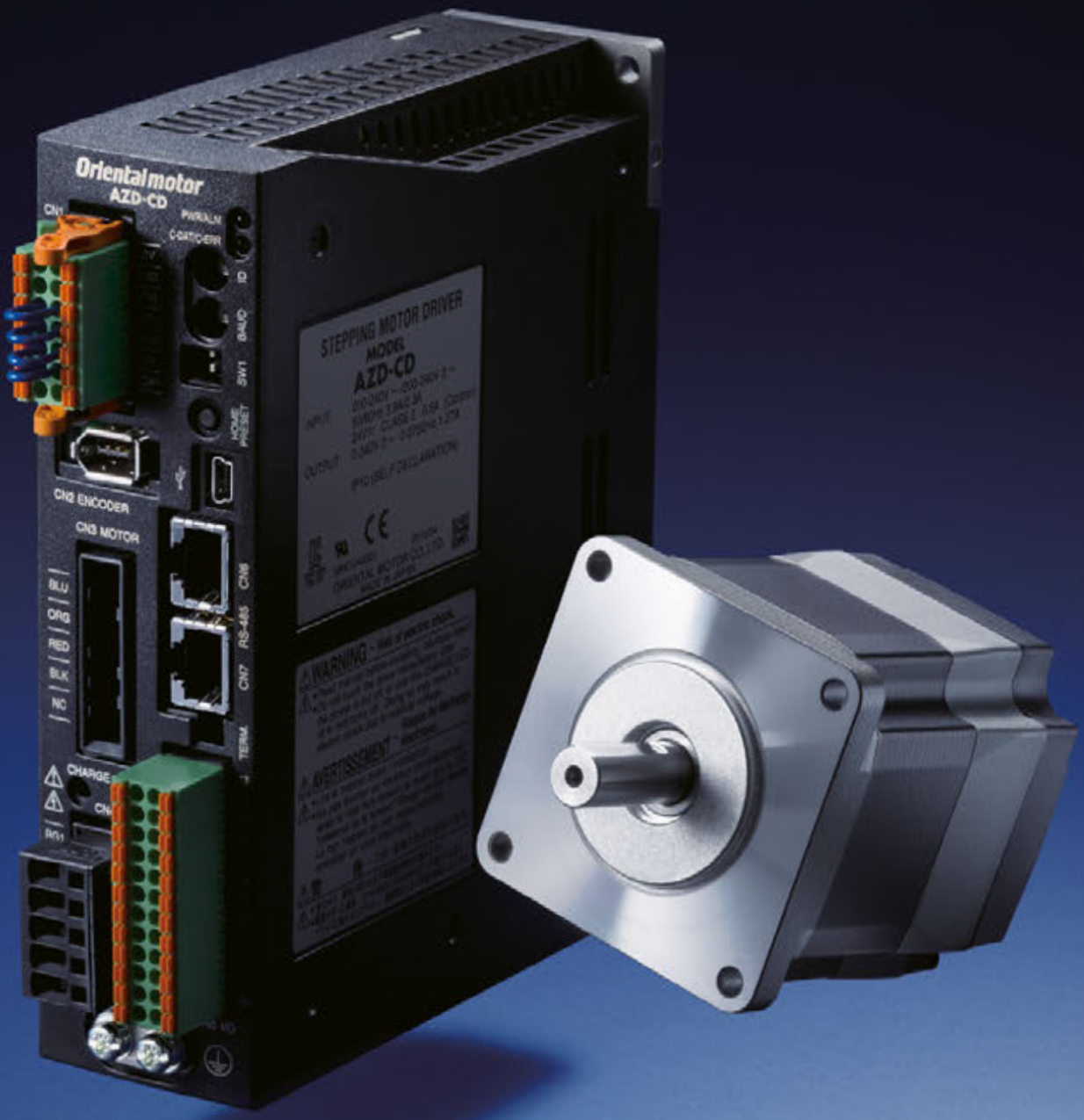
Oriental motor

Stepper Motor and Driver Package αSTEP

AZ Series

Equipped with Battery-Free Absolute Sensor

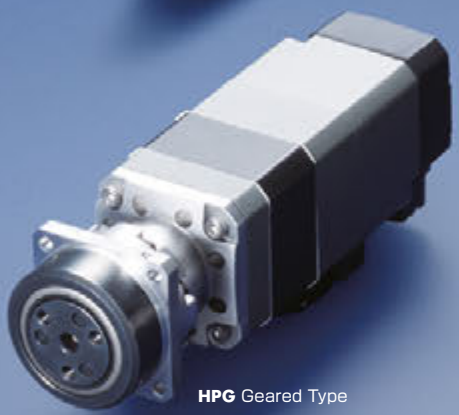


ADVANCED PERFORMANCE

Absolute × Battery-Free
Brings advanced POSITIONING close to hand.

The new **AZ** Series line-up achieves absolute positioning without the need for a battery.
As a battery is not needed this contributes to a reduction in total cost.
So the **AZ** Series offers absolute positioning for an affordable price.

*See page 12 for details on the lineup.



HPG Geared Type

PS Geared Type

□20 mm

□28 mm

□42 mm

Stepper Motor and Driver Package αSTEP

AZ Series

Equipped with Battery-Free Absolute Sensor

■ Lineup

Standard Options	□20 mm/□28 mm/□85 mm
Geared Options with Electromagnetic Brake	□42 mm/□60 mm/□90 mm

ADVANCED PERFORMANCE

Equipped with a newly developed ABZO sensor, this is advanced technology at an affordable price.

Newly developed **ABZO** sensor

We have developed a compact, low cost, battery-free mechanical absolute sensor (patented). This affordable motor series allows for productivity improvements and cost reductions.

● Mechanical Sensor

Analog clocks measure the current time based on the positions of the second hand, minute hand and hour hand. ABZO sensor is a mechanical sensor equipped with multiple gears equivalent to the hands on a clock. As it detects positioning information by detecting the angles of the respective gears, a battery is not required.

● Multirotation Absolute System

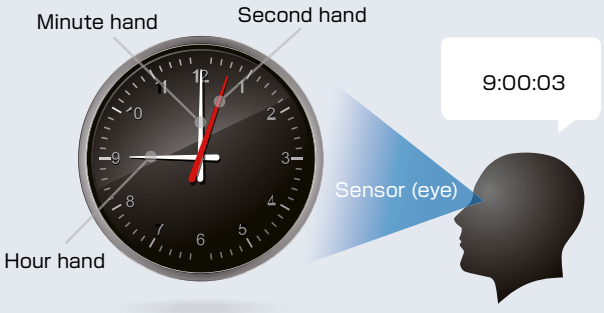
Absolute position detection is possible with ±900 rotations (1800 rotations)* of the motor shaft from the home position.

* The frame sizes 20 and 28 mm are ±450 rotations (900 rotations).

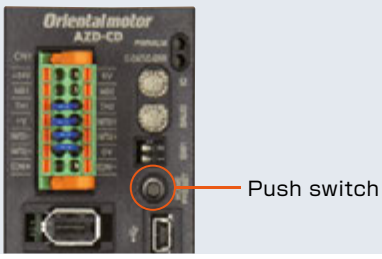
● Home Position Setting

By pressing the switch on the driver surface home position can be set simply, and the home position can be saved with the ABZO sensor. Furthermore, it is possible to set the home position using the data setting software (**MEXE02**) or the external input signal.

·Basic principles are like an analog clock



·Home Position Setting



External Sensors Not Required

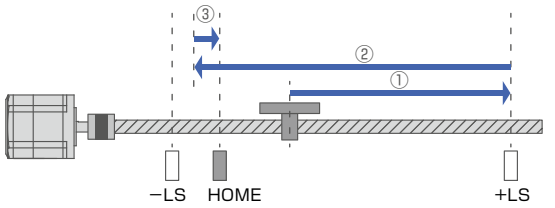
As it is an absolute system, external sensors such as the home sensor or limit sensor are not required.

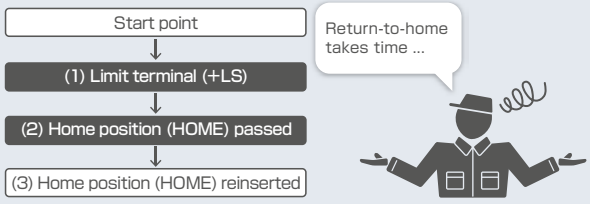
● High Speed Return-to-Home + Improved Return-to-Home Accuracy

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. Furthermore, as return-to-home can be performed without concern for differences in the home sensor, it is possible to improve home position accuracy.

Pre-ABZO homing method example

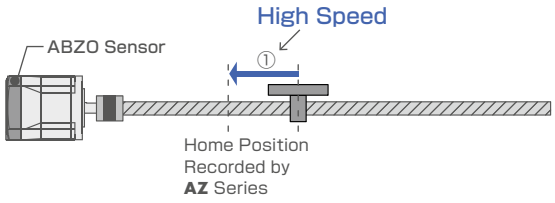
The home position is detected at low speed by detecting the limit sensor (±LS) and home sensor (HOME).





AZ Series utilising ABZO sensor homing method

There is no need to detect the limit sensor, and it moves directly at high speed to the home position recorded by the ABZO sensor.



● Cost reductions

Sensor costs and cable costs can be reduced, leading to lower system costs.

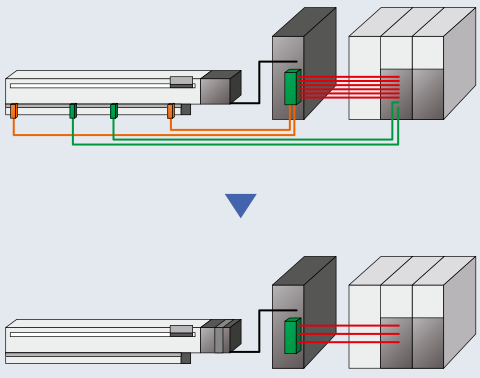
● Cable savings

This reduces cabling, increasing device design degree of freedom.

● Not affected by sensor

The **AZ** Series eliminates concerns such as sensor malfunctions, sensor faults or disconnection of the sensor lines. For example, sensor malfunctions due to metal flakes or oil mist floating about in the environment will be prevented.

●In systems where limit switches are not possible, software limits can be used to prevent the limit values being exceeded.



Achieves a Battery-Free Absolute System.

Battery-Free ABZO Sensor

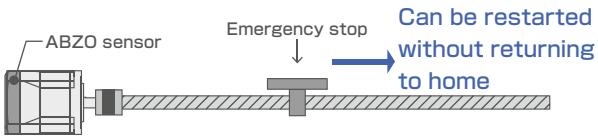
As this is a mechanical sensor, a battery is not necessary.
The positioning information is managed mechanically by the ABZO sensor.

● Maintaining Positioning Information

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 power cut.

●If the motor is temporarily replaced it is necessary to reset the home position as the positioning information is stored in the ABZO sensor.

Built-in Controller Type



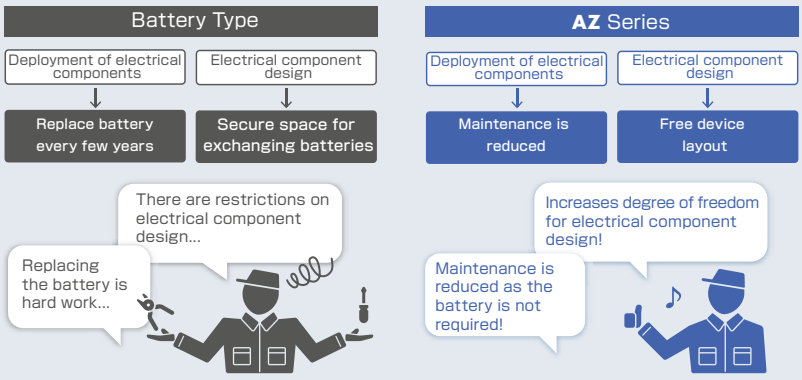
● Reduction in Maintenance

There is no need to replace the battery, so the effort and cost of maintenance is reduced.

● Drivers take up less Space

As space is not required for the battery, this frees up space within the panel for other purposes.

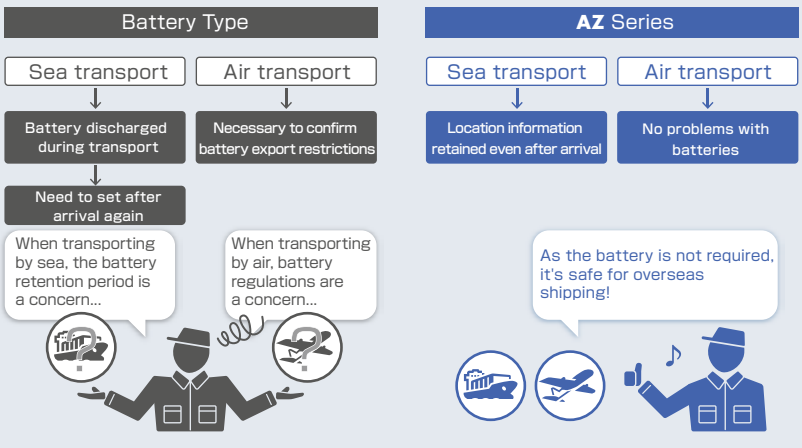
·Maintenance



● Safe for Overseas Shipping

As normal batteries are self discharging, care is required when transporting the device over long periods, such as in the case of overseas shipments. ABZO sensors do not require batteries, so there is no deadline for the storage of positioning information. Furthermore, there is no need to consider the respective regulations etc. when exporting overseas.

·Overseas Shipping



Save Energy with High Reliability and High Efficiency of αSTEP

High Reliability

We have adopted a proprietary control system.

We have achieved high reliability by linking the benefits of open loop control and closed loop control.

● Keeps driving even in the case of sudden load changes or sudden acceleration

Normally it drives with open loop control in sync with the pulse commands . At times of overload, control instantly switches to control using a closed loop, and perform positioning correction.

● Outputs an alarm signal in case an abnormality occurs

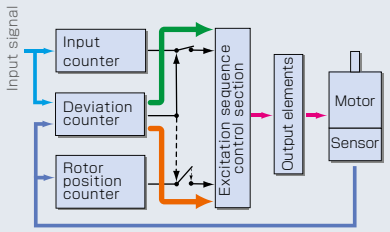
When overload continuously occurs, an alarm signal is output and when positioning determination is complete, a signal is output. This supports high reliability.

● Tuning not required

As normally it drives with open loop control, when there is a change in load, such as in the belt mechanism, cam and chain drive, the positioning can be determined without gain adjustment.

● Storing of stop position

When determining positioning, it stops using the motor's own holding torque without hunting. Therefore it is suitable for use in a situation where vibration could cause a problem when stopping due to a low-rigidity mechanism.



Normal (position deviation is less than ±1.8°)

Control is performed in open mode in the same way as with a stepper motor.

During overload, (position deviation is ±1.8° or more)

Control switches to closed mode to keep driving.

Energy Saving

Energy saving is also achieved by reducing motor heat generation through high efficiency.

● Reduced heat generation

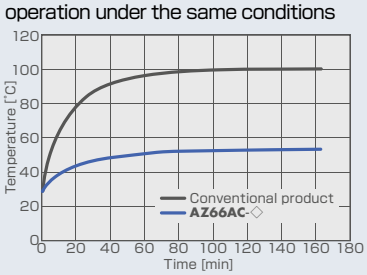
We have achieved a significant decrease in heat generation through high efficiency.

● The amount of power consumption has been reduced to 47% of its previous levels through energy saving

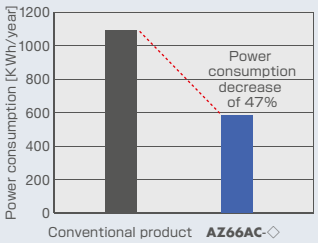
・Temperature distribution using thermography

This is an image when driving under the same conditions.

・Motor surface temperature during operation under the same conditions



・Power consumption



CO2 emissions have reduced by 47% compared to the previous levels

Drive conditions

Rotation speed 1000 r/min, load factor 50%

Usage time: 24 hour operation (drive 70%, standby 25%, stop 5%), 365 days/year

Two drivers that can be chosen based on the master control system.


Built-in Controller Type


Pulse-Input Type


RS-485 Pulse-Input Type


MultiAxis Type

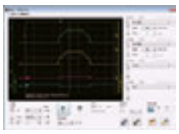
Built-in Controller Type FLEX AC DC

The built-in controller type driver allows for up-to 256 items of operating data, such as motor speed, position, acceleration / deceleration, interrupts, etc to be executed by a master controller via (1) I/O, (2) Modbus (RTU)/RS-485 or (3) FA network.

Basic Settings (setting when shipped)

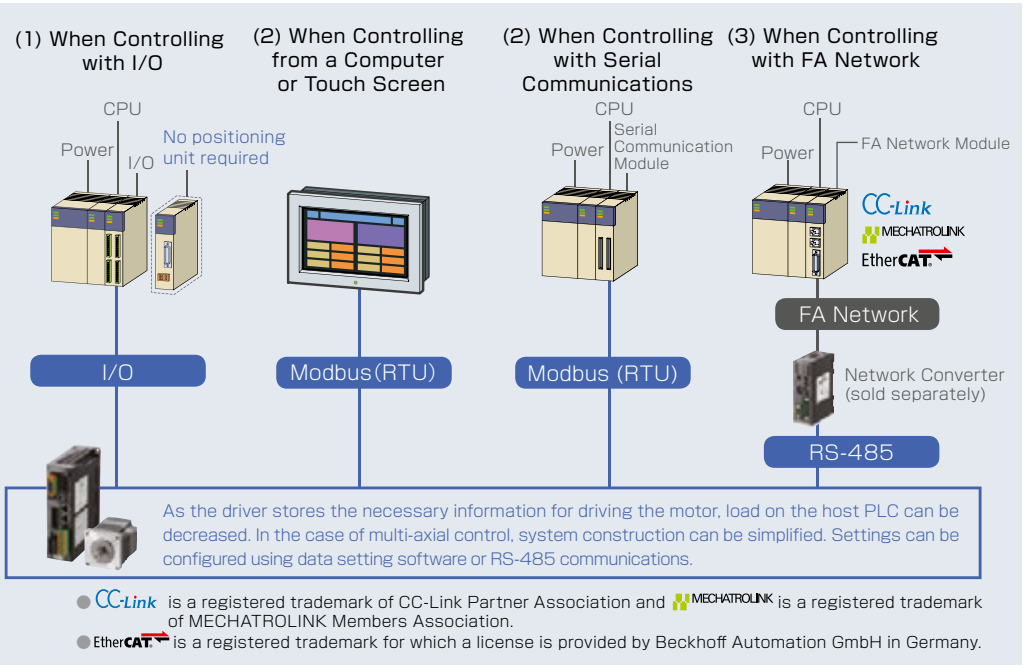
Operating Data Settings Parameter Changes

Data setting software (**MEXE02**)



- Alternatively this can be set using RS-485 communications.

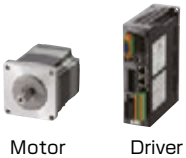
Through the use of network converters (sold separately), CC Link, MECHATROLINK and EtherCAT communications are supported. Through the available communication protocols it is possible to set the operating data, parameters, and operating commands, allowing for shorter design and build times.

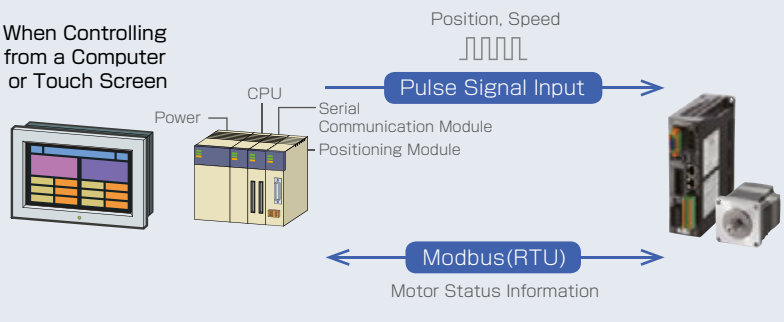


NEW Pulse-Input Type with RS-485 Communication AC DC

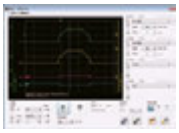
This type executes operations by inputting pulses into the driver. It controls the motor using a pulse generator. By using RS-485 communication motor status information (position, speed, torque, alarm, temperature, etc.) can be monitored.

Basic Settings (setting when shipped)





Operating Data Settings Parameter Settings Data setting software MEXE02

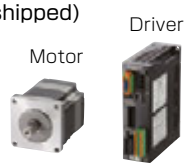


By using the MEXE02 data setting software, the alarm history can be displayed and a variety of monitoring can be customized according to the customer's needs.

Pulse-Input Type AC DC

The pulse-input type driver is driven by a pulse and direction input from a host PLC. Motion control is carried out via a pulse generator; an add on module to the PLC which must be prepared by the customer.

Basic Settings
(setting when shipped)

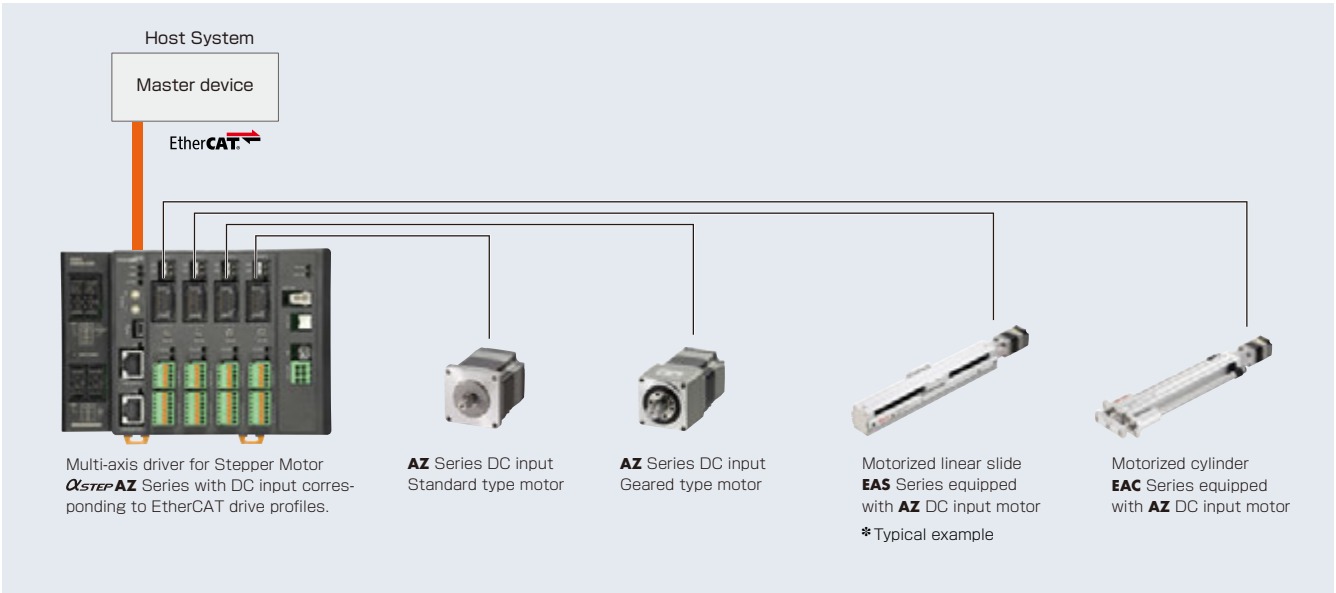


By using the data setting software (**MEXE02**), it is possible to confirm alarm history and monitor the various states.

●Data setting software (**MEXE02**) can be downloaded from the website.

NEW Network Compliant Multi-Axis Driver DC

This multi-axis driver is corresponding to EtherCAT drive profiles.
It can be connected to **AZ** Series DC input motors and to linear actuators equipped with those motors.
Drivers for 2 axes, 3 axes and 4 axes are available.



Multi-axis driver for Stepper Motor
αSTEP **AZ** Series with DC input corresponding to EtherCAT drive profiles.

AZ Series DC input
Standard type motor

AZ Series DC input
Geared type motor

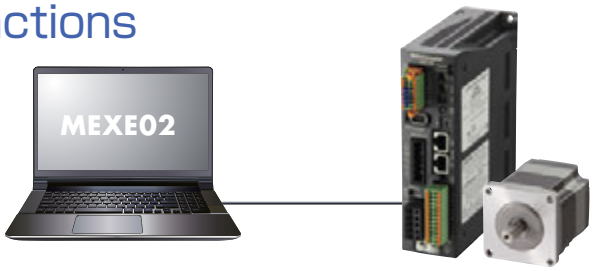
Motorized linear slide
EAS Series equipped
with **AZ** DC input motor

Motorized cylinder
EAC Series equipped
with **AZ** DC input motor

*Typical example

● EtherCAT is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.
● Data setting software (**MEXE02**) can be downloaded from the website.

Simple Settings and Usable Functions that could not be realized without **AZ**



Data setting software **MEXE02**

Data setting software can be downloaded from the website.

Simple Settings/Easy Operations

By using the **MEXE02** software it is possible to adjust the motor configuration and edit multiple operating and parameter settings. Furthermore, the built-in controller is able to carry out sequential control from multiple inputs or predefined interrupts without requiring a master controller.

● Unit-type setting wizard

The units wizard is a function which allows the engineer to input the units they wish to work with. Thereby reducing the burden of converting units when inputing operational data.

● A simple system can be realised without a master controller.

The built-in controller type driver can set and execute independently up-to 256 items of operating data, such as motor speed and index length. Furthermore, with sequential control it is possible to form a simple system without a master controller. This is ideal for index and return operations or aligned transportation, such as lifespan / durability tests.

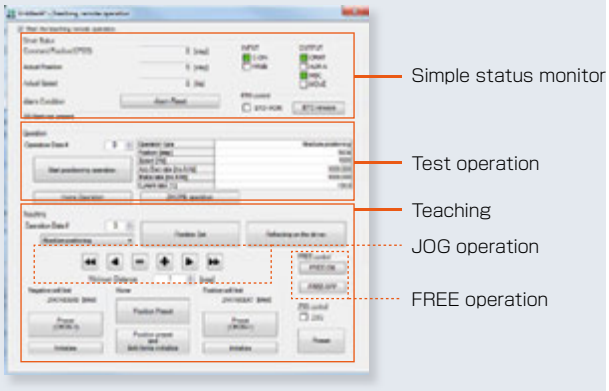
In case of questions please use our free hotline:
00800 22 55 66 22

Test Functions

Function for driving the motor independently and with which it is possible to connect with the master control system. By using during device startup, this can help to save time.

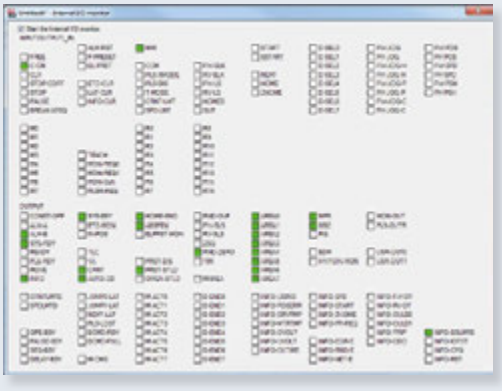
● Teaching Remote Operation At startup

It is possible to simply set home positions and drive the motor from the data setting software. Before connecting to the master control system, as it can perform teaching and test operations, this contributes to saving time for device startup.



● I/O Test At startup When driving

You can perform input signal monitoring and output signal forced output. This is a convenient function for confirming hard wiring with the master control system and the network I/O operation.

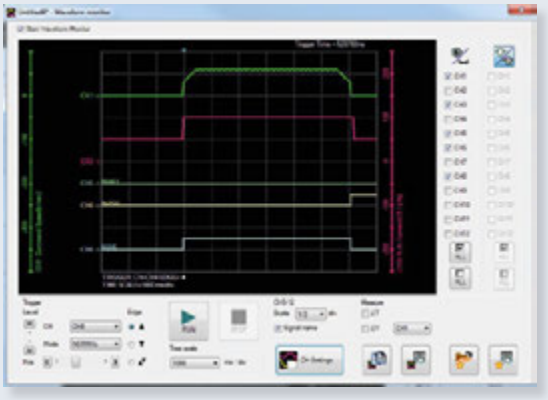


Monitor Function

Excellent monitor functions are included in order to confirm the motor driving state.
Using differently based on the various scenarios helps with device startup, shortening of adjustment time and efficient maintenance.

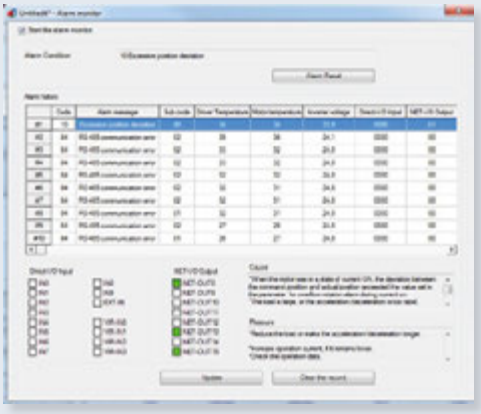
● Waveform Monitoring At startup

It is possible to monitor the motor driving state and output signal state in the same way as with an oscilloscope. Use this when starting up or adjusting the device.



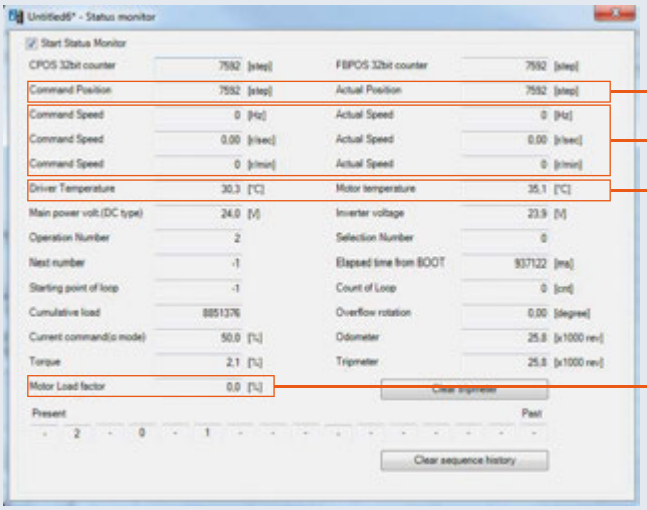
● Alarm Monitoring When driving During maintenance

When an abnormality occurred, it is possible to confirm the content of the abnormality, driving state when it occurred, and countermeasure methods. As the countermeasure method can be confirmed, the abnormality can be handled smoothly.



● Status Monitoring When driving During maintenance

When driving, it is possible to monitor speed, motor/driver temperature and load rate, as well as total revolutions from start of use. For the various items, as it is possible to set any signal to output, this is effective for efficient maintenance.



The actual position is detected in relation to the command position.

The actual speed is detected in relation to the command speed.

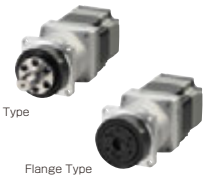
Detects the temperature within the motor encoder part and driver.

Displays the current load rate, given that the output torque for the speed during rotation is 100%.

Lineup

Motor

AC Single-Phase 200-240 VAC
DC 24/48 VDC

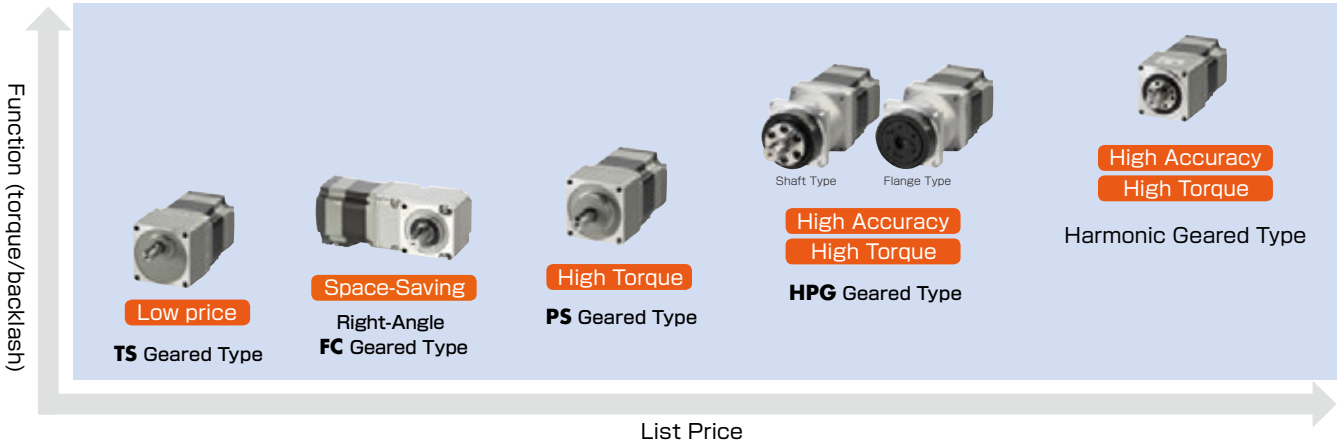
Type	Electro-magnetic Brake	Frame Size				
		20mm	28mm*6	42mm*2	60mm	85mm 90mm*4
Standard Type  Motor shaft shape One side milled/straight/with key	No	DC *1	DC *1	AC DC	AC DC	AC
	Yes	—	—	AC *3 DC *3	AC DC	AC *5
Low Backlash **TS** Geared Type (Spur Gear Mechanism)  Cable direction can be selected Downward, upward, right, left Low gear ratios, high-speed operations Gear Ratio 7.2、10、20、30	No	—	—	AC DC	AC DC	AC
	Yes	—	—	AC DC	AC DC	AC
Right Angle Gearhead **FC** Geared Type (Face Gear Mechanism)  Right-angled gearhead for positioning Gear Ratio 7.2、10、20、30	No	—	—	AC DC	AC DC	—
	Yes	—	—	AC DC	AC DC	—
PS Geared Type (Planetary Gear Mechanism)  A wide variety of gear ratios for selecting the desired step angle Gear Ratio 5、7.2、10、25、36、50	No	—	NEW DC *1	AC DC	AC DC	AC
	Yes	—	—	AC DC	AC DC	AC
Non-backlash **HPG** Geared Type (Harmonic Drive®)  Shaft Type Flange Type High positioning accuracy Gear Ratio 5、9、15	No	—	—	AC DC	AC DC	AC
	Yes	—	—	AC DC	AC DC	AC
Harmonic Geared Type (Harmonic Drive®)  High positioning accuracy Gear Ratio 50、100	No	—	NEW DC *1	AC DC	AC DC	AC
	Yes	—	—	AC DC	AC DC	AC

*1 24 VDC only *2 **HPG** geared type is 40 mm *3 only for **AZM46** *4 in case of geared type *5 only for **AZM98** *6 Harmonic gear type is 30 mm

Notes

- 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 are registered trademarks and trademarks of Harmonic Drive Systems Inc.

As a variation on stepper motors, we have prepared a geared motor in which the gears are combined.
You can select the optimal type from among each geared motor, considering torque, accuracy (backlash) and price.



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

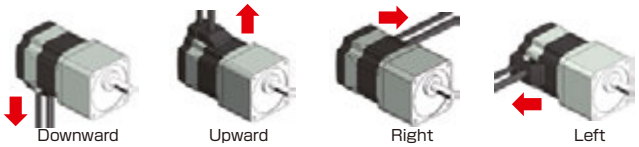
Driver

Type
Built-in Controller Type FLEX  AC DC
Pulse-Input Type with RS-485 Communication NEW  AC DC
Pulse-Input Type  AC DC
Network Compliant Multi-Axis Driver NEW  DC EtherCAT.

● FLEX is the collective name for products that support I/O control, Modbus (RTU) control and FA network control via network converters.
● EtherCAT. is a registered trademark for which a license is provided by Beckhoff Automation GmbH in Germany.

Shaft Shape and Cable Direction can be Selected to the Needs of Application.


One side milled　Straight　With key


Downward　Upward　Right　Left

The cable direction can be selected out of four directions from the output shaft.

● Standard Type

Frame Size \ Shaft Shape	One Side Milled	NEW Straight	NEW With key
20mm	●	—	—
28mm	●	—	—
42mm	●	●	● *
60mm	●	●	●
85mm	●	●	●

*AZM48 only

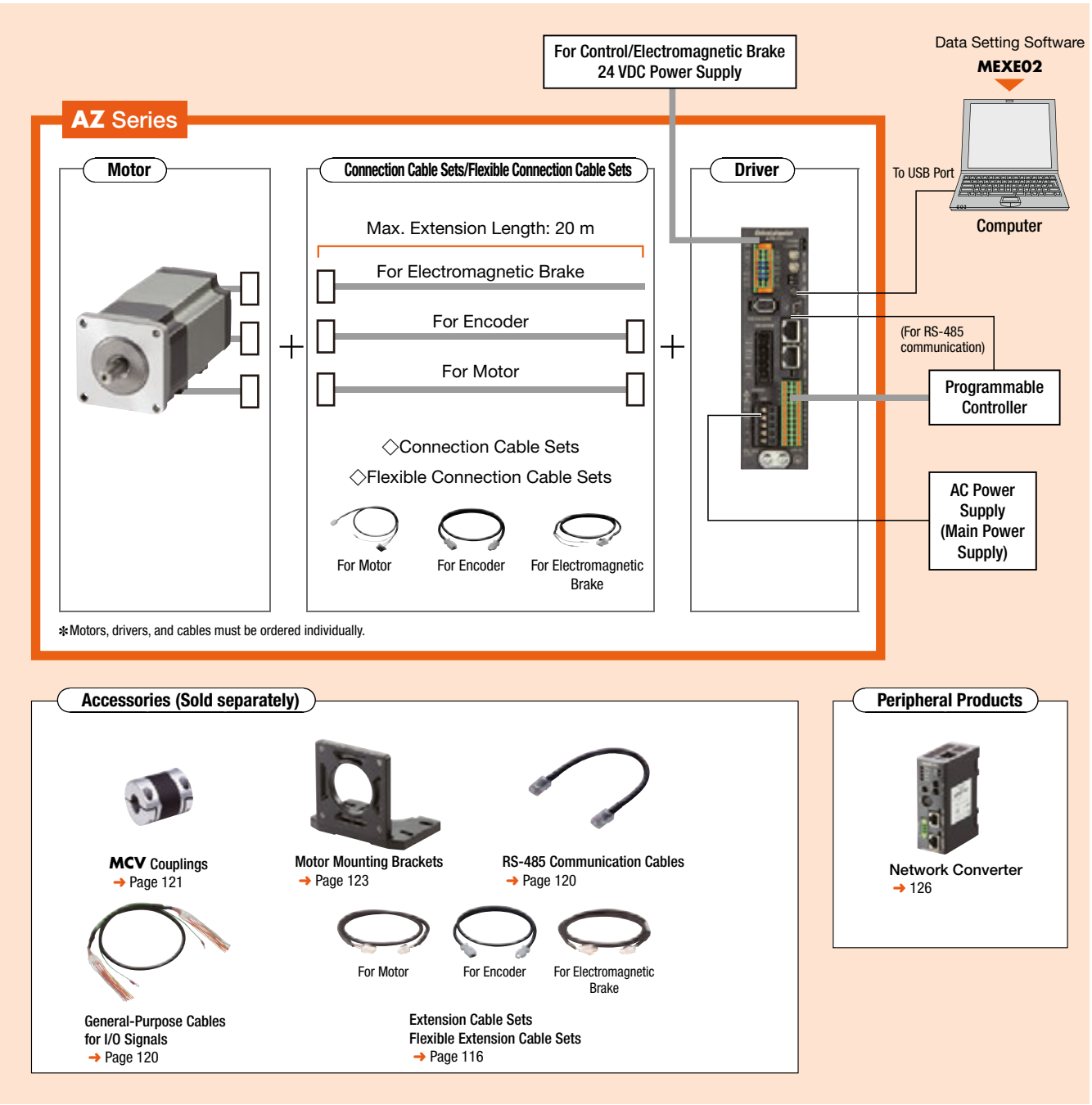
● TS Geared Type

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

System Configuration

When Combining a Magnetic Brake Type Motor with a Built-in Controller Type Driver or Pulse-Input with RS-485 Communication Driver.

An example of a system configuration when using a built-in controller type driver by I/O or by RS-485.
Motor, driver, cables should be ordered separately.



System configuration price example

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.

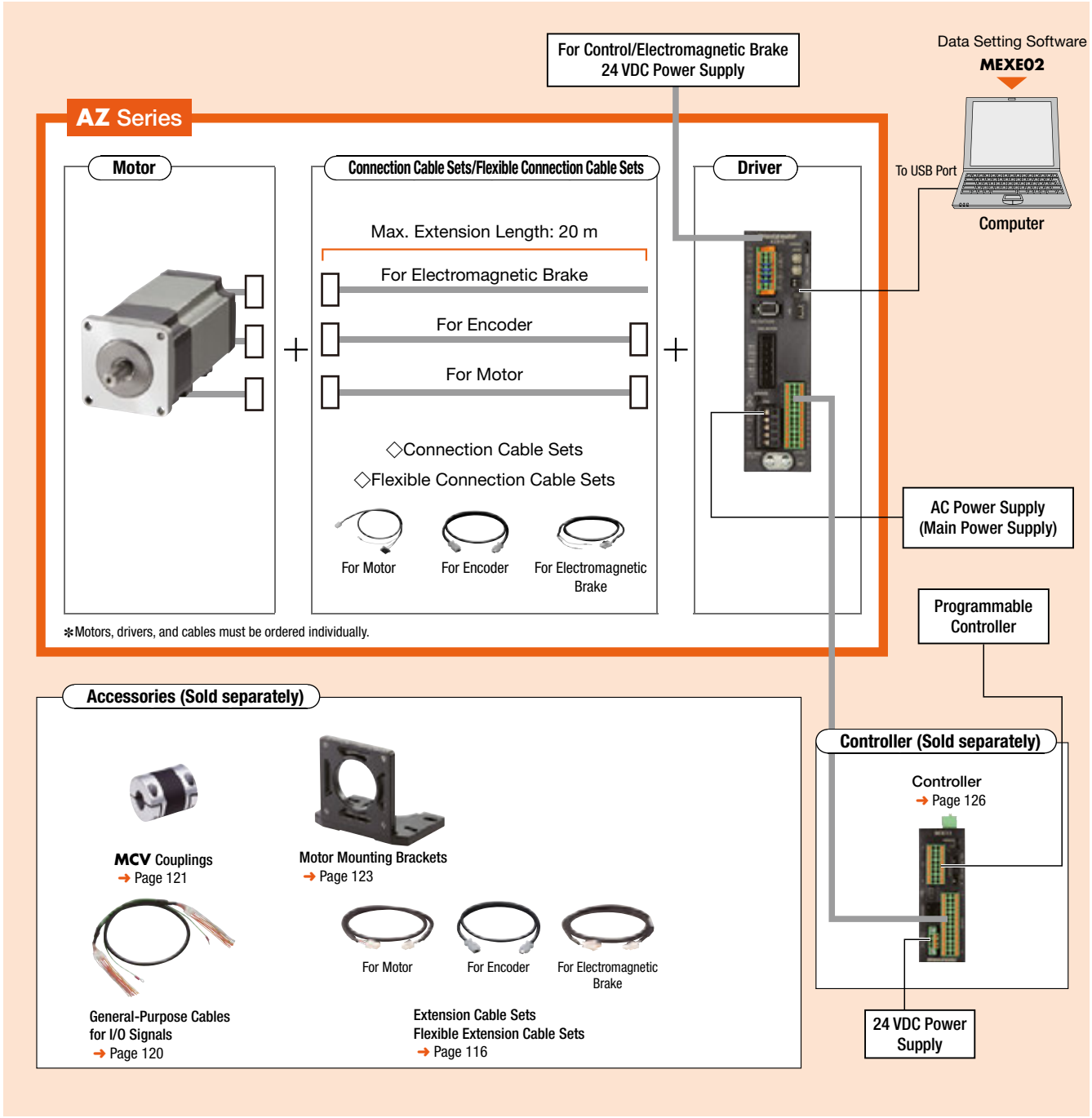
Note

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.
Motors, drivers, and cables must be ordered individually.

*Not supplied.



System configuration price example

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 Code

Motor

◇Standard Type

AZM 6 6 A 0 C

① ② ③ ④ ⑤ ⑥

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

AZM 6 6 A C - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

◇**TS** Geared Type

AZM 6 6 A C - TS 10 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

◇**FC** Geared Type

AZM 6 6 A C - FC 10 U A

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

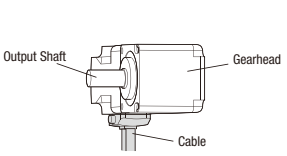
①	Motor Type	**AZM**: **AZ** Series Motor
②	Motor Frame Size	**4**: 42 mm (**HPG** Geared Type is 40 mm) **6**: 60 mm **9**: 85 mm (Geared Type is 90 mm)
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑤	Shaft Shape*	**0**: Straight Type **1**: With Key
⑥	Motor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

*For standard types without specified shaft shape one shaft side is milled.

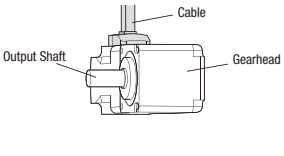
①	Motor Type	**AZM**: **AZ** Series Motor
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm **9**: 90 mm
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **M**: With Electromagnetic Brake
⑤	Motor Specification	**C**: AC Power Supply Input Specifications
⑥	Geared Type	**TS**: **TS** Geared Type
⑦	Gear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

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

*With the output shaft pointing to the left the cable direction is defined by looking from the gearhead side.



Downward Cable Direction



Upward Cable Direction

Driver

AZD - C D

① ② ③

①	Driver Type	**AZD**: **AZ** Series Driver
②	Power Supply Input	**C**: Single-Phase 200~240 VAC
③	Type	**D**: Built-in Controller Type **X**: Pulse-Input Type with RS-485 Communication Blank: Pulse Input Type

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z F B

① ② ③ ④ ⑤ ⑥

①		**CC**: Cable
②	Length	**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

*WARNING: Connecting the AZ to three-phase 400 VAC will damage the product

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** **AZM46A0C**	€246.00
	AZM48AC **AZM48A0C**	€255.00
	AZM48A1C	€265.00
60 mm	**AZM66AC** **AZM66A0C**	€290.00
	AZM66A1C	290.00
	AZM69AC **AZM69A0C**	€295.00
	AZM69A1C	€304.00
85 mm	**AZM98AC** **AZM98A0C**	€315.00
	AZM98A1C	€ 324,00
	AZM911AC **AZM911A0C**	€333.00
	AZM911A1C	€ 342,00

◇Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MC** **AZM46M0C**	€368.00
60 mm	**AZM66MC** **AZM66M0C**	€447.00
	AZM66M1C	€ 447,00
	AZM69MC **AZM69M0C**	€452.00
	AZM69M1C	€ 460,00
85 mm	**AZM98MC** **AZM98M0C**	€489.00
	AZM98M1C	€ 497,00

◇**TS** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AC-TS□◇**	3.6, 7.2	€341.00
	AZM46AC-TS□◇	10, 20, 30	€351.00
60 mm	**AZM66AC-TS□◇**	3.6, 7.2	€400.00
	AZM66AC-TS□◇	10, 20, 30	€410.00
90 mm	**AZM98AC-TS□◇**	3.6, 7.2	€456.00
	AZM98AC-TS□◇	10, 20, 30	€468.00

◇**TS** Geared Type with Electromagnetic Brake

Frame Size	Product Name		List Price
42 mm	**AZM46MC-TS□◇**	3.6, 7.2	€463.00
	AZM46MC-TS□◇	10, 20, 30	€473.00
60 mm	**AZM66MC-TS□◇**	3.6, 7.2	€557.00
	AZM66MC-TS□◇	10, 20, 30	€567.00
90 mm	**AZM98MC-TS□◇**	3.6, 7.2	€630.00
	AZM98MC-TS□◇	10, 20, 30	€642.00

◇**FC** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AC-FC□UA** **AZM46AC-FC□DA**	7.2, 10, 20, 30	€ 451,00
60 mm	**AZM66AC-FC□UA** **AZM66AC-FC□DA**	7.2, 10, 20, 30	€ 510,00

◇**FC** Geared Type with Electromagnetic Brake

Frame Size	Product Name		List Price
42 mm	**AZM46MC-FC□UA** **AZM46MC-FC□DA**	7.2, 10, 20, 30	€ 573,00
60 mm	**AZM66MC-FC□UA** **AZM66MC-FC□DA**	7.2, 10, 20, 30	€ 667,00

◇**PS** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AC-PS□**	5, 7.2, 10	€413.00
	AZM46AC-PS□	25, 36, 50	€450.00
60 mm	**AZM66AC-PS□**	5, 7.2, 10	€494.00
	AZM66AC-PS□	25, 36, 50	€546.00
90 mm	**AZM98AC-PS□**	5, 7.2, 10	€605.00
	AZM98AC-PS□	25, 36, 50	€705.00

◇**PS** Geared Type with Electromagnetic Brake

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46MC-PS□**	5, 7.2, 10	€535.00
	AZM46MC-PS□	25, 36, 50	€572.00
60 mm	**AZM66MC-PS□**	5, 7.2, 10	€651.00
	AZM66MC-PS□	25, 36, 50	€703.00
90 mm	**AZM98MC-PS□**	5, 7.2, 10	€779.00
	AZM98MC-PS□	25, 36, 50	€879.00

● A number indicating the gear ratio is entered where the box □ is located in the product name.
● Either **R** (right), **L** (left) or **U** (up) is entered for the cable withdrawing direction in ◇ in the product name.

◇**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	Gear Ratio	List Price
42 mm	**AZM46AC-HS□**	50, 100	€701.00
60 mm	**AZM66AC-HS□**		€945.00
90 mm	**AZM98AC-HS□**		€1,135.00

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46MC-HS50**	50, 100	€823.00
60 mm	**AZM66MC-HS50**		€1,102.00
90 mm	**AZM98MC-HS50**		€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 with RS-485 Communication

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

Use the flexible connection cable in applications where the cable is bent and flexed repeatedly. To extend the connection cables extension cables and flexible extension cables are provided. Please see page 116.

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

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)	
FC Geared		1 Piece	—	
PS Geared		1 Piece	—	
HPG Geared	Shaft Output	1 Piece	—	
	Flange Output	—	—	
Harmonic Geared		1 Piece	—	

For the functions and operation of the product please refer to the operating manual (function edition). The function edition is not included in the product, please contact the nearest sales office or download it from the website.

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

Connection Cable Sets / Flexible Connection Cable Sets

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

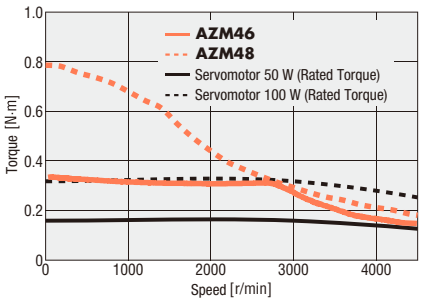
Output Power of Stepper Motors (Reference Values)

The output power (W) of AC servomotors is displayed as rated torque, i.e. the output power (W) when rotating at rated speed.
On the other hand, as stepper motors featuring with high positioning accuracy and high torque at low and medium speeds don't have a rated speed, the rated output power cannot be displayed. For reference it is shown below which torque of the **AZ** Series Standard Type is equivalent to which rated torque of the servomotor.

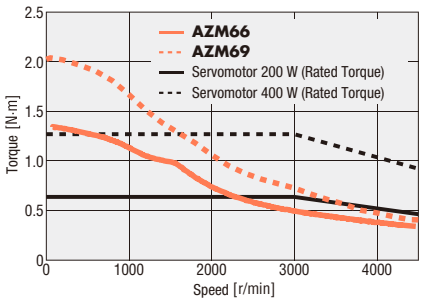
AZ Series (Standard Type)			Equivalent Rated Torque of Servomotor (Reference Value)
Frame Size	Product Name	Price	
42mm	**AZM46**	from € 706.00	Equivalent to Rated Torque of 50-100 W
	AZM48	from € 714.00	
60mm	**AZM66**	from € 750.00	Equivalent to Rated Torque of 100-200 W
	AZM69	from € 755.00	Equivalent to Rated Torque of 200-400 W
85mm	**AZM98**	from € 775.00	Equivalent to Rated Torque of 400-750 W
	AZM911	from € 793.00	

✻Total price for motor, driver and 1 m connection cable.

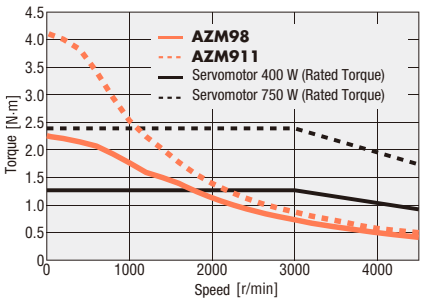
Frame Size 42mm



Frame Size 60mm



Frame Size 85mm



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.

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

Specifications

Motor Product Name	Single Shaft		**AZM46A□C**	**AZM48A□C**	**AZM66A□C**	**AZM69A□C**	**AZM98A□C**	**AZM911A□C**
	With Electromagnetic Brake		**AZM46M□C**	–	**AZM66M□C**	**AZM69M□C**	**AZM98M□C**	–
Driver Product Name	Built-in Controller Type		**AZD-CD** (Single-Phase 200-240 VAC)					
	Pulse-Input Type with RS-485 Communication		**AZD-CX** (Single-Phase 200-240 VAC)					
	Pulse Input Type		**AZD-C** (Single-Phase 200-240 VAC)					
Maximum Holding Torque		N·m	0.3	0.77	1.2	2	2	4
Holding Torque at Motor Standstill	Power ON	N·m	0.15	0.38	0.6	1	1	2
	With Electromagnetic Brake	N·m	0.15		0.6	1	1	–
Rotor Inertia		J: kg·m^2	55×10^{-7} (71×10^{-7})*1	115×10^{-7}	370×10^{-7} (530×10^{-7})*1	740×10^{-7} (900×10^{-7})*1	1090×10^{-7} (1250×10^{-7})*1	2200×10^{-7}
Resolution	Resolution Setting: 1000 P/R		0.36°/Pulse					
Power Supply Input	Voltage and Frequency		Single-Phase 200-240 VAC −15～+6% 50/60 Hz					
	Input Current	A	1.7	1.6	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% 0.25 A	24 VDC ±5%*2 0.25 A (0.5 A)*1			

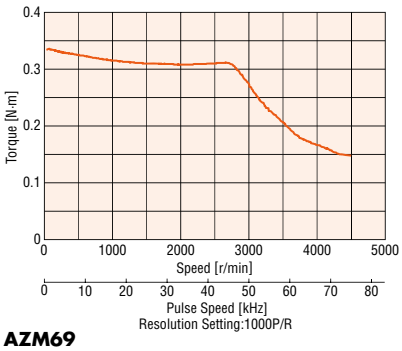
● Either **0** (straight) or 1 (with key) indicating the shaft shape is entered where the box □ is located in the product name. (For **AZM46** straight only). For the one side milled shaft shape no number is specified.

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

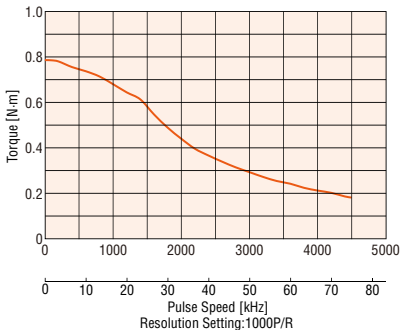
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

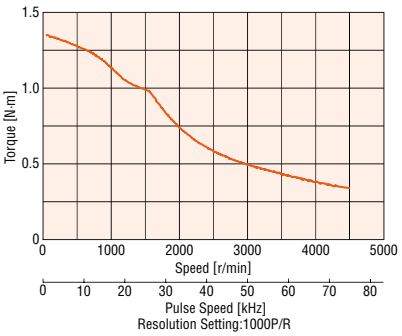
AZM46



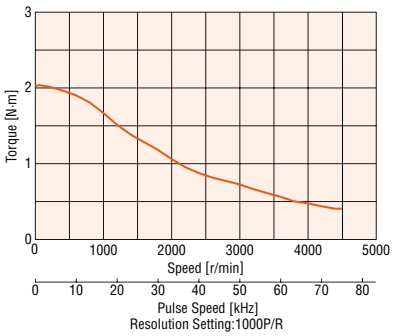
AZM48



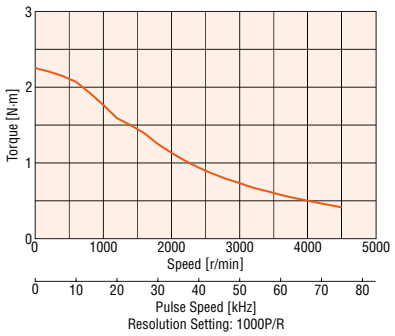
AZM66



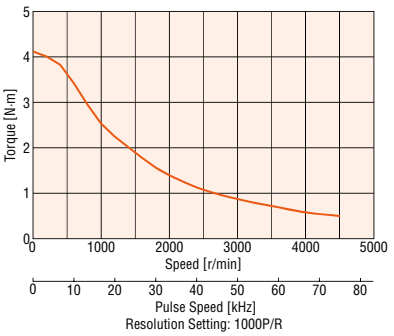
AZM69



AZM98



AZM911



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

Explanation of Terms in Specifications Table

Maximum Holding Torque	The maximum holding torque (holding force) the motor has when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the value of holding torque considers the permissible strength of the gear.)	
Permissible Torque	This is the maximum torque continuously applied to the gear output shaft.	
Max. Instantaneous Torque	This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration, such as when an inertial load is started and stopped.	
Holding Torque at Standstill	When Power is ON	This is the holding torque when the automatic current cutback function is activated.
	Electromagnetic Brake	This is the static friction torque that the electromagnetic brake can generate at rest. (Electromagnetic brake is power off activated type.)

TS Geared Type Frame Size 42 mm

Specifications

Motor Product Name	Single Shaft		**AZM46AC-TS3.6**□	**AZM46AC-TS7.2**□	**AZM46AC-TS10**□	**AZM46AC-TS20**□	**AZM46AC-TS30**□
	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 with RS-485 Communication		**AZD-CX** (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				

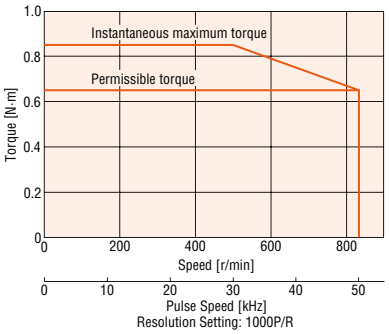
- Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box □ is located within the product name. For the downward direction no letter is entered in the box □.

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

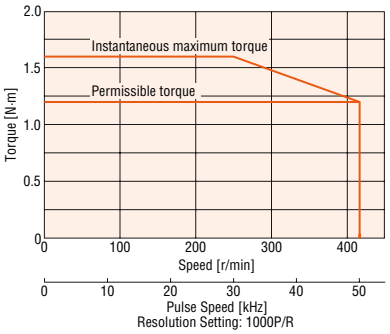
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

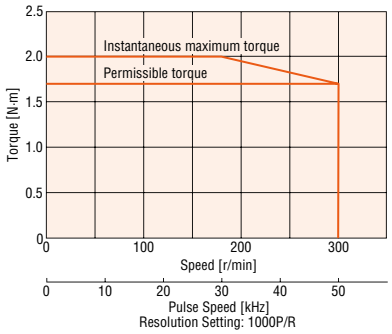
AZM46 Gear Ratio **3.6**



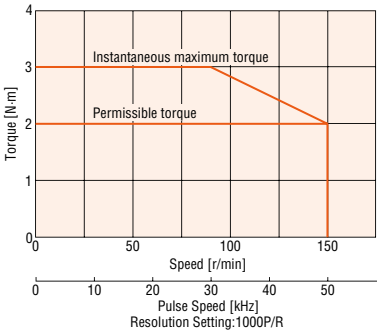
AZM46 Gear Ratio **7.2**



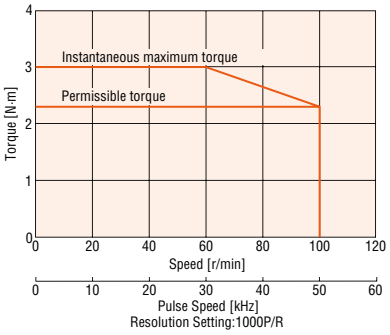
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal 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 with RS-485 Communication	**AZD-CX** (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.

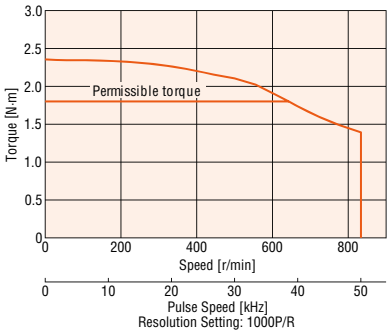
● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box □ is located within the product name. For the downward direction no letter is entered in the box □.

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

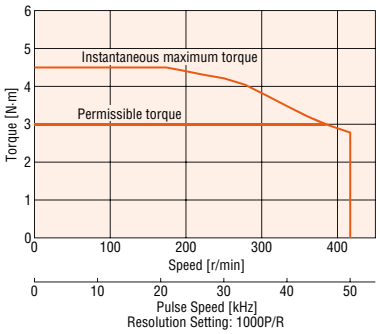
※2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

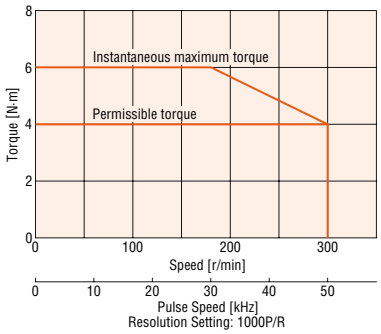
AZM66 Gear Ratio **3.6**



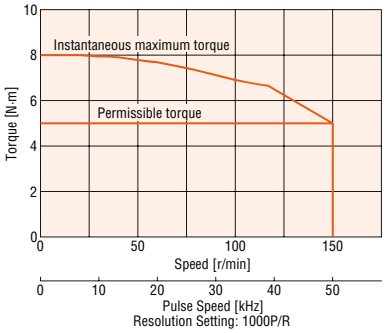
AZM66 Gear Ratio **7.2**



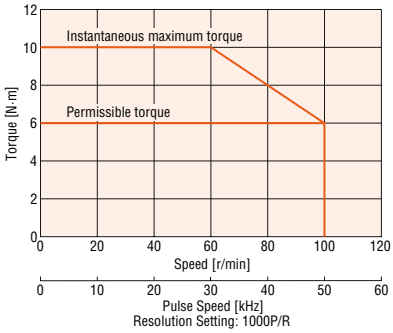
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal 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 with RS-485 Communication		**AZD-CX** (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.

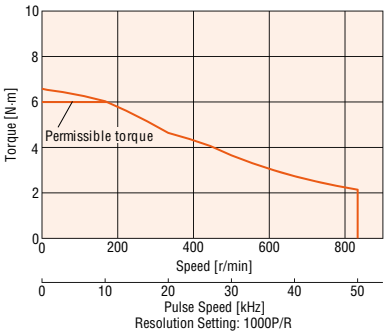
● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box □ is located within the product name. For the downward direction no letter is entered in the box □.

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

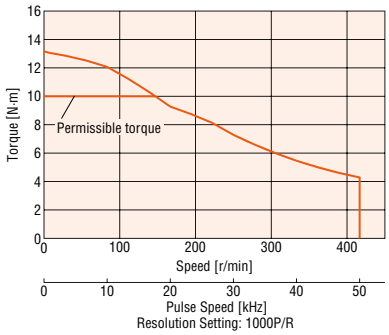
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

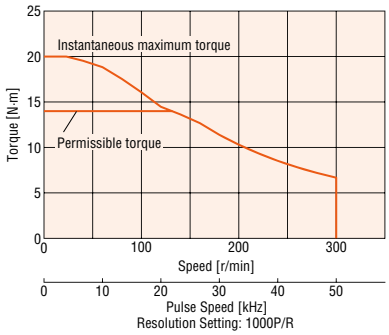
AZM98 Gear Ratio **3.6**



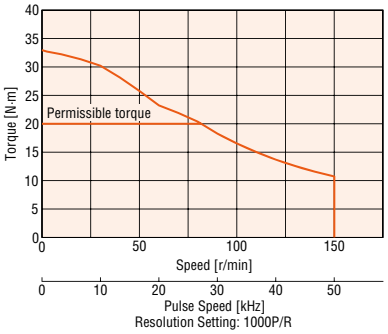
AZM98 Gear Ratio **7.2**



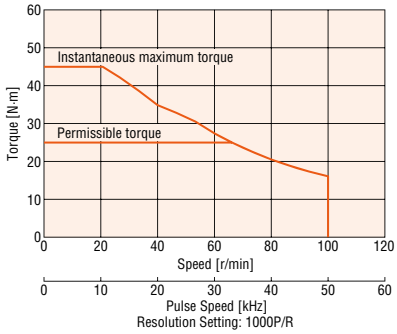
AZM98 Gear Ratio **10**



AZM98 Gear Ratio **20**



AZM98 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

FC Geared Type Frame Size 42 mm

Specifications

Motor Product Name	Single Shaft	**AZM46AC-FC7.2□A**	**AZM46AC-FC10□A**	**AZM46AC-FC20□A**	**AZM46AC-FC30□A**
	With Electromagnetic Brake	**AZM46MC-FC7.2□A**	**AZM46MC-FC10□A**	**AZM46MC-FC20□A**	**AZM46MC-FC30□A**
Driver Product Name	Built-in Controller Type	**AZD-CD** (Single-Phase 200-240 VAC)			
	Pulse-Input Type with RS-485 Communication	**AZD-CX** (Single-Phase 200-240 VAC)			
	Pulse Input Type	**AZD-C** (Single-Phase 200-240 VAC)			
Maximum Holding Torque	N·m	0.7	1	2	3
Rotor Inertia	J: kg·m^2	55×10^{-7} (71×10^{-7})*1			
Gear Ratio		7.2	10	20	30
Resolution	Resolution Setting: 1000P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	0.7	1	2	3
Holding Torque at Motor Standstill	Power ON N·m	0.7	1	2	3
	With Electromagnetic Brake N·m	0.7	1	2	3
Speed Range	r/min	0~416	0~300	0~150	0~100
Backlash	arcmin	25 (0.42°)		15 (0.25°)	
Power Supply Input	Voltage and Frequency	Single-Phase 200-240 VAC −15~+6% 50/60 Hz			
	Input Current A	1.7			
Control Power Supply		24 VDC ±5%*2 0.25 A (0.5 A)*1			

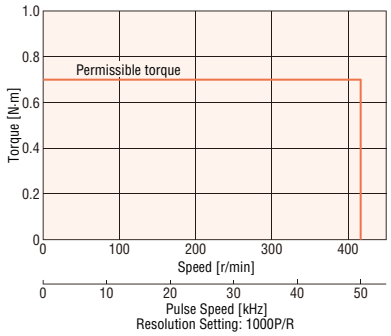
● Either **U** (up) or **D** (down) indicating the cable withdrawing direction is entered where the box □ is located within the product name.

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

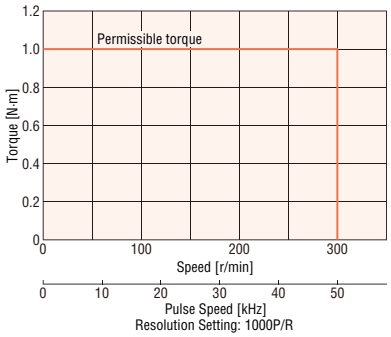
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

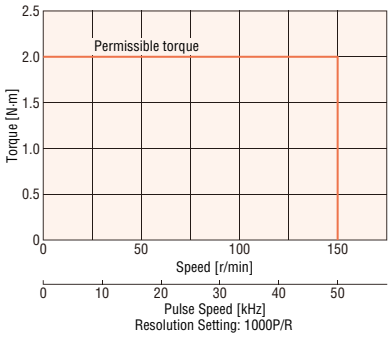
AZM46 Gear Ratio **7.2**



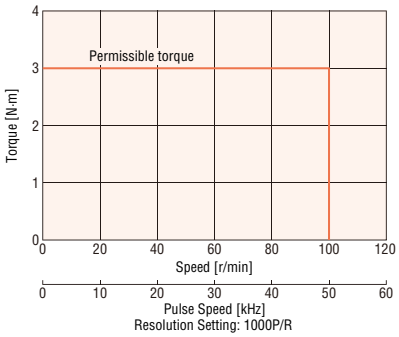
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

FC Geared Type Frame Size 60 mm

Specifications

Motor Product Name	Single Shaft	**AZM66AC-FC7.2□A**	**AZM66AC-FC10□A**	**AZM66AC-FC20□A**	**AZM66AC-FC30□A**
	With Electromagnetic Brake	**AZM66MC-FC7.2□A**	**AZM66MC-FC10□A**	**AZM66MC-FC20□A**	**AZM66MC-FC30□A**
Driver Product Name	Built-in Controller Type	**AZD-CD** (Single-Phase 200-240 VAC)			
	Pulse-Input Type with RS-485 Communication	**AZD-CX** (Single-Phase 200-240 VAC)			
	Pulse Input Type	**AZD-C** (Single-Phase 200-240 VAC)			
Maximum Holding Torque	N·m	2.5	3.5	7	10
Rotor Inertia	J: kg·m^2	370×10^{-7} (530×10^{-7})✻1			
Gear Ratio		7.2	10	20	30
Resolution	Resolution Setting: 1000P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	2.5	3.5	7	10
Holding Torque at Motor Standstill	Power ON N·m	2.5	3.5	7	10
	With Electromagnetic Brake N·m	2.5	3.5	7	10
Speed Range	r/min	0～416	0～300	0～150	0～100
Backlash	arcmin	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			

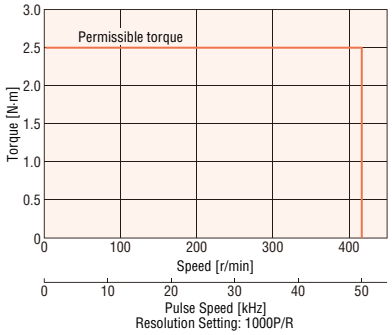
● Either **U** (up) or **D** (down) indicating the cable withdrawing direction is entered where the box □ is located within the product name.

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

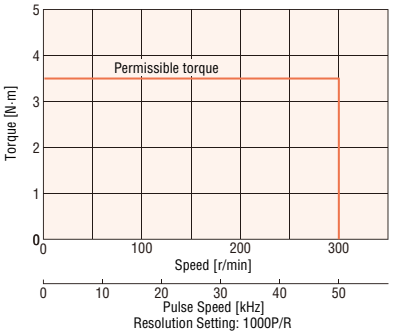
✻2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

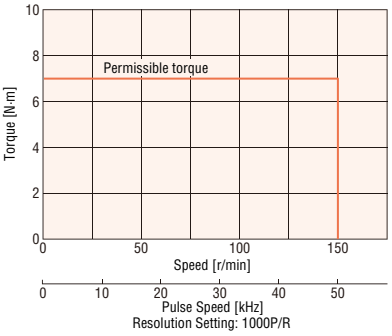
AZM66 Gear Ratio **7.2**



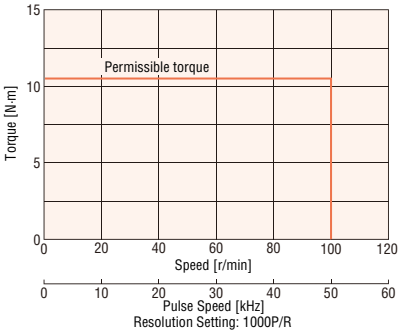
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

PS Geared Type Frame Size 42 mm

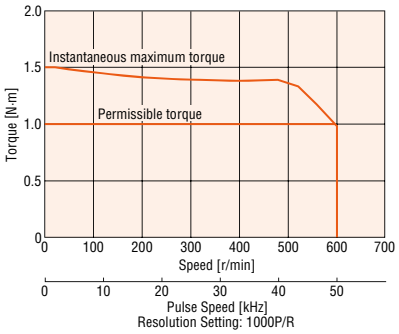
Specifications

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 with RS-485 Communication	**AZD-CX** (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					

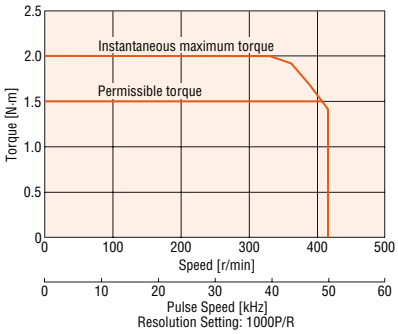
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

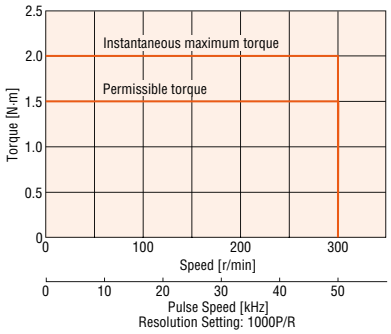
AZ46 Gear Ratio **5**



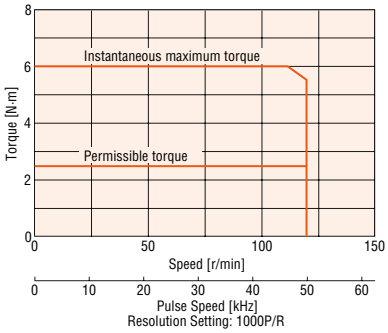
AZ46 Gear Ratio **7.2**



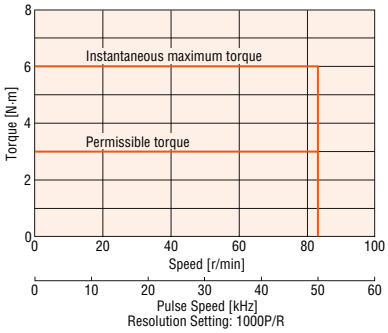
AZ46 Gear Ratio **10**



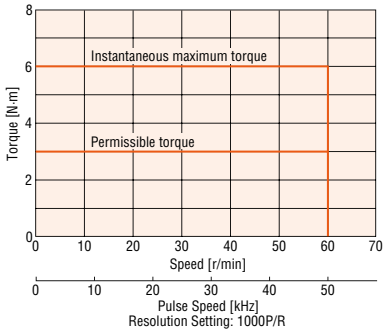
AZ46 Gear Ratio **25**



AZ46 Gear Ratio **36**



AZ46 Gear Ratio **50**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal 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 with RS-485 Communication	**AZD-CX** (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					

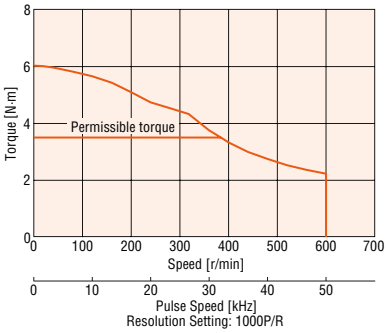
* For the geared motor output torque, refer to the speed – torque characteristics.

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

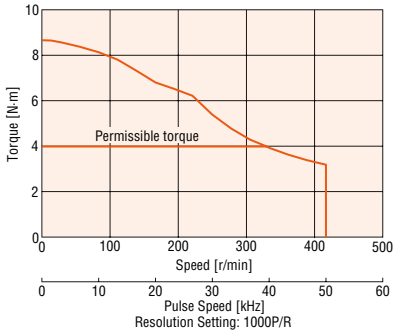
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

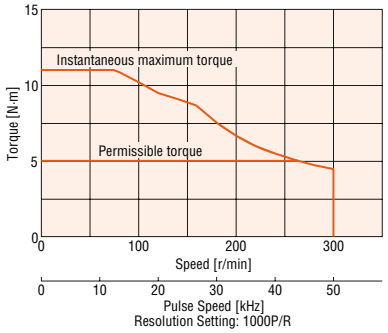
AZ66 Gear Ratio **5**



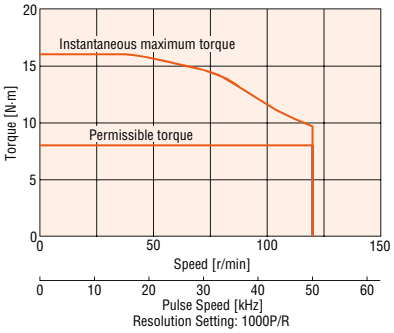
AZ66 Gear Ratio **7.2**



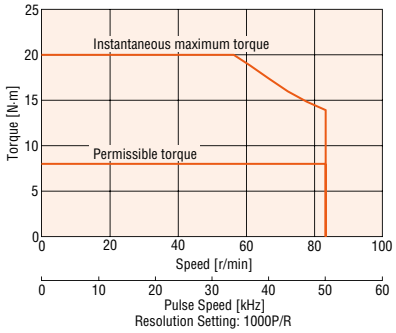
AZ66 Gear Ratio **10**



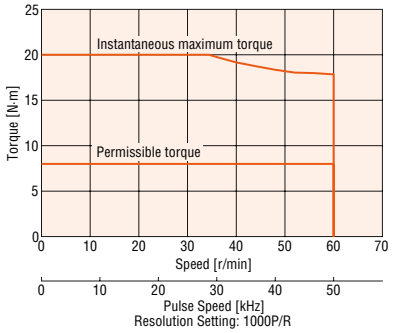
AZ66 Gear Ratio **25**



AZ66 Gear Ratio **36**



AZ66 Gear Ratio **50**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal 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 with RS-485 Communication	**AZD-CX** (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					

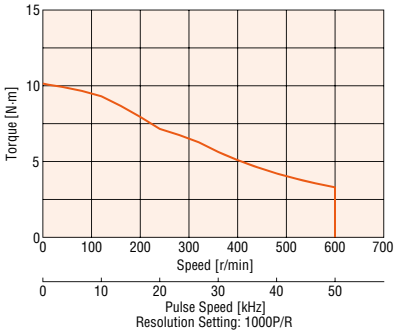
* For the geared motor output torque, refer to the speed – torque characteristics.

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

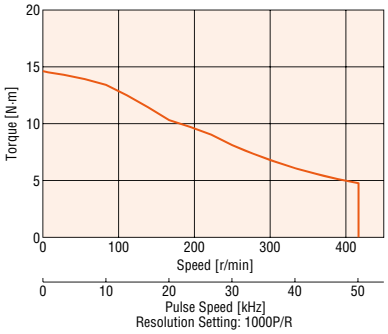
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Speed - Torque Characteristics (Reference Value)

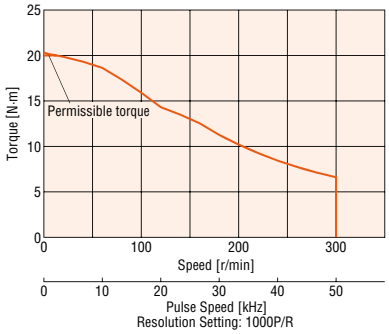
AZ98 Gear Ratio **5**



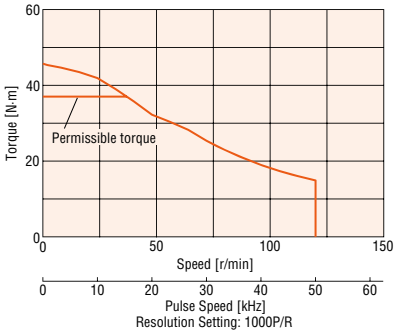
AZ98 Gear Ratio **7.2**



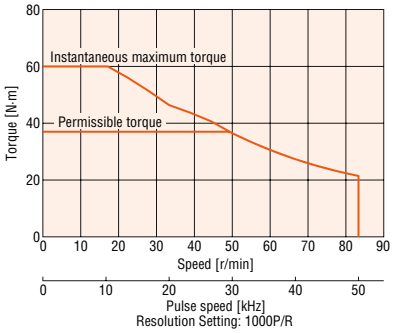
AZ98 Gear Ratio **10**



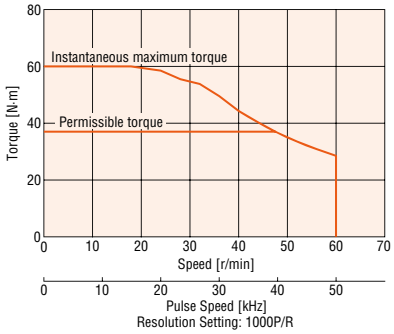
AZ98 Gear Ratio **25**



AZ98 Gear Ratio **36**



AZ98 Gear Ratio **50**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

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

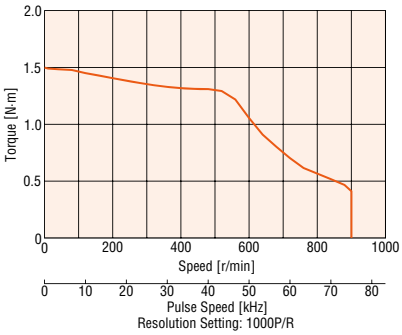
Specifications

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 with RS-485 Communication		**AZD-CX** (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			

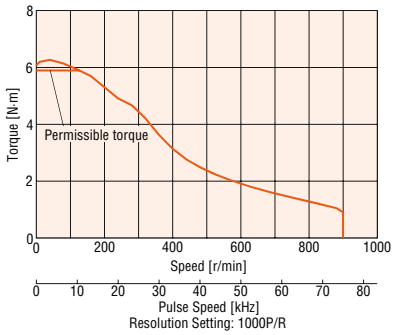
* For the geared motor output torque, refer to the speed – torque characteristics.
● For the flange output type, **F** is specified where the box □ is located in the product name.
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 The internal inertia of 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 Value)

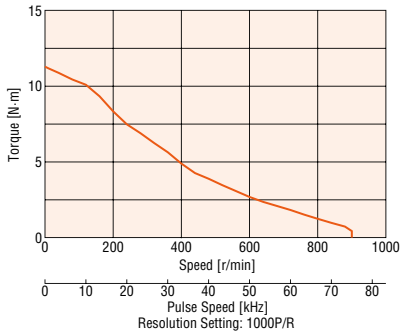
AZ46 Gear Ratio **5**



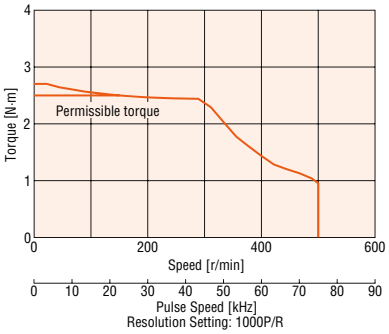
AZ66 Gear Ratio **5**



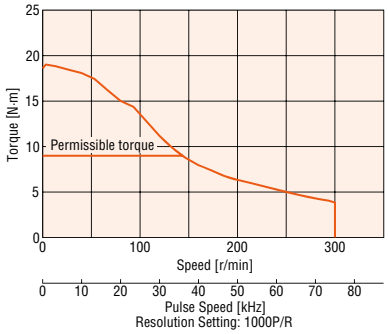
AZ98 Gear Ratio **5**



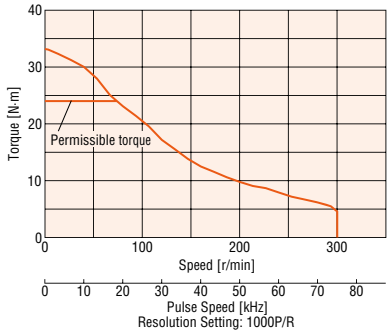
AZ46 Gear Ratio **9**



AZ66 Gear Ratio **15**



AZ98 Gear Ratio **15**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal 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 with RS-485 Communication		**AZD-CX** (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.

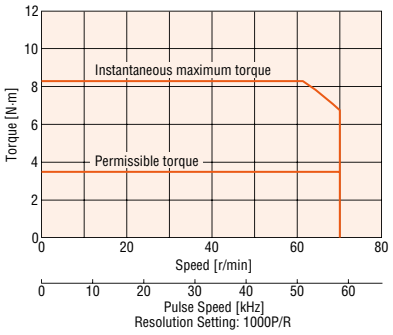
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

Note

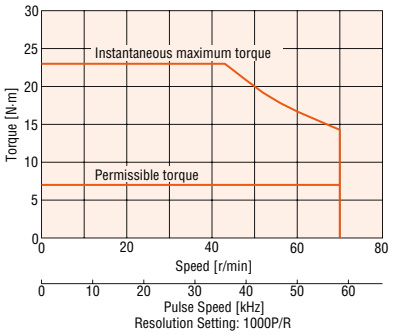
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed - Torque Characteristics (Reference Value)

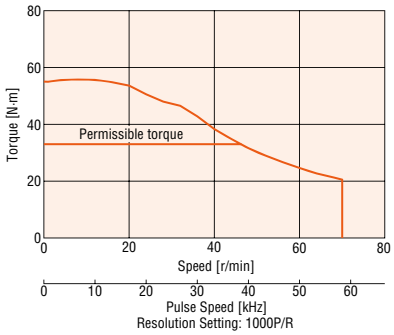
AZ46 Gear Ratio **50**



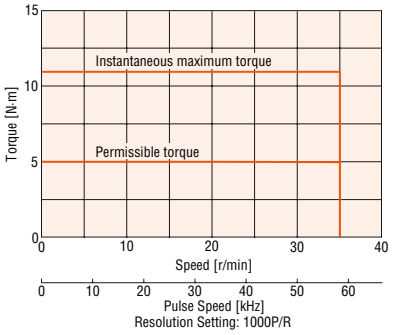
AZ66 Gear Ratio **50**



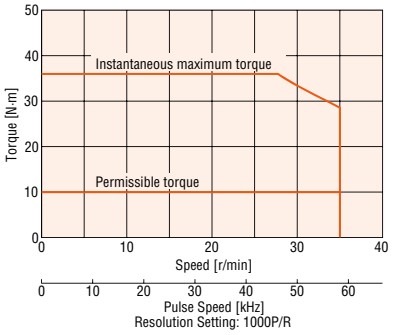
AZ98 Gear Ratio **50**



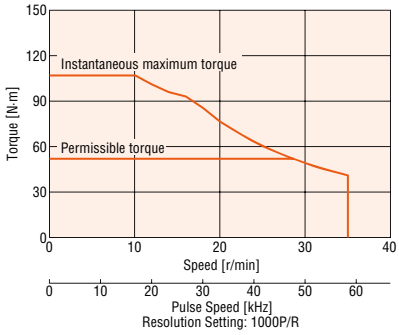
AZ46 Gear Ratio **100**



AZ66 Gear Ratio **100**



AZ98 Gear Ratio **100**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

Driver Specifications

Driver Type				Built-in Controller Type	Pulse-Input Type with RS-485 Communication	Pulse Input Type
Driver Product Name				**AZD-CD**	**AZD-CX**	**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*1	
	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	○	○	○*1
			Positioning Push-Motion Operation*2	○	○	○*1
		Connecting Method	Independent Operation	○	○	○*1
			Sequential Operation	○	○	○*1
			Multistep Speed-Change (Configuration Connection)	○	○	○*1
		Sequence Control	Loop Operation (Repeating)	○	○	○*1
			Event Jump Operation	○	○	○*1
	Continuous Operation	Position Control		○	○	○*1
		Speed Control		○	○	○*1
		Torque Control		○	○	○*1
		Pushing		○	○	○*1
	Return-to-home Operation		Return-to-home Operation	○	○	○
			High Speed Return-to-Home Operation	○	○	○
	JOG Operation			○	○	○
Monitor/Information			Waveform Monitoring	○	○	○
			Overload Detection	○	○	○
			Overheat Detection (Motor/Driver)	○	○	○
			Position/Speed Information	○	○	○
			Temperature Detection (Motor/Driver)	○	○	○
			Motor Load Factor	○	○	○
			Distance Traveled/Integrating Distance Traveled	○	○	○
Alarm				○	○	○

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

Built-in Controller Type RS-485 Communication Specification

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).

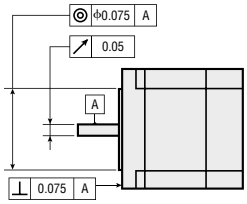
General Specifications

		Motor	Driver	
			Built-in Controller Type Pulse-Input Type with RS-485 Communication	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) *2	0～+55°C (non-freezing)*3	
	Ambient Humidity	85% or less (Non-condensing)		
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.		
Degree of Protection		IP66 (excluding installation surfaces and connector locations)	IP10	IP20
Stop Position Accuracy		**AZM46**, **AZM48**: ±4 Minutes (±0.067°)	**AZM66**, **AZM69**, **AZM98**, **AZM911**: ±3 Minutes (±0.05°)	
Shaft Runout		0.05 T.I.R. (mm)*4	–	
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*4	–	
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*4	–	
Multiple Rotation Detection Range Upon Power OFF		±900 Rotation (1,800 Rotations)		

*1 Only for products with an electromagnetic brake.
*2 Based on Oriental Motor's measurement conditions.
*3 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm and 2 mm thickness.
*4 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.



Electromagnetic Brake Specifications

Product Name		AZM46	AZM66	AZM69	AZM98
Type		Power Off Activated Type			
Power Supply Voltage		24 VDC ±5%*			
Power Supply Current	A	0.08	0.25	0.25	0.25
Brake Activation Time	ms	20			
Brake Release Time	ms	30			
Time Rating		Continous			

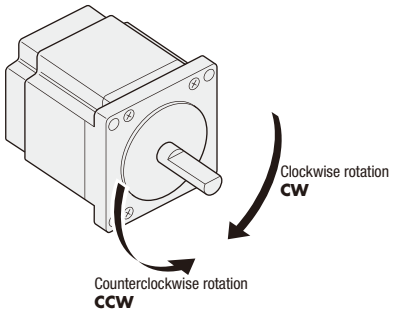
*If a 20 m extension cable is used for the electromagnetic brake type, the 24 VDC±4% specification applies.
● The product names are listed such that the product names are distinguishable.

Rotation Direction

This refers to the direction viewed from the output shaft side.
The rotation direction of the gear output shaft with respect to the standard type motor output shaft differs depending on the type of gear and gear ratio.
Refer to the following table.

Type	Gear Ratio	Rotation Direction with Respect to Motor Output Shaft
TS Geared Type	**3.6**, **7.2**, **10**	Same direction
	20, **30**	Opposite direction
FC Geared Type **PS** Geared Type **HPG** Geared Type	All gear ratios	Same direction
Harmonic Geared Type	All gear ratios	Opposite direction

● Standard Type Motor



Permissible Radial Load and Permissible Axial Load

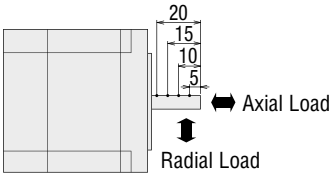
Unit: N

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

- The products can be identified with the detailed product code.
- **PS** geared type, **HPG** geared type, when either the permissible radial load or permissible axial load are added, shall have a lifespan value satisfying 20,000 hours. For **TS** and Harmonic geared types lifespan please contact the nearest Oriental Motor sales office.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

If an excentric load is applied when attaching an arm or table to the flange face, calculate the moment load with the following formula. The moment load should not exceed the permissible values shown in the table below.

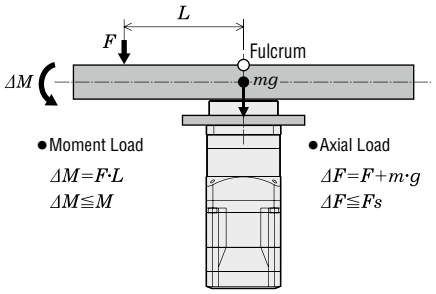
HPG Geared Type Flange Output Type

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

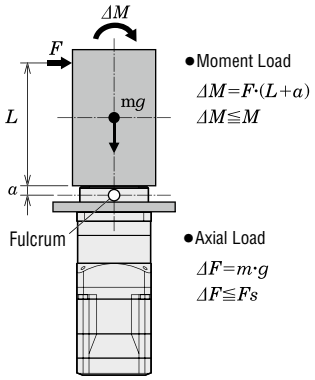
m: Work mass (kg)
g : Gravitational acceleration (m/s²)
F : External force (N)
L : Distance from center of output flange
a : Coefficient (m)
ΔF : Load on output flange side (N)
Fs : Permissible axial load (N)
ΔM: Moment load (N·m)
M: Permissible moment load (N·m)

The required moment load can be calculated according to the following formula.

Example 1: When external force F (N) is applied at a distance of L (m) from the centre of the output flange



Example 2: When external force F (N) is applied at a distance of L (m) from the surface mounting of the output flange

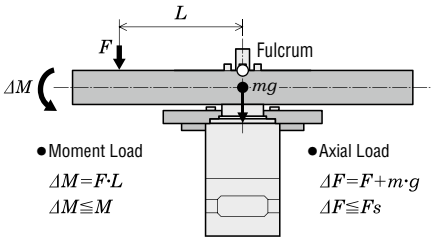


Harmonic Geared Type

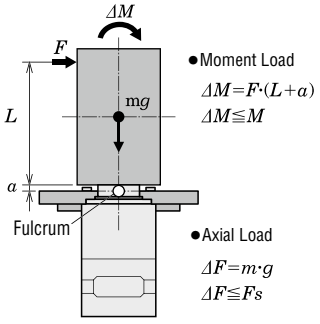
Product Name	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Coefficient a (m)
AZM46	220	5.6	0.009
AZM66	450	11.6	0.0114

The required moment load can be calculated according to the following formula.

Example 1: When external force F (N) is applied at a distance of L (m) from the centre of the output flange



Example 2: When external force F (N) is applied at a distance of L (m) from the surface mounting of the output flange



Load Torque - Driver Input Current Characteristics

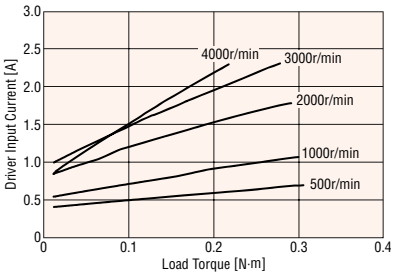
The following are the relationships between the load torque and driver input current at each speed when the motor is operated. From these characteristics, it is possible to estimate the current capacity actually required when used with multiple axes. For geared motors, convert to torque and speed at the motor shaft.

Motor shaft speed = Gear output shaft speed × Gear ratio [r/min]

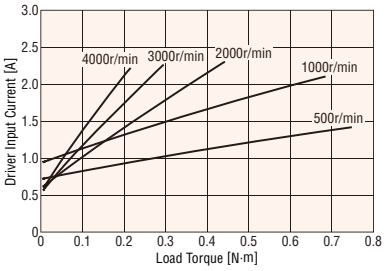
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear Ratio}} \text{ [N·m]}$$

Single-Phase 100-120 VAC

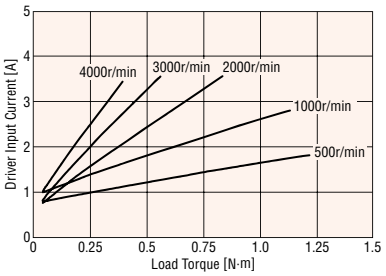
AZM46□C



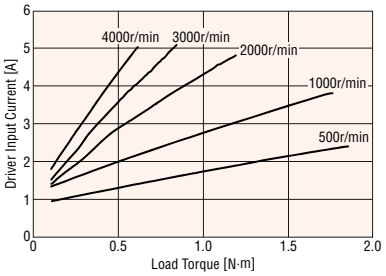
AZM48□C



AZM66□C

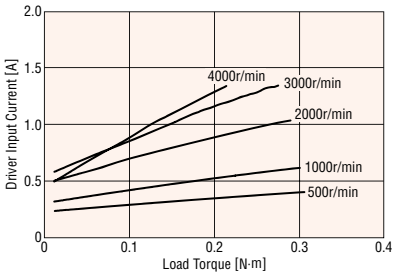


AZM69□C

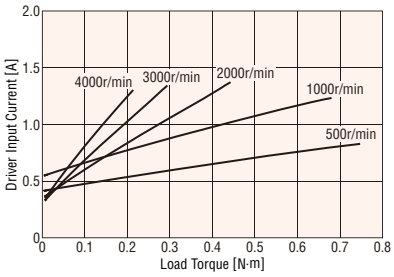


Single Phase 200–240 VAC

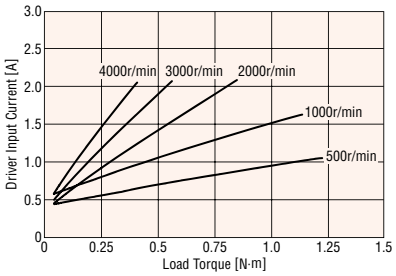
AZM46□C



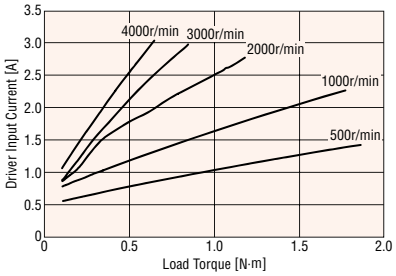
AZM48□C



AZM66□C

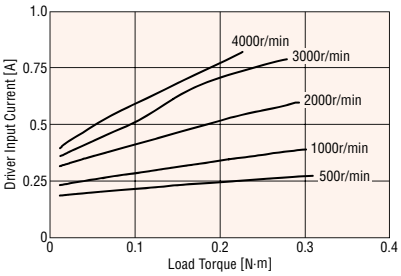


AZM69□C

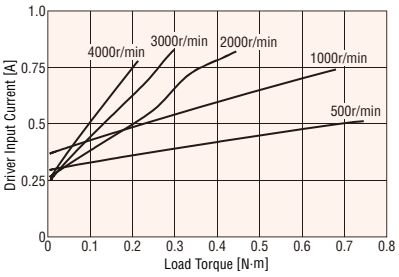


Three Phase 200–240 VAC

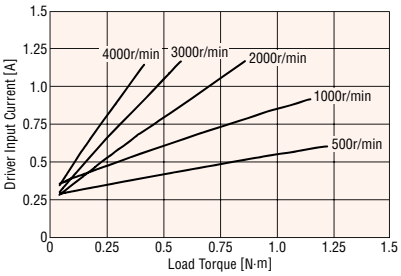
AZM46□C



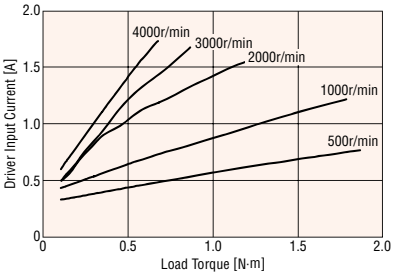
AZM48□C



AZM66□C

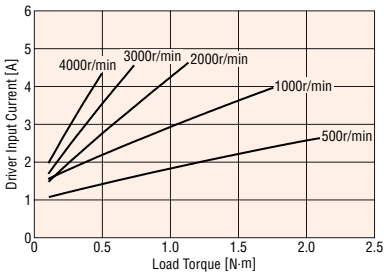


AZM69□C

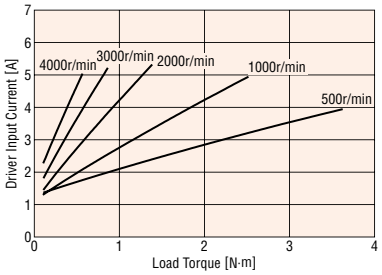


Single-Phase 100-120 VAC

AZM98□A

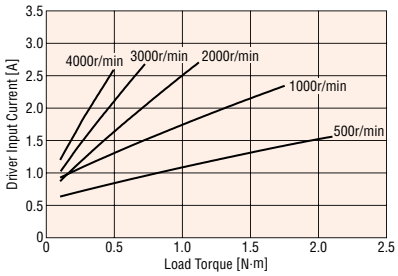


AZM911□A

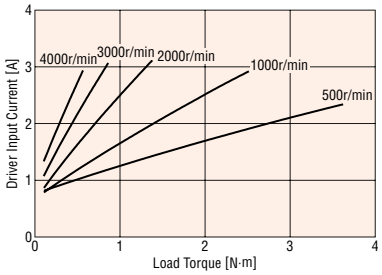


Single Phase 200–240 VAC

AZM98□C

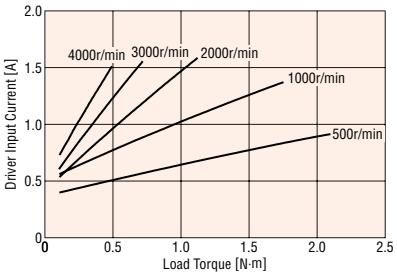


AZM911□C

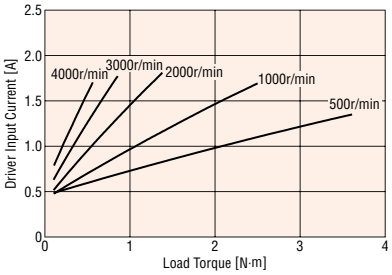


Three Phase 200–240 VAC

AZM98□C



AZM911□C



Dimensions (Unit = mm)

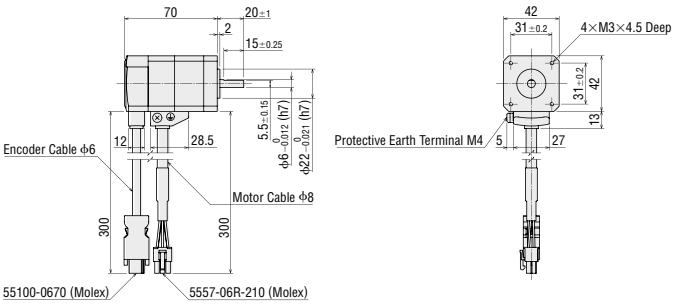
Motors

◇Standard Type

Frame Size 42 mm

Product Name	Mass kg
AZM46A□C	0.44

One Side Milled

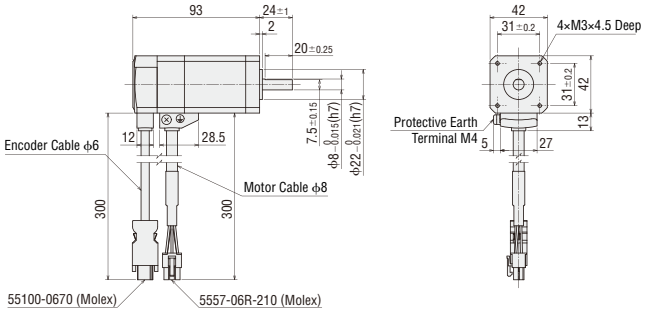


Straight

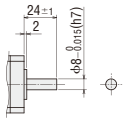
Frame Size 42 mm

Product Name	Mass kg
AZM48A□C	0.68

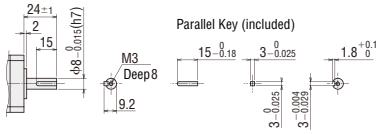
One Side Milled



Straight



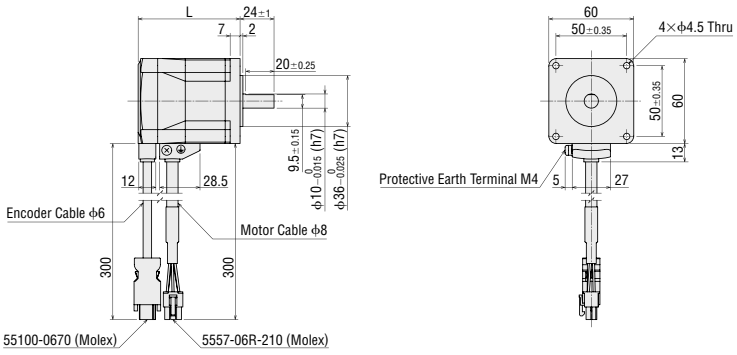
With Key



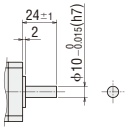
Frame Size 60 mm

Product Name	L	Mass kg
AZM66A□C	72	0.91
AZM69A□C	97.5	1.4

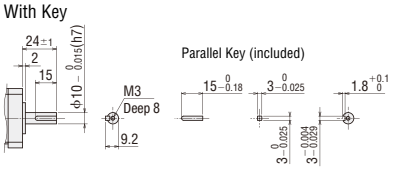
One Side Milled



Straight



With Key

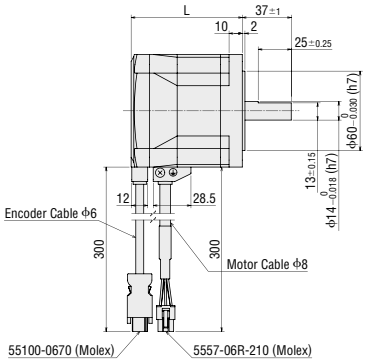


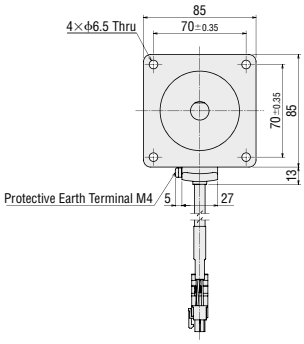
●Either **0** (straight) or **1** (with key) indicating the shaft shape is entered where the box □ is located within the product name. (For **AZM46** straight only).

Frame Size 85 mm

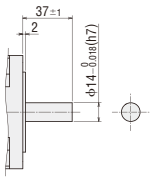
Product Name	L	Mass kg
AZM98A□C	84	1.9
AZM911A□C	114	3

One Side Milled

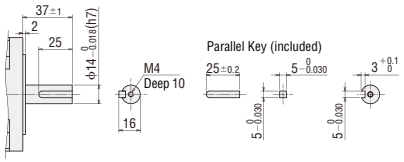




Straight



With Key

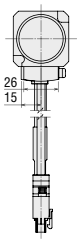


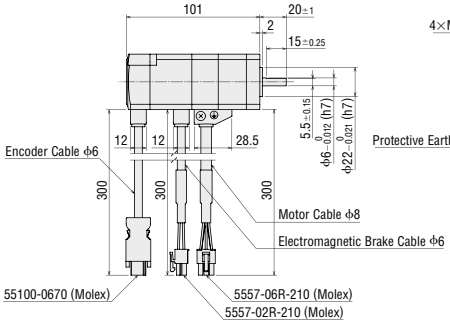
◇Standard Type with Electromagnetic Brake

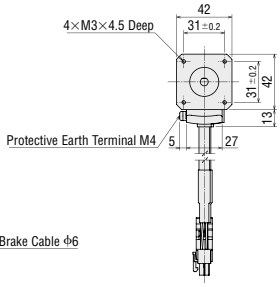
Frame Size 42 mm

Product Name	Mass kg
AZM46M□C	0.61

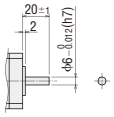
One Side Milled







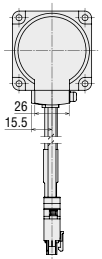
Straight

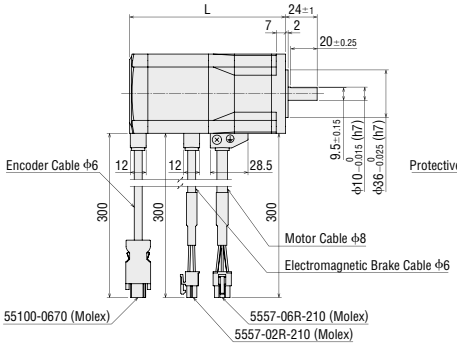


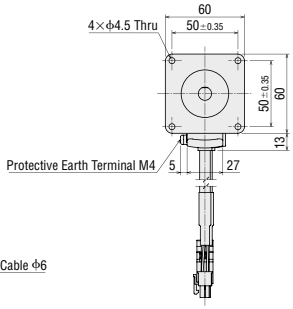
Frame Size 60 mm

Product Name	L	Mass kg
AZM66M□C	118	1.3
AZM69M□C	143.5	1.8

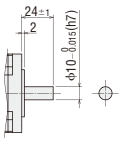
One Side Milled



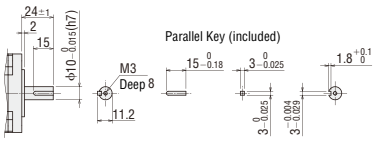




Straight



With Key

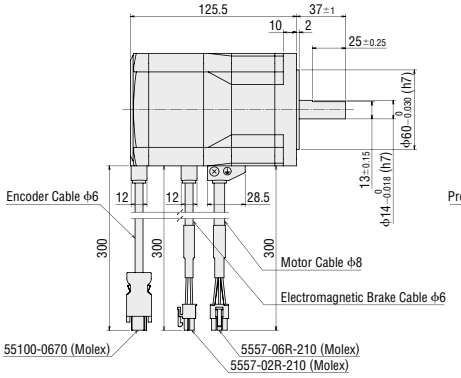


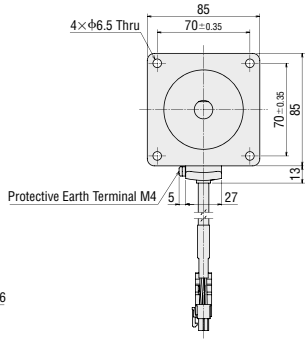
●Either **0** (straight) or **1** (with key) indicating the shaft shape is entered where the box □ is located within the product name. (For **AZM46** straight only).

Frame Size 85 mm

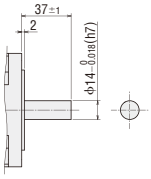
Product Name	Mass kg
AZM98M□C	2.5

One Side Milled

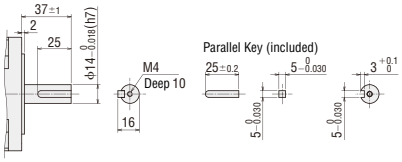




Straight

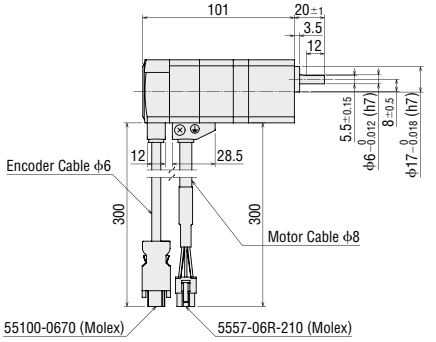


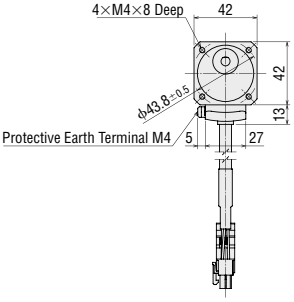
With Key



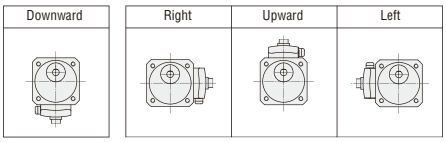
◇**TS** Geared Type
Frame Size 42 mm

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





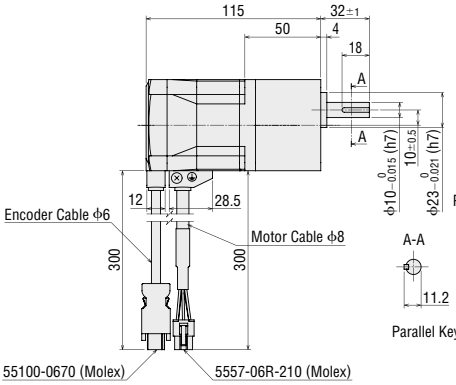
● Cable Direction

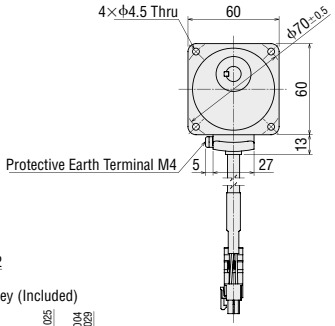


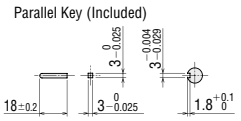
Frame Size 60 mm

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

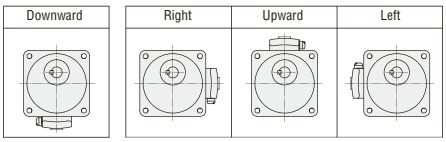
● Installation screw: M4×60 P0.7 (4 screws included)







● Cable Direction



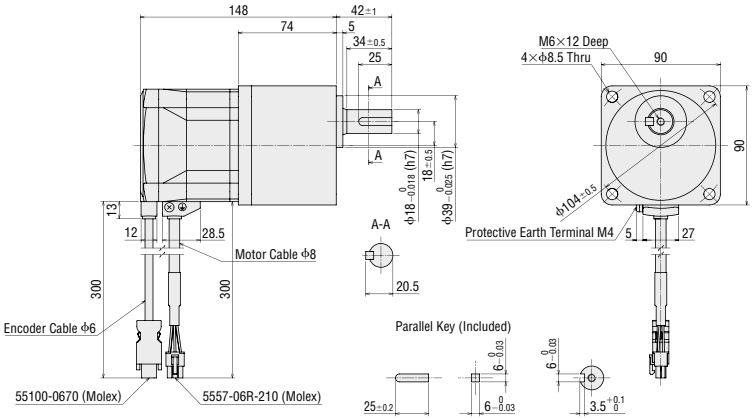
● The ■ within the product name includes a number expressing the gear ratio.

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box ◇ is located within the product name. For downward direction no letter is entered in the box ◇.

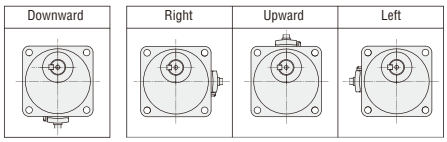
Frame Size 90 mm

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)



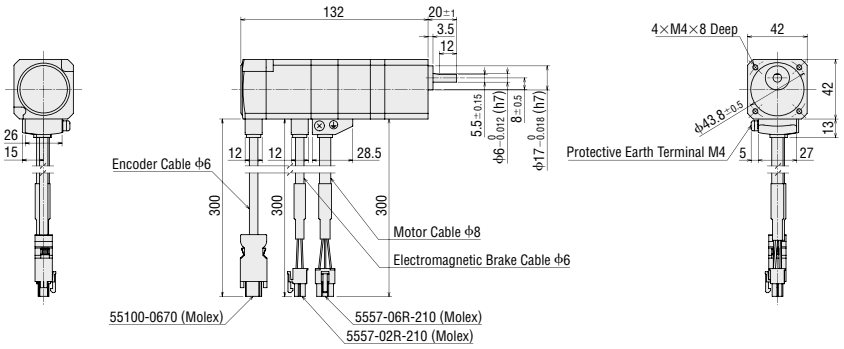
● Cable Direction



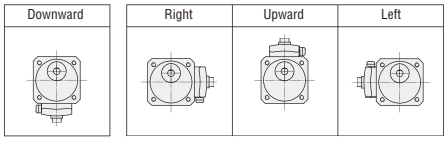
◇**TS** Geared Type with Electromagnetic Brake

Frame Size 42 mm

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



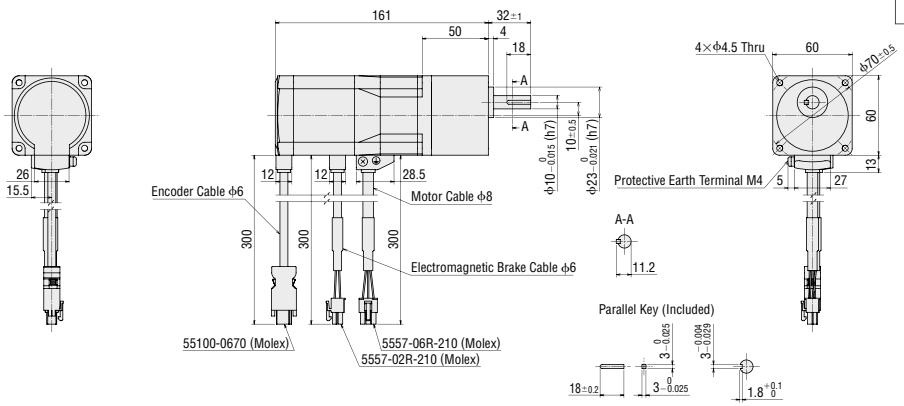
● Cable Direction



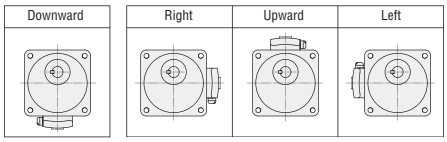
Frame Size 60 mm

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)



● Cable Direction



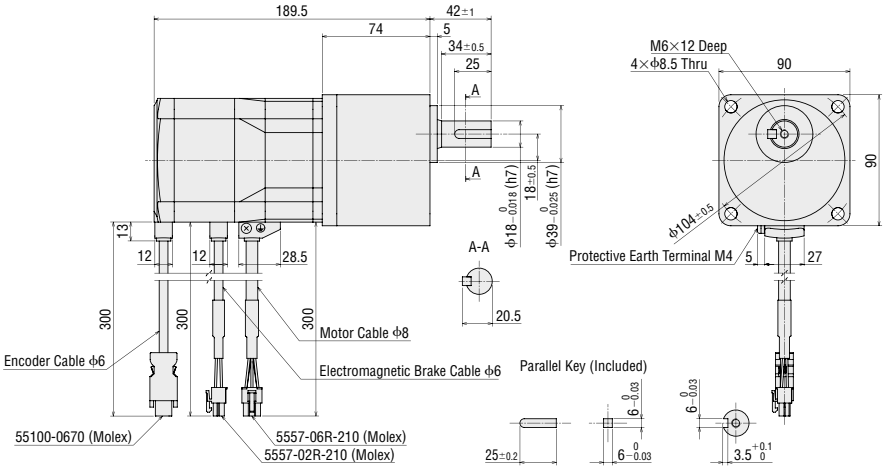
● The ■ within the product name includes a number expressing the gear ratio.

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box ◇ is located within the product name. For downward direction no letter is entered in the box ◇.

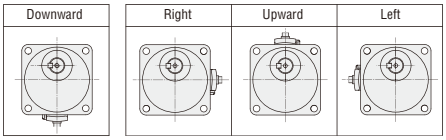
Frame Size 90 mm

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)



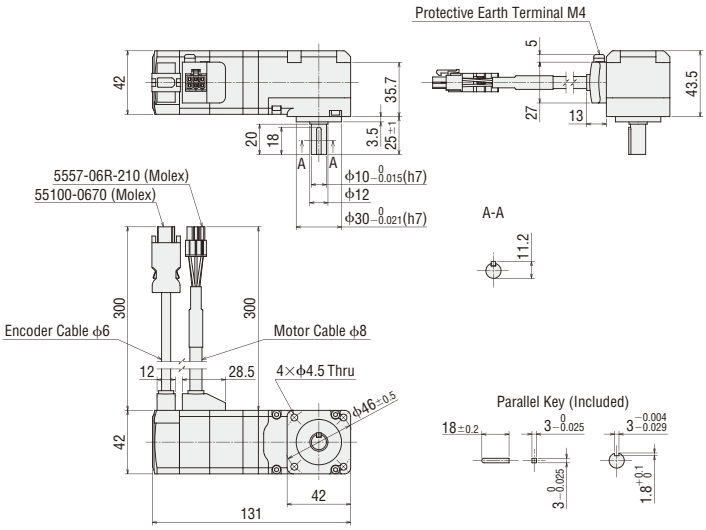
● Cable Direction



◇**FC** Geared Type

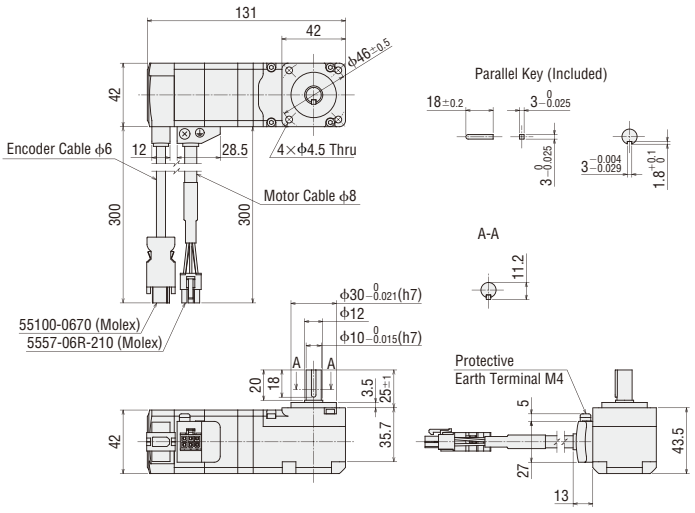
Frame Size 42 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM46AC-FC□UA	**7.2**, **10**, **20**, **30**	0.79



Frame Size 42 mm Cable Withdrawing Direction Down

Product Name	Gear Ratio	Mass kg
AZM46AC-FC□DA	**7.2**, **10**, **20**, **30**	0.79

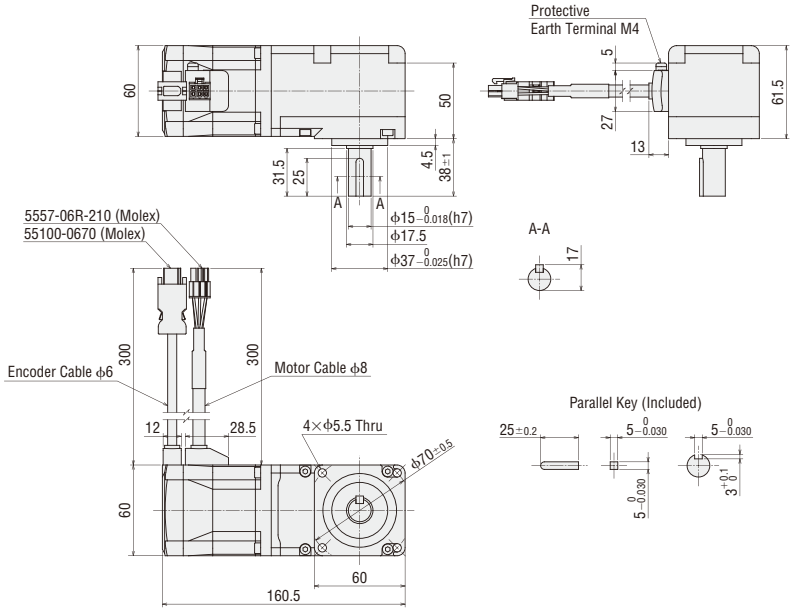


● The ■ within the product name includes a number expressing the gear ratio.

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box ◇ is located within the product name. For downward direction no letter is entered in the box ◇.

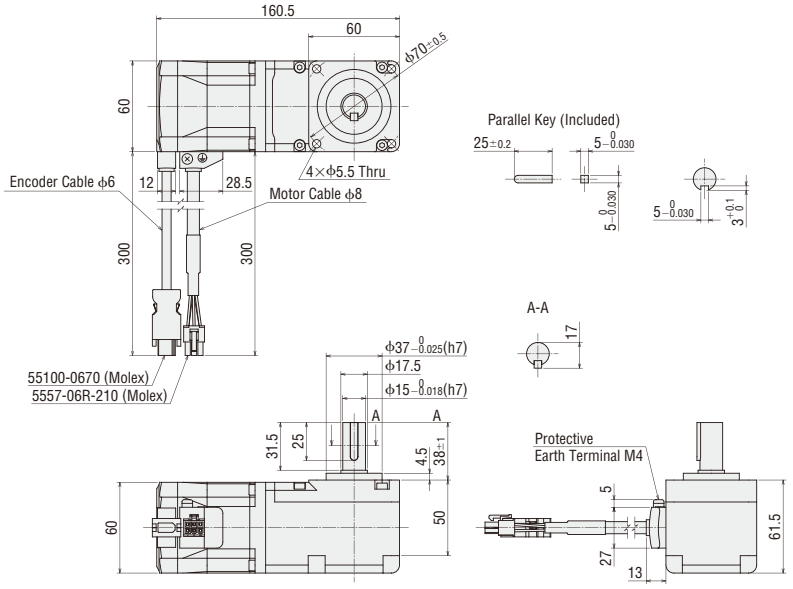
Frame Size 60 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM66AC-FC■UA	**7.2**, **10**, **20**, **30**	1.8



Frame Size 60 mm Cable Withdrawing Direction Down

Product Name	Gear Ratio	Mass kg
AZM66AC-FC■DA	**7.2**, **10**, **20**, **30**	1.8

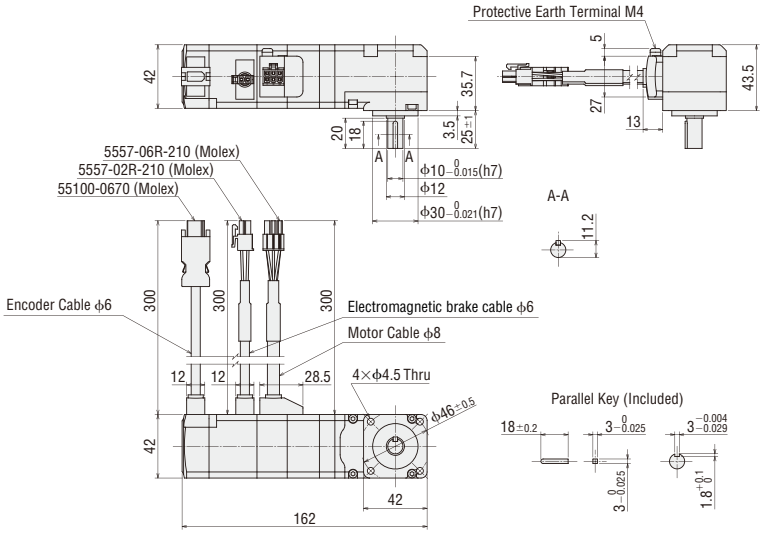


●The ■ within the product name includes a number expressing the gear ratio.

◇**FC** Geared Type with Electromagnetic Brake

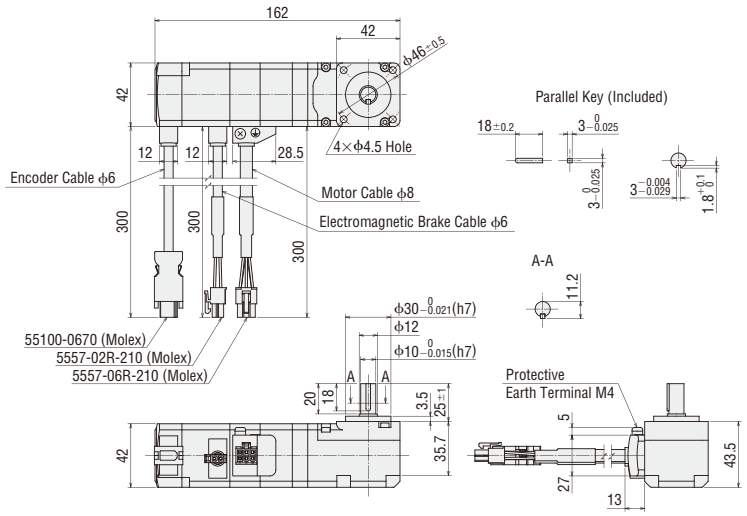
Frame Size 42 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM46MC-FC□UA	**7.2**, **10**, **20**, **30**	0.96



Frame Size 42 mm Cable Withdrawing Direction Down

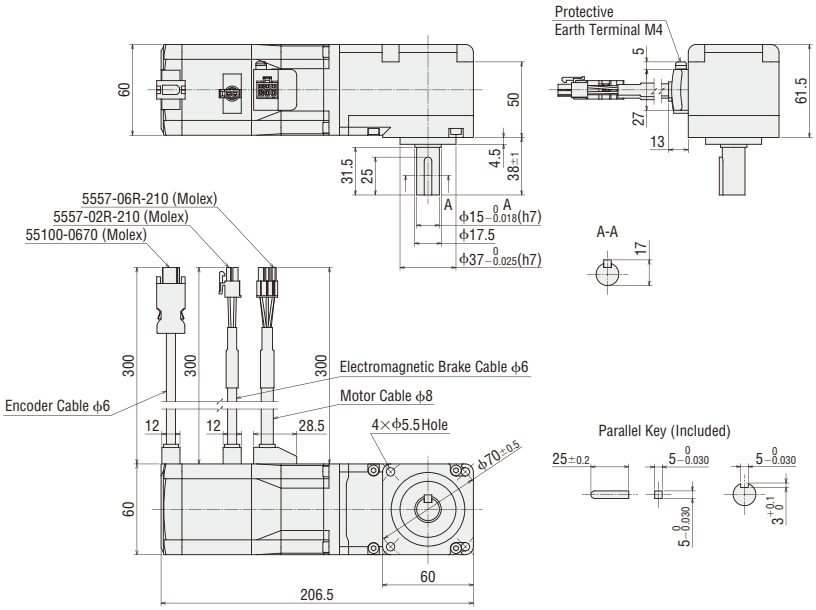
Product Name	Gear Ratio	Mass kg
AZM46MC-FC□DA	**7.2**, **10**, **20**, **30**	0.96



●The □ within the product name includes a number expressing the gear ratio.

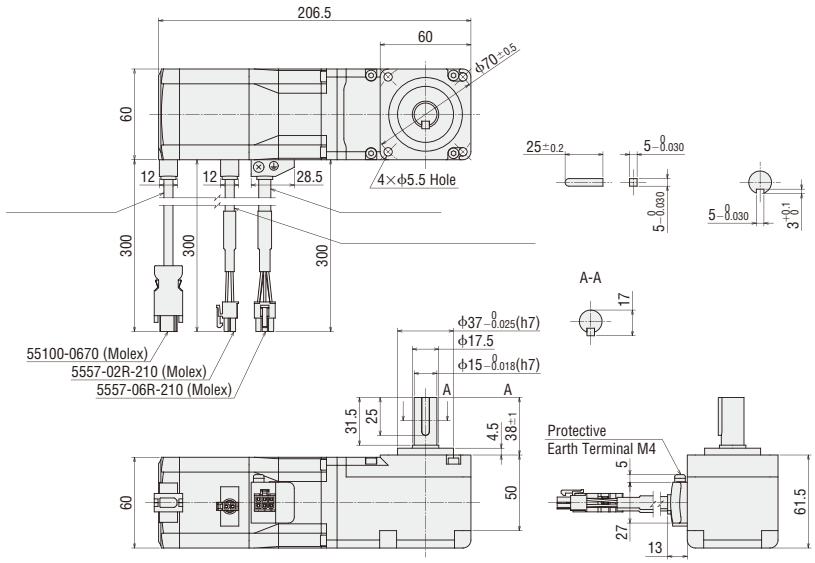
Frame Size 60 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM66MC-FC□UA	**7.2**, **10**, **20**, **30**	2.2



Frame Size 60 mm Cable Withdrawing Direction Down

Product Name	Gear Ratio	Mass kg
AZM66AC-MC□DA	**7.2**, **10**, **20**, **30**	2.2

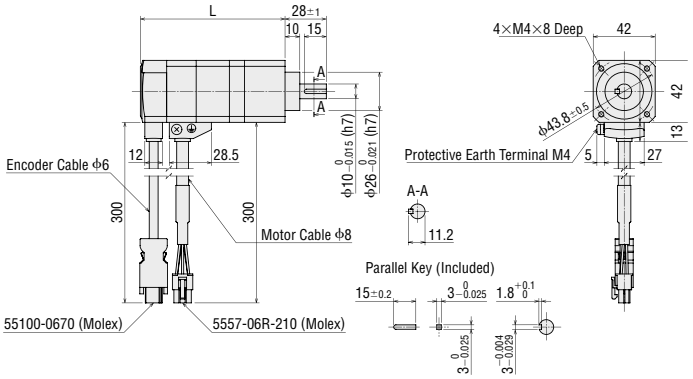


● The □ within the product name includes a number expressing the gear ratio.

◇**PS** Geared Type

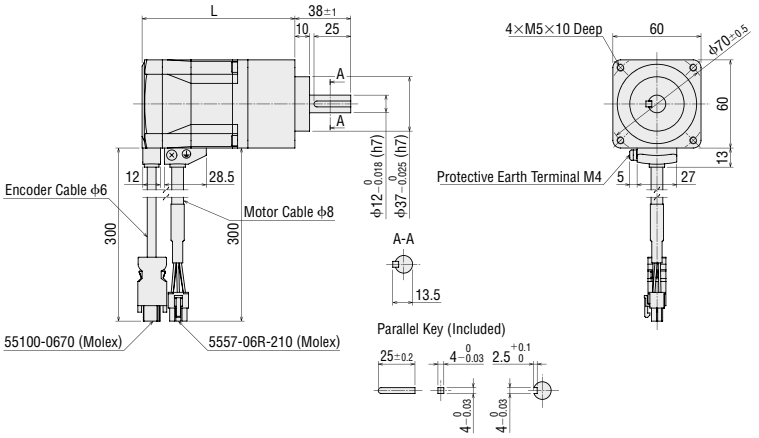
Frame Size 42 mm

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



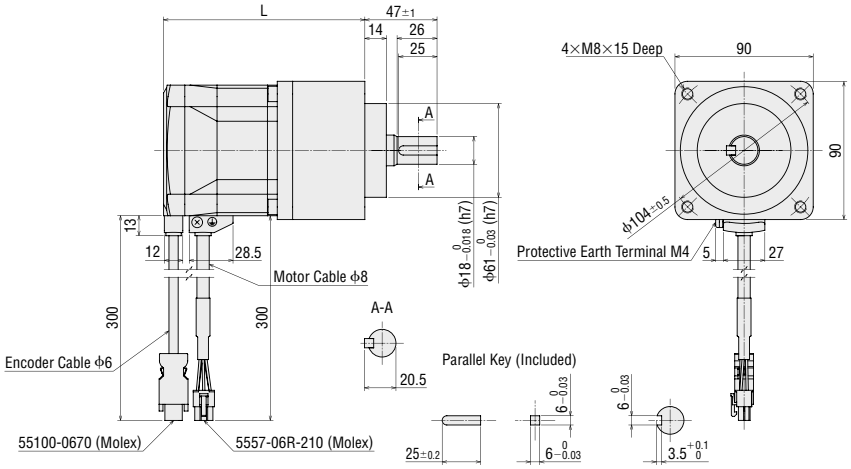
Frame Size 60 mm

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

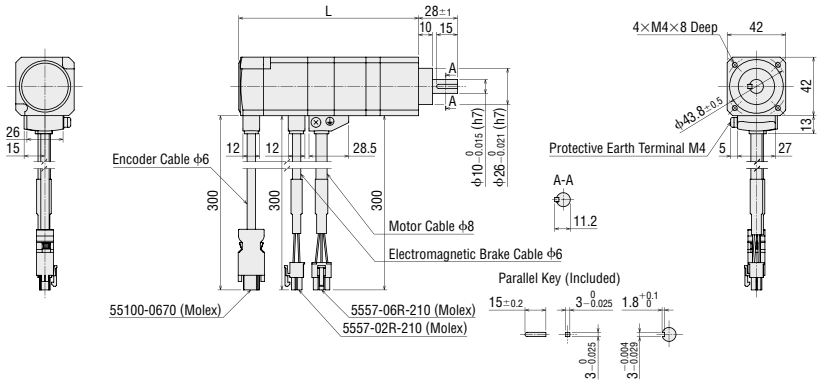


●The □ within the product name includes a number expressing the gear ratio.

◇**PS** Geared Type with Electromagnetic Brake

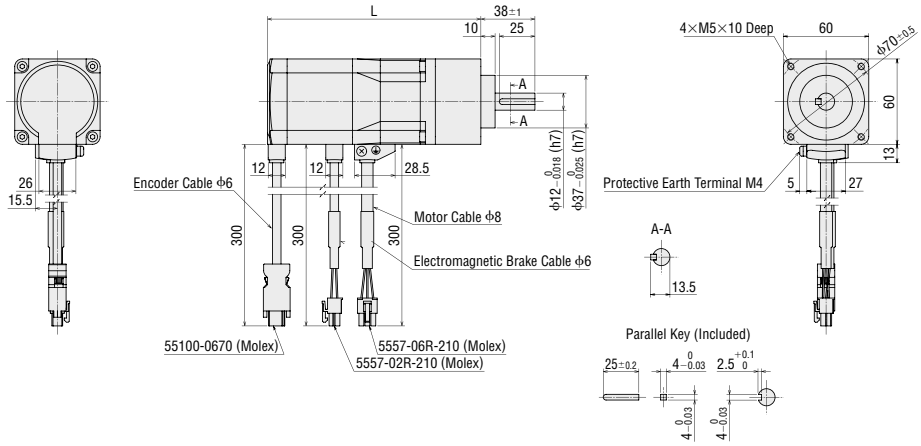
Frame Size 42 mm

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



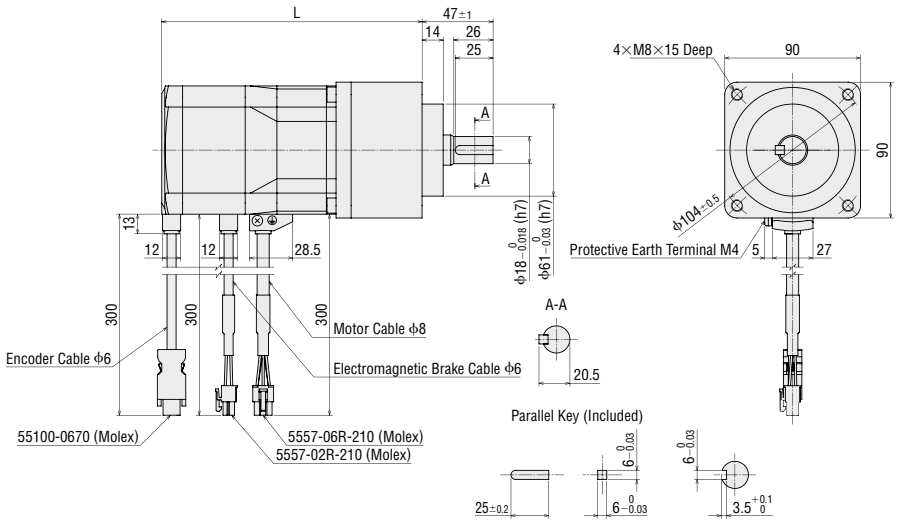
Frame Size 60 mm

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

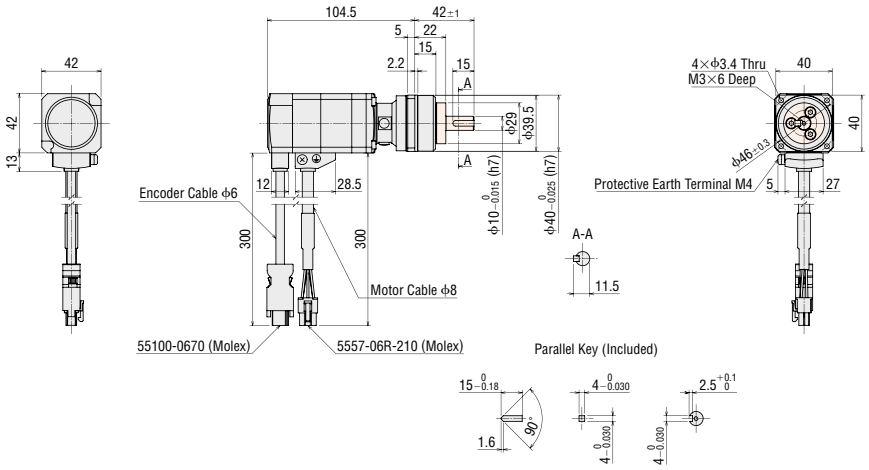


●The □ within the product name includes a number expressing the gear ratio.

◇**HPG** Geared Type Shaft Output Type

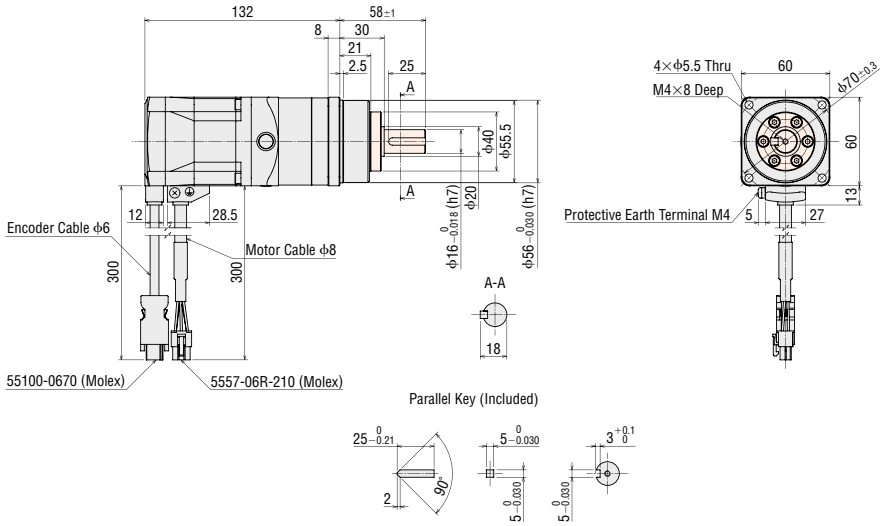
Frame Size 40 mm

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



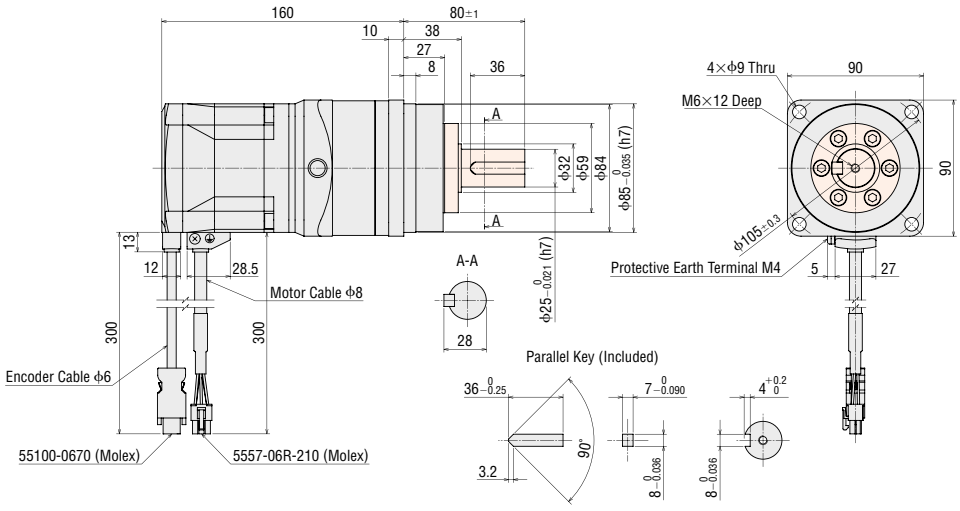
Frame Size 60 mm

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

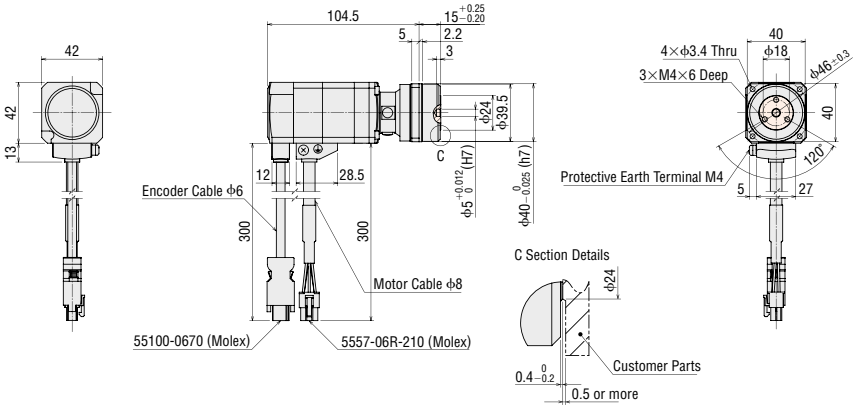


● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

◇**HPG** Geared Type Flange Output Type

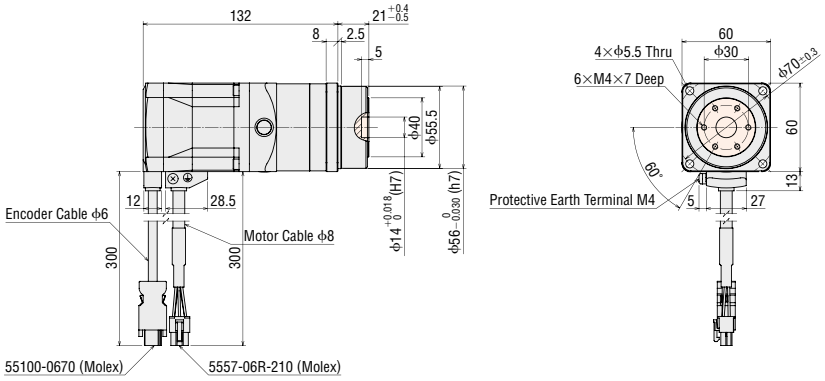
Frame Size 40 mm

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



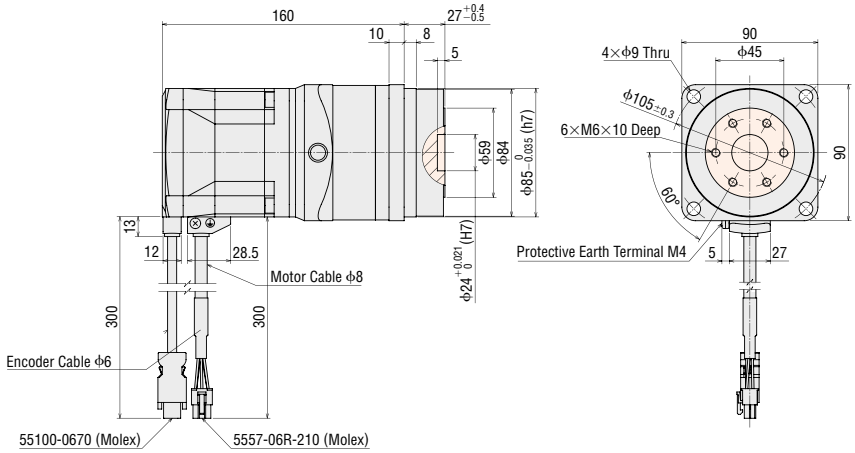
Frame Size 60 mm

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

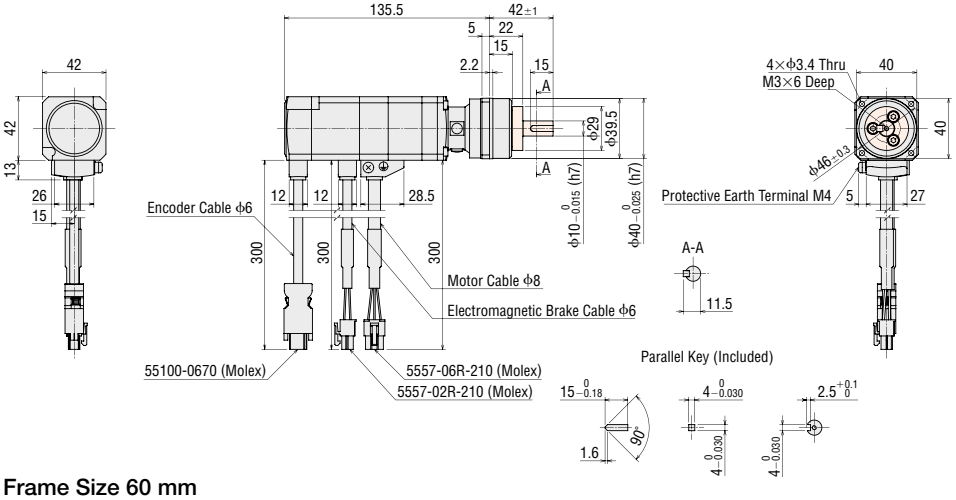


● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

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

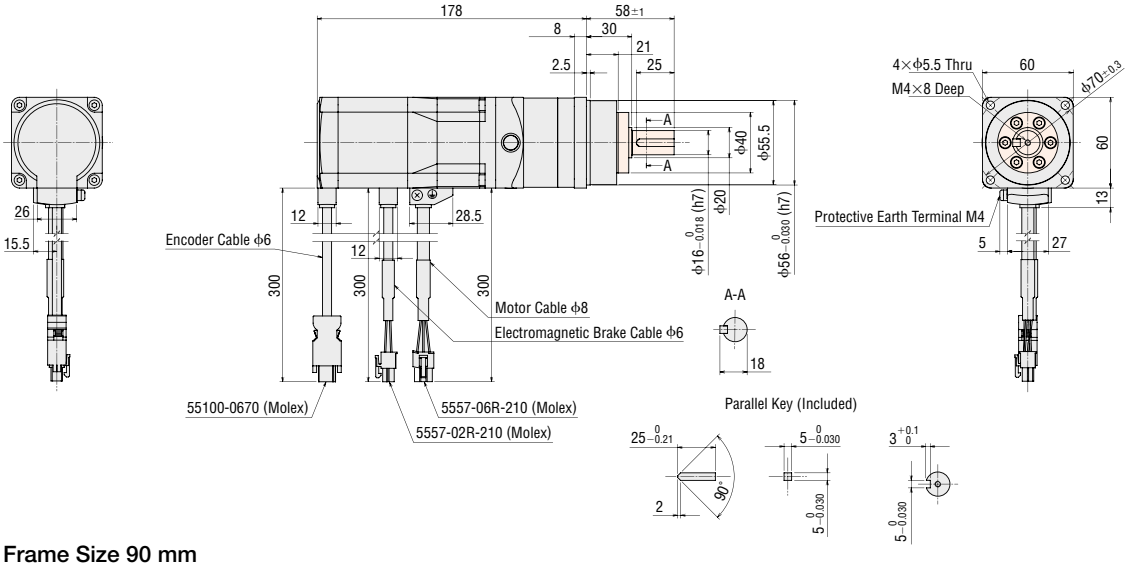
Frame Size 40 mm

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



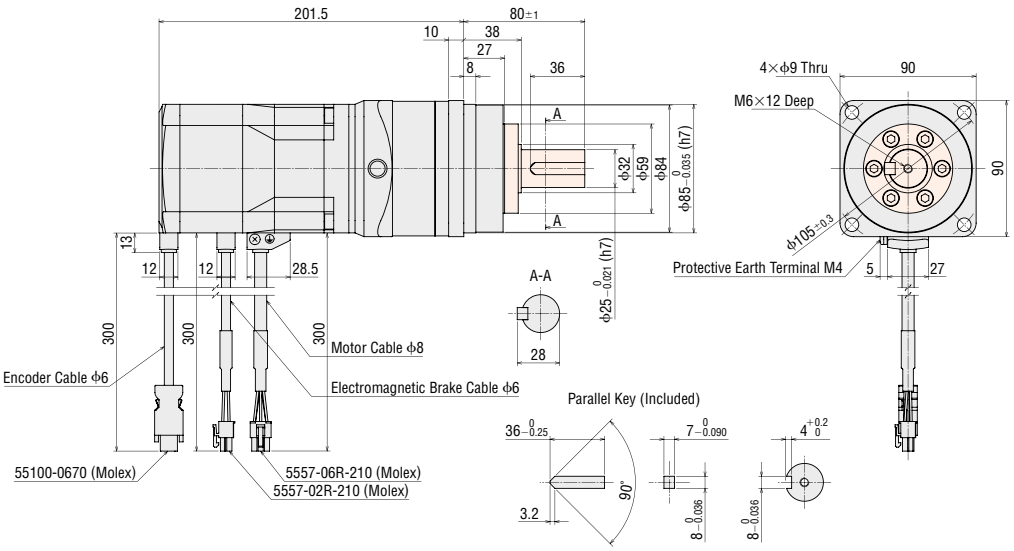
Frame Size 60 mm

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



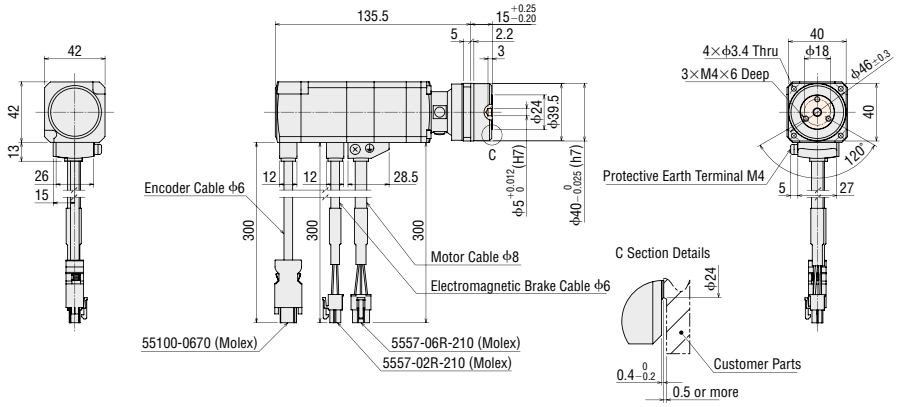
● The coloured part ▭ of the outline drawing is the rotation section.

● The ■ within the product name includes a number expressing the gear ratio.

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

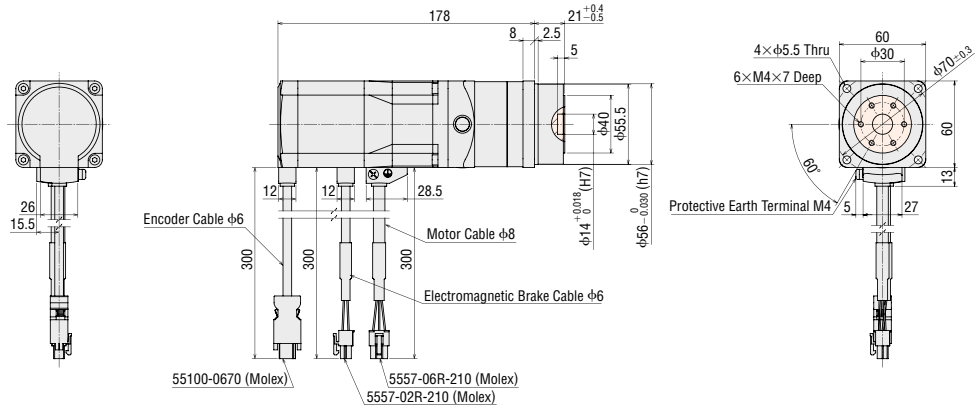
Frame Size 40 mm

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



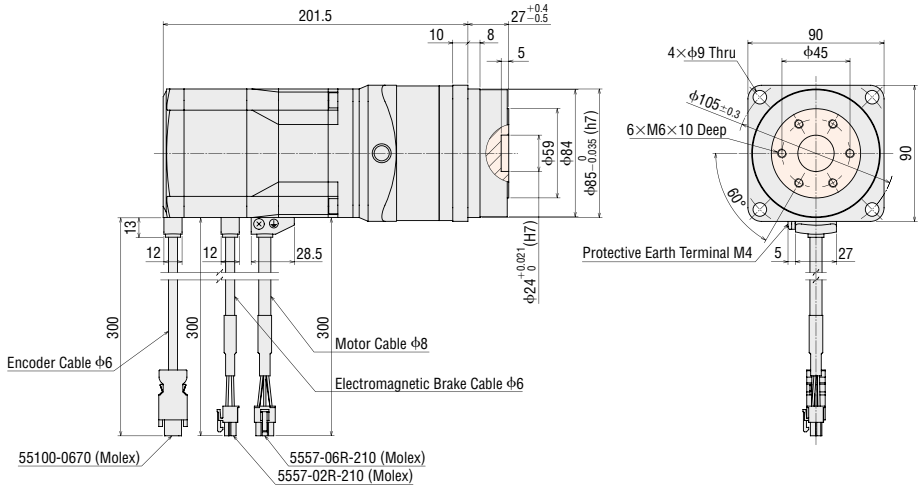
Frame Size 60 mm

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

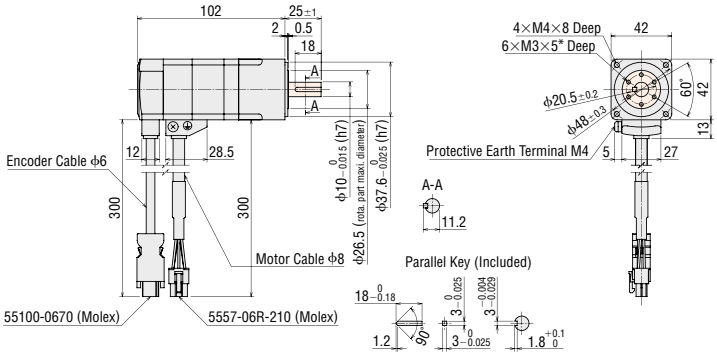


● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

◇Harmonic Geared Type

Frame Size 42 mm

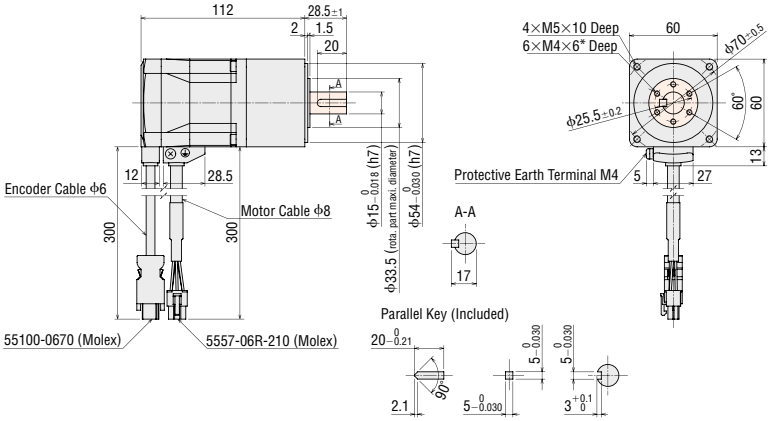
Product Name	Gear Ratio	Mass kg
AZM46AC-HS□	**50**, **100**	0.65



✻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

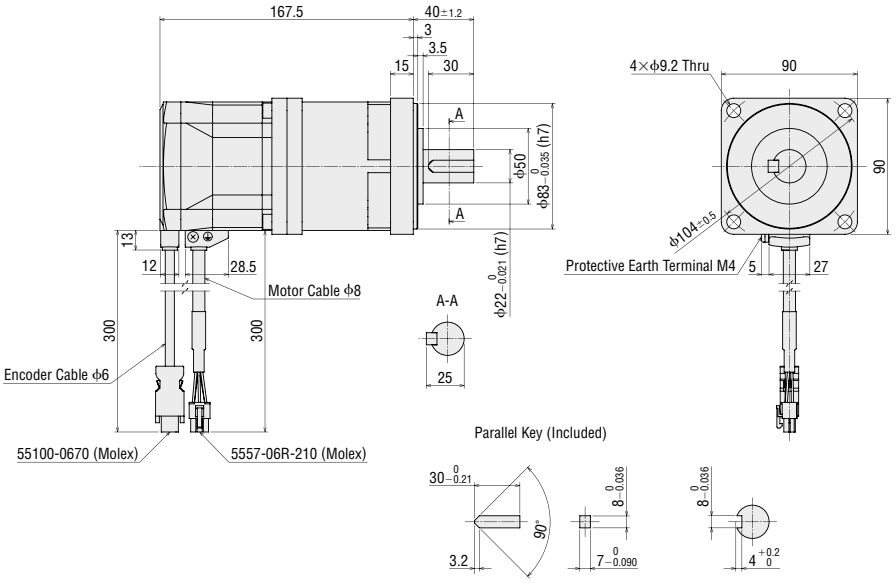
Product Name	Gear Ratio	Mass kg
AZM66AC-HS□	**50**, **100**	1.4



✻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

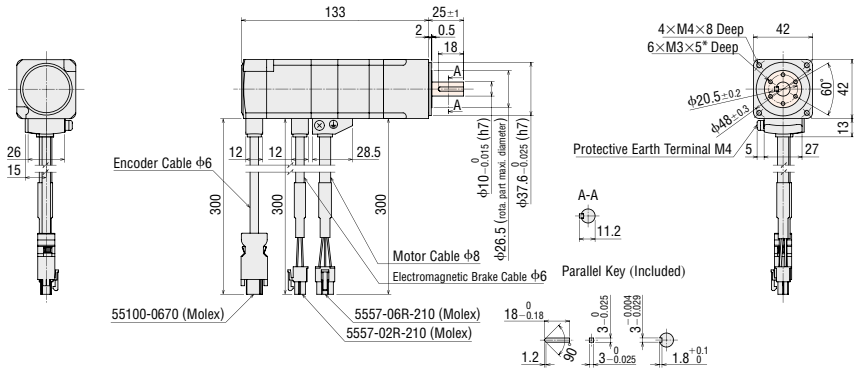


● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

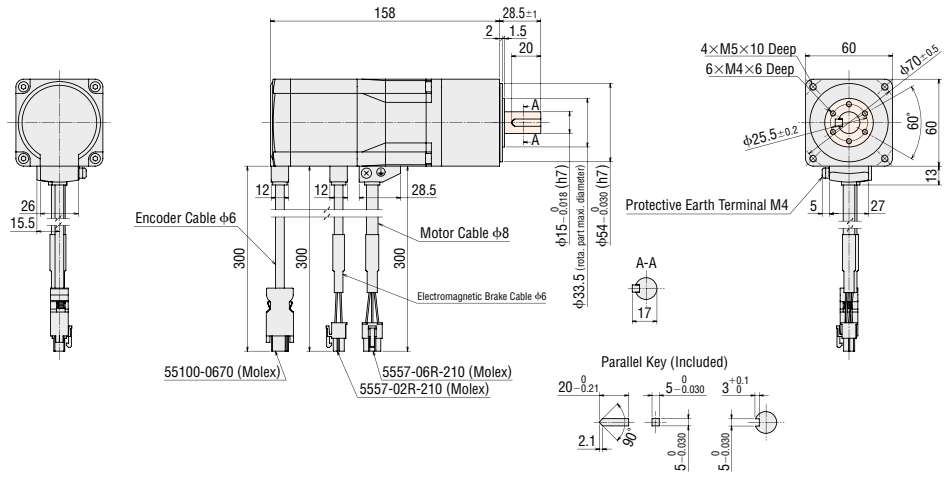
Product Name	Gear Ratio	Mass kg
AZM46MC-HS□	**50, 100**	0.82



✻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

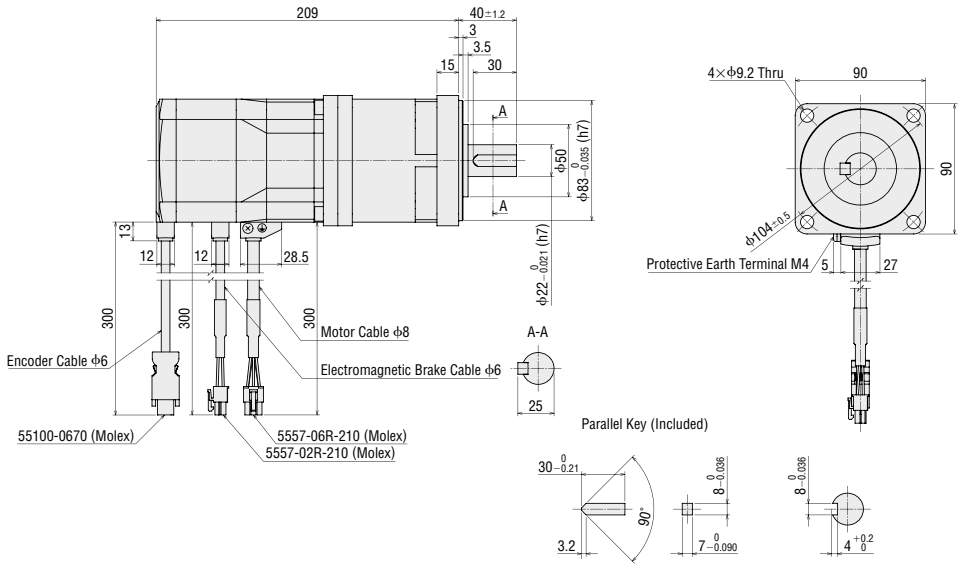
Product Name	Gear Ratio	Mass kg
AZM66MC-HS□	**50, 100**	1.8



✻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



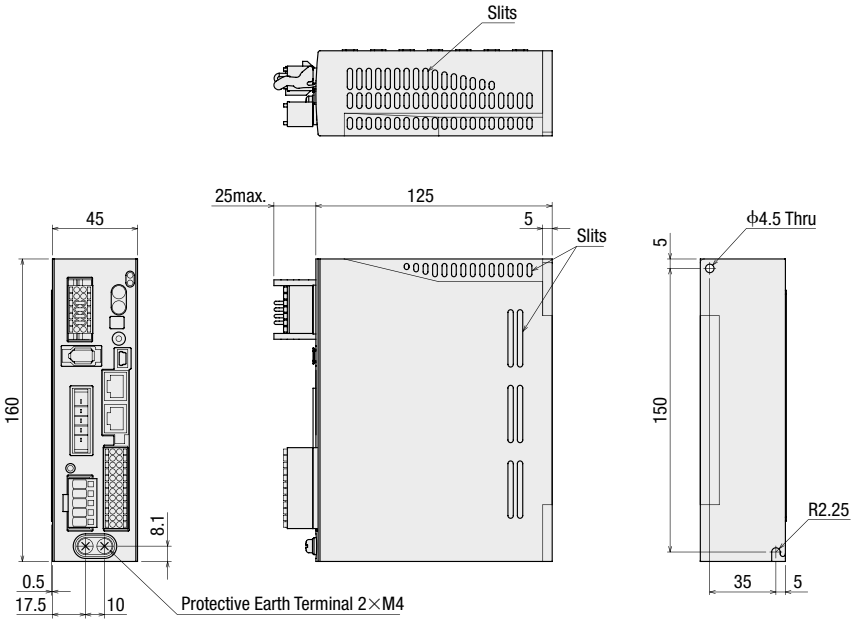
● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

Drivers

◇Built-in Controller Type, Pulse-Input Type with RS-485 Communication

Driver Product Name: **AZD-CD**, **AZD-CX**

Mass: 0.65 kg



●Accessories

Connector for Main Power Supply/Regeneration Unit (CN4)
Connector: 05JFAT-SAXGDK-H5.0
(JST Mfg. Co., Ltd.)

Connector for Input/Output Signal (CN5)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT GmbH & Co. KG)

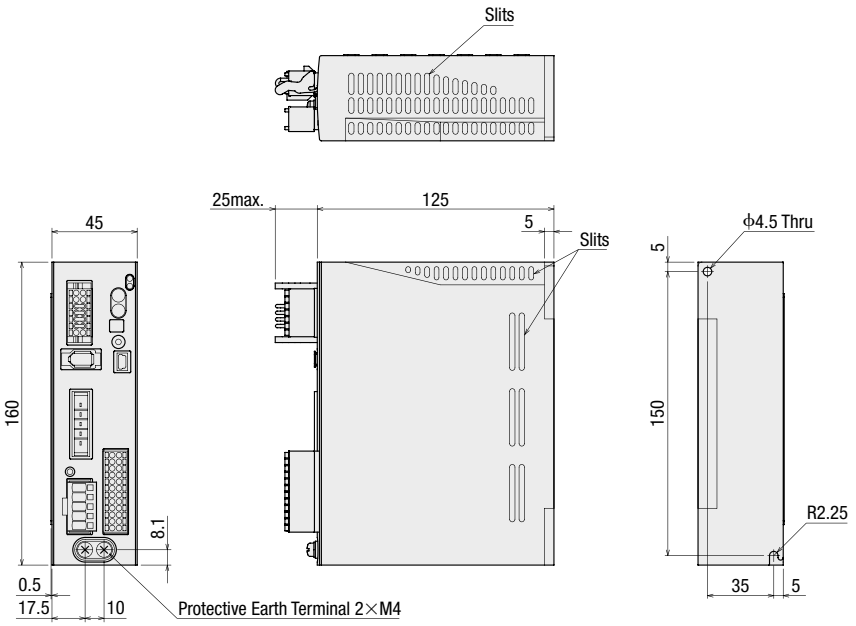
Connector for 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Output Terminal (CN1)
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT GmbH & Co. KG)

Lever for Connector: J-FAT-0T
(JST Mfg. Co., Ltd.)

◇Pulse-Input Type

Driver Product Name: **AZD-C**

Mass: 0.65 kg



●Accessories

Connector for Main Power Supply/Regeneration Unit (CN4)
Connector: 05JFAT-SAXGDK-H5.0
(JST Mfg. Co., Ltd.)

Connector for Input/Output Signal (CN5)
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT GmbH & Co. KG)

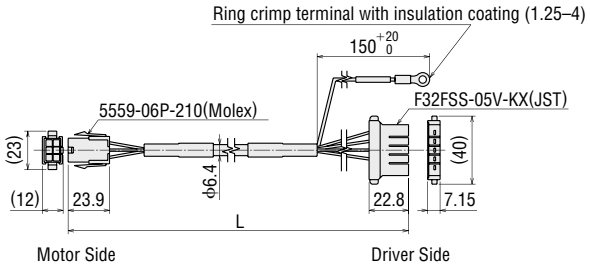
Connector for 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Output Terminal (CN1)
Connector: DFMC1,5/7-ST-3,5-LR
(PHOENIX CONTACT GmbH & Co. KG)

Lever for Connector: J-FAT-0T
(JST Mfg. Co., Ltd.)

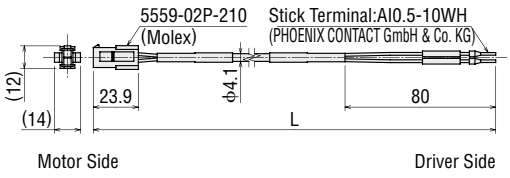
Cable for Motor (sold separately), Cable for Encoder (sold separately), Cable for Electromagnetic Brake (sold separately)

Only products with included connection cables

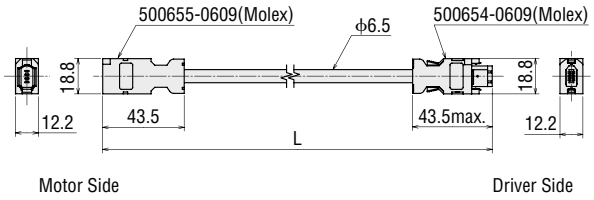
◇Cable for Motor



◇Cable for Electromagnetic Brake (Only for electromagnetic brake products)



◇Cable for Encoder



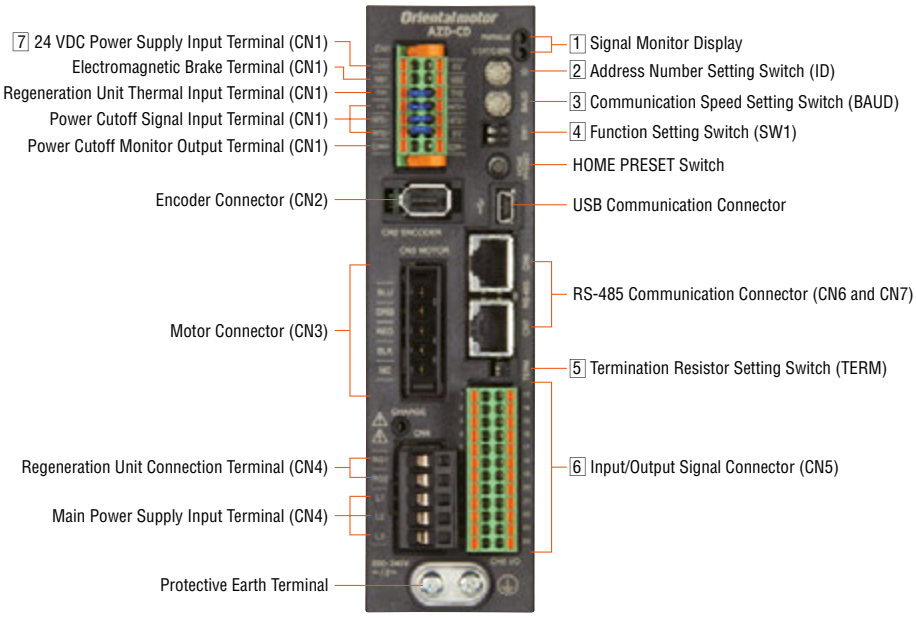
✻The length L (m) is specified where L is located in the dimensions in "Product Line" on page 19.

Notes

- The motor cable and the electromagnetic brake cable coming out of the motor cannot be connected directly to the driver. For connection to the driver use the accessory connection cable (sold separately) or the connection cable which is included to the product (for products with included cable).

Connection and Operation (Built-in Controller Type / Pulse-Input Type with RS-485 Communication)

Name and Functions of Driver Parts



1 Signal Monitor Displays

◇LED Displays

Display	Colour	Function	When Activated
PWR	Green	Power Display	When 24 VDC power is on.
ALM	Red	Alarm Display	Blinks when protective functions are activated.
C-DAT	Green	Communication Display	When communication data is received or sent.
C-ERR	Red	Communication Error Display	When there is an error with communication data.

2 Address Number Setting Switch (ID)

Display	Function
ID	Set the address number for RS-485 communication (Factory Setting. Built-in controller type : 0. Pulse input with RS-485 communication type : 1)

3 Communication Speed Setting Switch

Display	Function
BAUD	Set this when using RS-485 communications. Set the communication speed (Factory Setting. Built-in controller type : 7. Pulse input with RS-485 communication type : 4)

4 Function Setting Switch

Display	No.	Function
SW1	1	This sets the address number in combination with the address number setting switch (ID) (Factory Setting: OFF).
	2	Set the protocol of RS-485 communication (Factory Setting. Built-in controller type: OFF. Pulse input with RS-485 communication type : ON)

◇Settings of the RS-485 Communication Speed

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 Termination Resistor Setting Switch

Display	No.	Function
TERM	1	Set the RS-485 communication terminal resistor (120Ω) (Factory Setting: OFF) .
	2	OFF: no terminal resistor, ON: terminal resistor connected.

● Please use the same settings for both No. 1 and No. 2.

6 Input/Output Signal Connector (CN5)

For the Pulse-Input Type with RS-485 Communication pin No. 1, 2, 13 and 14 are for pulse input. For connecting to a programmable controller refer to page 63-64 of the Pulse-Input Type.

Display	Pin Number	Driver Type	Signal Name	Content	
CN5	1	Built-In Controller Type	IN0	START	This signal is used to start positioning operation.
		Pulse-Input Type with RS-485 Communication	CW+* [PLS+]	CW Pulse Input+ [Pulse Input+]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	2	Built-In Controller Type	IN2	M1	Use the 3 bits of M0, M1, M2, to select the drive data No.
		Pulse-Input Type with RS-485 Communication	CCW+* [DIR+]	CCW Pulse Input+ [Rotation Direction Input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	3	Common	IN4	ZHOME	Move to the home position set with the HOME PRESET switch.
	4	Common	IN6	STOP	Stop the motor.
	5	Common	IN-COM [0–7]*	IN0~IN7 input common	
	6	Common	IN8	FW-JOG	Start JOG operation.
	7	Common	OUT0	HOME-END	Output when determining the home position or completing high speed return-to-home operation.
	8	Common	OUT2	PLS-RDY	Not used
	9	Common	OUT4	MOVE	Output while operating the motor.
	10	Common	OUT-COM*	Output common	
	11	Common	ASG+	A phase pulse output+	
	12	Common	BSG+	B phase pulse output+	
	13	Built-In Controller Type	IN1	M0	Use the 3 bits of M0, M1, M2, to select the drive data No.
		Pulse-Input Type with RS-485 Communication	CW–* [PLS–]	CW–* [PLS–]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	14	Built-In Controller Type	IN3	M2	Use the 3 bits of M0, M1, M2, to select the drive data No.
		Pulse-Input Type with RS-485 Communication	CCW–* [DIR–]	CCW Pulse Input+ [Rotation Direction Input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	15	Common	IN5	FREE	The motor is set to non-excitation.
	16	Common	IN7	ALM-RST	Reset the alarm.
	17	Common	IN-COM [8-9]*	IN8, IN9 input common	
	18	Common	IN9	RV-JOG	Start JOG operation.
	19	Common	OUT1	IN-POS	Output when the motor operation is complete.
	20	Common	OUT3	READY	Output when the driver is ready for operation.
	21	Common	OUT5	ALM-B	Output the driver alarm state (normal close).
	22	Common	GND*[1]	Ground	
	23	Common	ASG–	A phase pulse output –	
	24	Common	BSG–	B phase pulse output –	

● Assigned functions are set by means of the parameter settings. The above is the initial value. For details, refer to the User's Manual.

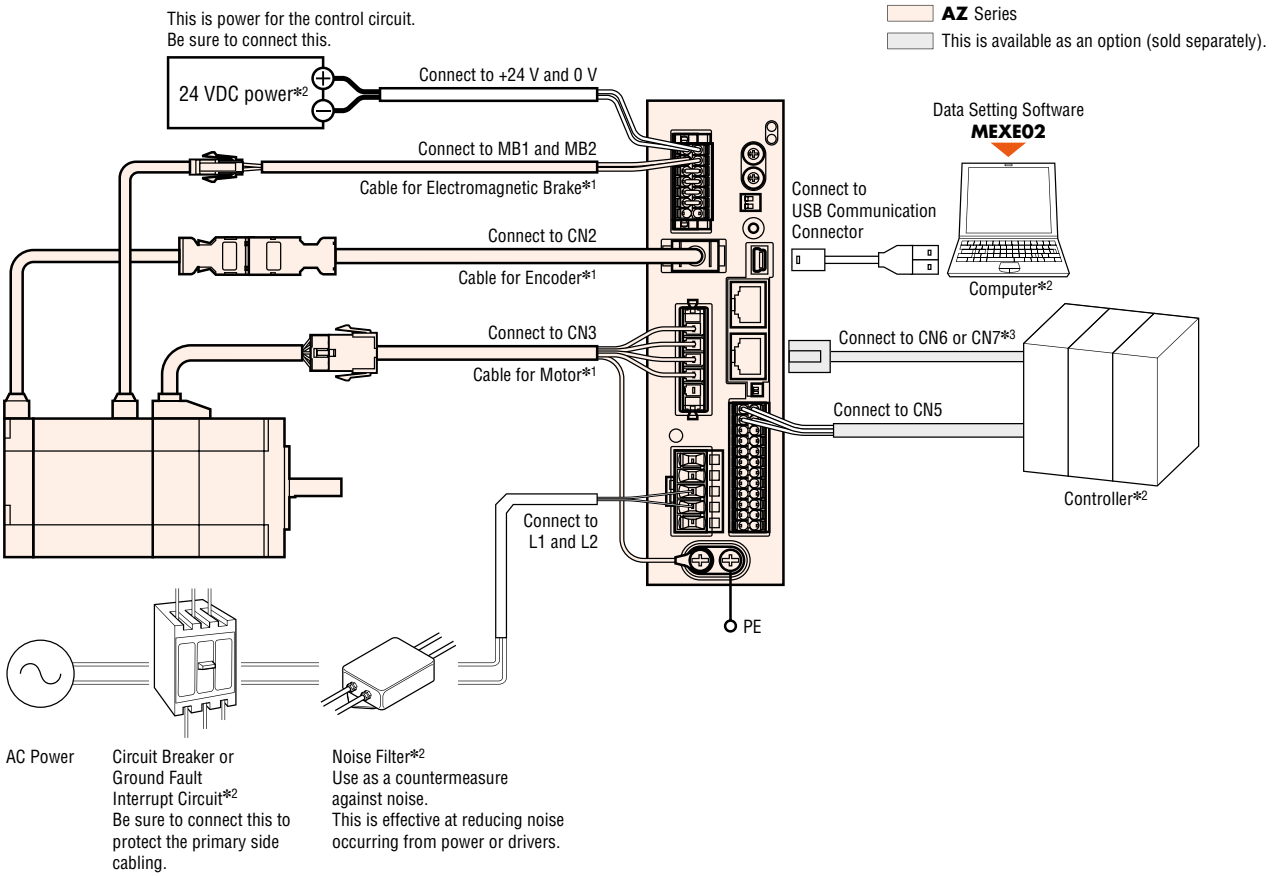
* The initial value setting cannot be changed.

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

Display	Input/Output	Terminal Name	Content
+24 V	Input	24 VDC Power Input Terminal+	This is the driver control circuit power. Be sure to connect this.
0 V		24 VDC Power Input Terminal–	
MB1	Output	Electromagnetic Brake Connection Terminal–	Connect the cable for Electromagnetic Brake Connection Terminal.
MB2		Electromagnetic Brake Connection Terminal+	
TH1	Input	Regeneration Unit Thermal Input Terminal	Connect the optional regenerative resistance (**RGB100**) (sold separately). When not connecting the regenerative resistance, short circuit between the terminals (**RGB100**).
TH2		Regeneration Unit Thermal Input Terminal	
HWTO1+	Input	Drive Cutoff Signal Input Terminal 1+	Connect the switch and programmable controller. When either HWTO1 input or HWTO2 input is OFF, the electricity to the motor is cut directly by hardware without the CPU.
HWTO1–		Drive Cutoff Signal Input Terminal 1–	
HWTO2+		Drive Cutoff Signal Input Terminal 2+	
HWTO2–		Drive Cutoff Signal Input Terminal 2–	
EDM+	Output	Drive Cutoff Signal Input Terminal+	Connect the programmable controller. When both HWTO1 input and HWTO2 input are OFF, EDM output becomes ON.
EDM–		Drive Cutoff Signal Input Terminal–	

●Connection Diagram

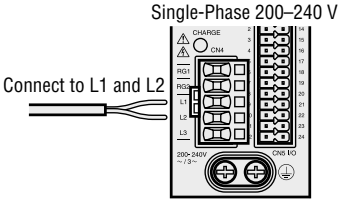
◇Connection to Peripheral Equipment



∗1 Make sure a cabling distance between the motor and the driver is 20 m or less.
∗2 Prepared by the customer.
∗3 When controlling with RS-485 communications, connect to the controller.

◇Connecting a Main Power Supply

The connection method differs according to the power supply specification.



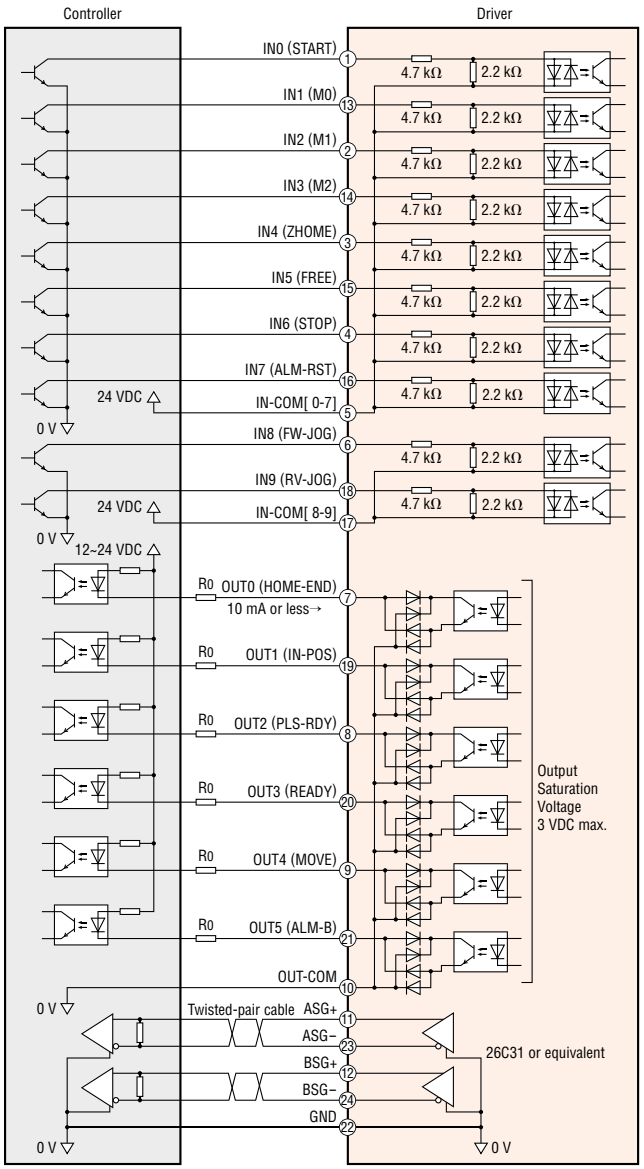
◇USB Cable Connection

The computer on which the data setting software **MEXE02** is installed and driver are connected with a USB cable.
Use the following specifications for the USB cable.

Specification	USB2.0 (full speed)
Cable	Length: 3 m (or less)
	Format: A-mini-B

◇Connecting to a Host Controller

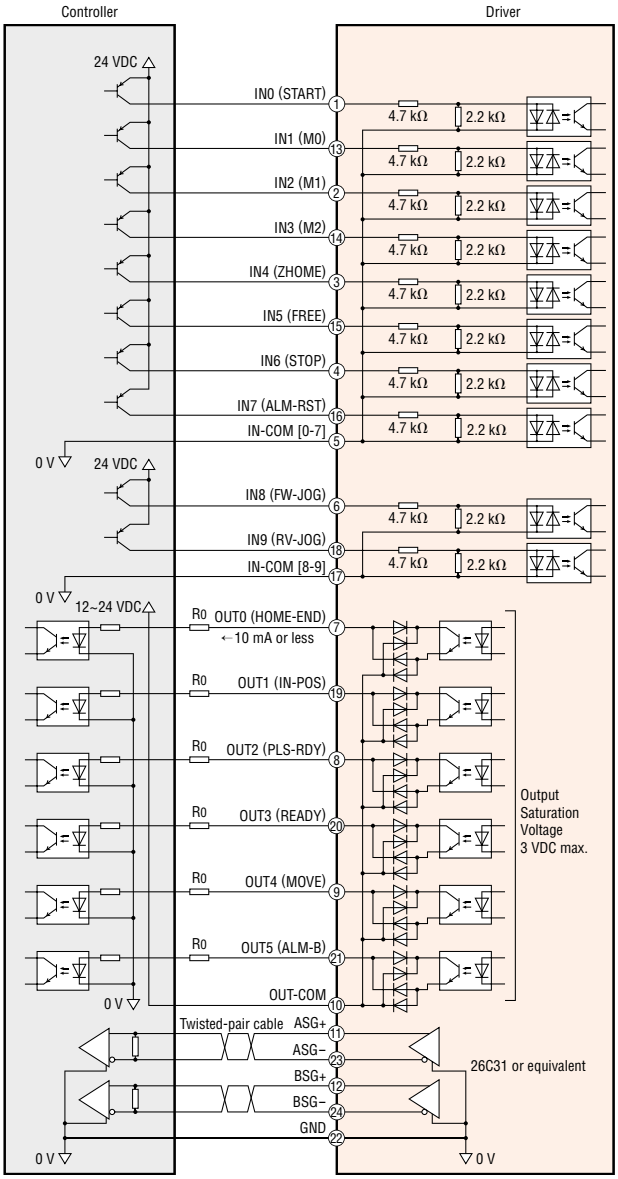
•Connecting to a Current Sink Output Circuit



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA, connect an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power lines (power supply line and motor line).
  Further, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

•Connecting to a Current Source Output Circuit



Notes

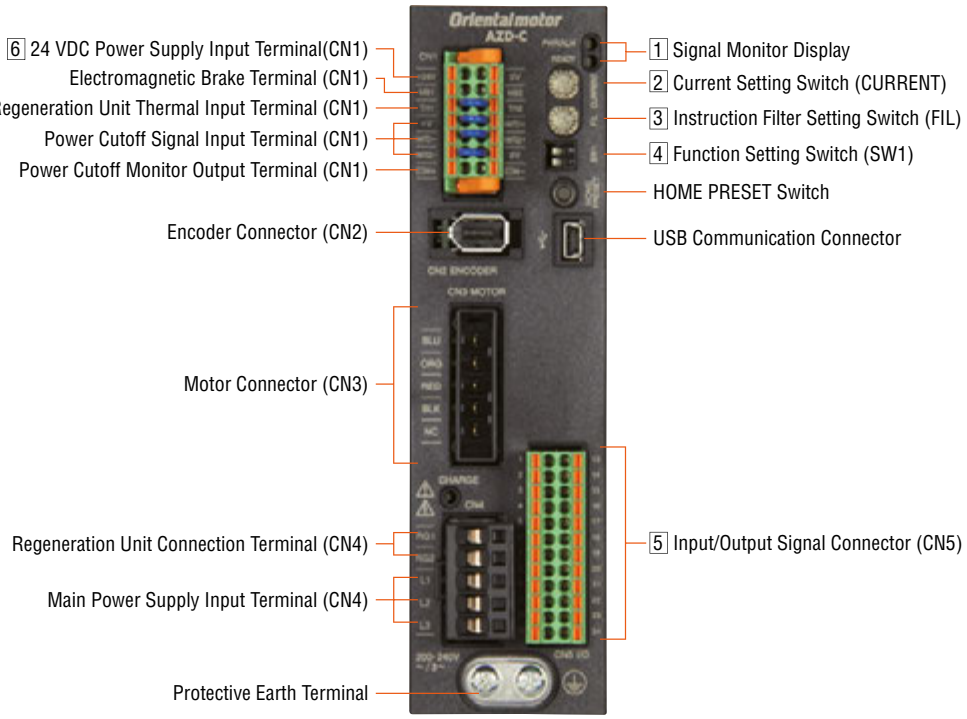
- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA, connect an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Further, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

◇Connecting to a Programmable Controller (Pulse-Input Type with RS-485 Communication)

The connection diagram is the same like that of the Pulse-Input Type. See page 63-64

Connection and Operation (Pulse-Input Type)

Names and Functions of Driver Parts



1 Signal Monitor Displays

◇LED Display

Display	Colour	Function	When Activated
PWR	Green	Power Display	When 24 VDC power is on.
ALM	Red	Alarm Display	Blinks when protective functions are activated.
READY	Green	READY Output	When READY output is set to ON.

2 Current Setting Switch

Display	Function
CURRENT	Set basic current that is the base for the operation current and stop current (Factory Setting: F).

3 Command Filter Setting Switch

Display	Function
FIL	Adjust the responsiveness of the motor (Factory Setting: 1).

4 Function Setting Switch

Display	No.	Function
SW1	1	Sets the resolution per one rotation of the motor output shaft: OFF [1000 p/r] (Factory Setting); ON [10000 p/r]
	2	Sets the pulse input format to 1 pulse input mode or 2 pulse input mode. (Factory Setting: OFF[2 pulse input mode])

5 Input/Output Signal Connector (CN4)

Display	Pin Number	Signal Name	Content	
CN4	1	CW+[PLS+]*1	CW pulse input+[pulse input+]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	2	CCW+[DIR+]*1	CCW pulse input+[rotation direction input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	3	IN4	ZHOME	Move to the home position set with the HOME PRESET switch.
	4	IN6	STOP	Stop the motor.
	5	IN-COM [4–7]*1	IN4–IN7 input common	
	6	IN8	FW-JOG	Start JOG operation.
	7	OUT0	HOME-END	Output when determining the home position or completing high speed return-to-home operation.
	8	OUT2	PLS-RDY	Output when the pulse input preparation is complete.
	9	OUT4	MOVE	Output while operating the motor.
	10	OUT-COM*1	Output common	
	11	ASG+	A phase pulse output+	
	12	BSG+	B phase pulse output+	
	13	CW−[PLS-]*1	CW pulse input−[pulse input−]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	14	CCW−[DIR-]*1	CCW pulse input−[rotation direction input −]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	15	IN5	FREE	The motor is set to non-excitation.
	16	IN7	ALM-RST	Reset the alarm.
	17	IN-COM [8–9]*1	IN8, IN9 input common	
	18	IN9	RV-JOG	Start JOG operation.
	19	OUT1	IN-POS	Output when the motor operation is complete.
	20	OUT3	READY	Outputs when the driver is ready for operation.
	21	OUT5	ALM-B	Output the driver alarm state (normal close).
	22	GND*1	Ground	
	23	ASG−	A phase pulse output−	
	24	BSG−	B phase pulse output−	

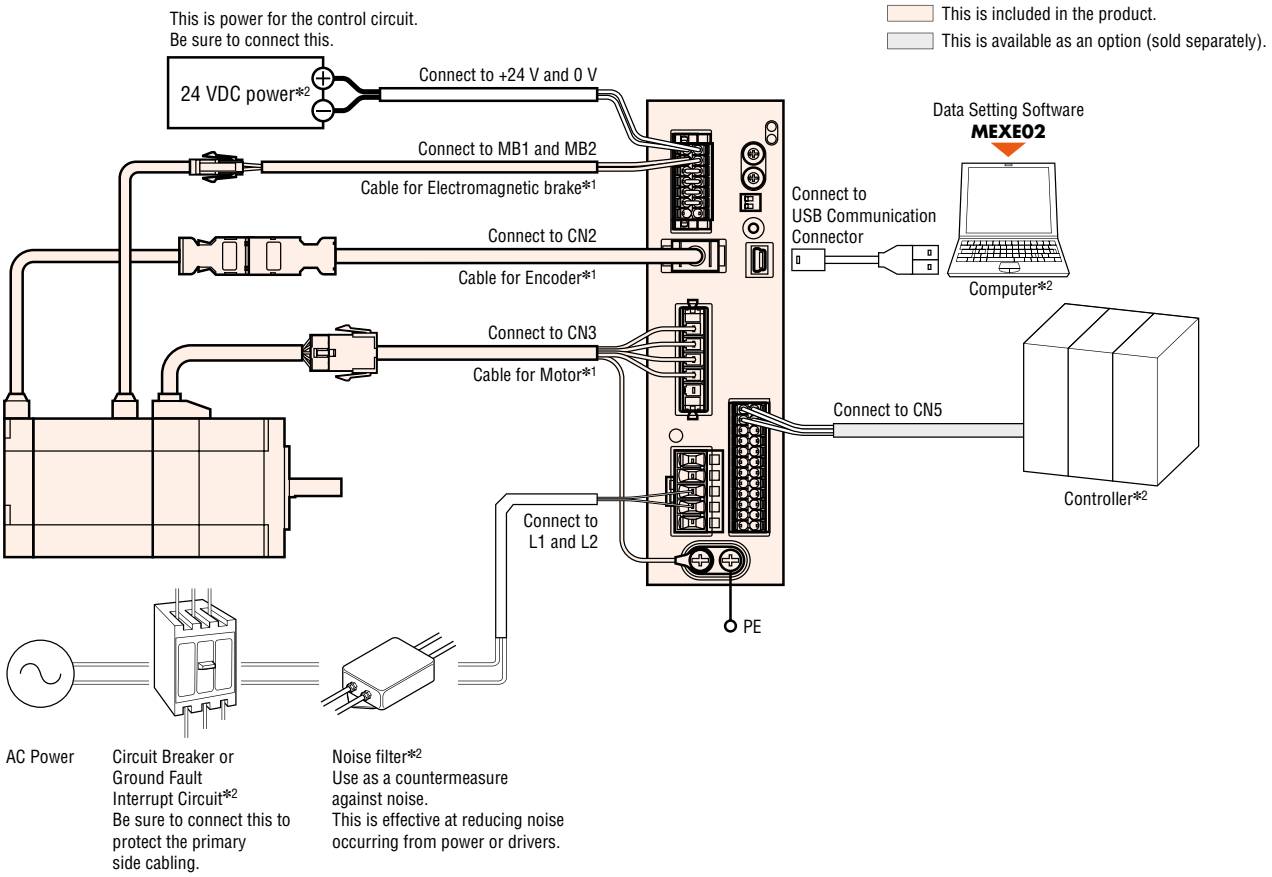
●Assigned functions are set by means of the parameter settings. The above is the initial value. For details, refer to the User's Manual.
*1 The initial value setting cannot be changed.

6 24 VDC Assigned functions are set by means of the parameter settings. The above is the initial value. For details, refer to the User's Manual. (CN1)

Display	Input/Output	Terminal Name	Content
+24 V	Input	24 VDC Power Input Terminal+	This is the driver control circuit power. Be sure to connect this.
0 V		24 VDC Power Input Terminal−	
MB1	Output	Electromagnetic Brake Terminal−	Connect the cable for electromagnetic brake of the electromagnetic brake type motor.
MB2		Electromagnetic Brake Terminal+	
TH1	Input	Regeneration Unit Thermal Input Terminal	Connect the optional regenerative resistance (**RGB100**) (sold separately). When not connecting the regenerative resistance, short circuit between the terminals (**RGB100**).
TH2		Regeneration Unit Thermal Input Terminal	
HWTO1+	Input	Drive Cutoff Signal Input Terminal 1+	Connect the switch and programmable controller. When either HWTO1 input or HWTO2 input is OFF, the electricity to the motor is cut directly by hardware without the CPU.
HWTO1−		Drive Cutoff Signal Input Terminal 1−	
HWTO2+		Drive Cutoff Signal Input Terminal 2+	
HWTO2−		Drive Cutoff Signal Input Terminal 2−	
EDM+	Output	Drive Cutoff Monitor Output Terminal+	Connect the programmable controller. When both HWTO1 input and HWTO2 input are OFF, EDM output becomes ON.
EDM−		Drive Cutoff Monitor Output Terminal−	

●Connection Diagram

◇Connection to Peripheral Equipment

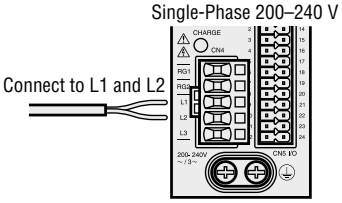


*1 Make sure a cabling distance between the motor and the driver is 20 m or less.
*2 Prepared by the customer.

◇Connecting a Main Power Supply

The connection method differs according to the power supply specification.

Single-Phase 200–240 V



◇USB Cable Connection

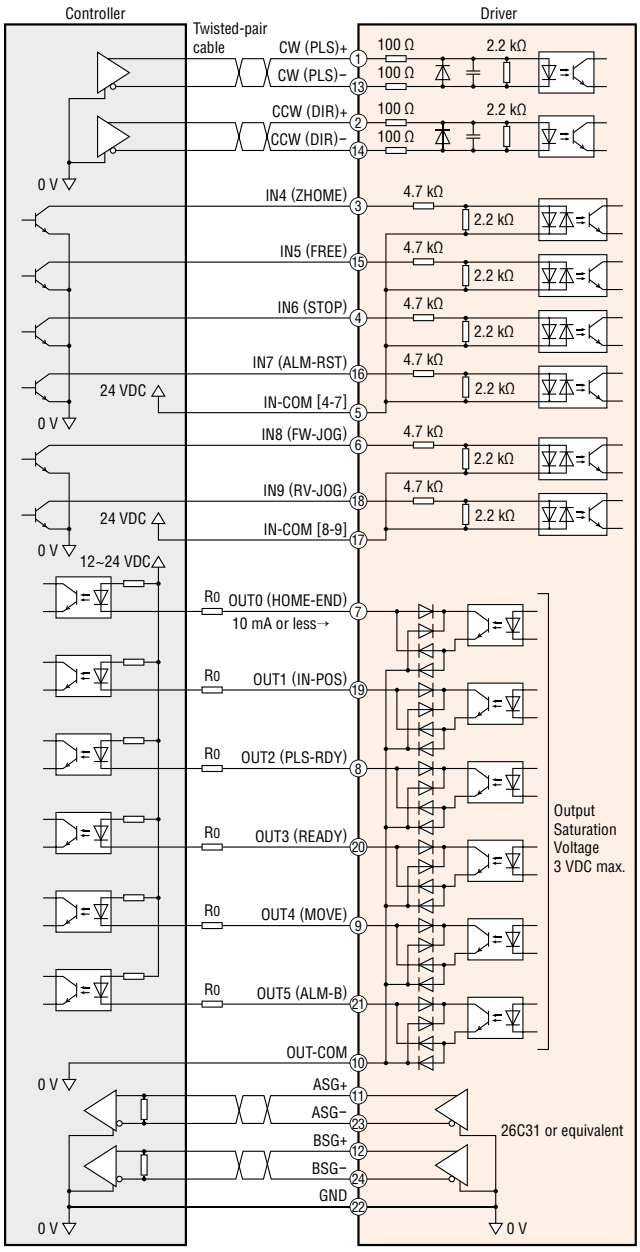
The computer on which the data setting software **MEXE02** is installed and driver are connected with a USB cable.
Use the following specifications for the USB cable.

Specification	USB2.0 (full speed)
Cable	Length: 3 m (or less)
	Format: A-mini-B

◇Connecting to a Host Controller

•Connecting to a Current Sink Output Circuit

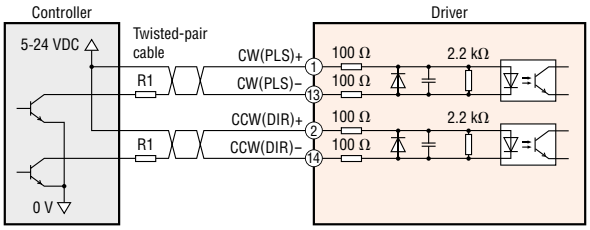
When the pulse input is a line driver



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA, connect the external resistance R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

When the pulse input is an open collector



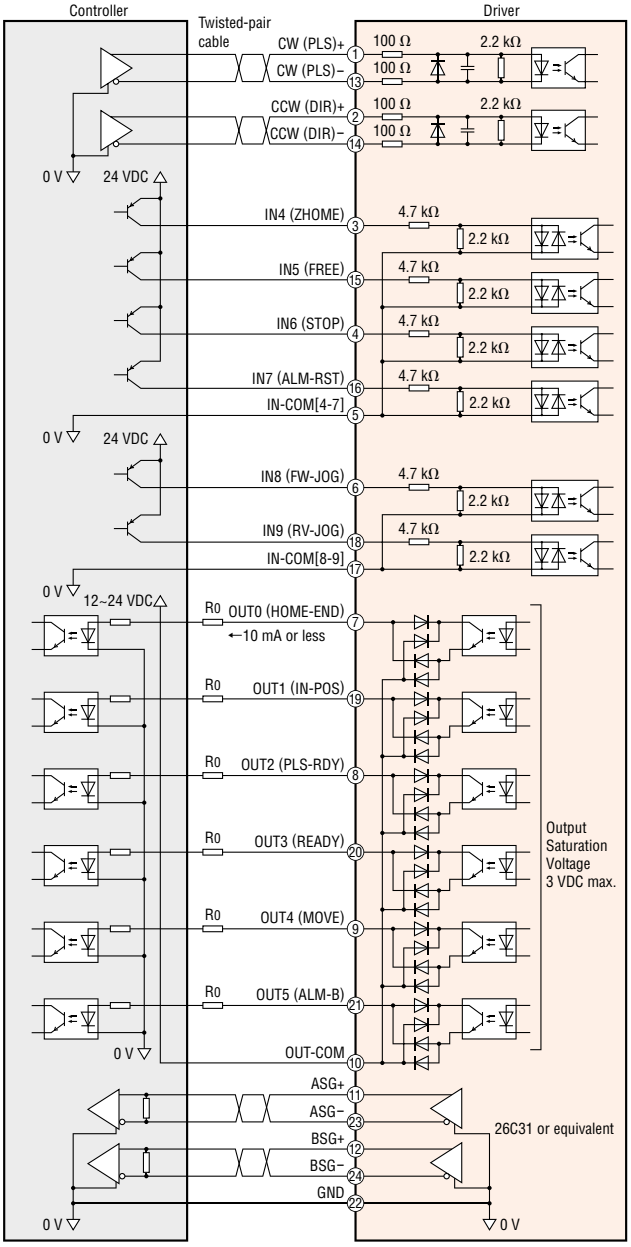
Notes

- For CW (PLS) input and CCW (DIR) input, use 5~24 VDC. Where the voltage exceeds 5 VDC, connect the external resistance R_1 to adjust the input current to be 7~20 mA.

◇Connecting to a Host Controller

•Connecting to a Current Source Output Circuit

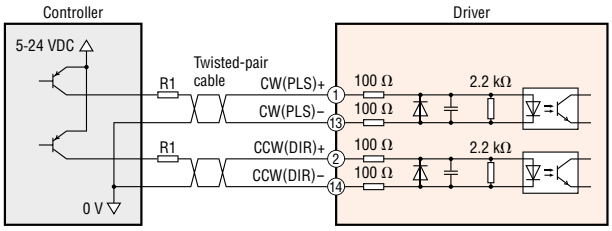
When the pulse input is a line driver



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA, connect to external resistance R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

When the pulse input is an open collector



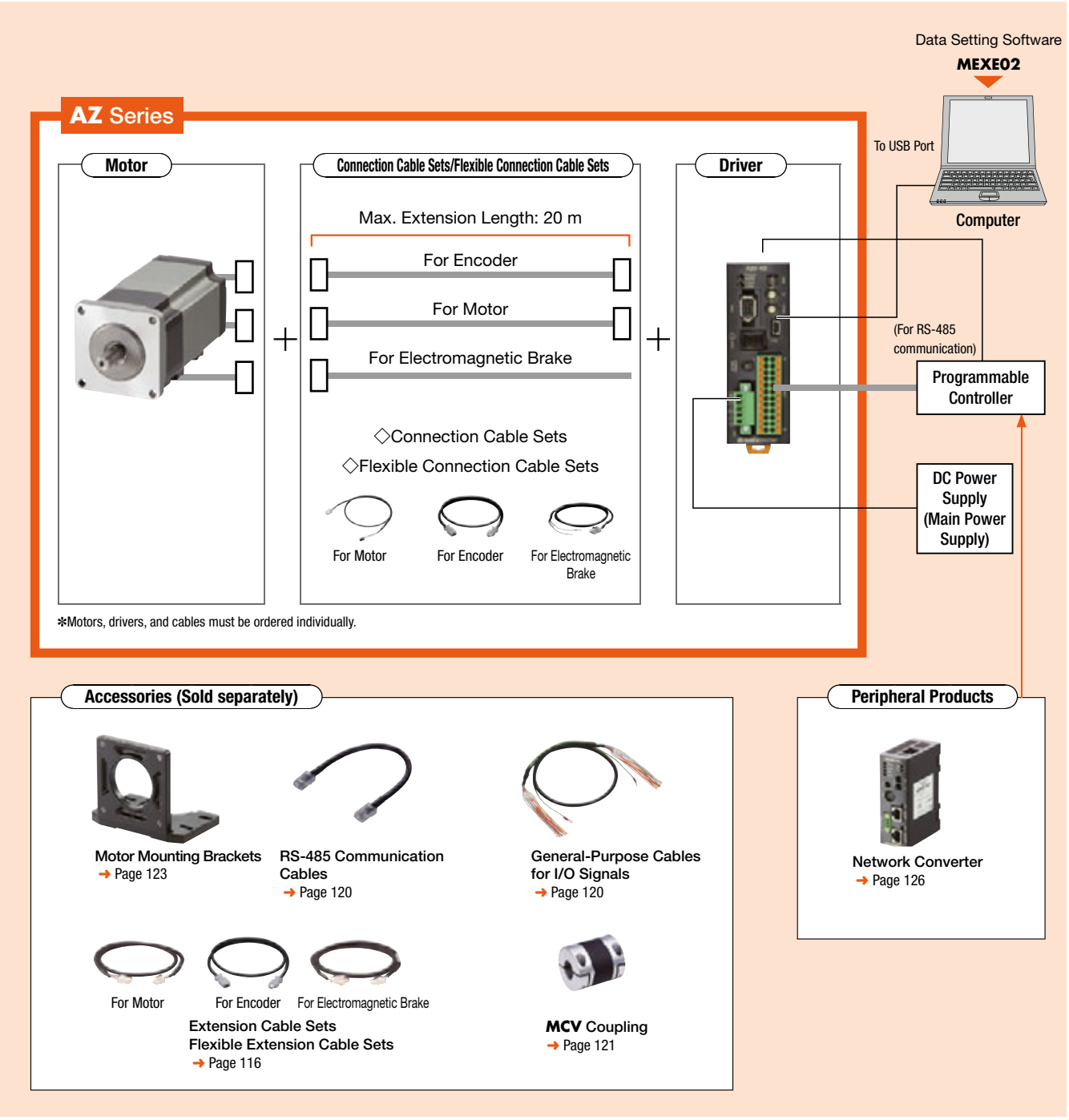
Notes

- For CW (PLS) input and CCW (DIR) input, use 5~24 VDC. Where the voltage exceeds 5 VDC, connect the external resistance R_1 to adjust the input current to be 7~20 mA.

System Configuration

Combination of Standard Type Motor with Electromagnetic Brake and Built-in Controller Type Driver or Pulse-Input Type Driver with RS-485 Communication

An example of a configuration using I/O control or RS-485 communication is shown below.
Motors, drivers, and cables must be ordered individually.



System Configuration Example

AZ Series

Motor	Driver	Connection Cable Sets
AZM66MK	**AZD-KD**	**CC030VZFB2**
€447.00	€360.00	€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	€21.00

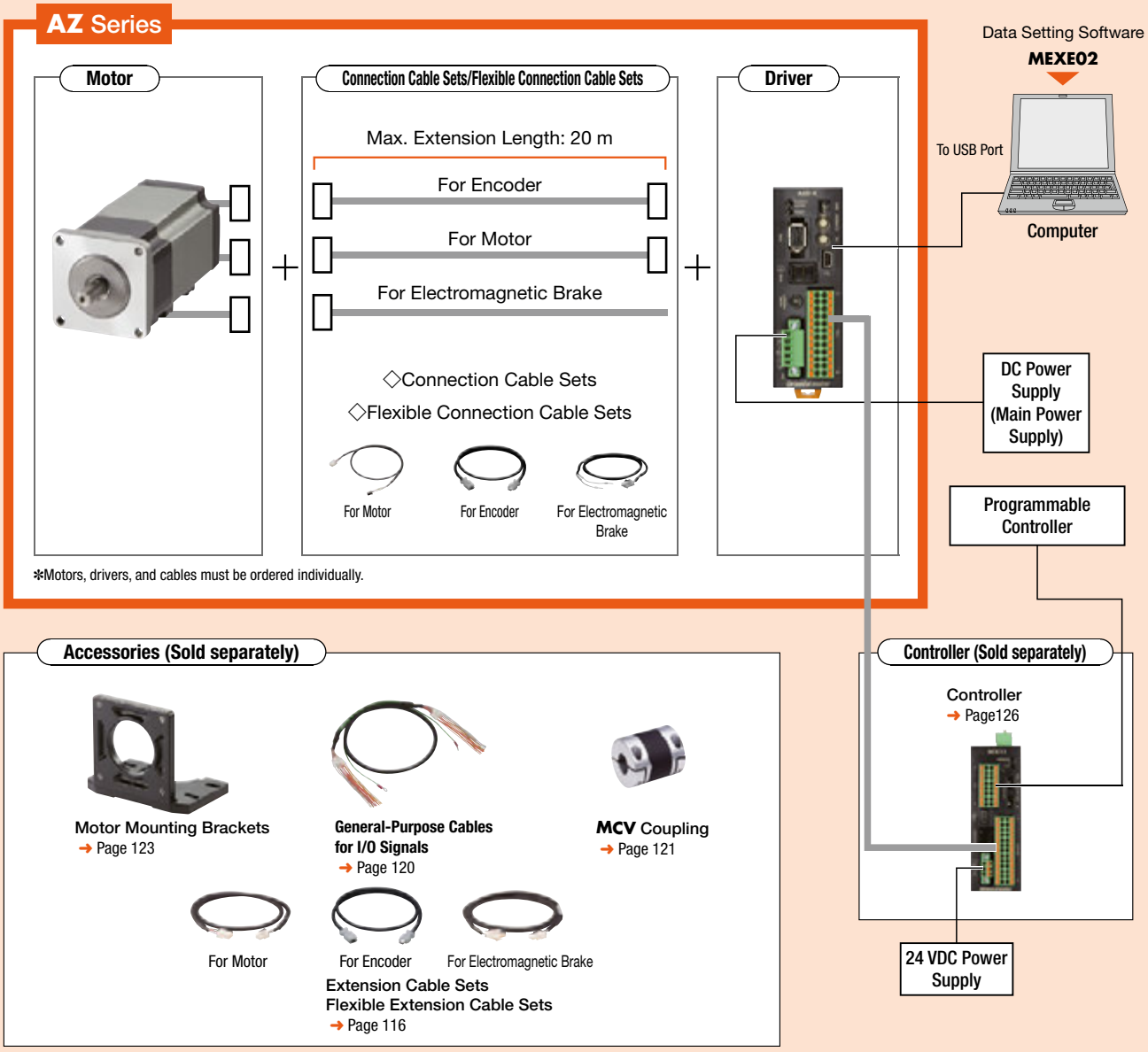
The system configuration shown above is an example. Other combinations are also available.

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.
Motors, drivers, and cables must be ordered individually.



System Configuration Example

AZ Series

Motor	Driver	Connection Cable Sets
AZM66MK	**AZD-K**	**CC030VZFB2**
€447.00	€310.00	€63.00

+

Accessory

Sold Separately			
Controller	Motor Mounting Brackets	Flexible Coupling	General-Purpose Cables for I/O Signals (1 m)
SCX11	**PAL2P-5**	**MCV251010**	**CC16D010B-1**
€215.00	€13.00	€53.00	€21.00

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 Code

Motor

◇Standard Type

AZM 6 6 A 0 K

① ② ③ ④ ⑤ ⑥

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

AZM 6 6 A K - HP 15 F

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

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

✻For standard types without specified shaft shape one shaft side is milled.

◇**TS** Geared Type

AZM 6 6 A K - TS 10 U

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

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

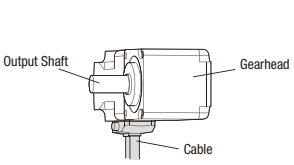
◇**FC** Geared Type

AZM 6 6 A K - FC 10 U A

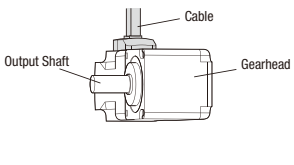
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

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

✻With the output shaft pointing to the left the cable direction is defined by looking from the gearhead side.



Downward Cable Direction



Upward Cable Direction

Driver

AZD - K D

① ② ③

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

Connection Cable Sets/Flexible Connection Cable Sets

CC 050 V Z □ F B 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Models	**Z**: **AZ** Series
⑤	Reference Number	Blank: Frame Size 42 mm (**HPG** Geared Type is 40 mm), 60 mm **2**: Frame Size 20 mm, 28 mm
⑥	Cable Type	**F**: Connection Cable Sets **R**: Flexible Connection Cable Sets
⑦	Electromagnetic Brake	Blank: Without Electromagnetic Brake **B**: With Electromagnetic Brake
⑧	Cable Specifications	**2**: DC Power Supply Input

Product Line

Motor

◇Standard Type

Frame Size	Product Name	List Price
20 mm	**AZM14AK** **AZM15AK**	€230.00
28 mm	**AZM24AK** **AZM26AK**	€230.00
42 mm	**AZM46AK** **AZM46A0K**	€246.00
	AZM48AK **AZM48A0K**	€255.00
	AZM48A1K	€265.00
60 mm	**AZM66AK** **AZM66A0K**	€290.00
	AZM66A1K	€290.00
	AZM69AK **AZM69A0K**	€295.00
	AZM69A1K	€304.00

◇Standard Type with Electromagnetic Brake

Frame Size	Product Name	List Price
42 mm	**AZM46MK** **AZM46M0K**	€368.00
60 mm	**AZM66MK** **AZM66M0K**	€447.00
	AZM66M1K	€447.00
	AZM69MK **AZM69M0K**	€452.00
	AZM69M1K	€460.00

◇**TS** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AK-TS□UA**	3.6, 7.2	€341.00
	AZM46AK-TS□UA	10, 20, 30	€351.00
60 mm	**AZM66AK-TS□UA**	3.6, 7.2	€400.00
	AZM66AK-TS□UA	10, 20, 30	€410.00

◇**TS** Geared Type with Electromagnetic Brake

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46MK-TS□UA**	3.6, 7.2	€463.00
	AZM46MK-TS□UA	10, 20, 30	€473.00
60 mm	**AZM66MK-TS□UA**	3.6, 7.2	€557.00
	AZM66MK-TS□UA	10, 20, 30	€567.00

◇**FC** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AK-FC□UA** **AZM46AK-FC□DA**	7.2, 10, 20, 30	€451.00
60 mm	**AZM66AK-FC□UA** **AZM66AK-FC□DA**	7.2, 10, 20, 30	€510.00

◇**FC** Geared Type with Electromagnetic Brake

Frame Size	Product Name		List Price
42 mm	**AZM46MK-FC□UA** **AZM46MK-FC□DA**	7.2, 10, 20, 30	€573.00
60 mm	**AZM66MK-FC□UA** **AZM66MK-FC□DA**	7.2, 10, 20, 30	€667.00

◇**PS** Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AK-PS□**	5, 7.2, 10	€413.00
	AZM46AK-PS□	25, 36, 50	€450.00
60 mm	**AZM66AK-PS□**	5, 7.2, 10	€494.00
	AZM66AK-PS□	25, 36, 50	€546.00

◇**PS** Geared Type with Electromagnetic Brake

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46MK-PS□**	5, 7.2, 10	€535.00
	AZM46MK-PS□	25, 36, 50	€572.00
60 mm	**AZM66MK-PS□**	5, 7.2, 10	€651.00
	AZM66MK-PS□	25, 36, 50	€703.00

● A number indicating the gear ratio is entered where the box □ is located in the product name.
● Either **R** (right), **L** (left) or **U** (up) is entered for the cable withdrawing direction in ◇ in the product name.

◇**HPG** Geared Type

Frame Size	Product Name	List Price
40 mm	**AZM46AK-HP5**	€526.00
	AZM46AK-HP5F	€516.00
	AZM46AK-HP9	€526.00
	AZM46AK-HP9F	€516.00
60 mm	**AZM66AK-HP5**	€710.00
	AZM66AK-HP5F	€695.00
	AZM66AK-HP15	€835.00
	AZM66AK-HP15F	€820.00

◇**HPG** Geared Type with Electromagnetic Brake

Frame Size	Product Name	List Price
40 mm	**AZM46MK-HP5**	€648.00
	AZM46MK-HP5F	€638.00
	AZM46MK-HP9	€648.00
	AZM46MK-HP9F	€638.00
60 mm	**AZM66MK-HP5**	€867.00
	AZM66MK-HP5F	€852.00
	AZM66MK-HP15	€992.00
	AZM66MK-HP15F	€977.00

◇Harmonic Geared Type

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46AK-HS□**	50, 100	€701.00
60 mm	**AZM66AK-HS□**		€945.00

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size	Product Name	Gear Ratio	List Price
42 mm	**AZM46MK-HS□**	50, 100	€823.00
60 mm	**AZM66MK-HS□**		€1,102.00

●Driver

◇Built-in Controller Type

Power Supply Input	Product Name	List Price
24/48 VDC	**AZD-KD**	€360.00

◇Pulse Input Type

Power supply input	Product Name	List Price
24/48 VDC	**AZD-K**	€310.00

◇Pulse-Input Type with RS-485 Communication

Power Supply Input	Product Name	List Price
24/48 VDC	**AZD-KX**	€360.00

Connection Cable Sets/Flexible Connection Cable Sets

Use the flexible connection cable in applications where the cable is bent and flexed repeatedly. To extend the connection cables extension cables and flexible extension cables are provided. Please see page 116-117.

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

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

◇Without Electromagnetic Brake

Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	**CC005VZ2F2**	€29.00
	1	**CC010VZ2F2**	€29.00
	1.5	**CC015VZ2F2**	€33.00
	2	**CC020VZ2F2**	€38.00
	2.5	**CC025VZ2F2**	€43.00
	3	**CC030VZ2F2**	€48.00
	4	**CC040VZ2F2**	€75.00
	5	**CC050VZ2F2**	€84.00
	7	**CC070VZ2F2**	€104.00
	10	**CC100VZ2F2**	€135.00
	15	**CC150VZ2F2**	€187.00
	20	**CC200VZ2F2**	€237.00

Product Line	Length L (m)	Product Name	List Price
Flexible Connection Cable Sets	0.5	**CC005VZ2R2**	€65.00
	1	**CC010VZ2R2**	€65.00
	1.5	**CC015VZ2R2**	€70.00
	2	**CC020VZ2R2**	€76.00
	2.5	**CC025VZ2R2**	€76.00
	3	**CC030VZ2R2**	€85.00
	4	**CC040VZ2R2**	€85.00
	5	**CC050VZ2R2**	€108.00
	7	**CC070VZ2R2**	€138.00
	10	**CC100VZ2R2**	€181.00
	15	**CC150VZ2R2**	€254.00
	20	**CC200VZ2R2**	€326.00

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

For Motor For Encoder

◇Without Electromagnetic Brake

Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	**CC005VZF2**	€29.00
	1	**CC010VZF2**	€29.00
	1.5	**CC015VZF2**	€33.00
	2	**CC020VZF2**	€38.00
	2.5	**CC025VZF2**	€43.00
	3	**CC030VZF2**	€48.00
	4	**CC040VZF2**	€75.00
	5	**CC050VZF2**	€84.00
	7	**CC070VZF2**	€104.00
	10	**CC100VZF2**	€135.00
	15	**CC150VZF2**	€187.00
	20	**CC200VZF2**	€237.00
Flexible Connection Cable Sets	0.5	**CC005VZR2**	€65.00
	1	**CC010VZR2**	€65.00
	1.5	**CC015VZR2**	€70.00
	2	**CC020VZR2**	€76.00
	2.5	**CC025VZR2**	€80.00
	3	**CC030VZR2**	€85.00
	4	**CC040VZR2**	€97.00
	5	**CC050VZR2**	€108.00
	7	**CC070VZR2**	€137.00
	10	**CC100VZR2**	€181.00
	15	**CC150VZR2**	€262.00
	20	**CC200VZR2**	€326.00

For Motor For Encoder For Electromagnetic Brake

Product Line	Length L (m)	Product Name	List Price
Connection Cable Sets	0.5	**CC005VZFB2**	€40.00
	1	**CC010VZFB2**	€40.00
	1.5	**CC015VZFB2**	€46.00
	2	**CC020VZFB2**	€52.00
	2.5	**CC025VZFB2**	€57.00
	3	**CC030VZFB2**	€63.00
	4	**CC040VZFB2**	€93.00
	5	**CC050VZFB2**	€103.00
	7	**CC070VZFB2**	€127.00
	10	**CC100VZFB2**	€163.00
	15	**CC150VZFB2**	€225.00
	20	**CC200VZFB2**	€285.00
Flexible Connection Cable Sets	0.5	**CC005VZRB2**	€87.00
	1	**CC010VZRB2**	€87.00
	1.5	**CC015VZRB2**	€95.00
	2	**CC020VZRB2**	€103.00
	2.5	**CC025VZRB2**	€109.00
	3	**CC030VZRB2**	€115.00
	4	**CC040VZRB2**	€131.00
	5	**CC050VZRB2**	€146.00
	7	**CC070VZRB2**	€184.00
	10	**CC100VZRB2**	€237.00
	15	**CC150VZRB2**	€331.00
	20	**CC200VZRB2**	€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)	
FC Geared		1 Piece	–	
PS Geared		1 Piece	–	
HPG Geared	Shaft Output	1 Piece	–	
	Flange Output	–	–	
Harmonic Geared		1 Piece	–	

For the functions and operation of the product please refer to the operating manual (function edition). The function edition is not included in the product, please contact the nearest sales office or download it from the website.

Driver

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

Connection Cable Sets / Flexible Connection Cable Sets

Type	Included: Operating Manual
Connection Cable Sets	–
Flexible Connection Cable Sets	1 Copy

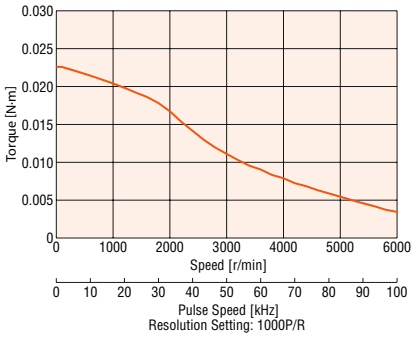
Standard Type Frame Size 20 mm, 28 mm

Specifications

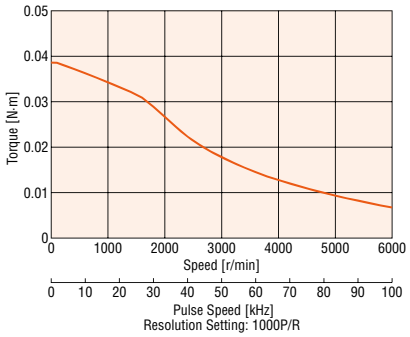
Motor Product Name	Single Shaft	AZM14AK	AZM15AK	AZM24AK	AZM26AK
Driver Product Name	Built-in Controller Type	AZD-KD			
	Pulse-Input Type with RS-485 Communication	AZD-KX			
	Pulse Input Type	AZD-K			
Maximum Holding Torque	N·m	0.02	0.036	0.095	0.19
Holding Torque at Motor Standstill	N·m	0.01	0.018	0.047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

Speed - Torque Characteristics (Reference Value)

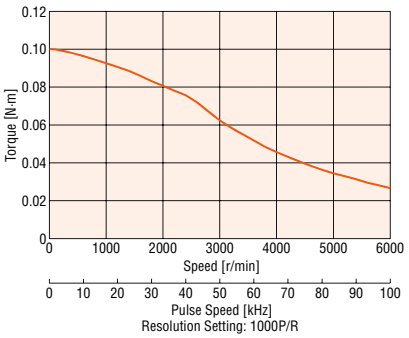
AZM14



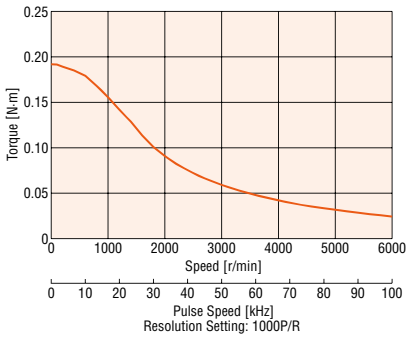
AZM15



AZM24



AZM26



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor.

Explanation of Terms in Specifications Table

Maximum Holding Torque	The maximum holding torque (holding force) the motor has when power (rated current) is being supplied but the motor shaft is at standstill. (With geared types, the value of holding torque considers the permissible strength of the gear.)	
Permissible Torque	This is the maximum torque continuously applied to the gear output shaft.	
Max. Instantaneous Torque	This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration, such as when an inertial load is started and stopped.	
Holding Torque at Standstill	When Power is ON	This is the holding torque when the automatic current cutback function is activated.
	Electromagnetic Brake	This is the static friction torque that the electromagnetic brake can generate at rest. (Electromagnetic brake is power off activated type.)

Standard Type Frame Size 42mm, 60 mm

Specifications

Motor Product Name	Single Shaft		**AZM46A□K**	**AZM48A□K**	**AZM66A□K**	**AZM69A□K**
	With Electromagnetic Brake		**AZM46M□K**	–	**AZM66M□K**	**AZM69M□K**
Driver Product Name	Built-in Controller Type		**AZD-KD**			
	Pulse-Input Type with RS-485 Communication		**AZD-KX**			
	Pulse Input Type		**AZD-K**			
Maximum Holding Torque		N·m	0.3	0.72	1	2
Holding Torque at Motor Standstill	Power ON	N·m	0.15	0.36	0.5	1
	Electromagnetic Brake	N·m	0.15	–	0.5	1
Rotor Inertia		J: kg·m^2	55×10^{-7} (71×10^{-7}) ✻1	115×10^{-7}	370×10^{-7} (530×10^{-7}) ✻1	740×10^{-7} (900×10^{-7}) ✻1
Resolution	Resolution Setting: 1000 P/R		0.36°/Pulse			
Power Supply Input	Voltage		24 VDC±5%✻2/48 VDC±5%✻3			
	Input Current	A	1.72 (1.8)✻1	2.2	3.55 (3.8)✻1	3.45 (3.7)✻1

- Either **0** (straight) or **1** (with key) indicating the shaft shape is entered where the box □ is located in the product name. (For **AZM46** straight only). For the one side milled shaft shape no number is specified.

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

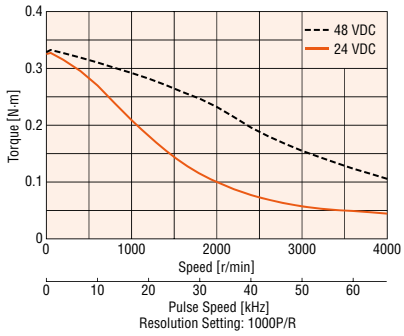
✻2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

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

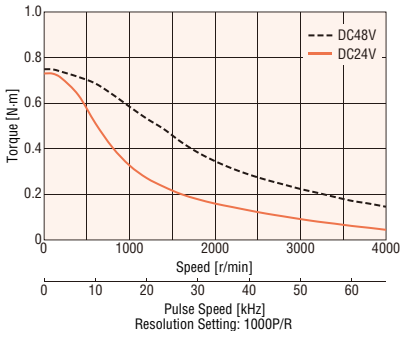
✻4 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

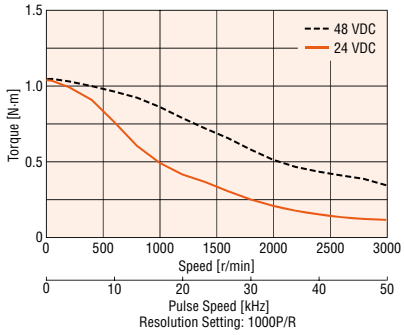
AZM46



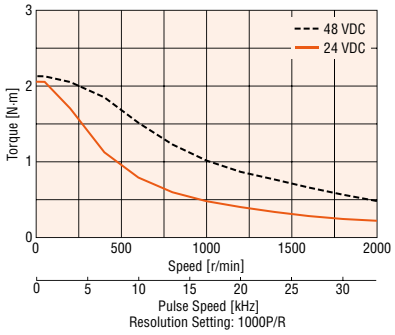
AZM48



AZM66



AZM69



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

TS Geared Type Frame Size 42mm

Specifications

Motor Product Name	Single Shaft	AZM46AK-TS3.6□	AZM46AK-TS7.2□	AZM46AK-TS10□	AZM46AK-TS20□	AZM46AK-TS30□
	With Electromagnetic Brake	AZM46MK-TS3.6□	AZM46MK-TS7.2□	AZM46MK-TS10□	AZM46MK-TS20□	AZM46MK-TS30□
Driver Product Name	Built-in Controller Type	AZD-KD				
	Pulse-Input Type with RS-485 Communication	AZD-KX				
	Pulse Input Type	AZD-K				
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
Max. Instantaneous Torque*	N·m	0.85	1.6	2	*	3
Holding Torque at Motor Standstill	Power ON N·m	0.54	1	1.5	1.8	2.3
	Electromagnetic Brake N·m	0.54	1	1.5	1.8	2.3
Speed Range	r/min	0～833	0～416	0～300	0～150	0～100
Backlash	arcmin	45 (0.75°)	25 (0.42°)		15 (0.25°)	
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5%				
	Input Current A	1.72 (1.8)*1				

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

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box □ is located within the product name. For the downward direction no letter is entered in the box □.

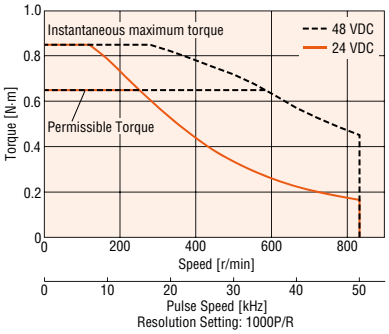
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

*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.

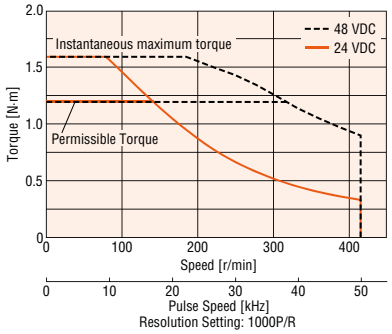
*3 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

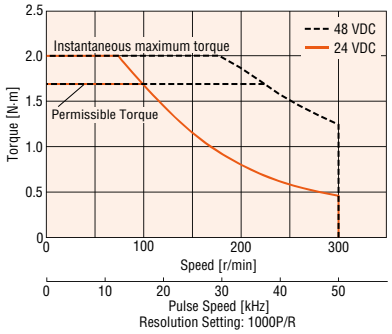
AZM46 Gear Ratio **3.6**



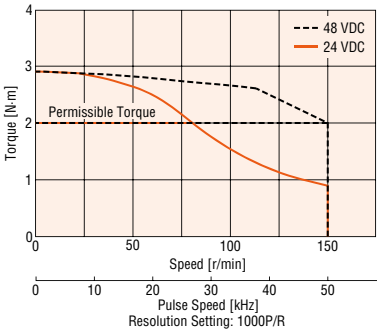
AZM46 Gear Ratio **7.2**



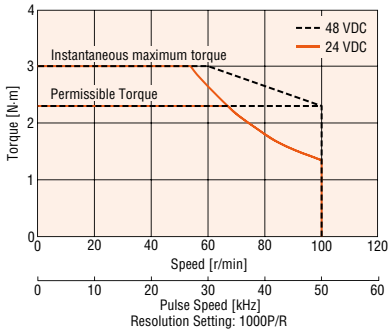
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

TS Geared Type Frame Size 60 mm

Specifications

Motor Product Name	Single Shaft	AZM66AK-TS3.6□	AZM66AK-TS7.2□	AZM66AK-TS10□	AZM66AK-TS20□	AZM66AK-TS30□
	With Electromagnetic Brake	AZM66MK-TS3.6□	AZM66MK-TS7.2□	AZM66MK-TS10□	AZM66MK-TS20□	AZM66MK-TS30□
Driver Product Name	Built-in Controller Type	AZD-KD				
	Pulse-Input Type with RS-485 Communication	AZD-KX				
	Pulse Input Type	AZD-K				
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
Max. Instantaneous Torque*	N·m	*	*	*	8	10
Holding Torque at Motor Standstill	Power ON N·m	1.1	2.2	3	5	6
	Electromagnetic Brake N·m	1.1	2.2	3	5	6
Speed Range	r/min	0～833	0～416	0～300	0～150	0～100
Backlash	arcmin	35 (0.59°)	15 (0.25°)		10 (0.17°)	
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5%*3				
	Input Current A	3.55 (3.8)*1				

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

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box □ is located within the product name. For the downward direction no letter is entered in the box □.

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

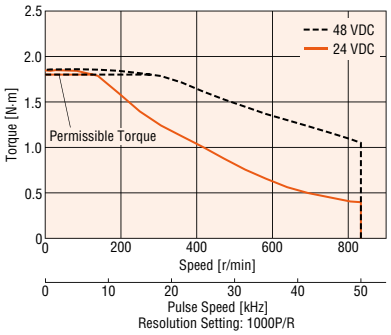
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

*3 When operating with 48 VDC input, set inertia load to approximately 10 times or less that of the rotor inertia ratio, and twice that of the safety rate when calculating accelerator torque.

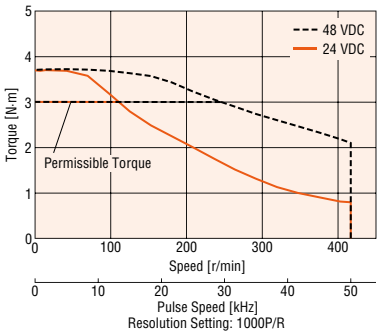
*4 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

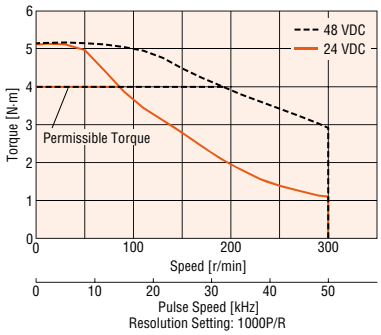
AZM66 Gear Ratio **3.6**



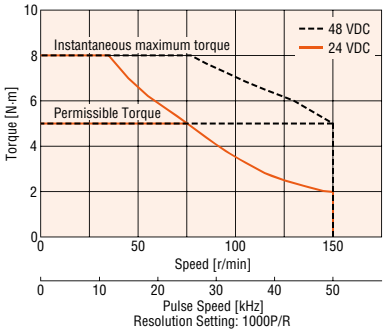
AZM66 Gear Ratio **7.2**



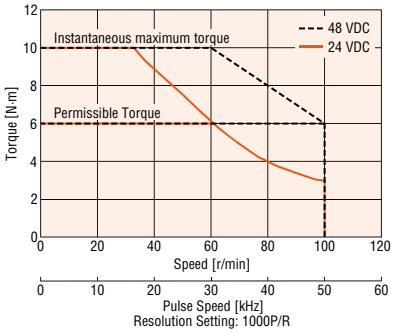
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

FC Geared Type Frame Size 42 mm

Specifications

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

● Either **U** (up) or **D** (down) indicating the cable withdrawing direction is entered where the box □ is located within the product name.

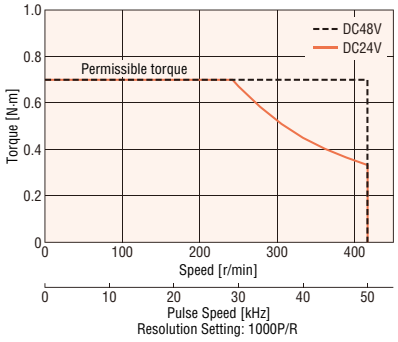
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

*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.

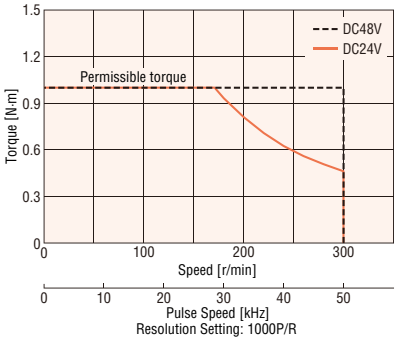
*3 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

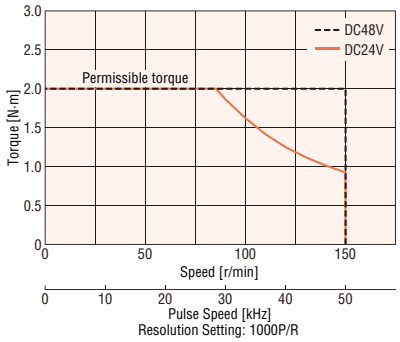
AZM46 Gear Ratio **7.2**



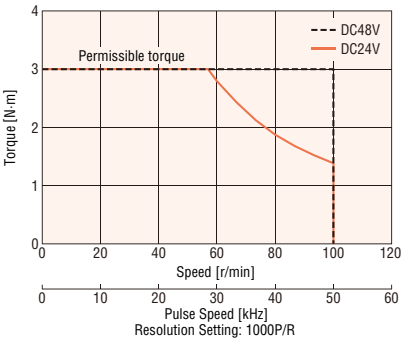
AZM46 Gear Ratio **10**



AZM46 Gear Ratio **20**



AZM46 Gear Ratio **30**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

FC Geared Type Frame Size 60 mm

Specifications

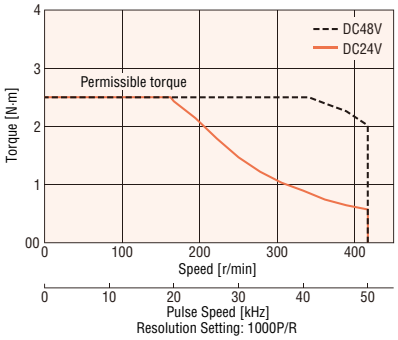
Motor Product Name	Single Shaft	AZM66AK-FC7.2□A	AZM66AC-FC10□A	AZM66AK-FC20□A	AZM66AK-FC30□A
	With Electromagnetic Brake	AZM66MK-FC7.2□A	AZM66MC-FC10□A	AZM66MK-FC20□A	AZM66MK-FC30□A
Driver Product Name	Built-in Controller Type	AZD-KD			
	Pulse-Input Type with RS-485 Communication	AZD-KX			
	Pulse Input Type	AZD-K			
Maximum Holding Torque	N·m	2.5	3.5	7	10
Rotor Inertia	J: kg·m^2	370×10^{-7} (530×10^{-7})*1			
Gear Ratio		7.2	10	20	30
Resolution	Resolution Setting: 1000P/R	0.05°/Pulse	0.036°/Pulse	0.018°/Pulse	0.012°/Pulse
Permissible Torque	N·m	2.5	3.5	7	10
Holding Torque at Motor Standstill	Power ON N·m	2.5	3.5	7	10
	With Electromagnetic Brake N·m	2.5	3.5	7	10
Speed Range	r/min	0~416	0~300	0~150	0~100
Backlash	arcmin	15 (0.25°)		10 (0.17°)	
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5% *3			
	Input Current A	3.35 (3.8)*1			

- Either **U** (up) or **D** (down) indicating the cable withdrawing direction is entered where the box □ is located within the product name.

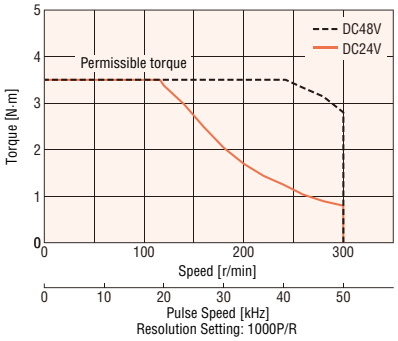
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.
*3 When operating with 48 VDC input, set inertia load to approximately 10 times or less that of the rotor inertia ratio, and twice that of the safety rate when calculating accelerator torque.
*4 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

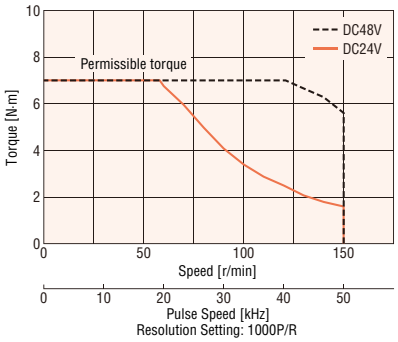
AZM66 Gear Ratio **7.2**



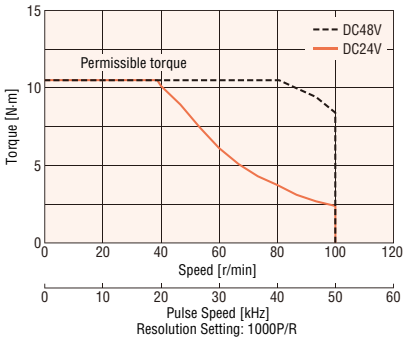
AZM66 Gear Ratio **10**



AZM66 Gear Ratio **20**



AZM66 Gear Ratio **30**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

PS Geared Type Frame Size 42mm

Specifications

Motor Product Name	Single Shaft	AZM46AK-PS5	AZM46AK-PS7.2	AZM46AK-PS10	AZM46AK-PS25	AZM46AK-PS36	AZM46AK-PS50
	With Electromagnetic Brake	AZM46MK-PS5	AZM46MK-PS7.2	AZM46MK-PS10	AZM46MK-PS25	AZM46MK-PS36	AZM46MK-PS50
Driver Product Name	Built-in Controller Type	AZD-KD					
	Pulse-Input Type with RS-485 Communication	AZD-KX					
	Pulse Input Type	AZD-K					
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	
Max. Instantaneous Torque*	N·m	*	2		6	*	6
Holding Torque at Motor Standstill	Power ON N·m	0.75	1	1.5	2.5	3	
	Electromagnetic Brake N·m	0.75	1	1.5	2.5	3	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin	15 (0.25°)					
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5%					
	Input Current A	1.72 (1.8)*1					

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

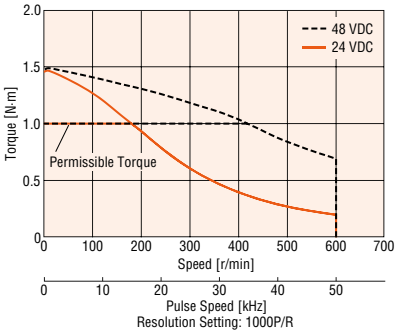
*1 The brackets ( ) indicate the specifications for the product with an electromagnetic brake.

*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.

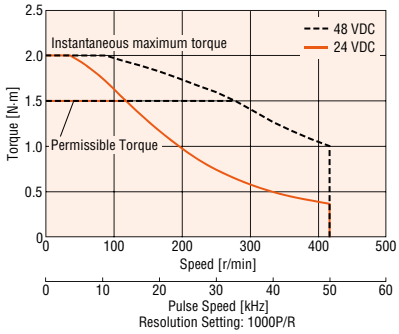
*3 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

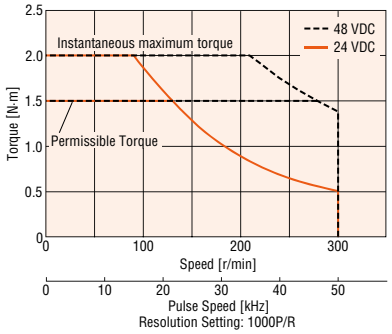
AZM46 Gear Ratio **5**



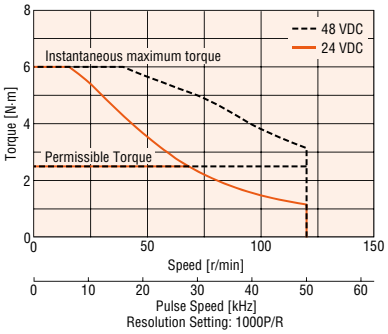
AZM46 Gear Ratio **7.2**



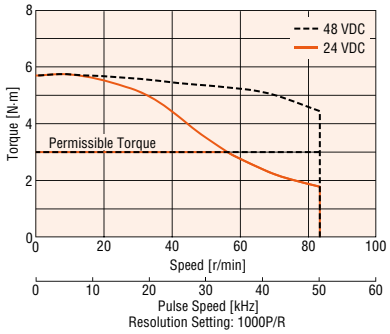
AZM46 Gear Ratio **10**



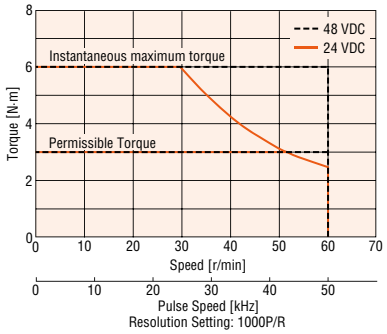
AZM46 Gear Ratio **25**



AZM46 Gear Ratio **36**



AZM46 Gear Ratio **50**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

PS Geared Type Frame Size 60 mm

Specifications

Motor Product Name	Single Shaft	AZM66AK-PS5	AZM66AK-PS7.2	AZM66AK-PS10	AZM66AK-PS25	AZM66AK-PS36	AZM66AK-PS50
	With Electromagnetic Brake	AZM66MK-PS5	AZM66MK-PS7.2	AZM66MK-PS10	AZM66MK-PS25	AZM66MK-PS36	AZM66MK-PS50
Driver Product Name	Built-in Controller Type	AZD-KD					
	Pulse-Input Type with RS-485 Communication	AZD-KX					
	Pulse Input Type	AZD-K					
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		
Max. Instantaneous Torque*	N·m	*	*	*	*	*	20
Holding Torque at Motor Standstill	Power ON N·m	2.5	3.6	5	7.6	8	
	Electromagnetic Brake N·m	2.5	3.6	5	7.6	8	
Speed Range	r/min	0～600	0～416	0～300	0～120	0～83	0～60
Backlash	arcmin	7 (0.12°)			9 (0.15°)		
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5%*3					
	Input Current A	3.55 (3.8)*1					

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

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

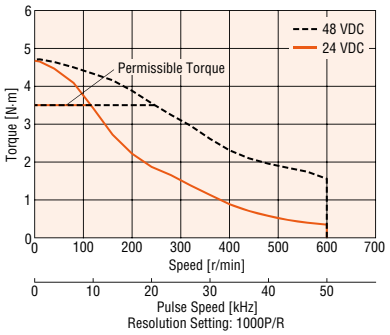
*2 For the type with an electromagnetic brake, a 24 VDC±4% specification applies if the wiring distance between the motor and driver is extended to 20 m using a cable.

*3 When operating with 48 VDC input, set inertia load to approximately 10 times or less that of the rotor inertia ratio, and twice that of the safety rate when calculating accelerator torque.

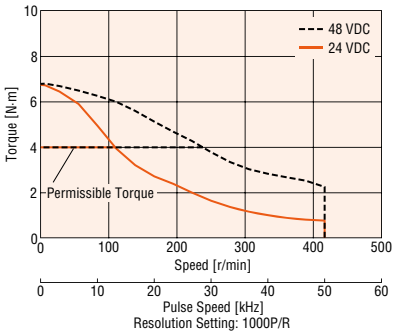
*4 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

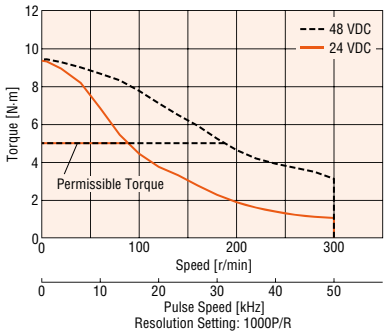
AZM66 Gear Ratio **5**



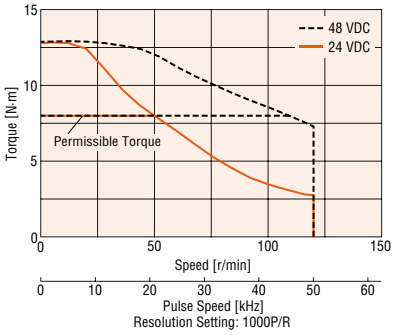
AZM66 Gear Ratio **7.2**



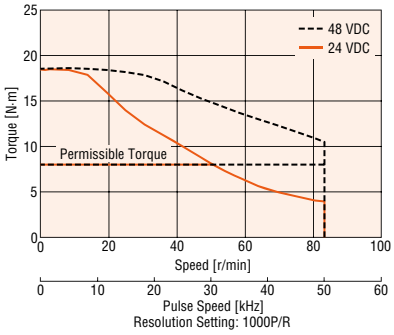
AZM66 Gear Ratio **10**



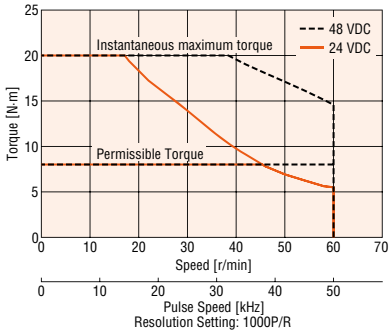
AZM66 Gear Ratio **25**



AZM66 Gear Ratio **36**



AZM66 Gear Ratio **50**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

HPG Geared Type Frame Size 40 mm, 60 mm

Specifications

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

*For the output torque as a geared motor, see the speed-torque characteristics.

● For the flange output type, **F** is specified where the box □ is located in the product name.

*1 The values inside the brackets ( ) represent the specification for the electromagnetic brake type.

*2 This is the value with the inertia moment inside the gear section converted into the motor shaft. The value within ( ) is the flange output type.

*3 This is the flange output type value.

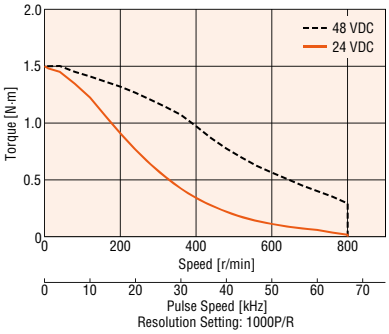
*4 If the wiring distance between the electromagnetic brake type motor and driver is extended to 20 m using an accessory cable (sold separately), the 24 VDC±4% specification applies.

*5 When operating with 48 VDC input, set inertia load to approximately 10 times or less that of the rotor inertia ratio, and twice that of the safety rate when calculating accelerator torque. (excluding **AZM46**)

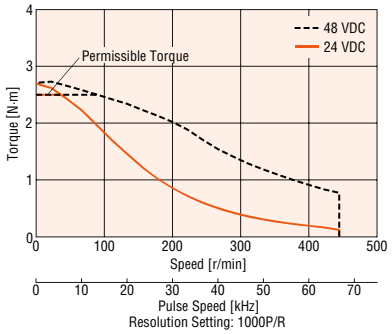
*6 Only for the Motor.

Speed - Torque Characteristics (Reference Value)

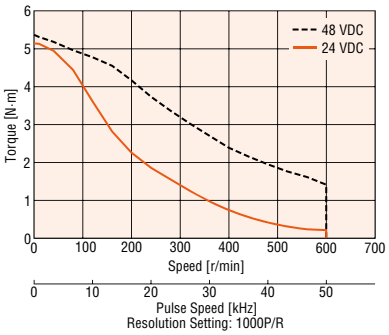
AZM46 Gear Ratio **5**



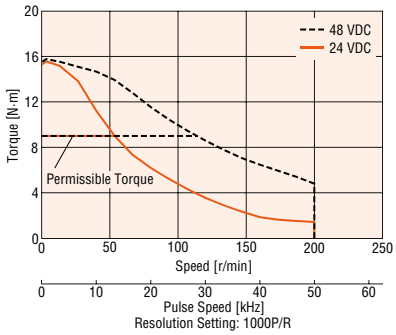
AZM46 Gear Ratio **9**



AZM66 Gear Ratio **5**



AZM66 Gear Ratio **15**



Notes

● The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.

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

Harmonic Geared Type Frame Size 42mm, 60 mm

Specifications

Motor Product Name	Single Shaft	AZM46AK-HS50	AZM46AK-HS100	AZM66AK-HS50	AZM66AK-HS100
	With Electromagnetic Brake	AZM46MK-HS50	AZM46MK-HS100	AZM66MK-HS50	AZM66MK-HS100
Driver Product Name	Built-in Controller Type	AZD-KD			
	Pulse-Input Type with RS-485 Communication	AZD-KX			
	Pulse Input Type	AZD-K			
Maximum Holding Torque	N·m	3.5	5	7	10
Rotor Inertia	J: kg·m^2	72×10^{-7} (88×10^{-7})*1		405×10^{-7} (565×10^{-7})*1	
Gear Ratio		50	100	50	100
Resolution	Resolution Setting: 1000P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m	3.5	5	7	10
Max. Instantaneous Torque*	N·m	8.3	11	*	36
Holding Torque at Motor Standstill	Power ON N·m	3.5	5	7	10
	Electromagnetic Brake N·m	3.5	5	7	10
Speed Range	r/min	0~70	0~35	0~60	0~30
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)
Power Supply Input	Voltage	24 VDC±5%*2/48 VDC±5%*3			
	Input Current A	1.72 (1.8)*1		3.55 (3.8)*1	

*For the output torque as a geared motor, see the speed-torque characteristics.

*1 The values inside the brackets ( ) represent the specification for the electromagnetic brake type.

*2 If the wiring distance between the electromagnetic brake type motor and driver is extended to 20 m using an accessory cable (sold separately), the 24 VDC±4% specification applies.

*3 When operating with 48 VDC input, set inertia load to approximately 10 times or less that of the rotor inertia ratio, and twice that of the safety rate when calculating accelerator torque. (excluding **AZM46**)

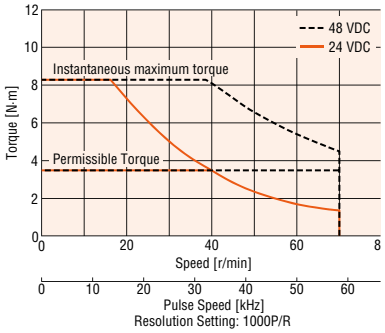
*4 Only for the Motor.

Notes

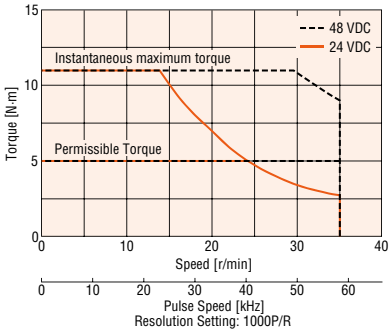
- The rotor inertia represents a sum of the moments of inertia of the harmonic gear converted to motor shaft values.

Speed - Torque Characteristics (Reference Value)

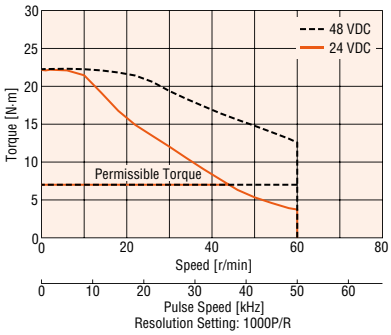
AZM46 Gear Ratio **50**



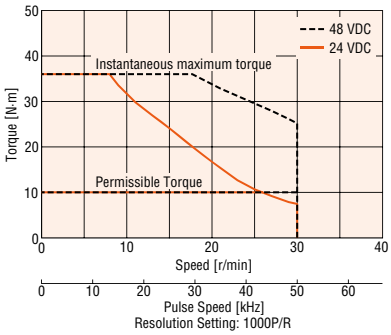
AZM46 Gear Ratio **100**



AZM66 Gear Ratio **50**



AZM66 Gear Ratio **100**



Notes

- The speed-torque characteristics are data based upon our measurement conditions. When these conditions change, these characteristics may change.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 80°C or less in order to protect the ABZO sensor. (When conforming to the UL standards, it is required to keep the temperature of the motor case at 75°C or less, since the motor is recognized as thermal class A.)

Driver Specifications

Driver Type				Built-in Controller Type	Pulse-Input Type with RS-485 Communication	Pulse Input Type
Driver Product Name				**AZD-KD**	**AZD-KX**	**AZD-K**
I/O Function			Max. Input Pulse Frequency	–	Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%) Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative Logic Pulse Input (Initial value)	
			Number of Positioning Data Sets	256 Points	256 Points*1	
			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	Operating Method	Positioning operation	○	○	○*1
			Positioning Push-Motion Operation*2	○	○	○*1
		Connecting Method	Independent Operation	○	○	○*1
			Sequential Operation	○	○	○*1
			Multistep Speed-Change (Configuration Connection)	○	○	○*1
		Sequence Control	Loop Operation (Repeating)	○	○	○*1
			Event Jump Operation	○	○	○*1
	Continuous Operation		Position Control	○	○	○*1
			Speed Control	○	○	○*1
			Torque Control	○	○	○*1
			Pushing	○	○	○*1
	Return-to-Home Operation		Return-to-Home Operation	○	○	○
			High Speed Return-to-Home Operation	○	○	○
	JOG Operation			○	○	○
Monitor/Information			Waveform Monitoring	○	○	○
			Overload Detection	○	○	○
			Overheat Detection (Motor · Driver)	○	○	○
			Position · Speed Information	○	○	○
			Temperature Detection (Motor · Driver)	○	○	○
			Motor Load Factor	○	○	○
			Distance Traveled · Integrating Distance Traveled	○	○	○
Alarm				○	○	○

*1 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).

Electromagnetic Brake Specifications

Product Name		**AZM46**	**AZM66**	**AZM69**
Type		Power Off Activated Type		
Power Supply Voltage		24 VDC ±5%*		
Power Supply Current	A	0.08	0.25	0.25
Brake Activation Time	ms	20		
Brake Release Time	ms	30		
Time Rating		Continous		

*If a 20 m extension cable is used for the electromagnetic brake type, the 24 VDC±4% specification applies.

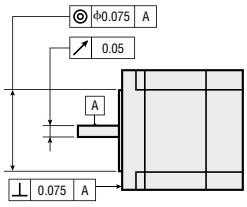
● The product names are listed such that the product names are distinguishable.

General Specifications

		Motor	Driver
Thermal Class		[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
Dielectric Voltage		Sufficient to withstand the following for 1 minute: **AZM14**, **AZM15**, **AZM24**, **AZM26** ・Case – Motor Windings 0.5 kVAC, 50 Hz or 60 Hz **AZM46**, **AZM48**, **AZM66**, **AZM69** ・Case – Motor Windings 1.0 kVAC, 50 Hz or 60 Hz ・Case – Electromagnetic Brake Windings*1 1.0 kVAC 50 Hz or 60 Hz	–
Operating Environment (In operation)	Ambient Temperature	0～+40°C (Non-freezing)	0～+50°C (Non-freezing)
	Ambient Humidity	85% or less (Non-condensing)	
	Atmosphere	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.	
Degree of Protection		**AZM14**, **AZM15**, **AZM24**, **AZM26**: IP40 (excluding installation surfaces and connector locations) **AZM46**, **AZM48**, **AZM66**, **AZM69**: IP66 (excluding installation surfaces and connector locations)	IP10
Stop Position Accuracy		**AZM14**, **AZM15**, **AZM24**, **AZM26**: ±5 minutes (±0.083°) **AZM46**, **AZM48**: ±4 minutes (±0.067°) **AZM66**, **AZM69**: ±3 minutes (±0.05°)	
Shaft Runout		0.05 T.I.R. (mm)*2	–
Concentricity of Installation Pilot to the Shaft		0.075 T.I.R. (mm)*2	–
Perpendicularity of Installation Surface to the Shaft		0.075 T.I.R. (mm)*2	–
Multiple Rotation Detection Range Upon Power OFF		**AZM14**, **AZM15**, **AZM24**, **AZM26**: ±450 rotations (900 rotations) **AZM46**, **AZM48**, **AZM66**, **AZM69**: ±900 rotations (1,800 rotations)	

*1 Only for products with an electromagnetic brake.

*2 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.



Note

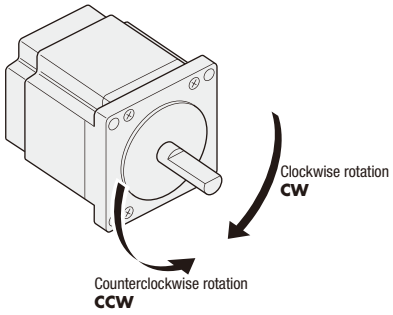
●Do not measure insulation resistance or perform a dielectric strength test while the motor and driver are connected. Also, do not perform these tests on the motor absolute sensor part.

Rotation Direction

This refers to the direction viewed from the output shaft side.
The rotation direction of the gear output shaft with respect to the standard type motor output shaft differs depending on the type of gear and gear ratio.
Refer to the following table.

Type	Gear Ratio	Rotation Direction with Respect to Motor Output Shaft
TS Geared Type	**3.6**, **7.2**, **10**	Same direction
	20, **30**	Opposite direction
FC Geared Type **PS** Geared Type **HPG** Geared Type	All gear ratios	Same direction
Harmonic Geared Type	All gear ratios	Opposite direction

●Standard Type Motor

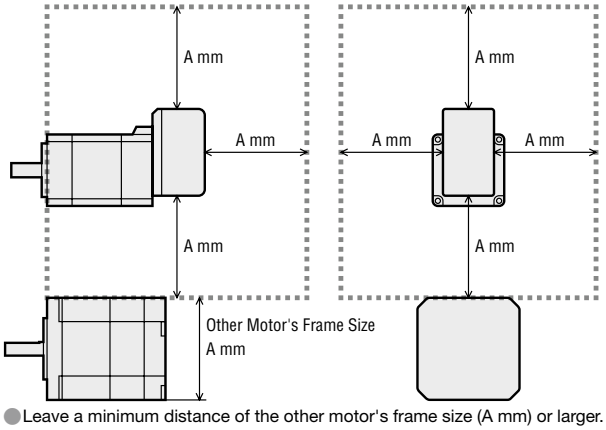


Motor Installation

Since the ABZO sensor is easily affected by a magnetic field, make sure the installation location.

●Motor installation of frame size 28 mm or smaller

When motors are installed side by side, ensure the distance among motors or more than the frame size in horizontal and vertical directions.



●Leave a minimum distance of the other motor's frame size (A mm) or larger.

●Reference

The other motor	A
Frame Size 20 mm	20 mm
Frame Size 28 mm	28 mm
Frame Size 42 mm	42 mm
Frame Size 60 mm	60 mm

Motor Installation within an Magnetic Field Ensure that the magnetic flux density of the ABZO sensor surface does not exceed the values shown in the overview.

Motor Frame Size	Magnetic Flux Density
28 mm or smaller	2mT*
42 mm or larger	10mT

*Between 1-2 mT ensure that the ambient temperature is between 20-40°C.

Permissible Radial Load and Permissible Axial Load

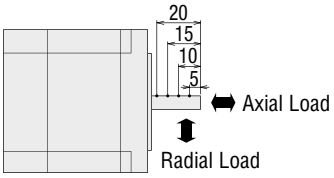
Unit: N

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

- The products can be identified with the detailed product code.
- **PS** geared type, **HPG** geared type, when either the permissible radial load or permissible axial load are added, shall have a lifespan value satisfying 20,000 hours. For **TS** and Harmonic geared types lifespan please contact the nearest Oriental Motor sales office.

Radial Load and Axial Load

Distance from Shaft End [mm]



Permissible Moment Load

If an excentric load is applied when attaching an arm or table to the flange face, calculate the moment load with the following formula. The moment load should not exceed the permissible values shown in the table below.

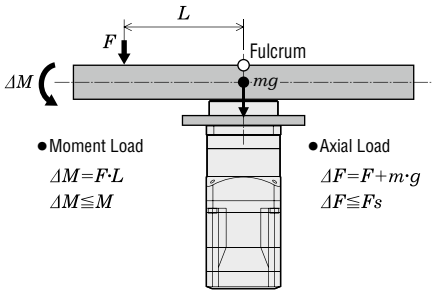
HPG Geared Type Flange Output Type

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

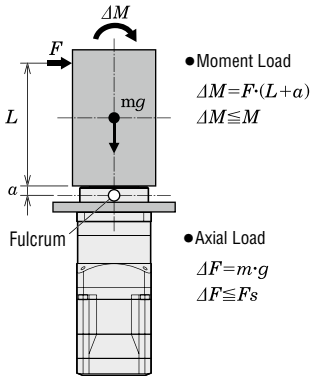
m: Work mass (kg)
g : Gravitational acceleration (m/s²)
F : External force (N)
L : Distance from center of output flange
a : Coefficient (m)
deltaF : Load on output flange side (N)
Fs : Permissible axial load (N)
deltaM: Moment load (N·m)
M: Permissible moment load (N·m)

The required moment load can be calculated according to the following formula.

Example 1: When external force F (N) is applied at a distance of L (m) from the centre of the output flange



Example 2: When external force F (N) is applied at a distance of L (m) from the surface mounting of the output flange

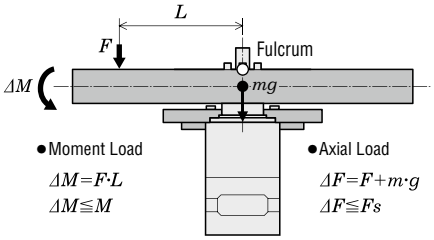


Harmonic Geared Type

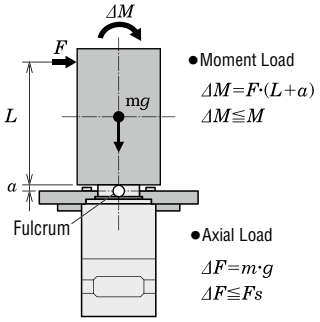
Product Name	Permissible Axial Load (N)	Permissible Moment Load (N·m)	Coefficient a (m)
AZM46	220	5.6	0.009
AZM66	450	11.6	0.0114

The required moment load can be calculated according to the following formula.

Example 1: When external force F (N) is applied at a distance of L (m) from the centre of the output flange



Example 2: When external force F (N) is applied at a distance of L (m) from the surface mounting of the output flange



Load Torque - Driver Input Current Characteristics

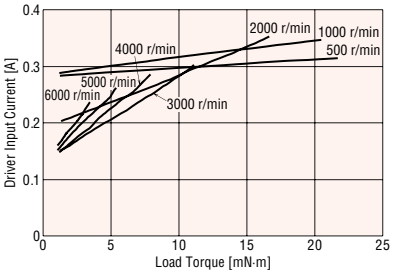
The following are the relationships between the load torque and driver input current at each speed when the motor is operated. From these characteristics, it is possible to estimate the current capacity actually required when used with multiple axes. For geared motors, convert to torque and speed at the motor shaft.

Motor shaft speed = Gear output shaft speed × Gear ratio [r/min]

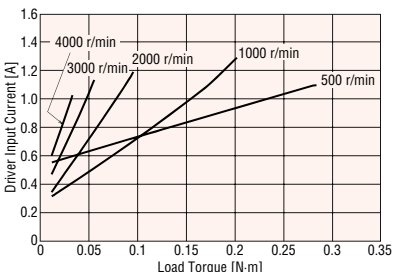
$$\text{Motor shaft torque} = \frac{\text{Gear output shaft torque}}{\text{Gear Ratio}} \text{ [N·m]}$$

24 VDC

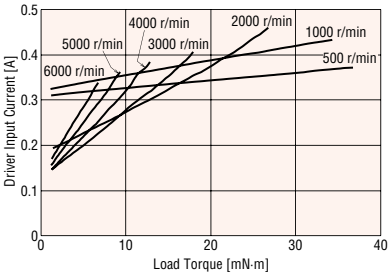
AZM14



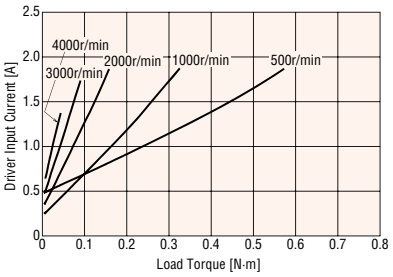
AZM46



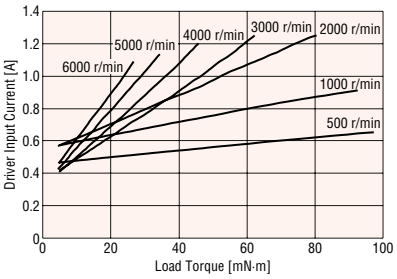
AZM15



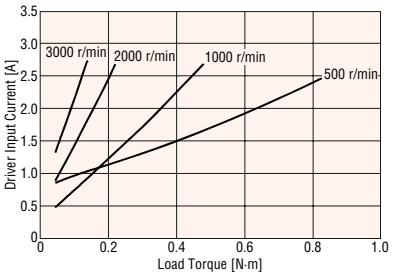
AZM48



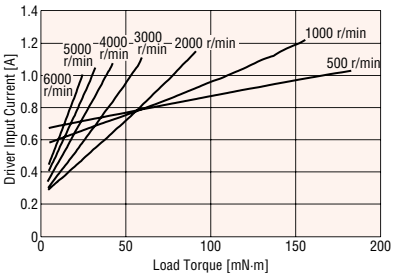
AZM24



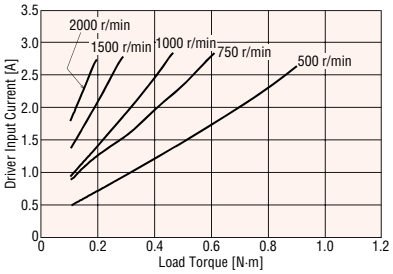
AZM66



AZM26

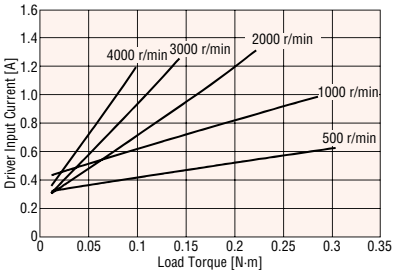


AZM69

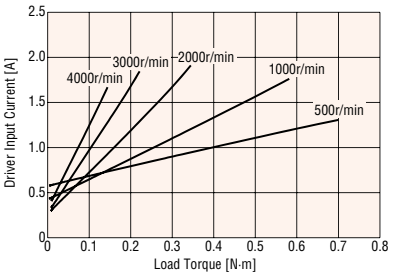


48 VDC

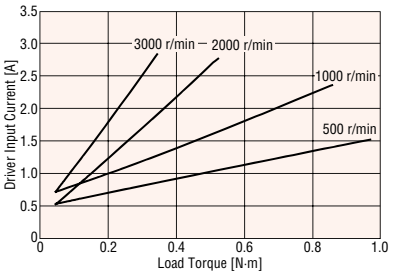
AZM46



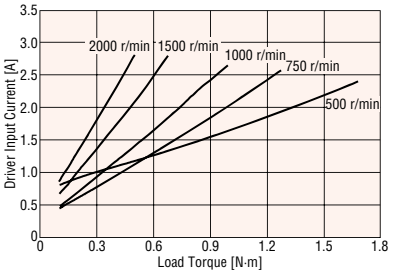
AZM48



AZM66



AZM69



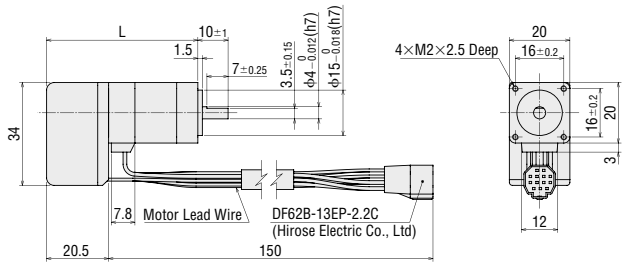
Dimensions (Unit = mm)

Motors

◇Standard Type

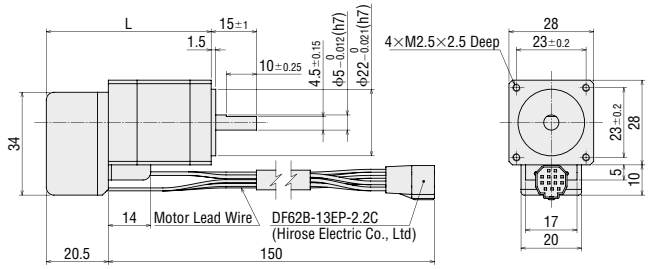
Frame Size 20 mm

Product Name	L	Mass kg
AZM14AK	50	0.08
AZM15AK	60	0.1



Frame Size 28 mm

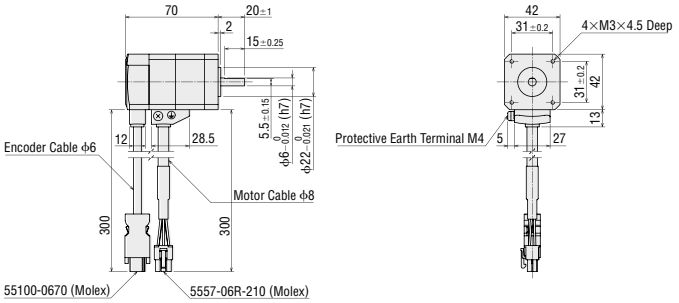
Product Name	L	Mass kg
AZM24AK	54.5	0.15
AZM26AK	74	0.24



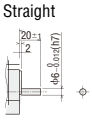
Frame Size 42 mm

Product Name	Mass kg
AZM46A□K	0.44

One Side Milled



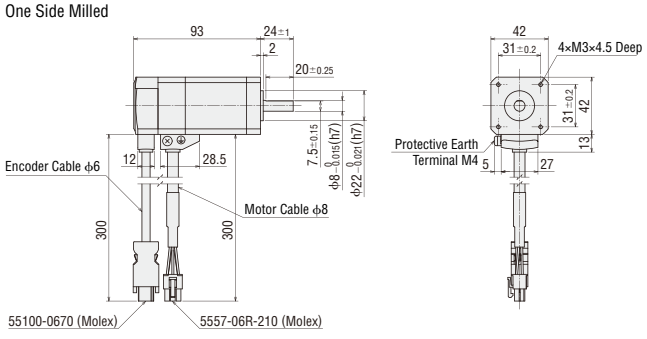
Straight



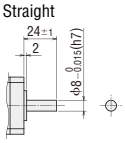
Frame Size 42 mm

Product Name	Mass kg
AZM48A□K	0.68

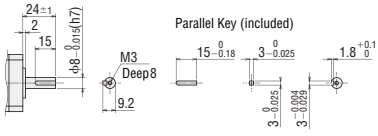
One Side Milled



Straight



With Key

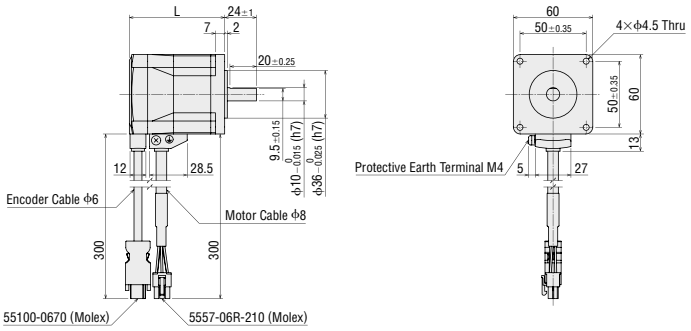


● Either **0** (straight) or **1** (with key) indicating the shaft shape is entered where the box □ is located within the product name. (For **AZM46** straight only).

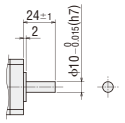
Frame Size 60 mm

Product Name	L	Mass kg
AZM66A□K	72	0.91
AZM69A□K	97.5	1.4

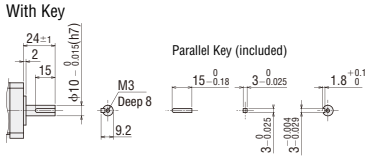
One Side Milled



Straight



With Key

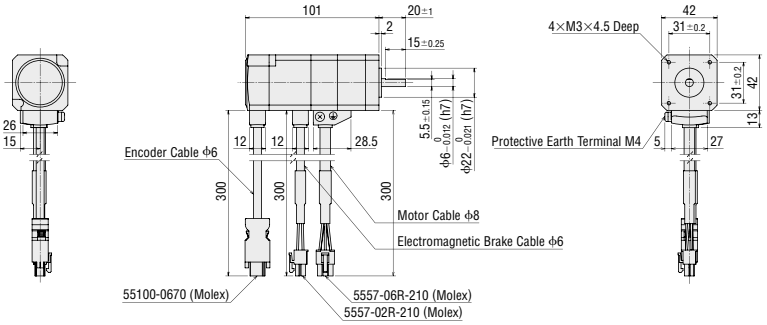


◇Standard Type with Electromagnetic Brake

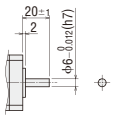
Frame Size 42 mm

Product Name	Mass kg
AZM46M□K	0.61

One Side Milled



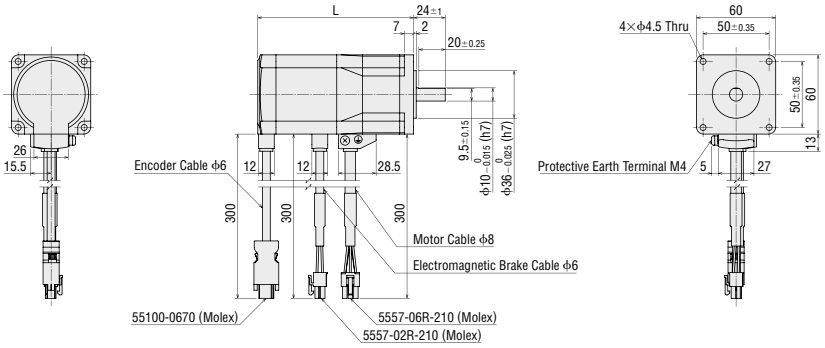
Straight



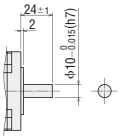
Frame Size 60 mm

Product Name	L	Mass kg
AZM66M□K	118	1.3
AZM69M□K	143.5	1.8

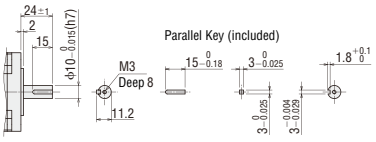
One Side Milled



Straight



With Key

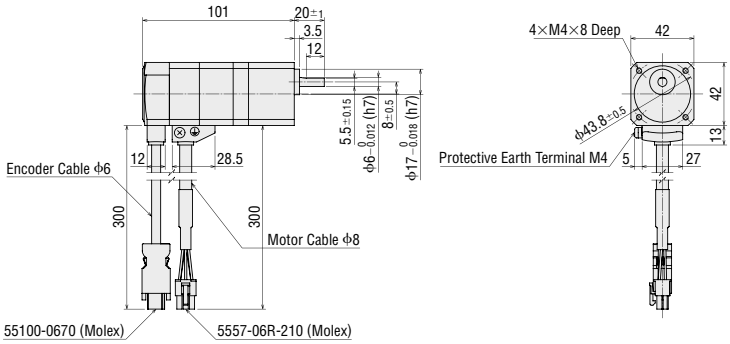


● Either **0** (straight) or **1** (with key) indicating the shaft shape is entered where the box □ is located within the product name. (For **AZM46** straight only).

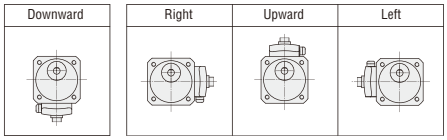
◇**TS** Geared Type

Frame Size 42 mm

Product Name	Gear Ratio	Mass kg
AZM46AK-TS■◇	**3.6**, **7.2**, **10**, **20**, **30**	0.59



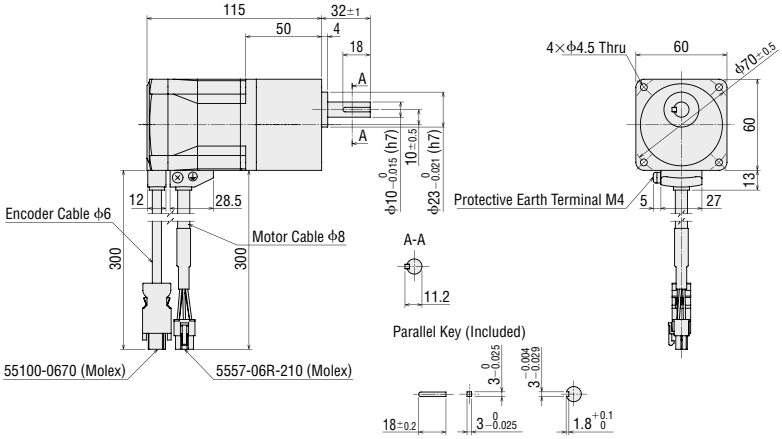
● Cable Direction



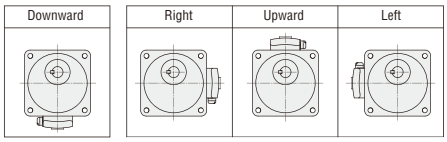
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66AK-TS■◇	**3.6**, **7.2**, **10**, **20**, **30**	1.3

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



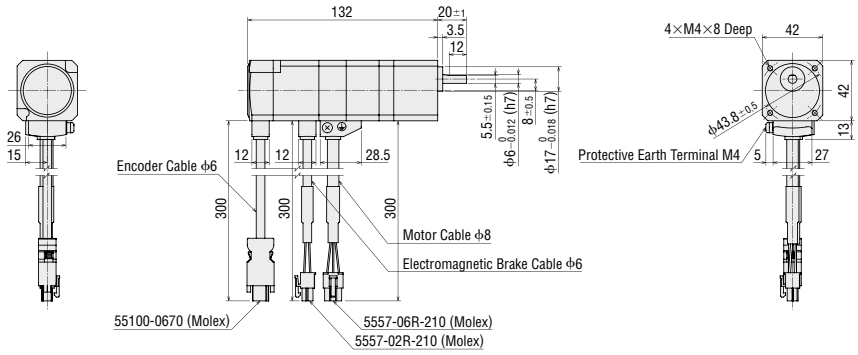
● Cable Direction



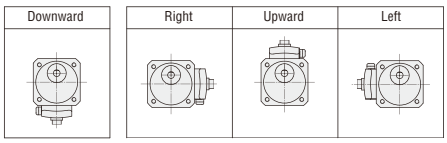
◇**TS** Geared Type with Electromagnetic Brake

Frame Size 42 mm

Product Name	Gear Ratio	Mass kg
AZM46MK-TS■◇	**3.6**, **7.2**, **10**, **20**, **30**	0.76



● Cable Direction



● The ■ within the product name includes a number expressing the gear ratio.

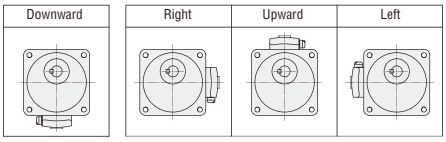
● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box ◇ is located within the product name. For downward direction no letter is entered in the box ◇.

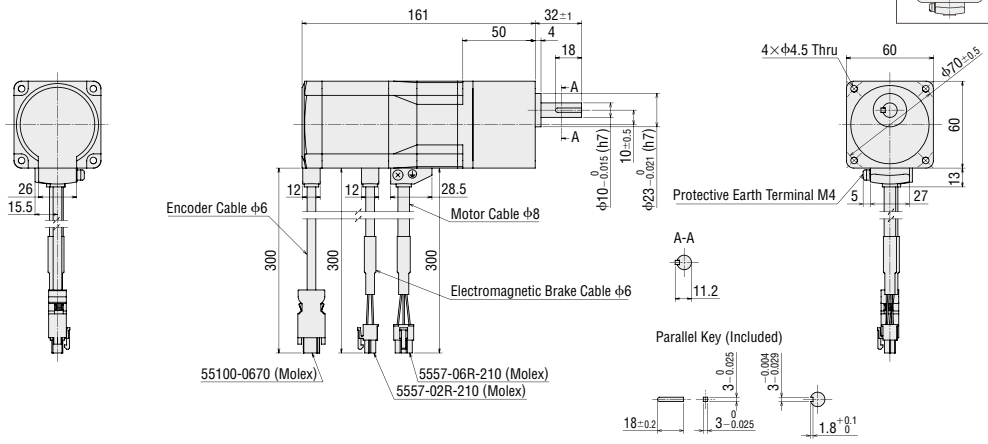
Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66MK-TS□◇	**3.6**, **7.2**, **10**, **20**, **30**	1.7

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

● Cable Direction

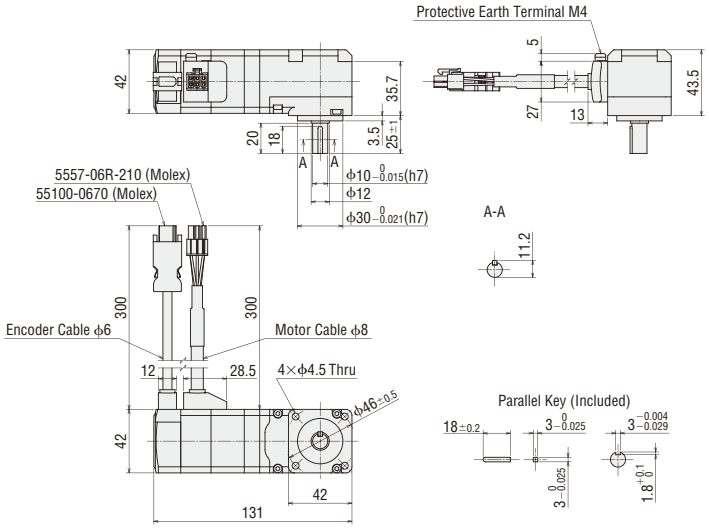




◇**FC** Geared Type

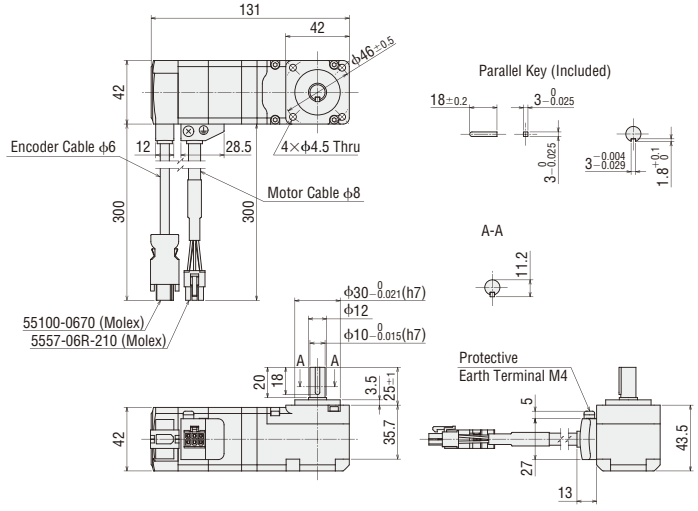
Frame Size 42 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM46AK-FC□UA	**7.2**, **10**, **20**, **30**	0.79



Frame Size 42 mm Cable Withdrawing Direction Down

Product Name	Gear Ratio	Mass kg
AZM46AK-FC□DA	**7.2**, **10**, **20**, **30**	0.79

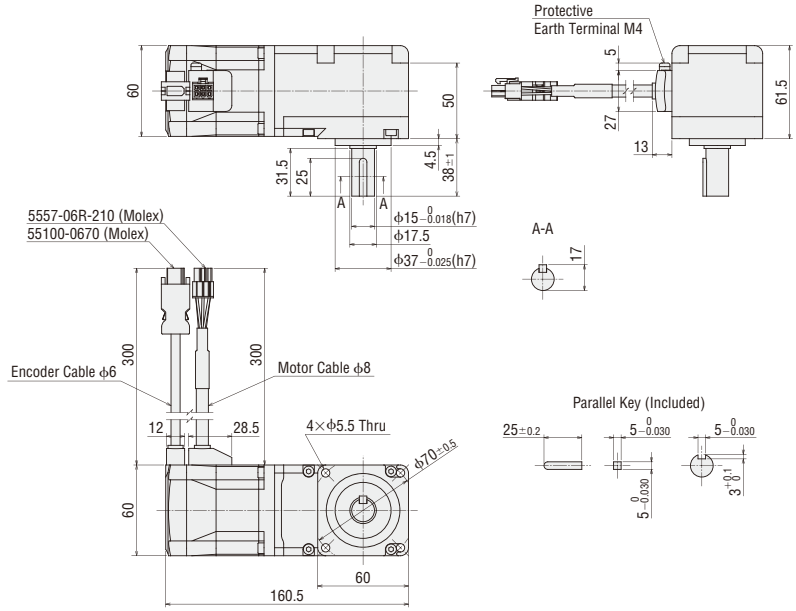


● The ■ within the product name includes a number expressing the gear ratio.

● Either **R** (right), **U** (up) or **L** (left) indicating the cable withdrawing direction is entered where the box ◇ is located within the product name. For downward direction no letter is entered in the box ◇

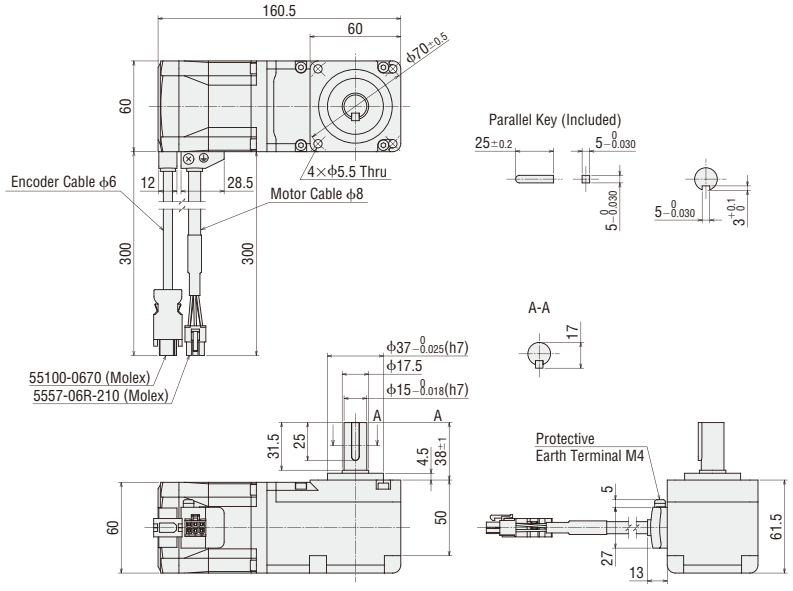
Frame Size 60 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM66AK-FC□UA	**7.2**, **10**, **20**, **30**	1.8



Frame Size 60 mm Cable Withdrawing Direction Down

Product Name	Gear Ratio	Mass kg
AZM66AK-FC□DA	**7.2**, **10**, **20**, **30**	1.8

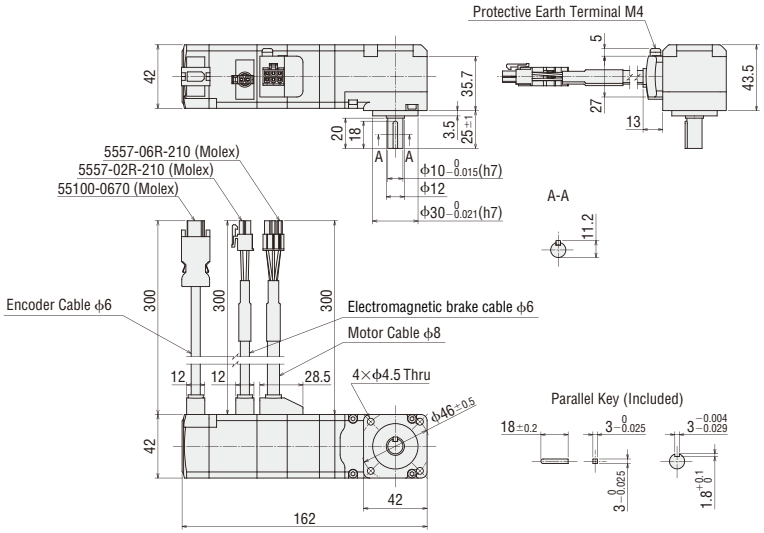


● The □ within the product name includes a number expressing the gear ratio.

◇**FC** Geared Type with Electromagnetic Brake

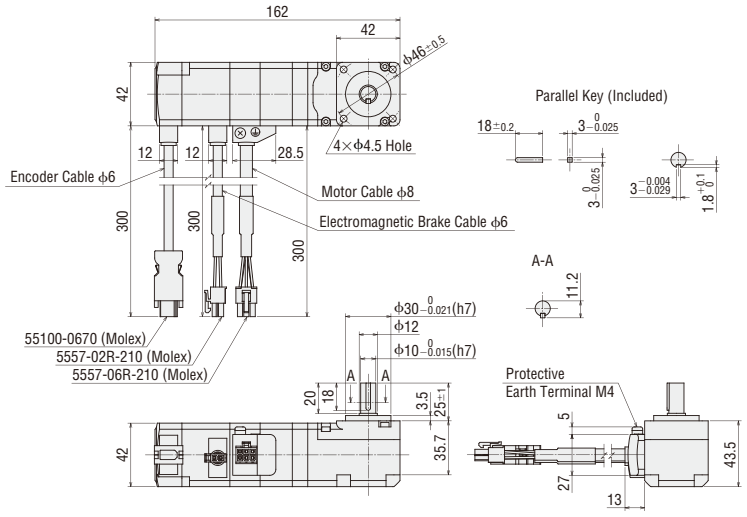
Frame Size 42 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM46MK-FC□UA	**7.2**, **10**, **20**, **30**	0.96



Frame Size 42 mm Cable Withdrawing Direction Down

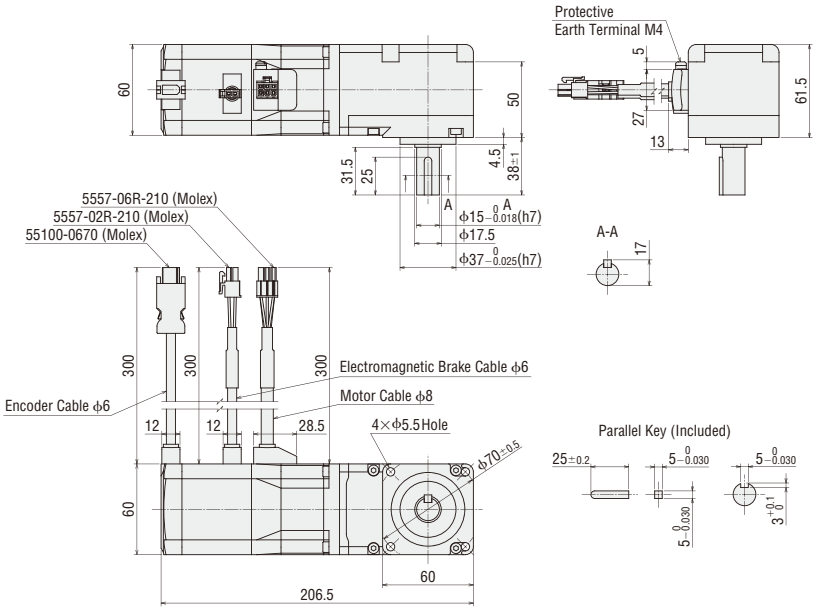
Product Name	Gear Ratio	Mass kg
AZM46MK-FC□DA	**7.2**, **10**, **20**, **30**	0.96



●The □ within the product name includes a number expressing the gear ratio.

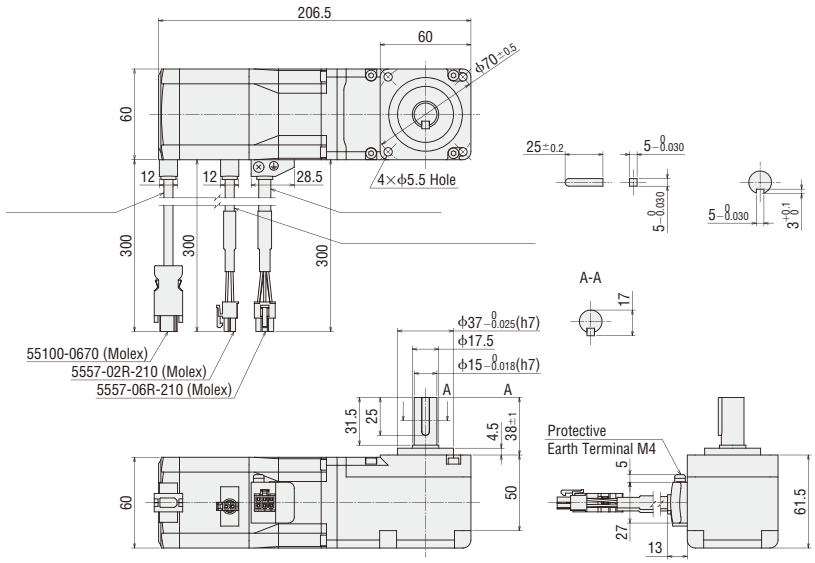
Frame Size 60 mm Cable Withdrawing Direction Up

Product Name	Gear Ratio	Mass kg
AZM66MK-FC□UA	**7.2**, **10**, **20**, **30**	2.2



Frame Size 60 mm Cable Withdrawing Direction Down

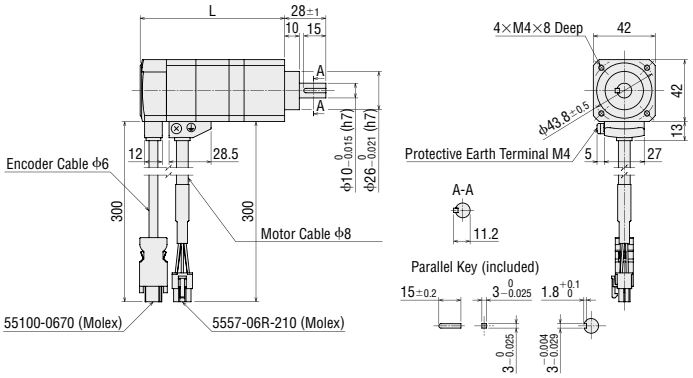
Product Name	Gear Ratio	Mass kg
AZM66AK-MC□DA	**7.2**, **10**, **20**, **30**	2.2



◇**PS** Geared Type

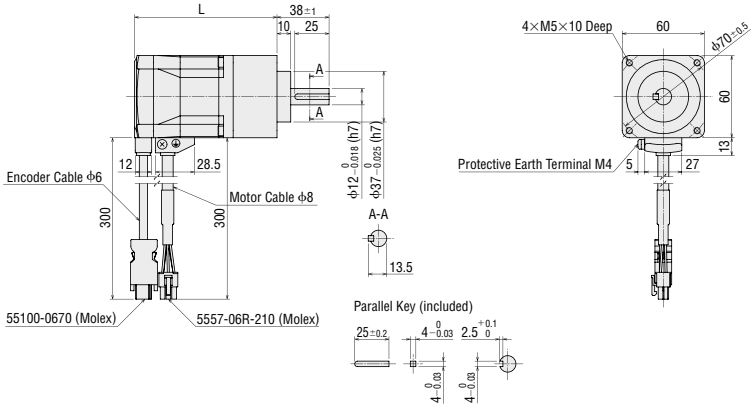
Frame Size 42 mm

Product Name	Gear Ratio	L	Mass kg
AZM46AK-PS■	**5**, **7.2**, **10**	98	0.64
	25, **36**, **50**	121.5	0.79



Frame Size 60 mm

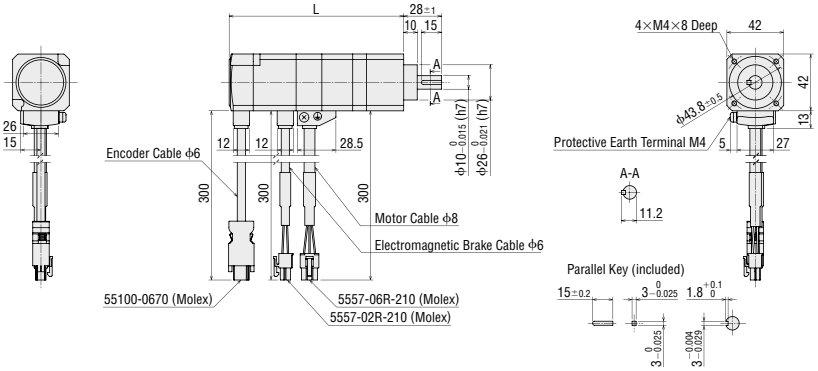
Product Name	Gear Ratio	L	Mass kg
AZM66AK-PS■	**5**, **7.2**, **10**	104	1.3
	25, **36**, **50**	124	1.6



◇**PS** Geared Type with Electromagnetic Brake

Frame Size 42 mm

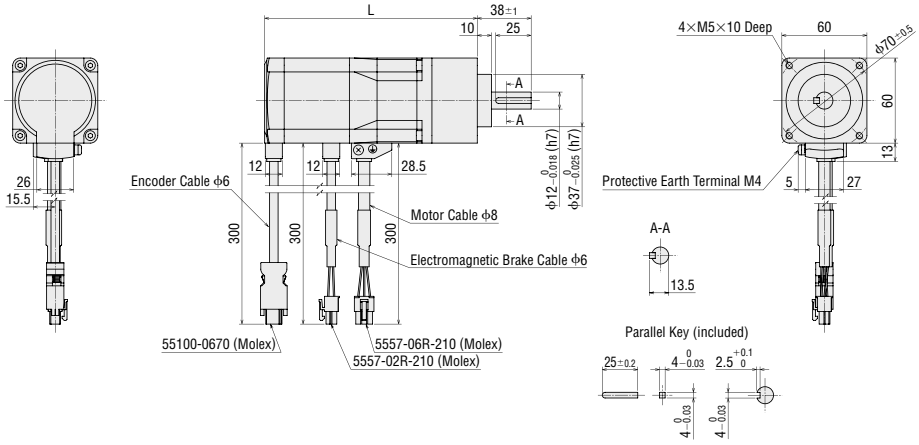
Product Name	Gear Ratio	L	Mass kg
AZM46MK-PS■	**5**, **7.2**, **10**	129	0.81
	25, **36**, **50**	152	0.96



●The ■ within the product name includes a number expressing the gear ratio.

Frame Size 60 mm

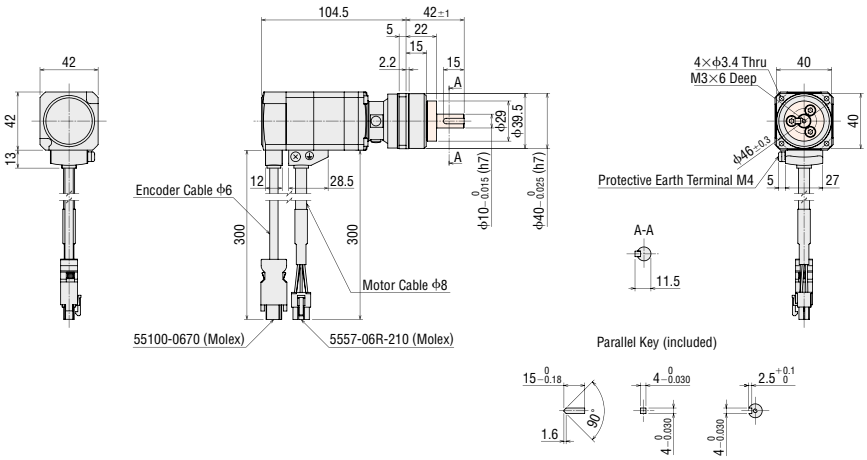
Product Name	Gear Ratio	L	Mass kg
AZM66MK-PS□	**5, 7.2, 10**	150	1.7
	25, 36, 50	170	2.0



◇**HPG** Geared Type Shaft Output Type

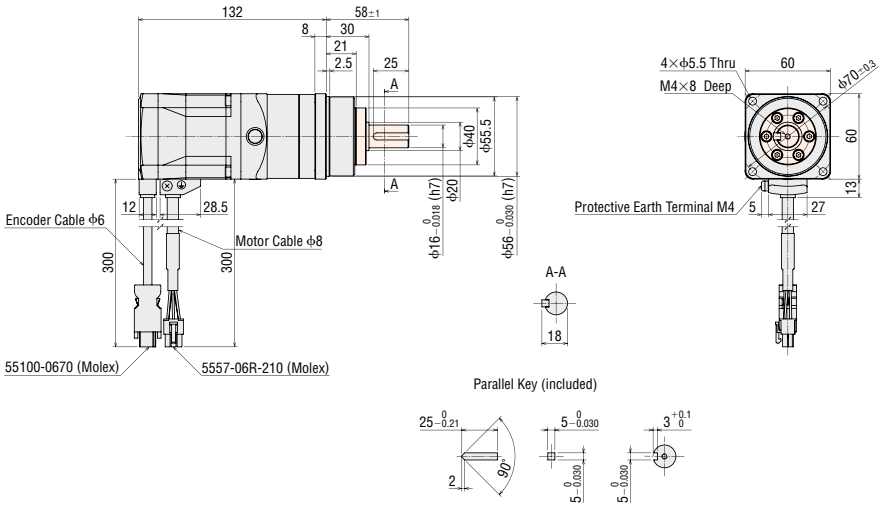
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46AK-HP□	**5, 9**	0.71



Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66AK-HP□	**5, 15**	1.9

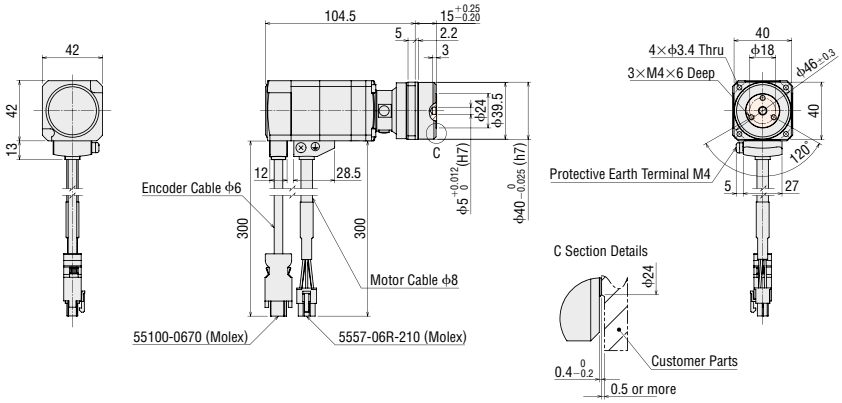


- The coloured part ▭ of the outline drawing is the rotation section.
- The ■ within the product name includes a number expressing the gear ratio.

◇**HPG** Geared Type Flange Output Type

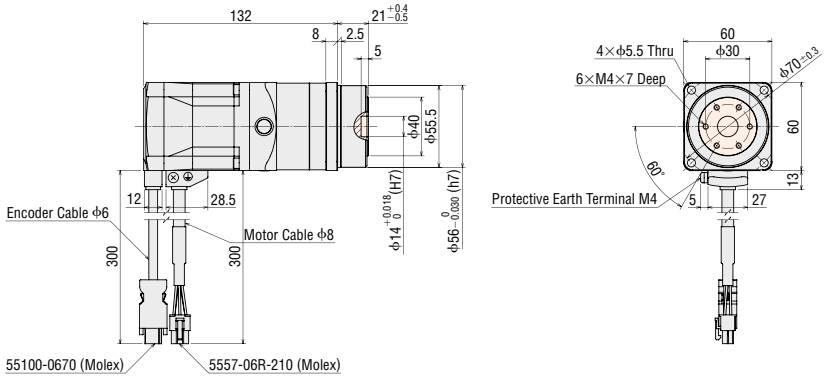
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46AK-HP□F	**5**, **9**	0.66



Frame Size 60 mm

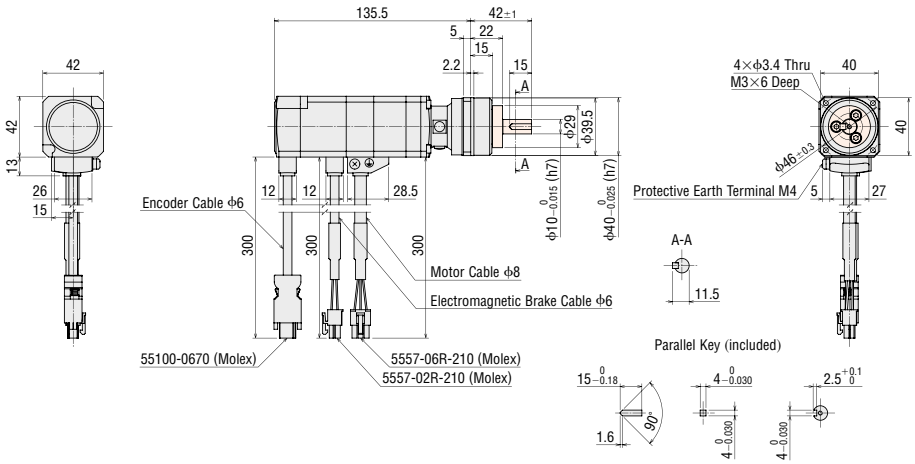
Product Name	Gear Ratio	Mass kg
AZM66AK-HP□F	**5**, **15**	1.8



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

Frame Size 40 mm

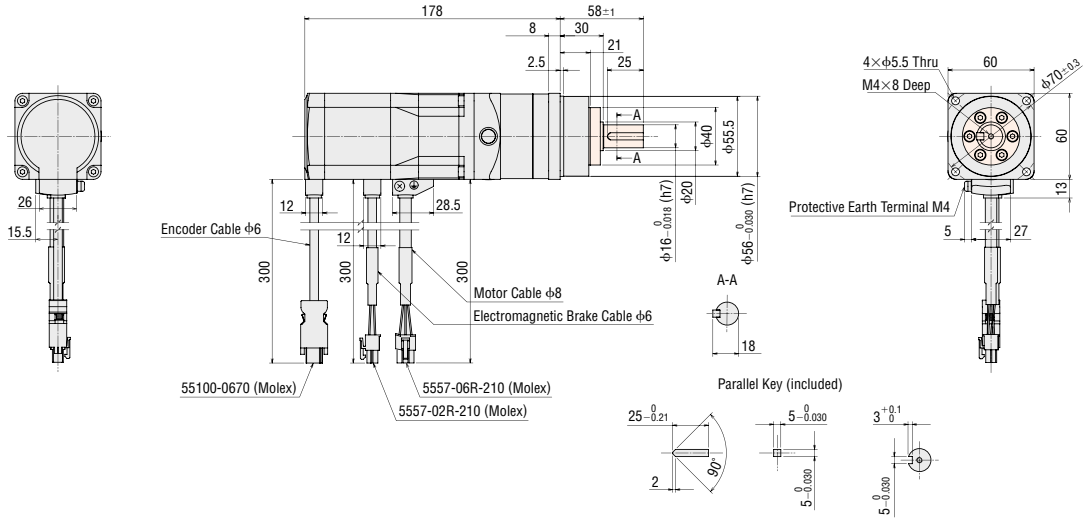
Product Name	Gear Ratio	Mass kg
AZM46MK-HP□	**5**, **9**	0.88



● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

Frame Size 60 mm

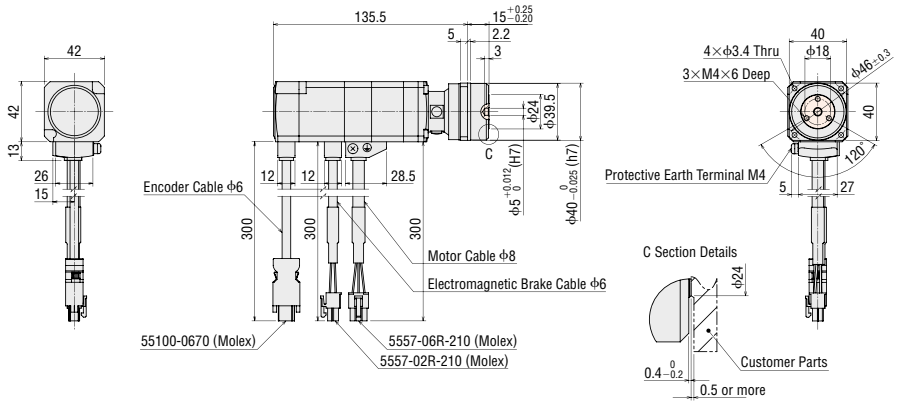
Product Name	Gear Ratio	Mass kg
AZM66MK-HP□	**5, 15**	2.3



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

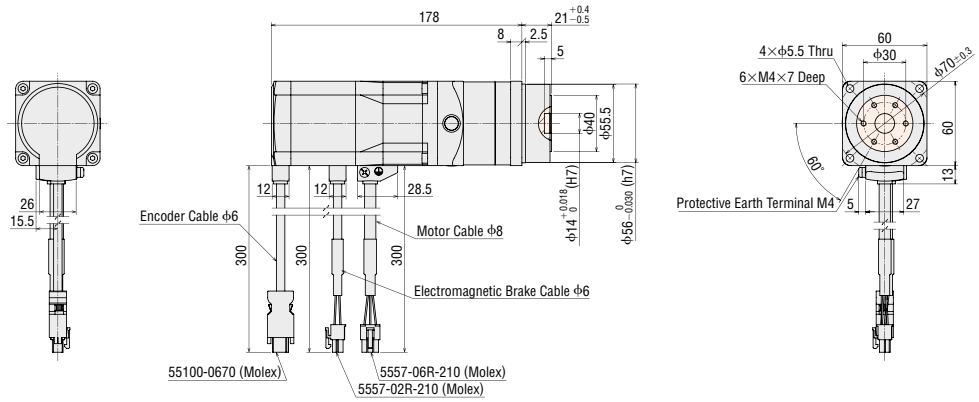
Frame Size 40 mm

Product Name	Gear Ratio	Mass kg
AZM46MK-HP□F	**5, 9**	0.83



Frame Size 60 mm

Product Name	Gear Ratio	Mass kg
AZM66MK-HP□F	**5, 15**	2.2

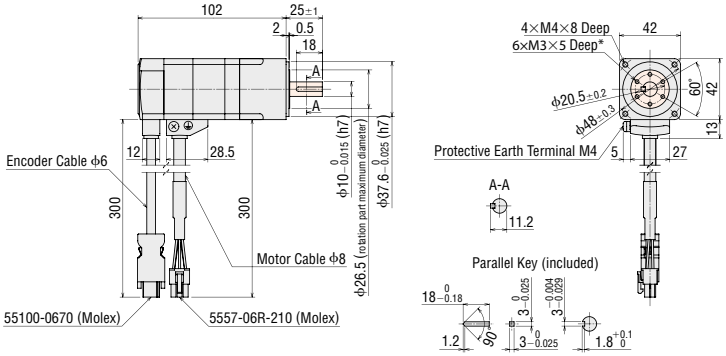


● The coloured part ▭ of the outline drawing is the rotation section.
● The □ within the product name includes a number expressing the gear ratio.

◇Harmonic Geared Type

Frame Size 42 mm

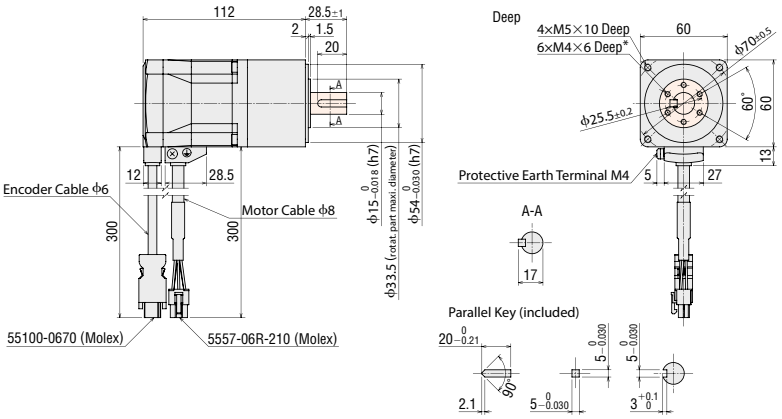
Product Name	Gear Ratio	Mass kg
AZM46AK-HS□	**50**, **100**	0.65



✻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
AZM66AK-HS□	**50**, **100**	1.4



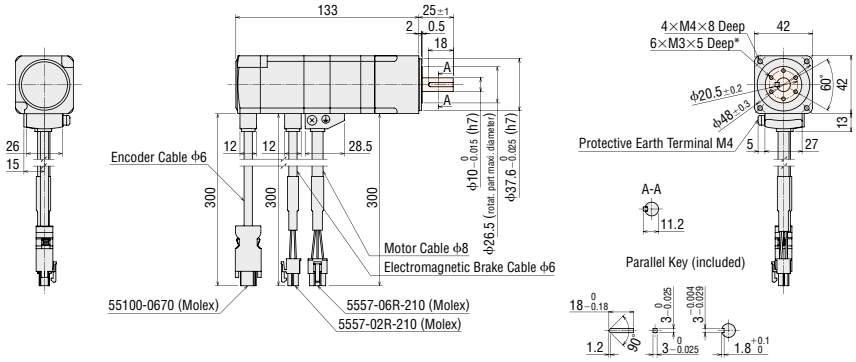
✻The position of the output shaft relative to the screw holes on the rotating part cannot be specified. Adjust the position via the size of the screw holes on the load installation surface.

● The coloured part ▭ of the outline drawing is the rotation section.
● The ■ within the product name includes a number expressing the gear ratio.

◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

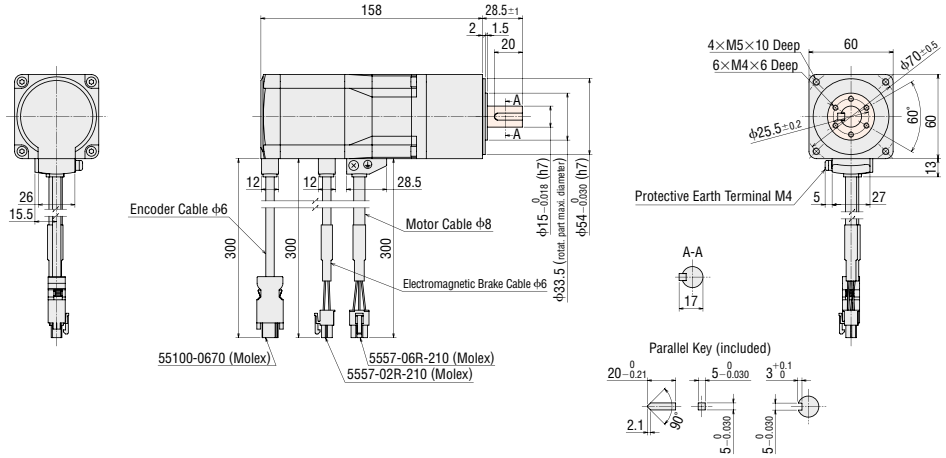
Product Name	Gear Ratio	Mass kg
AZM46MK-HS□	**50, 100**	0.82



✻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
AZM66MK-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.

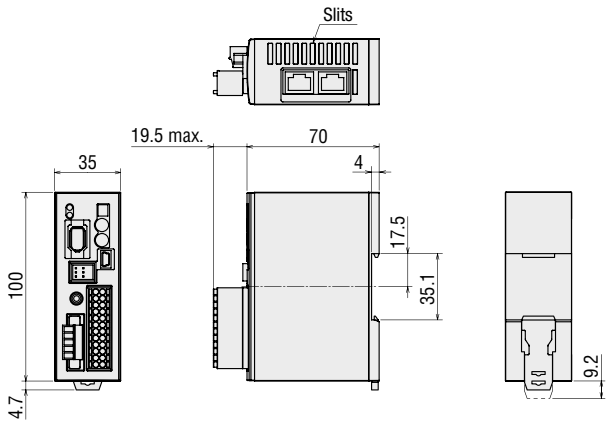
● The coloured part ▭ of the outline drawing is the rotation section.
● The ■ within the product name includes a number expressing the gear ratio.

Drivers

◇Built-in Controller Type, Pulse-Input Type with RS-485 Communication

Driver Product Name: **AZD-KD**, **AZD-KX**

Mass: 0.15kg



●Accessories

Connector form in power/electromagnetic brake connections (CN1)

Connector: MC1,5/5-STF-3,5
(PHOENIX CONTACT GmbH & Co. KG)

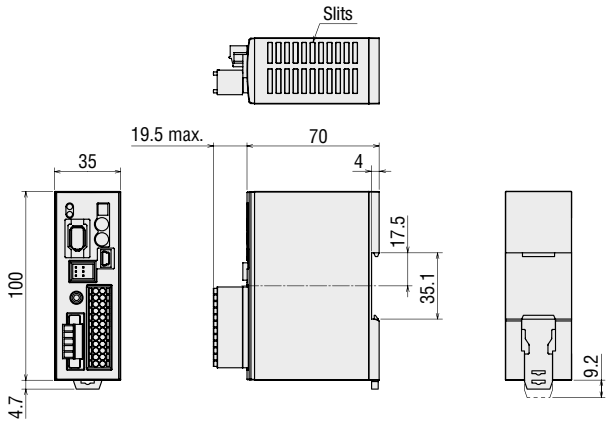
Connector for Input/Output Signal (CN4)

Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT GmbH & Co. KG)

◇Pulse-Input Type

Driver Product Name: **AZD-K**

Mass: 0.15kg



●Accessories

Connector form in power/electromagnetic brake connections (CN1)

Connector: MC1,5/5-STF-3,5
(PHOENIX CONTACT GmbH & Co. KG)

Connector for Input/Output Signal (CN4)

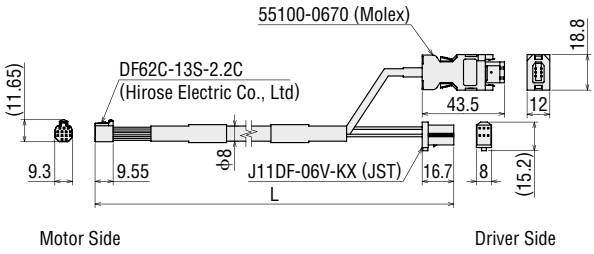
Connector: DFMC1,5/12-ST-3,5
(PHOENIX CONTACT GmbH & Co. KG)

Cable for Motor (sold separately), Cable for Encoder (sold separately), Cable for Electromagnetic Brake (sold separately)

Only products with included connection cables

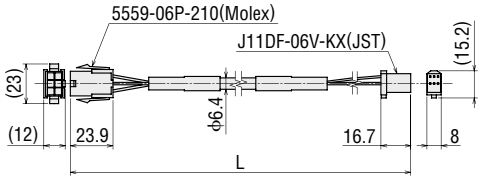
[AZ14, AZ15, AZ24, AZ26 use]

◇Cable for Motor

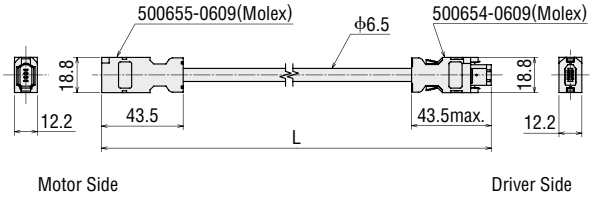


[AZ46, AZ48, AZ66, AZ69 use]

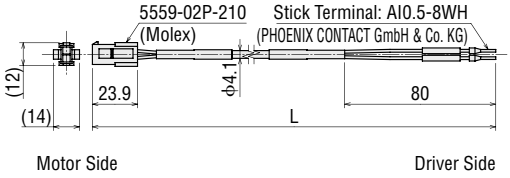
◇Cable for Motor



◇Cable for Encoder



◇Cable for Electromagnetic Brake (Only for electromagnetic brake products)



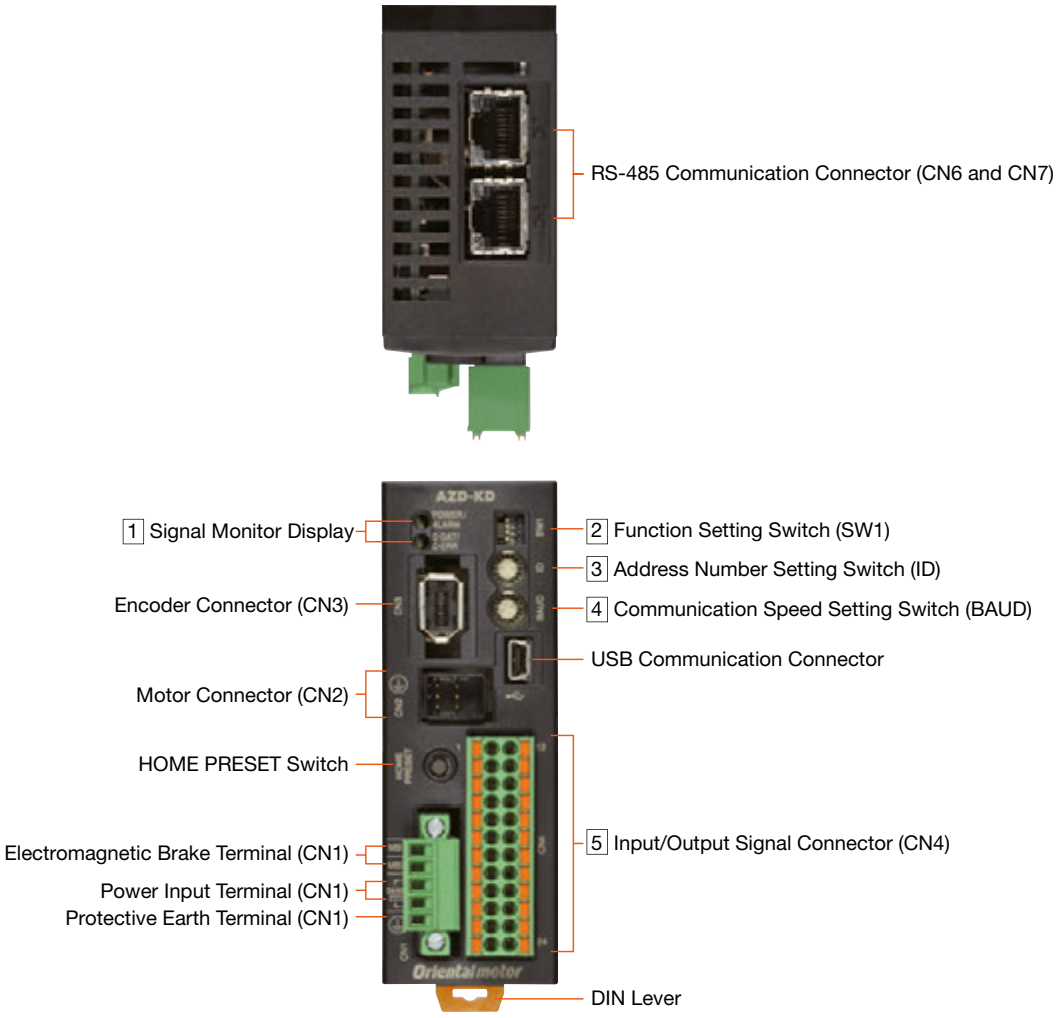
✻The length L (m) is specified where L is located in the dimensions in "Product Line" on page 71.

Notes

The motor cable and the electromagnetic brake cable coming out of the motor cannot be connected directly to the driver. For connection to the driver use the accessory connection cable (sold separately) or the connection cable which is included to the product (for products with included cable).

Connection and Operation (Built-in Controller Type)

Name and Functions of Driver Parts



1 Signal Monitor Display

◇LED Display

Display	Colour	Function	When Activated
POWER	Green	Power Display	When power is on.
ALARM	Red	Alarm Display	Blinks when protective functions are activated.
C-DAT	Green	Communication Display	When communication data is received or sent.
C-ERR	Red	Communication Error Display	When there is an error with communication data.

2 Function Setting Switch

Display	No.	Function
SW1	1	This sets the address number in combination with the address number setting switch (ID) (Factory Setting: OFF).
	2	Set the RS-485 communication protocol. Factory setting: Built-in Controller Type: OFF Pulse-Input Type with RS-485 Communication: ON
	3	Set the RS-485 communication terminal resistor (120Ω) (Factory Setting: OFF). OFF: no terminal resistor, ON: terminal resistor connected.
	4	

✻Please use the same settings for both No. 3 and No. 4.

3 Address Number Setting Switch (ID)

Display	Function
ID	Set this when RS-485 communication is used. Set the axis number. Factory setting: Built-in Controller Type: 0 Pulse-Input Type with RS-485 Communication: 1

4 Communication Speed Setting Switch

Display	Function
BAUD	Set this when RS-485 communication is used. Set the baud rate. Factory setting: Built-in Controller Type: 7 Pulse Input Type with RS-485 Communication: 4

◇Settings of the RS-485 Communication Speed

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 Input/Output Signal Connector (CN4)

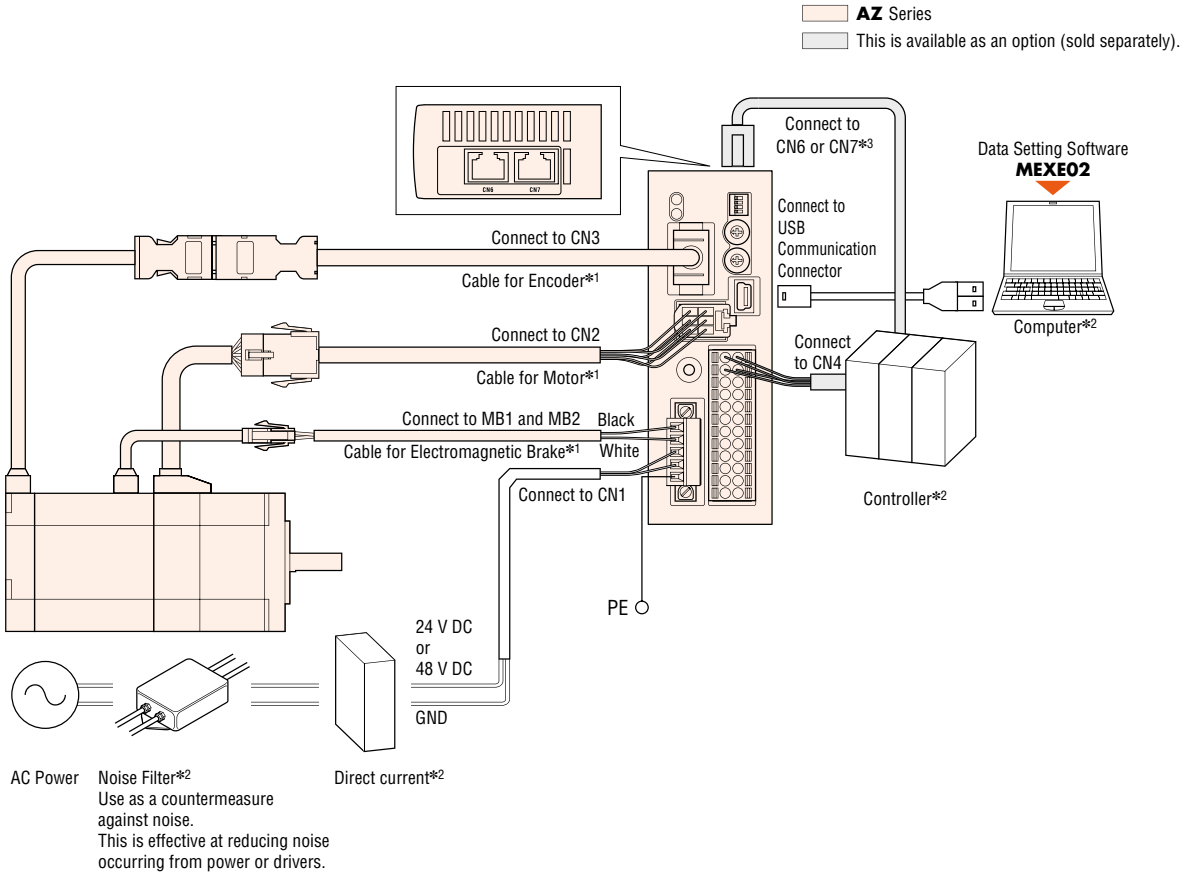
For the Pulse-Input Type with RS-485 Communication pin No. 1, 2, 13 and 14 are for pulse input. For connecting to a programmable controller refer to page 108-109 of the Pulse-Input Type.

Display	Pin Number	Driver Type	Signal Name	Content	
CN4	1	Built-In Controller Type	IN0	START	This signal is used to start positioning operation.
		Pulse-Input Type with RS-485 Communication	CW+* [PLS+]	CW Pulse Input+ [Pulse Input+]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	2	Built-In Controller Type	IN2	M1	Use 3 bits (M0, M1 and M2) to select the operating data number.
		Pulse-Input Type with RS-485 Communication	CCW+* [DIR+]	CCW Pulse Input+ [Rotation Direction Input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	3	Common	IN4	ZHOME	Move to the home position set by the HOME PRESET switch.
	4	Common	IN6	STOP	Stop the motor.
	5	Commont	IN-COM [0–7]*	IN0~IN7 Input Common	
	6	Commont	IN8	FW-JOG	Start the JOG operation.
	7	Commont	OUT0	HOME-END	Output when the home position is fixed and the high speed return-to-home operation is complete.
	8	Commont	OUT2	PLS-RDY	Not used.
	9	Commont	OUT4	MOVE	Output when the motor is operating.
	10	Commont	OUT-COM*	Output Common	
	11	Commont	ASG+	A-Phase Output+	
	12	Commont	BSG+	B-Phase Output+	
	13	Built-In Controller Type	IN1	M0	Use 3 bits (M0, M1 and M2) to select the operating data number.
		Pulse-Input Type with RS-485 Communication	CW–* [PLS–]	CW Pulse Input- [Pulse Input-]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	14	Built-In Controller Type	IN3	M2	Use 3 bits (M0, M1 and M2) to select the operating data number.
		Pulse-Input Type with RS-485 Communication	CCW–* [DIR–]	CCW Pulse Input+ [Rotation Direction Input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	15	Commont	IN5	FREE	Stop motor excitation.
	16	Commont	IN7	ALM-RST	Reset the alarm.
	17	Commont	IN-COM [8-9]*	IN8, IN9 Input Common	
	18	Commont	IN9	RV-JOG	Start the JOG operation.
	19	Commont	OUT1	IN-POS	Output when the motor operation is complete.
	20	Commont	OUT3	READY	Output when the driver is prepared for operation.
	21	Commont	OUT5	ALM-B	Outputs the alarm status for the driver (normally closed).
	22	Commont	GND*1	Ground	
	23	Commont	ASG–	A-Phase Output-	
	24	Commont	BSG–	B-Phase Output-	

●Functions to assign can be set by specifying parameters. Initial values are shown above. Refer to the AZ Series Function Edition operating manual.
∗1 The initial value setting cannot be changed.

●Connection Diagram

◇Connection to Peripheral Equipment



*1 When wiring the motor and the driver, keep a max. distance of 20 m.
*2 Prepared by the customer.
*3 When controlling with RS-485 communications, connect to the controller.

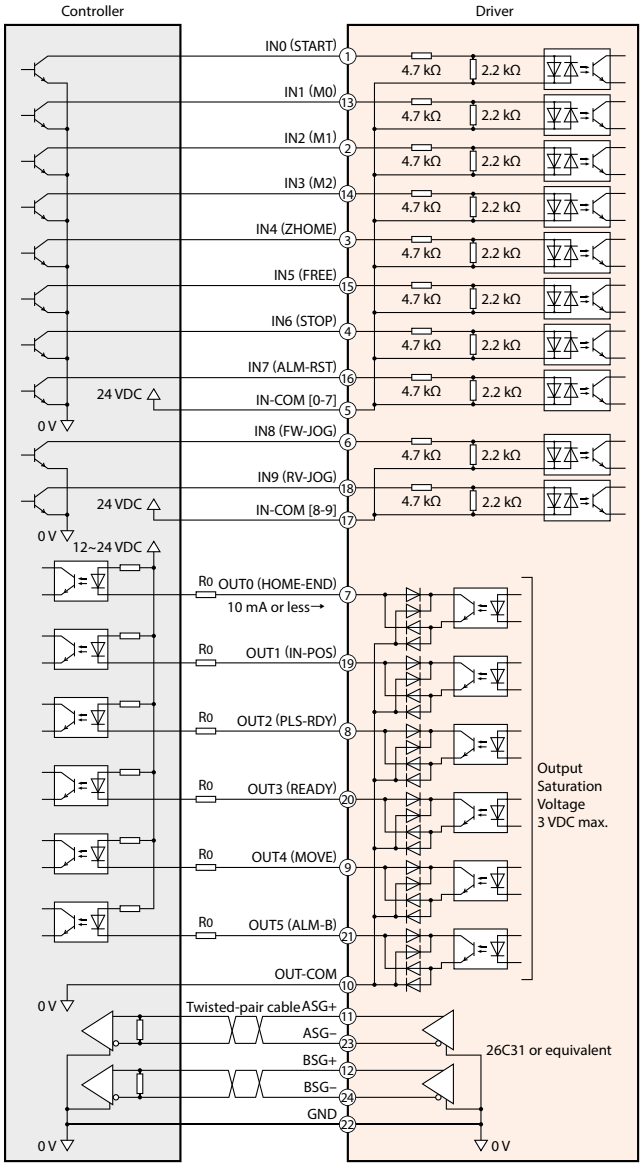
◇USB Cable Connection

The computer on which the data setting software **MEXE02** is installed and driver are connected with a USB cable.
Use the following specifications for the USB cable.

Specification	USB2.0 (full speed)
Cable	Length: 3 m (or less)
	Format: A-mini-B

◇Connecting to a Host Controller

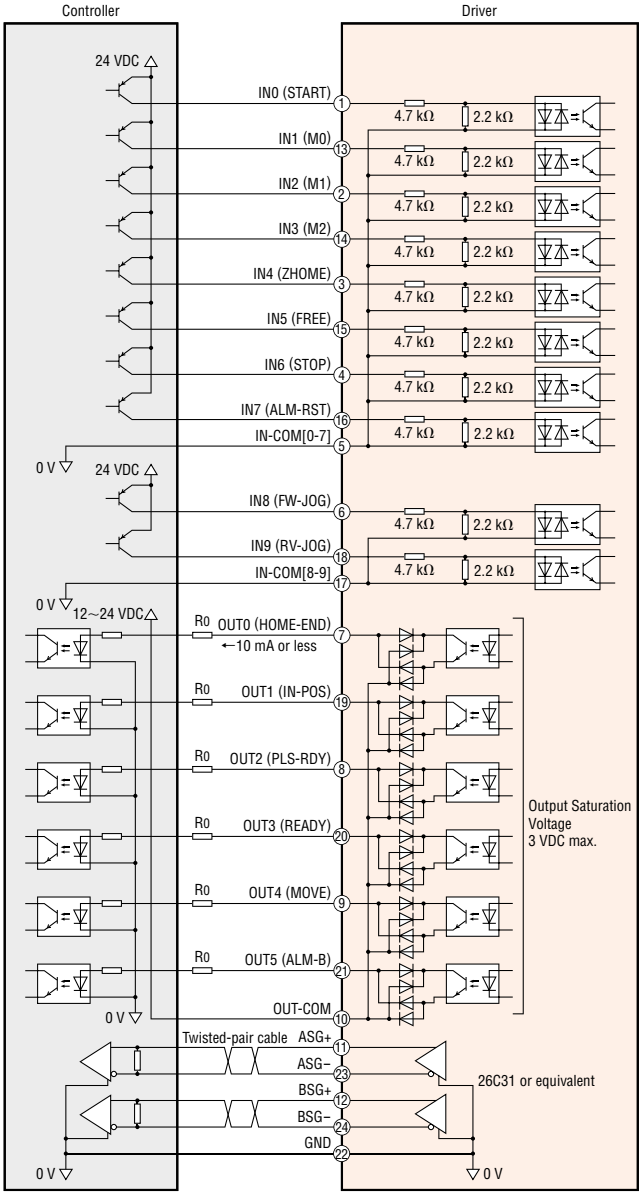
•Connecting to a Current Sink Output Circuit



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA , connect an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power lines (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

•Connecting to a Current Source Output Circuit



Notes

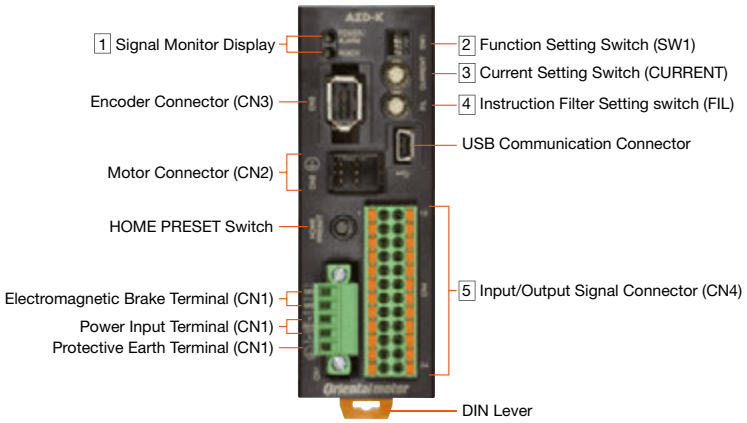
- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA , connect an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

◇Connecting to a Programmable Controller (Pulse-Input Type with RS-485 Communication)

The connection is the same as that of the Pulse-Input Type. See page 108-109

Connection and Operation (Pulse-Input Type)

Names and Functions of Driver Parts



1 Signal Monitor Display

◇LED Display

Display	Colour	Function	When Activated
POWER	Green	Power Display	When power is on.
ALARM	Red	Alarm Display	Blinks when protective functions are activated.
READY	Green	READY output	When READY output is set to ON

2 Function Setting Switch

Display	No.	Function
SW1	1	Set the resolution for each motor output axis rotation (Factory Setting : OFF [1000p/r]).
	2	Set the pulse input format to 1 pulse input mode or 2 pulse input mode. (Factory Setting: OFF [2 pulse input mode])
	3, 4	Not used

3 Current Setting Switch

Display	Function
CURRENT	Set basic current that is the base for the operation current and stop current (Factory Setting: F).

4 Command Filter Setting Switch

Display	Function
FIL	Adjust the responsiveness of the motor (Factory Setting: 1).

5 Input/Output Signal Connector (CN4)

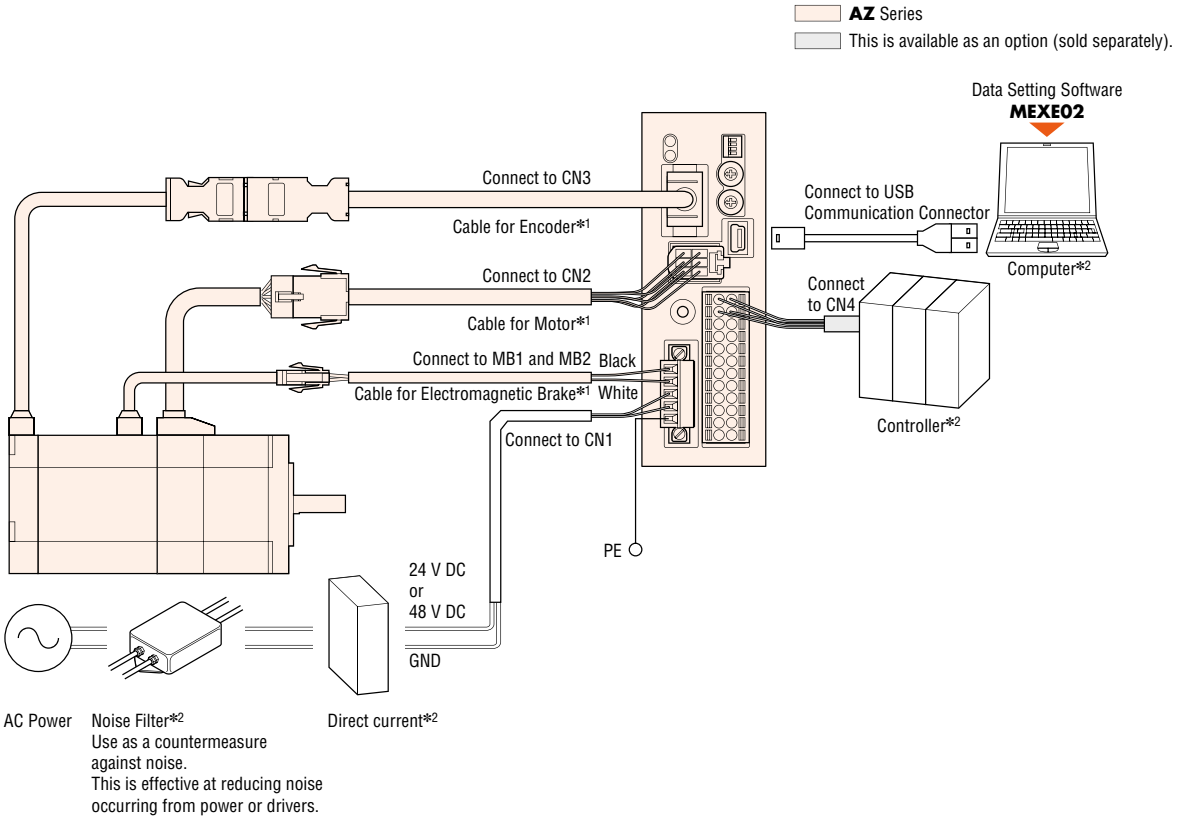
Display	Pin Number	Signal Name	Content	
CN5	1	CW+[PLS+]*1	CW pulse input+[pulse input+]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	2	CCW+[DIR+]*1	CCW pulse input+[rotation direction input+]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	3	IN4	ZHOME	Move to the home position set with the HOME PRESET switch.
	4	IN6	STOP	Stop the motor.
	5	IN-COM [4–7]*1	IN4–IN7 input common	
	6	IN8	FW-JOG	Start JOG operation.
	7	OUT0	HOME-END	Output when determining the home position or completing high speed return-to-home operation.
	8	OUT2	PLS-RDY	Output when the pulse input preparation is complete.
	9	OUT4	MOVE	Output while operating the motor.
	10	OUT-COM*1	Output common	
	11	ASG+	A phase pulse output+	
	12	BSG+	B phase pulse output+	
	13	CW−[PLS-]*1	CW pulse input−[pulse input−]	Pulse signal for motor operation in CW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	14	CCW−[DIR-]*1	CCW pulse input−[rotation direction input −]	Pulse signal for motor operation in CCW direction with 2 pulse input method. The brackets [ ] show the content when using 1 pulse input method.
	15	IN5	FREE	The motor is set to non-excitation.
	16	IN7	ALM-RST	Reset the alarm.
	17	IN-COM [8–9]*1	IN8, IN9 input common	
	18	IN9	RV-JOG	Start JOG operation.
	19	OUT1	IN-POS	Output when the motor operation is complete.
	20	OUT3	READY	Outputs when the driver is ready for operation.
	21	OUT5	ALM-B	Output the driver alarm state (normal close).
	22	GND*1	Ground	
	23	ASG−	A phase pulse output−	
	24	BSG−	B phase pulse output−	

Assigned functions are set by means of the parameter settings. The above is the initial value. For details, refer to the User's Manual.

*1 The initial value setting cannot be changed.

Connection Diagram

◇Connection to Peripheral Equipment



*1 Please keep the extension between the motor and driver up to 20m
*2 Prepared by the customer.

◇USB Cable Connection

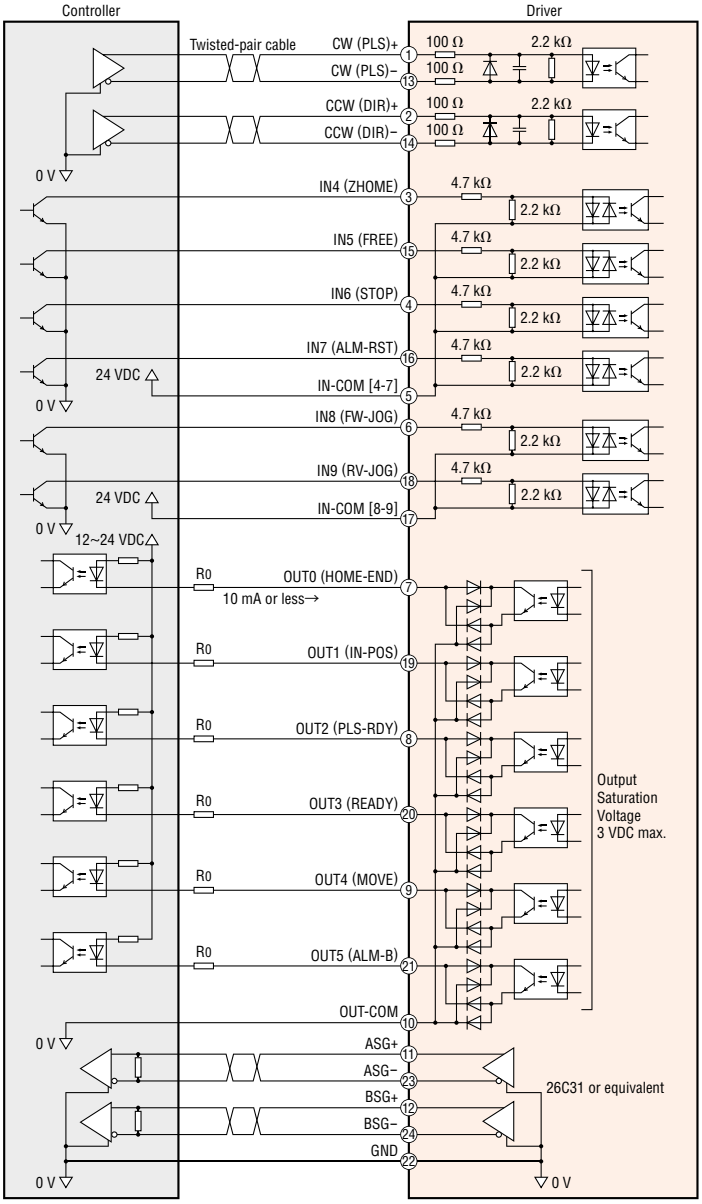
The computer on which the data setting software **MEXE02** is installed and driver are connected with a USB cable.
Use the following specifications for the USB cable.

Specification	USB2.0 (full speed)
Cable	Length: 3 m (or less)
	Format: A-mini-B

◇Connecting to a Host Controller

•Connecting to a Current Sink Output Circuit

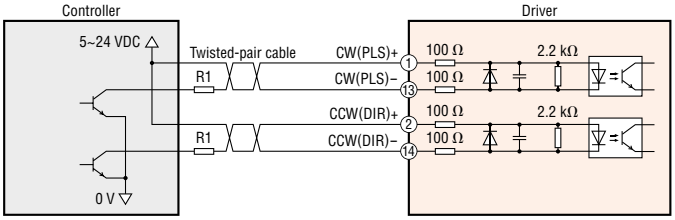
When the pulse input is a line driver



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA , connect an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

When the pulse input is an open collector



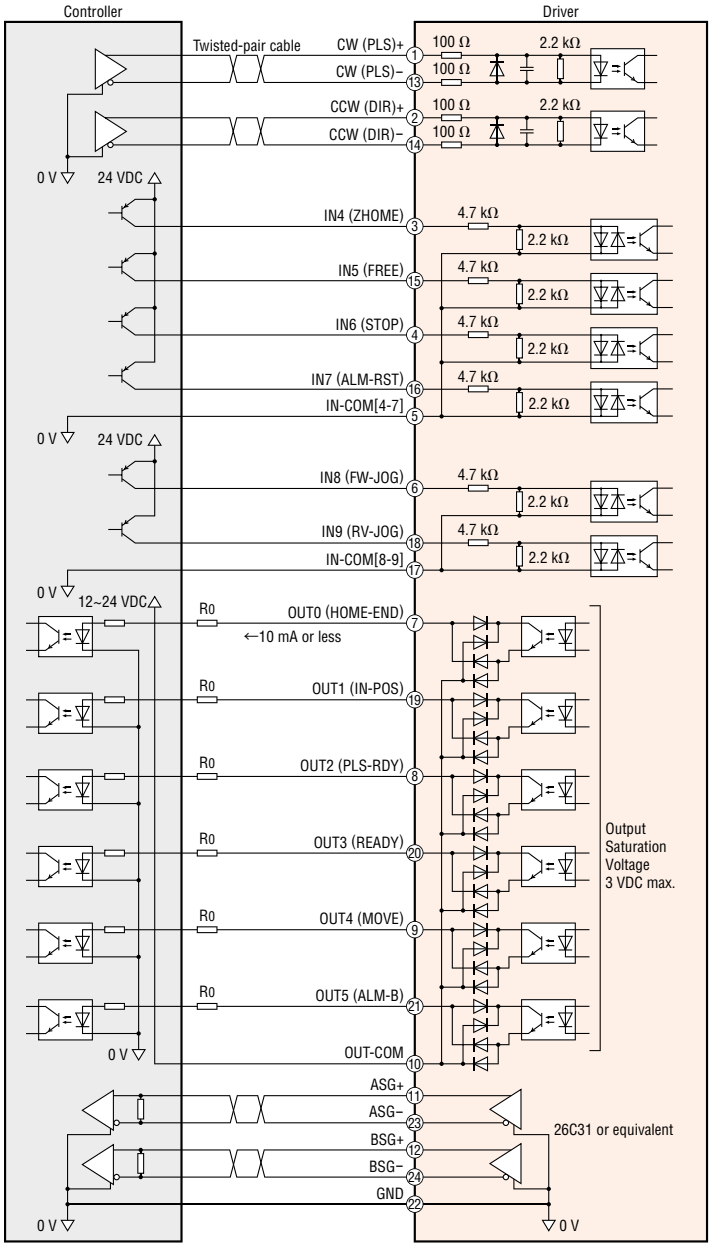
Notes

- For CW (PLS) input and CCW (DIR) input, use 5~24 VDC. Where the voltage exceeds 5 VDC, connect an external resistor R_1 to adjust the input current to be 7~20mA.

◇Connecting to a Host Controller

•Connecting to a Current Source Output Circuit

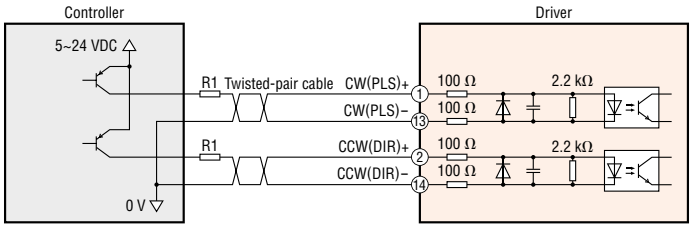
When the pulse input is a line driver



Notes

- For the input signal, use 24 VDC.
- For the output signal, use 12~24 VDC 10 mA or less. Where the current value exceeds 10 mA, connect to an external resistor R_0 to reduce the current to 10 mA or less.
- Make sure the signal line is wired at a distance of 200 mm or longer from the power line (power supply line and motor line).
  Furthermore, do not insert the signal line in the same pipe as the power lines or bundle them together.
- When noise is emitted from the motor cable or power cable due to wiring or allocation and it cause a problem, use shields or ferrite cores.

When the pulse input is an open collector



Notes

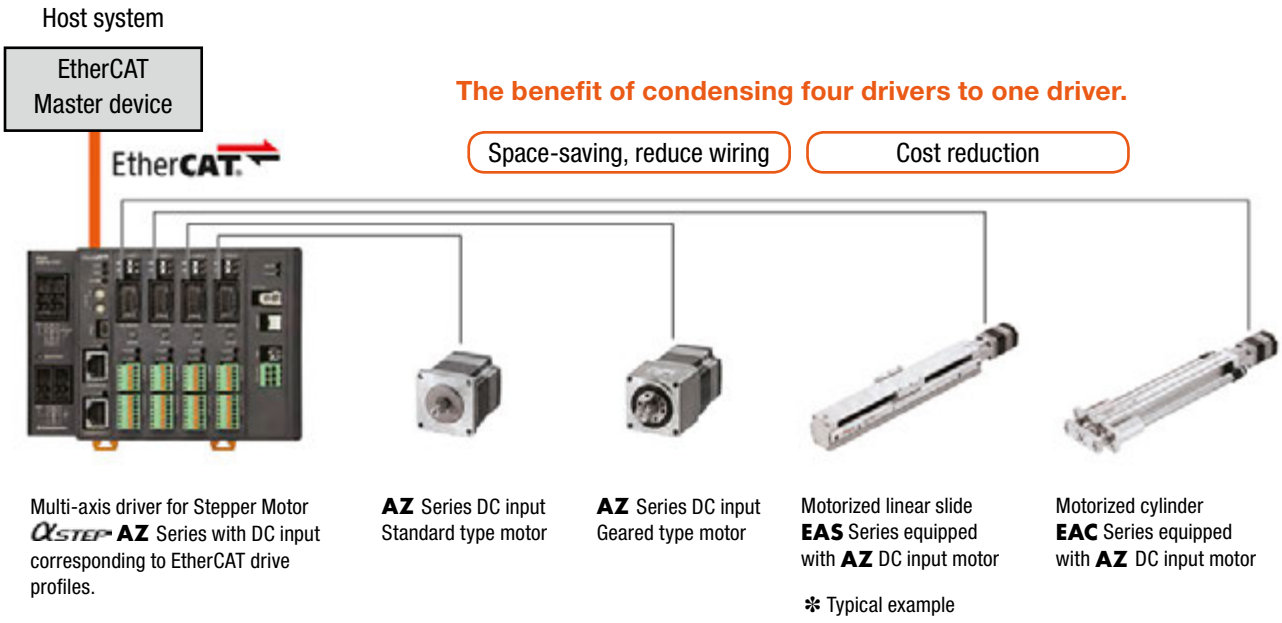
- For CW (PLS) input and CCW (DIR) input, use 5~24 VDC. Where the voltage exceeds 5 VDC, connect an external resistor R_1 to adjust the input current to be 7~20mA.

AZ Multi-Axis-Driver Series

DC Power supply
Supports EtherCAT Drive Profiles

The multi-axis driver corresponds to the EtherCAT communication drive profile CiA402. All of our **AZ** motors with DC power input and motorized actuators which are equipped with them can be connected. 2-axis, 3-axis, or 4-axis can be connected to the driver.

The Multi-axis driver achieves a space-saving and cost reduction (up to 4 axes)



● The motors and actuators shown above are an example.

Types

Product Name	Number of axes
AZD2A-KED	2
AZD3A-KED	3
AZD4A-KED	4

Applicable Series

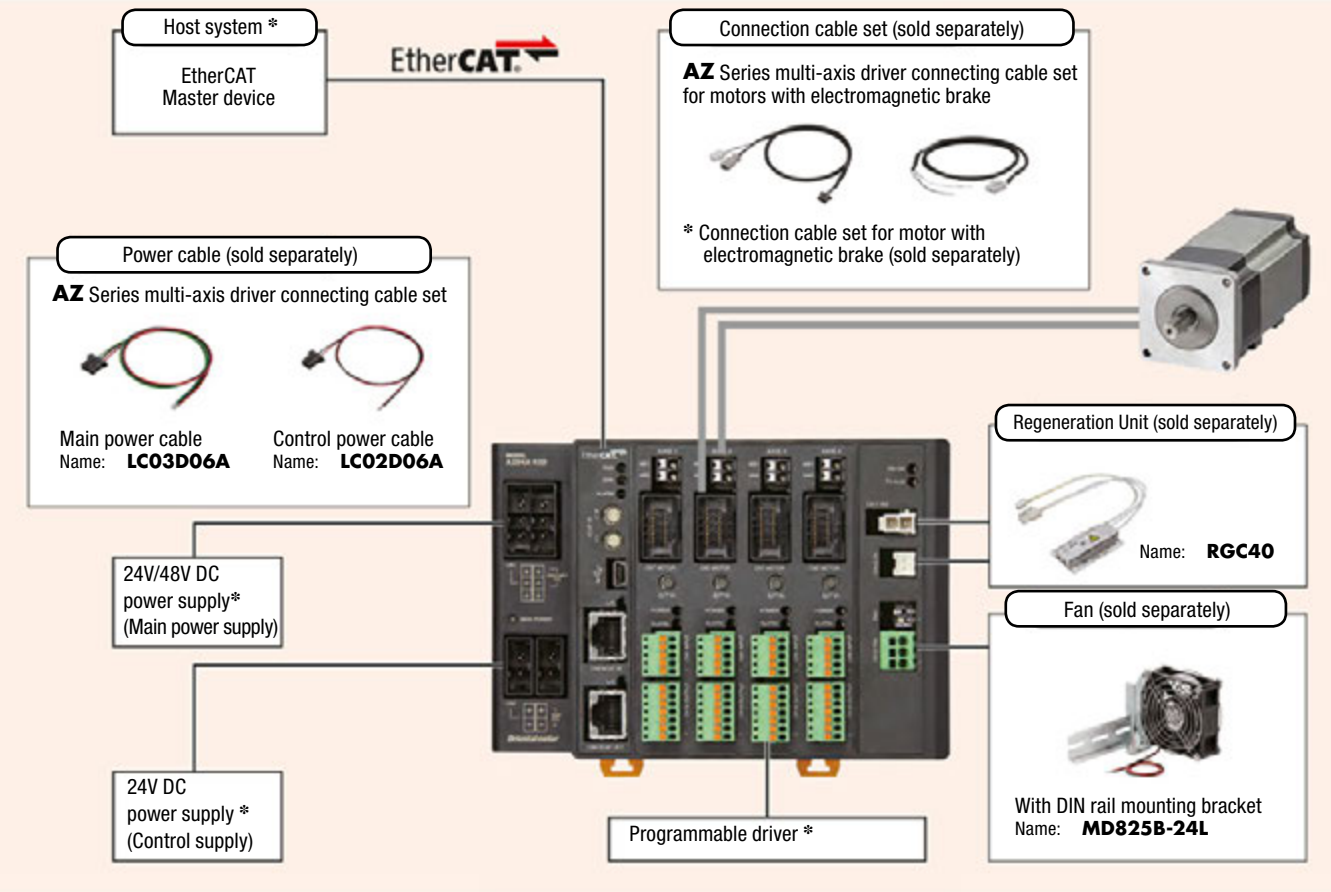
Motor	Actuator
Stepper motor αSTEP **AZ** Series DC power input	Electric slides **EAS** Series equipped with αSTEP **AZ** DC input motor Electric slides **EZS** Series equipped with αSTEP **AZ** DC input motor Electric cylinder **EAC** Series equipped with αSTEP **AZ** DC input motor Compact Linear actuator **DRS2** Series equipped with αSTEP **AZ** DC input motor

● Refer to each series' catalogue for applicable combinations with motors and actuators.

System configuration

Standard **AZ** DC Motor with electromagnetic brake

*Prepared by the customer



●System Configuration Example

AZ Series

Motor	Driver	Connection Cable Sets
AZM66MK	**AZD4A-KED**	**CC030VZFBA**
€447.00	€1,173.00	€85.00

+

Accessory

Sold Separately		
Main Power Cable	Control Power Cable	Regeneration Unit
LC03D06A	**LC02D06A**	**RGC40**
€14.00	€12.00	€43.00

●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

AZD 4A - K ED

① ② ③ ④

①	Driver Type	**AZD**: **AZ** Series Driver
②	Number of Axes	**2A**: 2 Axes **3A**: 3 Axes **4A**: 4 Axes
③	Power Supply Input	**K**: DC Power Supply Input
④	Type of communication	**ED**: EtherCAT Drive profile

Cables for multi-axis driver
Connection Cable Sets/Flexible Connection Cable Sets

◇For Standard Motor

CC 050 V Z □ F A

① ② ③ ④ ⑤ ⑥ ⑧

◇For Electro Magnetic type motor

CC 050 V Z F B A

① ② ③ ④ ⑥ ⑦ ⑧

①		**CC**: Cable
②	Length	**005**: 0.5 m **010**: 1 m **015**: 1.5 m **020**: 2 m **025**: 2.5 m **030**: 3 m **040**: 4 m **050**: 5 m **070**: 7 m **100**: 10 m **150**: 15 m **200**: 20 m
③	Reference Number	
④	Applicable Models	**Z**: **AZ** Series
⑤	Reference Number	Blank: Frame Size 42 mm (**HPG** Geared Type is 40 mm), 60 mm **2**: Frame Size 20 mm, 28 mm
⑥	Cable Type	**F**: Connection Cable Sets **R**: Flexible Connection Cable Sets
⑦	Electromagnetic Brake	**B**: With Electromagnetic Brake
⑧	Driver Type	**A**: For Multi-Axis Driver

Product Line

Multi-Axis Driver

◇EtherCAT Drive Profile Compliant

Product Name	Number of Axes	List Price
AZD2A-KED	**2** Axes	€733.00
AZD3A-KED	**3** Axes	€971.00
AZD4A-KED	**4** Axes	€1,173.00

AZ Series Multi-Axis Driver Connection Cable Sets/ Flexible Connection Cable Sets

◇Motor Connection Cables

Length L (m)	Frame Size 20 mm, 28 mm				Frame Size 42 mm, 60 mm			
	Connection Cable	List Price	Flexible Connection Cable	List Price	Connection Cable	List Price	Flexible Connection Cable	List Price
0.5	**CC005VZ2FA**	€ 54,00	**CC005VZ2RA**	€ 65,00	**CC005VZFA**	€ 54,00	**CC005VZRA**	€ 65,00
1	**CC010VZ2FA**	€ 54,00	**CC010VZ2RA**	€ 65,00	**CC010VZFA**	€ 54,00	**CC010VZRA**	€ 65,00
1.5	**CC015VZ2FA**	€ 58,00	**CC015VZ2RA**	€ 70,00	**CC015VZFA**	€ 58,00	**CC015VZRA**	€ 70,00
2	**CC020VZ2FA**	€ 61,00	**CC020VZ2RA**	€ 76,00	**CC020VZFA**	€ 61,00	**CC020VZRA**	€ 76,00
2.5	**CC025VZ2FA**	€ 66,00	**CC025VZ2RA**	€ 81,00	**CC025VZFA**	€ 66,00	**CC025VZRA**	€ 81,00
3	**CC030VZ2FA**	€ 69,00	**CC030VZ2RA**	€ 85,00	**CC030VZFA**	€ 69,00	**CC030VZRA**	€ 85,00
4	**CC040VZ2FA**	€ 77,00	**CC040VZ2RA**	€ 97,00	**CC040VZFA**	€ 77,00	**CC040VZRA**	€ 97,00
5	**CC050VZ2FA**	€ 84,00	**CC050VZ2RA**	€ 108,00	**CC050VZFA**	€ 84,00	**CC050VZRA**	€ 108,00
7	**CC070VZ2FA**	€ 104,00	**CC070VZ2RA**	€ 138,00	**CC070VZFA**	€ 104,00	**CC070VZRA**	€ 138,00
10	**CC100VZ2FA**	€ 135,00	**CC100VZ2RA**	€ 181,00	**CC100VZFA**	€ 135,00	**CC100VZRA**	€ 181,00
15	**CC150VZ2FA**	€ 187,00	**CC150VZ2RA**	€ 254,00	**CC150VZFA**	€ 187,00	**CC150VZRA**	€ 254,00
20	**CC200VZ2FA**	€ 237,00	**CC200VZ2RA**	€ 326,00	**CC200VZFA**	€ 237,00	**CC200VZRA**	€ 326,00

◇Connection Cables for Motors with Electromagnetic Brake

Length L (m)	Frame Size 42 mm, 60 mm			
	Connection Cable	List Price	Flexible Connection Cable	List Price
0.5	**CC005VZFBA**	€ 66,00	**CC005VZRBA**	€ 87,00
1	**CC010VZFBA**	€ 66,00	**CC010VZRBA**	€ 87,00
1.5	**CC015VZFBA**	€ 71,00	**CC015VZRBA**	€ 95,00
2	**CC020VZFBA**	€ 75,00	**CC020VZRBA**	€ 103,00
2.5	**CC025VZFBA**	€ 81,00	**CC025VZRBA**	€ 109,00
3	**CC030VZFBA**	€ 85,00	**CC030VZRBA**	€ 115,00
4	**CC040VZFBA**	€ 94,00	**CC040VZRBA**	€ 131,00
5	**CC050VZFBA**	€ 103,00	**CC050VZRBA**	€ 146,00
7	**CC070VZFBA**	€ 127,00	**CC070VZRBA**	€ 184,00
10	**CC100VZFBA**	€ 163,00	**CC100VZRBA**	€ 237,00
15	**CC150VZFBA**	€ 225,00	**CC150VZRBA**	€ 331,00
20	**CC200VZFBA**	€ 285,00	**CC200VZRBA**	€ 422,00

For Motor

For Electromagnetic Brake

Note

- For the Multi-Axis Driver only connection cables are provided. AZ Series extension cables cannot be used.

Included

Multi-Axis Driver

Type, Number of Axes \ Included		Connector for CN1	Connector for CN2	Contact for CN1, CN2	Connector Cap for CN4, CN5	Connector for CN9	Connector for CN10	Operating Manual
EtherCAT Compliant	2 Axes	2 Pieces	2 Pieces	10 Pieces	2 Pieces	2 Pieces	2 Pieces	1 Copy
	3 Axes	2 Pieces	2 Pieces	10 Pieces	2 Pieces	3 Pieces	3 Pieces	1 Copy
	4 Axes	2 Pieces	2 Pieces	10 Pieces	2 Pieces	4 Pieces	4 Pieces	1 Copy

Specifications

Power Supply Input

Main Power Supply: 24/48 VDC ±10% 7.0A (Max. 7.0 A, please use average 4.0 A or less)
Control Power Supply: 24 VDC ±10% 1.5A (For the type with an electromagnetic brake a 24 VDC±5% specification applies)
(For the type with an electromagnetic brake with 20 m connection cable a 24 VDC ±4% specification applies)

◇EtherCAT Specifications

Item	Content
Baud Rate	100 Mbps
Communication Period	0.5ms/1ms/2ms/3ms/4ms/5ms/6ms/7ms/8ms
Node Address	0～255(00h～FFh, initial value:00h)
Communication Protocol	EtherCAT dedicated protocol (CoE) CiA402 drive profile

General Specification

Item	Content
Degree of Protection	**IP10**
Operating Environment	Ambient temperature: 0~+50°C (Non-freezing) Ambient Humidity: 85% or less (Non-condensing) Altitude: Max. 1000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Storage, Transportation Environment	Ambient temperature: -25~+70°C (Non-freezing) Ambient Humidity: 85% or less (Non-condensing) Altitude: Max. 3000 m above sea level Atmosphere: No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.
Insulation Resistance	100MOhm or more when a 500 VDC megger is applied between the following parts: - FG Terminal - Power Supply Terminal
Dielectric Voltage	Sufficient to withstand for 1 minute: - EtherCAT Compliant: FG Terminal - Power Supply Terminal 1 kVAC, 50 Hz or 60 Hz, leakage current 10 mA or less

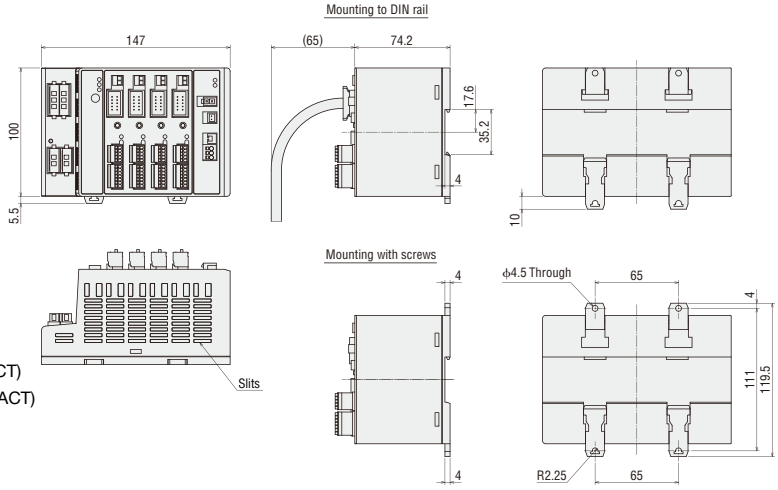
Note

- 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.

Dimensions (Unit = mm)

Multi-Axis Driver (EtherCAT Compliant)

Number of Axes \ Type	Product Name	Mass KG
2 Axes	**AZD2A-KED**	0.39
3 Axes	**AZD3A-KED**	0.42
4 Axes	**AZD4A-KED**	0.45



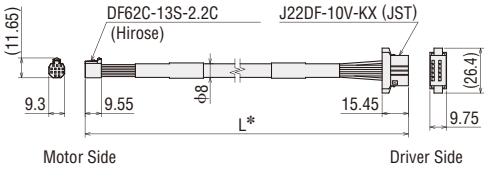
- The dimensions for 2 axes, 3 axes and 4 axes are the same.
- Included

  Connector for Main Power: F32FSS-03V-KX (JST)
  Connector for Control Power: F32FSS-02V-KX (JST)
  Connector for Main Power/Control Power: LF3F-41GF-P2.0 (JST)
  Connector for Input Signals: FK-MC 0,5/ 5-ST-2,5 (PHOENIX CONTACT)
  Connector for Output Signals: FK-MC 0,5/ 7-ST-2,5 (PHOENIX CONTACT)

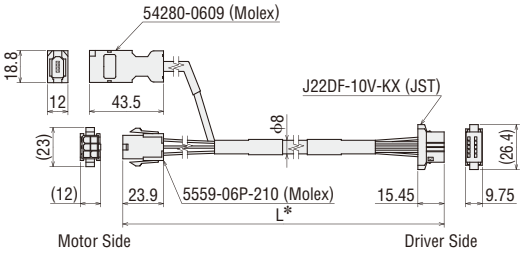
Connection Cable Sets/Flexible Connection Cable Sets

◇Cable for Motor

•Frame Size 20 mm, 28 mm

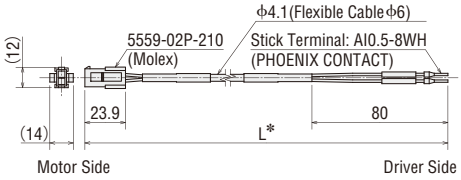


•Frame Size 42 mm, 60 mm



◇Cable for Electromagnetic Brake

•Frame Size 42 mm, 60 mm



✻The length L (m) is specified where L is located in the dimensions in "Product Line" on page 112-113

Multi-Axis Driver Accessories

Power Supply Cables (Sold Separately)

Lead wire cables with connectors for **AZ** Series Multi-Axis Drivers. Main power supply and control power supply can be connected easily.

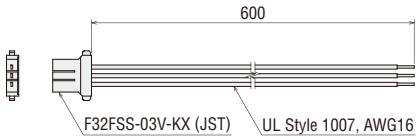
◇Product Line

Product Name	Type	List Price
LC03D06A	Main Power Supply	€14.00
LC02D06A	Control Power Supply	€12.00

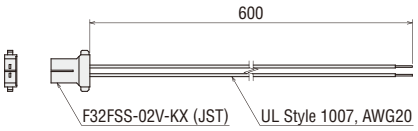
LC03D06A **LC03D06A**

◇Dimensions (Unit = mm)

Cable for Main Power Supply
LC03D06A



Cable for Control Power Supply
LC02D06A



Regeneration Unit

During vertical drive (gravitational operation) or sudden start/stop in high inertia, an external force causes the motor to rotate and function as a power generator. When the regenerative power exceeds the driver's regenerative power absorption capacity, it may cause damage to the motor. In such a case, the regeneration unit is connected to the driver to convert regenerative energy into thermal energy for dissipation.
As the Multi-Axis Driver uses 24 VDC, an alarm output can happen easily, therefore the use of the regeneration unit is recommended.

◇Product Line

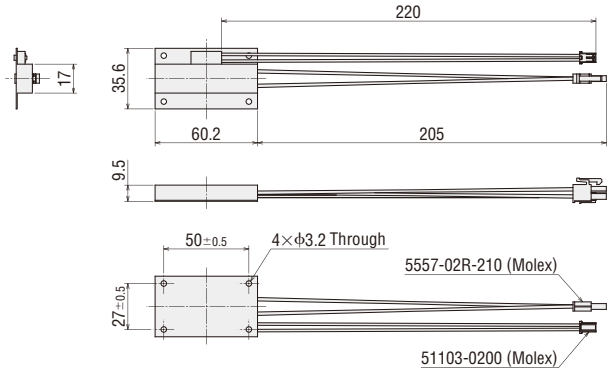
Product Name	List Price
RGC40	€43.00

◇Specification

Item	Content
Permissible Power Consumption	Continous regenerative power: 40W* Instantaneous regenerative power: 400W
Resistance Value	15Ω
Thermostat Operating Temperature	Operation: 95±5°C Reset: 65±15°C (Normally closed)
Thermostat Electrical Rating	250 VAC 0.5 A (Min. current 1.5 VDC 1 mA)

*Install the regeneration unit in a place that has the same heat radiation capability as the heat sink (material: aluminum 180x150 mm, 2 mm thick).

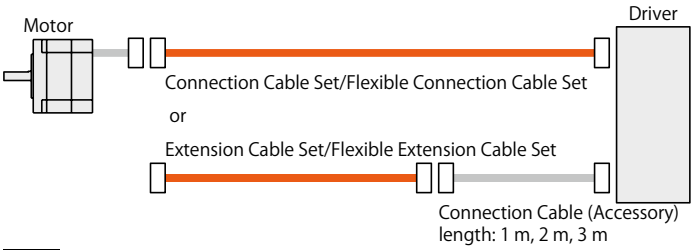
◇Dimensions (Unit = mm)
Mass: 0.03kg



Accessories (Sold separately)

Connection Cable Sets, Flexible Connection Cable Sets Extension Cable Sets, Flexible Extension Cable Sets

In the **AZ** series, there are products with cable for connecting between motor and driver (1 m, 2 m, 3 m) as well as those to which such cable is not attached.
When using the motor and driver more than 3 m apart, choose the connection cable set or extension cable set.
The extension cable maximum extension length is 20 m (including attached cable).
For the standard motor, the cable for motor cable and the cable for encoder make up the set. Whereas for the magnetic brake-attached motor, the cable for motor, the cable for encoder and the cable for magnetic brake make up the set.
If the cable becomes bent, use the flexible connection cable set or flexible extension cable set.



Notes

- Cables for motor and magnetic brake from the motor cannot be connected directly to the driver. When connecting to the driver, use the optional (sold separately) connection cable or the connection cable attached to the product (only for types with a connection cable attached).

AC Input

Extension Cable Sets, Flexible Extension Cable Set

Product Line

Extension Cable Sets

◇For Standard Motor

Cable for Motor　Cable for Encoder

Product Name	Length L (m)	List Price
CC010VZFT	1	€55.00
CC020VZFT	2	€62.00
CC030VZFT	3	€70.00
CC050VZFT	5	€84.00
CC070VZFT	7	€104.00
CC100VZFT	10	€135.00
CC150VZFT	15	€187.00

◇For Electromagnetic Brake Motor

Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

Product Name	Length L (m)	List Price
CC010VZFBT	1	€66.00
CC020VZFBT	2	€75.00
CC030VZFBT	3	€85.00
CC050VZFBT	5	€103.00
CC070VZFBT	7	€127.00
CC100VZFBT	10	€163.00
CC150VZFBT	15	€225.00

Flexible Extension Cable Sets

◇For Standard Motor

Cable for Motor　Cable for Encoder

Product Name	Length L (m)	List Price
CC010VZRT	1	€65.00
CC020VZRT	2	€76.00
CC030VZRT	3	€85.00
CC050VZRT	5	€108.00
CC070VZRT	7	€137.00
CC100VZRT	10	€181.00
CC150VZRT	15	€262.00

◇For Electromagnetic Brake Motor

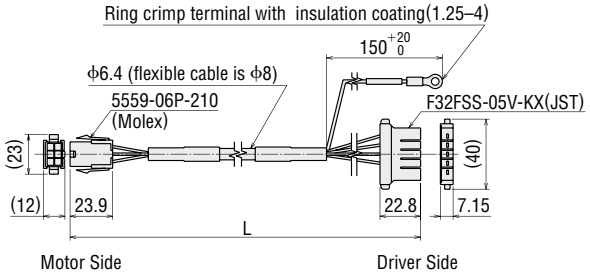
Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

Product Name	Length L (m)	List Price
CC010VZRBT	1	€87.00
CC020VZRBT	2	€103.00
CC030VZRBT	3	€115.00
CC050VZRBT	5	€146.00
CC070VZRBT	7	€184.00
CC100VZRBT	10	€237.00
CC150VZRBT	15	€331.00

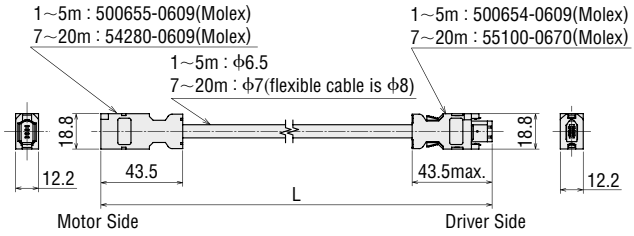
Dimensions (Unit = mm)

Connection Cable

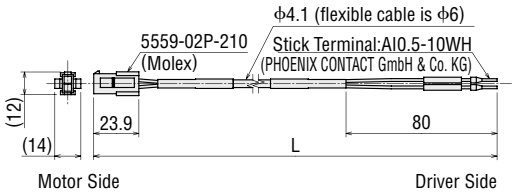
◇Motor Cable



◇Encoder Cable

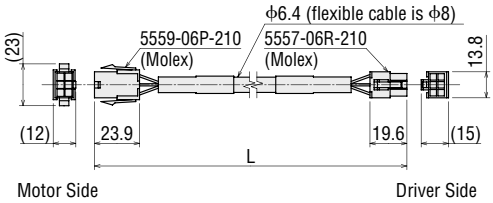


◇Electromagnetic Brake Cable

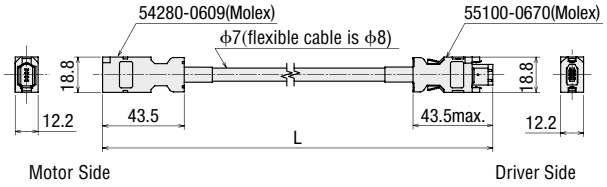


Extension Cable

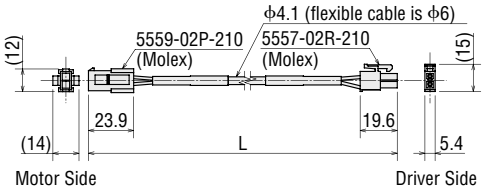
◇Motor Cable



◇Encoder Cable



◇Electromagnetic Brake Cable



DC Input

Extension Cable Sets, Flexible Extension Cable Sets

Product Line

[For **AZ14**, **AZ15**, **AZ24**, **AZ26**]

Extension Cable

◇For Standard Motor

Product Name	Length L (m)	List Price
CC010VZ2FT	1	€55.00
CC020VZ2FT	2	€62.00
CC030VZ2FT	3	€70.00
CC050VZ2FT	5	€84.00
CC070VZ2FT	7	€104.00
CC100VZ2FT	10	€135.00
CC150VZ2FT	15	€187.00

Flexible Extension Cable

◇For Standard Motor

Product Name	Length L (m)	List Price
CC010VZ2RT	1	€65.00
CC020VZ2RT	2	€76.00
CC030VZ2RT	3	€85.00
CC050VZ2RT	5	€108.00
CC070VZ2RT	7	€138.00
CC100VZ2RT	10	€181.00
CC150VZ2RT	15	€254.00

[For **AZ46, AZ48, AZ66, AZ69**]

●Extension Cable Sets

◇For Standard Motor

Cable for Motor　　Cable for Encoder

Product Name	Length L (m)	List Price
CC010VZFT	1	€55.00
CC020VZFT	2	€62.00
CC030VZFT	3	€70.00
CC050VZFT	5	€84.00
CC070VZFT	7	€104.00
CC100VZFT	10	€135.00
CC150VZFT	15	€187.00

◇For Electromagnetic Brake Motor

Cable for Motor　　Cable for Encoder　　Cable for Electromagnetic Brake

Product Name	Length L (m)	List Price
CC010VZFBT	1	€66.00
CC020VZFBT	2	€75.00
CC030VZFBT	3	€85.00
CC050VZFBT	5	€103.00
CC070VZFBT	7	€127.00
CC100VZFBT	10	€163.00
CC150VZFBT	15	€225.00

●Flexible Extension Cable Sets

◇For Standard Motor

Cable for Motor　　Cable for Encoder

Product Name	Length L (m)	List Price
CC010VZRT	1	€65.00
CC020VZRT	2	€76.00
CC030VZRT	3	€85.00
CC050VZRT	5	€108.00
CC070VZRT	7	€137.00
CC100VZRT	10	€181.00
CC150VZRT	15	€262.00

◇For Electromagnetic Brake Motor

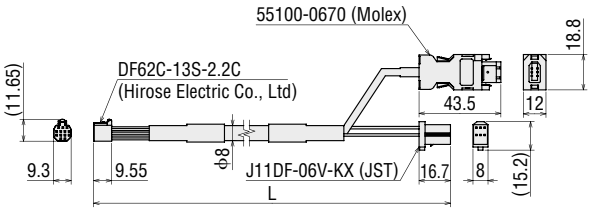
Cable for Motor　　Cable for Encoder　　Cable for Electromagnetic Brake

Product Name	Length L (m)	List Price
CC010VZRBT	1	€87.00
CC020VZRBT	2	€103.00
CC030VZRBT	3	€115.00
CC050VZRBT	5	€146.00
CC070VZRBT	7	€184.00
CC100VZRBT	10	€237.00
CC150VZRBT	15	€331.00

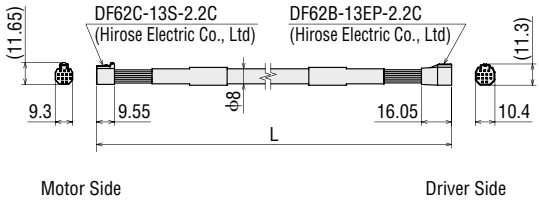
■Dimensions (Unit = mm)

[For **AZ14, AZ15, AZ24, AZ26**]

●Connection Cable



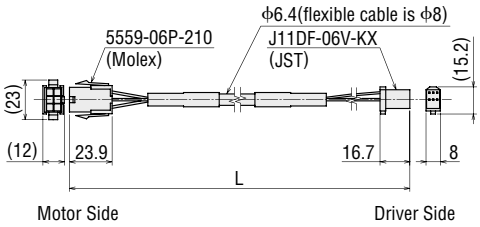
●Extension Cable



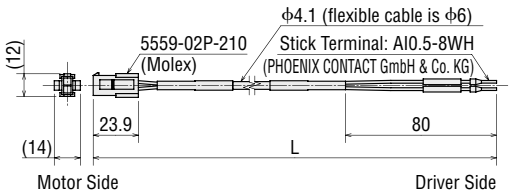
[For **AZ46, AZ66, AZ69**]

●Connection Cable

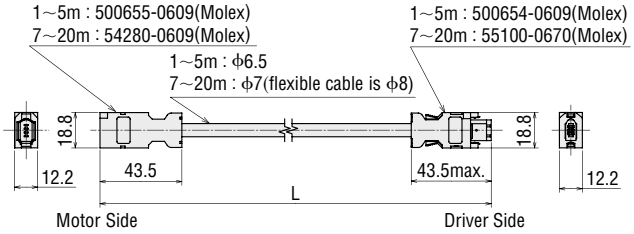
◇Cable for Motor



◇Cable for Electromagnetic Brake

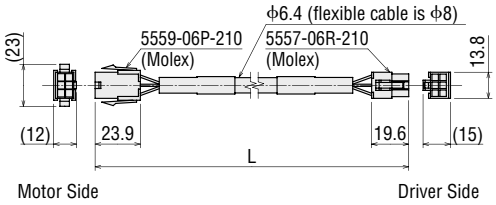


◇Cable for Encoder

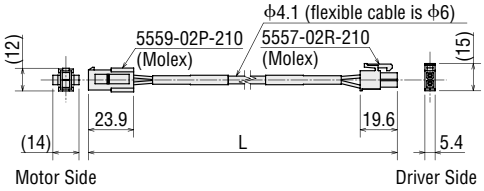


Extension Cable

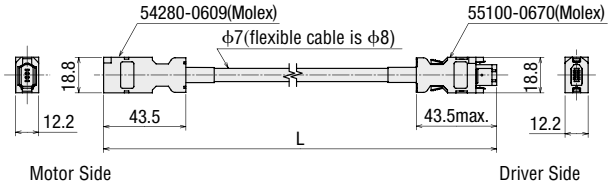
◇Cable for Motor



◇Cable for Electromagnetic Brake

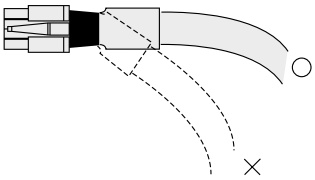


◇Cable for Encoder

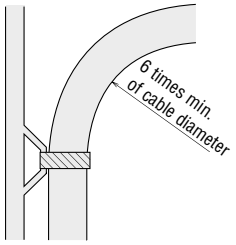


Notes on Use of a Flexible Cable

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

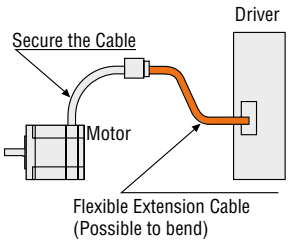


② For the bending radius, use at six times or more of the cable diameter.

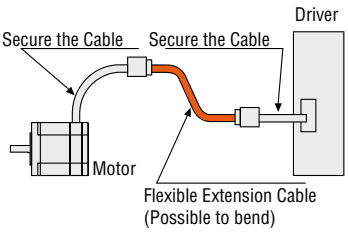


③ The cable wired from the motor or the cable comes as a set of the motor should not be bended. Use a flexible motor cable, if the cable will be bend.

- **Flexible Connection Cable**



- **Flexible Extension Cable**



Data Setting Software MEXE02

From the computer, it is not only possible to set and edit driving data and the various parameters, but also to monitor the waveforms of teaching, I/O and driving speed.
The data setting software is available for download from our website.
Furthermore, the data setting software is distributed on a CD-ROM.
For details, ask from our website or inquire at your nearest branch or sales office.

Operating Environment

Computer

Recommended CPU*1	Intel Core Processor 2 GHz or more (The OS must be supported.)
Display	high resolution video adapter and monitor, XGA (1024x768) or more.
Recommended Memory*1	32 bit (x86) version: 1 GB or more 64 bit (x64) version: 2 GB or more
Hard Disk*2	Available disk space of 60 MB or more
USB Port	USB2.0 1 port
Disk Device	CD-ROM drive (use for installation of software)

*1 The OS operating conditions need to be satisfied.
*2 Microsoft .NET Framework 4 Client Profile is required to use MEXE02. If it is not already installed, it will be installed automatically, in which case up to 1.5 GB of additional space is required.
- Windows and Windows Vista are registered trademarks of Microsoft Corporation in the United States and other countries. Pentium is a trademark of Intel Corporation.
- Please refer to our website for the latest update of operating environment.

Notes
- The required volume of memory or hard disk may vary depending on the system environment.

Operating Systems (OS)

Both the 32-bit (x86) and 64 bit (x64) editions are supported.
- Microsoft Windows XP Service Pack 3*
- Microsoft Windows Vista Service Pack 2
- Microsoft Windows 7 Service Pack 1
- Microsoft Windows 8
- Microsoft Windows 8.1

*This works with Service Pack 2 when using 64 bit (x64) edition.

Connection between Computer and Driver

Use the following specifications for the USB cable.

Specification	USB2.0 (full speed)
Cable	Length: 3 m (or less) Format: A-mini-B

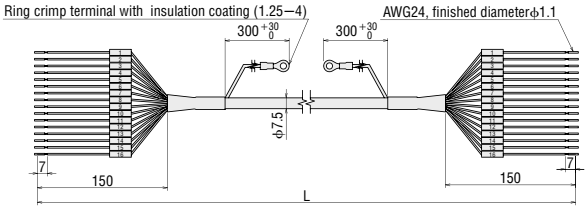
Generic Cable for Input/Output Signals

This is a convenient multi-core cable for connecting the driver and upper level controller.
Choose the necessary cable in accordance with the number of connecting I/O signals.

Product Line

Lead wire No. of cores	Cable Length			
	0.5 m	1 m	1.5 m	2 m
6	CC06D005B-1	CC06D010B-1	CC06D015B-1	CC06D020B-1
10	CC10D005B-1	CC10D010B-1	CC10D015B-1	CC10D020B-1
12	CC12D005B-1	CC12D010B-1	CC12D015B-1	CC12D020B-1
16	CC16D005B-1	CC16D010B-1	CC16D015B-1	CC16D020B-1

Dimensions (Unit = mm)



- The outline drawing is of 16 cores.

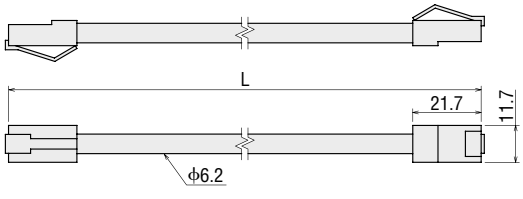
RS-485 Communication Cable

The cable is to link drivers when the driver is being operated under multi-axis mode, it also connects the network converter and driver.

Product Line

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

Dimensions (Unit = mm)



MCV Couplings

This is a one piece structure coupling with the vibration-proof rubber formed between the aluminium alloy hubs.

Product Line

Product Name
MCV15□
MCV19□
MCV25□
MCV30□

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

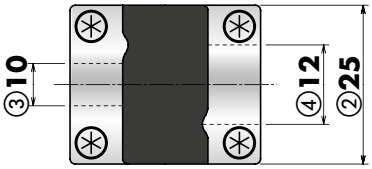
Product Number Code

MCV 25 10 12

① ② ③ ④

①	**MCV** Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (smaller inner diameter) (**06A** represents ϕ6.35 mm)
④	Inner Diameter d2 (larger inner diameter) (**06A** represents ϕ6.35 mm)

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



Coupling Selection Table

- Coupling is selected based on the following content.
  · The motor output torque is within the generic torque for coupling.
  · Motor shaft diameter

Applicable Product			Coupling Type	Motor Shaft Diameter mm		Driven Shaft Diameter mm									
Type	Frame Size	Product Name				**03**	**04**	**05**	**06**	**06A**	**08**	**10**	**12**	**14**	**15**
						ϕ3	ϕ4	ϕ5	ϕ6	ϕ6.35	ϕ8	ϕ10	ϕ12	ϕ14	ϕ15
Standard Type	20 mm	**AZ14**, **AZ15**	**MCV15**	**04**	ϕ4		●	●	●						
	28 mm	**AZ24**, **AZ26**		**05**	ϕ5	●	●	●	●						
	42 mm	**AZ46**		**06**	ϕ6		●	●	●						
		AZ48	**MCV19**	**08**	ϕ8			●	●		●				
	60 mm	**AZ66**, **AZ69**	**MCV25**	**10**	ϕ10				●	●	●	●	●		
	85 mm	**AZ98**, **AZ911**	**MCV30**	**14**	ϕ14						●	●	●	●	●

- The applicable product name includes the characters that can distinguish the product name.

MCS Couplings

This is a three piece structure coupling comprised of aluminium alloy hubs and resin spiders.

Product Line

Product Name
MCS20□
MCS30□
MCS40□
MCS55□
MCS65□

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

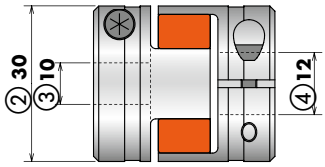
Product Number Code

MCS 30 10 12

① ② ③ ④

①	**MCS** Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (smaller inner diameter) (**F04** represents ϕ6.35 mm)
④	Inner Diameter d2 (larger inner diameter) (**F04** represents ϕ6.35 mm)

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



Coupling Selection Table

- Coupling is selected based on the following content.
  · The motor output torque is within the generic torque for coupling.
  · Motor shaft diameter
- When using the parallel key, choose an appropriate coupling for the parallel key.

Applicable Product			Gear Ratio	Coupling Type	Motor Shaft Diameter mm		Driven Shaft Diameter mm													
Type	Frame Size	Product Name					**05**	**06**	**F04**	**08**	**10**	**12**	**14**	**15**	**16**	**18**	**20**	**22**	**24**	**25**
							ϕ5	ϕ6	ϕ6.35	ϕ8	ϕ10	ϕ12	ϕ14	ϕ15	ϕ16	ϕ18	ϕ20	ϕ22	ϕ24	ϕ25
TS Geared Type	42 mm	**AZ46-TS**□	**3.6, 7.2**	**MCS20**	**06**	ϕ6	●	●	●	●	●									
			10, 20, 30	**MCS30**				●	●	●	●	●	●	●	●					
	60 mm	**AZ66-TS**□	**3.6, 7.2**	**MCS30**	**10**	ϕ10		●	●	●	●	●	●	●	●					
			10, 20, 30	**MCS40**						●	●	●	●	●	●	●	●			
	90 mm	**AZ98-TS**□	**3.6, 7.2, 10**	**MCS55**	**18**	ϕ18						●	●	●	●	●	●	●	●	
			20, 30	**MCS65**											●	●	●	●	●	●
FC Geared Type	42 mm	**AZ46-FC**□	**7.2, 10, 25, 36, 50**	**MCS20**	**10**	ϕ10	●	●	●	●	●									
				MCS30								●	●	●	●					
	60 mm	**AZ66-FC**□		**MCS40**	**15**	ϕ15				●	●	●								
				MCS55								●	●			●				
PS Geared Type	42 mm	**AZ46-PS**□	**5**	**MCS20**	**10**	ϕ10	●	●	●	●	●									
			7.2, 10, 25, 36, 50	**MCS30**				●	●	●	●	●	●	●	●					
	60 mm	**AZ66-PS**□	**5, 7.2**	**MCS40**	**12**	ϕ12				●	●	●	●	●	●	●	●			
			10, 25, 36, 50	**MCS55**								●	●	●	●	●	●	●	●	
	90 mm	**AZ98-PS**□	**5, 7.2**	**MCS55**	**18**	ϕ18						●	●	●	●	●	●	●	●	
			10, 25, 36, 50	**MCS65**											●	●	●	●	●	●
HPG Geared Type	40 mm	**AZ46-HP**□	**5, 9**	**MCS30**	**10**	ϕ10		●	●	●	●	●	●	●	●					
	60 mm	**AZ66-HP**□	**5, 15**	**MCS55**	**16**	ϕ16						●	●			●				
	90 mm	**AZ98-HP**□	**5, 15**	**MCS65**	**25**	ϕ25										●	●			
Harmonic Geared Type	42 mm	**AZ46-HS**□	**50, 100**	**MCS40**	**10**	ϕ10				●	●	●	●	●	●	●	●			
	60 mm	**AZ66-HS**□	**50, 100**	**MCS55**	**15**	ϕ15						●	●			●				

- The applicable product name includes the characters that can distinguish the product name.
- The □ within the product name includes a number expressing the reduction ratio.

Motor Mounting Brackets

Mounting brackets are convenient for installation and securing a stepping motor and geared stepping motor.
The attachment fitting fixing section is a convenient long hole specification for adjusting belt tension after assembling the motor.

Product Line

Standard Type

Material: Aluminum Alloy (SPCC)*
Surface processing: paint (electroless nickel plating)*

Product Name	Motor Frame Size	Applicable Product
PFB28A	28 mm	**AZ24**, **AZ26**
PAF0P	42 mm	**AZ46**, **AZ48**
PAL0P		
PAL2P-5	60 mm	**AZ66**, **AZ69**
PAL4P-5	85 mm	**AZ98**, **AZ911**

*The **PFB28A** specification is indicated within ( ).
● These mounting brackets can be perfectly fitted to the pilot of the stepping motors. (Except for **PAL0P**)
● There is a motor attachment screw attached.

TS Geared Type

Material: Aluminum Alloy
Surface processing: painting

Product Name	Motor Frame Size	Applicable Product
SOL0B	42 mm	**AZ46**
SOL2M4	60 mm	**AZ66**
SOL5M8	90 mm	**AZ98**

PS Geared Type

Material: SS400
Surface processing: electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
PLA60G	60 mm	**AZ66**
PLA90G	90 mm	**AZ98**

● There is a motor attachment screw attached.

Harmonic Geared Type

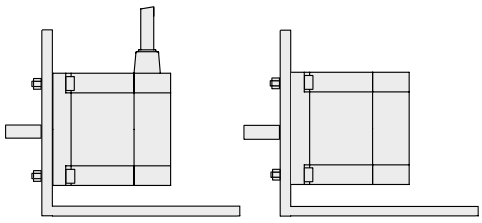
Material: SS400
Surface processing: electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
PLA60H	60 mm	**AZ66**
PLA90H	90 mm	**AZ98**

● There is a motor attachment screw attached.

Motor Mounting Direction

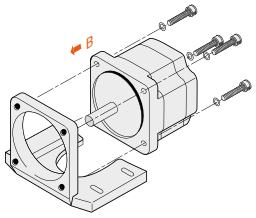
The motor cable comes out at right angles to the motor. Orient the motor so that the cable faces either upward or sideways.
● For **PLA60G**, **PLA90G**, **PLA60H**, **PLA90H**: The cable can face downward.



Cable facing upward　　Cable facing sideways

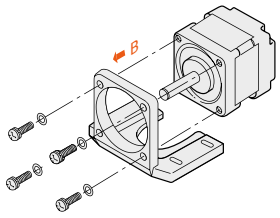
How to mount the motor

1 **PAL2P-5**, **SOL2M4**
PAL4P-5, **SOL5M8**



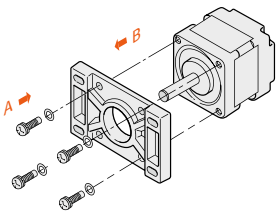
① Use the screws provided to secure the motor to the mounting bracket.
② Attach the motor from the direction shown by the arrow (B).

2 **PAL0P**, **SOL0B**



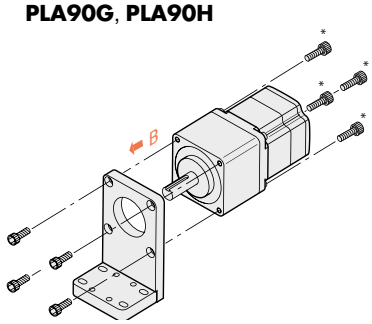
① Use the screws provided to secure the motor to the mounting bracket.
② Attach the motor from the direction shown by the arrow (B).

3 **PAF0P**, **PFB28A**



① Use the screws provided to secure the motor to the mounting bracket.
② Attach motor from the direction shown by either arrow (A) or arrow (B).

4 **PLA60G**, **PLA60H**
PLA90G, **PLA90H**

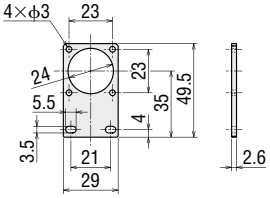


① Use the screw to attach the motor to the attachment fitting.
② Attach the motor from the direction shown by the arrow (B).
* Motor mounting hole on **PLA90H** is processed with tapping. Insert the screw from direction B.

Dimensions (Unit = mm)

PFB28A

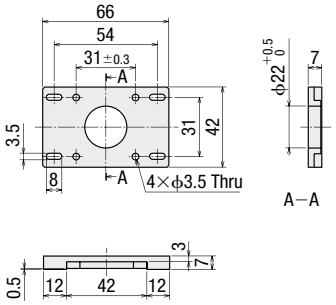
Mass: 25 g



Mounting Screws: M2.5 Length 5 mm
Included 4 pieces

PAF0P

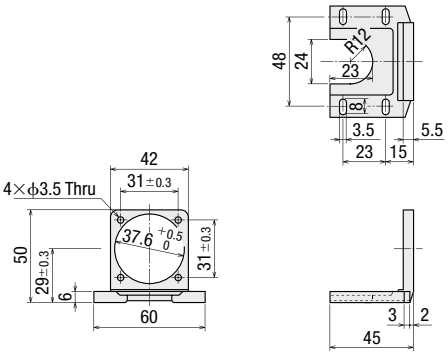
Mass: 30 g



Mounting Screws: M3 Length 7 mm
Included 4 pieces

PAL0P

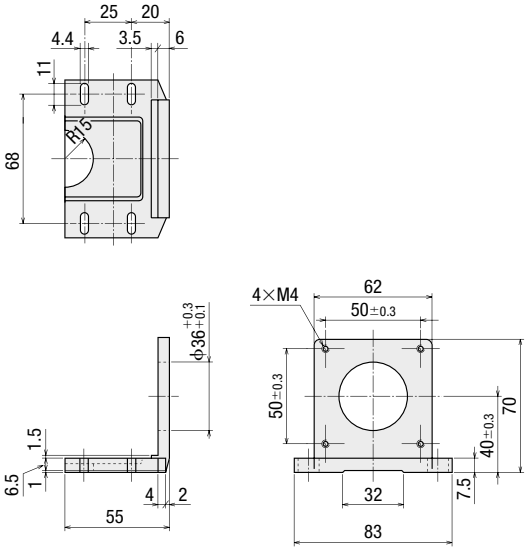
Mass: 35 g



Mounting Screws: M3 Length 10 mm
Included 4 pieces

PAL2P-5

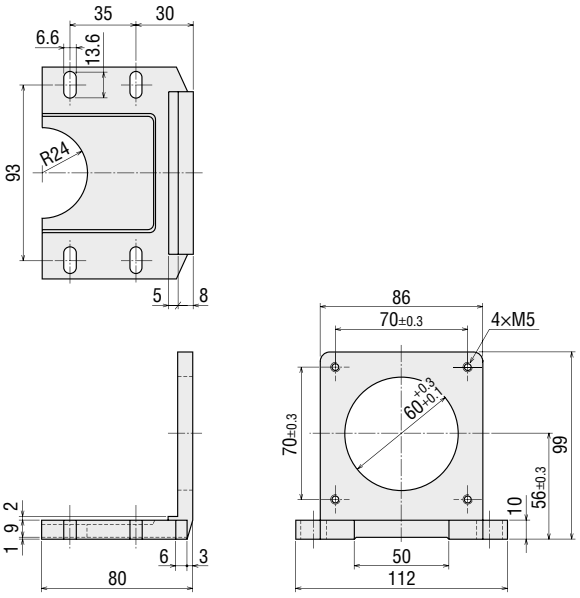
Mass: 110 g



Mounting Screws: M4 Length 12 mm
Included 4 pieces

PAL4P-5

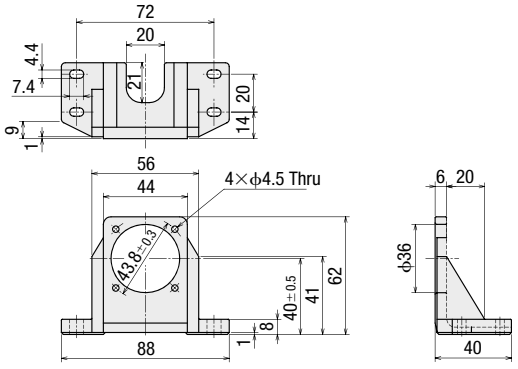
Mass: 250 g



Mounting Screws: M5 Length 16 mm
Included 4 pieces

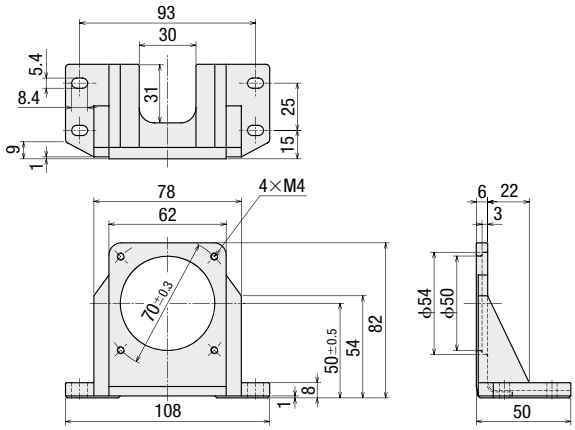
SOL0B

Mass: 85 g



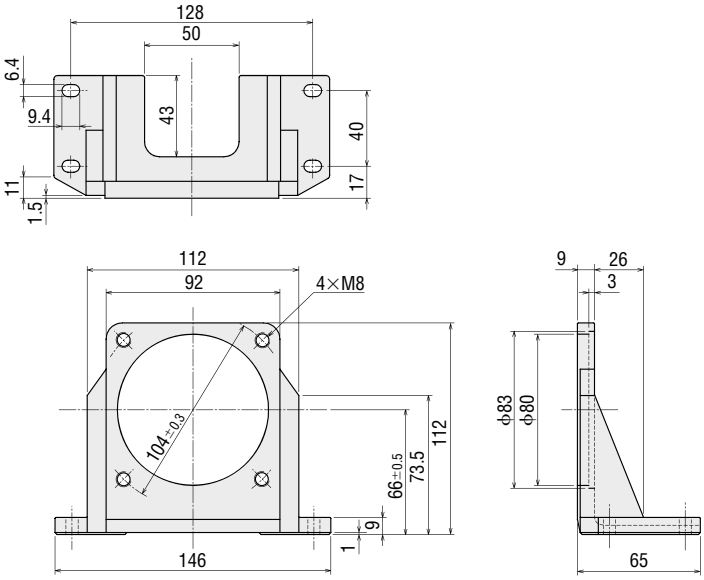
SOL2M4

Mass: 135 g



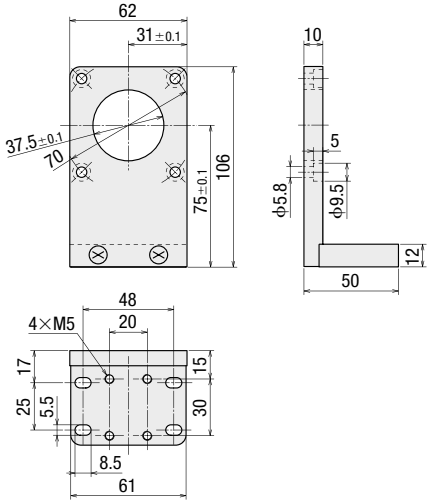
SOL5M8

Mass: 270 g



PLA60G

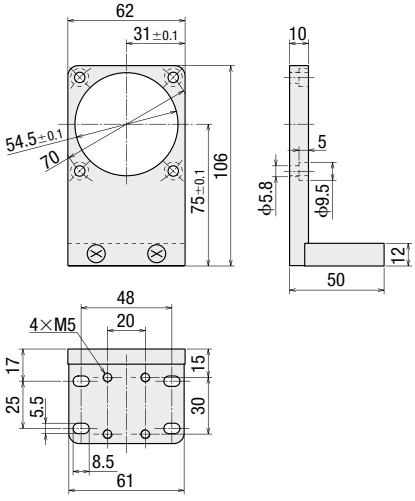
Mass: 0.7 kg



● Mounting Screws: M5 Length 15 mm
Included 4 pieces

PLA60H

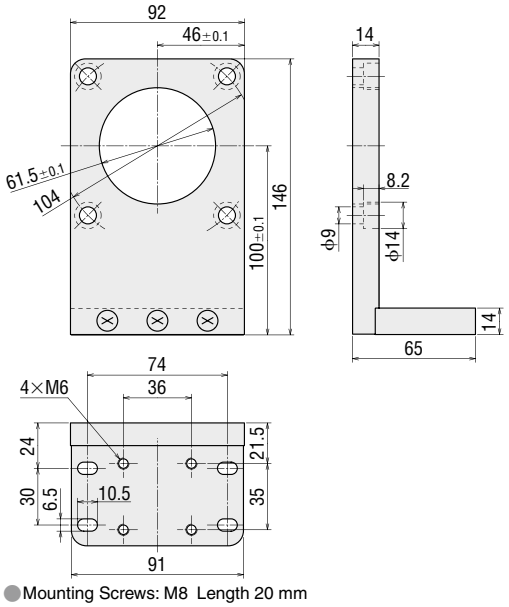
Mass: 0.7 kg



● Mounting Screws: M5 Length 15 mm
Included 4 pieces

PLA90G

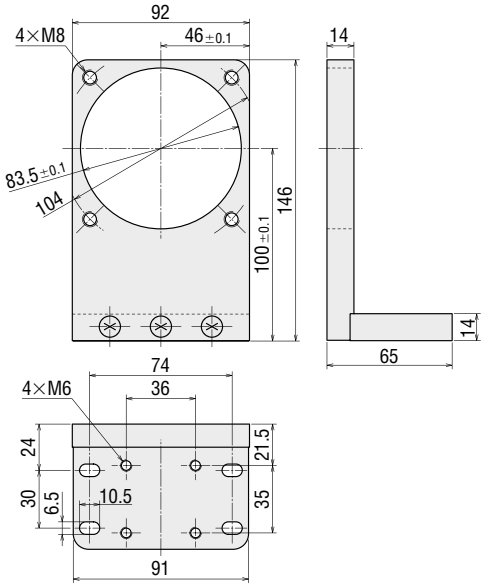
Mass: 1.6 kg



● Mounting Screws: M8 Length 20 mm
Included 4 pieces

PLA90H

Mass: 1.6 kg



● Mounting Screws: M8 Length 30 mm
Included 4 pieces, 4 washers

Regeneration Unit

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

Product Line

Product Name	List Price
RGB100	€41.00

Specifications

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

- Attach the regeneration unit to a location that has the same heat radiation capability as an aluminum heat radiation plate that is 350×350 mm and 3 mm thick.

Network Converters

Network converter is a transducer from the host communication protocol to our unique RS-485 communication protocol. By using this network converter, our RS-485 compatible products can be controlled under host communication environment.

Product Line

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

Controllers

Equipped with program editing and execution functions, the highly-functional and sophisticated **SCX11** controller is now available. Use the **SCX11** as a stored program controller to connect to any of Oriental Motor's standard pulse input drivers.
The **SCX11** is also able to control the motor via various serial ports such as USB, RS-232C and CANopen

- 100 Sequence Programs can be Stored
- Easy Operation
- Intelligent Setting

Product Line

Product Name	Driver Product Name
SCX11	AZD-C, AZD-K

Oriental motor

These products are manufactured at plants certified with the international standards **ISO 9001** (for quality assurance) and **ISO 14001** (for systems of environmental management).

Specifications are subject to change without notice. This catalogue was published in February 2018.

ORIENTAL MOTOR (EUROPA) GmbH
www.orientalmotor.de

European Headquarters
Schiessstraße 44
40549 Düsseldorf, Germany
Tel: 0211–520 670 0 Fax: 0211–520 670 99

Spanish Office
C/Caléndula 93 - Ed. E - Miniparc III
28109 El Soto de La Moraleja,
Alcobendas (Madrid), Spain
Tel: +34 918 266 565
www.orientalmotor.es

ORIENTAL MOTOR (UK) LTD.
www.oriental-motor.co.uk

UK Headquarters
Unit 5, Faraday Office Park,
Rankine Road, Basingstoke,
Hampshire RG24 8AH, U.K.
Tel: 01256–347 090 Fax: 01256–347 099

ORIENTAL MOTOR SWITZERLAND AG
www.orientalmotor.ch

Switzerland Headquarters
Badenerstraße 13
5200 Brugg AG, Switzerland
Tel: 056–560 504 5 Fax: 056–560 504 7

ORIENTAL MOTOR ITALIA s.r.l.
www.orientalmotor.it

Italy Headquarters
Via XXV Aprile 5
20016 Pero (MI), Italy
Tel: 02–939 063 46 Fax: 02–939 063 48

ORIENTAL MOTOR (FRANCE) SARL
www.orientalmotor.fr

France Headquarters
56, Rue des Hautes Pâtures
92000 Nanterre, France
Tel: 01–478 697 50 Fax: 01–478 245 16

Other countries: www.orientalmotor.eu

Customer Service Center (Support in German & English)

00800–22 55 66 22*
CA LL OM CC

Mon-Thu: 08:00 - 17:30 CET Friday: 08:00 - 16:00 CET

* Free Call Europe

info@orientalmotor.de

For more information please contact:

UK/022018/VERS04

Printed in Germany