Orientalmotor

New 0.72° Stepper Motor and Driver Packages

RKII Series

FLEX Built-in Controller (Stored Data) Type

Pulse Input Type

BEST
PERFORMANCE & PRICE

Introducing a re-invented, affordable and high performance
Stepper Motor and Driver Package.

BEST
PERFORMANCE & PRICE

SAVE

PRICE & ENERGY

EASY

CONNECTION & SYSTEM

HIGH

PERFORMANCE & RELIABILITY

New 0.72° Stepper Motor and Driver Packages

RKⅡ Series

SAVE
PRICE & ENERGY

Reduction of total cost.

Price

High-efficiency with Low Price

The **RKⅡ** Series offers significant improvements in motor performance, driver operation and functions compared to conventional products and is available at a new lower price.

Conventional Model:
RK Series
□60 mm (2.36 in.)
Standard Type
$612.00

RKⅡ Series
Pulse Input Type
□60 mm (2.36 in.)
Standard Type
$506.00

Space Saving

Slim and Compact

This new driver was created by re-arranging the internal components and optimizing the usage of the space within the driver. The result, 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℃ (+32~+104°F).

New slim & compact driver

57 mm (2.24 in.)   40 mm (1.57 in.)

165 mm (6.30 in.)   160 mm (6.30 in.)

Conventional Model
RK Series
Driver

RKⅡ Series
Driver

57 mm (2.24 in.)   20 mm (0.79 in.)
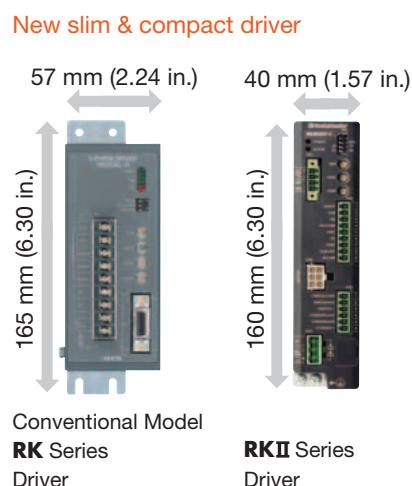
Conventional Model:
RK Series
Drivers

365 mm (14.37 in.)

40 mm (1.57 in.)
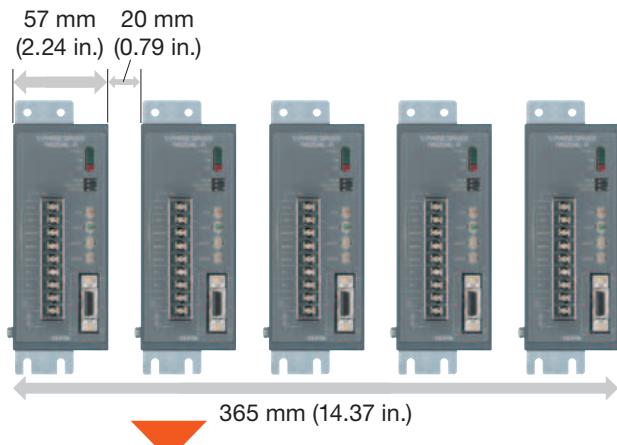
RKⅡ Series
Drivers
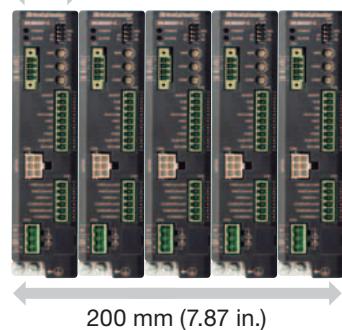
Installation Width
45% Reduction

200 mm (7.87 in.)

4
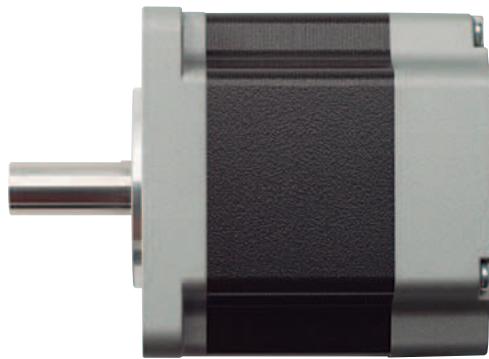
High Efficiency

Reduces power consumption by up to 47%

By optimizing the motor material, up to 47% of the power consumption has been reduced. This results in the reduced consumption of electricity and CO_2 emission.

Lower Heat Generation

Continuous Operation is Achieved

By utilizing high-efficiency technology to reduce the motor heat, continuous operation is achieved. In addition, reduction of heat output means less reliance on cooling fans and heat sinks.

● **Power Consumption Comparison**

47% less power consumption
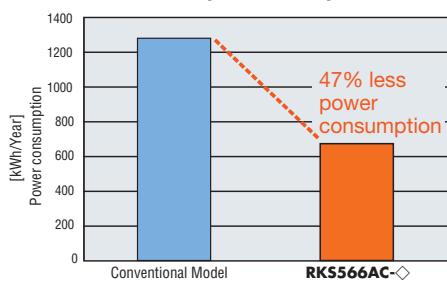
Operating Condition
· Spin Speed: 1000 r/min
· Load torque: 0.47 N·m (66.6 oz·in)
· Operating time: 24 hours
 (Operation 70%, Stand-by 25%, Off 5%)
 365 days/year

● **Motor Surface Temperature Comparison under the Same Conditions**
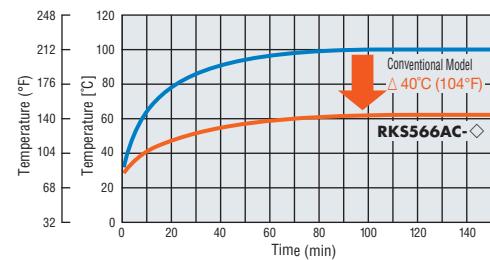
● **Power Consumption Comparison**

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_2 emission equivalent to power consumption ✱	[kg/year]	533	282	251 kg/year	Reduced by 47%

✱: Conversion rate: 0.416 kg/kWh

● **Distribution by thermography**

RKS566AC-◇   Conventional Model

99.9°C (212°F)
90.9°C (196°F)
81.9°C (179°F)
72.9°C (163°F)
63.9°C (147°F)
54.9°C (131°F)
45.9°C (115°F)
36.9°C (98°F)
27.9°C (82°F)
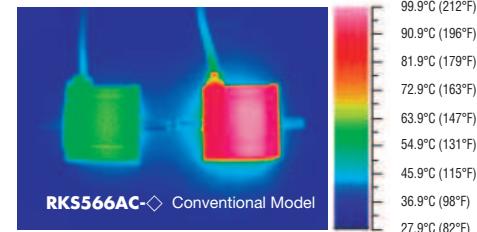
EASY
CONNECTION & SYSTEM

Easy to wire, easy to select.

Wiring

Easy Wiring

The new I/O connector does not require a screw and also eliminates 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
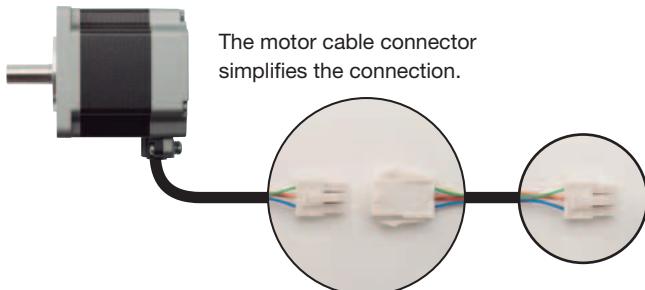
The motor cable connector simplifies the connection.

● **I/O Connector Wiring**

· No soldering
· No crimping tools

· Wiring time reduction
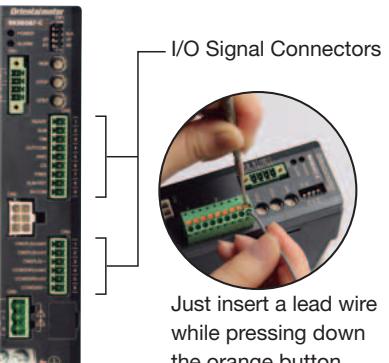
I/O Signal Connectors

Just insert a lead wire while pressing down the orange button with a screwdriver or pointed object.
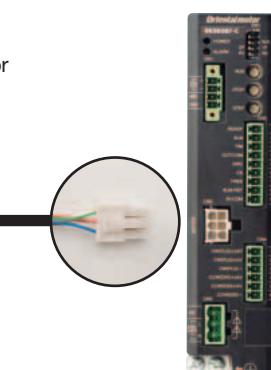
Selection

Easy Selection

● **Free Motor Selection Service for Customers:**
Send us a motor selection inquiry via our website, fax or e-mail.

● **Free Online Motor Sizing Tool Available at www.orientalmotor.com**
Our free online sizing tool is designed to make sizing a motor for your application fast and easier.

2 driver types 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 operating system.

Pulse Input Type

Power Supply Module	CPU Module	Positioning Module

Pulse Input

The motor can be controlled using a pulse generator. Operating data registered in the pulse generator is selected from the PLC to operate the motor.

Built-in Controller (Stored Data) Type FLEX

● Controlled by I/O

Power Supply Module	CPU Module	I/O Module

① I/O

● Controlled by serial communication

Power Supply Module	CPU Module	Serial Module

② Modbus (RTU)

● Controlled by Computer or Touch Screen

Touch Screen	or	Computer

Serial Communication Board

② Modbus (RTU)

● Controlled by FA Network

Power Supply Module	CPU Module	FA Network Module

③ FA Network

CC-Link
MECHATROLINK-Ⅱ
MECHATROLINK-Ⅲ
EtherCAT

Network Converter

② RS-485

Set the operating data to driver, and choose the command operation from the PLC.
To connect with the PLC, choose from
① I/O ② Modbus (RTU)/RS-485
③ FA network.

In case, the connection is connected via Modbus (RTU)/RS-485 or FA network, the operating data can be rewritten as needed.

● 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 saves space and simplifies 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 module. There is also a function for simultaneously starting multiple axes. The module 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), CC-Link, MECHATROLINK or EtherCAT communication is possible.
Over these links, operating data and parameters can be set, and operation commands can be sent to the driver.

● Programming the Driver

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 the data easily with the control module (sold separately), data setting software or via RS-485 communication.

Basic setting
(Factory setting)

Driver

Motor

Connection Cable
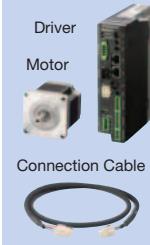
Operation Data Settings Parameter Changes

or

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

Data Setting Software
(**MEXE02**)

● Setting via RS-485 communication is possible.
● Data setting software can be downloaded from our website

EASY

CONNECTION & NETWORK
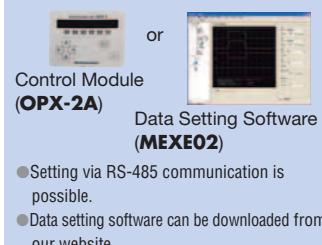
Built-in Controller (Stored Data) Type

Example of connection and control with the Built-in Controller (Stored Data) Type FLEX.

I/O Control

Using a Switch Box

Since operating data is set in the driver, the motor can start and stop with hand switches.
Easy control without the use of a PLC is possible.

START   STOP
CCW   CW
START   STOP
CCW   CW

Switch Box

`Simple Control` `Low Cost`
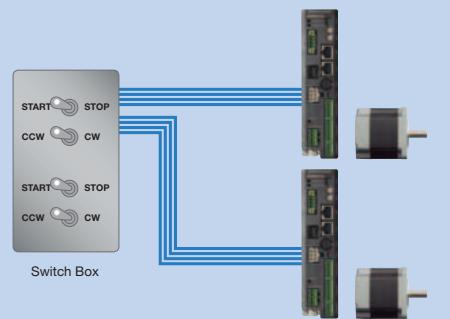
### Using PLC (No positioning control module is required)

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

Example: System requires positioning control module

Positioning Control Module
I/O Module
CPU Module
Power Supply Module

Stepper Motor Unit
Driver   Stepper Motor

I/O Module
CPU Module
Power Supply Module

`Simple Control` `Low Cost` `Space Saving`
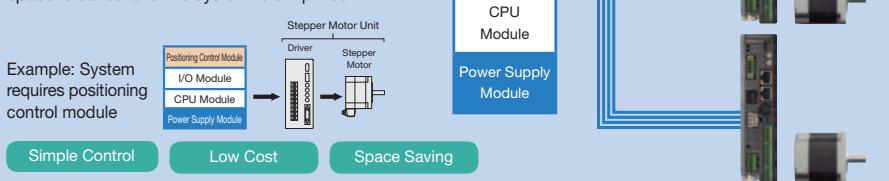
Using a PLC and a Touch Screen

The motor normally starts and stops via I/O, and Modbus (RTU) communication is used when setting the alarm and operating data.
Setting changes as well as monitor and alarm displays are performed on the touch screen (HMI). If multiple configurations exist, parameters can be entered on the touch screen, reducing the burden of combining programs or sequences.

Touch Screen (HMI)

I/O Module
CPU Module
Power Supply Module

`Simple Control` `Suitable for one or more products`
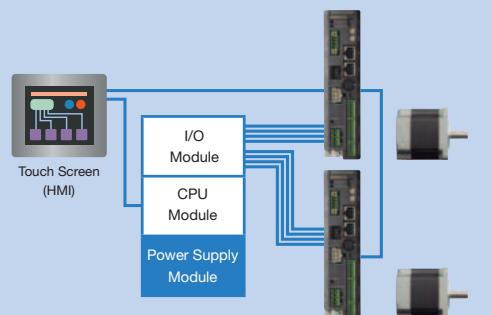
Network Control

CC-Link Control / MECHATROLINK Control / EtherCAT Control

CC-Link communication, MECHATROLINK communication and EtherCAT communication are available by using a 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 axes max
■ MECHATROLINK: 16 axes max
■ EtherCAT: 16 axes max

FA Network Module
CPU Module
Power Supply Module

RS-485

Network Converter

CC-Link
MECHATROLINK
EtherCAT.

`Simple Control` `Simple Wiring` `Multi-axis control, lower cost`

● CC-Link is a registered trademark of CC-Link Partner Association. MECHATROLINK a registered trademark of MECHATROLINK Members Association.
● EtherCAT is a registered trade mark licensed by Beckhoff Automation in Germany.
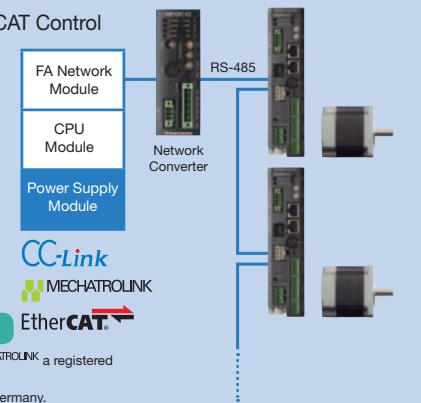
FLEX FLEX is a generic name of the products which support Factory Automation network control via I/O control, Modbus (RTU) control and network converter.

Built-in Controller Type
FLEX

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 module. There is also a group sending function for simultaneously starting multiple axes. The protocol supports Modbus (RTU), enabling connection with devices such as touch-screen panel computers and PCs.

Serial Module
CPU Module
Power Supply Module

Simple Control   Simple Wiring   Compatible with serial module of several manufactures
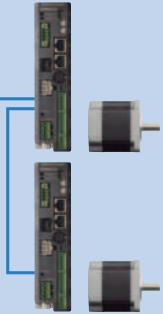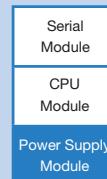
Modbus (RTU) control via PC

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

PC

Serial Module

Simple Control   Simple Wiring   Motor Control by PC
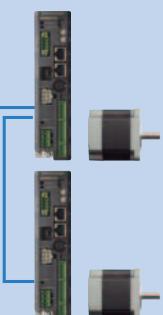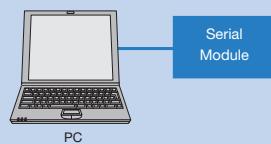
Simple Connection with a Touch Screen

Direct connection with a touch screen is available via Modbus (RTU) communication.
Operating data, parameters, alarm record and trial operation can be controlled without a PLC.
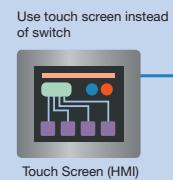
Use touch screen instead of switch

Touch Screen (HMI)

✻ **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

Built-in controller type is compatible with several types of system or network.

Introduction of Features

Group Sending Function

The group sending function simultaneously starts the multi-axes via Modbus (RTU) or FA network.
Send operation command to the main driver, other drivers in the same group will start operation simultaneously

● **Modbus (RTU):** Simultaneous start, change in distance, velocity and monitoring.
● **FA Network**: Simultaneous start only

● Modbus (RTU) Communication

Serial Module
CPU Module
Power Supply Module

Group 1
Main   Sub   Sub
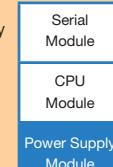
Multi-axis simultaneous starting is possible

HIGH
PERFORMANCE & RELIABILITY

Performance and function to enhance reliability.

High Accuracy

## Highly Accurate Positioning

Positioning accuracy of the **RKⅡ** Series is ±0.05° (±3 arc min). When the **RKⅡ** Series is used with a ball screw as shown in the drawing below, the stopping accuracy becomes ±0.0014 mm. The accuracy of the normal ground ball screw is ±0.01 mm, thus the accuracy is high enough for positioning operation.
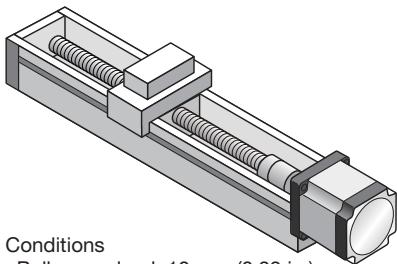
Conditions
· Ball screw lead: 10 mm (0.39 in.)
· Motor to be used: **RKⅡ** Series

Stopping Accuracy ±0.0014 mm

0.72°

0.72° 1.44°
±0.05°
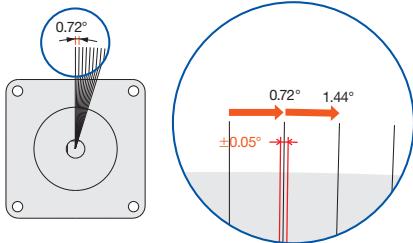
Positioning Accuracy ±0.05°

High Torque

Compact and High Torque

The **RKⅡ** Series is compact and produces high torque. The torque of the 42 mm (1.65 in.) frame size has increased 50%. This contributes to increased performance and faster move times. The series includes 60 mm (2.36 in.) and 85 mm (3.35 in.) frame size to cover a wide torque range.

● Note that for 60 mm (2.36 in.) and 85 mm (3.35 in.) frame size models, the torque is equivalent to the conventional model.

● Torque Comparison □42 mm (1.65 in.)

Torque [N·m] / Torque [oz·in]

RKS545AC-◇
Conventional Model
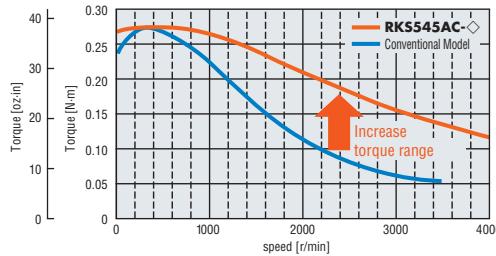
Increase torque range

speed [r/min]

High Efficiency

Optimizing the Use of Torque

With conventional stepper motors in applications where heat generation had to be suppressed, the running current had to be reduced, which also reduced torque. With the **RKⅡ** Series, thanks to its low heat generating and highly efficient motors, the motor torque can be used fully to maximize performance.

● Torque Comparison by Running Current

In case of **RKS566AC-◇**

Torque [N·m] / Torque [lb·in]

Operation Current 100%

Operating Current 50% (To reduce heat generation)

speed [r/min]
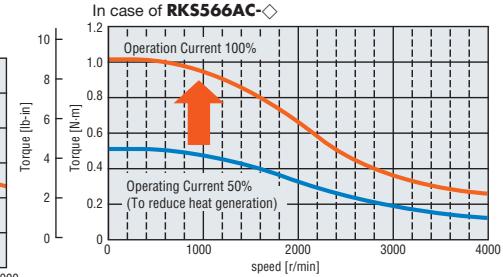
● Comparison of Cycle Time

In case of **RKS566AC-◇**

Spinning speed [r/min]

Operating Current 100%
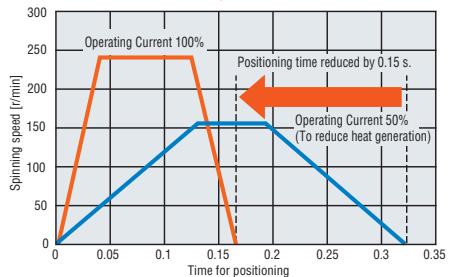
Positioning time reduced by 0.15 s.

Operating Current 50% (To reduce heat generation)

Time for positioning

Operating Conditions
· Moment of load inertia: 4×10^{-4} [kg·m²] (22 oz·in²)
· Load torque: 0.2 [N·m] (28 oz·in)
· Traveling Amount: 180°
· Safety Factor: 2

Low Vibration

Digitally Controlled Driver

Utilizing a full-time microstepping driver controlled by a digital system improves the vibration characteristics of the 0.72° stepper motor. Current control is also done by a high specification digital CPU. This model uses PWM control instead of PAM control resulting in a sinusoidal wave form in each phase, significantly reducing vibration.

● **Current Waveform in Motor (theoretical figure)**
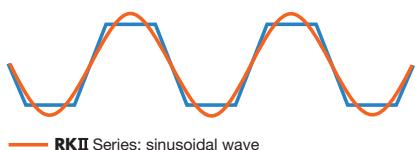
— **RKII** Series: sinusoidal wave
— Conventional products: trapezoidal wave

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

● **Vibration Characteristics Comparison**
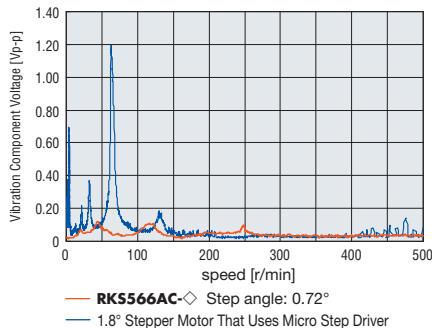
— **RKS566AC-◇** Step angle: 0.72°
— 1.8° Stepper Motor That Uses Micro Step Driver

Resolution

Step Angle can be Set Easily

For pulse input type, 32 step angles can be selected. To easily upgrade from a 1.8° stepper motor, use the step angle setting switch to match the existing input pulses to the desired output speed and position. There is no software or control module required.

Step Angle Setting Switch
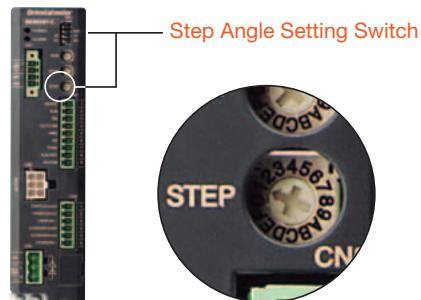
For built-in controller type, the value can be set between 200 p/rev - 200,000 p/rev. Setting can be done by a control module, data setting software or RS-485 communication.


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

or

Data Setting Software (**MEXE02**)
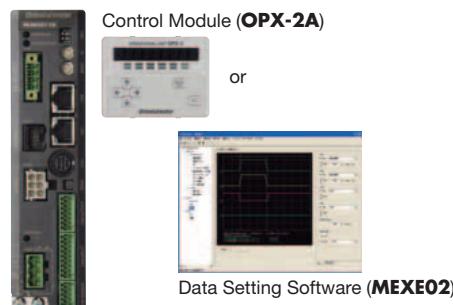
Protective Function

Built-in Alarm Features

Many types of protection functions are integrated into the driver. A blinking LED (blink count determines alarm type) indicates when an alarm is triggered.

(Example of alarm)
- ● Main circuit overheating
- ● Overvoltage
- ● Command pulse error
- ● Overcurrent
- ● Undervoltage
- ● Electrolytic capacitor error
- ● EEPROM error
- ● CPU error
- ● Automatic electromagnetic brake control error
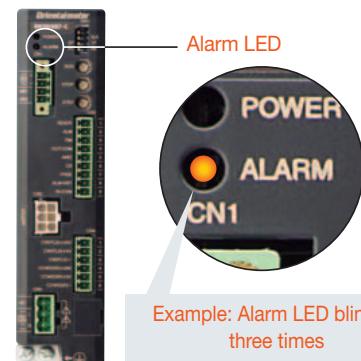
Alarm LED

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.

Product Line

● List of Drivers and Motors

Driver Type	Motor Type	Frame Size	Electromagnetic Brake	Power Input
Built-in Controller Type (FLEX)	Standard Type	42 mm (1.65 in.) 60 mm (2.36 in.) 85 mm (3.35 in.)	●	Single Phase 100-120 VAC Single Phase 200-240 VAC
	Standard Type with Encoder	42 mm (1.65 in.) 60 mm (2.36 in.) 85 mm (3.35 in.)	–	
	TS Geared Type **PS** Geared Type Harmonic Geared Type	42 mm (1.65 in.) 60 mm (2.36 in.) 90 mm (3.54 in.)	●	

Driver Type	Motor Type	Frame Size	Electromagnetic Brake	Power Input
Pulse Input Type	Standard Type	42 mm (1.65 in.) 60 mm (2.36 in.) 85 mm (3.35 in.)	●	Single Phase 100-120 VAC Single Phase 200-240 VAC
	TS Geared Type **PS** Geared Type Harmonic Geared Type	42 mm (1.65 in.) 60 mm (2.36 in.) 90 mm (3.54 in.)	●	

## ● List of Standard Type, Geared Type and Features

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

Type		Features	Permissible Torque, Maximum Torque [N·m (lb-in)]	Backlash [arc min (degree)]	Basic Resolution (°/pulse)	Output Shaft Speed (r/min)
Standard Type	NEW with Encoder＊	· Basic model of the **RKII** Series with Encoder · For encoder installed model, functions for monitoring positioning data, detecting positioning gap are available. · Resolution of encoder installed: 500 p/r.	Maximum holding torque 6.3 (55)	—	0.72	6000
TS Geared Type (Spur Gear Mechanism)		· High torque (Double of existing products) · A wide variety of reduction gear ratios, high-speed operations · Gear ratio types 3.6, 7.2, 10, 20, 30	Permissible torque, Maximum torque 25 45 (221) (398)	10 (0.17)	0.024	833
PS Geared Type (Planetary Gear Mechanism)		· Less backlash (comparing with existing products) · Highly permissible torque, maximum torque · A various reduction gear ratio lineup make easy to detect angle · Center shaft · Gear ratio types 5, 7.2, 10, 25, 36, 50	Permissible torque, Maximum torque 37 60 (320) (530)	7 (0.117)	0.0144	600
Harmonic Geared Type (Harmonic Drive)		· Longer mechanical life (2 times of existing products) · Higher torque (1.3 times of existing products) · High accuracy in positioning · Highly permissible torque, maximum torque · High reduction ratio, high resolution · Center shaft · Gear ratio types 50, 100	Permissible torque, Maximum torque 52 107 (460) (947)	0	0.0072	70

Low backlash — applies to TS Geared Type and PS Geared Type
Non backlash — applies to Harmonic Geared Type

Notes
● Above values are for reference only. These values vary depending on motor frame size and gear ratios.
● Harmonic drive and ⌧ are registered trademarks of Harmonic drive systems Inc or trademarks.

Geared motors offered by Oriental Motor come pre-assembled. Use the quick reference chart for performance and price.

Performance (Torque, backlash) vs Price

- **TS** Geared Type — Low Price
- **PS** Geared Type — High Torque
- Harmonic Geared Type — High Accuracy, High Torque

Features of the New Product Line

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

Encoder installed models make it possible to monitor the present position and detect for errors.

● **Positioning Monitor**
This feature can be used to detect the position of the motor. For instance, to confirm normal operations, compare commanded position to the actual position.

● **Return-to-Home Operation by Using Z-phase Signal**
Z-phase signal can be utilized for the return-to-home operation. Using Z-phase signal, the return-to-home point will be detected with higher accuracy than single use of the return-to-home sensor.

● **Detecting for Errors**
The encoder will compare command position and encoder-count. If deviation exceeds the set value, a STEPOUT signal will be output. Positional errors due to rapid changes in load can be detected. An alarm signal for abnormality in deviation is also available.
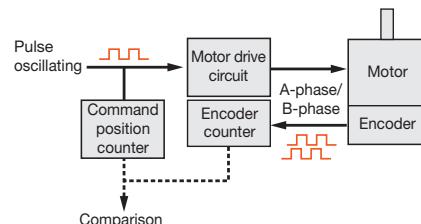

TS Geared Type

This geared type is made with a simple spur gear design. The torque and speed have been improved.

● **Mechanism**
Because of its high accuracy, this type has the same level of accuracy when compared to our tapered (**TH**) type without the added cost of tapering.
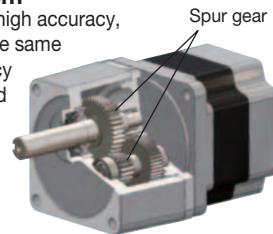
● **Torque and Speed are Improved (compared with conventional model types)**
The **TS** geared type realizes the improvement of permissible torque and at the same time, it can exert its maximum torque. The rated input speed is increased to 3,000 r/min and the permissible speed range of the output shaft has been significantly increased as well. The motor allows for higher torque and shortens the time for positioning, because the maximum torque range can be used for acceleration/deceleration.


- **RKS564** Gear ratio 30, maximum torque
- **RKS564** Gear ratio 30, permissible torque
- Conventional model types Permissible torque
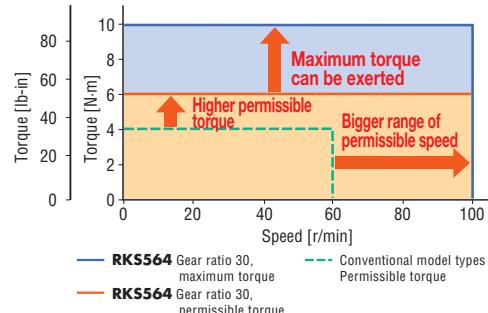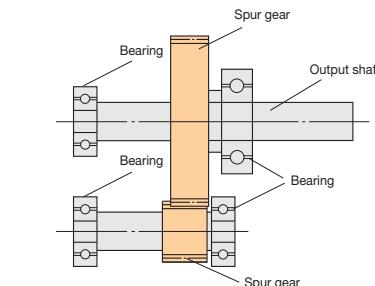
PS Geared Type

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

● **Mechanism**
There are gears inside used to distribute torque, which allows for higher torque than a spur gear design. The **PS** gear uses a higher accuracy gear design which provides for a lower backlash when compared to a spur gear design.

● **Reduce Backlash (Compare with conventional model types)**
Optimal design of gears reduced backlash. [Except: □42 mm (1.65 in.)]
Positioning with higher accuracy is possible.
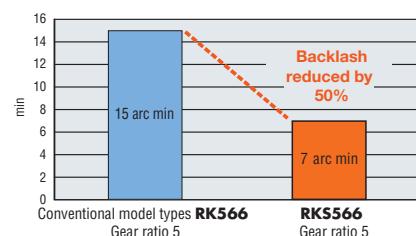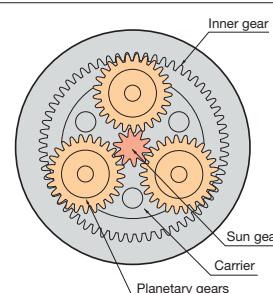
Features of the New Product Line

Harmonic Geared Type

The mechanical life, permissible torque and maximum torque are improved (compare with conventional model).

● **Improved Rated Life (Twice the length of conventional models)**
The rated life has been increased from 5,000 hours (conventional models) to 10,000 hours. [Except □42 mm (1.65 in.)]

[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
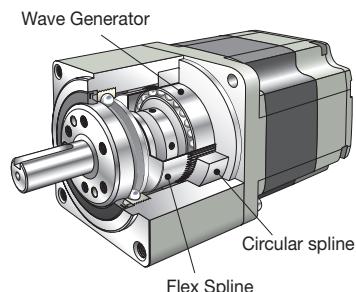
● **High Torque**
With more permissible and maximum torque available, more load can be handled with the same size geared motor.

● **Structure**

Wave Generator
Circular spline
Flex Spline

Comparison of specification

Product name	RKS564AC-HS100-◇	Conventional model
Permissible torque N·m	10 (88 lb-in)	8 (70 lb-in)
Maximum torque N·m	36 (390 lb-in)	28 (240 lb-in)
Gear ratio	100	
Lost motion (Load torque)	0.7 arc min or less ±0.39 N·m (3.45 lb-in)	

Comparison of torque characteristics

Permissible torque **25% UP**

RKS564 Gear ratio 100
Conventional Model

Maximum torque **30% UP**

RKS564 Gear ratio 100
Conventional Model
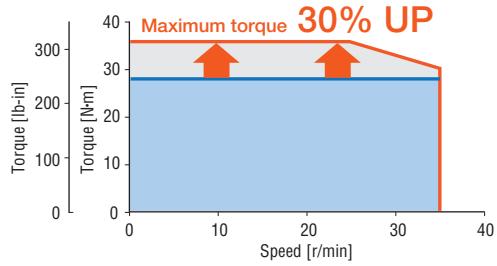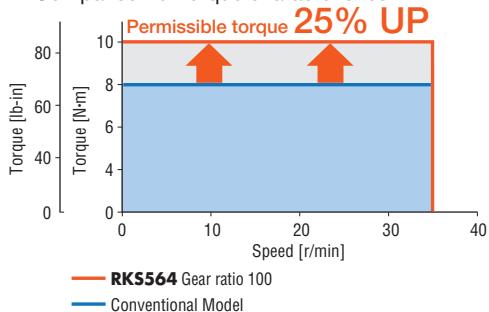
● **Surface Installation of Load Is Available**
This type permits installation of load directly on the rotating surface integrated with the shaft. [Except: □90 mm (3.54 in.)]

Appearance and Installation
Example: This surface rotates with the shaft
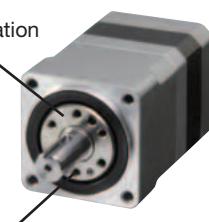
Tapped holes are provides on the rotating surface for load installation
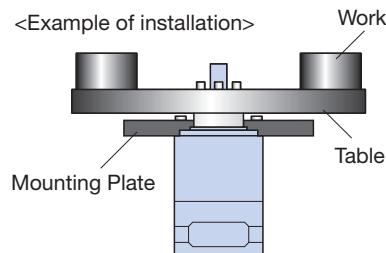
Application: Index Table
This type not only reduces the number of parts/processes, but also improves reliability. They are also suitable for operating loads that receive moment loads.

<Example of installation>

Work
Table
Mounting Plate

<Example mechanism>   <Surface mounting>

●Harmonic drive and [logo] are registered trademarks of Harmonic Drive systems Inc or trademarks.
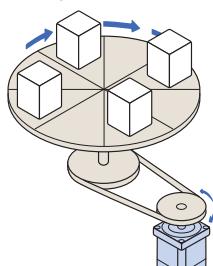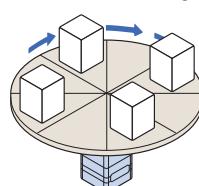
Advantages of Geared Motors

Using geared motors bring many advantages, such as speed reduction, high torque and high resolution.

The Motor Can Drive a Large Inertial Load

If compared with a standard motor, the geared motors can drive larger inertial loads because its permissible load moment of inertia increases with the square of the reduction ratio. This means that larger inertial loads can be driven with geared motors.

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 (0.79 in.), material: Aluminum)	Speed Range
	Standard Type	**RKS564AC-◇**	1.6×10^{-4} kg·m^2	72 mm (2.83 in.)	0~6,000 r/min
	PS Geared Type (Gear ratio 5)	**RKS566AC-PS5-◇**	40×10^{-4} kg·m^2	164 mm (6.46 in.)	0~600 r/min

Improved Damping Characteristic at Start and Stop

If the inertial load is large or acceleration/deceleration time is short, a geared motor can reduce damping more effectively and thereby ensure more stable driving compared to a standard motor. Geared motors are ideal for applications where a large inertia such as an index table or arm must be driven to perform quick positioning.
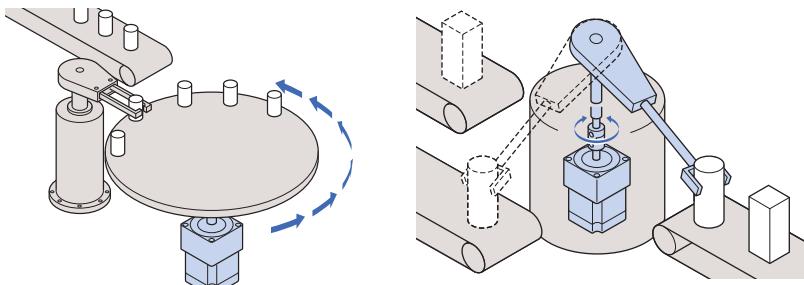
High Rigidity, Resistant to Torsional Force

Geared motors have high rigidity and are therefore resistant to torsional force. Therefore, compared to standard motors, geared motors are less subject to load torque fluctuation. This means that stability and high positioning accuracy can be ensured even when the load size changes.

Application: Lifter
The application can perform high-precision stops, even with elevators and other mechanisms that perform vertical operations where the number of loads or weight of loads changes.
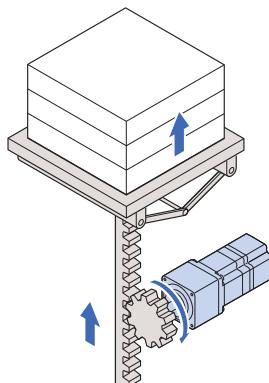
Application: Security Camera
The position can be held securely even when the camera sways from strong winds.
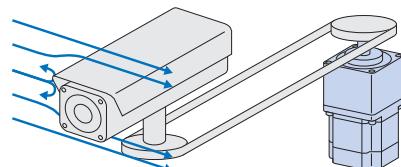
Downsizing

If comparing the standard motor and the geared motor which have similar maximum holding torque, the setting angle of the geared motor is smaller than the standard motor. Geared motors are effective when the equipment must be kept small and light.

128 mm (5.04 in.)
101.5 mm (4.00 in.)
60 mm (2.36 in.)
85 mm (3.35 in.)

PS Geared Motor
RKS564AC-PS25-◇ Weight: 1.4 kg (3.1 lb.), T$_H$ = 8 N·m (70 lb-in.)

Standard Motor
RKS5913AC-◇ Weight: 4.1 kg (9.0 lb.), T$_H$ = 6.3 N·m (55.7 lb-in.)

∗T$_H$ means "Holding torque"
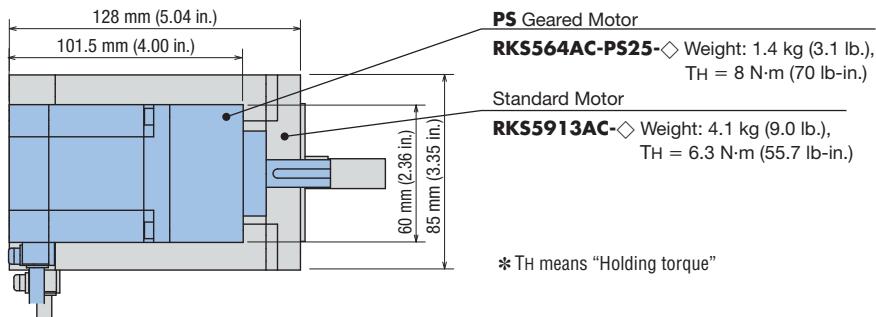
■System Configuration

● **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 by the customer as needed

Accessories (Sold separately)

The cables used in the EMC Directive evaluation

When extending the distance between the motor and driver without using an accessory cable. ✱2

or

When extending the distance between the motor and driver with an accessory cable. ✱2

(For electromagnetic brake)

Flexible Couplings
(→ Page 59)

**Connection Cable Sets
Flexible Connection Cable Sets**
(→ Page 57)

(For electromagnetic brake)

**Extension Cable Sets
Flexible Extension Cable Sets**
(→ Page 57)

Accessories (Sold separately) ✱3

Control Module or **Communication Cable for Data Setting Software**

(→ Page 64)   (→ Page 63)

Data Setting Software
MEXE02

To USB port

PC ✱1

24 VDC Power Supply for Control ✱1

RKⅡ Series

Motor

For Electromagnetic Brake ✱2
(Electromagnetic Brake type only)

For Motor✱2

The product comes with a 3 m (9.8 ft.) cable (for motor and electromagnetic brake).

Driver

(For RS-485 Communication)

Programmable Controller ✱1

Sensor ✱1

AC Power Supply (Main power supply)

Accessories (Sold separately)

Motor Mounting Brackets
(→ Page 60)

RS-485 Communication Cable
(→ Page 65)

General-Purpose Cables
(→ Page 64)

Related Products (Sold separately)

Network Converters
(→ Page 65)

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

● **Example of System Configuration**

| RKⅡ Series | Sold Separately | | |
	Motor Mounting Bracket	Flexible Coupling	General-Purpose Cable 1 m (3.3 ft.)
RKS566MCD-3	**PAL2P-5**	**MCS301010**	**CC16D010B-1**
$702.00	$17.00	$71.00	$39.00

+

● 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 **SCX11** controller.

＊1 Not supplied
＊2 Only the model includes connecting cable

Accessories (Sold separately)

The cables used in the EMC Directive evaluation

When extending the distance between the motor and driver without using an accessory cable. ＊2

(For electromagnetic brake)

Connection Cable Sets
Flexible Connection Cable Sets
(➜ Page 57)

or

When extending the distance between the motor and driver with an accessory cable. ＊2

(For electromagnetic brake)

Extension Cable Sets
Flexible Extension Cable Sets
(➜ Page 57)

Flexible Couplings
(➜ Page 59)

RKⅡ Series

Motor

Driver

For Electromagnetic Brake ＊2
(Electromagnetic Brake type only)

For Motor＊2

The product comes with a 3 m (9.8 ft.) cable
(for motor and electromagnetic brake).

**For Electromagnetic Brake
24 VDC Power Supply ＊1**

**Programmable
Controller ＊1**

Controller (Sold separately)

Controller
(➜ Page 66)
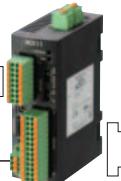
AC Power Supply

Sensor ＊1

**24 VDC
Power Supply ＊1**

Accessories (Sold separately)

**Motor Mounting
Brackets**
(➜ Page 60)

**General-Purpose
Cables**
(➜ Page 64)

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

●**Example of System Configuration**

RKⅡ Series		Sold Separately			
		Controller	**Motor Mounting Bracket**	**Flexible Coupling**	**General-Purpose Cable 1 m (3.3 ft.)**
RKS566MC-3	+	**SCX11**	**PAL2P-5A**	**MCS301010**	**CC16D010B-1**
$702.00		$385.00	$17.00	$71.00	$39.00

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

■ Product Number

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	**RKS** : **RKⅡ** Series
②	**5** : 5-Phase	
③	Motor Frame Size	**4** : 42 mm (1.65 in.) **6** : 60 mm (2.36 in.) **9** : 85 mm (3.35 in.) [(Motor Frame Size for Geared Type 90 mm) (3.54 in.)]
④	Motor Case Length	
⑤	Motor Type	**A** : Single Shaft **B** : Double Shaft **R** : Encoder Type **M** : Electromagnetic Brake Type
⑥	Power Supply Voltage	**A** : Single-Phase 100-120 VAC **C** : Single-Phase 200-240 VAC
⑦	Driver Type	**D** : Built-in Controller Type Blank : Pulse Input Type
⑧	Serial Number	
⑨	Gearhead Type	Blank : Standard Type **TS** : **TS** Geared Type **PS** : **PS** Geared Type **HS** : Harmonic Geared Type
⑩	Gear Ratio	
⑪	Connecting Cable	Numeric value : Cable length (included in package) **3** : 3 m (9.8 ft.)

■ Product Line

● Built-in Controller (Stored Data) Type

◇ Standard Type

Product Name (Single Shaft)	List Price
RKS543A☐D-3	$461.00
RKS544A☐D-3	$462.00
RKS545A☐D-3	$469.00
RKS564A☐D-3	$506.00
RKS566A☐D-3	$511.00
RKS569A☐D-3	$516.00
RKS596A☐D-3	$566.00
RKS599A☐D-3	$606.00
RKS5913A☐D-3	$649.00

Product Name (Double Shaft)	List Price
RKS543B☐D-3	$463.00
RKS544B☐D-3	$464.00
RKS545B☐D-3	$472.00
RKS564B☐D-3	$508.00
RKS566B☐D-3	$513.00
RKS569B☐D-3	$519.00
RKS596B☐D-3	$570.00
RKS599B☐D-3	$612.00
RKS5913B☐D-3	$657.00

◇ Standard Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐D-3	$609.00
RKS544M☐D-3	$610.00
RKS545M☐D-3	$618.00
RKS564M☐D-3	$696.00
RKS566M☐D-3	$702.00
RKS569M☐D-3	$707.00
RKS596M☐D-3	$778.00
RKS599M☐D-3	$818.00
RKS5913M☐D-3	$861.00

◇ Standard Type with Encoder

Product Name	List Price
RKS543R☐D2-3	$547.00
RKS544R☐D2-3	$548.00
RKS545R☐D2-3	$556.00
RKS564R☐D2-3	$592.00
RKS566R☐D2-3	$597.00
RKS569R☐D2-3	$602.00
RKS596R☐D2-3	$652.00
RKS599R☐D2-3	$692.00
RKS5913R☐D2-3	$735.00

◇ TS Geared Type

Product Name (Single Shaft)	List Price
RKS543A☐D-TS3.6-3	$601.00
RKS543A☐D-TS7.2-3	$601.00
RKS543A☐D-TS10-3	$616.00
RKS543A☐D-TS20-3	$616.00
RKS543A☐D-TS30-3	$616.00
RKS564A☐D-TS3.6-3	$661.00
RKS564A☐D-TS7.2-3	$661.00
RKS564A☐D-TS10-3	$677.00
RKS564A☐D-TS20-3	$677.00
RKS564A☐D-TS30-3	$677.00
RKS596A☐D-TS3.6-3	$749.00
RKS596A☐D-TS7.2-3	$749.00
RKS596A☐D-TS10-3	$765.00
RKS596A☐D-TS20-3	$765.00
RKS596A☐D-TS30-3	$765.00

Product Name (Single Shaft)	List Price
RKS543B☐D-TS3.6-3	$603.00
RKS543B☐D-TS7.2-3	$603.00
RKS543B☐D-TS10-3	$619.00
RKS543B☐D-TS20-3	$619.00
RKS543B☐D-TS30-3	$619.00
RKS564B☐D-TS3.6-3	$664.00
RKS564B☐D-TS7.2-3	$664.00
RKS564B☐D-TS10-3	$680.00
RKS564B☐D-TS20-3	$680.00
RKS564B☐D-TS30-3	$680.00
RKS596B☐D-TS3.6-3	$753.00
RKS596B☐D-TS7.2-3	$753.00
RKS596B☐D-TS10-3	$769.00
RKS596B☐D-TS20-3	$769.00
RKS596B☐D-TS30-3	$769.00

◇ TS Geared Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐D-TS3.6-3	$755.00
RKS543M☐D-TS7.2-3	$755.00
RKS543M☐D-TS10-3	$770.00
RKS543M☐D-TS20-3	$770.00
RKS543M☐D-TS30-3	$770.00
RKS564M☐D-TS3.6-3	$859.00
RKS564M☐D-TS7.2-3	$859.00
RKS564M☐D-TS10-3	$875.00
RKS564M☐D-TS20-3	$875.00
RKS564M☐D-TS30-3	$875.00
RKS596M☐D-TS3.6-3	$969.00
RKS596M☐D-TS7.2-3	$969.00
RKS596M☐D-TS10-3	$985.00
RKS596M☐D-TS20-3	$985.00
RKS596M☐D-TS30-3	$985.00

● Enter the power supply voltage **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) in the box ☐ 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 download it from our website.
www.orientalmotor.com

Note
● The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, use the connection cable supplied in the package.

◇PS Geared Type

Product Name (Single Shaft)	List Price
RKS545A☐D-PS5-3	$756.00
RKS545A☐D-PS7.2-3	$756.00
RKS545A☐D-PS10-3	$756.00
RKS543A☐D-PS25-3	$806.00
RKS543A☐D-PS36-3	$806.00
RKS543A☐D-PS50-3	$806.00
RKS566A☐D-PS5-3	$858.00
RKS566A☐D-PS7.2-3	$858.00
RKS566A☐D-PS10-3	$858.00
RKS564A☐D-PS25-3	$936.00
RKS564A☐D-PS36-3	$936.00
RKS564A☐D-PS50-3	$936.00
RKS599A☐D-PS5-3	$1,050.00
RKS599A☐D-PS7.2-3	$1,050.00
RKS599A☐D-PS10-3	$1,050.00
RKS596A☐D-PS25-3	$1,148.00
RKS596A☐D-PS36-3	$1,148.00
RKS596A☐D-PS50-3	$1,148.00

Product Name (Double Shaft)	List Price
RKS545B☐D-PS5-3	$758.00
RKS545B☐D-PS7.2-3	$758.00
RKS545B☐D-PS10-3	$758.00
RKS543B☐D-PS25-3	$808.00
RKS543B☐D-PS36-3	$808.00
RKS543B☐D-PS50-3	$808.00
RKS566B☐D-PS5-3	$861.00
RKS566B☐D-PS7.2-3	$861.00
RKS566B☐D-PS10-3	$861.00
RKS564B☐D-PS25-3	$939.00
RKS564B☐D-PS36-3	$939.00
RKS564B☐D-PS50-3	$939.00
RKS599B☐D-PS5-3	$1,056.00
RKS599B☐D-PS7.2-3	$1,056.00
RKS599B☐D-PS10-3	$1,056.00
RKS596B☐D-PS25-3	$1,153.00
RKS596B☐D-PS36-3	$1,153.00
RKS596B☐D-PS50-3	$1,153.00

◇PS Geared Type with Electromagnetic Brake

Product Name	List Price
RKS545M☐D-PS5-3	$924.00
RKS545M☐D-PS7.2-3	$924.00
RKS545M☐D-PS10-3	$924.00
RKS543M☐D-PS25-3	$974.00
RKS543M☐D-PS36-3	$974.00
RKS543M☐D-PS50-3	$974.00
RKS566M☐D-PS5-3	$1,074.00
RKS566M☐D-PS7.2-3	$1,074.00
RKS566M☐D-PS10-3	$1,074.00
RKS564M☐D-PS25-3	$1,152.00
RKS564M☐D-PS36-3	$1,152.00
RKS564M☐D-PS50-3	$1,152.00
RKS599M☐D-PS5-3	$1,290.00
RKS599M☐D-PS7.2-3	$1,290.00
RKS599M☐D-PS10-3	$1,290.00
RKS596M☐D-PS25-3	$1,388.00
RKS596M☐D-PS36-3	$1,388.00
RKS596M☐D-PS50-3	$1,388.00

◇Harmonic Geared Type

Product Name (Single Shaft)	List Price
RKS543A☐D-HS50-3	$1,100.00
RKS543A☐D-HS100-3	$1,100.00
RKS564A☐D-HS50-3	$1,422.00
RKS564A☐D-HS100-3	$1,422.00
RKS596A☐D-HS50-3	$1,766.00
RKS596A☐D-HS100-3	$1,766.00

Product Name (Double Shaft)	List Price
RKS543B☐D-HS50-3	$1,102.00
RKS543B☐D-HS100-3	$1,102.00
RKS564B☐D-HS50-3	$1,425.00
RKS564B☐D-HS100-3	$1,425.00
RKS596B☐D-HS50-3	$1,771.00
RKS596B☐D-HS100-3	$1,771.00

◇Harmonic Geared Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐D-HS50-3	$1,268.00
RKS543M☐D-HS100-3	$1,268.00
RKS564M☐D-HS50-3	$1,638.00
RKS564M☐D-HS100-3	$1,638.00
RKS596M☐D-HS50-3	$2,006.00
RKS596M☐D-HS100-3	$2,006.00

● Pulse Input Type

◇Standard Type

Product Name (Single Shaft)	List Price
RKS543A☐-3	$461.00
RKS544A☐-3	$462.00
RKS545A☐-3	$469.00
RKS564A☐-3	$506.00
RKS566A☐-3	$511.00
RKS569A☐-3	$516.00
RKS596A☐-3	$566.00
RKS599A☐-3	$606.00
RKS5913A☐-3	$649.00

Product Name (Double Shaft)	List Price
RKS543B☐-3	$463.00
RKS544B☐-3	$464.00
RKS545B☐-3	$472.00
RKS564B☐-3	$508.00
RKS566B☐-3	$513.00
RKS569B☐-3	$519.00
RKS596B☐-3	$570.00
RKS599B☐-3	$612.00
RKS5913B☐-3	$657.00

◇Standard Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐-3	$609.00
RKS544M☐-3	$610.00
RKS545M☐-3	$618.00
RKS564M☐-3	$696.00
RKS566M☐-3	$702.00
RKS569M☐-3	$707.00
RKS596M☐-3	$778.00
RKS599M☐-3	$818.00
RKS5913M☐-3	$861.00

● Enter the power supply voltage **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) in the box ☐ 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 download it from our website.
  www.orientalmotor.com

Note
● The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, use the connection cable supplied in the package.

◇TS Geared Type

Product Name (Single Shaft)	List Price
RKS543A☐-TS3.6-3	$601.00
RKS543A☐-TS7.2-3	$601.00
RKS543A☐-TS10-3	$616.00
RKS543A☐-TS20-3	$616.00
RKS543A☐-TS30-3	$616.00
RKS564A☐-TS3.6-3	$661.00
RKS564A☐-TS7.2-3	$661.00
RKS564A☐-TS10-3	$677.00
RKS564A☐-TS20-3	$677.00
RKS564A☐-TS30-3	$677.00
RKS596A☐-TS3.6-3	$749.00
RKS596A☐-TS7.2-3	$749.00
RKS596A☐-TS10-3	$765.00
RKS596A☐-TS20-3	$765.00
RKS596A☐-TS30-3	$765.00

Product Name (Single Shaft)	List Price
RKS543B☐-TS3.6-3	$603.00
RKS543B☐-TS7.2-3	$603.00
RKS543B☐-TS10-3	$619.00
RKS543B☐-TS20-3	$619.00
RKS543B☐-TS30-3	$619.00
RKS564B☐-TS3.6-3	$664.00
RKS564B☐-TS7.2-3	$664.00
RKS564B☐-TS10-3	$680.00
RKS564B☐-TS20-3	$680.00
RKS564B☐-TS30-3	$680.00
RKS596B☐-TS3.6-3	$753.00
RKS596B☐-TS7.2-3	$753.00
RKS596B☐-TS10-3	$769.00
RKS596B☐-TS20-3	$769.00
RKS596B☐-TS30-3	$769.00

◇TS Geared Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐-TS3.6-3	$755.00
RKS543M☐-TS7.2-3	$755.00
RKS543M☐-TS10-3	$770.00
RKS543M☐-TS20-3	$770.00
RKS543M☐-TS30-3	$770.00
RKS564M☐-TS3.6-3	$859.00
RKS564M☐-TS7.2-3	$859.00
RKS564M☐-TS10-3	$875.00
RKS564M☐-TS20-3	$875.00
RKS564M☐-TS30-3	$875.00
RKS596M☐-TS3.6-3	$969.00
RKS596M☐-TS7.2-3	$969.00
RKS596M☐-TS10-3	$985.00
RKS596M☐-TS20-3	$985.00
RKS596M☐-TS30-3	$985.00

◇PS Geared Type

Product Name (Single Shaft)	List Price
RKS545A☐-PS5-3	$756.00
RKS545A☐-PS7.2-3	$756.00
RKS545A☐-PS10-3	$756.00
RKS543A☐-PS25-3	$806.00
RKS543A☐-PS36-3	$806.00
RKS543A☐-PS50-3	$806.00
RKS566A☐-PS5-3	$858.00
RKS566A☐-PS7.2-3	$858.00
RKS566A☐-PS10-3	$858.00
RKS564A☐-PS25-3	$936.00
RKS564A☐-PS36-3	$936.00
RKS564A☐-PS50-3	$936.00
RKS599A☐-PS5-3	$1,050.00
RKS599A☐-PS7.2-3	$1,050.00
RKS599A☐-PS10-3	$1,050.00
RKS596A☐-PS25-3	$1,148.00
RKS596A☐-PS36-3	$1,148.00
RKS596A☐-PS50-3	$1,148.00

Product Name (Double Shaft)	List Price
RKS545B☐-PS5-3	$758.00
RKS545B☐-PS7.2-3	$758.00
RKS545B☐-PS10-3	$758.00
RKS543B☐-PS25-3	$808.00
RKS543B☐-PS36-3	$808.00
RKS543B☐-PS50-3	$808.00
RKS566B☐-PS5-3	$861.00
RKS566B☐-PS7.2-3	$861.00
RKS566B☐-PS10-3	$861.00
RKS564B☐-PS25-3	$939.00
RKS564B☐-PS36-3	$939.00
RKS564B☐-PS50-3	$939.00
RKS599B☐-PS5-3	$1,056.00
RKS599B☐-PS7.2-3	$1,056.00
RKS599B☐-PS10-3	$1,056.00
RKS596B☐-PS25-3	$1,153.00
RKS596B☐-PS36-3	$1,153.00
RKS596B☐-PS50-3	$1,153.00

◇PS Geared Type with Electromagnetic Brake

Product Name	List Price
RKS545M☐-PS5-3	$924.00
RKS545M☐-PS7.2-3	$924.00
RKS545M☐-PS10-3	$924.00
RKS543M☐-PS25-3	$974.00
RKS543M☐-PS36-3	$974.00
RKS543M☐-PS50-3	$974.00
RKS566M☐-PS5-3	$1,074.00
RKS566M☐-PS7.2-3	$1,074.00
RKS566M☐-PS10-3	$1,074.00
RKS564M☐-PS25-3	$1,152.00
RKS564M☐-PS36-3	$1,152.00
RKS564M☐-PS50-3	$1,152.00
RKS599M☐-PS5-3	$1,290.00
RKS599M☐-PS7.2-3	$1,290.00
RKS599M☐-PS10-3	$1,290.00
RKS596M☐-PS25-3	$1,388.00
RKS596M☐-PS36-3	$1,388.00
RKS596M☐-PS50-3	$1,388.00

◇Harmonic Geared Type

Product Name (Single Shaft)	List Price
RKS543A☐-HS50-3	$1,100.00
RKS543A☐-HS100-3	$1,100.00
RKS564A☐-HS50-3	$1,422.00
RKS564A☐-HS100-3	$1,422.00
RKS596A☐-HS50-3	$1,766.00
RKS596A☐-HS100-3	$1,766.00

Product Name (Double Shaft)	List Price
RKS543B☐-HS50-3	$1,102.00
RKS543B☐-HS100-3	$1,102.00
RKS564B☐-HS50-3	$1,425.00
RKS564B☐-HS100-3	$1,425.00
RKS596B☐-HS50-3	$1,771.00
RKS596B☐-HS100-3	$1,771.00

◇Harmonic Geared Type with Electromagnetic Brake

Product Name	List Price
RKS543M☐-HS50-3	$1,268.00
RKS543M☐-HS100-3	$1,268.00
RKS564M☐-HS50-3	$1,638.00
RKS564M☐-HS100-3	$1,638.00
RKS596M☐-HS50-3	$2,006.00
RKS596M☐-HS100-3	$2,006.00

● Enter the power supply voltage **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) in the box ☐ 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 download it from our website.
  www.orientalmotor.com

Note
● The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, use the connection cable supplied in the package.

Standard Type
Standard Type with Electromagnetic Brake
Standard Type with Encoder

**Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.)**

■ Specifications (RoHS)

| Product Name	Built-in Controller Type	RKS543□□D□-3	RKS544□□D□-3	RKS545□□D□-3	RKS564□□D□-3	RKS566□□D□-3	RKS569□□D□-3
	Pulse Input Type	RKS543□□-3	RKS544□□-3	RKS545□□-3	RKS564□□-3	RKS566□□-3	RKS569□□-3
Maximum Holding Torque N·m (oz-in)		0.14 (19.8)	0.21 (29)	0.27 (38)	0.52 (73)	0.96 (136)	1.77 (250)
Holding Torque at Motor Standstill	Power ON N·m (oz-in)	0.07 (9.9)	0.10 (14.2)	0.13 (18.4)	0.26 (36)	0.48 (68)	0.88 (124)
	Electromagnetic Brake N·m (oz-in)	0.07 (9.9)	0.10 (14.2)	0.13 (18.4)	0.26 (36)	0.48 (68)	0.88 (124)
Rotor Inertia $J : kg·m^2(oz-in^2)$		$30×10^{-7}$ (0.164) $[45×10^{-7}]$ (0.25)[*1] $31×10^{-7}$ (0.17)[*2]	$47×10^{-7}$ (0.26) $[62×10^{-7}]$ (0.34)[*1] $48×10^{-7}$ (0.26)[*2]	$64×10^{-7}$ (0.35) $[79×10^{-7}]$ (0.43)[*1] $65×10^{-7}$ (0.36)[*2]	$160×10^{-7}$ (0.88) $[320×10^{-7}]$ (1.75)[*1] $160×10^{-7}$ (0.88)[*2]	$270×10^{-7}$ (1.48) $[430×10^{-7}]$ (2.4)[*1] $270×10^{-7}$ (1.48)[*2]	$540×10^{-7}$ (3.0) $[700×10^{-7}]$ (3.8)[*1] $540×10^{-7}$ (3.0)[*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 A Single-Phase 100-120 VAC	2.1	1.9	1.9	4.0	3.8	4.0
	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		

● For Built-in Controller package, enter **A** (single shaft), **B** (double shaft), **M** (electromagnetic brake) or **R** (encoder) where the box □ is located within the product name.
  For Pulse Input package, enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
  Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ▨ is located within the product name.
  For encoder type, **2** will be entered where ▨ 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 (49.2 ft.) or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

■ Speed – Torque Characteristics fs: Maximum Starting Frequency

RKS543

RKS544
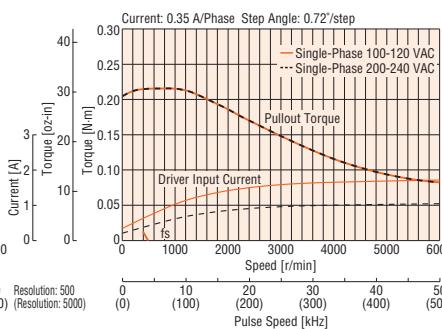
RKS545
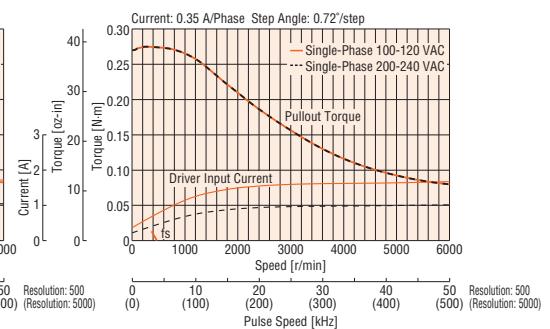
RKS564
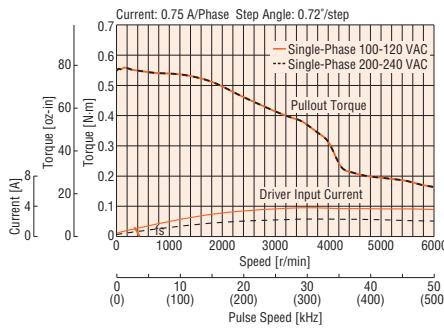
RKS566
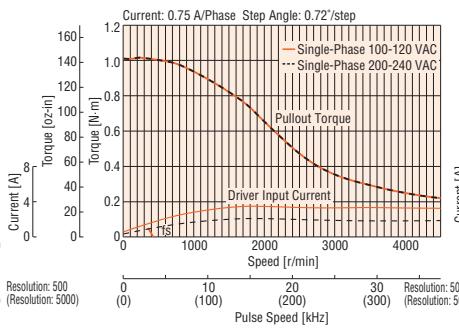
RKS569
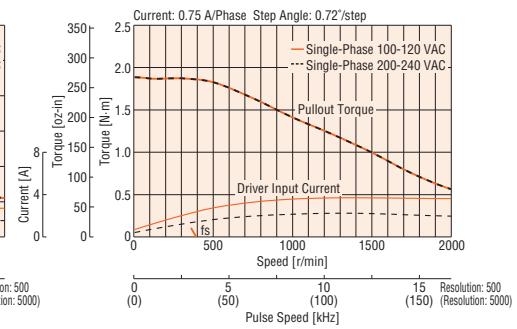
Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100℃ (212°F).
  For the Encoder type, in order to protect encoder, be sure to keep the temperature of the motor case under 85℃ (185°F).

Standard Type
Standard Type with Electromagnetic Brake
Standard Type with Encoder

Frame Size 85 mm (3.35 in.)

■ Specifications (RoHS)

Product Name	Built-in Controller Type	RKS596□□D□-3	RKS599□□D□-3	RKS5913□□D□-3
	Pulse Input Type	RKS596□□-3	RKS599□□-3	RKS5913□□-3
Maximum Holding Torque	N·m (oz-in)	2.1 (290)	4.1 (580)	6.3 (890)
Holding Torque at Motor Standstill	Power ON N·m (oz-in)	1.05 (149)	2.05 (290)	3.15 (440)
	Electromagnetic Brake N·m (oz-in)	1.05 (149)	2.05 (290)	3.15 (440)
Rotor Inertia	J : kg·m² (oz-in²)	1100×10^{-7} (6.0) [2200×10^{-7}] (12.0)*1 (1100×10^{-7}) (6.0)*2	2200×10^{-7} (12.0) [3300×10^{-7}] (18.1)*1 (2200×10^{-7}) (12.0)*2	3300×10^{-7} (18.1) [4400×10^{-7}] (24)*1 (3300×10^{-7}) (18.1)*2
Rated Current	A / Phase	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	3.6	3.5	3.5
	A Single-Phase 200-240 VAC	2.1	2.2	2.2
Excitation Mode		Microstep		
Control Power Supply*3		24 VDC±5% 0.2 A		
Electromagnetic Brake*4	Power Supply Input	24 VDC±5%*5 0.24 A		

● For Built-in Controller package, enter **A** (single shaft), **B** (double shaft), **M** (electromagnetic brake) or **R** (encoder) where the box □ is located within the product name.
For Pulse Input package, enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ▨ is located within the product name.
For encoder type, **2** will be entered where ▨ 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 (49.2 ft.) or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

## ■ Speed – Torque Characteristics fs: Maximum Starting Frequency

RKS596

RKS599
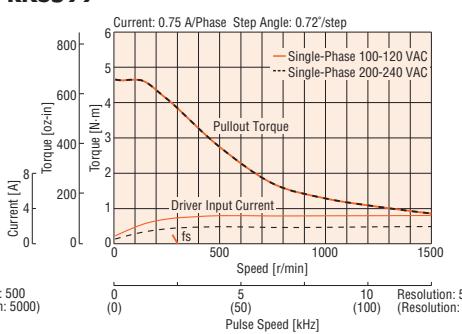
RKS5913
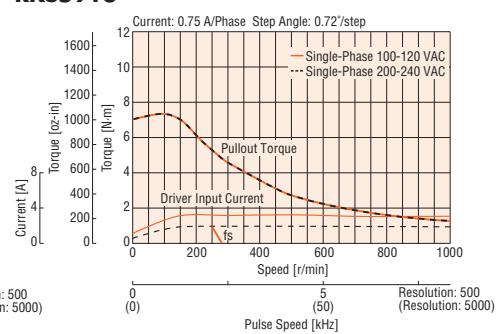
Note

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100℃ (212°F).
For the Encoder type, in order to protect encoder, be sure to keep the temperature of the motor case under 85℃ (185°F).

TS Geared Type
TS Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

■Specifications (RoHS)

Product Name	Built-in Controller Type	RKS543☐☐D-TS3.6-3	RKS543☐☐D-TS7.2-3	RKS543☐☐D-TS10-3	RKS543☐☐D-TS20-3	RKS543☐☐D-TS30-3
	Pulse Input Type	RKS543☐☐-TS3.6-3	RKS543☐☐-TS7.2-3	RKS543☐☐-TS10-3	RKS543☐☐-TS20-3	RKS543☐☐-TS30-3
Maximum Holding Torque	N·m (lb-in)	0.5 (4.4)	1 (8.8)	1.4 (12.3)	2 (17.7)	2.3 (20)
Rotor Inertia	J : kg·m^2 (oz-in^2)	30×10^{-7} (0.164) [45×10^{-7}] (0.25)[*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 (lb-in)	0.65 (5.7)	1.2 (10.6)	1.7 (15)	2 (17.7)	2.3 (20)
Maximum Torque[*2]	N·m (lb-in)	0.85 (7.5)	1.6 (14.1)	2 (17.7)	3 (26)	3 (26)
Holding Torque at Motor Standstill — Power ON	N·m (lb-in)	0.26 (2.3)	0.53 (4.6)	0.74 (6.5)	1.48 (13)	2.2 (19.4)
Holding Torque at Motor Standstill — Electromagnetic Brake	N·m (lb-in)	0.26 (2.3)	0.53 (4.6)	0.74 (6.5)	1.48 (13)	2.2 (19.4)
Permissible Speed Range	r/min	0～833	0～416	0～300	0～150	0～100
Backlash	arc min	45 (0.75°)	\multicolumn{2}{c}{25 (0.42°)}	\multicolumn{2}{c}{15 (0.25°)}
Power Supply Input — Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15～+10% 50/60 Hz
Power Supply Input — Input Current A — Single-Phase 100-120 VAC		2.1
Power Supply Input — Input 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

●Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box ☐ is located within the product name.
 Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ 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 (49.2 ft.) 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**
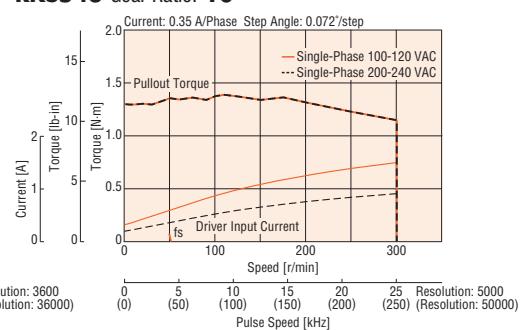
RKS543 Gear Ratio: **20**
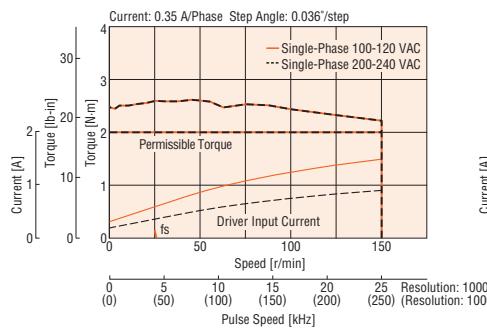
RKS543 Gear Ratio: **30**
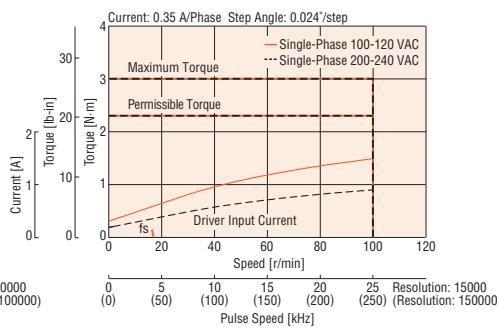
Note
●Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100℃ (212°F).

TS Geared Type
TS Geared Type with Electromagnetic Brake

Frame Size 60 mm (2.36 in.)

■ Specifications (RoHS)

cⓊUus CE

Product Name	Built-in Controller Type	RKS564□D-TS3.6-3	RKS564□D-TS7.2-3	RKS564□□D-TS10-3	RKS564□□D-TS20-3	RKS564□□D-TS30-3
	Pulse Input Type	RKS564□□-TS3.6-3	RKS564□□-TS7.2-3	RKS564□□-TS10-3	RKS564□□-TS20-3	RKS564□□-TS30-3
Maximum Holding Torque	N·m (lb-in)	1.8 (15.9)	3 (26)	4 (35)	5 (44)	6 (53)
Rotor Inertia	J : kg·m² (oz-in²)		160×10^{-7} (0.87) [320×10^{-7}] (1.75)*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 (lb-in)	1.8 (15.9)	3 (26)	4 (35)	5 (44)	6 (53)
Maximum Torque*2	N·m (lb-in)	2.5 (22)	4.5 (39)	6 (53)	8 (70)	10 (88)
Holding Torque at Motor Standstill	Power ON N·m (lb-in)	1 (8.8)	2 (17.7)	2.9 (25)	5 (44)	6 (53)
	Electromagnetic Brake N·m (lb-in)	1 (8.8)	2 (17.7)	2.9 (25)	5 (44)	6 (53)
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 Current A Single-Phase 100-120 VAC		4.0			
	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			

● Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
　Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ▨ 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 (49.2 ft.) 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**
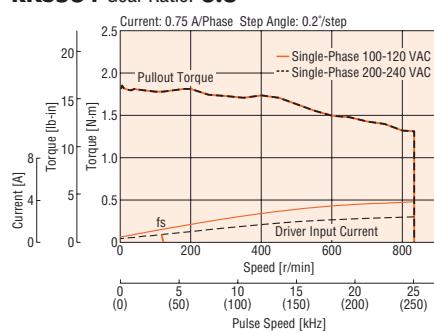
RKS564 Gear Ratio: **7.2**
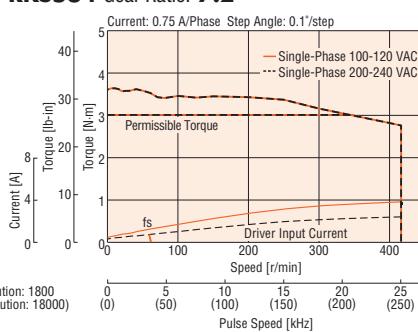
RKS564 Gear Ratio: **10**
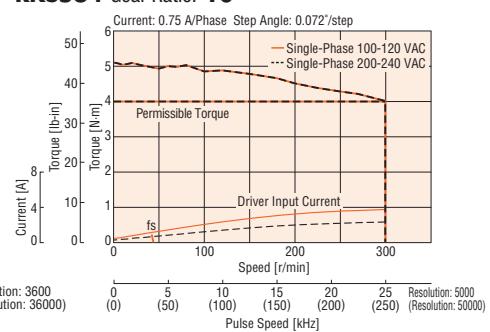
RKS564 Gear Ratio: **20**
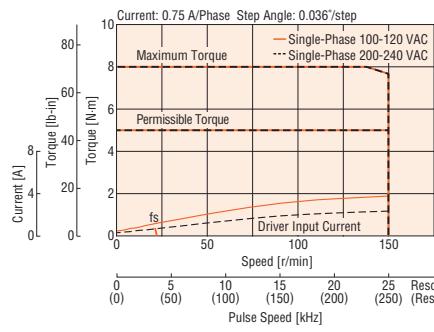
RKS564 Gear Ratio: **30**
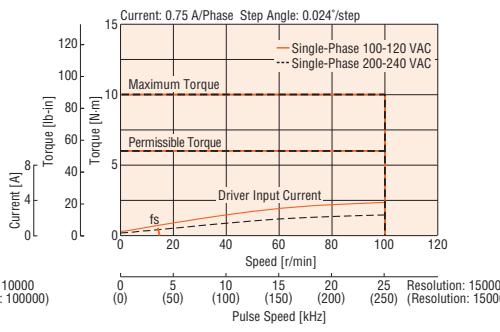
Note
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100°C (212°F).

TS Geared Type
TS Geared Type with Electromagnetic Brake

Frame Size 90 mm (3.54 in.)

■Specifications (RoHS)

cⓇULus CE

Product Name	Built-in Controller Type	RKS596□□D-TS3.6-3	RKS596□□D-TS7.2-3	RKS596□□D-TS10-3	RKS596□□D-TS20-3	RKS596□□D-TS30-3
	Pulse Input Type	RKS596□□-TS3.6-3	RKS596□□-TS7.2-3	RKS596□□-TS10-3	RKS596□□-TS20-3	RKS596□□-TS30-3
Maximum Holding Torque	N·m (lb-in)	6 (53)	10 (88)	14 (123)	20 (177)	25 (220)
Rotor Inertia	J : kg·m² (oz-in²)	1100×10^{-7} (6) [2200×10^{-7}][*1] (12)
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 (lb-in)	6 (53)	10 (88)	14 (123)	20 (177)	25 (220)
Maximum Torque*2	N·m (lb-in)	9 (79)	15 (132)	20 (177)	35 (300)	45 (390)
Holding Torque at Motor Standstill — Power ON	N·m (lb-in)	6 (53)	9 (79)	7.4 (65)	18.5 (163)	25 (220)
Holding Torque at Motor Standstill — Electromagnetic Brake	N·m (lb-in)	6 (53)	9 (79)	7.4 (65)	18.5 (163)	25 (220)
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
Power Supply Input — Input Current A — Single-Phase 100-120 VAC		3.6	4.9
Power Supply Input — Input 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

● Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
 Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where □ 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 (49.2 ft.) 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**
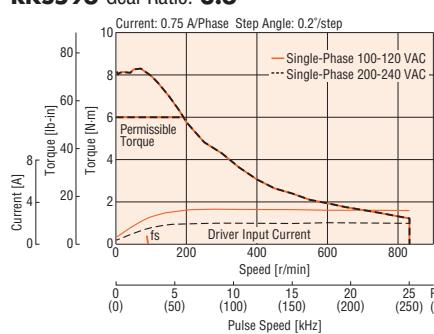

RKS596 Gear Ratio: **7.2**
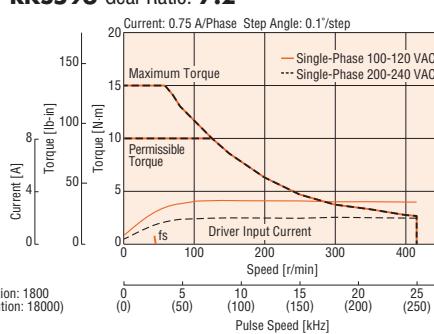
RKS596 Gear Ratio: **10**
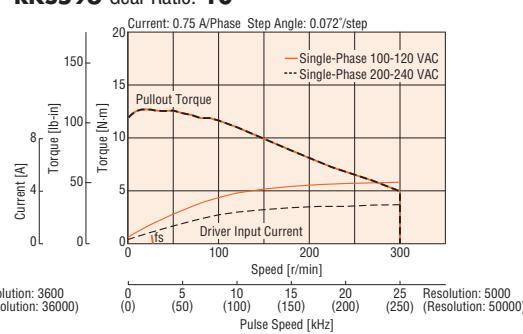
RKS596 Gear Ratio: **20**
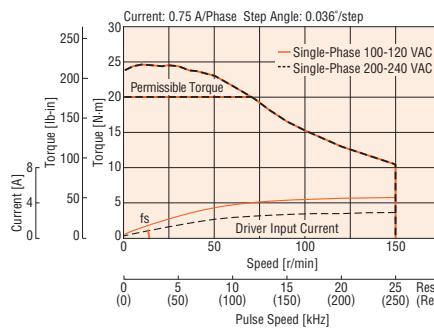
RKS596 Gear Ratio: **30**
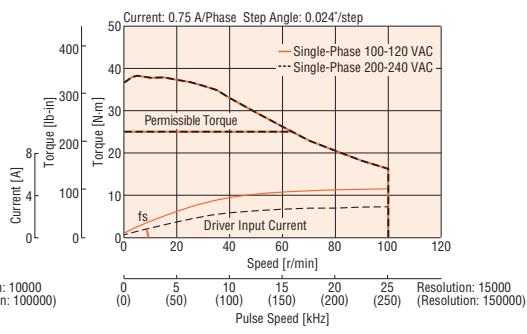
Note
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100℃ (212°F).

PS Geared Type
PS Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

■Specifications (RoHS)

Product Name	Built-in Controller Type	RKS545□□D-PS5-3	RKS545□□D-PS7.2-3	RKS545□□D-PS10-3	RKS543□□D-PS25-3	RKS543□□D-PS36-3	RKS543□□D-PS50-3
	Pulse Input Type	RKS545□-PS5-3	RKS545□-PS7.2-3	RKS545□-PS10-3	RKS543□-PS25-3	RKS543□-PS36-3	RKS543□-PS50-3
Maximum Holding Torque	N·m (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Rotor Inertia	J : kg·m^2 (oz-in^2)	64×10^{-7} (0.35) [79×10^{-7}]*1 (0.43)			30×10^{-7} (0.164) [45×10^{-7}]*1 (0.25)		
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 (lb-in)	1 (8.8)	1.5 (13.2)		2.5 (22)	3 (26)	
Maximum Torque*2	N·m (lb-in)	1.5 (13.2)	2 (17.7)		6 (53)		
Holding Torque at Motor Standstill — Power ON	N·m (lb-in)	0.74 (6.5)	1.07 (9.4)	1.49 (13.1)	1.85 (16.3)	2.6 (23)	3 (26)
Holding Torque at Motor Standstill — Electromagnetic Brake	N·m (lb-in)	0.74 (6.5)	1.07 (9.4)	1.49 (13.1)	1.85 (16.3)	2.6 (23)	3 (26)
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 Input — Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15～+10% 50/60 Hz					
Power Supply Input — Input Current A — Single-Phase 100-120 VAC		1.9			2.1		
Power Supply Input — Input Current A — Single-Phase 200-240 VAC		1.2			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					

●Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
　Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ▢ 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 (49.2 ft.) 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**
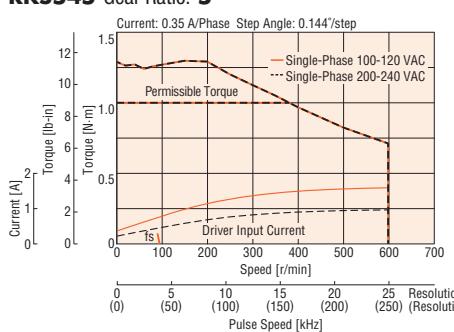
RKS545 Gear Ratio: **7.2**
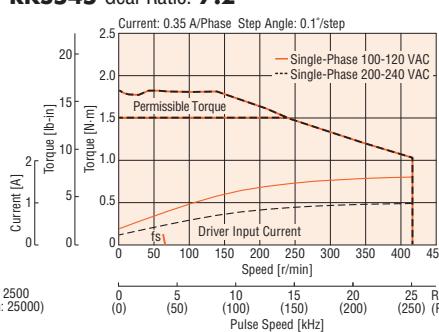

RKS545 Gear Ratio: **10**
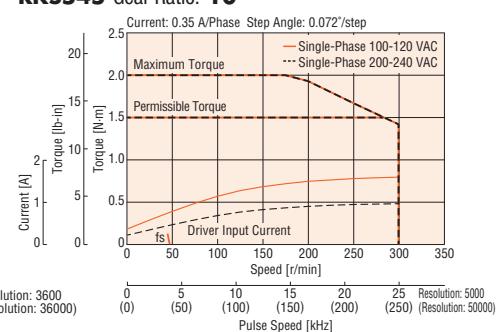
RKS543 Gear Ratio: **25**
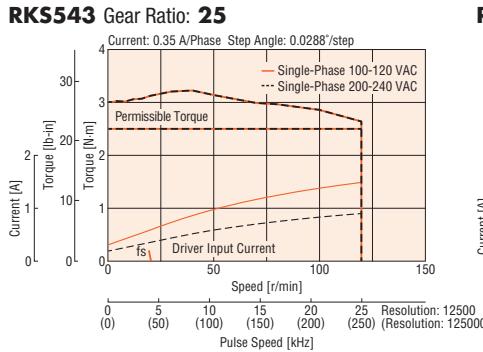
RKS543 Gear Ratio: **36**
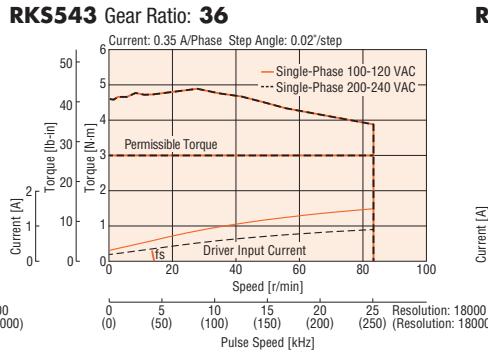
RKS543 Gear Ratio: **50**

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

PS Geared Type
PS Geared Type with Electromagnetic Brake

Frame Size 60 mm (2.36 in.)

■Specifications (RoHS)

Product Name	Built-in Controller Type	RKS566□□D-PS5-3	RKS566□□D-PS7.2-3	RKS566□□D-PS10-3	RKS564□□D-PS25-3	RKS564□□D-PS36-3	RKS564□□D-PS50-3
	Pulse Input Type	RKS566□□-PS5-3	RKS566□□-PS7.2-3	RKS566□□-PS10-3	RKS564□□-PS25-3	RKS564□□-PS36-3	RKS564□□-PS50-3
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Rotor Inertia	J : kg·m^2 (oz-in^2)	270×10^{-7} (1.48) [430×10^{-7}][1] (2.4)			160×10^{-7} (0.88) [320×10^{-7}][1] (1.75)		
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 (lb-in)	3.5 (30)	4 (35)	5 (44)	8 (70)		
Maximum Torque[2]	N·m (lb-in)	7 (61)	9 (79)	11 (97)	16 (141)	20 (177)	
Holding Torque at Motor Standstill — Power ON	N·m (lb-in)	2.7 (23)	3.9 (34)	5 (44)	7.2 (63)	8 (70)	
Holding Torque at Motor Standstill — Electromagnetic Brake	N·m (lb-in)	2.7 (23)	3.9 (34)	5 (44)	7.2 (63)	8 (70)	
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°)		
Power Supply Input — Voltage / Frequency		Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+10% 50/60 Hz					
Power Supply Input — Input Current A — Single-Phase 100-120 VAC		3.8			4.0		
Power Supply Input — Input Current A — Single-Phase 200-240 VAC		2.4			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					

● Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
　Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where □ 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 (49.2 ft.) 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**
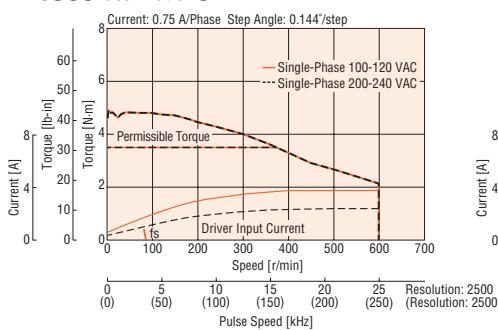
RKS566 Gear Ratio: **7.2**
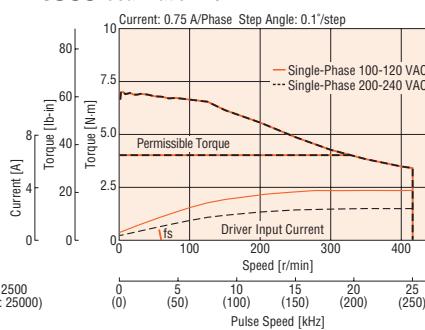
**RKS566** Gear Ratio: **10**
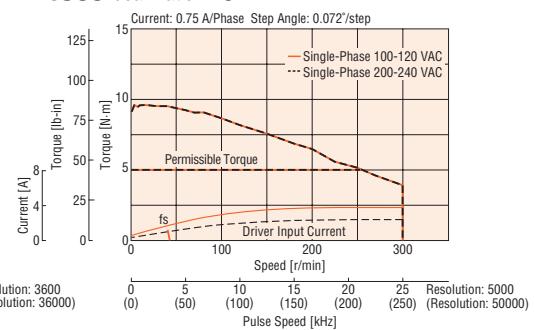
RKS564 Gear Ratio: **25**
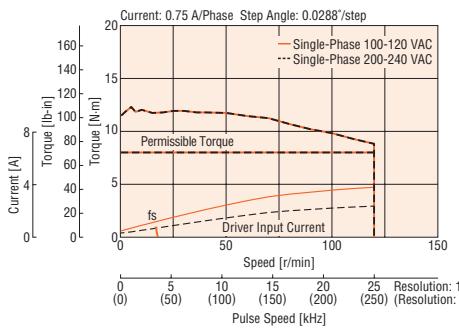
RKS564 Gear Ratio: **36**
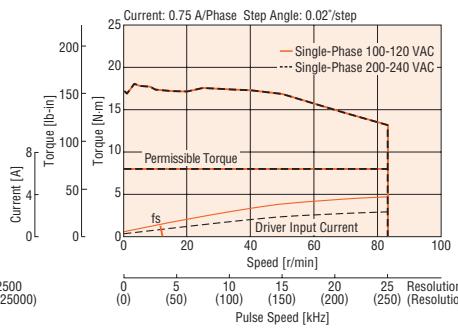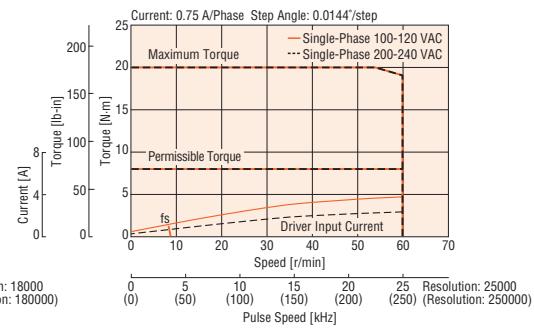
RKS564 Gear Ratio: **50**

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

PS Geared Type
PS Geared Type with Electromagnetic Brake

Frame Size 90 mm (3.54 in.)

■Specifications (RoHS)

Product Name	Built-in Controller Type	RKS599□D-PS5-3	RKS599□D-PS7.2-3	RKS599□D-PS10-3	RKS596□□D-PS25-3	RKS596□□D-PS36-3	RKS596□□D-PS50-3
	Pulse Input Type	RKS599□□-PS5-3	RKS599□□-PS7.2-3	RKS599□□-PS10-3	RKS596□□-PS25-3	RKS596□□-PS36-3	RKS596□□-PS50-3
Maximum Holding Torque	N·m (lb-in)	14 (123)	20 (177)		36 (310)	37 (320)	
Rotor Inertia	J : kg·m^2 (oz-in^2)	2200×10^{-7} (12) [3300×10^{-7}][1] (18.1)			1100×10^{-7} (6) [2200×10^{-7}][1] (12)		
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 (lb-in)	14 (123)	20 (177)		37 (320)		
Maximum Torque[2]	N·m (lb-in)	28 (240)	35 (300)		56 (490)	60 (530)	
Holding Torque at Motor Standstill	Power ON — N·m (lb-in)	12.5 (110)	18 (159)	20 (177)	18.5 (163)	26 (230)	37 (320)
	Electromagnetic Brake — N·m (lb-in)	12.5 (110)	18 (159)	20 (177)	18.5 (163)	26 (230)	37 (320)
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°)		
Power Supply Input	Voltage / Frequency	Single-Phase 100-120 VAC, Single-Phase 200-240 VAC −15~+10% 50/60 Hz					
	Input Current A — Single-Phase 100-120 VAC	3.5			4.9		
	Input 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					

● Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
　Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ▯ 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 (49.2 ft.) 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**
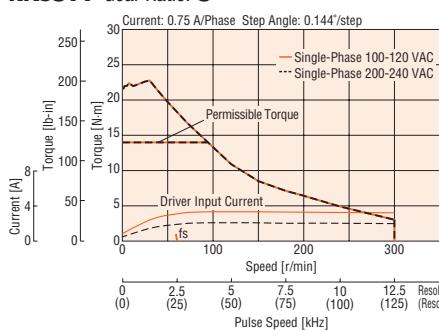
RKS599 Gear Ratio: **7.2**
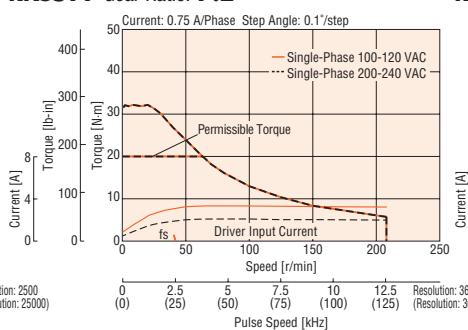

RKS599 Gear Ratio: **10**
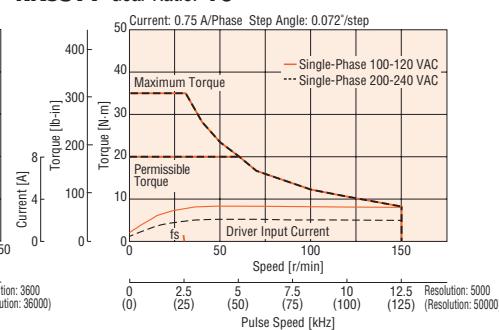
RKS596 Gear Ratio: **25**
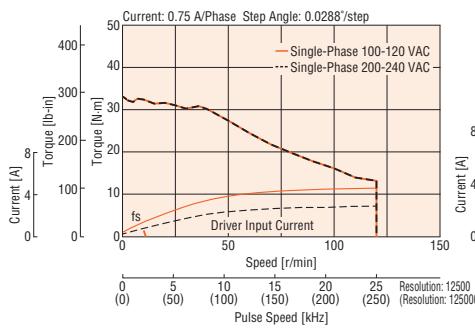
RKS596 Gear Ratio: **36**
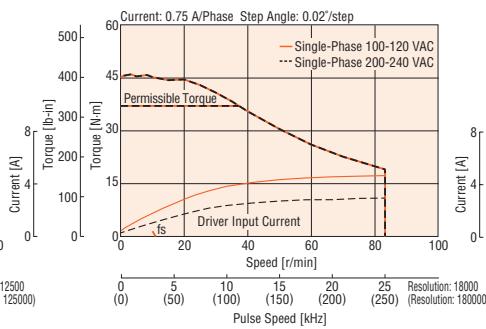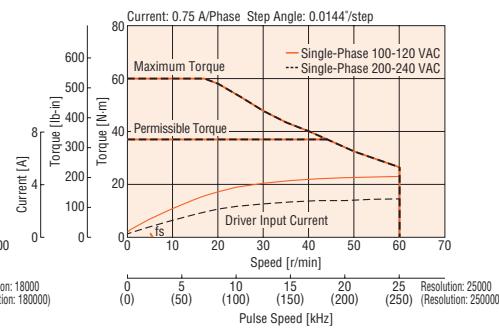
RKS596 Gear Ratio: **50**

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

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

■Specifications (RoHS)

| Product Name | Built-in Controller Type | RKS543□D-HS50-3 | RKS543□□D-HS100-3 | RKS564□□D-HS50-3 | RKS564□□D-HS100-3 | RKS596□□D-HS50-3 | RKS596□□D-HS100-3 |
	Pulse Input Type	RKS543□□-HS50-3	RKS543□□-HS100-3	RKS564□□-HS50-3	RKS564□□-HS100-3	RKS596□□-HS50-3	RKS596□□-HS100-3
Maximum Holding Torque	N·m (lb-in)	3.5 (30)	5 (44)	7 (61)	10 (88)	33 (290)	52 (460)
Rotor Inertia	J : kg·m² (oz-in²)	$47×10^{-7}$ (0.26) [$62×10^{-7}$][1] (0.34)		$195×10^{-7}$ (1.07) [$355×10^{-7}$][1] (1.94)		$1300×10^{-7}$ (7.1) [$2400×10^{-7}$][1] (13.1)	
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		3.5 (30)	5 (44)	7 (61)	10 (88)	33 (290)	52 (460)
Maximum Torque[2]	N·m (lb-in)	8.3 (73)	11 (97)	23 (200)	36 (310)	73 (640)	107 (940)
Holding Torque at Motor Standstill — Power ON	N·m (lb-in)	3.5 (30)	5 (44)	7 (61)	10 (88)	33 (290)	52 (460)
Holding Torque at Motor Standstill — Electromagnetic Brake	N·m (lb-in)	3.5 (30)	5 (44)	7 (61)	10 (88)	33 (290)	52 (460)
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					
Power Supply Input — Input Current A	Single-Phase 100-120 VAC	2.1		4.0		4.9	
Power Supply Input — Input Current A	Single-Phase 200-240 VAC	1.3		2.4		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] 0.08 A		24 VDC±5%[5] 0.25 A		24 VDC±5%[5] 0.42 A	

●Enter **A** (single shaft), **B** (double shaft) or **M** (electromagnetic brake) where the box □ is located within the product name.
　Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where □ 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 (49.2 ft.) or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

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

## ■Speed – Torque Characteristics fs: Maximum Starting Frequency

RKS543 Gear Ratio: **50**
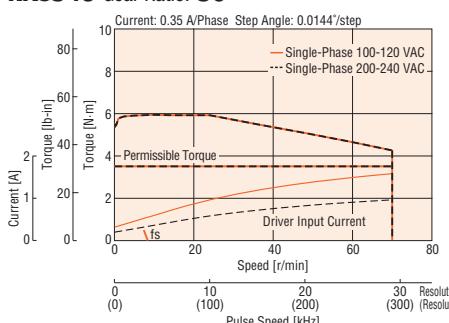

RKS564 Gear Ratio: **50**
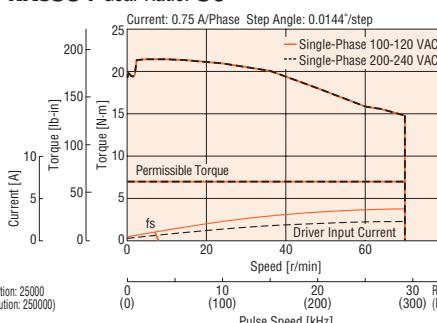
RKS596 Gear Ratio: **50**
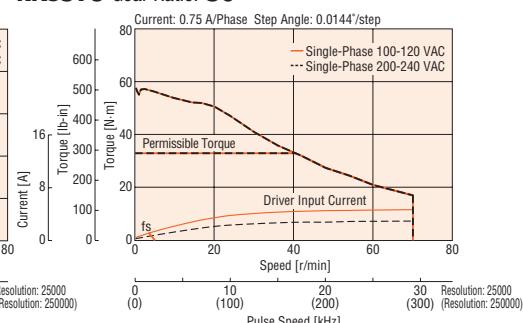
RKS543 Gear Ratio: **100**
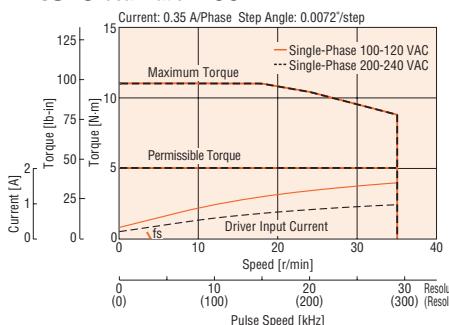
**RKS564** Gear Ratio: **100**
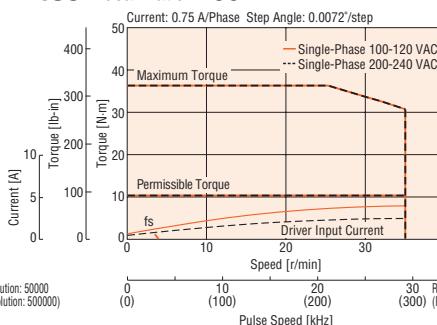
RKS596 Gear Ratio: **100**
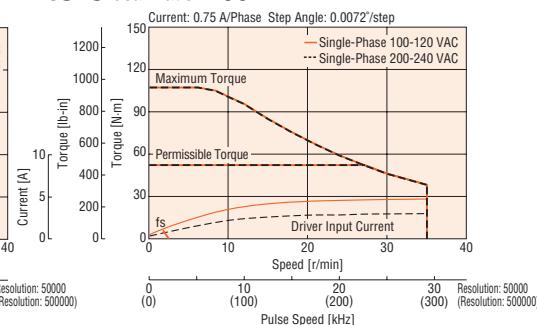
Notes
●Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the temperature of the motor case under 100℃ (212°F).
●For the Harmonic Gear operation, be sure to keep the temperature of the gear case under 70℃ (158°F) to prevent deterioration of grease applied to the gear.

■ Driver Specifications

	Built-in Controller type	Pulse-Input Type
Maximum Input Pulse Frequency	–	Line Driver Output from controller: 500 kHz (at 50% duty) Open-collector Output from controller: 250 kHz (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 **OPX-2A**	○	–
Data Setting Software **MEXE02**	○	–

■ Built-in Controller (Stored Data) 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.
Sending and Receiving Method	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

		Motor	Driver	
			Built-in Controller Type	Pulse Input Type
Heat-Resistant 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	· PE terminal – Power supply terminal 1.8 kVAC 50 Hz or 60 Hz · Signal I/O terminal – Power supply terminal 1.9 kVAC 50 Hz or 60 Hz
Operating Environment (In Operation)	Ambient Temperature	−10~+50°C (+14~+122°F) (non-freezing): Standard Type, **TS** and **PS** Geared Type 0~+50°C (+32~+122°F) (non-freezing): Package with Encoder 0~+40°C (+32~+104°F) (non-freezing): Harmonic geared type	0~+55°C (+32~+131°F)*2 (non-freezing)	
	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 (176°F) 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 (0.002 in.) T.I.R mm*4	–	
Radial Play*5		0.025 mm (0.001 in.) Max. Load 5 N (1.12 lb.)	–	
Axial Play*6		0.075 mm (0.003 in.) Max. Load 10 N (2.2 lb.)	–	
Concentricity of Installing Pilot to the Shaft		0.075 (0.003 in.) T.I.R mm*4	–	
Perpendicularity of Installation Surface to the Shaft		0.075 (0.003 in.) T.I.R mm*4	–	

*1 Only for Built-in Controller Package

*2 When attaching a heat sink 200 mm×200 mm (7.87×7.87)×2 mm (0.08 in.), 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 (1.12 lb.) 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 (2.2 lb.) 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.
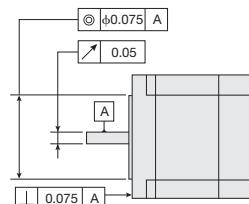
■ Encoder Specifications

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 (lb.)

Type	Frame Size	Product Name	Gear Ratio	Permissible Radial Load					Permissible Axial Load
				Distance from tip of shaft mm (in.)					
				0 (0)	5 (0.2)	10 (0.39)	15 (0.59)	20 (0.79)	
Standard Type	42 mm (1.65 in.)	RKS543	–	35 (7.8)	44 (9.9)	58 (13)	85 (19.1)	–	2.5 (0.56) <3.9 (0.87)> [3.1 (0.69)]
		RKS544							3.1 (0.69) <4.5 (1.01)> [3.7 (0.83)]
		RKS545							3.7 (0.83) <5.1 (1.14)> [4.3 (0.96)]
	60 mm (2.36 in.)	RKS564		90 (20)	100 (22)	130 (29)	180 (40)	270 (66)	6.9 (1.55) <9.8 (2.2)> [7.5 (1.67)]
		RKS566							8.8 (1.98) <11.8 (2.6)> [9.4 (2.1)]
		RKS569							13.7 (3) <16.7 (3.7)> [14.7 (3.3)]
	85 mm (3.35 in.)	RKS596		260 (58)	290 (65)	340 (76)	390 (87)	480 (108)	18.6 (4.1) <26.5 (5.9)> [19.6 (4.4)]
		RKS599							29.4(6.6) <37.3 (8.3)> [30.4 (6.8)]
		RKS5913							40.2 (9) <48.1 (10.8)> [41.2 (9.2)]
TS Geared Type	42 mm (1.65 in.)	RKS543	3.6, 7.2, 10	20 (4.5)	30 (6.7)	40 (9)	50 (11.2)	–	15 (3.3)
			20, 30	40 (9)	50 (11.2)	60 (13.5)	70 (15.7)	–	
	60 mm (2.36 in.)	RKS564	3.6, 7.2, 10	120 (27)	135 (30)	150 (33)	165 (37)	180 (40)	40 (9)
			20, 30	170 (38)	185 (41)	200 (45)	215 (48)	230 (51)	
	90 mm (3.54 in.)	RKS596	3.6, 7.2, 10	300 (67)	325 (73)	350 (78)	375 (84)	400 (90)	150 (33)
			20, 30	400 (90)	450 (101)	500 (112)	550 (123)	600 (135)	
PS Geared Type	42 mm (1.65 in.)	RKS545	5, 7.2, 10	73 (16.4)	84 (18.9)	100 (22)	123 (27)	–	50 (11.2)
		RKS543	25, 36, 50	109 (24)	127 (28)	150 (33)	184 (41)	–	
	60 mm (2.36 in.)	RKS566	5	200 (45)	220 (49)	250 (56)	280 (63)	320 (72)	100 (22)
			7.2, 10	250 (56)	270 (60)	300 (67)	340 (76)	390 (87)	
		RKS564	25, 36, 50	330 (74)	360 (81)	400 (90)	450 (101)	520 (117)	
	90 mm (3.54 in.)	RKS599	5, 7.2, 10	480 (108)	540 (121)	600 (135)	680 (153)	790 (177)	300 (67)
		RKS596	25	850 (191)	940 (210)	1050 (230)	1190 (260)	1380 (310)	
			36	930 (200)	1030 (230)	1150 (250)	1310 (290)	1520 (340)	
			50	1050 (230)	1160 (260)	1300 (290)	1480 (330)	1710 (380)	
Harmonic Geared Type	42 mm (1.65 in.)	RKS543	50, 100	180 (40)	220 (49)	270 (60)	360 (81)	510 (114)	220 (49)
	60 mm (2.36 in.)	RKS564		320 (72)	370 (83)	440 (99)	550 (123)	720 (162)	450 (101)
	90 mm (3.54 in.)	RKS596		1090 (240)	1150 (250)	1230 (270)	1310 (290)	1410 (310)	1300 (290)

● 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 (in.)

●Motors

◇Standard Type

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS543A□D-3	RKS543A□-3	PKE543AC	34	–	0.26 (0.57)	B996
RKS543B□D-3	RKS543B□-3	PKE543BC	(1.34)	49 (1.93)		
RKS544A□D-3	RKS544A□-3	PKE544AC	40	–	0.32 (0.7)	B997
RKS544B□D-3	RKS544B□-3	PKE544BC	(1.57)	55 (2.17)		
RKS545A□D-3	RKS545A□-3	PKE545AC	46	–	0.38 (0.84)	B998
RKS545B□D-3	RKS545B□-3	PKE545BC	(1.81)	61 (2.4)		
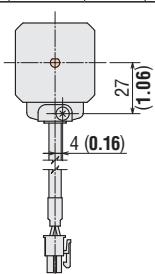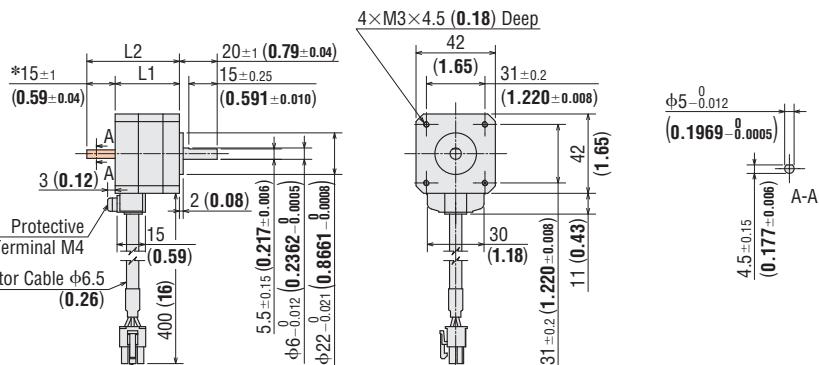
∗1 Length of milling cut for double shaft type is 15±0.25 (0.59±0.04)

Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS564A□D-3	RKS564A□-3	PKE564AC	48.5	–	0.7 (1.54)	B999
RKS564B□D-3	RKS564B□-3	PKE564BC	(1.91)	69.5 (2.74)		
RKS566A□D-3	RKS566A□-3	PKE566AC	59.5	–	0.9 (2.0)	B1000
RKS566B□D-3	RKS566B□-3	PKE566BC	(2.34)	80.5 (3.17)		
RKS569A□D-3	RKS569A□-3	PKE569AC	89	–	1.4 (3.1)	B1001
RKS569B□D-3	RKS569B□-3	PKE569BC	(3.50)	110 (4.33)		
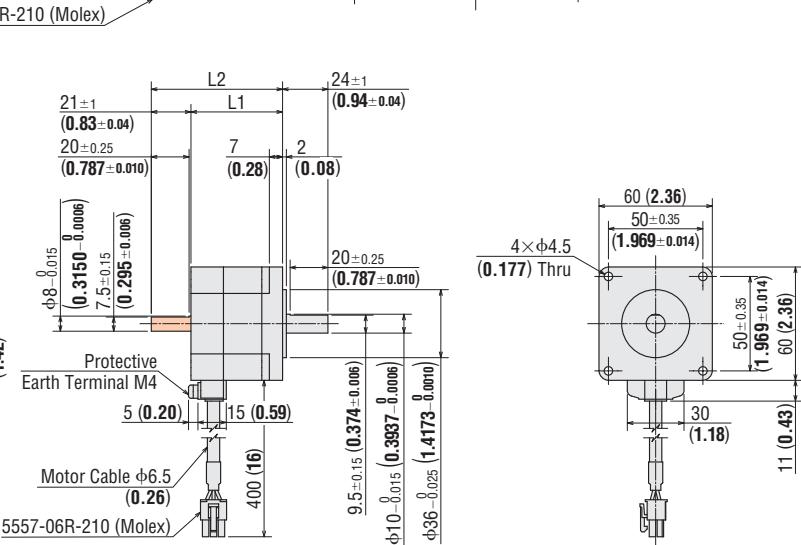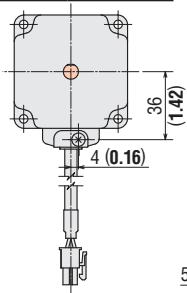
Frame Size 85 mm (3.35 in.)

| Product Name		Motor Product Name	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS596A□D-3	RKS596A□-3	PKE596AC	68	–	1.9 (4.2)	B1002
RKS596B□D-3	RKS596B□-3	PKE596BC	(2.68)	100 (3.94)		
RKS599A□D-3	RKS599A□-3	PKE599AC	98	–	3.0 (6.6)	B1003
RKS599B□D-3	RKS599B□-3	PKE599BC	(3.86)	130 (5.12)		
RKS5913A□D-3	RKS5913A□-3	PKE5913AC	128	–	4.1 (9.0)	B1004
RKS5913B□D-3	RKS5913B□-3	PKE5913BC	(5.04)	160 (6.30)		
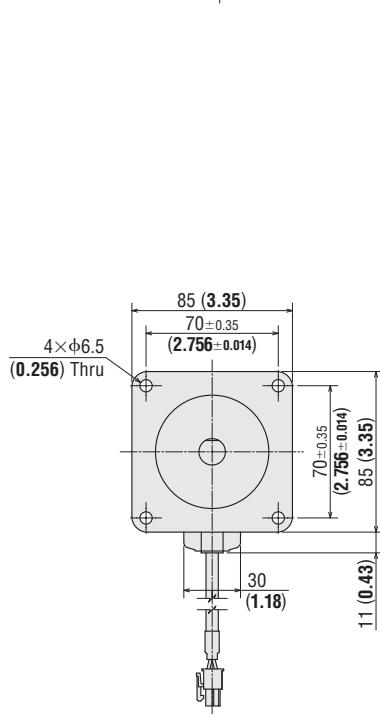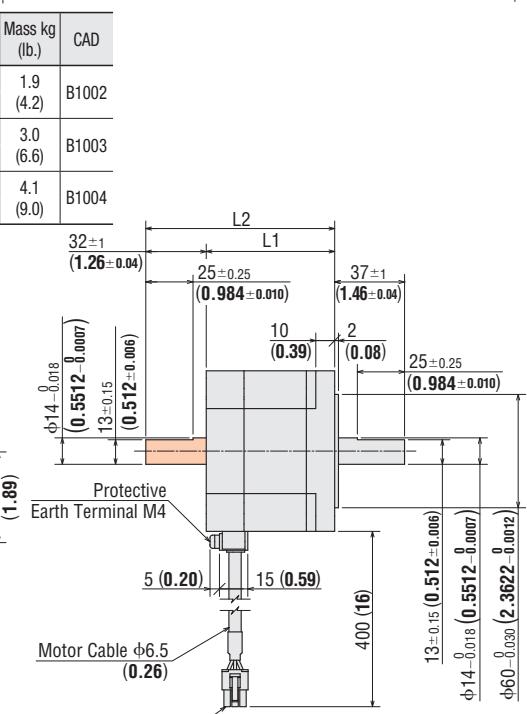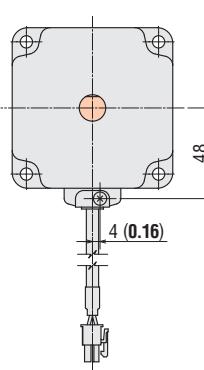
●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ■ is located within the product name.
●These dimensions are for double shaft models. For single shaft models, ignore the ■ areas.

◇Standard Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS543M☐D-3	RKS543M☐-3	PKE543MC	64 (2.52)	0.40 (0.88)	B1005
RKS544M☐D-3	RKS544M☐-3	PKE544MC	70 (2.76)	0.46 (1.01)	B1006
RKS545M☐D-3	RKS545M☐-3	PKE545MC	75 (2.95)	0.52 (1.14)	B1007
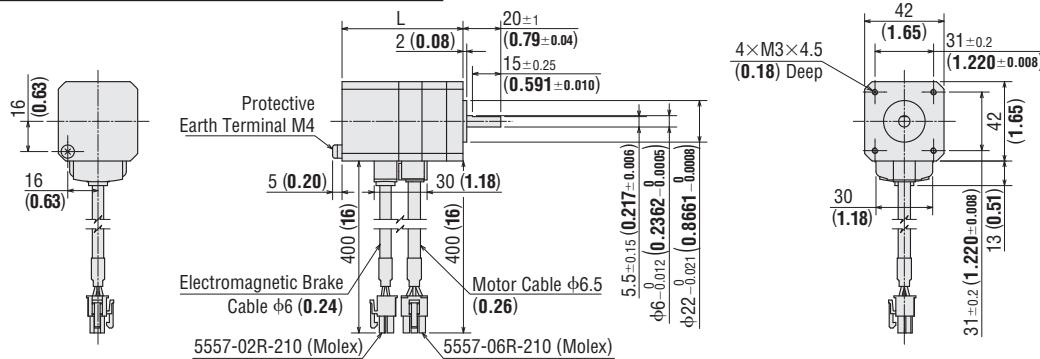
Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS564M☐D-3	RKS564M☐-3	PKE564MC	83.5 (3.29)	1.0 (2.2)	B1008
RKS566M☐D-3	RKS566M☐-3	PKE566MC	94.5 (3.72)	1.2 (2.6)	B1009
RKS569M☐D-3	RKS569M☐-3	PKE569MC	124 (4.88)	1.7 (3.7)	B1010
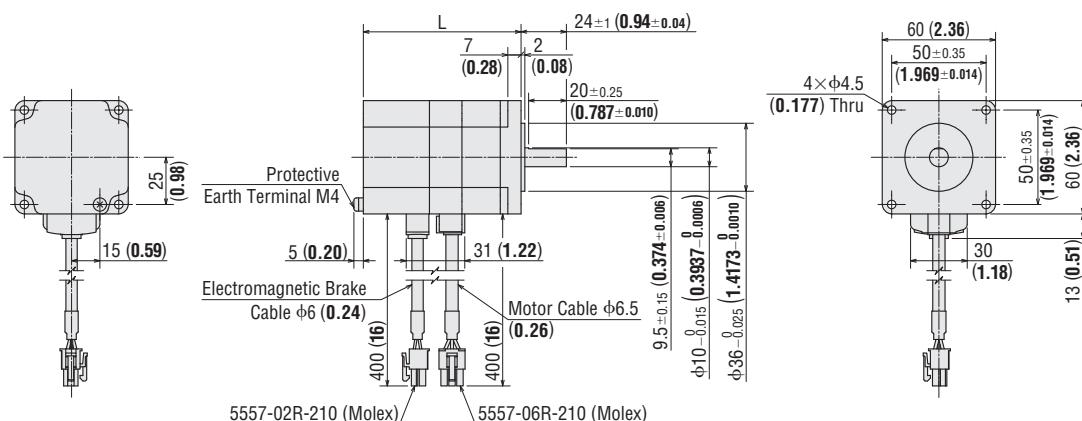
Frame Size 85 mm (3.35 in.)

| Product Name		Motor Product Name	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS596M☐D-3	RKS596M☐-3	PKE596MC	118 (4.65)	2.7 (5.9)	B1011
RKS599M☐D-3	RKS599M☐-3	PKE599MC	148 (5.83)	3.8 (8.4)	B1012
RKS5913M☐D-3	RKS5913M☐-3	PKE5913MC	178 (7.01)	4.9 (10.8)	B1013
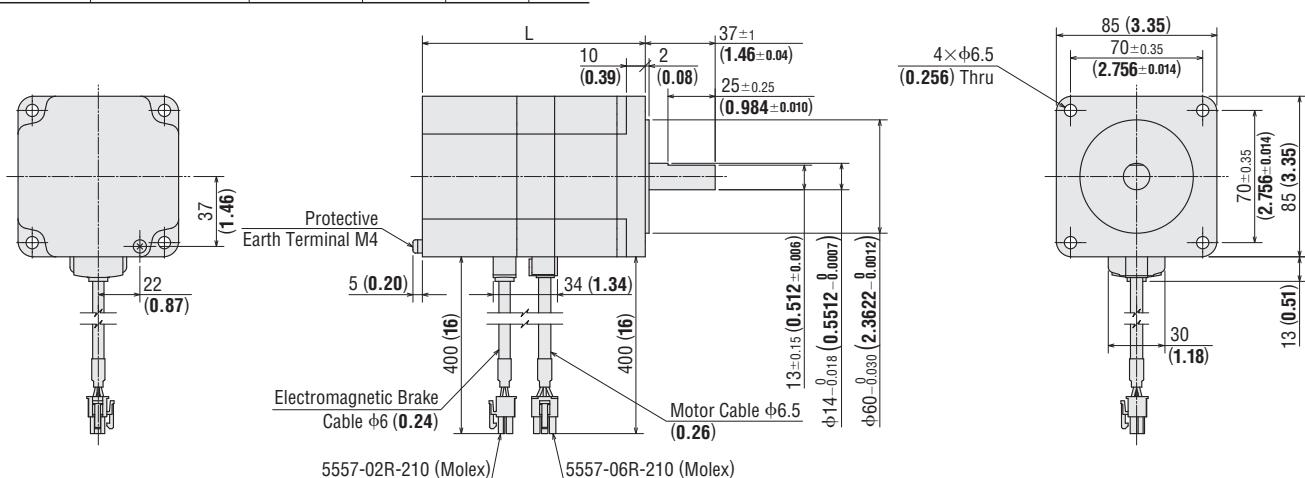
●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.

33

◇**Built-in Controller (Stored Data) Type with Encoder**

Frame Size 42 mm (1.65 in.)

Product Name	Motor Product Name	L	Mass kg (lb.)	CAD
RKS543R☐D2-3	PKE543RC2	56 (2.20)	0.32 (0.71)	B1083
RKS544R☐D2-3	PKE544RC2	62 (2.44)	0.38 (0.84)	B1084
RKS545R☐D2-3	PKE545RC2	68 (2.68)	0.44 (0.97)	B1085
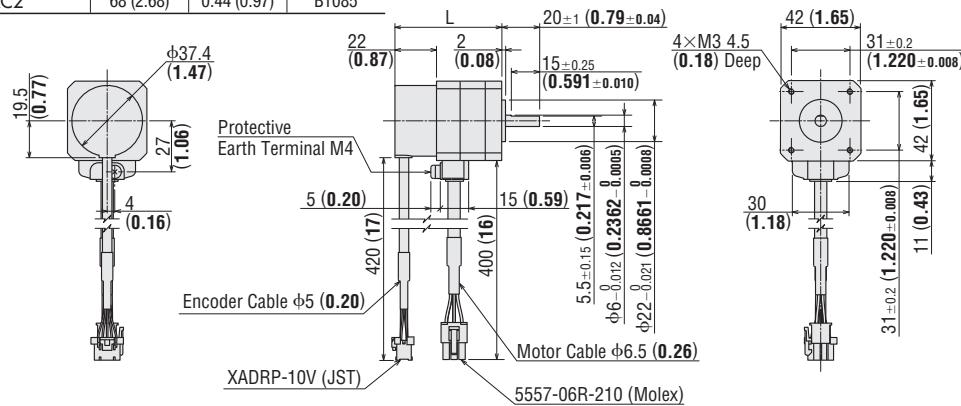
Frame Size 60 mm (2.36 in.)

Product Name	Motor Product Name	L	Mass kg (lb.)	CAD
RKS564R☐D2-3	PKE564RC2	70.5 (2.78)	0.76 (1.67)	B1086
RKS566R☐D2-3	PKE566RC2	81.5 (3.21)	0.96 (2.1)	B1087
RKS569R☐D2-3	PKE569RC2	111 (4.37)	1.5 (3.31)	B1088
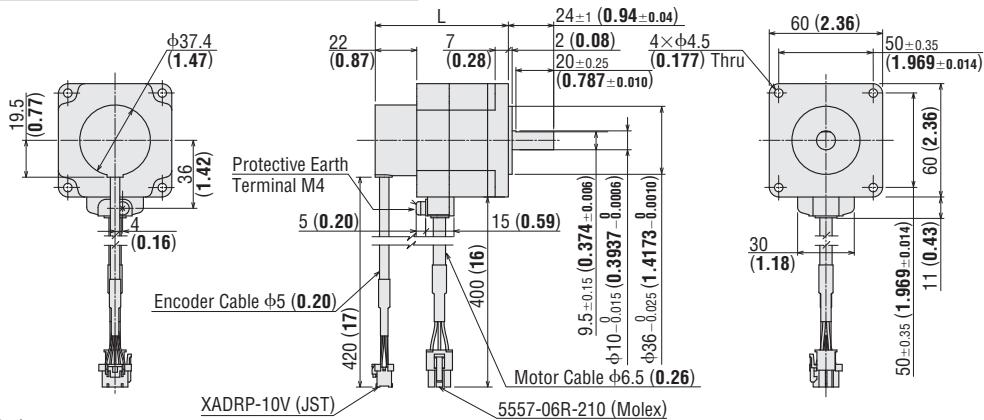
Frame Size 85 mm (3.35 in.)

| Product Name	Motor Product Name	L	Mass kg (lb.)	CAD
RKS596R☐D2-3	PKE596RC2	90 (3.54)	2.0 (4.4)	B1089
RKS599R☐D2-3	PKE599RC2	120 (4.72)	3.1 (6.8)	B1090
RKS5913R☐D2-3	PKE5913RC2	150 (5.91)	4.2 (9.3)	B1091
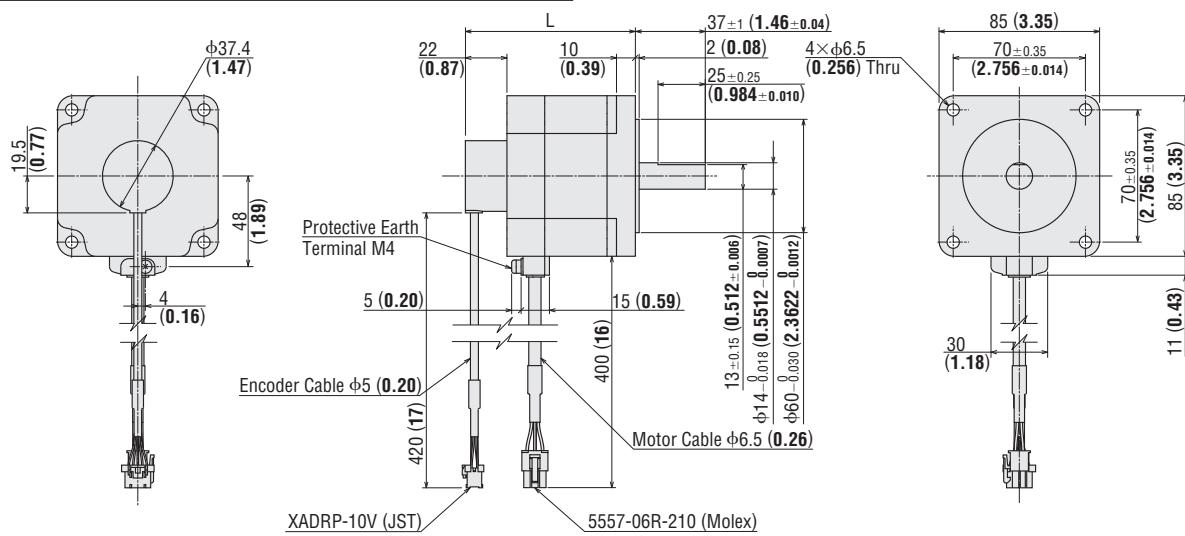
●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.

34

◇TS Geared Type

Frame Size 42 mm (1.65 in.)

| Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS543A☐D-TS☐-3	RKS543A☐-TS☐-3	PKE543AC-TS☐	**3.6**, **7.2**,	0.41	B1051
RKS543B☐D-TS☐-3	RKS543B☐-TS☐-3	PKE543BC-TS☐	**10**, **20**, **30**	(0.9)	
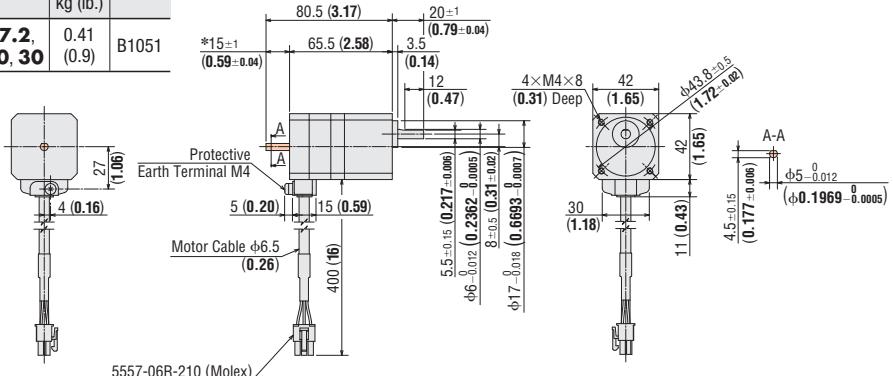
*1 Length of milling cut for double shaft type is
15±0.25 (0.59±0.04)

Frame Size 60 mm (2.36 in.)

| Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS564A☐D-TS☐-3	RKS564A☐-TS☐-3	PKE564AC-TS☐	**3.6**, **7.2**,	1.1	B1052
RKS564B☐D-TS☐-3	RKS564B☐-TS☐-3	PKE564BC-TS☐	**10**, **20**, **30**	(2.4)	

●Mounting Screw: M4×60 P0.7 (4 screws are included with the product)
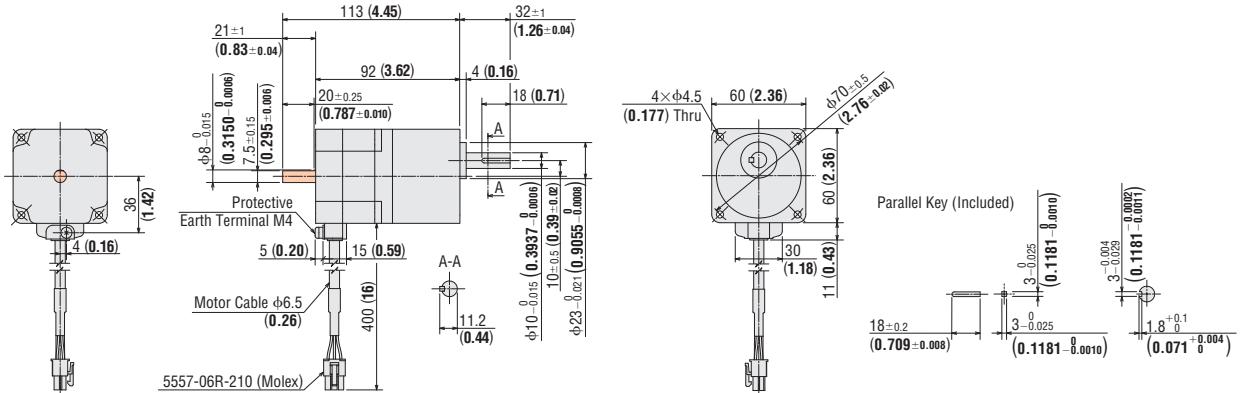
Frame Size 90 mm (3.54 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS596A☐D-TS☐-3	RKS596A☐-TS☐-3	PKE596AC-TS☐	**3.6**, **7.2**,	3.1	B1053
RKS596B☐D-TS☐-3	RKS596B☐-TS☐-3	PKE596BC-TS☐	**10**, **20**, **30**	(6.9)	

●Mounting Screw: M8×90 P1.25 (4 screws are included with the product)
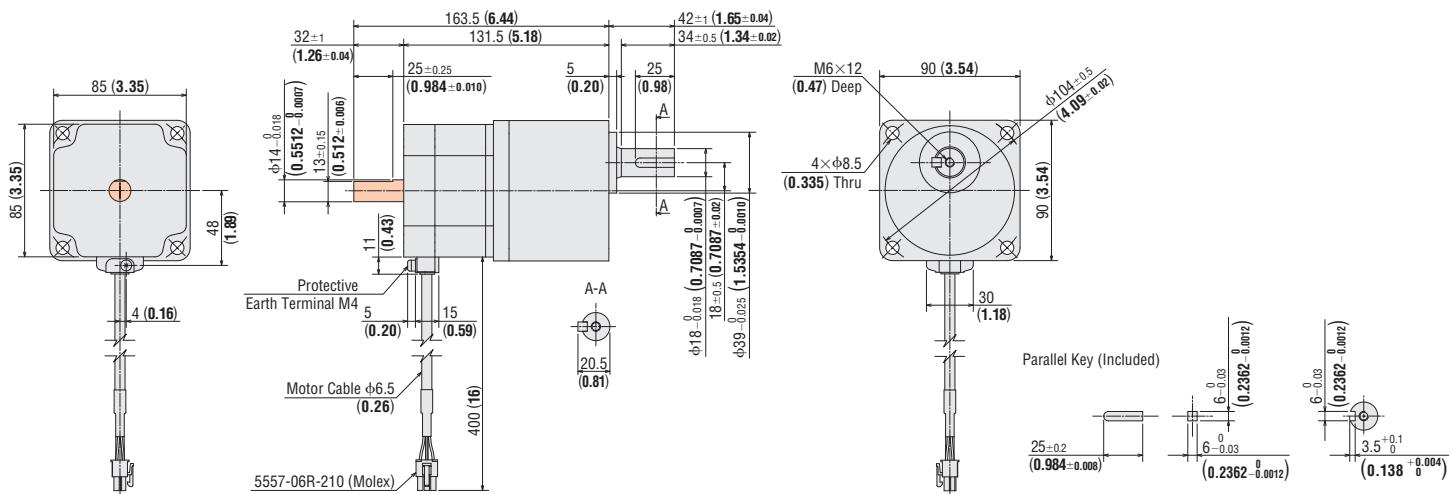
●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
●A value indicating the Gear Ratio is entered where the box ☐ is located within the product name.
●These dimensions are for double shaft models. For single shaft models, ignore the ▭ areas.

◇**TS** Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS543M☐-TS☐-3	RKS543M☐D-TS☐-3	PKE543MC-TS☐	**3.6**, **7.2**, **10**, **20**, **30**	0.55 (1.21)	B1054
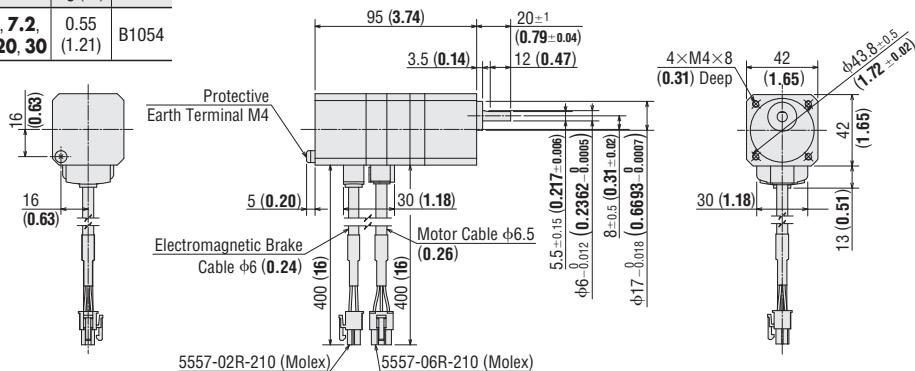
Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS564M☐-TS☐-3	RKS564M☐D-TS☐-3	PKE564MC-TS☐	**3.6**, **7.2**, **10**, **20**, **30**	1.4 (3.1)	B1055

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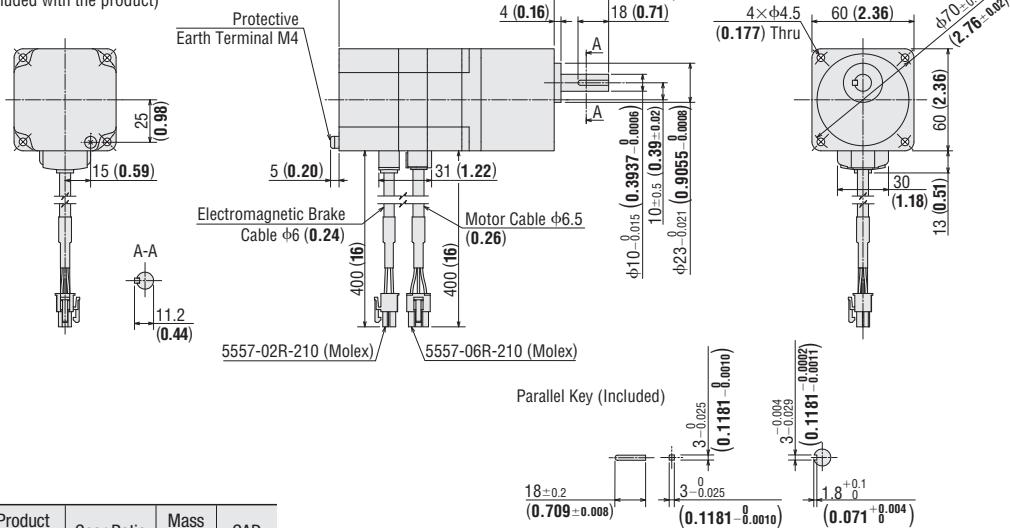
Parallel Key (Included)

Frame Size 90 mm (3.54 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS596M☐-TS☐-3	RKS596M☐D-TS☐-3	PKE596MC-TS☐	**3.6**, **7.2**, **10**, **20**, **30**	3.9 (8.6)	B1056

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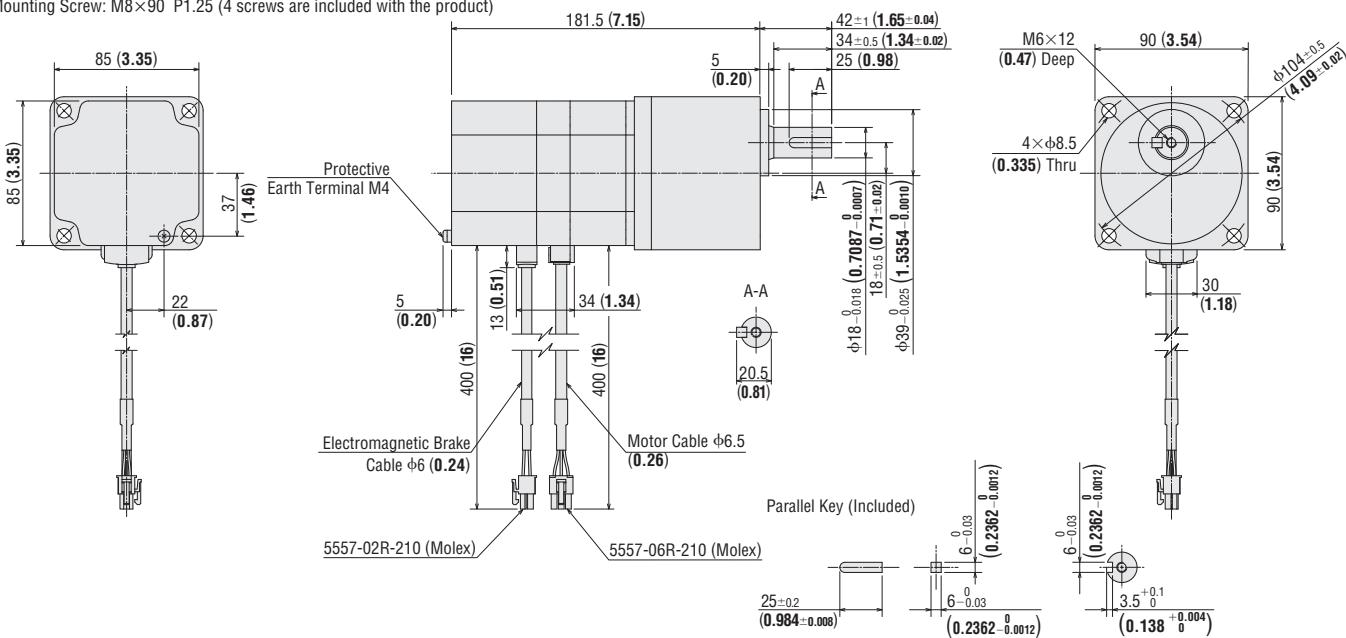

Parallel Key (Included)

● Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
● A value indicating the Gear Ratio is entered where the box ☐ is located within the product name.

◇PS Geared Type

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	Gear Ratio	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input						
RKS545A☐D-PS☐-3	RKS545A☐-PS☐-3	PKE545AC-PS☐	**5**, **7.2**, **10**	73.5 (2.89)	—	0.58 (1.28)	B1057
RKS545B☐D-PS☐-3	RKS545B☐-PS☐-3	PKE545BC-PS☐			88.5 (3.43)		
RKS543A☐D-PS☐-3	RKS543A☐-PS☐-3	PKE543AC-PS☐	**25**, **36**, **50**	86 (3.39)	—	0.61 (1.34)	B1058
RKS543B☐D-PS☐-3	RKS543B☐-PS☐-3	PKE543BC-PS☐			101 (3.98)		
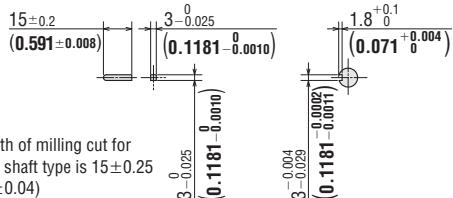
Parallel Key (Included)

*1 Length of milling cut for double shaft type is 15±0.25 (0.59±0.04)

Frame Size 60 mm (2.36 in.)

| Product Name		Motor Product Name	Gear Ratio	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input						
RKS566A☐D-PS☐-3	RKS566A☐-PS☐-3	PKE566AC-PS☐	**5**, **7.2**, **10**	92 (3.62)	—	1.3 (2.9)	B1059
RKS566B☐D-PS☐-3	RKS566B☐-PS☐-3	PKE566BC-PS☐			113 (4.45)		
RKS564A☐D-PS☐-3	RKS564A☐-PS☐-3	PKE564AC-PS☐	**25**, **36**, **50**	101.5 (4.00)	—	1.4 (3.1)	B1060
RKS564B☐D-PS☐-3	RKS564B☐-PS☐-3	PKE564BC-PS☐			122.5 (4.82)		
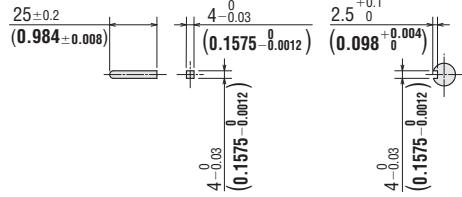
Parallel Key (Included)

Frame Size 90 mm (3.54 in.)

Product Name		Motor Product Name	Gear Ratio	L1	L2	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input						
RKS599A☐D-PS☐-3	RKS599A☐-PS☐-3	PKE599AC-PS☐	**5**, **7.2**, **10**	145 (5.71)	—	4.4 (9.7)	B1061
RKS599B☐D-PS☐-3	RKS599B☐-PS☐-3	PKE599BC-PS☐			177 (6.97)		
RKS596A☐D-PS☐-3	RKS596A☐-PS☐-3	PKE596AC-PS☐	**25**, **36**, **50**	142.5 (5.61)	—	4.1 (9.0)	B1062
RKS596B☐D-PS☐-3	RKS596B☐-PS☐-3	PKE596BC-PS☐			174.5 (6.87)		

Parallel Key (Included)

● Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
● A value indicating the Gear Ratio 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.

37
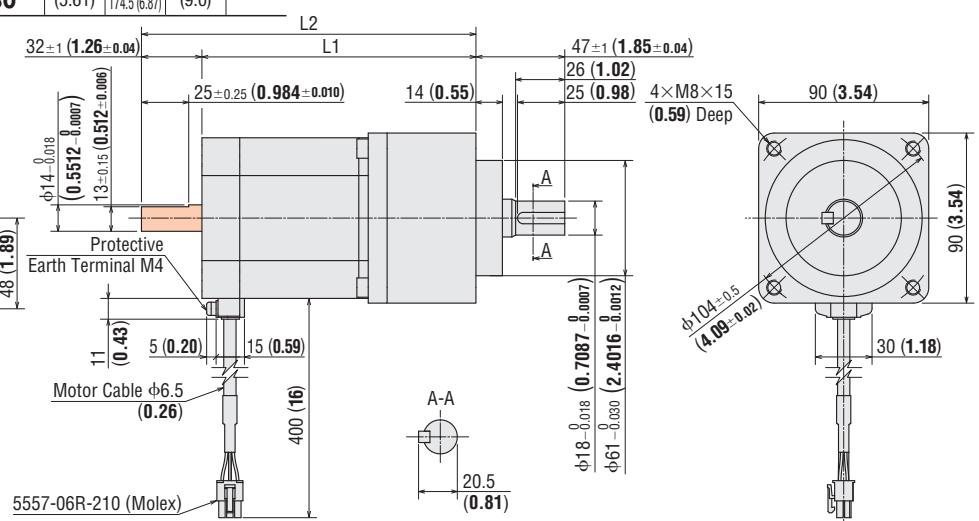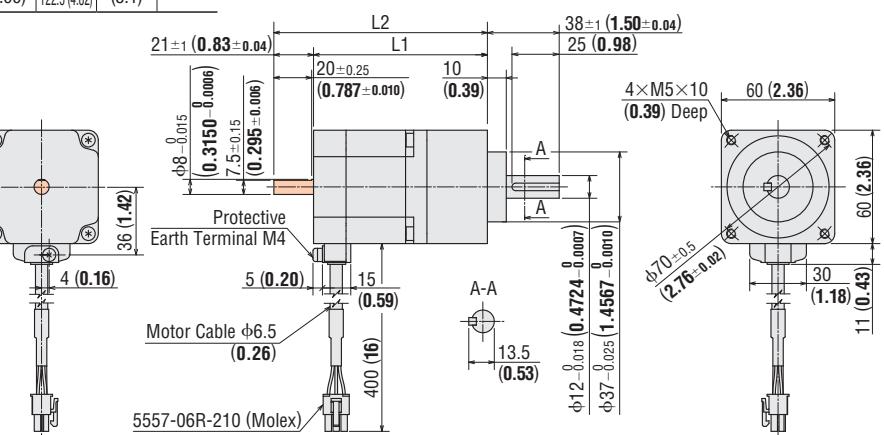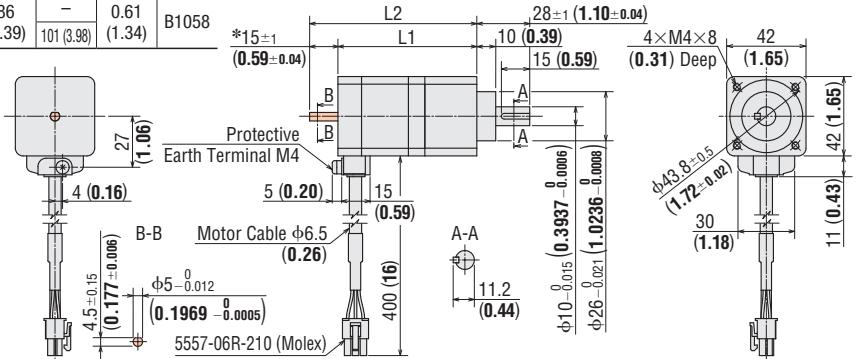
◇**PS** Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS545M☐D-PS☐-3	RKS545M☐-PS☐-3	PKE545MC-PS☐	**5**, **7.2**, **10**	103 (4.06)	0.72 (1.58)	B1063
RKS543M☐D-PS☐-3	RKS543M☐-PS☐-3	PKE543MC-PS☐	**25**, **36**, **50**	115.5 (4.55)	0.75 (1.65)	B1064
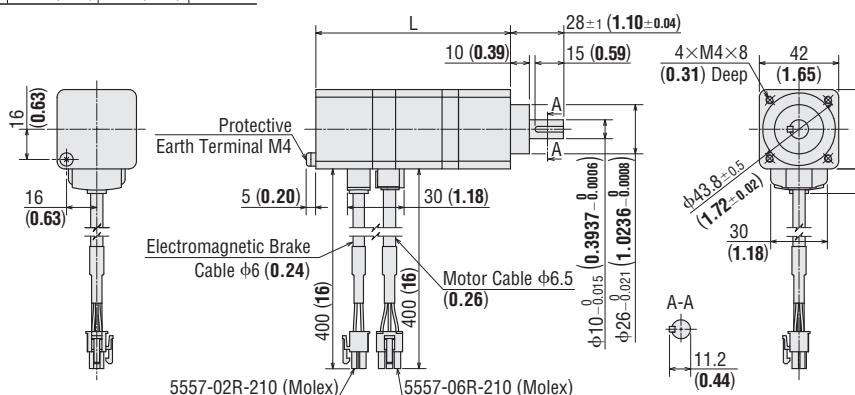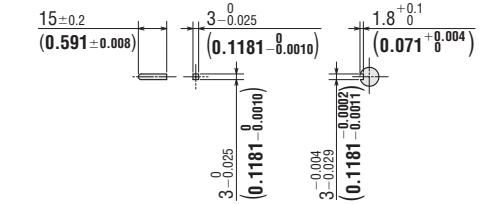
Parallel Key (Included)

Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS566M☐D-PS☐-3	RKS566M☐-PS☐-3	PKE566MC-PS☐	**5**, **7.2**, **10**	127 (5.0)	1.6 (3.5)	B1065
RKS564M☐D-PS☐-3	RKS564M☐-PS☐-3	PKE564MC-PS☐	**25**, **36**, **50**	136 (5.35)	1.7 (3.7)	B1066
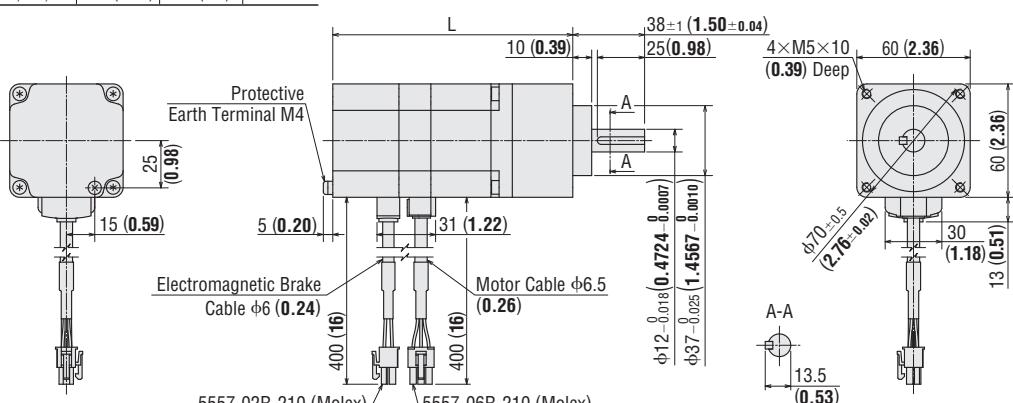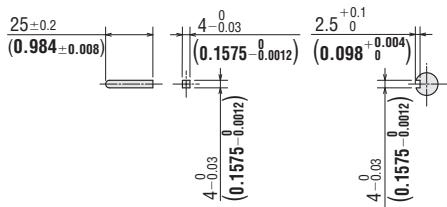
Parallel Key (Included)

Frame Size 90 mm (3.54 in.)

Product Name		Motor Product Name	Gear Ratio	L	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input					
RKS599M☐D-PS☐-3	RKS599M☐-PS☐-3	PKE599MC-PS☐	**5**, **7.2**, **10**	195 (7.68)	5.2 (11.4)	B1067
RKS596M☐D-PS☐-3	RKS596M☐-PS☐-3	PKE596MC-PS☐	**25**, **36**, **50**	192 (7.56)	4.9 (10.8)	B1068
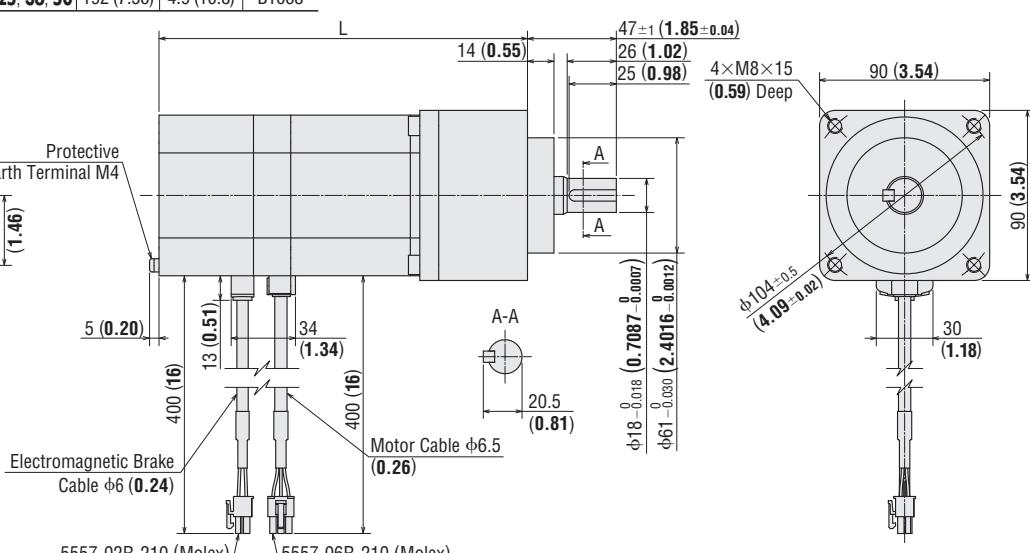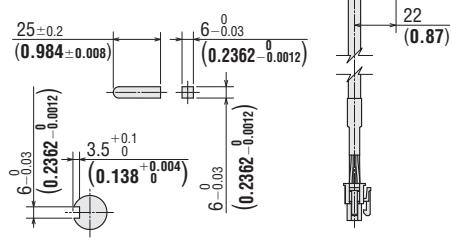
Parallel Key (Included)

●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
●A value indicating the Gear Ratio is entered where the box ☐ is located within the product name.

38

◇**Harmonic Geared Type**

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS543A☐D-HS☐-3	RKS543A☐-HS☐-3	PKE543AC-HS☐	**50**, **100**	0.47 (1.03)	B1033
RKS543B☐D-HS☐-3	RKS543B☐-HS☐-3	PKE543BC-HS☐			
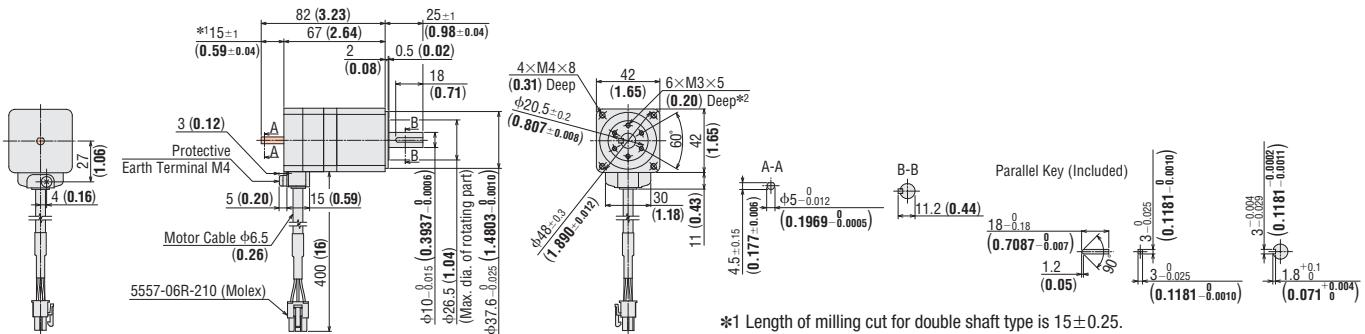
*1 Length of milling cut for double shaft type is 15±0.25.
*2 The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS564A☐D-HS☐-3	RKS564A☐-HS☐-3	PKE564AC-HS☐	**50**, **100**	1.2 (2.6)	B1034
RKS564B☐D-HS☐-3	RKS564B☐-HS☐-3	PKE564BC-HS☐			
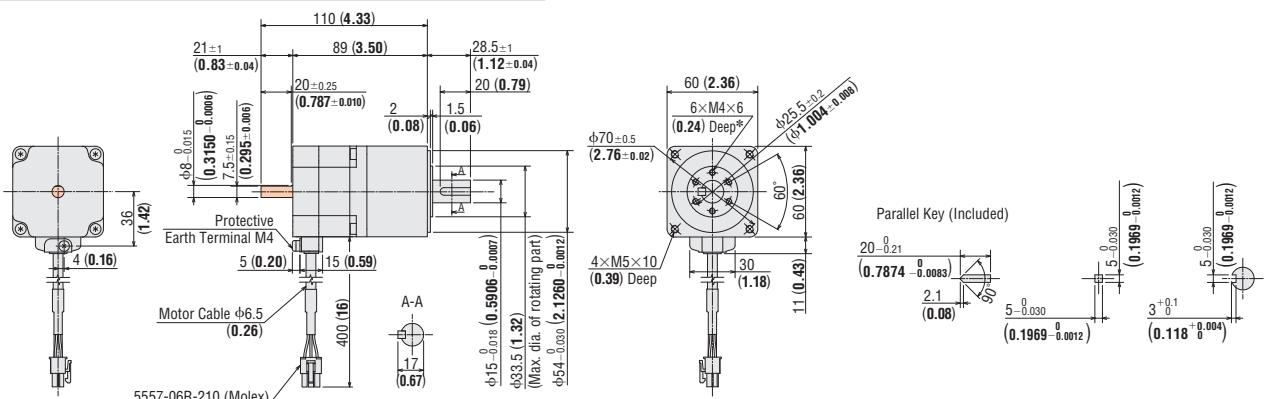
*The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 90 mm (3.54 in.)

| Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS596A☐D-HS☐-3	RKS596A☐-HS☐-3	PKE596AC-HS☐	**50**, **100**	3.9 (8.6)	B1035
RKS596B☐D-HS☐-3	RKS596B☐-HS☐-3	PKE596BC-HS☐			
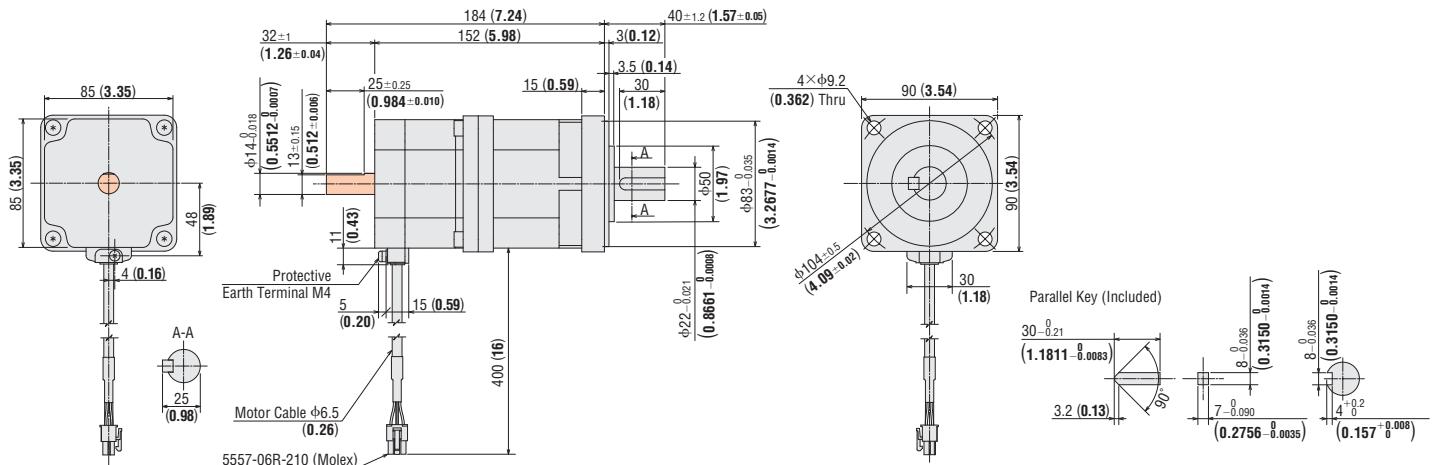
●Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
●A value indicating the Gear Ratio is entered where the box ☐ is located within the product name.
●These dimensions are for double shaft models. For single shaft models, ignore the ▭ areas.

39

## ◇Harmonic Geared Type with Electromagnetic Brake

Frame Size 42 mm (1.65 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS543M☐D-HS☐-3	RKS543M☐-HS☐-3	PKE543MC-HS☐	**50**, **100**	0.61 (1.34)	B1036
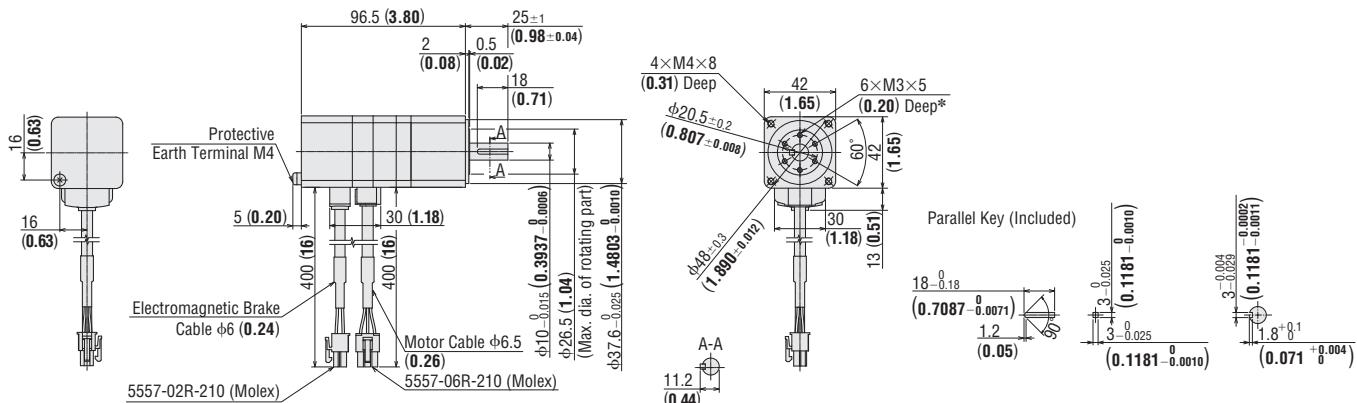
✽The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 60 mm (2.36 in.)

Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS564M☐D-HS☐-3	RKS564M☐-HS☐-3	PKE564MC-HS☐	**50**, **100**	1.5 (3.3)	B1037
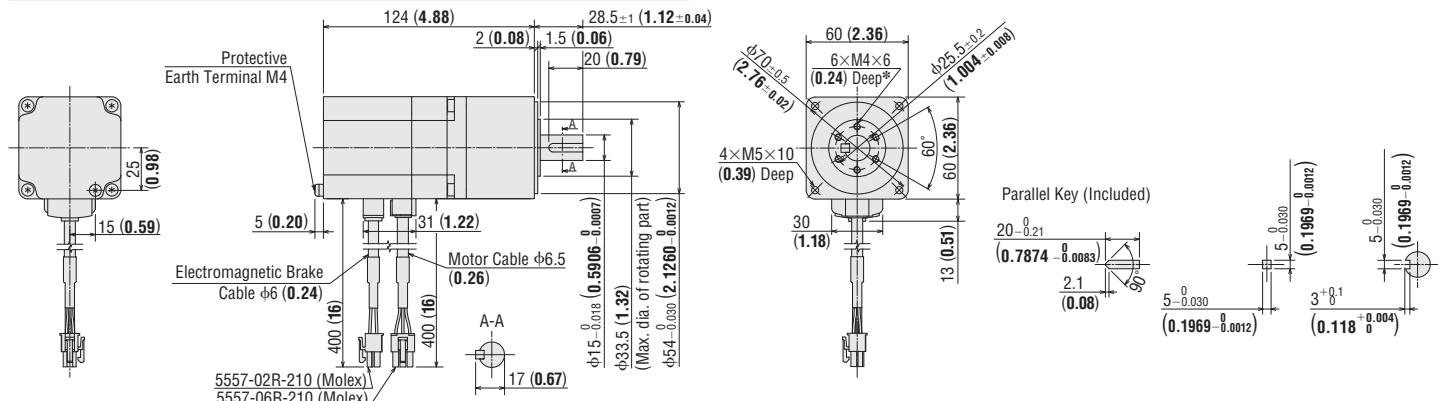
✽The position of the output shaft relative to the screw holes on the rotating part is arbitrary.

Frame Size 90 mm (3.54 in.)

| Product Name		Motor Product Name	Gear Ratio	Mass kg (lb.)	CAD
Built-in Controller	Pulse Input				
RKS596M☐D-HS☐-3	RKS596M☐-HS☐-3	PKE596MC-HS☐	**50**, **100**	4.8 (10.6)	B1038
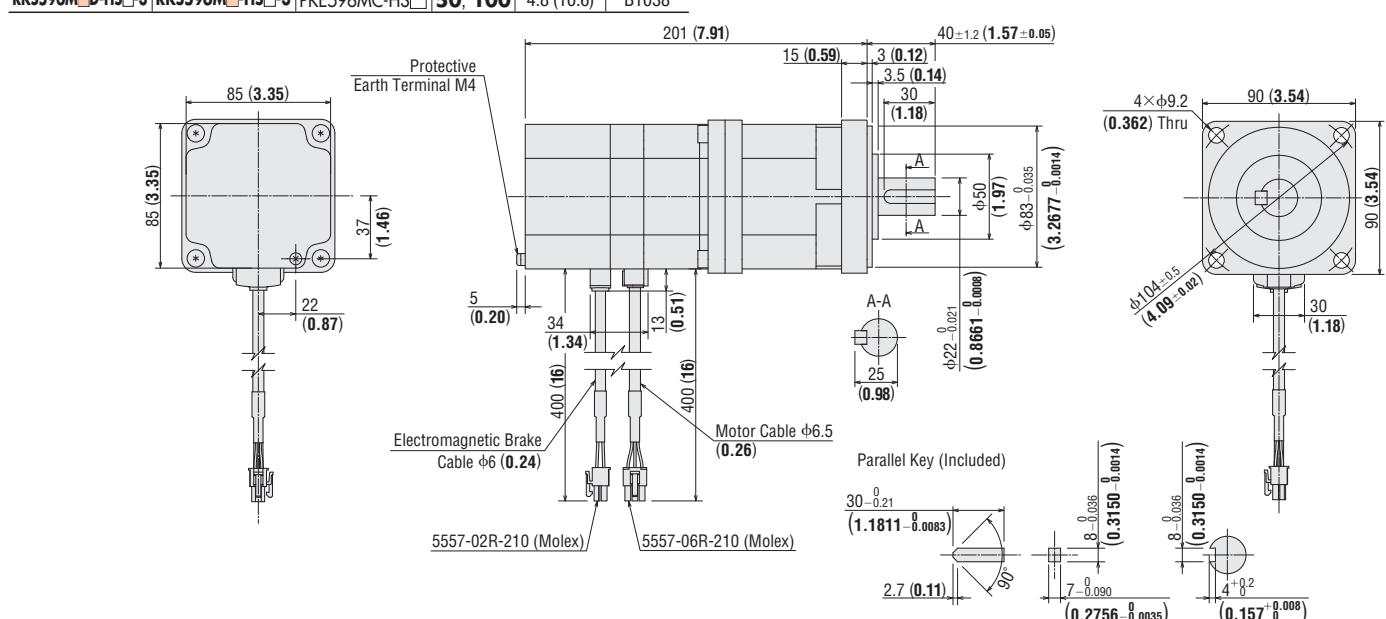
● Enter **A** (Single-Phase 100-120 VAC) or **C** (Single-Phase 200-240 VAC) where ☐ is located within the product name.
● A value indicating the Gear Ratio is entered where the box ☐ is located within the product name.

40

● 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 (ft.)
Cable for Motor	3 (9.8)

Motor Side — Driver Side

5559-06P-210 (Molex) 5557-06R-210 (Molex)

[23] (0.91) [12] (0.47) 23.9 (0.94) φ8.1 (0.32) L 19.6 (0.77) 13.8 (0.54) [15] (0.59)
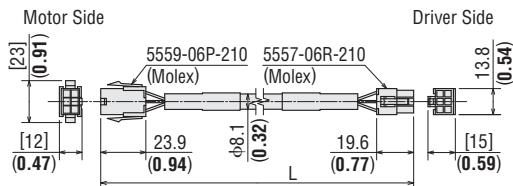
● Cable for Electromagnetic Brake
(Only for electromagnetic brake type)

| Cable for Motor	Length L m (ft.)
Cable for Motor	3 (9.8)

Motor Side — Driver Side

5559-02P-210 (Molex) Stick Terminal : AI0.5-8WH (Phoenix Contact)

[12] (0.47) [14] (0.55) 23.9 (0.94) φ4.1 (0.16) L 80 (3.15)
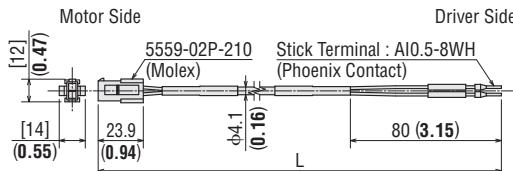
● Cable for Encoder (Only for encoder type)

Cable for Motor	Length L m (ft.)
Cable for Motor	3 (9.8)

Motor Side φ6.9 (0.27) : Cable for Encoder φ7.3 (0.29) : Flexible Cable for Encoder Driver Side

XADR-10V (JST) PUDP-10V-K (JST)

[21.4] (0.84) [10.1] (0.40) 21.5 (0.85) L 9.1 (0.36) 12 (0.47) [8.7] (0.34)

● Drivers

◇ Built-in Controller (Stored Data) Type

Mass: 0.8 kg (1.76 lb.) **CAD** B1048

Slits

Slits

40 (1.57) 160 (6.3) 9.5 (0.37) 4.8 (0.19) 4.5 (0.18)

21 (0.83) max. 120 (4.72) 5 (0.20)

Protective Earth Terminal 2×M4

5 (0.20) 150 (5.91) 5 (0.20) φ4.5 (0.177) Thru 30 (1.18) 5 (0.20)
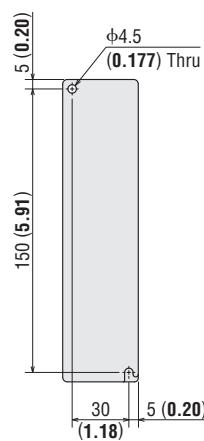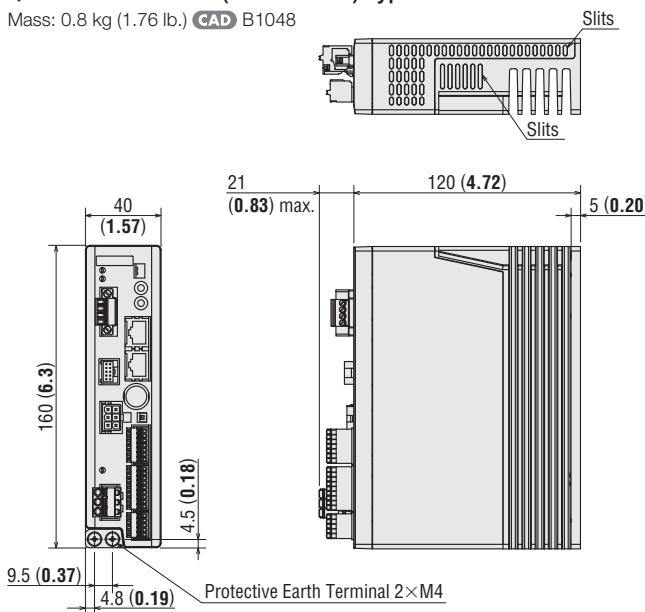
● Accessories

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: 0.8 kg (1.76 lb.) `CAD` Standard Type with Electromagnetic Brake: B1014, Standard Type: B1015

Slits
Slits

40 (**1.57**)

21 (**0.83**) max.

120 (**4.72**)

5 (**0.20**)

160 (**6.30**)

4.5 (**0.18**)

9.5 (**0.37**)

4.8 (**0.19**)

Protective Earth Terminal 2×M4

5 (**0.20**)

φ4.5 (**0.177**) Thru

150 (**5.91**)

30 (**1.18**)

5 (**0.20**)
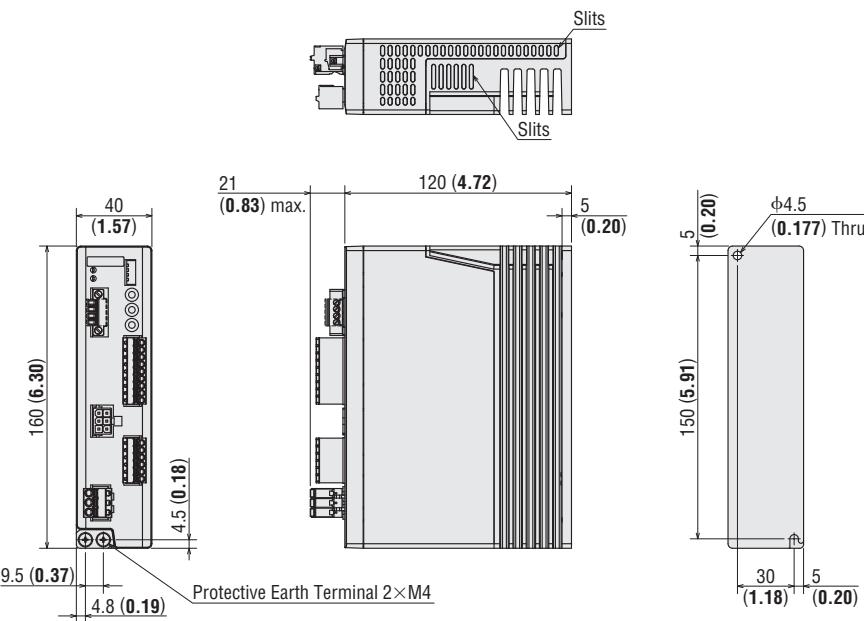
● Included

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	5 Function Setting Switches (SW1)
9 24 VDC Power Supply Input Terminal (CN1)	2 Axis Setting Switch (ID)
Electromagnetic Brake Terminal (CN1)	3 Baud Rate Setting Switch (BAUD)
	RS-485 Communication Connector (CN6)
Encoder Connector (CN10)	RS-485 Communication Connector (CN7)
	Control Module Connector (CN4)
Motor Connector (CN2)	4 Termination Resistor Setting Switches (TERM.)
	7 Output Signal Connector (CN9)
1 Signal Monitor Displays	6 Input Signal Connector (CN8)
Main Power Supply Input Terminal (CN3)	8 Sensor Signal Connector (CN5)
Protective Earth Terminal	

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 Axis Setting Switch (ID)

Indication	Switch Name	Function
ID	Axis Setting Switch	Set the axis 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-485 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

No. \ Destination	Connect to Network Converter	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	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

24 VDC Power Supply*3
Be sure to connect
when using an electromagnetic brake.

Data Setting Software

Control Module **OPX-2A**   **MEXE02**

or

To connect PC with driver,
please use communication
cable for the Data Setting
Software (**CC05IF-USB**,
sold separately).

24 VDC   Connect to CN1

GND

Connect to CN1

Cable for Electromagnetic Brake*1
Cable used to connect
electromagnetic brake and driver.

Connect to CN4

Connect to CN2

Output signal : Connect to CN9

Cable for Motor*1
Cable used to connect
motor and driver.

Input signal : Connect to CN8

PE

Sensor signal : Connect to CN5   Controller*2

Connect to CN3

PE

Power Supply Voltage*2
Single-Phase 100-120 VAC 50/60 Hz
Single-Phase 200-240 VAC 50/60 Hz

Circuit Breaker*2
or Ground Fault Interrupt Circuit
This must be placed, in order
to protect wiring on primary
side.

Noise Filter*2
Use a noise filter to eliminate noise.
This can help to reduce noise generated
by Power Supply or Driver.

*1 Each product comes with a motor cable 3 m (9.8 ft.) long. Different lengths and flexible cables are available (sold separately).
   When wiring the motor and the driver, keep a maximum distance of 20 m (65.6 ft.).
*2 Not Supplied.
*3 Not Supplied. If the wiring distance between the motor and driver is extended to 15 m (49.2 ft.) or longer by using an accessory cable (sold separately), the 24 VDC±4% specification applies.

◇Connecting to a Host Controller

• Connecting to a Current Sink Output Circuit

Controller

Driver

12~24 VDC

CN9

R_0 OUT0

10 mA max.→

R_0 OUT1

R_0 OUT2

R_0 OUT3

Output Saturation
Voltage 3 VDC max.

R_0 OUT4

R_0 OUT5

OUT-COM

0 V

CN8

IN0 4.4 kΩ 1 kΩ

IN1 4.4 kΩ 1 kΩ

IN2 4.4 kΩ 1 kΩ

IN3 4.4 kΩ 1 kΩ

IN4 4.4 kΩ 1 kΩ

IN5 4.4 kΩ 1 kΩ

IN6 4.4 kΩ 1 kΩ

IN7 4.4 kΩ 1 kΩ

24 VDC

IN-COM1 1 kΩ

0 V

NPN Sensor

24 VDC

CN5

+LS 4.4 kΩ 1 kΩ

−LS 4.4 kΩ 1 kΩ

HOMES 4.4 kΩ 1 kΩ

SLIT 4.4 kΩ 1 kΩ

IN-COM2

0 V
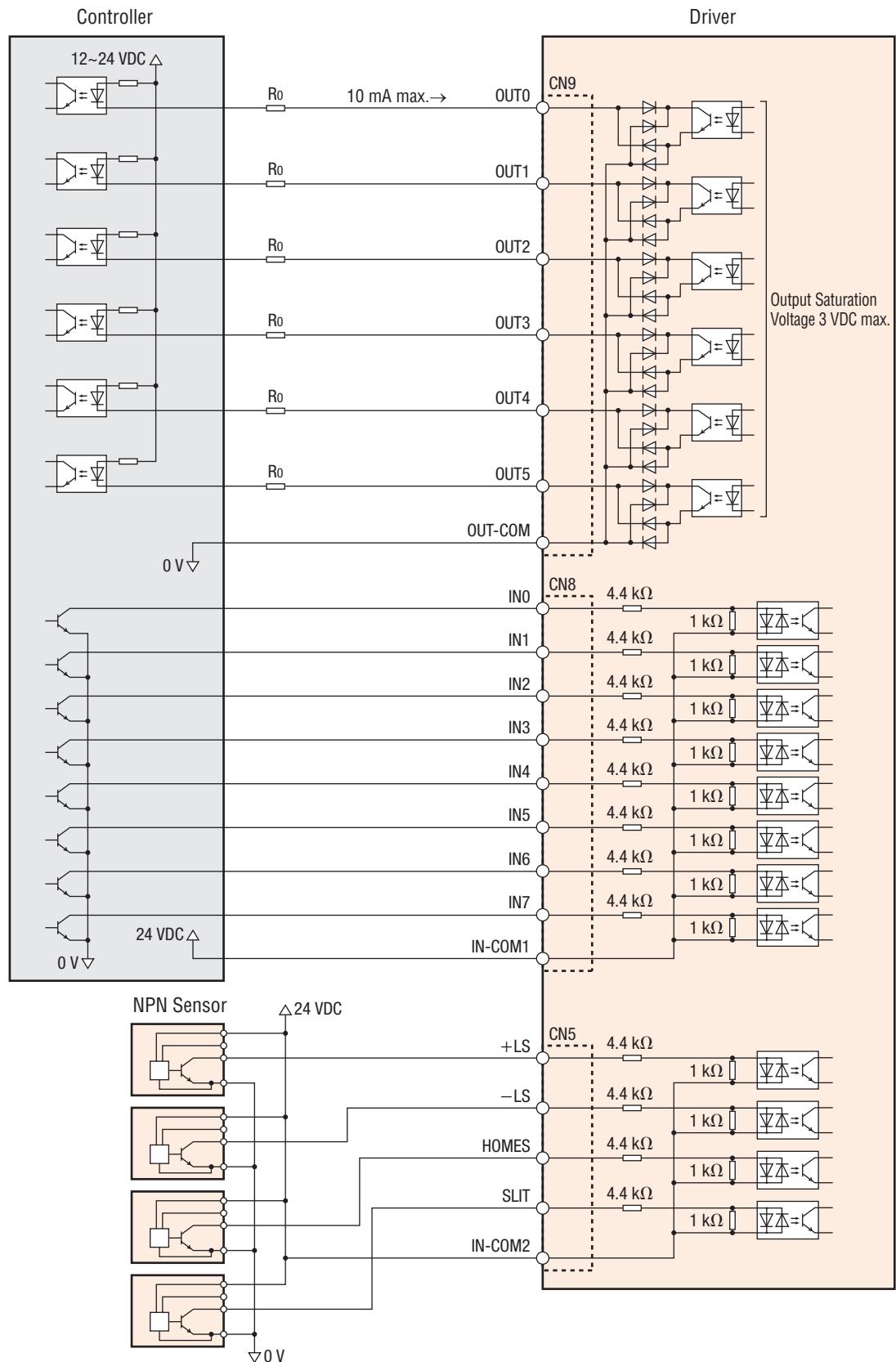
Notes

● Use input signals at 24 VDC.

● Use output signals at 26.4 VDC/10 mA or less. If the current exceeds 10 mA, connect an external resistor R0 to adjust current value to less than 10 mA.

● Output saturated voltage should be less than 3 VAC.

● Provide a minimum distance of 100 mm (3.94 in.) 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 ferrite core.

46

◇Connecting to a Host Controller
• Connecting to a Current Source Output Circuit

Controller

Driver

12~24 VDC

R0 ←10 mA Max. OUT0 CN9

R0 OUT1

R0 OUT2

R0 OUT3 Output saturated voltage 3 VDC Max.

R0 OUT4

R0 OUT5

0 V OUT-COM

24 VDC

IN0 CN8 4.4 kΩ 1 kΩ

IN1 4.4 kΩ 1 kΩ

IN2 4.4 kΩ 1 kΩ

IN3 4.4 kΩ 1 kΩ

IN4 4.4 kΩ 1 kΩ

IN5 4.4 kΩ 1 kΩ

IN6 4.4 kΩ 1 kΩ

IN7 4.4 kΩ 1 kΩ

IN-COM1 1 kΩ

0 V

PNP Sensor 24 VDC

+LS CN5 4.4 kΩ 1 kΩ

−LS 4.4 kΩ 1 kΩ

HOMES 4.4 kΩ 1 kΩ

SLIT 4.4 kΩ 1 kΩ

IN-COM2

0 V
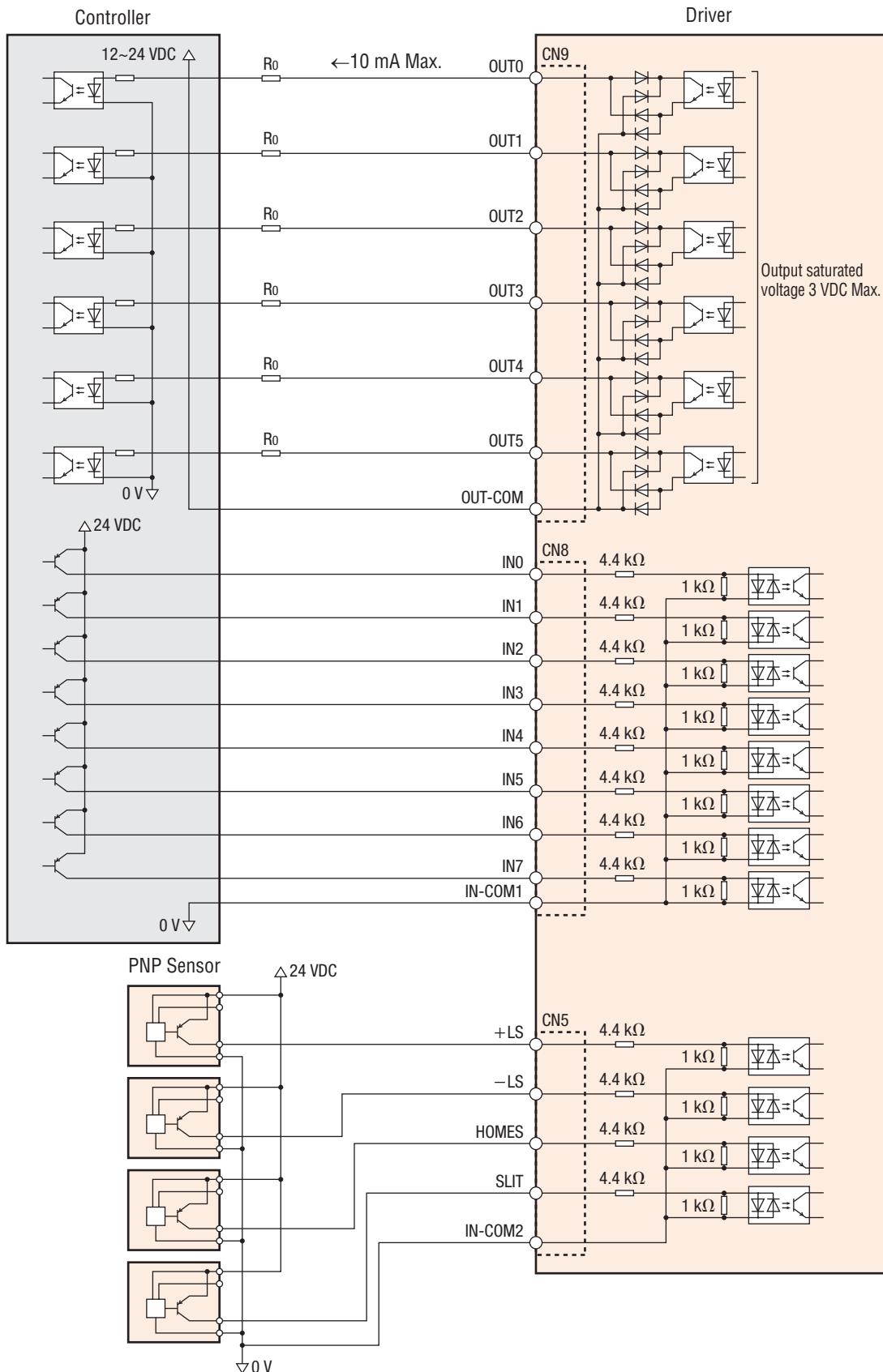
Notes
● Use 24 VDC for the input signal.
● Use output signals at 26.4 VDC/10 mA or less. If the current exceeds 10 mA, connect an external resistor R0 to adjust current value to less than 10 mA.
● Output saturated voltage should be less than 3 VDC.
● Signal lines should be kept at least 100 mm (3.94 in.) 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
2 24 VDC Input Terminal (CN1)
Electromagnetic Brake Connection Terminal (CN1)
Motor Connector (CN2)
Main Power Supply Input Terminal (CN3)
Protective Earth Terminal

3 Function Setting Switches (SW1)
4 Current Setting Switch
5 Step Angle Setting Switch
6 I/O Signal Connector (CN5)
7 Pulse Signal Connector (CN4)
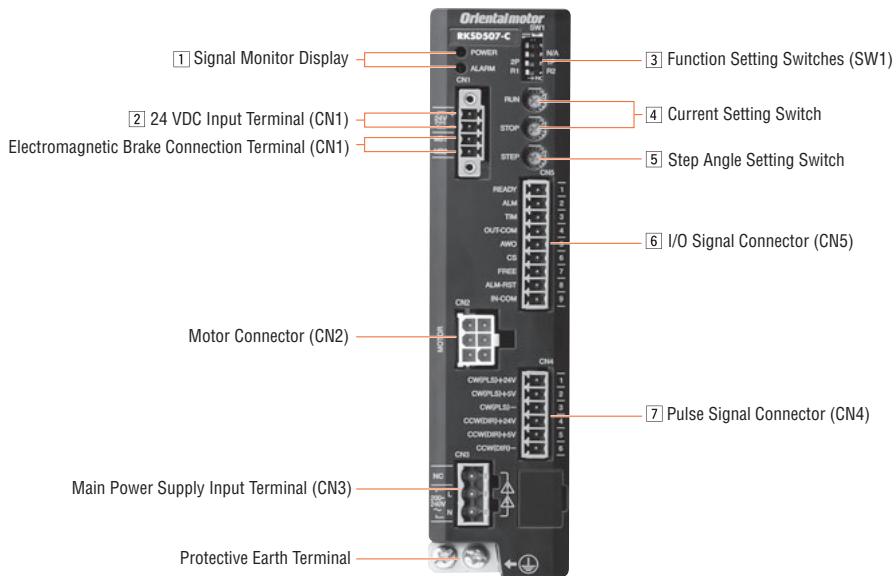
1 Signal Monitor Display

◇LED Indicator

Indication	Color	Function	Lighting Condition
POWER	Green	Power Supply Indication	When the main power supply is input
ALARM	Red	Alarm Indication	Blinks when protective functions are activated

◇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 (185°F).	Yes	
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	No holding
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	Yes	
9	Electrolytic Capacitor Abnormality	The electrolytic capacitor of the main circuit is damaged.	No	
9	EEPROM Abnormality	The saved data of the driver is damaged.	No	
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				Function Setting Switch: R2			
Step Angle Setting Switch (STEP) Scale	Resolution [P/R]	Step Angle [°]	Microsteps/ Step	Step Angle Setting Switch (STEP) Scale	Resolution [P/R]	Step Angle [°]	Microsteps/ Step
0	500	0.72	1	0	200	1.8	0.4
1	1000	0.36	2	1	400	0.9	0.8
2	1250	0.288	2.5	2	600	0.6	1.2
3	2000	0.18	4	3	800	0.45	1.6
4	2500	0.144	5	4	1200	0.3	2.4
5	4000	0.09	8	5	1600	0.225	3.2
6	5000	0.072	10	6	3200	0.1125	6.4
7	10000	0.036	20	7	6000	0.06	12
8	12500	0.0288	25	8	6400	0.05625	12.8
9	20000	0.018	40	9	7200	0.05	14.4
A	25000	0.0144	50	A	8000	0.045	16
B	40000	0.009	80	B	12000	0.03	24
C	50000	0.0072	100	C	12800	0.028125	25.6
D	62500	0.00576	125	D	16000	0.0225	32
E	100000	0.0036	200	E	25600	0.0140625	51.2
F	125000	0.00288	250	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)
CW (PLS) −	3	[+5 V or line driver]
CCW (DIR) +24 V	4	CCW Pulse Input (Rotation Direction Input) [+24 V]
CCW (DIR) +5 V	5	CCW Pulse Input (Rotation Direction Input)
CCW (DIR) −	6	[+5 V or line driver]

● Connection Diagram

◇ Connection with Peripheral Equipment

Included in the package.

Sold separately as Accessories.

24 VDC Power Supply*3
Be sure to connect
when using an electromagnetic brake.

24 VDC

GND

Connect to CN1

Connect to CN1

Cable for Electromagnetic Brake*1
Cable used to connect
electromagnetic brake and driver.

Connect to CN2

Cable for Motor*1
Cable used to connect
Motor and Driver.

PE

PE

Controller*2
Connect
a Controller with
pulse generator.

Connect to CN5

I/O Signal

Connect to CN4

Pulse Signal

Connect to CN3

Power Supply*2
Single-Phase 100-120 VAC 50/60 Hz
Single-Phase 200-240 VAC 50/60 Hz

Circuit Breaker*2
or Ground Fault Interrupter
Be sure to connect
in order to protect
the primary wiring.

Noise Filter*2
Use a noise filter to eliminate noise.
Effective in noise reduction
which is generated from the power supply or driver.

✳1 Each product comes with a motor cable 3 m (9.8 ft.) long. Different lengths and flexible cables are available (sold separately).
   When wiring the motor and the driver, keep a maximum distance of 20 m (65.6 ft.).
✳2 Not Supplied.
✳3 Not Supplied. If the wiring distance between the motor and driver is extended to 15 m (49.2 ft.) or longer by using an accessory cable (Sold separately), the 24 VDC±4% specification applies.

50

◇Connection to Programmable Controller

• Connection Diagram for Current Sink Output Circuit

When pulse input is Line Driver
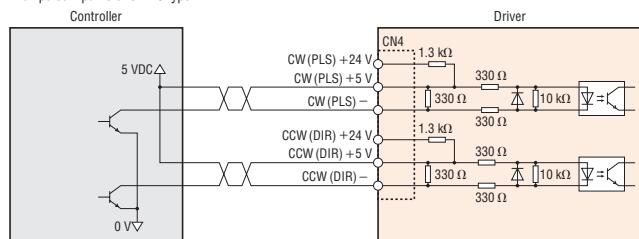
When pulse input is of 5 VDC type

When pulse input is of 24 VDC type

Notes
- 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 3 VAC.
- Provide a minimum distance of 100 mm (3.94 in.) 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.

• Connecting Diagram for Current Source Output Circuit

When pulse input is Line Driver
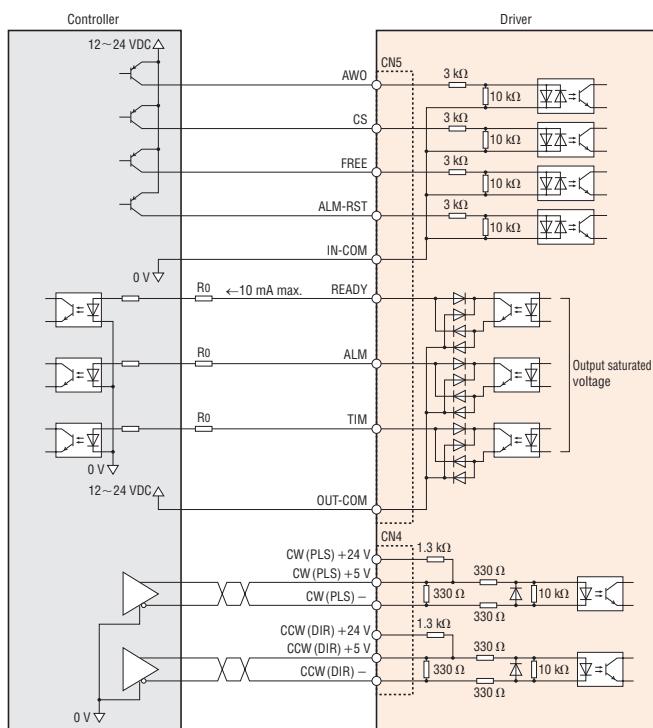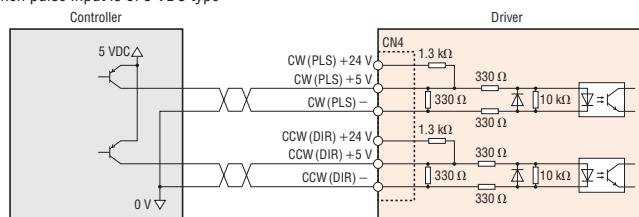
When pulse input is of 5 VDC type

When pulse input is of 24 VDC type

Notes
- 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 3 VAC.
- Provide a minimum distance of 100 mm (3.94 in.) 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.

■ Motor and Driver Combinations

Product names for motor and driver combinations are shown below.

● Built-in Controller (Stored Data) Type

Type	Product Name	Motor Product Name	Driver Product Name
Standard Type	RKS543☐D-3	PKE543☐C	RKSD503-☐D
	RKS544☐D-3	PKE544☐C	
	RKS545☐D-3	PKE545☐C	
	RKS564☐D-3	PKE564☐C	RKSD507-☐D
	RKS566☐D-3	PKE566☐C	
	RKS569☐D-3	PKE569☐C	
	RKS596☐D-3	PKE596☐C	
	RKS599☐D-3	PKE599☐C	
	RKS5913☐☐D-3	PKE5913☐C	
Standard Type with Electromagnetic Brake	RKS543M☐D-3	PKE543MC	RKSD503-☐D
	RKS544M☐D-3	PKE544MC	
	RKS545M☐D-3	PKE545MC	
	RKS564M☐D-3	PKE564MC	RKSD507-☐D
	RKS566M☐D-3	PKE566MC	
	RKS569M☐D-3	PKE569MC	
	RKS596M☐D-3	PKE596MC	
	RKS599M☐D-3	PKE599MC	
	RKS5913M☐D-3	PKE5913MC	
Standard Type with Encoder	RKS543R☐D2-3	PKE543RC2	RKSD503-☐D
	RKS544R☐D2-3	PKE544RC2	
	RKS545R☐D2-3	PKE545RC2	
	RKS564R☐D2-3	PKE564RC2	RKSD507-☐D
	RKS566R☐D2-3	PKE566RC2	
	RKS569R☐D2-3	PKE569RC2	
	RKS596R☐D2-3	PKE596RC2	
	RKS599R☐D2-3	PKE599RC2	
	RKS5913R☐D2-3	PKE5913RC2	
TS Geared Type	RKS543☐D-TS3.6-3	PKE543☐C-TS3.6	RKSD503-☐D
	RKS543☐D-TS7.2-3	PKE543☐C-TS7.2	
	RKS543☐D-TS10-3	PKE543☐C-TS10	
	RKS543☐D-TS20-3	PKE543☐C-TS20	
	RKS543☐D-TS30-3	PKE543☐C-TS30	
	RKS564☐D-TS3.6-3	PKE564☐C-TS3.6	RKSD507-☐D
	RKS564☐D-TS7.2-3	PKE564☐C-TS7.2	
	RKS564☐D-TS10-3	PKE564☐C-TS10	
	RKS564☐D-TS20-3	PKE564☐C-TS20	
	RKS564☐D-TS30-3	PKE564☐C-TS30	
	RKS596☐D-TS3.6-3	PKE596☐C-TS3.6	
	RKS596☐D-TS7.2-3	PKE596☐C-TS7.2	
	RKS596☐D-TS10-3	PKE596☐C-TS10	
	RKS596☐D-TS20-3	PKE596☐C-TS20	
	RKS596☐D-TS30-3	PKE596☐C-TS30	
TS Geared Type with Electromagnetic Brake	RKS543M☐D-TS3.6-3	PKE543MC-TS3.6	RKSD503-☐D
	RKS543M☐D-TS7.2-3	PKE543MC-TS7.2	
	RKS543M☐D-TS10-3	PKE543MC-TS10	
	RKS543M☐D-TS20-3	PKE543MC-TS20	
	RKS543M☐D-TS30-3	PKE543MC-TS30	
	RKS564M☐D-TS3.6-3	PKE564MC-TS3.6	RKSD507-☐D
	RKS564M☐D-TS7.2-3	PKE564MC-TS7.2	
	RKS564M☐D-TS10-3	PKE564MC-TS10	
	RKS564M☐D-TS20-3	PKE564MC-TS20	
	RKS564M☐D-TS30-3	PKE564MC-TS30	
	RKS596M☐D-TS3.6-3	PKE596MC-TS3.6	
	RKS596M☐D-TS7.2-3	PKE596MC-TS7.2	
	RKS596M☐D-TS10-3	PKE596MC-TS10	
	RKS596M☐D-TS20-3	PKE596MC-TS20	
	RKS596M☐D-TS30-3	PKE596MC-TS30	

● Enter **A** (Single shaft) or **B** (Double shaft) where the box ☐ is located within the product name.
Enter **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) where the box ☐ is located within the product name.

Type	Product Name	Motor Product Name	Driver Product Name
PS Geared Type	**RKS545☐**D-PS5-3	PKE545☐C-PS5	RKSD503-☐D
	RKS545☐D-PS7.2-3	PKE545☐C-PS7.2	
	RKS545☐D-PS10-3	PKE545☐C-PS10	
	RKS543☐D-PS25-3	PKE543☐C-PS25	
	RKS543☐D-PS36-3	PKE543☐C-PS36	
	RKS543☐D-PS50-3	PKE543☐C-PS50	
	RKS566☐D-PS5-3	PKE566☐C-PS5	RKSD507-☐D
	RKS566☐D-PS7.2-3	PKE566☐C-PS7.2	
	RKS566☐D-PS10-3	PKE566☐C-PS10	
	RKS564☐D-PS25-3	PKE564☐C-PS25	
	RKS564☐D-PS36-3	PKE564☐C-PS36	
	RKS564☐D-PS50-3	PKE564☐C-PS50	
	RKS599☐D-PS5-3	PKE599☐C-PS5	
	RKS599☐D-PS7.2-3	PKE599☐C-PS7.2	
	RKS599☐D-PS10-3	PKE599☐C-PS10	
	RKS596☐D-PS25-3	PKE596☐C-PS25	
	RKS596☐D-PS36-3	PKE596☐C-PS36	
	RKS596☐D-PS50-3	PKE596☐C-PS50	
PS Geared Type with Electromagnetic Brake	**RKS545M☐**D-PS5-3	PKE545MC-PS5	RKSD503-☐D
	RKS545M☐D-PS7.2-3	PKE545MC-PS7.2	
	RKS545M☐D-PS10-3	PKE545MC-PS10	
	RKS543M☐D-PS25-3	PKE543MC-PS25	
	RKS543M☐D-PS36-3	PKE543MC-PS36	
	RKS543M☐D-PS50-3	PKE543MC-PS50	
	RKS566M☐D-PS5-3	PKE566MC-PS5	RKSD507-☐D
	RKS566M☐D-PS7.2-3	PKE566MC-PS7.2	
	RKS566M☐D-PS10-3	PKE566MC-PS10	
	RKS564M☐D-PS25-3	PKE564MC-PS25	
	RKS564M☐D-PS36-3	PKE564MC-PS36	
	RKS564M☐D-PS50-3	PKE564MC-PS50	
	RKS599M☐D-PS5-3	PKE599MC-PS5	
	RKS599M☐D-PS7.2-3	PKE599MC-PS7.2	
	RKS599M☐D-PS10-3	PKE599MC-PS10	
	RKS596M☐D-PS25-3	PKE596MC-PS25	
	RKS596M☐D-PS36-3	PKE596MC-PS36	
	RKS596M☐D-PS50-3	PKE596MC-PS50	
Harmonic Geared Type	**RKS543☐**D-HS50-3	PKE543☐C-HS50	RKSD503-☐D
	RKS543☐D-HS100-3	PKE543☐C-HS100	
	RKS564☐D-HS50-3	PKE564☐C-HS50	RKSD507-☐D
	RKS564☐D-HS100-3	PKE564☐C-HS100	
	RKS596☐D-HS50-3	PKE596☐C-HS50	
	RKS596☐D-HS100-3	PKE596☐C-HS100	
Harmonic Geared Type with Electromagnetic Brake	**RKS543M☐**D-HS50-3	PKE543MC-HS50	RKSD503-☐D
	RKS543M☐D-HS100-3	PKE543MC-HS100	
	RKS564M☐D-HS50-3	PKE564MC-HS50	RKSD507-☐D
	RKS564M☐D-HS100-3	PKE564MC-HS100	
	RKS596M☐D-HS50-3	PKE596MC-HS50	
	RKS596M☐D-HS100-3	PKE596MC-HS100	

● Enter **A** (Single shaft) or **B** (Double shaft) where the box ☐ is located within the product name.
  Enter **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) where the box ☐ is located within the product name.

● Pulse Input Type

Type	Product Name	Motor Product Name	Driver Product Name
Standard Type	**RKS543☐-3**	PKE543☐C	RKSD503-☐
	RKS544☐-3	PKE544☐C	
	RKS545☐-3	PKE545☐C	
	RKS564☐-3	PKE564☐C	RKSD507-☐
	RKS566☐-3	PKE566☐C	
	RKS569☐-3	PKE569☐C	
	RKS596☐-3	PKE596☐C	
	RKS599☐-3	PKE599☐C	
	RKS5913☐-3	PKE5913☐C	
Standard Type with Electromagnetic Brake	**RKS543M☐-3**	PKE543MC	RKSD503M-☐
	RKS544M☐-3	PKE544MC	
	RKS545M☐-3	PKE545MC	
	RKS564M☐-3	PKE564MC	RKSD507M-☐
	RKS566M☐-3	PKE566MC	
	RKS569M☐-3	PKE569MC	
	RKS596M☐-3	PKE596MC	
	RKS599M☐-3	PKE599MC	
	RKS5913M☐-3	PKE5913MC	
TS Geared Type	**RKS543☐-TS3.6-3**	PKE543☐C-TS3.6	RKSD503-☐
	RKS543☐-TS7.2-3	PKE543☐C-TS7.2	
	RKS543☐-TS10-3	PKE543☐C-TS10	
	RKS543☐-TS20-3	PKE543☐C-TS20	
	RKS543☐-TS30-3	PKE543☐C-TS30	
	RKS564☐-TS3.6-3	PKE564☐C-TS3.6	RKSD507-☐
	RKS564☐-TS7.2-3	PKE564☐C-TS7.2	
	RKS564☐-TS10-3	PKE564☐C-TS10	
	RKS564☐-TS20-3	PKE564☐C-TS20	
	RKS564☐-TS30-3	PKE564☐C-TS30	
	RKS596☐-TS3.6-3	PKE596☐C-TS3.6	
	RKS596☐-TS7.2-3	PKE596☐C-TS7.2	
	RKS596☐-TS10-3	PKE596☐C-TS10	
	RKS596☐-TS20-3	PKE596☐C-TS20	
	RKS596☐-TS30-3	PKE596☐C-TS30	
TS Geared Type with Electromagnetic Brake	**RKS543M☐-TS3.6-3**	PKE543MC-TS3.6	RKSD503M-☐
	RKS543M☐-TS7.2-3	PKE543MC-TS7.2	
	RKS543M☐-TS10-3	PKE543MC-TS10	
	RKS543M☐-TS20-3	PKE543MC-TS20	
	RKS543M☐-TS30-3	PKE543MC-TS30	
	RKS564M☐-TS3.6-3	PKE564MC-TS3.6	RKSD507M-☐
	RKS564M☐-TS7.2-3	PKE564MC-TS7.2	
	RKS564M☐-TS10-3	PKE564MC-TS10	
	RKS564M☐-TS20-3	PKE564MC-TS20	
	RKS564M☐-TS30-3	PKE564MC-TS30	
	RKS596M☐-TS3.6-3	PKE596MC-TS3.6	
	RKS596M☐-TS7.2-3	PKE596MC-TS7.2	
	RKS596M☐-TS10-3	PKE596MC-TS10	
	RKS596M☐-TS20-3	PKE596MC-TS20	
	RKS596M☐-TS30-3	PKE596MC-TS30	

● Enter **A** (Single shaft) or **B** (Double shaft) where the box ☐ is located within the product name.
Enter **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) where the box ☐ is located within the product name.

Type	Product Name	Motor Product Name	Driver Product Name
PS Geared Type	**RKS545**☐-**PS5-3**	PKE545☐C-PS5	RKSD503-☐
	RKS545☐-**PS7.2-3**	PKE545☐C-PS7.2	
	RKS545☐-**PS10-3**	PKE545☐C-PS10	
	RKS543☐-**PS25-3**	PKE543☐C-PS25	
	RKS543☐-**PS36-3**	PKE543☐C-PS36	
	RKS543☐-**PS50-3**	PKE543☐C-PS50	
	RKS566☐-**PS5-3**	PKE566☐C-PS5	RKSD507-☐
	RKS566☐-**PS7.2-3**	PKE566☐C-PS7.2	
	RKS566☐-**PS10-3**	PKE566☐C-PS10	
	RKS564☐-**PS25-3**	PKE564☐C-PS25	
	RKS564☐-**PS36-3**	PKE564☐C-PS36	
	RKS564☐-**PS50-3**	PKE564☐C-PS50	
	RKS599☐-**PS5-3**	PKE599☐C-PS5	
	RKS599☐-**PS7.2-3**	PKE599☐C-PS7.2	
	RKS599☐-**PS10-3**	PKE599☐C-PS10	
	RKS596☐-**PS25-3**	PKE596☐C-PS25	
	RKS596☐-**PS36-3**	PKE596☐C-PS36	
	RKS596☐-**PS50-3**	PKE596☐C-PS50	
PS Geared Type with Electromagnetic Brake	**RKS545M**☐-**PS5-3**	PKE545MC-PS5	RKSD503M-☐
	RKS545M☐-**PS7.2-3**	PKE545MC-PS7.2	
	RKS545M☐-**PS10-3**	PKE545MC-PS10	
	RKS543M☐-**PS25-3**	PKE543MC-PS25	
	RKS543M☐-**PS36-3**	PKE543MC-PS36	
	RKS543M☐-**PS50-3**	PKE543MC-PS50	
	RKS566M☐-**PS5-3**	PKE566MC-PS5	RKSD507M-☐
	RKS566M☐-**PS7.2-3**	PKE566MC-PS7.2	
	RKS566M☐-**PS10-3**	PKE566MC-PS10	
	RKS564M☐-**PS25-3**	PKE564MC-PS25	
	RKS564M☐-**PS36-3**	PKE564MC-PS36	
	RKS564M☐-**PS50-3**	PKE564MC-PS50	
	RKS599M☐-**PS5-3**	PKE599MC-PS5	
	RKS599M☐-**PS7.2-3**	PKE599MC-PS7.2	
	RKS599M☐-**PS10-3**	PKE599MC-PS10	
	RKS596M☐-**PS25-3**	PKE596MC-PS25	
	RKS596M☐-**PS36-3**	PKE596MC-PS36	
	RKS596M☐-**PS50-3**	PKE596MC-PS50	
Harmonic Geared Type	**RKS543**☐-**HS50-3**	PKE543☐C-HS50	RKSD503-☐
	RKS543☐-**HS100-3**	PKE543☐C-HS100	
	RKS564☐-**HS50-3**	PKE564☐C-HS50	RKSD507-☐
	RKS564☐-**HS100-3**	PKE564☐C-HS100	
	RKS596☐-**HS50-3**	PKE596☐C-HS50	
	RKS596☐-**HS100-3**	PKE596☐C-HS100	
Harmonic Geared Type with Electromagnetic Brake	**RKS543M**☐-**HS50-3**	PKE543MC-HS50	RKSD503M-☐
	RKS543M☐-**HS100-3**	PKE543MC-HS100	
	RKS564M☐-**HS50-3**	PKE564MC-HS50	RKSD507M-☐
	RKS564M☐-**HS100-3**	PKE564MC-HS100	
	RKS596M☐-**HS50-3**	PKE596MC-HS50	
	RKS596M☐-**HS100-3**	PKE596MC-HS100	

● Enter **A** (Single shaft) or **B** (Double shaft) where the box ☐ is located within the product name.
　Enter **A** (single-phase 100-120 VAC) or **C** (single-phase 200-240 VAC) where the box ☐ is located within the product name.

55

Accessories (Sold Separately)

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

The **RKII** Series comes with a 3 m (9.8 ft.) cable for connection between the motor and driver.
When the distance between the motor and driver is extended to 3 m (9.8 ft.) or longer, a connection cable set or extension cable set must be used.
Keep the wiring distance between the motor and driver to 20 m (65.6 ft.) max.

■System Configuration

● **When Connecting the Motor and Driver without Using an Included Cable**
Use a connection cable set.
Use a flexible connection cable set if the cable will be bent.

◇ **For Standard Type or Standard Type with Electromagnetic Brake**
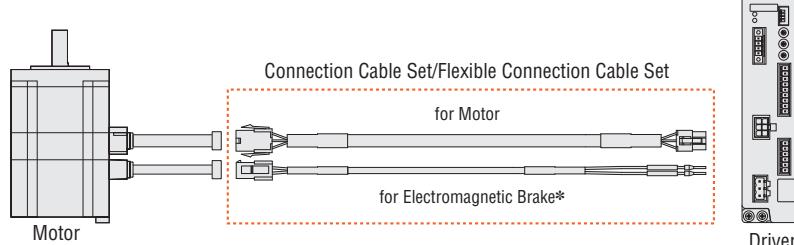
Connection Cable Set/Flexible Connection Cable Set
for Motor
for Electromagnetic Brake∗

Motor
Driver

∗Electromagnetic Brake Cable is required for the Motor with Electromagnetic Brake.

◇ **For Motor with Encoder**

Connection Cable Set/Flexible Connection Cable Set
for Motor
for Encoder
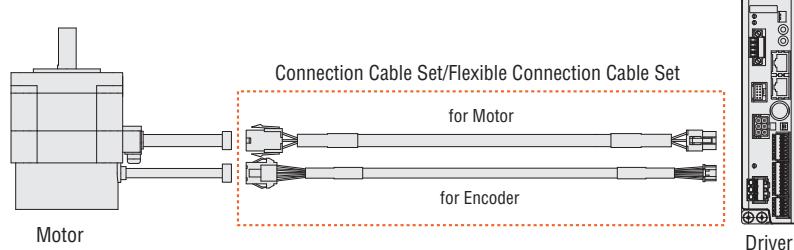
Motor
Driver

● **When Extending the Distance between the Motor and the Driver Using an Included Cable**
Use an extension cable set and connect it to the included cable.
Use flexible extension cable set added if the cable will be bent.

◇ **For Standard Type or Electromagnetic Brake Motor**
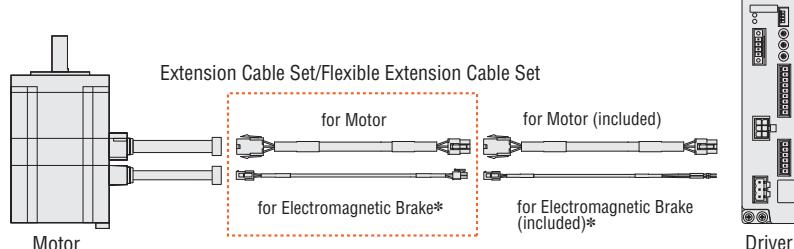
Extension Cable Set/Flexible Extension Cable Set
for Motor   for Motor (included)
for Electromagnetic Brake∗   for Electromagnetic Brake (included)∗

Motor
Driver

∗Electromagnetic Brake Cable is required for the Motor with Electromagnetic Brake.

◇ **For Motor with Encoder**

Extension Cable Set/Flexible Extension Cable Set
for Motor   for Motor (included)
for Encoder   for Encoder (included)

Motor
Driver
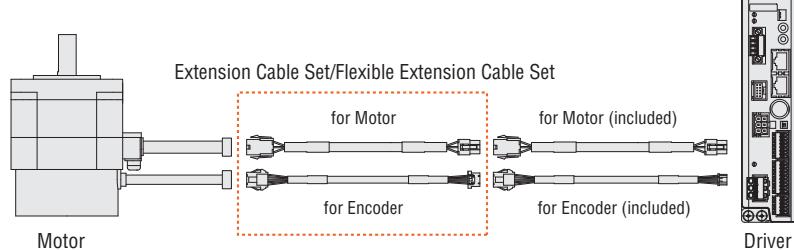
Notes
● Keep the total cable length below 20 m (65.6 ft.) when connecting a cable included in the **RKII** Series and an extension cable.
● The cable on the Electromagnetic Brake or Encoder cannot be connected to the driver directly. To connect to the driver, a connection cable (sold separately) is available.

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

■Product Line

● Connection Cable Sets

◇For Standard Motor

Motor Cable

Product Name	Length L m (ft.)	List Price
CC010VPF	1 (3.3)	$34.00
CC020VPF	2 (6.6)	$39.00
CC030VPF	3 (9.8)	$44.00
CC050VPF	5 (16.4)	$53.00
CC070VPF	7 (23.0)	$71.00
CC100VPF	10 (32.8)	$97.00
CC150VPF	15 (49.2)	$142.00
CC200VPF	20 (65.6)	$186.00

◇For Electromagnetic Brake Motor

Motor Cable   Electromagnetic Brake Cable

Product Name	Length L m (ft.)	List Price
CC010VPFB	1 (3.3)	$51.00
CC020VPFB	2 (6.6)	$58.00
CC030VPFB	3 (9.8)	$66.00
CC050VPFB	5 (16.4)	$81.00
CC070VPFB	7 (23.0)	$104.00
CC100VPFB	10 (32.8)	$138.00
CC150VPFB	15 (49.2)	$197.00
CC200VPFB	20 (65.6)	$255.00

◇For Encoder Motor

Motor Cable   Encoder Cable

Product Name	Length L m (ft.)	List Price
CC010VPFE	1 (3.3)	$78.00
CC020VPFE	2 (6.6)	$88.00
CC030VPFE	3 (9.8)	$100.00
CC050VPFE	5 (16.4)	$121.00
CC070VPFE	7 (23.0)	$149.00
CC100VPFE	10 (32.8)	$193.00
CC150VPFE	15 (49.2)	$267.00
CC200VPFE	20 (65.6)	$340.00

● Flexible Connection Cable Sets

◇For Standard Motor

Motor Cable

Product Name	Length L m (ft.)	List Price
CC010VPR	1 (3.3)	$45.00
CC020VPR	2 (6.6)	$52.00
CC030VPR	3 (9.8)	$58.00
CC050VPR	5 (16.4)	$70.00
CC070VPR	7 (23.0)	$93.00
CC100VPR	10 (32.8)	$127.00
CC150VPR	15 (49.2)	$186.00
CC200VPR	20 (65.6)	$242.00

◇For Electromagnetic Brake Motor

Motor Cable   Electromagnetic Brake Cable

Product Name	Length L m (ft.)	List Price
CC010VPRB	1 (3.3)	$77.00
CC020VPRB	2 (6.6)	$90.00
CC030VPRB	3 (9.8)	$101.00
CC050VPRB	5 (16.4)	$125.00
CC070VPRB	7 (23.0)	$159.00
CC100VPRB	10 (32.8)	$210.00
CC150VPRB	15 (49.2)	$296.00
CC200VPRB	20 (65.6)	$379.00

◇For Encoder Motor

Motor Cable   Encoder Cable

Product Name	Length L m (ft.)	List Price
CC010VPRE	1 (3.3)	$92.00
CC020VPRE	2 (6.6)	$109.00
CC030VPRE	3 (9.8)	$122.00
CC050VPRE	5 (16.4)	$155.00
CC070VPRE	7 (23.0)	$197.00
CC100VPRE	10 (32.8)	$259.00
CC150VPRE	15 (49.2)	$364.00
CC200VPRE	20 (65.6)	$467.00

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

■Product Line

● Extension Cable Sets

◇For Standard Motor

Motor Cable

Product Name	Length L m (ft.)	List Price
CC010VPF	1 (3.3)	$34.00
CC020VPF	2 (6.6)	$39.00
CC030VPF	3 (9.8)	$44.00
CC050VPF	5 (16.4)	$53.00
CC070VPF	7 (23.0)	$71.00
CC100VPF	10 (32.8)	$97.00
CC150VPF	15 (49.2)	$142.00

◇For Electromagnetic Brake Motor

Motor Cable   Electromagnetic Brake Cable

Product Name	Length L m (ft.)	List Price
CC010VPFBT	1 (3.3)	$53.00
CC020VPFBT	2 (6.6)	$61.00
CC030VPFBT	3 (9.8)	$69.00
CC050VPFBT	5 (16.4)	$84.00
CC070VPFBT	7 (23.0)	$107.00
CC100VPFBT	10 (32.8)	$141.00
CC150VPFBT	15 (49.2)	$200.00

◇For Encoder Motor

Motor Cable   Encoder Cable

Product Name	Length L m (ft.)	List Price
CC010VPFET	1 (3.3)	$78.00
CC020VPFET	2 (6.6)	$88.00
CC030VPFET	3 (9.8)	$100.00
CC050VPFET	5 (16.4)	$121.00
CC070VPFET	7 (23.0)	$149.00
CC100VPFET	10 (32.8)	$193.00
CC150VPFET	15 (49.2)	$267.00

● Flexible Extension Cable Sets

◇For Standard Motor

Motor Cable

Product Name	Length L m (ft.)	List Price
CC010VPR	1 (3.3)	$45.00
CC020VPR	2 (6.6)	$52.00
CC030VPR	3 (9.8)	$58.00
CC050VPR	5 (16.4)	$70.00
CC070VPR	7 (23.0)	$93.00
CC100VPR	10 (32.8)	$127.00
CC150VPR	15 (49.2)	$186.00

◇For Electromagnetic Brake Motor

Motor Cable   Electromagnetic Brake Cable

Product Name	Length L m (ft.)	List Price
CC010VPRBT	1 (3.3)	$80.00
CC020VPRBT	2 (6.6)	$93.00
CC030VPRBT	3 (9.8)	$104.00
CC050VPRBT	5 (16.4)	$127.00
CC070VPRBT	7 (23.0)	$162.00
CC100VPRBT	10 (32.8)	$212.00
CC150VPRBT	15 (49.2)	$299.00

◇For Encoder Motor

Motor Cable   Encoder Cable

Product Name	Length L m (ft.)	List Price
CC010VPRET	1 (3.3)	$92.00
CC020VPRET	2 (6.6)	$109.00
CC030VPRET	3 (9.8)	$122.00
CC050VPRET	5 (16.4)	$155.00
CC070VPRET	7 (23.0)	$197.00
CC100VPRET	10 (32.8)	$259.00
CC150VPRET	15 (49.2)	$364.00

■ Dimensions Unit = mm (in.)

● Connection Cable

◇ Motor Cable

Motor Side   Driver Side

[23] (**0.91**)   5559-06P-210 (Molex)   5557-06R-210 (Molex)   13.8 (**0.54**)

[12] (**0.47**)   23.9 (**0.94**)   φ8.1 (**0.32**)   19.6 (**0.77**)   [15] (**0.59**)

L

◇ Electromagnetic Brake Cable

Motor Side   Driver Side

[12] (**0.47**)   5559-02P-210 (Molex)   Stick Terminal : AI0.5-8WH (Phoenix Contact)

[14] (**0.55**)   23.9 (**0.94**)   φ4.1 (**0.16**)   80 (**3.15**)

L

◇ Encoder Cable

Motor Side

φ6.9 (**0.27**) : Cable for Encoder
φ7.3 (**0.29**) : Flexible Cable for Encoder

XADR-10V (JST)   PUDP-10V-K (JST)   Driver Side

[21.4] (**0.84**)   21.5 (**0.85**)   9.1 (**0.36**)   12 (**0.47**)

[10.1] (**0.40**)   L   [8.7] (**0.34**)
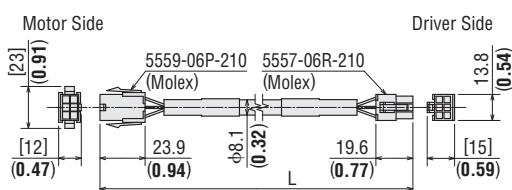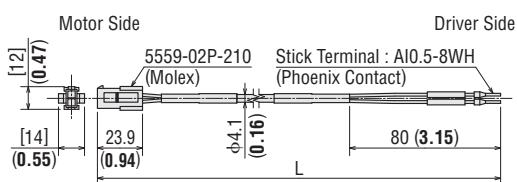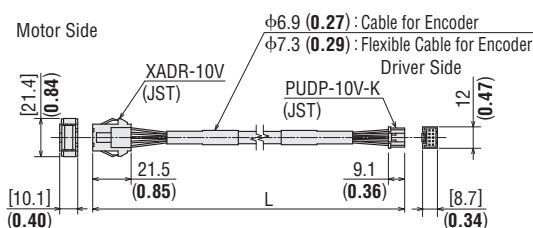
● Extension Cable

◇ Motor Cable

Motor Side   Driver Side

[23] (**0.91**)   5559-06P-210 (Molex)   5557-06R-210 (Molex)   13.8 (**0.54**)

[12] (**0.47**)   23.9 (**0.94**)   φ8.1 (**0.32**)   19.6 (**0.77**)   [15] (**0.59**)

L

◇ Electromagnetic Brake Cable

φ4.1 (**0.16**) : Cable for Electromagnetic Brake
φ6 (**0.24**) : Flexible Cable for Electromagnetic Brake

Motor Side   Driver Side

[12] (**0.47**)   5559-02P-210 (Molex)   5557-02R-210 (Molex)   [15] (**0.59**)

[14] (**0.55**)   23.9 (**0.94**)   19.6 (**0.77**)   5.4 (**0.21**)

L

◇ Encoder Cable

φ6.9 (**0.27**) : Cable for Encoder
φ7.3 (**0.29**) : Flexible Cable for Encoder

Motor Side   Driver Side

[21.4] (**0.84**)   XADR-10V (JST)   XADRP-10V (JST)   17.2 (**0.68**)

[10.1] (**0.40**)   21.5 (**0.85**)   12 (**0.47**)   11.4 (**0.45**)

L

■ Note on Use of Flexible Cable

① Do not allow the cable to bend at the cable connector.
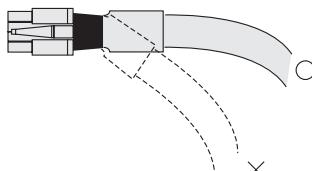
② For the bending radius, use at six times min. of the cable diameter.

6 times min. of cable diameter
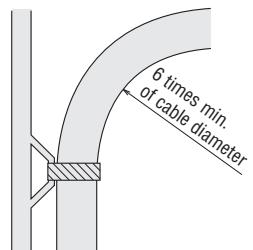
③ The cable from the motor and the included cables are not for bending. If the motor cable is to be bent, bend it by using the flexible cable.

● Flexible Connection Cable

Driver

Secure the Cable

Motor

Flexible Extension Cable (Possible to bend)

● Flexible Extension Cable

Driver

Secure the Cable   Secure the Cable

Motor

Flexible Extension Cable (Possible to bend)

MCS Couplings ⓇoHS

■ Product Line
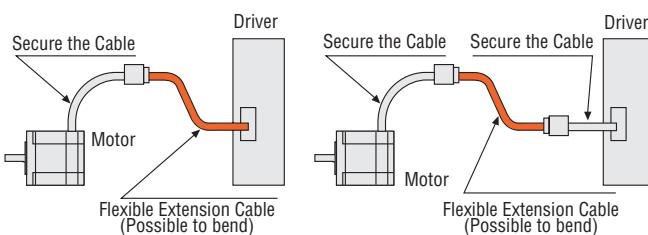
■ Product Number

MCS 30 08 12
①　②　③　④

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

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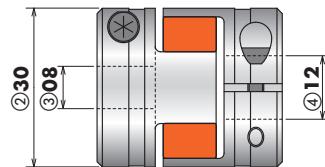
■ Coupling Selection Table

Type	Frame Size	Product Name	Gear Ratio	Coupling Type	Motor Shaft Diameter mm (in.)		Driven Shaft Diameter mm (in.)														
							04	05	06	F04	08	10	12	14	15	16	18	20	22	24	25
							φ4 (φ0.1575)	φ5 (φ0.1969)	φ6 (φ0.2362)	φ6.35 (φ0.2500)	φ8 (φ0.3150)	φ10 (φ0.3937)	φ12 (φ0.4724)	φ14 (φ0.5512)	φ15 (φ0.5906)	φ16 (φ0.6299)	φ18 (φ0.7087)	φ20 (φ0.7874)	φ22 (φ0.8661)	φ24 (φ0.9445)	φ25 (φ0.9843)
Step Angle 0.72° Standard Type	42 mm (1.65)	RKS543 RKS544 RKS545	–	MCS14 06	φ6 (φ0.2362)		●	●	●												
	60 mm (2.36)	RKS564 RKS566	–	MCS20 10	φ10 (φ0.3937)			●	●	●	●	●									
		RKS569		MCS30 10	φ10 (φ0.3937)				●	●	●	●	●	●	●	●					
	85 mm (3.35)	RKS596		MCS30 14	φ14 (φ0.5512)				●		●	●	●	●	●	●					
		RKS599	–	MCS40 14	φ14 (φ0.5512)						●	●	●								
		RKS5913		MCS55 14	φ14 (φ0.5512)								●	●	●	●	●	●	●	●	
TS Geared Type	42 mm (1.65)	RKS543	3.6, 7.2, 10, 20, 30	MCS20 06	φ6 (φ0.2362)			●	●	●	●	●									
	60 mm (2.36)	RKS564	3.6, 7.2, 10, 20, 30	MCS30 10	φ10 (φ0.3937)			●	●	●	●	●	●	●	●	●					
	90 mm (3.54)	RKS596	3.6, 7.2, 10, 20, 30	MCS55 18	φ14 (φ0.5512)								●	●	●	●	●	●	●	●	
PS Geared Type	42 mm (1.65)	RKS545	5	MCS20 10	φ10 (φ0.3937)		●	●	●	●	●										
		RKS545	7.2, 10	MCS30 10	φ10 (φ0.3937)			●	●	●	●	●	●	●	●						
		RKS543	25, 36, 50	MCS40 10	φ10 (φ0.3937)						●	●	●	●	●	●	●				
	60 mm (2.36)	RKS566	5	MCS40 12	φ12 (φ0.4724)						●	●	●	●	●	●	●				
		RKS566	7.2, 10	MCS55 12	φ12 (φ0.4724)								●	●	●	●	●	●	●	●	
		RKS564	25, 36, 50	MCS55 12	φ12 (φ0.4724)								●	●	●	●	●	●	●	●	
	90 mm (3.54)	RKS599	5	MCS55 18	φ18 (φ0.7087)								●	●	●	●	●	●	●	●	
		RKS599	7.2, 10	MCS65 18	φ18 (φ0.7087)											●	●	●	●	●	●
		RKS596	25, 36, 50	MCS65 18	φ18 (φ0.7087)											●	●	●	●	●	●
Harmonic Geared Type	42 mm (1.65)	RKS543	50, 100	MCS40 10	φ10 (φ0.3937)						●	●	●	●	●	●	●				

● Enter the gear ratio in the box (☐) within the model name.
● These couplings can also be used with a motor with an encoder.

Motor Mounting Brackets (RoHS)

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

■ Product Line Unit = mm (in.)

● Standard Type

Material: Aluminum Alloy

Product Name	Motor Frame Size	Applicable Product	List Price
PAF0P	42 mm (1.65 in.)	RKS543 RKS544 RKS545	$13.00
PAL0PA			$16.00
PAL2P-5A	60 mm (2.36 in.)	RKS564 RKS566 RKS569	$17.00
PAL4P-5A	85 mm (3.35 in.)	RKS596 RKS599 RKS5913	$19.00

● The applicable motor products are listed such that the bracket can be determined.
● The mounting bracket base is built with holes large enough to allow for adjustments of belt tension after a motor is installed.
● These mounting brackets can fit to the pilot of the stepper motors. (Excluding **PAL0P**)

● TS Geared Type

Material: Aluminum Alloy

Product Name	Motor Frame Size	Applicable Product	List Price
SOL0B-A	42 mm (1.65 in.)	RKS543	$23.00
SOL2M4	60 mm (2.36 in.)	RKS564	$27.00
SOL5B-A	90 mm (3.54 in.)	RKS596	$34.00

● PS Geared Type

Material: SS400
Surface Treatment: Electroless nickel plating

Product Name	Motor Frame Size	Applicable Product	List Price
PLA60G	60 mm (2.36 in.)	RKS564 RKS566	$190.00
PLA90G	90 mm (3.54 in.)	RKS596 RKS599	$226.00

● 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	List Price
PLA60H	60 mm (2.36 in.)	RKS564	$190.00
PLA90H	90 mm (3.54 in.)	RKS596	$226.00

● The mounting bracket base is built with holes large enough to allow for adjustments of belt tension after a motor is installed.
● Motor Mounting Screws are included.

■ Motor Mounting Direction

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

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

Cable facing upward   Cable facing sideways
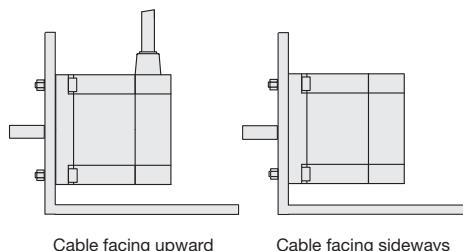
■ Installation Methods of the Motor

1 PAL2P-5A, PAL4P-5A SOL2M4, SOL5B-A
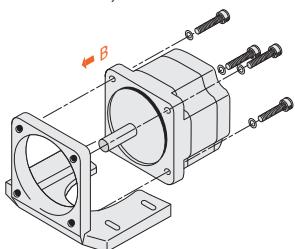
① Use the screws provided to secure the motor to the mounting bracket.
② Attach the motor from the direction shown by the arrow (B).

2 PAL0P, SOL0B-A
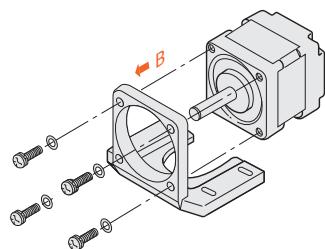
① Use the screws provided to secure the motor to the mounting bracket.
② Attach the motor from the direction shown by the arrow (B).

3 PAF0P
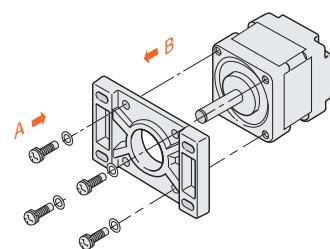
① Use the screws provided to secure the motor to the mounting bracket.
② Attach motor from the direction shown by either arrow (A) or arrow (B).

4 PLA60G, PLA90G PLA60H, PLA90H
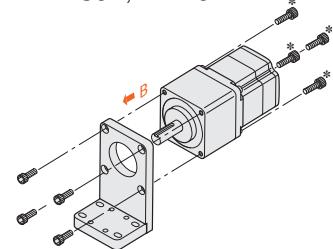
① Use the screws provided to secure the motor to the mounting bracket.
② Attach the motor from the direction shown by the arrow (B).

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

■ Dimensions Unit = mm (in.)

PALOPA
Mass: 35 g (1.24 oz.)
CAD B139
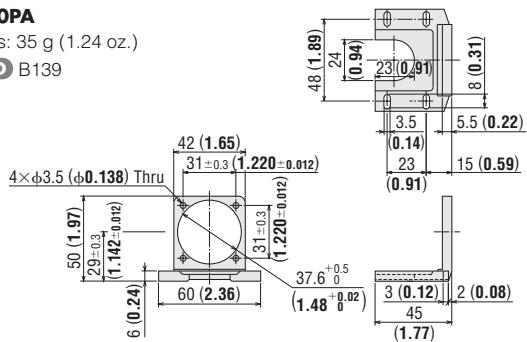
● Screws (Included)
No.4-40 UNC Length 10 mm (0.39 in.) … 4 pieces

PAL2P-5A
Mass: 110 g (3.9 oz.)
CAD B143
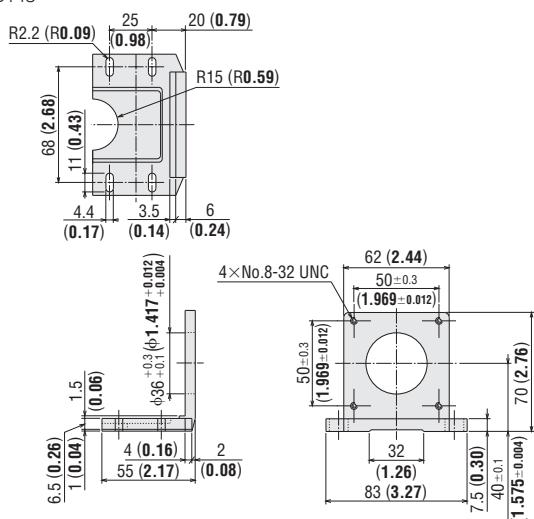
● Screws (Included)
No.8-32 UNC Length 12.7 mm (0.5 in.) … 4 pieces

SOL0B-A
Mass: 85 g (3 oz.)
CAD B267

SOL0A-A: 4×φ3.5 (φ0.138) Thru
SOL0B-A: 4×φ4.5 (φ0.177) Thru
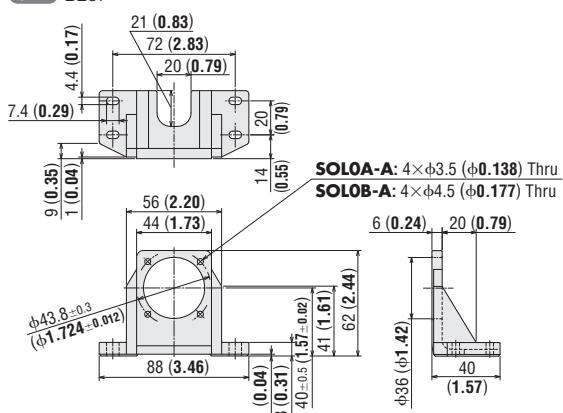
PAF0P
Mass: 30 g (1.06 oz.)
CAD B140

A–A
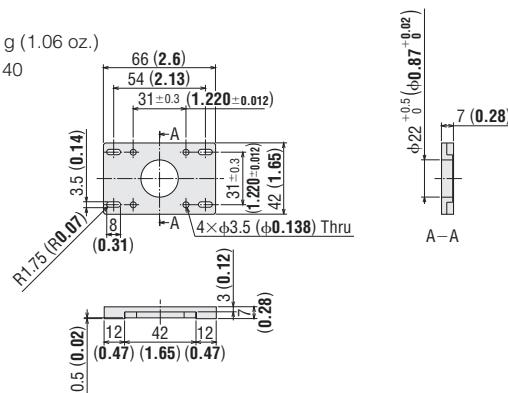
● Screws (Included)
M3P0.5 Length 7 mm (0.28 in.) … 4 pieces

PAL4P-5A
Mass: 250 g (8.8 oz.)
CAD B145
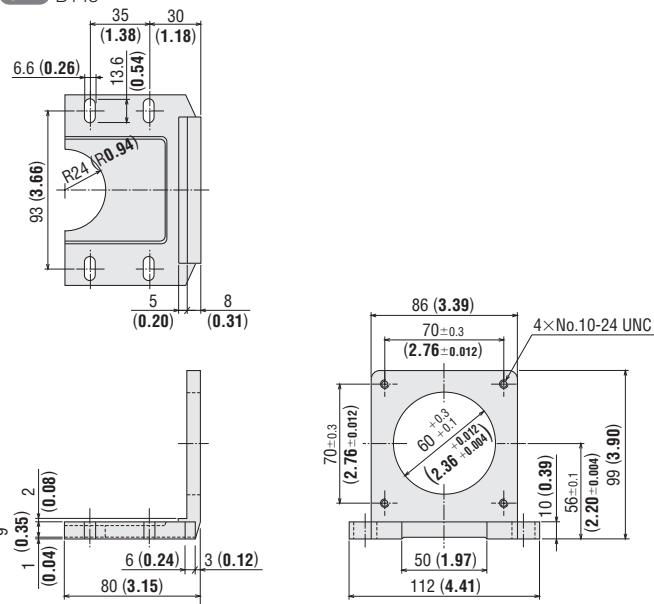
● Screws (Included)
No.10-24 UNC Length 15.875 mm (0.625 in.) … 4 pieces

SOL2M4
Mass: 135 g (4.8 oz.)
CAD A321

SOL2U08: 4×No.8-32UNC
SOL2M4: 4×M4

61
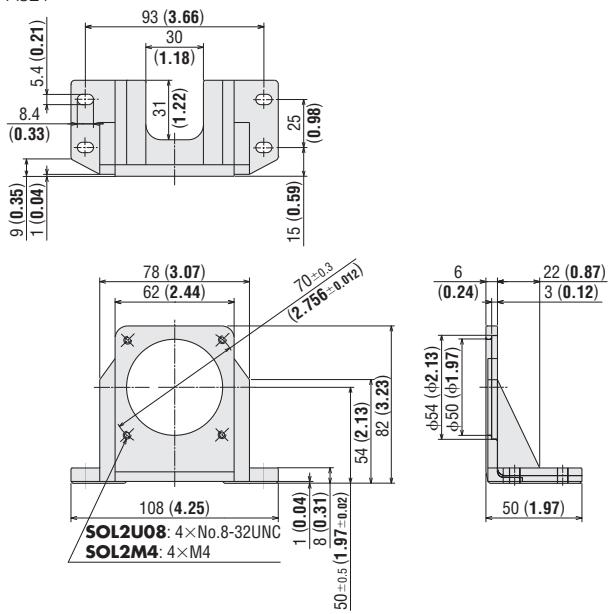
SOL5B-A

Mass: 270 g (9.5 oz.)

CAD B271

4×φ8.5 (φ0.335) Thru

PLA60G

Mass: 0.7 kg (1.54 lb.)

CAD B634

4×M5

PLA60H

Mass: 0.7 kg (1.54 lb.)

CAD B635

4×M5
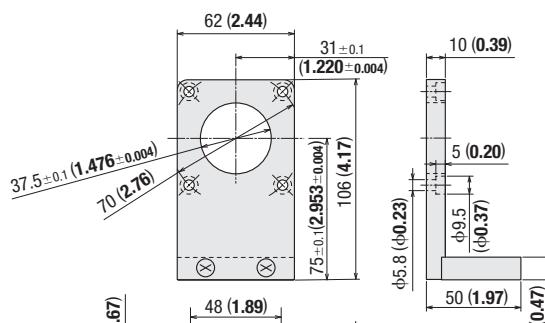
## PLA90G

Mass: 1.6 kg (3.5 lb.)

CAD B637

4×M6

PLA90H

Mass: 1.6 kg (3.5 lb.)

CAD B638

4×M8

4×M6
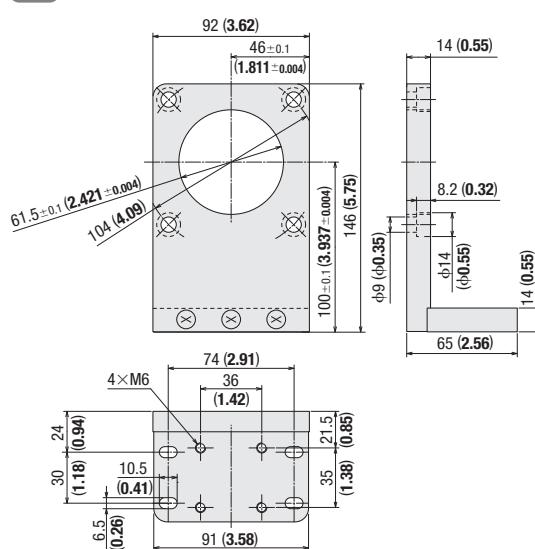
DIN Rail Mounting Bracket (RoHS)

Use to mount the driver on DIN rail.

■Product Line

Material: SPCC   Surface Treatment: Trivalent Chromate

Product Name	List Price
MADP02	$29.00

●DIN rail should be mounted on highly thermal conductive flat metal plate, comparable to 200 mm×200 mm×2 mm (7.87 in×7.87 in×0.08 in).
  Be sure to keep the ambient temperature of the driver 0～+40℃ (+32～+104°F).

# Communication Cable for Data Setting Software (RoHS)

This communication cable is required for connecting to the computer on which the data setting software is installed.

■Product Line

Product Name	Applicable Product	List Price
CC05IF-USB	Built-in Controller Type	$120.00

■Connection between Computer and Driver

Data Setting Software
MEXE02

USB Cable 0.5 m (20 in.)

PC (Not supplied)

Connect to Control Module Connector

PC Interface Cable 5 m (16.4 ft.)
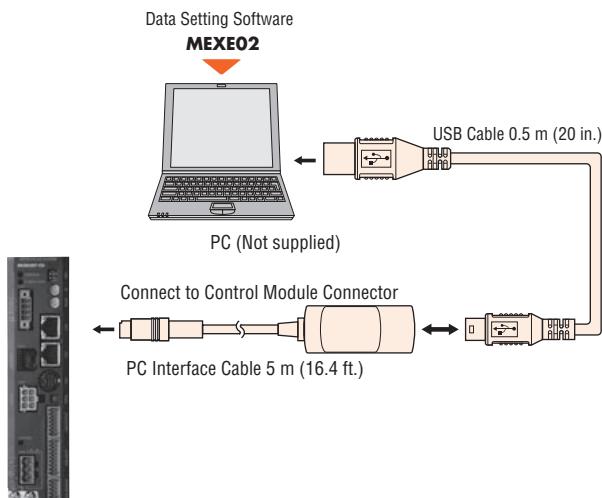
Note
●To connect with PC, exclusive device driver should be installed.

●Data Setting Software **MEXE02**

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

For details, please inquire via the website or contact the nearest Oriental Motor sales office.
www.orientalmotor.com

■Operating Environment

●Operating Systems (OS)

- Microsoft Windows 2000 Professional Service Pack 4
  Be sure to install Rollup 1 provided by Microsoft Corporation.
  Check whether Rollup 1 has been installed in "Add or remove programs".

For the following operating systems, both the 32-bit (x86) edition and 64-bit (x64) edition are supported.

- 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.

Notes
●The required memory and hard disk space may vary depending on the system environment.
●Windows and Windows Vista are registered trademarks of the Microsoft Corporation in the United States and other countries.

63

Control Module (RoHS)

Perform operations such as setting the driver's internal parameters and setting or changing the data.

It can also be used for operations such as speed and I/O monitoring, and teaching.

(Enlarged)

■Product Line

Product Name	Applicable Product	List Price
OPX-2A	Built-in Controller Type	$300.00

■Dimensions Unit = mm (in.)

●Control Module
Mass: 0.25 kg (0.55 lb.) (CAD) B453

91.8 (**3.61**)
96 (**3.78**)
6.1 (**0.28**)
21.5 (**0.85**)
72 (**2.83**)
67.8 (**2.67**)
Cable φ4.7 (φ**0.19**), 5000 (**196.9**)
38 (**1.50**)
φ11.2 (**0.44**)
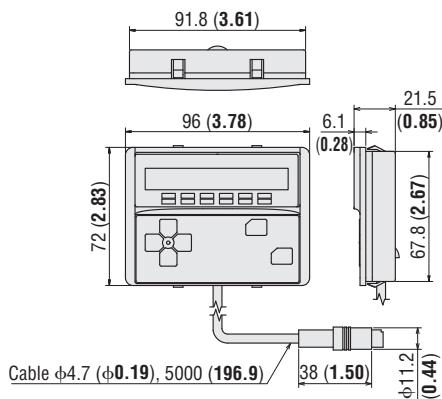
●Panel Cut-Out for Control Module
[Thickness of the mounting plate: 1~3 mm (0.04~0.12 in.)]

$68^{+0.7}_{0}$ (**$2.677^{+0.028}_{0}$**)
$92^{+0.8}_{0}$ (**$3.622^{+0.031}_{0}$**)
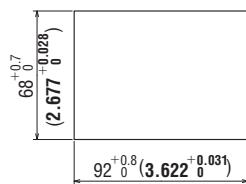
Driver Cable

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 (ft.)	List Price
CC16D005B-1	0.5 (1.65)	$34.00
CC16D010B-1	1.0 (3.3)	$39.00
CC16D015B-1	1.5 (4.95)	$44.00
CC16D020B-1	2.0 (6.6)	$49.00

■Dimensions Unit = mm (in.)

Round-type Insulating Crimp terminal (1.25−4)　　AWG24, Finishing Diameter φ1.1
300^{+30}_{0}　　300^{+30}_{0}
φ7.5
7　150 (**5.90**)　　150 (**5.90**)　7
L
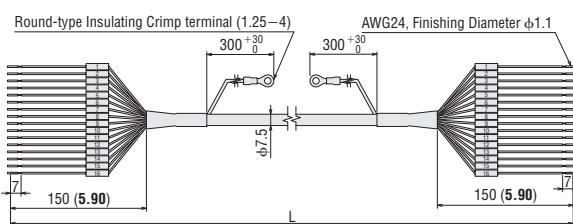
# RS-485 Communication Cable (RoHS)

This cable is used to link drivers in multi-axis operations.
It also connects the network converter to the driver.

■Product Line

Product Name	Length m (ft.)	Applicable Product	List Price
CC002-RS4	0.25 (0.82)	Built-in Controller Type	$33.00

■Dimensions Unit = mm (in.)

250 (**9.84**)
21.7 (**0.85**)
11.7 (**0.46**)
φ6.2 (φ**0.24**)

● Example of connection

RS-485 Communication Connector (CN6/CN7)

Link between drivers is available
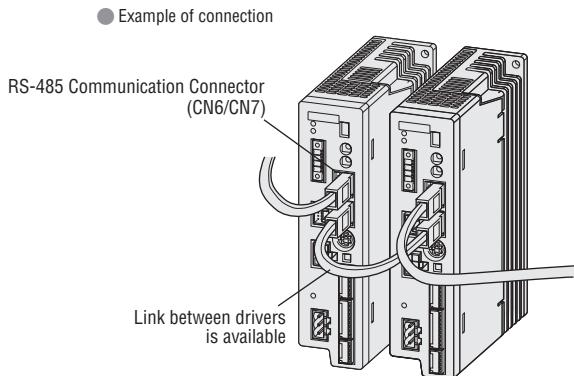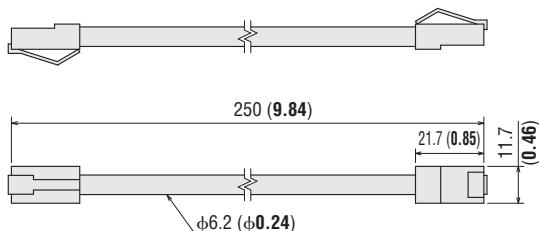
Network Converters (RoHS)

The network converter is a transducer that converts from the host communication protocol to RS-485 communication protocol. Use the network converter to control products supporting Oriental Motor's RS-485 Built-in Controller (Stored Data) type drivers in the host communication environment.

■Product Line

Network Type	Product Name	List Price
CC-Link Compatible	NETC01-CC	$282.00
MECHATROLINK - Ⅱ Compatible	NETC01-M2	$358.00
MECHATROLINK - Ⅲ Compatible	NETC01-M3	$ Call
EtherCAT Compatible	NETC01-ECT	$245.00

NETC01-CC   NETC01-M2   NETC01-M3   NETC01-ECT

Controller

Universal Controller

SCX11 (RoHS)

The **SCX11** Universal Controller is a highly functional and sophisticated controller, equipped with program editing and execution functions. The **SCX11** is also able to control the motor via various serial ports such as USB, RS-232C and **CAN**open. Use the **SCX11** to support Oriental Motor's Pulse Input Type drivers.

■Feature

- ●100 Sequence Programs can be Stored
- ●Stored Program with GUI
- ●USB Connection to PC
- ●Various Interfaces for Operation
- ●External Encoder Input

●Stand Alone Operation Using Sensors and Switches
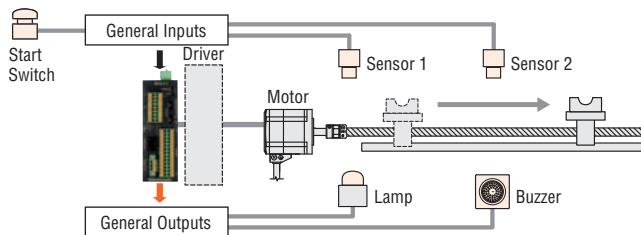
■Product Line

Product Name	List Price
SCX11	$349.00

●Various Interfaces for Operation

Top view

I/O

USB

RS-232C-Connector

CANopen-Connector
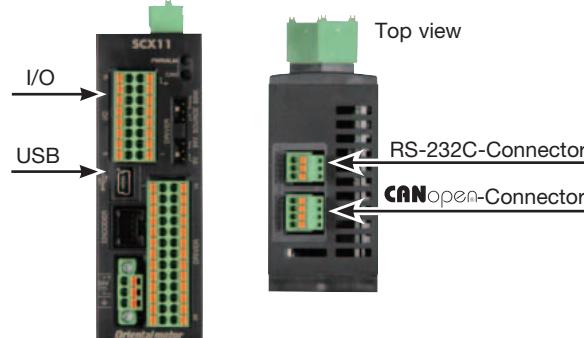
- ●Direct Command Operation via CANopen
- ●Operations Using a PC or PLC

Specifications are subject to change without notice. This catalog was published in October, 2013.

ORIENTAL MOTOR U.S.A. CORP.