

***Orientalmotor***

New 5-Phase Stepping Motor and Driver Packages

# RK II Series



Built-in controller type  
Pulse input type



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# BEST

PERFORMANCE & PRICE



An affordable stepping motor re-invented with a new concept of high performance.

# BEST

PERFORMANCE & PRICE



A highly reliable stepping motor that is too user-friendly to resist.

# SAVE

## PRICE & ENERGY

- Compact size, yet low price ..... Page 4
- Reduction power consumption and running cost ... Page 5

# EASY

## CONNECTION & SYSTEM

- Easy wiring ..... Page 6
- Easy selection ..... Page 6
- 2 types of drivers are available ..... Page 7

# HIGH

## PERFORMANCE & RELIABILITY

- High accuracy ..... Page 10
- Multiple step angle selections ..... Page 11
- Various kinds of protective functions (Alarm) ..... Page 11



New 5-Phase Stepping Motor and Driver Packages

## RK II Series

## Price

High-efficiency  
with Low Price

Compared to the conventional products, while achieving the significant improvement in motor performance, easy driver operation and function, the price has been lowered.



Conventional Model:  
**RK Series**  
□ 60 mm  
Standard Type

**RK II Series**  
Pulse Input Type  
□ 60 mm  
Standard Type

● For price and lead time, please contact the nearest Oriental Motor office, or visit the Oriental Motor website.

## Space Saving

Slim and Compact

This new driver has been created with re-arrangement of the internal components of the previous design, optimizing the usage of the size within the driver. In addition, drivers can be installed side by side, reducing a significant amount of space

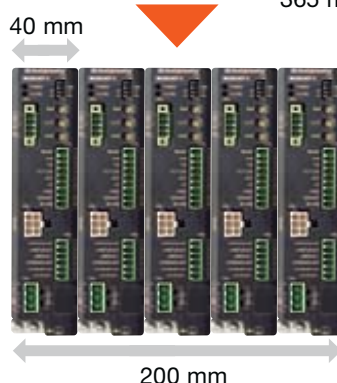
● When drivers are installed in contact with each other, the allowable ambient temperature range is 0 to 40°C

Multiple units can be installed in coherently with each other.

Conventional Model:  
**RK Series**  
Driver

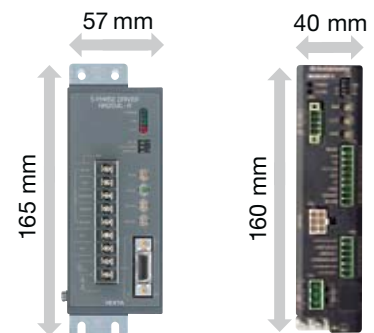


**RK II Series**  
Driver



Installation Width  
**45% Reduction**

Slim & compact driver



Conventional Model  
**RK Series**  
Driver

Installation Area  
**9405 mm<sup>2</sup>**  
(165x57=9405)

**RK II Series**  
Driver

Installation Area  
**6400 mm<sup>2</sup>**  
(160x40=6400)

MERIT  
**High-efficiency and compact size, yet cost down.**

MERIT  
**Obtain downsized and cost for control board.**





# High Efficiency

Reduces power consumption by up to 47%

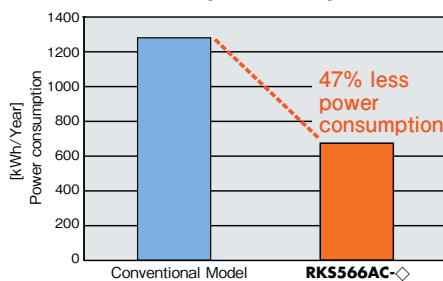
By optimizing the motor material, 47% of the power consumption has been reduced. This results in the decrease of electricity and CO<sub>2</sub> emission. In addition, with the lower heat generated by the motor, there is a lesser requirement of fans or radiation plate.

# Lower Heat Generation

Continuous Operation is Achieved

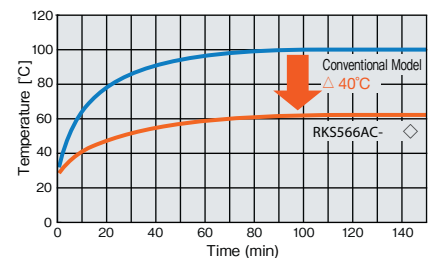
Continuous operation is achieved due to the reduction of motor heat generation by utilizing high-efficiency technology, and there is a lesser requirement of fans or radiation plate.

## ● Power Consumption Comparison



Operating Condition  
 · Spin speed : 1000 r/min  
 · Load torque: 0.47 N·m  
 · Operating time: 24 hours  
 (Operation 70%, Stand-by 25%, Stop 5%)  
 365 days/year

## ● Motor Surface Temperature Comparison under the Same Conditions

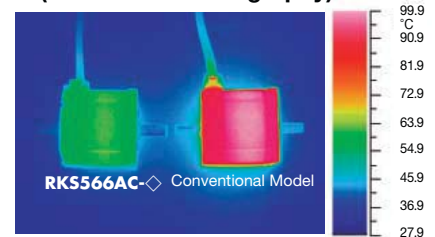


## ● Power Consumption Comparison

Items	Conventional Model	RKS566AC-◇	Comparison	
Power consumption during operation [W]	204	106	98 W	Reduced by 48%
Power consumption during stand-by [W]	14	13	1 W	Reduced by 7%
Power consumption [kWh/year]	1281	678	603 kWh/year	Reduced by 47%
CO <sub>2</sub> emission equivalent to power consumption ※ [kg/year]	533	282	251 kg/year	Reduced by 47%

※ : Conversion rate: 0.416 kg/kWh

## ● Distribution of temperature (shown on thermography)



## MERIT

**With the maximized motor performance, it is easy to achieve high efficiency and cost savings.**

## MERIT

**To reduce cost and procedure to take measures to prevent high-temperature.**

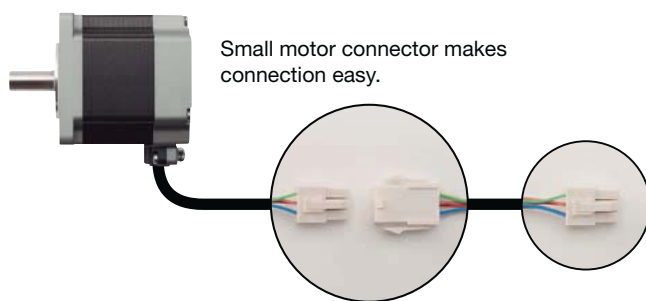
## Wiring

### Easy Wiring

The new I/O connector does not require a screw, eliminating the need for soldering or a special crimping tool. The motor connector can be connected easily by using a dedicated cable. This will reduce wiring time, maintenance and prevent mis-wiring.

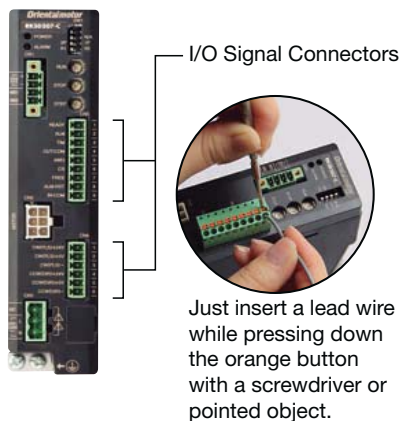
#### ● Motor Connector Wiring

- No screw tightening
- Wiring time reduction
- Reduce problems caused by mis-wiring



#### ● I/O Connector Wiring

- No soldering
- No crimping tools
- Wiring time reduction
- Less maintenance



## Selection

### Easy Selection

#### ● Free Motor Selection Service for Customers:

Send us a motor selection inquiry via our website, fax or e-mail.

#### ● Free Motor Selection Software Available for Download:

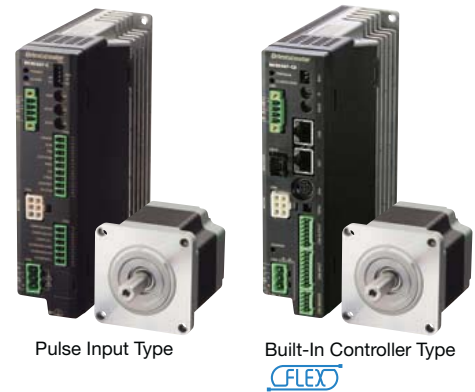
Make your own motor selection for your application by downloading our user friendly motor selection software from our website.



## MERIT

**The driver has been redesigned, making it more compact and allowing side-by-side in contact installation. It is also more user friendly as wiring has been made easier.**

Two types of drivers are available.



Pulse Input Type

Built-In Controller Type

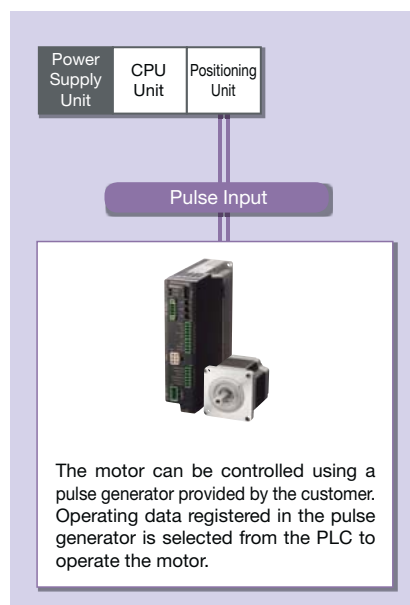
**FLEX**

# Driver

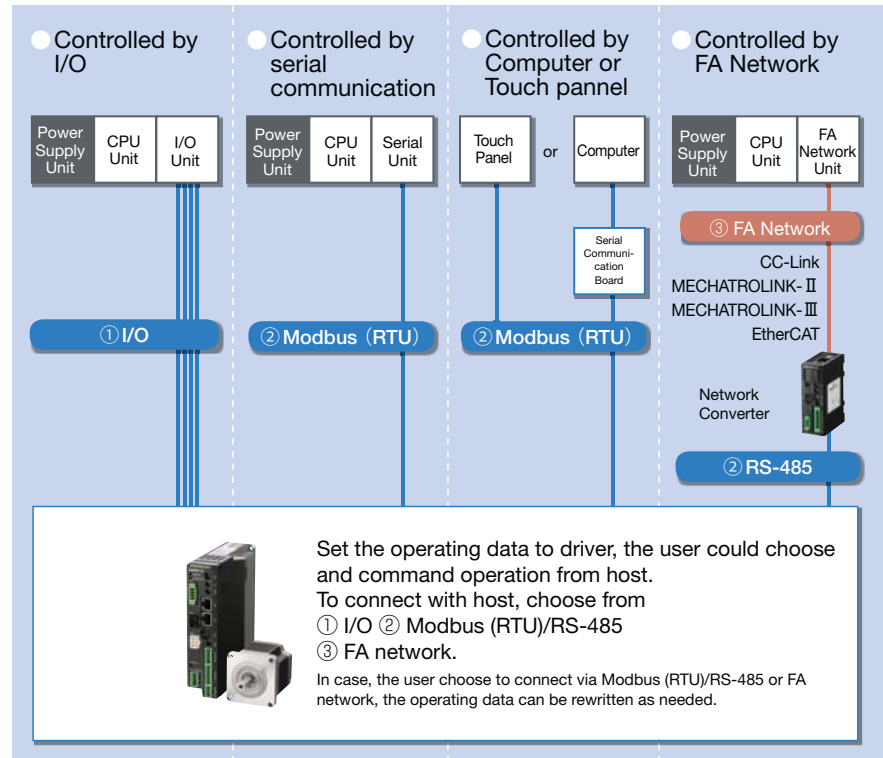
Pulse Input Type  
Built-In Controller Type

Select the control method in accordance with your operation system.

## Pulse Input Type



## Built-In Controller Type **FLEX**



### ● How to connect (Example: Refer to P. 8 and P. 9)

**① I/O**

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

**② Modbus (RTU)/RS-485**

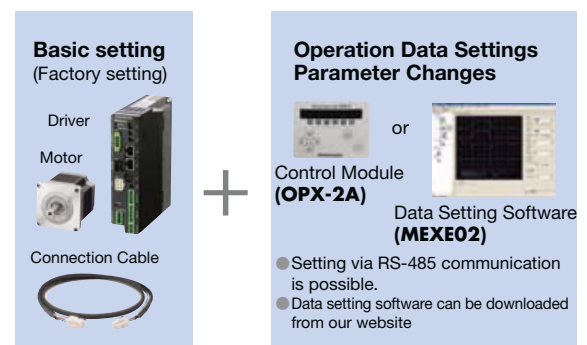
Through RS-485 communication, you can set operating data and parameters and input operation commands. A maximum of 31 drivers can be connected to one serial unit. There is also a function for simultaneously starting multiple axes. The unit also has a feature for starting multiple axes simultaneously. The unit supports the Modbus (RTU) protocol, which makes it easy to connect a PLC or similar device to the driver.

**③ FA Network**

By using a Network Converter (sold separately), you can use CC-Link communication and MECHATROLINK communication. Over these links, operating data and parameters can be set, and operation commands can be sent to the driver.

### ● Speed and moving step angle of motors can be configured by data setting.

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.



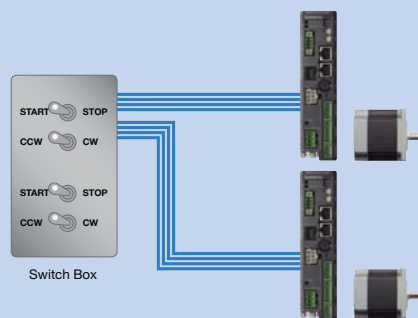
**MERIT**  
**Connects to a Wide Variety of Host System.**

Example of connection and control of Built-In Controller Type FLEX.

### I/O Control

#### Using a Switch Box

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



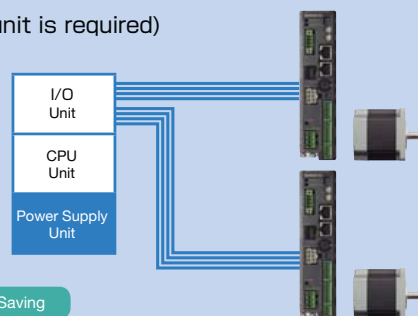
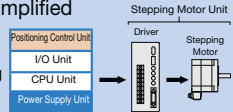
Simple Control

Low Cost

#### Using PLC (No positioning control unit is required)

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

Example: System requires positioning control unit



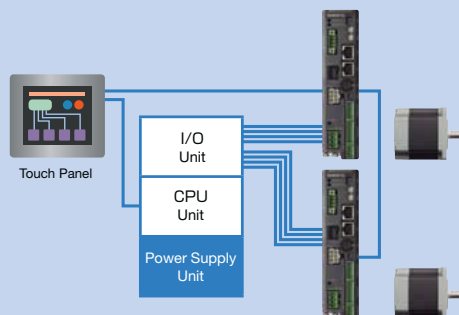
Simple Control

Low Cost

Space Saving

#### Using PLC and a Touch Panel

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



Simple Control

Suitable for one or more products

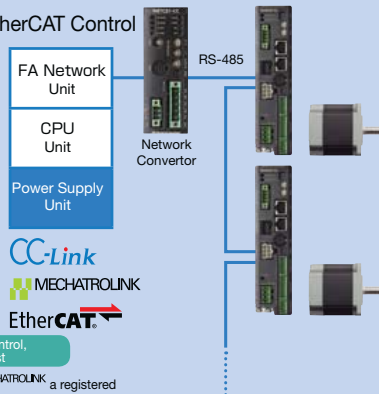
### Network Control

#### CC-Link Control / MECHATROLINK Control / EtherCAT Control

CC-Link communication, MECHATROLINK communication and Ether CAT communication are available by using network converter (sold separately). Operating data and parameters can be set and operation commands can be input using various communication methods. Also it shortens the design time.

- Multi-axis control with simple host.
- Can be connected with different types of network.
- Able to send information to a group of slaves at the same time.

- CC-Link: 12 axis max
- MECHATROLINK, EtherCAT: 16 axis max




Simple Control

Simple Wiring

Multi-axis control, lower cost

- CC-Link is a registered trademark of CC-Link Partner Association. MECHATROLINK is a registered trademark of MECHATROLINK Members Association.
- EtherCAT is a registered trade mark licensed by Beckhoff Automation in Germany.



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



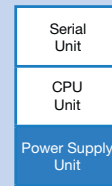
Build-In Controller Type  


# Modbus (RTU) Control

● Modbus is copyright of Schneider Automation Inc.

## Modbus (RTU) control via PLC

RS-485 communication can be used to set operating data, parameters and input operation commands. A maximum of 31 drivers can be connected to one serial unit. There is also a function for simultaneously starting multiple axes. The motor has a function that enables multiple shafts to be started simultaneously. The protocol supports Modbus (RTU), enabling connection with devices such as touch-screen panel computers and PCs.



- Simple Control
- Simple Wiring
- Compatible with serial unit of several manufactures

## Modbus (RTU) control via PC

Operating data, parameters and input operation commands can be input via RS-485 communication board into PC. It also suitable for PC Facility Use.

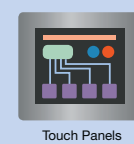


- Simple Control
- Simple Wiring
- Motor Control by PC

## Simple connect to Touch Panel

Direct connection to touch panel is available via Modbus (RTU) communication. Operating data, parameters, alarm record and trial operation can be controlled without PLC.

Use touch panel instead of switch



※ Pro-face (Digital Electronics Corporation) provides exclusive templates for Oriental Motor "Cockpit". For more detail, please refer to Digital Electronics Corporation's website.

- Simple Control
- Simple Wiring
- System Simplification

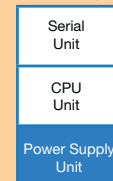
## Introduction of Features

### Group Sending Function

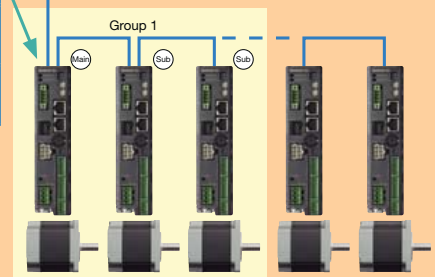
The group sending function simultaneously starts the multi-axis via Modbus (RTU) or FA network. Group some drivers, the used then send operation command to main driver, other drivers in the same group will start operation simultaneously

- Modbus (RTU): Simultaneous start, change of moving angle or speed, monitor are possible.
- FA Network: Simultaneous only

### ● Modbus (RTU) Communication



Multi-axis simultaneous starting is possible



MERIT  
**Build-in controller type is compatible with several kinds of system or network.**

# HIGH

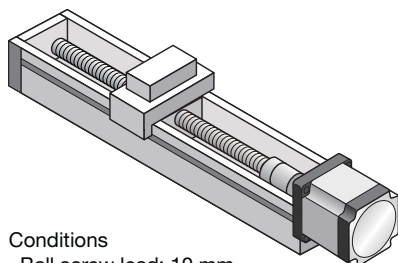
PERFORMANCE & RELIABILITY

Performance and function to enhance reliability.

## High Accuracy

High Accurate Positioning

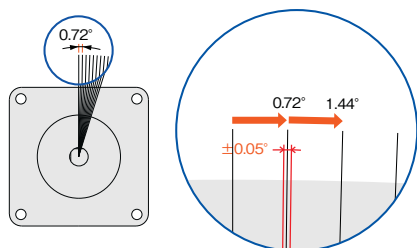
Positioning accuracy of the **RKII** Series is  $\pm 0.05^\circ$  ( $\pm 3$  arc min). When the **RKII** Series is used with a ball screw as shown in the below drawing, the stopping accuracy becomes  $\pm 1.4 \mu\text{m}$ . The accuracy of the normal ground ball screw is  $\pm 10 \mu\text{m}$ , thus the accuracy is high enough for positioning operation.



Conditions

- Ball screw lead: 10 mm
- Motor to be used: **RKII** series

Stopping Accuracy  $\pm 1.4 \mu\text{m}$



Positioning Accuracy  $\pm 0.05^\circ$

**MERIT**  
High accuracy in positioning  $\pm 0.05^\circ$ .

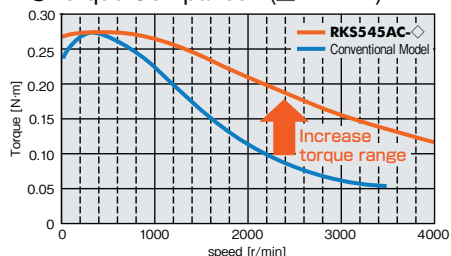
## High Torque

Compact and High Torque

The **RKII** Series is compact but produces high torque. The torque of the 42 mm frame size model has increased 50%. This contributes to a reduction in positioning and equipment takt time. The series includes 60 mm and 85 mm framesize models to cover a wide torque range.

● Note that for 60 mm and 85 mm frame size models, the torque is equivalent to the conventional model.

### ● Torque Comparison (□ 42 mm)

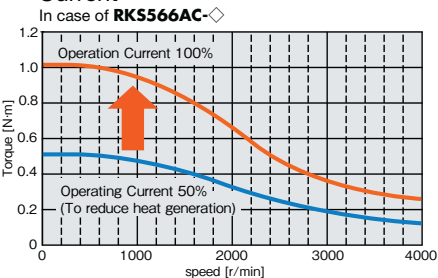


## High Efficiency

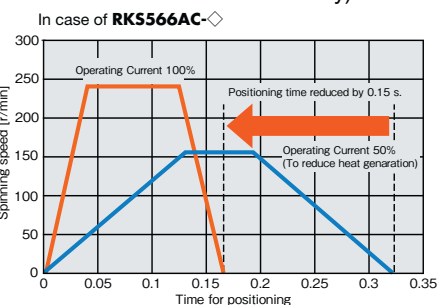
Shorten Positioning Time

With conventional stepping motors, in applications where heat generation had to be suppressed, the operating current had to be reduced, which also reduced torque. With the **RKII** Series, thanks to its low heat generating, highly efficient motors, the motor torque can be used fully to reduce positioning time.

### ● Torque Comparison by Operating Current



### ● Comparison of Cycle Time (between deferent current of electricity)



Operating Conditions  
 · Moment of load inertia:  $4 \times 10^{-4} [\text{kg} \cdot \text{m}^2]$   
 · Load torque: 0.2 [N·m]  
 · Traveling Amount: 180°  
 · Safeness rate: 2

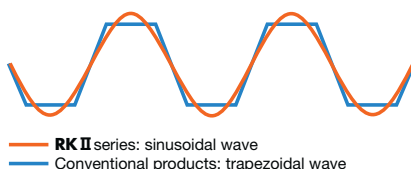
**MERIT**  
Shorten time for positioning.

# Low Vibration

Adopt full digital controlled driver

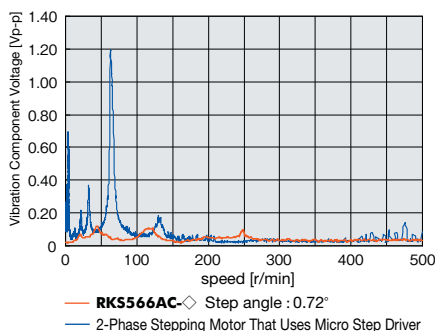
Fulltime micro step driver controlled by a full digital system improve its vibration characteristics much better than ever (first in 5-phase step motor). Current control is also done by a digital system, high spec CPU will perform arithmetic process. This model uses PWM control instead of PAM control, current in each phase became sinusoidal wave. In the result, vibration has been reduced drastically.

## ● Current Waveform in Motor (theoretical figure)



Current in motor changed from trapezoidal wave to sinusoidal wave, which resulted in less vibration.

## ● Vibration Characteristics Comparison



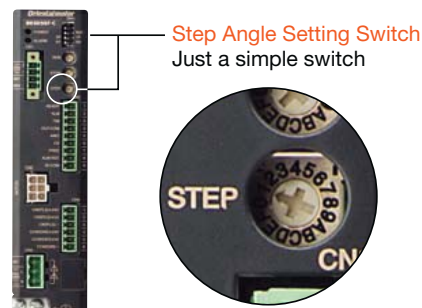
MERIT

**Vibration has been reduced drastically.**

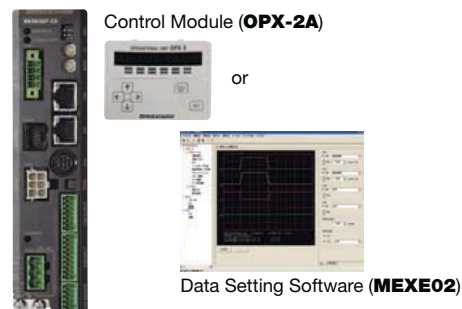
# Resolution

Step angle can be set easily

For pulse input type, a wide variety (32 kinds) of step angles can be selected. The user can select depending on their machinery, as well as the data of step angle for two-phase stepping motor is installed. It can be set easily (only select by switch) without any specialized software or Control module.



For built-in controller type, can be set its value between 200 p/r - 200,000 p/r. Setting can be done by Control module, software or RS-485 communication.



MERIT

**Optimal resolutions can be selected.**

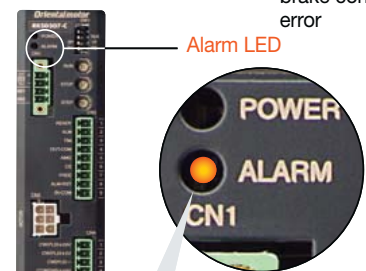
# Protective Function

Various kinds of protection are installed

Protection function to take immediate measures is installed. Alarm LED will show detail of trouble, the user can specify it immediately from blink count.

## (Example of alarm)

- Main circuit overheating
- Overvoltage
- Command pulse error
- Overcurrent
- Undervoltage
- Electrolytic capacitor error
- EEPROM error
- CPU error
- Automatic electromagnetic brake control error



Example: Alarm LED blinking three times

Overvoltage alarm

## [Causes]


- Power supply voltage exceeded the permissible value.
- A large inertial load was stopped suddenly or lifted or lowered.


MERIT

**Check troubles with protection function.**

Lineup



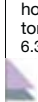


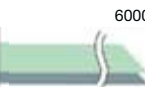

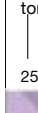
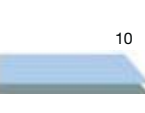
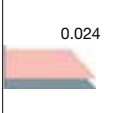
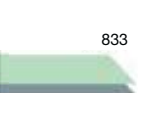


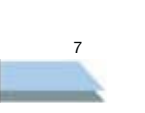
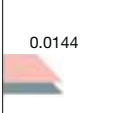
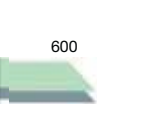


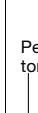

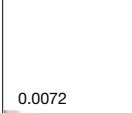
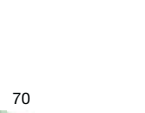
● List of drivers and motors

Driver Type	Motor Type	Frame Size	Electro-magnetic Brake	Power Input
	Standard Type	42 mm 60 mm 85 mm	●	Single Phase 100-120 VAC Single Phase 200-240 VAC
	Standard Type with Encoder	42 mm 60 mm 85 mm	—	
	TS Geared Type PS Geared Type Harmonic Geared Type	42 mm 60 mm 90 mm	●	


Driver Type	Motor Type	Frame Size	Electro-magnetic Brake	Power Input
	Standard Type	42 mm 60 mm 85 mm	●	Single Phase 100-120 VAC Single Phase 200-240 VAC
	TS Geared Type PS Geared Type Harmonic Geared Type	42 mm 60 mm 90 mm	●	

● List of Standard Type, Geared Type and Features

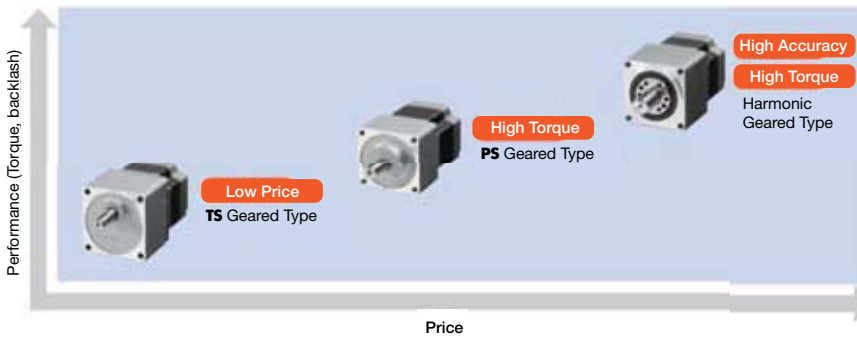
\*We provide encoder installed model, but only for the built-in controller models.

Type	Features	Permission Torque, Maximum Torque (N·m)	Backlash (arc min)	Basic Resolution (°/pulse)	Output Shaft Speed (r/min)	
Standard Type  with Encoder* 	<ul style="list-style-type: none"><li>Basic model of the <b>RKII</b> series with Encoder</li><li>For encoder installed model, functions for monitoring positioning data, detecting positioning gap are available.</li><li>Resolution of encoder installed: 500 p/r.</li></ul>	Maximum holding torque 6.3 	— 	0.72 	6000 	
Backlash-less	<b>TS Geared Type</b> (Spur Gear Mechanism) 	<ul style="list-style-type: none"><li>High torque (Double of existing products)</li><li>A wide variety of reduction gear ratios, high-speed operations</li><li>Gear ratio types 3.6, 7.2, 10, 20, 30</li></ul>	Permission torque, Maximum torque 25 45 	10 	0.024 	833 
	<b>PS Geared Type</b> (Planetary Gear Mechanism) 	<ul style="list-style-type: none"><li>Less backlash (comparing with existing products)</li><li>High permission torque, maximum torque</li><li>A various reduction gear ratio lineup make easy to detect angle</li><li>Center shaft</li><li>Gear ratio types 5, 7.2, 10, 25, 36, 50</li></ul>	Permission torque, Maximum torque 37 60 	7 	0.0144 	600 
Non backlash	Harmonic Geared Type (Harmonic Drive)  	<ul style="list-style-type: none"><li>Longer mechanical life (Double of existing products)</li><li>Higher torque (1.3 times of existing products)</li><li>High accuracy in positioning</li><li>High permission torque, maximum torque</li><li>High reduction ratio, high resolution</li><li>Center shaft</li><li>Gear ratio types 50, 100</li></ul>	Permission torque, Maximum torque 52 107 	0 	0.0072 	70 

Note

- Above values can be referred to know the difference between each types. Such values can be changed depending on setting angle or reduction ratio.
- Harmonic drive and  are registered trademarks of Harmonic drive systems Inc or trademarks.

We also provide the geared motor (a kind of variation of Stepping motor). Geared motors also has various specification, the user can select the optimal one by considering about torque, accuracy (backlash) or price.





# Features of New Lineup

## **NEW** Standard Type with Encoder (Built-in controller type only)

Encoder installed model make it possible to monitor present position and detect the gap. It contributes to carry more reliability to machinery.



### ● Positioning monitor

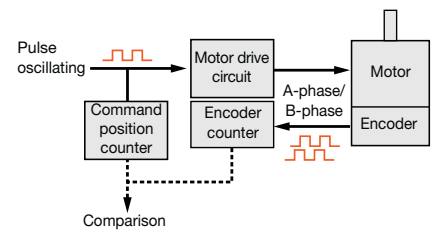
The user can detect position of the motor. For instance, comparing with command position, the user can confirm normal operation.

### ● Return-to-Home operation by using Z-phase signal

Z-phase signal can be utilized to home return operation. Using Z-phase signal, the home return point will be detected with higher accuracy than single use of the home return sensor.

### ● Detecting the gap

The encoder will compare command position and encoder-count, if deviation exceeds set value STEPOUT signal will be output. So that if acute change happened in current and cause gap in position, the user can figure it out. Alarm or warning sign for abnormality in deviation is also available.



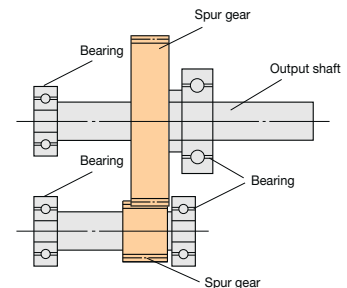
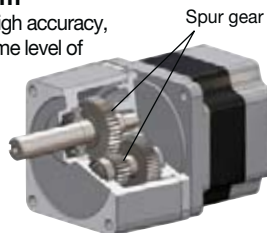
## TS Geared Type

This type is made with simple spur gear design. The torque and speed have been improved while its affordable price, if compare with existing type.



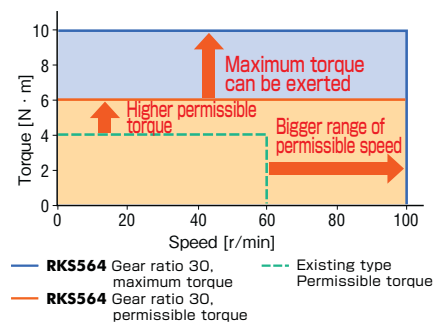
### ● Mechanism

Because of its high accuracy, this type has same level of accuracy with existing **TH** Gearhead even it does not have tapered gear.



### ● Torque and speed are improved (compare with existing type)

This type realizes the improvement of permissible torque, at the same time, it can exert its maximum torque. Not only these improvement, the rated input speed is increased to 3,000 r/min, and it permissible speed range of output shaft the drastically (compare with existing type). The motor exerts higher torque and shortens time for positioning, because maximum torque range can be used acceleration/deceleration.



## PS Geared Type

The PS gear mechanism is comprised primarily of a sun gear, planetary gears and an internal tooth gear. The planetary gears design realizes higher torque.



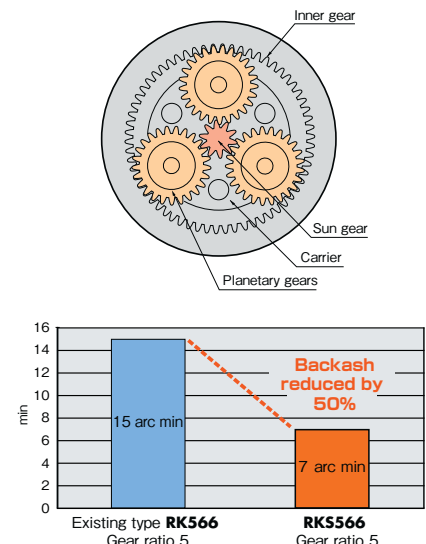
### ● Mechanism

There are some gears inside and they distribute torque, so that this design permit to use higher torque than spur gear design. As well as, this type uses high accuracy gear, it make backlash smaller if compare with spur gear design.



### ● Reduce backlash (Compare with existing type)

Optimal design of gears have reduced their backlash. (Except: □ 42 mm) It realize positioning with higher accuracy.



## Harmonic Geared Type

This type newly adopted high torque harmonic gears. The mechanical life, permissible torque and maximum torque are improved (compare with conventional model).



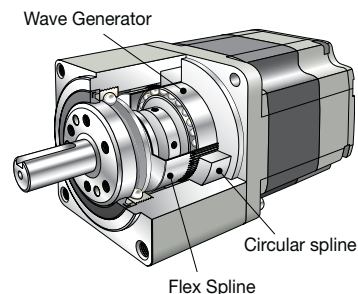
### ● Improved rated life time (Twice the length of conventional models)

The rated life time has been increased from 5,000 hours (conventional models) to 10,000 hours. (Except □ 42 mm)

[Condition for rated life time]

Torque : Permissible torque  
Type of load : Uniform load  
Input speed : 1,500 r/min  
Radial load : Permissible radial load  
Axial load : Permissible axial load

### ● Structure



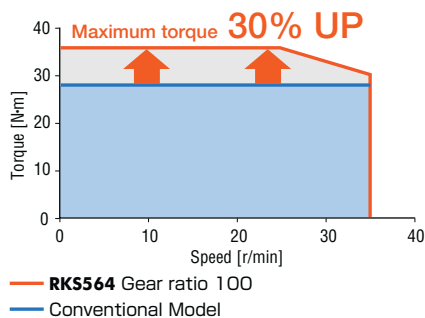
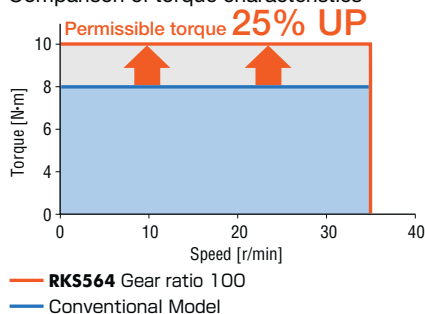
### ● High torque

If compares with the existing type, the permissible torque and maximum torque has been increased drastically. It makes the motor to drive more load while the size of motor is same as before.

### Comparison of specification

Products name	RKS564AC-HS100-◇	conventional model
Permissible torque N·m	10	8
Maximum torque N·m	36	28
Gear ratio	100	
Lost motion (Load torque)	0.7 arc min or less (± 0.39 N·m)	

### Comparison of torque characteristics

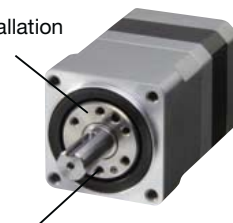


### ● Surface Installation of load is available

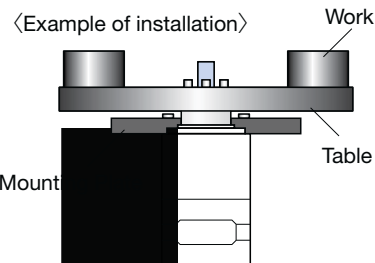
This type permits installation of load directly on the rotating surface integrated with the shaft. (Except: □ 90 mm)

#### Appearance and Installation

Example This surface rotates with the shaft



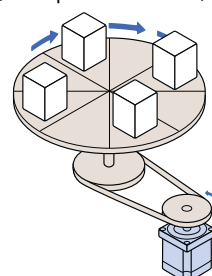
Tapped holes are provides on the rotating surface for load installation



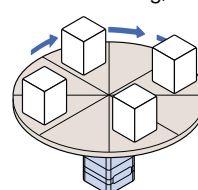
#### Application: Index Table

This type not only reduces the number of parts/processes, but also improves reliability. They are also suitable for operating loads that receive moment loads.

#### 〈Example mechanism〉



#### 〈Surface mounting〉





# Advantage of geared motor

Using geared motors bring the user lots of advantages, such as speed reduction / high torque / high resolution etc.

## The motor can drive a large inertial load

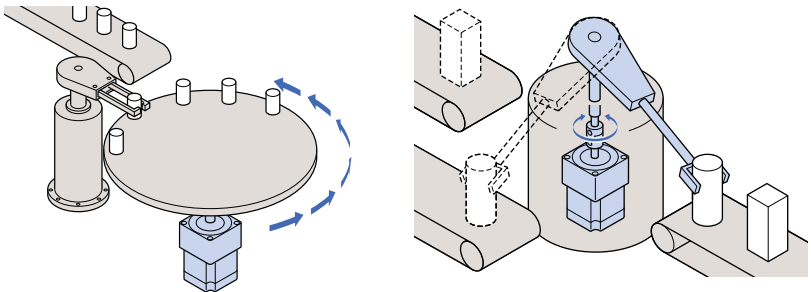
If compared with a standard motor, the geared motors can drive larger inertial load, because it's permissible load moment of inertia increases with the square of reduction ratio.

Comparison of load moment of inertia

	Motor Type	Motor product name	Load moment of inertia (10 times of Rotor Inertia)	Diameter of inertial load (Thickness: 20 mm, material: Aluminum)	Speed range
	Standard Type	<b>RK5564AC-◇</b>	$1.6 \times 10^{-4} \text{ kg} \cdot \text{m}^2$	72 mm	0 ~ 6,000 r/min
	<b>PS</b> Geared Type (Gear ratio 5)	<b>RK5566AC-PS5-◇</b>	$40 \times 10^{-4} \text{ kg} \cdot \text{m}^2$	164 mm	0 ~ 600 r/min

## Damping characteristic at starting/stopping will be improved.

When the motor works under large inertial load or need to accelerate/decelerate in a short time, it is better to use the geared motor than the standard motor. Because it can reduce damping and it can also drive stably. So that the geared motor is suitable for work that requires to position a large load (i.e. index table, arm) in a short time.

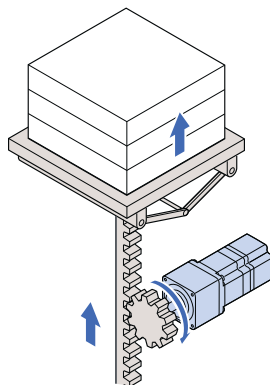


## High stiffness, not twisting easily.

The geared motor has a high stiffness and it cannot be twisted easily, so that it do not profoundly affected by changes of load torque (compared with standard motor).

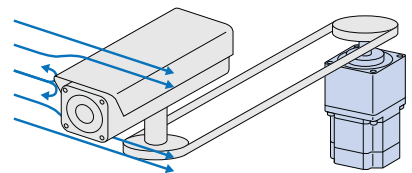
### Application: Lifter

The geared motor can stop with high accuracy, if the user uses it with machinery that drives vertically such as a lifter, even its number of work or load changes.



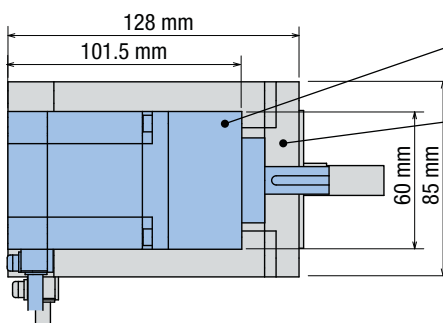
### Application: Security Camera

The motor can stand stably even the camera is shaken by strong wind.



## Downsizing

If comparing the standard motor and the geared one which have similar maximum holding torque, the setting angle of the geared motor is smaller than the other. This characteristic the motor downsizes both in quantity and volume. So that the geared motor is recommended, if equipment needs to be downsized or to save weight.



### PS Geared Motor

**RK5564AC-PS25-◇** Weight: 1.4 kg, TH=8 N·m

### Standard Motor

**RK55913AC-◇** Weight: 4.1 kg, TH=6.3 N·m

※ TH means "Holding torque"

## System Configuration

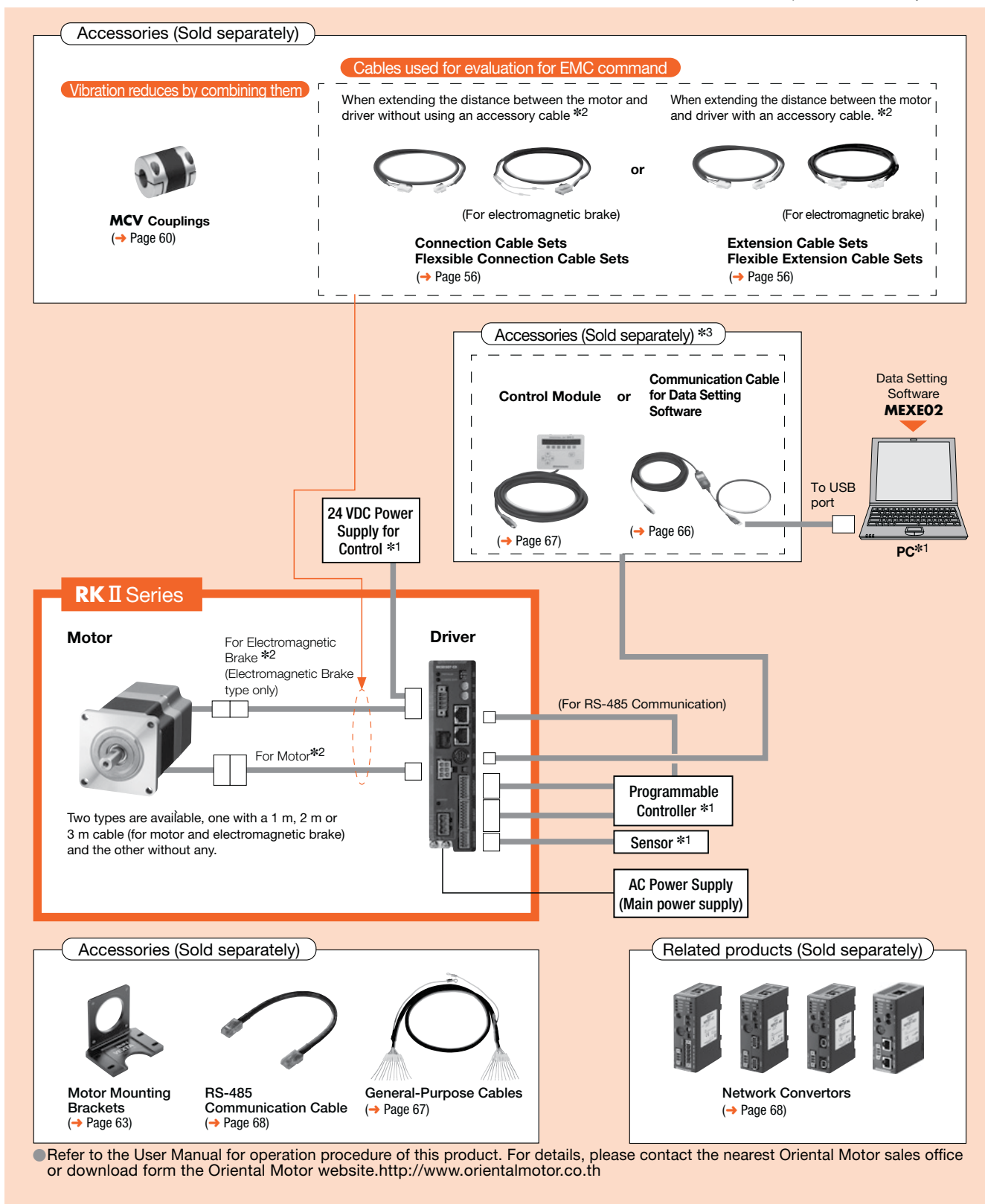
### Built-In Controller Package Standard Type with Electromagnetic Brake

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

\*1 Not supplied.

\*2 Only with the type supplied with a connection cable

\*3 To be provided as necessary



### System Configuration Example

Sold separately	
Motor Mounting Bracket <b>PAL2P-5</b>	Flexible Coupling <b>MCV251010</b>
General-Purpose Cable (1m) <b>CC16D010B-1</b>	

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



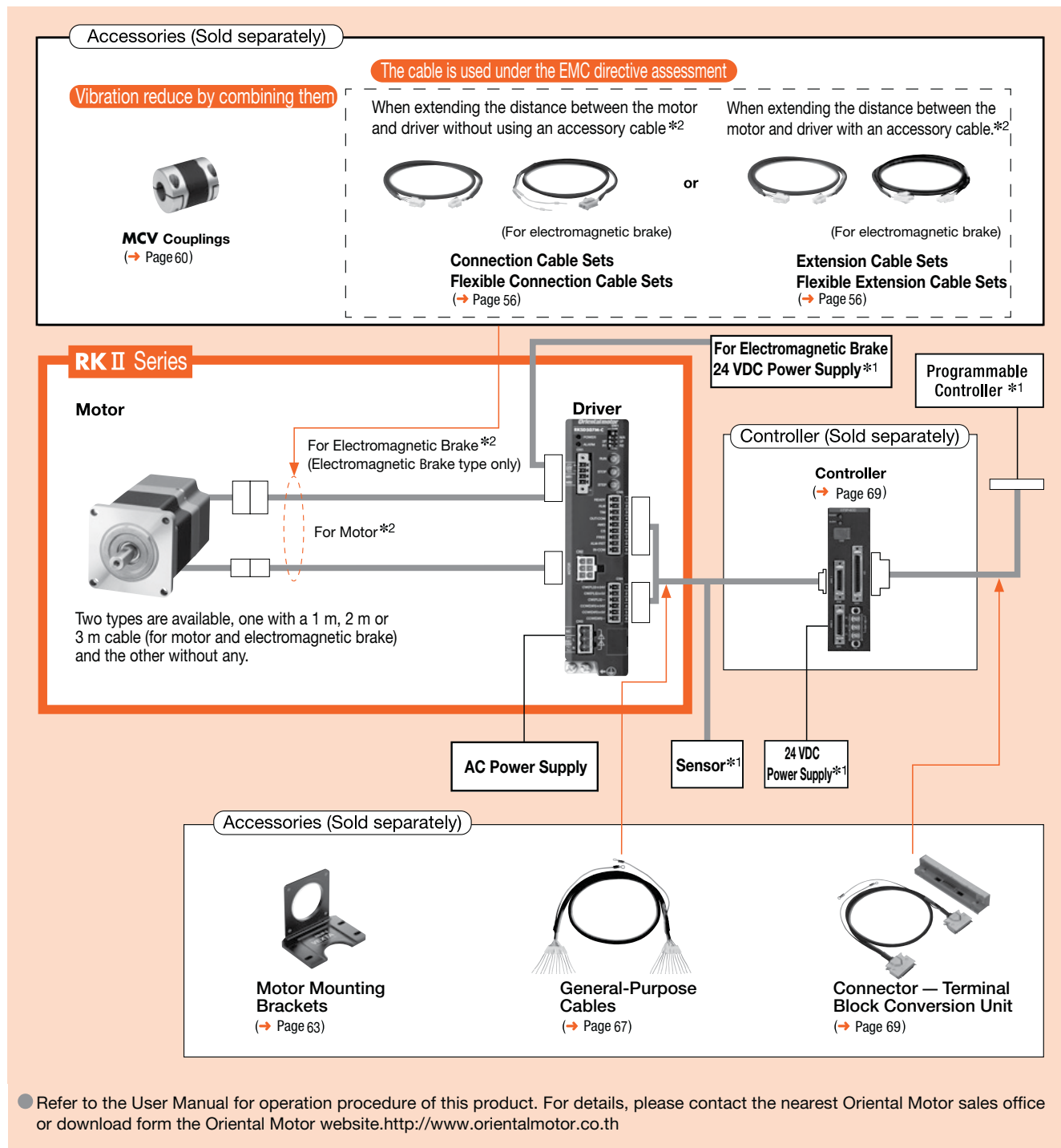
## System Configuration

### Pulse Input Type/Standard Type with Electromagnetic Brake

A single-axis system configuration with the controller **EMP400** Series.

\*1 Not supplied

\*2 Only the model includes connecting cable



### System Configuration Example

RK II Series	Sold Separately				
	Controller	Motor Mounting Bracket	Flexible Coupling	General-Purpose Cable (1 m)	Connector — Terminal Block Conversion Unit (1 m)
<b>RK5566MC-3</b>	<b>EMP401-1</b>	<b>PAL2P-5</b>	<b>MCV251010</b>	<b>CC16D010B-1</b>	<b>CC50T10E</b>

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

## Product Number Code

**RKS 5 6 4 R C D 2 - 3**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑪

**RKS 5 6 4 M C D - HS 50 - 3**

① ② ③ ④ ⑤ ⑥ ⑦ ⑨ ⑩ ⑪

①	Series Name	<b>RKS : RK II</b> series
②	<b>5</b> : 5-Phase	
③	Motor Frame Size	<b>4</b> : 42 mm <b>6</b> : 60 mm <b>9</b> : 85 mm (Motor Frame Size for Geared Type 90 mm)
④	Motor Case Length	
⑤	Motor Type	<b>A</b> : Single shaft <b>B</b> : Double shaft <b>R</b> : Encoder Type <b>M</b> : Electromagnetic Brake Type
⑥	Power Supply Voltage	<b>A</b> : Single-Phase 100-120 VAC <b>C</b> : Single-Phase 200-240 VAC
⑦	Driver Type	<b>D</b> : Built-In Controller Type Blank : Pulse Input Type
⑧	Serial Number	
⑨	Gearhead Type	Blank : Standard Type <b>TS</b> : <b>TS</b> Geared Type <b>PS</b> : <b>PS</b> Geared Type <b>HS</b> : Harmonic Geared Type
⑩	Gear Ratio	
⑪	Connecting Cable	Numeric value : Cable length (included in package) <b>1</b> : 1 m <b>2</b> : 2 m <b>3</b> : 3 m Blank : Package without cable

## Product Line

### Built-In Controller Type

#### Standard Type

Product Name (Single Shaft)	Product Name (Double Shaft)
<b>RKS543A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS544A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS544B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS545A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS545B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS564A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS564B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS566A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS566B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS569A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS569B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS596A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS596B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS599A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS599B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS5913A</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>	<b>RKS5913B</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>

#### TS Geared Type

Product Name (Single Shaft)	Product Name (Double Shaft)
<b>RKS543A</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>
<b>RKS543A</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>
<b>RKS543A</b> <input type="checkbox"/> <b>D-TS10</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D-TS10</b> <input type="checkbox"/>
<b>RKS543A</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>
<b>RKS543A</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>	<b>RKS543B</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>
<b>RKS564A</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>	<b>RKS564B</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>
<b>RKS564A</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>	<b>RKS564B</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>
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<b>RKS596A</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>	<b>RKS596B</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>
<b>RKS596A</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>	<b>RKS596B</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>

#### Standard Type with Electromagnetic Brake

Product Name
<b>RKS543M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS544M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS545M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS566M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS569M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS599M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>
<b>RKS5913M</b> <input type="checkbox"/> <b>D</b> <input type="checkbox"/>

#### Standard Type with Encoder

Product Name
<b>RKS543R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS544R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS545R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS564R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS566R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS569R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS596R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS599R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>
<b>RKS5913R</b> <input type="checkbox"/> <b>D2</b> <input type="checkbox"/>

#### TS Geared Type with Electromagnetic Brake

Product Name (Single Shaft)
<b>RKS543M</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>
<b>RKS543M</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>
<b>RKS543M</b> <input type="checkbox"/> <b>D-TS10</b> <input type="checkbox"/>
<b>RKS543M</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>
<b>RKS543M</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D-TS10</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>
<b>RKS564M</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D-TS3.6</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D-TS7.2</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D-TS10</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D-TS20</b> <input type="checkbox"/>
<b>RKS596M</b> <input type="checkbox"/> <b>D-TS30</b> <input type="checkbox"/>

- 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.
- Oriental Motor Corp. provide user's manual for this product. For more detail, please contact to our branch, sales office or the user can download it from our website.  
<http://www.orientalmotor.co.th>

#### Note

- The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, please purchase connection cable separately or choose the package come with the connection cable (The package includes a connection cable).

### ◇ PS Geared type

Product Name (Single Shaft)
RKS545A D-PS5-◇
RKS545A D-PS7.2-◇
RKS545A D-PS10-◇
RKS543A D-PS25-◇
RKS543A D-PS36-◇
RKS543A D-PS50-◇
RKS566A D-PS5-◇
RKS566A D-PS7.2-◇
RKS566A D-PS10-◇
RKS564A D-PS25-◇
RKS564A D-PS36-◇
RKS564A D-PS50-◇
RKS599A D-PS5-◇
RKS599A D-PS7.2-◇
RKS599A D-PS10-◇
RKS596A D-PS25-◇
RKS596A D-PS36-◇
RKS596A D-PS50-◇

Product Name (Double Shaft)
RKS545B D-PS5-◇
RKS545B D-PS7.2-◇
RKS545B D-PS10-◇
RKS543B D-PS25-◇
RKS543B D-PS36-◇
RKS543B D-PS50-◇
RKS566B D-PS5-◇
RKS566B D-PS7.2-◇
RKS566B D-PS10-◇
RKS564B D-PS25-◇
RKS564B D-PS36-◇
RKS564B D-PS50-◇
RKS599B D-PS5-◇
RKS599B D-PS7.2-◇
RKS599B D-PS10-◇
RKS596B D-PS25-◇
RKS596B D-PS36-◇
RKS596B D-PS50-◇

### ◇ PS Geared type with Electromagnetic Brake

Product Name (Single Shaft)
RKS545M D-PS5-◇
RKS545M D-PS7.2-◇
RKS545M D-PS10-◇
RKS543M D-PS25-◇
RKS543M D-PS36-◇
RKS543M D-PS50-◇
RKS566M D-PS5-◇
RKS566M D-PS7.2-◇
RKS566M D-PS10-◇
RKS564M D-PS25-◇
RKS564M D-PS36-◇
RKS564M D-PS50-◇
RKS599M D-PS5-◇
RKS599M D-PS7.2-◇
RKS599M D-PS10-◇
RKS596M D-PS25-◇
RKS596M D-PS36-◇
RKS596M D-PS50-◇

### ◇ Harmonic Geared Type

Product Name (Single Shaft)
RKS543A D-HS50-◇
RKS543A D-HS100-◇
RKS564A D-HS50-◇
RKS564A D-HS100-◇
RKS596A D-HS50-◇
RKS596A D-HS100-◇

Product Name (Double Shaft)
RKS543B D-HS50-◇
RKS543B D-HS100-◇
RKS564B D-HS50-◇
RKS564B D-HS100-◇
RKS596B D-HS50-◇
RKS596B D-HS100-◇

### ◇ Harmonic Geared Type with Electromagnetic Brake

Product Name
RKS543M D-HS50-◇
RKS543M D-HS100-◇
RKS564M D-HS50-◇
RKS564M D-HS100-◇
RKS596M D-HS50-◇
RKS596M D-HS100-◇

### ● Pulse Input Type

#### ◇ Standard Type

Product Name (Single Shaft)
RKS543A-◇
RKS544A-◇
RKS545A-◇
RKS564A-◇
RKS566A-◇
RKS569A-◇
RKS596A-◇
RKS599A-◇
RKS5913A-◇

Product Name (Double Shaft)
RKS543B-◇
RKS544B-◇
RKS545B-◇
RKS564B-◇
RKS566B-◇
RKS569B-◇
RKS596B-◇
RKS599B-◇
RKS5913B-◇

#### ◇ Standard Type with Electromagnetic Brake

Product Name
RKS543M-◇
RKS544M-◇
RKS545M-◇
RKS564M-◇
RKS566M-◇
RKS569M-◇
RKS596M-◇
RKS599M-◇
RKS5913M-◇

- 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.
- Oriental Motor Corp. provide user's manual for this product. For more detail, please contact to our branch, sales office or the user can download it from our website.  
<http://www.orientalmotor.co.th>

#### Note

- The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, please purchase connection cable separately or choose the package come with the connection cable (The package includes a connection cable).

### ◇ TS Geared Type

Product Name (Single Shaft)
RKS543A--TS3.6-◇
RKS543A--TS7.2-◇
RKS543A--TS10-◇
RKS543A--TS20-◇
RKS543A--TS30-◇
RKS564A--TS3.6-◇
RKS564A--TS7.2-◇
RKS564A--TS10-◇
RKS564A--TS20-◇
RKS564A--TS30-◇
RKS596A--TS3.6-◇
RKS596A--TS7.2-◇
RKS596A--TS10-◇
RKS596A--TS20-◇
RKS596A--TS30-◇

Product Name (Double Shaft)
RKS543B--TS3.6-◇
RKS543B--TS7.2-◇
RKS543B--TS10-◇
RKS543B--TS20-◇
RKS543B--TS30-◇
RKS564B--TS3.6-◇
RKS564B--TS7.2-◇
RKS564B--TS10-◇
RKS564B--TS20-◇
RKS564B--TS30-◇
RKS596B--TS3.6-◇
RKS596B--TS7.2-◇
RKS596B--TS10-◇
RKS596B--TS20-◇
RKS596B--TS30-◇

### ◇ TS Geared Type with Electromagnetic Brake

Product Name (Single Shaft)
RKS543M--TS3.6-◇
RKS543M--TS7.2-◇
RKS543M--TS10-◇
RKS543M--TS20-◇
RKS543M--TS30-◇
RKS564M--TS3.6-◇
RKS564M--TS7.2-◇
RKS564M--TS10-◇
RKS564M--TS20-◇
RKS564M--TS30-◇
RKS596M--TS3.6-◇
RKS596M--TS7.2-◇
RKS596M--TS10-◇
RKS596M--TS20-◇
RKS596M--TS30-◇

### ◇ PS Geared Type

Product Name (Single Shaft)
RKS545A--PS5-◇
RKS545A--PS7.2-◇
RKS545A--PS10-◇
RKS543A--PS25-◇
RKS543A--PS36-◇
RKS543A--PS50-◇
RKS566A--PS5-◇
RKS566A--PS7.2-◇
RKS566A--PS10-◇
RKS564A--PS25-◇
RKS564A--PS36-◇
RKS564A--PS50-◇
RKS599A--PS5-◇
RKS599A--PS7.2-◇
RKS599A--PS10-◇
RKS596A--PS25-◇
RKS596A--PS36-◇
RKS596A--PS50-◇

Product Name (Double Shaft)
RKS545B--PS5-◇
RKS545B--PS7.2-◇
RKS545B--PS10-◇
RKS543B--PS25-◇
RKS543B--PS36-◇
RKS543B--PS50-◇
RKS566B--PS5-◇
RKS566B--PS7.2-◇
RKS566B--PS10-◇
RKS564B--PS25-◇
RKS564B--PS36-◇
RKS564B--PS50-◇
RKS599B--PS5-◇
RKS599B--PS7.2-◇
RKS599B--PS10-◇
RKS596B--PS25-◇
RKS596B--PS36-◇
RKS596B--PS50-◇

### ◇ PS Geared Type with Electromagnetic Brake

Product Name (Single Shaft)
RKS545M--PS5-◇
RKS545M--PS7.2-◇
RKS545M--PS10-◇
RKS543M--PS25-◇
RKS543M--PS36-◇
RKS543M--PS50-◇
RKS566M--PS5-◇
RKS566M--PS7.2-◇
RKS566M--PS10-◇
RKS564M--PS25-◇
RKS564M--PS36-◇
RKS564M--PS50-◇
RKS599M--PS5-◇
RKS599M--PS7.2-◇
RKS599M--PS10-◇
RKS596M--PS25-◇
RKS596M--PS36-◇
RKS596M--PS50-◇

### ◇ Harmonic Geared Type

Product Name (Single Shaft)
RKS543A--HS50-◇
RKS543A--HS100-◇
RKS564A--HS50-◇
RKS564A--HS100-◇
RKS596A--HS50-◇
RKS596A--HS100-◇

Product Name (Double Shaft)
RKS543B--HS50-◇
RKS543B--HS100-◇
RKS564B--HS50-◇
RKS564B--HS100-◇
RKS596B--HS50-◇
RKS596B--HS100-◇

### ◇ Harmonic Geared Type with Electromagnetic Brake

Product Name
RKS543M--HS50-◇
RKS543M--HS100-◇
RKS564M--HS50-◇
RKS564M--HS100-◇
RKS596M--HS50-◇
RKS596M--HS100-◇

● 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.

● Oriental Motor Corp. provide user's manual for this product. For more detail, please contact to our branch, sales office or the user can download it from our website.  
<http://www.orientalmotor.co.th>

#### Note

● The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, please purchase connection cable separately or choose the package come with the connection cable (The package includes a connection cable).



# Standard Type Frame Size 42 mm, 60 mm

## Standard Type with Electromagnetic Brake Frame Size 42 mm, 60 mm

## Standard Type with Encoder Frame Size 42 mm, 60 mm

### Specifications RoHS



Product Name	Built-In Controller Type		RKS543	RKS544	RKS545	RKS564	RKS566	RKS569
	Pulse Input Type		RKS543	RKS544	RKS545	RKS564	RKS566	RKS569
Maximum Holding Torque		N·m	0.14	0.21	0.27	0.52	0.96	1.77
Holding Torque at Motor Standstill	Power ON	N·m	0.07	0.10	0.13	0.26	0.48	0.88
	Electromagnetic Brake	N·m	0.07	0.10	0.13	0.26	0.48	0.88
Rotor Inertia	J :	kg·m <sup>2</sup>	30×10 <sup>-7</sup> [45×10 <sup>-7</sup> ]*1 (31×10 <sup>-7</sup> )*2	47×10 <sup>-7</sup> [62×10 <sup>-7</sup> ]*1 (48×10 <sup>-7</sup> )*2	64×10 <sup>-7</sup> [79×10 <sup>-7</sup> ]*1 (65×10 <sup>-7</sup> )*2	160×10 <sup>-7</sup> [320×10 <sup>-7</sup> ]*1 (160×10 <sup>-7</sup> )*2	270×10 <sup>-7</sup> [430×10 <sup>-7</sup> ]*1 (270×10 <sup>-7</sup> )*2	540×10 <sup>-7</sup> [700×10 <sup>-7</sup> ]*1 (540×10 <sup>-7</sup> )*2
Rated Current	A / Phase		0.35			0.75		
Basic Step Angle			0.72°					
Power Supply Input	Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~-+10% 50/60 Hz					
	Input Current	Single-Phase 100-120 VAC	2.1	1.9	1.9	4.0	3.8	4.0
	A	Single-Phase 200-240 VAC	1.3	1.2	1.2	2.4	2.4	2.5
Excitation Mode			Microstep					
Control Power Supply*3			24 VDC±5% 0.2 A					
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.08 A			24 VDC±5%*5 0.25 A		

**Definition** → Refer to page 22

● For Built-in Controller package, either **A** (single shaft), **B** (double shaft), **M** (electromagnetic brake) or **R** (encoder) indicating the configuration is entered where the box ☐ is located within the product name.

For Pulse Input package, 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ is located within the product name.

For encoder type, 2 will be entered where ☐ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 The values inside the brackets ( ) represent the specification for the encoder type.

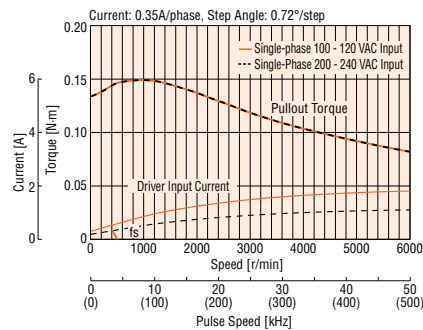
\*3 For Built-in Controller package, the control power supply is required.

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

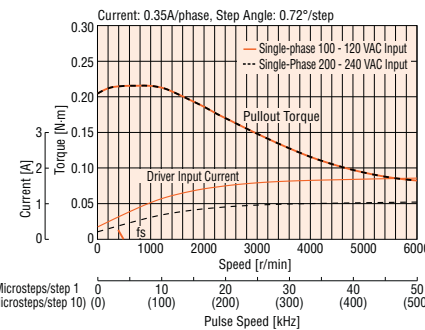
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

### Speed -Torque Characteristics fs: Maximum Starting Frequency

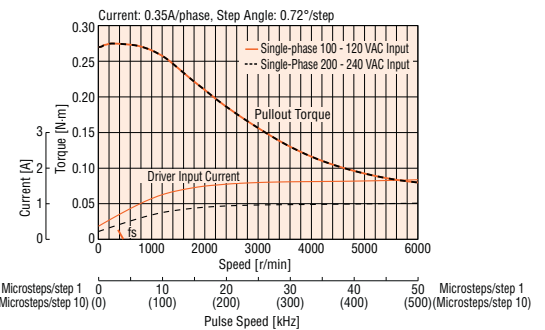
**RKS543**



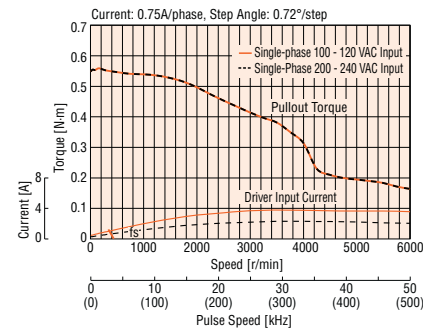
**RKS544**



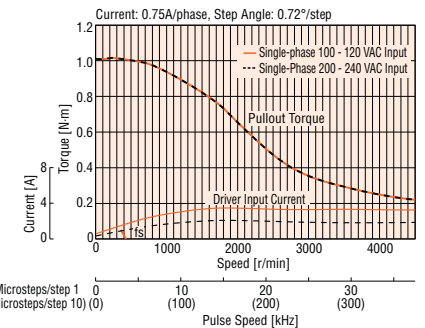
**RKS545**



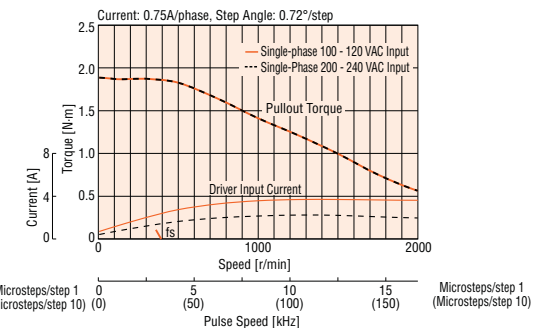
**RKS564**



**RKS566**



**RKS569**



#### 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.

For the Encoder type, in order to protect encoder, be sure to keep the temperature of the motor case under 85°C.

## Standard Type with Encoder Frame Size 85 mm



# TS Geared Type Frame Size 42 mm

# TS Geared Type with Electromagnetic Brake Frame Size 42 mm

## Specifications (RoHS)



Product Name	Built-In Controller Type	RKS543□ <input type="checkbox"/> D-TS3.6-◇	RKS543□ <input type="checkbox"/> D-TS7.2-◇	RKS543□ <input type="checkbox"/> D-TS10-◇	RKS543□ <input type="checkbox"/> D-TS20-◇	RKS543□ <input type="checkbox"/> D-TS30-◇
	Pulse Input Type	RKS543□ <input type="checkbox"/> TS3.6-◇	RKS543□ <input type="checkbox"/> TS7.2-◇	RKS543□ <input type="checkbox"/> TS10-◇	RKS543□ <input type="checkbox"/> TS20-◇	RKS543□ <input type="checkbox"/> TS30-◇
Maximum Holding Torque	N·m	0.5	1	1.4	2	2.3
Rotor Inertia	J : kg·m <sup>2</sup>	30×10 <sup>-7</sup> [45×10 <sup>-7</sup> ]*1				
Rated Current	A / Phase	0.35				
Basic Step Angle		0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio		3.6	7.2	10	20	30
Permissible Torque*2	N·m	0.65	1.2	1.7	2	2.3
Maximum Torque*2	N·m	0.85	1.6	2	3	3
Holding Torque at Power ON	N·m	0.26	0.53	0.74	1.48	2.2
Motor Standstill Electromagnetic Brake	N·m	0.26	0.53	0.74	1.48	2.2
Permissible Speed Range	r/min	0~833	0~416	0~300	0~150	0~100
Backlash	arc min	45(0.75°)	25(0.42°)		15(0.25°)	
Power Supply Input	Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~+10% 50/60 Hz			
	Input	Single-Phase 100-120 VAC	2.1			
	Current A	Single-Phase 200-240 VAC	1.3			
Excitation Mode		Microstep				
Control Power Supply*3		24 VDC±5% 0.2 A				
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.08 A				

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

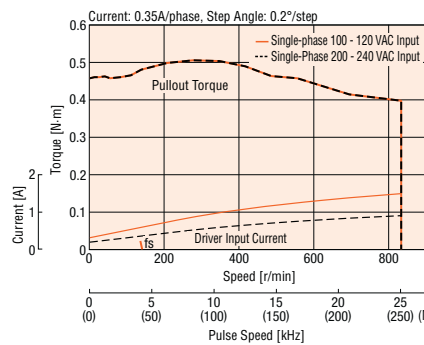
\*3 For Built-in Controller package, the control power supply is required.

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

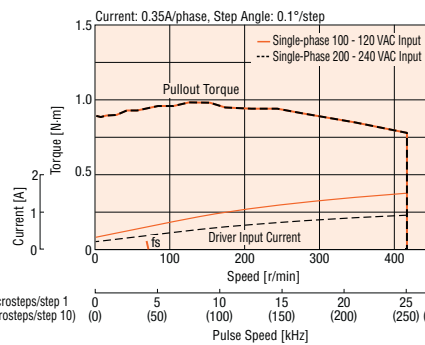
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

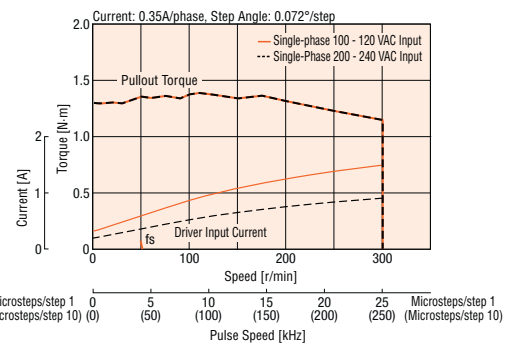
**RKS543 Gear Ratio: 3.6**



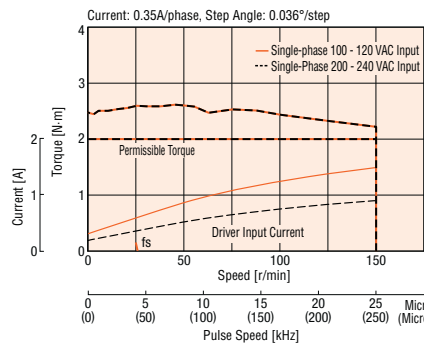
**RKS543 Gear Ratio: 7.2**



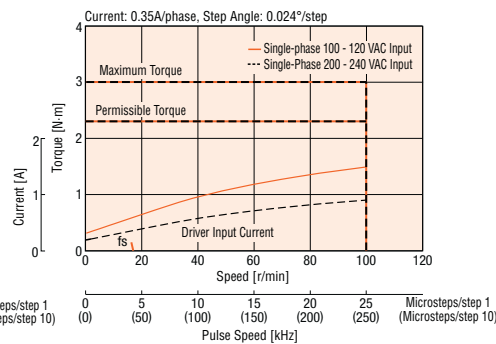
**RKS543 Gear Ratio: 10**



**RKS543 Gear Ratio: 20**



**RKS543 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.

# TS Geared Type Frame Size 60 mm

# TS Geared Type with Electromagnetic Brake Frame Size 60 mm

## Specifications (RoHS)



Product Name		Built-In Controller Type	RKS564□ <span style="color: red;">■</span> D-TS3.6-◇	RKS564□ <span style="color: red;">■</span> D-TS7.2-◇	RKS564□ <span style="color: red;">■</span> D-TS10-◇	RKS564□ <span style="color: red;">■</span> D-TS20-◇	RKS564□ <span style="color: red;">■</span> D-TS30-◇
		Pulse Input Type	RKS564□ <span style="color: red;">■</span> -TS3.6-◇	RKS564□ <span style="color: red;">■</span> -TS7.2-◇	RKS564□ <span style="color: red;">■</span> -TS10-◇	RKS564□ <span style="color: red;">■</span> -TS20-◇	RKS564□ <span style="color: red;">■</span> -TS30-◇
Maximum Holding Torque		N·m	1.8	3	4	5	6
Rotor Inertia		J : kg·m <sup>2</sup>	160×10 <sup>-7</sup> [320×10 <sup>-7</sup> ]*1				
Rated Current		A / Phase	0.75				
Basic Step Angle			0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio			3.6	7.2	10	20	30
Permissible Torque*2		N·m	1.8	3	4	5	6
Maximum Torque*2		N·m	2.5	4.5	6	8	10
Holding Torque at	Power ON	N·m	1	2	2.9	5	6
Motor Standstill	Electromagnetic Brake	N·m	1	2	2.9	5	6
Permissible Speed Range		r/min	0~833	0~416	0~300	0~150	0~100
Backlash		arc min	35(0.59°)	15(0.25°)		10(0.17°)	
Power Supply Input	Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC ~15~+10% 50/60 Hz				
	Input	Single-Phase 100-120 VAC	4.0				
	Current A	Single-Phase 200-240 VAC	2.4				
Excitation Mode			Microstep				
Control Power Supply*3			24 VDC±5% 0.2 A				
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.25 A				

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where □ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

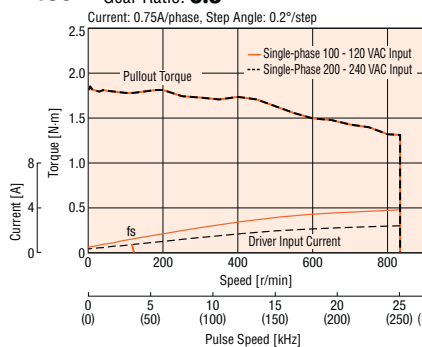
\*3 For Built-in Controller package, the control power supply is required.

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

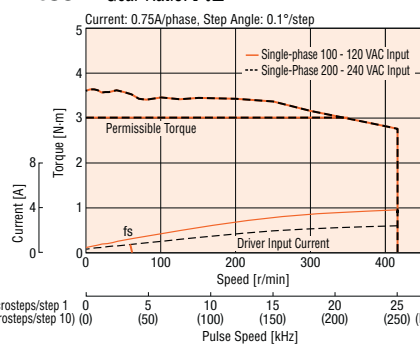
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

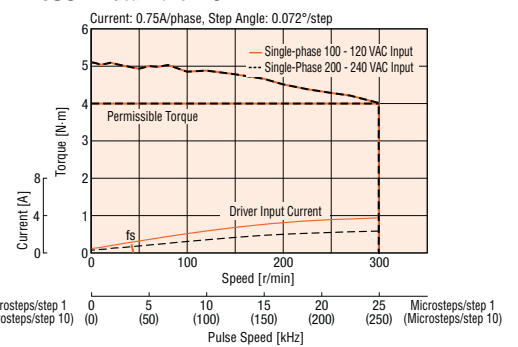
**RKS564 Gear Ratio: 3.6**



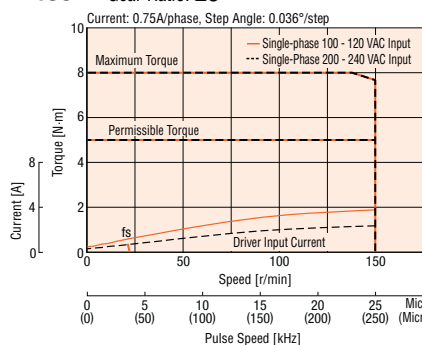
**RKS564 Gear Ratio: 7.2**



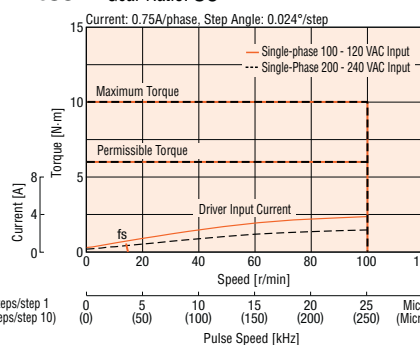
**RKS564 Gear Ratio: 10**



**RKS564 Gear Ratio: 20**



**RKS564 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.



# TS Geared Type Frame Size 90 mm

# TS Geared Type with Electromagnetic Brake Frame Size 90 mm

## Specifications (RoHS)



Product Name		Built-In Controller Type	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> D-TS3.6-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> D-TS7.2-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> D-TS10-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> D-TS20-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> D-TS30-◇
		Pulse Input Type	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> TS3.6-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> TS7.2-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> TS10-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> TS20-◇	RKS596□ <span style="background-color: #f0f0f0;"> </span> □ <span style="background-color: #f0f0f0;"> </span> TS30-◇
Maximum Holding Torque		N·m	6	10	14	20	25
Rotor Inertia		J : kg·m <sup>2</sup>	1100×10 <sup>-7</sup> [2200×10 <sup>-7</sup> ]*1				
Rated Current		A / Phase	0.75				
Basic Step Angle			0.2°	0.1°	0.072°	0.036°	0.024°
Gear Ratio			3.6	7.2	10	20	30
Permissible Torque*2		N·m	6	10	14	20	25
Maximum Torque*2		N·m	9	15	20	35	45
Holding Torque at	Power ON	N·m	6	9	7.4	18.5	25
Motor Standstill	Electromagnetic Brake	N·m	6	9	7.4	18.5	25
Permissible Speed Range		r/min	0~833	0~416	0~300	0~150	0~100
Backlash		arc min	25(0.42°)	15(0.25°)		10(0.17°)	
Power Supply Input	Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~+10% 50/60 Hz				
	Input	Single-Phase 100-120 VAC	3.6		4.9		
	Current A	Single-Phase 200-240 VAC	2.1		3.0		
Excitation Mode			Microstep				
Control Power Supply*3			24 VDC±5% 0.2 A				
Electromagnetic Brake*4	Power Supply Input		24 VDC±5%*5 0.42 A				

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where □ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

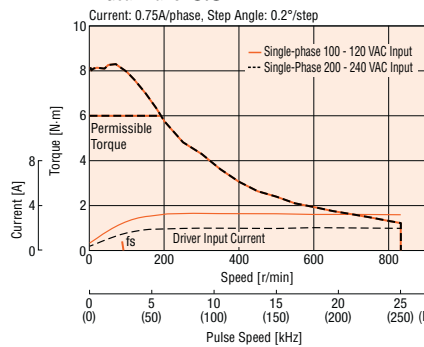
\*3 For Built-in Controller package, the control power supply is required.

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

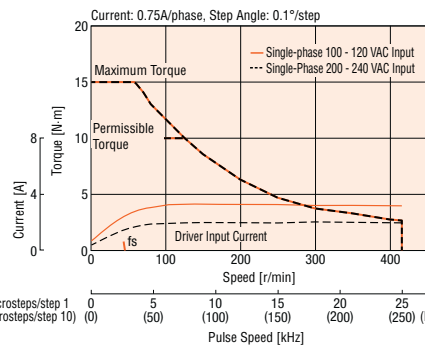
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

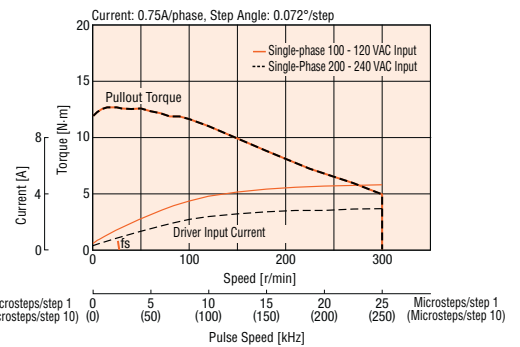
**RKS596 Gear Ratio: 3.6**



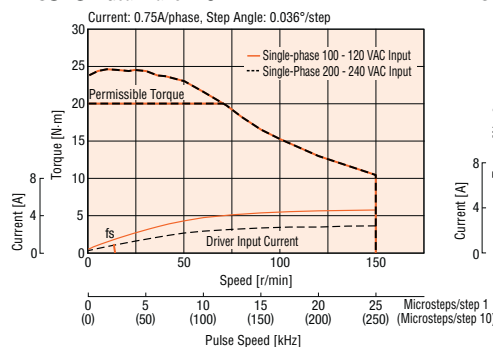
**RKS596 Gear Ratio: 7.2**



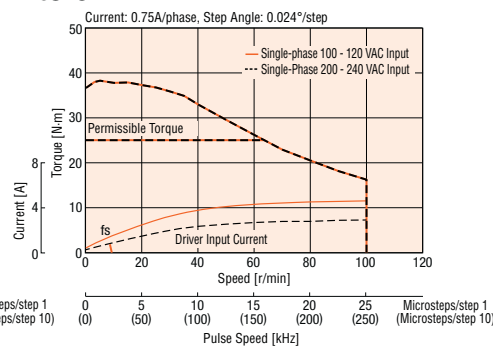
**RKS596 Gear Ratio: 10**



**RKS596 Gear Ratio: 20**



**RKS596 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

# PS Geared Type with Electromagnetic Brake Frame Size 42 mm

## Specifications (RoHS)



Product Name	Built-In Controller Type	RKS545	D-PS5	RKS545	D-PS7.2	RKS545	D-PS10	RKS543	D-PS25	RKS543	D-PS36	RKS543	D-PS50
Pulse Input Type		RKS545	PS5	RKS545	PS7.2	RKS545	PS10	RKS543	PS25	RKS543	PS36	RKS543	PS50
Maximum Holding Torque	N·m	1		1.5		2.5		3					
Rotor Inertia	J : kg·m <sup>2</sup>			64×10 <sup>-7</sup> [79×10 <sup>-7</sup> ]*1		30×10 <sup>-7</sup> [45×10 <sup>-7</sup> ]*1							
Rated Current	A / Phase			0.35									
Basic Step Angle		0.144°		0.1°		0.072°		0.0288°		0.02°		0.0144°	
Gear Ratio		5		7.2		10		25		36		50	
Permissible Torque*2	N·m	1		1.5		2.5		3					
Maximum Torque*2	N·m	1.5		2		6							
Holding Torque at Power ON	N·m	0.74		1.07		1.49		1.85		2.6		3	
Motor Standstill Electromagnetic Brake	N·m	0.74		1.07		1.49		1.85		2.6		3	
Permissible Speed Range	r/min	0~600		0~416		0~300		0~120		0~83		0~60	
Backlash	arc min			25(0.42°)									
Power Supply Voltage / Frequency				Single-Phase 100-120 VAC, Single-Phase 200-240 VAC		-15~+10% 50/60 Hz							
Input Current A				1.9		2.1		1.3					
Excitation Mode				Microstep									
Control Power Supply*3				24 VDC±5% 0.2 A									
Electromagnetic Brake*4	Power Supply Input			24 VDC±5%*5 0.08 A									

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

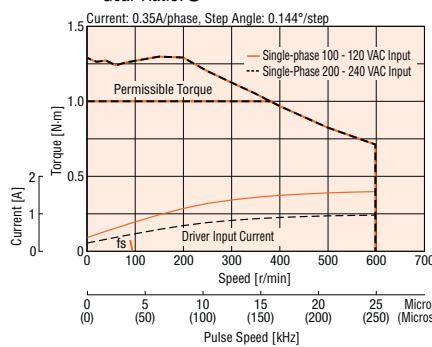
\*3 For Built-in Controller package, the control power supply is required.

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

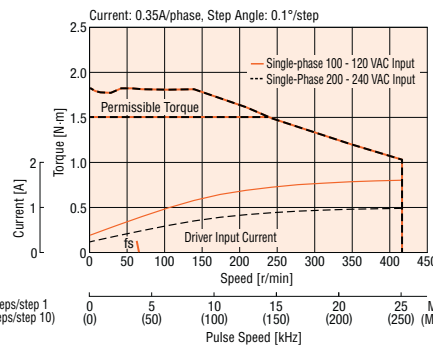
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

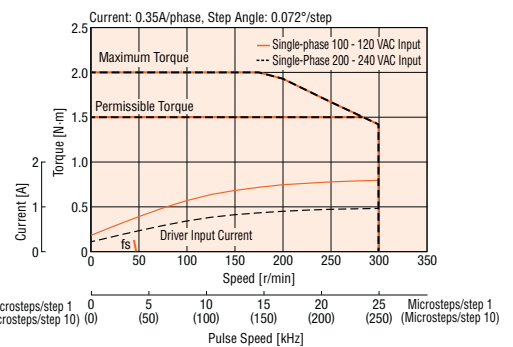
**RKS545 Gear Ratio: 5**



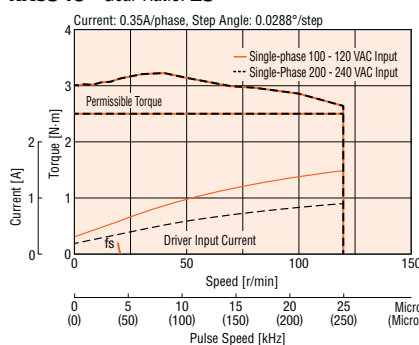
**RKS545 Gear Ratio: 7.2**



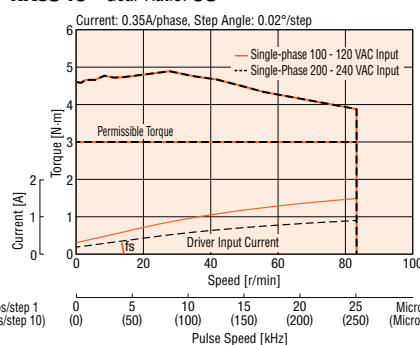
**RKS545 Gear Ratio: 10**



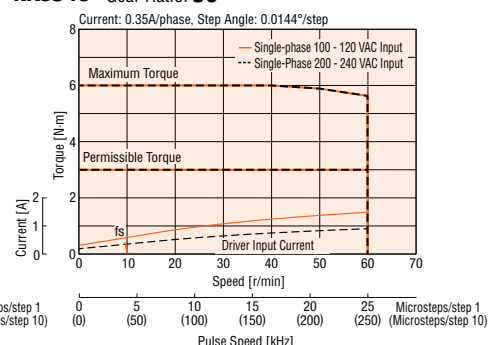
**RKS543 Gear Ratio: 25**



**RKS543 Gear Ratio: 36**



**RKS543 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

# PS Geared Type with Electromagnetic Brake Frame Size 60 mm

## Specifications (RoHS)



Product Name	Built-In Controller Type	RKS566□□D-PS5-◇	RKS566□□D-PS7.2-◇	RKS566□□D-PS10-◇	RKS564□□D-PS25-◇	RKS564□□D-PS36-◇	RKS564□□D-PS50-◇
	Pulse Input Type	RKS566□□-PS5-◇	RKS566□□-PS7.2-◇	RKS566□□-PS10-◇	RKS564□□-PS25-◇	RKS564□□-PS36-◇	RKS564□□-PS50-◇
Maximum Holding Torque	N·m	3.5	4	5	8		
Rotor Inertia	J : kg·m <sup>2</sup>	270×10 <sup>-7</sup> [430×10 <sup>-7</sup> ]*1			160×10 <sup>-7</sup> [320×10 <sup>-7</sup> ]*1		
Rated Current	A / Phase	0.75					
Basic Step Angle		0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio		5	7.2	10	25	36	50
Permissible Torque*2	N·m	3.5	4	5	8		
Maximum Torque*2	N·m	7	9	11	16	20	
Holding Torque at Power ON	N·m	2.7	3.9	5	7.2	8	
Motor Standstill Electromagnetic Brake	N·m	2.7	3.9	5	7.2	8	
Permissible Speed Range	r/min	0~600	0~416	0~300	0~120	0~83	0~60
Backlash	arc min	7(0.12°)			9(0.15°)		
Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~+10% 50/60 Hz					
Power Supply Input	Input	Single-Phase 100-120 VAC			3.8		
	Current A	Single-Phase 200-240 VAC			4.0		
Excitation Mode		2.4			2.4		
		Microstep					
Control Power Supply*3		24 VDC±5% 0.2 A					
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.25 A					

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration 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.

\*1 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

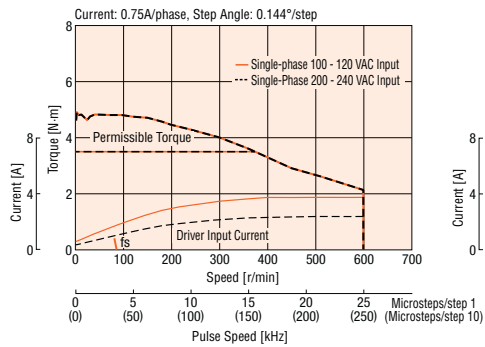
\*3 For Built-in Controller package, the control power supply is required.

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

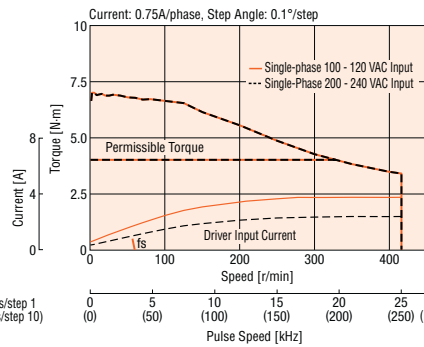
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

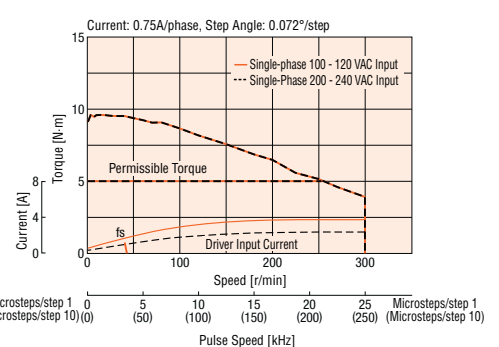
**RKS566 Gear Ratio: 5**



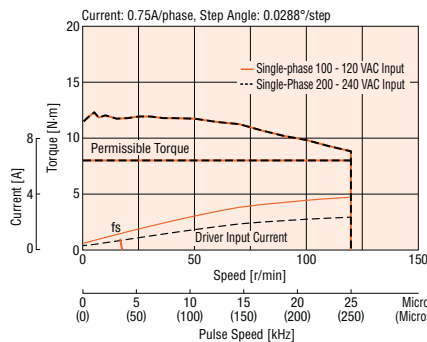
**RKS566 Gear Ratio: 7.2**



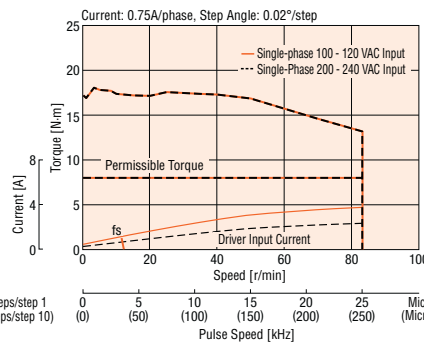
**RKS566 Gear Ratio: 10**



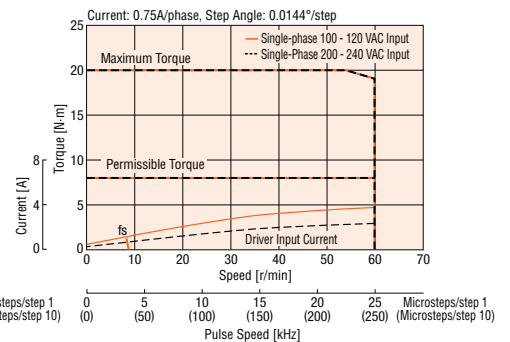
**RKS564 Gear Ratio: 25**



**RKS564 Gear Ratio: 36**



**RKS564 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

# PS Geared Type with Electromagnetic Brake Frame Size 90 mm

## Specifications (RoHS)



Product Name		Built-In Controller Type	RKS599□□D-PS5-◇	RKS599□□D-PS7.2-◇	RKS599□□D-PS10-◇	RKS596□□D-PS25-◇	RKS596□□D-PS36-◇	RKS596□□D-PS50-◇
		Pulse InputType	RKS599□□-PS5-◇	RKS599□□-PS7.2-◇	RKS599□□-PS10-◇	RKS596□□-PS25-◇	RKS596□□-PS36-◇	RKS596□□-PS50-◇
Maximum Holding Torque		N·m	14	20		36	37	
Rotor Inertia		J : kg·m <sup>2</sup>	2200×10 <sup>-7</sup> [3300×10 <sup>-7</sup> ]*1			1100×10 <sup>-7</sup> [2200×10 <sup>-7</sup> ]*1		
Rated Current		A / Phase	0.75					
Basic Step Angle			0.144°	0.1°	0.072°	0.0288°	0.02°	0.0144°
Gear Ratio			5	7.2	10	25	36	50
Permissible Torque*2		N·m	14	20		37		
Maximum Torque*2		N·m	28	35		56	60	
Holding Torque at Power ON		N·m	12.5	18	20	18.5	26	37
Motor Standstill Electromagnetic Brake		N·m	12.5	18	20	18.5	26	37
Permissible Speed Range		r/min	0~300	0~208	0~150	0~120	0~83	0~60
Backlash		arc min	7(0.12°)			9(0.15°)		
Voltage / Frequency			Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~+10% 50/60 Hz					
Power Supply Input	Input	Single-Phase 100-120 VAC	3.5			4.9		
	Current A	Single-Phase 200-240 VAC	2.2			3.0		
Excitation Mode			Microstep					
Control Power Supply*3			24 VDC±5% 0.2 A					
Electromagnetic Brake*4		Power Supply Input	24 VDC±5%*5 0.42 A					

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Permissible Torque and Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

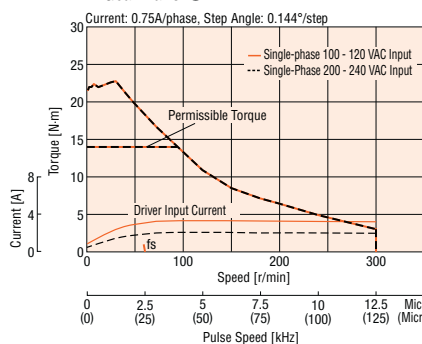
\*3 For Built-in Controller package, the control power supply is required.

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

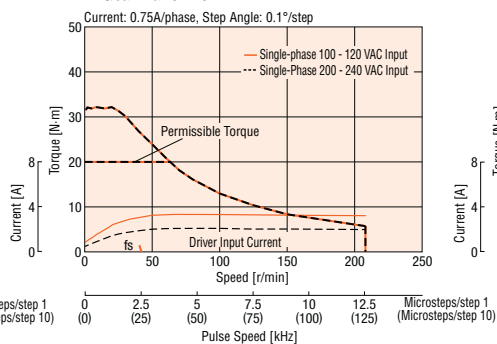
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## Speed -Torque Characteristics fs: Maximum Starting Frequency

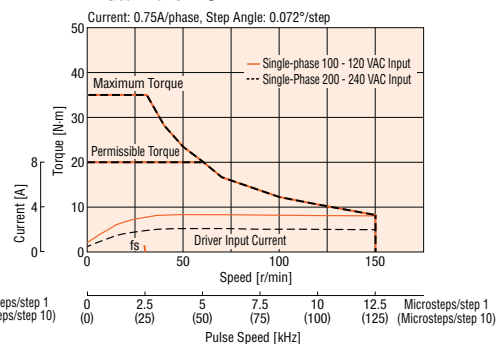
**RKS599 Gear Ratio: 5**



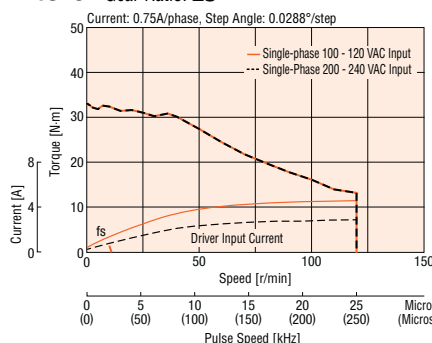
**RKS599 Gear Ratio: 7.2**



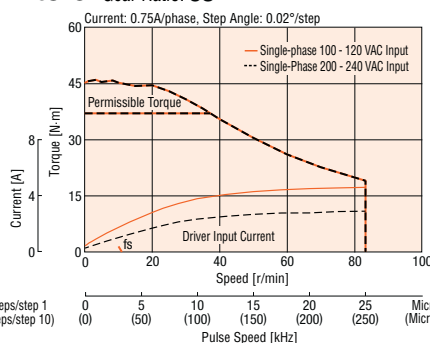
**RKS599 Gear Ratio: 10**



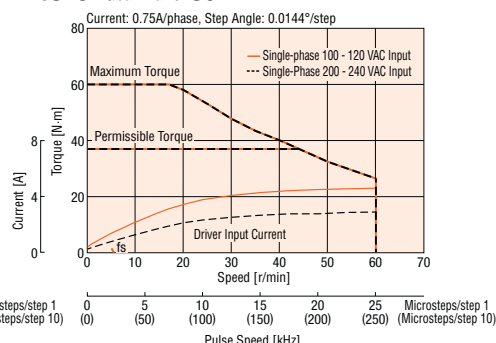
**RKS596 Gear Ratio: 25**



**RKS596 Gear Ratio: 36**



**RKS596 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

## Harmonic Geared Type with Electromagnetic Brake

### Frame Size 42 mm, 60 mm, 90 mm

#### Specifications (RoHS)



Product Name	Built-In Controller Type	RKS543	D-HS50	RKS543	D-HS100	RKS564	D-HS50	RKS564	D-HS100	RKS596	D-HS50	RKS596	D-HS100
	Pulse Input Type	RKS543	D-HS50	RKS543	D-HS100	RKS564	D-HS50	RKS564	D-HS100	RKS596	D-HS50	RKS596	D-HS100
Maximum Holding Torque	N·m	3.5		5		7		10		33		52	
Rotor Inertia	J : kg·m <sup>2</sup>	47×10 <sup>-7</sup> [62×10 <sup>-7</sup> ]*1				195×10 <sup>-7</sup> [355×10 <sup>-7</sup> ]*1				1300×10 <sup>-7</sup> [2400×10 <sup>-7</sup> ]*1			
Rated Current	A / Phase	0.35				0.75							
Basic Step Angle		0.0144°		0.072°		0.0144°		0.0072°		0.0144°		0.0072°	
Gear Ratio		50		100		50		100		50		100	
Permissible Torque	N·m	3.5		5		7		10		33		52	
Maximum Torque*2	N·m	8.3		11		23		36		73		107	
Holding Torque at Power ON	N·m	3.5		5		7		10		33		52	
Motor Standstill Electromagnetic Brake	N·m	3.5		5		7		10		33		52	
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 maximum (±0.16 N·m)		1.5 maximum (±0.20 N·m)		0.7 maximum (±0.28 N·m)		0.7 maximum (±0.39 N·m)		0.7 maximum (±1.2 N·m)		0.7 maximum (±1.2 N·m)	
Power Supply Input	Voltage / Frequency	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC -15~+10% 50/60 Hz											
	Input Current A	2.1				4.0				4.9			
Excitation Mode	Single-Phase 100-120 VAC	1.3				2.4				3.0			
	Single-Phase 200-240 VAC												
Control Power Supply*3		Microstep											
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.2 A											
		24 VDC±5%*5 0.08 A				24 VDC±5%*5 0.25 A				24 VDC±5%*5 0.42 A			

**Definition** → Refer to page 22

● 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-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ 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 The values inside the brackets [ ] represent the specification for the electromagnetic brake type.

\*2 Maximum Torque shown above is value recorded at the Gear. Refer to Speed -Torque Specification graph for output torque of Geared Motor.

\*3 For Built-in Controller package, the control power supply is required.

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

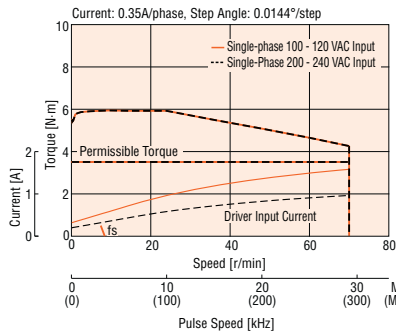
\*5 If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

#### Note

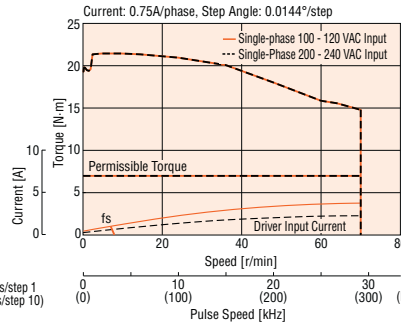
● The inertia represents a sum of the inertia of the harmonic gear converted to a motor shaft value, and the rotor inertia

#### Speed -Torque Characteristics fs: Maximum Starting Frequency

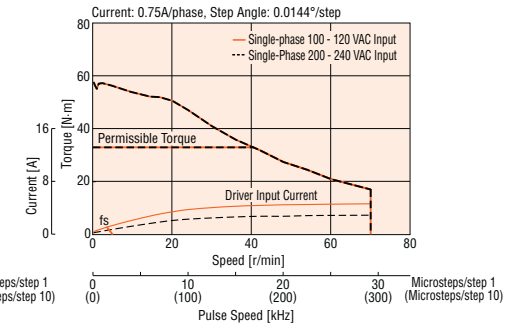
**RKS543 Gear Ratio: 50**



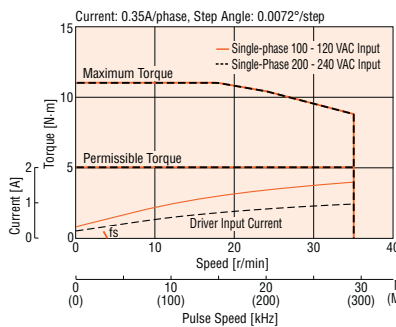
**RKS564 Gear Ratio: 50**



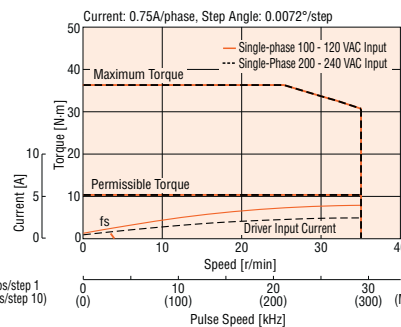
**RKS596 Gear Ratio: 50**



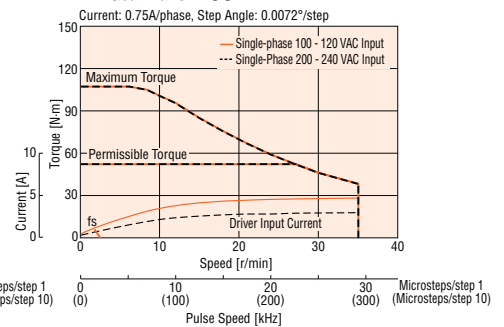
**RKS543 Gear Ratio: 100**



**RKS564 Gear Ratio: 100**



**RKS596 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.

● For the Harmonic Gear operation, be sure to keep the temperature of the gear case under 70°C to prevent deterioration of grease applied to the gear.



## Driver Specification

	Built-in Controller type	Pulse-input Type
Maximum Input Pulse Frequency	–	Line Driver Output from controller: 500kHz (at 50% duty) Open-collector Output from controller: 250kHz (at 50% duty)
Input Signal	Photocoupler input    Input signal voltage : 11.4 VDC~26.4 VDC	Photocoupler, Open-collector output: 11.4 VDC~26.4 VDC (AWO, CS, FREE, ALM-RST) Photocoupler, Open-collector output: 3 VDC~5.25 VDC (CW (PLS) + 5 V, CCW (DIR) + 5 V) Photocoupler, Open-collector output: 21.6 VDC~26.4 VDC (CW (PLS) + 24 V, CCW (DIR) + 24 V)
Output Signal	Photocoupler · Open-collector output External use condition: 30 VDC maximum, 10 mA maximum	Photocoupler · Open-collector output External use condition: 30 VDC maximum, 10 mA maximum (READY, ALM, TIM)
Number of Positioning Program	64	–
Positioning Operation	One-shot operation, Linked operation, Linked operation 2, Sequential mode, Direct mode	–
Other operation	Continuous Operation, JOG Operation, Return-To-Home Operation, Test Operation	–
Control Module <b>OPX-2A</b>	○	–
Data Setting Software <b>MEXE02</b>	○	–

## Built-In Controller Type 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 Asynchronous mode (data: 8-bit, stop bit: 1-bit/2-bit, parity: none/odd/even)
Baud Rate	9600 bps/19200 bps/38400 bps/57600 bps/115200 bps
Connection Type	Up to 31 units can be connected to one programmable controller (master equipment).

## General Specifications

		Driver	
		Built-In Controller Type	Pulse Input Type
Thermal Class	130 (B)	–	
Insulation Resistance	100 MΩ or more when 500 VDC megger is applied between the following places: · Case – Motor windings · Case – Electromagnetic brake windings*1	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 windings 1.5 kVAC 50 Hz or 60 Hz · Case – Electromagnetic brake windings 1.5 kVAC 50 Hz or 60 Hz*1	Sufficient to withstand the following for 1 minute: · 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): Standard Type, <b>TS</b> and <b>PS</b> Geared Type 0~+50°C (non-freezing): Package with Encoder 0~+40°C (non-freezing): Harmonic geared type	
	Ambient Humidity	85% or less (non-condensing)	
	Atmosphere	No corrosive gases, dust. Avoid contact with water or oil.	
Temperature Rise	Temperature rise of the windings are 80°C or less. Measured at rated current, at standstill, five phases energized measured (by the resistance change method).	–	
Degree of Protection	IP20	IP10	IP20
Stop Position Accuracy*3	±3 arc minutes (±0.05°)		
Shaft Runout	0.05 T.I.R (mm)*4	–	
Radial Play*5	0.025 mm Max. (Load 5 N)	–	
Axial Play*6	0.075 mm Max. (Load 10 N)	–	
Concentricity for Shaft in the Mounting Pilot	0.075 T.I.R (mm)*4	–	
Perpendicularity for Shaft of the Mounting Surface	0.075 T.I.R (mm)*4	–	

\*1 Only for Built-in Controller Package

\*2 When attaching a heat sink 200 mm x 200 mm x 2 mm, made from aluminum plate or higher.

\*3 This value is measured at step angle 0.72°, under no load. (The value changes depends on the size of the load.)

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

\*5 Radial Play : Displacement in shaft position in the radial direction, when a 5 N load is applied in the vertical direction to the tip of the motor's shaft.

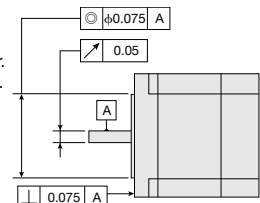
\*6 Axial Play : Displacement in shaft position in the axial direction, when a 10 N load is applied to the motor's shaft in the axial direction.

### Note

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

## Encoder Specifications

Resolution	500 P/R
Output mode	Incremental
Output signal	3 channels
Output Circuit type	Line Driver



## Permissible Radial Load and Permissible Axial Load

Unit=N

Type	Frame Size	Model	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from tip of shaft mm					
				0	5	10	15	20	
Standard Type	42 mm	RKS543	—	35	44	58	85	—	2.5 (3.9) [3.1]
		RKS544							3.1 (4.5) [3.7]
		RKS545							3.7 (5.1) [4.3]
	60 mm	RKS564		90	100	130	180	270	6.9 (9.8) [7.5]
		RKS566							8.8 (11.8) [9.4]
		RKS569							13.7 (16.7) [14.7]
	85 mm	RKS596		260	290	340	390	480	18.6 (26.5) [19.6]
		RKS599							29.4 (37.3) [30.4]
		RKS5913							40.2 (48.1) [41.2]
TS Geared Type	42 mm	RKS543	3.6, 7.2, 10	20	30	40	50	—	15
			20, 30	40	50	60	70	—	
	60 mm	RKS564	3.6, 7.2, 10	120	135	150	165	180	40
			20, 30	170	185	200	215	230	
	90 mm	RKS596	3.6, 7.2, 10	300	325	350	375	400	150
			20, 30	400	450	500	550	600	
PS Geared Type	42 mm	RKS545	5, 7.2, 10	73	84	100	123	—	50
		RKS543	25, 36, 50	109	127	150	184	—	
	60 mm	RKS566	5	200	220	250	280	320	100
			7.2, 10	250	270	300	340	390	
			RKS564	25, 36, 50	330	360	400	450	
	90 mm	RKS599	5, 7.2, 10	480	540	600	680	790	300
		RKS596	25	850	940	1050	1190	1380	
			36	930	1030	1150	1310	1520	
			50	1050	1160	1300	1480	1710	
Harmonic Geared Type	42 mm	RKS543	50, 100	180	220	270	360	510	220
	60 mm	RKS564		320	370	440	550	720	450
	90 mm	RKS596		1090	1150	1230	1310	1410	1300

- The values inside the brackets ( ) represent the specification for the electromagnetic brake type.  
 The values inside the brackets [ ] represent the specification for the encoder type.

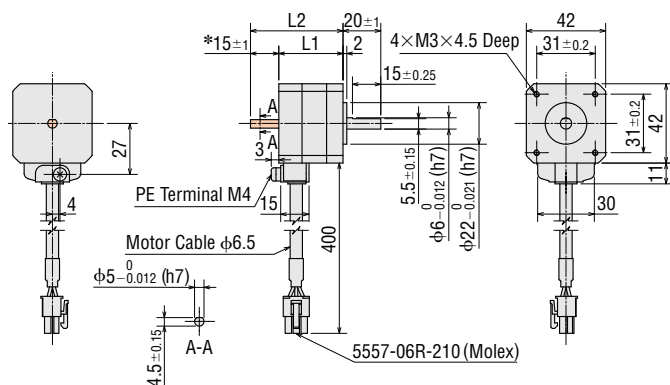
## Dimensions (Unit = mm)

### Motors

#### Standard Type

Frame Size 42 mm

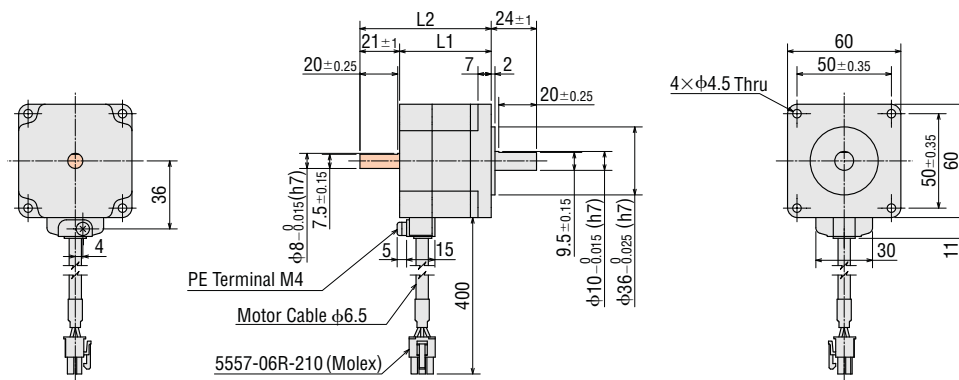
Product Name		Motor Product Name	L1	L2	Mass kg	CAD
Built-In Controller	Pulse Input					
<b>RKS543A</b> D-◇	<b>RKS543A</b> ◇	PKE543AC	34	—	0.26	B996
<b>RKS543B</b> D-◇	<b>RKS543B</b> ◇	PKE543BC		49		
<b>RKS544A</b> D-◇	<b>RKS544A</b> ◇	PKE544AC	40	—	0.32	B997
<b>RKS544B</b> D-◇	<b>RKS544B</b> ◇	PKE544BC		55		
<b>RKS545A</b> D-◇	<b>RKS545A</b> ◇	PKE545AC	46	—	0.38	B998
<b>RKS545B</b> D-◇	<b>RKS545B</b> ◇	PKE545BC		61		



\* Length of milling cut for double shaft type is 15±0.25.

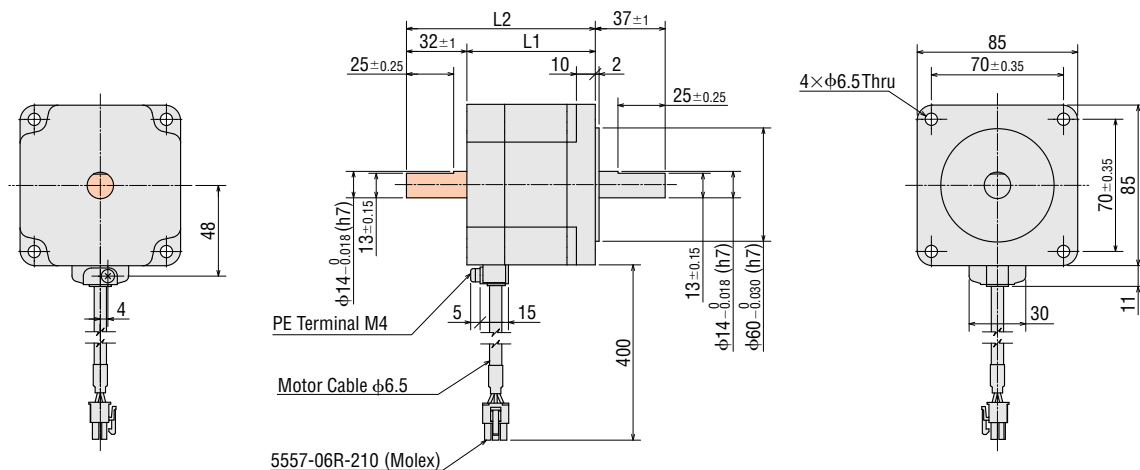
Frame Size 60 mm

Product Name		Motor Product Name	L1	L2	Mass kg	CAD
Built-In Controller	Pulse Input					
<b>RKS564A</b> D-◇	<b>RKS564A</b> ◇	PKE564AC	48.5	—	0.7	B999
<b>RKS564B</b> D-◇	<b>RKS564B</b> ◇	PKE564BC		69.5		
<b>RKS566A</b> D-◇	<b>RKS566A</b> ◇	PKE566AC	59.5	—	0.9	B1000
<b>RKS566B</b> D-◇	<b>RKS566B</b> ◇	PKE566BC		80.5		
<b>RKS569A</b> D-◇	<b>RKS569A</b> ◇	PKE569AC	89	—	1.4	B1001
<b>RKS569B</b> D-◇	<b>RKS569B</b> ◇	PKE569BC		110		



Frame Size 85 mm

Product Name		Motor Product Name	L1	L2	Mass kg	CAD
Built-In Controller	Pulse Input					
<b>RKS596A</b> D-◇	<b>RKS596A</b> ◇	PKE596AC	68	—	1.9	B1002
<b>RKS596B</b> D-◇	<b>RKS596B</b> ◇	PKE596BC		100		
<b>RKS599A</b> D-◇	<b>RKS599A</b> ◇	PKE599AC	98	—	3.0	B1003
<b>RKS599B</b> D-◇	<b>RKS599B</b> ◇	PKE599BC		130		
<b>RKS5913A</b> D-◇	<b>RKS5913A</b> ◇	PKE5913AC	128	—	4.1	B1004
<b>RKS5913B</b> D-◇	<b>RKS5913B</b> ◇	PKE5913BC		160		

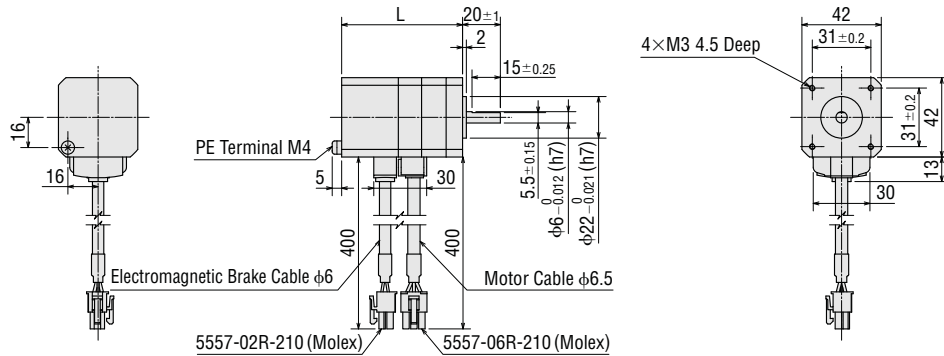


- Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where **◇** is located within the product name.
- A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box **◇** is located within the product name.
- These dimensions are for double shaft models. For single shaft models, ignore the **◇** areas.

# ◇ Standard Type with Electromagnetic Brake

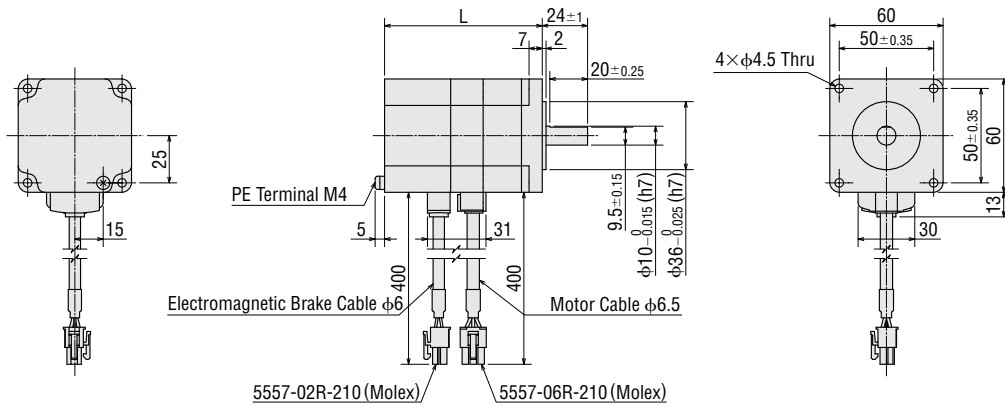
## Frame Size 42 mm

Product Name		Motor Product Name	L	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS543M</b> D-◇	<b>RKS543M</b> -◇	PKE543MC	64	0.40	B1005
<b>RKS544M</b> D-◇	<b>RKS544M</b> -◇	PKE544MC	70	0.46	B1006
<b>RKS545M</b> D-◇	<b>RKS545M</b> -◇	PKE545MC	75	0.52	B1007



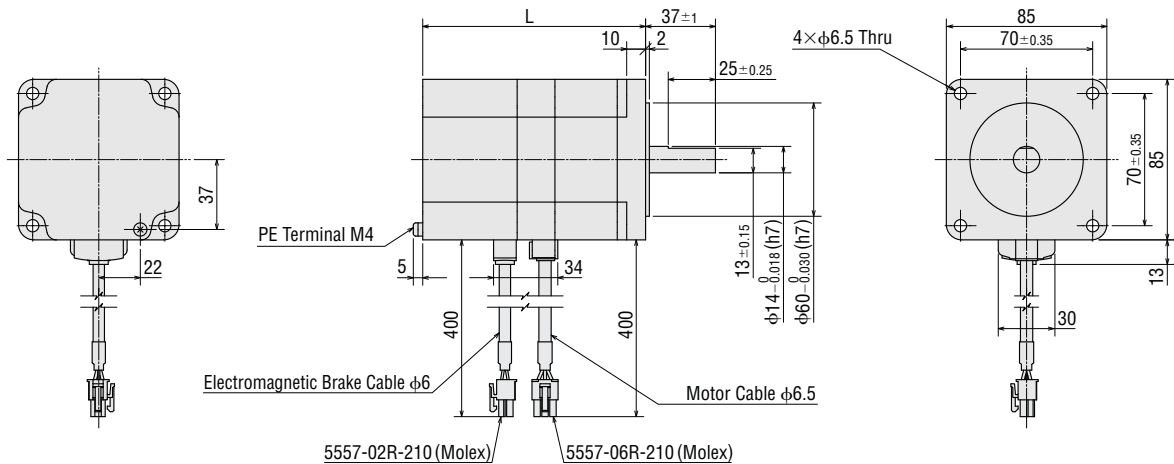
## Frame Size 60 mm

Product Name		Motor Product Name	L	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS564M</b> D-◇	<b>RKS564M</b> -◇	PKE564MC	83.5	1.0	B1008
<b>RKS566M</b> D-◇	<b>RKS566M</b> -◇	PKE566MC	94.5	1.2	B1009
<b>RKS569M</b> D-◇	<b>RKS569M</b> -◇	PKE569MC	124	1.7	B1010



## Frame Size 85 mm

Product Name		Motor Product Name	L	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS596M</b> D-◇	<b>RKS596M</b> -◇	PKE596MC	118	2.7	B1011
<b>RKS599M</b> D-◇	<b>RKS599M</b> -◇	PKE599MC	148	3.8	B1012
<b>RKS5913M</b> D-◇	<b>RKS5913M</b> -◇	PKE5913MC	178	4.9	B1013

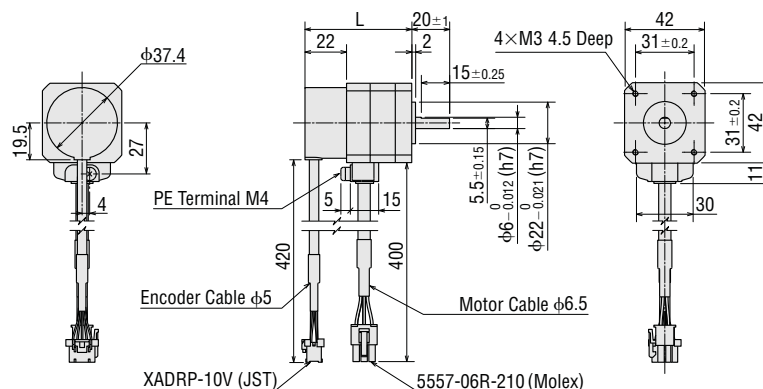


- Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where   is located within the product name.
- A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box ◇ is located within the product name.

### ◆ Standard Type with Encoder

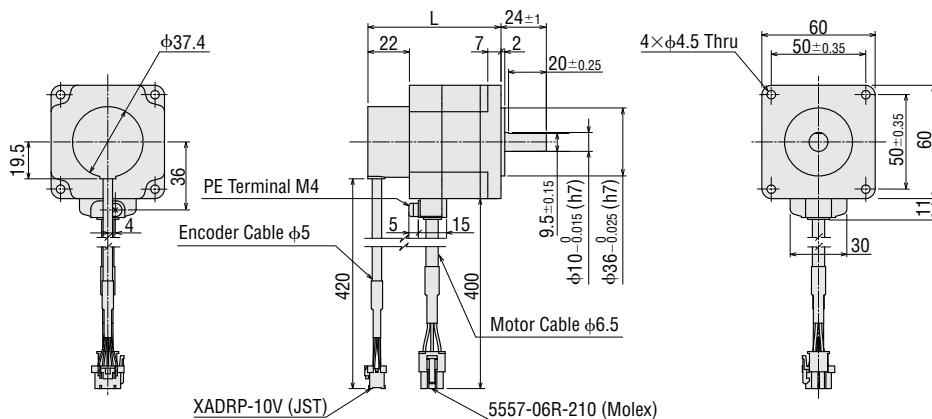
Frame Size 42 mm

Product Name	Motor Product Name	L	Mass kg	CAD
<b>RK5543R D2</b> ◇	PKE543RC2	56	0.32	B1083
<b>RK5544R D2</b> ◇	PKE544RC2	62	0.38	B1084
<b>RK5545R D2</b> ◇	PKE545RC2	68	0.44	B1085



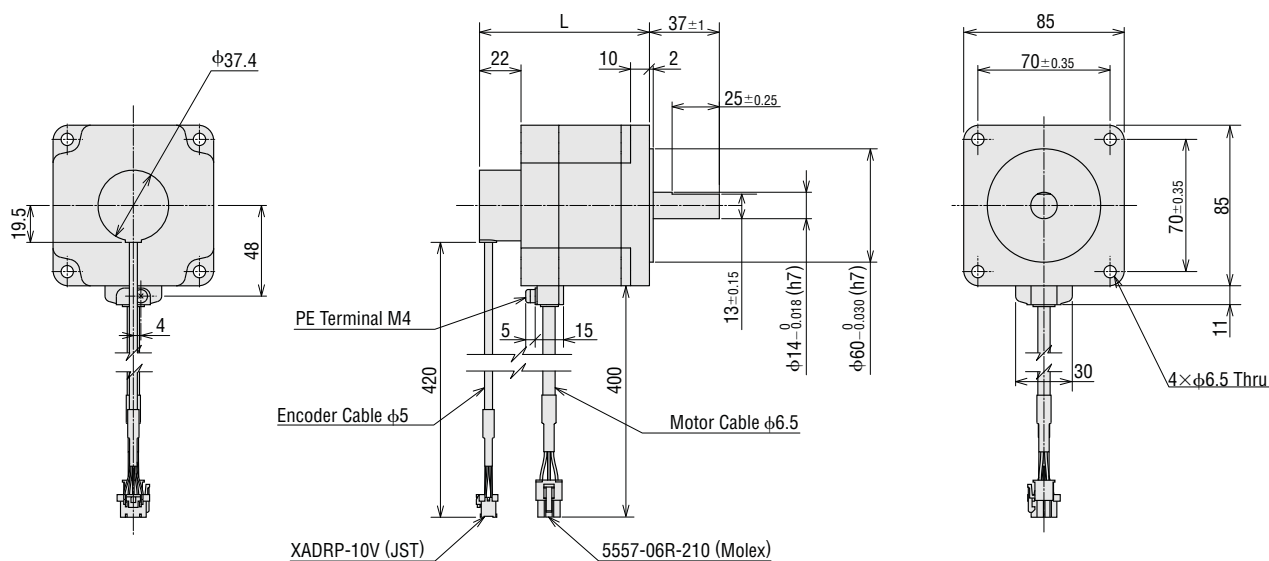
Frame Size 60 mm


Product Name	Motor Product Name	L	Mass kg	CAD
<b>RKS564R D2</b> ◇	PKE564RC2	70.5	0.76	B1086
<b>RKS566R D2</b> ◇	PKE566RC2	81.5	0.96	B1087
<b>RKS569R D2</b> ◇	PKE569RC2	111	1.5	B1088



Frame Size 85 mm

Product Name	Motor Product Name	L	Mass kg	CAD
<b>RK5596R D2-◇</b>	PKE596RC2	90	2.0	B1089
<b>RK5599R D2-◇</b>	PKE599RC2	120	3.1	B1090
<b>RK55913R D2-◇</b>	PKE5913RC2	150	4.2	B1091



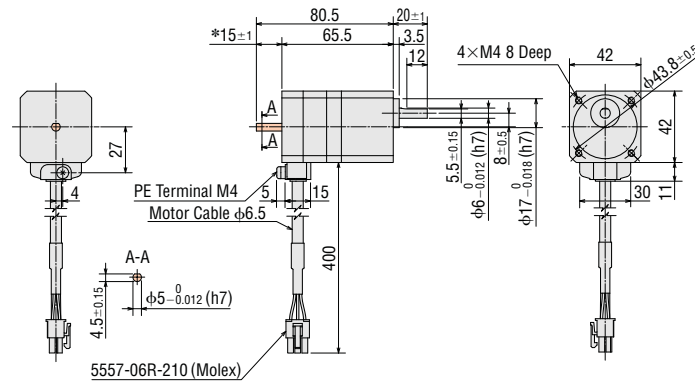
- Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where  is located within the product name.
- A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box  is located within the product name.



# ◇ **TS Geared Type**

Frame Size 42 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS543A</b> ◇ <b>D-TS</b> □ ◇	<b>RKS543A</b> □ <b>-TS</b> ◇ ◇	PKE543AC-TS □	<b>3.6, 7.2, 10, 20, 30</b>	0.41	B1051
<b>RKS543B</b> ◇ <b>D-TS</b> □ ◇	<b>RKS543B</b> □ <b>-TS</b> ◇ ◇	PKE543BC-TS □			

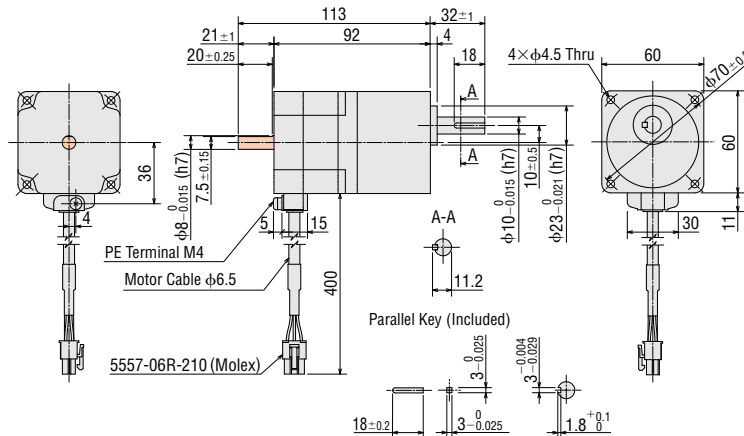


\* Length of milling cut for double shaft type is 15±0.25.

Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS564A</b> ◇ <b>D-TS</b> □ ◇	<b>RKS564A</b> □ <b>-TS</b> ◇ ◇	PKE564AC-TS □ ◇	<b>3.6, 7.2, 10, 20, 30</b>	1.1	B1052
<b>RKS564B</b> ◇ <b>D-TS</b> □ ◇	<b>RKS564B</b> □ <b>-TS</b> ◇ ◇	PKE564BC-TS □ ◇			

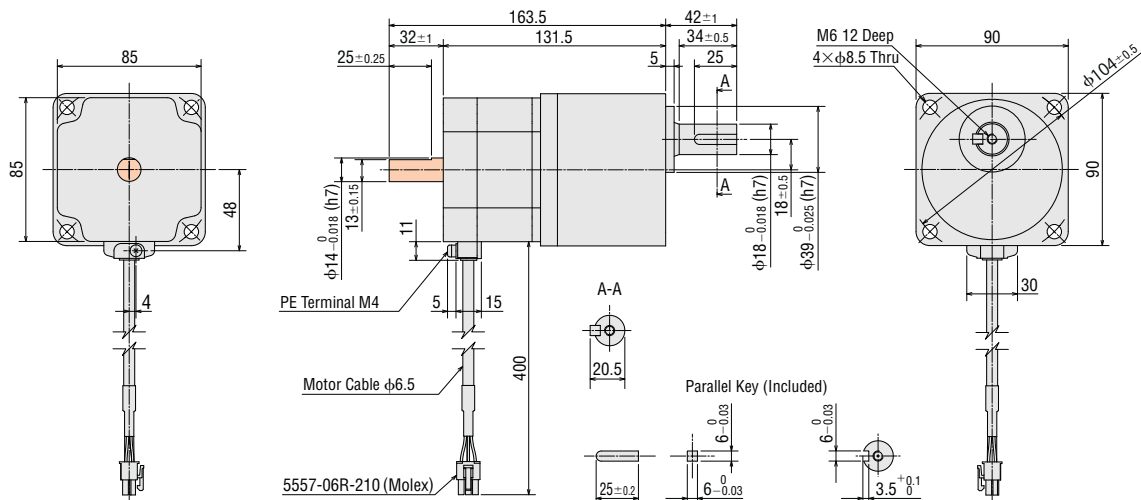
● Mounting Screw: M4×60 P0.7 (4 screws are included with the product)



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS596A</b> ◇ <b>D-TS</b> □ ◇	<b>RKS596A</b> □ <b>-TS</b> ◇ ◇	PKE596AC-TS □	<b>3.6, 7.2, 10, 20, 30</b>	3.1	B1053
<b>RKS596B</b> ◇ <b>D-TS</b> □ ◇	<b>RKS596B</b> □ <b>-TS</b> ◇ ◇	PKE596BC-TS □			

● Mounting Screw: M8×90 P1.25 (4 screws are included with the product)



● Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where   is located within the product name.

● A value indicating the Gear Ratio is entered where the box   is located within the product name.

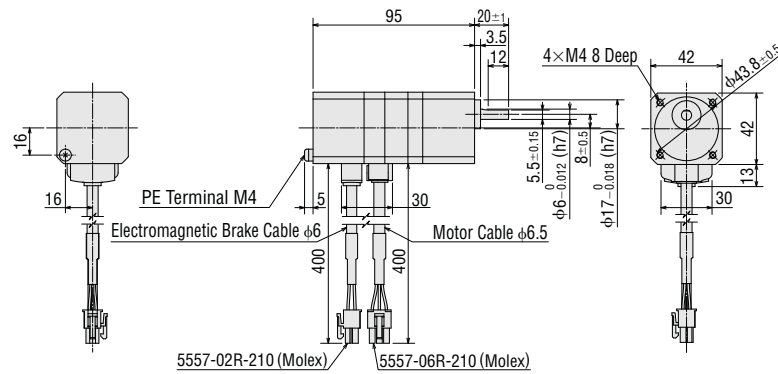
● A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cable included with the product is entered where the box   is located within the product name.

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

# ◇ **TS Geared Type with Electromagnetic Brake**

Frame Size 42 mm

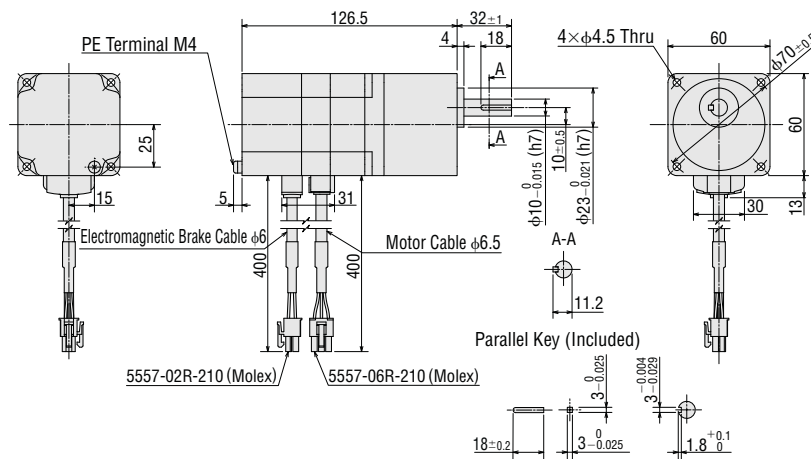
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Pulse Input	Built-In Controller				
<b>RK5543M</b> <span style="background-color: #f4a460;">D-TS</span> ◇	<b>RK5543M</b> <span style="background-color: #f4a460;">TS</span> ◇	PKE543MC-TS□	<b>3.6, 7.2, 10, 20, 30</b>	0.55	B1054



Frame Size 60 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Pulse Input	Built-In Controller				
<b>RK5564M</b> <span style="background-color: #f4a460;">D-TS</span> ◇	<b>RK5564M</b> <span style="background-color: #f4a460;">TS</span> ◇	PKE564MC-TS□	<b>3.6, 7.2, 10, 20, 30</b>	1.4	B1055

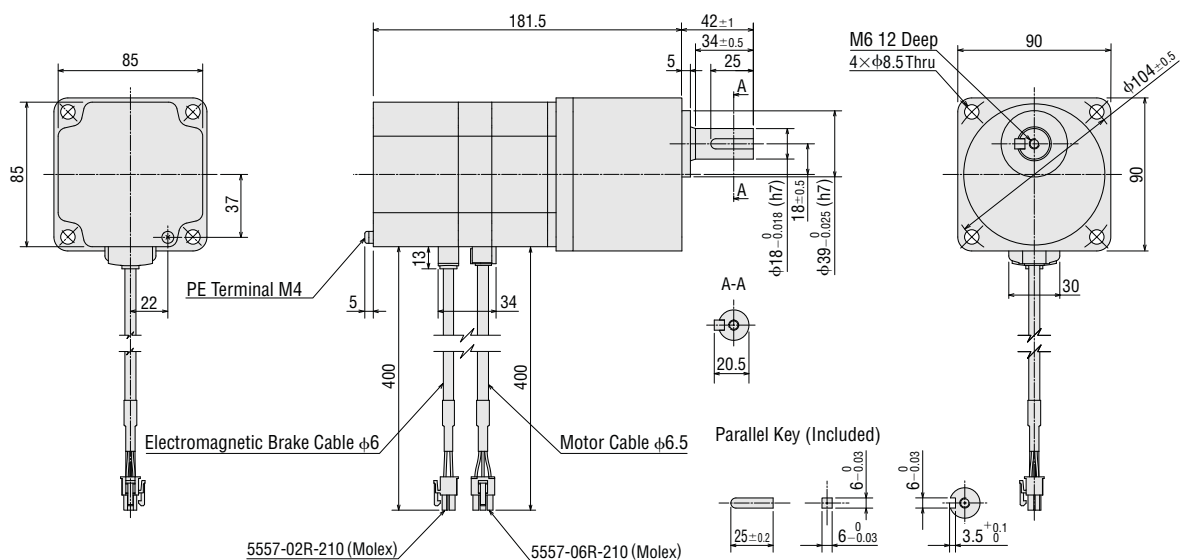
● Mounting Screw: M4×60 P0.7 (4 screws are included with the product)



Frame Size 90 mm

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Pulse Input	Built-In Controller				
<b>RK5596M</b> <span style="background-color: #f4a460;">D-TS</span> ◇	<b>RK5596M</b> <span style="background-color: #f4a460;">TS</span> ◇	PKE596MC-TS□	<b>3.6, 7.2, 10, 20, 30</b>	3.9	B1056

● Mounting Screw: M8×90 P1.25 (4 screws are included with the product)



● Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where   is located within the product name.

● A value 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 42 mm

Technical drawing of the 5557-06R-210 (Molex) connector, showing three views: front, side, and end view.

**Front View Dimensions:**

- Overall height: 27
- Pin spacing: 4
- Motor Cable diameter:  $\phi 6.5$
- PE Terminal M4

**Side View Dimensions:**

- Overall length: 400
- Dimensions:  $L1$ ,  $L2$ ,  $L3$
- Pin diameter:  $\phi 5 -0.012 (h7)$
- Pin length:  $4.5 \pm 0.15$

**End View Dimensions:**

- Overall diameter: 42
- Pin spacing: 30
- Pin diameter:  $\phi 3.8 \pm 0.05$
- Pin length: 11
- Motor Cable diameter:  $\phi 6.5$

**Parallel Key (Included) Dimensions:**

- Key width:  $15 \pm 0.2$
- Key height:  $3 -0.025$
- Key length:  $1.8 +0.1 / -0.04$

**Other Dimensions:**

- Pin diameter:  $\phi 10 -0.015 (h7)$
- Pin length:  $\phi 26 -0.021 (h7)$
- Pin diameter:  $\phi 10 -0.015 (h7)$
- Pin length:  $\phi 26 -0.021 (h7)$

**Material:** 5557-06R-210 (Molex)

[illegible][illegible]

- 37

Frame Size 42 mm

[illegible][illegible]











- 38

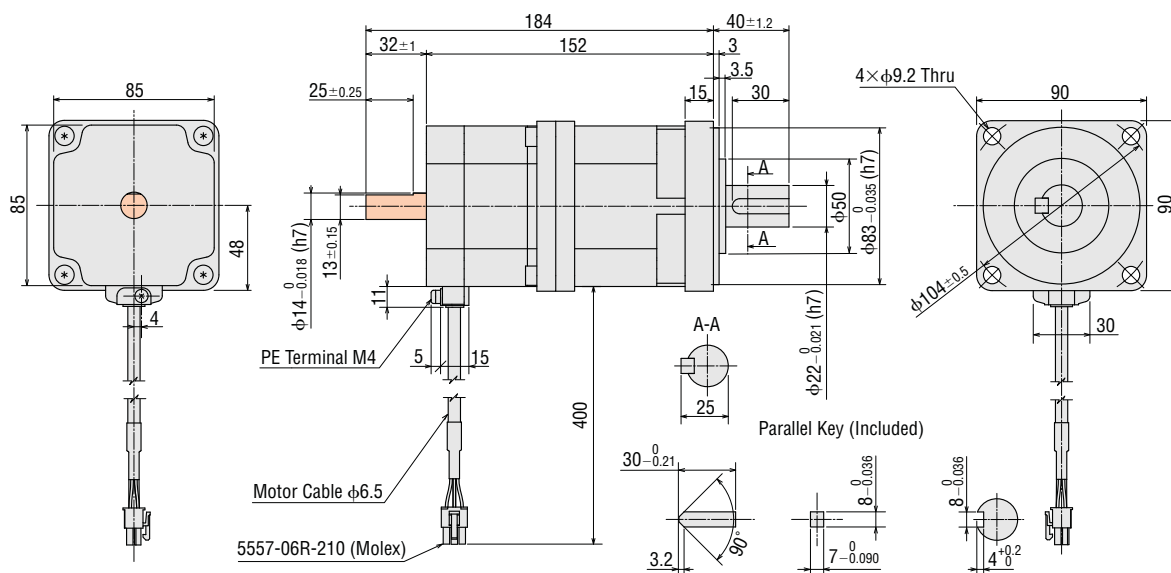
## Frame Size 42 mm

[illegible]

\*2 The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

[illegible]

Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS596A</b>  <b>D-HS</b> 	<b>RKS596A</b>  <b>-HS</b> 	PKE596AC-HS 	<b>50, 100</b>	3.9	B1035
<b>RKS596B</b>  <b>D-HS</b> 	<b>RKS596B</b>  <b>-HS</b> 	PKE596BC-HS 			



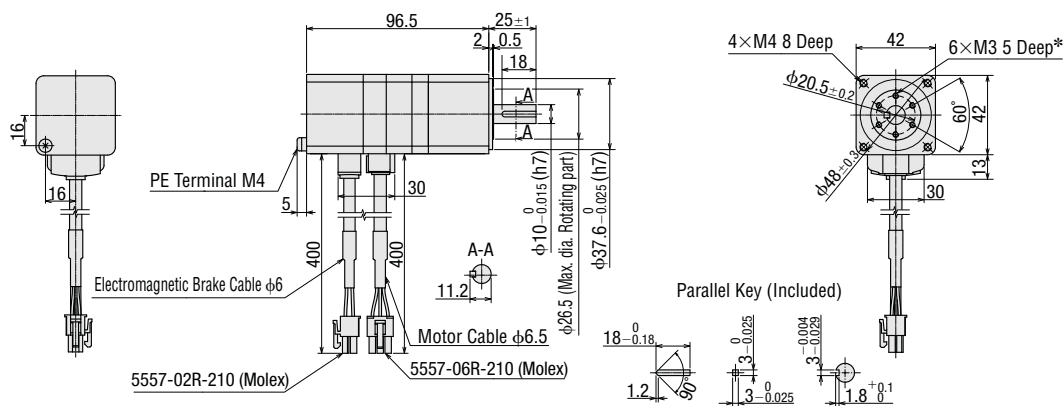
- 39



# ◇ Harmonic Geared Type with Electromagnetic Brake

## Frame Size 42 mm

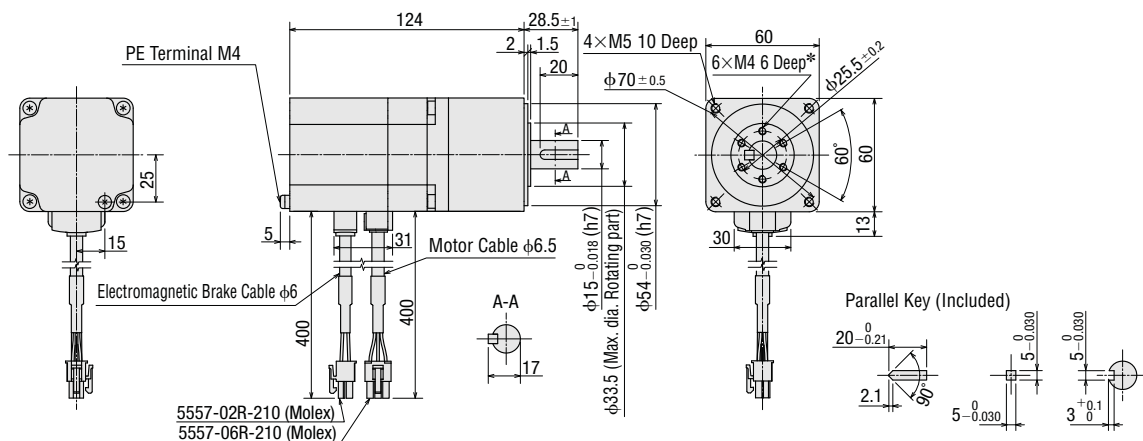
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS543M</b> <b>D-HS</b> <input type="checkbox"/> ◇	<b>RKS543M</b> <b>-HS</b> <input type="checkbox"/> ◇	PKE543MC-HS <input type="checkbox"/>	<b>50, 100</b>	0.61	B1036



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

## Frame Size 60 mm

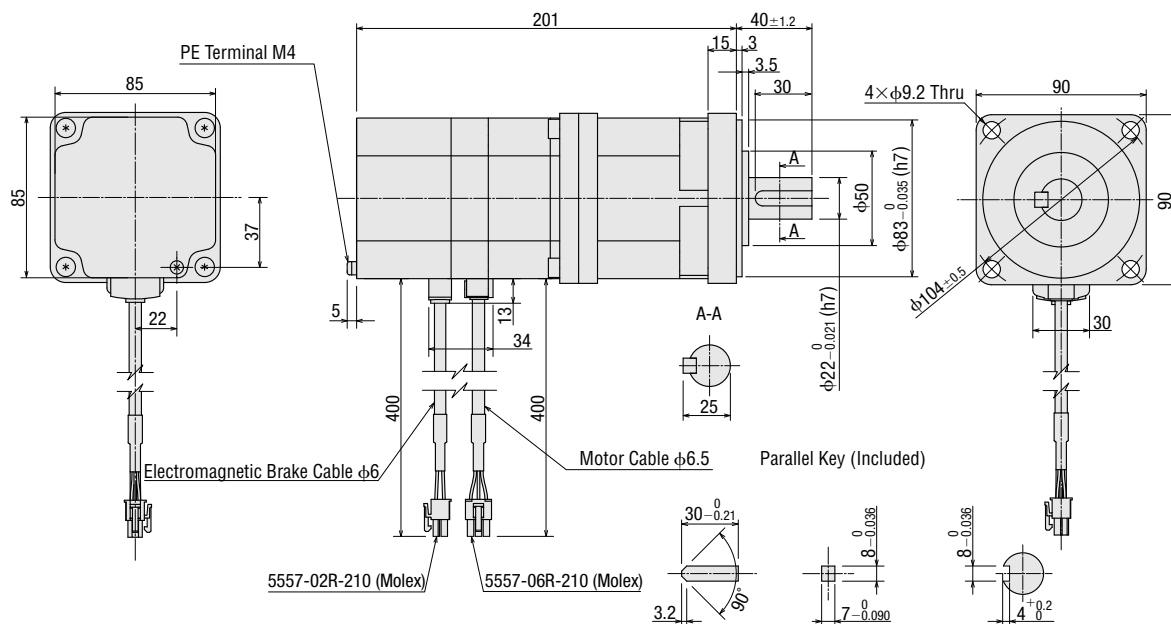
Product Name		Motor Product Name	Gear Ratio	Mass kg	CAD
Built-In Controller	Pulse Input				
<b>RKS564M</b> <b>D-HS</b> <input type="checkbox"/> ◇	<b>RKS564M</b> <b>-HS</b> <input type="checkbox"/> ◇	PKE564MC-HS <input type="checkbox"/>	<b>50, 100</b>	1.5	B1037



\* 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				
<b>RKS596M</b> <b>D-HS</b> <input type="checkbox"/> ◇	<b>RKS596M</b> <b>-HS</b> <input type="checkbox"/> ◇	PKE596MC-HS <input type="checkbox"/>	<b>50, 100</b>	4.8	B1038



- Either **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) indicating the configuration is entered where ☐ is located within the product name.
- A value 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.

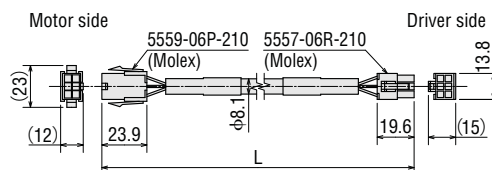
● Cable for Motor (Included), Cable for Electromagnetic Brake (Included), Cable for Encoder (Included)

◇ Only with the type supplied with a connection cable

Common to All Types

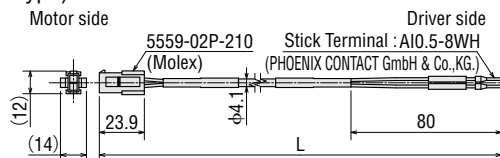
● Cable for Motor

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



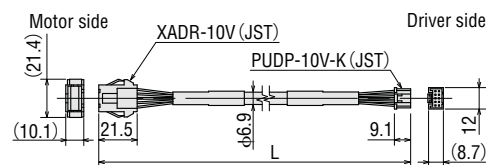
● Cable for Electromagnetic Brake (Only for electromagnetic brake type)

Cable for Motor	Cable Type
Cable for Motor 1 m	1
Cable for Motor 2 m	2
Cable for Motor 3 m	3



● Cable for Encoder (Only for encoder type)

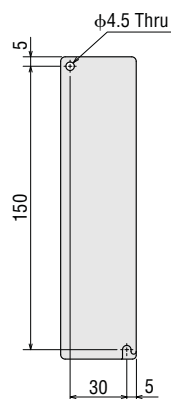
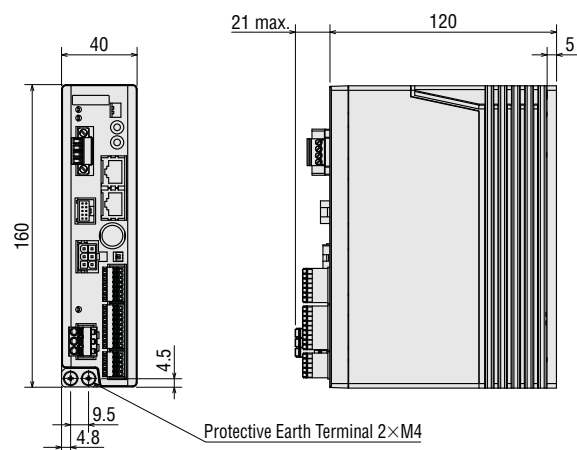
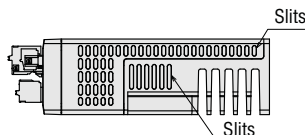
Cable for Motor	Cable Type
Cable for Motor 1 m	1
Cable for Motor 2 m	2
Cable for Motor 3 m	3



● Drivers

◇ Built-In Controller Type

Mass: 0.8kg CAD B1048



● Accessories

Connector for Power Input Terminal (CN1)

Connector: MC1,5/4-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)

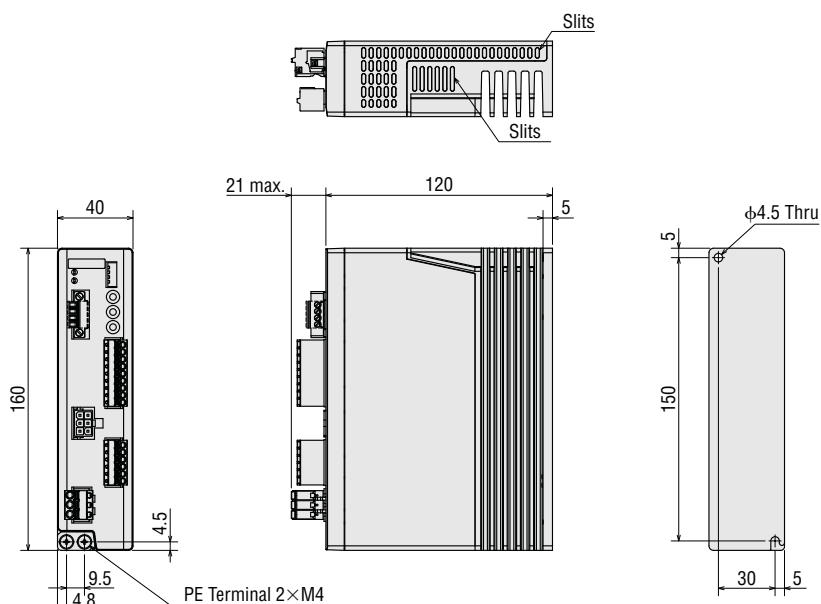
Connector: FK-MC0,5/7-ST-2,5 (PHOENIX CONTACT GmbH & Co.,KG.)

Connector for Regeneration Unit/Main Power Supply (CN3)

Connector: FKCT2,5/3-ST-5,08 (PHOENIX CONTACT GmbH & Co.,KG.)

# ◆ Pulse Input Type

Mass: 0.8kg **CAD** Standard Type with Electromagnetic Brake: B1014, Standard Type: B1015



## ● Included

I/O Signal Connector (CN5)

Connector:FK-MCP1,5/9-ST-3,81 (PHOENIX CONTACT GmbH & Co.,KG.)

Pulse Input Connector (CN4)

Connector:FK-MCP1,5/6-ST-3,81 (PHOENIX CONTACT GmbH & Co.,KG.)

Electromagnetic Brake Connection Terminal Connector (CN1)

Connector:MC1,5/4-STF-3,5 (PHOENIX CONTACT GmbH & Co.,KG.)

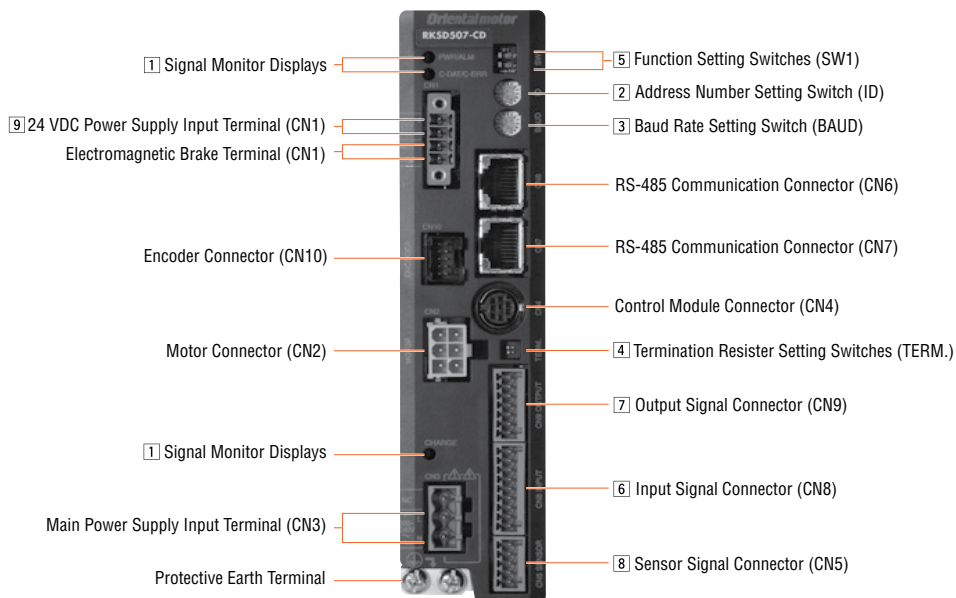
Power Source Input Connector (CN3)

Connector:FKCT2,5/3-ST-5,08 (PHOENIX CONTACT GmbH & Co.,KG.)

\* Electromagnetic brake type only

## ■ Connection and Operation (Built-In Controller Type)

### ● Names and Functions of Driver Parts



#### 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	Lights when communication data is received or sent.
C-ERR	Red	Communication Error Indication	Lights when there is an error with communication data.
CHARGE	Red	Power On Indication	Lights when main power is supplied.

#### 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 (BAUD)

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

##### ◇ Setting the Baud Rate for RS-484 Communications

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

#### 4 Termination Resistor Setting Switches (TERM.)

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

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

#### 5 Function Setting Switches (SW1)

Indication	No.	Function
SW1	1	Set the address number in combination with the address number setting switch (ID) (Factory setting: OFF).
	2	Set the protocol for RS-485 communication (Factory setting: OFF).

#### ◇ RS-485 Communication Protocol Setting

Destination No.	Connect to Network convertor	Modbus RTU Mode
2	OFF	ON

#### 6 Input Signal Connector (CN8)

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

\* 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: AW0	32: R0	37: R5	42: R10	47: R15	52: M4
1: FWD	6: +JOG	11: MS3	18: STOP	33: R1	38: R6	43: R11	48: M0	53: M5
2: RVS	7: -JOG	12: MS4	24: ALM-RST	34: R2	39: R7	44: R12	49: M1	
3: HOME	8: MS0	13: MS5	25: P-PRESET	35: R3	40: R8	45: R13	50: M2	
4: START	9: MS1	16: FREE	27: HMI	36: R4	41: R9	46: R14	51: M3	

#### 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	MOVE Output while the motor is under operation.
	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 (Point B).

\* 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.

Input Signal								
0: Not used	7: -JOG_R	16: FREE_R	36: R4	43: R11	50: M2_R	63: SLIT_R	73: AREA1	85: ZSG
1: FWD_R	8: MS0_R	17: AW0_R	37: R5	44: R12	51: M3_R	65: ALM	74: AREA2	86: MBC
2: RVS_R	9: MS1_R	18: STOP_R	38: R6	45: R13	52: M4_R	66: WNG	75: AREA3	
3: HOME_R	10: MS2_R	32: R0	39: R7	46: R14	53: M5_R	67: READY	80: S-BSY	
4: START_R	11: MS3_R	33: R1	40: R8	47: R15	60: +LS_R	68: MOVE	82: MPS	
5: SSTART_R	12: MS4_R	34: R2	41: R9	48: M0_R	61: -LS_R	70: HOME-P	83: STEPOUT	
6: +JOG_R	13: MS5_R	35: R3	42: R10	49: M1_R	62: HOMES_R	72: TIM	84: OH	

#### 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

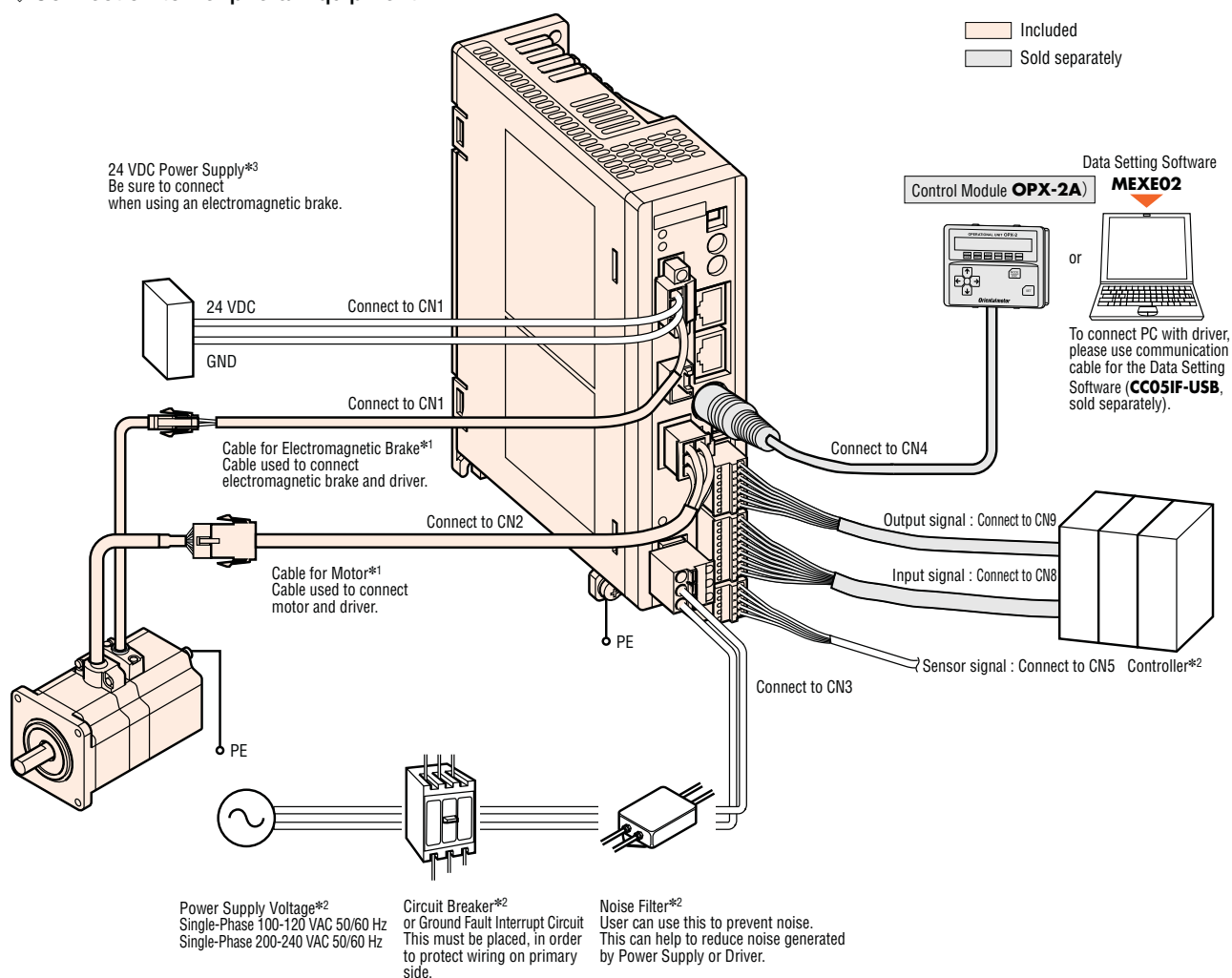
#### 9 24 VDC Input/Electromagnetic Brake Connection Terminal (CN1)

Indication	I/O	Terminal Name	Content
24V+	Input	24 VDC Power Input Terminal+	The power supply for the driver's control circuit terminal. Always connect while operating.
24V-		24 VDC Power Input Terminal-	
MB1	Output	Electromagnetic Brake Connection Terminal-	Connect with the electromagnetic brake line of an electromagnetic brake type motor.
MB2		Electromagnetic Brake Connection Terminal+	



● Connection Diagram  
 ◇ Connection to Peripheral Equipment

Included  
 Sold separately



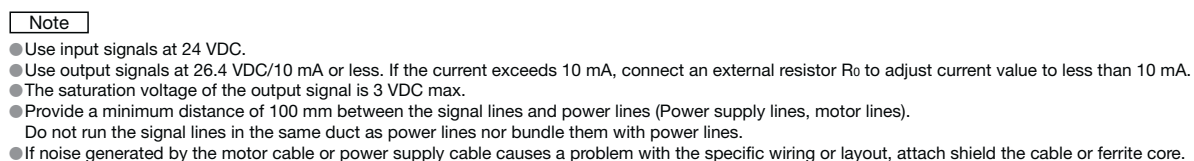
\*1 The user can choose from Package with Cable (1 m, 2 m or 3 m) or Package without Cable.

If the user needs a cable longer than 3 m or a flexible cable, please select an appropriate cable from the accessories (sold separately).  
 Keep the wiring distance between the motor and driver to 20 m max.

\*2 Not Supplied.

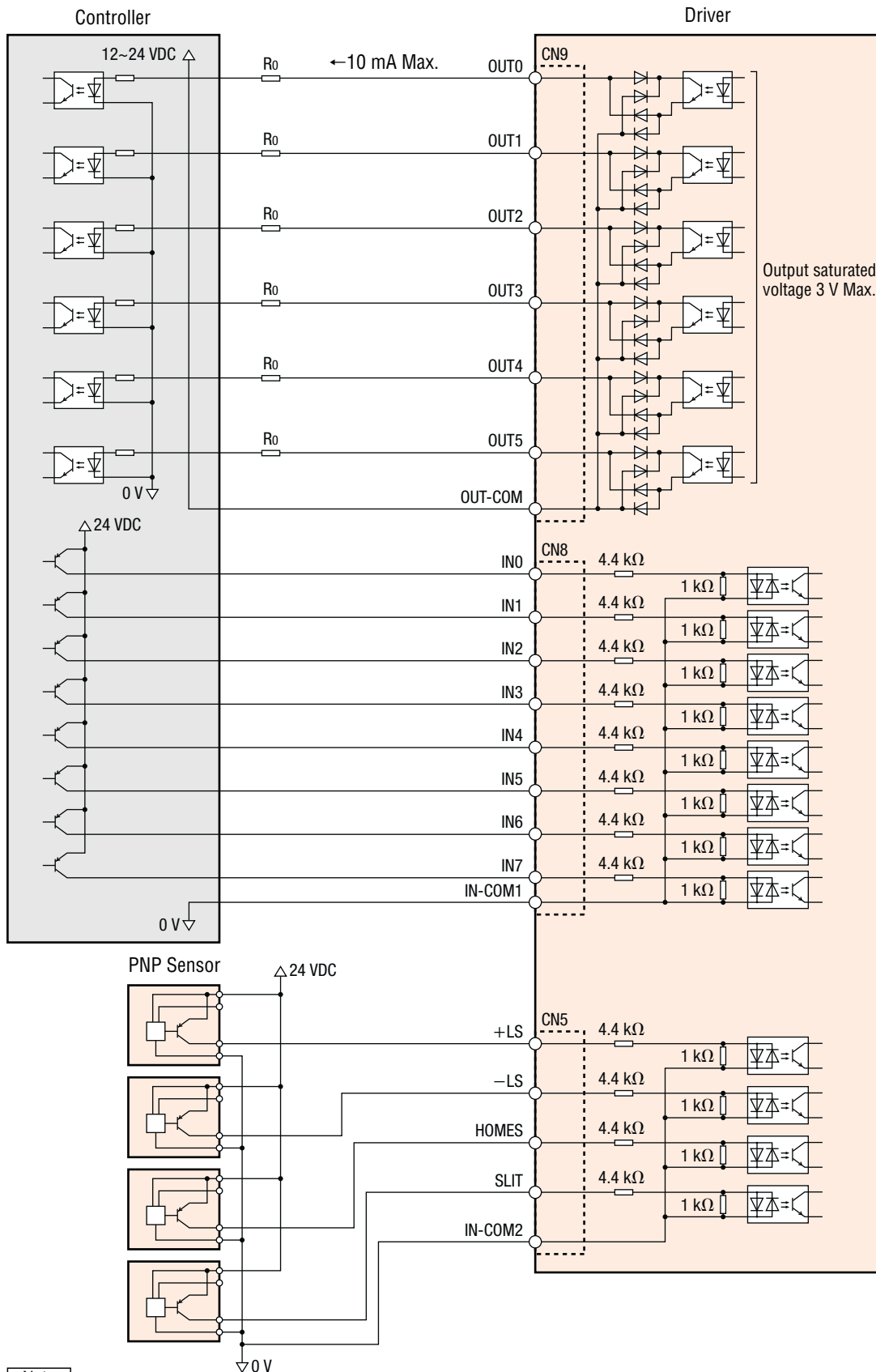
\*3 Not Supplied. If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (sold separately), the 24 VDC $\pm$ 4% specification applies.

- Connecting to a Current Sink Output Circuit



# ◇ Connecting to a Host Controller

## ● Connecting to a Current Source Output Circuit

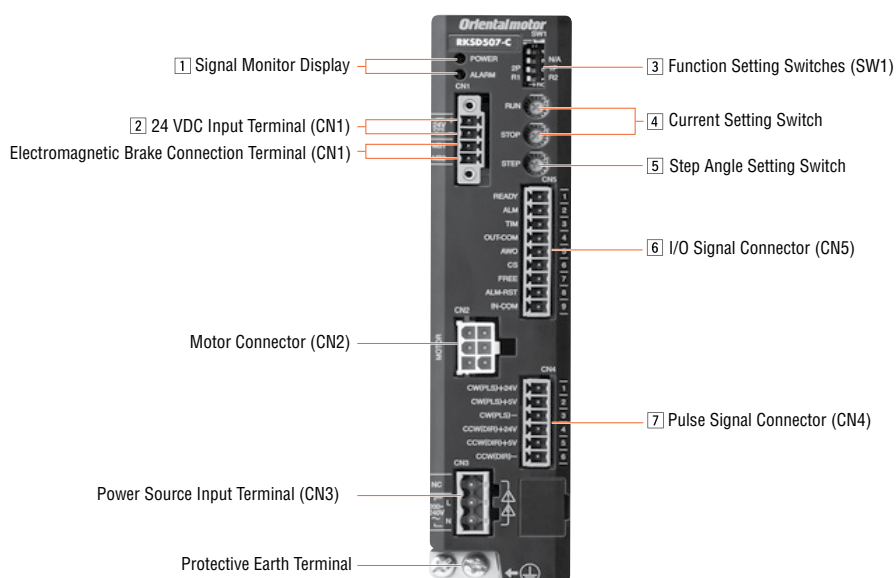


### Note

- Use 24 VDC for the input signal.
- Use 26.4 VDC or less for the output signal, and 10 mA or less for the current. If the current exceeds 10 mA, connect an external resistor  $R_0$  to reduce the current to less than 10 mA.
- Output saturated voltage should be less than 3 V.
- Signal lines should be kept at least 100 mm away from power lines (power supply lines and motor lines). Do not run the signal lines in the same duct or bundle them together.
- If noise generated by the motor cables or power supply cables causes a problem, try shielding the cables or using ferrite cores.

## ■ Connection and Operation (Pulse Input Type)

### ● Names and Functions of Driver Parts



#### 1 Signal Monitor Display

##### ◇ LED Indicator

Indication	Color	Function	Lighting Condition
POWER	Green	Power Supply Indication	When the main power supply is input
ALARM	Red	Alarm Indication	When protective functions are activated (Blink).

##### ◇ Alarm Contents

Blink Count	Function	Operating Condition	ALM-RST Release by Input	Motor Excitation
2	Main circuit overheating	The internal temperature of the driver exceeds 85°C.	Yes	No holding
3	Overvoltage	The internal voltage of the driver exceeds the permissible value	No	
4	Command pulse abnormality	The value of the command pulse becomes abnormal	Yes	
5	Overcurrent	The motor, cable and driver out put circuit shorted out	No	
6	Undervoltage	Power supply is instantaneously shut down Undervoltage	Yes	
7	Automatic control of electromagnetic brake abnormality	24 VDC power supply is not connected The electromagnetic brake is not connected The electromagnetic brake is mis-wired		
9	Electrolytic capacitor abnormality	The electrolytic capacitor of the main circuit is damaged.	No	
	EEPROM abnormality	The saved data of the driver is damaged.		
Lighting	CPU abnormality	CPU malfunctions		

#### 2 24 VDC Input Terminals/Electromagnetic Brake Connection Terminals

Indication	I/O	Terminal Name	Content
24 V+	Input	24 VDC Input Terminal +	Connects the 24 VDC power for electromagnetic brake.
24 V-	Input	24 VDC Input Terminal -	
MB1	Input	Electromagnetic Brake Connection Terminal (Black)	Connect the electromagnetic brake wire of the motor with the electromagnetic brake.
MB2	Input	Electromagnetic Brake Connection Terminal (White)	

### ③ Function Setting Switch (SW1)

Indication	No.	Function
R1/R2	1	Sets up the step angle in combination with the step angle setting switch.
2P/1P	2	Switches between 1-pulse input mode and 2-pulse input mode. [2P] for the 2-pulse input mode [1P] for the 1-pulse input mode

### ④ Current Setting Switch

Indication	Switch Name	Function
RUN	Operating Current Setting Switch	Sets the motor's operating current. The current value is set by the ratio of rated output current (%).
STOP	Stop Current Setting Switch	Sets the stopped current of the motor. The current value is set by the ratio of rated output current (%).

### ⑤ Step Angle Setting Switch

Indication	Function
STEP	Sets up step angle of the motor in combination with the function setting switch (SW1)

Function Setting Switch: R1			
Step Angle Setting Switch (STEP) Scale	Resolution [P/R]	Step Angle [°]	Microsteps/Step
0	500	0.72	1
1	1000	0.36	2
2	1250	0.288	2.5
3	2000	0.18	4
4	2500	0.144	5
5	4000	0.09	8
6	5000	0.072	10
7	10000	0.036	20
8	12500	0.0288	25
9	20000	0.018	40
A	25000	0.0144	50
B	40000	0.009	80
C	50000	0.0072	100
D	62500	0.00576	125
E	100000	0.0036	200
F	125000	0.00288	250

Function Setting Switch: R2			
Step Angle Setting Switch (STEP) Scale	Resolution [P/R]	Step Angle [°]	Microsteps/Step
0	200	1.8	0.4
1	400	0.9	0.8
2	600	0.6	1.2
3	800	0.45	1.6
4	1200	0.3	2.4
5	1600	0.225	3.2
6	3200	0.1125	6.4
7	6000	0.06	12
8	6400	0.05625	12.8
9	7200	0.05	14.4
A	8000	0.045	16
B	12000	0.03	24
C	12800	0.028125	25.6
D	16000	0.0225	32
E	25600	0.0140625	51.2
F	200000	0.0018	400

### ⑥ I/O Signal Connector (CN5)

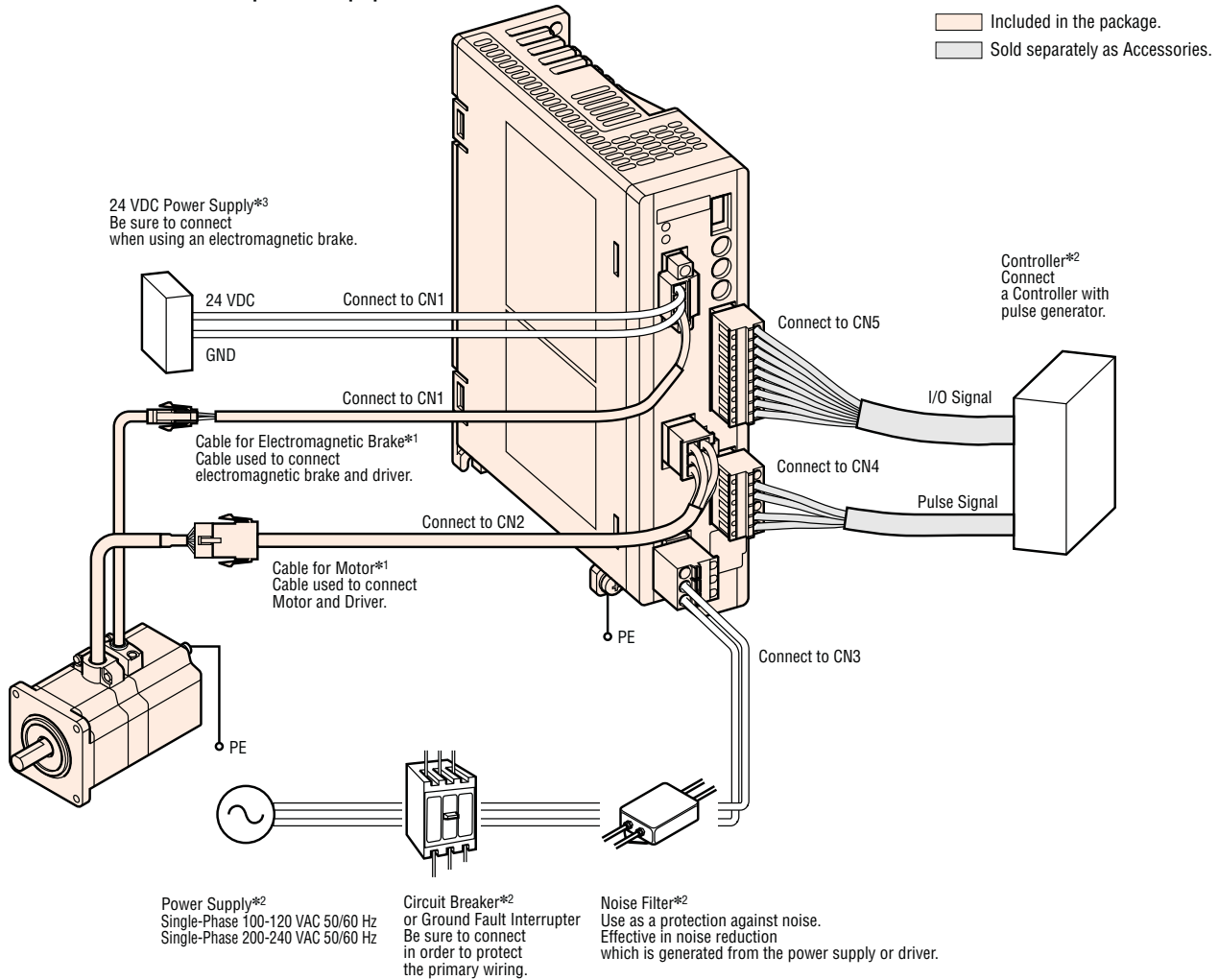
Indication	I/O	Pin Number	Content
READY	Output	1	Outputs when operation of the driver has been prepared.
ALM		2	Output alarm status of the driver (B contact).
TIM		3	Outputs when excitation state of the motor is at step "0" position.
OUT-COM		4	Output common
AW0	Input	5	Stops excitation of the motor.
CS		6	Switches the step angle.
FREE		7	Stops excitation of the motor. With electromagnetic brake type, the electromagnetic brake is also released.
ALM-RST		8	Resets the current alarm.
IN-COM		9	Input common

### ⑦ Pulse Signal Connector (CN4)

Indication	Pin Number	Content
CW (PLS) +24 V	1	CW Pulse Input (Pulse Input) [+24 V]
CW (PLS) +5 V	2	CW Pulse Input (Pulse Input) [+5 V or line driver]
CW (PLS) –	3	
CCW (DIR) +24 V	4	CCW Pulse Input (Rotation Direction Input) [+24 V]
CCW (DIR) +5 V	5	CCW Pulse Input (Rotation Direction Input) [+5 V or line driver]
CCW (DIR) –	6	

● Connection Diagram

◇ Connection with Peripheral Equipment



\*1 There are 2 types available, one with the cable which connects the motor and driver (1 m, 2 m, 3 m) and the other without any.

If you need cables longer than 3 m or flexible extension cable, select from the accessories (Sold separately).

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

\*2 Not Supplied.

\*3 Not Supplied. If the wiring distance between the motor and driver is extended to 15 m or longer by using an accessory cable (Sold separately), the 24 VDC $\pm$ 4% specification applies.



• Connection Diagram for Current Sink Output Circuit  
When pulse input is Line Driver



- Use input signal at 12~24 VDC.
- Use output signal at 12~24 VDC 10 mA max. When the current value exceeds 10 mA, connect the external resistor  $R_o$  to keep 10 mA max.
- Output saturated voltage should be less than 3V.
- Provide a minimum distance of 100 mm between the signal lines and power lines (Power supply lines, motor lines).
- Do not run the signal lines in the same duct as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.

When pulse input is Line Driver























































































































































- Use input signal at 12~24 VDC.
- Use output signal at 12~24 VDC 10 mA max. When the current value exceeds 10 mA, connect the external resistor  $R_0$  to keep 10 mA max.
- Output saturated voltage should be less than 3V.
- Provide a minimum distance of 100 mm between the signal lines and power lines (Power supply lines, motor lines).  
Do not run the signal lines in the same duct as power lines or bundle them with power lines.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cable or use ferrite cores.


The diagram illustrates a motor driver circuit. The **Controller** (grey) provides a 5 VDC supply and a 0 V reference. It connects to the **Driver** (orange) via a **CN4** connector. The Driver section contains two MOSFETs (N-channel and P-channel) and a motor. The N-channel MOSFET gate is driven by CW(PLS) +24 V and CW(PLS) +5 V. The P-channel MOSFET gate is driven by CCW(DIR) +24 V and CCW(DIR) +5 V. The motor is connected to the drains of both MOSFETs. The motor terminals are labeled with 1.3 kΩ, 330 Ω, and 10 kΩ resistors.


## Motor and Driver Combinations


Product names for motor and driver combinations are shown below.


### Built-In Controller Type

Type	Product Name	Motor Product Name	Driver Product Name
Standard Type	<b>RKS543</b>  <b>D</b> 	PKE543  C	RKSD503-  D
	<b>RKS544</b>  <b>D</b> 	PKE544  C	
	<b>RKS545</b>  <b>D</b> 	PKE545  C	
	<b>RKS564</b>  <b>D</b> 	PKE564  C	RKSD507-  D
	<b>RKS566</b>  <b>D</b> 	PKE566  C	
	<b>RKS569</b>  <b>D</b> 	PKE569  C	
	<b>RKS596</b>  <b>D</b> 	PKE596  C	
	<b>RKS599</b>  <b>D</b> 	PKE599  C	
Standard Type with Electromagnetic Brake	<b>RKS5913</b>  <b>D</b> 	PKE5913  C	RKSD503-  D
	<b>RKS543M</b>  <b>D</b> 	PKE543MC	
	<b>RKS544M</b>  <b>D</b> 	PKE544MC	
	<b>RKS545M</b>  <b>D</b> 	PKE545MC	RKSD507-  D
	<b>RKS564M</b>  <b>D</b> 	PKE564MC	
	<b>RKS566M</b>  <b>D</b> 	PKE566MC	
	<b>RKS569M</b>  <b>D</b> 	PKE569MC	
	<b>RKS596M</b>  <b>D</b> 	PKE596MC	
	<b>RKS599M</b>  <b>D</b> 	PKE599MC	
Standard Type with Encoder	<b>RKS5913M</b>  <b>D</b> 	PKE5913MC	RKSD503-  D
	<b>RKS543R</b>  <b>D2</b> 	PKE543RC2	
	<b>RKS544R</b>  <b>D2</b> 	PKE544RC2	
	<b>RKS545R</b>  <b>D2</b> 	PKE545RC2	RKSD507-  D
	<b>RKS564R</b>  <b>D2</b> 	PKE564RC2	
	<b>RKS566R</b>  <b>D2</b> 	PKE566RC2	
	<b>RKS569R</b>  <b>D2</b> 	PKE569RC2	
	<b>RKS596R</b>  <b>D2</b> 	PKE596RC2	
	<b>RKS599R</b>  <b>D2</b> 	PKE599RC2	
TS Geared Type	<b>RKS5913R</b>  <b>D2</b> 	PKE5913RC2	RKSD503-  D
	<b>RKS543</b>  <b>D-TS3.6</b> 	PKE543  C-TS3.6	
	<b>RKS543</b>  <b>D-TS7.2</b> 	PKE543  C-TS7.2	
	<b>RKS543</b>  <b>D-TS10</b> 	PKE543  C-TS10	RKSD507-  D
	<b>RKS543</b>  <b>D-TS20</b> 	PKE543  C-TS20	
	<b>RKS543</b>  <b>D-TS30</b> 	PKE543  C-TS30	
	<b>RKS564</b>  <b>D-TS3.6</b> 	PKE564  C-TS3.6	
	<b>RKS564</b>  <b>D-TS7.2</b> 	PKE564  C-TS7.2	
	<b>RKS564</b>  <b>D-TS10</b> 	PKE564  C-TS10	
	<b>RKS564</b>  <b>D-TS20</b> 	PKE564  C-TS20	
	<b>RKS564</b>  <b>D-TS30</b> 	PKE564  C-TS30	
	<b>RKS596</b>  <b>D-TS3.6</b> 	PKE596  C-TS3.6	
	<b>RKS596</b>  <b>D-TS7.2</b> 	PKE596  C-TS7.2	
	<b>RKS596</b>  <b>D-TS10</b> 	PKE596  C-TS10	
	<b>RKS596</b>  <b>D-TS20</b> 	PKE596  C-TS20	
	<b>RKS596</b>  <b>D-TS30</b> 	PKE596  C-TS30	
TS Geared Type with Electromagnetic Brake	<b>RKS543M</b>  <b>D-TS3.6</b> 	PKE543MC-TS3.6	RKSD503-  D
	<b>RKS543M</b>  <b>D-TS7.2</b> 	PKE543MC-TS7.2	
	<b>RKS543M</b>  <b>D-TS10</b> 	PKE543MC-TS10	
	<b>RKS543M</b>  <b>D-TS20</b> 	PKE543MC-TS20	
	<b>RKS543M</b>  <b>D-TS30</b> 	PKE543MC-TS30	RKSD507-  D
	<b>RKS564M</b>  <b>D-TS3.6</b> 	PKE564MC-TS3.6	
	<b>RKS564M</b>  <b>D-TS7.2</b> 	PKE564MC-TS7.2	
	<b>RKS564M</b>  <b>D-TS10</b> 	PKE564MC-TS10	
	<b>RKS564M</b>  <b>D-TS20</b> 	PKE564MC-TS20	
	<b>RKS564M</b>  <b>D-TS30</b> 	PKE564MC-TS30	
	<b>RKS596M</b>  <b>D-TS3.6</b> 	PKE596MC-TS3.6	
	<b>RKS596M</b>  <b>D-TS7.2</b> 	PKE596MC-TS7.2	
	<b>RKS596M</b>  <b>D-TS10</b> 	PKE596MC-TS10	
	<b>RKS596M</b>  <b>D-TS20</b> 	PKE596MC-TS20	
	<b>RKS596M</b>  <b>D-TS30</b> 	PKE596MC-TS30	

● Either **A** (Single shaft) or **B** (Double shaft) indicating the motor shaft configuration is entered where the box  is located within the product name.

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.

If the package do not include the cable,  is not exists in the product name.

Type	Product Name	Motor Product Name	Driver Product Name
PS Geared Type	RKS545 <input type="checkbox"/> D-PS5-◇	PKE545 <input type="checkbox"/> C-PS5	RKSD503- <input type="checkbox"/> D
	RKS545 <input type="checkbox"/> D-PS7.2-◇	PKE545 <input type="checkbox"/> C-PS7.2	
	RKS545 <input type="checkbox"/> D-PS10-◇	PKE545 <input type="checkbox"/> C-PS10	
	RKS543 <input type="checkbox"/> D-PS25-◇	PKE543 <input type="checkbox"/> C-PS25	
	RKS543 <input type="checkbox"/> D-PS36-◇	PKE543 <input type="checkbox"/> C-PS36	
	RKS543 <input type="checkbox"/> D-PS50-◇	PKE543 <input type="checkbox"/> C-PS50	
	RKS566 <input type="checkbox"/> D-PS5-◇	PKE566 <input type="checkbox"/> C-PS5	RKSD507- <input type="checkbox"/> D
	RKS566 <input type="checkbox"/> D-PS7.2-◇	PKE566 <input type="checkbox"/> C-PS7.2	
	RKS566 <input type="checkbox"/> D-PS10-◇	PKE566 <input type="checkbox"/> C-PS10	
	RKS564 <input type="checkbox"/> D-PS25-◇	PKE564 <input type="checkbox"/> C-PS25	
	RKS564 <input type="checkbox"/> D-PS36-◇	PKE564 <input type="checkbox"/> C-PS36	
	RKS564 <input type="checkbox"/> D-PS50-◇	PKE564 <input type="checkbox"/> C-PS50	
	RKS599 <input type="checkbox"/> D-PS5-◇	PKE599 <input type="checkbox"/> C-PS5	
	RKS599 <input type="checkbox"/> D-PS7.2-◇	PKE599 <input type="checkbox"/> C-PS7.2	
	RKS599 <input type="checkbox"/> D-PS10-◇	PKE599 <input type="checkbox"/> C-PS10	
	RKS596 <input type="checkbox"/> D-PS25-◇	PKE596 <input type="checkbox"/> C-PS25	
	RKS596 <input type="checkbox"/> D-PS36-◇	PKE596 <input type="checkbox"/> C-PS36	
	RKS596 <input type="checkbox"/> D-PS50-◇	PKE596 <input type="checkbox"/> C-PS50	
PS Geared Type with Electromagnetic Brake	RKS545M <input type="checkbox"/> D-PS5-◇	PKE545MC-PS5	RKSD503- <input type="checkbox"/> D
	RKS545M <input type="checkbox"/> D-PS7.2-◇	PKE545MC-PS7.2	
	RKS545M <input type="checkbox"/> D-PS10-◇	PKE545MC-PS10	
	RKS543M <input type="checkbox"/> D-PS25-◇	PKE543MC-PS25	
	RKS543M <input type="checkbox"/> D-PS36-◇	PKE543MC-PS36	
	RKS543M <input type="checkbox"/> D-PS50-◇	PKE543MC-PS50	
	RKS566M <input type="checkbox"/> D-PS5-◇	PKE566MC-PS5	RKSD507- <input type="checkbox"/> D
	RKS566M <input type="checkbox"/> D-PS7.2-◇	PKE566MC-PS7.2	
	RKS566M <input type="checkbox"/> D-PS10-◇	PKE566MC-PS10	
	RKS564M <input type="checkbox"/> D-PS25-◇	PKE564MC-PS25	
	RKS564M <input type="checkbox"/> D-PS36-◇	PKE564MC-PS36	
	RKS564M <input type="checkbox"/> D-PS50-◇	PKE564MC-PS50	
	RKS599M <input type="checkbox"/> D-PS5-◇	PKE599MC-PS5	
	RKS599M <input type="checkbox"/> D-PS7.2-◇	PKE599MC-PS7.2	
	RKS599M <input type="checkbox"/> D-PS10-◇	PKE599MC-PS10	
	RKS596M <input type="checkbox"/> D-PS25-◇	PKE596MC-PS25	
	RKS596M <input type="checkbox"/> D-PS36-◇	PKE596MC-PS36	
	RKS596M <input type="checkbox"/> D-PS50-◇	PKE596MC-PS50	
Harmonic Geared Type	RKS543 <input type="checkbox"/> D-HS50-◇	PKE543 <input type="checkbox"/> C-HS50	RKSD503- <input type="checkbox"/> D
	RKS543 <input type="checkbox"/> D-HS100-◇	PKE543 <input type="checkbox"/> C-HS100	RKSD507- <input type="checkbox"/> D
	RKS564 <input type="checkbox"/> D-HS50-◇	PKE564 <input type="checkbox"/> C-HS50	
	RKS564 <input type="checkbox"/> D-HS100-◇	PKE564 <input type="checkbox"/> C-HS100	
	RKS596 <input type="checkbox"/> D-HS50-◇	PKE596 <input type="checkbox"/> C-HS50	
Harmonic Geared Type with Electromagnetic Brake	RKS596 <input type="checkbox"/> D-HS100-◇	PKE596 <input type="checkbox"/> C-HS100	RKSD503- <input type="checkbox"/> D
	RKS543M <input type="checkbox"/> D-HS50-◇	PKE543MC-HS50	
	RKS543M <input type="checkbox"/> D-HS100-◇	PKE543MC-HS100	RKSD507- <input type="checkbox"/> D
	RKS564M <input type="checkbox"/> D-HS50-◇	PKE564MC-HS50	
	RKS564M <input type="checkbox"/> D-HS100-◇	PKE564MC-HS100	
	RKS596M <input type="checkbox"/> D-HS50-◇	PKE596MC-HS50	
	RKS596M <input type="checkbox"/> D-HS100-◇	PKE596MC-HS100	

● Either **A** (Single shaft) or **B** (Double shaft) indicating the motor shaft configuration is entered where the box ☐ is located within the product name.

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.

If the package do not include the cable, ◇ is not exists in the product name.

## Pulse Input Type

Type	Product Name	Motor Product Name	Driver Product Name
Standard Type	<b>RKS543</b> □-◇	PKE543□C	RKSD503-□
	<b>RKS544</b> □-◇	PKE544□C	
	<b>RKS545</b> □-◇	PKE545□C	
	<b>RKS564</b> □-◇	PKE564□C	RKSD507-□
	<b>RKS566</b> □-◇	PKE566□C	
	<b>RKS569</b> □-◇	PKE569□C	
	<b>RKS596</b> □-◇	PKE596□C	
	<b>RKS599</b> □-◇	PKE599□C	
Standard Type with Electromagnetic Brake	<b>RKS5913</b> □-◇	PKE5913□C	
	<b>RKS543M</b> □-◇	PKE543MC	RKSD503M-□
	<b>RKS544M</b> □-◇	PKE544MC	
	<b>RKS545M</b> □-◇	PKE545MC	
	<b>RKS564M</b> □-◇	PKE564MC	RKSD507M-□
	<b>RKS566M</b> □-◇	PKE566MC	
	<b>RKS569M</b> □-◇	PKE569MC	
	<b>RKS596M</b> □-◇	PKE596MC	
TS Geared Type	<b>RKS599M</b> □-◇	PKE599MC	
	<b>RKS5913M</b> □-◇	PKE5913MC	
	<b>RKS543</b> □-TS3.6-◇	PKE543□C-TS3.6	RKSD503-□
	<b>RKS543</b> □-TS7.2-◇	PKE543□C-TS7.2	
	<b>RKS543</b> □-TS10-◇	PKE543□C-TS10	
	<b>RKS543</b> □-TS20-◇	PKE543□C-TS20	RKSD507-□
	<b>RKS543</b> □-TS30-◇	PKE543□C-TS30	
	<b>RKS564</b> □-TS3.6-◇	PKE564□C-TS3.6	
TS Geared Type with Electromagnetic Brake	<b>RKS564</b> □-TS7.2-◇	PKE564□C-TS7.2	
	<b>RKS564</b> □-TS10-◇	PKE564□C-TS10	
	<b>RKS564</b> □-TS20-◇	PKE564□C-TS20	
	<b>RKS564</b> □-TS30-◇	PKE564□C-TS30	
	<b>RKS596</b> □-TS3.6-◇	PKE596□C-TS3.6	
	<b>RKS596</b> □-TS7.2-◇	PKE596□C-TS7.2	
	<b>RKS596</b> □-TS10-◇	PKE596□C-TS10	
	<b>RKS596</b> □-TS20-◇	PKE596□C-TS20	
TS Geared Type with Electromagnetic Brake	<b>RKS596</b> □-TS30-◇	PKE596□C-TS30	
	<b>RKS543M</b> □-TS3.6-◇	PKE543MC-TS3.6	RKSD503M-□
	<b>RKS543M</b> □-TS7.2-◇	PKE543MC-TS7.2	
	<b>RKS543M</b> □-TS10-◇	PKE543MC-TS10	
	<b>RKS543M</b> □-TS20-◇	PKE543MC-TS20	RKSD507M-□
	<b>RKS543M</b> □-TS30-◇	PKE543MC-TS30	
	<b>RKS564M</b> □-TS3.6-◇	PKE564MC-TS3.6	
	<b>RKS564M</b> □-TS7.2-◇	PKE564MC-TS7.2	
	<b>RKS564M</b> □-TS10-◇	PKE564MC-TS10	
	<b>RKS564M</b> □-TS20-◇	PKE564MC-TS20	
	<b>RKS564M</b> □-TS30-◇	PKE564MC-TS30	
	<b>RKS596M</b> □-TS3.6-◇	PKE596MC-TS3.6	
	<b>RKS596M</b> □-TS7.2-◇	PKE596MC-TS7.2	
	<b>RKS596M</b> □-TS10-◇	PKE596MC-TS10	
	<b>RKS596M</b> □-TS20-◇	PKE596MC-TS20	
	<b>RKS596M</b> □-TS30-◇	PKE596MC-TS30	

● Either **A** (Single shaft) or **B** (Double shaft) indicating the motor shaft configuration is entered where the box □ is located within the product name.

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.

If the package do not include the cable, ◇ is not exists in the product name.

Type	Product Name	Motor Product Name	Driver Product Name
PS Geared Type	RKS545□-PS5-◇	PKE545□C-PS5	RKSD503-□
	RKS545□-PS7.2-◇	PKE545□C-PS7.2	
	RKS545□-PS10-◇	PKE545□C-PS10	
	RKS543□-PS25-◇	PKE543□C-PS25	
	RKS543□-PS36-◇	PKE543□C-PS36	
	RKS543□-PS50-◇	PKE543□C-PS50	
	RKS566□-PS5-◇	PKE566□C-PS5	RKSD507-□
	RKS566□-PS7.2-◇	PKE566□C-PS7.2	
	RKS566□-PS10-◇	PKE566□C-PS10	
	RKS564□-PS25-◇	PKE564□C-PS25	
	RKS564□-PS36-◇	PKE564□C-PS36	
	RKS564□-PS50-◇	PKE564□C-PS50	
	RKS599□-PS5-◇	PKE599□C-PS5	
	RKS599□-PS7.2-◇	PKE599□C-PS7.2	
	RKS599□-PS10-◇	PKE599□C-PS10	
	RKS596□-PS25-◇	PKE596□C-PS25	
	RKS596□-PS36-◇	PKE596□C-PS36	
	RKS596□-PS50-◇	PKE596□C-PS50	
PS Geared Type with Electromagnetic Brake	RKS545M□-PS5-◇	PKE545MC-PS5	RKSD503M-□
	RKS545M□-PS7.2-◇	PKE545MC-PS7.2	
	RKS545M□-PS10-◇	PKE545MC-PS10	
	RKS543M□-PS25-◇	PKE543MC-PS25	
	RKS543M□-PS36-◇	PKE543MC-PS36	
	RKS543M□-PS50-◇	PKE543MC-PS50	
	RKS566M□-PS5-◇	PKE566MC-PS5	RKSD507M-□
	RKS566M□-PS7.2-◇	PKE566MC-PS7.2	
	RKS566M□-PS10-◇	PKE566MC-PS10	
	RKS564M□-PS25-◇	PKE564MC-PS25	
	RKS564M□-PS36-◇	PKE564MC-PS36	
	RKS564M□-PS50-◇	PKE564MC-PS50	
	RKS599M□-PS5-◇	PKE599MC-PS5	
	RKS599M□-PS7.2-◇	PKE599MC-PS7.2	
	RKS599M□-PS10-◇	PKE599MC-PS10	
	RKS596M□-PS25-◇	PKE596MC-PS25	
	RKS596M□-PS36-◇	PKE596MC-PS36	
	RKS596M□-PS50-◇	PKE596MC-PS50	
Harmonic Geared Type	RKS543□-HS50-◇	PKE543□C-HS50	RKSD503-□
	RKS543□-HS100-◇	PKE543□C-HS100	
	RKS564□-HS50-◇	PKE564□C-HS50	RKSD507-□
	RKS564□-HS100-◇	PKE564□C-HS100	
	RKS596□-HS50-◇	PKE596□C-HS50	
Harmonic Geared Type with Electromagnetic Brake	RKS596□-HS100-◇	PKE596□C-HS100	RKSD503M-□
	RKS543M□-HS50-◇	PKE543MC-HS50	
	RKS543M□-HS100-◇	PKE543MC-HS100	RKSD507M-□
	RKS564M□-HS50-◇	PKE564MC-HS50	
	RKS564M□-HS100-◇	PKE564MC-HS100	
	RKS596M□-HS50-◇	PKE596MC-HS50	
	RKS596M□-HS100-◇	PKE596MC-HS100	

● Either **A** (Single shaft) or **B** (Double shaft) indicating the motor shaft configuration is entered where the box □ is located within the product name.

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.

If the package do not include the cable, ◇ is not exists in the product name.

# Accessories (Sold Separately)

## Connection Cable Sets (RoHS), Flexible Connection Cable Sets (RoHS) Extension Cable Sets (RoHS), Flexible Extension Cable Sets (RoHS)

Cable connects the Motor to Driver for **RKII** series, we provide both of “with cable package (1 m, 2 m or 3 m)” and “without cable package”, the user can choose either meet the requirement.

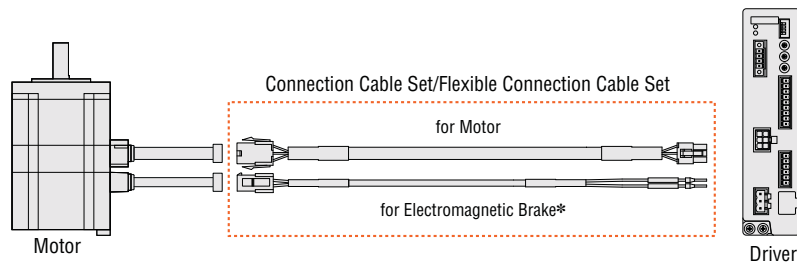
If the user need a cable longer than 3 m or flexible cable, please select an appropriate cable from among the accessories (sold separately).

Keep the wiring distance between the motor and driver to 20 m max.

### System Configuration

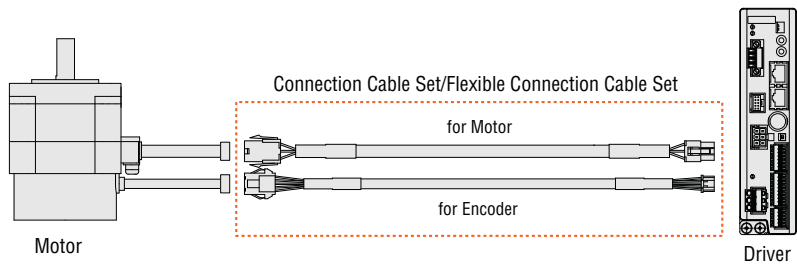
- Connect the motor and driver without using the cable which came with the product.  
Use a connection cable set  
Use a flexible cable set if the cable will be bend.

#### ◇ For Standard Type or Standard Type with Electromagnetic Brake



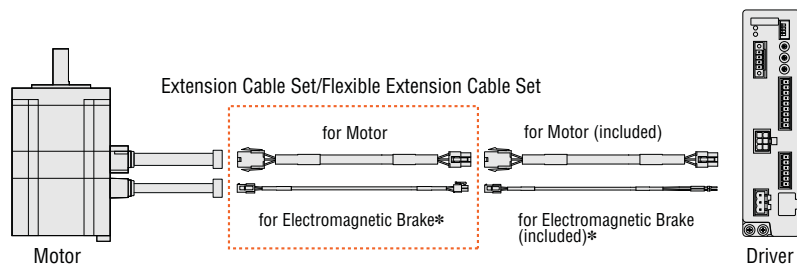
\* Electromagnetic Brake Cable is required for the Motor with Electromagnetic Brake.

#### ◇ For Motor with Encoder



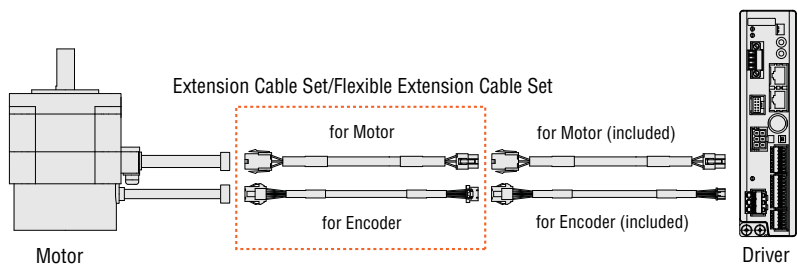
- Connect and extend the Motor and Driver by using cable included in package  
Use the Extension Cable Set combination with the cable came with the product.  
Use a flexible cable set if the cable will be bend.

#### ◇ For Standard Type or Electromagnetic Brake Motor



\* Electromagnetic Brake Cable is required for the Motor with Electromagnetic Brake.

#### ◇ For Motor with Encoder



#### Note

- Keep the total cable length below 20 m when connecting a cable included in the **RKII** Series and an extension cable.
- The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, connection cable (accessory, sold separately) is needed. Otherwise please select the package which comes with the connection cable (The package includes connection cable).



# Connection Cable Sets (RoHS), Flexible Connection Cable Sets (RoHS)

## Product Line

### Connection Cable Sets

#### For Standard Motor



Motor Cable

Product Name	Length L (m)
<b>CC010VPF</b>	1
<b>CC020VPF</b>	2
<b>CC030VPF</b>	3
<b>CC050VPF</b>	5
<b>CC070VPF</b>	7
<b>CC100VPF</b>	10
<b>CC150VPF</b>	15
<b>CC200VPF</b>	20

#### For Electromagnetic Brake Motor



Motor Cable



Electromagnetic Brake Cable

Product Name	Length L (m)
<b>CC010VPFB</b>	1
<b>CC020VPFB</b>	2
<b>CC030VPFB</b>	3
<b>CC050VPFB</b>	5
<b>CC070VPFB</b>	7
<b>CC100VPFB</b>	10
<b>CC150VPFB</b>	15
<b>CC200VPFB</b>	20

#### For Encoder Motor



Motor Cable



Encoder Cable

Product Name	Length L (m)
<b>CC010VPFE</b>	1
<b>CC020VPFE</b>	2
<b>CC030VPFE</b>	3
<b>CC050VPFE</b>	5
<b>CC070VPFE</b>	7
<b>CC100VPFE</b>	10
<b>CC150VPFE</b>	15
<b>CC200VPFE</b>	20

### Flexible Connection Cable Sets

#### For Standard Motor



Motor Cable

Product Name	Length L (m)
<b>CC010VPR</b>	1
<b>CC020VPR</b>	2
<b>CC030VPR</b>	3
<b>CC050VPR</b>	5
<b>CC070VPR</b>	7
<b>CC100VPR</b>	10
<b>CC150VPR</b>	15
<b>CC200VPR</b>	20

#### For Electromagnetic Brake Motor



Motor Cable



Electromagnetic Brake Cable

Product Name	Length L (m)
<b>CC010VPRB</b>	1
<b>CC020VPRB</b>	2
<b>CC030VPRB</b>	3
<b>CC050VPRB</b>	5
<b>CC070VPRB</b>	7
<b>CC100VPRB</b>	10
<b>CC150VPRB</b>	15
<b>CC200VPRB</b>	20

#### For Encoder Motor



Motor Cable



Encoder Cable

Product Name	Length L (m)
<b>CC010VPRE</b>	1
<b>CC020VPRE</b>	2
<b>CC030VPRE</b>	3
<b>CC050VPRE</b>	5
<b>CC070VPRE</b>	7
<b>CC100VPRE</b>	10
<b>CC150VPRE</b>	15
<b>CC200VPRE</b>	20

# Extension Cable Sets (RoHS), Flexible Extension Cable Sets (RoHS)

## Product Line

### Extension Cable Sets

#### For Standard Motor



Motor Cable

Product Name	Length L (m)
<b>CC010VPF</b>	1
<b>CC020VPF</b>	2
<b>CC030VPF</b>	3
<b>CC050VPF</b>	5
<b>CC070VPF</b>	7
<b>CC100VPF</b>	10
<b>CC150VPF</b>	15

#### For Electromagnetic Brake Motor



Motor Cable



Electromagnetic Brake Cable

Product Name	Length L (m)
<b>CC010VPFBT</b>	1
<b>CC020VPFBT</b>	2
<b>CC030VPFBT</b>	3
<b>CC050VPFBT</b>	5
<b>CC070VPFBT</b>	7
<b>CC100VPFBT</b>	10
<b>CC150VPFBT</b>	15

#### For Encoder Motor



Motor Cable



Encoder Cable

Product Name	Length L (m)
<b>CC010VPFET</b>	1
<b>CC020VPFET</b>	2
<b>CC030VPFET</b>	3
<b>CC050VPFET</b>	5
<b>CC070VPFET</b>	7
<b>CC100VPFET</b>	10
<b>CC150VPFET</b>	15

### Flexible Extension Cable Sets

#### For Standard Motor



Motor Cable

Product Name	Length L (m)
<b>CC010VPR</b>	1
<b>CC020VPR</b>	2
<b>CC030VPR</b>	3
<b>CC050VPR</b>	5
<b>CC070VPR</b>	7
<b>CC100VPR</b>	10
<b>CC150VPR</b>	15

#### For Electromagnetic Brake Motor



Motor Cable



Electromagnetic Brake Cable

Product Name	Length L (m)
<b>CC010VPRBT</b>	1
<b>CC020VPRBT</b>	2
<b>CC030VPRBT</b>	3
<b>CC050VPRBT</b>	5
<b>CC070VPRBT</b>	7
<b>CC100VPRBT</b>	10
<b>CC150VPRBT</b>	15

#### For Encoder Motor



Motor Cable



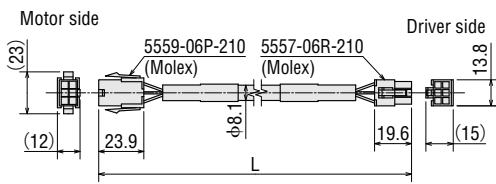
Encoder Cable

Product Name	Length L (m)
<b>CC010VPRET</b>	1
<b>CC020VPRET</b>	2
<b>CC030VPRET</b>	3
<b>CC050VPRET</b>	5
<b>CC070VPRET</b>	7
<b>CC100VPRET</b>	10
<b>CC150VPRET</b>	15

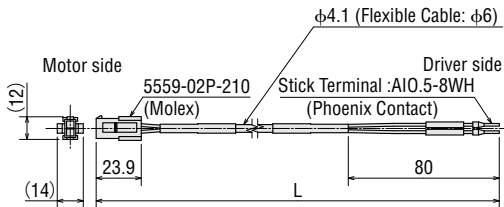
## Dimensions Unit = mm (in.)

### Connection Cable

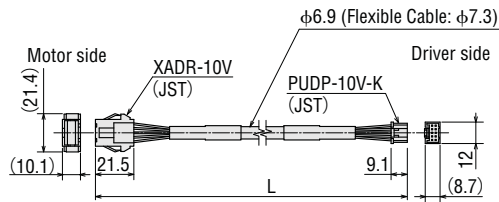
#### Motor Cable



#### Electromagnetic Brake Cable

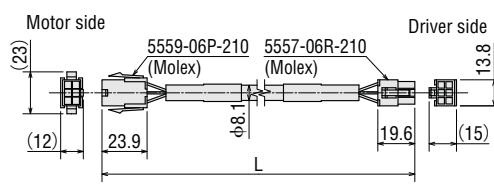


#### Encoder Cable

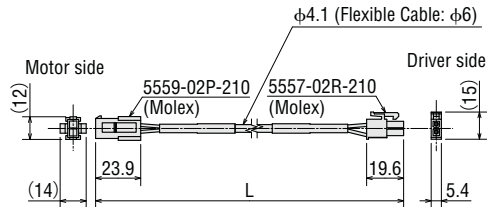


### Extension Cable

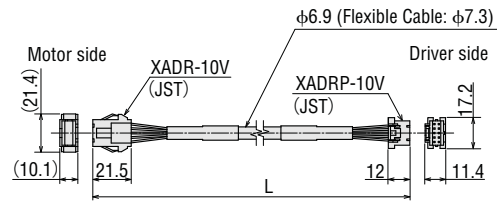
#### Motor Cable



#### Electromagnetic Brake Cable

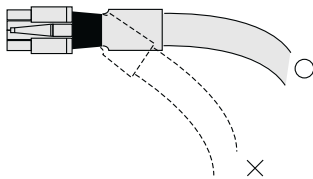


#### Encoder Cable

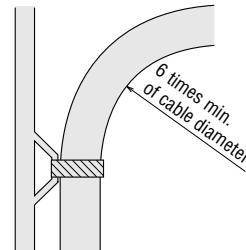


## Notes on Use of a Flexible Cable

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

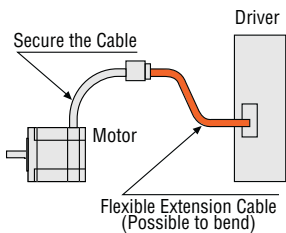


② For the bending radius, use at six times or more of the cable diameter.

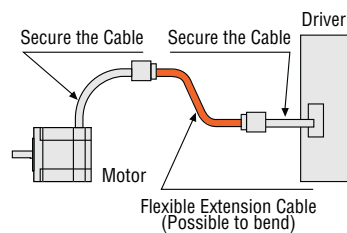


③ The cable wired from the motor or the cable comes as a set of the motor should not be bended. Use a flexible motor cable, if the cable will be bend.

#### Flexible Connection Cable



#### Flexible Extension Cable



# Flexible Couplings

Flexible Couplings compatible for **RK II** series are available.  
The user can select easily depending on size/purpose of the motor or gear.



## Coupling Selection

Coupling Type \ Motor Type	Motor Type		Purpose
	Standard Type	TS Geared Type PS Geared Type Harmonic Geared Type	
<b>MCV</b> Coupling	⊙	—	High accuracy positioning, control vibration
<b>MC</b> Coupling	⊙	—	High accuracy positioning
<b>MCS</b> Coupling	○	⊙	High strength and High accuracy positioning

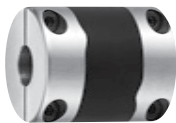
## Models and characteristics of coupling

### MCV Couplings

One piece contains antivibration rubber and aluminum base alloy.  
High in torsional stiffness because it has same characteristics for both normal rotation and reverse rotation, suitable for high accuracy positioning operation for stepping motor.

#### Features

- An antivibration rubber reduces the vibration generated at the motor.
- High response.
- No backlash.
- Electrical insulating properties.



### MC Couplings

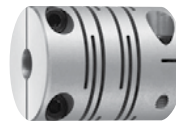
One piece slits-designed coupling.  
Because of its high torsional stiffness and low inertia, the suitable for high-speed positioning operation and high-response control.

#### Features

- No backlash.
- Low inertia.
- High torsional stiffness, high response.
- Two types - Set screw type and clamping type are available.



Set Screw Type



Clamping Type

### MCS Couplings

This coupling has three pieces structure contains an Aluminum Hub, a spider (material: polyurethane).  
The simple structure can transmit high-torque such as torque on geared type reliably.

#### Features

- High strength (usable for geared motor) is now available.
- No backlash.
- Controls the vibration generated by the motor.



## Selecting a Coupling

### Standard Type

The following examples explain the procedures in selecting a coupling by driven shaft diameter and product name.

Example: Product Name: **RKS566AC-1** Driven Shaft Diameter:  $\phi 8$  mm

1. The coupling type that matches **RKS566AC-1** from the coupling selection table is **MCV25** or **MC25**.
2. The inner diameter of the coupling according to the motor shaft will be **10** ( $\phi 10$  mm), and will be **8** ( $\phi 8$  mm) according to the driven shaft diameter.
3. In the coupling product name, smaller inner diameters come before larger ones, thus the coupling product name will be **MCV250810**, **MC250810S** (Set screw type) or **MC250810C2** (clamping Type).

- When the inner diameter is  $\phi 6.35$  mm, the number is **06A**. For example, when the coupling type is **MCV25**, the motor shaft diameter is **10** ( $\phi 10$  mm), and the driven shaft diameter is **06A** ( $\phi 6.35$  mm), the coupling product name will be **MCV2506A10**.

### TS Geared Type, PS Geared Type and Harmonic Geared Type

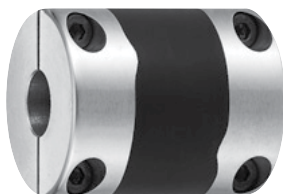
The following examples explain the procedures in selecting a coupling by driven shaft diameter and product name.

Example: Product Name: **RKS545AC-PS10-1** Driven Shaft Diameter:  $\phi 12$  mm

1. The coupling type that matches **RKS545AC-PS10-1** from the coupling selection table is **MCS30**.
2. The inner diameter of the coupling according to the motor shaft will be **10** ( $\phi 10$  mm), and will be **12** ( $\phi 8$  mm) according to the driven shaft diameter.
3. In the coupling product name, smaller inner diameters come before larger ones, thus the coupling product name will be **MCS301012**.

- When the inner diameter is  $\phi 6.35$  mm, the number is **F04**. For example, when the coupling type is **MCS30**, the motor shaft diameter is **06** ( $\phi 6$  mm), and the driven shaft diameter is **F04** ( $\phi 6.35$  mm), the coupling product name will be **MCS3006F04**.

# MCV Couplings RoHS



## Product Line

Product Name
<b>MCV15</b> <input type="text"/>
<b>MCV19</b> <input type="text"/>
<b>MCV25</b> <input type="text"/>
<b>MCV30</b> <input type="text"/>

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

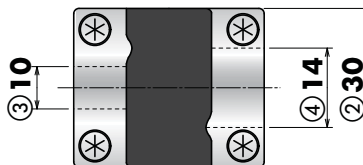
## Product Number Code

# MCV 30 10 14

①      ②      ③      ④

①	<b>MCV</b> Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (smaller inner diameter) ( <b>06A</b> represents $\phi 6.35$ mm)
④	Inner Diameter d2 (larger inner diameter)

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



## Coupling Selection Table

Type	Frame Size	Product Name	Coupling Type	Motor Shaft Diameter mm		Driven Shaft Diameter    mm								
						<b>04</b>	<b>05</b>	<b>06</b>	<b>06A</b>	<b>08</b>	<b>10</b>	<b>12</b>	<b>14</b>	<b>15</b>
						φ4	φ5	φ6	φ6.35	φ8	φ10	φ12	φ14	φ15
Standard Type	42 mm	<b>RKS543</b> <b>RKS544</b> <b>RKS545</b>	<b>MCV15</b>	<b>06</b>	φ6	●	●	●						
	60 mm	<b>RKS564</b> <b>RKS566</b> <b>RKS569</b>	<b>MCV25</b>	<b>10</b>	φ10			●	●	●	●			
	85 mm	<b>RKS596</b> <b>RKS599</b> <b>RKS5913</b>	<b>MCV30</b>	<b>14</b>	φ14				●	●	●	●	●	

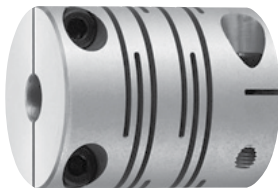
For more detail, refer to our website or contact to the customer center.

<http://www.orientalmotor.co.th/>

# MC Couplings RoHS



Set screw type



Clamping Type

## Product Line

● Set screw type

Product Name
<b>MC16</b> □ <b>S</b>
<b>MC25</b> □ <b>S</b>
<b>MC32</b> □ <b>S</b>
<b>MC40</b> □ <b>S</b>

● Clamping Type

Product Name
<b>MC16</b> □ <b>C2</b>
<b>MC25</b> □ <b>C2</b>
<b>MC32</b> □ <b>C2</b>
<b>MC40</b> □ <b>C2</b>

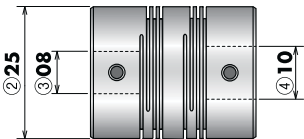
● A number indicating the coupling inner diameter is entered where the box □ is located within the product name.

## Product Number Code

**MC 25 08 10 S**

① ② ③ ④ ⑤

①	<b>MC</b> Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (smaller inner diameter) ( <b>06A</b> represents $\phi 6.35$ mm)
④	Inner Diameter d2 (larger inner diameter)
⑤	Fastening method <b>S</b> : Set Screw Type <b>C2</b> : Clamping Type



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

## Coupling Selection Table

Type	Frame Size	Product Name	Coupling Type	Motor Shaft Diameter mm		Driven Shaft Diameter   mm									
						<b>04</b>	<b>05</b>	<b>06</b>	<b>06A</b>	<b>08</b>	<b>10</b>	<b>12</b>	<b>14</b>	<b>15</b>	
						φ4	φ5	φ6	φ6.35	φ8	φ10	φ12	φ14	φ15	
Standard Type	42 mm	<b>RKS543</b> <b>RKS544</b> <b>RKS545</b>	<b>MC16</b>	<b>06</b>	φ6	○	◎	○		○					
	60 mm	<b>RKS564</b> <b>RKS566</b> <b>RKS569</b>	<b>MC25</b>	<b>10</b>	φ10			◎	◎	◎	◎	○			
	85 mm	<b>RKS596</b>	<b>MC32</b>	<b>14</b>	φ14					◎	◎	◎	◎	○	
		<b>RKS599</b> <b>RKS5913</b>	<b>MC40</b>	<b>14</b>	φ14						◎	◎	◎	◎	

◎ Common for the Set Screw Type and the Clamping Type

○ Only for Set Screw Type

For more detail, refer to our website or contact to the customer center.

<http://www.orientalmotor.co.th/>

# MCS Couplings (RoHS)



## Product Line

Product Name
<b>MCS20</b> <input type="checkbox"/>
<b>MCS30</b> <input type="checkbox"/>
<b>MCS40</b> <input type="checkbox"/>
<b>MCS55</b> <input type="checkbox"/>
<b>MCS65</b> <input type="checkbox"/>

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

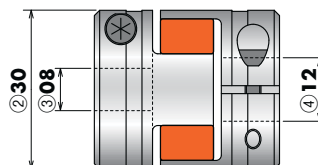
## Product Number Code

# MCS 30 08 12

①      ②      ③      ④

①	<b>MCS</b> Couplings
②	Outer Diameter of Coupling
③	Inner Diameter d1 (smaller inner diameter) ( <b>F04</b> represents $\phi 6.35$ mm)
④	Inner Diameter d2 (larger inner diameter) ( <b>F04</b> represents $\phi 6.35$ mm)

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



## Coupling Selection Table

Type	Frame Size	Product Name	Gear Ratio	Coupling Type	Motor Shaft Diameter mm	Driven Shaft Diameter mm													
						05	06	F04	08	10	12	14	15	16	18	20	22	24	25
						$\phi 5$	$\phi 6$	$\phi 6.35$	$\phi 8$	$\phi 10$	$\phi 12$	$\phi 14$	$\phi 15$	$\phi 16$	$\phi 18$	$\phi 20$	$\phi 22$	$\phi 24$	$\phi 25$
TS Geared Type	42 mm	<b>RKS543</b>	<b>3.6, 7.2, 10, 20, 30</b>	<b>MCS20</b>	<b>06</b> $\phi 6$	●	●	●	●	●									
	60 mm	<b>RKS564</b>	<b>3.6, 7.2, 10, 20, 30</b>	<b>MCS30</b>	<b>10</b> $\phi 10$		●	●	●	●	●	●	●	●					
	90 mm	<b>RKS596</b>	<b>3.6, 7.2, 10, 20, 30</b>	<b>MCS55</b>	<b>18</b> $\phi 14$						●	●	●	●	●	●	●	●	
PS Geared Type	42 mm	<b>RKS545</b>	<b>5</b>	<b>MCS20</b>	<b>10</b> $\phi 10$	●	●	●	●	●									
			<b>7.2, 10</b>	<b>MCS30</b>	<b>10</b> $\phi 10$		●	●	●	●	●	●	●	●					
	60 mm	<b>RKS543</b>	<b>25, 36, 50</b>	<b>MCS40</b>	<b>10</b> $\phi 10$				●	●	●	●	●	●	●	●			
			<b>5</b>	<b>MCS40</b>	<b>12</b> $\phi 12$				●	●	●	●	●	●	●	●			
		<b>RKS566</b>	<b>7.2, 10</b>	<b>MCS55</b>	<b>12</b> $\phi 12$						●	●	●	●	●	●	●	●	
			<b>25, 36, 50</b>	<b>MCS55</b>	<b>12</b> $\phi 12$						●	●	●	●	●	●	●	●	
	90 mm	<b>RKS599</b>	<b>5</b>	<b>MCS55</b>	<b>18</b> $\phi 18$						●	●	●	●	●	●	●	●	
			<b>7.2, 10</b>	<b>MCS65</b>	<b>18</b> $\phi 18$									●	●	●	●	●	●
Harmonic Geared Type	42 mm	<b>RKS543</b>	<b>50, 100</b>	<b>MCS40</b>	<b>10</b> $\phi 10$				●	●	●	●	●	●	●	●			

For more detail, refer to our website or contact to the customer center.

<http://www.orientalmotor.co.th/>



# Motor Mounting Brackets (RoHS)

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

## Product Line

### Standard Type

Material: Aluminum Alloy

Product Name	Motor Frame Size	Applicable Product
<b>PAFOP</b>	42 mm	<b>RKS543</b>
<b>PALOP</b>		<b>RKS544</b> <b>RKS545</b>
<b>PAL2P-5</b>	60 mm	<b>RKS564</b> <b>RKS566</b> <b>RKS569</b>
<b>PAL4P-5</b>	85 mm	<b>RKS596</b> <b>RKS599</b> <b>RKS5913</b>

- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction.
- These mounting brackets can be perfectly fitted to the pilot of the stepping motors. (Except for **PALOP**)

### TS Geared Type

Material: Aluminum Alloy

Product Name	Motor Frame Size	Applicable Product
<b>SOLOB</b>	42 mm	<b>RKS543</b>
<b>SOL2M4</b>	60 mm	<b>RKS564</b>
<b>SOL5M8</b>	90 mm	<b>RKS596</b>

### PS Geared Type

Material: SS400

Surface Treatment: electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
<b>PLA60G</b>	60 mm	<b>RKS564</b> <b>RKS566</b>
<b>PLA90G</b>	90 mm	<b>RKS596</b> <b>RKS599</b>

- The mounting bracket base is built with holes large enough to allow for alignment adjustments in the horizontal direction.
- Motor Mounting Screws are included.

### Harmonic Geared Type

Material: SS400

Surface Treatment: Electroless nickel plating

Product Name	Motor Frame Size	Applicable Product
<b>PLA60H</b>	60 mm	<b>RKS564</b>
<b>PLA90H</b>	90 mm	<b>RKS596</b>

- Fixed portion on mounting bracket is slotting shaped, it make easy to adjust tension of belt after mounting the motor.
- Motor Mounting Screws are included.

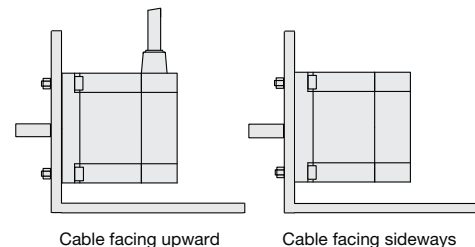
The other shapes of mounting bracket are also available.  
For more detail, please contact to our branch/ sales office or visit our website.

<http://www.orientalmotor.co.th/>

## Motor Mounting Direction

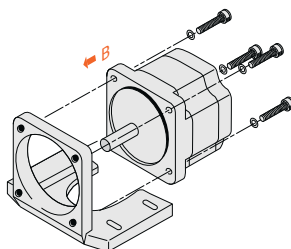
The motor cable comes out at right angles to the motor. Orient the motor so that the cable faces either upward or sideways.

- For **PLA60G**, **PLA90G**, **PLA60H**, **PLA90H**: The cable can face downward.



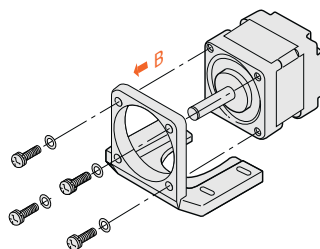
## How to mount the motor

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



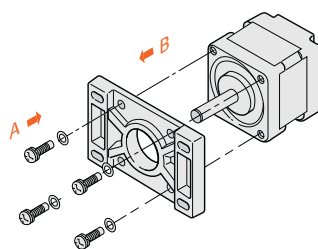
- ① Use the screws provided to secure the motor to the mounting bracket.
- ② Attach the motor from the direction shown by the arrow (B).

### 2 PALOP, SOLOB



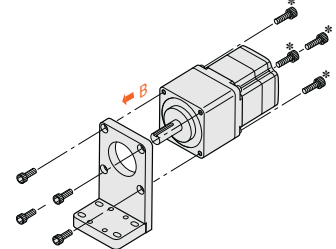
- ① Use the screws provided to secure the motor to the mounting bracket.
- ② Attach the motor from the direction shown by the arrow (B).

### 3 PAFOP



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

### 4 PLA60G, PLA90G, PLA60H, PLA90H



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

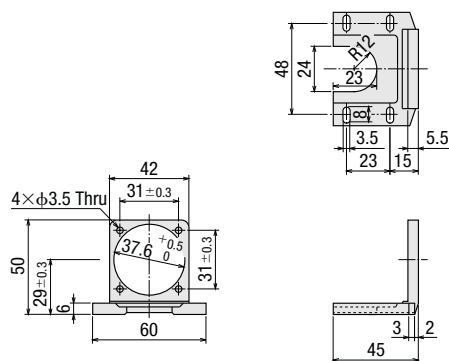
\*Motor mounting hole on **PLA90H** is processed with tapping. Insert the screw from direction B.

## Dimensions (Unit = mm)

### PALOP

Mass : 35 g

CAD B139

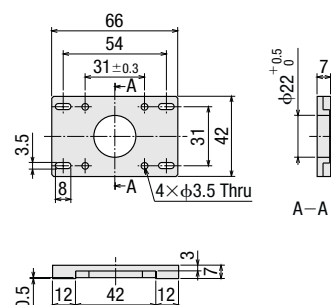


- Mounting Screws : M3 Length 10 mm  
Included 4 pieces

### PAFOP

Mass : 30 g

CAD B140

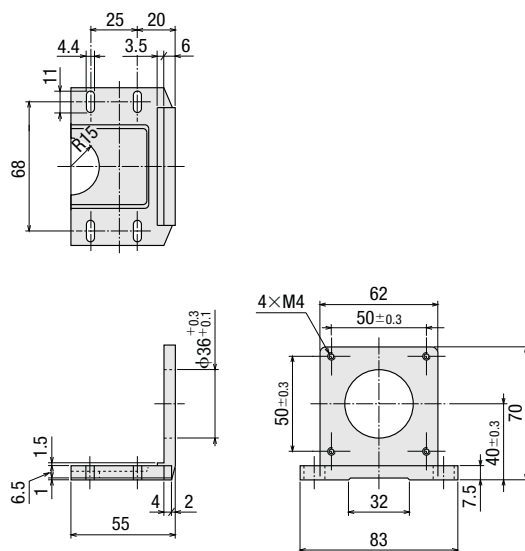


- Mounting Screws : M3 Length 7 mm  
Included 4 pieces

### PAL2P-5

Mass : 110 g

CAD B143

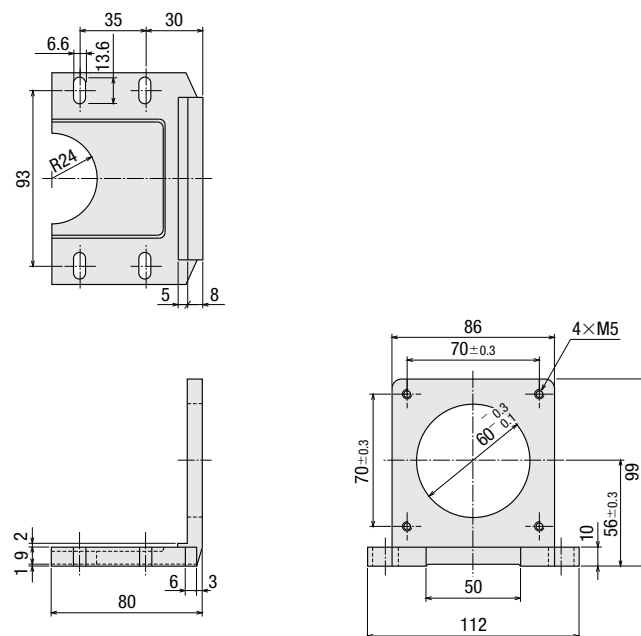


- Mounting Screws : M4 Length 12 mm  
Included 4 pieces

### PAL4P-5

Mass : 250 g

CAD B145

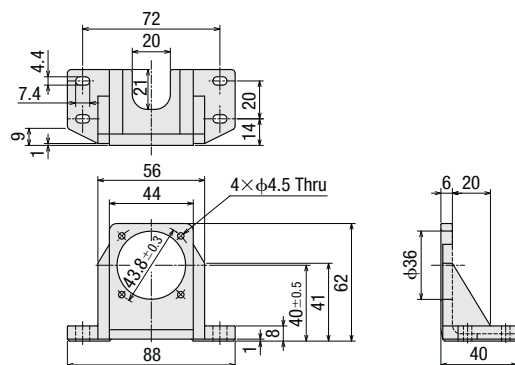


- Mounting Screws : M5 Length 16 mm  
Included 4 pieces

### SOLOB

Mass : 85 g

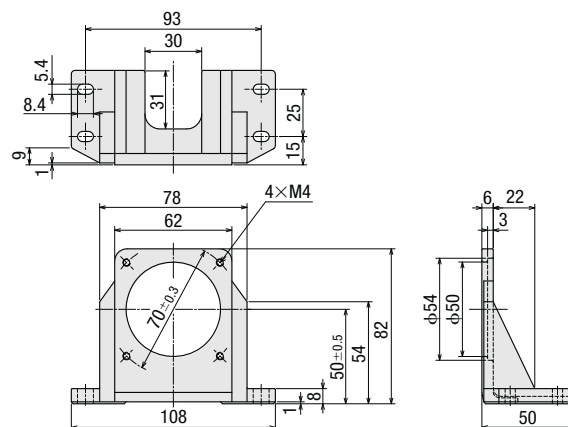
CAD B267



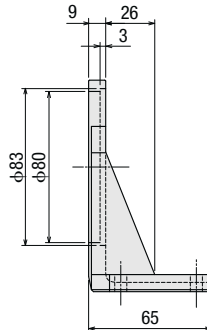
### SOL2M4

Mass : 135 g

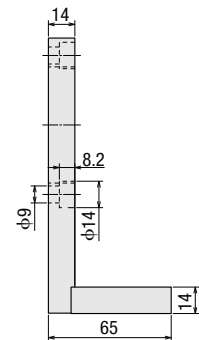
CAD A321



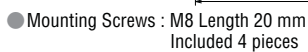
Mass : 270 g  
**CAD** A239



Mass : 0.7 kg  
**CAD** B634

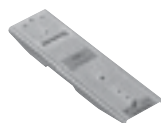


**PLA90G**  
Mass : 1.6 kg  
**CAD** B637



Use to mount the driver on DIN rail.

Material: SPCC Surface Treatment: Trivalent Chromate

**MADP02**

- DIN rail should be mounted on highly thermal conductive flat metal plate (comparable to 200 mm x 200 mm x 2 mm). Be sure to keep the ambient temperature of the driver 0~+40°C.

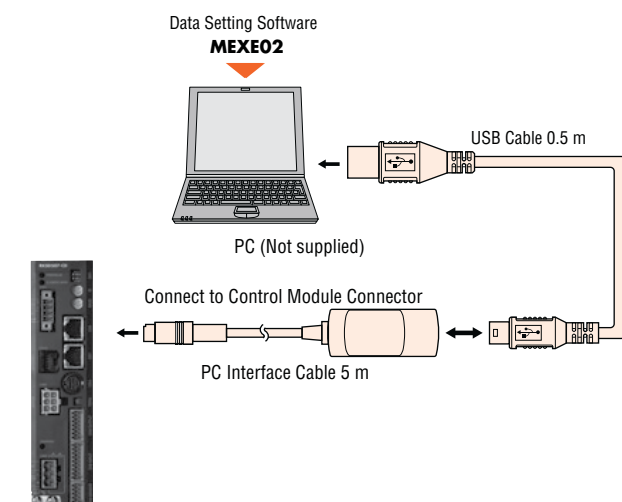
# Communication Cable for Data Setting Software RoHS

The cable to connect the PC with data setting software and driver installed.

## Product Line

Product Name	Applicable Product
<b>CC051F-USB</b>	Built-in Controller Type

## Connection between Computer and Driver



### Note

- To connect with PC, exclusive device driver should be installed.

## Data Setting Software **MEXE02**

Data Setting Software can be downloaded from our website. Also we provide Data Setting Software with CD-ROM.

For more detail, please contact our website or contact our branch/sales office.  
<http://www.orientalmotor.co.th/>



## Operating Environment

### Operating Systems

- Microsoft Windows 2000 Professional Service Pack 4 Rollup 1 provided by Microsoft Corp. must be applied. To confirm application of Rollup 1, please check it at "Add or Remove Programs."

For following OS, supports only 32-bit (x86) or 64-bit (x64) version.

- Microsoft Windows XP Home Edition Service Pack 3
- Microsoft Windows XP Professional Service Pack 2
- Microsoft Windows XP Professional Service Pack 3\*
- Microsoft Windows Vista Home Basic Service Pack 2
- Microsoft Windows Vista Home Premium Service Pack 2
- Microsoft Windows Vista Business Service Pack 2
- Microsoft Windows Vista Ultimate Service Pack 2
- Microsoft Windows Vista Enterprise Service Pack 2
- Microsoft Windows 7 Starter Service Pack 1
- Microsoft Windows 7 Home Premium Service Pack 1
- Microsoft Windows 7 Professional Service Pack 1
- Microsoft Windows 7 Ultimate Service Pack 1
- Microsoft Windows 7 Enterprise Service Pack 1

\* Supports 32-bit (x86) version only

### Computer

Recommended CPU*1	Intel Core Processor 2 GHz or more (The OS must be supported.)
Display	high resolution video adapter and monitor, XGA (1024x768) or more.
Recommended Memory*1	32-bit (x86) version: 1 GB or more 64-bit (x64) version: 2 GB or more
Hard Disk*2	Available disk space of 30 MB or more
USB Port	USB 1.1 1 port
Disk Device	CD-ROM drive (use for installation of software)

\*1 The OS operating conditions must be satisfied.

\*2 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 of 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.

- Please refer to our website for the latest update of operating environment.

### Note

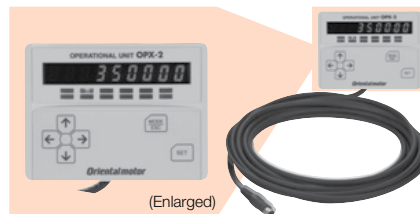
- The required volume of memory or hard disk may vary depending on the system environment.

# Control Module RoHS

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.

## Product Line

Product Name	Applicable Product
<b>OPX-2A</b>	Built-in Controller Type



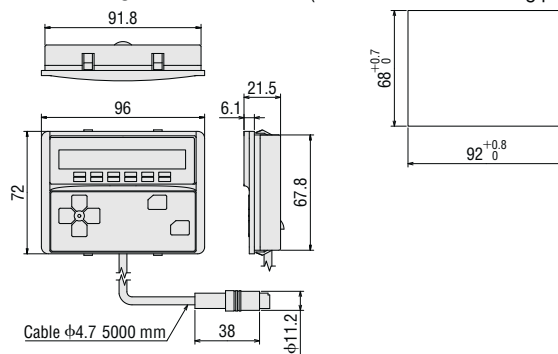
## Dimensions (Unit = mm)

### Control Module

Mass : 0.25 kg CAD B453

### Panel Cut-Out for Control Module

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



# Driver Cable

# General-Purpose Cables RoHS

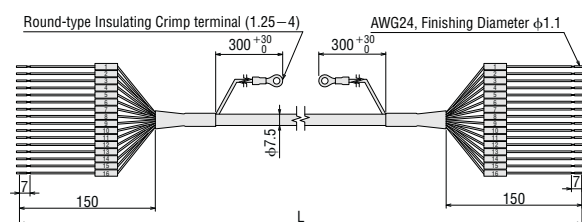


General-purpose multiconductor cable which is convenient for connection between the driver and the host controller.

## Product Line

Product Name	Length (m)
<b>CC16D005B-1</b>	0.5
<b>CC16D010B-1</b>	1.0
<b>CC16D015B-1</b>	1.5
<b>CC16D020B-1</b>	2.0

## Dimensions (Unit = mm)



# RS-485 Communication Cable RoHS

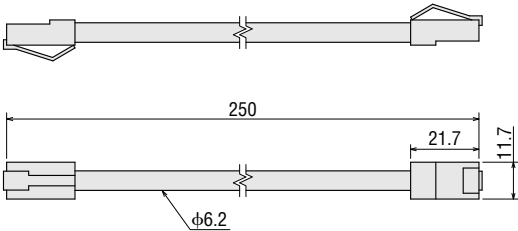
The cable to link drivers when the driver is being operated under multi-axis mode, it also connect the network converter and driver.



## Product Line

Product Name	Length (m)	Applicable Product
CC002-RS4	0.25	Built-in Controller Type

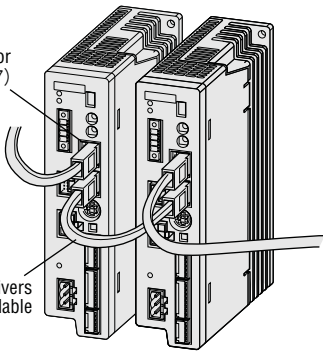
## Dimensions (Unit = mm)



● Example of connection

RS-485 Communication Connector (CN6/CN7)

Link between drivers is available



# Network Convertors 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
EtherCAT Compatible	NETC01-ECT



NETC01-CC



NETC01-M2



NETC01-M3



NETC01-ECT



# Controller

## Stored Program Controller

### EMP400 Series (RoHS)

#### Feature

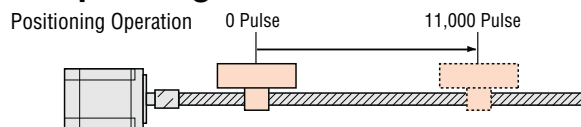
This features useful function designed based on experience of the Motor Manufacturer, such as Pulse Oscillation function, sequence programs and I/O control function.

- Input up to 32 sequence programs.
- Various operation commands are available
- Teaching Function

The amount of travel can be changed by jogging the load into position via the optional **OP300** interface.

- No exclusive software is needed.

#### Sample Program



#### Product Line

Product Name	Number of Axes	Connector
<b>EMP401-1</b>	Single Axis	—
<b>EMP401-2</b>		with connectors
<b>EMP402-1</b>	Dual Axis	—
<b>EMP402-2</b>		with connectors

- Control Module **OP300**

- [1] VS1  $\hookrightarrow$  500 : Start-up speed 500 Hz
- [2] V1  $\hookrightarrow$  1000 : Operating Speed 1,000 Hz
- [3] T1  $\hookrightarrow$  30.0 : Acceleration/Deceleration Rate 30.0 ms/kHz
- [4] D1  $\hookrightarrow$  +11000 : Distance CW 11,000 pulse to CW direction
- [5] INC1 : Relative Positioning Operation

# Connector — Terminal Block Conversion Unit (RoHS)

To connect **EMP** Series (half-pitch connector) to the Terminal block

- Plate to indicate signal name is included in package to detect the signal easily.
- DIN rail mounting is available

#### Product Line

Product Name	No. of PIN	Length of cable (m)
<b>CC50T10E</b>	50	1

- Dimensions are available on our website, or please contact to Customer Center. <http://orientalmotor.co.th/>





### 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.
- The price of all products listed in this catalogue does not include the consumption tax etc.
- For details of the products, please contact the nearest dealer, sales office or the following "Order Support Center" or "Customer Support Center".
- CCLink is a registered trademark of CC-Link Partner Association.
- MECHATROLINK- II is a registered trademark of YASUKAWA ELECTRIC CORPORATION.
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For more information please contact:



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