Oriental motor

NEW PRODUCTS

Stepping Motor and Driver Package αSTEP

High-Efficiency AR Series AC Input

FLEX Built-in Controller Type

Pulse Input Type

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The **AR** Series substantially reduces heat generation from the motor through use of high-efficiency technology. A pulse input type and a newly released built-in controller type are available.

AR Series AC Input with newly released Built-In Controller Type. Supporting FLEX equipped with interface which can be connected to the various superior systems.

Features of the **AR** Series

- Adopting Oriental Motor's Original Closed Loop Control
- Lower Heat Generation
- High Precision Positioning with Compact High-Torque Motors

NEW Features of the Built-In Controller Type

- Necessary Operation Information is Built into the Driver
  - Return-to-Home Operation
  - Positioning Operation
  - Continuous Operation
  - JOG Operation, Automatic Return Operation
- Connection to Superior System (FLEX)
  - I/O Control
  - Modbus (RTU) Control
  - Factory Automation Network Control (Via Network Converter)

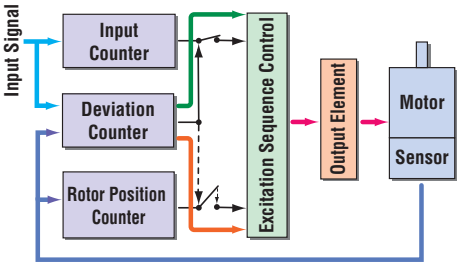
What is FLEX?

FLEX is a generic name of the products which support Factory Automation network control via I/O control, Modbus (RTU) control and network converter.

Adopting Oriental Motor's Original Closed Loop Control

◇Maintains Operation Even During Abrupt Load Fluctuations and Accelerations.

The **AR** Series uses our closed loop control to maintain positioning operation even during abrupt load fluctuations and accelerations. The rotor position detection sensor monitors the rotation.
When an overload condition is detected, the **AR** Series will instantaneously regain control using the closed loop mode.



◇Alarm Signal Output in Case of Abnormality

If an overload is applied continuously, an alarm signal is output. When the positioning is complete, an END signal is output. This ensures the same level of reliability achieved by a servo motor.

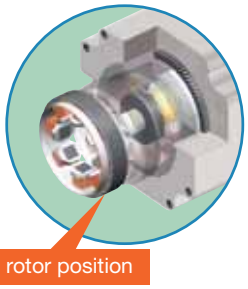
Normal (Positioning deviation is less than ±1.8°)
Motor runs in open loop mode like a stepping motor.

During Overload Condition (Positioning deviation is ±1.8° or more)
The closed loop mode is engaged to maintain the positioning operation.

◇Rotor Position Detection Sensor

The rotor position detection sensor uses the change in inductance caused by change in the distance between the stator teeth and the teeth on the sensor rotor to detect rotor position.

- This structure can be made small and thin, so the overall size of the motor can be reduced.
- High resolution
- This structure does not use electronic parts, so it is not affected by heat or vibration.

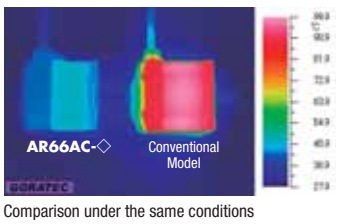


Continuous Operation is Achieved Due to the Reduction of Motor Heat Generation by Utilizing High-Efficiency Technology

◇Lower Heat Generation

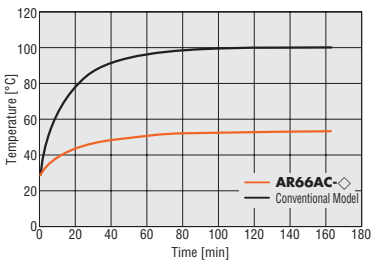
The **AR** Series utilizes high-efficiency technology to achieve a significant reduction in the amount of heat generated from the motor.

●Temperature Distribution by Thermography



Comparison under the same conditions

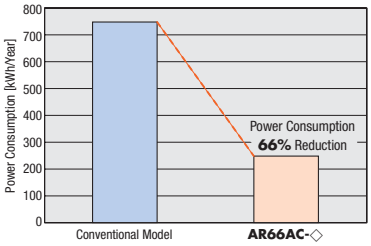
●Motor Case Temperature under Same Operating Conditions



◇Energy-Saving

Power consumption: up to **66**% less* than a conventional model

●Power Consumption



CO_2 emission: up to **66**% less* than a conventional model

* Operating Condition
Speed: 1000 r/min, Load Factor: 50%
Operating Time: 24 hours of operation (70% operating, 25% standing by, 5% standstill), 365 days/year

Beneficial Features of a Stepping Motor

Compact, Yet High Torque

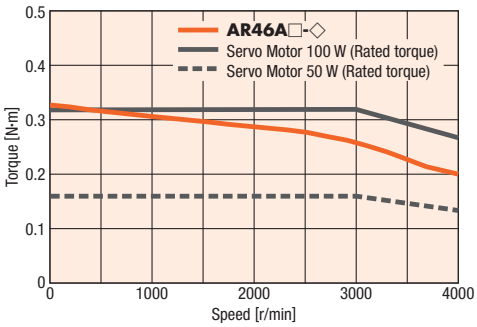
Stepping motors generate high torque with a compact body. Since a stepping motor has a shorter overall length compared to a servo motor of the same frame size (also by Oriental Motor), the device space can be reduced.

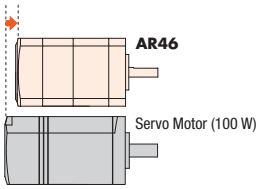
User-Friendly and Easy, Highly Accurate Positioning

Stepping motors provide convenient means to ensure highly accurate positioning because they synchronize themselves with commands without requiring feedback.

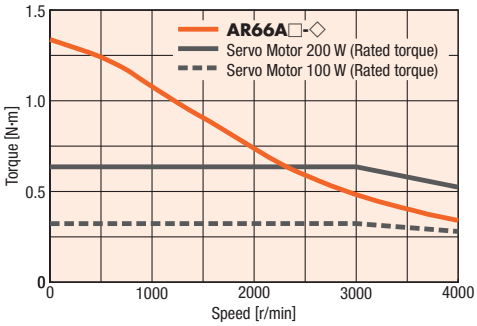
Comparison with servo motors of the same frame size

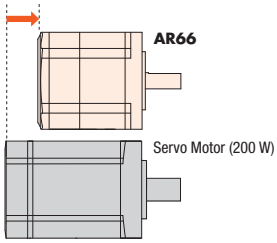
AR46 (Standard Type) and Servo Motors (50 W/100 W)



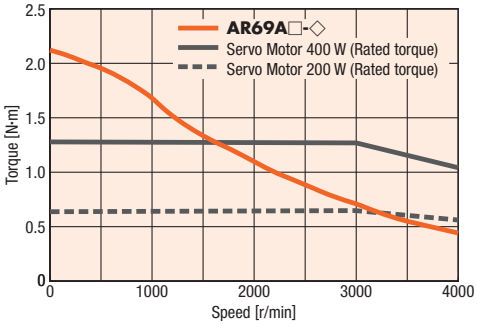


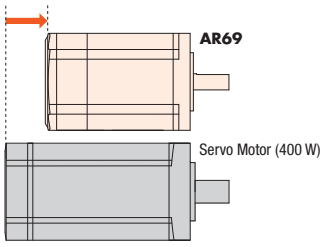
AR66 (Standard Type) and Servo Motors (100 W/200 W)



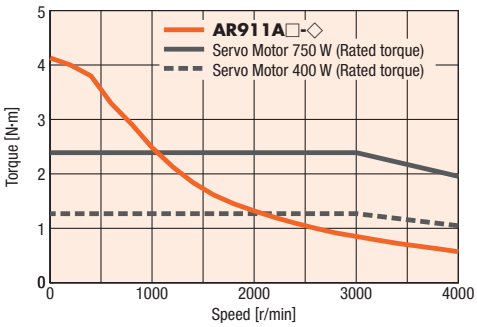


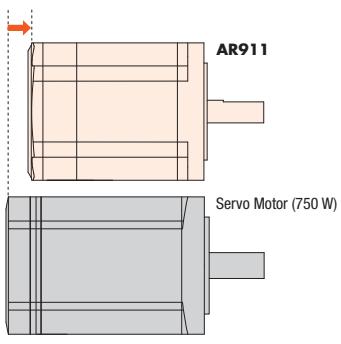
AR69 (Standard Type) and Servo Motors (200 W/400 W)





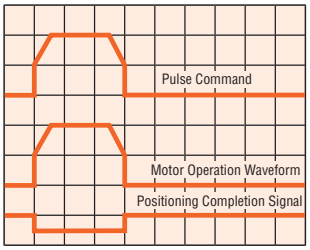
AR911 (Standard Type) and Servo Motors (400 W/750 W)





High Response

The motor operates synchronously with pulse commands to achieve high response. There's no delay in operation following a pulse command.



Measurement Condition: Feed 1/5 rotation
Inertial Load: 250×10^{-7}kg·m^2(J)

Capable of Driving Large Inertial Loads

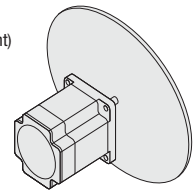
Stepping motors can drive larger inertial loads than servo motors of equivalent frame sizes.

Comparison at 30 times of the rotor inertia

• **AR** Series

Load Inertia 22.4×10^{-4} kg·m^2
(30 times the rotor inertial moment)

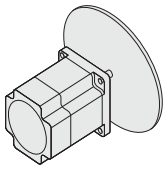
Load Inertia: Diameter: 169 mm, Thickness: 10 mm, Material: Aluminum
Motor: Frame size 60 mm, Length 90 mm



• Conventional Servo Motor

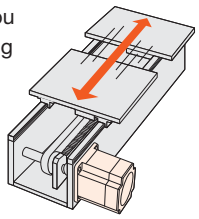
Load Inertia 4.0×10^{-4} kg·m^2
(30 times the rotor inertia)

Load Inertia: Diameter: 110 mm, Thickness: 10 mm, Material: Aluminum
Motor: Frame size 60 mm, Length 96.5 mm



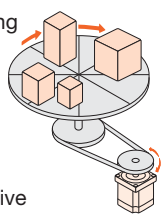
No Tuning

With the **AR** Series, you can perform positioning quickly after a load change, etc., without adjusting any gains.



No Hunting

Because it uses a stepping motor, the **AR** Series does not hunt when stopped. Accordingly, the **AR** Series is ideal for applications where the equipment uses a belt-drive mechanism or otherwise has low rigidity and you don't want it to vibrate when stopping.

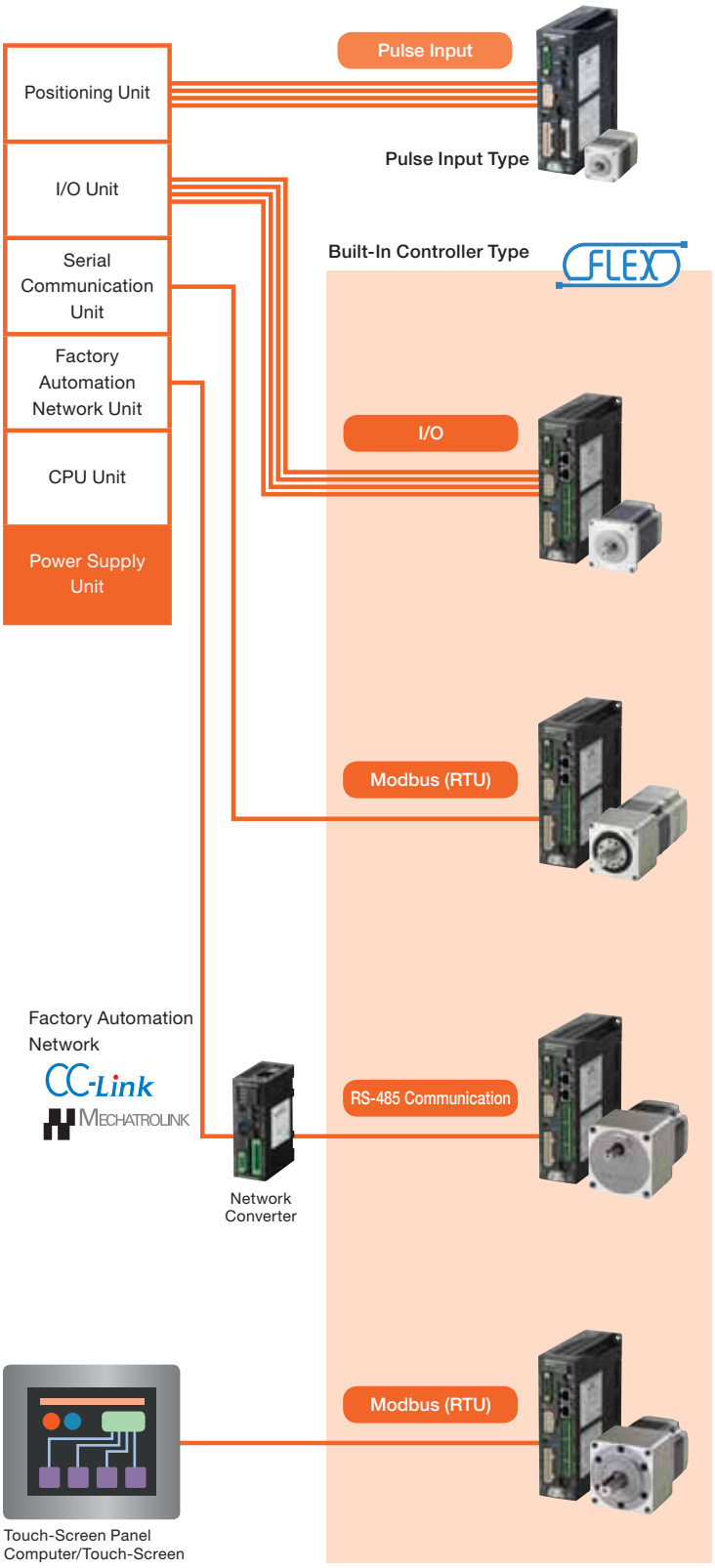


Types of Operation Systems

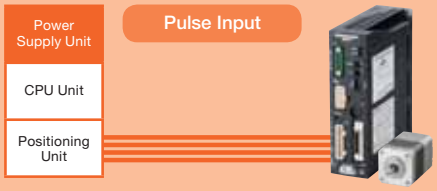
Stepping motor and driver packages combine a stepping motor selected from various types with a dedicated driver. In addition to the pulse input type, drivers with a built-in controller type is also available. You can select a desired combination product according to the required operation system. Different drivers are explained below by using the **AR** Series as an example.

Built-In Controller Type
Pulse Input Type

Control Method can be Selected Based on the Customer's Operation System

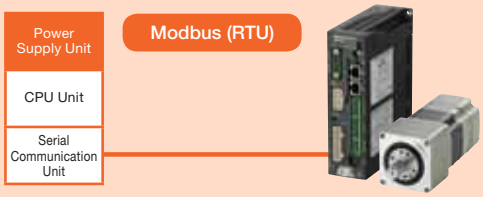


Typical System

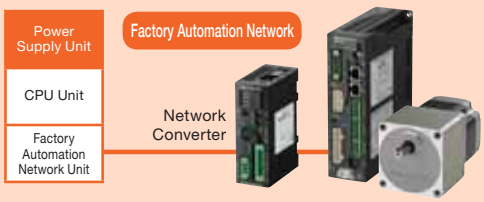


The motor can be controlled using a pulse generator provided by the customer. Operating data registered in the pulse generator is selected from the programmable logic controller to operate the motor.

The function of built-in pulse generator lets you build an operation system by connecting the motor directly to a programmable logic controller. Since no separate pulse generator is required, the drivers of this type save space and simplify the system.



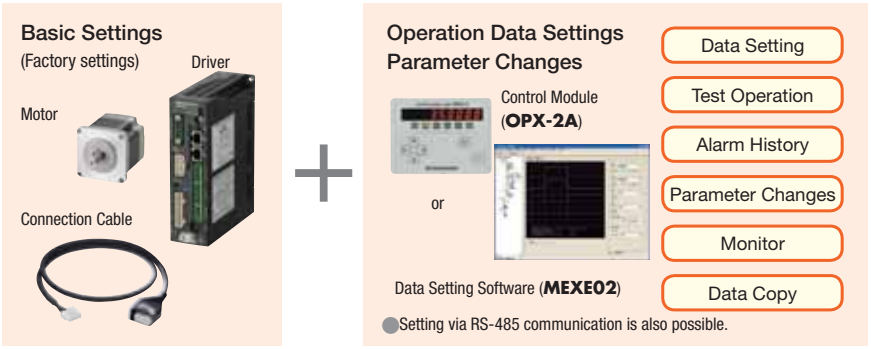
RS-485 enables operation data setting, parameter setting and operation command input. A maximum of 31 drivers can be connected to 1 serial unit. This also has the function which enables simultaneous start of the multi-axis. The protocol supports Modbus (RTU) which enables an easy connection by the programmable logic controller.



By using the network converter (sold separately), CC-Link communication and MECHATROLINK can be supported. Each communication enables operation data setting, parameter setting and operation command input.

Built-In Controller Package

The burden on the programmable PLC is reduced because the information necessary for motor operations is built into the driver. This simplifies the system configuration for multi-axis control.
Set with control module (sold separately), data setting software, or RS-485 communication.



Operation type

With built-in controller packages, the motor's operating speed and traveling amount are set with operating data and operations performed based on the selected operating data. The operation type is 4-pattern.

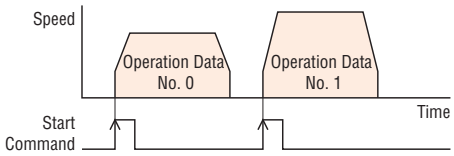
Item		Content	
Common	Control Method	I/O Control	
		RS-485 communication	Network Converter Connection
			Modbus RTU Protocol Connection
	Position Command Input	Set with operating data number Command range per point: −8388608～8388607 [steps] (setting unit: 1 [step])	
	Speed Command Input	Set with operating data number Command range: 0～1000000 [Hz] (setting unit: 1 [Hz])	
	Acceleration/ Deceleration Command Input	Set with operating data number or parameters. 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 Control	Velocity filter, moving average filter	
Return-To-Home Operation	Return-To-Home Method	2-sensor mode	This is the return-to-home operation using limit sensors (+LS, −LS).
		3-sensor mode	This is the return-to-home operation using limit sensors and HOME sensor.
		Pushing mode*1	This is the return-to-home operation for pushing to the mechanical end of a linear slide, etc.
		Position preset	This function allows a home position to be confirmed by inputting P-PRESET using an arbitrary position.
			An arbitrary value can be set for the home position.
Positioning Operation	Number of Positioning Points	64 points (No. 0～63)	
	Operation Mode	Incremental mode (Relative positioning)	
		Absolute mode (Absolute positioning)	
	Operation Functions	One-shot operation	This is a PTP (Point to Point) positioning operation.
		Linked operation	This is a multistep speed-change positioning operation linked to operating data.
		Linked operation 2	This is a positioning operation with timer linked to operating data. The timer (dwell time) can be set in the range of 0～50.000 [s]. (Setting unit: 0.001 [s])
		Push-motion operation*1	Continuous pressurizing position operations are performed with respect to load. The operating speed is maximum 30 [r/min] with the motor shaft.
	Starting Methods	Operating data selection mode	The positioning operation starts when START is input after M0～M5 has been selected.
		Direct mode (direct positioning)	The positioning operation starts with the operating data number that was set with the parameters when MS0～MS5 has been input.
		Sequential mode (sequential positioning)	The positioning operation starts in order from operating data No. 0 every time SSTART is input.
Continuous Operation	Number of Speed Points	64 points (No. 0～63)	
	Speed-Change Method	This switches the operating data number.	
Other Operations	JOG Operation	+JOG or −JOG is input, and regular feeding is performed.	
	Automatic Return Operation	This automatically returns to the original stopped position when the motor has become misaligned due to an external force during non-excitation.	
	Control Mode*2	The normal mode or the current control mode can be selected.	
Absolute Backup		Using the battery (accessory) makes the absolute system.	

*1 Do not perform push-motion operations with geared types. Doing so will damage the motor and gearhead.
*2 Use of the normal mode is recommended unless less heat generation and less noise are required.

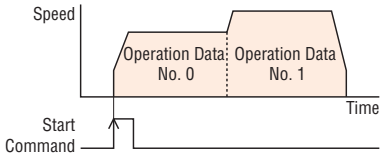
Positioning Operation

Operation Function

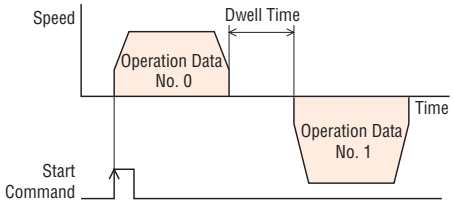
●One-Shot Operation



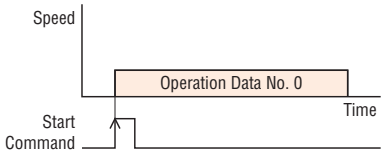
●Linked Operation



●Linked Operation 2



●Push-Motion Operation



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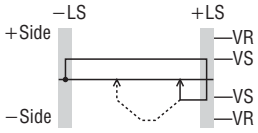
Start Method

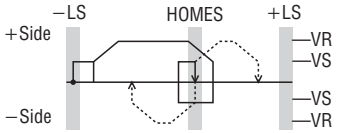
●Data-Select Positioning
●Direct Positioning
●Sequential Positioning

Return-To-Home Operation

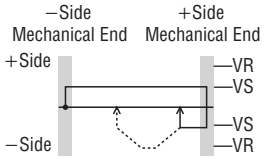
●2-Sensor Mode



●3-Sensor Mode

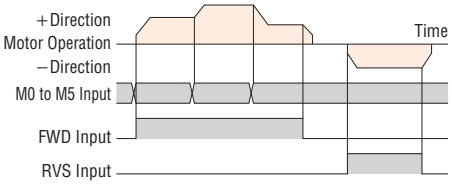


●Push-Motion Mode



●Position Preset

Continuous Operation



Other Operations

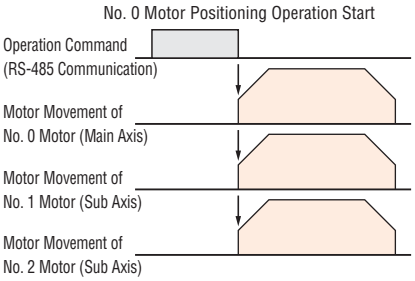
●JOG Operation (Test Operation)

●Automatic Return

●This comes with the return-to-home operation sequence installed, so the burden on the programmable master is reduced and there is no need to create a ladder.

Group Sending Function (Via RS-485 communication or Network Converter)

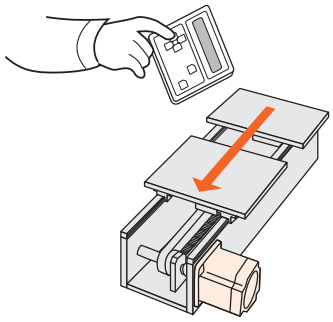
Groups can be configured with multiple axes connected via RS-485 communication, and commands sent for each group. Multi-axis simultaneous starting and identical operations are also possible.



Teaching Function

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

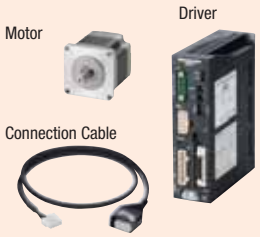
*Data setting software also distributes a CD-ROM. Request from our website or contact the nearest dealer or sales office for details.
http://www.orientalmotor.com.sg



Pulse Input Package

By using the data setting software and control module, sold separately, parameters can be changed, the alarm history displayed, and each monitor handled according to your demands.

Basic Settings
(Factory settings)



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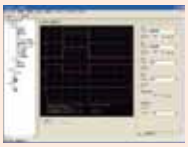
Extended Settings

Control Module (**OPX-2A**)

or



Data Setting Software (**MEXE02**)

- Push-Motion Operation
- Test Operation
- Alarm History
- Parameter Changes
- Monitor
- Data Copy

Main Additional Functions from Extended Settings

Item		Overview	Basic Settings	Extended Settings
Pulse Input Mode Selection		1-pulse input mode or 2-pulse input mode (negative logic) can be selected.	●	●
		Beyond the normal settings, the phase difference input can also be set. • 1-pulse mode (positive logic/negative logic) • 2-pulse mode (positive logic/negative logic) • Phase difference input (1×/2×/4×)	–	●
Resolution Setting		The resolution can be selected with a function switch (D0, D1, CS0, CS1).	●	●
		The value of the electronic gears corresponding to each function switch (D0, D1, CS0, CS1) can be changed.	–	●
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 with respect to the running current can be set.	–	●
Motor Rotation Coordinate Setting		The motor's rotation coordinate can be set.	–	●
All Windings On Signal (C-ON input)		This is the input signal for exciting the motor.	●	●
		The logic of the C-ON input during power supply input can be set.	–	●
Excitation Position Return-To-Home Operation when All Windings are On Enabled/Disabled		Whether or not an operation to return to the excitation position (deviation 0 position) is performed when all windings are on can be set.	–	●
I/O Input Signal Mode Selection		Input when a push-motion operation*1 is performed.	–	●
Alarm Code Signal Enabled/Disabled		Set when code output is desired when an alarm has occurred.	–	●
END Signal Output Width Setting		The END signal output width can be changed.	–	●
END Signal Output Offset		The END signal output value can be offset.	–	●
A/B Phase Output		This can be used to confirm the position of the motor.	●	●
Timing Signal Output		This is output every time the motor rotates 7.2°.	●	●
Velocity Filter Setting		This places a filter on the operation command and suppresses motor behavior.	●	●
		The value corresponding to each stage of the setting switch, 0～F (16 stages), can be changed.	–	●
Control Mode	Vibration Suppression Function for Normal Mode	This can be set to suppress resonance vibration during rotation.	–	●
		This can be set to suppress vibration during acceleration and deceleration, and when stopped.	–	●
	Gain Adjustment for Current Control Mode*2	This adjusts the position/speed loop gain.	–	●
		This adjusts the constant during velocity integration.	–	●
		This sets the damping control vibration frequency.	–	●
		This sets the damping control as enabled/disabled.	–	●
Motor Excitation Position Selection When Power is On		The motor excitation position when the power is on can be selected.	–	●
Control Module Settings		Whether the speed display of the control module is signed or an absolute value can be selected.	–	●
		The geared motor gear ratio for the speed monitor can be set.	–	●

*1 Do not perform push-motion operations with geared types. Doing so will damage the motor and gearhead.
*2 Use of the normal mode is recommended unless less heat generation and less noise are required.

Motor Lineup

Characteristics Comparison for Motors and Geared Motors

	Motor Type Geared Type	Features	Permissible Torque Maximum Torque [N·m]	Backlash [min]	Basic Resolution [deg/pulse]	Output Shaft Speed [r/min]
	Standard 	· **Basic model of the AR Series**	Maximum Holding Torque 4	——	0.36	4000
Low backlash	**TH Geared** (Parallel shaft) 	· **A wide variety of low gear ratios, high-speed operations** · **Gear Ratio Types** **3.6, 7.2, 10, 20, 30**	12	45	0.012	500
Low backlash	**PS Geared** (Planetary) 	· **High Permissible Torque/Maximum Torque** · **A wide variety of gear ratios for selecting the desired step angle** · **Center Shaft** · **Gear Ratio Types** **5, 7.2, 10, 25, 36, 50**	Permissible Torque 37 Maximum Torque 60	25	0.0072	600
Non-backlash	**PN Geared** (Planetary) 	· **High Speed (Low gear ratio), High Positioning Accuracy** · **High Permissible Torque/Maximum Torque** · **A wide variety of gear ratios for selecting the desired step angle** · **Center Shaft** · **Gear Ratio Types** **5, 7.2, 10, 25, 36, 50**	Permissible Torque 37 Maximum Torque 60	3	0.0072	600
Non-backlash	**Harmonic Geared** (Harmonic drive) 	· **High Positioning Accuracy** · **High Permissible Torque/Maximum Torque** · **High Gear Ratio, High Resolution** · **Center Shaft** · **Gear Ratio Types** **50, 100**	Permissible Torque 37 Maximum Torque 55	0	0.0036	70

Note

- The values shown above must be used as reference. These values vary depending on the frame size and gear ratio.

Power Supply Voltage and Range of Motor Frame Size

Unit Type	Power Supply Voltage	Motor Type	
		Standard Type	**TH** Geared Type **PS** Geared Type **PN** Geared Type Harmonic Geared Type
Built-In Controller Package 	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	□42 □60 □85	□42 □60 □90
Pulse Input Package 	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC	□42 □60 □85	□42 □60 □90

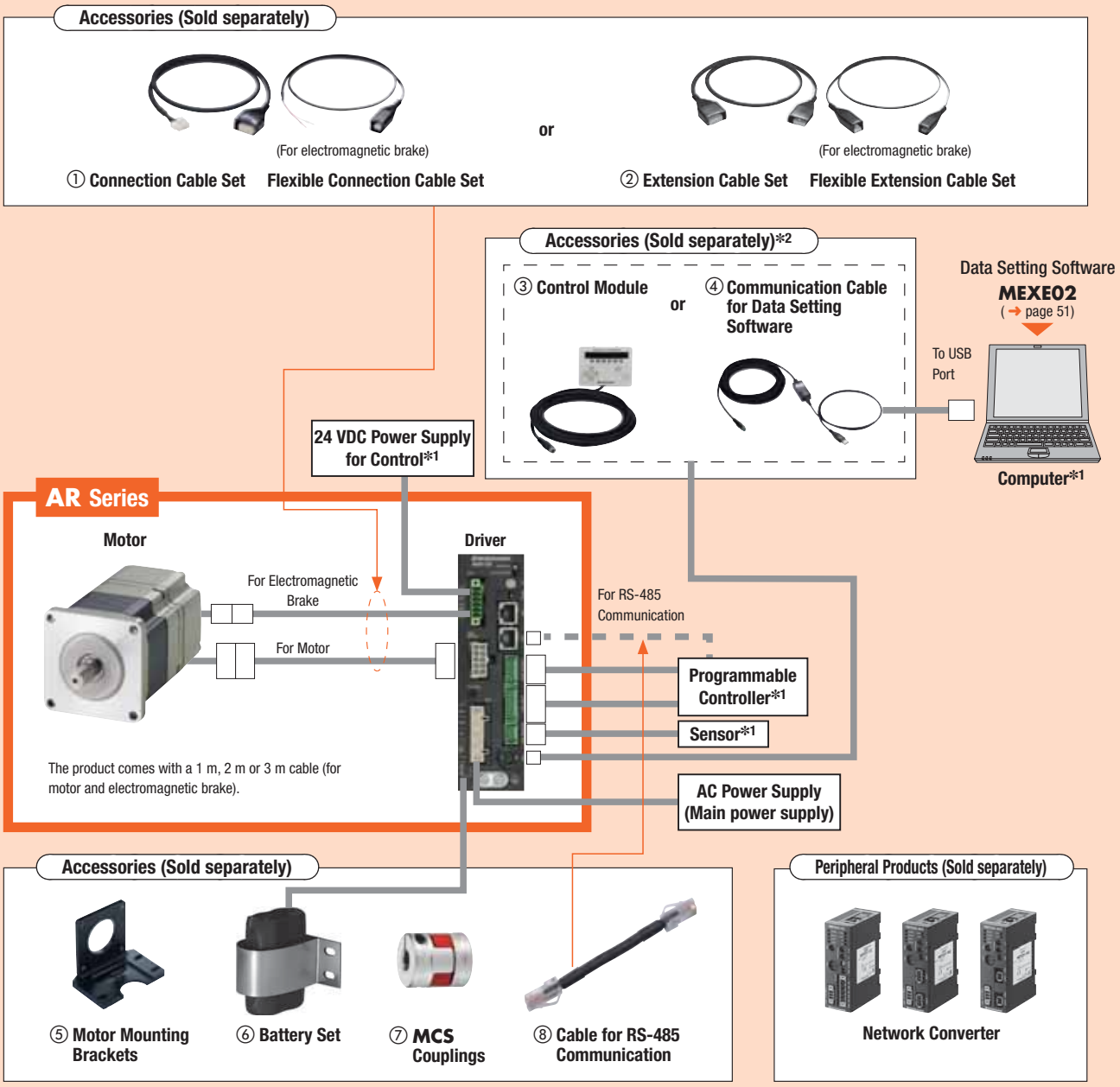
- □42: indicates a motor frame size of 42 mm.
- Electromagnetic brake models are available for all types.

System Configuration

Built-In Controller Package Standard Type with Electromagnetic Brake

An example of a system configuration when used with either I/O control or RS-485 communication.

*1 Not supplied
*2 To be provided as necessary



Number	Name	Overview
①	Connection Cable Sets Flexible Connection Cable Sets	These cable sets are used to connect the motor and driver without using the included cables.
②	Extension Cable Sets Flexible Extension Cable Sets	These cable sets are used to extend the wiring distance between the motor and driver using the included cables.
③	Control Module	This control module lets you set (edit, monitor, operate) various data and enables extended functions. Comes with a communication cable (5 m).
④	Data Setting Software	This data setting software lets you set (edit, monitor, operate) various data and enables extended functions. Comes with a PC interface cable (5 m) and a USB cable (0.5 m).
⑤	Motor Mounting Brackets	Dedicated mounting bracket for the motor.
⑥	Battery Set	Connect it when used as the absolute backup system.
⑦	**MCS** Couplings	Coupling that connects the motor shaft to the driven shaft.
⑧	Cable for RS-485 Communication	These cables are used to link drivers when a built-in controller type is being operated in a multi-drop manner.

Refer to the User Manual for operation procedure of this product. For details, please contact the nearest Oriental Motor sales office or download form Oriental Motor website.
http://www.orientalmotor.com.sg/

System Configuration Example

AR Series		Sold Separately	
		Motor Mounting Brackets	Flexible Couplings
AR66MCD-3	+	PAL2P-5	MCV251010

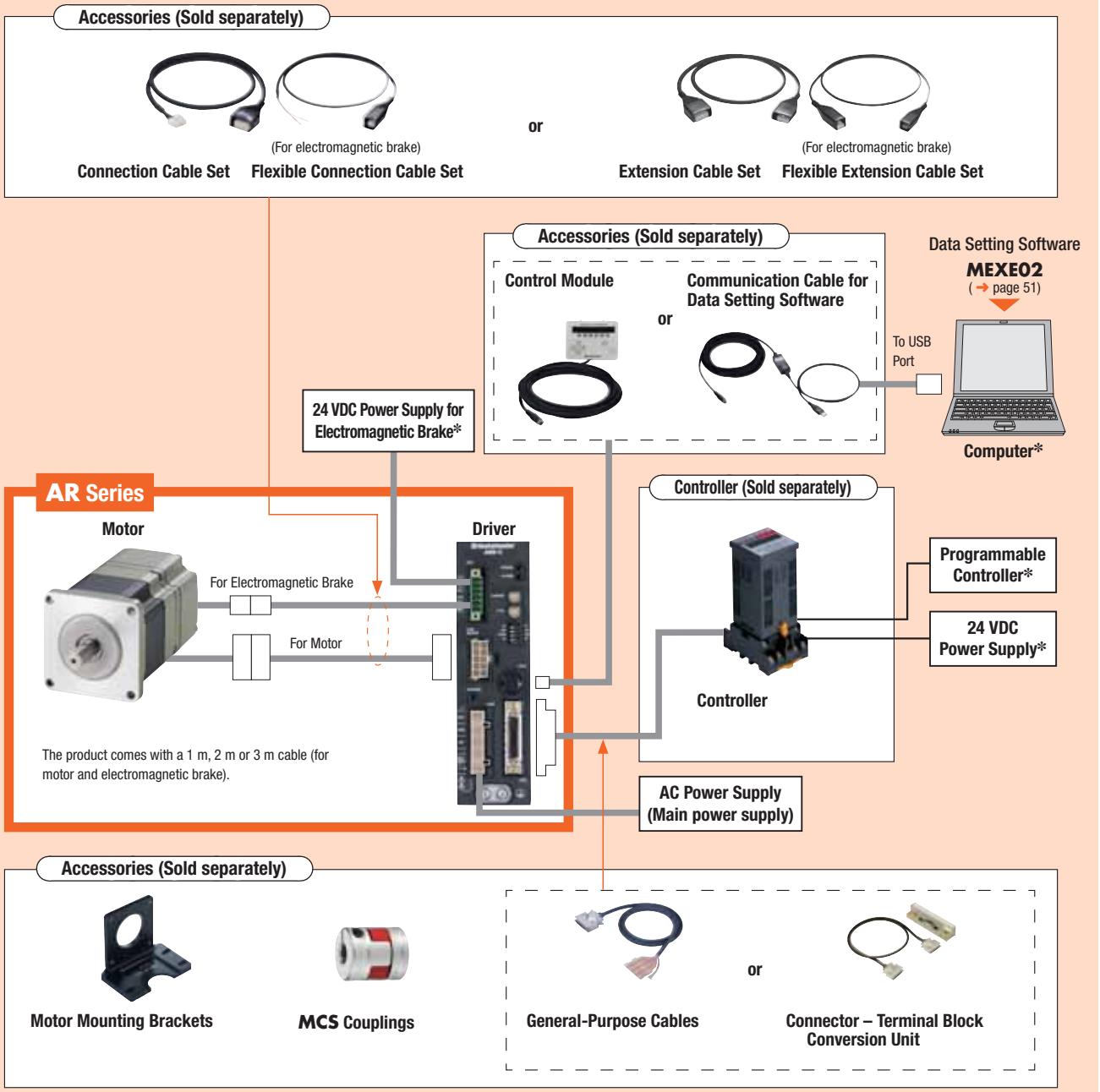
The system configuration shown above is an example. Other combinations are available.

System Configuration

Pulse Input Package Standard Type with Electromagnetic Brake

An example of a single-axis system configuration with the **PG1200** controller.

* Not supplied



Refer to the User Manual for operation procedure of this product. For details, please contact the nearest Oriental Motor sales office or download form Oriental Motor website.
http://www.orientalmotor.com.sg/

System Configuration Example

AR Series		Sold Separately			
		Controller	Motor Mounting Bracket	Flexible Coupling	Connector – Terminal Block Conversion Unit (1 m)
AR66MC-3	+	PG1200	PAL2P-5	MCV251010	CC36T1

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

Product Number Code

AR 6 6 A C D - PS 10 - 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series Name	**AR**: **AR** Series
②	Motor Frame Size	**4**: 42 mm **6**: 60 mm **9**: 85 mm (90 mm)
③	Motor Case Length	
④	Motor Type	**A**: Standard (Single shaft) **B**: Standard (Double shaft) **M**: Electromagnetic Brake Type
⑤	Power Supply Voltage	Built-In Controller Package **A**: Single-Phase 100-120 VAC **C**: Single-Phase 200-240 VAC Pulse Input Package **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 Package Blank: Pulse Input Package
⑦	Gearhead Type	Blank: Standard Type **T**: **TH** Geared Type **PS**: **PS** Geared Type **N**: **PN** Geared Type **H**: Harmonic Geared Type
⑧	Gear Ratio	
⑨	Cable Length (Included)	**1**: 1 m **2**: 2 m **3**: 3 m

Product Line

●For the single-phase 100-120 VAC (single-phase 100-115 VAC for Pulse Input Package) models and three-phase 200-230 VAC models, please contact the nearest Oriental Motor sales office.

●Built-In Controller Package

◇Standard Type

Product Name (Single shaft)	Product Name (Double shaft)
AR46A□D-◇	**AR46B□D-◇**
AR66A□D-◇	**AR66B□D-◇**
AR69A□D-◇	**AR69B□D-◇**
AR98A□D-◇	**AR98B□D-◇**
AR911A□D-◇	**AR911B□D-◇**

◇Standard Type with Electromagnetic Brake

Product Name
AR46M□D-◇
AR66M□D-◇
AR69M□D-◇
AR98M□D-◇

◇**TH** Geared Type

Product Name
AR46A□D-T3.6-◇
AR46A□D-T7.2-◇
AR46A□D-T10-◇
AR46A□D-T20-◇
AR46A□D-T30-◇
AR66A□D-T3.6-◇
AR66A□D-T7.2-◇
AR66A□D-T10-◇
AR66A□D-T20-◇
AR66A□D-T30-◇
AR98A□D-T3.6-◇
AR98A□D-T7.2-◇
AR98A□D-T10-◇
AR98A□D-T20-◇
AR98A□D-T30-◇

◇**TH** Geared Type with Electromagnetic Brake

Product Name
AR46M□D-T3.6-◇
AR46M□D-T7.2-◇
AR46M□D-T10-◇
AR46M□D-T20-◇
AR46M□D-T30-◇
AR66M□D-T3.6-◇
AR66M□D-T7.2-◇
AR66M□D-T10-◇
AR66M□D-T20-◇
AR66M□D-T30-◇
AR98M□D-T3.6-◇
AR98M□D-T7.2-◇
AR98M□D-T10-◇
AR98M□D-T20-◇
AR98M□D-T30-◇

◇Harmonic Geared Type

Product Name
AR46A□D-H50-◇
AR46A□D-H100-◇
AR66A□D-H50-◇
AR66A□D-H100-◇
AR98A□D-H50-◇
AR98A□D-H100-◇

◇Harmonic Geared Type with Electromagnetic Brake

Product Name
AR46M□D-H50-◇
AR46M□D-H100-◇
AR66M□D-H50-◇
AR66M□D-H100-◇
AR98M□D-H50-◇
AR98M□D-H100-◇

●Either **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) indicating the power supply input is entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name. Select a desired cable length from 1 m, 2 m and 3 m.

◇**PS** Geared Type

Product Name
AR46A□D-PS5-◇
AR46A□D-PS7-◇
AR46A□D-PS10-◇
AR46A□D-PS25-◇
AR46A□D-PS36-◇
AR46A□D-PS50-◇
AR66A□D-PS5-◇
AR66A□D-PS7-◇
AR66A□D-PS10-◇
AR66A□D-PS25-◇
AR66A□D-PS36-◇
AR66A□D-PS50-◇
AR98A□D-PS5-◇
AR98A□D-PS7-◇
AR98A□D-PS10-◇
AR98A□D-PS25-◇
AR98A□D-PS36-◇
AR98A□D-PS50-◇

◇**PS** Geared Type with Electromagnetic Brake

Product Name
AR46M□D-PS5-◇
AR46M□D-PS7-◇
AR46M□D-PS10-◇
AR46M□D-PS25-◇
AR46M□D-PS36-◇
AR46M□D-PS50-◇
AR66M□D-PS5-◇
AR66M□D-PS7-◇
AR66M□D-PS10-◇
AR66M□D-PS25-◇
AR66M□D-PS36-◇
AR66M□D-PS50-◇
AR98M□D-PS5-◇
AR98M□D-PS7-◇
AR98M□D-PS10-◇
AR98M□D-PS25-◇
AR98M□D-PS36-◇
AR98M□D-PS50-◇

◇**PN** Geared Type

Product Name
AR46A□D-N5-◇
AR46A□D-N7.2-◇
AR46A□D-N10-◇
AR66A□D-N5-◇
AR66A□D-N7.2-◇
AR66A□D-N10-◇
AR66A□D-N25-◇
AR66A□D-N36-◇
AR66A□D-N50-◇
AR98A□D-N5-◇
AR98A□D-N7.2-◇
AR98A□D-N10-◇
AR98A□D-N25-◇
AR98A□D-N36-◇
AR98A□D-N50-◇

◇**PN** Geared Type with Electromagnetic Brake

Product Name
AR46M□D-N5-◇
AR46M□D-N7.2-◇
AR46M□D-N10-◇
AR66M□D-N5-◇
AR66M□D-N7.2-◇
AR66M□D-N10-◇
AR66M□D-N25-◇
AR66M□D-N36-◇
AR66M□D-N50-◇
AR98M□D-N5-◇
AR98M□D-N7.2-◇
AR98M□D-N10-◇
AR98M□D-N25-◇
AR98M□D-N36-◇
AR98M□D-N50-◇

The following items are included in each product.
Motor, Shaft Parallel Key*1, Driver, Cable for Motor, Cable for Electromagnetic Brake*2, Connector for Input Signal, Connector for Output Signal, Connector for Sensor Signal, Connector for Regeneration Unit/Main Power Supply, Connector for 24 VDC Power Supply/Regeneration Unit Thermal Input/Electromagnetic Brake Output Terminal, Connector Wiring Lever, Operating Manual

●The product comes with a 1 m, 2 m or 3 m cable for motor and cable for electromagnetic brake*2. If you need cables longer than 3 m or cables offering excellent flexibility, select appropriate cables from the accessories (sold separately).

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

*2 Only with Electromagnetic Brake Type.

●Pulse Input Package

◇Standard Type

Product Name (Single shaft)	Product Name (Double shaft)
AR46A□-◇	**AR46B□-◇**
AR66A□-◇	**AR66B□-◇**
AR69A□-◇	**AR69B□-◇**
AR98A□-◇	**AR98B□-◇**
AR911A□-◇	**AR911B□-◇**

◇Standard Type with Electromagnetic Brake

Product Name
AR46M□-◇
AR66M□-◇
AR69M□-◇
AR98M□-◇

◇**TH** Geared Type

Product Name
AR46A□-T3.6-◇
AR46A□-T7.2-◇
AR46A□-T10-◇
AR46A□-T20-◇
AR46A□-T30-◇
AR66A□-T3.6-◇
AR66A□-T7.2-◇
AR66A□-T10-◇
AR66A□-T20-◇
AR66A□-T30-◇
AR98A□-T3.6-◇
AR98A□-T7.2-◇
AR98A□-T10-◇
AR98A□-T20-◇
AR98A□-T30-◇

◇**TH** Geared Type with Electromagnetic Brake

Product Name
AR46M□-T3.6-◇
AR46M□-T7.2-◇
AR46M□-T10-◇
AR46M□-T20-◇
AR46M□-T30-◇
AR66M□-T3.6-◇
AR66M□-T7.2-◇
AR66M□-T10-◇
AR66M□-T20-◇
AR66M□-T30-◇
AR98M□-T3.6-◇
AR98M□-T7.2-◇
AR98M□-T10-◇
AR98M□-T20-◇
AR98M□-T30-◇

◇Harmonic Geared Type

Product Name
AR46A□-H50-◇
AR46A□-H100-◇
AR66A□-H50-◇
AR66A□-H100-◇
AR98A□-H50-◇
AR98A□-H100-◇

◇Harmonic Geared Type with Electromagnetic Brake

Product Name
AR46M□-H50-◇
AR46M□-H100-◇
AR66M□-H50-◇
AR66M□-H100-◇
AR98M□-H50-◇
AR98M□-H100-◇

●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.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name. Select a desired cable length from 1 m, 2 m and 3 m.

The following items are included in each product.

Motor, Shaft Parallel Key*1, Driver, Cable for Motor, Cable for Electromagnetic Brake*2, Connector for I/O Signal, Connector for Regeneration Unit/Main Power Supply, Connector for 24 VDC Power Supply/Regeneration Unit Thermal Input/Electromagnetic Brake Output Terminal, Connector Wiring Lever, Operating Manual

●The product comes with a 1 m, 2 m or 3 m cable for motor and cable for electromagnetic brake*2. If you need cables longer than 3 m or cables offering excellent flexibility, select appropriate cables from the accessories (sold separately).

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

*2 Only with Electromagnetic Brake Type.

◇**PS** Geared Type

Product Name
AR46A□-PS5-◇
AR46A□-PS7-◇
AR46A□-PS10-◇
AR46A□-PS25-◇
AR46A□-PS36-◇
AR46A□-PS50-◇
AR66A□-PS5-◇
AR66A□-PS7-◇
AR66A□-PS10-◇
AR66A□-PS25-◇
AR66A□-PS36-◇
AR66A□-PS50-◇
AR98A□-PS5-◇
AR98A□-PS7-◇
AR98A□-PS10-◇
AR98A□-PS25-◇
AR98A□-PS36-◇
AR98A□-PS50-◇

◇**PS** Geared Type with Electromagnetic Brake

Product Name
AR46M□-PS5-◇
AR46M□-PS7-◇
AR46M□-PS10-◇
AR46M□-PS25-◇
AR46M□-PS36-◇
AR46M□-PS50-◇
AR66M□-PS5-◇
AR66M□-PS7-◇
AR66M□-PS10-◇
AR66M□-PS25-◇
AR66M□-PS36-◇
AR66M□-PS50-◇
AR98M□-PS5-◇
AR98M□-PS7-◇
AR98M□-PS10-◇
AR98M□-PS25-◇
AR98M□-PS36-◇
AR98M□-PS50-◇

◇**PN** Geared Type

Product Name
AR46A□-N5-◇
AR46A□-N7.2-◇
AR46A□-N10-◇
AR66A□-N5-◇
AR66A□-N7.2-◇
AR66A□-N10-◇
AR66A□-N25-◇
AR66A□-N36-◇
AR66A□-N50-◇
AR98A□-N5-◇
AR98A□-N7.2-◇
AR98A□-N10-◇
AR98A□-N25-◇
AR98A□-N36-◇
AR98A□-N50-◇

◇**PN** Geared Type with Electromagnetic Brake

Product Name
AR46M□-N5-◇
AR46M□-N7.2-◇
AR46M□-N10-◇
AR66M□-N5-◇
AR66M□-N7.2-◇
AR66M□-N10-◇
AR66M□-N25-◇
AR66M□-N36-◇
AR66M□-N50-◇
AR98M□-N5-◇
AR98M□-N7.2-◇
AR98M□-N10-◇
AR98M□-N25-◇
AR98M□-N36-◇
AR98M□-N50-◇

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

Specifications RoHS

cULus*1 CE

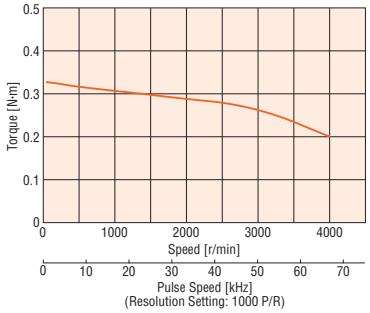
Product Name		Built-In Controller Package	AR46□□D-◇	AR66□□D-◇	AR69□□D-◇	AR98□□D-◇	AR911□□D-◇
		Pulse Input Package	AR46□□-◇	AR66□□-◇	AR69□□-◇	AR98□□-◇	AR911□□-◇
Maximum Holding Torque		N·m	0.3	1.2	2		4
Holding Torque at Motor Standstill	Power ON	N·m	0.15	0.6	1		2
	Electromagnetic Brake	N·m	0.15	0.6	1		–
Rotor Inertia		J: kg·m^2	58×10^{-7} [73×10^{-7}]*2	380×10^{-7} [500×10^{-7}]*2	750×10^{-7} [870×10^{-7}]*2	1100×10^{-7} [1220×10^{-7}]*2	2200×10^{-7}
Resolution	Resolution Setting: 1000 P/R		0.36°/Pulse				
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) IP20: Double shaft type Driver: IP20 (IP10)*3				
Power Supply Input	Voltage/Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60 Hz				
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60 Hz				
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	2.9 (2.4)*3	4.4 (3.6)*3	6.1 (4.9)*3	5.5 (4.6)*3	6.5 (5.9)*3
		Single-Phase 200-230 (240)*3V	1.9 (1.5)*3	2.7 (2.3)*3	3.8 (3)*3	3.4 (2.9)*3	4.1 (3.7)*3
		Three-Phase 200-230V	1	1.4	2	1.8	2.2
Control Power Supply			24 VDC±5% 0.5A				
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08A	24 VDC±5%*5 0.25A			–

●Either **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single shaft), **B** (double shaft) indicating the configuration is entered where the box □ is located within the product name of **AR911**.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

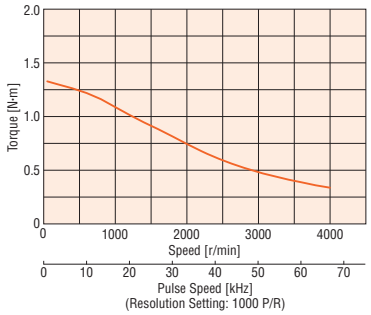
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

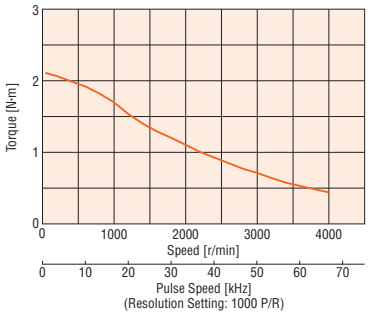
AR46



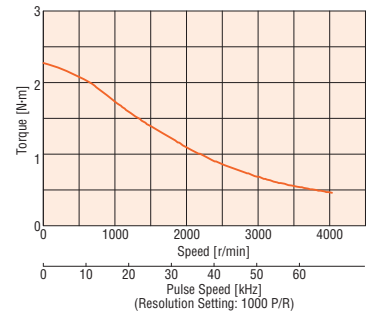
AR66



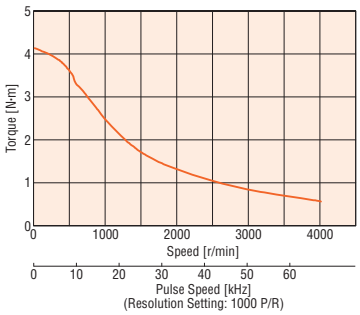
AR69



AR98



AR911



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

How to Read Specification Table

Maximum Holding Torque	The maximum holding torque (holding force) the motor has when power (rated current) is being supplied but the motor shaft is not rotating. (With geared types, the value of holding torque considers the permissible strength of the gear.)
Permissible Torque	The maximum value applied continuously by the mechanical strength of the output gear shaft. For the **TH** Geared Type, the total torque including acceleration/deceleration torque should not exceed the permissible torque.
Maximum Torque	The maximum torque can be applied to the output gear shaft during acceleration/deceleration such as when an inertial load is started or stopped. (**PS** Geared, **PN** Geared and Harmonic Geared Type only)
Holding Torque During Stop	The automatic current cutback function at motor standstill produces the holding torque. Electromagnetic brake: Static friction torque that the electromagnetic brake can generate when stopped. (The electromagnetic brake is a power off activated type.)

TH Geared Type Frame Size 42 mm

Specifications RoHS

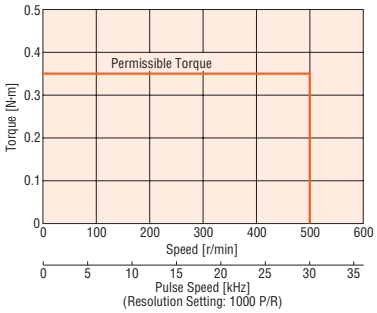
Product Name		Built-In Controller Package	AR46□□D-T3.6-◇	AR46□□D-T7.2-◇	AR46□□D-T10-◇	AR46□□D-T20-◇	AR46□□D-T30-◇
		Pulse Input Package	AR46□□-T3.6-◇	AR46□□-T7.2-◇	AR46□□-T10-◇	AR46□□-T20-◇	AR46□□-T30-◇
Maximum Holding Torque		N·m	0.35	0.7	1	1.5	
Rotor Inertia		J: kg·m^2	58×10^{-7}[73×10^{-7}]*2				
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	0.35	0.7	1	1.5	
Holding Torque at Motor Standstill	Power ON	N·m	0.34	0.69	0.96	1.4	1.5
	Electromagnetic Brake	N·m	0.34	0.69	0.96	1.4	1.5
Permissible Speed Range		r/min	0～500	0～250	0～180	0～90	0～60
Backlash		arc min (degrees)	45 (0.75°)	25 (0.42°)		15 (0.25°)	
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3				
Power Supply Input	Voltage/ Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz				
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz				
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	2.9 (2.4)*3				
		Single-Phase 200-230 (240)*3V	1.9 (1.5)*3				
		Three-Phase 200-230V	1				
Control Power Supply			24 VDC±5% 0.5A				
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08A				
Control Power Supply			24 VDC±5% 0.5A				
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08A				

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box ▢ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

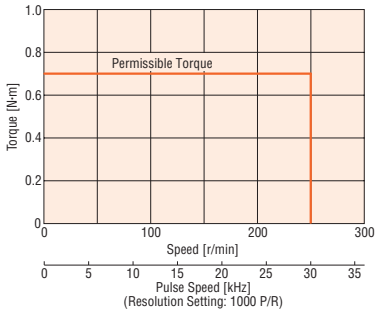
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

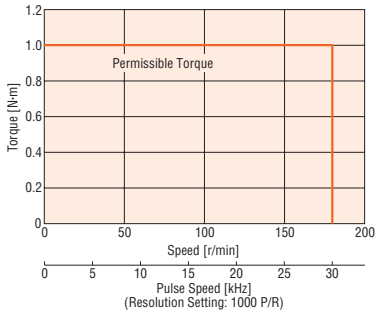
AR46 Gear Ratio 3.6



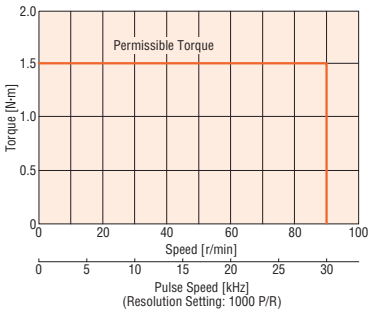
AR46 Gear Ratio 7.2



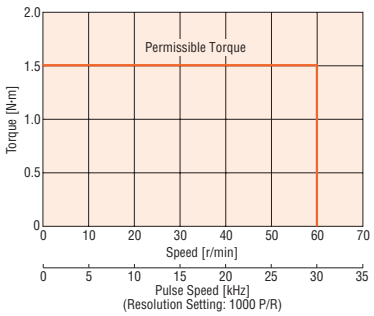
AR46 Gear Ratio 10



AR46 Gear Ratio 20



AR46 Gear Ratio 30



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C

TH Geared Type Frame Size 60 mm

Specifications RoHS

cULus *1 CE *1

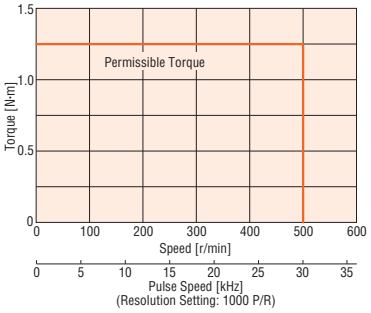
Product Name	Built-In Controller Package	AR66□□D-T3.6-◇	AR66□□D-T7.2-◇	AR66□□D-T10-◇	AR66□□D-T20-◇	AR66□□D-T30-◇
	Pulse Input Package	AR66□□-T3.6-◇	AR66□□-T7.2-◇	AR66□□-T10-◇	AR66□□-T20-◇	AR66□□-T30-◇
Maximum Holding Torque	N·m	1.25	2.5	3	3.5	4
Rotor Inertia	J: kg·m^2	380×10^{-7} [500×10^{-7}]*2				
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	1.25	2.5	3	3.5	4
Holding Torque at Motor Standstill	Power ON N·m	1.25	2.5	3	3.5	4
	Electromagnetic Brake N·m	1.25	2.5	3	3.5	4
Permissible Speed Range	r/min	0～500	0～250	0～180	0～90	0～60
Backlash	arc min (degrees)	35 (0.59°)	15 (0.25°)		10 (0.17°)	
Degree of Protection		Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3				
Power Supply Input Voltage/Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz				
	Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz				
Power Supply Input Maximum Input Current A	Single-Phase 100-115 (120)*3V	4.4 (3.6)*3				
	Single-Phase 200-230 (240)*3V	2.7 (2.3)*3				
	Three-Phase 200-230V	1.4				
Control Power Supply		24 VDC±5% 0.5A				
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.25A				

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

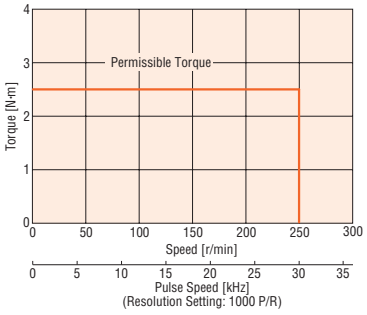
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

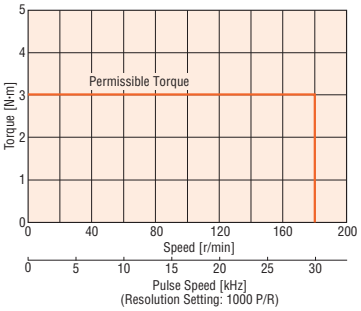
AR66 Gear Ratio 3.6



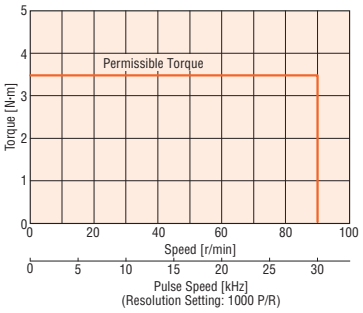
AR66 Gear Ratio 7.2



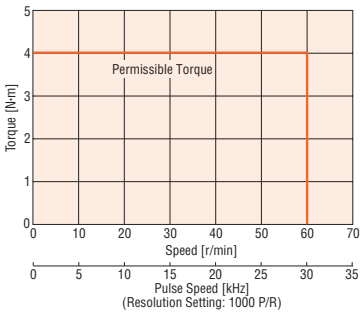
AR66 Gear Ratio 10



AR66 Gear Ratio 20



AR66 Gear Ratio 30



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

TH Geared Type Frame Size 90 mm

Specifications RoHS

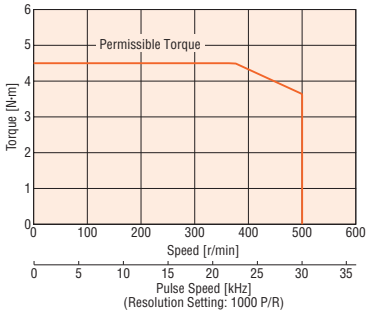
Product Name	Built-In Controller Package	AR98□□D-T3.6-◇	AR98□□D-T7.2-◇	AR98□□D-T10-◇	AR98□□D-T20-◇	AR98□□D-T30-◇
	Pulse Input Package	AR98□□-T3.6-◇	AR98□□-T7.2-◇	AR98□□-T10-◇	AR98□□-T20-◇	AR98□□-T30-◇
Maximum Holding Torque N·m		4.5	9		12	
Rotor Inertia J: kg·m^2		1100×10^{-7}[1220×10^{-7}]*2				
Gear 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		4.5	9		12	
Holding Torque at Motor Standstill	Power ON N·m	3.6	7.2	9	10	12
	Electromagnetic Brake N·m	3.6	7.2	9	10	12
Permissible Speed Range r/min		0～500	0～250	0～180	0～90	0～60
Backlash arc min (degrees)		25 (0.42°)	15 (0.25°)		10 (0.17°)	
Degree of Protection		Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3				
Power Supply Input Voltage/Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz				
	Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz				
Power Supply Input Maximum Input Current A	Single-Phase 100-115 (120)*3V	5.5 (4.6)*3				
	Single-Phase 200-230 (240)*3V	3.4 (2.9)*3				
	Three-Phase 200-230V	1.8				
Control Power Supply		24 VDC±5% 0.5A				
Electromagnetic Brake*4 Power Supply Input		24 VDC±5%*5 0.25A				

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

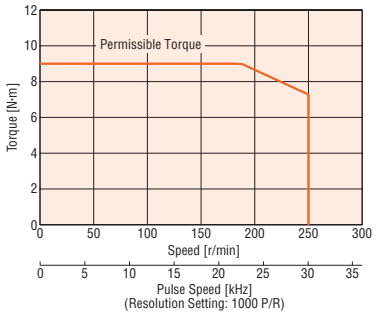
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

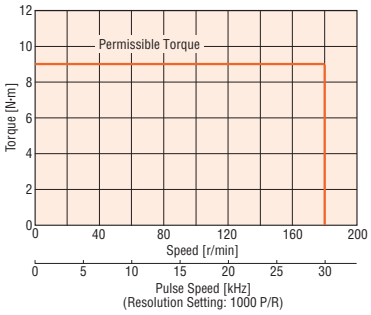
AR98 Gear Ratio 3.6



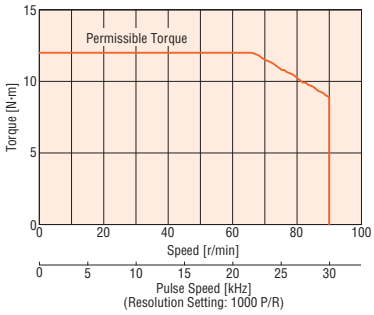
AR98 Gear Ratio 7.2



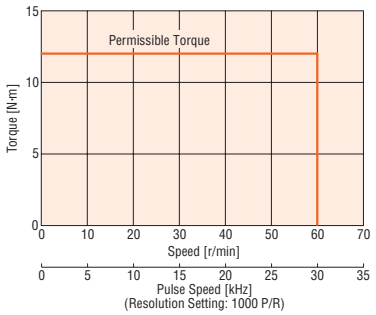
AR98 Gear Ratio 10



AR98 Gear Ratio 20



AR98 Gear Ratio 30



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PS Geared Type Frame Size 42 mm

Specifications RoHS

cULus *1 CE *1

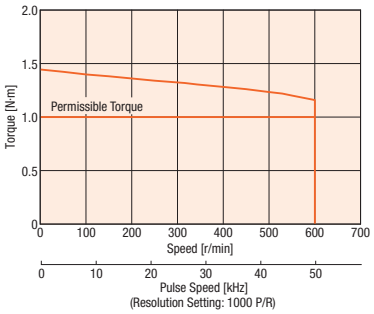
Product Name			Built-In Controller Package	AR46□□D-PS5-◇	AR46□□D-PS7-◇	AR46□□D-PS10-◇	AR46□□D-PS25-◇	AR46□□D-PS36-◇	AR46□□D-PS50-◇
			Pulse Input Package	AR46□□-PS5-◇	AR46□□-PS7-◇	AR46□□-PS10-◇	AR46□□-PS25-◇	AR46□□-PS36-◇	AR46□□-PS50-◇
Maximum Holding Torque		N·m		1	1.5		2.5	3	
Rotor Inertia		J: kg·m^2		58×10^{-7}[73×10^{-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		1	1.5		2.5	3	
Maximum Torque		N·m		1.5	2		6		
Holding Torque at Motor Standstill	Power ON	N·m		0.75	1	1.5	2.5	3	
	Electromagnetic Brake	N·m		0.75	1	1.5	2.5	3	
Permissible Speed Range		r/min		0～600	0～416	0～300	0～120	0～83	0～60
Backlash		arc min (degrees)		25 (0.42°)					
Degree of Protection				Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input	Voltage/ Frequency		Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz					
			Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz					
	Maximum Input Current A	Single-Phase 100-115 (120)*3	V	2.9 (2.4)*3					
		Single-Phase 200-230 (240)*3	V	1.9 (1.5)*3					
		Three-Phase 200-230	V	1					
Control Power Supply				24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input			24 VDC±5%*5 0.08A					

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

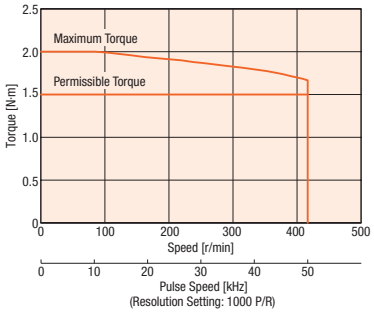
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

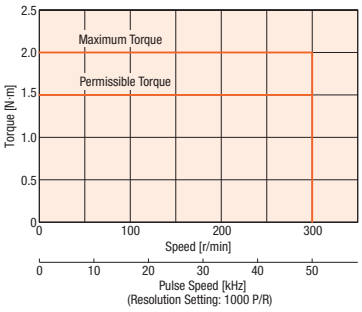
AR46 Gear Ratio 5



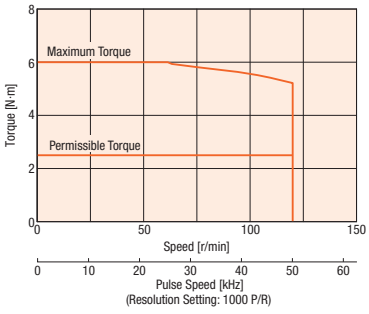
AR46 Gear Ratio 7.2



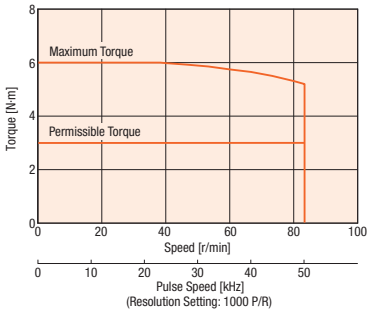
AR46 Gear Ratio 10



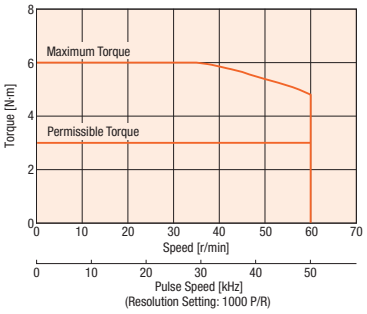
AR46 Gear Ratio 25



AR46 Gear Ratio 36



AR46 Gear Ratio 50



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PS Geared Type Frame Size 60 mm

Specifications RoHS

Product Name		Built-In Controller Package	AR66□□D-PS5-◇	AR66□□D-PS7-◇	AR66□□D-PS10-◇	AR66□□D-PS25-◇	AR66□□D-PS36-◇	AR66□□D-PS50-◇
		Pulse Input Package	AR66□□-PS5-◇	AR66□□-PS7-◇	AR66□□-PS10-◇	AR66□□-PS25-◇	AR66□□-PS36-◇	AR66□□-PS50-◇
Maximum Holding Torque		N·m	3.5	4	5	8		
Rotor Inertia		J: kg·m^2	380×10^{-7}[500×10^{-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	3.5	4	5	8		
Maximum Torque		N·m	7	9	11	16	20	
Holding Torque at Motor Standstill	Power ON	N·m	3	4	5	8		
	Electromagnetic Brake	N·m	3	4	5	8		
Permissible Speed Range		r/min	0～600	0～416	0～300	0～120	0～83	0～60
Backlash		arc min (degrees)	15 (0.25°)					
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input	Voltage/ Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz					
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz					
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	4.4 (3.6)*3					
		Single-Phase 200-230 (240)*3V	2.7 (2.3)*3					
		Three-Phase 200-230V	1.4					
Control Power Supply			24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.25A					

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

*1 Pulse input package only

*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

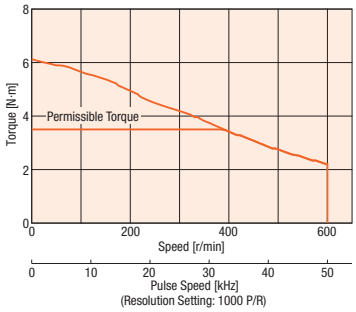
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.

*4 For pulse input package, a separate power supply for electromagnetic brakes is required.

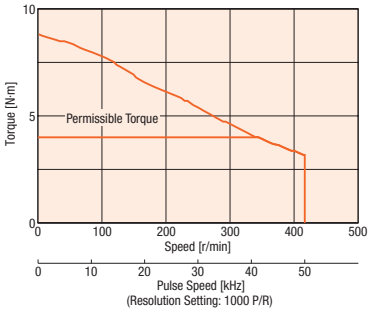
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

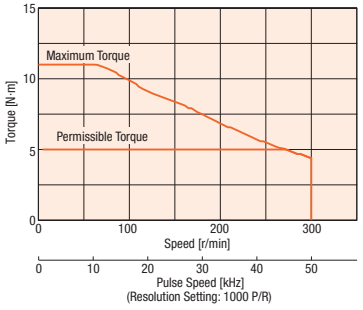
AR66 Gear Ratio 5



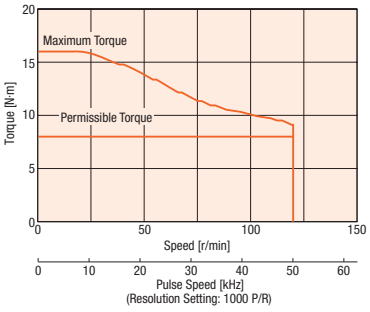
AR66 Gear Ratio 7.2



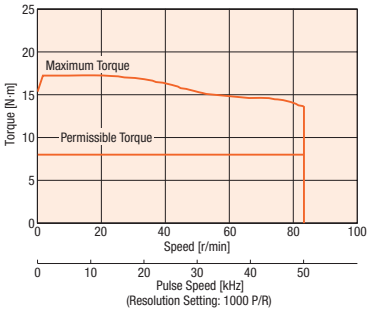
AR66 Gear Ratio 10



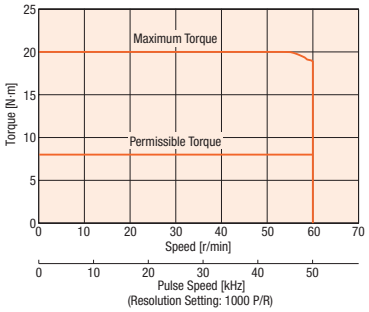
AR66 Gear Ratio 25



AR66 Gear Ratio 36



AR66 Gear Ratio 50



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PS Geared Type Frame Size 90 mm

Specifications RoHS

cULus *1 CE *1

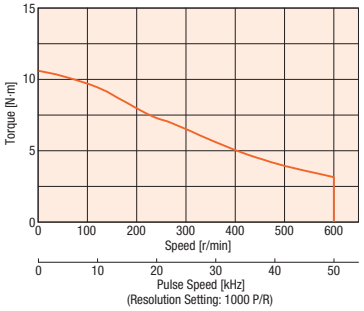
Product Name			Built-In Controller Package	AR98□□D-PS5-◇	AR98□□D-PS7-◇	AR98□□D-PS10-◇	AR98□□D-PS25-◇	AR98□□D-PS36-◇	AR98□□D-PS50-◇
			Pulse Input Package	AR98□□-PS5-◇	AR98□□-PS7-◇	AR98□□-PS10-◇	AR98□□-PS25-◇	AR98□□-PS36-◇	AR98□□-PS50-◇
Maximum Holding Torque		N·m		10	14	20	37		
Rotor Inertia		J: kg·m^2		1100×10^{-7}[1220×10^{-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		10	14	20	37		
Maximum Torque		N·m		28	35		56	60	
Holding Torque at Motor Standstill	Power ON	N·m		5	7.2	10	25	36	37
	Electromagnetic Brake	N·m		5	7.2	10	25	36	37
Permissible Speed Range		r/min		0~600	0~416	0~300	0~120	0~83	0~60
Backlash		arc min (degrees)		15 (0.25°)					
Degree of Protection				Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input	Voltage/ Frequency		Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15~+6% 50/60Hz					
			Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15~+10% 50/60Hz					
	Maximum Input Current A	Single-Phase 100-115 (120)*3V		5.5 (4.6)*3					
		Single-Phase 200-230 (240)*3V		3.4 (2.9)*3					
		Three-Phase 200-230V		1.8					
Control Power Supply				24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input			24 VDC±5%*5 0.25A					

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

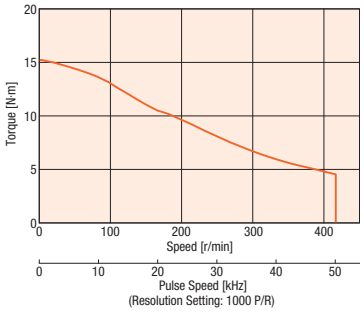
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

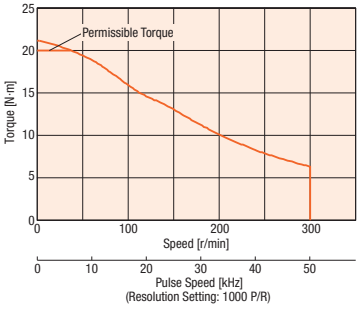
AR98 Gear Ratio 5



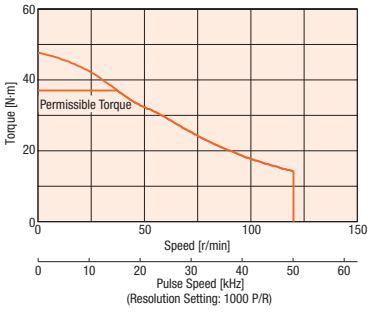
AR98 Gear Ratio 7.2



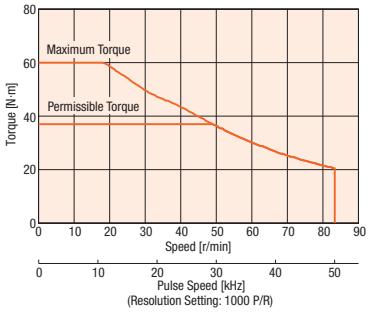
AR98 Gear Ratio 10



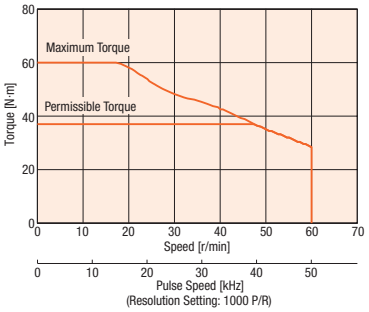
AR98 Gear Ratio 25



AR98 Gear Ratio 36



AR98 Gear Ratio 50



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PN Geared Type Frame Size 42 mm

Specifications RoHS

cULus *1 *1 CE

Product Name		Built-In Controller Package	AR46□□D-N5-◇	AR46□□D-N7.2-◇	AR46□□D-N10-◇
		Pulse Input Package	AR46□□-N5-◇	AR46□□-N7.2-◇	AR46□□-N10-◇
Maximum Holding Torque		N·m	1.35	1.5	
Rotor Inertia		J: kg·m^2	58×10^{-7}[73×10^{-7}]*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	1.35	1.5	
Maximum Torque		N·m	1.5	2	
Holding Torque at Motor Standstill	Power ON	N·m	0.75	1	1.5
	Electromagnetic Brake	N·m	0.75	1	1.5
Permissible Speed Range		r/min	0～600	0～416	0～300
Backlash		arc min (degrees)	2 (0.034°)		
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3		
Power Supply Input	Voltage/ Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz		
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz		
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	2.9 (2.4)*3		
		Single-Phase 200-230 (240)*3V	1.9 (1.5)*3		
		Three-Phase 200-230V	1		
Control Power Supply			24 VDC±5% 0.5A		
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08A		

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box ▢ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

*1 Pulse input package only

*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

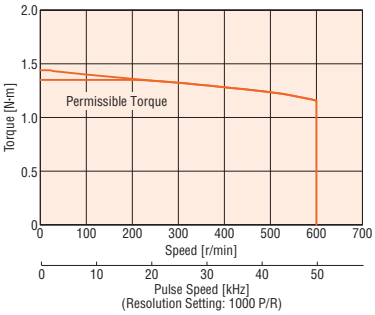
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.

*4 For pulse input package, a separate power supply for electromagnetic brakes is required.

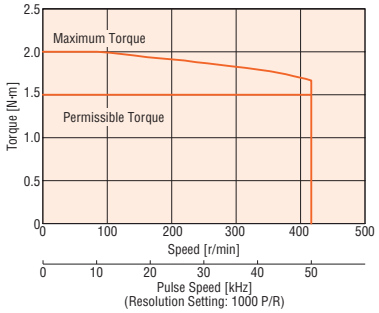
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

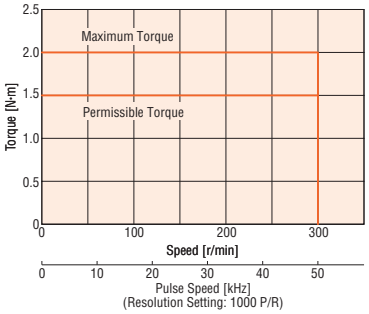
AR46 Gear Ratio 5



AR46 Gear Ratio 7.2



AR46 Gear Ratio 10



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PN Geared Type Frame Size 60 mm

Specifications RoHS

cULus *1 CE *1

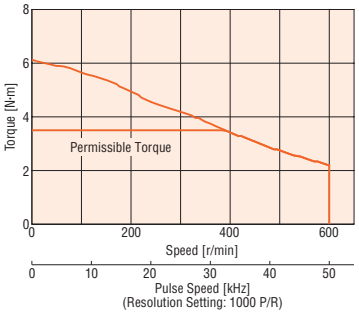
Product Name	Built-In Controller Package	AR66□□D-N5-◇	AR66□□D-N7.2-◇	AR66□□D-N10-◇	AR66□□D-N25-◇	AR66□□D-N36-◇	AR66□□D-N50-◇
	Pulse Input Package	AR66□□-N5-◇	AR66□□-N7.2-◇	AR66□□-N10-◇	AR66□□-N25-◇	AR66□□-N36-◇	AR66□□-N50-◇
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertia	J: kg·m^2	380×10^{-7}[500×10^{-7}]*2					
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	3.5	4	5	8		
Maximum Torque	N·m	7	9	11	16	20	
Holding Torque at Motor Standstill	Power ON N·m	3	4	5	8		
	Electromagnetic Brake N·m	3	4	5	8		
Permissible Speed Range	r/min	0～600	0～416	0～300	0～120	0～83	0～60
Backlash	arc min (degrees)	2 (0.034°)			3 (0.05°)		
Degree of Protection		Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input Voltage/Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz					
	Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz					
Power Supply Input Maximum Input Current A	Single-Phase 100-115 (120)*3V	4.4 (3.6)*3					
	Single-Phase 200-230 (240)*3V	2.7 (2.3)*3					
	Three-Phase 200-230V	1.4					
Control Power Supply		24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.25A					

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

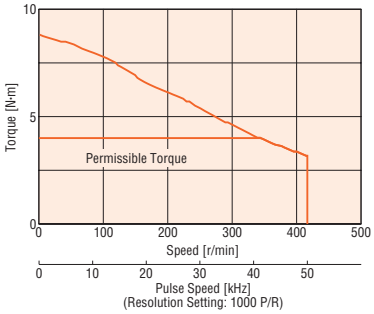
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

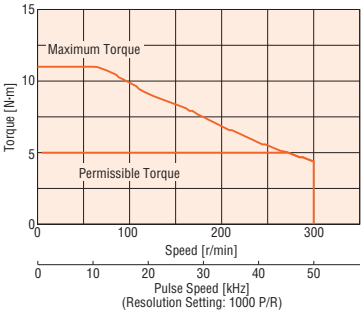
AR66 Gear Ratio 5



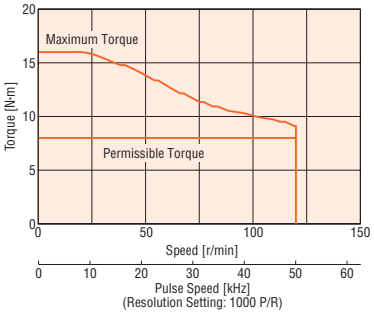
AR66 Gear Ratio 7.2



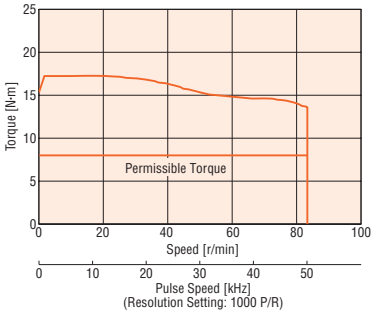
AR66 Gear Ratio 10



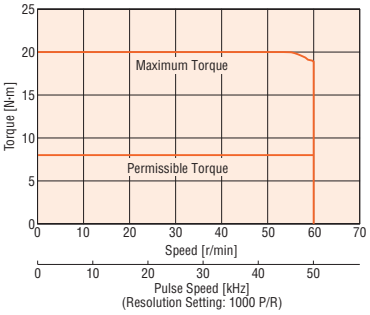
AR66 Gear Ratio 25



AR66 Gear Ratio 36



AR66 Gear Ratio 50



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

PN Geared Type Frame Size 90 mm

Specifications RoHS

Product Name		Built-In Controller Package	AR98□□D-N5-◇	AR98□□D-N7.2-◇	AR98□□D-N10-◇	AR98□□D-N25-◇	AR98□□D-N36-◇	AR98□□D-N50-◇
		Pulse Input Package	AR98□□-N5-◇	AR98□□-N7.2-◇	AR98□□-N10-◇	AR98□□-N25-◇	AR98□□-N36-◇	AR98□□-N50-◇
Maximum Holding Torque		N·m	10	14	20	37		
Rotor Inertia		J: kg·m^2	1100×10^{-7}[1220×10^{-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	10	14	20	37		
Maximum Torque		N·m	28	35		56	60	
Holding Torque at Motor Standstill	Power ON	N·m	5	7.2	10	25	36	37
	Electromagnetic Brake	N·m	5	7.2	10	25	36	37
Permissible Speed Range		r/min	0～600	0～416	0～300	0～120	0～83	0～60
Backlash		arc min (degrees)	2 (0.034°)			3 (0.05°)		
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input	Voltage/ Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz					
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz					
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	5.5 (4.6)*3					
		Single-Phase 200-230 (240)*3V	3.4 (2.9)*3					
		Three-Phase 200-230V	1.8					
Control Power Supply			24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.25A					

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

*1 Pulse input package only

*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

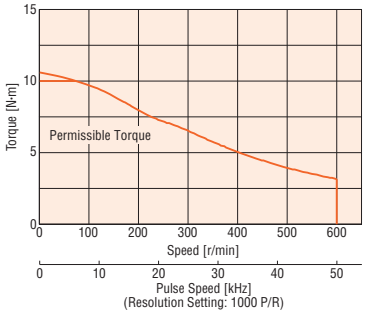
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.

*4 For pulse input package, a separate power supply for electromagnetic brakes is required.

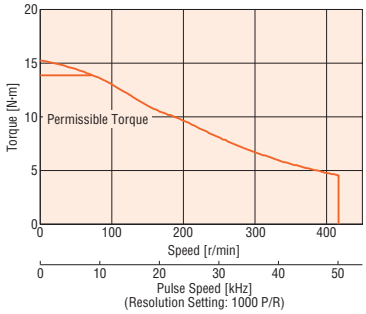
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

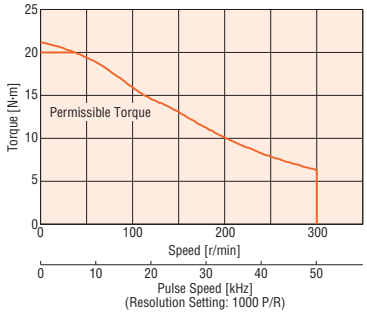
AR98 Gear Ratio 5



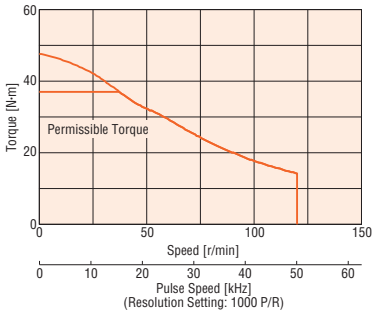
AR98 Gear Ratio 7.2



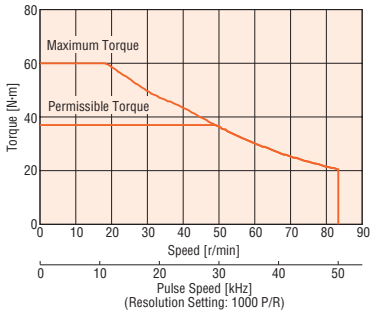
AR98 Gear Ratio 10



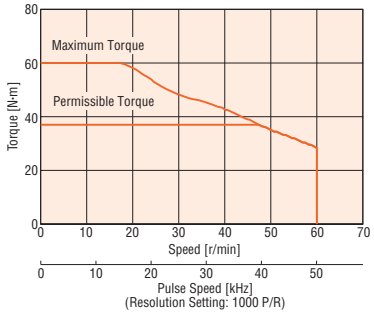
AR98 Gear Ratio 25



AR98 Gear Ratio 36



AR98 Gear Ratio 50



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.

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

Specifications RoHS

cULus *1 CE *1

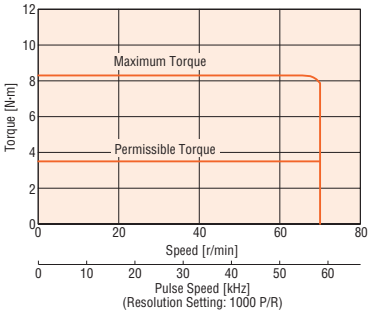
Product Name		Built-In Controller Package	AR46□□D-H50-◇	AR46□□D-H100-◇	AR66□□D-H50-◇	AR66□□D-H100-◇	AR98□□D-H50-◇	AR98□□D-H100-◇
		Pulse Input Package	AR46□□-H50-◇	AR46□□-H100-◇	AR66□□-H50-◇	AR66□□-H100-◇	AR98□□-H50-◇	AR98□□-H100-◇
Maximum Holding Torque		N·m	3.5	5	5.5	8	25	37
Rotor Inertia		J: kg·m^2	75×10^{-7}[90×10^{-7}]*2		415×10^{-7}[535×10^{-7}]*2		1300×10^{-7}[1420×10^{-7}]*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	3.5	5	5.5	8	25	37
Maximum Torque		N·m	8.3	11	18	28	35	55
Holding Torque at Motor Standstill	Power ON	N·m	3.5	5	5.5	8	25	37
	Electromagnetic Brake	N·m	3.5	5	5.5	8	25	37
Permissible Speed Range		r/min	0～70	0～35	0～70	0～35	0～70	0～35
Lost Motion (Load Torque)		arc min	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)	
Degree of Protection			Motor: IP54: Single shaft type (Excluding the mounting surface and connector) Driver: IP20 (IP10)*3					
Power Supply Input	Voltage/Frequency	Built-In Controller Package	Single-Phase 100-120 VAC Single-Phase 200-240 VAC −15～+6% 50/60Hz					
		Pulse Input Package	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC −15～+10% 50/60Hz					
	Maximum Input Current A	Single-Phase 100-115 (120)*3V	2.9 (2.4)*3		4.4 (3.6)*3		5.5 (4.6)*3	
		Single-Phase 200-230 (240)*3V	1.9 (1.5)*3		2.7 (2.3)*3		3.4 (2.9)*3	
		Three-Phase 200-230V	1		1.4		1.8	
Control Power Supply			24 VDC±5% 0.5A					
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08A		24 VDC±5%*5 0.25A			

●Either **A** (single shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in entered where the box □ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

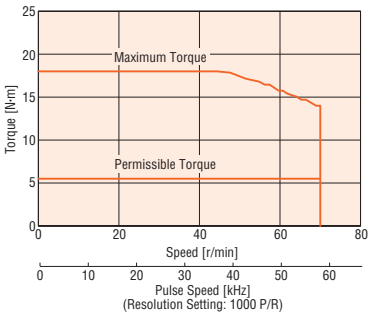
*1 Pulse input package only
*2 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.
*3 The values inside the parentheses ( ) represent the specification for the built-in controller package.
*4 For pulse input package, a separate power supply for electromagnetic brakes is required.
*5 If the wiring distance between the motor and driver is extended to 20 m min. using an accessory cable (sold separately), the 24 VDC±4% specification applies.

Speed – Torque Characteristics

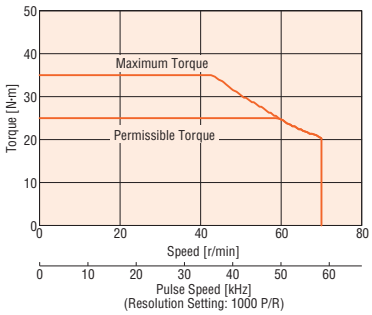
AR46 Gear Ratio 50



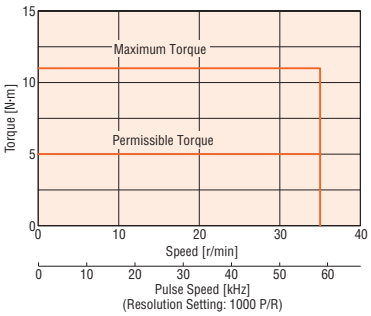
AR66 Gear Ratio 50



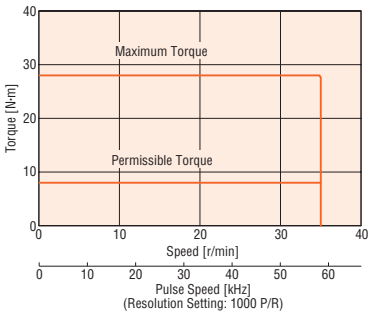
AR98 Gear Ratio 50



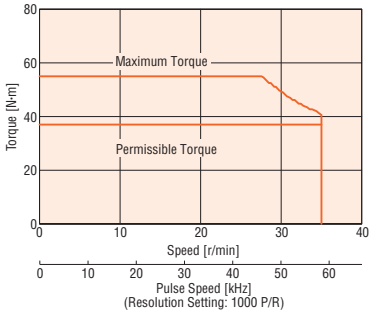
AR46 Gear Ratio 100



AR66 Gear Ratio 100



AR98 Gear Ratio 100



Note

●Pay attention to heat dissipation from the motor as there will be a considerable amount of heat under certain conditions. Be sure to keep the temperature of the motor case under 100°C.
●In order to prevent deterioration of the gear grease in the harmonic geared type, keep the temperature of the gear case at 70°C max.

Driver Specifications

		Built-In Controller Package	Pulse Input Package
Maximum Input Pulse Frequency		–	When the host controller is a line driver output: 500 kHz (When the pulse duty is 50%) When the host controller is an open-collector output: 250 kHz (When the pulse duty is 50%)*
Number of Positioning Data Sets		64 Points	–
Positioning Operation	One-Shot	○	–
	Linked	○	–
	Linked 2	○	–
	Sequential	○	–
	Direct	○	–
	Pushing	○	○
Continuous Operation		○	–
JOG Operation		○	–
Return-To-Home Operation		○	–
Test Operation		○	○
Absolute Backup System		○	–
Control Module **OPX-2A**		○	○
Data Setting Software **MEXE02**		○	○

*Value applies when an accessory general-purpose cable (**CC36D1-1**) is used.

Built-In Controller Package RS-485 Communication Specifications

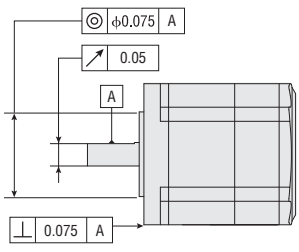
Protocol	Modbus protocol (Modbus RTU mode)
Electrical Characteristics	EIA-485 compliance Twisted-pair wire (TIA/EIA-568B CAT5e or greater recommended) is used up to a total extension length of 50 m.
Transmission/Reception Mode	Half-duplex communication
Baud Rate	9600 bps/19200 bps/38400 bps/57600 bps/115200 bps
Physical Layer	Asynchronous mode (data: 8-bit, stop bit: 1-bit/2-bit, parity: none/odd/even)
Connection Type	Up to 31 units can be connected to one programmable controller (master equipment).

General Specifications

		Motor	Driver	
			Built-In Controller Package	Pulse Input Package
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 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 (non-freezing)*1: Standard type, **TH**, **PS**, **PN** geared type 0～+40°C (non-freezing)*1: Harmonic geared type	0～+55°C (non-freezing)*2	0～+50°C (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: IP54 (Excluding the mounting surface and connectors) Standard Shaft (Double shaft): IP20	IP10	IP20
Stop Position Accuracy		**AR46**: ±4 arc minutes (±0.067°) **AR66**, **AR69**, **AR98**, **AR911**: ±3 arc minutes (±0.05°)		
Shaft Runout		0.05 T. I. R. (mm)*3	–	
Concentricity for Shaft in the Mounting Pilot		0.075 T. I. R. (mm)*3	–	
Perpendicularity for Shaft of the Mounting Surface		0.075 T. I. R. (mm)*3	–	

*1 When a heat sink of a capacity at least equivalent to an aluminum plate with a size of 250×250 mm, 6 mm 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, 2 mm 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 shaft center.

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



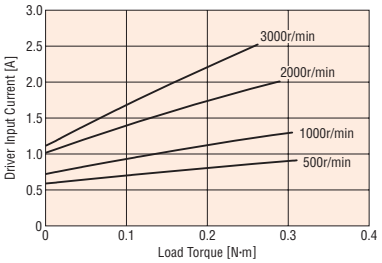
Load Torque – Driver Input Current Characteristics

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.

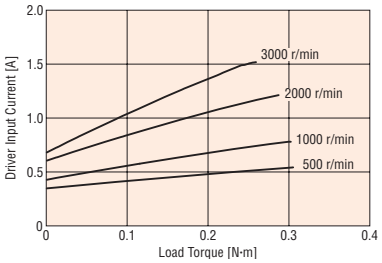
Motor shaft speed [r/min] = Gear output shaft speed × Gear ratio

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

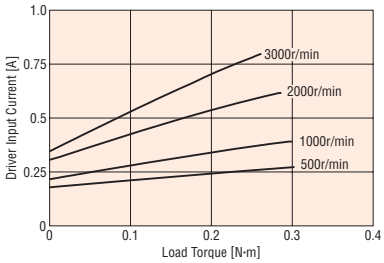
AR46□A



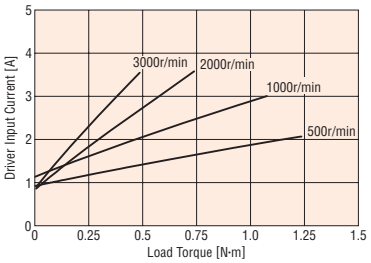
AR46□C



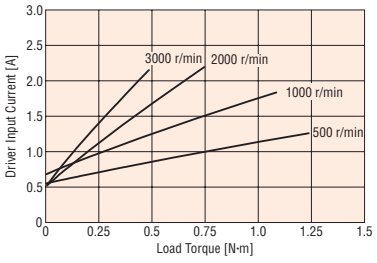
AR46□S



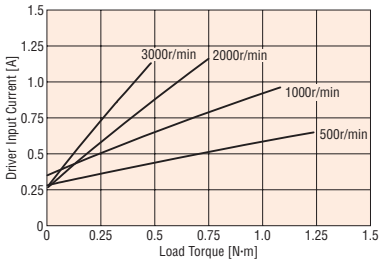
AR66□A



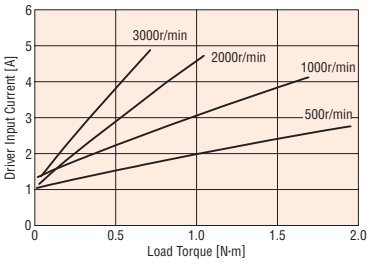
AR66□C



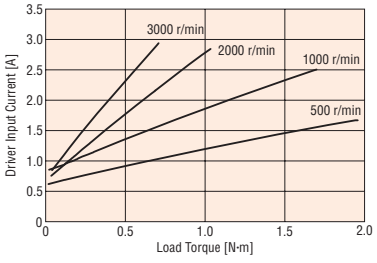
AR66□S



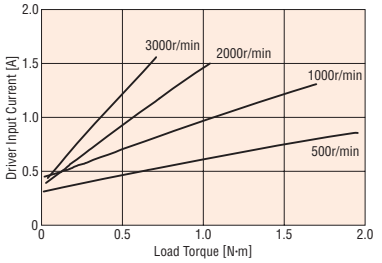
AR69□A



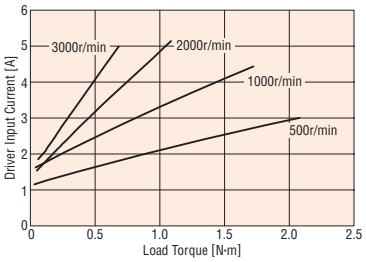
AR69□C



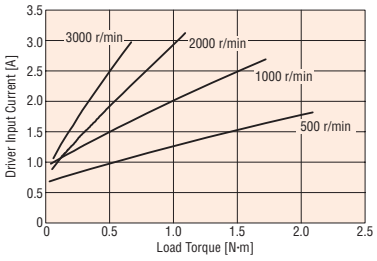
AR69□S



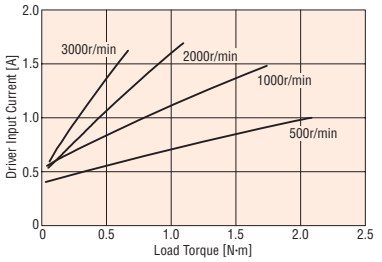
AR98□A



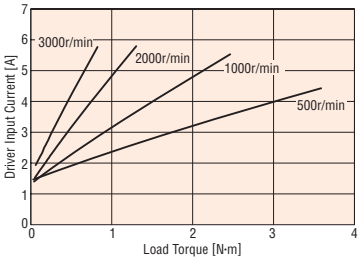
AR98□C



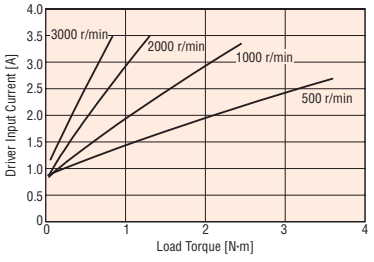
AR98□S



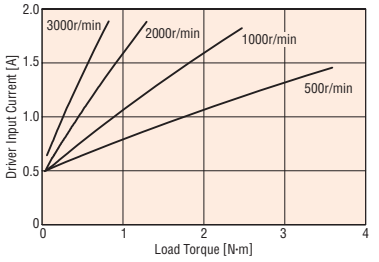
AR911□A



AR911□C



AR911□S



Note

- Either **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) indicating the configuration is entered where the box □ is located within the product name.
  Either **A** (single shaft), **B** (double shaft) indicating the configuration is entered where the box □ is located within the product name of **AR911**.
- The built-in positioning function type has a low reference value of approximately 0.1 A.

Common Specifications

Permissible Overhung Load and Permissible Thrust Load

AR Series

Unit = N

Type	Motor Frame Size mm	Product Name	Gear Ratio	Permissible Overhung Load Distance from Shaft End 0 mm	5 mm	10 mm	15 mm	20 mm	Permissible Thrust Load
Standard Type	42	**AR46**	–	35	44	58	85	–	4.6 [6.1]*
	60	**AR66**		90	100	130	180	270	8.8 [11.8]*
		AR69							13.7 [16.7]*
	85	**AR98**		260	290	340	390	480	18 [24]*
		AR911							29
TH Geared Type	42	**AR46**	**3.6**, **7.2**, **10**, **20**, **30**	10	14	20	30	–	15
	60	**AR66**		70	80	100	120	150	40
	90	**AR98**		220	250	300	350	400	100
PS Geared Type	42	**AR46**	**5**, **7.2**, **10**	73	84	100	123	–	50
			25, **36**, **50**	109	127	150	184	–	
	60	**AR66**	**5**	200	220	250	280	320	100
			7.2, **10**	250	270	300	340	390	
			25, **36**, **50**	330	360	400	450	520	
	90	**AR98**	**5**, **7.2**, **10**	480	540	600	680	790	300
			25	850	940	1050	1190	1380	
			36	930	1030	1150	1310	1520	
			50	1050	1160	1300	1480	1710	
PN Geared Type	42	**AR46**	**5**, **7.2**, **10**	100	120	150	190	–	100
	60	**AR66**	**5**	200	220	250	280	320	
			7.2, **10**	250	270	300	340	390	
			25, **36**, **50**	330	360	400	450	520	
	90	**AR98**	**5**	480	520	550	580	620	300
			7.2, **10**	480	540	600	680	790	
			25	850	940	1050	1110	1190	
			36	930	1030	1150	1220	1300	
			50	1050	1160	1300	1380	1490	
Harmonic Geared Type	42	**AR46**	**50**, **100**	180	220	270	360	510	220
	60	**AR66**		320	370	440	550	720	450
	90	**AR98**		1090	1150	1230	1310	1410	1300

●The motor product name has characters for identifying the serie's name.
*The brackets [ ] indicate the value for the electromagnetic brake type.

Note

●With a double shaft product, the output shaft located on the opposite side of the motor output shaft is used to install a slit disk or similar device. Do not apply any load torque, overhung load or thrust load on this output shaft.

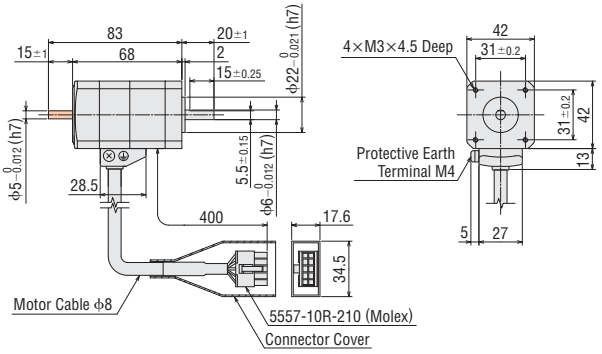
Dimensions (Unit = mm)

Motors

◇Standard Type

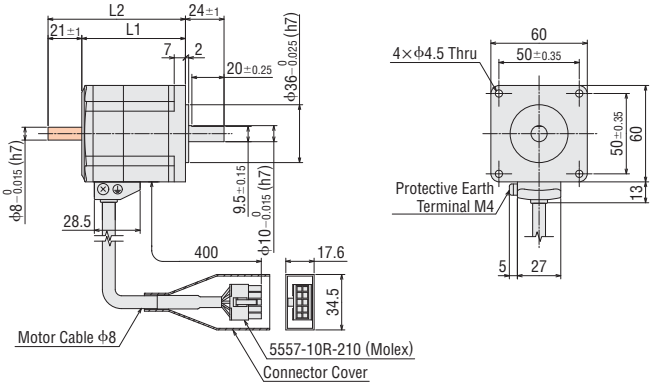
Frame Size 42 mm

Product Name		Motor Product Name	Mass kg	CAD
Built-In Controller	Pulse Input			
AR46A□D-◇	**AR46A□-◇**	ARM46AC	0.47	B447
AR46B□D-◇	**AR46B□-◇**	ARM46BC		



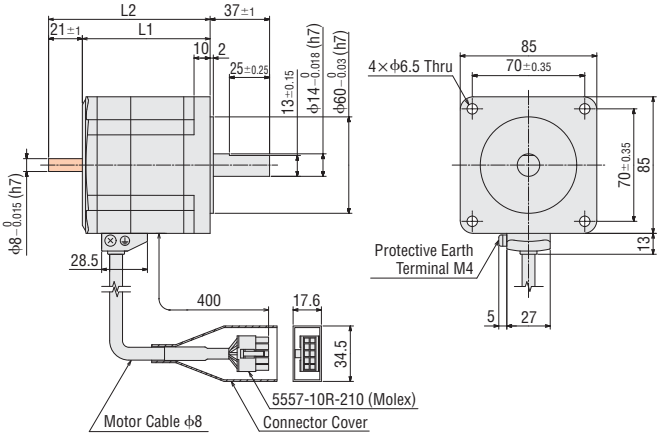
Frame Size 60 mm

Product Name		Motor Product Name	L1	L2	Mass kg	CAD
Built-In Controller	Pulse Input					
AR66A□D-◇	**AR66A□-◇**	ARM66AC	64.5	–	0.9	B448
AR66B□D-◇	**AR66B□-◇**	ARM66BC		85.5		
AR69A□D-◇	**AR69A□-◇**	ARM69AC	90	–	1.4	B449
AR69B□D-◇	**AR69B□-◇**	ARM69BC		111		



Frame Size 85 mm

Product Name		Motor Product Name	L1	L2	Mass kg	CAD
Built-In Controller	Pulse Input					
AR98A□D-◇	**AR98A□-◇**	ARM98AC	79.5	–	1.9	B455
AR98B□D-◇	**AR98B□-◇**	ARM98BC		100.5		
AR911A□D-◇	**AR911A□-◇**	ARM911AC	109.5	–	3.0	B456
AR911B□D-◇	**AR911B□-◇**	ARM911BC		130.5		

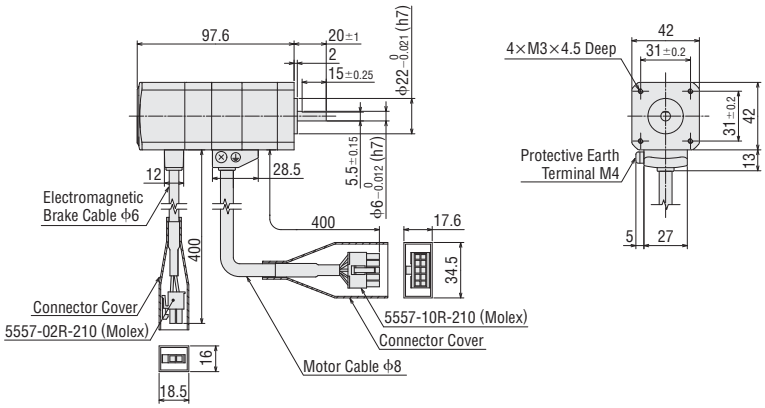


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.
●These dimensions are for double shaft models. For single shaft models, ignore the ▭ areas.

◇Standard Type with Electromagnetic Brake

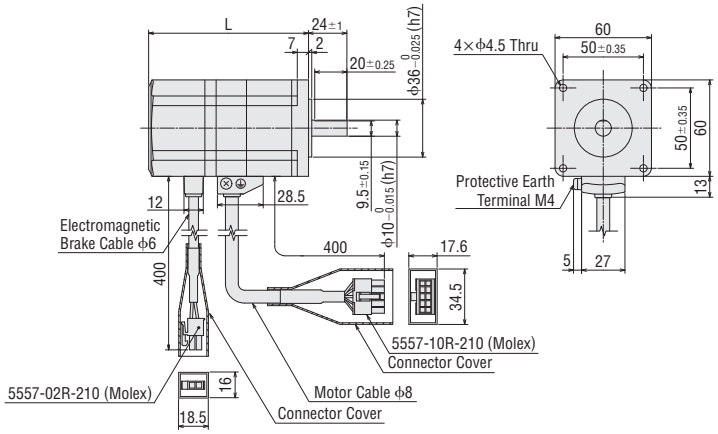
Frame Size 42 mm

Product Name		Motor Product Name	Mass kg	CAD
Built-In Controller	Pulse Input			
AR46M□D-◇	**AR46M□-◇**	ARM46MC	0.62	B450



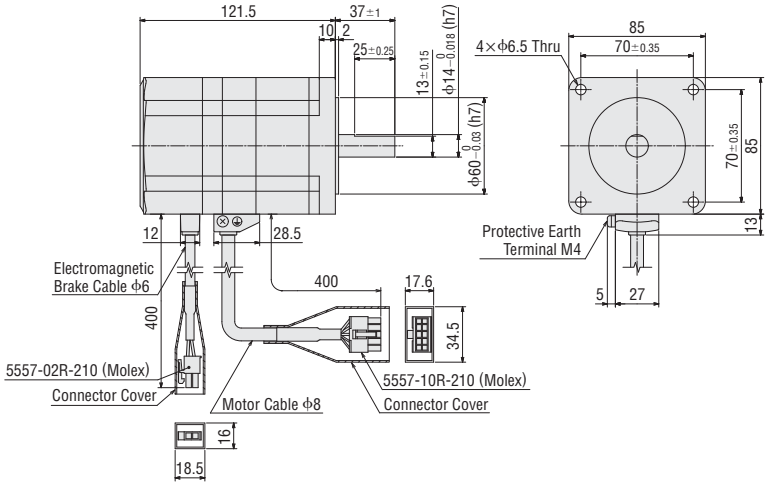
Frame Size 60 mm

Product Name		Motor Product Name	L	Mass kg	CAD
Built-In Controller	Pulse Input				
AR66M□D-◇	**AR66M□-◇**	ARM66MC	99.5	1.2	B451
AR69M□D-◇	**AR69M□-◇**	ARM69MC	125	1.7	B452



Frame Size 85 mm

Product Name		Motor Product Name	Mass kg	CAD
Built-In Controller	Pulse Input			
AR98M□D-◇	**AR98M□-◇**	ARM98MC	2.5	B457

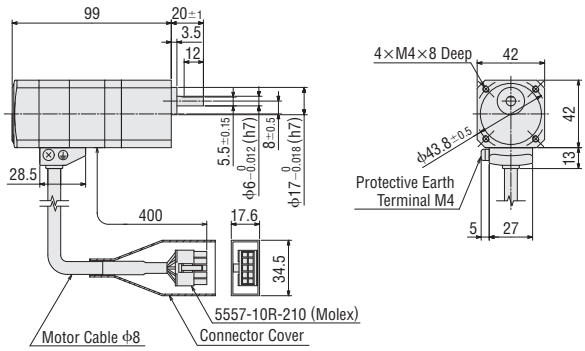


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**TH** Geared Type

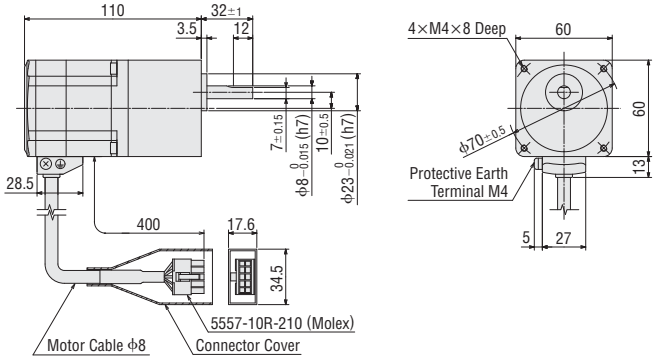
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46A□D-T■-◇	**AR46A□-T■-◇**	ARM46AC-T■	**3.6**, **7.2**, **10**, **20**, **30**	0.62	B458



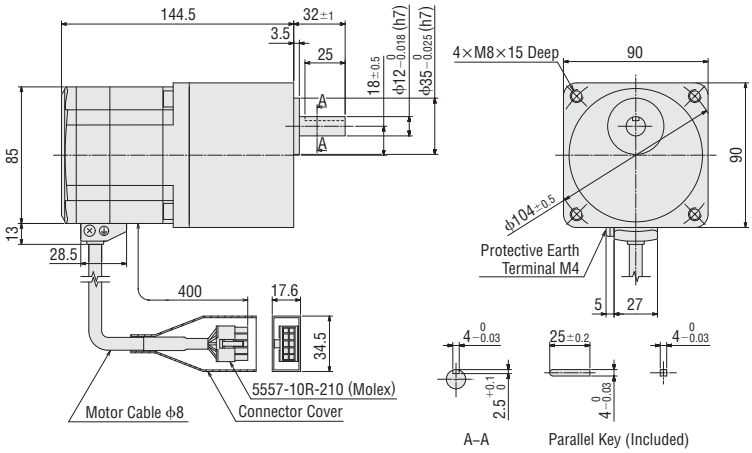
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR66A□D-T■-◇	**AR66A□-T■-◇**	ARM66AC-T■	**3.6**, **7.2**, **10**, **20**, **30**	1.3	B459



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR98A□D-T■-◇	**AR98A□-T■-◇**	ARM98AC-T■	**3.6**, **7.2**, **10**, **20**, **30**	3.1	B469

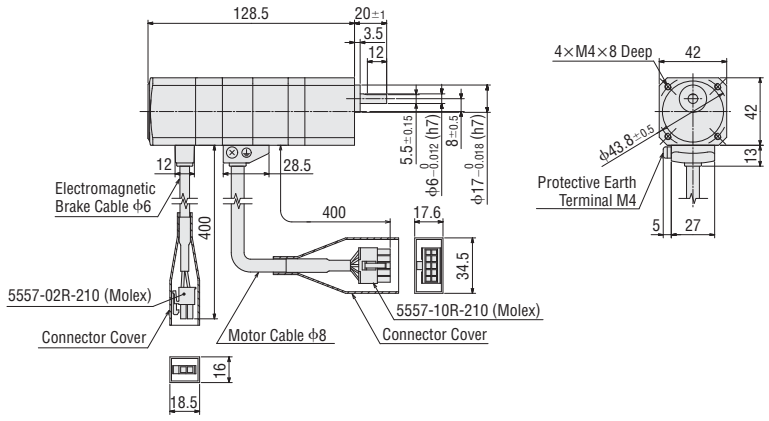


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**TH** Geared Type with Electromagnetic Brake

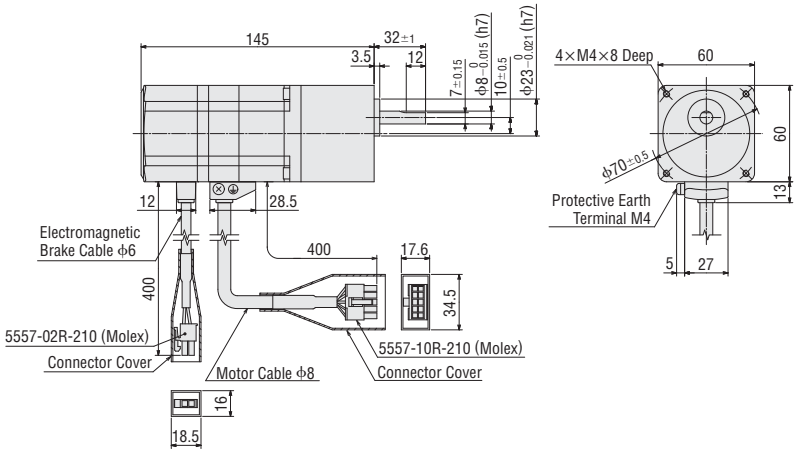
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46M□D-T■-◇	**AR46M□-T■-◇**	ARM46MC-T■	**3.6**, **7.2**, **10**, **20**, **30**	0.77	B461



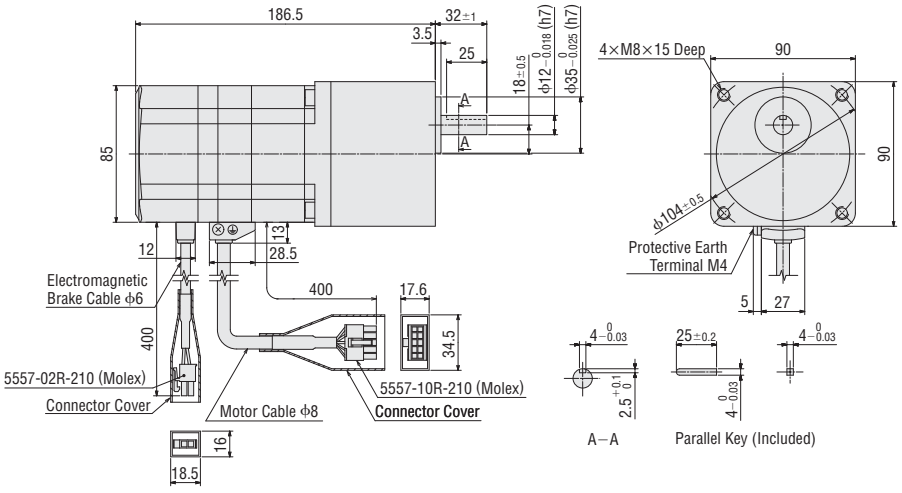
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR66M□D-T■-◇	**AR66M□-T■-◇**	ARM66MC-T■	**3.6**, **7.2**, **10**, **20**, **30**	1.6	B462



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR98M□D-T■-◇	**AR98M□-T■-◇**	ARM98MC-T■	**3.6**, **7.2**, **10**, **20**, **30**	3.7	B463

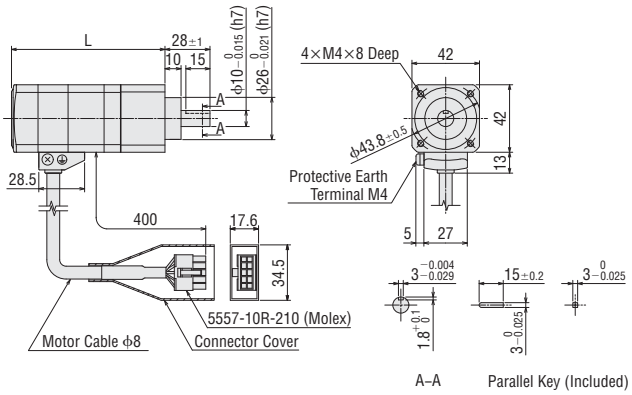


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**PS** Geared Type

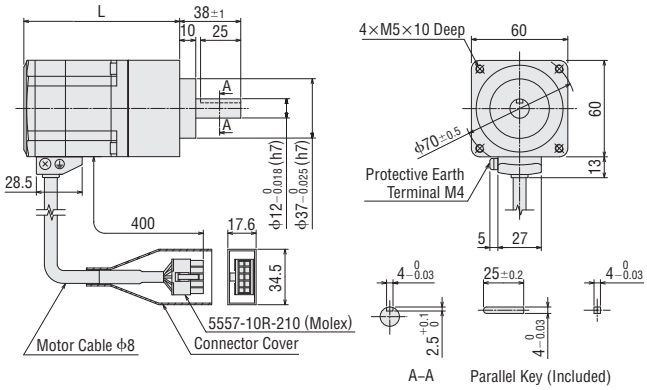
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR46A□D-PS■-◇	**AR46A□-PS■-◇**	ARM46AC-PS■	**5**, **7.2**, **10**	96	0.67	B666
			25, **36**, **50**	119.5	0.82	B667



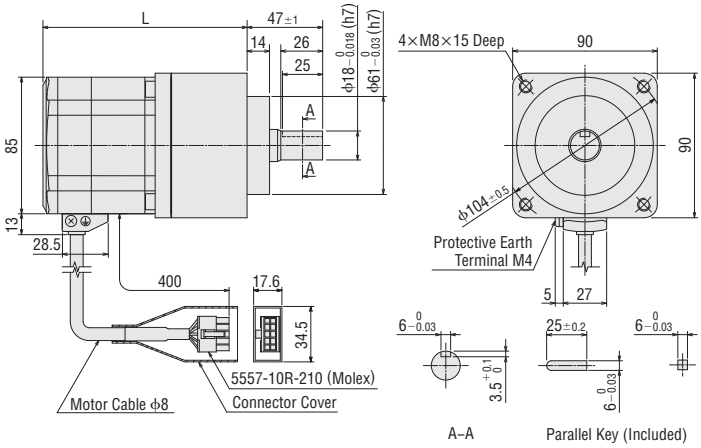
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR66A□D-PS■-◇	**AR66A□-PS■-◇**	ARM66AC-PS■	**5**, **7.2**, **10**	97	1.3	B670
			25, **36**, **50**	117	1.6	B671



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR98A□D-PS■-◇	**AR98A□-PS■-◇**	ARM98AC-PS■	**5**, **7.2**, **10**	127	3.3	B674
			25, **36**, **50**	154.5	4.1	B675

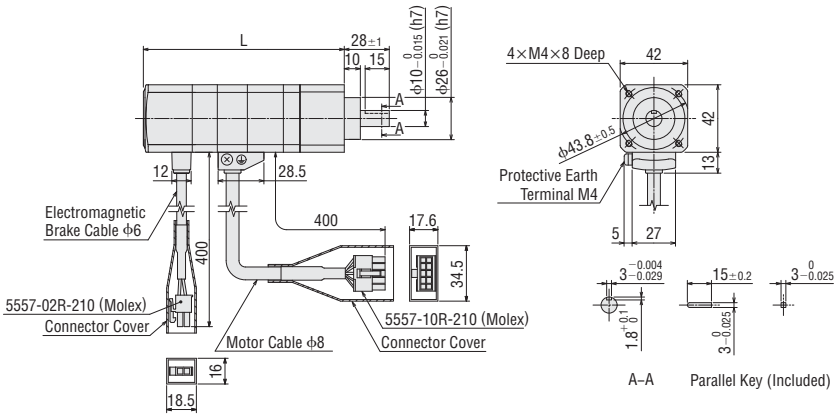


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**PS** Geared Type with Electromagnetic Brake

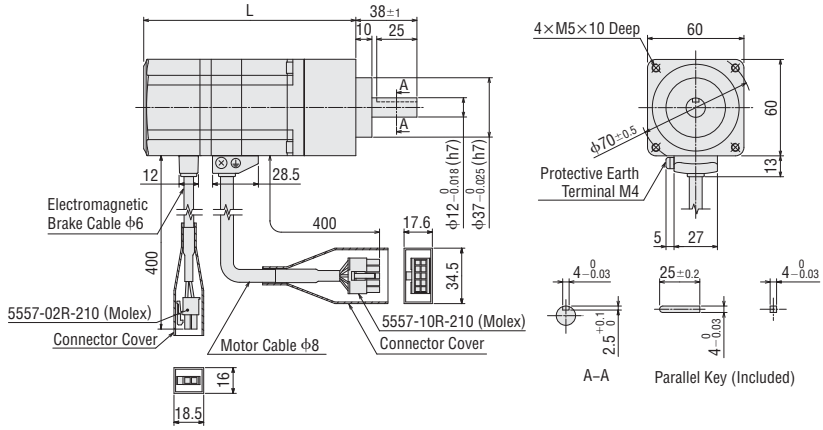
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR46M□D-PS■-◇	**AR46M□-PS■-◇**	ARM46MC-PS■	**5**, **7.2**, **10**	125.5	0.82	B668
			25, **36**, **50**	149	0.97	B669



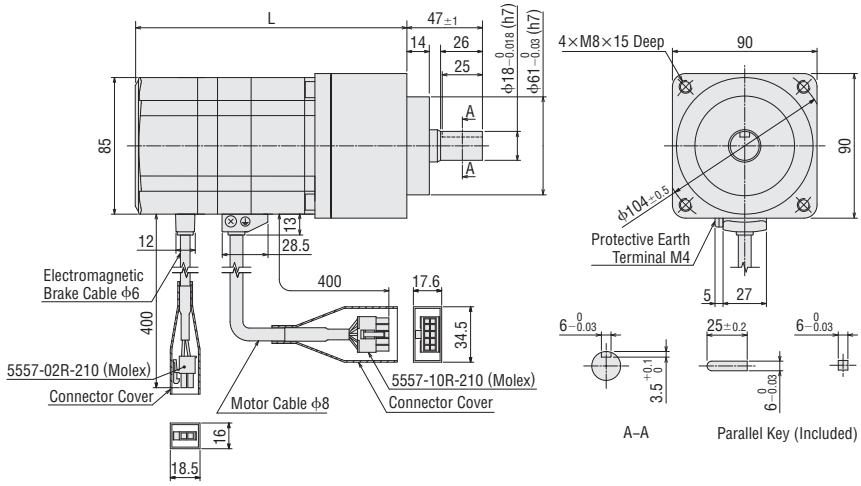
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR66M□D-PS■-◇	**AR66M□-PS■-◇**	ARM66MC-PS■	**5**, **7.2**, **10**	132	1.6	B672
			25, **36**, **50**	152	1.9	B673



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR98M□D-PS■-◇	**AR98M□-PS■-◇**	ARM98MC-PS■	**5**, **7.2**, **10**	169	3.9	B676
			25, **36**, **50**	196.5	4.7	B677

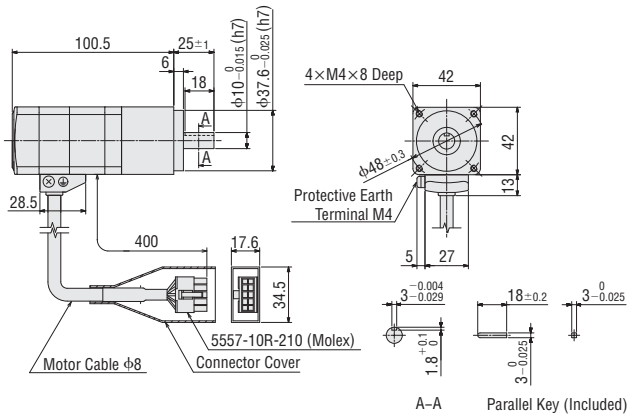


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**PN** Geared Type

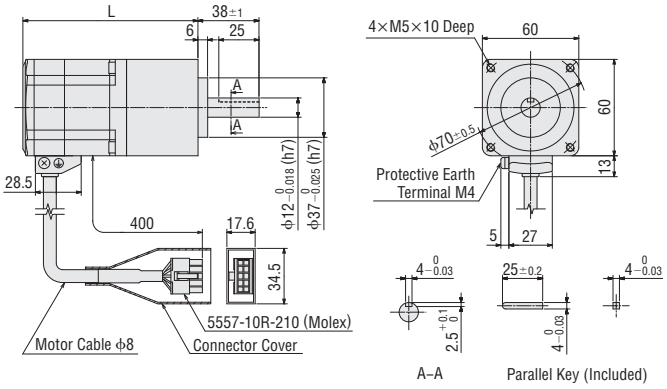
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46A□D-N■-◇	**AR46A□-N■-◇**	ARM46AC-N■	**5**, **7.2**, **10**	0.73	B476



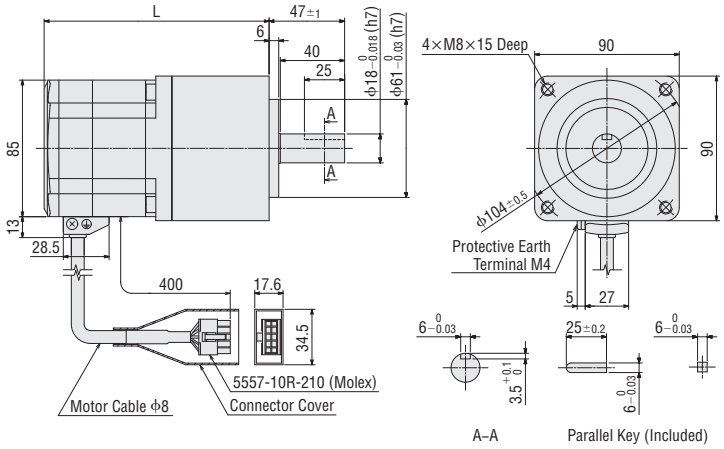
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR66A□D-N■-◇	**AR66A□-N■-◇**	ARM66AC-N■	**5**, **7.2**, **10**	109	1.5	B477
			25, **36**, **50**	125	1.73	B478



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR98A□D-N■-◇	**AR98A□-N■-◇**	ARM98AC-N■	**5**, **7.2**, **10**	140	3.8	B479
			25, **36**, **50**	163	4.5	B480

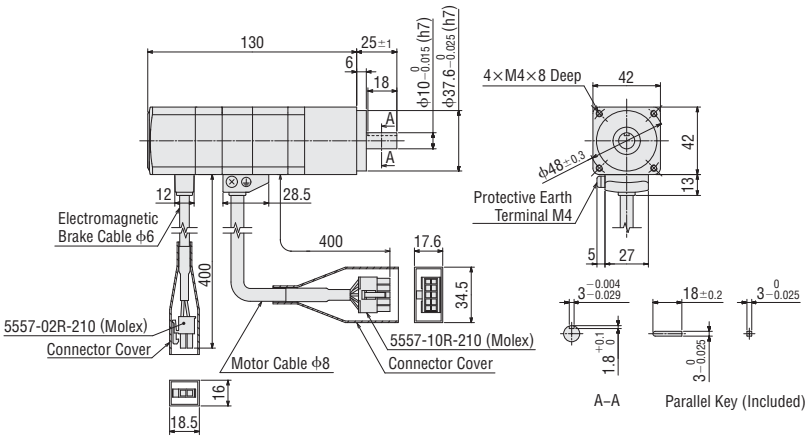


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇**PN** Geared Type with Electromagnetic Brake

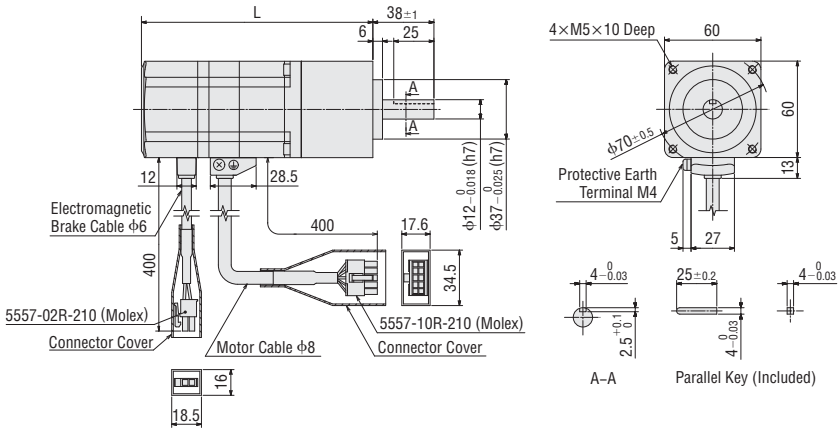
Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46M□D-N■-◇	**AR46M□-N■-◇**	ARM46MC-N■	**5**, **7.2**, **10**	0.88	B481



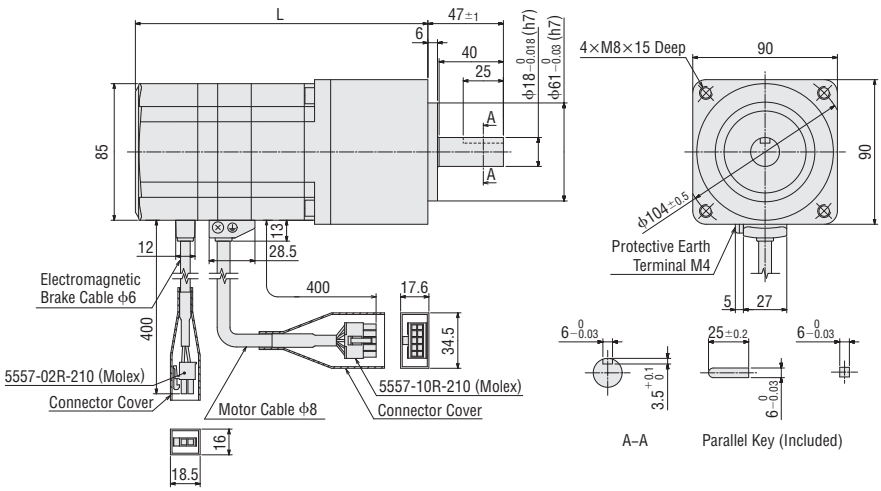
Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR66M□D-N■-◇	**AR66M□-N■-◇**	ARM66MC-N■	**5**, **7.2**, **10**	144	1.8	B482
			25, **36**, **50**	160	2	B483



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	L	Mass kg	CAD
Built-In Controller	Pulse Input					
AR98M□D-N■-◇	**AR98M□-N■-◇**	ARM98MC-N■	**5**, **7.2**, **10**	182	4.4	B484
			25, **36**, **50**	205	5.1	B485

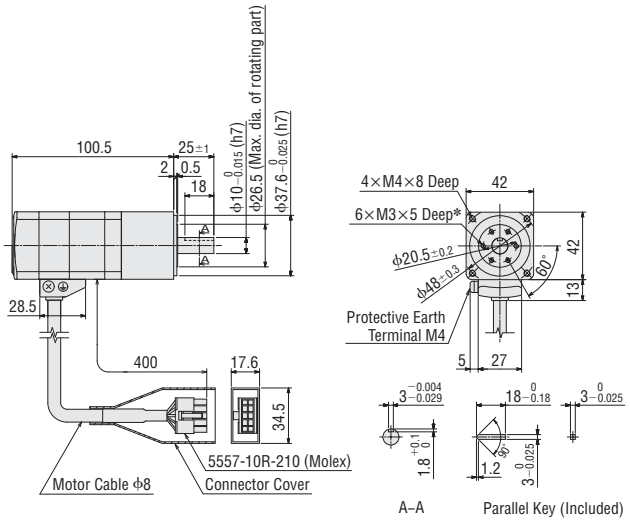


●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

◇Harmonic Geared Type

Frame Size 42 mm

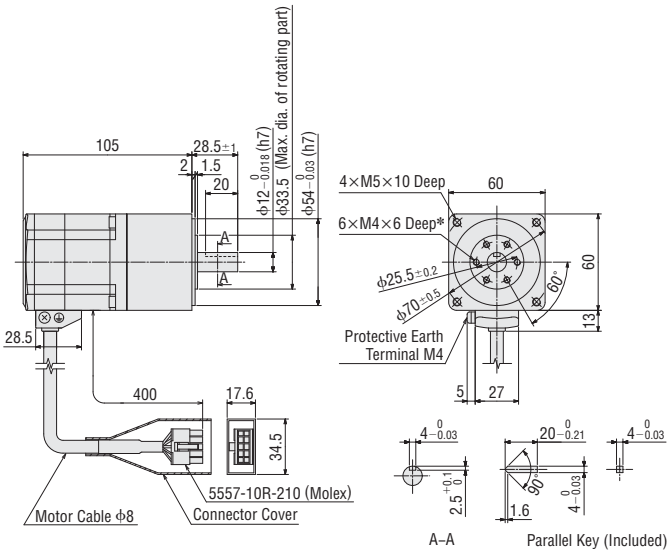
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46A□D-H■-◇	**AR46A□-H■-◇**	ARM46AC-H■	**50, 100**	0.68	B486



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

Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR66A□D-H■-◇	**AR66A□-H■-◇**	ARM66AC-H■	**50, 100**	1.41	B487

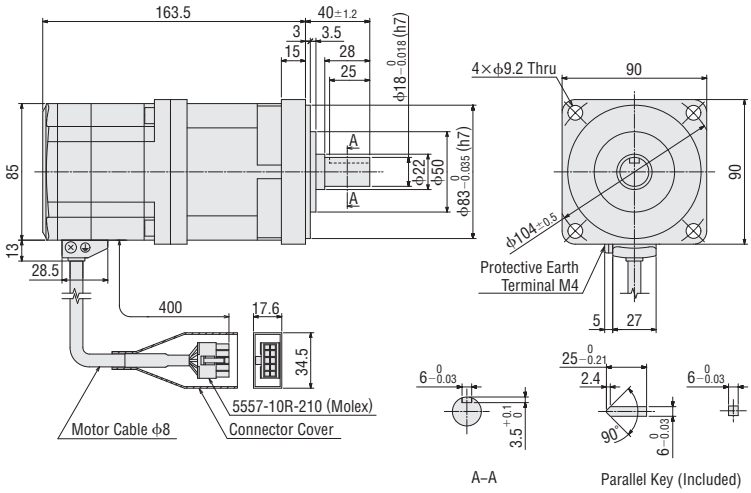


✻The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

Frame Size 90 mm

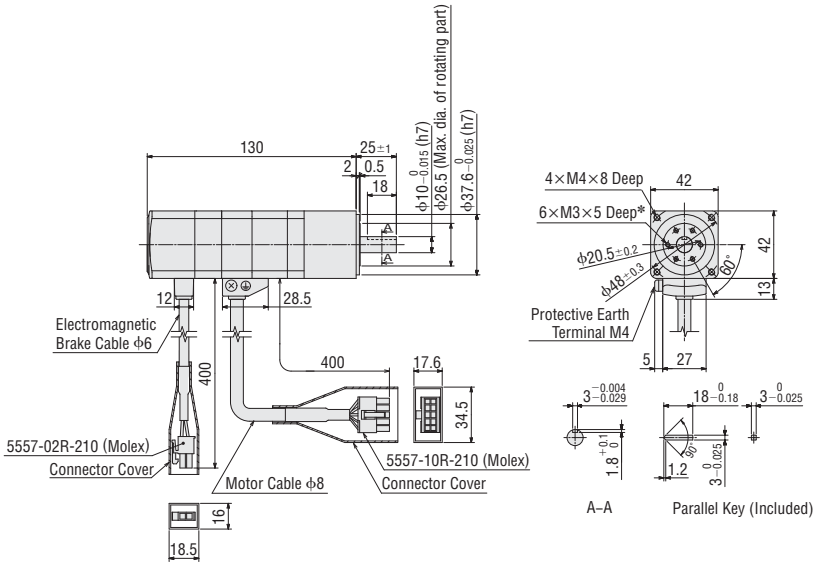
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR98A□D-H■-◇	**AR98A□-H■-◇**	ARM98AC-H■	**50**, **100**	4	B488



◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR46M□D-H■-◇	**AR46M□-H■-◇**	ARM46MC-H■	**50**, **100**	0.83	B489

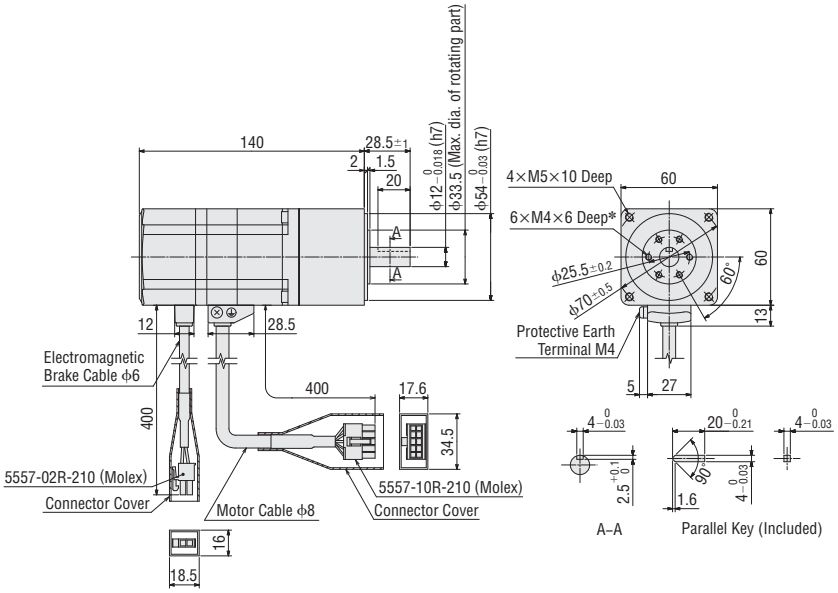


✻The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

Frame Size 60 mm

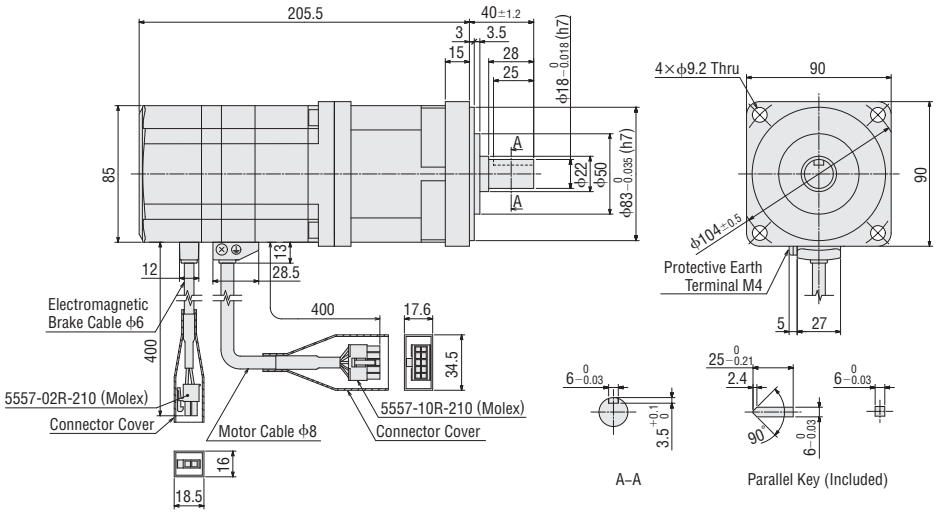
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR66M□D-H■-◇	**AR66M□-H■-◇**	ARM66MC-H■	**50, 100**	1.71	B490



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

Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
AR98M□D-H■-◇	**AR98M□-H■-◇**	ARM98MC-H■	**50, 100**	4.6	B491



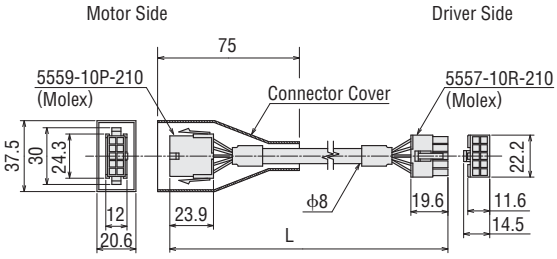
●Either **A**, **C**, or **S** indicating power-supply input is entered where the box □ is located within the product name. (Either **A** or **C** is entered for the built-in controller type.)
A number indicating the gear ratio is entered where the box ■ is located within the product name.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

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

Common to All Types

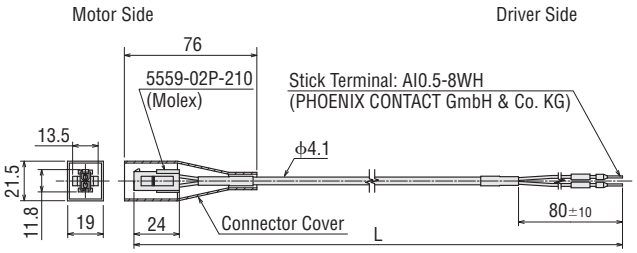
•Cable for Motor

Cable Type	Length L (m)
Cable for Motor 1 m	1
Cable for Motor 2 m	2
Cable for Motor 3 m	3



•Cable for Electromagnetic Brake (Only for electromagnetic brake type)

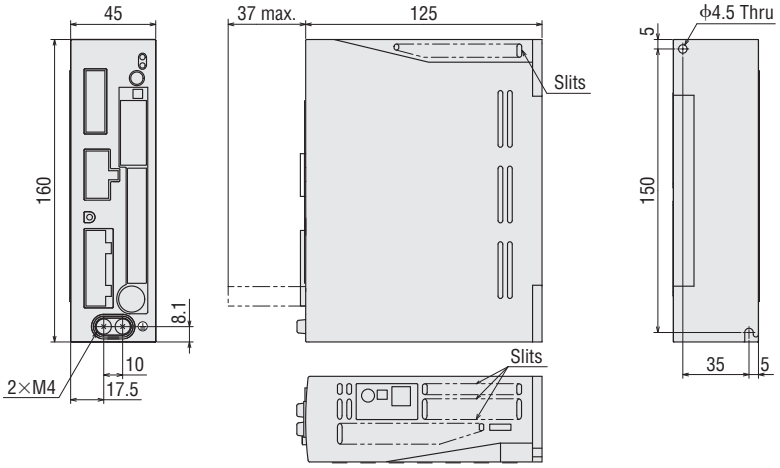
Cable Type	Length L (m)
Cable for Motor 1 m	1
Cable for Motor 2 m	2
Cable for Motor 3 m	3



●Drivers

◇Built-In Controller Package

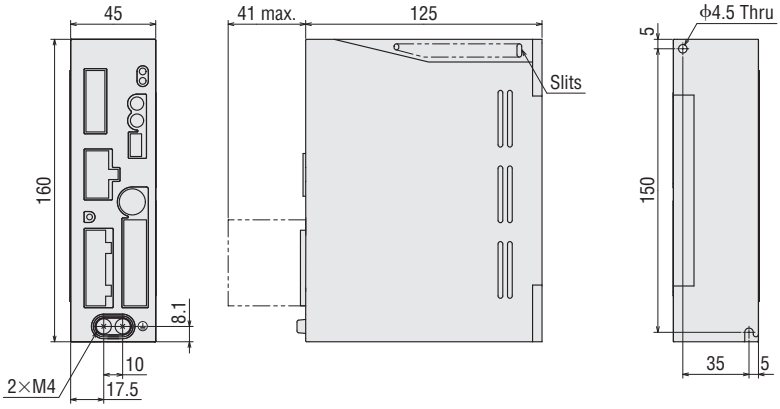
Mass: 0.75 kg CAD B797



●Accessories
Connector for Power Input Terminal (CN1)
Connector: MC1,5/6-STF-3,5 (PHOENIX CONTACT GmbH & Co. KG)
Connector for Sensor Signal (CN5)
Connector: FK-MC0,5/5-ST-2,5 (PHOENIX CONTACT GmbH & Co. KG)
Connector for Input Signal (CN8)
Connector: FK-MC0,5/9-ST-2,5 (PHOENIX CONTACT GmbH & Co. KG)
Connector for Output Signal (CN9)
Connector: FK-MC0,5/7-ST-2,5 (PHOENIX CONTACT GmbH & Co. KG)
Connector for Regeneration Unit/Main Power Supply (CN3)
Connector: 54928-0570 (Molex)

◇Pulse Input Package

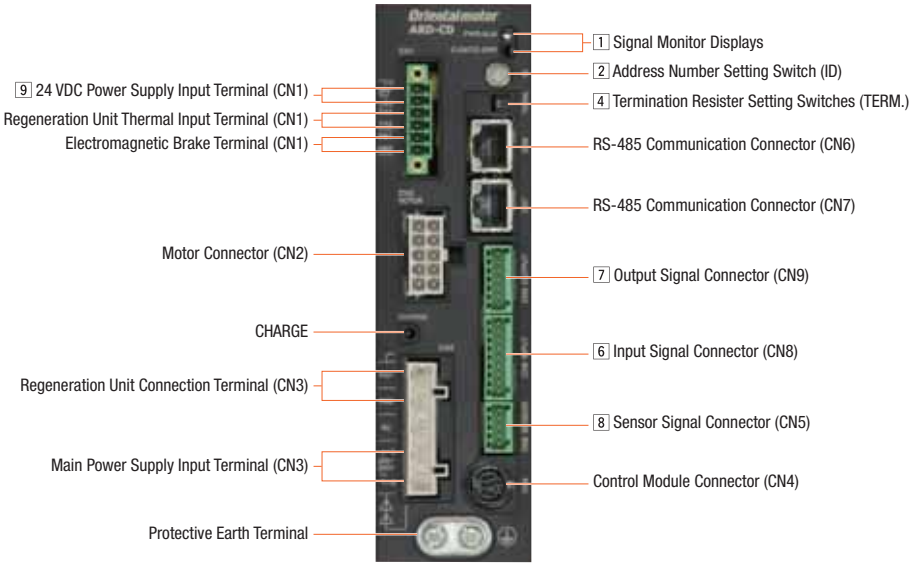
Mass: 0.75 kg CAD B454



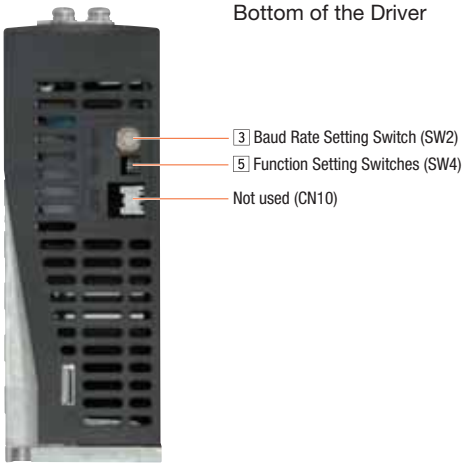
●Accessories
Connector for Control I/O (CN5)
Cover Assembly: 10336-52A0-008 (Sumitomo 3M Limited)
Connector: 10136-3000PE (Sumitomo 3M Limited)
Connector for Regeneration Unit Input/Main Power Supply Input Terminal (CN3)
Connector: 54928-0570 (Molex)
Connector for 24 VDC Power Supply Input/Regeneration Unit Thermal Input/ Electromagnetic Brake Output Terminal (CN1)
Connector: MC1,5/6-STF-3,5
(PHOENIX CONTACT GmbH & Co. KG)

Connection and Operation (Built-In Controller Package)

Names and Functions of Driver Parts



Bottom of the Driver



1 Signal Monitor Displays

◇LED Indicators

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

2 Address Number Setting Switch (ID)

Indication	Switch Name	Function
ID	Address Number Setting Switch	Set the address number for RS-485 communication (Factory Setting: 0).

3 Baud Rate Setting Switch (SW2)

Indication	Switch Name	Function
SW2	Baud Rate Setting Switch	Set the baud rate for RS-485 communications (Factory Setting: 7).

◇Setting the Baud Rate for RS-485 Communications

No.	Baud Rate (bps)
0	9600
1	19200
2	38400
3	57600
4	115200
5～6	Not used
7	625000 (Connection with Network Converter)
8～F	Not used

4 Termination Resister Setting Switches (TERM.)

Indication	No.	Function
TERM.	1	Set the termination resister (120 Ω) for RS-485 communication (Factory setting: OFF).
	2	OFF: No termination resister ON: Set the termination resister

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

5 Function Setting Switches (SW4)

Indication	No.	Function
SW4	1	This sets the address number in combination with the address number setting switch (ID) (Factory setting: OFF).
	2	This sets the protocol for RS-485 communication (Factory setting: OFF).

◇RS-485 Communication Protocol Setting

No. \ Destination	Connection with Network Converter	Modbus RTU Mode
2	OFF	ON

6 Input Signal Connector (CN8)

Indication	Pin No.	Signal Name	Initial Value	
CN8	1	IN0	HOME	This performs the return-to-home operation.
	2	IN1	START	This performs the positioning operation.
	3	IN2	M0	The operating data number is selected using 3 bits.
	4	IN3	M1	
	5	IN4	M2	
	6	IN5	FREE	Stop motor excitation and release the electromagnetic brake.
	7	IN6	STOP	This stops the motor.
	8	IN7	ALM-RST	This resets the current alarm.

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

The following input signals can be assigned to input terminals IN0～7.

Input Signal								
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	Initial Value	
CN9	1	OUT0	HOME-P	Output when the motor is home.
	2	OUT1	END	Output when the positioning operation has finished.
	3	OUT2	AREA1	Output when the motor is in area 1.
	4	OUT3	READY	Output when driver operation preparations have finished.
	5	OUT4	WNG	The driver's warning status is output.
	6	OUT5	ALM	The driver's alarm status is output (normally closed).

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

The following output signals can be assigned to output terminals OUT0～5.

Output Signal							
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)

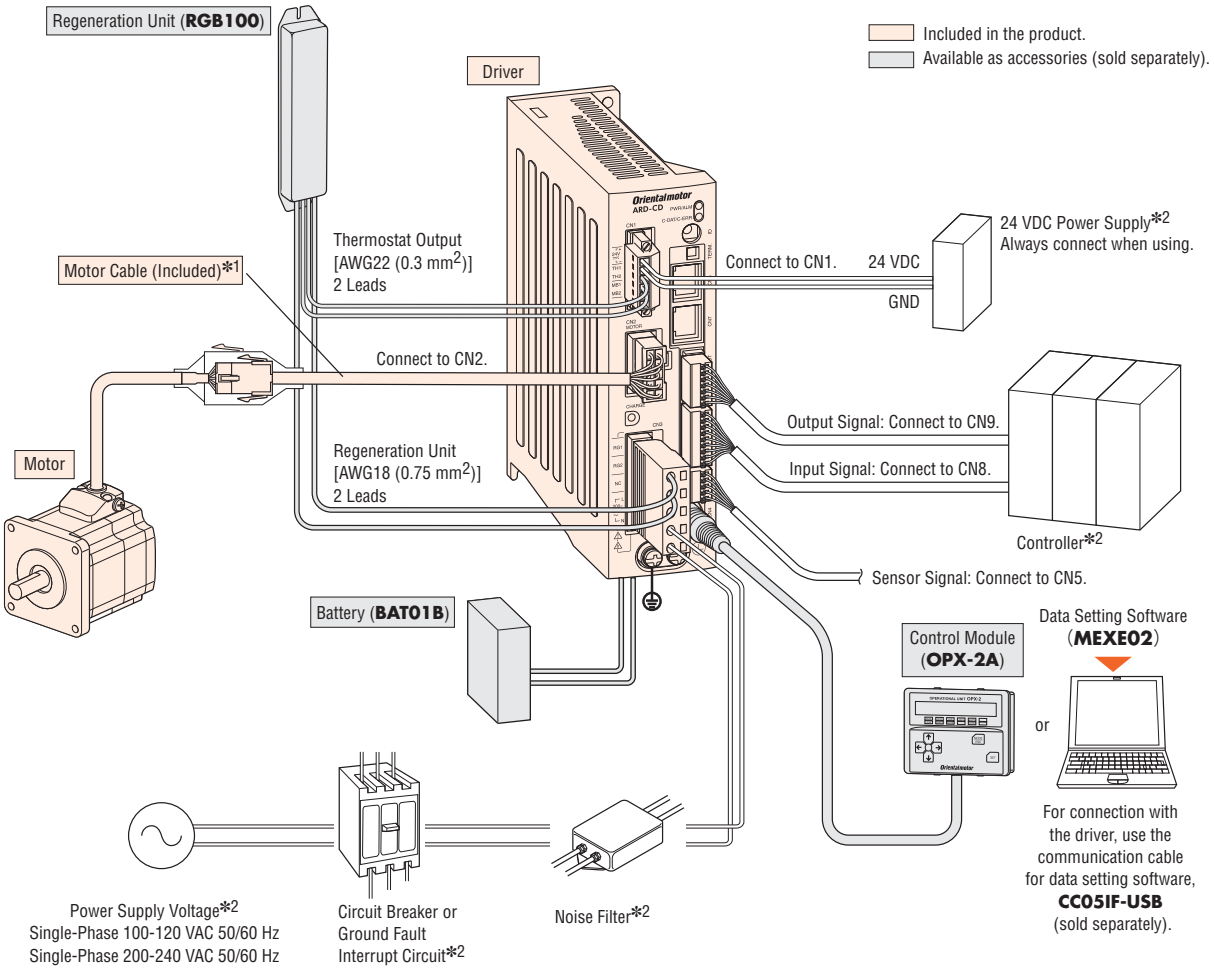
Indication	Pin No.	Signal Name	Initial Value
CN5	1	+LS	+Side Limit Sensor Input
	2	−LS	−Side Limit Sensor Input
	3	HOMES	Mechanical Home Sensor Input
	4	SLIT	Slit Sensor Input
	5	IN-COM2	Common for Sensor

9 24 VDC Input/Regeneration Unit Thermal Input/Electromagnetic Brake Connction Terminal (CN1)

Indication	I/O	Terminal Name	Content
24V+	Input	24 VDC Power Input Terminal+	This is the power supply for the driver's control circuit terminal. Always connect when using.
24V−		24 VDC Power Input Terminal−	
TH1		Regeneration Unit Thermal Input Terminal	Connects the accessory regeneration unit **RGB100** (sold separately). Short circuit between the terminals when no regeneration unit is connected.
TH2		Regeneration Unit Thermal Input Terminal	
MB1	Output	Electromagnetic Brake Connection Terminal−	This connects the electromagnetic brake line of an electromagnetic brake type motor.
MB2		Electromagnetic Brake Connection Terminal+	

Connection Diagram

◇Connection to Peripheral Equipment



*1 Each model comes with a motor cable 1, 2 or 3 m long. If you need a cable of a different length or a flexible cable, select an appropriate cable from among the accessories (sold separately). Keep the wiring distance between the motor and driver to 30 m max.

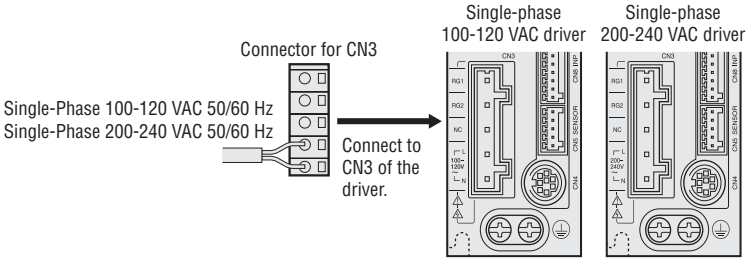
*2 Not supplied.

◇Connecting a Main Power Supply

Prepare the following cable for the power supply lines.

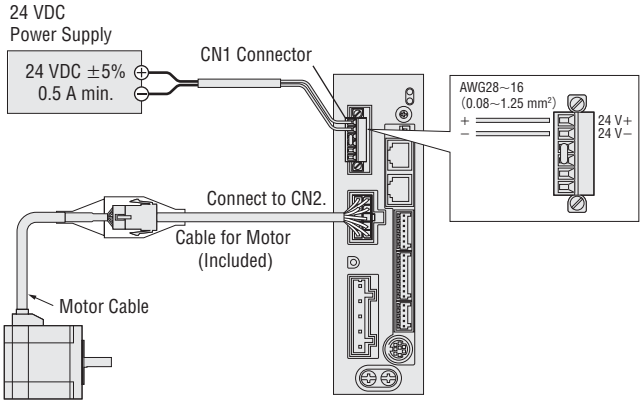
Single-Phase 100-120 VAC: Three-core cable [AWG16-14 (1.25–2.0 mm²)]

Single-Phase 200-240 VAC: Three-core cable [AWG16-14 (1.25–2.0 mm²)]

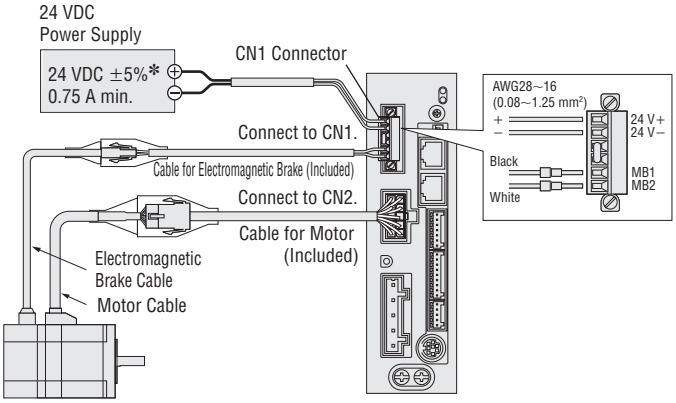


◇Connecting the Control Power Supply

Provide a 24 VDC power supply.



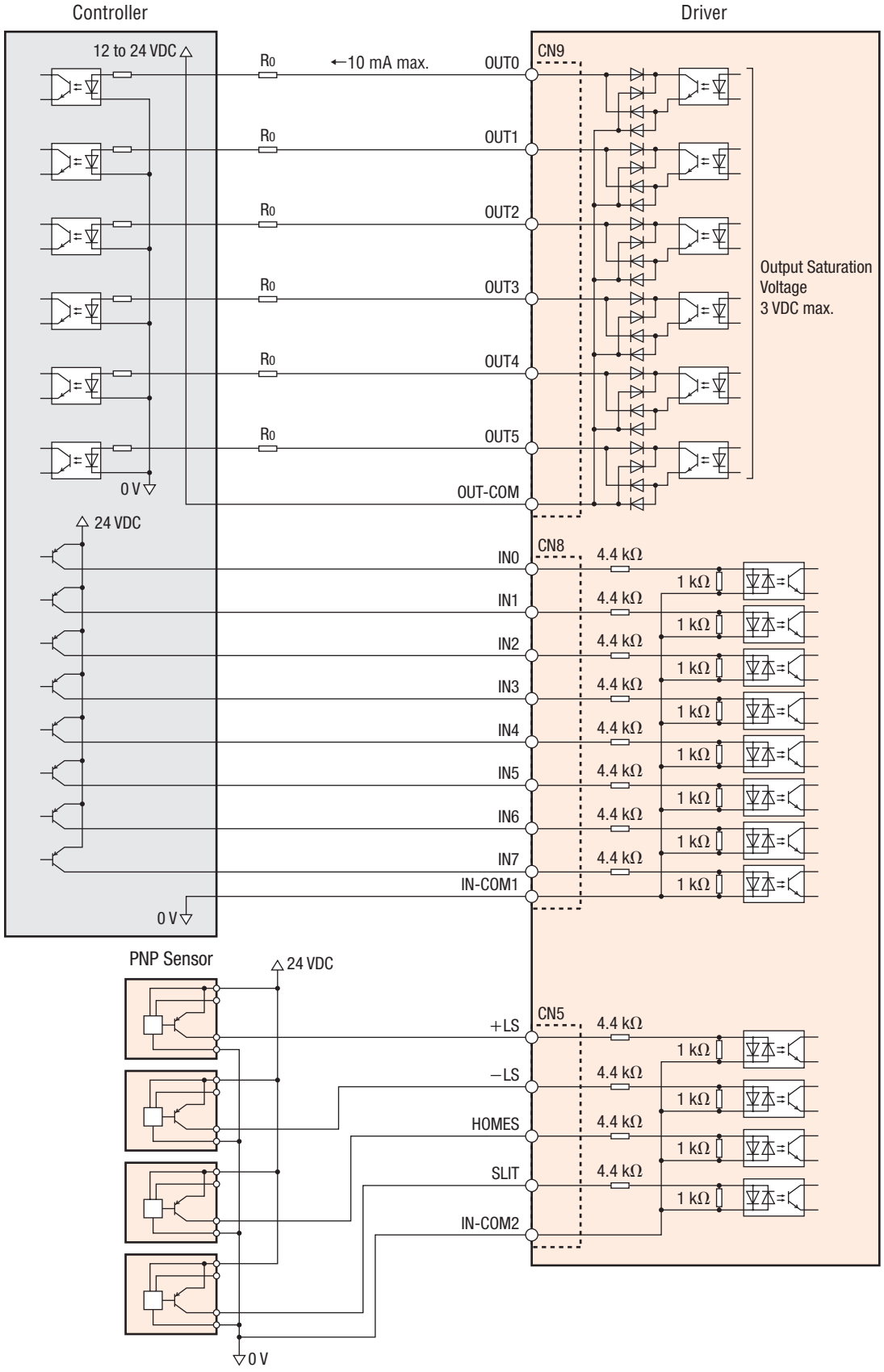
◇Connecting the Electromagnetic Brake



*If the distance between the motor and driver is extended to 20 m or longer, use a power supply of 24 VDC ±4%.

◇Connecting to a Host Controller

• Connecting to a Current Source Output Circuit

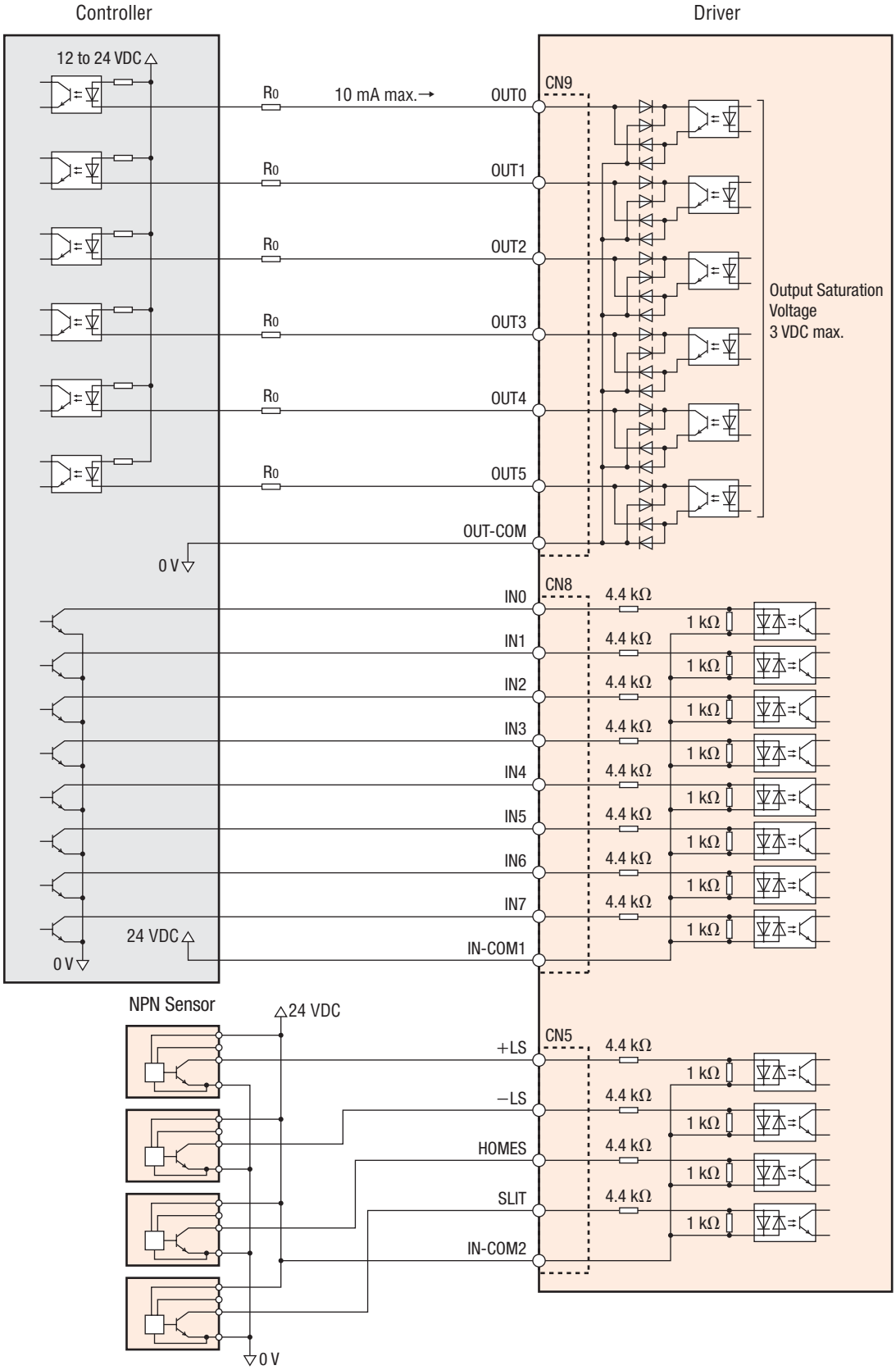


Note

- Use input signals at 24 VDC.
- Use output signals at 24 VDC or less. If the current exceeds 10 mA, connect an external resistor R_0.
- The saturation voltage of the output signal is 3 VDC max.
- Provide a minimum distance of 200 mm between the signal lines and power lines (AC lines, motor lines).
  Do not run the signal lines in the same duct as power lines nor 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 Sink Output Circuit

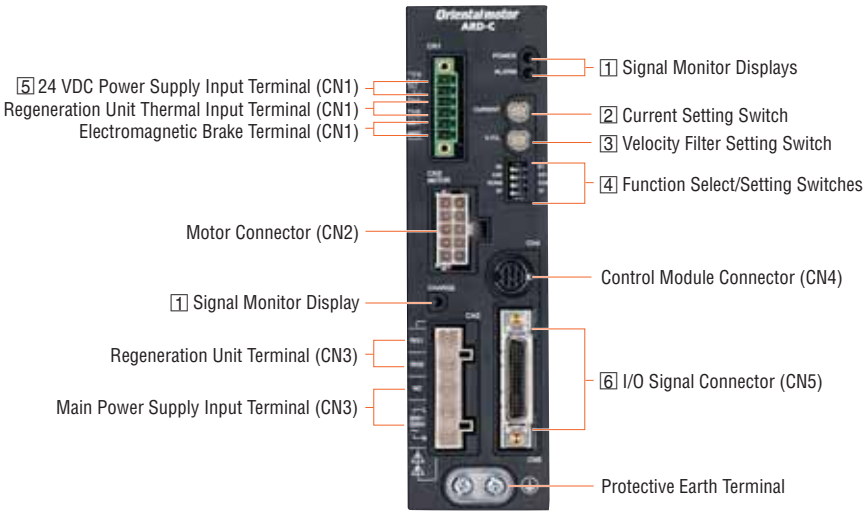


Note

- Use input signals at 24 VDC.
- Use output signals at 24 VDC or less. If the current exceeds 10 mA, connect an external resistor R_0.
- The saturation voltage of the output signal is 3 VDC max.
- Provide a minimum distance of 200 mm between the signal lines and power lines (AC lines, motor lines).
  Do not run the signal lines in the same duct as power lines nor 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 Package)

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.

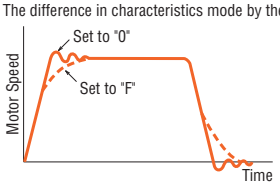
◇Alarms

Blink Count	Function	When Activated
2	Overheat	The temperature inside the driver rises above 85°C.
	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 Switches

Indication	Switch Name	Function
D0/D1	Resolution select switches	These switches are used to set the resolution per 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>
CS0/CS1		
NORM/CCM	Control mode select switches	This switch toggles the driver between the normal mode and current control mode. In the current control mode, noise and vibration can be reduced although the motor synchronicity may reduce. "NORM": Normal mode [Factory setting] "CCM": Current control mode
2P/1P	Pulse input mode switch	The settings of this switch are compatible with the following two types of pulse input modes: "1P" for the 1-pulse input mode [Factory setting], "2P" for the 2-pulse input mode.

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 terminal–	Connect the lead wires from the electromagnetic brake.
MB2		Electromagnetic brake terminal+	

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

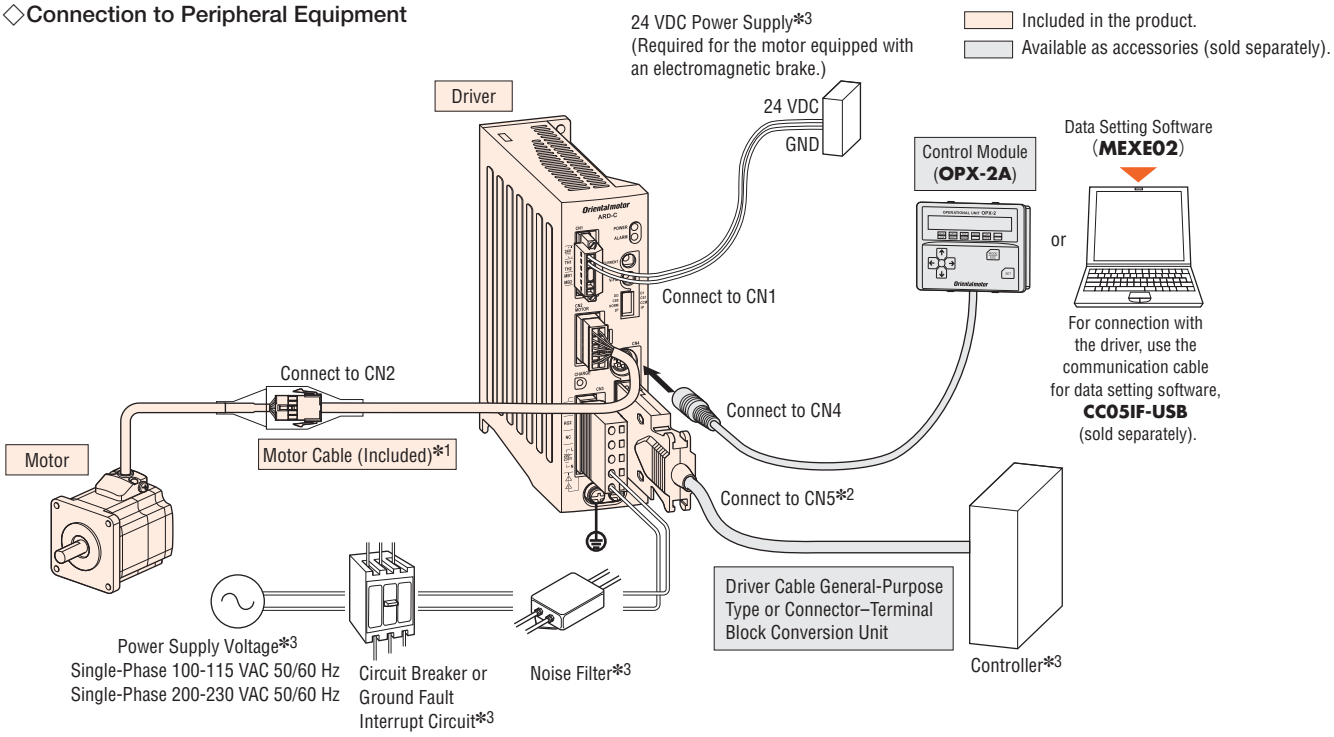
Indication	Input/Output	Pin No.	Signal		Signal Name	
			Positioning Operation	Push-Motion Operation*1	Positioning Operation	Push-Motion Operation*1
CN5	–	1	–		–	
	Output	2	GND		Ground connection	
		3	ASG+		A-phase pulse output (line driver)	
		4	ASG–			
		5	BSG+		B-phase pulse output (line driver)	
		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 V/line driver)	
		32	PLS–/CW–			
		33	PLS+24/CW+24V		Pulse input/CW pulse input (+24 V)	
		34	DIR+24/CCW+24V		Direction input/CCW pulse input (+24 V)	
		35	DIR+/CCW+		Direction input/CCW pulse input (+5 V/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** or the data setting software **MEXE02** (both sold separately).

*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 close with a control module (**OPX-2A**, sold separately) or a data setting software (**MEXE02**, sold separately) when the C-ON input is not used.

●Connection Diagram

◇Connection to Peripheral Equipment



*1 Each model comes with a motor cable 1 m, 2 m or 3 m long. If you need a cable of a different length or a flexible cable, select an appropriate cable from among the accessories (sold separately).

*2 Each model comes with a control I/O connector (CN5), but you must select the driver cable general-purpose type or connector–terminal block conversion unit, both of which are provided as accessories (sold separately).

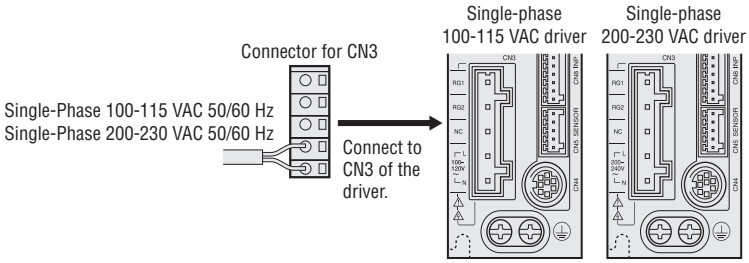
*3 Not supplied.

◇Connecting a Main Power Supply

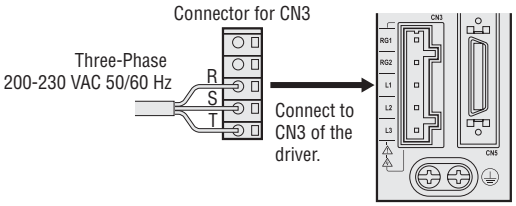
Prepare the following cable for the power supply lines.

Single-Phase 100-115 VAC: Three-core cable [AWG16-14 (1.25–2.0 mm^2)]
Single-Phase 200-230 VAC: Three-core cable [AWG16-14 (1.25–2.0 mm^2)]
Three-Phase 200-230 VAC: Four-core cable [AWG16-14 (1.25–2.0 mm^2)]

•Single-Phase 100-115 VAC, Single-Phase 200-230 VAC]

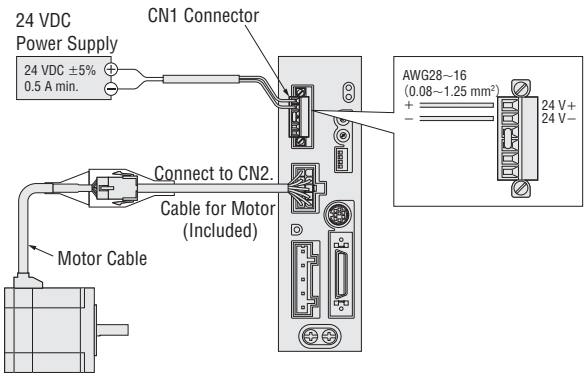


•Three-Phase 200-230 VAC



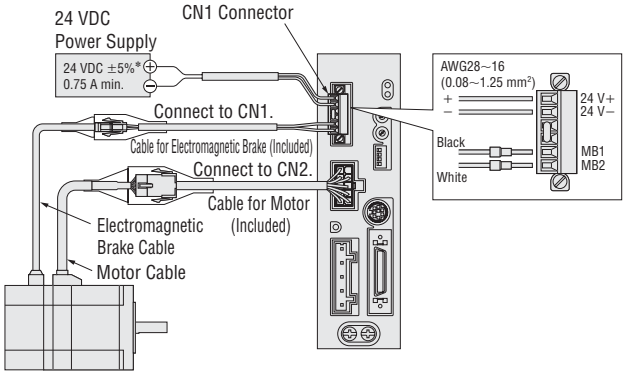
◇Connecting the Control Power Supply

Provide a 24 VDC power supply if you want to supply the control power separately from the main power. Supply of the control power is optional.



◇Connecting the Electromagnetic Brake

Provide a 24 VDC power supply.
Control power for the electromagnetic brake motor is separated from the main power.

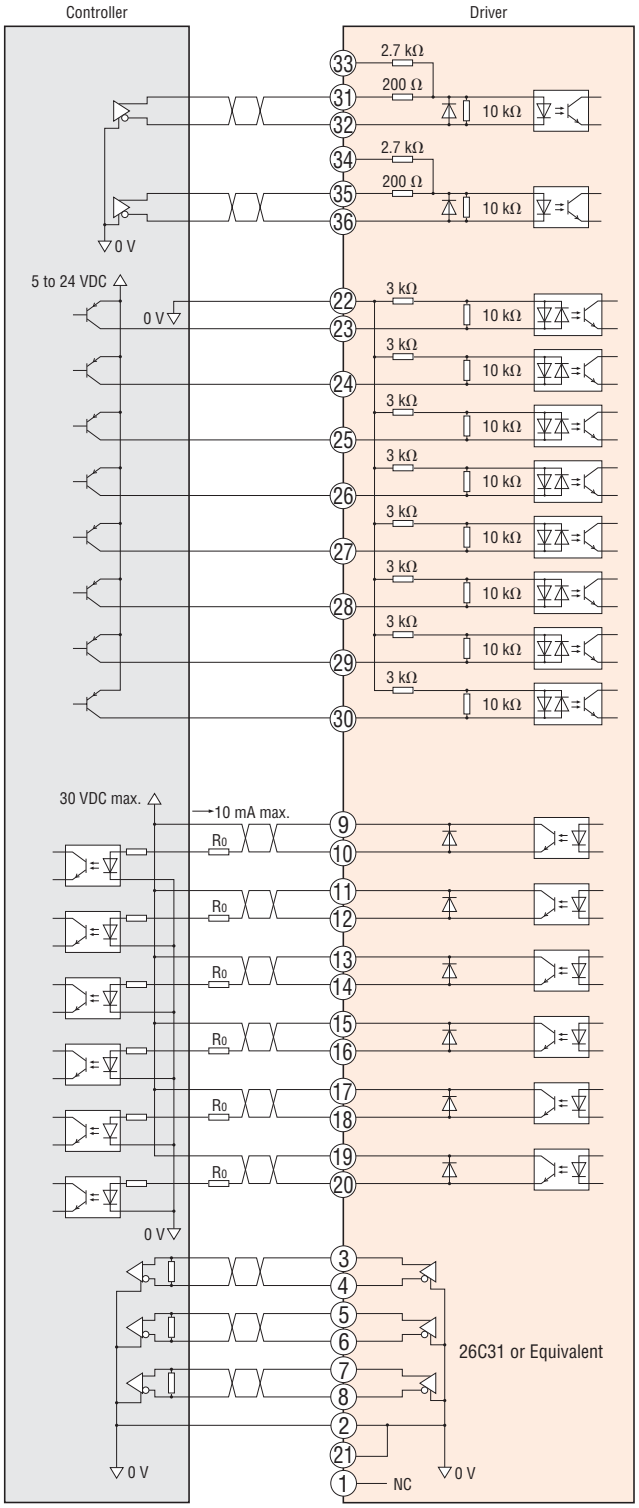


*If the distance between the motor and driver is extended to 20 m or longer, use a power supply of 24 VDC ±4%.

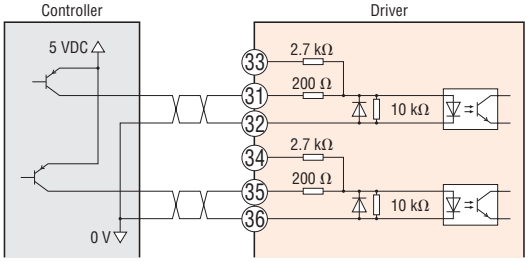
◇Connecting to a Host Controller

• Connecting to a Current Source Output Circuit

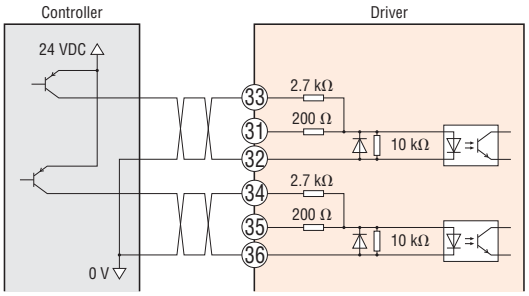
When pulse input is of line driver type



When pulse input is of 5 VDC type



When pulse input is of 24 VDC type



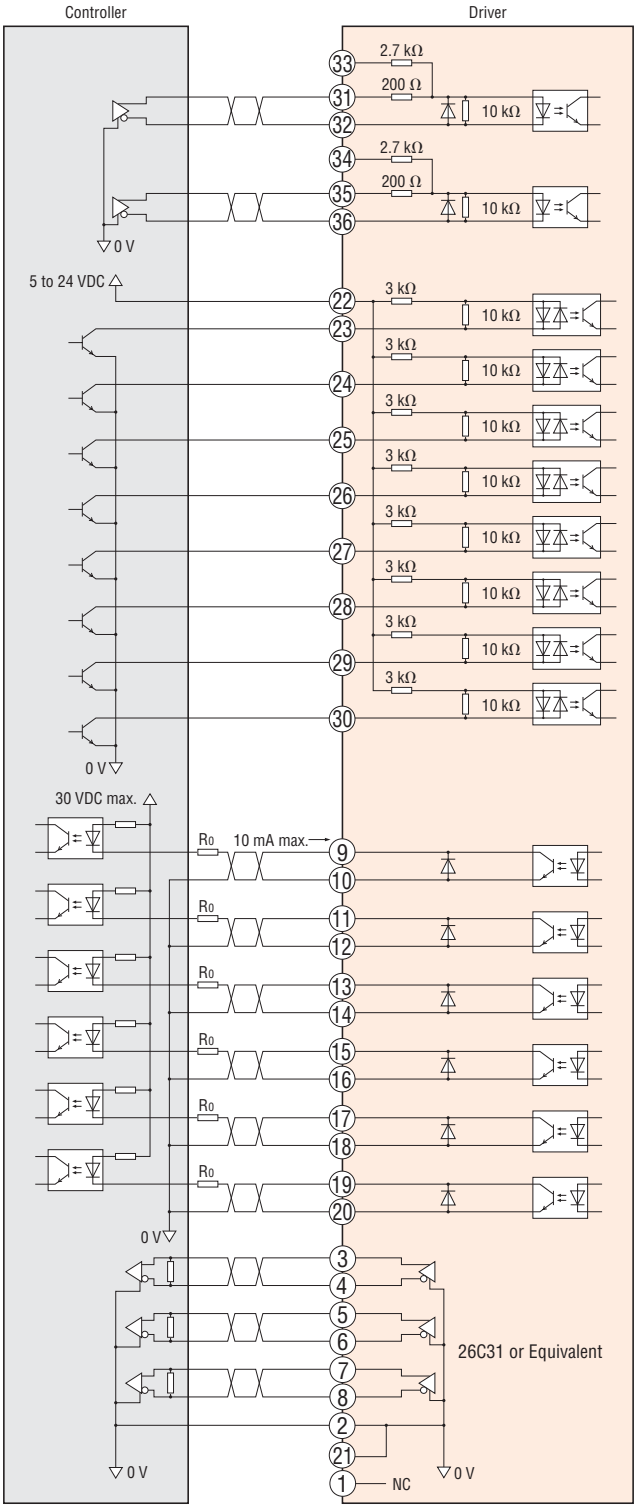
Note

- Use output signals at 30 VDC or less. If the current exceeds 10 mA, connect an external resistor R_0.
- Connect a terminal resistor of 100 Ω or more between the input of the line receiver terminals.
- Use a multi-core, twisted-pair shielded wire of AWG28 to 24 (0.08 to 0.2 mm^2) for the control input/output signal line (CN5), and keep wiring as short as possible (within 2 m).
- Note that as the length of the pulse signal line increases, the maximum transmission frequency decreases.
- Provide a minimum distance of 200 mm between the control I/O signal lines and power lines (AC lines, motor lines and other large-current circuits).

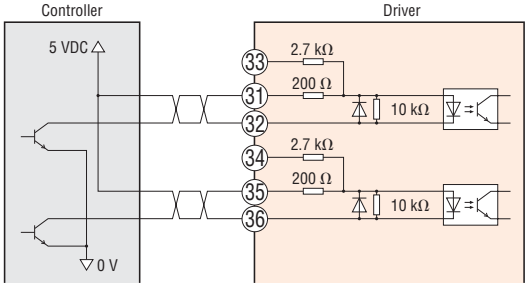
◇Connecting to a Host Controller

• Connecting to a Current Sink Output Circuit

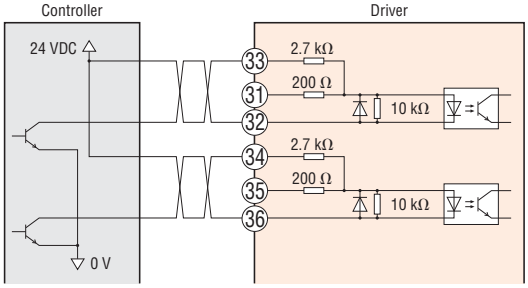
When pulse input is of line driver type



When pulse input is of 5 VDC type



When pulse input is of 24 VDC type



Note

- Use output signals at 30 VDC or less. If the current exceeds 10 mA, connect an external resistor R_0.
- Connect a terminal resistor of 100 Ω or more between the input of the line receiver terminals.
- Use a multi-core, twisted-pair shielded wire of AWG28 to 24 (0.08 to 0.2 mm^2) for the control input/output signal line (CN5), and keep wiring as short as possible (within 2 m).
- Note that as the length of the pulse signal line increases, the maximum transmission frequency decreases.
- Provide a minimum distance of 200 mm between the control I/O signal lines and power lines (AC lines, motor lines and other large-current circuits).

Motor and Driver Combinations

Product names for motor and driver combinations are shown below.

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

●**A** (Single shaft) or **M** (Electromagnetic brake) indicating the type is entered where the box □ is located within the product name.
Either **A** (single-phase 100-115(120)V), **C** (single-phase 200-230(240V)) or **S** (three-phase 200-230V: Pulse input package) indicating the power supply input in 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.
A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable indicated with the product is entered where the box ◇ is located within the product name.
✻**A** (Single shaft), **B** (Double shaft) or **M** (Electromagnetic brake) indicating the type is entered where the box □ is located within the product name of **AR46**□□**(D)**-◇, **AR66**□□**(D)**-◇, **AR69**□□**(D)**-◇ and **AR98**□□**(D)**-◇.
A (Single shaft), **B** (Double shaft) indicating the type is entered where the box □ is located within the product name of **AR911**□□**(D)**-◇.

Control Module RoHS

Features

The internal driver parameter settings and data settings can be established and changed. They can also be used for speed and I/O monitoring, teaching, and so on.

●The settings and monitoring details depend on the applicable products.

(Enlarged view)

Product Line

Product Name
OPX-2A

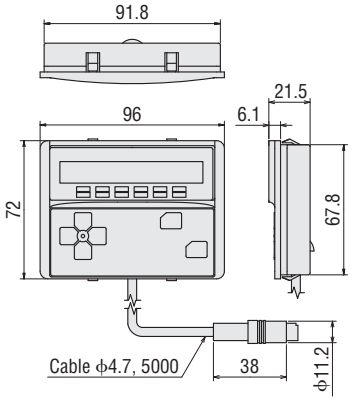
Specifications

Display	LED
Cable Length	5 m
Ambient Temperature	0～+40°C (non-condensing)

Dimensions (Unit = mm)

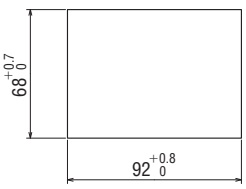
●Control Module

Mass: 0.25 kg CAD B453



●Panel Cut-Out for Control Module

(Thickness of the mounting plate: 1～3 mm)



Data Setting Software RoHS

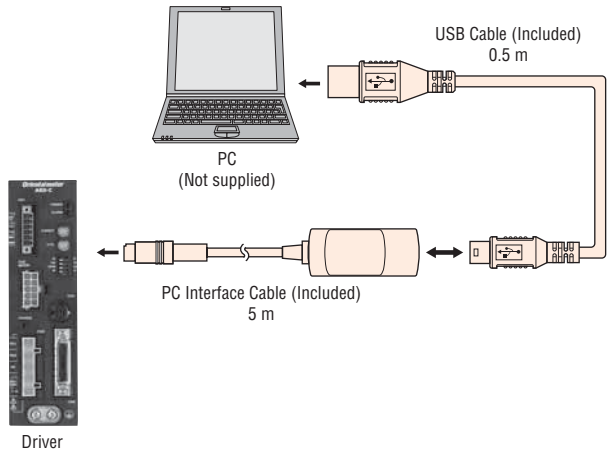
Operation data and various parameters can be established and edited on the computer, as well as I/O and operating speed waveforms monitored.

●The settings and monitoring details depend on the applicable products.

Product Line

Product Name
MEXE02

Connection between Computer and Driver



Notes

●To connect with a computer, a dedicated device driver needs to be installed.

●Data Setting Software **MEXE02**

Data setting software also distributes a CD-ROM.
Request from our website or contact the nearest dealer or sales office for details.

http://www.orientalmotor.com.sg

Operating Environment

Operating Systems	The OS supports 32-bit (x86) and 64-bit (x64) versions only. Windows 2000 Professional Service Pack 4 or later*1 Windows XP Home Edition Service Pack 3 or later Windows XP Professional Service Pack 2 Windows XP Professional Service Pack 3*2 or later Windows Vista Home Basic Service Pack 2 or later Windows Vista Home Premium Service Pack 2 or later Windows Vista Business Service Pack 2 or later Windows Vista Ultimate Service Pack 2 or later Windows Vista Enterprise Service Pack 2 or later Windows 7 Starter Service Pack 1 or later Windows 7 Home Premium Service Pack 1 or later Windows 7 Professional Service Pack 1 or later Windows 7 Ultimate Service Pack 1 or later Windows 7 Enterprise Service Pack 1 or later
CPU*3	Intel Core Processor 2 GHz or more (The OS must be supported.)
Memory*3	32-bit (x86) version: 1 GB or more 64-bit (x64) version: 2 GB or more
Hard Disk*4	Available disk space of 30 MB or more
Disk Device	CD-ROM drive
Serial Interface	USB 1.1 1 port

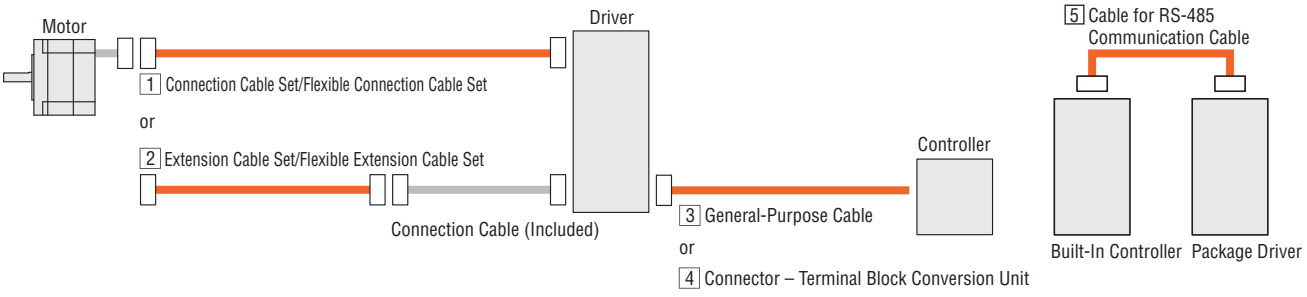
*1 Rollup 1 must be applied.
*2 Service Pack 3 supports 32-bit (x86) version only
*3 The OS operating conditions must be satisfied.
*4 Microsoft .NET Framework 2.0 Service Pack 2 is required to use **MEXE02**. If it is not already installed, it will be installed automatically, in which case up to 500 MB in additional space is required.

●Windows and Windows Vista are registered trademark of Microsoft Corporation in the United States and other countries. Pentium is a trademark of Intel Corporation.

Cables for AR Series AC Input Type

The **AR** Series comes with a 3 m cable for connection between the motor and driver.
When it is necessary to have a connection of a different length between motor and driver, a motor cable or extension cable must be used.
The cable for electromagnetic brake motor comes as a set of motor and electromagnetic brake cable.
Use a flexible motor cable if the cable will be flexed repeatedly.
Keep the overall cable length 30 m or less when using an extension cable to connect with a cable included with the **AR** Series.

●System Configuration of Cables



1 Connection Cable Set RoHS, Flexible Connection Cable Set RoHS

Product Line

Connection Cable Set

◇For Standard Motor

Motor Cables

Product Name	Length L (m)
CC050VAF	5
CC070VAF	7
CC100VAF	10
CC150VAF	15
CC200VAF	20
CC300VAF	30

◇For Electromagnetic Brake Motors

Motor Cables

Cable for Electromagnetic Brake Motor

Product Name	Length L (m)
CC050VAFB	5
CC070VAFB	7
CC100VAFB	10
CC150VAFB	15
CC200VAFB	20
CC300VAFB	30

Flexible Connection Cable Set

◇For Standard Motor

Motor Cables

Product Name	Length L (m)
CC010VAR	1
CC020VAR	2
CC030VAR	3
CC050VAR	5
CC070VAR	7
CC100VAR	10
CC150VAR	15
CC200VAR	20
CC300VAR	30

◇For Electromagnetic Brake Motors

Motor Cables

Cable for Electromagnetic Brake Motor

Product Name	Length L (m)
CC010VARB	1
CC020VARB	2
CC030VARB	3
CC050VARB	5
CC070VARB	7
CC100VARB	10
CC150VARB	15
CC200VARB	20
CC300VARB	30

2 Extension Cable Set RoHS, Flexible Extension Cable Set RoHS

Extension Cable Set

◇For Standard Motor

Motor Cables

Product Name	Length L (m)
CC010VAFT	1
CC020VAFT	2
CC030VAFT	3
CC050VAFT	5
CC070VAFT	7
CC100VAFT	10
CC150VAFT	15
CC200VAFT	20

◇For Electromagnetic Brake Motors

Motor Cables

Cable for Electromagnetic Brake Motor

Product Name	Length L (m)
CC010VAFBT	1
CC020VAFBT	2
CC030VAFBT	3
CC050VAFBT	5
CC070VAFBT	7
CC100VAFBT	10
CC150VAFBT	15
CC200VAFBT	20

Flexible Extension Cable Set

◇For Standard Motor

Motor Cables

Product Name	Length L (m)
CC010VART	1
CC020VART	2
CC030VART	3
CC050VART	5
CC070VART	7
CC100VART	10
CC150VART	15
CC200VART	20

◇For Electromagnetic Brake Motors

Motor Cables

Cable for Electromagnetic Brake Motor

Product Name	Length L (m)
CC010VARBT	1
CC020VARBT	2
CC030VARBT	3
CC050VARBT	5
CC070VARBT	7
CC100VARBT	10
CC150VARBT	15
CC200VARBT	20

3 General-Purpose Cable RoHS

This is a shielded cable equipped with a half-pitch connector at one end of the cable that snaps onto the driver.
The other end is laminated lead wires aligned in order at a pitch of 1.27 mm, which is convenient for insulation displacement connectors.

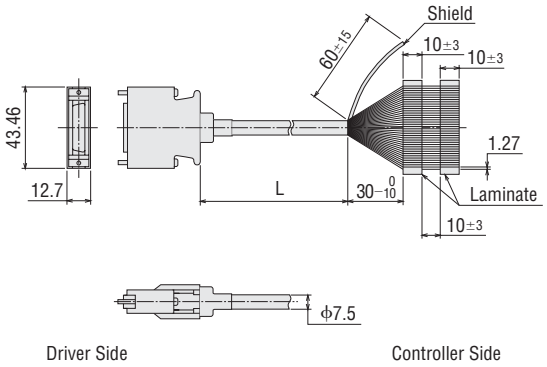
Note
- Note that as the length of the pulse signal line between the driver and controller increases, the maximum transmission frequency decreases.
- Install a connector that matches the controller you are using to the other end of the cable.

Product Line

Product Name	Applicable Connector	Length L (m)
CC36D1-1	Pulse Input Package CN5 (36 pins)	1
CC36D2-1		2

Dimensions (Unit: mm)

Conductor: AWG28 (0.08 mm^2)



4 Connector – Terminal Block Conversion Unit RoHS

CC36T1

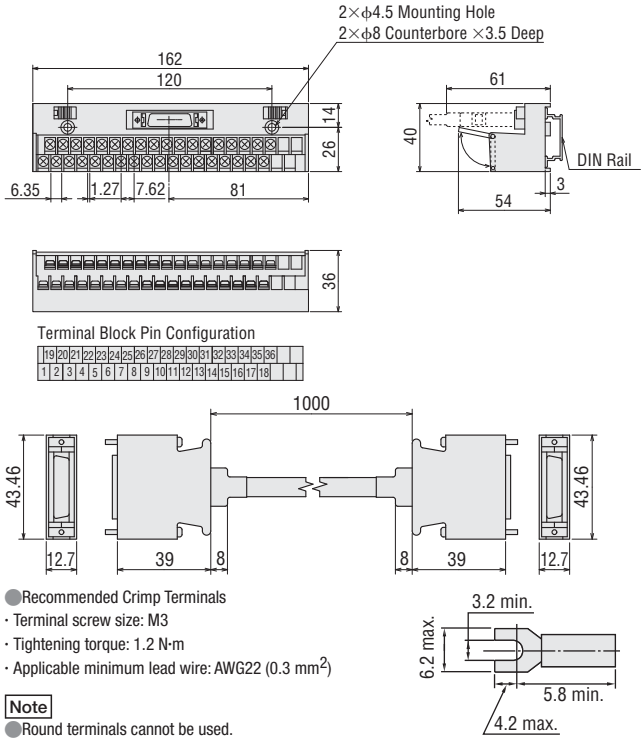
A terminal block conversion unit connects a driver to a host controller.
- With a signal name plate for easy, one-glance identification of driver signal names
- DIN-rail mountable
- Application Crimp Terminal: Fork Terminal
- Cable length: 1 m

Product Line

Product Name	Applicable Connector	Length (m)
CC36T1	Pulse Input Package CN5 (36 pins)	1

Dimensions (Unit: mm)

CAD B438



- Recommended Crimp Terminals
  - Terminal screw size: M3
  - Tightening torque: 1.2 N·m
  - Applicable minimum lead wire: AWG22 (0.3 mm^2)

Note
- Round terminals cannot be used.

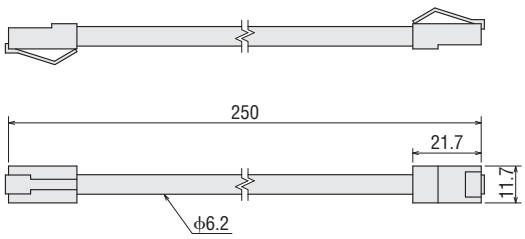
5 Cable for RS-485 Communication RoHS

This cable is used to link drivers when a built-in controller type is being operated in a multi-drop manner.

Product Line

Product Name	Applicable Products
CC002-RS4	Built-In Controller Package

Dimensions (Unit: mm)



Battery Set RoHS

Connect it when used as the absolute backup system.

Product Line

Product Name	Application
BAT01B	Built-In Controller Type

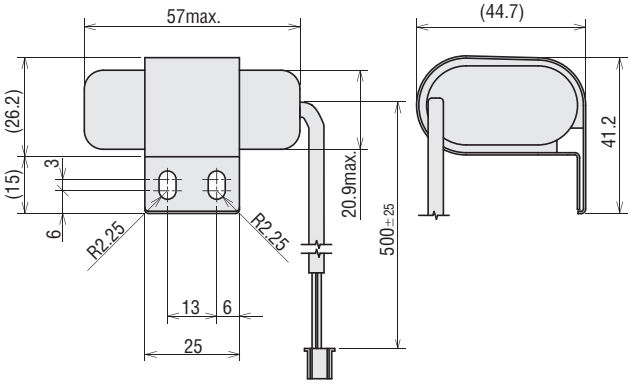
Specifications

Item	Content
Battery Type	Sealed Nickel/Hydrogen Storage Battery
Nominal Voltage	2.4V
Rated Capacity	1900mAh
Expected Life	Approximately 4 Years*1
Charge Time	32 hours*1
Data Retention Period	Approx. 360 hours (approx. 15 days)*1*2
Operating Ambient Temperature	0 to +40˚C (No freezing allowed)
Operating Ambient Humidity	45 to 85% (Non-Condensing)

*1 At an ambient temperature of 20˚C
*2 After the power is cut off with the battery fully charged.

Dimensions (Unit: mm)

Mass : 0.1kg CAD B560



Network Converter RoHS

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

Product Line

Network Type	Product Name
CC-Link Compatible	**NETC01-CC**
MECHATROLINK-Ⅱ Compatible	**NETC01-M2**
MECHATROLINK-Ⅲ Compatible	**NETC01-M3**

NETC01-CC **NETC01-M2** **NETC01-M3**

Flexible Couplings RoHS

MCS Couplings

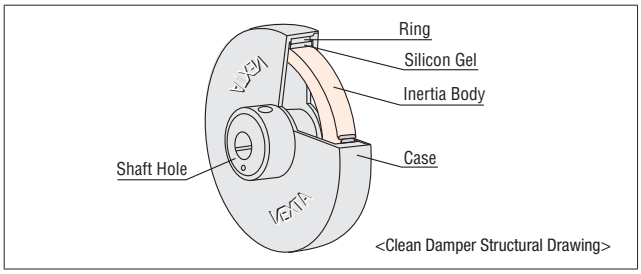
Features

- No backlash
- High strength (usable for geared motor) is now available
- A spider (material: polyurethane) controls the vibration generated by the motor

For details please contact the nearest Oriental Motor sales office.

Clean Dampers RoHS

Mechanical dampers suppress stepping motor vibration and improve high-speed performance. An inertia body and silicon gel are hermetically sealed in a plastic case.



<Clean Damper Structural Drawing>

Features

- Excellent Vibration Absorption
  The doughnut-shaped internal inertia body and silicon gel absorb vibration. This feature enables a stable damping effect.
- Cleanness Support
  Since there is no frictional dust it can be used in environments where higher degrees of cleanness are needed.
- High Reliability
- The damper holds up well in environmental resistance and changes little with age because the silicon gel and plastic case used are high heat-resistant.
- The machine part is sealed hermetically in a plastic case. This ensures safety and doesn't generate noise.
- This clean damper is an accessory for double shaft types. It can be used with various geared motors of double shaft type.

For details please contact the nearest Oriental Motor sales office.

Motor Mounting Brackets RoHS

Mounting brackets are convenient for installation and securing a stepping motor and geared type stepping motor.

Product Line

For Standard Type

Material: Aluminum alloy

Product Name	Motor Frame Size	Applicable Product
PAF0P	42mm	**AR46**
PAL0P		
PAL2P-5	60mm	**AR66** **AR69**
PAL4P-5	85mm	**AR98** **AR911**

- The fixing part of the mounting brackets adopt slotted hole for easy adjustment of the belt tension after the motor has been installed.
- These mounting brackets can be perfectly fitted to the pilot of the stepping motors. (Excluding **PAL0P**)

Notes

- Not available for geared type.

For TH Geared Type

Material: Aluminum alloy

Product Name	Motor Frame Size	Applicable Product
SOL0B	42mm	**AR46**
SOL2A	60mm	**AR66**
SOL5B	90mm	**AR98**

- When mounting **SOL2A**, use the included screws.
  Since screws are not included with **SOL0B** and **SOL5B**, prepare appropriate screws separately.

For PS Geared Type, PN Geared Type

Material: SS400
Surface Treatment: Electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
PLA60G	60mm	**AR66**
PLA90G	90mm	**AR98**

- The fixing part of the mounting brackets adopt slotted hole for easy adjustment of the belt tension after the motor has been installed.
- The motor mounting screws are included.

For Harmonic Geared Type

Material: SS400
Surface Treatment: Electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
PLA60H	60mm	**AR66**
PLA90H	90mm	**AR98**

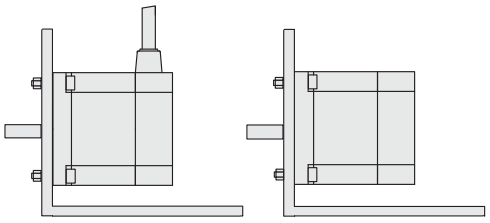
- The fixing part of the mounting brackets adopt slotted hole for easy adjustment of the belt tension after the motor has been installed.
- The motor mounting screws are included.

The mounting brackets of the other shape in addition to the above are available.
For details, please contact the nearest Oriental Motor sales office or view Oriental Motor website.
http://www.orientalmotor.com.sg

Motor Mounting Direction

Since the cable of the motor comes out vertical to the motor, install a cable upward or sideways.

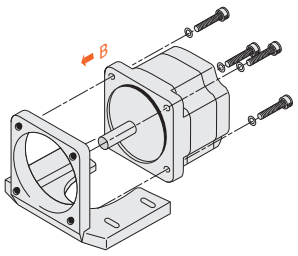
- The cable of **PLA60G**, **PLA90G**, **PLA60H**, **PLA90H** can be installed downward.



Cable Facing Upward　　Cable Facing Sideways

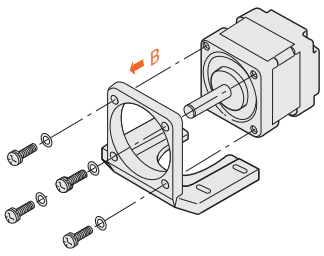
Mounting Method of the Motor

1 PAL2P-5, PAL4P-5



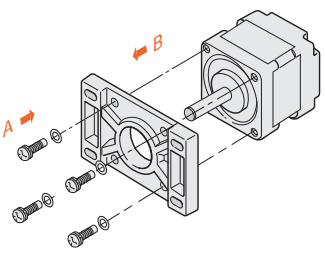
① Use the screws to install the motor to the mounting bracket.
② Install the motor from the direction shown by the arrow (B).

2 PAL0P, SOL0B, SOL2A, SOL5B



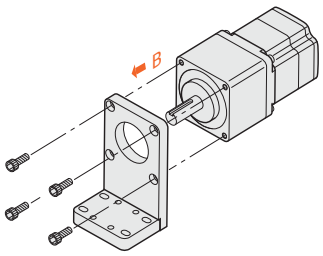
① Use the screws to install the motor to the mounting bracket.
② Install the motor from the direction shown by the arrow (B).

3 PAF0P



① Use the screws to install the motor to the mounting bracket.
② Motor can be installed on equipment from either side (A, B).

4 PLA60G, PLA90G, PLA60H, PLA90H



① Use the screws to install the motor to the mounting bracket.
② Install the motor from the direction shown by the arrow (B).

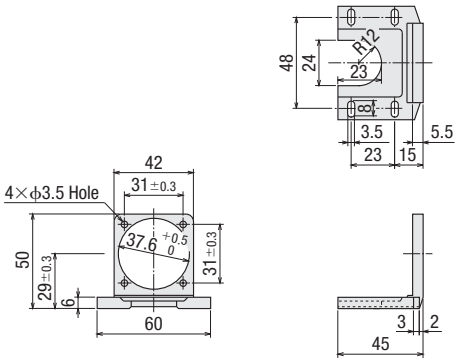
※For **PLA90H**, install the screws from direction shown by the arrow (B).

Dimensions (Unit: mm)

PAL0P

Mass: 35g

CAD B139

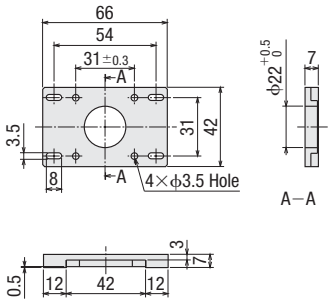


●Mounting Screw: M3 Length 10mm
4 included

PAF0P

Mass: 30g

CAD B140

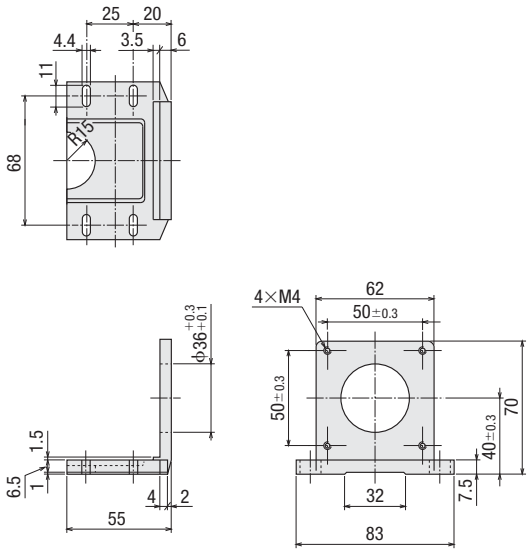


●Mounting Screw: M3 Length 7 mm
4 included

PAL2P-5

Mass: 110g

CAD B143

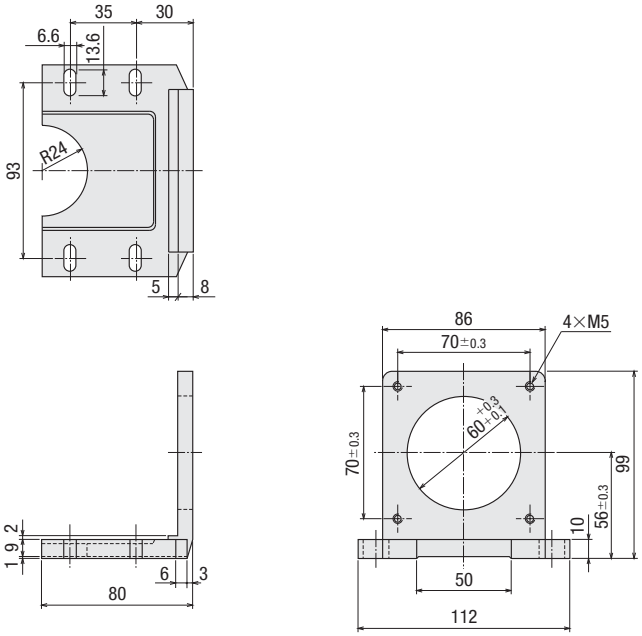


●Mounting Screw: M4 Length 12 mm
4 included

PAL4P-5

Mass: 250g

CAD B145

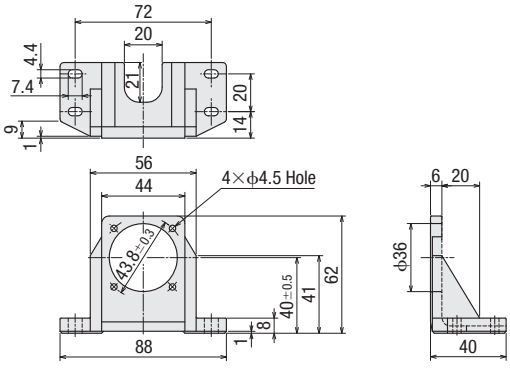


●Mounting Screw: M5 Length 16 mm
4 included

SOL0B

Mass: 85g

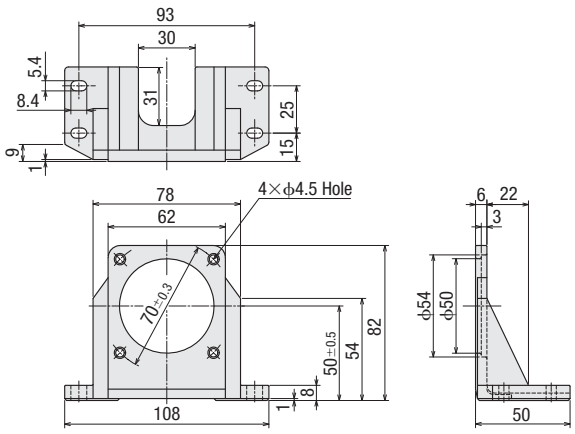
CAD B267



SOL2A

Mass: 120g

CAD B268

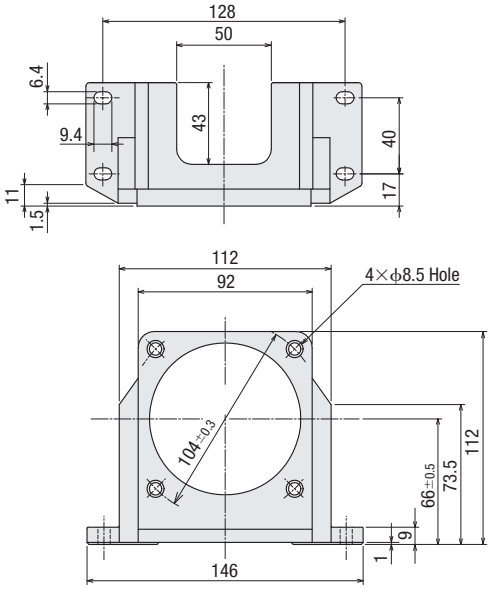


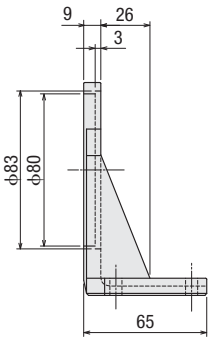
●Mounting Screw: M4 Length 12 mm
4 included

SOL5B

Mass: 270g

CAD B271

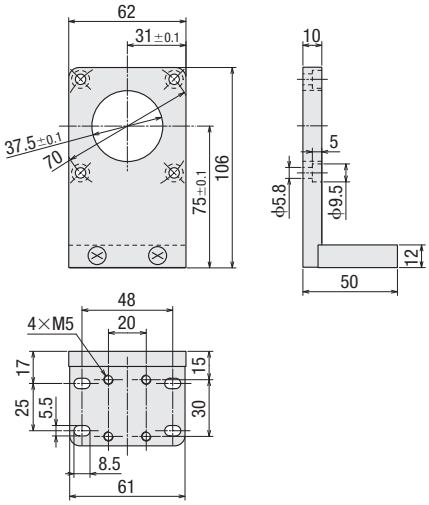




PLA60G

Mass: 0.7kg

CAD B634

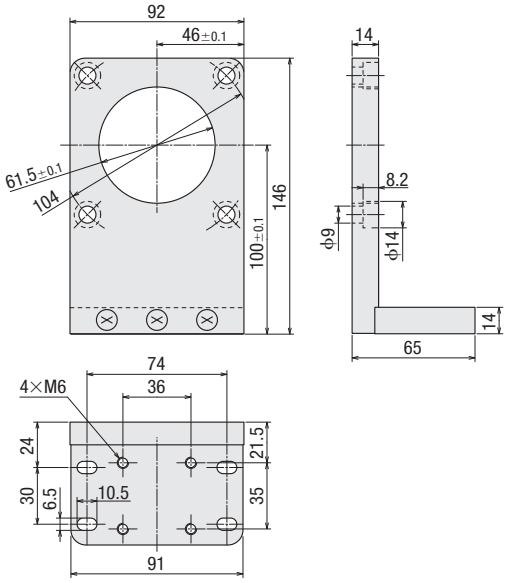


●Mounting Screw: M5 Length 15 mm
4 included

PLA90G

Mass: 1.6kg

CAD B637

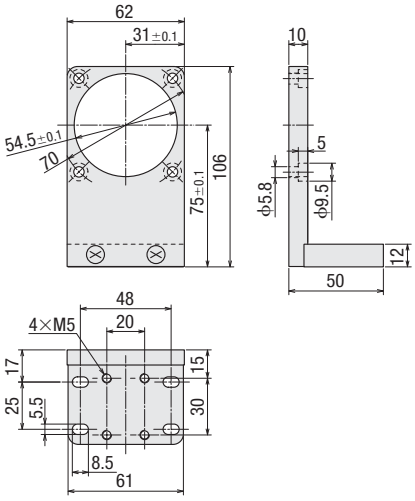


●Mounting Screw: M8 Length 20mm
4 included

PLA60H

Mass: 0.7kg

CAD B635

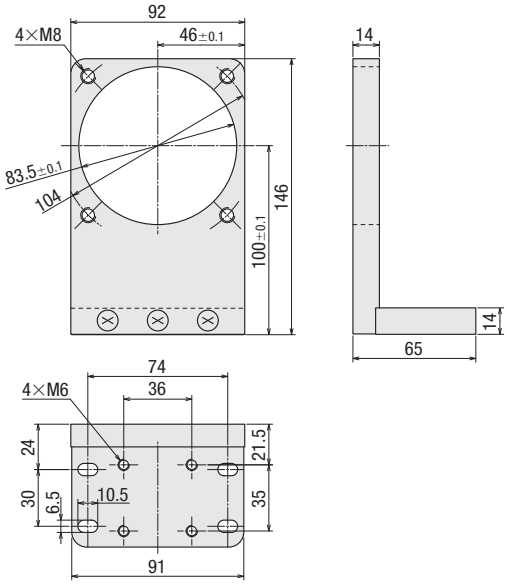


●Mounting Screw: M5 Length 15 mm
4 included

PLA90H

Mass: 1.6kg

CAD B638



●Mounting Screw: M8 Length 30 mm
4 included (includes 4 washers)

Controller Module (Sold separately)

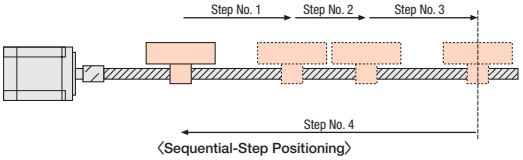
Stored-Data Type Controller

PG1200 RoHS

Features

All operations including data setting can easily be performed using the 4 touch pads on the panel. In addition, the number of signal lines is reduced to a minimum for easy operation and connection.
Jerk Limiting Control Function Suppresses Motor Drive Vibration

- Sequential-Step Positioning Operation/External Signal Operation Possible
- Maximum Oscillation Frequency 200 kHz
- 1-Pulse Output/2-Pulse Output Mode Select Possible



〈Sequential-Step Positioning〉


Recessed Installation Model


DIN Rail Installation Model

Product Line

Sink Logic

Product Line	Product Name
DIN Rail Installation Model	**PG1200N-D**
Recessed Installation Model	**PG1200N-U**

Source Logic

Product Line	Product Name
DIN Rail Installation Model	**PG1200P-D**
Recessed Installation Model	**PG1200P-U**

⚠ Safety Precautions

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

- The factories which manufacture the products listed in this catalogue have obtained Quality Management Systems ISO9001 and Environment Management Systems ISO14001.
- The content listed in this catalogue such as performance and specifications of the products are subject to change without notice for improvements.
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