Stepper Motors

Stepper Motor and Driver Packages
AC Input

0.36°/Geared α_{STEP} Absolute **AZ** Series

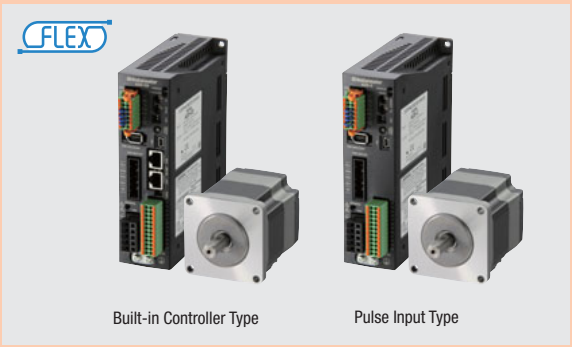
0.36°/Geared α_{STEP} **AR** Series

0.72°/Geared **RKII** Series

0.36°/Geared Stepper Motor and Driver Package αSTEP
AZ Series Battery-Free, Absolute Sensor Equipped

<Additional Information>
● Technical reference ➜ Page H-1
● Regulations & Standards ➜ Page I-2

● For detailed information about regulations and standards, please see the Oriental Motor website.



Built-in Controller Type　　Pulse Input Type

By incorporating the newly developed Absolute Sensor, absolute-type positioning is now possible without a battery. Advanced positioning is possible at affordable prices.

- Incorporates the Newly Developed Absolute Sensor
- No External Sensors Required
- Reduced Reset Time
- No Battery Required
- High Reliability
- Energy Savings
- 2 Driver Types to Choose from
  Built-in Controller Type FLEX/Pulse Input Type
- Easy Operation through the Use of the **MEXE02** Data Setting Software
- Starting from €676.00

FLEX What is FLEX?

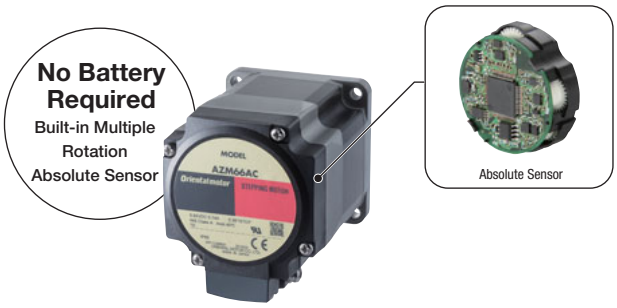
FLEX is the collective name for products that support I/O control, Modbus (RTU) control, and FA network control via network converters. These products enable simple connection and simple control, shortening the total lead time for system construction.

Features

Advanced Technology at Affordable Prices

Oriental Motor has developed and patented a compact, low-cost, battery-free mechanical type absolute sensors.
The **AZ** Series can contribute to improved productivity and cost reductions, and is available at affordable prices.

● List Price starting from €676.00
(Total price of motors and drivers)

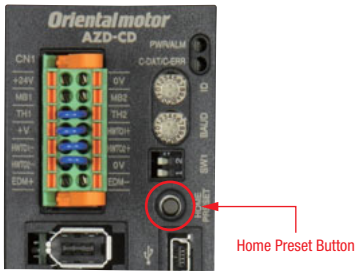


Newly Developed Absolute Sensor

●Mechanical-Type Sensor
A mechanical sensor composed of multiple gears is employed. Positioning information is detected by recognizing the angle of the individual gears. As a result, it does not require a battery.

●Multiple-Rotation Absolute System
Absolute position detection is possible with ±900 rotations (1800 rotations) of the motor shaft from the home position.

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



No External Sensors Required

With the use of the absolute system, external sensors such as the home sensor and the limit sensor are not needed.

●Reduced Cost

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

●Simple Wiring

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

●Not Affected by Sensor Malfunctions

There is no concern about sensor malfunctions (when operating in environments filled with oil mist or filled with metal pieces due to metal processing), sensor failures or sensor wire disconnections.

●Improved Return-to-Home Accuracy

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

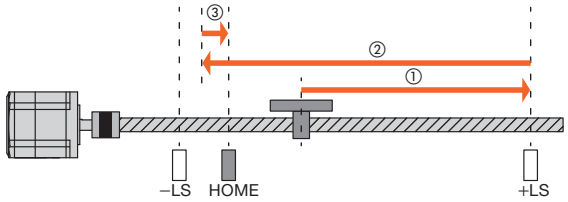
●If no limit sensor is installed, movements that exceed the limit values can be avoided through the use of the limits in the driver software.

Shortened Reset Time ① High Speed Return-to-Home

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

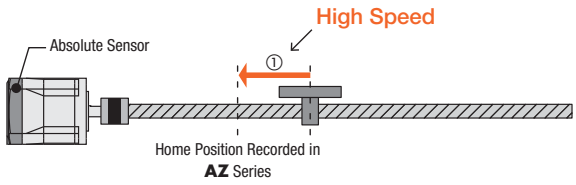
Previous Home Detection for Control Motor

The home position is detected at low speed by detecting the limit sensor (±LS) and home sensor (HOME).



Return-to-Home Operation of **AZ** Series

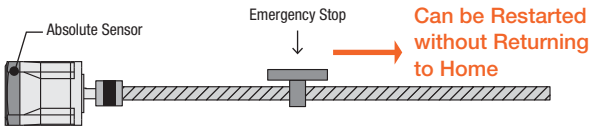
There is no need to detect the limit sensor, and it can travel directly at high speed to the home position recorded by the Absolute Sensor.



Shortened Reset Time ② Return-to-Home is Not Necessary

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

Built-in Controller Type



No Battery Required

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

●Reduced Maintenance

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

●Unlimited Driver Installation Possibilities

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

●Safe for Overseas Shipping

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

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

Positioning information is stored within the Absolute Sensor.

●Because the positioning information is stored in the Absolute Sensor, the home position must be reset if the motor is replaced.

High Reliability

High reliability is provided by using a control method unique to Oriental Motor that combines the merits of both open loop control and closed loop control.

●Continues Operation Even with Sudden Load Fluctuation and Sudden Acceleration

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

●Alarm Signal Output in Case of Abnormality

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

●No Tuning Required

Because it is normally operated with open loop control, positioning is still possible without gain tuning even when the load fluctuates due to the use of a belt mechanism, cam or chain drive, etc.

●Holding the Stop Position

During positioning, the motor stops with its own holding force without hunting. Because of this, it is ideal for applications where the low rigidity of the mechanism requires absence of vibration upon stopping.

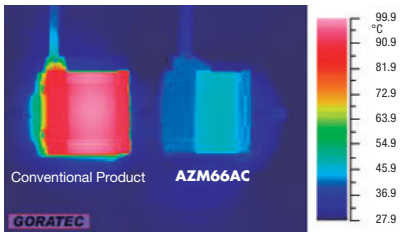
Energy Savings

Heat generation is reduced thanks to the high efficiency motor, resulting in energy savings.

●Lower Heat Generation

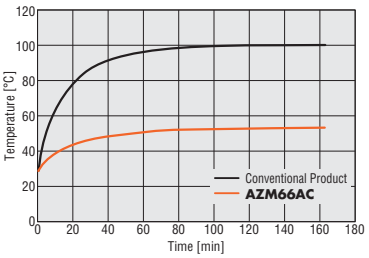
Heat generation by the motor has been significantly reduced through higher efficiency.

●Temperature Distribution by Thermography



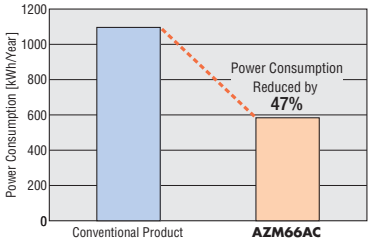
Comparison under the same conditions.

●Motor Surface Temperature during Operation Under the Same Conditions



●47% Less Power Consumption* than Conventional Oriental Motor Products Due to Energy-Saving Features

●Power Consumption



*Operating Condition
- Speed: 1000 r/min, load factor: 50%
- Operating Time: 24 hours of operation, 365 days/year (70% operating, 25% stand-by, 5% off)
- Power Supply Voltage: Single-Phase 200-240 VAC

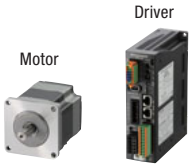
2 Driver Types Available Depending on the System Configuration

2 Types of **AZ** Series drivers are available, depending on the master control system in use.

●Built-in Controller Type FLEX

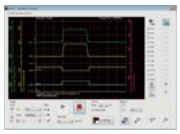
With this type, the operating data is set in the driver, and is then selected and executed from the host system. Host system connection and control are performed with ① I/O, ② Modbus (RTU)/ RS-485 or ③ FA network.

Basic Setting (Factory Setting)

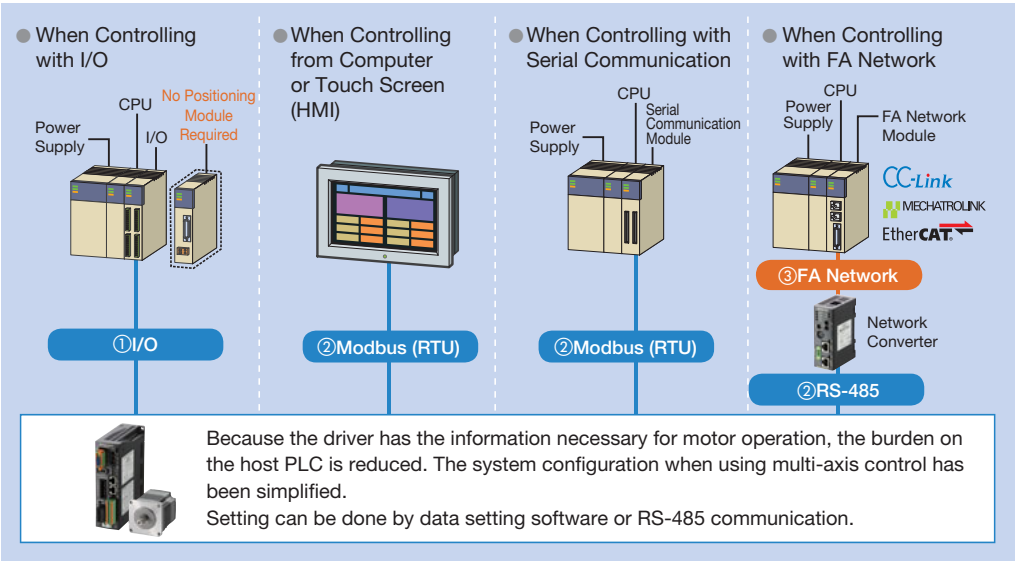


Setting Operating Data and Changing Parameters

Data Setting Software **MEXE02**



●Setting using RS-485 communication is also possible.

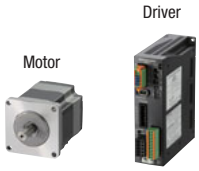


By using a network converter (sold separately), EtherCAT, CC-link or MECHATROLINK communication are possible. Operating data, parameter settings and operation commands can be input via various communication types. Its ability to accommodate the network being used results in a shortened design time.

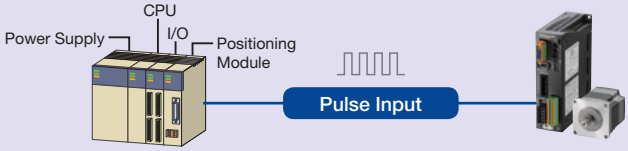
●Pulse Input Type

This type executes operations by inputting pulses into the driver. It controls the motor using a positioning module (pulse generator).

Basic Setting (Factory Setting)



By using the **MEXE02** data setting software, the alarm history can be displayed and a variety of monitoring can be customized according to the customer's needs.



●The **MEXE02** data setting software can be downloaded from the Oriental Motor website.

Easy Operation through the Use of the MEXE02 Data Setting Software

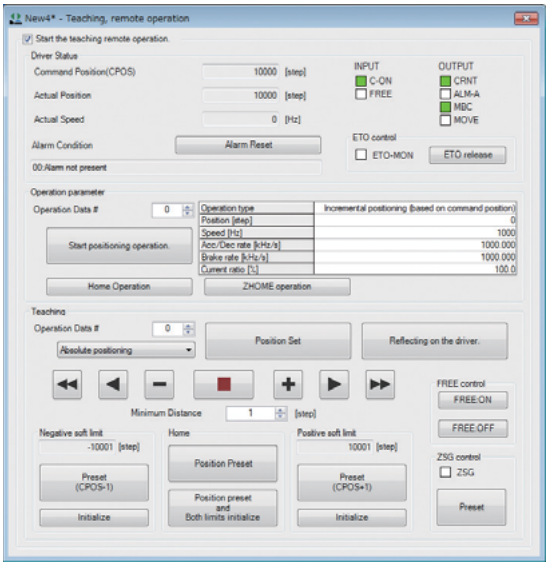
●Easy Setting and Easy Driving

◇Unit Setting Wizard

This is a function that allows the traveling amount, speed, etc. to be displayed and input in the designated units. It can be easily set by following the directions displayed on the screen.

◇Teaching and Remote Operation

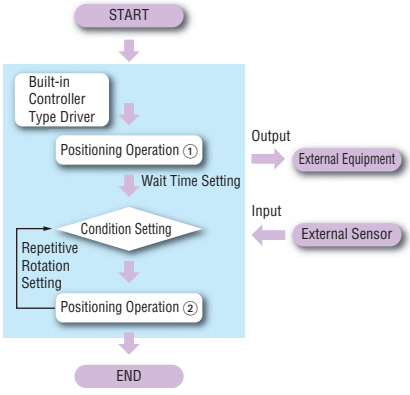
Data setting software can be used to easily perform the home setting or also drive the motor. This can be used for teaching or test drive purposes.



◇Simplified Program with Easy Sequence Function (Available only on the built-in controller type)

The built-in controller type simplifies programs of the sequence control by reading output signals that controls other devices and external input signals used in sensors.

- Number of Positioning Operation Data Setting (Up to 256)
- Number of General-Purpose I/O (Input 9, Output 6)
- Number of I/O for Communication (Input 16, Output 16)

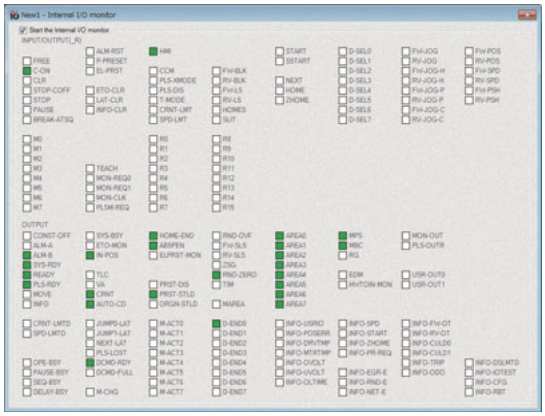


- Multi-monitoring enables remote operation and teaching while monitoring.

●Monitoring Function

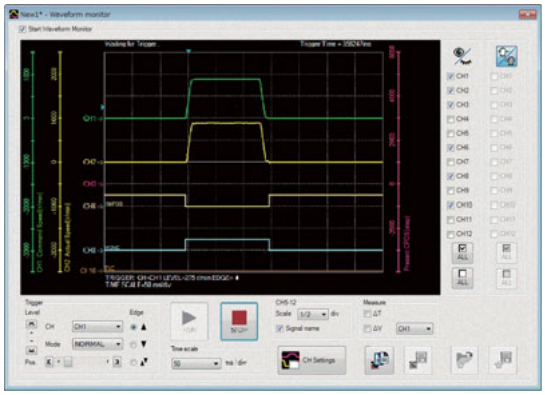
◇I/O Monitoring

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



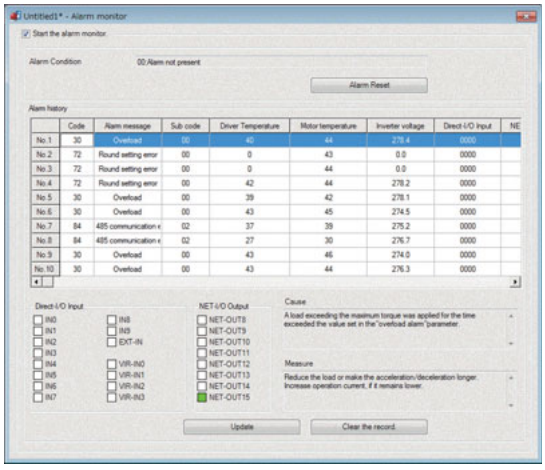
◇Waveform Monitoring

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



◇Alarm Monitoring

When an abnormality occurs, the details of the abnormality and the solution can be checked. Because the solution can be checked, it is possible to respond to abnormalities quickly.



Product Line of Motors

Types and Features of Standard and Geared Motors

	Type	Features	Permissible Torque and Max. Instantaneous Torque [N·m]	Backlash [arcmin (degrees)]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]
	Standard Type 	· Basic motor of the **AZ** Series	Maximum Holding Torque 4	—	0.36	4500
Low backlash	**TS** Geared Type (Spur Gear Mechanism) 	· A wide variety of low gear ratios for high-speed operation · Gear ratio: 3.6, 7.2, 10, 20, 30	Permissible Torque / Max. Instantaneous Torque 25 45	10 (0.17°)	0.012	833
Low backlash	**PS** Geared Type (Planetary Gear Mechanism) 	· High permissible/ max. instantaneous torque · A wide variety of gear ratios for selecting the desired step angle · Center shaft · Gear ratio: 5, 7.2, 10, 25, 36, 50	Permissible Torque \ Max. Instantaneous Torque 37 60	7 (0.12°)	0.0072	600
Non-backlash	**HPG** Geared Type (Harmonic Planetary) HarmonicDrive SYSTEMS 	· High positioning accuracy · High permissible/ max. instantaneous torque · Center shaft · Gear ratio: 5, 9, 15	Permissible Torque \ Max. Instantaneous Torque 24 33	3 (0.05°)	0.024	900
Non-backlash	**Harmonic Geared Type** (Harmonic Drive) HarmonicDrive SYSTEMS 	· High positioning accuracy · High permissible/ max. instantaneous torque · High gear ratio, high resolution · Center shaft · Gear ratio: 50, 100	Permissible Torque \ Max. Instantaneous Torque 52 107	0	0.0036	70

Note

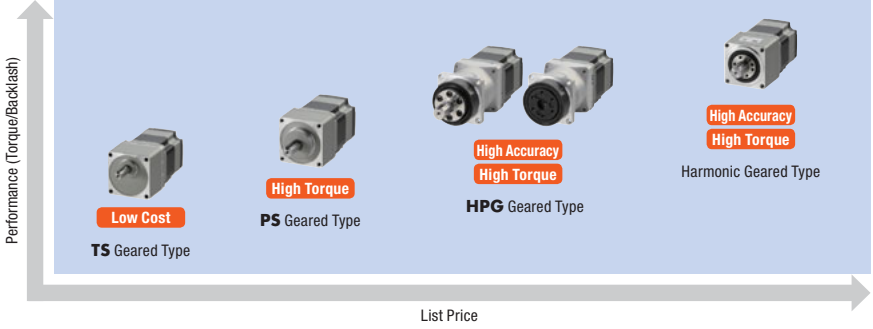
- Please use the above values as reference to see the differences between each type. These values vary depending on the motor frame size and gear ratio.
- Harmonic Planetary, Harmonic Drive and HarmonicDrive SYSTEMS are registered trademarks of Harmonic Drive Systems Inc.

Driver and Motor Product Line

Driver Type		Motor Type	Frame Size	Electromagnetic Brake Type	Power Supply Input
Built-in Controller Type FLEX 	Pulse Input Type 	Standard Type	42 mm 60 mm 85 mm	●	Single-Phase 200-240 VAC
		TS Geared Type **PS** Geared Type **HPG** Geared Type Harmonic Geared Type	42 mm* 60 mm 90 mm	●	

*HPG Geared Type is 40 mm

Oriental Motor offers geared motors, motor and gearhead pre-assembled. Based on torque, accuracy (backlash) and list price, the optimal type can be selected from the various geared motors.



Product Line of Actuators Equipped with AZ Series

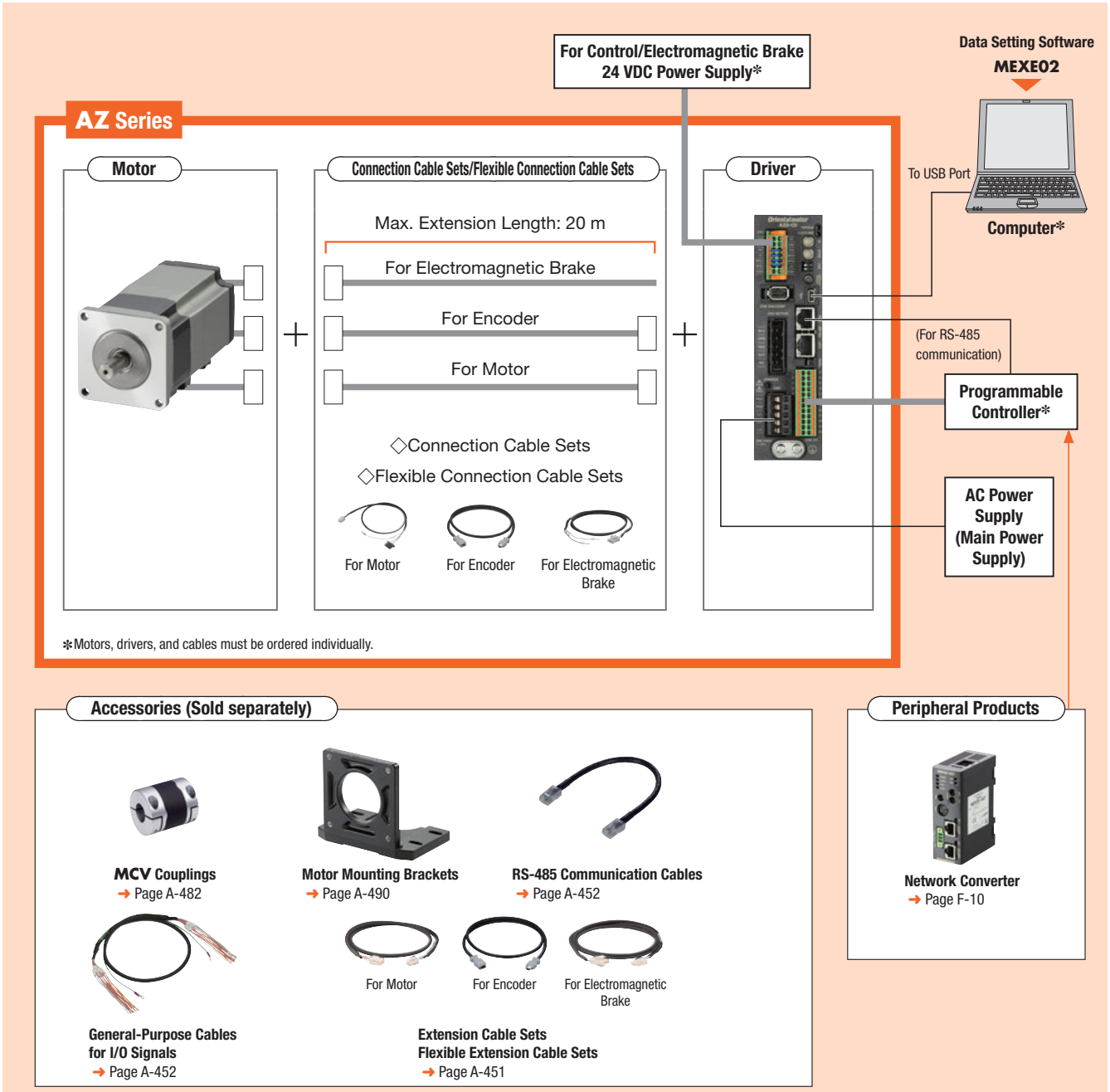
Series Name		Feature	Main Specifications
αSTEP **AZ** Series Equipped Electric Linear Slides **EAS** Series Electric Cylinders **EAC** Series		・High speed driving with light load or heavy load is possible. ・Speed fluctuation is minimal even at a low speed (1.25 mm/s). ・Compact size and high rigidity.	**EAS** Series ・Stroke: 50～850 mm ・Maximum Speed: 800 mm/s ・Maximum Transportable Mass: 60 kg (Horizontal), 30 kg (Vertical) **EAC** Series ・Stroke: 50～300 mm ・Maximum Speed: 600 mm/s ・Maximum Transportable Mass: 60 kg (Horizontal), 30 kg (Vertical)
αSTEP **AZ** Series Equipped Electric Linear Slides **EZS** Series		・Compact size and high rigidity. ・Simple dust-resistant structure. ・For Cleanroom Use (ISO Standard clean degree of Class 3).	・Stroke: 50～850 mm ・Maximum Speed: 800 mm/s ・Maximum Transportable Mass: 60 kg (Horizontal), 30 kg (Vertical)
αSTEP **AZ** Series Equipped Hollow rotary actuator **DGII** Series		・Wiring adjustments using cables and air-tube is easy with hollow output table. ・Direct installation of tables and arms is possible.	・Maximum Permissible Torque: 12 N·m ・Maximum Permissible Moment: 50 N·m ・Maximum Permissible Axial Load: 2000 N·m

System Configuration

Combination of Standard Type Motor with Electromagnetic Brake and Built-in Controller Type Driver

An example of a configuration using I/O control or RS-485 communication is shown below.

*Not supplied.



Example of System Configuration

AZ Series

Motor		Driver		Connection Cable Sets
AZM66MC	+	AZD-CD	+	CC030VZFB
€447.00		€480.00		€63.00

Accessory

Sold Separately		
Motor Mounting Bracket	Flexible Coupling	General-Purpose Cables for I/O Signals (1 m)
PAL2P-5	MCV251010	CC16D010B-1
€13.00	€53.00	€18.00

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

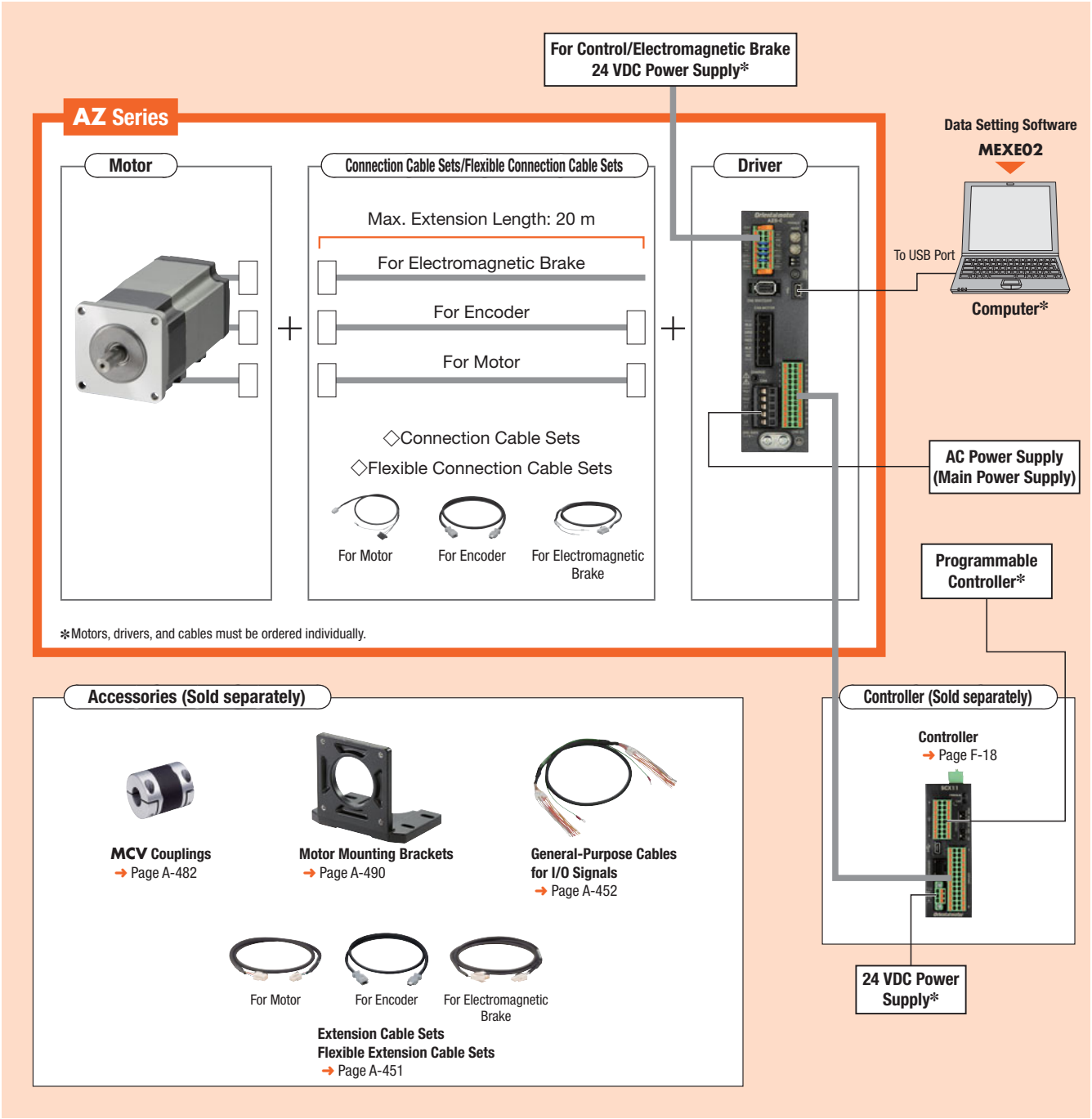
Note

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

●Combination of Standard Type Motor with Electromagnetic Brake and Pulse Input Type Driver

An example of a single-axis system configuration with the **SCX11** controller is shown below.

✻Not supplied.



●Example of System Configuration

AZ Series

Motor	Driver	Connection Cable Sets
AZM66MC	AZD-C	CC030VZFB
€447.00	€430.00	€63.00

Accessory

Sold Separately			
Controller	Motor Mounting Bracket	Flexible Coupling	General-Purpose Cables for I/O Signals (1 m)
SCX11	PAL2P-5	MCV251010	CC16D010B-1
€215.00	€13.00	€53.00	€18.00

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

Note

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

Product Number

Motor

◇Standard Type

AZM 6 6 A C

① ② ③ ④ ⑤

◇**TS**, **PS**, **HPG**, Harmonic Geared Type

AZM 6 6 A C - HP 15 F

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

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

Driver

AZD - C D

① ② ③

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**AZ** Series Built-in Controller Type/Pulse Input Type **C**: Single-Phase 200~240 VAC
③	Type	**D**: Built-in Controller Type Blank: Pulse Input Type

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

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

Product Line

For the single-phase 100-120 VAC models and three-phase 200-240 VAC models, please contact the nearest Oriental Motor sales office.

Motor

◇Standard Type

Frame Size	Product Name	List Price
42 mm	**AZM46AC**	€246.00
60 mm	**AZM66AC**	€290.00
	AZM69AC	€295.00
85 mm	**AZM98AC**	€315.00
	AZM911AC	€333.00

◇Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MC**	€368.00
60 mm	**AZM66MC**	€447.00
	AZM69MC	€452.00
85 mm	**AZM98MC**	€489.00

◇**TS** Geared Type

Frame Size	Product Name	List Price
42 mm	**AZM46AC-TS3.6**	€341.00
	AZM46AC-TS7.2	€341.00
	AZM46AC-TS10	€351.00
	AZM46AC-TS20	€351.00
	AZM46AC-TS30	€351.00
60 mm	**AZM66AC-TS3.6**	€400.00
	AZM66AC-TS7.2	€400.00
	AZM66AC-TS10	€410.00
	AZM66AC-TS20	€410.00
	AZM66AC-TS30	€410.00
90 mm	**AZM98AC-TS3.6**	€456.00
	AZM98AC-TS7.2	€456.00
	AZM98AC-TS10	€468.00
	AZM98AC-TS20	€468.00
	AZM98AC-TS30	€468.00

◇**TS** Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MC-TS3.6**	€463.00
	AZM46MC-TS7.2	€463.00
	AZM46MC-TS10	€473.00
	AZM46MC-TS20	€473.00
	AZM46MC-TS30	€473.00
60 mm	**AZM66MC-TS3.6**	€557.00
	AZM66MC-TS7.2	€557.00
	AZM66MC-TS10	€567.00
	AZM66MC-TS20	€567.00
	AZM66MC-TS30	€567.00
90 mm	**AZM98MC-TS3.6**	€630.00
	AZM98MC-TS7.2	€630.00
	AZM98MC-TS10	€642.00
	AZM98MC-TS20	€642.00
	AZM98MC-TS30	€642.00

◇**PS** Geared Type

Frame Size	Product Name	List Price
42 mm	**AZM46AC-PS5**	€413.00
	AZM46AC-PS7.2	€413.00
	AZM46AC-PS10	€413.00
	AZM46AC-PS25	€450.00
	AZM46AC-PS36	€450.00
	AZM46AC-PS50	€450.00
60 mm	**AZM66AC-PS5**	€494.00
	AZM66AC-PS7.2	€494.00
	AZM66AC-PS10	€494.00
	AZM66AC-PS25	€546.00
	AZM66AC-PS36	€546.00
	AZM66AC-PS50	€546.00
90 mm	**AZM98AC-PS5**	€605.00
	AZM98AC-PS7.2	€605.00
	AZM98AC-PS10	€605.00
	AZM98AC-PS25	€705.00
	AZM98AC-PS36	€705.00
	AZM98AC-PS50	€705.00

◇**PS** Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MC-PS5**	€535.00
	AZM46MC-PS7.2	€535.00
	AZM46MC-PS10	€535.00
	AZM46MC-PS25	€572.00
	AZM46MC-PS36	€572.00
	AZM46MC-PS50	€572.00
60 mm	**AZM66MC-PS5**	€651.00
	AZM66MC-PS7.2	€651.00
	AZM66MC-PS10	€651.00
	AZM66MC-PS25	€703.00
	AZM66MC-PS36	€703.00
	AZM66MC-PS50	€703.00
90 mm	**AZM98MC-PS5**	€779.00
	AZM98MC-PS7.2	€779.00
	AZM98MC-PS10	€779.00
	AZM98MC-PS25	€879.00
	AZM98MC-PS36	€879.00
	AZM98MC-PS50	€879.00

◇HPG Geared Type

Frame Size	Product Name	List Price
40 mm	**AZM46AC-HP5**	€526.00
	AZM46AC-HP5F	€516.00
	AZM46AC-HP9	€526.00
	AZM46AC-HP9F	€516.00
60 mm	**AZM66AC-HP5**	€710.00
	AZM66AC-HP5F	€695.00
	AZM66AC-HP15	€835.00
	AZM66AC-HP15F	€820.00
90 mm	**AZM98AC-HP5**	€895.00
	AZM98AC-HP5F	€875.00
	AZM98AC-HP15	€990.00
	AZM98AC-HP15F	€970.00

◇HPG Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
40 mm	**AZM46MC-HP5**	€648.00
	AZM46MC-HP5F	€638.00
	AZM46MC-HP9	€648.00
	AZM46MC-HP9F	€638.00
60 mm	**AZM66MC-HP5**	€867.00
	AZM66MC-HP5F	€852.00
	AZM66MC-HP15	€992.00
	AZM66MC-HP15F	€977.00
90 mm	**AZM98MC-HP5**	€1,069.00
	AZM98MC-HP5F	€1,049.00
	AZM98MC-HP15	€1,164.00
	AZM98MC-HP15F	€1,144.00

◇Harmonic Geared Type

Frame Size	Product Name	List Price
42 mm	**AZM46AC-HS50**	€701.00
	AZM46AC-HS100	€701.00
60 mm	**AZM66AC-HS50**	€945.00
	AZM66AC-HS100	€945.00
90 mm	**AZM98AC-HS50**	€1,135.00
	AZM98AC-HS100	€1,135.00

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MC-HS50**	€823.00
	AZM46MC-HS100	€823.00
60 mm	**AZM66MC-HS50**	€1,102.00
	AZM66MC-HS100	€1,102.00
90 mm	**AZM98MC-HS50**	€1,309.00
	AZM98MC-HS100	€1,309.00

●Driver

◇Built-in Controller Type

Power Supply Input	Product Name	List Price
Single-Phase 200-240 VAC	**AZD-CD**	€480.00

◇Pulse Input Type

Power Supply Input	Product Name	List Price
Single-Phase 200-240 VAC	**AZD-C**	€430.00

●Connection Cable Sets/Flexible Connection Cable Sets

For Motor For Encoder

◇Without Electromagnetic Brake

Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	**CC005VZF**	€29.00
	1	**CC010VZF**	€29.00
	1.5	**CC015VZF**	€33.00
	2	**CC020VZF**	€38.00
	2.5	**CC025VZF**	€43.00
	3	**CC030VZF**	€48.00
	4	**CC040VZF**	€75.00
	5	**CC050VZF**	€84.00
	7	**CC070VZF**	€104.00
	10	**CC100VZF**	€135.00
	15	**CC150VZF**	€187.00
	20	**CC200VZF**	€237.00
Flexible Connection Cable Sets	0.5	**CC005VZR**	€65.00
	1	**CC010VZR**	€65.00
	1.5	**CC015VZR**	€70.00
	2	**CC020VZR**	€76.00
	2.5	**CC025VZR**	€80.00
	3	**CC030VZR**	€85.00
	4	**CC040VZR**	€97.00
	5	**CC050VZR**	€108.00
	7	**CC070VZR**	€137.00
	10	**CC100VZR**	€181.00
	15	**CC150VZR**	€262.00
	20	**CC200VZR**	€326.00

For Motor For Encoder For Electromagnetic Brake

◇Type with an Electromagnetic Brake

Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	**CC005VZFB**	€40.00
	1	**CC010VZFB**	€40.00
	1.5	**CC015VZFB**	€46.00
	2	**CC020VZFB**	€52.00
	2.5	**CC025VZFB**	€57.00
	3	**CC030VZFB**	€63.00
	4	**CC040VZFB**	€93.00
	5	**CC050VZFB**	€103.00
	7	**CC070VZFB**	€127.00
	10	**CC100VZFB**	€163.00
	15	**CC150VZFB**	€225.00
	20	**CC200VZFB**	€285.00
Flexible Connection Cable Sets	0.5	**CC005VZRB**	€87.00
	1	**CC010VZRB**	€87.00
	1.5	**CC015VZRB**	€95.00
	2	**CC020VZRB**	€103.00
	2.5	**CC025VZRB**	€109.00
	3	**CC030VZRB**	€115.00
	4	**CC040VZRB**	€131.00
	5	**CC050VZRB**	€146.00
	7	**CC070VZRB**	€184.00
	10	**CC100VZRB**	€237.00
	15	**CC150VZRB**	€331.00
	20	**CC200VZRB**	€422.00

■Included

●Motor

Type \ Included		Parallel Key	Motor Installation Screw	Operating Manual
Standard		–	–	1 Copy
TS Geared	Frame Size 42 mm	–	–	
	Frame Size 60 mm	1 Piece	M4×60 P0.7 (4 Screws)	
	Frame Size 90 mm	1 Piece	M8×90 P1.25 (4 Screws)	
PS Geared		1 Piece	–	
HPG Geared	Shaft Output	1 Piece	–	
	Flange Output	–	–	
Harmonic Geared		1 Piece	–	

●Driver

Type \ Included	Connector	Operating Manual
Built-in Controller Type Pulse Input Type	・Connector for CN4 (1 Piece) ・Connector for CN1 (1 Piece) ・Connector for CN5 (1 Piece) ・Connector Wiring Lever (1 Piece)	1 Copy

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

Specifications

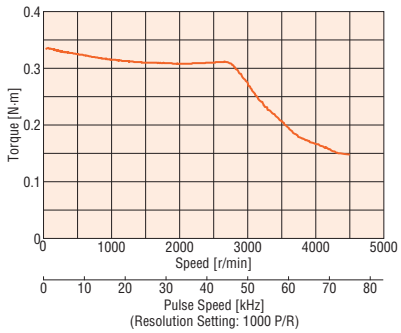
Motor Product Name	Single Shaft	AZM46AC	AZM66AC	AZM69AC	AZM98AC	AZM911AC
	With Electromagnetic Brake	AZM46MC	AZM66MC	AZM69MC	AZM98MC	–
Driver Product Name	Built-in Controller Type	AZD-CD (Single-Phase 200-240 VAC)				
	Pulse Input Type	AZD-C (Single-Phase 200-240 VAC)				
Maximum Holding Torque	N·m	0.3	1.2	2	2	4
Holding Torque at Motor Standstill	Power ON N·m	0.15	0.6	1	1	2
	With Electromagnetic Brake N·m	0.15	0.6	1	1	–
Rotor Inertia	J: kg·m^2	55×10^{-7} (71×10^{-7})*1	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 200-240 VAC −15～+6% 50/60 Hz				
	Input Current A	1.7	2.3	3.3	3.3	3.9
Control Power Supply		24 VDC ±5%*2 0.25 A (0.33 A)*1	24 VDC ±5%*2 0.25 A (0.5 A)*1			

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

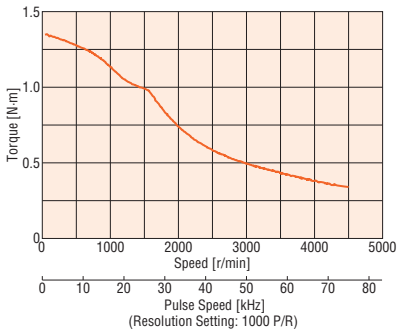
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

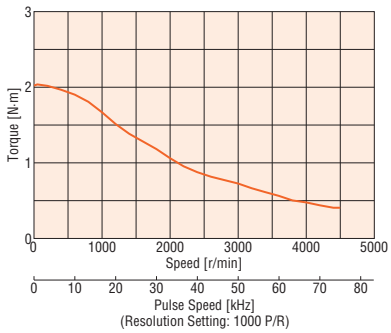
AZM46



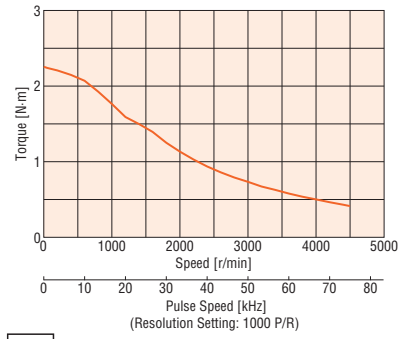
AZM66



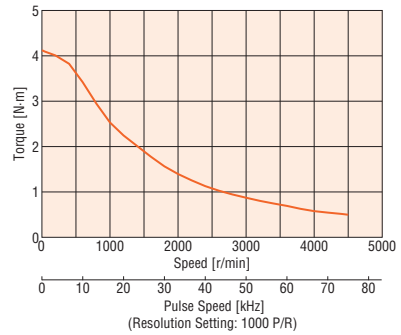
AZM69



AZM98



AZM911



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

TS Geared Type Frame Size 42 mm

Specifications

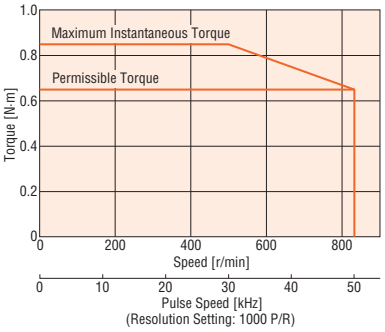
Motor Product Name	Single Shaft		**AZM46AC-TS3.6**	**AZM46AC-TS7.2**	**AZM46AC-TS10**	**AZM46AC-TS20**	**AZM46AC-TS30**
	With Electromagnetic Brake		**AZM46MC-TS3.6**	**AZM46MC-TS7.2**	**AZM46MC-TS10**	**AZM46MC-TS20**	**AZM46MC-TS30**
Driver Product Name	Built-in Controller Type		**AZD-CD** (Single-Phase 200-240 VAC)				
	Pulse Input Type		**AZD-C** (Single-Phase 200-240 VAC)				
Maximum Holding Torque		N·m	0.65	1.2	1.7	2	2.3
Rotor Inertia		J: kg·m^2	55×10^{-7} (71×10^{-7})*1				
Gear Ratio			3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000P/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 Motor Standstill	Power ON	N·m	0.54	1	1.5	1.9	2.2
	With 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 200-240 VAC −15～+6% 50/60 Hz				
	Input Current	A	1.7				
Control Power Supply			24 VDC ±5%*2 0.25 A (0.33 A)*1				

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

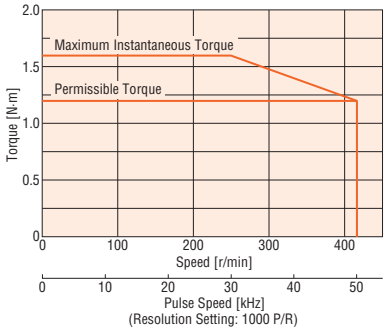
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

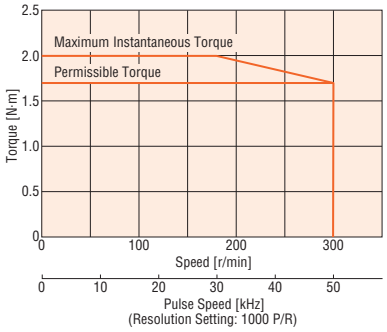
AZM46 Gear Ratio **3.6**



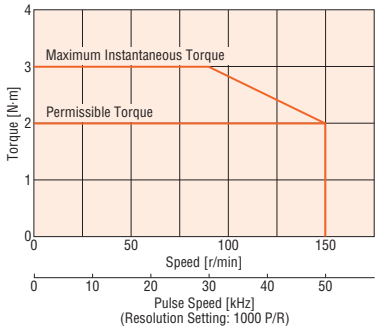
AZM46 Gear Ratio **7.2**



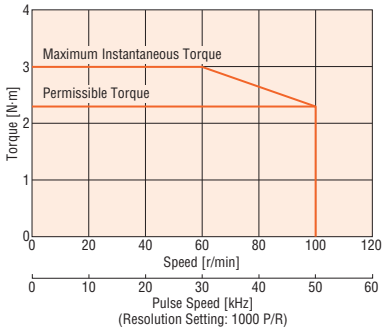
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

TS Geared Type Frame Size 60 mm

Specifications

Motor Product Name	Single Shaft		AZM66AC-TS3.6	AZM66AC-TS7.2	AZM66AC-TS10	AZM66AC-TS20	AZM66AC-TS30
	With Electromagnetic Brake		AZM66MC-TS3.6	AZM66MC-TS7.2	AZM66MC-TS10	AZM66MC-TS20	AZM66MC-TS30
Driver Product Name	Built-in Controller Type		AZD-CD (Single-Phase 200-240 VAC)				
	Pulse Input Type		AZD-C (Single-Phase 200-240 VAC)				
Maximum Holding Torque		N·m	1.8	3	4	5	6
Rotor Inertia		J: kg·m^2	370×10^{-7} (530×10^{-7})*1				
Gear Ratio			3.6	7.2	10	20	30
Resolution	Resolution Setting: 1000P/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 Motor Standstill	Power ON	N·m	1.3	2.6	3.7	5	6
	With 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 Input	Voltage and Frequency		Single-Phase 200-240 VAC −15～+6% 50/60 Hz				
	Input Current	A	2.3				
Control Power Supply			24 VDC ±5%*2 0.25 A (0.5 A)*1				

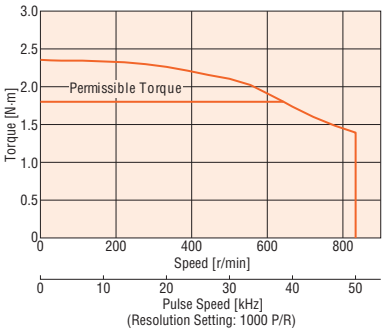
* For the geared motor output torque, refer to the speed – torque characteristics.

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

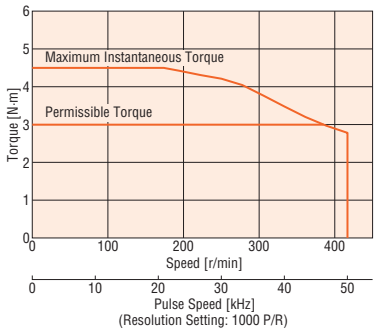
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

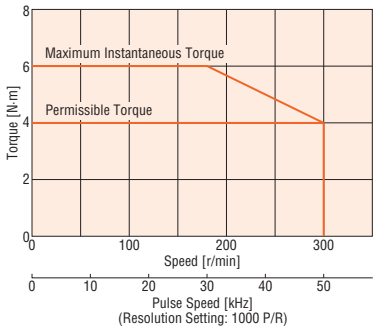
AZM66 Gear Ratio **3.6**



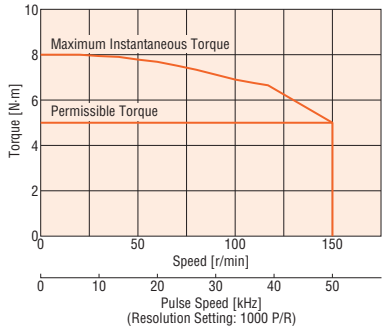
AZM66 Gear Ratio **7.2**



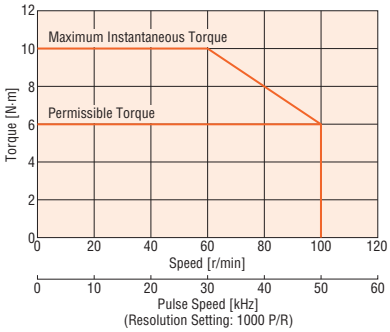
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

TS Geared Type Frame Size 90 mm

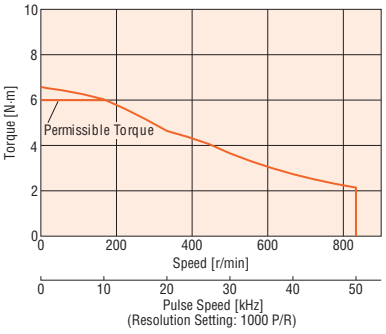
Specifications

Motor Product Name	Single Shaft		AZM98AC-TS3.6	AZM98AC-TS7.2	AZM98AC-TS10	AZM98AC-TS20	AZM98AC-TS30
	With Electromagnetic Brake		AZM98MC-TS3.6	AZM98MC-TS7.2	AZM98MC-TS10	AZM98MC-TS20	AZM98MC-TS30
Driver Product Name	Built-in Controller Type		AZD-CD (Single-Phase 200-240 VAC)				
	Pulse Input Type		AZD-C (Single-Phase 200-240 VAC)				
Maximum Holding Torque		N·m	6	10	14	20	25
Rotor Inertia		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 Motor Standstill	Power ON	N·m	3.6	7.2	10	20	25
	With 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 Input	Voltage and Frequency		Single-Phase 200-240 VAC −15～+6% 50/60 Hz				
	Input Current	A	3.3				
Control Power Supply			24 VDC ±5%*2 0.25 A (0.5 A)*1				

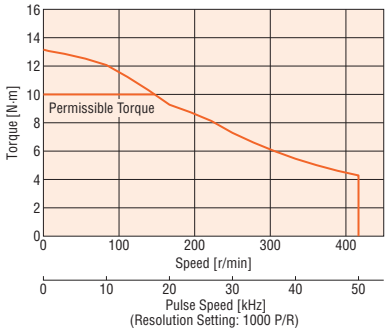
* For the geared motor output torque, refer to the speed – torque characteristics.
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

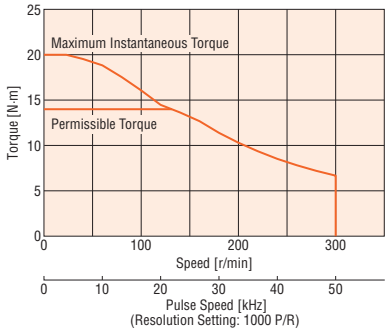
AZM98 Gear Ratio **3.6**



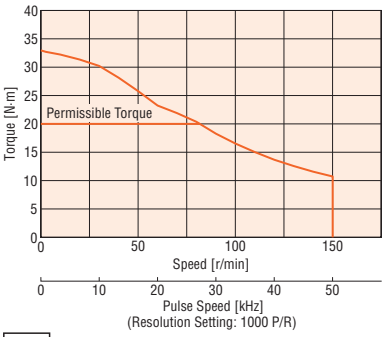
AZM98 Gear Ratio **7.2**



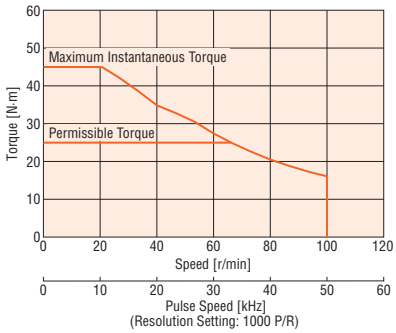
AZM98 Gear Ratio **10**



AZM98 Gear Ratio **20**



AZM98 Gear Ratio **30**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

PS Geared Type Frame Size 42 mm

Specifications

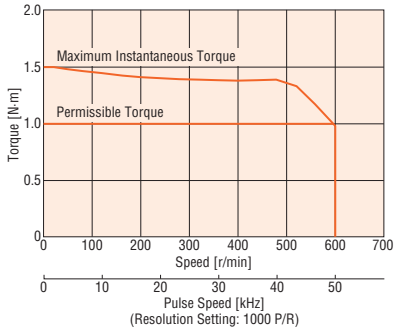
Motor Product Name	Single Shaft	AZM46AC-PS5	AZM46AC-PS7.2	AZM46AC-PS10	AZM46AC-PS25	AZM46AC-PS36	AZM46AC-PS50
	With Electromagnetic Brake	AZM46MC-PS5	AZM46MC-PS7.2	AZM46MC-PS10	AZM46MC-PS25	AZM46MC-PS36	AZM46MC-PS50
Driver Product Name	Built-in Controller Type	**AZD-CD** (Single-Phase 200-240 VAC)					
	Pulse Input Type	**AZD-C** (Single-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	1	1.5		2.5	3	
Rotor Inertia	J: kg·m^2	55×10^{-7} (71×10^{-7})*1					
Gear Ratio		5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000P/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		6		
Holding Torque at Motor Standstill	Power ON N·m	0.75	1	1.5	2.5	3	
	With 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 and Frequency	Single-Phase 200-240 VAC −15～+6% 50/60 Hz					
	Input Current A	1.7					
Control Power Supply		24 VDC ±5%*2 0.25 A (0.33 A)*1					

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

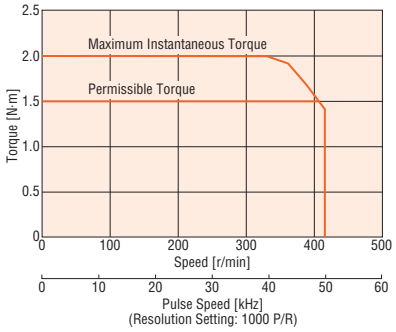
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

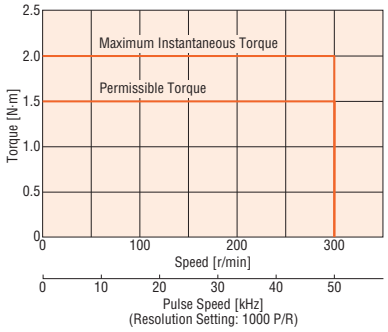
AZM46 Gear Ratio **5**



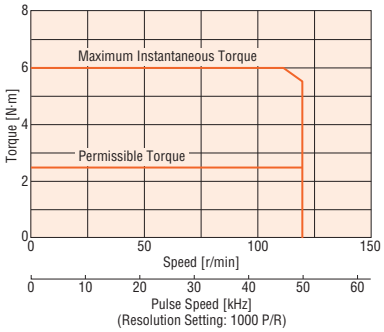
AZM46 Gear Ratio **7.2**



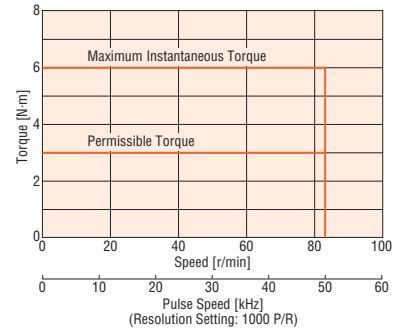
AZM46 Gear Ratio **10**



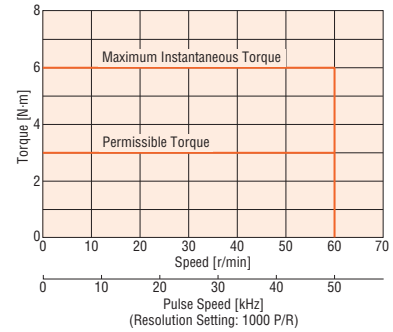
AZM46 Gear Ratio **25**



AZM46 Gear Ratio **36**



AZM46 Gear Ratio **50**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

PS Geared Type Frame Size 60 mm

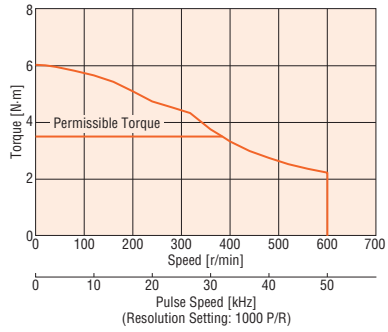
Specifications

Motor Product Name	Single Shaft		AZM66AC-PS5	AZM66AC-PS7.2	AZM66AC-PS10	AZM66AC-PS25	AZM66AC-PS36	AZM66AC-PS50
	With Electromagnetic Brake		AZM66MC-PS5	AZM66MC-PS7.2	AZM66MC-PS10	AZM66MC-PS25	AZM66MC-PS36	AZM66MC-PS50
Driver Product Name	Built-in Controller Type		AZD-CD (Single-Phase 200-240 VAC)					
	Pulse Input Type		AZD-C (Single-Phase 200-240 VAC)					
Maximum Holding Torque		N·m	3.5	4	5	8		
Rotor Inertia		J: kg·m^2	370×10^{-7} (530×10^{-7})*1					
Gear Ratio			5	7.2	10	25	36	50
Resolution	Resolution Setting: 1000P/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	*	*	11	16	20	
Holding Torque at Motor Standstill	Power ON	N·m	3	4	5	8		
	With 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 200-240 VAC −15～+6% 50/60 Hz					
	Input Current	A	2.3					
Control Power Supply			24 VDC ±5%*2 0.25 A (0.5 A)*1					

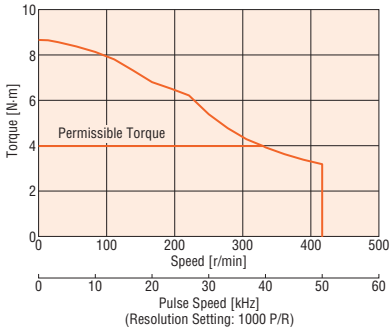
* For the geared motor output torque, refer to the speed – torque characteristics.
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

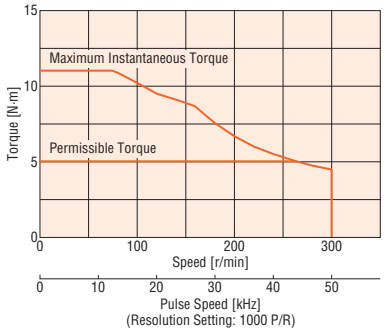
AZM66 Gear Ratio **5**



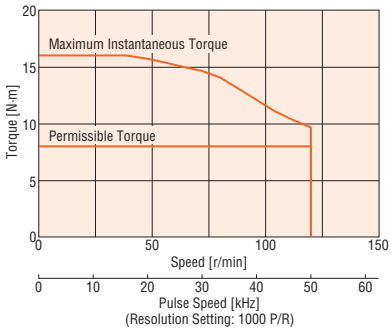
AZM66 Gear Ratio **7.2**



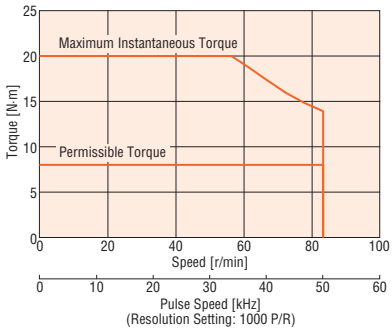
AZM66 Gear Ratio **10**



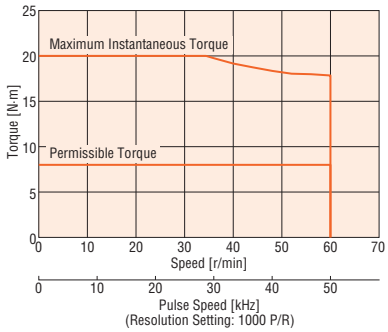
AZM66 Gear Ratio **25**



AZM66 Gear Ratio **36**



AZM66 Gear Ratio **50**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

PS Geared Type Frame Size 90 mm

Specifications

Motor Product Name	Single Shaft	AZM98AC-PS5	AZM98AC-PS7.2	AZM98AC-PS10	AZM98AC-PS25	AZM98AC-PS36	AZM98AC-PS50
	With Electromagnetic Brake	AZM98MC-PS5	AZM98MC-PS7.2	AZM98MC-PS10	AZM98MC-PS25	AZM98MC-PS36	AZM98MC-PS50
Driver Product Name	Built-in Controller Type	**AZD-CD** (Single-Phase 200-240 VAC)					
	Pulse Input Type	**AZD-C** (Single-Phase 200-240 VAC)					
Maximum Holding Torque	N·m	10	14	20	37		
Rotor Inertia	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	0.05°/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 Motor Standstill	Power ON N·m	5	7.2	10	25	36	37
	With 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 Input	Voltage and Frequency	Single-Phase 200-240 VAC −15～+6% 50/60 Hz					
	Input Current A	3.3					
Control Power Supply		24 VDC ±5%*2 0.25 A (0.5 A)*1					

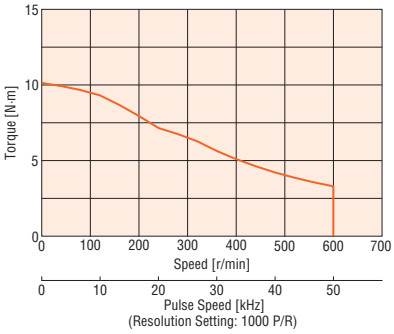
* For the geared motor output torque, refer to the speed – torque characteristics.

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

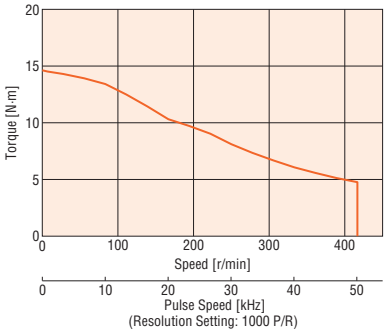
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

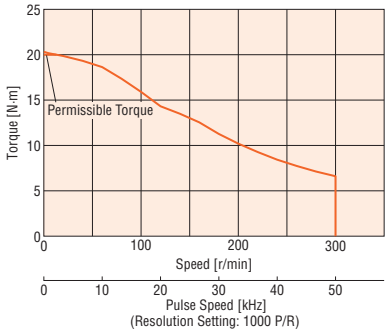
AZM98 Gear Ratio **5**



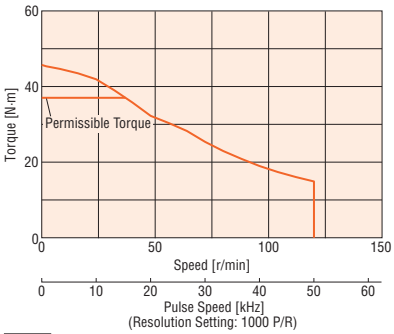
AZM98 Gear Ratio **7.2**



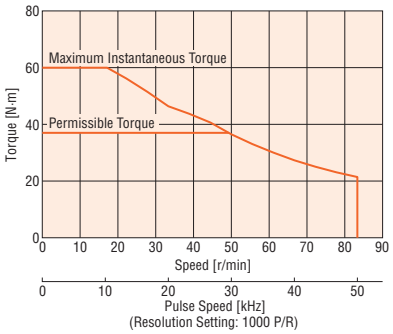
AZM98 Gear Ratio **10**



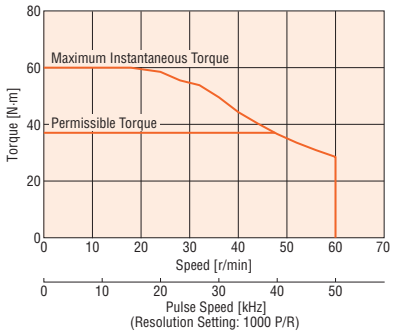
AZM98 Gear Ratio **25**



AZM98 Gear Ratio **36**



AZM98 Gear Ratio **50**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

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

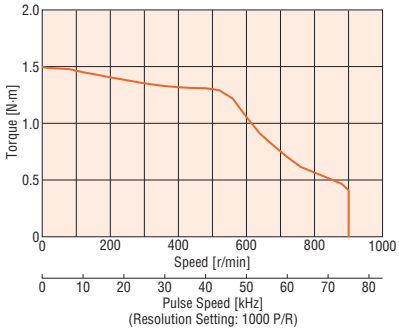
Specifications

Motor Product Name	Single Shaft		AZM46AC-HP5□	AZM46AC-HP9□	AZM66AC-HP5□	AZM66AC-HP15□	AZM98AC-HP5□	AZM98AC-HP15□
	With Electromagnetic Brake		AZM46MC-HP5□	AZM46MC-HP9□	AZM66MC-HP5□	AZM66MC-HP15□	AZM98MC-HP5□	AZM98MC-HP15□
Driver Product Name	Built-in Controller Type		AZD-CD (Single-Phase 200-240 VAC)					
	Pulse Input Type		AZD-C (Single-Phase 200-240 VAC)					
Maximum Holding Torque		N·m	1.5	2.5	5.9	9	10	24
Rotor Inertia		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	
Inertia*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: 1000P/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	N·m	0.75	1.35	3	9	5	15
	With Electromagnetic Brake	N·m	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 Input	Voltage and Frequency		Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Input Current	A	1.7		2.3		3.3	
Control Power Supply			24 VDC ±5%*4 0.25 A (0.33 A)*1		24 VDC ±5%*4 0.25 A (0.5 A)*1			
Output Flange Surface Runout*3		mm	0.02					
Output Flange Inner Runout*3		mm	0.03		0.04			

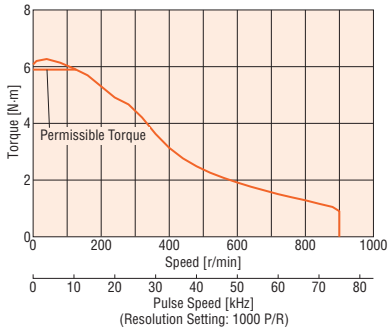
* For the geared motor output torque, refer to the speed – torque characteristics.
● For the flange output type, **F** is specified where the box □ is located in the product name.
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 The internal inertia of the gear is the value converted to the motor shaft. ( ) contain values for the flange output type.
*3 Specifications for the flange output type.
*4 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed – Torque Characteristics (Reference values)

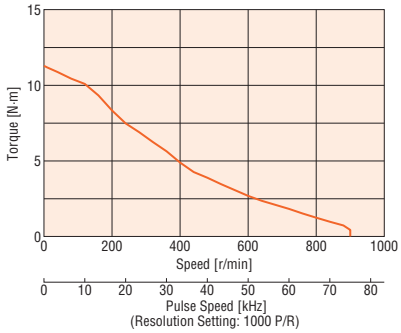
AZM46 Gear Ratio **5**



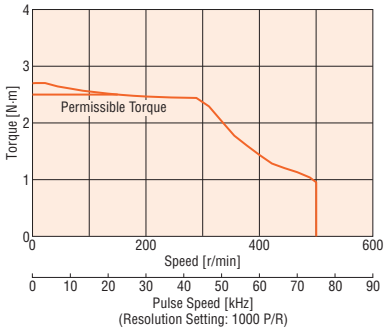
AZM66 Gear Ratio **5**



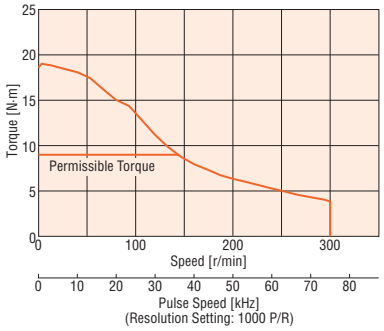
AZM98 Gear Ratio **5**



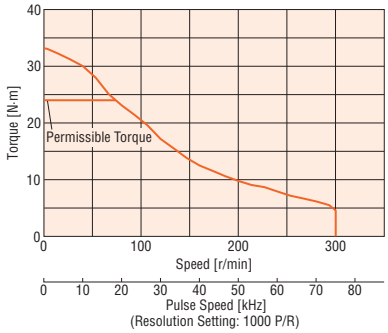
AZM46 Gear Ratio **9**



AZM66 Gear Ratio **15**



AZM98 Gear Ratio **15**



Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

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

Specifications

Motor Product Name	Single Shaft		AZM46AC-HS50	AZM46AC-HS100	AZM66AC-HS50	AZM66AC-HS100	AZM98AC-HS50	AZM98AC-HS100
	With Electromagnetic Brake		AZM46MC-HS50	AZM46MC-HS100	AZM66MC-HS50	AZM66MC-HS100	AZM98MC-HS50	AZM98MC-HS100
Driver Product Name	Built-in Controller Type		AZD-CD (Single-Phase 200-240 VAC)					
	Pulse Input Type		AZD-C (Single-Phase 200-240 VAC)					
Maximum Holding Torque		N·m	3.5	5	7	10	33	52
Rotor Inertia		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: 1000P/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 Motor Standstill	Power ON	N·m	3.5	5	7	10	33	52
	With 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 max. (±0.16 N·m)	1.5 max. (±0.20 N·m)	0.7 max. (±0.28 N·m)	0.7 max. (±0.39 N·m)	0.7 max. (±1.2 N·m)	
Power Supply Input	Voltage and Frequency		Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Input Current	A	1.7		2.3		3.3	
Control Power Supply			24 VDC ±5%*2 0.25 A (0.33 A)*1		24 VDC ±5%*2 0.25 A (0.5 A)*1			

* For the geared motor output torque, refer to the speed – torque characteristics.

*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

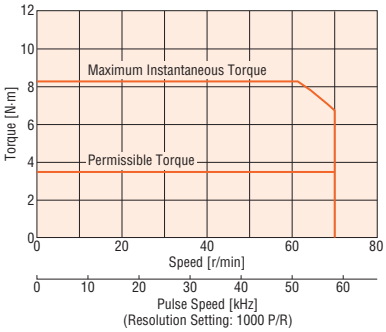
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Note

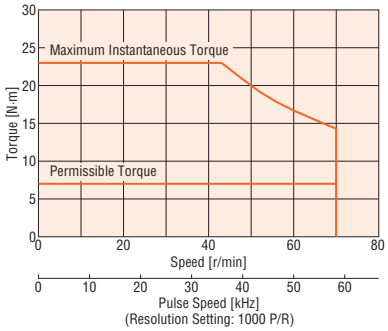
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

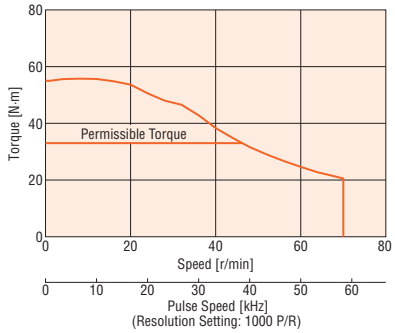
AZM46 Gear Ratio **50**



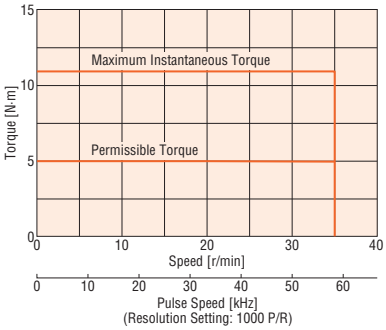
AZM66 Gear Ratio **50**



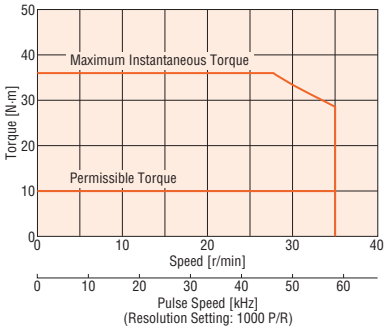
AZM98 Gear Ratio **50**



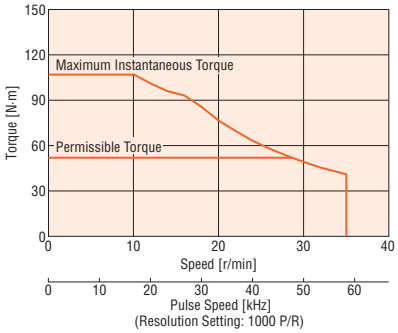
AZM46 Gear Ratio **100**



AZM66 Gear Ratio **100**



AZM98 Gear Ratio **100**



Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the absolute sensor, be sure to keep the temperature of the motor case at 80°C or less. (When conforming to the UL Standards, the temperature of the motor case must be kept at 75°C or less, since the motor is recognized as heat-resistant class A.)

Driver Specifications

Driver Type				Built-in Controller Type	Pulse Input Type
Driver Product Name				**AZD-CD**	**AZD-C**
I/O Function		Maximum 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 (Initial Value)
		Number of Positioning Data Sets		256 Points	256 Points*
		Direct Input		10 Points	6 Points
		Direct Output		6 Points	
		RS-485 Communication Network Input		16 Points	–
		RS-485 Communication Network Output		16 Points	–
Setting Tool		Data Setting Software **MEXE02**		○	○
Coordinates Management Method			Battery-free Absolute System	○	○
Operation	Positioning Operation	Operation Method	Positioning Operation	○	○*
			Positioning Push-Motion Operation	○	○*
		Connecting Method	Independent Operation	○	○*
			Sequential Operation	○	○*
			Multistep Speed-Change (Configuration Connection)	○	○*
		Sequence Control	Loop Operation (Repeating)	○	○*
			Event Jump Operation	○	○*
	Continuous Operation	Position Control		○	○*
		Speed Control		○	○*
		Torque Control		○	○*
		Pushing		○	○*
	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/Driver)	○	○
			Position/Speed Information	○	○
			Temperature Detection (Motor/Driver)	○	○
			Motor Load Factor	○	○
			Distance Traveled/Integrating Distance Traveled	○	○
Alarm				○	○

*This can be used by setting with the data setting software **MEXE02**.

Built-in Controller Type RS-485 Communication Specifications

Protocol	Modbus RTU Mode
Electrical Characteristics	EIA-485 Based, Straight Cable Use shielded twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The max. 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	9600 bps/19200 bps/38400 bps/57600 bps/115200 bps/230400 bps are available
Connection Type	Up to 31 units can be connected to a single programmable controller (master equipment).

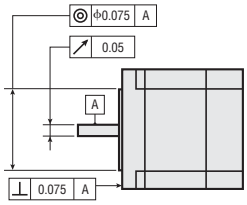
General specifications

		Motor	Driver	
			Built-in Controller Type	Pulse Input Type
Heat-resistant Class		130 (B) [UL 105 (A) certified]	–	
Insulation Resistance		100 MΩ or more when a 500 VDC megger is applied between the following places: ・Case – Motor Windings ・Case – Electromagnetic Brake Windings*1	100 MΩ or more when a 500 VDC megger is applied between the following places: ・Protective Earth Terminal – Power Supply Terminal ・Encoder Connector – Power Supply Terminal ・I/O Signal Terminal – Power Supply Terminal	
Dielectric Voltage		Sufficient to withstand the following 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	Sufficient to withstand the following for 1 minute: ・Protective Earth Terminal – Power Supply Terminal 1.5 kVAC, 50 Hz or 60 Hz ・Encoder Connector – Power Supply Terminal 1.8 kVAC, 50 Hz or 60 Hz ・I/O Signal Terminal – Power Supply Terminal 1.8 kVAC, 50 Hz or 60 Hz	
Operating Environment (In operation)	Ambient Temperature	0～+40°C (Non-freezing)	0～+55°C (non-freezing)*2	
	Ambient Humidity	85% or less (Non-condensing)		
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.		
Degree of Protection		IP66 (excluding installation surfaces and connector locations)	IP10	IP20
Stop Position Accuracy		**AZM46**: ±4 Minutes (±0.067°)	**AZM66**, **AZM69**, **AZM98**, **AZM911**: ±3 Minutes (±0.05°)	
Shaft Runout		0.05 T.I.R. (mm)*3	–	
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*3	–	
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*3	–	
Multiple Rotation Detection Range Upon Power OFF		±900 Rotation (1,800 Rotations)		

*1 Only for products with an electromagnetic brake.
*2 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm and 2 mm thickness.
*3 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.

Note

● Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected. Also, do not perform these tests on the motor absolute sensor part.



Permissible Radial Load and Permissible Axial Load

→ A-17

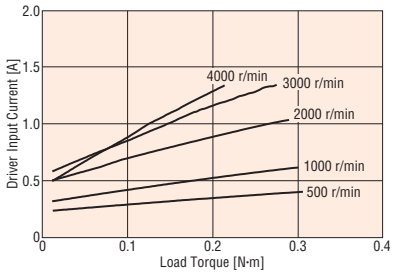
Load Torque – Driver Input Current Characteristics

This is the relationship between the load torque and driver input current at each speed when the motor is operated. From these characteristics, the current capacity required when used for multiple axes can be estimated. For geared motors, convert to torque and speed at the motor shaft.

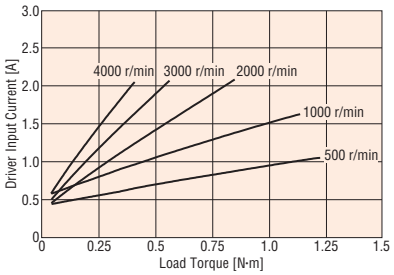
$$\text{Motor shaft speed [r/min]} = \text{Gear output shaft speed} \times \text{Gear ratio}$$

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

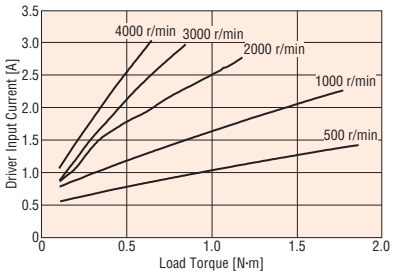
AZM46□C



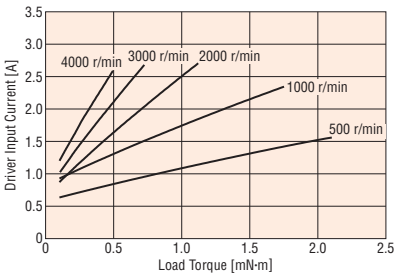
AZM66□C



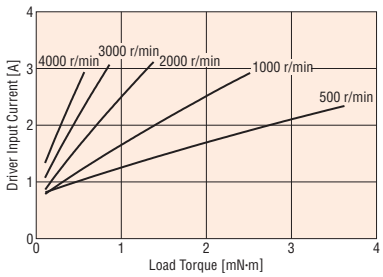
AZM69□C



AZM98□C



AZM911□C



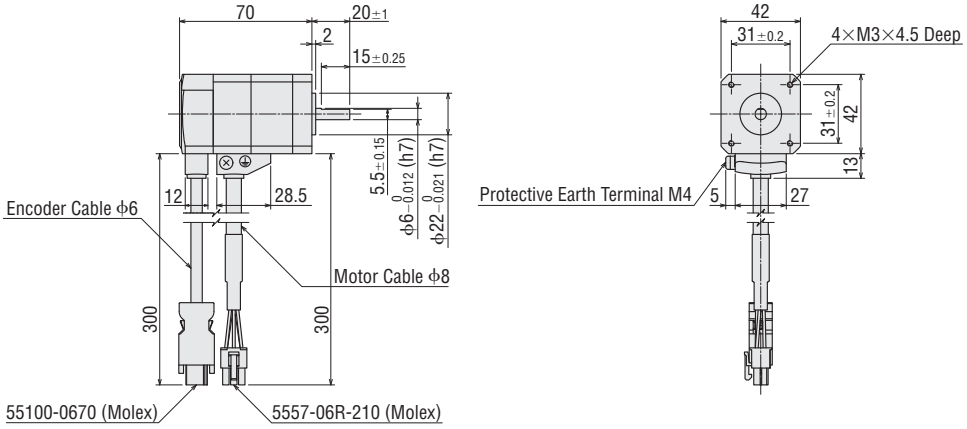
Dimensions (Unit = mm)

Motor

◇Standard Type

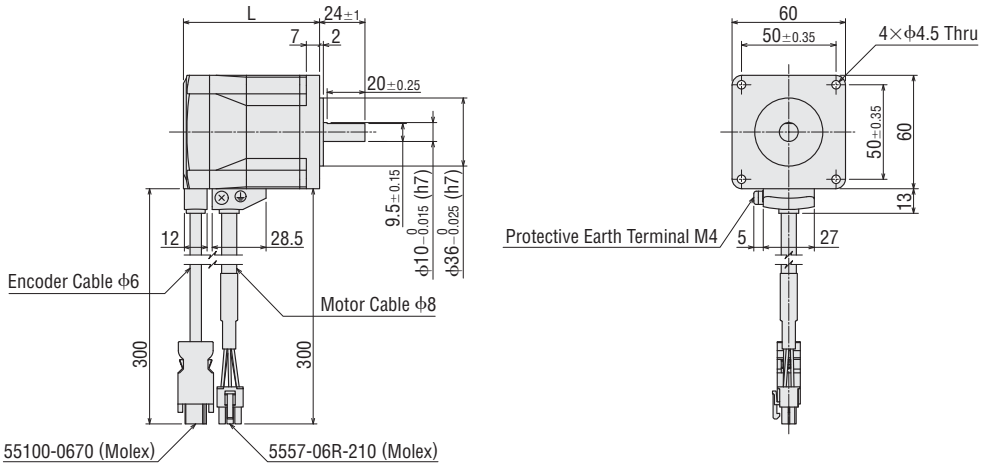
Frame Size 42 mm

Product Name	Mass kg
AZM46AC	0.44



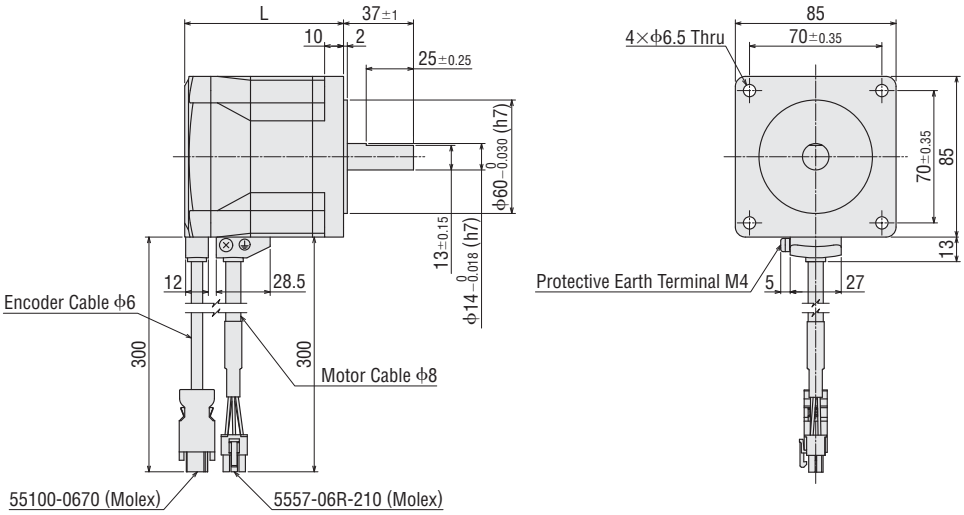
Frame Size 60 mm

Product Name	L	Mass kg
AZM66AC	72	0.91
AZM69AC	97.5	1.4



Frame Size 85 mm

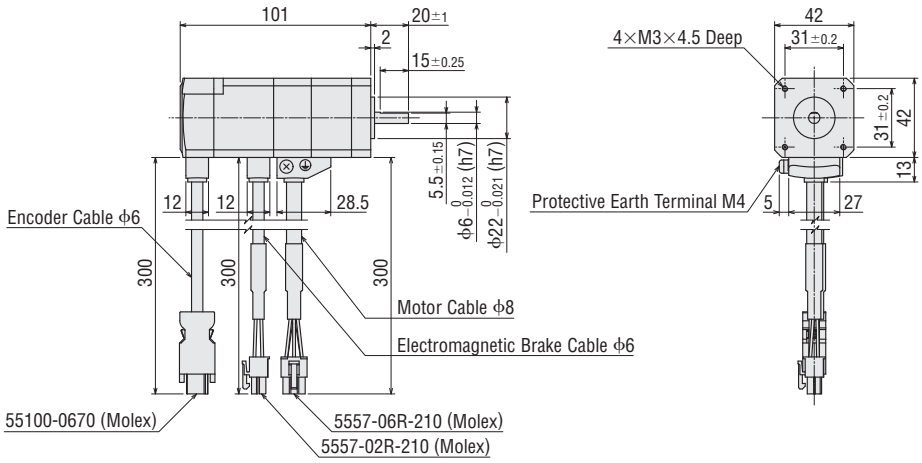
Product Name	L	Mass kg
AZM98AC	84	1.9
AZM911AC	114	3



◇Standard Type with Electromagnetic Brake

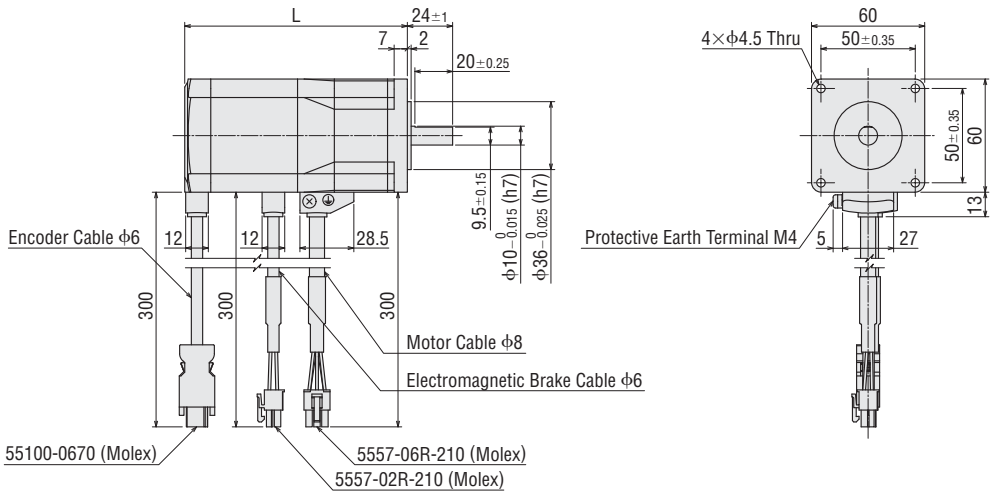
Frame Size 42 mm

Product Name	Mass kg
AZM46MC	0.61



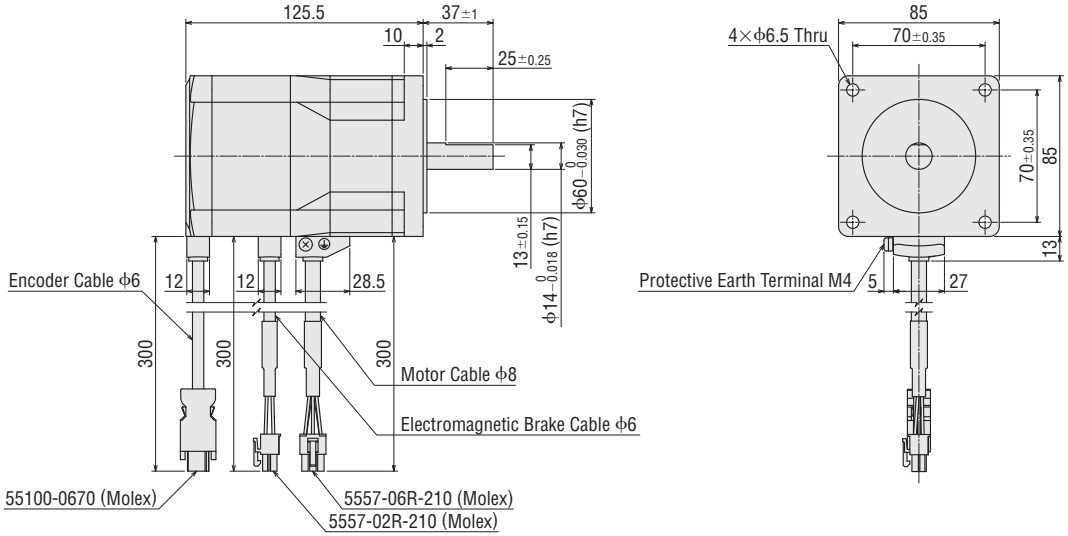
Frame Size 60 mm

Product Name	L	Mass kg
AZM66MC	118	1.3
AZM69MC	143.5	1.8



Frame Size 85 mm

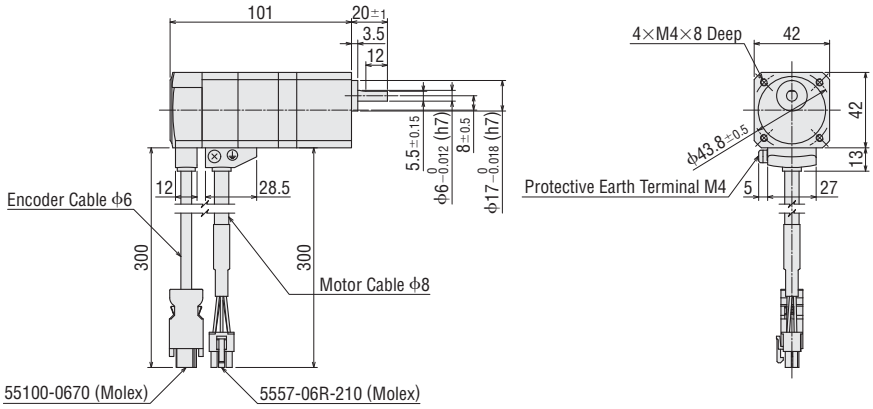
Product Name	Mass kg
AZM98MC	2.5



◇TS Geared Type

Frame Size 42 mm

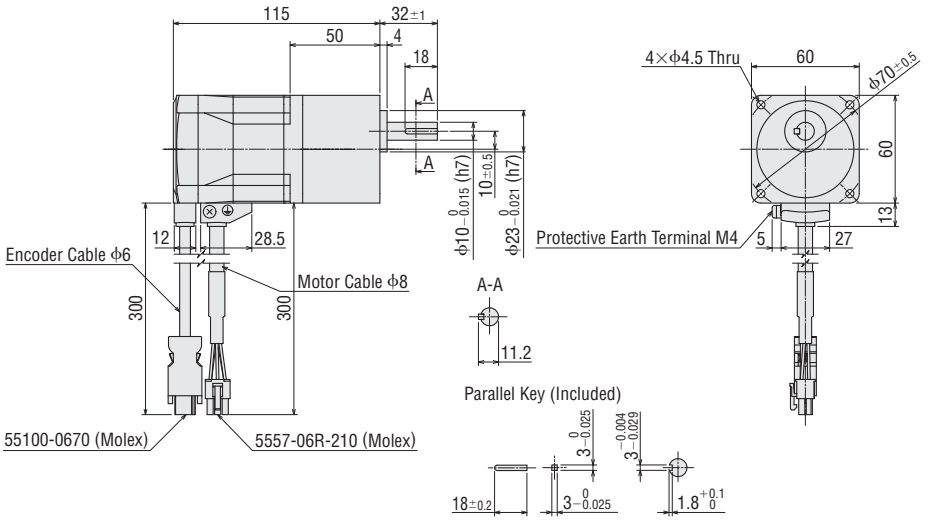
Product Name	Gear Ratio	Mass kg
AZM46AC-TS□	**3.6, 7.2, 10, 20, 30**	0.59



Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66AC-TS□	**3.6, 7.2, 10, 20, 30**	1.3

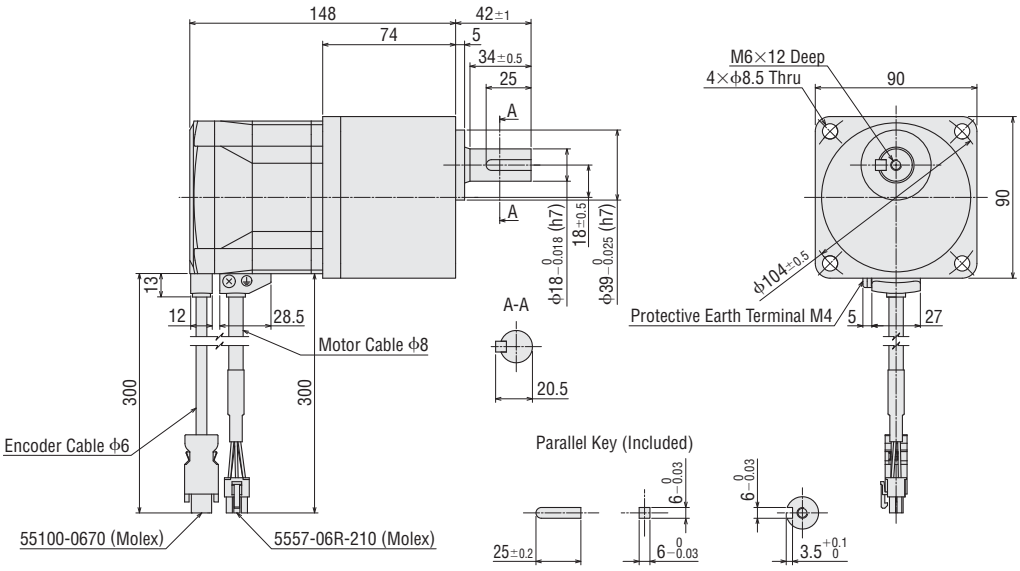
● Installation Screw: M4×60 P0.7 (4 screws included)



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98AC-TS□	**3.6, 7.2, 10, 20, 30**	3.1

● Installation Screw: M8×90 P1.25 (4 screws included)

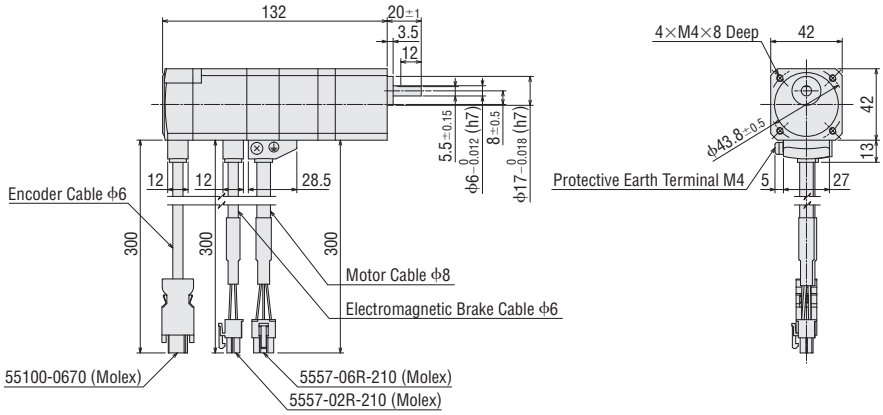


● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇TS Geared Type with Electromagnetic Brake

Frame Size 42 mm

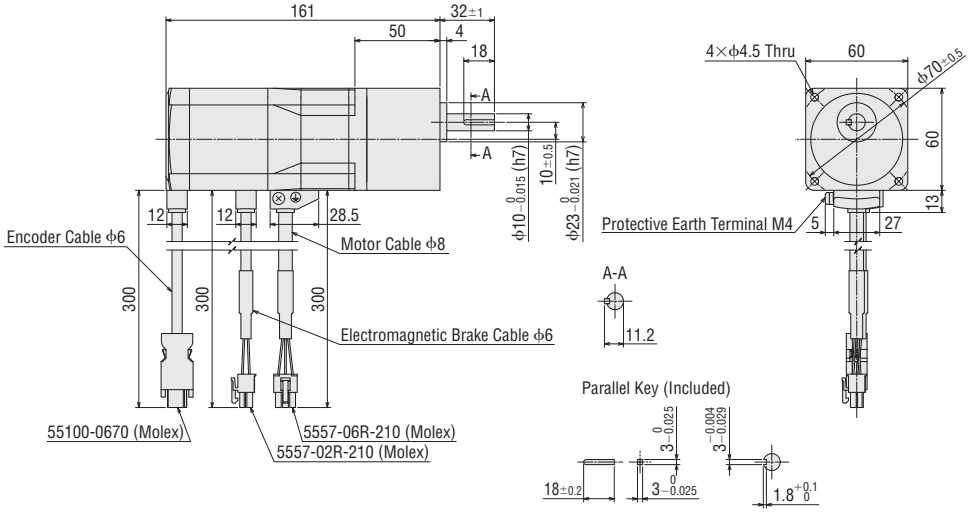
Product Name	Gear Ratio	Mass kg
AZM46MC-TS□	**3.6, 7.2, 10, 20, 30**	0.76



Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66MC-TS□	**3.6, 7.2, 10, 20, 30**	1.7

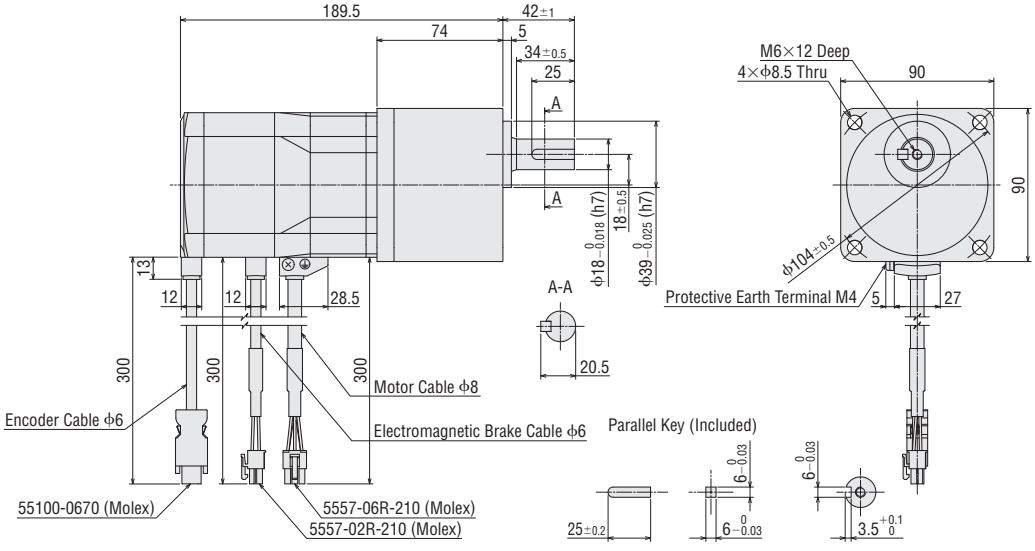
● Installation Screw: M4×60 P0.7 (4 screws included)



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98MC-TS□	**3.6, 7.2, 10, 20, 30**	3.7

● Installation Screw: M8×90 P1.25 (4 screws included)

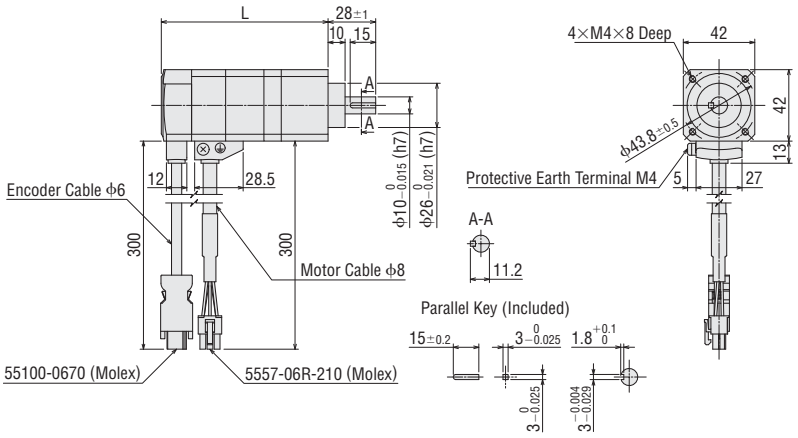


● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇PS Geared Type

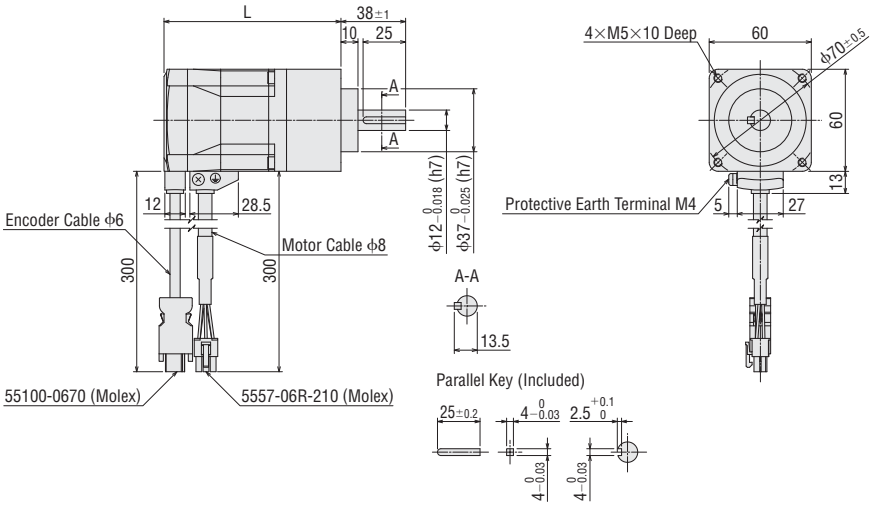
Frame Size 42 mm

Product Name	Gear Ratio	L	Mass kg
AZM46AC-PS□	5, 7.2, 10	98	0.64
	25, 36, 50	121.5	0.79



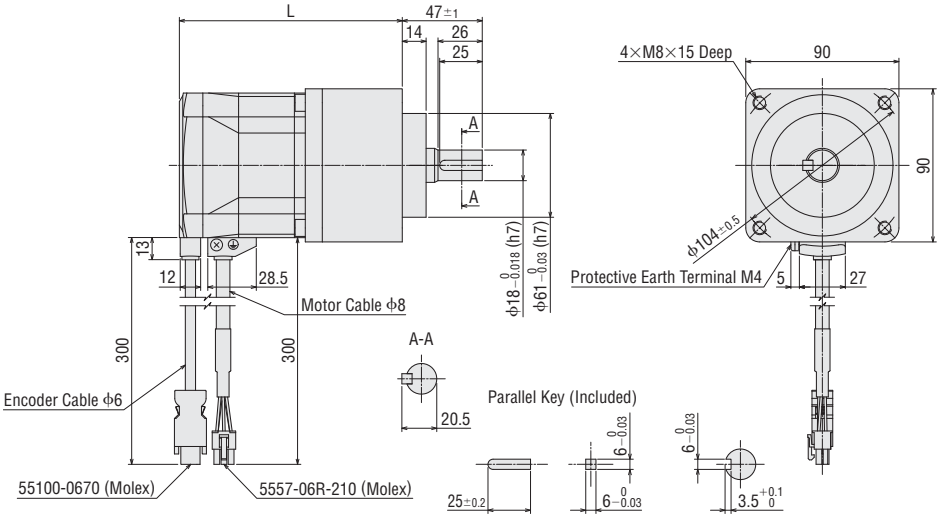
Frame Size 60 mm

Product Name	Gear Ratio	L	Mass kg
AZM66AC-PS□	5, 7.2, 10	104	1.3
	25, 36, 50	124	1.6



Frame Size 90 mm

Product Name	Gear Ratio	L	Mass kg
AZM98AC-PS□	5, 7.2, 10	131	3.3
	25, 36, 50	158.5	4.1

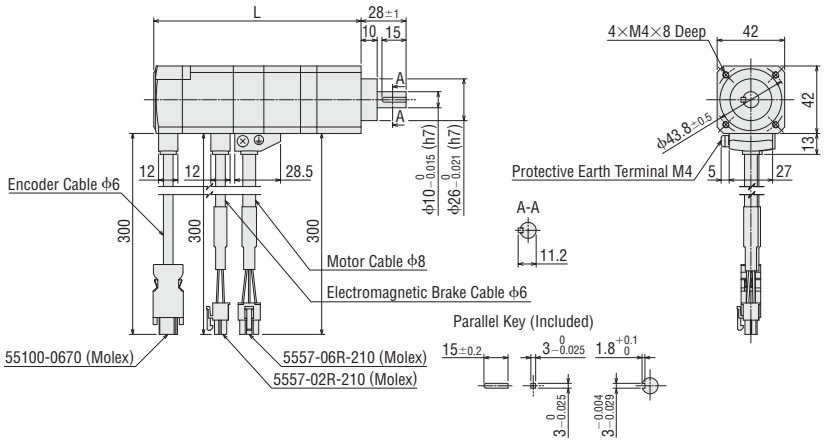


● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇PS Geared Type with Electromagnetic Brake

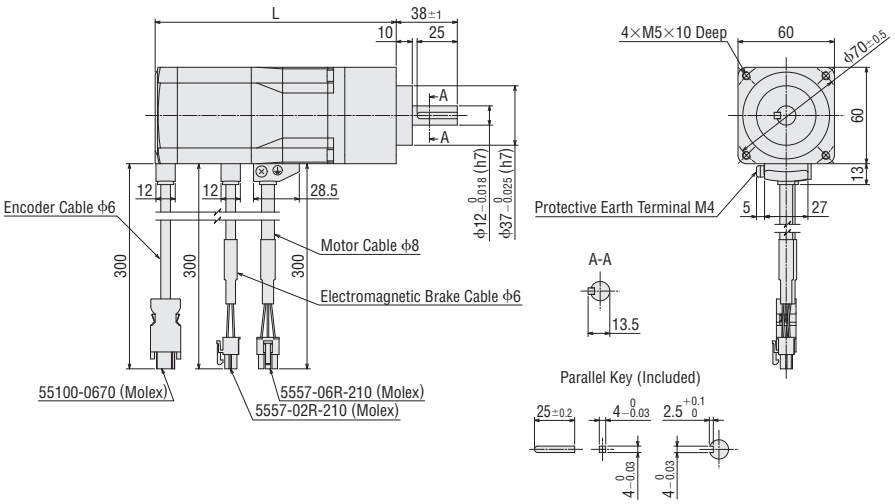
Frame Size 42 mm

Product Name	Gear Ratio	L	Mass kg
AZM46MC-PS□	**5, 7.2, 10**	129	0.81
	25, 36, 50	152	0.96



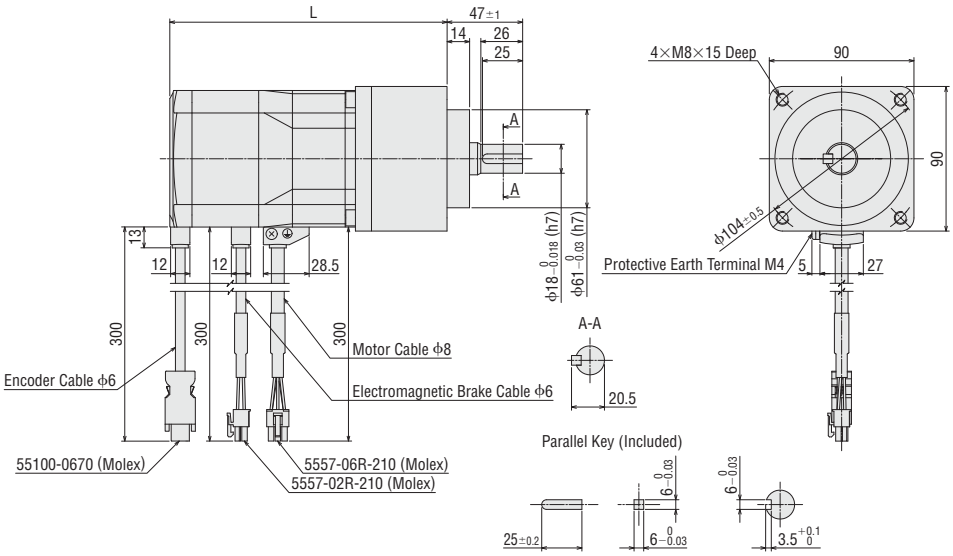
Frame Size 60 mm

Product Name	Gear Ratio	L	Mass kg
AZM66MC-PS□	**5, 7.2, 10**	150	1.7
	25, 36, 50	170	2.0



Frame Size 90 mm

Product Name	Gear Ratio	L	Mass kg
AZM98MC-PS□	**5, 7.2, 10**	172.5	3.9
	25, 36, 50	200	4.7

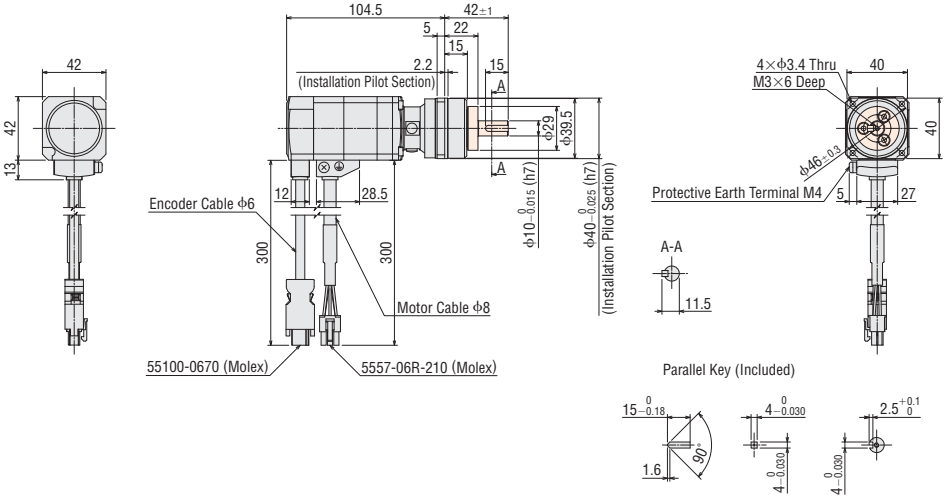


● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇HPG Geared Type Shaft Output Type

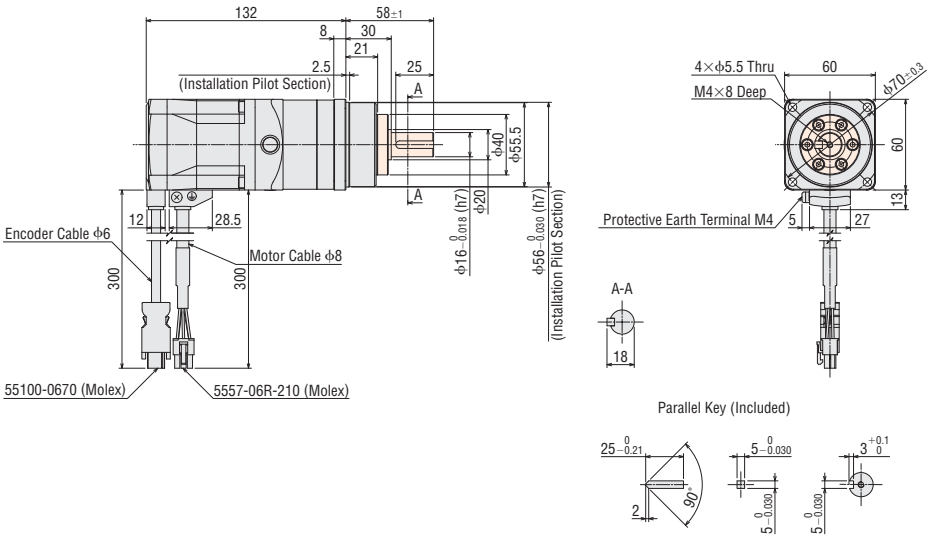
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46AC-HP□	**5, 9**	0.71



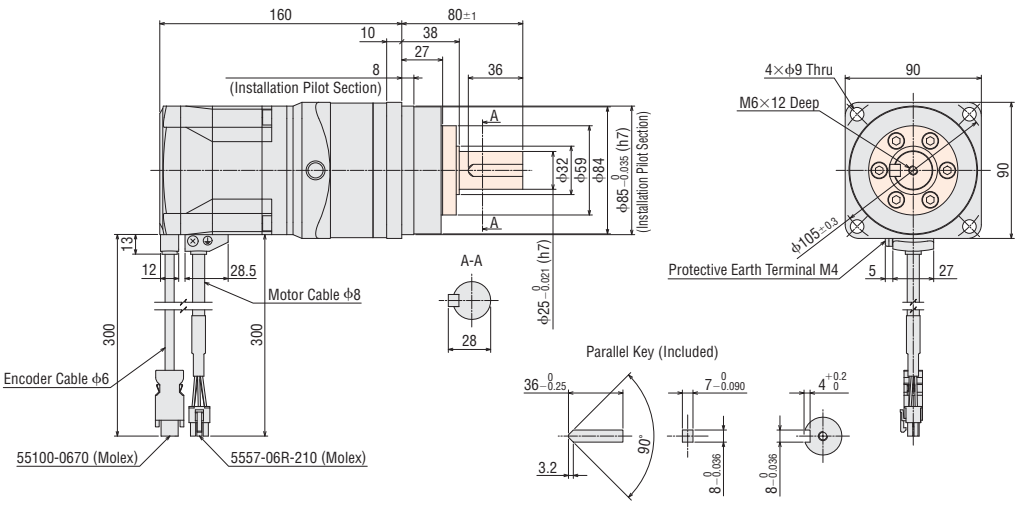
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66AC-HP□	**5, 15**	1.9



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98AC-HP□	**5, 15**	4.8

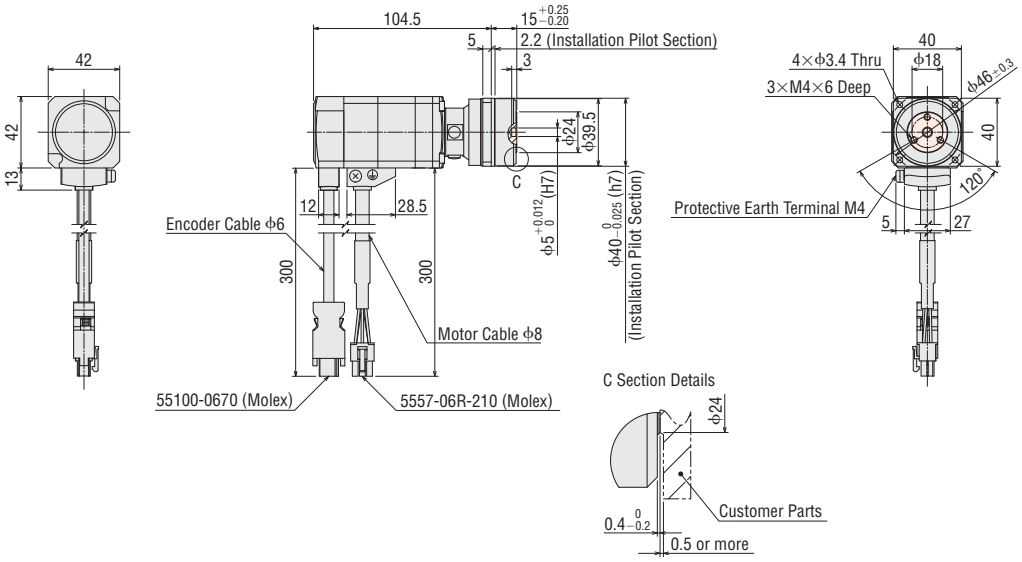


- The shaded areas in the dimensions are rotating parts.
- A number indicating the gear ratio is specified where the box □ is located in the product name.

◇HPG Geared Type Flange Output Type

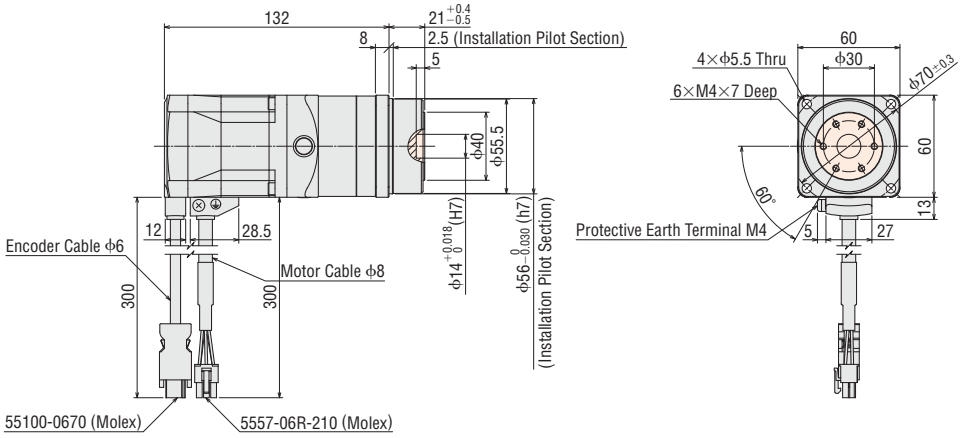
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46AC-HP□F	**5, 9**	0.66



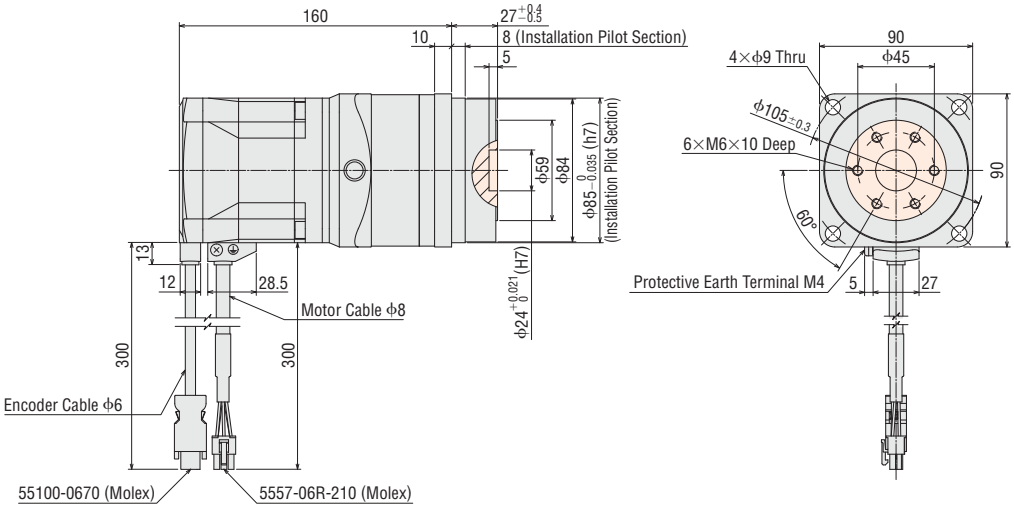
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66AC-HP□F	**5, 15**	1.8



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98AC-HP□F	**5**	4.5
	15	4.4

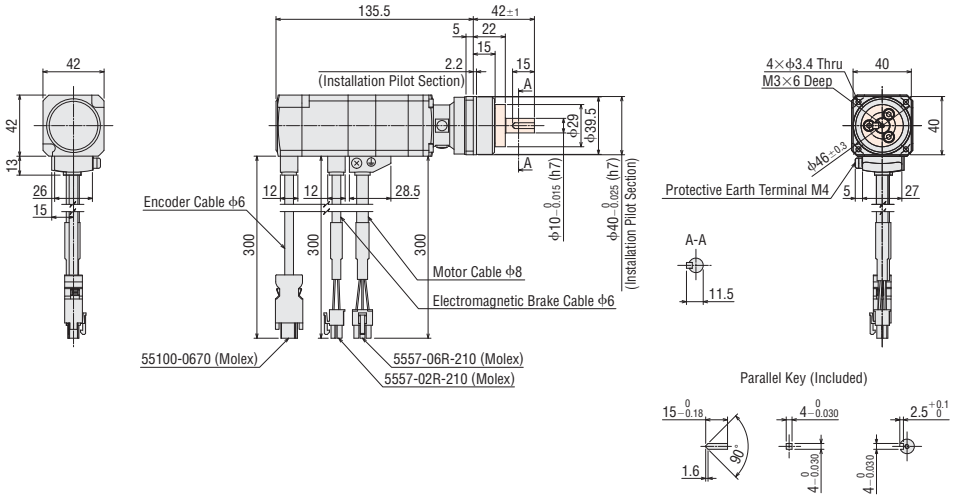


● The shaded areas in the dimensions are rotating parts.
● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇HPG Geared Type with Electromagnetic Brake Shaft Output Type

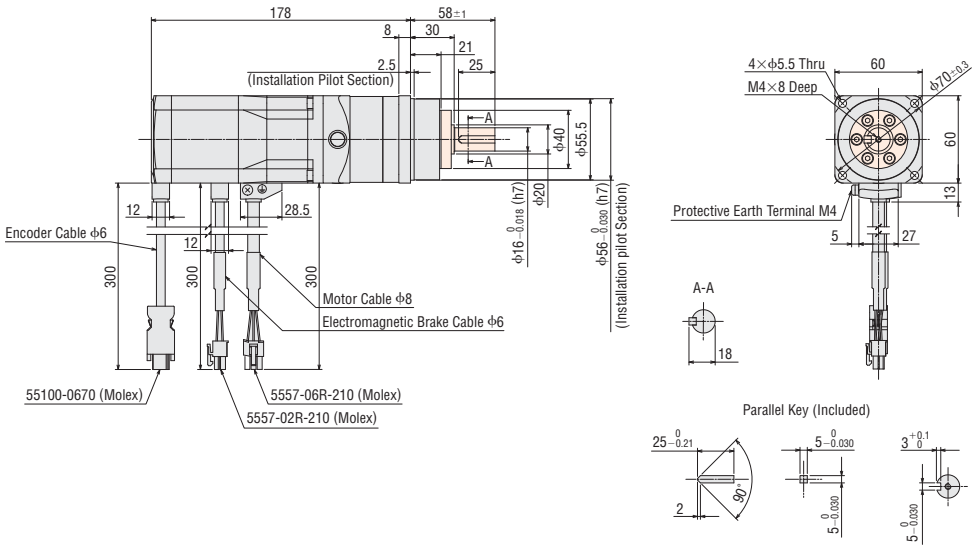
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46MC-HP■	**5, 9**	0.88



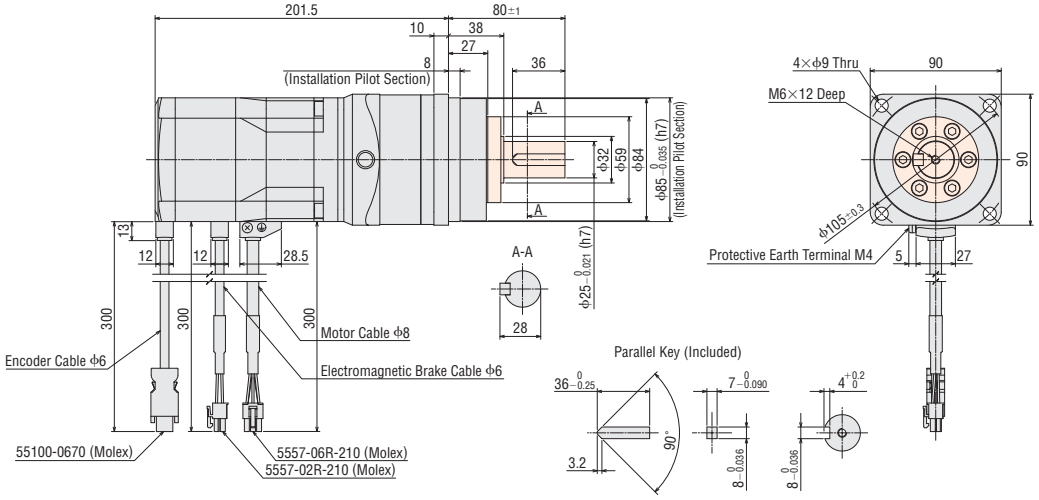
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66MC-HP■	**5, 15**	2.3



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98MC-HP■	**5, 15**	5.4

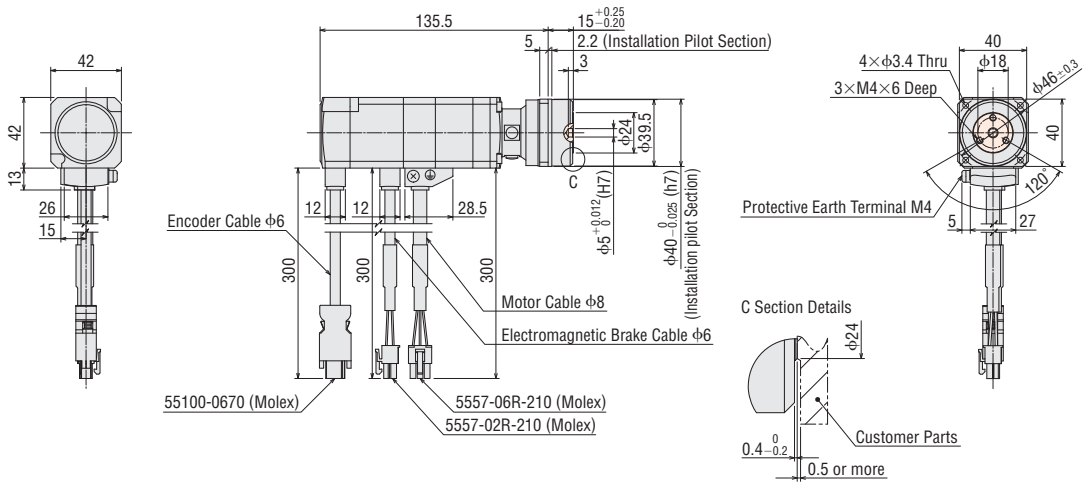


● The ▭ shaded areas in the dimensions are rotating parts.
● A number indicating the gear ratio is specified where the box ■ is located in the product name.

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

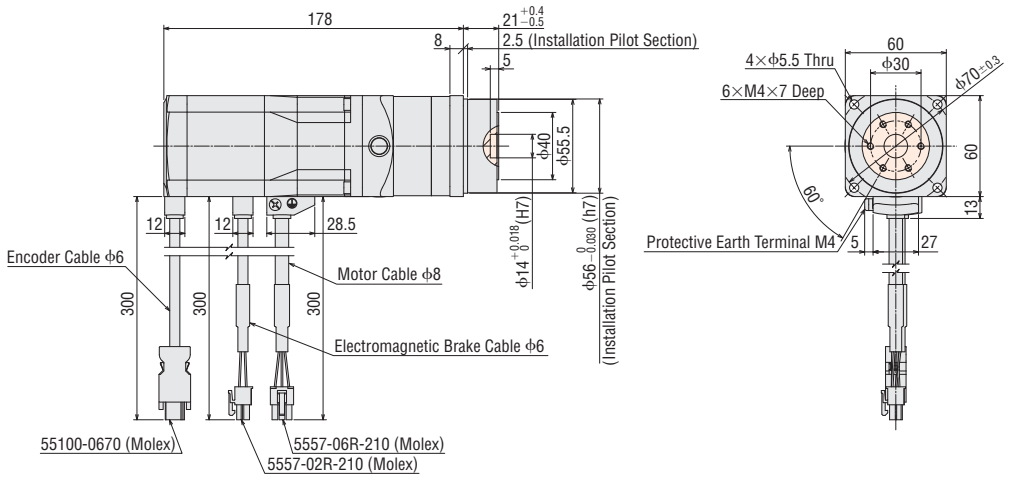
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46MC-HP□F	**5, 9**	0.83



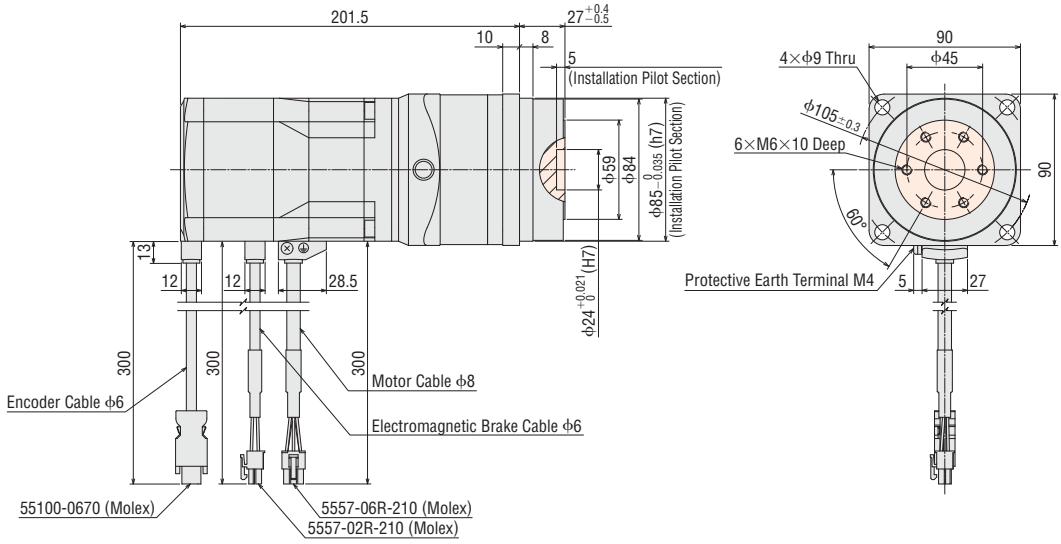
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66MC-HP□F	**5, 15**	2.2



Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98MC-HP□F	**5**	5.1
	15	5

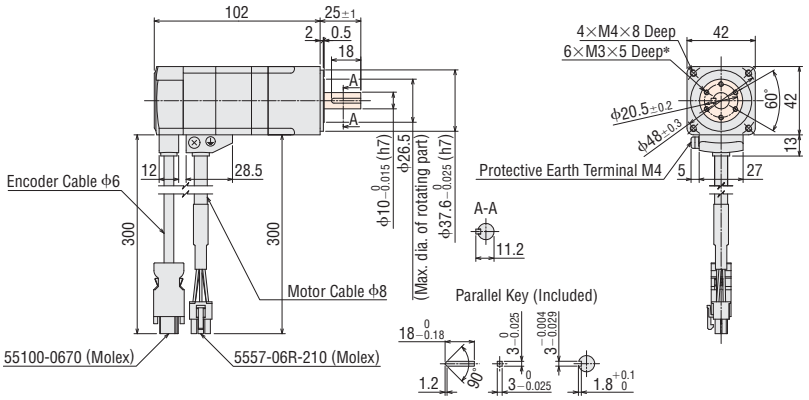


● The ▭ shaded areas in the dimensions are rotating parts.
● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇Harmonic Geared Type

Frame Size 42 mm

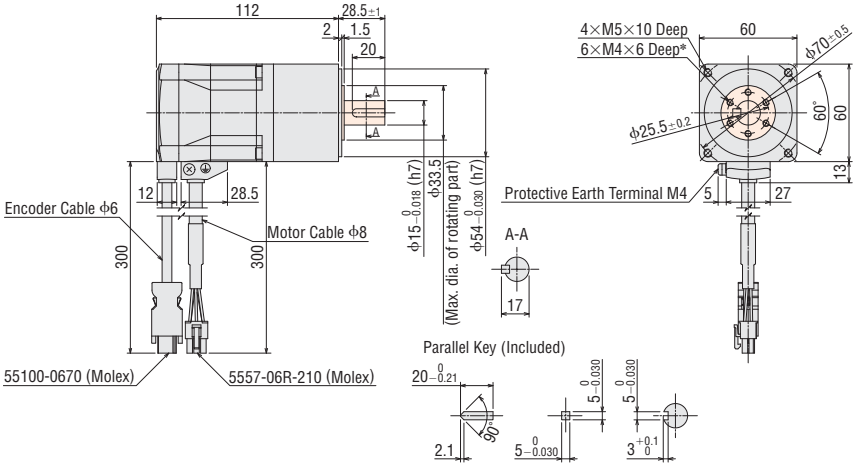
Product Name	Gear Ratio	Mass kg
AZM46AC-HS□	**50**, **100**	0.65



*The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

Frame Size 60 mm

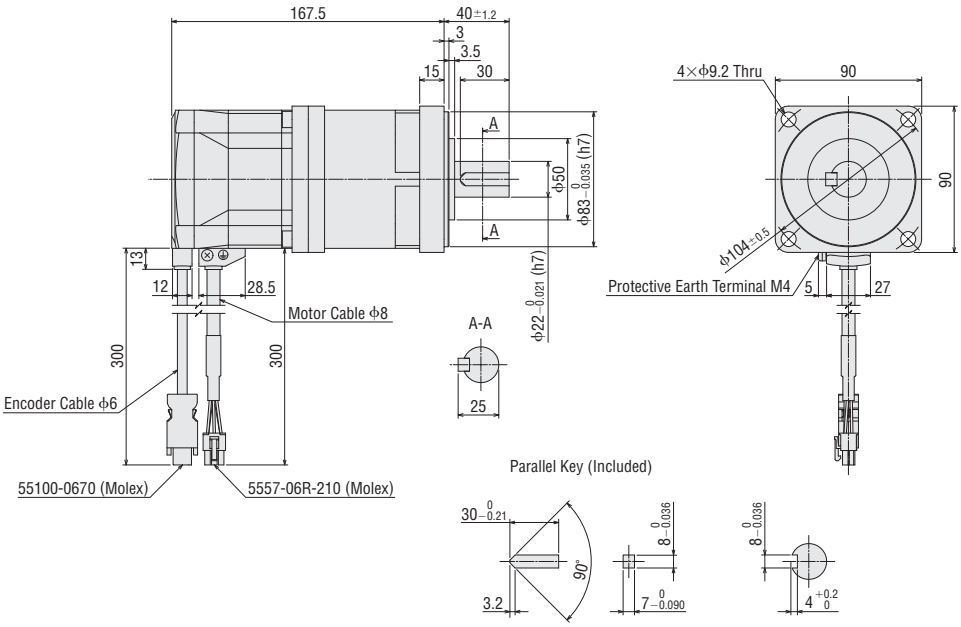
Product Name	Gear Ratio	Mass kg
AZM66AC-HS□	**50**, **100**	1.4



*The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98AC-HS□	**50**, **100**	3.9

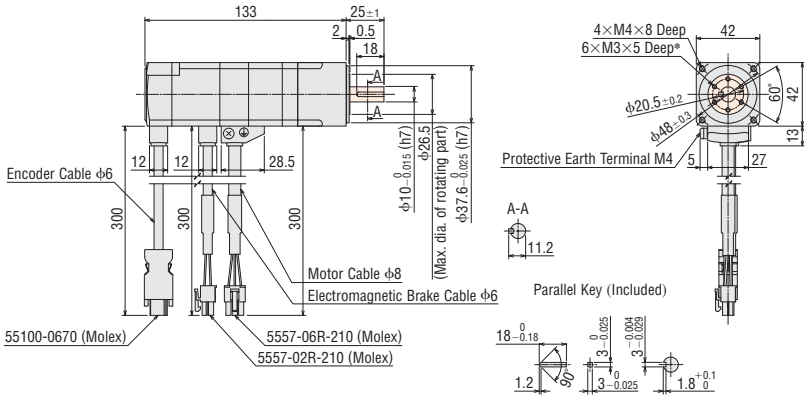


● The ▭ shaded areas in the dimensions are rotating parts.
● A number indicating the gear ratio is specified where the box □ is located in the product name.

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

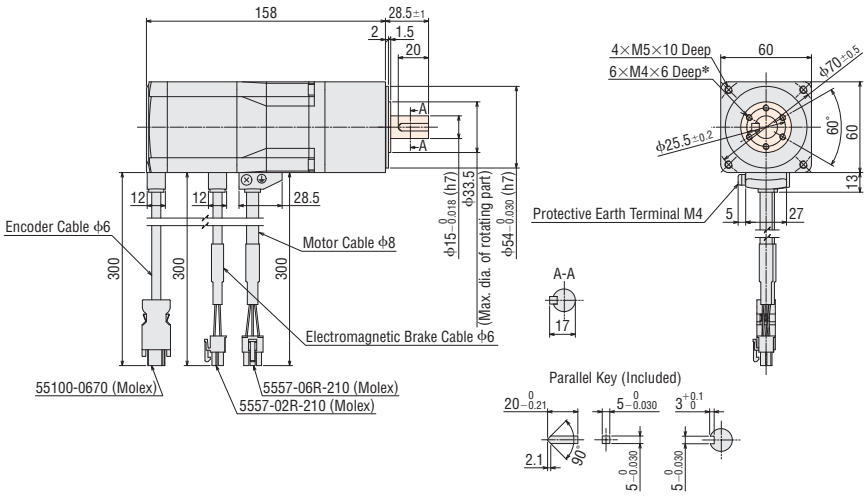
Product Name	Gear Ratio	Mass kg
AZM46MC-HS□	**50, 100**	0.82



✻The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

Frame Size 60 mm

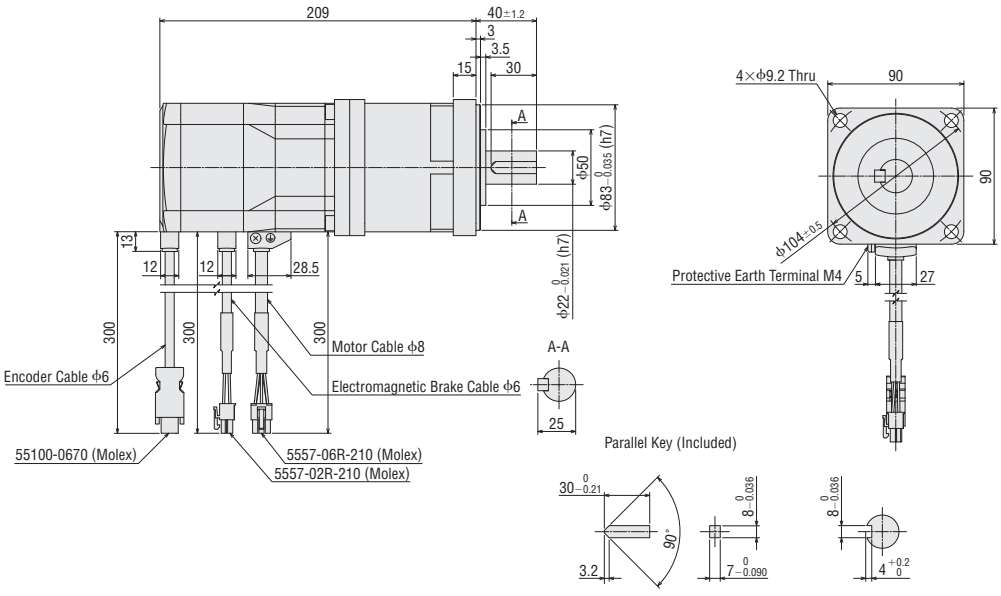
Product Name	Gear Ratio	Mass kg
AZM66MC-HS□	**50, 100**	1.8



✻The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

Frame Size 90 mm

Product Name	Gear Ratio	Mass kg
AZM98MC-HS□	**50, 100**	4.5



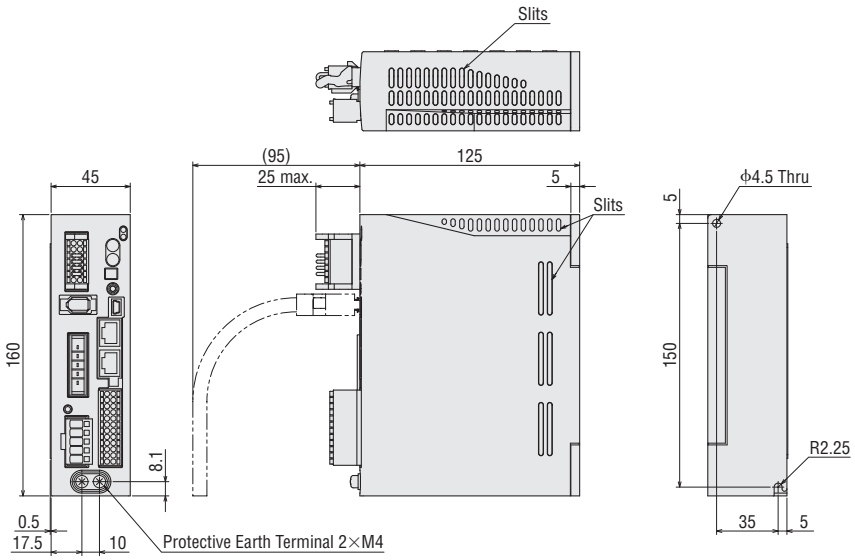
- The shaded areas in the dimensions are rotating parts.
- A number indicating the gear ratio is specified where the box □ is located in the product name.

●Driver

◇Built-in Controller Type

Product name: **AZD-CD**

Mass: 0.65 kg



●Included

Connector for Main Power/Regeneration Unit (CN4)
Connector: 05JFAT-SAXGDK-H5.0
(J.S.T.MFG.CO.,LTD.)

I/O Signals Connector (CN5)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

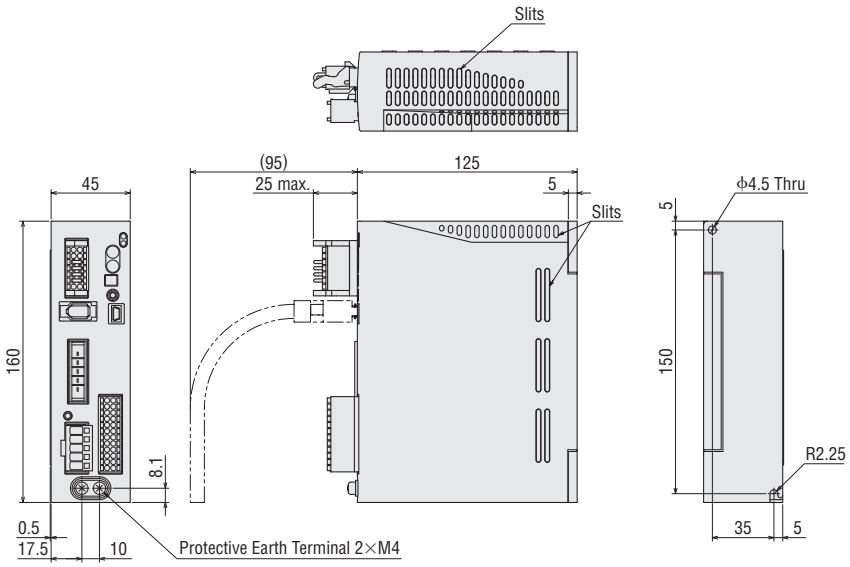
Connector for 24 VDC Power Supply Input/Electromagnetic Brake Connection/Regeneration Unit Thermal Input/Power Shut Down Signal I/O (CN1)
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT)

Connector Wiring Lever: J-FAT-0T
(J.S.T.MFG.CO.,LTD.)

◇Pulse Input Type

Product name: **AZD-C**

Mass: 0.65 kg



●Included

Connector for Main Power/Regeneration Unit (CN4)
Connector: 05JFAT-SAXGDK-H5.0
(J.S.T.MFG.CO.,LTD.)

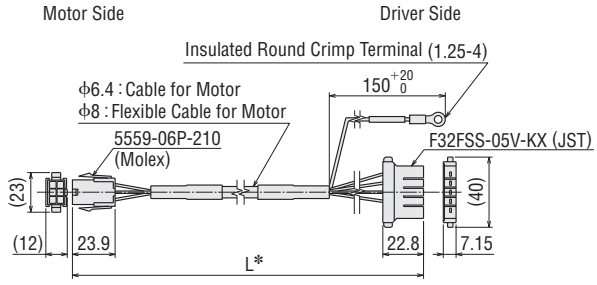
I/O Signals Connector (CN5)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT)

Connector for 24 VDC Power Supply Input/Electromagnetic Brake Connection/Regeneration Unit Thermal Input/Power Shut Down Signal I/O (CN1)
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT)

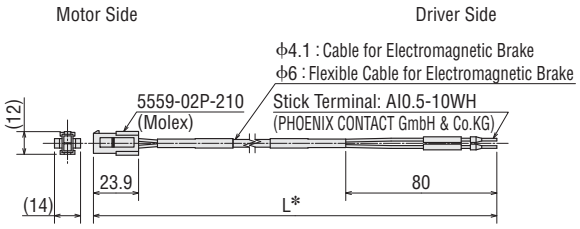
Connector Wiring Lever: J-FAT-0T
(J.S.T.MFG.CO.,LTD.)

●Connection Cable Sets/Flexible Connection Cable Sets

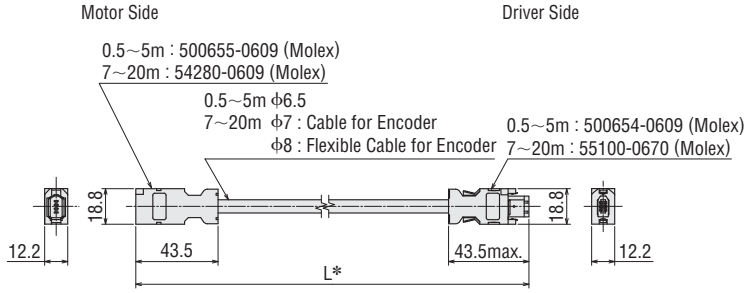
◇Cable for Motor



◇Cable for Electromagnetic Brake



◇Encoder Cable



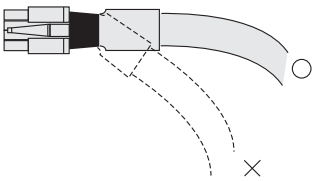
✻The length L (m) is specified where L is located in the dimensions in "■Product Line" on page A-34.

Note

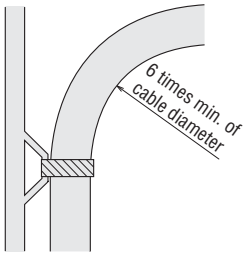
● The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use the connection cable.

■Note on Use of Flexible Cables

① Do not allow the cable to bend at the cable connector.

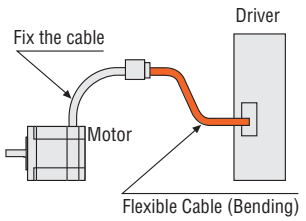


② Bending radius should be at least 6 times of the cable diameter.

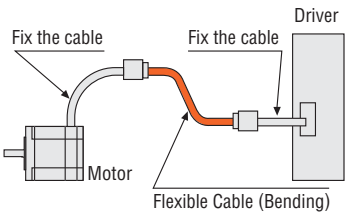


③ For the motor cable and the included cable are not used to bend and flex. Use the flexible cable in applications where the cable is bent and flexed.

- For Flexible Connection Cables



- For Flexible Extension Cables



Connection and Operation (Built-in Controller Type)

Names and Functions of Driver Parts

1 Signal Monitor Displays

◇LED Indicator

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 Axis Setting Switch

Indication	Function
ID	Set this when RS-485 communication is used. Set the axis number (factory setting: 0).

3 Baud Rate Setting Switch

Indication	Function
BAUD	Set this when RS-485 communication is used. Set the baud rate (factory setting: 7).

4 Function Setting Switch

Indication	No.	Function
SW1	1	Use in combination with the axis setting switch (ID) to set the axis number (factory setting: OFF).
	2	Set the RS-485 communication protocol (factory setting: OFF).

◇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 Terminating Resistor Setting Switch

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

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

6 I/O Signal Connector (CN5)

Indication	Pin No.	Signal Name	Content	
CN5	1	IN0	START	The signal to start the positioning operation.
	2	IN2	M1	Use 3 bits (M0, M1, and M2) to select the operating data number.
	3	IN4	ZHOME	Move to the home position set by the HOME PRESET switch.
	4	IN6	STOP	Stop the motor.
	5	IN-COM [0-7]*1	IN0～IN7 Input Common	
	6	IN8	FW-JOG	Start the JOG operation.
	7	OUT0	HOME-END	Output when the home position is fixed and the high speed return-to-home operation is complete.
	8	OUT2	PLS-RDY	Not used.
	9	OUT4	MOVE	Output when the motor is operating.
	10	OUT-COM*1	Output Common	
	11	ASG+	A-Phase Pulse Output+	
	12	BSG+	B-Phase Pulse Output+	
	13	IN1	M0	Use 3 bits, M0, M1, and M2, to select the operating data number.
	14	IN3	M2	Use 3 bits, M0, M1, and M2, to select the operating data number.
	15	IN5	FREE	Stop motor excitation.
	16	IN7	ALM-RST	Reset the alarm.
	17	IN-COM [8-9]*1	IN8, IN9 Input Common	
	18	IN9	RV-JOG	Start the JOG operation.
	19	OUT1	IN-POS	Output when the motor operation is complete.
	20	OUT3	READY	Output when the driver is prepared for operation.
	21	OUT5	ALM-B	Outputs the alarm status for the driver (normally closed).
	22	GND*1	Ground	
	23	ASG−	A-Phase Pulse Output−	
	24	BSG−	B-Phase Pulse Output−	

● Functions to assign can be set by specifying parameters. Initial values are shown above. Refer to the functions page.

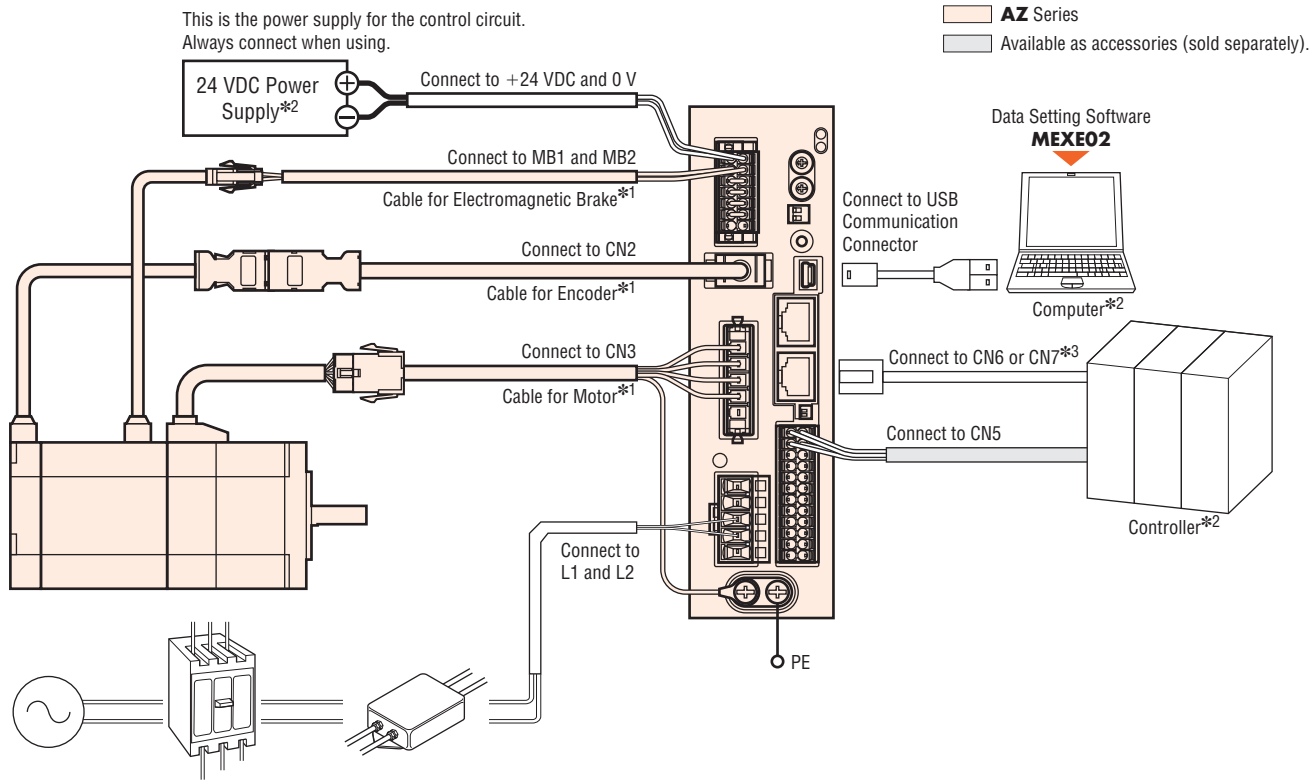
*1 The initial value setting cannot be changed.

7 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Unit Thermal Input Terminal/Power Shut Down Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Content
+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 Power	Electromagnetic Brake Connection Terminal −	For an electromagnetic brake type motor, connect the electromagnetic brake line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Unit Thermal Input Terminal	Connect the accessory (sold separately) regeneration unit (**RGB100**). When not connecting a regeneration unit, short these 2 terminals to each other.
TH2		Regeneration Unit Thermal Input Terminal	
HWTO1+	Input	Power Shut Down Signal Input Terminal 1+	Connect a switch or a programmable controller here. The supply of power to the motor is stopped without going through the CPU when the HWTO1 input or HWTO2 input is OFF.
HWTO1−		Power Shut Down Signal Input Terminal 1−	
HWTO2+		Power Shut Down Signal Input Terminal 2+	
HWTO2−		Power Shut Down Signal Input Terminal 2−	
EDM+	Output Power	Power Shut Down Monitor Output Terminal+	Connect a programmable controller here. The EDM output is ON when both the HWTO1 input and HWTO2 input are OFF.
EDM−		Power Shut Down Monitor Output Terminal−	

●Connection Diagram

◇Connections with Peripheral Equipment



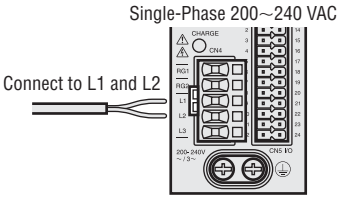
AC Power Supply

Circuit Breaker or Ground Fault Interrupter*2
Always connect to protect the primary side wiring.

Noise Filter*2
Use it for protection against noise.
Noise filter reduces noise generated from power supply and driver.

*1 When wiring the motor and the driver, keep a maximum distance of 20 m.
*2 Not supplied.
*3 If the motor is controlled through RS-485 communication, connect the controller.

◇Connecting the Main Power Supply



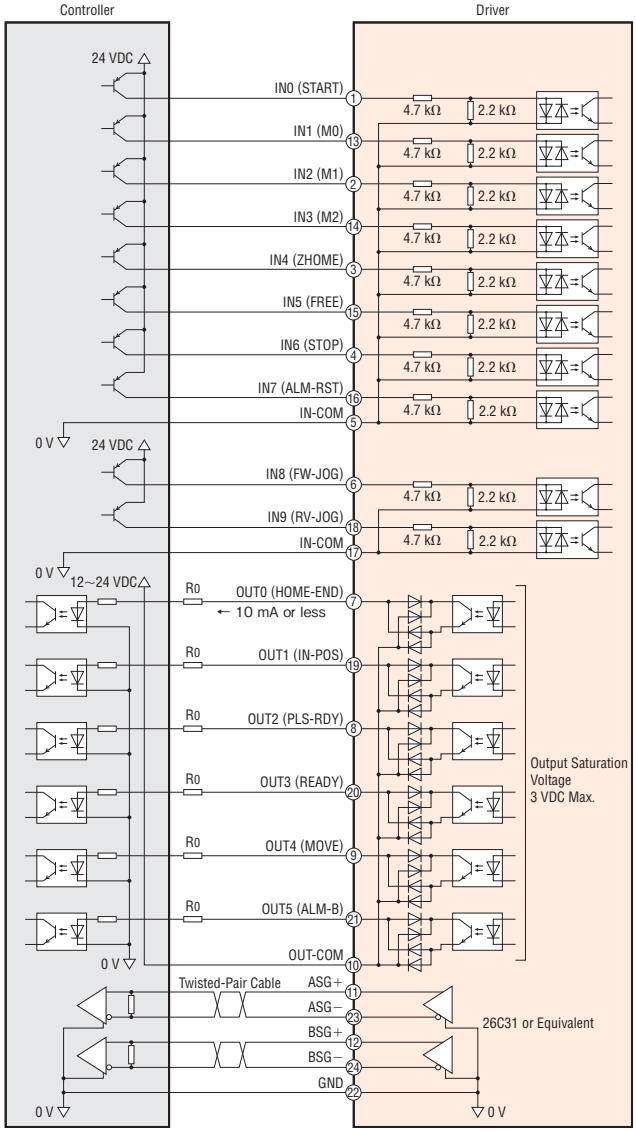
◇Connecting the USB Cable

A USB cable is required for connecting the driver to the computer on which the data setting software **MEXE02** is installed.
Use the USB cable of specifications below.

Specification	USB 2.0 (Full Speed)
Cable	Length: 3 m or less
	Configuration: A-mini-B

◇Connecting to a Programmable Controller (Built-In Controller Type)

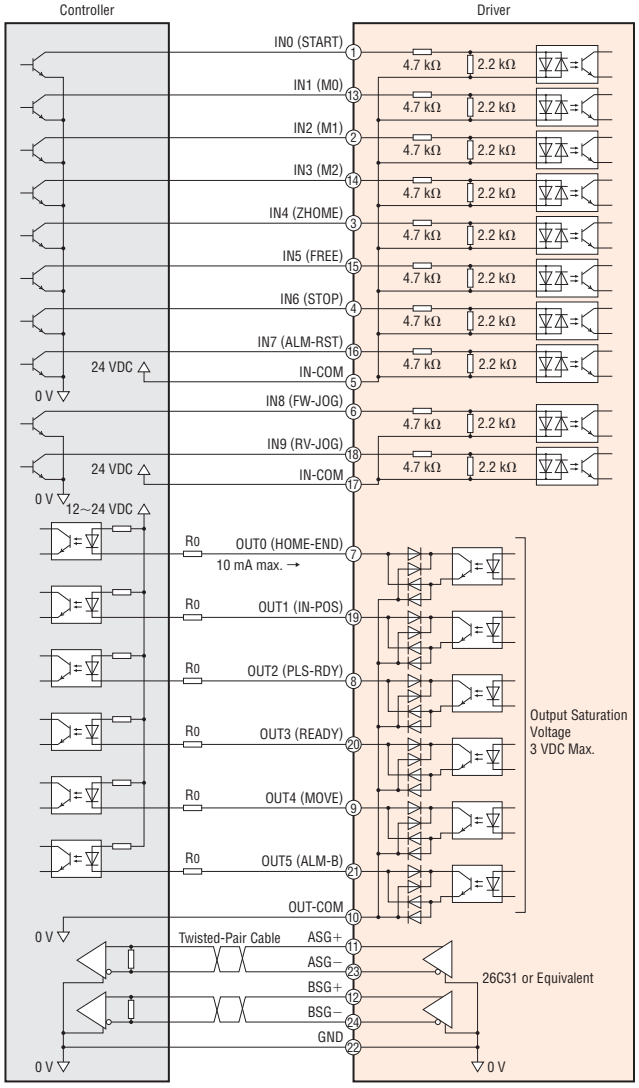
•Diagram for Connection with Current Source Output Circuit



Note

- Use 24 VDC for the input signals.
- Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor Ro to reduce the current to 10 mA or less.
- Provide a distance of 200 mm or more 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.

•Diagram for Connection with Current Sink Output Circuit

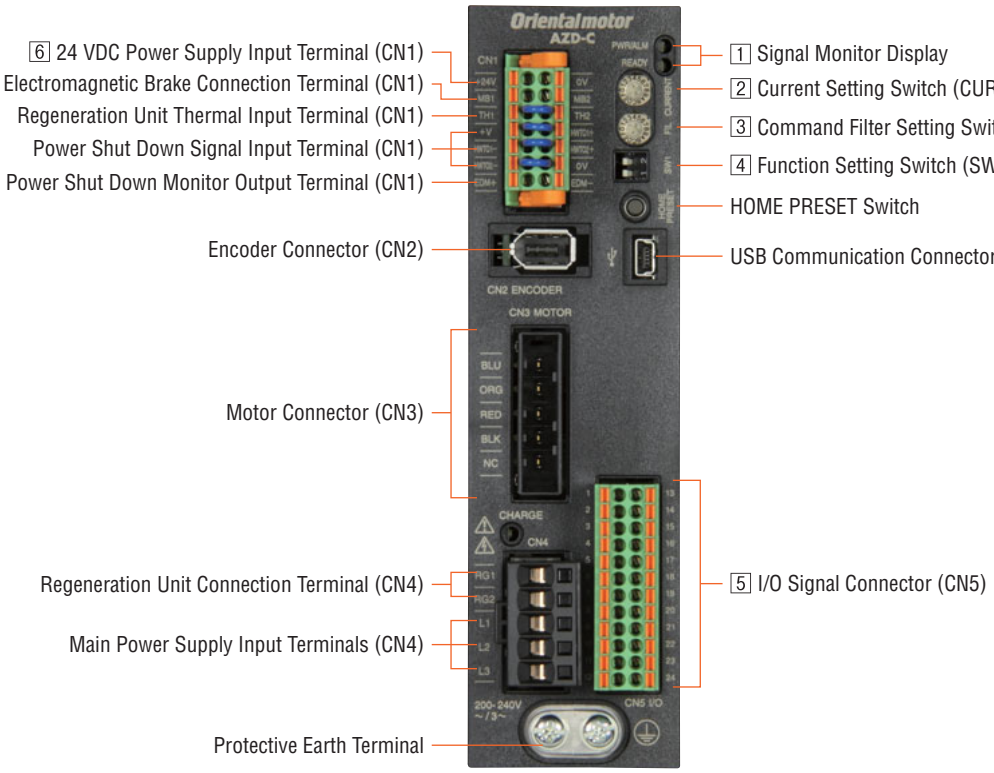


Note

- Use 24 VDC for the input signals.
- Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor Ro to reduce the current to 10 mA or less.
- Provide a distance of 200 mm or more 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 and Operation (Pulse Input Type)

Names and Functions of Driver Parts



1 Signal Monitor Displays

◇LED indicator

Indication	Color	Function	Illumination 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 power	When the READY output is ON

2 Current setting switch

Indication	Function
CURRENT	Set the basic current for 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 setting switch

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

5 I/O Signal Connector (CN5)

Indication	Pin No.	Signal name	Content	
CN5	1	PLS+ [CW+]*1	Pulse Input+ [CW Pulse Input+]	
	2	DIR+ [CCW+]*1	Rotation Direction Input+ [CCW Pulse Input+]	
	3	IN4	ZHOME	Move to the home position set by HOME PRESET switch.
	4	IN6	STOP	Stop the motor.
	5	IN-COM [4-7]*1	IN4~IN7 Input Common	
	6	IN8	FW-JOG	Start the JOG operation.
	7	OUT0	HOME-END	Output when the home position is fixed and the high speed return-to-home operation is complete.
	8	OUT2	PLS-RDY	Output when the pulse input is ready.
	9	OUT4	MOVE	Output when the motor is operating.
	10	OUT-COM*1	Output common	
	11	ASG+	A-Phase Pulse Output+	
	12	BSG+	B-Phase Pulse Output+	
	13	PLS− [CW−]*1	Pulse Input− [CW Pulse Input−]	
	14	DIR− [CCW−]*1	Rotation Direction Input− [CCW Pulse Input−]	
	15	IN5	FREE	Stop motor excitation.
	16	IN7	ALM-RST	Reset the alarm.
	17	IN-COM [8-9]*1	IN8, IN9 Input Common	
	18	IN9	RV-JOG	Start the JOG operation.
	19	OUT1	IN-POS	Output when the motor operation is complete.
	20	OUT3	READY	Output when the driver is prepared for operation.
	21	OUT5	ALM-B	Outputs the alarm status for the driver (normally closed).
	22	GND*1	Ground	
	23	ASG−	A-Phase Pulse Output−	
	24	BSG−	B-Phase Pulse Output−	

● Functions to assign can be set by specifying parameters. Initial values are shown above. Refer to the functions page.

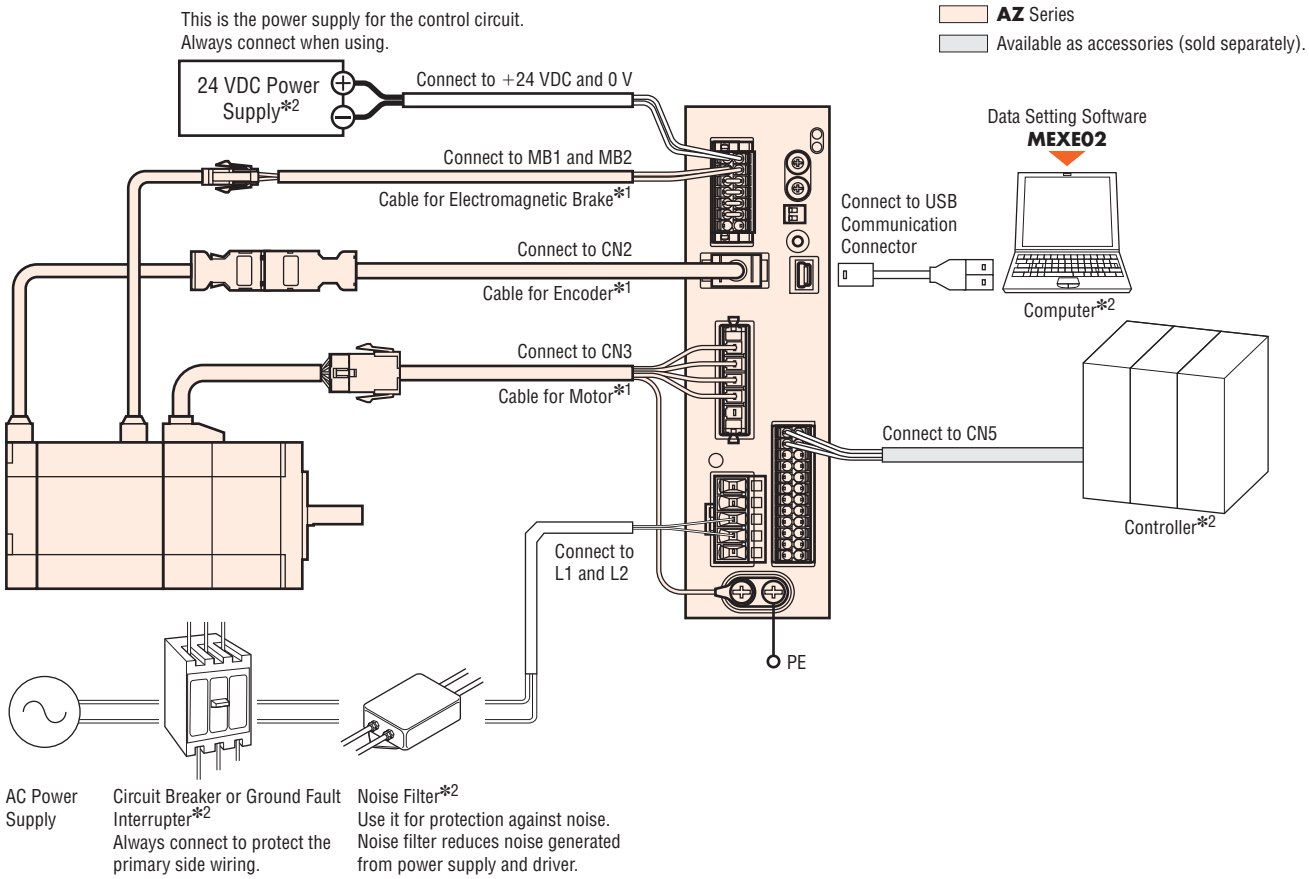
*1 The initial value setting cannot be changed.

6 24 VDC Power Supply Input Terminal/Electromagnetic Brake Connection Terminal/Regeneration Unit Thermal Input Terminal/Power Shut Down Monitor Output Terminal (CN1)

Indication	I/O	Terminal Name	Content
+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 line here.
MB2		Electromagnetic Brake Connection Terminal +	
TH1	Input	Regeneration Unit Thermal Input Terminal	Connect the accessory (sold separately) regeneration unit (**RGB100**). When not connecting a regeneration unit, short these 2 terminals to each other.
TH2		Regeneration Unit Thermal Input Terminal	
HWTO1+	Input	Power Shut Down Signal Input Terminal 1+	Connect a switch or a programmable controller here. The supply of power to the motor is stopped without going through the CPU when the HWTO1 input or HWTO2 input is OFF.
HWTO1−		Power Shut Down Signal Input Terminal 1−	
HWTO2+		Power Shut Down Signal Input Terminal 2+	
HWTO2−		Power Shut Down Signal Input Terminal 2−	
EDM+	Output	Power Shut Down Monitor Output Terminal +	Connect a programmable controller here. The EDM output is ON when both the HWTO1 input and HWTO2 input are OFF.
EDM−		Power Shut Down Monitor Output Terminal −	

●Connection diagram

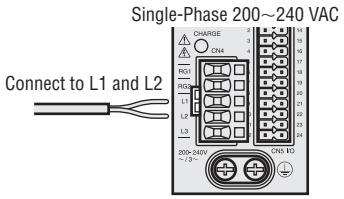
◇Connections with Peripheral Equipment



*1 When wiring the motor and the driver, keep a maximum distance of 20 m.

*2 Not supplied.

◇Connecting the Main Power Supply



◇Connecting the USB Cable

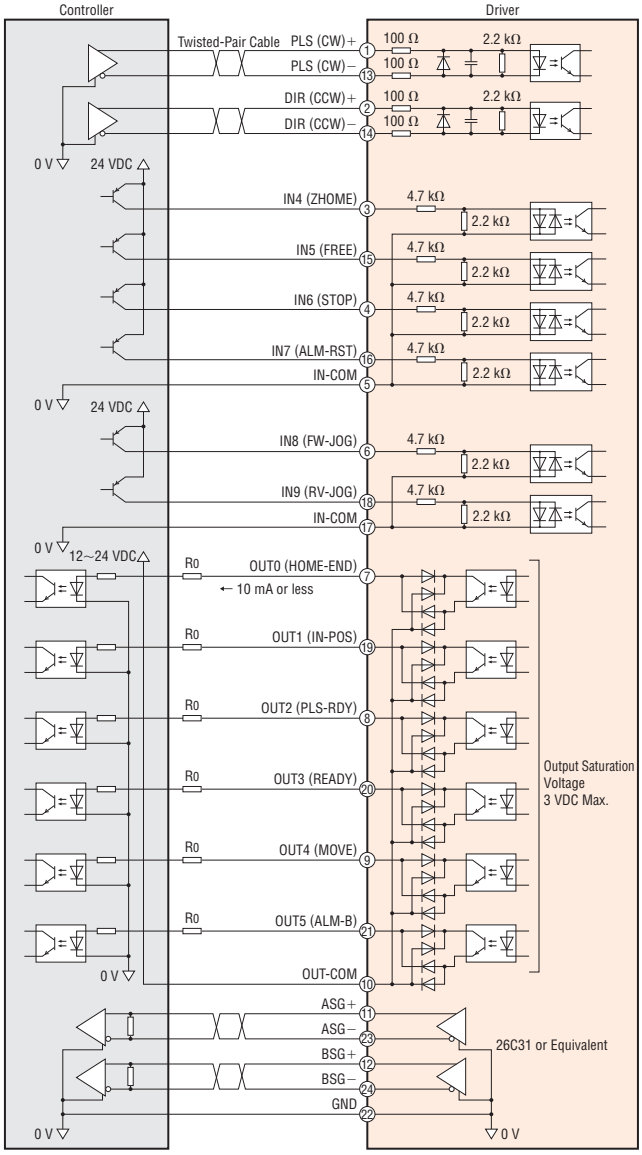
A USB cable is required for connecting the driver to the computer on which the data setting software **MEXE02** is installed.
Use the USB cable of specifications below.

Specification	USB 2.0 (Full Speed)
Cable	Length: 3 m or less
	Configuration: A-mini-B

◇Connecting to a Programmable Controller (Pulse Input Type)

•Diagram for Connection with Current Source Output Circuit

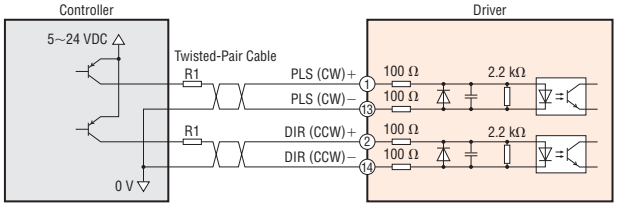
When the pulse input is the line driver



Note

- Use 24 VDC for the input signals.
- Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor R_0 to reduce the current to 10 mA or less.
- Provide a distance of 200 mm or more 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 open collector

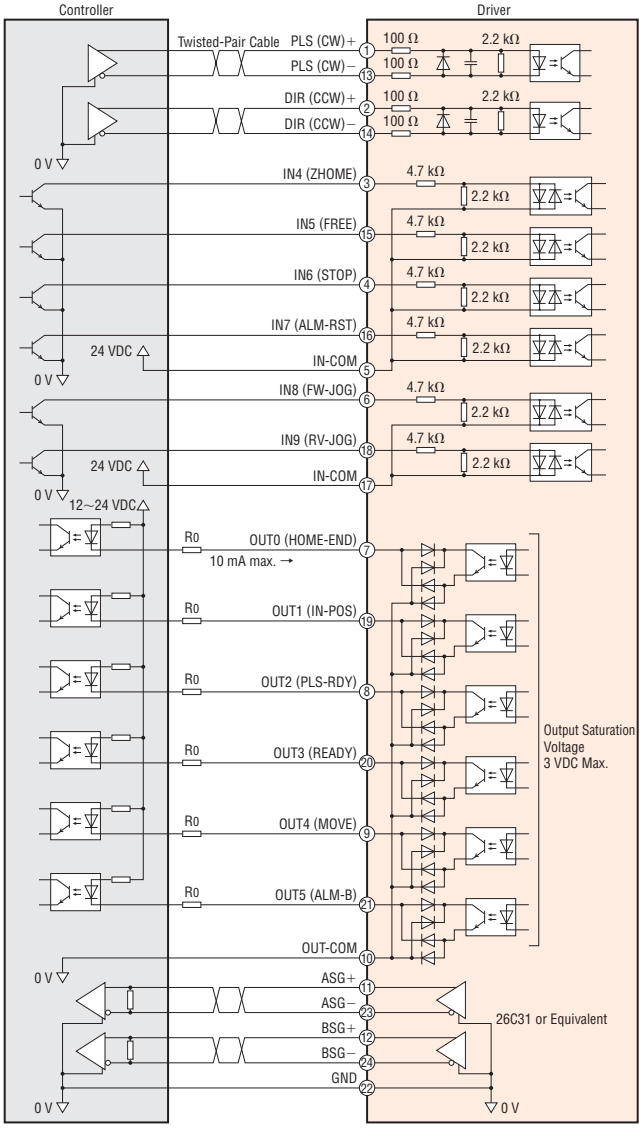


Note

- Use 5~24 VDC for PLS (CW) input and DIR (CCW) input. If voltage exceeding 5 VDC is applied, connect an external resistor R_1 so that the input current becomes 7~20 mA.

•Diagram for Connection with Current Sink Output Circuit

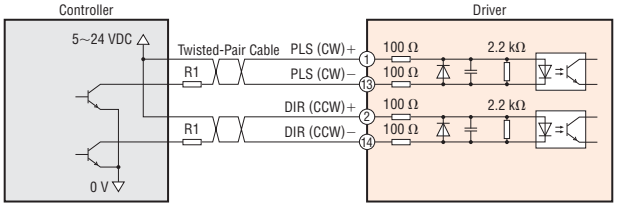
When the pulse input is the line driver



Note

- Use 24 VDC for the input signals.
- Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor R_0 to reduce the current to 10 mA or less.
- Provide a distance of 200 mm or more 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 open collector



Note

- Use 5~24 VDC for PLS (CW) input and DIR (CCW) input. If voltage exceeding 5 VDC is applied, connect an external resistor R_1 so that the input current becomes 7~20 mA.