Stepper Motors

Stepper Motor and Driver Packages

AC Input

0.36°/Geared α_{STEP} **AR** Series

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

0.72°/Geared **RKII** Series

0.36°/Geared Stepper Motor and Driver Package α_{STEP}
AR Series

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

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

Built-in Controller Type　　Pulse Input Type

View Expanded Product Information, Specifications, CAD, Accessories & more online. Visit www.orientalmotor.com/catalog or use the QR code and select "**AR** Series AC Power Supply Input".

A closed loop stepper motor series that substantially reduces heat generation from the motor through the use of high-efficiency technology. As stepper motors, these can be used for short-distance, repetitive positioning operations, without having to worry about the duty cycle.

- High Reliability with Closed Loop Control
- High Efficiency Technology Reduces Motor Heat Generation
- Capable of High Positioning Accuracy
- 2 Driver Types to Choose from
  Built-in Controller Type FLEX / Pulse Input Type

FLEX What is FLEX?

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

Features

High Reliability with Closed Loop Control

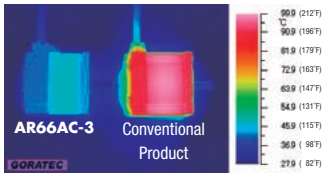
For details, refer to "Overview of Closed Loop Stepper Motor and Driver Packages α_{STEP}" on page A-9.

Continuous Operation Utilizing High-Efficiency Technology

●Lower Heat Generation

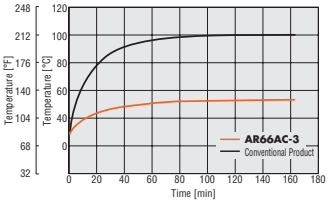
Heat generation by the motor has been significantly reduced through higher efficiency.

● Temperature Distribution by Thermography



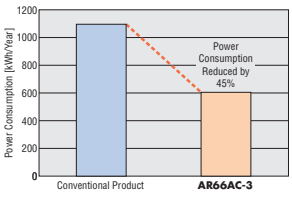
Comparison under the same conditions

● Motor Case Temperature under Same Operating Conditions



●45% Less Power Consumption* than Conventional Oriental Motor Products Due to Energy-Saving Features

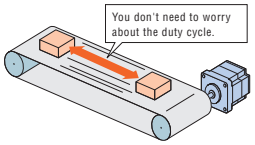
● Power Consumption



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

●Continuous Operation (Operation at a High Duty Cycle)

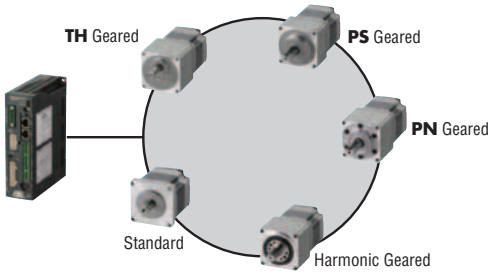
The **AR** Series can be operated at high frequency.
The motor can operate continuously.



Note
● If the motor is operated continuously, a heat sink of a capacity at least equivalent to an aluminum plate with a size of 250 × 250 mm (9.84 × 9.84 in.), 6 mm (0.24 in.) thick is required.

A Single Driver to Support a Variety of Motors

The driver is equipped with an automatic recognition function, which recognizes the attached motor.
Various types of motors, such as the standard type and the geared type, can be attached to a single driver. Therefore, there is no need to change the driver to match the motor to be attached. Maintenance is easier.



Actuators Equipped with **AR** Series

All of the products equipped with the **AR** series feature standardized controllability.

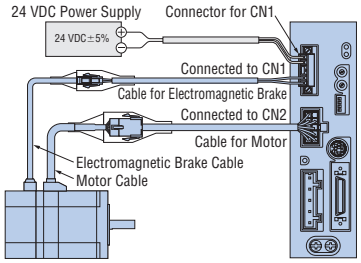
Easy to Use with High Functionality

Automatically Controlled Electromagnetic Brake

It is not necessary to provide a separate circuit to control the electromagnetic brake. The electromagnetic brake is released when the motor is excited (= the current ON input is turned ON), and activated to hold the load in position when the excitation is cut off (= the current ON input is turned OFF).

Note

A separate 24 VDC power supply is required for electromagnetic brake control.



Separation of Main Power and Control Power

The control power-input terminals are provided separately from the main power terminals. This means that even when the main power is cut off due to an emergency stop, etc., the current position can still be detected and alarm information can still be checked, as long as the power (24 VDC) is supplied to the control power-input terminals.

- For the pulse input type, operation is also possible with the main power supply only.

Up to 30 m (98.4 ft.) Wiring Distance Between Motor and Driver

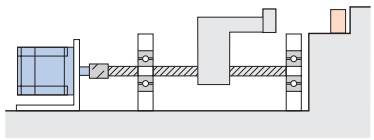
This series uses an included cable or accessory cable that can extend the wiring distance between the motor and driver up to 30 m (98.4 ft.). Extension cables and flexible extension cables are available as accessories (sold separately).

Push-Motion Operation

A force is continuously applied to the load. When contact is made with the load, the motor switches to push-motion operation and applies constant torque to the load.

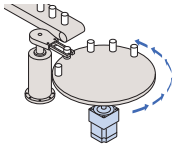
Note

- Push-motion operation requires a data module **OPX-2A** (sold separately) or data setting software **MEXE02**.
- Do not perform push-motion operation using geared motors. Doing so may damage the motor or gear unit.



Position Control in the Same Direction

The round feature enables you to control positioning even in an application where positioning is repeated in the same direction. (Available only on the built-in controller type.)



✻When building an absolute system, the accessory battery is necessary (sold separately).

Also Supports Absolute Systems

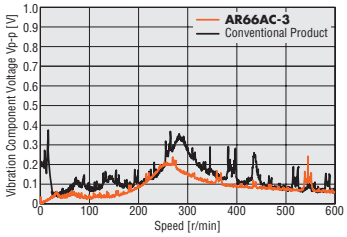
You can build an absolute system that detects absolute positions by connecting the accessory battery (sold separately). (Available only on the built-in controller type.)

- Battery Set (Sold separately)

A Stepper Motor with Advanced Characteristics, Easier to Use

Low Vibration

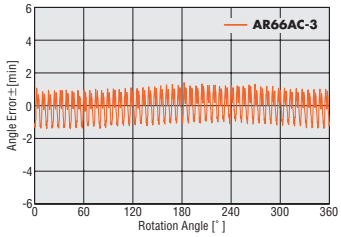
In addition to the microstep drive system, a smooth drive function is equipped to achieve smoother operation.
The smooth drive function automatically implements microstep drive based on the same traveling amount and traveling speed used in the full step mode, without changing the pulse input settings.



Improved Angular Accuracy

The improved current control technology improves the stop position accuracy of the motor. The result is greater positioning accuracy.

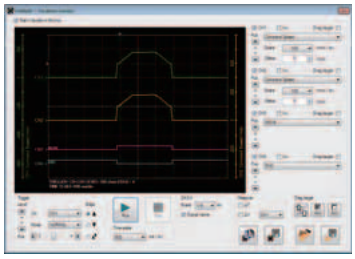
AR66AC-3: ±3 arcmin (degrees)
Conventional Product: ±5 arcmin (degrees)



Easy Setting and Easy Monitoring

By using the **MEXE02** data setting software, a computer can be used to change operating data or parameters, as well as to perform monitoring.

- Monitoring of Operating Condition by Waveform



A highly efficient monitoring function that allows for easy identification of the motor and I/O status at a glance.

Complying with Various Standards to Support Diverse Equipment Designs

Motor Protection Degree: IP65✻

The motor complies with the requirements of protection degree IP65✻ (except for the motor mounting surface and connectors). This means that the enclosure prevents intrusion of dust that can otherwise inhibit normal operation.

✻For double shaft products, the degree of protection is IP20.

Conforms to International Safety Standards

These products are recognized by UL/CSA and they also bear the CE Marking as a proof of conformance to the Low Voltage and EMC Directives.

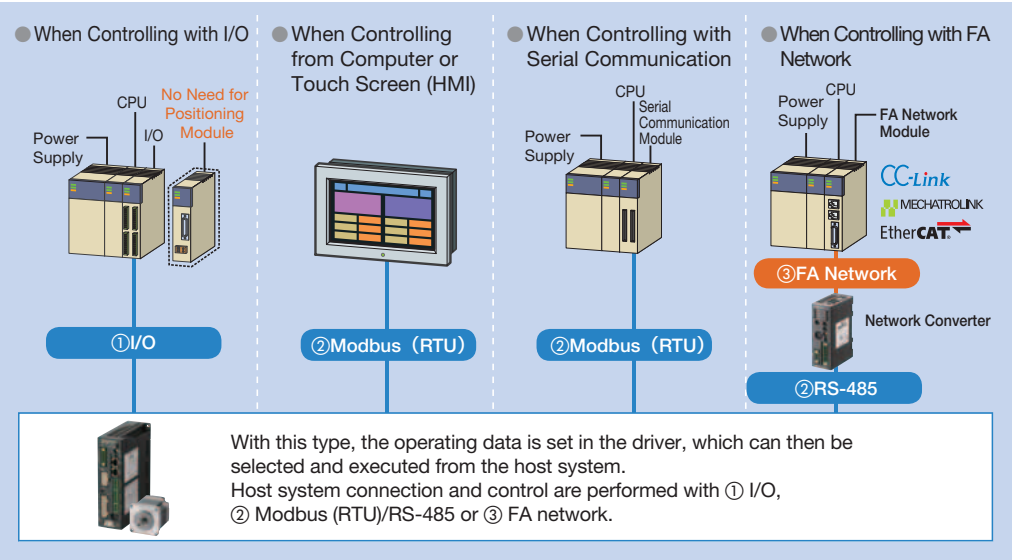
Conforms to Semiconductor Equipment Materials International Standard "SEMI F47"

These products comply with the SEMI Standard on power supply voltage drop, and accordingly can be used effectively in semiconductor manufacturing apparatuses.
Effective for use in semiconductor equipment.
The customer is advised to always evaluate the motor on the actual equipment.

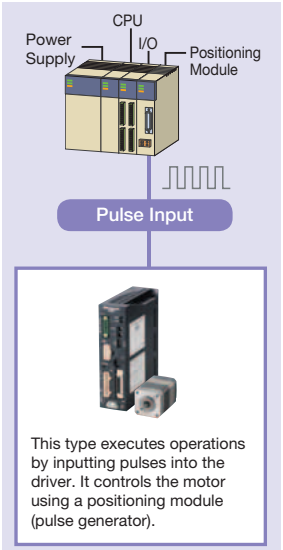
2 Driver Types Available Depending on the System Configuration

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

●Built-in Controller Type FLEX



●Pulse Input Type

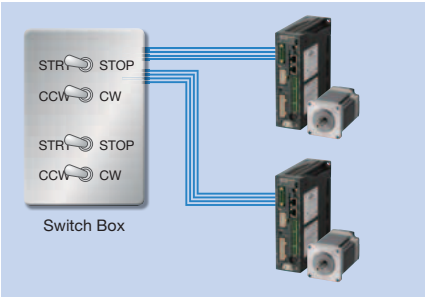


●Control System Configuration for Built-in Controller Type

① I/O Control

The positioning module (pulse generator) function is built into the driver, and therefore an operation system using I/O can be created by connecting directly to a switch box or PLC. A positioning module is not necessary on the PLC side, saving space and simplifying the system.

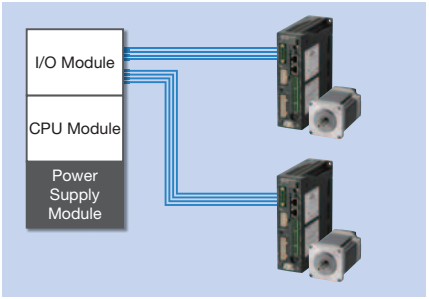
●Example of Using a Switch Box



Operating data is set in the driver, and the motor can be started or stopped simply by connecting a switch. Control can be performed easily without using PLC.

Easy Control | Low-Cost Design

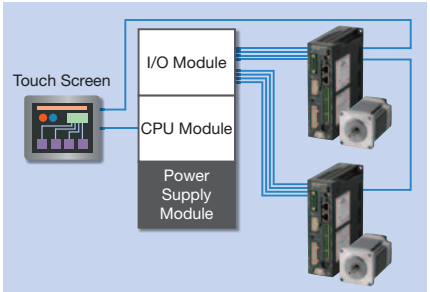
●Example of Using PLC



When using PLC, an operation system can be created by connecting directly to an I/O module. A positioning module is not necessary on the PLC side, therefore space is saved and the system is simplified.

Easy Control | Low-Cost Design | Space Saving

●Example of Using PLC and a Touch Screen



Normally, the motor is started and stopped with I/O. Changing the operating data settings and displaying the monitors and alarms is performed with the touch screen using Modbus (RTU) communication. When there is a lot of setup work, changes can be easily performed on the touch screen, and the burden of creating ladders is reduced.

Easy Control | Support for Small Lots of Multiple Products

② Control via Modbus (RTU)/RS-485 Communication

RS-485 communication can be used to set operating data and parameters and input operation commands. Up to 31 drivers can be connected to 1 serial communication module. There is a function that enables multiple shafts to be started simultaneously. The Modbus (RTU) protocol is supported and can be used to connect to touch screens and computer.

Easy Control | Simple Wiring | Supports Brands of Serial Module | Motor Controlled by Computer | Simplified System

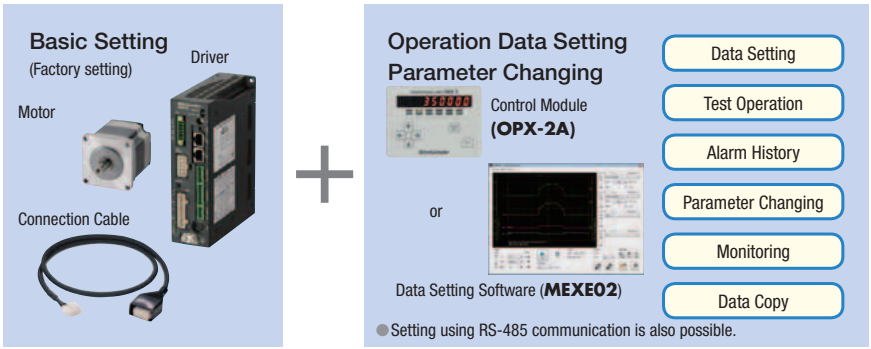
③ Control via FA Network

By using a network converter (sold separately), CC-link, MECHATROLINK or EtherCAT communication are possible. These can be used to set operating data and parameters and input operation commands.

Easy Control | Simple Wiring | Multi-Axis Control at Low Cost

Built-in Controller Type FLEX

Because the driver has the information necessary for motor operation, the burden on the host PLC is reduced. The system configuration when using multi-axis control has been simplified.
Settings are configured using a control module (sold separately), data setting software or RS-485 communication.



Operation Types

In the built-in controller type, the operating speed and traveling amount of the motor are set with operating data, and operation is performed according to the selected operating data. There are four types of motor operations.

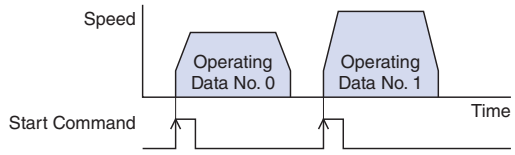
Item		Description	
Common	Control Method	I/O control	
		RS-485 Communication	Network converter connection
			Modbus RTU protocol connection
	Position Command Input	Setting with operating data number	Command range for each point: −8388608～8388607 [step] (Setting unit: 1 [step])
	Speed Command Input	Setting with operating data number	Command Range: 0～1000000 [Hz] (Setting unit: 1 [Hz])
	Acceleration/Deceleration Command Input	Set with the operating data number or parameter. The acceleration/deceleration rate [ms/kHz] or acceleration/deceleration time [s] can be selected. Command Range: 0.001～1000.000 [ms/kHz] (Setting unit: 0.001 [ms/kHz]) 0.001～1000.000 [s] (Setting unit: 0.001[s])	
	Acceleration/Deceleration Processing	Velocity filter, movement average filter	
Return-To-Home Operation	Return-to-Home Modes	2-Sensor Mode	A return-to-home operation that uses a limit sensor (+LS, −LS).
		3-Sensor Mode	A return-to-home operation that uses a limit sensor and a HOME sensor.
		Pushing Mode*1	A return-to-home operation by pressing the table against the mechanical end of a linear slide, etc.
		Position Preset	A function where P-PRESET is input at the desired position to confirm the home position.
			The home position can be set to the desired value.
Positioning Operation	Number of Positioning Points	64 points (No. 0～63)	
	Operating Modes	Incremental mode (Relative positioning)	
		Absolute mode (Absolute positioning)	
	Operation Functions	Independent Operation	A PTP (Point to Point) positioning operation.
		Linked Operation	A multistep speed-change positioning operation that is linked with operating data.
		Linked Operation 2	A positioning operation with a timer that is linked with operating data. The timer (dwell time) can be set from 0～50.000 [s]. (Setting unit: 0.001 [s])
		Push-Motion Operation*1	Continuous pressurizing position operations are performed with respect to the load. Maximum speed of operation is 500 [r/min] on the motor shaft.
	Start Methods	Operating Data Selection Method	Starts the positioning operation when START is input after selecting M0～M5.
		Direct Method (Direct positioning)	Starts the positioning operation with the operating data number set in the parameters when MS0～MS5 is input.
		Sequential Method (Sequential positioning)	Starts the positioning operation in sequence from operating data No. 0 each time SSTART is input.
Continuous Operation	Number of Speed Points	64 points (No. 0～63)	
	Speed Change Method	Changes the operating data number.	
Other Operations	JOG Operation	Regular feed is performed by inputting +JOG or −JOG.	
	Automatic Return Operation	When the motor position is moved by an external force while the motor is in a non-excitation state, it automatically returns to the position where it originally stopped.	
	Control Mode*2	The normal mode and the current control mode can be selected.	
Absolute Backup		You can build an absolute system by using a battery (accessory).	

*1 Do not perform push-motion operation using geared type motors. Doing so may damage the motor or gear unit.
*2 Except to further reduce heat generation or noise, using normal mode is recommended.

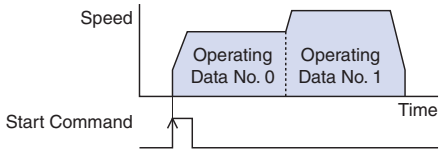
Positioning Operation

<Operation Functions>

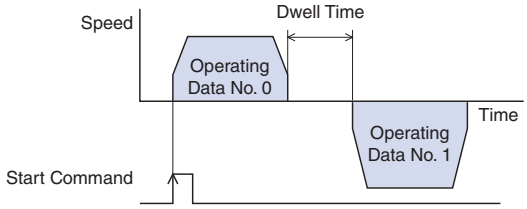
•Independent Operation



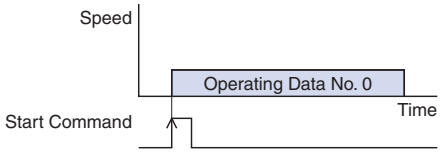
•Linked Operation



•Linked Operation 2



•Push-Motion Operation



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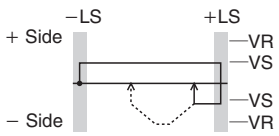
<Start Methods>

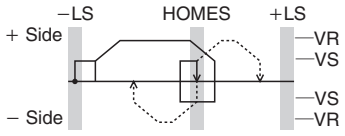
- Operating Data Selection Method
- Direct Positioning
- Sequential Positioning

Return-To-Home Operation

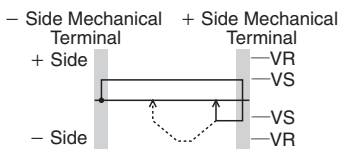
•2-Sensor Mode



•3-Sensor Mode

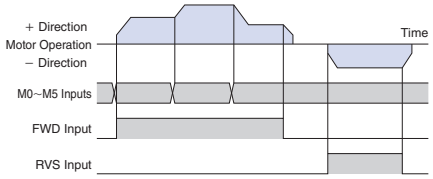


•Pushing Mode



•Position Preset

Continuous Operation



Other Operations

•JOG Operation (Test operation)

•Automatic Return Operation

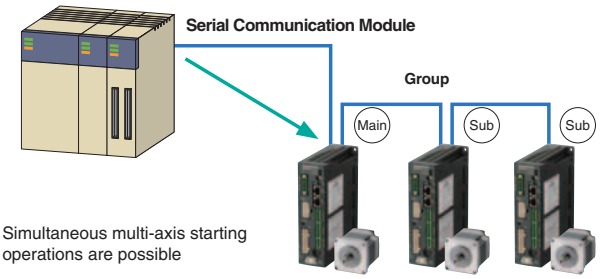
- Equipped with a sequence for return-to-home operation that reduces the burden of the host master and the hassle of creating a ladder.

●Group Send Function

Modbus (RTU) communication and FA network have a function that enables multiple shafts to be started simultaneously.
Multiple drivers can be grouped together, and when an operation command is sent to the master driver, all the drivers that belong to the same group as the master driver will operate simultaneously.

- Modbus (RTU) control: Support for simultaneous start, changes to traveling amount and speed and monitoring
- FA network control: Simultaneous start only

•Example of Modbus (RTU) Communication Control

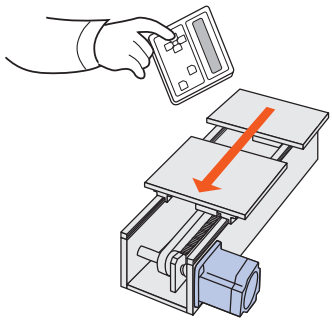


Simultaneous multi-axis starting operations are possible

●Teaching Function

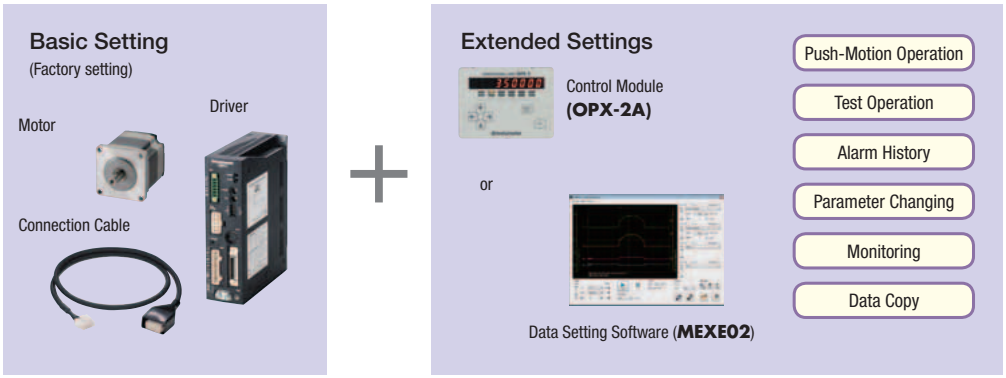
Teaching can be performed with the **OPX-2A** control module (sold separately) or the **MEXE02*** data setting software. The table is moved to the desired position, and the position data at that time is stored as the positioning data.

*The data setting software can be downloaded from the website. Please contact Oriental Motor for details.



Pulse Input Type

The control module (sold separately) and data setting software can be used to change the parameters, display the alarm history, and perform various types of monitoring.



●Main Additional Functions Available with Extended Settings

Item		Overview	Basic Setting	Extended Settings
Selection of Pulse Input Mode		1-pulse input mode or 2-pulse input (negative logic) mode can be selected.	●	●
		In addition to the normal settings, the phase difference input can also be set. ・1-pulse input mode (positive logic/negative logic) ・2-pulse input mode (positive logic/negative logic) ・Phase difference input (1-multiplication/2-multiplication/4-multiplication)	–	●
Resolution Setting		The resolution can be selected with a function switch (D0, D1, CS0, CS1).	●	●
		The function switch can be used to the change each of the corresponding electronic gear values (D0, D1, CS0, CS1).	–	●
Running Current Setting		The running current setting can be changed with the current setting switch (CURRENT).	●	●
		The value corresponding to each stage of the current setting switch (CURRENT), 0～F (16 stages), can be changed.	–	●
Standstill Current Ratio Setting		The ratio of the standstill current relative to the running current can be set.	–	●
Motor Rotational Coordinates Setting		The rotational coordinates for the motor can be set.	–	●
Current On Signal (C-ON input)		The input signal for the excitation of the motor.	●	●
		The logic of the C-ON input during power supply input can be set.	–	●
Return to Excitation Position Operation During Current On Enable/Disable		Set whether or not to return to the excitation position (deviation 0 position) during current on.	–	●
I/O Input Signal Mode Selection		Input to select the push-motion operation*1.	–	●
Alarm Code Signal Enable/Disable		Set to output the code when an alarm occurs.	–	●
END Output Signal Range Setting		The END output signal range can be changed.	–	●
END Output Signal Offset		The END output signal value can be offset.	–	●
A/B Phase Output		This can be used to confirm the position of the motor.	●	●
Timing Output Signal		This is output each time the motor rotates 7.2°.	●	●
Velocity Filter Setting		Applies a filter to the operation command to control the motor action.	●	●
		The values corresponding to each of 0～F (16 stages) for the setting switch.	–	●
Control Mode	Vibration Suppression Function for Normal Mode	This can be set to suppress resonant vibration during rotation.	–	●
		This can be set to suppress vibration during acceleration, and deceleration, and when stopped.	–	●
	Gain Adjustment for Current Control Mode*2	Adjusts the position and speed loop gain.	–	●
		Adjusts the speed integration time constant.	–	●
		Sets the damping control vibration frequency.	–	●
		Sets whether to enable or disable damping control.	–	●
Selection of Motor Excitation Position at Power On		The motor excitation position for when the power is on can be selected.	–	●
Control Module Setting		Select whether to use symbols or an absolute value display for the speed display of the control module.	–	●
		The geared motor gear ratio for the speed monitor can be set.	–	●

*1 Do not perform push-motion operation using geared type motors. Doing so may damage the motor or gear unit.
*2 Except to further reduce heat generation or noise, using normal mode is recommended.

Product Line of Motors

Types and Features of Standard and Geared Motors

	Type	Features	Permissible Torque and Max. Instantaneous Torque [N·m (lb-in.)]	Backlash [arcmin (degrees)]	Basic Resolution [deg/step]	Output Shaft Speed [r/min]
	Standard Type 	· Basic motor of the **AR** Series	Maximum Holding Torque 4 (35)	———	0.36	4000
Low Backlash	**TH** Geared Type (Spur Gear Mechanism) 	· A wide variety of low gear ratios, high-speed operations · Gear ratio: 3.6, 7.2, 10, 20, 30	12 (106)	10 (0.17)	0.012	500
Low Backlash	**PS** Geared Type (Planetary Gear Mechanism) 	· High permissible torque/max. instantaneous torque · A wide variety of gear ratios for selecting the desired step angle · Center shaft · Gear ratio: 5, 7.2, 10, 25, 36, 50	Permissible Torque 37 (320) Max. Instantaneous Torque 60 (530)	7 (0.12)	0.0072	600
Non-Backlash	**PN** Geared Type (Planetary Gear Mechanism) 	· High speed (low gear ratio), high positioning accuracy · High permissible torque/max. instantaneous torque · A wide variety of gear ratios for selecting the desired step angle · Center shaft · Gear ratio: 5, 7.2, 10, 25, 36, 50	Permissible Torque 37 (320) Max. Instantaneous Torque 60 (530)	2 (0.034)	0.0072	600
Non-Backlash	**Harmonic Geared Type** (Harmonic Drive) 	· High positioning accuracy · High permissible torque/max. instantaneous torque · High gear ratio, high resolution · Center shaft · Gear ratio: 50, 100	Permissible Torque 37 (320) Max. Instantaneous Torque 55 (480)	0	0.0036	70

Note

● Please use the above values as reference to see the differences between each type. These values vary depending on the motor frame size and gear ratio.

Power Supply Input and Frame Size

Driver Type	Power Supply Input	Motor Type: Standard Type	Motor Type: TH Geared Type, PS Geared Type, PN Geared Type, Harmonic Geared Type
Built-in Controller Type 	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	□42 (□1.65) □60 (□2.36) □85 (□3.35)	□42 (□1.65) □60 (□2.36) □90 (□3.54)
Pulse Input Type 	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC	□42 (□1.65) □60 (□2.36) □85 (□3.35)	□42 (□1.65) □60 (□2.36) □90 (□3.54)

● □42 (□1.65): Indicates a motor frame size of 42 mm (1.65 in.).

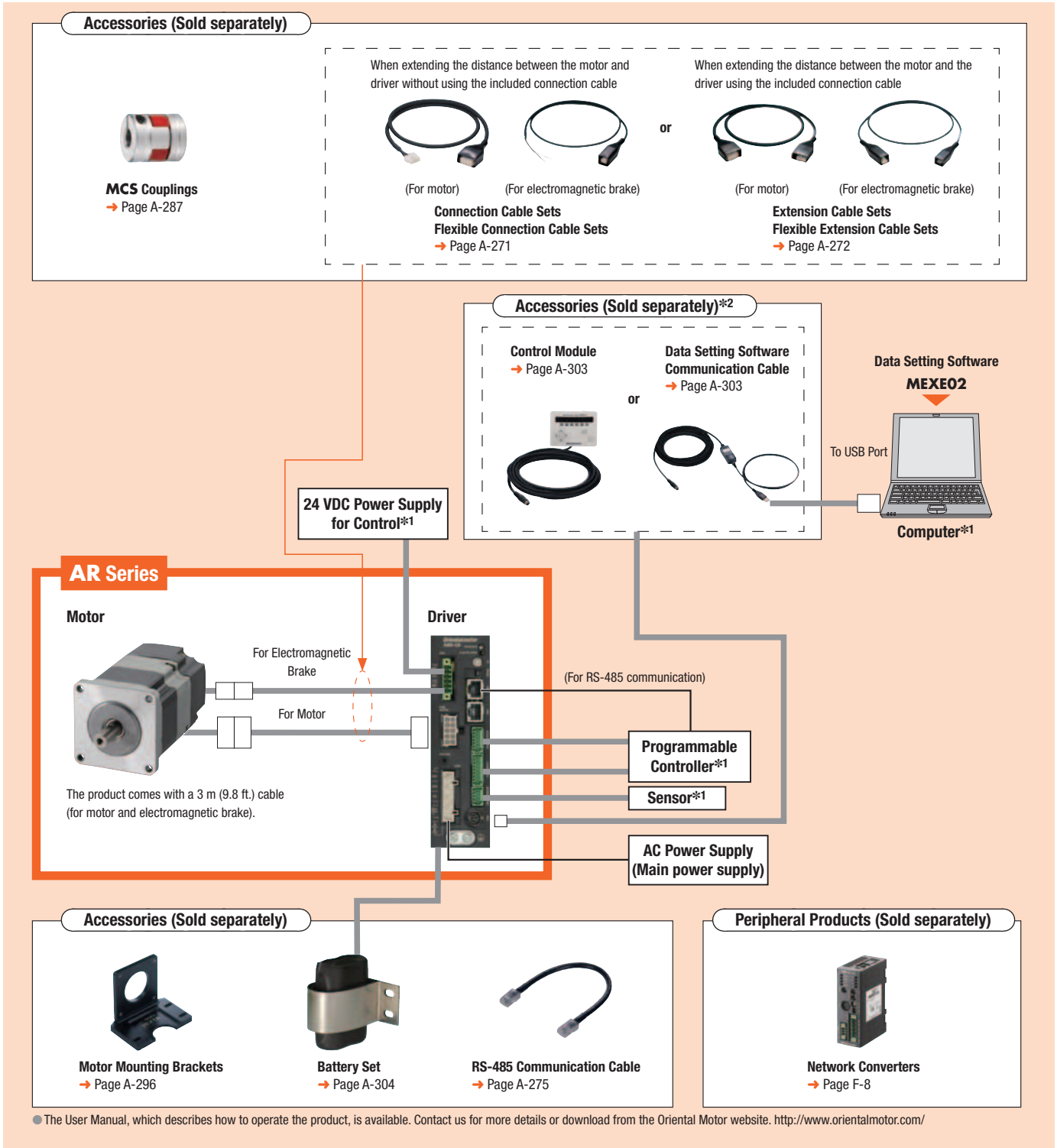
● Electromagnetic brake models are available for all types.

System Configuration

Built-in Controller Type - Standard Type with Electromagnetic Brake

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

*1 Not supplied
*2 Required for I/O control drive.



The User Manual, which describes how to operate the product, is available. Contact us for more details or download from the Oriental Motor website. http://www.orientalmotor.com/

Example of System Configuration

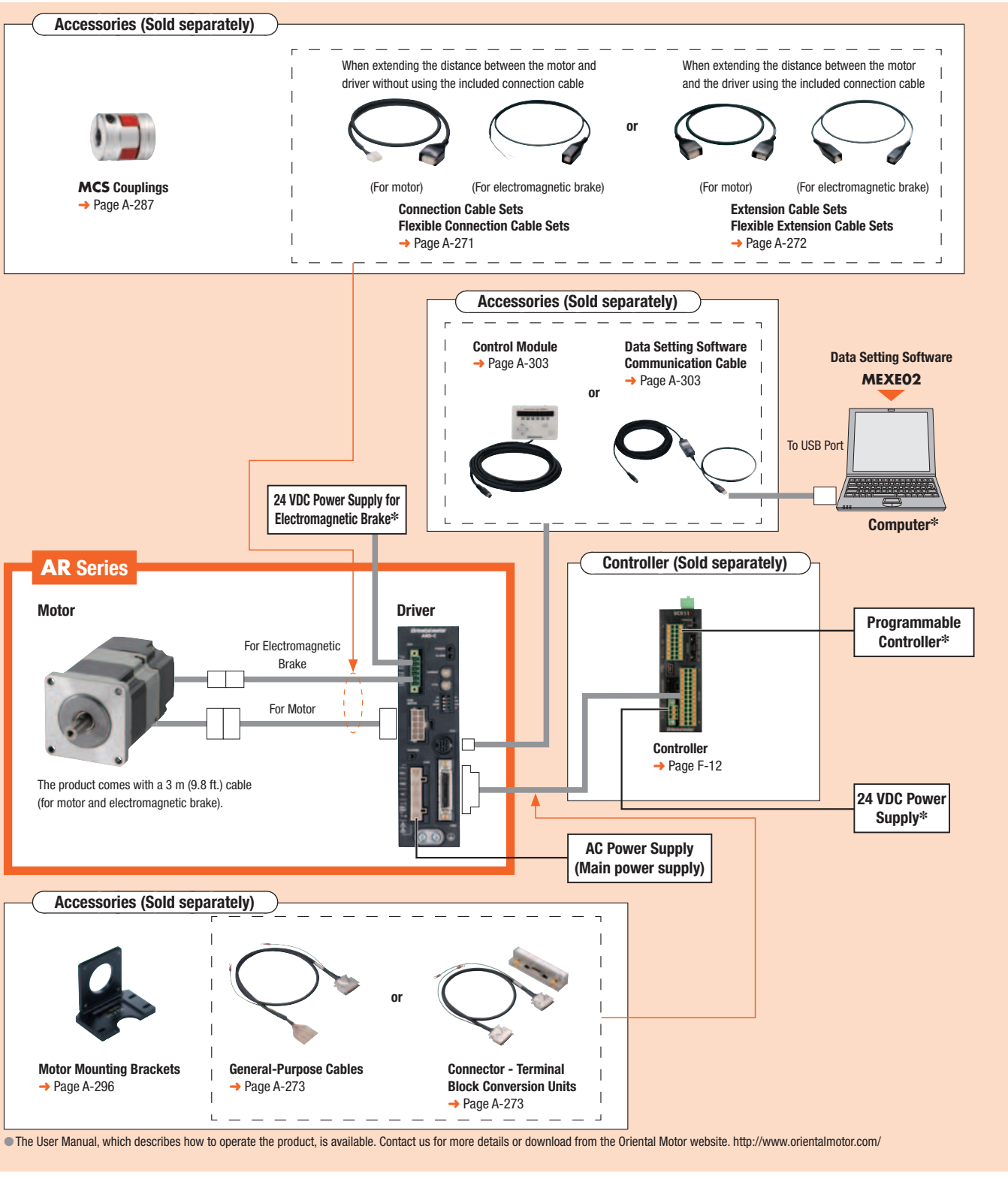
AR Series	+	Sold Separately	
		Motor Mounting Bracket	Flexible Coupling
AR66MCD-3		PAL2P-5A	MCS300610
$975.00		$17.00	$71.00

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

●Pulse Input Type, Standard Type with Electromagnetic Brake

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

✻ Not supplied



● The User Manual, which describes how to operate the product, is available. Contact us for more details or download from the Oriental Motor website. http://www.orientalmotor.com/

●Example of System Configuration

AR Series		Sold Separately			
		Controller	Motor Mounting Bracket	Flexible Coupling	Connector - Terminal Block Conversion Unit 1 m (3.3 ft.)
AR66MC-3	+	SCX11	PAL2P-5A	MCS300610	CC36T10E
$975.00		$349.00	$17.00	$71.00	$284.00

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

Product Number

AR 6 6 A C D - PS 10 - 3

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series Name	**AR**: **AR** Series
②	Motor Frame Size	**4**: 42 mm (1.65 in.) **6**: 60 mm (2.36 in.) **9**: 85 mm (3.35 in.) [90 mm (3.54 in.)]
③	Motor Case Length	
④	Configuration	**A**: Single Shaft **B**: Double Shaft **M**: With Electromagnetic Brake
⑤	Power Supply Input	Built-in Controller Type **A**: Single-Phase 100-120 VAC **C**: Single-Phase 200-240 VAC Pulse Input Type **A**: Single-Phase 100-115 VAC **C**: Single-Phase 200-230 VAC **S**: Three-Phase 200-230 VAC
⑥	Driver Type	**D**: Built-in Controller Type Blank: Pulse Input Type
⑦	Geared Type	Blank: Standard Type **T**: **TH** Geared Type **PS**: **PS** Geared Type **N**: **PN** Geared Type **H**: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Connection Cable	**3**: 3 m (9.8 ft.)

Product Line

●Built-in Controller Type

◇Standard Type

Product Name (Single shaft)	List Price
AR46A□D-3	$727.00
AR66A□D-3	$782.00
AR69A□D-3	$804.00
AR98A□D-3	$847.00
AR911A□D-3	$915.00

Product Name (Double shaft)	List Price
AR46B□D-3	$730.00
AR66B□D-3	$784.00
AR69B□D-3	$807.00
AR98B□D-3	$850.00
AR911B□D-3	$919.00

◇Standard Type with Electromagnetic Brake

Product Name	List Price
AR46M□D-3	$920.00
AR66M□D-3	$975.00
AR69M□D-3	$998.00
AR98M□D-3	$1,040.00

◇**TH** Geared Type

Product Name	List Price
AR46A□D-T3.6-3	$833.00
AR46A□D-T7.2-3	$833.00
AR46A□D-T10-3	$846.00
AR46A□D-T20-3	$846.00
AR46A□D-T30-3	$846.00
AR66A□D-T3.6-3	$901.00
AR66A□D-T7.2-3	$901.00
AR66A□D-T10-3	$913.00
AR66A□D-T20-3	$913.00
AR66A□D-T30-3	$913.00
AR98A□D-T3.6-3	$992.00
AR98A□D-T7.2-3	$992.00
AR98A□D-T10-3	$1,005.00
AR98A□D-T20-3	$1,005.00
AR98A□D-T30-3	$1,005.00

◇**TH** Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□D-T3.6-3	$1,027.00
AR46M□D-T7.2-3	$1,027.00
AR46M□D-T10-3	$1,039.00
AR46M□D-T20-3	$1,039.00
AR46M□D-T30-3	$1,039.00
AR66M□D-T3.6-3	$1,094.00
AR66M□D-T7.2-3	$1,094.00
AR66M□D-T10-3	$1,107.00
AR66M□D-T20-3	$1,107.00
AR66M□D-T30-3	$1,107.00
AR98M□D-T3.6-3	$1,186.00
AR98M□D-T7.2-3	$1,186.00
AR98M□D-T10-3	$1,198.00
AR98M□D-T20-3	$1,198.00
AR98M□D-T30-3	$1,198.00

● Either **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) indicating the power supply voltage is entered where the box □ is located within the product name.

The following items are included with each product.

Motor, Parallel Key*1, Driver, Cable for Motor*2, Cable for Electromagnetic Brake (Products with an electromagnetic brake only)*2, Connector Set for Driver, Operating Manual

*1 Only for products with a key slot on the output shaft.

*2 Accessory cables (sold separately) must be purchased in the following situations:

- When using a flexible extension cable
- When using a cable longer than 3 m (9.8 ft.)

◇PS Geared Type

Product Name	List Price
AR46A□D-PS5-3	$934.00
AR46A□D-PS7-3	$934.00
AR46A□D-PS10-3	$934.00
AR46A□D-PS25-3	$979.00
AR46A□D-PS36-3	$979.00
AR46A□D-PS50-3	$979.00
AR66A□D-PS5-3	$1,034.00
AR66A□D-PS7-3	$1,034.00
AR66A□D-PS10-3	$1,034.00
AR66A□D-PS25-3	$1,097.00
AR66A□D-PS36-3	$1,097.00
AR66A□D-PS50-3	$1,097.00
AR98A□D-PS5-3	$1,162.00
AR98A□D-PS7-3	$1,162.00
AR98A□D-PS10-3	$1,162.00
AR98A□D-PS25-3	$1,270.00
AR98A□D-PS36-3	$1,270.00
AR98A□D-PS50-3	$1,270.00

◇PS Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□D-PS5-3	$1,127.00
AR46M□D-PS7-3	$1,127.00
AR46M□D-PS10-3	$1,127.00
AR46M□D-PS25-3	$1,172.00
AR46M□D-PS36-3	$1,172.00
AR46M□D-PS50-3	$1,172.00
AR66M□D-PS5-3	$1,227.00
AR66M□D-PS7-3	$1,227.00
AR66M□D-PS10-3	$1,227.00
AR66M□D-PS25-3	$1,290.00
AR66M□D-PS36-3	$1,290.00
AR66M□D-PS50-3	$1,290.00
AR98M□D-PS5-3	$1,355.00
AR98M□D-PS7-3	$1,355.00
AR98M□D-PS10-3	$1,355.00
AR98M□D-PS25-3	$1,463.00
AR98M□D-PS36-3	$1,463.00
AR98M□D-PS50-3	$1,463.00

◇PN Geared Type

Product Name	List Price
AR46A□D-N5-3	$1,015.00
AR46A□D-N7.2-3	$1,015.00
AR46A□D-N10-3	$1,015.00
AR66A□D-N5-3	$1,214.00
AR66A□D-N7.2-3	$1,214.00
AR66A□D-N10-3	$1,214.00
AR66A□D-N25-3	$1,346.00
AR66A□D-N36-3	$1,346.00
AR66A□D-N50-3	$1,346.00
AR98A□D-N5-3	$1,506.00
AR98A□D-N7.2-3	$1,506.00
AR98A□D-N10-3	$1,506.00
AR98A□D-N25-3	$1,606.00
AR98A□D-N36-3	$1,606.00
AR98A□D-N50-3	$1,606.00

◇PN Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□D-N5-3	$1,208.00
AR46M□D-N7.2-3	$1,208.00
AR46M□D-N10-3	$1,208.00
AR66M□D-N5-3	$1,407.00
AR66M□D-N7.2-3	$1,407.00
AR66M□D-N10-3	$1,407.00
AR66M□D-N25-3	$1,540.00
AR66M□D-N36-3	$1,540.00
AR66M□D-N50-3	$1,540.00
AR98M□D-N5-3	$1,700.00
AR98M□D-N7.2-3	$1,700.00
AR98M□D-N10-3	$1,700.00
AR98M□D-N25-3	$1,800.00
AR98M□D-N36-3	$1,800.00
AR98M□D-N50-3	$1,800.00

◇Harmonic Geared Type

Product Name	List Price
AR46A□D-H50-3	$1,199.00
AR46A□D-H100-3	$1,199.00
AR66A□D-H50-3	$1,484.00
AR66A□D-H100-3	$1,484.00
AR98A□D-H50-3	$1,864.00
AR98A□D-H100-3	$1,864.00

◇Harmonic Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□D-H50-3	$1,393.00
AR46M□D-H100-3	$1,393.00
AR66M□D-H50-3	$1,677.00
AR66M□D-H100-3	$1,677.00
AR98M□D-H50-3	$2,057.00
AR98M□D-H100-3	$2,057.00

● Either **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) indicating the power supply voltage is entered where the box □ is located within the product name.

The following items are included with each product.

Motor, Parallel Key*1, Driver, Cable for Motor*2, Cable for Electromagnetic Brake (Products with an electromagnetic brake only)*2, Connector Set for Driver, Operating Manual

*1 Only for products with a key slot on the output shaft.

*2 Accessory cables (sold separately) must be purchased in the following situations:

- When using a flexible extension cable
- When using a cable longer than 3 m (9.8 ft.)

●Pulse Input Type

◇Standard Type

Product Name (Single shaft)	List Price
AR46A□-3	$727.00
AR66A□-3	$782.00
AR69A□-3	$804.00
AR98A□-3	$847.00
AR911A□-3	$915.00

Product Name (Double shaft)	List Price
AR46B□-3	$730.00
AR66B□-3	$784.00
AR69B□-3	$807.00
AR98B□-3	$850.00
AR911B□-3	$919.00

◇Standard Type with Electromagnetic Brake

Product Name	List Price
AR46M□-3	$920.00
AR66M□-3	$975.00
AR69M□-3	$998.00
AR98M□-3	$1,040.00

◇TH Geared Type

Product Name	List Price
AR46A□-T3.6-3	$833.00
AR46A□-T7.2-3	$833.00
AR46A□-T10-3	$846.00
AR46A□-T20-3	$846.00
AR46A□-T30-3	$846.00
AR66A□-T3.6-3	$901.00
AR66A□-T7.2-3	$901.00
AR66A□-T10-3	$913.00
AR66A□-T20-3	$913.00
AR66A□-T30-3	$913.00
AR98A□-T3.6-3	$992.00
AR98A□-T7.2-3	$992.00
AR98A□-T10-3	$1,005.00
AR98A□-T20-3	$1,005.00
AR98A□-T30-3	$1,005.00

◇TH Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□-T3.6-3	$1,027.00
AR46M□-T7.2-3	$1,027.00
AR46M□-T10-3	$1,039.00
AR46M□-T20-3	$1,039.00
AR46M□-T30-3	$1,039.00
AR66M□-T3.6-3	$1,094.00
AR66M□-T7.2-3	$1,094.00
AR66M□-T10-3	$1,107.00
AR66M□-T20-3	$1,107.00
AR66M□-T30-3	$1,107.00
AR98M□-T3.6-3	$1,186.00
AR98M□-T7.2-3	$1,186.00
AR98M□-T10-3	$1,198.00
AR98M□-T20-3	$1,198.00
AR98M□-T30-3	$1,198.00

◇PS Geared Type

Product Name	List Price
AR46A□-PS5-3	$934.00
AR46A□-PS7-3	$934.00
AR46A□-PS10-3	$934.00
AR46A□-PS25-3	$979.00
AR46A□-PS36-3	$979.00
AR46A□-PS50-3	$979.00
AR66A□-PS5-3	$1,034.00
AR66A□-PS7-3	$1,034.00
AR66A□-PS10-3	$1,034.00
AR66A□-PS25-3	$1,097.00
AR66A□-PS36-3	$1,097.00
AR66A□-PS50-3	$1,097.00
AR98A□-PS5-3	$1,162.00
AR98A□-PS7-3	$1,162.00
AR98A□-PS10-3	$1,162.00
AR98A□-PS25-3	$1,270.00
AR98A□-PS36-3	$1,270.00
AR98A□-PS50-3	$1,270.00

◇PS Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□-PS5-3	$1,127.00
AR46M□-PS7-3	$1,127.00
AR46M□-PS10-3	$1,127.00
AR46M□-PS25-3	$1,172.00
AR46M□-PS36-3	$1,172.00
AR46M□-PS50-3	$1,172.00
AR66M□-PS5-3	$1,227.00
AR66M□-PS7-3	$1,227.00
AR66M□-PS10-3	$1,227.00
AR66M□-PS25-3	$1,290.00
AR66M□-PS36-3	$1,290.00
AR66M□-PS50-3	$1,290.00
AR98M□-PS5-3	$1,355.00
AR98M□-PS7-3	$1,355.00
AR98M□-PS10-3	$1,355.00
AR98M□-PS25-3	$1,463.00
AR98M□-PS36-3	$1,463.00
AR98M□-PS50-3	$1,463.00

●Either **A** (single-phase 100-115 VAC), **C** (single-phase 200-230 VAC) or **S** (three-phase 200-230 VAC) indicating the power supply input is entered where the box □ is located within the product name.

The following items are included with each product.

Motor, Parallel Key*1, Driver, Cable for Motor*2, Cable for Electromagnetic Brake (Products with an electromagnetic brake only)*2, Connector Set for Driver, Operating Manual

*1 Only for products with a key slot on the output shaft.

*2 Accessory cables (sold separately) must be purchased in the following situations:

- When using a flexible extension cable
- When using a cable longer than 3 m (9.8 ft.)

◇PN Geared Type

Product Name	List Price
AR46A□-N5-3	$1,015.00
AR46A□-N7.2-3	$1,015.00
AR46A□-N10-3	$1,015.00
AR66A□-N5-3	$1,214.00
AR66A□-N7.2-3	$1,214.00
AR66A□-N10-3	$1,214.00
AR66A□-N25-3	$1,346.00
AR66A□-N36-3	$1,346.00
AR66A□-N50-3	$1,346.00
AR98A□-N5-3	$1,506.00
AR98A□-N7.2-3	$1,506.00
AR98A□-N10-3	$1,506.00
AR98A□-N25-3	$1,606.00
AR98A□-N36-3	$1,606.00
AR98A□-N50-3	$1,606.00

◇Harmonic Geared Type

Product Name	List Price
AR46A□-H50-3	$1,199.00
AR46A□-H100-3	$1,199.00
AR66A□-H50-3	$1,484.00
AR66A□-H100-3	$1,484.00
AR98A□-H50-3	$1,864.00
AR98A□-H100-3	$1,864.00

● Either **A** (single-phase 100-115 VAC), **C** (single-phase 200-230 VAC) or **S** (three-phase 200-230 VAC) indicating the power supply input is entered where the box □ is located within the product name.

PN Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□-N5-3	$1,208.00
AR46M□-N7.2-3	$1,208.00
AR46M□-N10-3	$1,208.00
AR66M□-N5-3	$1,407.00
AR66M□-N7.2-3	$1,407.00
AR66M□-N10-3	$1,407.00
AR66M□-N25-3	$1,540.00
AR66M□-N36-3	$1,540.00
AR66M□-N50-3	$1,540.00
AR98M□-N5-3	$1,700.00
AR98M□-N7.2-3	$1,700.00
AR98M□-N10-3	$1,700.00
AR98M□-N25-3	$1,800.00
AR98M□-N36-3	$1,800.00
AR98M□-N50-3	$1,800.00

◇Harmonic Geared Type with Electromagnetic Brake

Product Name	List Price
AR46M□-H50-3	$1,393.00
AR46M□-H100-3	$1,393.00
AR66M□-H50-3	$1,677.00
AR66M□-H100-3	$1,677.00
AR98M□-H50-3	$2,057.00
AR98M□-H100-3	$2,057.00

The following items are included with each product.

Motor, Parallel Key*1, Driver, Cable for Motor*2, Cable for Electromagnetic Brake (Products with an electromagnetic brake only)*2, Connector Set for Driver, Operating Manual

*1 Only for products with a key slot on the output shaft.

*2 Accessory cables (sold separately) must be purchased in the following situations:

- When using a flexible extension cable
- When using a cable longer than 3 m (9.8 ft.)

Standard Type Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.), 85 mm (3.35 in.)

Specifications

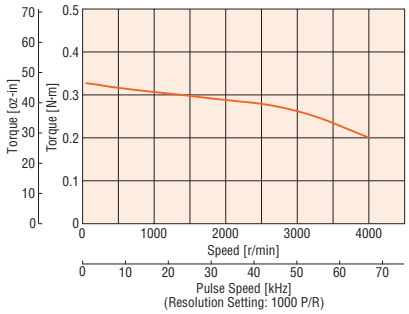
Product Name				Built-in Controller Type	AR46□□D-3	AR66□□D-3	AR69□□D-3	AR98□□D-3	AR911□□D-3
				Pulse Input Type	AR46□□-3	AR66□□-3	AR69□□-3	AR98□□-3	AR911□□-3
Maximum Holding Torque				N·m (oz-in)	0.3 (42)	1.2 (170)	2 (280)		4 (560)
Holding Torque at Motor Standstill	Power ON			N·m (oz-in)	0.15 (21)	0.6 (85)	1 (142)		2 (280)
	Electromagnetic Brake			N·m (oz-in)	0.15 (21)	0.6 (85)	1 (142)		–
Rotor Inertia				J: kg·m^2 (oz-in^2)	58×10^{-7} (0.32) [73×10^{-7} (0.4)]*2	380×10^{-7} (2.1) [500×10^{-7} (2.7)]*2	750×10^{-7} (4.1) [870×10^{-7} (4.8)]*2	1100×10^{-7} (6) [1220×10^{-7} (6.7)]*2	2200×10^{-7} (12)
Resolution				Resolution Setting: 1000 P/R	0.36°/Pulse				
Power Supply Input	Voltage and Frequency			Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15～+6% 50/60 Hz				
				Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15～+10% 50/60 Hz				
	Input Current A	Built-in Controller	Single-Phase 100-120 VAC		2.4	3.6	4.9	4.6	5.9
			Single-Phase 200-240 VAC		1.5	2.3	3	2.9	3.7
		Pulse Input	Single-Phase 100-115 VAC		2.9	4.4	6.1	5.5	6.5
			Single-Phase 200-230 VAC		1.9	2.7	3.8	3.4	4.1
			Three-Phase 200-230 VAC		1	1.4	2	1.8	2.2
Control Power Supply					24 VDC±5% 0.5 A				
For Electromagnetic Brake*3				Power Supply Input	24 VDC±5%*4 0.08 A	24 VDC±5%*4 0.25 A			–

- Either **A** (single shaft), **B** (double shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
  Either **A** (single shaft) or **B** (double shaft) indicating the configuration is entered where the box □ is located within the **AR911** product name.
  Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box ■ is located within the product name.

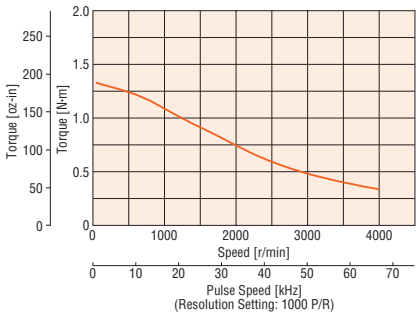
*1 Pulse input type only
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.
*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

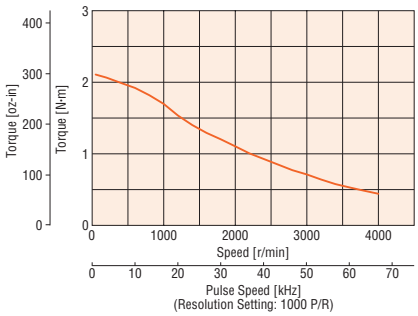
AR46



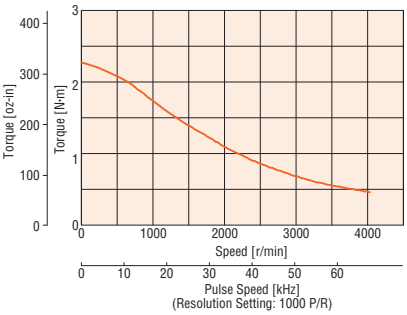
AR66



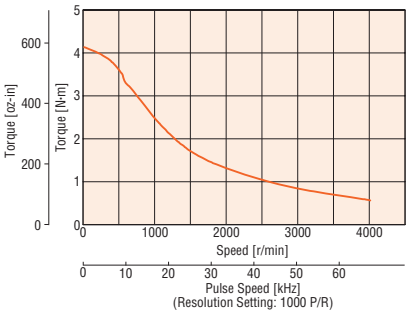
AR69



AR98



AR911



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

TH Geared Type Frame Size 42 mm (1.65 in.)

Specifications

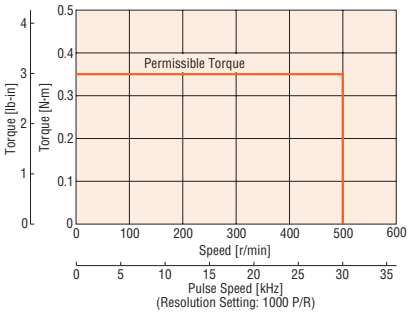
Product Name	Built-in Controller Type	AR46□□D-T3.6-3	AR46□□D-T7.2-3	AR46□□D-T10-3	AR46□□D-T20-3	AR46□□D-T30-3
	Pulse Input Type	AR46□□-T3.6-3	AR46□□-T7.2-3	AR46□□-T10-3	AR46□□-T20-3	AR46□□-T30-3
Maximum Holding Torque	N·m (lb-in)	0.35 (3.0)	0.7 (6.1)	1 (8.8)	1.5 (13.2)	
Rotor Inertia	J: kg·m^2 (oz-in^2)	58×10^{-7} (0.32) [73×10^{-7} (0.4)]*2				
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 (lb-in)	0.35 (3.0)	0.7 (6.1)	1 (8.8)	1.5 (13.2)	
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	0.34 (3.0)	0.69 (6.1)	0.96 (8.4)	1.4 (12.3)	1.5 (13.2)
	Electromagnetic Brake N·m (lb-in)	0.34 (3.0)	0.69 (6.1)	0.96 (8.4)	1.4 (12.3)	1.5 (13.2)
Speed Range	r/min	0~500	0~250	0~180	0~90	0~60
Backlash	arcmin (degrees)	45 (0.75)	25 (0.42)		15 (0.25)	
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz				
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz				
Power Supply Input — Input Current A	Built-in Controller: Single-Phase 100-120 VAC	2.4				
	Built-in Controller: Single-Phase 200-240 VAC	1.5				
	Pulse Input: Single-Phase 100-115 VAC	2.9				
	Pulse Input: Single-Phase 200-230 VAC	1.9				
	Pulse Input: Three-Phase 200-230 VAC	1				
Control Power Supply		24 VDC±5% 0.5 A				
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.08 A				

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box ▢ is located within the product name.

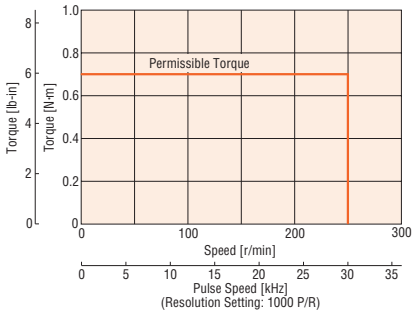
*1 Pulse input type only
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.
*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

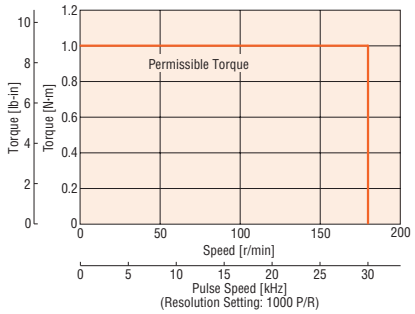
AR46 Gear Ratio **3.6**



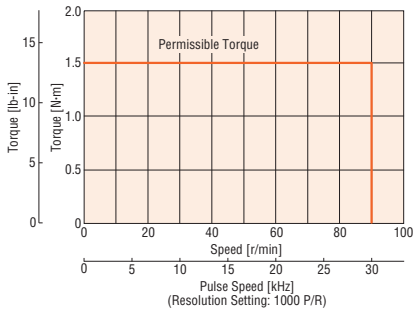
AR46 Gear Ratio **7.2**



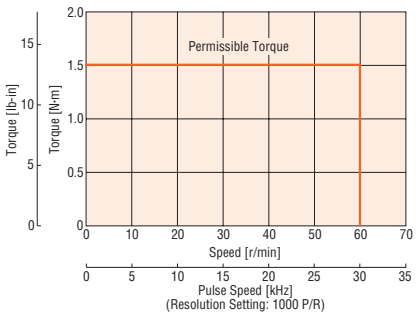
AR46 Gear Ratio **10**



AR46 Gear Ratio **20**



AR46 Gear Ratio **30**



Note

● Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

TH Geared Type Frame Size 60 mm (2.36 in.)

Specifications

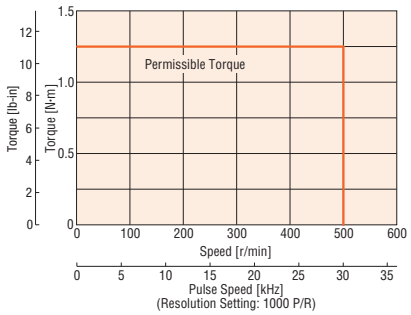
Product Name	Built-in Controller Type	AR66□□D-T3.6-3	AR66□□D-T7.2-3	AR66□□D-T10-3	AR66□□D-T20-3	AR66□□D-T30-3
	Pulse Input Type	AR66□□-T3.6-3	AR66□□-T7.2-3	AR66□□-T10-3	AR66□□-T20-3	AR66□□-T30-3
Maximum Holding Torque	N·m (lb-in)	1.25 (11.0)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Rotor Inertia	J: kg·m^2 (oz-in^2)	380×10^{-7} (2.1) [500×10^{-7} (2.7)]*2				
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 (lb-in)	1.25 (11.0)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	1.25 (11.0)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
	Electromagnetic Brake N·m (lb-in)	1.25 (11.0)	2.5 (22)	3 (26)	3.5 (30)	4 (35)
Speed Range	r/min	0~500	0~250	0~180	0~90	0~60
Backlash	arcmin (degrees)	35 (0.59)	15 (0.25)		10 (0.17)	
Power Supply Input	Voltage and Frequency / Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz				
	Voltage and Frequency / Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz				
	Input Current A / Built-in Controller / Single-Phase 100-120 VAC	3.6				
	Input Current A / Built-in Controller / Single-Phase 200-240 VAC	2.3				
	Input Current A / Pulse Input / Single-Phase 100-115 VAC	4.4				
	Input Current A / Pulse Input / Single-Phase 200-230 VAC	2.7				
	Input Current A / Pulse Input / Three-Phase 200-230 VAC	1.4				
Control Power Supply		24 VDC±5% 0.5 A				
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A				

- Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
  Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

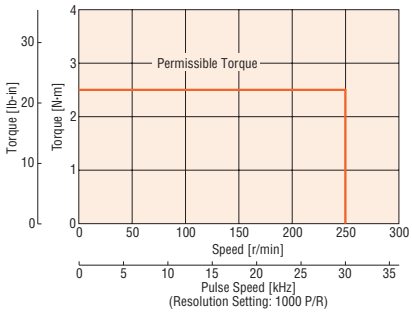
*1 Pulse input type only
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.
*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

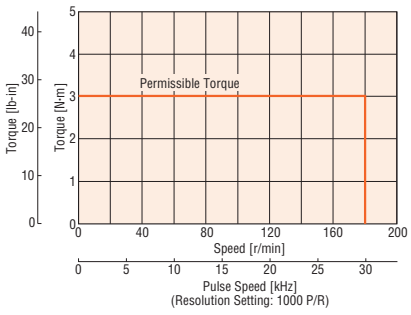
AR66 Gear Ratio **3.6**



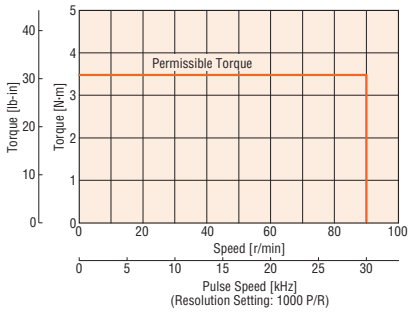
AR66 Gear Ratio **7.2**



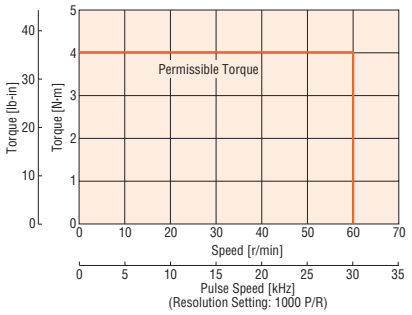
AR66 Gear Ratio **10**



AR66 Gear Ratio **20**



AR66 Gear Ratio **30**



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

TH Geared Type Frame Size 90 mm (3.54 in.)

Specifications

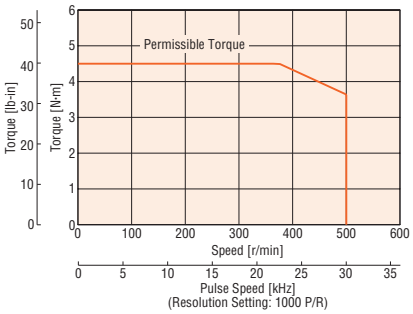
Product Name	Built-in Controller Type	AR98□□D-T3.6-3	AR98□□D-T7.2-3	AR98□□D-T10-3	AR98□□D-T20-3	AR98□□D-T30-3
	Pulse Input Type	AR98□□-T3.6-3	AR98□□-T7.2-3	AR98□□-T10-3	AR98□□-T20-3	AR98□□-T30-3
Maximum Holding Torque	N·m (lb-in)	4.5 (39)	9 (79)		12 (106)	
Rotor Inertia	J: kg·m^2 (oz-in^2)	1100×10^{-7} (6.0) [1220×10^{-7} (6.7)]*2				
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 (lb-in)	4.5 (39)	9 (79)		12 (106)	
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	3.6 (31)	7.2 (63)	9 (79)	10 (88)	12 (106)
	Electromagnetic Brake N·m (lb-in)	3.6 (31)	7.2 (63)	9 (79)	10 (88)	12 (106)
Speed Range	r/min	0~500	0~250	0~180	0~90	0~60
Backlash	arcmin (degrees)	25 (0.42)	15 (0.25)		10 (0.17)	
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz				
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz				
Power Supply Input — Input Current A	Built-in Controller: Single-Phase 100-120 VAC	4.6				
	Built-in Controller: Single-Phase 200-240 VAC	2.9				
	Pulse Input: Single-Phase 100-115 VAC	5.5				
	Pulse Input: Single-Phase 200-230 VAC	3.4				
	Pulse Input: Three-Phase 200-230 VAC	1.8				
Control Power Supply		24 VDC±5% 0.5 A				
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A				

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

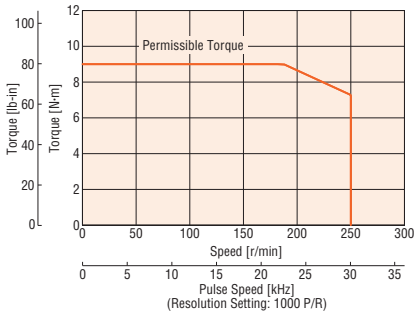
*1 Pulse input type only
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.
*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

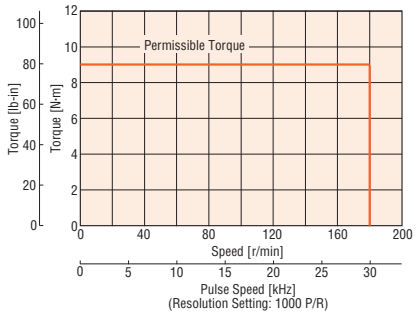
AR98 Gear Ratio **3.6**



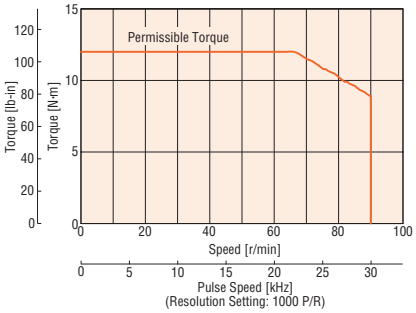
AR98 Gear Ratio **7.2**



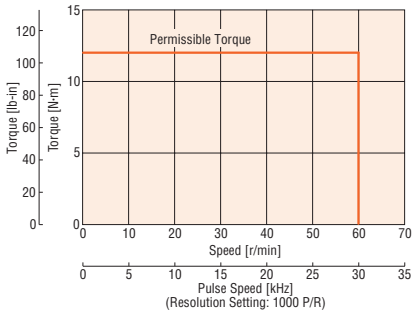
AR98 Gear Ratio **10**



AR98 Gear Ratio **20**



AR98 Gear Ratio **30**



Note

● Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

PS Geared Type Frame Size 42 mm (1.65 in.)

Specifications

Product Name	Built-in Controller Type	AR46□□D-PS5-3	AR46□□D-PS7-3	AR46□□D-PS10-3	AR46□□D-PS25-3	AR46□□D-PS36-3	AR46□□D-PS50-3
	Pulse Input Type	AR46□□-PS5-3	AR46□□-PS7-3	AR46□□-PS10-3	AR46□□-PS25-3	AR46□□-PS36-3	AR46□□-PS50-3
Maximum Holding Torque	N·m (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Rotor Inertia	J: kg·m^2 (oz-in^2)	58×10^{-7} (0.32) [73×10^{-7} (0.4)]✻2					
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 (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Maximum Instantaneous Torque✻	N·m (lb-in)	✻	2 (17.7)		6 (53)		
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	0.75 (6.6)	1 (8.8)	1.5 (13.2)	2.5 (22)	3 (26)	
	Electromagnetic Brake N·m (lb-in)	0.75 (6.6)	1 (8.8)	1.5 (13.2)	2.5 (22)	3 (26)	
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin (degrees)	15 (0.25)					
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
Power Supply Input — Input Current A — Built-in Controller	Single-Phase 100-120 VAC	2.4					
	Single-Phase 200-240 VAC	1.5					
Power Supply Input — Input Current A — Pulse Input	Single-Phase 100-115 VAC	2.9					
	Single-Phase 200-230 VAC	1.9					
	Three-Phase 200-230 VAC	1					
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake✻3	Power Supply Input	24 VDC±5%✻4 0.08 A					

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

✻1 Pulse input type only

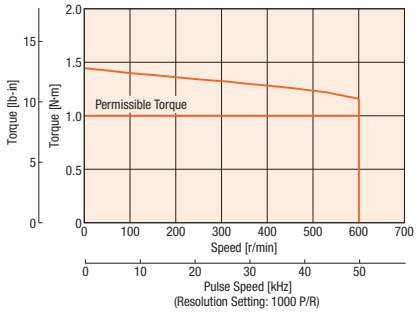
✻2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

✻3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

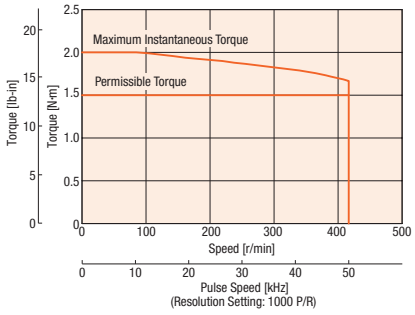
✻4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

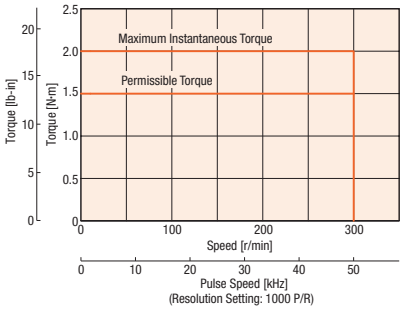
AR46 Gear Ratio **5**



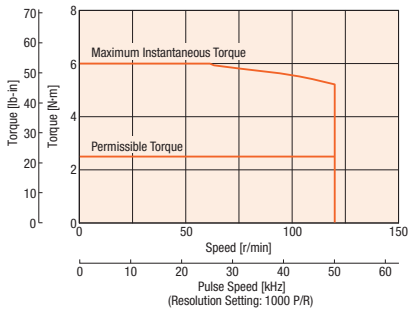
AR46 Gear Ratio **7.2**



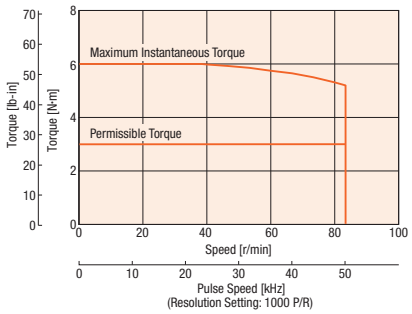
AR46 Gear Ratio **10**



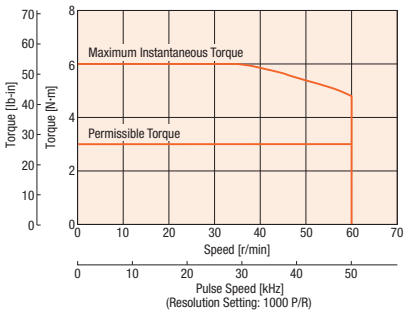
AR46 Gear Ratio **25**



AR46 Gear Ratio **36**



AR46 Gear Ratio **50**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

Overview, Product Series
AC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/Geared RKII
DC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/0.36° /Geared CRK
1.8°/Geared RBK
1.8°/0.9° /Geared CMK
0.72° All-in-One PKA
Motor Only
1.8°/0.9° PKP/PK
Geared PKP
0.72°/0.36° PKP
Accessories

PS Geared Type Frame Size 60 mm (2.36 in.)

Specifications

Product Name	Built-in Controller Type	AR66□□D-PS5-3	AR66□□D-PS7-3	AR66□□D-PS10-3	AR66□□D-PS25-3	AR66□□D-PS36-3	AR66□□D-PS50-3
	Pulse Input Type	AR66□□-PS5-3	AR66□□-PS7-3	AR66□□-PS10-3	AR66□□-PS25-3	AR66□□-PS36-3	AR66□□-PS50-3
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Rotor Inertia	J: kg·m^2 (oz-in^2)	380×10^{-7} (2.1) [500×10^{-7} (2.7)]*2					
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 (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Maximum Instantaneous Torque*	N·m (lb-in)	*	*	11 (97)	16 (141)	*	20 (177)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	3 (26)	4 (35)	5 (44)	8 (70)		
	Electromagnetic Brake N·m (lb-in)	3 (26)	4 (35)	5 (44)	8 (70)		
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin (degrees)	7 (0.12)			9 (0.15)		
Power Supply Input	Voltage and Frequency — Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Voltage and Frequency — Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
	Input Current A — Built-in Controller — Single-Phase 100-120 VAC	3.6					
	Input Current A — Built-in Controller — Single-Phase 200-240 VAC	2.3					
	Input Current A — Pulse Input — Single-Phase 100-115 VAC	4.4					
	Input Current A — Pulse Input — Single-Phase 200-230 VAC	2.7					
	Input Current A — Pulse Input — Three-Phase 200-230 VAC	1.4					
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A					

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

*1 Pulse input type only

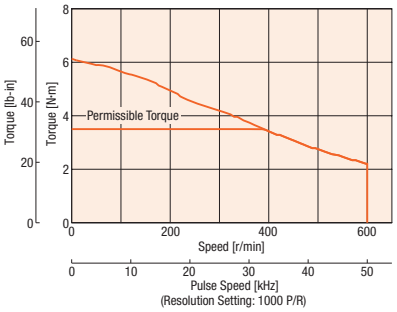
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

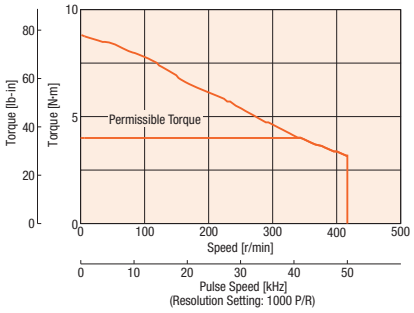
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

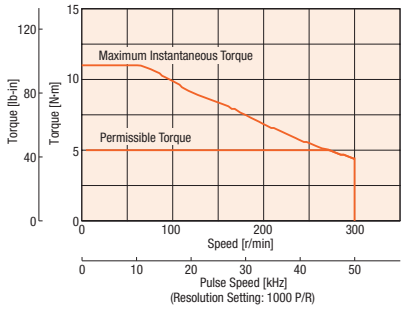
AR66 Gear Ratio **5**



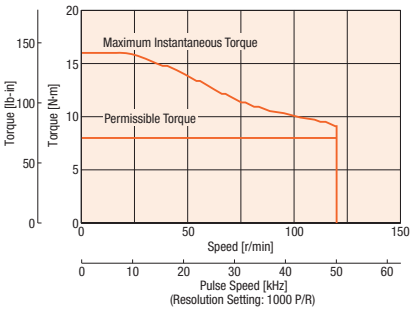
AR66 Gear Ratio **7.2**



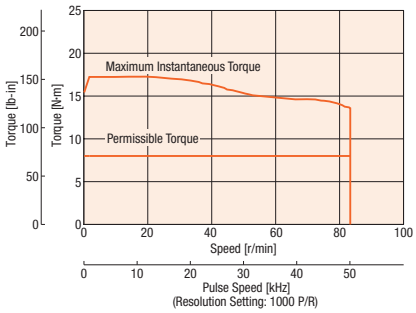
AR66 Gear Ratio **10**



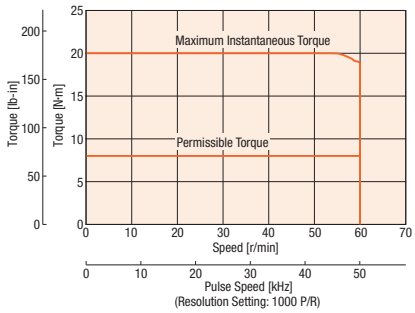
AR66 Gear Ratio **25**



AR66 Gear Ratio **36**



AR66 Gear Ratio **50**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

PS Geared Type Frame Size 90 mm (3.54 in.)

Specifications

Product Name	Built-in Controller Type	AR98□□D-PS5-3	AR98□□D-PS7-3	AR98□□D-PS10-3	AR98□□D-PS25-3	AR98□□D-PS36-3	AR98□□D-PS50-3
	Pulse Input Type	AR98□□-PS5-3	AR98□□-PS7-3	AR98□□-PS10-3	AR98□□-PS25-3	AR98□□-PS36-3	AR98□□-PS50-3
Maximum Holding Torque	N·m (lb-in)	10 (88)	14 (123)	20 (177)	37 (320)		
Rotor Inertia	J: kg·m^2 (oz-in^2)	1100×10^{-7} (6.0) [1220×10^{-7} (6.7)]*2					
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 (lb-in)	10 (88)	14 (123)	20 (177)	37 (320)		
Maximum Instantaneous Torque*	N·m (lb-in)	*	*	*	*	60 (530)	
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	5 (44)	7.2 (63)	10 (88)	25 (220)	36 (310)	37 (320)
	Electromagnetic Brake N·m (lb-in)	5 (44)	7.2 (63)	10 (88)	25 (220)	36 (310)	37 (320)
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin (degrees)	7 (0.12)			9 (0.15)		
Power Supply Input	Voltage and Frequency / Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Voltage and Frequency / Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
	Input Current A / Built-in Controller / Single-Phase 100-120 VAC	4.6					
	Input Current A / Built-in Controller / Single-Phase 200-240 VAC	2.9					
	Input Current A / Pulse Input / Single-Phase 100-115 VAC	5.5					
	Input Current A / Pulse Input / Single-Phase 200-230 VAC	3.4					
	Input Current A / Pulse Input / Three-Phase 200-230 VAC	1.8					
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A					

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box ■ is located within the product name.

*1 Pulse input type only

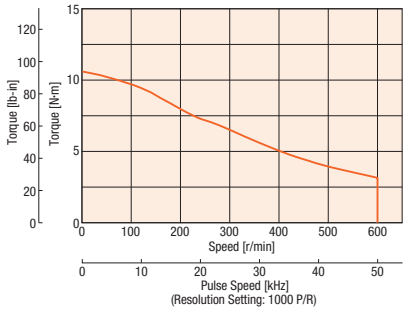
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

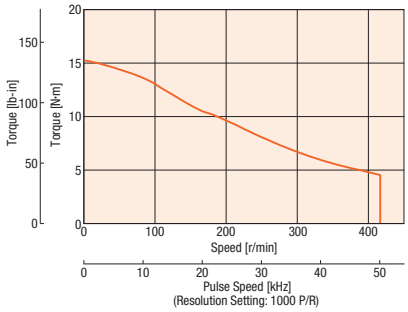
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

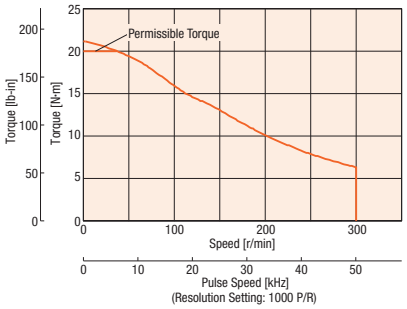
AR98 Gear Ratio **5**



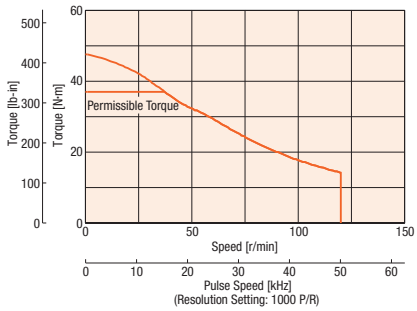
AR98 Gear Ratio **7.2**



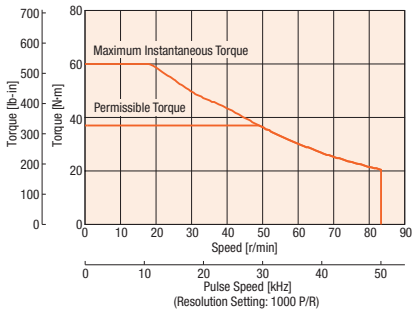
AR98 Gear Ratio **10**



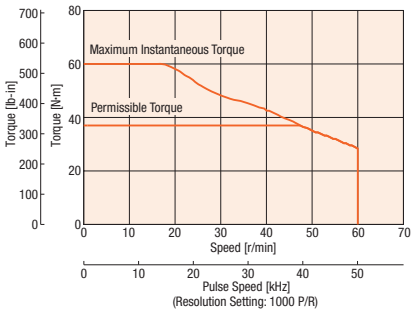
AR98 Gear Ratio **25**



AR98 Gear Ratio **36**



AR98 Gear Ratio **50**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

Overview, Product Series
AC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/Geared RKII
DC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/0.36° /Geared CRK
1.8°/Geared RBK
1.8°/0.9° /Geared CMK
0.72° All-in-One PKA
Motor Only
1.8°/0.9° PKP/PK
Geared PKP
0.72°/0.36° PKP
Accessories

PN Geared Type Frame Size 42 mm (1.65 in.)

Specifications

Product Name	Built-in Controller Type	AR46□□D-N5-3	AR46□□D-N7.2-3	AR46□□D-N10-3
	Pulse Input Type	AR46□□-N5-3	AR46□□-N7.2-3	AR46□□-N10-3
Maximum Holding Torque	N·m (lb-in)	1.35 (11.9)	1.5 (13.2)	
Rotor Inertia	J: kg·m^2 (oz-in^2)	58×10^{-7} (0.32) [73×10^{-7} (0.4)]*2		
Gear Ratio		5	7.2	10
Resolution	Resolution Setting: 1000 P/R	0.072°/Pulse	0.05°/Pulse	0.036°/Pulse
Permissible Torque	N·m (lb-in)	1.35 (11.9)	1.5 (13.2)	
Maximum Instantaneous Torque*	N·m (lb-in)	*	2 (17.7)	
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	0.75 (6.6)	1 (8.8)	1.5 (13.2)
	Electromagnetic Brake N·m (lb-in)	0.75 (6.6)	1 (8.8)	1.5 (13.2)
Speed Range	r/min	0~600	0~416	0~300
Backlash	arcmin (degrees)	2 (0.034)		
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz		
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz		
Power Supply Input — Input Current A	Built-in Controller: Single-Phase 100-120 VAC	2.4		
	Built-in Controller: Single-Phase 200-240 VAC	1.5		
	Pulse Input: Single-Phase 100-115 VAC	2.9		
	Pulse Input: Single-Phase 200-230 VAC	1.9		
	Pulse Input: Three-Phase 200-230 VAC	1		
Control Power Supply		24 VDC±5% 0.5 A		
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.08 A		

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

*1 Pulse input type only

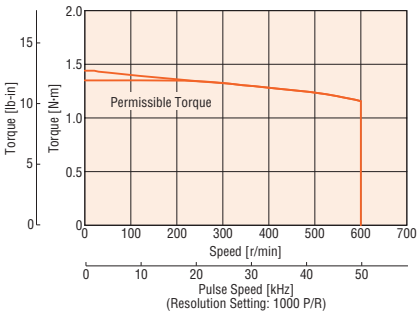
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

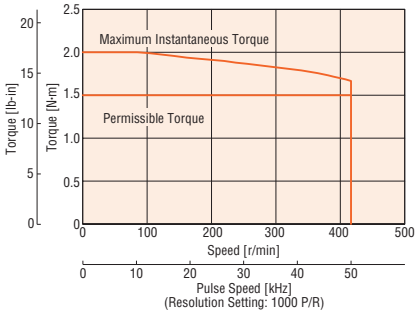
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

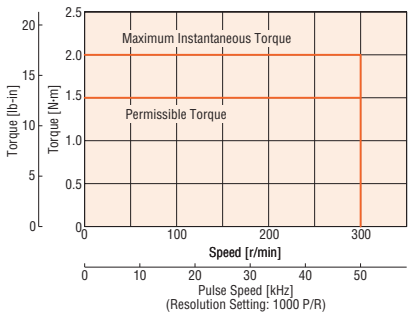
AR46 Gear Ratio **5**



AR46 Gear Ratio **7.2**



AR46 Gear Ratio **10**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

PN Geared Type Frame Size 60 mm (2.36 in.)

Specifications

Product Name	Built-in Controller Type	AR66□□D-N5-3	AR66□□D-N7.2-3	AR66□□D-N10-3	AR66□□D-N25-3	AR66□□D-N36-3	AR66□□D-N50-3
	Pulse Input Type	AR66□□-N5-3	AR66□□-N7.2-3	AR66□□-N10-3	AR66□□-N25-3	AR66□□-N36-3	AR66□□-N50-3
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Rotor Inertia	J: kg·m^2 (oz-in^2)	380×10^{-7} (2.1) [500×10^{-7} (2.7)]*2					
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 (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Maximum Instantaneous Torque*	N·m (lb-in)	*	*	11 (97)	16 (141)	*	20 (177)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	3 (26)	4 (35)	5 (44)	8 (70)		
	Electromagnetic Brake N·m (lb-in)	3 (26)	4 (35)	5 (44)	8 (70)		
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin (degrees)	2 (0.034)			3 (0.05)		
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
Power Supply Input — Input Current A (Built-in Controller)	Single-Phase 100-120 VAC	3.6					
	Single-Phase 200-240 VAC	2.3					
Power Supply Input — Input Current A (Pulse Input)	Single-Phase 100-115 VAC	4.4					
	Single-Phase 200-230 VAC	2.7					
	Three-Phase 200-230 VAC	1.4					
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A					

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

*1 Pulse input type only

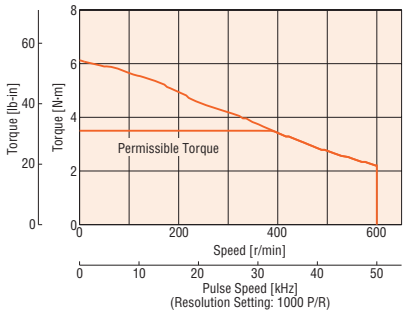
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

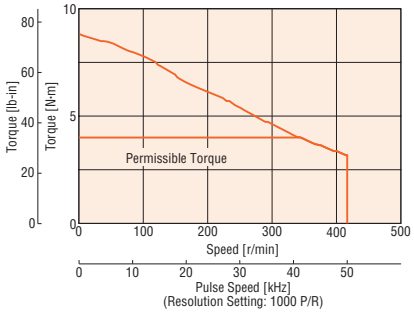
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

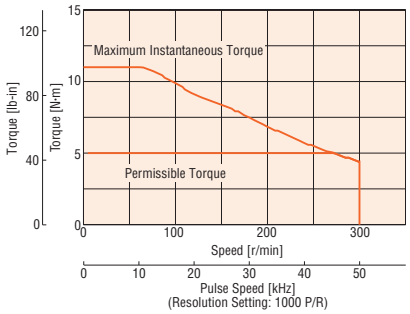
AR66 Gear Ratio **5**



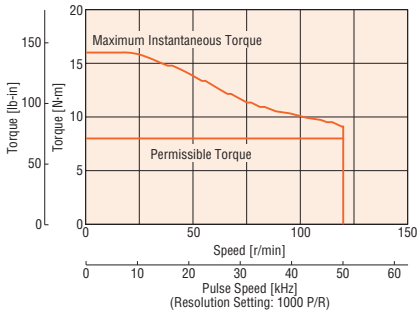
AR66 Gear Ratio **7.2**



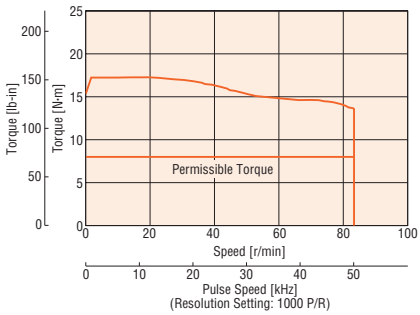
AR66 Gear Ratio **10**



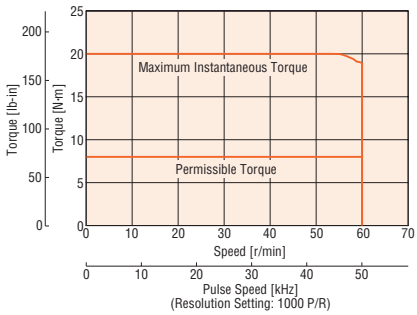
AR66 Gear Ratio **25**



AR66 Gear Ratio **36**



AR66 Gear Ratio **50**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

Overview, Product Series
AC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/Geared RKII
DC Input Motor & Driver
0.36°/Geared αSTEP AR
0.36°/Geared αSTEP Absolute AZ
0.72°/0.36° /Geared CRK
1.8°/Geared RBK
1.8°/0.9° /Geared CMK
0.72° All-in-One PKA
Motor Only
1.8°/0.9° PKP/PK
Geared PKP
0.72°/0.36° PKP
Accessories

PN Geared Type Frame Size 90 mm (3.54 in.)

Specifications

Product Name	Built-in Controller Type	AR98□□D-N5-3	AR98□□D-N7.2-3	AR98□□D-N10-3	AR98□□D-N25-3	AR98□□D-N36-3	AR98□□D-N50-3
	Pulse Input Type	AR98□□-N5-3	AR98□□-N7.2-3	AR98□□-N10-3	AR98□□-N25-3	AR98□□-N36-3	AR98□□-N50-3
Maximum Holding Torque	N·m (lb-in)	10 (88)	14 (123)	20 (177)	37 (320)		
Rotor Inertia	J: kg·m^2 (oz-in^2)	1100×10^{-7} (6.0) [1220×10^{-7} (6.7)]*2					
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 (lb-in)	10 (88)	14 (123)	20 (177)	37 (320)		
Maximum Instantaneous Torque*	N·m (lb-in)	*	*	*	*	60 (530)	
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	5 (44)	7.2 (63)	10 (88)	25 (220)	36 (310)	37 (320)
	Electromagnetic Brake N·m (lb-in)	5 (44)	7.2 (63)	10 (88)	25 (220)	36 (310)	37 (320)
Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arcmin (degrees)	2 (0.034)			3 (0.05)		
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
Power Supply Input — Input Current A	Built-in Controller, Single-Phase 100-120 VAC	4.6					
	Built-in Controller, Single-Phase 200-240 VAC	2.9					
	Pulse Input, Single-Phase 100-115 VAC	5.5					
	Pulse Input, Single-Phase 200-230 VAC	3.4					
	Pulse Input, Three-Phase 200-230 VAC	1.8					
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.25 A					

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

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

*1 Pulse input type only

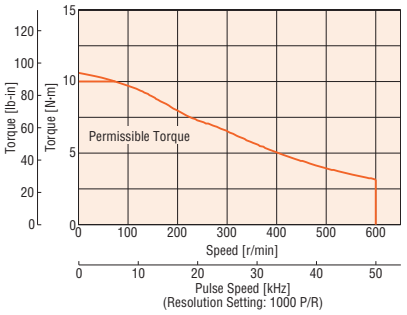
*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

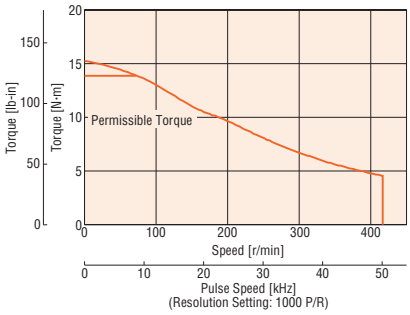
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics (Reference values)

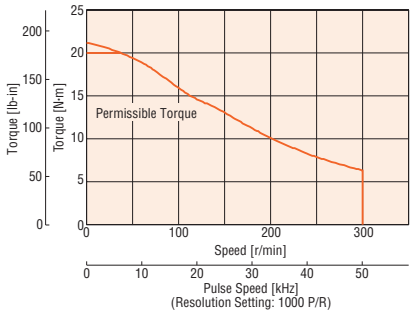
AR98 Gear Ratio **5**



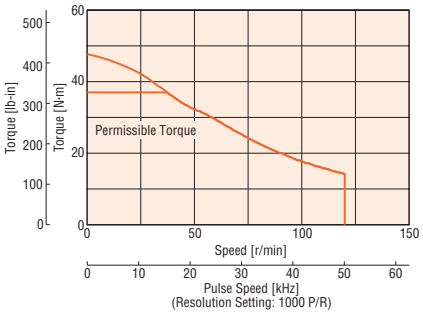
AR98 Gear Ratio **7.2**



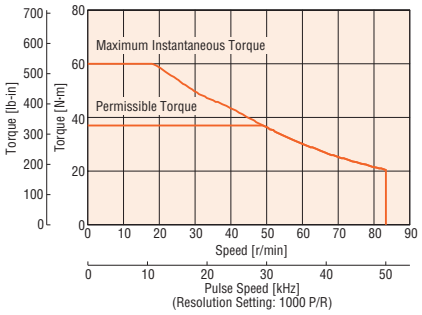
AR98 Gear Ratio **10**



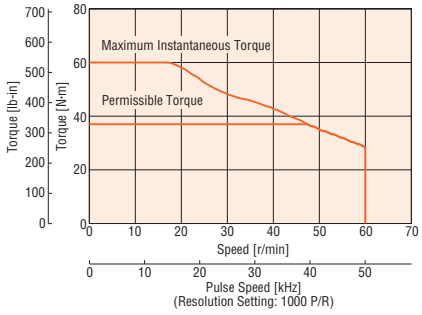
AR98 Gear Ratio **25**



AR98 Gear Ratio **36**



AR98 Gear Ratio **50**



Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

Harmonic Geared Type Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.), 90 mm (3.54 in.)

Specifications

Product Name	Built-in Controller Type	AR46□□D-H50-3	AR46□□D-H100-3	AR66□□D-H50-3	AR66□□D-H100-3	AR98□□D-H50-3	AR98□□D-H100-3
	Pulse Input Type	AR46□□-H50-3	AR46□□-H100-3	AR66□□-H50-3	AR66□□-H100-3	AR98□□-H50-3	AR98□□-H100-3
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
Rotor Inertia	J: kg·m^2 (oz-in^2)	75×10^{-7} (0.41) [90×10^{-7} (0.49)]*2		415×10^{-7} (2.3) [535×10^{-7} (2.9)]*2		1300×10^{-7} (7.1) [1420×10^{-7} (7.8)]*2	
Gear Ratio		50	100	50	100	50	100
Resolution	Resolution Setting: 1000 P/R	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse	0.0072°/Pulse	0.0036°/Pulse
Permissible Torque	N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
Maximum Instantaneous Torque	N·m (lb-in)	8.3 (73)	11 (97)	18 (159)	28 (240)	35 (300)	55 (480)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
	Electromagnetic Brake N·m (lb-in)	3.5 (30)	5 (44)	5.5 (48)	8 (70)	25 (220)	37 (320)
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 (±0.2 N·m)	0.7 max (±0.28 N·m)	0.7 max (±0.39 N·m)	1.5 max (±1.2 N·m)	
Power Supply Input — Voltage and Frequency	Built-in Controller	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+6% 50/60 Hz					
	Pulse Input	Single-Phase 100-115 VAC, Single-Phase 200-230 VAC, Three-Phase 200-230 VAC −15~+10% 50/60 Hz					
Power Supply Input — Input Current A	Built-in Controller, Single-Phase 100-120 VAC	2.4		3.6		4.6	
	Built-in Controller, Single-Phase 200-240 VAC	1.5		2.3		2.9	
	Pulse Input, Single-Phase 100-115 VAC	2.9		4.4		5.5	
	Pulse Input, Single-Phase 200-230 VAC	1.9		2.7		3.4	
	Pulse Input, Three-Phase 200-230 VAC	1		1.4		1.8	
Control Power Supply		24 VDC±5% 0.5 A					
For Electromagnetic Brake*3	Power Supply Input	24 VDC±5%*4 0.08 A		24 VDC±5%*4 0.25 A			

- Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
  Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

*1 Pulse input type only

*2 The brackets [ ] indicate the specifications for the electromagnetic brake product.

*3 For the pulse input type, a separate power supply for the electromagnetic brakes is required for the electromagnetic brake product.

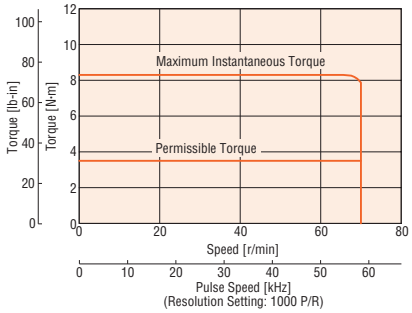
*4 If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Note

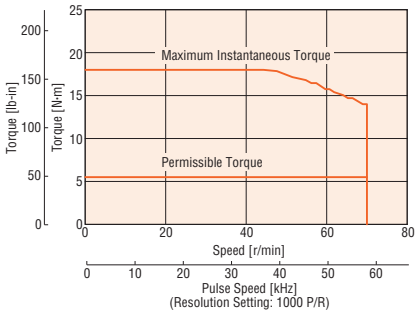
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.

Speed – Torque Characteristics (Reference values)

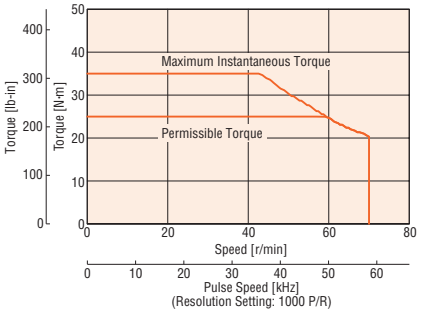
AR46 Gear Ratio **50**



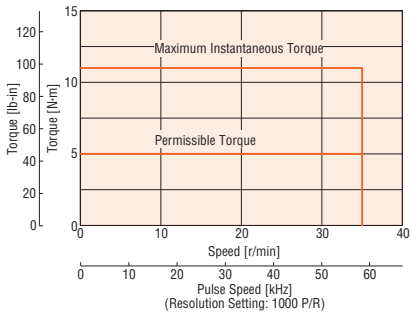
AR66 Gear Ratio **50**



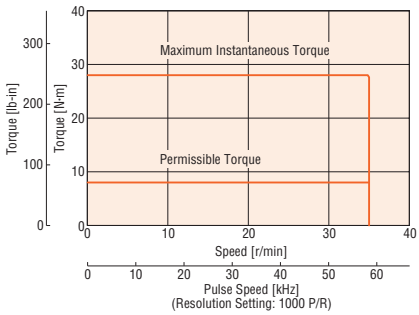
AR98 Gear Ratio **50**



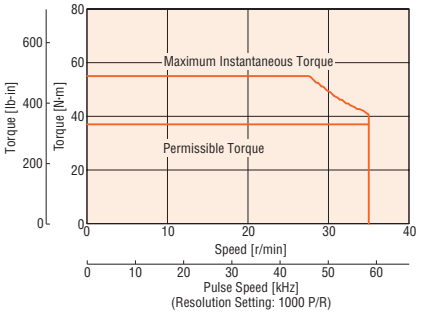
AR46 Gear Ratio **100**



AR66 Gear Ratio **100**



AR98 Gear Ratio **100**



Note

- Data for the speed–torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C (212°F) or less.

Driver Specifications

		Built-in Controller Type	Pulse Input Type
Max. Input Pulse Frequency		–	Line driver output by Host controller: 500 kHz (When the pulse duty is 50%) Open-collector output by Host controller: 250 kHz (When the pulse duty is 50%)*1 Negative Logic Pulse Input (Initial value)
Number of Positioning Data Sets		64 Points	–
Positioning Operation	Independent	○	–
	Linked	○	–
	Linked 2	○	–
	Sequential	○	–
	Direct	○	–
	Pushing	○	○*2
Continuous Operation		○	–
JOG Operation		○	–
Return-To-Home Operation		○	–
Test Operation		○	○*2
Absolute Backup System		○	–
Control Module **OPX-2A**		○	○
Data Setting Software **MEXE02**		○	○

*1 The value when the general-purpose cable **CC36D1E** (sold separately) is used. General-Purpose Cables ➜ Page A-273
*2 Set with extended function (**MEXE02**)

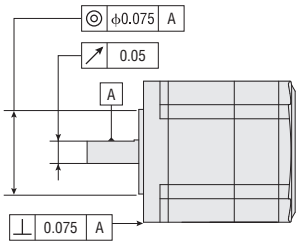
Built-in Controller Type RS-485 Communication Specification

Protocol	Modbus Protocol (Modbus RTU mode)
Electrical Characteristics	EIA-485 Based, Straight Cable Use shielded twisted-pair cables (TIA/EIA-568B CAT5e or better recommended). The maximum total extension length is 50 m (164 ft.).
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
Connection Type	Up to 31 units can be connected to a single programmable controller (master unit).

General Specifications

Item		Motor	Driver	
			Built-in Controller Type	Pulse Input Type
Thermal Class		130 (B)	–	
Insulation Resistance		100 MΩ or more when 500 VDC megger is applied between the following places: • Case – Motor and sensor windings • Case – Electromagnetic brake windings	100 MΩ or more when a 500 VDC megger is applied between the following places: • PE terminal – Power supply terminal • Signal I/O terminal – Power supply terminal	
Dielectric Strength		Sufficient to withstand the following for 1 minute: • Case – Motor and sensor windings 1.5 kVAC 50 Hz or 60 Hz • Case – Electromagnetic brake windings 1.5 kVAC 50 Hz or 60 Hz	Sufficient to withstand the following for 1 minute: • PE terminal – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz • Signal I/O terminal – Power supply terminal 1.9 kVAC, 50 Hz or 60 Hz	• PE terminal – Power supply terminal 1.5 kVAC, 50 Hz or 60 Hz • Signal I/O terminal – Power supply terminal 1.8 kVAC, 50 Hz or 60 Hz
Operating Environment (in operation)	Ambient Temperature	−10～+50°C (+14～+122°F) (non-freezing)*1: Standard type, **TH**, **PS**, **PN** geared type 0～+40°C (+32～+104°F) (non-freezing)*1: Harmonic geared type	0～+55°C (+32～+131°F) (non-freezing)*2	0～+50°C (+32～+122°F) (non-freezing)*2
	Ambient Humidity	85% or less (non-condensing)		
	Atmosphere	No corrosive gases, dust, water or oil		
Degree of Protection		Standard type (Single shaft), Geared type: IP65 (Excluding the mounting surface and connector) Standard type (Double shaft): IP20	IP10	IP20
Stop Position Accuracy		**AR46**: ±4 arcmin (±0.067°) **AR66**, **AR69**, **AR98**, **AR911**: ±3 arcmin (±0.05°)		
Shaft Runout		0.05 mm (0.002 in.) T.I.R. *3	–	
Concentricity		0.075 mm (0.003 in.) T.I.R. *3	–	
Perpendicularity		0.075 mm (0.003 in.) T.I.R. *3	–	

*1 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 250×250 mm (9.84×9.84 in.), 6 mm (0.24 in.) thick is installed.
*2 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 200×200 mm (7.87×7.87 in.), 2 mm (0.08 in.) thick is installed.
*3 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated one revolution centered on the reference axis center.



Note
● Do not measure insulation resistance or perform the dielectric strength test while the motor and driver are connected.

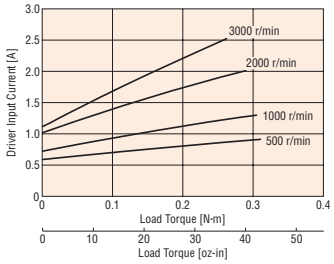
Load Torque – Driver Input Current Characteristics

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

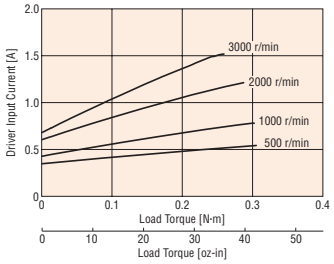
$$\text{Motor shaft speed [r/min]} = \text{Gear output shaft speed} \times \text{Gear ratio}$$

$$\text{Motor shaft torque [N•m (oz-in)]} = \frac{\text{Gear output shaft torque}}{\text{Gear ratio}}$$

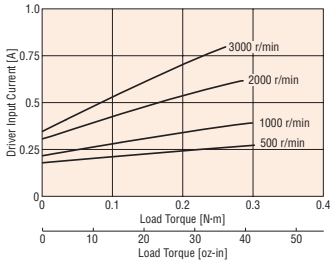
AR46□A



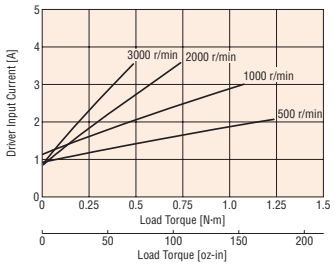
AR46□C



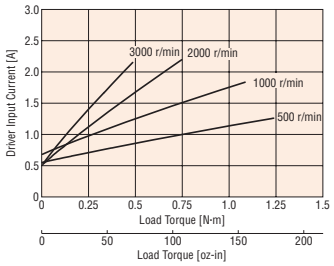
AR46□S



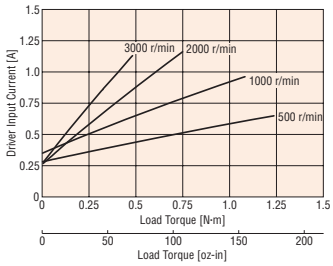
AR66□A



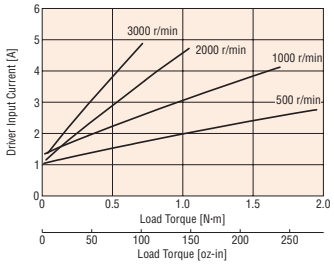
AR66□C



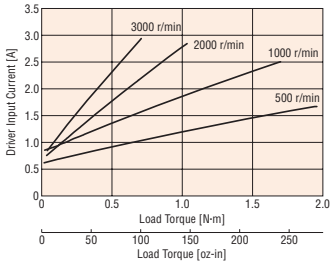
AR66□S



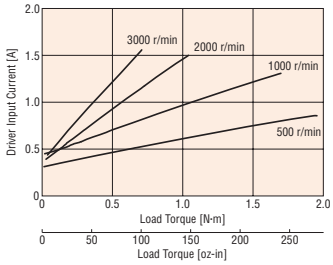
AR69□A



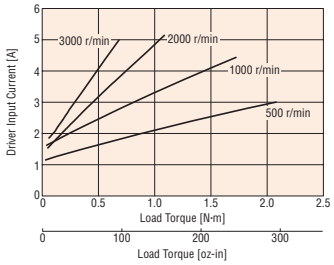
AR69□C



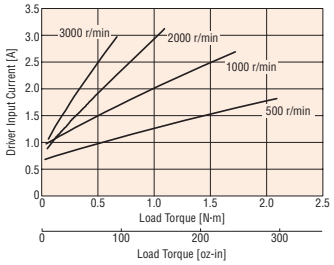
AR69□S



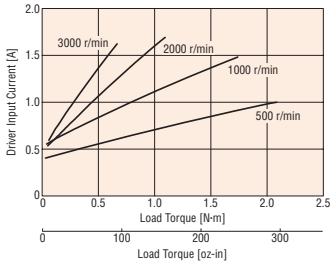
AR98□A



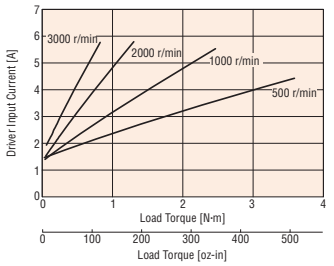
AR98□C



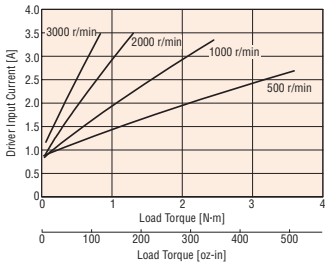
AR98□S



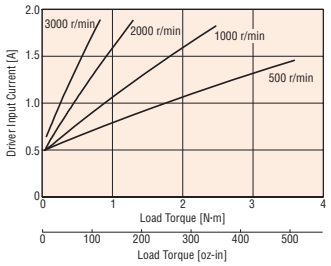
AR911□A



AR911□C



AR911□S



Note

● For built-in controller type, the reference value is approx. 0.1 A lower.

Permissible Radial Load and Permissible Axial Load

→ Page A-16

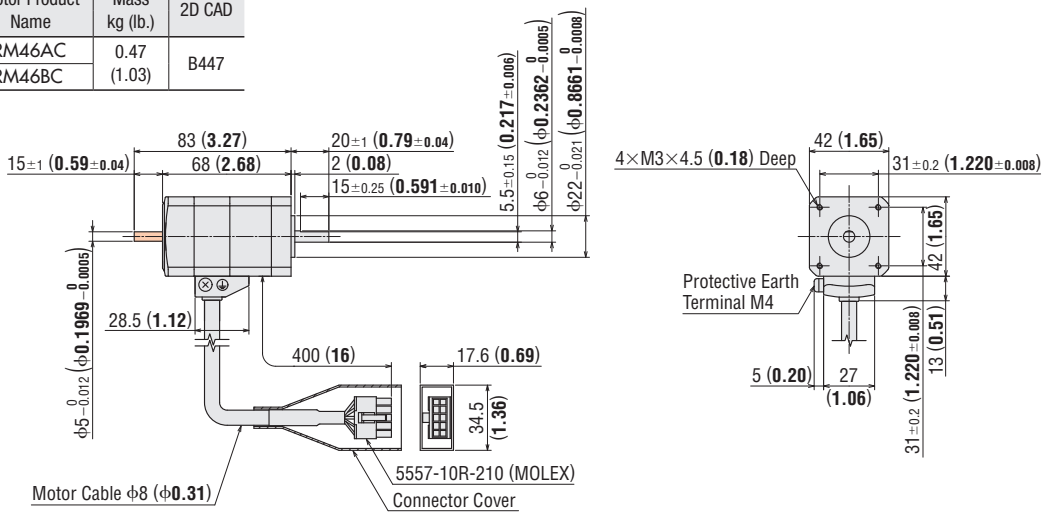
Dimensions Unit = mm (in.)

Motor

◇Standard Type

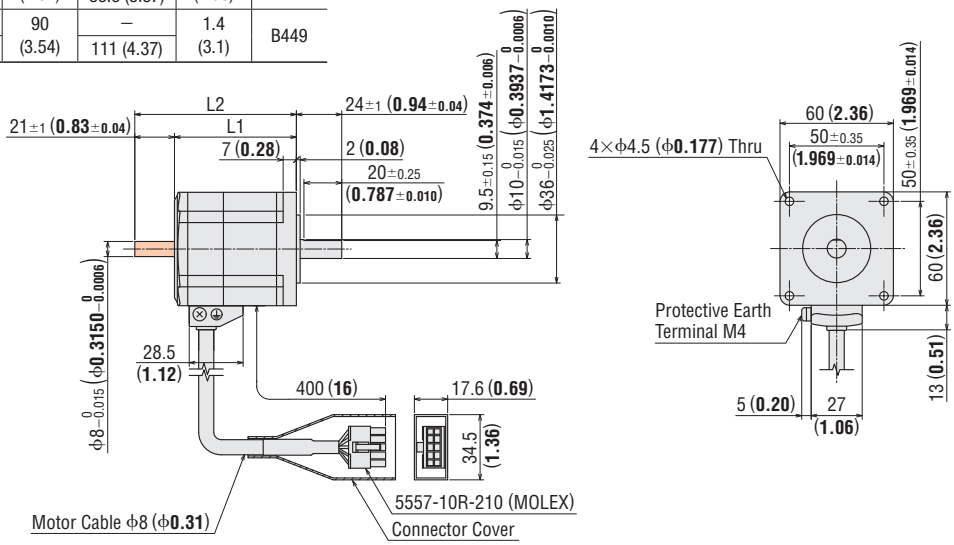
Frame Size 42 mm (1.65 in.) 2D & 3D CAD

Product Name		Motor Product Name	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input			
AR46A□D-3	**AR46A□-3**	ARM46AC	0.47 (1.03)	B447
AR46B□D-3	**AR46B□-3**	ARM46BC		



Frame Size 60 mm (2.36 in.) 2D & 3D CAD

Product Name		Motor Product Name	L1	L2	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR66A□D-3	**AR66A□-3**	ARM66AC	64.5 (2.54)	–	0.9 (1.98)	B448
AR66B□D-3	**AR66B□-3**	ARM66BC		85.5 (3.37)		
AR69A□D-3	**AR69A□-3**	ARM69AC	90 (3.54)	–	1.4 (3.1)	B449
AR69B□D-3	**AR69B□-3**	ARM69BC		111 (4.37)		



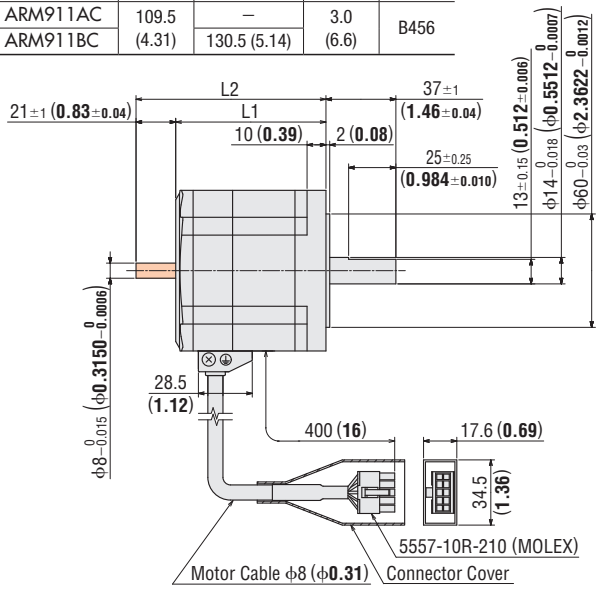
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

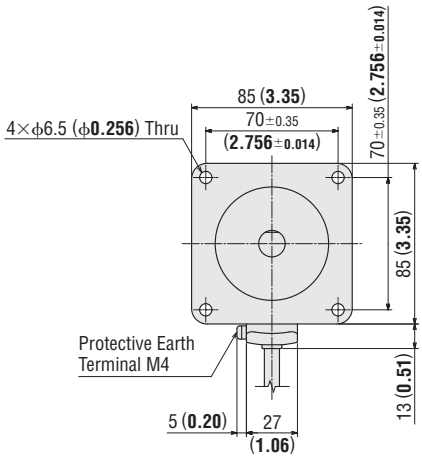
● These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.

Frame Size 85 mm (3.35 in.)

2D & 3D CAD

Product Name		Motor Product Name	L1	L2	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR98A□D-3	**AR98A□-3**	ARM98AC	79.5 (3.13)	–	1.9 (4.2)	B455
AR98B□D-3	**AR98B□-3**	ARM98BC		100.5 (3.96)		
AR911A□D-3	**AR911A□-3**	ARM911AC	109.5 (4.31)	–	3.0 (6.6)	B456
AR911B□D-3	**AR911B□-3**	ARM911BC		130.5 (5.14)		





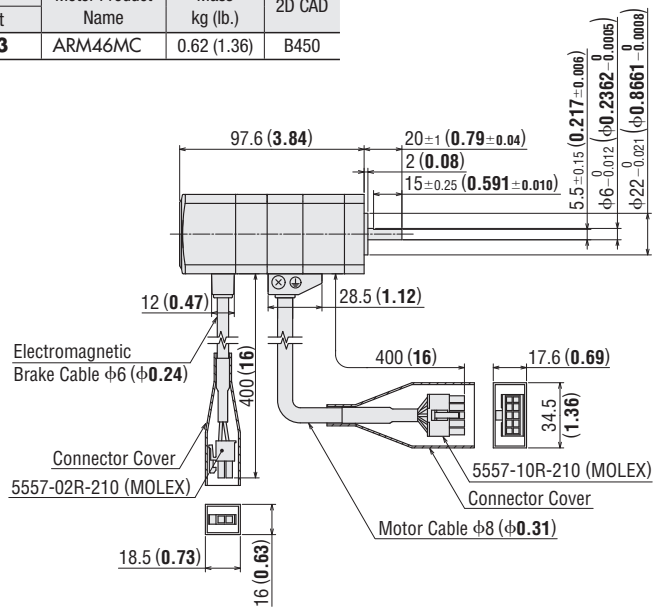
● These dimensions are for double shaft motors. For single shaft motors, ignore the shaded ▭ areas.

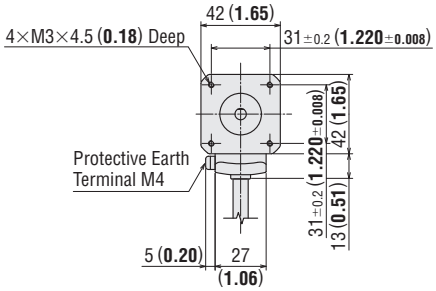
◇Standard Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input			
AR46M□D-3	**AR46M□-3**	ARM46MC	0.62 (1.36)	B450



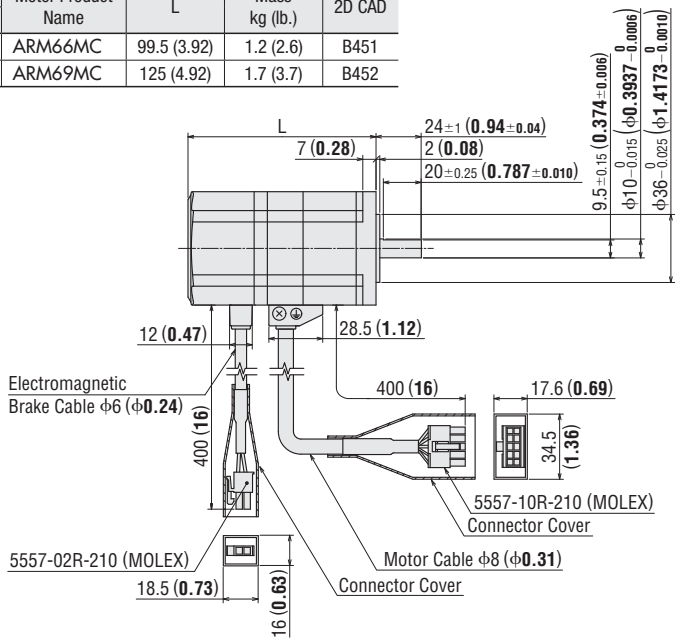


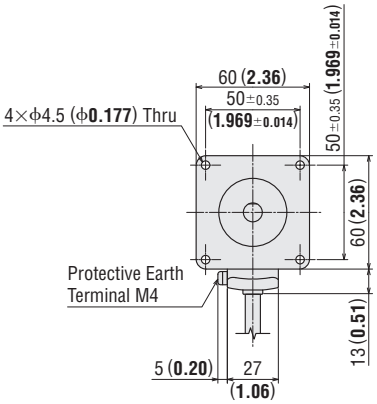
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box ▭ is located within the product name.

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR66M□D-3	**AR66M□-3**	ARM66MC	99.5 (3.92)	1.2 (2.6)	B451
AR69M□D-3	**AR69M□-3**	ARM69MC	125 (4.92)	1.7 (3.7)	B452

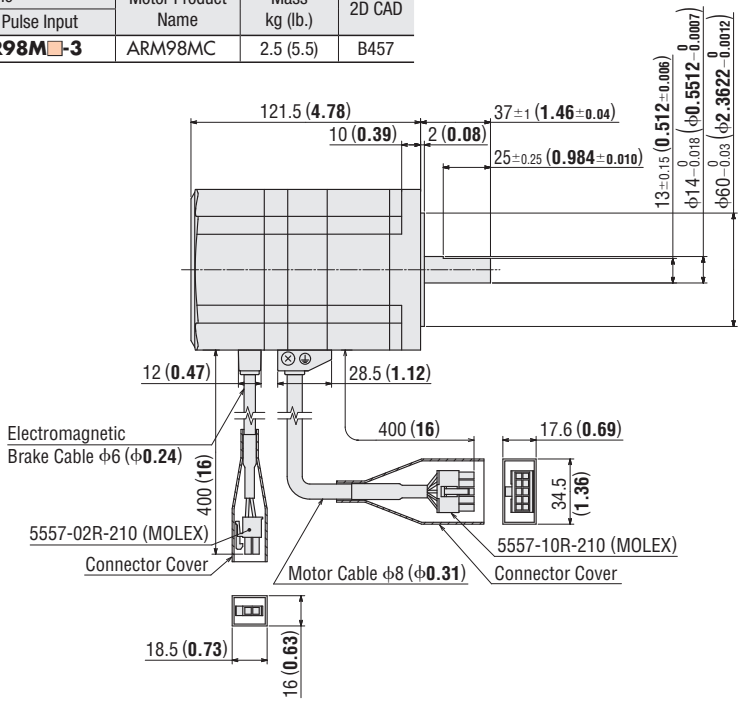


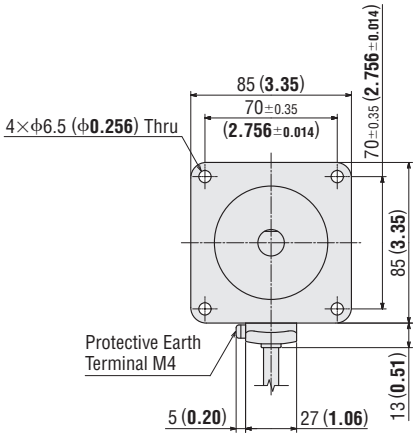


Frame Size 85 mm (3.35 in.)

2D & 3D CAD

Product Name		Motor Product Name	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input			
AR98M□D-3	**AR98M□-3**	ARM98MC	2.5 (5.5)	B457





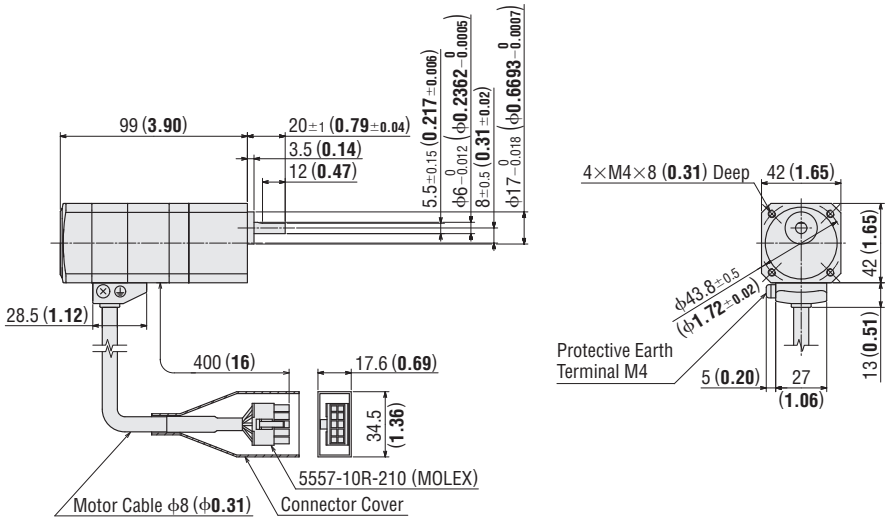
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

◇TH Geared Type

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

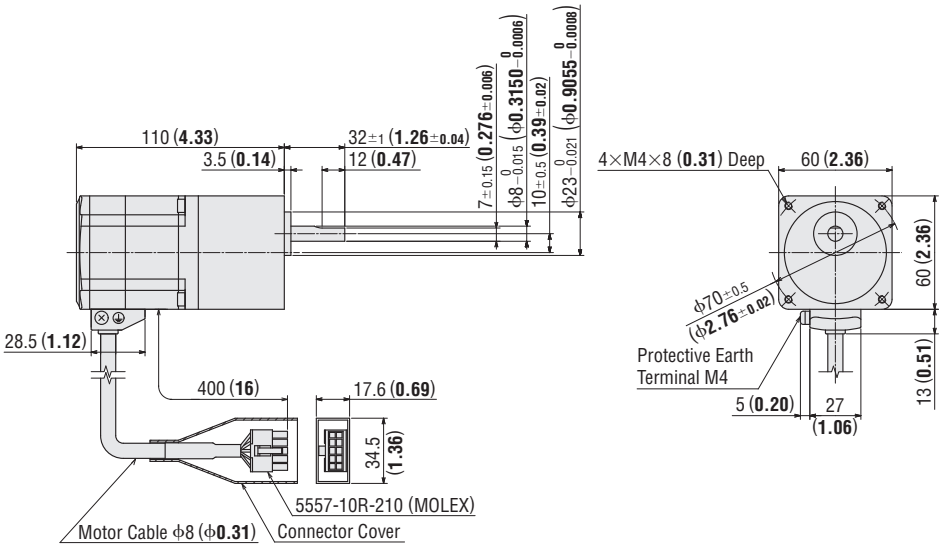
Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46A□D-T■-3	**AR46A□-T■-3**	ARM46AC-T■	**3.6, 7.2, 10, 20, 30**	0.62 (1.36)	B458



Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR66A□D-T■-3	**AR66A□-T■-3**	ARM66AC-T■	**3.6, 7.2, 10, 20, 30**	1.3 (2.9)	B459

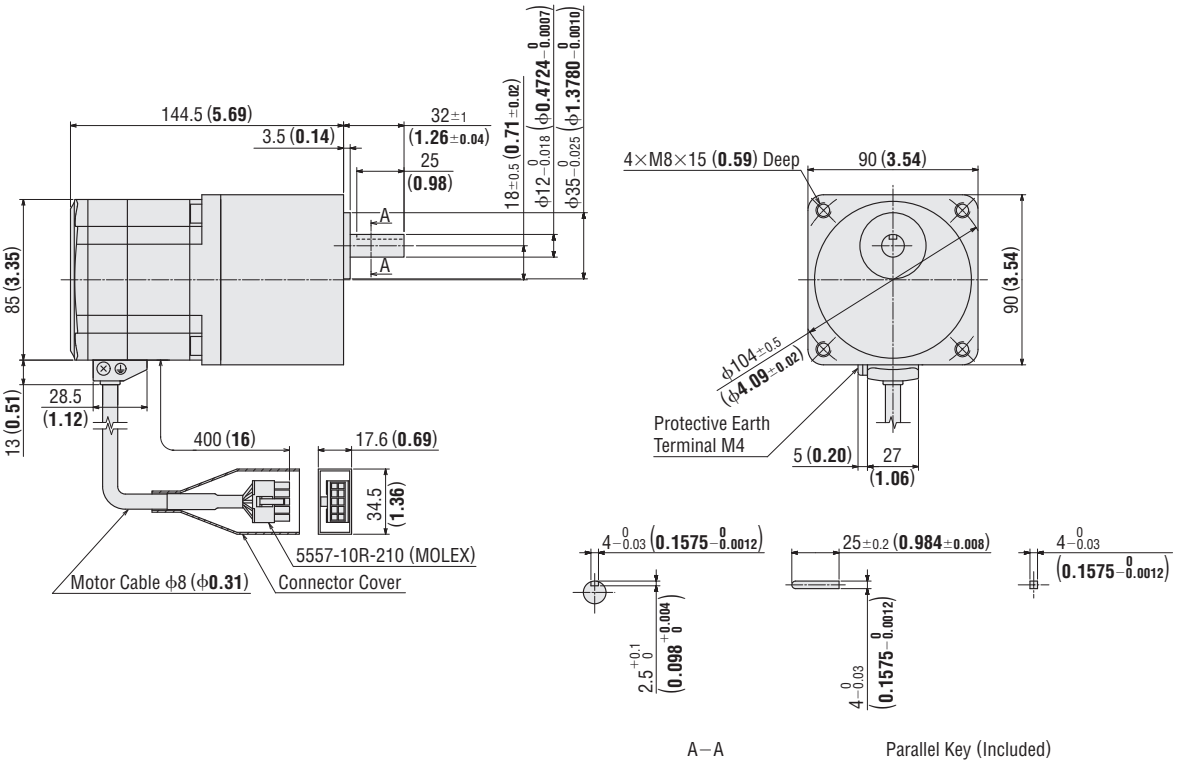


● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR98A□D-T■-3	**AR98A□-T■-3**	ARM98AC-T■	**3.6**, **7.2**, **10**, **20**, **30**	3.1 (6.8)	B460

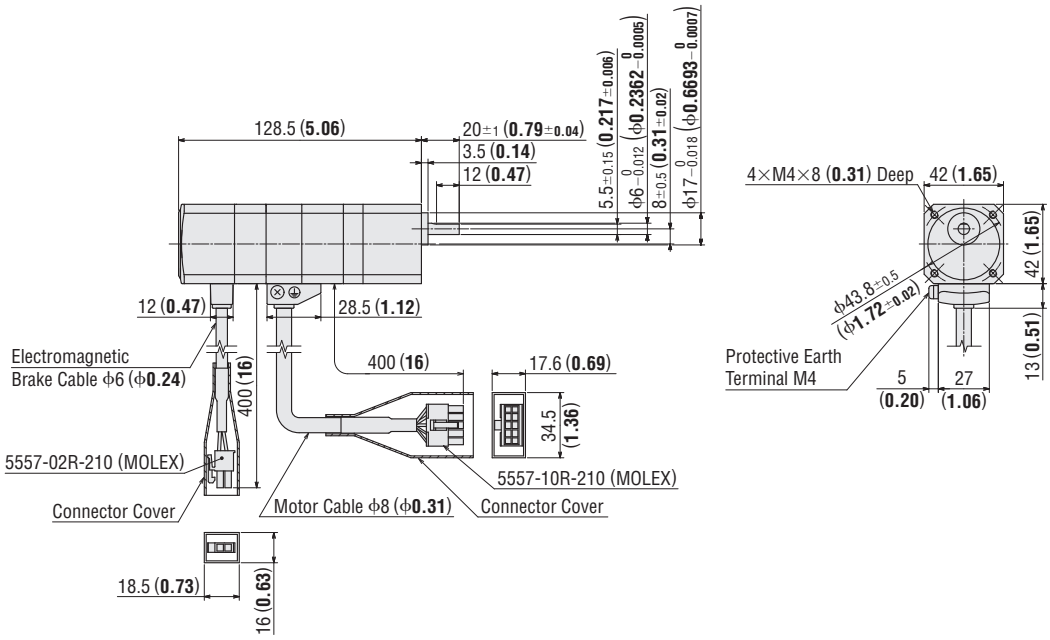


◇TH Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46M□D-T■-3	**AR46M□-T■-3**	ARM46MC-T■	**3.6**, **7.2**, **10**, **20**, **30**	0.77 (1.69)	B461

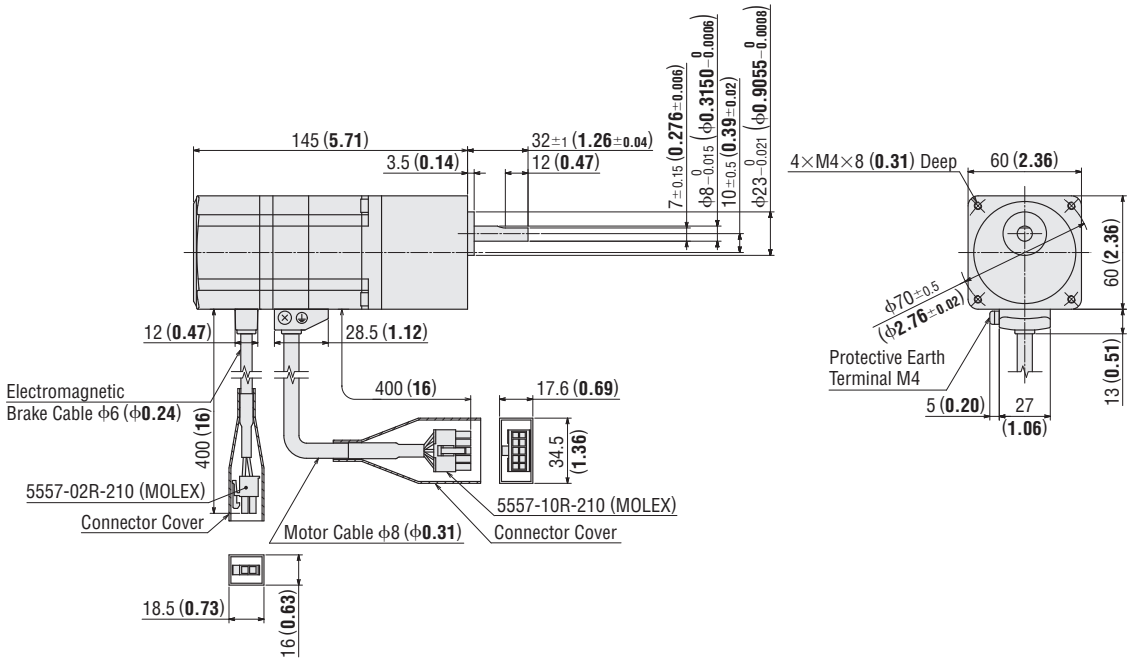


● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

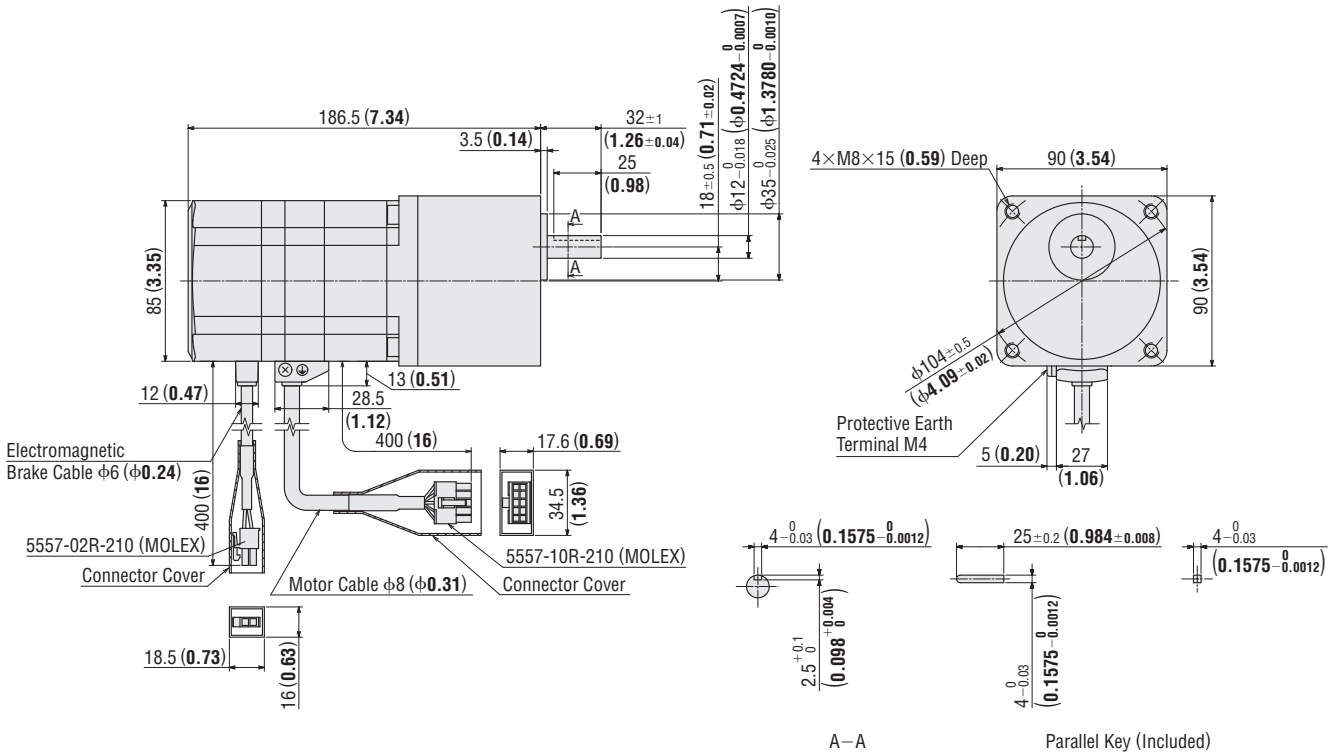
Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR66M□D-T■-3	**AR66M□-T■-3**	ARM66MC-T■	**3.6, 7.2, 10, 20, 30**	1.6 (3.5)	B462



Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR98M□D-T■-3	**AR98M□-T■-3**	ARM98MC-T■	**3.6, 7.2, 10, 20, 30**	3.7 (8.1)	B463



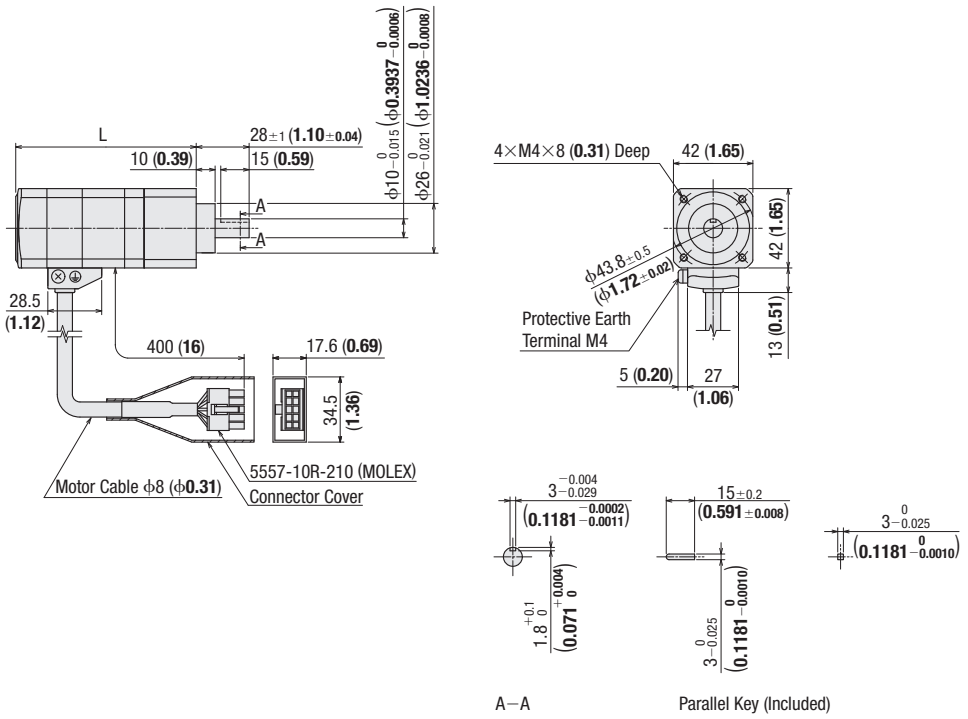
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

◇PS Geared Type

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

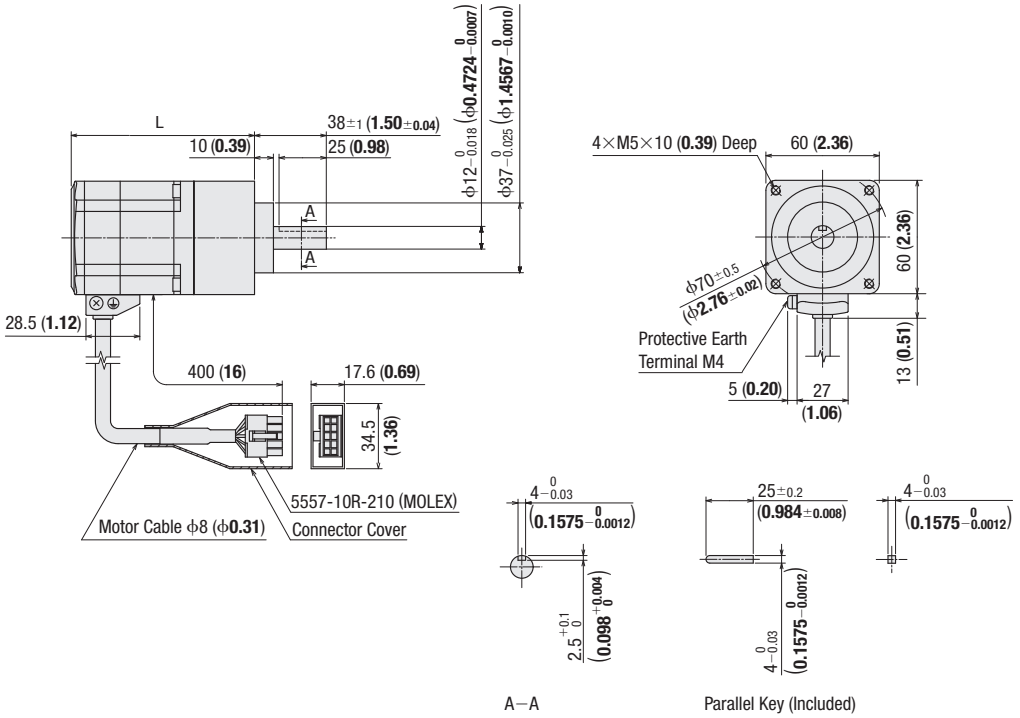
Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR46A□D-PS■-3	**AR46A□-PS■-3**	ARM46AC-PS■	**5**, **7.2**, **10**	96 (3.78)	0.67 (1.47)	B666
			25, **36**, **50**	119.5 (4.70)	0.82 (1.80)	B667



Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR66A□D-PS■-3	**AR66A□-PS■-3**	ARM66AC-PS■	**5**, **7.2**, **10**	97 (3.82)	1.3 (2.9)	B670
			25, **36**, **50**	117 (4.61)	1.6 (3.5)	B671

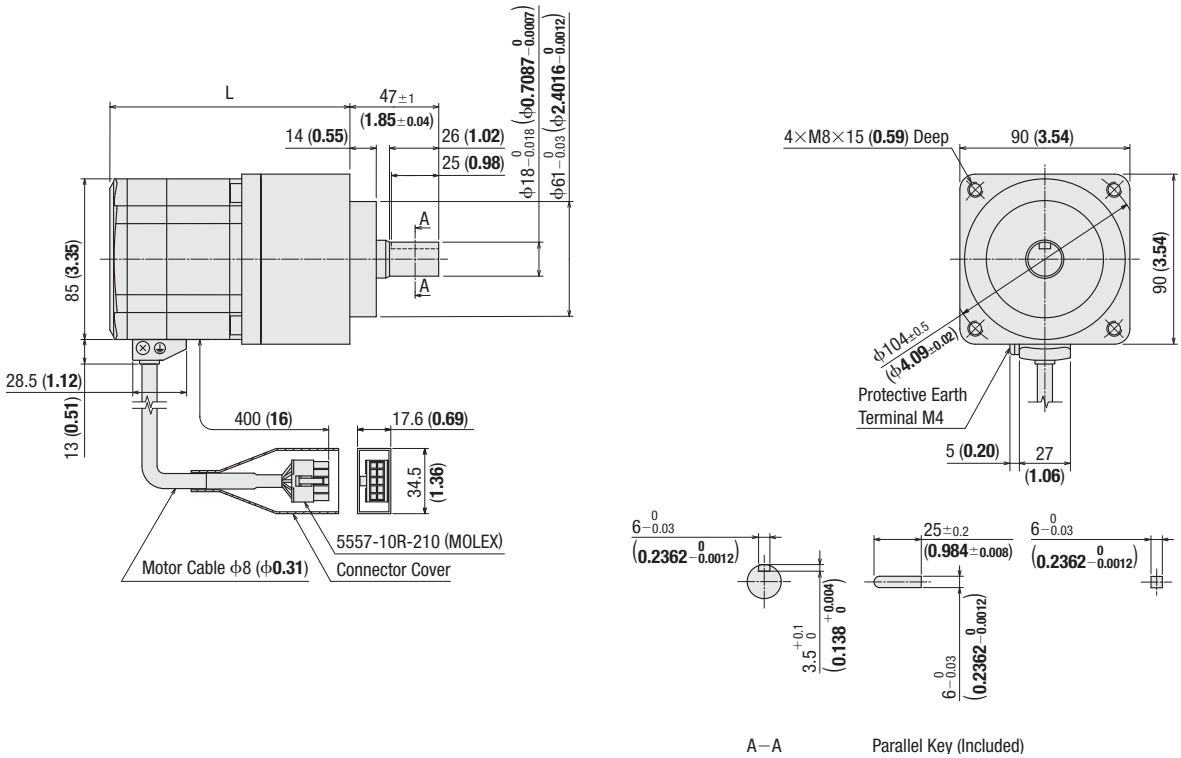


● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR98A□D-PS■-3	**AR98A□-PS■-3**	ARM98AC-PS■	**5, 7.2, 10**	127 (5.00)	3.3 (7.3)	B674
			25, 36, 50	154.5 (6.08)	4.1 (9.0)	B675



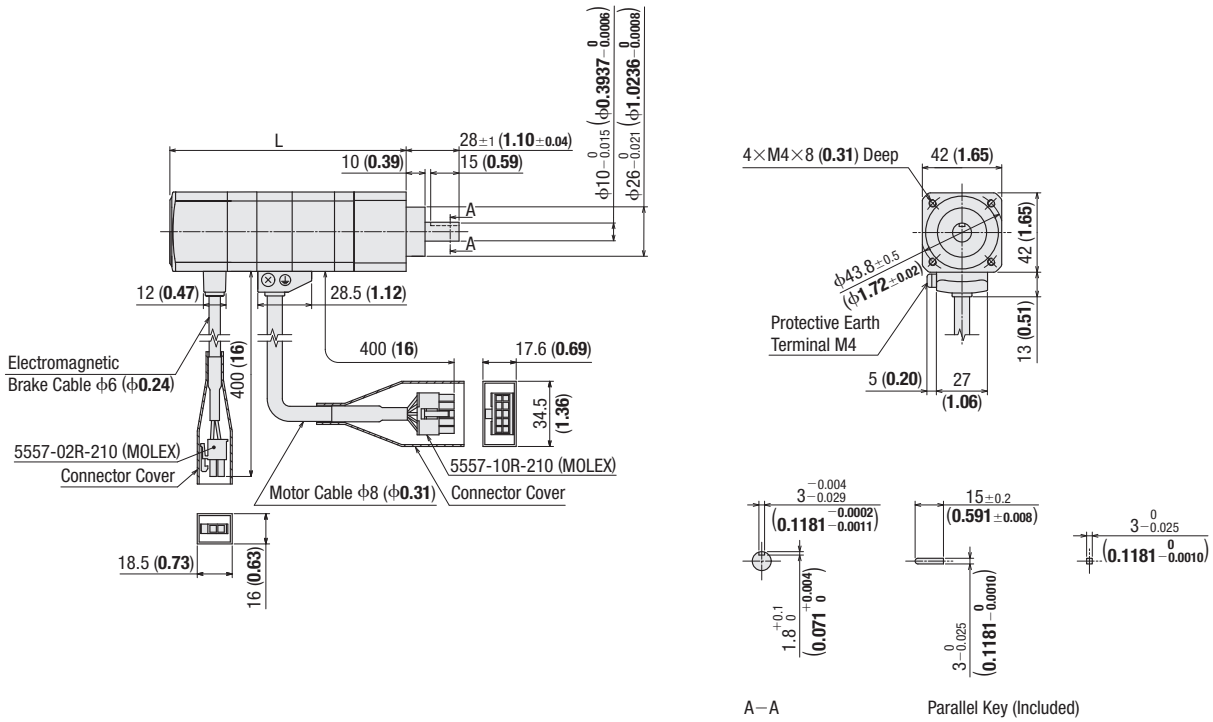
A−A Parallel Key (Included)

◇PS Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR46M□D-PS■-3	**AR46M□-PS■-3**	ARM46MC-PS■	**5, 7.2, 10**	125.5 (4.94)	0.82 (1.80)	B668
			25, 36, 50	149 (5.87)	0.97 (2.1)	B669



A−A Parallel Key (Included)

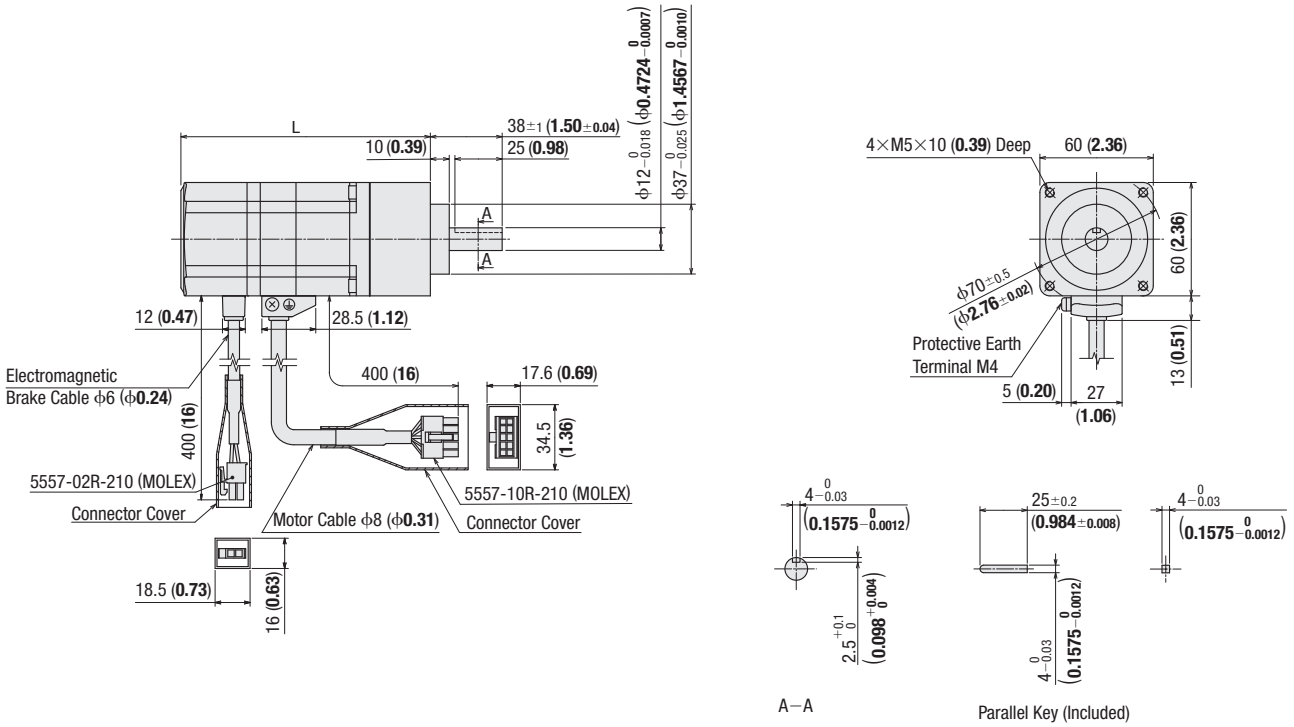
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.

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

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

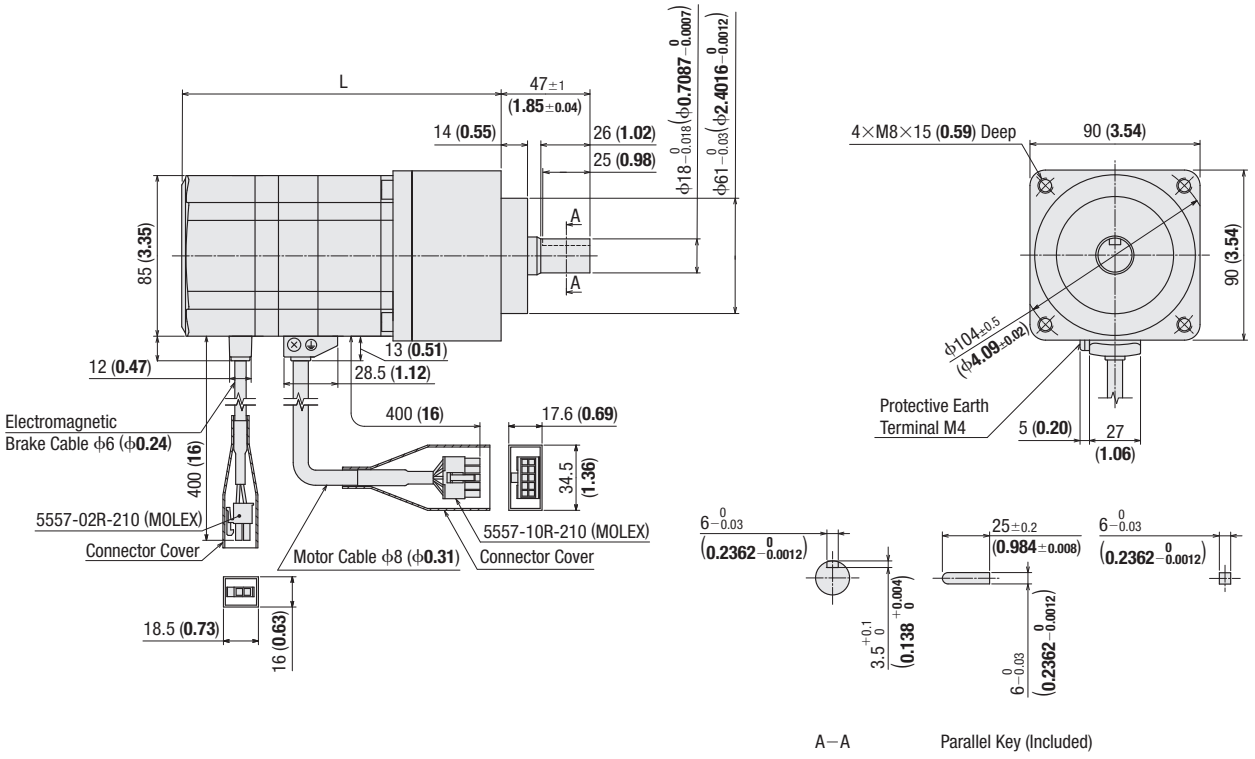
Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR66M□D-PS■-3	**AR66M□-PS■-3**	ARM66MC-PS■	**5**, **7.2**, **10**	132 (5.20)	1.6 (3.5)	B672
			25, **36**, **50**	152 (5.98)	1.9 (4.2)	B673



Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR98M□D-PS■-3	**AR98M□-PS■-3**	ARM98MC-PS■	**5**, **7.2**, **10**	169 (6.65)	3.9 (8.6)	B676
			25, **36**, **50**	196.5 (7.74)	4.7 (10.3)	B677



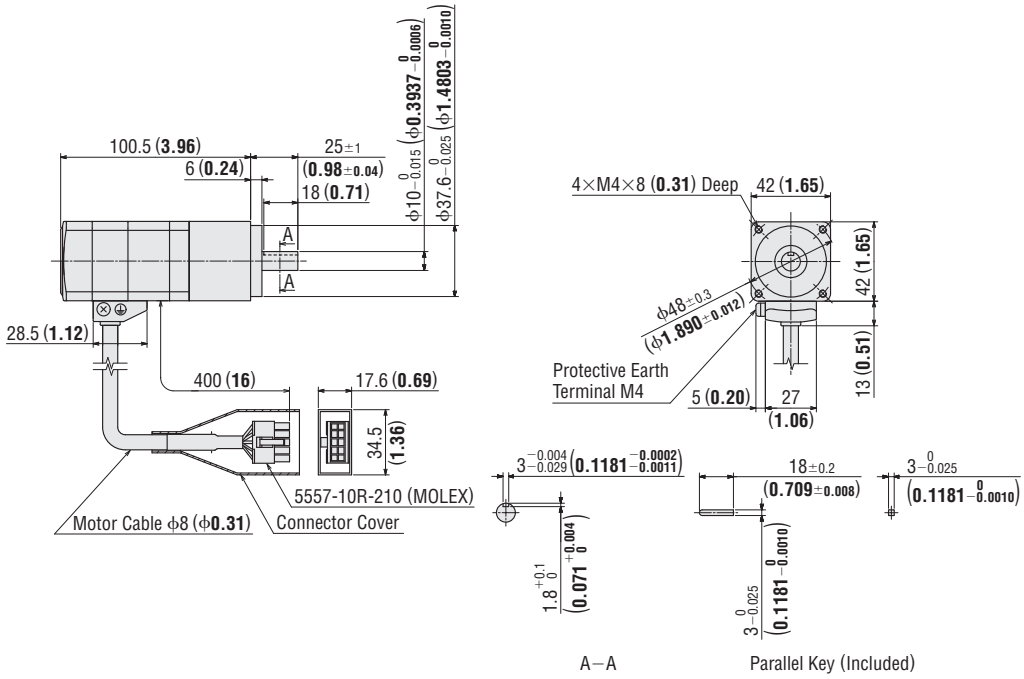
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

◇**PN** Geared Type

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

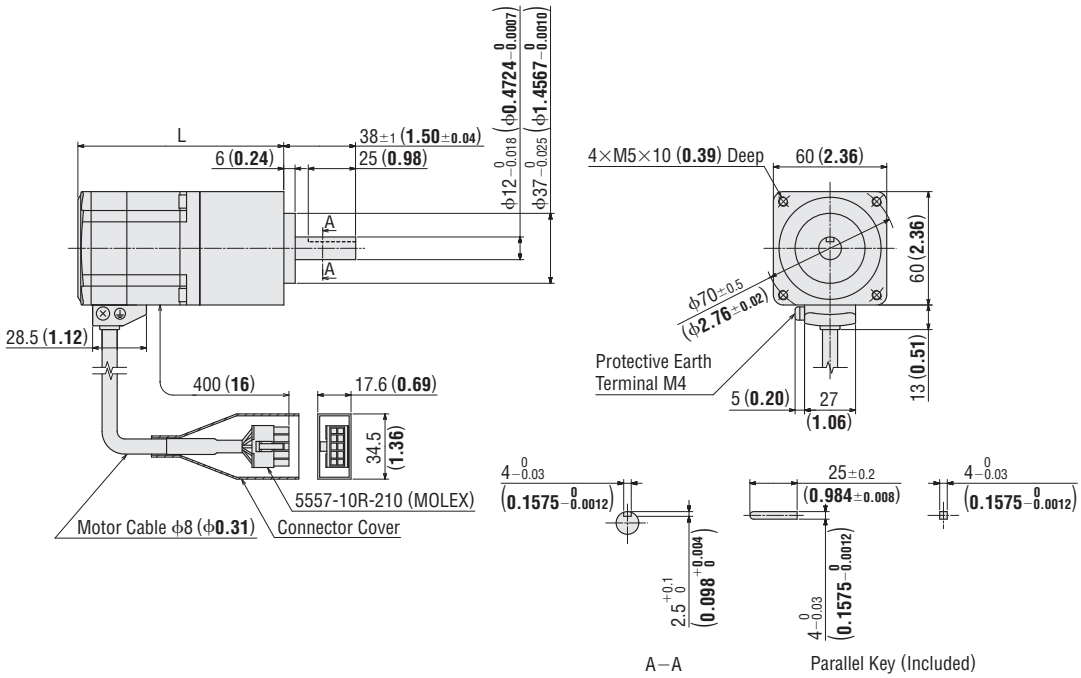
Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46A□D-N■-3	**AR46A□-N■-3**	ARM46AC-N■	**5**, **7.2**, **10**	0.73 (1.61)	B476



Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR66A□D-N■-3	**AR66A□-N■-3**	ARM66AC-N■	**5**, **7.2**, **10**	109 (4.29)	1.5 (3.3)	B477
			25, **36**, **50**	125 (4.92)	1.73 (3.8)	B478

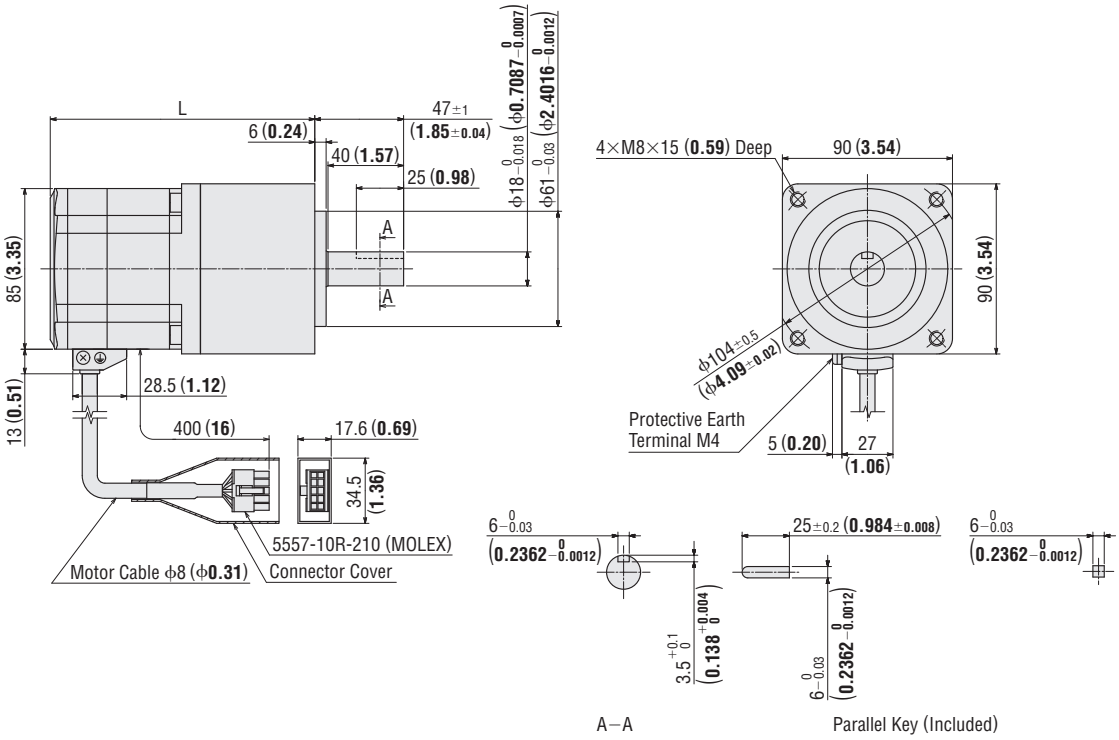


● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR98A□D-N■-3	**AR98A□-N■-3**	ARM98AC-N■	**5, 7.2, 10**	140 (5.51)	3.8 (8.4)	B479
			25, 36, 50	163 (6.42)	4.5 (9.9)	B480

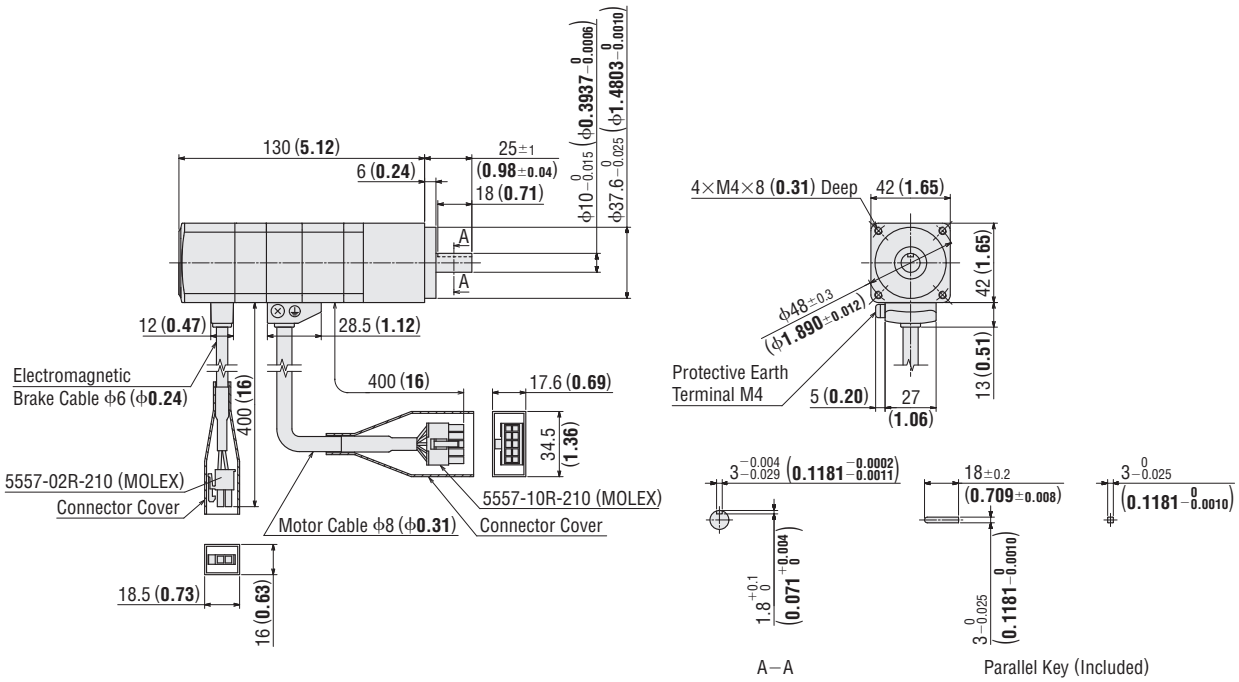


◇PN Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46M□D-N■-3	**AR46M□-N■-3**	ARM46MC-N■	**5, 7.2, 10**	0.88 (1.94)	B481

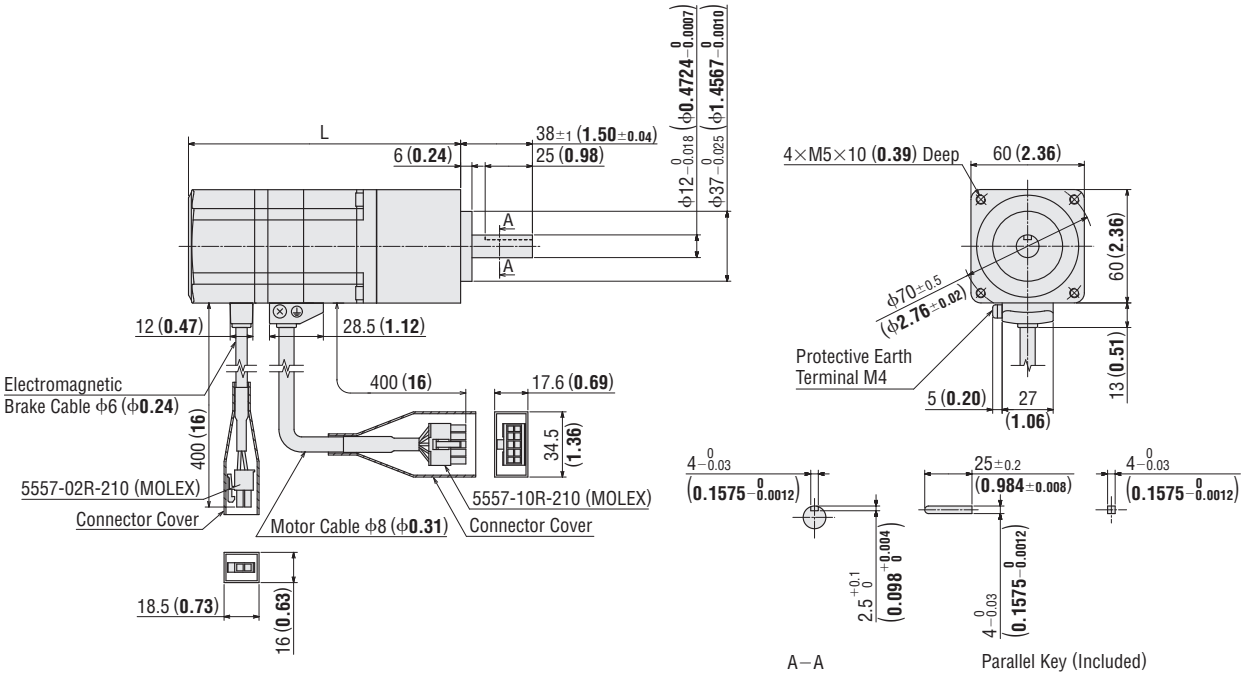


● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

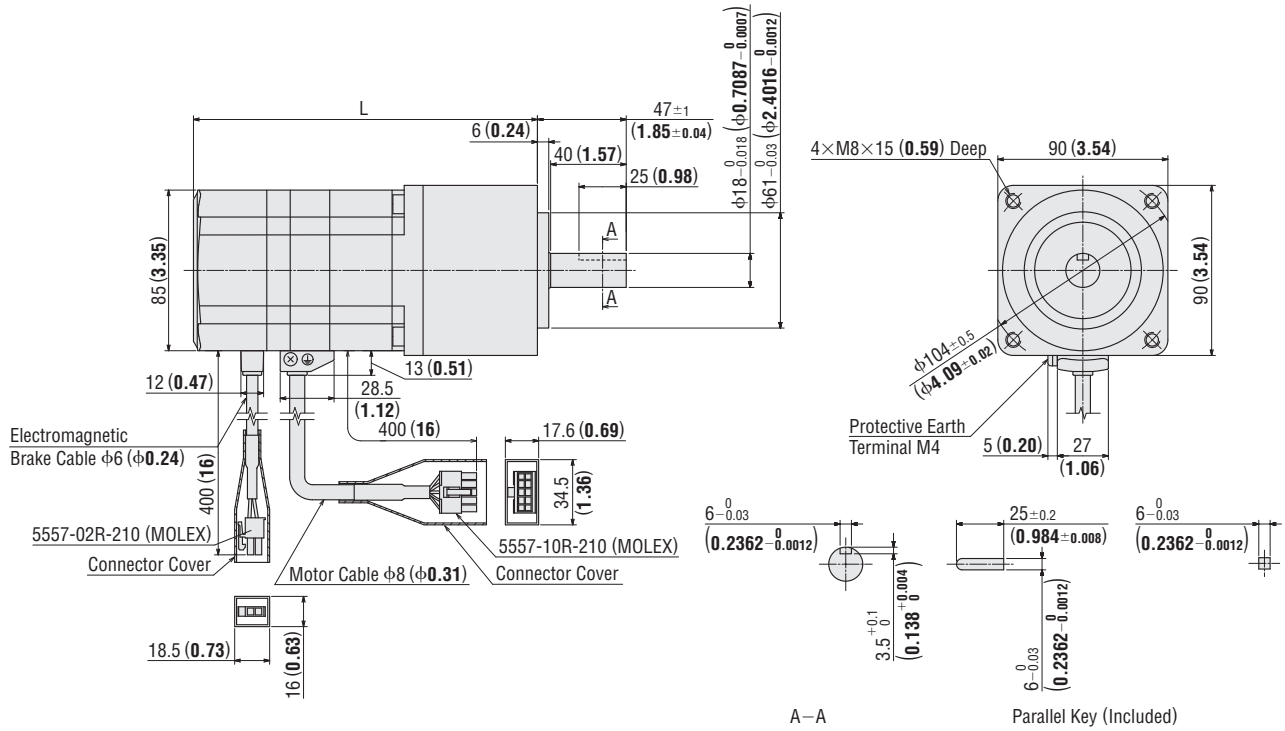
Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR66M□D-N■-3	**AR66M□-N■-3**	ARM66MC-N■	**5**, **7.2**, **10**	144 (5.67)	1.8 (4.0)	B482
			25, **36**, **50**	160 (6.30)	2 (4.4)	B483



Frame Size 90 mm (3.54 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input					
AR98M□D-N■-3	**AR98M□-N■-3**	ARM98MC-N■	**5**, **7.2**, **10**	182 (7.17)	4.4 (9.7)	B484
			25, **36**, **50**	205 (8.07)	5.1 (11.2)	B485



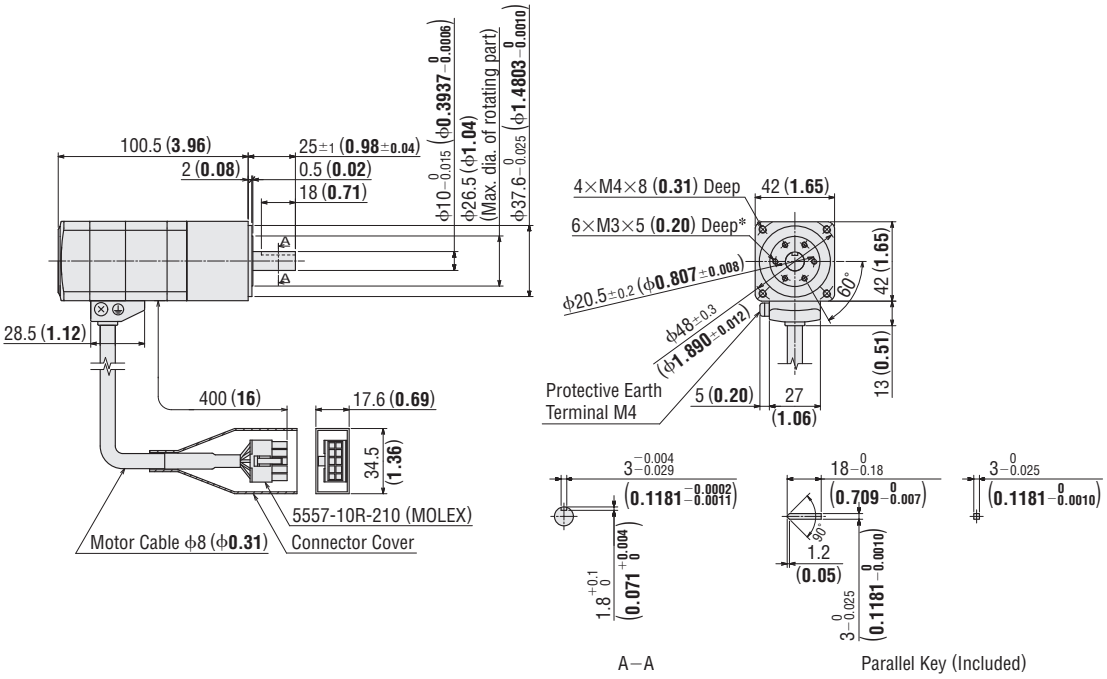
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

◇Harmonic Geared Type

Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46A□D-H■-3	**AR46A□-H■-3**	ARM46AC-H■	**50, 100**	0.68 (1.5)	B486

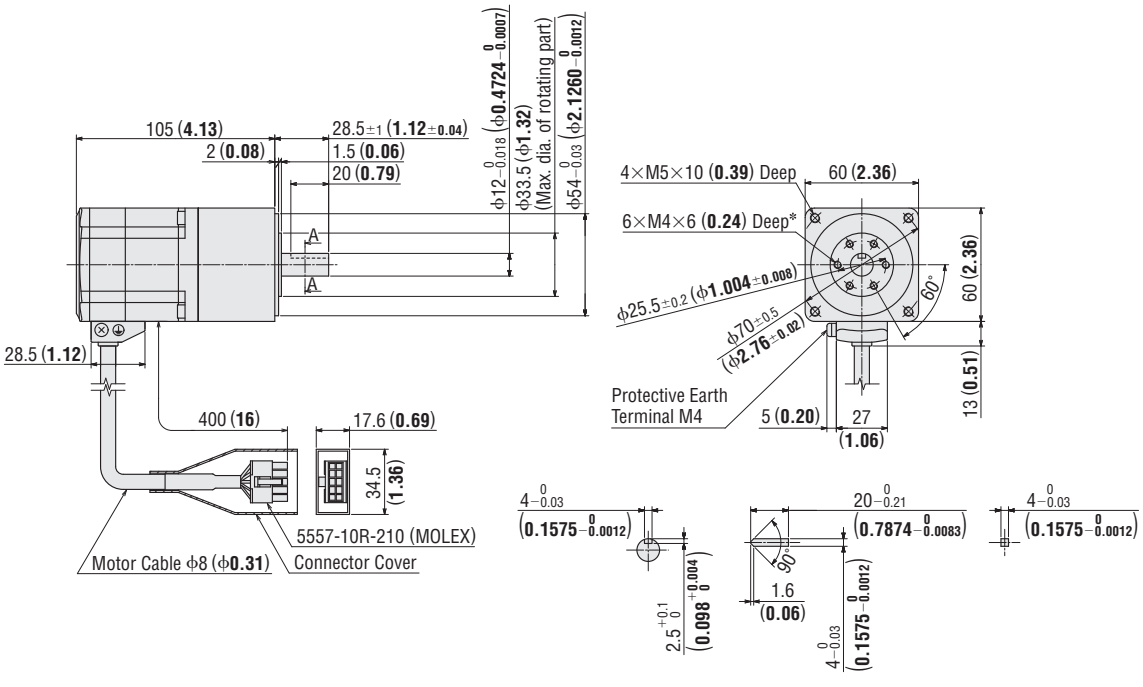


✻The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR66A□D-H■-3	**AR66A□-H■-3**	ARM66AC-H■	**50, 100**	1.41 (3.1)	B487



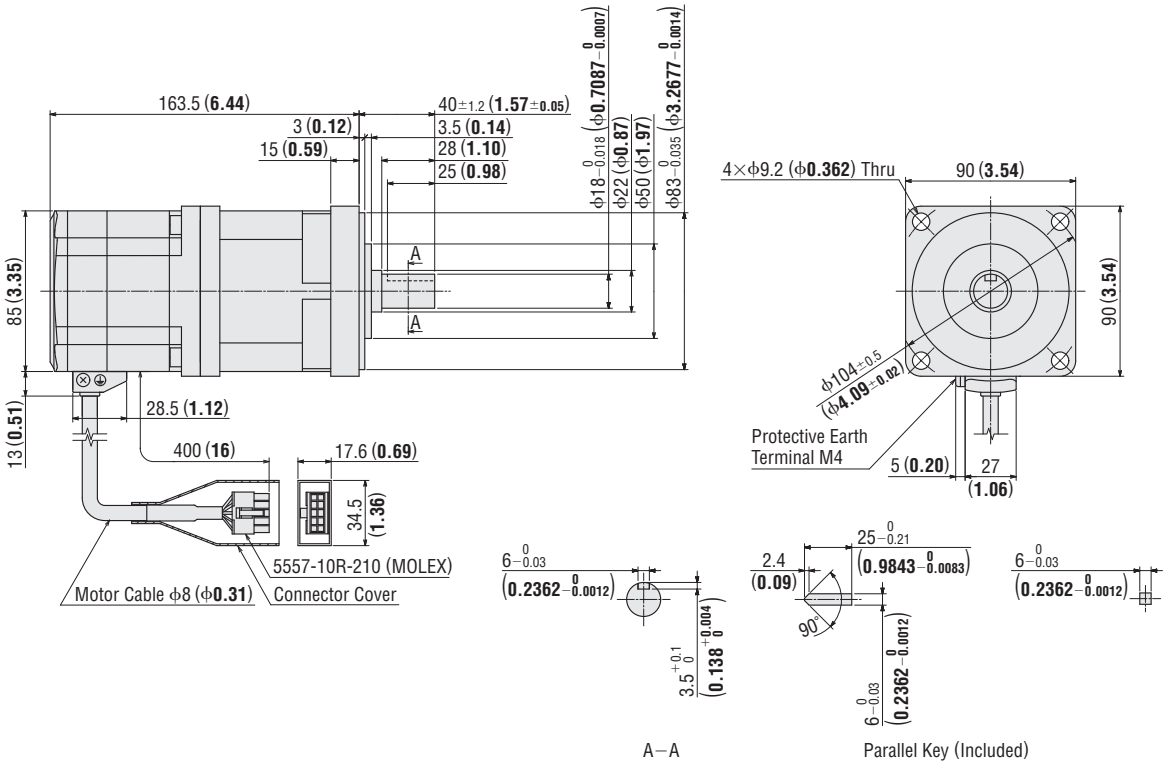
✻The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 90 mm (3.54 in.)

2D & 3D CAD

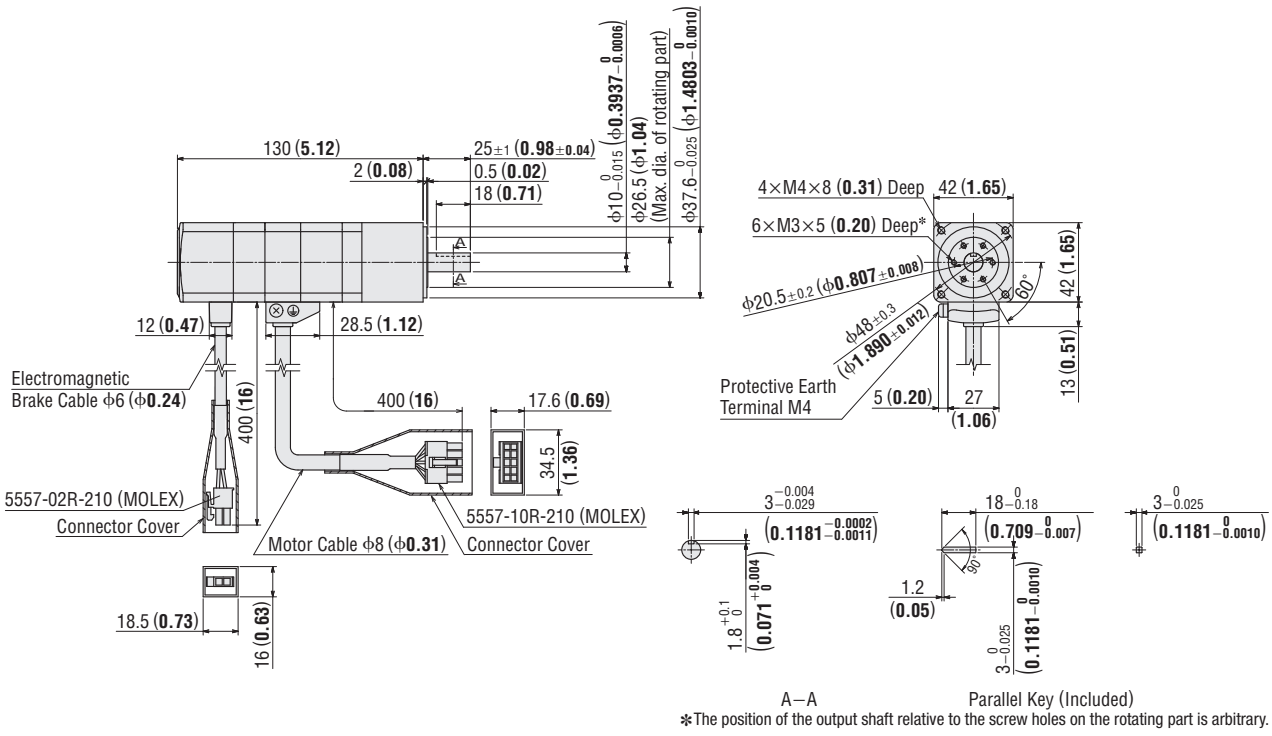
Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR98A□D-H■-3	**AR98A□-H■-3**	ARM98AC-H■	**50, 100**	4 (8.8)	B488



◇Harmonic Geared Type with Electromagnetic Brake
Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR46M□D-H■-3	**AR46M□-H■-3**	ARM46MC-H■	**50, 100**	0.83 (1.83)	B489



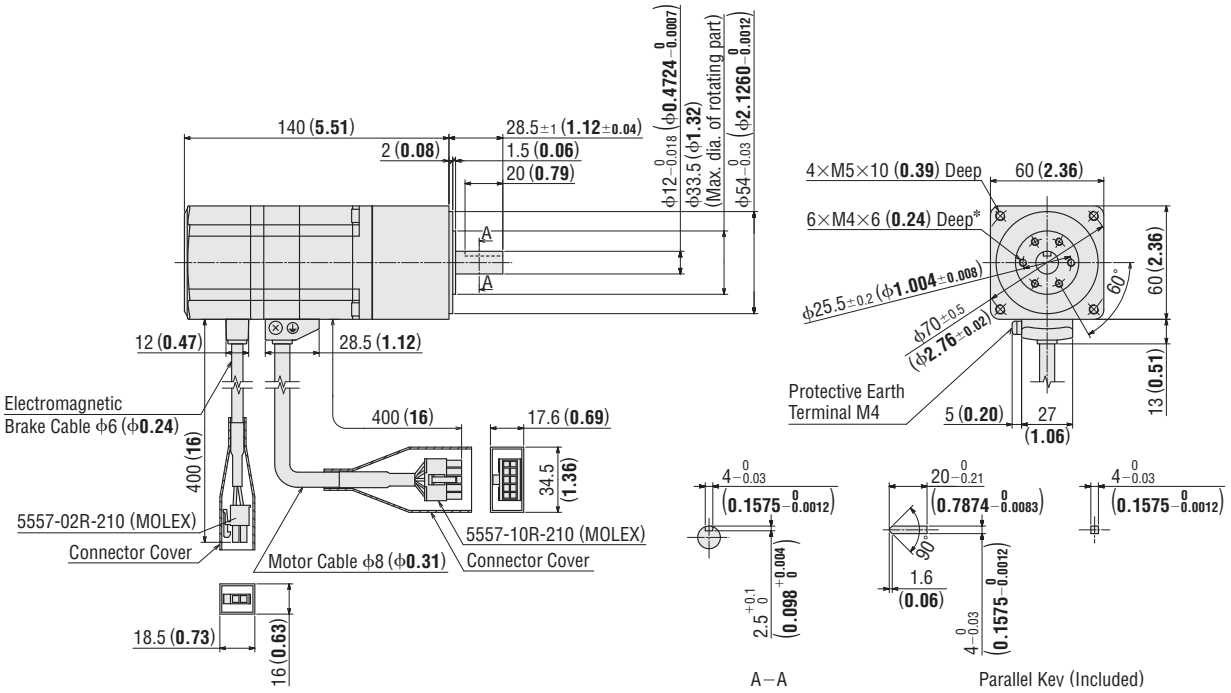
*The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR66M□D-H■-3	**AR66M□-H■-3**	ARM66MC-H■	**50**, **100**	1.71 (3.8)	B490

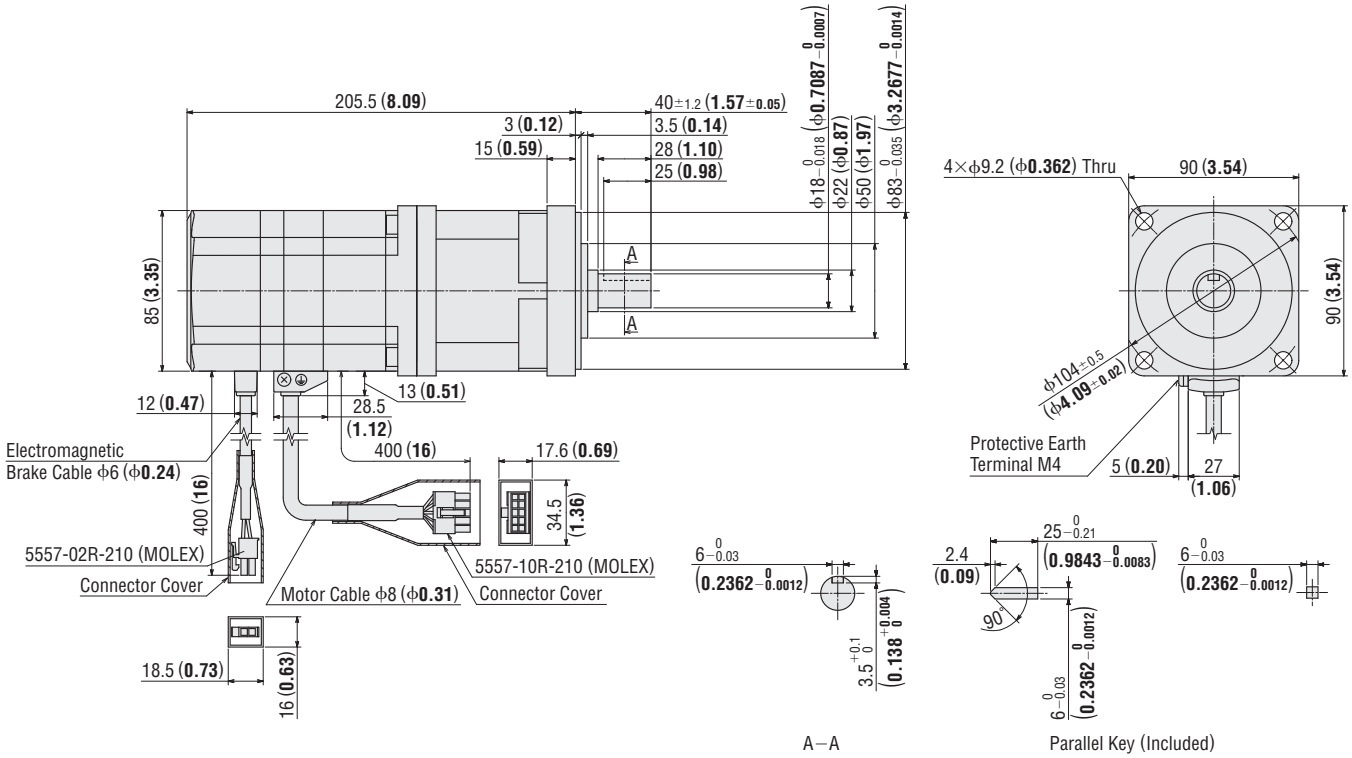


✻The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 90 mm (3.54 in.)

2D & 3D CAD

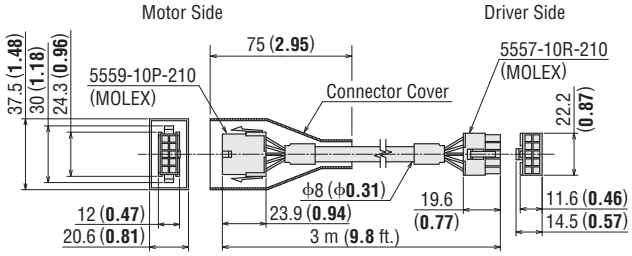
Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	2D CAD
Built-in Controller	Pulse Input				
AR98M□D-H■-3	**AR98M□-H■-3**	ARM98MC-H■	**50**, **100**	4.6 (10.1)	B491



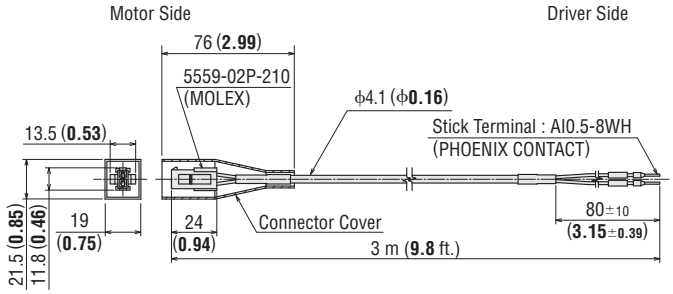
● Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

●Cable for Motor (Included), Cable for Electromagnetic Brake (Included)

◇Cable for Motor



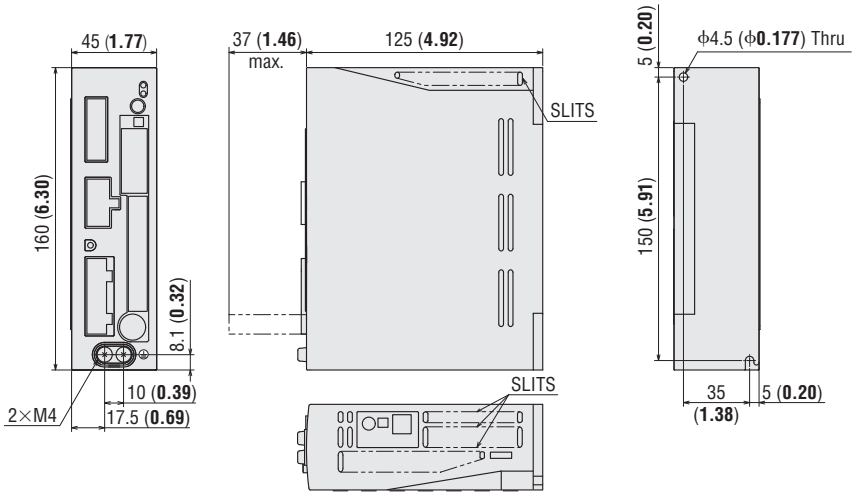
◇Cable for Electromagnetic Brake (Only for electromagnetic brake product)



●Driver

◇Built-in Controller Type

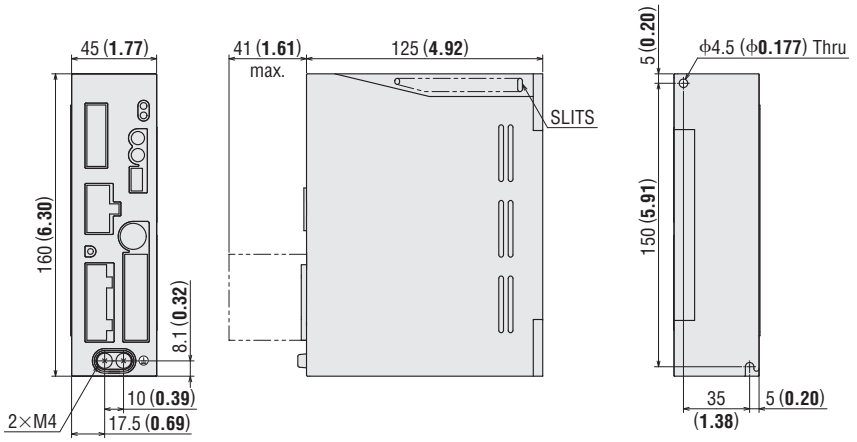
Mass: 0.75 kg (1.65 lb.) 2D CAD B797 3D CAD



●Included
Connector for 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Terminals (CN1)
Connector: MC1,5/6-STF-3,5 (Phoenix Contact)
Sensor Signal Connector (CN5)
Connector: FK-MC0,5/5-ST-2,5 (Phoenix Contact)
Input Signal Connector (CN8)
Connector: FK-MC0,5/9-ST-2,5 (Phoenix Contact)
Output Signal Connector (CN9)
Connector: FK-MC0,5/7-ST-2,5 (Phoenix Contact)
Connector for Regeneration Unit Input/Main Power Input Terminals (CN3)
Connector: 54928-0570 (Molex)
Connector Wiring Lever

◇Pulse Input Type

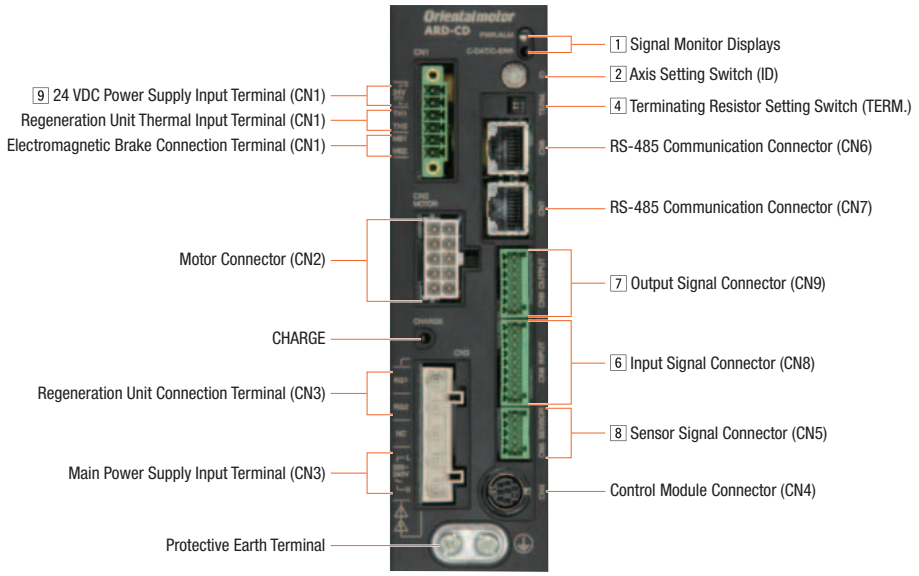
Mass: 0.75 kg (1.65 lb.) 2D CAD B454 3D CAD



●Included
Connector for 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Terminals (CN1)
Connector: MC1,5/6-STF-3,5 (Phoenix Contact)
I/O Signals Connector (CN5)
Case: 10336-52A0-008 (3M Japan Limited)
Connector: 10136-3000PE (3M Japan Limited)
Connector for Regeneration Unit Input/Main Power Input Terminals (CN3)
Connector: 54928-0570 (Molex)
Connector Wiring Lever

Connection and Operation (Built-in controller type)

Names and Functions of Driver Parts



[Driver Bottom]

1 Signal Monitor Displays

◇LED Indicators

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

2 Axis Setting Switch (ID)

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

3 Baud Rate Setting Switch (SW2)

Indication	Switch Name	Function
SW2	Baud Rate Setting Switch	Set this when RS-485 communication is used. Set the baud rate (factory setting: 7).

◇RS-485 Baud Rate Setting

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5~6	Not used
7	625000 (connection with a network converter)
8~F	Not used

4 Terminating Resistor Setting Switch (TERM.)

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

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

5 Function Setting Switch (SW4)

Indication	No.	Function
SW4	1	Use in combination with the axis setting switch (ID) to set the axis number (factory setting: OFF).
	2	Set the RS-485 communication protocol (factory setting: OFF).

◇RS-485 Communication Protocol Setting

No. \ Connection	Connection with a network converter	Modbus RTU Mode
2	OFF	ON

6 Input Signal Connector (CN8)

Indication	Pin No.	Signal Name	Description	
CN8	1	IN0	HOME	Execute the return-to-home operation.
	2	IN1	START	Execute the positioning operation.
	3	IN2	M0	Use 3 bits to select the operating data number.
	4	IN3	M1	
	5	IN4	M2	
	6	IN5	FREE	Stop motor excitation and release the electromagnetic brake.
	7	IN6	STOP	Stop the motor.
	8	IN7	ALM-RST	Reset the current alarm.
	9	IN-COM1	Common for Input Signals	

✻You can set functions to assign by specifying parameters. Initial values are shown above. For details, see the user manual.

The following input signals can be assigned to input terminals IN0～IN7.

Input Signals								
0: Not used	5: SSTART	10: MS2	17: C-ON	27: HMI	36: R4	41: R9	46: R14	51: M3
1: FWD	6: +JOG	11: MS3	18: STOP	32: R0	37: R5	42: R10	47: R15	52: M4
2: RVS	7: −JOG	12: MS4	24: ALM-RST	33: R1	38: R6	43: R11	48: M0	53: M5
3: HOME	8: MS0	13: MS5	25: P-PRESET	34: R2	39: R7	44: R12	49: M1	
4: START	9: MS1	16: FREE	26: P-CLR	35: R3	40: R8	45: R13	50: M2	

7 Output Signal Connector (CN9)

Indication	Pin No.	Signal Name	Description	
CN9	1	OUT0	HOME-P	Output when the motor is in the home position.
	2	OUT1	END	Output when the positioning operation is completed.
	3	OUT2	AREA1	Output when the motor is within the range of area 1.
	4	OUT3	READY	Output when the driver is ready for operation.
	5	OUT4	WNG	Outputs the warning status for the driver.
	6	OUT5	ALM	Outputs the alarm status for the driver (normally closed).
	7	OUT-COM	Common for Output Signals	

✻You can set functions to assign by specifying parameters. Initial values are shown above. For details, see the user manual.

The following output signals can be assigned to output terminals OUT0～OUT5.

Output Signals							
0: Not used	7: −JOG_R	16: FREE_R	36: R4	43: R11	50: M2_R	63: SLIT_R	71: TLC
1: FWD_R	8: MS0_R	17: C-ON_R	37: R5	44: R12	51: M3_R	65: ALM	72: TIM
2: RVS_R	9: MS1_R	18: STOP_R	38: R6	45: R13	52: M4_R	66: WNG	73: AREA1
3: HOME_R	10: MS2_R	32: R0	39: R7	46: R14	53: M5_R	67: READY	74: AREA2
4: START_R	11: MS3_R	33: R1	40: R8	47: R15	60: +LS_R	68: MOVE	75: AREA3
5: SSTART_R	12: MS4_R	34: R2	41: R9	48: M0_R	61: −LS_R	69: END	80: S-BSY
6: +JOG_R	13: MS5_R	35: R3	42: R10	49: M1_R	62: HOMES_R	70: HOME-P	82: MPS

8 Sensor Signal Connector (CN5)

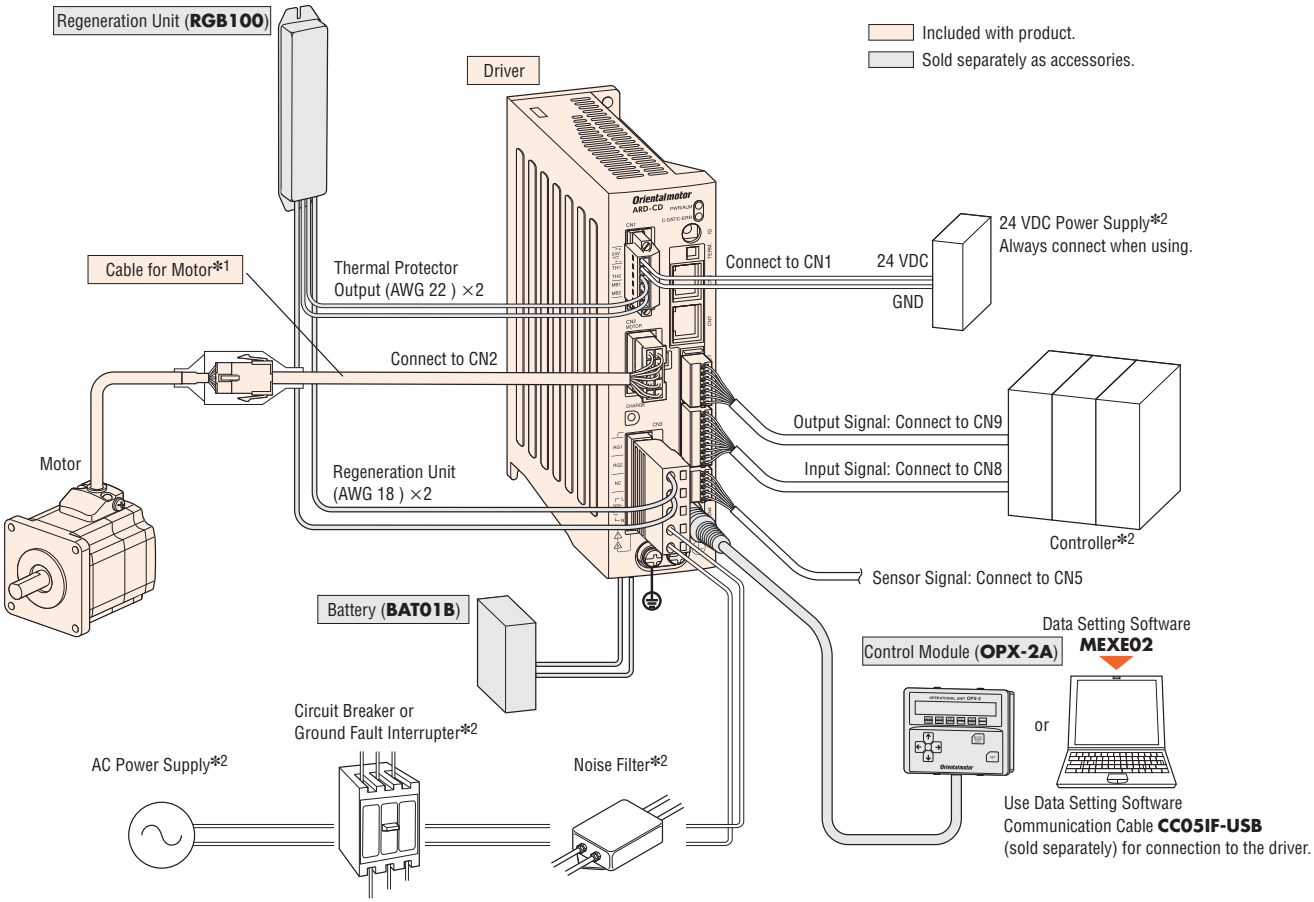
Indication	Pin No.	Signal Name	Description
CN5	1	+LS	+Side Limit Sensor Input
	2	−LS	−Side Limit Sensor Input
	3	HOMES	Mechanical Home Sensor Input
	4	SLIT	Slit Sensor Input
	5	IN-COM2	Common for Sensors

9 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Connection Terminals (CN1)

Indication	I/O	Terminal Name	Description
24V+	Input	24 VDC Power Supply Input Terminal +	The power supply for the driver control circuit. Always connect when using.
24V−		24 VDC Power Supply Input Terminal −	
TH1		Regeneration Unit Thermal Input Terminal	Connect the accessory (sold separately) regeneration unit (**RGB100**). When not connecting a regeneration unit, short these 2 terminals to each other.
TH2		Regeneration Unit Thermal Input Terminal	
MB1	Output	Electromagnetic Brake Connection Terminal −	Connect the lead wires from the electromagnetic brake.
MB2		Electromagnetic Brake Connection Terminal +	

●Connection Diagram

◇Connections with Peripheral Equipment

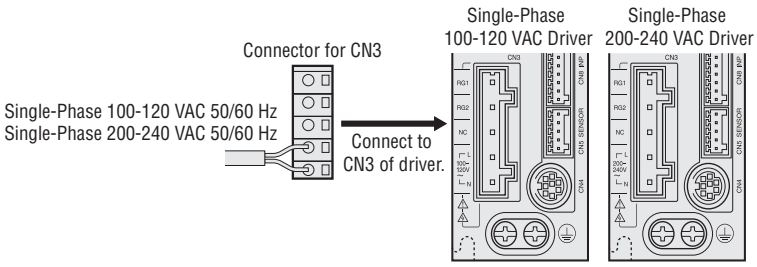


*1 If cables longer than 3 m (9.8 ft.) or flexible cables are required, select the appropriate cables from the accessories (sold separately).
When wiring the motor and the driver, keep a maximum distance of 30 m (98.4 ft.).

*2 Not supplied.

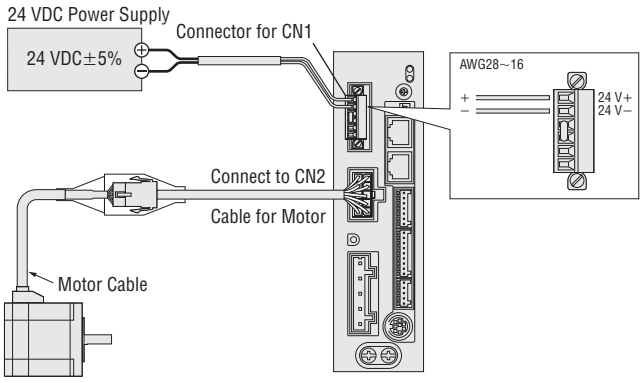
◇Connecting the Main Power Supply

Furnish the following cable for the power supply lines.
Single-Phase 100-120 VAC: Three-Core Cable [AWG16~14]
Single-Phase 200-240 VAC: Three-Core Cable [AWG16~14]

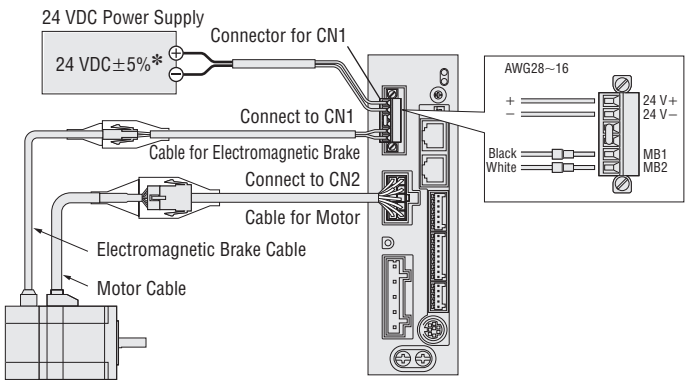


◇Connecting the Control Power Supply

Prepare a 24 VDC power supply.



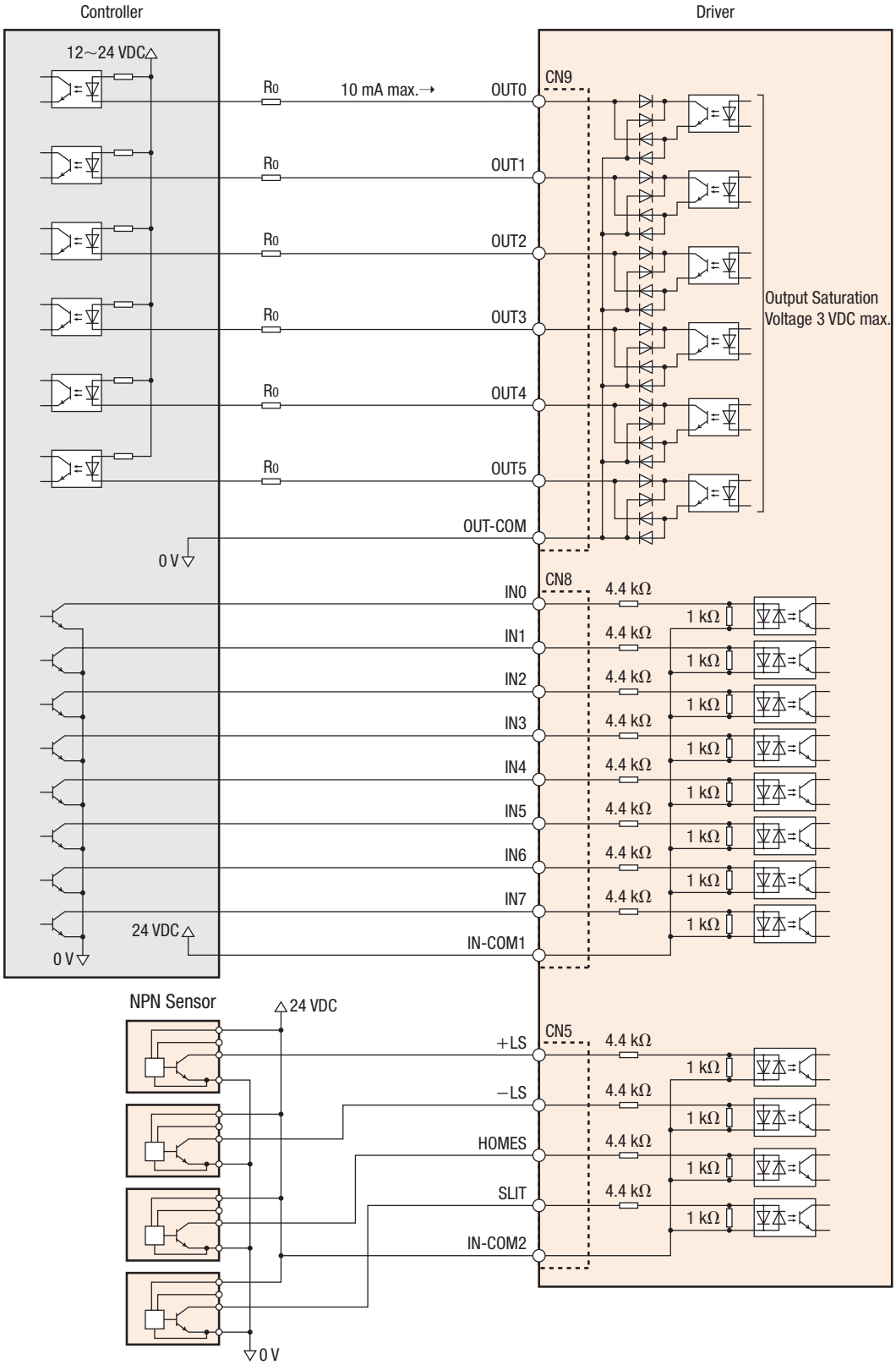
◇Connecting the Electromagnetic Brake



*If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

◇Connecting to a Host Controller

•Connecting to a Current Sink Output Circuit

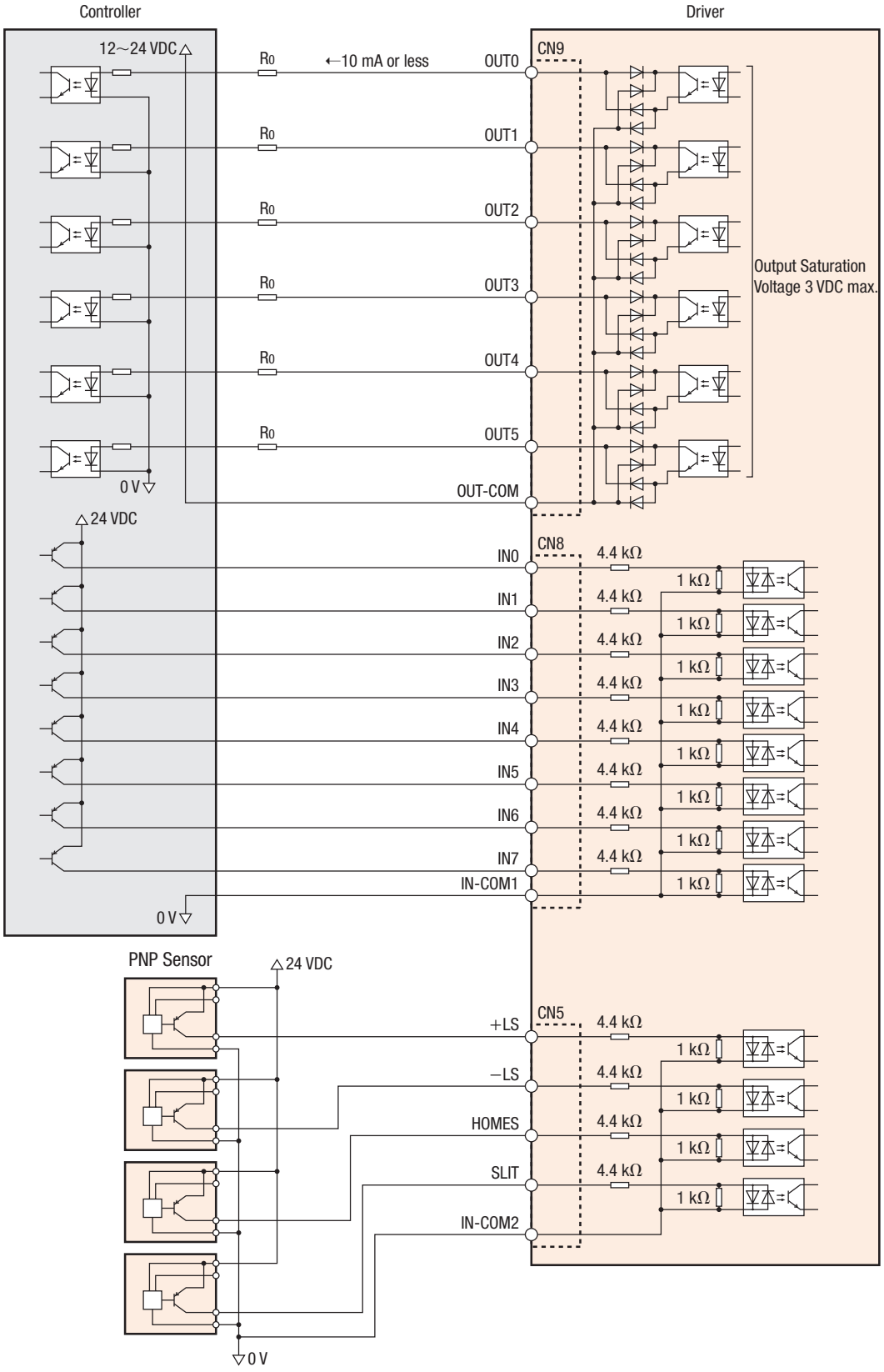


Note

- Use 24 VDC for the input signals.
- Use output signal at 12~24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor Ro to reduce the current to 10 mA or less.
- The maximum saturation voltage for the output signals is 3 VDC.
- Provide a distance of 200 mm (7.9 in.) or more between the signal lines and power lines (power supply lines, motor lines). Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

◇Connecting to a Host Controller

•Connecting to a Current Source Output Circuit

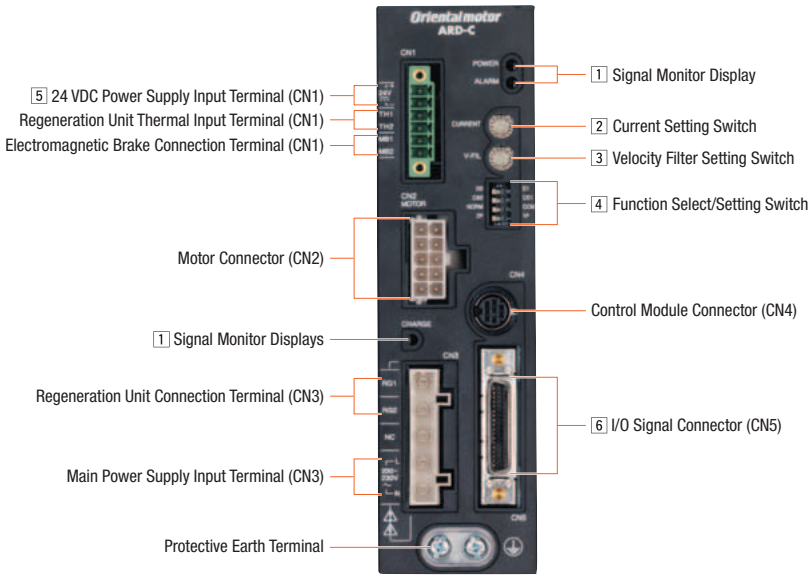


Note

- Use 24 VDC for the input signals.
- Use output signal at 12～24 VDC 10 mA or less. When the current value exceeds 10 mA, connect an external resistor R_0 to reduce the current to 10 mA or less.
- The maximum saturation voltage for the output signals is 3 VDC.
- Provide a distance of 200 mm (7.9 in.) or longer between the signal lines and power lines (power supply lines, motor lines). Do not run the signal lines in the same piping as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

Connection and Operation (Pulse input type)

Names and Functions of Driver Parts



1 Signal Monitor Displays

◇LED Displays

Indication	Color	Function	When Activated
POWER	Green	Power supply indication	Lights when main power or 24 VDC power is on.
ALARM	Red	Alarm indication	Blinks when protective functions are activated.
CHARGE	Red	Power supply indication	Lights when main power is on.

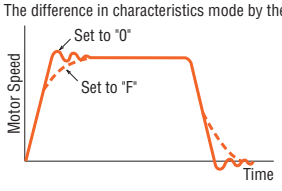
◇Alarms

Blink Count	Function	When Activated
2	Overheat	The temperature inside the driver rises above 85°C (185°F).
	Overload	When the amount of time during which the load torque exceeded the maximum torque exceeds the overload detection time. (Default value: 5 seconds)
	Overspeed	The motor output shaft speed exceeds 4500 r/min.
	Command pulse error	The command pulse value becomes abnormal.
	Regeneration unit overheat	The thermostat for regeneration unit signal is activated.
3	Overvoltage	The primary voltage of the driver's inverter exceeds the upper limit.
	Main power supply error	The main power is cut off when an operation command is input.
	Undervoltage	The primary voltage of the driver's inverter drops below the lower limit.
4	Overflow rotation during current on	The position deviation exceeds the overflow revolutions. (Default value: 3 revolutions)
	Overflow rotation during current off	The current is turned on even though the position deviation when the current is turned off was equal to or greater than the permissible value. (Default value: 100 revolutions or more)
5	Overcurrent	An excessive current flows through the inverter power element inside the driver.
	Drive circuit error	The power cable of the motor is disconnected.
7	Abnormal operation data	Return to electrical home operation is performed while an operation data error warning is present.
	Electronic gear setting error	The resolution set by the electronic gear is outside the specified range.
8	Sensor error during operation	A sensor error occurs while the motor is rotating.
	Initial sensor error	The power source is turned on when the motor cable is not connected to the driver.
	Initial rotor rotation error	The main power is turned on while the motor is rotating.
	Motor combination error	A motor not supported by the driver is connected.
9	EEPROM error	A motor control parameter is damaged.

2 Current Setting Switch

Indication	Switch Name	Function
CURRENT	Current setting switch	This switch adjusts the operating current. It is used to limit the torque and temperature rise. A desired current can be set as a percentage (%) of the rated output current. The factory setting is "F".

3 Velocity Filter Setting Switch

Indication	Switch Name	Function
V-FIL	Velocity filter setting switch	This switch adjusts the motor response. Adjust the switch if you want to suppress motor vibration or cause the motor to start/stop smoothly. "0" and "F" correspond to the minimum and maximum velocity filter settings, respectively. The factory setting is "1". The difference in characteristics mode by the velocity filter 

4 Function Select/Setting Switch

Indication	Switch Name	Function
D0/D1 CS0/CS1	Resolution select switches	Sets the resolution per one rotation of the motor output shaft. "D0" "CS0" → 1000 pulse (0.36°/step) [Factory setting] "D0" "CS1" → 10000 pulse (0.036°/step) "D1" "CS0" → 500 pulse (0.72°/step) "D1" "CS1" → 5000 pulse (0.072°/step)
NORM/CCM	Control mode select switches	Switches the control mode from normal mode to current control mode. When set to current control mode, the synchronization of the motor is lost, but the noise and vibration is reduced. NORM: Normal mode [Factory setting] CCM: Current control mode
2P/1P	Pulse input mode select switch	Switches the pulse input mode between 1-pulse input mode and 2-pulse input mode. 2P: 2-pulse input mode 1P: 1-pulse input mode [Factory setting]

5 24 VDC Power Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Terminal (CN1)

Indication	Input/Output	Terminal Name	Description
24V+	Input	24 VDC power supply input terminal+	Connect a power supply to these terminals if you want to supply the control power separately from the main power. Supply of the control power is optional. If you are using an electromagnetic brake motor, connect a power supply to these terminals for the electromagnetic brake power.
24V−		24 VDC power supply input terminal−	
TH1		Regeneration unit thermal input terminal	Connect the accessory regeneration unit **RGB100** (sold separately). If no regeneration unit is used, short the TH1 and TH2 terminals of CN1.
TH2		Regeneration unit thermal input terminal	
MB1	Output	Electromagnetic brake connection terminal−	Connect the lead wires from the electromagnetic brake.
MB2		Electromagnetic brake connection terminal+	

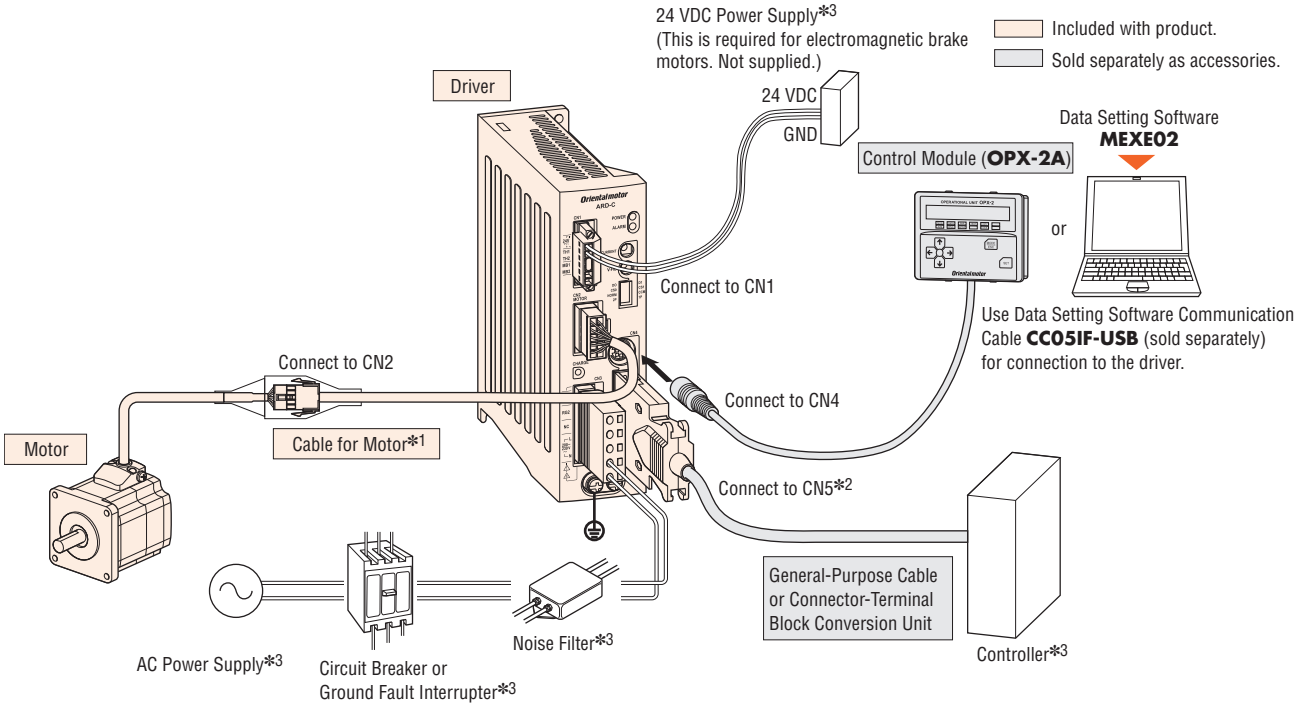
6 I/O Signal Connector (CN5, 36 pins)

Indication	Input/Output	Pin No.	Signal		Signal Name	
			Positioning Operation	Push-Motion Operation*1	Positioning Operation	Push-Motion Operation*1
CN5	–	1	–		–	
	Output	2	GND		Ground connection	
		3	ASG+		A-phase pulse output (line driver)	
		4	ASG−			
		5	BSG+		B-phase pulse output (line driver)	
		6	BSG−			
		7	TIM1+		Timing output (line driver)	
		8	TIM1−			
		9	ALM+		Alarm output	
		10	ALM−			
		11	WNG+		Warning output	
		12	WNG−			
		13	END+		Positioning complete output	
		14	END−			
		15	READY+/AL0+*1		Operation ready complete output/Alarm code output 0*1	
		16	READY−/AL0−*1			
		17	TLC+/AL1+*1		Torque limit output /Alarm code output 1*1	
		18	TLC−/AL1−*1			
		19	TIM2+/AL2+*1		Timing output (open-collector)/Alarm code output 2*1	
		20	TIM2−/AL2−*1			
		21	GND		Ground connection	
	Input	22	IN–COM		Input signal common	
		23	C–ON*2		Current on input*2	
		24	CLR/ALM–RST		Deviation counter clear input/Alarm reset input	
		25	CCM		Current control mode ON input	
		26	CS	T–MODE*1	Resolution select input	Push-motion operation ON*1
		27	–	M0*1	–	Push-current setting select input*1
		28	RETURN	M1*1	Return to electrical home operation	
		29	P–RESET	M2*1	Position reset input	
		30	FREE		Electromagnetic brake release, excitation OFF	
		31	PLS+/CW+		Pulse input/CW pulse input (+5 VDC/line driver)	
		32	PLS−/CW−			
		33	PLS+24/CW+24V		Pulse input/CW pulse input (+24 VDC)	
		34	DIR+24/CCW+24V		Direction input/CCW pulse input (+24 VDC)	
		35	DIR+/CCW+		Direction input/CCW pulse input (+5 VDC/line driver)	
		36	DIR−/CCW−			

*1 The signal will become effective if the applicable setting has been changed using the accessory control module **OPX-2A** (sold separately) or the data setting software **MEXE02**.
*2 The factory setting of the C-ON input is normally open. Be sure to turn the C-ON input ON when operating the motor.
Set the C-ON input to normally closed with a control module **OPX-2A** (sold separately) or a data setting software **MEXE02** when the C-ON input is not used.

●Connection Diagram

◇Connections with Peripheral Equipment

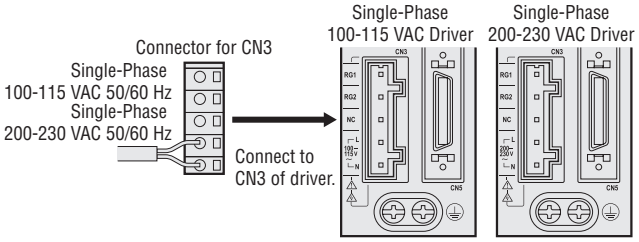


*1 If cables longer than 3 m (9.8 ft.) or flexible cables are required, select the appropriate cables from the accessories (sold separately).
When wiring the motor and the driver, keep a maximum distance of 30 m (98.4 ft.).
*2 The control I/O connector (CN5) is included with the product, but an accessory general-purpose cable or connector–terminal block conversion unit (sold separately) must be purchased. Choose one or the other.
*3 Not supplied.

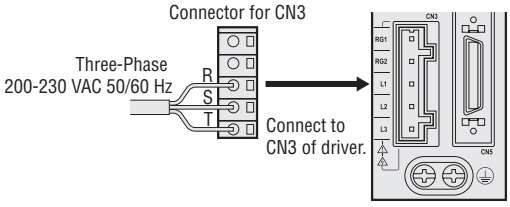
◇Connecting the Main Power Supply

Furnish the following cable for the power supply lines.
Single-Phase 100-115 VAC: Three-Core Cable [AWG16~14]
Single-Phase 200-230 VAC: Three-Core Cable [AWG16~14]
Three-Phase 200-230 VAC: 4-core Cable [AWG16~14]

●Single-Phase 100-115 VAC/Single-Phase 200-230 VAC

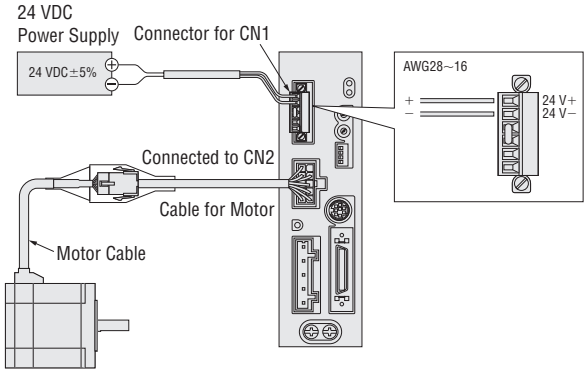


●Three-Phase 200-230 VAC



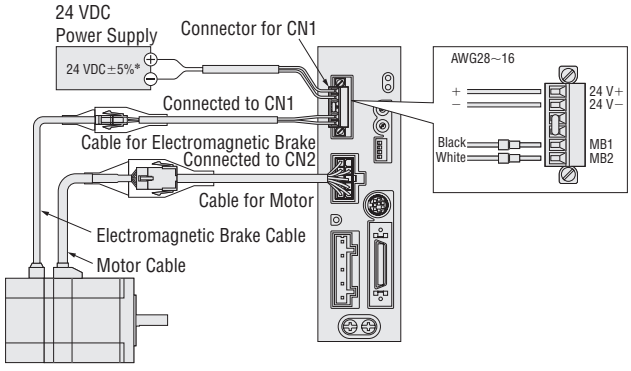
◇Connecting the Control Power Supply

To separate the main power supply and control power supply, prepare a 24 VDC power supply.
The control power supply is not mandatory.



◇Connecting the Electromagnetic Brake

Prepare a 24 VDC power supply.
The main power supply and control power supply are separated in this case too.

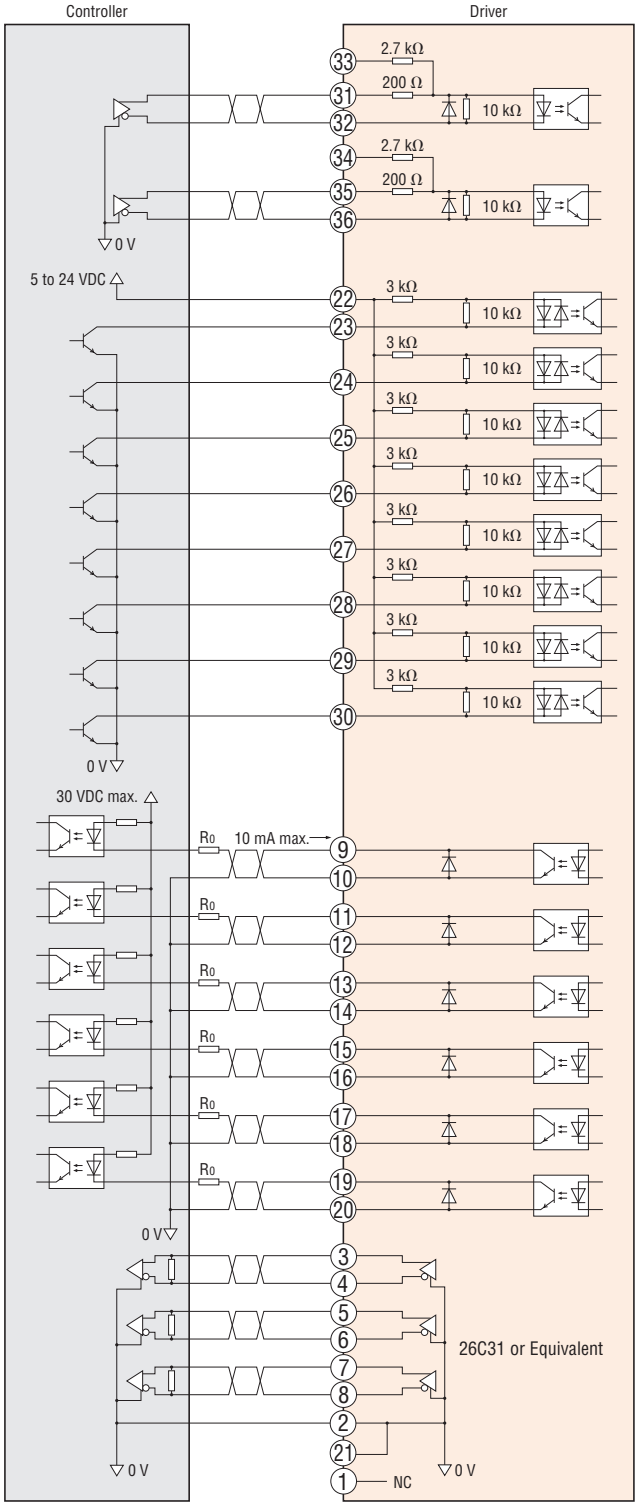


*If the wiring distance between the motor and driver is extended to 20 m (65.6 ft.) or longer using an accessory cable (sold separately), the 24 VDC±4% specification applies.

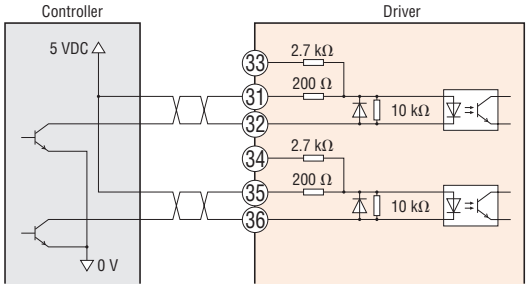
◇Connecting to a Host Controller

•Connecting to a Current Sink Output Circuit

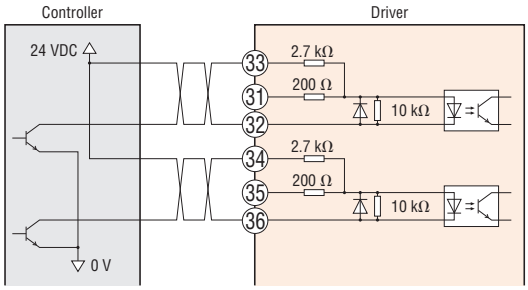
When the pulse input is the Line Driver



When the pulse input is open collector (input voltage 5 VDC)



When the pulse input is open collector (input voltage 24 VDC)

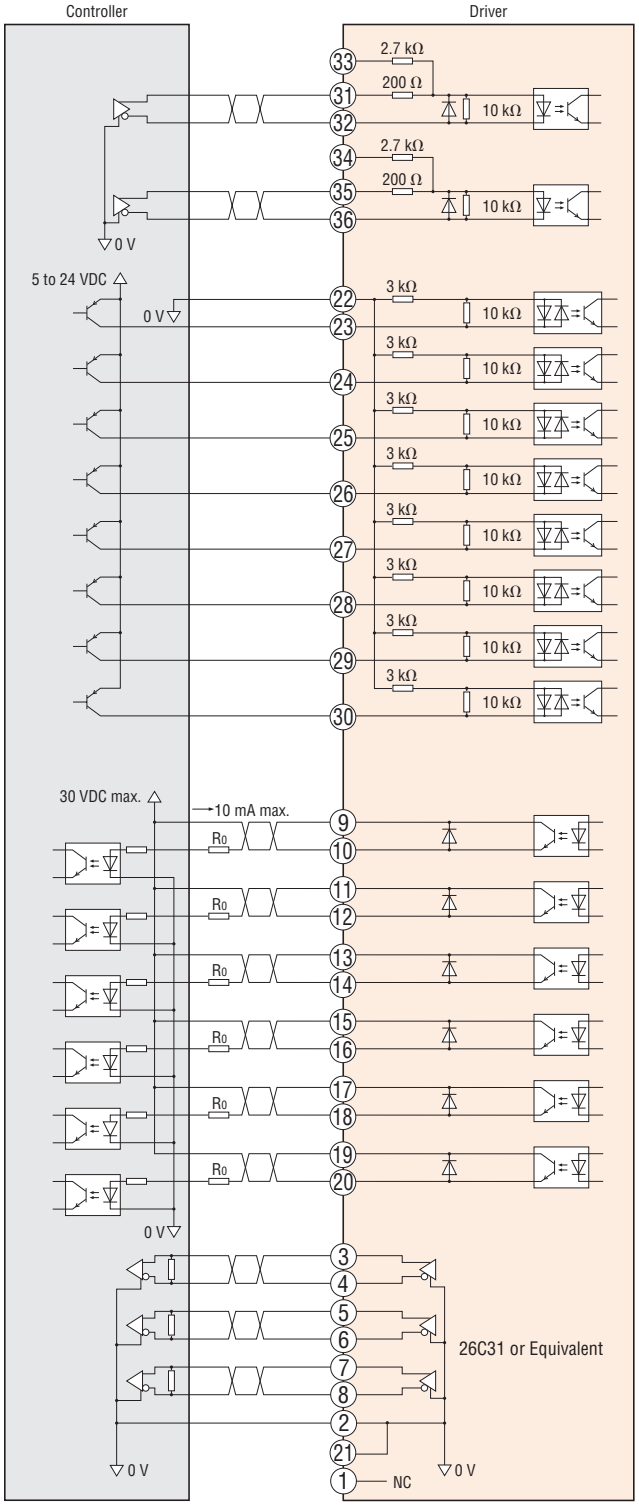


Note

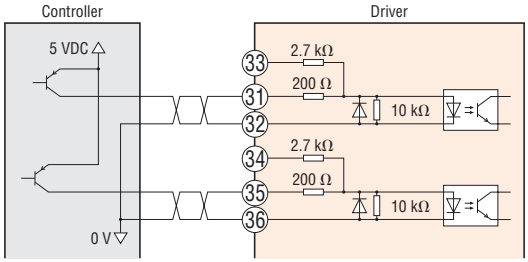
- Use output signals at 30 VDC or less. When the current value exceeds 10 mA, connect an external resistor Ro.
- Connect a terminating resistor of 100 Ω or more between the input of the line receiver terminals.
- For the control I/O signal lines (CN5), use a multi-core shielded twisted-pair wire [AWG28~24] and keep the wiring length as short as possible (no more than 2 m (6.6 ft.)).
- Note that as the length of the pulse line increases, the maximum transmission frequency decreases.
- Provide a distance of 200 mm (7.9 in.) or more between the control I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

•Connecting to a Current Source Output Circuit

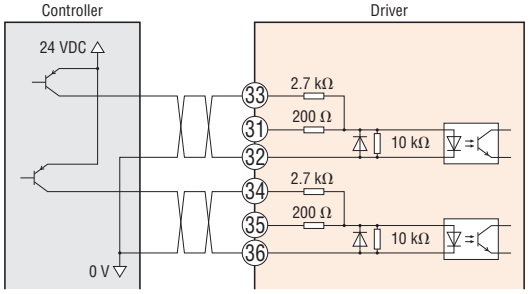
When the pulse input is the Line Driver



When the pulse input is open collector (input voltage 5 VDC)



When the pulse input is open collector (input voltage 24 VDC)



Note

- Use output signals at 30 VDC or less. When the current value exceeds 10 mA, connect an external resistor R0.
- Connect a terminating resistor of 100 Ω or more between the input of the line receiver terminals.
- For the control I/O signal lines (CN5), use a multi-core shielded twisted-pair wire [AWG28～24] and keep the wiring length as short as possible (no more than 2 m (6.6 ft.)).
- Note that as the length of the pulse line increases, the maximum transmission frequency decreases.
- Provide a distance of 200 mm (7.9 in.) or more between the control I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

List of Motor and Driver Combinations

The product names for motor and driver combinations are shown below.

Type	Built-in Controller Type			Pulse Input Type		
	Product Name	Motor Product Name	Driver Product Name	Product Name	Motor Product Name	Driver Product Name
Standard Type	**AR46**□□**D-3**✻	ARM46□C✻	ARD-□D	**AR46**□□**-3**✻	ARM46□C✻	ARD-□
	AR66□□**D-3**✻ **AR69**□□**D-3**✻	ARM66□C✻ ARM69□C✻		**AR66**□□**-3**✻ **AR69**□□**-3**✻	ARM66□C✻ ARM69□C✻	
	AR98□□**D-3**✻	ARM98□C✻		**AR98**□□**-3**✻	ARM98□C✻	
	AR911□□**D-3**✻	ARM911□C✻		**AR911**□□**-3**✻	ARM911□C✻	
TH Geared Type	**AR46**□□**D-T**■**-3**	ARM46□C-T■		**AR46**□□**-T**■**-3**	ARM46□C-T■	
	AR66□□**D-T**■**-3**	ARM66□C-T■		**AR66**□□**-T**■**-3**	ARM66□C-T■	
	AR98□□**D-T**■**-3**	ARM98□C-T■		**AR98**□□**-T**■**-3**	ARM98□C-T■	
PS Geared Type	**AR46**□□**D-PS**■**-3**	ARM46□C-PS■		**AR46**□□**-PS**■**-3**	ARM46□C-PS■	
	AR66□□**D-PS**■**-3**	ARM66□C-PS■		**AR66**□□**-PS**■**-3**	ARM66□C-PS■	
	AR98□□**D-PS**■**-3**	ARM98□C-PS■		**AR98**□□**-PS**■**-3**	ARM98□C-PS■	
PN Geared Type	**AR46**□□**D-N**■**-3**	ARM46□C-N■		**AR46**□□**-N**■**-3**	ARM46□C-N■	
	AR66□□**D-N**■**-3**	ARM66□C-N■		**AR66**□□**-N**■**-3**	ARM66□C-N■	
	AR98□□**D-N**■**-3**	ARM98□C-N■		**AR98**□□**-N**■**-3**	ARM98□C-N■	
Harmonic Geared Type	**AR46**□□**D-H**■**-3**	ARM46□C-H■		**AR46**□□**-H**■**-3**	ARM46□C-H■	
	AR66□□**D-H**■**-3**	ARM66□C-H■		**AR66**□□**-H**■**-3**	ARM66□C-H■	
	AR98□□**D-H**■**-3**	ARM98□C-H■		**AR98**□□**-H**■**-3**	ARM98□C-H■	

● Either **A** (single shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115 (120) VAC), **C** (single-phase 200-230 (240) VAC) or **S** (three-phase 200-230 VAC: pulse input type only) indicating power supply input is entered where the box □ is located within the product name.
A number indicating the gear ratio is entered where the box ■ is located within the product name.

✻ Either **A** (single shaft), **B** (double shaft) or **M** (with electromagnetic brake) indicating the configuration is entered where the □ box is located within the product names **AR46**□□**(D)-3**, **AR66**□□**(D)-3**, **AR69**□□**(D)-3**, and **AR98**□□**(D)-3**. Also, either **A** (single shaft) or **B** (double shaft) indicating the configuration is entered where the □ box is located within the product name **AR911**□□**(D)-3**.