

Stepping Motors

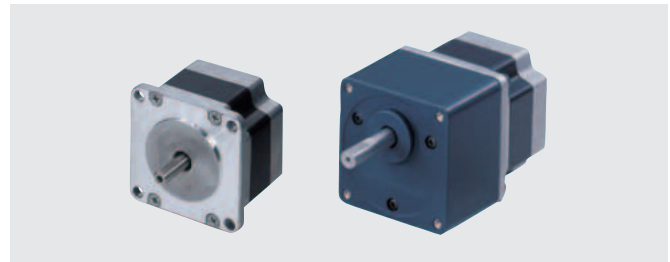
## Stepping Motors (Motor Only)

|  |                         |                          |                      |                      |   |                           |                      |                         |                       |                             |                           |                      |
|--|-------------------------|--------------------------|----------------------|----------------------|---|---------------------------|----------------------|-------------------------|-----------------------|-----------------------------|---------------------------|----------------------|
|  | AC Input Motor & Driver | Introduction             | 0.36° / Geared<br>AR | 0.36° / Geared<br>AS | 0.72° / Geared<br>RK                        | 0.9°/1.8° / Geared<br>UMK | 0.36° / Geared<br>AR | DC Input Motor & Driver | 0.36° / Geared<br>ASX | 0.36°/0.72° / Geared<br>CRK | 0.9°/1.8° / Geared<br>CMK | 1.8° / Geared<br>RBK |
|  |                         | 0.36°<br>PK Series       | 0.36°<br>PK          | Motor Only           | 0.72°<br>PK Series                          | 0.72°<br>PK               | 0.9°<br>PK Series    |                         | 0.9°<br>PK            | 1.8°<br>PK/PV Series        | 1.8°<br>PK/PV             |                      |
|  |                         | Geared Type<br>PK Series | Geared<br>PK         |                      | Controllers<br>SCX10<br>/EMP400<br>/SG8030J | Accessories               |                      |                         |                       |                             |                           |                      |

# Stepping Motors (Motor Only)

● Additional Information ●  
 Technical reference → Page G-1  
 Safety standards → Page H-2

Four basic step angles are available. A wide range of frame sizes are also available from 20 mm (0.79 in.) up to 85 mm (3.35 in.). Five geared solutions are available in the same frame sizes up to 90 mm (3.54 in.) and come pre-assembled. Encoder options are also available as a standard offering. Motor windings come in various specifications.



## Features

### ● Four Basic Step Angles are Available

- 0.36°: High-Torque type
- 0.72°: High-Torque or Standard type
- 0.9°: Standard type
- 1.8°: High-Torque, High-Efficiency, Standard type or High-Inertia Capability

### ● Stop Position Accuracy of 2 Arc Minutes (No Load)

The step angle 0.36° high-torque type is designed with a stop position accuracy of 2 arc minutes (0.034°) [standard type: 3 arc minutes (0.05°)]. The reduced error helps improve the positioning accuracy.

### ◇ 0.36° Stepping Motors: High-Torque Type

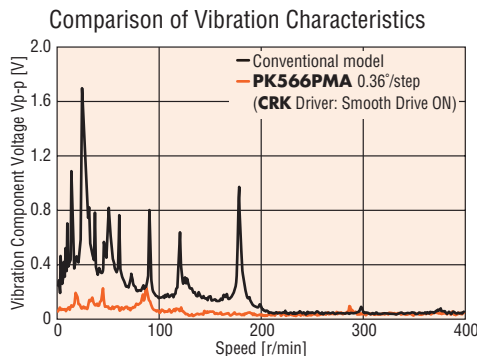
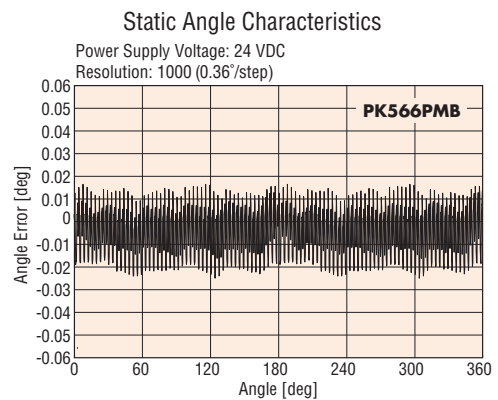
The 0.36° Stepping Motors, High-Torque type provides 1000 steps per revolution by having 100 teeth on the rotor and contributes to the highest resolution and lowest vibration. This motor also achieves improved stopped positional accuracy of 2 arc minutes.

Step Angle 0.36°  
 High-torque type: 100 teeth  
 Resolution: 1000 steps per rotation  
 = 0.36°/step



### ● Lowest Vibration

The lowest vibration is achieved using the smallest basic step angle of 0.36°.



### ◇ 0.72° Stepping Motors: High-Torque and Standard Type

The 0.72° Stepping Motors, High-Torque or Standard type offer 500 steps per revolution and providing excellent performance. The 0.72° motors are ideal for reducing the vibration throughout the entire motor speed range.

### ◇ 0.9° Stepping Motors: Standard Type

The 0.9° Stepping Motors, Standard type provides 400 steps per revolution.

### ◇ 1.8° Stepping Motors: High-Torque and Standard Type

The 1.8° Stepping Motors, High-Torque or Standard type offers 200 steps per revolution.

### ● Five Geared Types

Five different gearheads are offered in our Geared Motors, each designed for different characteristics and specifications based on varying applications or motion requirements. Please see page A-275 for details.

## ● High-Torque Type

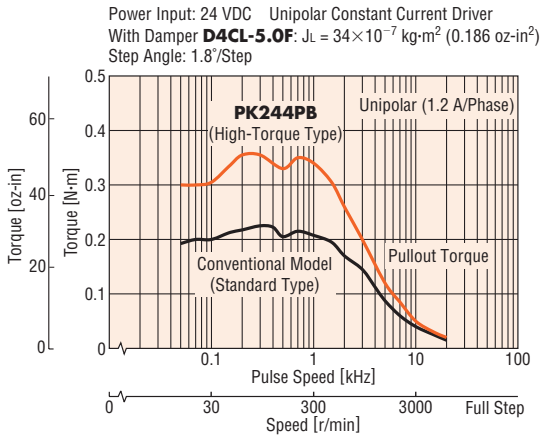
(Step Angle 0.36°, 0.72°, 1.8°)

### ◇ Generates a High-Torque

A high-torque motor generating high torque of approx. 1.2 to 1.5 times the level achieved by the standard type.

Comparison of Speed-Torque Characteristics for the Same Motor Frame Size

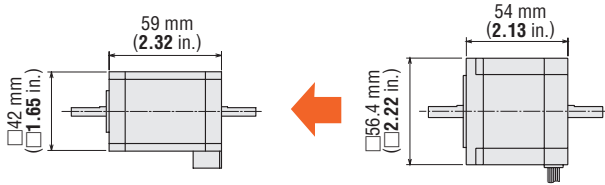
### 1.8° High-Torque Type



### ◇ Downsizing of Your Motor

Providing torque equivalent to a motor of the next larger frame size, high-torque type allows for a downsizing of your equipment.

Example: Comparison of 1.8° Standard Type and 1.8° High-Torque Type



| High-Torque Type     | Type           | Standard Type        |
|----------------------|----------------|----------------------|
| <b>PK246PB</b>       | Model          | <b>PK266-01B</b>     |
| 0.93 N-m (132 oz-in) | Holding Torque | 1.17 N-m (166 oz-in) |

### ◇ Lower Power Consumption and Lower Heat Generation

When compared to the standard type, the motor current may drop at equivalent torque due to an excess in the torque. This may have the effect of reducing the temperature rise of the motor.

## ● High-Torque, High-Efficiency Type

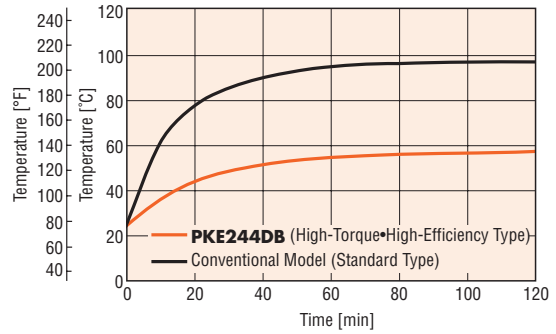
(Step Angle 1.8°)

### ◇ Lower Heat Generation

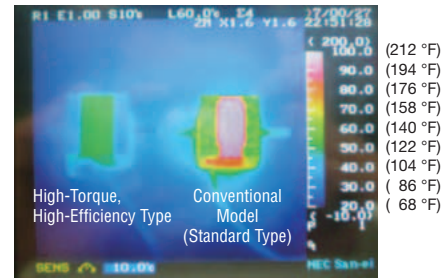
Utilizing the latest in motor technology, the High-Torque, High-Efficiency Type stepping motors are able to achieve a significant reduction in the amount of heat generated from the motor.

(There is a 50% reduction in temperature rise compared with conventional models.)

### Motor Case Temperature under the Same Operating Conditions



### Temperature Distribution by Thermography

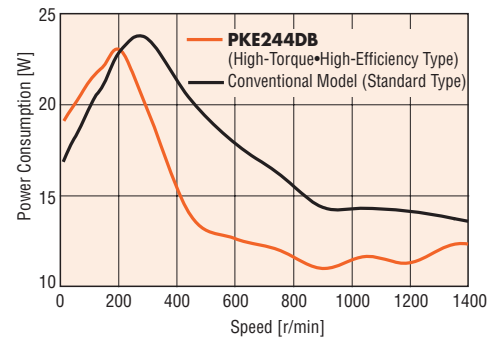


● Comparison under the Same Operating Conditions

### ◇ Lower Power Consumption

This model has achieved a 31% reduction\* in power consumption through energy savings and a reduction of 10 kg/per year in CO<sub>2</sub> emissions.

### Power Consumption



\*450 r/min, continuous operation

- **Encoder Option Available**  
(Step Angle 0.36°, 0.72°, 0.9°, 1.8°)



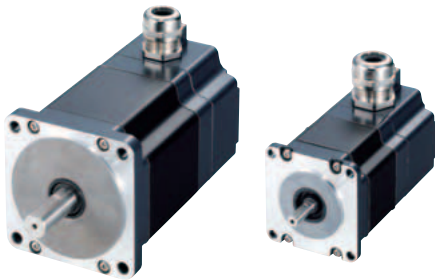
The **PK** Series stepping motor with encoder offers high torque and precise feedback capability.

- Encoder Feedback Type: Incremental
- Encoder Output Type: TTL and Differential Type\*
- Four feedback resolutions: 200, 400, 500 and 1000 pulses/rev\*
- 2-channel or 3-channel\*
- Provides closed loop system capability

\*For details on the Encoder product lineup, check the Product Line on A-282.

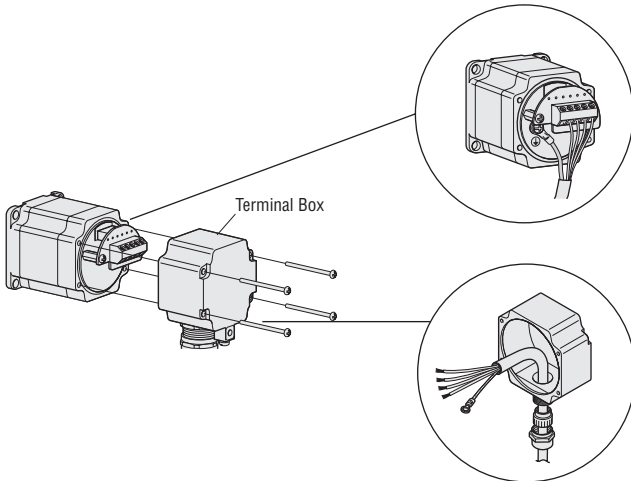
- **Terminal Box Type**  
(Step Angle 0.72°, 1.8°)

The motor conforms to the IP65 standard of ingress protection against dust and water.



- ◇ **Terminal-Block Connection Design**

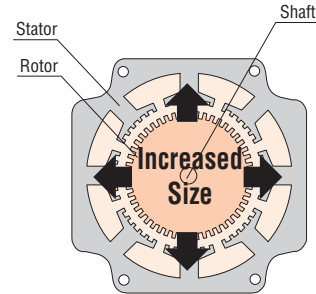
The motor can be wired directly from its terminal block.



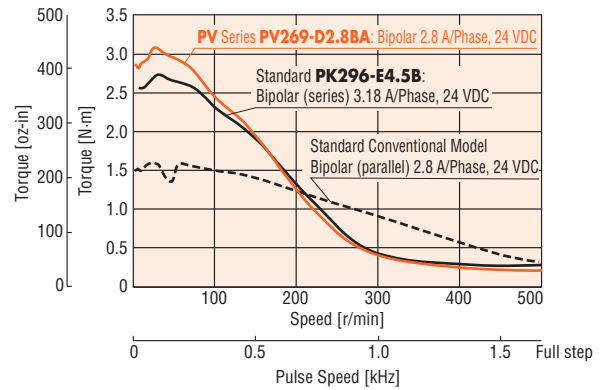
- **PV Series**  
(Step Angle 1.8°)

- ◇ **High Inertia Capability**

The **PV** Series provides, on average, 1.5 times higher torque than a standard stepping motor. By utilizing a larger rotor diameter, larger magnets can be used to significantly increase the output torque.








Motor structure  
(Cross section perpendicular to shaft)



● Geared Motor Lineup

◇ Characteristics Comparison for Geared Motors

| Geared Type             | Features   | Permissible Torque<br>Maximum Torque [N·m (lb-in)]           | Backlash<br>[arc min (degrees)] | Basic Resolution<br>[deg/step] | Output Shaft Speed<br>[r/min] |
|-------------------------|--|--|---------------------------------|--------------------------------|-------------------------------|
| For 1.8° Stepping Motor | <b>SH Geared Type</b><br>(Parallel shaft)<br> <ul style="list-style-type: none"> <li>A wide variety of low gear ratios, high-speed operations</li> <li>Gear ratios: 3.6, 7.2, 9, 10, 18, 36</li> </ul>  | 12 (106)   | Approx. 60~120 (1~2)            | 0.05                           | 500                           |
|                         | <b>TH Geared Type</b><br>(Parallel shaft)<br> <ul style="list-style-type: none"> <li>A wide variety of low gear ratios, high-speed operations</li> <li>Gear ratios: 3.6, 7.2, 10, 20, 30</li> </ul>   | 12 (106)   | 45 (0.75)                       | 0.024                          | 500                           |
| Low backlash            | <b>PS/PL Geared Type</b><br>(Parallel shaft)<br> <ul style="list-style-type: none"> <li>High permissible/maximum torque</li> <li>A wide variety of gear ratios for selecting the desired step angle (resolution)</li> <li>Centered output shaft</li> <li>Gear ratios: 5, 7.2, 10, 25, 36, 50</li> </ul>   | Permissible Torque<br>37 (320)    Maximum Torque<br>60 (530) | 25 (0.42)                       | 0.0144                         | 600                           |
|                         | <b>PN Geared Type</b><br>(Planetary)<br> <ul style="list-style-type: none"> <li>High speed (low gear ratio), high accuracy positioning</li> <li>High permissible/maximum torque</li> <li>A wide variety of gear ratios for selecting the desired step angle (resolution)</li> <li>Centered output shaft</li> <li>Gear ratios: 5, 7.2, 10, 25, 36, 50</li> </ul> | Permissible Torque<br>37 (320)    Maximum Torque<br>60 (530) | 3 (0.05)                        | 0.0144                         | 600                           |
| Non-backlash            | <b>Harmonic Geared Type</b><br>(Harmonic drive)<br> <ul style="list-style-type: none"> <li>High accuracy positioning</li> <li>High permissible/maximum torque</li> <li>High gear ratios, high resolution</li> <li>Centered output shaft</li> <li>Gear ratios: 50, 100</li> </ul>  | Permissible Torque<br>37 (320)    Maximum Torque<br>55 (480) | 0                               | 0.0072                         | 70                            |

Note

● The values shown above are for reference only. These values vary depending on the frame size and gear ratio.

Introduction

DC Input Motor & Driver

AR /Geared /AS /Geared /RK /UMK /AR /ASX /CRK /CMK /RBK

DC Input Motor & Driver























PK /PK /PK /PK /PK /PK

Controllers

SCX10 /EMP400 /SG8030J






















Accessories

## Wide Range of Stepping Motor Variations

| Motor Frame Size [mm (in.)]   | Round Shaft   |   |   |   |  |   |  |
|---|---|---|---|---|--|---|--|
| 20<br>(0.79)  | 0.72°<br>High-Torque  | 1.8°<br>High-Torque   |   |   |  |   |  |
|   |    |    |   |   |  |   |  |
|   | Page A-291  | Page A-304  |   |   |  |   |  |
| 28<br>(1.10)  | 0.36°<br>High-Torque  | 0.72°<br>High-Torque  | 1.8°<br>High-Torque   |   |  |   |  |
|   |    |    |    |   |  |   |  |
|   | Page A-290  | Page A-291  | Encoder<br>Page A-305   |   |  |   |  |
| 35<br>(1.38)  | 1.8°<br>High-Torque   |   |   |   |  |   |  |
|   |    |   |   |   |  |   |  |
|   | Encoder<br>Page A-307   |   |   |   |  |   |  |
| 42<br>(1.65)  | 0.36°<br>High-Torque  | 0.72°<br>High-Torque  | 0.72°<br>Standard   | 0.9°<br>Standard  | 1.8°<br>High-Torque,<br>High-Efficiency  | 1.8°<br>High-Torque   | 1.8°<br>Standard Type  |
|   |   |   |   |   |   |   |  |
|   | Encoder<br>Page A-290   | Encoder<br>Page A-291   | Encoder<br>Page A-291   | Encoder<br>Page A-294   | Page A-302   | Encoder<br>Page A-309   | Encoder<br>Page A-313  |
|   | 1.8°<br>Standard  |   |   |   |  |   |  |
|   | 50<br>(1.97)  |   |   |   |  |   |  |
|   |  |   |   |   |  |   |  |
|   | Encoder<br>Page A-317   |   |   |   |  |   |  |
|   | 56.4<br>(2.22)<br>60<br>(2.36)  | 0.36°<br>High-Torque  | 0.72°<br>Standard   | 0.9°<br>Standard  | 1.8°<br>High-Torque  | 1.8°<br>Standard  | 1.8°<br><b>PV Series</b>   |
|  |   |  |  |  |  |  |  |
| Encoder<br>Page A-290   |   | Terminal Box<br>Encoder<br>Page A-292, A-293  | Encoder<br>Page A-298   | Encoder<br>Page A-311   | Terminal Box<br>Encoder<br>Page A-319, A-323   | Page A-325  |  |
| 0.72°<br>Standard   |   | 1.8°<br>Standard  |   |   |  |   |  |
| 85<br>(3.35)  |   |   |   |   |  |   |  |
|   |   |  |  |   |  |   |  |
|   |   | Terminal Box<br>Encoder<br>Page A-292, A-293  | Terminal Box<br>Encoder<br>Page A-328, A-332  |   |  |   |  |

Encoder Motor with an encoder is available

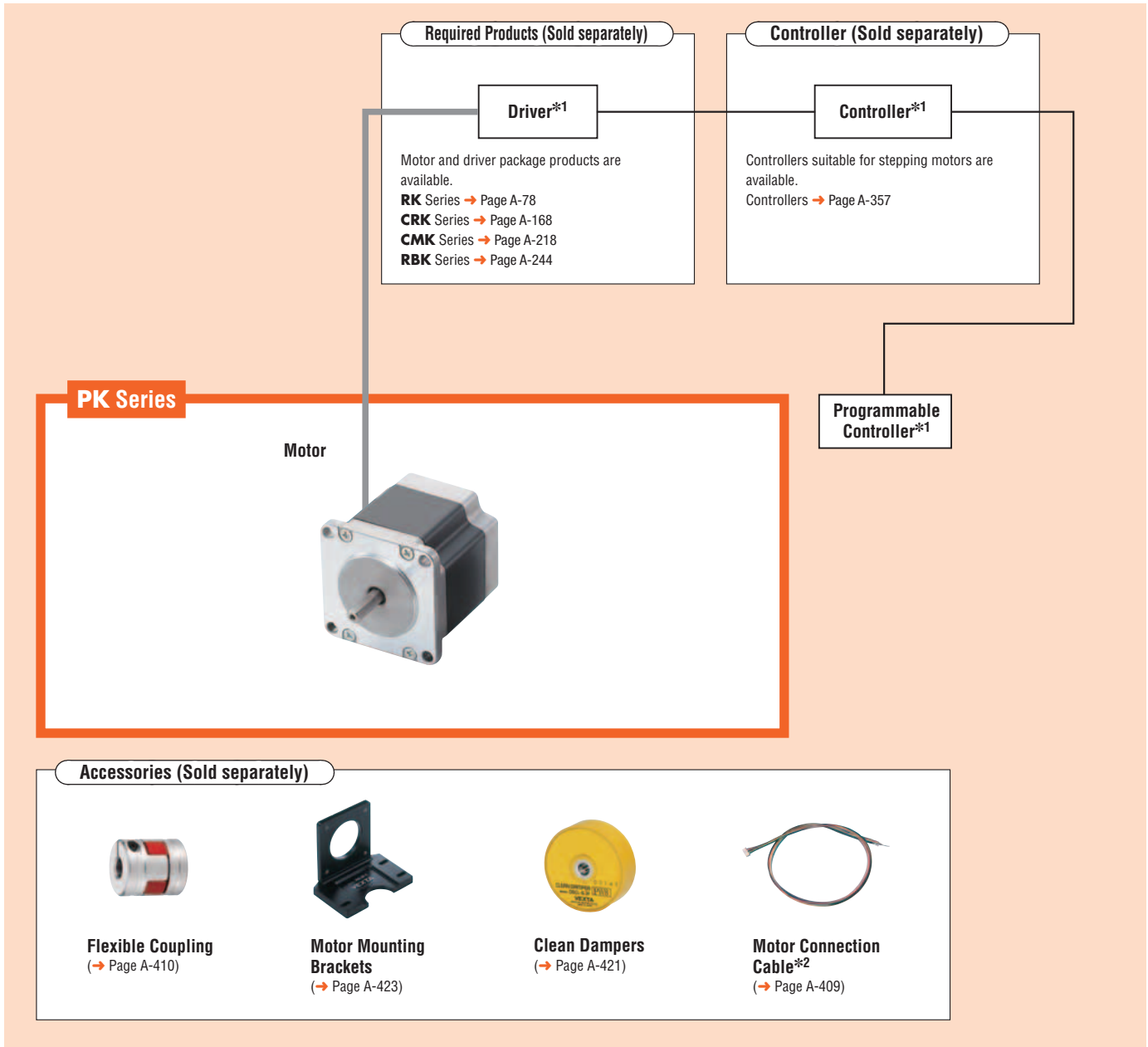
Terminal Box Motor with Terminal Box is available

| Motor Frame Size [mm (in.)] | Geared  |   |   |  |   |
|-----------------------------|---|---|---|--|---|
| 20 (0.79)                   | Harmonic Geared   |   |   |  |   |
|                             |    |   |   |  |   |
|                             | Page A-354  |   |   |  |   |
| 28 (1.10)                   | <b>SH</b> Geared  | <b>TH</b> Geared  | <b>PS</b> Geared  | <b>PN</b> Geared   | Harmonic Geared   |
|                             |    |    |    |     |    |
|                             | <b>Encoder</b>  |   |   |  |   |
|                             | Page A-334  | Page A-342  | Page A-344, A-346   | Page A-352   | Page A-354  |
| 35 (1.38)                   |   |   |   |  |   |
| 42 (1.65)                   | <b>SH</b> Geared  | <b>TH</b> Geared  | <b>PS, PL</b> Geared  | <b>PN</b> Geared   | Harmonic Geared   |
|                             |   |   |   |    |   |
|                             | <b>Encoder</b>  | <b>Encoder</b>  | <b>Encoder</b>  |  | <b>Encoder</b>  |
|                             | Page A-336  | Page A-342  | Page A-344, A-348   | Page A-352   | Page A-354  |
| 50 (1.97)                   |   |   |   |  |   |
| 56.4 (2.22)                 | <b>SH</b> Geared  | <b>TH</b> Geared  | <b>PS, PL</b> Geared  | <b>PN</b> Geared   | Harmonic Geared   |
|                             |  |  |  |   |  |
|                             | <b>Encoder</b>  | <b>Encoder</b>  | <b>Encoder</b>  |  | <b>Encoder</b>  |
|                             | Page A-338  | Page A-343  | Page A-345, A-350   | Page A-353   | Page A-355  |
| 60 (2.36)                   |   |   |   |  |   |
| 85 (3.35)                   | <b>SH</b> Geared  | <b>TH</b> Geared  | <b>PS, PL</b> Geared  | <b>PN</b> Geared   | Harmonic Geared   |
|                             |  |  |  |  |  |
|                             |   | <b>Encoder</b>  | <b>Encoder</b>  |  | <b>Encoder</b>  |
|                             | Page A-340  | Page A-343  | Page A-345  | Page A-353   | Page A-355  |

|                         |
|-------------------------|
| Introduction            |
| AC Input Motor & Driver |
| AR 0.36° /Geared        |
| AS 0.72° /Geared        |
| UMK 0.9°/1.8° /Geared   |
| AR 0.36° /Geared        |
| ASX 0.36° /Geared       |
| DC Input Motor & Driver |
| CRK 0.36°/0.72° /Geared |
| CMK 0.9°/1.8° /Geared   |
| RBK 1.8° /Geared        |
| PK 0.36°                |
| PK 0.72°                |
| PK 0.9°                 |
| Motor Only              |
| PK/PV 1.8°              |
| PK Geared               |
| Controllers             |
| SCX10                   |
| EMP400                  |
| /SG80301                |
| Accessories             |

## System Configuration

These accessories enable step angle 0.9°/1.8° **PK Series** products to be used for various operations.



### ●Example of System Configuration

|                                       |   |   |                                       |                                  |
|---------------------------------------|---|---|---------------------------------------|----------------------------------|
| 2-Phase PK Series<br><b>PK264-01B</b> | + | Sold Separately                           |                                       |                                  |
|                                       |   | Motors Mounting Bracket<br><b>PAL2P-2</b> | Flexible Coupling<br><b>MC20F0408</b> | Clean Damper<br><b>D6CL-6.3F</b> |

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

\*1 Not supplied

\*2 A motor connection cable (0.6 m) is included with products that have product names ending in "L".



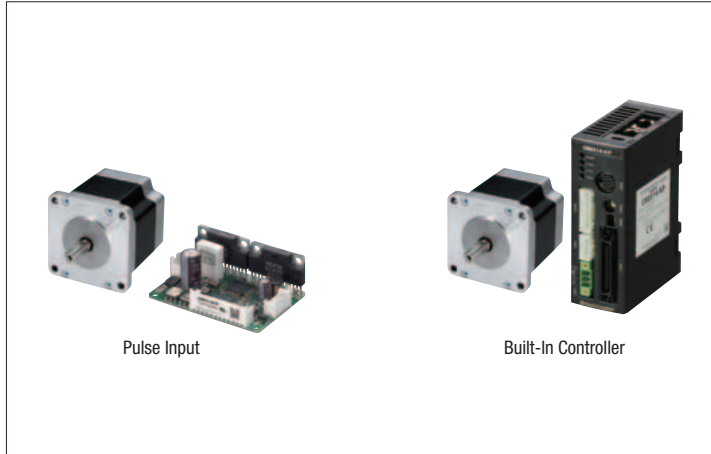
## Motor and Driver Packages

To achieve maximum performance, motors with dedicated drivers are also available.

### 0.36°/0.72° Stepping Motor and Driver Package



AC Input  
**RK Series**  
→ Page A-78

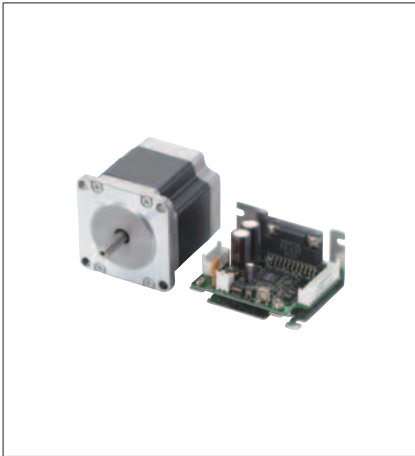


Pulse Input

Built-In Controller

DC Input  
**CRK Series**  
→ Page A-168

### 0.9°/1.8° Stepping Motor and Driver Package



DC Input  
**CMK Series**  
→ Page A-218



DC Input  
**RBK Series**  
→ Page A-244

|                                  |
|----------------------------------|
| Introduction                     |
| AC Input Motor & Driver          |
| 0.36° / Geared / Gearing         |
| AR                               |
| 0.72° / Geared / Gearing         |
| AS                               |
| 0.9° / 1.8° / Geared / Gearing   |
| RK                               |
| 0.36° / Geared / Gearing         |
| UMK                              |
| DC Input Motor & Driver          |
| 0.36° / Geared / Gearing         |
| AR                               |
| 0.36° / Geared / Gearing         |
| ASX                              |
| 0.36° / 0.72° / Geared / Gearing |
| CRK                              |
| 0.9° / 1.8° / Geared / Gearing   |
| CMK                              |
| 1.8° / Geared / Gearing          |
| RBK                              |
| Motor Only                       |
| 0.36° / Geared / Gearing         |
| PK                               |
| 0.72° / Geared / Gearing         |
| PK                               |
| 0.9° / Geared / Gearing          |
| PK                               |
| 1.8° / Geared / Gearing          |
| PK/PV                            |
| Geared / Gearing                 |
| PK                               |
| Controllers                      |
| SCX10                            |
| EMP400                           |
| /SG8030J                         |
| Accessories                      |

## Product Number

**PK5** indicates the step angle 0.36°/0.72° **PK** Series stepping motors.

**PK2** indicates the step angle 0.9°/1.8° **PK** Series stepping motors.

**PV2** indicates the step angle 1.8° **PV** Series stepping motors.

### Step Angle 0.36°/0.72° High-Torque Type

**PK 5 2 3 P M A**

① ② ③ ④ ⑤

### Step Angle 0.72° Standard Type

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

**PK 5 4 3 NAW**

① ② ③

◇ Motor Frame Size 85 mm (3.35 in.)

**PK 5 9 6 BE**

① ② ③

### Step Angle 0.72° Standard Type Terminal Box

**PK 5 9 6 A T**

① ② ③ ④

### Geared Type

◇ Motor Frame Size 20 mm (0.79 in.), 28 mm (1.10 in.)

**PK 5 2 3 □ P A - T 10**

① ② ③ ④ ⑤ ⑥ ⑦

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

**PK 5 4 4 BW - N 5**

① ② ③ ④ ⑤

◇ Motor Frame Size 90 mm (3.54 in.)

**PK 5 9 9 AE - PS 5**

① ② ③ ④ ⑤

|   |                   |  |
|---|-------------------|--|
| ① | Motor Frame Size  | <b>1:</b> 20 mm (0.79 in.) <b>2:</b> 28 mm (1.10 in.)<br><b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.) |
| ② | Motor Case Length |  |
| ③ | Motor Type        |  |
| ④ | Resolution        | <b>M:</b> 0.36°/Step Blank: 0.72°/Step   |
| ⑤ | Shaft Type        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft  |

|   |                   |  |
|---|-------------------|--|
| ① | Motor Frame Size  | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)<br><b>9:</b> 85 mm (3.35 in.)                  |
| ② | Motor Case Length |  |
| ③ | Shaft Type        | <b>NAW:</b> Single Shaft <b>NBW:</b> Double Shaft<br><b>AE:</b> Single Shaft <b>BE:</b> Double Shaft |

|   |                   |   |
|---|-------------------|---|
| ① | Motor Frame Size  | <b>6:</b> 60 mm (2.36 in.) <b>9:</b> 85 mm (3.35 in.) |
| ② | Motor Case Length |   |
| ③ | Shaft Type        | <b>A:</b> Single Shaft                                |
| ④ | Terminal Box      |   |

|   |                      |  |
|---|----------------------|--|
| ① | Motor Frame Size     | <b>1:</b> 20 mm (0.79 in.) <b>2:</b> 28 mm (1.10 in.)  |
| ② | Motor Case Length    |  |
| ③ | Motor Specifications | <b>H:</b> High Speed Blank: Standard   |
| ④ | Motor Type           |  |
| ⑤ | Shaft Type           | <b>A:</b> Single Shaft <b>B:</b> Double Shaft  |
| ⑥ | Gearhead Type        | <b>T:</b> <b>TH</b> Geared Type <b>PS:</b> <b>PS</b> Geared Type<br><b>N:</b> <b>PN</b> Geared Type <b>H:</b> Harmonic Geared Type |
| ⑦ | Gear Ratio           |  |

|   |                   |  |
|---|-------------------|--|
| ① | Motor Frame Size  | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)<br><b>9:</b> 90 mm (3.54 in.)  |
| ② | Motor Case Length |  |
| ③ | Shaft Type        | <b>AW:</b> Single Shaft <b>BW:</b> Double Shaft<br><b>AE:</b> Single Shaft <b>BE:</b> Double Shaft                                 |
| ④ | Gearhead Type     | <b>T:</b> <b>TH</b> Geared Type <b>PS:</b> <b>PS</b> Geared Type<br><b>N:</b> <b>PN</b> Geared Type <b>H:</b> Harmonic Geared Type |
| ⑤ | Gear Ratio        |  |

● Step Angle 0.36°/0.72° High-Torque Type with Encoder

**PK 5 4 4 P M A - R 2 8 L**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

● Step Angle 0.72° Standard Type with Encoder

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

**PK 5 4 3 NAW - R 2 7 L**

① ② ③ ④ ⑤ ⑥ ⑦

◇ Motor Frame Size 90 mm (3.54 in.)

**PK 5 9 9 AE - R 2 7**

① ② ③ ④ ⑤ ⑥

● Geared Type with Encoder

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

**PK 5 4 5 AW R 2 7 L T 30**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

◇ Motor Frame Size 90 mm (3.54 in.)

**PK 5 9 9 AE R 2 7 PS 5**

① ② ③ ④ ⑤ ⑥ ⑧ ⑨

|   |                    |   |
|---|--------------------|---|
| ① | Motor Frame Size   | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)   |
| ② | Motor Case Length  |   |
| ③ | Motor Type         |   |
| ④ | Resolution         | <b>M:</b> 0.36°/Step <b>Blank:</b> 0.72°/Step           |
| ⑤ | Shaft Type         | <b>A:</b> Single Shaft                                  |
| ⑥ | Encoder Version    |   |
| ⑦ | Encoder Output     | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B index |
| ⑧ | Encoder Resolution | <b>7:</b> 500 P/R <b>8:</b> 1000 P/R                    |
| ⑨ | Encoder Type       | <b>Blank:</b> TTL Type <b>L:</b> Differential Type      |

|   |                    |   |
|---|--------------------|---|
| ① | Motor Frame Size   | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)<br><b>9:</b> 90 mm (3.54 in.) |
| ② | Motor Case Length  |   |
| ③ | Shaft Type         | <b>NAW:</b> Single Shaft  |
| ④ | Encoder Version    |   |
| ⑤ | Encoder Output     | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B index                             |
| ⑥ | Encoder Resolution | <b>7:</b> 500 P/R   |
| ⑦ | Encoder Type       | <b>Blank:</b> TTL Type <b>L:</b> Differential Type                                  |

|   |                    |   |
|---|--------------------|---|
| ① | Motor Frame Size   | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.36 in.)<br><b>9:</b> 90 mm (3.54 in.)                           |
| ② | Motor Case Length  |   |
| ③ | Shaft Type         | <b>AW:</b> Single Shaft <b>AE:</b> Single Shaft   |
| ④ | Encoder Version    |   |
| ⑤ | Encoder Output     | <b>2:</b> 3-Channel A, B index  |
| ⑥ | Encoder Resolution | <b>7:</b> 500 P/R   |
| ⑦ | Encoder Type       | <b>Blank:</b> TTL Type <b>L:</b> Differential Type  |
| ⑧ | Gearhead Type      | <b>T: TH</b> Geared Type <b>PS: PS</b> Geared Type<br><b>N: PN</b> Geared Type <b>H:</b> Harmonic Geared Type |
| ⑨ | Gear Ratio         |   |

|  |
|--|
| Introduction                           |
| AC Input Motor & Driver                |
| 0.36° / Geared / ASTEP AR              |
| 0.72° / Geared / ASTEP AS              |
| 0.72° / Geared / RK                    |
| 0.9°/1.8° / Geared / UMK               |
| 0.36° / Geared / ASTEP AR              |
| 0.36° / Geared / ASTEP ASX             |
| DC Input Motor & Driver                |
| 0.36°/0.72° / Geared / CRK             |
| 0.9°/1.8° / Geared / CMK               |
| 1.8° / Geared / RBK                    |
| Motor Only                             |
| 0.36° / PK                             |
| 0.72° / PK                             |
| 0.9° / PK                              |
| 1.8° / PK/PV                           |
| Geared / PK                            |
| Controllers / SCX10 / EMP400 / SG8030J |
| Accessories                            |

● Step Angle 0.9°/1.8° Standard Type

**PK 2 4 3 M - 0 1 B A**  
 ① ② ③ ④ ⑤ ⑥ ⑦

|   |                       |  |
|---|-----------------------|--|
| ① | Motor Frame Size      | <b>4:</b> 42 mm (1.65 in.) <b>5:</b> 50 mm (1.97 in.)<br><b>6:</b> 56.4 mm (2.22 in.) <b>8:</b> 85 mm (3.35 in.) |
| ② | Motor Case Length     |  |
| ③ | Motor Type            | <b>M:</b> 0.9°/Step Blank: 1.8°/Step   |
| ④ | Reference Number      |  |
| ⑤ | Winding Specification |  |
| ⑥ | Shaft Type            | <b>A:</b> Single Shaft <b>B:</b> Double Shaft  |
| ⑦ | U.S.A. Version        |  |

● Step Angle 1.8° High-Torque Type

**PK 2 6 6 P A A**  
 ① ② ③ ④ ⑤

|   |                   |  |
|---|-------------------|--|
| ① | Motor Frame Size  | <b>2:</b> 28 mm (1.10 in.) <b>3:</b> 35 mm (1.38 in.)<br><b>4:</b> 42 mm (1.65 in.) <b>6:</b> 56.4 mm (2.22 in.) |
| ② | Motor Case Length |  |
| ③ | Motor Type        | <b>P:</b> High-Torque Type   |
| ④ | Shaft Type        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft  |
| ⑤ | U.S.A. Version    |  |

● Step Angle 1.8° High-Torque, High-Efficiency Type

**PKE 2 4 3 A - L**  
 ① ② ③ ④

|   |                   |   |
|---|-------------------|---|
| ① | Motor Frame Size  | <b>4:</b> 42 mm (1.65 in.)                    |
| ② | Motor Case Length |   |
| ③ | Shaft Type        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |
| ④ | Connection Cable  |   |

● Step Angle 1.8° Standard Type Terminal Box

**PK 2 6 4 D A T**  
 ① ② ③ ④ ⑤

|   |                   |   |
|---|-------------------|---|
| ① | Motor Frame Size  | <b>6:</b> 56.4 mm (2.22 in.) <b>9:</b> 85 mm (3.35 in.) |
| ② | Motor Case Length |   |
| ③ | Motor Lead        | <b>D:</b> 4 Leads <b>E:</b> 8 Leads                     |
| ④ | Shaft Type        | <b>A:</b> Single Shaft                                  |
| ⑤ | Terminal Box      |   |

● Step Angle 1.8° PV Series

**PV 2 6 6 - 0 2 B A**  
 ① ② ③ ④ ⑤ ⑥

|   |                       |   |
|---|-----------------------|---|
| ① | Motor Frame Size      | <b>6:</b> 60 mm (2.36 in.)                    |
| ② | Motor Case Length     |   |
| ③ | Motor Lead            | <b>0:</b> 6 Leads <b>D:</b> 4 Leads           |
| ④ | Winding Specification |   |
| ⑤ | Shaft Type            | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |
| ⑥ | U.S.A. Version        |   |

● Geared Type

◇ SH Geared Type Motor Frame Size 28 mm (1.10 in.)

**PK 2 2 3 P A - SG 10**  
 ① ② ③ ④ ⑤ ⑥

|   |                   |   |
|---|-------------------|---|
| ① | Motor Frame Size  | <b>2:</b> 28 mm (1.10 in.)                    |
| ② | Motor Case Length |   |
| ③ | Motor Type        |   |
| ④ | Shaft Type        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |
| ⑤ | Gearhead Type     | <b>SG: SH</b> Geared Type                     |
| ⑥ | Gear Ratio        |   |

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

**PK 2 6 4 A 1 A - SG 10**  
 ① ② ③ ④ ⑤ ⑥ ⑦

|   |                       |   |
|---|-----------------------|---|
| ① | Motor Frame Size      | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.22 in.)<br><b>9:</b> 90 mm (3.54 in.) |
| ② | Motor Case Length     |   |
| ③ | Shaft Type            | <b>A:</b> Single Shaft <b>B:</b> Double Shaft                                       |
| ④ | Winding Specification |   |
| ⑤ | U.S.A. Version        |   |
| ⑥ | Gearhead Type         | <b>SG: SH</b> Geared Type   |
| ⑦ | Gear Ratio            |   |

◇ **PS/PL Geared Type**

**PK 2 4 4 P D A - P 10**

① ② ③ ④ ⑤ ⑥ ⑦

● **Step Angle 0.9° Standard Type/Step Angle 1.8° High-Torque Type with Encoder**

**PK 2 4 3 M A A R 1 5**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

● **Step Angle 1.8° Standard Type with Encoder**

**PK 2 4 3 - 0 1 A A R 1 5**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

● **Geared Type with Encoder**

◇ **SH Geared Type Motor Frame Size 28 mm (1.10 in.)**

**PK 2 2 3 P A R 1 5 S 10**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

◇ **SH Geared Type Motor Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.), 90 mm (3.54 in.)**

**PK 2 6 4 A 2 A R 1 5 S 10**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

◇ **PS/PL Geared Type**

**PK 2 4 4 P D A R 1 5 - P 10**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

|   |                   |   |
|---|-------------------|---|
| ① | Motor Frame Size  | <b>2:</b> 28 mm (1.10 in.) <b>4:</b> 42 mm (1.65 in.)<br><b>6:</b> 60 mm (2.22 in.) |
| ② | Motor Case Length |   |
| ③ | Motor Type        |   |
| ④ | Motor Lead        | <b>D:</b> 4 Leads   |
| ⑤ | Shaft Type        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft                                       |
| ⑥ | Gearhead Type     | <b>PS: PS</b> Geared Type <b>P: PL</b> Geared Type                                  |
| ⑦ | Gear Ratio        |   |

|   |                    |  |
|---|--------------------|--|
| ① | Motor Frame Size   | <b>2:</b> 28 mm (1.10 in.) <b>3:</b> 35 mm (1.38 in.)<br><b>4:</b> 42 mm (1.65 in.) <b>6:</b> 56.4 mm (2.22 in.) |
| ② | Motor Case Length  |  |
| ③ | Motor Type         | <b>M:</b> 0.9°/Step <b>P:</b> High-Torque Type   |
| ④ | Shaft Type         | <b>A:</b> Single Shaft   |
| ⑤ | U.S.A. Version     |  |
| ⑥ | Encoder Version    |  |
| ⑦ | Encoder Output     | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, Index   |
| ⑧ | Encoder Resolution | <b>5:</b> 200 R/P <b>6:</b> 400 R/P  |

|   |                       |   |
|---|-----------------------|---|
| ① | Motor Frame Size      | <b>4:</b> 42 mm (1.65 in.) <b>5:</b> 50 mm (1.97 in.)<br><b>6:</b> 56.4 mm (2.22 in.) |
| ② | Motor Case Length     |   |
| ③ | Motor Type            |   |
| ④ | Winding Specification |   |
| ⑤ | Shaft Type            | <b>A:</b> Single Shaft  |
| ⑥ | U.S.A. Version        |   |
| ⑦ | Encoder Version       |   |
| ⑧ | Encoder Output        | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, Index                              |
| ⑨ | Encoder Resolution    | <b>5:</b> 200 R/P <b>6:</b> 400 R/P   |

|   |                    |                            |
|---|--------------------|----------------------------|
| ① | Motor Frame Size   | <b>2:</b> 28 mm (1.10 in.) |
| ② | Motor Case Length  |                            |
| ③ | Motor Type         |                            |
| ④ | Shaft Type         | <b>A:</b> Single Shaft     |
| ⑤ | Encoder Version    |                            |
| ⑥ | Encoder Output     | <b>1:</b> 2-Channel A, B   |
| ⑦ | Encoder Resolution | <b>5:</b> 200 R/P          |
| ⑧ | Gearhead Type      | <b>S: SH</b> Geared Type   |
| ⑨ | Gear Ratio         |                            |

|   |                       |  |
|---|-----------------------|--|
| ① | Motor Frame Size      | <b>4:</b> 42 mm (1.65 in.) <b>6:</b> 60 mm (2.26 in.)    |
| ② | Motor Case Length     |  |
| ③ | Shaft Type            | <b>A:</b> Single Shaft                                   |
| ④ | Winding Specification |  |
| ⑤ | U.S.A. Version        |  |
| ⑥ | Encoder Version       |  |
| ⑦ | Encoder Output        | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, Index |
| ⑧ | Encoder Resolution    | <b>5:</b> 200 R/P <b>6:</b> 400 R/P                      |
| ⑨ | Gearhead Type         | <b>S: SH</b> Geared Type                                 |
| ⑩ | Gear Ratio            |  |

|   |                    |   |
|---|--------------------|---|
| ① | Motor Frame Size   | <b>2:</b> 28 mm (1.10 in.) <b>4:</b> 42 mm (1.65 in.)<br><b>6:</b> 60 mm (2.22 in.) |
| ② | Motor Case Length  |   |
| ③ | Motor Type         |   |
| ④ | Motor Lead         | <b>D:</b> 4 Leads   |
| ⑤ | Shaft Type         | <b>A:</b> Single Shaft  |
| ⑥ | Encoder Version    |   |
| ⑦ | Encoder Output     | <b>1:</b> 2-Channel A, B <b>2:</b> 3-Channel A, B, Index                            |
| ⑧ | Encoder Resolution | <b>5:</b> 200 R/P <b>6:</b> 400 R/P   |
| ⑨ | Gearhead Type      | <b>PS: PS</b> Geared Type <b>P: PL</b> Geared Type                                  |
| ⑩ | Gear Ratio         |   |

|                         |   |
|-------------------------|---|
| Introduction            |   |
| AC Input Motor & Driver | 0.36° / Geared / Geared (DSTEP, AR, AS)   |
| DC Input Motor & Driver | 0.36° / Geared / Geared (ASX, CRK, CMK)   |
| Motor Only              | 0.36° / Geared / Geared (RBK, PK, PK, PK) |
| Controllers             | SCX10 / EMP400 / SG8030J                  |
| Accessories             |   |

## Product Line

### ● Step Angle: 0.36°/Step, PK Series

#### ◇ High-Torque Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| <b>PK523PMA</b>      | <b>PK523PMB</b>      |
| <b>PK524PMA</b>      | <b>PK524PMB</b>      |
| <b>PK525PMA</b>      | <b>PK525PMB</b>      |
| <b>PK544PMA</b>      | <b>PK544PMB</b>      |
| <b>PK546PMA</b>      | <b>PK546PMB</b>      |
| <b>PK564PMA</b>      | <b>PK564PMB</b>      |
| <b>PK566PMA</b>      | <b>PK566PMB</b>      |
| <b>PK569PMA</b>      | <b>PK569PMB</b>      |

### ● Step Angle: 0.72°/Step, PK Series

#### ◇ High-Torque Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| <b>PK513PA</b>       | <b>PK513PB</b>       |
| <b>PK523PA</b>       | <b>PK523PB</b>       |
| <b>PK525PA</b>       | <b>PK525PB</b>       |
| <b>PK544PA</b>       | <b>PK544PB</b>       |
| <b>PK546PA</b>       | <b>PK546PB</b>       |

#### ◇ Standard Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| <b>PK543NAW</b>      | <b>PK543NBW</b>      |
| <b>PK544NAW</b>      | <b>PK544NBW</b>      |
| <b>PK545NAW</b>      | <b>PK545NBW</b>      |
| <b>PK564NAW</b>      | <b>PK564NBW</b>      |
| <b>PK566NAW</b>      | <b>PK566NBW</b>      |
| <b>PK569NAW</b>      | <b>PK569NBW</b>      |
| <b>PK596AE</b>       | <b>PK596BE</b>       |
| <b>PK599AE</b>       | <b>PK599BE</b>       |
| <b>PK5913AE</b>      | <b>PK5913BE</b>      |

#### ◇ Standard Type Terminal Box

| Model (Single Shaft) |
|----------------------|
| <b>PK564AT</b>       |
| <b>PK566AT</b>       |
| <b>PK569AT</b>       |
| <b>PK596AT</b>       |
| <b>PK599AT</b>       |
| <b>PK5913AT</b>      |

The following items are included in each product.

Motor, Parallel Key\*

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

#### ◇ High-Torque Type with Encoder

| Model (TTL Type Encoder)                   | Model (Differential Type Encoder) |
|--|-----------------------------------|
| —  | —                                 |
| —  | —                                 |
| —  | —                                 |
| <b>PK544PMA-R</b> <input type="checkbox"/> | <b>PK544PMA-R28L</b>              |
| <b>PK546PMA-R</b> <input type="checkbox"/> | <b>PK546PMA-R28L</b>              |
| <b>PK564PMA-R</b> <input type="checkbox"/> | <b>PK564PMA-R28L</b>              |
| <b>PK566PMA-R</b> <input type="checkbox"/> | <b>PK566PMA-R28L</b>              |
| <b>PK569PMA-R</b> <input type="checkbox"/> | <b>PK569PMA-R28L</b>              |

#### ◇ High-Torque Type with Encoder

| Model (TTL Type Encoder)                  | Model (Differential Type Encoder) |
|---|-----------------------------------|
| —   | —                                 |
| —   | —                                 |
| —   | —                                 |
| <b>PK544PA-R</b> <input type="checkbox"/> | <b>PK544PA-R27L</b>               |
| <b>PK546PA-R</b> <input type="checkbox"/> | <b>PK546PA-R27L</b>               |

#### ◇ Standard Type with Encoder

| Model (TTL Type Encoder)                   | Model (Differential Type Encoder) |
|--|-----------------------------------|
| <b>PK543NAW-R</b> <input type="checkbox"/> | <b>PK543NAW-R27L</b>              |
| <b>PK544NAW-R</b> <input type="checkbox"/> | <b>PK544NAW-R27L</b>              |
| <b>PK545NAW-R</b> <input type="checkbox"/> | <b>PK545NAW-R27L</b>              |
| <b>PK564NAW-R</b> <input type="checkbox"/> | <b>PK564NAW-R27L</b>              |
| <b>PK566NAW-R</b> <input type="checkbox"/> | <b>PK566NAW-R27L</b>              |
| <b>PK569NAW-R</b> <input type="checkbox"/> | <b>PK569NAW-R27L</b>              |
| <b>PK596AE-R</b> <input type="checkbox"/>  | —                                 |
| <b>PK599AE-R</b> <input type="checkbox"/>  | —                                 |
| <b>PK5913AE-R</b> <input type="checkbox"/> | —                                 |

● Enter the encoder code (**17**, **18**, **27** or **28**) in the box  within the model name.

● Step Angle: 0.9°/Step, **PK Series**

◇ Standard Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK243M-01AA          | PK243M-01BA          |
| PK243M-02AA          | PK243M-02BA          |
| PK243M-03AA          | PK243M-03BA          |
| PK244M-01AA          | PK244M-01BA          |
| PK244M-02AA          | PK244M-02BA          |
| PK244M-03AA          | PK244M-03BA          |
| PK245M-01AA          | PK245M-01BA          |
| PK245M-02AA          | PK245M-02BA          |
| PK245M-03AA          | PK245M-03BA          |
| PK264M-01A           | PK264M-01B           |
| PK264M-02A           | PK264M-02B           |
| PK264M-03A           | PK264M-03B           |
| PK264M-E2.0A         | PK264M-E2.0B         |
| PK266M-01A           | PK266M-01B           |
| PK266M-02A           | PK266M-02B           |
| PK266M-03A           | PK266M-03B           |
| PK266M-E2.0A         | PK266M-E2.0B         |
| PK268M-01A           | PK268M-01B           |
| PK268M-02A           | PK268M-02B           |
| PK268M-03A           | PK268M-03B           |
| PK268M-E2.0A         | PK268M-E2.0B         |

● Step Angle: 1.8°/Step, **PK Series**

◇ High-Torque · High Efficiency Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PKE243DA-L           | PKE243DB-L           |
| PKE243A-L            | PKE243B-L            |
| PKE244DA-L           | PKE244DB-L           |
| PKE244A-L            | PKE244B-L            |
| PKE245DA-L           | PKE245DB-L           |
| PKE245A-L            | PKE245B-L            |

◇ High-Torque Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK213PDA             | PK213PDB             |
| PK213PA              | PK213PB              |
| PK214PDA             | PK214PDB             |
| PK214PA              | PK214PB              |
| PK223PA              | PK223PB              |
| PK224PA              | PK224PB              |
| PK225PA              | PK225PB              |
| PK233PA              | PK233PB              |
| PK235PA              | PK235PB              |
| PK244PA              | PK244PB              |
| PK246PA              | PK246PB              |
| PK264PAA             | PK264PBA             |
| PK266PAA             | PK266PBA             |
| PK268PAA             | PK268PBA             |

◇ Standard Type with Encoder

| Model (TTL Type Encoder)           |
|------------------------------------|
| PK243MAAR <input type="checkbox"/> |
| -                                  |
| -                                  |
| PK244MAAR <input type="checkbox"/> |
| -                                  |
| -                                  |
| PK245MAAR <input type="checkbox"/> |
| -                                  |
| -                                  |
| PK264MAR <input type="checkbox"/>  |
| -                                  |
| -                                  |
| PK266MAR <input type="checkbox"/>  |
| -                                  |
| -                                  |
| PK268MAR <input type="checkbox"/>  |
| -                                  |
| -                                  |

◇ High-Torque Type with Encoder

| Model (TTL Type Encoder)           |
|------------------------------------|
| -                                  |
| -                                  |
| -                                  |
| -                                  |
| PK223PAR15                         |
| PK224PAR15                         |
| PK225PAR15                         |
| PK233PAR <input type="checkbox"/>  |
| PK235PAR <input type="checkbox"/>  |
| PK244PAR <input type="checkbox"/>  |
| PK246PAR <input type="checkbox"/>  |
| PK264PAAR <input type="checkbox"/> |
| PK266PAAR <input type="checkbox"/> |
| PK268PAAR <input type="checkbox"/> |

● Enter the encoder code (**15**, **16**, **25** or **26**) in the box () within the model name.

|                             |
|-----------------------------|
| Introduction                |
| AR <sup>DSTEP</sup>         |
| AS <sup>DSTEP</sup>         |
| RK                          |
| UMK                         |
| AR <sup>DSTEP</sup>         |
| ASX <sup>DSTEP</sup>        |
| CRK                         |
| CMK                         |
| RBK                         |
| PK                          |
| PK                          |
| PK                          |
| PK/PV                       |
| PK                          |
| SCX10<br>EMP400<br>/SG8030J |
| Accessories                 |

◇ Standard Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK243-01AA           | PK243-01BA           |
| PK243-02AA           | PK243-02BA           |
| PK243-03AA           | PK243-03BA           |
| PK244-01AA           | PK244-01BA           |
| PK244-02AA           | PK244-02BA           |
| PK244-03AA           | PK244-03BA           |
| PK244-04AA           | PK244-04BA           |
| PK245-01AA           | PK245-01BA           |
| PK245-02AA           | PK245-02BA           |
| PK245-03AA           | PK245-03BA           |
| PK256-02A            | PK256-02B            |
| PK258-02A            | PK258-02B            |
| PK264-01A            | PK264-01B            |
| PK264-02A            | PK264-02B            |
| PK264-03A            | PK264-03B            |
| PK264-E2.0A          | PK264-E2.0B          |
| PK266-01A            | PK266-01B            |
| PK266-02A            | PK266-02B            |
| PK266-03A            | PK266-03B            |
| PK266-E2.0A          | PK266-E2.0B          |
| PK268-01A            | PK268-01B            |
| PK268-02A            | PK268-02B            |
| PK268-03A            | PK268-03B            |
| PK268-E2.0A          | PK268-E2.0B          |
| PK296-01AA           | PK296-01BA           |
| PK296-02AA           | PK296-02BA           |
| PK296-03AA           | PK296-03BA           |
| PK296-F4.5A          | PK296-F4.5B          |
| PK299-01AA           | PK299-01BA           |
| PK299-02AA           | PK299-02BA           |
| PK299-03AA           | PK299-03BA           |
| PK299-F4.5A          | PK299-F4.5B          |
| PK2913-01AA          | PK2913-01BA          |
| PK2913-02AA          | PK2913-02BA          |
| PK2913-F4.0A         | PK2913-F4.0B         |

◇ Standard Type with Encoder

| Model (TTL Type Encoder)             |
|--------------------------------------|
| PK243-01AAR <input type="checkbox"/> |
| -                                    |
| -                                    |
| PK244-01AAR <input type="checkbox"/> |
| -                                    |
| -                                    |
| -                                    |
| PK245-01AAR <input type="checkbox"/> |
| -                                    |
| -                                    |
| PK256-02AR <input type="checkbox"/>  |
| PK258-02AR <input type="checkbox"/>  |
| -                                    |
| PK264-02AR <input type="checkbox"/>  |
| -                                    |
| -                                    |
| -                                    |
| PK266-02AR <input type="checkbox"/>  |
| -                                    |
| -                                    |
| -                                    |
| PK268-02AR <input type="checkbox"/>  |
| -                                    |
| -                                    |

◇ Standard Type Terminal Box

| Model (Single Shaft) |
|----------------------|
| PK264DAT             |
| PK266DAT             |
| PK268DAT             |
| PK296EAT             |
| PK299EAT             |
| PK2913EAT            |

● Step Angle: 1.8°/Step, **PV** Series

◇ High Inertia Capability

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PV264-D2.8AA         | PV264-D2.8BA         |
| PV264-02AA           | PV264-02BA           |
| PV266-D2.8AA         | PV266-D2.8BA         |
| PV266-02AA           | PV266-02BA           |
| PV267-D2.8AA         | PV267-D2.8BA         |
| PV267-02AA           | PV267-02BA           |
| PV269-D2.8AA         | PV269-D2.8BA         |
| PV269-02AA           | PV269-02BA           |

● Enter the encoder code (15, 16, 25 or 26) in the box (  ) within the model name.



● Geared, **PK** Series

◇ **SH** Geared Type

| Model (Single Shaft)  | Model (Double Shaft)  |
|-----------------------|-----------------------|
| <b>PK223PA-SG7.2</b>  | <b>PK223PB-SG7.2</b>  |
| <b>PK223PA-SG9</b>    | <b>PK223PB-SG9</b>    |
| <b>PK223PA-SG10</b>   | <b>PK223PB-SG10</b>   |
| <b>PK223PA-SG18</b>   | <b>PK223PB-SG18</b>   |
| <b>PK223PA-SG36</b>   | <b>PK223PB-SG36</b>   |
| <b>PK243A1A-SG3.6</b> | <b>PK243B1A-SG3.6</b> |
| <b>PK243A1A-SG7.2</b> | <b>PK243B1A-SG7.2</b> |
| <b>PK243A1A-SG9</b>   | <b>PK243B1A-SG9</b>   |
| <b>PK243A1A-SG10</b>  | <b>PK243B1A-SG10</b>  |
| <b>PK243A1A-SG18</b>  | <b>PK243B1A-SG18</b>  |
| <b>PK243A1A-SG36</b>  | <b>PK243B1A-SG36</b>  |
| <b>PK243A2A-SG3.6</b> | <b>PK243B2A-SG3.6</b> |
| <b>PK243A2A-SG7.2</b> | <b>PK243B2A-SG7.2</b> |
| <b>PK243A2A-SG9</b>   | <b>PK243B2A-SG9</b>   |
| <b>PK243A2A-SG10</b>  | <b>PK243B2A-SG10</b>  |
| <b>PK243A2A-SG18</b>  | <b>PK243B2A-SG18</b>  |
| <b>PK243A2A-SG36</b>  | <b>PK243B2A-SG36</b>  |
| <b>PK264A1A-SG3.6</b> | <b>PK264B1A-SG3.6</b> |
| <b>PK264A1A-SG7.2</b> | <b>PK264B1A-SG7.2</b> |
| <b>PK264A1A-SG9</b>   | <b>PK264B1A-SG9</b>   |
| <b>PK264A1A-SG10</b>  | <b>PK264B1A-SG10</b>  |
| <b>PK264A1A-SG18</b>  | <b>PK264B1A-SG18</b>  |
| <b>PK264A1A-SG36</b>  | <b>PK264B1A-SG36</b>  |
| <b>PK264A2A-SG3.6</b> | <b>PK264B2A-SG3.6</b> |
| <b>PK264A2A-SG7.2</b> | <b>PK264B2A-SG7.2</b> |
| <b>PK264A2A-SG9</b>   | <b>PK264B2A-SG9</b>   |
| <b>PK264A2A-SG10</b>  | <b>PK264B2A-SG10</b>  |
| <b>PK264A2A-SG18</b>  | <b>PK264B2A-SG18</b>  |
| <b>PK264A2A-SG36</b>  | <b>PK264B2A-SG36</b>  |
| <b>PK296A1A-SG3.6</b> | <b>PK296B1A-SG3.6</b> |
| <b>PK296A1A-SG7.2</b> | <b>PK296B1A-SG7.2</b> |
| <b>PK296A1A-SG9</b>   | <b>PK296B1A-SG9</b>   |
| <b>PK296A1A-SG10</b>  | <b>PK296B1A-SG10</b>  |
| <b>PK296A1A-SG18</b>  | <b>PK296B1A-SG18</b>  |
| <b>PK296A1A-SG36</b>  | <b>PK296B1A-SG36</b>  |
| <b>PK296A2A-SG3.6</b> | <b>PK296B2A-SG3.6</b> |
| <b>PK296A2A-SG7.2</b> | <b>PK296B2A-SG7.2</b> |
| <b>PK296A2A-SG9</b>   | <b>PK296B2A-SG9</b>   |
| <b>PK296A2A-SG10</b>  | <b>PK296B2A-SG10</b>  |
| <b>PK296A2A-SG18</b>  | <b>PK296B2A-SG18</b>  |
| <b>PK296A2A-SG36</b>  | <b>PK296B2A-SG36</b>  |

◇ **SH** Geared Type with Encoder

| Model (TTL Type Encoder)                              |
|---|
| <b>PK223PAR15S7.2</b>                                 |
| <b>PK223PAR15S9</b>                                   |
| <b>PK223PAR15S10</b>                                  |
| <b>PK223PAR15S18</b>                                  |
| <b>PK223PAR15S36</b>                                  |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S3.6</b> |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S7.2</b> |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S9</b>   |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S10</b>  |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S18</b>  |
| <b>PK243A1AR</b> <input type="checkbox"/> <b>S36</b>  |
| —   |
| —   |
| —   |
| —   |
| —   |
| —   |
| —   |
| —   |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S3.6</b> |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S7.2</b> |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S9</b>   |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S10</b>  |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S18</b>  |
| <b>PK264A2AR</b> <input type="checkbox"/> <b>S36</b>  |

● Enter the encoder code (**15**, **16**, **25** or **26**) in the box (  ) within the model name.

|              |                                  |  |            |                             |             |
|--------------|----------------------------------|--|------------|-----------------------------|-------------|
| Introduction | AC Input Motor & Driver          | DC Input Motor & Driver  | Motor Only | Controllers                 | Accessories |
| AR           | 0.36° / Geared<br>0.72° / Geared | 0.36° / Geared<br>0.36° / Geared<br>0.36° / Geared<br>0.36° / Geared | PK         | SCX10<br>EMP400<br>/SG8030J |             |
| AS           | 0.9° / 1.8° / Geared             | 0.9° / 1.8° / Geared   | PK/PV      |                             |             |
| RK           | 1.8° / Geared                    | 1.8° / Geared  | PK         |                             |             |
| UMK          | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
| ASX          | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
| CRK          | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
| CMK          | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
| RBK          | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
|              | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |
|              | 0.36° / Geared<br>0.36° / Geared | 0.36° / Geared<br>0.36° / Geared                                     | PK         |                             |             |

◇TH Geared Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK523PA-T7.2         | PK523PB-T7.2         |
| PK523PA-T10          | PK523PB-T10          |
| PK523PA-T20          | PK523PB-T20          |
| PK523PA-T30          | PK523PB-T30          |
| PK543AW-T3.6         | PK543BW-T3.6         |
| PK543AW-T7.2         | PK543BW-T7.2         |
| PK543AW-T10          | PK543BW-T10          |
| PK543AW-T20          | PK543BW-T20          |
| PK543AW-T30          | PK543BW-T30          |
| PK564AW-T3.6         | PK564BW-T3.6         |
| PK564AW-T7.2         | PK564BW-T7.2         |
| PK564AW-T10          | PK564BW-T10          |
| PK564AW-T20          | PK564BW-T20          |
| PK564AW-T30          | PK564BW-T30          |
| PK596AE-T3.6         | PK596BE-T3.6         |
| PK596AE-T7.2         | PK596BE-T7.2         |
| PK596AE1-T10         | PK596BE1-T10         |
| PK596AE1-T20         | PK596BE1-T20         |
| PK596AE1-T30         | PK596BE1-T30         |

◇PS Geared Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK523PA-PS5          | PK523PB-PS5          |
| PK523PA-PS7          | PK523PB-PS7          |
| PK523PA-PS10         | PK523PB-PS10         |
| PK545AW-PS5          | PK545BW-PS5          |
| PK545AW-PS7          | PK545BW-PS7          |
| PK545AW-PS10         | PK545BW-PS10         |
| PK543AW-PS25         | PK543BW-PS25         |
| PK543AW-PS36         | PK543BW-PS36         |
| PK543AW-PS50         | PK543BW-PS50         |
| PK566AW-PS5          | PK566BW-PS5          |
| PK566AW-PS7          | PK566BW-PS7          |
| PK566AW-PS10         | PK566BW-PS10         |
| PK564AW-PS25         | PK564BW-PS25         |
| PK564AW-PS36         | PK564BW-PS36         |
| PK564AW-PS50         | PK564BW-PS50         |
| PK599AE-PS5          | PK599BE-PS5          |
| PK599AE-PS7          | PK599BE-PS7          |
| PK599AE-PS10         | PK599BE-PS10         |
| PK596AE-PS25         | PK596BE-PS25         |
| PK596AE-PS36         | PK596BE-PS36         |
| PK596AE-PS50         | PK596BE-PS50         |
| PK223PDA-PS5         | PK223PDB-PS5         |
| PK223PDA-PS10        | PK223PDB-PS10        |

◇PL Geared Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| PK244PDA-P5          | PK244PDB-P5          |
| PK244PDA-P10         | PK244PDB-P10         |
| PK244PDA-P36         | PK244PDB-P36         |
| PK266PDA-P5          | PK266PDB-P5          |
| PK266PDA-P10         | PK266PDB-P10         |
| PK264PDA-P36         | PK264PDB-P36         |

◇TH Geared Type with Encoder

| Model (TTL Type Encoder) | Model (Differential Type Encoder) |
|--------------------------|-----------------------------------|
| —                        | —                                 |
| —                        | —                                 |
| —                        | —                                 |
| —                        | —                                 |
| PK543AWR27T3.6           | PK543AWR27LT3.6                   |
| PK543AWR27T7.2           | PK543AWR27LT7.2                   |
| PK543AWR27T10            | PK543AWR27LT10                    |
| PK543AWR27T20            | PK543AWR27LT20                    |
| PK543AWR27T30            | PK543AWR27LT30                    |
| PK564AWR27T3.6           | PK564AWR27LT3.6                   |
| PK564AWR27T7.2           | PK564AWR27LT7.2                   |
| PK564AWR27T10            | PK564AWR27LT10                    |
| PK564AWR27T20            | PK564AWR27LT20                    |
| PK564AWR27T30            | PK564AWR27LT30                    |
| PK596AER27T3.6           | —                                 |
| PK596AER27T7.2           | —                                 |
| PK596AE1R27T10           | —                                 |
| PK596AE1R27T20           | —                                 |
| PK596AE1R27T30           | —                                 |

◇PS Geared Type with Encoder

| Model (TTL Type Encoder) | Model (Differential Type Encoder) |
|--------------------------|-----------------------------------|
| —                        | —                                 |
| —                        | —                                 |
| —                        | —                                 |
| PK545AWR27PS5            | PK545AWR27LPS5                    |
| PK545AWR27PS7            | PK545AWR27LPS7                    |
| PK545AWR27PS10           | PK545AWR27LPS10                   |
| PK543AWR27PS25           | PK543AWR27LPS25                   |
| PK543AWR27PS36           | PK543AWR27LPS36                   |
| PK543AWR27PS50           | PK543AWR27LPS50                   |
| PK566AWR27PS5            | PK566AWR27LPS5                    |
| PK566AWR27PS7            | PK566AWR27LPS7                    |
| PK566AWR27PS10           | PK566AWR27LPS10                   |
| PK564AWR27PS25           | PK564AWR27LPS25                   |
| PK564AWR27PS36           | PK564AWR27LPS36                   |
| PK564AWR27PS50           | PK564AWR27LPS50                   |
| PK599AER27PS5            | —                                 |
| PK599AER27PS7            | —                                 |
| PK599AER27PS10           | —                                 |
| PK596AER27PS25           | —                                 |
| PK596AER27PS36           | —                                 |
| PK596AER27PS50           | —                                 |

◇PL Geared Type with Encoder

| Model (TTL Type Encoder)                |
|---|
| PK244PDAR <input type="checkbox"/> -P5  |
| PK244PDAR <input type="checkbox"/> -P10 |
| PK244PDAR <input type="checkbox"/> -P36 |
| PK266PDAR <input type="checkbox"/> -P5  |
| PK266PDAR <input type="checkbox"/> -P10 |
| PK264PDAR <input type="checkbox"/> -P36 |

● Enter the encoder code (15, 16, 25 or 26) in the box (  ) within the model name.

## ◇ PN Geared Type

| Model (Single Shaft) | Model (Double Shaft) |
|----------------------|----------------------|
| <b>PK523PA-N5</b>    | <b>PK523PB-N5</b>    |
| <b>PK523PA-N7.2</b>  | <b>PK523PB-N7.2</b>  |
| <b>PK523PA-N10</b>   | <b>PK523PB-N10</b>   |
| <b>PK544AW-N5</b>    | <b>PK544BW-N5</b>    |
| <b>PK544AW-N7.2</b>  | <b>PK544BW-N7.2</b>  |
| <b>PK544AW-N10</b>   | <b>PK544BW-N10</b>   |
| <b>PK566AW-N5</b>    | <b>PK566BW-N5</b>    |
| <b>PK566AW-N7.2</b>  | <b>PK566BW-N7.2</b>  |
| <b>PK566AW-N10</b>   | <b>PK566BW-N10</b>   |
| <b>PK564AW-N25</b>   | <b>PK564BW-N25</b>   |
| <b>PK564AW-N36</b>   | <b>PK564BW-N36</b>   |
| <b>PK564AW-N50</b>   | <b>PK564BW-N50</b>   |
| <b>PK599AE-N5</b>    | <b>PK599BE-N5</b>    |
| <b>PK599AE-N7.2</b>  | <b>PK599BE-N7.2</b>  |
| <b>PK599AE-N10</b>   | <b>PK599BE-N10</b>   |
| <b>PK596AE-N25</b>   | <b>PK596BE-N25</b>   |
| <b>PK596AE-N36</b>   | <b>PK596BE-N36</b>   |
| <b>PK596AE-N50</b>   | <b>PK596BE-N50</b>   |

## ◇ Harmonic Geared Type

| Model (Single Shaft)  | Model (Double Shaft)  |
|-----------------------|-----------------------|
| <b>PK513PA-H50S</b>   | <b>PK513PB-H50S</b>   |
| <b>PK513PA-H100S</b>  | <b>PK513PB-H100S</b>  |
| <b>PK523HPA-H50S</b>  | <b>PK523HPB-H50S</b>  |
| <b>PK523HPA-H100S</b> | <b>PK523HPB-H100S</b> |
| <b>PK543AW-H50S</b>   | <b>PK543BW-H50S</b>   |
| <b>PK543AW-H100S</b>  | <b>PK543BW-H100S</b>  |
| <b>PK564AW-H50S</b>   | <b>PK564BW-H50S</b>   |
| <b>PK564AW-H100S</b>  | <b>PK564BW-H100S</b>  |
| <b>PK596AE1-H50</b>   | <b>PK596BE1-H50</b>   |
| <b>PK596AE1-H100</b>  | <b>PK596BE1-H100</b>  |

## ◇ Harmonic Geared Type with Encoder

| Model (TTL Type Encoder) | Model (Differential Type Encoder) |
|--------------------------|-----------------------------------|
| -                        | -                                 |
| -                        | -                                 |
| -                        | -                                 |
| -                        | -                                 |
| <b>PK543AWR27H50</b>     | <b>PK543AWR27LH50</b>             |
| <b>PK543AWR27H100</b>    | <b>PK543AWR27LH100</b>            |
| <b>PK564AWR27H50</b>     | <b>PK564AWR27LH50</b>             |
| <b>PK564AWR27H100</b>    | <b>PK564AWR27LH100</b>            |
| <b>PK596AE1R27H50</b>    | -                                 |
| <b>PK596AE1R27H100</b>   | -                                 |

|                          |                      |
|--------------------------|----------------------|
| Introduction             |                      |
| AR                       | 0.36° / Geared       |
| AS                       | 0.36° / Geared       |
| RK                       | 0.72° / Geared       |
| UMK                      | 0.9°/1.8° / Geared   |
| AR                       | 0.36° / Geared       |
| ASX                      | 0.36° / Geared       |
| CRK                      | 0.36°/0.72° / Geared |
| CMK                      | 0.9°/1.8° / Geared   |
| RBK                      | 1.8° / Geared        |
| PK                       | 0.36°                |
| PK                       | 0.72°                |
| PK                       | 0.9°                 |
| PK/PV                    | 1.8°                 |
| PK                       | Geared               |
| SCX10 / EMP400 / SG8030J | Controllers          |
|                          | Accessories          |

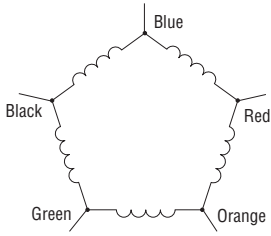
## Wirings and Connections

- Step Angle 0.36°/0.72° Standard Type, Step Angle 0.72° High-Torque Type, Geared Type

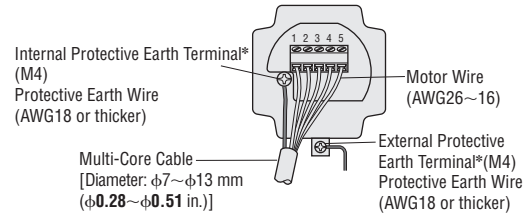
### ◇ Inner Wiring Diagram for Motor

Connection Type: New Pentagon (Bipolar)

For more details on the New Pentagon (Bipolar), please visit [www.orientalmotor.com](http://www.orientalmotor.com)

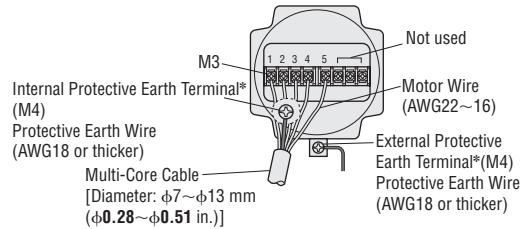


### ● Step Angle 0.72° Standard Type Terminal Box PK564AT, PK566AT, PK569AT



\*Use either the internal or external protective earth terminal for grounding.

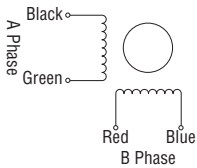
### PK596AT, PK599AT, PK5913AT



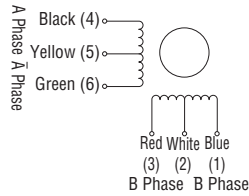
- Step Angle 0.9°/1.8° Standard Type, Step Angle 1.8° High-Torque Type, Step Angle 1.8° PV Series, Geared Type

### ◇ Inner Wiring Diagram for Motor

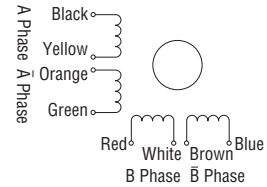
#### ● 4-Lead Motor



#### ● 6-Lead Motor

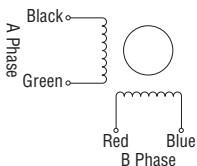


#### ● 8-Lead Motor

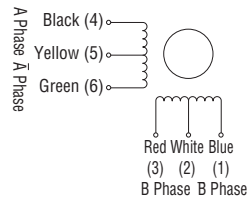


### ◇ Wiring Connection Diagram

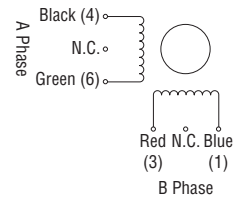
#### ● 4 Leads Bipolar Connection



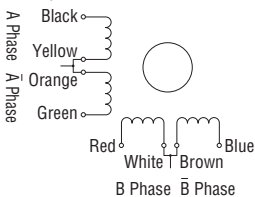
#### ● 6 Leads Unipolar Connection



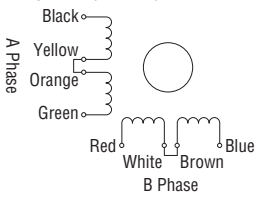
#### ● 6 Leads Bipolar (Series) Connection



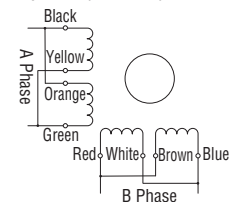
#### ● 8 Leads Unipolar Connection



#### ● 8 Leads Bipolar (Series) Connection



#### ● 8 Leads Bipolar (Parallel) Connection



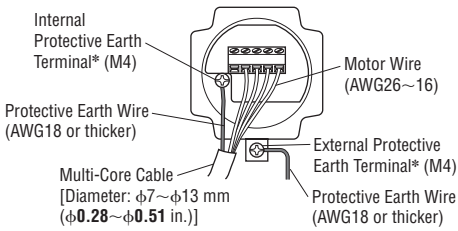
● The numbers inside the parentheses indicate the connector pin No. of the high-torque type motor.

● N.C.: No Connection

## ● Step Angle 1.8° Standard Type Terminal Box

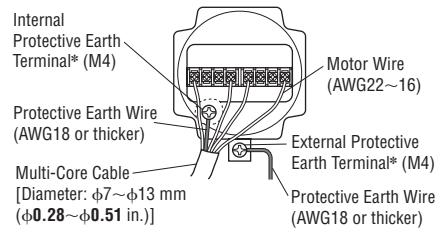
### ◇ Motor Connections

#### ● PK26 □ DAT



\*Use either the internal or external protective earth terminal for grounding.

#### ● PK29 □ EAT

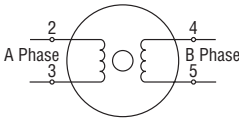


\*Use either the internal or external protective earth terminal for grounding.

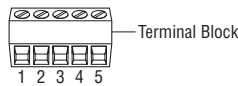
### ◇ Wiring Connection Diagram

#### ● PK26 □ DAT

Bipolar

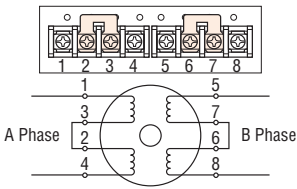


Connect motor lead wires to the terminals 2 to 5.

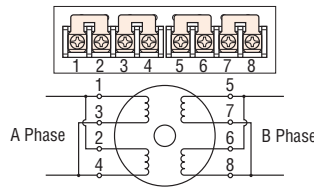


#### ● PK29 □ EAT

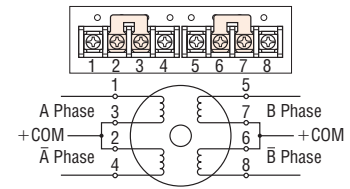
Bipolar (Series)



Bipolar (Parallel)



Unipolar



## ■ Notes on the Speed – Torque Characteristics Diagram

The speed – torque characteristics featured in this catalog are measured with a constant-current driver or a constant-voltage driver. The actual characteristics will vary depending on the driver used. Please use these diagrams only for reference purposes when selecting a motor. You must also conduct a thorough evaluation with the actual driver to be used.

|                          |                        |
|--------------------------|------------------------|
| Introduction             |                        |
| AR                       | 0.36° / Geared         |
| AS                       | 0.36° / Geared         |
| RK                       | 0.72° / Geared         |
| UMK                      | 0.9° / 1.8° / Geared   |
| AR                       | 0.36° / Geared         |
| ASX                      | 0.36° / Geared         |
| CRK                      | 0.36° / 0.72° / Geared |
| CMK                      | 0.9° / 1.8° / Geared   |
| RBK                      | 1.8° / Geared          |
| PK                       | 0.36°                  |
| PK                       | 0.72°                  |
| PK                       | 0.9°                   |
| PK/PV                    | 1.8°                   |
| PK                       | Geared                 |
| SCX10 / EMP400 / SG8030J | Controllers            |
|                          | Accessories            |