

STEPPING MOTORS

AZ Series

Battery-Free Absolute Sensor Equipped

New Generation & High Precision Positioning Motors

α STEP



Newly developed ABZO sensor comes with advanced technology is now at affordable price

Newly Developed **ABZO** Sensor

Oriental Motor has developed a compact, low-cost, and mechanical driven type equipped with absolute sensor that does not require a battery (Patented).

The products offered at affordable prices which can achieve productivity improvement and cost reduction.



06

AZ Series

● Mechanical driven sensor

On an analog clock, the current time is shown by the positions of the second hand, minute hand, and hour hand. The ABZO sensor is a mechanical driven sensor equipped with multiple gears that correspond to the hands of a clock. The sensor recognizes the angle of each gear to detect positional information. Therefore, no batteries are required.

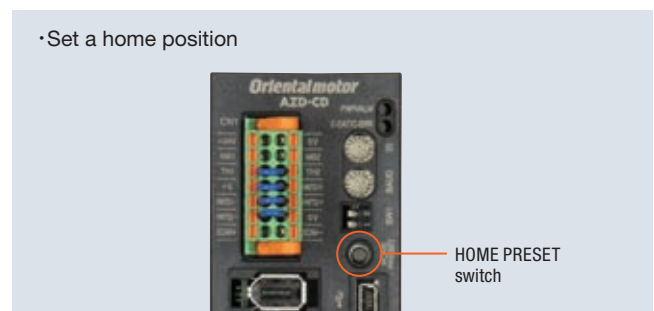
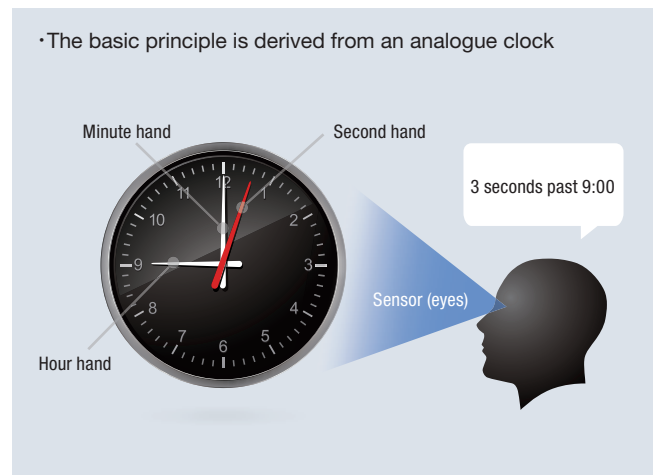
● Multi-rotation absolute sensor

From the reference of home position, the absolute position for ± 900 rotations (for 1800 rotations)* of the motor shaft can be detected.

* A frame size of 20 mm or 28 mm (30 mm) is for ± 450 rotations (900 rotations).

● How to set home position

A home position can easily be set by pressing the switch on the front of the driver, and the ABZO sensor saves the home position. You can also use the support software (**MEXE02**) or external input signals to set a home position.



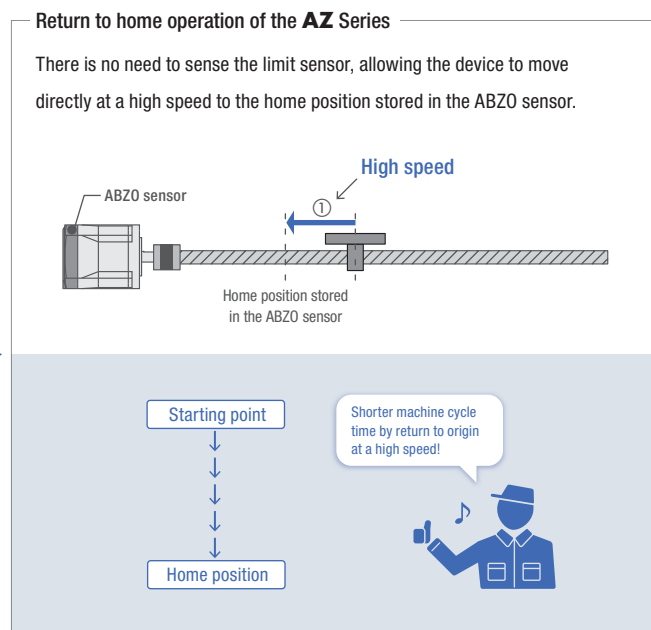
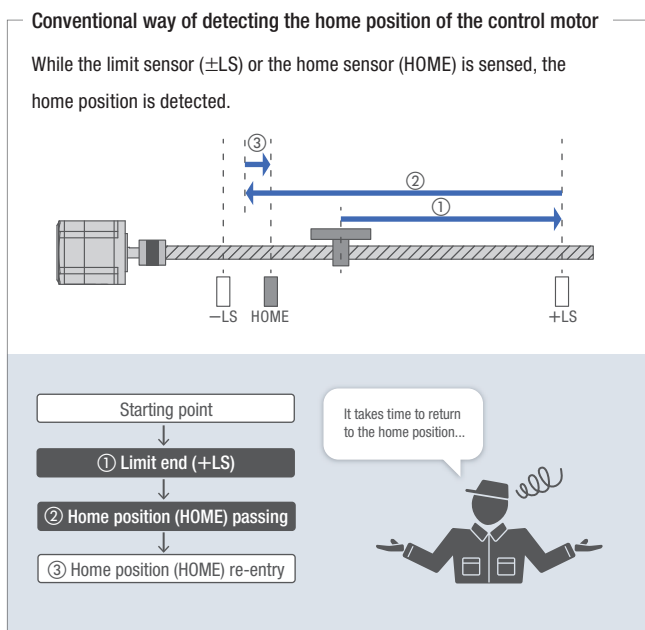
The absolute system is achieved with battery-free.

No External Sensor Required

This series uses the absolute system that does not require external sensors such as a home position sensor and limit sensor.

● High-speed return to home + Improvement of accuracy in the return to home position

Since return-to-home operation is enabled without an external sensor, the operation can be performed at a high speed regardless of sensor sensitivity specifications. This reduces the machine cycle time. Returning to the home position is made possible regardless of variations in home sensors, improving the accuracy of the home position.



● Cost reduction

The sensor and wiring cost can be reduced, lowering the total system cost.

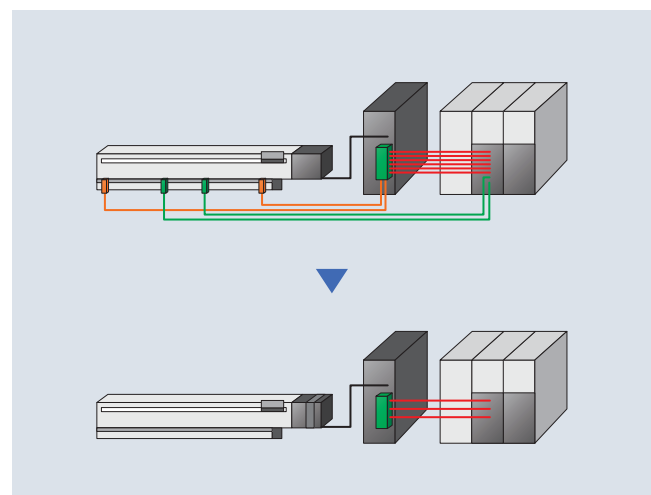
● Wire saving

Wire saving allows the equipment to design easily.

● The equipment is not affected by malfunction of an external sensor.

You do not have to worry about malfunction, failure, or disconnection of an external sensor (for example, in an environment where metal pieces scatter or oil mist occurs).

● If there is no limit sensor attached, you can use the software limit of the driver to prevent the threshold from being exceeded.



The absolute system is achieved with battery-free.

Battery-free

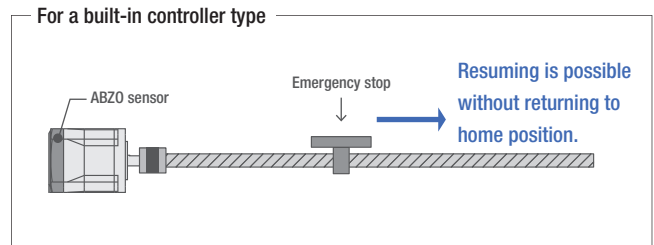
A mechanical driven sensor is used and requires no battery.
The positional information is mechanically managed by the ABZO sensor.



● Keep positional information

The positional information is kept even if power is shut down during positioning operation or the cable between the motor and the driver is removed. When a built-in controller type recovers from an emergency stop of the production line or from a power failure, it can resume positioning operation without returning to the home position.

- Since positional information is kept in the ABZO sensor, the home position must be set again if the motor is replaced.



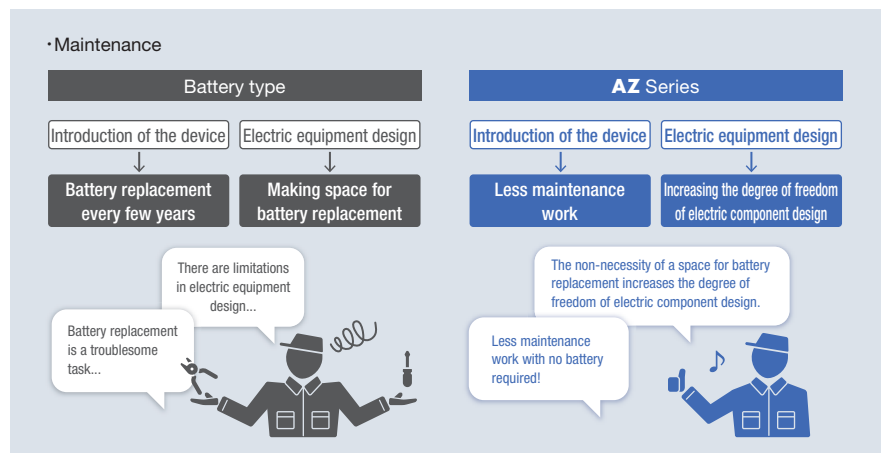
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● Less maintenance work

Battery replacement is not required, reducing maintenance work and costs.

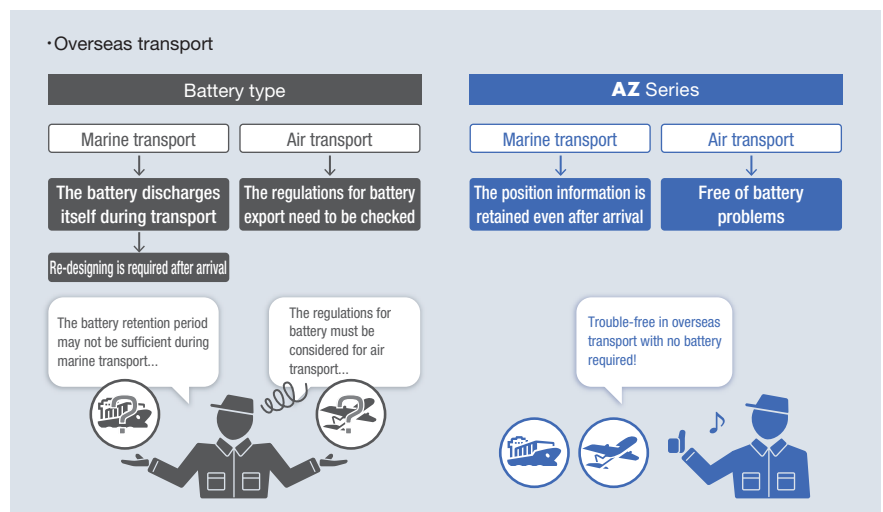
● Desired installation of the driver

Not require to ensure space for battery replacement, as the driver can be installed in any location, and a more flexible layout design is available for the control panel and other devices.



● Trouble-free for overseas transportation

Since batteries discharge by themselves, care must be taken when transported over a long period of time for international or long-distance shipment. The ABZO sensor does not require a battery, and there is no time limitation for positional information retention. In addition, there is no need to consider the regulations applied to battery export.



AZ Series

Energy saving achieved by excellent characteristics, high reliability, and energy saving derived from α STEP



Excellent Characteristics and High Reliability

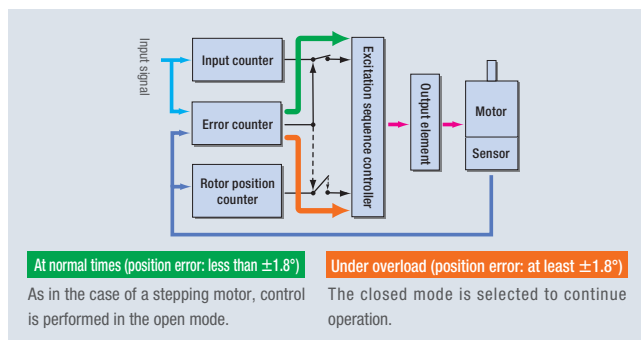
This unit employs the unique control method, achieve high reliability with advantages for both the open loop control and closed loop control.

- Operation continues even at sudden load change or sudden acceleration

At normal times, this compact unit synchronizes with pulse commands and operates with open loop control. When overloaded, the current control immediately changed to the closed loop control and corrects the position.

- In an abnormal condition, an alarm signal is output

If overloaded continuously applied, the unit outputs an alarm signal, and when positioning is completed, the unit outputs a signal. These features provide high reliability.



- High response

Utilizing the high response of the stepping motor, the unit can move the device in a short distance for a short time. The unit can move the device by following the command and without delay.

- The stop position is retained without hunting

During positioning, stoppage is done by the retaining force of the motor, without hunting. Therefore, the unit is most suitable for the applications which low-rigidity positioning mechanism is used and vibration should not occur during stoppage.

- No tuning is required

Under normal conditions, this unit operates by open loop control. This enables positioning without gain adjustment even when there is a change in the load of the belt mechanism, chain drive, or other mechanical drives.

- Smooth movement even at a low speed

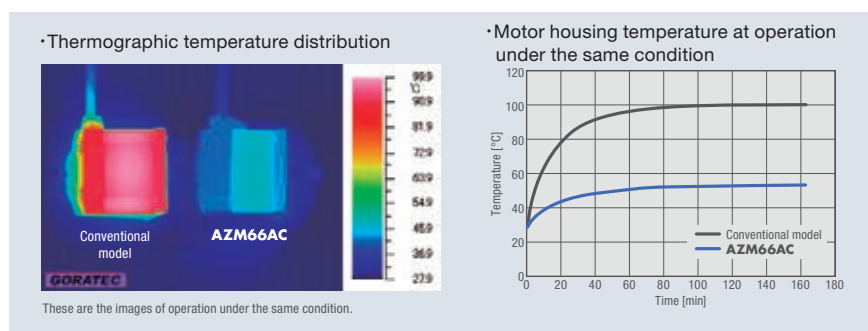
The micro-step drive and smooth driving functions* are equipped with standard functions suppress vibration at a low speed and smooth movement.

* These functions do not require any change of the pulse input setting but allow the micro-step drive which travel distance and speed are of the same as those of full-step drive.

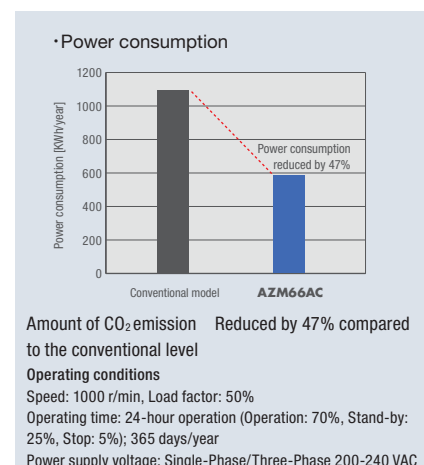
Energy Saving and Low Heat Emission

The adoption of the high efficiency motor leads to the reduction of heat emission and power consumption.

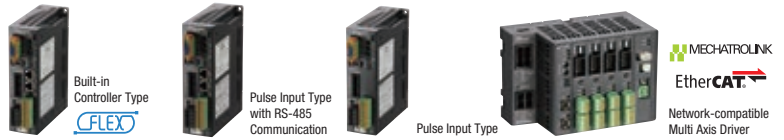
- Heat emission drastically reduced



- Power consumption Reduced by 47% compared to the conventional level



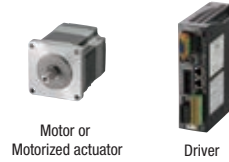
Drivers selectable according to the host system



Built-in Controller Type **FLEX** AC DC

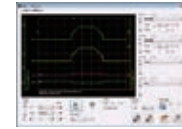
Sets of data operation in the driver, and selects and executes the operation data from the upper-level system. Connection with and control of the upper-level system are performed by I/O, Modbus (RTU), RS-485 communication, or FA network. By using a network converter (sold separately), the CC-Link communication, MECHATROLINK communication, and EtherCAT communication can be supported.

Basic setting (Factory setting)



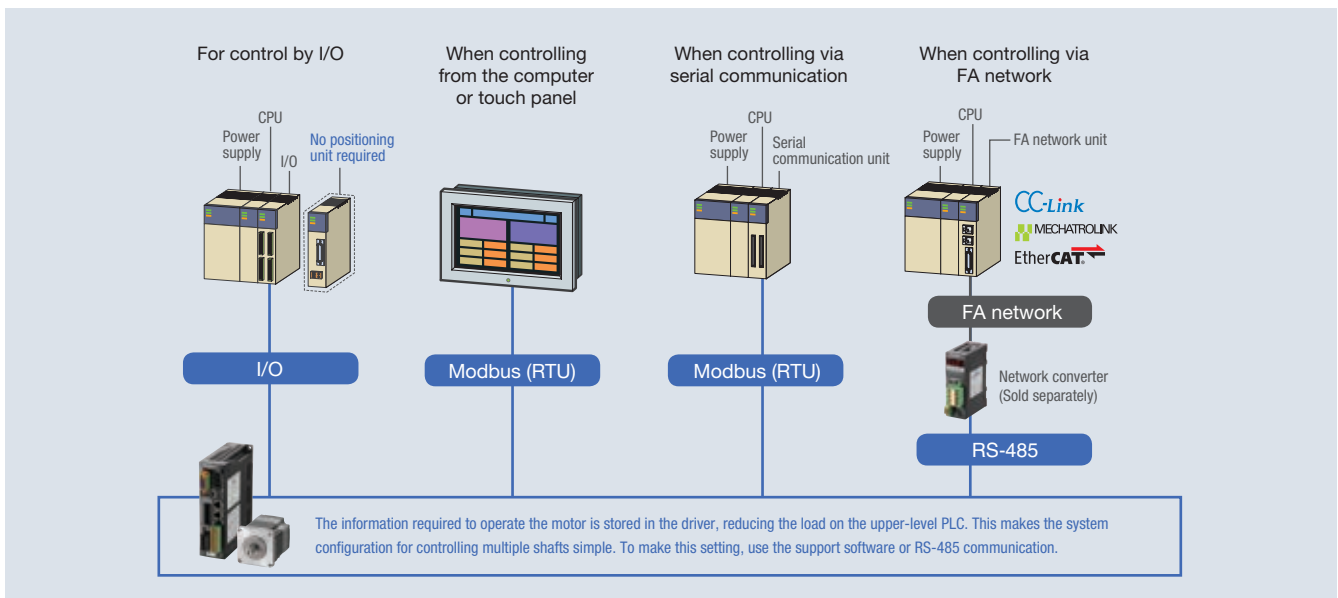
Operation data setting Parameter change

Support software (**MEXE02**)



● Setting via RS-485 communication is also available.

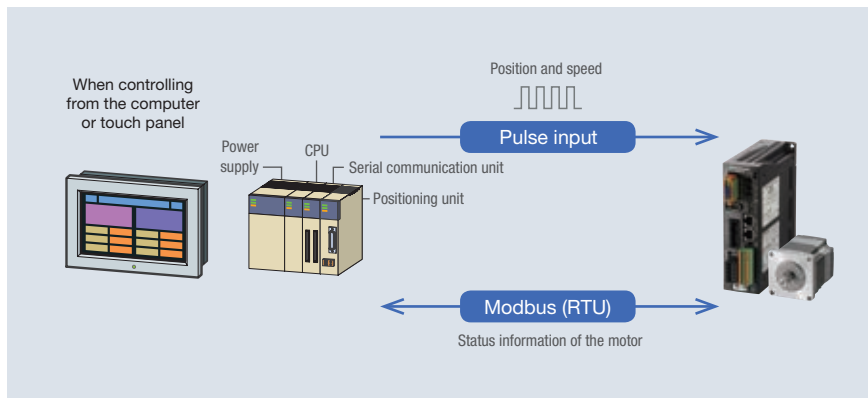
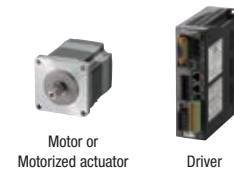
FLEX FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.



NEW Pulse Input Type with RS-485 Communication AC DC

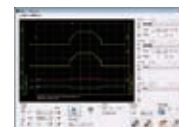
It executes operation by inputting pulses to the driver. The motor is controlled from the positioning unit (pulse oscillator) provided by the customer. The use of RS-485 communication allows the monitoring of status information (position, speed, torque, alarms, temperature, etc.) of the motor.

Basic setting (Factory setting)



I/O allocation change Parameter change

Support software (**MEXE02**)

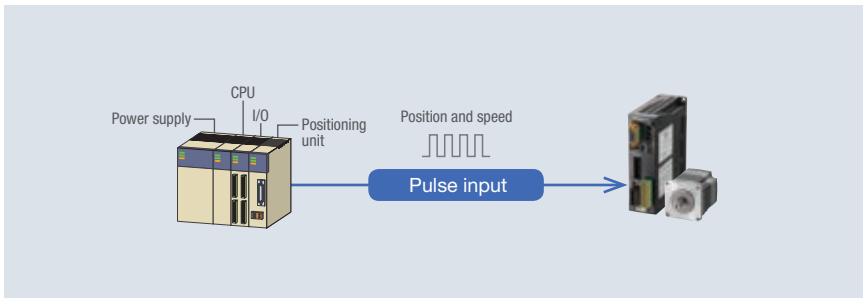
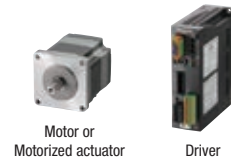


The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.

Pulse Input Type AC DC

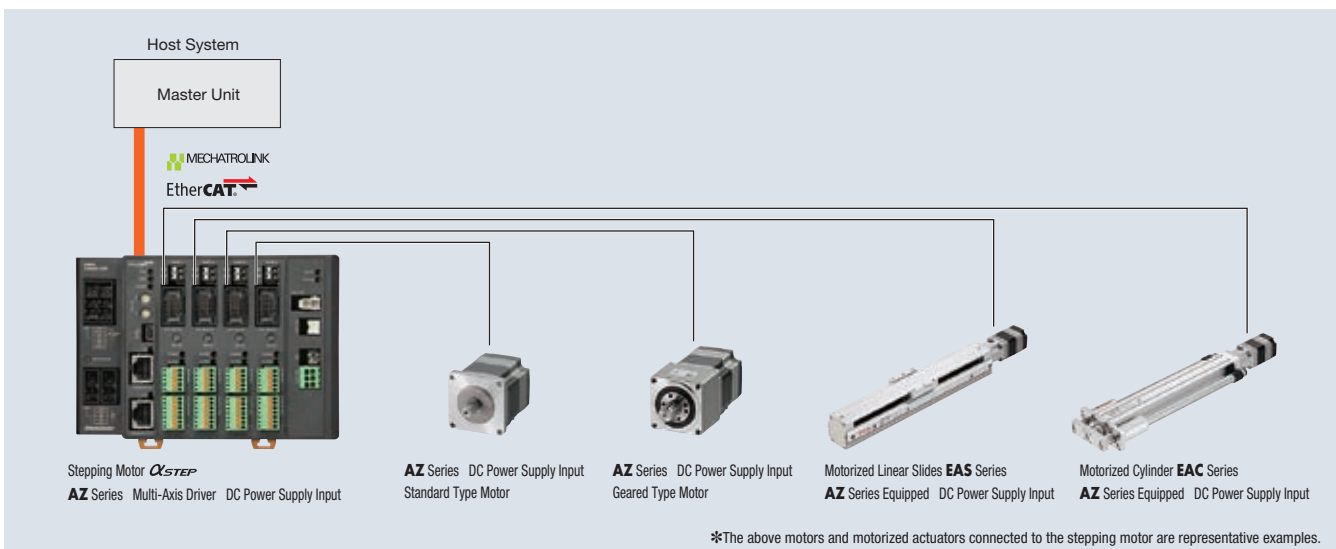
It executes operation by inputting pulses to the driver. The motor is controlled by the positioning unit (pulse oscillator) provided by the customer. The use of the support software (**MEXE02**) allows the checking of alarm history and the monitoring of various conditions.

Basic setting (Factory setting)



Network-compatible Multi-Axis Drivers DC

Multi-axis driver that supports MECHATROLINK-III and EtherCAT Drive Profile. The driver can be connected to a DC power supply motor of the **AZ** Series and to a motorized actuator equipped with motor. We provide the drivers to which 2, 3, or 4 axial connectors can be connected.



- **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).

Easy settings and useful functions that are unique to the **AZ Series**.



Support software **MEXE02**

The support software can be downloaded from the Oriental Motor website. The media is also available (for free).

Easy Settings and Easy Operation

The support software (**MEXE02**) allows you to perform basic settings such as the editing of operation data and the setting of parameters. Furthermore, since the built-in controller type enables sequence control, it can configure a simple system without using a host sequence.

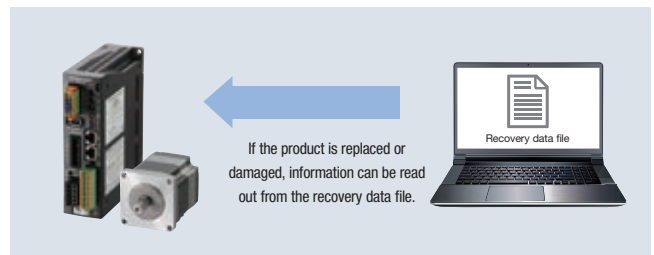
● Unit setting wizard

This function allows you to display/enter the travel distance, speed, or other details in your desired unit. Since data can be input or displayed according to the mechanism used, the function saves labor for unit conversion and allows you to easily input operation data.



● Creating a recovery data file

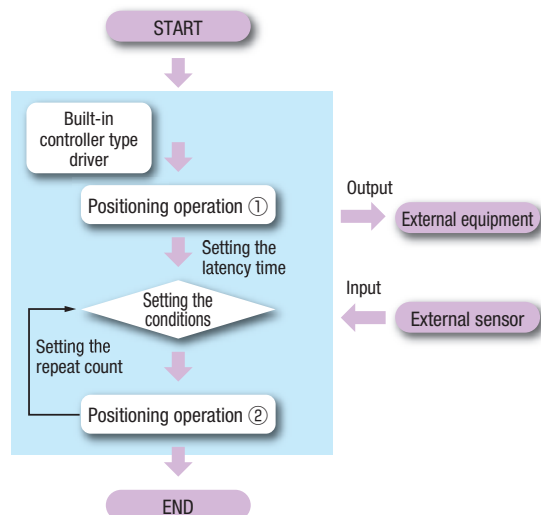
At first, create a file in which factory settings of the product will be saved in preparation for product replacement due to maintenance or for damage to the product. Be sure to create a recovery data file if you are using a motorized actuator.



● The simplified sequence function simplifies programs

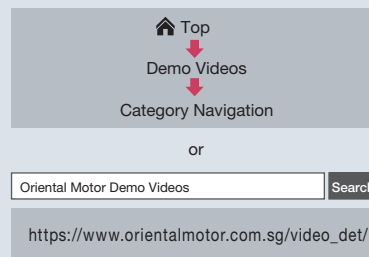
By importing output signals for controlling other equipment or external input signals such as those from sensors, the **AZ Series** can simplify sequence control programs.

- No. of positioning operation data items that can be set (up to 256 points)
- No. of general-purpose I/O points (10 points for input and 6 points for output)
- No. of communication I/O points (16 points for input and 16 points for output)



Tip for the Usage Navigation

Our website contains video which shows useful functions and usage of the **αSTEP AZ Series**. We hope you will use the Usage Navigation.

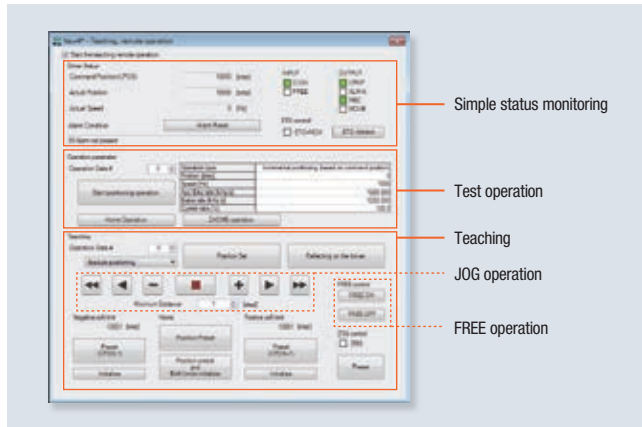


Test Functions

The test functions allows the motor to operate by itself and enables you to check the connection with the host system. The use of these functions during equipment startup can save time.

● Teaching/Remote operation During startup

From the support software, you can easily set an original point or drive the motor. Before performing connection with the host system, you can perform teaching, test operation, etc. This contributes to the reduction of the equipment startup time.



● I/O test During startup During operation

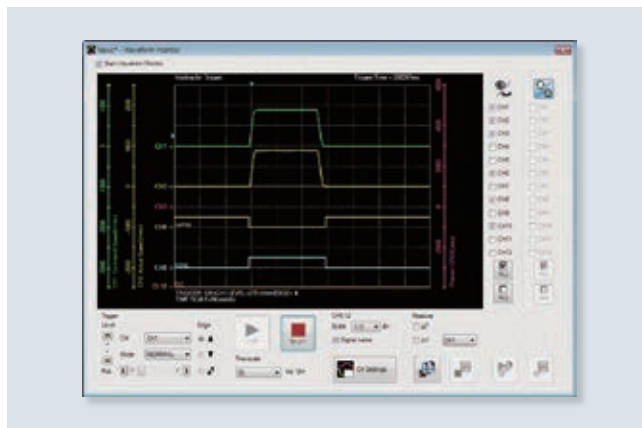
You can monitor input signals and forcibly output output signals. This is a useful function for checking connection with the host system or the operation of a network I/O.



Various Monitor Functions

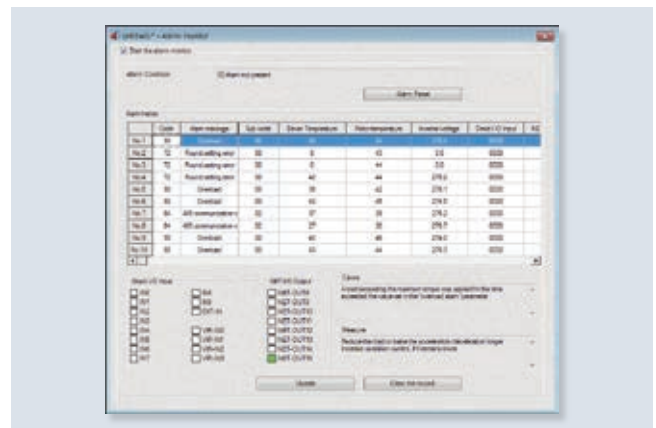
● Waveform monitor During startup

Similar to using an oscilloscope, the motor drive condition and output signal status can be checked. Use this function when starting up the device or making adjustments.



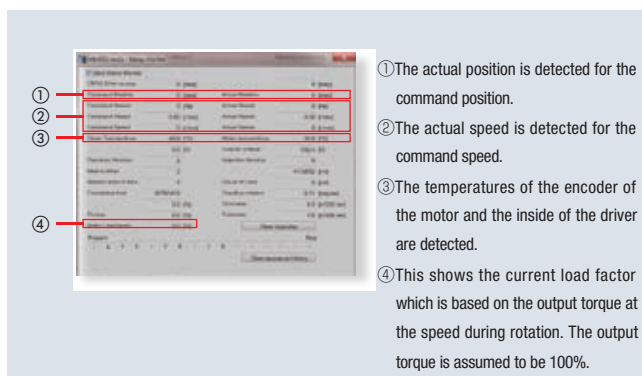
● Alarm monitor During startup

If an error occurs, you can check the error details, operation conditions at the time of error occurrence, and measures to be taken.



● Status monitoring During startup

In addition to the speed, motor, driver temperature, and load factor, you can monitor other conditions including rotation amount accumulated from the start of use. Signals can be output for each item as needed, achieving efficient maintenance.



- ① The actual position is detected for the command position.
- ② The actual speed is detected for the command speed.
- ③ The temperatures of the encoder of the motor and the inside of the driver are detected.
- ④ This shows the current load factor which is based on the output torque at the speed during rotation. The output torque is assumed to be 100%.

● Compatible with multi monitoring

This function allows you to simultaneously open and use multiple setting screens such as those for data setting, test operation, and monitoring. This function facilitates equipment startup, adjustment, etc.




AZ Series Lineup

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

DC : 24/48 VDC input

Motors

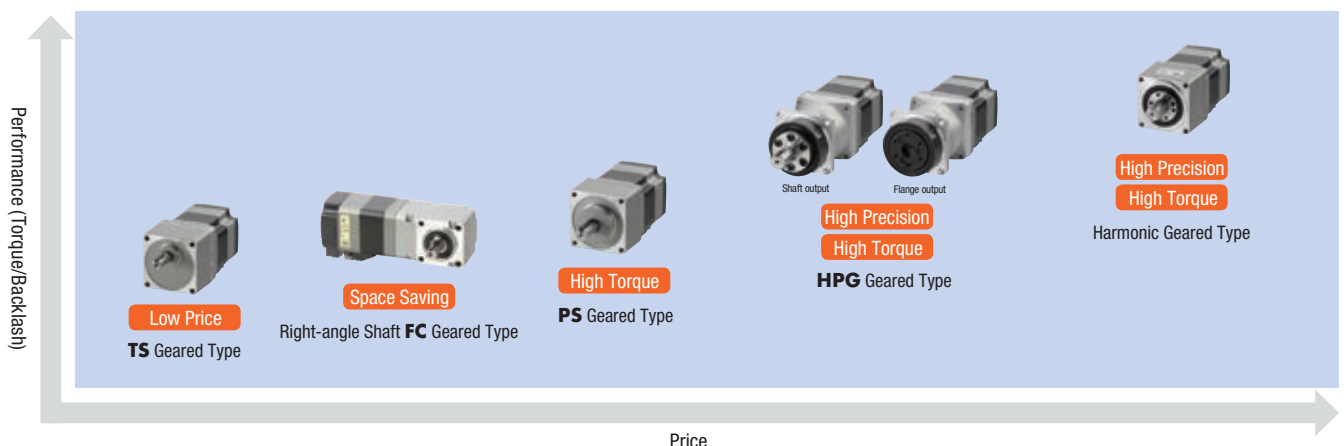
Type	Electromagnetic Brake	Frame Size				
		20 mm	28 mm*6	42 mm*2	60 mm	85 mm 90 mm*4
Standard  Motor shaft shape Single sided milling/straight/with key	Not equipped	DC*1	DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC*3	AC DC*3	AC*5
TS Geared (Spur gear mechanism) Selection of the cable drawing direction Downward/upward/right/left Low gear ratio, high-speed operation enabled Gear ratio: 3.6, 7.2, 10, 20, 30	Not equipped	—	—	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
Right-angle Shaft FC Geared (Face gear mechanism) Right-angle shaft gear for positioning Gear ratio: 7.2, 10, 20, 30	Not equipped	—	—	AC DC	AC DC	—
	Equipped	—	—	AC DC	AC DC	—
PS Geared (Planetary gear mechanism) Gear ratio useful for angle indexing Gear ratio: 5, 7.2, 10, 25, 36, 50	Not equipped	—	NEW DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
HPG Geared (HarmonicPlanetary®) High-precision positioning Gear ratio: 5, 9, 15	Not equipped	—	—	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC
Harmonic Geared (HarmonicDrive®) High-precision positioning Gear ratio: 50, 100	Not equipped	—	NEW DC*1	AC DC	AC DC	AC
	Equipped	—	—	AC DC	AC DC	AC

*1 24 VDC only *2 40 mm for the HPG geared type *3 AZM46 only *4 Geared type only *5 AZM98 only *6 30 mm for the harmonic geared type

Note ● The values shown above must be used as reference. These values vary depending on the motor frame size and gear ratio.
 ● HarmonicPlanetary, HarmonicDrive and HDS are registered trademarks or trademarks of Harmonic Drive Systems Inc.

We offer motors pre-assembled with gears, as variations of stepping motors.

Select an appropriate type from the various geared motors according to the torque, accuracy (backlash) and price.




Permissible Torque/ Maximum Instantaneous Torque [N·m]	Backlash [arcmin]	Basic Resolution [°/Pulse]	Output Shaft Rotation Speed [r/min]
Maximum Holding Torque 4	—	0.36	6000
Permissible Torque / Maximum Instantaneous Torque 25 / 45	10	0.012	833
Permissible Torque 10.5	10	0.012	416
Permissible Torque / Maximum Instantaneous Torque 37 / 60	7	0.0072	600
Permissible Torque / Maximum Instantaneous Torque 24 / 33	3	0.024	900
Permissible Torque / Maximum Instantaneous Torque 52 / 107	0	0.0036	70

● **FLEX** FLEX is a general term of the products that support I/O control, Modbus (RTU) control, and FA network control via a network converter.
 ● **MECHATROLINK** is a registered trademark of the MECHATROLINK Members Association. ● **EtherCAT** is a registered trademark licensed by Beckhoff Automation in Germany.

Drivers


Type

Built-in Controller **FLEX**




AC DC

Pulse Input with RS-485 Communication **NEW**




AC DC

Pulse Input



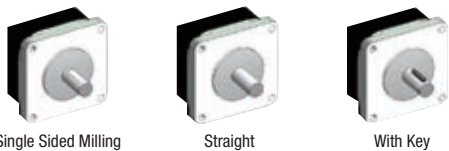
AC DC

Network-compatible
Multi Axis Driver



DC
MECHATROLINK
EtherCAT

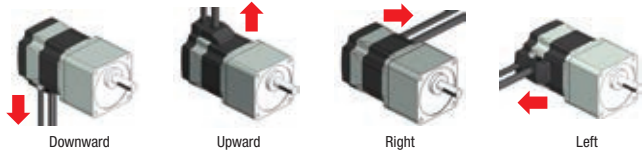
You can select the shaft shape and cable drawing direction depending on the application.



● Standard Type

Frame Size	Shaft Shape	Single Sided Milling	NEW Straight	NEW With Key
	20 mm	●	—	—
28 mm	●	—	—	
42 mm	●	●	●*	
60 mm	●	●	●	
85 mm	●	●	●	

*AZM48 only



You can select a cable drawing direction from the output shaft from among the 4 directions.

● **TS** Geared Type

Frame Size	Cable Drawing Direction			
	Downward	Upward NEW	Right NEW	Left NEW
42 mm	●	●	●	●
60 mm	●	●	●	●
90 mm	●	●	●	●

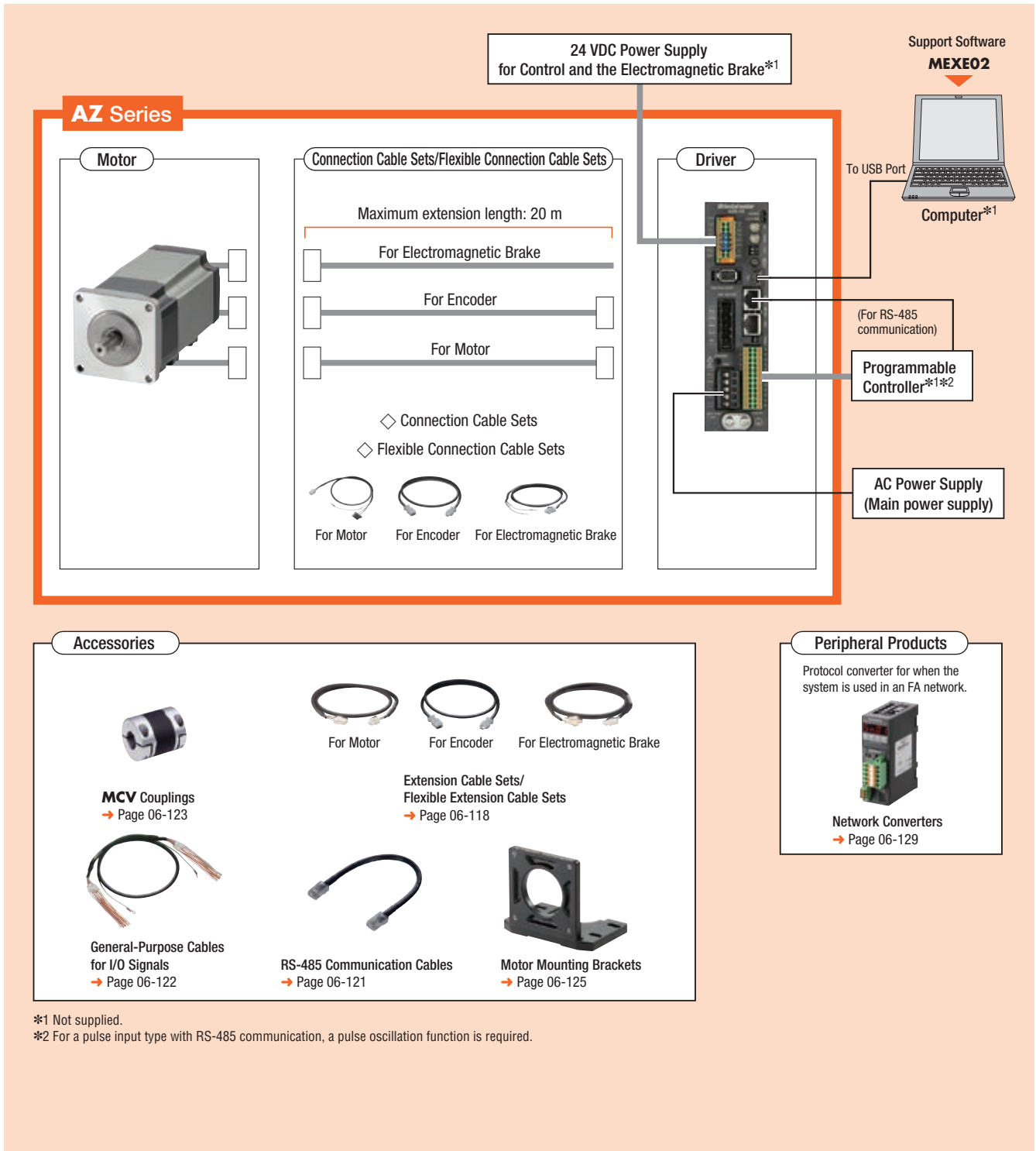
[Click Here](#)

For more information, please visit **ORIENTAL MOTOR** Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

System Configuration

- When a standard type motor with electromagnetic brake is combined with a built-in controller type driver or a pulse input type driver with RS-485 communication

The figure below shows a sample configuration which includes a built-in controller type driver and which uses I/O control or RS-485 communication. The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



System Configuration Example

AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MC	AZD-CD	CC030VZFB	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD650	SGD83	SGD14	SGD100	SGD25

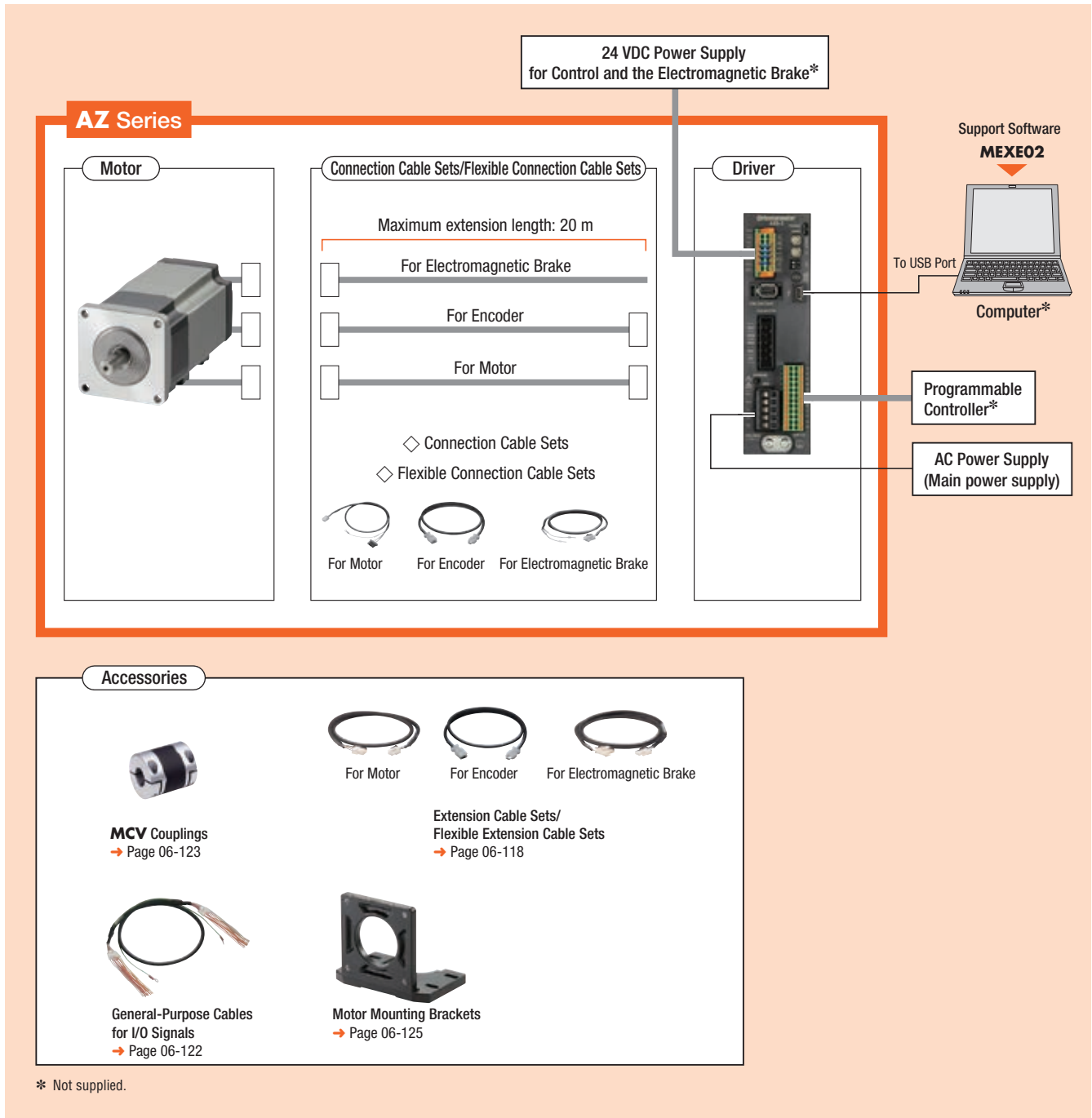
The system configuration shown above is an example. Other combinations are available.

Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable.

● When a standard type motor with electromagnetic brake is combined with a pulse input type driver

The figure below shows a sample configuration of a single axis system which uses a programmable controller (equipped with a pulse oscillator). The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



● System Configuration Example

AZ Series			+	Sold Separately		
Motor	Driver	Connection Cable Sets		Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MC	AZD-C	CC030VZFB		PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD588	SGD83		SGD14	SGD100	SGD25

● 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 directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Motors

◇ Standard Type

AZM 6 6 A 0 C

① ② ③ ④ ⑤ ⑥

◇ PS, HPG, Harmonic Geared Type

AZM 6 6 A C - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

◇ TS Geared Type

AZM 6 6 A C - TS 7.2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

◇ FC Geared Type

AZM 6 6 A C - FC 7.2 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

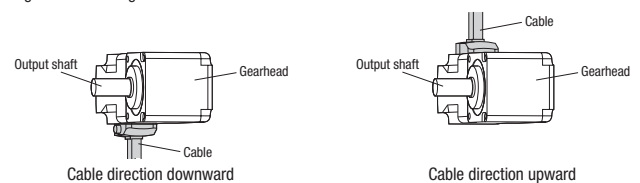
①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm (40 mm for the HPG Geared Type) 6: 60 mm 9: 85 mm (90 mm for the Geared Type)
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Additional Function*	0: Straight 1: With Key
⑥	Motor Specifications	C: AC Power Supply Input Specifications
⑦	Gear Type	PS: PS Geared Type HP: HPG Geared Type HS: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Output Shaft Type	HPG Geared Type Blank: Shaft Output F: Flange Output

*When the name of a standard type does not contain a number representing an additional function, it is a single-sided milled type.

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm 9: 90 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	C: AC Power Supply Input Specifications
⑥	Gear Type	TS: TS Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction	U: Upward L: Left R: Right

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	C: AC Power Supply Input Specifications
⑥	Gear Type	FC: FC Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction*	D: Downward U: Upward
⑨	Identification	A: Solid Shaft

*The cable drawing direction is based on the assumption that the output shaft is at left and the gearhead is at right.



Driver

AZD - C D

① ② ③

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

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

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	Applied Model	Z: For AZ Series
⑤	Cable Type	F: Connection Cable Set R: Flexible Connection Cable Set
⑥	Description	Blank: For the product with no Electromagnetic Brakes B: For the product with Electromagnetic Brake

Product Line

The motor, driver, and connection cables need to purchase separately.

Motors

◇ Standard Type

Frame Size	Product Name	List Price
42 mm	AZM46AC	SGD340
	AZM46AOC	SGD340
	AZM48AC <small>NEW</small>	SGD353
	AZM48AOC <small>NEW</small>	SGD353
	AZM48A1C <small>NEW</small>	SGD365
60 mm	AZM66AC	SGD400
	AZM66AOC	SGD400
	AZM66A1C	SGD413
	AZM69AC	SGD406
	AZM69AOC	SGD406
85 mm	AZM69A1C	SGD419
	AZM98AC	SGD431
	AZM98AOC	SGD431
	AZM98A1C	SGD444
	AZM911AC	SGD456
	AZM911AOC	SGD456
	AZM911A1C	SGD469



◇ Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC	SGD515
	AZM46MOC	SGD515
60 mm	AZM66MC	SGD625
	AZM66MOC	SGD625
	AZM66M1C	SGD638
	AZM69MC	SGD631
85 mm	AZM69MOC	SGD631
	AZM69M1C	SGD644
	AZM98MC	SGD681
	AZM98MOC	SGD681
	AZM98M1C	SGD694



◇ TS Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AC-TS3.6	SGD488
	AZM46AC-TS3.6R	SGD488
	AZM46AC-TS3.6U	SGD488
	AZM46AC-TS3.6L	SGD488
	AZM46AC-TS7.2	SGD488
	AZM46AC-TS7.2R	SGD488
	AZM46AC-TS7.2U	SGD488
	AZM46AC-TS7.2L	SGD488
	AZM46AC-TS10	SGD505
	AZM46AC-TS10R	SGD505
	AZM46AC-TS10U	SGD505
	AZM46AC-TS10L	SGD505
	AZM46AC-TS20	SGD505
	AZM46AC-TS20R	SGD505
	AZM46AC-TS20U	SGD505
	AZM46AC-TS20L	SGD505
	AZM46AC-TS30	SGD505
	AZM46AC-TS30R	SGD505
	AZM46AC-TS30U	SGD505
	AZM46AC-TS30L	SGD505
60 mm	AZM66AC-TS3.6	SGD574
	AZM66AC-TS3.6R	SGD574
	AZM66AC-TS3.6U	SGD574
	AZM66AC-TS3.6L	SGD574
	AZM66AC-TS7.2	SGD574
	AZM66AC-TS7.2R	SGD574
	AZM66AC-TS7.2U	SGD574
	AZM66AC-TS7.2L	SGD574
	AZM66AC-TS10	SGD591
	AZM66AC-TS10R	SGD591
	AZM66AC-TS10U	SGD591
	AZM66AC-TS10L	SGD591
	AZM66AC-TS20	SGD591
	AZM66AC-TS20R	SGD591
	AZM66AC-TS20U	SGD591
	AZM66AC-TS20L	SGD591
	AZM66AC-TS30	SGD591
	AZM66AC-TS30R	SGD591
	AZM66AC-TS30U	SGD591
	AZM66AC-TS30L	SGD591



◇ TS Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC-TS3.6	SGD663
	AZM46MC-TS3.6R	SGD663
	AZM46MC-TS3.6U	SGD663
	AZM46MC-TS3.6L	SGD663
	AZM46MC-TS7.2	SGD663
	AZM46MC-TS7.2R	SGD663
	AZM46MC-TS7.2U	SGD663
	AZM46MC-TS7.2L	SGD663
	AZM46MC-TS10	SGD680
	AZM46MC-TS10R	SGD680
	AZM46MC-TS10U	SGD680
	AZM46MC-TS10L	SGD680
	AZM46MC-TS20	SGD680
	AZM46MC-TS20R	SGD680
	AZM46MC-TS20U	SGD680
	AZM46MC-TS20L	SGD680
	AZM46MC-TS30	SGD680
	AZM46MC-TS30R	SGD680
	AZM46MC-TS30U	SGD680
	AZM46MC-TS30L	SGD680
60 mm	AZM66MC-TS3.6	SGD799
	AZM66MC-TS3.6R	SGD799
	AZM66MC-TS3.6U	SGD799
	AZM66MC-TS3.6L	SGD799
	AZM66MC-TS7.2	SGD799
	AZM66MC-TS7.2R	SGD799
	AZM66MC-TS7.2U	SGD799
	AZM66MC-TS7.2L	SGD799
	AZM66MC-TS10	SGD816
	AZM66MC-TS10R	SGD816
	AZM66MC-TS10U	SGD816
	AZM66MC-TS10L	SGD816
	AZM66MC-TS20	SGD816
	AZM66MC-TS20R	SGD816
	AZM66MC-TS20U	SGD816
	AZM66MC-TS20L	SGD816
	AZM66MC-TS30	SGD816
	AZM66MC-TS30R	SGD816
	AZM66MC-TS30U	SGD816
	AZM66MC-TS30L	SGD816





◇ **TS Geared Type**

Frame Size	Product Name	List Price
90 mm	AZM98AC-TS3.6	SGD634
	AZM98AC-TS3.6R	SGD634
	AZM98AC-TS3.6U	SGD634
	AZM98AC-TS3.6L	SGD634
	AZM98AC-TS7.2	SGD634
	AZM98AC-TS7.2R	SGD634
	AZM98AC-TS7.2U	SGD634
	AZM98AC-TS7.2L	SGD634
	AZM98AC-TS10	SGD651
	AZM98AC-TS10R	SGD651
	AZM98AC-TS10U	SGD651
	AZM98AC-TS10L	SGD651
	AZM98AC-TS20	SGD651
	AZM98AC-TS20R	SGD651
	AZM98AC-TS20U	SGD651
	AZM98AC-TS20L	SGD651
	AZM98AC-TS30	SGD651
	AZM98AC-TS30R	SGD651
	AZM98AC-TS30U	SGD651
	AZM98AC-TS30L	SGD651

◇ **TS Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
90 mm	AZM98MC-TS3.6	SGD884
	AZM98MC-TS3.6R	SGD884
	AZM98MC-TS3.6U	SGD884
	AZM98MC-TS3.6L	SGD884
	AZM98MC-TS7.2	SGD884
	AZM98MC-TS7.2R	SGD884
	AZM98MC-TS7.2U	SGD884
	AZM98MC-TS7.2L	SGD884
	AZM98MC-TS10	SGD901
	AZM98MC-TS10R	SGD901
	AZM98MC-TS10U	SGD901
	AZM98MC-TS10L	SGD901
	AZM98MC-TS20	SGD901
	AZM98MC-TS20R	SGD901
	AZM98MC-TS20U	SGD901
	AZM98MC-TS20L	SGD901
	AZM98MC-TS30	SGD901
	AZM98MC-TS30R	SGD901
	AZM98MC-TS30U	SGD901
	AZM98MC-TS30L	SGD901



◇ **FC Geared Type**

Frame Size	Product Name	List Price
42 mm	AZM46AC-FC7.2UA	SGD646
	AZM46AC-FC7.2DA	SGD646
	AZM46AC-FC10UA	SGD646
	AZM46AC-FC10DA	SGD646
	AZM46AC-FC20UA	SGD646
	AZM46AC-FC20DA	SGD646
	AZM46AC-FC30UA	SGD646
	AZM46AC-FC30DA	SGD646
60 mm	AZM66AC-FC7.2UA	SGD769
	AZM66AC-FC7.2DA	SGD769
	AZM66AC-FC10UA	SGD769
	AZM66AC-FC10DA	SGD769
	AZM66AC-FC20UA	SGD769
	AZM66AC-FC20DA	SGD769
	AZM66AC-FC30UA	SGD769
	AZM66AC-FC30DA	SGD769

◇ **FC Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MC-FC7.2UA	SGD821
	AZM46MC-FC7.2DA	SGD821
	AZM46MC-FC10UA	SGD821
	AZM46MC-FC10DA	SGD821
	AZM46MC-FC20UA	SGD821
	AZM46MC-FC20DA	SGD821
	AZM46MC-FC30UA	SGD821
	AZM46MC-FC30DA	SGD821
60 mm	AZM66MC-FC7.2UA	SGD994
	AZM66MC-FC7.2DA	SGD994
	AZM66MC-FC10UA	SGD994
	AZM66MC-FC10DA	SGD994
	AZM66MC-FC20UA	SGD994
	AZM66MC-FC20DA	SGD994
	AZM66MC-FC30UA	SGD994
	AZM66MC-FC30DA	SGD994



◇ **PS Geared Type**

Frame Size	Product Name	List Price
42 mm	AZM46AC-PS5	SGD628
	AZM46AC-PS7.2	SGD628
	AZM46AC-PS10	SGD628
	AZM46AC-PS25	SGD690
	AZM46AC-PS36	SGD690
	AZM46AC-PS50	SGD690
60 mm	AZM66AC-PS5	SGD750
	AZM66AC-PS7.2	SGD750
	AZM66AC-PS10	SGD750
	AZM66AC-PS25	SGD838
	AZM66AC-PS36	SGD838
	AZM66AC-PS50	SGD838
90 mm	AZM98AC-PS5	SGD869
	AZM98AC-PS7.2	SGD869
	AZM98AC-PS10	SGD869
	AZM98AC-PS25	SGD1,019
	AZM98AC-PS36	SGD1,019
	AZM98AC-PS50	SGD1,019

◇ **PS Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MC-PS5	SGD803
	AZM46MC-PS7.2	SGD803
	AZM46MC-PS10	SGD803
	AZM46MC-PS25	SGD865
	AZM46MC-PS36	SGD865
	AZM46MC-PS50	SGD865
60 mm	AZM66MC-PS5	SGD975
	AZM66MC-PS7.2	SGD975
	AZM66MC-PS10	SGD975
	AZM66MC-PS25	SGD1,063
	AZM66MC-PS36	SGD1,063
	AZM66MC-PS50	SGD1,063
90 mm	AZM98MC-PS5	SGD1,119
	AZM98MC-PS7.2	SGD1,119
	AZM98MC-PS10	SGD1,119
	AZM98MC-PS25	SGD1,269
	AZM98MC-PS36	SGD1,269
	AZM98MC-PS50	SGD1,269



◇ HPG Geared Type

Frame Size	Product Name	List Price
40 mm	AZM46AC-HP5	SGD740
	AZM46AC-HP5F	SGD728
	AZM46AC-HP9	SGD740
	AZM46AC-HP9F	SGD728
60 mm	AZM66AC-HP5	SGD1,000
	AZM66AC-HP5F	SGD981
	AZM66AC-HP15	SGD1,184
	AZM66AC-HP15F	SGD1,165
90 mm	AZM98AC-HP5	SGD1,260
	AZM98AC-HP5F	SGD1,235
	AZM98AC-HP15	SGD1,399
	AZM98AC-HP15F	SGD1,374



◇ HPG Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
40 mm	AZM46MC-HP5	SGD915
	AZM46MC-HP5F	SGD903
	AZM46MC-HP9	SGD915
	AZM46MC-HP9F	SGD903
60 mm	AZM66MC-HP5	SGD1,225
	AZM66MC-HP5F	SGD1,206
	AZM66MC-HP15	SGD1,409
	AZM66MC-HP15F	SGD1,390
90 mm	AZM98MC-HP5	SGD1,510
	AZM98MC-HP5F	SGD1,485
	AZM98MC-HP15	SGD1,649
	AZM98MC-HP15F	SGD1,624



◇ Harmonic Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AC-HS50	SGD996
	AZM46AC-HS100	SGD996
60 mm	AZM66AC-HS50	SGD1,344
	AZM66AC-HS100	SGD1,344
90 mm	AZM98AC-HS50	SGD1,613
	AZM98AC-HS100	SGD1,613



◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MC-HS50	SGD1,171
	AZM46MC-HS100	SGD1,171
60 mm	AZM66MC-HS50	SGD1,569
	AZM66MC-HS100	SGD1,569
90 mm	AZM98MC-HS50	SGD1,863
	AZM98MC-HS100	SGD1,863

● Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-AD	SGD650
Single-Phase/Three-Phase 200-240 VAC	AZD-CD	SGD650



◇ Pulse Input Type with RS-485 Communication NEW

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-AX	SGD650
Single-Phase/Three-Phase 200-240 VAC	AZD-CX	SGD650



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
Single-Phase 100-120 VAC	AZD-A	SGD588
Single-Phase/Three-Phase 200-240 VAC	AZD-C	SGD588



● Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent repeatedly. We provide connection cables and flexible extension cables that can be connected to connection cables for extension. See page 06-118.

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



For Motor For Encoder



For Motor For Encoder For Electromagnetic Brake

◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZF	SGD38
	1	CC010VZF	SGD38
	1.5	CC015VZF	SGD44
	2	CC020VZF	SGD50
	2.5	CC025VZF	SGD56
	3	CC030VZF	SGD63
	4	CC040VZF	SGD98
	5	CC050VZF	SGD110
	7	CC070VZF	SGD136
	10	CC100VZF	SGD176
	15	CC150VZF	SGD244
	20	CC200VZF	SGD310
Flexible Connection Cable Set	0.5	CC005VZR	SGD84
	1	CC010VZR	SGD84
	1.5	CC015VZR	SGD92
	2	CC020VZR	SGD99
	2.5	CC025VZR	SGD106
	3	CC030VZR	SGD111
	4	CC040VZR	SGD126
	5	CC050VZR	SGD141
	7	CC070VZR	SGD180
	10	CC100VZR	SGD236
	15	CC150VZR	SGD333
	20	CC200VZR	SGD426

◇ For the product with Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZFB	SGD53
	1	CC010VZFB	SGD53
	1.5	CC015VZFB	SGD60
	2	CC020VZFB	SGD68
	2.5	CC025VZFB	SGD75
	3	CC030VZFB	SGD83
	4	CC040VZFB	SGD121
	5	CC050VZFB	SGD135
	7	CC070VZFB	SGD166
	10	CC100VZFB	SGD214
	15	CC150VZFB	SGD294
	20	CC200VZFB	SGD373
Flexible Connection Cable Set	0.5	CC005VZRB	SGD114
	1	CC010VZRB	SGD114
	1.5	CC015VZRB	SGD124
	2	CC020VZRB	SGD134
	2.5	CC025VZRB	SGD143
	3	CC030VZRB	SGD151
	4	CC040VZRB	SGD171
	5	CC050VZRB	SGD191
	7	CC070VZRB	SGD240
	10	CC100VZRB	SGD311
	15	CC150VZRB	SGD433
	20	CC200VZRB	SGD551

06

■ Accessories

● Motors

Type	Accessories	Parallel Key	Motor Installation Screws	Operating Manual
Standard Type		—	—	1 set
TS Geared Type	Frame Size 42 mm	—	—	
	Frame Size 60 mm	1 piece	M4×60 P0.7 (4 pieces)	
	Frame Size 90 mm	1 piece	M8×90 P1.25 (4 pieces)	
FC Geared Type		1 piece	—	
PS Geared Type		1 piece	—	
HPG Geared Type	Shaft Output	1 piece	—	
	Flange Output	—	—	
Harmonic Geared Type		1 piece	—	

● For the details of the functions and operation methods of the product, refer to the Operating Manual (Functions). The Operating Manual for Functions does not come with the product. Contact the nearest Oriental Motor sales office, or download the Operating Manual from the Oriental Motor website.

● Drivers

Type	Accessories	Connector	Operating Manual
For 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 set

● Connection Cable Sets/Flexible Connection Cable Sets

Type	Accessories	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 set

AZ Series

Estimate of Output from Stepping Motors

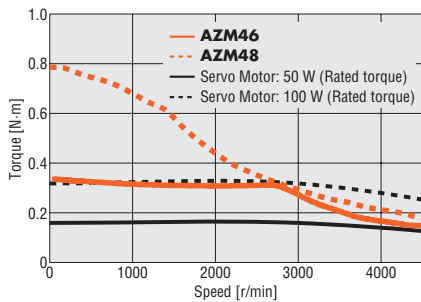
As for output (W) from an AC servo motor, the output (W) generated during rotation at the "Rated Speed" is expressed as the "Rated Output".

On the other hand, stepping motors which feature high-precision positioning and high torque in medium and low-speed areas do not have any rated speed. Therefore, there is no expression of "Rated Output". The table below shows the correspondence between the torque of each **AZ** Series standard type motor and the corresponding rated torque W of an applicable servo motor.

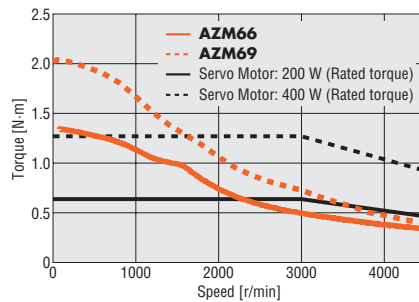
AZ Series (Standard type)		Servo motor with Corresponding Rated Torque (Estimate)
Frame Size	Product Name	
42 mm	AZM46	Corresponds to a rated torque of 50~100 W
	AZM48	
60 mm	AZM66	Corresponds to a rated torque of 100~200 W
	AZM69	Corresponds to a rated torque of 200~400 W
85 mm	AZM98	Corresponds to a rated torque of 400~750 W
	AZM911	

*These are samples of total prices of a motor, driver, and 1 m connection cable.

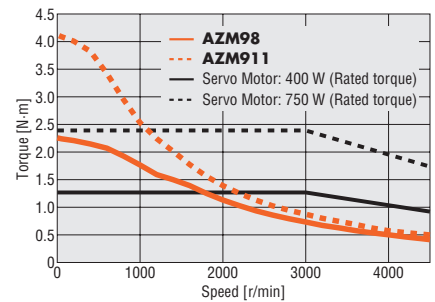
● Frame Size 42 mm



● Frame Size 60 mm



● Frame Size 85 mm



● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

Standard Type Frame Size 42 mm, 60 mm, 85 mm



Specifications

Motor	Single Shaft	AZM46A□C	AZM48A□C	AZM66A□C	AZM69A□C	AZM98A□C	AZM911A□C		
Product Name	With Electromagnetic Brake	AZM46M□C	—	AZM66M□C	AZM69M□C	AZM98M□C	—		
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)							
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)							
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)							
Maximum Holding Torque	N·m	0.3	0.77	1.2	2	2	4		
Holding Torque at Motor Standstill	Power ON	N·m	0.15	0.38	0.6	1	1	2	
	Electromagnetic Brake	N·m	0.15	—	0.6	1	1	—	
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})*1	115×10^{-7}	370×10^{-7} (530×10^{-7})*1	740×10^{-7} (900×10^{-7})*1	1090×10^{-7} (1250×10^{-7})*1	2200×10^{-7}		
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse							
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC						
	Input	Single-Phase 100-120 VAC	2.7	2.7	3.8	5.4	5.5	6.4	
		Current	Single-Phase 200-240 VAC	1.7	1.6	2.3	3.3	3.3	3.9
		A	Three-Phase 200-240 VAC	1.0	1.0	1.4	2.0	2.0	2.3
Control Power Source		24 VDC $\pm 5\%$ *2 0.25 A (0.33 A)*1	24 VDC $\pm 5\%$ 0.25 A	24 VDC $\pm 5\%$ *2 0.25 A (0.5 A)*1					

● Either **0** (Straight) or **1** (With a key) indicating the configuration is entered where the box □ is located within the product name. (For **AZM46**, straight only)
For single-sided milling, no character is entered into the □ mark.

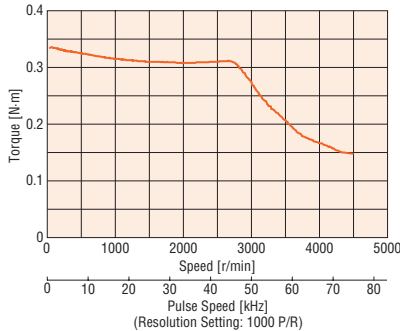
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

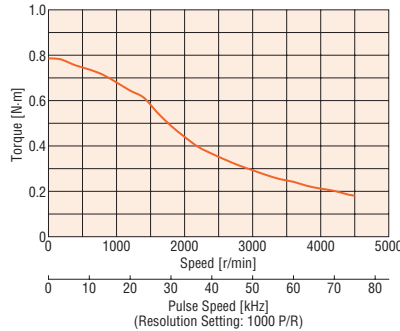
*2 For the electromagnetic brake type, the 24 VDC $\pm 4\%$ specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

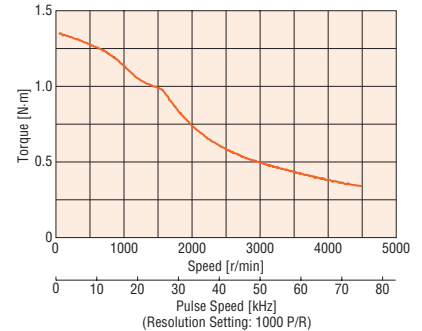
AZM46



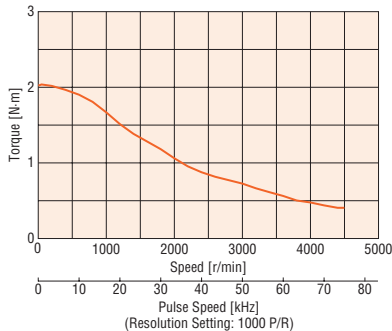
AZM48



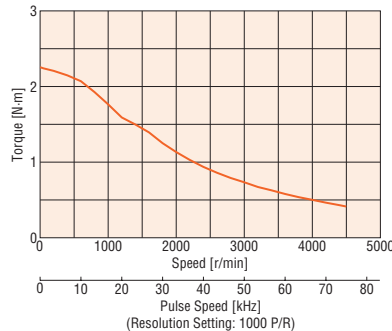
AZM66



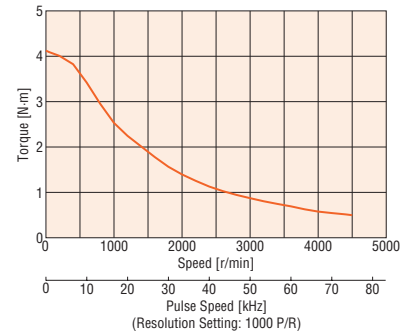
AZM69



AZM98



AZM911



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Descriptions of the Terms on the Specification Table

Maximum Holding Torque	: The maximum holding torque (holding force) of the motor when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the permissible strength of the gear is given consideration for this value.)
Permissible Torque	: The maximum value of the torque that can be continuously applied on the output gear shaft.
Maximum Instantaneous Torque	: This is the maximum torque value that can be applied to the output gear shaft during acceleration/deceleration like when an inertial load is started and stopped.
Holding Torque at Motor Standstill	Power ON : Holding torque when the automatic current cutback function is active.
	Electromagnetic Brake : Static friction torque when the electromagnetic brake is activated at standstill. (Electromagnetic brake is power off activated type.)

TS Geared Type Frame Size 42 mm

Specifications



Motor Product Name	Single Shaft	AZM46AC-TS3.6□	AZM46AC-TS7.2□	AZM46AC-TS10□	AZM46AC-TS20□	AZM46AC-TS30□
Motor Product Name	With Electromagnetic Brake	AZM46MC-TS3.6□	AZM46MC-TS7.2□	AZM46MC-TS10□	AZM46MC-TS20□	AZM46MC-TS30□
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
Driver Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
Driver Product Name	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	0.65	1.2	1.7	2	2.3
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1				
Gear Ratio		3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	0.65	1.2	1.7	2	2.3
Maximum Instantaneous Torque	N·m	0.85	1.6	2	3	
Holding Torque at Power ON	N·m	0.54	1	1.5	1.9	2.2
Motor Standstill Electromagnetic Brake	N·m	0.54	1	1.5	1.9	2.2
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arcmin	45 (0.75°)	25 (0.42°)		15 (0.25°)	
Power Supply Input	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz				
Power Supply Input	Input	Single-Phase 100-120 VAC	2.7			
Power Supply Input	Current	Single-Phase 200-240 VAC	1.7			
Power Supply Input	A	Three-Phase 200-240 VAC	1.0			
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1				

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

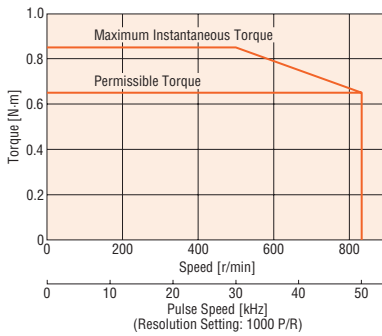
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

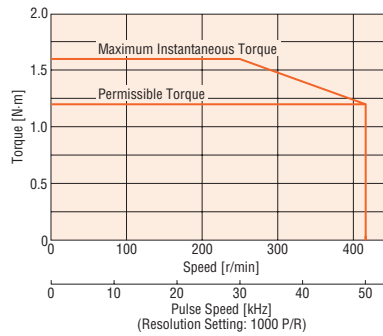
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

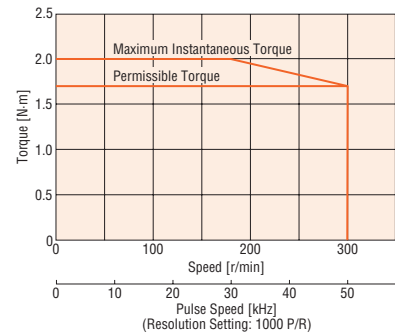
AZM46 Gear Ratio 3.6



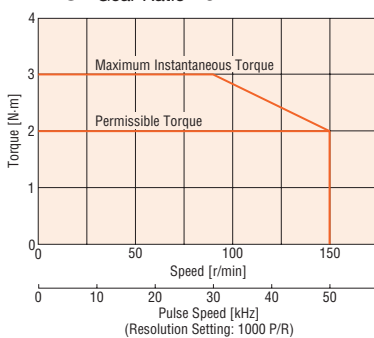
AZM46 Gear Ratio 7.2



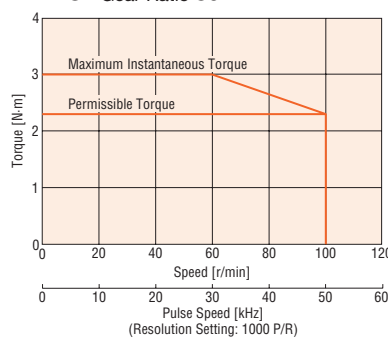
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 60 mm



Specifications

Motor	Single Shaft	AZM66AC-TS3.6	AZM66AC-TS7.2	AZM66AC-TS10	AZM66AC-TS20	AZM66AC-TS30
Product Name	With Electromagnetic Brake	AZM66MC-TS3.6	AZM66MC-TS7.2	AZM66MC-TS10	AZM66MC-TS20	AZM66MC-TS30
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	1.8	3	4	5	6
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	1.8	3	4	5	6
Maximum Instantaneous Torque*	N·m	*	4.5	6	8	10
Holding Torque at Power ON	N·m	1.3	2.6	3.7	5	6
Motor Standstill Electromagnetic Brake	N·m	1.3	2.6	3.7	5	6
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arcmin	35 (0.59°)	15 (0.25°)		10 (0.17°)	
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz				
Input	Single-Phase 100-120 VAC					
Current	Single-Phase 200-240 VAC	3.8				
A	Three-Phase 200-240 VAC	2.3				
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1				

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

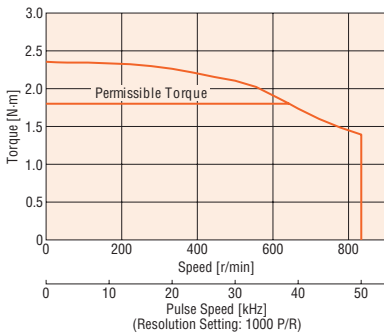
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

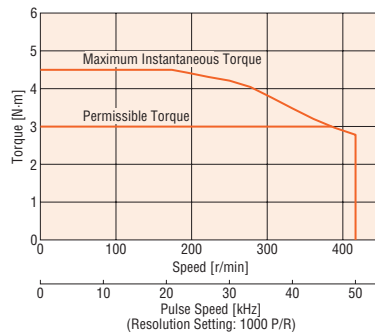
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

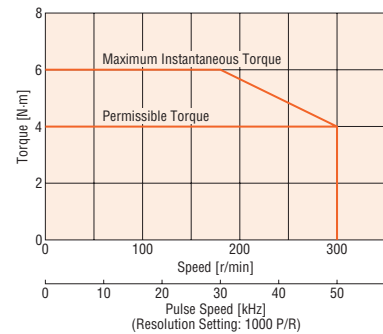
AZM66 Gear Ratio 3.6



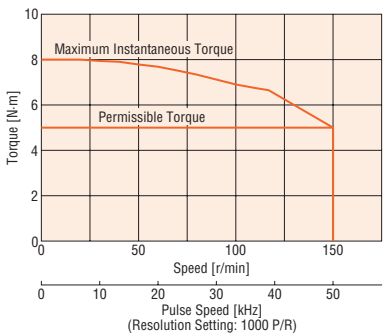
AZM66 Gear Ratio 7.2



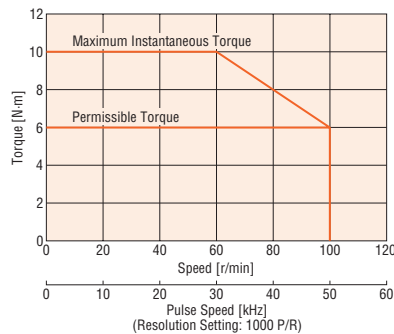
AZM66 Gear Ratio 10



AZM66 Gear Ratio 20



AZM66 Gear Ratio 30



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZ0 sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 90 mm

Specifications



Motor	Single Shaft	AZM98AC-TS3.6 □	AZM98AC-TS7.2 □	AZM98AC-TS10 □	AZM98AC-TS20 □	AZM98AC-TS30 □	
Product Name	With Electromagnetic Brake	AZM98MC-TS3.6 □	AZM98MC-TS7.2 □	AZM98MC-TS10 □	AZM98MC-TS20 □	AZM98MC-TS30 □	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	6	10	14	20	25	
Rotor Inertial	J: kg·m ²	1090×10 ⁻⁷ (1250×10 ⁻⁷)*1					
Gear Ratio		3.6	7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	6	10	14	20	25	
Maximum Instantaneous Torque*	N·m	*	*	20	*	45	
Holding Torque at	Power ON	N·m	3.6	7.2	10	20	25
Motor Standstill	Electromagnetic Brake	N·m	3.6	7.2	10	20	25
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42)		15 (0.25°)		10 (0.17°)	
Power Supply	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz				
	Input	Single-Phase 100-120 VAC					
	Current	Single-Phase 200-240 VAC	5.5				
	A	Three-Phase 200-240 VAC	3.3				
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

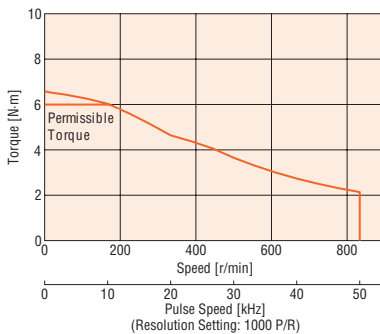
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

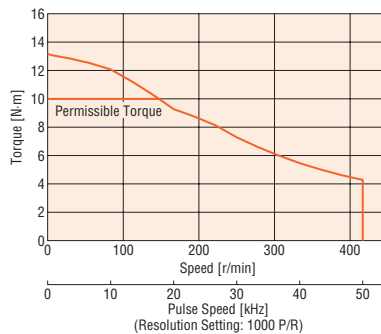
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

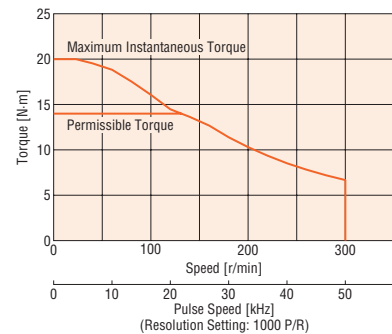
AZM98 Gear Ratio 3.6



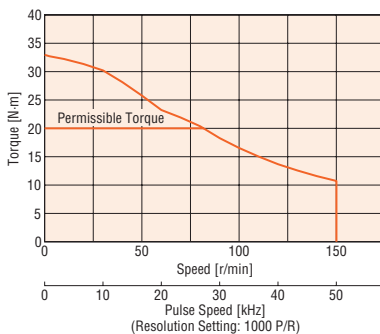
AZM98 Gear Ratio 7.2



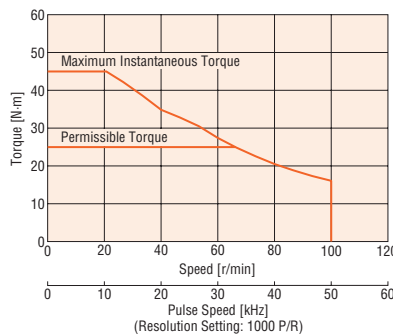
AZM98 Gear Ratio 10



AZM98 Gear Ratio 20



AZM98 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 42 mm



Specifications

Motor	Single Shaft	AZM46AC-FC7.2 <input type="checkbox"/> A	AZM46AC-FC10 <input type="checkbox"/> A	AZM46AC-FC20 <input type="checkbox"/> A	AZM46AC-FC30 <input type="checkbox"/> A	
Product Name	With Electromagnetic Brake	AZM46MC-FC7.2 <input type="checkbox"/> A	AZM46MC-FC10 <input type="checkbox"/> A	AZM46MC-FC20 <input type="checkbox"/> A	AZM46MC-FC30 <input type="checkbox"/> A	
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	0.7	1	2	3	
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})* ¹				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	0.7	1	2	3	
Holding Torque at Motor Standstill	Power ON	N·m	0.7	1	2	3
	Electromagnetic Brake	N·m	0.7	1	2	3
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42°)		15 (0.25°)		
Power Supply Input	Voltage and Frequency		Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC			
	Input	Single-Phase 100-120 VAC	-15~+6% 50/60 Hz			
	Current	Single-Phase 200-240 VAC	2.7			
Control Power Source	A	Three-Phase 200-240 VAC	1.7			
			1.0			
		24 VDC \pm 5%* ² 0.25 A (0.33 A)* ¹				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box is located within the product name.

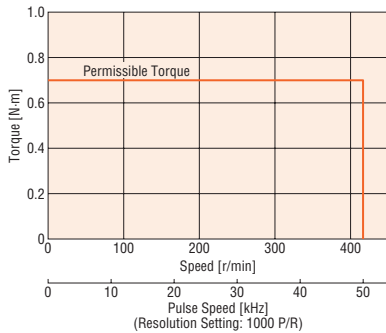
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

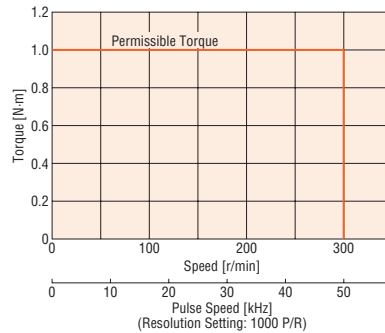
*2 For the electromagnetic brake type, the 24 VDC \pm 4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

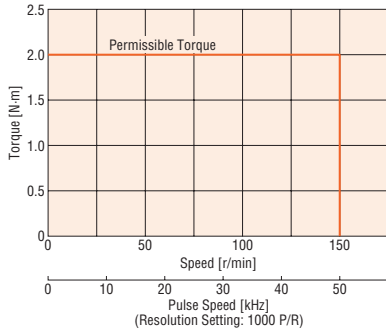
AZM46 Gear Ratio **7.2**



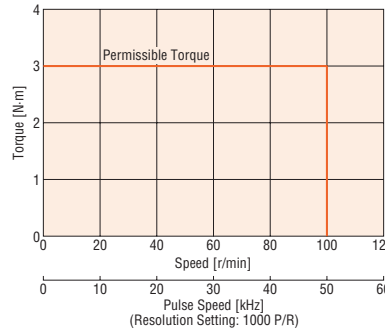
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AC-FC7.2 <input type="checkbox"/> A	AZM66AC-FC10 <input type="checkbox"/> A	AZM66AC-FC20 <input type="checkbox"/> A	AZM66AC-FC30 <input type="checkbox"/> A	
Product Name	With Electromagnetic Brake	AZM66MC-FC7.2 <input type="checkbox"/> A	AZM66MC-FC10 <input type="checkbox"/> A	AZM66MC-FC20 <input type="checkbox"/> A	AZM66MC-FC30 <input type="checkbox"/> A	
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)				
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)				
Product Name	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	2.5	3.5	7	10.5	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	2.5	3.5	7	10.5	
Holding Torque at	Power ON	N·m	2.5	3.5	7	10.5
Motor Standstill	Electromagnetic Brake	N·m	2.5	3.5	7	10.5
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	15 (0.25°)		10 (0.17°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC				
Input	Input	Single-Phase 100-120 VAC	3.8			
	Current	Single-Phase 200-240 VAC	2.3			
	A	Three-Phase 200-240 VAC	1.4			
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box is located within the product name.

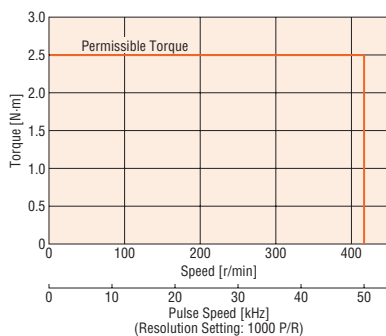
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

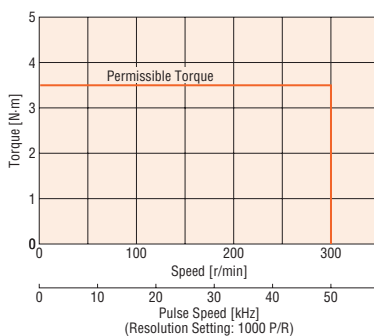
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

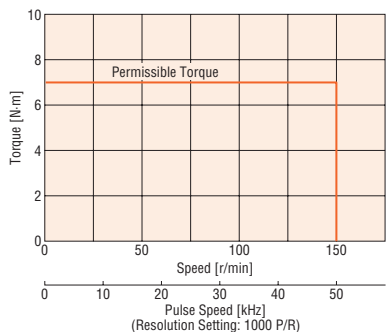
AZM66 Gear Ratio 7.2



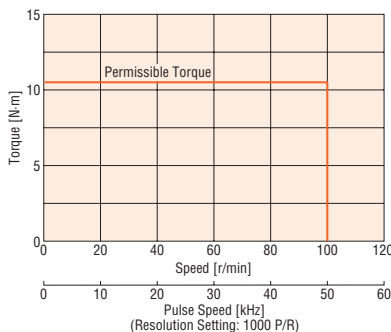
AZM66 Gear Ratio 10



AZM66 Gear Ratio 20



AZM66 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 42 mm



Specifications

Motor	Single Shaft	AZM46AC-PS5	AZM46AC-PS7.2	AZM46AC-PS10	AZM46AC-PS25	AZM46AC-PS36	AZM46AC-PS50
Product Name	With Electromagnetic Brake	AZM46MC-PS5	AZM46MC-PS7.2	AZM46MC-PS10	AZM46MC-PS25	AZM46MC-PS36	AZM46MC-PS50
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	1	1.5	2.5	3		
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	1	1.5	2.5	3		
Maximum Instantaneous Torque	N·m	1.5	2	3	6		
Holding Torque at Power ON	N·m	0.75	1	1.5	2.5	3	
Motor Standstill Electromagnetic Brake	N·m	0.75	1	1.5	2.5	3	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	15 (0.25°)					
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	2.7					
Current	Single-Phase 200-240 VAC	1.7					
A	Three-Phase 200-240 VAC	1.0					
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1					

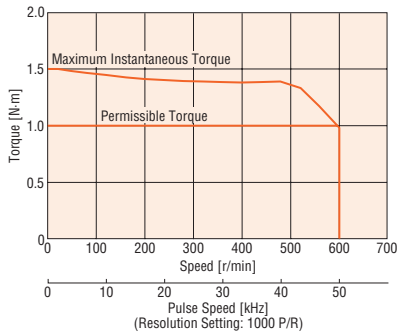
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

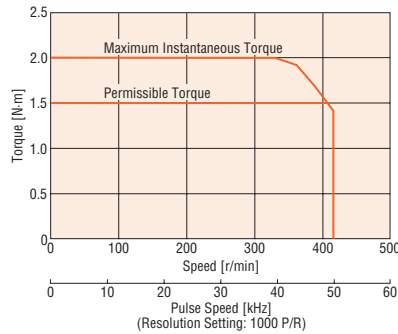
*2 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

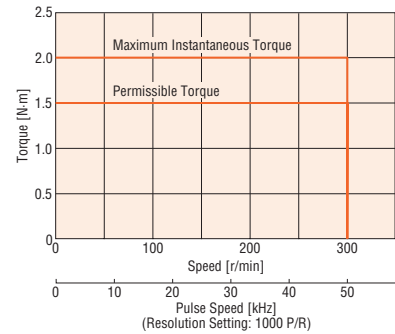
AZM46 Gear Ratio 5



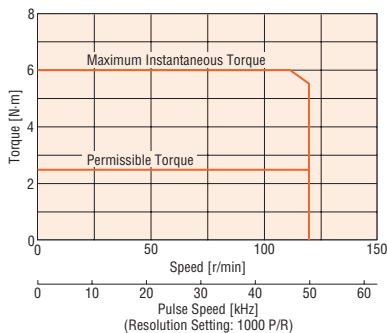
AZM46 Gear Ratio 7.2



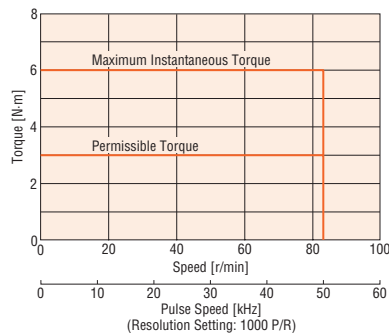
AZM46 Gear Ratio 10



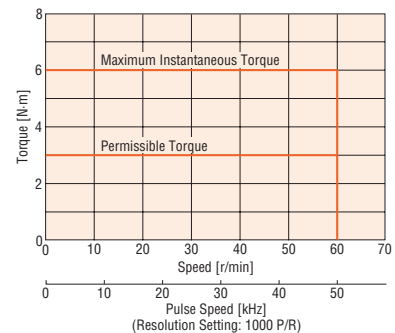
AZM46 Gear Ratio 25



AZM46 Gear Ratio 36



AZM46 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 60 mm

Specifications



Motor Product Name	Single Shaft	AZM66AC-PS5	AZM66AC-PS7.2	AZM66AC-PS10	AZM66AC-PS25	AZM66AC-PS36	AZM66AC-PS50
Motor Product Name	With Electromagnetic Brake	AZM66MC-PS5	AZM66MC-PS7.2	AZM66MC-PS10	AZM66MC-PS25	AZM66MC-PS36	AZM66MC-PS50
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Driver Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
Driver Product Name	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.057°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	3.5	4	5	8		
Maximum Instantaneous Torque*	N·m	*	*	11	16	20	
Holding Torque at Power ON	N·m	3	4	5	8		
Motor Standstill Electromagnetic Brake	N·m	3	4	5	8		
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	7 (0.12°)			9 (0.15°)		
Power Supply Input	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Power Supply Input	Input	Single-Phase 100-120 VAC			3.8		
Power Supply Input	Current	Single-Phase 200-240 VAC			2.3		
Power Supply Input	A	Three-Phase 200-240 VAC			1.4		
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

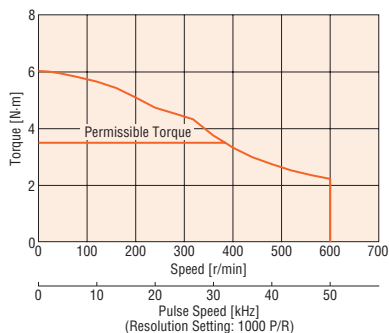
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

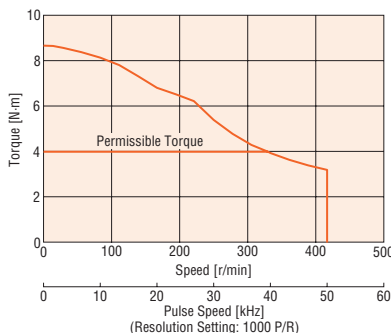
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

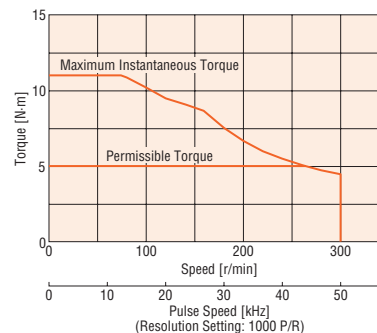
AZM66 Gear Ratio 5



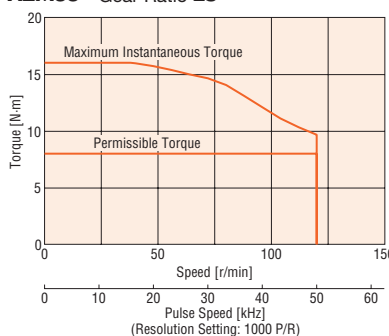
AZM66 Gear Ratio 7.2



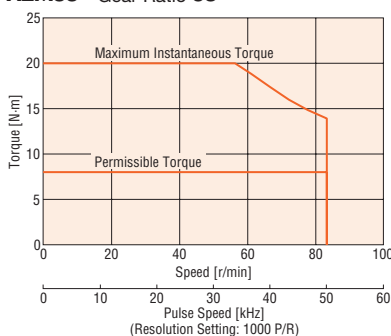
AZM66 Gear Ratio 10



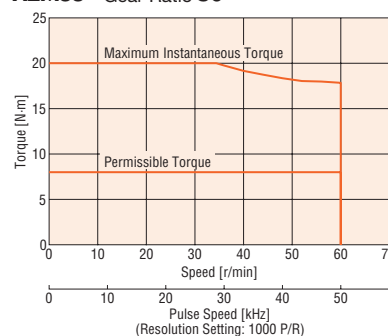
AZM66 Gear Ratio 25



AZM66 Gear Ratio 36



AZM66 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

(When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 90 mm



Specifications

Motor	Single Shaft	AZM98AC-PS5	AZM98AC-PS7.2	AZM98AC-PS10	AZM98AC-PS25	AZM98AC-PS36	AZM98AC-PS50
Product Name	With Electromagnetic Brake	AZM98MC-PS5	AZM98MC-PS7.2	AZM98MC-PS10	AZM98MC-PS25	AZM98MC-PS36	AZM98MC-PS50
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	10	14	20	37		
Rotor Inertial	J: kg·m ²	1090×10 ⁻⁷ (1250×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.057°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque*	N·m	*	*	20	37		
Maximum Instantaneous Torque*	N·m	*	*	*	*	60	
Holding Torque at Power ON	N·m	5	7.2	10	25	36	37
Motor Standstill Electromagnetic Brake	N·m	5	7.2	10	25	36	37
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	7 (0.12°)			9 (0.15°)		
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	5.5					
Current	Single-Phase 200-240 VAC	3.3					
A	Three-Phase 200-240 VAC	2.0					
Control Power Source		24 VDC ±5%*2 0.25 A (0.5 A)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

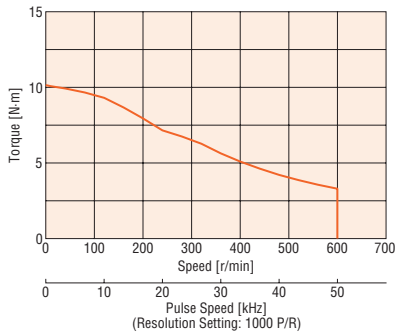
● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

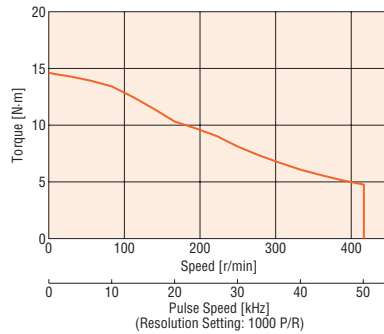
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

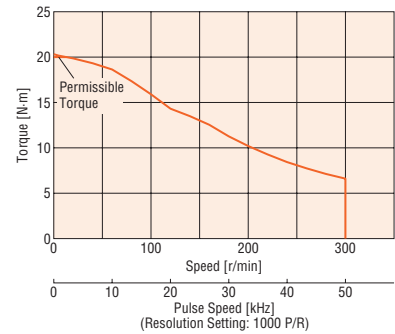
AZM98 Gear Ratio 5



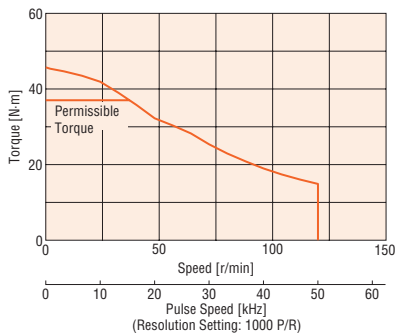
AZM98 Gear Ratio 7.2



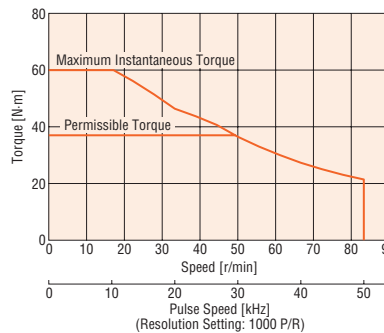
AZM98 Gear Ratio 10



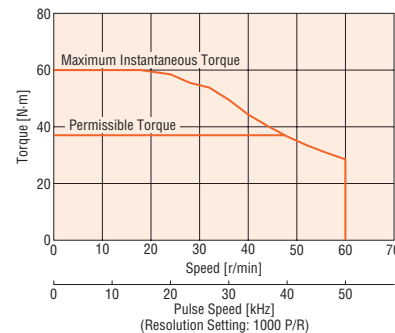
AZM98 Gear Ratio 25



AZM98 Gear Ratio 36



AZM98 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

HPG Geared Type Frame Size 40 mm, 60 mm, 90 mm

Specifications



Motor	Single Shaft	AZM46AC-HP5	AZM46AC-HP9	AZM66AC-HP5	AZM66AC-HP15	AZM98AC-HP5	AZM98AC-HP15
Product Name	With Electromagnetic Brake	AZM46MC-HP5	AZM46MC-HP9	AZM66MC-HP5	AZM66MC-HP15	AZM98MC-HP5	AZM98MC-HP15
Driver	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
Product Name	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	1.5	2.5	5.9	9	10	24
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1		370×10 ⁻⁷ (530×10 ⁻⁷)*1		1090×10 ⁻⁷ (1250×10 ⁻⁷)*1	
Inertial*2	J: kg·m ²	5.8×10 ⁻⁷ (4.2×10 ⁻⁷)	3.4×10 ⁻⁷ (2.9×10 ⁻⁷)	92×10 ⁻⁷ (86×10 ⁻⁷)	78×10 ⁻⁷ (77×10 ⁻⁷)	629×10 ⁻⁷ (589×10 ⁻⁷)	488×10 ⁻⁷ (488×10 ⁻⁷)
Gear Ratio		5	9	5	15	5	15
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.04°/Pulse	0.072°/Pulse	0.024°/Pulse	0.072°/Pulse	0.024°/Pulse
Permissible Torque*	N·m	*	2.5	5.9	9	*	24
Maximum Instantaneous Torque*	N·m	*	*	*	*	*	*
Holding Torque at Motor Standstill	Power ON	0.75	1.35	3	9	5	15
	Electromagnetic Brake	0.75	1.35	3	9	5	15
Speed Range	r/min	0~900	0~500	0~900	0~300	0~900	0~300
Backlash	arcmin	3 (0.05°)					
Power Supply	Voltage and Frequency	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz					
Input	Single-Phase 100-120 VAC	2.7		3.8		5.5	
Current	Single-Phase 200-240 VAC	1.7		2.3		3.3	
A	Three-Phase 200-240 VAC	1.0		1.4		2.0	
Control Power Source		24 VDC ±5%*4 0.25 A (0.33 A)*1		24 VDC ±5%*4 0.25 A (0.5 A)*1			
Runout of Output Flange Surface*3	mm	0.02			0.04		
Runout of Output Flange Inner Diameter*3	mm	0.03			0.04		

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For the flange output type, **F** is entered where the box is located within the product name.

● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

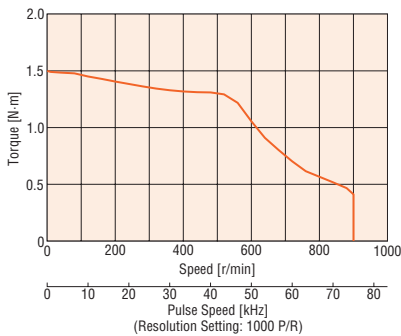
*2 The values for the moments of inertia within the gear that has been converted to motor shaft values. The () indicate the values for the flange output type.

*3 Specifications for the flange output type.

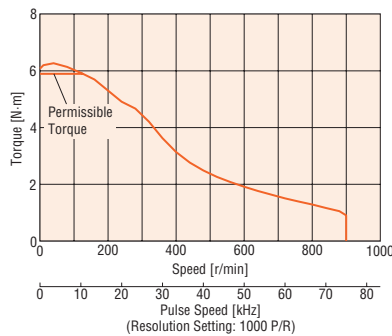
*4 For the electromagnetic brake type, the 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Speed – Torque Characteristics (Reference values)

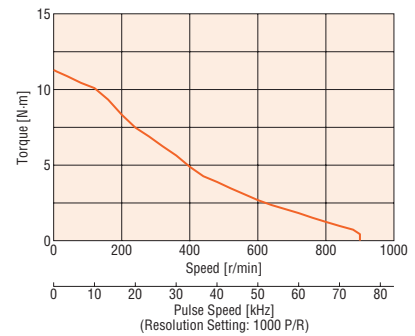
AZM46 Gear Ratio 5



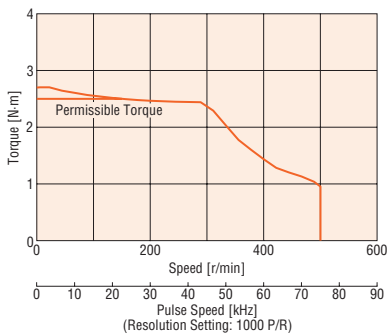
AZM66 Gear Ratio 5



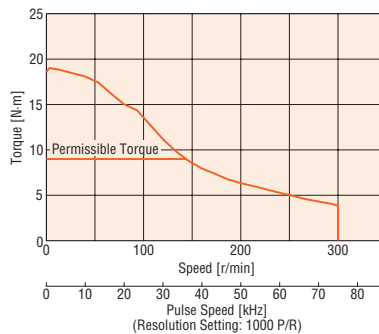
AZM98 Gear Ratio 5



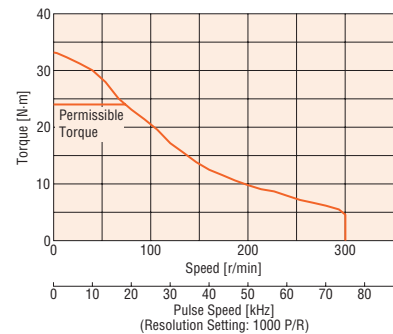
AZM46 Gear Ratio 9



AZM66 Gear Ratio 15



AZM98 Gear Ratio 15



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Harmonic Geared Type Frame Size 42 mm, 60 mm, 90 mm



Specifications

Motor	Single Shaft	AZM46AC-HS50	AZM46AC-HS100	AZM66AC-HS50	AZM66AC-HS100	AZM98AC-HS50	AZM98AC-HS100
Product Name	With Electromagnetic Brake	AZM46MC-HS50	AZM46MC-HS100	AZM66MC-HS50	AZM66MC-HS100	AZM98MC-HS50	AZM98MC-HS100
Driver Product Name	Built-in Controller	AZD-AD (Single-Phase 100-120 VAC), AZD-CD (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input with RS-485 Communication	AZD-AX (Single-Phase 100-120 VAC), AZD-CX (Single-Phase/Three-Phase 200-240 VAC)					
	Pulse Input	AZD-A (Single-Phase 100-120 VAC), AZD-C (Single-Phase/Three-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	3.5	5	7	10	33	52
Rotor Inertial	J: kg·m ²	72×10 ⁻⁷ (88×10 ⁻⁷)*1		405×10 ⁻⁷ (565×10 ⁻⁷)*1		1290×10 ⁻⁷ (1450×10 ⁻⁷)*1	
Gear Ratio		50	100	50	100	50	100
Resolution	Resolution Setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m	3.5	5	7	10	33	52
Maximum Instantaneous Torque*	N·m	8.3	11	23	36	*	107
Holding Torque at Power ON	N·m	3.5	5	7	10	33	52
Motor Standstill Electromagnetic Brake	N·m	3.5	5	7	10	33	52
Speed Range	r/min	0~70	0~35	0~70	0~35	0~70	0~35
Lost Motion (Load torque)	arcmin	1.5 or less (±0.16 N·m)	1.5 or less (±0.20 N·m)	0.7 or less (±0.28 N·m)	0.7 or less (±0.39 N·m)	0.7 or less (±1.2 N·m)	
Power Supply	Single-Phase 100-120 VAC, Single-Phase/Three-Phase 200-240 VAC -15~+6% 50/60 Hz						
Input	Input	Single-Phase 100-120 VAC		Single-Phase 200-240 VAC		Three-Phase 200-240 VAC	
	Current	2.7		1.7		1.0	
	A	3.8		2.3		1.4	
Control Power Source		24 VDC ±5%*2 0.25 A (0.33 A)*1		24 VDC ±5%*2 0.25 A (0.5 A)*1			

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For details of the standards, check the Oriental Motor website.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

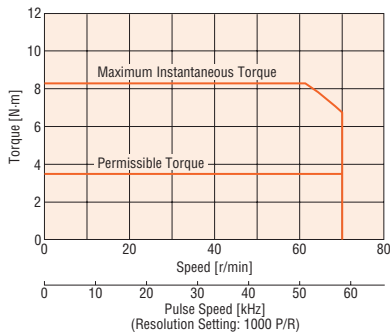
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

Note

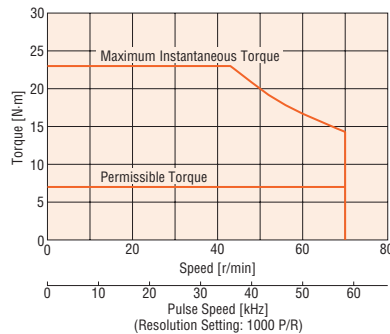
● The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

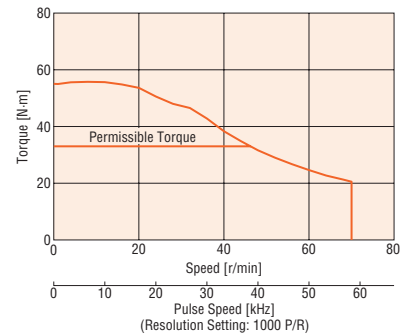
AZM46 Gear Ratio 50



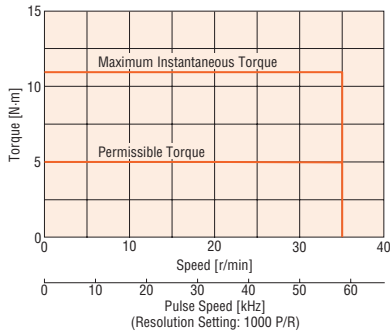
AZM66 Gear Ratio 50



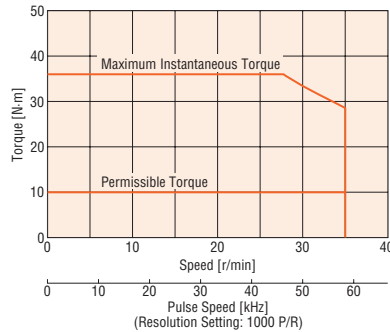
AZM98 Gear Ratio 50



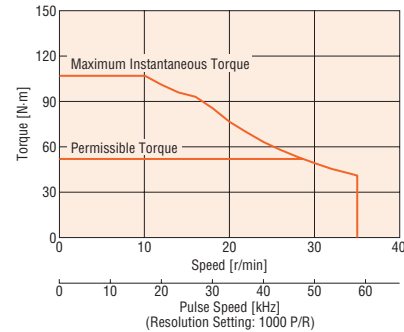
AZM46 Gear Ratio 100



AZM66 Gear Ratio 100



AZM98 Gear Ratio 100



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Driver Specifications

Driver Type	Built-in Controller Type	Pulse Input Type with RS-485 Communication	Pulse Input Type		
Driver Product Name	AZD-AD AZD-CD	AZD-AX AZD-CX	AZD-A AZD-C		
I/O Function	Max. Input Pulse Frequency	–	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input		
	Number of Positioning Data Sets	256 points	256 points*1		
	Direct Input	10 points	6 points		
	Direct Output	6 points			
	RS-485 Communication Remote Input	16 points	–		
	RS-485 Communication Remote Output	16 points	–		
Setting Tool	Support Software MEXE02	○			
Coordinate Management Method	Battery-free absolute system				
Positioning Operation	Type	Positioning Operation	○	○	○*1
		Push-motion Positioning Operation*2	○	○	○*1
	Connecting Method	Independent Operation	○	○	○*1
		Forward Feed Operation	○	○	○*1
		Multistep Speed-change (Shape connection)	○	○	○*1
	Sequence Control	Loop Operation (Repetition)	○	○	○*1
		Event Jump Operation	○	○	○*1
		Position Control	○	○	○*1
	Linked Operation	Speed Control	○	○	○*1
		Torque Control	○	○	○*1
Push-motion*2		○	○	○*1	
Return-to-home Operation	Return-to-home Operation	○	○	○	
	High-speed Return-to-home Operation	○	○	○	
JOG Operation		○	○	○	
Monitor/Information	Waveform Monitoring	○	○	○	
	Overload Detection	○	○	○	
	Overheat Detection (Motor and driver)	○	○	○	
	Position and Speed Information	○	○	○	
	Temperature Detection (Motor and driver)	○	○	○	
	Motor Load Factor	○	○	○	
Alarm	Mileage/Accumulated Mileage	○	○	○	

*1 Available after setting with support software **MEXE02**.

*2 Push-motion operation is not available to geared motors and **DGII** Series motorized actuators.

RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 based, Straight cable Use twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The maximum total extension length is 50 m.*
Communication Mode	Half duplex and start-stop synchronization (Data: 8 bits, Stop bit: 1 bit or 2 bits, Parity: none, even, or odd)
Baud Rate	Select from 9600 bps/19200 bps/38400 bps/57600 bps/115200 bps/230400 bps.
Connection Type	Up to 31 units can be connected to a single programmable controller (Master unit).

*If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

General Specifications

	Motor	Driver	
		Built-in Controller Type Pulse Input Type with RS-485 Communication	Pulse Input Type
Heat-resistant Class	130 (B) [Recognized as 105 (A) by UL.]	-	
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*1	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 · Power input terminal – Power supply terminal	
Dielectric Strength Voltage	No abnormality is found with the following application for 1 minute: · Case – Motor windings 1.5 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*1 1.5 kVAC 50 Hz or 60 Hz	No abnormality is found with the following application 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 · Power input terminal – Power supply terminal 1.8 kVAC 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)*2	
	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	IP66 (excluding installation surfaces and connector locations)	IP10	IP20
Stop Position Accuracy	AZM46, AZM48: ±4 min (±0.067°) AZM66, AZM69, AZM98, AZM911: ±3 min (±0.05°)		
Shaft Runout	0.05 T.I.R. (mm)*4	-	
Concentricity of Installation Pilot to the Shaft	0.075 T.I.R. (mm)*4	-	
Perpendicularity of Installation Surface to the Shaft	0.075 T.I.R. (mm)*4	-	
Range of Multiple Rotation Inspection at Power OFF	±900 rotations (1800 rotations)		

*1 Electromagnetic brake type only

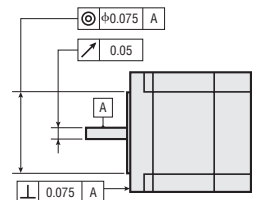
*2 Under the Oriental Motor's measurement conditions

*3 When a heat sink equivalent to an aluminum plate size of at least 200×200 mm and 2 mm thickness is installed

*4 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution, centered on the reference axis center.

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.



Electromagnetic Brake Specifications

Product Name	AZM46	AZM66	AZM69	AZM98
Type	Power off activated type			
Power Supply Voltage	24 VDC ±5%*			
Power Supply Current	A	0.08	0.25	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.

- The product names are described with text by which the product name can be identified.

Rotation Direction

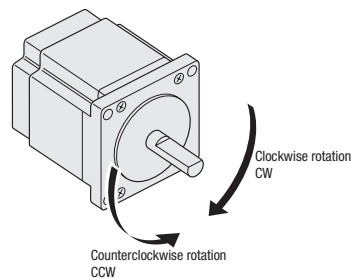
The figure below shows the rotation directions seen from the output shaft.

The rotation direction of the gear output shaft, which is seen from the output shaft of a standard type motor, differs depending on the gear type or gear ratio.

Refer to the table below.

Type	Gear Ratio	Rotation Direction seen from the Output Shaft
TS Geared Type	3, 6, 7, 2, 10	Same direction
	20, 30	Reverse direction
FC Geared Type	Total reduction gear ratio	Same direction
PS Geared Type		Same direction
HPG Geared Type		Reverse direction
Harmonic Geared Type	Total reduction gear ratio	Reverse direction

- Standard type motor



Permissible Radial Load/Permissible Axial Load

Unit: N

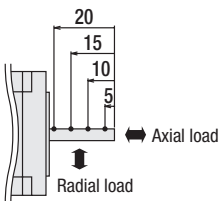
Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End mm					
				0	5	10	15	20	
Standard Type	42 mm	AZM46	-	35	44	58	85	-	15
		AZM48		30	35	44	58	85	
	60 mm	AZM66, AZM69		90	100	130	180	270	30
	85 mm	AZM98, AZM911		260	290	340	390	480	60
TS Geared Type	42 mm	AZM46	3.6, 7.2, 10	20	30	40	50	-	15
			20, 30	40	50	60	70	-	
	60 mm	AZM66	3.6, 7.2, 10	120	135	150	165	180	40
			20, 30	170	185	200	215	230	
	90 mm	AZM98	3.6, 7.2, 10	300	325	350	375	400	150
			20, 30	400	450	500	550	600	
FC Geared Type	42 mm	AZM46	7.2, 10, 20, 30	180	200	220	250	-	100
	60 mm	AZM66		270	290	310	330	350	200
PS Geared Type	42 mm	AZM46	5	70	80	95	120	-	100
			7.2	80	90	110	140	-	
			10	85	100	120	150	-	
			25	120	140	170	210	-	
			36	130	160	190	240	-	
			50	150	170	210	260	-	
	60 mm	AZM66	5	170	200	230	270	320	200
			7.2	200	220	260	310	370	
			10	220	250	290	350	410	
			25	300	340	400	470	560	
			36	340	380	450	530	630	
			50	380	430	500	600	700	
	90 mm	AZM98	5	380	420	470	540	630	600
			7.2	430	470	530	610	710	
			10	480	530	590	680	790	
			25	650	720	810	920	1070	
			36	730	810	910	1040	1210	
			50	820	910	1020	1160	1350	
HPG Geared Type	40 mm	AZM46	5	150	170	190	230	270	430
			9	180	200	230	270	320	510
	60 mm	AZM66	5	250	270	300	330	360	700
			15	360	380	420	460	510	980
	90 mm	AZM98	5	600	630	670	710	750	1460
			15	830	880	930	980	1050	2030
Harmonic Geared Type	42 mm	AZM46	50, 100	180	220	270	360	510	220
	60 mm	AZM66		320	370	440	550	720	450
	90 mm	AZM98		1090	1150	1230	1310	1410	1300

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

● PS geared type and HPG geared type: The values shown in the table are those that enable a product life of 20,000 hours when either permissible radial load or permissible axial load is applied. For the product life of the gearhead, contact the nearest Oriental Motor sales office, or check the Oriental Motor website.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

When eccentric load is applied to the installation surface of the output flange, load moment acts on the bearing. Before using the motor, apply the formulas below to check that the axial load and load moment are within the specifications.

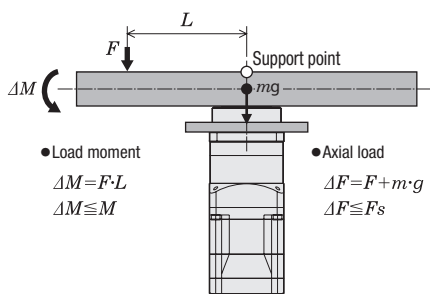
HPG Geared Type Flange Output Type

Product Name	Gear Ratio	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
AZM46	5	430	4.9	0.006
	9	510	5.9	
AZM66	5	700	12.0	0.011
	15	980	17.2	
AZM98	5	1460	38.7	0.0115
	15	2030	53.5	

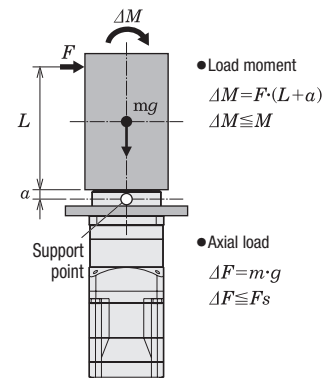
m : Load mass (kg)
 g : Gravitational acceleration (m/s²)
 F : External force (N)
 L : Overhung distance (m)
 α : Constant (m)
 ΔF : Load applied to the output flange surface (N)
 F_s : Permissible axial load (N)
 ΔM : Load moment (N·m)
 M : Permissible moment load (N·m)

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.

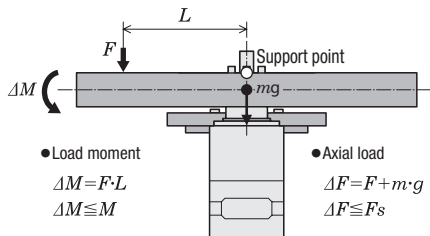


Harmonic Geared Type

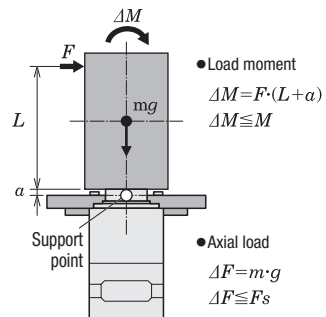
Motor Frame Size	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
42 mm	220	5.6	0.009
60 mm	450	11.6	0.0114

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.

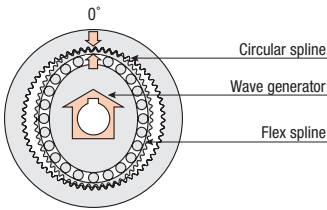


Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.



Accuracy of the Harmonic Geared Type

Basic Structure



Accuracy

Unlike common reduction gears which employ spur gears, the harmonic geared type has no backlash (play between the meshing gears) between the harmonic gears. With this mechanism, the harmonic gears have the following features: The number of teeth that simultaneously mesh is large; the influence of teeth pitch errors or accumulated pitch errors on rotational accuracy are averaged; and with these, high positioning accuracy is achieved. In addition, the harmonic gears have a high gear ratio. Therefore, the distortion of the output shaft which is caused by the load torque applied to the output shaft is by far smaller than the distortion that occurs on the output shafts of standalone motors or other geared motors. This means that harmonic gears have high rigidity. With high rigidity, harmonic gears are resistant to load change, enabling stable positioning. When high positioning accuracy or rigidity is required, refer to the characteristics described below.

Angular Transmission Accuracy

Error between the actual rotation angle of an output shaft and the theoretical rotation angle of the output shaft which is calculated based on the input pulse count. The accuracy is represented by the difference between the minimum error and the maximum error that are measured when the output shaft is rotated once from an arbitrary position.

Product Name	Angular Transmission Accuracy [arcmin]
AZM24-HS □	2 (0.034°)
AZM46-HS □	1.5 (0.025°)
AZM66-HS □	
AZM98-HS □	1 (0.017°)

● Values measured under no load (reference values measured at the gears)

Torque – Distortion Characteristics

In actual applications, frictional load is inevitably generated, causing displacement depending on the frictional load. If the frictional load is constant, the displacement is also constant during one direction operation. However, when the motor is operated in both directions (the forward and reverse directions), the displacement doubles during the back and forth motion. The displacement can be assumed from the torque - distortion characteristics described below.

The displacement occurs when external force is applied during stop or when the motor is operated under frictional load. The slope in the graph below is close to the spring constant of each of the three classifications given below and can be estimated by the corresponding calculation.

1. When the load torque T_L is up to T_1

$$\theta = \frac{T_L}{K_1} \text{ [min]}$$

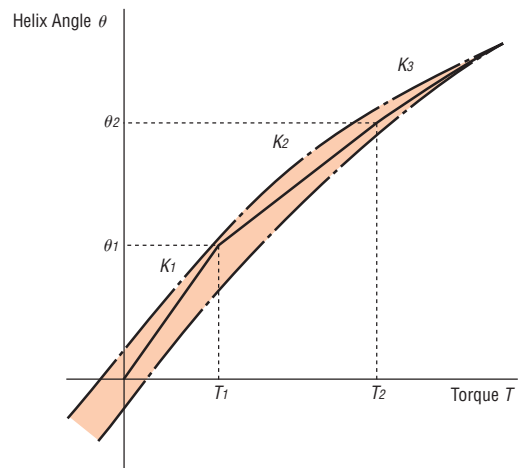
2. When the load torque T_L is above T_1 but up to T_2

$$\theta = \theta_1 + \frac{T_L - T_1}{K_2} \text{ [min]}$$

3. When the load torque T_L exceeds T_2

$$\theta = \theta_2 + \frac{T_L - T_2}{K_3} \text{ [min]}$$

The helix angle determined by the calculation is the helix angle of a stand-alone harmonic gear.



Helix Angle – Torque Characteristics

Values used for the calculation

Product Name	Gear Ratio	T1 N-m	K1 N-m/min	θ1 min	T2 N-m	K2 N-m/min	θ2 min	K3 N-m/min
AZM24-HS50	50	0.29	0.08	3.7	—	0.12	—	—
AZM24-HS100	100	0.29	0.1	2.9	1.5	0.15	11	0.21
AZM46-HS50	50	0.8	0.64	1.25	2	0.87	2.6	0.93
AZM46-HS100	100	0.8	0.79	1.02	2	0.99	2.2	1.28
AZM66-HS50	50	2	0.99	2	6.9	1.37	5.6	1.66
AZM66-HS100	100	2	1.37	1.46	6.9	1.77	4.2	2.1
AZM98-HS50	50	7	3.8	1.85	25	5.2	5.3	6.7
AZM98-HS100	100	7	4.7	1.5	25	7.3	4	8.4

Load Torque – Driver Input Current Characteristics

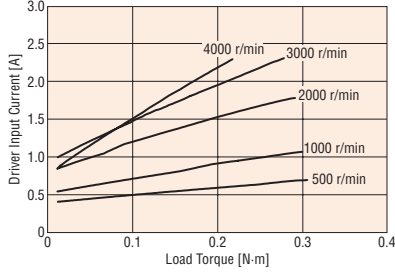
This is the relationship between the load torque and driver input current at each speed when the motor is actually operated. From these characteristics, the power supply capacity required for use in multi-axis operation can be estimated. For the geared type, convert to torque and speed by the motor shaft.

$$\text{Motor shaft speed} = \text{Gear output shaft speed} \times \text{Gear ratio} \text{ [r/min]}$$

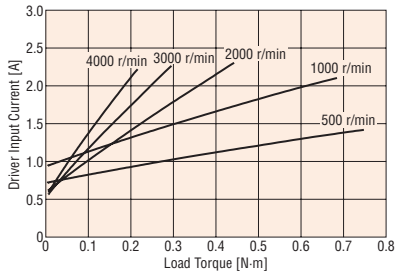
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear ratio}} \text{ [N}\cdot\text{m]}$$

Single-Phase 100-120 VAC

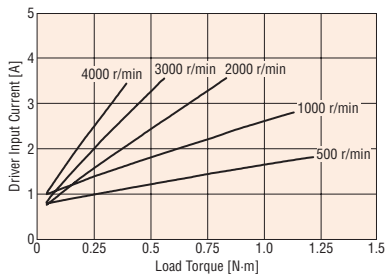
AZM46□C



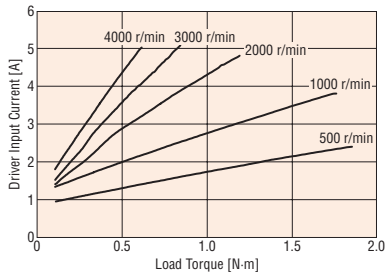
AZM48□C



AZM66□C

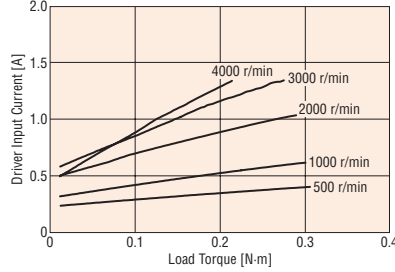


AZM69□C

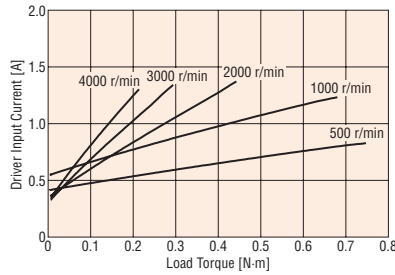


Single-Phase 200-240 VAC

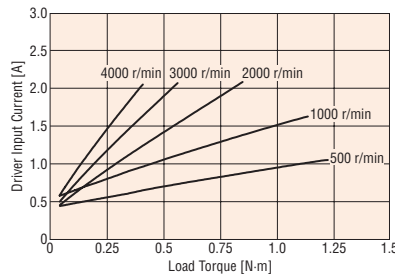
AZM46□C



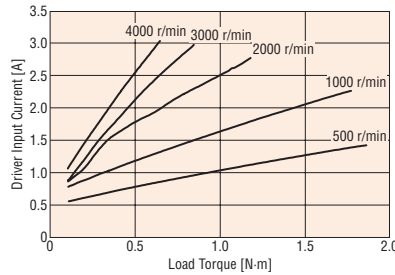
AZM48□C



AZM66□C

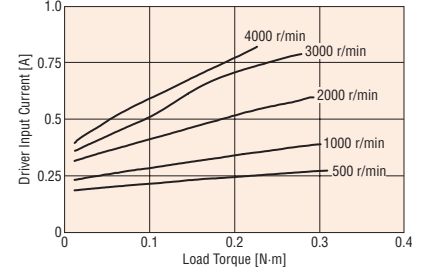


AZM69□C

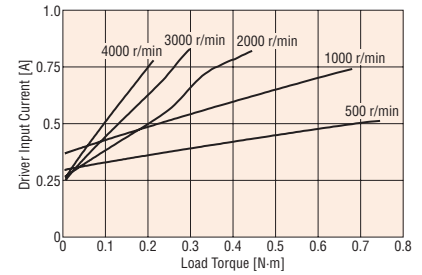


Three-Phase 200-240 VAC

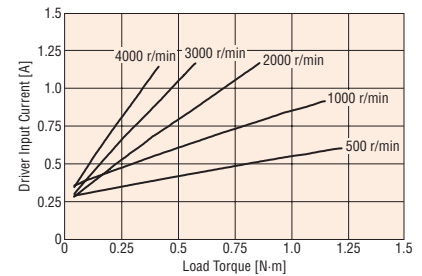
AZM46□C



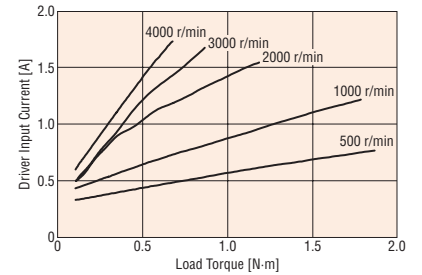
AZM48□C



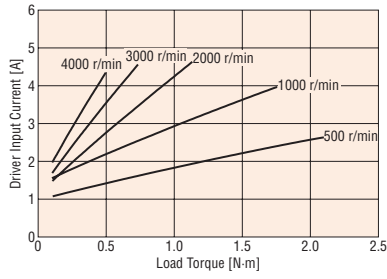
AZM66□C



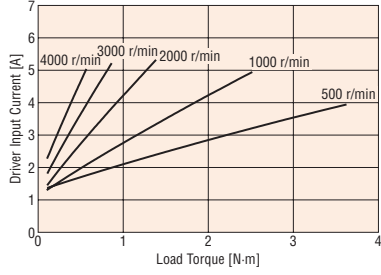
AZM69□C



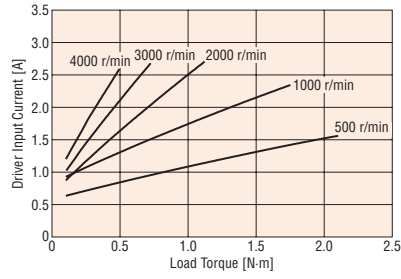
● Single-Phase 100-120 VAC
AZM98□C



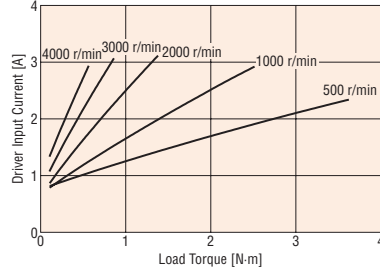
AZM911□C



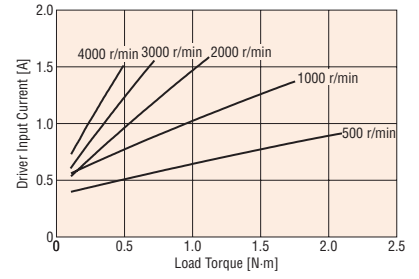
● Single-Phase 200-240 VAC
AZM98□C



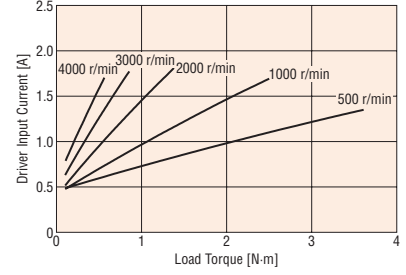
AZM911□C



● Three-Phase 200-240 VAC
AZM98□C



AZM911□C



Dimensions (Unit: mm)

Motors

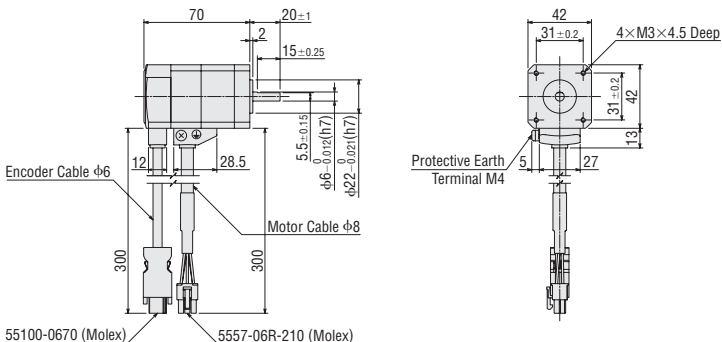
Standard Type

Frame Size 42 mm

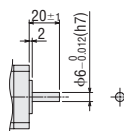
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46AC	0.44	B1092
Straight	AZM46AOC		B1288

Single Sided Milling



Straight

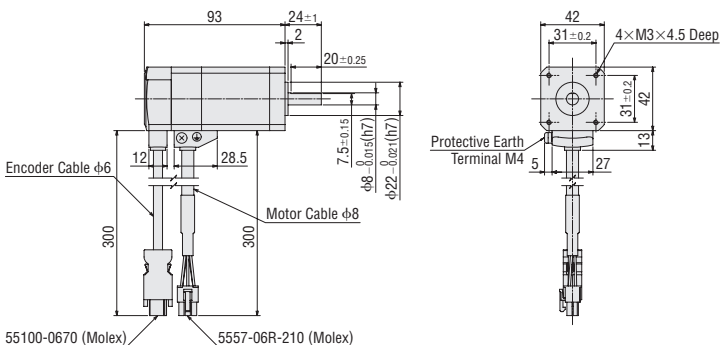


Frame Size 42 mm

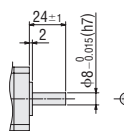
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM48AC	0.68	B1312
Straight	AZM48AOC		B1289
With Key	AZM48A1C		B1299

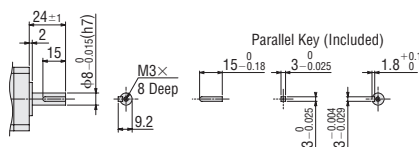
Single Sided Milling



Straight



With Key

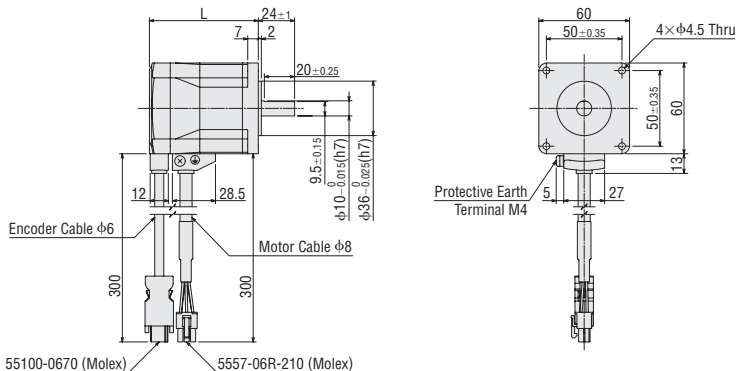


Frame Size 60 mm

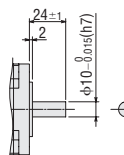
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66AC	72	0.91	B1093
Straight	AZM66AOC			B1290
With Key	AZM66A1C			B1300
Single Sided Milling	AZM69AC	97.5	1.4	B1129
Straight	AZM69AOC			B1291
With Key	AZM69A1C			B1301

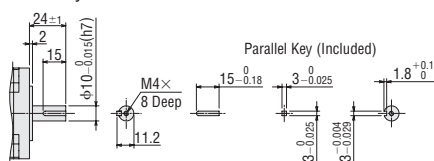
Single Sided Milling



Straight



With Key

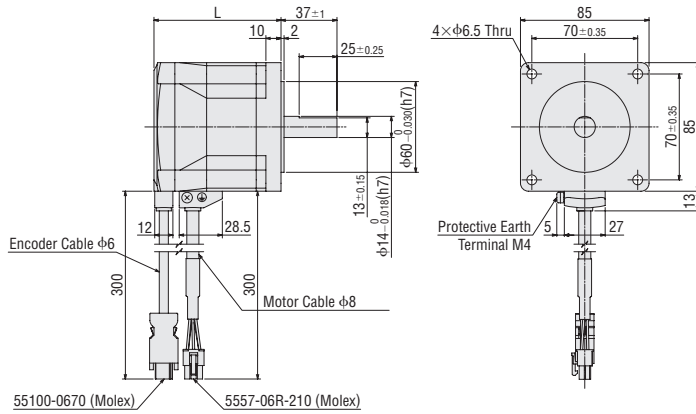


Frame Size 85 mm

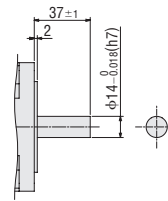
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM98AC	84	1.9	B1181
Straight	AZM98AOC			B1292
With Key	AZM98A1C			B1302
Single Sided Milling	AZM911AC	114	3	B1183
Straight	AZM911AOC			B1293
With Key	AZM911A1C			B1303

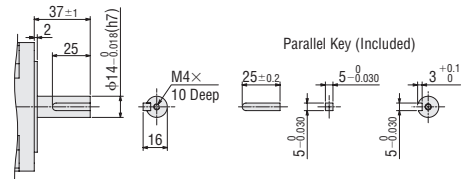
Single Sided Milling



Straight



With Key



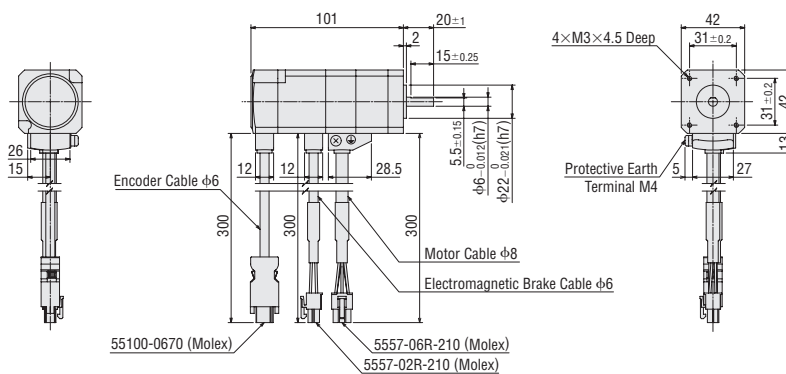
Standard Type with Electromagnetic Brake

Frame Size 42 mm

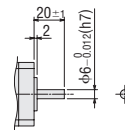
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46MC	0.61	B1154
Straight	AZM46MOC		B1294

Single Sided Milling



Straight



06

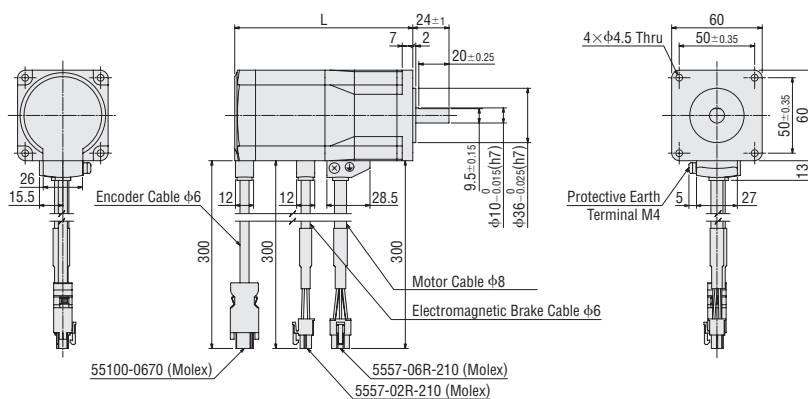
AZ Series

Frame Size 60 mm

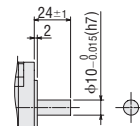
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66MC	118	1.3	B1155
Straight	AZM66MOC			B1295
With Key	AZM66M1C			B1305
Single Sided Milling	AZM69MC	143.5	1.8	B1156
Straight	AZM69MOC			B1296
With Key	AZM69M1C			B1306

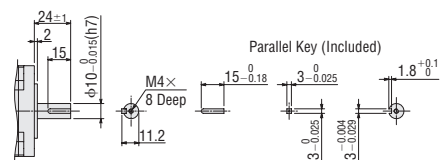
Single Sided Milling



Straight



With Key

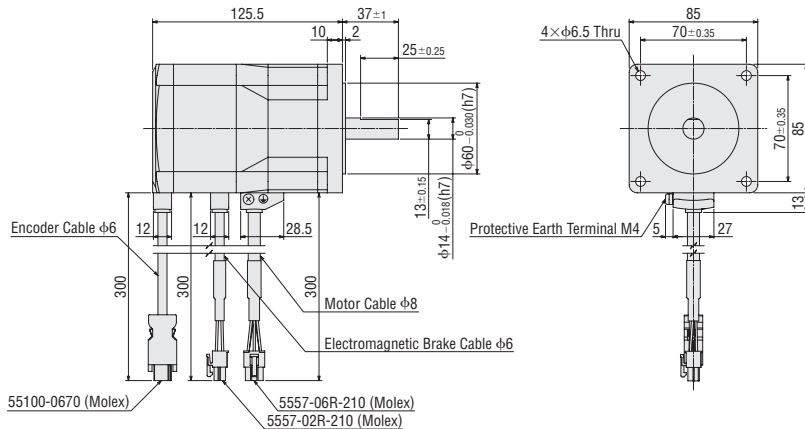


Frame Size 85 mm

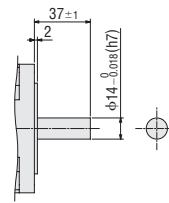
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM98MC	2.5	B1182
Straight	AZM98MOC		B1297
With Key	AZM98M1C		B1307

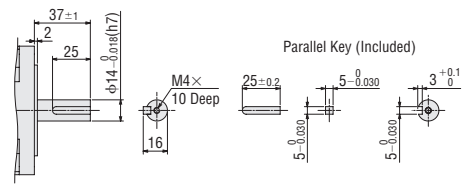
Single Sided Milling



Straight



With Key



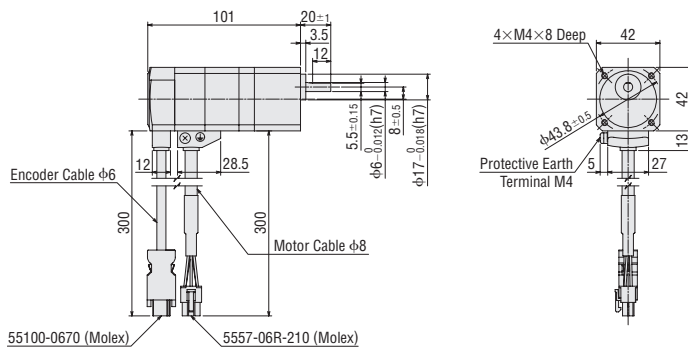
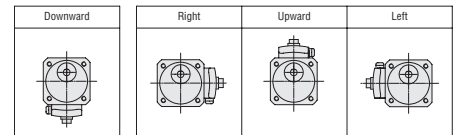
◇ TS Geared Type

Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46AC-TS ■	3.6, 7.2, 10, 20, 30	0.59	B1157
Right	AZM46AC-TS ■R			B1272
Upward	AZM46AC-TS ■U			B1270
Left	AZM46AC-TS ■L			B1271

● Cable Drawing Direction

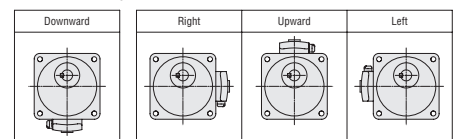


Frame Size 60 mm

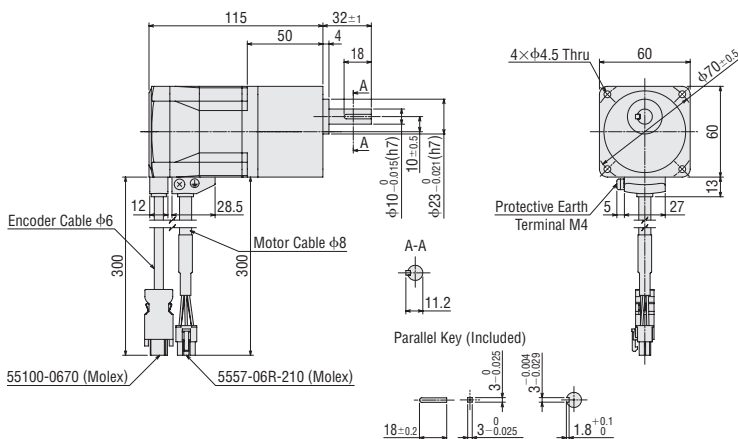
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66AC-TS ■	3.6, 7.2, 10, 20, 30	1.3	B1158
Right	AZM66AC-TS ■R			B1275
Upward	AZM66AC-TS ■U			B1273
Left	AZM66AC-TS ■L			B1274

● Cable Drawing Direction



● Installation Screws: M4×60 P0.7 (4 pieces included)



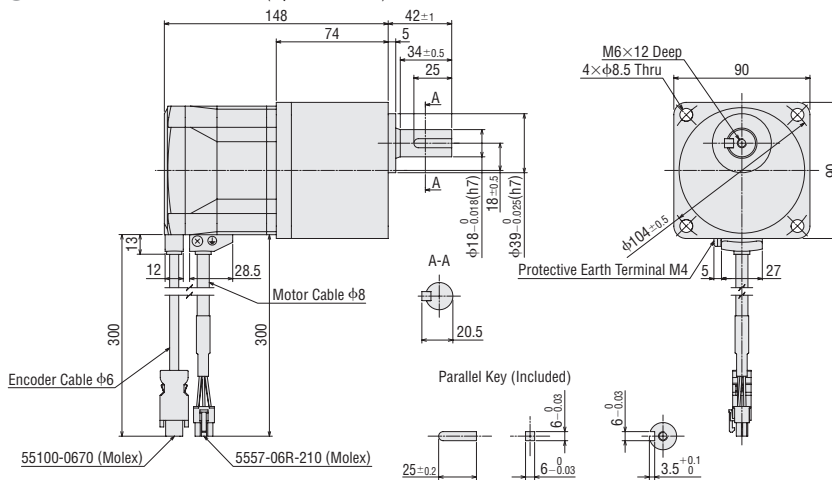
● A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm

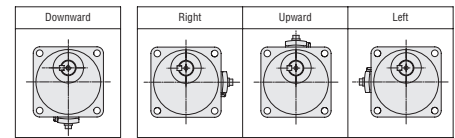
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM98AC-TS 	3.6, 7.2, 10, 20, 30	3.1	B1184
Right	AZM98AC-TS R			B1278
Upward	AZM98AC-TS U			B1276
Left	AZM98AC-TS L			B1277

● Installation Screws: M8×90 P1.25 (4 pieces included)



● Cable Drawing Direction



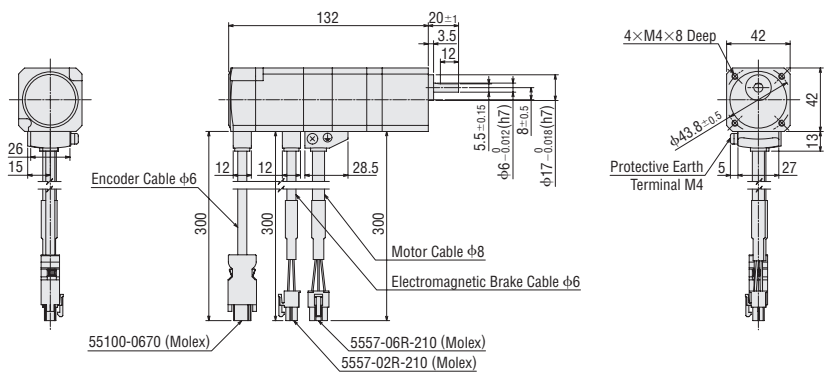
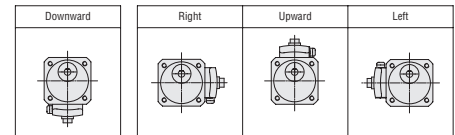
◇ TS Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46MC-TS 	3.6, 7.2, 10, 20, 30	0.76	B1216
Right	AZM46MC-TS R			B1284
Upward	AZM46MC-TS U			B1282
Left	AZM46MC-TS L			B1283

● Cable Drawing Direction

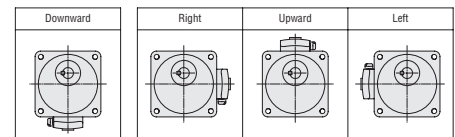


Frame Size 60 mm

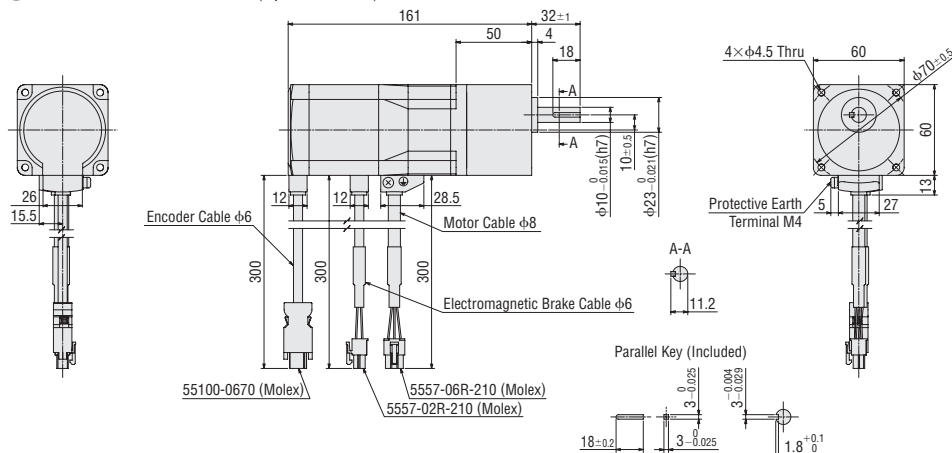
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66MC-TS 	3.6, 7.2, 10, 20, 30	1.7	B1217
Right	AZM66MC-TS R			B1287
Upward	AZM66MC-TS U			B1285
Left	AZM66MC-TS L			B1286

● Cable Drawing Direction



● Installation Screws: M4×60 P0.7 (4 pieces included)



● A number indicating the gear ratio is entered where the box is located within the product name.

Click Here

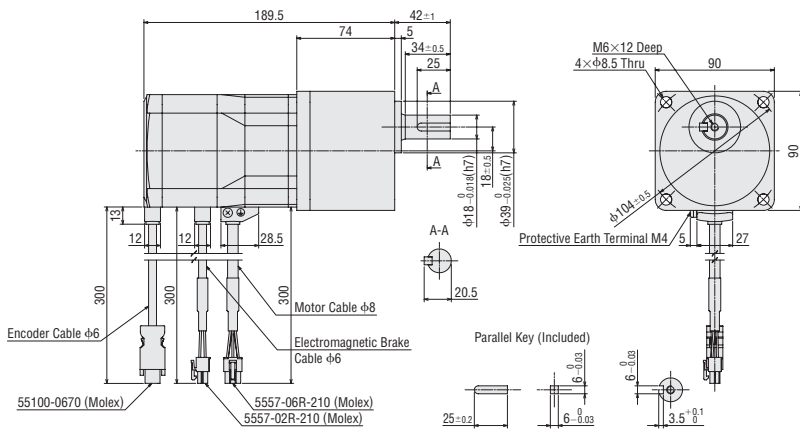
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 90 mm

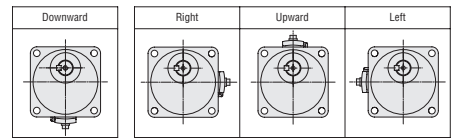
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM98MC-TS 	3.6, 7.2, 10, 20, 30	3.7	B1190
Right	AZM98MC-TS R			B1281
Upward	AZM98MC-TS U			B1279
Left	AZM98MC-TS L			B1280

● Installation Screws: M8×90 P1.25 (4 pieces included)



● Cable Drawing Direction

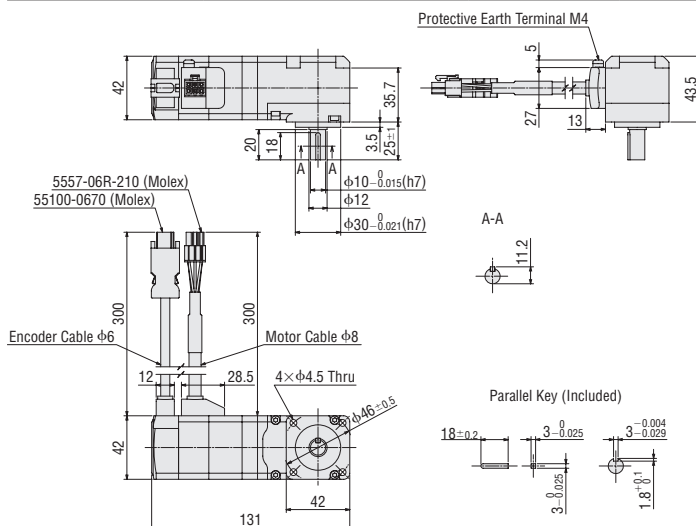


◇ FC Geared Type

Frame Size 42 mm Cable Drawing Direction Upward

2D & 3D CAD

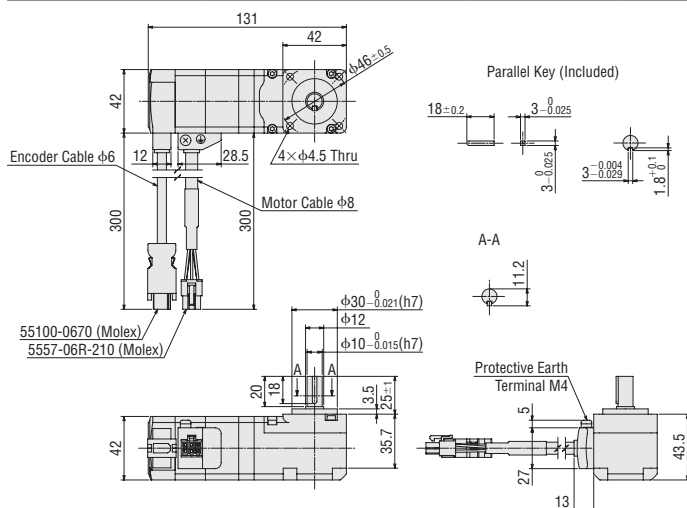
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-FC UA	7.2, 10, 20, 30	0.79	B1314



Frame Size 42 mm Cable Drawing Direction Downward

2D & 3D CAD

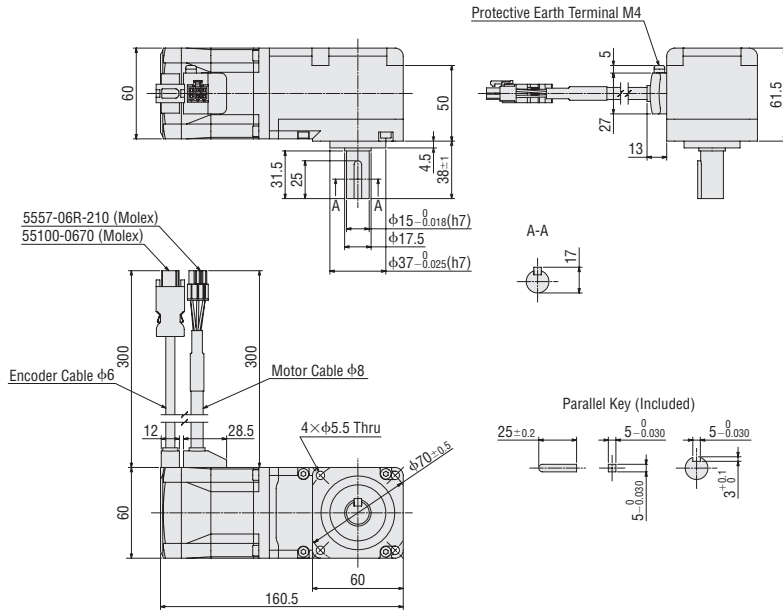
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-FC DA	7.2, 10, 20, 30	0.79	B1313



● A number indicating the gear ratio is entered where the box is located within the product name.

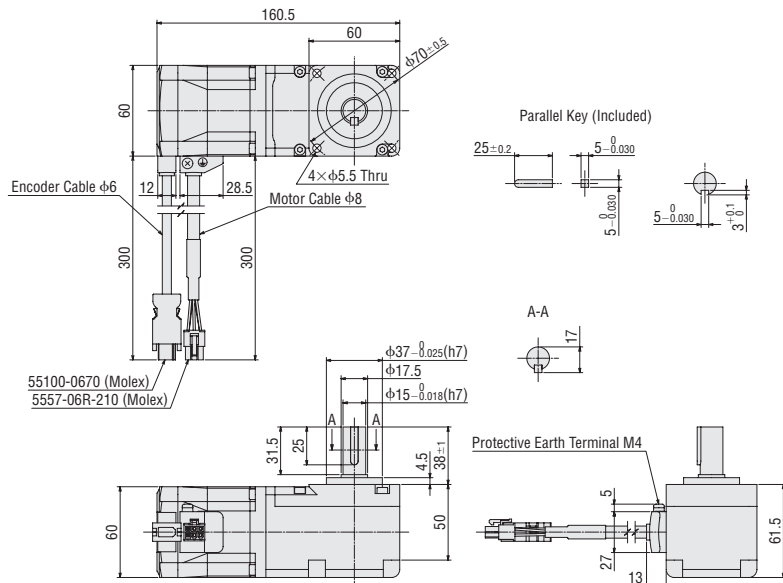
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-FC ■ UA	7.2, 10, 20, 30	1.8	B1318



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-FC ■ DA	7.2, 10, 20, 30	1.8	B1317



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

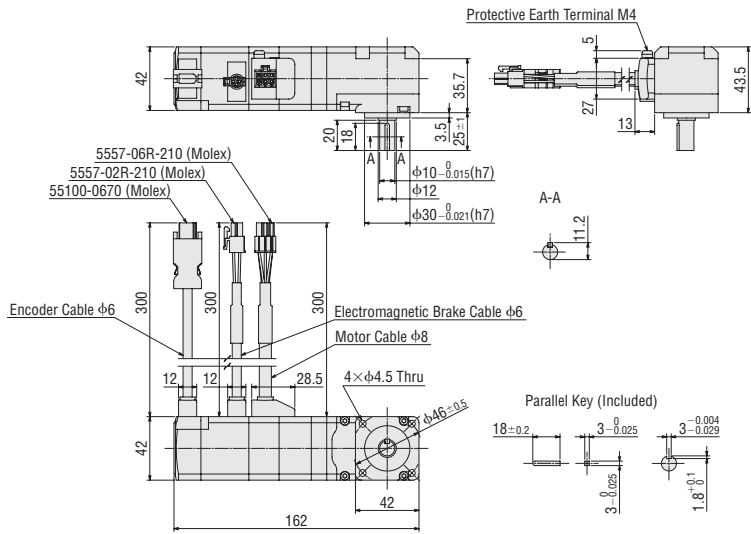
[Click Here](#)

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ FC Geared Type with Electromagnetic Brake

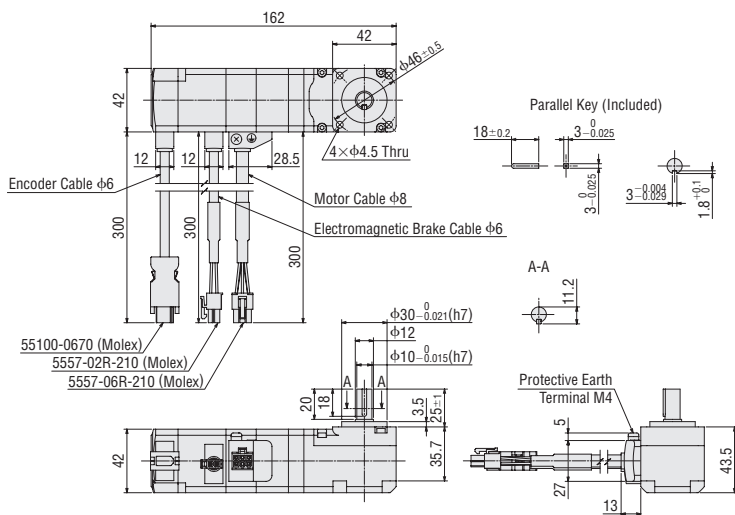
Frame Size 42 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-FC UA	7.2, 10, 20, 30	0.96	B1316



Frame Size 42 mm Cable Drawing Direction Downward **2D & 3D CAD**

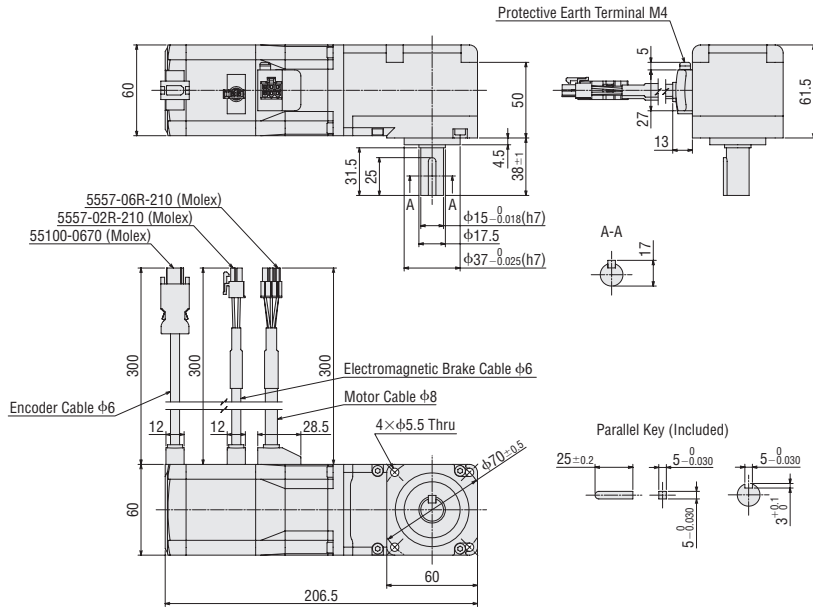
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-FC DA	7.2, 10, 20, 30	0.96	B1315



● A number indicating the gear ratio is entered where the box is located within the product name.

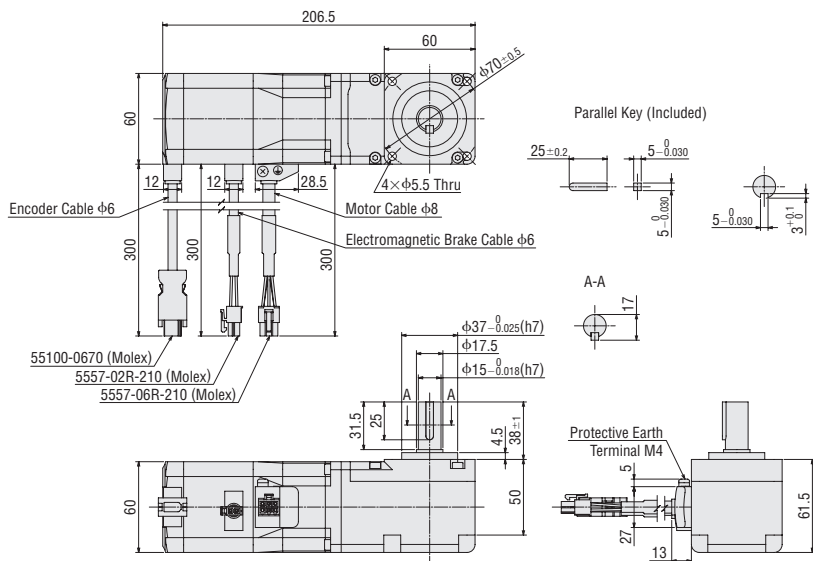
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-FC UA	7.2, 10, 20, 30	2.2	B1320



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-FC DA	7.2, 10, 20, 30	2.2	B1319



● A number indicating the gear ratio is entered where the box is located within the product name.

[Click Here](#)

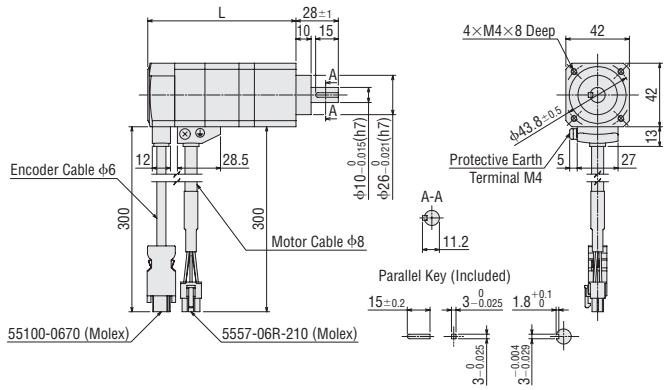
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<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ PS Geared Type

Frame Size 42 mm

2D & 3D CAD

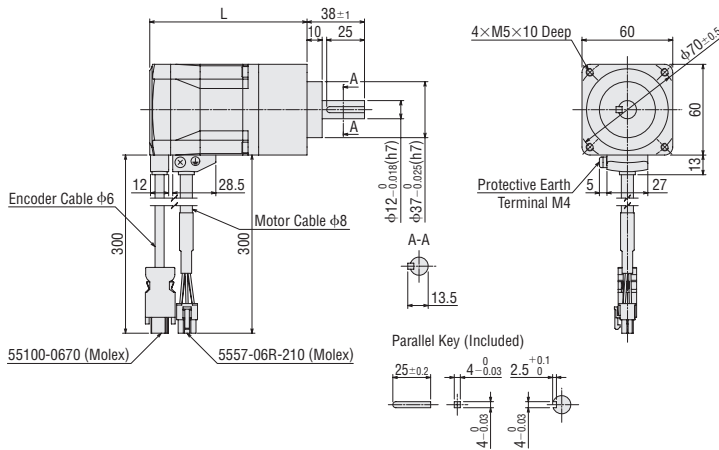
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46AC-PS 	5, 7, 2, 10	98	0.64	B1159
	25, 36, 50	121.5	0.79	B1160



Frame Size 60 mm

2D & 3D CAD

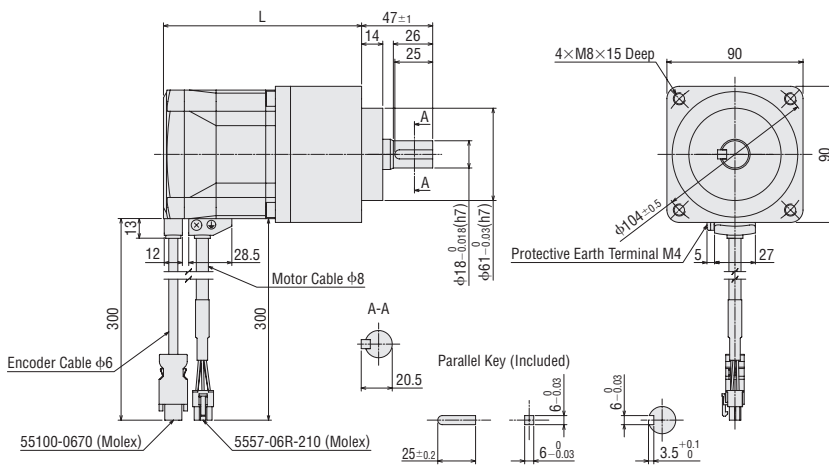
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66AC-PS 	5, 7, 2, 10	104	1.3	B1161
	25, 36, 50	124	1.6	B1162



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM98AC-PS 	5, 7, 2, 10	131	3.3	B1185
	25, 36, 50	158.5	4.1	B1186



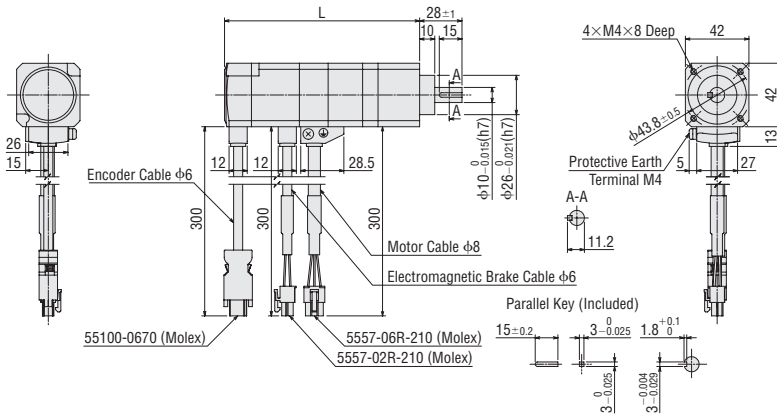
● A number indicating the gear ratio is entered where the box is located within the product name.

◆ PS Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

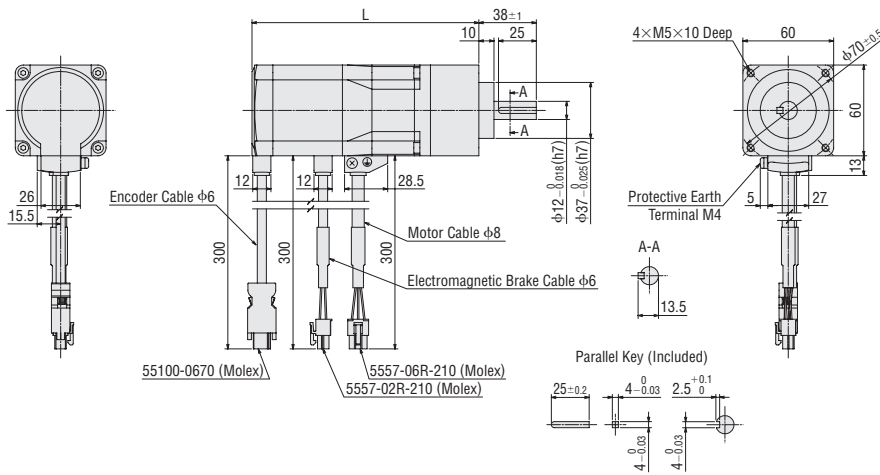
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46MC-PS■	5, 7.2, 10	129	0.81	B1218
	25, 36, 50	152	0.96	B1219



Frame Size 60 mm

2D & 3D CAD

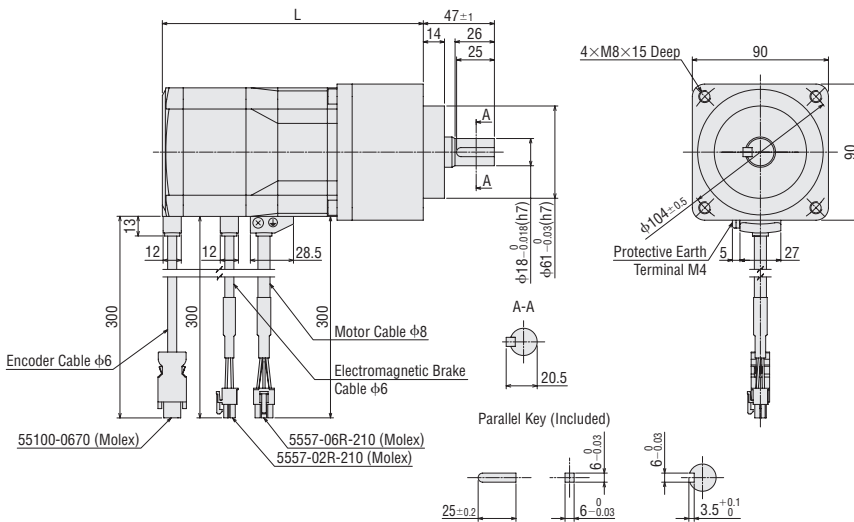
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66MC-PS■	5, 7.2, 10	150	1.7	B1220
	25, 36, 50	170	2.0	B1221



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM98MC-PS■	5, 7.2, 10	172.5	3.9	B1191
	25, 36, 50	200	4.7	B1192



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

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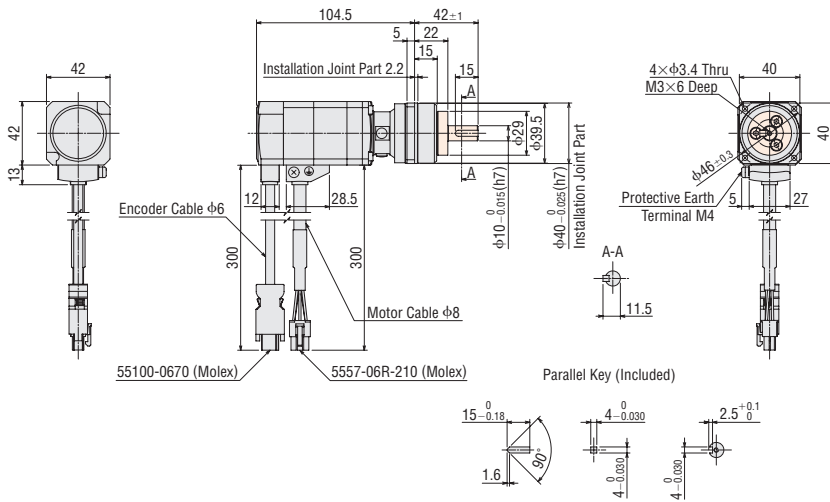
For more information, please visit ORIENTAL MOTOR Website: <https://www.orientalmotor.com.sg/om/tp/index.html>

◇ HPG Geared Type Shaft Output Type

Frame Size 40 mm

2D & 3D CAD

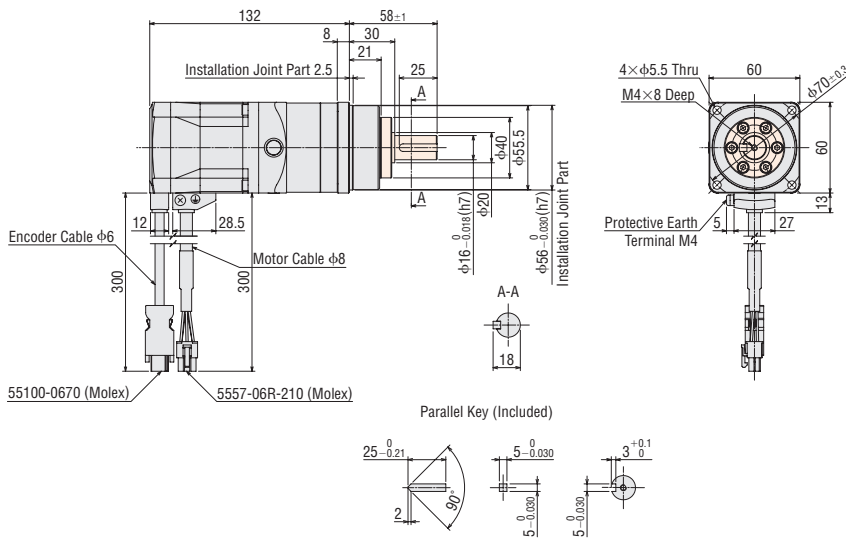
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HP	5, 9	0.71	B1163



Frame Size 60 mm

2D & 3D CAD

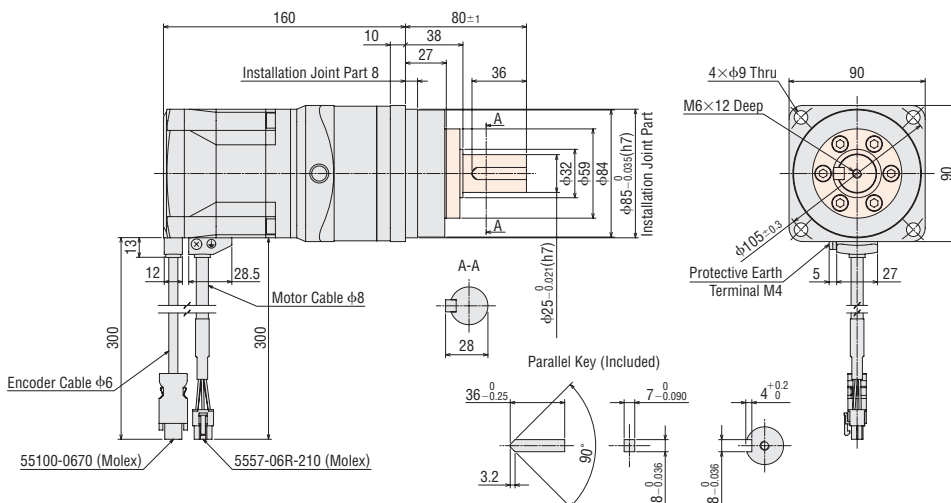
Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HP	5, 15	1.9	B1165



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HP	5, 15	4.8	B1187



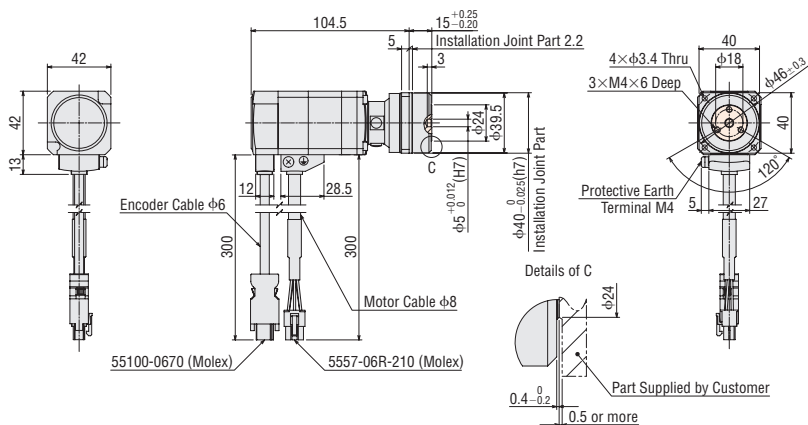
- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

◆ HPG Geared Type Flange Output Type

Frame Size 40 mm

2D & 3D CAD

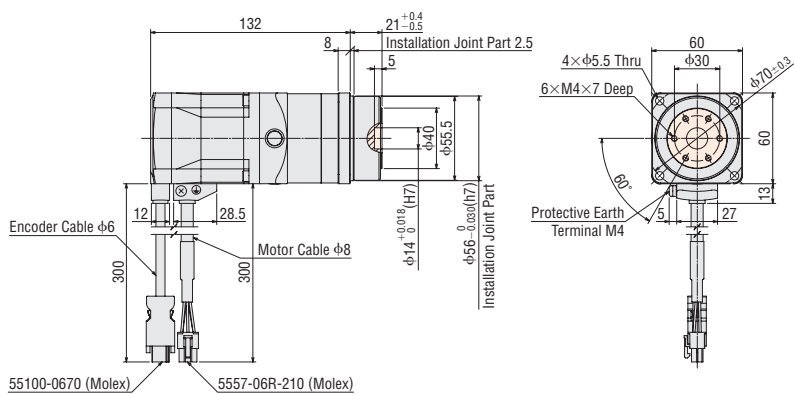
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HP ■F	5, 9	0.66	B1164



Frame Size 60 mm

2D & 3D CAD

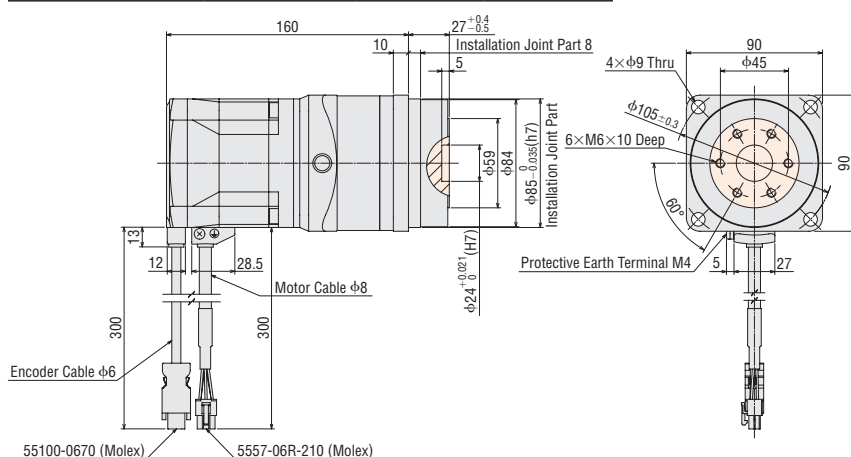
Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HP ■F	5, 15	1.8	B1166



Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HP ■F	5	4.5	B1188
	15	4.4	



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

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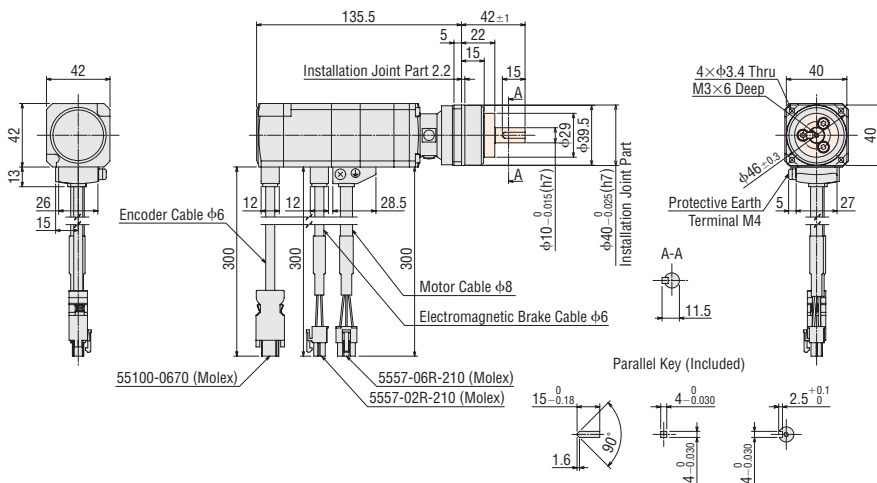
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ HPG Geared Type with Electromagnetic Brake Shaft Output Type

Frame Size 40 mm

2D & 3D CAD

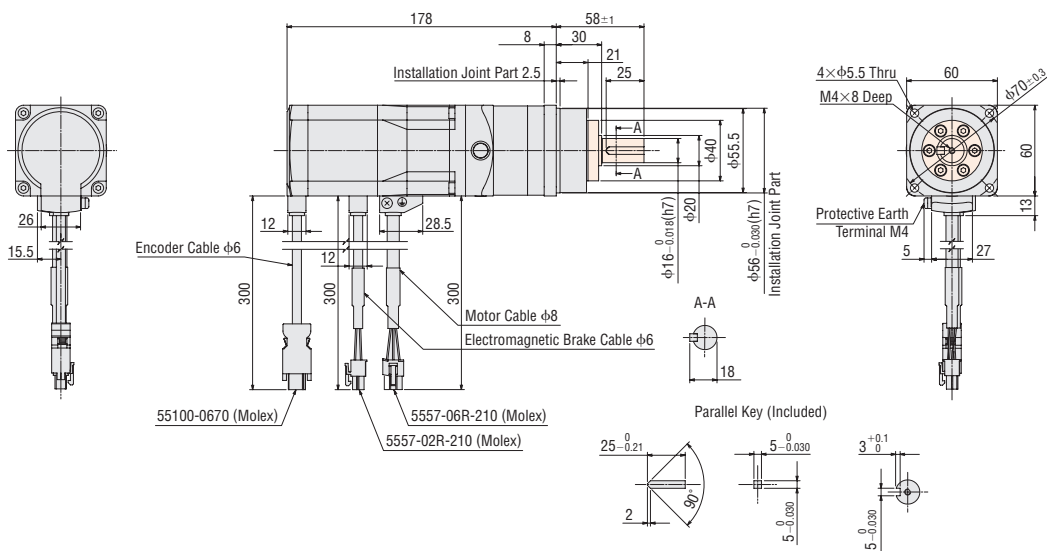
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HP ■	5, 9	0.88	B1222



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HP ■	5, 15	2.3	B1224



06

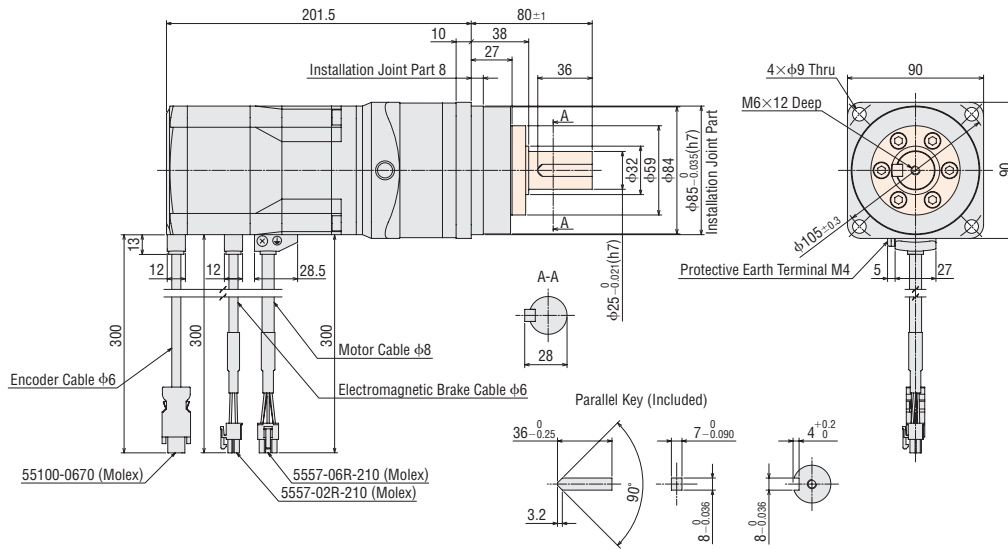
AZ Series

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HP	5, 15	5.4	B1193

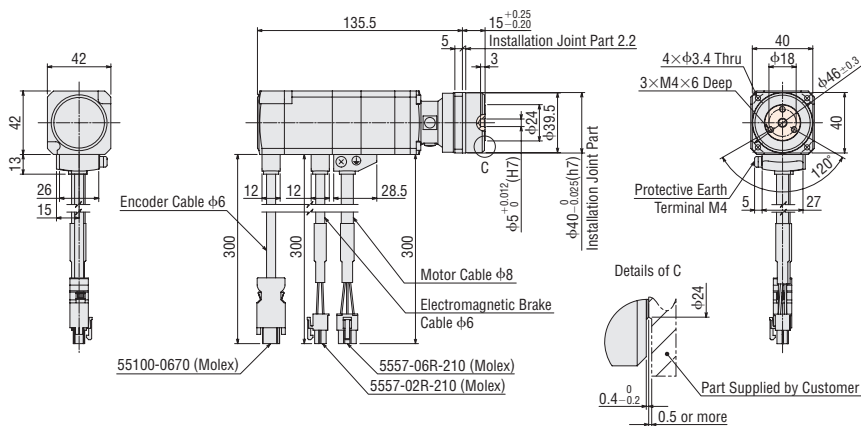


◆ HPG Geared Type with Electromagnetic Brake Flange Output Type

Frame Size 40 mm

2D & 3D CAD

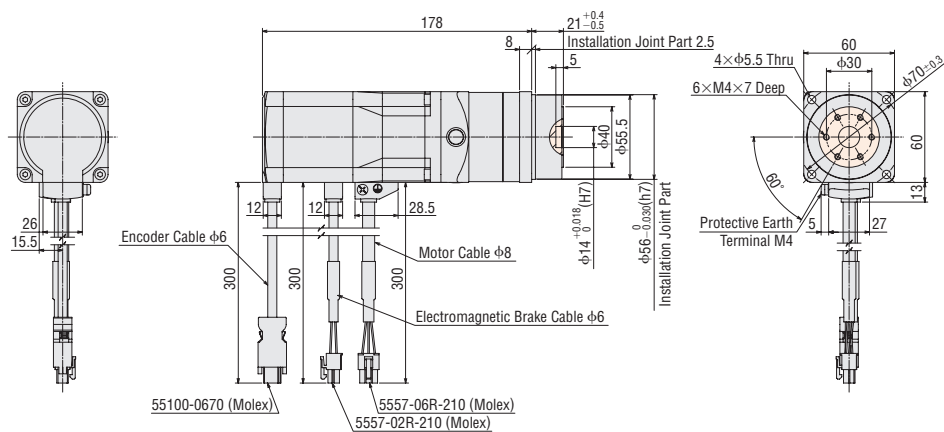
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HP F	5, 9	0.83	B1223



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HP F	5, 15	2.2	B1225



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

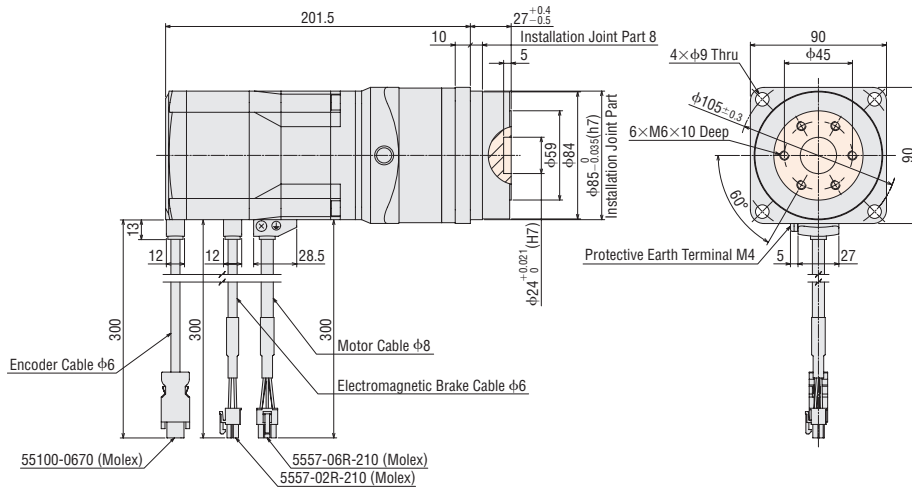
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<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HP F	5	5.1	B1194
	15	5	

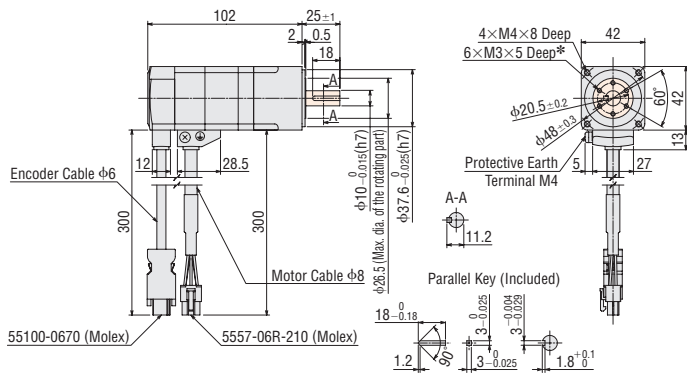


◇ Harmonic Geared Type

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AC-HS ■	50, 100	0.65	B1167

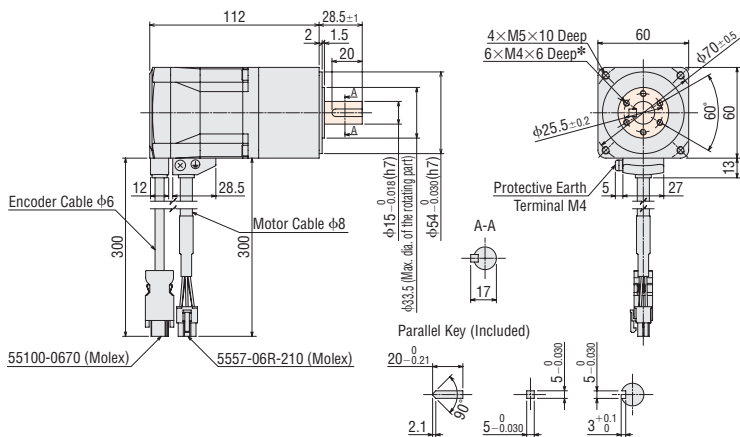


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AC-HS ■	50, 100	1.4	B1168



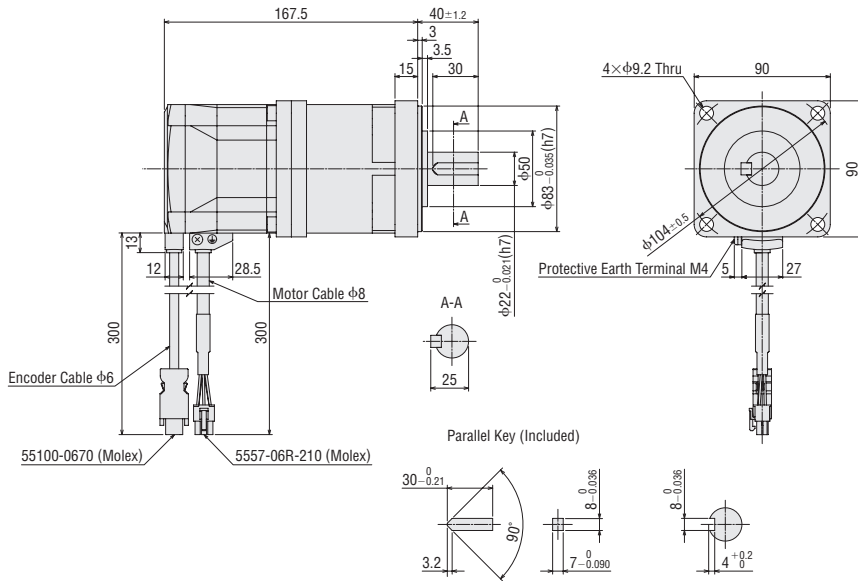
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98AC-HS	50, 100	3.9	B1189

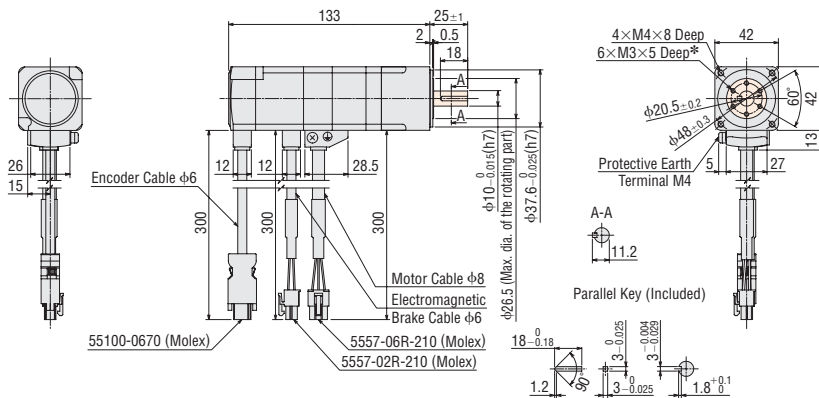


◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MC-HS	50, 100	0.82	B1226

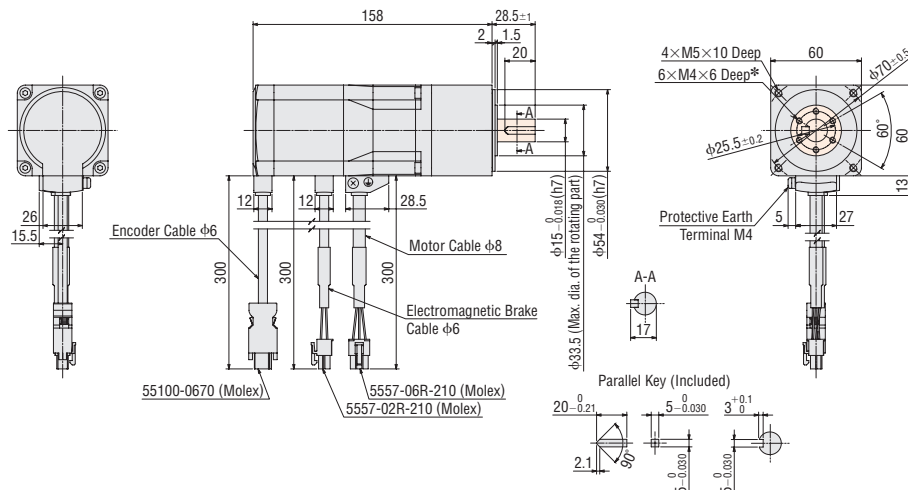


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MC-HS	50, 100	1.8	B1227



*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

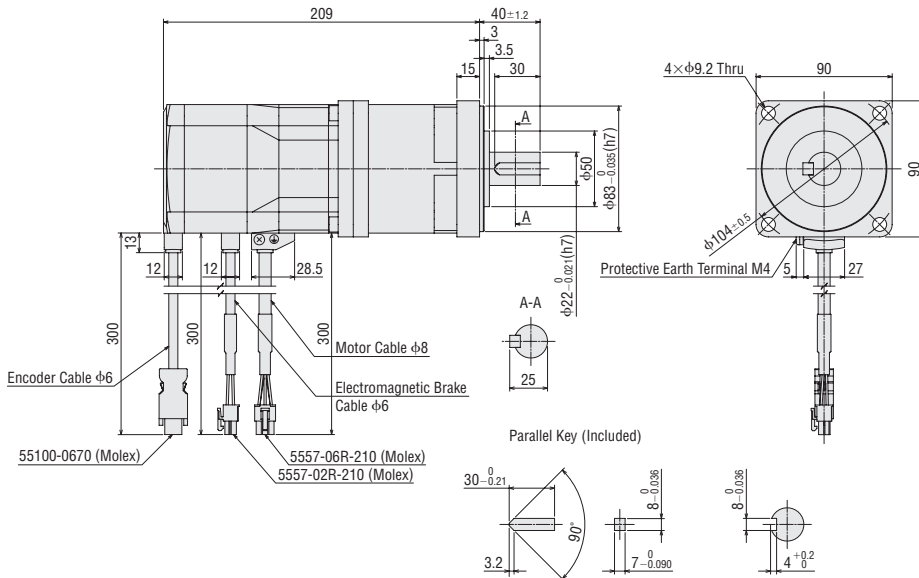
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Frame Size 90 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM98MC-HS 	50, 100	4.5	B1195



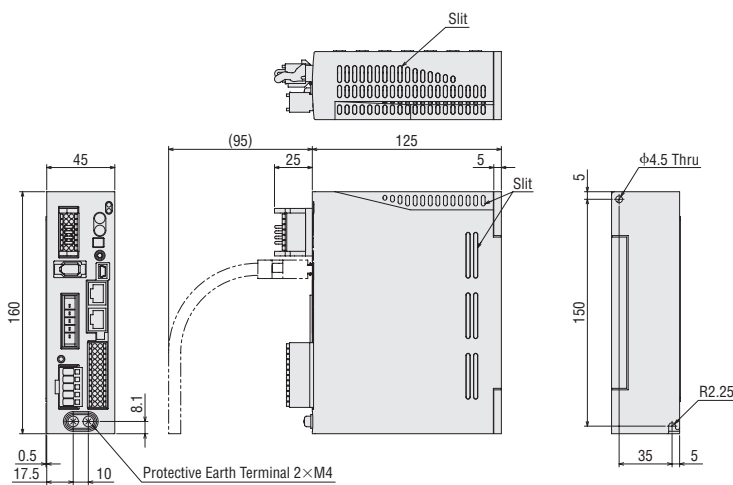
● A number indicating the gear ratio is entered where the box is located within the product name.

● Drivers

2D & 3D CAD

Type	Product Name	Mass kg	2D CAD
Built-in Controller Type	AZD-AD, AZD-CD	0.65	B1095
Pulse Input Type with RS-485 Communication	AZD-AX, AZD-CX		
Pulse Input Type	AZD-A, AZD-C		B1097

● The dimensions below is the drawing of a built-in controller type. The external dimensions and accessories are common to all driver types.



● Accessories

Connector for the Main Power Supply and Regeneration Resistor (CN4)

Connector: 05JFAT-SAXGDK-H5.0
(J.S.T.MFG.CO.,LTD.)
Connector wiring lever

I/O Signals Connector (CN5)

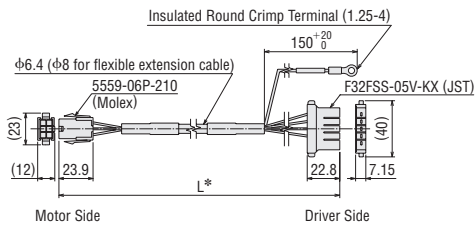
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

Connector for 24 VDC Power-Supply Input/Electromagnetic Brake Connection/Regeneration Resistor Thermal Input/Power Cutoff Signal I/O (CN1)

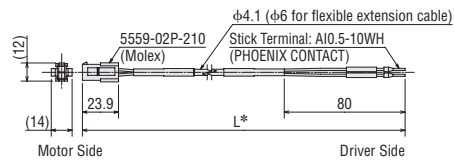
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT)

● Connection Cable Sets/Flexible Connection Cable Sets

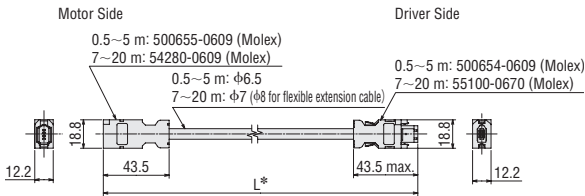
◇ Cable for Motor



◇ Cable for Electromagnetic Brake



◇ Cable for Encoder



*"L" in the above dimensions is replaced by any Length L (m) in " Product Line" on page 06-18.

Note

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

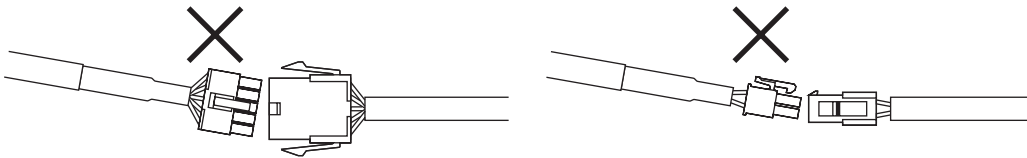
■ Cautions for Using Connection Cables

When using connection cables, make sure you follow the instructions below.

● When inserting the connector

Be sure to hold the connector and firmly insert it straight into the socket.

Inserting the connector at an angle may damage the terminal or result in a bad connection.



● When Disconnecting the Connector

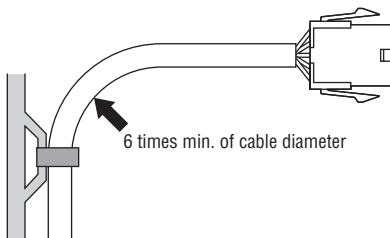
While releasing the lock of the connector, pull it out straight.

Pulling the cable (lead wire) may damage the connector.

● Bending Radius of Cables

The bending radius of the cable, use at least 6 times min. of the cable diameter.

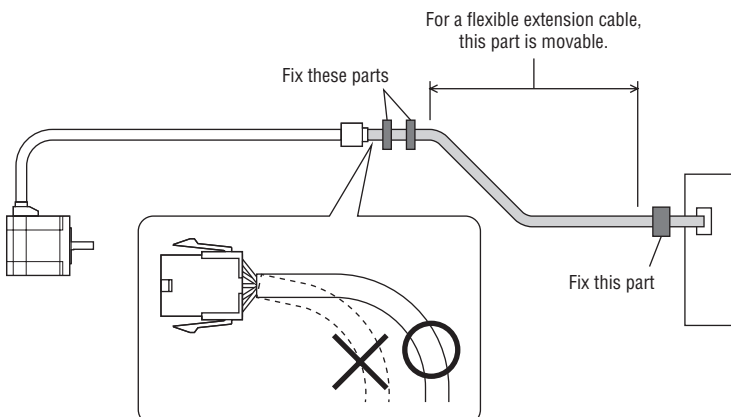
For lead wire types, make sure that the bending radius of the lead wire that you use is at least 4 times larger than the lead wire diameter.



● Method for Fixing the Cable

When fixing the cable, fix a part near the connector to avoid stress on the connector.

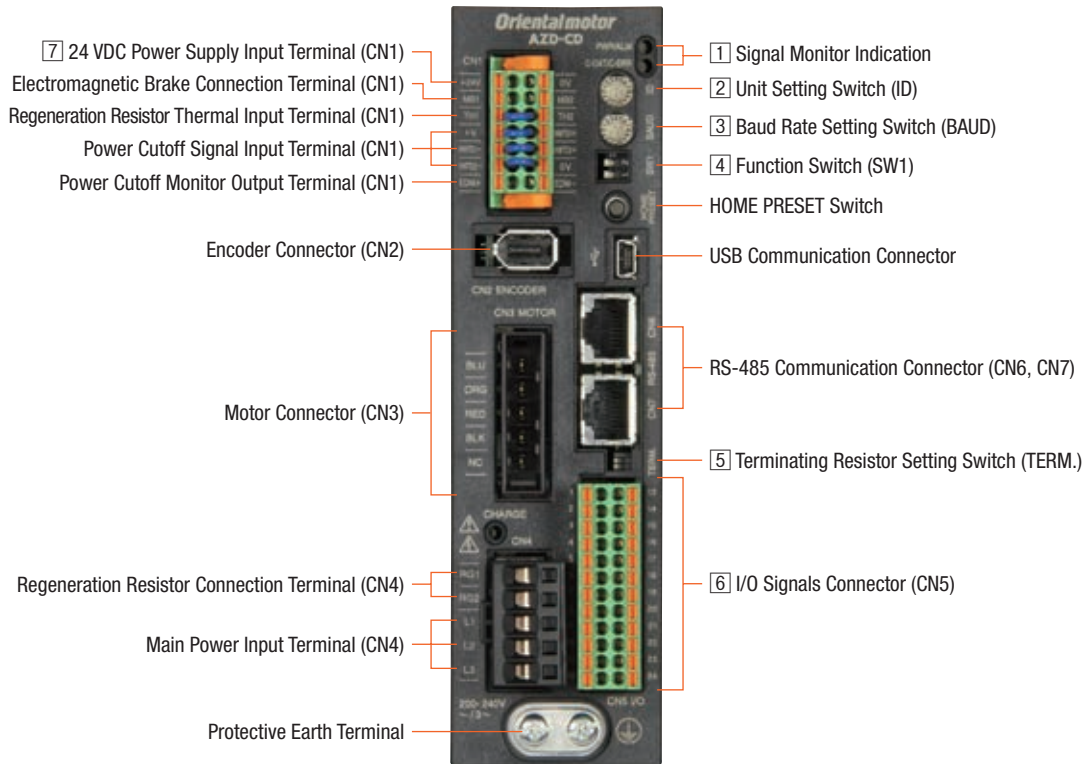
Take measures such as using wide clamps and fixing two parts of the cable to avoid stress on the connector.



Connection and Operation (Built-in controller type/Pulse input type with RS-485 communication)

Names and Functions of Driver Parts

Below is a photo of the built-in controller type.



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
PWR	Green	Power supply indication	When 24 VDC power supply is input
ALM	Red	Alarm indication	When a protective function is activated (blinking)
C-DAT	Green	Communication indication	When communication data is being sent or received
C-ERR	Red	Communication error indication	When communication data is in error

2 Unit Setting Switch

Indication	Function
ID	Set this when you use RS-485 communication. Set the unit number. (Factory setting) Built-in controller type: 0 Pulse input type with RS-485 communication: 1

3 Baud Rate Setting Switch

Indication	Function
BAUD	Set this when you use RS-485 communication. Set the baud rate. (Factory setting) Built-in controller type: 7 Pulse input type with RS-485 communication: 4

◇ RS-485 Baud Rate Setting

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5	230400
6	Not used
7	Network converter
8~F	Not used

4 Function Switch

Indication	No.	Function
SW1	1	Use in combination with the unit setting switch (ID) to set the axis number. (Factory setting) OFF
	2	Set the RS-485 communication protocol. (Factory setting) Built-in controller type: OFF Pulse input type with RS-485 communication: ON

5 Terminating Resistor Setting Switch

Indication	No.	Function
TERM.	1	Set the terminating resistor (120 Ω) for RS-485 communication (Factory setting: OFF).
	2	OFF: Terminating resistor not used ON: Terminating resistor used

● Configure both No. 1 and No. 2 to the same setting.

6 I/O Signals Connector (CN5)

For the pulse input type with RS-485 communication, No. 1, 2, 13, and 14 pins are dedicated to pulse input. For wire connection with programmable controller, refer to "Pulse Input Type" on Page 06-63.

Indication	Pin No.	Driver Type	Signal Name	Description
CN5	1	Built-in Controller Type	IN0	START This signal is used to start positioning operation.
		Pulse Input Type with RS-485 Communication	CW+* [PLS+]	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	Built-in Controller Type	IN2	M1 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse Input Type with RS-485 Communication	CCW+* [DIR+]	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	Common	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	Common	IN6	STOP Stops the motor.
	5	Common	IN-COM [0-7]*	IN0~IN7 Input Common
	6	Common	IN8	FW-JOG Starts the JOG operation.
	7	Common	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	Common	OUT2	PLS-RDY Not used.
	9	Common	OUT4	MOVE Output during motor operation.
	10	Common	OUT-COM*	Output Common
	11	Common	ASG+	A-Phase Pulse Output +
	12	Common	BSG+	B-Phase Pulse Output +
	13	Built-in controller type	IN1	M0 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CW-* [PLS-]	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	Built-in controller type	IN3	M2 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW-* [DIR-]	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	Common	IN5	FREE Stops motor excitation.
	16	Common	IN7	ALM-RST Resets the alarms.
	17	Common	IN-COM [8-9]*	IN8, IN9 Input Common
	18	Common	IN9	RV-JOG Starts the JOG operation.
	19	Common	OUT1	IN-POS Outputs when the motor operation is finished.
	20	Common	OUT3	READY Outputs when the driver is ready for operation.
21	Common	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).	
22	Common	GND*	Ground	
23	Common	ASG-	A-Phase Pulse Output -	
24	Common	BSG-	B-Phase Pulse Output -	

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

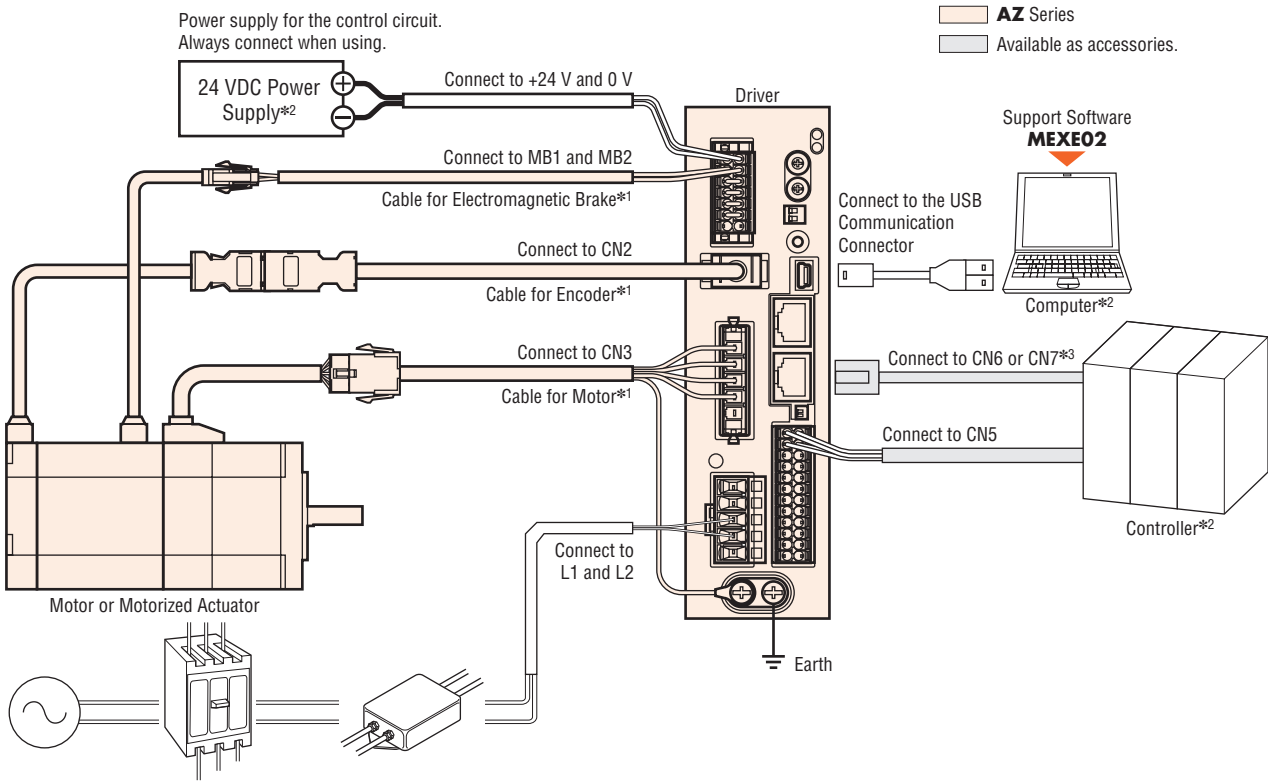
*Initial settings cannot be changed.

7 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Resistor Thermal Input Terminal/Power Cutoff Signal Input Terminal/Power Cutoff Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Description
+24V	Input	24 VDC Power Supply Input Terminal +	The power supply for the driver control circuit. Always connect when using.
0V		24 VDC Power Supply Input Terminal -	
MB1	Output	Electromagnetic Brake Connection Terminal -	For an electromagnetic brake type motor, connect the electromagnetic brake cable line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Resistor Thermal Input Terminal	Connect the accessory regeneration resistor (RGB100). When not connecting a regeneration resistor, short these 2 terminals to each other.
TH2		Regeneration Resistor Thermal Input Terminal	
HWT01+	Input	Power Cutoff Signal Input Terminal 1 +	Connect the switches and the programmable controller. If either the HWT01 input or HWT02 input is OFF, power supply to the motor will be cut off directly with hardware, without passing through the CPU.
HWT01-		Power Cutoff Signal Input Terminal 1 -	
HWT02+		Power Cutoff Signal Input Terminal 2 +	
HWT02-		Power Cutoff Signal Input Terminal 2 -	
EDM+	Output	Power Cutoff Monitor Output Terminal +	Connects the programmable controller. If both the HWT01 input and HWT02 input are OFF, EDM output will be turned ON.
EDM-		Power Cutoff Monitor Output Terminal -	

● Connection Diagram

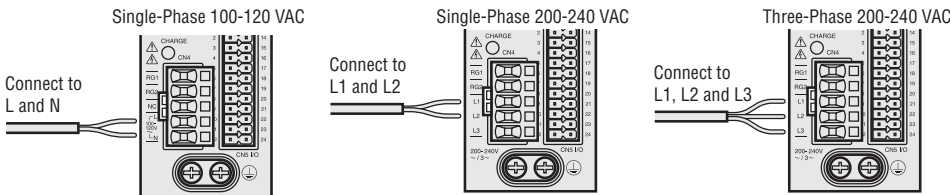
◇ Connections with Peripheral Equipment



- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.
- *3 Connect to the controller when controlling by RS-485 communication.

◇ Connecting the Main Power Supply

The connection method varies depending on power supply specifications.



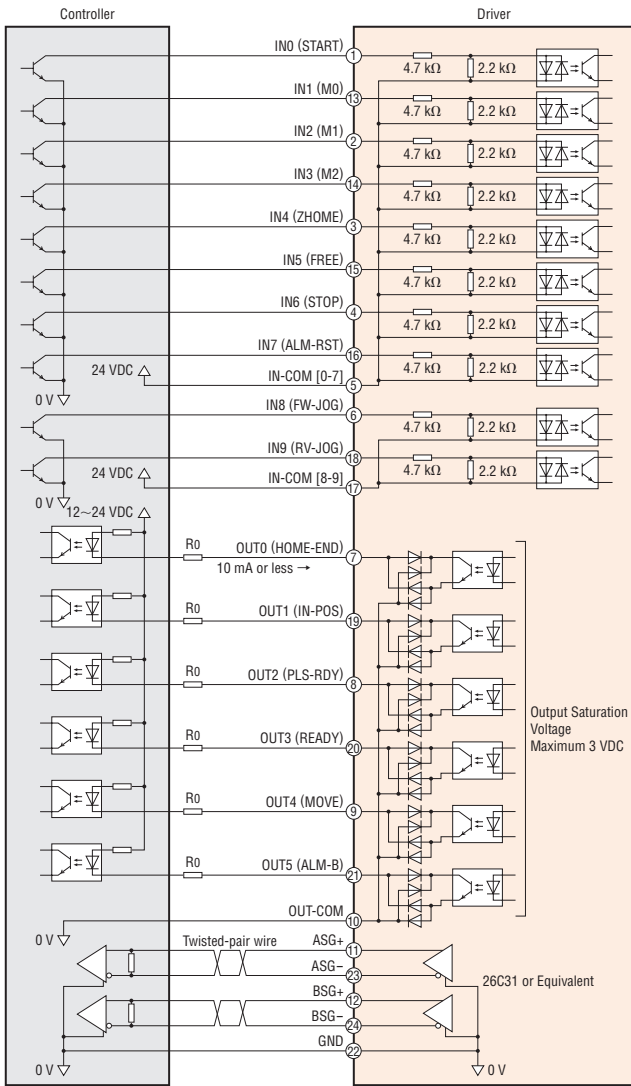
◇ Connection of the USB Cable

Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to Programmable Controller (Built-in controller type)

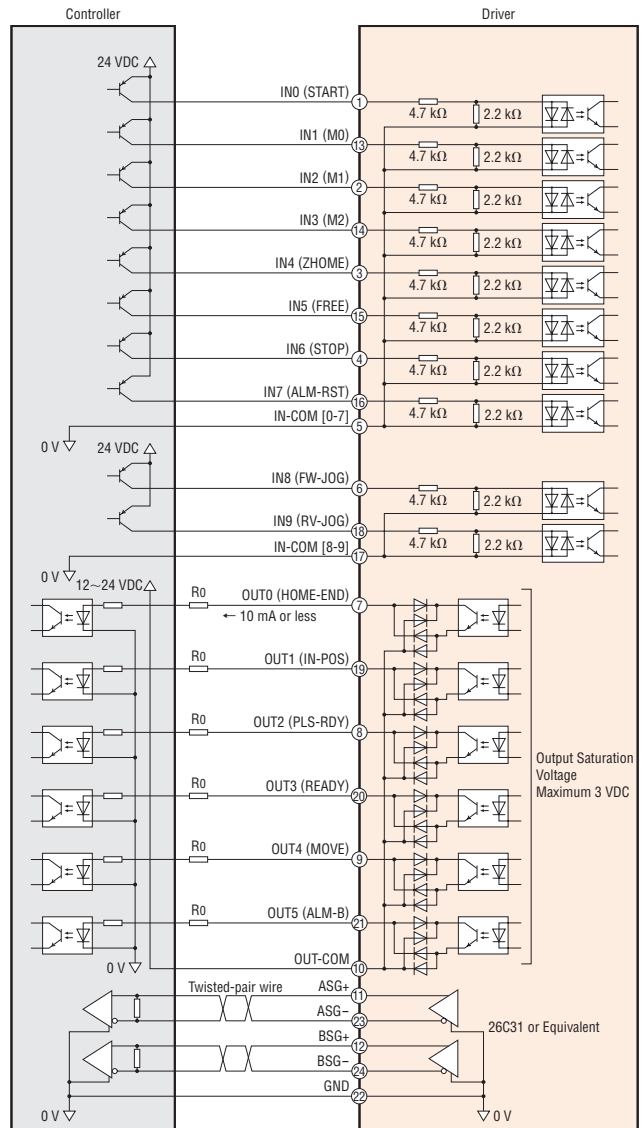
● Connection Diagram for Connection with Current Sink Output Circuit



Note

- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

● Connection Diagram for Connection with Current Source Output Circuit



Note

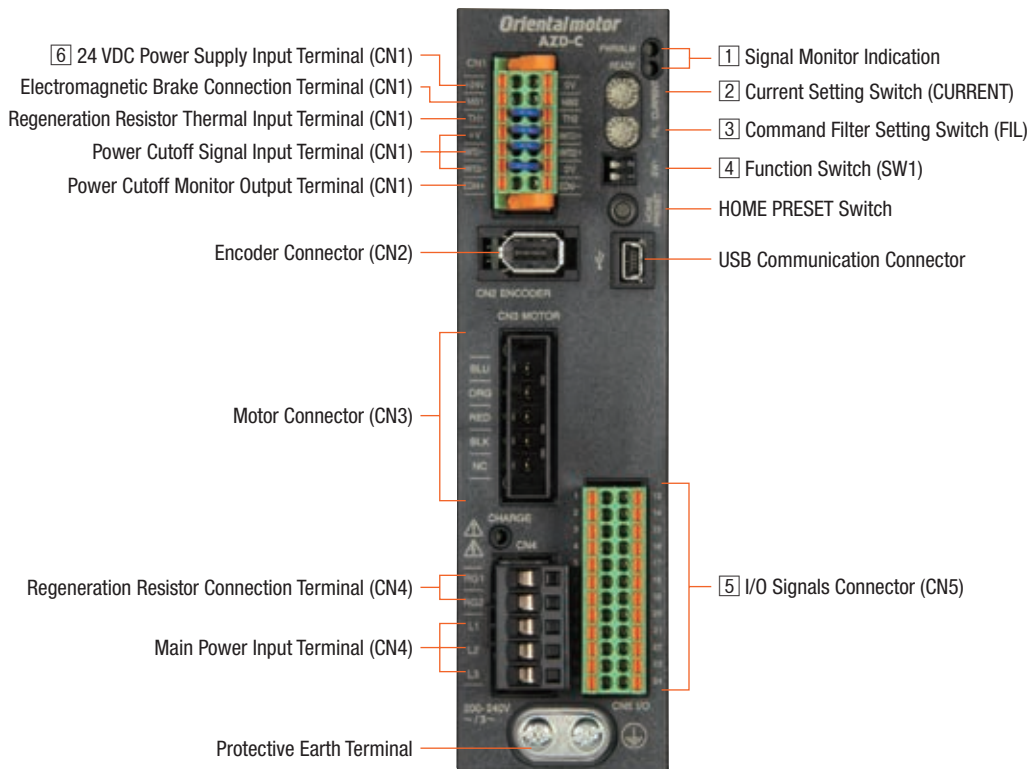
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

◇ Connecting to the Programmable Controller (Pulse input type with RS-485 communication)

The connection diagram is similar to that of the pulse input type. Refer to page 06-63.

Connection and Operation (Pulse input type)

Names and Functions of Driver Parts



1] Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
PWR	Green	Power supply indication	When 24 VDC power supply is input
ALM	Red	Alarm indication	When a protective function is activated (blinking)
READY	Green	READY output	When READY output is ON

2] Current Setting Switch

Indication	Function
CURRENT	Set the base current, which is the basis of the running current and the standstill current (Factory setting: F).

3] Command Filter Setting Switch

Indication	Function
FIL	Adjust the responsiveness of the motor (Factory setting: 1).

4] Function Switch

Indication	No.	Function
SW1	1	Sets the resolution per one rotation of the motor output shaft (Factory setting: OFF [1000 p/r]).
	2	Sets the pulse input mode as either 1-pulse input mode or 2-pulse input mode (Factory setting: OFF [2-pulse input mode]).

5 I/O Signals Connector (CN5)

Indication	Pin No.	Signal Name	Description
CN5	1	CW+ [PLS+]*	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	CCW+ [DIR+]*	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	IN6	STOP Stops the motor.
	5	IN-COM [4-7]*	IN4-IN7 Input Common
	6	IN8	FW-JOG Starts the JOG operation.
	7	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	OUT2	PLS-RDY Output when the pulse input preparation is completed.
	9	OUT4	MOVE Output during motor operation.
	10	OUT-COM*	Output Common
	11	ASG+	A-Phase Pulse Output +
	12	BSG+	B-Phase Pulse Output +
	13	CW- [PLS-]*	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	CCW- [DIR-]*	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	IN5	FREE Stops motor excitation.
	16	IN7	ALM-RST Resets the alarms.
	17	IN-COM [8-9]*	IN8, IN9 Input Common
	18	IN9	RV-JOG Starts the JOG operation.
	19	OUT1	IN-POS Outputs when the motor operation is finished.
	20	OUT3	READY Outputs when the driver is ready for operation.
	21	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).
	22	GND*	Ground
	23	ASG-	A-Phase Pulse Output -
	24	BSG-	B-Phase Pulse Output -

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the **AZ** Series.

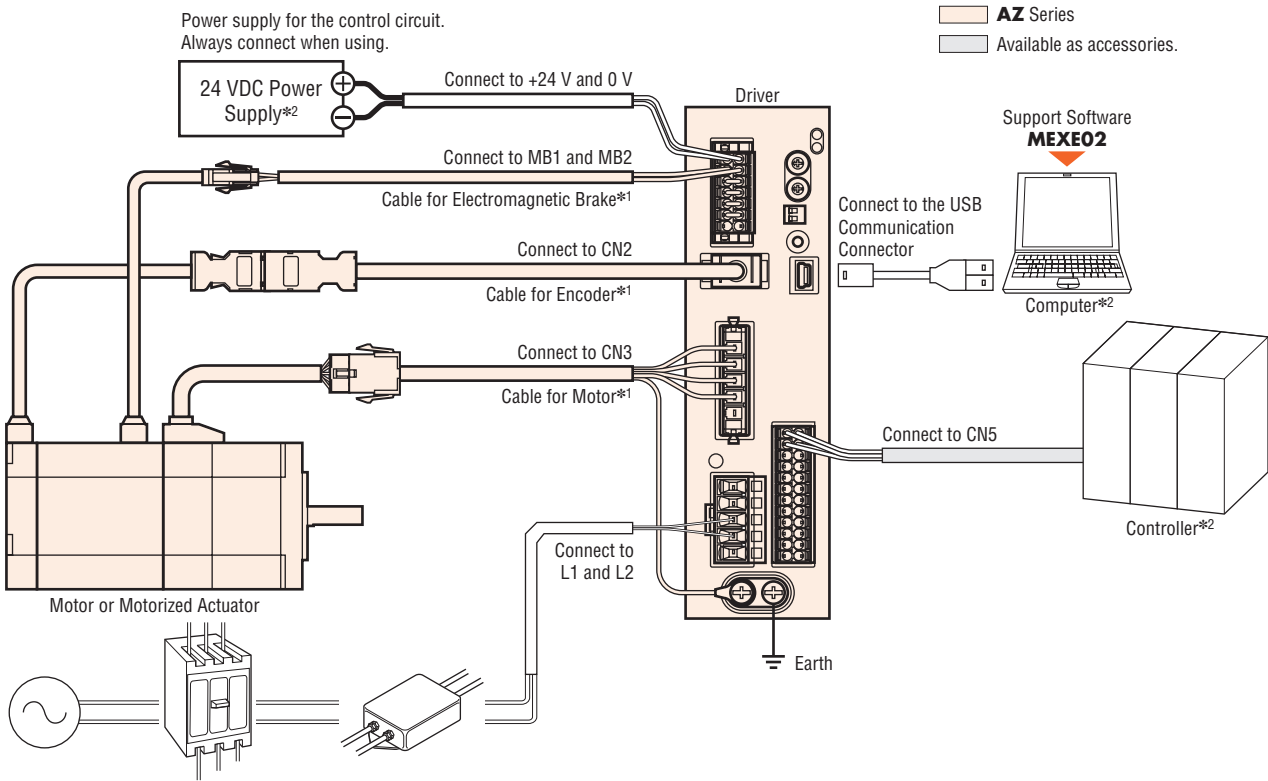
*Initial settings cannot be changed.

6 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Resistor Thermal Input Terminal/Power Cutoff Signal Input Terminal/Power Cutoff Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Description
+24V	Input	24 VDC Power Supply Input Terminal +	The power supply for the driver control circuit. Always connect when using.
0V		24 VDC Power Supply Input Terminal -	
MB1	Output	Electromagnetic Brake Connection Terminal -	For an electromagnetic brake type motor, connect the electromagnetic brake cable line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Resistor Thermal Input Terminal	Connect the accessory regeneration resistor (RGB100). When not connecting a regeneration resistor, short these 2 terminals to each other.
TH2		Regeneration Resistor Thermal Input Terminal	
HWT01+	Input	Power Cutoff Signal Input Terminal 1 +	Connect the switches and the programmable controller. If either the HWT01 input or HWT02 input is OFF, power supply to the motor will be cut off directly with hardware, without passing through the CPU.
HWT01-		Power Cutoff Signal Input Terminal 1 -	
HWT02+		Power Cutoff Signal Input Terminal 2 +	
HWT02-		Power Cutoff Signal Input Terminal 2 -	
EDM+	Output	Power Cutoff Monitor Output Terminal +	Connects the programmable controller. If both the HWT01 input and HWT02 input are OFF, EDM output will be turned on.
EDM-		Power Cutoff Monitor Output Terminal -	

● Connection Diagram

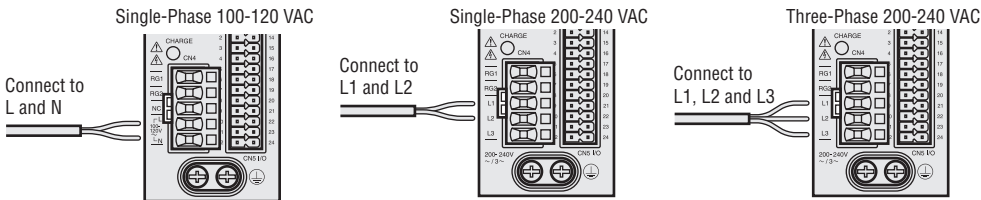
◇ Connections with Peripheral Equipment



- *1 Keep the wiring distance between the motor and driver to 20 m or less.
- *2 Not supplied.

◇ Connecting the Main Power Supply

The connection method varies depending on power supply specifications.



◇ Connection of the USB Cable

Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed.

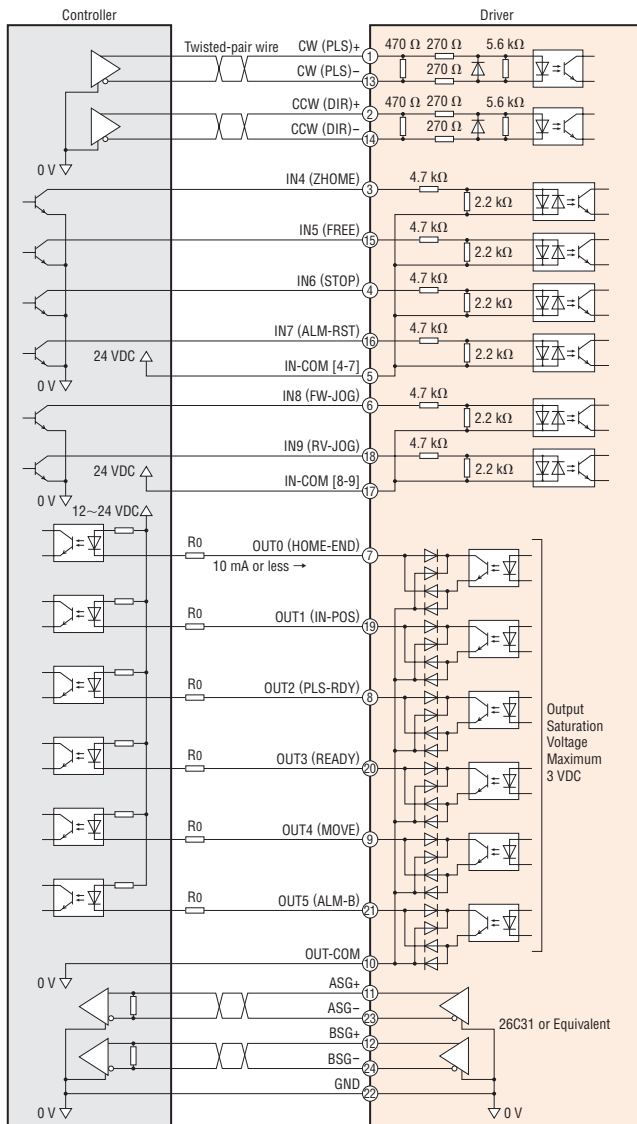
Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to the Programmable Controller (Pulse input type)

● Connection Diagram for Connection with Current Sink Output Circuit

When the pulse input is the line driver

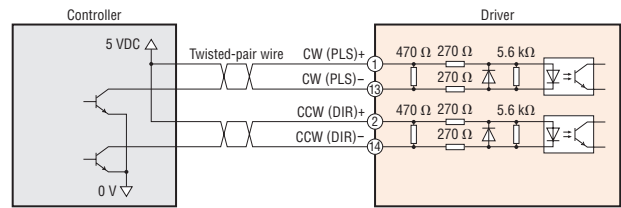


Note

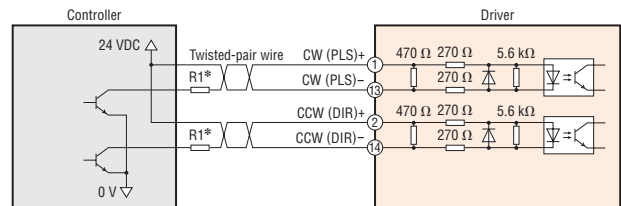
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

● When the pulse input signal is 5 VDC



● When the pulse input signal is 24 VDC



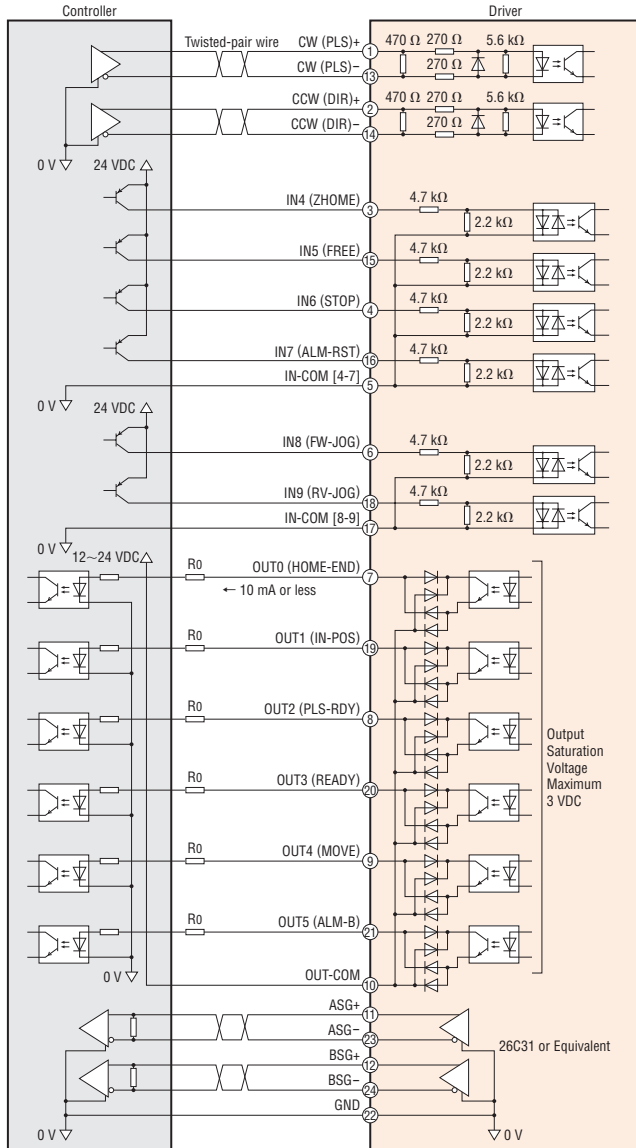
* R_1 : 1.2 k Ω ~2.2 k Ω , 0.5 W or more

Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 k Ω ~2.2 k Ω , 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

•Connection Diagram for Connection with Current Source Output Circuit

When the pulse input is the line driver

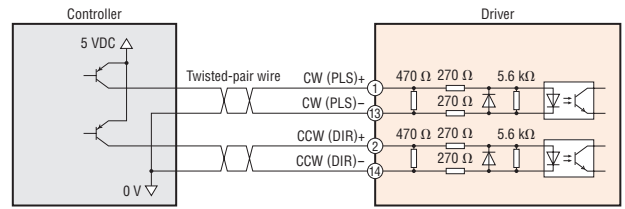


Note

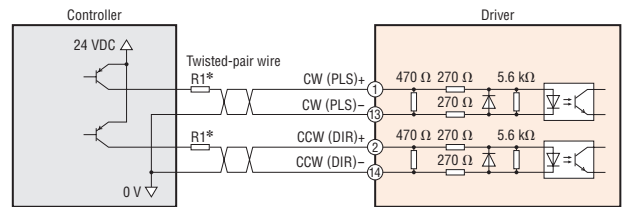
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

•When the pulse input signal is 5 VDC



•When the pulse input signal is 24 VDC



* R_1 : 1.2 k Ω ~2.2 k Ω , 0.5 W or more

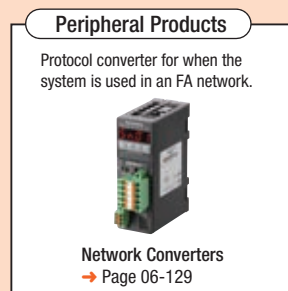
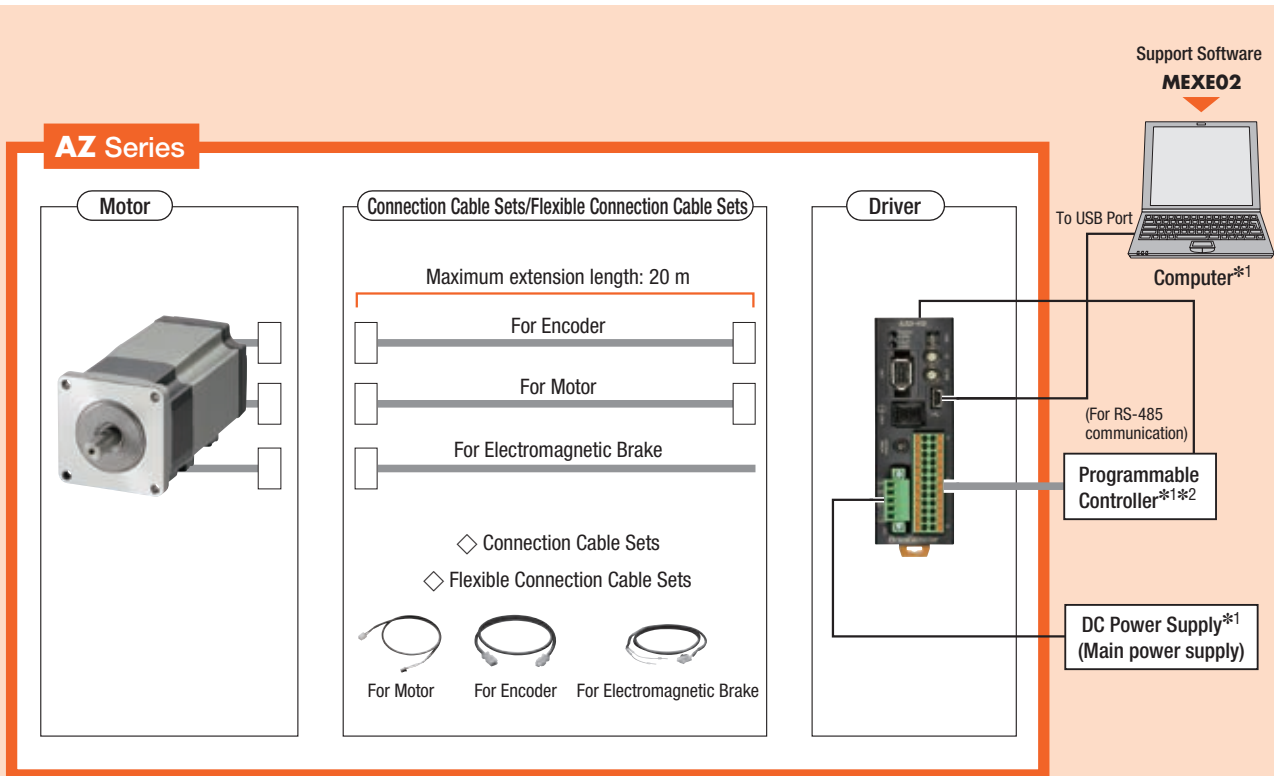
Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 k Ω ~2.2 k Ω , 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

System Configuration

- When a standard type motor with electromagnetic brake is combined with a built-in controller type driver or a pulse input type driver with RS-485 communication

The figure below shows a sample configuration which includes a built-in controller type driver and which uses I/O control or RS-485 communication. The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



*1 Not supplied.

*2 For a pulse input type with RS-485 communication, a pulse oscillation function is required.

System Configuration Example

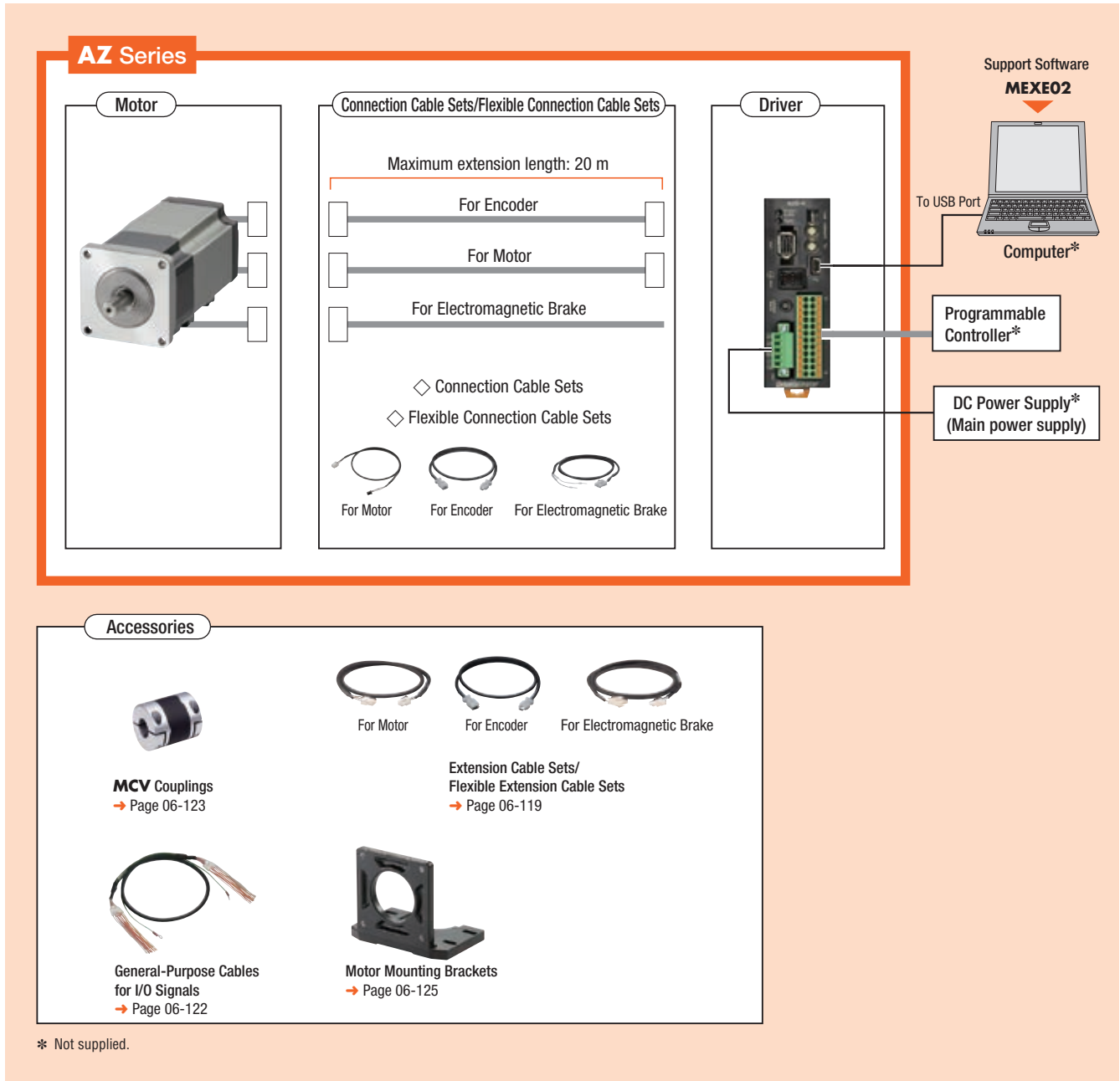
AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MK	AZD-KD	CC030VZFB2	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD488	SGD83	SGD14	SGD100	SGD25

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 directly connected to a driver. To connect the motor to the driver, use a connection cable.

● When a standard type motor with electromagnetic brake is combined with a pulse input type driver
 The figure below shows a sample configuration of a single axis system which uses a programmable controller (equipped with a pulse oscillator).
 The motor, driver, and connection cable set/flexible connection cable set need to be separately provided.



● System Configuration Example

AZ Series			Sold Separately		
Motor	Driver	Connection Cable Sets	Motor Mounting Brackets	Flexible Couplings	General-Purpose Cable for I/O Signals (1 m)
AZM66MK	AZD-K	CC030VZFB2	PAL2P-5	MCV251010	CC16D010B-1
SGD625	SGD425	SGD83	SGD14	SGD100	SGD25

● 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 directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Motors

Standard Type

AZM 6 6 A 0 K

① ② ③ ④ ⑤ ⑥

PS, HPG, Harmonic Geared Type

AZM 6 6 A K - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

TS Geared Type

AZM 6 6 A K - TS 7.2 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

FC Geared Type

AZM 6 6 A K - FC 7.2 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

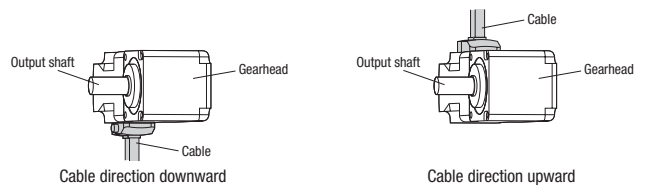
①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	1: 20 mm 2: 28 mm (30 mm for the Harmonic Geared Type) 4: 42 mm (40 mm for the HPG Geared Type) 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Additional Function*	0: Straight 1: With Key
⑥	Motor Specifications	K: DC Power Supply Input Specifications
⑦	Gear Type	PS: PS Geared Type HP: HPG Geared Type HS: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Output Shaft Type	HPG Geared Type Blank: Shaft Output F: Flange Output

*When the name of a standard type does not contain a number representing an additional function, it is a single-sided milled type.

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	K: DC Power Supply Input Specifications
⑥	Gear Type	TS: TS Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction	U: Upward L: Left R: Right

①	Motor Type	AZM: AZ Series Motor
②	Motor Frame Size	4: 42 mm 6: 60 mm
③	Motor Case Length	
④	Output Shaft Shape	A: Single Shaft M: With Electromagnetic Brake
⑤	Motor Specifications	K: DC Power Supply Input Specifications
⑥	Gear Type	FC: FC Geared Type
⑦	Gear Ratio	
⑧	Cable Drawing Direction*	D: Downward U: Upward
⑨	Identification	A: Solid Shaft

*The cable drawing direction is based on the assumption that the output shaft is at left and the gearhead is at right.



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

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	Applied Model	Z: For AZ Series
⑤	Reference Number	Blank: For frame size 42 mm (40 mm for the HPG Geared Type), 60 mm 2: For frame size 20 mm, 28 mm (30 mm for the Harmonic Geared Type)
⑥	Cable Type	F: Connection Cable Set R: Flexible Connection Cable Set
⑦	Description	Blank: For the product with no Electromagnetic Brakes B: For the product with Electromagnetic Brakes
⑧	Cable Specifications	2: DC Power Supply Input

Driver

AZD - K D

① ② ③

Connection Cable Set/Flexible Connection Cable Set

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Product Line

The motor, driver, and connection cables need to purchase separately.

Motors

◇ Standard Type

Frame Size	Product Name	List Price
20 mm	AZM14AK	SGD313
	AZM15AK	SGD313
28 mm	AZM24AK	SGD313
	AZM26AK	SGD313
42 mm	AZM46AK	SGD340
	AZM46AOK	SGD340
	AZM48AK <small>NEW</small>	SGD353
	AZM48AOK <small>NEW</small>	SGD353
	AZM48A1K <small>NEW</small>	SGD365
60 mm	AZM66AK	SGD400
	AZM66AOK	SGD400
	AZM66A1K	SGD413
	AZM69AK	SGD406
	AZM69AOK	SGD406
	AZM69A1K	SGD419



◇ Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK	SGD515
	AZM46MOK	SGD515
60 mm	AZM66MK	SGD625
	AZM66MOK	SGD625
	AZM66M1K	SGD638
	AZM69MK	SGD631
	AZM69MOK	SGD631
	AZM69M1K	SGD644



◇ TS Geared Type

Frame Size	Product Name	List Price
42 mm	AZM46AK-TS3.6	SGD488
	AZM46AK-TS3.6R	SGD488
	AZM46AK-TS3.6U	SGD488
	AZM46AK-TS3.6L	SGD488
	AZM46AK-TS7.2	SGD488
	AZM46AK-TS7.2R	SGD488
	AZM46AK-TS7.2U	SGD488
	AZM46AK-TS7.2L	SGD488
	AZM46AK-TS10	SGD505
	AZM46AK-TS10R	SGD505
	AZM46AK-TS10U	SGD505
	AZM46AK-TS10L	SGD505
	AZM46AK-TS20	SGD505
	AZM46AK-TS20R	SGD505
	AZM46AK-TS20U	SGD505
	AZM46AK-TS20L	SGD505
	AZM46AK-TS30	SGD505
	AZM46AK-TS30R	SGD505
	AZM46AK-TS30U	SGD505
	AZM46AK-TS30L	SGD505
60 mm	AZM66AK-TS3.6	SGD574
	AZM66AK-TS3.6R	SGD574
	AZM66AK-TS3.6U	SGD574
	AZM66AK-TS3.6L	SGD574
	AZM66AK-TS7.2	SGD574
	AZM66AK-TS7.2R	SGD574
	AZM66AK-TS7.2U	SGD574
	AZM66AK-TS7.2L	SGD574
	AZM66AK-TS10	SGD591
	AZM66AK-TS10R	SGD591
	AZM66AK-TS10U	SGD591
	AZM66AK-TS10L	SGD591
	AZM66AK-TS20	SGD591
	AZM66AK-TS20R	SGD591
	AZM66AK-TS20U	SGD591
	AZM66AK-TS20L	SGD591
	AZM66AK-TS30	SGD591
	AZM66AK-TS30R	SGD591
	AZM66AK-TS30U	SGD591
	AZM66AK-TS30L	SGD591



◇ TS Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	AZM46MK-TS3.6	SGD663
	AZM46MK-TS3.6R	SGD663
	AZM46MK-TS3.6U	SGD663
	AZM46MK-TS3.6L	SGD663
	AZM46MK-TS7.2	SGD663
	AZM46MK-TS7.2R	SGD663
	AZM46MK-TS7.2U	SGD663
	AZM46MK-TS7.2L	SGD663
	AZM46MK-TS10	SGD680
	AZM46MK-TS10R	SGD680
	AZM46MK-TS10U	SGD680
	AZM46MK-TS10L	SGD680
	AZM46MK-TS20	SGD680
	AZM46MK-TS20R	SGD680
	AZM46MK-TS20U	SGD680
	AZM46MK-TS20L	SGD680
	AZM46MK-TS30	SGD680
	AZM46MK-TS30R	SGD680
	AZM46MK-TS30U	SGD680
	AZM46MK-TS30L	SGD680
60 mm	AZM66MK-TS3.6	SGD799
	AZM66MK-TS3.6R	SGD799
	AZM66MK-TS3.6U	SGD799
	AZM66MK-TS3.6L	SGD799
	AZM66MK-TS7.2	SGD799
	AZM66MK-TS7.2R	SGD799
	AZM66MK-TS7.2U	SGD799
	AZM66MK-TS7.2L	SGD799
	AZM66MK-TS10	SGD816
	AZM66MK-TS10R	SGD816
	AZM66MK-TS10U	SGD816
	AZM66MK-TS10L	SGD816
	AZM66MK-TS20	SGD816
	AZM66MK-TS20R	SGD816
	AZM66MK-TS20U	SGD816
	AZM66MK-TS20L	SGD816
	AZM66MK-TS30	SGD816
	AZM66MK-TS30R	SGD816
	AZM66MK-TS30U	SGD816
	AZM66MK-TS30L	SGD816





◇ **FC Geared Type**

Frame Size	Product Name	List Price
42 mm	AZM46AK-FC7.2UA	SGD646
	AZM46AK-FC7.2DA	SGD646
	AZM46AK-FC10UA	SGD646
	AZM46AK-FC10DA	SGD646
	AZM46AK-FC20UA	SGD646
	AZM46AK-FC20DA	SGD646
	AZM46AK-FC30UA	SGD646
	AZM46AK-FC30DA	SGD646
60 mm	AZM66AK-FC7.2UA	SGD769
	AZM66AK-FC7.2DA	SGD769
	AZM66AK-FC10UA	SGD769
	AZM66AK-FC10DA	SGD769
	AZM66AK-FC20UA	SGD769
	AZM66AK-FC20DA	SGD769
	AZM66AK-FC30UA	SGD769
	AZM66AK-FC30DA	SGD769



◇ **FC Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MK-FC7.2UA	SGD821
	AZM46MK-FC7.2DA	SGD821
	AZM46MK-FC10UA	SGD821
	AZM46MK-FC10DA	SGD821
	AZM46MK-FC20UA	SGD821
	AZM46MK-FC20DA	SGD821
	AZM46MK-FC30UA	SGD821
	AZM46MK-FC30DA	SGD821
60 mm	AZM66MK-FC7.2UA	SGD994
	AZM66MK-FC7.2DA	SGD994
	AZM66MK-FC10UA	SGD994
	AZM66MK-FC10DA	SGD994
	AZM66MK-FC20UA	SGD994
	AZM66MK-FC20DA	SGD994
	AZM66MK-FC30UA	SGD994
	AZM66MK-FC30DA	SGD994



◇ **PS Geared Type**

Frame Size	Product Name	List Price
28 mm	AZM24AK-PS7.2 <small>NEW</small>	SGD625
	AZM24AK-PS10 <small>NEW</small>	SGD625
42 mm	AZM46AK-PS5	SGD628
	AZM46AK-PS7.2	SGD628
	AZM46AK-PS10	SGD628
	AZM46AK-PS25	SGD690
	AZM46AK-PS36	SGD690
	AZM46AK-PS50	SGD690
60 mm	AZM66AK-PS5	SGD750
	AZM66AK-PS7.2	SGD750
	AZM66AK-PS10	SGD750
	AZM66AK-PS25	SGD838
	AZM66AK-PS36	SGD838
	AZM66AK-PS50	SGD838



◇ **PS Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MK-PS5	SGD803
	AZM46MK-PS7.2	SGD803
	AZM46MK-PS10	SGD803
	AZM46MK-PS25	SGD865
	AZM46MK-PS36	SGD865
	AZM46MK-PS50	SGD865
60 mm	AZM66MK-PS5	SGD975
	AZM66MK-PS7.2	SGD975
	AZM66MK-PS10	SGD975
	AZM66MK-PS25	SGD1,063
	AZM66MK-PS36	SGD1,063
	AZM66MK-PS50	SGD1,063



◇ **HPG Geared Type**

Frame Size	Product Name	List Price
40 mm	AZM46AK-HP5	SGD740
	AZM46AK-HP5F	SGD728
	AZM46AK-HP9	SGD740
	AZM46AK-HP9F	SGD728
60 mm	AZM66AK-HP5	SGD1,000
	AZM66AK-HP5F	SGD981
	AZM66AK-HP15	SGD1,184
	AZM66AK-HP15F	SGD1,165



◇ **HPG Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
40 mm	AZM46MK-HP5	SGD915
	AZM46MK-HP5F	SGD903
	AZM46MK-HP9	SGD915
	AZM46MK-HP9F	SGD903
60 mm	AZM66MK-HP5	SGD1,225
	AZM66MK-HP5F	SGD1,206
	AZM66MK-HP15	SGD1,409
	AZM66MK-HP15F	SGD1,390



◇ **Harmonic Geared Type**

Frame Size	Product Name	List Price
30 mm	AZM24AK-HS50 <small>NEW</small>	SGD954
	AZM24AK-HS100 <small>NEW</small>	SGD954
42 mm	AZM46AK-HS50	SGD996
	AZM46AK-HS100	SGD996
60 mm	AZM66AK-HS50	SGD1,344
	AZM66AK-HS100	SGD1,344



◇ **Harmonic Geared Type with Electromagnetic Brake**

Frame Size	Product Name	List Price
42 mm	AZM46MK-HS50	SGD1,171
	AZM46MK-HS100	SGD1,171
60 mm	AZM66MK-HS50	SGD1,569
	AZM66MK-HS100	SGD1,569

Drivers

◇ Built-in Controller Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KD	SGD488



◇ Pulse Input Type with RS-485 Communication **NEW**

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-KX	SGD488



◇ Pulse Input Type

Power Supply Input	Product Name	List Price
24/48 VDC	AZD-K	SGD425



Connection Cable Sets/Flexible Connection Cable Sets

Use a flexible connection cable set if the cable will be bent repeatedly. We provide connection cables and flexible extension cables that can be connected to connection cables for extension. See page 06-119.

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

[For **AZM14, AZM15, AZM24, AZM26**]



◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZ2F2	SGD38
	1	CC010VZ2F2	SGD38
	1.5	CC015VZ2F2	SGD44
	2	CC020VZ2F2	SGD50
	2.5	CC025VZ2F2	SGD56
	3	CC030VZ2F2	SGD63
	4	CC040VZ2F2	SGD98
	5	CC050VZ2F2	SGD110
	7	CC070VZ2F2	SGD136
	10	CC100VZ2F2	SGD176
	15	CC150VZ2F2	SGD244
	20	CC200VZ2F2	SGD310

Type	Length L (m)	Product Name	List Price
Flexible Connection Cable Set	0.5	CC005VZ2R2	SGD84
	1	CC010VZ2R2	SGD84
	1.5	CC015VZ2R2	SGD92
	2	CC020VZ2R2	SGD99
	2.5	CC025VZ2R2	SGD106
	3	CC030VZ2R2	SGD111
	4	CC040VZ2R2	SGD126
	5	CC050VZ2R2	SGD141
	7	CC070VZ2R2	SGD180
	10	CC100VZ2R2	SGD236
	15	CC150VZ2R2	SGD333
	20	CC200VZ2R2	SGD426

[For **AZM46, AZM48, AZM66, AZM69**]



◇ For the product with no Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZF2	SGD38
	1	CC010VZF2	SGD38
	1.5	CC015VZF2	SGD44
	2	CC020VZF2	SGD50
	2.5	CC025VZF2	SGD56
	3	CC030VZF2	SGD63
	4	CC040VZF2	SGD98
	5	CC050VZF2	SGD110
	7	CC070VZF2	SGD136
	10	CC100VZF2	SGD176
	15	CC150VZF2	SGD244
	20	CC200VZF2	SGD310
Flexible Connection Cable Set	0.5	CC005VZR2	SGD84
	1	CC010VZR2	SGD84
	1.5	CC015VZR2	SGD92
	2	CC020VZR2	SGD99
	2.5	CC025VZR2	SGD106
	3	CC030VZR2	SGD111
	4	CC040VZR2	SGD126
	5	CC050VZR2	SGD141
	7	CC070VZR2	SGD180
	10	CC100VZR2	SGD236
	15	CC150VZR2	SGD333
	20	CC200VZR2	SGD426



◇ For the product with Electromagnetic Brakes

Type	Length L (m)	Product Name	List Price
Connection Cable Set	0.5	CC005VZFB2	SGD53
	1	CC010VZFB2	SGD53
	1.5	CC015VZFB2	SGD60
	2	CC020VZFB2	SGD68
	2.5	CC025VZFB2	SGD75
	3	CC030VZFB2	SGD83
	4	CC040VZFB2	SGD121
	5	CC050VZFB2	SGD135
	7	CC070VZFB2	SGD166
	10	CC100VZFB2	SGD214
	15	CC150VZFB2	SGD294
	20	CC200VZFB2	SGD373
Flexible Connection Cable Set	0.5	CC005VZRB2	SGD114
	1	CC010VZRB2	SGD114
	1.5	CC015VZRB2	SGD124
	2	CC020VZRB2	SGD134
	2.5	CC025VZRB2	SGD143
	3	CC030VZRB2	SGD151
	4	CC040VZRB2	SGD171
	5	CC050VZRB2	SGD191
	7	CC070VZRB2	SGD240
	10	CC100VZRB2	SGD311
	15	CC150VZRB2	SGD433
	20	CC200VZRB2	SGD551

Accessories

Motors

Type	Accessories	Parallel Key	Motor Installation Screws	Operating Manual
Standard Type		—	—	1 set
TS Geared Type	Frame Size 42 mm	—	—	
	Frame Size 60 mm	1 piece	M4×60 P0.7 (4 pieces)	
FC Geared Type		1 piece	—	
PS Geared Type	Frame Size 28 mm	—	—	
	Frame Size 42 mm, 60 mm	1 piece	—	
HPG Geared Type	Shaft Output	1 piece	—	
	Flange Output	—	—	
Harmonic Geared Type	Frame Size 30 mm	—	—	
	Frame Size 42 mm, 60 mm	1 piece	—	

● For the details of the functions and operation methods of the product, refer to the Operating Manual (Functions). The Operating Manual for Functions does not come with the product. Contact the nearest Oriental Motor sales office, or download the Operating Manual from the Oriental Motor website.

Drivers

Type	Accessories	Connector	Operating Manual
For All Types		<ul style="list-style-type: none"> Connector for CN4 (1 piece) Connector for CN1 (1 piece) 	1 set

Connection Cable Sets/Flexible Connection Cable Sets

Type	Accessories	Operating Manual
Connection Cable Sets		—
Flexible Connection Cable Sets		1 set

Standard Type Frame Size 20 mm, 28 mm

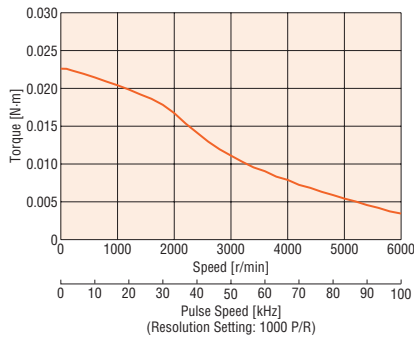


Specifications

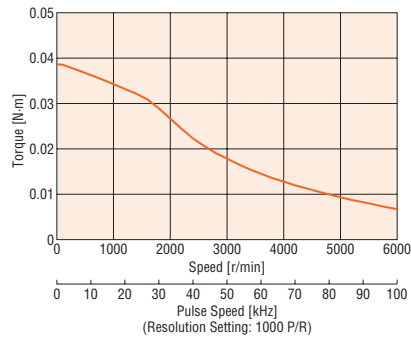
Motor Product Name	Single Shaft	AZM14AK	AZM15AK	AZM24AK	AZM26AK
Driver Product Name	Built-in Controller	AZD-KD			
	Pulse Input with RS-485 Communication	AZD-KX			
	Pulse Input	AZD-K			
Maximum Holding Torque	N·m	0.02	0.036	0.095	0.19
Holding Torque at Motor Standstill	N·m	0.01	0.018	0.047	0.095
Rotor Inertial	J: kg·m ²	2.7×10^{-7}	3.9×10^{-7}	9.2×10^{-7}	17×10^{-7}
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse			
Power Supply Input	Voltage	24 VDC ±5%			
	Input Current	A	0.5	0.6	1.6

Speed – Torque Characteristics (Reference values)

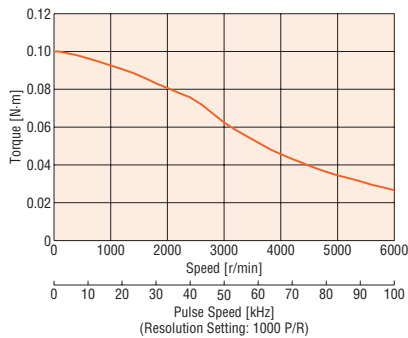
AZM14



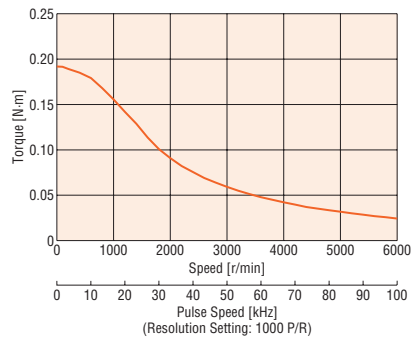
AZM15



AZM24



AZM26



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

Descriptions of the Terms on the Specification Table

Maximum Holding Torque	: The maximum holding torque (holding force) of the motor when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the permissible strength of the gear is given consideration for this value.)
Permissible Torque	: The maximum value of the torque that can be continuously applied on the output gear shaft.
Maximum Instantaneous Torque	: This is the maximum torque value that can be applied to the output gear shaft during acceleration/deceleration like when an inertial load is started and stopped.
Holding Torque at Motor Standstill	Power ON : Holding torque when the automatic current cutback function is active.
	Electromagnetic Brake : Static friction torque when the electromagnetic brake is activated at standstill. (Electromagnetic brake is power off activated type.)

Standard Type Frame Size 42 mm, 60 mm

Lineup Added



Specifications

Motor Product Name	Single Shaft	AZM46A□K	AZM48A□K	AZM66A□K	AZM69A□K
With Electromagnetic Brake		AZM46M□K	—	AZM66M□K	AZM69M□K
Driver Product Name	Built-in Controller	AZD-KD			
Pulse Input with RS-485 Communication		AZD-KX			
Pulse Input		AZD-K			
Maximum Holding Torque	N·m	0.3	0.72	1	2
Holding Torque at Motor Standstill	Power ON	0.15	0.36	0.5	1
	Electromagnetic Brake	0.15	—	0.5	1
Rotor Inertial	J: kg·m ²	55×10^{-7} (71×10^{-7})*1	115×10^{-7}	370×10^{-7} (530×10^{-7})*1	740×10^{-7} (900×10^{-7})*1
Resolution	Resolution Setting: 1000 P/R	0.36°/Pulse			
Power Supply Input	Voltage	24 VDC $\pm 5\%$ *2 /48 VDC $\pm 5\%$ *3	24 VDC $\pm 5\%$ /48 VDC $\pm 5\%$ *3	24 VDC $\pm 5\%$ *2 /48 VDC $\pm 5\%$ *3	
	Input Current	A	1.72 (1.8)*1	2.2	3.55 (3.8)*1

● Either **0** (Straight) or **1** (With a key) indicating the configuration is entered where the box □ is located within the product name. (For **AZM46**, straight only)

For single-sided milling, no character is entered into the □ mark.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

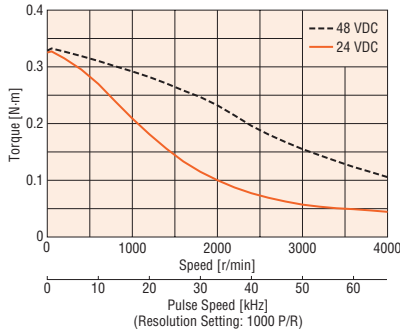
*2 For the electromagnetic brake type, the 24 VDC $\pm 4\%$ specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times of the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**)

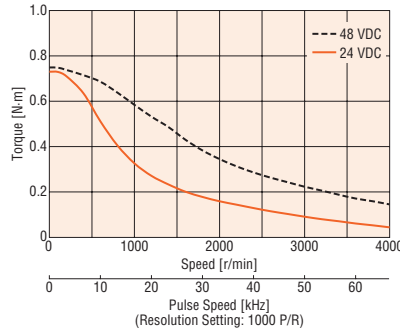
*4 Motor only

Speed – Torque Characteristics (Reference values)

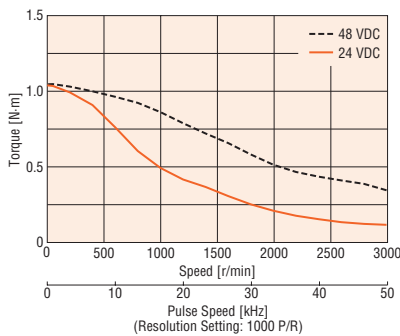
AZM46



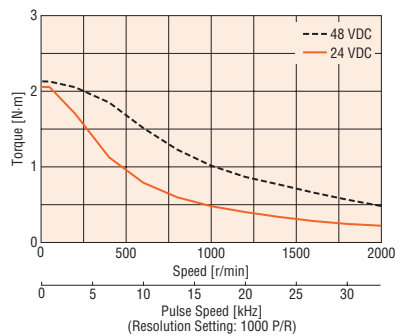
AZM48



AZM66



AZM69



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 42 mm

Specifications



Motor Product Name	Single Shaft	AZM46AK-TS3.6□	AZM46AK-TS7.2□	AZM46AK-TS10□	AZM46AK-TS20□	AZM46AK-TS30□
Motor Product Name	With Electromagnetic Brake	AZM46MK-TS3.6□	AZM46MK-TS7.2□	AZM46MK-TS10□	AZM46MK-TS20□	AZM46MK-TS30□
Driver Product Name	Built-in Controller	AZD-KD				
Driver Product Name	Pulse Input with RS-485 Communication	AZD-KX				
Driver Product Name	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	0.65	1.2	1.7	2	2.3
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1				
Gear Ratio		3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	0.65	1.2	1.7	2	2.3
Maximum Instantaneous Torque*	N·m	0.85	1.6	2	*	3
Holding Torque at Power ON	N·m	0.54	1	1.5	1.8	2.3
Motor Standstill Electromagnetic Brake	N·m	0.54	1	1.5	1.8	2.3
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arcmin	45 (0.75°)	25 (0.42°)		15 (0.25°)	
Power Supply Input Voltage		24 VDC ±5%*2/48 VDC ±5%				
Power Supply Input Input Current	A	1.72 (1.8)*1				

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

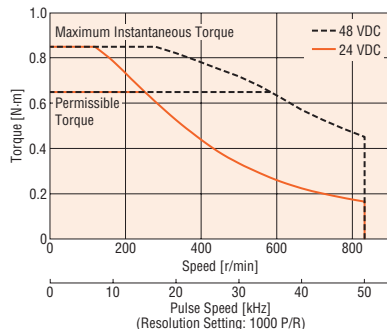
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 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.

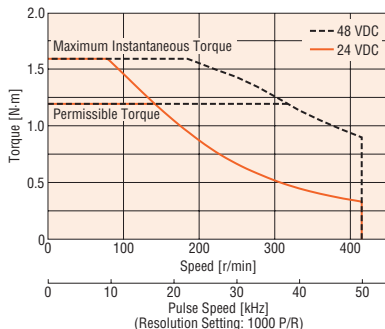
*3 Motor only

Speed – Torque Characteristics (Reference values)

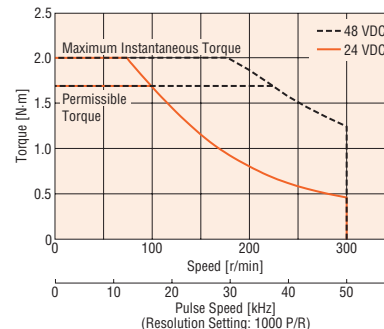
AZM46 Gear Ratio 3.6



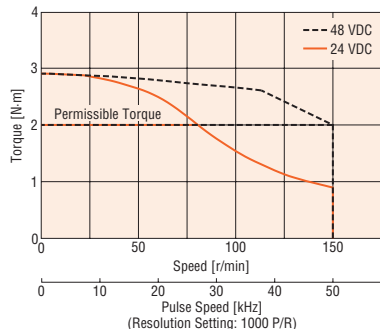
AZM46 Gear Ratio 7.2



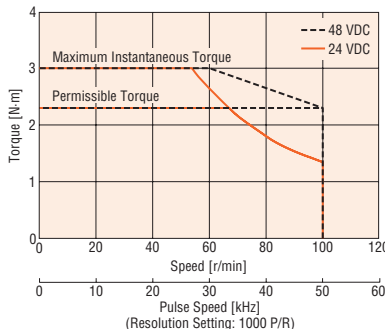
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

TS Geared Type Frame Size 60 mm



Specifications

Motor	Single Shaft	AZM66AK-TS3.6	AZM66AK-TS7.2	AZM66AK-TS10	AZM66AK-TS20	AZM66AK-TS30	
Product Name	With Electromagnetic Brake	AZM66MK-TS3.6	AZM66MK-TS7.2	AZM66MK-TS10	AZM66MK-TS20	AZM66MK-TS30	
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1.8	3	4	5	6	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		3.6	7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.1°/Pulse	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	1.8	3	4	5	6	
Maximum Instantaneous Torque*	N·m	*	*	*	8	10	
Holding Torque at	Power ON	N·m	1.1	2.2	3	5	6
Motor Standstill	Electromagnetic Brake	N·m	1.1	2.2	3	5	6
Speed Range	r/min	0~833	0~416	0~300	0~150	0~100	
Backlash	arcmin	35 (0.59°)	15 (0.25°)		10 (0.17°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%*3					
	Input Current	A 3.55 (3.8)*1					

● The □ mark in the product name is replaced by **R** (Right), **U** (Upward), or **L** (Left) which shows the cable drawing direction. For the downward direction, no character is entered into the □ mark.

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

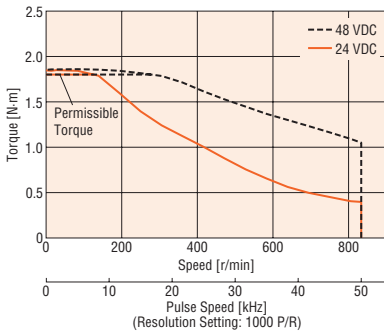
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

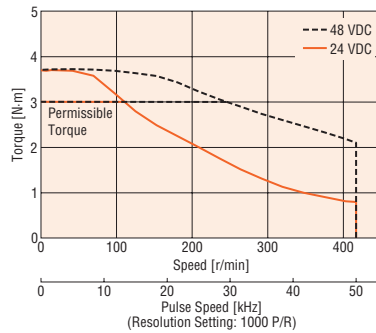
*4 Motor only

Speed – Torque Characteristics (Reference values)

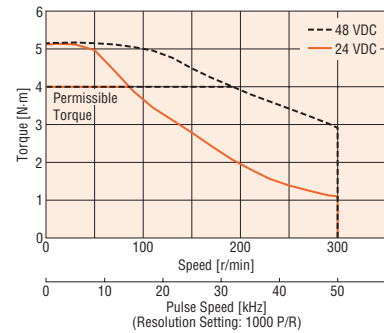
AZM66 Gear Ratio 3.6



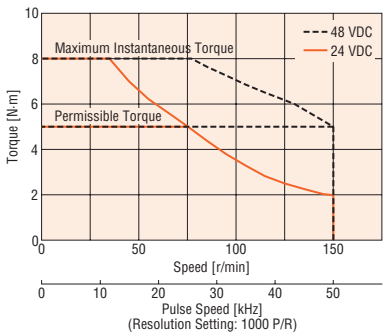
AZM66 Gear Ratio 7.2



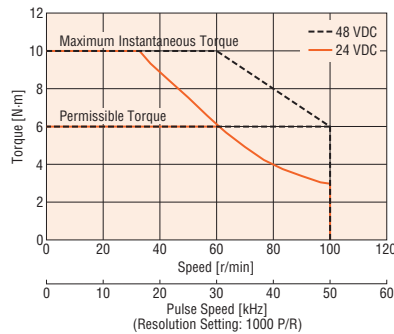
AZM66 Gear Ratio 10



AZM66 Gear Ratio 20



AZM66 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 42 mm

Specifications



Motor Product Name	Single Shaft	AZM46AK-FC7.2□A	AZM46AK-FC10□A	AZM46AK-FC20□A	AZM46AK-FC30□A	
Motor Product Name	With Electromagnetic Brake	AZM46MK-FC7.2□A	AZM46MK-FC10□A	AZM46MK-FC20□A	AZM46MK-FC30□A	
Driver Product Name	Built-in Controller	AZD-KD				
Driver Product Name	Pulse Input with RS-485 Communication	AZD-KX				
Driver Product Name	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	0.7	1	2	3	
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	0.7	1	2	3	
Holding Torque at Motor Standstill	Power ON	N·m	0.7	1	2	3
Holding Torque at Motor Standstill	Electromagnetic Brake	N·m	0.7	1	2	3
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	25 (0.42°)		15 (0.25°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%				
Power Supply Input	Input Current	1.72 (1.8)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

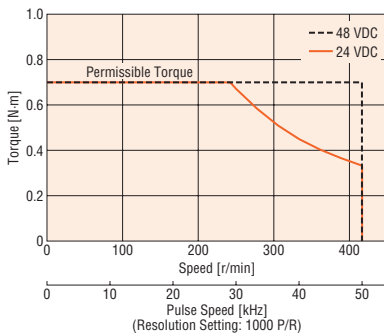
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 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.

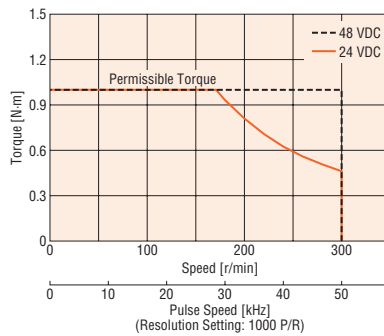
*3 Motor only

Speed – Torque Characteristics (Reference values)

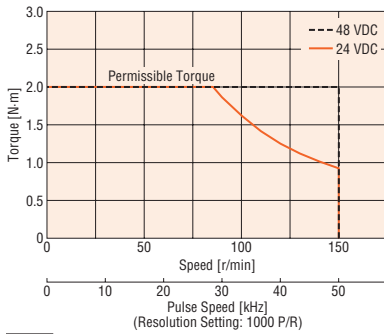
AZM46 Gear Ratio 7.2



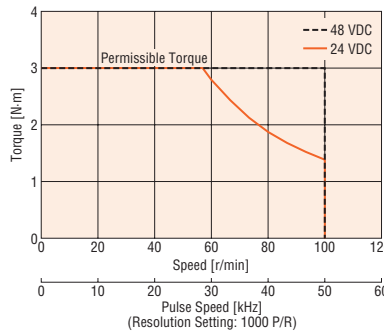
AZM46 Gear Ratio 10



AZM46 Gear Ratio 20



AZM46 Gear Ratio 30



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

FC Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AK-FC7.2□A	AZM66AK-FC10□A	AZM66AK-FC20□A	AZM66AK-FC30□A	
Product Name	With Electromagnetic Brake	AZM66MK-FC7.2□A	AZM66MK-FC10□A	AZM66MK-FC20□A	AZM66MK-FC30□A	
Driver	Built-in Controller	AZD-KD				
Product Name	Pulse Input with RS-485 Communication	AZD-KX				
	Pulse Input	AZD-K				
Maximum Holding Torque	N·m	2.5	3.5	7	10.5	
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1				
Gear Ratio		7.2	10	20	30	
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse	
Permissible Torque	N·m	2.5	3.5	7	10.5	
Holding Torque at	Power ON	N·m	2.5	3.5	7	10.5
Motor Standstill	Electromagnetic Brake	N·m	2.5	3.5	7	10.5
Speed Range	r/min	0~416	0~300	0~150	0~100	
Backlash	arcmin	15 (0.25°)		10 (0.17°)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%*3				
	Input Current	A				
		3.35 (3.8)*1				

● Either **U** (Upward) or **D** (Downward) indicating the cable drawing direction is entered where the box □ is located within the product name.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

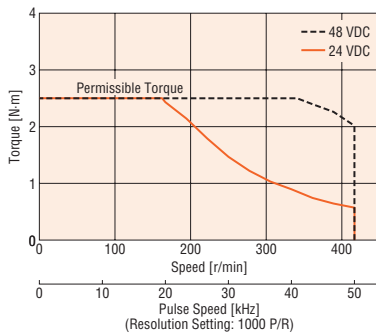
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

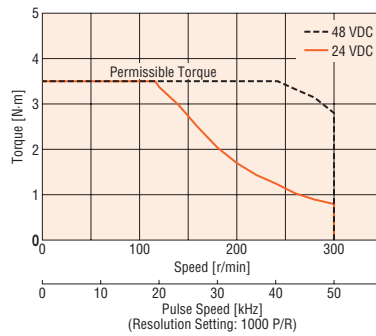
*4 Motor only

Speed – Torque Characteristics (Reference values)

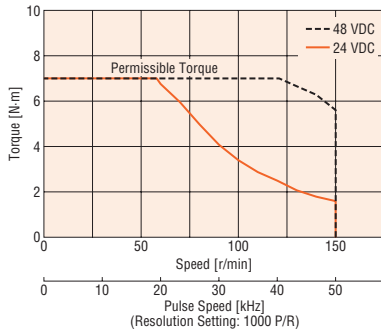
AZM66 Gear Ratio **7.2**



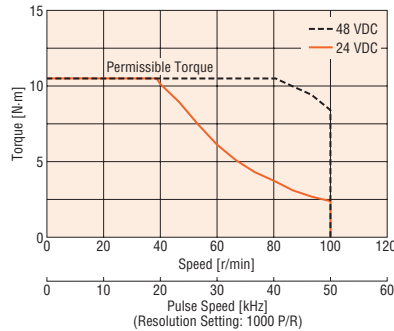
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

(When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 28 mm NEW

Specifications

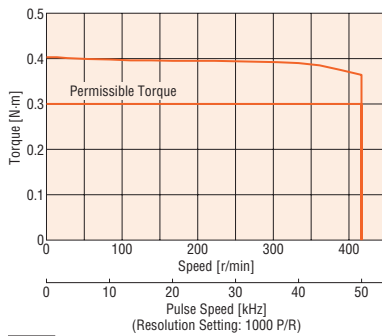


Motor Product Name	Single Shaft	AZM24AK-PS7.2	AZM24AK-PS10
Driver Product Name	Built-in Controller	AZD-KD	
	Pulse Input with RS-485 Communication	AZD-KX	
	Pulse Input	AZD-K	
Maximum Holding Torque	N·m	0.3	0.5
Rotor Inertial	J: kg·m ²	9.2×10^{-7}	
Gear Ratio		7.2	10
Resolution	Resolution Setting: 1000 P/R	0.05°/Pulse	0.036°/Pulse
Permissible Torque	N·m	0.3	0.5
Maximum Instantaneous Torque*	N·m	*	—
Holding Torque at Motor Standstill	N·m	0.2	0.27
Speed Range	r/min	0~416	0~300
Backlash	arcmin	35 (0.59°)	
Power Supply Input	Voltage	24 VDC ±5%	
	Input Current	A	1.6

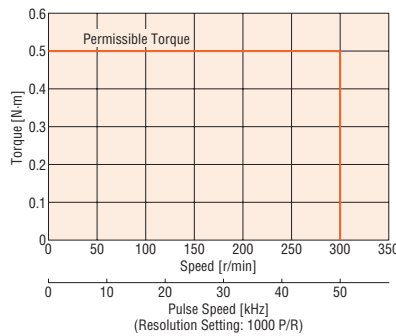
* For the geared motor output torque, refer to the Speed – Torque Characteristics.

Speed – Torque Characteristics (Reference values)

AZM24 Gear Ratio **7.2**



AZM24 Gear Ratio **10**



Note

- The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less.

PS Geared Type Frame Size 42 mm

Specifications



Motor	Single Shaft	AZM46AK-PS5	AZM46AK-PS7.2	AZM46AK-PS10	AZM46AK-PS25	AZM46AK-PS36	AZM46AK-PS50
Product Name	With Electromagnetic Brake	AZM46MK-PS5	AZM46MK-PS7.2	AZM46MK-PS10	AZM46MK-PS25	AZM46MK-PS36	AZM46MK-PS50
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1	1.5	2.5	3		
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	1	1.5	2.5	3		
Maximum Instantaneous Torque*	N·m	*	2	6	*	6	
Holding Torque at Power ON	N·m	0.75	1	1.5	2.5	3	
Motor Standstill Electromagnetic Brake	N·m	0.75	1	1.5	2.5	3	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	15 (0.25°)					
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%					
	Input Current	1.72 (1.8)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

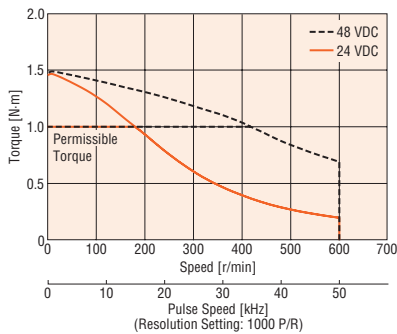
*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 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.

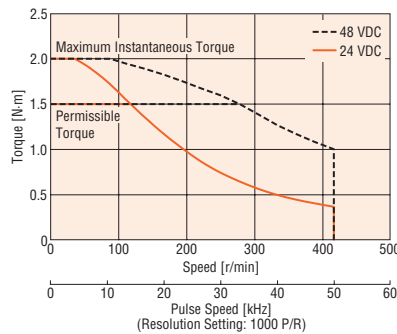
*3 Motor only

Speed – Torque Characteristics (Reference values)

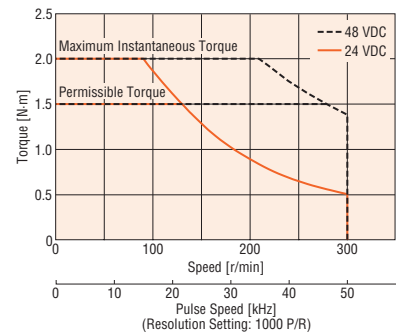
AZM46 Gear Ratio 5



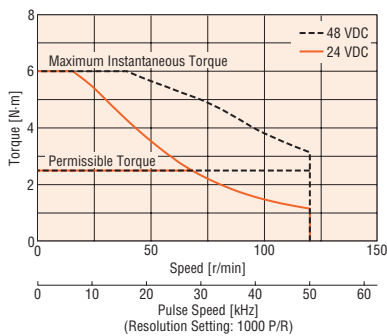
AZM46 Gear Ratio 7.2



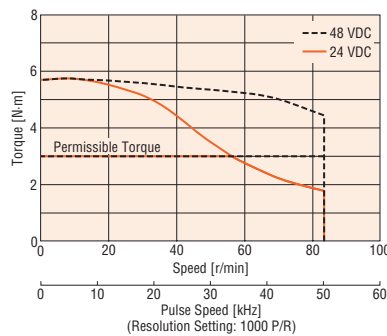
AZM46 Gear Ratio 10



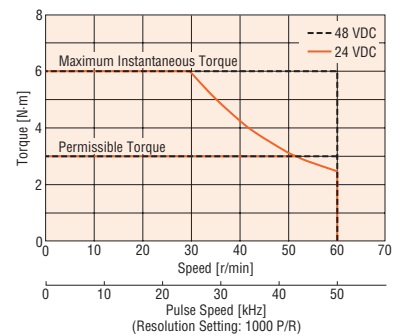
AZM46 Gear Ratio 25



AZM46 Gear Ratio 36



AZM46 Gear Ratio 50



Note

- The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

PS Geared Type Frame Size 60 mm

Specifications



Motor	Single Shaft	AZM66AK-PS5	AZM66AK-PS7.2	AZM66AK-PS10	AZM66AK-PS25	AZM66AK-PS36	AZM66AK-PS50
Product Name	With Electromagnetic Brake	AZM66MK-PS5	AZM66MK-PS7.2	AZM66MK-PS10	AZM66MK-PS25	AZM66MK-PS36	AZM66MK-PS50
Driver	Built-in Controller	AZD-KD					
Product Name	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertial	J: kg·m ²	370×10 ⁻⁷ (530×10 ⁻⁷)*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse	0.0144°/Pulse	0.01°/Pulse	0.0072°/Pulse
Permissible Torque	N·m	3.5	4	5	8		
Maximum Instantaneous Torque*	N·m	*	*	*	*	*	20
Holding Torque at	Power ON	N·m	2.5	3.6	5	7.6	8
Motor Standstill	Electromagnetic Brake	N·m	2.5	3.6	5	7.6	8
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	7 (0.12)			9 (0.15)		
Power Supply Input	Voltage	24 VDC ±5%*2/48 VDC ±5%*3					
	Input Current	A 3.55 (3.8)*1					

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

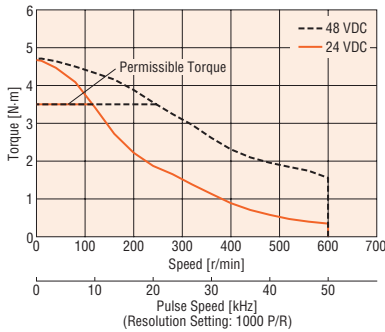
*2 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque.

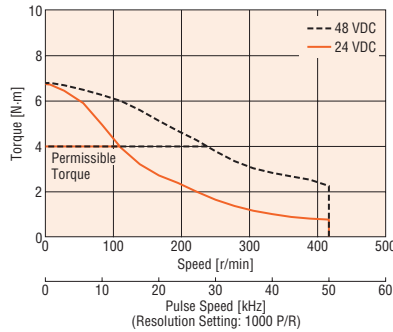
*4 Motor only

Speed – Torque Characteristics (Reference values)

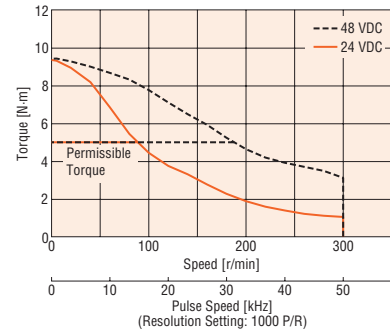
AZM66 Gear Ratio 5



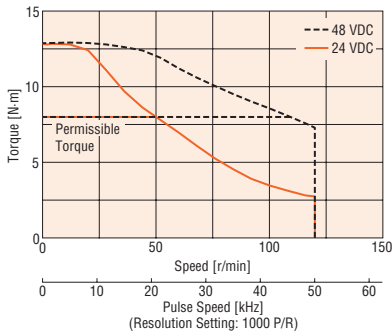
AZM66 Gear Ratio 7.2



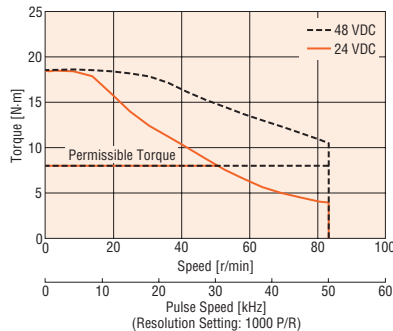
AZM66 Gear Ratio 10



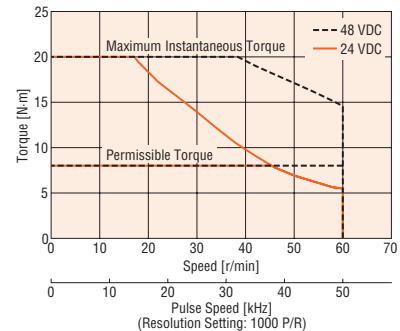
AZM66 Gear Ratio 25



AZM66 Gear Ratio 36



AZM66 Gear Ratio 50



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

HPG Geared Type Frame Size 40 mm, 60 mm

Specifications



Motor	Single Shaft	AZM46AK-HP5	AZM46AK-HP9	AZM66AK-HP5	AZM66AK-HP15
Product Name	With Electromagnetic Brake	AZM46MK-HP5	AZM46MK-HP9	AZM66MK-HP5	AZM66MK-HP15
Driver	Built-in Controller	AZD-KD			
Product Name	Pulse Input with RS-485 Communication	AZD-KX			
	Pulse Input	AZD-K			
Maximum Holding Torque	N·m	1.5	2.5	5	9
Rotor Inertial	J: kg·m ²	55×10 ⁻⁷ (71×10 ⁻⁷)*1		370×10 ⁻⁷ (530×10 ⁻⁷)*1	
Inertial*2	J: kg·m ²	5.8×10 ⁻⁷ (4.2×10 ⁻⁷)	3.4×10 ⁻⁷ (2.9×10 ⁻⁷)	92×10 ⁻⁷ (86×10 ⁻⁷)	78×10 ⁻⁷ (77×10 ⁻⁷)
Gear Ratio		5	9	5	15
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.04°/Pulse	0.072°/Pulse	0.024°/Pulse
Permissible Torque*	N·m	*	2.5	*	9
Maximum Instantaneous Torque*	N·m	*	*	*	*
Holding Torque at Power ON	N·m	0.75	1.35	2.5	7.5
Motor Standstill Electromagnetic Brake	N·m	0.75	1.35	2.5	7.5
Speed Range	r/min	0~800	0~444	0~600	0~200
Backlash	arcmin	3 (0.05)			
Power Supply Input	Voltage	24 VDC ±5%*4/48 VDC ±5%*5			
	Input Current	A	1.72 (1.8)*1	3.55 (3.8)*1	
Runout of Output Flange Surface*3	mm	0.02		0.04	
Runout of Output Flange Inner Diameter*3	mm	0.03		0.04	

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

● For the flange output type, **F** is entered where the box is located within the product name.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 The values for the moments of inertia within the gear that has been converted to motor shaft values. The parentheses () indicate the values for the flange output type.

*3 Specifications for the flange output type.

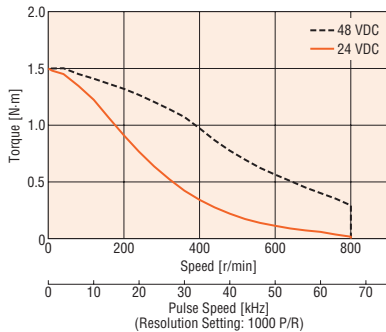
*4 For the electromagnetic brake type, the 24 VDC ±4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

*5 When the motor is operated from 48 VDC input, use an inertial load 10 times the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**)

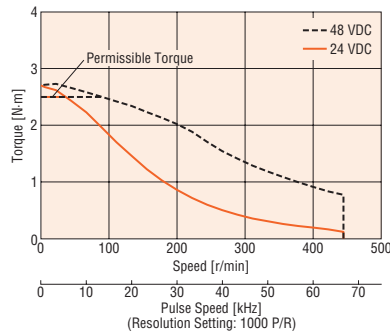
*6 Motor only

Speed – Torque Characteristics (Reference values)

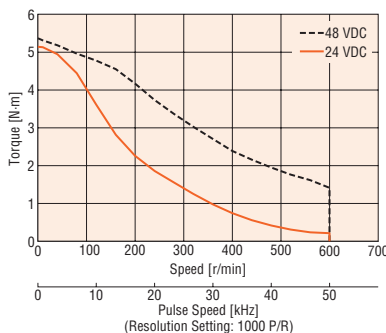
AZM46 Gear Ratio 5



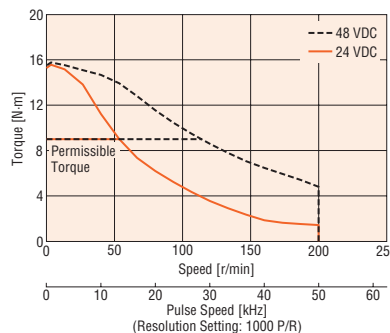
AZM46 Gear Ratio 9



AZM66 Gear Ratio 5



AZM66 Gear Ratio 15



Note

● The speed–torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

Harmonic Geared Type Frame Size 30 mm, 42 mm, 60 mm

Lineup Added

CE US *4

Specifications

Motor Product Name	Single Shaft	AZM24AK-HS50	AZM24AK-HS100	AZM46AK-HS50	AZM46AK-HS100	AZM66AK-HS50	AZM66AK-HS100
	With Electromagnetic Brake	-	-	AZM46MK-HS50	AZM46MK-HS100	AZM66MK-HS50	AZM66MK-HS100
Driver Product Name	Built-in Controller	AZD-KD					
	Pulse Input with RS-485 Communication	AZD-KX					
	Pulse Input	AZD-K					
Maximum Holding Torque	N·m	1.8	2.4	3.5	5	7	10
Rotor Inertial	J: kg·m ²	12×10 ⁻⁷		72×10 ⁻⁷ (88×10 ⁻⁷)*1		405×10 ⁻⁷ (565×10 ⁻⁷)*1	
Gear Ratio		50	100	50	100	50	100
Resolution	Resolution Setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m	1.8	2.4	3.5	5	7	10
Maximum Instantaneous Torque*	N·m	3.3	4.8	8.3	11	*	36
Holding Torque at Power ON	N·m	1.8	2.4	3.5	5	7	10
Motor Standstill Electromagnetic Brake	N·m	-	-	3.5	5	7	10
Speed Range	r/min	0~70	0~35	0~70	0~35	0~60	0~30
Lost Motion (Load torque)	arcmin	1.5 or less (±0.09 N·m)	1.5 or less (±0.12 N·m)	1.5 or less (±0.16 N·m)	1.5 or less (±0.20 N·m)	0.7 or less (±0.28 N·m)	0.7 or less (±0.39 N·m)
Power Supply Input	Voltage	24 VDC ±5%		24 VDC ±5%*2/48 VDC ±5%*3			
	Input Current	A		1.72 (1.8)*1		3.55 (3.8)*1	

* For the geared motor output torque, refer to the Speed – Torque Characteristics.

*1 The values in the () are those measured when a motor with electromagnetic brake is connected.

*2 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.

*3 When the motor is operated from 48 VDC input, use an inertial load 10 times of the rotor inertial ratio or less and twice the safety factor or more when calculating the acceleration torque. (Excluding **AZM46**).

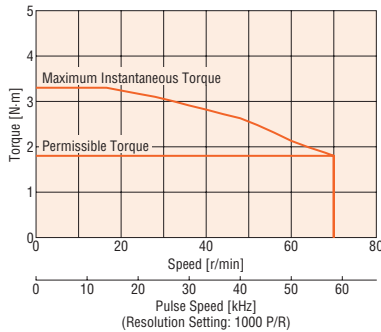
*4 Motor only (Excluding frame size 30 mm)

Note

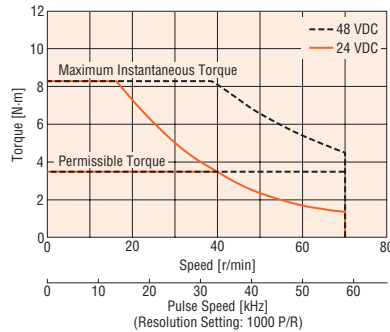
● The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

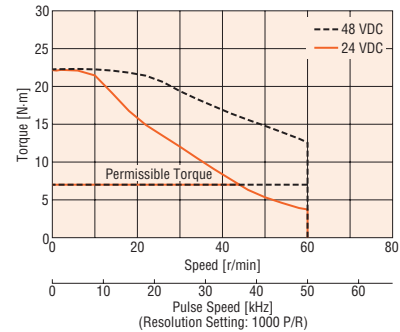
AZM24 Gear Ratio 50



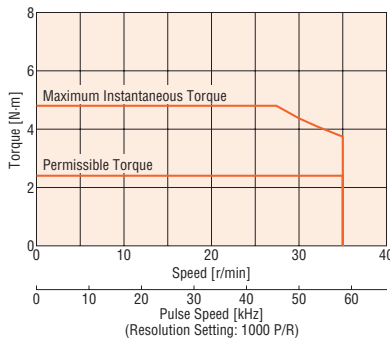
AZM46 Gear Ratio 50



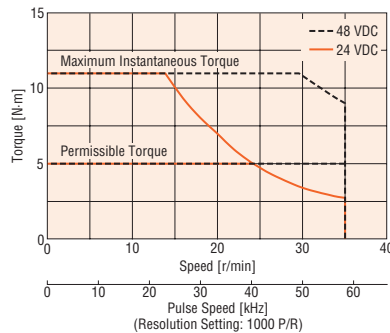
AZM66 Gear Ratio 50



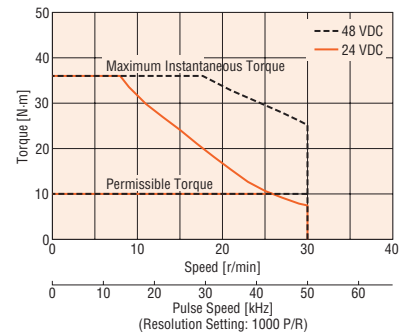
AZM24 Gear Ratio 100



AZM46 Gear Ratio 100



AZM66 Gear Ratio 100



Note

● The speed-torque characteristics shows the data based on the company's measurement conditions. If conditions change, the characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the ABZO sensor, ensure that the motor case temperature is 80°C or less. (When conforming to the UL/CSA Standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as insulation class A.)

06

AZ Series

Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Driver Specifications

Driver Type	Built-in Controller Type	Pulse Input Type with RS-485 Communication	Pulse Input Type			
Driver Product Name	AZD-KD	AZD-KX	AZD-K			
I/O Function	Max. Input Pulse Frequency	—	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative logic pulse input			
	Number of Positioning Data Sets	256 points	256 points*1			
	Direct Input	10 points	6 points			
	Direct Output	6 points				
	RS-485 Communication Remote Input	16 points	—			
	RS-485 Communication Remote Output	16 points	—			
Setting Tool	Support Software MEXE02	○				
Coordinate Management Method	Battery-free absolute system					
Operation	Type	Positioning Operation	○	○	○*1	
		Push-motion Positioning Operation*2	○	○	○*1	
	Positioning Operation	Connecting Method	Independent Operation	○	○	○*1
			Forward Feed Operation	○	○	○*1
			Multistep Speed-change (Shape connection)	○	○	○*1
	Sequence Control	Control	Loop Operation (Repetition)	○	○	○*1
			Event Jump Operation	○	○	○*1
	Linked Operation	Position Control	Speed Control	○	○	○*1
			Torque Control	○	○	○*1
			Push-motion*2	○	○	○*1
			Return-to-home Operation	○	○	○
	Return-to-home Operation	High-speed Return-to-home Operation	Return-to-home Operation	○	○	○
			High-speed Return-to-home Operation	○	○	○
	JOG Operation		○	○	○	
Monitor/Information	Waveform Monitoring	○	○	○		
	Overload Detection	○	○	○		
	Overheat Detection (Motor and driver)	○	○	○		
	Position and Speed Information	○	○	○		
	Temperature Detection (Motor and driver)	○	○	○		
	Motor Load Factor	○	○	○		
	Mileage/Accumulated Mileage	○	○	○		
Alarm		○	○	○		

*1 Available after setting with the support software **MEXE02**.

*2 Push-motion operation is not available to geared motors and **DGII** Series motorized actuators.

RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 based, Straight cable Use twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The maximum total extension length is 50 m.*
Communication Mode	Half duplex and start-stop synchronization (Data: 8 bits, Stop bit: 1 bit or 2 bits, Parity: none, even, or odd)
Baud Rate	Select from 9600bps/19200bps/38400bps/57600bps/115200bps/230400bps.
Connection Type	Up to 31 units can be connected to a single programmable controller (Master unit).

*If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

Electromagnetic Brake Specifications

Product Name	AZM46	AZM66	AZM69
Type	Power off activated type		
Power Supply Voltage	24 VDC \pm 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 \pm 4% specification applies if the wiring distance between the motor and driver is extended by 20 m using a cable.

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

General Specifications

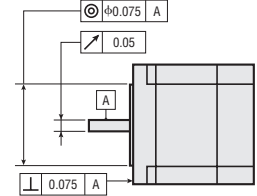
		Motor	Driver
Heat-resistant Class		130 (B) [Recognized as 105 (A) by UL.]	—
Insulation Resistance		The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Case – Motor windings · Case – Electromagnetic brake windings*1	The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following locations: · Protective earth terminal – Power supply terminal
Dielectric Strength Voltage		No abnormality is found with the following application for 1 minute: AZM14, AZM15, AZM24, AZM26 · Case – Motor windings 0.5 kVAC 50 Hz or 60 Hz AZM46, AZM48, AZM66, AZM69 · Case – Motor windings 1.0 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings*1 1.0 kVAC 50 Hz or 60 Hz	—
Operating Environment (In operation)	Ambient Temperature	0~+40°C (Non-freezing)	0~+50°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		AZM14, AZM15, AZM24, AZM26: IP40 (excluding installation surfaces and connector locations) AZM46, AZM48, AZM66, AZM69: IP66 (excluding installation surfaces and connector locations)	IP10
Stop Position Accuracy		AZM14, AZM15, AZM24, AZM26: ±5 min (±0.083°) AZM46, AZM48: ±4 min (±0.067°) AZM66, AZM69: ±3 min (±0.05°)	
Shaft Runout		0.05 T.I.R. (mm)*2	—
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*2	—
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*2	—
Range of Multiple Rotation Inspection at Power OFF		AZM14, AZM15, AZM24, AZM26: ±450 rotations (900 rotations) AZM46, AZM48, AZM66, AZM69: ±900 rotations (1800 rotations)	

*1 Electromagnetic brake type only

*2 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution, centered on the reference axis center.

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. Also, do not conduct these tests on the ABZO sensor section of the motor.



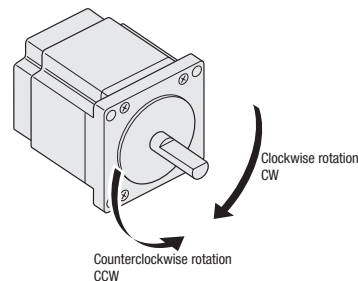
Rotation Direction

The figure shows the rotation directions seen from the output shaft. The rotation direction of the gear output shaft, which is seen from the output shaft of a standard type motor, differs depending on the gear type or gear ratio.

Refer to the table below.

Type	Gear Ratio	Rotation Direction seen from the Output Shaft
TS Geared Type	3.6, 7.2, 10	Same direction
	20, 30	Reverse direction
FC Geared Type	Total reduction gear ratio	Same direction
PS Geared Type		Same direction
HPG Geared Type		Reverse direction
Harmonic Geared Type	Total reduction gear ratio	Reverse direction

● Standard type motor



Motor Installation

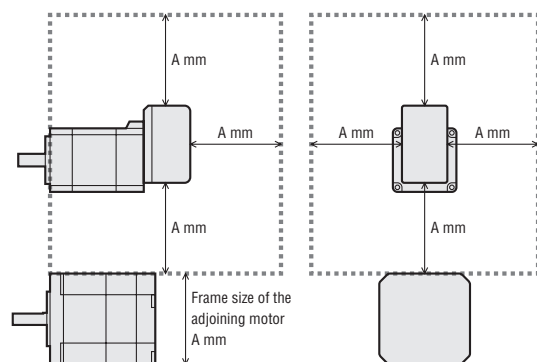
Since the ABZO sensor is easily affected by magnetism, exercise caution when determining the location to install the motor.

● Installing the motor the frame size 28 mm or less

When installing multiple motors next to each other, make sure that the distance between two motors in the horizontal and vertical directions is at least the frame size of the adjoining motor.

● Reference

Adjoining Motor	A
Frame size 20 mm	20
Frame size 28 mm	28
Frame size 42 mm	42
Frame size 60 mm	60



● Make sure that the distance between the two motors is at least the frame size of the adjoining motor (A mm).

● When installing motors in an environment in which a magnetic field is generated

Ensure that the magnetic flux density on the ABZO sensor surface does not exceed the values listed below.

Motor Frame Size	Magnetic Flux Density
28 mm or less	2 mT*
42 mm or more	10 mT

*If the magnetic flux density is between more than 1 mT and 2 mT, the ambient temperature must be between more than 20°C and 40°C.

Permissible Radial Load/Permissible Axial Load

Unit: N

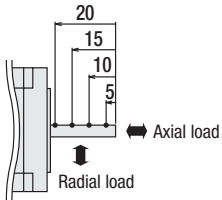
Type	Motor Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from Shaft End mm					
				0	5	10	15	20	
Standard Type	20 mm	AZM14, AZM15	—	12	15	—	—	—	3
	28 mm	AZM24, AZM26		25	34	52	—	—	5
	42 mm	AZM46		35	44	58	85	—	15
		AZM48		30	35	44	58	85	
	60 mm	AZM66, AZM69		90	100	130	180	270	30
TS Geared Type	42 mm	AZM46	3.6, 7.2, 10	20	30	40	50	—	15
			20, 30	40	50	60	70	—	
	60 mm	AZM66	3.6, 7.2, 10	120	135	150	165	180	40
			20, 30	170	185	200	215	230	
FC Geared Type	42 mm	AZM46	7.2, 10, 20, 30	180	200	220	250	—	100
	60 mm	AZM66		270	290	310	330	350	200
PS Geared Type	28 mm	AZM24	7.2, 10	45	60	80	100	—	40
	42 mm	AZM46	5	70	80	95	120	—	100
			7.2	80	90	110	140	—	
			10	85	100	120	150	—	
			25	120	140	170	210	—	
			36	130	160	190	240	—	
			50	150	170	210	260	—	
	60 mm	AZM66	5	170	200	230	270	320	200
			7.2	200	220	260	310	370	
			10	220	250	290	350	410	
			25	300	340	400	470	560	
			36	340	380	450	530	630	
			50	380	430	500	600	700	
	HPG Geared Type	40 mm	AZM46	5	150	170	190	230	270
9				180	200	230	270	320	510
60 mm		AZM66	5	250	270	300	330	360	700
			15	360	380	420	460	510	980
Harmonic Geared Type	30 mm	AZM24	50, 100	100	135	175	250	—	140
	42 mm	AZM46		180	220	270	360	510	220
	60 mm	AZM66		320	370	440	550	720	450

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

● PS geared type and HPG geared type: The values shown in the table are those that enable a product life of 20,000 hours when either permissible radial load or permissible axial load is applied. For the product life of the gearhead, contact the nearest Oriental Motor sales office, or check the Oriental Motor website.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

When eccentric load is applied to the installation surface of the output flange, load moment acts on the bearing.
Before using the motor, apply the formulas below to check that the axial load and load moment are within the specifications.

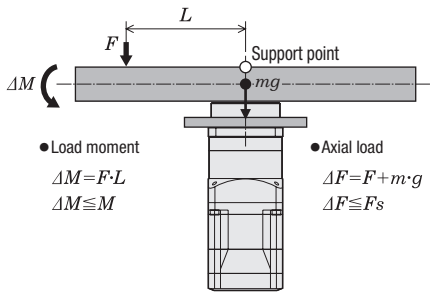
HPG Geared Type Flange Output Type

Product Name	Gear Ratio	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
AZM46	5	430	4.9	0.006
	9	510	5.9	
AZM66	5	700	12.0	0.011
	15	980	17.2	

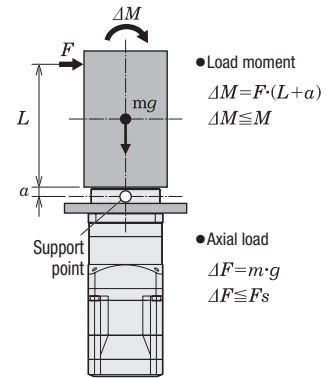
m : Load mass (kg)
 g : Gravitational acceleration (m/s²)
 F : External force (N)
 L : Overhung distance (m)
 α : Constant (m)
 ΔF : Load applied to the output flange surface (N)
 F_s : Permissible axial load (N)
 ΔM : Load moment (N·m)
 M : Permissible moment load (N·m)

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.

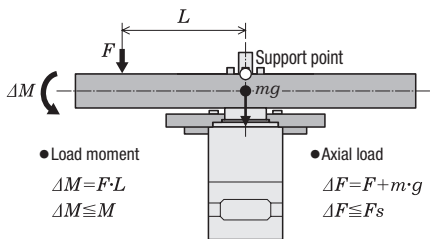


Harmonic Geared Type

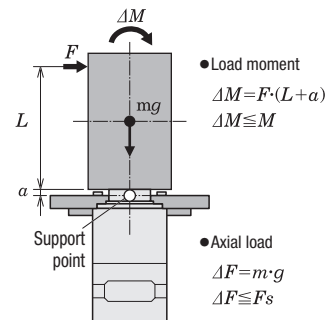
Motor Frame Size	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Constant α (m)
30 mm	140	2.9	0.0073
42 mm	220	5.6	0.009
60 mm	450	11.6	0.0114

Apply the formulas below to calculate the load moment.

Example 1: External force F (N) is applied to the protrusion L (m). It is applied horizontally to the center of the output flange.



Example 2: External force F (N) is applied to the protrusion L (m). It is applied vertically to the center of the output flange.



Accuracy of the Harmonic Geared Type

→ Page 06-35

Load Torque – Driver Input Current Characteristics

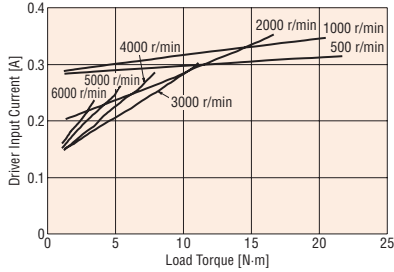
This is the relationship between the load torque and driver input current at each speed when the motor is actually operated. From these characteristics, the power supply capacity required for use in multi-axis operation can be estimated. For the geared type, convert to torque and speed by the motor shaft.

$$\text{Motor shaft speed} = \text{Gear output shaft speed} \times \text{Gear ratio} \text{ [r/min]}$$

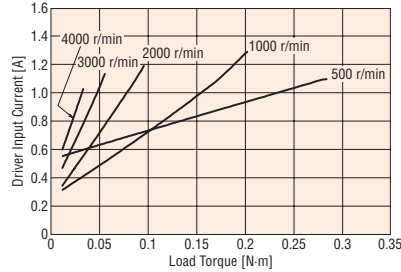
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear ratio}} \text{ [N}\cdot\text{m]}$$

24 VDC

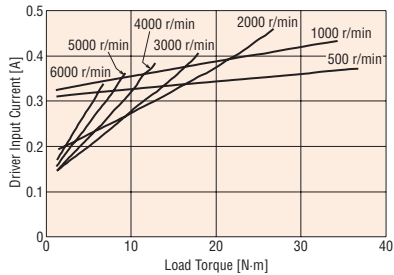
AZM14



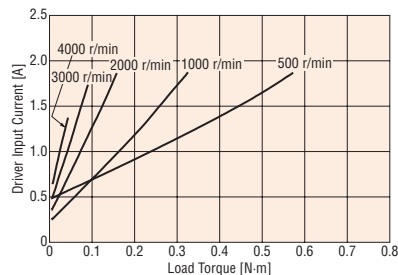
AZM46



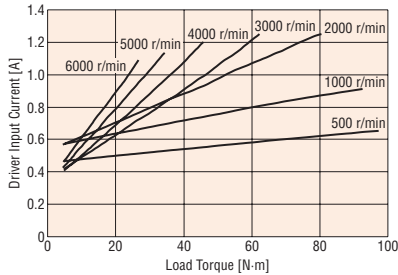
AZM15



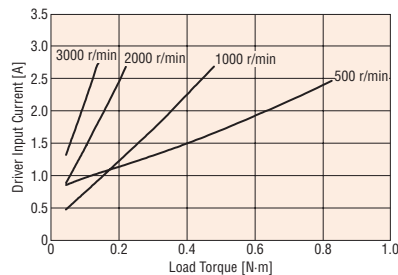
AZM48



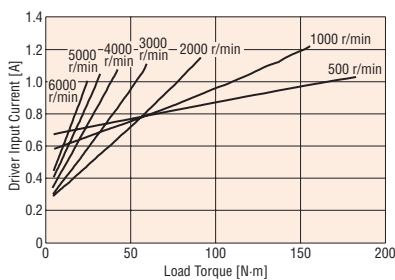
AZM24



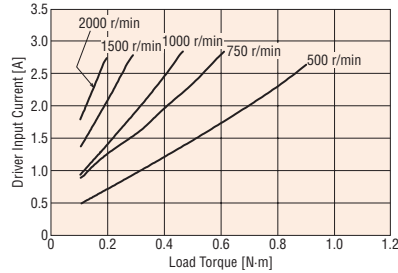
AZM66



AZM26

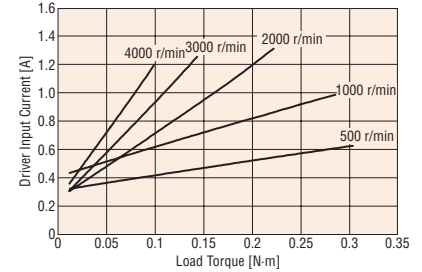


AZM69

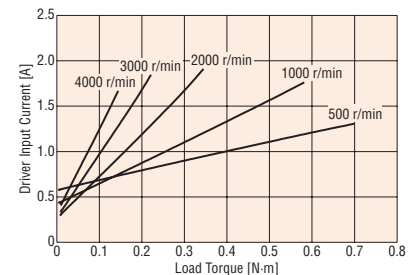


48 VDC

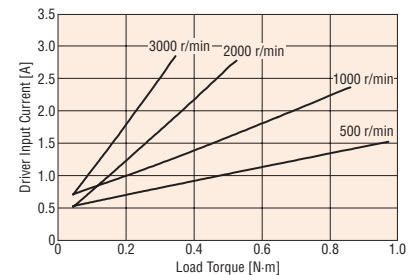
AZM46



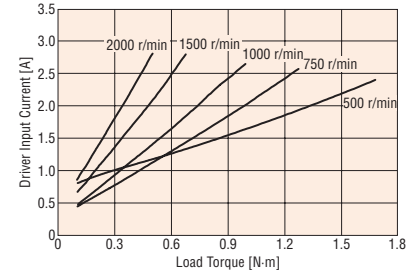
AZM48



AZM66



AZM69



Dimensions (Unit: mm)

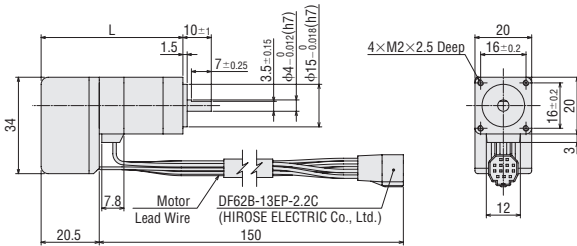
● Motors

◇ Standard Type

Frame Size 20 mm

2D & 3D CAD

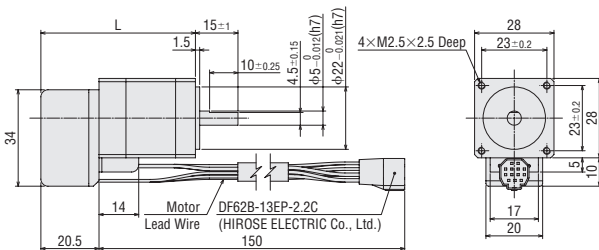
Product Name	L	Mass kg	2D CAD
AZM14AK	50	0.08	B1212
AZM15AK	60	0.1	B1213



Frame Size 28 mm

2D & 3D CAD

Product Name	L	Mass kg	2D CAD
AZM24AK	54.5	0.15	B1214
AZM26AK	74	0.24	B1215

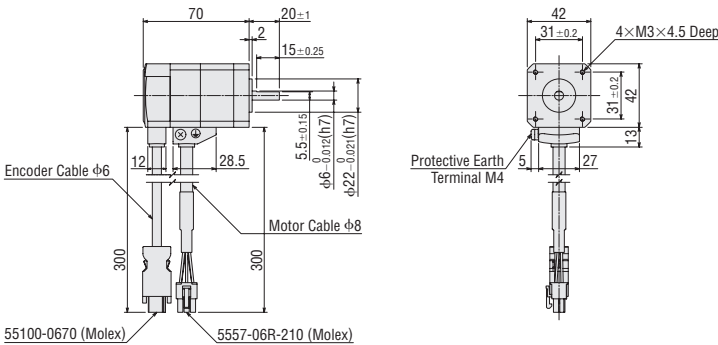


Frame Size 42 mm

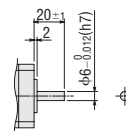
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46AK	0.44	B1092
Straight	AZM46AOK		B1288

Single Sided Milling



Straight

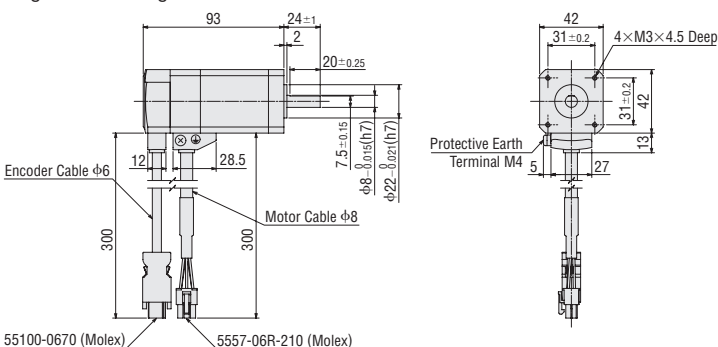


Frame Size 42 mm

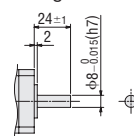
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM48AK	0.68	B1312
Straight	AZM48AOK		B1289
With Key	AZM48A1K		B1299

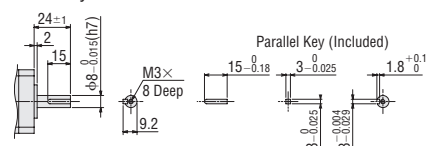
Single Sided Milling



Straight



With Key

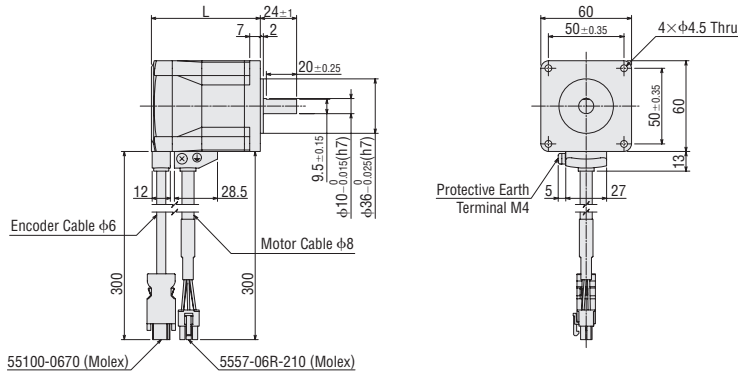


Frame Size 60 mm

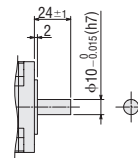
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66AK	72	0.91	B1093
Straight	AZM66AOK			B1290
With Key	AZM66A1K			B1300
Single Sided Milling	AZM69AK	97.5	1.4	B1129
Straight	AZM69AOK			B1291
With Key	AZM69A1K			B1301

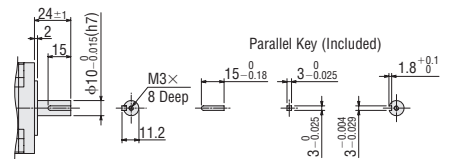
Single Sided Milling



Straight



With Key



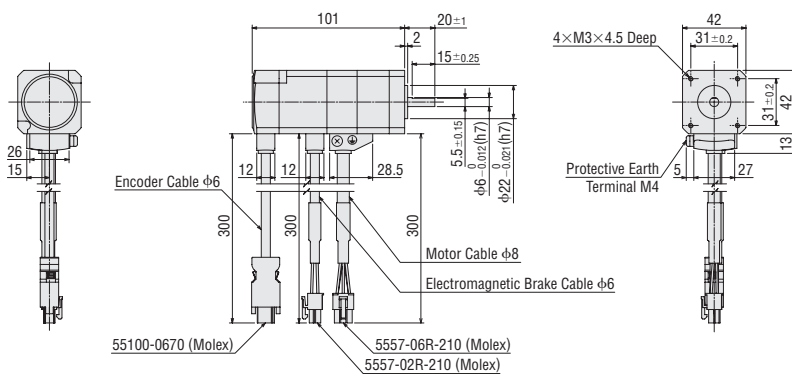
◇ Standard Type with Electromagnetic Brake

Frame Size 42 mm

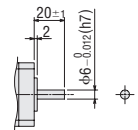
2D & 3D CAD

Shaft Shape	Product Name	Mass kg	2D CAD
Single Sided Milling	AZM46MK	0.61	B1154
Straight	AZM46MOK		B1294

Single Sided Milling



Straight



06

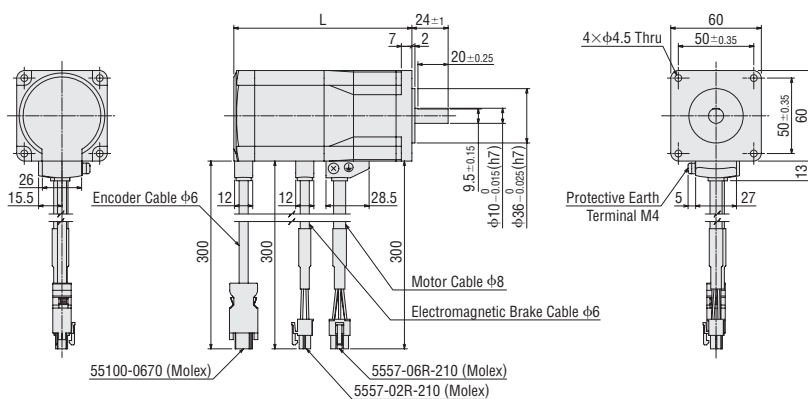
AZ Series

Frame Size 60 mm

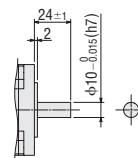
2D & 3D CAD

Shaft Shape	Product Name	L	Mass kg	2D CAD
Single Sided Milling	AZM66MK	118	1.3	B1155
Straight	AZM66MOK			B1295
With Key	AZM66M1K			B1305
Single Sided Milling	AZM69MK	143.5	1.8	B1156
Straight	AZM69MOK			B1296
With Key	AZM69M1K			B1306

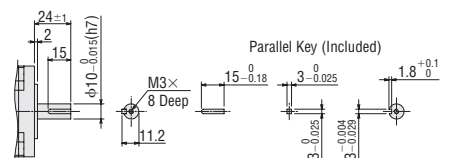
Single Sided Milling



Straight



With Key

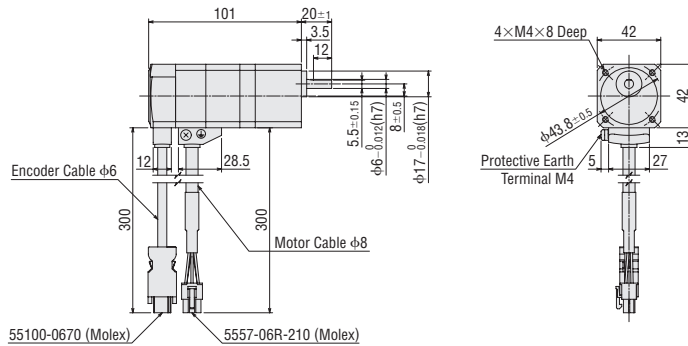


◇ **TS Geared Type**

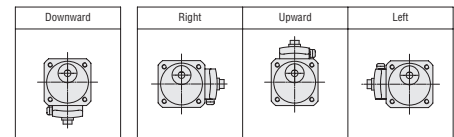
Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46AK-TS ■	3.6, 7.2, 10, 20, 30	0.59	B1157
Right	AZM46AK-TS ■R			B1272
Upward	AZM46AK-TS ■U			B1270
Left	AZM46AK-TS ■L			B1271



● Cable Drawing Direction

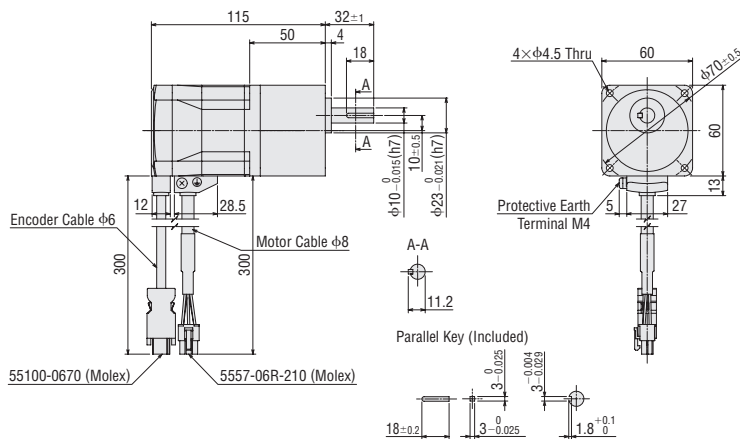


Frame Size 60 mm

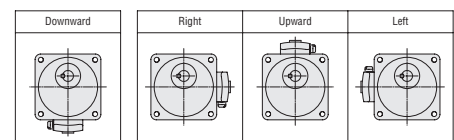
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66AK-TS ■	3.6, 7.2, 10, 20, 30	1.3	B1158
Right	AZM66AK-TS ■R			B1275
Upward	AZM66AK-TS ■U			B1273
Left	AZM66AK-TS ■L			B1274

● Installation Screws: M4×60 P0.7 (4 pieces included)



● Cable Drawing Direction

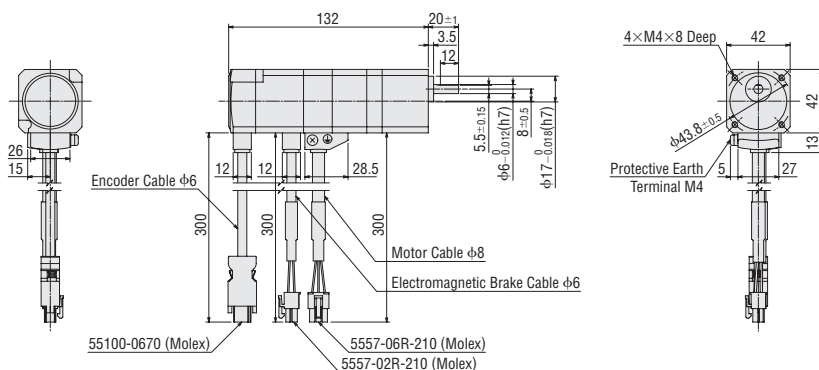


◇ **TS Geared Type with Electromagnetic Brake**

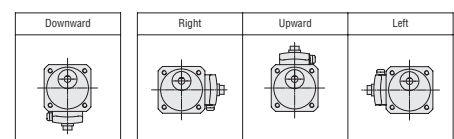
Frame Size 42 mm

2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM46MK-TS ■	3.6, 7.2, 10, 20, 30	0.76	B1216
Right	AZM46MK-TS ■R			B1284
Upward	AZM46MK-TS ■U			B1282
Left	AZM46MK-TS ■L			B1283



● Cable Drawing Direction



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

Click Here

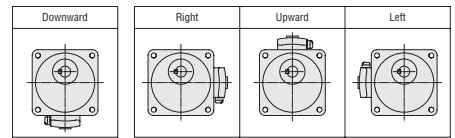
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 60 mm

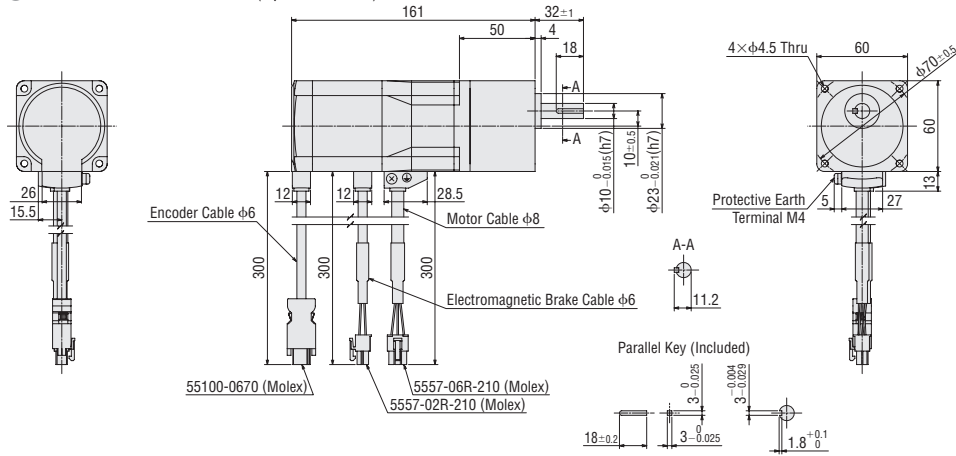
2D & 3D CAD

Cable Drawing Direction	Product Name	Gear Ratio	Mass kg	2D CAD
Downward	AZM66MK-TS ■	3.6, 7.2, 10, 20, 30	1.7	B1217
Right	AZM66MK-TS ■ R			B1287
Upward	AZM66MK-TS ■ U			B1285
Left	AZM66MK-TS ■ L			B1286

● Cable Drawing Direction



● Installation Screws: M4×60 P0.7 (4 pieces included)

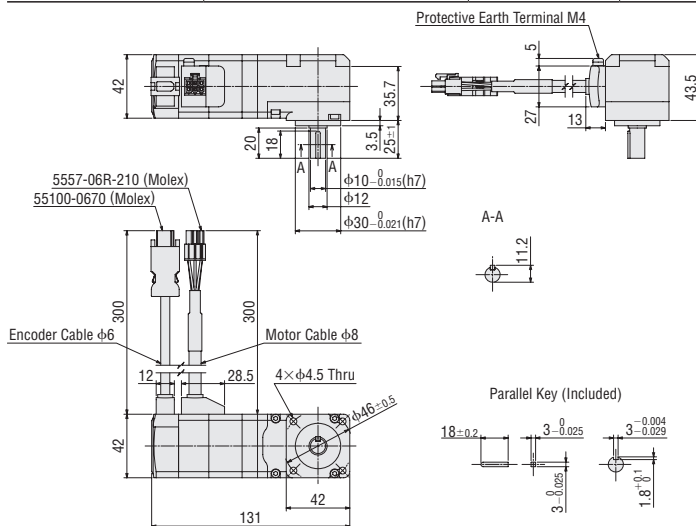


◇ FC Geared Type

Frame Size 42 mm Cable Drawing Direction Upward

2D & 3D CAD

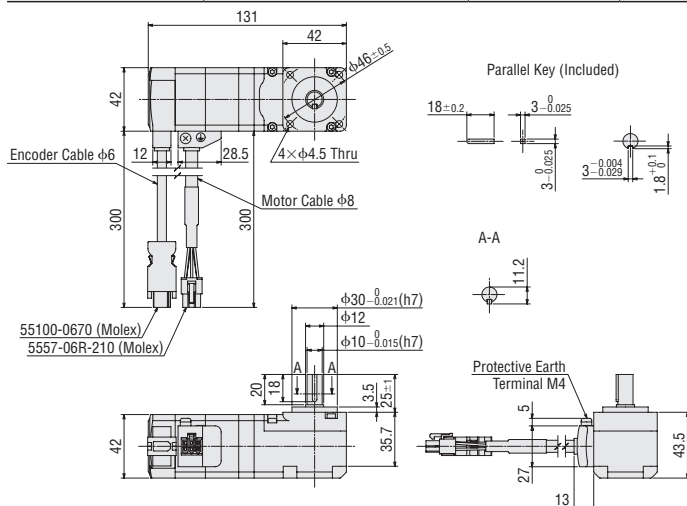
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-FC ■ UA	7.2, 10, 20, 30	0.79	B1314



Frame Size 42 mm Cable Drawing Direction Downward

2D & 3D CAD

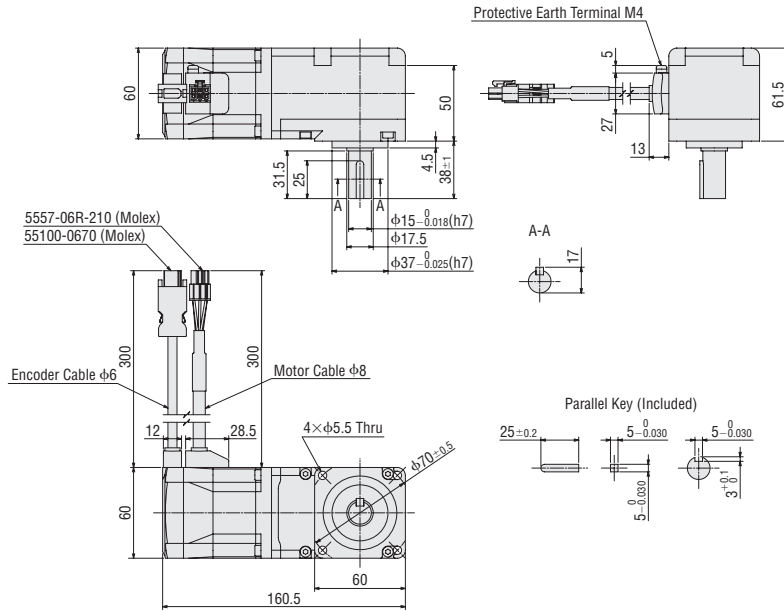
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-FC ■ DA	7.2, 10, 20, 30	0.79	B1313



● A number indicating the gear ratio is entered where the box ■ is located within the product name.

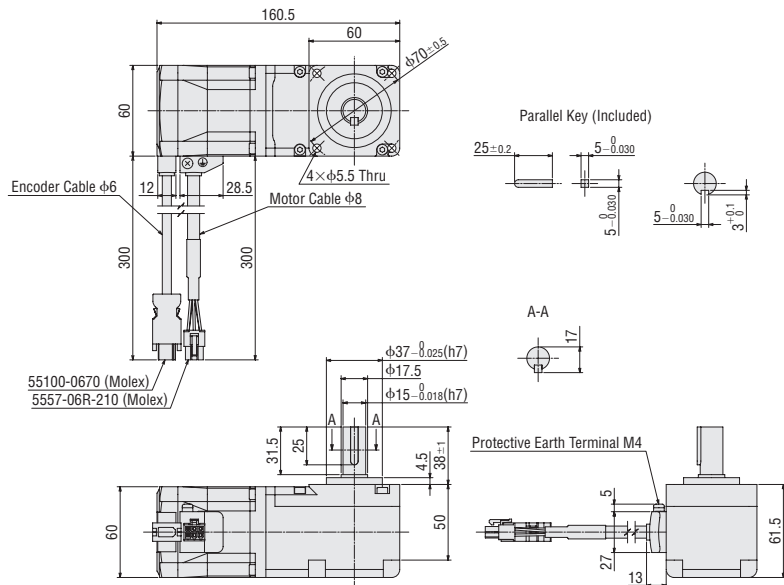
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-FC UA	7.2, 10, 20, 30	1.8	B1318



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-FC DA	7.2, 10, 20, 30	1.8	B1317

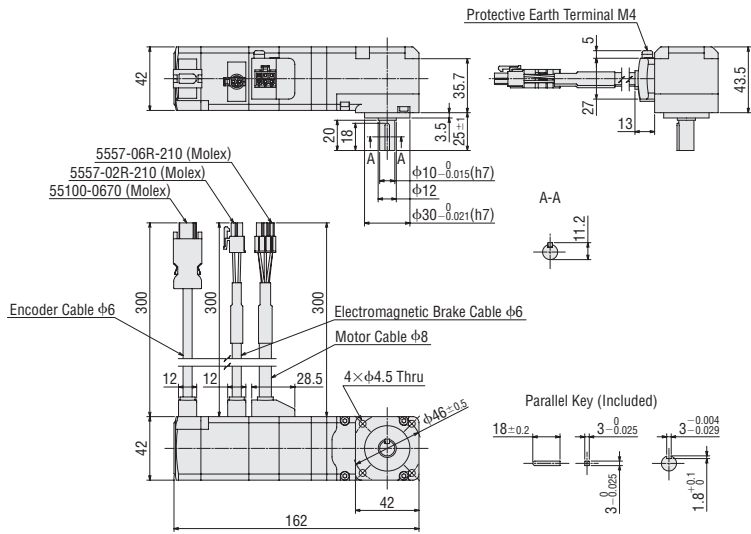


● A number indicating the gear ratio is entered where the box ■ is located within the product name.

◇ FC Geared Type with Electromagnetic Brake

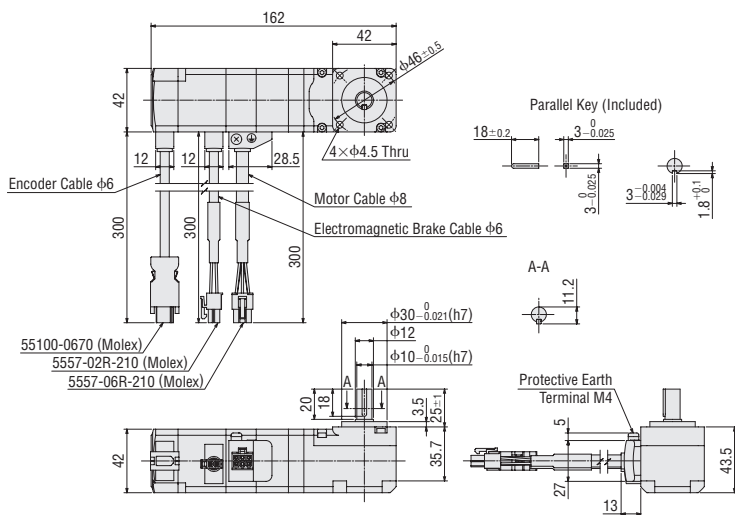
Frame Size 42 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-FC UA	7.2, 10, 20, 30	0.96	B1316



Frame Size 42 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-FC DA	7.2, 10, 20, 30	0.96	B1315



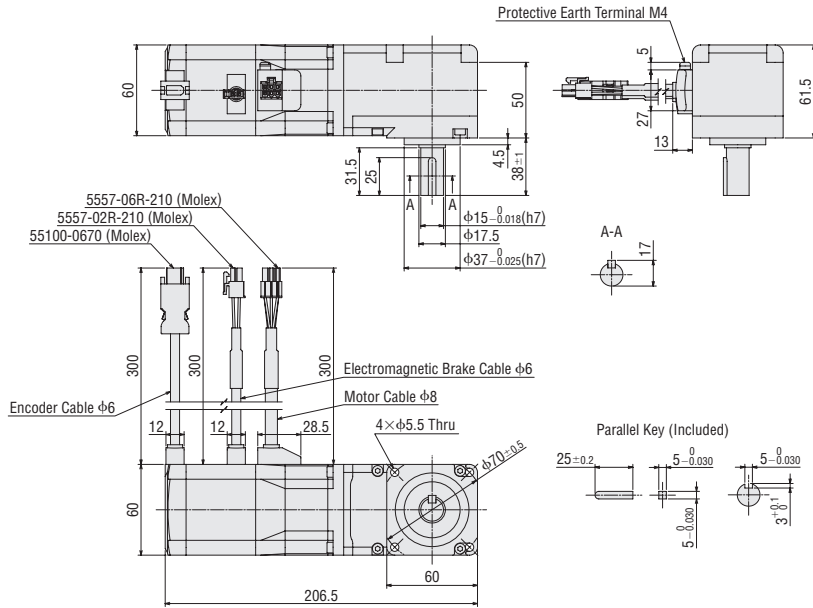
06

AZ Series

● A number indicating the gear ratio is entered where the box ■ is located within the product name.

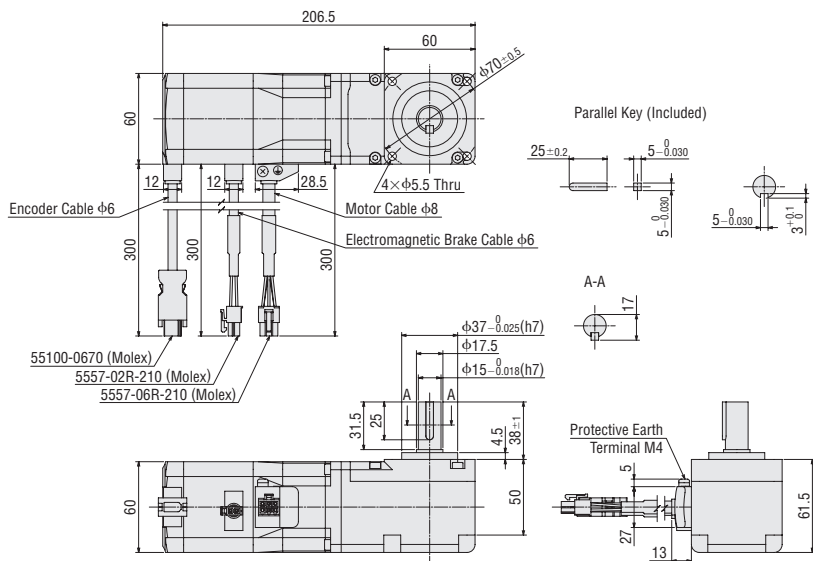
Frame Size 60 mm Cable Drawing Direction Upward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-FC UA	7.2, 10, 20, 30	2.2	B1320



Frame Size 60 mm Cable Drawing Direction Downward **2D & 3D CAD**

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-FC DA	7.2, 10, 20, 30	2.2	B1319



● A number indicating the gear ratio is entered where the box is located within the product name.

[Click Here](#)

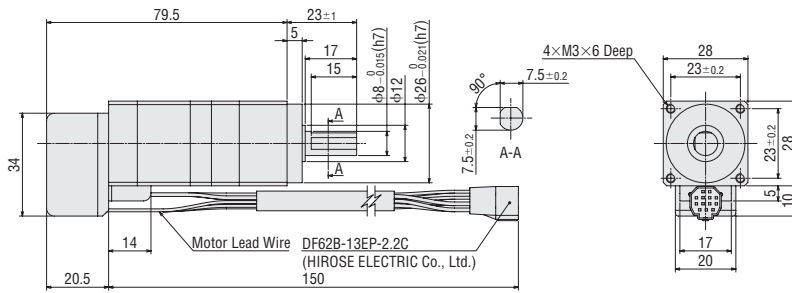
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

◇ PS Geared Type

Frame Size 28 mm

2D & 3D CAD

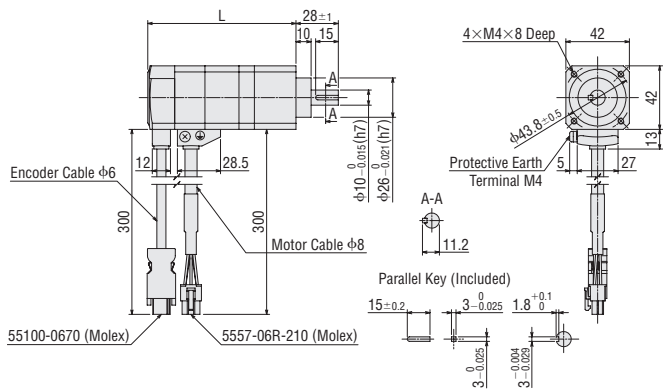
Product Name	Gear Ratio	Mass kg	2D CAD
AZM24AK-PS 	7.2, 10	0.25	B1366



Frame Size 42 mm

2D & 3D CAD

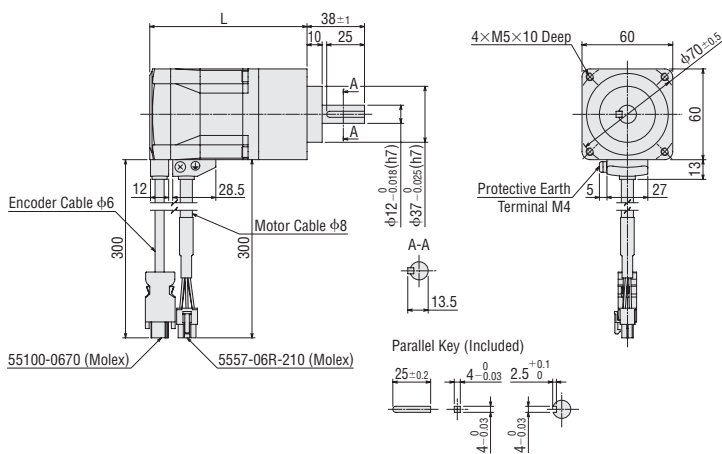
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46AK-PS 	5, 7.2, 10	98	0.64	B1159
	25, 36, 50	121.5	0.79	B1160



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66AK-PS 	5, 7.2, 10	104	1.3	B1161
	25, 36, 50	124	1.6	B1162



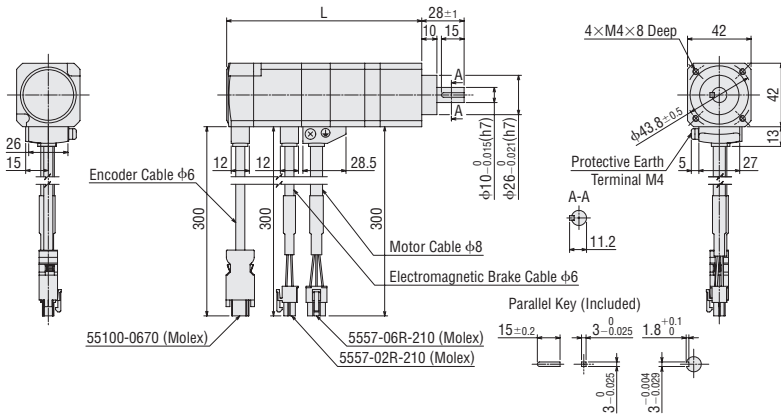
● A number indicating the gear ratio is entered where the box is located within the product name.

◆ **PS Geared Type with Electromagnetic Brake**

Frame Size 42 mm

2D & 3D CAD

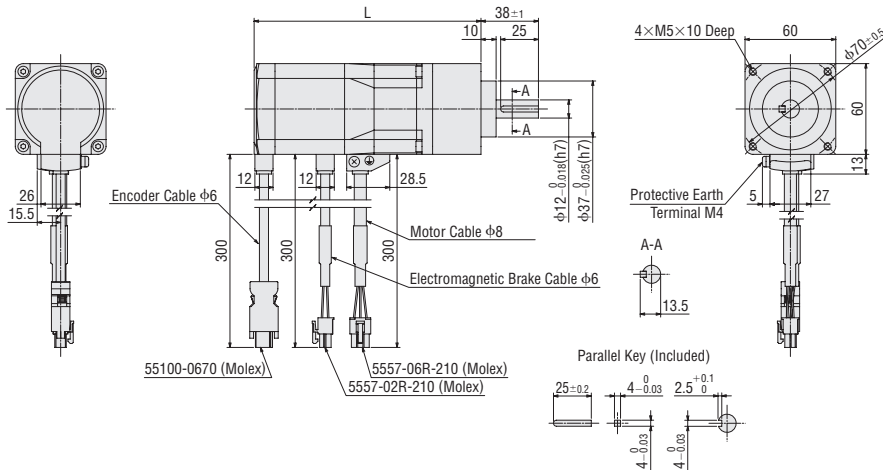
Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM46MK-PS ■	5, 7.2, 10	129	0.81	B1218
	25, 36, 50	152	0.96	B1219



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	L	Mass kg	2D CAD
AZM66MK-PS ■	5, 7.2, 10	150	1.7	B1220
	25, 36, 50	170	2.0	B1221

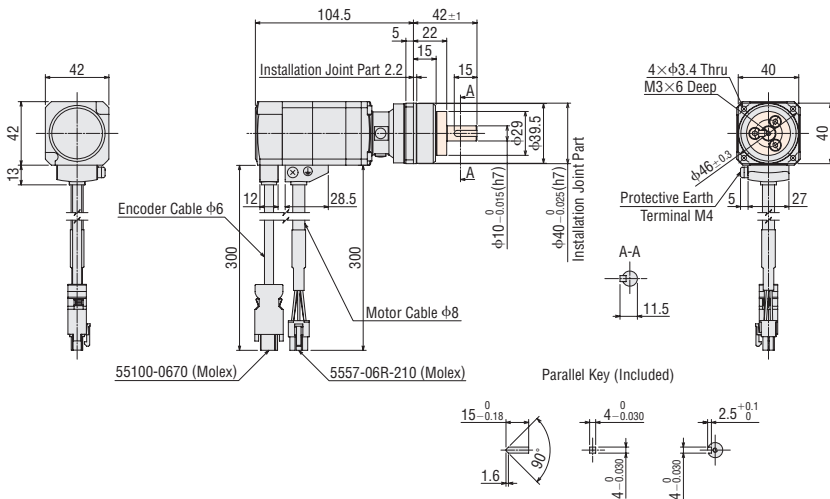


◆ **HPG Geared Type Shaft Output Type**

Frame Size 40 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HP ■	5, 9	0.71	B1163



- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

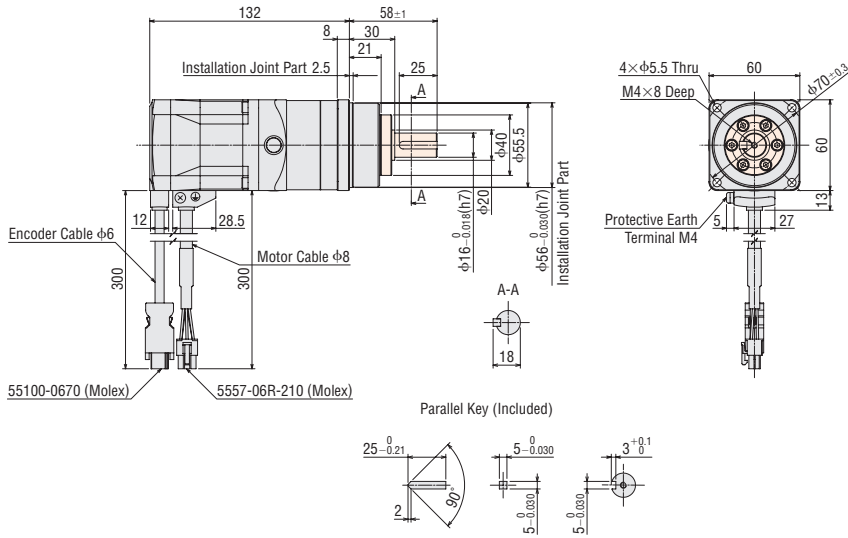
Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HP 	5, 15	1.9	B1165

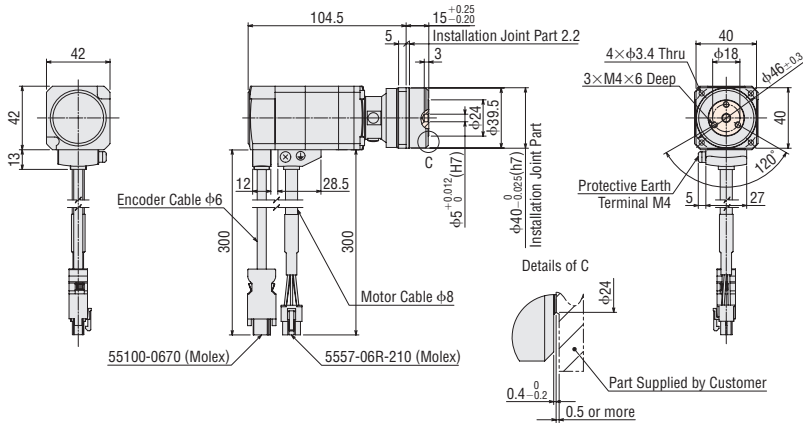


◇ HPG Geared Type Flange Output Type

Frame Size 40 mm

2D & 3D CAD

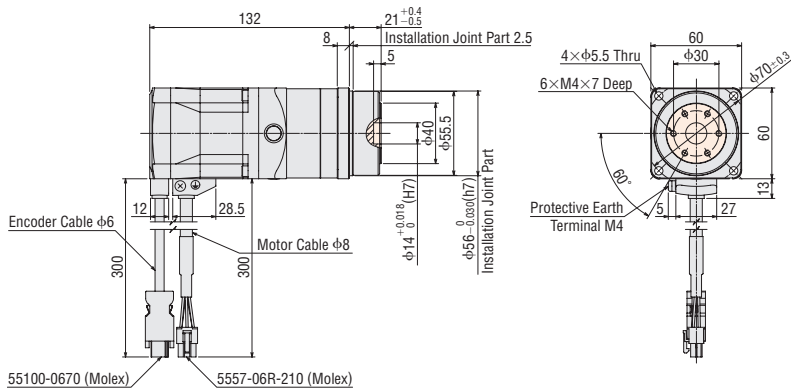
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HP F	5, 9	0.66	B1164



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HP F	5, 15	1.8	B1166



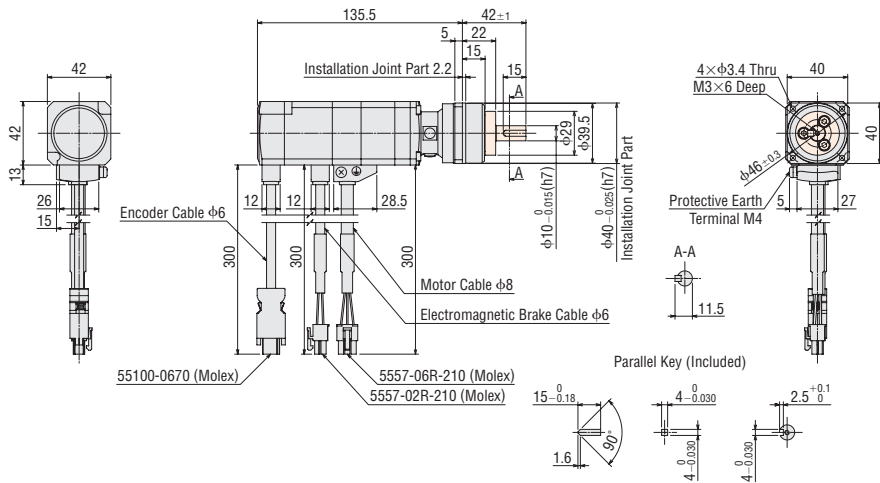
- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

◆ **HPG Geared Type with Electromagnetic Brake Shaft Output Type**

Frame Size 40 mm

2D & 3D CAD

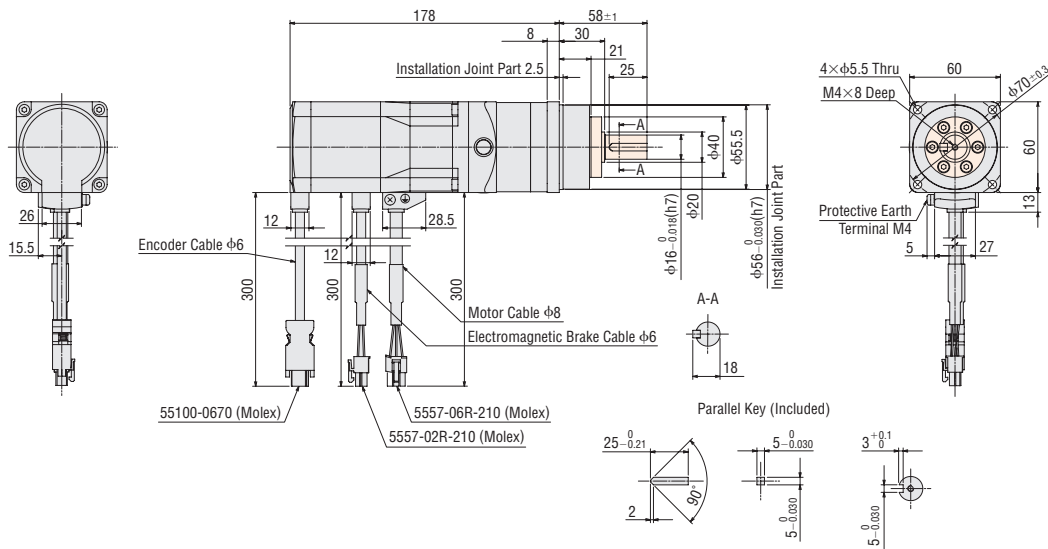
Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HP ■	5, 9	0.88	B1222



Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HP ■	5, 15	2.3	B1224

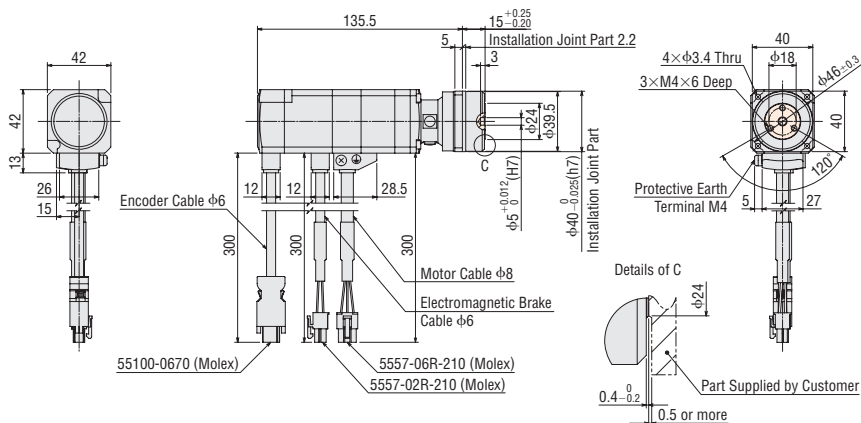


◆ **HPG Geared Type with Electromagnetic Brake Flange Output Type**

Frame Size 40 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HP ■F	5, 9	0.83	B1223

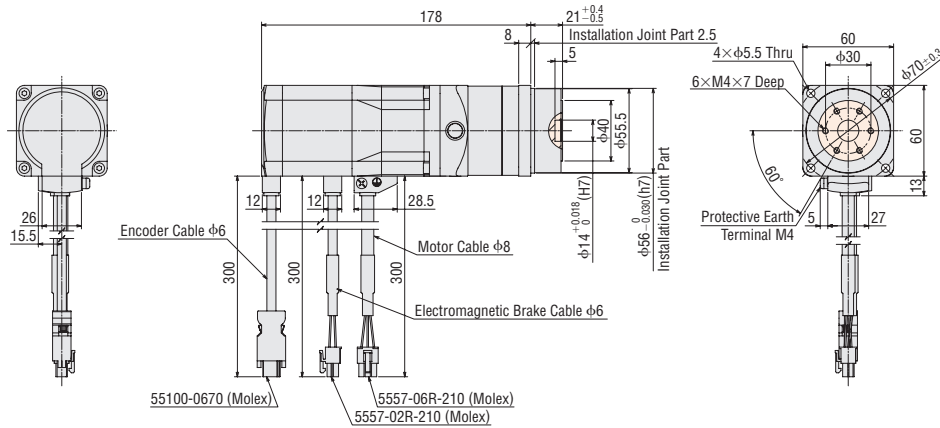


- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HP 	5, 15	2.2	B1225

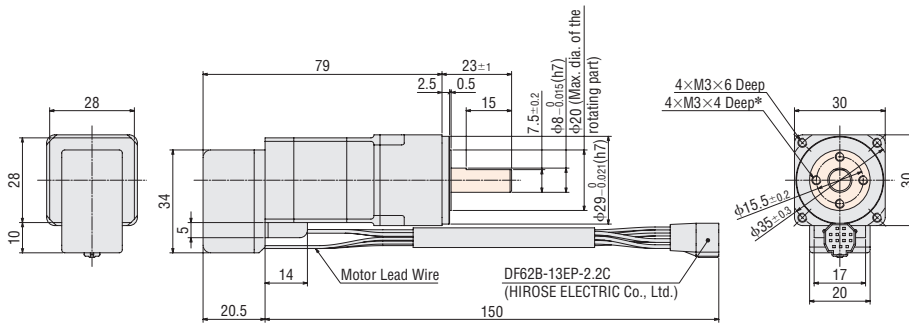


◇ Harmonic Geared Type

Frame Size 30 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM24AK-HS 	50, 100	0.24	B1367

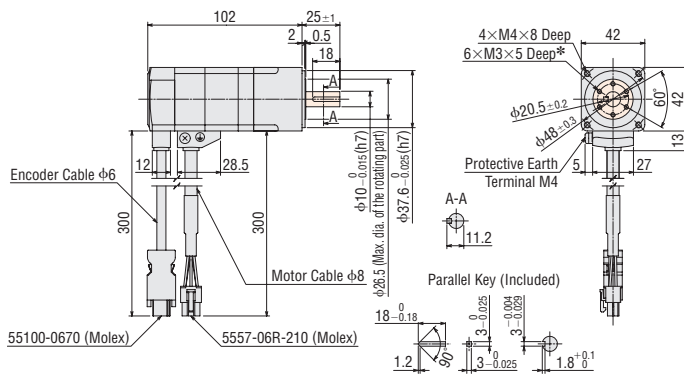


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46AK-HS 	50, 100	0.65	B1167



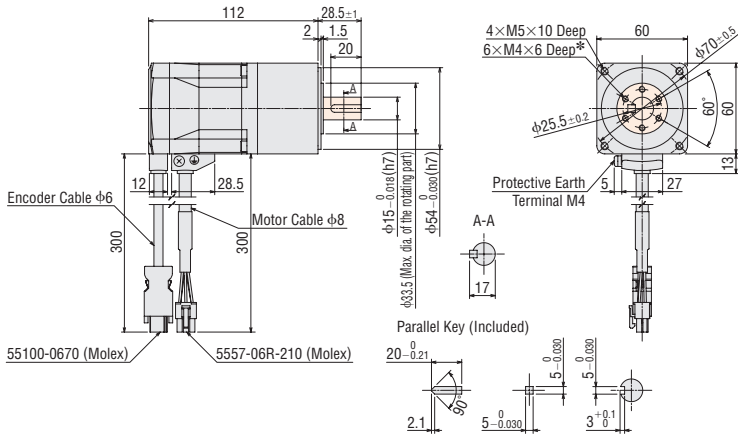
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box is located within the product name.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66AK-HS ■	50, 100	1.4	B1168



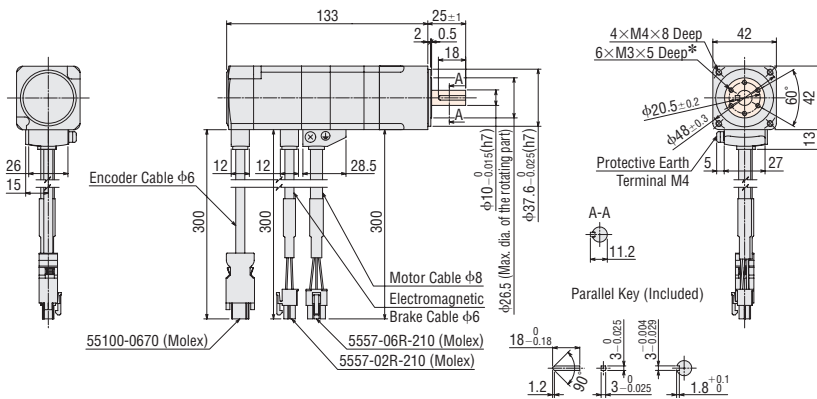
*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

◇ Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM46MK-HS ■	50, 100	0.82	B1226

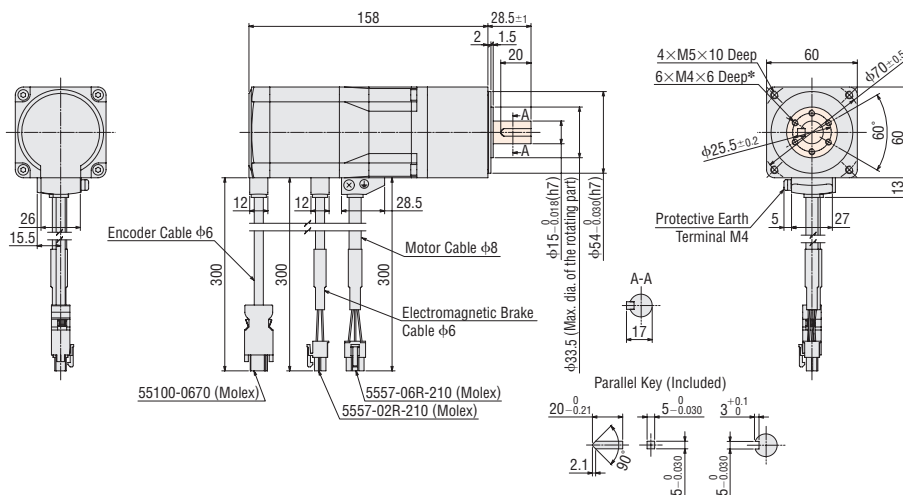


*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

Frame Size 60 mm

2D & 3D CAD

Product Name	Gear Ratio	Mass kg	2D CAD
AZM66MK-HS ■	50, 100	1.8	B1227



*On the dimensions, you cannot designate the positions of the output shaft and screw holes. Therefore, develop a design by using the size of the screw holes on the surface to which load is applied.

- The colored section for the dimensions indicates the rotating part.
- A number indicating the gear ratio is entered where the box ■ is located within the product name.

Click Here

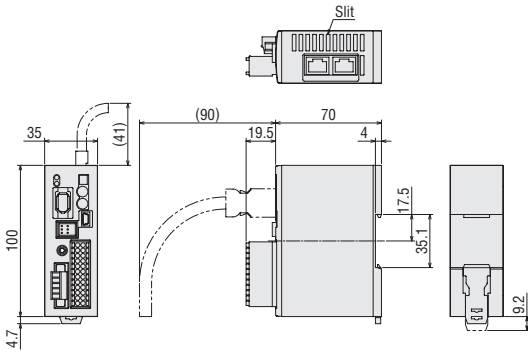
For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

Drivers

2D & 3D CAD

Type	Product Name	Mass kg	2D CAD
Built-in Controller Type	AZD-KD	0.15	B1094
Pulse Input Type with RS-485 Communication	AZD-KX		
Pulse Input Type	AZD-K		B1096

The dimensions below is the drawing of a built-in controller type. The external dimensions and accessories are common to all driver types.



Accessories

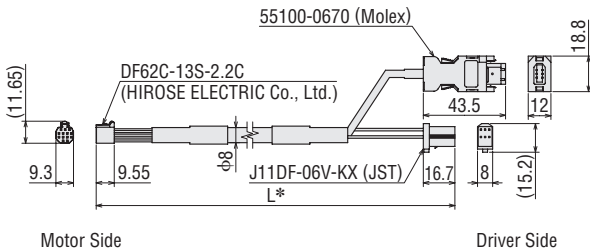
Main Power Supply/Electromagnetic Brake Connector (CN1)
Connector: MC1,5/5-STF-3,5
(PHOENIX CONTACT)

I/O Signals Connector (CN4)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

Connection Cable Sets/Flexible Connection Cable Sets

[For **AZM14, AZM15, AZM24, AZM26**]

◇ Cable for Motor

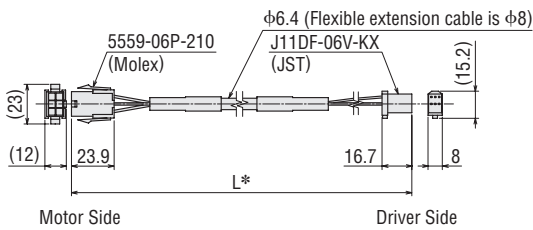


Motor Side

Driver Side

[For **AZM46, AZM48, AZM66, AZM69**]

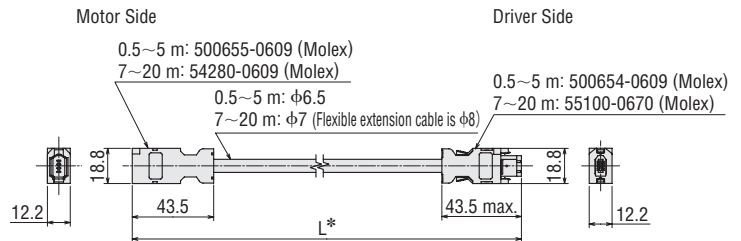
◇ Cable for Motor



Motor Side

Driver Side

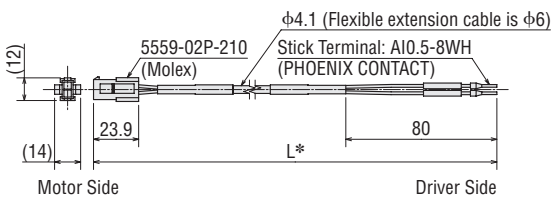
◇ Cable for Encoder



Motor Side

Driver Side

◇ Cable for Electromagnetic Brake



Motor Side

Driver Side

*"L" is replaced by the length specified in Length L (m) in "Product Line" on page 06-71.

Note

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

Cautions for Using Connection Cables

→ Page 06-55

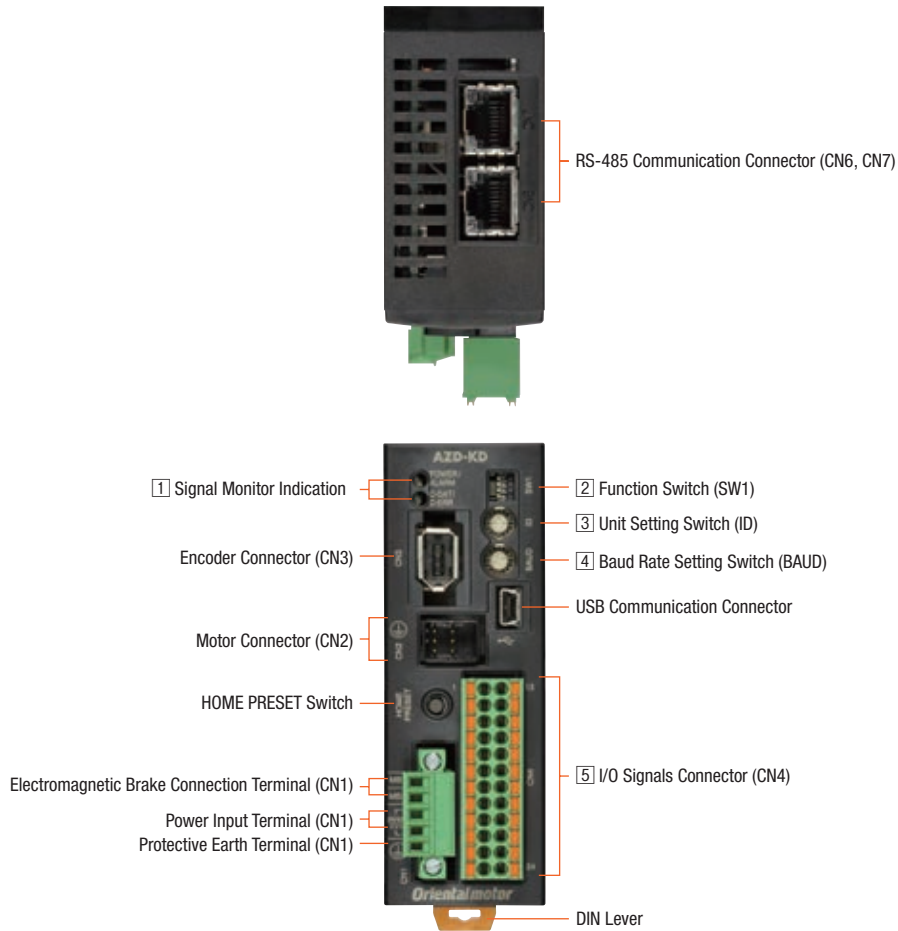
06

AZ Series

Connection and Operation (Built-in controller type/Pulse input type with RS-485 communication)

Names and Functions of Driver Parts

Below is a photo of the built-in controller type.



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
POWER	Green	Power supply indication	When power is applied
ALARM	Red	Alarm indication	When a protective function is activated (blinking)
C-DAT	Green	Communication indication	When communication data is being sent or received
C-ERR	Red	Communication error indication	When communication data is in error

2 Function Switch

Indication	No.	Function
SW1	1	Use in combination with the unit setting switch (ID) to set the axis number. (Factory setting) OFF
	2	Set the RS-485 communication protocol. (Factory setting) Built-in controller type: OFF Pulse input type with RS-485 communication: ON
	3	Set the terminating resistor (120 Ω) for RS-485 communication.
	4	(Factory setting) OFF (OFF: Terminating resistor not used ON: Terminating resistor used)

*Configure both No. 3 and No. 4 to the same setting.

3 Unit Setting Switch

Indication	Function
ID	Set this when you use RS-485 communication. Set the unit number. (Factory setting) Built-in controller type: 0 Pulse input type with RS-485 communication: 1

4 Baud Rate Setting Switch

Indication	Function
BAUD	Set this when you use RS-485 communication. Set the baud rate. (Factory setting) Built-in controller type: 7 Pulse input type with RS-485 communication: 4

◇ RS-485 Baud Rate Setting

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5	230400
6	Not used
7	Network converter
8-F	Not used

5 I/O Signals Connector (CN4)

For the pulse input type with RS-485 communication, No. 1, 2, 13, and 14 pins are dedicated to pulse input. For wire connection with the programmable controller, refer to "Pulse Input Types" on page 06-109.

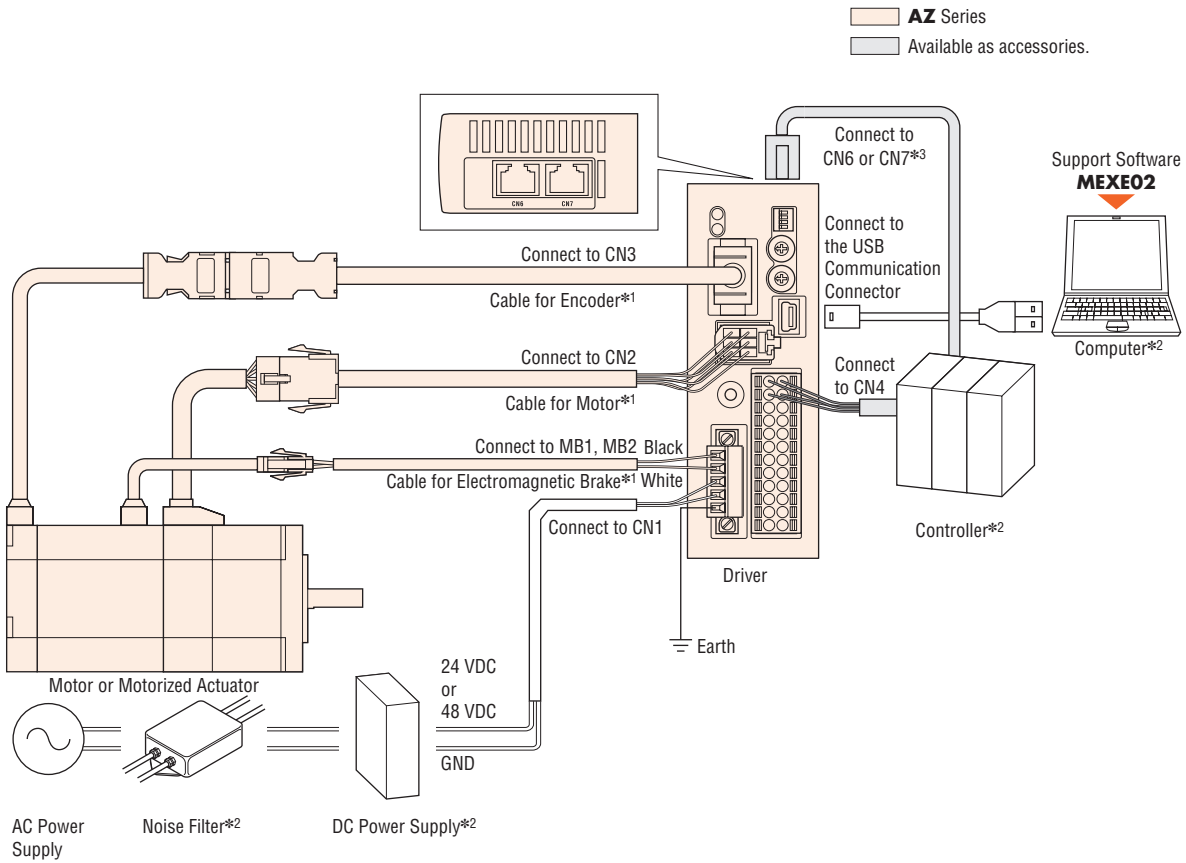
Indication	Pin No.	Driver Type	Signal Name	Description
CN4	1	Built-in controller type	IN0	START This signal is used to start positioning operation.
		Pulse input type with RS-485 communication	CW+* [PLS+]	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	Built-in controller type	IN2	M1 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW+* [DIR+]	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	Common	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	Common	IN6	STOP Stops the motor.
	5	Common	IN-COM [0-7]*	IN0~IN7 Input Common
	6	Common	IN8	FW-JOG Starts the JOG operation.
	7	Common	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	Common	OUT2	PLS-RDY Not used.
	9	Common	OUT4	MOVE Output during motor operation.
	10	Common	OUT-COM*	Output Common
	11	Common	ASG+	A-Phase Pulse Output +
	12	Common	BSG+	B-Phase Pulse Output +
	13	Built-in controller type	IN1	M0 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CW-* [PLS-]	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	Built-in controller type	IN3	M2 Uses the 3 bits, between M0, M1 and M2, to select the operating data number.
		Pulse input type with RS-485 communication	CCW-* [DIR-]	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	Common	IN5	FREE Stops motor excitation.
	16	Common	IN7	ALM-RST Resets the alarms.
	17	Common	IN-COM [8-9]*	IN8, IN9 Input Common
	18	Common	IN9	RV-JOG Starts the JOG operation.
	19	Common	OUT1	IN-POS Outputs when the motor operation is finished.
	20	Common	OUT3	READY Outputs when the driver is ready for operation.
21	Common	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).	
22	Common	GND*	Ground	
23	Common	ASG-	A-Phase Pulse Output -	
24	Common	BSG-	B-Phase Pulse Output -	

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

*Initial settings cannot be changed.

● Connection Diagram

◇ Connections with Peripheral Equipment



*1 Keep the wiring distance between the motor and driver to 20 m or less.

*2 Not supplied.

*3 Connect to the controller when controlling by RS-485 communication.

◇ Connection of the USB Cable

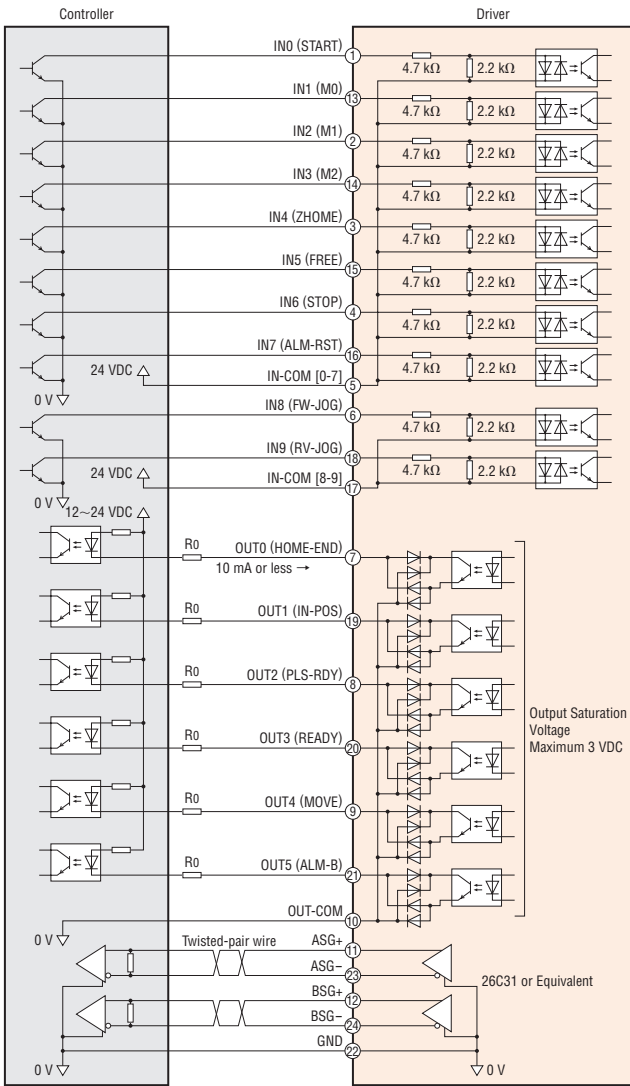
Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed.

Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

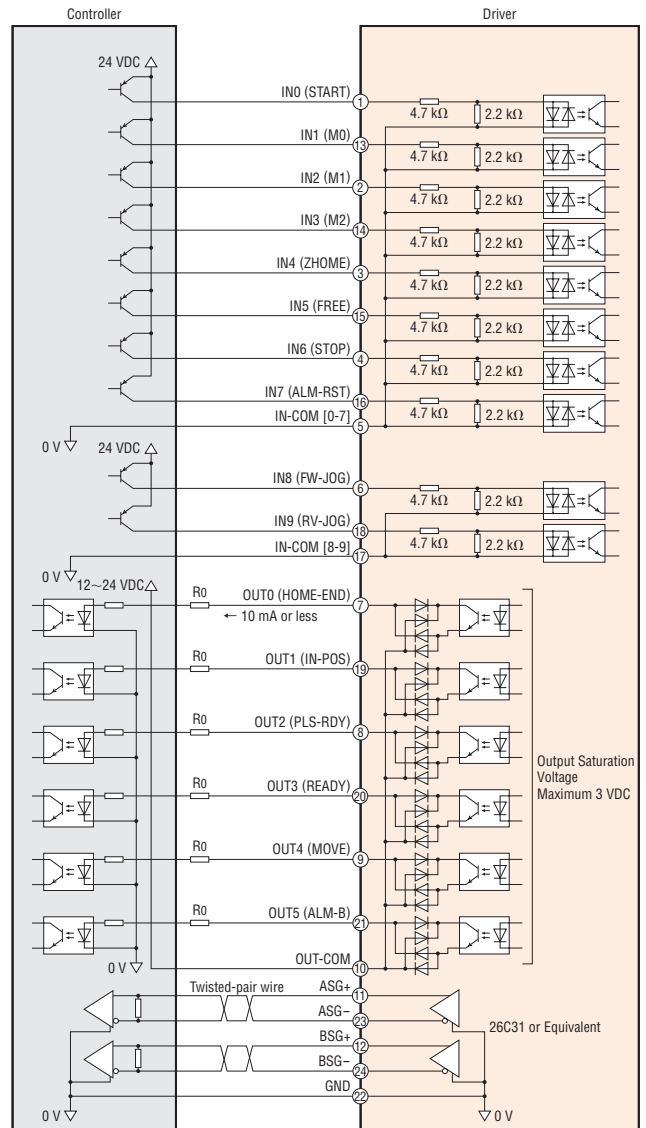
◇ Connecting to the Programmable Controller (Built-in controller type)

● Connection Diagram for Connection with Current Sink Output Circuit



- Note**
- Use 24 VDC for the input signals.
 - Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
 - Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
 - If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

● Connection Diagram for Connection with Current Source Output Circuit



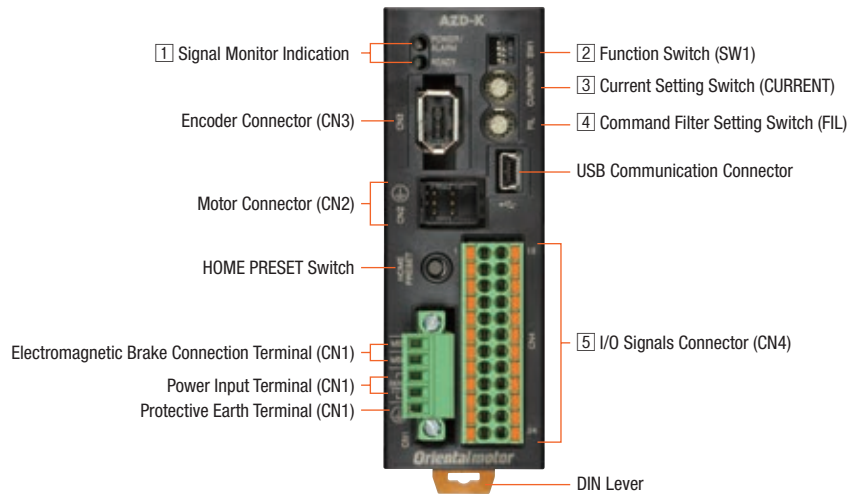
- Note**
- Use 24 VDC for the input signals.
 - Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
 - Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
 - If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

◇ Connecting to the Programmable Controller (Pulse input type with RS-485 communication)

The connection diagram is similar to that of the pulse input type. Refer to page 06-109.

Connection and Operation (Pulse input type)

Names and Functions of Driver Parts



1 Signal Monitor Indication

◇ LED Indicators

Indication	Color	Function	Lighting Condition
POWER	Green	Power supply indication	When power is applied
ALARM	Red	Alarm indication	When a protective function is activated (blinking)
READY	Green	READY output	When READY output is ON

2 Function Switch

Indication	No.	Function
SW1	1	Sets the resolution per one rotation of the motor output shaft (Factory setting: OFF [1000 p/r]).
	2	Sets the pulse input mode as either 1-pulse input mode or 2-pulse input mode (Factory setting: OFF [2-pulse input mode]).
	3, 4	Not used.

3 Current Setting Switch

Indication	Function
CURRENT	Set the base current, which is the basis of the running current and the standstill current (Factory setting: F).

4 Command Filter Setting Switch

Indication	Function
FIL	Adjust the responsiveness of the motor (Factory setting: 1).

5 I/O Signals Connector (CN4)

Indication	Pin No.	Signal Name	Description
CN4	1	CW+ [PLS+]*	CW Pulse Input + [Pulse Input +] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	2	CCW+ [DIR+]*	CCW Pulse Input + [Rotation Direction Input +] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	3	IN4	ZHOME Moves to home that has been set with the HOME/PRESET switch.
	4	IN6	STOP Stops the motor.
	5	IN-COM [4-7]*	IN4~IN7 Input Common
	6	IN8	FW-JOG Starts the JOG operation.
	7	OUT0	HOME-END When home position has been established, it will be output when the high-speed return-to-home operation is completed.
	8	OUT2	PLS-RDY Output when the pulse input preparation is completed.
	9	OUT4	MOVE Output during motor operation.
	10	OUT-COM*	Output Common
	11	ASG+	A-Phase Pulse Output +
	12	BSG+	B-Phase Pulse Output +
	13	CW- [PLS-]*	CW Pulse Input - [Pulse Input -] This is the pulse signal that is input to operate the motor in the CW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	14	CCW- [DIR-]*	CCW Pulse Input - [Rotation Direction Input -] This is the pulse signal that is input to operate the motor in the CCW direction in the 2-pulse input method. The input method in the [] applies to the 1-pulse input method.
	15	IN5	FREE Stops motor excitation.
	16	IN7	ALM-RST Resets the alarms.
	17	IN-COM [8-9]*	IN8, IN9 Input Common
	18	IN9	RV-JOG Starts the JOG operation.
	19	OUT1	IN-POS Outputs when the motor operation is finished.
	20	OUT3	READY Outputs when the driver is ready for operation.
	21	OUT5	ALM-B Outputs the alarm status of the driver (Normal close).
	22	GND*	Ground
	23	ASG-	A-Phase Pulse Output -
	24	BSG-	B-Phase Pulse Output -

● You can set functions to assign by using parameters. Initial values are shown above. For details, refer to "Functions" in the Operating Manual of the AZ Series.

*Initial settings cannot be changed.

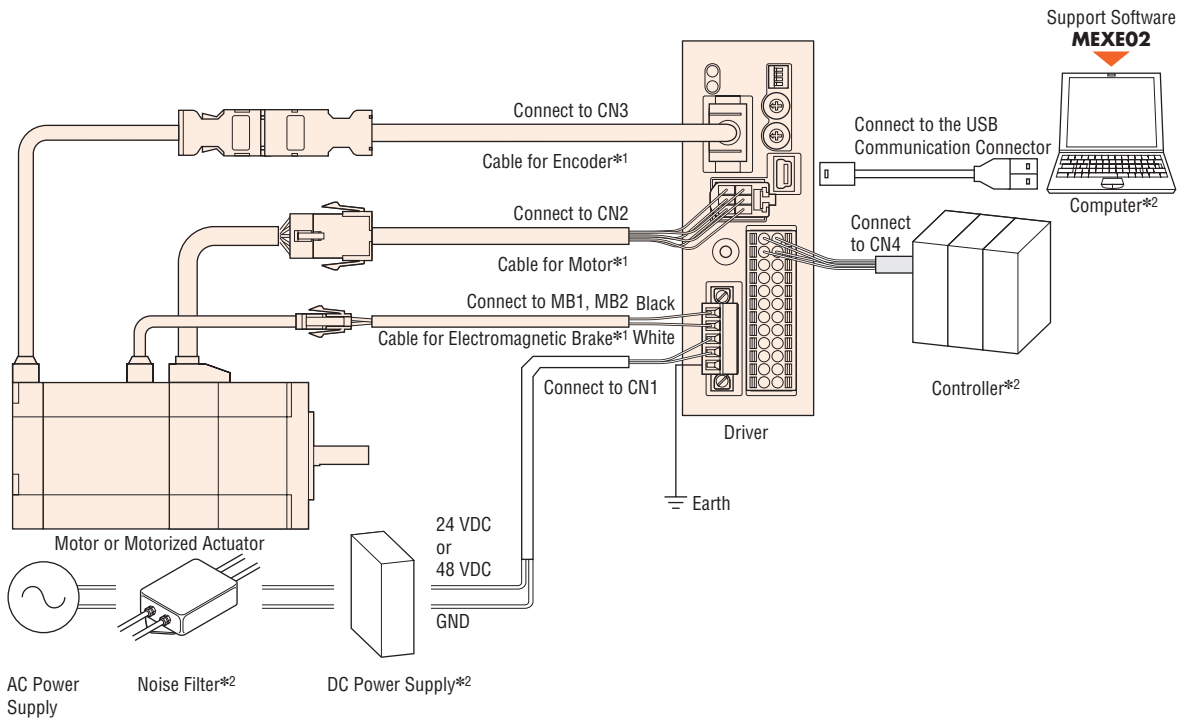
Click Here

For more information, please visit ORIENTAL MOTOR Website:
<https://www.orientalmotor.com.sg/om/tp/index.html>

● Connection Diagram

◇ Connections with Peripheral Equipment

■ AZ Series
 ■ Available as accessories.



*¹ Keep the wiring distance between the motor and driver to 20 m or less.
 *² Not supplied.

◇ Connection of the USB Cable

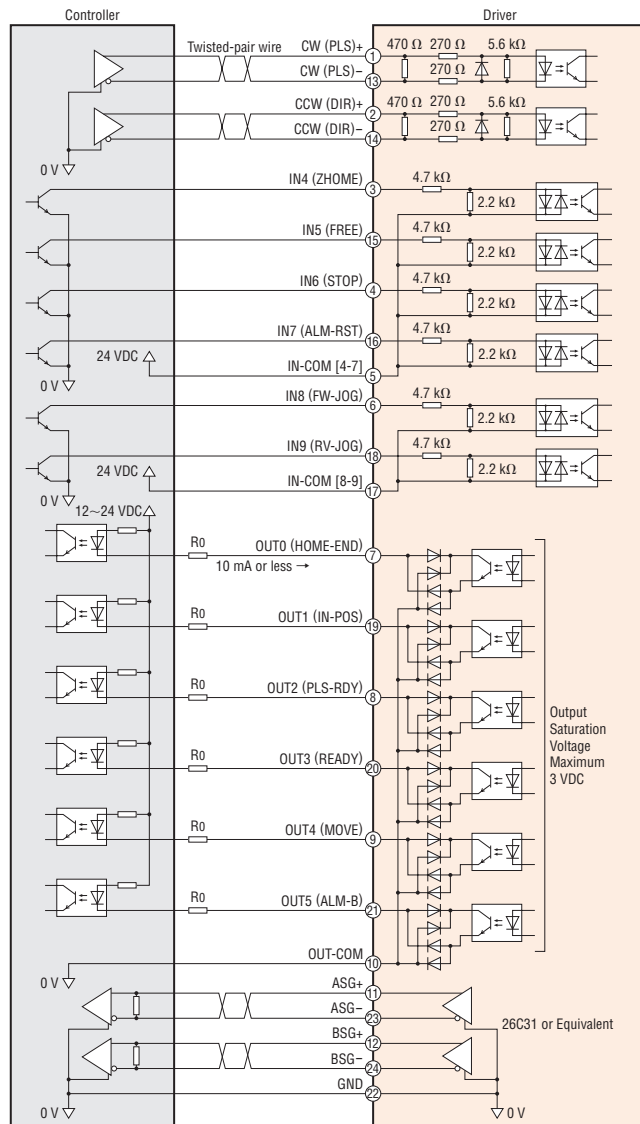
Use this USB cable to connect the driver to the computer on which the support software **MEXE02** is installed. Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less
	Configuration: A to mini B

◇ Connecting to the Programmable Controller (Pulse input type)

● Connection Diagram for Connection with Current Sink Output Circuit

When the pulse input is the line driver

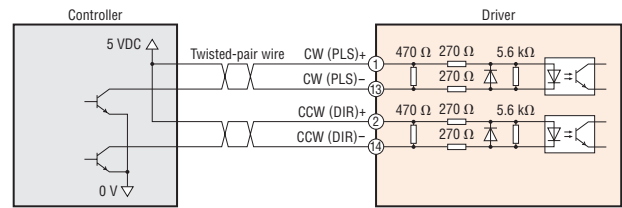


Note

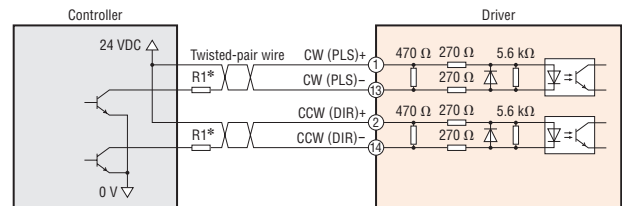
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

● When the pulse input signal is 5 VDC



● When the pulse input signal is 24 VDC



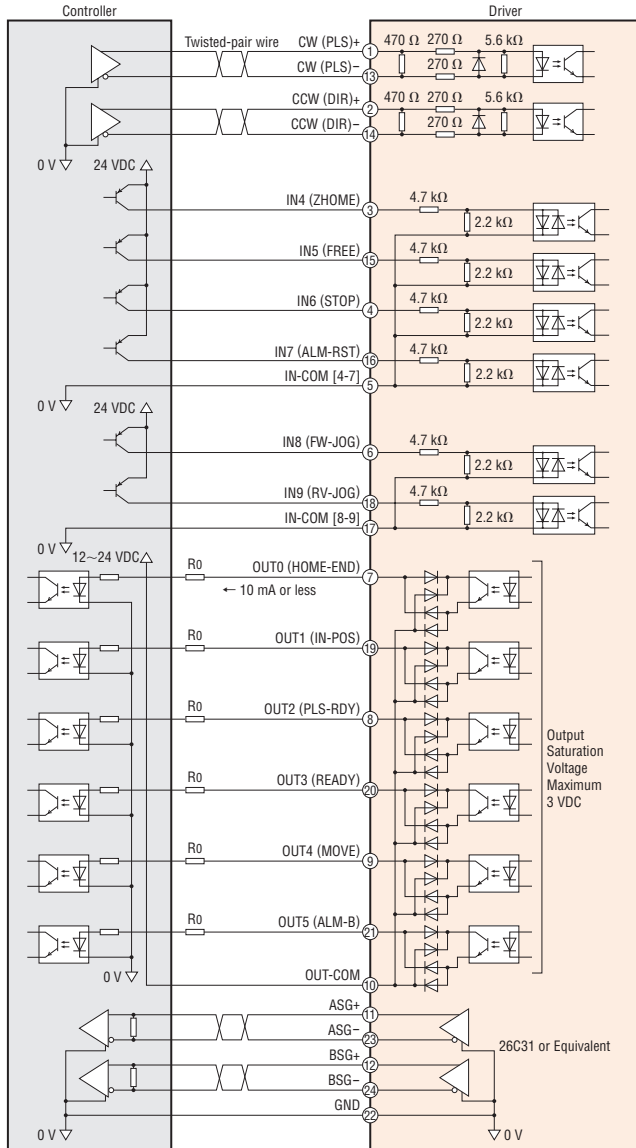
* R_1 : 1.2 kΩ~2.2 kΩ, 0.5 W or more

Note

- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 kΩ~2.2 kΩ, 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

•Connection Diagram for Connection with Current Source Output Circuit

When the pulse input is the line driver

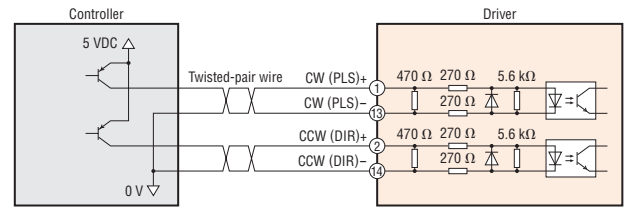


Note

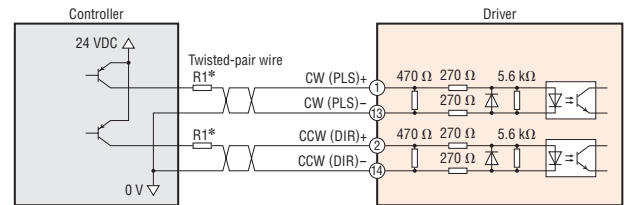
- Use 24 VDC for the input signals.
- Use 12~24 VDC, 10 mA or less for the output signals. When the current value exceeds 10 mA, connect the external resistor R_0 to reduce the current to 10 mA or below.
- Provide a distance of 200 mm or longer between the signal lines and power lines (power supply lines, motor lines).
Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When the pulse input is the open collector

•When the pulse input signal is 5 VDC



•When the pulse input signal is 24 VDC



* R_1 : 1.2 k Ω ~2.2 k Ω , 0.5 W or more

Note

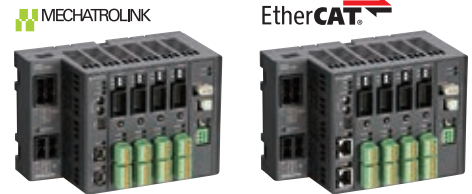
- Use 5~24 VDC for the CW (PLS) and CCW (DIR) inputs.
When using at 24 VDC, connect external resistor R_1 (1.2 k Ω ~2.2 k Ω , 0.5 W or more).
- When using at 5 VDC, do not connect any external resistors, but directly connect a pulse input signal.

AZ Series Multi-Axis Drivers

DC Power Supply Input

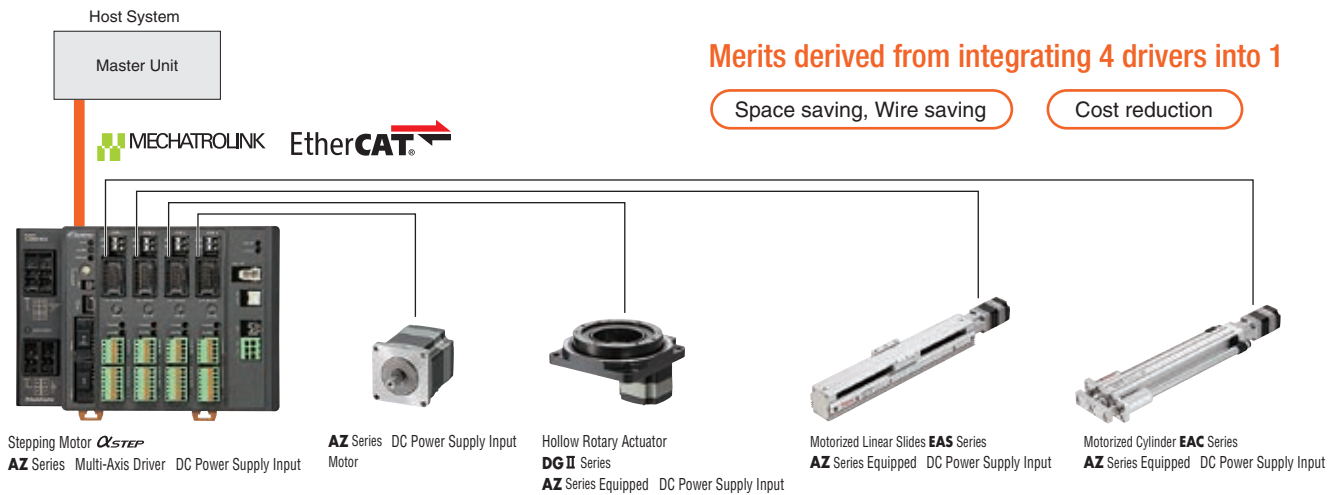
MECHATROLINK-III Compatible
EtherCAT Drive Profile Compatible

The multi-axis drivers can be connected to DC power supply motors of our **AZ** Series and to the motorized actuators equipped with motors. We provide the multi-axis drivers that can support MECHATROLINK-III, or EtherCAT Drive Profile.
No. of axes: 2, 3, or 4



Features

Multi-axis driver (up to 4 axes) that reduces space and cost



The above motors and motorized actuators connected to the stepping motor are representative examples.

ESI File

We provide an ESI file to allow you to use EtherCAT-compatible products more easily. The ESI file can be downloaded from the Oriental Motor website. Contact OMRON Corporation for connection with the PLCs made by the company. An EtherCAT connection guide is available.

Applicable Product Series

The **AZ** Series multi-axis driver DC power supply input can be used in combination with the motorized actuators listed below.

- Compact linear actuators **DRS2** Series **AZ** Series equipped
- Hollow rotary actuators **DG II** Series **AZ** Series equipped DC power supply input
- Motorized linear slides **EAS** Series **AZ** Series equipped DC power supply input
- Motorized linear slides **EZS** Series **AZ** Series equipped DC power supply input
- Motorized cylinders **EAC** Series **AZ** Series equipped DC power supply input

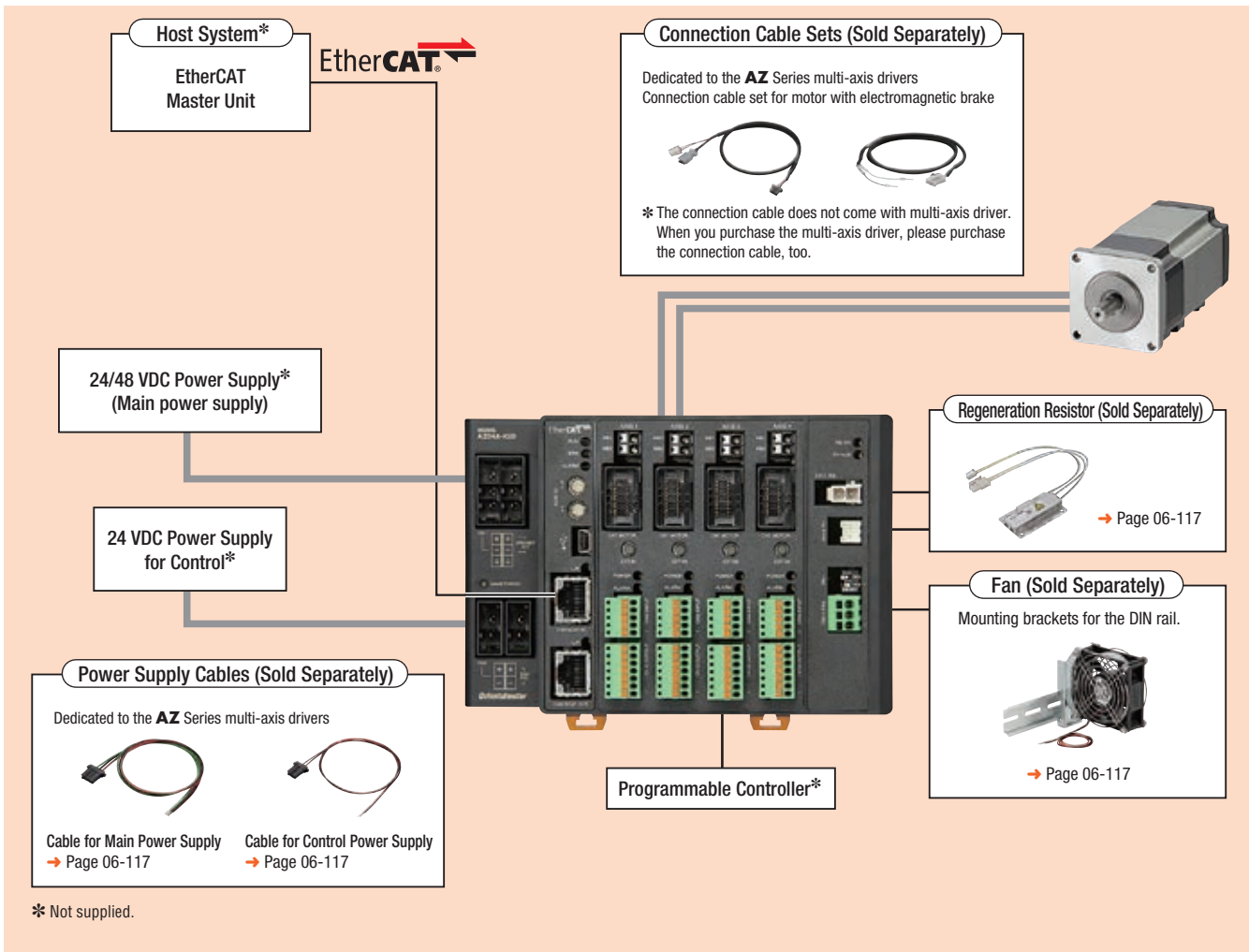
For the details of the motors and motorized actuators that can be combined, refer to the Oriental Motor website or the catalog of each Series.



System Configuration

When supporting EtherCAT Drive Profile

This is a sample system configuration showing a combination with standard type **AZ** Series DC power supply input with electromagnetic brake.



System Configuration Example

AZ Series			Sold Separately			
Motor	Driver	Connection Cable Sets	Cable for Main Power Supply	Cable for Control Power Supply	Regeneration Resistor	Fan
AZM66MK	AZD4A-KED	CC030VZFBA	LC03D06A	LC02D06A	RGC40	V-MD825B24L
SGD625	SGD1,600	SGD111	SGD19	SGD16	SGD56	SGD64

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 directly connected to a driver. To connect the motor to the driver, use a connection cable.

Product Number Code

Multi-Axis Driver

AZD 4A - K ED

① ② ③ ④

Dedicated to the AZ Series Multi-Axis Drivers

Connection Cable Sets/Flexible Connection Cable Sets

◇ Connection Cable for Motor

CC 050 V Z □ F A

① ② ③ ④ ⑤ ⑥ ⑧

◇ Connection Cable Set for Motor with Electromagnetic Brake

CC 050 V Z F B A

① ② ③ ④ ⑥ ⑦ ⑧

①	Driver Type	AZD : AZ Series Driver
②	No. of Axes	2A : 2 Axes 3A : 3 Axes 4A : 4 Axes
③	Power Supply Input	K : 24 VDC/48 VDC
④	Network Type	M3 : MECHATROLINK-III ED : EtherCAT Drive Profile

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	Applied Model	Z : For AZ Series
⑤	Reference Number	Blank: For frame size 42 mm (40 mm for the HPG Geared Type), 60 mm 2 : For frame size 20 mm, 28 mm (30 mm for the harmonic Geared Type)
⑥	Cable Type	F : Connection Cable Set R : Flexible Connection Cable Set
⑦	Description	B : For the product with Electromagnetic Brakes
⑧	Driver Type	A : For Multi-Axis Drivers

Product Line

Multi-Axis Drivers

◇ MECHATROLINK-III Compatible

Product Name	No. of Axes	List Price
AZD2A-KM3	2 axes	SGD1,000
AZD3A-KM3	3 axes	SGD1,325
AZD4A-KM3	4 axes	SGD1,600



◇ EtherCAT Drive Profile Compatible

Product Name	No. of Axes	List Price
AZD2A-KED	2 axes	SGD1,000
AZD3A-KED	3 axes	SGD1,325
AZD4A-KED	4 axes	SGD1,600



● Connection Cable Sets/Flexible Connection Cable Sets dedicated to the **AZ** Series Multi-Axis Drivers

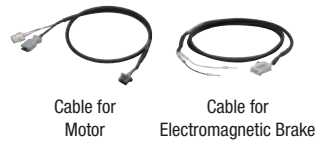


◇ Connection Cable for Motor

Length L (m)	For Frame Size 20 mm, 28 mm				For Frame Size 42 mm, 60 mm			
	Connection Cable	List Price	Flexible Connection Cable	List Price	Connection Cable	List Price	Flexible Connection Cable	List Price
0.5	CC005VZ2FA	SGD71	CC005VZ2RA	SGD84	CC005VZFZA	SGD71	CC005VZRZA	SGD84
1	CC010VZ2FA	SGD71	CC010VZ2RA	SGD84	CC010VZFZA	SGD71	CC010VZRZA	SGD84
1.5	CC015VZ2FA	SGD76	CC015VZ2RA	SGD92	CC015VZFZA	SGD76	CC015VZRZA	SGD92
2	CC020VZ2FA	SGD81	CC020VZ2RA	SGD99	CC020VZFZA	SGD81	CC020VZRZA	SGD99
2.5	CC025VZ2FA	SGD86	CC025VZ2RA	SGD106	CC025VZFZA	SGD86	CC025VZRZA	SGD106
3	CC030VZ2FA	SGD91	CC030VZ2RA	SGD111	CC030VZFZA	SGD91	CC030VZRZA	SGD111
4	CC040VZ2FA	SGD101	CC040VZ2RA	SGD126	CC040VZFZA	SGD101	CC040VZRZA	SGD126
5	CC050VZ2FA	SGD110	CC050VZ2RA	SGD141	CC050VZFZA	SGD110	CC050VZRZA	SGD141
7	CC070VZ2FA	SGD136	CC070VZ2RA	SGD180	CC070VZFZA	SGD136	CC070VZRZA	SGD180
10	CC100VZ2FA	SGD176	CC100VZ2RA	SGD236	CC100VZFZA	SGD176	CC100VZRZA	SGD236
15	CC150VZ2FA	SGD244	CC150VZ2RA	SGD333	CC150VZFZA	SGD244	CC150VZRZA	SGD333
20	CC200VZ2FA	SGD310	CC200VZ2RA	SGD426	CC200VZFZA	SGD310	CC200VZRZA	SGD426

◇ Connection Cable Set for Motor with Electromagnetic Brake

Length L (m)	For Frame Size 42 mm, 60 mm			
	Connection Cable Set	List Price	Flexible Connection Cable Set	List Price
0.5	CC005VZFBA	SGD86	CC005VZRBA	SGD114
1	CC010VZFBA	SGD86	CC010VZRBA	SGD114
1.5	CC015VZFBA	SGD93	CC015VZRBA	SGD124
2	CC020VZFBA	SGD98	CC020VZRBA	SGD134
2.5	CC025VZFBA	SGD105	CC025VZRBA	SGD143
3	CC030VZFBA	SGD111	CC030VZRBA	SGD151
4	CC040VZFBA	SGD123	CC040VZRBA	SGD171
5	CC050VZFBA	SGD135	CC050VZRBA	SGD191
7	CC070VZFBA	SGD166	CC070VZRBA	SGD240
10	CC100VZFBA	SGD214	CC100VZRBA	SGD311
15	CC150VZFBA	SGD294	CC150VZRBA	SGD433
20	CC200VZFBA	SGD373	CC200VZRBA	SGD551



Note

● As for the cables dedicated to multi-axis drivers, we provide only connection cables. You cannot use extension cables for the **AZ** Series for multi-axis drivers.

■ Accessories

● Multi-Axis Drivers

Type and No. of Axes	Accessories	Connector for CN1	Connector for CN3	Contact for CN1, CN2	Connector Cap for CN4A, CN4B	Connector for CN9	Connector for CN10	Operating Manual
		MECHATROLINK-III Compatible	2 axes	2 pieces	2 pieces	10 pieces	2 pieces	2 pieces
EtherCAT Compatible	3 axes	2 pieces	2 pieces	10 pieces	2 pieces	3 pieces	3 pieces	1 set
	4 axes	2 pieces	2 pieces	10 pieces	2 pieces	4 pieces	4 pieces	1 set

■ Specifications *

● Power Supply Input

For main power supply: 24 VDC/48 VDC ±10% 7.0 A (Maximum 7.0 A Average 4.0 A or less during use)

For control power supply: 24 VDC ±10% 1.5 A (For motors with electromagnetic brake, use power supply, 24 VDC ±5%)

(For motors with electromagnetic brake (when using a 20 cm connection cable), use power supply, 24 VDC ±4%)

● Communication Specifications

◇ MECHATROLINK-III Specifications

Items	Description
Baud Rate	100 Mbps
Transmission Period	0.5 ms/1 ms/2 ms/4 ms
Station Address	03 h~EF h (Initial value: 03 h)
Transmission Bytes	32/48 bytes (Initial value: 48 bytes)
Profile	Standard stepping motor drive profile Standard servo profile

◇ EtherCAT Specifications

Items	Description
Baud Rate	100 Mbps
Communication Period	0.5 ms/1 ms/2 ms/3 ms/4 ms/5 ms/6 ms/7 ms/8 ms
Node Address	0~255 (00 h~FF h, Initial value: 00 h)
Communication Protocol	Proprietary protocol for EtherCAT (CoE) CiA402 drive profile

*Compatible with EtherCAT drive profile only.

General Specifications

Items	Description
Degree of Protection	IP10
Operating Environment	Ambient temperature: 0~+50°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 1000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Storage Condition Transportation Environment	Ambient temperature: -25~+70°C (Non-freezing) Humidity: 85% or less (Non-condensing) Altitude: Up to 3000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water or oil.
Insulation Resistance	When a 500 VDC megger is applied to the location below, the resistance to be measured is 100 MΩ or more. · FG terminal – Power supply terminal
Dielectric Strength Voltage	No abnormality is found with the following application for 1 minute: · MECHATROLINK-III Compatible: FG terminal – Power supply terminal 500 VAC 50/60 Hz Leakage current 15 mA or less · EtherCAT Compatible: FG terminal – Power supply terminal 1 kVAC 50/60 Hz Leakage current 10 mA or less

Note

- When measuring insulation resistance or performing a dielectric strength voltage test, be sure to disconnect the motor from the driver beforehand. In addition, make sure that the ABZO sensor of the motor is exempt from the above measurement and test.

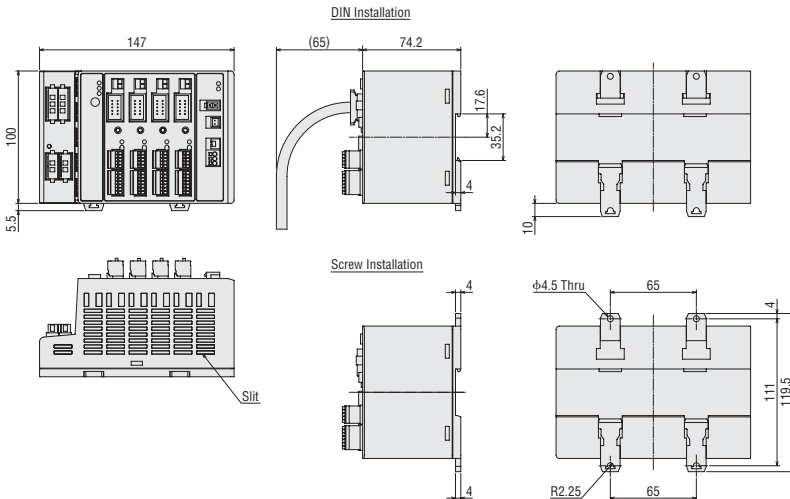
Dimensions (Unit: mm)

Multi-Axis Drivers

2D & 3D CAD

No. of Axes	Type	MECHATROLINK-III Compatible		EtherCAT Compatible		Mass kg
		Product Name	2D CAD	Product Name	2D CAD	
2 Axes	AZD2A-KM3	B1200		AZD2A-KED	B1206	0.39
3 Axes	AZD3A-KM3	B1201		AZD3A-KED	B1207	0.42
4 Axes	AZD4A-KM3	B1202		AZD4A-KED	B1208	0.45

- The size is commonly applied to 2, 3, and 4 axis drivers.



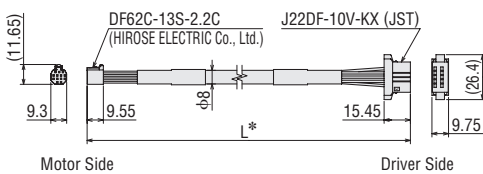
Accessories

- Connector for main power supply: F32FSS-03V-KX (JST)
- Connector for control power supply: F32FSS-02V-KX (JST)
- Contact for main power supply connectors and control power supply connectors: LF3F-41GF-P2.0 (JST)
- Input signal connector: FK-MC 0,5/ 5-ST-2,5 (PHOENIX CONTACT)
- Output signal connector: FK-MC 0,5/ 7-ST-2,5 (PHOENIX CONTACT)

Connection Cable Sets, Flexible Connection Cable Sets

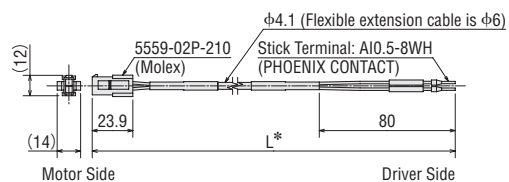
◇ Cable for Motor

•For frame size 20 mm, 28 mm

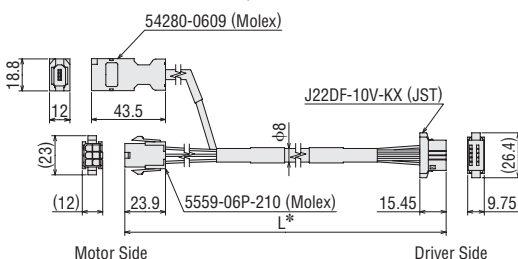


◇ Cable for Electromagnetic Brake

•For frame size 42 mm, 60 mm



•For frame size 42 mm, 60 mm



*"L" in the above dimensions is replaced by any Length L (m) in "Product Line" on page 06-115.

Accessories Dedicated to Multi-Axis Drivers

Power Supply Cables (Sold separately)

These lead wires, equipped with a connector, are dedicated to the **AZ** Series multi-axis drivers. The wires easily allow connection with main power supply and control power supply.

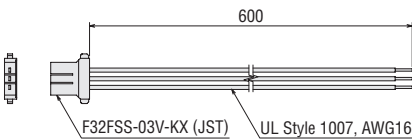
Product Line

Product Name	Type	List Price
LC03D06A	For main power supply	SGD19
LC02D06A	For control power supply	SGD16

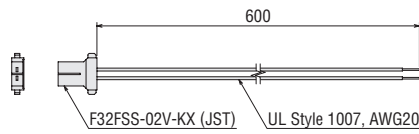


Dimensions (Unit: mm)

Cable for main power supply LC03D06A



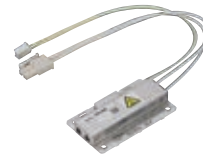
Cable for control power supply LC02D06A



Regeneration Resistor

During vertical drive (gravitational operation) or sudden start/stop in high inertia, an external force causes the motor to rotate and function as a power generator. When the regenerative power exceeds the driver's regenerative power absorption capacity, it may cause damage to the motor. In such a case, the regeneration resistor is connected to the driver to convert regenerative energy into thermal energy for dissipation.

When 24 VDC is used for a multi-axis driver, alarms tend to be easily generated. Therefore, we recommend to use a regeneration resistor.



Product Line

Product Name	List Price
RGC40	SGD56

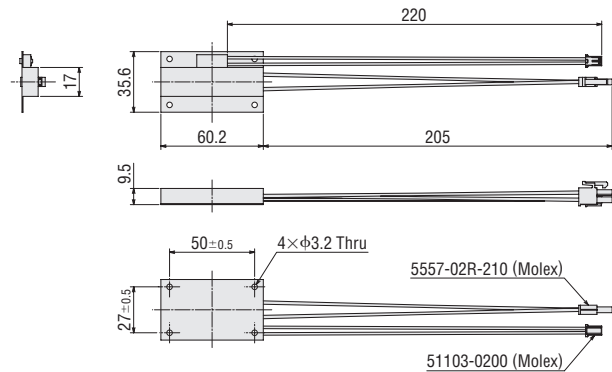
Specifications

Items	Description
Allowable Power Consumption	Continuous regenerative power: 40 W* Instantaneous regenerative power: 400 W
Resistance Value	15 Ω
Thermostat Operating Temperature	Operation: Opens at 95±5°C Reset: Closes at 65±15°C (Normally closed)
Thermostat Electrical Rating	250 VAC, 0.5 A (Min. current 1.5 VDC, 1 mA)

*Install the regeneration resistor in the location that has the same heat radiation capability as the heat sink (Material: Aluminum 180×150 mm Thickness 2 mm).

Dimensions (Unit: mm)

Mass: 0.03 kg **2D CAD** B1209 **3D CAD**



Fan

DC propeller fan for circulating air in the control panel or cooling a certain part.

Product Line

Product Name	Type	List Price
V-MD825B24L	With DIN rail mounting bracket	SGD64



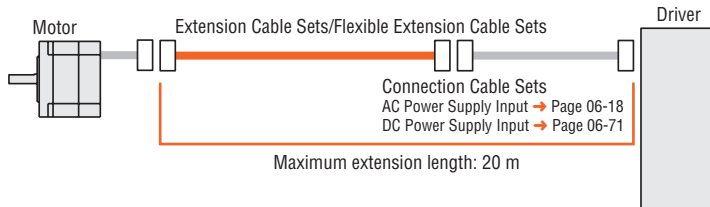
Accessories (Sold Separately)

Extension Cable Sets, Flexible Extension Cable Sets

For the **AZ** Series, we provide sets of connection cables and flexible extension cables that can be connected to sets of connection cables for extension.

For standard motors, sets of motor cables and encoder cables are provided. For motors with an electromagnetic brake, sets of motor cables, encoder cables, and electromagnetic brake cables are provided.

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



Note

- The motor cable and electromagnetic brake cable from the motor cannot be directly connected to a driver. To connect the motor to the driver, use a connection cable. The maximum length of the cable extension is 20 m.

AC Power Supply Input

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

Extension Cable Sets

◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZFT	1		SGD71
CC020VZFT	2		SGD81
CC030VZFT	3		SGD91
CC050VZFT	5		SGD110
CC070VZFT	7		SGD136
CC100VZFT	10		SGD176
CC150VZFT	15		SGD244

Flexible Extension Cable Sets

◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZRT	1		SGD84
CC020VZRT	2		SGD99
CC030VZRT	3		SGD111
CC050VZRT	5		SGD141
CC070VZRT	7		SGD180
CC100VZRT	10		SGD236
CC150VZRT	15		SGD333

◇ For Motors with Electromagnetic Brake



Product Name	Length	L (m)	List Price
CC010VZFBT	1		SGD86
CC020VZFBT	2		SGD98
CC030VZFBT	3		SGD111
CC050VZFBT	5		SGD135
CC070VZFBT	7		SGD166
CC100VZFBT	10		SGD214
CC150VZFBT	15		SGD294

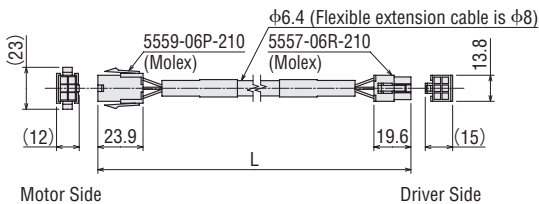
◇ For Motors with Electromagnetic Brake



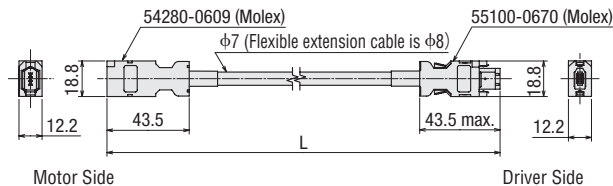
Product Name	Length	L (m)	List Price
CC010VZRBt	1		SGD114
CC020VZRBt	2		SGD134
CC030VZRBt	3		SGD151
CC050VZRBt	5		SGD191
CC070VZRBt	7		SGD240
CC100VZRBt	10		SGD311
CC150VZRBt	15		SGD433

Dimensions (Unit: mm)

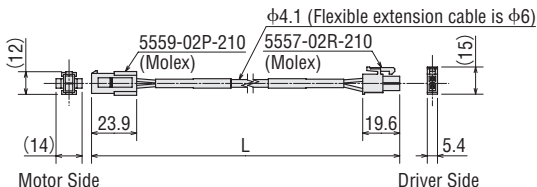
Cable for Motor



Cable for Encoder



Cable for Electromagnetic Brake



DC Power Supply Input

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

[For **AZM14, AZM15, AZM24, AZM26**]

- Extension Cables
- ◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZ2FT	1		SGD71
CC020VZ2FT	2		SGD81
CC030VZ2FT	3		SGD91
CC050VZ2FT	5		SGD110
CC070VZ2FT	7		SGD136
CC100VZ2FT	10		SGD176
CC150VZ2FT	15		SGD244

- Flexible Extension Cables
- ◇ For Standard Motors



Product Name	Length	L (m)	List Price
CC010VZ2RT	1		SGD84
CC020VZ2RT	2		SGD99
CC030VZ2RT	3		SGD111
CC050VZ2RT	5		SGD141
CC070VZ2RT	7		SGD180
CC100VZ2RT	10		SGD236
CC150VZ2RT	15		SGD333

[For **AZM46, AZM48, AZM66, AZM69**]

- Extension Cable Sets
- ◇ For Standard Motors



Cable for Motor



Cable for Encoder

Product Name	Length	L (m)	List Price
CC010VZFT	1		SGD71
CC020VZFT	2		SGD81
CC030VZFT	3		SGD91
CC050VZFT	5		SGD110
CC070VZFT	7		SGD136
CC100VZFT	10		SGD176
CC150VZFT	15		SGD244

- ◇ For Motors with Electromagnetic Brake



Cable for Motor



Cable for Encoder



Cable for Electromagnetic Brake

Product Name	Length	L (m)	List Price
CC010VZFBT	1		SGD86
CC020VZFBT	2		SGD98
CC030VZFBT	3		SGD111
CC050VZFBT	5		SGD135
CC070VZFBT	7		SGD166
CC100VZFBT	10		SGD214
CC150VZFBT	15		SGD294

● Flexible Extension Cable Sets

◇ For Standard Motors



Cable for Motor

Cable for Encoder

Product Name	Length	L (m)	List Price
CC010VZRT	1		SGD84
CC020VZRT	2		SGD99
CC030VZRT	3		SGD111
CC050VZRT	5		SGD141
CC070VZRT	7		SGD180
CC100VZRT	10		SGD236
CC150VZRT	15		SGD333

◇ For Motors with Electromagnetic Brake



Cable for Motor

Cable for Encoder

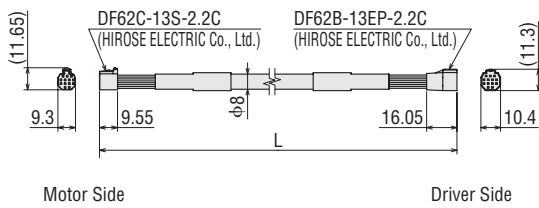
Cable for Electromagnetic Brake

Product Name	Length	L (m)	List Price
CC010VZRB	1		SGD114
CC020VZRB	2		SGD134
CC030VZRB	3		SGD151
CC050VZRB	5		SGD191
CC070VZRB	7		SGD240
CC100VZRB	10		SGD311
CC150VZRB	15		SGD433

■ Dimensions (Unit: mm)

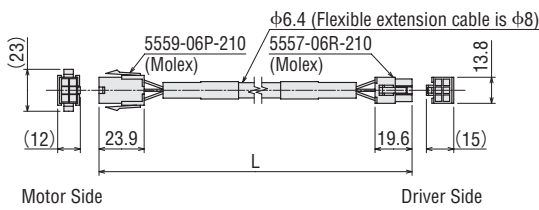
[For AZM14, AZM15, AZM24, AZM26]

● Cable for Motor

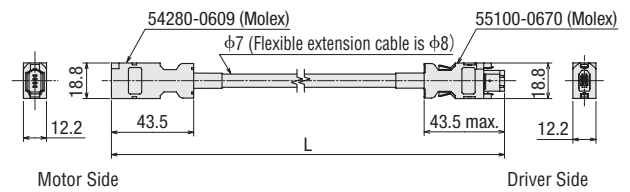


[For AZM46, AZM48, AZM66, AZM69]

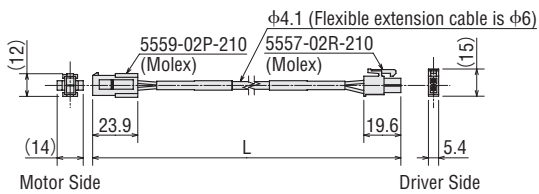
● Cable for Motor



● Cable for Encoder



● Cable for Electromagnetic Brake



■ Notes on Use of Cables

→ Refer to page 06-55.

Support Software MEXE02

In addition to operating data and various parameter settings with a computer, you can perform teaching and monitor I/O and operating speed waveform with support software.

Support software can be downloaded from the Oriental Motor website.

Oriental Motor also provides media.

Visit our website, or contact the nearest Oriental Motor sales office.

Operating Environment

Computer

Recommended CPU*1	Intel Core processor 2 GHz or faster (OS must be supported)
Display	Video adapter and monitor with a minimum resolution of XGA (1024 × 768)
Recommended Memory*1	32 bit (x86) edition: 1 GB or more 64 bit (x64) edition: 2 GB or more
Hard Disk*2	Free disk space of at least 60 MB
USB Port	USB2.0 1 port

*1 The system requirements for the OS must be met.

*2 **MEXE02** requires Microsoft.NET Framework 4 Client Profile. If it is not installed, it will be installed automatically. An additional 1.5 GB of free space may be required for 64-bit (x64) edition OS and 600 MB for 32-bit (x86) edition OS.

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

● Intel and Core are registered trademarks or trademarks of Intel Corporation in the United States and other countries.

● For the latest information of operating environment, refer to the Oriental Motor website.

Note

● Depending on your system environment, the required memory and hard disk may vary.

● When using media to install the support software, you need to prepare a drive for the media.

Operating System (OS)

The 32 bit (x86) editions and 64 bit (x64) editions are supported.

- Microsoft Windows XP Service Pack 3*
- Microsoft Windows Vista Service Pack 2
- Microsoft Windows 7 Service Pack 1
- Microsoft Windows 8
- Microsoft Windows 8.1
- Microsoft Windows 10

*For the 64-bit (x64) version, Service Pack 2 is used.

Computer and Driver Connection

Use a USB cable with the following specifications.

Specifications	USB2.0 (Full speed)
Cable	Length: 3 m or less Configuration: A-mini-B

RS-485 Communication Cables

This cable is used to connect drivers when the multi-axis operation of built-in controller types or pulse input types with RS-485 communication is performed.

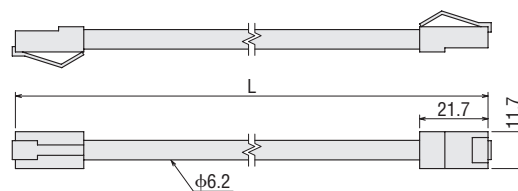
It also connects the network converter to the driver.



Product Line

Product Name	Applicable Drivers	Length L (m)	List Price
CC001-RS4	DC Power Supply Input Driver	0.1	SGD32
CC002-RS4	AC Power Supply Input Driver DC Power Supply Input Driver	0.25	SGD37

Dimensions (Unit: mm)



Connector – Terminal Block Conversion Unit

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

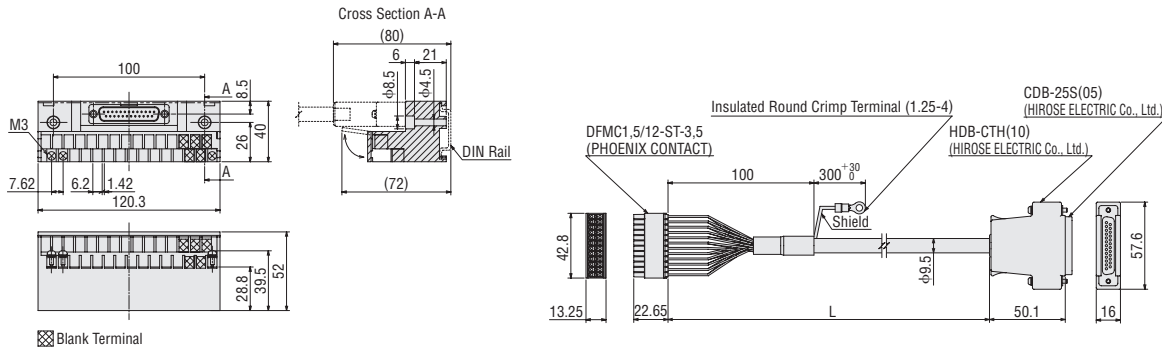
- Includes a signal name plate for easy, one-glance identification of driver signal names
- Enables both DIN rail installation and screw installation
- Employs a double shield cable



Product Line

Product Name	Length L (m)	List Price
CC24T05E	0.5	SGD213
CC24T10E	1	SGD219

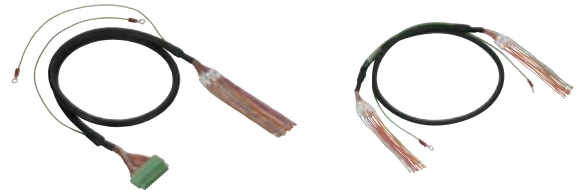
Dimensions (Unit: mm)



General-Purpose Cables for I/O Signals

General-purpose multi-core cables provide convenient connection between a driver and programmable controller.

- Employs a double shield cable
- Core wire AWG24



Cables with lead wires on one side

Cables with lead wires on both sides

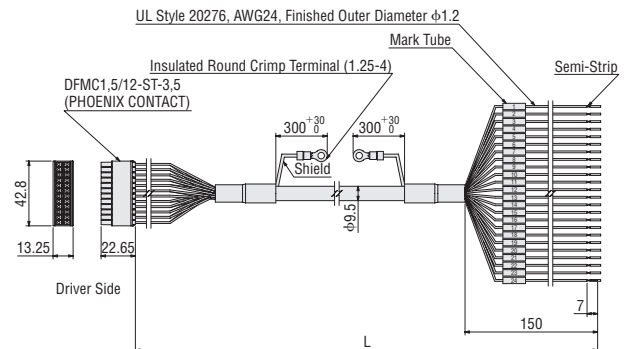
Cables with Lead Wires on One Side

Since cables on the driver side are connected to the connector, labor and time can be saved.

Product Line

Number of Lead Line Cores	Length L		
	0.5 m	1 m	2 m
24	CC24D005C-1	CC24D010C-1	CC24D020C-1
	SGD88	SGD94	SGD106

Dimensions (Unit: mm)



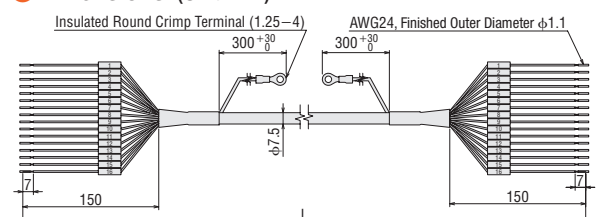
Cables with Lead Wires on Both Sides

In accordance with the number of I/O signals to be connected, select the optimum cable.

Product Line

Number of Lead Line Cores	Length L			
	0.5 m	1 m	1.5 m	2 m
6	CC06D005B-1	CC06D010B-1	CC06D015B-1	CC06D020B-1
	SGD17	SGD19	SGD21	SGD23
10	CC10D005B-1	CC10D010B-1	CC10D015B-1	CC10D020B-1
	SGD19	SGD21	SGD24	SGD26
12	CC12D005B-1	CC12D010B-1	CC12D015B-1	CC12D020B-1
	SGD21	SGD24	SGD27	SGD30
16	CC16D005B-1	CC16D010B-1	CC16D015B-1	CC16D020B-1
	SGD22	SGD25	SGD28	SGD31

Dimensions (Unit: mm)



● The dimensions shows a 16-core cable.

MCV Couplings

This one-piece coupling is made with anti-vibration rubber molded between aluminum alloy hubs.



Product Line

Product Name	List Price
MCV15 □	SGD94
MCV19 □	SGD90
MCV25 □	SGD100
MCV30 □	SGD105

● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

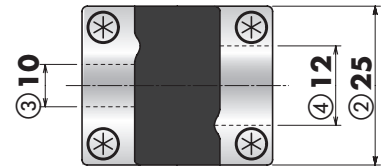
Product Number Code

MCV 25 10 12

① ② ③ ④

①	MCV Coupling
②	Outer Diameter of Coupling
③	Inner Diameter d1 (Smaller inner diameter) (06A represents $\phi 6.35$ mm)
④	Inner Diameter d2 (Larger inner diameter) (06A represents $\phi 6.35$ mm)

● For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Coupling Selection Table

- Select the coupling based on the criteria below.
 - The output torque of the motor is equal to or under the normal torque of the coupling.
 - Motor shaft diameter.

Type	Applicable Product		Coupling Type	Motor Shaft Diameter mm	Driven Shaft Diameter mm												
	Frame Size	Product Name			03	04	05	06	06A	08	10	12	14	15			
					$\phi 3$	$\phi 4$	$\phi 5$	$\phi 6$	$\phi 6.35$	$\phi 8$	$\phi 10$	$\phi 12$	$\phi 14$	$\phi 15$			
Standard Type	20 mm	AZM14, AZM15	MCV15	04	$\phi 4$		●	●	●								
	28 mm	AZM24, AZM26		05	$\phi 5$	●	●	●	●								
	42 mm	AZM46		06	$\phi 6$		●	●	●								
		AZM48	MCV19	08	$\phi 8$			●	●		●						
	60 mm	AZM66, AZM69	MCV25	10	$\phi 10$				●	●	●	●	●				
85 mm	AZM98, AZM911	MCV30	14	$\phi 14$						●	●	●	●	●	●	●	

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

MCS Couplings

This three-piece coupling adopts an aluminum alloy hub and a resin spider.



Product Line

Product Name	List Price
MCS20 □	SGD58
MCS30 □	SGD70
MCS40 □	SGD107
MCS55 □	SGD142
MCS65 □	SGD226

● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

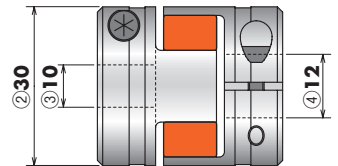
Product Number Code

MCS 30 10 12

- ① ② ③ ④

①	MCS Coupling
②	Outer Diameter of Coupling
③	Inner Diameter d1 (Smaller inner diameter) (F04 represents φ6.35 mm)
④	Inner Diameter d2 (Larger inner diameter) (F04 represents φ6.35 mm)

● For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Coupling Selection Table

- Select the coupling based on the criteria below.
 - The output torque of the motor is equal to or under the normal torque of the coupling.
 - Motor shaft diameter.
- When using a parallel key, select the coupling that matches the parallel key.

Applicable Product			Gear Ratio	Coupling Type	Motor Shaft Diameter mm	Driven Shaft Diameter mm												
Type	Frame Size	Product Name				05 φ5	06 φ6	F04 φ6.35	08 φ8	10 φ10	12 φ12	14 φ14	15 φ15	16 φ16	18 φ18	20 φ20	22 φ22	24 φ24
TS Geared Type	42 mm	AZM46-TS □	3.6, 7.2	MCS20	06	φ6	●	●	●	●	●	●	●	●				
			10, 20, 30	MCS30			●	●	●	●	●	●	●	●				
	60 mm	AZM66-TS □	3.6, 7.2	MCS30	10	φ10	●	●	●	●	●	●	●					
			10, 20, 30	MCS40			●	●	●	●	●	●	●	●	●			
	90 mm	AZM98-TS □	3.6, 7.2, 10	MCS55	18	φ18				●	●	●	●	●	●	●	●	
			20, 30	MCS65									●	●	●	●	●	●
FC Geared Type	42 mm	AZM46-FC □	7.2, 10, 20, 30	MCS20	10	φ10	●	●	●	●	●							
				MCS30						●	●	●	●					
	60 mm	AZM66-FC □		MCS40	15	φ15				●	●	●						
				MCS55											●			
PS Geared Type	28 mm	AZM24-PS □	7.2, 10	MCS20	08	φ8	●	●	●	●	●							
			5	MCS20			●	●	●	●	●							
	42 mm	AZM46-PS □	7.2, 10, 25, 36, 50	MCS30	10	φ10		●	●	●	●	●	●					
			5, 7.2	MCS40						●	●	●	●	●	●	●		
	60 mm	AZM66-PS □	10, 25, 36, 50	MCS55	12	φ12				●	●	●	●	●	●	●	●	
		5, 7.2	MCS55															
		10, 25, 36, 50	MCS65															
HPG Geared Type	40 mm	AZM46-HP □	5, 9	MCS30	10	φ10		●	●	●	●	●	●					
	60 mm	AZM66-HP □	5, 15	MCS55							●	●						
	90 mm	AZM98-HP □	5, 15	MCS65										●	●			
Harmonic Geared Type	30 mm	AZM24-HS □	50, 100	MCS30	08	φ8		●	●	●	●	●	●	●				
	42 mm	AZM46-HS □	50, 100	MCS40						●	●	●	●	●	●			
	60 mm	AZM66-HS □	50, 100	MCS55							●	●			●			

- The product names of the applicable ones are described with text by which the product name can be identified.
- A number in the box □ in the product name indicates the gear ratio.

Motor Mounting Brackets

Mounting brackets are convenient for installation and securing a stepping motor and geared type stepping motor. The mounting bracket base is built with holes large enough to allow for adjustments of belt tension after a motor is installed.



Product Line

For Standard Type

Material: Aluminum alloy (SPCC)*

Surface treatment: Painting (Electroless nickel plating)*

Product Name	List Price	Motor Frame Size	Applicable Product
PFB28A	SGD15	28 mm	AZM24, AZM26
PAFOP	SGD14	42 mm	AZM46, AZM48
PALOP		60 mm	AZM66, AZM69
PAL2P-5	SGD16	85 mm	AZM98, AZM911
PAL4P-5			

*The specifications in the () apply to **PFB28A**.

● These installation brackets can be perfectly fitted to the pilot of the stepping motors. (Excluding **PALOP**)

● The motor installation screws are included.

For TS Geared Type

Material: Aluminum alloy

Surface treatment: Painting

Product Name	List Price	Motor Frame Size	Applicable Product
SOLOB	SGD25	42 mm	AZM46
SOL2M4	SGD30	60 mm	AZM66
SOL5M8	SGD38	90 mm	AZM98

For PS Geared Type

Material: SS400

Surface treatment: Electroless nickel plating

Product Name	List Price	Motor Frame Size	Applicable Product
PFA28G	SGD69	28 mm	AZM24
PFA42F	SGD75	42 mm	AZM46
PLA60G	SGD131	60 mm	AZM66
PLA90G	SGD156	90 mm	AZM98

● The motor installation screws are included.

For Harmonic Geared Type

Material: SS400

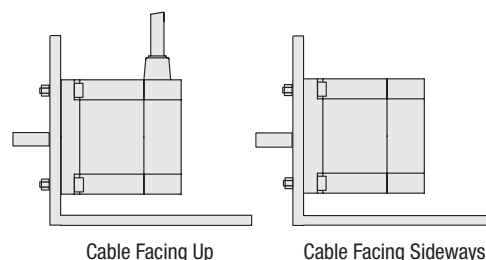
Surface treatment: Electroless nickel plating

Product Name	List Price	Motor Frame Size	Applicable Product
PFA42H	SGD75	42 mm	AZM46
PLA60H	SGD131	60 mm	AZM66
PLA90H	SGD156	90 mm	AZM98

● The motor installation screws are included.

Motor Installation Direction

Since the cable comes out perpendicular with the motor, install the cable in a way that it faces upward or sideward.

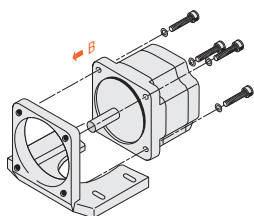


Cable Facing Up

Cable Facing Sideways

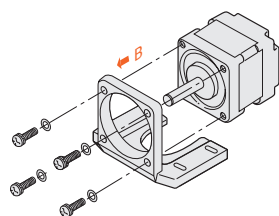
Installation Methods of the Motor

1 PAL2P-5, SOL2M4 PAL4P-5, SOL5M8



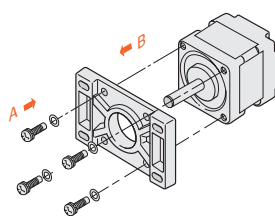
- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

2 PALOP, SOLOB



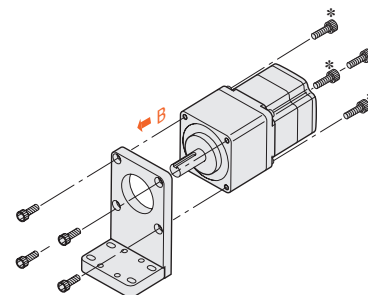
- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

3 PAFOP, PFB28A PFA28G, PFA42F PFA42H



- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (A, B).

4 PLA60G, PLA60H PLA90G, PLA90H



- ① Use the screws to secure the motor to the installation bracket.
- ② Install the motor from the direction shown by the arrow (B).

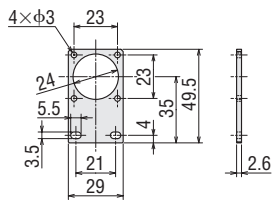
*For **PLA90H**, install the screws from (B) direction.

Dimensions (Unit: mm)

PFB28A

Mass: 25 g

2D CAD B645

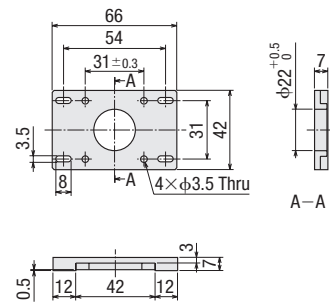


● Installation screws: M2.5 Length 5 mm
4 pieces included

PAFOP

Mass: 30 g

2D CAD B140 3D CAD

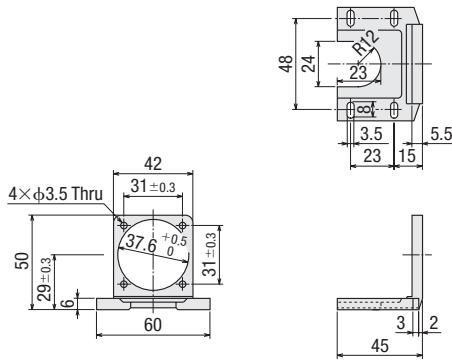


● Installation screws: M3 Length 7 mm
4 pieces included

PALOP

Mass: 35 g

2D CAD B139 3D CAD

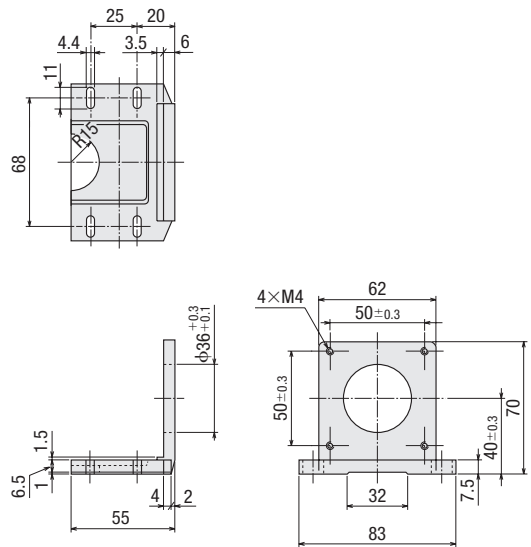


● Installation screws: M3 Length 10 mm
4 pieces included

PAL2P-5

Mass: 110 g

2D CAD B143 3D CAD

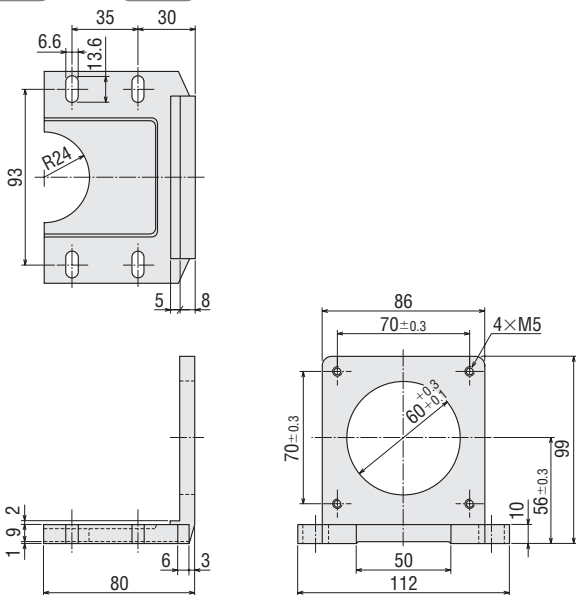


● Installation screws: M4 Length 12 mm
4 pieces included

PAL4P-5

Mass: 250 g

2D CAD B145 3D CAD

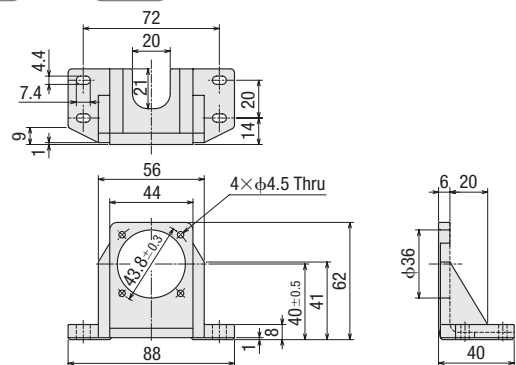


● Installation screws: M5 Length 16 mm
4 pieces included

SOLOB

Mass: 85 g

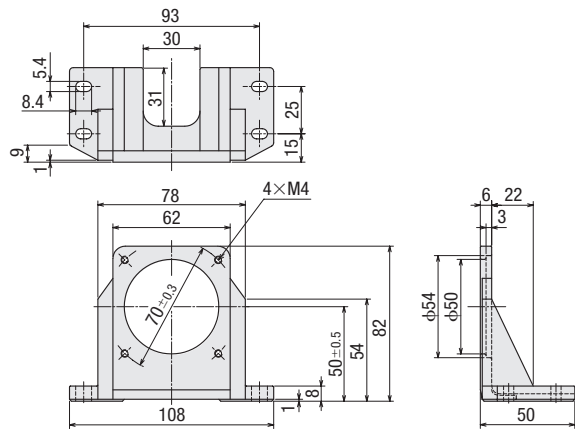
2D CAD B267 3D CAD



SOL2M4

Mass: 135 g

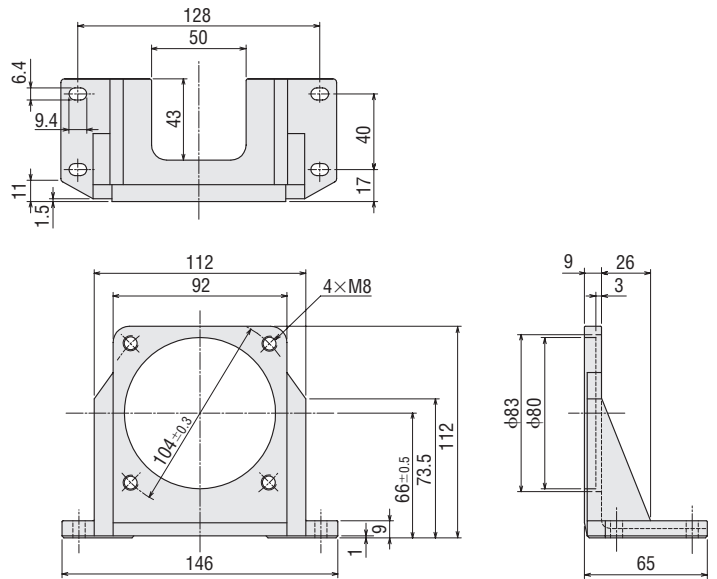
2D CAD A321 3D CAD



SOL5M8

Mass: 270 g

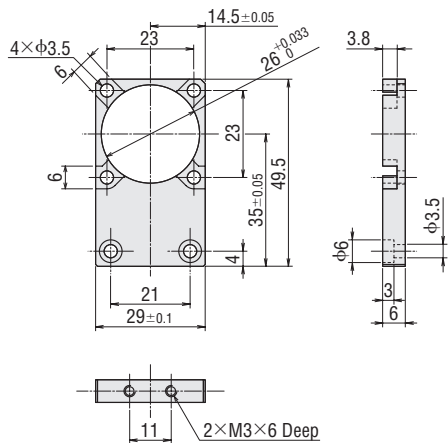
2D CAD A239 3D CAD



PFA28G

Mass: 40 g

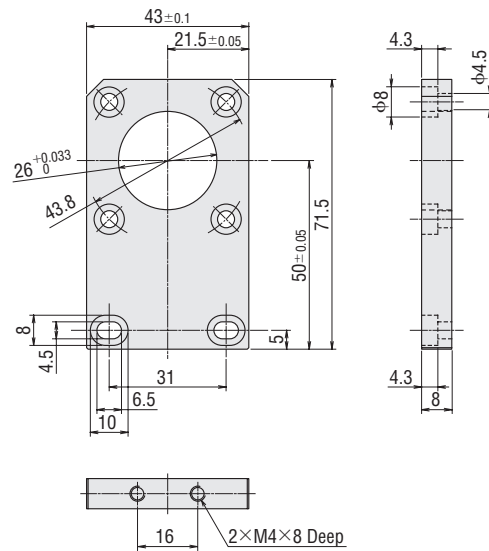
2D CAD B640



PFA42F

Mass: 150 g

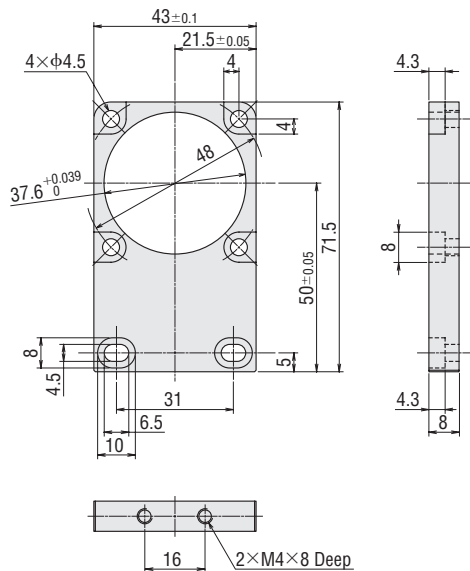
2D CAD B643



PFA42H

Mass: 120 g

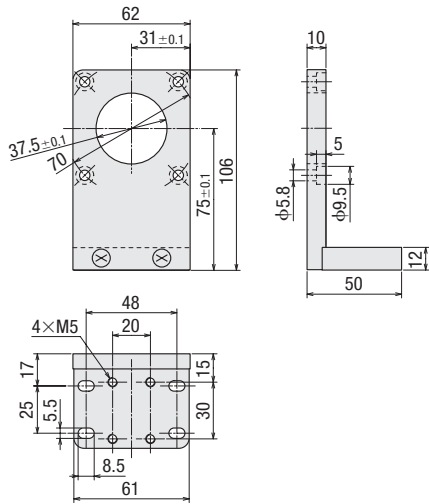
2D CAD B644



PLA60G

Mass: 0.7 kg

2D CAD B634

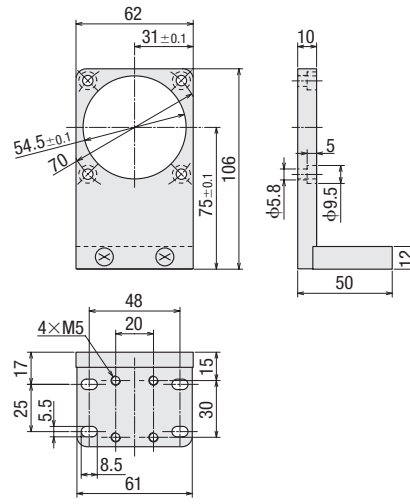


● Installation screws: M5 Length 15 mm
4 pieces included

PLA60H

Mass: 0.7 kg

2D CAD B635

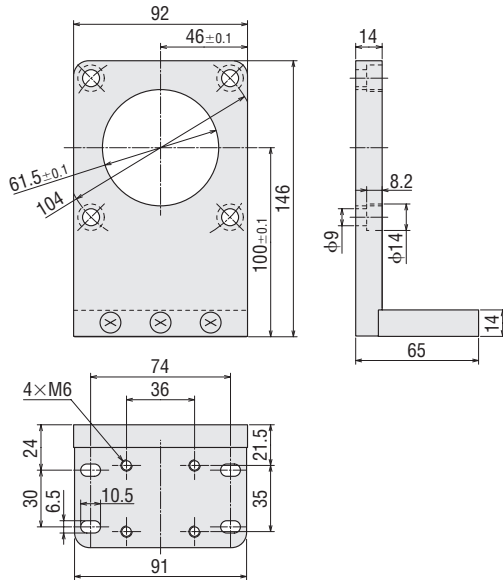


● Installation screws: M5 Length 15 mm
4 pieces included

PLA90G

Mass: 1.6 kg

2D CAD B637

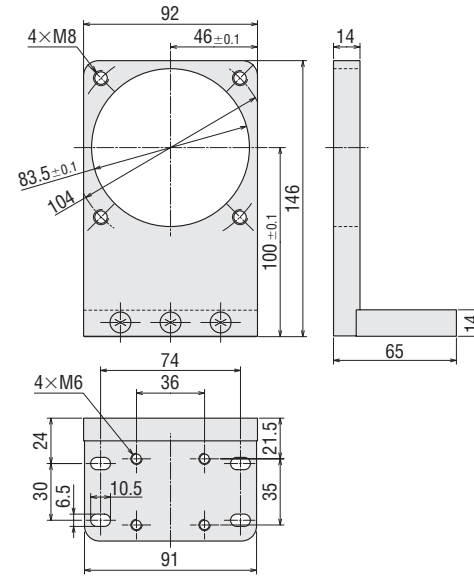


● Installation screws: M8 Length 20 mm
4 pieces included

PLA90H

Mass: 1.6 kg

2D CAD B638



● Installation screws: M8 Length 30 mm 4 pieces included
4 washers included

Regeneration Resistor

During vertical drive (gravitational operation) or sudden start/stop in high inertia, an external force causes the motor to rotate and function as a power generator. When the regenerative power exceeds the driver's regenerative power absorption capacity, it may cause damage to the motor.

In such a case, the regeneration resistor is connected to the driver to convert regenerative energy into thermal energy for dissipation.



Product Line

Product Name	Applicable Driver	List Price
RGB100	AC Power Supply Input Driver	SGD56

Specifications

Items	Description
Continuous Regenerative Power	50 W
Resistance Value	150 Ω
Thermostat Operating Temperature	Operation: 150±7°C Reset: 145±12°C (Normally closed)
Thermostat Electrical Rating	120 VAC, 4 A 30 VDC, 4 A (Min. current 5 mA)

● Install the regeneration resistor in the location that has the same heat radiation capability as the heat sink (Material: Aluminum 350×350 mm Thickness 3 mm).

Network Converters

The network converter converts 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	List Price
CC-Link Ver.1.1 Compatible	NETC01-CC	SGD275
CC-Link Ver.2 Compatible	NETC02-CC	SGD275
MECHATROLINK-II Compatible	NETC01-M2	SGD313
MECHATROLINK-III Compatible	NETC01-M3	SGD350
Compatible with EtherCAT	NETC01-ECT	SGD350



