Oriental motor

Hollow Rotary Actuators

DGII Series

αSTEP **AZ** Series Equipped
Servo Motor **AZX** Series Equipped

These integrated hollow rotary table and motor products allow for the direct installation of large-inertia disks and arms. This can save time and costs associated with designing the mechanism, sourcing necessary parts, assembly, and adjustment.

Horizontal Motor Mounting

Vertical Motor Mounting

Hollow Rotary Actuators

DGII Series

Parts Procurement, Mechanism Designing, Assembly, and Adjustment:
Reduced Hassle

Hollow Output Table Max. Diameter of Hollow Section:
Ø100 mm

Max. Permissible Torque
50 Nm

Max. Permissible Axial Load
4000 N

Repetitive Positioning Accuracy
±15 arcsec (±0.004°)

2 Product Lines Can be Equipped with the Integrated DGII Series Motor and Table: The AZ Series and the AZX Series

Equipped αSTEP AZ Series (Page 19)

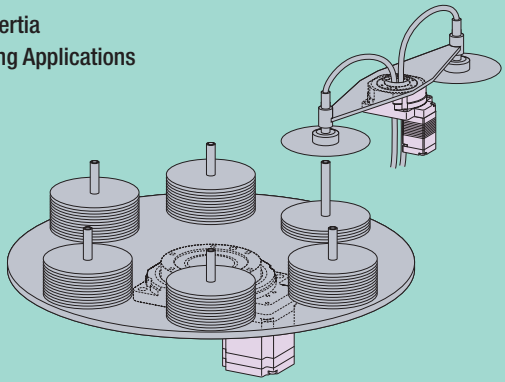
- Built-In Battery-Free Absolute Encoder
- Max. Permissible Torque: 50 Nm
- Max. Speed: 1800 deg/s
- Wide Variety of Product Lines
- Compatible with Various FA Networks

EtherCAT® EtherNet/IP PROFINET
Modbus (RTU)

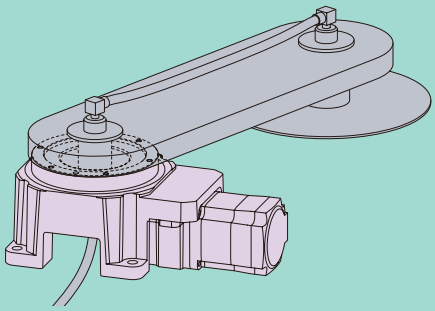
●Refer to pages 4 to 5 for product lines and specifications of each series.

●A Wide Variety of Applications

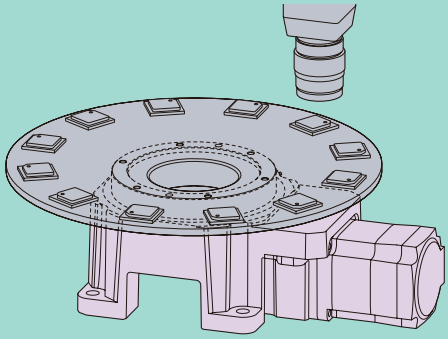
Load Inertia
Changing Applications



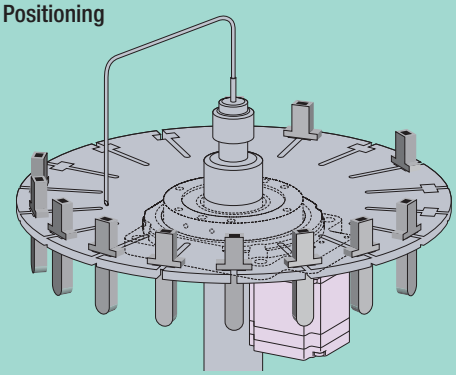
Moment Load
Applications



High Accuracy
Positioning Applications



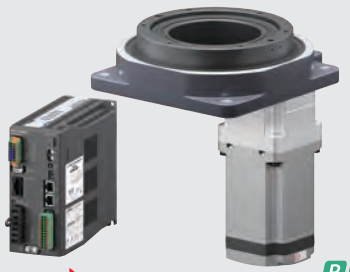
Hollow Hole-Mediated,
High Precision Positioning
Applications



➜For Higher Speed and Higher Torque Demands

Equipped Servo Motor **AZX** Series (Page 61)

- ●Built-In Battery-Free Absolute Sensor
- ●Instantaneous Max. Torque: 50 Nm
- ●Max. Speed: 1833 deg/s
- ●Network-Compatible Drivers
- ●The Basic Operations are the Same as the **AZ** Series



EtherCAT EtherNet/IP PROFINET

Product Line

αSTEP AZ Series Equipped

AC : Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC Input　DC : 24/48 VDC Input

Actuator												
Product Number Frame Size Input Type	Electromagnetic Brake	Diameter of Hollow Section [mm]	Gear Ratio	Permissible Torque [Nm]	Motor Direction	Max. Speed [deg/s]	Permissible Moment [Nm]	Permissible Axial Load [N]	Lost Motion [arcmin]	Backlash [arcmin]	Angular Transmission Accuracy [arcmin]	Repetitive Positioning Accuracy [arcsec]
							20 40 60 80	500 1000 2000 3000				
DGM60 60 mm DC 	None	ϕ28	18	0.9	Vertical	1200	2	100	2	Non-Backlash	4	±15
DGM85R 85 mm AC DC 	None	ϕ33		4.5		1200	10	500				
	Equipped											
DGM130R 130 mm AC DC 	None	ϕ62		12		900 -1200	50	2000			3	
	Equipped											
DGM200R 200 mm AC 	None	ϕ100		50		660	100	4000			2	
	Equipped											
DGB85 85 mm AC DC 	None	ϕ33	12	3	Horizontal	600 -1800	10	500	–	6	6	±30
			18	4.5								
			36	9								
	Equipped		12	3								
			18	4.5								
			36	9								
DGB130 130 mm AC DC 	None	ϕ62	18	12		450 -1200	50	2000				
			36	24								
	Equipped		18	12								
			36	24								

● Type with electromagnetic brake is not available with DC power supply for **DGB85** and **DGB130**.

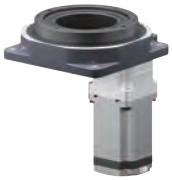
AC : Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC Input　DC : 24/48 VDC Input

Driver Type					
Network-Compatible Drivers EtherCAT. EtherNet/IP PROFINET  AC DC	Built-in Controller FLEX Modbus (RTU)  AC DC	Pulse Input with RS-485 Communication  AC DC	Pulse Input  AC DC	Network-Compatible Multi-Axis Driver* EtherCAT.  DC	mini Driver* EtherCAT. EtherNet/IP PROFINET Modbus (RTU) Pulse Input with RS-485 Communication  DC

✻Please refer to the Oriental Motor website for product details.

Servo Motor **AZX** Series Equipped

AC : Single-Phase/Three-Phase 200-240 VAC Input

Actuator														
Product Number Frame Size Input Type	Electro-magnetic Brake	Diameter of Hollow Section [mm]	Gear Ratio	Rated Torque [Nm]	Max. Instantaneous Torque [Nm]	Motor Direction	Max. Speed [deg/s]	Permissible Moment [Nm]	Permissible Axial Load [N]	Lost Motion [arcmin]	Back-lash [arcmin]	Angular Transmission Accuracy [arcmin]	Repetitive Positioning Accuracy [arcsec]
								20 40 60 80	500 1000 2000 3000				
DGM200R 200 mm AC 	None	ϕ100	18	19	50	Vertical	1833	100	4000	3	Non-Backlash	–	±15
	Equipped												

Driver Type
Network-Compatible Drivers EtherCAT. EtherNet/IP PROFINET  AC

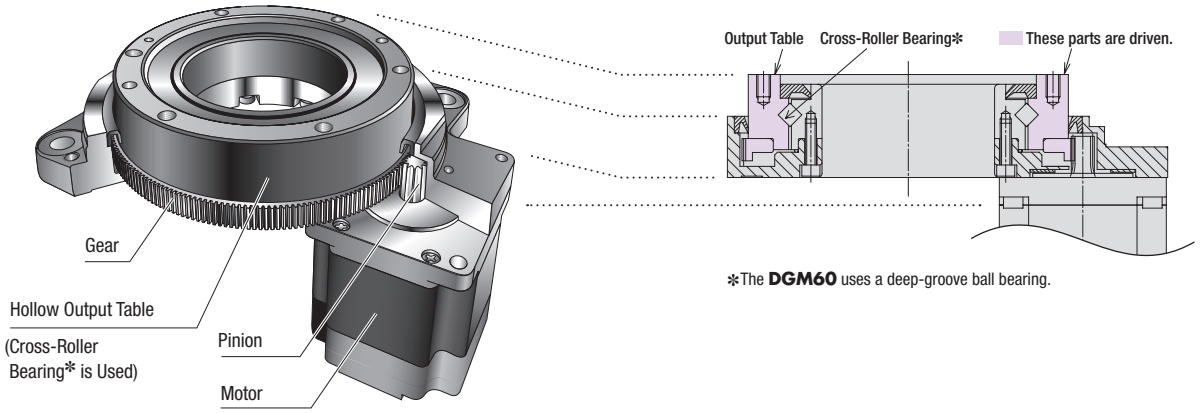
Features of Hollow Rotary Actuators

The **DGII** Series is a line of integrated products that combines a hollow rotary table and **α_{STEP} AZ** Series stepper motor.
The actuator has an internal speed reduction structure, making high power driving possible.

Features

By using a cross-roller bearing* for the hollow output table, it achieves both high power and high rigidity.

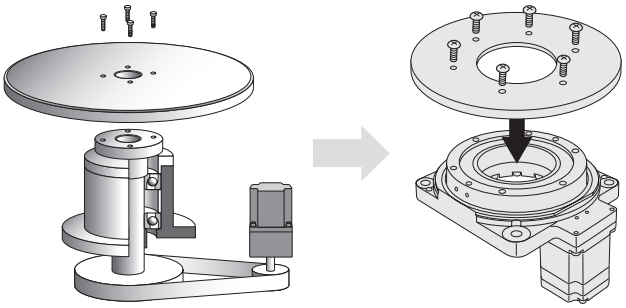
●The figure below shows structure for a vertically mounted motor. The Structure of Hollow Output Table is the Same for Horizontally Mounted Motors.



*The **DGM60** uses a deep-groove ball bearing.

Simplified Design

Equipment tables and arms can be installed directly on the output table. Compared to mechanical components such as a belt and pulley, this saves the hassle and cost of designing the mechanism, arranging for necessary parts, adjusting the belt tension, etc.



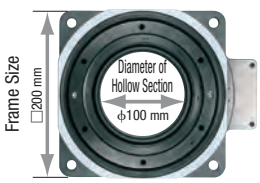
Motor + Mechanical Component (Designed and arranged separately)

DGII Series (Integrated product)

Large-Diameter, Hollow Output Table Makes Simple Wiring and Piping Possible

The large diameter hollow hole (through-hole) helps reduce the complexity of wiring and piping, thus simplifying equipment design.

● Filling Equipment with Piped-in Liquid



Example: For **DGM200R**

Product Number	Frame Size [mm]	Diameter of Hollow Section [mm]
DGM60	60	ϕ28
DG□85R	85	ϕ33
DG□130R	130	ϕ62
DGM200R	200	ϕ100

High-Precision Positioning

High precision positioning is achieved by combining the motor and the rotary table mechanism.

	Motor Vertical Mounting	Motor Horizontal Mounting
Backlash	Non-Backlash	6 arcmin (0.1°)
Repetitive Positioning Accuracy	±15 arcsec (±0.004°)	±30 arc seconds (±0.008°)

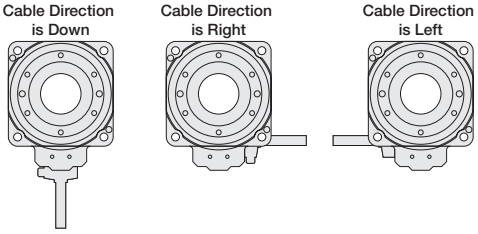
Note The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

Select the Right Cable Outlet Direction for the Application (Only for **AZ** Series Equipped)

Choose the motor cable outlet direction based on the application. *

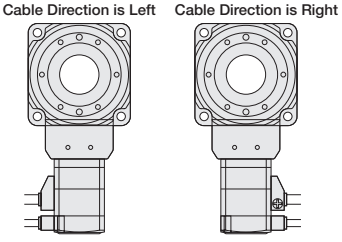
Motor Vertical Mounting

●Choose from 3 Cable Outlet Directions.



Motor Horizontal Mounting

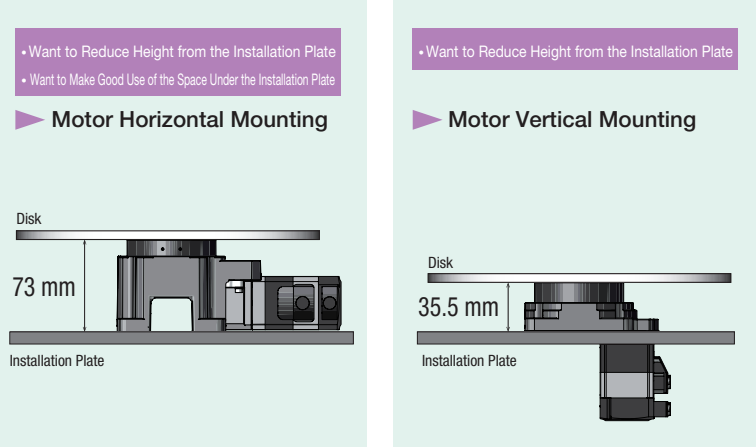
●Choose from 2 Cable Outlet Directions.



*It may not be available for some frame sizes. Check the dimension.

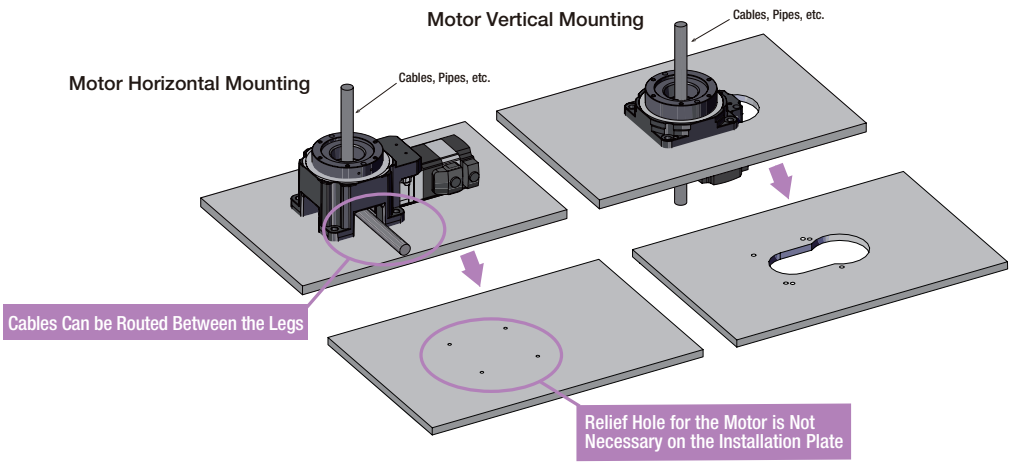
Specific Use for Specific Space

In addition to the conventional type in which the rotary table axis is assembled parallel to the motor axis (motor vertical mounting), a product line in which the rotary table axis is assembled perpendicularly to the motor axis (motor horizontal mounting) is now available. Select the type that best suits the equipment's installation space.
(Example: For standard type with 85 mm frame size)



●Advantages of Horizontally Mounted Motors

- The installation plate can be omitted because it does not need a relief hole for the motor.
- Pipes and cables can be routed between the legs under the table.

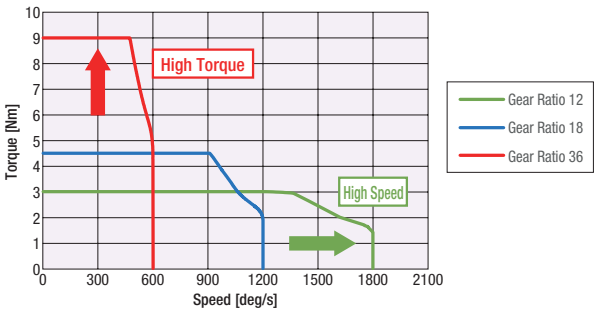


Wider Specification Range through Addition of Gear Ratios (For Horizontally Mounted Motor Only)

Actuators with horizontally mounted motors now come with 3 types of gear ratios: 12, 18 and 36.

Select the gear ratio depending on the required speed and required torque.

DGB85R AC Power Supply Products
Speed-Torque Characteristics (Reference Value)



High Load and High Rigidity

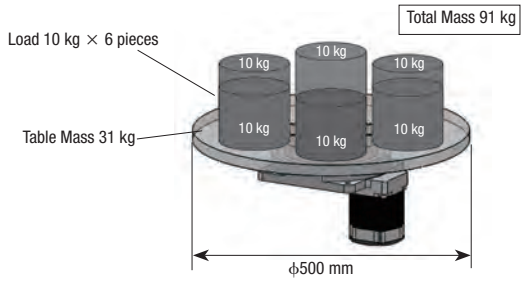
A cross-roller bearing is used for the bearing on the hollow output table, providing high load and high rigidity. (Except for **DGM60**)

·Max. Permissible Axial Load: 4000 N
·Max. Permissible Moment: 100 Nm

● High Load

Example: Driving with 6 loads on a table

Load Mass: 91 kg
Table 31 kg (Diameter 500 mm, thickness 20 mm, iron)
Load 10 kg × 6 pieces



[Axial Load]
(31 kg + 10 kg × 6 pieces × gm/s^2≒893 N
The axial load for a total mass of 91 kg is 893 N
The permissible axial load of **DGM200R** is 4000 N, which is within the permissible value.

High Load Driving is Possible

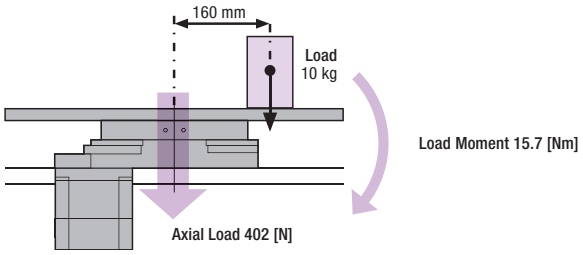
<Operation Example>

Actuator Product Name	: **DGM200R-AZAC**
Driver Product Name	: **AZD-CD**
Power Supply Input	: 200 VAC
Overhung Distance	: 160 mm
Installation Direction	: Horizontal

● High Rigidity

Example: Driving with a load placed 160 mm away from the table center.

Load Mass: 41 kg
Table 31 kg (Diameter 500 mm, thickness 20 mm, iron)
Load 10 kg × 1 pieces



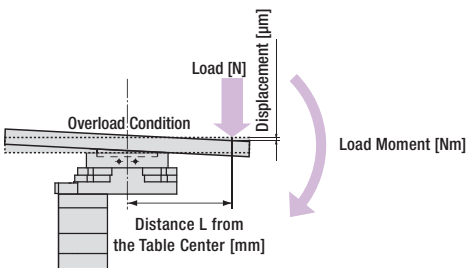
[Load Moment]
10 kg × gm/s^2 × 0.16 m ≒ 15.7 Nm
When a 10 kg load is placed 160 mm from the center of the table, the load moment is 15.7 Nm.
The permissible moment of **DGM200R** is 100 Nm, which is within the permissible value.

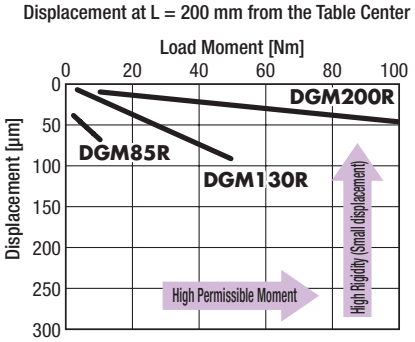
[Axial Load]
(31 kg + 10 kg) × gm/s^2 ≒ 402 N
The axial load for a total mass of 41kg is 402 N
The permissible axial load of **DGM200R** is 4000 N, which is within the permissible value.

This Series Can be Driven Even When a Large Load is Placed Away from the Center of Rotary Actuator Table

Relationship Between Displacement and the Load Moment Positioned 200 mm from the Table Center

The received permissible moment increases as the product number increases, and the displacement caused by the load moment decreases.





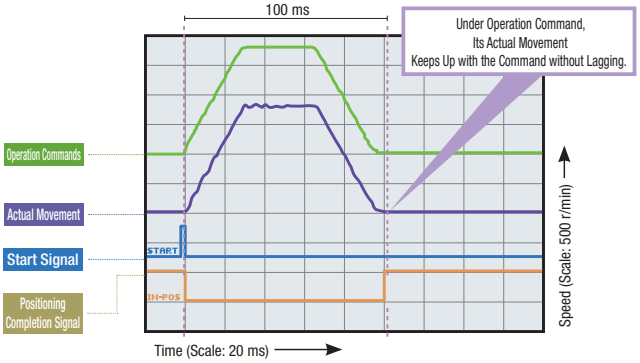
αSTEP-Specific High Performance and High Reliability

αSTEP is a stepper motor-based series of motors with a unique hybrid control system that combines the advantages of both open loop and closed loop control. The motor positions are constantly monitored and control is switched between 2 types depending on the situation.

Quick Positioning through Agile Responsiveness

Similar to stepper motors, short-distance positioning can be performed in a short amount of time. Since it is a compact yet high-torque motor that operates synchronously with pulse command, it offers excellent acceleration performance and response.

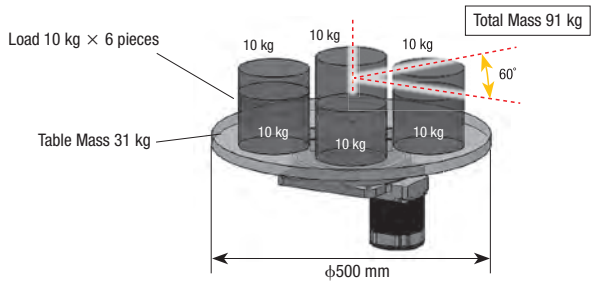
Actual Motor Movement Under Operation Commands



<Operation Example>

Actuator Product Name	:	**DGM200R-AZAC**
Driver Product Name	:	**AZD-CD**
Power Supply Input	:	200 VAC
Load Mass		91 kg
	:	Table 31 kg (Diameter 500 mm, thickness 20 mm, iron)
	:	Load 10 kg × 6 pieces
Installation Direction	:	Horizontal
Traveling Amount	:	60˚

Total inertia of table and load = 26330 × 10^{-4} kg·m²

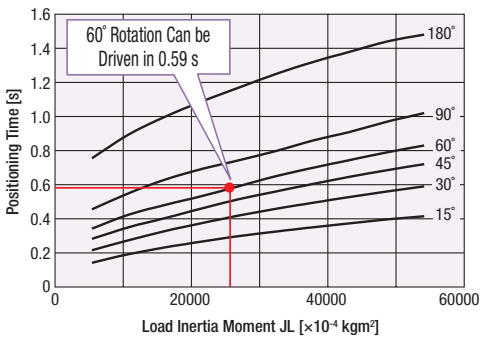


Quick Positioning

With **DGM200R**, 60˚ rotation can be driven in 0.59 s with a total mass of 91 kg.

Load Inertia – Positioning Time (Reference value)

DGM200R



The positioning time can be inferred using catalog data

Quick positioning is possible even with large loads

αSTEP
AZ Series
Built-in Battery-Free Absolute Sensor

Continues Operation Even with Sudden Load Fluctuation and Sudden Acceleration

In normal conditions, it operates synchronously with pulse commands under open loop control, and because of its compact size and high torque generation, it has excellent acceleration performance and responsiveness. In an overload condition, it switches immediately to closed loop control to correct the position.

Low Vibration Even at Low Speed

Thanks to the microstep drive system and smooth drive function*, which come standard, resolution can be improved without mechanical elements such as a speed reduction mechanism. As a result, speed fluctuation is minimal even at low speeds, leading to improved stability.

✻What is Smooth Drive Function?

The smooth drive function automatically microsteps based on the same traveling amount and traveling speed used in the full step mode, without changing the pulse input settings.

Alarm Signal Output in Case of Abnormality

If a continuous overload is applied, an alarm signal is output. Also, when the positioning is completed, a signal is output. This provides high reliability.

Tuning-Free

Since it is normally operated under open loop control, the movement that has been configured in setting is secured without tuning even when there is load fluctuation.

Holding the Stop Position without Hunting

Thanks to the open loop control under normal condition, it does not cause a phenomenon known as hunting in which the shaft moves slightly when it is stopped. Since it can hold the stop position securely, it is ideal for applications where absence of vibration upon stopping is required.

Energy Savings, Low Heat Generation

High-efficiency motors reduce heat generation and save energy.

αSTEP AZ Series Equipped Absolute System-Mediated Simple Home Setting and Return-to-Home

Oriental Motor has developed a compact mechanical multi-turn absolute sensor <ABZO Sensor> (patented). This can help improve productivity and reduce costs.

Home Sensor is Not Necessary

Because it is an absolute system, there is no need for a home sensor.

Reduced Costs

This can lower the sensor costs and wiring costs, which can lower the system system costs.

Simple Wiring

Wiring is simplified, and the degree of freedom for equipment design is increased.

Not Affected by External Sensor Malfunctions

There are no concerns for malfunction, failure or disconnection of external sensors.

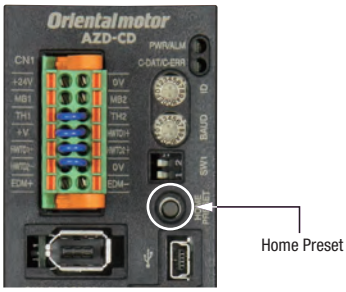
Improved Return-to-Home Accuracy

Home position accuracy is increased because the return-to-home operation is performed regardless of any variations in home sensor sensitivity.

*If no limit sensor is installed, movements that exceed the limit values can be avoided through the use of the limits in the driver software.

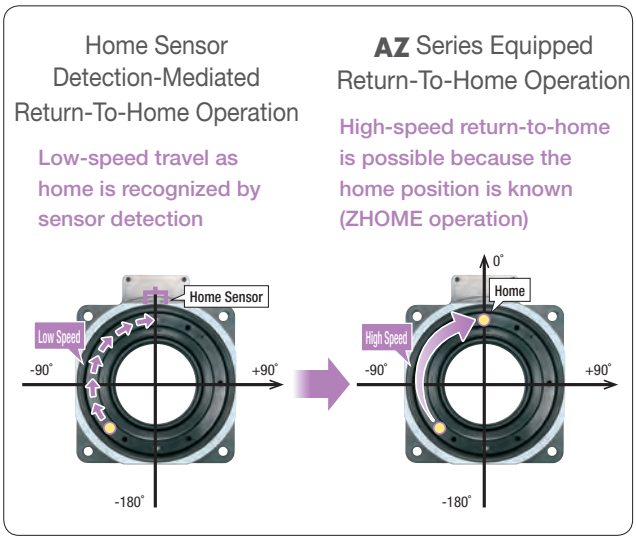
Simple Home Setting

The home position can be easily set by pressing a switch on the driver's surface, which is saved by the Absolute Sensor. In addition, home setting is possible with the support software (**MEXE02**) or by using an external input signal.



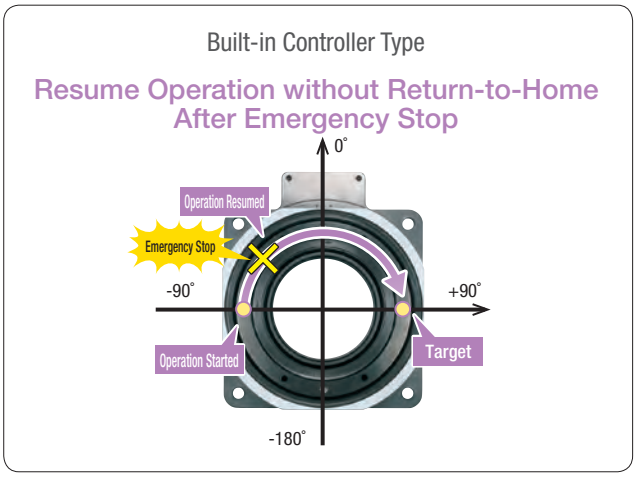
High-Speed Return-to-Home

Because return-to-home is possible without using a home sensor, return-to-home can be performed at high speed without taking the sensor sensitivity into account, allowing for a shortened machine cycle.



Return-to-Home is Not Necessary

Even if the power shuts down during a positioning operation, the positioning information is stored. With the built-in controller type, you can restart the positioning operation without performing return-to-home after an emergency stop on the production line or a blackout.



Mechanical-Type Sensor Means No Batteries

Battery-Free

No battery is required because it is a mechanical-type sensor. Because positioning information is managed mechanically by the Absolute Sensor, the positioning information can be preserved, even if the power turns off, or if the cable between the motor and the driver is disconnected.

Reduced Maintenance

Because there is no battery that needs replacing, maintenance time and costs can be reduced.

Unlimited Driver Installation Possibilities

Because there is no need to secure space for battery replacement, there are no restrictions on the installation location of the driver, improving the flexibility and freedom of the layout design of the control cabinet.

Safe for Overseas Shipping

Batteries will self-discharge, so care must be taken when the equipment requires a long transportation time, such as when being sent overseas. The Absolute Sensor does not require a battery, so there is no limit as to how long the positioning information is maintained. In addition, there is no need to worry about various safety regulations, which must be taken into consideration when shipping a battery overseas.

Position Holding Even when the Cable between the Motor and Driver is Detached

Positioning information is stored within the Absolute Sensor.

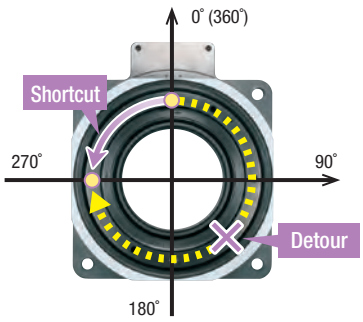
Convenient Functions Unique to **AZ** Series Equipped Models

Convenient Operation and Setting

Using the functions of **AZ** Series allows for coordinate control on the output table of a hollow rotary actuator, the following operations can be performed.

Shorter Takt Time with Shortcut Operation

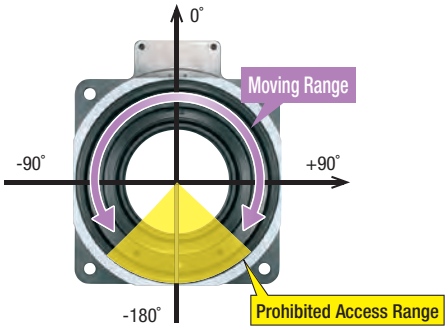
In this operating mode, the system is driven in the rotation direction that has the shortest distance towards the set target position. It can shorten the equipment's takt time.



Example)
When traveling from 0˚ position to 270˚, it automatically selects the shorted counter-clock-wise rotation direction for driving.

Easy Control with Prohibited Access Range Setting

If there are any obstacles on the equipment, it is possible to set the range in which movement is prohibited on the output table.

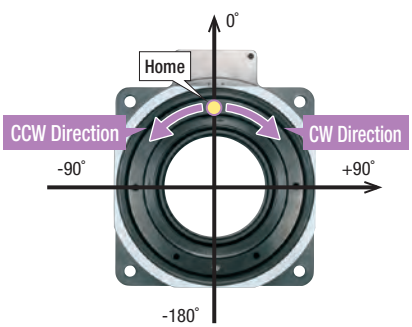


Reduced Equipment Startup Time

The parameters required for operating the hollow rotary actuator have been set as factory setting. This contributes to reduced startup time of the equipment.

·Home
·Resolution setting (0.01˚/step)
·Rotation direction setting for the output table
·Round setting±180˚

● Each initial setting can be changed.

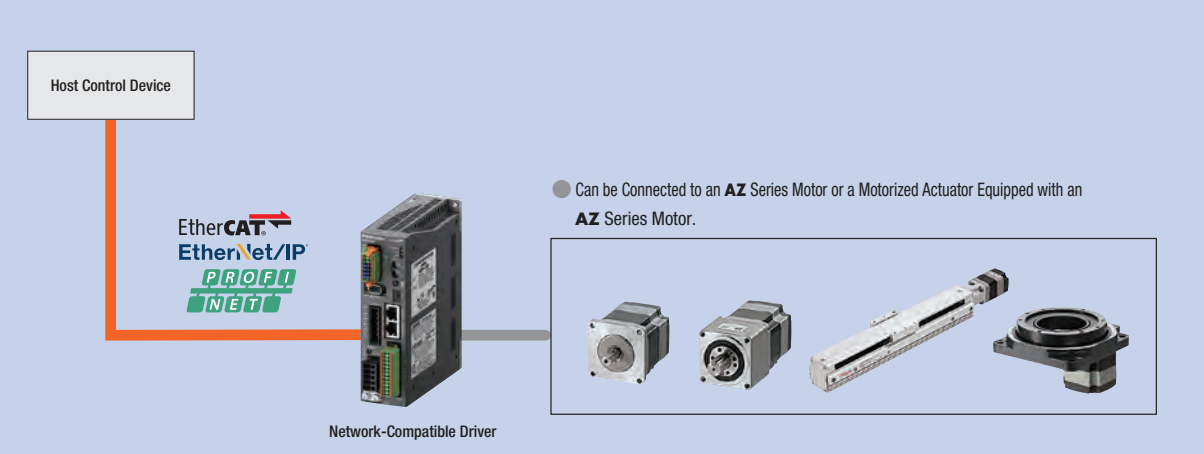


Different Drivers are Available to Match the Host System

Network-Compatible Driver AC DC

AZ Series Equipped AZX Series Equipped

These drivers are compatible with EtherCAT, EtherNet/IP, PROFINET, MECHATROLINK-Ⅲ and SCNET Ⅲ/H communications. Direct control over the network is possible. The host control device and driver are connected with one communication cable, reducing wiring.

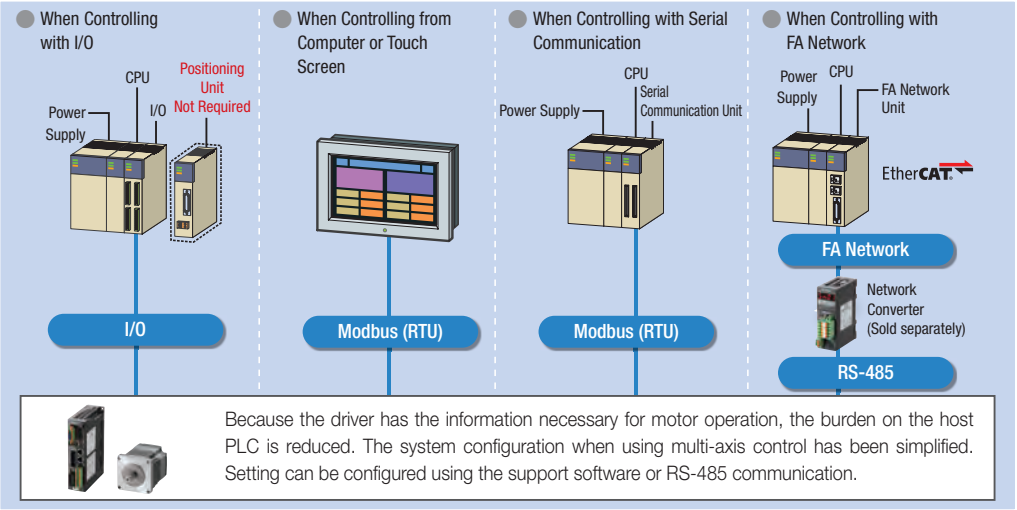


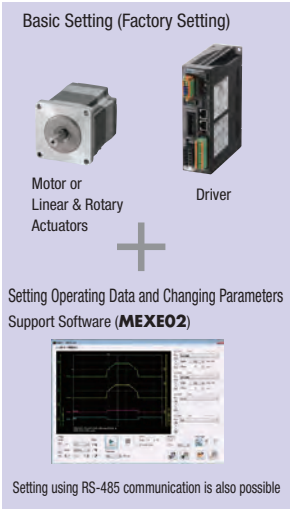
AZX-equipped drivers are compatible with EtherCAT, EtherNet/IP and PROFINET.

Built-in Controller Type FLEX AC DC

AZ Series Equipped

With this type, the operating data is set in the driver, and is then selected and executed from the host system. Host system connection and control are performed with any of the following: I/O, Modbus (RTU), RS-485 communication, or FA network. By using a network converter (sold separately), control can be performed using EtherCAT communication, MECHATROLINK communication or CC-Link communication.



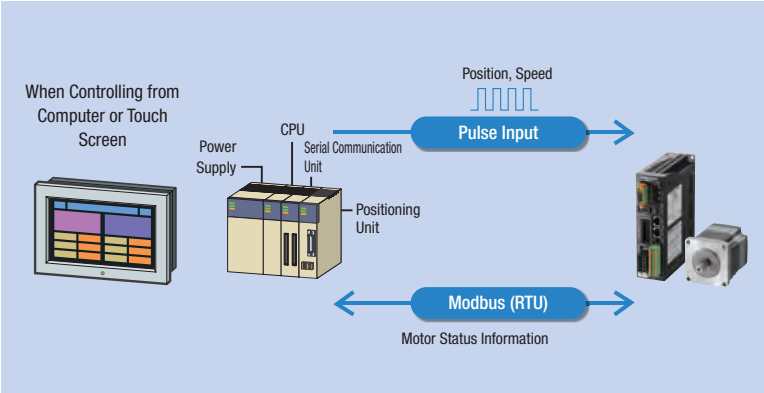


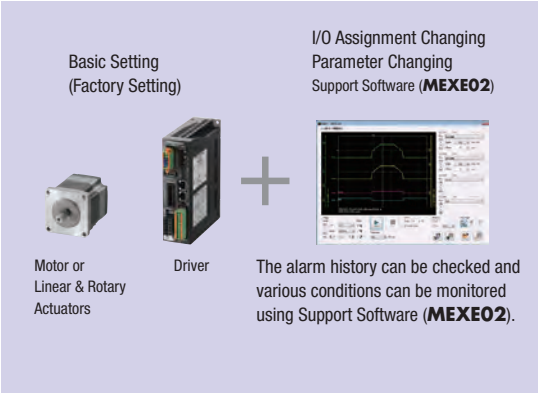
FLEX is the collective name for products that support I/O control, Modbus (RTU) control, and FA network control via network converters.

Pulse Input Type with RS-485 Communication AC DC

AZ Series Equipped

This type executes operations by inputting pulses into the driver. The motor can be controlled using a positioning module (pulse generator) provided by the customer. The motor's status information (position, speed, torque, alarm, temperature, etc.) can be monitored using RS-485 communication.

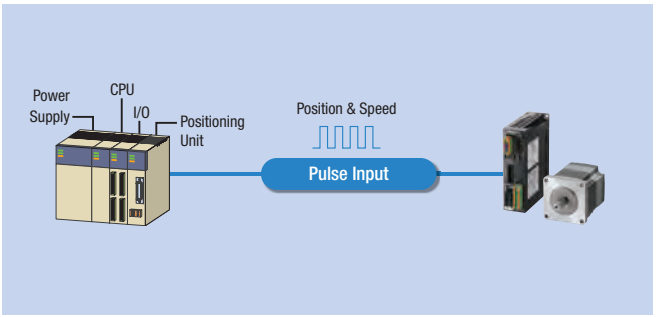


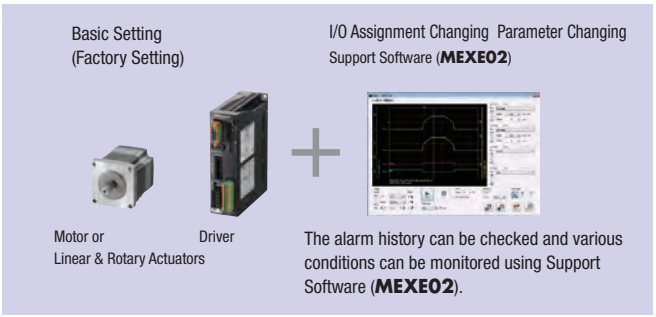


Pulse Input Type AC DC

AZ Series Equipped

This type executes operations by inputting pulses into the driver. The motor can be controlled using a positioning module (pulse generator) provided by the customer. The alarm history can be checked and various conditions can be monitored using Support Software (**MEXE02**).

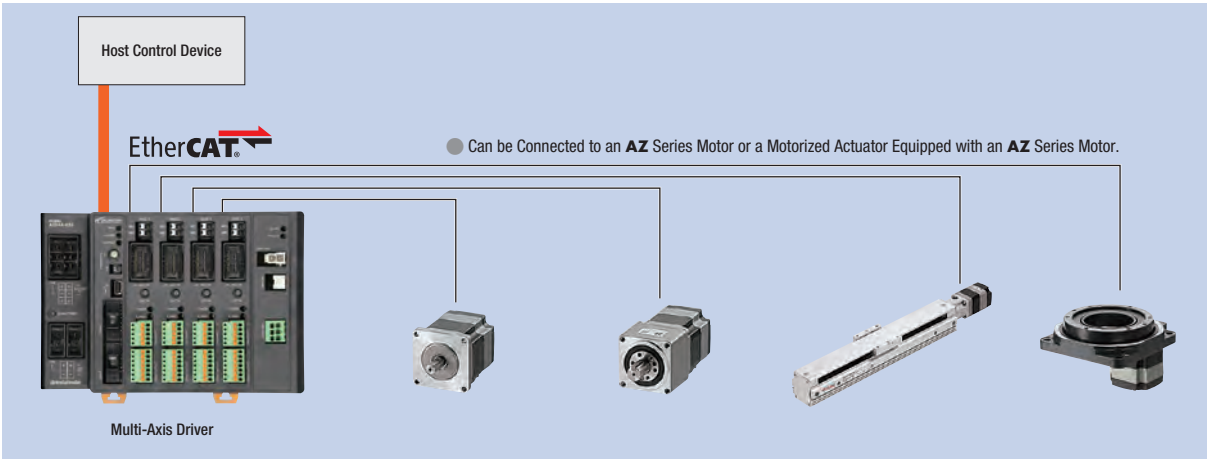




Network Compatible Multi-Axis Driver* DC

AZ Series Equipped

This multi-axis driver is compatible with EtherCAT, MECHATROLINK-III and SSCNET III/H communications. It can be connected to **AZ** Series DC input motors and their on-board actuators. Drivers with 2-axis, 3-axis and 4-axis connections are available.



*Please refer to the Oriental Motor website for details about this product.

mini Driver* DC mobi Mobile Automation-Compatible Products

AZ Series Equipped

Compact and lightweight design was pursued. Can be installed in narrow spaces.
The broad voltage specifications that can be used with a battery power supply make this suitable for integration into self-powered equipment.

● What Are “Mobile Automation Products”?

"Mobile Automation-Compatible Products" are a group of products based on the shared concept of battery operation, compact size and lightweight.
Optimized for use with self-propelled equipment and traveling equipment, they contribute to the realization of flexible automation lines and mobile automation which will become required more in the future.

EtherCAT
EtherNet/IP
PROFINET
Modbus (RTU)
Pulse Input with RS-485 Communication

*Please refer to the Oriental Motor website for details about this product.

- EtherCAT-compatible drivers have passed the official EtherCAT conformance test.
- EtherCAT is a patented technology licensed from Beckhoff Automation GmbH (Germany) and is a registered trademark of that company.
- EtherNet/IP is a trademark of ODVA, Ltd.
- PROFINET is a trademark or registered trakemark of PROFIBUS Nutzerorganisation e.V. (PNO).
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website.

Easy Setting and Easy Operation with Support Software

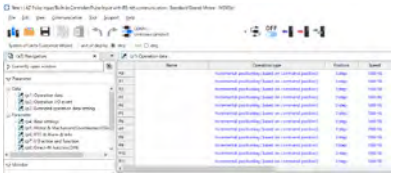
By using the support software, data setting, actual drive, and confirmation via each monitor function can be performed easily on a computer.

Support Software **MEXE02**

The support software can be downloaded from the Oriental Motor website.

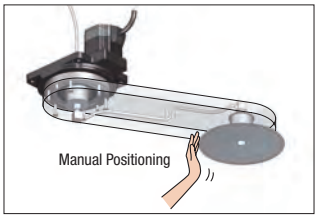
Operating Data/Parameter Settings

You can easily set the operating data and parameters on a computer. Since the setting data can be stored, the same setting can be applied simply by forwarding the saved data when you replace a driver, etc.



Teaching and Remote Operation

Positioning adjustment can be performed on support software or manually, and it can be imported into the driver as operation command information. This can be used for equipment start-up.



Multi-monitoring enables remote operation and teaching while monitoring.

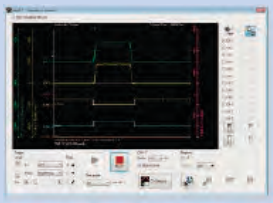
Various Monitoring Functions

I/O Monitoring

The status of the I/O wired to the driver can be checked on a computer. This can be used for post-wiring I/O checks or I/O checks during operation.

Waveform Monitoring

The operating status of the motor (such as command speed and motor load factor) can be checked from an oscilloscope-like image. This can be used for equipment start-up and adjustment.

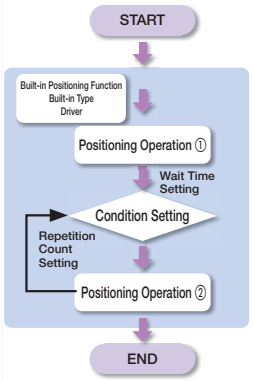


Alarm Monitoring

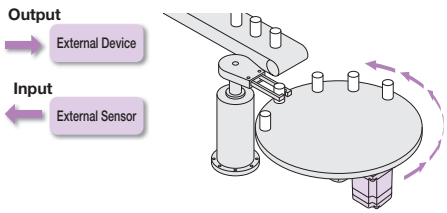
When an abnormality occurs, the details of the abnormality and the solution can be checked.

Sequence Function Simplifies Programming
(Not available in some models)

AZ Series is equipped with a variety of sequence functions, such as a timer setting between operations and linked operation, conditional branching and loop counting.
Sequence programming of the host system can be simplified.



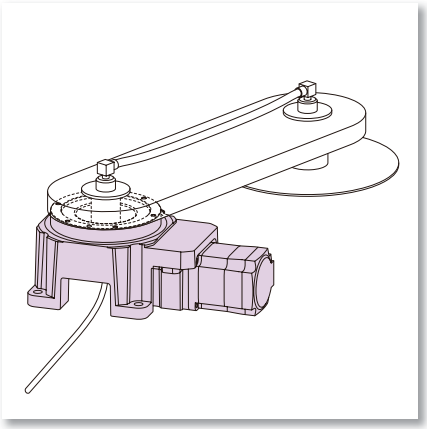
- Number of Positioning Operation Data Sets (Up to 256)
- General-Purpose I/O Signal Counts (Input 10, Output 6)
- Communication I/O Signal Counts (Input 16, Output 16)



Application & Usage Examples

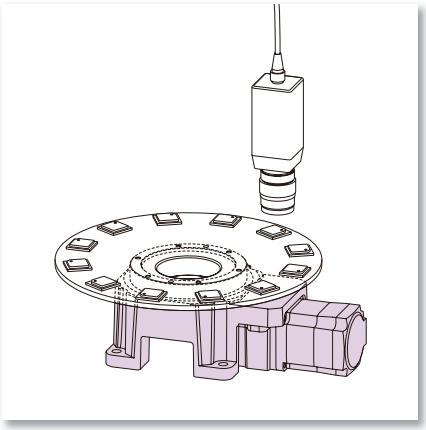
Applications that Require High Rigidity

● Applications in which a Load Moment is Applied

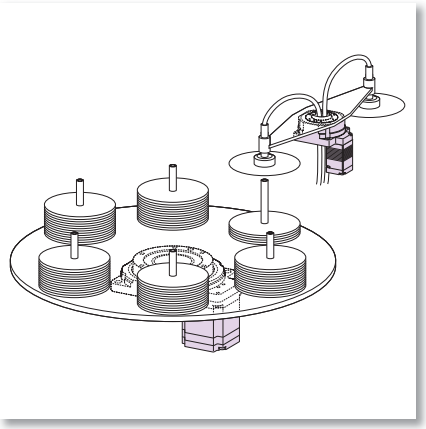


Applications that Require High Performance Motors

● High Positioning Accuracy Applications (Image Inspection Equipment)



● Applications with Load Inertia Fluctuations (Disk Manufacturing Equipment)



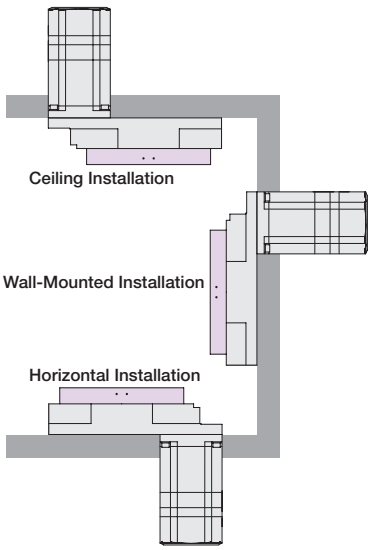
Installation Direction Examples

The **DG**Ⅱ Series can not only be installed horizontally, but can also be ceiling mounted or wall mounted.

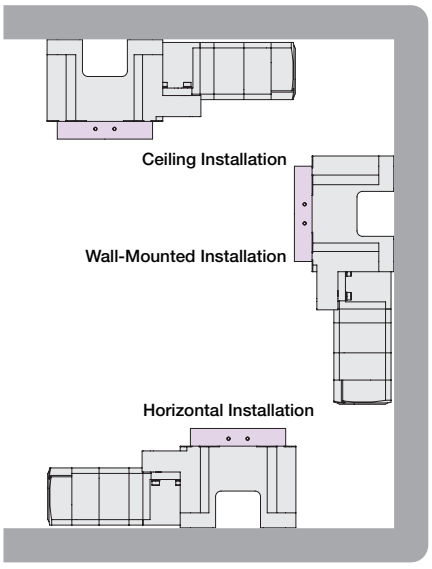
Note

A small amount of grease will occasionally seep out of the hollow rotary actuator. If a grease leak would cause a contamination issue near the machine, either perform routine inspections, or install protective equipment such as an oil sump.

Motor Vertical Mounting



Motor Horizontal Mounting

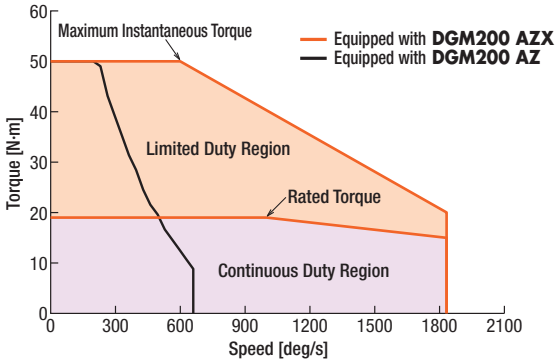


Servo Motors

AZX Series Equipped

Achieves High Torque in High Speed

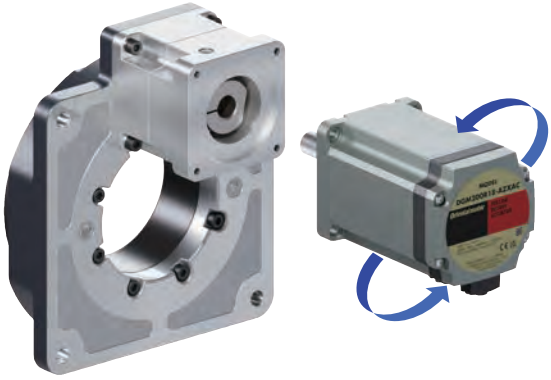
The **AZX** Series-equipped systems achieves high torque in high speed.
It is suitable for positioning applications involving large traveling amount and continuous operation applications.



- This is a comparison of the speed-torque characteristics of the **DGII** Series equipped with **AZX** Series and **AZ**Series.
  The system equipped with **AZX** Series offers superior torque in the high speed range while the system equipped **AZ** Series is better in the low speed range.

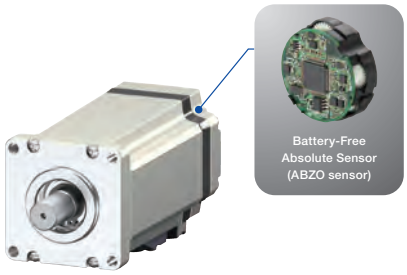
Cable Outlet Direction Can be Changed

Since motors in systems equipped with the **AZX** Series are binded through couplings, the motor unit can be disassembled.
Changing the motor's direction allows for the cable outlet direction to be changed, which increases the freedom during the designing stage.



Servo Motor Equipped with Battery-Free Absolute Encoder

The driving servo motor **AZX** Series features the same battery-free mechanical absolute encoder (ABZO sensor) as the **αSTEP AZ** Series. This is a servo motor specialized for both positioning and continuous operation.

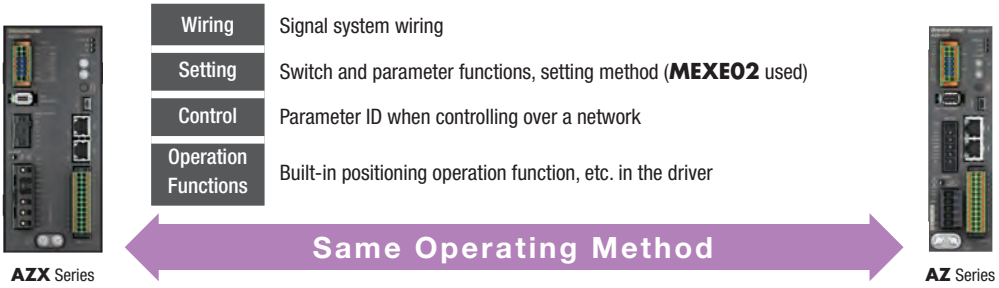


- Mechanical-Type Sensor
  Holds positioning information even when powered off
- Multi-Turn Absolute Sensor
  Absolute position detection is possible with ±900 rotations
  (1800 rotations) of the motor shaft from the reference home position

- For details on the **AZX** Series, check the Oriental Motor website.

The Same Basic Operations as the **AZ** Series

The basic operations of the **AZX** Series are the same as the **AZ** Series.
This reduces operational hassle when they are used together within the same equipment.



List of Combinations

AZ Series Equipped

•AC Input

Product Line	Series	Product Name
Hollow Rotary Actuator	**DG Ⅱ** Series	**DGM85R-AZ□C** **DGM130R-AZ□C■** **DGM200R-AZ□C■** **DGB85R□□-AZ□C■** **DGB130R□□-AZ□C■**

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Product Line	Type	Product Name
Driver	Built-in Controller Type	**AZD-AD**, **AZD-CD**
	Pulse Input Type with RS-485 Communication	**AZD-AX**, **AZD-CX**
	Pulse Input Type	**AZD-A**, **AZD-C**
	EtherNet/IP-Compatible	**AZD-AEP**, **AZD-CEP**
	EtherCAT-Compatible	**AZD-AED**, **AZD-CED**
	PROFINET-Compatible	**AZD-APN**, **AZD-CPN**

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Product Line	Type	Product Name
Connection Cable Sets/ Flexible Connection Cable Sets	Connection Cable Set	For Motor / Encoder: **CC◇◇◇VZF** For Motor / Encoder / Electromagnetic Brake: **CC◇◇◇VZFB**
	Flexible Connection Cable Sets	For Motor / Encoder: **CC◇◇◇VZR** For Motor / Encoder / Electromagnetic Brake: **CC◇◇◇VZRB**

●A code or a number indicating either one of the followings is entered where the box is located within the product name.
□: Gear ratio ■: Motor unit configuration ■: Cable outlet direction ◇: Cable length

•DC Input

Product Line	Series	Product Name
Hollow Rotary Actuator	**DG Ⅱ** Series	**DGM60-AZAK** **DGM85R-AZ□K** **DGM130R-AZ□K■** **DGB85R□□-AZAK■** **DGB130R□□-AZAK■**

+

Product Line	Type	Product Name
Driver	Built-in Controller Type	**AZD-KD**
	Pulse Input Type with RS-485 Communication	**AZD-KX**
	Pulse Input Type	**AZD-K**
	EtherNet/IP-Compatible	**AZD-KEP**
	EtherCAT-Compatible	**AZD-KED**
	PROFINET-Compatible	**AZD-KPN**

+

Product Line	Type		Product Name
Connection Cable Sets/ Flexible Connection Cable Sets	For **DGM60**	Connection Cable Set	**CC◇◇◇VZ2F2**
		Flexible Connection Cable Sets	**CC◇◇◇VZ2R2**
	DGM85, **DGM130**, For **DGB85**, For **DGB130**	Connection Cable Set	For Motor/Encoder: **CC◇◇◇VZF2** For Motor/Encoder/Electromagnetic Brake: **CC◇◇◇VZFB2**
		Flexible Connection Cable Sets	For Motor/Encoder: **CC◇◇◇VZR2** For Motor/Encoder/Electromagnetic Brake: **CC◇◇◇VZRB2**

●A code or a number indicating either one of the followings is entered where the box is located within the product name.
□: Gear ratio ■: Motor unit configuration ■: Cable outlet direction ◇: Cable length

AZX Series Equipped

•AC Input

Product Line	Series	Product Name
Hollow Rotary Actuator	**DG Ⅱ** Series	**DGM200R18-AZX□C**

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Product Line	Type	Product Name
Driver	EtherCAT-Compatible	**AZXD-SED**
	EtherNet/IP-Compatible	**AZXD-SEP**
	PROFINET-Compatible	**AZXD-SPN**

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Product Line	Type	Product Name
Connection Cable Sets/ Flexible Connection Cable Sets	Connection Cable Set	For Motor / Encoder: **CC◇◇◇VXF** For Motor / Encoder / Electromagnetic Brake: **CC◇◇◇VXFB**
	Flexible Connection Cable Sets	For Motor / Encoder: **CC◇◇◇VXR** For Motor / Encoder / Electromagnetic Brake: **CC◇◇◇VXRB**

●A code or a number indicating either one of the following product lines is entered where the box is located within the product name.
■: Motor unit configuration ◇: Cable length

How to Read Specifications

Hollow Rotary Actuator Specifications

	Frame Size			85 mm	200 mm
	Actuator Product Name	Standard		DGM85R-AZAC	DGM200R18-AZXAC
		With Electromagnetic Brake		DGM85R-AZMC	DGM200R18-AZXMC
①	Type of Output Table Supporting Bearing			Cross-Roller Bearing	Cross-Roller Bearing
②	Inertia		J: kgm^2	21120×10^{-7} [26304×10^{-7}]*	760000×10^{-7} [786000×10^{-7}]*
	Gear Ratio			18	18
③	Min. Traveling Amount of Output Table Unit		deg/STEP	0.01	0.01
④	Permissible Torque		Nm	4.5	-
⑤	Rated Torque		Nm	-	19
⑥	Maximum Instantaneous Torque		Nm	-	50
⑦	Holding Torque at Motor Standstill	Power ON	Nm	2.7	-
		Electromagnetic Brake	Nm	2.7	-
⑧	Max. Speed		deg/s	1200 (200 r/min)	1833 (305 r/min)
⑨	Repetitive Positioning Accuracy		arcsec	±15 (±0.004°)	±15 (±0.004°)
⑩	Lost Motion		arcmin	2 (0.033°)	3 (0.050°)
⑪	Angular Transmission Accuracy		arcmin	4 (0.067°)	-
⑫	Permissible Axial Load		N	500	4000
⑬	Permissible Moment		Nm	10	100
⑭	Runout of Output Table Surface		mm	0.015	0.015
⑮	Runout of Output Table Inner (Outer) Diameter		mm	0.015	0.030
⑯	Parallelism of Output Table		mm	0.03	0.05

①Type of Output Table Supporting Bearing
This is the type of bearing used for the output table.

②Inertia
This is the total sum of the rotor inertia of the motor and the inertia of the speed reduction mechanism, converted to a moment on the output table.

③Min. Traveling Amount of Output Table Unit
This is the min. traveling amount that can be set. (Factory setting)

④Permissible Torque
This is the limit of mechanical strength of the speed reduction mechanism. Make sure the applied torque, including the acceleration torque and load fluctuation, does not exceed the permissible torque.

⑤Rated Torque
This is the output torque when the motor is operated at rated output power and rated speed.

⑥Maximum Instantaneous Torque
This is the max. torque that can be applied to the output gear shaft during acceleration/deceleration, such as when an inertial load is started and stopped.

⑦Holding Torque at Motor Standstill
Power ON: This is the max. force with which to hold the output table in position if it stops when the power is on.
Electromagnetic Brake: This is the max. force with which to hold the output table in position if it stops with an electromagnetic brake.
Electromagnetic brake is power off activated type.

⑧Max. Speed
This is the output table speed that the mechanical strength of the speed reduction mechanism can tolerate.

⑨Repetitive Positioning Accuracy
This is a value indicating the degree of error that is generated when positioning is performed repeatedly to the same position in the same direction.

⑩ · Lost Motion [Vertical Motor Mounting]
This is the difference in stopped angles achieved when the output table is positioned to the same position in the forward and reverse directions.
· Backlash [Horizontal Motor Mounting]
This is the play of the output gear shaft when the motor shaft is fixed.
When positioning in bi-direction, the positioning accuracy is affected.

⑪Angular Transmission Accuracy
This is the difference between the theoretical rotation angle of the output table as calculated from the input pulse count and the actual rotation angle.

⑫Permissible Axial Load
This is the permissible value of axial load applied to the output table in the axial direction.

⑬Permissible Moment
When a load is applied to a position away from the center of the output table, the output table receives a tilting force. Permissible moment refers to the permissible value of the load moment calculated by multiplying the offset distance from the center by the applied load.

⑭Runout of Output Table Surface
This is the max. value of runout of the installation surface of the output table when the output table is rotated under no load.

⑮Runout of Output Table Inner (Outer) Diameter
This is the max. value of runout of the inner diameter or outer diameter of the table when the output table is rotated under no load.

⑯Parallelism of Output Table
This is an inclination of the installation surface of the output table compared with the actuator mounting surface on the equipment side.

For product-related technical reference and information about regulations and standards, please see the Oriental Motor website.

Product Number

Hollow Rotary Actuators

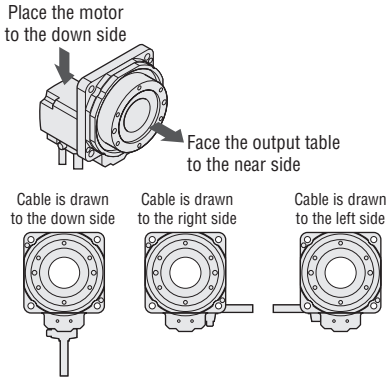
◇Motor Vertical Mounting

DGM 130 R - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	**DGM**: **DGII** Series
②	Frame Size	**85**: 85 mm **130**: 130 mm **200**: 200 mm
③	Type of Output Table Supporting Bearing	**R**: Cross-Roller Bearing
④	Motor	**AZ**: **AZ** Series
⑤	Motor Type	**A**: Standard **M**: With Electromagnetic Brake
⑥	Motor Specification	**C**: AC Input Specification
⑦	Cable Outlet Direction*	None: Down **R**: Right **L**: Left

*Cable outlet direction is the direction of the cable when the output table is at the front and the motor is facing downwards.



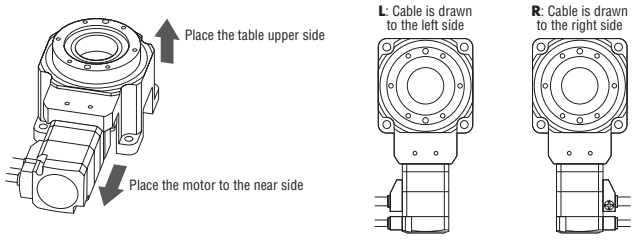
◇Motor Horizontal Mounting

DGB 85 R 12 - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	**DGB**: **DGII** Series
②	Frame Size	**85**: 85 mm **130**: 130 mm
③	Type of Output Table Supporting Bearing	**R**: Cross-Roller Bearing
④	Gear Ratio	
⑤	Motor	**AZ**: **AZ** Series
⑥	Motor Type	**A**: Standard **M**: With Electromagnetic Brake
⑦	Motor Specification	**C**: AC Input Specification
⑧	Cable Outlet Direction*	**R**: Right **L**: Left

*Cable outlet direction is the direction of the cable when the output table is at the top and the motor is facing forward.



Driver

AZD - C D

① ② ③

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**A**: Single-Phase 100-120 VAC **C**: Single-Phase/Three-Phase 200-240 VAC
③	Product Line	**D**: Built-in Controller Type **X**: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type **EP**: EtherNet/IP-Compatible **ED**: EtherCAT-Compatible **PN**: PROFINET-Compatible

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Model	**Z**: For **AZ** Series
⑤	Cable Type	**F**: Connection Cable Sets **R**: Flexible Connection Cable Sets
⑥	Description	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake

Product Line

Hollow Rotary Actuators

◇Motor Vertical Mounting

•Standard

Frame Size	Product Name
85 mm	**DGM85R-AZAC**
130 mm	**DGM130R-AZAC** **DGM130R-AZACR** **DGM130R-AZACL**
200 mm	**DGM200R-AZAC** **DGM200R-AZACR** **DGM200R-AZACL**

•With Electromagnetic Brake

Frame Size	Product Name
85 mm	**DGM85R-AZMC**
130 mm	**DGM130R-AZMC** **DGM130R-AZMCR** **DGM130R-AZMCL**
200 mm	**DGM200R-AZMC** **DGM200R-AZMCR** **DGM200R-AZMCL**

◇Motor Horizontal Mounting

•Standard

Frame Size	Product Name
85 mm	**DGB85R12-AZACR** **DGB85R12-AZACL** **DGB85R18-AZACR** **DGB85R18-AZACL** **DGB85R36-AZACR** **DGB85R36-AZACL**
130 mm	**DGB130R18-AZACR** **DGB130R18-AZACL** **DGB130R36-AZACR** **DGB130R36-AZACL**

•With Electromagnetic Brake

Frame Size	Product Name
85 mm	**DGB85R12-AZMCR** **DGB85R12-AZMCL** **DGB85R18-AZMCR** **DGB85R18-AZMCL** **DGB85R36-AZMCR** **DGB85R36-AZMCL**
130 mm	**DGB130R18-AZMCR** **DGB130R18-AZMCL** **DGB130R36-AZMCR** **DGB130R36-AZMCL**

Driver

◇Built-in Controller Type

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-AD**
Single-Phase/Three-Phase 200-240 VAC	**AZD-CD**

◇Pulse Input Type

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-A**
Single-Phase/Three-Phase 200-240 VAC	**AZD-C**

◇EtherCAT-Compatible

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-AED**
Single-Phase/Three-Phase 200-240 VAC	**AZD-CED**

◇Pulse Input Type with RS-485 Communication

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-AX**
Single-Phase/Three-Phase 200-240 VAC	**AZD-CX**

◇EtherNet/IP-Compatible

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-AEP**
Single-Phase/Three-Phase 200-240 VAC	**AZD-CEP**

◇PROFINET-Compatible

Power Supply Input	Product Name
Single-Phase 100-120 VAC	**AZD-APN**
Single-Phase/Three-Phase 200-240 VAC	**AZD-CPN**

Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable in applications 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 Motor/Encoder

Product Line	Length L [m]	Product Name
Connection Cable Set	0.5	**CC005VZF**
	1	**CC010VZF**
	1.5	**CC015VZF**
	2	**CC020VZF**
	2.5	**CC025VZF**
	3	**CC030VZF**
	4	**CC040VZF**
	5	**CC050VZF**
	7	**CC070VZF**
	10	**CC100VZF**
	15	**CC150VZF**
	20	**CC200VZF**

Product Line	Length L [m]	Product Name
Flexible Connection Cable Sets	0.5	**CC005VZR**
	1	**CC010VZR**
	1.5	**CC015VZR**
	2	**CC020VZR**
	2.5	**CC025VZR**
	3	**CC030VZR**
	4	**CC040VZR**
	5	**CC050VZR**
	7	**CC070VZR**
	10	**CC100VZR**
	15	**CC150VZR**
	20	**CC200VZR**

◇For Motor/Encoder/ Type with Electromagnetic Brake

Product Line	Length L [m]	Product Name
Connection Cable Set	0.5	**CC005VZFB**
	1	**CC010VZFB**
	1.5	**CC015VZFB**
	2	**CC020VZFB**
	2.5	**CC025VZFB**
	3	**CC030VZFB**
	4	**CC040VZFB**
	5	**CC050VZFB**
	7	**CC070VZFB**
	10	**CC100VZFB**
	15	**CC150VZFB**
	20	**CC200VZFB**

Product Line	Length L [m]	Product Name
Flexible Connection Cable Sets	0.5	**CC005VZRB**
	1	**CC010VZRB**
	1.5	**CC015VZRB**
	2	**CC020VZRB**
	2.5	**CC025VZRB**
	3	**CC030VZRB**
	4	**CC040VZRB**
	5	**CC050VZRB**
	7	**CC070VZRB**
	10	**CC100VZRB**
	15	**CC150VZRB**
	20	**CC200VZRB**

Included Items

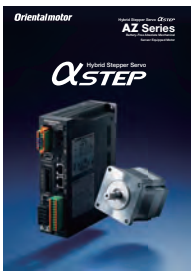
Driver

Type \ Included Items	Connector
Built-in Controller Type Pulse Input Type with RS-485 Communication Pulse Input Type	-For CN1 (1 piece) -For CN4 (1 piece) -For CN5 (1 piece) -Connector wiring lever (1 piece)
EtherCAT-Compatible EtherNet/IP-Compatible PROFINET-Compatible	-For CN1 (1 piece) -For CN4 (1 piece) -For CN7 (1 piece) -Connector wiring lever (1 piece)

Connection Cable Sets / Flexible Connection Cable Sets

Type \ Included Items	Operating Manual
Connection Cable Set	–
Flexible Connection Cable Sets	1 Set

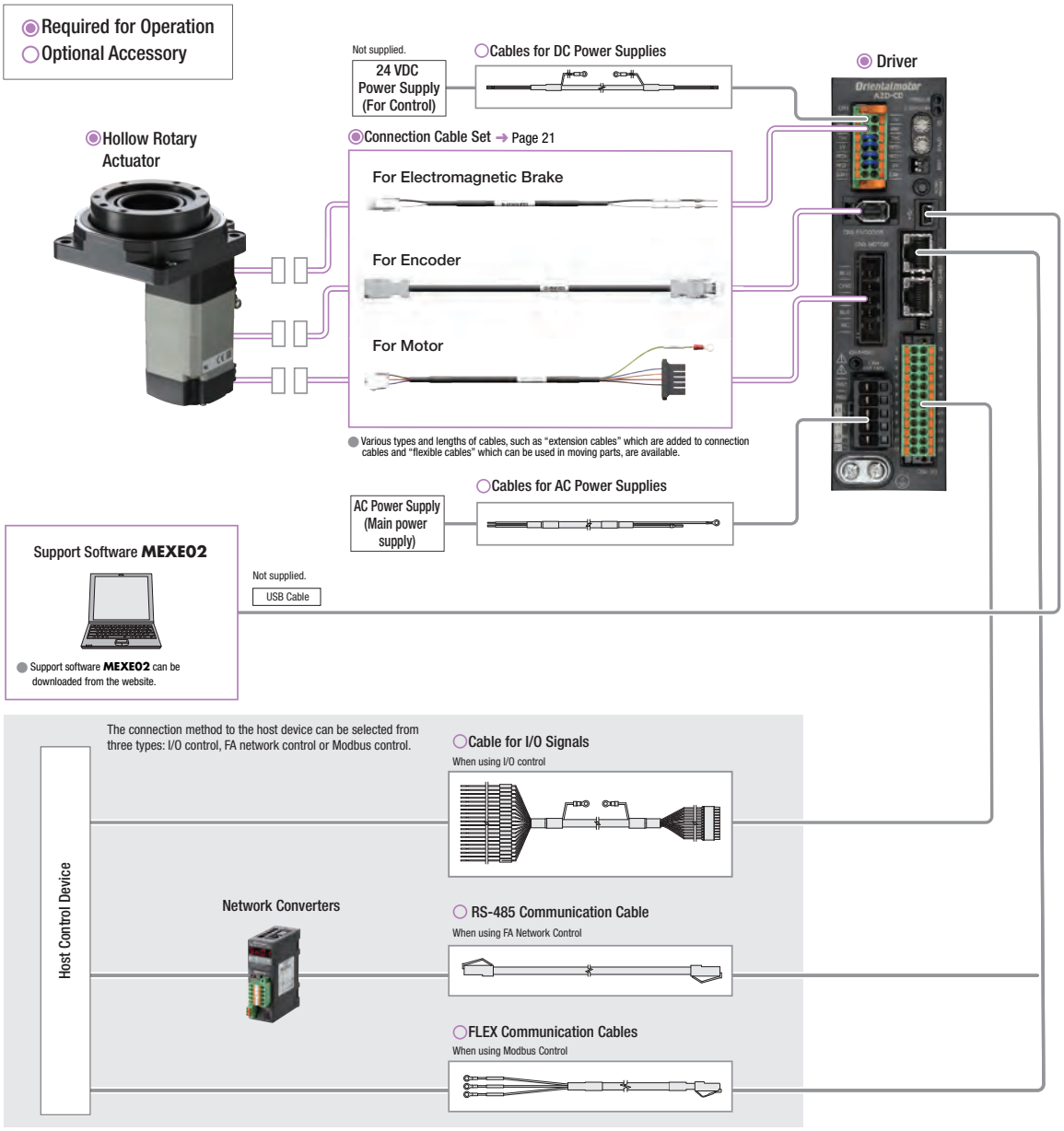
The αSTEP **AZ** Series has a separate catalog. When selecting a product, please also use this individual catalog.



System Configuration

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Built-in Positioning Function Type Driver or Pulse Input Type Driver with RS-485 Communication

An example of a configuration using RS-485 communication or I/O control with a built-in controller type driver is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM85R-AZMC		AZD-CD		CC010VZFB	CC24D010C-1
◉		◉		◉	○

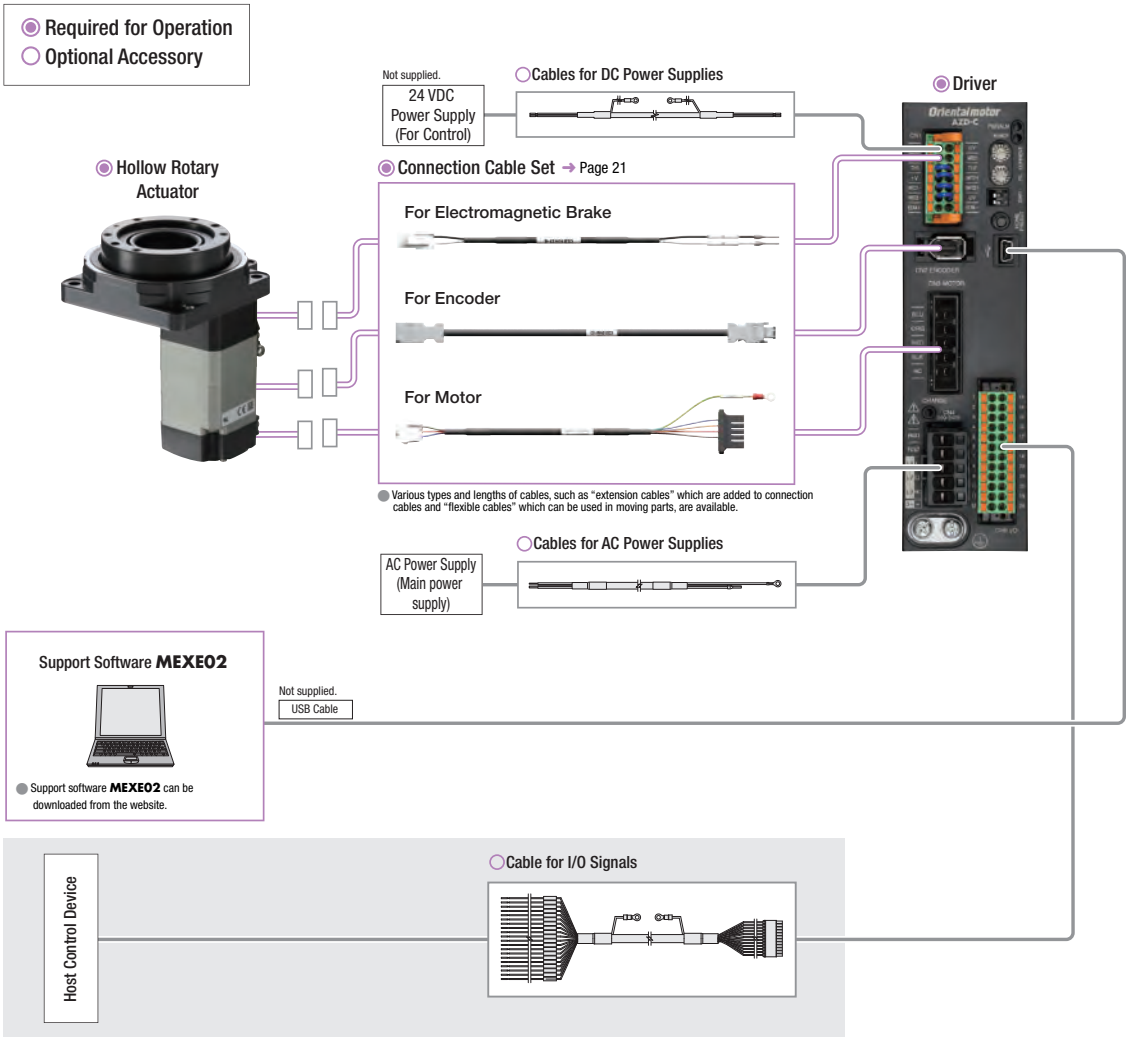
The system configuration shown above is an example. Other combinations are also available.

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.
- Home-sensor set cannot be used when the motor is horizontal.

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Pulse Input Type Driver

An example of a single-axis system configuration with a programmable controller (equipped with pulse oscillation function) is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM85R-AZMC		AZD-C		CC010VZFB	CC24D010C-1
◉		◉		◉	○

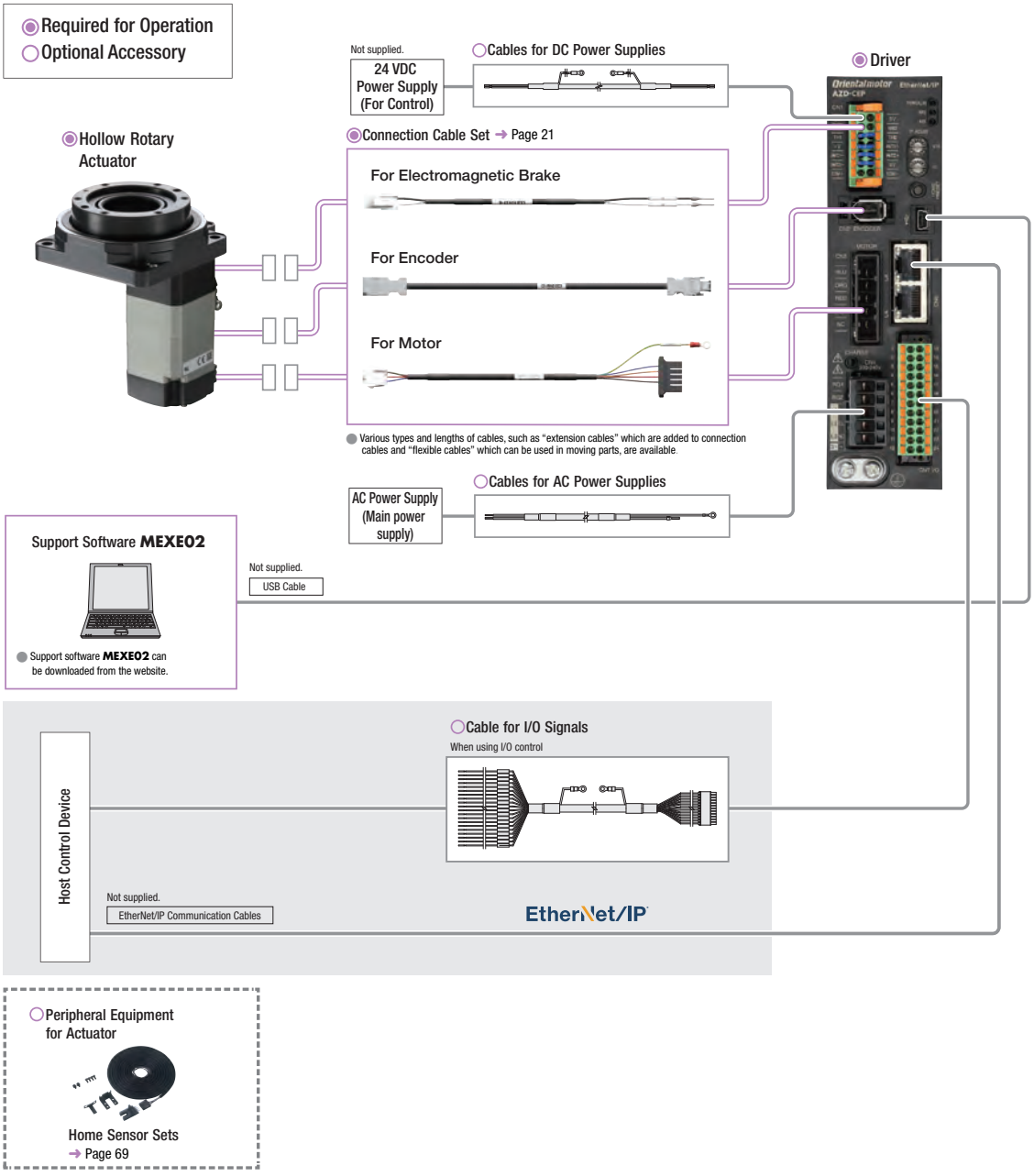
The system configuration shown above is an example. Other combinations are also available.

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.
- Home-sensor set cannot be used when the motor is horizontal.

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Network-Compatible Driver

An example of a configuration using I/O control or EtherNet/IP with an EtherNet/IP compatible driver is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Peripheral Equipment for Actuator

Home Sensor Sets
→ Page 69

Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM85R-AZMC	+	AZD-CEP	+	CC010VZFB	CC24D010C-1
◉		◉		◉	○

● 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.
● Home-sensor set cannot be used when the motor is horizontal.

Motor Vertical Mounting Frame Size 85 mm, 130 mm, 200 mm

Hollow Rotary Actuator Specifications

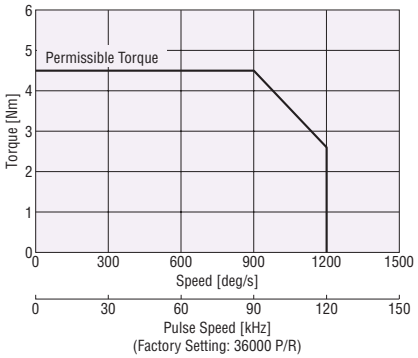
Frame Size			85 mm	130 mm	200 mm
Actuator Product Name	Standard		**DGM85R-AZAC**	**DGM130R-AZAC□**	**DGM200R-AZAC□**
	With Electromagnetic Brake		**DGM85R-AZMC**	**DGM130R-AZMC□**	**DGM200R-AZMC□**
Equipped Motor (**AZ** Series)			**AZM46**	**AZM66**	**AZM911**
Type of Output Table Supporting Bearing			Cross-Roller Bearing		
Inertia		J: kgm^2	21120×10^{-7} [26304×10^{-7}]*	147380×10^{-7} [199220×10^{-7}]*	916400×10^{-7} [968240×10^{-7}]*
Gear Ratio			18		
Min. Travel Amount of Output Table Unit		deg/STEP	0.01		
Permissible Torque		Nm	4.5	12	50
Holding Torque at Motor Standstill	Power ON	Nm	2.7	12	36 [20]*
	Electromagnetic Brake	Nm	2.7	12	20
Max. Speed		deg/s	1200 (200 r/min)		600 (110 r/min)
Repetitive Positioning Accuracy		arcsec	±15 (±0.004°)		
Lost Motion		arcmin	2 (0.033°)		
Angular Transmission Accuracy		arcmin	4 (0.067°)	3 (0.05°)	2 (0.033°)
Permissible Axial Load		N	500	2000	4000
Permissible Moment		Nm	10	50	100
Runout of Output Table Surface		mm	0.015		
Runout of Output Table Inner (Outer) Diameter		mm	0.015		0.030
Parallelism of Output Table		mm	0.030		0.050

●Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box □ is located in the product name. For down, there is no character in the box □.
*The value inside the [ ] represents the value when an actuator with an electromagnetic brake is connected.

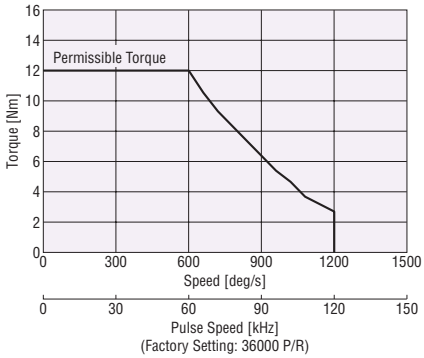
Note
●The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.
●The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference values)

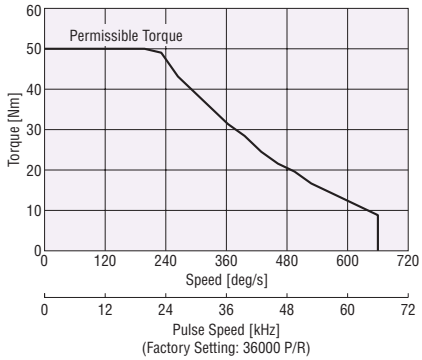
DGM85R



DGM130R



DGM200R



Note
●Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.
●Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO Sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
(When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Motor Horizontal Mounting Frame Size 85 mm

Hollow Rotary Actuator Specifications

Frame Size			85 mm		
Actuator Product Name	Standard		**DGB85R12-AZAC□**	**DGB85R18-AZAC□**	**DGB85R36-AZAC□**
	With Electromagnetic Brake		**DGB85R12-AZMC□**	**DGB85R18-AZMC□**	**DGB85R36-AZMC□**
Equipped Motor (**AZ** Series)			**AZM46**		
Type of Output Table Supporting Bearing			Cross-Roller Bearing		
Inertia		J: kgm^2	11200×10^{-7} [13500×10^{-7}]*1	21100×10^{-7} [26300×10^{-7}]*1	74500×10^{-7} [95300×10^{-7}]*1
Gear Ratio			12	18	36
Min. Travel Amount of Output Table Unit		deg/STEP	0.01		
Permissible Torque		Nm	3	4.5	9
Holding Torque at Motor Standstill	Power ON	Nm	1.8	2.7	5.4
	Electromagnetic Brake	Nm	1.8	2.7	5.4
Max. Speed		deg/s	1800 (300 r/min)	1200 (200 r/min)	600 (100 r/min)
Repetitive Positioning Accuracy		arcsec	±30 (±0.008°)*2		
Backlash		arcmin	6 (0.1°)		
Angular Transmission Accuracy		arcmin	6 (0.1°)		
Permissible Axial Load		N	500		
Permissible Moment		Nm	10		
Runout of Output Table Surface		mm	0.015		
Runout of Output Table Inner (Outer) Diameter		mm	0.015		
Parallelism of Output Table		mm	0.030		

- Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box □ is located in the product name.

*1 The value inside the [ ] represents the value when an actuator with an electromagnetic brake is connected.

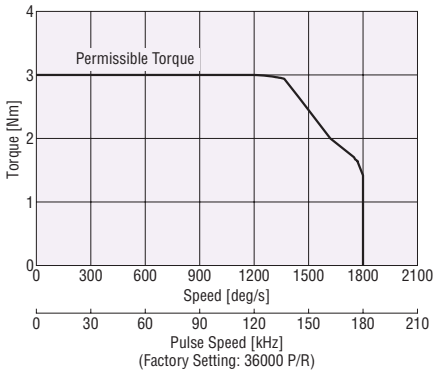
*2 For a gear ratio of 18, accuracy may be reduced when the operating range of output table is 1 rotation or more.

Note

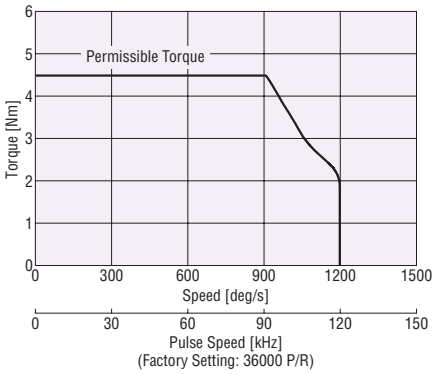
- The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.
- The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference values)

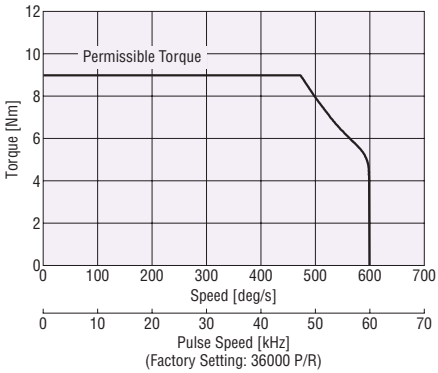
DGB85R12



DGB85R18



DGB85R36



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO Sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
  (When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Motor Horizontal Mounting Frame Size 130 mm

Hollow Rotary Actuator Specifications

Frame Size			130 mm	
Actuator Product Name	Standard		**DGB130R18-AZAC□**	**DGB130R36-AZAC□**
	With Electromagnetic Brake		**DGB130R18-AZMC□**	**DGB130R36-AZMC□**
Equipped Motor (**AZ** Series)			**AZM66**	
Type of Output Table Supporting Bearing			Cross-Roller Bearing	
Inertia		J: kgm^2	147000×10^{-7} [199000×10^{-7}]*1	507000×10^{-7} [714000×10^{-7}]*1
Gear Ratio			18	36
Min. Travel Amount of Output Table Unit		deg/STEP	0.01	
Permissible Torque		Nm	12	24
Holding Torque at Motor Standstill	Power ON	Nm	12	21.6
	Electromagnetic Brake	Nm	12	21.6
Max. Speed		deg/s	1200 (200 r/min)	600 (100 r/min)
Repetitive Positioning Accuracy		arcsec	±30 (±0.008°)*2	
Backlash		arcmin	6 (0.1°)	
Angular Transmission Accuracy		arcmin	6 (0.1°)	
Permissible Axial Load		N	2000	
Permissible Moment		Nm	50	
Runout of Output Table Surface		mm	0.015	
Runout of Output Table Inner (Outer) Diameter		mm	0.015	
Parallelism of Output Table		mm	0.030	

- Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box □ is located in the product name.

*1 The value inside the [ ] represents the value when an actuator with an electromagnetic brake is connected.

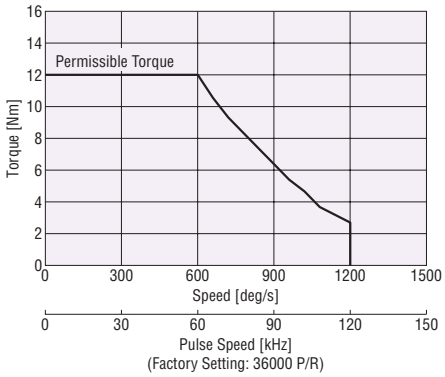
*2 For a gear ratio of 18, accuracy may be reduced when the operating range of output table is 1 rotation or more.

Note

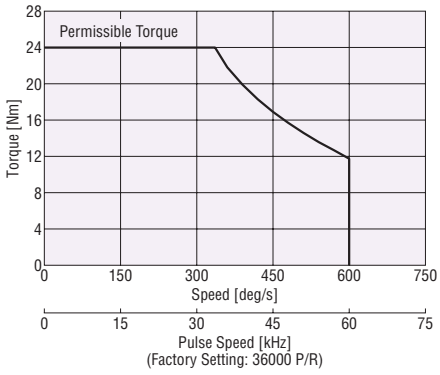
- The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.
- The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference values)

DGB130R18



DGB130R36



Note

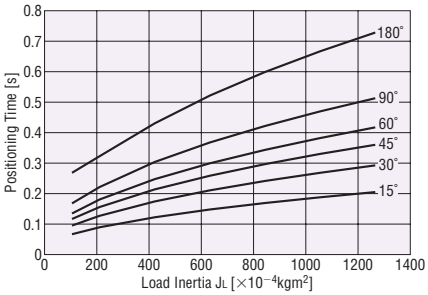
- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO Sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
  (When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Load Inertia – Positioning Time (Reference value)

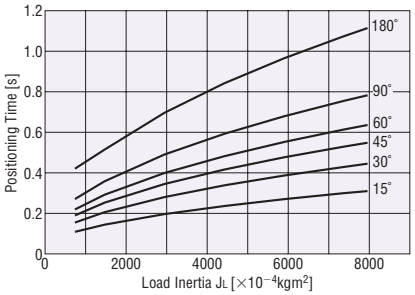
Load inertia is the inertia of the customer's load.

Motor Vertical Mounting

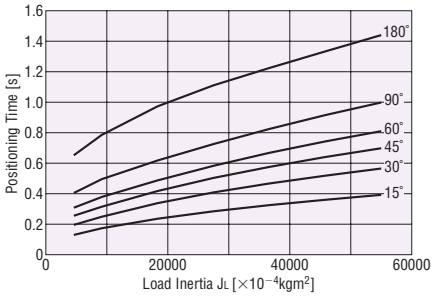
DGM85R



DGM130R



DGM200R

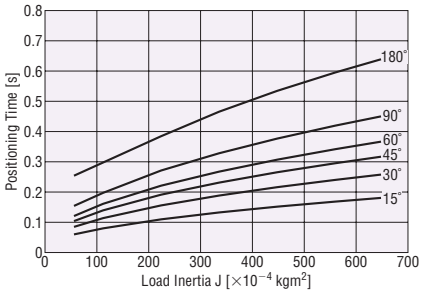


Note

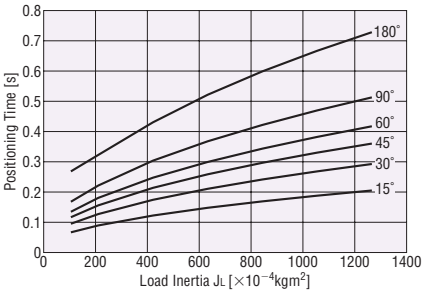
- The load inertia-positioning time is the theoretical value that is 1.5 times the torque safety factor under normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.

Motor Horizontal Mounting

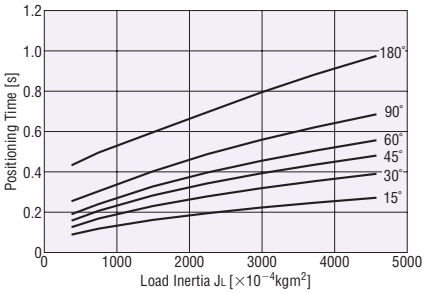
DGB85R12



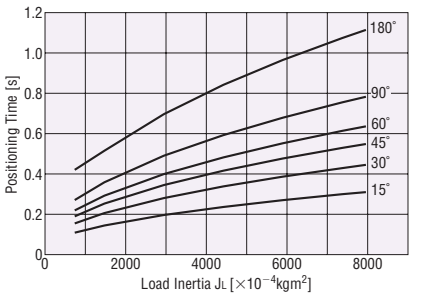
DGB85R18



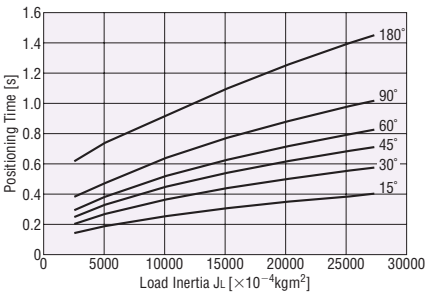
DGB85R36



DGB130R18



DGB130R36

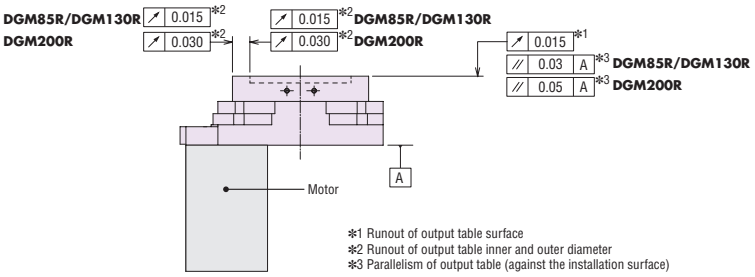


Note

- The load inertia-positioning time is the theoretical value that is 1.5 times the torque safety factor under normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.

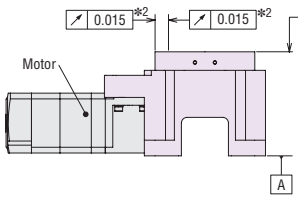
Mechanical Precision (No Load)

Motor Vertical Mounting



*1 Runout of output table surface
*2 Runout of output table inner and outer diameter
*3 Parallelism of output table (against the installation surface)

Motor Horizontal Mounting

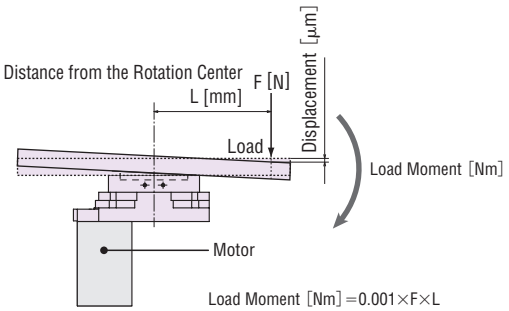


*1 Runout of output table surface
*2 Runout of output table inner and outer diameter
*3 Parallelism of output table (against the installation surface)

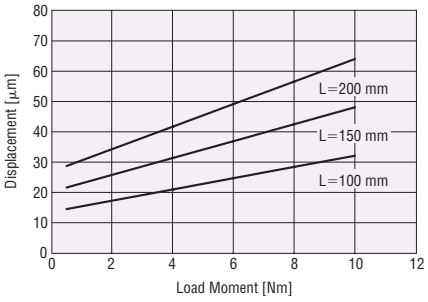
Displacement by Load Moment (Reference Value)

The output table will be displaced when it receives a load moment. The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction. The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.

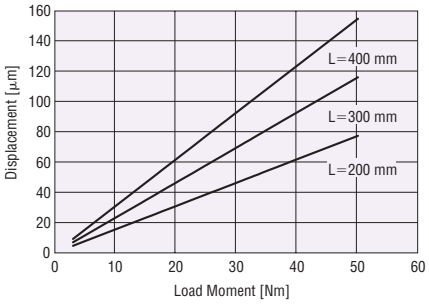
Motor Vertical Mounting



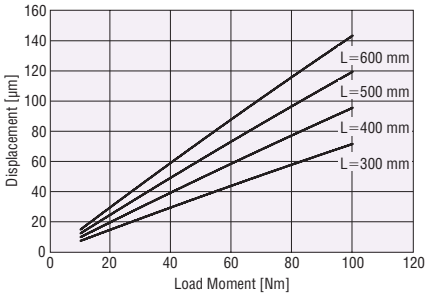
DGM85R



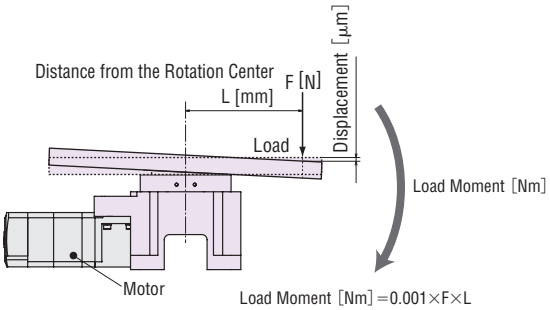
DGM130R



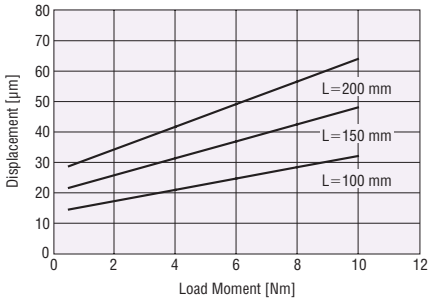
DGM200R



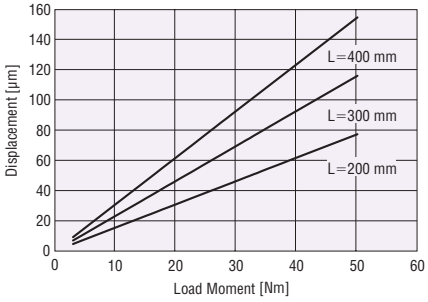
Motor Horizontal Mounting



DGB85R12, DGB85R18, DGB85R36



DGB130R18, DGB130R36



Electromagnetic Brake Specifications

Frame Size		85 mm	130 mm	200 mm
Type		Power Off Activated Type		
Power Supply Voltage		24 VDC±5%*		
Power Supply Current	A	0.08	0.25	0.25
Time Rating		Continuous		

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

Driver Specifications

Driver Product Name			AZD-AD	AZD-CD	
Main Power Supply	Input Voltage		Single-phase 100-120 VAC -15 - +6% 50/60 Hz	Single-phase 200-240 VAC -15 - +6% 50/60 Hz	Three-phase 200-240 VAC -15 - +6% 50/60 Hz
	Input Current	**DGM85**, **DGB85**	2.7 A	1.7 A	1.0 A
		DGM130, **DGB130**	3.8 A	2.3 A	1.4 A
		DGM200	6.4 A	3.9 A	2.3 A
Control Power Supply	Input Voltage		24 VDC±5%*1		
	Input Current		0.25 A (0.5 A)*2		
Interface	Control Input		10 Points, Photocoupler		
	Pulse Output		2 Points, Line Driver		
	Control Output		6 Points, Photocoupler and Open-Collector		
	Power Shut Down Signal Input		2 Points, Photocoupler		
	Power Shut Down Monitor Output		1 Points, Photocoupler and Open-Collector		

*1 If an electromagnetic brake motor is used, it will be 24 VDC±4% when the distance between the motor and driver is extended to 20 m with an Oriental Motor cable.
*2 The value in parentheses ( ) indicates the specification when connected to the electromagnetic brake motor. It is 0.33 A for **DGM85** and **DGB85**.

Driver Product Name			AZD-AX AZD-A AZD-AEP AZD-AED AZD-APN	AZD-CX AZD-C AZD-CEP AZD-CED AZD-CPN	
Main Power Supply	Input Voltage		Single-phase 100-120 VAC -15 - +6% 50/60 Hz	Single-phase 200-240 VAC -15 - +6% 50/60 Hz	Three-phase 200-240 VAC -15 - +6% 50/60 Hz
	Input Current	**DGM85**, **DGB85**	2.7 A	1.7 A	1.0 A
		DGM130, **DGB130**	3.8 A	2.3 A	1.4 A
		DGM200	6.4 A	3.9 A	2.3 A
Control Power Supply	Input Voltage		24 VDC±5%*1		
	Input Current		0.25 A (0.5 A)*2		
Interface	Pulse Input		・2 Points, Photocoupler ・Maximum Input Pulse Frequency Line driver: 1 MHz (at 50% duty) Open Collector: 250 kHz (at 50% duty)		
	Control Input		6 Points, Photocoupler		
	Pulse Output		2 Points, Line Driver		
	Control Output		6 Points, Photocoupler and Open-Collector		
	Power Shut Down Signal Input		2 Points, Photocoupler		
	Power Shut Down Monitor Output		1 Points, Photocoupler and Open-Collector		

*1 If an electromagnetic brake motor is used, it will be 24 VDC±4% when the distance between the motor and driver is extended to 20 m with an Oriental Motor cable.
*2 The value in parentheses ( ) indicates the specification when connected to the electromagnetic brake motor. It is 0.33 A for **DGM85** and **DGB85**.

General Specifications

		Actuator (Equipped Motor: **AZ** Series)	Driver	
			Built-in Controller Type Pulse Input Type with RS-485 Communication EtherNet/IP-Compatible EtherCAT-Compatible PROFINET-Compatible	Pulse Input Type
Thermal Class		130 (B) [UL/CSA standard acquisition has been certified with UL 105 (A)]	-	
Insulation Resistance		The measured value is 100 MΩ or more when 500 VDC megger is applied between the following places: · Case–Motor Winding · Case–Electromagnetic Brake Winding*1	The measured value is 100 MΩ or more when 500 VDC megger is applied between the following places: attached. · Protective Earth Terminal–Main Power Supply Terminal · Encoder Connector–Main Power Supply Terminal · I/O Signal Terminal–Main Power Supply Terminal	
Dielectric Strength		Sufficient to withstand the following for 1 minute: · Case–Motor Winding 1.5 kVAC, 50 Hz or 60 Hz · Case–Electromagnetic Brake Winding*2 1.5 kVAC, 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: · Protective earth terminal–Main power supply terminal 1.5 kVAC, 50 Hz or 60 Hz · Encoder connector–Main power supply terminal 1.8 kVAC, 50 Hz or 60 Hz · I/O signal terminal–Main power supply terminal 1.8 kVAC, 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0 - +40°C (Non-freezing)*2	0 - +55°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, oil or other liquids.		
Degree of Protection		IP40 (IP20 for motor connector)	IP10	IP20
Multiple Rotation Detection Range in Power OFF State (Motor Output Power)		±900 Rotation (1800 Rotations)		

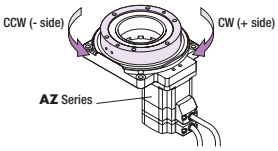
*1 Only for products with an electromagnetic brake
*2 Based on Oriental Motor's internal measurement conditions
*3 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm and 2 mm thickness

Note

● Separate the motor and driver when measuring insulation resistance and performing a dielectric voltage withstand test. Also, do not perform these tests on the absolute sensor part of the motor.

Rotation Direction

This indicates the rotation direction when viewed from the output table side.



● The illustration shows a vertically mounted motor. The rotation direction of a horizontally mounted motor is the same.

The αSTEP **AZ** Series has a separate catalog. When selecting a product, please also use this individual catalog.

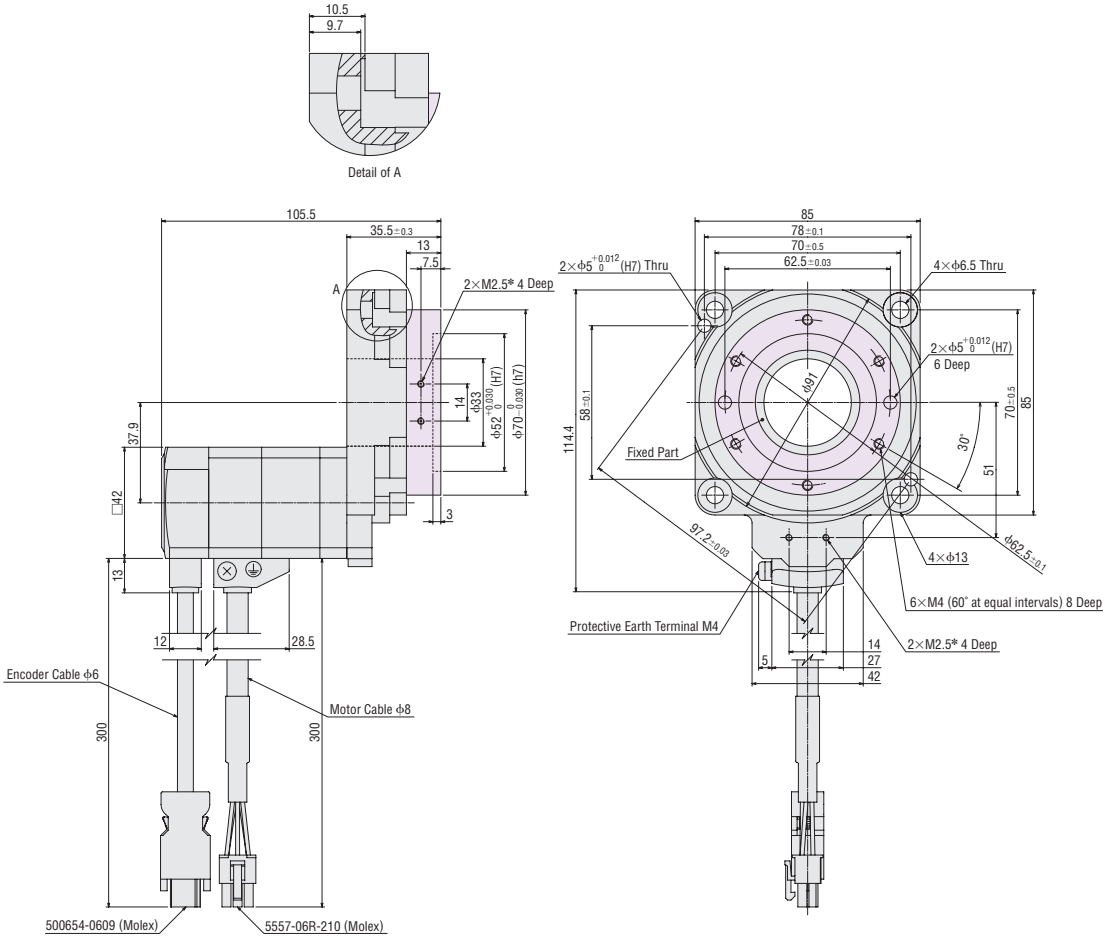
Dimensions (Unit = mm)

Hollow Rotary Actuators

◇Motor Vertical Mounting Frame Size 85 mm

Standard 2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM85R-AZAC	1.1	D4501



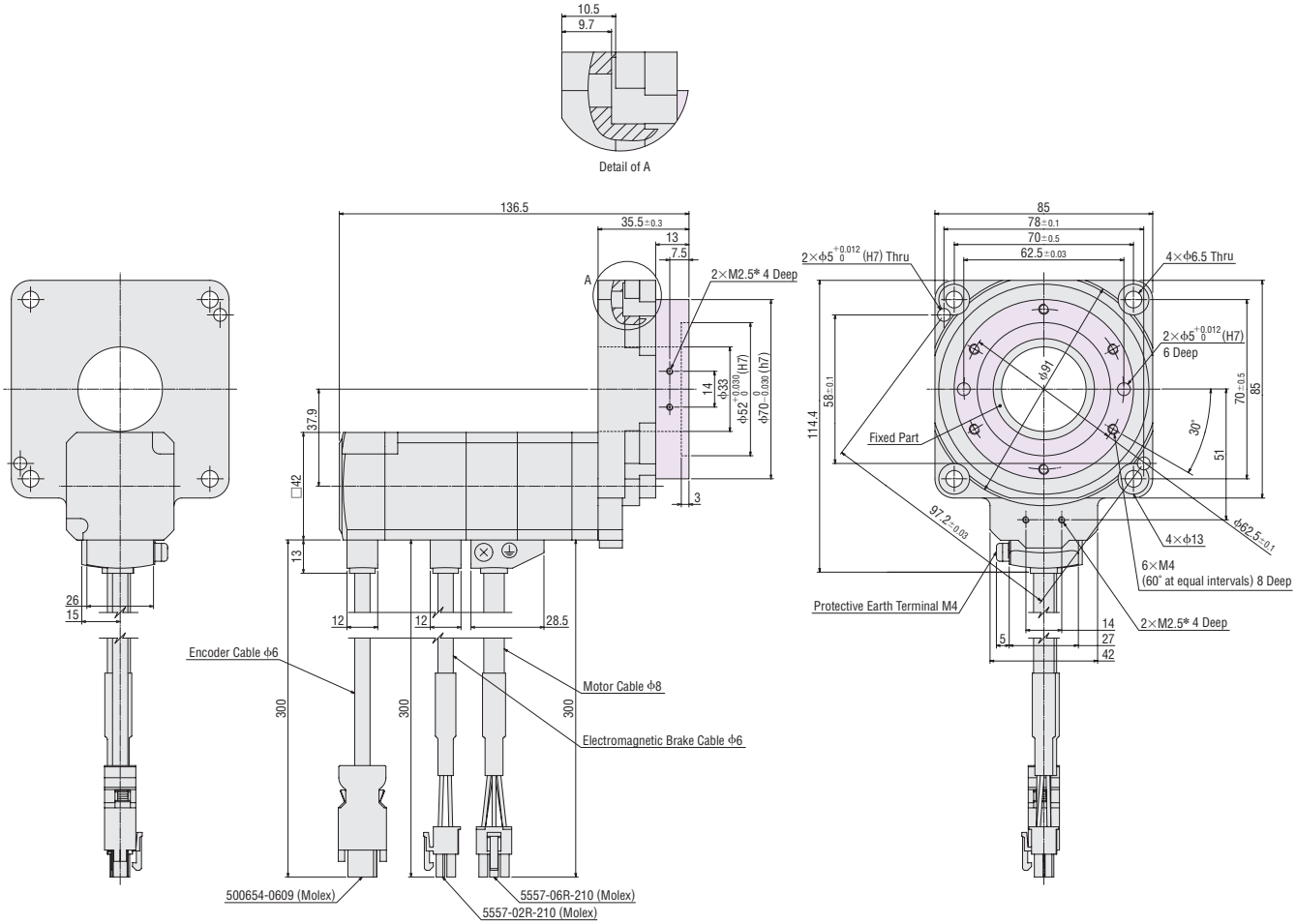
●The ▭ shaded areas are rotating parts.

✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

With Electromagnetic Brake

2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM85R-AZMC	1.3	D6452



●The ▭ shaded areas are rotating parts.

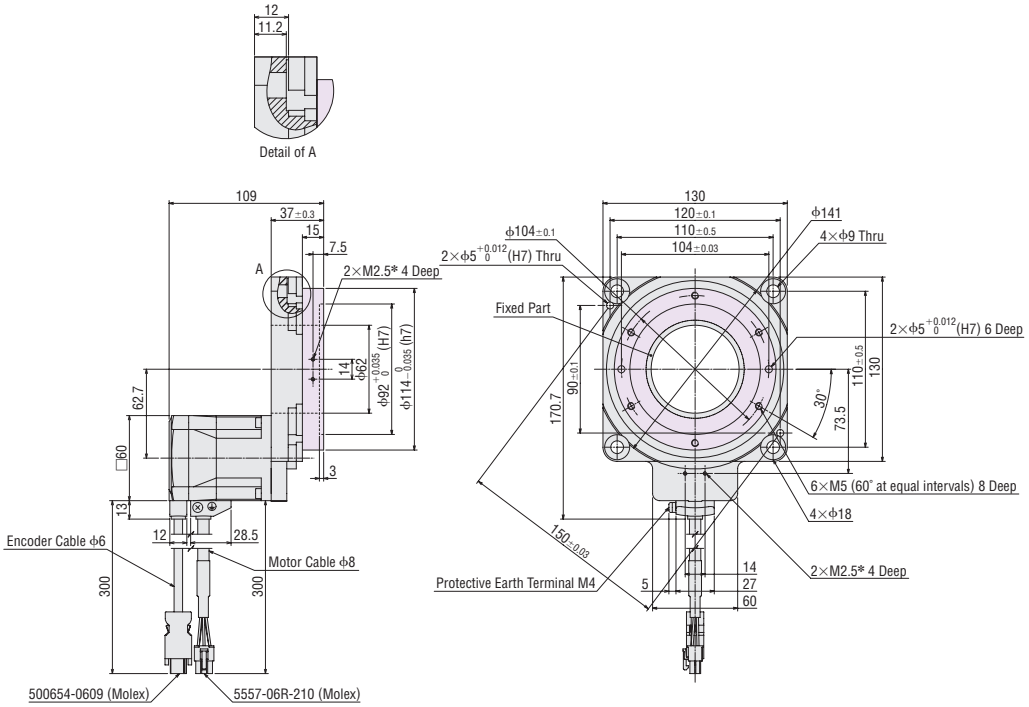
✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

◇Motor Vertical Mounting Frame Size 130 mm

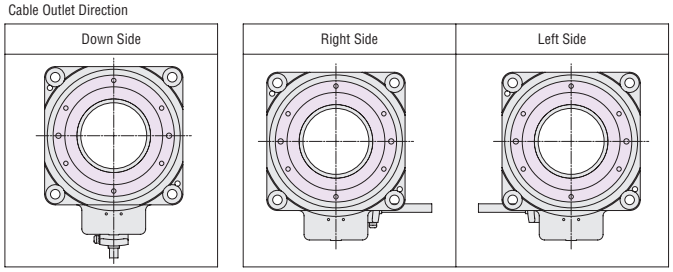
Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM130R-AZAC**	2.7	D4502
Right	**DGM130R-AZACR**		D7645
Left	**DGM130R-AZACL**		D7644



Cable Outlet Direction



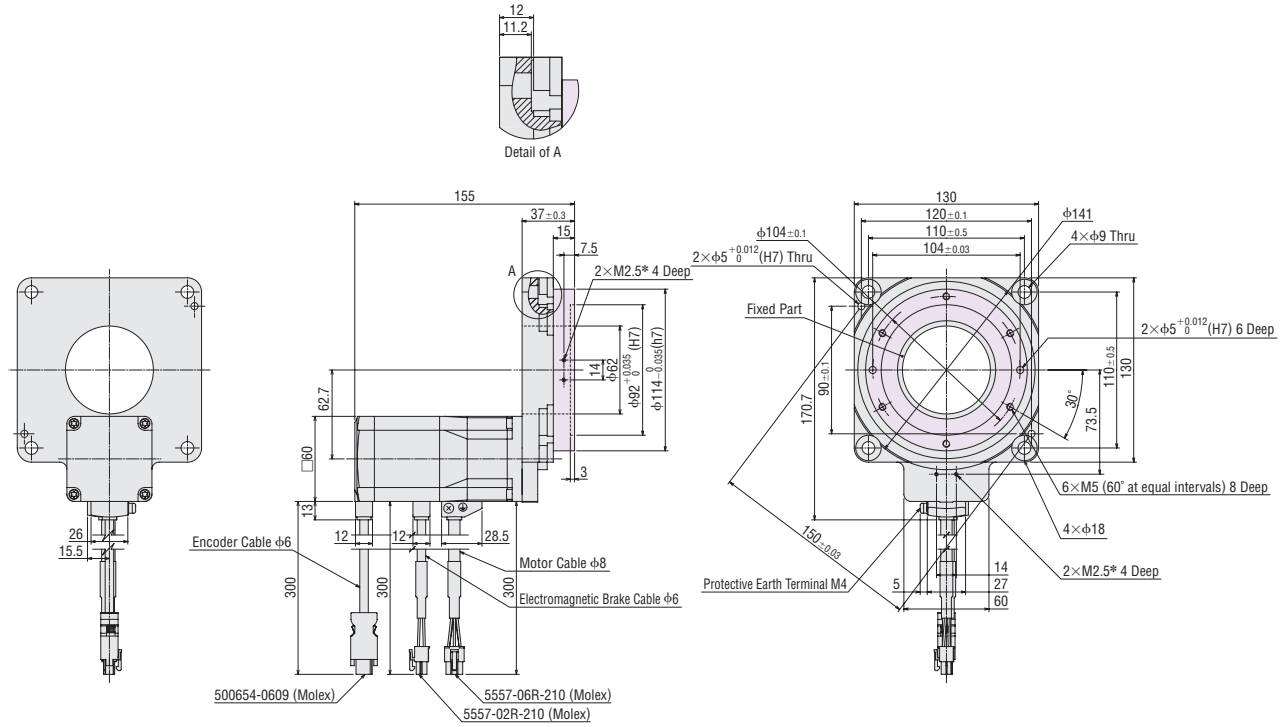
●The ▭ shaded areas are rotating parts.

✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

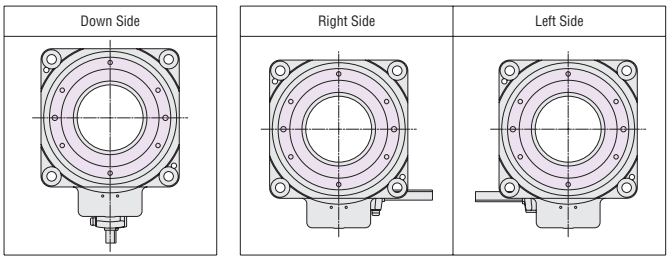
With Electromagnetic Brake

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM130R-AZMC**	3.1	D6453
Right	**DGM130R-AZMCR**		D7647
Left	**DGM130R-AZMCL**		D7646



Cable Outlet Direction



●The ▭ shaded areas are rotating parts.

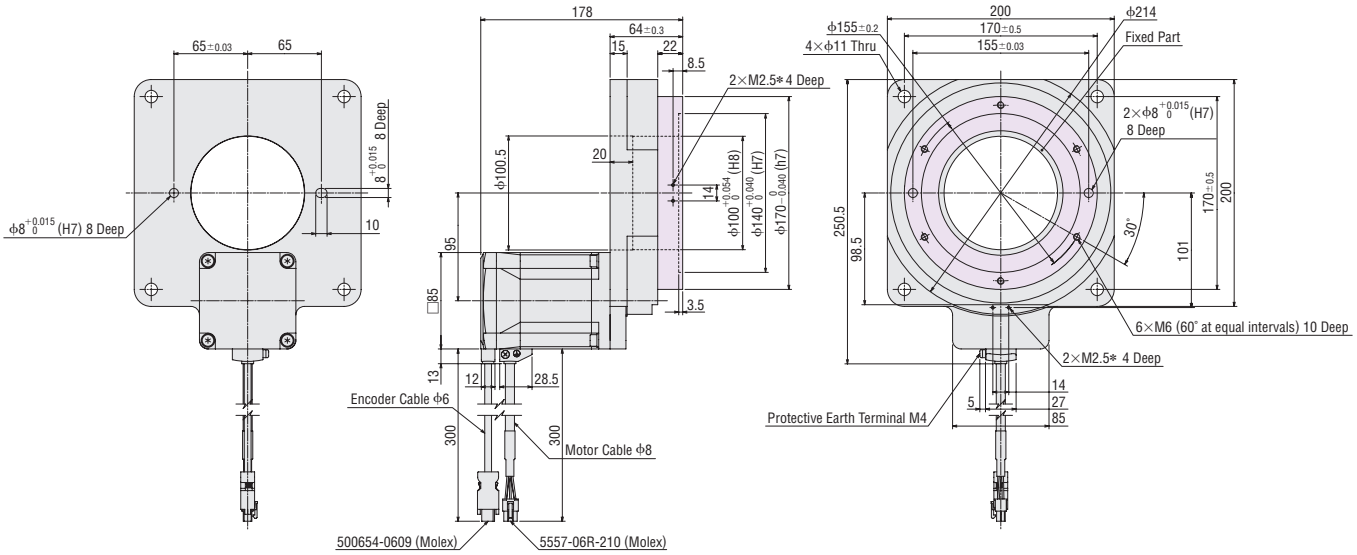
✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

◇Motor Vertical Mounting Frame Size 200 mm

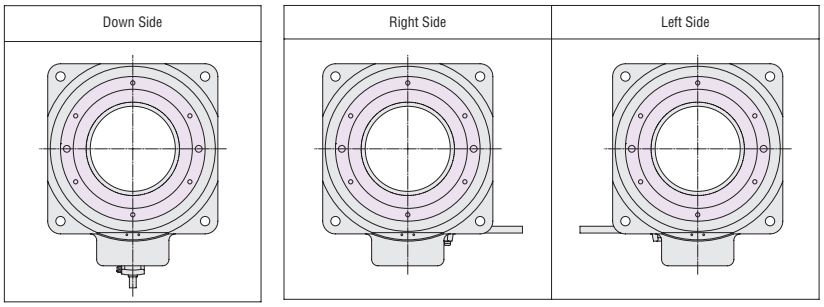
Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM200R-AZAC**	9.4	D6454
Right	**DGM200R-AZACR**		D7649
Left	**DGM200R-AZACL**		D7648



Cable Outlet Direction



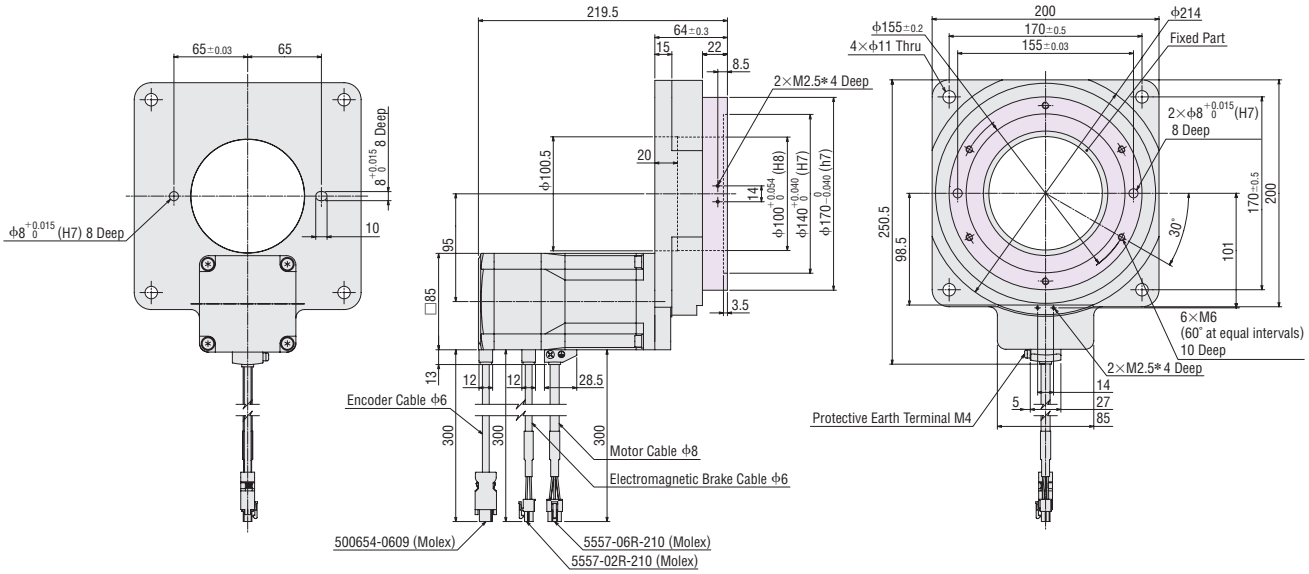
●The ▭ shaded areas are rotating parts.

✻Use M2.5 screw holes when installing the home-sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

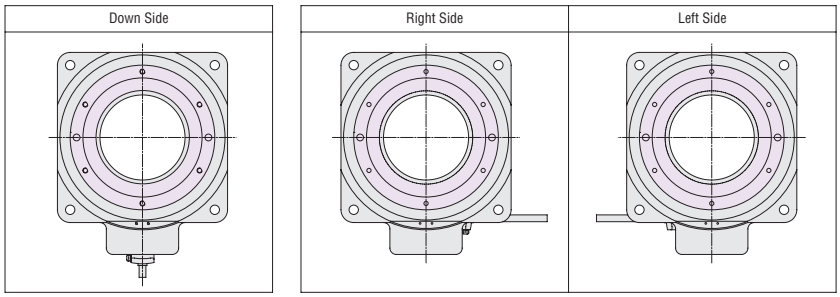
With Electromagnetic Brake

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM200R-AZMC**	10	D6455
Right	**DGM200R-AZMCR**		D7651
Left	**DGM200R-AZMCL**		D7650



Cable Outlet Direction



● The ▭ shaded areas are rotating parts.

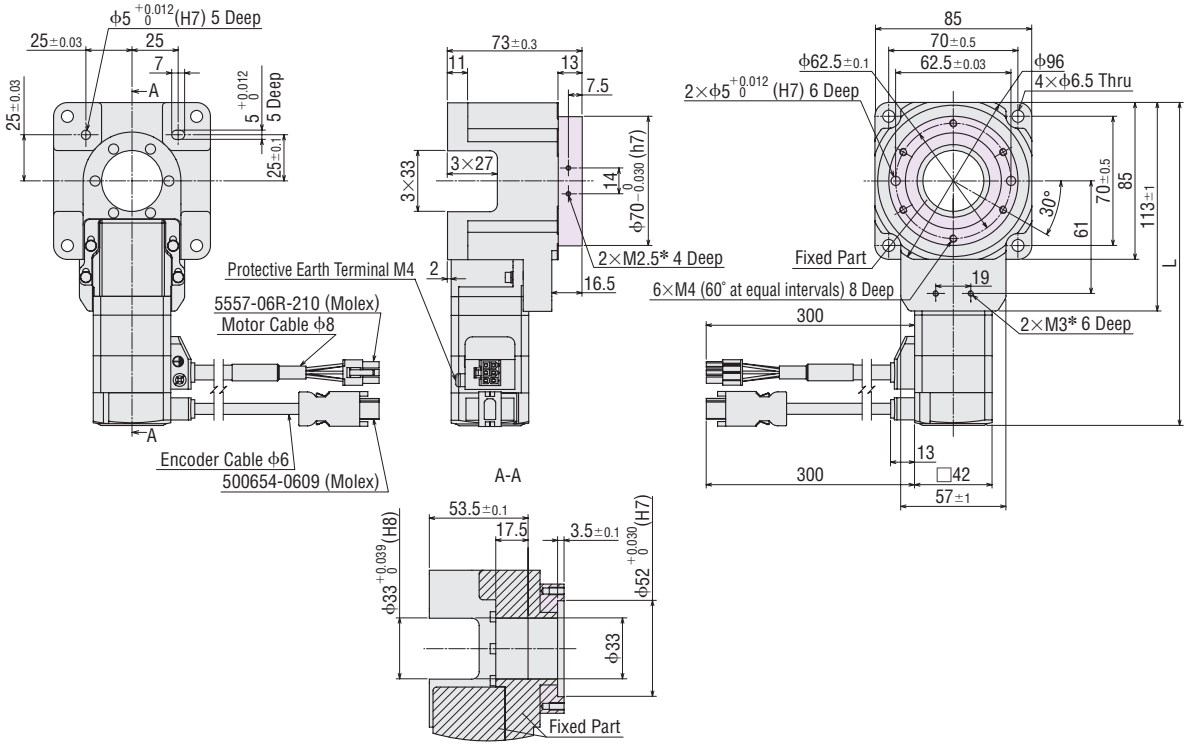
✻Use M2.5 screw holes when installing the home-sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

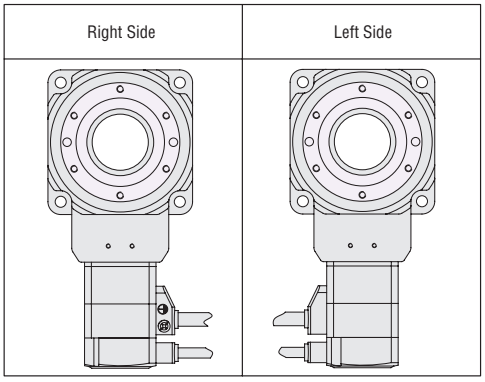
◇Motor Horizontal Mounting Frame Size 85 mm

Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB85R12-AZACR**	182	1.5	D7887R
Left	**DGB85R12-AZACL**			D7887L
Right	**DGB85R18-AZACR**	178		D7888R
Left	**DGB85R18-AZACL**			D7888L
Right	**DGB85R36-AZACR**	175		D7889R
Left	**DGB85R36-AZACL**			D7889L



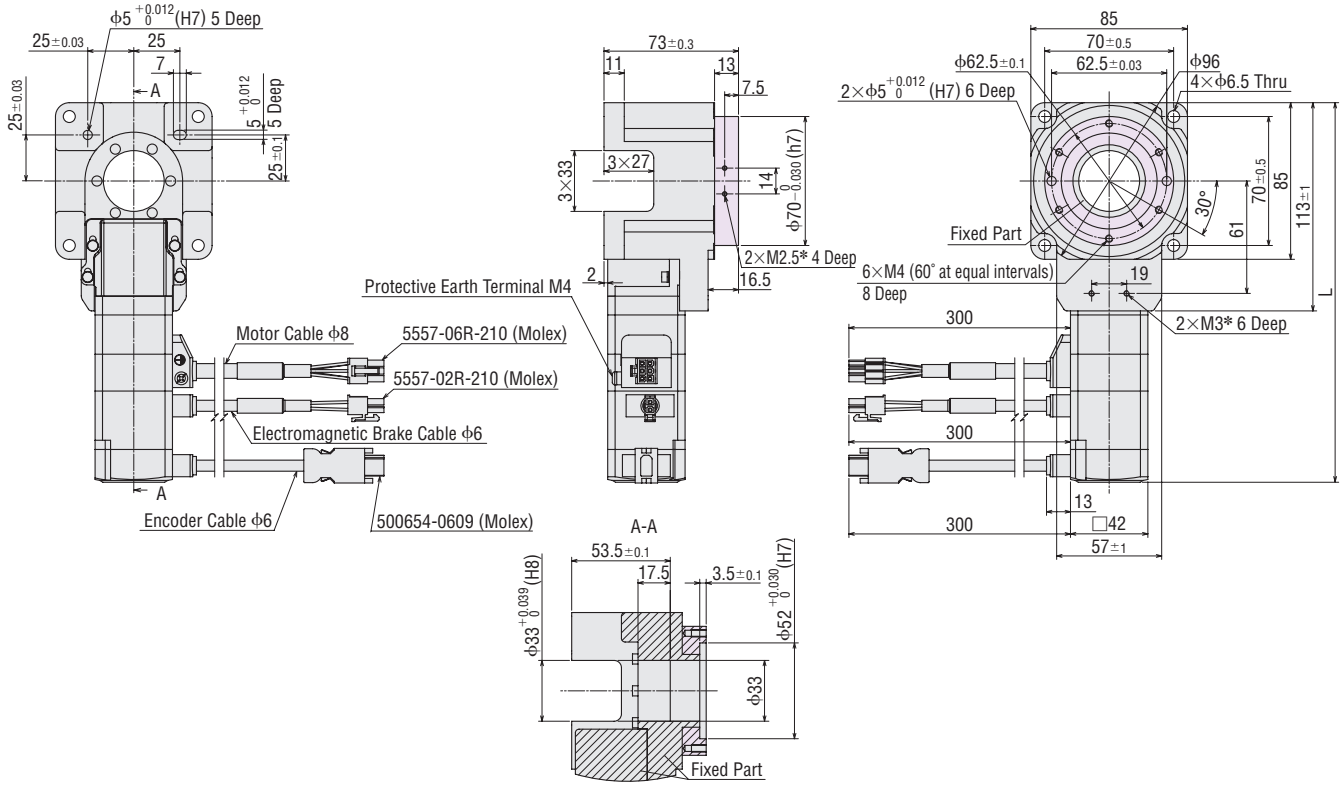


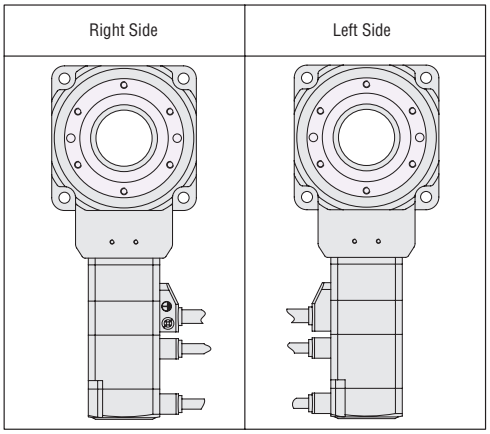
●The ▭ shaded areas are rotating parts.
*Home-sensor set cannot be used.

With Electromagnetic Brake

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB85R12-AZMCR**	213	1.7	D7890R
Left	**DGB85R12-AZMCL**			D7890L
Right	**DGB85R18-AZMCR**	209		D7891R
Left	**DGB85R18-AZMCL**			D7891L
Right	**DGB85R36-AZMCR**	206		D7892R
Left	**DGB85R36-AZMCL**			D7892L





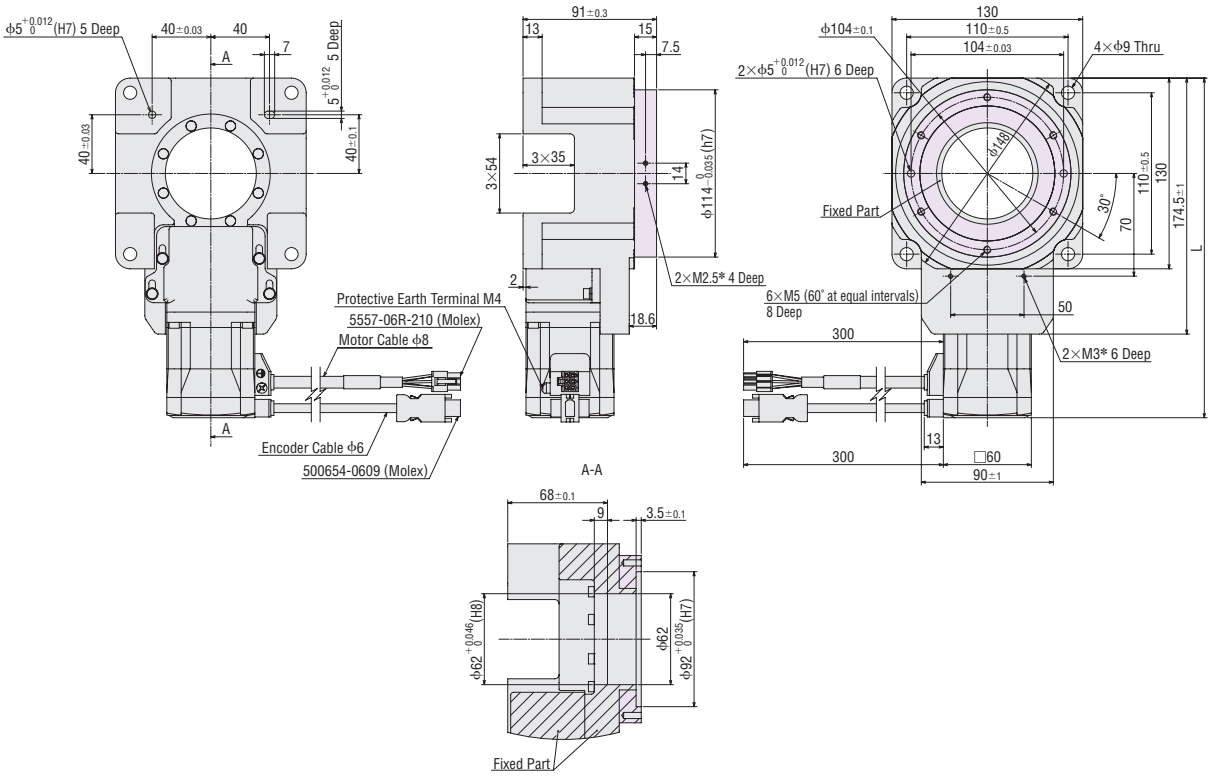
●The ▭ shaded areas are rotating parts.
✻Home-sensor set cannot be used.

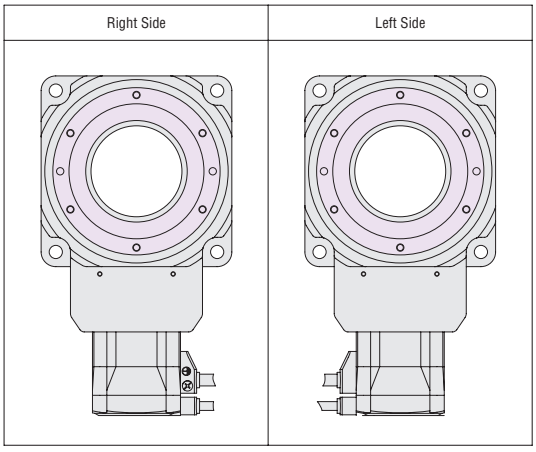
◇Motor Horizontal Mounting Frame Size 130 mm

Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB130R18-AZACR**	238	3.9	D7894R
Left	**DGB130R18-AZACL**			D7894L
Right	**DGB130R36-AZACR**	231.5		D7895R
Left	**DGB130R36-AZACL**			D7895L



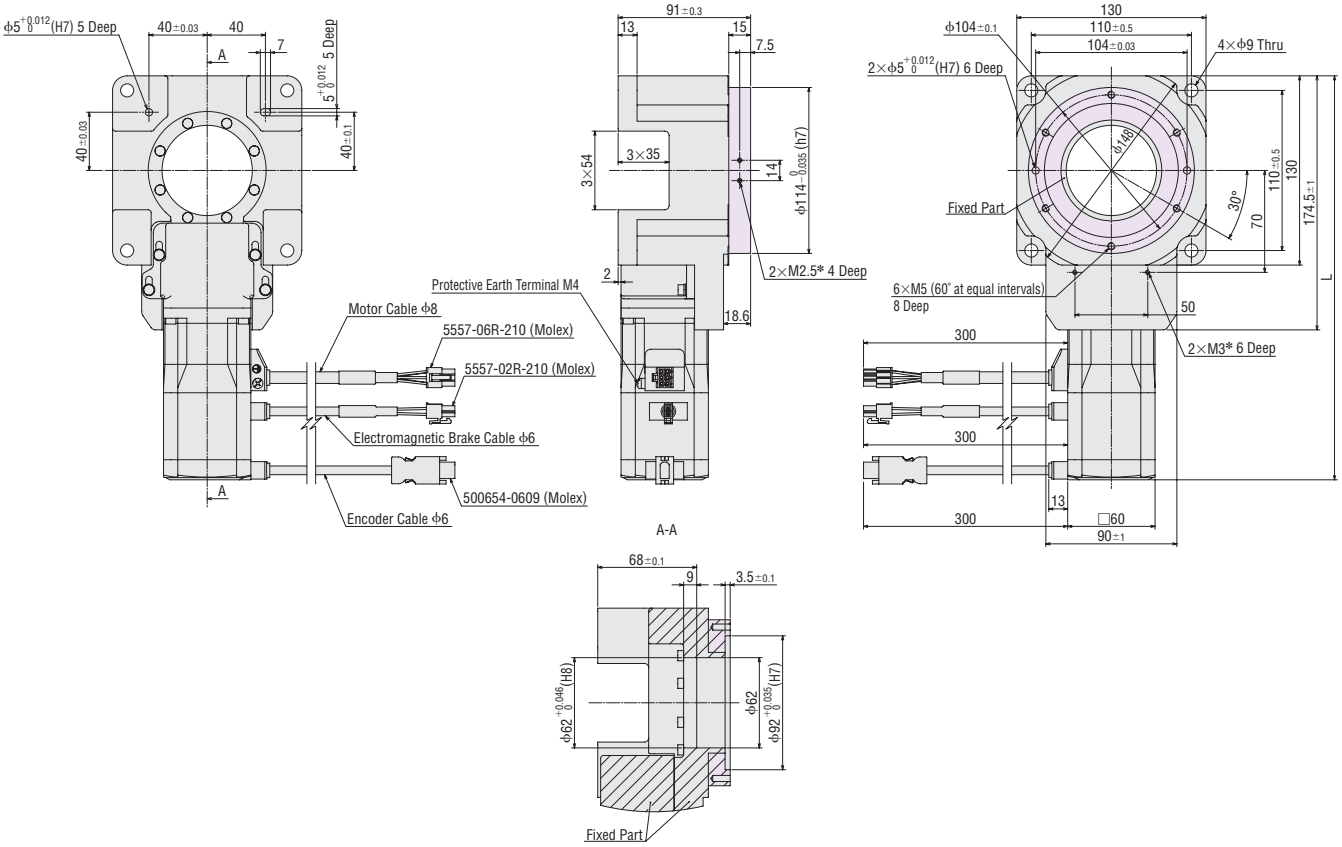


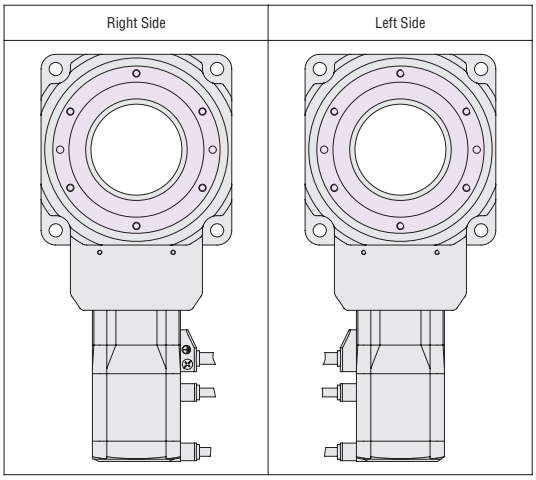
●The ▭ shaded areas are rotating parts.
*Home-sensor set cannot be used.

With Electromagnetic Brake

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB130R18-AZMCR**	284	4.3	D7897R
Left	**DGB130R18-AZMCL**			D7897L
Right	**DGB130R36-AZMCR**	277.5		D7898R
Left	**DGB130R36-AZMCL**			D7898L





●The ▭ shaded areas are rotating parts.
✻Home-sensor set cannot be used.

Hollow Rotary Actuators

DGII Series α_{STEP} AZ Series Equipped DC Power Suply Input

For product-related technical reference and information about regulations and standards, please see the Oriental Motor website.

Product Number

●Hollow Rotary Actuators

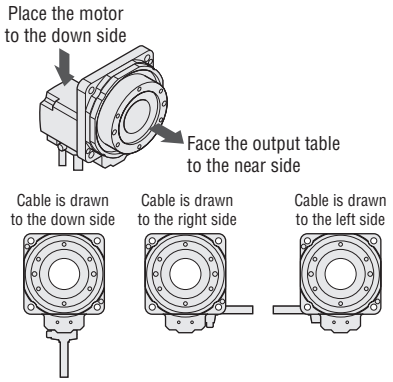
◇Motor Vertical Mounting

DGM 130 R - AZ A K R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	**DGM**: **DGII** Series
②	Frame Size	**60**: 60 mm **85**: 85 mm **130**: 130 mm
③	Type of Output Table Supporting Bearing	**R**: Cross-Roller Bearing Blank: Deep-Groove Ball Bearing
④	Motor	**AZ**: **AZ** Series
⑤	Motor Type	**A**: Standard **M**: With Electromagnetic Brake
⑥	Motor Specification	**K**: DC Input Specification
⑦	Cable Outlet Direction*	Blank: Down **R**: Right **L**: Left

*Cable outlet direction is the direction of the cable when the output table is at the front and the motor is facing downwards.



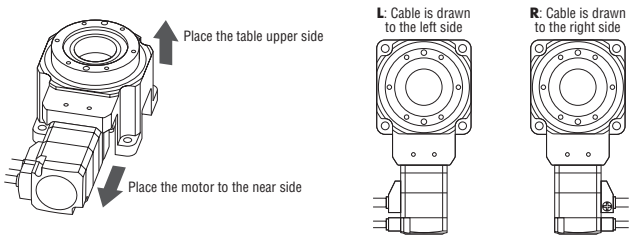
◇Motor Horizontal Mounting

DGB 85 R 12 - AZ A K R

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	**DGB**: **DGII** Series
②	Frame Size	**85**: 85 mm **130**: 130 mm
③	Type of Output Table Supporting Bearing	**R**: Cross-Roller Bearing
④	Gear Ratio	
⑤	Motor	**AZ**: **AZ** Series
⑥	Motor Type	**A**: Standard
⑦	Motor Specification	**K**: DC Input Specification
⑧	Cable Outlet Direction*	**R**: Right **L**: Left

*Cable outlet direction is the direction of the cable when the output table is at the top and the motor is facing forward.



The α_{STEP} **AZ** Series has a separate catalog. When selecting a product, please also use this individual catalog.

Driver

AZD - K D

① ② ③

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**K**: 24/48 VDC
③	Product Line	**D**: Built-in Controller Type **X**: Pulse Input Type with RS-485 Communication Blank: Pulse Input Type **EP**: EtherNet/IP-Compatible **ED**: EtherCAT-Compatible **PN**: PROFINET-Compatible

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Model	**Z**: For **AZ** Series
⑤	Reference Number	Blank: For **DGM85**, **DGM130** **2**: For **DGM60**
⑥	Cable Type	**F**: Connection Cable Sets **R**: Flexible Connection Cable Sets
⑦	Description	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑧	Cable Specifications	**2**: For DC Input

Product Line

Hollow Rotary Actuators

◇Motor Vertical Mounting

•Standard

Frame Size	Product Name
60 mm	**DGM60-AZAK**
85 mm	**DGM85R-AZAK**
130 mm	**DGM130R-AZAK** **DGM130R-AZAKR** **DGM130R-AZAKL**

•With Electromagnetic Brake

Frame Size	Product Name
85 mm	**DGM85R-AZMK**
130 mm	**DGM130R-AZMK** **DGM130R-AZMKR** **DGM130R-AZMKL**

◇Motor Horizontal Mounting

•Standard

Frame Size	Product Name
85 mm	**DGB85R12-AZAKR** **DGB85R12-AZAKL** **DGB85R18-AZAKR** **DGB85R18-AZAKL** **DGB85R36-AZAKR** **DGB85R36-AZAKL**
130 mm	**DGB130R18-AZAKR** **DGB130R18-AZAKL** **DGB130R36-AZAKR** **DGB130R36-AZAKL**

Driver

◇Built-in Controller Type

Power Supply Input	Product Name
24/48 VDC	**AZD-KD**

◇Pulse Input Type

Power Supply Input	Product Name
24/48 VDC	**AZD-K**

◇EtherCAT-Compatible

Power Supply Input	Product Name
24/48 VDC	**AZD-KED**

◇Pulse Input Type with RS-485 Communication

Power Supply Input	Product Name
24/48 VDC	**AZD-KX**

◇EtherNet/IP-Compatible

Power Supply Input	Product Name
24/48 VDC	**AZD-KEP**

◇PROFINET-Compatible

Power Supply Input	Product Name
24/48 VDC	**AZD-KPN**

●Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable in applications 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 Frame Size 60 mm]

◇For Motor/Encoder

Product Line	Length L [m]	Product Name
Connection Cable Set	0.5	**CC005VZ2F2**
	1	**CC010VZ2F2**
	1.5	**CC015VZ2F2**
	2	**CC020VZ2F2**
	2.5	**CC025VZ2F2**
	3	**CC030VZ2F2**
	4	**CC040VZ2F2**
	5	**CC050VZ2F2**
	7	**CC070VZ2F2**
	10	**CC100VZ2F2**
	15	**CC150VZ2F2**
	20	**CC200VZ2F2**

Product Line	Length L [m]	Product Name
Flexible Connection Cable Sets	0.5	**CC005VZ2R2**
	1	**CC010VZ2R2**
	1.5	**CC015VZ2R2**
	2	**CC020VZ2R2**
	2.5	**CC025VZ2R2**
	3	**CC030VZ2R2**
	4	**CC040VZ2R2**
	5	**CC050VZ2R2**
	7	**CC070VZ2R2**
	10	**CC100VZ2R2**
	15	**CC150VZ2R2**
	20	**CC200VZ2R2**

[For Frame Size 85 mm, 130 mm]

For Motor For Encoder

◇For Motor/Encoder

Product Line	Length L [m]	Product Name
Connection Cable Set	0.5	**CC005VZF2**
	1	**CC010VZF2**
	1.5	**CC015VZF2**
	2	**CC020VZF2**
	2.5	**CC025VZF2**
	3	**CC030VZF2**
	4	**CC040VZF2**
	5	**CC050VZF2**
	7	**CC070VZF2**
	10	**CC100VZF2**
	15	**CC150VZF2**
	20	**CC200VZF2**

Product Line	Length L [m]	Product Name
Flexible Connection Cable Sets	0.5	**CC005VZR2**
	1	**CC010VZR2**
	1.5	**CC015VZR2**
	2	**CC020VZR2**
	2.5	**CC025VZR2**
	3	**CC030VZR2**
	4	**CC040VZR2**
	5	**CC050VZR2**
	7	**CC070VZR2**
	10	**CC100VZR2**
	15	**CC150VZR2**
	20	**CC200VZR2**

◇For Motor/Encoder/ Electromagnetic Brake

For Motor For Encoder For Electromagnetic Brake

Product Line	Length L [m]	Product Name
Connection Cable Set	0.5	**CC005VZFB2**
	1	**CC010VZFB2**
	1.5	**CC015VZFB2**
	2	**CC020VZFB2**
	2.5	**CC025VZFB2**
	3	**CC030VZFB2**
	4	**CC040VZFB2**
	5	**CC050VZFB2**
	7	**CC070VZFB2**
	10	**CC100VZFB2**
	15	**CC150VZFB2**
	20	**CC200VZFB2**

Product Line	Length L [m]	Product Name
Flexible Connection Cable Sets	0.5	**CC005VZRB2**
	1	**CC010VZRB2**
	1.5	**CC015VZRB2**
	2	**CC020VZRB2**
	2.5	**CC025VZRB2**
	3	**CC030VZRB2**
	4	**CC040VZRB2**
	5	**CC050VZRB2**
	7	**CC070VZRB2**
	10	**CC100VZRB2**
	15	**CC150VZRB2**
	20	**CC200VZRB2**

■Included Items

●Driver

Type \ Included Items	Connector
Built-in Controller Type Pulse Input Type with RS-485 Communication Pulse Input Type	For CN1 (1 piece) For CN4 (1 piece)
EtherNet/IP-Compatible EtherCAT-Compatible PROFINET-Compatible	For CN1 (1 piece) For CN4 (1 piece) For CN7 (1 piece)

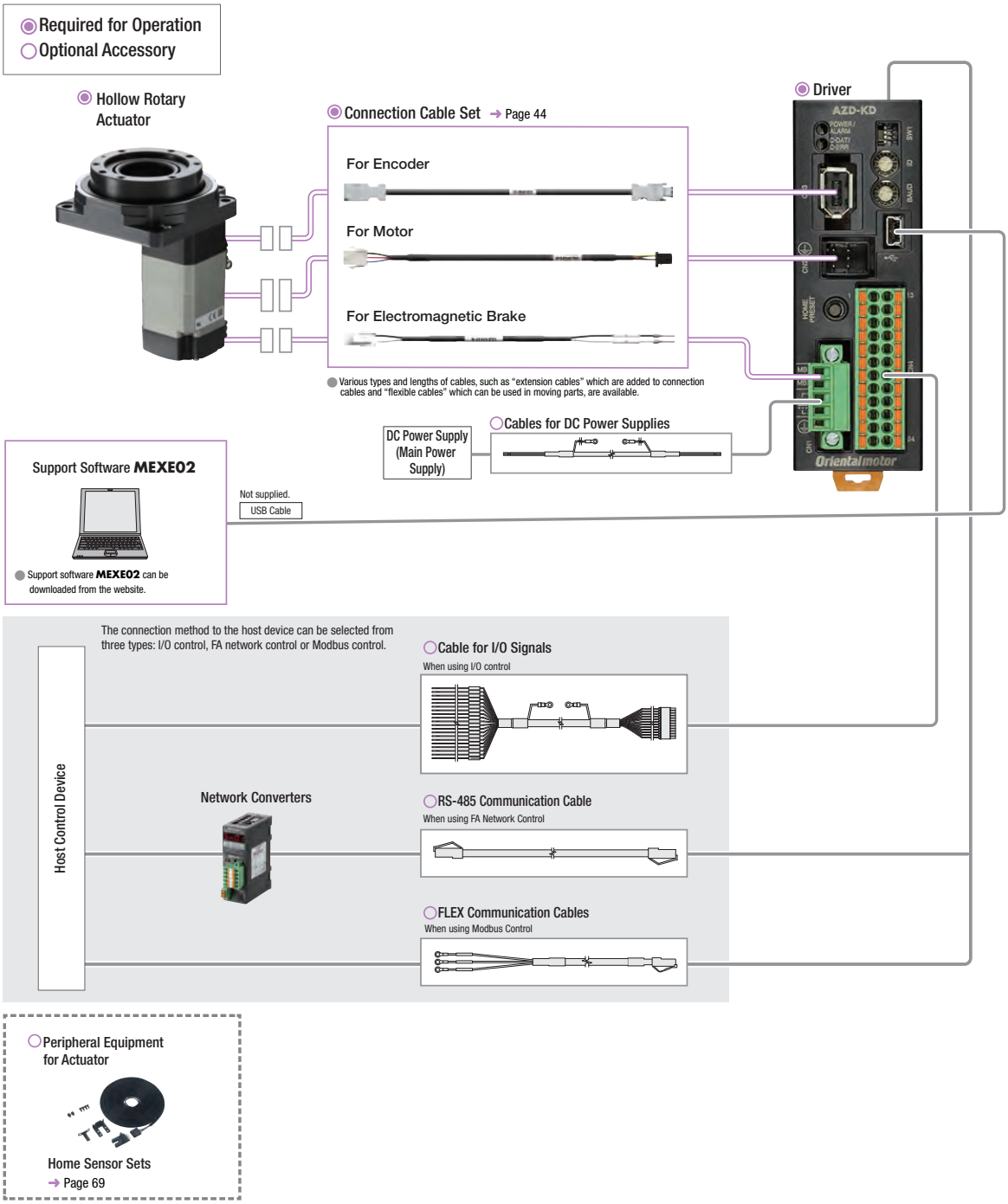
●Connection Cable Sets / Flexible Connection Cable Sets

Type \ Included Items	Operating Manual
Connection Cable Set	–
Flexible Connection Cable Sets	1 Set

System Configuration

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Built-in Positioning Function Type Driver or Pulse Input Type Driver with RS-485 Communication

An example of a configuration using RS-485 communication or I/O control with a built-in controller type driver is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM85R-AZMK		AZD-KD		CC010VZFB2	CC24D010C-1
◉		◉		◉	○

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

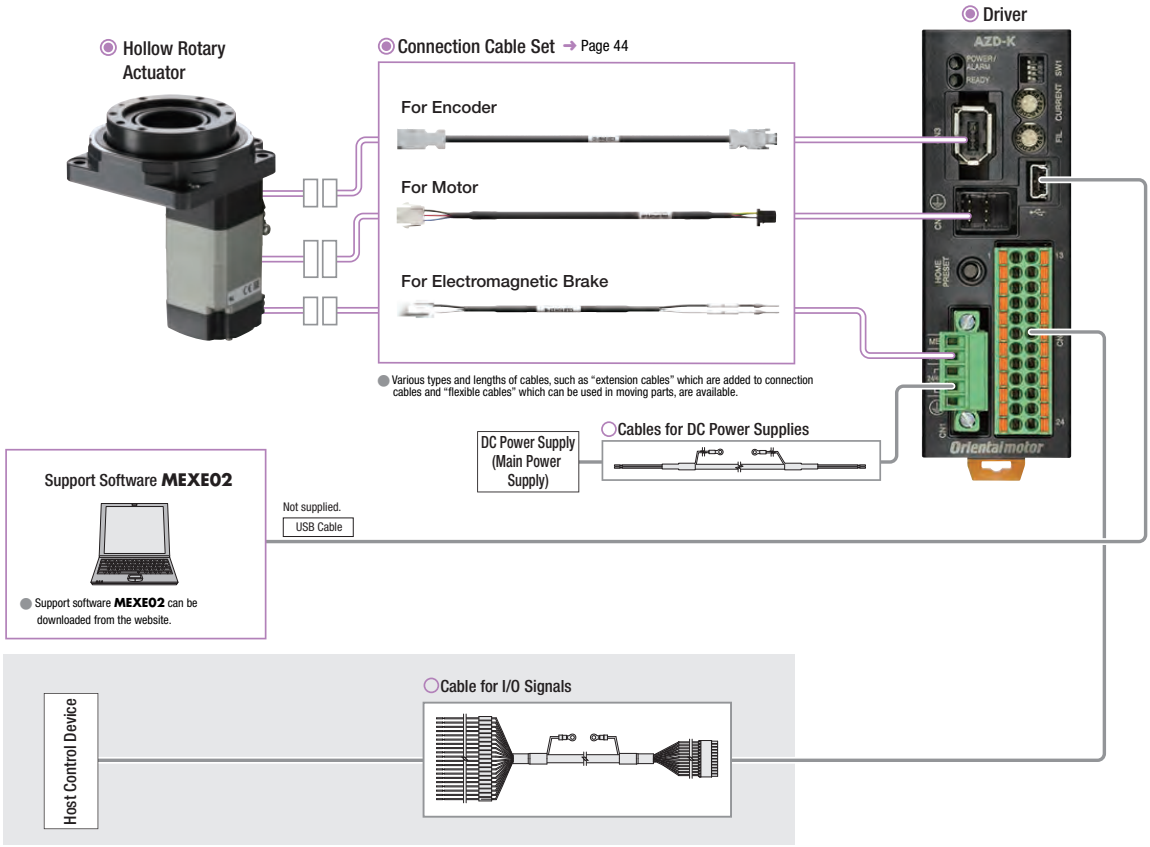
Note

- 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.
- Home-sensor set cannot be used when the motor is horizontal.

●Combination of Linear & Rotary Actuator with Electromagnetic Brake and Pulse Input Type Driver

An example of a single-axis system configuration with a programmable controller (equipped with pulse oscillation function) is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.

◉Required for Operation
○Optional Accessory



○Peripheral Equipment for Actuator

Home Sensor Sets
→ Page 69

●Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM85R-AZMK		AZD-K		CC010VZFB2	CC24D010C-1
◉		◉		◉	○

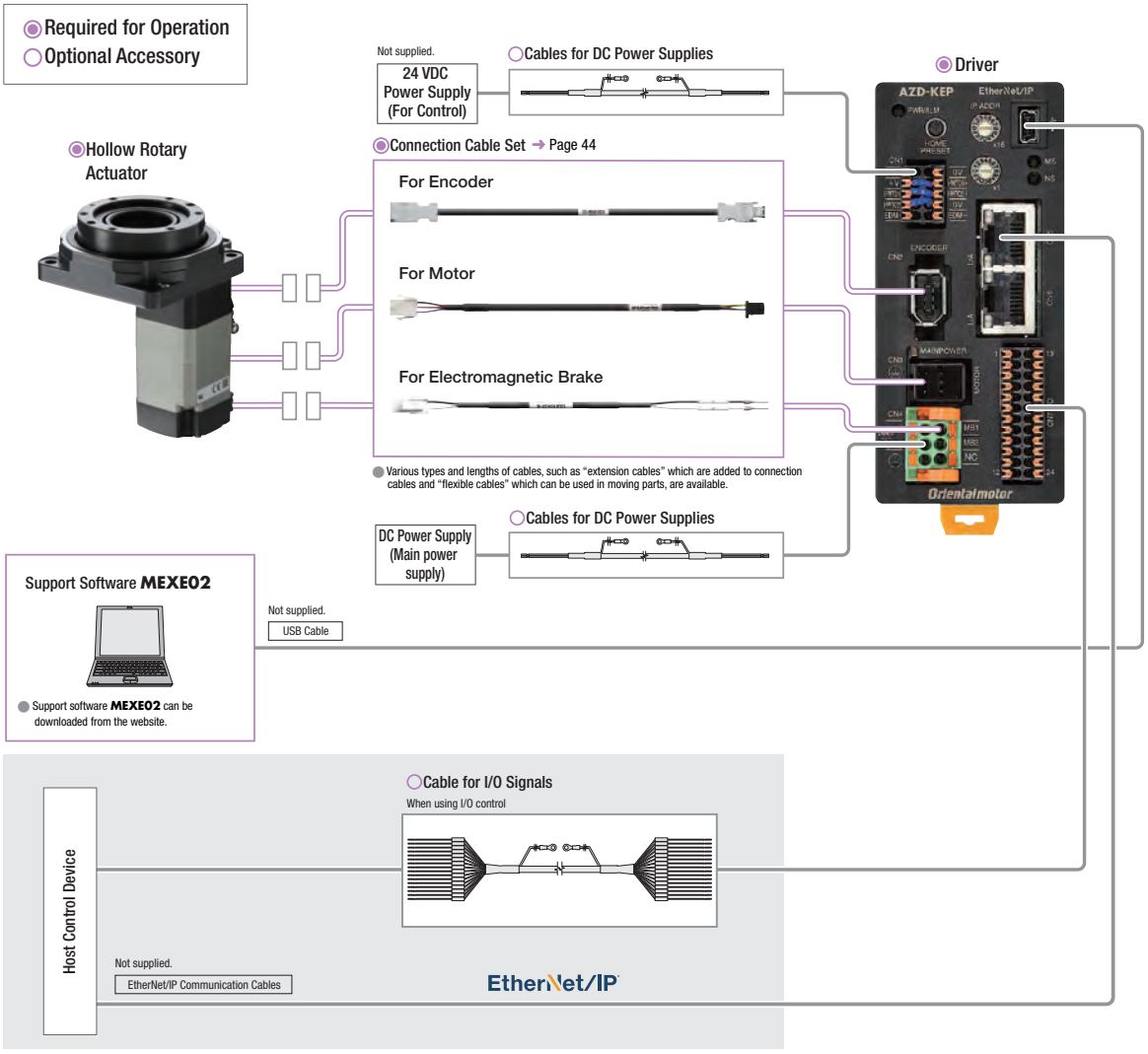
●The system configuration shown above is an example. Other combinations are also available.

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.
●Home-sensor set cannot be used when the motor is horizontal.

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Network-Compatible Driver

An example of a configuration using I/O control or EtherNet/IP with an EtherNet/IP compatible driver is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Peripheral Equipment for Actuator

Home Sensor Sets
→ Page 69

Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable General Purpose Type (1 m)
DGM85R-AZMK		AZD-KEP		CC010VZFB2	CC16D010B-1
◉		◉		◉	○

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.
- Home-sensor set cannot be used when the motor is horizontal.

Motor Vertical Mounting Frame Size 60 mm, 85 mm, 130 mm

Hollow Rotary Actuator Specifications

Frame Size			60 mm	85 mm	130 mm
Actuator Product Name	Standard		**DGM60-AZAK**	**DGM85R-AZAK**	**DGM130R-AZAK□**
	With Electromagnetic Brake		–	**DGM85R-AZMK**	**DGM130R-AZMK□**
Equipped Motor (**AZ** Series)			**AZM24**	**AZM46**	**AZM66**
Type of Output Table Supporting Bearing			Deep-Groove Ball Bearing	Cross-Roller Bearing	
Inertia		J: kgm^2	3700×10^{-7}	21120×10^{-7} [26304×10^{-7}]*	147380×10^{-7} [199220×10^{-7}]*
Gear Ratio			18		
Min. Travel Amount of Output Table Unit		deg/STEP	0.01		
Permissible Torque		Nm	0.9	4.5	12
Holding Torque at Motor Standstill	Power ON	Nm	0.45	2.7	9
	Electromagnetic Brake	Nm	–	2.7	9
Max. Speed		deg/s	1200 (200 r/min)		900 (150 r/min)
Repetitive Positioning Accuracy		arcsec	±15 (±0.004°)		
Lost Motion		arcmin	2 (0.033°)		
Angular Transmission Accuracy		arcmin	4 (0.067°)		3 (0.05°)
Permissible Axial Load		N	100	500	2000
Permissible Moment		Nm	2	10	50
Runout of Output Table Surface		mm	0.030	0.015	
Runout of Output Table Inner (Outer) Diameter		mm	0.030	0.015	
Parallelism of Output Table		mm	0.050	0.030	

- Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box ☐ is located in the product name. For down, there is no character in the box ☐.
- When the motor is operated from 48 VDC input, as a reference, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Except for **DGM85**)

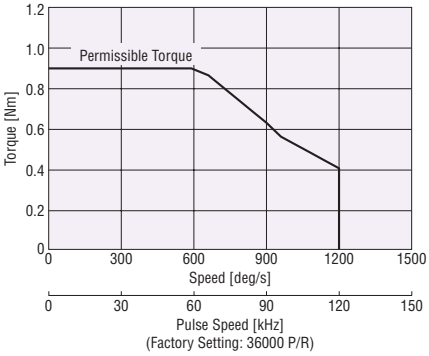
*The value inside the [ ] represents the value when an actuator with an electromagnetic brake is connected.

Note

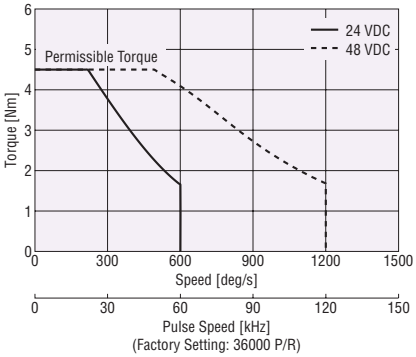
- The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.
- The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference Values)

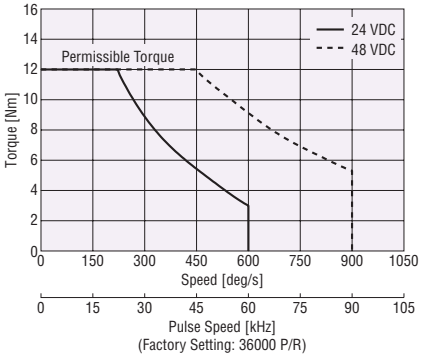
DGM60



DGM85R



DGM130R



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
  (When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Motor Horizontal Mounting Frame Size 85 mm

Hollow Rotary Actuator Specifications

Frame Size		85mm		
Actuator Product Name Standard		**DGB85R12-AZAK□**	**DGB85R18-AZAK□**	**DGB85R36-AZAK□**
Equipped Motor (**AZ** Series)		AZM46		
Type of Output Table Supporting Bearing		Cross-Roller Bearing		
Inertia	J: kgm^2	11200×10^{-7}	21100×10^{-7}	74500×10^{-7}
Gear Ratio		12	18	36
Min. Travel Amount of Output Table Unit	deg/STEP	0.01		
Permissible Torque	Nm	3	4.5	9
Holding Torque at Motor Standstill	Nm	1.8	2.7	5.4
Max. Speed	deg/s	1800 (300 r/min)	1200 (200 r/min)	600 (100 r/min)
Repetitive Positioning Accuracy	arcsec	±30 (±0.008°)*		
Backlash	arcmin	6 (0.1°)		
Angular Transmission Accuracy	arcmin	6 (0.1°)		
Permissible Axial Load	N	500		
Permissible Moment	Nm	10		
Runout of Output Table Surface	mm	0.015		
Runout of Output Table Inner (Outer) Diameter	mm	0.015		
Parallelism of Output Table	mm	0.030		

● Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box □ is located in the product name.

*For a gear ratio of 18, accuracy may be reduced when the operating range of output table is 1 rotation or more.

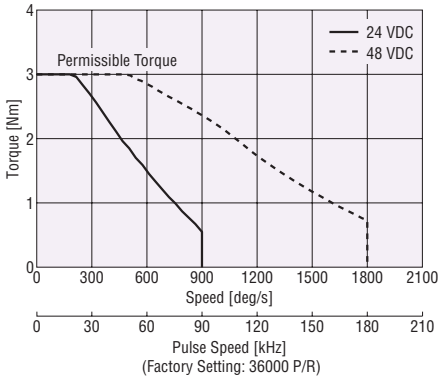
Note

● The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

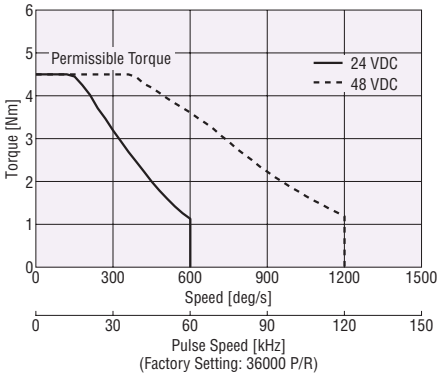
● The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference Values)

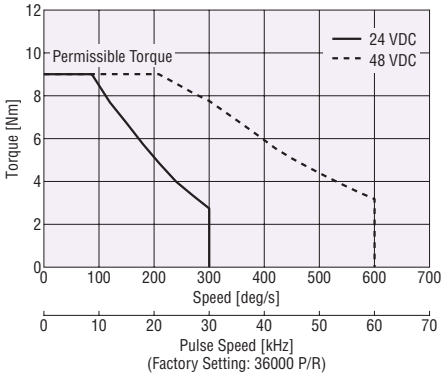
DGB85R12



DGB85R18



DGB85R36



Note

● Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO Sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
(When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

Motor Horizontal Mounting Frame Size 130 mm

Hollow Rotary Actuator Specifications

Frame Size		130 mm	
Actuator Product Name	Standard	**DGB130R18-AZAK□**	**DGB130R36-AZAK□**
Equipped Motor (**AZ** Series)		**AZM66**	
Type of Output Table Supporting Bearing		Cross-Roller Bearing	
Inertia	J: kgm^2	147000×10^{-7}	507000×10^{-7}
Gear Ratio		18	36
Min. Travel Amount of Output Table Unit	deg/STEP	0.01	
Permissible Torque	Nm	12	24
Holding Torque at Motor Standstill	Nm	9	18
Max. Speed	deg/s	900 (150 r/min)	450 (75 r/min)
Repetitive Positioning Accuracy	arcsec	±30 (±0.008°)*	
Backlash	arcmin	6 (0.1°)	
Angular Transmission Accuracy	arcmin	6 (0.1°)	
Permissible Axial Load	N	2000	
Permissible Moment	Nm	50	
Runout of Output Table Surface	mm	0.015	
Runout of Output Table Inner (Outer) Diameter	mm	0.015	
Parallelism of Output Table	mm	0.030	

- Either **R** (Right) or **L** (Left) indicating the cable outlet direction is specified where the box □ is located in the product name.
- When the motor is operated from 48 VDC input, as a reference, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

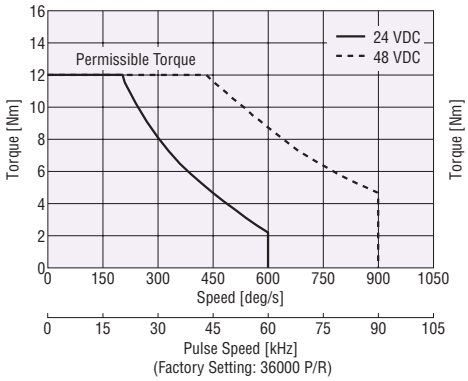
*For a gear ratio of 18, accuracy may be reduced when the operating range of output table is 1 rotation or more.

Note

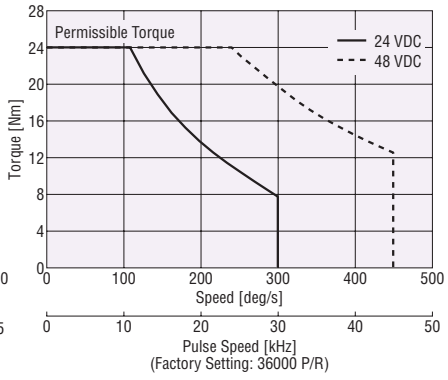
- The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.
- The motor unit cannot be disassembled.

Speed – Torque Characteristics (Reference Values)

DGB130R18



DGB130R36



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. Conditions such as power supply voltage and ambient temperature may cause these characteristics to change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO Sensor, be sure to keep the temperature of the motor case at 80°C or less during use.
  (When conforming to the UL or CSA Standards, the temperature of the motor case must be kept at 75°C or less since the motor is recognized as heat-resistant class A.)

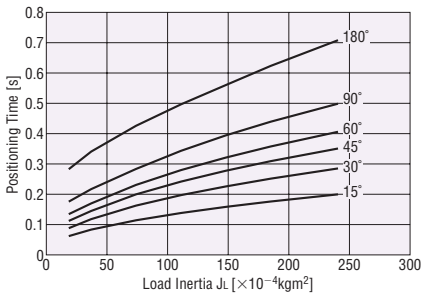
Load Inertia – Positioning Time (Reference value)

Load inertia is the inertia of the customer's load.

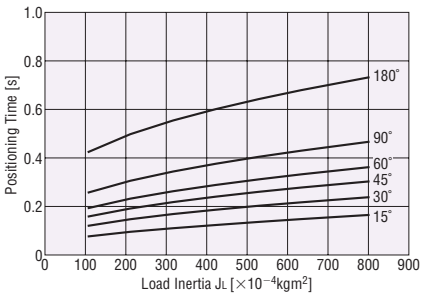
Motor Vertical Mounting

◇24 VDC

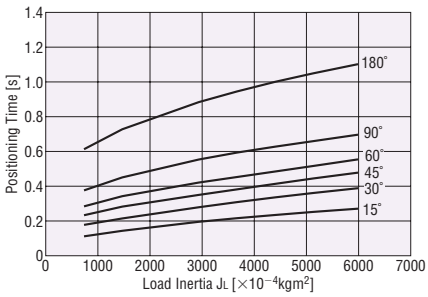
DGM60



DGM85R



DGM130R



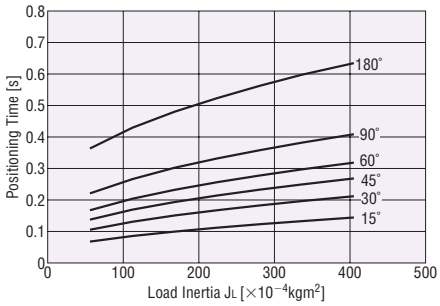
Note

- The load inertia-positioning time is the theoretical value that is 1.5 times the torque safety factor under normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.
- For "Load Inertia-Positioning Time" at 48 VDC input, contact your nearest Oriental Motor sales office.

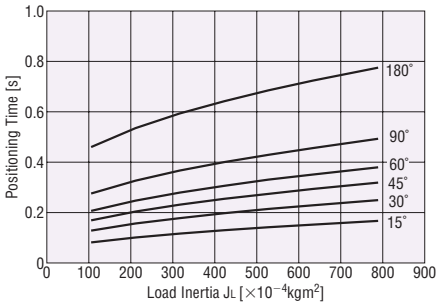
Motor Horizontal Mounting

◇24 VDC

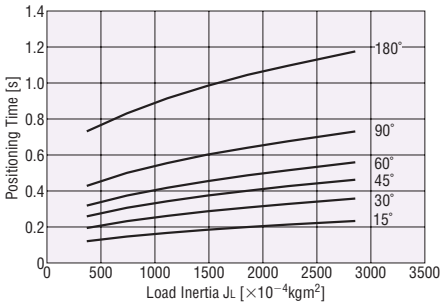
DGB85R12



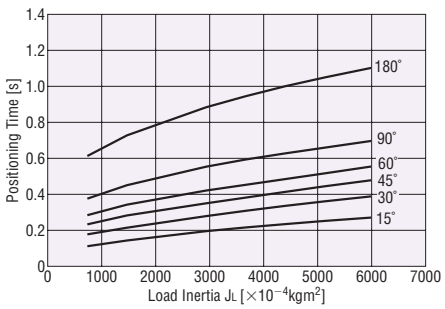
DGB85R18



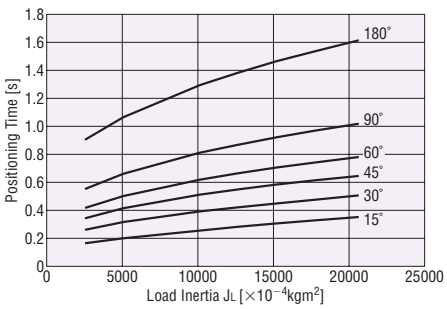
DGB85R36



DGB130R18



DGB130R36



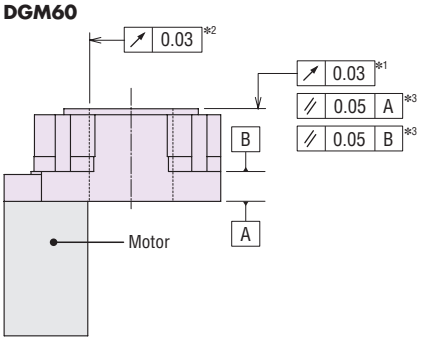
Note

- The load inertia-positioning time is the theoretical value that is 1.5 times the torque safety factor under normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.
- For "Load Inertia-Positioning Time" at 48 VDC input, contact your nearest Oriental Motor sales office.

Mechanical Precision (No Load)

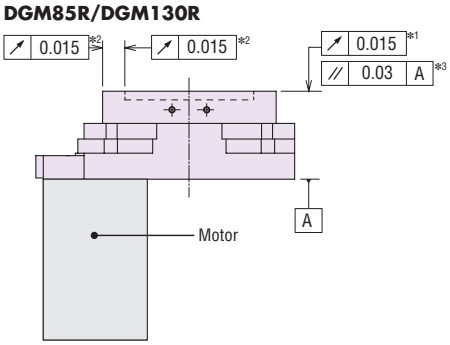
Motor Vertical Mounting

DGM60



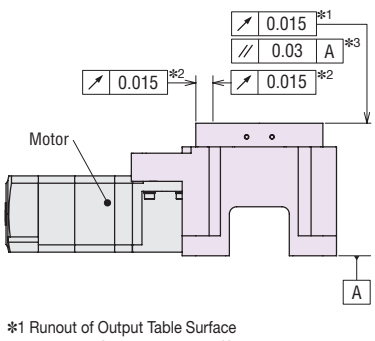
∗1 Runout of output table surface
∗2 Runout of output table inner diameter (Hollow inner diameter)
∗3 Parallelism of output table (against the installation surface)

DGM85R/DGM130R



∗1 Runout of output table surface
∗2 Runout of output table inner and outer diameter
∗3 Parallelism of output table (against the installation surface)

Motor Horizontal Mounting

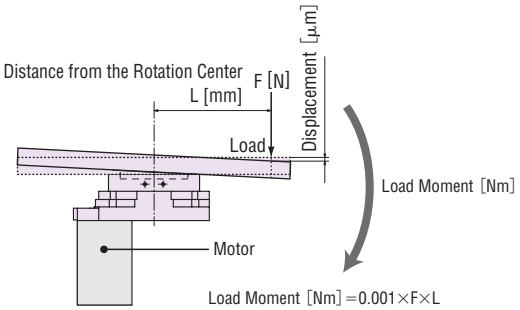


∗1 Runout of Output Table Surface
∗2 Runout of Output Table Inner/Outer Dimensions
∗3 Parallelism of Output Table (Based on Installation Surface)

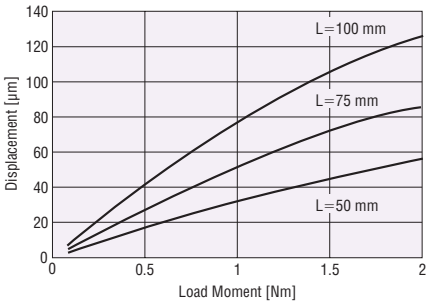
Displacement by Load Moment (Reference Value)

The output table will be displaced when it receives a load moment.
The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction.
The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.

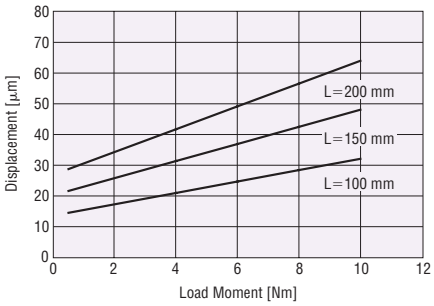
Motor Vertical Mounting



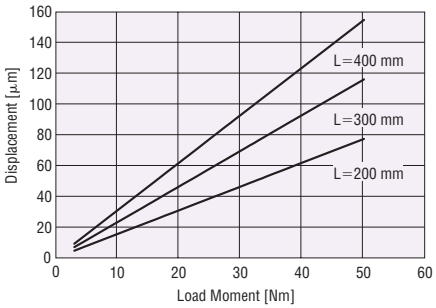
DGM60



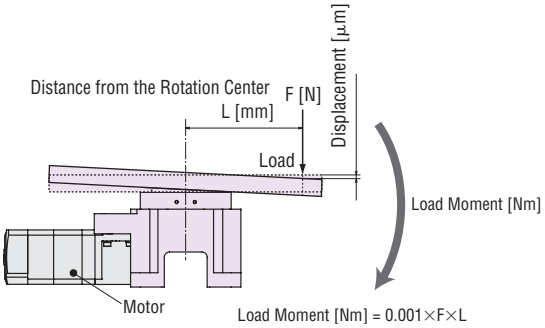
DGM85R



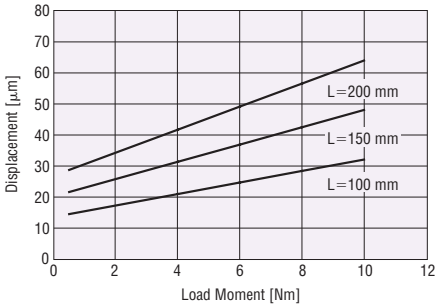
DGM130R



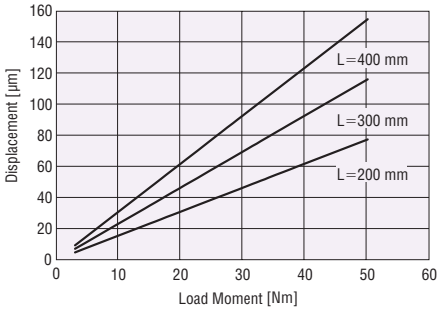
Motor Horizontal Mounting



DGB85R12, DGB85R18, DGB85R36



DGB130R18, DGB130R36



Electromagnetic Brake Specifications

Frame Size		85 mm	130 mm
Type		Power Off Activated Type	
Power Supply Voltage		24 VDC±5%*	
Power Supply Current	A	0.08	0.25
Time Rating		Continuous	

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

Driver Specifications

Driver Product Name			AZD-KD	AZD-KX AZD-K	AZD-KEP AZD-KED
Main Power Supply	Input Voltage	**DGM60**	24 VDC±5%		
		DGM85, **DGB85**, **DGM130**, **DGB130**	・24 VDC±5%*1 ・48 VDC±5%		・24 VDC±5% ・48 VDC±5%
	Input Current	**DGM60**	1.6 A		1.6 A
		DGM85, **DGB85**	1.72 A (1.8 A)*2		1.5 A
		DGM130, **DGB130**	3.55 A (3.8 A)*2		3.3 A
Control Power Supply	Input Voltage		–		24 VDC±5%*1
	Input Current		–		0.15 A (0.4 A)*3
Interface	Pulse Input		–	・2 Points, Photocoupler ・Maximum Input Pulse Frequency Line driver: 1 MHz (at 50% duty) Open collector: 250 kHz (at 50% duty)	
	Control Input		10 Points, Photocoupler	6 Points, Photocoupler	
	Pulse Output		2 Points, Line Driver		
	Control Output		6 Points, Photocoupler and Open-Collector		
	Power Shut Down Signal Input		–		2 Points, Photocoupler
	Power Shut Down Monitor Output		–		1 Points, Photocoupler and Open-Collector

*1 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance is extended to 20 m using a cable.
*2 The value in parentheses ( ) indicates the specification when connected to the electromagnetic brake motor.
*3 The value in parentheses ( ) indicates the specification when connected to the electromagnetic brake motor. 0.23 A for **DGM85** and **DGB85**.

General Specifications

		Actuator (Equipped Motor: **AZ** Series)	Driver
Thermal Class		130 (B) [UL/CSA is certified as compliant with 105 (A).] *1	–
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: ・Case–Motor Winding ・Case–Electromagnetic Brake Winding*2	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: Frame Size 60 mm ・Between the case and motor sensor windings: 0.5 kVAC, 50 Hz or 60 Hz Frame Size 85 m, 130 mm ・Between the case and motor sensor windings: 1.0 kVAC, 50 Hz or 60 Hz ・Between the case and electromagnetic brake windings: *2 1.0 kVAC, 50Hz or 60Hz	–
Operating Environment (In operation)	Ambient Temperature	0 to +40°C (Non-Freezing)	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, oil or other liquids.	
Degree of Protection		IP40 (IP20 for motor connector)	IP10
Multiple Rotation Detection Range in Power OFF State (Motor Output Shaft)		Frame size 60 mm: ±450 rotations (900 rotations) Frame size 85 mm, 130 mm: ±900 rotations (1800 rotations)	

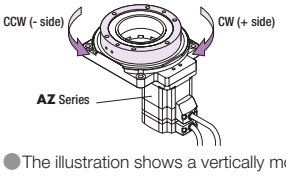
*1 Excluding **DGM60**
*2 Only for type with electromagnetic brake

Note

● Separate the motor and driver when measuring insulation resistance and performing a dielectric voltage withstand test. Also, do not perform these tests on the ABZO Sensor part of the motor.

Rotation Direction

This indicates the rotation direction when viewed from the output table side.



● The illustration shows a vertically mounted motor. The rotation direction of a horizontally mounted motor is the same.

The αSTEP **AZ** Series has a separate catalog. When selecting a product, please also use this individual catalog.

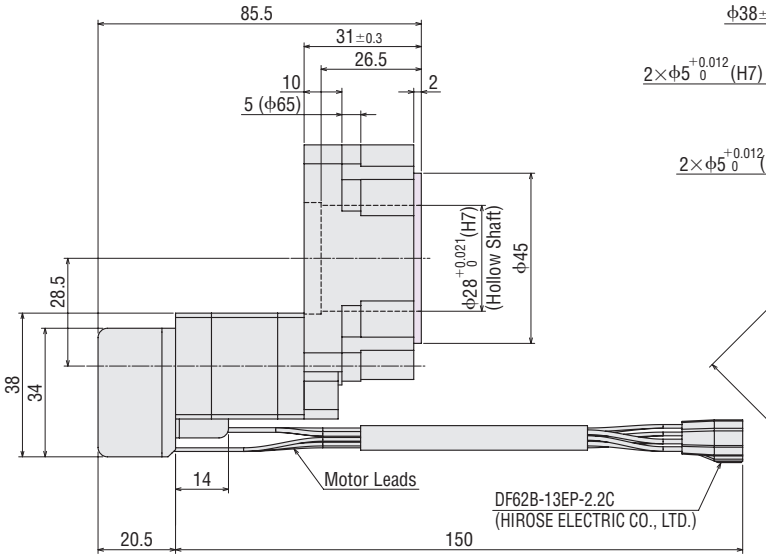
Dimensions (Unit = mm)

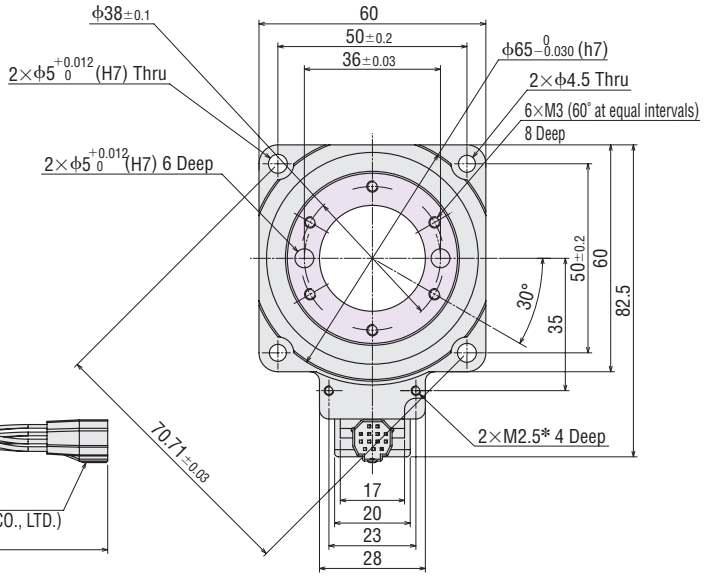
Hollow Rotary Actuators

◇Motor Vertical Mounting Frame Size 60 mm

Standard 2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM60-AZAK	0.5	D7689





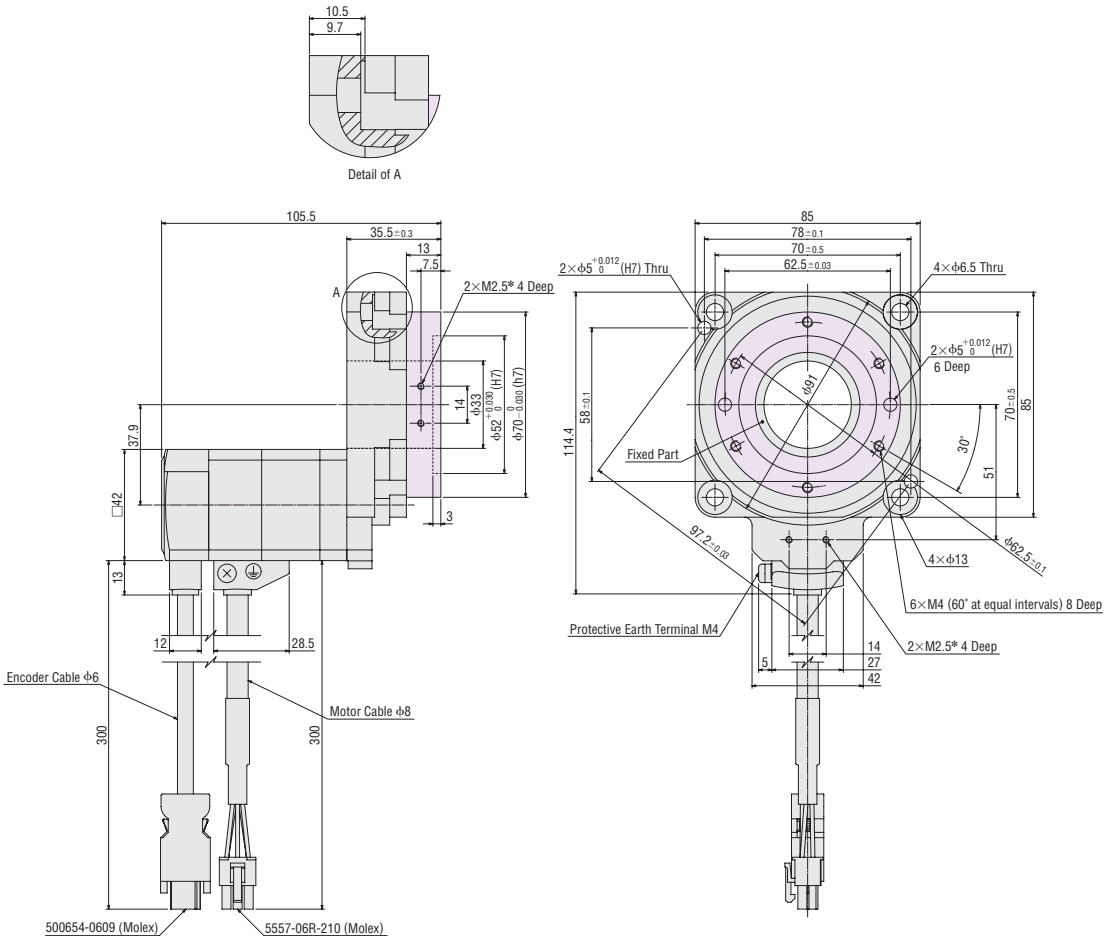
● The ▭ shaded areas are rotating parts.

*Use M2.5 screw holes when installing the home-sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇Motor Vertical Mounting Frame Size 85 mm

Standard 2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM85R-AZAK	1.1	D4501

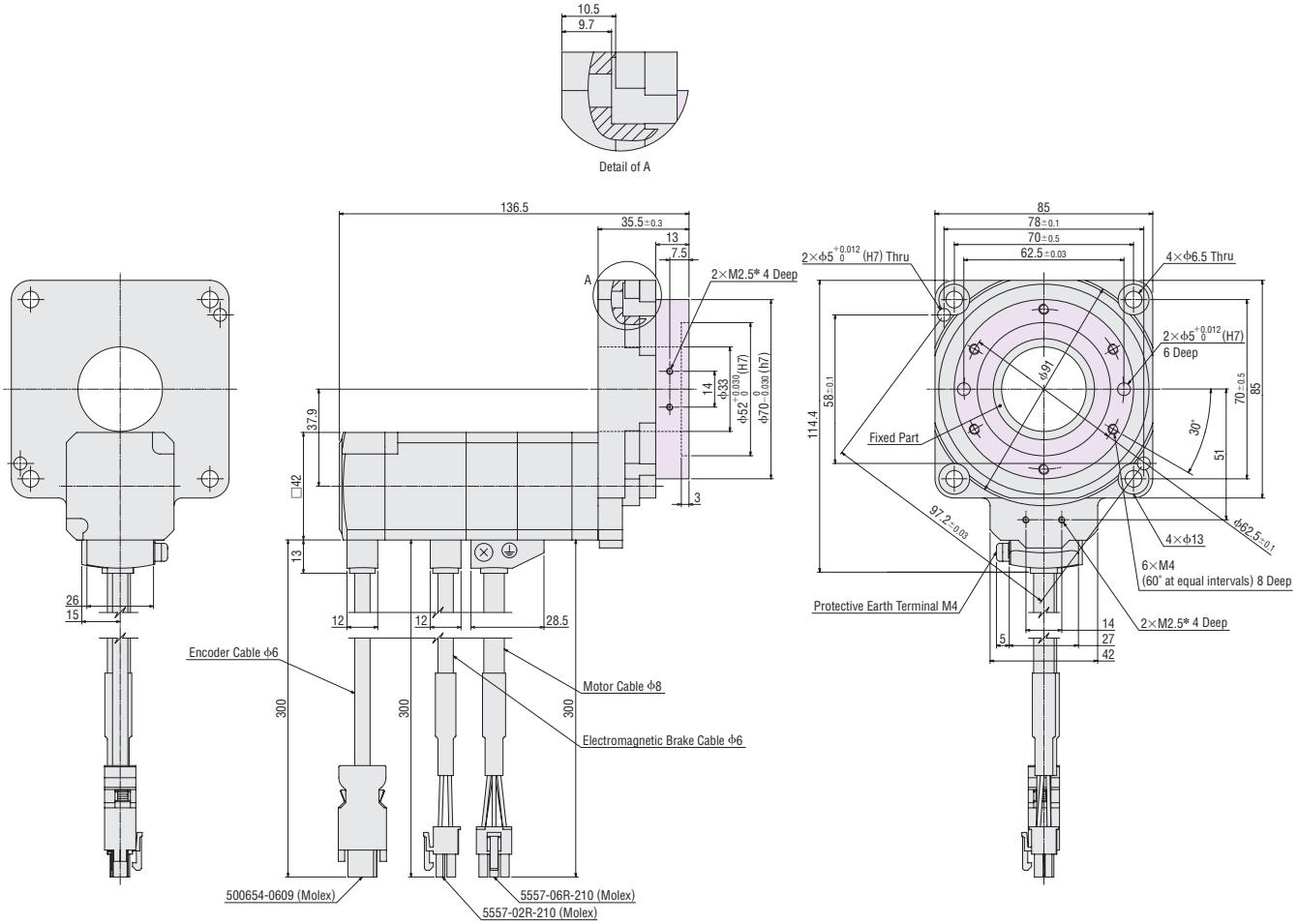


●The ▭ shaded areas are rotating parts.

✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

With Electromagnetic Brake 2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM85R-AZMK	1.3	D6452



●The ▭ shaded areas are rotating parts.

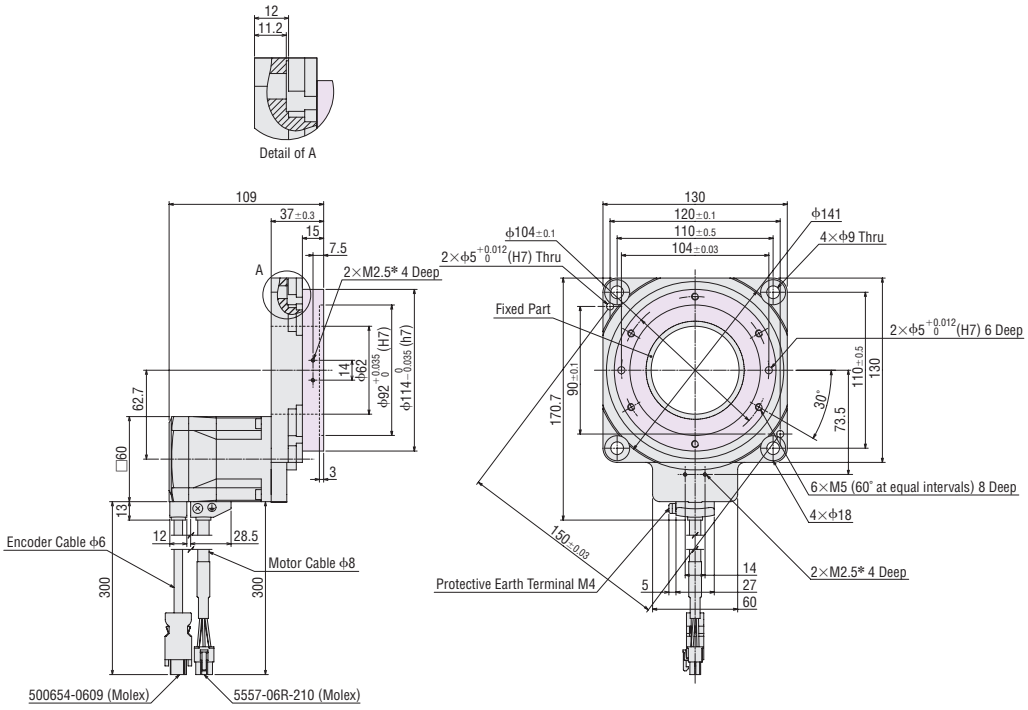
✻Use M2.5 screw holes when installing the home-sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇Motor Vertical Mounting Frame Size 130 mm

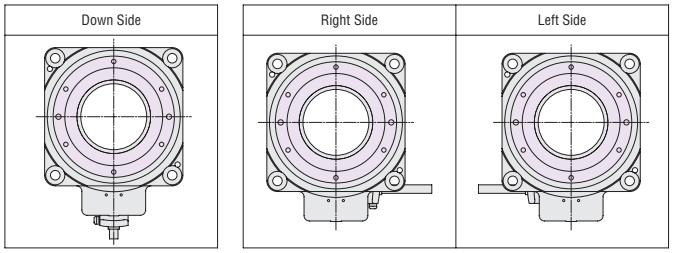
Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM130R-AZAK**	2.7	D4502
Right	**DGM130R-AZAKR**		D7645
Left	**DGM130R-AZAKL**		D7644



Cable Outlet Direction



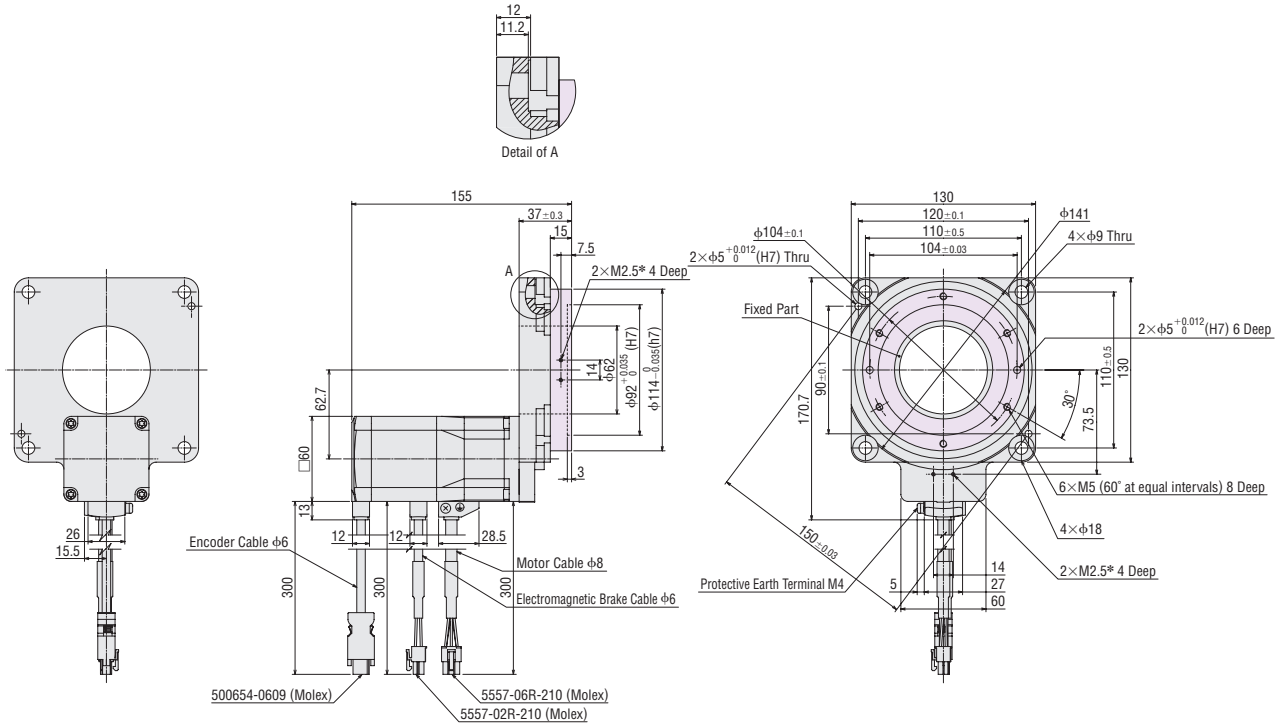
●The ▭ shaded areas are rotating parts.

✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

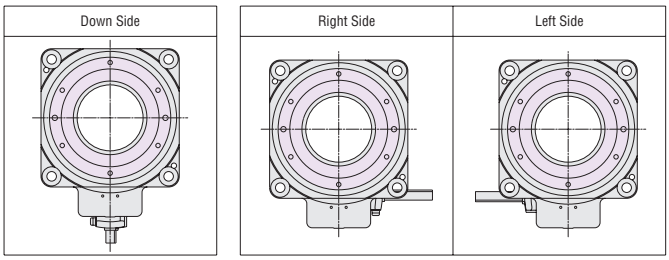
With Electromagnetic Brake

2D & 3D CAD

Cable Outlet Direction	Product Name	Mass [kg]	CAD
Down	**DGM130R-AZMK**	3.1	D6453
Right	**DGM130R-AZMKR**		D7647
Left	**DGM130R-AZMKL**		D7646



Cable Outlet Direction



●The ▭ shaded areas are rotating parts.

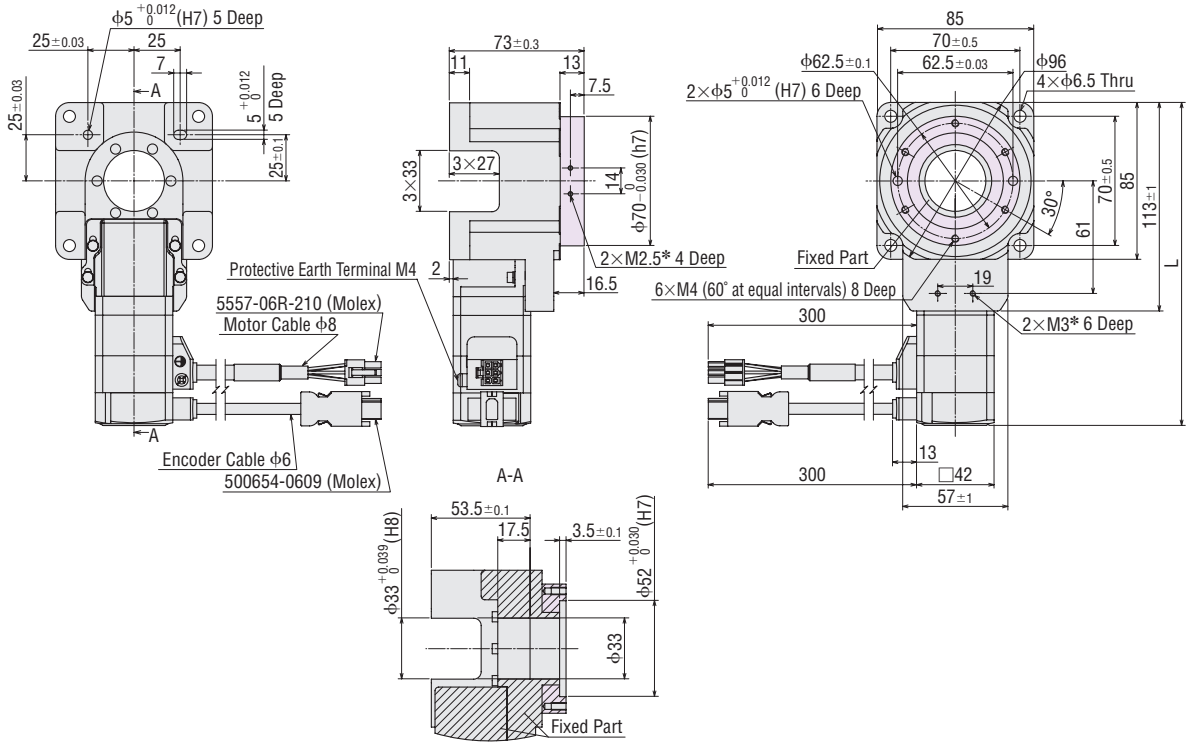
✻Use M2.5 screw holes when installing the home-sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

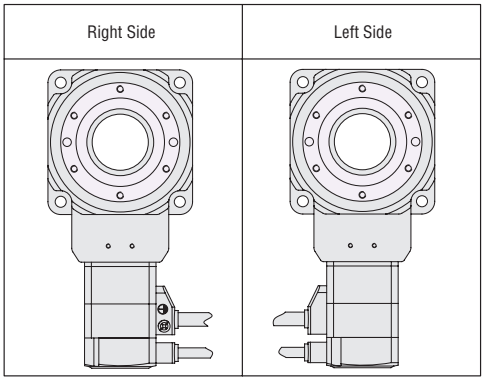
◇Motor Horizontal Mounting Frame Size 85 mm

Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB85R12-AZAKR**	182	1.5	D7887R
Left	**DGB85R12-AZAKL**			D7887L
Right	**DGB85R18-AZAKR**	178		D7888R
Left	**DGB85R18-AZAKL**			D7888L
Right	**DGB85R36-AZAKR**	175		D7889R
Left	**DGB85R36-AZAKL**			D7889L





●The ▭ shaded areas are rotating parts.

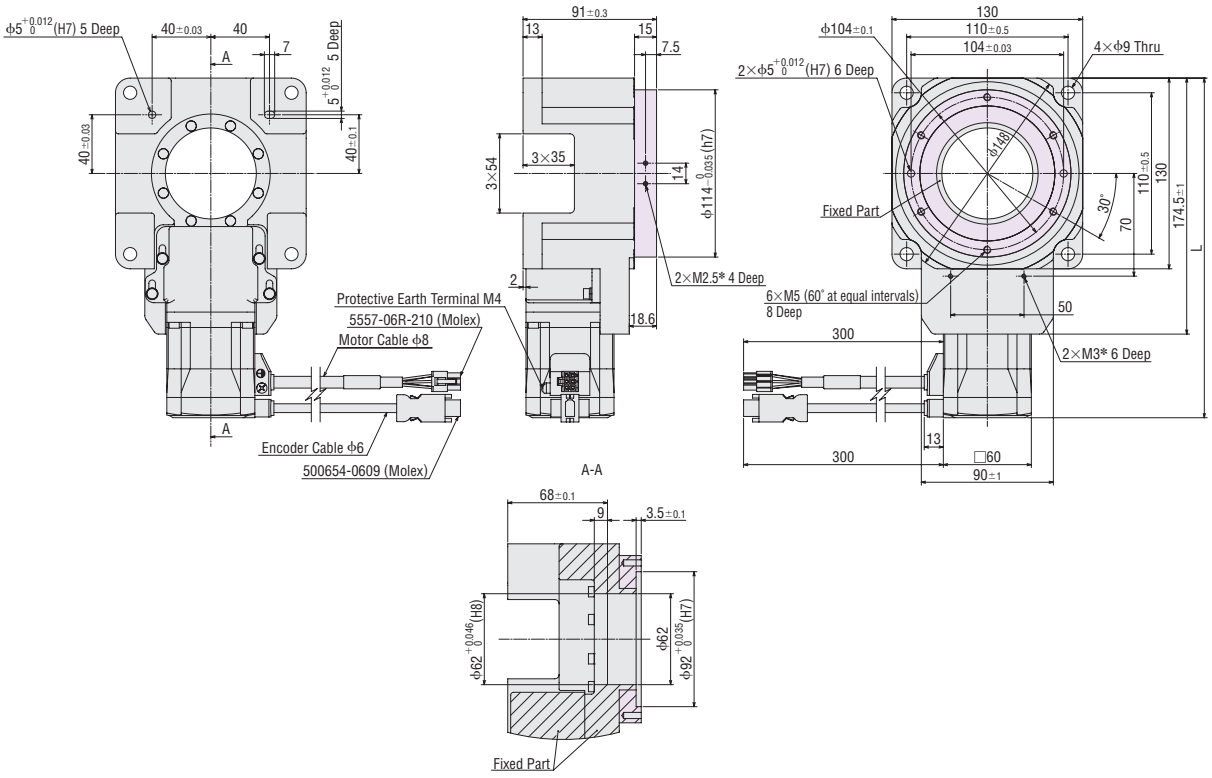
*Home-sensor set cannot be used.

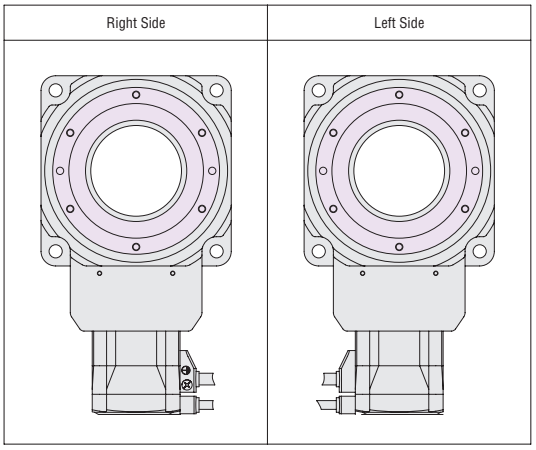
◇Motor Horizontal Mounting Frame Size 130 mm

Standard

2D & 3D CAD

Cable Outlet Direction	Product Name	L	Mass [kg]	CAD
Right	**DGB130R18-AZAKR**	238	3.9	D7894R
Left	**DGB130R18-AZAKL**			D7894L
Right	**DGB130R36-AZAKR**	231.5		D7895R
Left	**DGB130R36-AZAKL**			D7895L





●The ▭ shaded areas are rotating parts.
*Home-sensor set cannot be used.

Product Number

Hollow Rotary Actuators

DGM 200 R 18 - AZX A C

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	**DGM**: **DGII** Series
②	Frame Size	**200**: 200 mm
③	Type of Output Table Supporting Bearing	**R**: Cross-Roller Bearing
④	Gear Ratio	
⑤	Motor	**AZX**: **AZX** Series
⑥	Motor Type	**A**: Standard **M**: With Electromagnetic Brake
⑦	Motor Specification	**C**: AC Input Specification

Driver

AZXD-S EP

① ② ③

①	Driver Type	**AZXD**: **AZX** Series Driver
②	Power Supply Input	**S**: Single-Phase/Three-Phase 200-240 VAC
③	Product Line	**ED**: EtherCAT-Compatible **EP**: EtherNet/IP-Compatible **PN**: PROFINET Compatible

Connection Cable Sets / Flexible Connection Cable Sets

CC 010 V X F B

① ② ③ ④ ⑤ ⑥

①		**CC**: Cable
②	Length	**010**: 1 m **020**: 2 m **030**: 3 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Model	**X**: For **AZX** Series
⑤	Cable Type	**F**: Connection Cable Set **R**: Flexible Connection Cable Set
⑥	Description	Blank: For Type without Electromagnetic Brake **B**: For Type with Electromagnetic Brake

Product Line

Hollow Rotary Actuators

◇Standard

Frame Size	Product Name
200 mm	**DGM200R18-AZXAC**

◇Electromagnetic Brake

Frame Size	Product Name
200 mm	**DGM200R18-AZXMC**

Driver

◇EtherCAT-Compatible

Power Supply Input	Product Name
Single-Phase/Three-Phase 200-240 VAC	**AZXD-SED**

◇EtherNet/IP-Compatible

Power Supply Input	Product Name
Single-Phase/Three-Phase 200-240 VAC	**AZXD-SEP**

◇PROFINET-Compatible NEW

Power Supply Input	Product Name
Single-Phase/Three-Phase 200-240 VAC	**AZXD-SPN**

Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable in applications 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 Motor/Encoder

For Motor For Encoder

Product Line	Length L [m]	Product Name
Connection Cables Sets	1	**CC010VXF**
	2	**CC020VXF**
	3	**CC030VXF**
	5	**CC050VXF**
	7	**CC070VXF**
	10	**CC100VXF**
	15	**CC150VXF**
	20	**CC200VXF**

Product Line	Length L [m]	Product Name
Flexible Connection Cables Sets	1	**CC010VXR**
	2	**CC020VXR**
	3	**CC030VXR**
	5	**CC050VXR**
	7	**CC070VXR**
	10	**CC100VXR**
	15	**CC150VXR**
	20	**CC200VXR**

◇For Motor/Encoder/Electromagnetic Brake

For Motor For Encoder For Electromagnetic Brake

Product Line	Length L [m]	Product Name
Connection Cables Sets	1	**CC010VXFB**
	2	**CC020VXFB**
	3	**CC030VXFB**
	5	**CC050VXFB**
	7	**CC070VXFB**
	10	**CC100VXFB**
	15	**CC150VXFB**
	20	**CC200VXFB**

Product Line	Length L [m]	Product Name
Flexible Connection Cables Sets	1	**CC010VXRB**
	2	**CC020VXRB**
	3	**CC030VXRB**
	5	**CC050VXRB**
	7	**CC070VXRB**
	10	**CC100VXRB**
	15	**CC150VXRB**
	20	**CC200VXRB**

Included Items

Driver

Type \ Included Items	Connector
EtherCAT-Compatible EtherNet/IP-Compatible	-For CN1 (1 piece) -For CN4 (1 piece) -For CN7 (1 piece) -Connector wiring lever (1 piece)

Connection Cable Sets / Flexible Connection Cable Sets

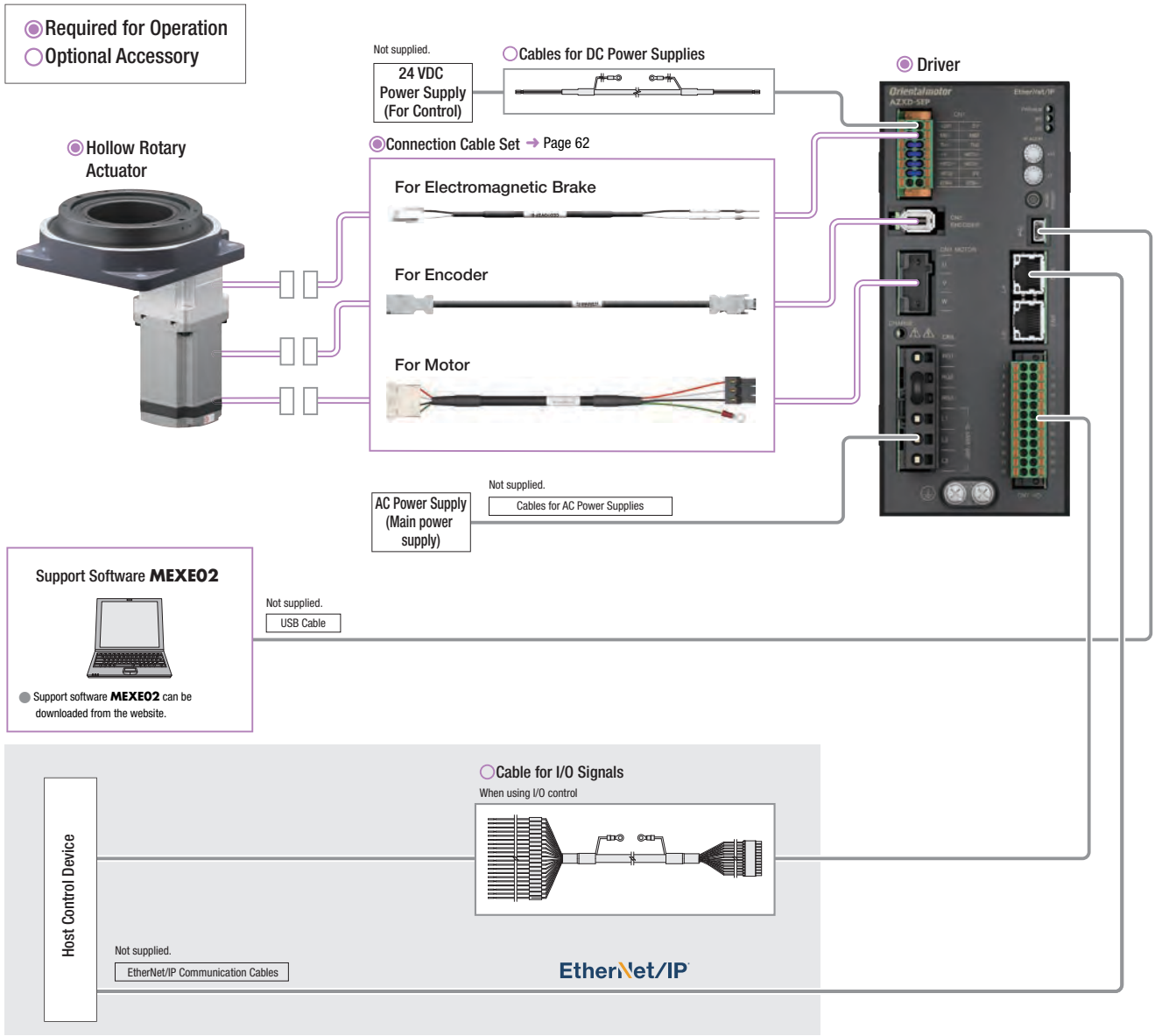
Type \ Included Items	Operating Manual
Connection Cable Set	–
Flexible Connection Cable Sets	1 Set

Servo Motor **AZX** Series has a separate catalog. When selecting a product, please also use this individual catalog.

System Configuration

Combination of Linear & Rotary Actuator with Electromagnetic Brake and Network-Compatible Driver

An example of a configuration using I/O control or EtherNet/IP with an EtherNet/IP-compatible driver is shown below.
Hollow rotary actuators, drivers and connection cable sets/flexible connection cable sets must be ordered separately.



Example of System Configuration

Hollow Rotary Actuator		Driver		Cables	
				Connection Cable Set (1 m)	I/O Signal Cable Connector Type (1 m)
DGM200R18-AZXMC		AZXD-SEP		CC010VXFB	CC24D010C-1
◉		◉		◉	○

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.

Frame Size 200 mm

Hollow Rotary Actuator Specifications

Frame Size		200 mm
Actuator Product Name	Standard	**DGM200R18-AZXAC**
	With Electromagnetic Brake	**DGM200R18-AZXMC**
Type of Output Table Supporting Bearing		Cross-Roller Bearing
Inertia	J: kgm^2	760000×10^{-7} [786000×10^{-7}]*
Gear Ratio		18
Min. Traveling Amount of Output Table Unit	deg/STEP	0.01
Rated Torque	Nm	19
Maximum Instantaneous Torque	Nm	50
Max. Speed	deg/s	1833 (306 r/min)
Repetitive Positioning Accuracy	arcsec	±15 (±0.004°)
Lost Motion	arcmin	3 (0.050°)
Permissible Axial Load	N	4000
Permissible Moment	Nm	100
Runout of Output Table Surface	mm	0.015
Runout of Output Table Inner (Outer) Diameter	mm	0.030
Parallelism of Output Table		0.05

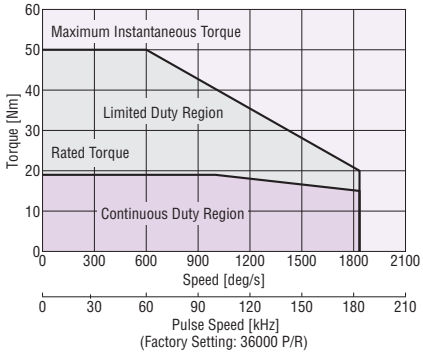
*The value inside the [ ] represents the value when an actuator with an electromagnetic brake is connected.

Note

- The repetitive positioning accuracy is measured at a constant temperature (normal temperature) under a constant load.

Speed – Torque Characteristics

DGM200R18



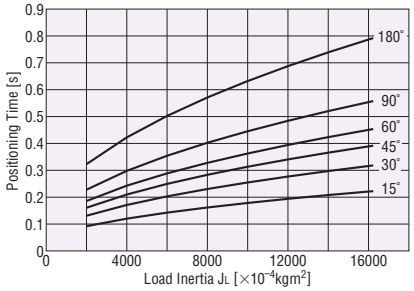
Note

- A regeneration unit may be needed depending on the operating conditions. Regeneration Unit ➜ Website

Load Inertia – Positioning Time (Reference Value)

Load inertia is the inertia of the customer's load.

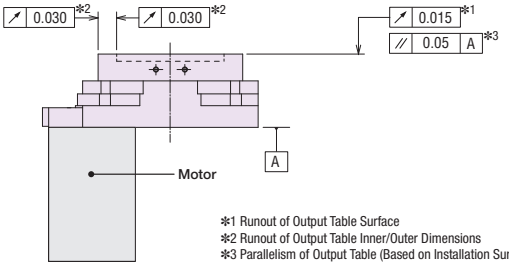
DGM200R18



Note

- The load inertia-positioning time is the theoretical value that is 1.5 times the torque safety factor under normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.

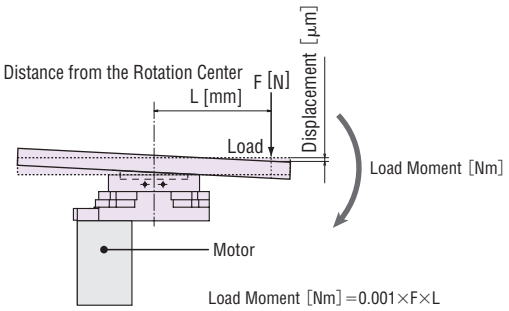
Mechanical Precision (No Load)



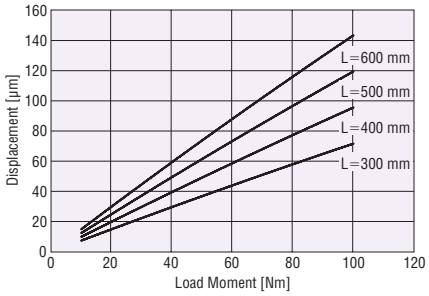
*1 Runout of Output Table Surface
*2 Runout of Output Table Inner/Outer Dimensions
*3 Parallelism of Output Table (Based on Installation Surface)

Displacement by Load Moment (Reference Value)

The output table will be displaced when it receives a load moment. The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction. The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.



DGM200R18



Electromagnetic Brake Specifications

Frame Size		200 mm
Type		Power Off Activated Type
Power Supply Input		24 VDC±10%
Power Consumption	W	8.5
Rated Current	A	0.35
Static Friction Torque	Nm	1.91

Driver Specifications

Driver Product Name		AZXD-SED	AZXD-SEP	AZXD-SPN
Main Power Supply	Input Voltage	Single-Phase/Three-Phase 200-240VAC −15 - +6% 50/60 Hz		
	Rated Current*1	Single-Phase: 7.1 A, Three-Phase: 3.9 A		
Control Power Supply	Input Voltage	24 VDC±5%		
	Input Current	0.27 A (0.62 A)*2		
Interface	Control Input	6 Points, Photocoupler		
	Pulse Output	2 Points, Line Driver		
	Control Output	6 Points, Photocoupler and Open Collector		
	Power Shut Down Signal Input	2 Points, Photocoupler		
	Power Shut Down Monitor Output	1 Point, Photocoupler and Open Collector		
	Field Network	EtherCAT	EtherNet/IP	PROFINET

*1 The value when operated in the continuous duty region. When operated in the limited duty region, a maximum of approximately 2 times the current flows.
*2 The value inside the ( ) represents the value when an actuator with an electromagnetic brake is connected.

General Specifications

		Actuator (Equipped Motor: **AZX** Series)	Driver
Thermal Class		130 (B)	–
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: ・Case–Motor Winding ・Case–Electromagnetic Brake Winding*1	100 MΩ or more when a 500 VDC megger is applied between the following places: ・Protective Earth Terminal–Main Power Supply Terminal ・Encoder Connector–Main Power Supply Terminal ・I/O Signal Terminal–Main Power Supply Terminal
Dielectric Strength		Sufficient to withstand the following for 1 minute: ・Case–Motor Winding 1.5 kVAC 50 Hz or 60 Hz ・Case–Electromagnetic Brake Winding*1 1.0 kVAC 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: ・Protective Earth Terminal–Main Power Supply Terminal 1.5 kVAC 50 Hz or 60 Hz ・Encoder Connector–Main Power Supply Terminal 1.8 kVAC 50 Hz or 60 Hz ・I/O Signal Terminal–Main Power Supply Terminal 1.8 kVAC 50 Hz or 60 Hz
Operating Environment (In operation)	Ambient Temperature	0 - +40°C (Non-Freezing)*2	0 - +55°C (Non-Freezing)*3 [If used at single-phase 200-240 VAC, then 0 - 50°C]*3
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection		IP40 (IP20 for motor connector)	IP10
Multiple Rotation Detection Range in Power OFF State (Motor Output Shaft)		±900 Rotations (1800 Rotations)	

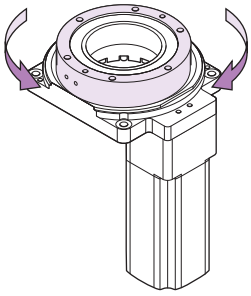
*1 Only for types with electromagnetic brake
*2 Based on Oriental Motor's internal measurement conditions
*3 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm and 2 mm thickness

Note

● Separate the motor and driver when measuring insulation resistance and performing a dielectric voltage withstand test. Also, do not perform these tests on the absolute sensor part of the motor.

Rotation Direction

This indicates the rotation direction when viewed from the output table side.

CCW (- side)  CW (+ side)

Servo Motor **AZX** Series has a separate catalog. When selecting a product, please also use this individual catalog.

Dimensions (Unit = mm)

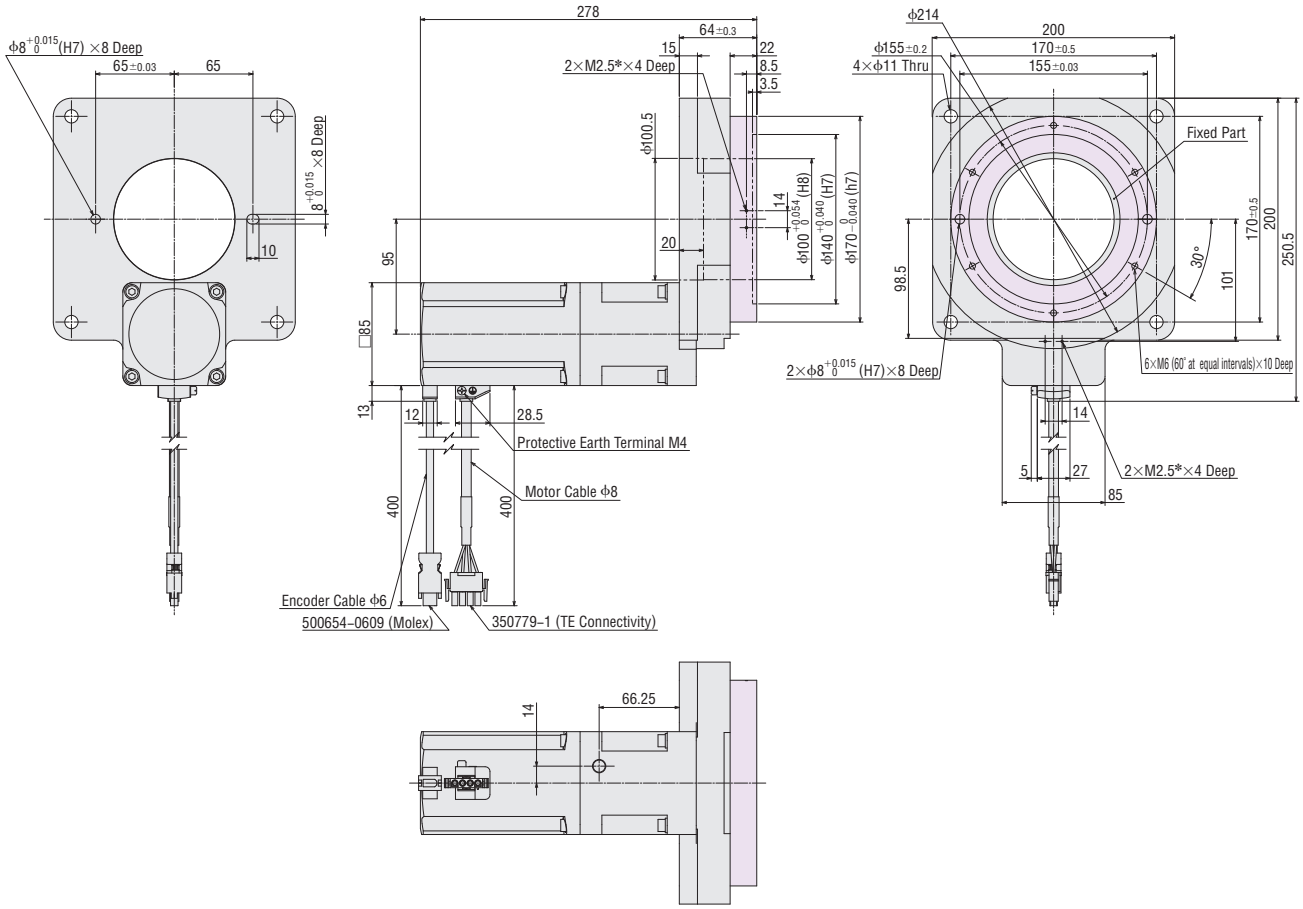
Hollow Rotary Actuators

◇Frame Size: 200 mm

•Standard

2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM200R18-AZXAC	11.2	D7927



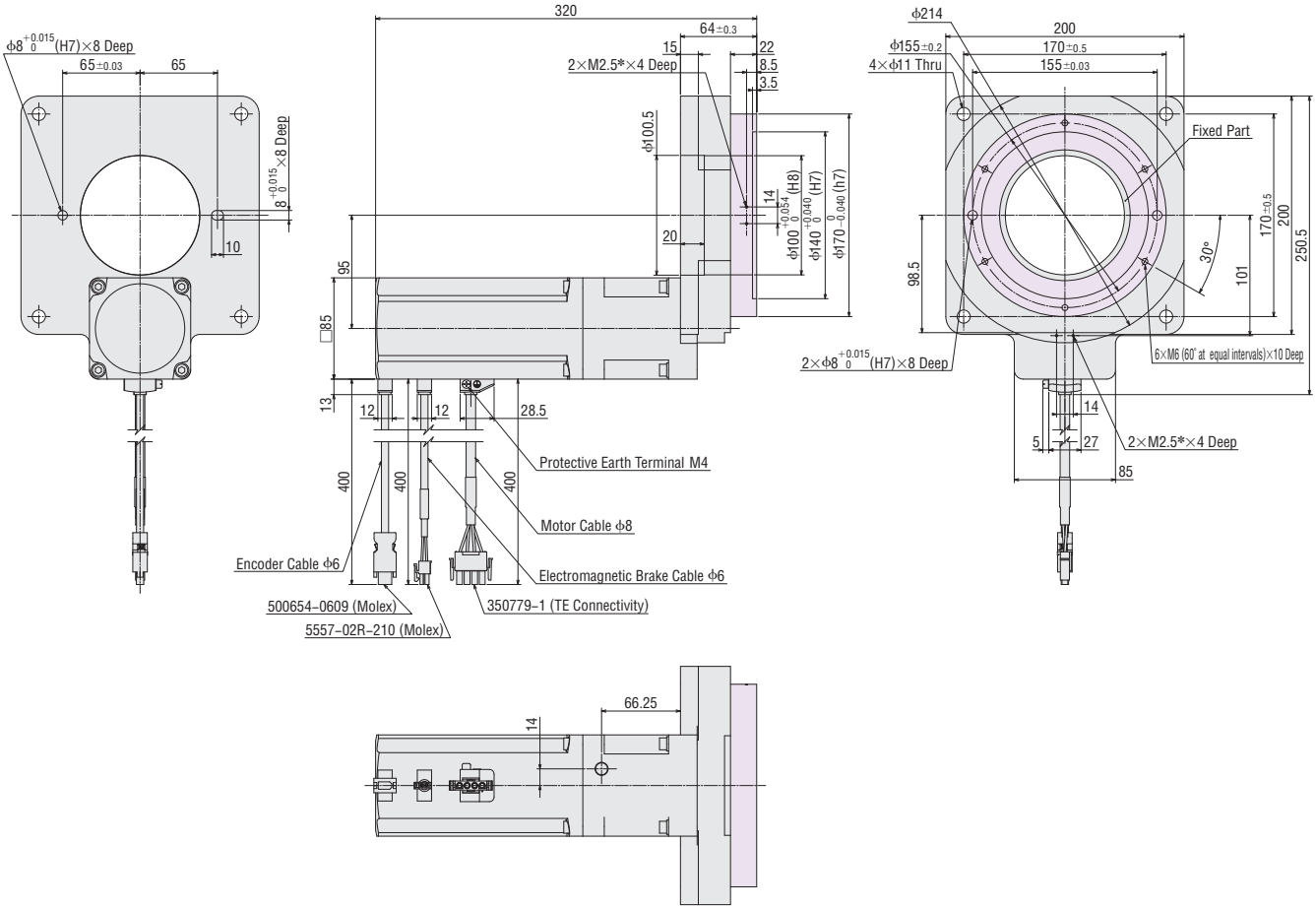
●The ▭ shaded areas are rotating parts.

✻Use the M2.5 screw hole when installing a home-sensor set (sold separately). This hole is only for installing a home sensor; do not use it for any other purposes.

•With Electromagnetic Brake

2D & 3D CAD

Product Name	Mass [kg]	CAD
DGM200R18-AZXMC	12	D7928

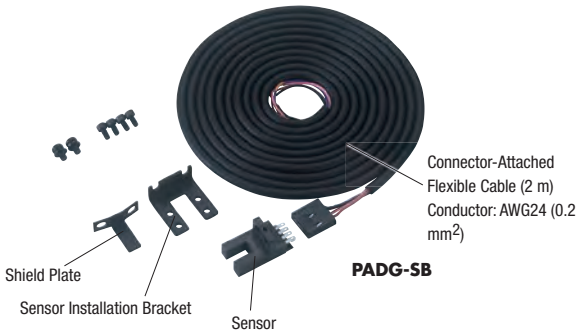


●The ▭ shaded areas are rotating parts.

✻Use the M2.5 screw hole when installing a home-sensor set (sold separately). This hole is only for installing a home sensor; do not use it for any other purposes.

Home Sensor Sets

For simple return-to-home operation, a home sensor set containing a photomicrosensor, flexible cable with connector, sensor mounting brackets, shield plate and mounting screws is now available.
Since the sensor set comes with all the parts required for the return-to-home operation, you will spend less time designing, fabricating and procuring parts related to sensor installation. Installation is very easy, so you can start using the sensor right away.



Product Line

Product Name	Sensor Output	Applicable Product
PADG-SA	NPN	**DGM60-AZ**
PADG-SB		**DGM85R-AZ** **DGM130R-AZ** **DGM200R-AZ**
PADG-SAY	PNP	**DGM60-AZ**
PADG-SBY		**DGM85R-AZ** **DGM130R-AZ** **DGM200R-AZ**

● The product names of the applicable products are described with text by which the product name can be identified.

Note

● Horizontally mounted motors cannot be used.

Specifications

NPN Type

Item	**DGM60**: EE-SX672A (OMRON) **DGM85**, **DGM130**, **DGM200**: EE-SX673A (OMRON)
Power Supply Voltage	5 - 24 VDC±10%, ripple (P-P) 10% or less
Current Consumption	35 mA max.
Control Output	NPN open-collector output 5 - 24 VDC 100 mA or less Internal residual voltage 0.8 VDC or less (At load current of 100 mA)
Indicator LED	Detection Display (Red)
Sensor Logic	Normally open/Normally closed (Can be switched with connection)

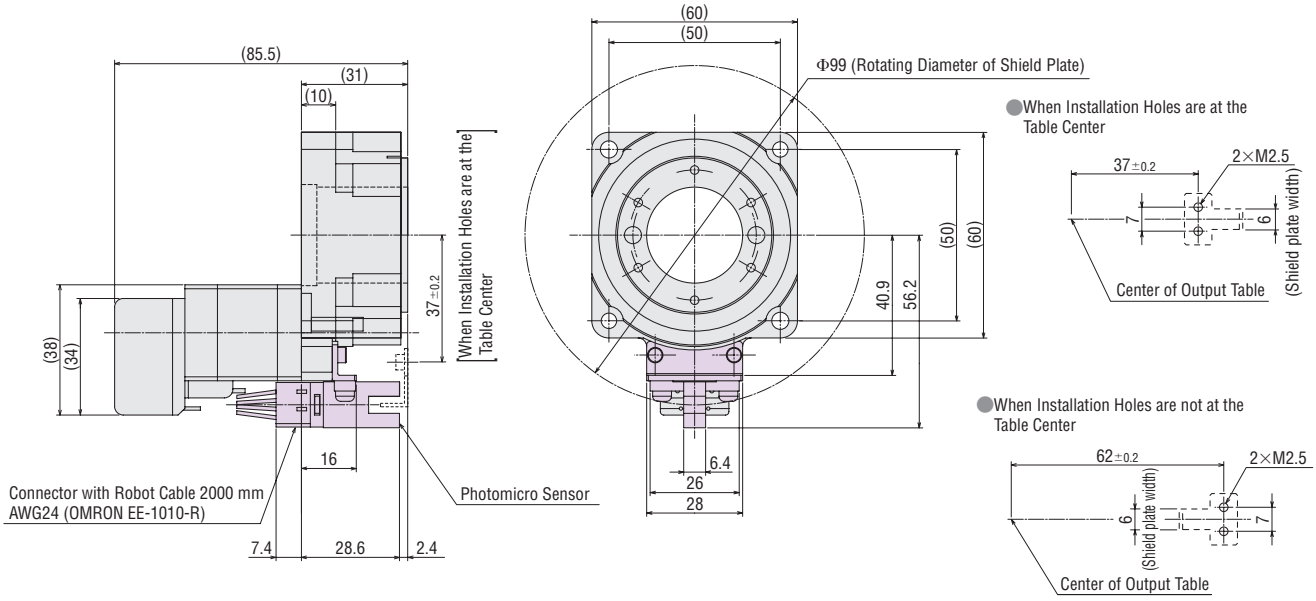
PNP Type

Item	**DGM60**: EE-SX672R (OMRON) **DGM85**, **DGM130**, **DGM200**: EE-SX673R (OMRON)
Power Supply Voltage	5 - 24 VDC±10%, ripple (P-P) 10% or less
Current Consumption	30mA max.
Control Output	PNP open-collector output 5 - 24 VDC 50 mA or less Internal residual voltage 1.3 VDC or less (At load current of 50 mA)
Indicator LED	Detection Display (Red)
Sensor Logic	Normally open/Normally closed (Can be switched with connection)

Reference Diagram for Home Sensor Installation (Units: mm)

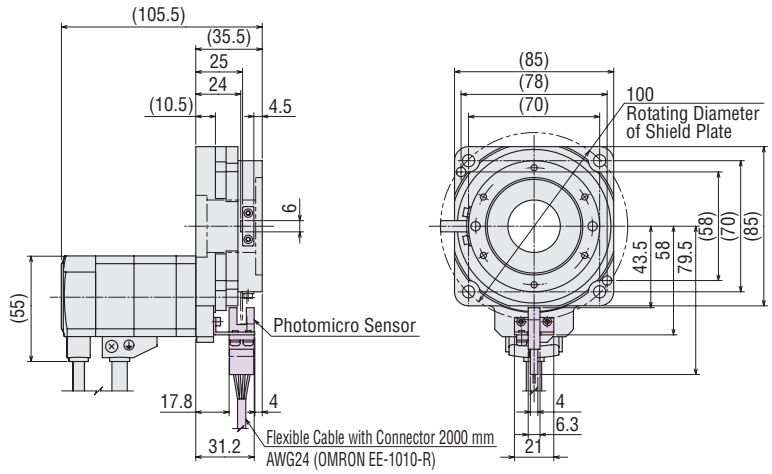
These dimensions apply when a home sensor has been installed.
For installation dimensions of sensors with other product numbers, please refer to the Oriental Motor website.

DGM60



[Installation Hole Dimensions for Shield Plate]

DGM85R



2D CAD

Applicable Product	CAD
DGM60-AZAK	D7690
DGM85R-AZA□	D4503
DGM85R-AZM□	D6456
DGM130R-AZA□	D4504
DGM130R-AZA□R	D7653
DGM130R-AZA□L	D7652
DGM130R-AZM□	D6457
DGM130R-AZM□R	D7655
DGM130R-AZM□L	D7654
DGM200R-AZAC	D6458
DGM200R-AZACR	D7657
DGM200R-AZACL	D7656
DGM200R-AZMC	D6459
DGM200R-AZMCR	D7659
DGM200R-AZMCL	D7658

● The □ in product name will contain **C** (AC power supply input specifications) or **K** (DC power supply input specifications), which indicates the motor specifications.

Oriental motor

These products are manufactured at plants 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. This catalogue was published in June 2024.

ORIENTAL MOTOR (EUROPA) GmbH

European Headquarters
Schiessstraße 44
40549 Düsseldorf, Germany
Tel: 0211 5206700 Fax: 0211 52067099

Spanish Office
Ronda de Poniente 2, Ed. 12, 2ª planta
28109 Tres Cantos (Madrid), Spain
Tel: +34 919 61 06 76

ORIENTAL MOTOR (UK) LTD.

UK Headquarters
Unit 5, Faraday Office Park,
Rankine Road, Basingstoke,
Hampshire RG24 8AH, U.K.
Tel: +44 1256 347090 Fax: +44 1256 347099

ORIENTAL MOTOR ITALIA s.r.l.

Italy Headquarters
Via XXV Aprile 5
20016 Pero (MI), Italy
Tel: +39 2 93906346 Fax: +39 2 93906348

ORIENTAL MOTOR (FRANCE) SARL

France Headquarters
56, Rue des Hautes Pâtures
92000 Nanterre, France
Tel: +33 1 47 86 97 50 Fax: +33 1 47 82 45 16

Customer Service Center
(Support in German & English)

00800 22 55 66 22*
Mon-Thu: 08:00 - 16:30 CET
Friday: 08:00 - 15:00 CET
*Free Call Europe

info@orientalmotor.de

WWW.ORIENTALMOTOR.EU

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