

Orientalmotor

LINEAR AND ROTARY ACTUATORS

Hollow Rotary Actuators

DGI Series

AZ Series Battery-Free Absolute Sensor Equipped

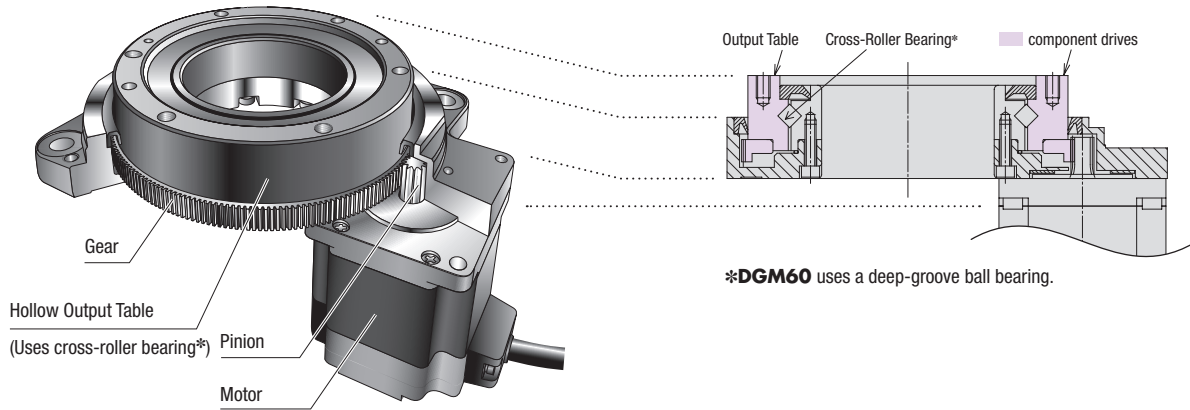


Hollow Rotary Actuator Characteristics

The **DGII** Series is a line of integrated products that combines a hollow rotary table with a stepper motor. The actuator has an internal speed reduction mechanism (gear ratio 18), which makes high power driving possible.

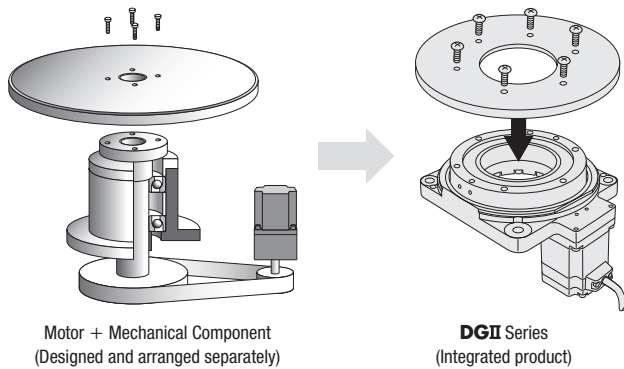
Features

A cross-roller bearing* is used on the output table, which allows for both high load and high rigidity.



Simplified Design

Tables and arms can be installed directly onto the output table. This saves the hassle and cost of designing an installation mechanism, arranging necessary mechanism parts, adjusting the belt tension, etc., when mechanical components such as a belt and pulley are used for installation.



High Positioning Accuracy with Non-Backlash

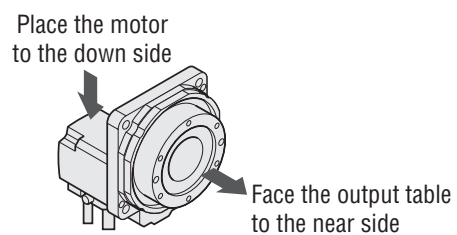
- Non-Backlash
- Repetitive Positioning Accuracy ± 15 arc seconds ($\pm 0.004^\circ$)

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

Selectable Cable Drawing Direction

3 types are available to choose from depending on the direction to draw out the motor cable.

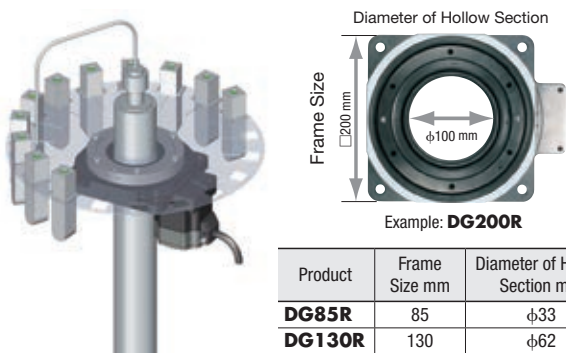
- The cable drawing direction shows the cable direction when facing the output table to the near side and placing the motor to the down side.



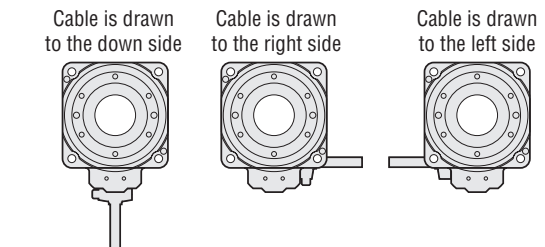
Large-Diameter, Hollow Output Table Makes Simple Wiring and Piping Possible

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



Product	Frame Size mm	Diameter of Hollow Section mm
DG85R	85	$\phi 33$
DG130R	130	$\phi 62$
DG200R	200	$\phi 100$



Power Supply	Cable Drawing Direction	Hollow Rotary Actuator			
		Frame Size			
		60 mm	85 mm	130 mm	200 mm
AC Input	Down	—	●	●	●
	Right	—	—	●	●
	Left	—	—	●	●
DC Input	Down	●	●	●	—
	Right	—	—	●	—
	Left	—	—	●	—

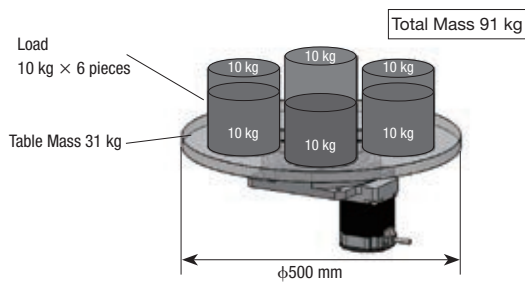
High Load and High Rigidity

DGII Series uses a cross-roller bearing on the output table bearing, which allows for both high load and high rigidity. (Except **DGM60** type)

- Maximum Permissible Axial Load 4000 N
- Maximum Permissible Moment 100 N·m

<Example Operation>

Actuator Product Name : **DGM200R-AZAC**
 Driver Product Name : **AZD-CD**
 Power-Supply Input : 230 VAC
 Load Mass : 91 kg (6 load pieces + table)
 : Load 10 kg/piece × 6 pieces
 : Table 31 kg
 (Diameter 500 mm, thickness 20 mm, iron)
 Overhang Distance : 160 mm
 Installation Direction : Horizontal



● High Load

The axial load for a total mass of 91 kg is 893 N.
 $(10 \text{ kg} \times 6 \text{ pieces} + 31 \text{ kg}) \times \text{gm/s}^2 \doteq 893 \text{ N}$
 The permissible axial load of the **DGM200R** is 4000 N, so this is within the permissible value.

High Load Driving is Possible

● High Rigidity

[Load Moment]

When a 10 kg load is placed 160 mm from the center of the table, the moment is 15.7 N·m.

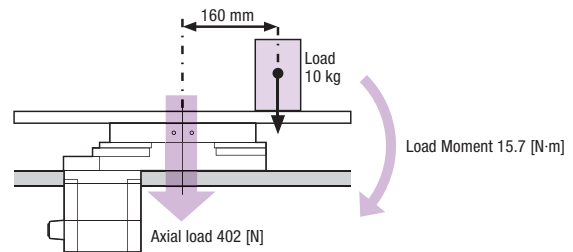
$$10 \text{ kg} \times \text{gm/s}^2 \times 0.16 \text{ m} \doteq 15.7 \text{ N}\cdot\text{m}$$

The permissible moment of the **DGM200R** is 100 N·m, so this is within the permissible value.

[Axial Load]

The axial load is: table + load $(31 \text{ kg} + 10 \text{ kg}) \times \text{gm/s}^2 \doteq 402 \text{ N}$

The permissible axial load of the **DGM200R** is 4000 N, so this is within the permissible value.

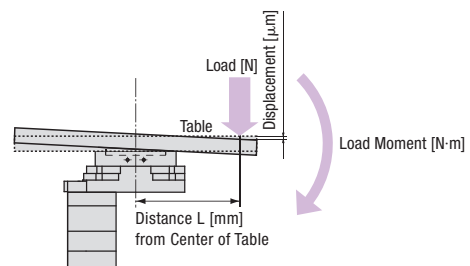


A high-rigidity rotary actuator allows a large load that is far away from the table center to be driven

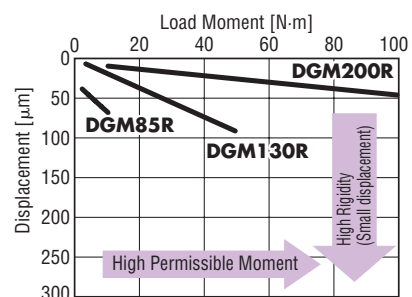
● Relationship Between Load Moment and Displacement when

Distance L=200 mm from Center of Table

The larger the frame size, the received permissible moment increases, but the displacement caused by the load moment decreases.

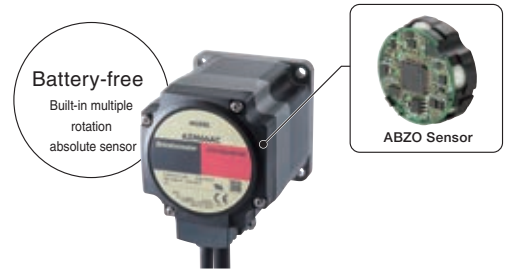


Displacement at Distance L = 200 mm from Center of Table



Simple Home Position Setting and Return-to-Home Thanks to Absolute System

The patented <ABZO Sensor>, a newly developed small mechanical multi-rotation absolute sensor. Contributes to improved productivity and cost reduction.



No Home Sensor Required

Because it is an absolute system, no home sensor is required.

Reduced Cost

Sensor costs and wiring costs can be reduced, allowing for lower system costs.

Simple Wiring

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

Not Affected by Sensor Malfunctions

No need to worry about sensor malfunctions, sensor damage or sensor disconnection.

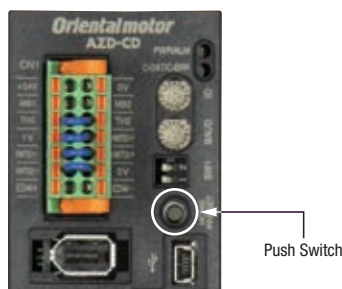
Improved Return-to-Home Accuracy

Home position accuracy is increased because the return-to-home action 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.

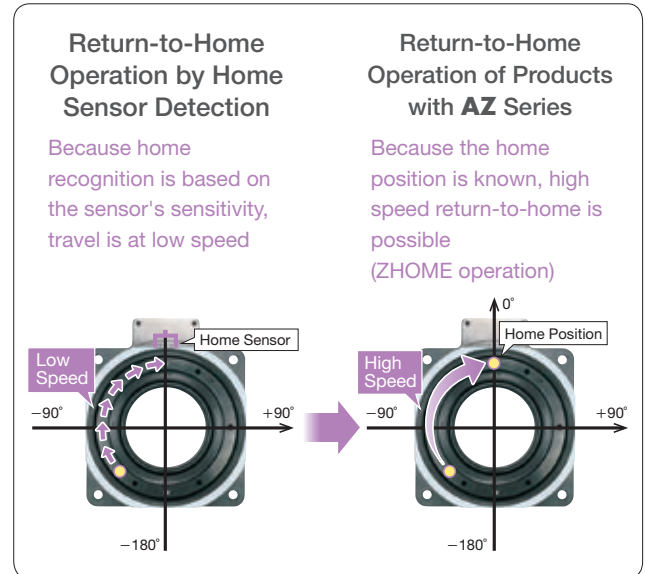
Easy Home Position Setting

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



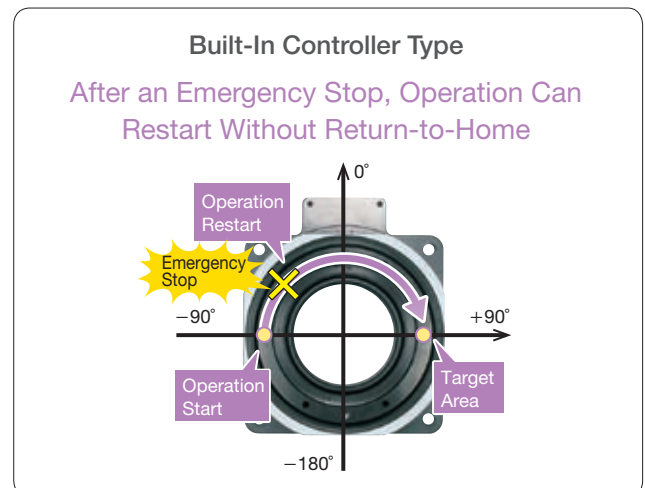
High-Speed Return-to-Home Operation

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



Return-to-Home Not Required

Even if the power shuts down during a positioning operation, the positioning information is retained. Furthermore, for built-in controller types, positioning operations can restart without a return-to-home when recovering from an emergency stop of the production line or a blackout.



Battery-Free Because it is a Mechanical-Type Sensor

Battery-Free

No battery is required because it is a mechanical-type sensor. Because positioning information is managed mechanically by the ABZO 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's 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 box.



Safe for Overseas Shipping

Normal batteries will self-discharge, so care must be taken when the equipment requires a long shipping time, such as when being sent overseas. The ABZO sensor does not require a battery, so there is no limit to how long the positioning information is maintained. In addition, there's 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 ABZO sensor.

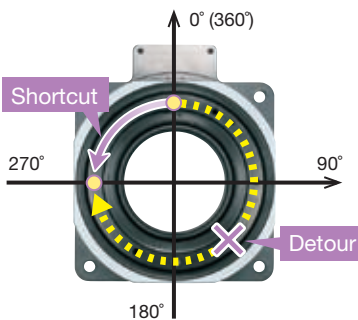
Convenient Functions Thanks to the Use of the AZ Series

Convenient Operation & Setting

By using models with **AZ** Series functions, coordinate management on the hollow rotary actuator output table can be carried out, and the follow operations are possible.

Reduce takt time with short-cut operations

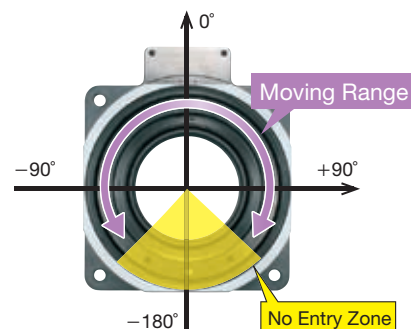
This is an operation method in which the actuator rotates in the direction that is the shortest distance to the target position. This can reduce the takt time of the equipment.



Example)
When moving from the 0° position to 270° position, counterclockwise movement is automatically selected as the shortest rotation direction.

Simple control by setting no-entry zones

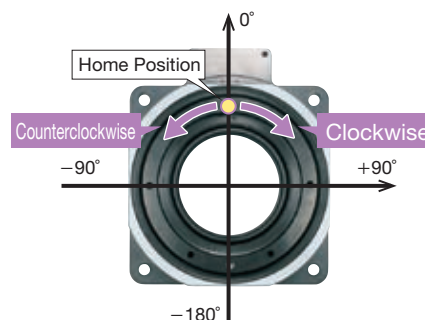
If there are obstructions on the equipment, it is possible to set a region on the output table that will be avoided.



Reduced Equipment Setup Time

The necessary operation parameters for the hollow rotary actuator are set at the time of shipment, which contributes to reduced equipment setup time.

- Home Position
- Resolution Setting (0.01°/step)
- Output Table Rotation Direction Setting
- Round Setting $\pm 180^\circ$
- All initial setting values can be changed.



High Performance and High Reliability Thanks to Stepper Motor and Driver Packages α STEP

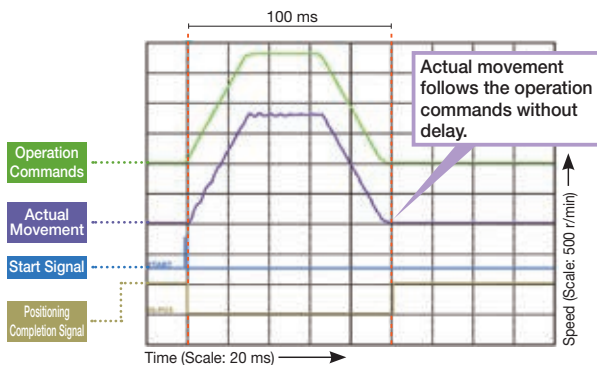
High reliability is provided by using stepper motor and driver packages that employ a control method unique to Oriental Motor, which combines the merits of both open loop control and closed loop control.

Quick Positioning through Agile Responsiveness

With stepper motors, short distance positioning is carried out in a short period of time.

Stepper motors are operated synchronously with pulse commands, and while they are compact, they still generate high torque and offer excellent acceleration performance and response.

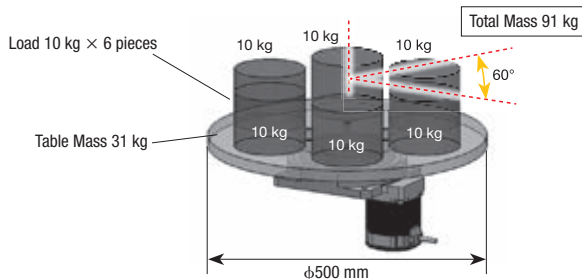
Actual stepper motor movement in response to operation commands



<Example Operation>

Actuator Product Name : **DGM200R-AZAC**
 Driver Product Name : **AZD-CD**
 Power-Supply Input : 230 VAC
 Load Mass : 91 kg (6 load pieces + table)
 : Load 10 kg/piece \times 6 pieces
 : Table 31 kg (Diameter 500 mm, thickness 20 mm, iron)
 Installation Direction : Horizontal
 Traveling Amount : 60°

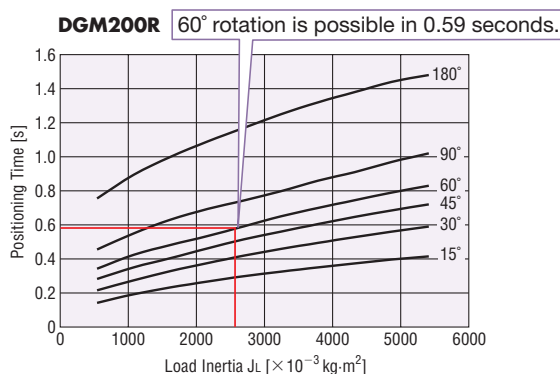
Total inertia of table and load = $2633 \times 10^{-3} \text{ kg}\cdot\text{m}^2$



● Quick Positioning

With the **DGM200R**, 60° rotation of a total mass of 91 kg is possible in 0.59 seconds.

Load Inertia – Positioning Time (Reference value)



The positioning time can be inferred using catalog data.

Quick positioning is possible even with large loads.



Stepper Motor and Driver Packages α STEP

AZ Series

With 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* of the stepper motor, 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.

*About the 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.

No Tuning Required

Because it is normally operated with open loop control, even when the load fluctuates, no tuning is needed to obtain movement exactly as set.

Maintains Stop Position Without Hunting

Thanks to the normally open loop control, there is no hunting, the minute shaft movements that occur during stopping. Because the stop location is securely maintained, it is best suited for applications that undergo vibration during stops.

Applications & Uses

Applications that Require High Rigidity

- Applications in which a Moment Load is Applied (Ceiling mounted)



Applications that Require High Performance Motors

- High Positioning Accuracy Applications (Image inspection equipment)
- Applications with Load Fluctuations (Disc manufacturing equipment)

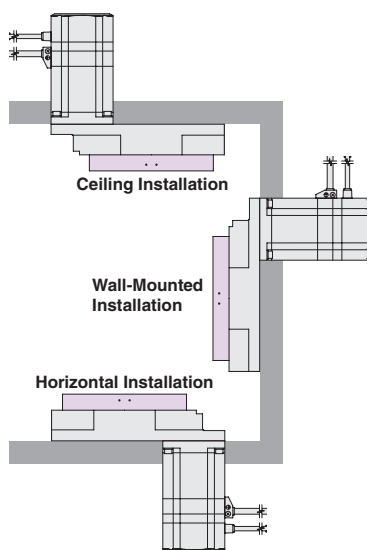


Installation Direction

In addition to horizontal installation, the **DGII** Series can also be ceiling-mounted or wall-mounted, expanding the possibilities of equipment design.

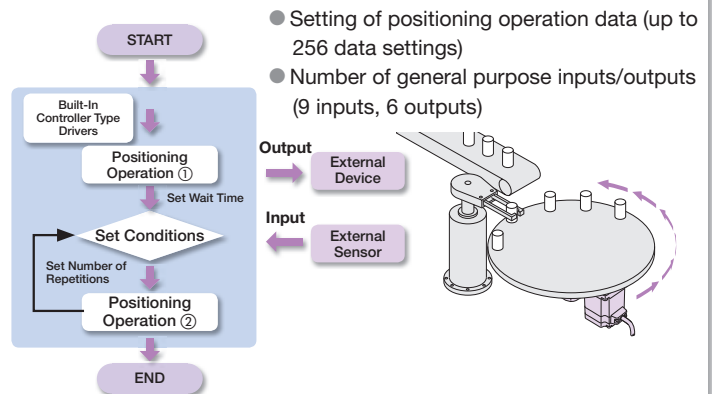
Note

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.



Example Use of Simple Sequence Function (Built-in Controller Type)

The built-in controller type can simplify sequence control programming by outputting control signals to other devices, and incorporating external input signals from sensors, etc.

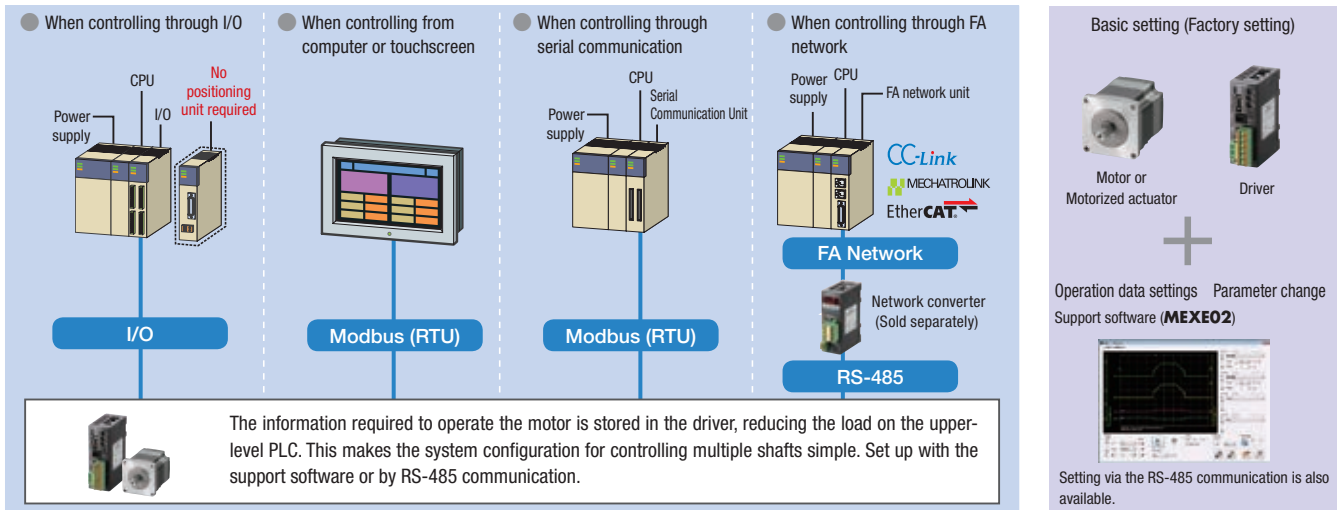


Drivers Selectable According to the Host System

A compatible driver can be selected for the **DGII** Series according to your host system.

● Built-in Controller Type **FLEXO**

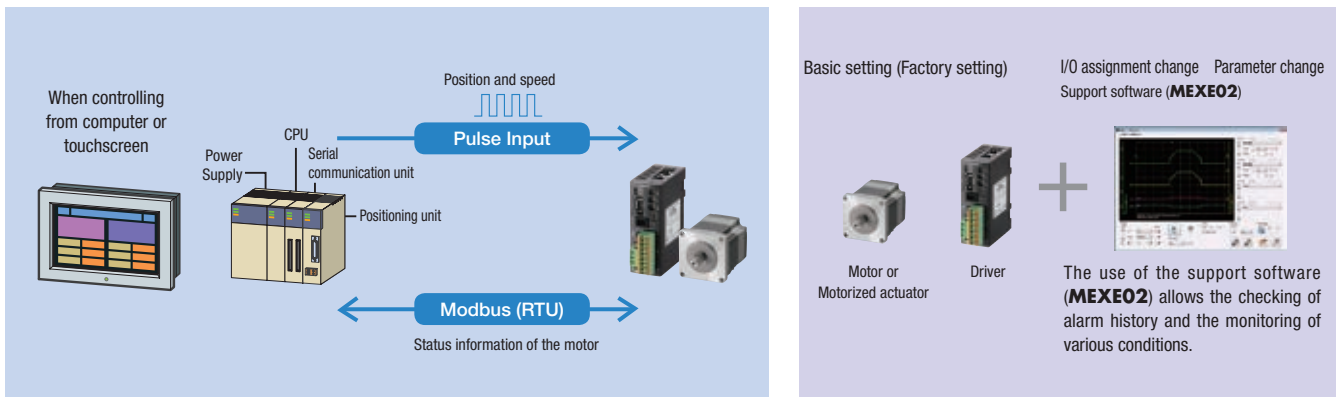
Set the operating data in the driver, and the operating data is selected and executed from the host system. Host system connection and control is performed through I/O, Modbus (RTU), RS-485 communication, or FA network. The use of a network converter (sold separately) allows control via CC-Link communication, MECHATROLINK communication, or EtherCAT communication.



FLEXO FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.

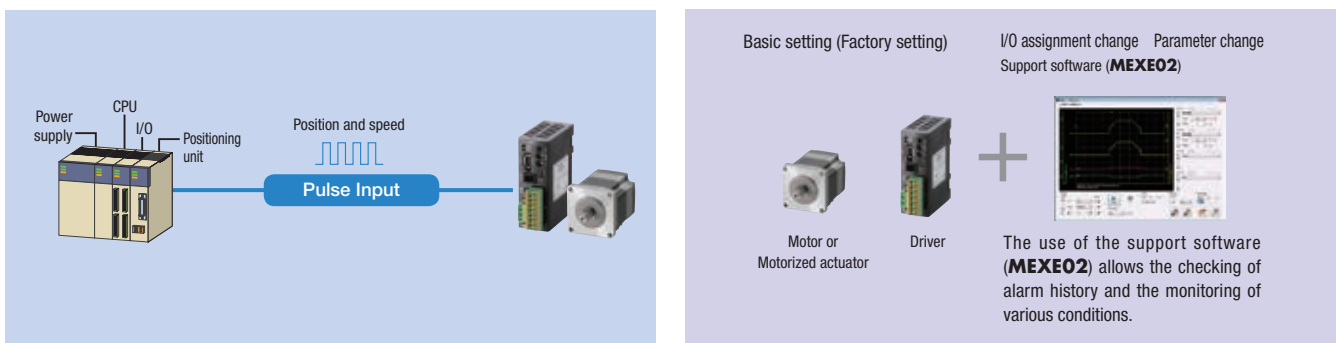
● Pulse Input Type with RS-485 Communication

This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.



● Pulse Input Type

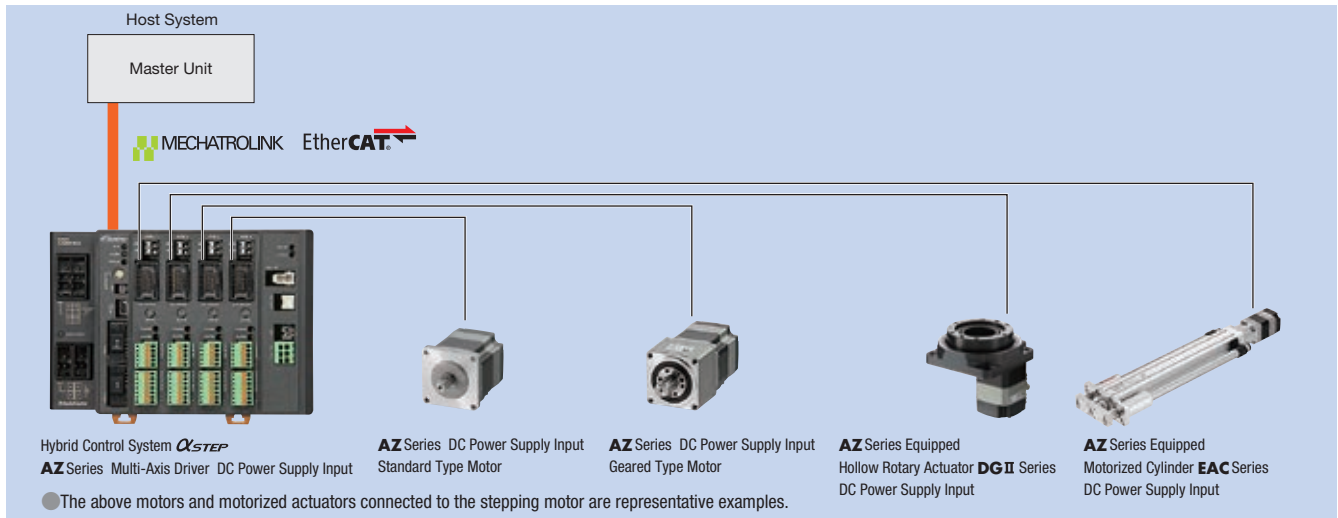
This type executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.



- **CC-Link** and **MECHATROLINK** are the registered trademarks of the CC-Link Partner Association and the MECHATROLINK Members Association, respectively.
- **EtherCAT** is the registered trademark licensed by Beckhoff Automation in Germany.
- The support software (**MEXE02**) can be downloaded from the Oriental Motor website. The media is also available (for free).

● **Network-compatible Multi-Axis Driver* (DC power supply input only)**

Multi-axis driver that supports MECHATROLINK-III and EtherCAT Drive Prole. The driver can be connected to a DC power supply motor of the **AZ** Series and to an actuator equipped with motor. 2-axes, 3-axes, and 4-axes connectable drivers are available.



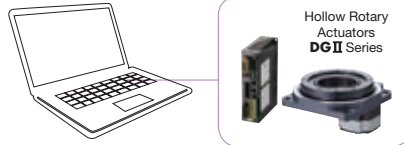
*For details of the products, see the Oriental Motor website.

Simple Operation with Support Software

Easy to use support software enables data setting and verification of the actual drive by using a computer.

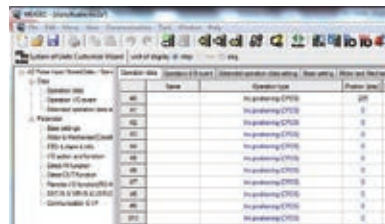
Support Software (MEXE02)

The support software can be downloaded from the website. Oriental Motor also provides it on a CD-ROM free of charge.



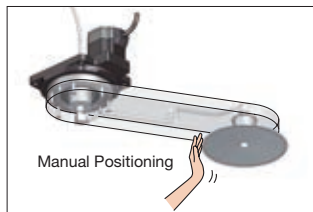
● **Operating Data and Parameter Settings**

Setting of operation data and parameters is easily performed via computer. Because the setting data can be saved, when the driver is replaced, the same settings can be used by transferring the saved data.



● **Teaching and Remote Operation**

By using the data setting software and manual positioning, the operation command information can be input into the driver. Use when setting up equipment.



● **Multi-monitoring enables remote operation and teaching while monitoring.**

Various Monitoring Functions

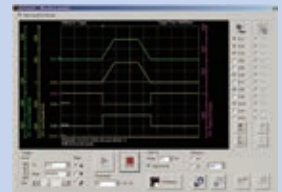
● **I/O Monitoring**

The state of I/O wiring to the driver can be verified by computer. This can be used for post-wiring I/O checks or I/O checks during operation.



● **Waveform Monitoring**

The operational state of the motor (such as command speed and motor load factor), can be checked by 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.















Lineup

Hollow Rotary Actuators **DGII** Series *αSTEP AZ* Equipped

AC : Single-Phase 100-120 VAC,
Single-Phase/Three-Phase 200-240 VAC Input

DC : 24/48 VDC Input

Actuators														Driver			
Product Name Frame Size Power Supply Input	Electro- magnetic Brake	Diameter of Hollow Section [mm]	Permissible Torque [N·m]	Permissible Moment Load [N·m]				Permissible Axial Load [N]				Lost Motion [arcmin]	Backlash [arcmin]	Angular Transmission Accuracy [arcmin]	Repetitive Positioning Accuracy [arcsec]	Type	
				20	40	60	80	500	1000	2000	3000						
DGM60 60 mm NEW DC 	Not Equipped	φ28	0.9	2				100					2		4	±15	Built-in Controller FLEX  AC  DC <hr/> Pulse Input with RS-485 Communication  AC  DC <hr/> Pulse Input  AC  DC <hr/> Network -Compatible Multi-Axis Driver*  DC 
DGM85R 85 mm AC DC 	Not Equipped	φ33	4.5	10				500					2		4	±15	
	Equipped																
DGM130R 130 mm AC DC Selectable Cable Drawing Direction 	Not Equipped	φ62	12	50						2000			2	Non- Backlash	3	±15	
	Equipped																
DGM200R 200 mm AC Selectable Cable Drawing Direction 	Not Equipped	φ100	50	100									2		2	±15	
	Equipped																

* For details please refer to our website.

How to Read Specifications

Specifications

Frame Size		85 mm	130 mm	200 mm
Actuator Product Name	Single Shaft Type	DGM85R-AZAC	DGM130R-AZAC □	DGM200R-AZAC □
	Electromagnetic Brake Type	DGM85R-AZMC	DGM130R-AZMC □	DGM200R-AZMC □
Driver Model Name	Built-in Controller Type	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase / Three-Phase 200-240 VAC)		
	Pulse Input Type with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase / Three-Phase 200-240 VAC)		
	Pulse Input Type	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase / Three-Phase 200-240 VAC)		
Built-In Motor (AZ Series)		AZM46	AZM66	AZM911
①	Type of Output Table Supporting Bearing	Cross-Roller Bearing		
②	Inertia	J: kg·m ²	21120 × 10 ⁻⁷ [26304 × 10 ⁻⁷]	147380 × 10 ⁻⁷ [199220 × 10 ⁻⁷]
	Gear Ratio		18	916400 × 10 ⁻⁷ [968240 × 10 ⁻⁷]
③	Minimum Traveling Amount of the Output Table	deg/STEP	0.01	
④	Permissible Torque	N·m	4.5	12
⑤	Holding Torque at Motor Standstill	Power ON	2.7	12
		Electromagnetic Brake	2.7	12
⑥	Max. Speed	deg/seconds	1200 (200 r/min)	
⑦	Repetitive Positioning Accuracy	arc second	±15 (±0.004°)	
⑧	Lost Motion	arc minute	2 (0.033°)	
⑨	Angular Transmission Accuracy	arc minute	4 (0.067°)	3 (0.05°)
⑩	Permissible Axial Load	N	500	2000
⑪	Permissible Moment	N·m	10	50
⑫	Runout of Output Table Surface	mm	0.015	
⑬	Runout of Output Table Inner (Outer) Diameter	mm	0.015	0.030
⑭	Parallelism of Output Table	mm	0.030	0.050
⑮	Degree of Protection		IP40 (IP20 for motor connector)	
Power-Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase / Three-Phase 200-240 VAC -15~+6% 50/60 Hz	
	Input Current A	Single-Phase 100-120 VAC	2.7	3.8
		Single-Phase 200-240 VAC	1.7	2.3
		Three-Phase 200-240 VAC	1.0	1.4
Control Power Supply		24 VDC±5% 0.25 A [0.33 A]	24 VDC±5% 0.25 A [0.5 A]	

① Type of Output Table Supporting Bearing

This is the type of the bearing used for the output table.

② Inertia

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

③ Minimum Traveling Amount of the Output Table

This is the minimum traveling amount that can be set. (Factory setting)

④ Permissible 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.

⑤ Holding Torque at Motor Standstill

Power ON: This is the maximum torque with which to hold the output table in position if it stops when the power is on.

Electromagnetic Brake: This is the maximum torque with which to hold the output table in position using an electromagnetic brake when it stops.

⑥ Max. Speed

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

⑦ Repetitive Positioning Accuracy

This is a value indicating the degree of error that generates when positioning is performed repeatedly to the same position in the same direction.

⑧ Lost Motion

This is the difference in stopped angles achieved when the output table is positioned to the same position in the forward and reverse directions.

⑨ Angular Transmission Accuracy

This is the difference between the theoretical rotation angle of the output table as calculated from the input pulse counter, and the actual rotation angle.

⑩ Permissible Axial Load

This is the permissible value of axial load applied to the output table in the axial direction.

⑪ Permissible Moment

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

⑫ Runout of Output Table Surface

This is the maximum value of runout of the installation surface of the output table when the output table is rotated under no load.

⑬ Runout of Output Table Inner (Outer) Diameter

This is the maximum value of runout of the inner diameter or outer diameter of the table when the output table is rotated under no load.

⑭ Parallelism of Output Table

This is the inclination of the installation surface of the output table compared with the actuator installation surface on the equipment side.

⑮ Degree of Protection

Based on IEC60529 and EN60034-5 (=IEC60034-5), dust-resistance and waterproofing regarding the degree of protection of the device is classified using a grade.

Hollow Rotary Actuators

DGII Series α STEP AZ Equipped AC Input

Product Number Code

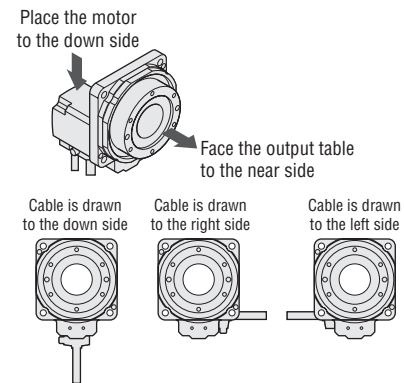
Hollow Rotary Actuators

DGM 130 R - AZ A C R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	DGM : DGII Series Actuator
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 Type	AZ : AZ Series
⑤	Motor Configuration	A : Single Shaft M : With Electromagnetic Brake
⑥	Motor Specification	C : AC Power Supply Input Specification
⑦	Cable Drawing Direction*	Blank : Down side R : Right side L : Left side

* The cable drawing direction represents the cable direction for when the output table is faced to the near side and the motor is placed to the down side.



Drivers

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	Type	D : Built-in Controller Type X : Pulse Input Type with RS-485 Communication Blank : Pulse Input Type

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		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 Models	Z : AZ Series
⑤	Cable Type	F : Connection Cable Sets R : Flexible Connection Cable Sets
⑥	Electromagnetic Brake	Blank : Without Electromagnetic Brake B : With Electromagnetic Brake

Product Line

Hollow Rotary Actuators

◇ Single Shaft

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



Drivers

◇ Built-in Controller Type

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



◇ Pulse Input Type with RS-485 Communication

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



◇ Pulse Input Type

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



Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable if the cable will be bent.

The motor cable and electromagnetic brake cable from the hollow rotary actuator cannot be connected directly to the driver. When connecting to a driver, use the accessory connection cable (sold separately) or use the included connection cable (for products which include a connection cable).

◇ For Motor/Encoder



Product Line	Length m	Product Name
Connection Cable Sets	0.5	CC005VZF
	1	CC010VZF
	1.5	CC015VZF
	2	CC020VZF
	2.5	CC025VZF
	3	CC030VZF
	4	CC040VZF
	5	CC050VZF
	7	CC070VZF
	10	CC100VZF
Flexible Connection Cable Sets	15	CC150VZF
	20	CC200VZF
	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/ Electromagnetic Brake



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

● Actuators

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		<ul style="list-style-type: none"> Connector for CN4 (1 piece) Connector for CN1 (1 piece) Connector for CN5 (1 piece) Connector Wiring Lever (1 piece) 	1 Copy

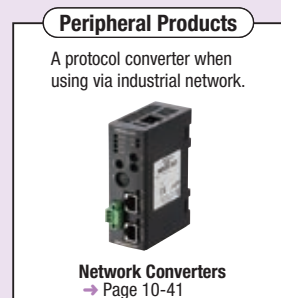
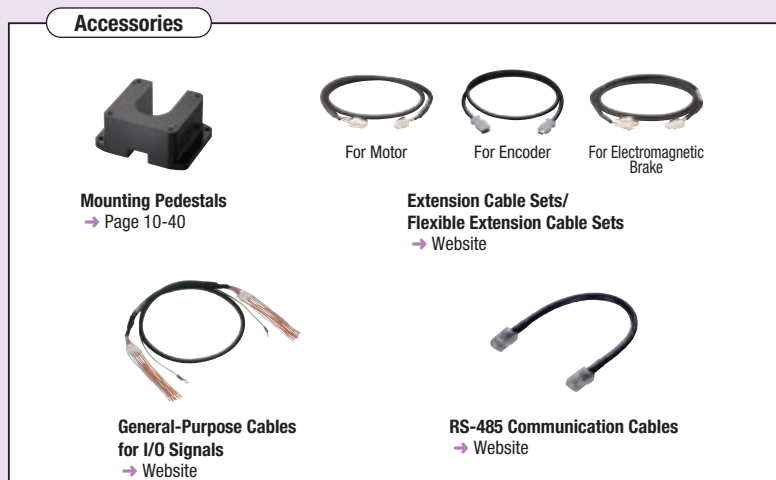
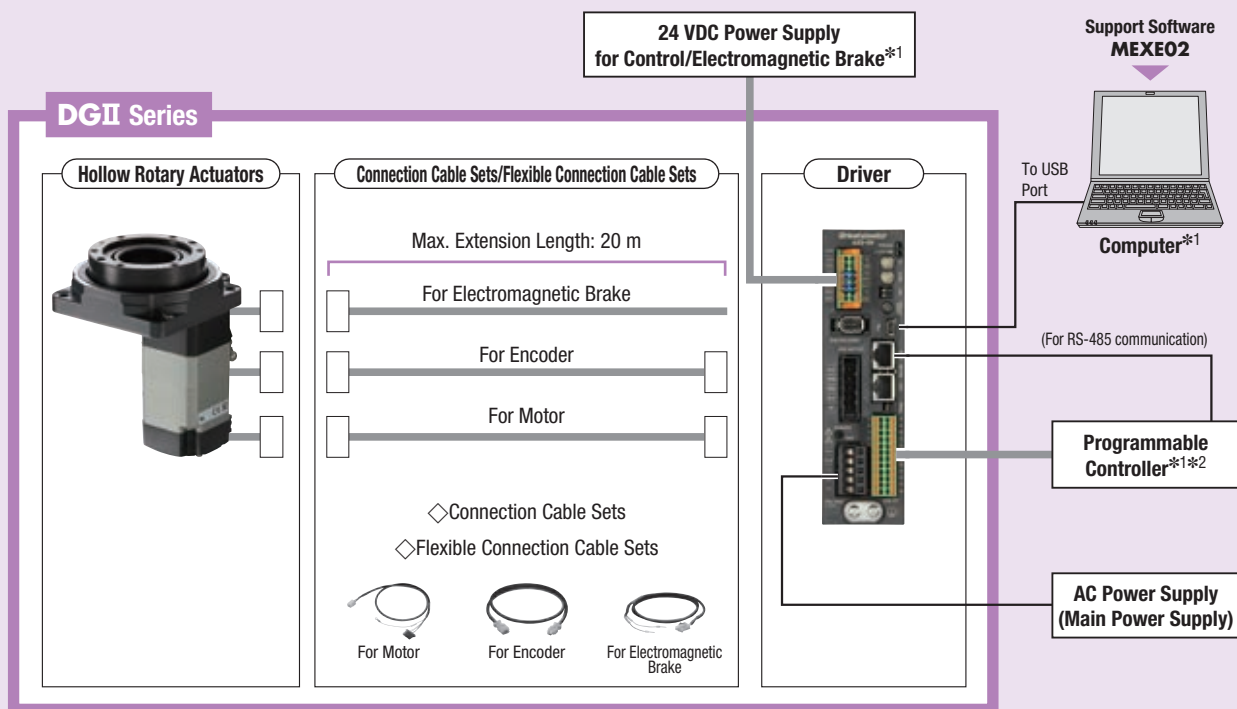
● Connection Cable Sets/Flexible Connection Cable Sets

Type	Included	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 Copy

System Configuration

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

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



*1 Not supplied.

*2 For drivers of pulse input type with RS-485 communication, use a controller that has a pulse generating function.

● The **MEXE02** can be downloaded from Oriental Motor Website Download Page.

● The functions and operating method of this product are common to those of the hybrid control system **αSTEP AZ** Series.

For the functions and operating method of this product, refer to the operating manuals (Driver Edition and Function Edition) of the **AZ** Series. The OPERATING MANUAL Driver Edition is included in the product, but the OPERATING MANUAL Function Edition is not included.

For detail, contact the nearest Oriental Motor sales office or download from Oriental Motor Website Download Page.

<http://www.orientalmotor.com.sg/>

System Configuration Example

DGII Series			+	Sold Separately
Hollow Rotary Actuator DGM85R-AZMC	Driver AZD-CD	Connection Cable Set (3 m) CC030VZFB		

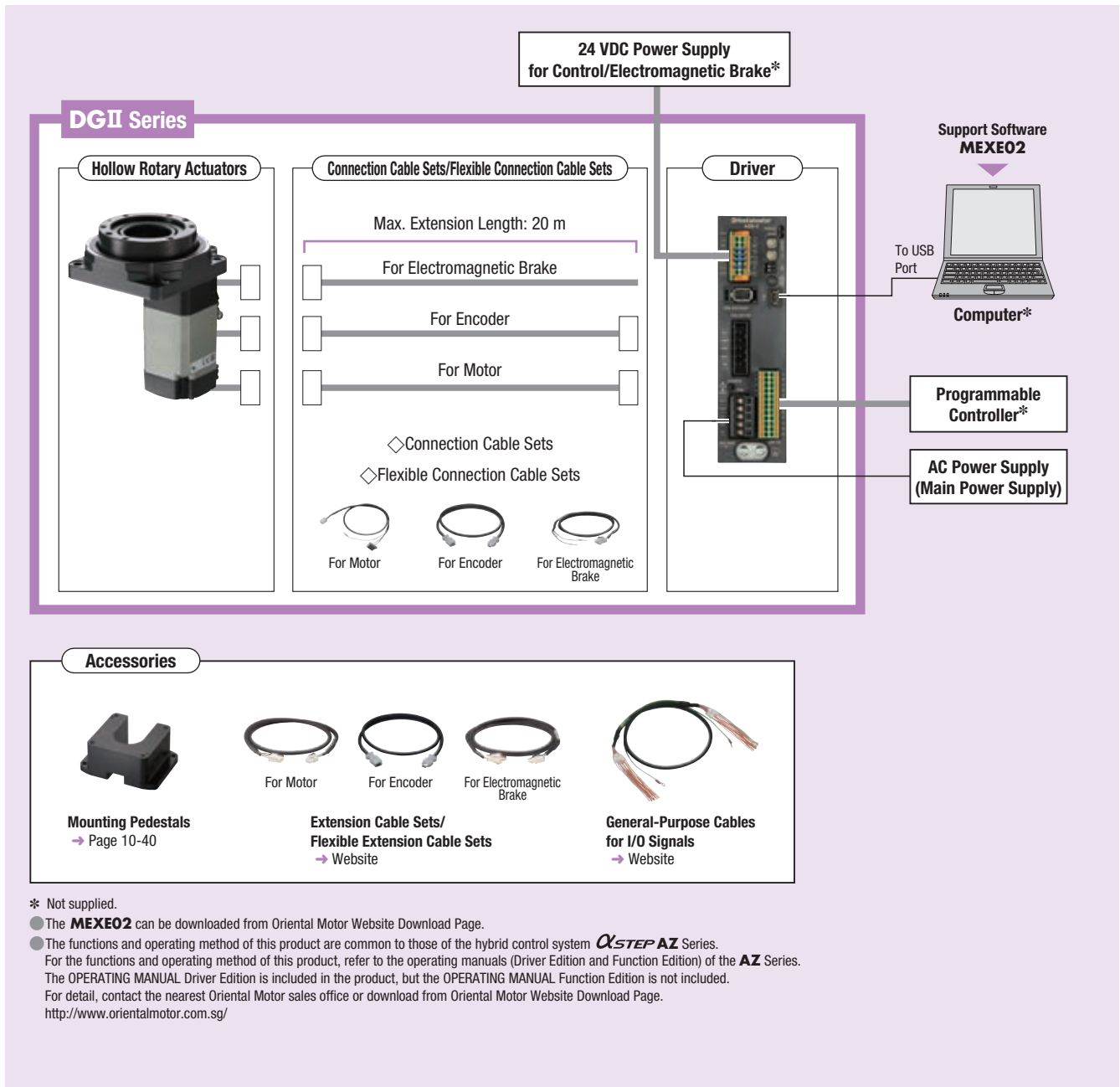
● The system configuration shown above is an example. Other combinations are available.

Note

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

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

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



● **System Configuration Example**

DGII Series			+	Sold Separately
Hollow Rotary Actuator DGM85R-AZMC	Driver AZD-C	Connection Cable Set (3 m) CC030VZFB		

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

Specifications

Frame Size		85 mm	130 mm	200 mm	
Actuator Product Name	Single Shaft	DGM85R-AZAC	DGM130R-AZAC □	DGM200R-AZAC □	
	With Electromagnetic Brake	DGM85R-AZMC	DGM130R-AZMC □	DGM200R-AZMC □	
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase / Three-Phase 200-240VAC)			
	Pulse Input Type with RS-485 Communication	AZD-AX (Single-Phase 100-120VAC), AZD-CX (Single-Phase / Three-Phase 200-240VAC)			
	Pulse Input	AZD-A (Single-Phase 100-120VAC), AZD-C (Single-Phase / Three-Phase 200-240VAC)			
Motor Type (AZ Series)		AZM46	AZM66	AZM911	
Type of Output Table Supporting Bearing			Cross-Roller Bearing		
Inertia	J: kg·m ²	21120×10^{-7} [26304×10^{-7}]*1	147380×10^{-7} [199220×10^{-7}]*1	916400×10^{-7} [968240×10^{-7}]*1	
Gear Ratio		18			
Minimum Traveling Amount of the Output Table	deg/STEP	0.01			
Permissible Torque	N·m	4.5	12	50	
	Power ON	N·m	2.7	12	36 [20]*1
Holding Torque at Motor Standstill	Electromagnetic Brake	N·m	2.7	12	20
Maximum Speed	deg/s	1200 (200 r/min)		660 (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	N·m	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	
Degree of Protection		IP40 (IP20 for motor connector)			
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase / Three-Phase 200-240 VAC -15~+6% 50/60 Hz		
	Input Current A	Single-Phase 100-120 VAC	2.7	3.8	6.4
		Single-Phase 200-240 VAC	1.7	2.3	3.9
		Three-Phase 200-240 VAC	1.0	1.4	2.3
Control Power Supply		24 VDC ±5%*2 0.25 A [0.33 A]*1	24 VDC ±5%*2 0.25 A [0.5 A]*1		

● Either **R** (right) or **L** (left) is entered for the cable withdrawing direction in □ in the product name.

*1 The brackets [] indicate the specifications for the electromagnetic brake type.

*2 Changes to 24 VDC ± 4% if the electromagnetic brake type has been extended with the 20 m accessory cable.

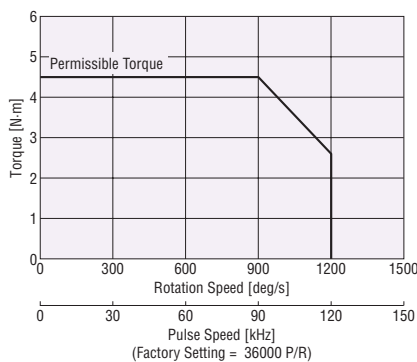
Note

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

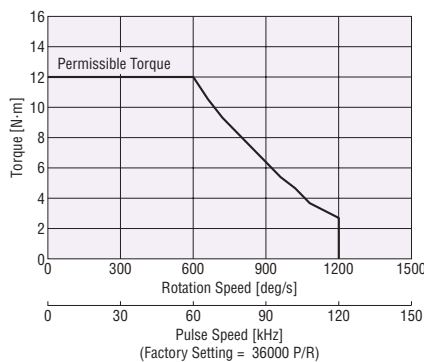
● The motor can not be removed.

Speed – Torque Characteristics (Reference values)

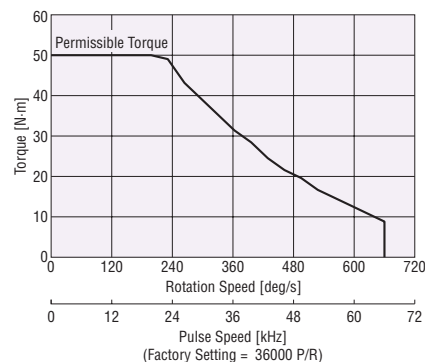
DGM85R-AZ



DGM130R-AZ



DGM200R-AZ



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

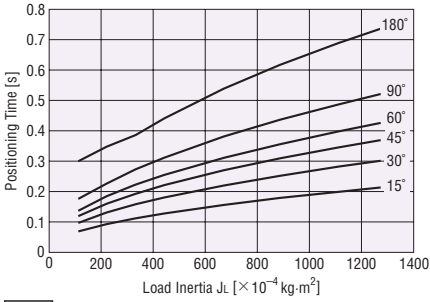
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Please keep the motor case temperature at a maximum of 80°C to protect the ABZO sensor.

(When conforming to the UL 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.)

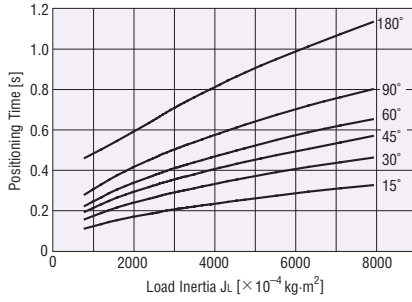
Load Inertia – Positioning Time (Reference value)

The load inertia refers to the inertia of the customer's load.

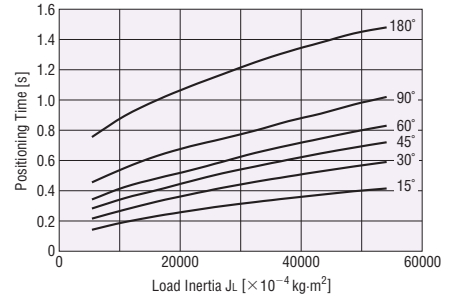
DGM85R-AZ



DGM130R-AZ



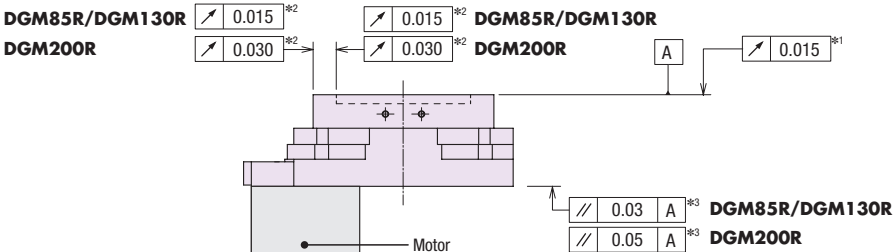
DGM200R-AZ



Note

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

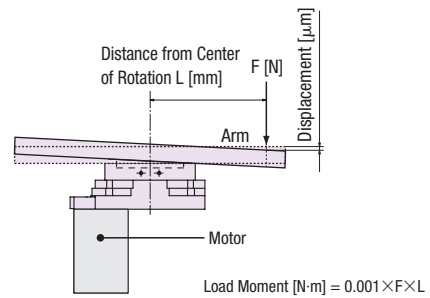
Mechanical Precision (At no load)



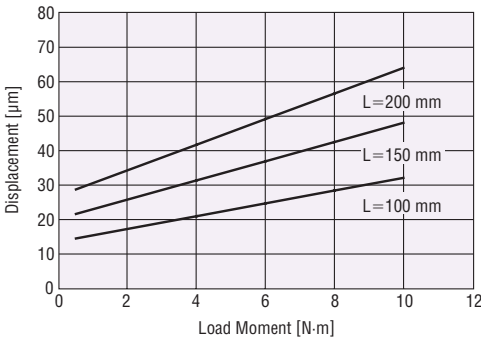
- *1 Runout of output table surface
- *2 Runout of output table inner and outer diameter
- *3 Parallelism of output table (against the installation surface)

Displacement by Load Moment (Reference value)

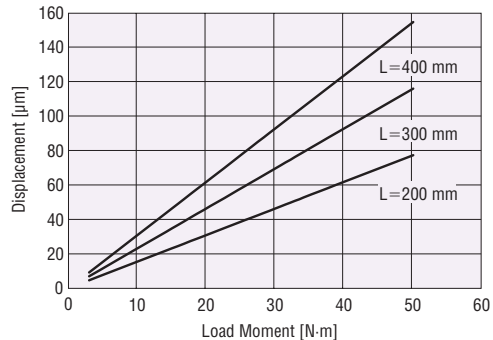
The output table will be displaced when it receives a load moment.
The graph plots the table displacement that occurs at distance L from the rotation center of the output table when a given load moment is applied in one direction.
The displacement becomes approximately twice the size when the load moment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



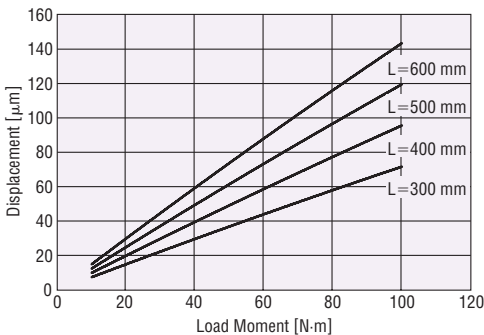
DGM85R



DGM130R



DGM200R



Electromagnetic Brake Specifications

Product Name	DGM85	DGM130	DGM200
Type	Power off activated type		
Power Supply Voltage	24 VDC±5%*		
Power Supply Current	A	0.08	0.25
Brake Activate Time	ms	20	
Brake Release Time	ms	30	
Time Rating	Continuous		

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

General Specifications



	Actuator (Built-in Motor: AZ Series)	Driver	
		Built-In Controller Type Pulse Input Type with RS-485 Communication	Pulse Input Type
Thermal Class	130 (B) [Recognized as 105 (A) by the UL Standards]	-	
Insulation Resistance	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*2	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal · Encoder connector – Power supply terminal · I/O signal terminals – Power supply terminal	
Dielectric Strength	Sufficient to withstand the following for 1 minute: · Case – Motor windings 1.5 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*2 1.5 kVAC 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: · Protective earth terminal – Power supply terminal 1.5 kVAC, 50 Hz or 60 Hz · Encoder connector – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz · I/O signal terminals – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)*3	
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	Use in an area without corrosive gases and 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 shaft)	±900 rotations (1800 rotations)		

*1 For motor product names, not actuator product names.

*2 Only for electromagnetic brake type.

*3 It depends on the Orientalmotor's measurement conditions.

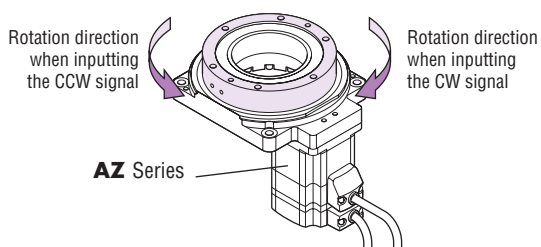
*4 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200 × 200 mm and 2 mm thickness.

Note

- Do not perform the insulation resistance measurement or dielectric voltage withstand test while the actuator and driver are connected.
Also, do not conduct these tests on the motor absolute sensor component.

Rotation Direction

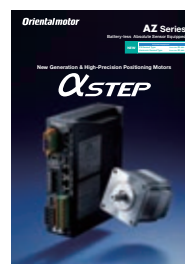
The figure below shows the rotation directions seen from the output table.



Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of the **AZ** Series or our website.

- Driver Specifications
- RS-485 Communication Specifications
- Dimensions (Drivers, Connection Cables)
- Connection and Operation
- Accessories (Extension Cables)



Dimensions (Unit: mm)

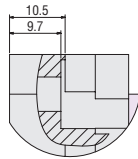
Hollow Rotary Actuators

◇ Frame Size 85 mm

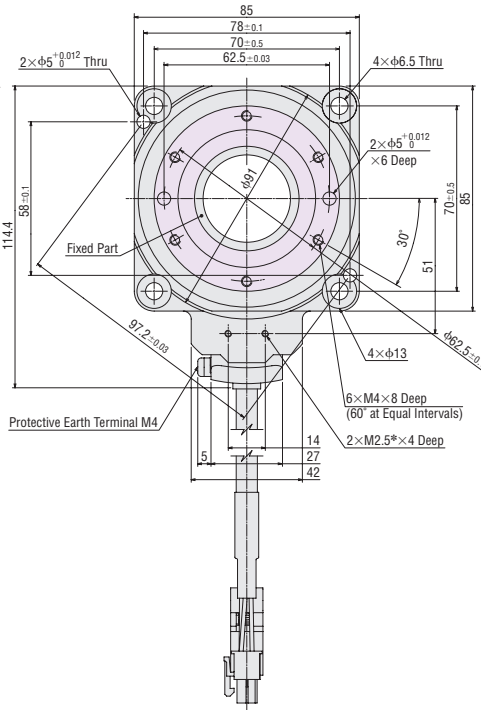
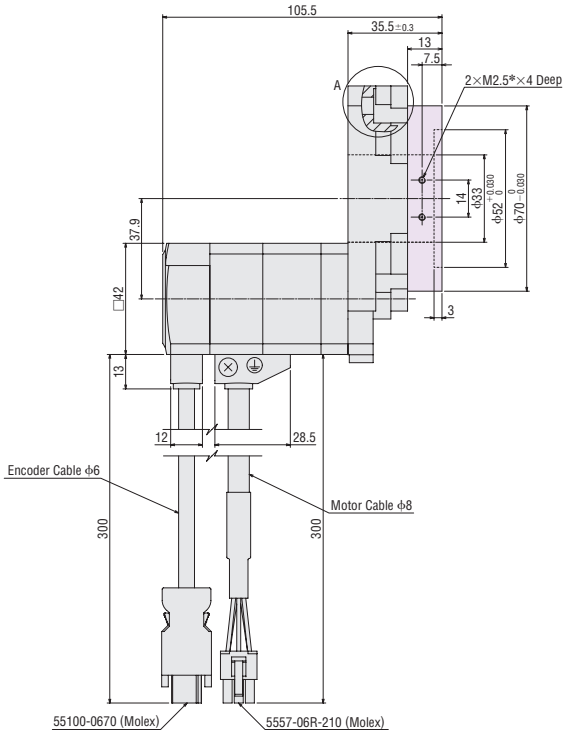
Single Shaft Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM85R-AZAC	1.1	D4501



Detail of 'A'



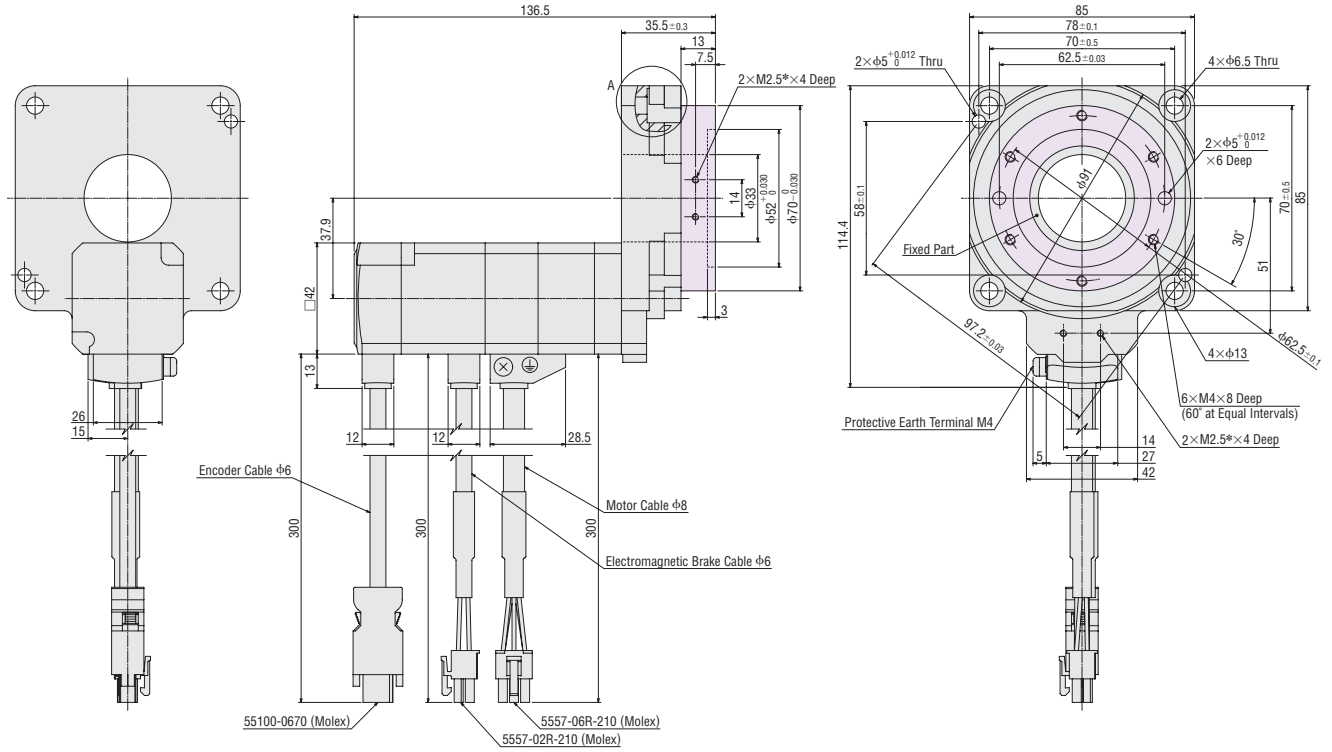
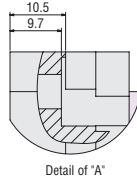
● The shaded areas are rotating parts.

*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.

Electromagnetic Brake Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM85R-AZMC	1.3	D6452



● The shaded areas are rotating parts.

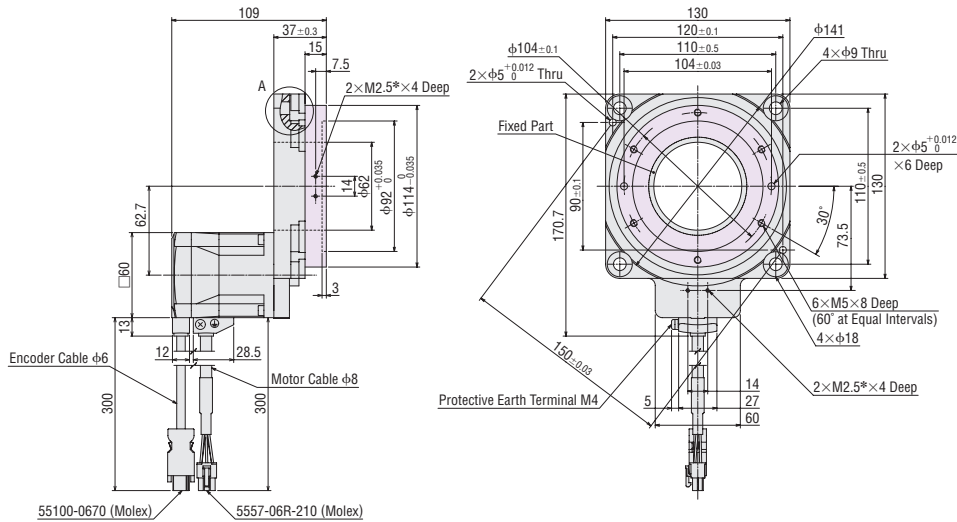
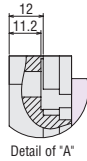
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 130 mm

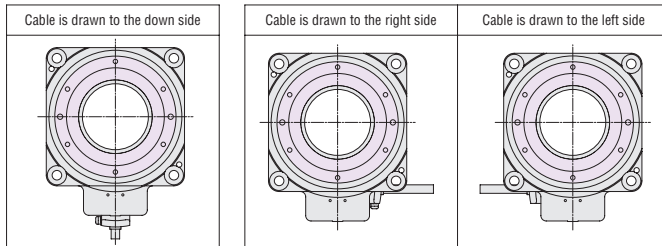
Single Shaft Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZAC	2.7	D4502
Right	DGM130R-AZACR		D7645
Left	DGM130R-AZACL		D7644



Cable leading direction



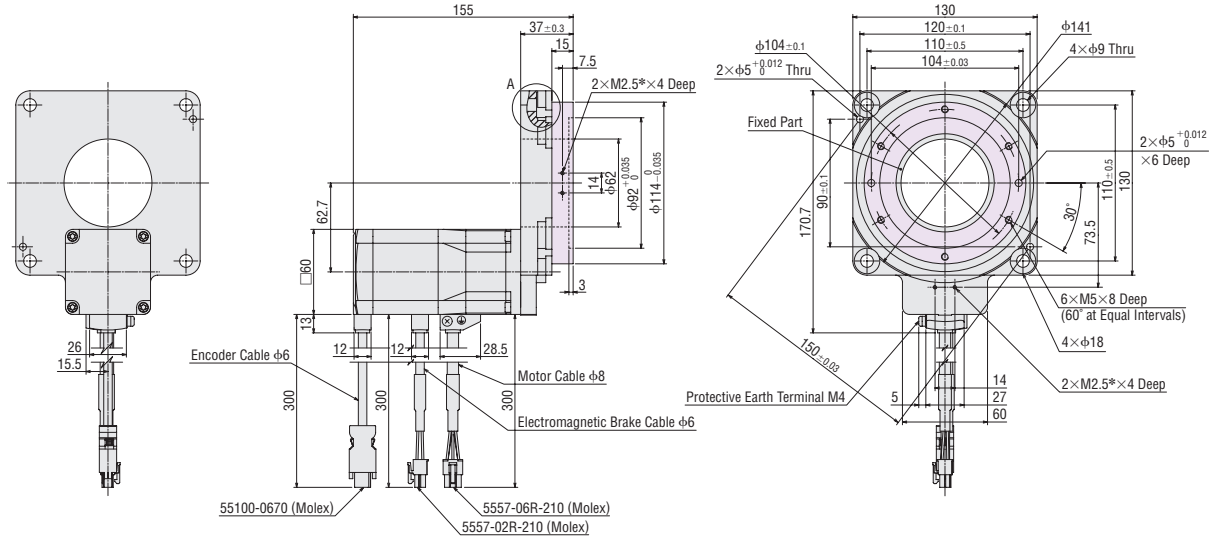
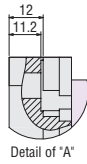
● The shaded areas are rotating parts.

*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.

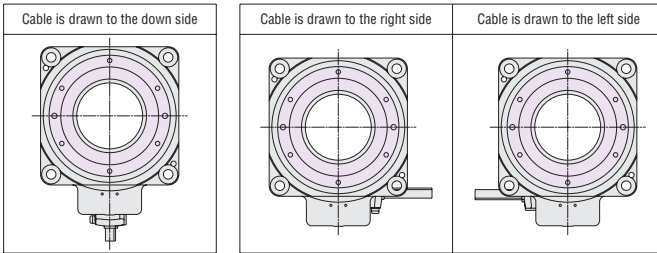
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZMC	3.1	D6453
Right	DGM130R-AZMCR		D7647
Left	DGM130R-AZMCL		D7646



Cable leading direction



● The shaded areas are rotating parts.

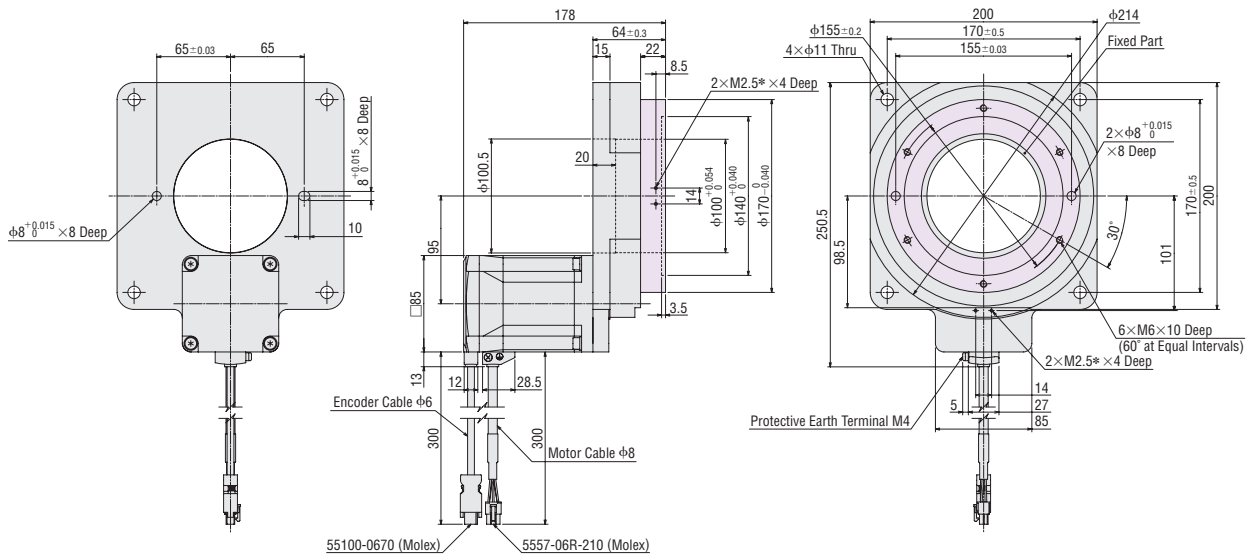
*Use M2.5 screw holes when installing the home sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 200 mm

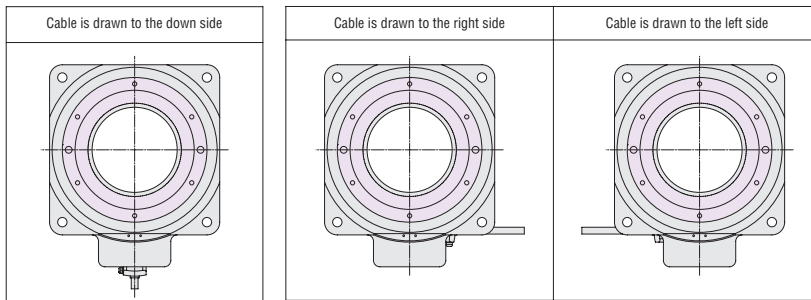
Single Shaft Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM200R-AZAC	9.4	D6454
Right	DGM200R-AZACR		D7649
Left	DGM200R-AZACL		D7648



Cable leading direction



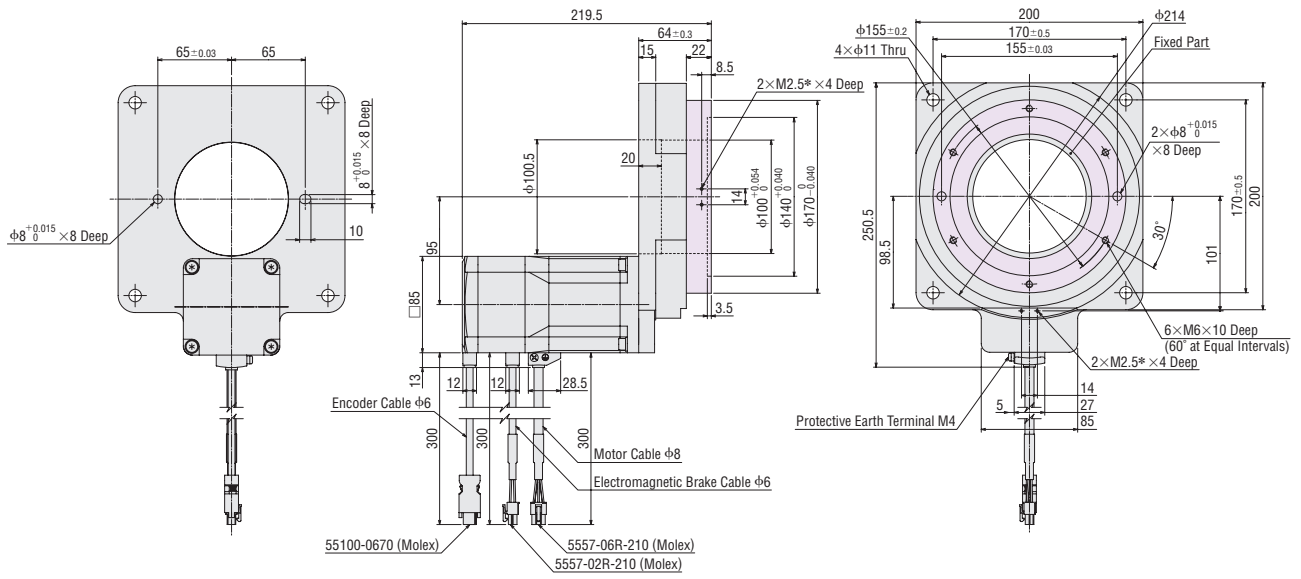
● The shaded areas are rotating parts.

*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.

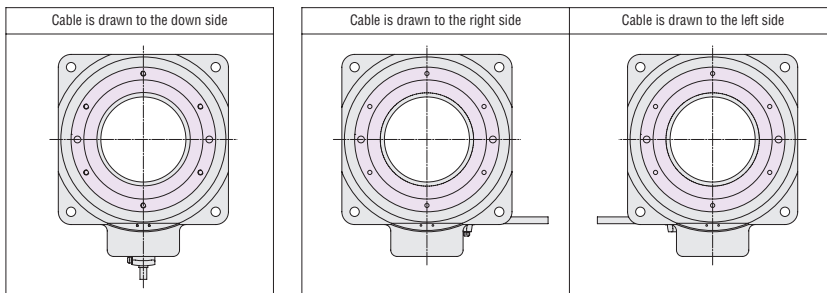
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM200R-AZMC	10	D6455
Right	DGM200R-AZMCR		D7651
Left	DGM200R-AZMCL		D7650



Cable leading 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.

Hollow Rotary Actuators

DGII Series α STEP AZ Equipped DC Input

Product Number Code

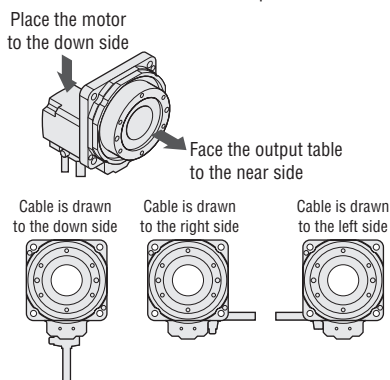
Hollow Rotary Actuators

DGM 130 R - AZ A K R

① ② ③ ④ ⑤ ⑥ ⑦

①	Series Name	DGM : DGII Series Actuator
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 Type	AZ : AZ Series
⑤	Motor Configuration	A : Single Shaft M : With Electromagnetic Brake
⑥	Motor Specification	K : DC Power Supply Input Specification
⑦	Cable Drawing Direction*	Blank: Down side R : Right side L : Left side

*The cable drawing direction represents the cable direction for when the output table is faced to the near side and the motor is placed to the down side.



Drivers

AZD - K D

① ② ③

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

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B 2

① ② ③ ④ ⑤ ⑥ ⑦

①		CC : Cables
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 Models	Z : AZ Series
⑤	Cable Type	F : Connection Cable Sets R : Flexible Connection Cable Sets
⑥	Electromagnetic Brake	Blank : Without Electromagnetic Brake B : With Electromagnetic Brake
⑦	Cable Specifications	2 : DC Power Supply Input

Product Line

Hollow Rotary Actuators

◇ Single Shaft

Frame Size	Product Name
60 mm	DGM60-AZAK <small>NEW</small>
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



● Drivers

◇ Built-in Controller Type

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



◇ Pulse Input Type with RS-485 Communication

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



◇ Pulse Input Type

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



● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent.

The motor cable and electromagnetic brake cable from the hollow rotary actuator cannot be connected directly to the driver. When connecting to a driver, use the accessory connection cable (sold separately) or use the included connection cable (for products which include a connection cable).

For **DGM60**



◇ For Motor/Encoder

Product Line	Length m	Product Name
Connection Cable Sets	0.5	CC005VZ2F2
	1	CC010VZ2F2
	1.5	CC015VZ2F2
	2	CC020VZ2F2
	2.5	CC025VZ2F2
	3	CC030VZ2F2
	4	CC040VZ2F2
	5	CC050VZ2F2
	7	CC070VZ2F2
	10	CC100VZ2F2
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 **DGM85, DGM130**



◇ For Motor/Encoder

Product Line	Length m	Product Name
Connection Cable Sets	0.5	CC005VZF2
	1	CC010VZF2
	1.5	CC015VZF2
	2	CC020VZF2
	2.5	CC025VZF2
	3	CC030VZF2
	4	CC040VZF2
	5	CC050VZF2
	7	CC070VZF2
	10	CC100VZF2
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

Product Line	Length m	Product Name
Connection Cable Sets	0.5	CC005VZFB2
	1	CC010VZFB2
	1.5	CC015VZFB2
	2	CC020VZFB2
	2.5	CC025VZFB2
	3	CC030VZFB2
	4	CC040VZFB2
	5	CC050VZFB2
	7	CC070VZFB2
	10	CC100VZFB2
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

● Actuators

Type	Included	Operating Manual
Common to All Types		1 Copy

● Drivers

Type	Included	Connector	Operating Manual
Common to All Types		<ul style="list-style-type: none"> • Connector for CN4 (1 piece) • Connector for CN1 (1 piece) 	1 Copy

● Connection Cable Sets/Flexible Connection Cable Sets

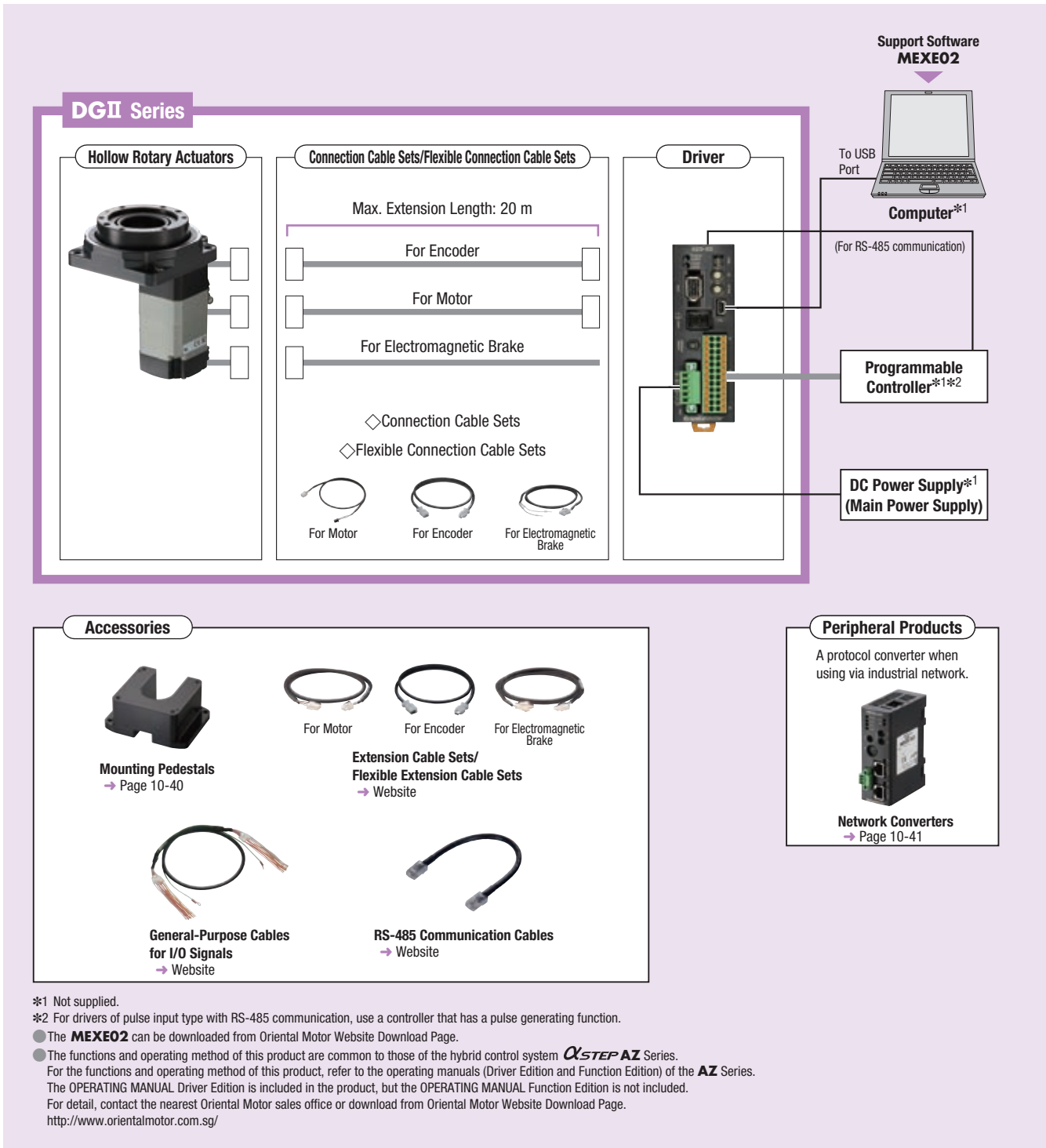
Type	Included	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 Copy

System Configuration

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

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

Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



System Configuration Example

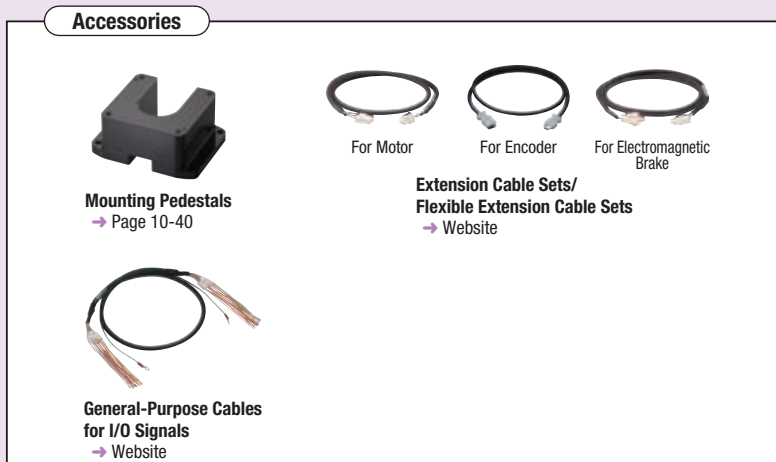
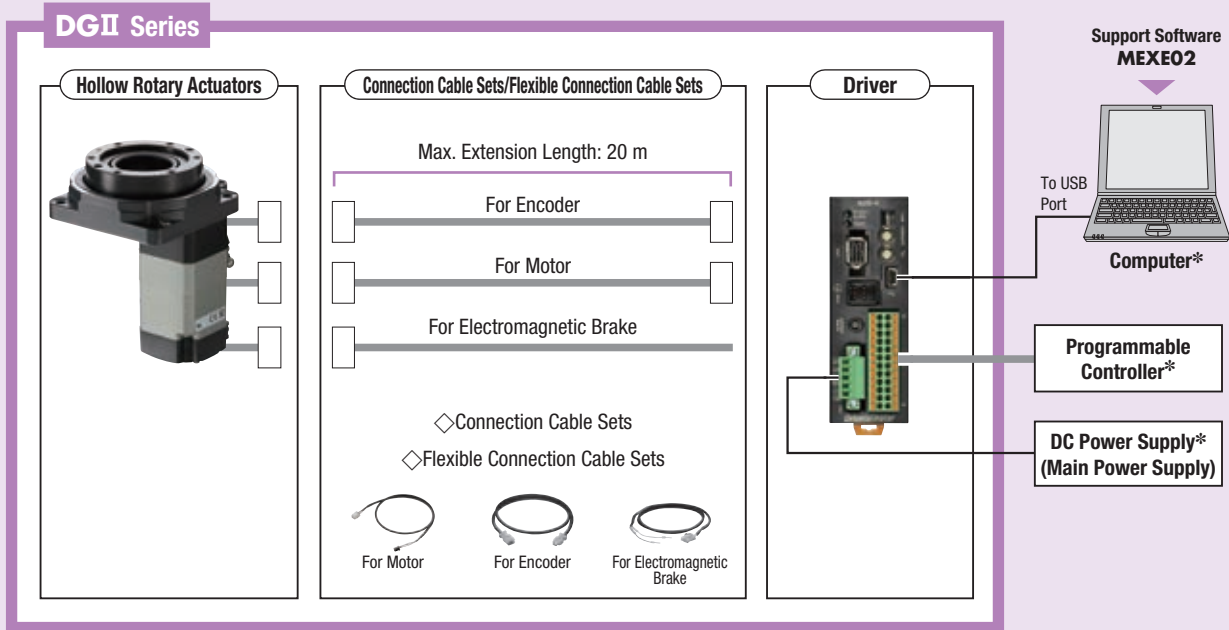
DG II Series			+	Sold Separately
Hollow Rotary Actuator DGM85R-AZMK	Driver AZD-KD	Connection Cable Set (3 m) CC030VZFB2		

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

Note

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

● **Combination of Linear & Rotary Actuator with an Electromagnetic Brake and Pulse Input Type Driver**
 This is an example of a single-axis system configuration using a programmable controller (with pulse oscillation function).
 Hollow rotary actuators, drivers, and connection cable sets/flexible connection cable sets need to be ordered separately.



* Not supplied.
 ● The **MEXE02** can be downloaded from Oriental Motor Website Download Page.
 ● The functions and operating method of this product are common to those of the hybrid control system **αSTEPAZ** Series.
 For the functions and operating method of this product, refer to the operating manuals (Driver Edition and Function Edition) of the **AZ** Series.
 The OPERATING MANUAL Driver Edition is included in the product, but the OPERATING MANUAL Function Edition is not included.
 For detail, contact the nearest Oriental Motor sales office or download from Oriental Motor Website Download Page.
<http://www.orientalmotor.com.sg/>

● **System Configuration Example**

DGII Series			+	Sold Separately
Hollow Rotary Actuator DGM85R-AZMK	Driver AZD-K	Connection Cable Set (3 m) CC030VZFB2		

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

Specifications

Frame Size		60 mm	85 mm	130 mm
Actuator Product Name	Single Shaft	DGM60-AZAK	DGM85R-AZAK	DGM130R-AZAK <input type="checkbox"/>
	With Electromagnetic Brake		DGM85R-AZMK	DGM130R-AZMK <input type="checkbox"/>
Driver Product Name	Built-in Controller	AZD-KD		
	Pulse Input Type with RS-485 Communication	AZD-KX		
	Pulse Input	AZD-K		
Motor Type (AZ Series)		AZM24	AZM46	AZM66
Type of Output Table Supporting Bearing		Deep-Groove Ball Bearing	Cross-Roller Bearing	
Inertia	J : kg·m ²	3700×10 ⁻⁷ —	21120×10 ⁻⁷ [26304×10 ⁻⁷]*1	147380×10 ⁻⁷ [199220×10 ⁻⁷]*1
Gear Ratio		18		
Minimum Traveling Amount of the Output Table	deg/STEP	0.01		
Permissible Torque	N·m	0.9	4.5	12
Holding Torque at Motor Standstill	Power ON	N·m	0.45	2.7
	Electromagnetic Brake	N·m	—	2.7
Maximum 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°)		
Permissible Axial Load	N	100	500	2000
Permissible Moment	N·m	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	
Degree of Protection		IP40 (IP20 for motor connector)		
Power Supply Input	Voltage	24 VDC ±5%	24 VDC ±5%*2 / 48 VDC ±5%*3	
	Input Current	A	1.6	1.72 [1.8]*1

● Either **R** (right) or **L** (left) is entered for the cable withdrawing direction in in the product name.

*1 The brackets [] indicate the specifications for the electromagnetic brake type.

*2 Changes to 24 VDC ± 4% if the electromagnetic brake type has been extended with the 20 m accessory cable.

*3 When the motor is operated with 48 VDC input, as a reference, keep the load inertia 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **DGM85**)

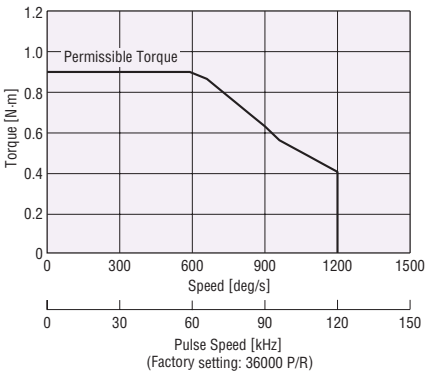
Note

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

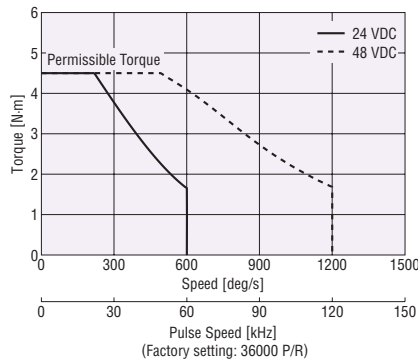
● The motor can not be removed.

Speed – Torque Characteristics (Reference values)

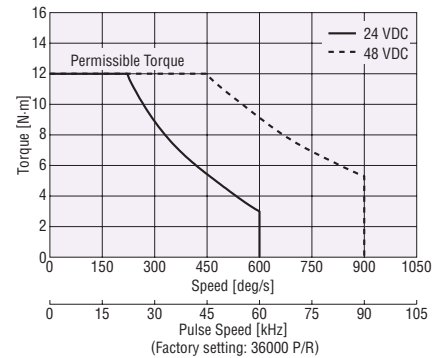
DGM60-AZ



DGM85R-AZ



DGM130R-AZ



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Please keep the motor case temperature at a maximum of 80°C to protect the ABZO sensor.

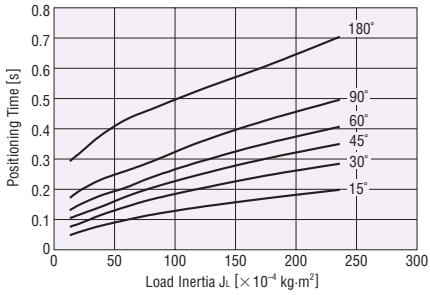
(When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

Load Inertia – Positioning Time (Reference value)

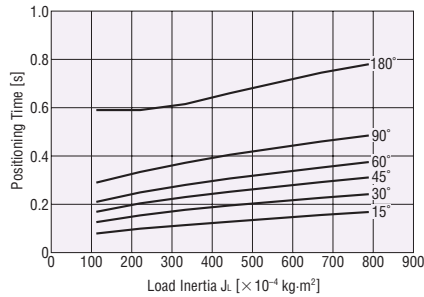
The load inertia refers to the inertia of the customer's load.

● 24 VDC

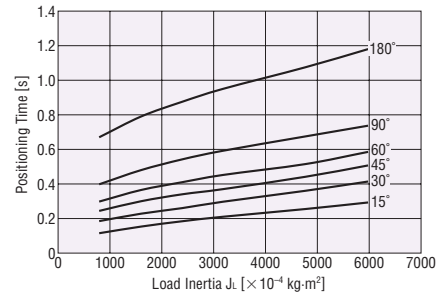
DGM60-AZ



DGM85R-AZ



DGM130R-AZ

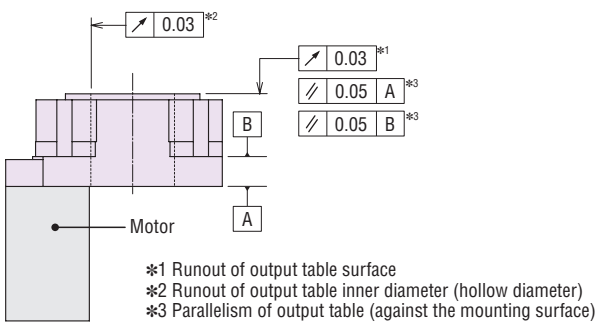


Note

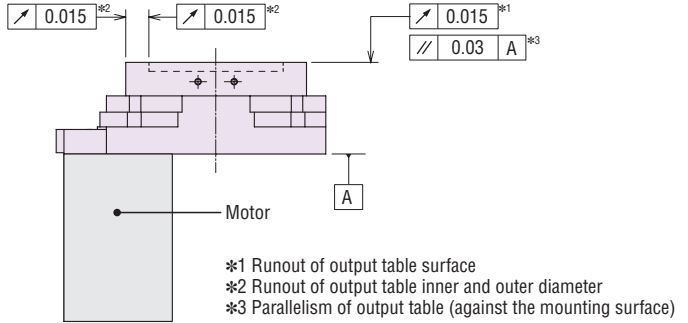
- Data for the load Inertia - positioning time is theoretical value of 1.5 times torque safety factor at normal ambient temperature. If the conditions are changed, the characteristics may also change as a result.
- For details on 48 VDC input the Load Inertia - Positioning Time data, please refer to contact your nearest Oriental Motor sales office.

Mechanical Precision (At no load)

DGM60



DGM85R/DGM130R

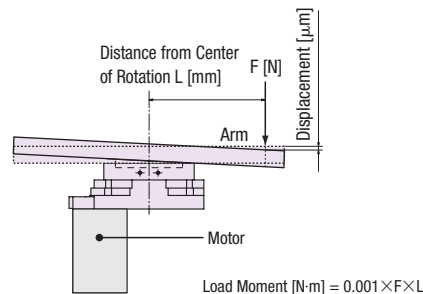


Displacement by Load Moment (Reference value)

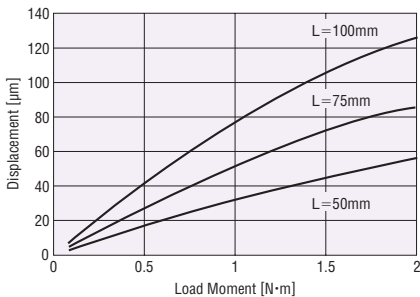
The output table will be displaced when it receives a load moment.

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.

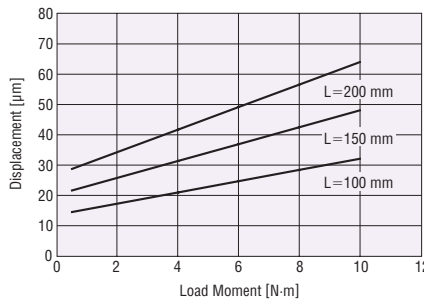
The displacement becomes approximately twice the size when the load moment is applied in both the positive and negative directions.



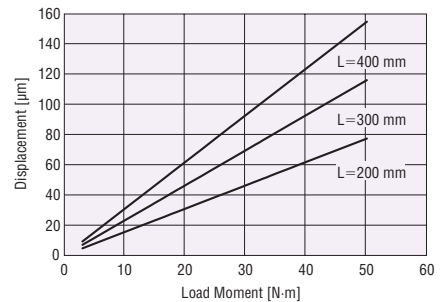
DGM60



DGM85R



DGM130R



Electromagnetic Brake Specifications

Product Name	DGM85	DGM130
Type	Power off activated type	
Power Supply Voltage	24 VDC±5%*	
Power Supply Current	0.08	0.25
Brake Activate Time	ms	
Brake Release Time	ms	
Time Rating	Continuous	

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

General Specifications



	Actuator (Built-in Motor: AZ Series)	Driver
Thermal Class	130 (B) [Recognized as 105 (A) by the UL Standards]*1	—
Insulation Resistance	The measured value is 100 M Ω or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*4	The measured value is 100 M Ω or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal.
Dielectric Strength	Sufficient to withstand the following for 1 minute: DGM60 · Case – Motor windings 0.5 kVAC 50Hz or 60Hz DGM85, DGM130 · Case – Motor windings 1.0 kVAC 50Hz or 60Hz · Case – Electromagnetic brake windings*4 1.0kVAC 50Hz or 60Hz	—
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)
	Atmosphere	Use in an area without corrosive gases and 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)	DGM60 : ±450 rotations (900 rotations) DGM85, DGM130 : ±900 rotations (1800 rotations)	

*1 Excluding **DGM60**

*2 For motor product names, not actuator product names.

*3 For motor product

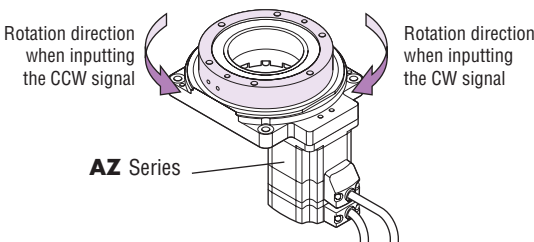
*4 Only for electromagnetic brake type

Note

● Do not perform the insulation resistance measurement or dielectric voltage withstand test while the actuator and driver are connected.
Also, do not conduct these tests on the motor absolute sensor component.

Rotation Direction

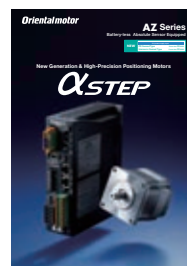
The figure below shows the rotation directions seen from the output table.



Drivers and cables that are used with actuators are common to the **AZ** Series.

For details, see the catalogs of the **AZ** Series or our website.

- Driver Specifications
- RS-485 Communication Specifications
- Dimensions (Drivers, Connection Cables)
- Connection and Operation
- Accessories (Extension Cables)



Dimensions (Unit: mm)

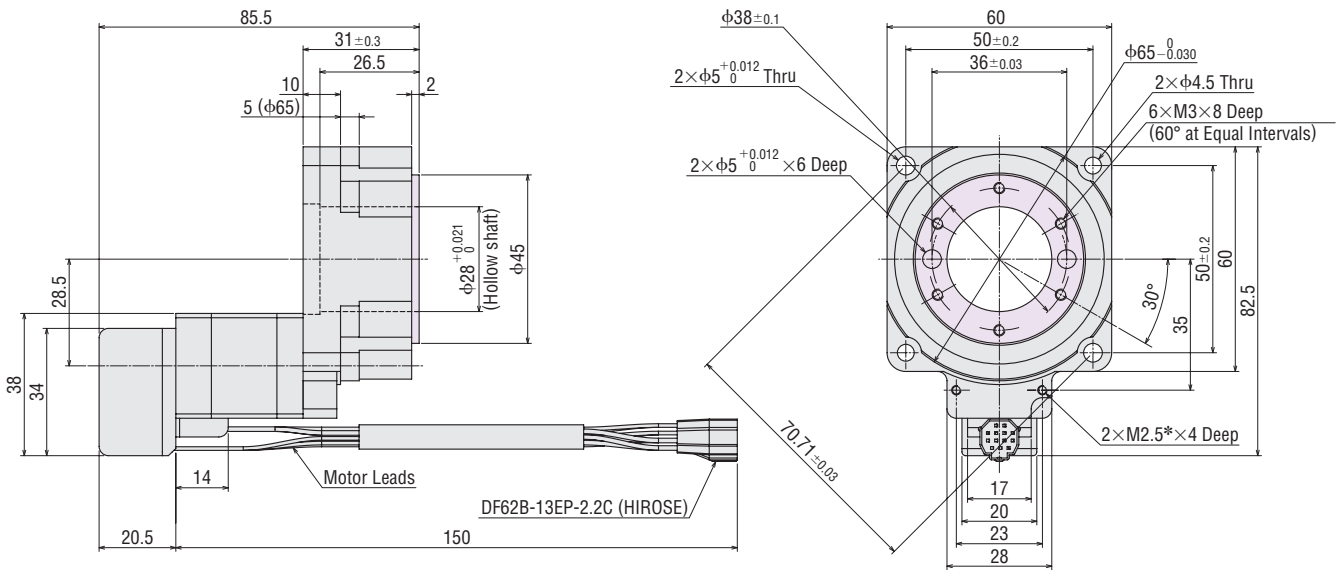
Hollow Rotary Actuators

◇ Frame Size 60 mm

Single Shaft Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM60-AZAK	0.5	D7689



● The shaded areas are rotating parts.

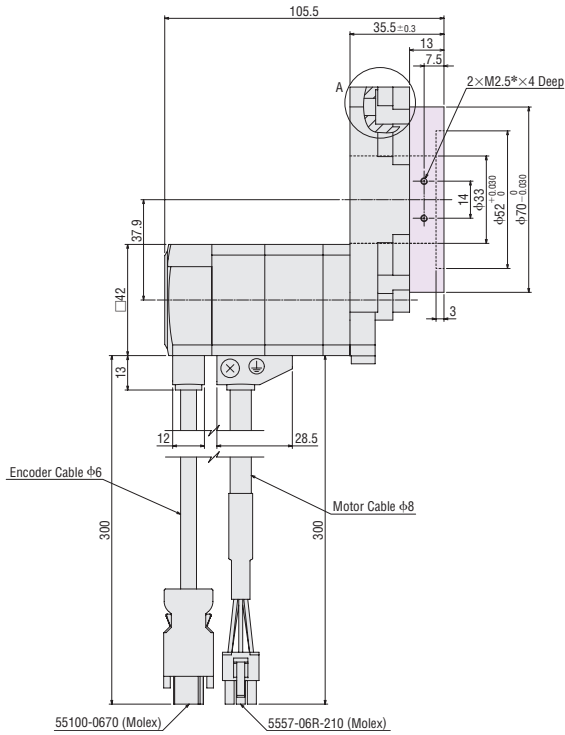
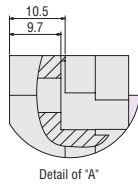
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 85 mm

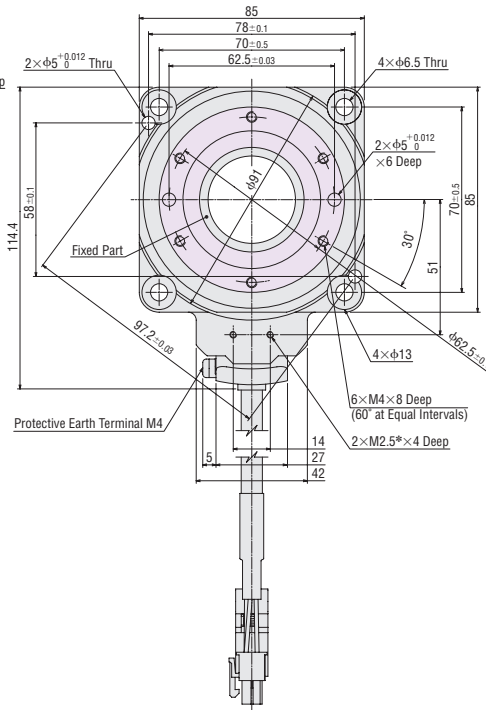
Single Shaft Type

2D & 3D CAD

Product Name	Mass kg	2D CAD
DGM85R-AZAK	1.1	D4501



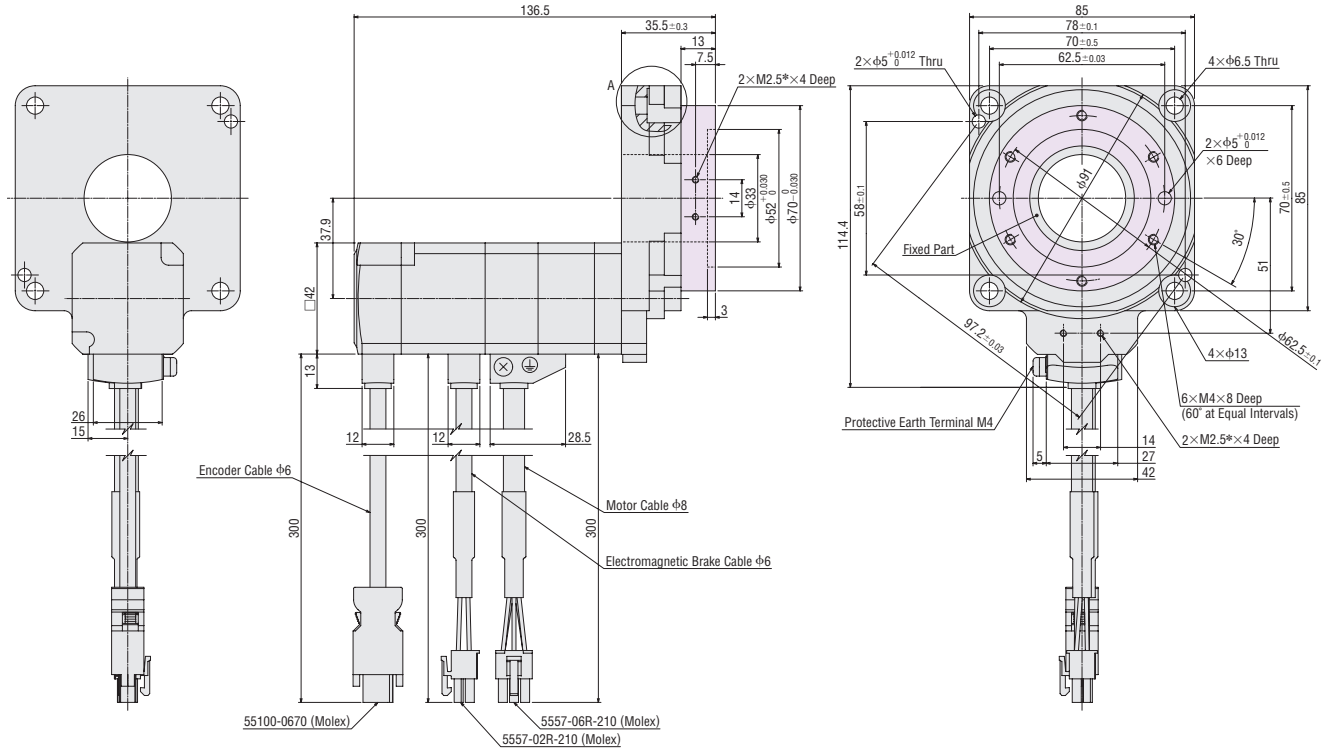
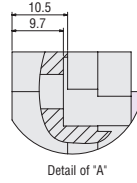
● The shaded areas are rotating parts.



*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.

Electromagnetic Brake Type **2D & 3D CAD**

Product Name	Mass kg	2D CAD
DGM85R-AZMK	1.3	D6452



● The shaded areas are rotating parts.

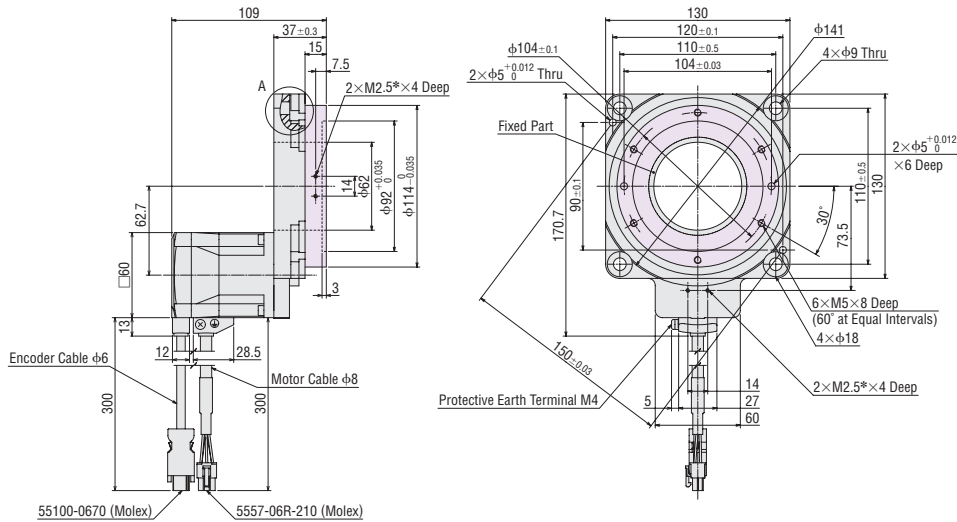
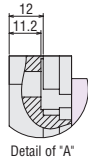
*Use M2.5 screw holes when installing the home sensor set (sold separately).
Do not use these holes for any purpose other than to install the home sensor.

◇ Frame Size 130 mm

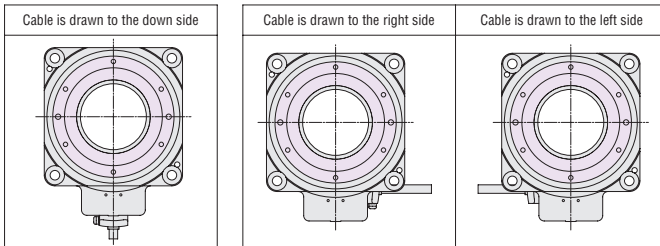
Single Shaft Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZAK	2.7	D4502
Right	DGM130R-AZAKR		D7645
Left	DGM130R-AZAKL		D7644



Cable leading direction



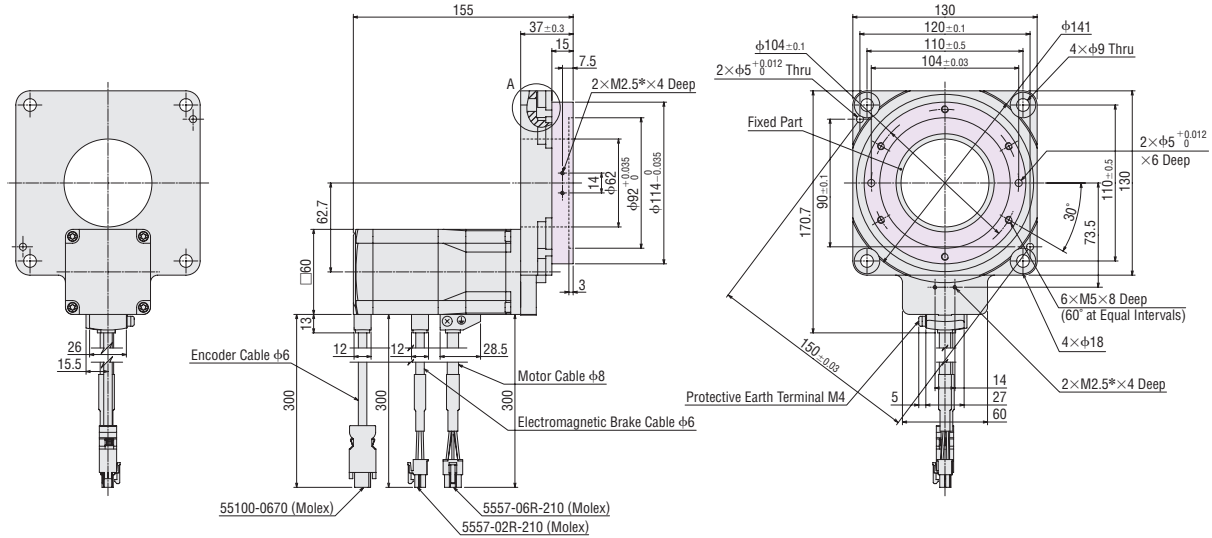
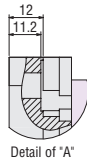
● The shaded areas are rotating parts.

*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.

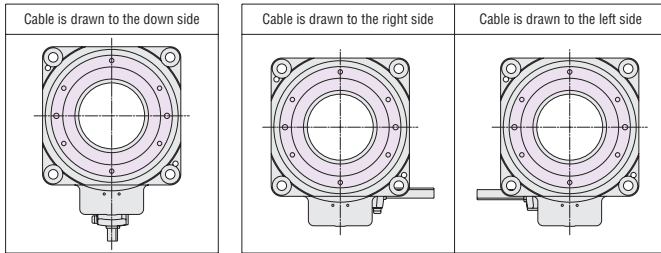
Electromagnetic Brake Type

2D & 3D CAD

Cable Drawing Direction	Product Name	Mass kg	2D CAD
Down	DGM130R-AZMK	3.1	D6453
Right	DGM130R-AZMKR		D7647
Left	DGM130R-AZMKL		D7646



Cable leading direction



● The shaded areas are rotating parts.

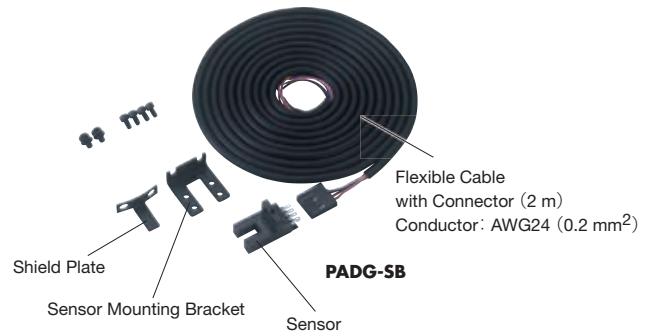
※Use M2.5 screw holes when installing the home sensor set (sold separately). Do not use these holes for any purpose other than to install the home sensor.

Accessories (Sold Separately)

Home-Sensor Sets

A home-sensor set, which consists of a photomicro sensor, connector with cable, sensor mounting bracket, shield plate and installation screws, is provided to facilitate easy return to home operation.

All parts needed for return to home operation are included in the set, so you will spend less time designing, fabricating or procuring parts in connection with sensor installation. Installation is very easy, so you can start using the sensor right away.



Product Line

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

Specifications

NPN Type

Product	PADG-SA (OMRON Model: EE-SX672A) PADG-SB (OMRON Model: EE-SX673A)
Power Supply	5~24 VDC ±10%, ripple (P-P) 10% or less
Current Consumption	35 mA or less
Control Output	NPN open-collector output, 5~24 VDC 100 mA or less Residual voltage 0.8 VDC or less (at load current of 100 mA)
Indicator LED	Detection display (red)
Sensor Logic	Normally open/normally closed (selectable, depending on connection)

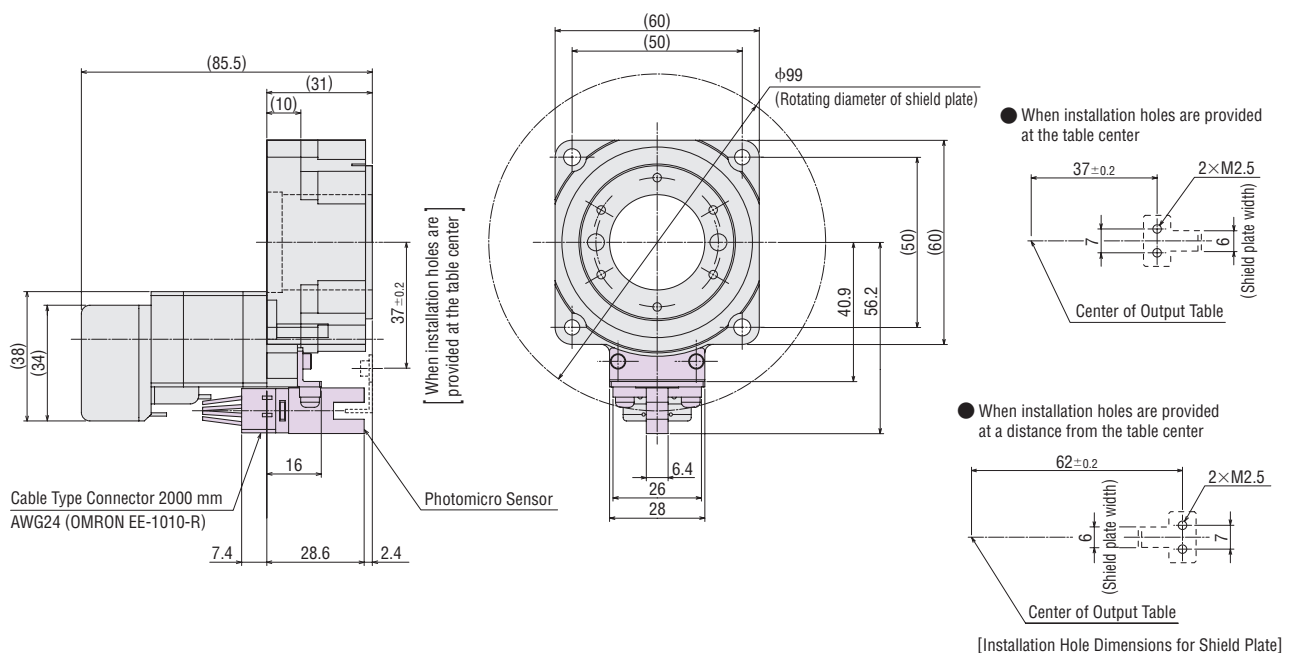
PNP Type

Product	PADG-SAY (OMRON Model: EE-SX672R) PADG-SBY (OMRON Model: EE-SX673R)
Power Supply	5~24 VDC ±10%, ripple (P-P) 10% or less
Current Consumption	30 mA or less
Control Output	PNP open-collector output, 5~24 VDC 50 mA or less Residual voltage 1.3 VDC or less (at load current of 50 mA)
Indicator LED	Detection display (red)
Sensor Logic	Normally open/normally closed (selectable, depending on connection)

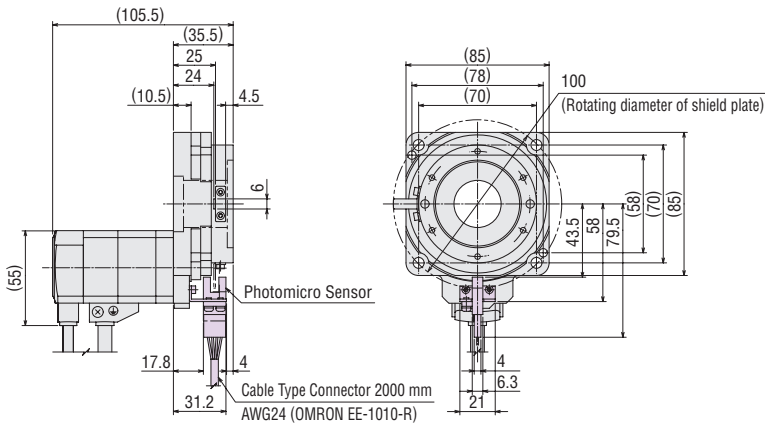
Dimensions of Sensor Installation (Unit: mm)

These dimensions apply when a home-sensor set is installed on a single shaft.
For the dimensions of other frame sizes, please refer to our website.

DGM60



DGM85R



2D CAD

Applicable Products	2D CAD
DGM60-AZAK	D7690
DGM85R-AZA <input type="checkbox"/>	D4503
DGM85R-AZM <input type="checkbox"/>	D6456
DGM130R-AZA <input type="checkbox"/>	D4504
DGM130R-AZA <input type="checkbox"/> R	D7653
DGM130R-AZA <input type="checkbox"/> L	D7652
DGM130R-AZM <input type="checkbox"/>	D6457
DGM130R-AZM <input type="checkbox"/> R	D7655
DGM130R-AZM <input type="checkbox"/> L	D7654
DGM200R-AZAC	D6458
DGM200R-AZACR	D7657
DGM200R-AZACL	D7656
DGM200R-AZMC	D6459
DGM200R-AZMCR	D7659
DGM200R-AZMCL	D7658

● Either **C** (AC power input) or **K** (DC power input) indicating the motor specification is entered where the box is located within the product name.

Mounting Pedestals

The mounting pedestal enables the **DGII** Series to be used as a direct drive motor. Applications that require height and installation from the side can also be performed, expanding the range of available operations.

Product Line

Material: Aluminum Alloy

Surface treatment: Alumite (**DGM60**, **DGM85**, **DGM130**),
Paint (**MDG200**)

2D & 3D CAD

Model Name	Applicable Products	
	Type	Product Name
MDG60B	Single Shaft	DGM60-AZA
MDG85A2	Single Shaft	DGM85R-AZA
MDG85B2	Single Shaft	DGM85R-AZA
	Electromagnetic Brake	DGM85R-AZM
MDG130A2	Single Shaft	DGM130R-AZA
MDG130B2	Single Shaft	DGM130R-AZA
	Electromagnetic Brake	DGM130R-AZM
MDG200A	Single Shaft	DGM200R-AZA
MDG200B	Single Shaft	DGM200R-AZA
	Electromagnetic Brake	DGM200R-AZM

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



<Application Example>

Note

The mounting pedestals are cannot be used to the products with cable drawing direction is right and left sides.

They can be used with permissible values of **DGII** Series. Please use them facing upwards on the horizontal plane.

The following items are included with each product.

Hexagonal Socket Head Screws for Actuator Assembly, Positioning Pins, Bands (for Cable Clamping), Band Bases, Set Screws for Band Bases

Network Converters

Network converters convert host communication protocol to Oriental Motor's original RS-485 communication protocol. You can use a network converter to control Oriental Motor's RS-485-compatible products within the host communication environment.

Product Line

Network Type	Product Name
CC-Link Ver.1.1 Compatible	NETC01-CC
CC-Link Ver.2 Compatible	NETC02-CC
MECHATROLINK- II Compatible	NETC01-M2
MECHATROLINK- III Compatible	NETC01-M3
Compatible with EtherCAT	NETC01-ECT



NETC01-CC



NETC02-CC



NETC01-M2



NETC01-M3



NETC01-ECT



Safety Precautions

- To ensure correct operation, carefully read the Operating Manual before using it.
- The products listed in this catalogue are for industrial use and for built-in component. Do not use for any other applications.

- The factories which manufacture the products listed in this catalogue have obtained Quality Management Systems ISO9001 and Environment Management Systems ISO14001.
- The content listed in this catalogue such as performance and specifications of the products are subject to change without notice for improvements.
- The price of all products listed in this catalogue does not include the consumption tax etc.
- For details of the products, please contact the nearest dealer, sales office or the following "Order Support Center" or "Customer Support Center".
- **Orientalmotor** is registered trademark or trademark of Oriental Motor in Japan and other countries.

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