

Rack and Pinion System

# L Series

*α*STEP AZ Series Equipped



# How to Read Specifications Table

## Specifications

Frame Size		60 mm	80 mm
Actuator Product Name	Standard	<b>LM2</b> □ <b>500AZAC</b> -□	<b>LM4</b> □ <b>500AZAC</b> -□
	with Electromagnetic Brake	<b>LM2</b> □ <b>500AZMC</b> -□	<b>LM4</b> □ <b>500AZMC</b> -□
Driver Product Name	Built-in Controller Type	<b>AZD-AD</b> (Single-Phase 100-120 VAC), <b>AZD-CD</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type with RS-485 Communication	<b>AZD-AX</b> (Single-Phase 100-120 VAC), <b>AZD-CX</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type	<b>AZD-A</b> (Single-Phase 100-120 VAC), <b>AZD-C</b> (Single-Phase/Three-Phase 200-240 VAC)	
Equipped Motor ( <b>AZ</b> Series)		<b>AZM66</b>	
① Maximum Speed	mm/s	500	
② Transportable Mass	kg	10 (250 mm/s) 7 (500 mm/s)	20 (250 mm/s) 7 (500 mm/s)
③ Maximum Acceleration	m/s <sup>2</sup>	1	
④ Thrust*1	N	110 (250 mm/s) 77 (500 mm/s)	220 (250 mm/s) 77 (500 mm/s)
⑤ Push Force	N	110	220
⑥ Holding Force	Power On	110	220
	with Electromagnetic Brake	110	220
⑦ Minimum Travel Amount	mm	0.01	
⑧ Rotor Inertia	J·kg·m <sup>2</sup>	370×10 <sup>-7</sup> (530×10 <sup>-7</sup> )*2	
⑨ Stroke	mm	100, 200, 300, 400, 500, 600, 700, or 800	100, 200, 300, 400, 500, 600, 700, 800, 900, or 1000
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15 to +6% 50/60Hz
	Input Current A	Single-Phase 100-120 VAC	3.8
		Single-Phase 200-240 VAC	2.3
		Three-Phase 200-240 VAC	1.4
Control Power Supply		24 VDC±5%*3 0.25 A (0.5A)*2	

● Depending on the product, limitations and caution may be required for usage. For details, refer to the notes on each product page.

### ① Maximum Speed

The maximum speed allowed when transporting the transportable mass.

### ② Transportable Mass

Mass that can be moved under operating performance of the rack and pinion motor.

### ③ Maximum Acceleration

The maximum acceleration allowed when the transportable mass is transferred.

### ④ Thrust

The force that the rack can push the load during constant speed operation.

### ⑤ Push Force

The pressure applied to the load at push-motion operation.

### ⑥ Holding Force

Holding force when the motor is stopped or when the electromagnetic brake is operating, while power is supplied.

### ⑦ Minimum Travel Amount

The minimum distance that the rack travels. (Factory setting)

### ⑧ Rotor Inertia

This refers to the inertia of the rotor inside the equipped motor.

### ⑨ Stroke

The maximum distance the rack can be pushed and pulled.

## Rack and Pinion System

# L Series $\alpha$ STEP AZ Series Equipped AC Power Supply Input

For technical references, regulations, and standards related to these products, please see the Oriental Motor website.

### Product Number

#### Rack and Pinion Motors

## LM 4 F 500 AZ M C - 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	<b>LM: L Series Rack and Pinion Motor</b>
②	Frame Size	<b>2:</b> 60 mm <b>4:</b> 80 mm
③	Moving Direction of Rack	<b>F:</b> Vertical to Mounting Foot Surface <b>B:</b> Horizontal to Mounting Foot Surface
④	Rack Maximum Speed	<b>40:</b> 40 mm/s <b>90:</b> 90 mm/s <b>500:</b> 500 mm/s
⑤	Equipped Motor	<b>AZ: AZ Series</b>
⑥	Motor Type	<b>A:</b> Standard <b>M:</b> with Electromagnetic Brake
⑦	Motor Power Supply Input	<b>C:</b> AC Power Supply Input Specifications
⑧	Stroke	<b>1:</b> 100 mm <b>2:</b> 200 mm <b>3:</b> 300 mm <b>4:</b> 400 mm <b>5:</b> 500 mm <b>6:</b> 600 mm <b>7:</b> 700 mm <b>8:</b> 800 mm <b>9:</b> 900 mm <b>10:</b> 1000 mm

#### Drivers

## AZD - C D

① ② ③

①	Driver Type	<b>AZD: AZ Series Driver</b>
②	Power Supply Input	<b>A:</b> Single-Phase 100-120 VAC <b>C:</b> Single-Phase/Three-Phase 200-240 VAC
③	Type	<b>D:</b> Built-in Controller Type <b>X:</b> Pulse Input Type with RS-485 Communication Blank: Pulse Input Type

#### Connection Cable Sets/Flexible Connection Cable Sets

## CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		<b>CC:</b> Cable
②	Length	<b>005:</b> 0.5 m <b>010:</b> 1 m <b>015:</b> 1.5 m <b>020:</b> 2 m <b>025:</b> 2.5 m <b>030:</b> 3 m <b>040:</b> 4 m <b>050:</b> 5 m <b>070:</b> 7 m <b>100:</b> 10 m <b>150:</b> 15 m <b>200:</b> 20 m
③	Reference Number	
④	Applicable Model	<b>Z: AZ Series</b>
⑤	Cable Type	<b>F:</b> Connection Cable Set <b>R:</b> Flexible Connection Cable Set
⑥	Electromagnetic Brake	Blank: without Electromagnetic Brake <b>B:</b> with Electromagnetic Brake

## Product Line

- Rack and Pinion Motors
- ◇ High-Speed Type



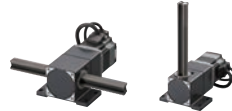
Frame Size	Product Name	List Price
60 mm	LM2□500AZAC-1	
	LM2□500AZAC-2	
	LM2□500AZAC-3	
	LM2□500AZAC-4	
	LM2□500AZAC-5	
	LM2□500AZAC-6	
	LM2□500AZAC-7	
	LM2□500AZAC-8	
80 mm	LM4□500AZAC-1	
	LM4□500AZAC-2	
	LM4□500AZAC-3	
	LM4□500AZAC-4	
	LM4□500AZAC-5	
	LM4□500AZAC-6	
	LM4□500AZAC-7	
	LM4□500AZAC-8	
	LM4□500AZAC-9	
	LM4□500AZAC-10	

- ◇ High-Speed Type with Electromagnetic Brake



Frame Size	Product Name	List Price
60 mm	LM2□500AZMC-1	
	LM2□500AZMC-2	
	LM2□500AZMC-3	
	LM2□500AZMC-4	
	LM2□500AZMC-5	
	LM2□500AZMC-6	
	LM2□500AZMC-7	
	LM2□500AZMC-8	
	LM4□500AZMC-1	
	LM4□500AZMC-2	
80 mm	LM4□500AZMC-3	
	LM4□500AZMC-4	
	LM4□500AZMC-5	
	LM4□500AZMC-6	
	LM4□500AZMC-7	
	LM4□500AZMC-8	
	LM4□500AZMC-9	
	LM4□500AZMC-10	

- ◇ Large Transportable Mass Type



Frame Size	Product Name	List Price
60 mm	LM2□90AZAC-1	
	LM2□90AZAC-2	
	LM2□90AZAC-3	
	LM2□90AZAC-4	
	LM2□90AZAC-5	
	LM2□90AZAC-6	
	LM2□90AZAC-7	
	LM2□90AZAC-8	
80 mm	LM4□40AZAC-1	
	LM4□40AZAC-2	
	LM4□40AZAC-3	
	LM4□40AZAC-4	
	LM4□40AZAC-5	
	LM4□40AZAC-6	
	LM4□40AZAC-7	
	LM4□40AZAC-8	
	LM4□40AZAC-9	
	LM4□40AZAC-10	

- ◇ Large Transportable Mass Type with Electromagnetic Brake



Frame Size	Product Name	List Price
60 mm	LM2□90AZMC-1	
	LM2□90AZMC-2	
	LM2□90AZMC-3	
	LM2□90AZMC-4	
	LM2□90AZMC-5	
	LM2□90AZMC-6	
	LM2□90AZMC-7	
	LM2□90AZMC-8	
	LM4□40AZMC-1	
	LM4□40AZMC-2	
80 mm	LM4□40AZMC-3	
	LM4□40AZMC-4	
	LM4□40AZMC-5	
	LM4□40AZMC-6	
	LM4□40AZMC-7	
	LM4□40AZMC-8	
	LM4□40AZMC-9	
	LM4□40AZMC-10	

● Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.

● Drivers

◇ Built-in Controller Type



Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	<b>AZD-AD</b>	
Single-Phase/Three-Phase 200-240 VAC	<b>AZD-CD</b>	

◇ Pulse Input Type with RS-485 Communication



Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	<b>AZD-AX</b>	
Single-Phase/Three-Phase 200-240 VAC	<b>AZD-CX</b>	

◇ Pulse Input Type



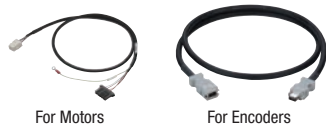
Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	<b>AZD-A</b>	
Single-Phase/Three-Phase 200-240 VAC	<b>AZD-C</b>	

● Connection Cable Sets/Flexible Connection Cable Sets

Use the flexible connection cable in application where the cable is bent and flexed.

The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

◇ For Motors/Encoders



Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	<b>CC005VZF</b>	
	1	<b>CC010VZF</b>	
	1.5	<b>CC015VZF</b>	
	2	<b>CC020VZF</b>	
	2.5	<b>CC025VZF</b>	
	3	<b>CC030VZF</b>	
	4	<b>CC040VZF</b>	
	5	<b>CC050VZF</b>	
	7	<b>CC070VZF</b>	
	10	<b>CC100VZF</b>	
	15	<b>CC150VZF</b>	
	20	<b>CC200VZF</b>	
	Flexible Connection Cable Sets	0.5	<b>CC005VZR</b>
1		<b>CC010VZR</b>	
1.5		<b>CC015VZR</b>	
2		<b>CC020VZR</b>	
2.5		<b>CC025VZR</b>	
3		<b>CC030VZR</b>	
4		<b>CC040VZR</b>	
5		<b>CC050VZR</b>	
7		<b>CC070VZR</b>	
10		<b>CC100VZR</b>	
15		<b>CC150VZR</b>	
20		<b>CC200VZR</b>	

◇ For Motors/Encoders/Electromagnetic Brakes



Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	<b>CC005VZFB</b>	
	1	<b>CC010VZFB</b>	
	1.5	<b>CC015VZFB</b>	
	2	<b>CC020VZFB</b>	
	2.5	<b>CC025VZFB</b>	
	3	<b>CC030VZFB</b>	
	4	<b>CC040VZFB</b>	
	5	<b>CC050VZFB</b>	
	7	<b>CC070VZFB</b>	
	10	<b>CC100VZFB</b>	
	15	<b>CC150VZFB</b>	
	20	<b>CC200VZFB</b>	
	Flexible Connection Cable Sets	0.5	<b>CC005VZRB</b>
1		<b>CC010VZRB</b>	
1.5		<b>CC015VZRB</b>	
2		<b>CC020VZRB</b>	
2.5		<b>CC025VZRB</b>	
3		<b>CC030VZRB</b>	
4		<b>CC040VZRB</b>	
5		<b>CC050VZRB</b>	
7		<b>CC070VZRB</b>	
10		<b>CC100VZRB</b>	
15		<b>CC150VZRB</b>	
20		<b>CC200VZRB</b>	

■ Included

● Rack and Pinion Motors

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		<ul style="list-style-type: none"> <li>· CN1 Connector (1 pc.)</li> <li>· CN4 Connector (1 pc.)</li> <li>· CN5 Connector (1 pc.)</li> <li>· Connector Lever (1 pc.)</li> </ul>	1 Copy

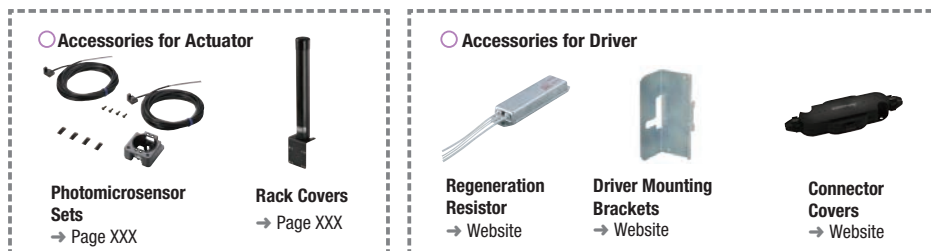
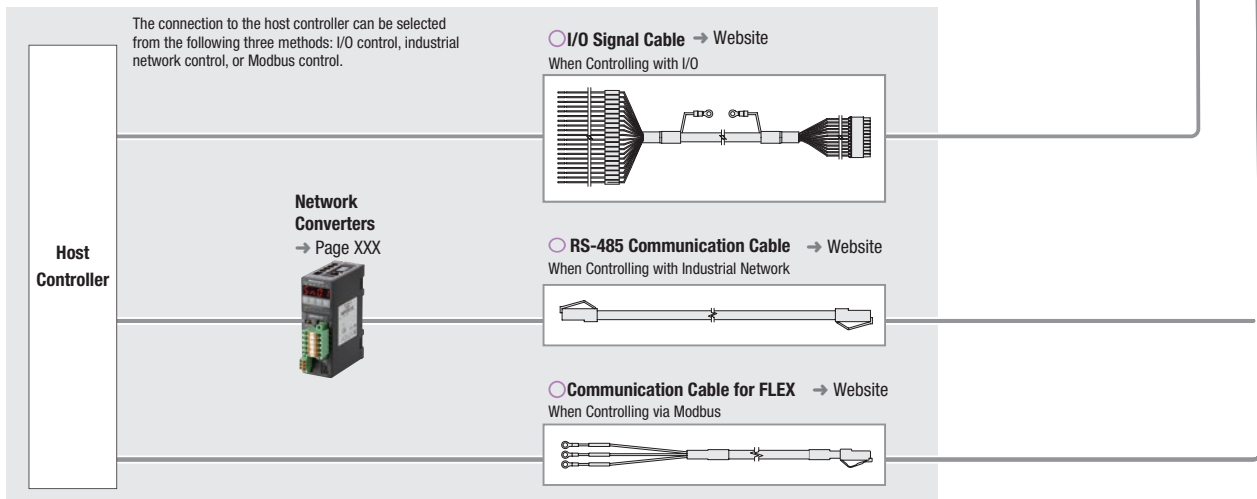
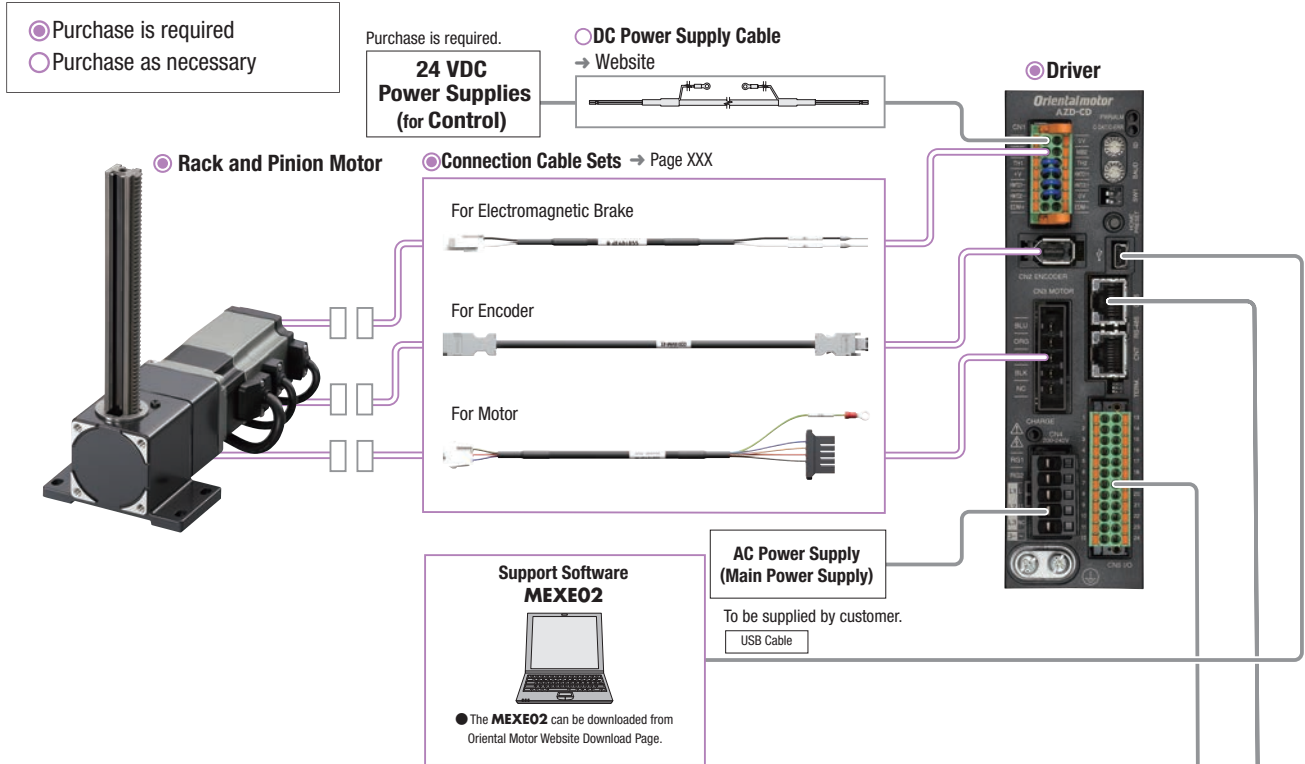
● Connection Cable Sets/Flexible Connection Cable Sets

Type	Included	Operating Manual
Connection Cable Set		-
Flexible Connection Cable Set		1 Copy

## System Configuration

### Combination of L Series with Electromagnetic Brake and either Built-in Controller Type Driver or Pulse Input Type Driver with RS-485 Communication

This is an example of a configuration using I/O control or RS-485 communication in a built-in controller type driver. Rack and pinion motors, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



#### Example of System Configuration Pricing

Rack and Pinion Motor	+	Driver	+	Cable	
<b>LM2F90AZMC-1</b>		<b>AZD-CD</b>		Connection Cable Set (1 m)	I/O Signal Cable with Connector (1 m)
				<b>CC010VZFB</b>	<b>CC24D010C-1</b>

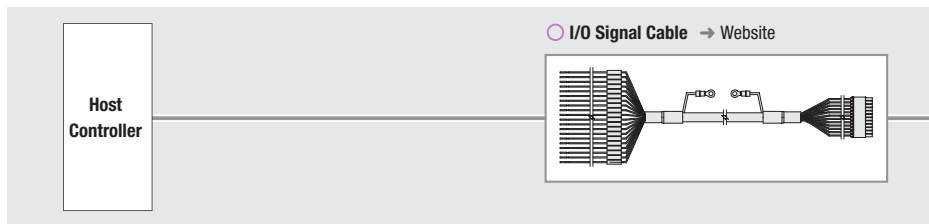
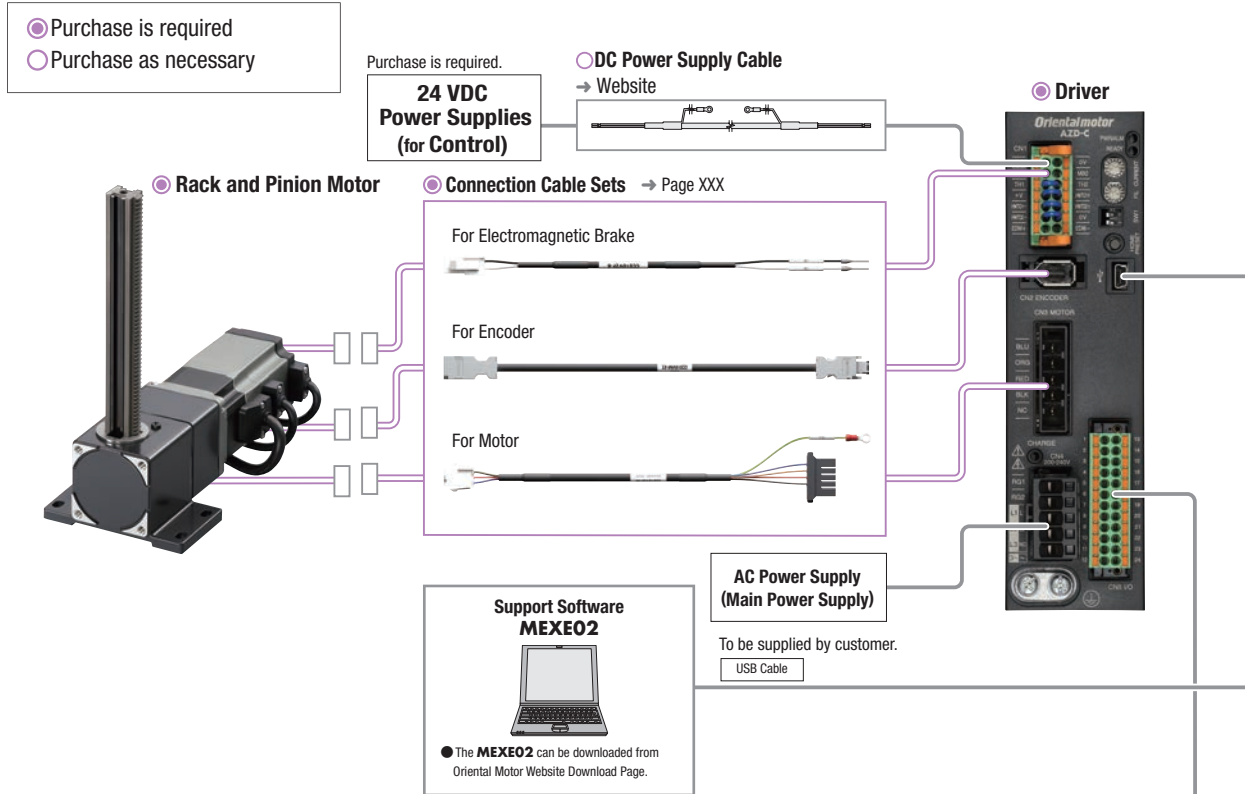
● The system configuration shown above is an example. Other combinations are also available.

#### Note:

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

● **Combination of L Series with Electromagnetic Brake and Pulse Input Type Driver**

This is an example of a single-axis system configuration using a programmable controller (with pulse generating function). Rack and pinion motors, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



<p>○ <b>Accessories for Actuator</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">   <b>Photomicrosensor Sets</b> → Page XXX         </div> <div style="text-align: center;">   <b>Rack Covers</b> → Page XXX         </div> </div>	<p>○ <b>Accessories for Driver</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">   <b>Regeneration Resistor</b> → Website         </div> <div style="text-align: center;">   <b>Driver Mounting Brackets</b> → Website         </div> <div style="text-align: center;">   <b>Connector Covers</b> → Website         </div> </div>
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● **Example of System Configuration Pricing**

			<b>Cable</b>	
Rack and Pinion Motor	Driver	+	Connection Cable Set (1 m)	I/O Signal Cable with Connector (1 m)
<b>LM2F90AZMC-1</b>	<b>AZD-C</b>	+	<b>CC010VZFB</b>	<b>CC24D010C-1</b>
○	○	+	○	○

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

**Note:**

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

# High-Speed Type

## Specifications

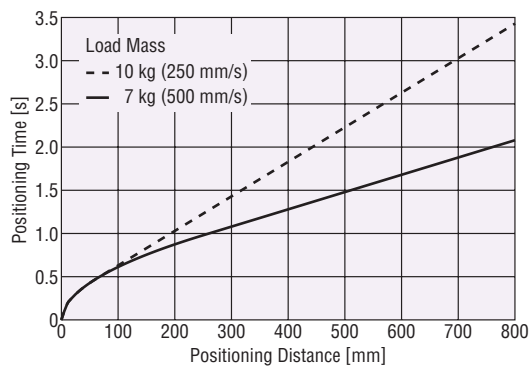
Frame Size		60 mm	80 mm
Actuator Product Name	Standard	<b>LM2</b> □ <b>500AZAC</b> -□	<b>LM4</b> □ <b>500AZAC</b> -□
	with Electromagnetic Brake	<b>LM2</b> □ <b>500AZMC</b> -□	<b>LM4</b> □ <b>500AZMC</b> -□
Driver Product Name	Built-in Controller Type	<b>AZD-AD</b> (Single-Phase 100-120 VAC), <b>AZD-CD</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type with RS-485 Communication	<b>AZD-AX</b> (Single-Phase 100-120 VAC), <b>AZD-CX</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type	<b>AZD-A</b> (Single-Phase 100-120 VAC), <b>AZD-C</b> (Single-Phase/Three-Phase 200-240 VAC)	
Equipped Motor ( <b>AZ</b> Series)		<b>AZM66</b>	
Maximum Speed	mm/s	500	
Transportable Mass	kg	10 (250 mm/s) 7 (500 mm/s)	20 (250 mm/s) 7 (500 mm/s)
Maximum Acceleration	m/s <sup>2</sup>	1	
Thrust*1	N	110 (250 mm/s) 77 (500 mm/s)	220 (250 mm/s) 77 (500 mm/s)
Push Force	N	110	
Holding Force	Power On	110	
	with Electromagnetic Brake	110	
Minimum Travel Amount	mm	0.01	
Rotor Inertia	J·kg·m <sup>2</sup>	370×10 <sup>-7</sup> (530×10 <sup>-7</sup> )*2	
Stroke	mm	100, 200, 300, 400, 500, 600, 700, or 800	100, 200, 300, 400, 500, 600, 700, 800, 900, or 1000
Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15 to +6% 50/60Hz	
Power Supply Input	Input Current A	Single-Phase 100-120 VAC	3.8
		Single-Phase 200-240 VAC	2.3
		Three-Phase 200-240 VAC	1.4
Control Power Supply		24 VDC±5%*3 0.25 A (0.5A)*2	

- Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.  
A number indicating the rack stroke is entered where the box □ is located within the product name.
- When the rack is moved in the vertical direction, the load mass that can be driven is the value obtained by subtracting the rack mass from the transportable mass. Refer to 'Dimensions' for the rack mass.
- \*1 For a value obtained by adding the acceleration thrust of a load to the load thrust, do not exceed the thrust amount.
- \*2 The bracket ( ) indicates the value for the product with an electromagnetic brake.
- \*3 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

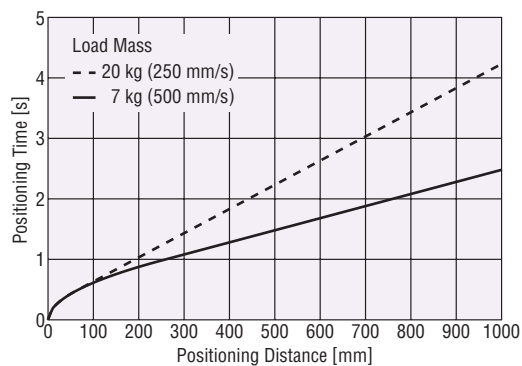
## Positioning Distance - Positioning Time

Check the positioning time (reference) from the positioning distance.  
The positioning time differs depending on the transportable mass.

### LM2



### LM4



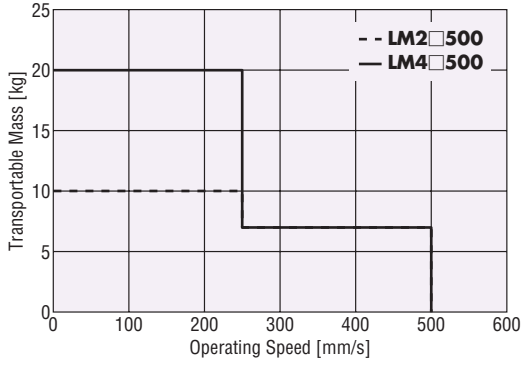


## Repetitive Positioning Accuracy (Reference Value)

It is the value measured with the transportable mass. It varies depending on load, driving condition or mounting direction.

Product Name	Rack Moving Direction	Repetitive Positioning Accuracy [mm]
<b>LM2</b>	Horizontal Direction	±0.25
<b>LM4</b>		
<b>LM2</b>	Vertical Direction	±0.07
<b>LM4</b>		

## Operating Speed - Transportable Mass



### Note:

- The operating speed - transportable mass characteristics shows the data based on Oriental Motor's measurement conditions. The characteristics may change depending on the conditions of the power supply voltage and the ambient temperature.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less since the motor is recognized as resistant class A.)

# Large Transportable Mass Type

## Specifications

Frame Size		60 mm	80 mm
Actuator Product Name	Standard	<b>LM2</b> □ <b>90AZAC</b> -□	<b>LM4</b> □ <b>40AZAC</b> -□
	with Electromagnetic Brake	<b>LM2</b> □ <b>90AZMC</b> -□	<b>LM4</b> □ <b>40AZMC</b> -□
Driver Product Name	Built-in Controller Type	<b>AZD-AD</b> (Single-Phase 100-120 VAC), <b>AZD-CD</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type with RS-485 Communication	<b>AZD-AX</b> (Single-Phase 100-120 VAC), <b>AZD-CX</b> (Single-Phase/Three-Phase 200-240 VAC)	
	Pulse Input Type	<b>AZD-A</b> (Single-Phase 100-120 VAC), <b>AZD-C</b> (Single-Phase/Three-Phase 200-240 VAC)	
Equipped Motor ( <b>AZ</b> Series)		<b>AZM66</b>	
Maximum Speed	mm/s	90	40
Transportable Mass	kg	30	100 (20 mm/s) 70 (40 mm/s)
Maximum Acceleration	m/s <sup>2</sup>	0.187	0.074
Thrust*1	N	306	1008 (20 mm/s) 705 (40 mm/s)
Push Force	N	306	1008
Holding Force	Power On	N	1008
	with Electromagnetic Brake	N	1008
Minimum Travel Amount	mm	0.001	
Rotor Inertia	J:kg·m <sup>2</sup>	$370 \times 10^{-7}$ $(530 \times 10^{-7})^{*2}$	
Stroke	mm	100, 200, 300, 400, 500, 600, 700, or 800	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15 to +6% 50/60Hz
	Input Current A	Single-Phase 100-120 VAC	3.8
		Single-Phase 200-240 VAC	2.3
		Three-Phase 200-240 VAC	1.4
Control Power Supply		24 VDC±5%*3 0.25 A (0.5 A)*2	

● Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.  
A number indicating the rack stroke is entered where the box □ is located within the product name.

● When the rack is moved in the vertical direction, the load mass that can be driven is the value obtained by subtracting the rack mass from the transportable mass. Refer to 'Dimensions' for the rack mass.

\*1 For a value obtained by adding the acceleration thrust of a load to the load thrust, do not exceed the thrust amount.

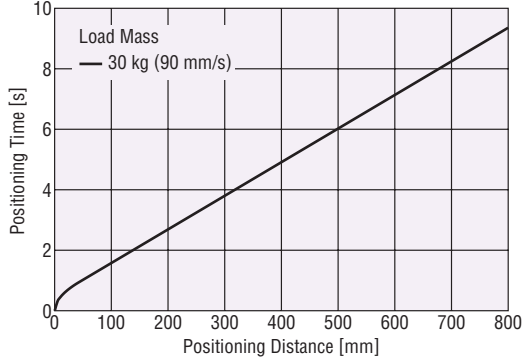
\*2 The bracket ( ) indicates the value for the product with an electromagnetic brake.

\*3 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

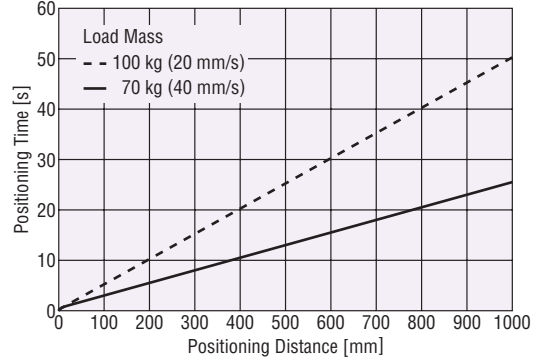
## Positioning Distance - Positioning Time

Check the positioning time (reference) from the positioning distance.  
The positioning time differs depending on the transportable mass.

### LM2



### LM4

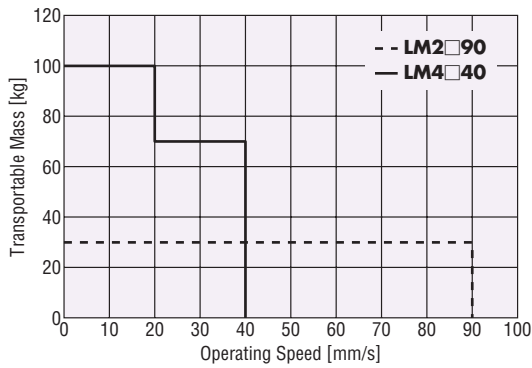


## Repetitive Positioning Accuracy (Reference Value)

It is the value measured with the transportable mass. It varies depending on load, driving condition or mounting direction.

Product Name	Rack Moving Direction	Repetitive Positioning Accuracy [mm]
LM2	Horizontal Direction	±0.25
LM4		
LM2	Vertical Direction	±0.07
LM4		

## Operating Speed - Transportable Mass



### Note:

- The operating speed - transportable mass characteristics shows the data based on Oriental Motor's measurement conditions. The characteristics may change depending on the conditions of the power supply voltage and the ambient temperature.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less since the motor is recognized as resistant class A.)

## Electromagnetic Brake Specifications

Product Name	LM2	LM4
Brake Type	Power Off Activated Type	
Power Supply Voltage	24 V DC±5%*	
Power Supply Current	A	0.25
Brake Operating Time	ms	20
Brake Releasing Time	ms	30
Time Rating	Continuous	

\*For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

## General Specifications



	Rack and Pinion Motor	Driver	
		Built-in Controller Type Pulse Input Type with RS-485 Communication	Pulse Input Type
Thermal Class	130 (B) [UL/CSA Recognized 105 (A) ]	-	
Insulation Resistance	100 MΩ or more when a 500 VDC megger is applied between the following places: · Case – Motor Windings · Case – Electromagnetic Brake Windings*2	100 MΩ or more when a 500 VDC megger is applied between the following places: · Protective Earth Terminal – Power Supply Terminal · Encoder Connector – Power Supply Terminal · I/O Signal Terminal – Power Supply Terminal	
Dielectric Strength	Sufficient to withstand the following for 1 minute: · Case – Motor Windings 1.5 kVAC, 50 Hz or 60 Hz · Case – Electromagnetic Brake Windings*2 1.5 kVAC, 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: · Protective Earth Terminal – Power Supply Terminal 1.5 kVAC, 50Hz or 60Hz · Encoder Connector – Power Supply Terminal 1.8 kVAC, 50Hz or 60Hz · I/O Signal Terminal – Power Supply Terminal 1.8 kVAC, 50Hz or 60Hz	
Operating Environment	Ambient Temperature	0 to +40°C (Non-freezing)*3	
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water or oil.	
Degree of Protection	IP30 (Excluding rack moving part and connector part)	IP10	IP20
Multiple Rotation Detection Range in Power OFF State (Motor Output Shaft)	±900 Rotations (1800 Rotations)		

\*1 The motor product name (not the actuator product name) is recognized by UL under the UL and Canada Standards.

The motor product name (not the actuator product name) conforms to the standards to affix the CE Marking.

\*2 Only for products with an electromagnetic brake.

\*3 It is based on Oriental Motor's measurement conditions.

\*4 When installing a motor to a heat sink of a capacity at least equivalent to an aluminum plate of 200×200 mm, thickness 2 mm.

### Note:

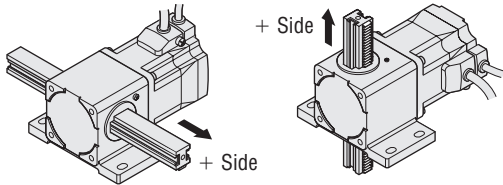
● Disconnect the motor and driver when taking an insulation resistance measurement or performing a dielectric voltage withstand test. Also, do not perform these tests on the absolute sensor part of the motor.

## Moving Direction

At the time of shipment, the moving direction of the rack is set as shown below.

**B** Type

**F** Type



## Rack Permissible Rotational Torque (Moment)

Product Name	Rack Permissible Rotational Torque (Moment)
<b>LM2</b>	0.3 N·m max.
<b>LM4</b>	0.5 N·m max.

- Keep the rotational torque below the permissible value.  
If the rotational torque is applied too much, the rack bushing will wear in a short time.



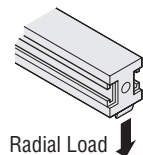
## Permissible Radial Load

Unit: N

Stroke mm	LM2□90	LM2□500	LM4□40	LM4□500
100	25	25*1	120	60*1
200	20	20*1	90	40*1
300	10	10*1	70	30*1
400	10	10*1	60	25*1
500	7	7*1	50	20*1
600	*2	*2	40	15*1
700	*2	*2	40	10*1
800	*2	*2	25	7*1
900	-	-	20	*2
1000	-	-	15	*2

- Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.

\*1 The value is the operation speed up to 90 mm/s. When operating at a speed exceeding 90 mm/s, do not apply a radial load to the rack by providing a guide, etc.  
\*2 Do not apply a radial load to the rack by providing a guide, etc. since the rack is damaged.



## Rack and Pinion System

# L Series $\alpha$ STEP AZ Series Equipped DC Power Supply Input

For technical references, regulations, and standards related to these products, please see the Oriental Motor website.

### Product Number

#### Rack and Pinion Motors

LM 4 F 150 AZ M K - 1

	①	②	③	④	⑤	⑥	⑦	⑧
① Series Name	<b>LM</b> : L Series Rack and Pinion Motor							
② Frame Size	<b>2</b> : 60 mm <b>4</b> : 80 mm							
③ Moving Direction of Rack	<b>F</b> : Vertical to Mounting Foot Surface <b>B</b> : Horizontal to Mounting Foot Surface							
④ Rack Maximum Speed	<b>20</b> : 20 mm/s <b>50</b> : 50 mm/s <b>150</b> : 150 mm/s <b>200</b> : 200 mm/s							
⑤ Equipped Motor	<b>AZ</b> : <b>AZ</b> Series							
⑥ Motor Type	<b>A</b> : Standard <b>M</b> : with Electromagnetic Brake							
⑦ Motor Power Supply Input	<b>K</b> : DC Power Supply Input Specifications							
⑧ Stroke	<b>1</b> : 100 mm <b>2</b> : 200 mm <b>3</b> : 300 mm <b>4</b> : 400 mm <b>5</b> : 500 mm <b>6</b> : 600 mm <b>10</b> : 1000 mm							

#### Drivers

AZD - K D

	①	②	③
① Driver Type	<b>AZD</b> : <b>AZ</b> Series Driver		
② Power Supply Input	<b>K</b> : 24/48 VDC		
③ Type	<b>D</b> : Built-in Controller Type <b>X</b> : Pulse Input Type with RS-485 Communication Blank : Pulse Input Type		

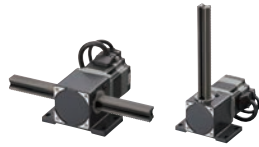
#### Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B 2

	①	②	③	④	⑤	⑥	⑦
①	<b>CC</b> : Cable						
② Length	<b>005</b> : 0.5 m <b>010</b> : 1 m <b>015</b> : 1.5 m <b>020</b> : 2 m <b>025</b> : 2.5 m <b>030</b> : 3 m <b>040</b> : 4 m <b>050</b> : 5 m <b>070</b> : 7 m <b>100</b> : 10 m <b>150</b> : 15 m <b>200</b> : 20 m						
③ Reference Number							
④ Applicable Model	<b>Z</b> : <b>AZ</b> Series						
⑤ Cable Type	<b>F</b> : Connection Cable Set <b>R</b> : Flexible Connection Cable Set						
⑥ Electromagnetic Brake	Blank: without Electromagnetic Brake <b>B</b> : with Electromagnetic Brake						
⑦ Power Supply Cable	<b>2</b> : DC Power Supply Input						

## Product Line

- Rack and Pinion Motors
- ◇ High-Speed Type



Frame Size	Product Name	List Price
60 mm	LM2□200AZAK-1	
	LM2□200AZAK-2	
	LM2□200AZAK-3	
	LM2□200AZAK-4	
	LM2□200AZAK-5	
80 mm	LM4□150AZAK-1	
	LM4□150AZAK-2	
	LM4□150AZAK-3	
	LM4□150AZAK-4	
	LM4□150AZAK-5	
	LM4□150AZAK-10	

- ◇ High-Speed Type with Electromagnetic Brake



Frame Size	Product Name	List Price
60 mm	LM2□200AZMK-1	
	LM2□200AZMK-2	
	LM2□200AZMK-3	
	LM2□200AZMK-4	
	LM2□200AZMK-5	
80 mm	LM4□150AZMK-1	
	LM4□150AZMK-2	
	LM4□150AZMK-3	
	LM4□150AZMK-4	
	LM4□150AZMK-5	
	LM4□150AZMK-10	

- ◇ Large Transportable Mass Type



Frame Size	Product Name	List Price
60 mm	LM2□50AZAK-1	
	LM2□50AZAK-2	
	LM2□50AZAK-3	
	LM2□50AZAK-4	
	LM2□50AZAK-5	
80 mm	LM4□20AZAK-1	
	LM4□20AZAK-2	
	LM4□20AZAK-3	
	LM4□20AZAK-4	
	LM4□20AZAK-5	
	LM4□20AZAK-10	

- ◇ Large Transportable Mass Type with Electromagnetic Brake



Frame Size	Product Name	List Price
60 mm	LM2□50AZMK-1	
	LM2□50AZMK-2	
	LM2□50AZMK-3	
	LM2□50AZMK-4	
	LM2□50AZMK-5	
80 mm	LM4□20AZMK-1	
	LM4□20AZMK-2	
	LM4□20AZMK-3	
	LM4□20AZMK-4	
	LM4□20AZMK-5	
	LM4□20AZMK-10	

● Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.

Note:

LM4□20AZAK-10 and LM4□20AZMK-10 cannot be used in combination with the Multi-Axis Driver SSCNET III /H Compatible.

● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
24/48 VDC	<b>AZD-KD</b>	



◇ Pulse Input Type with RS-485 Communication

Power Supply Input	Product Name	List Price
24/48 VDC	<b>AZD-KX</b>	



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
24/48 VDC	<b>AZD-K</b>	



● Connection Cable Sets/Flexible Connection Cable Sets

Use the flexible connection cable in application where the cable is bent and flexed.

The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

◇ For Motors/Encoders



Product Line	Length (m)	Product Name	List Price
Connection Cable Sets	0.5	<b>CC005VZF2</b>	
	1	<b>CC010VZF2</b>	
	1.5	<b>CC015VZF2</b>	
	2	<b>CC020VZF2</b>	
	2.5	<b>CC025VZF2</b>	
	3	<b>CC030VZF2</b>	
	4	<b>CC040VZF2</b>	
	5	<b>CC050VZF2</b>	
	7	<b>CC070VZF2</b>	
	10	<b>CC100VZF2</b>	
	15	<b>CC150VZF2</b>	
	20	<b>CC200VZF2</b>	
Flexible Connection Cable Sets	0.5	<b>CC005VZR2</b>	
	1	<b>CC010VZR2</b>	
	1.5	<b>CC015VZR2</b>	
	2	<b>CC020VZR2</b>	
	2.5	<b>CC025VZR2</b>	
	3	<b>CC030VZR2</b>	
	4	<b>CC040VZR2</b>	
	5	<b>CC050VZR2</b>	
	7	<b>CC070VZR2</b>	
	10	<b>CC100VZR2</b>	
	15	<b>CC150VZR2</b>	
	20	<b>CC200VZR2</b>	

◇ For Motors/Encoders/Electromagnetic Brakes



Product Line	Length (m)	Product Name	List Price
Connection Cable Sets	0.5	<b>CC005VZFB2</b>	
	1	<b>CC010VZFB2</b>	
	1.5	<b>CC015VZFB2</b>	
	2	<b>CC020VZFB2</b>	
	2.5	<b>CC025VZFB2</b>	
	3	<b>CC030VZFB2</b>	
	4	<b>CC040VZFB2</b>	
	5	<b>CC050VZFB2</b>	
	7	<b>CC070VZFB2</b>	
	10	<b>CC100VZFB2</b>	
	15	<b>CC150VZFB2</b>	
	20	<b>CC200VZFB2</b>	
Flexible Connection Cable Sets	0.5	<b>CC005VZRB2</b>	
	1	<b>CC010VZRB2</b>	
	1.5	<b>CC015VZRB2</b>	
	2	<b>CC020VZRB2</b>	
	2.5	<b>CC025VZRB2</b>	
	3	<b>CC030VZRB2</b>	
	4	<b>CC040VZRB2</b>	
	5	<b>CC050VZRB2</b>	
	7	<b>CC070VZRB2</b>	
	10	<b>CC100VZRB2</b>	
	15	<b>CC150VZRB2</b>	
	20	<b>CC200VZRB2</b>	

■ Included

● Rack and Pinion Motors

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		· CN1 Connector (1 pc.) · CN4 Connector (1 pc.)	1 Copy

● Connection Cable Sets/Flexible Connection Cable Sets

Type	Included	Operating Manual
Connection Cable Set		-
Flexible Connection Cable Set		1 Copy



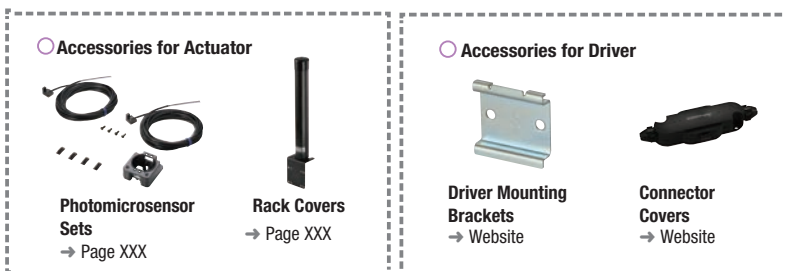
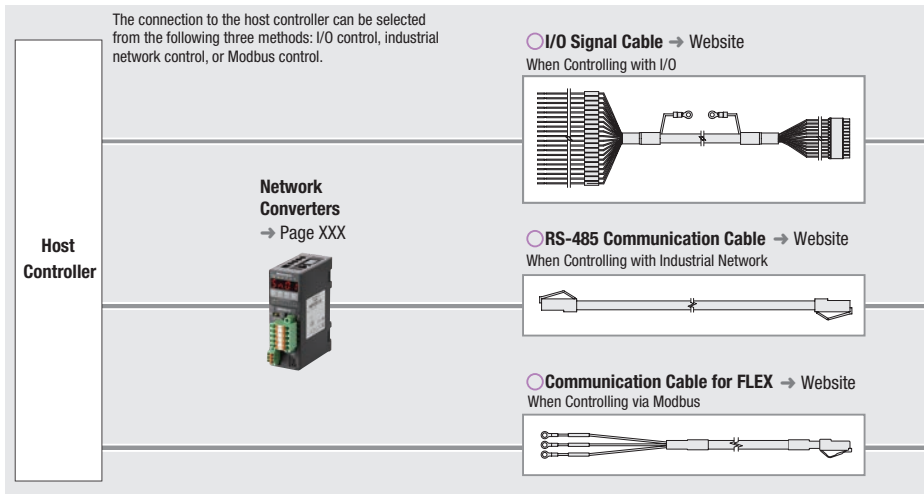
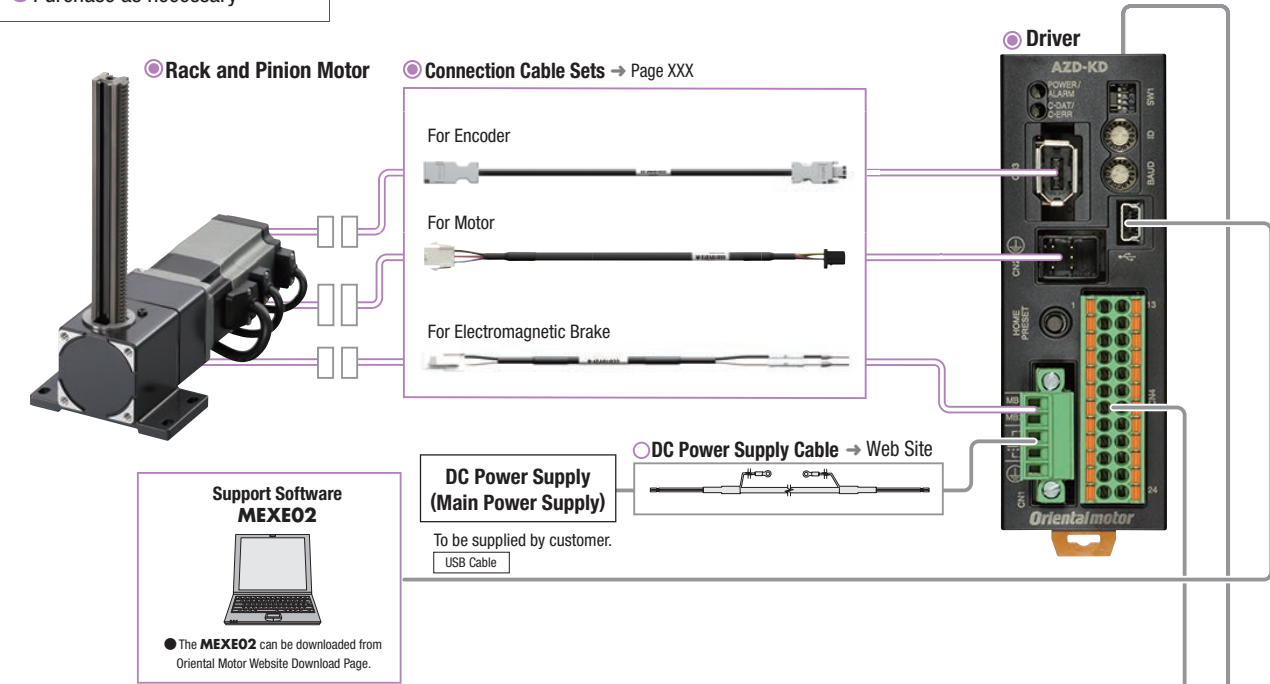
## System Configuration

### Combination of L Series with Electromagnetic Brake and either Built-in Controller Type Driver or Pulse Input Type Driver with RS-485 Communication

This is an example of a configuration using I/O control or RS-485 communication in a built-in controller type driver.

Rack and pinion motors, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.

- Purchase is required
- Purchase as necessary



#### Example of System Configuration Pricing

Rack and Pinion Motor	+	Driver	+	Cable	
LM2F50AZMK-1		AZD-KD		Connection Cable Set (1 m)	I/O Signal Cable with Connector (1 m)
				CC010VZFB2	CC24D010C-1
<input checked="" type="radio"/>		<input checked="" type="radio"/>		<input checked="" type="radio"/>	<input type="radio"/>

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

#### Note:

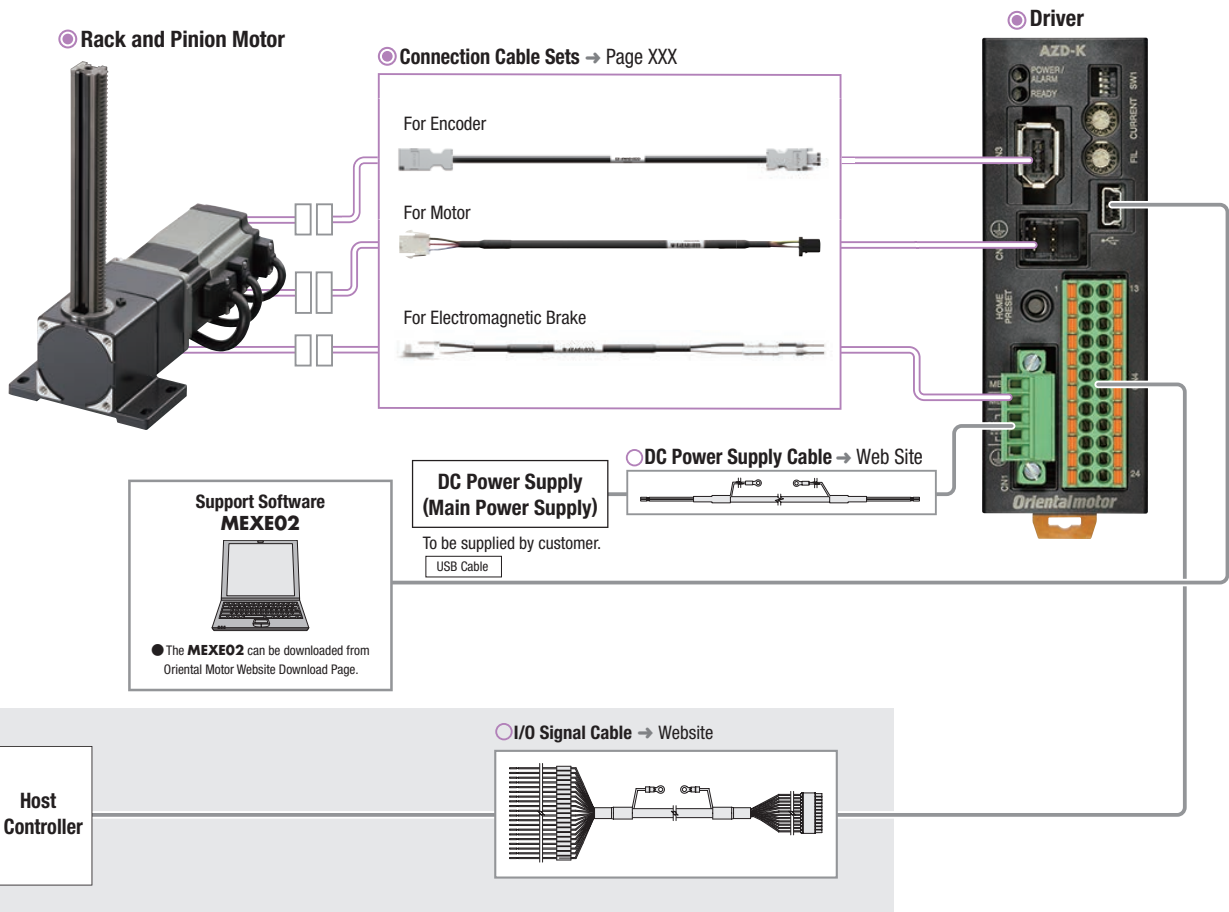
The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

● **Combination of L Series with Electromagnetic Brake and Pulse Input Type Driver**

This is an example of a single-axis system configuration using a programmable controller (with pulse generating function).

Rack and pinion motors, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.

- Purchase is required
- Purchase as necessary



○ **Accessories for Actuator**

**Photomicrosensor Sets**  
→ Page XXX

**Rack Covers**  
→ Page XXX

○ **Accessories for Driver**

**Driver Mounting Brackets**  
→ Website

**Connector Covers**  
→ Website

● **Example of System Configuration Pricing**

Rack and Pinion Motor		Driver		Cable	
<b>LM2F50AZMK-1</b>	+	<b>AZD-K</b>	+	Connection Cable Set (1 m)	I/O Signal Cable with Connector (1 m)
<b>LM2F50AZMK-1</b>		<b>AZD-K</b>		<b>CC010VZFB2</b>	<b>CC24D010C-1</b>
○		○		○	○

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

**Note:**

● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

# High-Speed Type

## Specifications

Frame Size		60 mm	80 mm
Actuator Product Name	Standard	<b>LM2</b> □ <b>200AZAK</b> -□	<b>LM4</b> □ <b>150AZAK</b> -□
	with Electromagnetic Brake	<b>LM2</b> □ <b>200AZMK</b> -□	<b>LM4</b> □ <b>150AZMK</b> -□
Driver Product Name	Built-in Controller Type	<b>AZD-KD</b>	
	Pulse Input Type with RS-485 Communication	<b>AZD-KX</b>	
	Pulse Input Type	<b>AZD-K</b>	
Equipped Motor ( <b>AZ</b> Series)		<b>AZM66</b>	
Maximum Speed	24 VDC	mm/s	200
	48 VDC	mm/s	250
Transportable Mass	24 VDC	Kg	10 (100 mm/s) 5 (200 mm/s)
	48 VDC	Kg	10 (250 mm/s)
Maximum Acceleration		m/s <sup>2</sup>	1
Thrust*1	24 VDC	N	110 (100 mm/s) 55 (200 mm/s)
	48 VDC	N	110 (250 mm/s)
Push Force		N	110
Holding Force	Power On	N	110
	with Electromagnetic Brake	N	110
Minimum Travel Amount		mm	0.01
Rotor Inertia		J:kg·m <sup>2</sup>	$370 \times 10^{-7}$ ( $530 \times 10^{-7}$ )*2
Stroke		mm	100, 200, 300, 400, 500
Power Supply Input	Voltage		24 VDC ±5%*3/48 VDC ±5%
	Input Current	A	3.55 (3.8)*2

● Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.

A number indicating the rack stroke is entered where the box □ is located within the product name.

● When the rack is moved in the vertical direction, the load mass that can be driven is the value obtained by subtracting the rack mass from the transportable mass. Refer to 'Dimensions' for the rack mass.

\*1 For a value obtained by adding the acceleration thrust of a load to the load thrust, do not exceed the thrust amount.

\*2 The bracket ( ) indicates the value for the product with an electromagnetic brake.

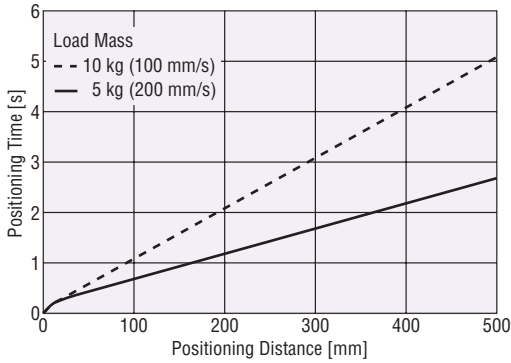
\*3 For the type with an electromagnetic brake, a 24 VDC ±4% specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

## Positioning Distance - Positioning Time

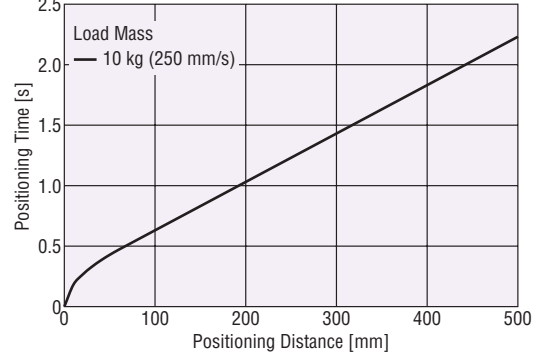
Check the positioning time (reference) from the positioning distance.  
The positioning time differs depending on the transportable mass.

### LM2

24 VDC

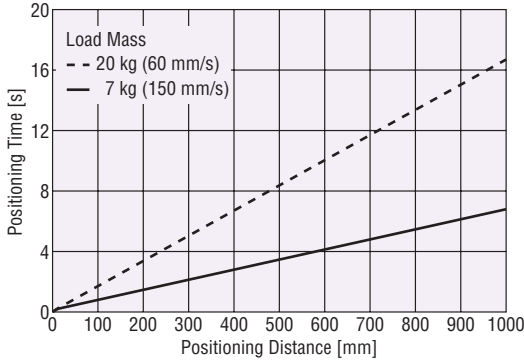


48 VDC

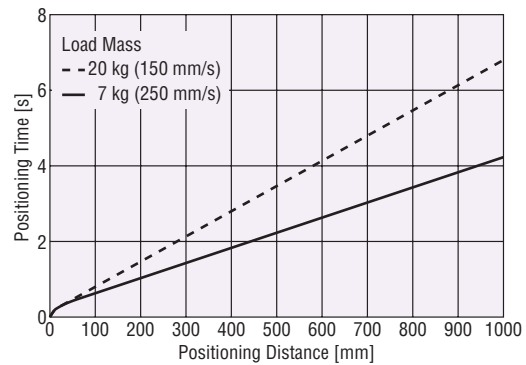


### LM4

24 VDC



48 VDC



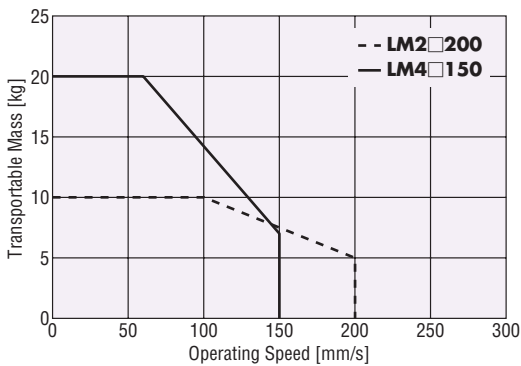
## Repetitive Positioning Accuracy (Reference Value)

It is the value measured with the transportable mass. It varies depending on load, driving condition or mounting direction.

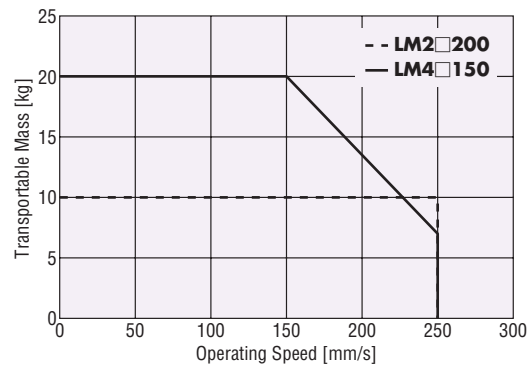
Product Name	Rack Moving Direction	Repetitive Positioning Accuracy [mm]
LM2	Horizontal Direction	±0.25
LM4		
LM2	Vertical Direction	±0.07
LM4		

## Operating Speed - Transportable Mass

24 VDC



48 VDC



### Note:

- The operating speed - transportable mass characteristics shows the data based on Oriental Motor's measurement conditions. The characteristics may change depending on the conditions of the power supply voltage and the ambient temperature.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less since the motor is recognized as resistant class A.)

# Large Transportable Mass Type

## Specifications

Frame Size		60 mm	80 mm
Actuator Product Name	Standard	<b>LM2</b> <input type="checkbox"/> 50AZAK- <input type="checkbox"/>	<b>LM4</b> <input type="checkbox"/> 20AZAK- <input type="checkbox"/>
	with Electromagnetic Brake	<b>LM2</b> <input type="checkbox"/> 50AZMK- <input type="checkbox"/>	<b>LM4</b> <input type="checkbox"/> 20AZMK- <input type="checkbox"/>
Driver Product Name	Built-in Controller Type	<b>AZD-KD</b>	
	Pulse Input Type with RS-485 Communication	<b>AZD-KX</b>	
	Pulse Input Type	<b>AZD-K</b>	
Equipped Motor (AZ Series)		<b>AZM66</b>	
Maximum Speed	24 VDC	mm/s	50
	48 VDC	mm/s	60
Transportable Mass	24 VDC	Kg	30
			100 (10 mm/s) 50 (20 mm/s)
	48 VDC	Kg	30
			100 (15 mm/s) 50 (25 mm/s)
Maximum Acceleration		m/s <sup>2</sup>	0.187
Thrust*1	24 VDC	N	306
	48 VDC	N	306
Push Force		N	306
Holding Force	Power On	N	306
	with Electromagnetic Brake	N	306
Minimum Travel Amount		mm	0.001
Rotor Inertia		J:kg·m <sup>2</sup>	$370 \times 10^{-7}$ ( $530 \times 10^{-7}$ )*2
Stroke		mm	100, 200, 300, 400, 500
Power Supply Input	Voltage		24 VDC $\pm 5\%$ *3/48 VDC $\pm 5\%$
	Input Current	A	3.55 (3.8)*2

● Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box  is located within the product name.

A number indicating the rack stroke is entered where the box  is located within the product name.

● When the rack is moved in the vertical direction, the load mass that can be driven is the value obtained by subtracting the rack mass from the transportable mass. Refer to 'Dimensions' for the rack mass.

\*1 For a value obtained by adding the acceleration thrust of a load to the load thrust, do not exceed the thrust amount.

\*2 The bracket ( ) indicates the value for the product with an electromagnetic brake.

\*3 For the type with an electromagnetic brake, a 24 VDC  $\pm 4\%$  specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

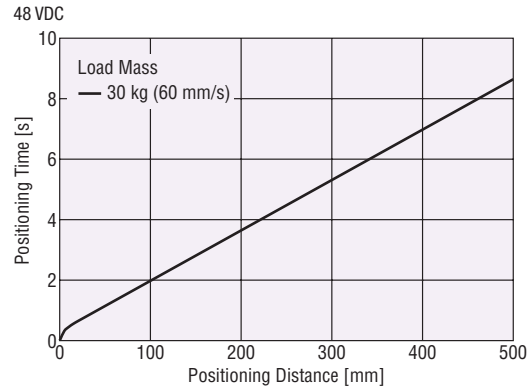
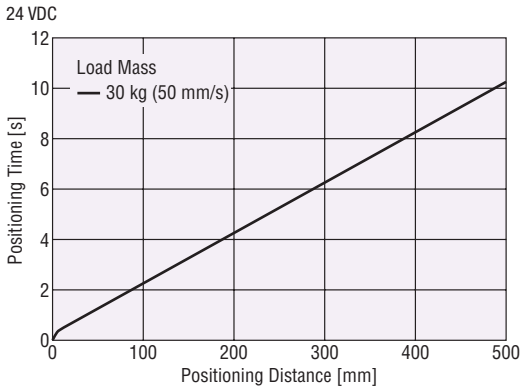
### Note:

**LM4**20AZAK-10 and **LM4**20AZMK-10 cannot be used in combination with the Multi-Axis Driver SSCNET III /H Compatible.

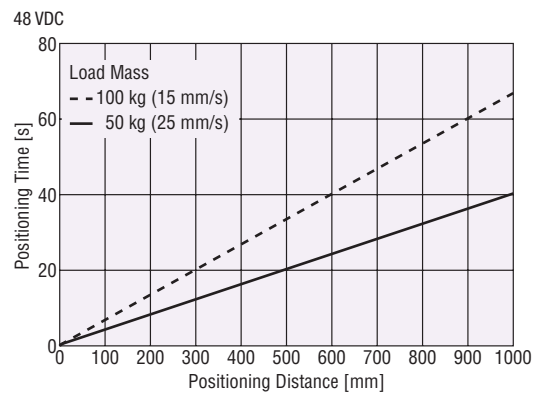
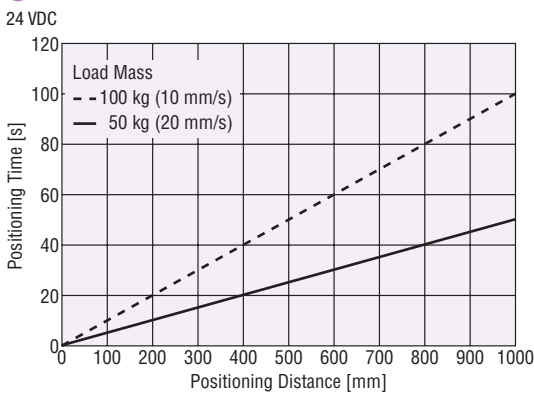
## Positioning Distance - Positioning Time

Check the positioning time (reference) from the positioning distance.  
The positioning time differs depending on the transportable mass.

### LM2



### LM4

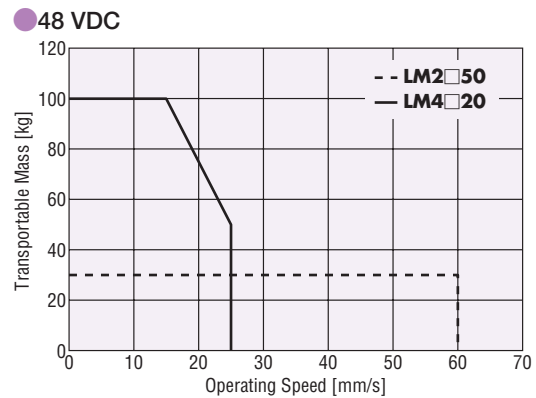
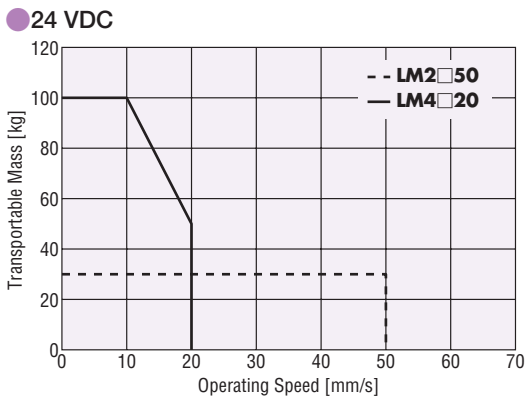


## Repetitive Positioning Accuracy (Reference Value)

It is the value measured with the transportable mass. It varies depending on load, driving condition or mounting direction.

Product Name	Rack Moving Direction	Repetitive Positioning Accuracy [mm]
LM2	Horizontal Direction	±0.25
LM4		
LM2	Vertical Direction	±0.07
LM4		

## Operating Speed - Transportable Mass



### Note:

- The operating speed - transportable mass characteristics shows the data based on Oriental Motor's measurement conditions. The characteristics may change depending on the conditions of the power supply voltage and the ambient temperature.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less since the motor is recognized as resistant class A.)

## Electromagnetic Brake Specifications

Product Name	LM2	LM4
Brake Type	Power Off Activated Type	
Power Supply Voltage	24 V DC±5%*	
Power Supply Current	0.25 A	
Brake Operating Time	ms	
Brake Releasing Time	ms	
Time Rating	Continuous	

\*For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and the driver is extended to 20 m using a cable.

## General Specifications



		Rack and Pinion Motor	Driver
Thermal Class		130 (B) [UL/CSA Recognized 105 (A)]	—
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: · Case – Motor Windings · Case – Electromagnetic Brake Windings*3	100 MΩ or more when a 500 VDC megger is applied between the following places: · Protective Earth Terminal – Power Supply Terminal
Dielectric Strength		Sufficient to withstand the following for 1 minute: · Case – Motor Windings 1.0 kVAC 50Hz or 60Hz · Case – Electromagnetic Brake Windings*3 1.0 kVAC 50Hz or 60Hz	—
Operating Environment	Ambient Temperature	0 to +40°C (Non-freezing)*4	0 to +50°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water or oil.	
Degree of Protection		IP30 (Excluding rack moving part and connector part)	IP10
Multiple Rotation Detection Range in Power OFF State (Motor Output Shaft)		±900 Rotations (1800 Rotations)	

\*1 The motor product name (not the actuator product name) is recognized by UL under UL and Canada Standards.

The motor product name (not the actuator product name) conforms to the standards to affix the CE Marking.

\*2 Only for the motor part.

\*3 Only for products with an electromagnetic brake.

\*4 It is based on Oriental Motor's measurement conditions.

### Note:

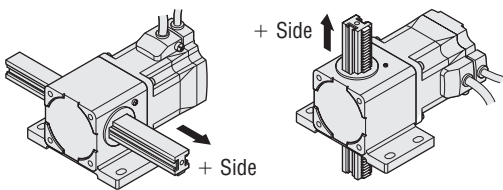
● Disconnect the motor and driver when taking an insulation resistance measurement or performing a dielectric voltage withstand test. Also, do not perform these tests on the absolute sensor part of the motor.

## Moving Direction

At the time of shipment, the moving direction of the rack is set as shown below.

**B** Type

**F** Type



## Rack Permissible Rotational Torque (Moment)

Product Name	Rack Permissible Rotational Torque (Moment)
<b>LM2</b>	0.3 N·m max.
<b>LM4</b>	0.5 N·m max.

- Keep the rotational torque below the permissible value.  
If the rotational torque is applied too much, the rack bushing will wear in a short time.



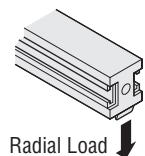
## Permissible Radial Load

Stroke mm	LM2□50	LM2□200	LM4□20	LM4□150
100	25	25 <sup>*1</sup>	120	60 <sup>*1</sup>
200	20	20 <sup>*1</sup>	90	40 <sup>*1</sup>
300	10	10 <sup>*1</sup>	70	30 <sup>*1</sup>
400	10	10 <sup>*1</sup>	60	25 <sup>*1</sup>
500	7	7 <sup>*1</sup>	50	20 <sup>*1</sup>
600	-	-	40	15 <sup>*1</sup>
1000	-	-	15	*2

- Either **F** (vertical to the mounting foot surface) or **B** (horizontal to the mounting foot surface) indicating the rack moving direction is entered where the box □ is located within the product name.

\*1 The value is the operation speed up to 90 mm/s. When operating at a speed exceeding 90 mm/s, do not apply a radial load to the rack by providing a guide, etc..

\*2 Do not apply a radial load to the rack by providing a guide, etc. since the rack is damaged.





## Dimensions (Unit: mm)

### LM2 B Type

#### ◇ Frame Size 60 mm High-Speed Type

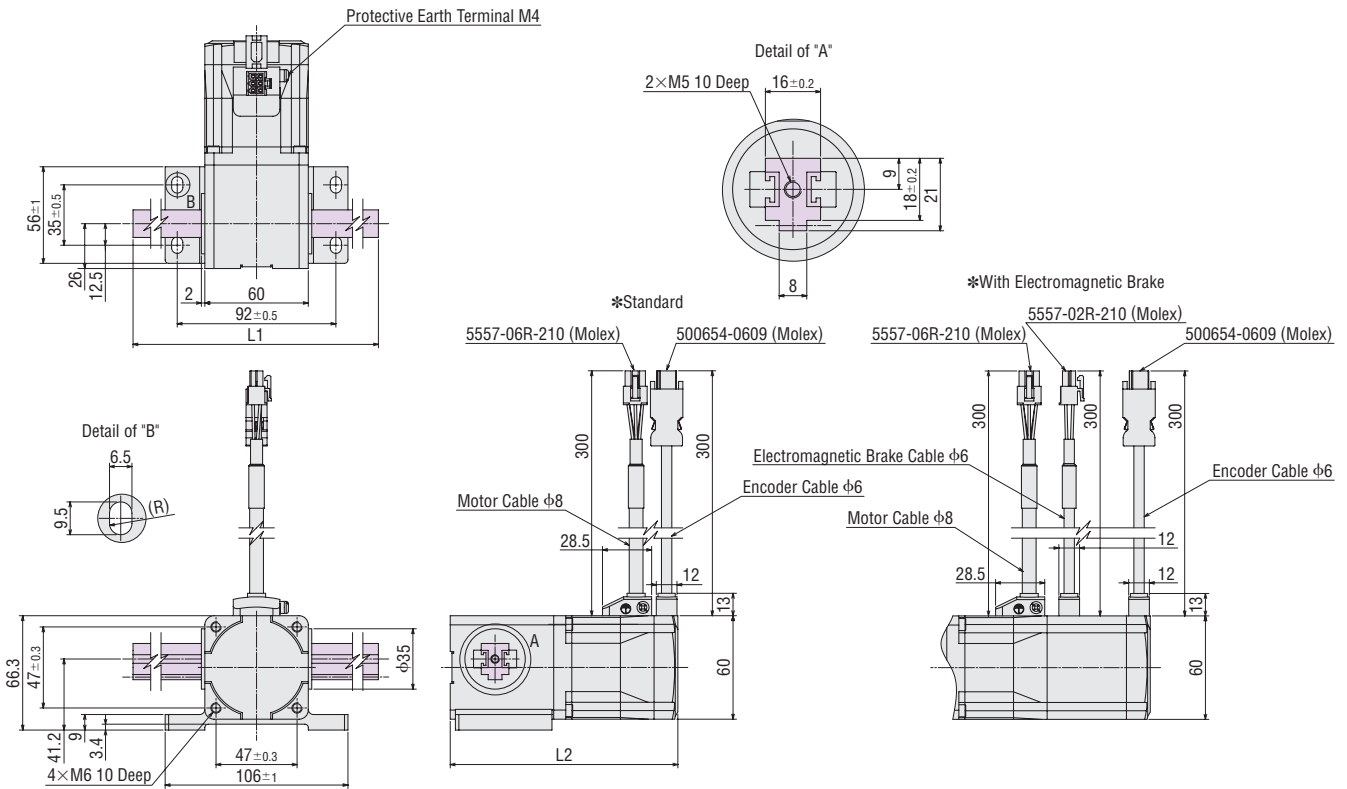
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2B500AZAC-1</b>	<b>LM2B200AZAK-1</b>	229.4	132	1.9	0.5	D7818
200	<b>LM2B500AZAC-2</b>	<b>LM2B200AZAK-2</b>	330.0		2.0	0.6	D7819
300	<b>LM2B500AZAC-3</b>	<b>LM2B200AZAK-3</b>	430.4		2.2	0.8	D7820
400	<b>LM2B500AZAC-4</b>	<b>LM2B200AZAK-4</b>	531.0		2.4	1.0	D7821
500	<b>LM2B500AZAC-5</b>	<b>LM2B200AZAK-5</b>	631.5		2.6	1.2	D7822
600	<b>LM2B500AZAC-6</b>	-	731.4		2.8	1.4	D7823
700	<b>LM2B500AZAC-7</b>	-	829.5		3.0	1.6	D7824
800	<b>LM2B500AZAC-8</b>	-	930.4		3.2	1.8	D7825

#### ◇ Frame Size 60 mm High-Speed Type with Electromagnetic Brake

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2B500AZMC-1</b>	<b>LM2B200AZMK-1</b>	229.4	178	2.2	0.5	D7826
200	<b>LM2B500AZMC-2</b>	<b>LM2B200AZMK-2</b>	330.0		2.3	0.6	D7827
300	<b>LM2B500AZMC-3</b>	<b>LM2B200AZMK-3</b>	430.4		2.5	0.8	D7828
400	<b>LM2B500AZMC-4</b>	<b>LM2B200AZMK-4</b>	531.0		2.7	1.0	D7829
500	<b>LM2B500AZMC-5</b>	<b>LM2B200AZMK-5</b>	631.5		2.9	1.2	D7830
600	<b>LM2B500AZMC-6</b>	-	731.4		3.1	1.4	D7831
700	<b>LM2B500AZMC-7</b>	-	829.5		3.3	1.6	D7832
800	<b>LM2B500AZMC-8</b>	-	930.4		3.5	1.8	D7833



● The shaded areas are moving parts.

● **LM2 F Type**

◇ **Frame Size 60 mm High-Speed Type**

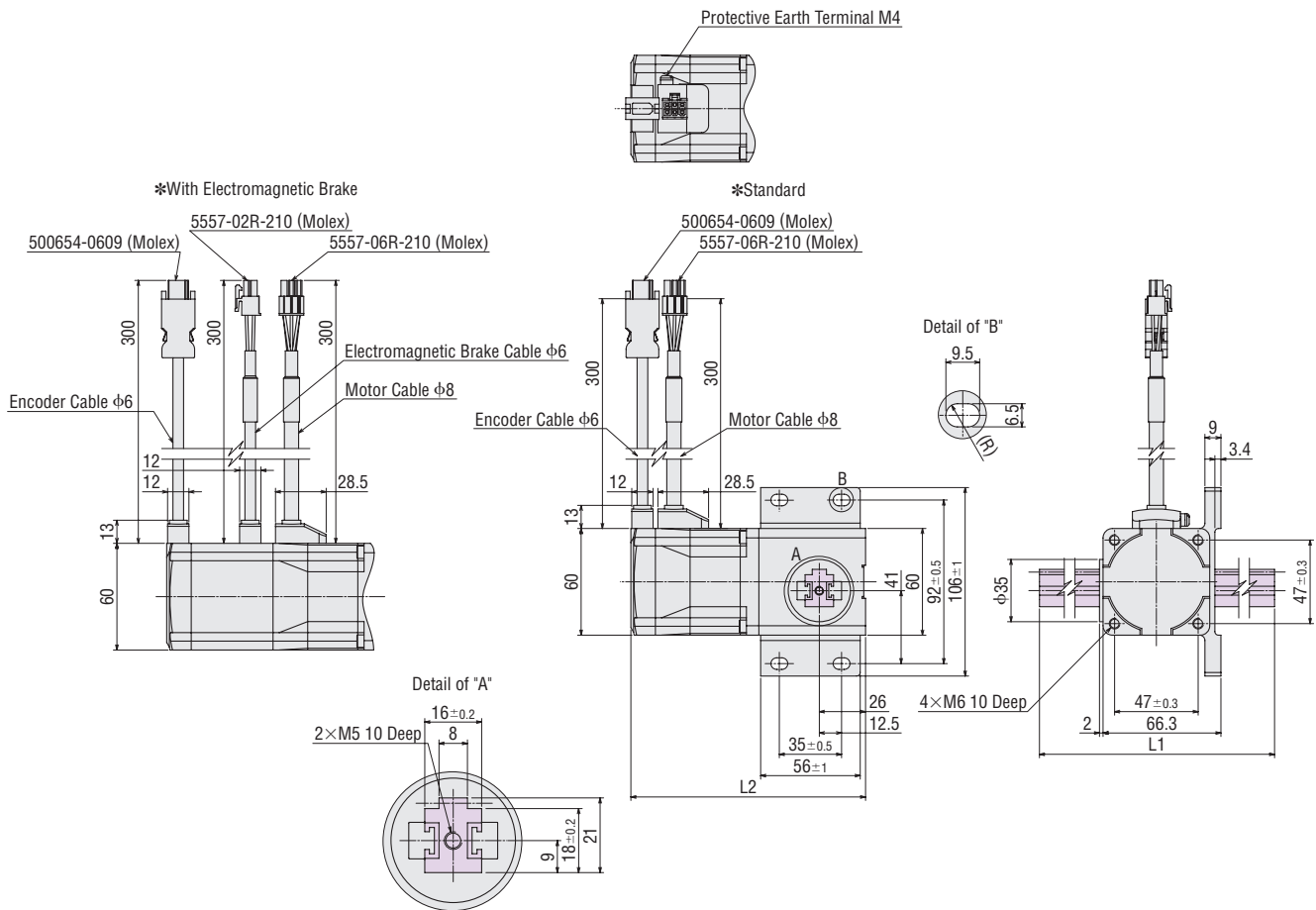
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2F500AZAC-1</b>	<b>LM2F200AZAK-1</b>	229.4	132	1.9	0.5	D7786
200	<b>LM2F500AZAC-2</b>	<b>LM2F200AZAK-2</b>	330.0		2.0	0.6	D7787
300	<b>LM2F500AZAC-3</b>	<b>LM2F200AZAK-3</b>	430.4		2.2	0.8	D7788
400	<b>LM2F500AZAC-4</b>	<b>LM2F200AZAK-4</b>	531.0		2.4	1.0	D7789
500	<b>LM2F500AZAC-5</b>	<b>LM2F200AZAK-5</b>	631.5		2.6	1.2	D7790
600	<b>LM2F500AZAC-6</b>	-	731.4		2.8	1.4	D7791
700	<b>LM2F500AZAC-7</b>	-	829.5		3.0	1.6	D7792
800	<b>LM2F500AZAC-8</b>	-	930.4		3.2	1.8	D7793

◇ **Frame Size 60 mm High-Speed Type with Electromagnetic Brake**

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2F500AZMC-1</b>	<b>LM2F200AZMK-1</b>	229.4	178	2.2	0.5	D7794
200	<b>LM2F500AZMC-2</b>	<b>LM2F200AZMK-2</b>	330.0		2.3	0.6	D7795
300	<b>LM2F500AZMC-3</b>	<b>LM2F200AZMK-3</b>	430.4		2.5	0.8	D7796
400	<b>LM2F500AZMC-4</b>	<b>LM2F200AZMK-4</b>	531.0		2.7	1.0	D7797
500	<b>LM2F500AZMC-5</b>	<b>LM2F200AZMK-5</b>	631.5		2.9	1.2	D7798
600	<b>LM2F500AZMC-6</b>	-	731.4		3.1	1.4	D7799
700	<b>LM2F500AZMC-7</b>	-	829.5		3.3	1.6	D7800
800	<b>LM2F500AZMC-8</b>	-	930.4		3.5	1.8	D7801



● The shaded areas are moving parts.

● **LM2 B Type**

◇ **Frame Size 60 mm Large Transportable Mass Type**

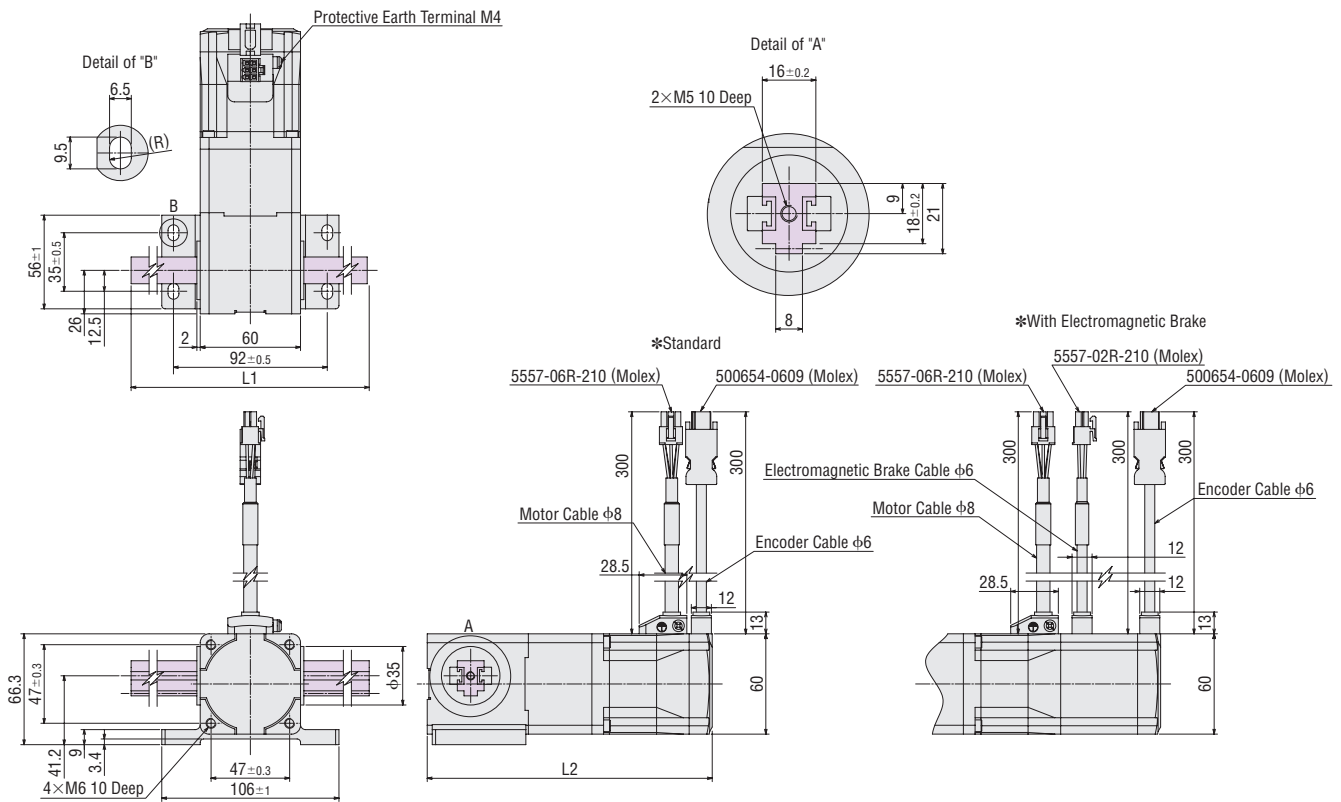
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2B90AZAC-1</b>	<b>LM2B50AZAK-1</b>	229.4	170.5	2.1	0.5	D7802
200	<b>LM2B90AZAC-2</b>	<b>LM2B50AZAK-2</b>	330.0		2.2	0.6	D7803
300	<b>LM2B90AZAC-3</b>	<b>LM2B50AZAK-3</b>	430.4		2.4	0.8	D7804
400	<b>LM2B90AZAC-4</b>	<b>LM2B50AZAK-4</b>	531.0		2.6	1.0	D7805
500	<b>LM2B90AZAC-5</b>	<b>LM2B50AZAK-5</b>	631.5		2.8	1.2	D7806
600	<b>LM2B90AZAC-6</b>	-	731.4		3.0	1.4	D7807
700	<b>LM2B90AZAC-7</b>	-	829.5		3.2	1.6	D7808
800	<b>LM2B90AZAC-8</b>	-	930.4		3.4	1.8	D7809

◇ **Frame Size 60 mm Large Transportable Mass Type with Electromagnetic Brake**

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2B90AZMC-1</b>	<b>LM2B50AZMK-1</b>	229.4	216.5	2.5	0.5	D7810
200	<b>LM2B90AZMC-2</b>	<b>LM2B50AZMK-2</b>	330.0		2.6	0.6	D7811
300	<b>LM2B90AZMC-3</b>	<b>LM2B50AZMK-3</b>	430.4		2.8	0.8	D7812
400	<b>LM2B90AZMC-4</b>	<b>LM2B50AZMK-4</b>	531.0		3.0	1.0	D7813
500	<b>LM2B90AZMC-5</b>	<b>LM2B50AZMK-5</b>	631.5		3.2	1.2	D7814
600	<b>LM2B90AZMC-6</b>	-	731.4		3.4	1.4	D7815
700	<b>LM2B90AZMC-7</b>	-	829.5		3.6	1.6	D7816
800	<b>LM2B90AZMC-8</b>	-	930.4		3.8	1.8	D7817



● The shaded areas are moving parts.

● **LM2 F Type**

◇ **Frame Size 60 mm Large Transportable Mass Type**

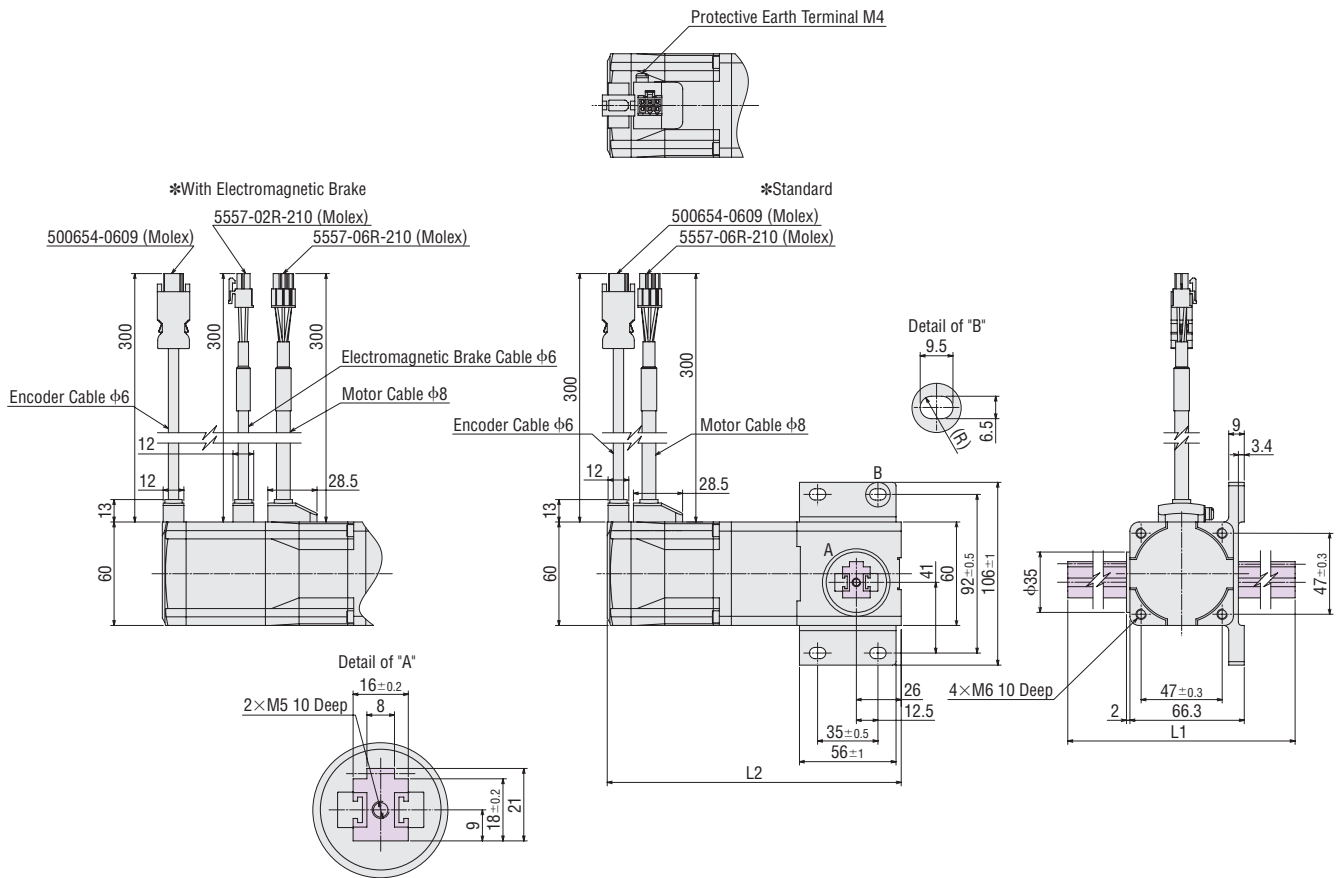
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2F90AZAC-1</b>	<b>LM2F50AZAK-1</b>	229.4	170.5	2.1	0.5	D7770
200	<b>LM2F90AZAC-2</b>	<b>LM2F50AZAK-2</b>	330.0		2.2	0.6	D7771
300	<b>LM2F90AZAC-3</b>	<b>LM2F50AZAK-3</b>	430.4		2.4	0.8	D7772
400	<b>LM2F90AZAC-4</b>	<b>LM2F50AZAK-4</b>	531.0		2.6	1.0	D7773
500	<b>LM2F90AZAC-5</b>	<b>LM2F50AZAK-5</b>	631.5		2.8	1.2	D7774
600	<b>LM2F90AZAC-6</b>	-	731.4		3.0	1.4	D7775
700	<b>LM2F90AZAC-7</b>	-	829.5		3.2	1.6	D7776
800	<b>LM2F90AZAC-8</b>	-	930.4		3.4	1.8	D7777

◇ **Frame Size 60 mm Large Transportable Mass Type with Electromagnetic Brake**

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg	Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input					
100	<b>LM2F90AZMC-1</b>	<b>LM2F50AZMK-1</b>	229.4	216.5	2.5	0.5	D7778
200	<b>LM2F90AZMC-2</b>	<b>LM2F50AZMK-2</b>	330.0		2.6	0.6	D7779
300	<b>LM2F90AZMC-3</b>	<b>LM2F50AZMK-3</b>	430.4		2.8	0.8	D7780
400	<b>LM2F90AZMC-4</b>	<b>LM2F50AZMK-4</b>	531.0		3.0	1.0	D7781
500	<b>LM2F90AZMC-5</b>	<b>LM2F50AZMK-5</b>	631.5		3.2	1.2	D7782
600	<b>LM2F90AZMC-6</b>	-	731.4		3.4	1.4	D7783
700	<b>LM2F90AZMC-7</b>	-	829.5		3.6	1.6	D7784
800	<b>LM2F90AZMC-8</b>	-	930.4		3.8	1.8	D7785



● The shaded areas are moving parts.

● **LM4 B Type**

◇ **Frame Size 80 mm**

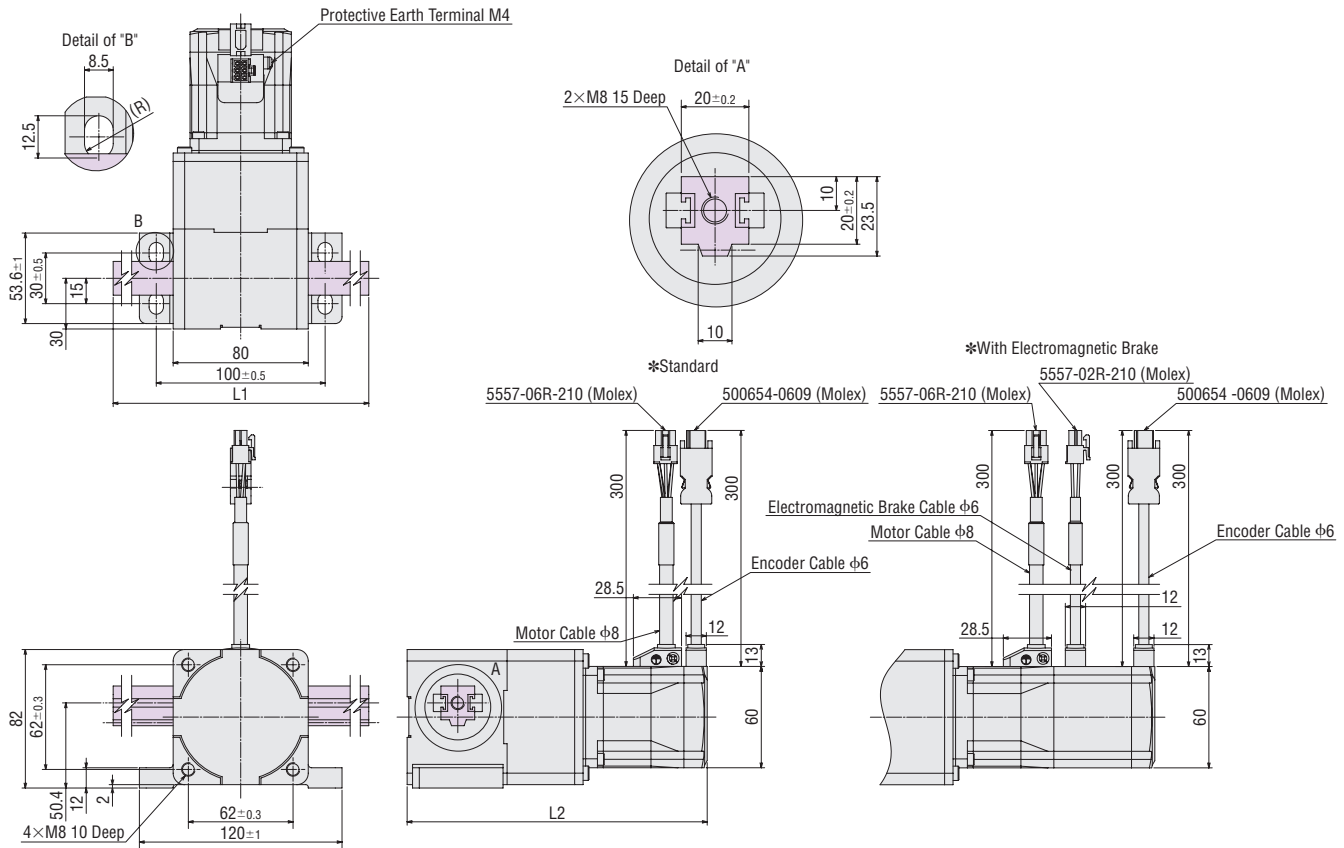
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg		Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input			High-Speed Type	Large Transportable Mass Type		
	100	LM4B□AZAC-1						
200	LM4B□AZAC-2	LM4B□AZAK-2	341.6	3.1	3.2	1.0	D7845	
300	LM4B□AZAC-3	LM4B□AZAK-3	443.7	3.4	3.5	1.3	D7846	
400	LM4B□AZAC-4	LM4B□AZAK-4	541.9	3.6	3.7	1.5	D7847	
500	LM4B□AZAC-5	LM4B□AZAK-5	640.1	3.9	4.0	1.8	D7848	
600	LM4B□AZAC-6	LM4B□AZAK-6	742.2	4.2	4.3	2.1	D7849	
700	LM4B□AZAC-7	-	840.4	4.5	4.6	2.4	D7850	
800	LM4B□AZAC-8	-	942.5	4.8	4.9	2.7	D7851	
900	LM4B□AZAC-9	-	1040.7	5.1	5.2	3.0	D7852	
1000	LM4B□AZAC-10	LM4B□AZAK-10	1142.8	5.4	5.5	3.3	D7853	

◇ **Frame Size 80mm with Electromagnetic Brake**

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg		Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input			High-Speed Type	Large Transportable Mass Type		
	100	LM4B□AZMC-1						
200	LM4B□AZMC-2	LM4B□AZMK-2	341.6	3.5	3.6	1.0	D7865	
300	LM4B□AZMC-3	LM4B□AZMK-3	443.7	3.8	3.9	1.3	D7866	
400	LM4B□AZMC-4	LM4B□AZMK-4	541.9	4.0	4.1	1.5	D7867	
500	LM4B□AZMC-5	LM4B□AZMK-5	640.1	4.3	4.4	1.8	D7868	
600	LM4B□AZMC-6	LM4B□AZMK-6	742.2	4.6	4.7	2.1	D7869	
700	LM4B□AZMC-7	-	840.4	4.9	5.0	2.4	D7870	
800	LM4B□AZMC-8	-	942.5	5.2	5.3	2.7	D7871	
900	LM4B□AZMC-9	-	1040.7	5.5	5.6	3.0	D7872	
1000	LM4B□AZMC-10	LM4B□AZMK-10	1142.8	5.8	5.9	3.3	D7873	



- A number indicating the rack maximum speed is entered where the box □ is located within the product name.  
**40** (40 mm/s) or **500** (500 mm/s) for the AC power input and **20** (20 mm/s) or **150** (150 mm/s) for the DC power input is entered, respectively.
- The shaded areas are moving parts.

● **LM4 F Type**

◇ **Frame Size 80 mm**

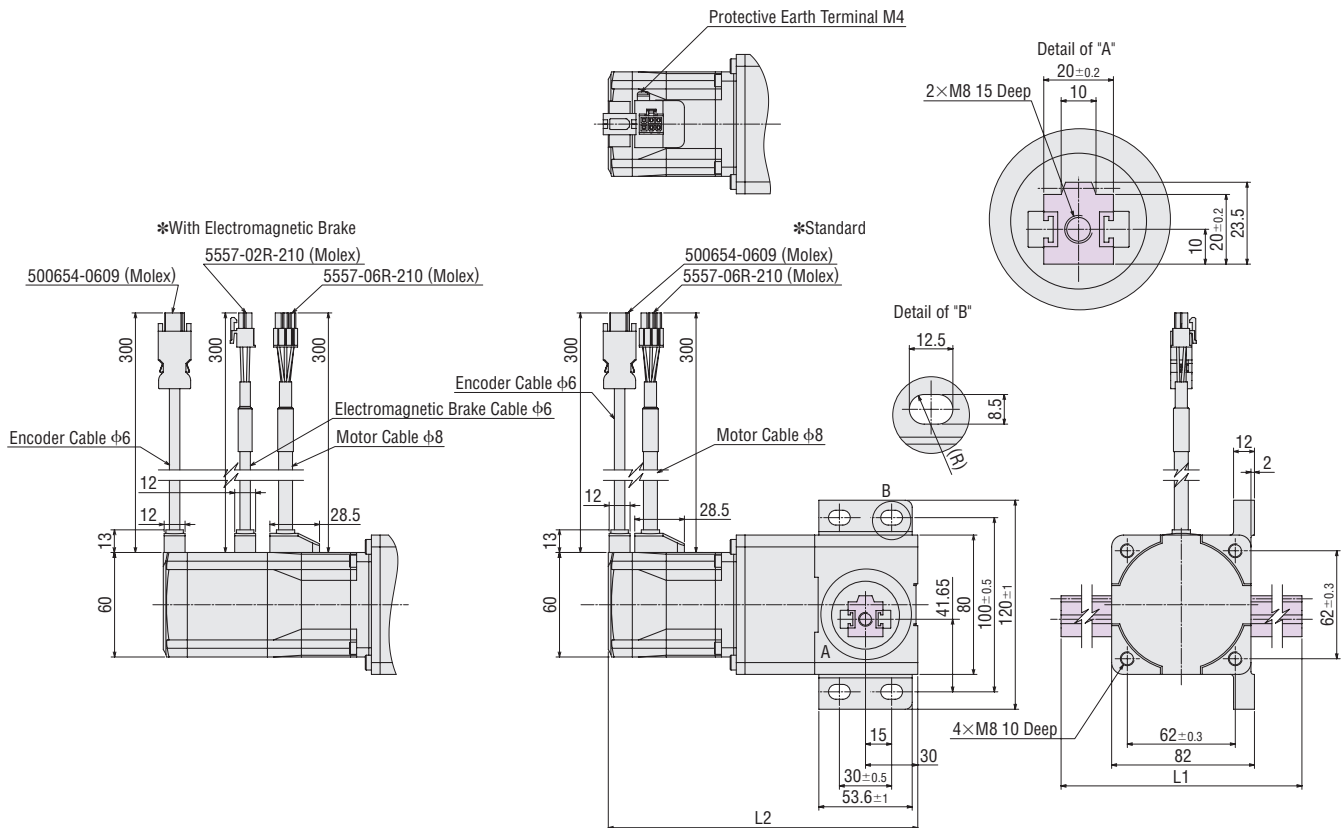
2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg		Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input			High-Speed Type	Large Transportable Mass Type		
	100	<b>LM4F</b> □ <b>AZAC-1</b>						
200	<b>LM4F</b> □ <b>AZAC-2</b>	<b>LM4F</b> □ <b>AZAK-2</b>	341.6	3.1	3.2	1.0	D7835	
300	<b>LM4F</b> □ <b>AZAC-3</b>	<b>LM4F</b> □ <b>AZAK-3</b>	443.7	3.4	3.5	1.3	D7836	
400	<b>LM4F</b> □ <b>AZAC-4</b>	<b>LM4F</b> □ <b>AZAK-4</b>	541.9	3.6	3.7	1.5	D7837	
500	<b>LM4F</b> □ <b>AZAC-5</b>	<b>LM4F</b> □ <b>AZAK-5</b>	640.1	3.9	4.0	1.8	D7838	
600	<b>LM4F</b> □ <b>AZAC-6</b>	<b>LM4F</b> □ <b>AZAK-6</b>	742.2	4.2	4.3	2.1	D7839	
700	<b>LM4F</b> □ <b>AZAC-7</b>	-	840.4	4.5	4.6	2.4	D7840	
800	<b>LM4F</b> □ <b>AZAC-8</b>	-	942.5	4.8	4.9	2.7	D7841	
900	<b>LM4F</b> □ <b>AZAC-9</b>	-	1040.7	5.1	5.2	3.0	D7842	
1000	<b>LM4F</b> □ <b>AZAC-10</b>	<b>LM4F</b> □ <b>AZAK-10</b>	1142.8	5.4	5.5	3.3	D7843	

◇ **Frame Size 80 mm with Electromagnetic Brake**

2D & 3D CAD

Stroke mm	Product Name		L1	L2	Mass (Rack Mass Included) kg		Rack Mass kg	2D CAD
	AC Power Supply Input	DC Power Supply Input			High-Speed Type	Large Transportable Mass Type		
	100	<b>LM4F</b> □ <b>AZMC-1</b>						
200	<b>LM4F</b> □ <b>AZMC-2</b>	<b>LM4F</b> □ <b>AZMK-2</b>	341.6	3.5	3.6	1.0	D7855	
300	<b>LM4F</b> □ <b>AZMC-3</b>	<b>LM4F</b> □ <b>AZMK-3</b>	443.7	3.8	3.9	1.3	D7856	
400	<b>LM4F</b> □ <b>AZMC-4</b>	<b>LM4F</b> □ <b>AZMK-4</b>	541.9	4.0	4.1	1.5	D7857	
500	<b>LM4F</b> □ <b>AZMC-5</b>	<b>LM4F</b> □ <b>AZMK-5</b>	640.1	4.3	4.4	1.8	D7858	
600	<b>LM4F</b> □ <b>AZMC-6</b>	<b>LM4F</b> □ <b>AZMK-6</b>	742.2	4.6	4.7	2.1	D7859	
700	<b>LM4F</b> □ <b>AZMC-7</b>	-	840.4	4.9	5.0	2.4	D7860	
800	<b>LM4F</b> □ <b>AZMC-8</b>	-	942.5	5.2	5.3	2.7	D7861	
900	<b>LM4F</b> □ <b>AZMC-9</b>	-	1040.7	5.5	5.6	3.0	D7862	
1000	<b>LM4F</b> □ <b>AZMC-10</b>	<b>LM4F</b> □ <b>AZMK-10</b>	1142.8	5.8	5.9	3.3	D7863	



● A number indicating the rack maximum speed is entered where the box □ is located within the product name.

● **40** (40 mm/s) or **500** (500 mm/s) for the AC power input and **20** (20 mm/s) or **150** (150 mm/s) for the DC power input is entered, respectively.

● The shaded areas are moving parts.

# Peripheral Equipment

## Photomicrosensor Sets

A photomicrosensor set, which consists of a photomicrosensor (with flexible cable), sensor mounting bracket, shielding plate and installation screw, is provided to facilitate easy return-to-home operation.

All parts needed for return-to-home operation are included in the set, so you will spend less time designing, fabricating or procuring parts in connection with sensor installation.

### Features

#### ● Compact

This is a compact sensor that takes into consideration the installation space. It is easy to detect the rack position.

#### ● Two Output Signals are Available

By installing a sensor on both sides of the rack, it is possible to detect two signals at the both moving ends or the signals at the moving end and the intermediate stop position, separately.

#### ● Product Line

Product Name	Applicable Product	List Price
<b>PARP-PS2B</b>	<b>LM2</b>	
<b>PARP-PS4B</b>	<b>LM4</b>	

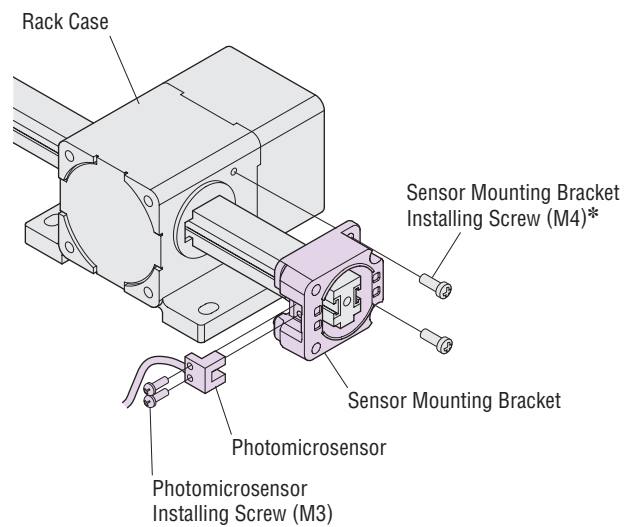
The following items are included with the product.  
 Photomicrosensors\* (2 pieces), Shielding Plates (4 pieces), Sensor Mounting Bracket (1 piece), Photomicrosensor Installation Screws (4 pieces), Operating Manual  
 \*With Flexible Cable (3 m)

#### ● Specifications

Product Name	EE-SX951-R (OMRON)
Power Supply Voltage	5 to 24 VDC±10%, Ripple (Peak to Peak) 10% max.
Consumption Current	15 mA or less
Control Output	NPN Open-Collector Output, 5 to 24 VDC, 50 mA or less Residual Voltage: 0.7 VDC or less (At load current of 50 mA) : 0.4 VDC or less (At load current of 5 mA)
Indicator LED	Detection Indication (Red)
Logic	Normally Open/Normally Closed (Possible to switch by connection)



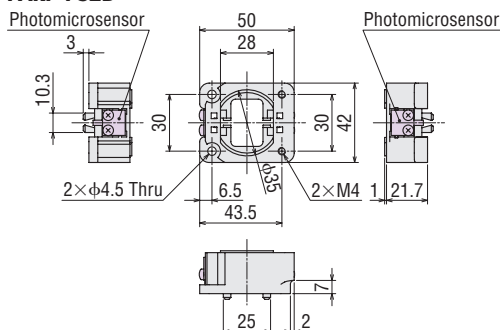
#### ● Installation Example



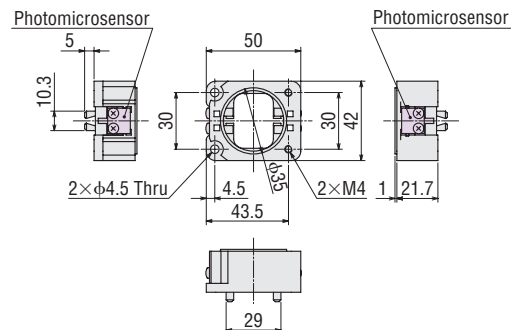
\*Use the screws included with the rack case.

#### ● Dimensions (Unit: mm)

##### PARP-PS2B



##### PARP-PS4B



● The dimensions with photomicrosensor set attached to L Series are available. Refer to the Oriental Motor website.

## Rack Cover (For Photomicrosensor)

It is a simple cover that protects the rack from impact and particles adhesion.

It also prevents grease from adhering to human body, equipment and so on. Use it together with photomicrosensor set sold separately.

Product Name	Applicable Product	Applicable Stroke (mm)	List Price
<b>2LSC-P02</b>	<b>LM2</b>	100, 200	
<b>2LSC-P04</b>		300, 400	
<b>4LSC-P02</b>	<b>LM4</b>	100, 200	
<b>4LSC-P04</b>		300, 400	

