Without Electromagnetic Brake **M**: With Electromagnetic Brake
⑥	Motor Offset **R**: Motor Offset Mount Type
⑦	Power Supply Voltage **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**PWA6H010R-A**	PWAM6H010RA	ESMC-A2
	PWA6H010R-C	PWAM6H010RC	ESMC-C2
Equipped	**PWA6H010MR-A**	PWAM6H010MRA	ESMC-A2
	PWA6H010MR-C	PWAM6H010MRC	ESMC-C2

Push Force

◇**PWA6**

●This is a representative value at a speed of 6 mm/s max.

Notes:

●When the cylinder is used in a vertical direction, an external force calclurated by multiplying the weight of the carried object by the rate of garavitational 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.

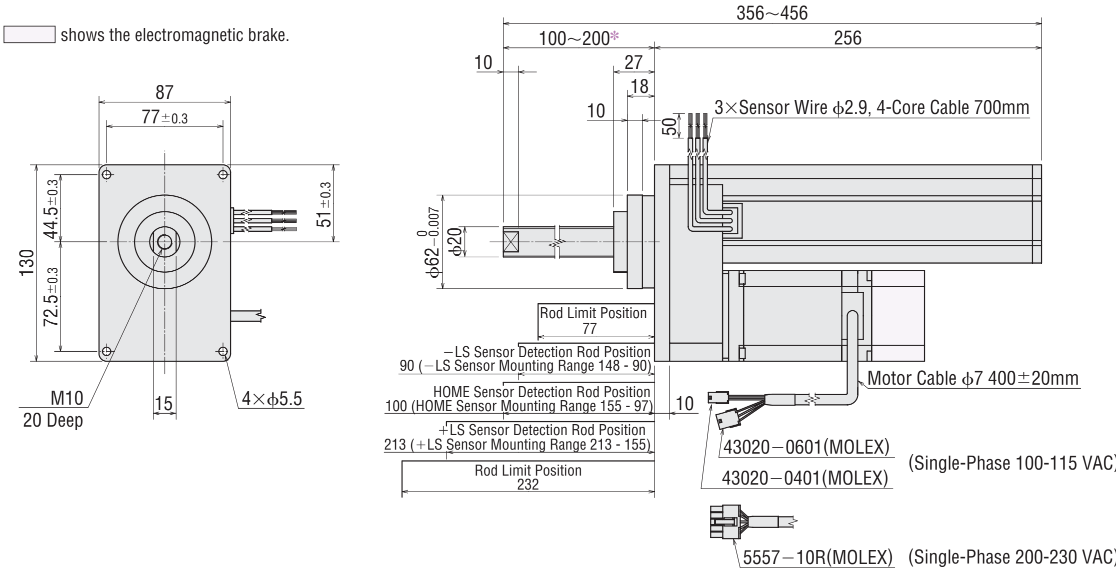
●Operate the cylinder with a push current of 35% or less. If the push current exceeds 35%, the life of this product will be affected by excess thrust force due to the impact and variations that occur upon push motion.

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, built-in
Movement	Possible

Features Page 56 | General Specifications of Motor Page 57 | System Configuration Page 58

Dimensions of Cylinder (Unit = mm)



✻At standard sensor position

Cylinder Model	Electromagnetic Brake	Mass [kg]	DXF	
			A✻	C✻
PWAM6H010R□	Not Equipped	4.9	D845	D847
PWAM6H010MR□	Equipped	5.2	D846	D848

✻A and C represent the power supply voltage.

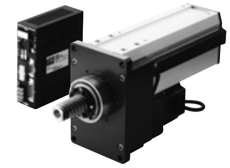
● Enter the power supply voltage A or C in the box (□) within the model name.

Product Line Page 57 | Specifications, Dimensions of Controller Page 64 | Connection and Operation Page 66

PWA8: Frame Size 200 mm × 130 mm

Single-Phase 100-115 VAC
Single-Phase 200-230 VAC

Maximum Transportable Mass: Horizontal 500 kg
Stroke: 100 mm



Specifications of Cylinder

Drive Method	Ball Screw + Gear	Repetitive Positioning Accuracy [mm]	±0.02	Resolution [mm]	0.001	Stroke [mm]	100

Model	Lead [mm]	Positioning Operation		Push Operation		Maximum Holding Force		
		Maximum Thrust Force [N]	Speed Range [mm/s]	Push Force [N]	Speed Range [mm/s]	Power ON	Power OFF	Electromagnetic Brake
PWA8J010R-□	1.6	5000	~9	~3500	~6	5000	250	–
		1000	~70					
PWA8J010MR-□		5000	~9					3500
		1000	~70					

● Enter the power supply voltage **A** or **C** in the box (□) within the model name.

Product Number Code

PWA 8 J 010 M R - A

① ② ③ ④ ⑤ ⑥ ⑦

①	Series	**PWA**: **PWA II** Series
②	Cylinder Size	**8**: Width 130 mm
③	Lead	**J**: 1.6 mm
④	Stroke	**010** (100 mm)
⑤	Electromagnetic Brake	Blank: Without Electromagnetic Brake **M**: With Electromagnetic Brake
⑥	Motor Offset	**R**: Motor Offset Mount Type
⑦	Power Supply Voltage	**A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC

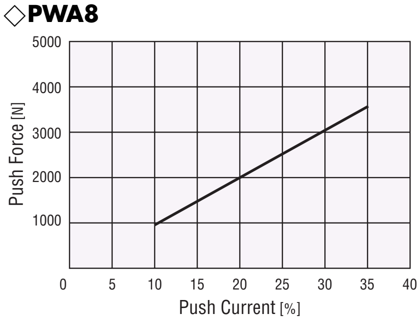
Cylinder/Controller Combinations

Model names for cylinder and linear motion controller combinations are shown below.

Electromagnetic Brake	Model	Cylinder Model	Controller Model
Not equipped	**PWA8J010R-A**	PWAM8J010RA	ESMC-A2
	PWA8J010R-C	PWAM8J010RC	ESMC-C2
Equipped	**PWA8J010MR-A**	PWAM8J010MRA	ESMC-A2
	PWA8J010MR-C	PWAM8J010MRC	ESMC-C2

Push Force

◇**PWA8**



● This is a representative value at a speed of 6 mm/s max.

Notes:

● When the cylinder is used in a vertical direction, an external force calclurated by multiplying the weight of the carried object by the rate of garavitational 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.

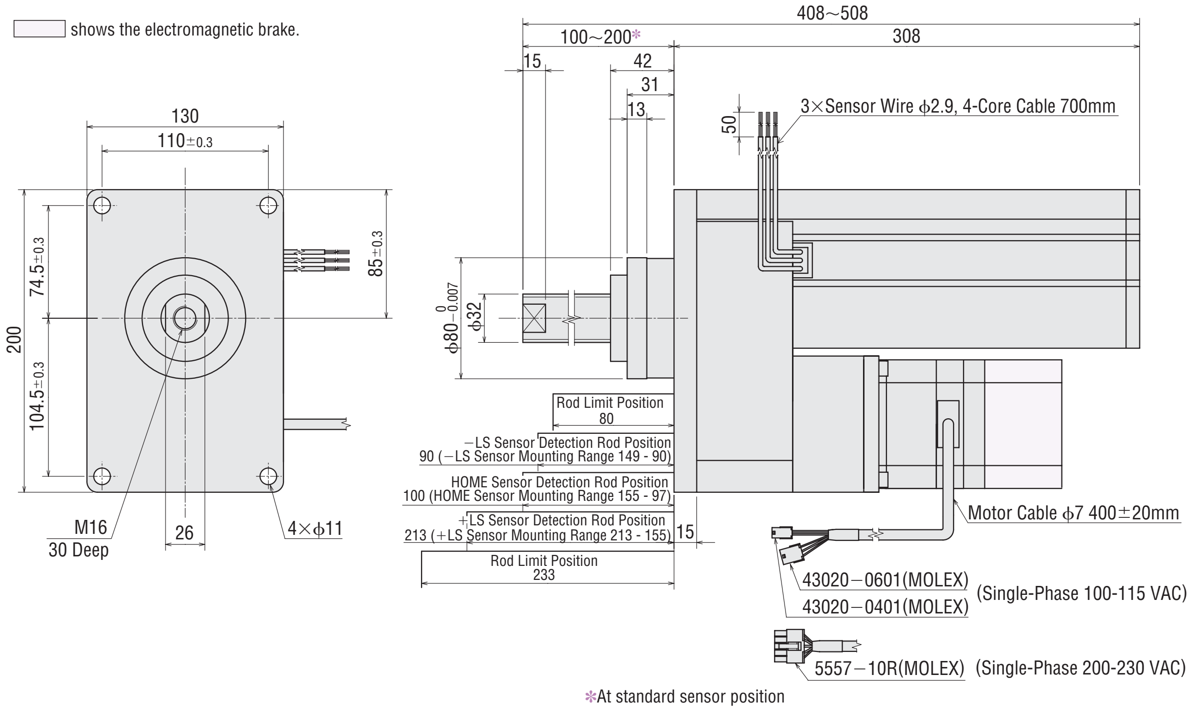
● Operate the cylinder with a push current of 35% or less. If the push current exceeds 35%, the life of this product will be affected by excess thrust force due to the impact and variations that occur upon push motion.

Specifications of Sensor

Item	Model: EE-SX671A (OMRON)
Power Supply	5 to 24 VDC ±10%, ripple (p-p) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5 to 24 VDC, 100 mA or less Residual voltage 0.8 V or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Logic	Normally open/normally closed (switchable, depending on connection)
Type	Photomicro sensor
Quantity	3 pieces, built-in
Movement	Possible

Features Page 56 | General Specifications of Motor Page 57 | System Configuration Page 58

Dimensions of Cylinder (Unit = mm)



Cylinder Model	Electromagnetic Brake	Mass [kg]	DXF	
			A*	C*
PWAM8J010R□	Not Equipped	16.2	D849	D851
PWAM8J010MR□	Equipped	16.6	D850	D852

*A and C represent the power supply voltage.

● Enter the power supply voltage A or C in the box (□) within the model name.

SPV/EZCⅡ/EZA/PWAⅡ Series Common Controller

■Specifications of Controller

●Controller Mode

Item			Controller Model		
			ESMC-K2	ESMC-A2	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%	Single-Phase 100-115 VAC −15～+10%	Single-Phase 200-230 VAC −15～+10%
		Frequency	−	50/60 Hz	
		Current	4.0 A[*1]	6.0 A[*1]	3.5 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[*2]	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		0.01～1500.00 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			· 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		
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/OUT0, OUT1 Photocoupler, Open-collector output (24 VDC, 10 mA or less) ASG1, BSG1 Photocoupler, Open-collector output (24 VDC, 15 mA or less) ASG2, BSG2 Line driver output		
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-A2	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%	Single-Phase 100-115 VAC −15～+10%	Single-Phase 200-230 VAC −15～+10%
		Frequency	−	50/60 Hz	
		Current	4.0 A[*1]	6.0 A[*1]	3.5 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/OUT0, OUT1 Photocoupler, Open-collector output (24 VDC, 10 mA or less) ASG1, BSG1 Photocoupler, Open-collector output (24 VDC, 15 mA or less) ASG2, BSG2 Line driver output		
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 linear slide or cylinder.
[ESMC-K2] EZCM4/EZAM4: 1.7 A SPVM6/EZCM6/EZAM6: 4.0 A
[ESMC-A2] EZCM4/EZAM4: 3.0 A SPVM6/EZCM6/EZAM6: 5.0 A SPVM8/PWAM8: 6.0 A PWAM6: 6.4 A
[ESMC-C2] EZCM4/EZAM4: 2.1 A SPVM6/EZCM6/EZAM6: 3.0 A SPVM8/PWAM8: 3.5 A PWAM6: 3.9 A
*2 Values vary depending on the connected linear slide. Check the specifications of each series.

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 terminal · FG – I/O connector
Dielectric Strength	Sufficient to withstand the following for 1 minute: · FG – Main power supply 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 linear slide and controller are connected.

●Single-Phase 100-115 VAC/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 terminal, Motor connector, Battery connector · Control power supply terminal – Main power supply terminal, Motor connector, Battery connector · PE – Main power supply terminal, Motor connector, Battery connector
Dielectric Strength	Sufficient to withstand the following terminals for 1 minute: · Signal I/O, Control power supply – Main power supply 1.8 kVAC · Signal I/O, Control power supply – Motor output 1.8 kVAC · Signal I/O, Control power supply – Battery input 1.8 kVAC · PE – Main power supply 1.5 kVAC · PE – Motor output 1.5 kVAC · PE – Battery input 1.5 kVAC
Ambient Temperature	0∼+40˚C (non-freezing)
Ambient Humidity	85% or less (non-condensing)

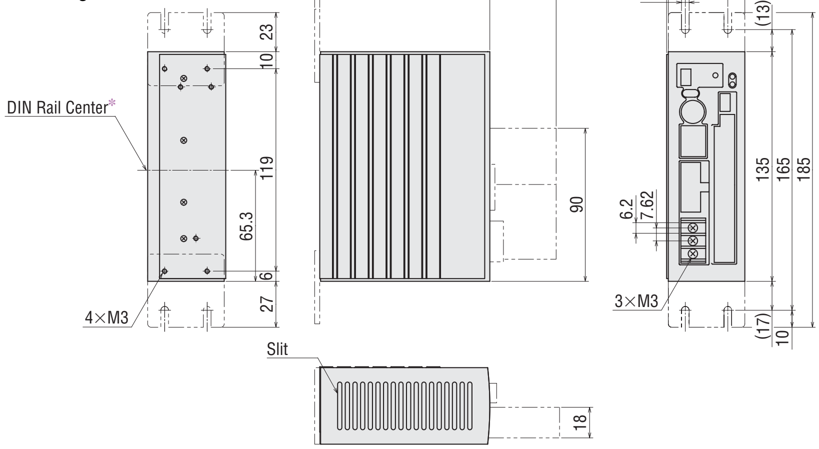
Note:
- Do not measure insulation resistance or perform the dielectric strength test while the linear slide and controller are connected.

Controller Dimensions (Unit = mm)

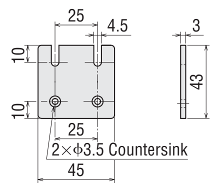
●24 VDC

Controller Model: ESMC-K2

Mass: 0.44 kg DXF D853



● Mounting Bracket (2 pieces, included)



● Control I/O Connector (Included)
Case: 54331-1361 (MOLEX)
Connector: 54306-3619 (MOLEX)

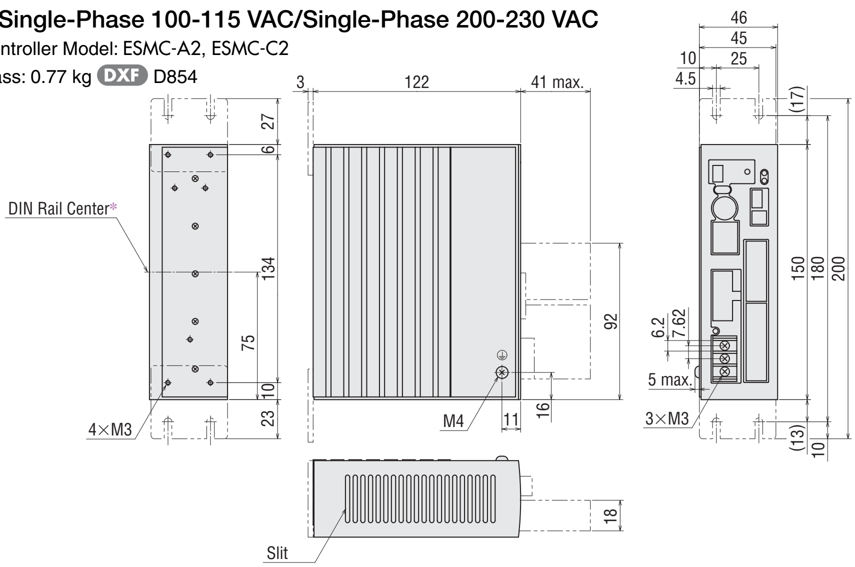
● I/O Connector for Sensor (Included)
Case: 54331-1201 (MOLEX)
Connector: 54306-2019 (MOLEX)

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

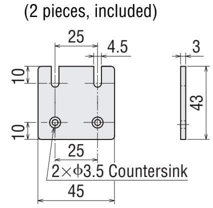
●Single-Phase 100-115 VAC/Single-Phase 200-230 VAC

Controller Model: ESMC-A2, ESMC-C2

Mass: 0.77 kg DXF D854



● Mounting Bracket (2 pieces, included)



● Control I/O Connector (Included)
Case: 54331-1361 (MOLEX)
Connector: 54306-3619 (MOLEX)

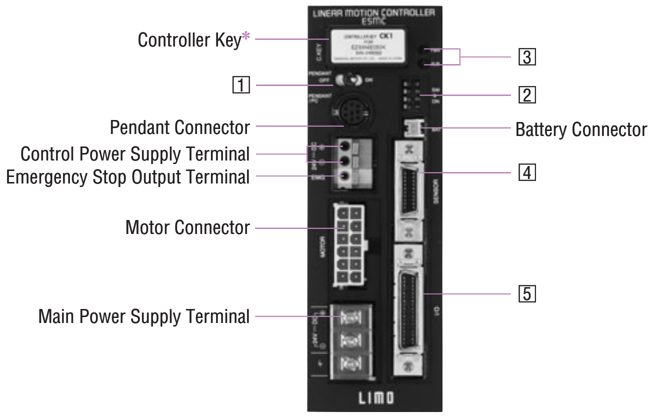
● I/O Connector for Sensor (Included)
Case: 54331-1201 (MOLEX)
Connector: 54306-2019 (MOLEX)

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

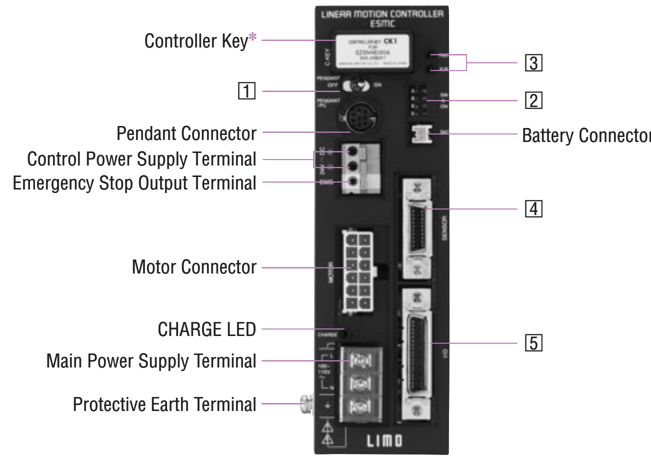
Connection and Operation

Names and Functions of Controller Parts

ESMC-K2



ESMC-A2, ESMC-C2



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

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 mode OFF: Incremental mode
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

5 I/O Connector

●Controller Mode

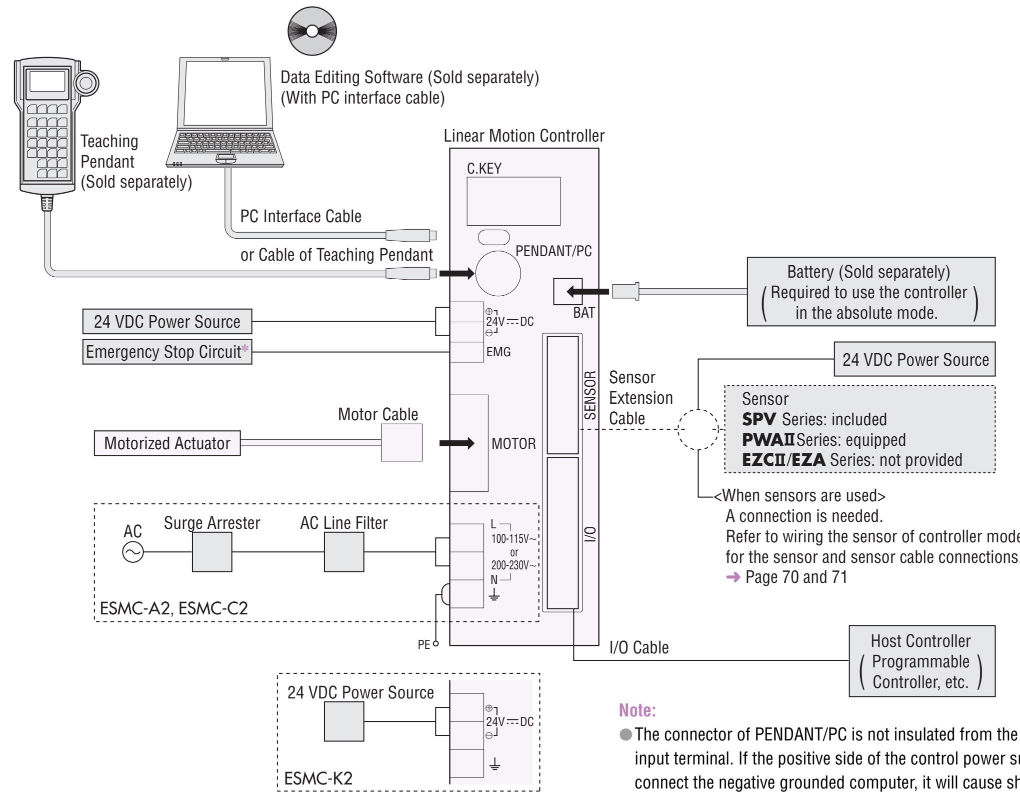
Indication	I/O	Pin No.	Signal Name	Function
I/O	Input	18	IN-COM1	Power supply for input signals
		19	GND	Power supply for I/O signals
		1	OUT-COM	Power supply for output signals
	Output	2	ALM	This signal is output when a protective function has been activated.
		3	MOVE	This signal is output while the 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/ OUT0	AREA: This output notifies that the table of the cylinder is staying inside a specified area. OUT0: 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	$\overline{\text{ASG2}}$	
		24	BSG2	B-phase pulse output (Line driver)
		25	$\overline{\text{BSG2}}$	
	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 ✻1✻2	Power supply for input signals
		19	GND	Power supply for I/O signals
		1	OUT-COM ✻3	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/ OUT0	TIM: This signal is output when the excitation sequence is at step "0." OUT0: 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	$\overline{\text{ASG2}}$	
		24	BSG2	B-phase pulse output (Line driver)
		25	$\overline{\text{BSG2}}$	
	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 ✻4	HOME: Start return to home operation PRESET: Preset the current position
		30	REQ	Request the current position output
		31	FP+	Operation command pulse input (The operation command pulse input in the + coordinate direction in the 2-pulse input mode)
		32	FP−	
		33	P24-FP	
		34	RP+	Direction of movement input (The operation command pulse input in the − coordinate direction in the 2-pulse input mode)
		35	RP−	
		36	P24-RP	

✻1 Connect this signal to 24 VDC if your contoroller is used in the NPN mode, or connect it to ground if the controller is used in the PNP mode.
✻2 Connect this signal even when only output signals are used.
✻3 Connect this signal to ground if your controller is used in the NPN mode, or connect it to 24 VDC if the controller is used in the PNP mode.
✻4 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



Note:
●The connector of PENDANT/PC is not insulated from the control power supply input terminal. If the positive side of the control power supply is grounded, do not connect the negative grounded computer, it will cause short-circuit.

*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, determine an appropriate circuit configuration based on the result of risk assessment of the equipment you are manufacturing.

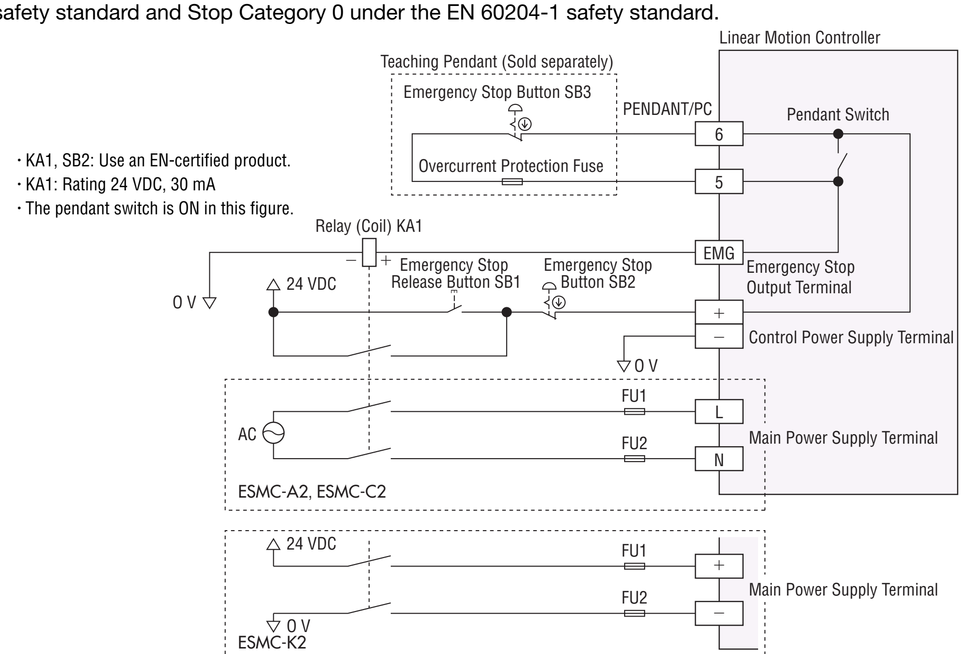
●If the risk assessment result indicates that no emergency stop function is necessary, the circuit configuration shown in "Connection example when an emergency stop function is not used" can be used.

●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.

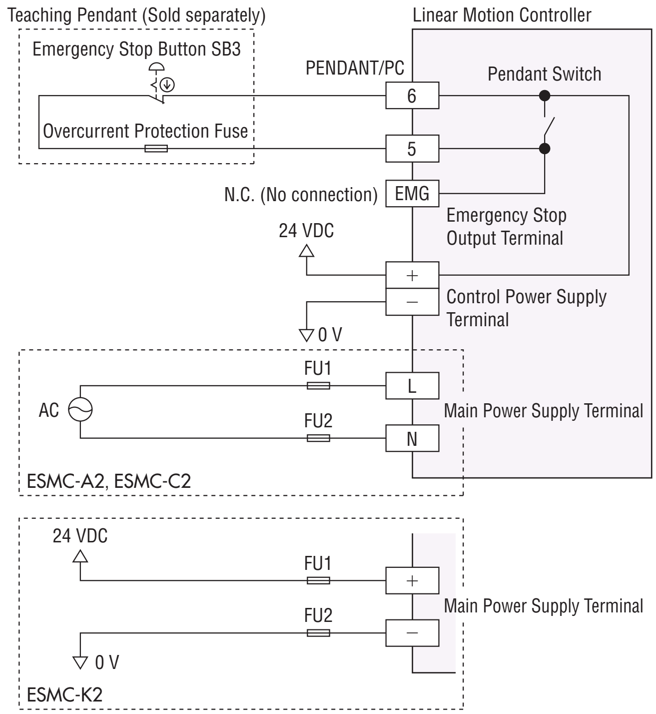
●Provide a measure on the machine side so that the machine will operate safely when the motorized actuator is stopped.

◇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 actuator will stop operating. This stopping method is based on software control. It does not meet the emergency stop requirements specified in safety standards.

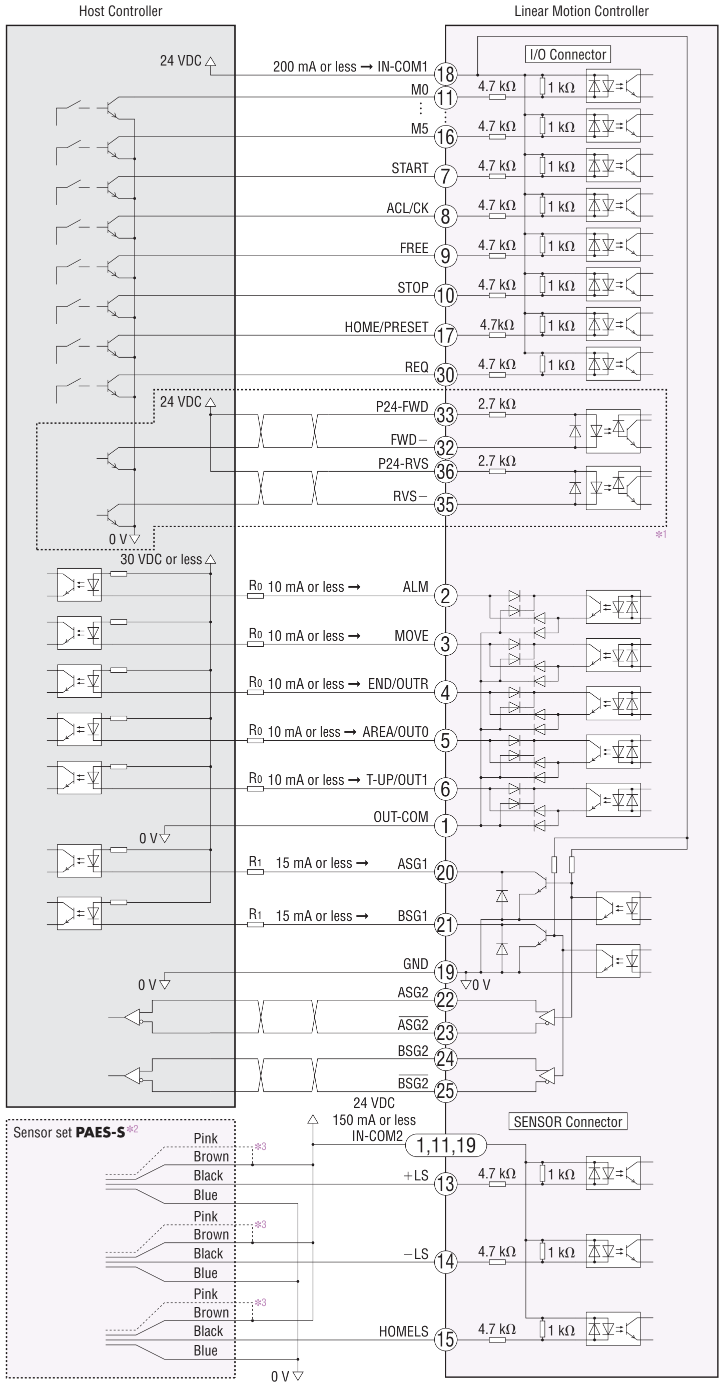
◇Power Source
- Two types of power source, main power and control power are required. Both power sources must at least have the specified capacity.
  Specifications of controller ➜ Page 64
- If the power capacity is insufficient, motor output may drop, which may cause the linear slide to malfunction (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 linear slide 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

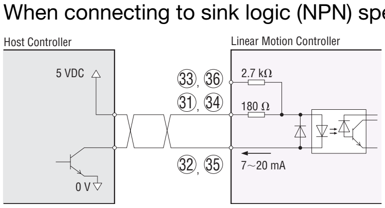
· Sink Logic (NPN) Specification



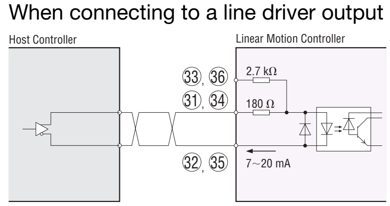
※1 For connection of 31 to 36 pins, refer to "FWD (FP) and RVS (RP) Signals" as shown below.
※2 An accessory sensor set is also available (sold separately.)
※3 Connect this line if the normally closed (NC) logic is used.

◇FWD (FP) and RVS (RP) Signals

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

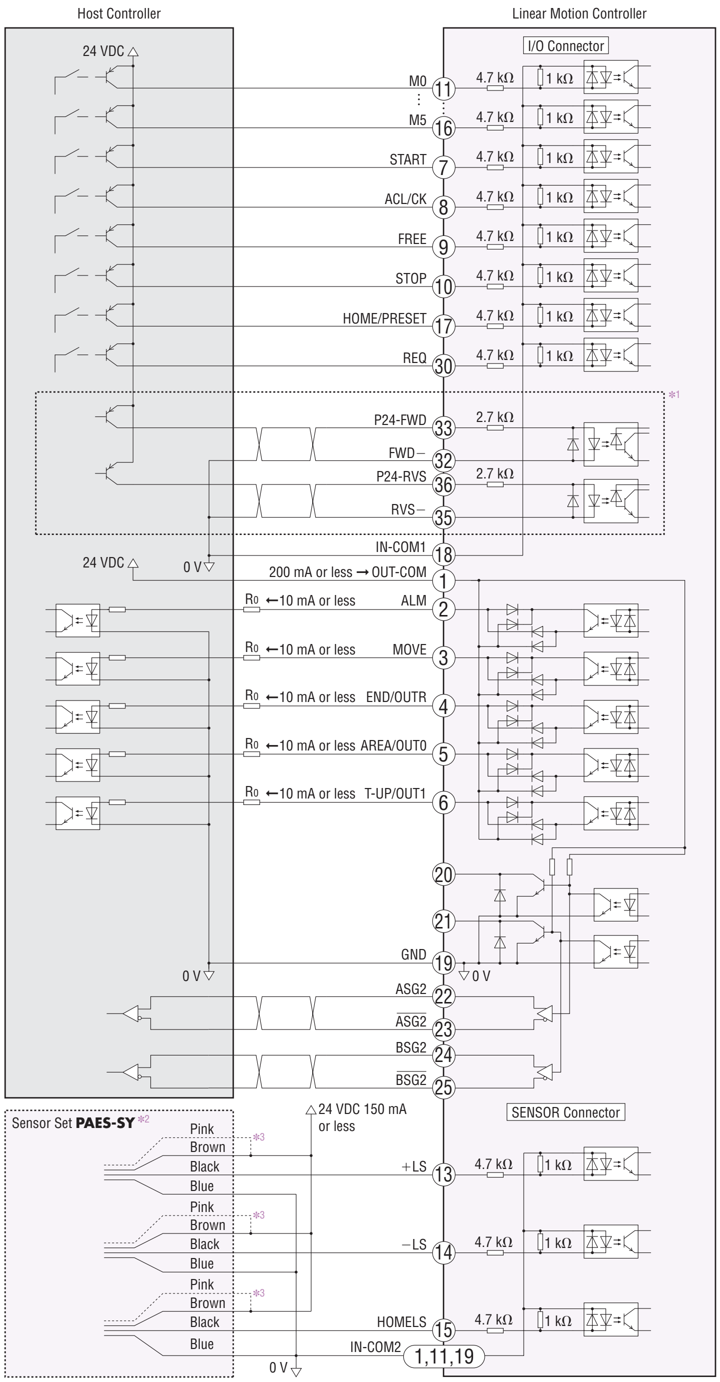


When connecting to a line driver output circuit



◇Controller Mode

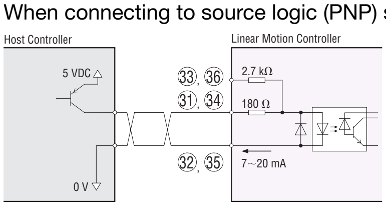
· Source Logic (PNP) Specification



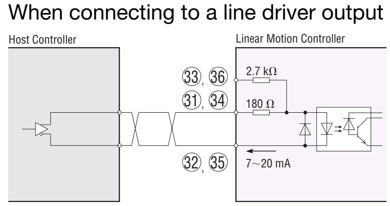
✻1 For connection of 31 to 36 pins, refer to "FWD (FP) and RVS (RP) Signals" as shown below.
✻2 An accessory sensor set is also available (sold separately.)
✻3 Connect this line if the normally closed (NC) logic is used.

◇FWD (FP) and RVS (RP) Signals

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

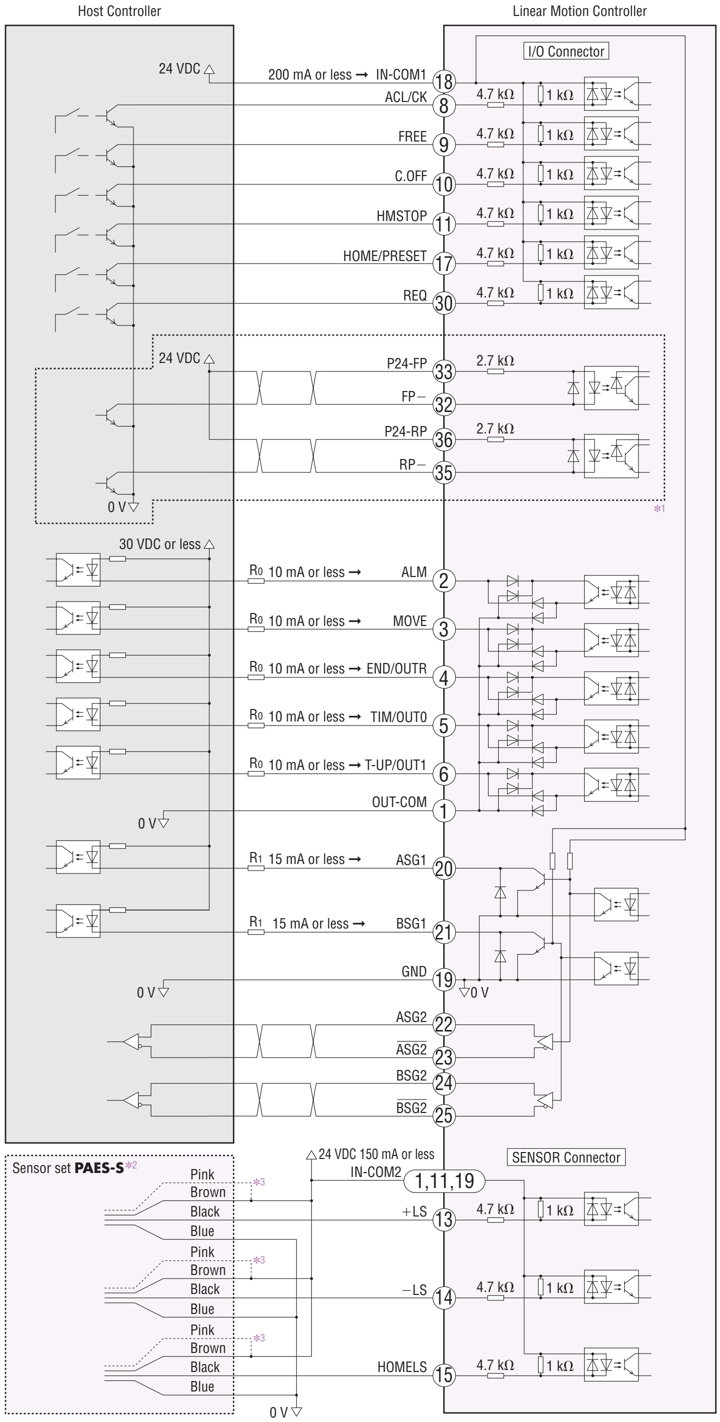


When connecting to a line driver output circuit



◇Driver Mode

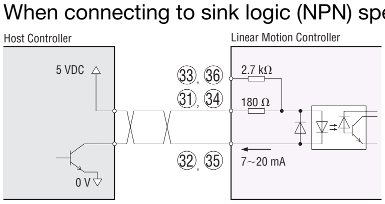
· Sink Logic (NPN) Specification



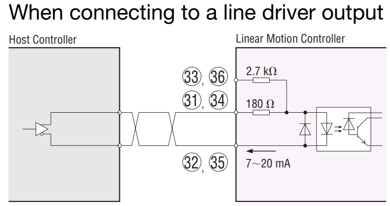
✻1 For connection of 31 to 36 pins, refer to "FWD (FP) and RVS (RP) Signals" as shown below.
✻2 An accessory sensor set is also available (sold separately.)
✻3 Connect this line if the normally closed (NC) logic is used.

◇FWD (FP) and RVS (RP) Signals

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

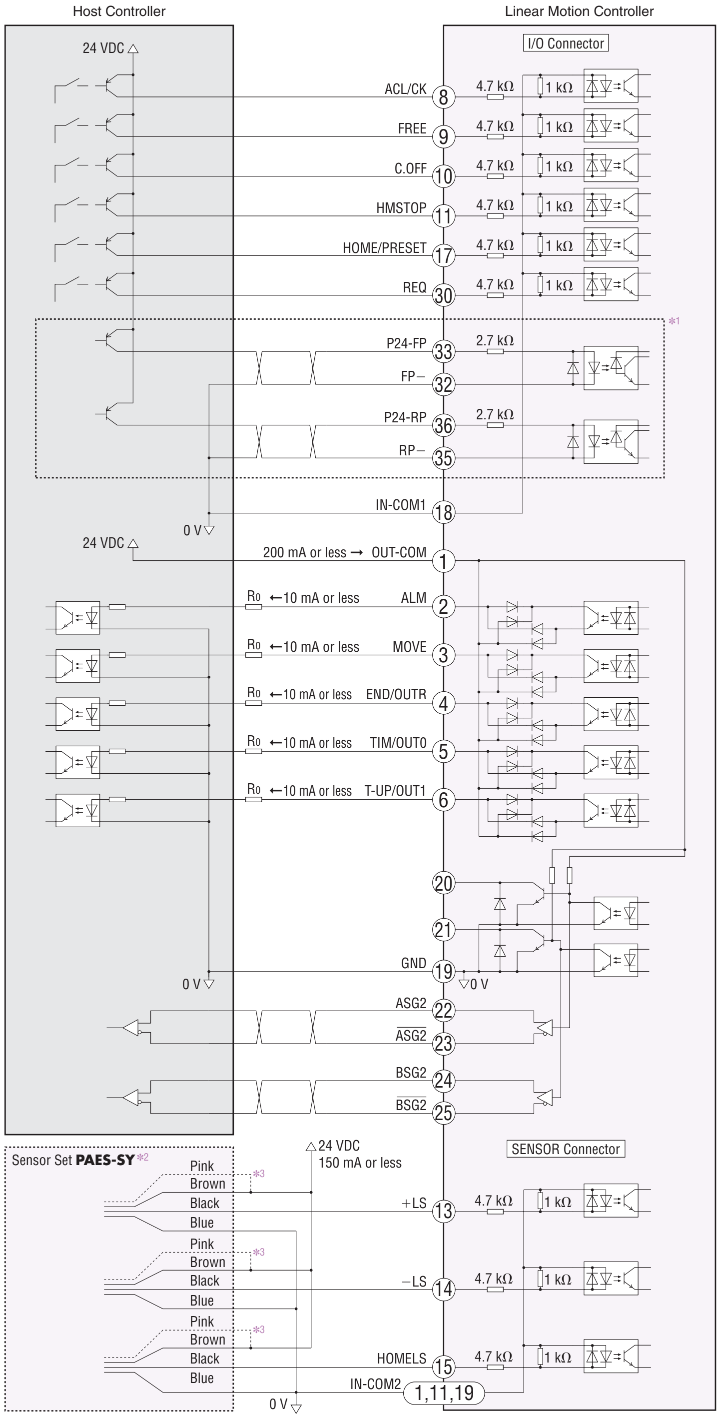


When connecting to a line driver output circuit



◇Driver Mode

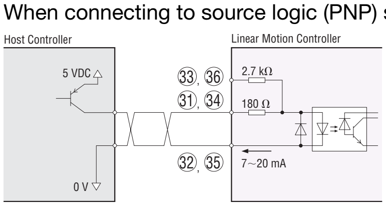
· Source Logic (PNP) Specification



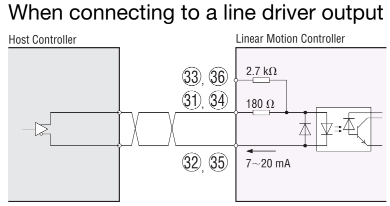
✻1 For connection of 31 to 36 pins, refer to “FWD (FP) and RVS (RP) Signals” as shown below.
✻2 An accessory sensor set is also available (sold separately.)
✻3 Connect this line if the normally closed (NC) logic is used.

◇FWD (FP) and RVS (RP) Signals

When connecting to source logic (PNP) 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 linear slide or the cylinder 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

◇SPV/EZCⅡ/EZA/PWAⅡ Series

For 24 VDC, Single-Phase 100-115 VAC, Single-Phase 200-230 VAC*

*Only for **EZCⅡ** and **EZA** Series

Standard Cables (Without electromagnetic brake/with electromagnetic brake)

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

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

Flexible Cables (Without electromagnetic brake/with electromagnetic brake)

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

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

◇SPV/PWAⅡ Series

For Single-Phase 200-230 VAC

Standard Cables (Without electromagnetic brake/with electromagnetic brake)

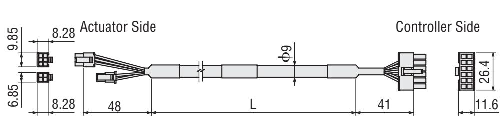
Length (L)	Model
1 m	**CC010ES-3**
2 m	**CC020ES-3**
3 m	**CC030ES-3**
5 m	**CC050ES-3**
7 m	**CC070ES-3**
10 m	**CC100ES-3**
15 m	**CC150ES-3**
20 m	**CC200ES-3**

Flexible Cables (Without electromagnetic brake/with electromagnetic brake)

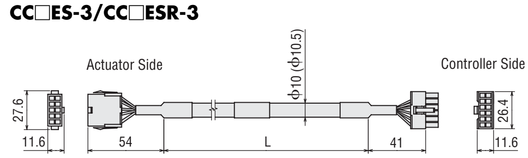
Length (L)	Model
1 m	**CC010ESR-3**
2 m	**CC020ESR-3**
3 m	**CC030ESR-3**
5 m	**CC050ESR-3**
7 m	**CC070ESR-3**
10 m	**CC100ESR-3**
15 m	**CC150ESR-3**
20 m	**CC200ESR-3**

●Dimensions (Unit = mm)

CC□ES-2/CC□ESR-2



CC□ES-3/CC□ESR-3



Values in the parentheses are for flexible cables.

■Sensor Extension Cables (Applicable product: SPV/EZCⅡ/PWAⅡ Series) (RoHS)

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

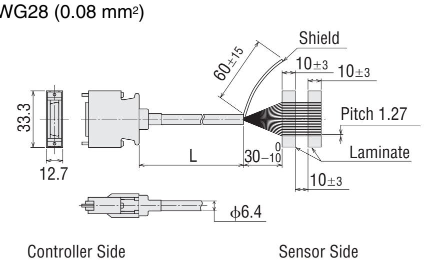
●Product Line

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

●Dimensions (Unit = mm)

CC20D□-1

Conductor: AWG28 (0.08 mm²)



Teaching Pendant

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

●Product Line

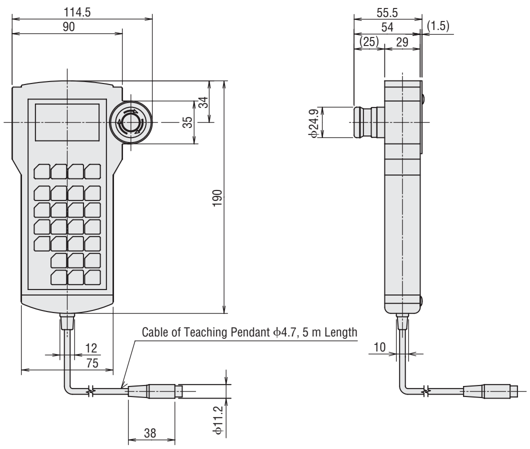
Model	EZT1

●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)

DXF D416



●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 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 liniear motion 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)

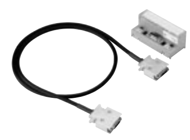
Item	Model: **EZED2**	
Operating Software	Microsoft® Windows® 2000 Professional Service Pack 4 or later (hereinafter referred to as "Windows® 2000") Microsoft® Windows® XP Home Edition Service Pack 2 or later (hereinafter referred to as "Windows® XP") Microsoft® Windows® XP Professional Edition Service 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.)	
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.

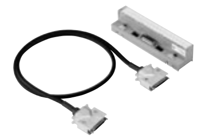
Connector — Terminal Block Conversion Unit RoHS

A conversion unit that connects a driver to a host controller using a terminal block.

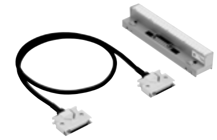
- With a signal name plate for easy, one-glance identification of driver signal names
- DIN-rail mountable
- Cable length: 1 m



CC20T1



CC36T1



CC50T1

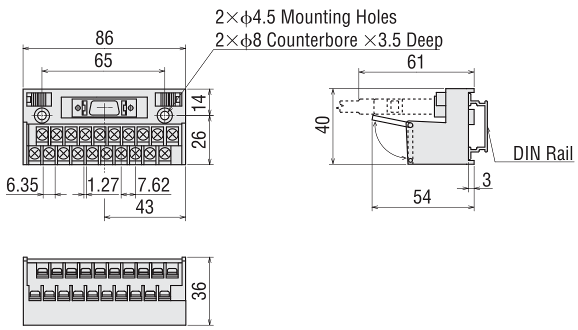
Product Line

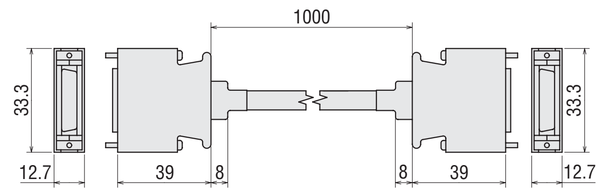
Model	Connector
CC20T1	For sensor I/O connector
CC36T1	For I/O connector
CC50T1	For connection between the **EMP** Series controller and host controller

Dimensions (Unit = mm)

CC20T1

DXF B437



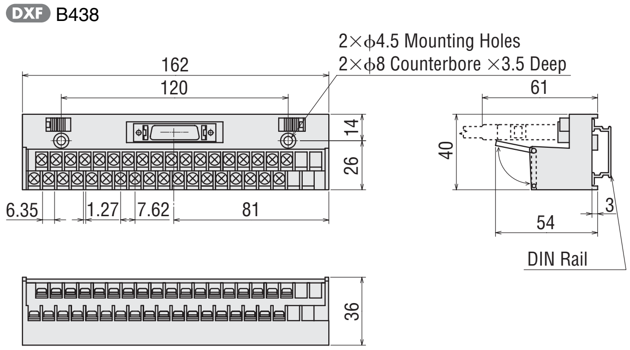


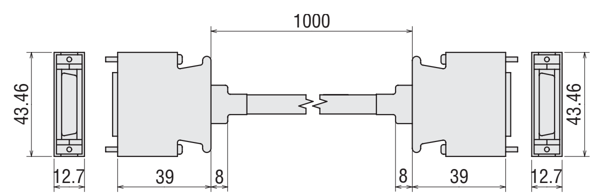
Terminal Block Pin No.

11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10

CC36T1

DXF B438



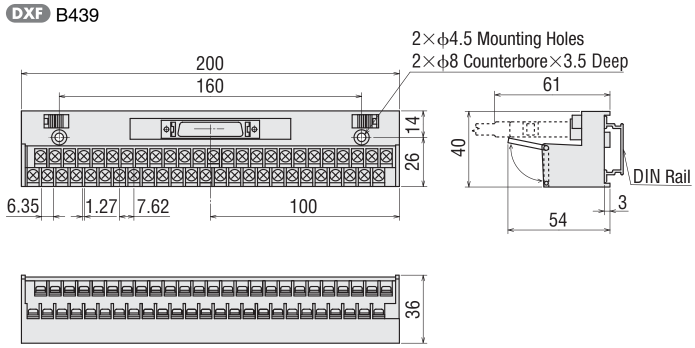


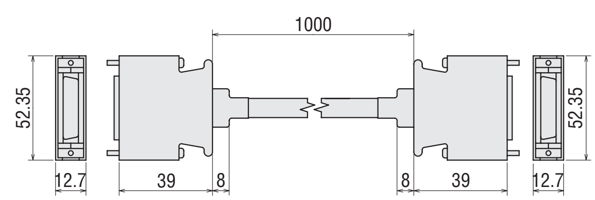
Terminal Block Pin No.

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	

CC50T1

DXF B439



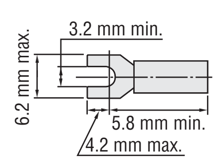


Terminal Block Pin No.

26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

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)

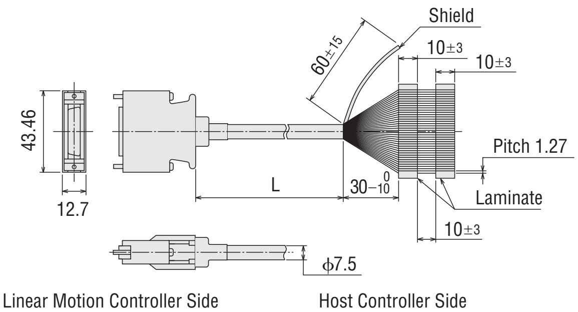
This cable is used for connection between the linear motion controller and the host controller.
A half-pitch connector allowing one-touch connection to the controller is attached at one end of the flat cable.

Product Line

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

Dimensions (Unit = mm)

Conductor: AWG28 (0.08 mm²)



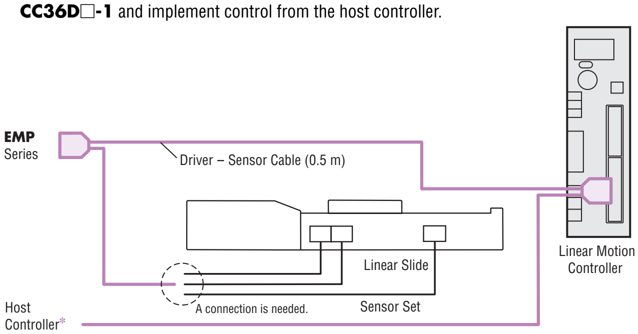
Driver — Sensor Cable (Applicable product: **SPV**/**EZCⅡ**/**PWAⅡ** Series)

This cable is used for connecting the linear motion controller and **EMP** Series controller.

Product Line

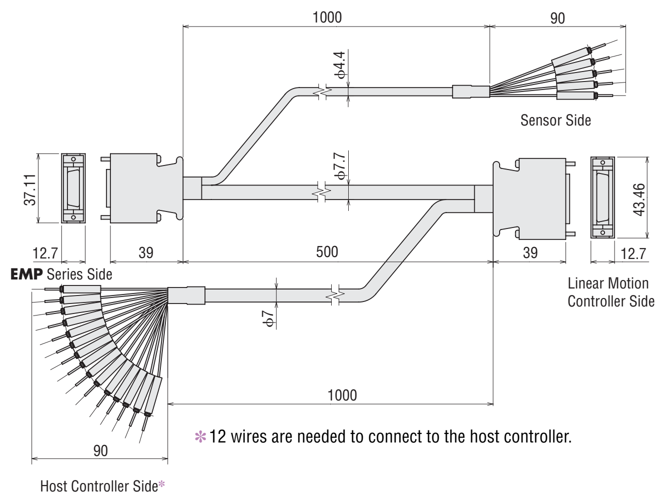
Model	Length	Applicable **EMP** Series
CC005EZ6-EMPD	0.5 m	**EMP400** Series

● The current position output function MOVE output, HMSTOP input of the linear motion controller is not available. To use the current position output function, use the I/O cable **CC36D□-1** and implement control from the host controller.



*The following signals are connected to the host controller:
A-phase/B-phase pulse, alarm clear, motor non-excitation/electromagnetic brake release, preset, all windings off

Dimensions (Unit = mm)



Battery Set (RoHS)

This battery set is needed to use the controller in the absolute mode.
Dedicated battery holder is included.

Product Line

Model	**PAEZ-BT2H**

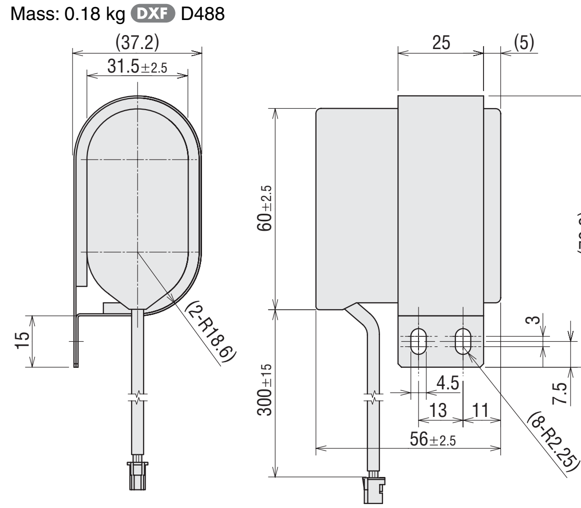
Specifications

Item	Model: **PAEZ-BT2H**
Battery Type	Cylindrical sealed nickel-cadmium storage cell
Nominal Voltage	2.4 V
Rated Capacity	2000 mAh
Mass	180 g
Life	Approx. 4 years*1 *2 *3
Data Retention Period	Approx. 360 hours (Approx. 15 days)*1 *4
Ambient Temperature	0～+40˚C (non-freezing)
Ambient Humidity	20～85%

*1 At an ambient temperature of 20˚C
*2 Calculated by assuming the following conditions of use (one-week cycle)
The battery is charged for eight hours and used for 16 hours to back up data on six days in a week.
The battery is used to back up data for all 24 hours on one day in a week.
*3 The battery that came with the product is not charged. Charge the battery for at least 48 hours before using it.
*4 After the power is cut off with the battery fully charged.

Dimensions (Unit = mm)

Mass: 0.18 kg DXF D488



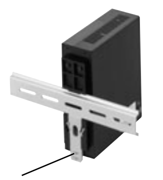
EZ limo absolute mode uses Ni-Cd rechargeable batteries.
Disposal of the used batteries is subject to each country's regulations on environmental control. Please contact Oriental Motor if you have any questions regarding disposal of the batteries.

DIN Rail Mounting Plate (RoHS)

This mounting plate is convenient for installing the controller of the **EZ limo** on DIN rails easily. (Mounting screws are included.)

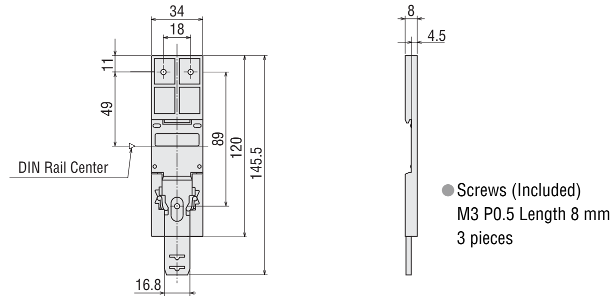
●Product Line

Model	**PADP01**



DIN Rail Mounting Plate

●Dimensions (Unit = mm)



Cable Holders (Applicable product: **SPV** Series)

●This cable holder protects and guides cables in dual or three axes combinations.
●It can be combined with the mounting bracket (**PAB3**).
●Two sizes are provided for accommodating different numbers of cables.
Internal dimensions – Standard type: 14 mm × 20 mm/Wide type: 14 mm × 40 mm

Standard Type　Wide Type

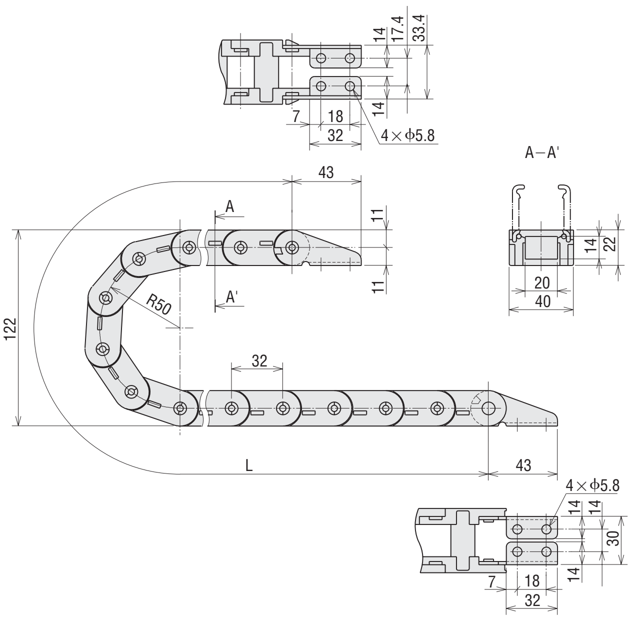
●Product Line

Applicable Product		Applicable Cable Holder		
Applicable Product	X-Axis Stroke [mm]	Length (L) [mm]	Standard Type Model	Wide Type Model
SPV Series	50*, 100	768	**PACB-1**	**PACB2-1**
	200	864	**PACB-2**	**PACB2-2**
	300	960	**PACB-3**	**PACB2-3**
	400	1056	**PACB-4**	**PACB2-4**
	500*, 600	1248	**PACB-6**	**PACB2-6**
	700*, 800	1440	**PACB-8**	**PACB2-8**
	900*, 1000	1632	**PACB-10**	**PACB2-10**
	1100*, 1200*, 1300	1920	**PACB-13**	**PACB2-13**
	1400*, 1500	2112	**PACB-15**	**PACB2-15**

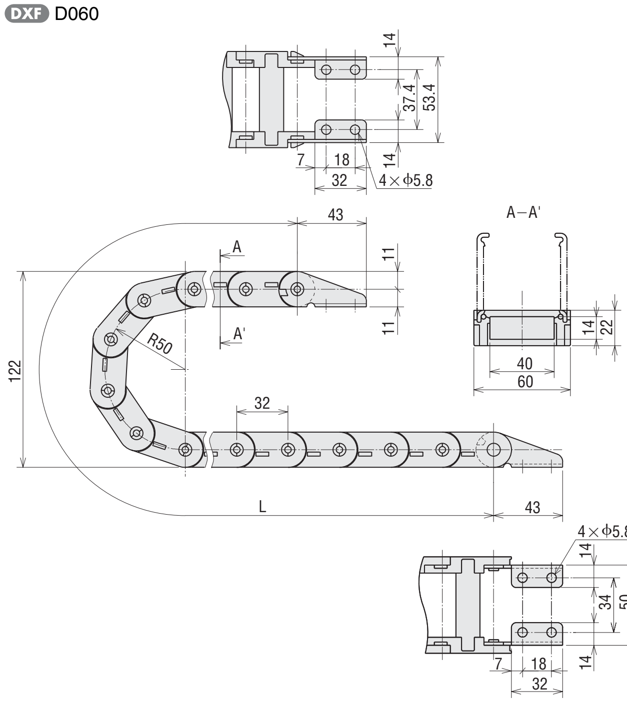
*If you are using the product whose stroke is denoted by an asterisk (*), adjust the length of each applicable cable holder.

●Dimensions (Unit = mm)

PACB-□
DXF D059



PACB2-□
DXF D060



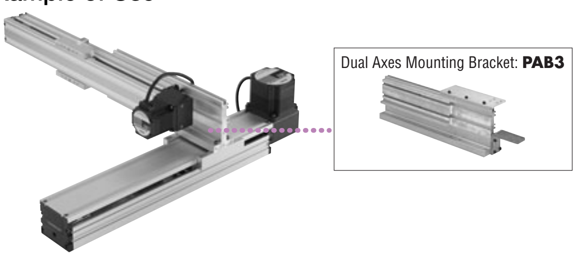
■Dual Axes Mounting Bracket (Applicable product: **SPV** Series)

- A dedicated mounting bracket for X-Y mounting when two linear slides are combined
- Any product with a stroke up to 400 mm can be installed as the Y-axis.
- The mounting bracket comes with a metal bracket for cable holder (cable holder sold separately).

●Product Line

Applicable Product	Mounting Bracket Model
SPV Series	**PAB3**

●Example of Use



●Example of Combination

X-Axis	Y-Axis*	Maximum Transportable Mass of Y-Axis
SPV8	**SPV6**	5 kg

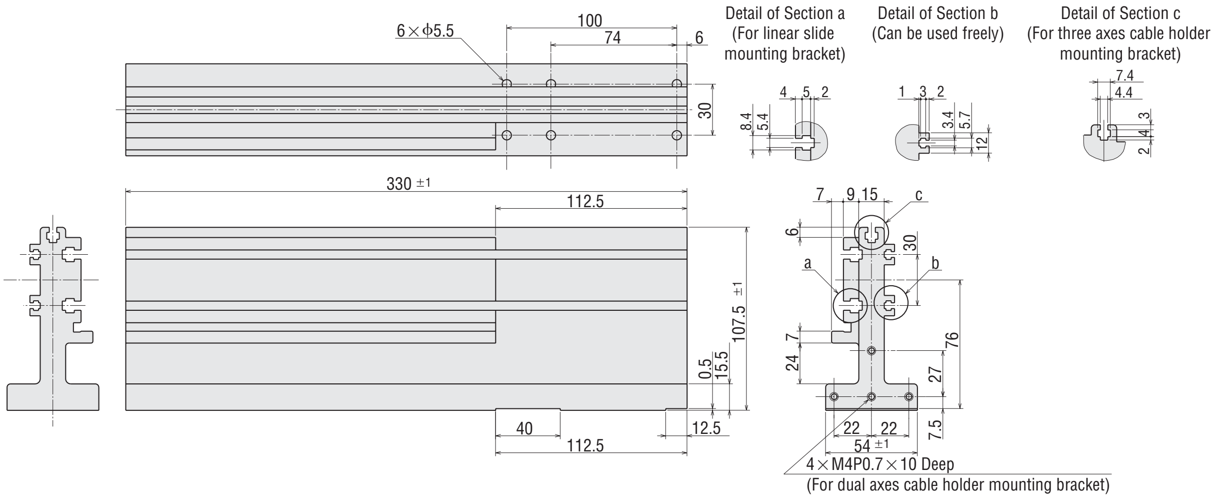
*With all combinations, the maximum Y-axis stroke is 400 mm.

●Dimensions (Unit = mm)

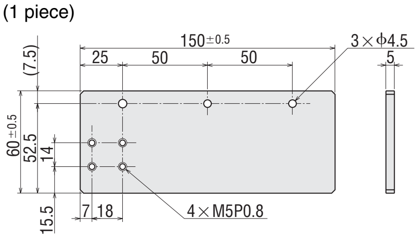
Dual Axes Mounting Bracket

Mass: 2.3 kg

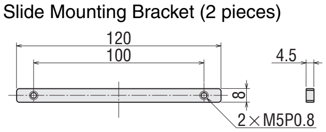
DXF D070



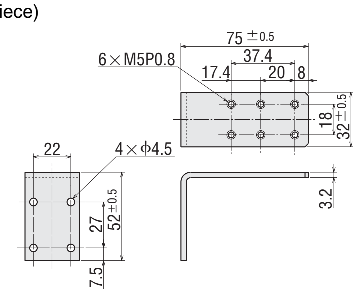
Three Axes Cable Holder Mounting Bracket
(1 piece)



Linear Slide Mounting Bracket (2 pieces)



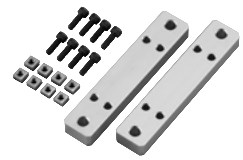
Dual Axes Cable Holder Mounting Bracket
(1 piece)



- All the screws and nuts required for mounting are included.

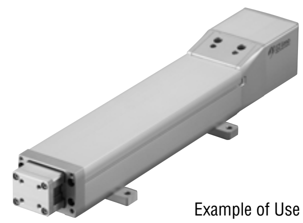
■Mounting Plate (Applicable product: **EZA** Series) (RoHS)

This plate is provided so that the **EZA** Series Cylinder can be installed and secured with screws mounted from above. The mounting plate comes with screws to secure it to the **EZA** Series Cylinder (T-groove is used). The customer must provide mounting screws with which to install the cylinder to the corresponding equipment.



●Product Line

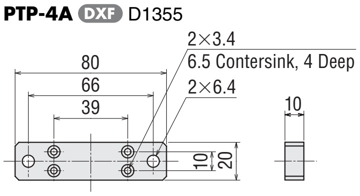
Model Name	Applicable Product	Mass (g)
PTP-A4	**EZA4**	80
PTP-A6	**EZA6**	100



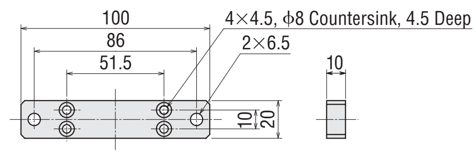
Example of Use

●Dimensions (Unit = mm)

PTP-4A DXF D1355

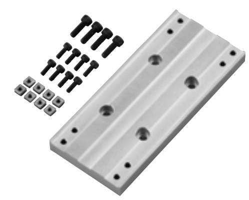


PTP-6A DXF D1356



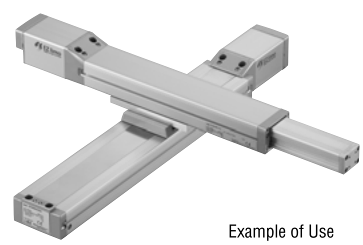
■Dual Axes Mounting Plate (Applicable product: **EZSⅡ/EZA** Series) (RoHS)

This plate is provided for easy installation of the **EZA** Series on the table of the **EZSⅡ** Series Motorized Slider. It is a dedicated product that combines the **EZA** Series and the **EZSⅡ** Series.



●Product Line

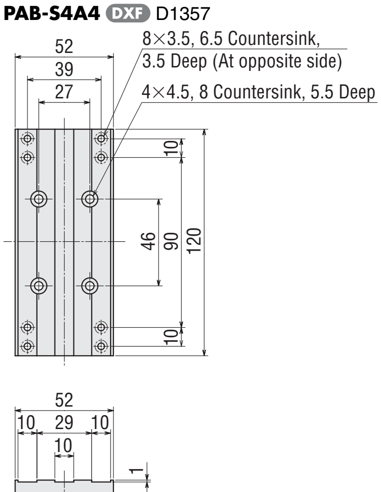
Model Name	Applicable Product	Mass (g)
PAB-S4A4	Combination of **EZS4** and **EZA4**	150
PAB-S6A4	Combination of **EZS6** and **EZA4**	170
PAB-S6A6	Combination of **EZS6** and **EZA6**	205

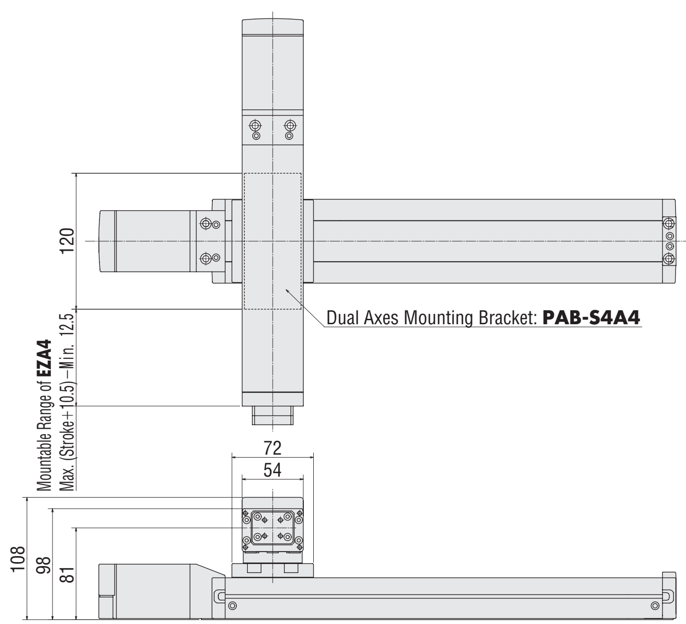


Example of Use

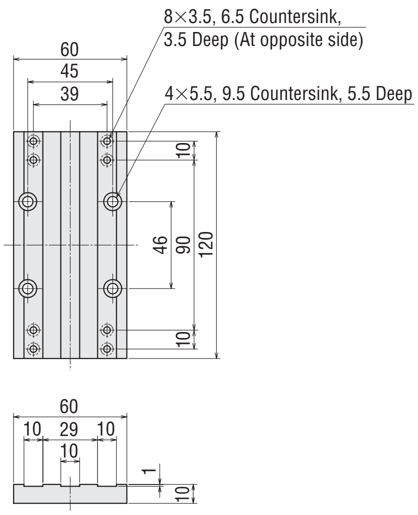
●Dimensions (Unit = mm)

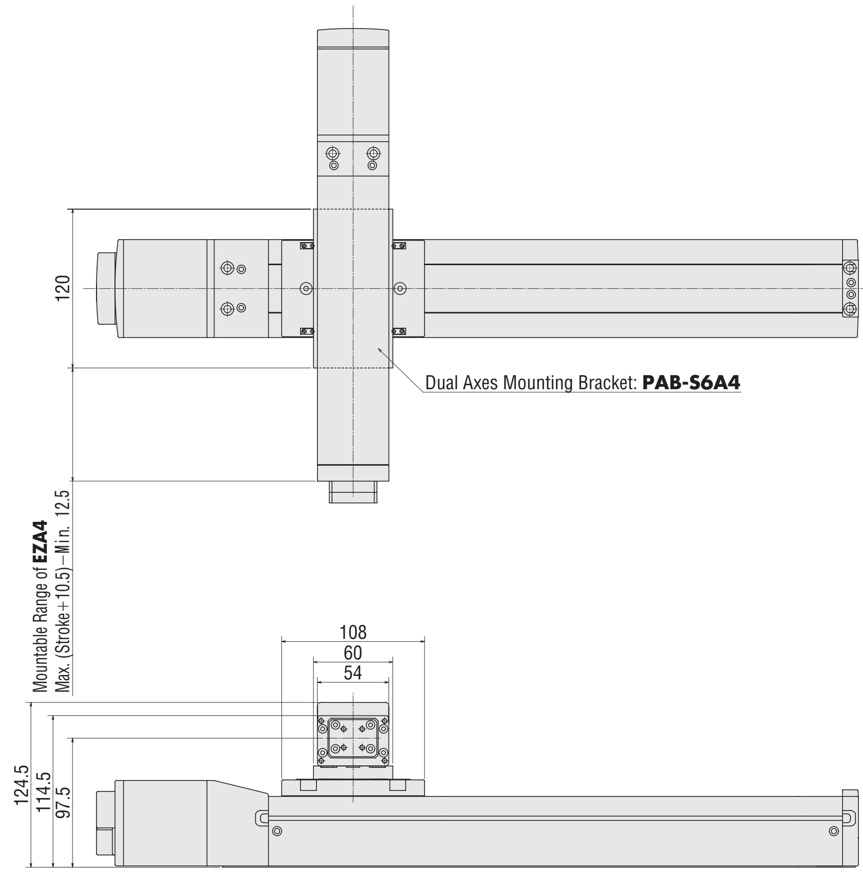
PAB-S4A4 DXF D1357



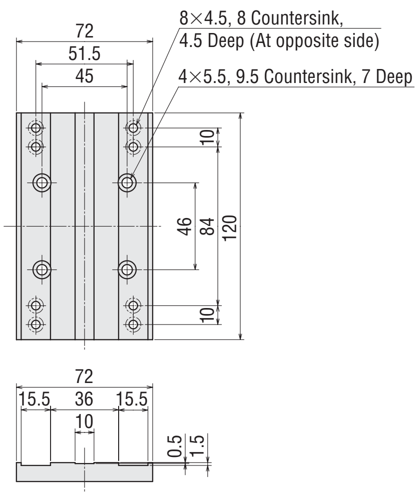


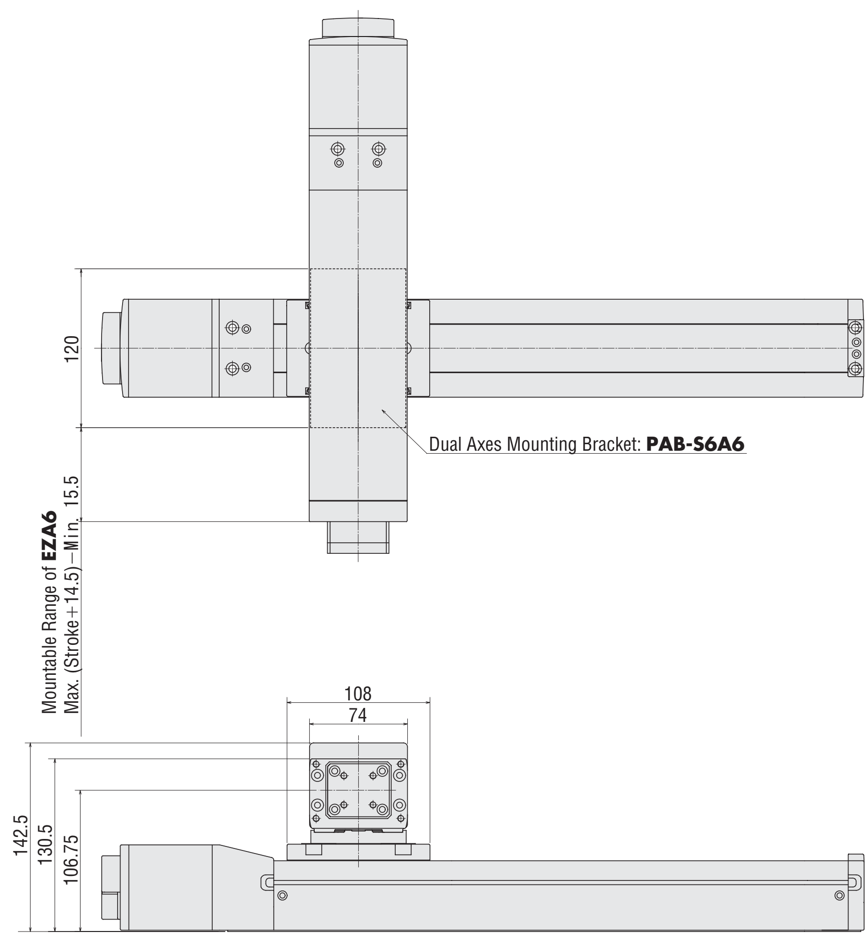
PAB-S6A4 DXF D1358





PAB-S6A6 DXF D1359





Selection Calculations

After you have determined which series to use, select the appropriate model. Select a linear slide/cylinder of the size that best suits your application.
Select the appropriate model by following the steps below.

(1) Select a Linear Slide/Cylinder Satisfying the Required Transportable Mass

By referring to the product specifications, select a linear slide/cylinder satisfying the required transportable mass.

Condition: Drive a load 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 the cylinder model **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."

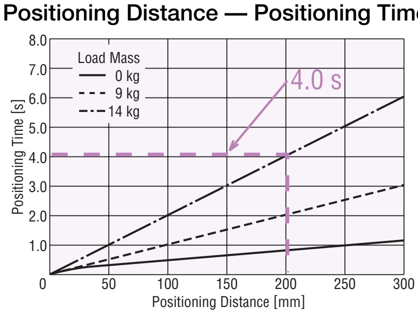
Notes:
- The calculated positioning time does not include the settling time.
  Use a settling time of 0.15 s as a reference.
- The running duty, which represents the relationship of running time and stopping time, should be kept to 50% or less (reference).
  Running duty [%] = running time [s] × 100/(running 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 Linear Slide/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 linear slide/cylinder based on the time calculated in step (2).

●**SPV** Series Linear Slides

◇Operating Speed of the Linear Slide
Refer to the "maximum speed specification in Specification of Linear Slide."

◇Acceleration of the Linear Slide
Check using the "Load Mass — Acceleration" graph.

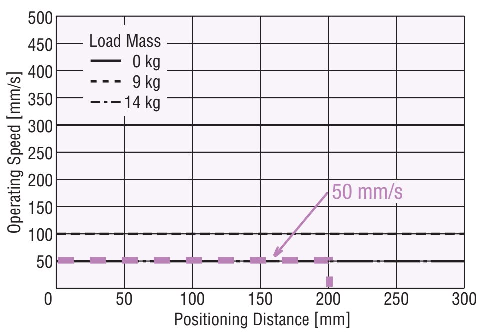
●**EZCⅡ/EZA/PWAⅡ** Series Cylinders

◇Operating Speed and Acceleration of the Cylinder

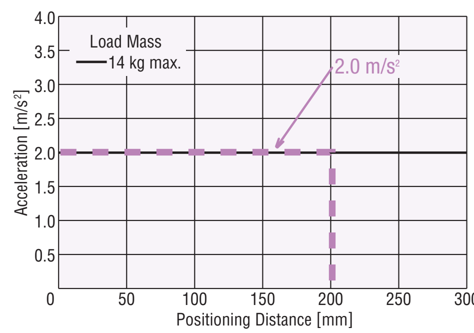
Check the operating speed and acceleration by referring to "Positioning Distance — Operating Speed" and "Positioning Distance – Acceleration.".

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/s^2.

EZC4E040-K "●Positioning Distance — Operating Speed"



EZC4E040-K "●Positioning Distance — Acceleration"

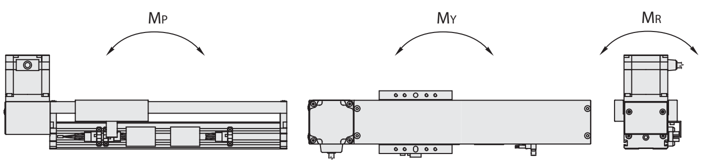


(4) Check the Load Moment

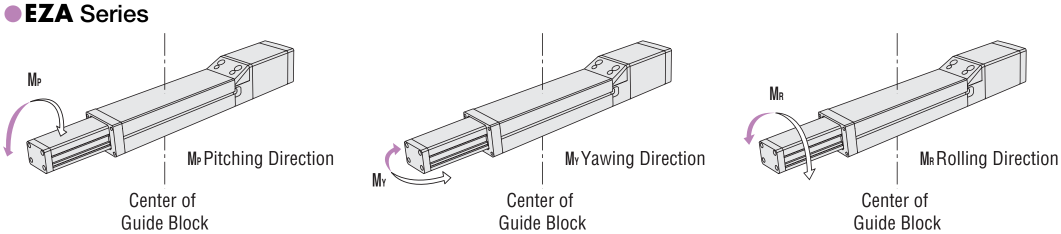
For the **SPV** Series linear slide and **EZA** Series cylinders, calculation of the load moment that will generate under the applicable condition is necessary. For the **EZA** Series, "maximum load moment in Specification of Cylinder" indicates the load moment of the built-in guide. Moment of the rod must be considered. Maximum load moment is the total value of rod moment and load moment. Calculate the load moment referring to the table below. Confirm that the calculated result is smaller than the "Maximum Load Moment" specified in product specifications. If the maximum load moment is exceeded, select another model.

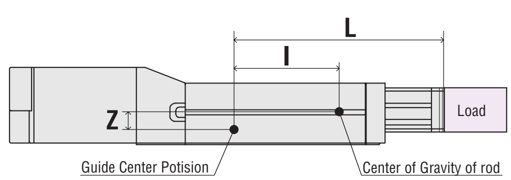
The maximum load moment has been calculated by considering the estimated traveling life of each model. If a given model is operated at load moment exceeding the designed limit, the life of the linear slide/cylinder will decrease. The life is also affected by the operating environment and conditions.

●**SPV** Series



●**EZA** Series





EZA4

Stroke		50	100	150	200	250	300
Mass of Rod (kg)		0.2	0.28	0.36	0.44	0.52	0.6
L	Rod Overhung Length from Center of Guide Block (mm)	125	175	225	275	325	375
l	Length from Center of Guide Block to Center of Gravity of Rod (mm)	43	68.5	94.5	120	146	171
Z	Height from Center of Guide Block to Center of Gravity of Rod (mm)	21.5					

EZA6

Stroke		50	100	150	200	250	300
Mass of Rod (kg)		0.33	0.44	0.548	0.653	0.758	0.863
L	Rod Overhung Length from Center of Guide Block (mm)	139	189	239	289	339	389
l	Length from Center of Guide Block to Center of Gravity of Rod (mm)	44	70.5	96.5	122	147	173
Z	Height from Center of Guide Block to Center of Gravity of Rod (mm)	28					

How to Calculate the Speed for Sensorless Return to Home Operation

The **EZA** Series can perform high-speed, sensorless return to home operation. The maximum return to home speed is 100 mm/s when the lead is 12 mm, and the maximum speed becomes 50 mm/s when the lead is 6 mm. Select the applicable calculation formula by referring to the cylinder installation conditions and calculate the maximum settable speed for return to home operation from the specific overhung length and load mass.

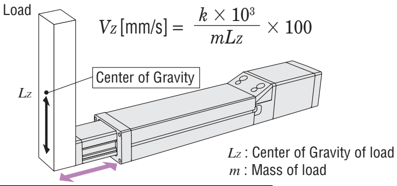
Note that the load will receive an impact if the sensorless return to home operation is performed at high speed.

✻If there is an overhung load on both the Z-axis and Y-axis, compare Vz _ and VY. The smaller of the two provides the maximum settable speed for return to home operation.

●Cylinder Installation Conditions (Horizontal, wall—mounted or ceiling—mounted)

◇Overhung in Z-Axis Direction

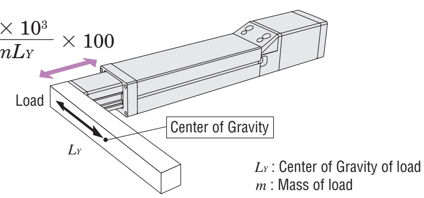
$$V_Z\,[\text{mm/s}] = \frac{k \times 10^3}{mL_Z} \times 100$$



Cylinder Size	Strength Coefficient k	
	Lead 12 mm	Lead 12 mm
EZA4	38.0	60.8
EZA6	10.1	9.9

◇Overhung in Y-Axis Direction

$$V_Y\,[\text{mm/s}] = \frac{k \times 10^3}{mL_Y} \times 100$$

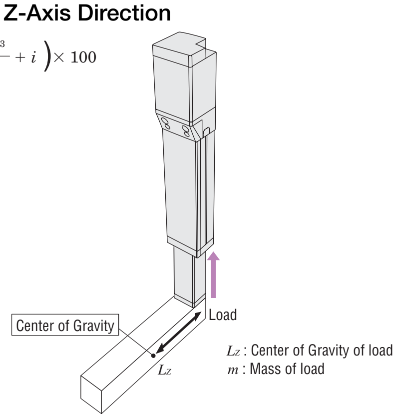


Cylinder Size	Strength Coefficient k	
	Lead 12 mm	Lead 12 mm
EZA4	21.1	33.8
EZA6	2.9	3.8

●Cylinder Installation Conditions (Vertical: Upward)

◇Overhung in Z-Axis Direction

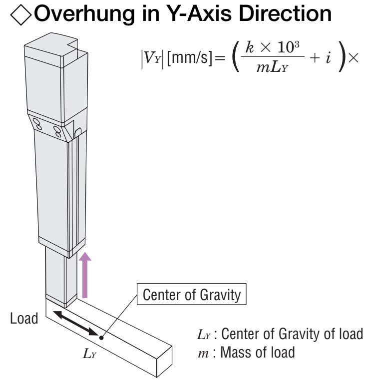
$$|V_Z|\,[\text{mm/s}] = \left(\frac{k \times 10^3}{mL_Z} + i\right) \times 100$$



Cylinder Size	Strength Coefficient k		Upward Coefficient i	
	Lead 12 mm	Lead 6 mm	Lead 12 mm	Lead 6 mm
EZA4	58.9	60.8	3.2	3.3
EZA6	12.2	17.7	0.3	0.5

◇Overhung in Y-Axis Direction

$$|V_Y|\,[\text{mm/s}] = \left(\frac{k \times 10^3}{mL_Y} + i\right) \times 100$$

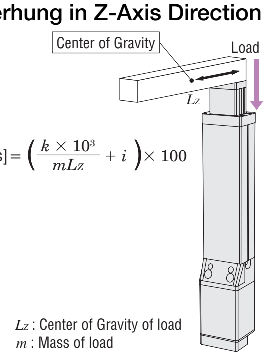


Cylinder Size	Strength Coefficient k		Upward Coefficient i	
	Lead 12 mm	Lead 6 mm	Lead 12 mm	Lead 6 mm
EZA4	32.7	33.8	3.2	3.3
EZA6	4.7	6.9	0.5	0.5

●Cylinder Installation Conditions (Vertical: Downward)

◇Overhung in Z-Axis Direction

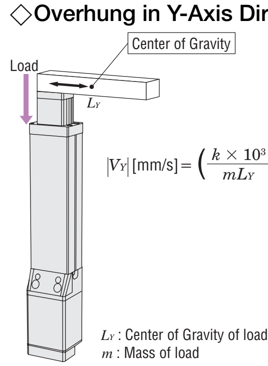
$$|V_Z|\,[\text{mm/s}] = \left(\frac{k \times 10^3}{mL_Z} + i\right) \times 100$$



Cylinder Size	Strength Coefficient k		Downward Coefficient i	
	Lead 12 mm	Lead 6 mm	Lead 12 mm	Lead 6 mm
EZA4	35.1	41.5	−1.9	−2.2
EZA6	5.1	3.9	−0.1	−0.2

◇Overhung in Y-Axis Direction

$$|V_Y|\,[\text{mm/s}] = \left(\frac{k \times 10^3}{mL_Y} + i\right) \times 100$$



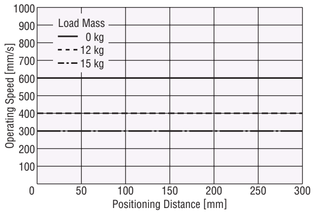
Cylinder Size	Strength Coefficient k		Downward Coefficient i	
	Lead 12 mm	Lead 6 mm	Lead 12 mm	Lead 6 mm
EZA4	19.5	23.0	−1.9	−2.2
EZA6	2.0	1.5	−0.1	−0.2

EZA Series Positioning Distance — Operating Speed, Positioning Distance — Acceleration

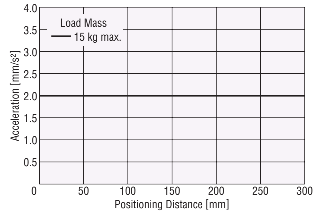
EZA4D (Lead 12 mm, 24 VDC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

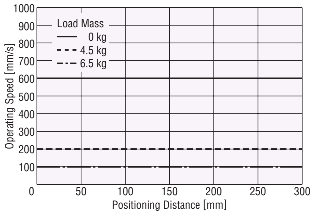


Positioning Distance — Acceleration

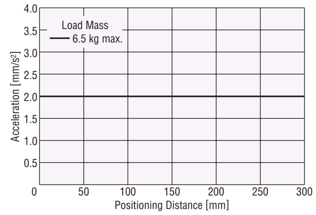


◇Vertical Installation

● Positioning Distance — Operating Speed



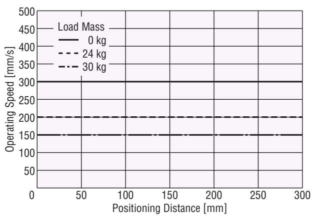
Positioning Distance — Acceleration



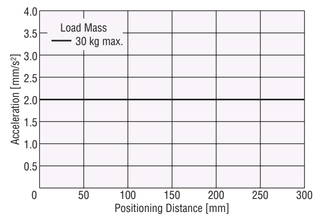
EZA4E (Lead 6 mm, 24 VDC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

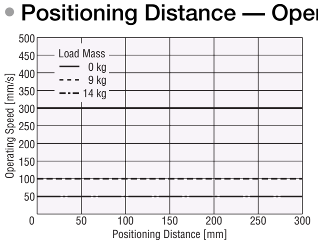


Positioning Distance — Acceleration

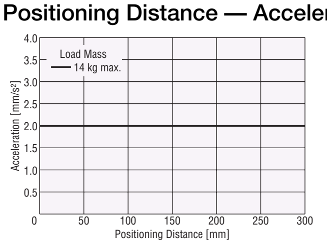


◇Vertical Installation

● Positioning Distance — Operating Speed



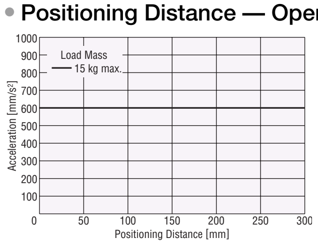
Positioning Distance — Acceleration



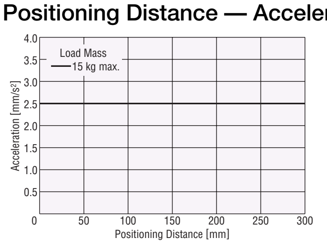
EZA4D (Lead 12 mm, Single-Phase 100 VAC/Single-Phase 200-230 VAC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

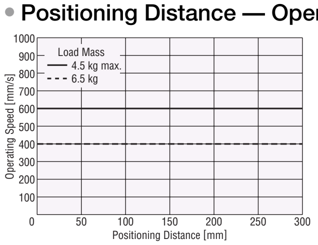


Positioning Distance — Acceleration

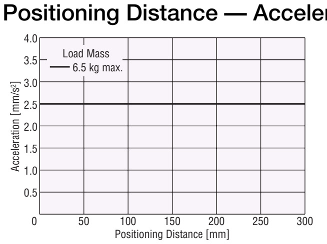


◇Vertical Installation

● Positioning Distance — Operating Speed



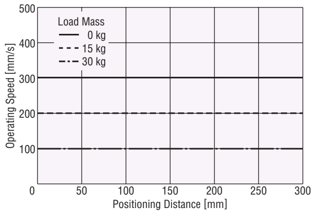
Positioning Distance — Acceleration



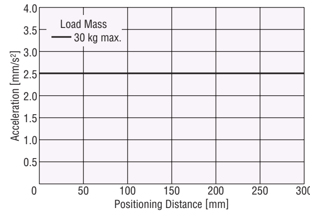
EZA4E (Lead 6 mm, Single-Phase 100 VAC/Single-Phase 200-230 VAC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

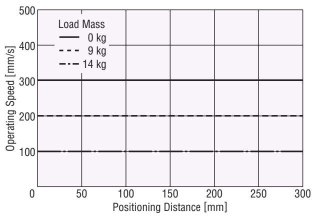


Positioning Distance — Acceleration

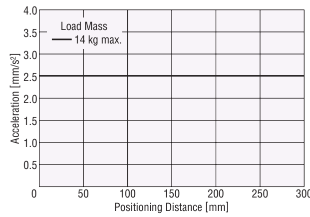


◇Vertical Installation

● Positioning Distance — Operating Speed



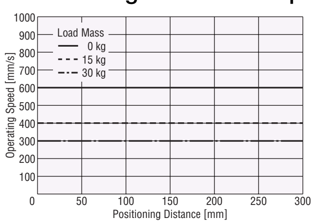
Positioning Distance — Acceleration



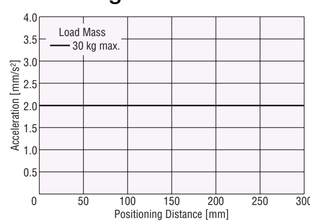
EZA6D (Lead 12 mm, 24 VDC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

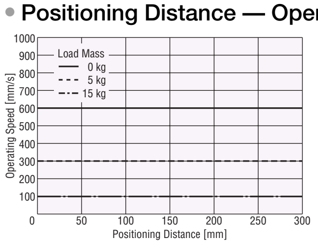


Positioning Distance — Acceleration

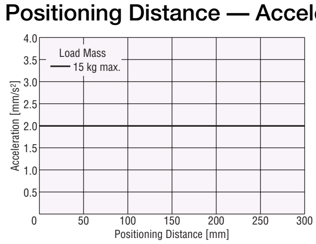


◇Vertical Installation

● Positioning Distance — Operating Speed



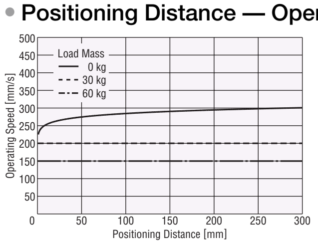
Positioning Distance — Acceleration



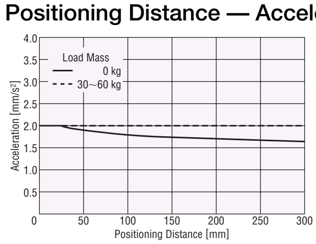
EZA6E (Lead 6 mm, 24 VDC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

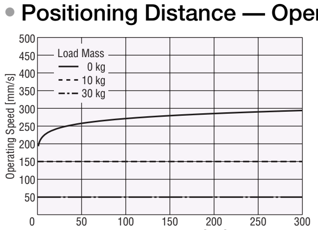


Positioning Distance — Acceleration

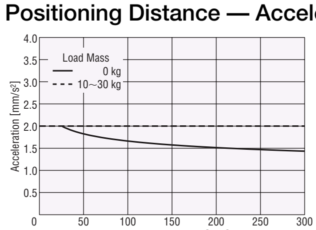


◇Vertical Installation

● Positioning Distance — Operating Speed



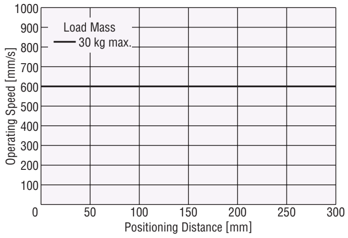
Positioning Distance — Acceleration



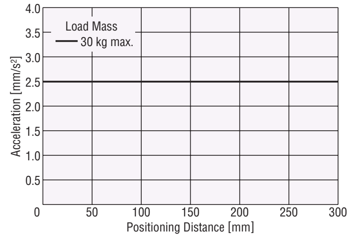
●EZA6D (Lead 12mm, Single-Phase 100 VAC/Single-Phase 200-230 VAC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

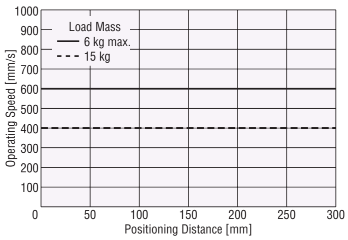


Positioning Distance — Acceleration

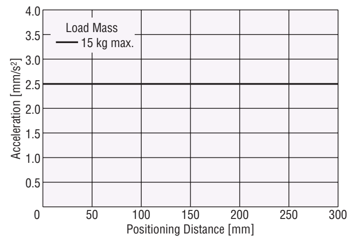


◇Vertical Installation

● Positioning Distance — Operating Speed



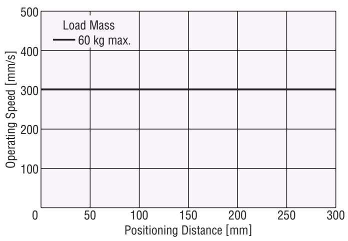
Positioning Distance — Acceleration



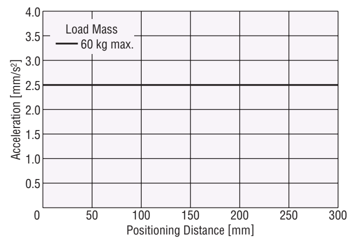
●EZA6E (Lead 6 mm, Single-Phase 100 VAC/Single-Phase 200-230 VAC)

◇Horizontal Installation

● Positioning Distance — Operating Speed

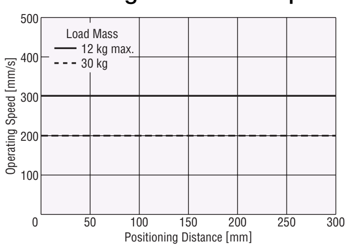


Positioning Distance — Acceleration

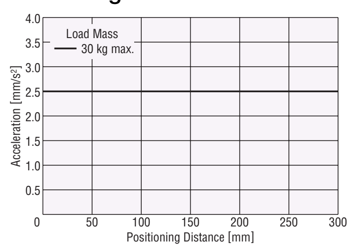


◇Vertical Installation

● Positioning Distance — Operating Speed



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).

Specifications are subject to change without notice.

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