

***Orientalmotor***

Stepper Motors

# PKP Series

Additions to the Product Line

Standard Type Frame Size 13 mm



# Stepper Motors

## PKP Series


















2-Phase

Stepper Motors **PKP Series** **High Torque** **Low Vibration**

A High Torque Type is also available.  
Check the details on the website.

● Bipolar (4 lead wires) and unipolar (5 or 6 lead wires) wiring types are available.  
(For details on the wiring types, refer to page 10.)

Features / Product Line / System Configuration / How to Read Product Numbers / Product Line / Included Items / Specifications Table Glossary P. 4 to 18

| Motor Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Motor Frame Size | Additional Function |              |                            | Reference Page |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|--------------|----------------------------|----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  | Standard            | With Encoder | With Electromagnetic Brake |                |
| <b>Standard Type</b><br>(Basic Step Angle: 1.8°/step)<br> Reasonable<br><br>   <br>Mini-Connector Type Connector Type With Encoder With Electromagnetic Brake<br>Standard                 | □13 mm           | <b>NEW</b>          | —            | —                          | P.19           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □20 mm           | ●                   | ●            | —                          | P. 20 to 23    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □28 mm           | ●                   | ●            | ●                          | P. 24 to 29    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □35 mm           | ●                   | ●            | ●                          | P. 30 to 35    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □42 mm           | ●                   | ●            | ●                          | P. 36 to 49    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □50 mm           | ●                   | ●            | —                          | P. 50 to 53    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □56.4 mm         | ●                   | ●            | ●                          | P. 54 to 65    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □60 mm*          | ●                   | —            | —                          | P. 66 to 67    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □85 mm           | ●                   | —            | —                          | P. 68 to 70    |
| <b>High-Resolution Type</b> (Basic Step Angle: 0.9°/step)<br> Reasonable<br><br>   <br>Mini-Connector Type Connector Type With Encoder With Electromagnetic Brake<br>Standard | □28 mm           | ●                   | ●            | —                          | P. 72 to 75    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □42 mm           | ●                   | ●            | ●                          | P. 76 to 83    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □56.4 mm         | ●                   | ●            | ●                          | P. 84 to 91    |
| <b>Flat Type</b> (Basic Step Angle: 0.018° to 1.8°/step)<br> <br>Standard With Harmonic Gears                                                                                                                                                                                                                                                                                                                                                                                                                             | □42 mm           | ●                   | —            | —                          | P.92           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □60 mm           | ●                   | —            | —                          | P.93           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □51 mm           | With Harmonic Gears |              |                            | P.94           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □61 mm           | With Harmonic Gears |              |                            | P.95           |
| <b>SH Geared Type</b> (Basic Step Angle: 0.05° to 0.5°/step)<br> <br>Standard With Encoder                                                                                                                                                                                                                                                                                                                                                                                                                                | □28 mm           | ●                   | —            | —                          | P. 96 to 97    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □42 mm           | ●                   | ●            | —                          | P. 98 to 103   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □60 mm           | ●                   | ●            | —                          | P. 104 to 109  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □90 mm*          | ●                   | —            | —                          | P. 110 to 111  |
| <b>CS Geared Type</b> (Basic Step Angle: 0.09 to 0.36°/step)<br><br>Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □28 mm           | ●                   | —            | —                          | P. 112 to 113  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □42 mm           | ●                   | —            | —                          | P. 114 to 115  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | □60 mm           | ●                   | —            | —                          | P. 116 to 117  |

● : 2 types are available—the "Mini-Connector Type" and the "Connector Type" Refer to page 5 for details.

\*This is the conventional PK Series.

General Specifications / Electromagnetic Brake Specifications / Encoder Part Specifications / Permissible Radial Load and Permissible Axial Load / Flat Type, Permissible Moment Load with Harmonic Gears / Flat Type, Accuracy with Harmonic Gears / Motor Inner Wiring Diagram and Rotation Direction P. 118 to 121

**NEW**

**2-Phase PKP Series Standard Type Frame Size 13 mm**

- Industry's smallest frame size of 13 mm (as of July 2022, according to a study by Oriental Motor)
- Mass of only 21 g
- Connector types that are easy to work with



Refer to page 19 for details.

**5-Phase Stepper Motors PKP Series** High Accuracy Low Vibration

|                                                                                                                                                   |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Features / Product Line / System Configuration / How to Read Product Numbers / Types and Pricing / Included Items / Specifications Table Glossary | P. 122 to 127 |
|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

| Motor Type                                                                                                                                                           | Motor Frame Size | Additional Function |              |                            | Reference Page |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|--------------|----------------------------|----------------|
|                                                                                                                                                                      |                  | Standard            | With Encoder | With Electromagnetic Brake |                |
| <b>Standard Type</b><br>(Basic Step Angle: 0.72°/step)<br>Flat Connector Reasonable High Strength<br><br>Mini-Connector Type Connector Type With Encoder<br>Standard | □20 mm*          | ●                   | ●            | —                          | P. 128 to 129  |
|                                                                                                                                                                      | □28 mm           | ●                   | —            | —                          | P.130          |
|                                                                                                                                                                      | □42 mm           | ●                   | ●            | —                          | P. 131 to 133  |
|                                                                                                                                                                      | □56.4 mm         | ●                   | ●            | —                          | P. 134 to 135  |
|                                                                                                                                                                      | □60 mm           | ●                   | ●            | —                          | P. 136 to 137  |
|                                                                                                                                                                      | □85 mm*          | ●                   | —            | —                          | P.138          |
| <b>High-Resolution Type</b><br>(Basic Step Angle: 0.36°/step)<br><br>Standard                                                                                        | □42 mm           | ●                   | —            | —                          | P.139          |
|                                                                                                                                                                      | □60 mm           | ●                   | —            | —                          | P.140          |
| <b>TS Geared Type</b><br>(Basic Step Angle: 0.024 to 0.2°/step)<br><br>Standard                                                                                      | □42 mm           | ●                   | —            | —                          | P.141          |
|                                                                                                                                                                      | □60 mm           | ●                   | —            | —                          | P.142          |

● : 2 types are available—the "Mini-Connector Type" and the "Connector Type" Refer to page 5 for details.

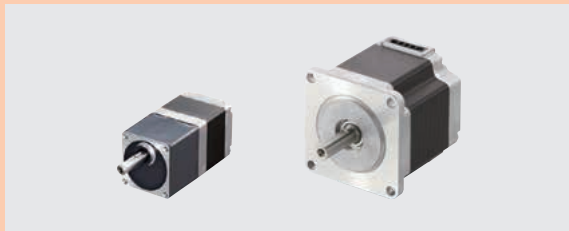
|                                                                                                                                                        |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| General Specifications / Encoder Part Specifications / Motor Pin Arrangement / Rotation Direction / Permissible Radial Load and Permissible Axial Load | P. 143 to 144 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|

**2-Phase 5-Phase Driver for Stepper Motors** Compact Low Vibration

|                                                                                                                                                                                                                                                                            |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Driver Types and Features                                                                                                                                                                                                                                                  | P.146         |
| Bipolar Driver for 2-Phase Stepper Motors<br>Driver for 5-Phase Stepper Motors<br><b>CVD Series—Pulse Input Type</b><br><br>Right Angle with Installation Plate With Installation Plate Without Installation Plate                                                         | P. 147 to 153 |
| Bipolar Driver for 2-Phase Stepper Motors<br>Driver for 5-Phase Stepper Motors<br><b>CVD Series RS-485 Communication Type</b><br><br>Right Angle with Installation Plate With Installation Plate                                                                           | P. 154 to 159 |
| Bipolar Driver for 2-Phase/5-Phase Stepper Motors<br><b>CVD Series S Type</b><br>Driver for 5-Phase Stepper Motors<br><b>CVD Series SC Type</b><br>Unipolar Driver for 2-Phase Stepper Motors<br><br>S Type SC Type<br>SPI Communication-Compatible Pulse Input-Compatible | P.146         |
| Cables                                                                                                                                                                                                                                                                     | P. 163 to 174 |
| Peripheral Equipment                                                                                                                                                                                                                                                       | P. 175 to 177 |

# 2-Phase Stepper Motors PKP Series

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



## Introducing our Video Library

Videos presenting the features, operations, and methods of use, etc. of the **PKP** Series are available on the Oriental Motor website.

These products are high-torque 2-phase stepper motors. A wide variety of products are available to meet your design specifications.

- Motor Frame Size 13 mm to 85 mm
- Standard Type with a Resolution of 200 Steps per Revolution (Basic step angle: 1.8°/step)
- High-Resolution Type with a Resolution of 400 Steps per Revolution (Basic step angle: 0.9°/step)
- Oriental Motor's Flattest Type of 2-phase Stepper Motor
- High-Torque and High-Resolution **SH** Geared Type
- Bipolar (4 lead wires) and Unipolar (5 or 6 lead wires) are Available
- Encoder Type and Electromagnetic Brake Type are Available
- Many Motor Current Specifications Available

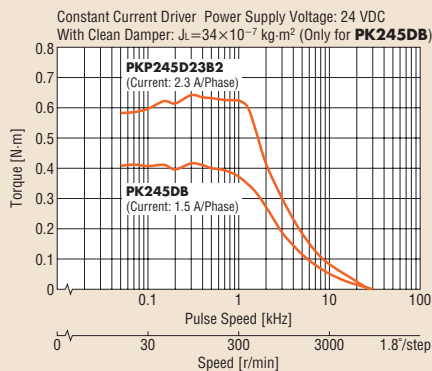
- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

## Features

### Increased Torque over the Entire Speed Range from Low to High

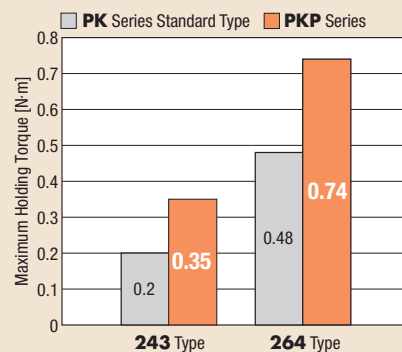
After revising the magnetic design and structure design of the **PKP** Series, it produces much more torque than standard **PK** Series motors of the same size. In addition, torque can be increased in the high-speed range by using high current motors.

#### Comparison of Speed – Torque Characteristics of the Same Size Motors



High current is possible due to the revised motor winding design and the highly efficient design of the drive circuit that can be combined. Increased torque over the entire speed range from low to high is achieved.

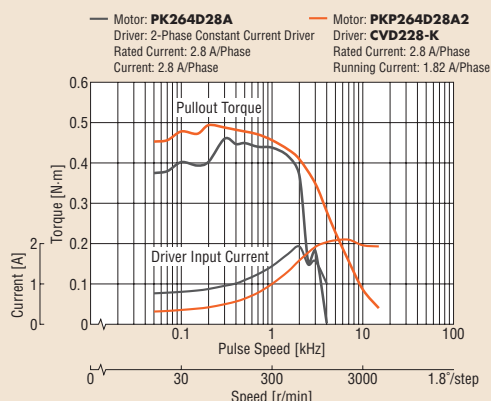
#### Comparison of Maximum Holding Torque



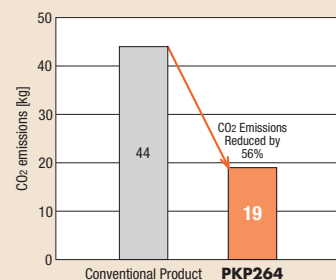
## Conservation of Energy and Electrical Power

Reducing the running current supplied to **PKP** Motors achieves the same torque as conventional products while reducing power consumption and CO<sub>2</sub> emissions.

#### Reduced Running Current with the PKP Series



#### Power Consumption and CO<sub>2</sub> Emissions 56% Lower than Conventional Oriental Motor Products



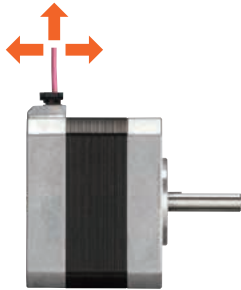
|                             |                               |
|-----------------------------|-------------------------------|
| Speed                       | 0.1 kHz (30 r/min)            |
| Operating Time              | 24 hours, 365 days            |
| Operating Conditions        | 50% operating, 50% stand-by   |
| Power Supply Voltage        | 24 VDC                        |
| CO <sub>2</sub> Coefficient | 0.519 kg-CO <sub>2</sub> /kWh |



## Compact and Flat Connector

The **PKP** Series uses a compact flat connector, which shortens the length of the connector's overhang. In addition, the degree of freedom for the cable outlet direction has been increased, because the outlet direction points upward.

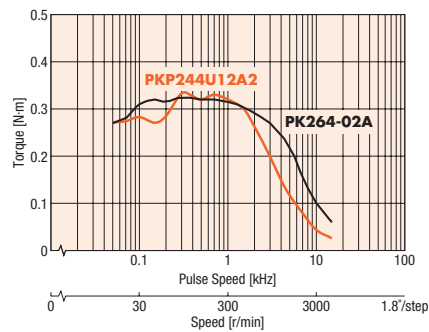
- Because the connector is provided for select products only, refer to the dimensions of each model for details.



## Saving Resources through Downsizing

Use a **PKP** Series motor in place of a standard motor from the **PK** Series with the equivalent torque in order to downsize motors. **Volume reduced by 44%**

Comparison of Torque Characteristics of **PKP244U12A2** and **PK264-02A**



**Downsizing is Possible with the Same Torque!**

(Unit = mm)

**PK264-02A** → **PKP244U12A2**

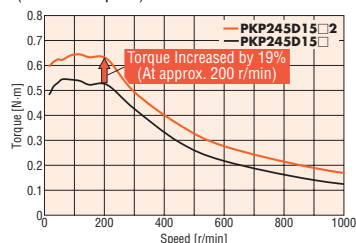
## Select Motors by Specifications and Characteristics

The Mini-Connector Type and Connector Type are available in some Standard Type and High-Resolution Type product lines. You can choose according to your desired specifications and characteristics.

### ● Comparison of the Mini-Connector Type and the Connector Type For 2-Phase Stepper Motors

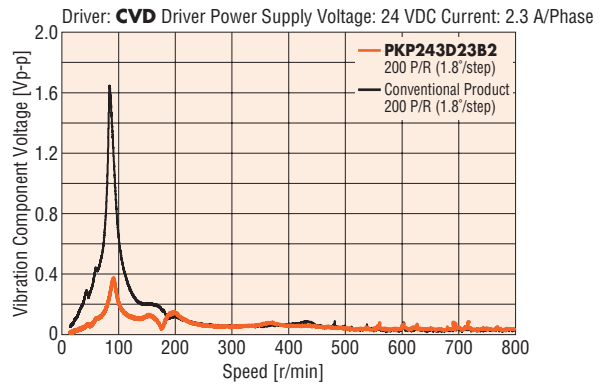
| Type                                 | Mini-Connector Type                                                                                                                                                                                                                       | Connector Type      |             |                     |      |          |              |                     |       |  |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|---------------------|------|----------|--------------|---------------------|-------|--|
|                                      |                                                                                                                                                                                                                                           |                     |             |                     |      |          |              |                     |       |  |
| Features                             | <ul style="list-style-type: none"> <li>Using a compact flat connector shortens the length of the connector's overhang</li> <li>High permissible radial load/permissible axial load</li> <li>High torque (excluding some types)</li> </ul> | Reasonable prices   |             |                     |      |          |              |                     |       |  |
| Permissible Radial Load (Max. value) | <table border="1"> <tr> <td>□42 mm</td> <td><b>85 N</b></td> <td><b>63% Increase</b></td> <td>52 N</td> </tr> <tr> <td>□56.4 mm</td> <td><b>270 N</b></td> <td><b>68% Increase</b></td> <td>160 N</td> </tr> </table>                     | □42 mm              | <b>85 N</b> | <b>63% Increase</b> | 52 N | □56.4 mm | <b>270 N</b> | <b>68% Increase</b> | 160 N |  |
| □42 mm                               | <b>85 N</b>                                                                                                                                                                                                                               | <b>63% Increase</b> | 52 N        |                     |      |          |              |                     |       |  |
| □56.4 mm                             | <b>270 N</b>                                                                                                                                                                                                                              | <b>68% Increase</b> | 160 N       |                     |      |          |              |                     |       |  |
| Permissible Axial Load               | <table border="1"> <tr> <td>□42 mm</td> <td><b>15 N</b></td> <td><b>50% Increase</b></td> <td>10 N</td> </tr> <tr> <td>□56.4 mm</td> <td><b>30 N</b></td> <td></td> <td>20 N</td> </tr> </table>                                          | □42 mm              | <b>15 N</b> | <b>50% Increase</b> | 10 N | □56.4 mm | <b>30 N</b>  |                     | 20 N  |  |
| □42 mm                               | <b>15 N</b>                                                                                                                                                                                                                               | <b>50% Increase</b> | 10 N        |                     |      |          |              |                     |       |  |
| □56.4 mm                             | <b>30 N</b>                                                                                                                                                                                                                               |                     | 20 N        |                     |      |          |              |                     |       |  |

◆ Example of comparison of Torque characteristics with the same size motor (□42 mm bipolar)



## Lower Vibration

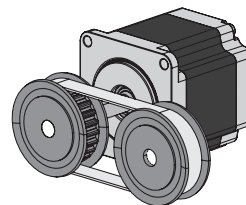
Revising the magnetic design has achieved lower vibration than with conventional products.



### ● Permissible Radial Load Increased

By increasing the permissible radial load, the Mini-Connector Type make assembling equipment easier.

#### ◇ Applications Belt and Pulley Mechanism



#### ◇ Advantages

- The components for avoiding the concentration of the radial load on the shaft are no longer needed, making it easier to reduce the size of the equipment.
- It is easy to adjust belt tension to obtain a higher safety factor in the tension of the belt.

### ● Increased Torque

The torque characteristics of the Mini-Connector Type is equal to or higher than those of the Connector Type (excluding some types). Reduced positioning time is achieved by increasing torque.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

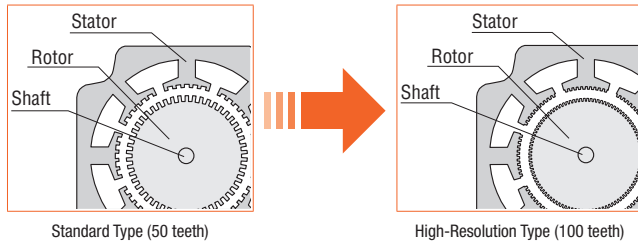
Peripheral Equipment

## High-Resolution Type

This is a high-resolution stepper motor with a basic step angle of 0.9°. Stopping accuracy is improved.

### ● Increased Resolution (Compared to standard type)

The number of rotor teeth has doubled to 100, compared to 50 with the standard type. As a result, the basic step angle is 0.9°/step, which is half than the standard type.



### ● Avoidance of Resonance Regions

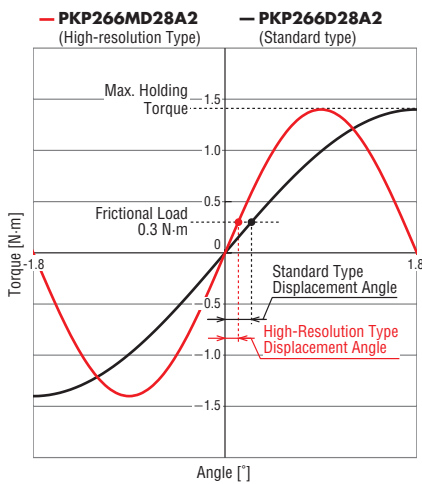
If the pulse speed is within a resonance region, vibration may increase. Resonance regions can be avoided by switching to a high-resolution type.

### ● Improved Stopping Accuracy

Compared with the standard type (basic step angle 1.8°), the displacement angle of the motor is smaller than the frictional load applied to the motor.

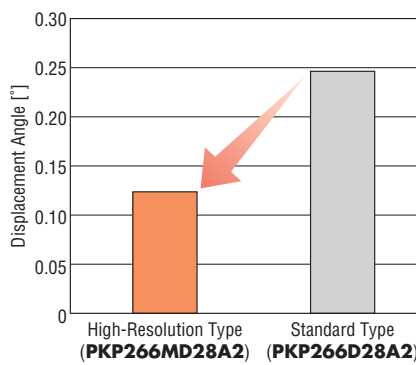
The stopping accuracy in applications that constantly apply a frictional load, such as a ball screw mechanism, is therefore improved.

#### ◇ Comparison of Angles and Torque Characteristics\* (Reference value)



\*For frictional load 0.3 N·m

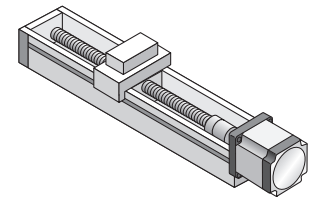
#### ◇ Comparison of Displacement Angles by Frictional Load\* (Reference value)



\*For frictional load 0.3 N·m

#### ◇ Example of Mechanism where a Constant Frictional Load is Applied

For example, in a ball screw mechanism, as the one shown in the figure, a frictional load is constantly applied to the motor by the guide block and guide rail, etc.

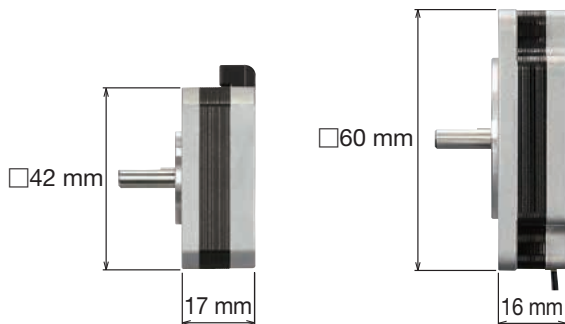


## Flat Type

This is Oriental Motor's flattest type of 2-phase stepper motors.

### ● Flat and Lightweight Design

The motor can be installed in a narrow space.



Maximum Holding Torque: 0.1 N·m  
Mass: 0.11 kg

Maximum Holding Torque: 0.18 N·m  
Mass: 0.2 kg

### ● With Harmonic Gears

◇ Attach the load to the surface of the flange to fix the load.

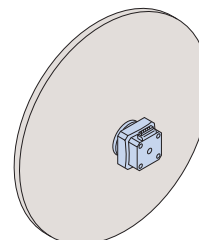
Example: Frame Size 51 mm



Gear Ratio 100  
Maximum Holding Torque: 2.4 N·m  
Mass: 0.32 kg

◇ Makes drives with large inertia possible.

Example: Frame Size 51 mm



Inertia 0.12 kg·m<sup>2</sup>  
(Approximately 7 times the rotor inertia)  
Inertial Load: Diameter 0.35 m,  
Thickness 0.01 m  
Mass 7.6 kg, Material Iron  
Motor: Length 17 mm  
Gear Ratio 100

## Features of Geared Types

Using a geared type motor can provide advantages such as deceleration, high torque, and high resolution.

### ● Differentiating Features of the CS Geared Type and the SH Geared Type

| Type       |       | CS Geared Type                                                                                                                                | SH Geared Type                                                                                                                                                                |          |
|------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Features   |       | <ul style="list-style-type: none"> <li>● Center Shaft Configuration</li> <li>● High Torque</li> <li>● High Permissible Radial Load</li> </ul> | <ul style="list-style-type: none"> <li>● Wide Variety</li> <li>· 90 mm Frame Size and Unipolar Wiring</li> <li>· Includes Encoder</li> <li>· Many Gear Ratio Types</li> </ul> |          |
| Frame Size | 28 mm | Maximum Holding Torque [N·m]                                                                                                                  | 0.4~0.8                                                                                                                                                                       | 0.3, 0.4 |
|            |       | Speed Range (Max. value) [r/min]                                                                                                              | 300~600                                                                                                                                                                       | 83~416   |
|            |       | Permissible Radial Load (Max. value) [N]                                                                                                      | 73                                                                                                                                                                            | 23       |
|            | 42 mm | Maximum Holding Torque [N·m]                                                                                                                  | 0.5~2                                                                                                                                                                         | 0.2~0.8  |
|            |       | Speed Range (Max. value) [r/min]                                                                                                              | 150~600                                                                                                                                                                       | 83~833   |
|            |       | Permissible Radial Load (Max. value) [N]                                                                                                      | 96                                                                                                                                                                            | 30       |
|            | 60 mm | Maximum Holding Torque [N·m]                                                                                                                  | 1.3~4.5                                                                                                                                                                       | 1~4      |
|            |       | Speed Range (Max. value) [r/min]                                                                                                              | 150~600                                                                                                                                                                       | 83~833   |
|            |       | Permissible Radial Load (Max. value) [N]                                                                                                      | 260                                                                                                                                                                           | 160      |
|            | 90 mm | Maximum Holding Torque [N·m]                                                                                                                  | —                                                                                                                                                                             | 2.5~12   |
|            |       | Speed Range (Max. value) [r/min]                                                                                                              | —                                                                                                                                                                             | 50~500   |
|            |       | Permissible Radial Load (Max. value) [N]                                                                                                      | —                                                                                                                                                                             | 400      |

### ● Achieves Increased Torque with the Same Motor Frame Size

Switching to a geared type motor increases torque without changing the motor frame size.

This is effective when installation is not possible because the motor installation space is limited.



| Standard Type      | Motor Type          | CS Geared Type          |
|--------------------|---------------------|-------------------------|
| <b>PKP243D15A2</b> | Product Name        | <b>PKP243D15A2-CS20</b> |
| <b>0.35 N·m</b>    | Max. Holding Torque | <b>2 N·m</b>            |

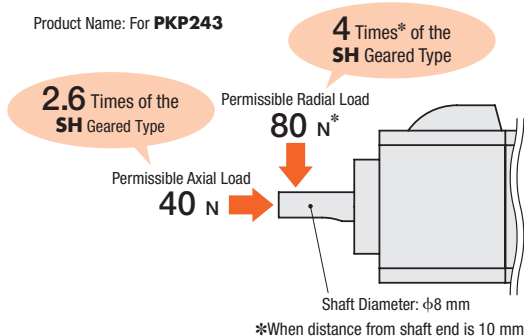
## CS Geared Type

The geared type with center shaft addresses torque, shaft load capacity and installation demands.

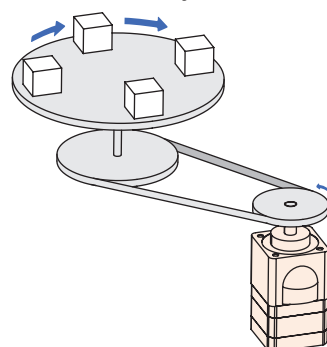
### ● Increased shaft load capacity reduces assembly time

Increased permissible radial load and permissible axial load can reduce assembly time.

#### ◇ Permissible Radial Load and Permissible Axial Load



#### ◇ Applications Belt and Pulley Mechanism



#### ◇ Advantages

- Reduce adjustments during assembly because belt tension can be higher than with conventional products
- The components for avoiding the concentration of the radial load on the shaft are no longer needed
- The degree of freedom in pulley selection is increased

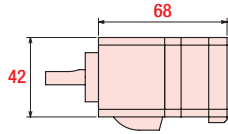
- 13 mm
- 20 mm
- 28 mm
- 35 mm
- 42 mm
- 50 mm
- 51 mm
- 56.4 mm
- 60 mm
- 61 mm
- 85 mm
- 90 mm

● Increase Torque Contributes to Reduced Size and Weight of the Motor

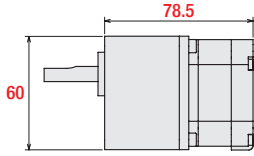
High torque, shorter motor length and a frame size that's one size smaller.

◇ Dimensions: (Unit = mm)

**CS Geared Type (PKP243D15A2-CS20)**

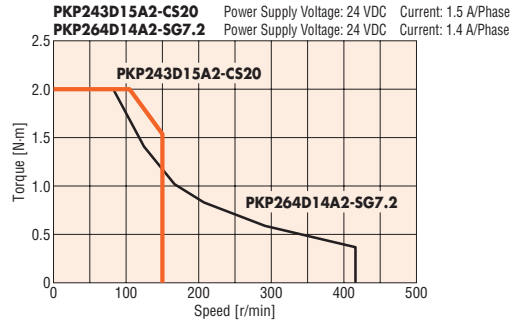


**SH Geared Type (PKP264D14A2-SG7.2)**



Maximum Holding Torque: Same  
 Frame Size: **Reduced by 18 mm**  
 Motor Length: **Reduced by 10.5 mm**  
 Mass: **Reduced by 47 %**

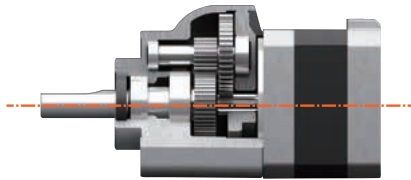
◇ Torque Characteristics Comparison



● Center Shaft Makes Designing Easier

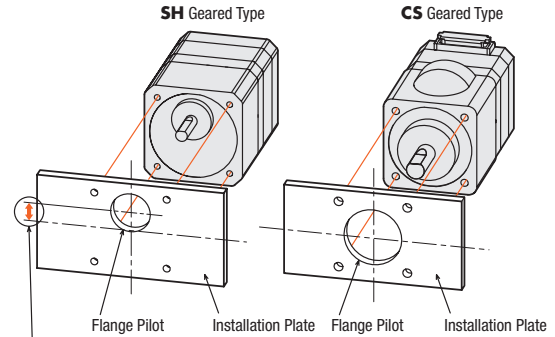
A review of the gear structure has led to the center shaft. It is easier to design the installation plate. In addition, the degree of freedom for the cable outlet direction has been increased.

● Output Shaft now Placed in Center



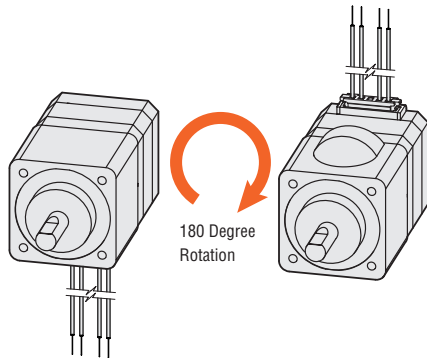
Internal Gearhead Structure Figure

● Installation Plate Designing Made Easier



Amount of deviation between the central axis of the 4 installation holes and the central axis of the flange pilot

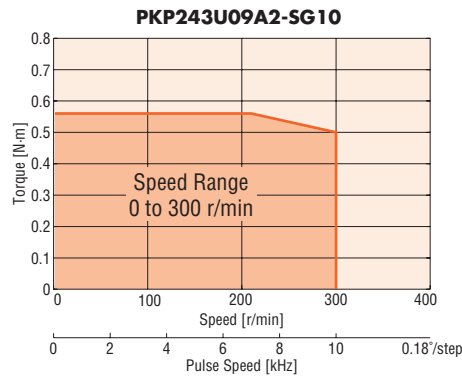
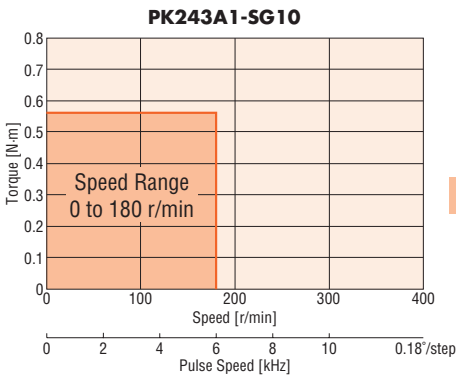
● Increased Degree of Freedom for Cable Outlet Direction



**SH Geared Type**

This type is well-suited for deceleration, increased torque, high resolution, and limited vibration. It experiences less backlash than conventional products.

● Wider Speed Range makes it Easier to Use than Conventional Products



# Product Line Equipped with Additional Functions to Broaden Applications

## ● With Encoder

(Available for standard type, high-resolution type, **SH** geared type)

Encoder Specifications → Page 118

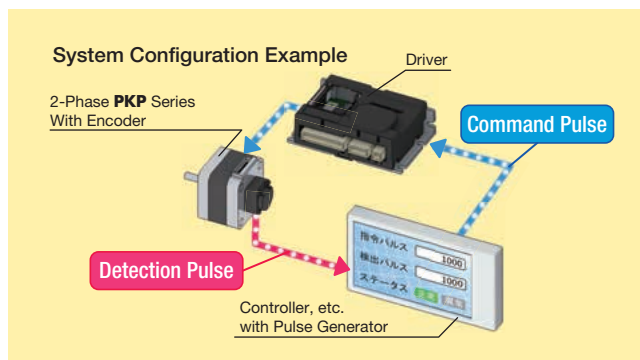
### ● Main Specifications

| Type           | Standard Type                   | High-Resolution Type, <b>SH</b> Geared Type |
|----------------|---------------------------------|---------------------------------------------|
| Resolution     | 200 P/R, 400 P/R                | 400 P/R                                     |
| Output Signals | A phase, B phase, Z phase (3ch) |                                             |

\*A product line with resolution of 1000 P/R is available with standard type frame sizes of 42 mm and 56.4 mm. Check the details in the individual V-212 catalog.

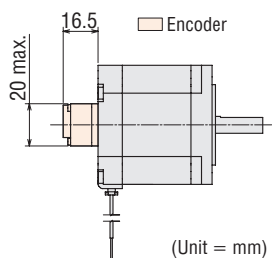
### ◇ Motor Position Detection is Possible.

Monitoring the current position and detecting positional errors is possible. For example, comparing the command position and current position enables you to check the normal operation of the motor.



### ◇ Equipped with a Compact Encoder

● When frame size is 56.4 mm



### ◇ High Reliability with Line Driver Output Circuit Type

Noise resistance is improved by differential output, and the wiring distance can be longer than with the voltage output type.

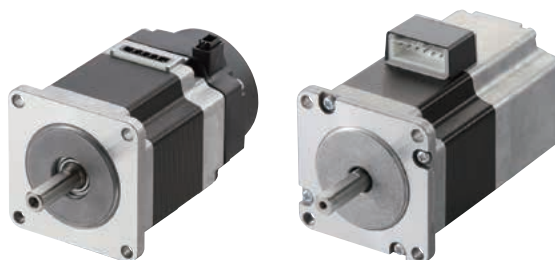
● The cables, which are convenient for wiring with an encoder, are available and sold separately.

Connection Cable for Encoder → Page 169

## ● With Electromagnetic Brake

(Provided for standard type and high-resolution type)

Electromagnetic Brake Specifications → Page 118



### ◇ Position Can Be Held When the Power Is OFF or a Power Failure Occurs.

This type features an electromagnetic brake that activates when the power is off.

When the power is accidentally cut off due to a power failure or other unexpected event, the electromagnetic brake holds the load in position to prevent it from dropping or moving. Also, the load can be held by the electromagnetic brake when the motor is stopped, and the heat generated by the motor can be curtailed by switching the motor current off.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

**SH** Geared Type

**CS** Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

**TS** Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

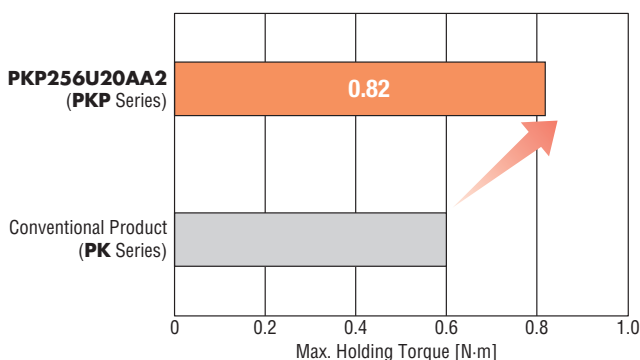
# 50 mm Frame Size Motor with Greatly Increased Torque

## ● 50 mm Frame Size Motor

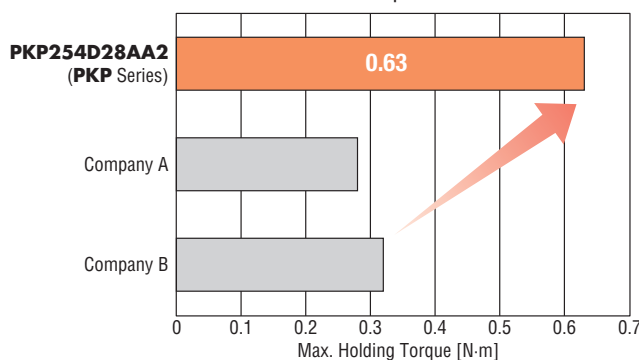
Review and improvement of the design has led to greatly increased torque.

Greatly increased torque has led to advantages, such as reduced positioning time and driving and holding larger loads.

Conventional **PK** Series – Comparison with the 50 mm Frame Size Motor



Compared with Same-Sized Motors from Other Companies\*



\*As of November 2018, according to a study by Oriental Motor.



Combined Drivers (Sold separately) → Page 146

These are compact and lightweight bipolar and unipolar drivers.

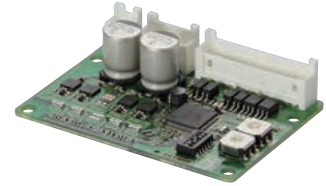
● **Bipolar Driver CVD Series**

The **CVD** Series offers the pulse input type and the RS-485 communication type drivers.

● **Right Angle Type with Installation Plate**  
The connector points outward.

● **With Installation Plate**  
The connector points upward.

● **Without Installation Plate\***  
The connector points upward.



\*Pulse input type only

● **Bipolar Driver CVD Series S Type**

● **Unipolar Driver**



· SPI Communication-Compatible



· Pulse Input-Compatible



□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm






□60 mm

□61 mm

□85 mm

□90 mm

**Product Line**

| Motor Product Line<br>(Basic Step Angle)                                                                                         | Frame Size, Wiring Type |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |         |          |
|----------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|
|                                                                                                                                  | 13 mm                   |          | 20 mm   |          | 28 mm   |          | 35 mm   |          | 42 mm   |          | 50 mm   |          | 56.4 mm |          | 60 mm   |          | 85 mm   |          |
|                                                                                                                                  | Bipolar                 | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar | Bipolar | Unipolar |
| <b>Standard Type</b><br>(1.8°)<br>            | ●                       | —        | ○       | ○        | ●       | ●        | ●       | ●        | ●       | ●        | ●       | ●        | ●       | ●        | ○*4     | ○*4      | ○       | ○        |
|                                                                                                                                  | —                       | —        | ○       | ○        | ●       | ●        | ●       | ●        | ●       | ●        | ●       | ●        | ●       | ●        | —       | —        | —       | —        |
|                                                                                                                                  | —                       | —        | —       | —        | ●       | ●        | ●       | ●        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | —       | —        |
| <b>High-Resolution Type</b><br>(0.9°)<br>     | —                       | —        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | —       | —        |
|                                                                                                                                  | —                       | —        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | —       | —        |
|                                                                                                                                  | —                       | —        | —       | —        | —       | —        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | —       | —        |
| <b>Flat Type</b><br>(0.018° to 1.8°)<br>      | —                       | —        | —       | —        | —       | —        | —       | —        | ●       | —        | —       | —        | —       | ○        | —       | —        | —       |          |
|                                                                                                                                  | —                       | —        | —       | —        | —       | —        | —       | —        | ●*1     | —        | —       | —        | —       | ○*2      | —       | —        | —       |          |
| <b>SH Geared Type</b><br>(0.05° to 0.5°)<br>  | —                       | —        | —       | —        | ●       | ●        | —       | —        | ●       | ●        | —       | —        | —       | ●        | ●       | —        | ●*3     |          |
|                                                                                                                                  | —                       | —        | —       | —        | —       | —        | —       | —        | ●       | —        | —       | —        | —       | ●        | —       | —        | —       |          |
| <b>CS Geared Type</b><br>(0.09° to 0.36°)<br> | —                       | —        | —       | —        | ●       | ●        | —       | —        | ●       | —        | —       | —        | —       | ●        | —       | —        | —       |          |

●: Connector Connection Method ○: Lead Wire Type

\*1 Flat Type - 51 mm with Harmonic Gears.

\*2 Flat Type - 61 mm with Harmonic Gears.

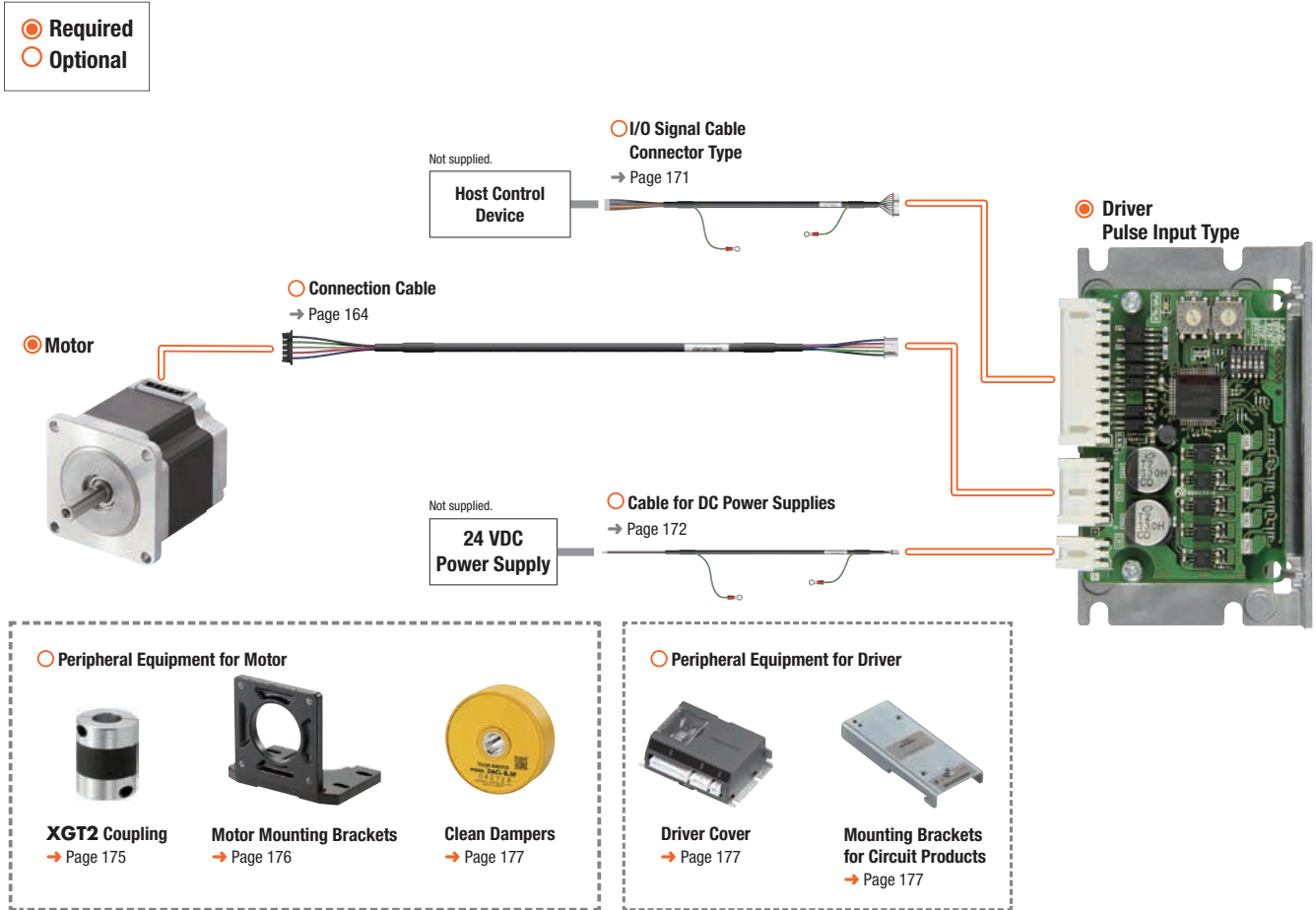
\*3 The **SH** geared type is 90 mm.

\*4 This is the conventional **PK** Series.

## System Configuration

### Combination of the 2-Phase Stepper Motor PKP Series and the CVD Series Pulse Input Type Driver

An example of a system configuration using a host control device (with built-in pulse generator function) is shown below. Motors, drivers, and connection cables must be ordered individually.



### Example of System Configuration

|                    |                   | Cables                 |                            |                                   | Peripheral Equipment    |                     |                  |
|--------------------|-------------------|------------------------|----------------------------|-----------------------------------|-------------------------|---------------------|------------------|
| Motor              | Driver            | Connection Cable (1 m) | Cable for I/O Signal (1 m) | Cable for DC Power Supplies (1 m) | Motor Mounting Brackets | Flexible Couplings  | Clean Damper     |
| <b>PKP264D28B2</b> | <b>CVD228BR-K</b> | <b>CCM010V2AEF</b>     | <b>CC12D010-2</b>          | <b>CC02D010-2</b>                 | <b>PALW2P-2</b>         | <b>XGT2-19C-8-8</b> | <b>D6CL-8.0F</b> |
| ○                  | ○                 | ○                      | ○                          | ○                                 | ○                       | ○                   | ○                |

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

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

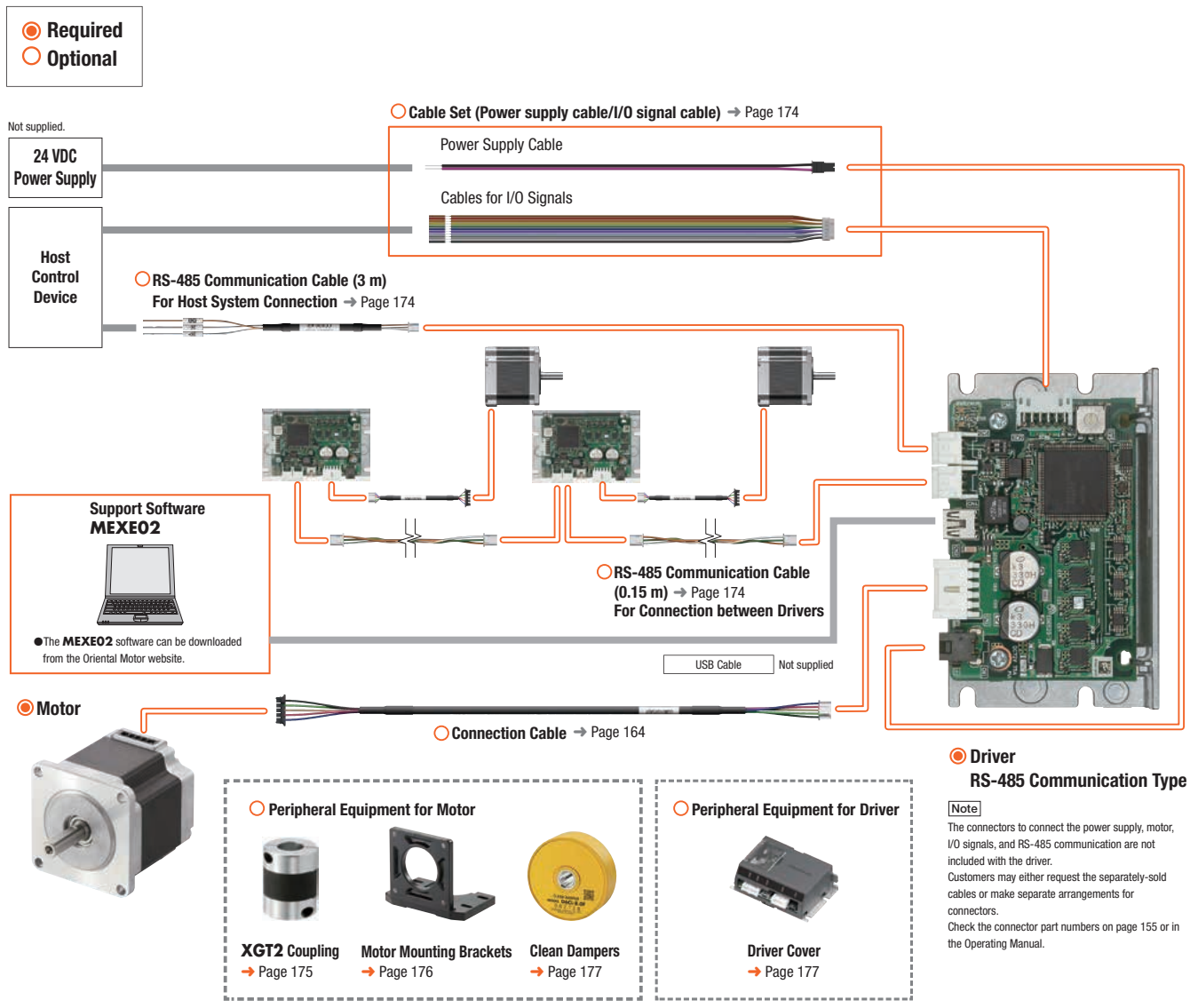
Cables

Peripheral Equipment

- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

● **Combination of the 2-Phase Stepper Motor PKP Series and the CVD Series RS-485 Communication Type Driver**

An example of a three axis system configuration using RS-485 communication is shown below. Motors, drivers, and connection cables must be ordered individually.



● **Example of System Configuration**

| Motor              | Driver           | Cables                 |                                  |                   | Peripheral Equipment    |                     |                  |
|--------------------|------------------|------------------------|----------------------------------|-------------------|-------------------------|---------------------|------------------|
|                    |                  | Connection Cable (1 m) | RS-485 Communication Cable (3 m) | Cable Set (0.3 m) | Motor Mounting Brackets | Flexible Couplings  | Clean Damper     |
| <b>PKP264D28B2</b> | <b>CVD2BR-KR</b> | <b>CCM010V2AEF</b>     | <b>CC030-RS</b>                  | <b>LHS003CC</b>   | <b>PALW2P-2</b>         | <b>XGT2-19C-8-8</b> | <b>D6CL-8.0F</b> |
| ○                  | ○                | ○                      | ○                                | ○                 | ○                       | ○                   | ○                |

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

## Product Number

### Motor

#### PKP Series

◇ Standard Type/Standard Type with an Electromagnetic Brake  
High-Resolution Type/High-Resolution Type with an  
Electromagnetic Brake

**PKP 2 6 4 M D 28 A 2**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

|   |                              |                                                                                                      |
|---|------------------------------|------------------------------------------------------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                                                               |
| ② | 2: 2-Phase                   |                                                                                                      |
| ③ | Motor Frame Size             | <b>1:</b> 20 mm <b>2:</b> 28 mm <b>3:</b> 35 mm<br><b>4:</b> 42 mm <b>6:</b> 56.4 mm <b>9:</b> 85 mm |
| ④ | Motor Case Length            |                                                                                                      |
| ⑤ | Motor Type                   | Blank: Standard Type <b>M:</b> High-Resolution Type                                                  |
| ⑥ | Number of Lead Wires         | <b>D:</b> 4 Leads <b>U:</b> 5 or 6 Leads                                                             |
| ⑦ | Motor Winding Specifications |                                                                                                      |
| ⑧ | Configuration                | <b>A:</b> Single Shaft <b>B:</b> Double Shaft<br><b>M:</b> With Electromagnetic Brake                |
| ⑨ | Reference Number             |                                                                                                      |

● Some products with a shaft diameter of  $\phi 6.35$  mm are also available. For details, please contact your nearest Oriental Motor sales office.

◇ Standard Type with Encoder/High-Resolution Type with Encoder

**PKP 2 4 3 M D 15 A 2-R3F L**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

|   |                              |                                                                                      |
|---|------------------------------|--------------------------------------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                                               |
| ② | 2: 2-Phase                   |                                                                                      |
| ③ | Motor Frame Size             | <b>1:</b> 20 mm <b>2:</b> 28 mm <b>3:</b> 35 mm<br><b>4:</b> 42 mm <b>6:</b> 56.4 mm |
| ④ | Motor Case Length            |                                                                                      |
| ⑤ | Motor Type                   | Blank: Standard Type <b>M:</b> High-Resolution Type                                  |
| ⑥ | Number of Lead Wires         | <b>D:</b> 4 Leads                                                                    |
| ⑦ | Motor Winding Specifications |                                                                                      |
| ⑧ | Configuration                | <b>A:</b> Single Shaft                                                               |
| ⑨ | Reference Number             |                                                                                      |
| ⑩ | Encoder Resolution           | <b>R3E:</b> 200 P/R <b>R3F:</b> 400 P/R<br><b>R3J:</b> 1000 P/R                      |
| ⑪ | Encoder Output Circuit Type  | Blank: Voltage Output<br><b>L:</b> Line Driver Output                                |

◇ Flat Type

**PKP 2 4 2 D 23 A 2**

① ② ③ ④ ⑥ ⑦ ⑧ ⑩

**PKP 2 6 2 F D 15 A W**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

◇ Flat Type with Harmonic Gears

**PKP 2 4 2 D 23 A 2 - H 100**

① ② ③ ④ ⑥ ⑦ ⑧ ⑩ ⑪ ⑫

**PKP 2 6 2 F D 15 A W - H 100 S**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑪ ⑫ ⑬

|   |                              |                                                                                                                    |
|---|------------------------------|--------------------------------------------------------------------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                                                                             |
| ② | 2: 2-Phase                   |                                                                                                                    |
| ③ | Motor Frame Size             | <b>4:</b> 42 mm (The type with harmonic gears is 51 mm)<br><b>6:</b> 60 mm (The type with harmonic gears is 61 mm) |
| ④ | Motor Case Length            |                                                                                                                    |
| ⑤ | Motor Classification         | <b>F:</b> Motor Frame Size 60 mm                                                                                   |
| ⑥ | Number of Lead Wires         | <b>D:</b> 4 Leads                                                                                                  |
| ⑦ | Motor Winding Specifications |                                                                                                                    |
| ⑧ | Configuration                | <b>A:</b> Single Shaft                                                                                             |
| ⑨ | Cable Identification         | Blank: Connector Coupled Type<br><b>W:</b> Lead Wire Type                                                          |
| ⑩ | Reference Number             |                                                                                                                    |
| ⑪ | Geared Type                  | Blank: Flat Type<br><b>H:</b> Flat Type with Harmonic Gears                                                        |
| ⑫ | Gear Ratio                   |                                                                                                                    |
| ⑬ | Gear Type                    |                                                                                                                    |

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**T5** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

Motor Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm  
□51 mm

□56.4 mm

□60 mm  
□61 mm

□85 mm  
□90 mm

◇ **SH, CS** Geared Type

**PKP 2 4 3 U 09 B 2 - SG 18**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

◇ **SH** Geared Type with Encoder

**PKP 2 6 4 D 28 A 2 - SG 18 - R3F L**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

**PK Series**

◇ Standard Type

**PK 2 6 4 J D B**

① ② ③ ④ ⑤ ⑥ ⑦

◇ **SH** Geared Type

**PK 2 9 6 A 1 - SG 18**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

● **Driver**

Refer to page D-1 for details on drivers.

● **Connection Cable**

◇ Motor Connection Cable

**LC 2 B 06 A**

① ② ③ ④ ⑤

|   |                   |                                              |
|---|-------------------|----------------------------------------------|
| ① | Cables            | <b>LC:</b> Connector Leads                   |
| ② | <b>2:</b> 2-Phase |                                              |
| ③ | Cable Type        | <b>B:</b> For Bipolar <b>U:</b> For Unipolar |
| ④ | Cable Length      | <b>06:</b> 0.6 m <b>10:</b> 1 m              |
| ⑤ | Reference Number  |                                              |

◇ Electromagnetic Brake Connection Cable

**LC M 02 A - 006**

① ② ③ ④ ⑤

|   |                      |                                     |
|---|----------------------|-------------------------------------|
| ① | Cables               | <b>LC:</b> Connector Leads          |
| ② | Cable Type           | <b>M:</b> For Electromagnetic Brake |
| ③ | Number of Lead Wires |                                     |
| ④ | Reference Number     |                                     |
| ⑤ | Cable Length         | <b>006:</b> 0.6 m <b>010:</b> 1 m   |

|   |                              |                                                        |
|---|------------------------------|--------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                 |
| ② | <b>2:</b> 2-Phase            |                                                        |
| ③ | Motor Frame Size             | <b>2:</b> 28 mm <b>4:</b> 42 mm <b>6:</b> 60 mm        |
| ④ | Motor Case Length            |                                                        |
| ⑤ | Number of Lead Wires         | <b>D:</b> 4 Leads <b>U:</b> 5 or 6 Leads               |
| ⑥ | Motor Winding Specifications |                                                        |
| ⑦ | Configuration                | <b>A:</b> Single Shaft <b>B:</b> Double Shaft          |
| ⑧ | Reference Number             |                                                        |
| ⑨ | Geared Type                  | <b>SG: SH</b> Geared Type<br><b>CS: CS</b> Geared Type |
| ⑩ | Gear Ratio                   |                                                        |

|   |                              |                                                       |
|---|------------------------------|-------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                |
| ② | <b>2:</b> 2-Phase            |                                                       |
| ③ | Motor Frame Size             | <b>2:</b> 28 mm <b>4:</b> 42 mm <b>6:</b> 60 mm       |
| ④ | Motor Case Length            |                                                       |
| ⑤ | Number of Lead Wires         | <b>D:</b> 4 Leads                                     |
| ⑥ | Motor Winding Specifications |                                                       |
| ⑦ | Configuration                | <b>A:</b> Single Shaft                                |
| ⑧ | Reference Number             |                                                       |
| ⑨ | Geared Type                  | <b>SG: SH</b> Geared Type                             |
| ⑩ | Gear Ratio                   |                                                       |
| ⑪ | Encoder Resolution           | <b>R3F:</b> 400 P/R                                   |
| ⑫ | Encoder Output Circuit Type  | Blank: Voltage Output<br><b>L:</b> Line Driver Output |

|   |                      |                                               |
|---|----------------------|-----------------------------------------------|
| ① | Series Name          | <b>PK: PK Series</b>                          |
| ② | <b>2:</b> 2-Phase    |                                               |
| ③ | Motor Frame Size     | <b>6:</b> 60 mm                               |
| ④ | Motor Case Length    |                                               |
| ⑤ | Motor Type           | <b>J:</b> High-Torque Type                    |
| ⑥ | Number of Lead Wires | Blank: 6 Leads <b>D:</b> 4 Leads              |
| ⑦ | Configuration        | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |

|   |                              |                                               |
|---|------------------------------|-----------------------------------------------|
| ① | Series Name                  | <b>PK: PK Series</b>                          |
| ② | <b>2:</b> 2-Phase            |                                               |
| ③ | Motor Frame Size             | <b>9:</b> 90 mm                               |
| ④ | Motor Case Length            |                                               |
| ⑤ | Configuration                | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |
| ⑥ | Motor Winding Specifications |                                               |
| ⑦ | Geared Type                  | <b>SG: SH</b> Geared Type                     |
| ⑧ | Gear Ratio                   |                                               |

◇ Encoder Connection Cable

**LC E 08 A - 006**

① ② ③ ④ ⑤

|   |                  |                                                                    |
|---|------------------|--------------------------------------------------------------------|
| ① | Cables           | <b>LC:</b> Connector Leads                                         |
| ② | Cable Type       | <b>E:</b> For Encoder                                              |
| ③ | Applicable Model | <b>05:</b> For Voltage Output<br><b>08:</b> For Line Driver Output |
| ④ | Reference Number |                                                                    |
| ⑤ | Cable Length     | <b>006:</b> 0.6 m                                                  |



## Product Line

A connector-coupled motor requires a connection cable. Motors, drivers, and connection cables must be ordered individually. Refer to page 146 for details on drivers, and refer to page 163 for details on connection cables.

### ● Motor

#### ◇ Standard Type

##### ● Bipolar (4 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| <b>PKP203D06A</b> *         | <b>PKP203D06B</b> *         |
| <b>PKP213D05A</b>           | <b>PKP213D05B</b>           |
| <b>PKP214D06A</b>           | <b>PKP214D06B</b>           |
| <b>PKP223D15A2</b>          | <b>PKP223D15B2</b>          |
| <b>PKP225D15A2</b>          | <b>PKP225D15B2</b>          |
| <b>PKP233D15A</b>           | <b>PKP233D15B</b>           |
| <b>PKP233D23A</b>           | <b>PKP233D23B</b>           |
| <b>PKP235D15A</b>           | <b>PKP235D15B</b>           |
| <b>PKP235D23A</b>           | <b>PKP235D23B</b>           |
| <b>PKP243D08A2</b>          | <b>PKP243D08B2</b>          |
| <b>PKP243D15A2</b>          | <b>PKP243D15B2</b>          |
| <b>PKP243D15A</b>           | <b>PKP243D15B</b>           |
| <b>PKP243D23A2</b>          | <b>PKP243D23B2</b>          |
| <b>PKP243D23A</b>           | <b>PKP243D23B</b>           |
| <b>PKP244D08A2</b>          | <b>PKP244D08B2</b>          |
| <b>PKP244D15A2</b>          | <b>PKP244D15B2</b>          |
| <b>PKP244D15A</b>           | <b>PKP244D15B</b>           |
| <b>PKP244D23A2</b>          | <b>PKP244D23B2</b>          |
| <b>PKP244D23A</b>           | <b>PKP244D23B</b>           |
| <b>PKP245D08A2</b>          | <b>PKP245D08B2</b>          |
| <b>PKP245D15A2</b>          | <b>PKP245D15B2</b>          |
| <b>PKP245D15A</b>           | <b>PKP245D15B</b>           |
| <b>PKP245D23A2</b>          | <b>PKP245D23B2</b>          |
| <b>PKP245D23A</b>           | <b>PKP245D23B</b>           |
| <b>PKP246D15A2</b>          | <b>PKP246D15B2</b>          |
| <b>PKP246D15A</b>           | <b>PKP246D15B</b>           |
| <b>PKP246D23A2</b>          | <b>PKP246D23B2</b>          |
| <b>PKP246D23A</b>           | <b>PKP246D23B</b>           |
| <b>PKP254D28AA2</b>         | <b>PKP254D28BA2</b>         |
| <b>PKP256D28AA2</b>         | <b>PKP256D28BA2</b>         |
| <b>PKP258D28AA2</b>         | <b>PKP258D28BA2</b>         |
| <b>PKP264D14A2</b>          | <b>PKP264D14B2</b>          |
| <b>PKP264D28A2</b>          | <b>PKP264D28B2</b>          |
| <b>PKP264D28A</b>           | <b>PKP264D28B</b>           |
| <b>PKP264D42A2</b>          | <b>PKP264D42B2</b>          |
| <b>PKP266D14A2</b>          | <b>PKP266D14B2</b>          |
| <b>PKP266D28A2</b>          | <b>PKP266D28B2</b>          |
| <b>PKP266D28A</b>           | <b>PKP266D28B</b>           |
| <b>PKP266D42A2</b>          | <b>PKP266D42B2</b>          |
| <b>PKP268D14A2</b>          | <b>PKP268D14B2</b>          |
| <b>PKP268D28A2</b>          | <b>PKP268D28B2</b>          |
| <b>PKP268D28A</b>           | <b>PKP268D28B</b>           |
| <b>PKP268D42A2</b>          | <b>PKP268D42B2</b>          |
| <b>PK264JDA</b>             | <b>PK264JDB</b>             |
| <b>PK266JDA</b>             | <b>PK266JDB</b>             |
| <b>PK267JDA</b>             | <b>PK267JDB</b>             |
| <b>PK269JDA</b>             | <b>PK269JDB</b>             |
| <b>PKP296D45A</b>           | <b>PKP296D45B</b>           |
| <b>PKP296D63A</b>           | <b>PKP296D63B</b>           |
| <b>PKP299D45A</b>           | <b>PKP299D45B</b>           |
| <b>PKP299D63A</b>           | <b>PKP299D63B</b>           |
| <b>PKP2913D45A</b>          | <b>PKP2913D45B</b>          |
| <b>PKP2913D56A</b>          | <b>PKP2913D56B</b>          |

\*For details, please contact your nearest Oriental Motor sales office.

##### ● Unipolar (5 or 6 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| <b>PKP213U05A</b>           | <b>PKP213U05B</b>           |
| <b>PKP214U06A</b>           | <b>PKP214U06B</b>           |
| <b>PKP223U09A2</b>          | <b>PKP223U09B2</b>          |
| <b>PKP225U09A2</b>          | <b>PKP225U09B2</b>          |
| <b>PKP233U12A</b>           | <b>PKP233U12B</b>           |
| <b>PKP235U12A</b>           | <b>PKP235U12B</b>           |
| <b>PKP243U04A</b>           | <b>PKP243U04B</b>           |
| <b>PKP243U06A</b>           | <b>PKP243U06B</b>           |
| <b>PKP243U08A2</b>          | <b>PKP243U08B2</b>          |
| <b>PKP243U09A2</b>          | <b>PKP243U09B2</b>          |
| <b>PKP243U09A</b>           | <b>PKP243U09B</b>           |
| <b>PKP243U12A2</b>          | <b>PKP243U12B2</b>          |
| <b>PKP244U04A</b>           | <b>PKP244U04B</b>           |
| <b>PKP244U08A2</b>          | <b>PKP244U08B2</b>          |
| <b>PKP244U08A</b>           | <b>PKP244U08B</b>           |
| <b>PKP244U12A2</b>          | <b>PKP244U12B2</b>          |
| <b>PKP244U12A</b>           | <b>PKP244U12B</b>           |
| <b>PKP245U05A</b>           | <b>PKP245U05B</b>           |
| <b>PKP245U08A2</b>          | <b>PKP245U08B2</b>          |
| <b>PKP245U08A</b>           | <b>PKP245U08B</b>           |
| <b>PKP245U12A2</b>          | <b>PKP245U12B2</b>          |
| <b>PKP245U12A</b>           | <b>PKP245U12B</b>           |
| <b>PKP246U12A2</b>          | <b>PKP246U12B2</b>          |
| <b>PKP246U12A</b>           | <b>PKP246U12B</b>           |
| <b>PKP246U16A2</b>          | <b>PKP246U16B2</b>          |
| <b>PKP254U20AA2</b>         | <b>PKP254U20BA2</b>         |
| <b>PKP256U20AA2</b>         | <b>PKP256U20BA2</b>         |
| <b>PKP258U20AA2</b>         | <b>PKP258U20BA2</b>         |
| <b>PKP264U10A2</b>          | <b>PKP264U10B2</b>          |
| <b>PKP264U10A</b>           | <b>PKP264U10B</b>           |
| <b>PKP264U20A2</b>          | <b>PKP264U20B2</b>          |
| <b>PKP264U20A</b>           | <b>PKP264U20B</b>           |
| <b>PKP264U30A</b>           | <b>PKP264U30B</b>           |
| <b>PKP266U10A2</b>          | <b>PKP266U10B2</b>          |
| <b>PKP266U10A</b>           | <b>PKP266U10B</b>           |
| <b>PKP266U20A2</b>          | <b>PKP266U20B2</b>          |
| <b>PKP266U20A</b>           | <b>PKP266U20B</b>           |
| <b>PKP266U30A</b>           | <b>PKP266U30B</b>           |
| <b>PKP268U10A2</b>          | <b>PKP268U10B2</b>          |
| <b>PKP268U10A</b>           | <b>PKP268U10B</b>           |
| <b>PKP268U20A2</b>          | <b>PKP268U20B2</b>          |
| <b>PKP268U20A</b>           | <b>PKP268U20B</b>           |
| <b>PKP268U30A</b>           | <b>PKP268U30B</b>           |
| <b>PK264JA</b>              | <b>PK264JB</b>              |
| <b>PK266JA</b>              | <b>PK266JB</b>              |
| <b>PK267JA</b>              | <b>PK267JB</b>              |
| <b>PK269JA</b>              | <b>PK269JB</b>              |
| <b>PKP296U20A</b>           | <b>PKP296U20B</b>           |
| <b>PKP296U30A</b>           | <b>PKP296U30B</b>           |
| <b>PKP296U45A</b>           | <b>PKP296U45B</b>           |
| <b>PKP299U20A</b>           | <b>PKP299U20B</b>           |
| <b>PKP299U30A</b>           | <b>PKP299U30B</b>           |
| <b>PKP299U45A</b>           | <b>PKP299U45B</b>           |
| <b>PKP2913U20A</b>          | <b>PKP2913U20B</b>          |
| <b>PKP2913U40A</b>          | <b>PKP2913U40B</b>          |

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

Motor  
Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

◇ Standard Type with Encoder

● Bipolar (4 lead wires)

| Product Name      |
|-------------------|
| PKP213D05A-R2EL   |
| PKP214D06A-R2EL   |
| PKP223D15A2-R2□L  |
| PKP225D15A2-R2□L  |
| PKP233D15A-R2□L   |
| PKP233D23A-R2□L   |
| PKP235D15A-R2□L   |
| PKP235D23A-R2□L   |
| PKP243D08A2-R2□L  |
| PKP243D15A2-R2□L  |
| PKP243D23A2-R2□L  |
| PKP244D08A2-R2□L  |
| PKP244D15A2-R2□L  |
| PKP244D23A2-R2□L  |
| PKP245D08A2-R2□L  |
| PKP245D15A2-R2□L  |
| PKP245D23A2-R2□L  |
| PKP246D15A2-R2□L  |
| PKP246D23A2-R2□L  |
| PKP254D28AA2-R2□L |
| PKP256D28AA2-R2□L |
| PKP258D28AA2-R2□L |
| PKP264D14A2-R2□L  |
| PKP264D28A2-R2□L  |
| PKP264D42A2-R2□L  |
| PKP266D14A2-R2□L  |
| PKP266D28A2-R2□L  |
| PKP266D42A2-R2□L  |
| PKP268D14A2-R2□L  |
| PKP268D28A2-R2□L  |
| PKP268D42A2-R2□L  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● Unipolar (5 or 6 lead wires)

| Product Name      |
|-------------------|
| PKP213U05A-R2EL   |
| PKP214U06A-R2EL   |
| PKP223U09A2-R2□L  |
| PKP225U09A2-R2□L  |
| PKP233U12A-R2□L   |
| PKP235U12A-R2□L   |
| PKP243U08A2-R2□L  |
| PKP243U09A2-R2□L  |
| PKP243U12A2-R2□L  |
| PKP244U08A2-R2□L  |
| PKP244U12A2-R2□L  |
| PKP245U08A2-R2□L  |
| PKP245U12A2-R2□L  |
| PKP246U12A2-R2□L  |
| PKP246U16A2-R2□L  |
| PKP254U20AA2-R2□L |
| PKP256U20AA2-R2□L |
| PKP258U20AA2-R2□L |
| PKP264U10A2-R2□L  |
| PKP264U20A2-R2□L  |
| PKP266U10A2-R2□L  |
| PKP266U20A2-R2□L  |
| PKP268U10A2-R2□L  |
| PKP268U20A2-R2□L  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

◇ Standard Type with Electromagnetic Brake

● Bipolar (4 lead wires)

| Product Name |
|--------------|
| PKP223D15M2  |
| PKP225D15M2  |
| PKP233D15M   |
| PKP235D15M   |
| PKP243D23M2  |
| PKP244D23M2  |
| PKP245D23M2  |
| PKP246D23M2  |
| PKP264D28M2  |
| PKP266D28M2  |
| PKP268D28M2  |

● Unipolar (6 lead wires)

| Product Name |
|--------------|
| PKP223U09M2  |
| PKP225U09M2  |
| PKP233U12M   |
| PKP235U12M   |
| PKP243U09M   |
| PKP244U12M   |
| PKP245U12M   |
| PKP246U12M   |
| PKP264U20M   |
| PKP266U20M   |
| PKP268U20M   |

◇ High-Resolution Type

● Bipolar (4 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223MD15A                 | PKP223MD15B                 |
| PKP225MD15A                 | PKP225MD15B                 |
| PKP243MD15A2                | PKP243MD15B2                |
| PKP243MD15A                 | PKP243MD15B                 |
| PKP244MD15A2                | PKP244MD15B2                |
| PKP244MD15A                 | PKP244MD15B                 |
| PKP245MD15A2                | PKP245MD15B2                |
| PKP246MD15A2                | PKP246MD15B2                |
| PKP264MD28A2                | PKP264MD28B2                |
| PKP264MD28A                 | PKP264MD28B                 |
| PKP266MD28A2                | PKP266MD28B2                |
| PKP266MD28A                 | PKP266MD28B                 |
| PKP268MD28A2                | PKP268MD28B2                |
| PKP268MD28A                 | PKP268MD28B                 |

● Unipolar (5 or 6 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223MU09A                 | PKP223MU09B                 |
| PKP225MU09A                 | PKP225MU09B                 |
| PKP243MU09A                 | PKP243MU09B                 |
| PKP243MU12A2                | PKP243MU12B2                |
| PKP244MU12A2                | PKP244MU12B2                |
| PKP244MU12A                 | PKP244MU12B                 |
| PKP245MU12A2                | PKP245MU12B2                |
| PKP246MU12A2                | PKP246MU12B2                |
| PKP264MU20A2                | PKP264MU20B2                |
| PKP264MU20A                 | PKP264MU20B                 |
| PKP266MU20A2                | PKP266MU20B2                |
| PKP266MU20A                 | PKP266MU20B                 |
| PKP268MU20A2                | PKP268MU20B2                |
| PKP268MU20A                 | PKP268MU20B                 |

◇ High-Resolution Type with Encoder

● Bipolar (4 lead wires)

| Product Name      |
|-------------------|
| PKP223MD15A-R2FL  |
| PKP225MD15A-R2FL  |
| PKP243MD15A2-R2FL |
| PKP244MD15A2-R2FL |
| PKP245MD15A2-R2FL |
| PKP246MD15A2-R2FL |
| PKP264MD28A2-R2FL |
| PKP266MD28A2-R2FL |
| PKP268MD28A2-R2FL |

◇ High-Resolution Type with Electromagnetic Brake

● Bipolar (4 lead wires)

| Product Name |
|--------------|
| PKP243MD15M  |
| PKP244MD15M  |
| PKP264MD28M  |
| PKP266MD28M  |
| PKP268MD28M  |

◇ Flat Type

● Bipolar (4 lead wires)

| Product Name (Single Shaft) |
|-----------------------------|
| PKP242D23A2                 |
| PKP262FD15AW                |

◇ SH Geared Type

● Bipolar (4 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223D15A-SG7.2            | PKP223D15B-SG7.2            |
| PKP223D15A-SG9              | PKP223D15B-SG9              |
| PKP223D15A-SG10             | PKP223D15B-SG10             |
| PKP223D15A-SG18             | PKP223D15B-SG18             |
| PKP223D15A-SG36             | PKP223D15B-SG36             |
| PKP243D15A2-SG3.6           | PKP243D15B2-SG3.6           |
| PKP243D23A2-SG3.6           | PKP243D23B2-SG3.6           |
| PKP243D15A2-SG7.2           | PKP243D15B2-SG7.2           |
| PKP243D23A2-SG7.2           | PKP243D23B2-SG7.2           |
| PKP243D15A2-SG9             | PKP243D15B2-SG9             |
| PKP243D23A2-SG9             | PKP243D23B2-SG9             |
| PKP243D15A2-SG10            | PKP243D15B2-SG10            |
| PKP243D23A2-SG10            | PKP243D23B2-SG10            |
| PKP243D15A2-SG18            | PKP243D15B2-SG18            |
| PKP243D23A2-SG18            | PKP243D23B2-SG18            |
| PKP243D15A2-SG36            | PKP243D15B2-SG36            |
| PKP243D23A2-SG36            | PKP243D23B2-SG36            |
| PKP264D14A2-SG3.6           | PKP264D14B2-SG3.6           |
| PKP264D28A2-SG3.6           | PKP264D28B2-SG3.6           |
| PKP264D14A2-SG7.2           | PKP264D14B2-SG7.2           |
| PKP264D28A2-SG7.2           | PKP264D28B2-SG7.2           |
| PKP264D14A2-SG9             | PKP264D14B2-SG9             |
| PKP264D28A2-SG9             | PKP264D28B2-SG9             |
| PKP264D14A2-SG10            | PKP264D14B2-SG10            |
| PKP264D28A2-SG10            | PKP264D28B2-SG10            |
| PKP264D14A2-SG18            | PKP264D14B2-SG18            |
| PKP264D28A2-SG18            | PKP264D28B2-SG18            |
| PKP264D14A2-SG36            | PKP264D14B2-SG36            |
| PKP264D28A2-SG36            | PKP264D28B2-SG36            |

● Unipolar (5 or 6 lead wires)

| Product Name      |
|-------------------|
| PKP223MU09A-R2FL  |
| PKP225MU09A-R2FL  |
| PKP243MU12A2-R2FL |
| PKP244MU12A2-R2FL |
| PKP245MU12A2-R2FL |
| PKP246MU12A2-R2FL |
| PKP264MU20A2-R2FL |
| PKP266MU20A2-R2FL |
| PKP268MU20A2-R2FL |

● Unipolar (6 lead wires)

| Product Name |
|--------------|
| PKP243MU09M  |
| PKP244MU12M  |
| PKP264MU20M  |
| PKP266MU20M  |
| PKP268MU20M  |

◇ Flat Type with Harmonic Geared

● Bipolar (4 lead wires)

| Product Name (Single Shaft) |
|-----------------------------|
| PKP242D23A2-H50             |
| PKP242D23A2-H100            |
| PKP262FD15AW-H50S           |
| PKP262FD15AW-H100S          |

● Unipolar (5 or 6 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223U09A-SG7.2            | PKP223U09B-SG7.2            |
| PKP223U09A-SG9              | PKP223U09B-SG9              |
| PKP223U09A-SG10             | PKP223U09B-SG10             |
| PKP223U09A-SG18             | PKP223U09B-SG18             |
| PKP223U09A-SG36             | PKP223U09B-SG36             |
| PKP243U09A2-SG3.6           | PKP243U09B2-SG3.6           |
| PKP243U09A2-SG7.2           | PKP243U09B2-SG7.2           |
| PKP243U09A2-SG9             | PKP243U09B2-SG9             |
| PKP243U09A2-SG10            | PKP243U09B2-SG10            |
| PKP243U09A2-SG18            | PKP243U09B2-SG18            |
| PKP243U09A2-SG36            | PKP243U09B2-SG36            |
| PKP264U10A2-SG3.6           | PKP264U10B2-SG3.6           |
| PKP264U20A2-SG3.6           | PKP264U20B2-SG3.6           |
| PKP264U10A2-SG7.2           | PKP264U10B2-SG7.2           |
| PKP264U20A2-SG7.2           | PKP264U20B2-SG7.2           |
| PKP264U10A2-SG9             | PKP264U10B2-SG9             |
| PKP264U20A2-SG9             | PKP264U20B2-SG9             |
| PKP264U10A2-SG10            | PKP264U10B2-SG10            |
| PKP264U20A2-SG10            | PKP264U20B2-SG10            |
| PKP264U10A2-SG18            | PKP264U10B2-SG18            |
| PKP264U20A2-SG18            | PKP264U20B2-SG18            |
| PKP264U10A2-SG36            | PKP264U10B2-SG36            |
| PKP264U20A2-SG36            | PKP264U20B2-SG36            |
| PK296A1-SG3.6               | PK296B1-SG3.6               |
| PK296A2-SG3.6               | PK296B2-SG3.6               |
| PK296A1-SG7.2               | PK296B1-SG7.2               |
| PK296A2-SG7.2               | PK296B2-SG7.2               |
| PK296A1-SG9                 | PK296B1-SG9                 |
| PK296A2-SG9                 | PK296B2-SG9                 |
| PK296A1-SG10                | PK296B1-SG10                |
| PK296A2-SG10                | PK296B2-SG10                |
| PK296A1-SG18                | PK296B1-SG18                |
| PK296A2-SG18                | PK296B2-SG18                |
| PK296A1-SG36                | PK296B1-SG36                |
| PK296A2-SG36                | PK296B2-SG36                |

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

Motor Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

◇ **SH** Geared Type with Encoder

● Bipolar (4 lead wires)

| Product Name           |
|------------------------|
| PKP243D15A2-SG3.6-R2FL |
| PKP243D23A2-SG3.6-R2FL |
| PKP243D15A2-SG7.2-R2FL |
| PKP243D23A2-SG7.2-R2FL |
| PKP243D15A2-SG9-R2FL   |
| PKP243D23A2-SG9-R2FL   |
| PKP243D15A2-SG10-R2FL  |
| PKP243D23A2-SG10-R2FL  |
| PKP243D15A2-SG18-R2FL  |
| PKP243D23A2-SG18-R2FL  |
| PKP243D15A2-SG36-R2FL  |
| PKP243D23A2-SG36-R2FL  |
| PKP264D28A2-SG3.6-R2FL |
| PKP264D28A2-SG7.2-R2FL |
| PKP264D28A2-SG9-R2FL   |
| PKP264D28A2-SG10-R2FL  |
| PKP264D28A2-SG18-R2FL  |
| PKP264D28A2-SG36-R2FL  |

◇ **CS** Geared Type

● Bipolar (4 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223D15A-CS10             | PKP223D15B-CS10             |
| PKP223D15A-CS15             | PKP223D15B-CS15             |
| PKP223D15A-CS20             | PKP223D15B-CS20             |
| PKP243D15A2-CS5             | PKP243D15B2-CS5             |
| PKP243D23A2-CS5             | PKP243D23B2-CS5             |
| PKP243D15A2-CS10            | PKP243D15B2-CS10            |
| PKP243D23A2-CS10            | PKP243D23B2-CS10            |
| PKP243D15A2-CS15            | PKP243D15B2-CS15            |
| PKP243D23A2-CS15            | PKP243D23B2-CS15            |
| PKP243D15A2-CS20            | PKP243D15B2-CS20            |
| PKP243D23A2-CS20            | PKP243D23B2-CS20            |
| PKP264D14A2-CS5             | PKP264D14B2-CS5             |
| PKP264D28A2-CS5             | PKP264D28B2-CS5             |
| PKP264D14A2-CS10            | PKP264D14B2-CS10            |
| PKP264D28A2-CS10            | PKP264D28B2-CS10            |
| PKP264D14A2-CS15            | PKP264D14B2-CS15            |
| PKP264D28A2-CS15            | PKP264D28B2-CS15            |
| PKP264D14A2-CS20            | PKP264D14B2-CS20            |
| PKP264D28A2-CS20            | PKP264D28B2-CS20            |

● Unipolar (6 lead wires)

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| PKP223U09A-CS10             | PKP223U09B-CS10             |
| PKP223U09A-CS15             | PKP223U09B-CS15             |
| PKP223U09A-CS20             | PKP223U09B-CS20             |

● Driver

Refer to page 146 for details on drivers.

● Connection Cable

Refer to the dimensions page for each product for information on connection cables and applicable motors. Some cables are available that can be directly connected to the recommended driver. See page 163.

■ Included

| Type                  | Included                                                 | Surge Suppressor           | Parallel Key | Motor Mounting Screw  | Operating Manual |
|-----------------------|----------------------------------------------------------|----------------------------|--------------|-----------------------|------------------|
| Standard Type         | With Encoder                                             | —                          | —            | —                     | —                |
|                       | High-Resolution Type                                     | With Electromagnetic Brake | 1 pc.        | —                     | —                |
| Flat Type             |                                                          | —                          | —            | —                     | 1 Copy           |
| <b>SH</b> Geared Type | Frame Size 28 mm<br>Frame Size 42 mm<br>Frame Size 60 mm | —                          | —            | —                     | — *              |
|                       | Frame Size 90 mm                                         | —                          | 1 pc.        | M6×18 P1.0 (4 Screws) | —                |
| <b>CS</b> Geared Type | Frame Size 28 mm<br>Frame Size 42 mm                     | —                          | —            | —                     | —                |
|                       | Frame Size 60 mm                                         | —                          | 1 pc.        | M4×60 P0.7 (4 Screws) | —                |

\*An operating manual is included with encoder types.

■ How to Read Specifications

|                              |                                                                                                                                                                                                                                                                                                                           |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Holding Torque       | : This is the maximum holding torque (holding force) the motor has when power is supplied (at rated current) but the motor is not rotating. (With geared types, the value of holding torque considers the permissible strength of the gear.)                                                                              |
| Permissible Torque           | : The permissible torque represents the maximum value limited by the mechanical strength of the output gear shaft when operated at a constant speed. For the <b>SH</b> geared types and <b>CS</b> geared types, the total torque including acceleration and deceleration torque should not exceed the permissible torque. |
| Maximum Instantaneous Torque | : This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration such when an inertial load is started and stopped.                                                                                                                                                             |

# Standard Type Frame Size 13 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| <b>PKP203D06</b> □ | 0.0075                        | $0.41 \times 10^{-7}$                 | 0.6                      | 1.9            | 3.2                           | 1.1                    | 1.8°             | <b>CVD206BR-K</b>                   |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

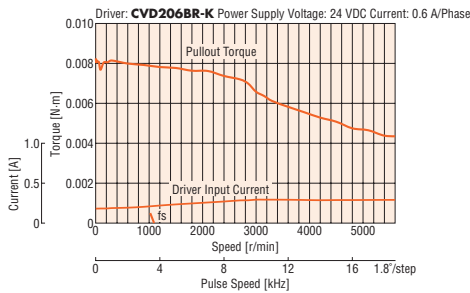
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) *fs*: Max. Starting Frequency

#### PKP203D06A/ PKP203D06B



#### Note

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

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

● The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit: mm)

#### Motor

| Product Name      | Mass<br>kg | 2D CAD |
|-------------------|------------|--------|
| <b>PKP203D06A</b> | 0.021      | B1522  |
| <b>PKP203D06B</b> |            |        |

#### Applicable Connector

Connector Housing: DF52-4P-0.8C

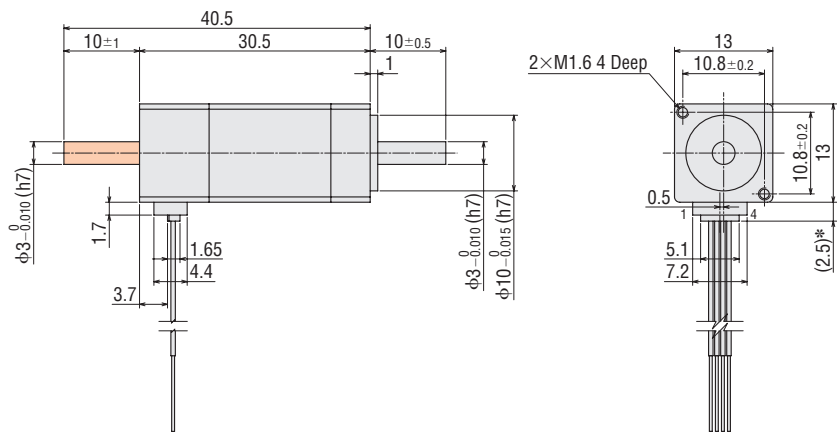
(HIROSE ELECTRIC CO., LTD.)

Contact: DF52-2832PCF

(HIROSE ELECTRIC CO., LTD.)

Crimp Tool: AP105-DF52-2832P

(HIROSE ELECTRIC CO., LTD.)



\*With connection cable

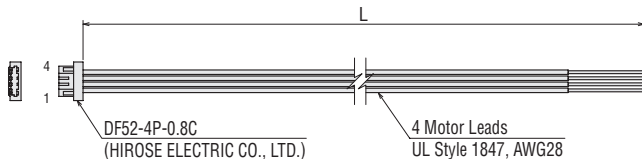
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B10G</b> | 1            |



#### Note

● The voltage applied to the cable should be 30 V or lower. If 30 V is exceeded, the cable will be damaged.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model D⑧

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment



# Standard Type Frame Size 20 mm (Bipolar 4 lead wires)

## Lead Wire Type

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP213D05□   | 0.02                          | $1.6 \times 10^{-7}$                  | 0.5                      | 4.25           | 8.5                           | 4.1                    | 1.8°             | <b>CVD205BR-K</b>                |
| PKP214D06□   | 0.036                         | $2.9 \times 10^{-7}$                  | 0.6                      | 3.9            | 6.5                           | 3.5                    |                  | <b>CVD206BR-K</b>                |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

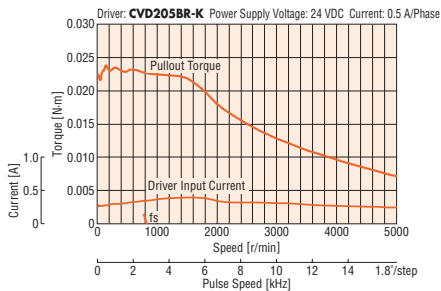
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

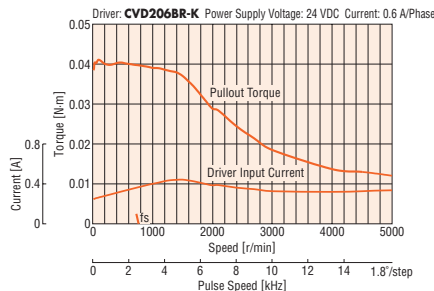
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP213D05A/PKP213D05B



PKP214D06A/PKP214D06B



### Note

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

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

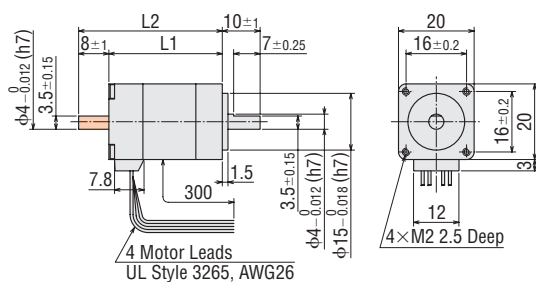
● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP213D05A   | 30 | —  | 0.05       | B976   |
| PKP213D05B   |    | 38 |            |        |
| PKP214D06A   | 40 | —  | 0.07       | B978   |
| PKP214D06B   |    | 48 |            |        |



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● The back shaft side of the double shaft model is entirely shaft flat.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 20 mm (Unipolar 5 lead wires)

## Lead Wire Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP213U05□   | 0.014                         | $1.6 \times 10^{-7}$                  | 0.5                      | 4.25           | 8.5                           | 2.9                    | 1.8°             | CMD2109P                            |
| PKP214U06□   | 0.026                         | $2.9 \times 10^{-7}$                  | 0.6                      | 4.2            | 7                             | 2.4                    |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

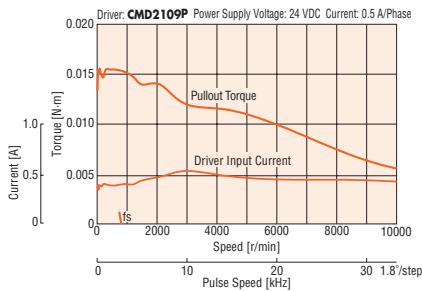
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

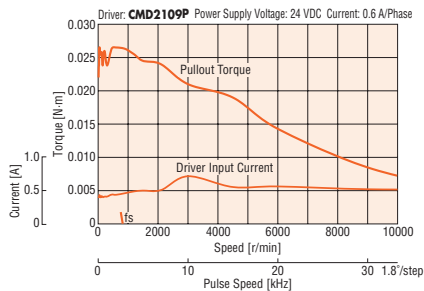
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) *f*<sub>s</sub>: Max. Starting Frequency

#### PKP213U05A/PKP213U05B



#### PKP214U06A/PKP214U06B



#### Note

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

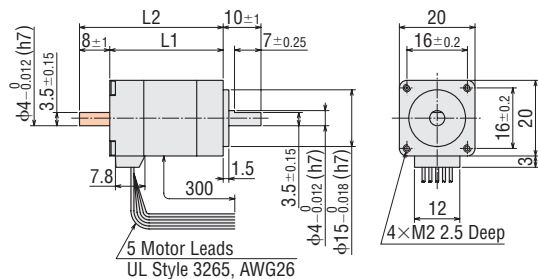
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP213U05A   | 30 | —  | 0.05       | B977   |
| PKP213U05B   |    | 38 |            |        |
| PKP214U06A   | 40 | —  | 0.07       | B979   |
| PKP214U06B   |    | 48 |            |        |



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● The back shaft side of the double shaft model is entirely shaft flat.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑥

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type with Encoder Frame Size 20 mm (Bipolar 4 lead wires)

## Lead Wire Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name  | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|---------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP213D05A-R3 | 0.02                          | $2.5 \times 10^{-7}$                  | 0.5                      | 4.25           | 8.5                           | 4.1                    | 1.8°             | CVD205BR-K                       |
| PKP214D06A-R3 | 0.036                         | $3.8 \times 10^{-7}$                  | 0.6                      | 3.9            | 6.5                           | 3.5                    |                  | CVD206BR-K                       |

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

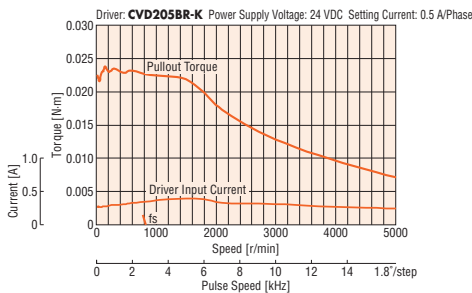
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

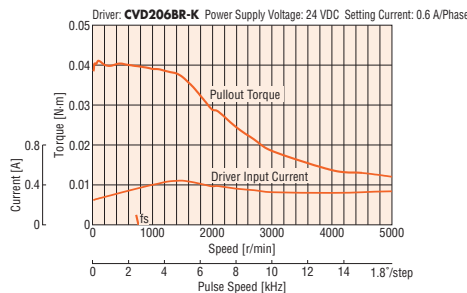
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) *f*<sub>s</sub>: Max. Starting Frequency

PKP213D05A-R3



PKP214D06A-R3



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit = mm)

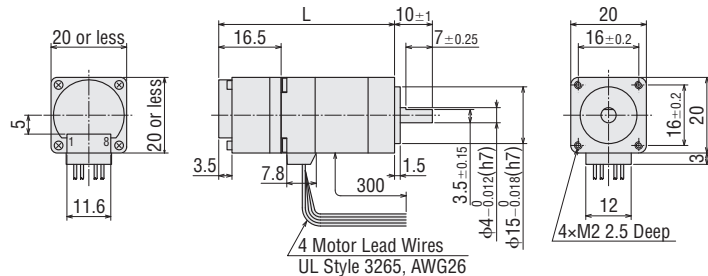
### Motor

2D & 3D CAD

| Product Name  | L    | Mass<br>kg | 2D CAD |
|---------------|------|------------|--------|
| PKP213D05A-R3 | 46.5 | 0.07       | B1100  |
| PKP214D06A-R3 | 56.5 | 0.09       | B1101  |

● Applicable Connector (Molex)

|                   | Encoder    |
|-------------------|------------|
| Connector Housing | 51021-0800 |
| Contact           | 50079-8100 |
| Crimp Tool        | 57177-5000 |



### Connection Cable (Sold separately)

#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

# Standard Type with Encoder Frame Size 20 mm (Unipolar 5 lead wires)

## Lead Wire Type

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## Specifications

| Product Name    | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP213U05A-R2EL | 0.014                      | $1.66 \times 10^{-7}$              | 0.5                   | 4.25        | 8.5                        | 2.9                 | 1.8°             | CMD2109P                         |
| PKP214U06A-R2EL | 0.026                      | $2.96 \times 10^{-7}$              | 0.6                   | 4.2         | 7                          | 2.4                 |                  |                                  |

● See "Common Specifications" page for encoder specifications.

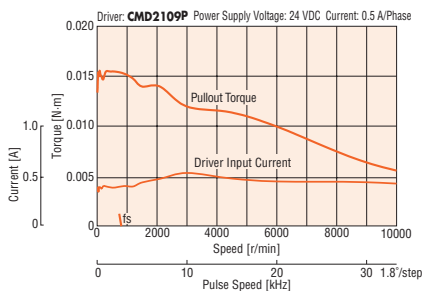
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

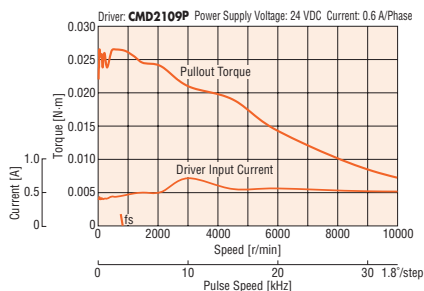
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP213U05A-R2EL



### PKP214U06A-R2EL



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

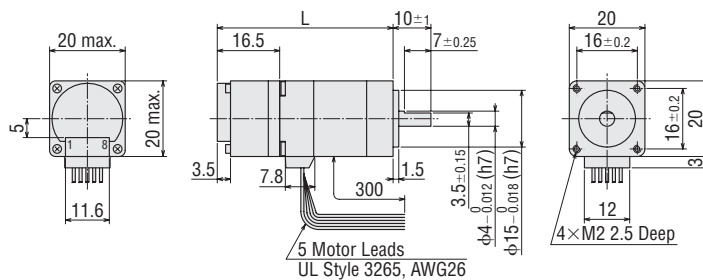
### Motor

2D & 3D CAD

| Product Name    | L    | Mass kg | 2D CAD |
|-----------------|------|---------|--------|
| PKP213U05A-R2EL | 46.5 | 0.06    | B1098  |
| PKP214U06A-R2EL | 56.5 | 0.08    | B1099  |

● Applicable Connector (Molex)

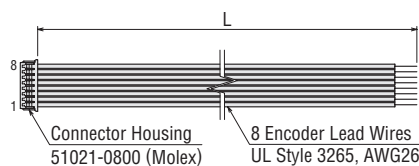
|                   | Encoder    |
|-------------------|------------|
| Connector Housing | 51021-0800 |
| Contact           | 50079-8100 |
| Crimping Tool     | 57177-5000 |



### Connection Cable (Sold separately)

#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑥

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP223D15□2  | 0.095                      | 9×10 <sup>-7</sup>                 | 1.5                   | 1.77        | 1.18                       | 0.96                | 1.8°             | CVD215BR-K                       |
| PKP225D15□2  | 0.19                       | 18×10 <sup>-7</sup>                |                       | 3           | 2                          | 1.6                 |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

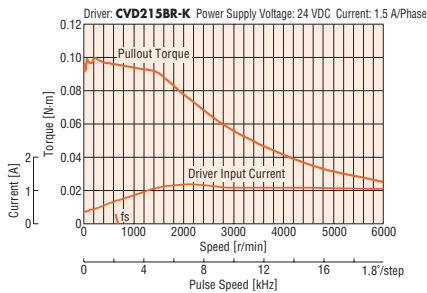
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

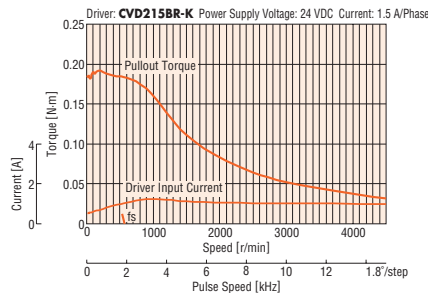
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP223D15A2/PKP223D15B2



PKP225D15A2/PKP225D15B2



**Note**

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

● Motor

2D & 3D CAD

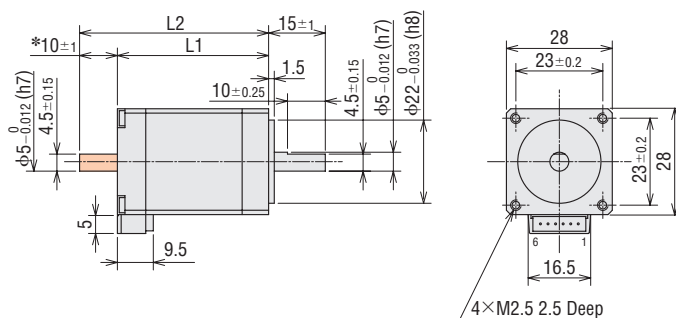
| Product Name | L1   | L2   | Mass kg | 2D CAD |
|--------------|------|------|---------|--------|
| PKP223D15A2  | 32   | —    | 0.11    | B980   |
| PKP223D15B2  |      | 42   |         |        |
| PKP225D15A2  | 51.5 | —    | 0.2     | B982   |
| PKP225D15B2  |      | 61.5 |         |        |

● Applicable Connector

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10±0.25.

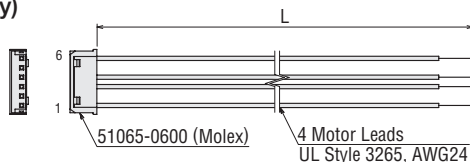
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# Standard Type Frame Size 28 mm (Unipolar 6 lead wires)

## Connector Type

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP223U09□2  | 0.075                         | 9×10 <sup>-7</sup>                    | 0.95                     | 2.95           | 3.11                          | 1.44                   | 1.8°             | CMD2109P                            |
| PKP225U09□2  | 0.135                         | 18×10 <sup>-7</sup>                   |                          | 4.4            | 4.6                           | 2.11                   |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

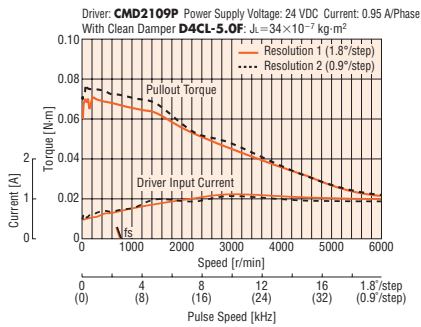
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

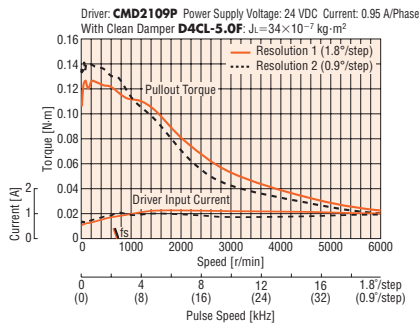
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP223U09A2/ PKP223U09B2



### PKP225U09A2/ PKP225U09B2



### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

## Dimensions (Unit: mm)

### Motor

### 2D & 3D CAD

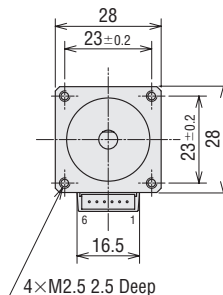
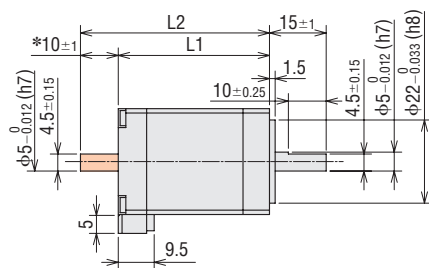
| Product Name | L1   | L2   | Mass<br>kg | 2D CAD |
|--------------|------|------|------------|--------|
| PKP223U09A2  | 32   | —    | 0.11       | B980   |
| PKP223U09B2  |      | 42   |            |        |
| PKP225U09A2  | 51.5 | —    | 0.2        | B982   |
| PKP225U09B2  |      | 61.5 |            |        |

### Applicable Connector

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10±0.25.

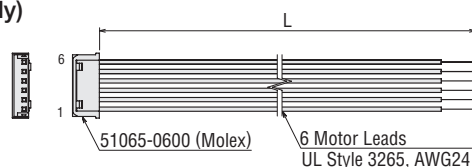
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type with Encoder Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

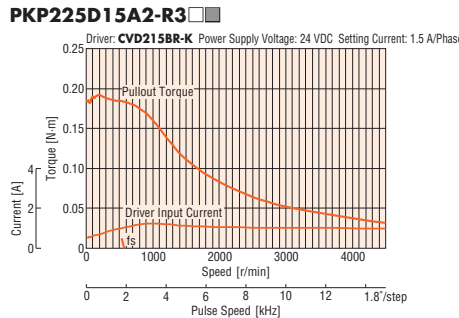
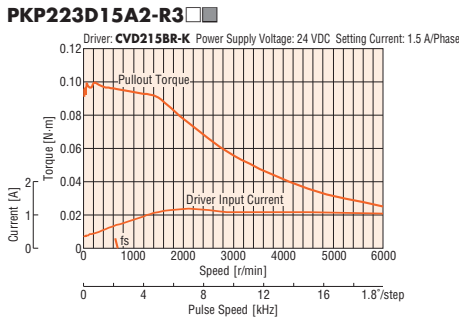
| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP223D15A2-R3□□ | 0.095                         | 9.9×10 <sup>-7</sup>                  | 1.5                      | 1.77           | 1.18                          | 0.96                   | 1.8°             | CVD215BR-K                       |
| PKP225D15A2-R3□□ | 0.19                          | 19×10 <sup>-7</sup>                   |                          | 3              | 2                             | 1.6                    |                  |                                  |

- A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.
- A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.
- Refer to the common specifications page for encoder specifications.
- \*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit = mm)

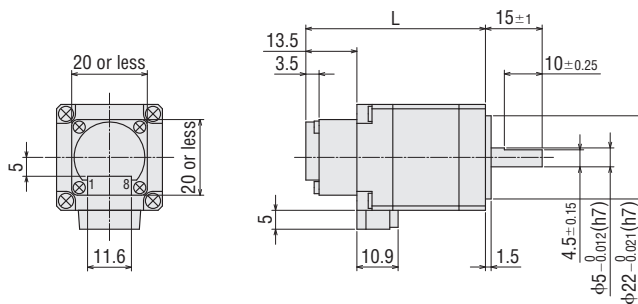
● Motor

2D & 3D CAD

| Product Name     | L    | Mass kg | 2D CAD |
|------------------|------|---------|--------|
| PKP223D15A2-R3□□ | 47.5 | 0.13    | B1198  |
| PKP225D15A2-R3□□ | 67   | 0.22    | B1199  |

● Applicable Connector (Molex)

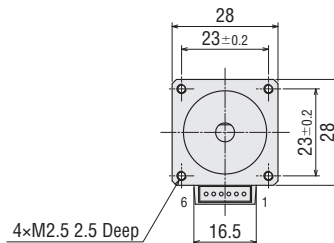
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0600 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

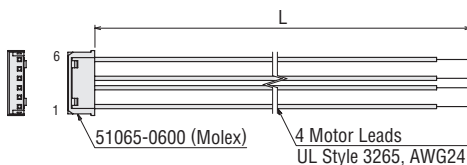
- Refer to the motor inner wiring page for an inner wiring diagram of the motor.



● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



◇ Encoder Connection Cable

● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

- Refer to the cables page for dimensions.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.  
 A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

# Standard Type with Encoder Frame Size 28 mm (Unipolar 6 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP223U09A2-R2□L | 0.075                         | 9.1×10 <sup>-7</sup>                  | 0.95                     | 2.95           | 3.11                          | 1.44                   | 1.8°             | CMD2109P                            |
| PKP225U09A2-R2□L | 0.135                         | 18×10 <sup>-7</sup>                   |                          | 4.4            | 4.6                           | 2.11                   |                  |                                     |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● See "Common Specifications" page for encoder specifications.

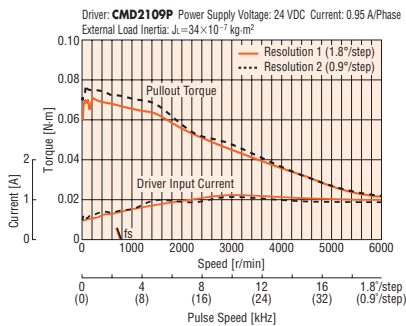
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

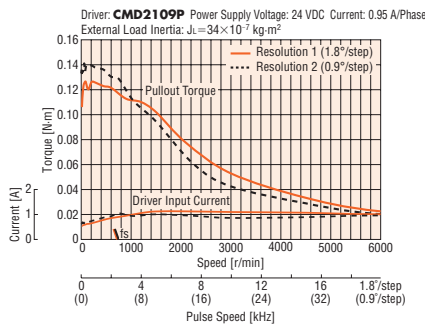
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP223U09A2-R2EL/PKP223U09A2-R2FL



### PKP225U09A2-R2EL/PKP225U09A2-R2FL



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

### Motor

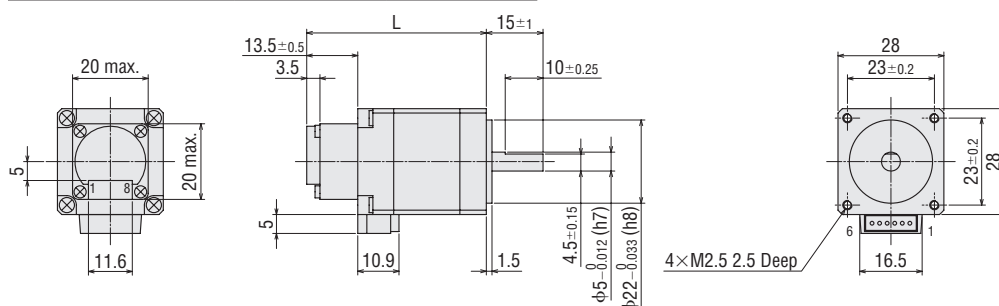
2D & 3D CAD

| Product Name     | L    | Mass<br>kg | 2D CAD |
|------------------|------|------------|--------|
| PKP223U09A2-R2□L | 47.5 | 0.12       | B1198  |
| PKP225U09A2-R2□L | 67   | 0.21       | B1199  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● Applicable Connector (Molex)

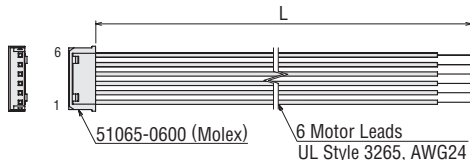
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0600 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimping Tool     | 57176-5000 | 57177-5000 |



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |



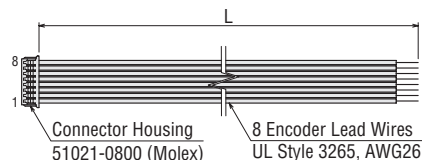
## Inner Wiring Diagram of Motor

### Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



# Standard Type with Electromagnetic Brake Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| PKP223D15M2  | 0.095                         | 14×10 <sup>-7</sup> *                 | 1.5                      | 1.77           | 1.18                          | 0.96                   | 1.8°             | 0.08                                                |
| PKP225D15M2  | 0.19                          | 23×10 <sup>-7</sup> *                 |                          | 3              | 2                             | 1.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

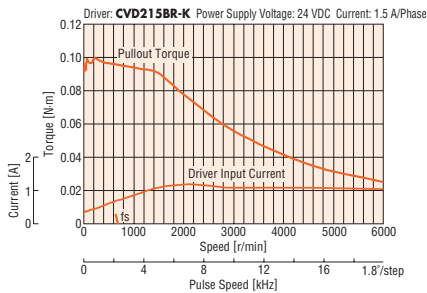
\* This value is including the electromagnetic brake inertia.

### Note

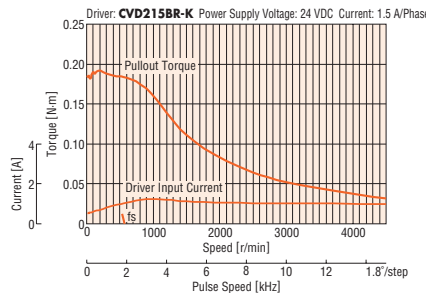
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP223D15M2



PKP225D15M2



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

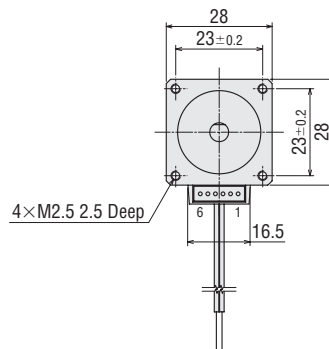
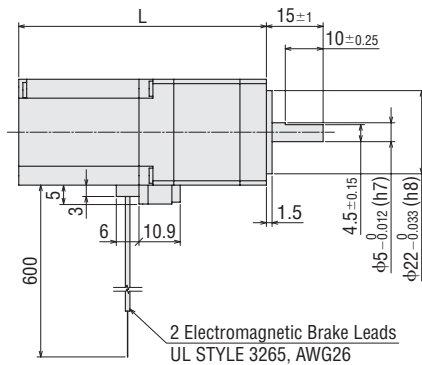
| Product Name | L    | Mass<br>kg | 2D CAD |
|--------------|------|------------|--------|
| PKP223D15M2  | 65.5 | 0.17       | B1196  |
| PKP225D15M2  | 85   | 0.26       | B1197  |

### Applicable Connector

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



## Inner Wiring Diagram of Motor

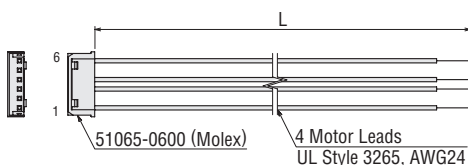
Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



# Standard Type with Electromagnetic Brake Frame Size 28 mm (Unipolar 6 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| PKP223U09M2  | 0.075                         | 14×10 <sup>-7</sup> *                 | 0.95                     | 2.95           | 3.11                          | 1.44                   | 1.8°             | 0.08                                                |
| PKP225U09M2  | 0.135                         | 23×10 <sup>-7</sup> *                 |                          | 4.4            | 4.6                           | 2.11                   |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

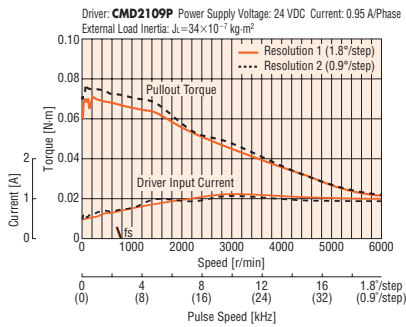
\*This value is including the electromagnetic brake inertia.

### Note

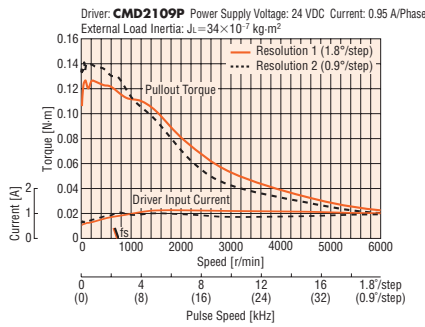
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP223U09M2



### PKP225U09M2



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

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

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

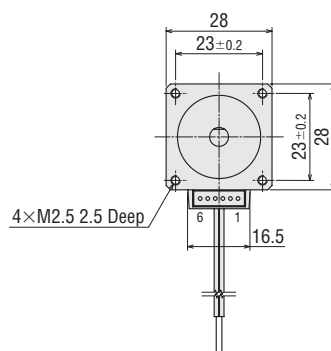
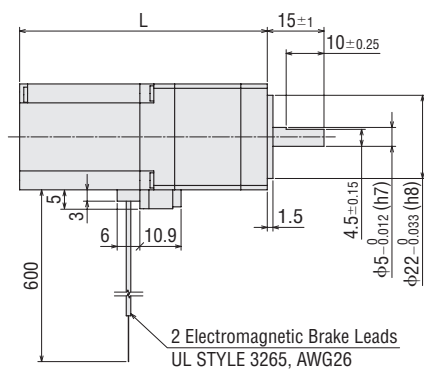
| Product Name | L    | Mass<br>kg | 2D CAD |
|--------------|------|------------|--------|
| PKP223U09M2  | 65.5 | 0.17       | B1196  |
| PKP225U09M2  | 85   | 0.26       | B1197  |

### ● Applicable Connector

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

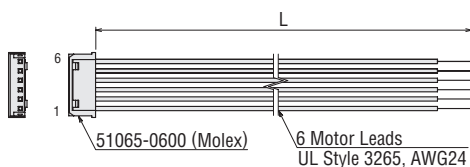
Crimp Tool: 57176-5000 (Molex)



### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |



# Standard Type Frame Size 35 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP233D15□   | 0.2                        | 24×10 <sup>-7</sup>                | 1.5                   | 2.43        | 1.62                       | 1.5                 | 1.8°             | CVD215BR-K                       |
| PKP233D23□   |                            |                                    | 2.3                   | 1.56        | 0.68                       | 0.67                |                  | CVD223BR-K                       |
| PKP235D15□   | 0.37                       | 50×10 <sup>-7</sup>                | 1.5                   | 3.6         | 2.4                        | 2.6                 |                  | CVD215BR-K                       |
| PKP235D23□   |                            |                                    | 2.3                   | 2.23        | 0.97                       | 1.2                 |                  | CVD223BR-K                       |

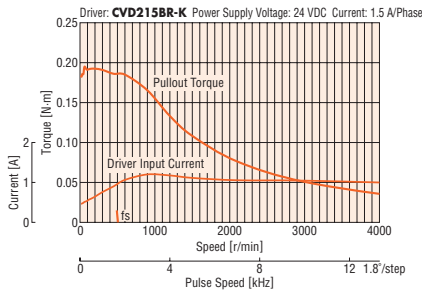
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).  
 \*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

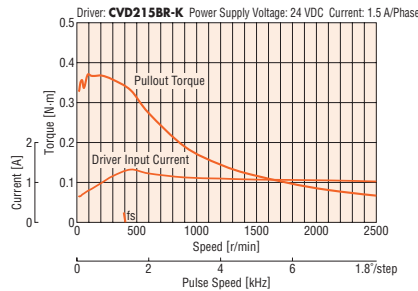
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

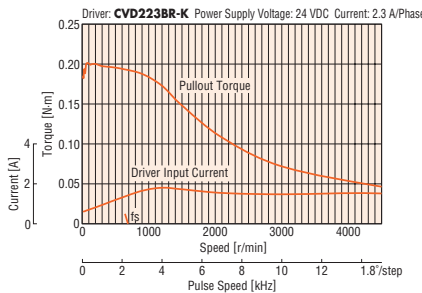
PKP233D15A/PKP233D15B



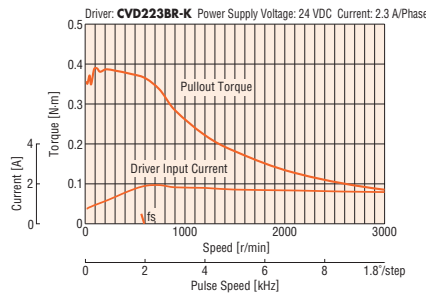
PKP235D15A/PKP235D15B



PKP233D23A/PKP233D23B



PKP235D23A/PKP235D23B



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

● Motor

2D & 3D CAD

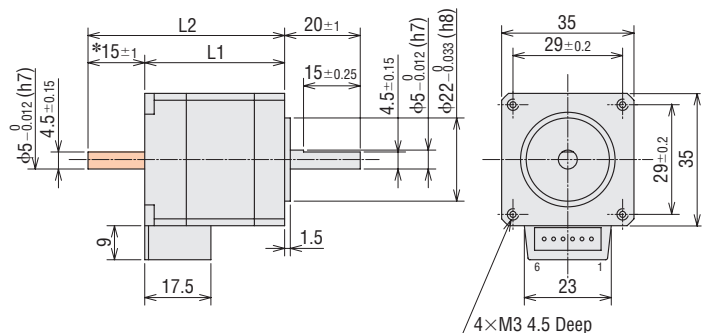
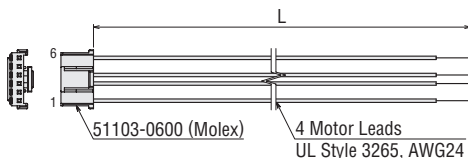
| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP233D15A   | 37 | —  | 0.18    | B983   |
| PKP233D15B   |    | 52 |         |        |
| PKP233D23A   |    | —  |         | B1111  |
| PKP233D23B   |    | 52 |         |        |
| PKP235D15A   | 52 | —  | 0.285   | B984   |
| PKP235D15B   |    | 67 |         |        |
| PKP235D23A   |    | —  |         | B1112  |
| PKP235D23B   |    | 67 |         |        |

● Applicable Connector  
 Connector Housing: 51103-0600 (Molex)  
 Contact: 50351-8100 (Molex)  
 Crimp Tool: 57295-5000 (Molex)

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06B      | 0.6          |
| LC2B10B      | 1            |



\*The length of the shaft flat on the double shaft model is 15±0.25.  
 ● These dimensions are for double shaft motors.  
 For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# Standard Type Frame Size 35 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP233U12□   | 0.16                          | $24 \times 10^{-7}$                   | 1.2                      | 3.24           | 2.7                           | 1.4                    | 1.8°             | CMD21 12P                           |
| PKP235U12□   | 0.3                           | $50 \times 10^{-7}$                   |                          | 4.08           | 3.4                           | 2                      |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

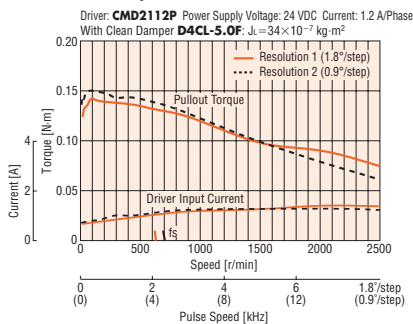
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

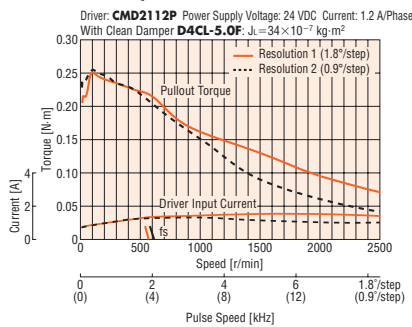
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) *f<sub>s</sub>*: Max. Starting Frequency

#### PKP233U12A/PKP233U12B



#### PKP235U12A/PKP235U12B



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP233U12A   | 37 | —  | 0.18       | B983   |
| PKP233U12B   |    | 52 |            |        |
| PKP235U12A   | 52 | —  | 0.285      | B984   |
| PKP235U12B   |    | 67 |            |        |

#### Applicable Connector

Connector Housing: 51103-0600 (Molex)

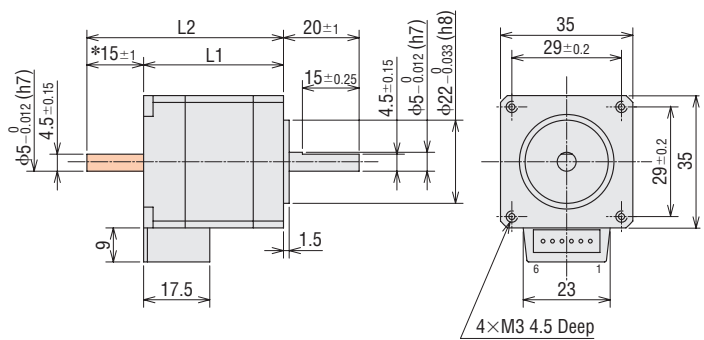
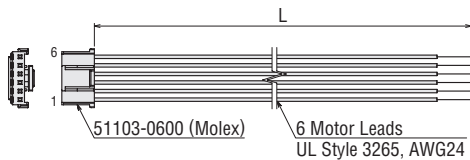
Contact: 50351-8100 (Molex)

Crimp Tool: 57295-5000 (Molex)

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06B      | 0.6          |
| LC2U10B      | 1            |



\*The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type with Encoder Frame Size 35 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm  
51 mm

56.4 mm

60 mm  
61 mm

85 mm  
90 mm

## Specifications

| Product Name  | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|---------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP233D15A-R3 | 0.2                           | 25 × 10 <sup>-7</sup>                 | 1.5                      | 2.43           | 1.62                          | 1.5                    | 1.8°             | CVD215BR-K                       |
| PKP233D23A-R3 |                               |                                       | 2.3                      | 1.56           | 0.68                          | 0.67                   |                  | CVD223BR-K                       |
| PKP235D15A-R3 | 0.37                          | 51 × 10 <sup>-7</sup>                 | 1.5                      | 3.6            | 2.4                           | 2.6                    |                  | CVD215BR-K                       |
| PKP235D23A-R3 |                               |                                       | 2.3                      | 2.23           | 0.97                          | 1.2                    |                  | CVD223BR-K                       |

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

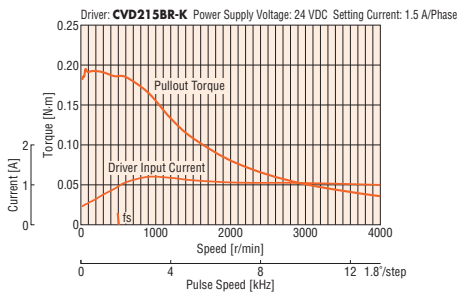
\* See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

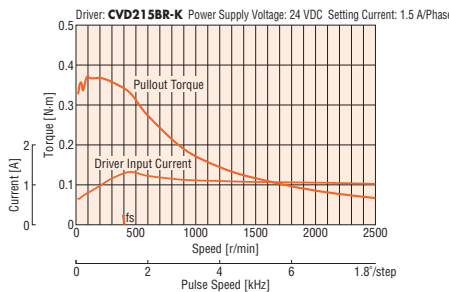
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

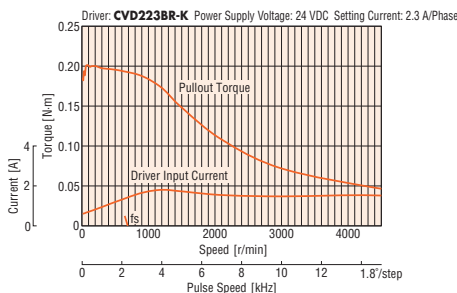
PKP233D15A-R3



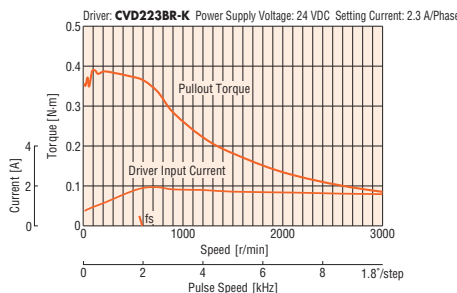
PKP235D15A-R3



PKP233D23A-R3



PKP235D23A-R3



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

## Dimensions (Unit = mm)

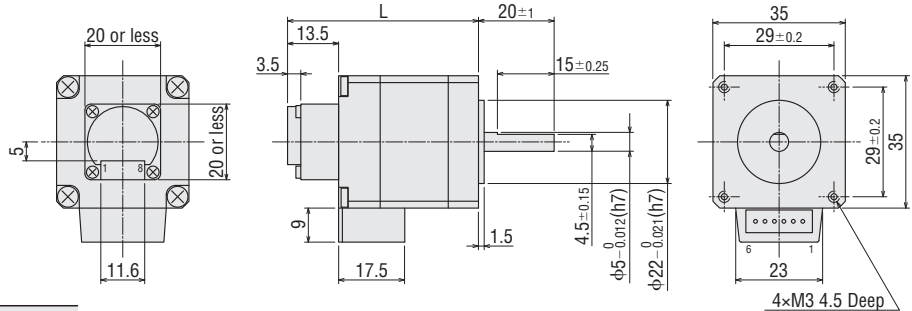
### Motor

2D & 3D CAD

| Product Name                           | L    | Mass kg | 2D CAD |
|----------------------------------------|------|---------|--------|
| PKP233D15A-R3 <input type="checkbox"/> | 50.5 | 0.2     | B1102  |
| PKP233D23A-R3 <input type="checkbox"/> |      |         |        |
| PKP235D15A-R3 <input type="checkbox"/> | 65.5 | 0.31    | B1103  |
| PKP235D23A-R3 <input type="checkbox"/> |      |         |        |

● Applicable Connector (Molex)

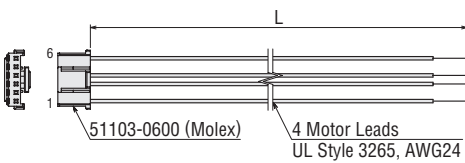
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51103-0600 | 51021-0800 |
| Contact           | 50351-8100 | 50079-8100 |
| Crimp Tool        | 57295-5000 | 57177-5000 |



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06B      | 0.6          |
| LC2B10B      | 1            |



#### Encoder Connection Cable

##### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

# Standard Type with Encoder Frame Size 35 mm (Unipolar 6 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name    | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP233U12A-R2□L | 0.16                       | 24×10 <sup>-7</sup>                | 1.2                   | 3.24        | 2.7                        | 1.4                 | 1.8°             | CMD2112P                         |
| PKP235U12A-R2□L | 0.3                        | 50×10 <sup>-7</sup>                |                       | 4.08        | 3.4                        | 2                   |                  |                                  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● See "Common Specifications" page for encoder specifications.

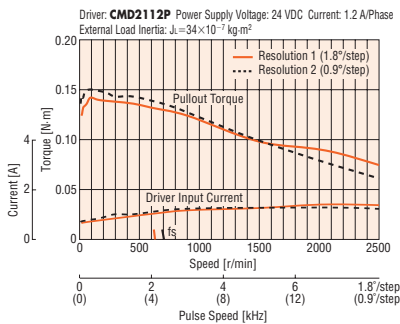
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

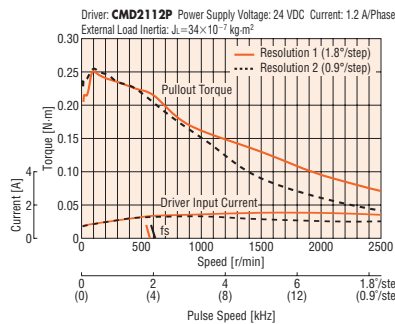
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP233U12A-R2EL/PKP233U12A-R2FL



### PKP235U12A-R2EL/PKP235U12A-R2FL



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

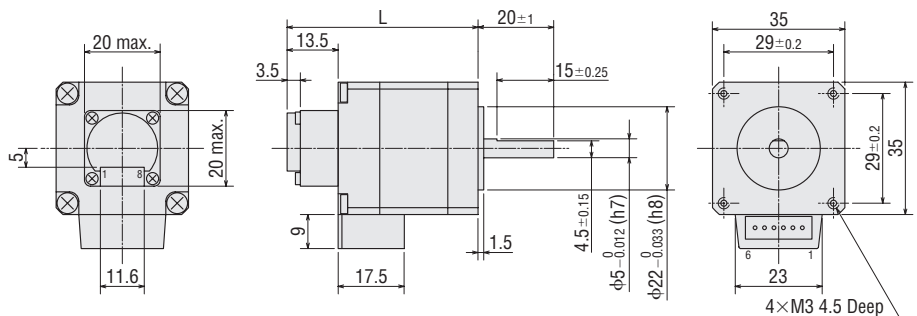
## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name    | L    | Mass kg | 2D CAD |
|-----------------|------|---------|--------|
| PKP233U12A-R2□L | 50.5 | 0.19    | B1102  |
| PKP235U12A-R2□L | 65.5 | 0.295   | B1103  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.



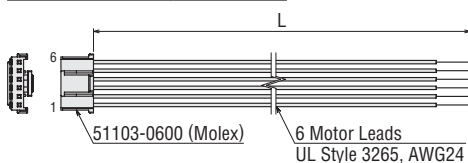
● Applicable Connector (Molex)

|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51103-0600 | 51021-0800 |
| Contact           | 50351-8100 | 50079-8100 |
| Crimping Tool     | 57295-5000 | 57177-5000 |

### Connection Cable (Sold separately)

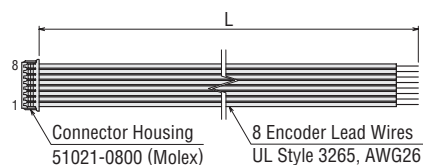
#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06B      | 0.6          |
| LC2U10B      | 1            |



#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type with Electromagnetic Brake Frame Size 35 mm (Bipolar 4 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| PKP233D15M   | 0.2                           | 36×10 <sup>-7</sup> *                 | 1.5                      | 2.43           | 1.62                          | 1.5                    | 1.8°             | 0.3                                                 |
| PKP235D15M   | 0.37                          | 62×10 <sup>-7</sup> *                 |                          | 3.6            | 2.4                           | 2.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

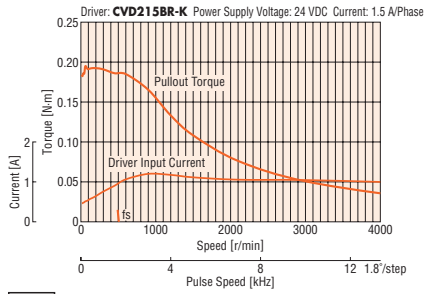
\* This value is including the electromagnetic brake inertia.

### Note

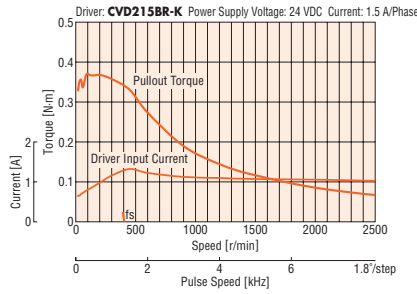
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP233D15M



PKP235D15M



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

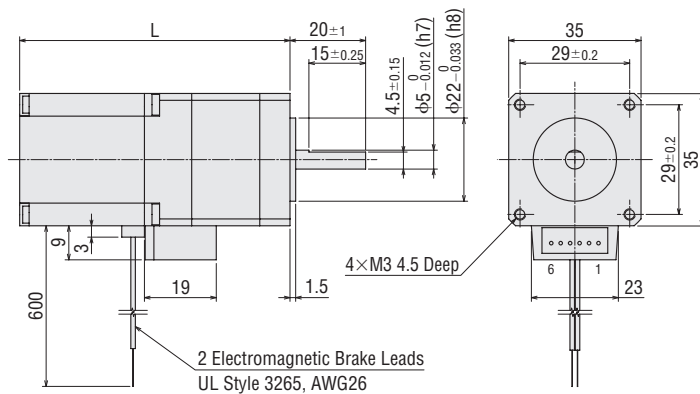
| Product Name | L  | Mass<br>kg | 2D CAD |
|--------------|----|------------|--------|
| PKP233D15M   | 71 | 0.285      | B1134  |
| PKP235D15M   | 86 | 0.39       | B1135  |

● Applicable Connector (Molex)

Connector Housing: 51103-0600

Contact: 50351-8100

Crimp Tool: 57295-5000



## Inner Wiring Diagram of Motor

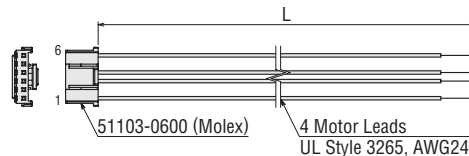
Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06B      | 0.6          |
| LC2B10B      | 1            |



# Standard Type with Electromagnetic Brake Frame Size 35 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP233U12M</b> | 0.16                          | 36×10 <sup>-7</sup> *                 | 1.2                      | 3.24           | 2.7                           | 1.4                    | 1.8°             | 0.3                                                 |
| <b>PKP235U12M</b> | 0.3                           | 62×10 <sup>-7</sup> *                 |                          | 4.08           | 3.4                           | 2                      |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

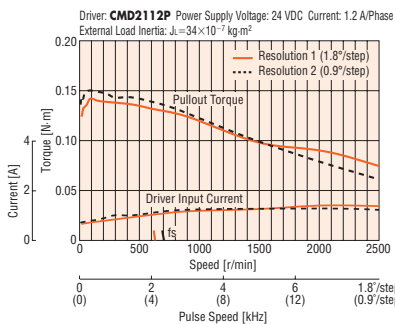
\* This value is including the electromagnetic brake inertia.

**Note**

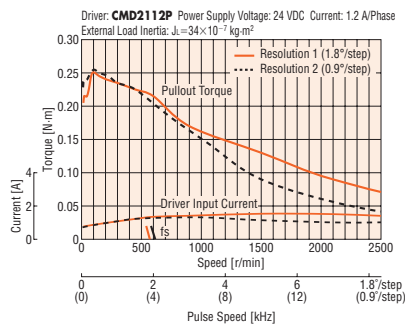
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

#### PKP233U12M



#### PKP235U12M



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

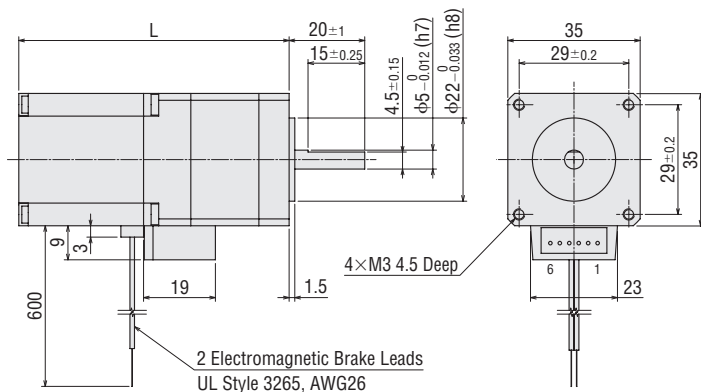
● Motor

2D & 3D CAD

| Product Name      | L  | Mass<br>kg | 2D CAD |
|-------------------|----|------------|--------|
| <b>PKP233U12M</b> | 71 | 0.285      | B1134  |
| <b>PKP235U12M</b> | 86 | 0.39       | B1135  |

● Applicable Connector (Molex)

Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000



### Inner Wiring Diagram of Motor

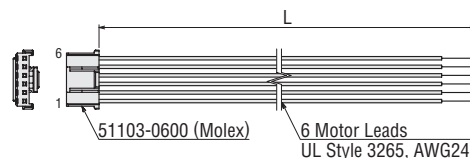
Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06B</b> | 0.6          |
| <b>LC2U10B</b> | 1            |





# Standard Type Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP243D08□2  | 0.35                       | 36×10 <sup>-7</sup>                | 0.85                  | 4.6         | 5.4                        | 10                  | 1.8°             | CVD223FBR-K                      |
| PKP243D15□2  |                            |                                    | 1.5                   | 2.7         | 1.8                        | 3.3                 |                  |                                  |
| PKP243D23□2  |                            |                                    | 2.3                   | 1.8         | 0.78                       | 1.4                 |                  |                                  |
| PKP244D08□2  | 0.48                       | 54×10 <sup>-7</sup>                | 0.85                  | 5.7         | 6.7                        | 14                  |                  |                                  |
| PKP244D15□2  |                            |                                    | 1.5                   | 3.2         | 2.1                        | 4.4                 |                  |                                  |
| PKP244D23□2  |                            |                                    | 2.3                   | 2.1         | 0.93                       | 1.9                 |                  |                                  |
| PKP245D08□2  | 0.66                       | 73×10 <sup>-7</sup>                | 0.85                  | 6           | 7.1                        | 16                  |                  |                                  |
| PKP245D15□2  |                            |                                    | 1.5                   | 3.3         | 2.2                        | 5.3                 |                  |                                  |
| PKP245D23□2  |                            |                                    | 2.3                   | 2.3         | 1                          | 2.2                 |                  |                                  |
| PKP246D15□2  | 0.99                       | 110×10 <sup>-7</sup>               | 1.5                   | 4.4         | 2.9                        | 7.9                 |                  |                                  |
| PKP246D23□2  |                            |                                    | 2.3                   | 3.2         | 1.4                        | 3.3                 |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

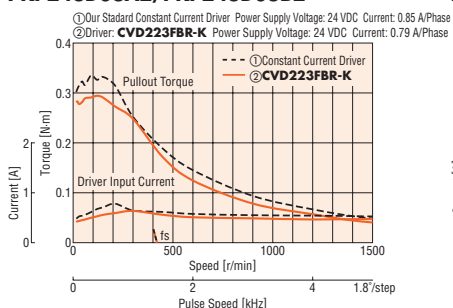
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

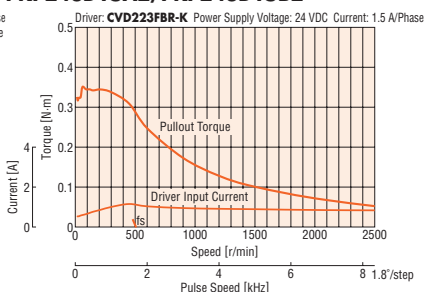
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

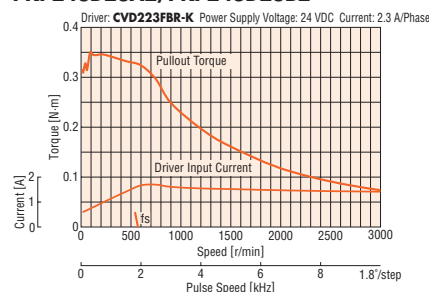
PKP243D08A2/ PKP243D08B2



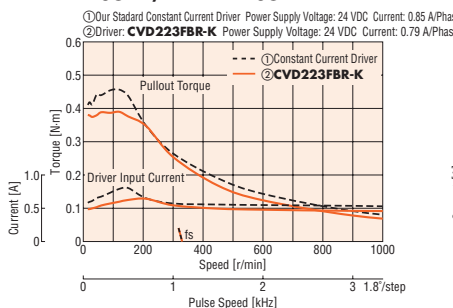
PKP243D15A2/ PKP243D15B2



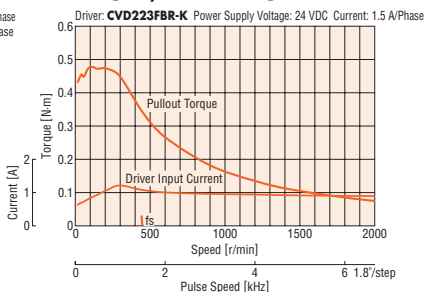
PKP243D23A2/ PKP243D23B2



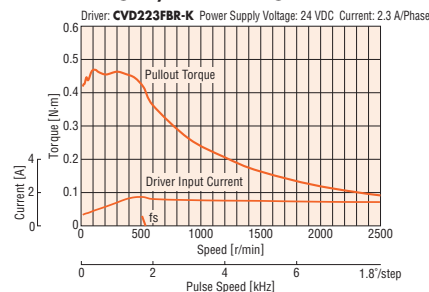
PKP244D08A2/ PKP244D08B2



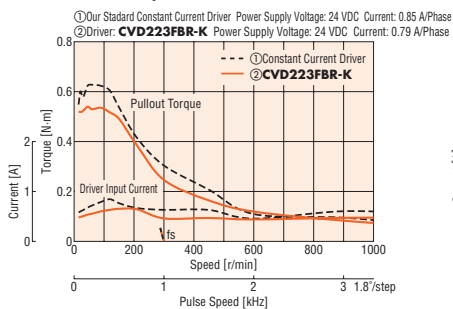
PKP244D15A2/ PKP244D15B2



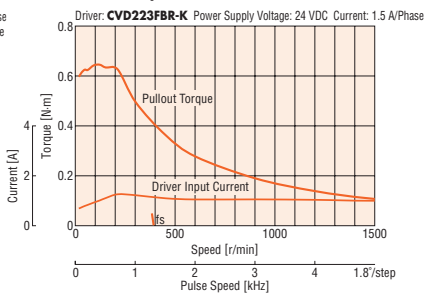
PKP244D23A2/ PKP244D23B2



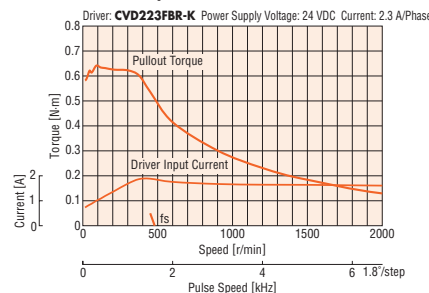
PKP245D08A2/ PKP245D08B2



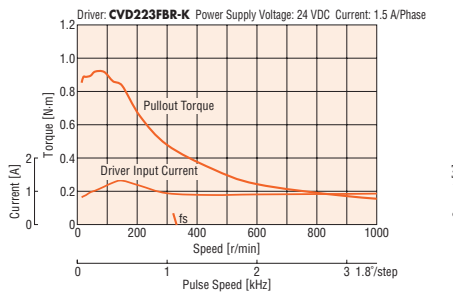
PKP245D15A2/ PKP245D15B2



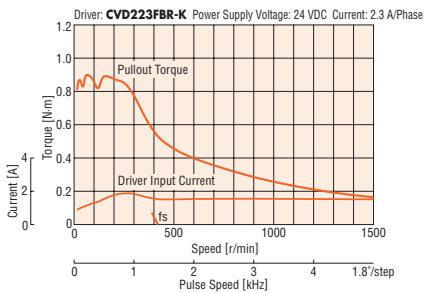
PKP245D23A2/ PKP245D23B2



PKP246D15A2/ PKP246D15B2



PKP246D23A2/ PKP246D23B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## Dimensions (Unit: mm)

### ● Motor

2D & 3D CAD

| Product Name       | L1 | L2 | Mass kg | 2D CAD |
|--------------------|----|----|---------|--------|
| <b>PKP243D08A2</b> | 33 | —  | 0.23    | B1260  |
| <b>PKP243D08B2</b> |    | 48 |         |        |
| <b>PKP243D15A2</b> |    | —  |         |        |
| <b>PKP243D15B2</b> |    | 48 |         |        |
| <b>PKP243D23A2</b> |    | —  |         |        |
| <b>PKP243D23B2</b> | 48 | —  | —       | —      |
| <b>PKP244D08A2</b> | 39 | —  | 0.3     | B1261  |
| <b>PKP244D08B2</b> |    | 54 |         |        |
| <b>PKP244D15A2</b> |    | —  |         |        |
| <b>PKP244D15B2</b> |    | 54 |         |        |
| <b>PKP244D23A2</b> |    | —  |         |        |
| <b>PKP244D23B2</b> | 54 | —  | —       | —      |
| <b>PKP245D08A2</b> | 47 | —  | 0.37    | B1262  |
| <b>PKP245D08B2</b> |    | 62 |         |        |
| <b>PKP245D15A2</b> |    | —  |         |        |
| <b>PKP245D15B2</b> |    | 62 |         |        |
| <b>PKP245D23A2</b> |    | —  |         |        |
| <b>PKP245D23B2</b> | 62 | —  | —       | —      |
| <b>PKP246D15A2</b> | 59 | —  | 0.5     | B1263  |
| <b>PKP246D15B2</b> |    | 74 |         |        |
| <b>PKP246D23A2</b> |    | —  |         |        |
| <b>PKP246D23B2</b> |    | 74 |         |        |

#### ● Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

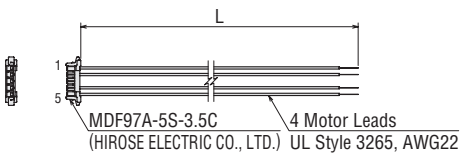
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

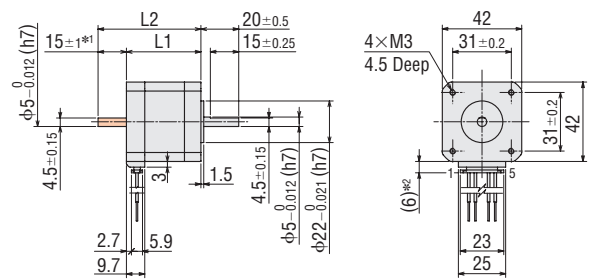
| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

# Standard Type Frame Size 42 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP243D15□   | 0.35                          | 36×10 <sup>-7</sup>                   | 1.5                      | 2.85           | 1.9                           | 5                      | 1.8°             | CVD215BR-K                          |
| PKP243D23□   |                               |                                       | 2.3                      | 1.93           | 0.84                          | 2.1                    |                  | CVD223BR-K                          |
| PKP244D15□   | 0.48                          | 57×10 <sup>-7</sup>                   | 1.5                      | 3.9            | 2.6                           | 4.9                    |                  | CVD215BR-K                          |
| PKP244D23□   |                               |                                       | 2.3                      | 2.34           | 1.02                          | 2.1                    |                  | CVD223BR-K                          |
| PKP245D15□   | 0.58                          | 83×10 <sup>-7</sup>                   | 1.5                      | 3.6            | 2.4                           | 6.6                    |                  | CVD215BR-K                          |
| PKP245D23□   |                               |                                       | 2.3                      | 2.57           | 1.12                          | 2.9                    |                  | CVD223BR-K                          |
| PKP246D15□   | 0.93                          | 114×10 <sup>-7</sup>                  | 1.5                      | 5.8            | 3.87                          | 8                      |                  | CVD215BR-K                          |
| PKP246D23□   |                               |                                       | 2.3                      | 3.45           | 1.5                           | 3.5                    |                  | CVD223BR-K                          |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

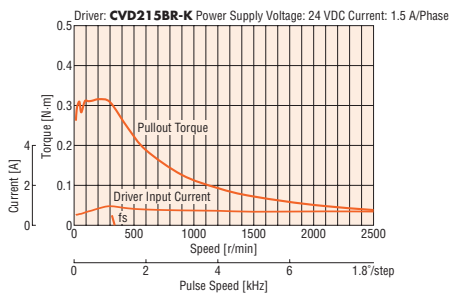
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

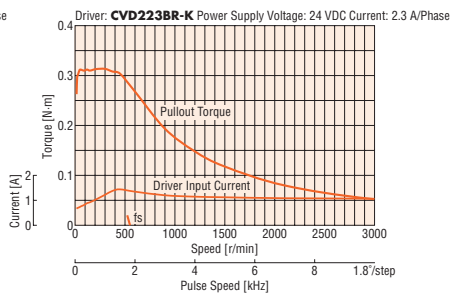
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

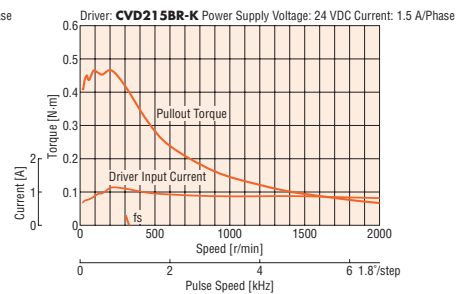
PKP243D15A/ PKP243D15B



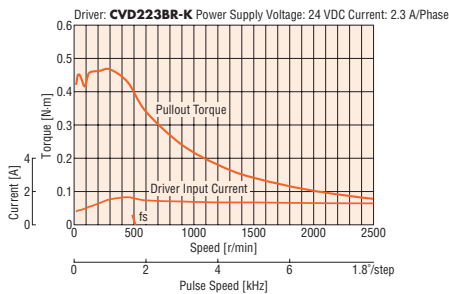
PKP243D23A/ PKP243D23B



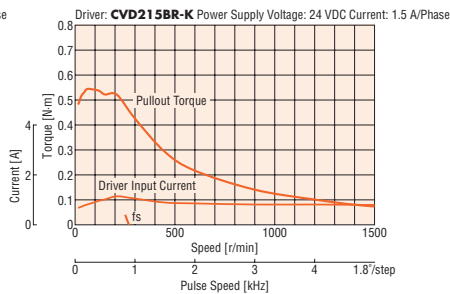
PKP244D15A/ PKP244D15B



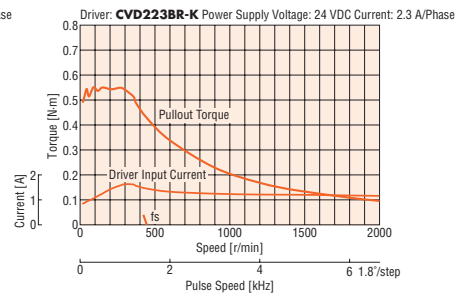
PKP244D23A/ PKP244D23B



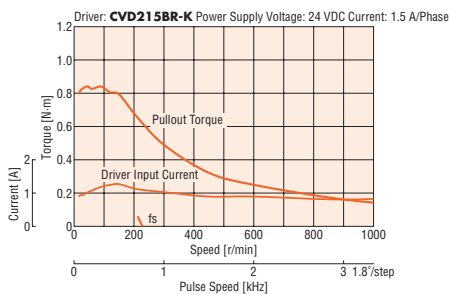
PKP245D15A/ PKP245D15B



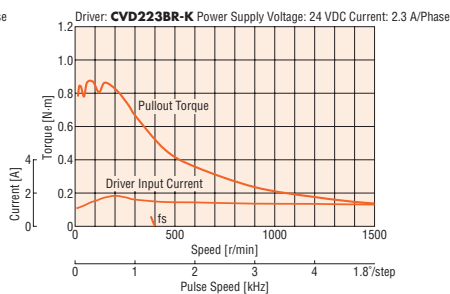
PKP245D23A/ PKP245D23B



PKP246D15A/ PKP246D15B



PKP246D23A/ PKP246D23B



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same if combined with an RS-485 communication type driver.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

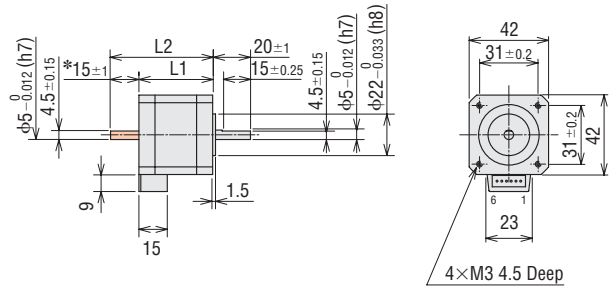
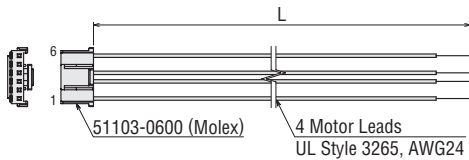
| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP243D15A   | 33 | —  | 0.25    | B968   |
| PKP243D15B   |    | 48 |         |        |
| PKP243D23A   |    | —  |         |        |
| PKP243D23B   |    | 48 |         |        |
| PKP244D15A   | 39 | —  | 0.3     | B969   |
| PKP244D15B   |    | 54 |         |        |
| PKP244D23A   |    | —  |         |        |
| PKP244D23B   |    | 54 |         |        |
| PKP245D15A   | 47 | —  | 0.39    | B970   |
| PKP245D15B   |    | 62 |         |        |
| PKP245D23A   |    | —  |         |        |
| PKP245D23B   |    | 62 |         |        |
| PKP246D15A   | 59 | —  | 0.5     | B971   |
| PKP246D15B   |    | 74 |         |        |
| PKP246D23A   |    | —  |         |        |
| PKP246D23B   |    | 74 |         |        |

- Applicable Connector (Molex)  
Connector Housing: 51103-0600 (Molex)  
Contact: 50351-8100 (Molex)  
Crimp Tool: 57295-5000 (Molex)

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06B      | 0.6          |
| LC2B10B      | 1            |



- \*The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .
- These dimensions are for double shaft motors.  
For single shaft motors, ignore the shaded areas.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

- Refer to the motor inner wiring page for an inner wiring diagram of the motor.

# Standard Type Frame Size 42 mm (Unipolar 5 lead wires)

## Mini-Connector Type

### Specifications

| Product Name       | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| <b>PKP243U08□2</b> | 0.26                       | 36×10 <sup>-7</sup>                | 0.8                   | 5.3         | 6.6                        | 5.3                 | 1.8°             | <b>CMD2109P</b>                  |
| <b>PKP243U09□2</b> |                            |                                    | 0.95                  | 4.5         | 4.7                        | 3.7                 |                  | <b>CMD2109P</b>                  |
| <b>PKP243U12□2</b> |                            |                                    | 1.2                   | 3.2         | 2.7                        | 2.4                 |                  | <b>CMD2112P</b>                  |
| <b>PKP244U08□2</b> | 0.39                       | 54×10 <sup>-7</sup>                | 0.8                   | 7.1         | 8.9                        | 8.4                 |                  | <b>CMD2109P</b>                  |
| <b>PKP244U12□2</b> |                            |                                    | 1.2                   | 4.8         | 4                          | 3.7                 |                  | <b>CMD2112P</b>                  |
| <b>PKP245U08□2</b> | 0.49                       | 73×10 <sup>-7</sup>                | 0.8                   | 6.4         | 8                          | 8.3                 |                  | <b>CMD2109P</b>                  |
| <b>PKP245U12□2</b> |                            |                                    | 1.2                   | 3.8         | 3.2                        | 3.7                 |                  | <b>CMD2112P</b>                  |
| <b>PKP246U12□2</b> | 0.75                       | 110×10 <sup>-7</sup>               | 1.2                   | 6.1         | 5.1                        | 6                   |                  | <b>CMD2112P</b>                  |
| <b>PKP246U16□2</b> |                            |                                    | 1.6                   | 4.5         | 2.8                        | 3.3                 |                  | <b>CMD2120P</b>                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

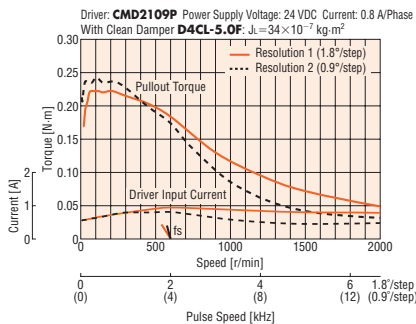
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

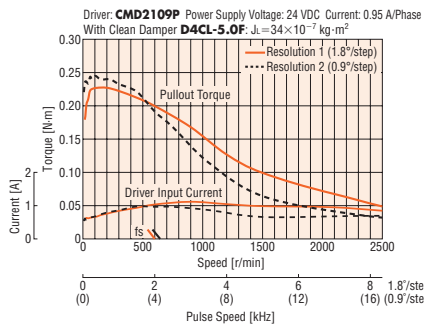
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

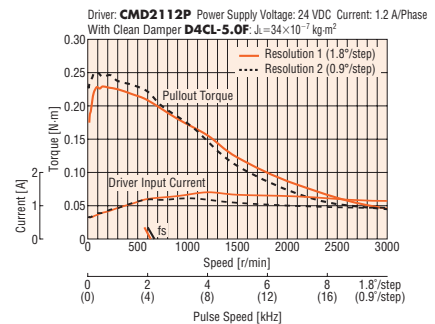
#### PKP243U08A2/ PKP243U08B2



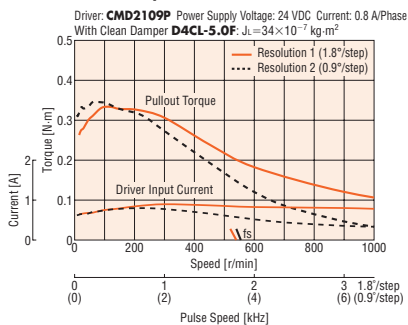
#### PKP243U09A2/ PKP243U09B2



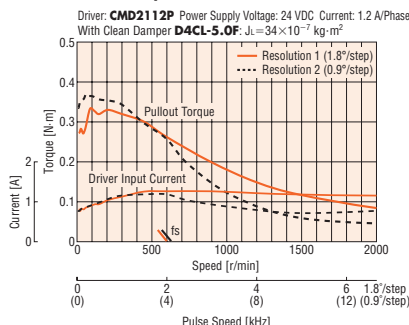
#### PKP243U12A2/ PKP243U12B2



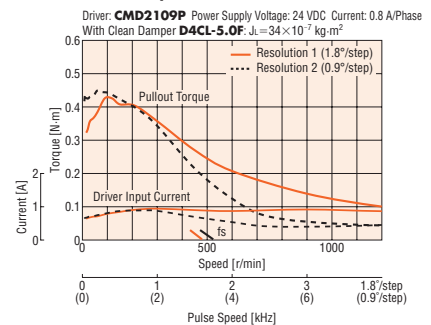
#### PKP244U08A2/ PKP244U08B2



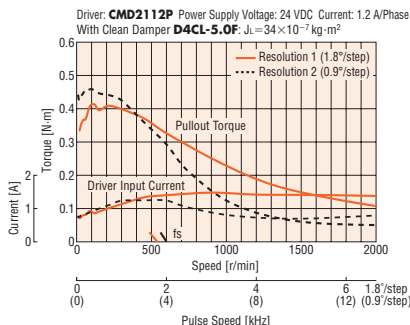
#### PKP244U12A2/ PKP244U12B2



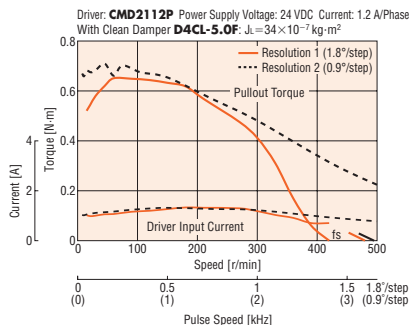
#### PKP245U08A2/ PKP245U08B2



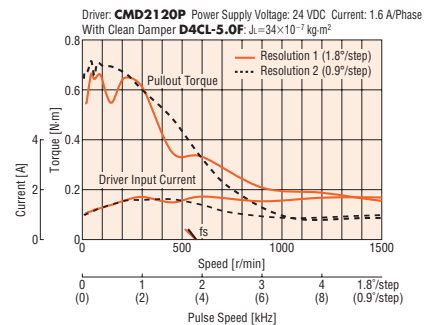
#### PKP245U12A2/ PKP245U12B2



#### PKP246U12A2/ PKP246U12B2



#### PKP246U16A2/ PKP246U16B2



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Dimensions (Unit: mm)

### ● Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP243U08A2  | 33 | —  | 0.23    | B1335  |
| PKP243U08B2  |    | 48 |         |        |
| PKP243U09A2  |    | —  |         |        |
| PKP243U09B2  |    | 48 |         |        |
| PKP243U12A2  |    | —  |         |        |
| PKP243U12B2  | 48 | —  | —       | —      |
| PKP244U08A2  | 39 | —  | 0.3     | B1336  |
| PKP244U08B2  |    | 54 |         |        |
| PKP244U12A2  |    | —  |         |        |
| PKP244U12B2  |    | 54 |         |        |
| PKP245U08A2  |    | 47 |         |        |
| PKP245U08B2  | 62 |    |         |        |
| PKP245U12A2  | —  |    |         |        |
| PKP245U12B2  | 62 |    |         |        |
| PKP246U12A2  | 59 |    | —       | 0.5    |
| PKP246U12B2  |    | 74 |         |        |
| PKP246U16A2  |    | —  |         |        |
| PKP246U16B2  |    | 74 |         |        |

#### ● Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

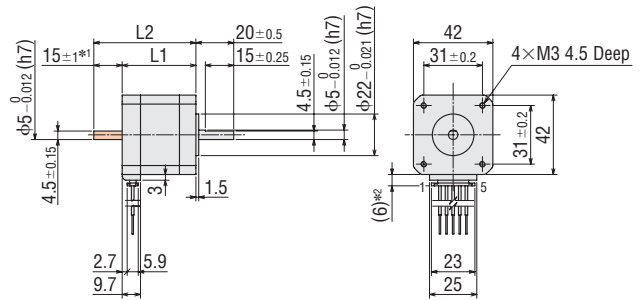
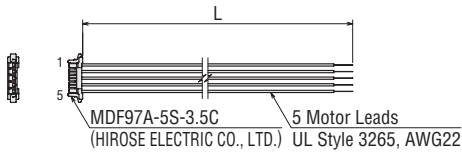
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# Standard Type Frame Size 42 mm (Unipolar 6 lead wires)

## Connector Type

## Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP243U04□   | 0.25                       | 36×10 <sup>-7</sup>                | 0.4                   | 12          | 30                         | 33                  | 1.8°             | <b>CMD2109P</b>                  |
| PKP243U06□   |                            |                                    | 0.6                   | 6.6         | 11                         | 12.4                |                  |                                  |
| PKP243U09□   |                            |                                    | 0.95                  | 4.47        | 4.7                        | 5                   |                  |                                  |
| PKP244U04□   | 0.36                       | 57×10 <sup>-7</sup>                | 0.4                   | 12          | 30                         | 28.6                |                  | <b>CMD2109P</b>                  |
| PKP244U08□   |                            |                                    | 0.8                   | 5.76        | 7.2                        | 7.6                 |                  |                                  |
| PKP244U12□   |                            |                                    | 1.2                   | 4.8         | 4                          | 3.9                 |                  |                                  |
| PKP245U05□   | 0.45                       | 83×10 <sup>-7</sup>                | 0.5                   | 12          | 24                         | 33                  |                  | <b>CMD2109P</b>                  |
| PKP245U08□   |                            |                                    | 0.8                   | 6.4         | 8                          | 11.3                |                  |                                  |
| PKP245U12□   |                            |                                    | 1.2                   | 4.56        | 3.8                        | 5                   |                  |                                  |
| PKP246U12□   | 0.75                       | 114×10 <sup>-7</sup>               | 1.2                   | 7.2         | 6                          | 6.5                 | <b>CMD2112P</b>  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

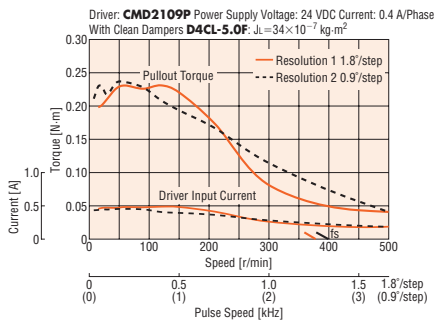
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

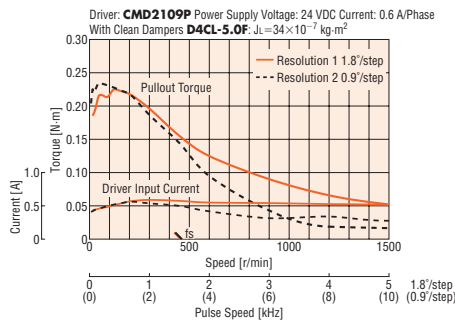
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

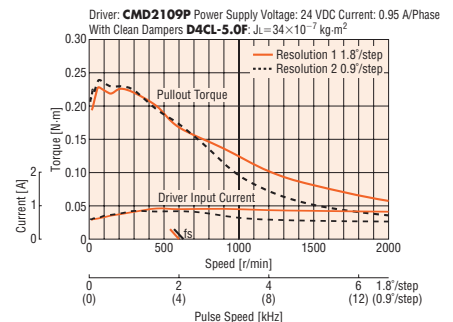
### PKP243U04A/ PKP243U04B



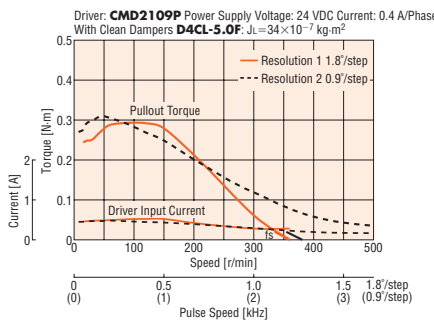
### PKP243U06A/ PKP243U06B



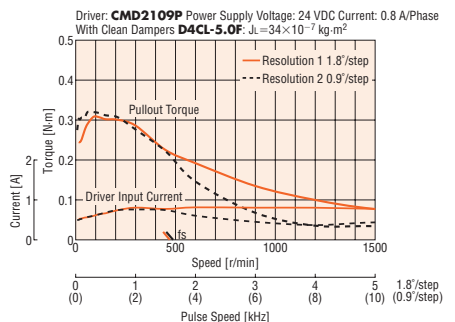
### PKP243U09A/ PKP243U09B



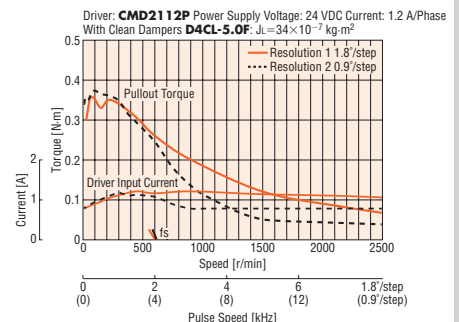
### PKP244U04A/ PKP244U04B



### PKP244U08A/ PKP244U08B



### PKP244U12A/ PKP244U12B



### Note

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

● If there is a "clean damper" entry in the speed - torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

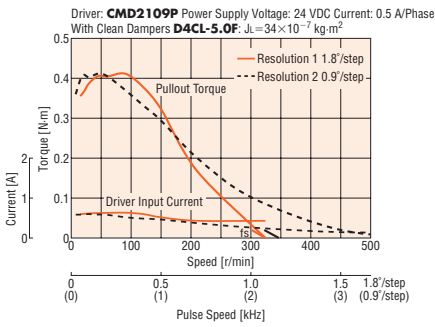
61 mm

85 mm

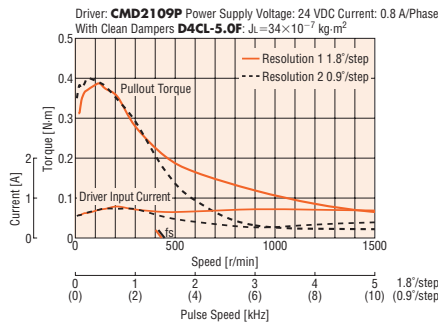
90 mm

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

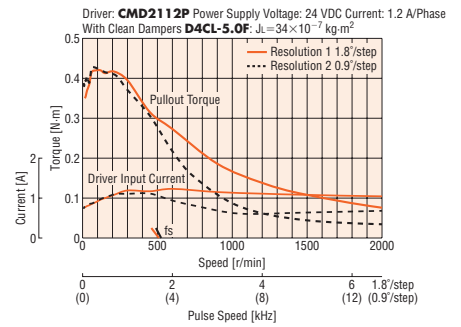
**PKP245U05A/PKP245U05B**



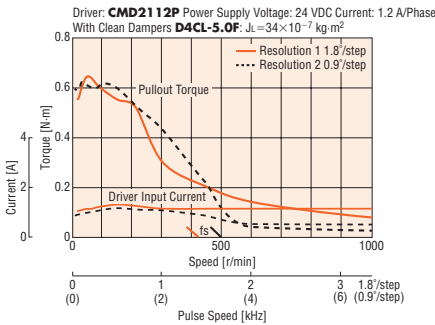
**PKP245U08A/PKP245U08B**



**PKP245U12A/PKP245U12B**



**PKP246U12A/PKP246U12B**



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor’s internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a “clean damper” entry in the speed - torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

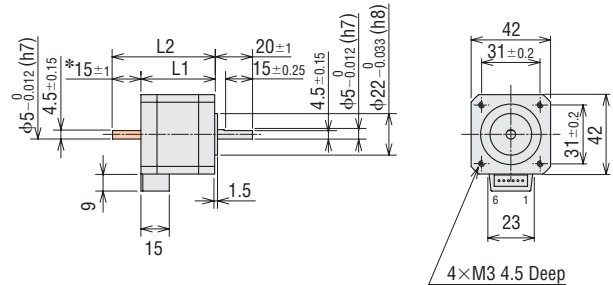
## Dimensions (Unit: mm)

● Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP243U04A   | 33 | —  | 0.25    | B968   |
| PKP243U04B   |    | 48 |         |        |
| PKP243U06A   |    | —  |         |        |
| PKP243U06B   |    | 48 |         |        |
| PKP243U09A   |    | —  |         |        |
| PKP243U09B   | 48 | 39 | 0.3     | B969   |
| PKP244U04A   | —  |    |         |        |
| PKP244U04B   | 54 |    |         |        |
| PKP244U08A   | —  |    |         |        |
| PKP244U08B   | 54 |    |         |        |
| PKP244U12A   | 47 | —  | 0.39    | B970   |
| PKP244U12B   |    | 54 |         |        |
| PKP245U05A   |    | —  |         |        |
| PKP245U05B   |    | 62 |         |        |
| PKP245U08A   |    | —  |         |        |
| PKP245U08B   | 62 | 59 | 0.5     | B971   |
| PKP245U12A   | —  |    |         |        |
| PKP245U12B   | 62 |    |         |        |
| PKP246U12A   | 59 | —  | 0.5     | B971   |
| PKP246U12B   |    | 74 |         |        |

- Applicable Connector (Molex)  
Connector Housing: 51103-0600 (Molex)  
Contact: 50351-8100 (Molex)  
Crimp Tool: 57295-5000 (Molex)

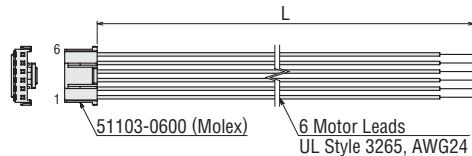


- \* The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .
- These dimensions are for double shaft motors.  
For single shaft motors, ignore the shaded areas.

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06B      | 0.6          |
| LC2U10B      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

- Refer to the motor inner wiring page for an inner wiring diagram of the motor.

# Standard Type with Encoder Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name   | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|----------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP243D08A2-R3 | 0.35                       | 37×10 <sup>-7</sup>                | 0.85                  | 4.6         | 5.4                        | 10                  | 1.8°             | CVD223FBR-K                      |
| PKP243D15A2-R3 |                            |                                    | 1.5                   | 2.7         | 1.8                        | 3.3                 |                  |                                  |
| PKP243D23A2-R3 |                            |                                    | 2.3                   | 1.8         | 0.78                       | 1.4                 |                  |                                  |
| PKP244D08A2-R3 | 0.48                       | 55×10 <sup>-7</sup>                | 0.85                  | 5.7         | 6.7                        | 14                  |                  |                                  |
| PKP244D15A2-R3 |                            |                                    | 1.5                   | 3.2         | 2.1                        | 4.4                 |                  |                                  |
| PKP244D23A2-R3 |                            |                                    | 2.3                   | 2.1         | 0.93                       | 1.9                 |                  |                                  |
| PKP245D08A2-R3 | 0.66                       | 74×10 <sup>-7</sup>                | 0.85                  | 6           | 7.1                        | 16                  |                  |                                  |
| PKP245D15A2-R3 |                            |                                    | 1.5                   | 3.3         | 2.2                        | 5.3                 |                  |                                  |
| PKP245D23A2-R3 |                            |                                    | 2.3                   | 2.3         | 1                          | 2.2                 |                  |                                  |
| PKP246D15A2-R3 | 0.99                       | 111×10 <sup>-7</sup>               | 1.5                   | 4.4         | 2.9                        | 7.9                 |                  |                                  |
| PKP246D23A2-R3 |                            |                                    | 2.3                   | 3.2         | 1.4                        | 3.3                 |                  |                                  |

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box ◻ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ◼ is located in the product name. For voltage output, there is no letter in the ◼ box.

● Refer to the common specifications page for encoder specifications.

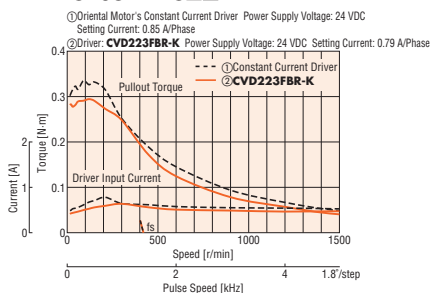
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

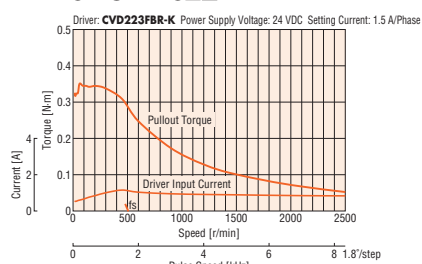
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

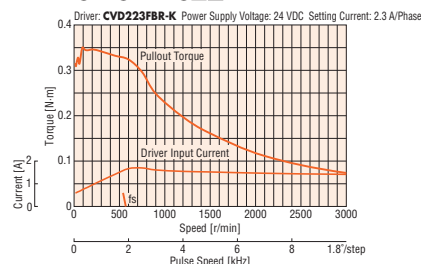
#### PKP243D08A2-R3



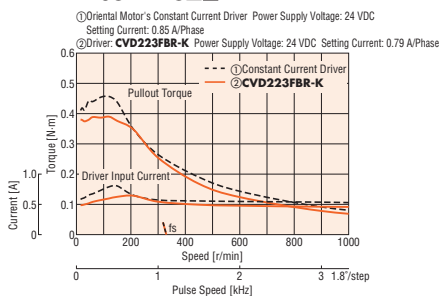
#### PKP243D15A2-R3



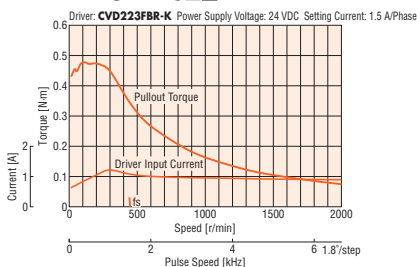
#### PKP243D23A2-R3



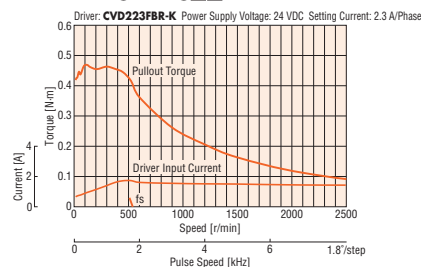
#### PKP244D08A2-R3



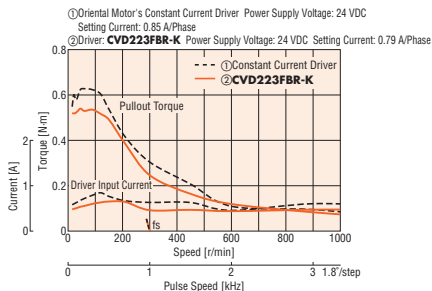
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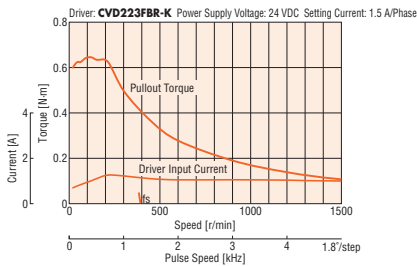
#### PKP244D23A2-R3



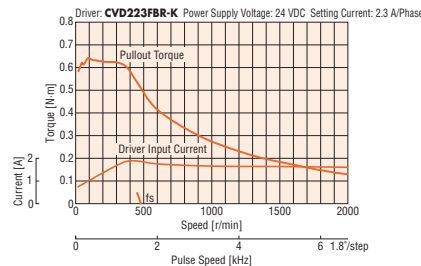
#### PKP245D08A2-R3



#### PKP245D15A2-R3



#### PKP245D23A2-R3



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box ◻ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ◼ is located in the product name. For voltage output, there is no letter in the ◼ box.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

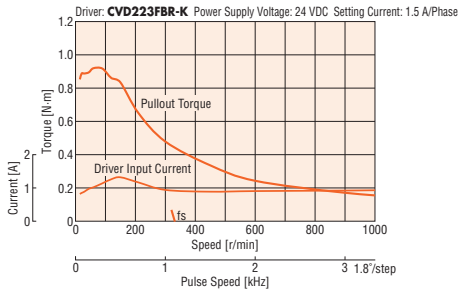
Cables

Peripheral Equipment

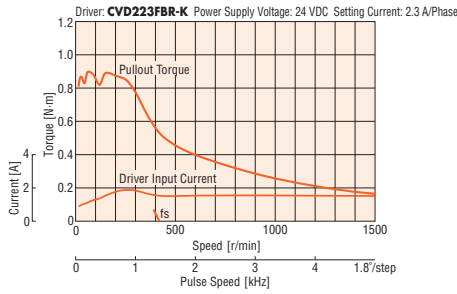
- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP246D15A2-R3 □ □



PKP246D23A2-R3 □ □



**Note**

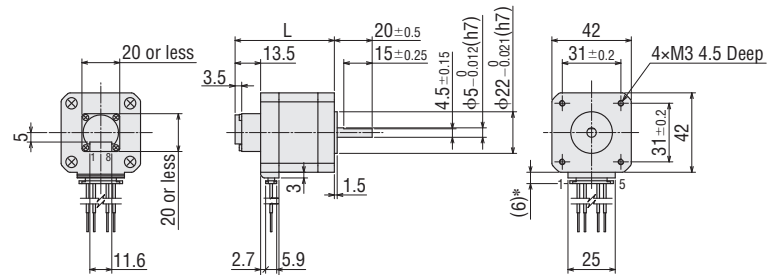
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit = mm)

● Motor

2D & 3D CAD

| Product Name       | L    | Mass kg | 2D CAD |
|--------------------|------|---------|--------|
| PKP243D08A2-R3 □ □ | 46.5 | 0.25    | B1321  |
| PKP243D15A2-R3 □ □ |      |         |        |
| PKP243D23A2-R3 □ □ |      |         |        |
| PKP244D08A2-R3 □ □ | 52.5 | 0.32    | B1322  |
| PKP244D15A2-R3 □ □ |      |         |        |
| PKP244D23A2-R3 □ □ |      |         |        |
| PKP245D08A2-R3 □ □ | 60.5 | 0.39    | B1323  |
| PKP245D15A2-R3 □ □ |      |         |        |
| PKP245D23A2-R3 □ □ |      |         |        |
| PKP246D15A2-R3 □ □ | 72.5 | 0.52    | B1324  |
| PKP246D23A2-R3 □ □ |      |         |        |



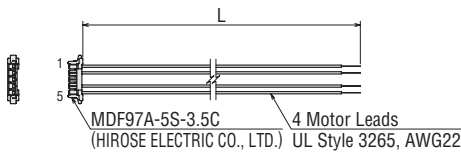
● Applicable Connector (Molex)

|                   | Motor (HIROSE ELECTRIC CO., LTD.) | Encoder (Molex) |
|-------------------|-----------------------------------|-----------------|
| Connector Housing | MDF97A-5S-3.5C                    | 51021-0800      |
| Contact           | MDF97-22SC                        | 50079-8100      |
| Crimp Tool        | HT801/MDF97-22S                   | 57177-5000      |

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



◇ Encoder Connection Cable

● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.  
 A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.  
 A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box □ is located in the product name. For voltage output, there is no letter in the □ box.

# Standard Type with Encoder Frame Size 42 mm (Unipolar 5 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name     | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|------------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP243U08A2-R2□L | 0.26                       | 36×10 <sup>-7</sup>                | 0.8                   | 5.3         | 6.6                        | 5.3                 | 1.8°             | CMD2109P                         |
| PKP243U09A2-R2□L |                            |                                    | 0.95                  | 4.5         | 4.7                        | 3.7                 |                  | CMD2109P                         |
| PKP243U12A2-R2□L |                            |                                    | 1.2                   | 3.2         | 2.7                        | 2.4                 |                  | CMD2112P                         |
| PKP244U08A2-R2□L | 0.39                       | 54×10 <sup>-7</sup>                | 0.8                   | 7.1         | 8.9                        | 8.4                 |                  | CMD2109P                         |
| PKP244U12A2-R2□L |                            |                                    | 1.2                   | 4.8         | 4                          | 3.7                 |                  | CMD2112P                         |
| PKP245U08A2-R2□L |                            |                                    | 0.8                   | 6.4         | 8                          | 8.3                 |                  | CMD2109P                         |
| PKP245U12A2-R2□L | 0.49                       | 73×10 <sup>-7</sup>                | 1.2                   | 3.8         | 3.2                        | 3.7                 |                  | CMD2112P                         |
| PKP246U12A2-R2□L |                            |                                    | 1.2                   | 6.1         | 5.1                        | 6                   |                  | CMD2112P                         |
| PKP246U16A2-R2□L |                            |                                    | 1.6                   | 4.5         | 2.8                        | 3.3                 |                  | CMD2120P                         |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● See "Common Specifications" page for encoder specifications.

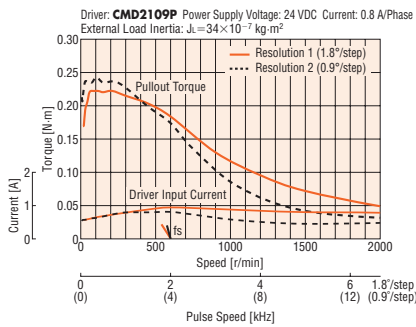
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

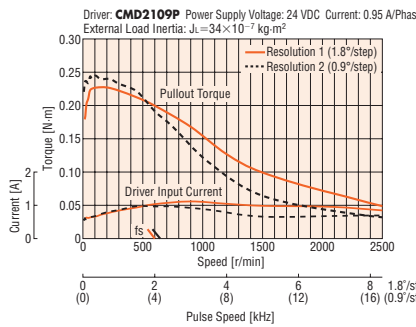
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

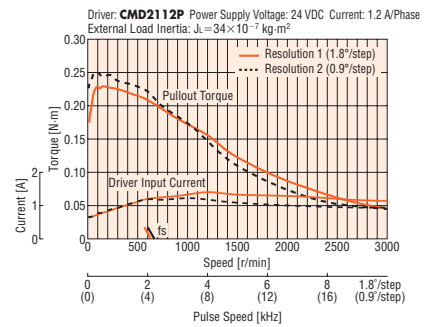
### PKP243U08A2-R2EL/PKP243U08A2-R2FL



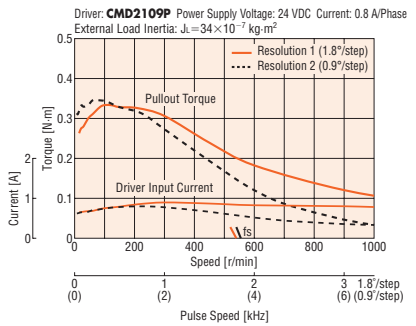
### PKP243U09A2-R2EL/PKP243U09A2-R2FL



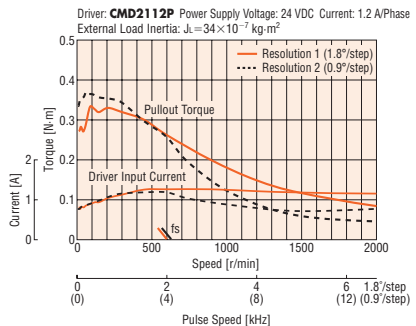
### PKP243U12A2-R2EL/PKP243U12A2-R2FL



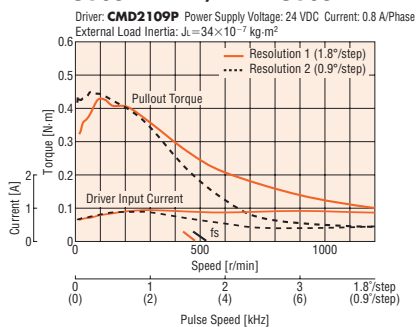
### PKP244U08A2-R2EL/PKP244U08A2-R2FL



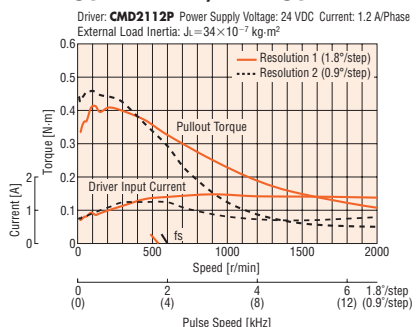
### PKP244U12A2-R2EL/PKP244U12A2-R2FL



### PKP245U08A2-R2EL/PKP245U08A2-R2FL



### PKP245U12A2-R2EL/PKP245U12A2-R2FL



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

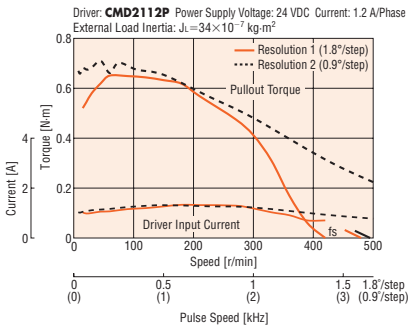
61 mm

85 mm

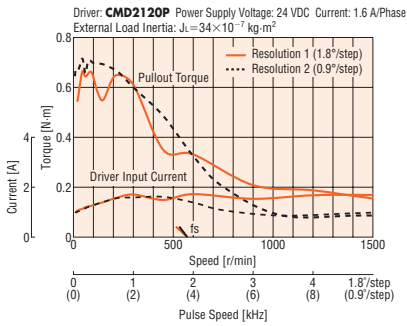
90 mm

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP246U12A2-R2EL/PKP246U12A2-R2FL



### PKP246U16A2-R2EL/PKP246U16A2-R2FL



#### Note

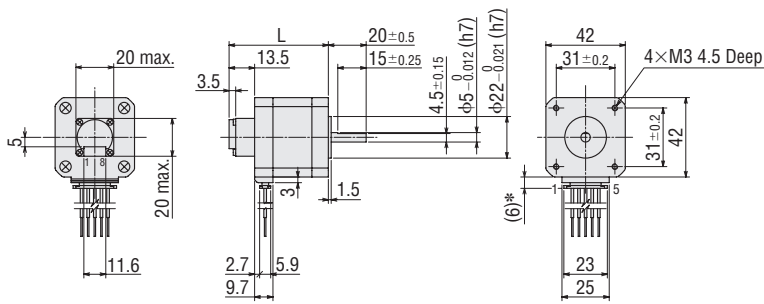
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name     | L    | Mass kg | 2D CAD |
|------------------|------|---------|--------|
| PKP243U08A2-R2□L |      |         |        |
| PKP243U09A2-R2□L | 46.5 | 0.24    | B1328  |
| PKP243U12A2-R2□L |      |         |        |
| PKP244U08A2-R2□L | 52.5 | 0.31    | B1329  |
| PKP244U12A2-R2□L |      |         |        |
| PKP245U08A2-R2□L | 60.5 | 0.38    | B1330  |
| PKP245U12A2-R2□L |      |         |        |
| PKP246U12A2-R2□L | 72.5 | 0.51    | B1331  |
| PKP246U16A2-R2□L |      |         |        |



※With connection cable

- Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

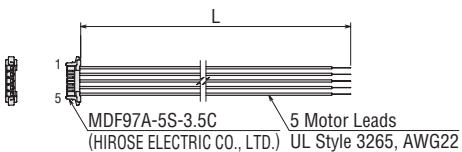
#### Applicable Connector

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimping Tool     | HT801/MDF97-22S                      | 57177-5000         |

### Connection Cable (Sold separately)

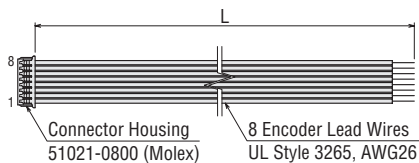
#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# Standard Type with Electromagnetic Brake Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| PKP243D23M2  | 0.35                          | 48×10 <sup>-7</sup> *                 | 2.3                      | 1.8            | 0.78                          | 1.4                    | 1.8°             | 0.3                                                 |
| PKP244D23M2  | 0.48                          | 66×10 <sup>-7</sup> *                 |                          | 2.1            | 0.93                          | 1.9                    |                  |                                                     |
| PKP245D23M2  | 0.66                          | 85×10 <sup>-7</sup> *                 |                          | 2.3            | 1                             | 2.2                    |                  |                                                     |
| PKP246D23M2  | 0.99                          | 120×10 <sup>-7</sup> *                |                          | 3.2            | 1.4                           | 3.3                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

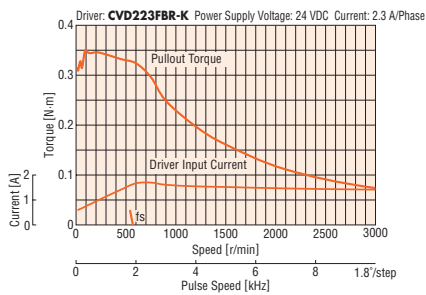
\*The Inertia of the electromagnetic brake is included in the value.

### Note

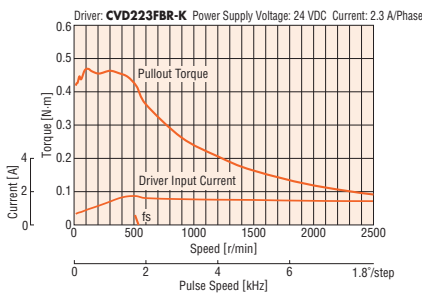
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

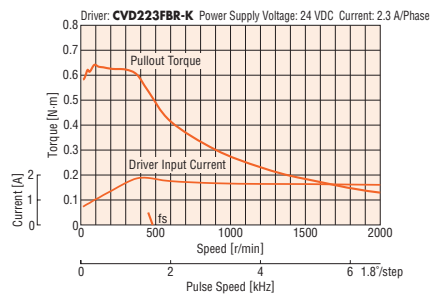
### PKP243D23M2



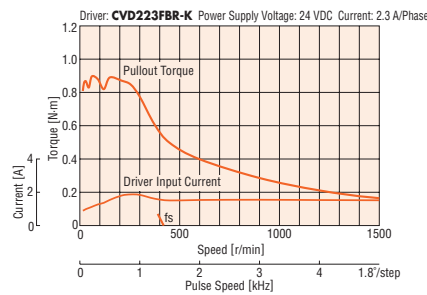
### PKP244D23M2



### PKP245D23M2



### PKP246D23M2



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

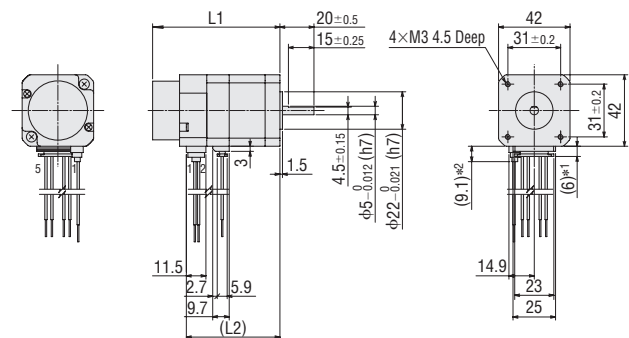
### Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP243D23M2  | 69 | 49 | 0.33       | B1435  |
| PKP244D23M2  | 75 | 55 | 0.40       | B1436  |
| PKP245D23M2  | 83 | 63 | 0.47       | B1437  |
| PKP246D23M2  | 95 | 75 | 0.60       | B1438  |

● Applicable Connector

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Electromagnetic Brake<br>(HIROSE ELECTRIC CO., LTD.) |
|-------------------|--------------------------------------|------------------------------------------------------|
| Connector Housing | MDF97A-5S-3.5C                       | DF62C-2S-2.2C                                        |
| Contact           | MDF97-22SC                           | DF62-22SCA                                           |
| Crimping Tool     | HT801/MDF97-22S                      | HT801/DF62-22(10)                                    |



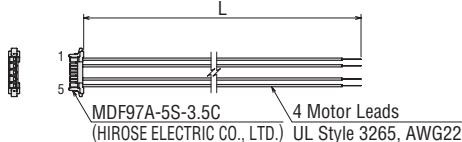
\*1 With connection cable

\*2 With electromagnetic brake connection cable

### Connection Cable (Sold separately)

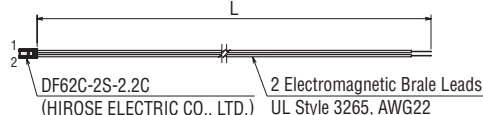
#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



#### Electromagnetic Brake Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCM02A-006   | 0.6          |
| LCM02A-010   | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type with Electromagnetic Brake Frame Size 42 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP243U09M</b> | 0.25                          | 48×10 <sup>-7</sup> *                 | 0.95                     | 4.47           | 4.7                           | 5                      | 1.8°             | 0.3                                                 |
| <b>PKP244U12M</b> | 0.39                          | 69×10 <sup>-7</sup> *                 | 1.2                      | 4.8            | 4                             | 3.9                    |                  |                                                     |
| <b>PKP245U12M</b> | 0.45                          | 95×10 <sup>-7</sup> *                 |                          | 4.56           | 3.8                           | 5                      |                  |                                                     |
| <b>PKP246U12M</b> | 0.75                          | 126×10 <sup>-7</sup> *                |                          | 7.2            | 6                             | 6.5                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

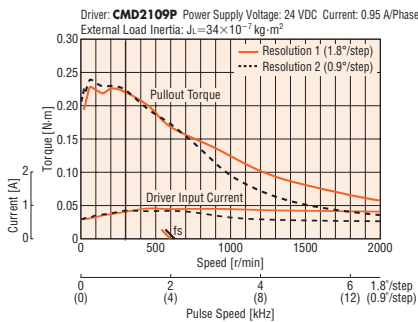
\*This value is including the electromagnetic brake inertia.

**Note**

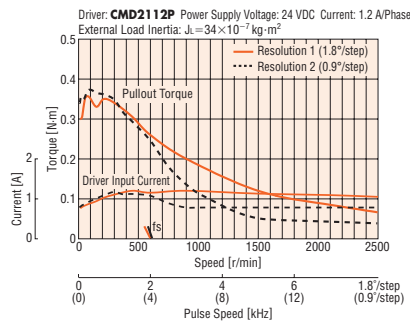
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

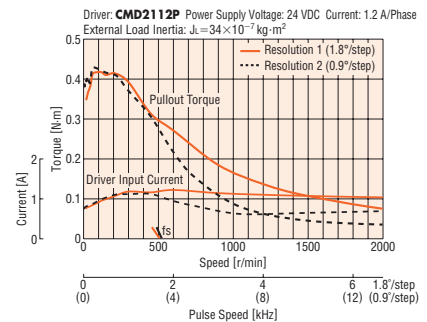
#### PKP243U09M



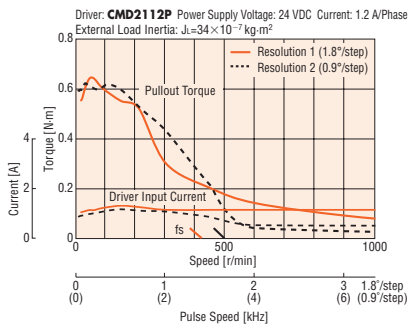
#### PKP244U12M



#### PKP245U12M



#### PKP246U12M



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

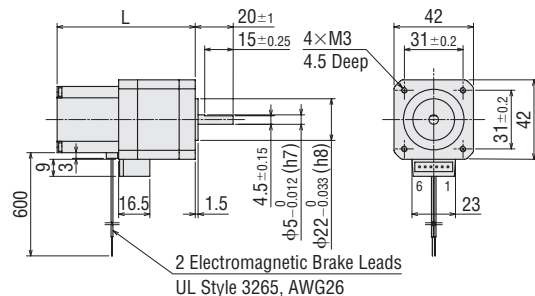
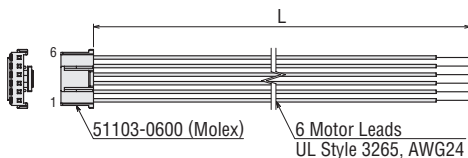
| Product Name      | L  | Mass<br>kg | 2D CAD |
|-------------------|----|------------|--------|
| <b>PKP243U09M</b> | 67 | 0.36       | B1136  |
| <b>PKP244U12M</b> | 73 | 0.41       | B1137  |
| <b>PKP245U12M</b> | 81 | 0.5        | B1138  |
| <b>PKP246U12M</b> | 93 | 0.61       | B1139  |

- Applicable Connector (Molex)  
Connector Housing: 51103-0600  
Contact: 50351-8100  
Crimp Tool: 57295-5000

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06B</b> | 0.6          |
| <b>LC2U10B</b> | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 50 mm (Bipolar 4 lead wires) Mini-Connector Type

## Specifications

| Product Name                 | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|------------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| <b>PKP254D28</b> □ <b>A2</b> | 0.63                          | 120×10 <sup>-7</sup>                  | 2.8                      | 1.5            | 0.55                          | 1.1                    | 1.8°             | <b>CVD228BR-K</b>                   |
| <b>PKP256D28</b> □ <b>A2</b> | 1.08                          | 220×10 <sup>-7</sup>                  |                          | 2              | 0.7                           | 1.6                    |                  |                                     |
| <b>PKP258D28</b> □ <b>A2</b> | 1.99                          | 450×10 <sup>-7</sup>                  |                          | 3.1            | 1.1                           | 2.8                    |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

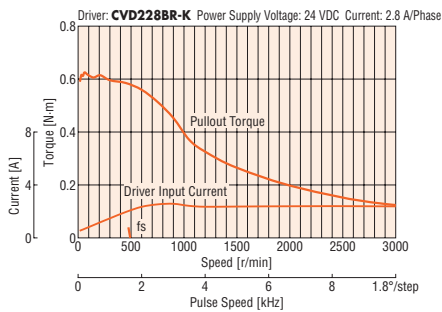
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

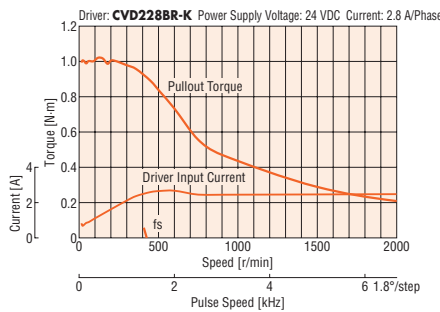
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

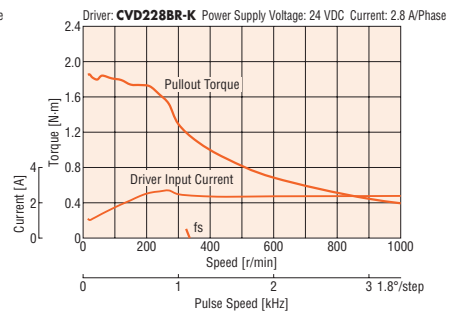
**PKP254D28AA2/ PKP254D28BA2**



**PKP256D28AA2/ PKP256D28BA2**



**PKP258D28AA2/ PKP258D28BA2**



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

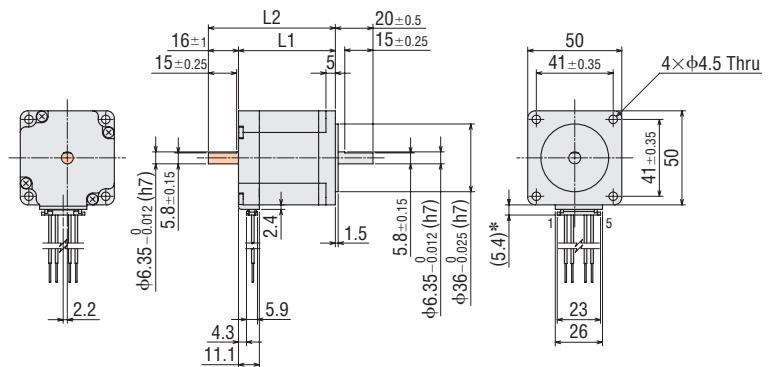
| Product Name        | L1   | L2   | Mass<br>kg | 2D CAD |
|---------------------|------|------|------------|--------|
| <b>PKP254D28AA2</b> | 39   | —    | 0.37       | B1452  |
| <b>PKP254D28BA2</b> | —    | 55   | —          | —      |
| <b>PKP256D28AA2</b> | 51.5 | —    | 0.54       | B1453  |
| <b>PKP256D28BA2</b> | —    | 67.5 | —          | —      |
| <b>PKP258D28AA2</b> | 81   | —    | 0.93       | B1454  |
| <b>PKP258D28BA2</b> | —    | 97   | —          | —      |

### Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

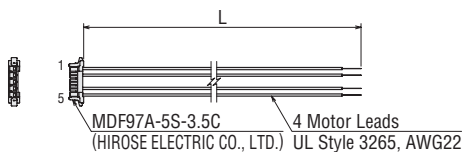
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type Frame Size 50 mm (Unipolar 5 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP254U20□A2 | 0.48                          | 120×10 <sup>-7</sup>                  | 2                        | 2.2            | 1.1                           | 1.1                    | 1.8°             | CMD2120P                         |
| PKP256U20□A2 | 0.82                          | 220×10 <sup>-7</sup>                  |                          | 2.8            | 1.4                           | 1.6                    |                  |                                  |
| PKP258U20□A2 | 1.54                          | 450×10 <sup>-7</sup>                  |                          | 4.2            | 2.1                           | 2.8                    |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

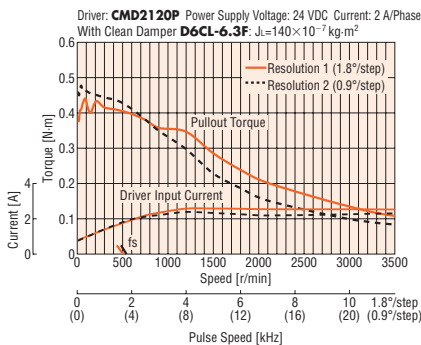
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

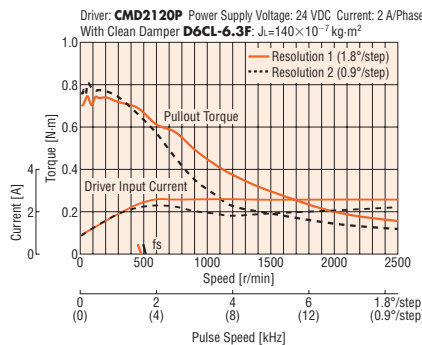
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

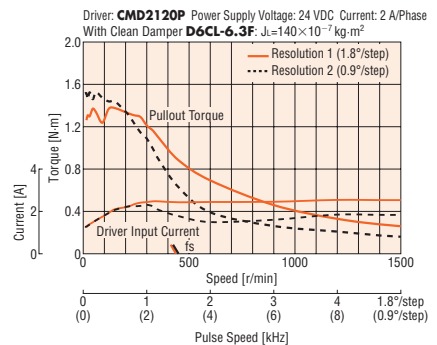
#### PKP254U20AA2/ PKP254U20BA2



#### PKP256U20AA2/ PKP256U20BA2



#### PKP258U20AA2/ PKP258U20BA2



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

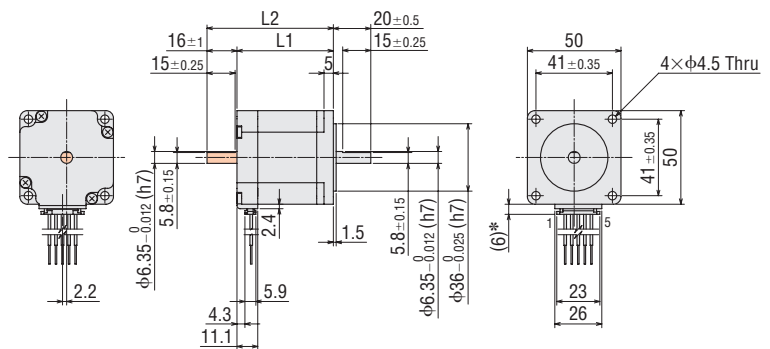
| Product Name | L1   | L2   | Mass kg | 2D CAD |
|--------------|------|------|---------|--------|
| PKP254U20AA2 | 39   | —    | 0.37    | B1455  |
| PKP254U20BA2 | —    | 55   |         |        |
| PKP256U20AA2 | 51.5 | —    | 0.54    | B1456  |
| PKP256U20BA2 |      | 67.5 |         |        |
| PKP258U20AA2 | 81   | —    | 0.93    | B1457  |
| PKP258U20BA2 |      | 97   |         |        |

#### Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

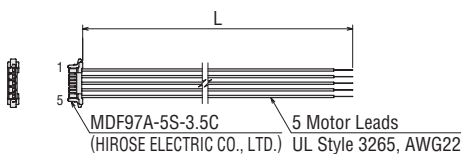
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type with Encoder Frame Size 50 mm (Bipolar 4 lead wires)

## Mini-Connector Type

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP254D28AA2-R2□L | 0.63                          | 120×10 <sup>-7</sup>                  | 2.8                      | 1.5            | 0.55                          | 1.1                    | 1.8°             | CVD228BR-K                          |
| PKP256D28AA2-R2□L | 1.08                          | 220×10 <sup>-7</sup>                  |                          | 2              | 0.7                           | 1.6                    |                  |                                     |
| PKP258D28AA2-R2□L | 1.99                          | 450×10 <sup>-7</sup>                  |                          | 3.1            | 1.1                           | 2.8                    |                  |                                     |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

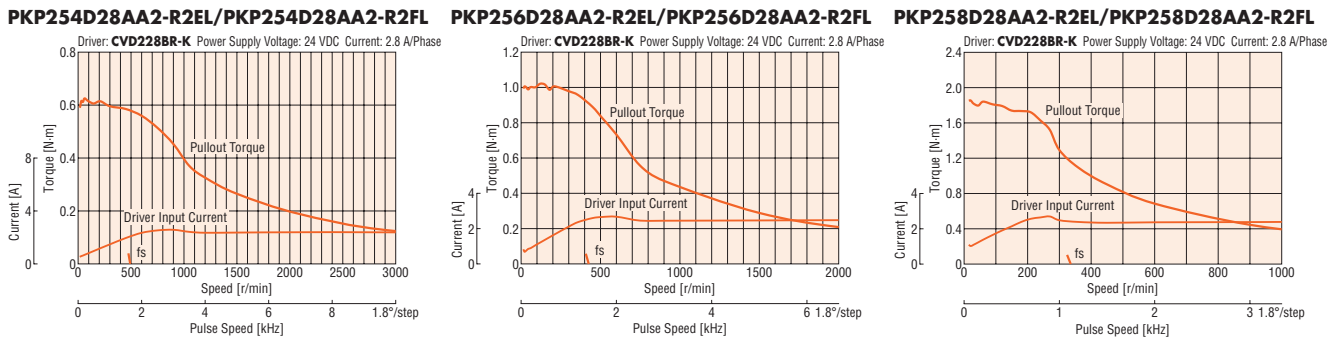
● See "Common Specifications" page for encoder specifications.

\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motor

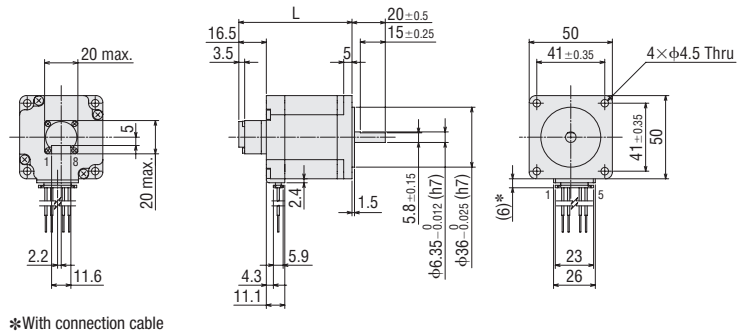
2D & 3D CAD

| Product Name      | L    | Mass<br>kg | 2D CAD |
|-------------------|------|------------|--------|
| PKP254D28AA2-R2□L | 55.5 | 0.37       | B1458  |
| PKP256D28AA2-R2□L | 68   | 0.54       | B1459  |
| PKP258D28AA2-R2□L | 97.5 | 0.93       | B1460  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

#### Applicable Connector

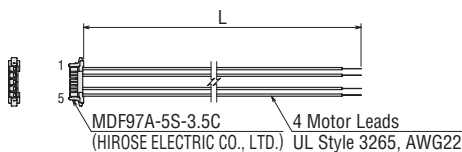
|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimping Tool     | HT801/MDF97-22S                      | 57177-5000         |



#### Connection Cable (Sold separately)

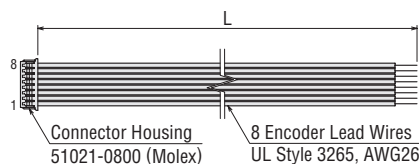
##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



##### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type With Encoder Frame Size 50 mm (Unipolar 5 lead wires)

## Mini-Connector Type

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP254U20AA2-R2□L | 0.48                          | 120×10 <sup>-7</sup>                  | 2                        | 2.2            | 1.1                           | 1.1                    | 1.8°             | CMD2120P                         |
| PKP256U20AA2-R2□L | 0.82                          | 220×10 <sup>-7</sup>                  |                          | 2.8            | 1.4                           | 1.6                    |                  |                                  |
| PKP258U20AA2-R2□L | 1.54                          | 450×10 <sup>-7</sup>                  |                          | 4.2            | 2.1                           | 2.8                    |                  |                                  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● See "Common Specifications" page for encoder specifications.

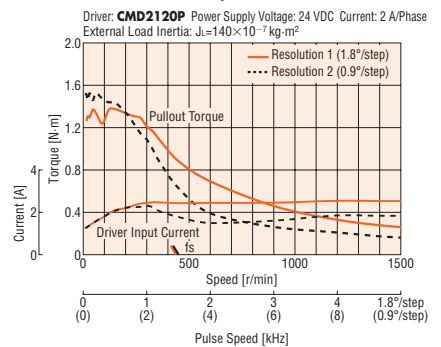
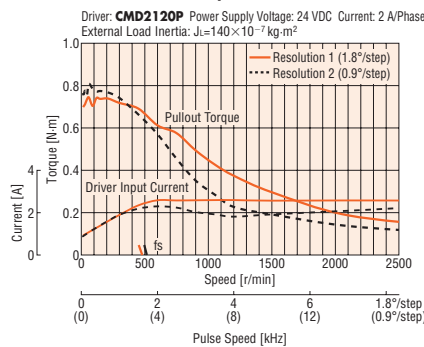
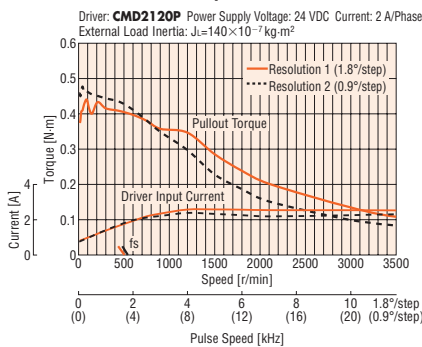
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP254U20AA2-R2EL/PKP254U20AA2-R2FL PKP256U20AA2-R2EL/PKP256U20AA2-R2FL PKP258U20AA2-R2EL/PKP258U20AA2-R2FL



#### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

### Dimensions (Unit: mm)

#### Motor

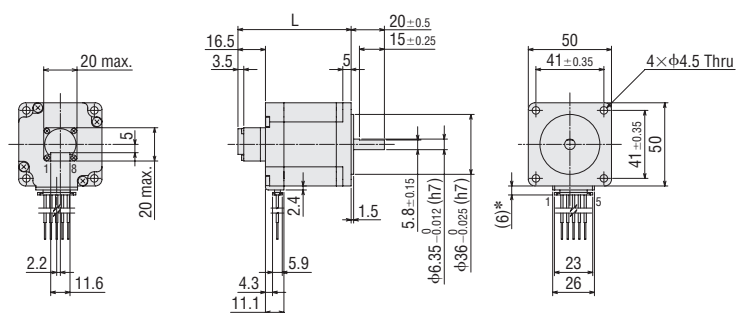
2D & 3D CAD

| Product Name      | L    | Mass kg | 2D CAD |
|-------------------|------|---------|--------|
| PKP254U20AA2-R2□L | 55.5 | 0.37    | B1461  |
| PKP256U20AA2-R2□L | 68   | 0.54    | B1462  |
| PKP258U20AA2-R2□L | 97.5 | 0.93    | B1463  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● Applicable Connector

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimping Tool     | HT801/MDF97-22S                      | 57177-5000         |

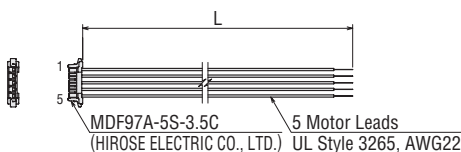


\*With connection cable

#### Connection Cable (Sold separately)

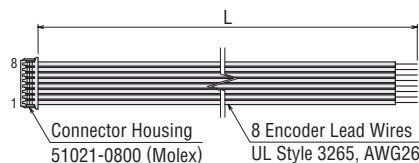
##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



##### ◇ Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# Standard Type Frame Size 56.4 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP264D14□2  | 0.74                       | 140×10 <sup>-7</sup>               | 1.4                   | 2.9         | 2.1                        | 6                   | 1.8°             | CVD228BR-K                       |
| PKP264D28□2  |                            |                                    | 2.8                   | 1.6         | 0.57                       | 1.5                 |                  |                                  |
| PKP264D42□2  |                            |                                    | 4.2                   | 1           | 0.24                       | 0.65                |                  |                                  |
| PKP266D14□2  | 1.4                        | 270×10 <sup>-7</sup>               | 1.4                   | 4.6         | 3.3                        | 12                  |                  | CVD228BR-K                       |
| PKP266D28□2  |                            |                                    | 2.8                   | 2.4         | 0.86                       | 2.9                 |                  |                                  |
| PKP266D42□2  |                            |                                    | 4.2                   | 1.6         | 0.38                       | 1.3                 |                  |                                  |
| PKP268D14□2  | 2.5                        | 500×10 <sup>-7</sup>               | 1.4                   | 6.6         | 4.7                        | 18                  |                  | CVD228BR-K                       |
| PKP268D28□2  |                            |                                    | 2.8                   | 3.4         | 1.2                        | 4.6                 |                  |                                  |
| PKP268D42□2  |                            |                                    | 4.2                   | 2.2         | 0.53                       | 2                   |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

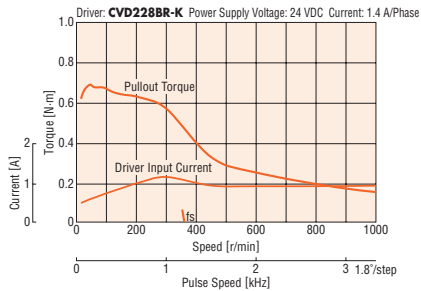
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

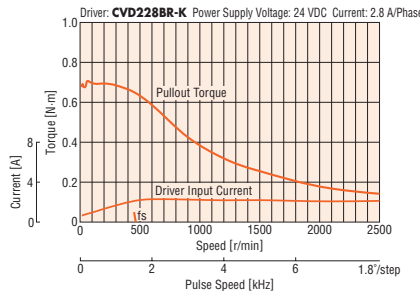
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

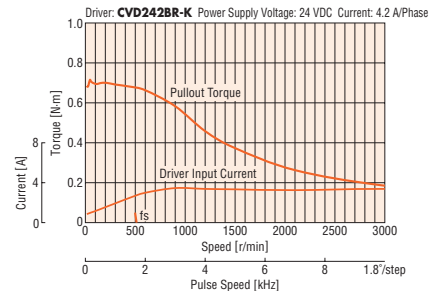
PKP264D14A2/ PKP264D14B2



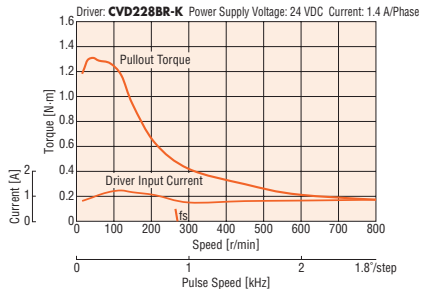
PKP264D28A2/ PKP264D28B2



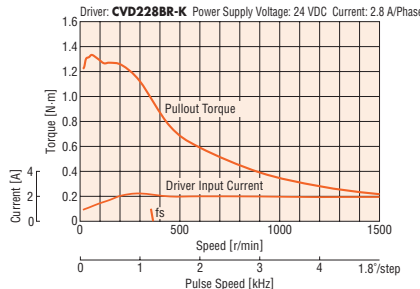
PKP264D42A2/ PKP264D42B2



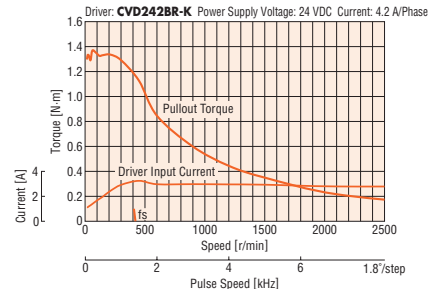
PKP266D14A2/ PKP266D14B2



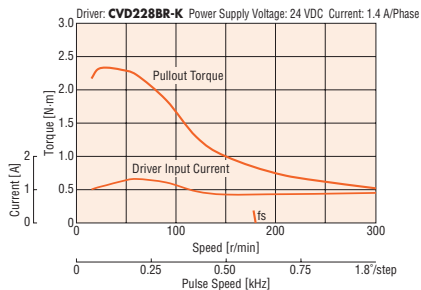
PKP266D28A2/ PKP266D28B2



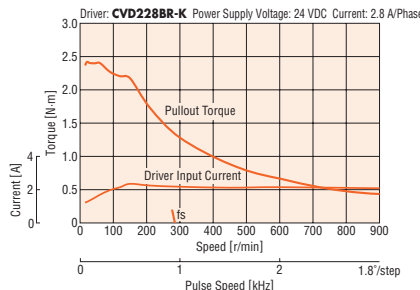
PKP266D42A2/ PKP266D42B2



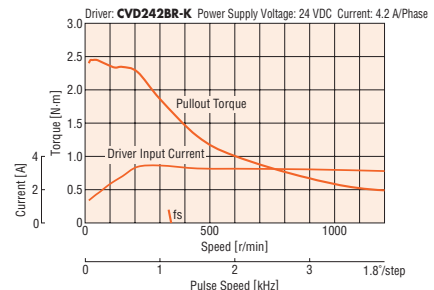
PKP268D14A2/ PKP268D14B2



PKP268D28A2/ PKP268D28B2



PKP268D42A2/ PKP268D42B2



#### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment



## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name       | L1 | L2 | Mass kg | 2D CAD |
|--------------------|----|----|---------|--------|
| <b>PKP264D14A2</b> | 39 | —  | 0.45    | B1249  |
| <b>PKP264D14B2</b> |    | 62 |         |        |
| <b>PKP264D28A2</b> |    | —  |         |        |
| <b>PKP264D28B2</b> |    | 62 |         |        |
| <b>PKP264D42A2</b> |    | —  |         |        |
| <b>PKP264D42B2</b> | 62 | —  | —       | —      |
| <b>PKP266D14A2</b> | 54 | —  | 0.7     | B1250  |
| <b>PKP266D14B2</b> |    | 77 |         |        |
| <b>PKP266D28A2</b> |    | —  |         |        |
| <b>PKP266D28B2</b> |    | 77 |         |        |
| <b>PKP266D42A2</b> |    | —  |         |        |
| <b>PKP266D42B2</b> | 77 | —  | —       | —      |
| <b>PKP268D14A2</b> | 76 | —  | 1.1     | B1251  |
| <b>PKP268D14B2</b> |    | 99 |         |        |
| <b>PKP268D28A2</b> |    | —  |         |        |
| <b>PKP268D28B2</b> |    | 99 |         |        |
| <b>PKP268D42A2</b> |    | —  |         |        |
| <b>PKP268D42B2</b> | 99 | —  | —       | —      |

#### Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

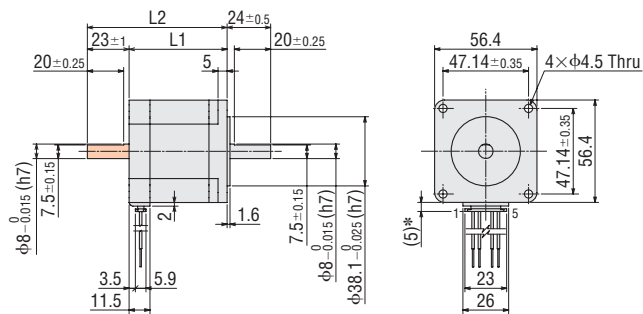
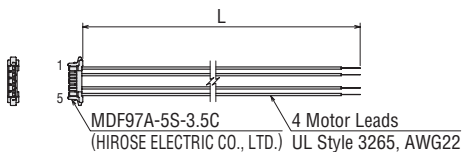
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



\*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 56.4 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP264D28□   | 0.6                        | 120×10 <sup>-7</sup>               | 2.8                   | 2           | 0.73                       | 1.8                 | 1.8°             | CVD228BR-K                       |
| PKP266D28□   | 1.4                        | 290×10 <sup>-7</sup>               |                       | 2.8         | 1                          | 2.9                 |                  |                                  |
| PKP268D28□   | 2.3                        | 490×10 <sup>-7</sup>               |                       | 3.4         | 1.23                       | 4.4                 |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

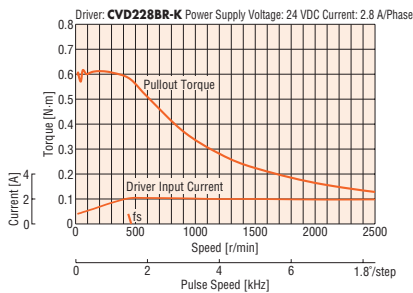
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

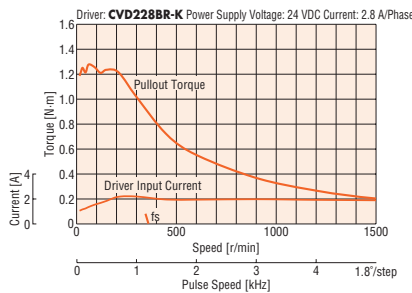
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

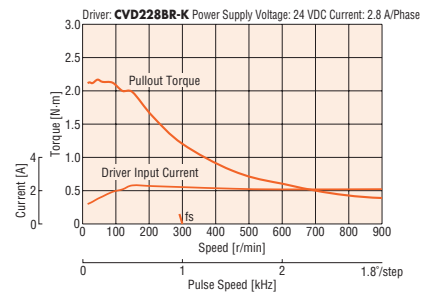
PKP264D28A/PKP264D28B



PKP266D28A/PKP266D28B



PKP268D28A/PKP268D28B



#### Note

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

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

● The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP264D28A   | 39 | —  | 0.46    | B972   |
| PKP264D28B   |    | 62 |         |        |
| PKP266D28A   | 54 | —  | 0.73    | B973   |
| PKP266D28B   |    | 77 |         |        |
| PKP268D28A   | 76 | —  | 1.1     | B974   |
| PKP268D28B   |    | 99 |         |        |

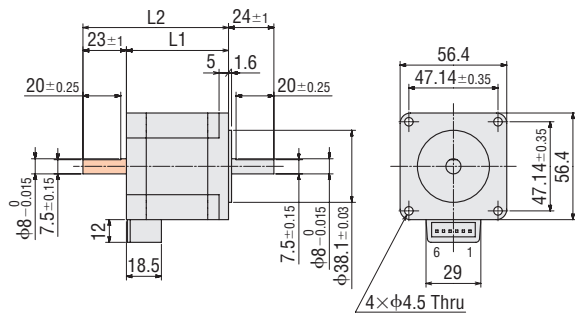
● Applicable Connector (Molex)

Connector Housing: 51067-0600 (Molex)

Contact: 50217-9101 (Molex)

Crimp Tool: 57189-5000 (Molex)

57190-5000 (Molex)



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

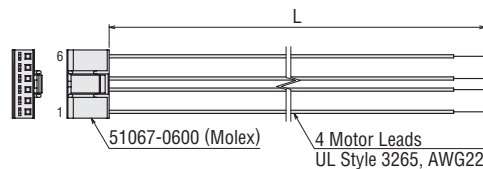
Wiring Diagram No.: Model B③

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06C      | 0.6          |
| LC2B10C      | 1            |



2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

# Standard Type Frame Size 56.4 mm (Unipolar 5 lead wires)

## Mini-Connector Type

### Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP264U10□2  | 0.58                       | 140×10 <sup>-7</sup>               | 1                     | 4.4         | 4.4                        | 6                   | 1.8°             | CMD2120P                         |
| PKP264U20□2  |                            |                                    | 2                     | 2.2         | 1.1                        | 1.5                 |                  |                                  |
| PKP266U10□2  | 1.1                        | 270×10 <sup>-7</sup>               | 1                     | 6.9         | 6.9                        | 11.6                |                  |                                  |
| PKP266U20□2  |                            |                                    | 2                     | 3.4         | 1.7                        | 2.9                 |                  |                                  |
| PKP268U10□2  | 2                          | 500×10 <sup>-7</sup>               | 1                     | 9.9         | 9.9                        | 18.4                |                  |                                  |
| PKP268U20□2  |                            |                                    | 2                     | 4.8         | 2.4                        | 4.6                 |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

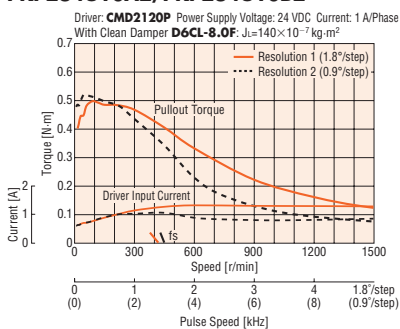
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

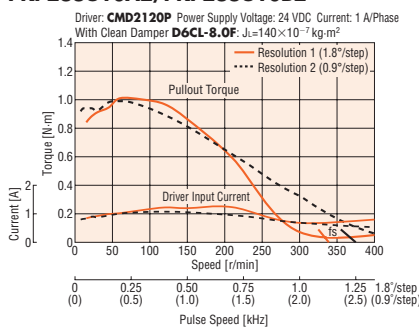
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

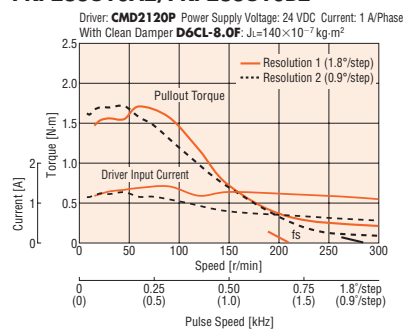
PKP264U10A2/ PKP264U10B2



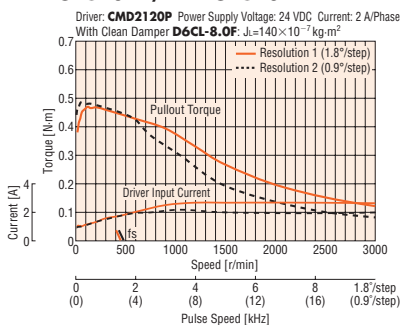
PKP266U10A2/ PKP266U10B2



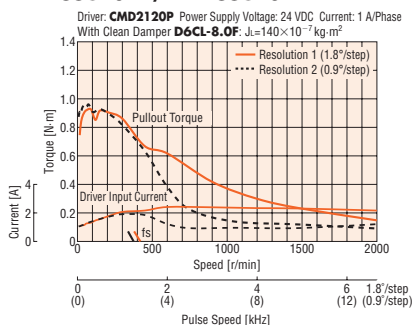
PKP268U10A2/ PKP268U10B2



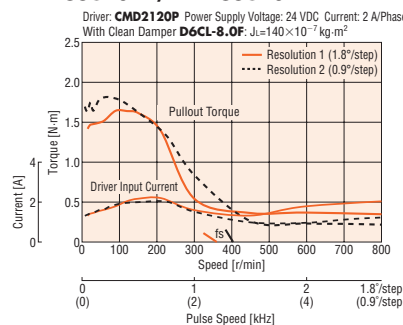
PKP264U20A2/ PKP264U20B2



PKP266U20A2/ PKP266U20B2



PKP268U20A2/ PKP268U20B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

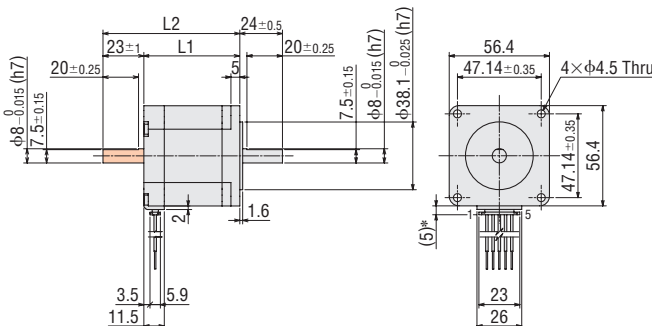
#### ● Motor

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP264U10A2  | 39 | —  | 0.45    | B1257  |
| PKP264U10B2  |    | 62 |         |        |
| PKP264U20A2  |    | —  |         |        |
| PKP264U20B2  | 54 | 62 | 0.7     | B1258  |
| PKP266U10A2  |    | —  |         |        |
| PKP266U10B2  |    | 77 |         |        |
| PKP266U20A2  | 76 | —  | 1.1     | B1259  |
| PKP266U20B2  |    | 77 |         |        |
| PKP268U10A2  |    | —  |         |        |
| PKP268U10B2  | 76 | 99 | 1.1     | B1259  |
| PKP268U20A2  |    | —  |         |        |
| PKP268U20B2  |    | 99 |         |        |

#### ● Applicable Connector

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)  
 Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)  
 Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

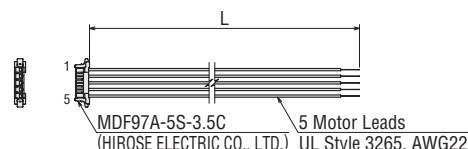
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### ● Connection Cable (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 56.4 mm (Unipolar 6 lead wires)

## Connector Type

## Specifications

| Product Name | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP264U10□   | 0.51                       | 120×10 <sup>-7</sup>               | 1                     | 5.87        | 5.87                       | 7.2                 | 1.8°             | <b>CMD2120P</b>                  |
| PKP264U20□   |                            |                                    | 2                     | 2.9         | 1.45                       | 1.8                 |                  |                                  |
| PKP264U30□   |                            |                                    | 3                     | 1.95        | 0.65                       | 0.8                 |                  |                                  |
| PKP266U10□   | 1.1                        | 290×10 <sup>-7</sup>               | 1                     | 8.1         | 8.1                        | 11.6                |                  | <b>CMD2120P</b>                  |
| PKP266U20□   |                            |                                    | 2                     | 4           | 2                          | 2.9                 |                  |                                  |
| PKP266U30□   |                            |                                    | 3                     | 2.76        | 0.92                       | 1.33                |                  |                                  |
| PKP268U10□   | 1.75                       | 490×10 <sup>-7</sup>               | 1                     | 9.32        | 9.32                       | 17.6                |                  | <b>CMD2120P</b>                  |
| PKP268U20□   |                            |                                    | 2                     | 4.9         | 2.45                       | 4.4                 |                  |                                  |
| PKP268U30□   |                            |                                    | 3                     | 3.15        | 1.05                       | 1.96                |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

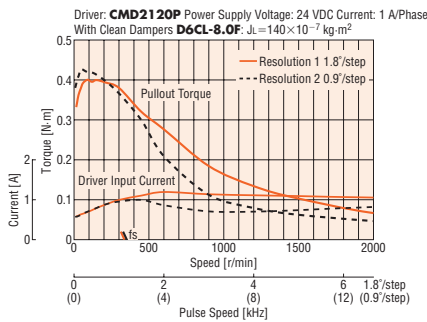
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

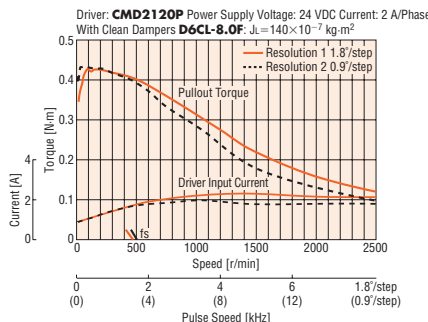
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) *f*<sub>s</sub>: Max. Starting Frequency

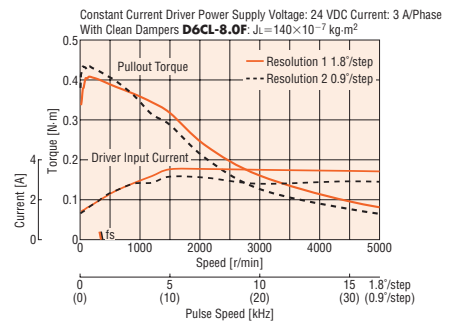
**PKP264U10A/PKP264U10B**



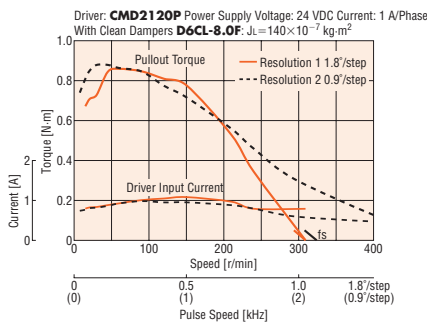
**PKP264U20A/PKP264U20B**



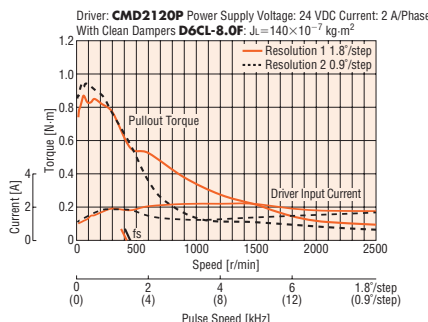
**PKP264U30A/PKP264U30B**



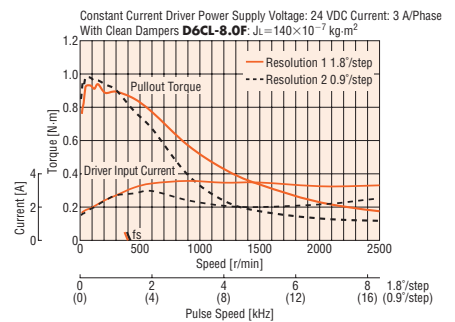
**PKP266U10A/PKP266U10B**



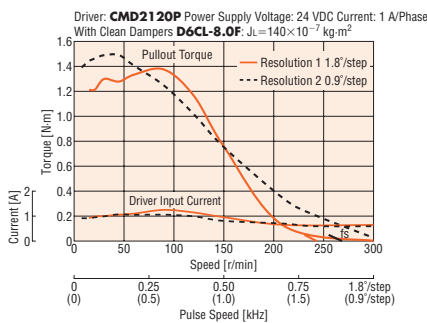
**PKP266U20A/PKP266U20B**



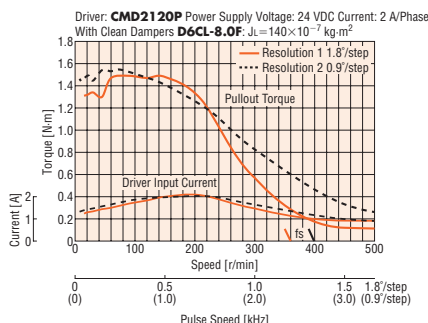
**PKP266U30A/PKP266U30B**



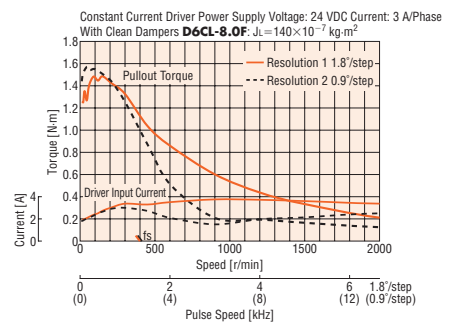
**PKP268U10A/PKP268U10B**



**PKP268U20A/PKP268U20B**



**PKP268U30A/PKP268U30B**



### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

## Dimensions (Unit: mm)

### ● Motor

2D & 3D CAD

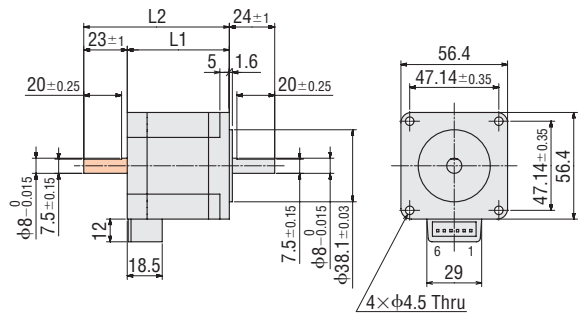
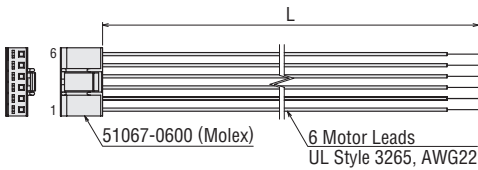
| Product Name      | L1 | L2 | Mass kg | 2D CAD |
|-------------------|----|----|---------|--------|
| <b>PKP264U10A</b> | 39 | —  | 0.46    | B972   |
| <b>PKP264U10B</b> |    | 62 |         |        |
| <b>PKP264U20A</b> |    | —  |         |        |
| <b>PKP264U20B</b> |    | 62 |         |        |
| <b>PKP264U30A</b> | 54 | —  | 0.73    | B973   |
| <b>PKP264U30B</b> |    | 62 |         |        |
| <b>PKP266U10A</b> |    | —  |         |        |
| <b>PKP266U10B</b> | 54 | 77 | 0.73    | B973   |
| <b>PKP266U20A</b> |    | —  |         |        |
| <b>PKP266U20B</b> |    | 77 |         |        |
| <b>PKP266U30A</b> |    | —  |         |        |
| <b>PKP266U30B</b> | 76 | 77 | 1.1     | B974   |
| <b>PKP268U10A</b> |    | —  |         |        |
| <b>PKP268U10B</b> |    | 99 |         |        |
| <b>PKP268U20A</b> | 76 | —  | 1.1     | B974   |
| <b>PKP268U20B</b> |    | 99 |         |        |
| <b>PKP268U30A</b> |    | —  |         |        |
| <b>PKP268U30B</b> |    | 99 |         |        |

- Applicable Connector (Molex)  
Connector Housing: 51067-0600 (Molex)  
Contact: 50217-9101 (Molex)  
Crimp Tool: 57189-5000 (Molex)  
57190-5000 (Molex)

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06C</b> | 0.6          |
| <b>LC2U10C</b> | 1            |



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

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

- Refer to the motor inner wiring page for an inner wiring diagram of the motor.

# Standard Type with Encoder Frame Size 56.4 mm (Bipolar 4 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

### Specifications

| Product Name   | Maximum Holding Torque N-m | Rotor Inertia J: kg-m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|----------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|----------------------------------|
| PKP264D14A2-R3 | 0.74                       | 140×10 <sup>-7</sup>               | 1.4                   | 2.9         | 2.1                        | 6                   | 1.8°             | CVD228BR-K                       |
| PKP264D28A2-R3 |                            |                                    | 2.8                   | 1.6         | 0.57                       | 1.5                 |                  |                                  |
| PKP264D42A2-R3 |                            |                                    | 4.2                   | 1           | 0.24                       | 0.65                |                  |                                  |
| PKP266D14A2-R3 | 1.4                        | 270×10 <sup>-7</sup>               | 1.4                   | 4.6         | 3.3                        | 12                  |                  | CVD228BR-K                       |
| PKP266D28A2-R3 |                            |                                    | 2.8                   | 2.4         | 0.86                       | 2.9                 |                  |                                  |
| PKP266D42A2-R3 |                            |                                    | 4.2                   | 1.6         | 0.38                       | 1.3                 |                  |                                  |
| PKP268D14A2-R3 | 2.5                        | 500×10 <sup>-7</sup>               | 1.4                   | 6.6         | 4.7                        | 18                  |                  | CVD228BR-K                       |
| PKP268D28A2-R3 |                            |                                    | 2.8                   | 3.4         | 1.2                        | 4.6                 |                  |                                  |
| PKP268D42A2-R3 |                            |                                    | 4.2                   | 2.2         | 0.53                       | 2                   |                  |                                  |

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

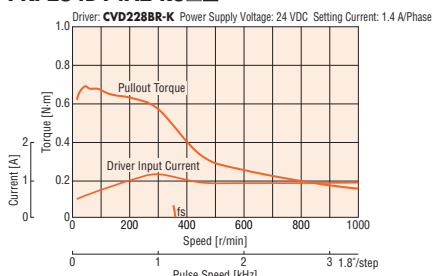
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

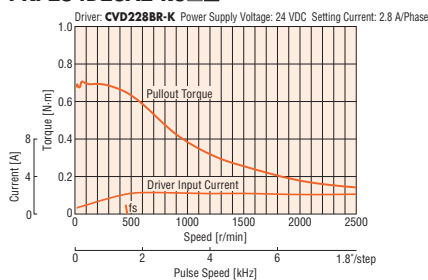
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

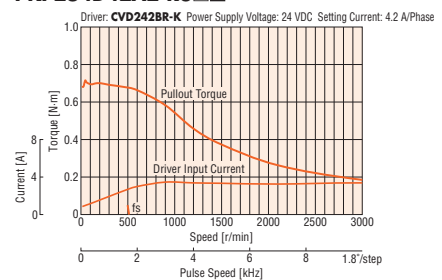
#### PKP264D14A2-R3



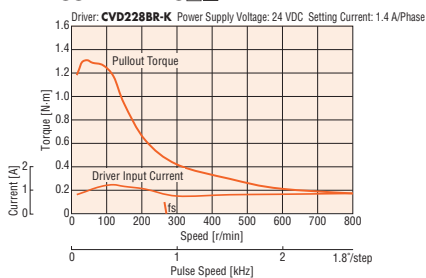
#### PKP264D28A2-R3



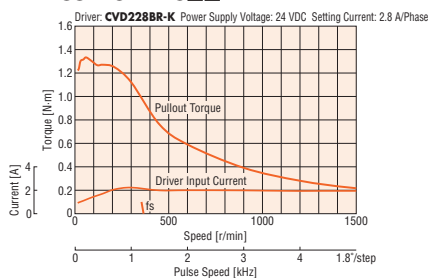
#### PKP264D42A2-R3



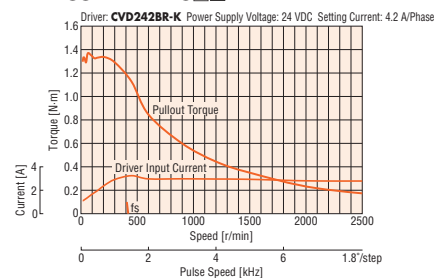
#### PKP266D14A2-R3



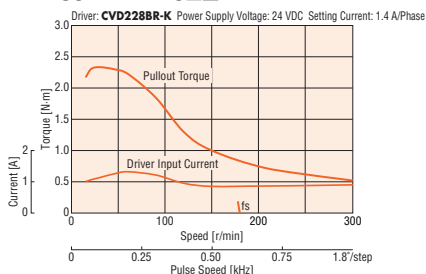
#### PKP266D28A2-R3



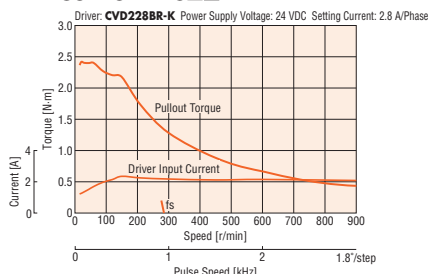
#### PKP266D42A2-R3



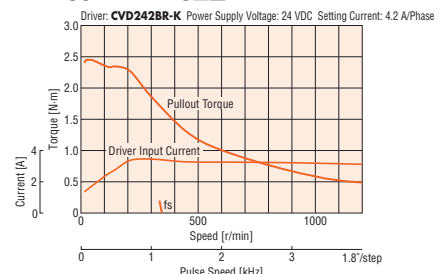
#### PKP268D14A2-R3



#### PKP268D28A2-R3



#### PKP268D42A2-R3



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

## Dimensions (Unit = mm)

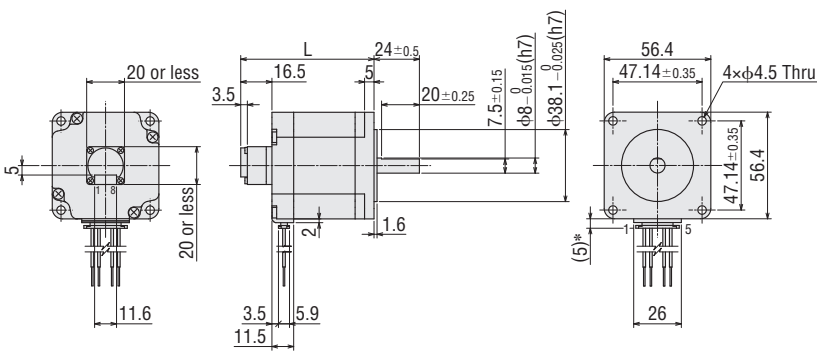
### ● Motor

2D & 3D CAD

| Product Name                            | L    | Mass kg | 2D CAD |
|-----------------------------------------|------|---------|--------|
| PKP264D14A2-R3 <input type="checkbox"/> | 55.5 | 0.47    | B1325  |
| PKP264D28A2-R3 <input type="checkbox"/> |      |         |        |
| PKP264D42A2-R3 <input type="checkbox"/> |      |         |        |
| PKP266D14A2-R3 <input type="checkbox"/> | 70.5 | 0.72    | B1326  |
| PKP266D28A2-R3 <input type="checkbox"/> |      |         |        |
| PKP266D42A2-R3 <input type="checkbox"/> |      |         |        |
| PKP268D14A2-R3 <input type="checkbox"/> | 92.5 | 1.12    | B1327  |
| PKP268D28A2-R3 <input type="checkbox"/> |      |         |        |
| PKP268D42A2-R3 <input type="checkbox"/> |      |         |        |

### ● Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

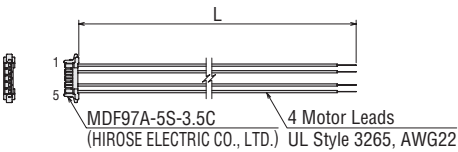


\*With connection cable

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "E" (200 P/R) or "F" (400 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "E" (200 P/R), F (400 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.



# Standard Type with Encoder Frame Size 56.4 mm (Unipolar 5 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

### Specifications

| Product Name     | Maximum Holding Torque | Rotor Inertia        | Rated Current | Voltage | Winding Resistance | Inductance | Basic Step Angle | Recommended Driver Product Name* |
|------------------|------------------------|----------------------|---------------|---------|--------------------|------------|------------------|----------------------------------|
|                  | N·m                    | J: kg·m <sup>2</sup> | A/Phase       | VDC     | Ω/Phase            | mH/Phase   |                  |                                  |
| PKP264U10A2-R2□L | 0.58                   | 140×10 <sup>-7</sup> | 1             | 4.4     | 4.4                | 6          | 1.8°             | CMD2120P                         |
| PKP264U20A2-R2□L |                        |                      | 2             | 2.2     | 1.1                | 1.5        |                  |                                  |
| PKP266U10A2-R2□L | 1.1                    | 270×10 <sup>-7</sup> | 1             | 6.9     | 6.9                | 11.6       |                  |                                  |
| PKP266U20A2-R2□L |                        |                      | 2             | 3.4     | 1.7                | 2.9        |                  |                                  |
| PKP268U10A2-R2□L | 2                      | 500×10 <sup>-7</sup> | 1             | 9.9     | 9.9                | 18.4       |                  |                                  |
| PKP268U20A2-R2□L |                        |                      | 2             | 4.8     | 2.4                | 4.6        |                  |                                  |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

● See "Common Specifications" page for encoder specifications.

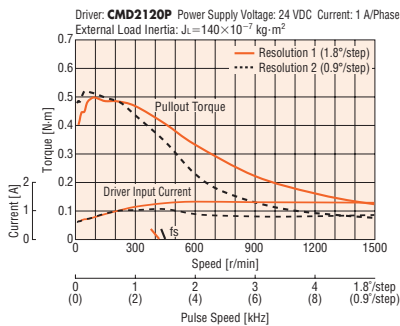
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

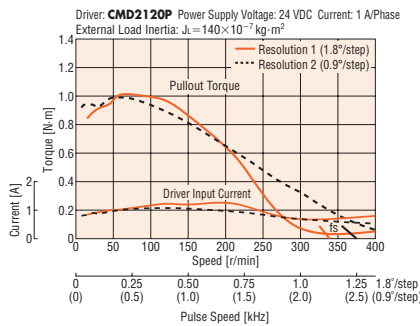
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

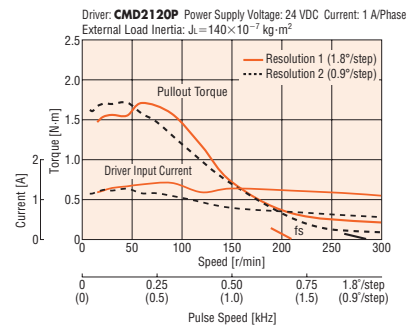
PKP264U10A2-R2EL/PKP264U10A2-R2FL



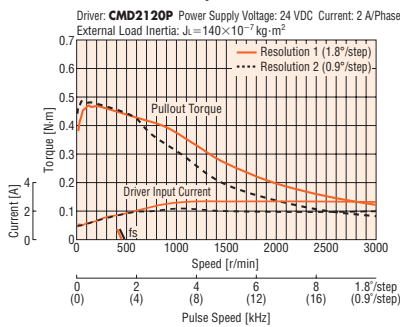
PKP266U10A2-R2EL/PKP266U10A2-R2FL



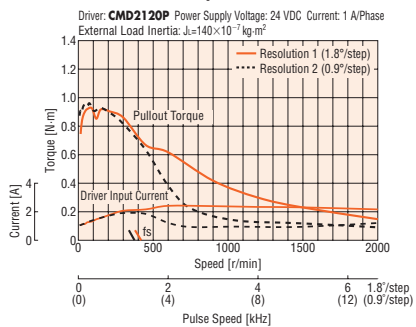
PKP268U10A2-R2EL/PKP268U10A2-R2FL



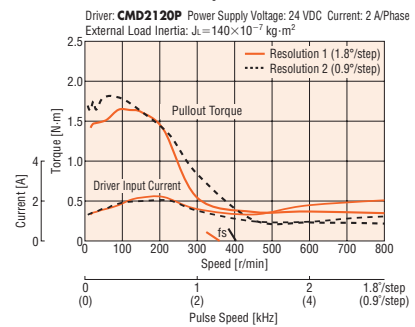
PKP264U20A2-R2EL/PKP264U20A2-R2FL



PKP266U20A2-R2EL/PKP266U20A2-R2FL



PKP268U20A2-R2EL/PKP268U20A2-R2FL



#### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

### Motor

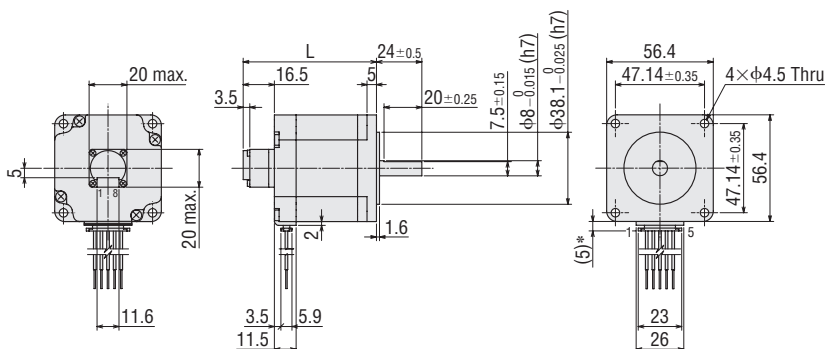
2D & 3D CAD

| Product Name     | L    | Mass kg | 2D CAD |
|------------------|------|---------|--------|
| PKP264U10A2-R2□L | 55.5 | 0.45    | B1332  |
| PKP264U20A2-R2□L |      |         |        |
| PKP266U10A2-R2□L | 70.5 | 0.7     | B1333  |
| PKP266U20A2-R2□L |      |         |        |
| PKP268U10A2-R2□L | 92.5 | 1.1     | B1334  |
| PKP268U20A2-R2□L |      |         |        |

● Either **E** (200 P/R) or **F** (400 P/R) indicating the encoder resolution is entered where the box □ is located within the product name.

### Applicable Connector

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimping Tool     | HT801/MDF97-22S                      | 57177-5000         |

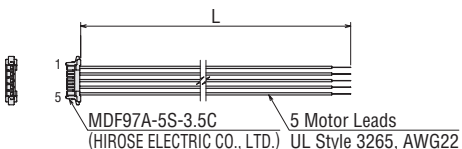


\*With connection cable

### Connection Cable (Sold separately)

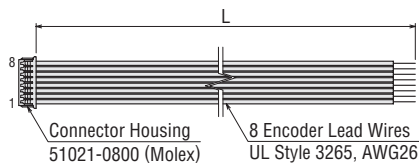
#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type with Electromagnetic Brake Frame Size 56.4 mm (Bipolar 4 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP264D28M2</b> | 0.74                          | 270×10 <sup>-7</sup> *                | 2.8                      | 1.6            | 0.57                          | 1.5                    | 1.8°             | 0.8                                                 |
| <b>PKP266D28M2</b> | 1.4                           | 400×10 <sup>-7</sup> *                |                          | 2.4            | 0.86                          | 2.9                    |                  |                                                     |
| <b>PKP268D28M2</b> | 2.5                           | 630×10 <sup>-7</sup> *                |                          | 3.4            | 1.2                           | 4.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

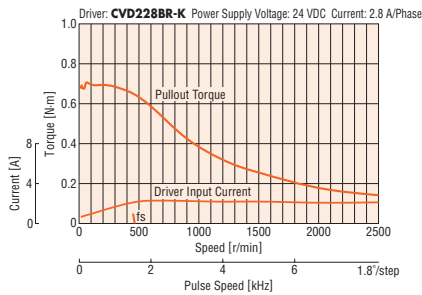
\* This value is including the electromagnetic brake inertia.

### Note

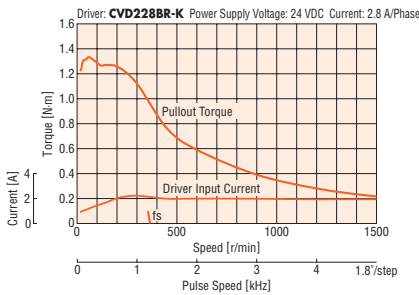
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

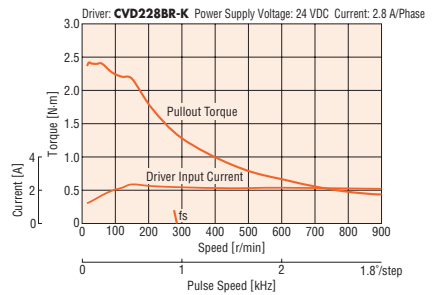
### PKP264D28M2



### PKP266D28M2



### PKP268D28M2



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

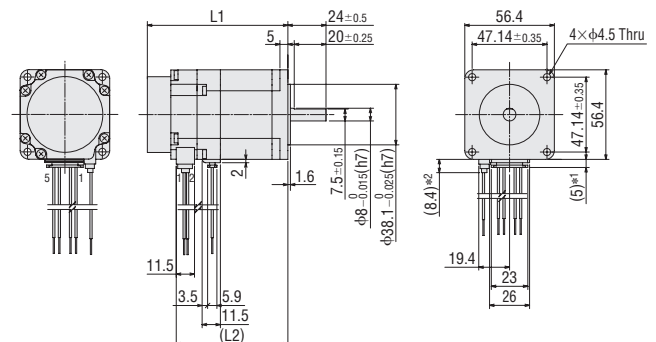
### Motor

2D & 3D CAD

| Product Name       | L1    | L2   | Mass kg | 2D CAD |
|--------------------|-------|------|---------|--------|
| <b>PKP264D28M2</b> | 73.5  | 55.3 | 0.65    | B1439  |
| <b>PKP266D28M2</b> | 88.5  | 70.3 | 0.9     | B1440  |
| <b>PKP268D28M2</b> | 110.5 | 92.3 | 1.3     | B1441  |

● Applicable Connector

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Electromagnetic Brake<br>(HIROSE ELECTRIC CO., LTD.) |
|-------------------|--------------------------------------|------------------------------------------------------|
| Connector Housing | MDF97A-5S-3.5C                       | DF62C-2S-2.2C                                        |
| Contact           | MDF97-22SC                           | DF62-22SCA                                           |
| Crimping Tool     | HT801/MDF97-22S                      | HT801/DF62-22(10)                                    |



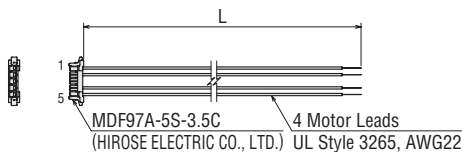
\*1 With connection cable

\*2 With electromagnetic brake connection cable

### Connection Cable (Sold separately)

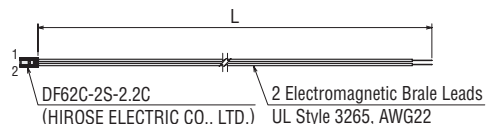
#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



#### ◇ Electromagnetic Brake Connection Cable

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCM02A-006</b> | 0.6          |
| <b>LCM02A-010</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type with Electromagnetic Brake Frame Size 56.4 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP264U20M</b> | 0.51                          | 270×10 <sup>-7</sup> *                | 2                        | 2.9            | 1.45                          | 1.8                    | 1.8°             | 1.5                                                 |
| <b>PKP266U20M</b> | 1.1                           | 440×10 <sup>-7</sup> *                |                          | 4              | 2                             | 2.9                    |                  |                                                     |
| <b>PKP268U20M</b> | 1.75                          | 640×10 <sup>-7</sup> *                |                          | 4.9            | 2.45                          | 4.4                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

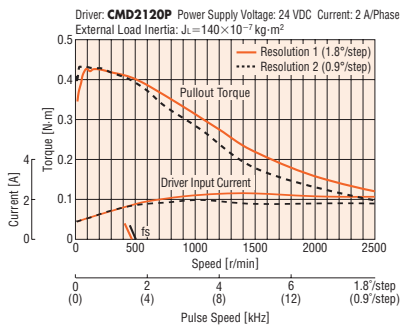
\* This value is including the electromagnetic brake inertia.

#### Note

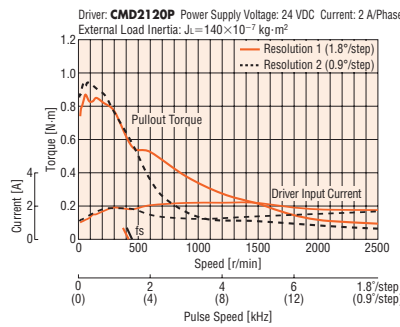
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

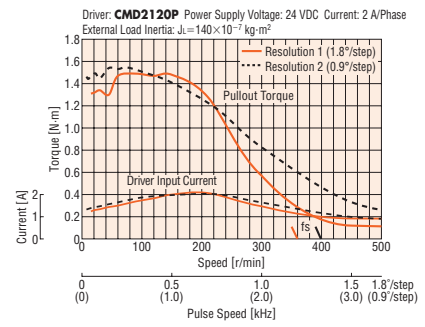
**PKP264U20M**



**PKP266U20M**



**PKP268U20M**



#### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

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

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name      | L     | Mass<br>kg | 2D CAD |
|-------------------|-------|------------|--------|
| <b>PKP264U20M</b> | 75.5  | 0.76       | B1140  |
| <b>PKP266U20M</b> | 90.5  | 1.03       | B1141  |
| <b>PKP268U20M</b> | 112.5 | 1.4        | B1142  |

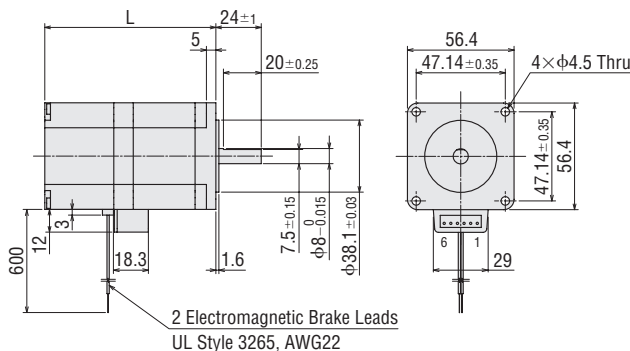
● Applicable Connector (Molex)

Connector Housing: 51067-0600

Contact: 50217-9101

Crimp Tool: 57189-5000

57190-5000



### Inner Wiring Diagram of Motor

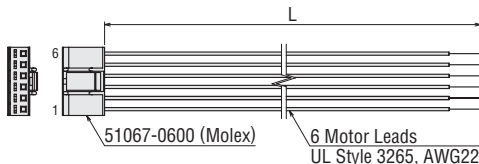
Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06C</b> | 0.6          |
| <b>LC2U10C</b> | 1            |



# Standard Type Frame Size 60 mm (Bipolar 4 lead wires)

## Lead Wire Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|
| PK264JD□     | 1.06                          | 280×10 <sup>-7</sup>                  | 2.8                      | 2.1            | 0.73                          | 1.8                    | 1.8°             |
| PK266JD□     | 1.75                          | 450×10 <sup>-7</sup>                  |                          | 2.8            | 1                             | 3.05                   |                  |
| PK267JD□     | 2.2                           | 570×10 <sup>-7</sup>                  |                          | 3.4            | 1.2                           | 3.54                   |                  |
| PK269JD□     | 3.1                           | 900×10 <sup>-7</sup>                  |                          | 4.2            | 1.49                          | 5.7                    |                  |

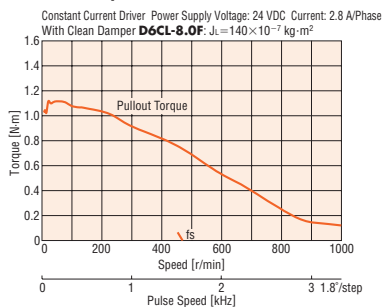
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

#### Note

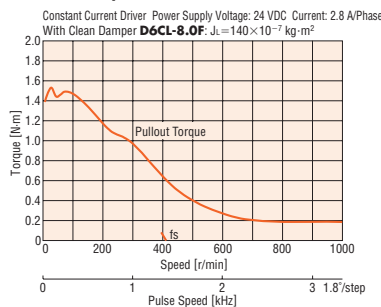
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

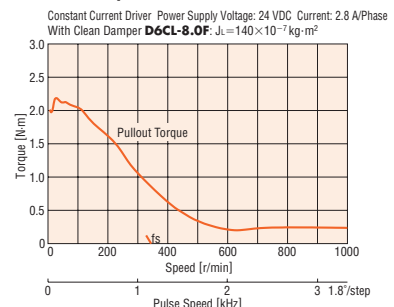
#### PK264JDA/PK264JDB



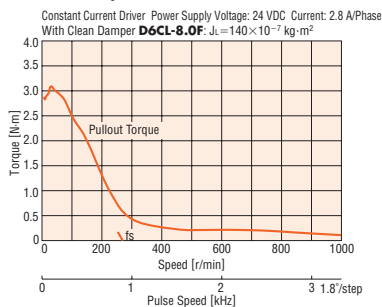
#### PK266JDA/PK266JDB



#### PK267JDA/PK267JDB



#### PK269JDA/PK269JDB



#### Note

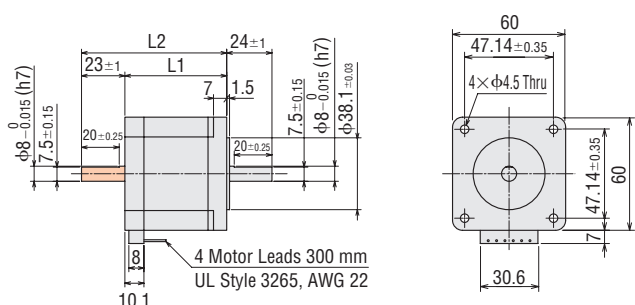
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name | L1   | L2   | Mass<br>kg | 2D CAD |
|--------------|------|------|------------|--------|
| PK264JDA     | 43.5 | —    | 0.6        | B279   |
| PK264JDB     |      | 66.5 |            |        |
| PK266JDA     | 54   | —    | 0.83       | B232   |
| PK266JDB     |      | 77   |            |        |
| PK267JDA     | 65   | —    | 1.02       | B233   |
| PK267JDB     |      | 88   |            |        |
| PK269JDA     | 85   | —    | 1.43       | B280   |
| PK269JDB     |      | 108  |            |        |



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

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type Frame Size 60 mm (Unipolar 6 lead wires)

## Lead Wire Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|
| PK264J□      | 0.75                          | 280×10 <sup>-7</sup>                  | 2                        | 2.9            | 1.46                          | 1.8                    | 1.8°             |
| PK266J□      | 1.35                          | 450×10 <sup>-7</sup>                  |                          | 4              | 2                             | 3.05                   |                  |
| PK267J□      | 1.7                           | 570×10 <sup>-7</sup>                  |                          | 4.8            | 2.4                           | 3.54                   |                  |
| PK269J□      | 2.2                           | 900×10 <sup>-7</sup>                  |                          | 6              | 2.98                          | 5.7                    |                  |

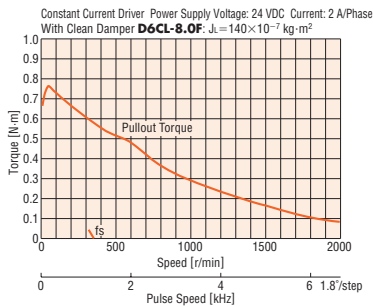
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

**Note**

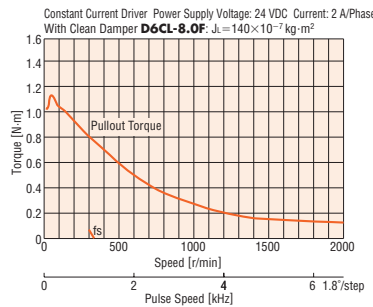
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

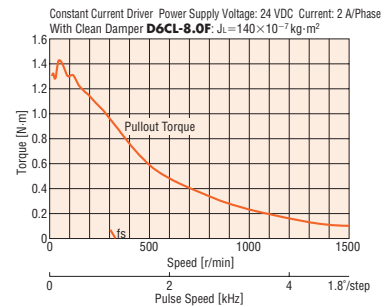
**PK264JA/PK264JB**



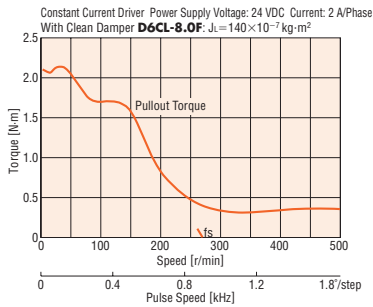
**PK266JA/PK266JB**



**PK267JA/PK267JB**



**PK269JA/PK269JB**



**Note**

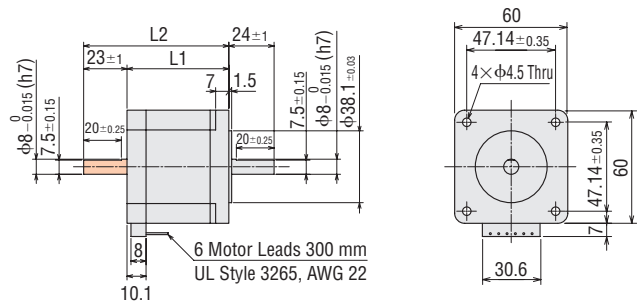
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

### Dimensions (Unit: mm)

● Motor

2D & 3D CAD

| Product Name | L1   | L2   | Mass kg | 2D CAD |
|--------------|------|------|---------|--------|
| PK264JA      | 43.5 | —    | 0.6     | B279   |
| PK264JB      |      | 66.5 |         |        |
| PK266JA      | 54   | —    | 0.83    | B232   |
| PK266JB      |      | 77   |         |        |
| PK267JA      | 65   | —    | 1.02    | B233   |
| PK267JB      |      | 88   |         |        |
| PK269JA      | 85   | —    | 1.43    | B280   |
| PK269JB      |      | 108  |         |        |



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

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑦

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Standard Type Frame Size 85 mm (Bipolar 4 lead wires)

## Lead Wire Type

## Specifications

| Product Name        | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|---------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| <b>PKP296D45</b> □  | 3.3                           | 1100×10 <sup>-7</sup>                 | 4.5                      | 1.9            | 0.42                          | 3.1                    | 1.8°             | <b>CVD245BR-K</b>                |
| <b>PKP296D63</b> □  |                               |                                       | 6.3                      | 1.4            | 0.23                          | 1.6                    |                  | -                                |
| <b>PKP299D45</b> □  | 6.4                           | 2200×10 <sup>-7</sup>                 | 4.5                      | 2.7            | 0.6                           | 5.4                    |                  | <b>CVD245BR-K</b>                |
| <b>PKP299D63</b> □  |                               |                                       | 6.3                      | 2              | 0.32                          | 2.6                    |                  | -                                |
| <b>PKP2913D45</b> □ | 9.5                           | 3400×10 <sup>-7</sup>                 | 4.5                      | 3.5            | 0.78                          | 6.9                    |                  | <b>CVD245BR-K</b>                |
| <b>PKP2913D56</b> □ |                               |                                       | 5.6                      | 2.6            | 0.47                          | 4.4                    |                  | -                                |

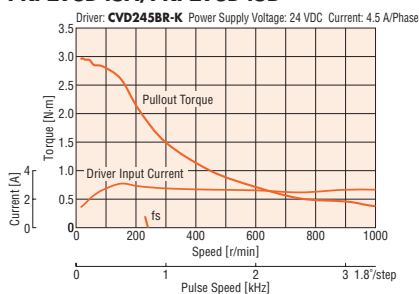
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).  
 \*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

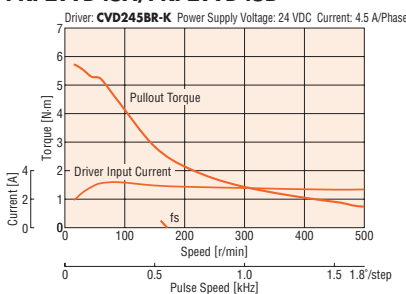
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) $f_s$ : Max. Starting Frequency

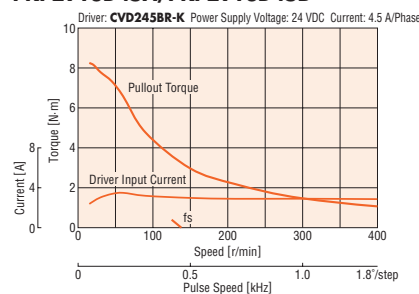
### PKP296D45A/ PKP296D45B



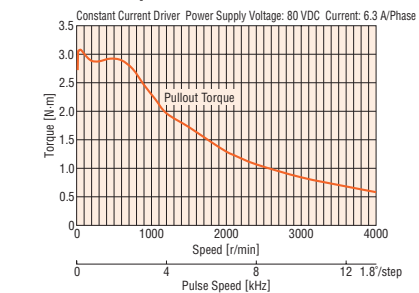
### PKP299D45A/ PKP299D45B



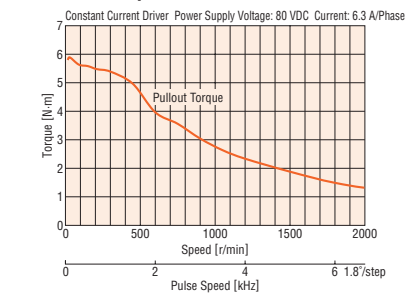
### PKP2913D45A/ PKP2913D45B



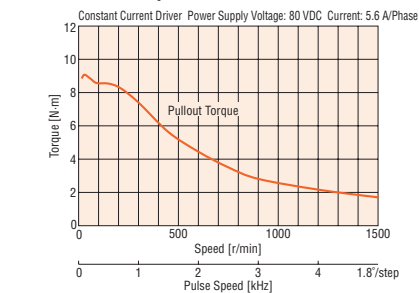
### PKP296D63A/ PKP296D63B



### PKP299D63A/ PKP299D63B



### PKP2913D56A/ PKP2913D56B



### Note

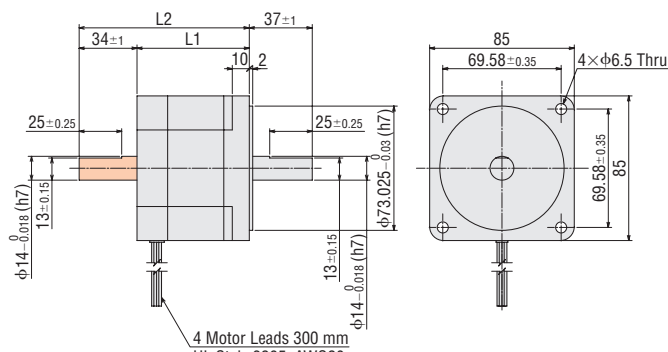
● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.  
 ● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to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

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name       | L1  | L2  | Mass kg | 2D CAD |
|--------------------|-----|-----|---------|--------|
| <b>PKP296D45A</b>  | 66  | —   | 1.8     | B1237  |
| <b>PKP296D45B</b>  |     | 100 |         |        |
| <b>PKP296D63A</b>  |     | —   |         |        |
| <b>PKP296D63B</b>  | 96  | 100 | 2.9     | B1238  |
| <b>PKP299D45A</b>  |     | —   |         |        |
| <b>PKP299D45B</b>  |     | 130 |         |        |
| <b>PKP299D63A</b>  | 126 | —   | 4       | B1239  |
| <b>PKP299D63B</b>  |     | 130 |         |        |
| <b>PKP2913D45A</b> |     | —   |         |        |
| <b>PKP2913D45B</b> | 160 | —   |         |        |
| <b>PKP2913D56A</b> |     | 160 |         |        |
| <b>PKP2913D56B</b> | 160 |     |         |        |



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

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment



# Standard Type Frame Size 85 mm (Unipolar 6 lead wires)

## Lead Wire Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|
| PKP296U20□   | 2.6                           | 1100×10 <sup>-7</sup>                 | 2                        | 4.4            | 2.2                           | 7.8                    | 1.8°             |
| PKP296U30□   |                               |                                       | 3                        | 3              | 1.0                           | 3.5                    |                  |
| PKP296U45□   |                               |                                       | 4.5                      | 2              | 0.45                          | 1.6                    |                  |
| PKP299U20□   | 5.0                           | 2200×10 <sup>-7</sup>                 | 2                        | 6.4            | 3.2                           | 13.2                   |                  |
| PKP299U30□   |                               |                                       | 3                        | 4.5            | 1.5                           | 6                      |                  |
| PKP299U45□   |                               |                                       | 4.5                      | 2.8            | 0.63                          | 2.6                    |                  |
| PKP2913U20□  | 7.3                           | 3400×10 <sup>-7</sup>                 | 2                        | 7.6            | 3.8                           | 18                     |                  |
| PKP2913U40□  |                               |                                       | 4                        | 3.8            | 0.94                          | 4.4                    |                  |

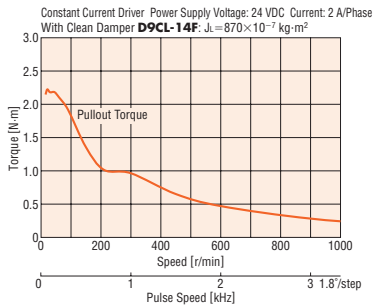
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

### Note

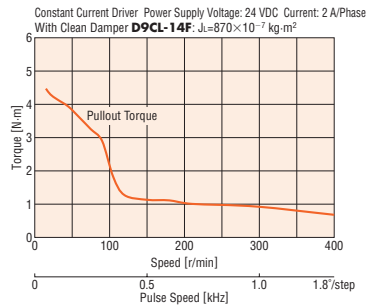
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

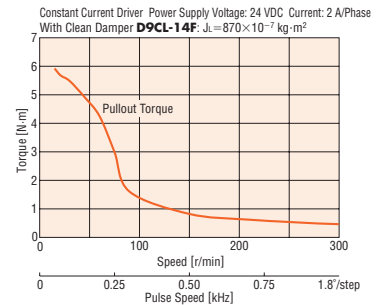
### PKP296U20A/PKP296U20B



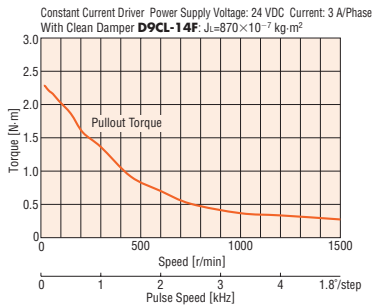
### PKP299U20A/PKP299U20B



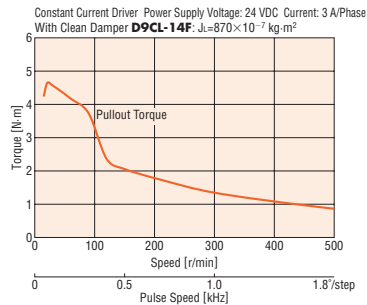
### PKP2913U20A/PKP2913U20B



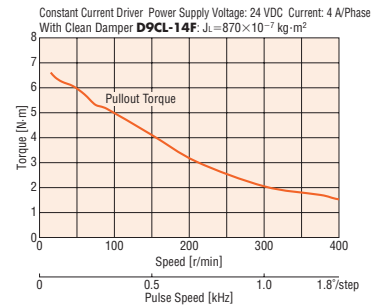
### PKP296U30A/PKP296U30B



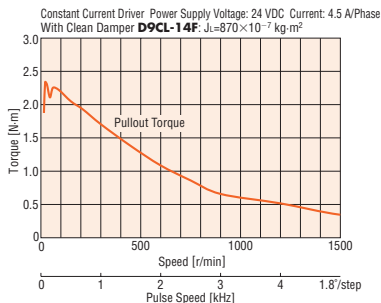
### PKP299U30A/PKP299U30B



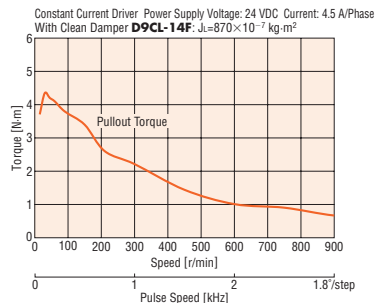
### PKP2913U40A/PKP2913U40B



### PKP296U45A/PKP296U45B



### PKP299U45A/PKP299U45B



### Note

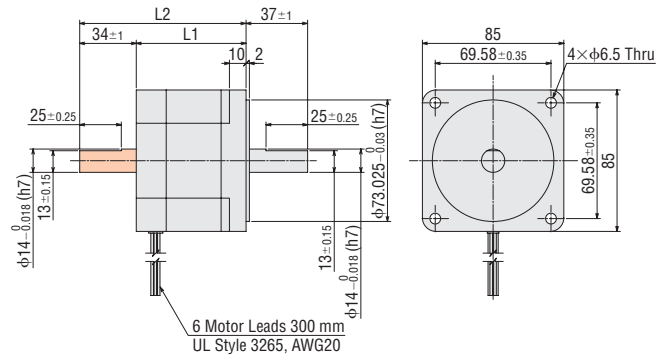
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name | L1  | L2  | Mass kg | 2D CAD |
|--------------|-----|-----|---------|--------|
| PKP296U20A   | 66  | —   | 1.8     | B1246  |
| PKP296U20B   |     | 100 |         |        |
| PKP296U30A   |     | —   |         |        |
| PKP296U30B   |     | 100 |         |        |
| PKP296U45A   |     | —   |         |        |
| PKP296U45B   | 100 | —   | 2.9     | B1247  |
| PKP299U20A   | 96  | —   |         |        |
| PKP299U20B   |     | 130 |         |        |
| PKP299U30A   |     | —   |         |        |
| PKP299U30B   |     | 130 |         |        |
| PKP299U45A   |     | —   |         |        |
| PKP299U45B   | 130 | —   | 4       | B1248  |
| PKP2913U20A  | 126 | —   |         |        |
| PKP2913U20B  |     | 160 |         |        |
| PKP2913U40A  |     | —   |         |        |
| PKP2913U40B  |     | 160 |         |        |



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

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑦

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP223MD15□  | 0.086                         | $8.6 \times 10^{-7}$                  | 1.5                      | 1.77           | 1.18                          | 1.3                    | 0.9°             | CVD215BR-K                       |
| PKP225MD15□  | 0.165                         | $17 \times 10^{-7}$                   |                          | 3              | 2                             | 2.7                    |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

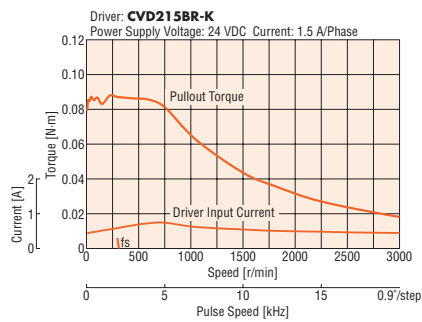
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

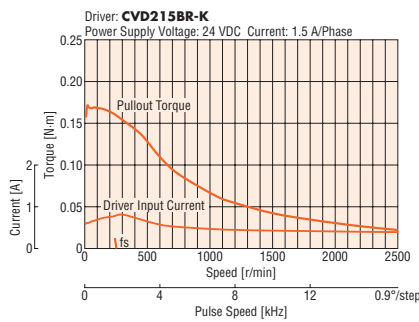
● Set the current of the driver so that it does not exceed the rated current of the motor. If the current of the driver exceeds the rated current of the motor, it may cause damage to the product.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP223MD15A/PKP223MD15B



PKP225MD15A/PKP225MD15B



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

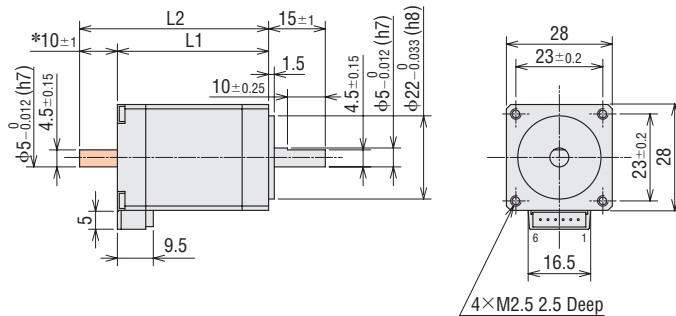
| Product Name | L1   | L2   | Mass kg | 2D CAD |
|--------------|------|------|---------|--------|
| PKP223MD15A  | 32   | —    | 0.11    | B980   |
| PKP223MD15B  |      | 42   |         |        |
| PKP225MD15A  | 51.5 | —    | 0.2     | B982   |
| PKP225MD15B  |      | 61.5 |         |        |

### Applicable Connectors

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is  $10 \pm 0.25$ .

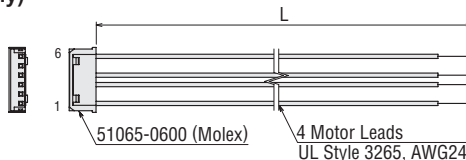
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type Frame Size 28 mm (Unipolar 6 lead wires)

## Connector Type

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP223MU09□  | 0.07                          | $8.6 \times 10^{-7}$                  | 0.95                     | 2.95           | 3.11                          | 1.9                    | 0.9°             | CMD2109P                            |
| PKP225MU09□  | 0.124                         | $17 \times 10^{-7}$                   |                          | 4.4            | 4.6                           | 3.2                    |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

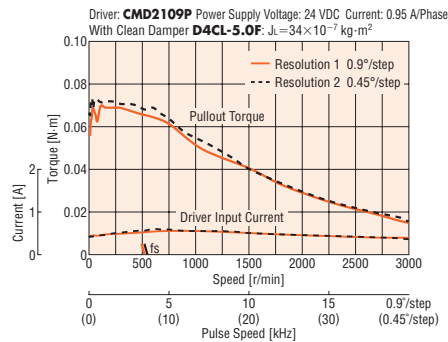
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

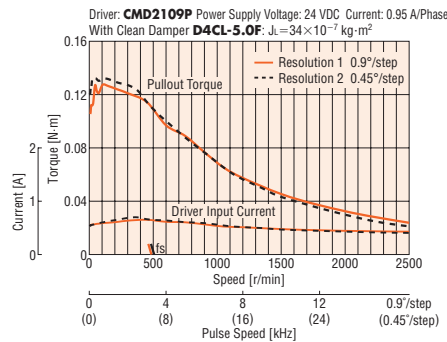
● Set the current of the driver so that it does not exceed the rated current of the motor. If the current of the driver exceeds the rated current of the motor, it may cause damage to the product.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP223MU09A/PKP223MU09B



### PKP225MU09A/PKP225MU09B



### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

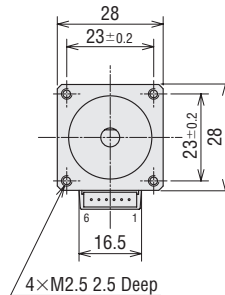
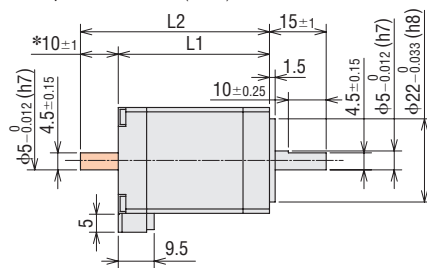
| Product Name | L1   | L2   | Mass<br>kg | 2D CAD |
|--------------|------|------|------------|--------|
| PKP223MU09A  | 32   | –    | 0.11       | B980   |
| PKP223MU09B  |      | 42   |            |        |
| PKP225MU09A  | 51.5 | –    | 0.2        | B982   |
| PKP225MU09B  |      | 61.5 |            |        |

### Applicable Connectors

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10±0.25.

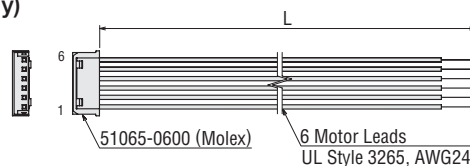
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type with Encoder Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP223MD15A-R3F | 0.086                         | $9.5 \times 10^{-7}$                  | 1.5                      | 1.77           | 1.18                          | 1.3                    | 0.9°             | CVD215BR-K                       |
| PKP225MD15A-R3F | 0.165                         | $18 \times 10^{-7}$                   |                          | 3              | 2                             | 2.7                    |                  |                                  |

- A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.
- Refer to the common specifications page for encoder specifications.

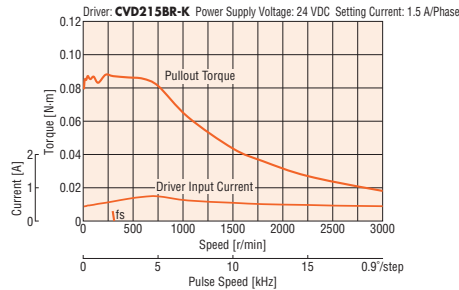
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

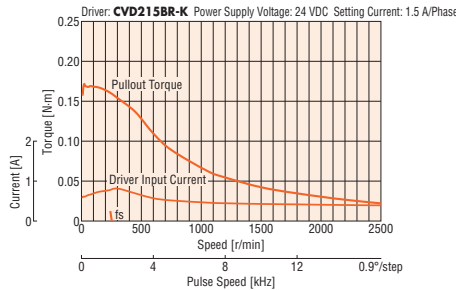
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP223MD15A-R3F



PKP225MD15A-R3F



### Note

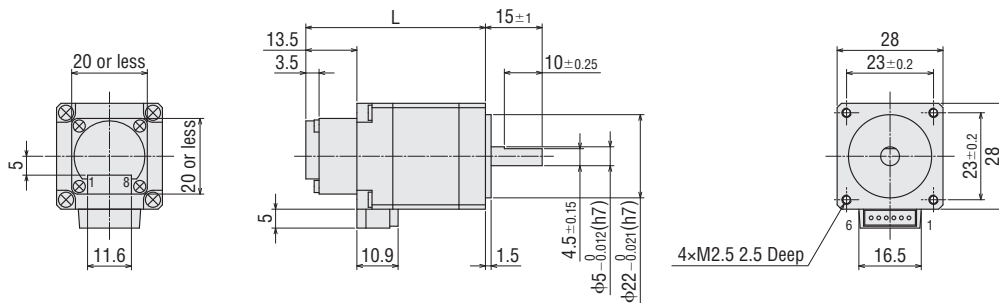
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name    | L    | Mass kg | 2D CAD |
|-----------------|------|---------|--------|
| PKP223MD15A-R3F | 47.5 | 0.13    | B1198  |
| PKP225MD15A-R3F | 67   | 0.22    | B1199  |



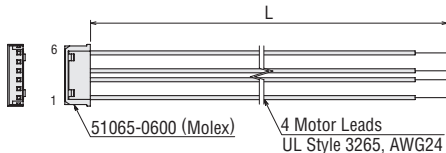
- Applicable Connector (Molex)

|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0600 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

- Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

- Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

# High-Resolution Type with Encoder Frame Size 28 mm (Unipolar 6 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP223MU09A-R2FL | 0.07                          | $9.2 \times 10^{-7}$                  | 0.95                     | 2.95           | 3.11                          | 1.9                    | 0.9°             | CMD2109P                            |
| PKP225MU09A-R2FL | 0.124                         | $18 \times 10^{-7}$                   |                          | 4.4            | 4.6                           | 3.2                    |                  |                                     |

● See "Common Specifications" page for encoder specifications.

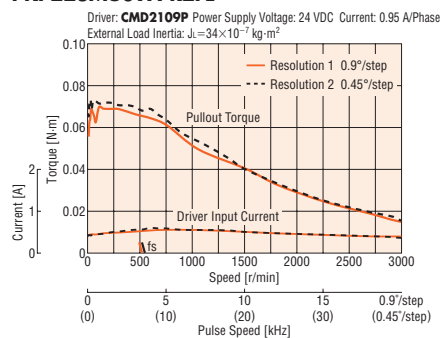
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

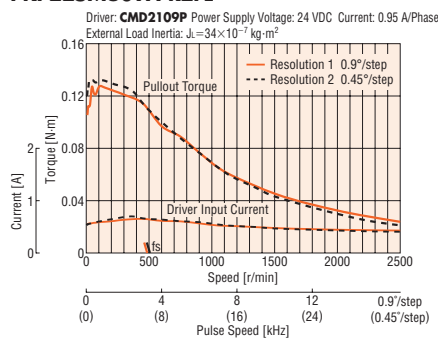
● Set the current of the driver so that it does not exceed the rated current of the motor. If the current of the driver exceeds the rated current of the motor, it may cause damage to the product.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP223MU09A-R2FL



### PKP225MU09A-R2FL



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

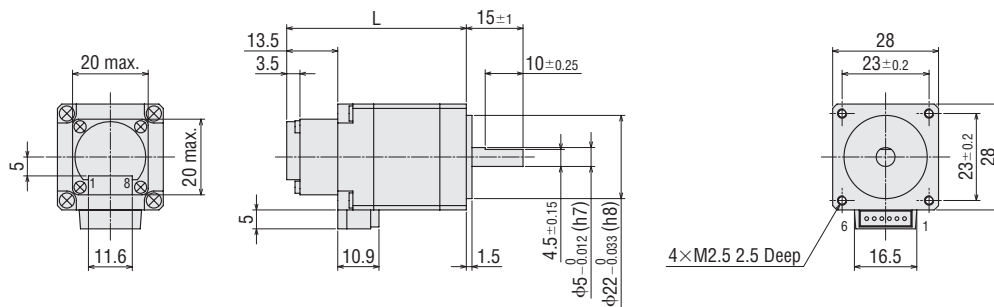
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

### ● Motors

2D & 3D CAD

| Product Name     | L    | Mass<br>kg | 2D CAD |
|------------------|------|------------|--------|
| PKP223MU09A-R2FL | 47.5 | 0.12       | B1198  |
| PKP225MU09A-R2FL | 67   | 0.21       | B1199  |



● Applicable Connector (Molex)

|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0600 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |

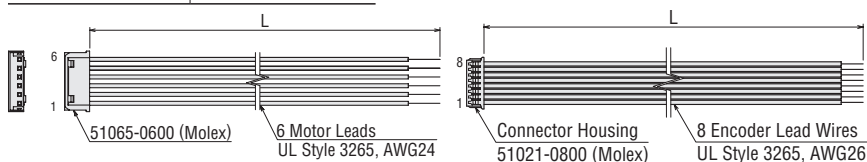
### ● Connection Cables (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |

#### ◇ Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP243MD15□2 | 0.32                          | 39×10 <sup>-7</sup>                   | 1.5                      | 2.7            | 1.8                           | 5.1                    | 0.9°             | CVD223FBR-K                      |
| PKP244MD15□2 | 0.42                          | 58×10 <sup>-7</sup>                   |                          | 3.2            | 2.1                           | 6                      |                  |                                  |
| PKP245MD15□2 | 0.61                          | 78×10 <sup>-7</sup>                   |                          | 3              | 2                             | 6.6                    |                  |                                  |
| PKP246MD15□2 | 0.82                          | 116×10 <sup>-7</sup>                  |                          | 3.9            | 2.6                           | 9                      |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

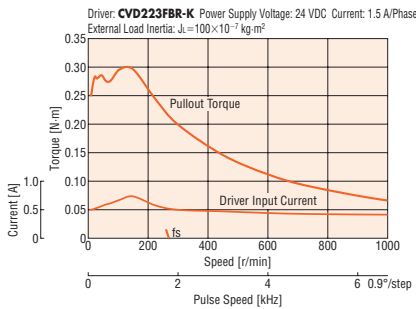
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

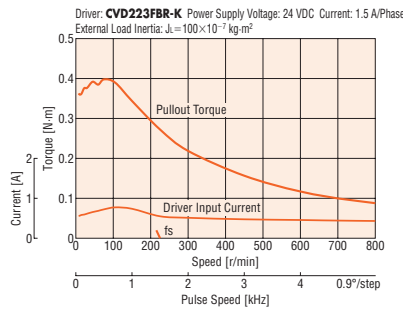
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

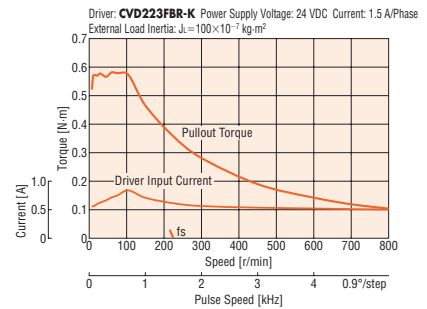
#### PKP243MD15A2/ PKP243MD15B2



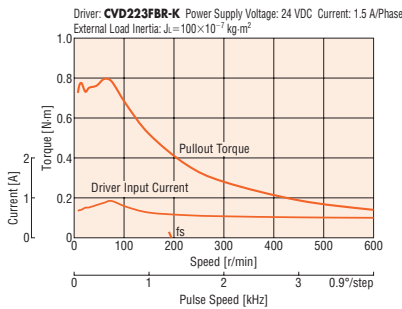
#### PKP244MD15A2/ PKP244MD15B2



#### PKP245MD15A2/ PKP245MD15B2



#### PKP246MD15A2/ PKP246MD15B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP243MD15A2 | 33 | —  | 0.23    | B1260  |
| PKP243MD15B2 |    | 48 |         |        |
| PKP244MD15A2 | 39 | —  | 0.3     | B1261  |
| PKP244MD15B2 |    | 54 |         |        |
| PKP245MD15A2 | 47 | —  | 0.37    | B1262  |
| PKP245MD15B2 |    | 62 |         |        |
| PKP246MD15A2 | 59 | —  | 0.5     | B1263  |
| PKP246MD15B2 |    | 74 |         |        |

#### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

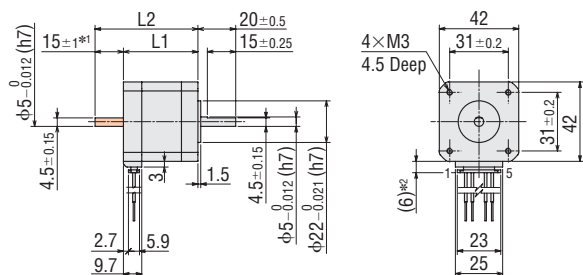
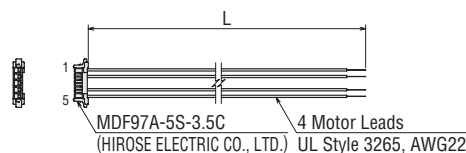
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

#### Connection Cables (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# High-Resolution Type Frame Size 42 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP243MD15□  | 0.30                          | $36 \times 10^{-7}$                   | 1.5                      | 2.85           | 1.9                           | 6.6                    | 0.9°             | CVD215BR-K                          |
| PKP244MD15□  | 0.42                          | $57 \times 10^{-7}$                   |                          | 3.9            | 2.6                           | 7.6                    |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

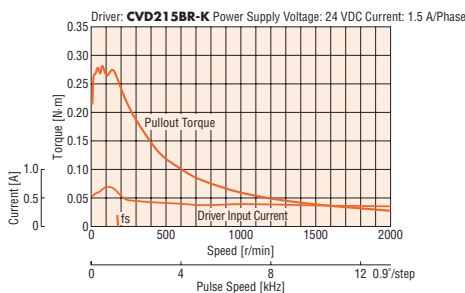
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

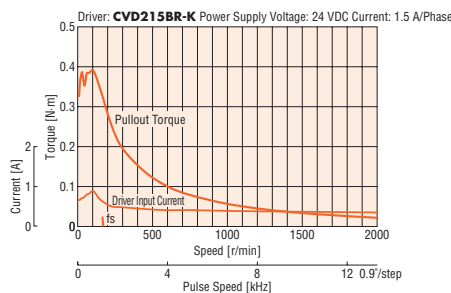
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) $f_s$ : Max. Starting Frequency

#### PKP243MD15A/PKP243MD15B



#### PKP244MD15A/PKP244MD15B



#### Note

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

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

● The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

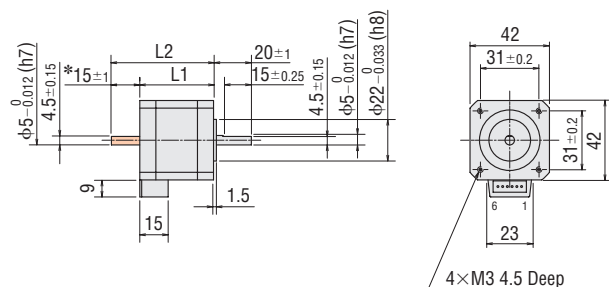
| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP243MD15A  | 33 | —  | 0.25       | B968   |
| PKP243MD15B  |    | 48 |            |        |
| PKP244MD15A  | 39 | —  | 0.3        | B969   |
| PKP244MD15B  |    | 54 |            |        |

#### Applicable Connectors

Connector Housing: 51103-0600 (Molex)

Contact: 50351-8100 (Molex)

Crimp Tool: 57295-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 15±0.25.

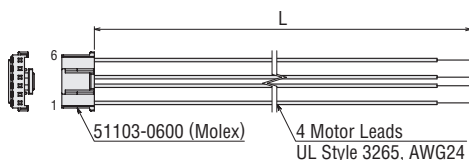
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06B      | 0.6          |
| LC2B10B      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type Frame Size 42 mm (Unipolar 5 lead wires)

## Mini-Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP243MU12□2 | 0.26                          | $39 \times 10^{-7}$                   | 1.2                      | 3.2            | 2.7                           | 3.5                    | 0.9°             | CMD2112P                         |
| PKP244MU12□2 | 0.35                          | $58 \times 10^{-7}$                   |                          | 4.9            | 4.1                           | 5                      |                  |                                  |
| PKP245MU12□2 | 0.5                           | $78 \times 10^{-7}$                   |                          | 3.8            | 3.2                           | 5.3                    |                  |                                  |
| PKP246MU12□2 | 0.65                          | $116 \times 10^{-7}$                  |                          | 4.9            | 4.1                           | 6.7                    |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

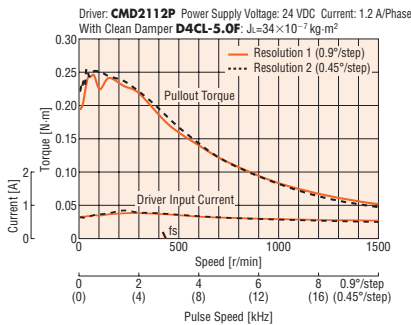
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

**Note**

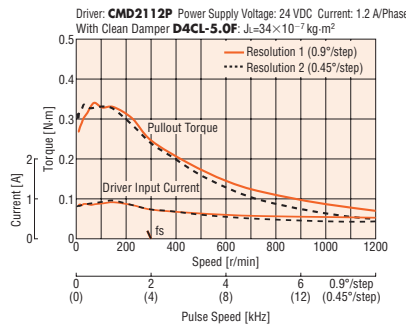
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

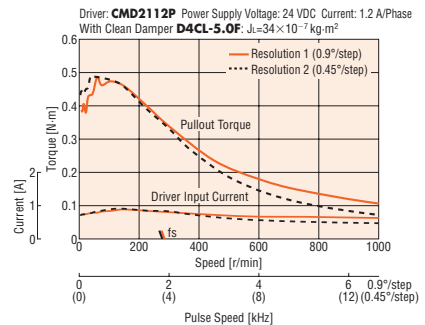
#### PKP243MU12A2/ PKP243MU12B2



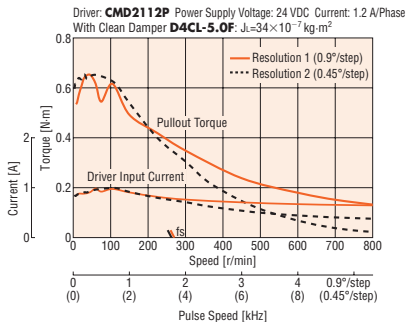
#### PKP244MU12A2/ PKP244MU12B2



#### PKP245MU12A2/ PKP245MU12B2



#### PKP246MU12A2/ PKP246MU12B2



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

### Dimensions (Unit: mm)

#### ● Motors

2D & 3D CAD

| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP243MU12A2 | 33 | —  | 0.23    | B1335  |
| PKP243MU12B2 |    | 48 |         |        |
| PKP244MU12A2 | 39 | —  | 0.3     | B1336  |
| PKP244MU12B2 |    | 54 |         |        |
| PKP245MU12A2 | 47 | —  | 0.37    | B1337  |
| PKP245MU12B2 |    | 62 |         |        |
| PKP246MU12A2 | 59 | —  | 0.5     | B1338  |
| PKP246MU12B2 |    | 74 |         |        |

● Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

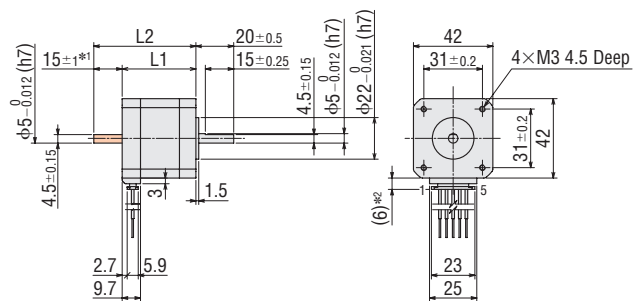
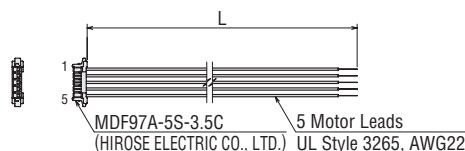
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

#### ● Connection Cables (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type Frame Size 42 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP243MU09□  | 0.25                          | $36 \times 10^{-7}$                   | 0.95                     | 4.47           | 4.7                           | 6.6                    | 0.9°             | <b>CMD2109P</b>                     |
| PKP244MU12□  | 0.35                          | $57 \times 10^{-7}$                   | 1.2                      | 4.8            | 4                             | 6                      |                  | <b>CMD2112P</b>                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

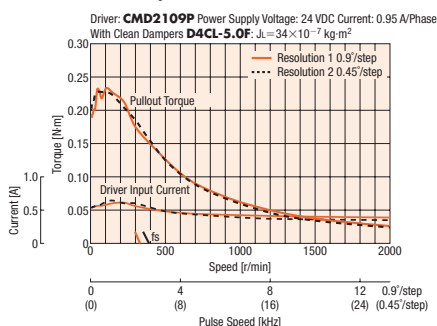
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

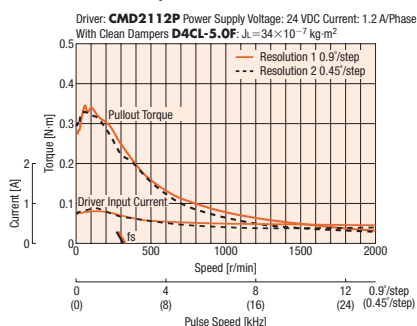
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) $f_s$ : Max. Starting Frequency

#### PKP243MU09A/PKP243MU09B



#### PKP244MU12A/PKP244MU12B



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

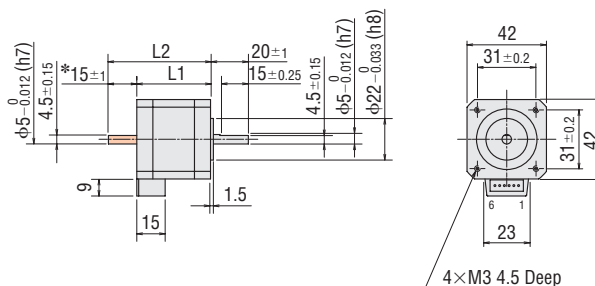
| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP243MU09A  | 33 | —  | 0.25       | B968   |
| PKP243MU09B  |    | 48 |            |        |
| PKP244MU12A  | 39 | —  | 0.3        | B969   |
| PKP244MU12B  |    | 54 |            |        |

#### Applicable Connectors

Connector Housing: 51103-0600 (Molex)

Contact: 50351-8100 (Molex)

Crimp Tool: 57295-5000 (Molex)



\*The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .

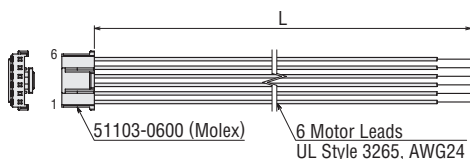
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06B      | 0.6          |
| LC2U10B      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type with Encoder Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP243MD15A2-R3F | 0.32                          | 40×10 <sup>-7</sup>                   | 1.5                      | 2.7            | 1.8                           | 5.1                    | 0.9°             | CVD223FBR-K                      |
| PKP244MD15A2-R3F | 0.42                          | 59×10 <sup>-7</sup>                   |                          | 3.2            | 2.1                           | 6                      |                  |                                  |
| PKP245MD15A2-R3F | 0.61                          | 79×10 <sup>-7</sup>                   |                          | 3              | 2                             | 6.6                    |                  |                                  |
| PKP246MD15A2-R3F | 0.82                          | 117×10 <sup>-7</sup>                  |                          | 3.9            | 2.6                           | 9                      |                  |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

● Refer to the common specifications page for encoder specifications.

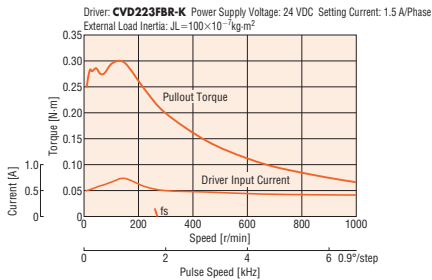
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

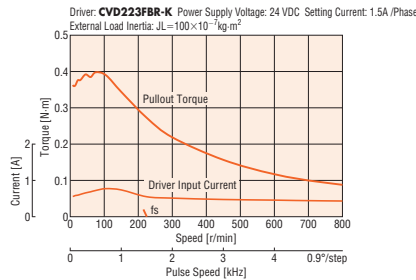
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

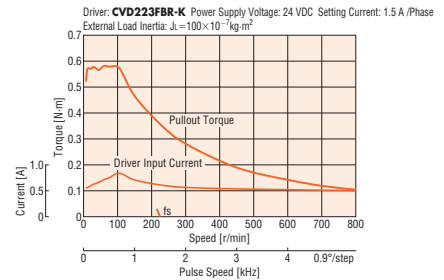
PKP243MD15A2-R3F



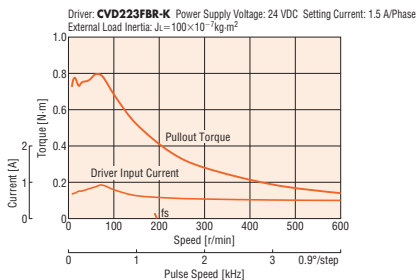
PKP244MD15A2-R3F



PKP245MD15A2-R3F



PKP246MD15A2-R3F



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed - torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit = mm)

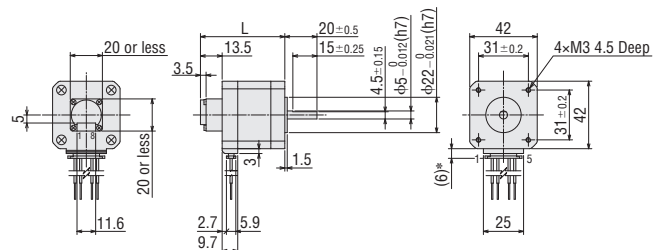
#### Motor

2D & 3D CAD

| Product Name     | L    | Mass kg | 2D CAD |
|------------------|------|---------|--------|
| PKP243MD15A2-R3F | 46.5 | 0.25    | B1321  |
| PKP244MD15A2-R3F | 52.5 | 0.32    | B1322  |
| PKP245MD15A2-R3F | 60.5 | 0.39    | B1323  |
| PKP246MD15A2-R3F | 72.5 | 0.52    | B1324  |

#### Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

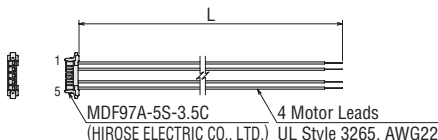


\*With connection cable

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



##### Encoder Connection Cable

###### For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

###### For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

# High-Resolution Type with Encoder Frame Size 42 mm (Unipolar 5 lead wires)

## Mini-Connector Type

### Specifications

| Product Name             | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| <b>PKP243MU12A2-R2FL</b> | 0.26                          | $39 \times 10^{-7}$                   | 1.2                      | 3.2            | 2.7                           | 3.5                    | 0.9°             | <b>CMD21 12P</b>                    |
| <b>PKP244MU12A2-R2FL</b> | 0.35                          | $58 \times 10^{-7}$                   |                          | 4.9            | 4.1                           | 5                      |                  |                                     |
| <b>PKP245MU12A2-R2FL</b> | 0.5                           | $78 \times 10^{-7}$                   |                          | 3.8            | 3.2                           | 5.3                    |                  |                                     |
| <b>PKP246MU12A2-R2FL</b> | 0.65                          | $116 \times 10^{-7}$                  |                          | 4.9            | 4.1                           | 6.7                    |                  |                                     |

● See "Common Specifications" page for encoder specifications.

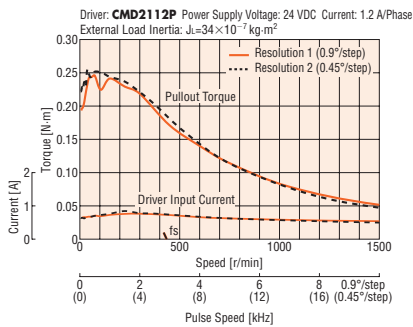
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

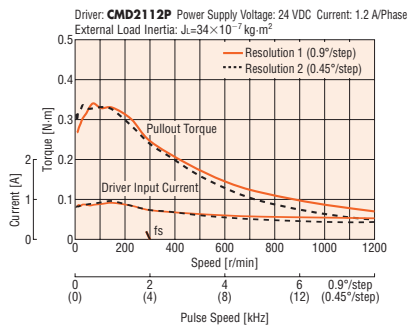
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

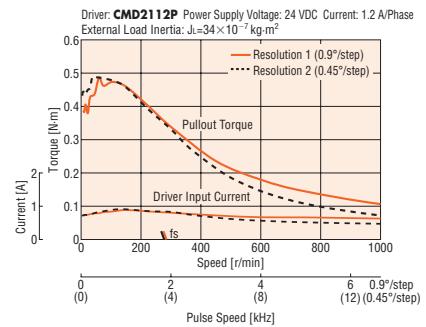
#### PKP243MU12A2-R2FL



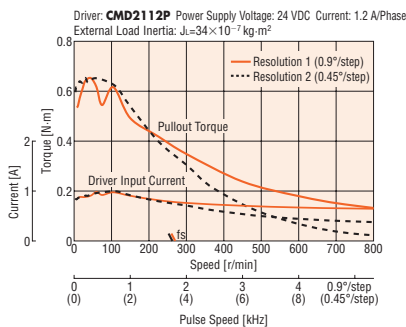
#### PKP244MU12A2-R2FL



#### PKP245MU12A2-R2FL



#### PKP246MU12A2-R2FL



#### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

### Dimensions (Unit: mm)

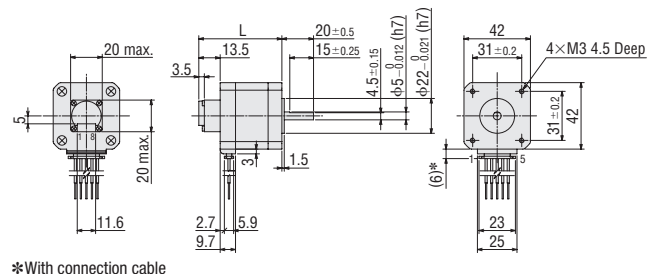
#### ● Motors

2D & 3D CAD

| Product Name             | L    | Mass<br>kg | 2D CAD |
|--------------------------|------|------------|--------|
| <b>PKP243MU12A2-R2FL</b> | 46.5 | 0.23       | B1328  |
| <b>PKP244MU12A2-R2FL</b> | 52.5 | 0.3        | B1329  |
| <b>PKP245MU12A2-R2FL</b> | 60.5 | 0.37       | B1330  |
| <b>PKP246MU12A2-R2FL</b> | 72.5 | 0.5        | B1331  |

● Applicable Connectors

|                   | Motor<br>(HIROSE ELECTRIC CO.,LTD.) | Encoder<br>(Molex) |
|-------------------|-------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                      | 51021-0800         |
| Contact           | MDF97-22SC                          | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                     | 57177-5000         |

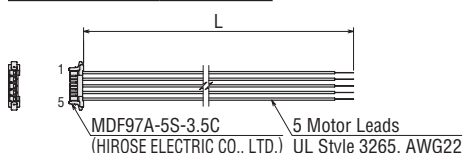


\*With connection cable

#### ● Connection Cables (Sold separately)

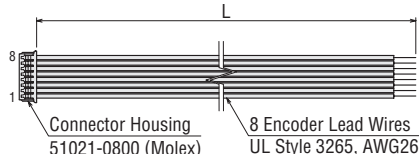
##### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06E</b> | 0.6          |
| <b>LC2U10E</b> | 1            |



##### ◇ Encoder Connection Cable

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type with Electromagnetic Brake Frame Size 42 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP243MD15M</b> | 0.30                          | 48×10 <sup>-7</sup> *                 | 1.5                      | 2.85           | 1.9                           | 6.6                    | 0.9°             | 0.3                                                 |
| <b>PKP244MD15M</b> | 0.42                          | 69×10 <sup>-7</sup> *                 |                          | 3.9            | 2.6                           | 7.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

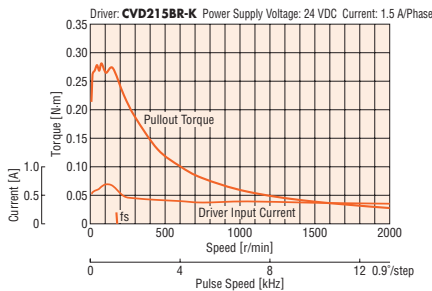
\* This value is including the electromagnetic brake inertia.

### Note

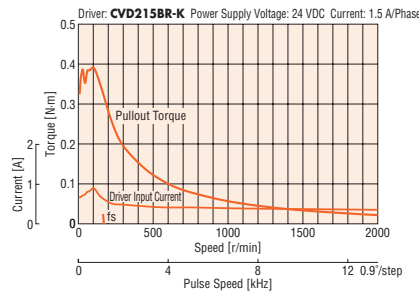
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP243MD15M



### PKP244MD15M



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name       | L  | Mass<br>kg | 2D CAD |
|--------------------|----|------------|--------|
| <b>PKP243MD15M</b> | 67 | 0.36       | B1136  |
| <b>PKP244MD15M</b> | 73 | 0.41       | B1137  |

● Applicable Connector (Molex)

Connector Housing: 51103-0600

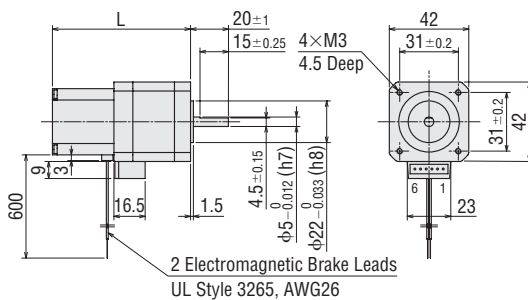
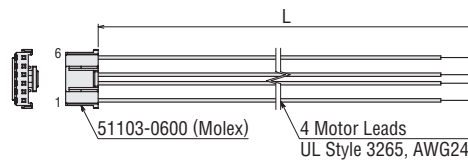
Contact: 50351-8100

Crimp Tool: 57295-5000

### Connection Cables (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06B</b> | 0.6          |
| <b>LC2B10B</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type with Electromagnetic Brake Frame Size 42 mm (Unipolar 6 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP243MU09M</b> | 0.25                          | 48×10 <sup>-7</sup> *                 | 0.95                     | 4.47           | 4.7                           | 6.6                    | 0.9°             | 0.3                                                 |
| <b>PKP244MU12M</b> | 0.35                          | 69×10 <sup>-7</sup> *                 | 1.2                      | 4.8            | 4                             | 6                      |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

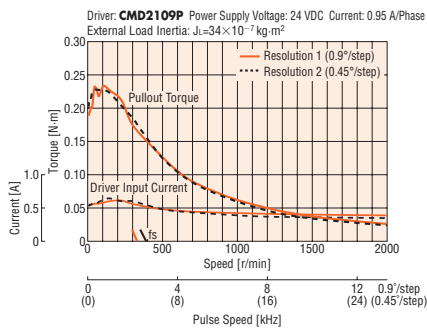
\*The Inertia of the electromagnetic brake is included in the value.

### Note

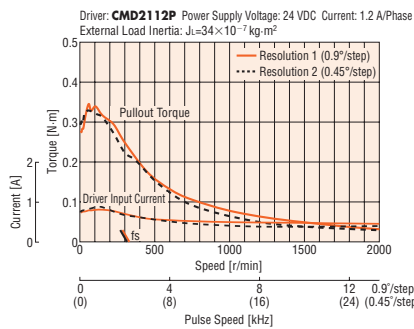
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PKP243MU09M



### PKP244MU12M



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

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

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

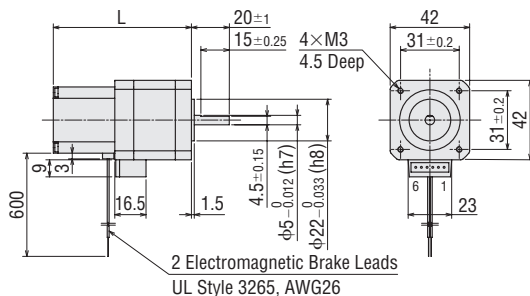
| Product Name       | L  | Mass<br>kg | 2D CAD |
|--------------------|----|------------|--------|
| <b>PKP243MU09M</b> | 67 | 0.36       | B1136  |
| <b>PKP244MU12M</b> | 73 | 0.41       | B1137  |

● Applicable Connector (Molex)

Connector Housing: 51103-0600

Contact: 50351-8100

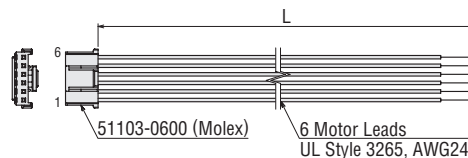
Crimp Tool: 57295-5000



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06B</b> | 0.6          |
| <b>LC2U10B</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.



# High-Resolution Type Frame Size 56.4 mm (Bipolar 4 lead wires)

## Mini-Connector Type

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP264MD28□2 | 0.7                           | 150×10 <sup>-7</sup>                  | 2.8                      | 2              | 0.73                          | 2.1                    | 0.9°             | CVD228BR-K                       |
| PKP266MD28□2 | 1.4                           | 310×10 <sup>-7</sup>                  |                          | 1.8            | 0.65                          | 3                      |                  |                                  |
| PKP268MD28□2 | 2.3                           | 520×10 <sup>-7</sup>                  |                          | 2.7            | 0.97                          | 4.7                    |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

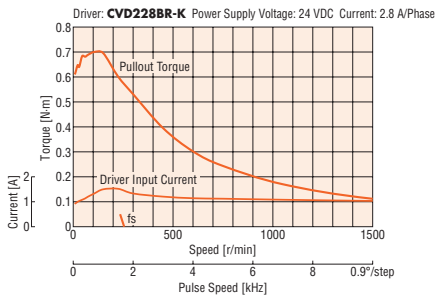
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

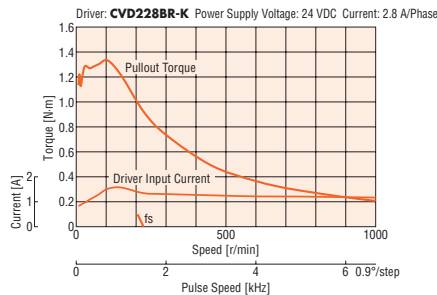
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

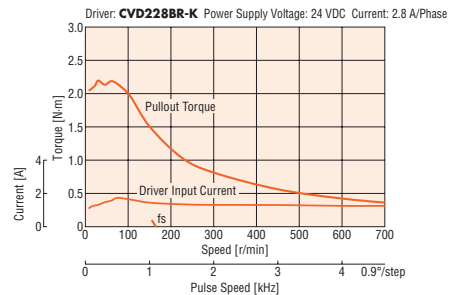
PKP264MD28A2/ PKP264MD28B2



PKP266MD28A2/ PKP266MD28B2



PKP268MD28A2/ PKP268MD28B2



#### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### ● Motors

2D & 3D CAD

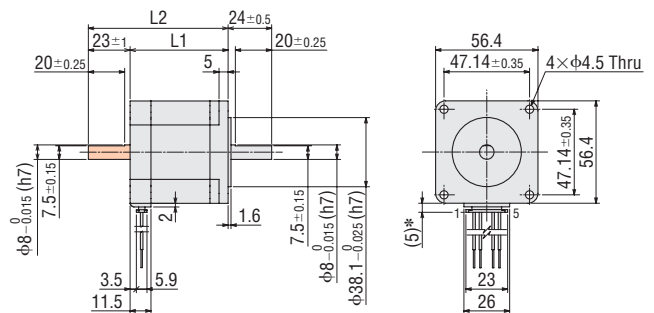
| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP264MD28A2 | 39 | —  | 0.45    | B1249  |
| PKP264MD28B2 |    | 62 |         |        |
| PKP266MD28A2 | 54 | —  | 0.7     | B1250  |
| PKP266MD28B2 |    | 77 |         |        |
| PKP268MD28A2 | 76 | —  | 1.1     | B1251  |
| PKP268MD28B2 |    | 99 |         |        |

#### ● Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

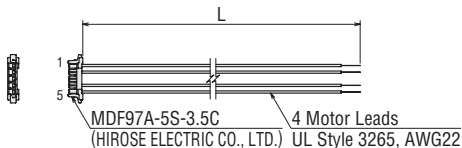
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### ● Connection Cables (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type Frame Size 56.4 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name        | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|---------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| <b>PKP264MD28</b> □ | 0.6                           | $120 \times 10^{-7}$                  | 2.8                      | 2              | 0.73                          | 2.1                    | 0.9°             | <b>CVD228BR-K</b>                   |
| <b>PKP266MD28</b> □ | 1.32                          | $290 \times 10^{-7}$                  |                          | 2.8            | 1                             | 3.9                    |                  |                                     |
| <b>PKP268MD28</b> □ | 2.23                          | $490 \times 10^{-7}$                  |                          | 3.4            | 1.23                          | 5.6                    |                  |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

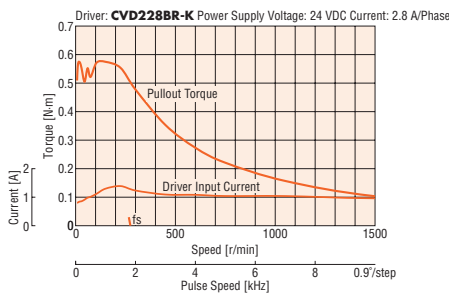
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

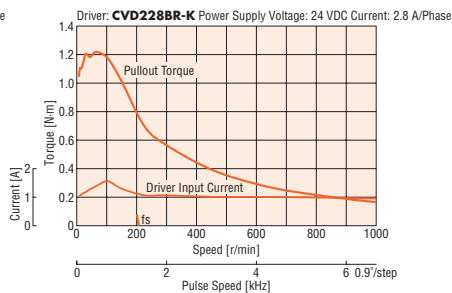
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

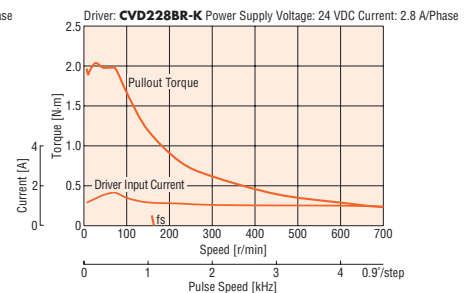
#### PKP264MD28A/PKP264MD28B



#### PKP266MD28A/PKP266MD28B



#### PKP268MD28A/PKP268MD28B



#### Note

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

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

● The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

| Product Name       | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------------|----|----|------------|--------|
| <b>PKP264MD28A</b> | 39 | —  | 0.46       | B972   |
| <b>PKP264MD28B</b> |    | 62 |            |        |
| <b>PKP266MD28A</b> | 54 | —  | 0.73       | B973   |
| <b>PKP266MD28B</b> |    | 77 |            |        |
| <b>PKP268MD28A</b> | 76 | —  | 1.1        | B974   |
| <b>PKP268MD28B</b> |    | 99 |            |        |

#### Applicable Connectors

Connector Housing: 51067-0600 (Molex)

Contact: 50217-9101 (Molex)

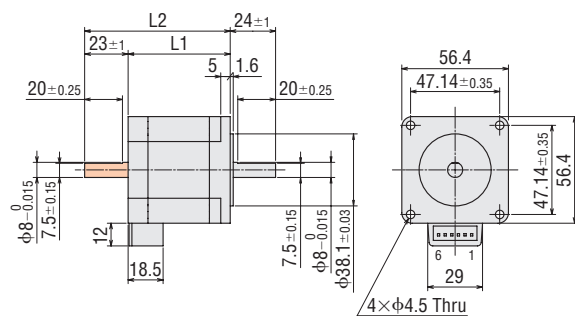
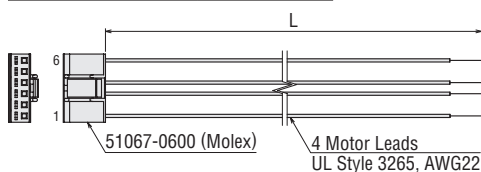
Crimp Tool: 57189-5000 (Molex)

57190-5000 (Molex)

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06C</b> | 0.6          |
| <b>LC2B10C</b> | 1            |



● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type Frame Size 56.4 mm (Unipolar 5 lead wires)

## Mini-Connector Type

### Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| PKP264MU20□2 | 0.55                          | 150×10 <sup>-7</sup>                  | 2                        | 2.9            | 1.45                          | 2.1                    | 0.9°             | CMD2120P                         |
| PKP266MU20□2 | 1.2                           | 310×10 <sup>-7</sup>                  |                          | 2.8            | 1.39                          | 3.5                    |                  |                                  |
| PKP268MU20□2 | 1.8                           | 520×10 <sup>-7</sup>                  |                          | 3.6            | 1.81                          | 4.3                    |                  |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

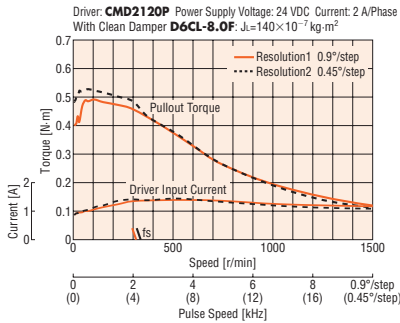
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

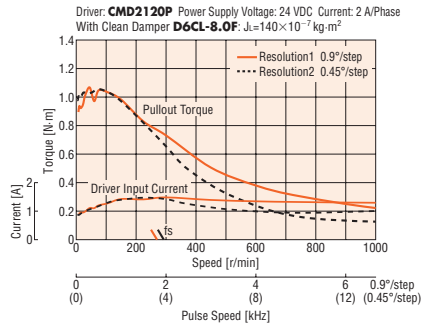
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

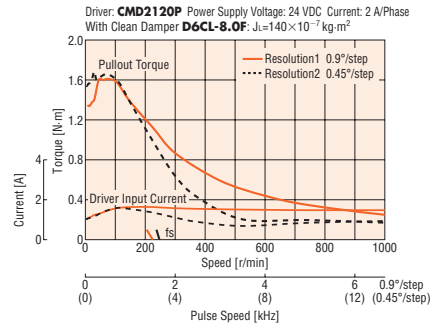
#### PKP264MU20A2/ PKP264MU20B2



#### PKP266MU20A2/ PKP266MU20B2



#### PKP268MU20A2/ PKP268MU20B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

### Dimensions (Unit: mm)

#### ● Motors

2D & 3D CAD

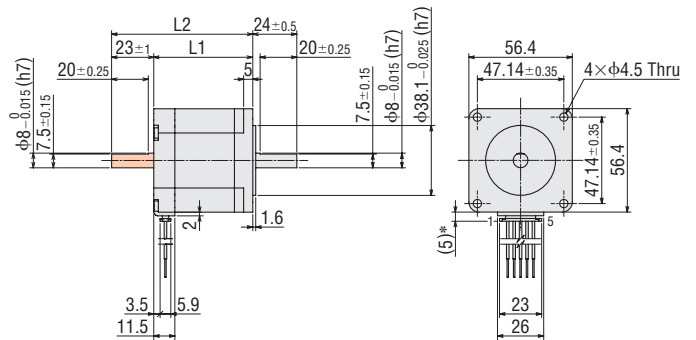
| Product Name | L1 | L2 | Mass kg | 2D CAD |
|--------------|----|----|---------|--------|
| PKP264MU20A2 | 39 | —  | 0.45    | B1257  |
| PKP264MU20B2 |    | 62 |         |        |
| PKP266MU20A2 | 54 | —  | 0.7     | B1258  |
| PKP266MU20B2 |    | 77 |         |        |
| PKP268MU20A2 | 76 | —  | 1.1     | B1259  |
| PKP268MU20B2 |    | 99 |         |        |

#### ● Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

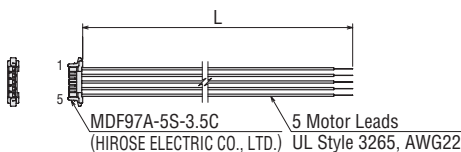
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### ● Connection Cables (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type Frame Size 56.4 mm (Unipolar 6 lead wires) Connector Type

## Specifications

| Product Name | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|--------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP264MU20□  | 0.51                          | 120×10 <sup>-7</sup>                  | 2                        | 2.9            | 1.45                          | 2.1                    | 0.9°             | CMD2120P                            |
| PKP266MU20□  | 1.1                           | 290×10 <sup>-7</sup>                  |                          | 4              | 2                             | 3.9                    |                  |                                     |
| PKP268MU20□  | 1.75                          | 490×10 <sup>-7</sup>                  |                          | 4.9            | 2.45                          | 5.6                    |                  |                                     |

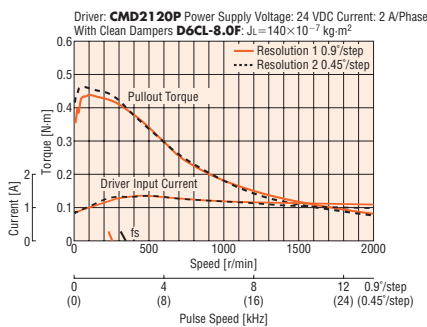
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).  
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

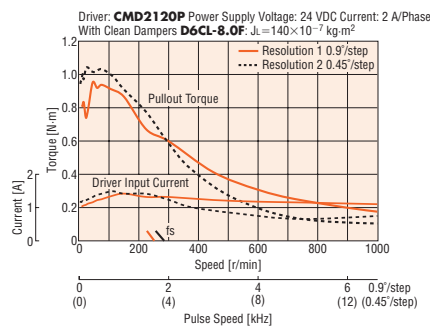
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) *f*<sub>s</sub>: Max. Starting Frequency

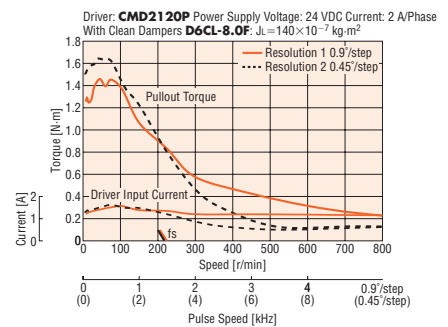
### PKP264MU20A/PKP264MU20B



### PKP266MU20A/PKP266MU20B



### PKP268MU20A/PKP268MU20B



### Note

● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.  
● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.  
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------|----|----|------------|--------|
| PKP264MU20A  | 39 | —  | 0.46       | B972   |
| PKP264MU20B  |    | 62 |            |        |
| PKP266MU20A  | 54 | —  | 0.73       | B973   |
| PKP266MU20B  |    | 77 |            |        |
| PKP268MU20A  | 76 | —  | 1.1        | B974   |
| PKP268MU20B  |    | 99 |            |        |

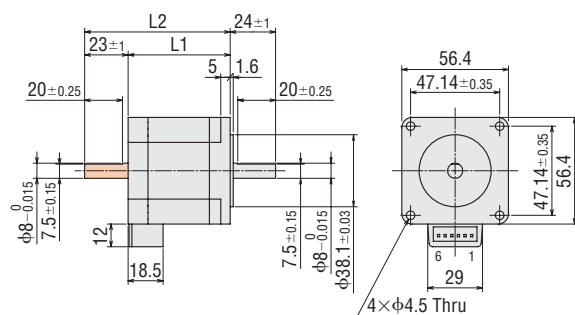
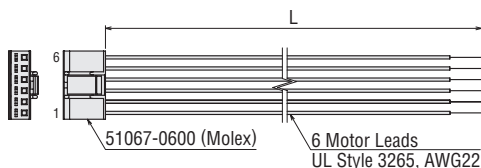
### Applicable Connectors

Connector Housing: 51067-0600 (Molex)  
Contact: 50217-9101 (Molex)  
Crimp Tool: 57189-5000 (Molex)  
57190-5000 (Molex)

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06C      | 0.6          |
| LC2U10C      | 1            |



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

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# High-Resolution Type with Encoder Frame Size 56.4 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name                                                                            | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------------------------------------------------------------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| <b>PKP264MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 0.7                           | 150×10 <sup>-7</sup>                  | 2.8                      | 2              | 0.73                          | 2.1                    | 0.9°             | <b>CVD228BR-K</b>                |
| <b>PKP266MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 1.4                           | 310×10 <sup>-7</sup>                  |                          | 1.8            | 0.65                          | 3                      |                  |                                  |
| <b>PKP268MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 2.3                           | 520×10 <sup>-7</sup>                  |                          | 2.7            | 0.97                          | 4.7                    |                  |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

● Refer to the common specifications page for encoder specifications.

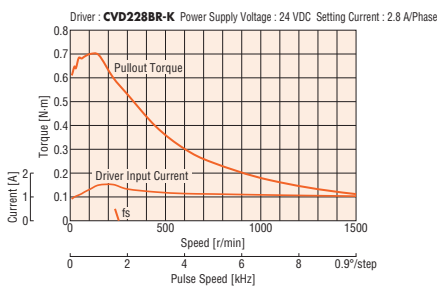
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

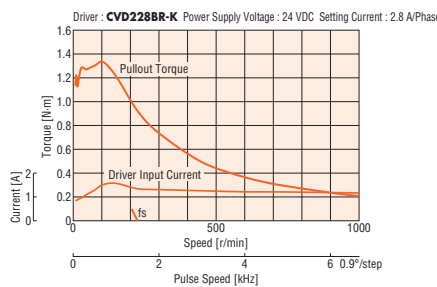
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

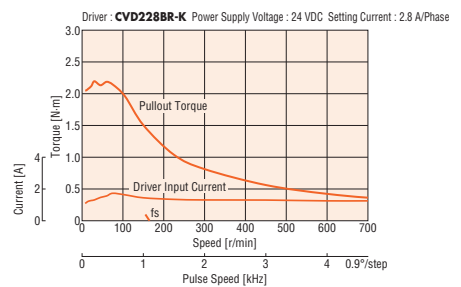
**PKP264MD28A2-R3F**



**PKP266MD28A2-R3F**



**PKP268MD28A2-R3F**



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit = mm)

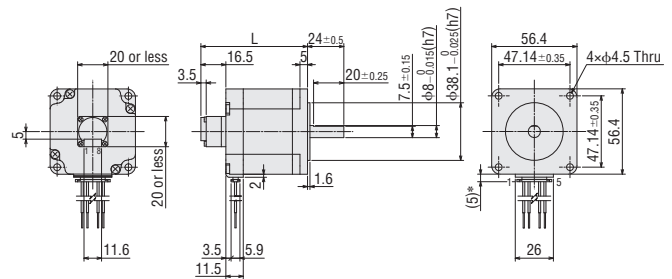
### Motor

2D & 3D CAD

| Product Name                                                                            | L    | Mass<br>kg | 2D CAD |
|-----------------------------------------------------------------------------------------|------|------------|--------|
| <b>PKP264MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 55.5 | 0.47       | B1325  |
| <b>PKP266MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 70.5 | 0.72       | B1326  |
| <b>PKP268MD28A2-R3F</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> | 92.5 | 1.12       | B1327  |

● Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

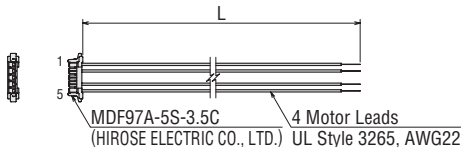


\*With connection cable

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### ● For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

# High-Resolution Type with Encoder Frame Size 56.4 mm (Unipolar 5 lead wires)

## Mini-Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| PKP264MU20A2-R2FL | 0.55                          | 150×10 <sup>-7</sup>                  | 2                        | 2.9            | 1.45                          | 2.1                    | 0.9°             | CMD2120P                            |
| PKP266MU20A2-R2FL | 1.2                           | 310×10 <sup>-7</sup>                  |                          | 2.8            | 1.39                          | 3.5                    |                  |                                     |
| PKP268MU20A2-R2FL | 1.8                           | 520×10 <sup>-7</sup>                  |                          | 3.6            | 1.81                          | 4.3                    |                  |                                     |

● See "Common Specifications" page for encoder specifications.

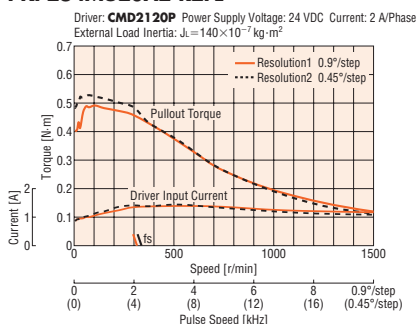
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

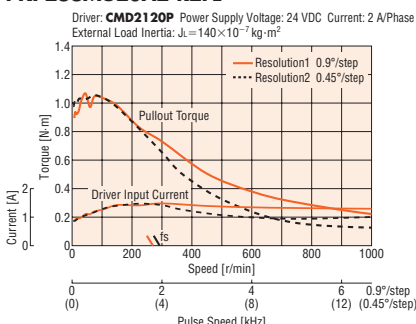
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

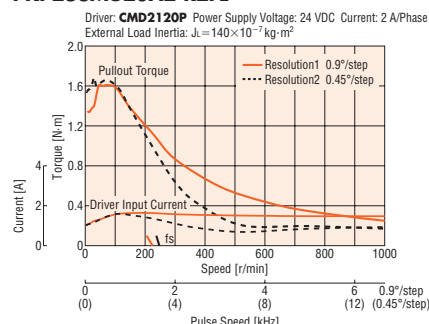
### PKP264MU20A2-R2FL



### PKP266MU20A2-R2FL



### PKP268MU20A2-R2FL



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The data in the speed – torque characteristics represents the use of an external load inertia.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

## Dimensions (Unit: mm)

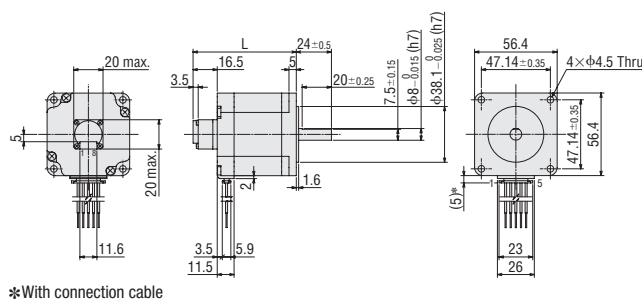
### Motors

2D & 3D CAD

| Product Name      | L    | Mass<br>kg | 2D CAD |
|-------------------|------|------------|--------|
| PKP264MU20A2-R2FL | 55.5 | 0.45       | B1332  |
| PKP266MU20A2-R2FL | 70.5 | 0.7        | B1333  |
| PKP268MU20A2-R2FL | 92.5 | 1.1        | B1334  |

### Applicable Connectors

|                   | Motor<br>(HIROSE ELECTRIC CO.,LTD.) | Encoder<br>(Molex) |
|-------------------|-------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                      | 51021-0800         |
| Contact           | MDF97-22SC                          | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                     | 57177-5000         |

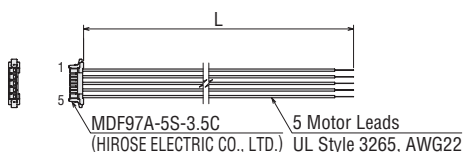


\*With connection cable

### Connection Cables (Sold separately)

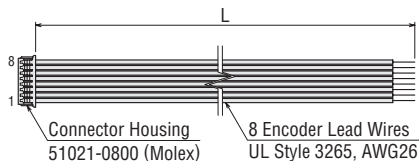
#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



#### Encoder Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC08A-006    | 0.6          |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# High-Resolution Type with Electromagnetic Brake Frame Size 56.4 mm (Bipolar 4 lead wires)

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP264MD28M</b> | 0.6                           | 270×10 <sup>-7</sup> *                | 2.8                      | 2              | 0.73                          | 2.1                    | 0.9°             | 1.5                                                 |
| <b>PKP266MD28M</b> | 1.32                          | 440×10 <sup>-7</sup> *                |                          | 2.8            | 1                             | 3.9                    |                  |                                                     |
| <b>PKP268MD28M</b> | 2.23                          | 640×10 <sup>-7</sup> *                |                          | 3.4            | 1.23                          | 5.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

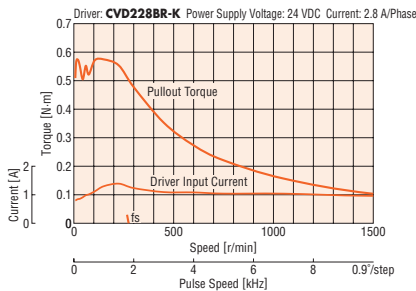
\* This value is including the electromagnetic brake inertia.

### Note

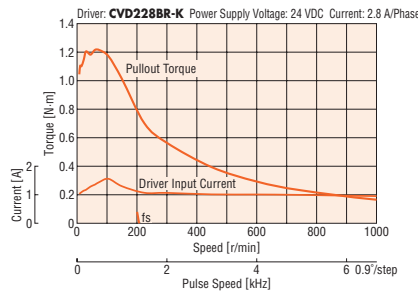
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

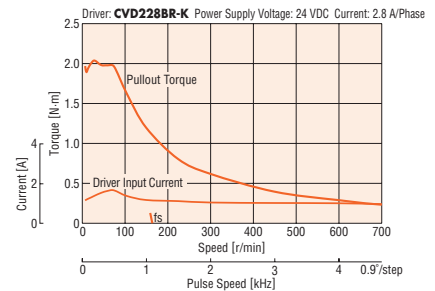
**PKP264MD28M**



**PKP266MD28M**



**PKP268MD28M**



### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name       | L     | Mass<br>kg | 2D CAD |
|--------------------|-------|------------|--------|
| <b>PKP264MD28M</b> | 75.5  | 0.76       | B1140  |
| <b>PKP266MD28M</b> | 90.5  | 1.03       | B1141  |
| <b>PKP268MD28M</b> | 112.5 | 1.4        | B1142  |

● Applicable Connector (Molex)

Connector Housing: 51067-0600

Contact: 50217-9101

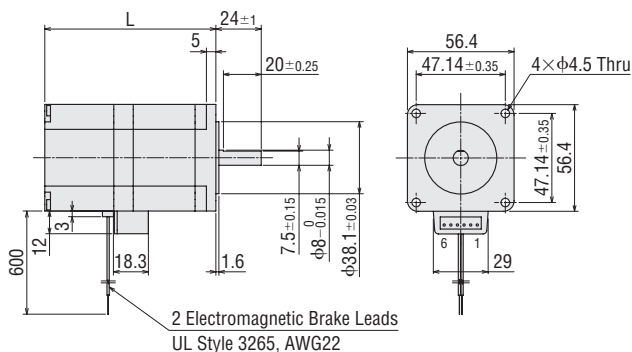
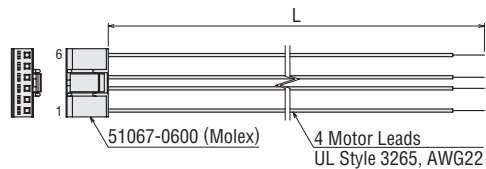
Crimp Tool: 57189-5000

57190-5000

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06C</b> | 0.6          |
| <b>LC2B10C</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.



# High-Resolution Type with Electromagnetic Brake Frame Size 56.4 mm (Unipolar 6 lead wires) Connector Type

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Electromagnetic Brake Static Friction Torque<br>N·m |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-----------------------------------------------------|
| <b>PKP264MU20M</b> | 0.51                          | 270×10 <sup>-7</sup> *                | 2                        | 2.9            | 1.45                          | 2.1                    | 0.9°             | 1.5                                                 |
| <b>PKP266MU20M</b> | 1.1                           | 440×10 <sup>-7</sup> *                |                          | 4              | 2                             | 3.9                    |                  |                                                     |
| <b>PKP268MU20M</b> | 1.75                          | 640×10 <sup>-7</sup> *                |                          | 4.9            | 2.45                          | 5.6                    |                  |                                                     |

● Refer to the common specification page for electromagnetic brake specifications.

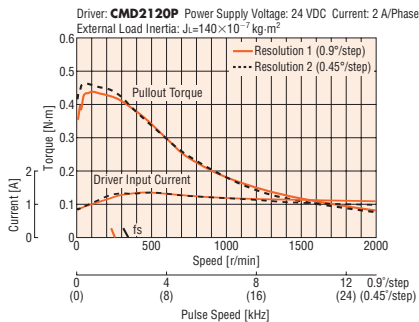
\* This value is including the electromagnetic brake inertia.

### Note

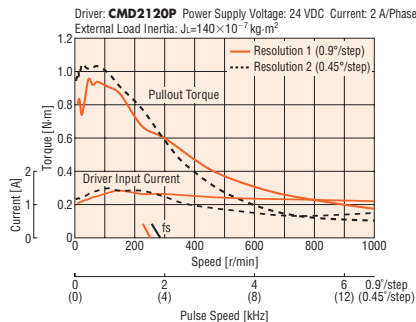
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

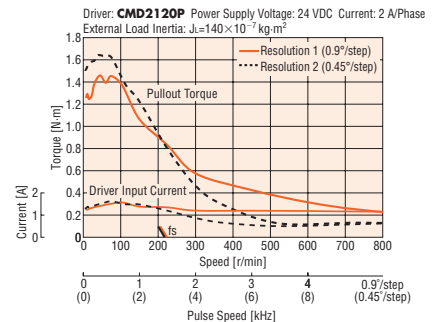
### PKP264MU20M



### PKP266MU20M



### PKP268MU20M



### Note

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

● The data in the speed – torque characteristics represents the use of an external load inertia.

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

## Dimensions (Unit: mm)

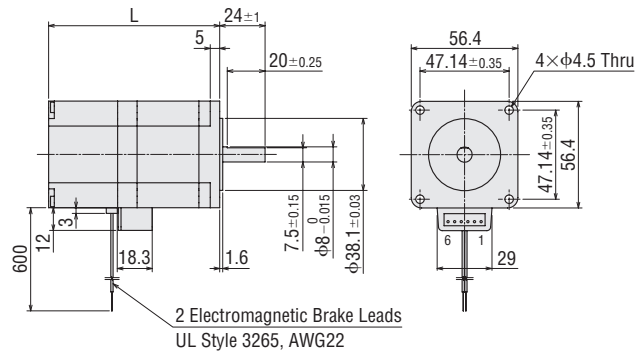
### Motors

2D & 3D CAD

| Product Name       | L     | Mass<br>kg | 2D CAD |
|--------------------|-------|------------|--------|
| <b>PKP264MU20M</b> | 75.5  | 0.76       | B1140  |
| <b>PKP266MU20M</b> | 90.5  | 1.03       | B1141  |
| <b>PKP268MU20M</b> | 112.5 | 1.4        | B1142  |

● Applicable Connector (Molex)

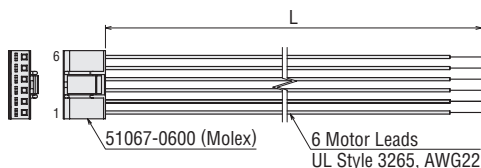
Connector Housing: 51067-0600  
Contact: 50217-9101  
Crimp Tool: 57189-5000  
57190-5000



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06C</b> | 0.6          |
| <b>LC2U10C</b> | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Flat Type Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name       | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|----------------------------------|
| <b>PKP242D23A2</b> | 0.1                           | $13 \times 10^{-7}$                   | 2.3                      | 1.4            | 0.61                          | 0.53                   | 1.8°             | <b>CVD223FBR-K</b>               |

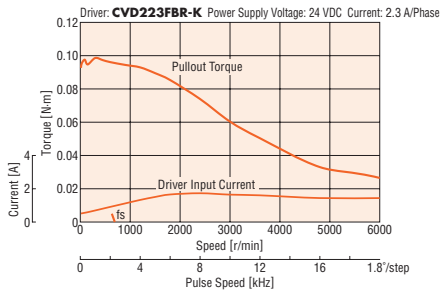
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

#### PKP242D23A2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

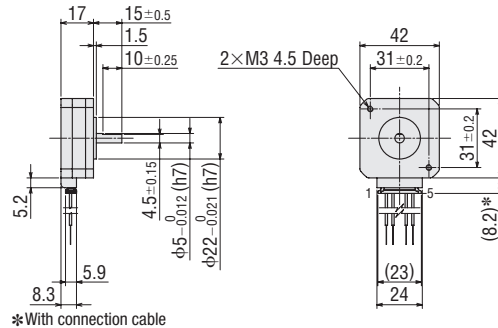
#### Motors

2D & 3D CAD

| Product Name       | Mass<br>kg | 2D CAD |
|--------------------|------------|--------|
| <b>PKP242D23A2</b> | 0.11       | B1355  |

#### Applicable Connectors

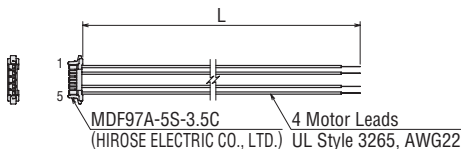
- Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
- Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
- Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



#### Connection Cables (Sold separately)

##### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Flat Type Frame Size 60 mm (Bipolar 4 lead wires)

## Lead Wire Type

### Specifications

| Product Name        | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|---------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|-------------------------------------|
| <b>PKP262FD15AW</b> | 0.18                          | $68 \times 10^{-7}$                   | 1.5                      | 2.25           | 1.5                           | 1.4                    | 1.8°             | <b>CVD215BR-K</b>                   |

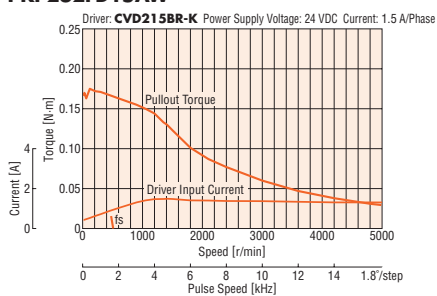
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) *f*<sub>s</sub>: Max. Starting Frequency

#### PKP262FD15AW



#### Note

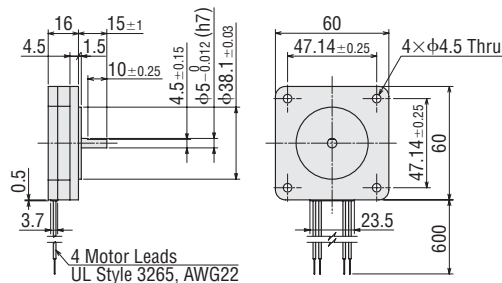
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

| Product Name        | Mass<br>kg | 2D CAD |
|---------------------|------------|--------|
| <b>PKP262FD15AW</b> | 0.2        | B1170  |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Flat Type with Harmonic Gear

Frame Size 51 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Maximum Instantaneous Torque<br>N·m | Lost Motion (Load Torque)<br>arcmin | Speed Range<br>r/min | Recommended Driver Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|-------------------------------------|-------------------------------------|----------------------|----------------------------------|
| PKP242D23A2-H50  | 1.8                           | 17×10 <sup>-7</sup>                   | 2.3                      | 1.4            | 0.61                          | 0.53                   | 0.036°           | 50         | 1.8                       | 3.3                                 | 1.5 max.<br>(±0.09 N·m)             | 0 – 70               | CVD223FBR-K                      |
| PKP242D23A2-H100 | 2.4                           |                                       |                          |                |                               |                        | 0.018°           | 100        | 2.4                       | 4.8                                 | 1.5 max.<br>(±0.12 N·m)             | 0 – 35               |                                  |

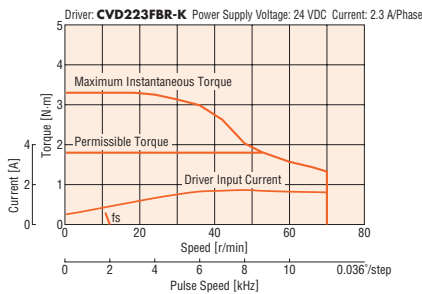
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

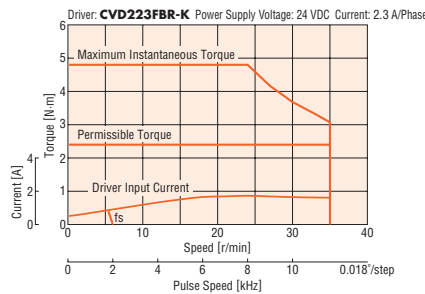
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP242D23A2-H50



PKP242D23A2-H100



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The speed – torque characteristics is data when the gear case temperature is at 25 to 30°C. As the temperature decreases, the viscosity of the grease in the gear increases and the torque decreases.
- In order to prevent deterioration of the gear grease in the harmonic geared type, keep the temperature of the gear case at 70°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

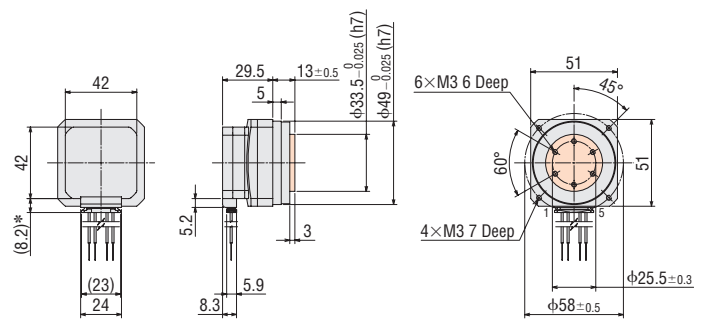
### Motors

2D & 3D CAD

| Product Name     | Mass kg | 2D CAD |
|------------------|---------|--------|
| PKP242D23A2-H50  | 0.32    | B1356  |
| PKP242D23A2-H100 |         |        |

### Applicable Connectors

- Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)
- Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)
- Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

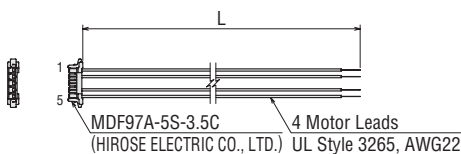


- The shaded areas are rotating parts.
- \*With connection cable

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# Flat Type with Harmonic Gear

Frame Size 61 mm (Bipolar 4 lead wires)

Lead Wire Type

## Specifications

| Product Name              | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Maximum Instantaneous Torque<br>N·m | Lost Motion (Load Torque)<br>arcmin | Speed Range<br>r/min | Recommended Driver<br>Product Name* |
|---------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|-------------------------------------|-------------------------------------|----------------------|-------------------------------------|
| <b>PKP262FD15AW-H50S</b>  | 3.5                           | 83×10 <sup>-7</sup>                   | 1.5                      | 1.65           | 1.1                           | 0.8                    | 0.036°           | 50         | 3.5                       | *                                   | 1.5 max.<br>(±0.17 N·m)             | 0 to 70              | <b>CVD215BR-K</b>                   |
| <b>PKP262FD15AW-H100S</b> | 5                             |                                       |                          |                |                               |                        | 0.018°           | 100        | 5                         | *                                   | 1.5 max.<br>(±0.25 N·m)             | 0 to 35              |                                     |

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

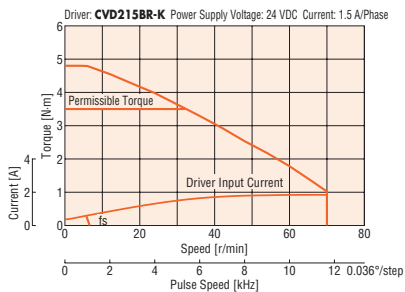
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

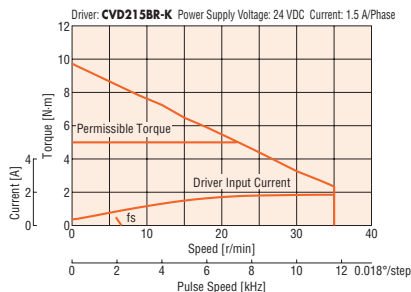
- The rotor inertia represents a sum of the inertia of the harmonic gear converted to motor shaft values.
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

**PKP262FD15AW-H50S**



**PKP262FD15AW-H100S**



### Note

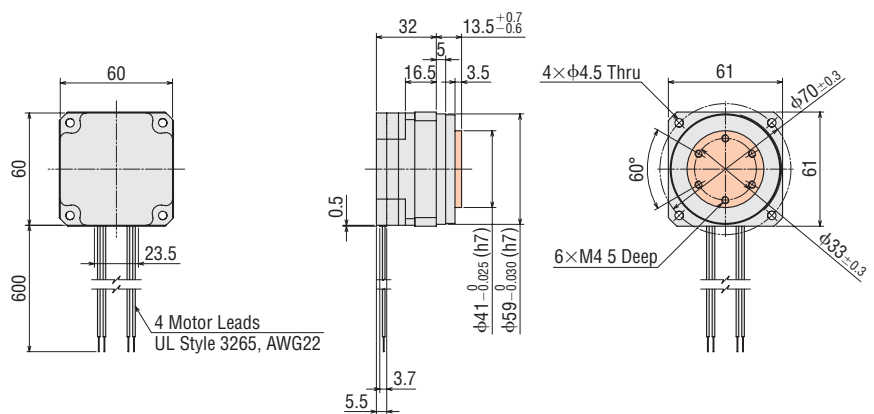
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- The speed – torque characteristics is data when the gear case temperature is at 25 to 30°C. As the temperature decreases, the viscosity of the grease in the gear increases and the torque decreases.
- In order to prevent deterioration of the gear grease in the harmonic geared type, keep the temperature of the gear case at 70°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name              | Mass<br>kg | 2D CAD |
|---------------------------|------------|--------|
| <b>PKP262FD15AW-H50S</b>  | 0.54       | B1451  |
| <b>PKP262FD15AW-H100S</b> |            |        |



● The shaded areas are rotating parts.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑤

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name            | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| <b>PKP223D15□-SG7.2</b> | 0.3                           | 9×10 <sup>-7</sup>                    | 1.5                      | 1.8            | 1.2                           | 0.74                   | 0.25°            | 7.2        | 0.3                       | 0 – 416              | 90 (1.5)           | <b>CVD215BR-K</b>                |
| 0.2°                    |                               |                                       |                          |                |                               |                        | 9                | 0 – 333    |                           |                      |                    |                                  |
| <b>PKP223D15□-SG10</b>  | 0.4                           | 9×10 <sup>-7</sup>                    | 1.5                      | 1.8            | 1.2                           | 0.74                   | 0.18°            | 10         | 0.4                       | 0 – 300              | 90 (1.5)           | <b>CVD215BR-K</b>                |
| 0.1°                    |                               |                                       |                          |                |                               |                        | 18               | 0 – 166    |                           |                      |                    |                                  |
| <b>PKP223D15□-SG18</b>  | 0.4                           | 9×10 <sup>-7</sup>                    | 1.5                      | 1.8            | 1.2                           | 0.74                   | 0.1°             | 18         | 0.4                       | 0 – 166              | 90 (1.5)           | <b>CVD215BR-K</b>                |
| 0.05°                   |                               |                                       |                          |                |                               |                        | 36               | 0 – 83     |                           |                      |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

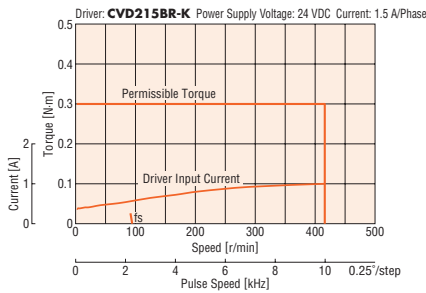
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

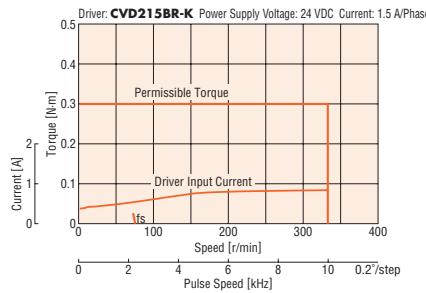
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

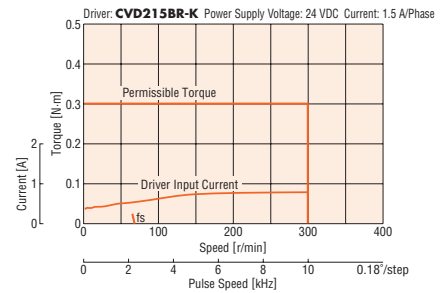
**PKP223D15A-SG7.2/PKP223D15B-SG7.2**



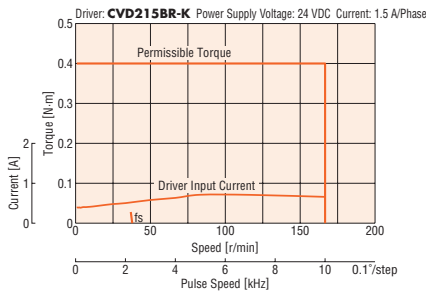
**PKP223D15A-SG9/PKP223D15B-SG9**



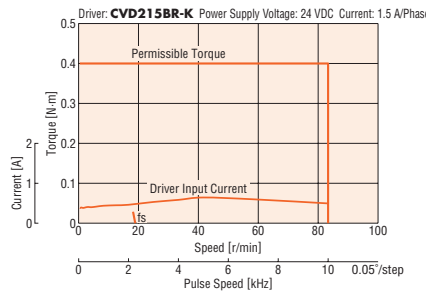
**PKP223D15A-SG10/PKP223D15B-SG10**



**PKP223D15A-SG18/PKP223D15B-SG18**



**PKP223D15A-SG36/PKP223D15B-SG36**



#### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### ● Motors

2D & 3D CAD

| Product Name          | Gear Ratio                | Mass kg | 2D CAD |
|-----------------------|---------------------------|---------|--------|
| <b>PKP223D15A-SG□</b> | <b>7.2, 9, 10, 18, 36</b> | 0.16    | B985   |
| <b>PKP223D15B-SG□</b> |                           |         |        |

● The box □ in the product name indicates a number representing the gear ratio.

● Applicable Connectors

Connector Housing: 51065-0600 (Molex)

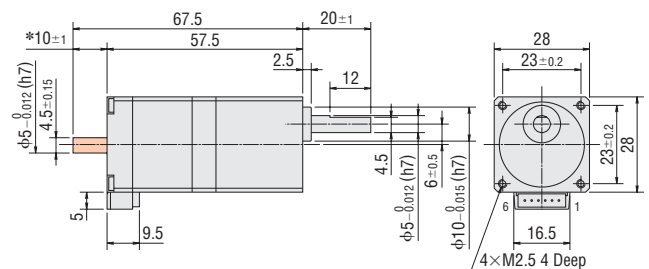
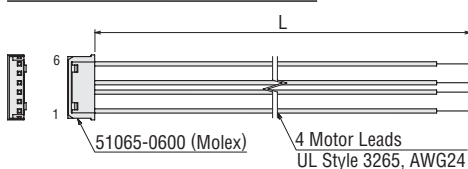
Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)

#### ● Connection Cables (Sold separately)

##### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06A</b> | 0.6          |
| <b>LC2B10A</b> | 1            |



\*The length of the shaft flat on the double shaft model is 10±0.25.

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# SH Geared Type Frame Size 28 mm (Unipolar 6 lead wires)

## Connector Type

## Specifications

| Product Name            | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| <b>PKP223U09□-SG7.2</b> | 0.3                           | 9×10 <sup>-7</sup>                    | 0.95                     | 2.66           | 2.8                           | 1                      | 0.25°            | 7.2        | 0.3                       | 0 – 416              | 90 (1.5)           | <b>CMD2109P</b>                  |
| 0.2°                    |                               |                                       |                          |                |                               |                        | 9                | 0 – 333    |                           |                      |                    |                                  |
| 0.18°                   |                               |                                       |                          |                |                               |                        | 10               | 0 – 300    |                           |                      |                    |                                  |
| <b>PKP223U09□-SG10</b>  | 0.4                           | 9×10 <sup>-7</sup>                    | 0.95                     | 2.66           | 2.8                           | 1                      | 0.1°             | 18         | 0.4                       | 0 – 166              | 90 (1.5)           | <b>CMD2109P</b>                  |
| 0.05°                   |                               |                                       |                          |                |                               |                        | 36               | 0 – 83     |                           |                      |                    |                                  |
|                         |                               |                                       |                          |                |                               |                        |                  |            |                           |                      |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

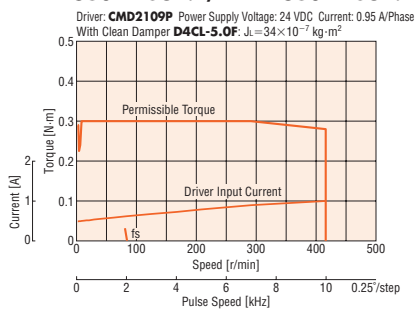
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

### Note

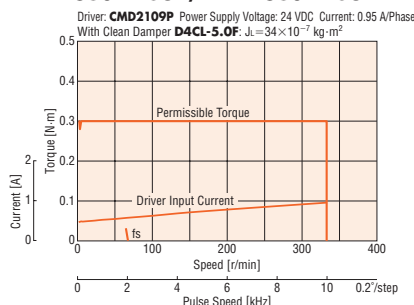
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

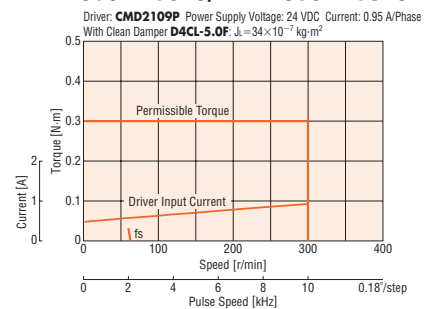
### PKP223U09A-SG7.2/ PKP223U09B-SG7.2



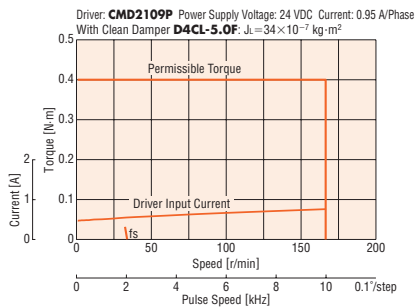
### PKP223U09A-SG9/ PKP223U09B-SG9



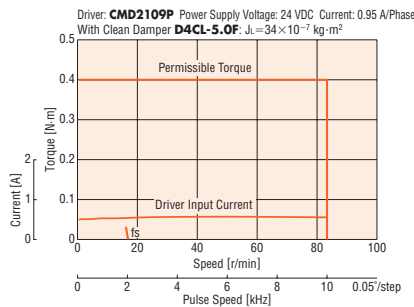
### PKP223U09A-SG10/ PKP223U09B-SG10



### PKP223U09A-SG18/ PKP223U09B-SG18



### PKP223U09A-SG36/ PKP223U09B-SG36



### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name          | Gear Ratio        | Mass<br>kg | 2D CAD |
|-----------------------|-------------------|------------|--------|
| <b>PKP223U09A-SG□</b> | <b>7.2, 9,</b>    | 0.16       | B985   |
| <b>PKP223U09B-SG□</b> | <b>10, 18, 36</b> |            |        |

● The box □ in the product name indicates a number representing the gear ratio.

● Applicable Connectors

Connector Housing: 51065-0600 (Molex)

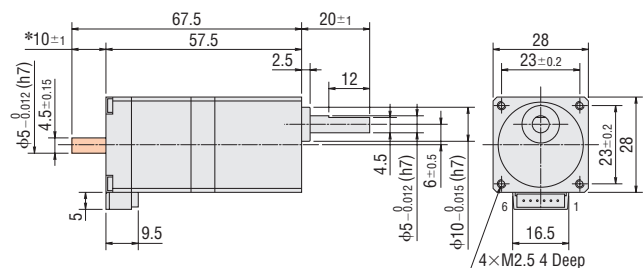
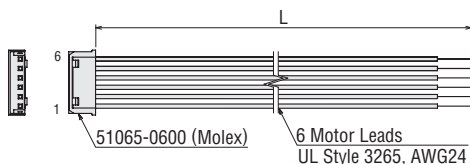
Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2U06A</b> | 0.6          |
| <b>LC2U10A</b> | 1            |



\*The length of the shaft flat on the double shaft model is 10±0.25.

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment





# SH Geared Type with Encoder

Frame Size 28 mm (Bipolar 4 lead wires)

Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name         | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Value Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|----------------------|-------------------------------|---------------------------------------|--------------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP223D15A-SG7.2-R3F | 0.3                           | 9.9×10 <sup>-7</sup>                  | 1.5                            | 1.8            | 1.2                           | 0.74                   | 0.25°            | 7.2        | 0.3                       | 0~416                | 90 (1.5)           | CVD215BR-K                       |
| 0.2°                 |                               |                                       |                                |                |                               |                        | 9                | 0~333      |                           |                      |                    |                                  |
| 0.18°                |                               |                                       |                                |                |                               |                        | 10               | 0~300      |                           |                      |                    |                                  |
| PKP223D15A-SG10-R3F  | 0.4                           |                                       |                                |                |                               |                        | 0.1°             | 18         | 0.4                       | 0~166                |                    |                                  |
| 0.05°                |                               |                                       |                                |                |                               |                        | 36               | 0~83       |                           |                      |                    |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

● Refer to the common specifications page for encoder specifications.

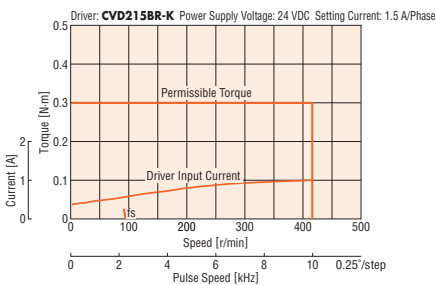
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

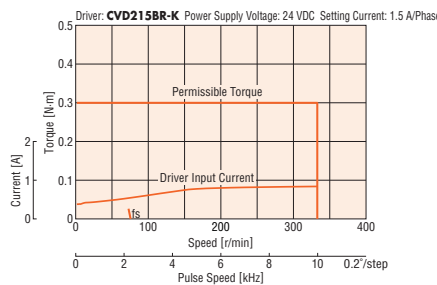
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

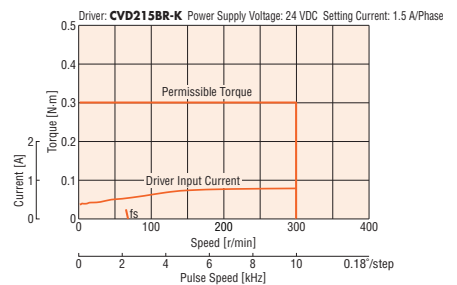
PKP223D15A-SG7.2-R3F



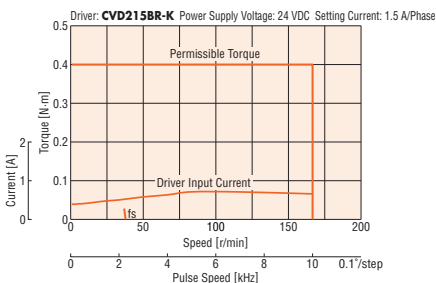
PKP223D15A-SG9-R3F



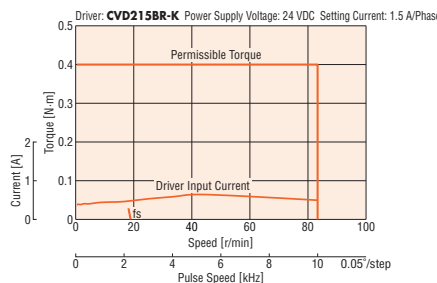
PKP223D15A-SG10-R3F



PKP223D15A-SG18-R3F



PKP223D15A-SG36-R3F



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box   is located in the product name. For voltage output, there is no letter in the   box.

## Dimensions (Unit = mm)

### Motor

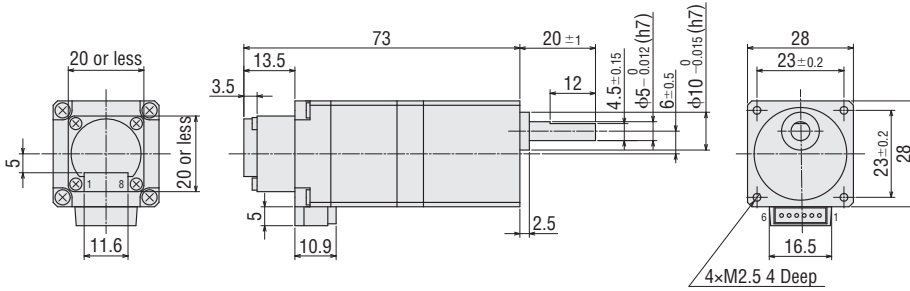
2D & 3D CAD

| Product Name                         | Gear Ratio                | Mass kg | 2D CAD |
|--------------------------------------|---------------------------|---------|--------|
| <b>PKP223D15A-SG</b> □- <b>R3F</b> ■ | <b>7.2, 9, 10, 18, 36</b> | 0.18    | B1582  |

● A number indicating the gear ratio is specified where the box □ is located in the product name.

● Applicable Connector (Molex)

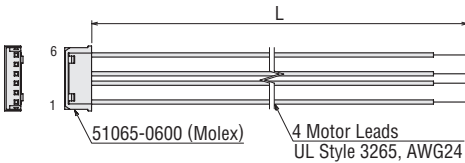
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0600 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |



### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06A</b> | 0.6          |
| <b>LC2B10A</b> | 1            |



#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### ● For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP243D15□2-SG3.6 | 0.2                           | 36 × 10 <sup>-7</sup>                 | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.5°             | 3.6        | 0.2                       | 0 – 833              | 90 (1.5°)          | CVD223FBR-K                      |
| PKP243D23□2-SG3.6 |                               |                                       | 2.3                      | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15□2-SG7.2 | 0.4                           |                                       | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.25°            | 7.2        | 0.4                       | 0 – 416              |                    |                                  |
| PKP243D23□2-SG7.2 |                               |                                       |                          | 2.3            | 0.87                          | 0.38                   |                  |            |                           |                      |                    |                                  |
| PKP243D15□2-SG9   | 0.5                           |                                       | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.2°             | 9          | 0.5                       | 0 – 333              |                    |                                  |
| PKP243D23□2-SG9   |                               |                                       |                          | 2.3            | 0.87                          | 0.38                   |                  |            |                           |                      |                    |                                  |
| PKP243D15□2-SG10  | 0.56                          |                                       | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.18°            | 10         | 0.56                      | 0 – 300              |                    |                                  |
| PKP243D23□2-SG10  |                               |                                       |                          | 2.3            | 0.87                          | 0.38                   |                  |            |                           |                      |                    |                                  |
| PKP243D15□2-SG18  | 0.8                           |                                       | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.1°             | 18         | 0.8                       | 0 – 166              |                    |                                  |
| PKP243D23□2-SG18  |                               |                                       |                          | 2.3            | 0.87                          | 0.38                   |                  |            |                           |                      |                    |                                  |
| PKP243D15□2-SG36  | 0.8                           |                                       | 1.5                      | 0.83           | 0.55                          | 0.77                   | 0.05°            | 36         | 0.8                       | 0 – 83               |                    |                                  |
| PKP243D23□2-SG36  |                               |                                       |                          | 2.3            | 0.87                          | 0.38                   |                  |            |                           |                      |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

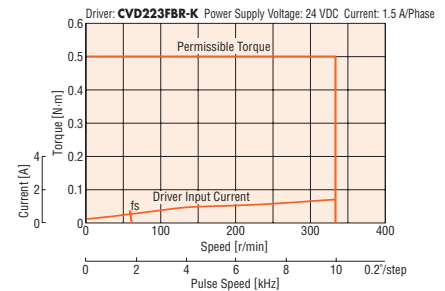
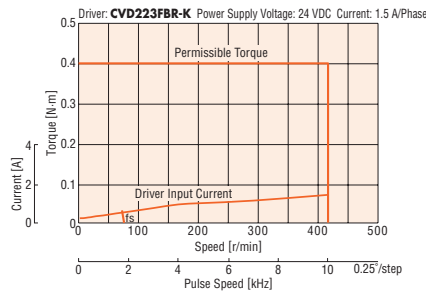
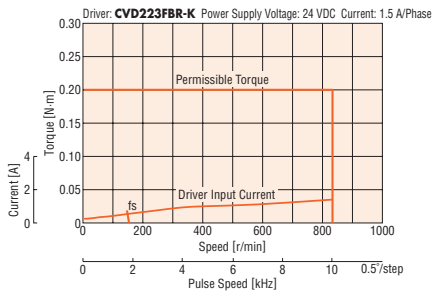
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

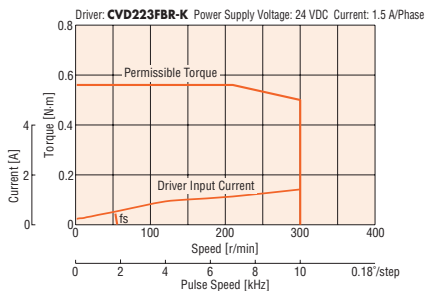
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

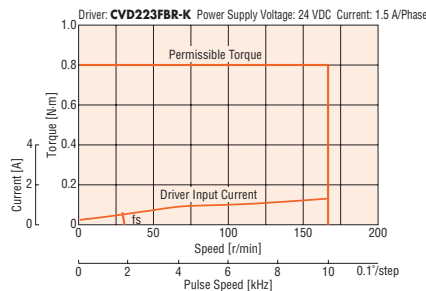
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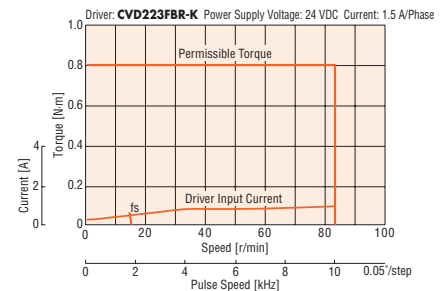
PKP243D15A2-SG10/PKP243D15B2-SG10



PKP243D15A2-SG18/PKP243D15B2-SG18



PKP243D15A2-SG36/PKP243D15B2-SG36



**Note**

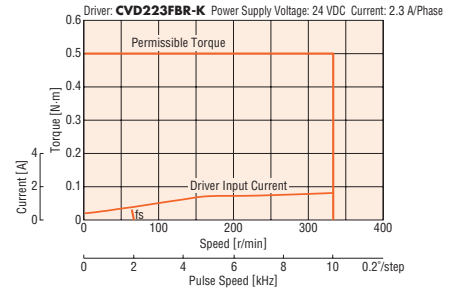
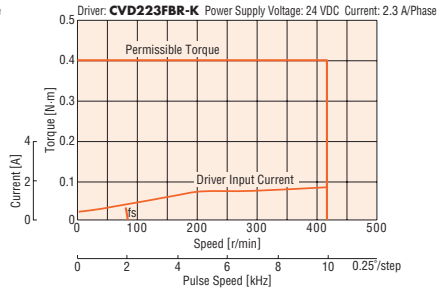
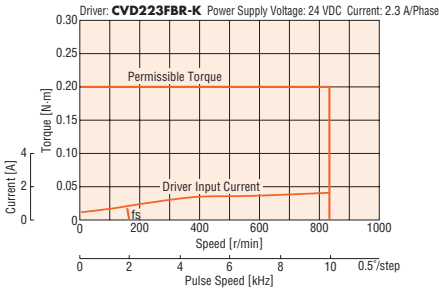
● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

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

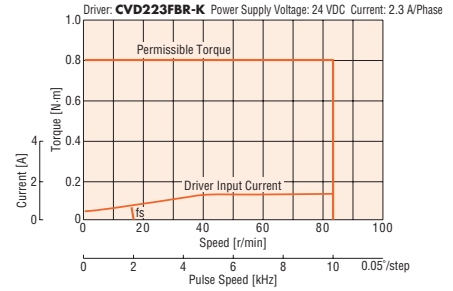
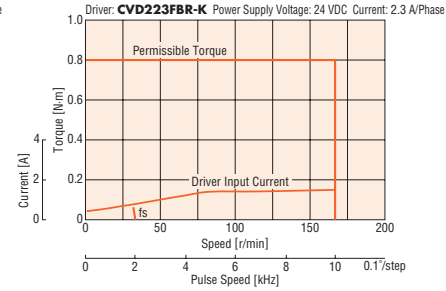
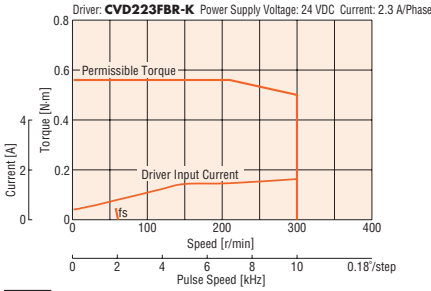
● The characteristics are the same when RS-485 communication type driver is used in combination.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP243D23A2-SG3.6/PKP243D23B2-SG3.6 PKP243D23A2-SG7.2/PKP243D23B2-SG7.2 PKP243D23A2-SG9/PKP243D23B2-SG9



PKP243D23A2-SG10/PKP243D23B2-SG10 PKP243D23A2-SG18/PKP243D23B2-SG18 PKP243D23A2-SG36/PKP243D23B2-SG36



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio              | Mass kg | 2D CAD |
|-----------------|-------------------------|---------|--------|
| PKP243D15A2-SG□ | 3.6, 7.2, 9, 10, 18, 36 | 0.33    | B1340  |
| PKP243D15B2-SG□ |                         |         |        |
| PKP243D23A2-SG□ |                         |         |        |
| PKP243D23B2-SG□ |                         |         |        |

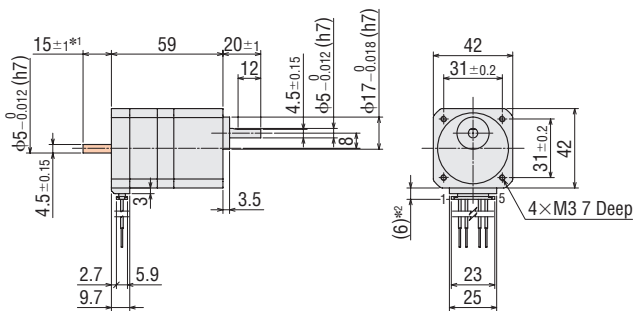
● The box □ in the product name indicates a number representing the gear ratio.

### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable

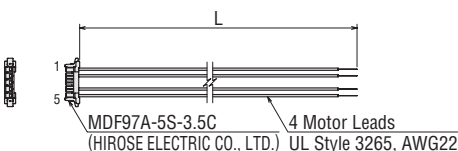
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type Frame Size 42 mm (Unipolar 5 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP243U09□2-SG3.6 | 0.2                           | 36 × 10 <sup>-7</sup>                 | 0.95                     | 2              | 2.1                           | 1.8                    | 0.5°             | 3.6        | 0.2                       | 0 – 833              | 90 (1.5°)          | <b>CMD2109P</b>                  |
| PKP243U09□2-SG7.2 | 0.4                           |                                       |                          |                |                               |                        | 0.25°            | 7.2        | 0.4                       | 0 – 416              |                    |                                  |
| PKP243U09□2-SG9   | 0.5                           |                                       |                          |                |                               |                        | 0.2°             | 9          | 0.5                       | 0 – 333              |                    |                                  |
| PKP243U09□2-SG10  | 0.56                          |                                       |                          |                |                               |                        | 0.18°            | 10         | 0.56                      | 0 – 300              |                    |                                  |
| PKP243U09□2-SG18  | 0.8                           |                                       |                          |                |                               |                        | 0.1°             | 18         | 0.8                       | 0 – 166              |                    |                                  |
| PKP243U09□2-SG36  | 0.8                           |                                       |                          |                |                               |                        | 0.05°            | 36         | 0.8                       | 0 – 83               |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

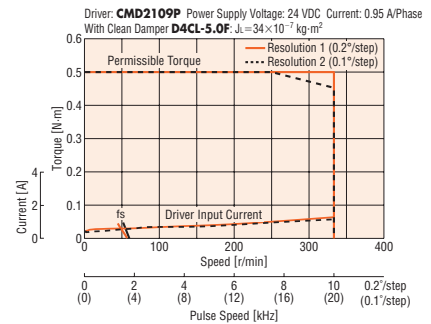
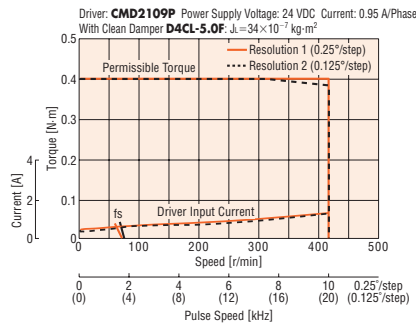
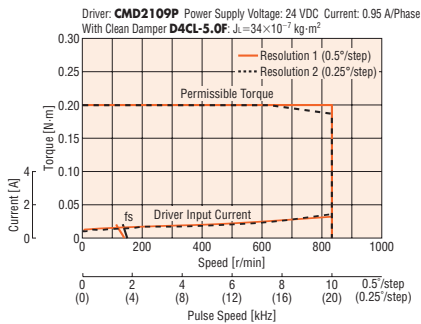
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

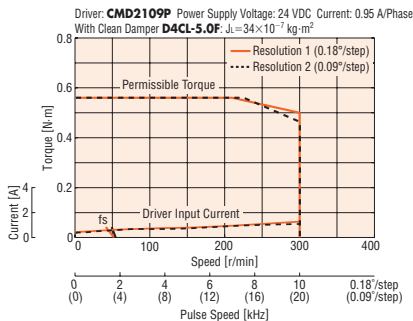
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

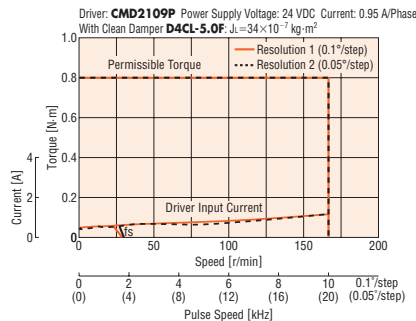
PKP243U09A2-SG3.6/PKP243U09B2-SG3.6 PKP243U09A2-SG7.2/PKP243U09B2-SG7.2 PKP243U09A2-SG9/PKP243U09B2-SG9



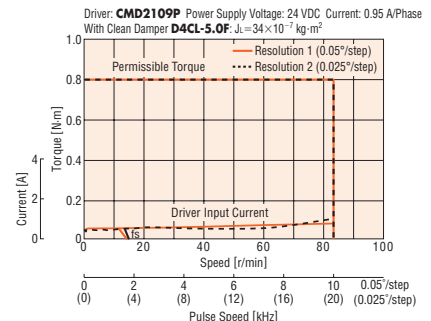
PKP243U09A2-SG10/PKP243U09B2-SG10



PKP243U09A2-SG18/PKP243U09B2-SG18



PKP243U09A2-SG36/PKP243U09B2-SG36



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio              | Mass kg | 2D CAD |
|-----------------|-------------------------|---------|--------|
| PKP243U09A2-SG□ | 3.6, 7.2, 9, 10, 18, 36 | 0.33    | B1339  |
| PKP243U09B2-SG□ |                         |         |        |

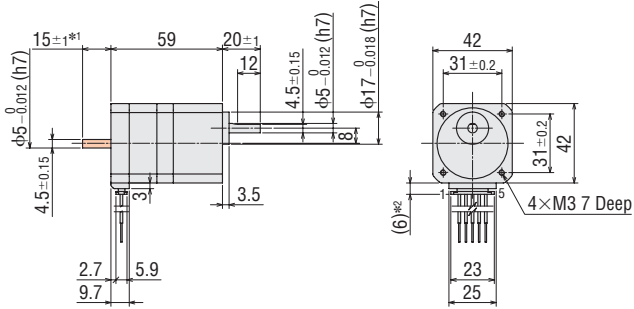
● The box □ in the product name indicates a number representing the gear ratio.

#### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*1 The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .

\*2 With connection cable

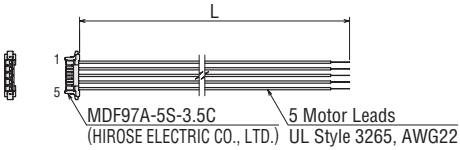
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type with Encoder Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name          | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Value Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-----------------------|-------------------------------|---------------------------------------|--------------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP243D15A2-SG3.6-R3F | 0.2                           | 37×10 <sup>-7</sup>                   | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.5°             | 3.6        | 0.2                       | 0~833                | 60 (1°)            | CVD223FBR-K                      |
| PKP243D23A2-SG3.6-R3F |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15A2-SG7.2-R3F | 0.4                           |                                       | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.25°            | 7.2        | 0.4                       | 0~416                |                    |                                  |
| PKP243D23A2-SG7.2-R3F |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15A2-SG9-R3F   | 0.5                           |                                       | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.2°             | 9          | 0.5                       | 0~333                |                    |                                  |
| PKP243D23A2-SG9-R3F   |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15A2-SG10-R3F  | 0.56                          |                                       | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.18°            | 10         | 0.56                      | 0~300                |                    |                                  |
| PKP243D23A2-SG10-R3F  |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15A2-SG18-R3F  | 0.8                           |                                       | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.1°             | 18         | 0.8                       | 0~166                |                    |                                  |
| PKP243D23A2-SG18-R3F  |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |
| PKP243D15A2-SG36-R3F  | 0.8                           |                                       | 1.5                            | 0.83           | 0.55                          | 0.77                   | 0.05°            | 36         | 0.8                       | 0~83                 |                    |                                  |
| PKP243D23A2-SG36-R3F  |                               |                                       | 2.3                            | 0.87           | 0.38                          | 0.41                   |                  |            |                           |                      |                    |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

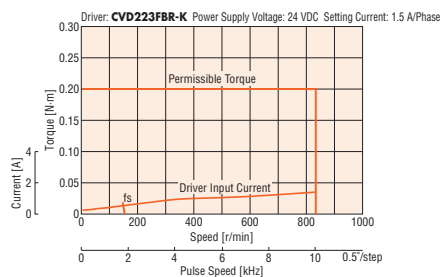
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

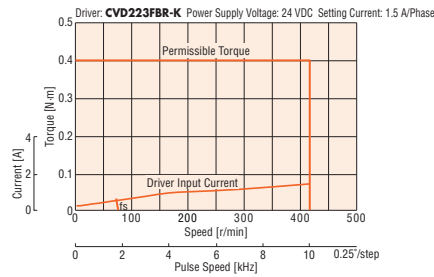
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

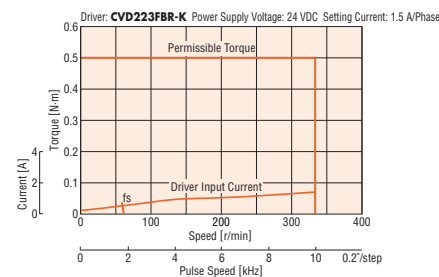
PKP243D15A2-SG3.6-R3F



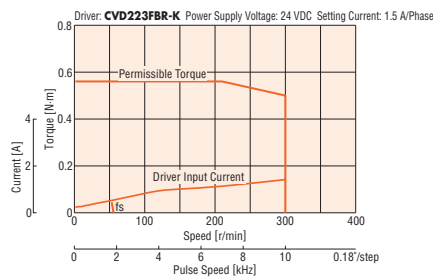
PKP243D15A2-SG7.2-R3F



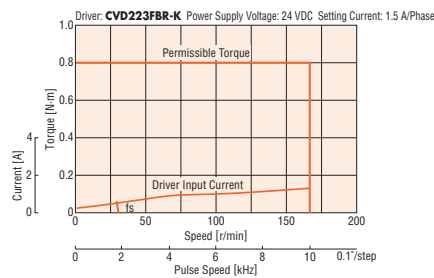
PKP243D15A2-SG9-R3F



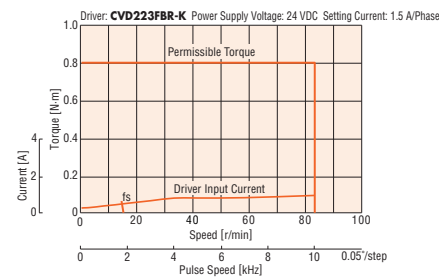
PKP243D15A2-SG10-R3F



PKP243D15A2-SG18-R3F



PKP243D15A2-SG36-R3F



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

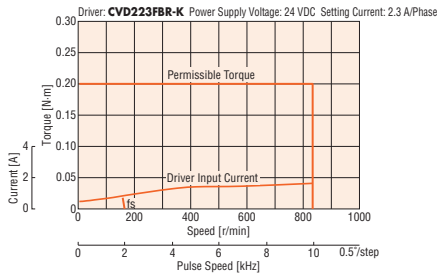
● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

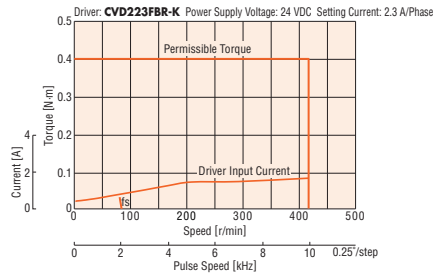


# Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

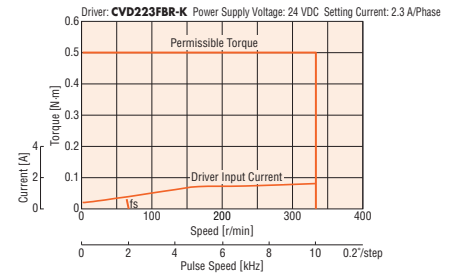
PKP243D23A2-SG3.6-R3F



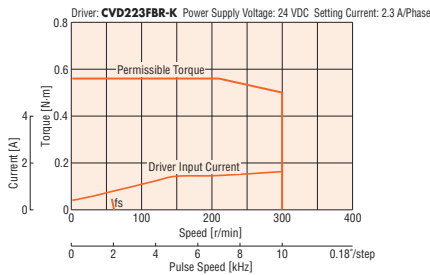
PKP243D23A2-SG7.2-R3F



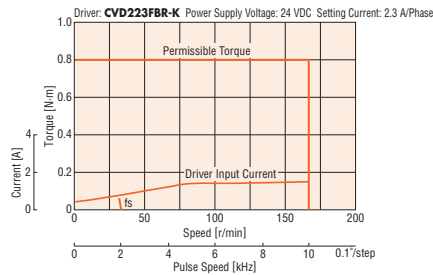
PKP243D23A2-SG9-R3F



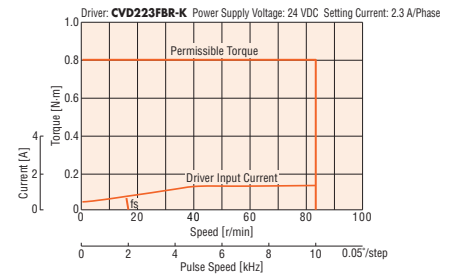
PKP243D23A2-SG10-R3F



PKP243D23A2-SG18-R3F



PKP243D23A2-SG36-R3F



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit = mm)

● Motor

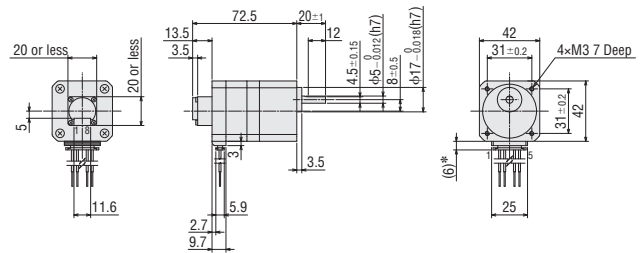
2D & 3D CAD

| Product Name        | Gear Ratio              | Mass kg | 2D CAD |
|---------------------|-------------------------|---------|--------|
| PKP243D15A2-SG□-R3F | 3.6, 7.2, 9, 10, 18, 36 | 0.35    | B1508  |
| PKP243D23A2-SG□-R3F |                         |         |        |

● A number indicating the gear ratio is specified where the box □ is located in the product name.

● Applicable Connector (Molex)

|                   | Motor (HIROSE ELECTRIC CO., LTD.) | Encoder (Molex) |
|-------------------|-----------------------------------|-----------------|
| Connector Housing | MDF97A-5S-3.5C                    | 51021-0800      |
| Contact           | MDF97-22SC                        | 50079-8100      |
| Crimp Tool        | HT801/MDF97-22S                   | 57177-5000      |

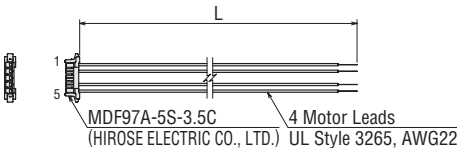


\*With connection cable

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



◇ Encoder Connection Cable

● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

# SH Geared Type Frame Size 60 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP264D14□2-SG3.6 | 1                             | 140×10 <sup>-7</sup>                  | 1.4                      | 2              | 1.4                           | 3.1                    | 0.5°             | 3.6        | 1                         | 0 – 833              | 70 (1.17°)         | CVD228BR-K                       |
| PKP264D28□2-SG3.6 |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |
| PKP264D14□2-SG7.2 | 2                             |                                       | 1.4                      | 2              | 1.4                           | 3.1                    | 0.25°            | 7.2        | 2                         | 0 – 416              |                    |                                  |
| PKP264D28□2-SG7.2 |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |
| PKP264D14□2-SG9   | 2.5                           |                                       | 1.4                      | 2              | 1.4                           | 3.1                    | 0.2°             | 9          | 2.5                       | 0 – 333              |                    |                                  |
| PKP264D28□2-SG9   |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |
| PKP264D14□2-SG10  | 2.7                           |                                       | 1.4                      | 2              | 1.4                           | 3.1                    | 0.18°            | 10         | 2.7                       | 0 – 300              |                    |                                  |
| PKP264D28□2-SG10  |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |
| PKP264D14□2-SG18  | 3                             |                                       | 1.4                      | 2              | 1.4                           | 3.1                    | 0.1°             | 18         | 3                         | 0 – 166              |                    |                                  |
| PKP264D28□2-SG18  |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |
| PKP264D14□2-SG36  | 4                             |                                       | 1.4                      | 2              | 1.4                           | 3.1                    | 0.05°            | 36         | 4                         | 0 – 83               |                    |                                  |
| PKP264D28□2-SG36  |                               |                                       | 2.8                      | 0.92           | 0.33                          | 0.81                   |                  |            |                           |                      |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

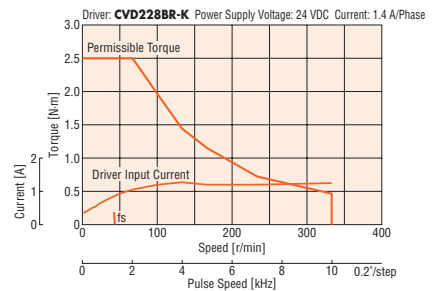
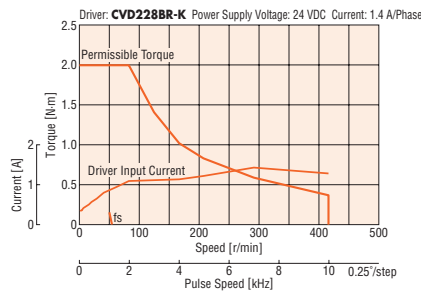
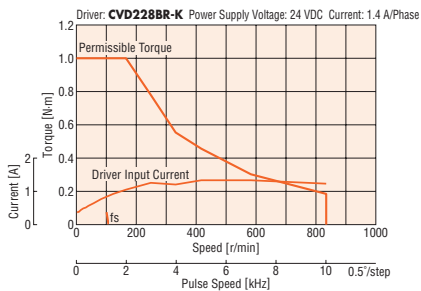
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

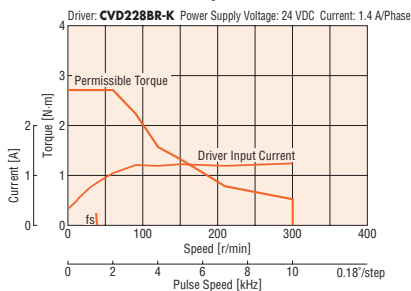
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

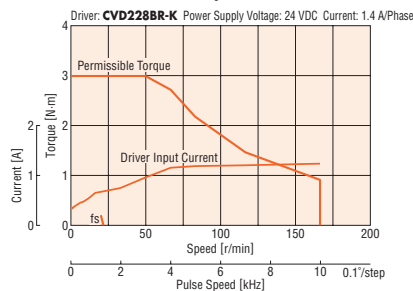
PKP264D14A2-SG3.6/PKP264D14B2-SG3.6 PKP264D14A2-SG7.2/PKP264D14B2-SG7.2 PKP264D14A2-SG9/PKP264D14B2-SG9



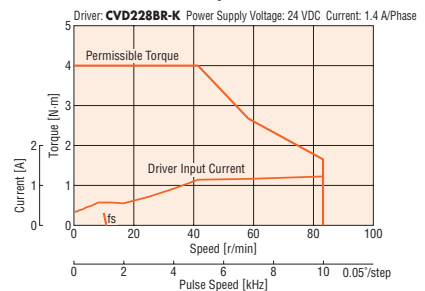
PKP264D14A2-SG10/PKP264D14B2-SG10



PKP264D14A2-SG18/PKP264D14B2-SG18



PKP264D14A2-SG36/PKP264D14B2-SG36



#### Note

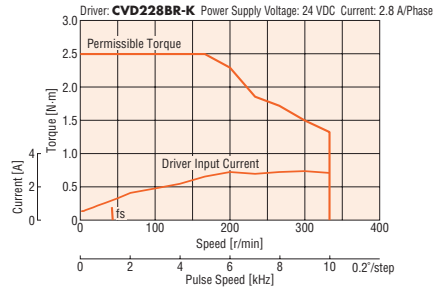
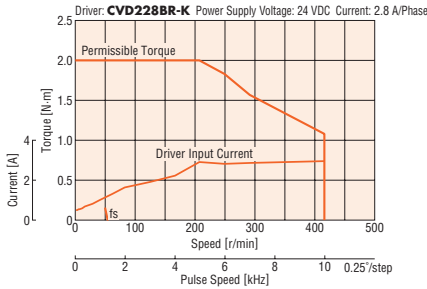
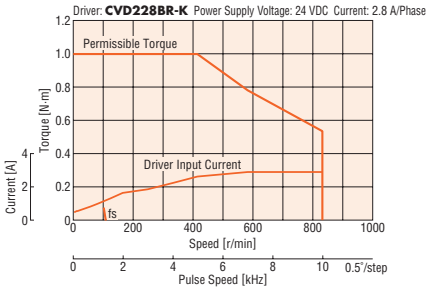
● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

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

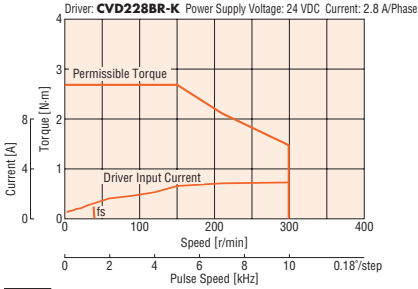
● The characteristics are the same when RS-485 communication type driver is used in combination.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

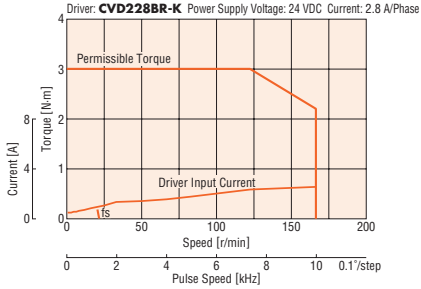
PKP264D28A2-SG3.6/PKP264D28B2-SG3.6 PKP264D28A2-SG7.2/PKP264D28B2-SG7.2 PKP264D28A2-SG9/PKP264D28B2-SG9



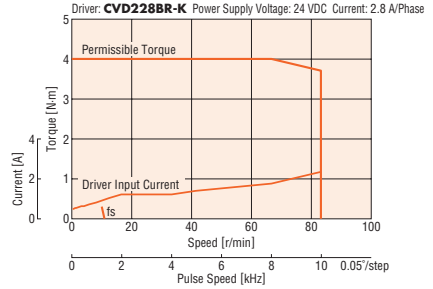
PKP264D28A2-SG10/PKP264D28B2-SG10



PKP264D28A2-SG18/PKP264D28B2-SG18



PKP264D28A2-SG36/PKP264D28B2-SG36



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio              | Mass kg | 2D CAD |
|-----------------|-------------------------|---------|--------|
| PKP264D14A2-SG□ | 3.6, 7.2, 9, 10, 18, 36 | 0.76    | B1342  |
| PKP264D14B2-SG□ |                         |         |        |
| PKP264D28A2-SG□ |                         |         |        |
| PKP264D28B2-SG□ |                         |         |        |

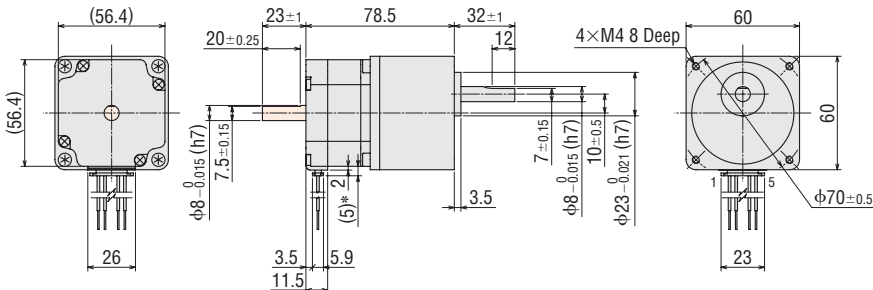
- The box □ in the product name indicates a number representing the gear ratio.

### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

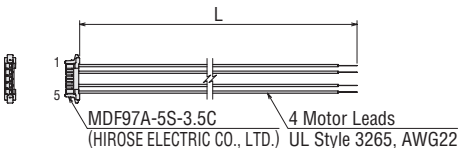
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type Frame Size 60 mm (Unipolar 5 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP264U10□2-SG3.6 | 1                             | 140×10 <sup>-7</sup>                  | 1                        | 2.9            | 2.9                           | 4.2                    | 0.5°             | 3.6        | 1                         | 0 – 833              | 70<br>(1.17°)      | CMD2120P                         |
| PKP264U20□2-SG3.6 |                               |                                       | 2                        | 1.5            | 0.76                          | 1                      |                  |            |                           |                      |                    |                                  |
| PKP264U10□2-SG7.2 | 2                             |                                       | 1                        | 2.9            | 2.9                           | 4.2                    | 0.25°            | 7.2        | 2                         | 0 – 416              |                    |                                  |
| PKP264U20□2-SG7.2 |                               |                                       | 2                        | 1.5            | 0.76                          | 1                      |                  |            |                           |                      |                    |                                  |
| PKP264U10□2-SG9   | 2.5                           |                                       | 1                        | 2.9            | 2.9                           | 4.2                    | 0.2°             | 9          | 2.5                       | 0 – 333              |                    |                                  |
| PKP264U20□2-SG9   |                               |                                       | 2                        | 1.5            | 0.76                          | 1                      |                  |            |                           |                      |                    |                                  |
| PKP264U10□2-SG10  | 2.7                           |                                       | 1                        | 2.9            | 2.9                           | 4.2                    | 0.18°            | 10         | 2.7                       | 0 – 300              |                    |                                  |
| PKP264U20□2-SG10  |                               |                                       | 2                        | 1.5            | 0.76                          | 1                      |                  |            |                           |                      |                    |                                  |
| PKP264U10□2-SG18  | 3                             |                                       | 1                        | 2.9            | 2.9                           | 4.2                    | 0.1°             | 18         | 3                         | 0 – 166              |                    |                                  |
| PKP264U20□2-SG18  |                               |                                       | 2                        | 1.5            | 0.76                          | 1                      |                  |            |                           |                      |                    |                                  |
| PKP264U10□2-SG36  | 4                             | 1                                     | 2.9                      | 2.9            | 4.2                           | 0.05°                  | 36               | 4          | 0 – 83                    |                      |                    |                                  |
| PKP264U20□2-SG36  |                               | 2                                     | 1.5                      | 0.76           | 1                             |                        |                  |            |                           |                      |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

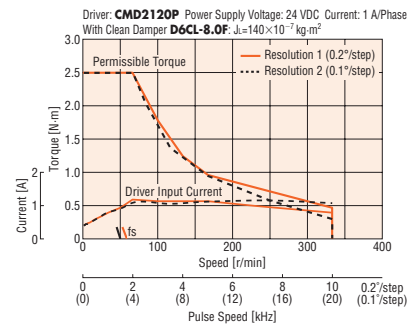
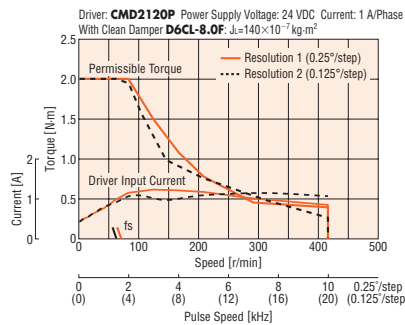
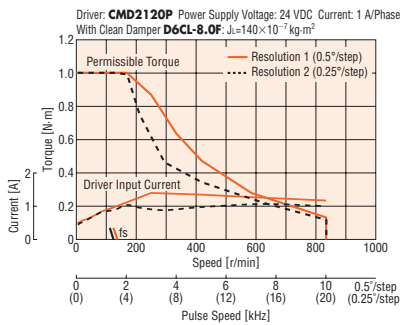
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

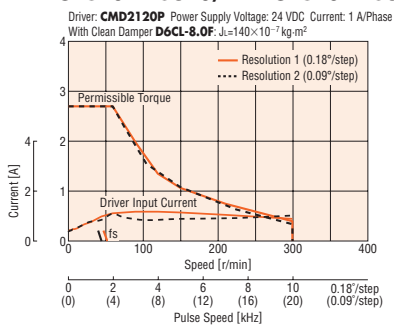
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

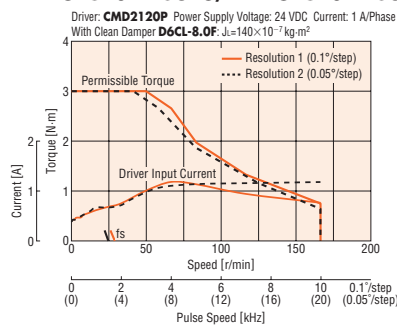
PKP264U10A2-SG3.6/PKP264U10B2-SG3.6 PKP264U10A2-SG7.2/PKP264U10B2-SG7.2 PKP264U10A2-SG9/PKP264U10B2-SG9



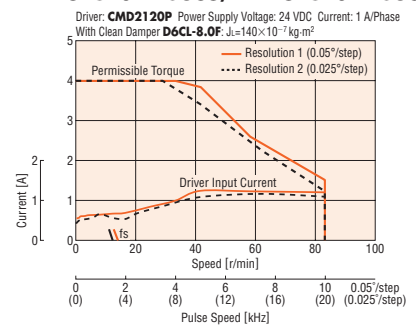
PKP264U10A2-SG10/PKP264U10B2-SG10



PKP264U10A2-SG18/PKP264U10B2-SG18



PKP264U10A2-SG36/PKP264U10B2-SG36



#### Note

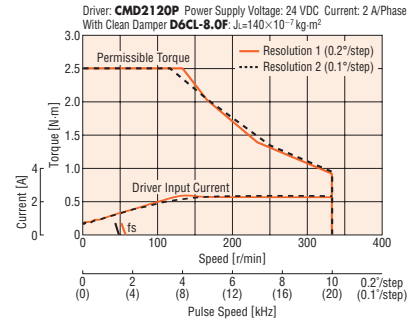
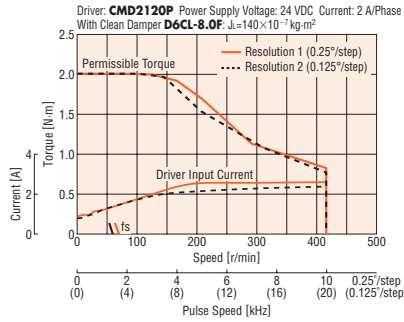
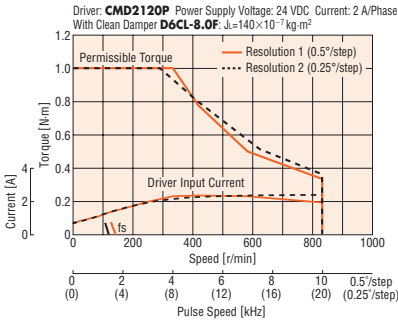
● Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

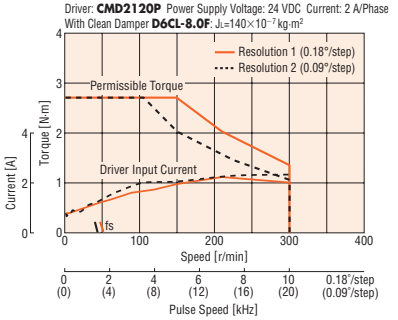
● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

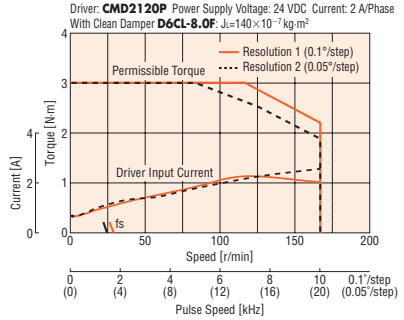
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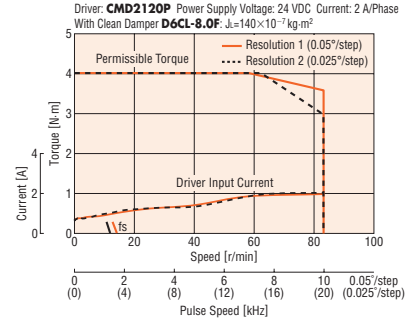
PKP264U20A2-SG10/PKP264U20B2-SG10



PKP264U20A2-SG18/PKP264U20B2-SG18



PKP264U20A2-SG36/PKP264U20B2-SG36



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio              | Mass kg | 2D CAD |
|-----------------|-------------------------|---------|--------|
| PKP264U10A2-SG□ | 3.6, 7.2, 9, 10, 18, 36 | 0.76    | B1341  |
| PKP264U10B2-SG□ |                         |         |        |
| PKP264U20A2-SG□ |                         |         |        |
| PKP264U20B2-SG□ |                         |         |        |

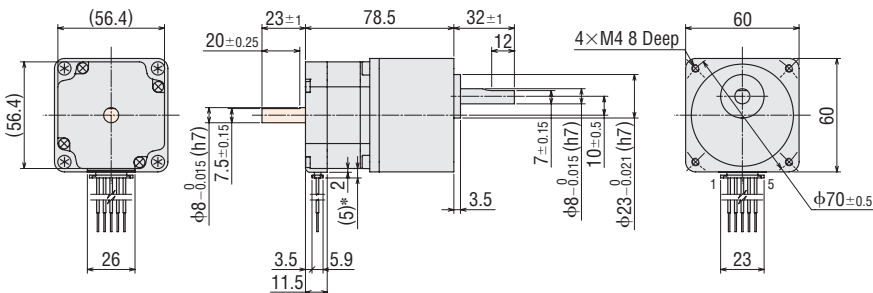
- The box □ in the product name indicates a number representing the gear ratio.

### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)

Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)

Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*With connection cable

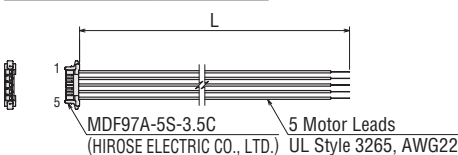
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06E      | 0.6          |
| LC2U10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A②

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# SH Geared Type with Encoder

Frame Size 60 mm (Bipolar 4 lead wires)

Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name          | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Value Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-----------------------|-------------------------------|---------------------------------------|--------------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP264D28A2-SG3.6-R3F | 1                             | 140×10 <sup>-7</sup>                  | 2.8                            | 0.92           | 0.33                          | 0.81                   | 0.5°             | 3.6        | 1                         | 0~833                | 70<br>(1.17°)      | <b>CVD228BR-K</b>                |
| PKP264D28A2-SG7.2-R3F | 2                             |                                       |                                |                |                               |                        | 0.25°            | 7.2        | 2                         | 0~416                |                    |                                  |
| PKP264D28A2-SG9-R3F   | 2.5                           |                                       |                                |                |                               |                        | 0.2°             | 9          | 2.5                       | 0~333                |                    |                                  |
| PKP264D28A2-SG10-R3F  | 2.7                           |                                       |                                |                |                               |                        | 0.18°            | 10         | 2.7                       | 0~300                |                    |                                  |
| PKP264D28A2-SG18-R3F  | 3                             |                                       |                                |                |                               |                        | 0.1°             | 18         | 3                         | 0~166                |                    |                                  |
| PKP264D28A2-SG36-R3F  | 4                             |                                       |                                |                |                               |                        | 0.05°            | 36         | 4                         | 0~83                 |                    |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

● Refer to the common specifications page for encoder specifications.

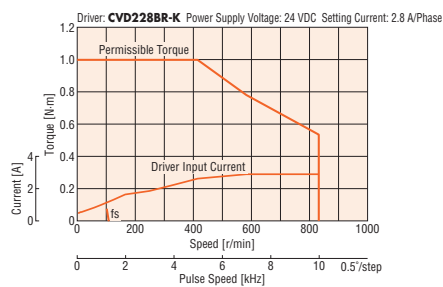
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

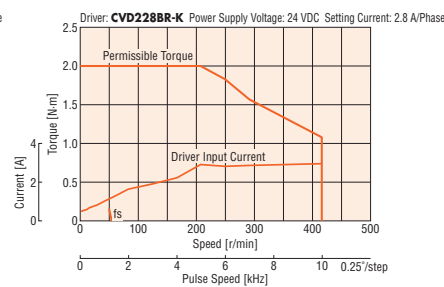
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

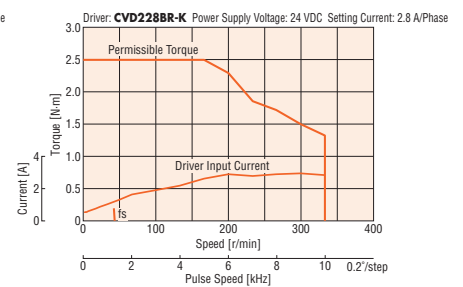
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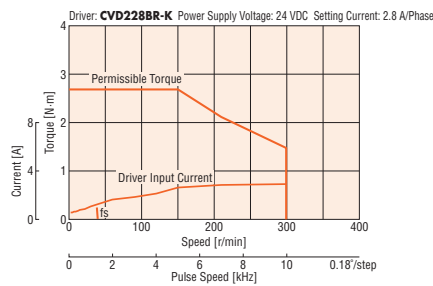
PKP264D28A2-SG7.2-R3F



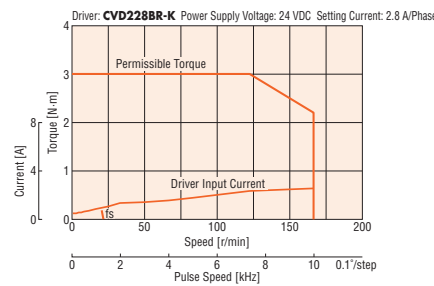
PKP264D28A2-SG9-R3F



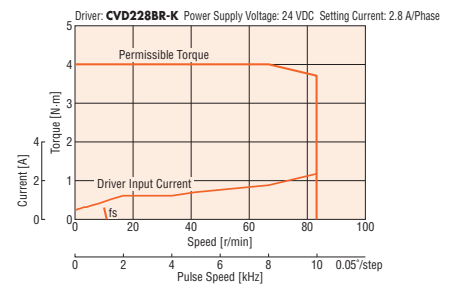
PKP264D28A2-SG10-R3F



PKP264D28A2-SG18-R3F



PKP264D28A2-SG36-R3F



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name                           | Gear Ratio                     | Mass kg | 2D CAD |
|----------------------------------------|--------------------------------|---------|--------|
| <b>PKP264D28A2-SG</b> □ - <b>R3F</b> ■ | <b>3.6, 7.2, 9, 10, 18, 36</b> | 0.78    | B1509  |

● A number indicating the gear ratio is specified where the box □ is located in the product name.

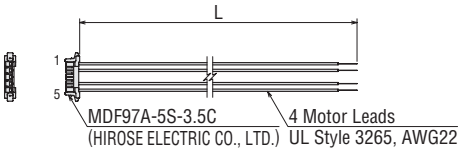
● Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC2B06E</b> | 0.6          |
| <b>LC2B10E</b> | 1            |



#### ◇ Encoder Connection Cable

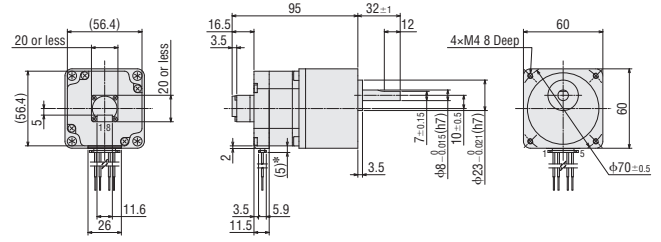
##### ● For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### ● For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

● Refer to the cables page for dimensions.



\*With connection cable

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

● Refer to the motor inner wiring page for an inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.



# SH Geared Type Frame Size 90 mm (Unipolar 6 lead wires)

## Lead Wire Type

### Specifications

| Product Name  | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque N·m | Speed Range r/min |
|---------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|------------|------------------------|-------------------|
| PK296□1-SG3.6 | 2.5                        | 1400×10 <sup>-7</sup>              | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.5°             | 3.6        | 2.5                    | 0 – 500           |
| PK296□2-SG3.6 |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |
| PK296□1-SG7.2 | 5                          |                                    | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.25°            | 7.2        | 5                      | 0 – 250           |
| PK296□2-SG7.2 |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |
| PK296□1-SG9   | 6.3                        |                                    | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.2°             | 9          | 6.3                    | 0 – 200           |
| PK296□2-SG9   |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |
| PK296□1-SG10  | 7                          |                                    | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.18°            | 10         | 7                      | 0 – 180           |
| PK296□2-SG10  |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |
| PK296□1-SG18  | 9                          |                                    | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.1°             | 18         | 9                      | 0 – 100           |
| PK296□2-SG18  |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |
| PK296□1-SG36  | 12                         |                                    | 1.5                   | 3.3         | 2.2                        | 7.7                 | 0.05°            | 36         | 12                     | 0 – 50            |
| PK296□2-SG36  |                            |                                    | 3                     | 1.4         | 0.48                       | 1.5                 |                  |            |                        |                   |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

● Backlash value is approximately 1 to 2°.

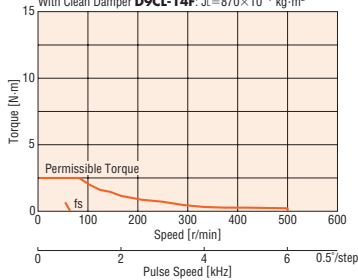
**Note**

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

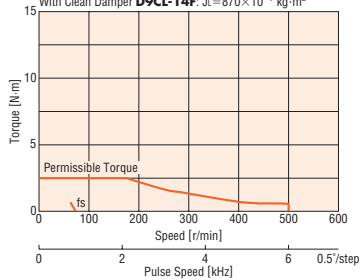
#### PK296A1-SG3.6/PK296B1-SG3.6

Constant Current Driver Power Supply Voltage: 24 VDC Current: 1.5 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



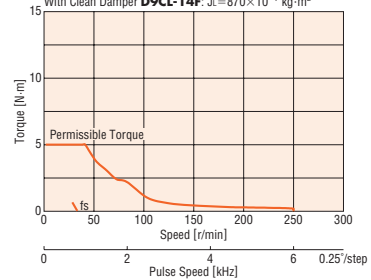
#### PK296A2-SG3.6/PK296B2-SG3.6

Constant Current Driver Power Supply Voltage: 24 VDC Current: 3 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



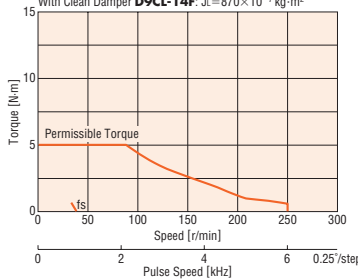
#### PK296A1-SG7.2/PK296B1-SG7.2

Constant Current Driver Power Supply Voltage: 24 VDC Current: 1.5 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



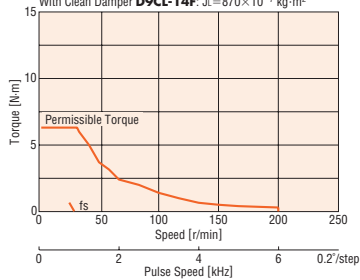
#### PK296A2-SG7.2/PK296B2-SG7.2

Constant Current Driver Power Supply Voltage: 24 VDC Current: 3 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



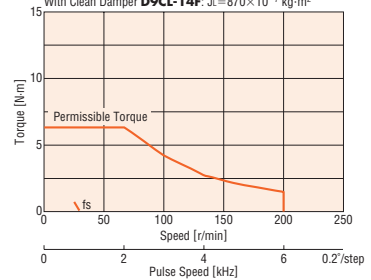
#### PK296A1-SG9/PK296B1-SG9

Constant Current Driver Power Supply Voltage: 24 VDC Current: 1.5 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



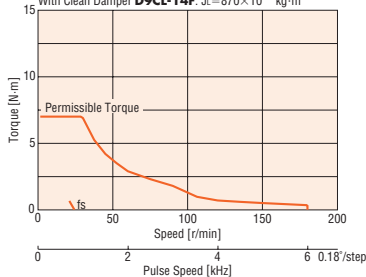
#### PK296A2-SG9/PK296B2-SG9

Constant Current Driver Power Supply Voltage: 24 VDC Current: 3 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



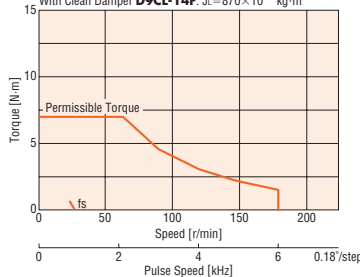
#### PK296A1-SG10/PK296B1-SG10

Constant Current Driver Power Supply Voltage: 24 VDC Current: 1.5 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



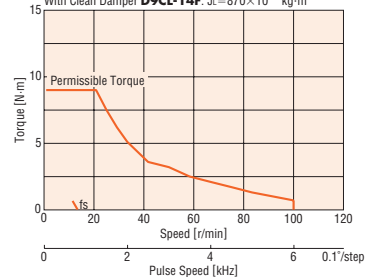
#### PK296A2-SG10/PK296B2-SG10

Constant Current Driver Power Supply Voltage: 24 VDC Current: 3 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>

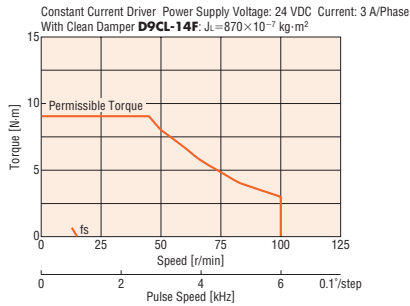


#### PK296A1-SG18/PK296B1-SG18

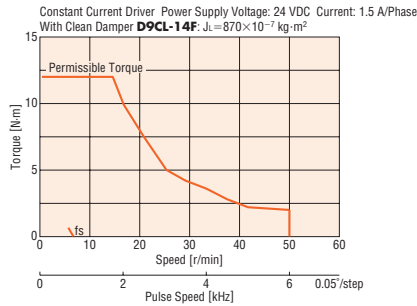
Constant Current Driver Power Supply Voltage: 24 VDC Current: 1.5 A/Phase With Clean Damper **D9CL-14F**. J: =870×10<sup>-7</sup> kg·m<sup>2</sup>



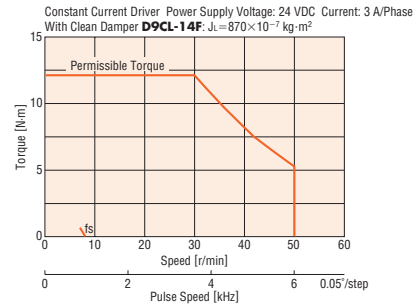
### PK296A2-SG18/PK296B2-SG18



### PK296A1-SG36/PK296B1-SG36



### PK296A2-SG36/PK296B2-SG36



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.

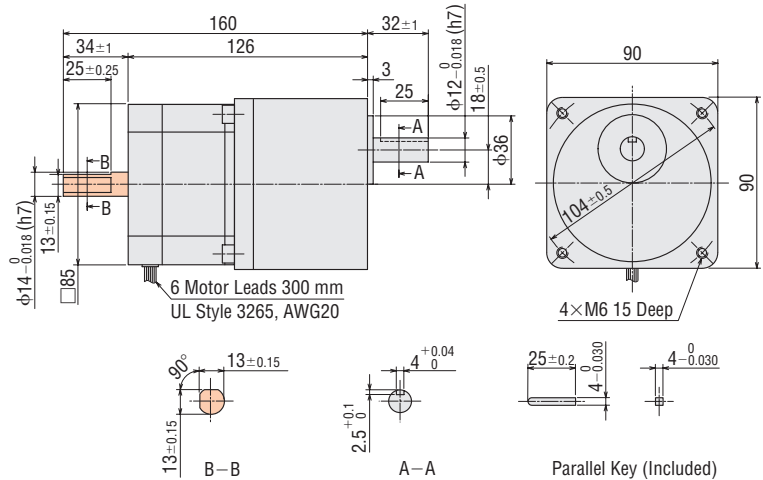
## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name | Gear Ratio              | Mass kg | 2D CAD |
|--------------|-------------------------|---------|--------|
| PK296A1-SG□  | 3.6, 7.2, 9, 10, 18, 36 | 2.8     | B242   |
| PK296B1-SG□  |                         |         |        |
| PK296A2-SG□  |                         |         |        |
| PK296B2-SG□  |                         |         |        |

- The box □ in the product name indicates a number representing the gear ratio.



- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded areas.
- Included  
Installation Screws: M6 length 18 mm × 4

## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model C⑦

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# CS Geared Type Frame Size 28 mm (Bipolar 4 lead wires)

## Connector Type

### Specifications

| Product Name    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver Product Name* |
|-----------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|----------------------------------|
| PKP223D15□-CS10 | 0.4                           | 9×10 <sup>-7</sup>                    | 1.5                      | 1.8            | 1.2                           | 0.74                   | 0.18             | 10         | 0.4                       | 0 – 600              | 90 (1.5°)          | CVD215BR-K                       |
| PKP223D15□-CS15 | 0.6                           |                                       |                          |                |                               |                        | 0.12             | 15         | 0.6                       | 0 – 400              |                    |                                  |
| PKP223D15□-CS20 | 0.8                           |                                       |                          |                |                               |                        | 0.09             | 20         | 0.8                       | 0 – 300              |                    |                                  |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

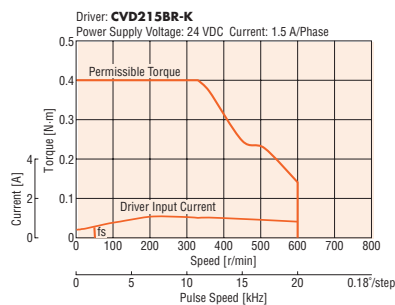
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

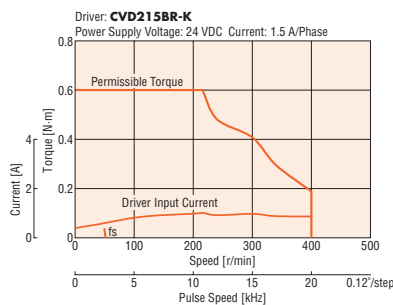
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

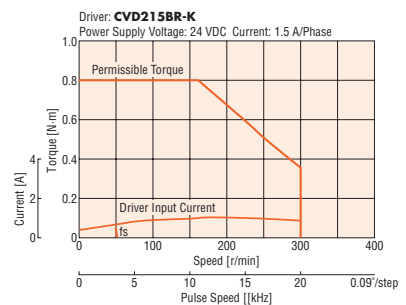
PKP223D15A-CS10/PKP223D15B-CS10



PKP223D15A-CS15/PKP223D15B-CS15



PKP223D15A-CS20/PKP223D15B-CS20



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

● Motors

2D & 3D CAD

| Product Name   | Gear Ratio | Mass kg | 2D CAD |
|----------------|------------|---------|--------|
| PKP223D15A-CS□ | 10, 15, 20 | 0.17    | B1524A |
| PKP223D15B-CS□ |            |         | B1524B |

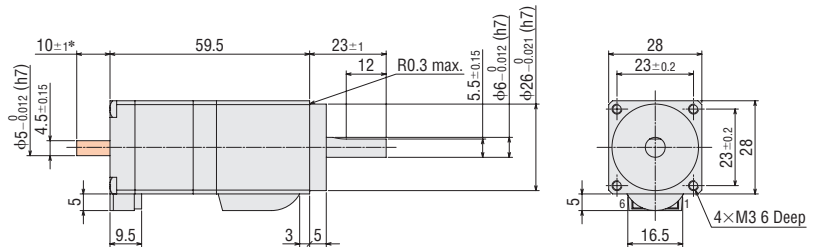
● The box □ in the product name indicates a number representing the gear ratio.

● Applicable Connectors

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10±0.25.

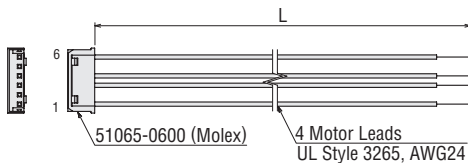
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● Connection Cables (Sold separately)

◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06A      | 0.6          |
| LC2B10A      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B③

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

# CS Geared Type Frame Size 28 mm (Unipolar 6 lead wires)

## Connector Type

### Specifications

| Product Name    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Voltage<br>VDC | Winding Resistance<br>Ω/Phase | Inductance<br>mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver<br>Product Name* |
|-----------------|-------------------------------|---------------------------------------|--------------------------|----------------|-------------------------------|------------------------|------------------|------------|---------------------------|----------------------|--------------------|-------------------------------------|
| PKP223U09□-CS10 | 0.4                           | 9×10 <sup>-7</sup>                    | 0.95                     | 2.66           | 2.8                           | 1                      | 0.18             | 10         | 0.4                       | 0 – 600              | 90 (1.5°)          | CMD2109P                            |
| PKP223U09□-CS15 | 0.6                           |                                       |                          |                |                               |                        | 0.12             | 15         | 0.6                       | 0 – 400              |                    |                                     |
| PKP223U09□-CS20 | 0.8                           |                                       |                          |                |                               |                        | 0.09             | 20         | 0.8                       | 0 – 300              |                    |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

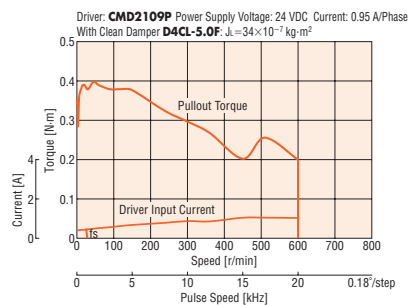
\*See "Drivers for 2-Phase / 5-Phase Motors" page for details on the recommended drivers.

#### Note

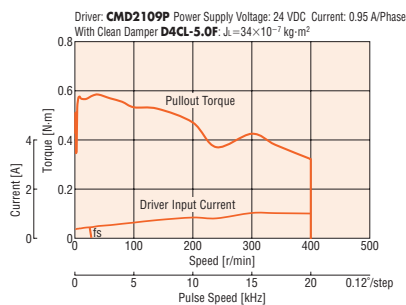
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

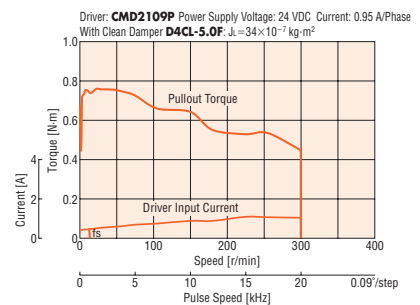
#### PKP223U09A-CS10/PKP223U09B-CS10



#### PKP223U09A-CS15/PKP223U09B-CS15



#### PKP223U09A-CS20/PKP223U09B-CS20



#### Note

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

● If there is a "clean damper" entry in the speed – torque characteristics, the data is for a double shaft motor when a clean damper is equipped.

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

### Dimensions (Unit: mm)

#### Motors

2D & 3D CAD

| Product Name   | Gear Ratio | Mass<br>kg | 2D CAD |
|----------------|------------|------------|--------|
| PKP223U09A-CS□ | 10, 15, 20 | 0.17       | B1524A |
| PKP223U09B-CS□ |            |            | B1524B |

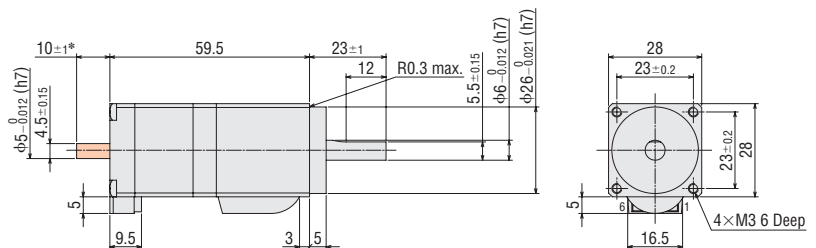
● The box □ in the product name indicates a number representing the gear ratio.

#### Applicable Connectors

Connector Housing: 51065-0600 (Molex)

Contact: 50212-8100 (Molex)

Crimp Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10±0.25.

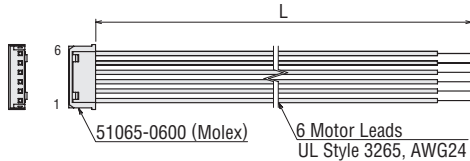
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

#### Connection Cables (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2U06A      | 0.6          |
| LC2U10A      | 1            |



### Inner Wiring Diagram of Motor

Wiring Diagram No.: Model B④

● See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# CS Geared Type Frame Size 42 mm (Bipolar 4 lead wires)

## Mini-Connector Type

### Specifications

| Product Name     | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Voltage VDC | Winding Resistance Ω/Phase | Inductance mH/Phase | Basic Step Angle | Gear Ratio | Permissible Torque N·m | Speed Range r/min | Recommended Driver Product Name* |         |
|------------------|----------------------------|------------------------------------|-----------------------|-------------|----------------------------|---------------------|------------------|------------|------------------------|-------------------|----------------------------------|---------|
| PKP243D15□2-CS5  | 0.5                        | 37×10 <sup>-7</sup>                | 1.5                   | 0.83        | 0.55                       | 0.77                | 0.36°            | 5          | 0.5                    | 0 – 600           | CVD223FBR-K                      |         |
| PKP243D23□2-CS5  |                            |                                    | 2.3                   | 0.87        | 0.38                       | 0.41                |                  |            |                        |                   |                                  |         |
| PKP243D15□2-CS10 | 1                          |                                    | 1.5                   | 1.5         | 0.83                       | 0.55                | 0.77             | 0.18°      | 10                     | 1                 |                                  | 0 – 300 |
| PKP243D23□2-CS10 |                            |                                    |                       | 2.3         | 0.87                       | 0.38                | 0.41             |            |                        |                   |                                  |         |
| PKP243D15□2-CS15 | 1.5                        |                                    | 1.5                   | 1.5         | 0.83                       | 0.55                | 0.77             | 0.12°      | 15                     | 1.5               |                                  | 0 – 200 |
| PKP243D23□2-CS15 |                            |                                    |                       | 2.3         | 0.87                       | 0.38                | 0.41             |            |                        |                   |                                  |         |
| PKP243D15□2-CS20 | 2                          | 1.5                                | 1.5                   | 0.83        | 0.55                       | 0.77                | 0.09°            | 20         | 2                      | 0 – 150           |                                  |         |
| PKP243D23□2-CS20 |                            |                                    | 2.3                   | 0.87        | 0.38                       | 0.41                |                  |            |                        |                   |                                  |         |

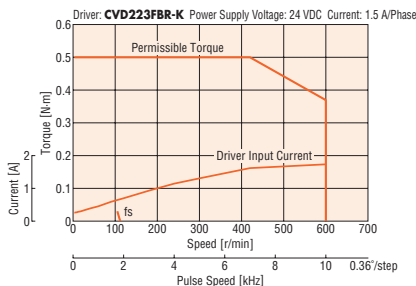
- The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).
- The backlash is 1.5° for the gear ratio 5 and 1° for other gear ratios. (Reference value).
- \*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

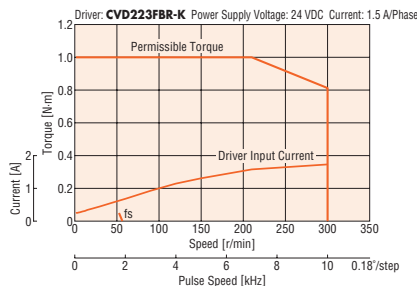
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

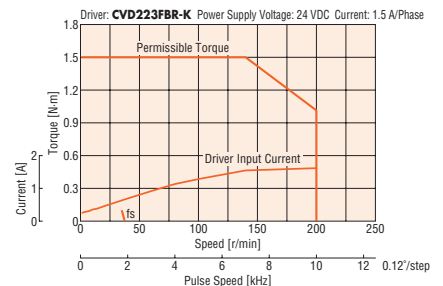
PKP243D15A2-CS5/PKP243D15B2-CS5



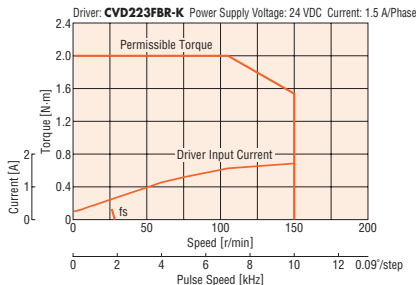
PKP243D15A2-CS10/PKP243D15B2-CS10



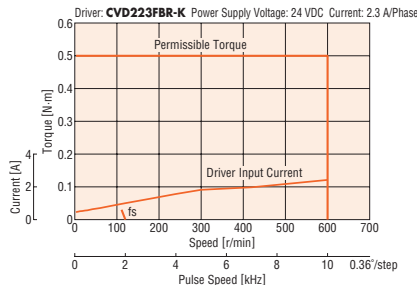
PKP243D15A2-CS15/PKP243D15B2-CS15



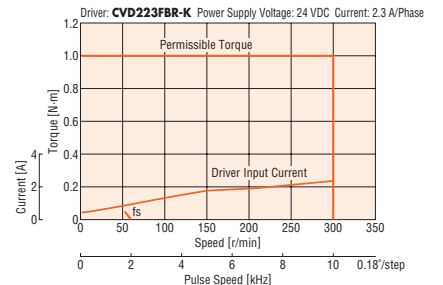
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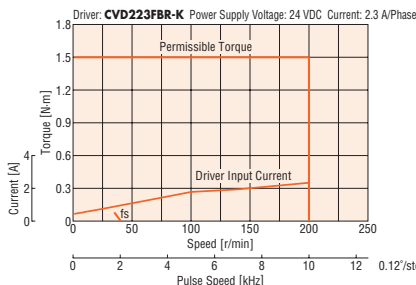
PKP243D23A2-CS5/PKP243D23B2-CS5



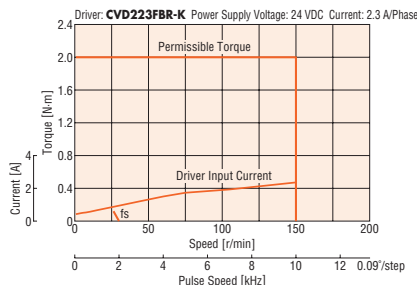
PKP243D23A2-CS10/PKP243D23B2-CS10



PKP243D23A2-CS15/PKP243D23B2-CS15



PKP243D23A2-CS20/PKP243D23B2-CS20



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same when RS-485 communication type driver is used in combination.

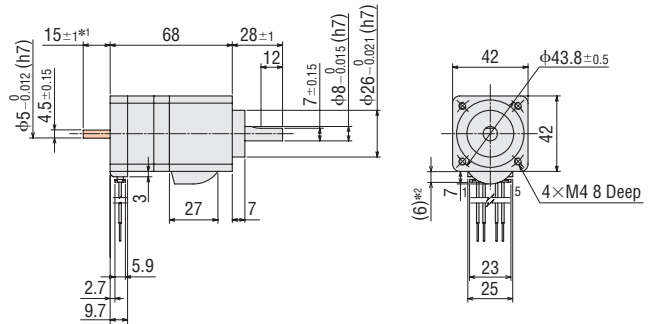
## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio    | Mass kg | 2D CAD |
|-----------------|---------------|---------|--------|
| PKP243D15A2-CS□ | 5, 10, 15, 20 | 0.4     | B1510A |
| PKP243D15B2-CS□ |               |         | B1510B |
| PKP243D23A2-CS□ |               |         | B1510A |
| PKP243D23B2-CS□ |               |         | B1510B |

- The box □ in the product name indicates a number representing the gear ratio.
- Applicable Connectors  
 Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)  
 Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)  
 Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)



\*1 The length of the shaft flat on the double shaft model is  $15 \pm 0.25$ .

\*2 With connection cable

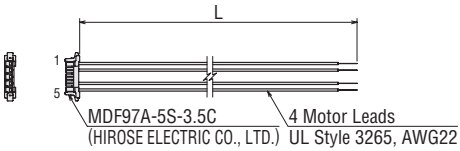
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded (6) areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# CS Geared Type Frame Size 60 mm (Bipolar 4 lead wires)

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name     | Maximum Holding Torque | Rotor Inertia        | Rated Current | Voltage | Winding Resistance | Inductance | Basic Step Angle | Gear Ratio | Permissible Torque | Speed Range | Backlash   | Recommended Driver Product Name* |         |
|------------------|------------------------|----------------------|---------------|---------|--------------------|------------|------------------|------------|--------------------|-------------|------------|----------------------------------|---------|
|                  | N·m                    | J: kg·m <sup>2</sup> | A/Phase       | VDC     | Ω/Phase            | mH/Phase   |                  |            | N·m                | r/min       | arcmin     |                                  |         |
| PKP264D14□2-CS5  | 1.3                    | 140×10 <sup>-7</sup> | 1.4           | 2       | 1.4                | 3.1        | 0.36             | 5          | 1.3                | 0 – 600     | 70 (1.17°) | CVD228BR-K                       |         |
| PKP264D28□2-CS5  |                        |                      | 2.8           | 0.92    | 0.33               | 0.81       |                  |            |                    |             |            |                                  |         |
| PKP264D14□2-CS10 | 2.7                    |                      | 1.4           | 1.4     | 2                  | 1.4        | 3.1              | 0.18       | 10                 | 2.7         |            |                                  | 0 – 300 |
| PKP264D28□2-CS10 |                        |                      |               | 2.8     | 0.92               | 0.33       | 0.81             |            |                    |             |            |                                  |         |
| PKP264D14□2-CS15 | 4                      |                      | 1.4           | 1.4     | 2                  | 1.4        | 3.1              | 0.12       | 15                 | 4           |            |                                  | 0 – 200 |
| PKP264D28□2-CS15 |                        |                      |               | 2.8     | 0.92               | 0.33       | 0.81             |            |                    |             |            |                                  |         |
| PKP264D14□2-CS20 | 4.5                    |                      | 1.4           | 1.4     | 2                  | 1.4        | 3.1              | 0.09       | 20                 | 4.5         |            |                                  | 0 – 150 |
| PKP264D28□2-CS20 |                        |                      |               | 2.8     | 0.92               | 0.33       | 0.81             |            |                    |             |            |                                  |         |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

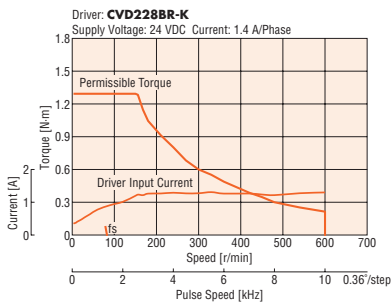
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

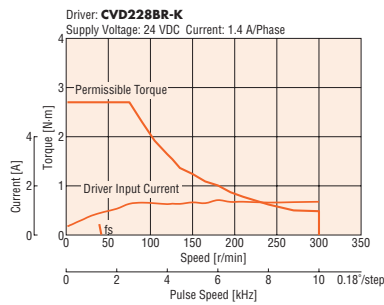
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

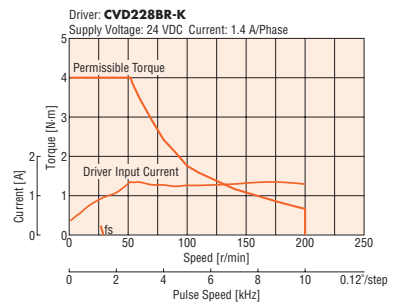
PKP264D14A2-CS5/ PKP264D14B2-CS5



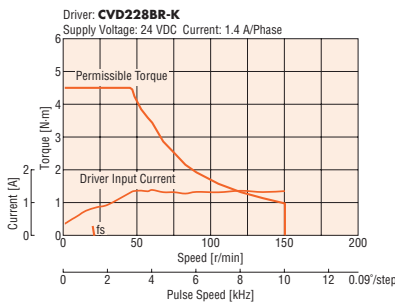
PKP264D14A2-CS10/ PKP264D14B2-CS10



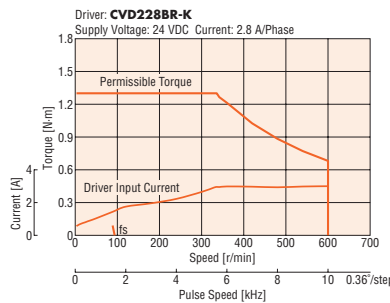
PKP264D14A2-CS15/ PKP264D14B2-CS15



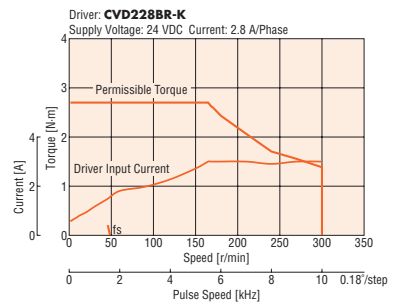
PKP264D14A2-CS20/ PKP264D14B2-CS20



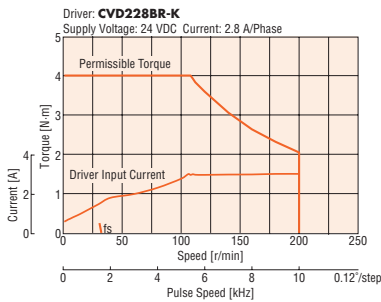
PKP264D28A2-CS5/ PKP264D28B2-CS5



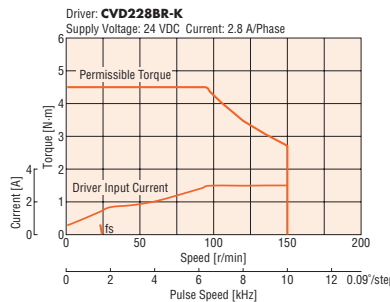
PKP264D28A2-CS10/ PKP264D28B2-CS10



PKP264D28A2-CS15/ PKP264D28B2-CS15



PKP264D28A2-CS20/ PKP264D28B2-CS20



#### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.



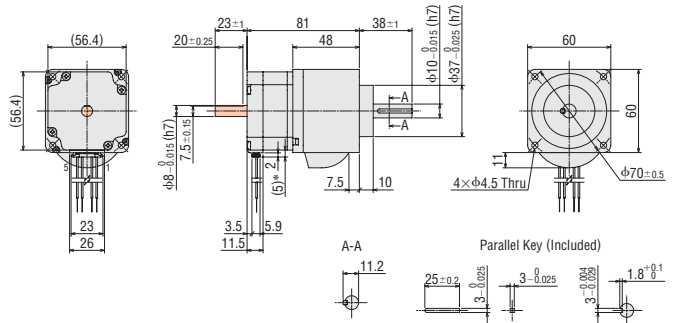
## Dimensions (Unit: mm)

### Motors

2D & 3D CAD

| Product Name    | Gear Ratio    | Mass kg | 2D CAD |
|-----------------|---------------|---------|--------|
| PKP264D14A2-CS□ | 5, 10, 15, 20 | 0.86    | B1523A |
| PKP264D14B2-CS□ |               |         | B1523B |
| PKP264D28A2-CS□ |               |         | B1523A |
| PKP264D28B2-CS□ |               |         | B1523B |

- The box □ in the product name indicates a number representing the gear ratio.
- Applicable Connectors  
Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD.)  
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD.)  
Crimp Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD.)

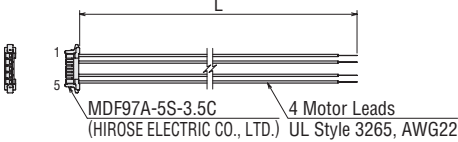


- \*With connection cable
- These dimensions are for double shaft motors.  
For single shaft motors, ignore the shaded areas.

### Connection Cables (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC2B06E      | 0.6          |
| LC2B10E      | 1            |



## Inner Wiring Diagram of Motor

Wiring Diagram No.: Model A①

- See "Inner Wiring Diagram of Motor" page for the inner wiring diagram of the motor.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Common Specifications

### General Specifications

| Specifications                                        |                     | Motor                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Class                                         |                     | 130 (B)                                                                                                                                                                                                                                                                                                                                      |
| Insulation Resistance                                 |                     | The measured value is 100 MΩ min. when a 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.                                                                                                                                                                                          |
| Dielectric Strength                                   |                     | No abnormalities are observed, even when applying voltage between the windings and the case for 1 minute under normal ambient temperature and humidity with the following conditions.<br>· Frame size 42 mm max., <b>PKP262</b> : 0.5 kVAC 50/60 Hz<br>· Frame size 56.4 mm or more: 1.0 kVAC 50/60 Hz<br>· <b>PKP29</b> : 1.5 kVAC 50/60 Hz |
| Operating Environment<br>(In operation)               | Ambient Temperature | -10 = ≤ +50°C (Non-freezing) [0 = ≤ +40°C for Flat Type with Harmonic Gear]                                                                                                                                                                                                                                                                  |
|                                                       | Ambient Humidity    | 85% or less (Non-Condensing)                                                                                                                                                                                                                                                                                                                 |
|                                                       | Atmosphere          | No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.                                                                                                                                                                                                                                                |
| Temperature Rise                                      |                     | Winding temperature rise 80°C max. (Based on Oriental Motor's internal measurement conditions)                                                                                                                                                                                                                                               |
| Stop Position Accuracy*1                              |                     | ± 3 arcmin (±0.05°) [ <b>PKP21</b> , <b>PKP242</b> and <b>PKP262</b> are ± 5 arcmin (±0.083°), <b>PK26</b> and <b>PK26JD</b> are ± 2 arcmin (±0.034°)]                                                                                                                                                                                       |
| Shaft Runout                                          |                     | 0.05T.I.R. (mm)*4                                                                                                                                                                                                                                                                                                                            |
| Radial Play*2                                         |                     | 0.025 mm Max. (Load 5 N)                                                                                                                                                                                                                                                                                                                     |
| Axial Play*3                                          |                     | 0.075 mm Max. (10 N load) [ <b>PKP21</b> is 1 N load, <b>PKP22</b> , <b>PKP242</b> and <b>PKP262</b> are 2.5 N load]                                                                                                                                                                                                                         |
| Concentricity of Installation Pilot to the Shaft      |                     | 0.075T.I.R. (mm)*4                                                                                                                                                                                                                                                                                                                           |
| Perpendicularity of Installation Surface to the Shaft |                     | 0.075T.I.R. (mm)*4                                                                                                                                                                                                                                                                                                                           |

\*1 This value is for a full step under no load. (The value changes with the size of the load.)

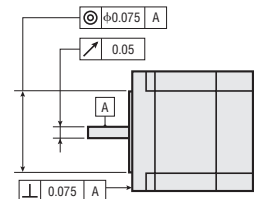
\*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N load is applied perpendicular to the tip of the motor shaft.

\*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N (**PKP21**) and is 1 N, (**PKP22**, **PKP242** and **PKP262** are 2.5 N).

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

#### Note

- Separate the motor and driver when measuring insulation resistance or performing a dielectric voltage withstand test. Also, do not conduct these tests on the motor encoder section.



### Electromagnetic Brake Specifications

| Product Name           | PKP22                    | PKP23-PKP24 | PKP26 | PKP26M2 |      |
|------------------------|--------------------------|-------------|-------|---------|------|
| Type                   | Power Off Activated Type |             |       |         |      |
| Power Supply Voltage   | 24 VDC ± 5%              |             |       |         |      |
| Power Supply Current   | A                        | 0.05        | 0.07  | 0.23    | 0.18 |
| Static Friction Torque | N·m                      | 0.08        | 0.3   | 1.5     | 0.8  |
| Brake Activation Time  | ms                       | 20*         |       |         |      |
| Brake Release Time     | ms                       | 50*         |       |         |      |
| Time Rating            | Continuous               |             |       |         |      |

\*The value is when the included surge suppressor (varistor) is used. [Recommended varistor: Z15D121 (Manufactured by SEMITEC)]

### Encoder Specifications

| Encoder Product Name | R3E                                           | R3F | R3J  | R3EL                | R3FL | R3JL |
|----------------------|-----------------------------------------------|-----|------|---------------------|------|------|
| Resolution (P/R)     | 200                                           | 400 | 1000 | 200                 | 400  | 1000 |
| Angular Accuracy     | ± 0.36° (Motor output shaft conversion value) |     |      |                     |      |      |
| Output Circuit Type  | Voltage Output                                |     |      | Line Driver Output* |      |      |
| Output Type          | Incremental                                   |     |      |                     |      |      |
| Output Signals       | A phase, B phase, Z phase (3 ch)              |     |      |                     |      |      |
| Power Supply Voltage | 5 VDC ± 10%                                   |     |      |                     |      |      |
| Current              | 45 mA max.                                    |     |      | 30 mA max.          |      |      |

\*26C31 or Equivalent

Motor  
Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

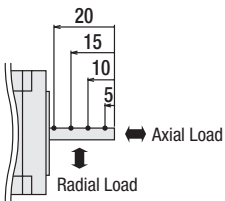
## Permissible Radial Load and Permissible Axial Load

Unit: N

| Type                                  | Motor Frame Size               | Product Name                                  | Gear Ratio     | Permissible Radial Load        |     |     |     |     | Permissible Axial Load |
|---------------------------------------|--------------------------------|-----------------------------------------------|----------------|--------------------------------|-----|-----|-----|-----|------------------------|
|                                       |                                |                                               |                | Distance from Shaft End [mm]   |     |     |     |     |                        |
|                                       |                                |                                               |                | 0                              | 5   | 10  | 15  | 20  |                        |
| Standard Type                         | 13 mm                          | <b>PKP203</b>                                 | -              | 5                              | 6   | -   | -   | -   | 1                      |
|                                       | 20 mm                          | <b>PKP213, PKP214</b>                         |                | 12                             | 15  | -   | -   | -   | 3                      |
|                                       | 28 mm                          | <b>PKP223, PKP225</b>                         |                | 25                             | 34  | 52  | -   | -   | 5                      |
|                                       | 35 mm                          | <b>PKP233, PKP235</b>                         |                | 20                             | 25  | 34  | 52  | -   | 10                     |
|                                       | 42 mm                          | <b>PKP243, PKP244, PKP245, PKP246</b>         |                | 20                             | 25  | 34  | 52  | -   | 10                     |
|                                       |                                | <b>PKP243□2, PKP244□2, PKP245□2, PKP246□2</b> |                | 35                             | 44  | 58  | 85  | -   | 15                     |
|                                       | 50 mm                          | <b>PKP254, PKP256, PKP258</b>                 |                | 61                             | 73  | 90  | 110 | -   | 20                     |
|                                       |                                | <b>PKP264, PKP266, PKP268</b>                 |                | 61                             | 73  | 90  | 110 | 160 | 20                     |
|                                       | 56.4 mm                        | <b>PKP264□2, PKP266□2, PKP268□2</b>           |                | 90                             | 100 | 130 | 180 | 270 | 30                     |
| <b>PK264J, PK266J, PK267J, PK269J</b> |                                | 50                                            | 60             | 75                             | 100 | 150 | 20  |     |                        |
| 85 mm                                 | <b>PKP296, PKP299, PKP2913</b> | 260                                           | 290            | 340                            | 390 | 480 | 60  |     |                        |
| High-Resolution Type                  | 28 mm                          | <b>PKP223, PKP225</b>                         | -              | 25                             | 34  | 52  | -   | -   | 5                      |
|                                       |                                | <b>PKP243, PKP244</b>                         |                | 20                             | 25  | 34  | 52  | -   | 10                     |
|                                       | 42 mm                          | <b>PKP243□2, PKP244□2, PKP245□2, PKP246□2</b> |                | 35                             | 44  | 58  | 85  | -   | 15                     |
|                                       |                                | <b>PKP264, PKP266, PKP268</b>                 |                | 61                             | 73  | 90  | 110 | 160 | 20                     |
|                                       | 56.4 mm                        | <b>PKP264□2, PKP266□2, PKP268□2</b>           |                | 90                             | 100 | 130 | 180 | 270 | 30                     |
|                                       |                                | <b>PKP264□2, PKP266□2, PKP268□2</b>           |                | 90                             | 100 | 130 | 180 | 270 | 30                     |
| Flat Type · Standard                  | 42 mm                          | <b>PKP242</b>                                 | -              | 20                             | 25  | 34  | -   | -   | 5                      |
|                                       | 60 mm                          | <b>PKP262</b>                                 |                |                                |     |     |     |     |                        |
| Flat Type with Harmonic Gear          | 51 mm                          | <b>PKP242</b>                                 | <b>50, 100</b> | -                              | -   | -   | -   | -   | 200                    |
|                                       | 61 mm                          | <b>PKP262</b>                                 |                | -                              | -   | -   | -   | -   | 450                    |
| SH Geared Type                        | 28 mm                          | <b>PKP223</b>                                 | -              | <b>7.2, 9, 10, 18, 36</b>      |     |     |     |     | 15                     |
|                                       | 42 mm                          | <b>PKP243</b>                                 |                | <b>3.6, 7.2, 9, 10, 18, 36</b> |     |     |     |     | 10                     |
|                                       |                                | <b>PKP243</b>                                 |                | <b>3.6, 7.2, 9, 10</b>         |     |     |     |     | 30                     |
|                                       | 60 mm                          | <b>PKP264</b>                                 |                | <b>18, 36</b>                  |     |     |     |     | 80                     |
|                                       | 90 mm                          | <b>PK296</b>                                  |                | <b>3.6, 7.2, 9, 10, 18, 36</b> |     |     |     |     | 220                    |
| CS Geared Type                        | 28 mm                          | <b>PKP223</b>                                 | -              | <b>10, 15, 20</b>              |     |     |     |     | 30                     |
|                                       | 42 mm                          | <b>PKP243</b>                                 |                | <b>5, 10, 15, 20</b>           |     |     |     |     | 59                     |
|                                       | 60 mm                          | <b>PKP264</b>                                 |                | <b>5, 10, 15, 20</b>           |     |     |     |     | 160                    |

### Radial Load and Axial Load

Distance from Shaft End [mm]



### Permissible Moment Load of Flat Type with Harmonic Gear

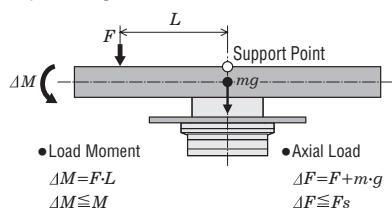
When an eccentric load is applied to the output flange-installation surface, the load moment acts on the bearing.

Use the following formula to check whether the axial load and load moment are within specifications.

| Product Name      | Gear Ratio     | Permissible Axial Load (N) | Permissible Moment Load (N·m) | Constant a (m) |
|-------------------|----------------|----------------------------|-------------------------------|----------------|
| <b>PKP242-H□</b>  | <b>50, 100</b> | 200                        | 8.5                           | 0.0129         |
| <b>PKP262-H□S</b> | <b>50, 100</b> | 450                        | 10.1                          | 0.0140         |

|                                                   |                                                |
|---------------------------------------------------|------------------------------------------------|
| m: Load mass (kg)                                 | $\Delta F$ : Load on output flange surface (N) |
| g: Gravitational acceleration (m/s <sup>2</sup> ) | F <sub>s</sub> : Permissible axial load (N)    |
| F: External force (N)                             |                                                |
| L: Overhung distance (m)                          | $\Delta M$ : Load moment (N·m)                 |
| a: Constant (m)                                   | M: Permissible moment load (N·m)               |

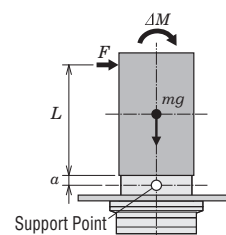
Example 1: An external force F (N) is applied at L (m) overhang position in a horizontal direction from the center of the output flange



• Load Moment  $\Delta M = F \cdot L$   
 $\Delta M \leq M$

• Axial Load  $\Delta F = F + m \cdot g$   
 $\Delta F \leq F_s$

Example 2: An external force F (N) is applied at L (m) overhang position in a vertical direction from the output flange-installation surface



• Load Moment  $\Delta M = F \cdot (L + a)$   
 $\Delta M \leq M$

• Axial Load  $\Delta F = m \cdot g$   
 $\Delta F \leq F_s$

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

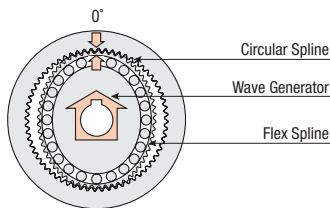
Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## Details of the Flat Type with Harmonic Gear

### Principle and Structure



### Details of the Accuracy

Unlike the conventional spur gear gearhead, the harmonic gear has no backlash. The harmonic gear has many teeth in simultaneous meshing engagement, and is designed to average out the effects of tooth pitch error and cumulative pitch error on rotation accuracy to ensure high positioning accuracy. Also, harmonic gears have high gear ratio, so that the torsion when the load torque is applied to the output shaft is much smaller than a single motor and other geared motor, and the rigidity is high. High rigidity is less subject to load fluctuation and enables stable positioning. When the high positioning accuracy and rigidity are required, refer to the following characteristics.

### Angular Transmission Accuracy

Angular transmission error is the difference between the theoretical rotation angle of the output shaft, as calculated from the input pulse count, and actual rotation angle. Represented as the difference between the min. value and max. value in the set of measurements taken for a single rotation of the output shaft starting from an arbitrary position.

| Product Name | Angular Transmission Accuracy [arcmin] |
|--------------|----------------------------------------|
| PKP242-H□    | 2 (0.034°)                             |
| PKP262-H□S   | 1.5 (0.025°)                           |

● Values in no-load condition (reference of gear part)

### Torque – Torsion Characteristics

In actual applications, there is always frictional load, and displacement is produced as a result of this load. If the frictional load is constant, the displacement will be constant for unidirectional operation. However, in bidirectional operation, double the displacement is produced over a round trip. This displacement can be estimated from the following torque – torsion characteristics.

This displacement occurs when an external force is applied as the gear is stopped, or when the gear is driven under a frictional load. The slope can be approximated with the spring constant in the following 3 classes, depending on the size of the load torque, and can be estimated through calculation.

1. Load torque  $T_L$  is  $T_1$  max.

$$\theta = \frac{T_L}{K_1} \text{ [min]}$$

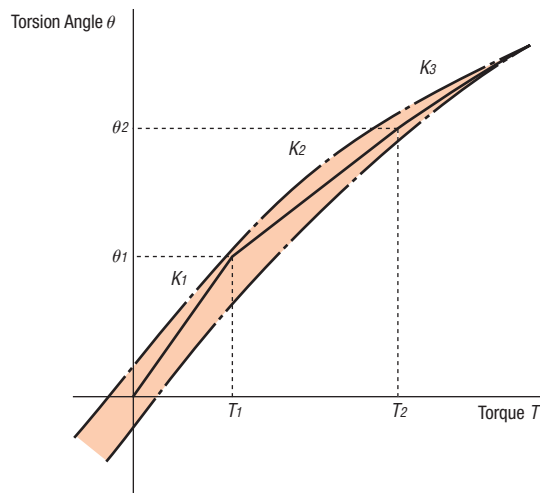
2. Load torque  $T_L$  exceeds  $T_1$  and is  $T_2$  max.

$$\theta = \theta_1 + \frac{T_L - T_1}{K_2} \text{ [min]}$$

3. Load torque  $T_L$  exceeds  $T_2$

$$\theta = \theta_2 + \frac{T_L - T_2}{K_3} \text{ [min]}$$

The torsion angle of the harmonic gear alone is calculated according to the size of the load torque.



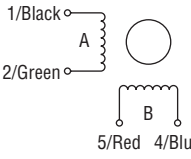
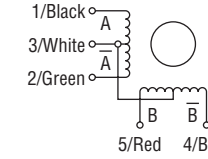
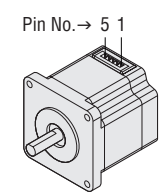
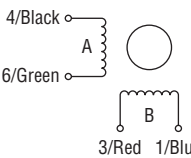
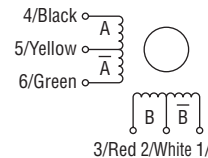
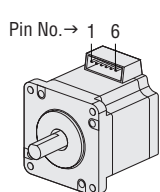
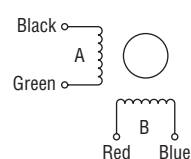
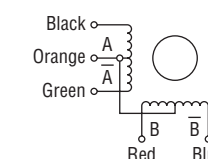
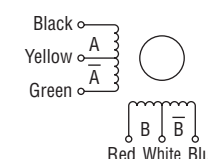
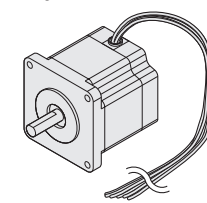
Torsion Angle – Torque Characteristics

### Values for Determining Torsion Angle

| Product Name | Item | Gear Ratio | $T_1$ | $K_1$   | $\theta_1$ | $T_2$ | $K_2$   | $\theta_2$ | $K_3$   |
|--------------|------|------------|-------|---------|------------|-------|---------|------------|---------|
|              |      |            | N·m   | N·m/min | min        | N·m   | N·m/min | min        | N·m/min |
| PKP242-H50   |      | 50         | 0.29  | 0.13    | 2.3        | 0.75  | 0.19    | 4.5        | 0.24    |
| PKP242-H100  |      | 100        | 0.29  | 0.26    | 1.1        | 0.75  | 0.29    | 2.8        | 0.35    |
| PKP262-H50S  |      | 50         | 0.8   | 0.64    | 1.2        | 2     | 0.87    | 2.8        | 0.93    |
| PKP262-H100S |      | 100        | 0.8   | 0.79    | 1          | 2     | 0.99    | 2.1        | 1.28    |

## Motor Inner Wiring Diagram and Rotation Direction

### Inner Wiring Diagram

| Motor Model Type               | Connection Diagram/Pin Arrangement                                                                            |                                                                                                                |                                                                                                                                                                                |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model A<br>Mini-Connector Type | ① Bipolar (4 Lead Wires)<br> | ② Unipolar (5 Lead Wires)<br> | · Pin Arrangement<br>                                                                       |
| Model B<br>Connector Type      | ③ Bipolar (4 Lead Wires)<br> | ④ Unipolar (6 Lead Wires)<br> | · Pin Arrangement<br>                                                                       |
| Model C<br>Lead Wire Type      | ⑤ Bipolar (4 Lead Wires)<br> | ⑥ Unipolar (5 Lead Wires)<br> | ⑦ Unipolar (6 Lead Wires)<br>                                                                |
|                                |                                                                                                               |                                                                                                                | · Pin Arrangement<br> <p>Motor lead wire colors: Blue, white, red, black, yellow, green</p> |

● The colors in the wiring diagram are the colors of the separately sold connection cables.

### Rotation Direction

When excited in the order shown below, it rotates in a clockwise direction viewed from the output shaft direction.

#### ● Bipolar

| STEP | Black | Green | Red | Blue |
|------|-------|-------|-----|------|
| 1    | -     | +     | +   | -    |
| 2    | -     | +     | -   | +    |
| 3    | +     | -     | -   | +    |
| 4    | +     | -     | +   | -    |

#### ● Unipolar

| STEP | A  | $\bar{A}$ | B  | $\bar{B}$ |
|------|----|-----------|----|-----------|
| 1    | ON |           | ON |           |
| 2    |    | ON        | ON |           |
| 3    |    | ON        |    | ON        |
| 4    | ON |           |    | ON        |

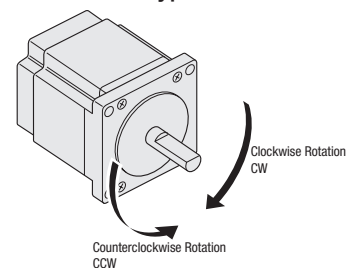
### Geared Motor Rotation Direction

The rotation direction of the output gear shaft relative to the standard type motor output shaft varies depending on the gear type and gear ratio.

Please check the following table.

| Geared Type                   |                         | Gear Ratio                 | Rotation Direction when Viewed from the Output Shaft Side of the Motor |
|-------------------------------|-------------------------|----------------------------|------------------------------------------------------------------------|
| SH Geared Type                | Frame Size 28 mm        | <b>7.2, 36</b>             | Same Direction                                                         |
|                               |                         | <b>9, 10, 18</b>           | Opposite Direction                                                     |
|                               | Frame Size 42 mm, 60 mm | <b>3.6, 7.2, 9, 10</b>     | Same Direction                                                         |
|                               |                         | <b>18, 36</b>              | Opposite Direction                                                     |
|                               | Frame Size 90 mm        | <b>3.6, 7.2, 9, 10, 18</b> | Same Direction                                                         |
| CS Geared Type                |                         | <b>36</b>                  | Opposite Direction                                                     |
| Flat Type with Harmonic Gears |                         | <b>5, 10, 15, 20</b>       | Same Direction                                                         |
|                               |                         | <b>50, 100</b>             | Opposite Direction                                                     |

### Standard Type Motor



# 5-Phase Stepper Motors PKP Series

Motor  
Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm



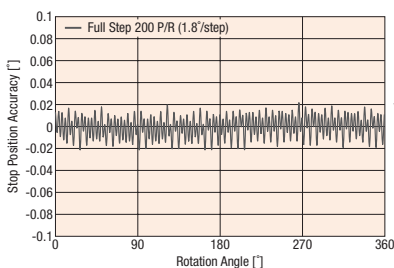
This is a high torque and low vibration stepper motor with a basic step angle of  $0.72^\circ$  (resolution of 500 steps per revolution). High Positioning accuracy is possible, as well as low vibration and reduced noise. (A separate dedicated driver is required to operate each motor.)

## Features

### High Accuracy

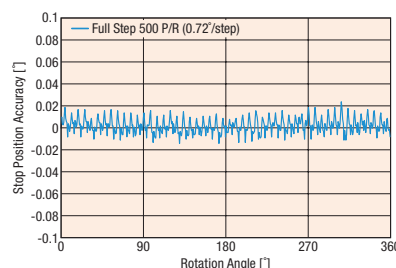
Since the step angle of 5-Phase Stepper Motors in the **PKP Series** is at  $0.72^\circ$  (high-resolution type at  $0.36^\circ$ ) and the stopping accuracy is at  $\pm 0.05^\circ$ , highly accurate positioning is possible. In addition, the stop position accuracy controlled by a microstep driver has almost the same high accuracy as that controlled by a full-step driver.

#### ● General 2-Phase Motor



Stopping accuracy gets worse with Microstep

#### ● 5-Phase PKP Series (Driver: 5-phase CVD driver)



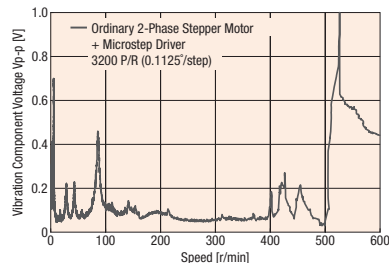
Stopping accuracy does not get worse with Microstep

PKP Series Highly accurate positioning for 5-phase is possible

### Low Vibration and Reduced Noise

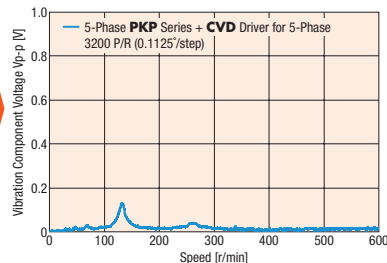
Because the basic step angle is small at  $0.72^\circ$  ( $0.36^\circ$  for high-resolution type), the vibrations and noise are lower than the 2-phase stepper motor with a basic step angle of  $1.8^\circ$ . Also, vibrations and noise can be further reduced with the driver of the microstep drive.

#### ● Example of 2-Phase Stepper Motor Vibration Characteristics



PKP Series Vibration characteristics for 5-phase are further improved

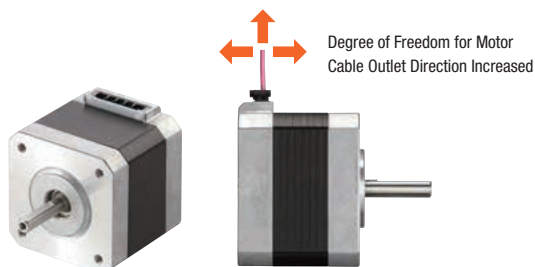
#### ● Example of 5-Phase Stepper Motor Vibration Characteristics



### Lineup of Products Using Compact, Flat Connectors















The product line offers products that use compact, flat connectors. The degree of freedom for the motor cable outlet direction has been increased, because the outlet direction points upward.

● The connector configuration depends on the motor. Check the details in the motor dimensions.



# Product Line

—: Not Offered in This Product Line

| Type<br>(Basic Step Angle)            | Features                                                                                                                                                                                                                            | Frame Size                                                                           |                                                                                   |                                                                                      |                                                                                   |                                                                                        |                                                                                                          |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                                       |                                                                                                                                                                                                                                     | 20 mm                                                                                | 28 mm                                                                             | 42 mm                                                                                | 56.4 mm                                                                           | 60 mm                                                                                  | 85 mm                                                                                                    |
| Standard Type<br>(0.72°)              | <ul style="list-style-type: none"> <li>Standard model</li> <li>High torque, low vibration</li> </ul>                                                                                                                                |  *1 |  |     |  |     |  *1<br>Lead Wire Type |
| High-Resolution Type<br>(0.36°)       | <ul style="list-style-type: none"> <li>Resolution double that of standard type</li> <li>Results in high positioning accuracy and reduced vibration</li> </ul>                                                                       | —                                                                                    | —                                                                                 |     | —                                                                                 |     | —                                                                                                        |
| Standard Type with Encoder<br>(0.72°) | <ul style="list-style-type: none"> <li>En resolution 500 P/R, A, B, Z (3 ch) signal output</li> <li>Uses compact encoder</li> <li>Encoder with superior noise resistance due to line driver (differential output) output</li> </ul> |  *1 | —                                                                                 |  *2 |  |  *2 | —                                                                                                        |
| TS Geared Type<br>(0.024° to 0.2°)    | <ul style="list-style-type: none"> <li>Spur gear mechanism</li> <li>A wide variety of low gear ratios, high-speed operations</li> <li>Gear ratio types: 3.6, 7.2, 10, 20, 30</li> </ul>                                             | —                                                                                    | —                                                                                 |    | —                                                                                 |    | —                                                                                                        |

\*1 This is the conventional PK Series.

\*2 With frame sizes of 42 mm and 60 mm, a product line with resolution of 1000 P/R is also available.

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

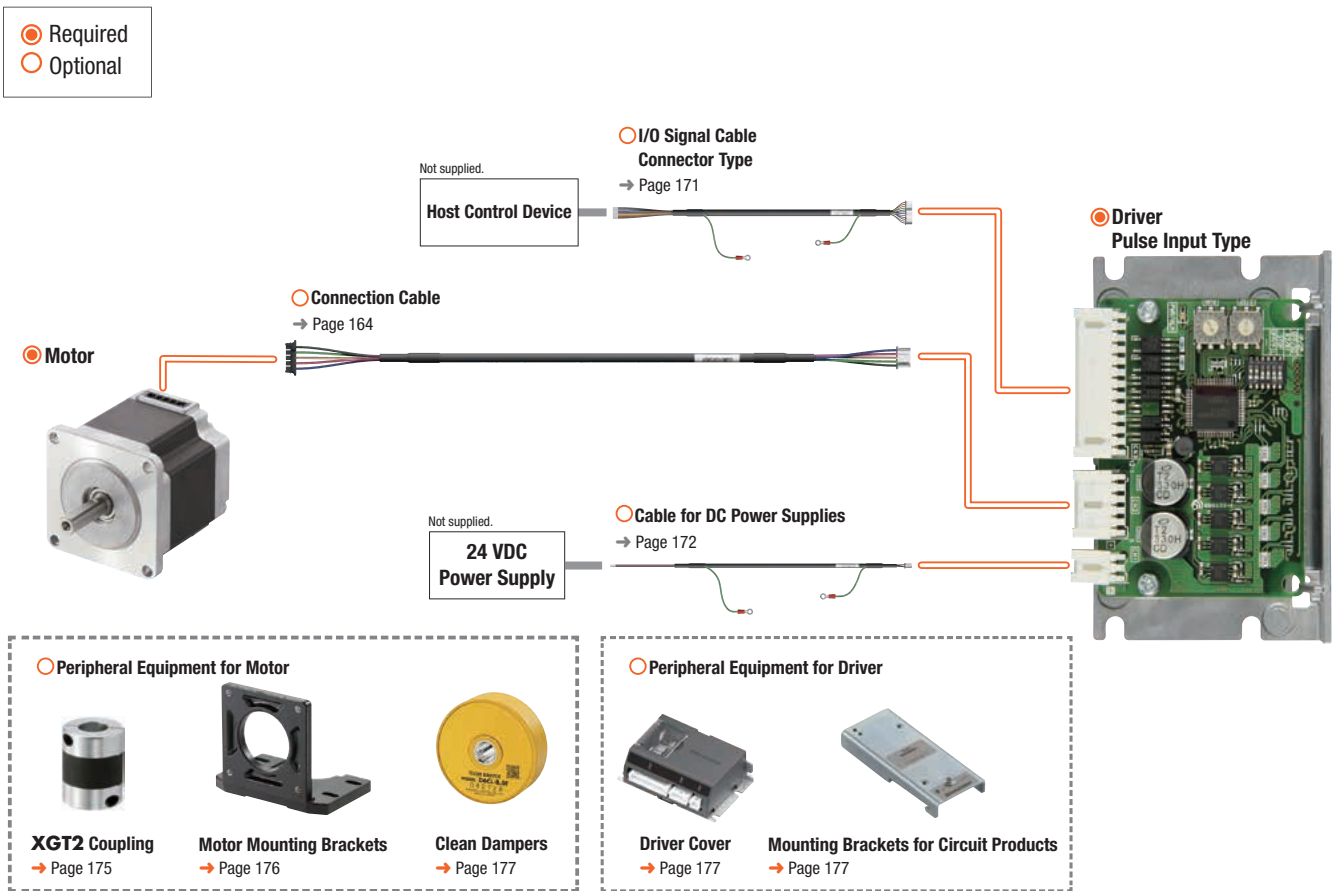


- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

## System Configuration

### Combination of the 5-Phase Stepper Motor PKP Series and the CVD Series Pulse Input Type Driver

An example of a system configuration using a host control device (with built-in pulse generator function) is shown below. Motors, drivers, and connection cables must be ordered individually.



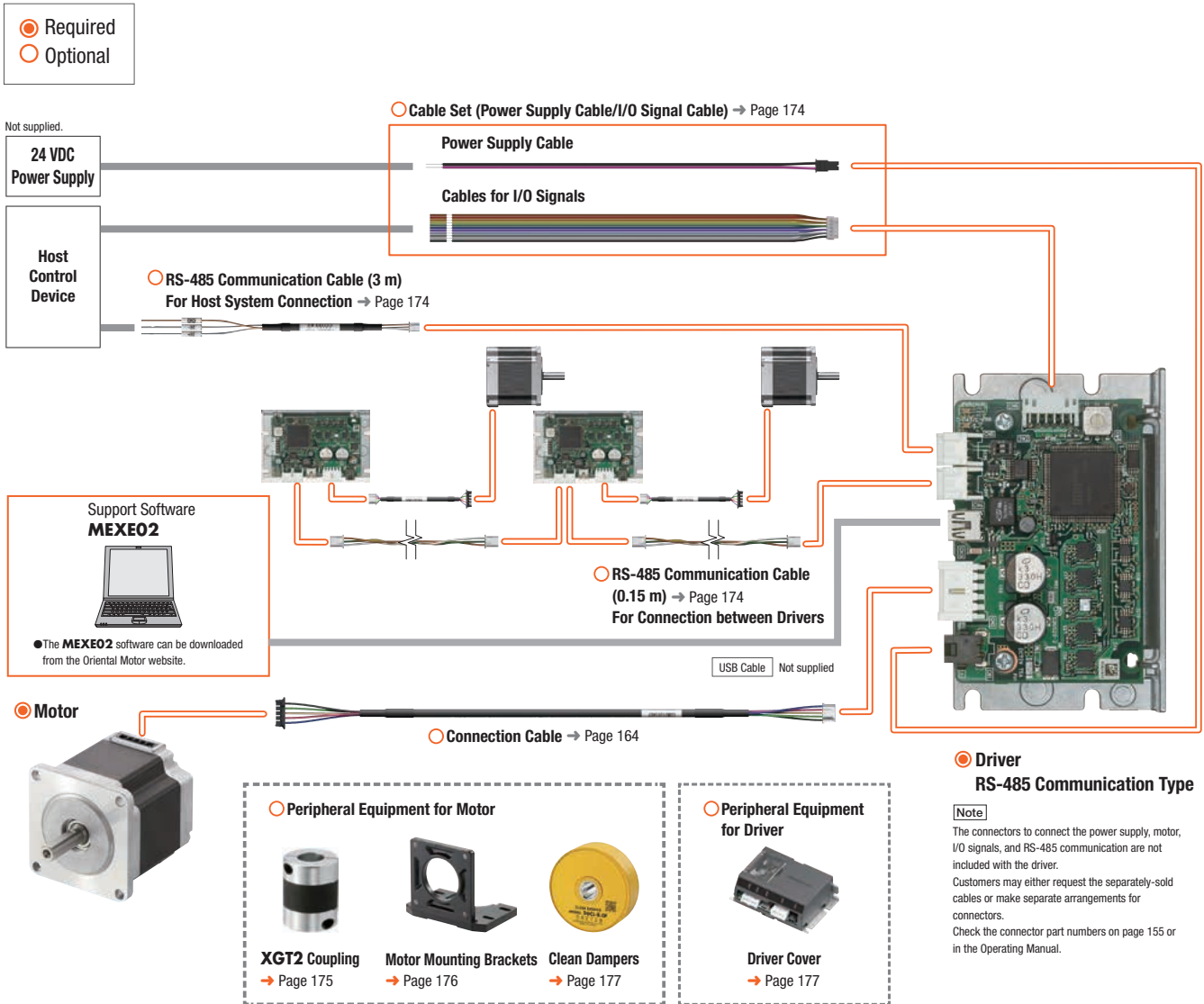
### Example of System Configuration

| Motor                            | Driver                           | Cables                 |                            |                                   | Peripheral Equipment    |                       |                       |
|----------------------------------|----------------------------------|------------------------|----------------------------|-----------------------------------|-------------------------|-----------------------|-----------------------|
|                                  |                                  | Connection Cable (1 m) | Cable for I/O Signal (1 m) | Cable for DC Power Supplies (1 m) | Motor Mounting Brackets | Flexible Couplings    | Clean Damper          |
| <b>PKP566FN24B2</b>              | <b>CVD524BR-K</b>                | <b>CCM010V5AEF</b>     | <b>CC12D010-2</b>          | <b>CC02D010-2</b>                 | <b>PALW2P-5</b>         | <b>XGT2-19C-8-8</b>   | <b>D6CL-8.0F</b>      |
| <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/>  | <input type="radio"/>      | <input type="radio"/>             | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> |

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

● Combination of the 5-Phase Stepper Motor PKP Series and the CVD Series RS-485 Communication Type Driver

An example of a three axis system configuration using RS-485 communication is shown below. Motors, drivers, and connection cables must be ordered individually.



● Example of System Configuration

| Motor        | Driver    | Cables                 |                                  |                   | Peripheral Equipment    |                    |              |
|--------------|-----------|------------------------|----------------------------------|-------------------|-------------------------|--------------------|--------------|
|              |           | Connection Cable (1 m) | RS-485 Communication Cable (3 m) | Cable Set (0.3 m) | Motor Mounting Brackets | Flexible Couplings | Clean Damper |
| PKP566FN24B2 | CVD5BR-KR | CCM010V5AEF            | CC030-RS                         | LHS003CC          | PALW2P-5                | XGT2-19C-8-8       | D6CL-8.0F    |
| ○            | ○         | ○                      | ○                                | ○                 | ○                       | ○                  | ○            |

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

- Motor Frame Size
- 13 mm
- 20 mm
- 28 mm
- 35 mm
- 42 mm
- 50 mm  
51 mm
- 56.4 mm
- 60 mm  
61 mm
- 85 mm  
90 mm

## Product Number

### Motor

◇ Frame Size 20 mm, 85 mm

Standard Type

**PK 5 1 3 P A**

① ② ③ ④ ⑤ ⑧

**PK 5 9 6 H N A W**

① ② ③ ④ ⑥ ⑦ ⑧ ⑪

Standard Type with Encoder

**PK 5 1 3 P A - R3G L**

① ② ③ ④ ⑤ ⑧ ⑨ ⑩

◇ Frame Size 28 mm, 42 mm, 56.4 mm, 60 mm

Standard Type, High-Resolution Type

**PKP 5 6 6 F N 24 A 2**

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩

**PKP 5 4 4 M N 18 A**

① ② ③ ④ ⑥ ⑦ ⑧ ⑨

Standard Type with Encoder/High-Resolution Type with Encoder

**PKP 5 6 6 F N 24 A 2 - R3G L**

① ② ③ ④ ⑤ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

### TS Geared Type

**PKP 5 4 3 N 18 A 2 - TS 30**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

### Driver

Refer to page D-1 for details on drivers.

### Connection Cable

◇ Motor Connection Cable

**LC 5 N 06 E**

① ② ③ ④ ⑤

◇ Encoder Connection Cable

**LC E 08 A - 006**

① ② ③ ④ ⑤

|   |                             |                                                           |
|---|-----------------------------|-----------------------------------------------------------|
| ① | Series Name                 | <b>PK: PK Series</b>                                      |
| ② | <b>5:</b> 5-Phase           |                                                           |
| ③ | Motor Frame Size            | <b>1:</b> 20 mm <b>9:</b> 85 mm                           |
| ④ | Motor Case Length           |                                                           |
| ⑤ | Motor Classification        |                                                           |
| ⑥ | Motor Type                  | Blank: Standard Model <b>H:</b> High Speed Specification  |
| ⑦ | Number of Lead Wires        | <b>N:</b> 5 Leads                                         |
| ⑧ | Configuration               | <b>A:</b> Single Shaft <b>B:</b> Double Shaft             |
| ⑨ | Encoder Resolution          | <b>R3G:</b> 500 P/R                                       |
| ⑩ | Encoder Output Circuit Type | Blank: Voltage Output<br><b>L:</b> Line Driver Output     |
| ⑪ | Cable Identification        | Blank: Connector Coupled Type<br><b>W:</b> Lead Wire Type |

|   |                              |                                                                                                      |
|---|------------------------------|------------------------------------------------------------------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                                                                               |
| ② | <b>5:</b> 5-Phase            |                                                                                                      |
| ③ | Motor Frame Size             | <b>2:</b> 28 mm <b>4:</b> 42 mm<br><b>6:</b> 56.4 mm<br>(60 mm when the motor classification is "F") |
| ④ | Motor Case Length            |                                                                                                      |
| ⑤ | Motor Classification         | <b>F:</b> Motor Frame Size 60 mm                                                                     |
| ⑥ | Motor Type                   | Blank: Standard Type<br><b>M:</b> High-Resolution Type                                               |
| ⑦ | Number of Lead Wires         | <b>N:</b> 5 Leads                                                                                    |
| ⑧ | Motor Winding Specifications |                                                                                                      |
| ⑨ | Configuration                | <b>A:</b> Single Shaft <b>B:</b> Double Shaft                                                        |
| ⑩ | Reference Number             |                                                                                                      |
| ⑪ | Encoder Resolution           | <b>R3G:</b> 500 P/R <b>R3J:</b> 1000 P/R                                                             |
| ⑫ | Encoder Output Circuit Type  | Blank: Voltage Output<br><b>L:</b> Line Driver Output                                                |

● Some products with a shaft diameter of  $\phi 6.35$  mm are also available. For details, please contact your nearest Oriental Motor sales office.

|   |                              |                                               |
|---|------------------------------|-----------------------------------------------|
| ① | Series Name                  | <b>PKP: PKP Series</b>                        |
| ② | <b>5:</b> 5-Phase            |                                               |
| ③ | Motor Frame Size             | <b>4:</b> 42 mm <b>6:</b> 60 mm               |
| ④ | Motor Case Length            |                                               |
| ⑤ | Number of Lead Wires         | <b>N:</b> 5 Leads                             |
| ⑥ | Motor Winding Specifications |                                               |
| ⑦ | Configuration                | <b>A:</b> Single Shaft <b>B:</b> Double Shaft |
| ⑧ | Reference Number             |                                               |
| ⑨ | Geared Type                  | <b>TS: TS Geared Type</b>                     |
| ⑩ | Gear Ratio                   |                                               |

|   |                   |                                 |
|---|-------------------|---------------------------------|
| ① | Cables            | <b>LC:</b> Connector Leads      |
| ② | <b>5:</b> 5-Phase |                                 |
| ③ | Cable Type        | <b>N:</b> For 5-Phase           |
| ④ | Cable Length      | <b>06:</b> 0.6 m <b>10:</b> 1 m |
| ⑤ | Reference Number  |                                 |

|   |                  |                                                                    |
|---|------------------|--------------------------------------------------------------------|
| ① | Cables           | <b>LC:</b> Connector Leads                                         |
| ② | Cable Type       | <b>E:</b> For Encoder                                              |
| ③ | Applicable Model | <b>05:</b> For Voltage Output<br><b>08:</b> For Line Driver Output |
| ④ | Reference Number |                                                                    |
| ⑤ | Cable Length     | <b>006:</b> 0.6 m                                                  |

## Product Line

A connection cable is required for connector-coupled motors.

Motors, drivers, and cables are must be ordered individually. Refer to page 163 for connection cable.

### Motor

#### Standard Type

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| <b>PK513PA</b>              | <b>PK513PB</b>              |
| <b>PKP523N12A</b>           | <b>PKP523N12B</b>           |
| <b>PKP525N12A</b>           | <b>PKP525N12B</b>           |
| <b>PKP543N18A2</b>          | <b>PKP543N18B2</b>          |
| <b>PKP544N18A2</b>          | <b>PKP544N18B2</b>          |
| <b>PKP544N18A</b>           | <b>PKP544N18B</b>           |
| <b>PKP545N18A2</b>          | <b>PKP545N18B2</b>          |
| <b>PKP546N18A2</b>          | <b>PKP546N18B2</b>          |
| <b>PKP546N18A</b>           | <b>PKP546N18B</b>           |
| <b>PKP564N28A2</b>          | <b>PKP564N28B2</b>          |
| <b>PKP566N28A2</b>          | <b>PKP566N28B2</b>          |
| <b>PKP568N28A2</b>          | <b>PKP568N28B2</b>          |
| <b>PKP564FN24A2</b>         | <b>PKP564FN24B2</b>         |
| <b>PKP564FN38A2</b>         | <b>PKP564FN38B2</b>         |
| <b>PKP566FN24A2</b>         | <b>PKP566FN24B2</b>         |
| <b>PKP566FN38A2</b>         | <b>PKP566FN38B2</b>         |
| <b>PKP569FN24A2</b>         | <b>PKP569FN24B2</b>         |
| <b>PKP569FN38A2</b>         | <b>PKP569FN38B2</b>         |
| <b>PK596HNAW</b>            | <b>PK596HNBW</b>            |
| <b>PK599HNAW</b>            | <b>PK599HNBW</b>            |
| <b>PK5913HNAW</b>           | <b>PK5913HNBW</b>           |

#### High-Resolution Type

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| <b>PKP544MN18A</b>          | <b>PKP544MN18B</b>          |
| <b>PKP546MN18A</b>          | <b>PKP546MN18B</b>          |
| <b>PKP564FMN24A</b>         | <b>PKP564FMN24B</b>         |
| <b>PKP566FMN24A</b>         | <b>PKP566FMN24B</b>         |
| <b>PKP569FMN24A</b>         | <b>PKP569FMN24B</b>         |

#### TS Geared Type

| Product Name (Single Shaft) | Product Name (Double Shaft) |
|-----------------------------|-----------------------------|
| <b>PKP544N18A2-TS3.6</b>    | <b>PKP544N18B2-TS3.6</b>    |
| <b>PKP544N18A2-TS7.2</b>    | <b>PKP544N18B2-TS7.2</b>    |
| <b>PKP544N18A2-TS10</b>     | <b>PKP544N18B2-TS10</b>     |
| <b>PKP543N18A2-TS20</b>     | <b>PKP543N18B2-TS20</b>     |
| <b>PKP543N18A2-TS30</b>     | <b>PKP543N18B2-TS30</b>     |
| <b>PKP566N28A2-TS3.6</b>    | <b>PKP566N28B2-TS3.6</b>    |
| <b>PKP566N28A2-TS7.2</b>    | <b>PKP566N28B2-TS7.2</b>    |
| <b>PKP566N28A2-TS10</b>     | <b>PKP566N28B2-TS10</b>     |
| <b>PKP564N28A2-TS20</b>     | <b>PKP564N28B2-TS20</b>     |
| <b>PKP564N28A2-TS30</b>     | <b>PKP564N28B2-TS30</b>     |

### Driver

For details about drivers refer to page 146.

### Connection Cable

For the applicable motor of the connection cable, refer to the dimension page of each product.

Some cables that can be directly connected to the recommended driver are also available. See page 163.

## Included

| Type                 | Included         | Parallel Key | Motor Installation Screw | Operating Manual |
|----------------------|------------------|--------------|--------------------------|------------------|
| Standard Type        |                  | —            | —                        | —                |
| High-Resolution Type |                  | —            | —                        | —                |
| With Encoder         |                  | —            | —                        | 1 Set            |
| TS Geared Type       | Frame Size 42 mm | —            | —                        | —                |
|                      | Frame Size 60 mm | 1 Piece      | M4×60 P0.7 (4 Screws)    |                  |

## How to Read Specifications

|                              |                                                                                                                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Holding Torque       | : This is the maximum holding torque (holding force) the motor has when power is supplied (at rated current) but the motor is not rotating. (With geared types, the value of holding torque considers the permissible strength of the gear.) |
| Permissible Torque           | : The permissible torque represents the maximum value limited by the mechanical strength of the output gear shaft when operated at a constant speed.                                                                                         |
| Maximum Instantaneous Torque | : This is the maximum torque that can be applied to the gear output shaft during acceleration/deceleration such when an inertial load is started and stopped.                                                                                |

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type Frame Size 20 mm

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name   |                | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|----------------|----------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft   | Double Shaft   |                               |                                       |                          |                               |                  |                                  |
| <b>PK513PA</b> | <b>PK513PB</b> | 0.0231                        | $1.6 \times 10^{-7}$                  | 0.35                     | 3.5                           | 0.72°            | <b>CVD503BR-K</b>                |

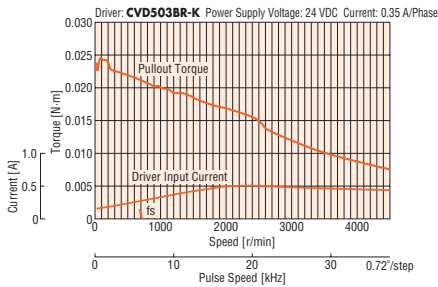
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

### PK513PA/PK513PB



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

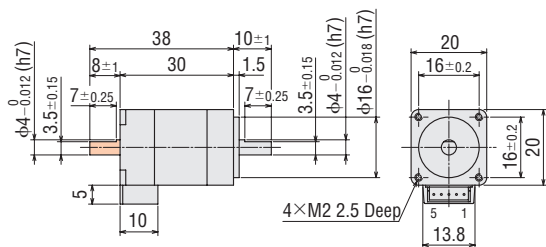
| Product Name   | Mass<br>kg | 2D CAD |
|----------------|------------|--------|
| <b>PK513PA</b> | 0.05       | B316   |
| <b>PK513PB</b> |            |        |

### Applicable Connectors

Connector Housing: 51065-0500 (Molex)

Contact: 50212-8100 (Molex)

Crimping Tool: 57176-5000 (Molex)



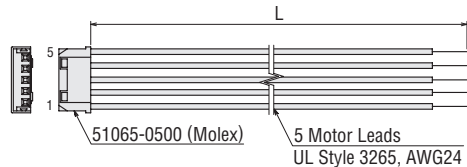
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the areas.

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06A</b> | 0.6          |
| <b>LC5N10A</b> | 1            |



## Motor Pin Assignments

### Motor Pin Assignments: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.

# Standard Type with Encoder Frame Size 20 mm

## Connector Type

### Specifications

| Product Name        | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|---------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|-------------------------------------|
| <b>PK513PA-R2GL</b> | 0.0231                        | $1.66 \times 10^{-7}$                 | 0.35                     | 3.5                           | 0.72°            | <b>CVD503BR-K</b>                   |

● See "Common Specifications" page for encoder specifications.

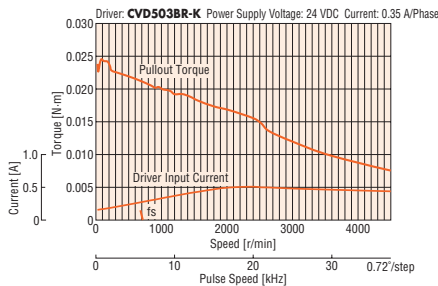
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

#### PK513PA-R2GL



#### Note

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

● For the type with an encoder, to protect the encoder, be sure to keep the motor case temperature at 85°C max.

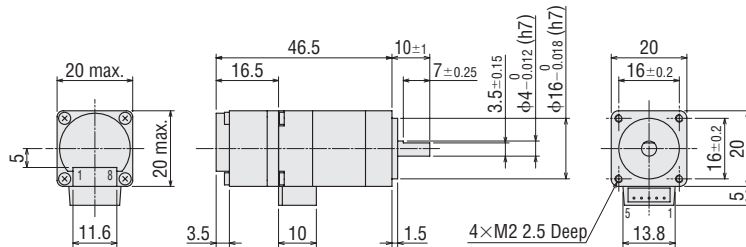
● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name        | Mass<br>kg | 2D CAD |
|---------------------|------------|--------|
| <b>PK513PA-R2GL</b> | 0.06       | B1069  |



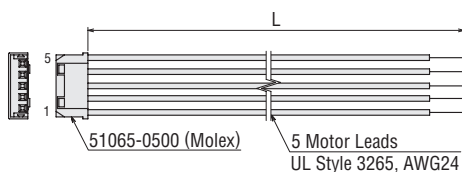
#### ● Applicable Connectors (Molex)

|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0500 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |

#### ● Connection Cable (Sold separately)

##### ◇ Motor Connection Cable

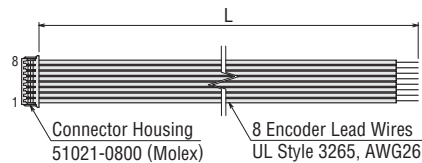
| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06A</b> | 0.6          |
| <b>LC5N10A</b> | 1            |



#### ● Connection Cable (Included)

##### ◇ Encoder Connection Cable

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |



### Motor Pin Assignments

#### Motor Pin Assignments: Model B

● Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type Frame Size 28 mm

## Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name      |                   | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-------------------|-------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft      | Double Shaft      |                               |                                       |                          |                               |                  |                                  |
| <b>PKP523N12A</b> | <b>PKP523N12B</b> | 0.052                         | $9 \times 10^{-7}$                    | 1.2                      | 0.63                          | 0.72°            | <b>CVD512BR-K</b>                |
| <b>PKP525N12A</b> | <b>PKP525N12B</b> | 0.091                         | $18 \times 10^{-7}$                   |                          | 1                             |                  |                                  |

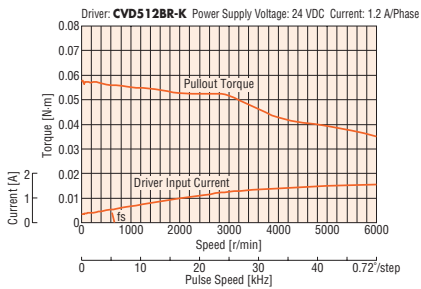
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

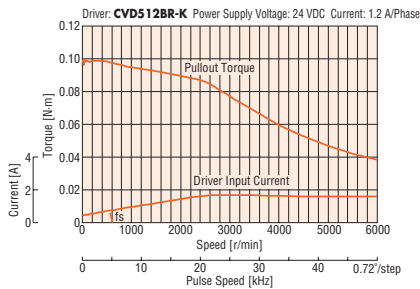
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

**PKP523N12A/PKP523N12B**



**PKP525N12A/PKP525N12B**



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

## Dimensions (Unit: mm)

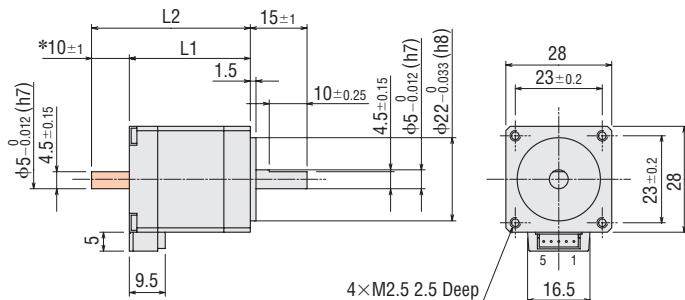
### Motor

2D & 3D CAD

| Product Name      | L1   | L2   | Mass kg | 2D CAD |
|-------------------|------|------|---------|--------|
| <b>PKP523N12A</b> | 32   | —    | 0.11    | B1146  |
| <b>PKP523N12B</b> |      | 42   |         |        |
| <b>PKP525N12A</b> | 51.5 | —    | 0.2     | B1147  |
| <b>PKP525N12B</b> |      | 61.5 |         |        |

### Applicable Connectors

Connector Housing: 51065-0500 (Molex)  
Contact: 50212-8100 (Molex)  
Crimping Tool: 57176-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 10 ± 0.25.

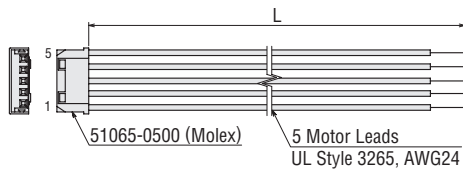
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the [shaded] areas.

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06A</b> | 0.6          |
| <b>LC5N10A</b> | 1            |



## Motor Pin Assignments

Motor Pin Assignments: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.



# NEW Standard Type with Encoder Connector Type

## Frame Size 28 mm

### Specifications

| Product Name   | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|----------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|-------------------------------------|
| PKP523N03A-R3G | 0.048                         | 9.9×10 <sup>-7</sup>                  | 0.35                     | 4.95                          | 0.72°            | CVD503BR-K                          |
| PKP523N07A-R3G |                               |                                       | 0.75                     | 1.1                           |                  | CVD507BR-K                          |
| PKP523N12A-R3G | 0.052                         | 19×10 <sup>-7</sup>                   | 1.2                      | 0.63                          |                  | CVD512BR-K                          |
| PKP525N03A-R3G | 0.078                         |                                       | 0.35                     | 6.5                           |                  | CVD503BR-K                          |
| PKP525N07A-R3G |                               | 0.75                                  | 1.41                     | CVD507BR-K                    |                  |                                     |
| PKP525N12A-R3G | 0.091                         | 1.2                                   | 1                        | CVD512BR-K                    |                  |                                     |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

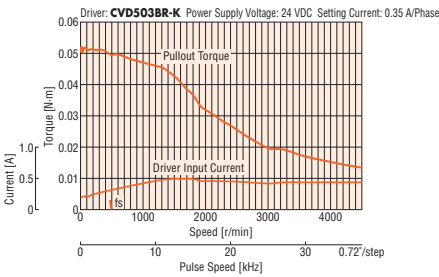
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

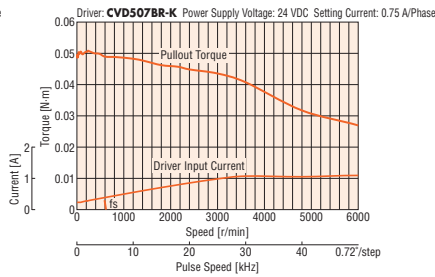
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

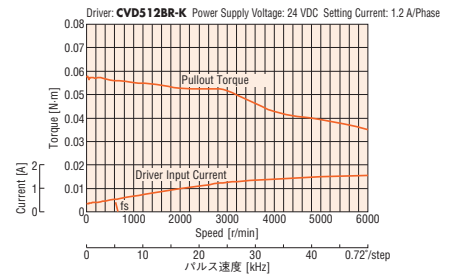
PKP523N03A-R3G



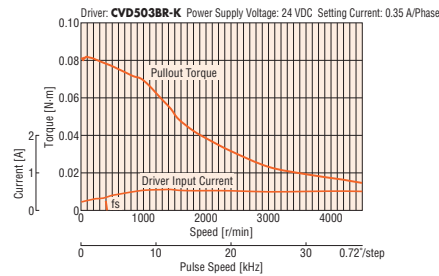
PKP523N07A-R3G



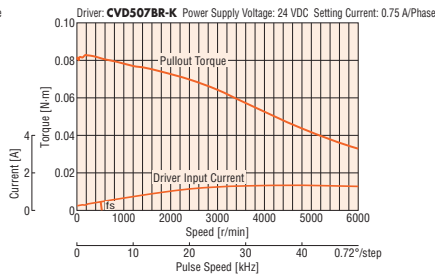
PKP523N12A-R3G



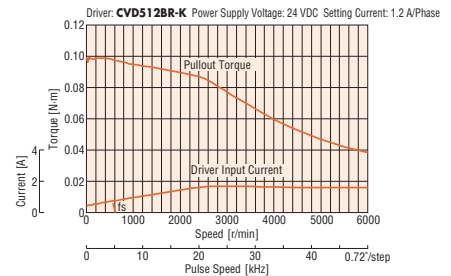
PKP525N03A-R3G



PKP525N07A-R3G



PKP525N12A-R3G



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring of  
Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

T5 Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

## Dimensions (Unit = mm)

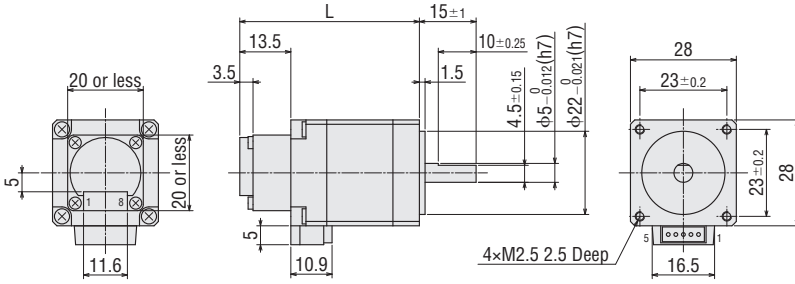
### Motor

2D & 3D CAD

| Product Name            | L    | Mass kg | 2D CAD |
|-------------------------|------|---------|--------|
| <b>PKP523N03A-R3G</b> ■ | 47.5 | 0.13    | B1070  |
| <b>PKP523N07A-R3G</b> ■ |      |         |        |
| <b>PKP523N12A-R3G</b> ■ |      |         |        |
| <b>PKP525N03A-R3G</b> ■ | 67   | 0.22    | B1071  |
| <b>PKP525N07A-R3G</b> ■ |      |         |        |
| <b>PKP525N12A-R3G</b> ■ |      |         |        |

### Applicable Connector (Molex)

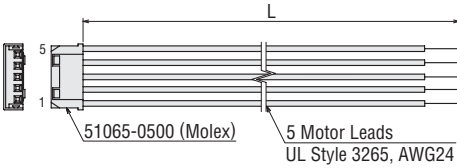
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0500 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06A</b> | 0.6          |
| <b>LC5N10A</b> | 1            |



#### Encoder Connection Cable

##### For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

Refer to the cables page for dimensions.

## Motor Pin Arrangement

Motor Pin Arrangement: Model B

Refer to the motor pin arrangement page for information on motor pin arrangement.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

# Standard Type Frame Size 42 mm

## Mini-Connector Type

### Specifications

| Product Name       |                    | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Winding Resistance Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------------|--------------------|----------------------------|------------------------------------|-----------------------|----------------------------|------------------|----------------------------------|
| Single Shaft       | Double Shaft       |                            |                                    |                       |                            |                  |                                  |
| <b>PKP543N18A2</b> | <b>PKP543N18B2</b> | 0.22                       | 35×10 <sup>-7</sup>                | 1.8                   | 0.4                        | 0.72°            | <b>CVD518BR-K</b>                |
| <b>PKP544N18A2</b> | <b>PKP544N18B2</b> | 0.3                        | 55×10 <sup>-7</sup>                |                       |                            |                  |                                  |
| <b>PKP545N18A2</b> | <b>PKP545N18B2</b> | 0.37                       | 71×10 <sup>-7</sup>                |                       |                            |                  |                                  |
| <b>PKP546N18A2</b> | <b>PKP546N18B2</b> | 0.5                        | 110×10 <sup>-7</sup>               |                       |                            |                  |                                  |

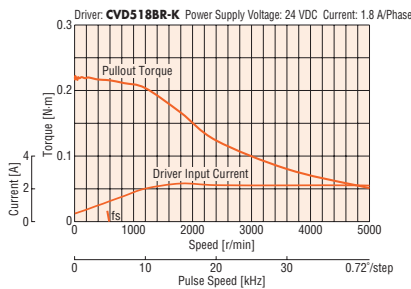
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

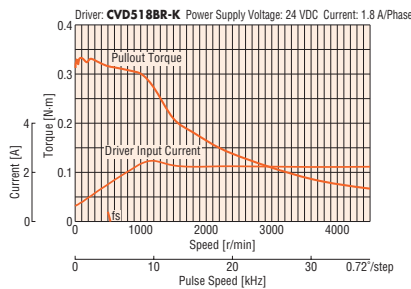
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) $f_s$ : Max. Starting Frequency

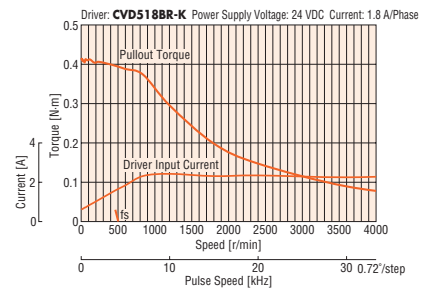
#### PKP543N18A2/PKP543N18B2



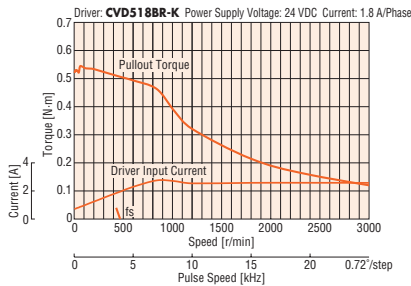
#### PKP544N18A2/PKP544N18B2



#### PKP545N18A2/PKP545N18B2



#### PKP546N18A2/PKP546N18B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

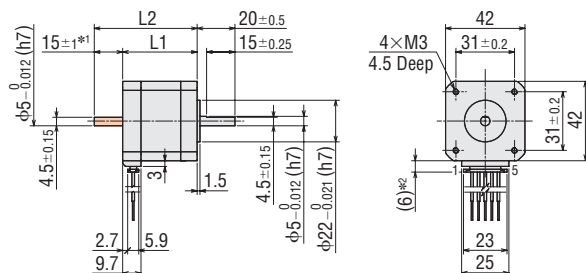
#### Motor

2D & 3D CAD

| Product Name       | L1 | L2 | Mass kg | 2D CAD |
|--------------------|----|----|---------|--------|
| <b>PKP543N18A2</b> | 33 | —  | 0.23    | B1264  |
| <b>PKP543N18B2</b> | —  | 48 | —       | —      |
| <b>PKP544N18A2</b> | 39 | —  | 0.29    | B1265  |
| <b>PKP544N18B2</b> | —  | 54 | —       | —      |
| <b>PKP545N18A2</b> | 47 | —  | 0.37    | B1266  |
| <b>PKP545N18B2</b> | —  | 62 | —       | —      |
| <b>PKP546N18A2</b> | 59 | —  | 0.49    | B1267  |
| <b>PKP546N18B2</b> | —  | 74 | —       | —      |

#### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD)  
 Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD)  
 Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD)



\*1 The length of the shaft flat on the double shaft model is 15±0.25.

\*2 With connection cable.

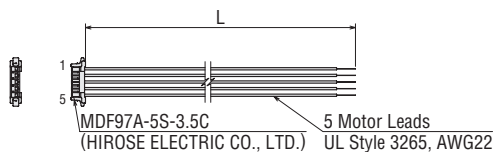
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the [ ] areas.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06E</b> | 0.6          |
| <b>LC5N10E</b> | 1            |



### Motor Pin Assignments

#### Motor Pin Assignments: Model A

- Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

# Standard Type Frame Size 42 mm

## Connector Type

### Specifications

| Product Name      |                   | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-------------------|-------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft      | Double Shaft      |                               |                                       |                          |                               |                  |                                  |
| <b>PKP544N18A</b> | <b>PKP544N18B</b> | 0.26                          | $57 \times 10^{-7}$                   | 1.8                      | 0.51                          | 0.72°            | <b>CVD518BR-K</b>                |
| <b>PKP546N18A</b> | <b>PKP546N18B</b> | 0.44                          | $114 \times 10^{-7}$                  |                          | 0.66                          |                  |                                  |

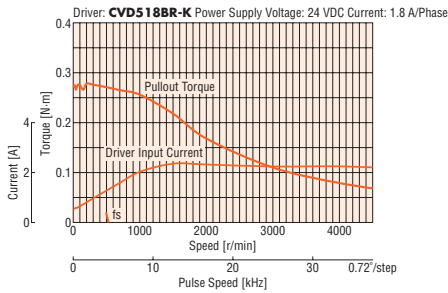
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

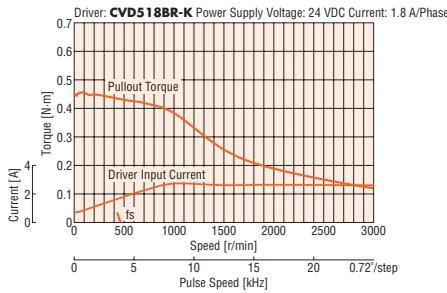
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

**PKP544N18A/PKP544N18B**



**PKP546N18A/PKP546N18B**



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C or less.
- The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit: mm)

● Motor

2D & 3D CAD

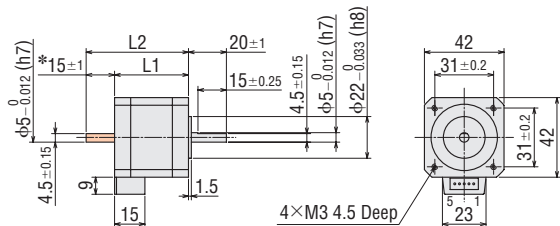
| Product Name      | L1 | L2 | Mass kg | 2D CAD |
|-------------------|----|----|---------|--------|
| <b>PKP544N18A</b> | 39 | —  | 0.3     | B1120  |
| <b>PKP544N18B</b> |    | 54 |         |        |
| <b>PKP546N18A</b> | 59 | —  | 0.5     | B1121  |
| <b>PKP546N18B</b> |    | 74 |         |        |

● Applicable Connectors

Connector Housing: 51103-0600 (Molex)

Contact: 50351-8100 (Molex)

Crimp Tool: 57295-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 15±0.25.

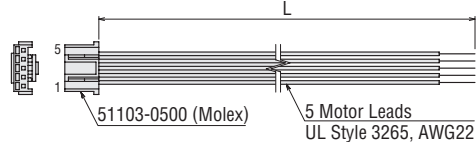
● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded areas.

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06B</b> | 0.6          |
| <b>LC5N10B</b> | 1            |



### Motor Pin Assignments

Motor Pin Arrangement: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.

# Standard Type with Encoder Frame Size 42 mm

## Mini-Connector Type

### Specifications

| Product Name                                    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-------------------------------------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| <b>PKP543N18A2-R3G</b> <input type="checkbox"/> | 0.22                          | $36 \times 10^{-7}$                   | 1.8                      | 0.4                           | 0.72°            | <b>CVDS18BR-K</b>                |
| <b>PKP544N18A2-R3</b> <input type="checkbox"/>  | 0.3                           | $56 \times 10^{-7}$                   |                          | 0.48                          |                  |                                  |
| <b>PKP545N18A2-R3G</b> <input type="checkbox"/> | 0.37                          | $72 \times 10^{-7}$                   |                          | 0.55                          |                  |                                  |
| <b>PKP546N18A2-R3G</b> <input type="checkbox"/> | 0.5                           | $111 \times 10^{-7}$                  |                          | 0.64                          |                  |                                  |

● A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

● Refer to the common specifications page for encoder specifications.

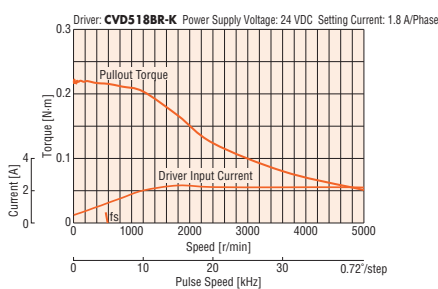
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

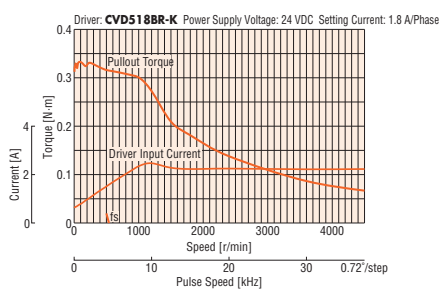
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

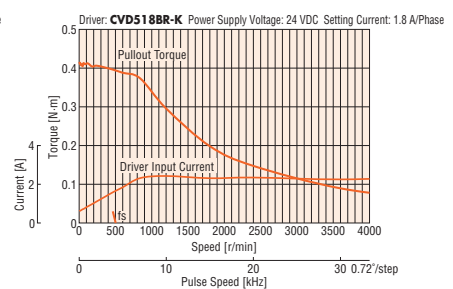
#### PKP543N18A2-R3G



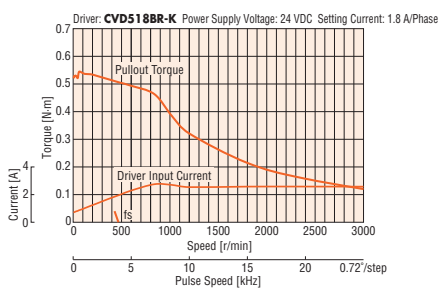
#### PKP544N18A2-R3



#### PKP545N18A2-R3G



#### PKP546N18A2-R3G



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Dimensions (Unit = mm)

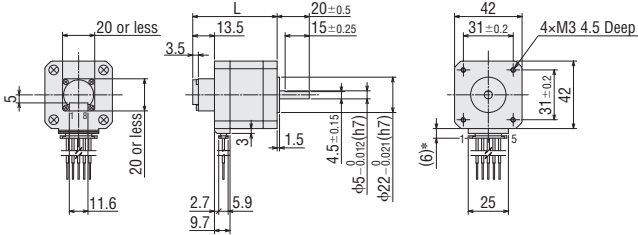
### Motor

2D & 3D CAD

| Product Name                             | L    | Mass kg | 2D CAD |
|------------------------------------------|------|---------|--------|
| PKP543N18A2-R3G <input type="checkbox"/> | 46.5 | 0.25    | B1343  |
| PKP544N18A2-R3 <input type="checkbox"/>  | 52.5 | 0.31    | B1344  |
| PKP545N18A2-R3G <input type="checkbox"/> | 60.5 | 0.39    | B1345  |
| PKP546N18A2-R3G <input type="checkbox"/> | 72.5 | 0.51    | B1346  |

#### ● Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |



\*With connection cable

## Motor Pin Arrangement

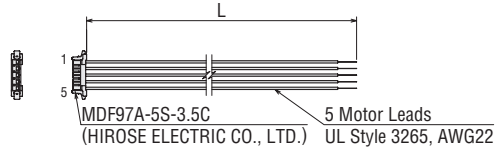
Motor Pin Arrangement: Model A

● Refer to the motor pin arrangement page for information on motor pin arrangement.

### ● Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06E      | 0.6          |
| LC5N10E      | 1            |



#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

● A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

# Standard Type Frame Size 56.4 mm

## Mini-Connector Type

### Specifications

| Product Name       |                    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------------|--------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft       | Double Shaft       |                               |                                       |                          |                               |                  |                                  |
| <b>PKP564N28A2</b> | <b>PKP564N28B2</b> | 0.44                          | $140 \times 10^{-7}$                  | 2.8                      | 0.16                          | 0.72°            | <b>CVD528BR-K</b>                |
| <b>PKP566N28A2</b> | <b>PKP566N28B2</b> | 0.81                          | $270 \times 10^{-7}$                  |                          | 0.24                          |                  |                                  |
| <b>PKP568N28A2</b> | <b>PKP568N28B2</b> | 1.5                           | $500 \times 10^{-7}$                  |                          | 0.37                          |                  |                                  |

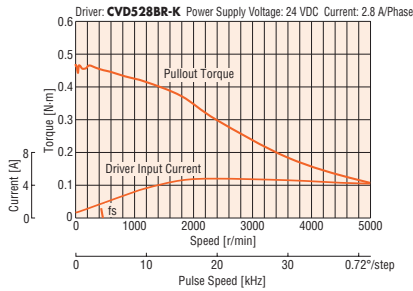
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

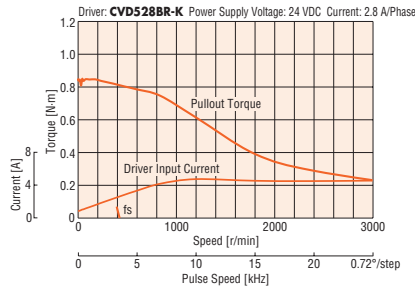
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

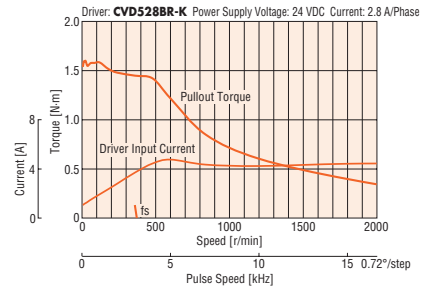
#### PKP564N28A2/ PKP564N28B2



#### PKP566N28A2/ PKP566N28B2



#### PKP568N28A2/ PKP568N28B2



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

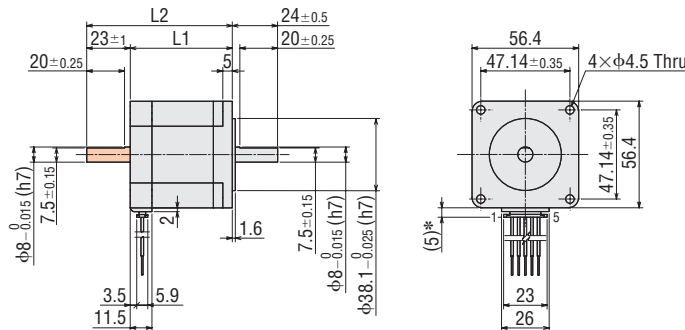
● Motor

2D & 3D CAD

| Product Name       | L1 | L2 | Mass kg | 2D CAD |
|--------------------|----|----|---------|--------|
| <b>PKP564N28A2</b> | 39 | —  | 0.43    | B1257  |
| <b>PKP564N28B2</b> |    | 62 |         |        |
| <b>PKP566N28A2</b> | 54 | —  | 0.67    | B1258  |
| <b>PKP566N28B2</b> |    | 77 |         |        |
| <b>PKP568N28A2</b> | 76 | —  | 1       | B1259  |
| <b>PKP568N28B2</b> |    | 99 |         |        |

● Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD)  
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD)  
Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD)



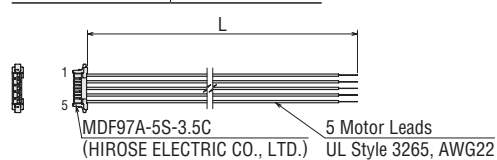
\*With connection cable

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

● Connection Cable (Sold separately)

◇ Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06E</b> | 0.6          |
| <b>LC5N10E</b> | 1            |



### Motor Pin Assignments

Motor Pin Assignments: Model A

- Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment



# Standard Type with Encoder Frame Size 56.4 mm

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| PKP564N28A2-R3G | 0.44                          | 140×10 <sup>-7</sup>                  | 2.8                      | 0.16                          | 0.72°            | CVD528BR-K                       |
| PKP566N28A2-R3G | 0.81                          | 270×10 <sup>-7</sup>                  |                          | 0.24                          |                  |                                  |
| PKP568N28A2-R3G | 1.5                           | 500×10 <sup>-7</sup>                  |                          | 0.37                          |                  |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

● Refer to the common specifications page for encoder specifications.

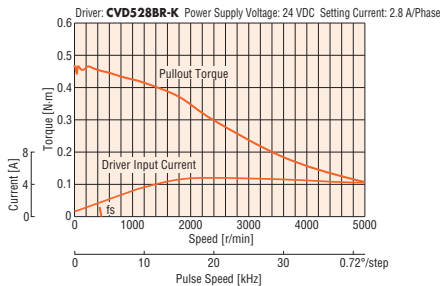
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

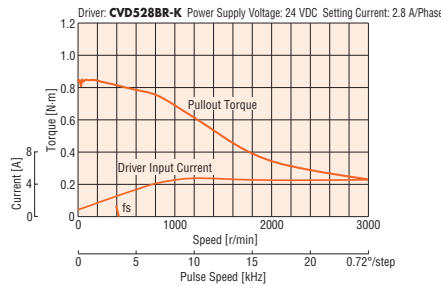
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

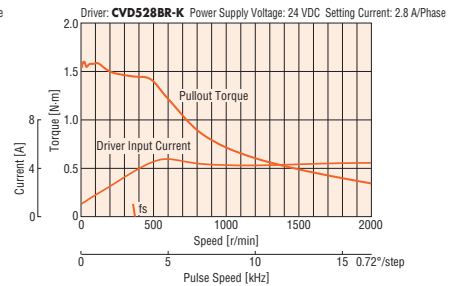
PKP564N28A2-R3G



PKP566N28A2-R3G



PKP568N28A2-R3G



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

### Dimensions (Unit = mm)

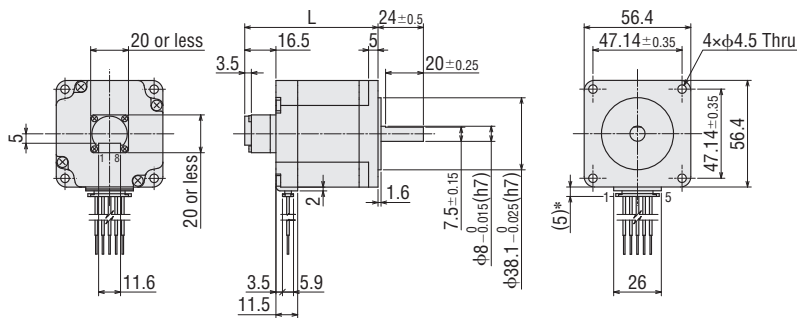
#### Motor

2D & 3D CAD

| Product Name    | L    | Mass<br>kg | 2D CAD |
|-----------------|------|------------|--------|
| PKP564N28A2-R3G | 55.5 | 0.45       | B1347  |
| PKP566N28A2-R3G | 70.5 | 0.69       | B1348  |
| PKP568N28A2-R3G | 92.5 | 1.02       | B1349  |

#### Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

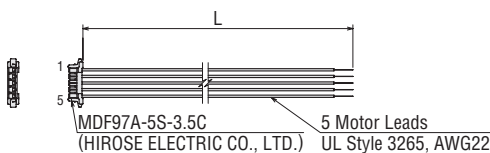


\*With connection cable

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06E      | 0.6          |
| LC5N10E      | 1            |



##### Encoder Connection Cable

#### For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

#### For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

### Motor Pin Arrangement

Motor Pin Arrangement: Model A

● Refer to the motor pin arrangement page for information on motor pin arrangement.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

# Standard Type Frame Size 60 mm

## Mini-Connector Type

### Specifications

| Product Name        |                     | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Winding Resistance Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|---------------------|---------------------|----------------------------|------------------------------------|-----------------------|----------------------------|------------------|----------------------------------|
| Single Shaft        | Double Shaft        |                            |                                    |                       |                            |                  |                                  |
| <b>PKP564FN24A2</b> | <b>PKP564FN24B2</b> | 0.66                       | 160×10 <sup>-7</sup>               | 2.4                   | 0.28                       | 0.72°            | <b>CVD524BR-K</b>                |
| <b>PKP564FN38A2</b> | <b>PKP564FN38B2</b> |                            |                                    | 3.8                   | 0.12                       |                  | <b>CVD538BR-K</b>                |
| <b>PKP566FN24A2</b> | <b>PKP566FN24B2</b> | 1.15                       | 290×10 <sup>-7</sup>               | 2.4                   | 0.38                       |                  | <b>CVD524BR-K</b>                |
| <b>PKP566FN38A2</b> | <b>PKP566FN38B2</b> |                            |                                    | 3.8                   | 0.16                       |                  | <b>CVD538BR-K</b>                |
| <b>PKP569FN24A2</b> | <b>PKP569FN24B2</b> | 2.1                        | 540×10 <sup>-7</sup>               | 2.4                   | 0.64                       |                  | <b>CVD524BR-K</b>                |
| <b>PKP569FN38A2</b> | <b>PKP569FN38B2</b> |                            |                                    | 3.8                   | 0.22                       |                  | <b>CVD538BR-K</b>                |

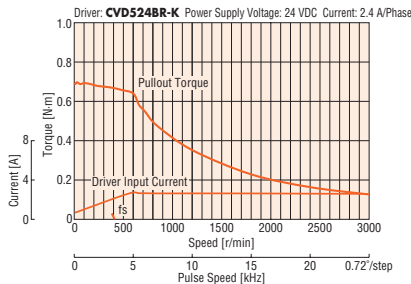
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

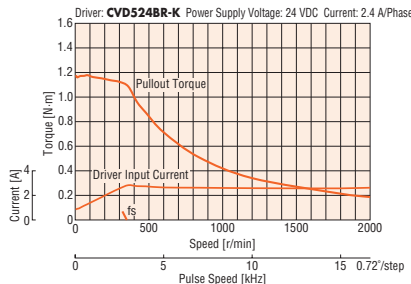
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) *f<sub>s</sub>*: Max. Starting Frequency

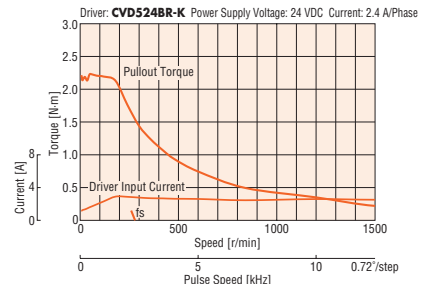
#### PKP564FN24A2/ PKP564FN24B2



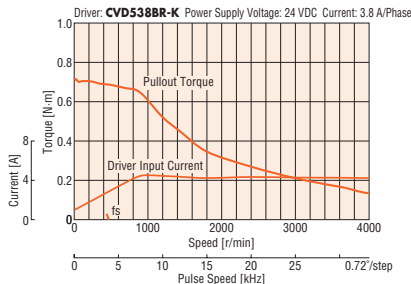
#### PKP566FN24A2/ PKP566FN24B2



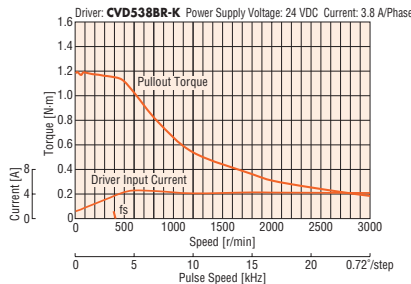
#### PKP569FN24A2/ PKP569FN24B2



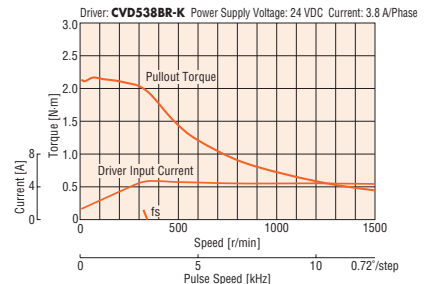
#### PKP564FN38A2/ PKP564FN38B2



#### PKP566FN38A2/ PKP566FN38B2



#### PKP569FN38A2/ PKP569FN38B2



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name        | L1   | L2    | Mass kg | 2D CAD |
|---------------------|------|-------|---------|--------|
| <b>PKP564FN24A2</b> | 44   | —     | 0.56    | B1252  |
| <b>PKP564FN24B2</b> |      | 65    |         |        |
| <b>PKP564FN38A2</b> | 56   | —     | 0.79    | B1253  |
| <b>PKP564FN38B2</b> |      | 65    |         |        |
| <b>PKP566FN24A2</b> | 84.5 | —     | 1.3     | B1254  |
| <b>PKP566FN24B2</b> |      | 77    |         |        |
| <b>PKP566FN38A2</b> | 84.5 | —     | 1.3     | B1254  |
| <b>PKP566FN38B2</b> |      | 77    |         |        |
| <b>PKP569FN24A2</b> | 84.5 | —     | 1.3     | B1254  |
| <b>PKP569FN24B2</b> |      | 105.5 |         |        |
| <b>PKP569FN38A2</b> | 84.5 | —     | 1.3     | B1254  |
| <b>PKP569FN38B2</b> |      | 105.5 |         |        |

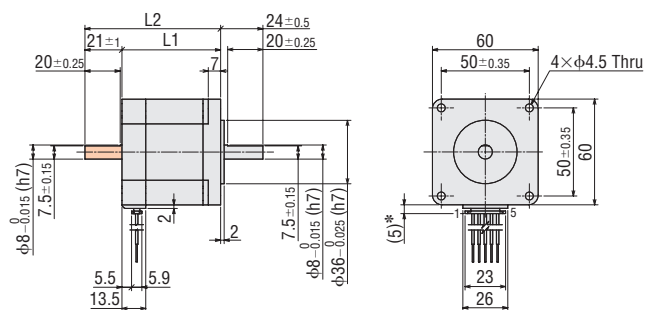
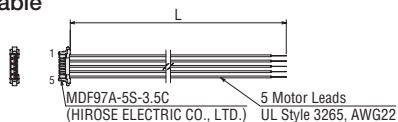
#### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD)  
 Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD)  
 Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD)

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06E</b> | 0.6          |
| <b>LC5N10E</b> | 1            |



\*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the areas.

### Motor Pin Assignments

Motor Pin Assignments: Model A

- Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Standard Type with Encoder Frame Size 60 mm

## Mini-Connector Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name     | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current |      | Winding Resistance Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |            |
|------------------|----------------------------|------------------------------------|---------------|------|----------------------------|------------------|----------------------------------|------------|
|                  |                            |                                    | A/Phase       |      |                            |                  |                                  |            |
| PKP564FN24A2-R3G | 0.66                       | 160×10 <sup>-7</sup>               | 2.4           | 0.28 | 0.72°                      | CVD524BR-K       |                                  |            |
| PKP564FN38A2-R3G |                            |                                    | 3.8           | 0.12 |                            |                  |                                  |            |
| PKP566FN24A2-R3  | 1.15                       | 290×10 <sup>-7</sup>               | 2.4           | 0.38 |                            |                  | CVD524BR-K                       |            |
| PKP566FN38A2-R3G |                            |                                    | 3.8           | 0.16 |                            |                  |                                  |            |
| PKP569FN24A2-R3G | 2.1                        | 540×10 <sup>-7</sup>               | 2.4           | 0.64 |                            |                  |                                  | CVD538BR-K |
| PKP569FN38A2-R3G |                            |                                    | 3.8           | 0.22 |                            |                  |                                  |            |

- A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.
- A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.
- Refer to the common specifications page for encoder specifications.

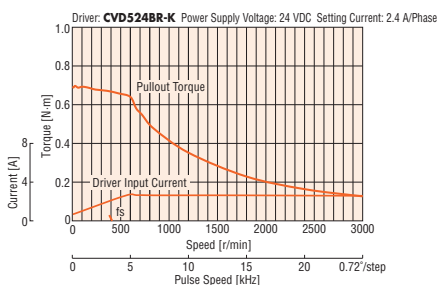
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

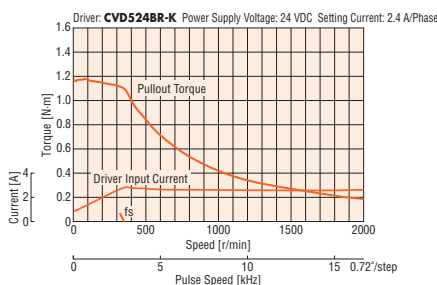
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

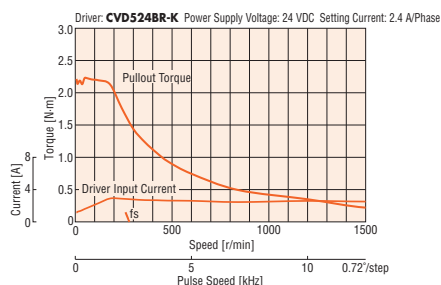
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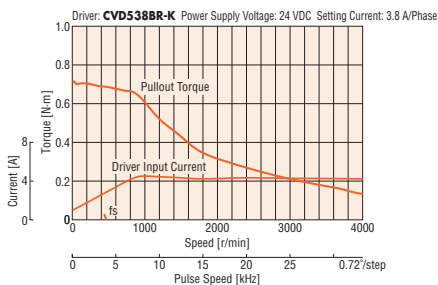
PKP566FN24A2-R3



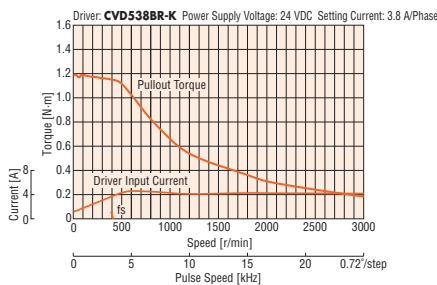
PKP569FN24A2-R3G



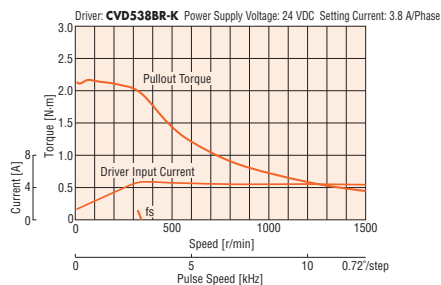
PKP564FN38A2-R3G



PKP566FN38A2-R3G



PKP569FN38A2-R3G



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box □ is located in the product name.  
 A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

## Dimensions (Unit = mm)

### Motor

2D & 3D CAD

| Product Name                                     | L    | Mass kg | 2D CAD |
|--------------------------------------------------|------|---------|--------|
| <b>PKP564FN24A2-R3G</b> <input type="checkbox"/> | 60.5 | 0.58    | B1350  |
| <b>PKP564FN38A2-R3G</b> <input type="checkbox"/> |      |         |        |
| <b>PKP566FN24A2-R3</b> <input type="checkbox"/>  | 72.5 | 0.81    | B1351  |
| <b>PKP566FN38A2-R3G</b> <input type="checkbox"/> |      |         |        |
| <b>PKP569FN24A2-R3G</b> <input type="checkbox"/> | 101  | 1.32    | B1352  |
| <b>PKP569FN38A2-R3G</b> <input type="checkbox"/> |      |         |        |

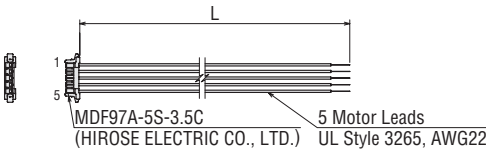
● Applicable Connector (Molex)

|                   | Motor<br>(HIROSE ELECTRIC CO., LTD.) | Encoder<br>(Molex) |
|-------------------|--------------------------------------|--------------------|
| Connector Housing | MDF97A-5S-3.5C                       | 51021-0800         |
| Contact           | MDF97-22SC                           | 50079-8100         |
| Crimp Tool        | HT801/MDF97-22S                      | 57177-5000         |

### Connection Cable (Sold separately)

#### ◇ Motor Connection Cable

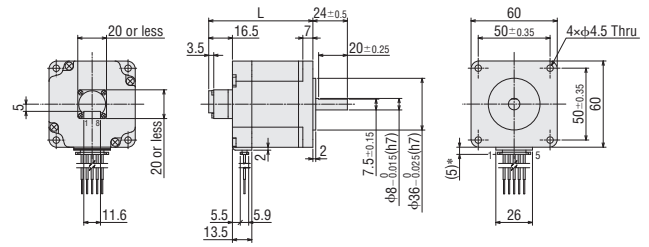
| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06E</b> | 0.6          |
| <b>LC5N10E</b> | 1            |



## Motor Pin Arrangement

Motor Pin Arrangement: Model A

● Refer to the motor pin arrangement page for information on motor pin arrangement.



\*With connection cable

#### ◇ Encoder Connection Cable

##### ● For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### ● For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

● Refer to the cables page for dimensions.

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

● A letter "G" (500 P/R) or "J" (1000 P/R) indicating the encoder resolution is specified where the box  is located in the product name.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

# Standard Type Frame Size 85 mm

## Lead Wire Type

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name      |                   | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-------------------|-------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft      | Double Shaft      |                               |                                       |                          |                               |                  |                                  |
| <b>PK596HNAW</b>  | <b>PK596HNBW</b>  | 2.1                           | $1400 \times 10^{-7}$                 | 2.8                      | 0.41                          | 0.72°            | <b>CVD528BR-K</b>                |
| <b>PK599HNAW</b>  | <b>PK599HNBW</b>  | 4.1                           | $2700 \times 10^{-7}$                 |                          | 0.46                          |                  |                                  |
| <b>PK5913HNAW</b> | <b>PK5913HNBW</b> | 6.3                           | $4000 \times 10^{-7}$                 |                          | 0.72                          |                  |                                  |

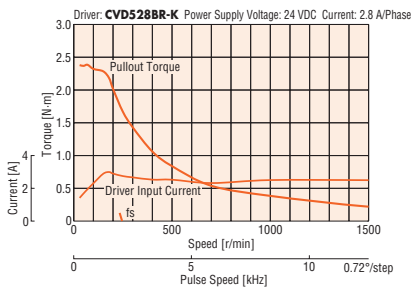
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

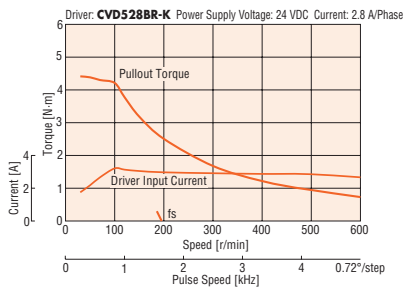
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

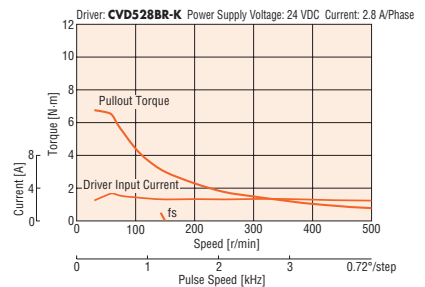
### PK596HNAW/PK596HNBW



### PK599HNAW/PK599HNBW



### PK5913HNAW/PK5913HNBW



### Note

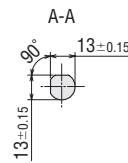
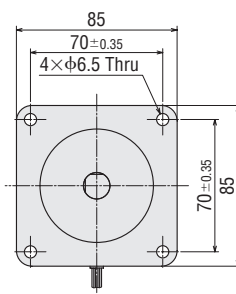
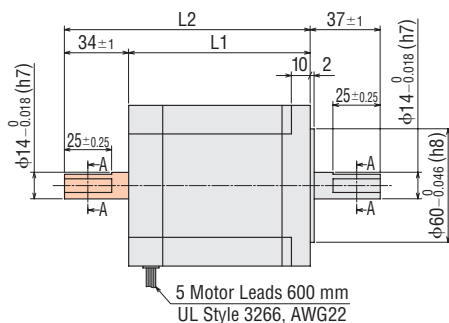
- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep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

## Dimensions (Unit: mm)

### Motor

2D & 3D CAD

| Product Name      | L1  | L2  | Mass kg | 2D CAD |
|-------------------|-----|-----|---------|--------|
| <b>PK596HNAW</b>  | 66  | —   | 1.7     | B155   |
| <b>PK596HNBW</b>  |     | 100 |         |        |
| <b>PK599HNAW</b>  | 96  | —   | 2.8     | B156   |
| <b>PK599HNBW</b>  |     | 130 |         |        |
| <b>PK5913HNAW</b> | 126 | —   | 3.8     | B157   |
| <b>PK5913HNBW</b> |     | 160 |         |        |



- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded in the [shaded] areas.

## Motor Pin Assignments

Motor Pin Assignments: Model C

- Refer to the motor pin arrangement page for information on motor pin arrangement.



# High Resolution Type with Encoder Frame Size 28 mm Connector Type

## Specifications

| Product Name           | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|------------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| <b>PKP523MN03A-R3J</b> | 0.042                         | 9.9×10 <sup>-7</sup>                  | 0.35                     | 4.7                           | 0.36°            | <b>CVD503BR-K</b>                |
| <b>PKP523MN07A-R3J</b> |                               |                                       | 0.75                     | 1.06                          |                  | <b>CVD507BR-K</b>                |
| <b>PKP524MN03A-R3J</b> | 0.061                         | 14×10 <sup>-7</sup>                   | 0.35                     | 6.0                           |                  | <b>CVD503BR-K</b>                |
| <b>PKP524MN07A-R3J</b> |                               |                                       | 0.75                     | 1.36                          |                  | <b>CVD507BR-K</b>                |
| <b>PKP525MN03A-R3J</b> | 0.09                          | 20×10 <sup>-7</sup>                   | 0.35                     | 6.6                           |                  | <b>CVD503BR-K</b>                |
| <b>PKP525MN07A-R3J</b> |                               |                                       | 0.75                     | 1.44                          |                  | <b>CVD507BR-K</b>                |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box is located in the product name. For voltage output, there is no letter in the box.

● Refer to the common specifications page for encoder specifications.

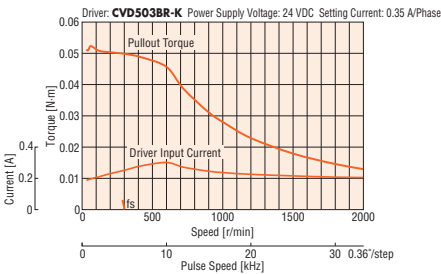
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

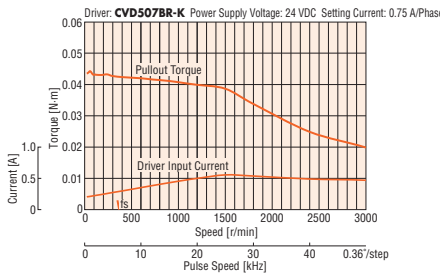
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

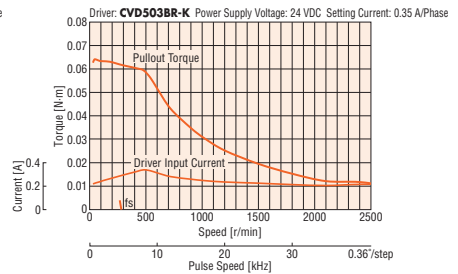
**PKP523MN03A-R3J**



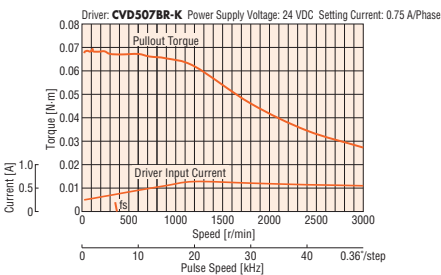
**PKP523MN07A-R3J**



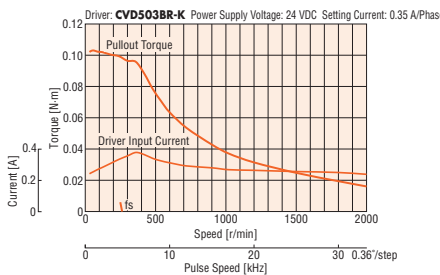
**PKP524MN03A-R3J**



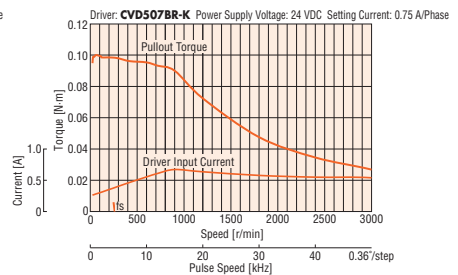
**PKP524MN07A-R3J**



**PKP525MN03A-R3J**



**PKP525MN07A-R3J**



### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box is located in the product name. For voltage output, there is no letter in the box.

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

- Motor Frame Size
- 13 mm
  - 20 mm
  - 28 mm
  - 35 mm
  - 42 mm
  - 50 mm
  - 51 mm
  - 56.4 mm
  - 60 mm
  - 61 mm
  - 85 mm
  - 90 mm

## Dimensions (Unit = mm)

### Motor

2D & 3D CAD

| Product Name           | L    | Mass kg | 2D CAD |
|------------------------|------|---------|--------|
| <b>PKP523MN03A-R3J</b> | 47.5 | 0.13    | B1070  |
| <b>PKP523MN07A-R3J</b> |      |         |        |
| <b>PKP524MN03A-R3J</b> | 55.5 | 0.17    | B1579  |
| <b>PKP524MN07A-R3J</b> |      |         |        |
| <b>PKP525MN03A-R3J</b> | 67   | 0.22    | B1071  |
| <b>PKP525MN07A-R3J</b> |      |         |        |

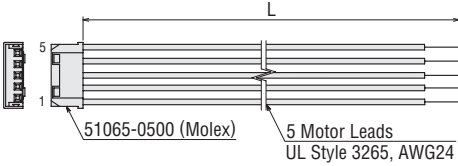
#### Applicable Connector (Molex)

|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51065-0500 | 51021-0800 |
| Contact           | 50212-8100 | 50079-8100 |
| Crimp Tool        | 57176-5000 | 57177-5000 |

### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06A</b> | 0.6          |
| <b>LC5N10A</b> | 1            |



#### Encoder Connection Cable

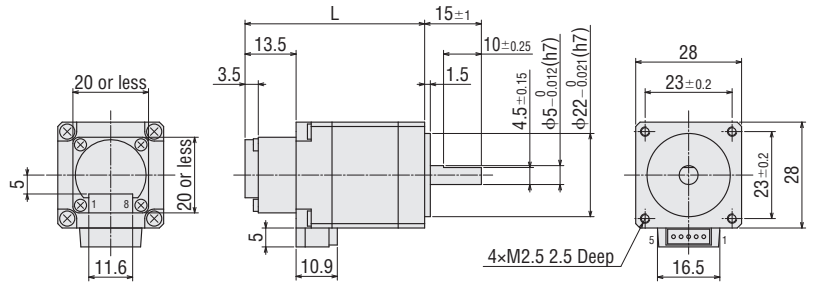
##### For Voltage Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE05A-006</b> | 0.6          |

##### For Line Driver Output

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>LCE08A-006</b> | 0.6          |

Refer to the cables page for dimensions.



## Motor Pin Arrangement

Motor Pin Arrangement: Model B

Refer to the motor pin arrangement page for information on motor pin arrangement.

A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.



# High-Resolution Type Frame Size 42 mm

## Connector Type

### Specifications

| Product Name       |                    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|--------------------|--------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| Single Shaft       | Double Shaft       |                               |                                       |                          |                               |                  |                                  |
| <b>PKP544MN18A</b> | <b>PKP544MN18B</b> | 0.26                          | $60 \times 10^{-7}$                   | 1.8                      | 0.51                          | 0.36°            | <b>CVD518BR-K</b>                |
| <b>PKP546MN18A</b> | <b>PKP546MN18B</b> | 0.44                          | $121 \times 10^{-7}$                  |                          | 0.66                          |                  |                                  |

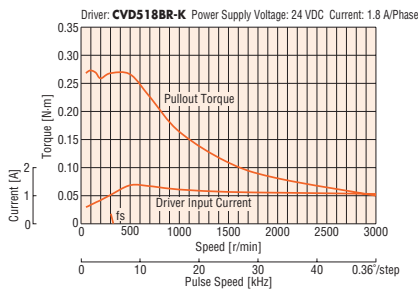
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

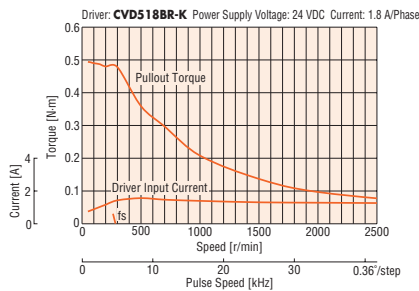
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) $f_s$ : Max. Starting Frequency

#### PKP544MN18A/PKP544MN18B



#### PKP546MN18A/PKP546MN18B



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

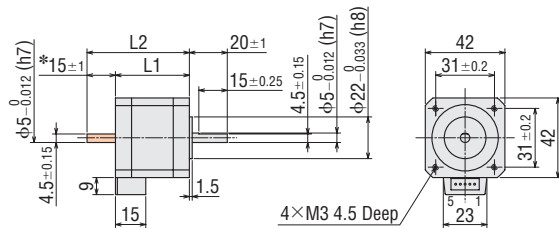
#### Motor

2D & 3D CAD

| Product Name       | L1 | L2 | Mass<br>kg | 2D CAD |
|--------------------|----|----|------------|--------|
| <b>PKP544MN18A</b> | 39 | —  | 0.3        | B1120  |
| <b>PKP544MN18B</b> |    | 54 |            |        |
| <b>PKP546MN18A</b> | 59 | —  | 0.5        | B1121  |
| <b>PKP546MN18B</b> |    | 74 |            |        |

#### Applicable Connectors

Connector Housing: 51103-0500 (Molex)  
Contact: 50351-8100 (Molex)  
Crimp Tool: 57295-5000 (Molex)



\*The length of the shaft flat on the double shaft model is 15±0.25.

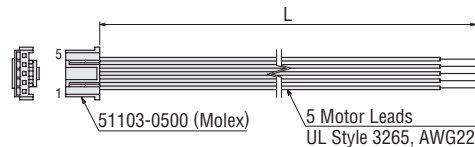
- These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the areas.

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name   | Length L (m) |
|----------------|--------------|
| <b>LC5N06B</b> | 0.6          |
| <b>LC5N10B</b> | 1            |



### Motor Pin Assignments

#### Motor Pin Assignments: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Gearing  
Type

CS Gearing  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Gearing  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# NEW High-Resolution Type with Encoder Connector Type

Frame Size 42 mm

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

## Specifications

| Product Name    | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|-----------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| PKP544MN18A-R3J | 0.26                          | $61 \times 10^{-7}$                   | 1.8                      | 0.51                          | 0.36°            | CVD518BR-K                       |
| PKP546MN18A-R3J | 0.44                          | $122 \times 10^{-7}$                  |                          | 0.66                          |                  |                                  |

- A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.
- Refer to the common specifications page for encoder specifications.

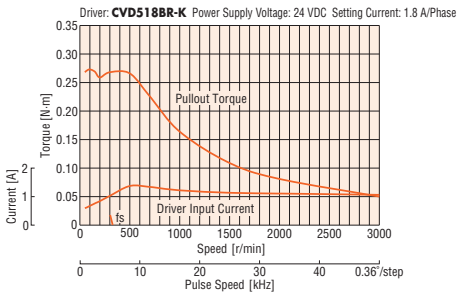
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

### Note

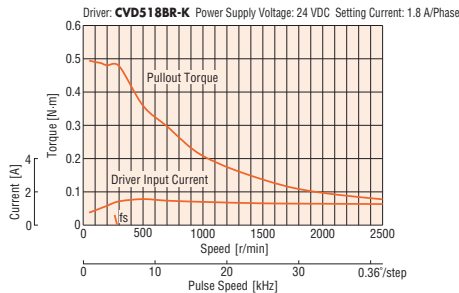
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

## Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

PKP544MN18A-R3J



PKP546MN18A-R3J



### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.
- The characteristics are the same if combined with an RS-485 communication type driver.

## Dimensions (Unit = mm)

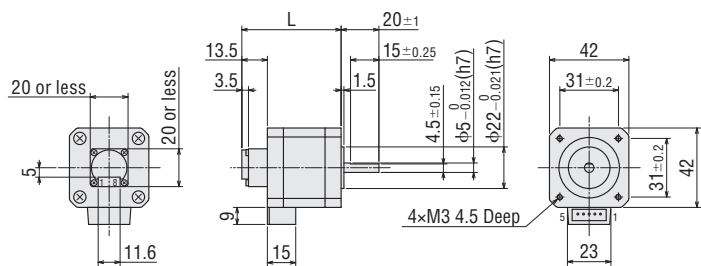
### Motor

2D & 3D CAD

| Product Name    | L    | Mass<br>kg | 2D CAD |
|-----------------|------|------------|--------|
| PKP544MN18A-R3J | 52.5 | 0.32       | B1580  |
| PKP546MN18A-R3J | 72.5 | 0.52       | B1581  |

- Applicable Connector (Molex)

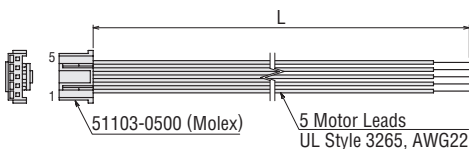
|                   | Motor      | Encoder    |
|-------------------|------------|------------|
| Connector Housing | 51103-0500 | 51021-0800 |
| Contact           | 50351-8100 | 50079-8100 |
| Crimp Tool        | 57295-5000 | 57177-5000 |



### Connection Cable (Sold separately)

#### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06B      | 0.6          |
| LC5N10B      | 1            |



#### Encoder Connection Cable

##### For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

##### For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

- Refer to the cables page for dimensions.

## Motor Pin Arrangement

Motor Pin Arrangement: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.

- A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box  is located in the product name. For voltage output, there is no letter in the  box.

# High-Resolution Type Frame Size 60 mm

## Connector Type

### Specifications

| Product Name        |                     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver<br>Product Name* |
|---------------------|---------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|-------------------------------------|
| Single Shaft        | Double Shaft        |                               |                                       |                          |                               |                  |                                     |
| <b>PKP564FMN24A</b> | <b>PKP564FMN24B</b> | 0.78                          | $310 \times 10^{-7}$                  | 2.4                      | 0.32                          | 0.36°            | <b>CVD524BR-K</b>                   |
| <b>PKP566FMN24A</b> | <b>PKP566FMN24B</b> | 1.25                          | $490 \times 10^{-7}$                  |                          | 0.4                           |                  |                                     |
| <b>PKP569FMN24A</b> | <b>PKP569FMN24B</b> | 2.3                           | $970 \times 10^{-7}$                  |                          | 0.66                          |                  |                                     |

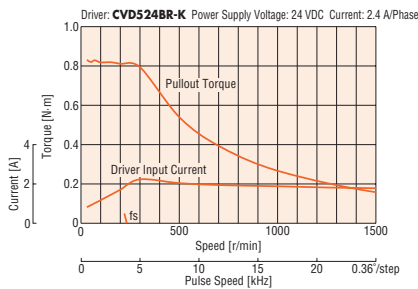
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

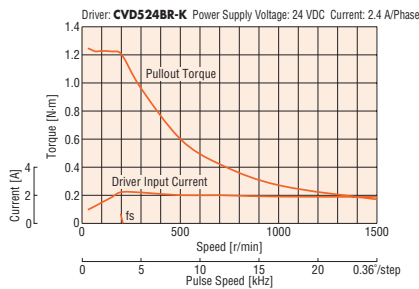
- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

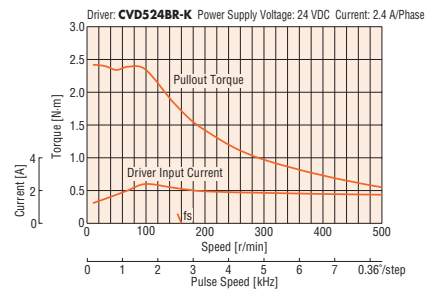
#### PKP564FMN24A/ PKP564FMN24B



#### PKP566FMN24A/ PKP566FMN24B



#### PKP569FMN24A/ PKP569FMN24B



#### Note

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

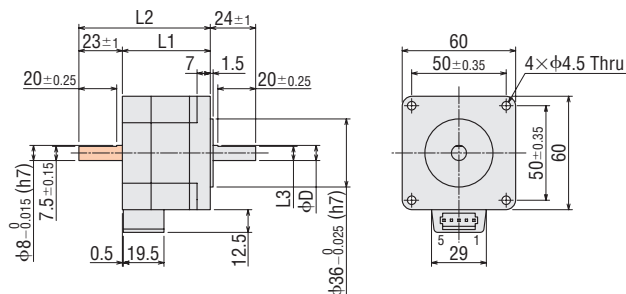
| Product Name        | L1   | L2   | L3       | φD                                | Mass<br>kg | 2D CAD |
|---------------------|------|------|----------|-----------------------------------|------------|--------|
| <b>PKP564FMN24A</b> | 46.5 | —    | 7.5±0.15 | 8 <sup>0</sup> <sub>-0.015</sub>  | 0.65       | B1125  |
| <b>PKP564FMN24B</b> |      | 69.5 |          |                                   |            |        |
| <b>PKP566FMN24A</b> | 56   | —    | 7.5±0.15 | 8 <sup>0</sup> <sub>-0.015</sub>  | 0.87       | B1126  |
| <b>PKP566FMN24B</b> |      | 79   |          |                                   |            |        |
| <b>PKP569FMN24A</b> | 87   | —    | 9.5±0.15 | 10 <sup>0</sup> <sub>-0.015</sub> | 1.5        | B1127  |
| <b>PKP569FMN24B</b> |      | 110  |          |                                   |            |        |

#### Applicable Connectors

Connector Housing: VHR-5N (J.S.T.MFG.CO.,LTD.)

Contact: BVH-21T-P1.1 (J.S.T.MFG.CO.,LTD.)

Crimp Tool: YC-160R (J.S.T.MFG.CO.,LTD.)



#### These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the areas.

### Motor Pin Assignments

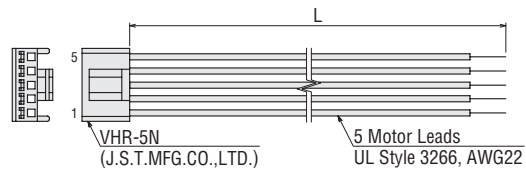
#### Motor Pin Assignments: Model B

- Refer to the motor pin arrangement page for information on motor pin arrangement.

#### Connection Cable (Sold separately)

##### ◇ Motor Connection Cable

| Product Name    | Length L (m) |
|-----------------|--------------|
| <b>LC5N06C2</b> | 0.6          |
| <b>LC5N10C2</b> | 1            |



2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

5H Gearing  
Type

CS Gearing  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Gearing  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# NEW High-Resolution Type with Encoder Connector Type

## Frame Size 60 mm

13 mm

20 mm

28 mm

35 mm

42 mm

50 mm

51 mm

56.4 mm

60 mm

61 mm

85 mm

90 mm

### Specifications

| Product Name     | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Recommended Driver Product Name* |
|------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|----------------------------------|
| PKP564FMN24A-R3J | 0.78                          | 310×10 <sup>-7</sup>                  | 2.4                      | 0.32                          | 0.36°            | CVD524BR-K                       |
| PKP566FMN24A-R3J | 1.25                          | 490×10 <sup>-7</sup>                  |                          | 0.4                           |                  |                                  |
| PKP569FMN24A-R3J | 2.3                           | 970×10 <sup>-7</sup>                  |                          | 0.66                          |                  |                                  |

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

● Refer to the common specifications page for encoder specifications.

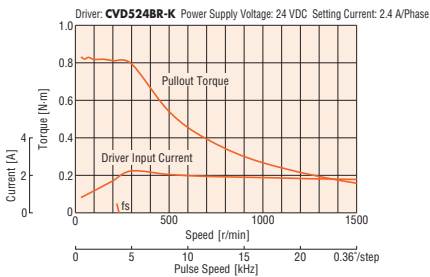
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

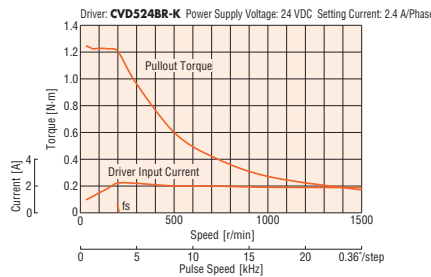
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed - Torque Characteristics (Reference values) fs: Max. Starting Frequency

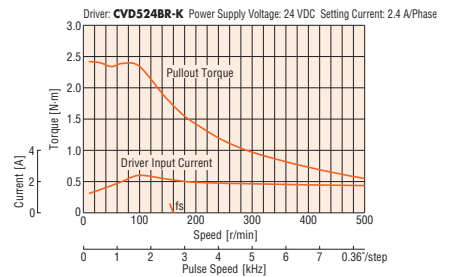
PKP564FMN24A-R3J



PKP566FMN24A-R3J



PKP569FMN24A-R3J



#### Note

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

● Depending on the driving conditions, a considerable amount of heat may be generated by the motor. To protect the encoder, be sure to keep the motor case temperature at 85°C max.

● The characteristics are the same if combined with an RS-485 communication type driver.

### Dimensions (Unit = mm)

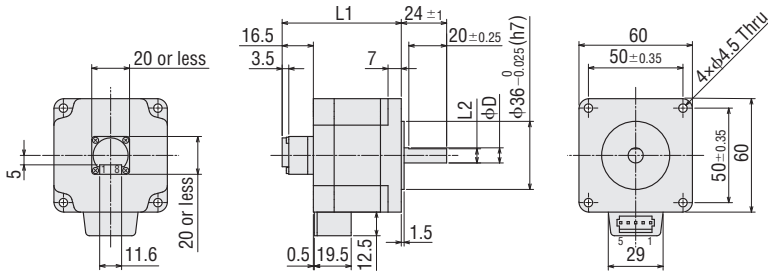
#### Motor

2D & 3D CAD

| Product Name     | L1    | L2       | φD                        | Mass kg | 2D CAD |
|------------------|-------|----------|---------------------------|---------|--------|
| PKP564FMN24A-R3J | 63    | 7.5±0.15 | 8 <sup>-0.015</sup> (h7)  | 0.67    | B1583  |
| PKP566FMN24A-R3J | 72.5  |          |                           | 0.89    | B1584  |
| PKP569FMN24A-R3J | 103.5 | 9.5±0.15 | 10 <sup>-0.015</sup> (h7) | 1.52    | B1585  |

● Applicable Connector (Molex)

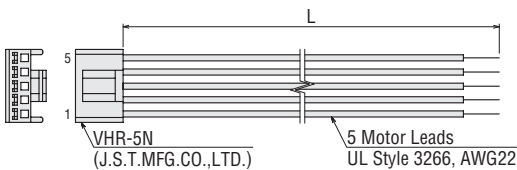
|                   | Motor<br>(J.S.T.MFG.CO.,LTD.) | Encoder<br>(Molex) |
|-------------------|-------------------------------|--------------------|
| Connector Housing | VHR-5N                        | 51021-0800         |
| Contact           | BVH-21T-P1.1                  | 50079-8100         |
| Crimp Tool        | YC-160R                       | 57177-5000         |



#### Connection Cable (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06C2     | 0.6          |
| LC5N10C2     | 1            |



##### ◇ Encoder Connection Cable

#### ● For Voltage Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE05A-006   | 0.6          |

#### ● For Line Driver Output

| Product Name | Length L (m) |
|--------------|--------------|
| LCE08A-006   | 0.6          |

● Refer to the cables page for dimensions.

### Motor Pin Arrangement

Motor Pin Arrangement: Model B

● Refer to the motor pin arrangement page for information on motor pin arrangement.

● A letter "L" (line driver output) indicating the encoder output circuit configuration is specified where the box ■ is located in the product name. For voltage output, there is no letter in the ■ box.

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# TS Geared Type Frame Size 42 mm

## Mini-Connector Type

### Specifications

| Product Name      | Maximum Holding Torque N·m | Rotor Inertia J: kg·m <sup>2</sup> | Rated Current A/Phase | Winding Resistance Ω/Phase | Basic Step Angle | Gear Ratio | Permissible Torque N·m | Maximum Instantaneous Torque N·m | Speed Range r/min | Backlash arcmin | Recommended Driver Product Name* |
|-------------------|----------------------------|------------------------------------|-----------------------|----------------------------|------------------|------------|------------------------|----------------------------------|-------------------|-----------------|----------------------------------|
| PKP544N18□2-TS3.6 | 0.65                       | 55 × 10 <sup>-7</sup>              | 1.8                   | 0.48                       | 0.2°             | 3.6        | 0.65                   | 0.85                             | 0 – 833           | 45 (0.75)       | CVD518BR-K                       |
| PKP544N18□2-TS7.2 | 1.2                        |                                    |                       |                            | 0.1°             | 7.2        | 1.2                    | 1.6                              | 0 – 416           | 25 (0.42)       |                                  |
| PKP544N18□2-TS10  | 1.7                        |                                    |                       |                            | 0.072°           | 10         | 1.7                    | 2                                | 0 – 300           | 15 (0.25)       |                                  |
| PKP543N18□2-TS20  | 2                          | 35 × 10 <sup>-7</sup>              | 0.4                   | 0.036°                     | 20               | 2          | 3                      | 0 – 150                          |                   |                 |                                  |
| PKP543N18□2-TS30  | 2.3                        |                                    |                       | 0.024°                     | 30               | 2.3        | 3                      | 0 – 100                          |                   |                 |                                  |

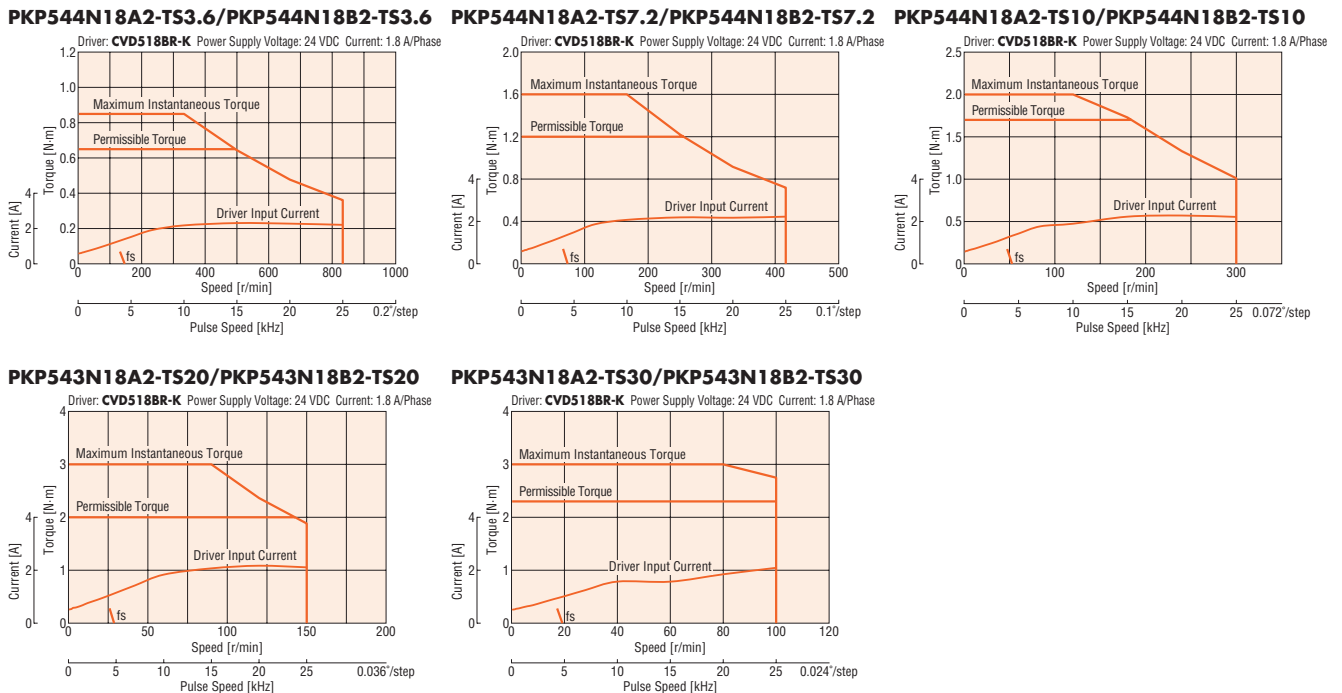
● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

**Note**

● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency



**Note**

- Data for the speed – torque characteristics is based on Oriental Motor's internal measurement conditions. If the conditions are changed, the characteristics may also change as a result.
- Depending on the driving conditions, a considerable amount of heat may be generated by the motor. Be sure to keep the motor case temperature at 100°C max.
- The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

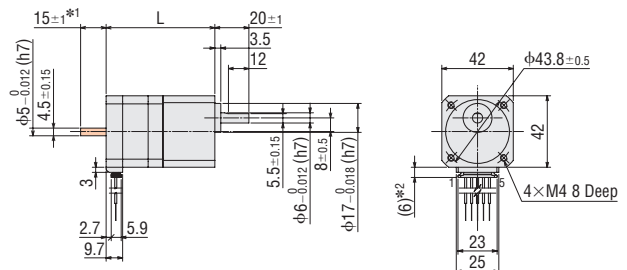
#### Motor

| Product Name    | Gear Ratio   | L    | Mass kg | 2D CAD |
|-----------------|--------------|------|---------|--------|
| PKP544N18A2-TS□ | 3.6, 7.2, 10 | 70.5 | 0.41    | B1362  |
| PKP544N18B2-TS□ |              |      |         |        |
| PKP543N18A2-TS□ | 20, 30       | 64.5 | 0.36    | B1363  |
| PKP543N18B2-TS□ |              |      |         |        |

● The box □ in the product name indicates a number representing the gear ratio.

● Applicable Connectors

- Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD)
- Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD)
- Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD)

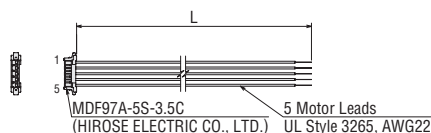


- \*1 The length of the shaft flat on the double shaft model is 15 ± 0.25.
- \*2 With connection cable.
- These dimensions are for double shaft motors. For single shaft motors, ignore the shaded in the □ areas.

#### Connection Cable (Sold separately)

##### ◇ Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06E      | 0.6          |
| LC5N10E      | 1            |



### Motor Pin Assignments

#### Motor Pin Assignments: Model A

● Refer to the motor pin arrangement page for information on motor pin arrangement.

# TS Geared Type Frame Size 60 mm

## Mini-Connector Type

### Specifications

| Product Name      | Maximum Holding Torque<br>N·m | Rotor Inertia<br>J: kg·m <sup>2</sup> | Rated Current<br>A/Phase | Winding Resistance<br>Ω/Phase | Basic Step Angle | Gear Ratio | Permissible Torque<br>N·m | Maximum Instantaneous Torque<br>N·m | Speed Range<br>r/min | Backlash<br>arcmin | Recommended Driver<br>Product Name* |
|-------------------|-------------------------------|---------------------------------------|--------------------------|-------------------------------|------------------|------------|---------------------------|-------------------------------------|----------------------|--------------------|-------------------------------------|
| PKP566N28□2-TS3.6 | 1.8                           | 270×10 <sup>-7</sup>                  | 2.8                      | 0.24                          | 0.2°             | 3.6        | 1.8                       | 2.5                                 | 0 – 833              | 35 (0.59°)         | CVD528BR-K                          |
| PKP566N28□2-TS7.2 | 3                             |                                       |                          |                               | 0.1°             | 7.2        | 3                         | 4.5                                 | 0 – 416              | 15 (0.25°)         |                                     |
| PKP566N28□2-TS10  | 4                             |                                       |                          |                               | 0.072°           | 10         | 4                         | 6                                   | 0 – 300              |                    |                                     |
| PKP564N28□2-TS20  | 5                             | 140×10 <sup>-7</sup>                  | 0.16                     | 0.036°                        | 20               | 5          | 8                         | 0 – 150                             | 10 (0.17°)           |                    |                                     |
| PKP564N28□2-TS30  | 6                             |                                       |                          |                               | 0.024°           | 30         | 6                         | 10                                  |                      | 0 – 100            |                                     |

● The box □ in the product name indicates the shaft **A** (single shaft) or **B** (double shaft).

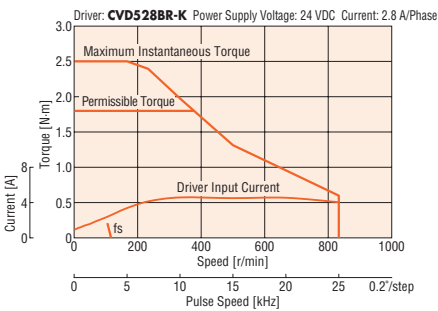
\*See "Drivers for 2-Phase / 5-Phase Motors" page for drivers that can be used in combination.

#### Note

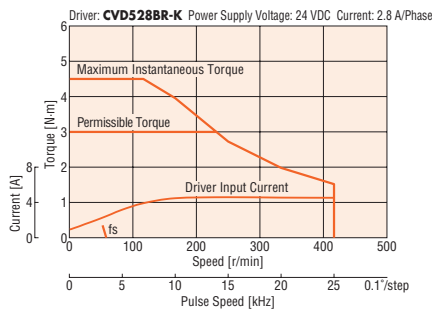
● Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Speed – Torque Characteristics (Reference values) fs: Max. Starting Frequency

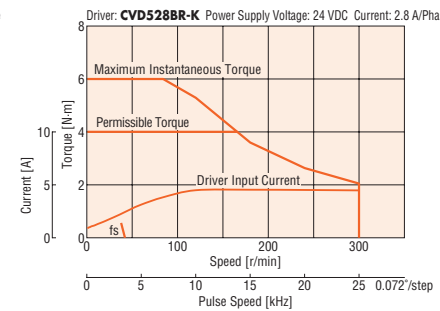
PKP566N28A2-TS3.6/PKP566N28B2-TS3.6



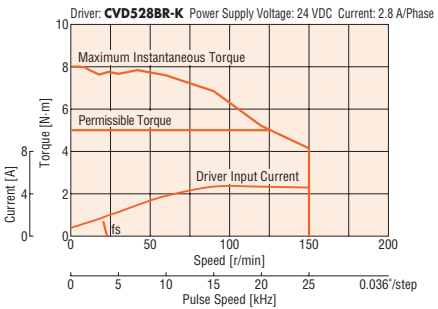
PKP566N28A2-TS7.2/PKP566N28B2-TS7.2



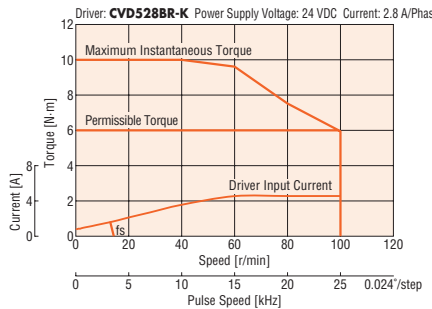
PKP566N28A2-TS10/PKP566N28B2-TS10



PKP564N28A2-TS20/PKP564N28B2-TS20



PKP564N28A2-TS30/PKP564N28B2-TS30



#### Note

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

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

● The characteristics are the same when RS-485 communication type driver is used in combination.

### Dimensions (Unit: mm)

#### Motor

2D & 3D CAD

| Product Name    | Gear Ratio   | L  | Mass<br>kg | 2D CAD |
|-----------------|--------------|----|------------|--------|
| PKP566N28A2-TS□ | 3.6, 7.2, 10 | 98 | 0.99       | B1364  |
| PKP566N28B2-TS□ |              |    |            |        |
| PKP564N28A2-TS□ | 20, 30       | 83 | 0.78       | B1365  |
| PKP564N28B2-TS□ |              |    |            |        |

● The box □ in the product name indicates a number representing the gear ratio.

● Mounting Screw: M4×60 P0.7 (4 screws included)

#### Applicable Connectors

Connector Housing: MDF97A-5S-3.5C (HIROSE ELECTRIC CO., LTD)

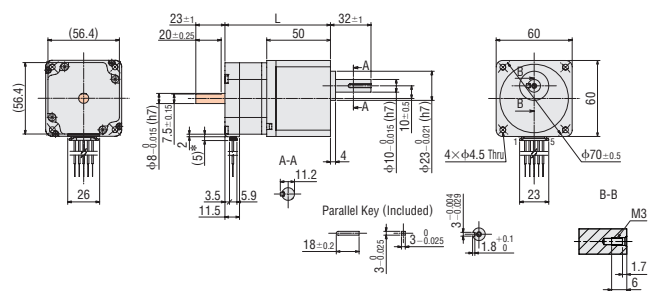
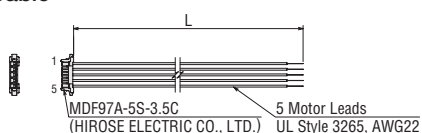
Contact: MDF97-22SC (HIROSE ELECTRIC CO., LTD)

Crimping Tool: HT801/MDF97-22S (HIROSE ELECTRIC CO., LTD)

#### Connection Cable (Sold separately)

##### Motor Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| LC5N06E      | 0.6          |
| LC5N10E      | 1            |



\*With connection cable

● These dimensions are for double shaft motors.

For single shaft motors, ignore the shaded in the  areas.

### Motor Pin Assignments

Motor Pin Assignments: Model A

● Refer to the motor pin arrangement page for information on motor pin arrangement.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring of  
Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment



## General Specifications

| Specifications                                        |                     | Motor                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Class                                         |                     | 130 (B)                                                                                                                                                                                                                                                                                                                             |
| Insulation Resistance                                 |                     | The measured value is 100 MΩ min. when a 500 VDC megger is applied between the windings and the case under normal ambient temperature and humidity.                                                                                                                                                                                 |
| Dielectric Strength                                   |                     | No abnormalities are observed, even when applying voltage between the windings and the case for 1 minute under normal ambient temperature and humidity with the following conditions.<br>• <b>PK513, PKP52□, PKP54□</b> : 0.5 kVAC 50/60 Hz<br>• <b>PKP56□</b> : 1.0 kVAC 50/60 Hz<br>• <b>PKP56□FMN, PK59□</b> : 1.5 kVAC 50/60 Hz |
| Operating Environment (In operation)                  | Ambient Temperature | -10 ≤ +50°C (Non-freezing)                                                                                                                                                                                                                                                                                                          |
|                                                       | Ambient Humidity    | 85% or less (Non-Condensing)                                                                                                                                                                                                                                                                                                        |
|                                                       | Atmosphere          | No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.                                                                                                                                                                                                                                       |
| Temperature Rise                                      |                     | Winding temperature rise 80°C max. (Based on Oriental Motor's internal measurement conditions)                                                                                                                                                                                                                                      |
| Stop Position Accuracy*1                              |                     | Standard Type: ±3 arcmin (±0.05°) [ <b>PK513</b> is ±10 arcmin (±0.17°)]<br>High-Resolution Type: ±2 arcmin (±0.034°)                                                                                                                                                                                                               |
| Shaft Runout                                          |                     | 0.05 T.I.R (mm)*4                                                                                                                                                                                                                                                                                                                   |
| Radial Play*2                                         |                     | 0.025 mm Max. (Load 5 N)                                                                                                                                                                                                                                                                                                            |
| Axial Play*3                                          |                     | 0.075 mm Max. (load 10 N)<br>[Load for <b>PK513</b> is 1 N, load for <b>PKP52□</b> is 2.5 N]                                                                                                                                                                                                                                        |
| Concentricity of Installation Pilot to the Shaft      |                     | 0.075 T.I.R (mm)*4                                                                                                                                                                                                                                                                                                                  |
| Perpendicularity of Installation Surface to the Shaft |                     | 0.075 T.I.R (mm)*4                                                                                                                                                                                                                                                                                                                  |

\*1 This value is for a full step under no load. (The value changes with the size of the load.)

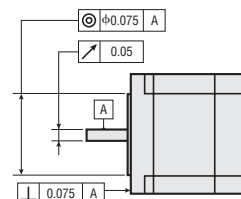
\*2 Radial Play: Displacement in shaft position in the radial direction when a 5 N load is applied perpendicular to the tip of the motor shaft.

\*3 Axial Play: Displacement in shaft position in the axial direction when a 10 N load (1 N for **PK513**, load for **PKP52□** is 2.5 N) is applied to the motor shaft in the axial direction.

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

### Note

● Separate the motor and driver when measuring insulation resistance or performing a dielectric voltage withstand test. Also, do not conduct these tests on the motor encoder section.



## Encoder Specifications

| Encoder Product Name | R3G                                          | R3J  | R3GL         | R3JL |
|----------------------|----------------------------------------------|------|--------------|------|
| Resolution (P/R)     | 500                                          | 1000 | 500          | 1000 |
| Angular Accuracy     | ±0.36° (Motor output shaft conversion value) |      |              |      |
| Output Circuit Type  | Voltage Output                               |      | Line Driver* |      |
| Output Type          | Incremental                                  |      |              |      |
| Output Signals       | A phase, B phase, Z phase (3 ch)             |      |              |      |
| Power Supply Voltage | 5 VDC ± 10%                                  |      |              |      |
| Current              | 45 mA max.                                   |      | 30 mA max.   |      |

\*26C31 or Equivalent

## Motor Pin Arrangement

| Motor Model Type                                                                       | Pin Arrangement/Lead Wire Color |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
|----------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|-----|--------|-------|-------|---|--------|---|-------|---|-------|
| Model A<br>Mini-Connector<br>Type                                                      | Pin No. → 5 1                   | <table border="1"> <thead> <tr> <th>Pin No.</th> <th>Lead Wire Color*</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>Blue</td> </tr> <tr> <td>4</td> <td>Red</td> </tr> <tr> <td>3</td> <td>Orange</td> </tr> <tr> <td>2</td> <td>Green</td> </tr> <tr> <td>1</td> <td>Black</td> </tr> </tbody> </table> | Pin No.         | Lead Wire Color* | 5   | Blue   | 4     | Red   | 3 | Orange | 2 | Green | 1 | Black |
|                                                                                        | Pin No.                         | Lead Wire Color*                                                                                                                                                                                                                                                                                           |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 5                                                                                      | Blue                            |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 4                                                                                      | Red                             |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 3                                                                                      | Orange                          |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 2                                                                                      | Green                           |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 1                                                                                      | Black                           |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| *The colors of the lead wires are the colors of the separately sold connection cables. |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Model B<br>Connector Type                                                              | Pin No. → 1 5                   | <table border="1"> <thead> <tr> <th>Pin No.</th> <th>Lead Wire Color*</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Blue</td> </tr> <tr> <td>2</td> <td>Red</td> </tr> <tr> <td>3</td> <td>Orange</td> </tr> <tr> <td>4</td> <td>Green</td> </tr> <tr> <td>5</td> <td>Black</td> </tr> </tbody> </table> | Pin No.         | Lead Wire Color* | 1   | Blue   | 2     | Red   | 3 | Orange | 4 | Green | 5 | Black |
|                                                                                        | Pin No.                         | Lead Wire Color*                                                                                                                                                                                                                                                                                           |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 1                                                                                      | Blue                            |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 2                                                                                      | Red                             |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 3                                                                                      | Orange                          |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 4                                                                                      | Green                           |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| 5                                                                                      | Black                           |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| *The colors of the lead wires are the colors of the separately sold connection cables. |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Model C<br>Lead Wire Type                                                              |                                 | <table border="1"> <thead> <tr> <th>Lead Wire Color</th> </tr> </thead> <tbody> <tr> <td>Blue</td> </tr> <tr> <td>Red</td> </tr> <tr> <td>Orange</td> </tr> <tr> <td>Green</td> </tr> <tr> <td>Black</td> </tr> </tbody> </table>                                                                          | Lead Wire Color | Blue             | Red | Orange | Green | Black |   |        |   |       |   |       |
|                                                                                        | Lead Wire Color                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Blue                                                                                   |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Red                                                                                    |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Orange                                                                                 |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Green                                                                                  |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
| Black                                                                                  |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |
|                                                                                        |                                 |                                                                                                                                                                                                                                                                                                            |                 |                  |     |        |       |       |   |        |   |       |   |       |

Motor  
Frame Size

□13 mm

□20 mm

□28 mm

□35 mm

□42 mm

□50 mm

□51 mm

□56.4 mm

□60 mm

□61 mm

□85 mm

□90 mm

## Common Specifications

### Rotation Direction

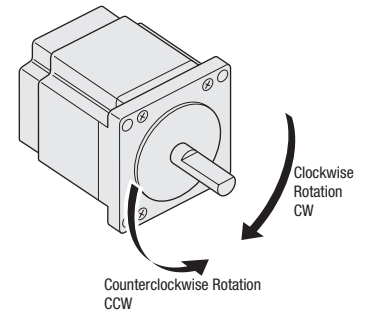
This indicates the rotation direction as viewed from the output shaft side of the motor.

The rotation direction of the output gear shaft relative to the standard type motor output shaft varies depending on the gear type and gear ratio.

Please check the following table.

| Geared Type |                         | Gear Ratio          | Rotation Direction of the Gear Output Shaft |
|-------------|-------------------------|---------------------|---------------------------------------------|
| TS Geared   | Frame Size 42 mm, 60 mm | <b>3.6, 7.2, 10</b> | Same as the motor output shaft              |
|             |                         | <b>20, 30</b>       | Opposite as the motor output shaft          |

### Standard Type Motor



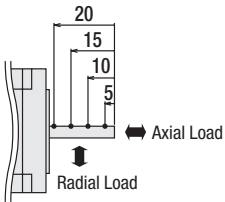
### Permissible Radial Load and Permissible Axial Load

Unit: N

| Type                 | Motor Frame Size | Product Name                              | Gear Ratio          | Permissible Radial Load                          |     |     |     |     | Permissible Axial Load |
|----------------------|------------------|-------------------------------------------|---------------------|--------------------------------------------------|-----|-----|-----|-----|------------------------|
|                      |                  |                                           |                     | Distance from the Tip of Motor Output Shaft [mm] |     |     |     |     |                        |
|                      |                  |                                           |                     | 0                                                | 5   | 10  | 15  | 20  |                        |
| Standard Type        | 20 mm            | <b>PK513</b>                              | —                   | 12                                               | 15  | —   | —   | —   | 3                      |
|                      | 28 mm            | <b>PKP523, PKP525</b>                     | —                   | 25                                               | 34  | 52  | —   | —   | 5                      |
|                      | 42 mm            | <b>PKP543, PKP544□2, PKP545, PKP546□2</b> | —                   | 35                                               | 44  | 58  | 85  | —   | 15                     |
|                      | 42 mm            | <b>PKP544, PKP546</b>                     | —                   | 20                                               | 25  | 34  | 52  | —   | 10                     |
|                      | 56.4 mm          | <b>PKP564, PKP566, PKP568</b>             | —                   | 90                                               | 100 | 130 | 180 | 270 | 30                     |
|                      | 60 mm            | <b>PKP564, PKP566, PKP569</b>             | —                   | 90                                               | 100 | 130 | 180 | 270 | 30                     |
| High-Resolution Type | 85 mm            | <b>PK596, PK599, PK5913</b>               | —                   | 260                                              | 290 | 340 | 390 | 480 | 60                     |
|                      | 42 mm            | <b>PKP544, PKP546</b>                     | —                   | 20                                               | 25  | 34  | 52  | —   | 10                     |
|                      | 60 mm            | <b>PKP564, PKP566, PKP569</b>             | —                   | 90                                               | 100 | 130 | 180 | 270 | 20                     |
| TS Geared            | 42 mm            | <b>PKP544</b>                             | <b>3.6, 7.2, 10</b> | 20                                               | 30  | 40  | 50  | —   | 15                     |
|                      |                  | <b>PKP543</b>                             | <b>20, 30</b>       | 40                                               | 50  | 60  | 70  | —   |                        |
|                      | 60 mm            | <b>PKP566</b>                             | <b>3.6, 7.2, 10</b> | 120                                              | 135 | 150 | 165 | 180 | 40                     |
|                      |                  | <b>PKP564</b>                             | <b>20, 30</b>       | 170                                              | 185 | 200 | 215 | 230 |                        |

### Radial Load and Axial Load

Distance from Shaft End [mm]



2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

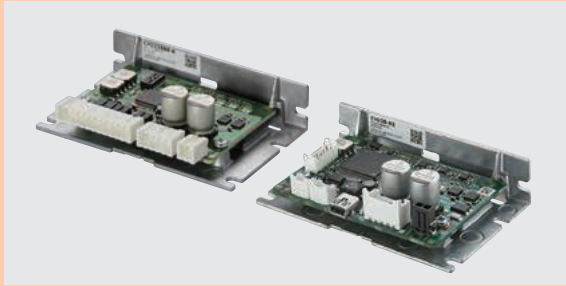
# CVD Series 5-Phase Driver for 2-Phase Stepper Motors

## Unipolar Driver for 2-Phase Stepper Motors

2-Phase Bipolar  
5-Phase  
Pulse Input

2-Phase Bipolar  
5-Phase  
RS-485 Communication

2-Phase  
Unipolar



These are DC power supply input drivers for stepper motors. The bipolar/unipolar driver for 2-phase stepper motors and the driver for 5-phase stepper motors are available. Using the microstep drive function for a low-vibration driver reduces vibration and noise.

### Features and Types

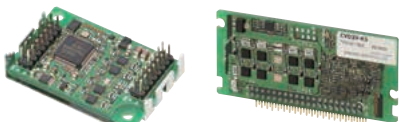
#### ● Bipolar Driver for 2-Phase Stepper Motor Driver for 5-Phase Stepper Motor CVD Series

| Driver Type                                                                                                                                                                          | External View                                                                                                                                                      | Overview                                                                                                                                                                                     | Driver Installation Direction                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <p>● <b>CVD Series Pulse Input Type</b><br/>Page 147 to 153</p> <ul style="list-style-type: none"> <li>Mass 20 g to 70 g (The value differs according to the driver type)</li> </ul> | <p>Right Angle with Installation Plate</p> <p>The connector points outward.</p>                                                                                    | <ul style="list-style-type: none"> <li>Can be controlled depending on the positioning module (pulse generator)</li> <li>Running current can be easily set with the digital switch</li> </ul> | <ul style="list-style-type: none"> <li>Horizontal Installation</li> <li>Vertical Installation</li> </ul> |
| <p>With Installation Plate</p> <p>The connector points upward.</p>                                                                                                                   | <ul style="list-style-type: none"> <li>Compatible with RS-485 communication (Modbus Protocol)</li> <li>Easy overwriting of data and multi-axis settings</li> </ul> |                                                                                                                                                                                              |                                                                                                          |
| <p>Without Installation Plate</p> <p>The connector points upward.</p>                                                                                                                |                                                                                                                                                                    |                                                                                                                                                                                              |                                                                                                          |
| <p>● <b>CVD Series RS-485 Communication Type</b><br/>Page 154 to 159</p> <ul style="list-style-type: none"> <li>Mass 65 g</li> </ul>                                                 | <p>Right Angle with Installation Plate</p> <p>The connector points outward.</p>                                                                                    | <ul style="list-style-type: none"> <li>Compatible with <b>MEXE02</b> support software</li> </ul>                                                                                             |                                                                                                          |
| <p>With Installation Plate</p> <p>The connector points upward.</p>                                                                                                                   |                                                                                                                                                                    |                                                                                                                                                                                              |                                                                                                          |

#### Note

● The driver cannot be shared by both a 2-phase stepper motor and 5-phase stepper motor. Each must use its respective dedicated driver.

#### ● For 2-Phase/5-Phase Stepper Motors Bipolar Driver CVD Series **S** Type



· SPI Communication-Compatible · Pulse Input-Compatible  
This is a compact board driver. For details, please contact your nearest Oriental Motor sales office.

#### ● For 5-Phase Stepper Motors Driver CVD Series **SC** Type



This driver can easily control speed by sensing the speed control motor. For details, please contact your nearest Oriental Motor sales office.

#### ● For 2-Phase Stepper Motors Unipolar Driver



The Microstep Drive drivers are compact and lightweight. Refer to page 160.

Bipolar Driver for 2-Phase Stepper Motors  
 Driver for 5-Phase Stepper Motors  
**CVD Series Pulse Input Type**

**Product Number**

**CVD 2 23 F B R - K**

- ① ② ③ ④ ⑤ ⑥ ⑦

|   |                                     |                                                                        |
|---|-------------------------------------|------------------------------------------------------------------------|
| ① | Series Name                         | <b>CVD: CVD Series</b>                                                 |
| ② | <b>2:</b> 2-Phase <b>5:</b> 5-Phase |                                                                        |
| ③ | Rated Current                       |                                                                        |
| ④ | Driver Identification               |                                                                        |
| ⑤ | Driver Shape                        | <b>B:</b> With Installation Plate<br>Blank: Without Installation Plate |
| ⑥ | Connector Shape                     | <b>R:</b> Right Angle                                                  |
| ⑦ | Power Supply Input                  | <b>K:</b> DC Power Supply                                              |

**Product Line**

We have prepared a connection cable set (sold separately) consisting of motor, power supply, and I/O signal cables. The connectors are already crimped, which makes them easy to wire without crimp tools. For details, refer to page 163.

● Bipolar Driver for 2-Phase Stepper Motors

◇ Right Angle Type with Installation Plate

| Product Name       |
|--------------------|
| <b>CVD205BR-K</b>  |
| <b>CVD206BR-K</b>  |
| <b>CVD215BR-K</b>  |
| <b>CVD223BR-K</b>  |
| <b>CVD223FBR-K</b> |
| <b>CVD228BR-K</b>  |
| <b>CVD242BR-K</b>  |
| <b>CVD245BR-K</b>  |

◇ With Installation Plate

| Product Name      |
|-------------------|
| <b>CVD205B-K</b>  |
| <b>CVD206B-K</b>  |
| <b>CVD215B-K</b>  |
| <b>CVD223B-K</b>  |
| <b>CVD223FB-K</b> |
| <b>CVD228B-K</b>  |
| <b>CVD242B-K</b>  |
| <b>CVD245B-K</b>  |

◇ Without Installation Plate

| Product Name     |
|------------------|
| <b>CVD205-K</b>  |
| <b>CVD206-K</b>  |
| <b>CVD215-K</b>  |
| <b>CVD223-K</b>  |
| <b>CVD223F-K</b> |
| <b>CVD228-K</b>  |

● Driver for 5-Phase Stepper Motors

◇ Right Angle Type with Installation Plate

| Product Name      |
|-------------------|
| <b>CVD503BR-K</b> |
| <b>CVD507BR-K</b> |
| <b>CVD512BR-K</b> |
| <b>CVD514BR-K</b> |
| <b>CVD518BR-K</b> |
| <b>CVD524BR-K</b> |
| <b>CVD528BR-K</b> |
| <b>CVD538BR-K</b> |

◇ With Installation Plate

| Product Name     |
|------------------|
| <b>CVD503B-K</b> |
| <b>CVD507B-K</b> |
| <b>CVD512B-K</b> |
| <b>CVD514B-K</b> |
| <b>CVD518B-K</b> |
| <b>CVD524B-K</b> |
| <b>CVD528B-K</b> |
| <b>CVD538B-K</b> |

◇ Without Installation Plate

| Product Name    |
|-----------------|
| <b>CVD503-K</b> |
| <b>CVD507-K</b> |
| <b>CVD512-K</b> |
| <b>CVD514-K</b> |
| <b>CVD518-K</b> |
| <b>CVD524-K</b> |

**Included**

| Type                | Connector for Driver Connection                                     |
|---------------------|---------------------------------------------------------------------|
| Common to All Types | CN1 Connector (1 pc.), CN2 Connector (1 pc.), CN3 Connector (1 pc.) |

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Specifications

### ● Bipolar Driver for 2-Phase Stepper Motors



| Product Name                            | CVD205□□-K                                                                                                                                                                                             | CVD206□□-K                                 | CVD215□□-K  | CVD223□□-K<br>CVD223F□□-K | CVD228□□-K  | CVD242B□-K  | CVD245B□-K  |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------|---------------------------|-------------|-------------|-------------|
| Driving Method                          | Microstep Drive, Bipolar, Constant Current Drive Method                                                                                                                                                |                                            |             |                           |             |             |             |
| Motor Driving Current (Factory Setting) | 0.5 A/Phase                                                                                                                                                                                            | 0.6 A/Phase                                | 1.5 A/Phase | 2.3 A/Phase               | 2.8 A/Phase | 4.2 A/Phase | 4.5 A/Phase |
| Power Supply Voltage                    | 24 VDC ± 10%                                                                                                                                                                                           |                                            |             |                           |             |             |             |
| Input Current A                         | 0.5                                                                                                                                                                                                    | 0.5                                        | 1.9         | 2.0                       | 3.0         | 3.6         | 3.9         |
| Max. Input Pulse Frequency              | Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%)<br>Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative Logic Pulse Input |                                            |             |                           |             |             |             |
| Operating Environment                   | Ambient Temperature                                                                                                                                                                                    | 0 to +50°C (Non-freezing)                  |             |                           |             |             |             |
|                                         | Ambient Humidity                                                                                                                                                                                       | 85% or less (Non-condensing)               |             |                           |             |             |             |
|                                         | Surrounding Atmosphere                                                                                                                                                                                 | No corrosive gas or dust. No water or oil. |             |                           |             |             |             |

### ● Driver for 5-Phase Stepper Motors



| Product Name                            | CVD503□□-K                                                                                                                                                                                             | CVD507□□-K                                 | CVD512□□-K  | CVD514□□-K  | CVD518□□-K  | CVD524B□-K  | CVD528B□-K  | CVD538B□-K  |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Driving Method                          | Microstep Drive, Bipolar, Constant Current Drive Method                                                                                                                                                |                                            |             |             |             |             |             |             |
| Motor Driving Current (Factory Setting) | 0.35 A/Phase                                                                                                                                                                                           | 0.75 A/Phase                               | 1.2 A/Phase | 1.4 A/Phase | 1.8 A/Phase | 2.4 A/Phase | 2.8 A/Phase | 3.8 A/Phase |
| Power Supply Voltage                    | 24 VDC ± 10%                                                                                                                                                                                           |                                            |             |             |             |             |             |             |
| Input Current A                         | 0.6                                                                                                                                                                                                    | 1.4                                        | 1.7         | 1.8         | 2.8         | 3.0         | 4.8         | 4.8         |
| Max. Input Pulse Frequency              | Line driver output by programmable controller: 1 MHz (When the pulse duty is 50%)<br>Open-collector output by programmable controller: 250 kHz (When the pulse duty is 50%) Negative Logic Pulse Input |                                            |             |             |             |             |             |             |
| Operating Environment                   | Ambient Temperature                                                                                                                                                                                    | 0 to +50°C (Non-freezing)                  |             |             |             |             |             |             |
|                                         | Ambient Humidity                                                                                                                                                                                       | 85% or less (Non-condensing)               |             |             |             |             |             |             |
|                                         | Surrounding Atmosphere                                                                                                                                                                                 | No corrosive gas or dust. No water or oil. |             |             |             |             |             |             |

- For the type with a installation plate, the box □ in the product name indicates the driver shape **B** (with installation plate).
- For the right angle type with a installation plate, the box □ in the product name indicates the connector shape **R** (right angle).

## Dimensions (Unit: mm)

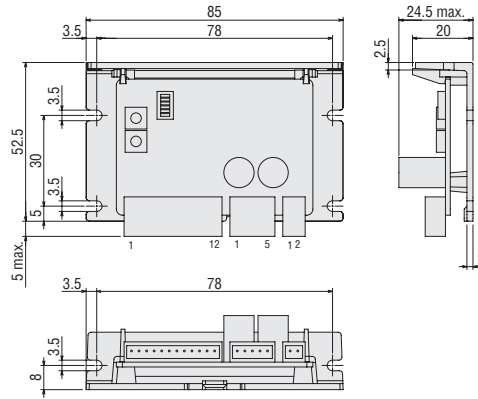
### ● Right Angle Type with Installation Plate

#### 2D & 3D CAD

| Product Name       | Mass kg | 2D CAD |
|--------------------|---------|--------|
| <b>CVD205BR-K</b>  | 0.06    | B1210  |
| <b>CVD206BR-K</b>  |         |        |
| <b>CVD215BR-K</b>  |         |        |
| <b>CVD223BR-K</b>  |         |        |
| <b>CVD223FBR-K</b> |         |        |
| <b>CVD228BR-K</b>  |         |        |
| <b>CVD503BR-K</b>  |         |        |
| <b>CVD507BR-K</b>  |         |        |
| <b>CVD512BR-K</b>  |         |        |
| <b>CVD514BR-K</b>  |         |        |
| <b>CVD518BR-K</b>  |         |        |
| <b>CVD524BR-K</b>  |         |        |

● Included

Connector Housing: 51103-0200 (Molex)  
 51103-0500 (Molex)  
 51103-1200 (Molex)  
 Contact: 50351-8100 (Molex)

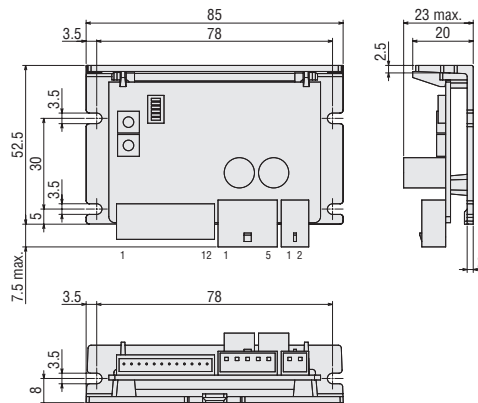


#### 2D & 3D CAD

| Product Name      | Mass kg | 2D CAD |
|-------------------|---------|--------|
| <b>CVD242BR-K</b> | 0.07    | B1211  |
| <b>CVD245BR-K</b> |         |        |
| <b>CVD528BR-K</b> |         |        |
| <b>CVD538BR-K</b> |         |        |

● Included

Connector Housing: 51067-0200 (Molex)  
 51067-0500 (Molex)  
 51103-1200 (Molex)  
 Contact: 50217-9101 (Molex)  
 50351-8100 (Molex)



● We have prepared a connection cable set (sold separately) consisting of motor, power supply, and I/O signal cables. The connectors are already crimped, which makes them easy to wire without crimp tools. For details, refer to page 163.

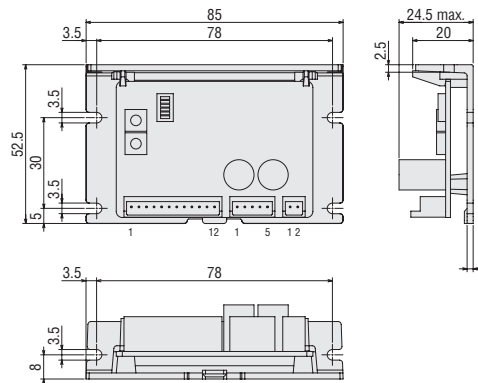
### ● With Installation Plate

#### 2D & 3D CAD

| Product Name      | Mass kg | 2D CAD |
|-------------------|---------|--------|
| <b>CVD205B-K</b>  | 0.06    | B1255  |
| <b>CVD206B-K</b>  |         |        |
| <b>CVD215B-K</b>  |         |        |
| <b>CVD223B-K</b>  |         |        |
| <b>CVD223FB-K</b> |         |        |
| <b>CVD228B-K</b>  |         |        |
| <b>CVD503B-K</b>  |         |        |
| <b>CVD507B-K</b>  |         |        |
| <b>CVD512B-K</b>  |         |        |
| <b>CVD514B-K</b>  |         |        |
| <b>CVD518B-K</b>  |         |        |
| <b>CVD524B-K</b>  |         |        |

● Included

Connector Housing: 51103-0200 (Molex)  
 51103-0500 (Molex)  
 51103-1200 (Molex)  
 Contact: 50351-8100 (Molex)

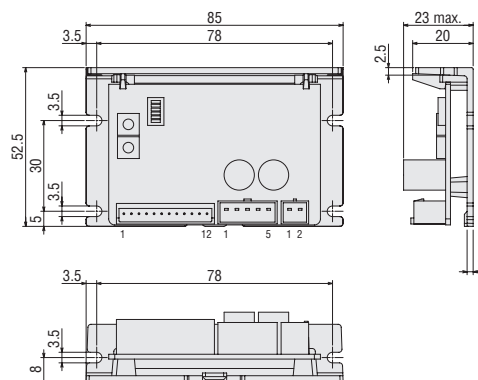


#### 2D & 3D CAD

| Product Name     | Mass kg | 2D CAD |
|------------------|---------|--------|
| <b>CVD242B-K</b> | 0.07    | B1256  |
| <b>CVD245B-K</b> |         |        |
| <b>CVD528B-K</b> |         |        |
| <b>CVD538B-K</b> |         |        |

● Included

Connector Housing: 51067-0200 (Molex)  
 51067-0500 (Molex)  
 51103-1200 (Molex)  
 Contact: 50217-9101 (Molex)  
 50351-8100 (Molex)



● We have prepared a connection cable set (sold separately) consisting of motor, power supply, and I/O signal cables. The connectors are already crimped, which makes them easy to wire without crimp tools. For details, refer to page 163.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

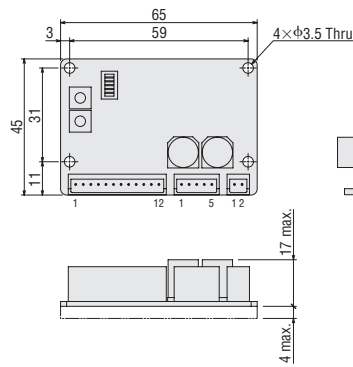
Cables

Peripheral  
Equipment

## Without Installation Plate

2D & 3D CAD

| Product Name     | Mass kg | 2D CAD |
|------------------|---------|--------|
| <b>CVD205-K</b>  | 0.02    | B1128  |
| <b>CVD206-K</b>  |         |        |
| <b>CVD215-K</b>  |         |        |
| <b>CVD223-K</b>  |         |        |
| <b>CVD223F-K</b> |         |        |
| <b>CVD228-K</b>  |         |        |
| <b>CVD503-K</b>  |         |        |
| <b>CVD507-K</b>  |         |        |
| <b>CVD512-K</b>  |         |        |
| <b>CVD514-K</b>  |         |        |
| <b>CVD518-K</b>  |         |        |
| <b>CVD524-K</b>  |         |        |



### Included

Connector Housing: 51103-0200 (Molex)  
 51103-0500 (Molex)  
 51103-1200 (Molex)  
 Contact: 50351-8100 (Molex)

- We have prepared a connection cable set (sold separately) consisting of motor, power supply, and I/O signal cables. The connectors are already crimped, which makes them easy to wire without crimp tools. For details, refer to page 163.

## List of Applicable Motors

### Bipolar Driver for 2-Phase Stepper Motors

| Driver Product Name                 |                         |                            | Motor Drive Current | Applicable Motor |                                            |
|-------------------------------------|-------------------------|----------------------------|---------------------|------------------|--------------------------------------------|
| Right Angle with Installation Plate | With Installation Plate | Without Installation Plate |                     | Connector Type   | Motor Product Name                         |
| <b>CVD205BR-K</b>                   | <b>CVD205B-K</b>        | <b>CVD205-K</b>            | 0.5 A/Phase         | Model C          | <b>PKP21 3D</b>                            |
| <b>CVD206BR-K</b>                   | <b>CVD206B-K</b>        | <b>CVD206-K</b>            | 0.6 A/Phase         | Model C          | <b>PKP21 4D</b>                            |
|                                     |                         |                            |                     | Model D          | <b>PKP20 3D</b>                            |
| <b>CVD215BR-K</b>                   | <b>CVD215B-K</b>        | <b>CVD215-K</b>            | 1.5 A/Phase         | Model B          | <b>PKP22 □ D, PKP23 □ D15, PKP24 □ D15</b> |
|                                     |                         |                            |                     | Model C          | <b>PKP26 2FD</b>                           |
| <b>CVD223BR-K</b>                   | <b>CVD223B-K</b>        | <b>CVD223-K</b>            | 2.3 A/Phase         | Model B          | <b>PKP23 □ D23, PKP24 □ D23</b>            |
| <b>CVD223FBR-K</b>                  | <b>CVD223FB-K</b>       | <b>CVD223F-K</b>           | 2.3 A/Phase         | Model A          | <b>PKP24 □ D</b>                           |
| <b>CVD228BR-K</b>                   | <b>CVD228B-K</b>        | <b>CVD228-K</b>            | 2.8 A/Phase         | Model A          | <b>PKP25 □ D, PKP26 □ D14, PKP26 □ D28</b> |
|                                     |                         |                            |                     | Model B          | <b>PKP26 □ D28</b>                         |
| <b>CVD242BR-K</b>                   | <b>CVD242B-K</b>        | —                          | 4.2 A/Phase         | Model A          | <b>PKP26 □ D42</b>                         |
| <b>CVD245BR-K</b>                   | <b>CVD245B-K</b>        | —                          | 4.5 A/Phase         | Model C          | <b>PKP29 □ D</b>                           |

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.
- For high-resolution type, the code **M** (high-resolution type) indicating the motor type is entered where the box ■ is located within the names of the applicable motors.
- The applicable motors are listed such that the available combinations with the driver are distinguishable. Combinations with the encoder type and geared type are also available. For details on the product name, please see the Oriental Motor website.

### Note

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

### Driver for 5-Phase Stepper Motors

| Driver Product Name                 |                         |                            | Motor Drive Current | Applicable Motor                       |
|-------------------------------------|-------------------------|----------------------------|---------------------|----------------------------------------|
| Right Angle with Installation Plate | With Installation Plate | Without Installation Plate |                     |                                        |
| <b>CVD503BR-K</b>                   | <b>CVD503B-K</b>        | <b>CVD503-K</b>            | 0.35 A/Phase        | <b>PK51 3, PK52 □</b>                  |
| <b>CVD507BR-K</b>                   | <b>CVD507B-K</b>        | <b>CVD507-K</b>            | 0.75 A/Phase        | <b>PK52 □ H, PK54 □</b>                |
| <b>CVD512BR-K</b>                   | <b>CVD512B-K</b>        | <b>CVD512-K</b>            | 1.2 A/Phase         | <b>PK52 □</b>                          |
| <b>CVD514BR-K</b>                   | <b>CVD514B-K</b>        | <b>CVD514-K</b>            | 1.4 A/Phase         | <b>PK56 □</b>                          |
| <b>CVD518BR-K</b>                   | <b>CVD518B-K</b>        | <b>CVD518-K</b>            | 1.8 A/Phase         | <b>PKP54 □</b>                         |
| <b>CVD524BR-K</b>                   | <b>CVD524B-K</b>        | <b>CVD524-K</b>            | 2.4 A/Phase         | <b>PKP56 □ FN24, PKP56 □ FMN</b>       |
| <b>CVD528BR-K</b>                   | <b>CVD528B-K</b>        | —                          | 2.8 A/Phase         | <b>PKP56 □ N28, PK56 □ H, PK59 □ H</b> |
| <b>CVD538BR-K</b>                   | <b>CVD538B-K</b>        | —                          | 3.8 A/Phase         | <b>PKP56 □ FN38</b>                    |

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.
- The applicable motors are listed such that the available combinations with the driver are distinguishable. Combinations with the encoder type and geared type are also available. For details on the product name, please see the Oriental Motor website.

### Note

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.



# Connection and Operation

## Names and Functions of Driver Parts

### 1 Signal Monitor Indicators

#### ◇ LED Indicator

| Indication | Color | Function                | Lighting Condition                                 |
|------------|-------|-------------------------|----------------------------------------------------|
| PWR/ALM    | Green | Power Supply Indication | When power is applied                              |
|            | Red   | Alarm Indication        | When a protective function is activated (blinking) |

#### ◇ Alarm Contents

| Blink Count | Function               | Operating Condition                                                                                                                           |
|-------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 2           | Overheat Protection    | When the temperature of the driver board reaches 85°C                                                                                         |
| 3           | Overvoltage Protection | When the power supply voltage exceeds its permissible value<br>When a large inertial load is stopped suddenly<br>When a large load is hoisted |
| 5           | Overcurrent Protection | When an excessive current flows to the motor's output circuit                                                                                 |
| 9           | EEPROM Error           | When data of the driver is damaged                                                                                                            |
| Lighting    | CPU Error              | When the CPU driver malfunctions                                                                                                              |

### 2 Function Setting Switch

| Indication | No. | Function                                                                         |
|------------|-----|----------------------------------------------------------------------------------|
| 1P/2P      | 1   | Switches the pulse input mode between 1-pulse input mode and 2-pulse input mode. |
| OFF/SD     | 2   | Switches the smooth drive function between enabled and disabled.                 |
| R2/R1      | 3   | Use in combination with the step angle setting switch to set the step angle.     |
| STOP       | 4   | Switches the standstill current of motors to 25% or 50%.                         |
| OFF/FIL    | 5   | Switches the command filter between enabled and disabled.                        |
| —          | 6   | Not used.                                                                        |

### 3 Step Angle Setting Switch

| Indication | Function                                                        |
|------------|-----------------------------------------------------------------|
| STEP       | Use in combination with the R2/R1 switch to set the step angle. |

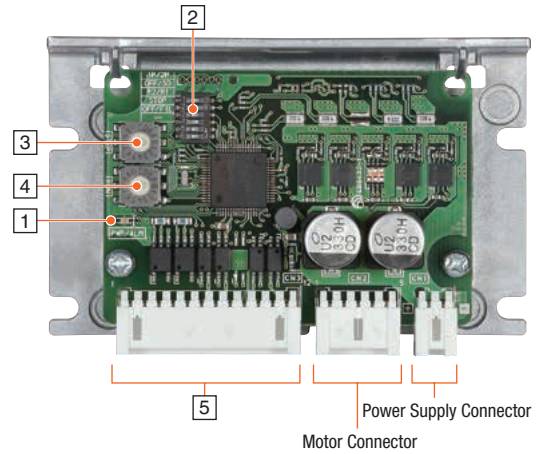
| Step Angle Setting Switch (STEP) Scale | R2/R1 Switch: When Set to ON (R1) |            | R2/R1 Switch: When Set to OFF (R2) |             |
|----------------------------------------|-----------------------------------|------------|------------------------------------|-------------|
|                                        | Resolution (P/R)                  | Step Angle | Resolution (P/R)                   | Step Angle  |
| 0                                      | 500                               | 0.72°      | 200                                | 1.8°        |
| 1                                      | 1000                              | 0.36°      | 400                                | 0.9°        |
| 2                                      | 1250                              | 0.288°     | 800                                | 0.45°       |
| 3                                      | 2000                              | 0.18°      | 1000                               | 0.36°       |
| 4                                      | 2500                              | 0.144°     | 1600                               | 0.225°      |
| 5                                      | 4000                              | 0.09°      | 2000                               | 0.18°       |
| 6                                      | 5000                              | 0.072°     | 3200                               | 0.1125°     |
| 7                                      | 10000                             | 0.036°     | 5000                               | 0.072°      |
| 8                                      | 12500                             | 0.0288°    | 6400                               | 0.05625°    |
| 9                                      | 20000                             | 0.018°     | 10000                              | 0.036°      |
| A                                      | 25000                             | 0.0144°    | 12800                              | 0.028125°   |
| B                                      | 40000                             | 0.009°     | 20000                              | 0.018°      |
| C                                      | 50000                             | 0.0072°    | 25000                              | 0.0144°     |
| D                                      | 62500                             | 0.00576°   | 25600                              | 0.0140625°  |
| E                                      | 100000                            | 0.0036°    | 50000                              | 0.0072°     |
| F                                      | 125000                            | 0.00288°   | 51200                              | 0.00703125° |

### 4 Running Current Setting Switch

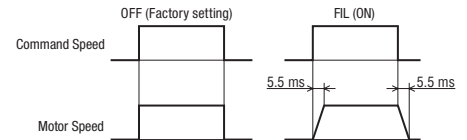
| Indication | Function                        |
|------------|---------------------------------|
| RUN        | Sets the motor running current. |

### 5 I/O Signal Connector

| Indication | Pin No. | I/O    | Signal Name              | Function                                                                                              |
|------------|---------|--------|--------------------------|-------------------------------------------------------------------------------------------------------|
| CN3        | 1       | Input  | CW+ (PLS+)               | Rotates the motor in the CW direction.<br>(Operation command pulse signal when in 1-pulse input mode) |
|            | 2       |        | CW- (PLS-)               |                                                                                                       |
|            | 3       |        | CCW+ (DIR+)              | Rotates the motor in the CCW direction.<br>(Rotation direction signal when in 1-pulse input mode)     |
|            | 4       |        | CCW- (DIR-)              |                                                                                                       |
|            | 5       |        | AWO+                     | Stop motor excitation.                                                                                |
|            | 6       |        | AWO-                     |                                                                                                       |
|            | 7       | CS+    | Switches the step angle. |                                                                                                       |
|            | 8       | CS-    |                          |                                                                                                       |
|            | 9       | Output | ALM+                     | Outputs the alarm status for the driver (normally closed).                                            |
|            | 10      |        | ALM-                     |                                                                                                       |
|            | 11      |        | TIM+                     | Output when the state of excitation of the motor is the excitation home position.                     |
|            | 12      |        | TIM-                     |                                                                                                       |



● Difference in the Motor Responsiveness Depending on the Command Filter (OFF/FIL Switch)



● Compared to the standard type, the high-resolution type has 2 times the resolution and 1/2 the step angle.

Example: When the R2/R1 switch is set to ON (R1) and the STEP switch is set to "0"

Resolution of High-Resolution Type:  $500 \times 2 = 1000$

Step Angle of High-Resolution Type:  $0.72/2 = 0.36^\circ$

● With the geared types, the actual step angle is the value obtained by dividing the step angle by the gear ratio.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

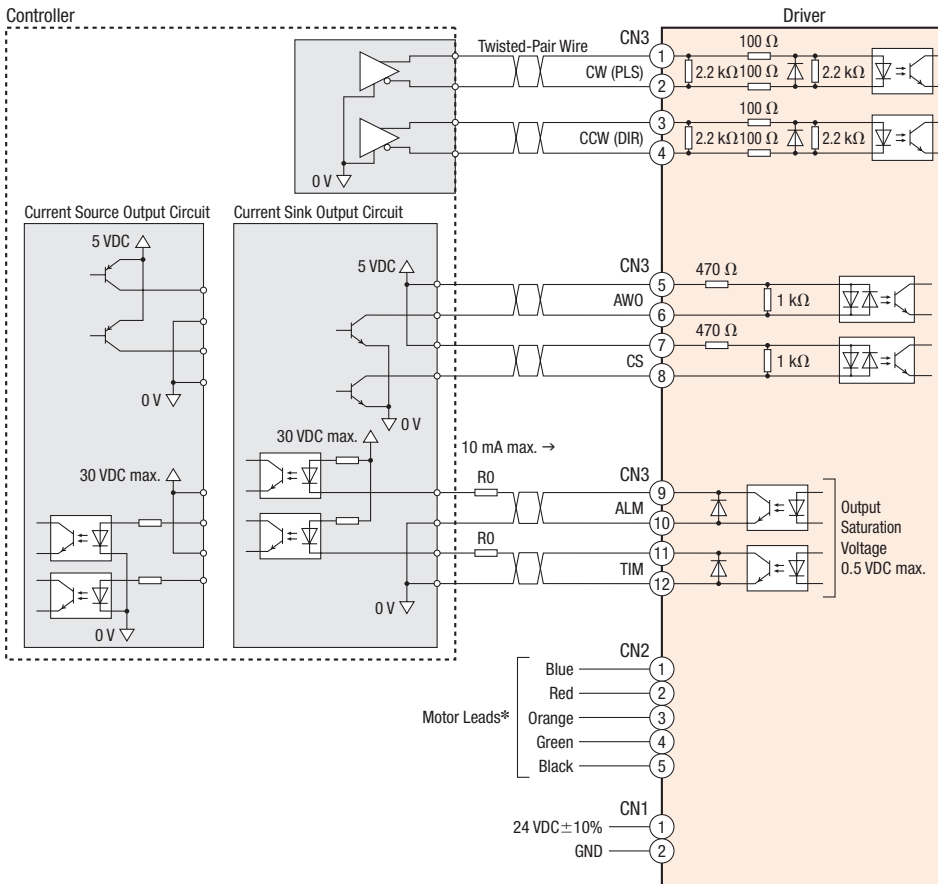
Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

# Connection Diagrams

- When the Input Signal Voltage is 5 VDC
- ◇ When the pulse input is the line driver



\*The pin arrangement of the connector differs depending on the motor. See the connection table below for details.

## ◇ Connection Table of 2-Phase CVD Drivers

- Motor: 2-Phase **PKP/PK** Series Bipolar 4 Lead Wires
- Driver: Bipolar Driver for 2-Phase Stepper Motors

| Driver<br>CN2 Pin No. | Model A |       | Model B |       | Model C |         | Model D |  |
|-----------------------|---------|-------|---------|-------|---------|---------|---------|--|
|                       | Pin No. | Color | Pin No. | Color | Color   | Pin No. | Color   |  |
| 1                     | 4       | Blue  | 1       | Blue  | Blue    | 3       | Blue    |  |
| 2                     | 5       | Red   | 3       | Red   | Red     | 4       | Red     |  |
| 3                     | -       | -     | -       | -     | -       | -       | -       |  |
| 4                     | 2       | Green | 6       | Green | Green   | 2       | Green   |  |
| 5                     | 1       | Black | 4       | Black | Black   | 1       | Black   |  |

● The colors in the table represent colors of the lead wires of the connection cables sold separately.

### Note

● The pin arrangement varies depending on the model. It will not rotate normally if the connection is wrong.

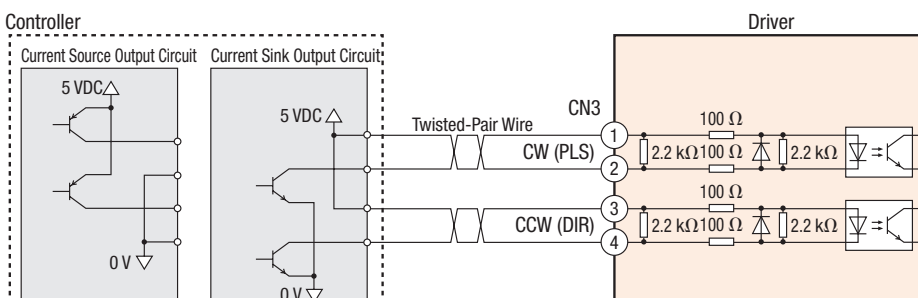
## ◇ Connection Table of 5-Phase CVD Drivers

- Motor: 5-Phase **PKP/PK** Series
- Driver: Driver for 5-Phase Stepper Motors

| Driver<br>CN2 Pin No. | Model A |        | Model B |        | Model C |        |
|-----------------------|---------|--------|---------|--------|---------|--------|
|                       | Pin No. | Color  | Pin No. | Color  | Color   | Color  |
| 1                     | 5       | Blue   | 1       | Blue   | Blue    | Blue   |
| 2                     | 4       | Red    | 2       | Red    | Red     | Red    |
| 3                     | 3       | Orange | 3       | Orange | Orange  | Orange |
| 4                     | 2       | Green  | 4       | Green  | Green   | Green  |
| 5                     | 1       | Black  | 5       | Black  | Black   | Black  |

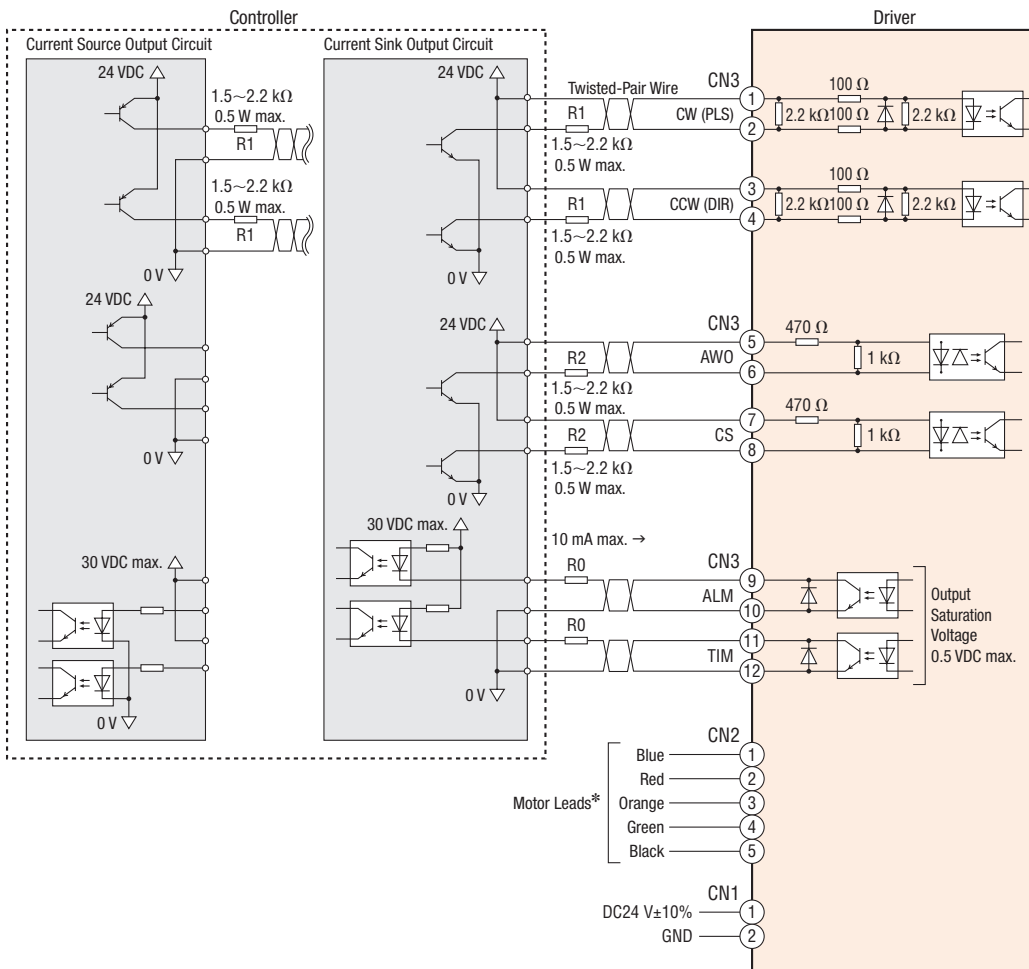
● The colors in the table represent colors of the lead wires of the connection cables sold separately.

## ◇ When the pulse input is open collector



● When the Input Signal Voltage is 24 VDC

◇ When the pulse input is open collector



\*The pin arrangement of the connector differs depending on the motor. See the connection table on page 152 for details.

[Notes on Wiring]

◇ I/O Signal Connection

● Input signal

- Use 5 VDC for the CW input and CCW input signals. If voltage exceeding 5 VDC is applied, connect an external resistor R1 so that the current becomes 7 - 20 mA.  
 Example: When connecting to 24 VDC, R1 should be 1.5 - 2.2 kΩ, 0.5 W or more
- Use 5 VDC for the AWO input and CS input signals. If voltage exceeding 5 VDC is applied, connect an external resistor R2 so that the current becomes 5 - 15 mA.  
 Example: When connecting to 24 VDC, R2 should be 1.5 - 2.2 kΩ, 0.5 W or more

● Output signal

- Use output signals at 30 VDC 10 mA max. When the current value exceeds 10 mA, connect an external resistor R0.
- Either a twisted-pair wire or shielded wire is recommended for the I/O signal cable.
- Note that as the length of the pulse line increases, the max. transmission frequency decreases, and keep the wiring length as short as possible (2 m max.).
- Provide a distance of 100 mm min. between the signal lines and power lines (such as power supply lines and motor lines).

◇ Power Supply Connection

- Incorrect polarities of the DC power-supply input will damage the driver. Make sure that the polarity is correct before turning the power on.

◇ Motor Cable Extension

- Up to 3 cables can be connected between the motor and driver.
- Maximum extension length is 10 m. (5 m for **CVD242**, **CVD528** or **CVD538**.)

◇ General

- A separate hand crimp tool is required to crimp the connector and lead wires included with the driver. Connection cable sets which are available as accessories (sold separately) have already had their lead wires crimped.
- If a specific wiring and layout causes the motor cable or power supply cable to generate a noise problem, shield the cable or use ferrite cores.

2-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

SH Geared  
Type

CS Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
PKP

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

TS Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Bipolar Driver for 2-Phase Stepper Motors Driver for 5-Phase Stepper Motors CVD Series RS-485 Communication Type

2-Phase Bipolar  
5-Phase  
Pulse Input

2-Phase Bipolar  
5-Phase  
RS-485 Communication

2-Phase  
Unipolar

## Product Number

# CVD 2 B R - K R

① ② ③ ④ ⑤ ⑥

|   |                                     |                                      |
|---|-------------------------------------|--------------------------------------|
| ① | Series Name                         | <b>CVD: CVD Series</b>               |
| ② | <b>2:</b> 2-Phase <b>5:</b> 5-Phase |                                      |
| ③ | Driver Configuration                | <b>B:</b> With an Installation Plate |
| ④ | Connector Configuration             | <b>R:</b> Right Angle                |
| ⑤ | Power Supply Input                  | <b>K:</b> DC Power Supply            |
| ⑥ | Product Line                        | <b>R:</b> RS-485 Communication Type  |

## Product Line

Motor cables, power supply and I/O signal cables, and RS-485 communication cables (sold separately) are available. The connectors are already crimped, so they can be easily wired without the need for a crimp tool. Refer to page 163 for details.

### ● Bipolar Driver for 2-Phase Stepper Motors

#### ◇ Right Angle Type with Installation Plate

|                  |  |
|------------------|--|
| Product Name     |  |
| <b>CVD2BR-KR</b> |  |

#### ◇ With Installation Plate

|                 |  |
|-----------------|--|
| Product Name    |  |
| <b>CVD2B-KR</b> |  |

### ● Driver for 5-Phase Stepper Motors

#### ◇ Right Angle Type with Installation Plate

|                  |  |
|------------------|--|
| Product Name     |  |
| <b>CVD5BR-KR</b> |  |

#### ◇ With Installation Plate

|                 |  |
|-----------------|--|
| Product Name    |  |
| <b>CVD5B-KR</b> |  |

## Specifications



| Driver Product Name                  |                     | <b>CVD2B□-KR</b>                                                                              | <b>CVD5B□-KR</b> |
|--------------------------------------|---------------------|-----------------------------------------------------------------------------------------------|------------------|
| Drive Method                         |                     | Microstep Drive, Bipolar Constant Current Drive Method                                        |                  |
| Power Supply Voltage                 |                     | 24 VDC±10%                                                                                    |                  |
| Input Current*                       |                     | A                                                                                             | 0.5~3.0          |
| Interface                            | Control Input       | 7 points, Photocoupler                                                                        |                  |
|                                      | Control Output      | 2 points, Photocoupler and Open-Collector                                                     |                  |
|                                      | Field Network       | Modbus RTU (RS-485 communication)                                                             |                  |
| Operating Environment (In operation) | Ambient Temperature | 0~+50°C (Non-freezing)                                                                        |                  |
|                                      | Ambient Humidity    | 85% or less (Non-condensing)                                                                  |                  |
|                                      | Atmosphere          | No corrosive gases or dust. The product should not be exposed to water, oil or other liquids. |                  |

● For the right angle type with installation plate, an **R** (right angle) indicating the connector configuration is specified where the □ box is located in the driver product name.  
\*Varies depending on the combined motor. Refer to page 155.

## RS-485 Communication Specifications

|                            |                                                                                                                  |
|----------------------------|------------------------------------------------------------------------------------------------------------------|
| Electrical Characteristics | Complies with EIA-485.<br>Use twisted-pair wire. The max. total extension length is 10 m.                        |
| Communication Mode         | Half duplex and start-stop synchronization (Data: 8 bits, stop bit: 1 bit or 2 bits, parity: none, even, or odd) |
| Baud Rate                  | 9,600 bps, 19,200 bps, 38,400 bps, 57,600 bps, 115,200 bps, and 230,400 bps are available                        |
| Protocol                   | Modbus RTU mode                                                                                                  |
| Connection Type            | Up to 31 units can be connected to a single host system.                                                         |

## Dimensions (Unit: mm)

### Right Angle Type with Installation Plate

2D & 3D CAD

| Product Name     | Mass kg | 2D CAD |
|------------------|---------|--------|
| <b>CVD2BR-KR</b> | 0.065   | B1512  |
| <b>CVD5BR-KR</b> |         |        |

#### ● Applicable Connector (Molex)

##### Power Connector (CN1)

Connector Housing: 43645-0200 (Molex)

Contact: 43030-0001 (Molex)

##### Motor Connector (CN2)

Connector Housing: 51103-0500 (Molex)

Contact: 50351-8100 (Molex)

##### RS-485 Communication Connector (CN4, CN5)

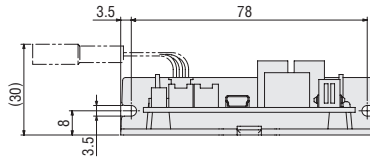
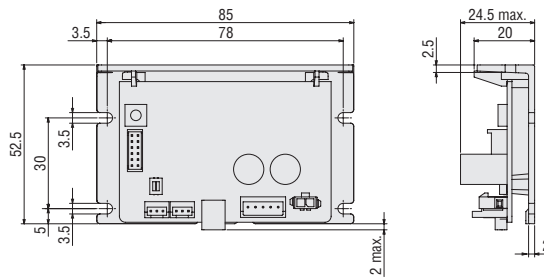
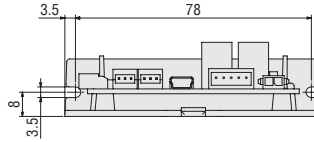
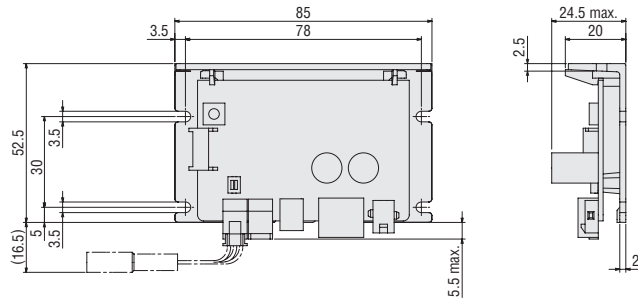
Connector Housing: PAP-03V-S (J.S.T.MFG.CO.,LTD.)

Contact: SPHD-001T-P0.5 or SPHD-002T-P0.5 (J.S.T.MFG.CO.,LTD.)

##### I/O signal connector (CN6)

Connector Housing: PHDR-12VS (J.S.T.MFG.CO.,LTD.)

Contact: SPHD-001T-P0.5 (J.S.T.MFG.CO.,LTD.)



### With Installation Plate

2D & 3D CAD

| Product Name    | Mass kg | 2D CAD |
|-----------------|---------|--------|
| <b>CVD2B-KR</b> | 0.065   | B1511  |
| <b>CVD5B-KR</b> |         |        |

#### ● Applicable Connector (Molex)

Same as the right angle with installation plate.

- Motor cables, power supply and I/O signal cables, and RS-485 communication cables (sold separately) are available. The connectors are already crimped, so they can be easily wired without the need for a crimp tool. Refer to page 163 for details.

## List of Applicable Motors

### Driver for 2-Phase Stepper Motors

| Driver Product Name                 |                         | Motor Drive Current | Input Current A | Applicable Motor                                                                                                                                                                                             |
|-------------------------------------|-------------------------|---------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Right Angle with Installation Plate | With Installation Plate |                     |                 |                                                                                                                                                                                                              |
| <b>CVD2BR-KR</b>                    | <b>CVD2B-KR</b>         | 0.5 A/Phase         | 0.5             | <b>PKP21 3D05</b> □                                                                                                                                                                                          |
|                                     |                         | 0.6 A/Phase         | 0.5             | <b>PKP203D06</b> □, <b>PKP214D06</b> □                                                                                                                                                                       |
|                                     |                         | 0.85 A/Phase        | 0.8             | <b>PKP24</b> □ <b>D08</b> □ <b>2</b>                                                                                                                                                                         |
|                                     |                         | 1.4 A/Phase         | 1.3             | <b>PKP26</b> □ <b>D14</b> □ <b>2</b>                                                                                                                                                                         |
|                                     |                         | 1.5 A/Phase         | 1.9             | <b>PKP22</b> □ <b>D15</b> □, <b>PKP22</b> □ <b>MD15</b> □, <b>PKP22</b> □ <b>D15</b> □ <b>2</b> , <b>PKP23</b> □ <b>D15</b> □, <b>PKP24</b> □ <b>D15</b> □, <b>PKP24</b> □ <b>MD15</b> □, <b>PKP262FD15A</b> |
|                                     |                         |                     |                 | <b>PKP24</b> □ <b>D15</b> □ <b>2</b> , <b>PKP24</b> □ <b>MD15</b> □ <b>2</b>                                                                                                                                 |
|                                     |                         | 2.3 A/Phase         | 2.0             | <b>PKP23</b> □ <b>D23</b> □, <b>PKP24</b> □ <b>D23</b> □ <b>2</b> , <b>PKP24</b> □ <b>D23</b> □                                                                                                              |
|                                     |                         | 2.8 A/Phase         | 3.0             | <b>PKP25</b> □ <b>D28</b> □ <b>A2</b> , <b>PKP26</b> □ <b>D28</b> □ <b>2</b> , <b>PKP26</b> □ <b>D28</b> □, <b>PKP26</b> □ <b>MD28</b> □ <b>2</b> , <b>PKP26</b> □ <b>MD28</b> □                             |

### Driver for 5-Phase Stepper Motors

| Driver Product Name                 |                         | Motor Drive Current | Input Current A | Applicable Motor                                                                             |
|-------------------------------------|-------------------------|---------------------|-----------------|----------------------------------------------------------------------------------------------|
| Right Angle with Installation Plate | With Installation Plate |                     |                 |                                                                                              |
| <b>CVD5BR-KR</b>                    | <b>CVD5B-KR</b>         | 0.35 A/Phase        | 0.6             | <b>PK513</b> , <b>PK52</b> □ <b>P</b>                                                        |
|                                     |                         | 0.75 A/Phase        | 1.4             | <b>PK52</b> □ <b>H</b> , <b>PK54</b> □                                                       |
|                                     |                         | 1.2 A/Phase         | 1.7             | <b>PKP52</b> □                                                                               |
|                                     |                         | 1.4 A/Phase         | 1.8             | <b>PK56</b> □                                                                                |
|                                     |                         | 1.8 A/Phase         | 2.8             | <b>PKP54</b> □ <b>N18</b> □ <b>2</b> , <b>PKP54</b> □ <b>N18</b> □, <b>PKP54</b> □ <b>MN</b> |
|                                     |                         | 2.4 A/Phase         | 3.0             | <b>PKP56</b> □ <b>FN24</b> □ <b>2</b> , <b>PKP56</b> □ <b>FMN</b>                            |

- A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.

- Either **A** (single shaft) or **B** (double shaft) indicating the configuration is specified where the box □ is located in the names of the applicable motors.

- The applicable motors are listed such that the available combinations with the driver are distinguishable.

Combinations with the encoder type and geared type are also available.

For details on the product name, please see the Oriental Motor website.

#### [Note]

- Be sure to set the driver current at or below the motor rated current. If the motor rated current is exceeded, the product will be damaged.

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**T5** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

## Connection and Operation

### Names and Functions of Driver Parts

#### 1 Signal Monitor Indicators

##### ◇ LED Indicators

| Indication  | Color | Function                       | Lighting Condition                                 |
|-------------|-------|--------------------------------|----------------------------------------------------|
| PWR/ALM     | Green | Power Supply Indication        | When power is applied                              |
|             | Red   | Alarm Indication               | When a protective function is activated (blinking) |
| C-DAT/C-ERR | Green | Communication Indication       | When communication data is being sent or received  |
|             | Red   | Communication Error Indication | When communication data is in error                |

#### 2 Terminating Resistor Setting Switch

| Indication | No. | Function                                                                                                 |
|------------|-----|----------------------------------------------------------------------------------------------------------|
| SW2        | 1   | Set the RS-485 communication terminating resistor (120 Ω) (factory setting: OFF for both No.1 and No.2). |
|            | 2   |                                                                                                          |

#### 3 Motor Setting Switch

| Indication | Function                                       |
|------------|------------------------------------------------|
| SW1        | Set the applicable motor (factory setting: 0). |

#### 4 USB Communication Connector (CN3)

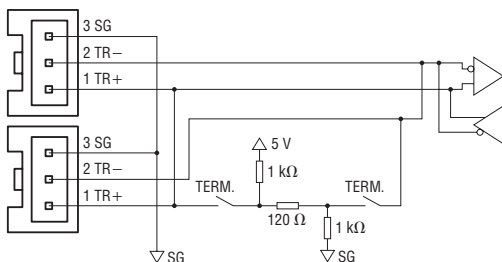
##### ◇ USB Communication Cable Specifications

|                |                            |
|----------------|----------------------------|
| Specifications | USB 2.0 (Full speed)       |
| Cables         | Length: 3 m or less        |
|                | Configuration: A to mini B |

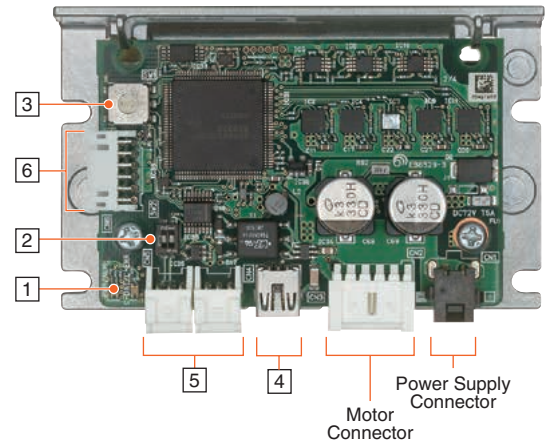
#### 5 RS-485 Communication Connector (CN4, CN5)

Connect when controlling with RS-485 communication. If connecting multiple drivers, connect the RS-485 communication cable (sold separately) to either the CN4 or CN5 connector. Another driver can be connected to the open connectors.

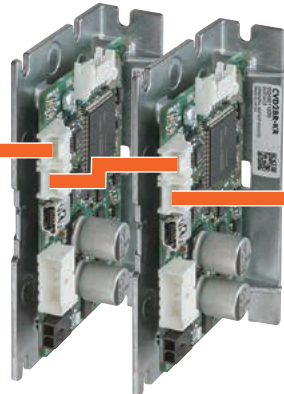
##### Internal Input Circuit



| Pin No. | Signal Name | Description                     |
|---------|-------------|---------------------------------|
| 1       | TR+         | RS-485 Communication Signal (+) |
| 2       | TR-         | RS-485 Communication Signal (-) |
| 3       | SG          | Signal GND                      |



RS-485 Communication Wire



#### 6 I/O Signal Connector (CN6)

| Indication | Pin No. | Signal Name | Description                                                                            |
|------------|---------|-------------|----------------------------------------------------------------------------------------|
| CN6        | 1       | IN-COM      | Input Common                                                                           |
|            | 2       | IN0         | Control Input 0 [FW-POS] Execute continuous operation in the FWD direction.            |
|            | 3       | IN1         | Control Input 1 [RV-POS] Execute continuous operation in the RVS direction.            |
|            | 4       | IN2         | Control Input 2 [STOP] Stop the motor.                                                 |
|            | 5       | IN3         | Control Input 3 [ALM-RST] Reset the alarms.                                            |
|            | 6       | IN4         | Control Input 4 [HOMES] The signal input from the mechanical home sensor.              |
|            | 7       | IN5         | Control Input 5 [FW-LS] The signal input from the FWD direction limit sensor.          |
|            | 8       | IN6         | Control Input 6 [RV-LS] The signal input from the RVS direction limit sensor.          |
|            | 9       | OUT0        | Control Output 0 [ALM-B] Output the alarm status for the driver (B contact).           |
|            | 10      | OUT1        | Control Output 1 [TIM] Output each time the motor output shaft rotates 7.2° from home. |
|            | 11      | OUT-COM     | Output Common                                                                          |
|            | 12      | N.C.        | N.C.                                                                                   |

## ● Alarm Contents

| Blink Count | Function                              | Operating Condition                                                                                                                                                                                            |
|-------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5           | Overcurrent Protection                | When an excessive current flows to the motor's output circuit                                                                                                                                                  |
| 2           | Main Circuit Overheat Protection      | When the temperature of the driver board reaches 85°C                                                                                                                                                          |
| 3           | Overvoltage Protection                | When the power supply voltage exceeds its permissible value<br>When a large inertial load is stopped suddenly<br>When a large load is hoisted                                                                  |
| 3           | Undervoltage                          | When the power supply suddenly shuts down or the voltage is insufficient                                                                                                                                       |
| 2           | Command Pulse Error                   | When the command pulse frequency exceeds the specification value                                                                                                                                               |
| 9           | EEPROM Error                          | When data of the driver is damaged                                                                                                                                                                             |
| 7           | Return-to-Home Not Completed          | When absolute positioning operation starts with the coordinates not fixed                                                                                                                                      |
| 7           | ±LS Simultaneous Input                | Both FW-LS input and RV-LS input are detected when there is an alarm for the "FW-LS/RV-LS input operation" parameter<br>Return-to-home operation executed when both FW-LS input and RV-LS input are detected   |
| 7           | ±LS Reverse Connection                | When a reverse LS input to the operation direction is detected during return-to-home operation in either 3-sensor mode or 2-sensor mode                                                                        |
| 7           | Return-to-Home Operation Error        | When the FW-LS and RV-LS sensor and the HOME sensor are installed near one another<br>When the HOME sensor is exceeded during a deceleration stop during return-to-home operation in 1-direction rotation mode |
| 7           | HOMES Not Detected                    | When HOMES input is not detected between the FW-LS input and RV-LS input during return-to-home operation in 3-sensor mode                                                                                      |
| 7           | TIM, SLIT Signal Error                | When TIM output and SLIT input cannot be detected during return-to-home operation                                                                                                                              |
| 7           | Hardware Overtravel                   | Either FW-LS input or RV-LS input is detected when there is an alarm for the "FW-LS/RV-LS input operation" parameter                                                                                           |
| 7           | Software Overtravel                   | When the software limit is reached when there is an alarm for the "Software overtravel" parameter                                                                                                              |
| 7           | Return-to-Home Operation Offset Error | When either FW-LS input or RV-LS is detected during offset traveling during return-to-home operation                                                                                                           |
| 7           | Operating Data Error                  | When a positioning SD operation is executed with operating speed 0 data                                                                                                                                        |
| 7           | RS-485 Communication Error            | When a set number of consecutive errors occurs with the "Communication error alarm" parameter in RS-485 communication                                                                                          |
| 7           | RS-485 Communication Timeout          | When there is no communication with the host system even when the set time in the "Communication timeout" parameter has elapsed                                                                                |
| Lit up      | CPU Error                             | When the CPU driver malfunctions                                                                                                                                                                               |

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

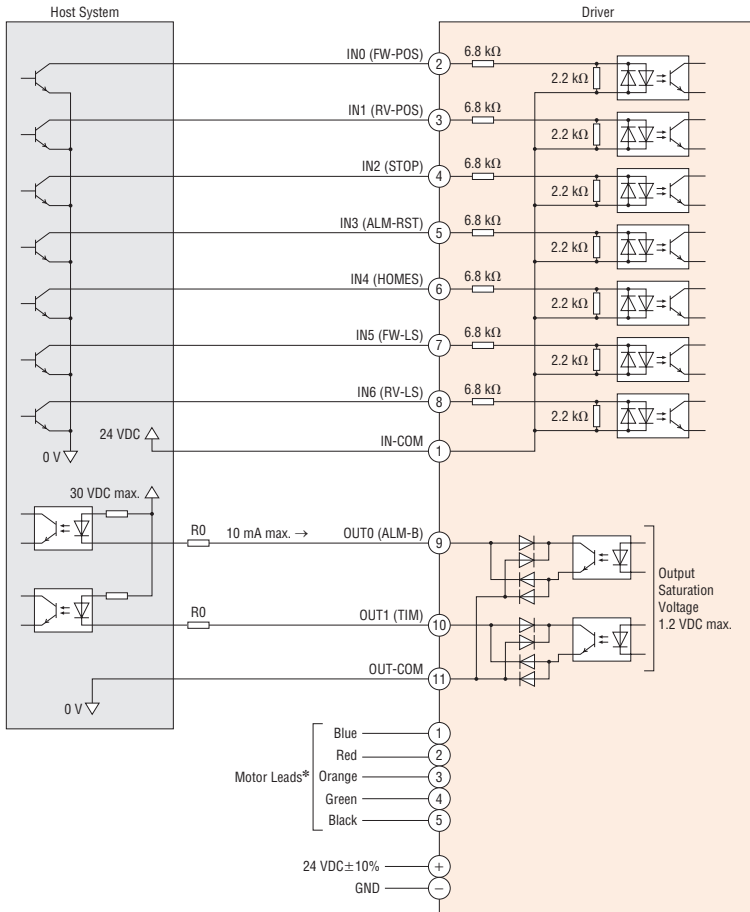
Cables

Peripheral  
Equipment



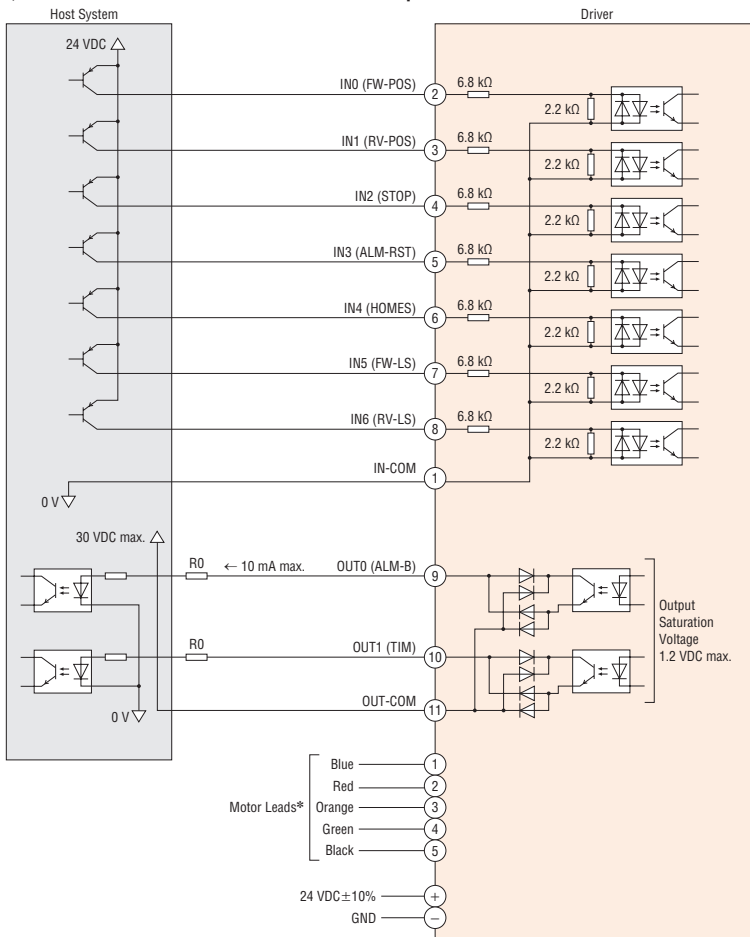
# Connection Diagrams

## ◇ Connection with Current Sink Output Circuit



\*The connector pin arrangement varies depending on the motor. Refer to the connection table on page 159 for details.

## ◇ Connection with Current Source Output Circuit



\*The connector pin arrangement varies depending on the motor. Refer to the connection table on page 159 for details.

## [Notes on Wiring]

### ◇ I/O Signal Connection

- Output Signals  
Use output signals at 30 VDC 10 mA max. When the current value exceeds 10 mA, connect an external resistor R0.
- Either a twisted-pair wire or shielded wire is recommended for the I/O signal cable.
- Keep the cable as short as possible (under 2 m) to suppress the effects of noise.
- Provide a distance of 100 mm min. between the signal lines and power lines (such as power supply lines and motor lines).

### ◇ Power Supply Connection

- Incorrect polarities of the DC power-supply input will damage the driver. Make sure that the polarity is correct before turning the power on.

### ◇ Motor Connection

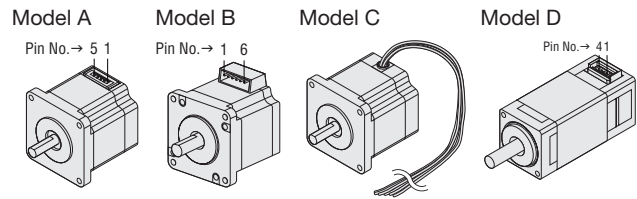
- Up to three cables can be used to connect the motor and driver.
- The maximum extension length is 10 m.

### ◇ General

- A separate hand crimp tool is required to crimp the connector and lead wires included with the driver. The separately sold connection cables have already had their lead wires crimped.
- If a specific wiring and layout causes the motor cable or power supply cable to generate a noise problem, shield the cable or use ferrite cores.

### ◇ 2-Phase CVD Driver Connection Table

- Motor: 2-Phase **PKP/PK** Series Bipolar 4 Lead Wires
- Driver: Bipolar Driver for 2-Phase Stepper Motors



| Driver<br>CN2 Pin No. | Model A |       | Model B |       | Model C | Model D |       |
|-----------------------|---------|-------|---------|-------|---------|---------|-------|
|                       | Pin No. | Color | Pin No. | Color | Color   | Pin No. | Color |
| 1                     | 4       | Blue  | 1       | Blue  | Blue    | 3       | Blue  |
| 2                     | 5       | Red   | 3       | Red   | Red     | 4       | Red   |
| 3                     | —       | —     | —       | —     | —       | —       | —     |
| 4                     | 2       | Green | 6       | Green | Green   | 2       | Green |
| 5                     | 1       | Black | 4       | Black | Black   | 1       | Black |

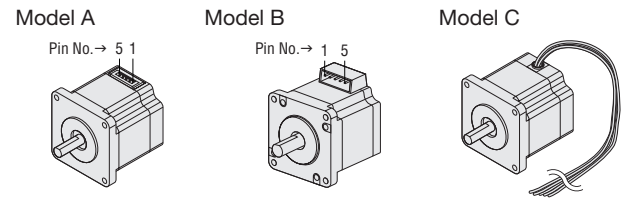
● The colors in the table indicate the colors of the lead wires in the separately sold connection cables.

**Note**

- The pin arrangement varies depending on the model. It will not rotate normally if the connection is wrong.

### ◇ 5-Phase CVD Driver Connection Table

- Motor: 5-Phase **PKP/PK** Series
- Driver: Driver for 5-Phase Stepper Motors



| Driver<br>CN2 Pin No. | Model A |        | Model B |        | Model C |
|-----------------------|---------|--------|---------|--------|---------|
|                       | Pin No. | Color  | Pin No. | Color  | Color   |
| 1                     | 5       | Blue   | 1       | Blue   | Blue    |
| 2                     | 4       | Red    | 2       | Red    | Red     |
| 3                     | 3       | Orange | 3       | Orange | Orange  |
| 4                     | 2       | Green  | 4       | Green  | Green   |
| 5                     | 1       | Black  | 5       | Black  | Black   |

● The colors in the table indicate the colors of the lead wires in the separately sold connection cables.

#### 2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

#### 5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

#### Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

# Unipolar Drivers for 2-Phase Stepper Motors

2-Phase Bipolar  
5-Phase  
Pulse Input

2-Phase Bipolar  
5-Phase  
RS-485 Communication

2-Phase  
Unipolar

## Product Number

# CMD 2 1 09 P

①      ②      ③      ④      ⑤

|   |                            |                 |
|---|----------------------------|-----------------|
| ① | Driver Type                |                 |
| ② | 2: 2-Phase                 |                 |
| ③ | Power Supply Input Voltage | 1: 24 VDC       |
| ④ | Rated Current              |                 |
| ⑤ | Signal I/O Mode            | P: Photocoupler |

## Product Line

We have prepared a connection cable set (sold separately) consisting of cables for motor, power supply, and I/O signals. The connectors are already crimped, which makes them easy to wire without crimp tools. For details, refer to page 163.

| Product Name    |  |
|-----------------|--|
| <b>CMD2109P</b> |  |
| <b>CMD2112P</b> |  |
| <b>CMD2120P</b> |  |

## Included

| Type                | Connector for Driver Connection                                           | Operating Manual |
|---------------------|---------------------------------------------------------------------------|------------------|
| Common to All Types | CN1 Connector (1 pc.),<br>CN2 Connector (1 pc.),<br>CN3 Connector (1 pc.) | 1 Copy           |

## Specifications



| Product Name                          |                     | CMD2109P                                                                                      | CMD2112P    | CMD2120P  |
|---------------------------------------|---------------------|-----------------------------------------------------------------------------------------------|-------------|-----------|
| Drive Method                          |                     | Microstep Drive, Unipolar Constant-Current Drive Method                                       |             |           |
| Motor Drive Current (Factory setting) |                     | 0.95 A/Phase                                                                                  | 1.2 A/Phase | 2 A/Phase |
| Power Supply Voltage                  |                     | 24 VDC ± 10%                                                                                  |             |           |
| Input Current A                       |                     | 1.5                                                                                           | 1.7         | 2.9       |
| Max. Input Pulse Frequency            |                     | 100 kHz (When the pulse duty is 50%)<br>Negative Logic Pulse Input                            |             |           |
| Operating Environment (In operation)  | Ambient Temperature | 0 ~ +40°C (Non-freezing)                                                                      |             |           |
|                                       | Ambient Humidity    | 85% or Less (Non-condensing)                                                                  |             |           |
|                                       | Atmosphere          | No corrosive gases or dust. The product should not be exposed to water, oil or other liquids. |             |           |

## Dimensions (Unit: mm)

2D & 3D CAD

| Product Name    | Mass kg | 2D CAD |
|-----------------|---------|--------|
| <b>CMD2109P</b> | 0.05    | B441   |
| <b>CMD2112P</b> |         |        |
| <b>CMD2120P</b> |         |        |

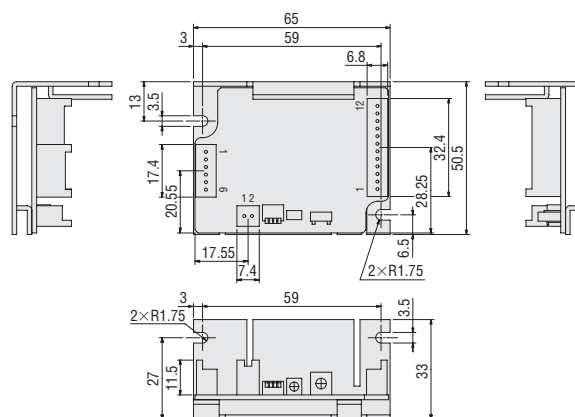
● Included

Connector Housing: 51103-0200 (Molex)

51103-1200 (Molex)

51103-0600 (Molex)

Contact: 50351-8100 (Molex)



## List of Applicable Motors

| Driver Product Name | Motor Drive Current | Applicable Motor                                                                                                                   |
|---------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>CMD2109P</b>     | 0.95 A/Phase        | <b>PKP21</b> □U, <b>PKP22</b> □■U, <b>PKP24</b> □U04, <b>PKP245U05</b> ,<br><b>PKP243U06</b> , <b>PKP24</b> □U08, <b>PKP243U09</b> |
| <b>CMD2112P</b>     | 1.2 A/Phase         | <b>PKP23</b> □U, <b>PKP24</b> □■U12                                                                                                |
| <b>CMD2120P</b>     | 2 A/Phase           | <b>PKP246U16</b> , <b>PKP25</b> □U, <b>PKP26</b> □U10, <b>PKP26</b> □■U20                                                          |

● A number indicating the length of the motor case is entered where the box □ is located within the names of the applicable motors.

● For high-resolution type, the code **M** (high-resolution type) indicating the motor type is entered where the box ■ is located within the names of the applicable motors.

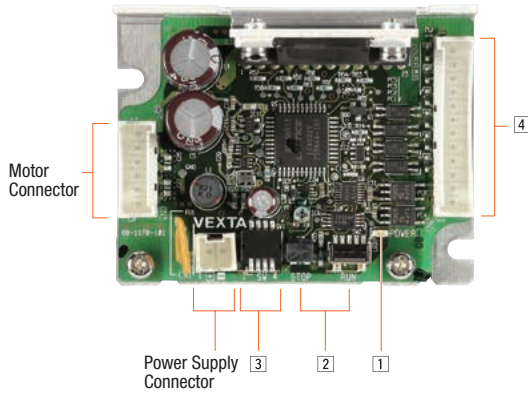
● The applicable motors are listed such that the available combinations with the driver are distinguishable.

Combination with the encoder type and geared type are also available.

For details on the product name, please see the Oriental Motor website.

## Connection and Operation (Unipolar Driver for 2-phase Stepper Motors)

### Names and Functions of Driver Parts



#### 1 Power Supply Input Indicator

| Color | Function                | Lighting Condition     |
|-------|-------------------------|------------------------|
| Green | Power Supply Indication | When power is applied. |

#### 2 Current Adjustment Switch

| Indication | Switch Name                                       | Function                                        |
|------------|---------------------------------------------------|-------------------------------------------------|
| RUN        | Motor Running Current Adjustment Switch           | The motor running current can be adjusted.      |
| STOP       | Motor Standstill Current Adjustment Potentiometer | The motor's standstill current can be adjusted. |

#### 3 Function Switches

| Indication | Switch Name                    | Function                                                                          |
|------------|--------------------------------|-----------------------------------------------------------------------------------|
| 1          | Pulse Input Mode Select Switch | The pulse input mode can be switched to 1-pulse input mode or 2-pulse input mode. |
| 2, 3, 4    | Step Angle Setting Switch      | The switches can set any of 5 step angles.                                        |

### Step Angle Setting Switch

| SW-2 | SW-3 | SW-4 | Resolution | Resolution | Step Angle |
|------|------|------|------------|------------|------------|
| OFF  | OFF  | OFF  | 1          | 200        | 1.8°       |
| OFF  | OFF  | ON   | 2          | 400        | 0.9°       |
| OFF  | ON   | OFF  | 4          | 800        | 0.45°      |
| OFF  | ON   | ON   | 8          | 1600       | 0.225°     |
| ON   | OFF  | OFF  | 16         | 3200       | 0.1125°    |

#### Note

- If a combination not listed in the table is set, the resolution becomes 1, and the motor operates at the basic step angle.
- The step angle is calculated by dividing the basic step angle by the resolution number. The above figures are based on a basic step angle of 1.8°.
- With the high-resolution type, the basic step angle is 0.9°, and the resolution is 400 at resolution 1.
- With geared types, the step angle/gear ratio is the actual step angle.
- The step angle set with the step angle setting switches is effective when the step angle select (CS) input signal is OFF.
- Do not change the step angle select input signal or step angle setting switches while the motor is operating. The motor may misstep and stop. Change the step angle setting switches when the step angle select input signal is OFF and the excitation timing output signal is ON.

#### 4 I/O Signals

| Indication     | I/O           | Pin No. | Signal Name                                  | Function                                                                                                                                                      |
|----------------|---------------|---------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CN2            | Input Signals | 1       | Pulse Signal (CW Pulse Signal)               | Rotates the motor in the CW direction. (Operation command pulse signal when in 1-pulse input mode)                                                            |
|                |               | 2       |                                              |                                                                                                                                                               |
|                |               | 3       | Rotation Direction Signal (CCW Pulse Signal) | Rotates the motor in the CCW direction. (Rotation direction signal when in 1-pulse input mode as follows, photocoupler "OFF": CCW and photocoupler "ON": CCW) |
|                |               | 4       |                                              |                                                                                                                                                               |
|                |               | 5       | All Windings Off Signal                      | All windings of the motor are set to OFF and the motor shaft can be rotated by external force.                                                                |
|                |               | 6       |                                              |                                                                                                                                                               |
|                |               | 7       | Step Angle Select Input Signal               | The motor operates at the basic step angle regardless of how the step angle setting switches are set.                                                         |
|                |               | 8       |                                              |                                                                                                                                                               |
|                |               | 9       | Automatic Current Cutback Release Signal     | This signal is used to disable the automatic current cutback function.                                                                                        |
|                |               | 10      |                                              |                                                                                                                                                               |
| Output Signals |               | 11      | Excitation Timing Signal                     | This signal is output when the excitation sequence is step "0."                                                                                               |
|                |               | 12      |                                              |                                                                                                                                                               |

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

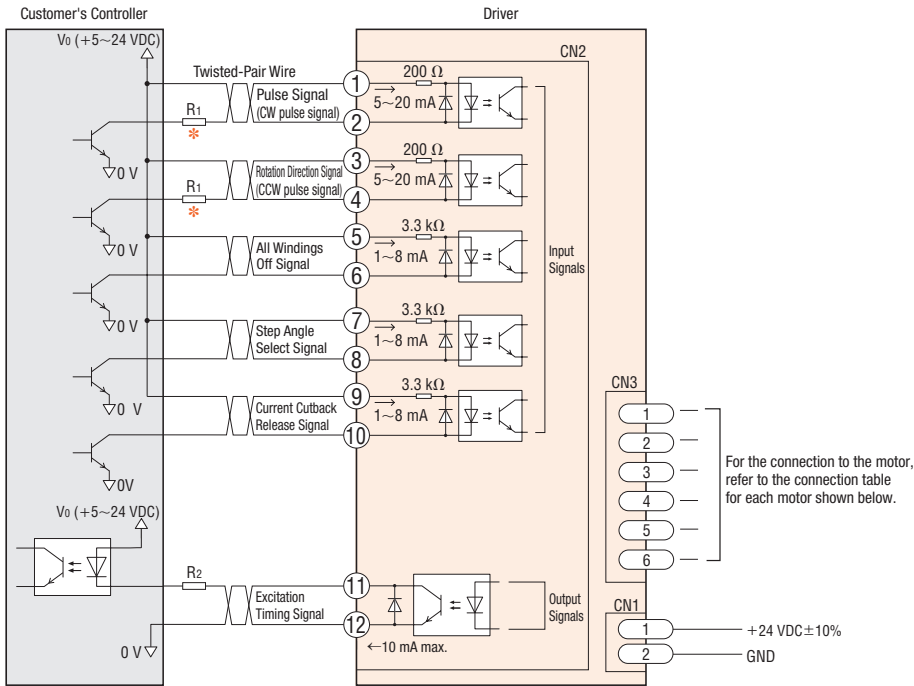
Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## ● Connection Diagrams

### ◇ Connection with Current Sink Output Circuit



## [Notes on Wiring]

### ◇ I/O Signal Connection

#### \*Pulse Input Signals

The external resistor is not needed when 5 VDC is applied. If voltage exceeding 5 VDC is applied, connect an external resistor R1 so that the current becomes 5 - 20 mA. Example) When Vo is 24 VDC, R1: 1.5 - 2.2 kΩ 0.5 W min.

#### ● Output Signals

Check the specifications of the connected devices, and if the current exceeds 10 mA, connect the external resistor R2.

#### ● Use twisted-pair wires of AWG24 - 22 (0.2 - 0.3 mm<sup>2</sup>).

● Note that as the length of the pulse line increases, the max. transmission frequency decreases, and keep the wiring length as short as possible (2 m max.).

● Provide a distance of 100 mm min. between the I/O signal lines and power lines (such as power supply lines and motor lines).

### ◇ Connecting the Power Supply

● Use a wire of AWG22 (0.3 mm<sup>2</sup>).

● Incorrect polarities of the DC power supply input will damage the driver. Make sure that the polarity is correct before turning the power on.

### ◇ Motor Cable Extension

● Use a wire of AWG22 (0.3 mm<sup>2</sup>) min.

● The max. extension length is 2 m.

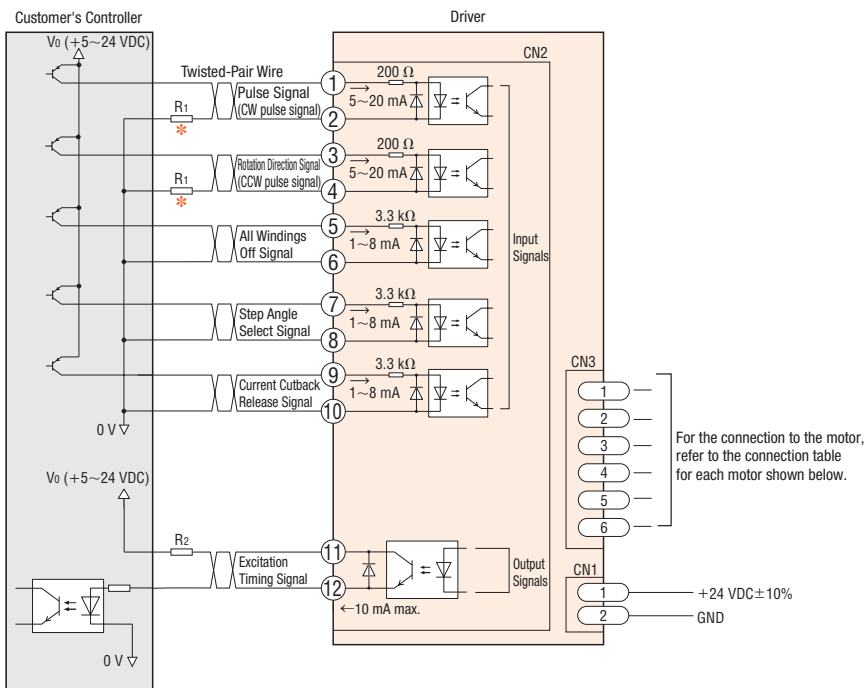
### ◇ General

● A separate hand crimp tool is required to crimp the connector and lead wires included with the driver.

Connection cable sets which are available as accessories (sold separately) have already had their lead wires crimped.

● If a specific wiring and layout causes the motor cable or power supply cable to generate a noise problem, shield the cable or use ferrite cores.

### ◇ Connection with Current Source Output Circuit



## ● Table for 2-Phase CMD Driver Connection

● Motor: 2-Phase **PKP/PK** Series Unipolar 5 Lead Wires (6 Lead Wires)

● Driver: Unipolar Driver for 2-Phase Stepper Motors

| Driver<br>CN3 Pin No. | Model A |       | Model B |        | Model C |
|-----------------------|---------|-------|---------|--------|---------|
|                       | Pin No. | Color | Pin No. | Color  |         |
| 1                     | 4       | Blue  | 1       | Blue   | Blue    |
| 2                     | 3       | White | 2       | White  | White   |
| 3                     | 5       | Red   | 3       | Red    | Red     |
| 4                     | 1       | Black | 4       | Black  | Black   |
| 5                     | —       |       | 5       | Yellow | Yellow  |
| 6                     | 2       | Green | 6       | Green  | Green   |

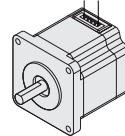
● The colors in the table represent colors of the lead wires of the connection cables sold separately.

### Note

● The motors of the model A and model B are different in pin assignments. Wrong connection will not cause the motor to operate properly.

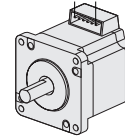
Model A

Pin No. → 5 1

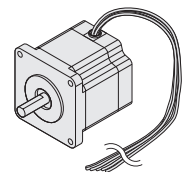


Model B

Pin No. → 1 6



Model C



2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

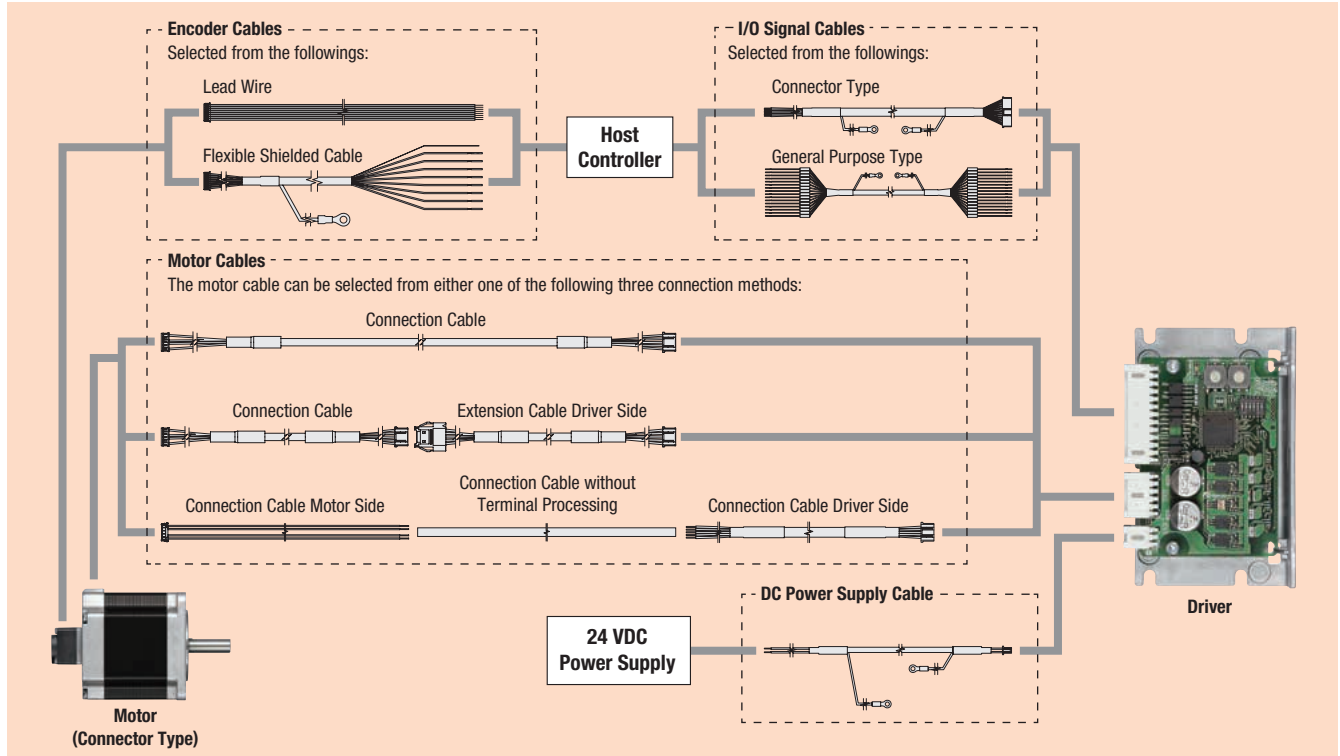
Cables

Peripheral  
Equipment

# Cables

## Cable System Configuration Example

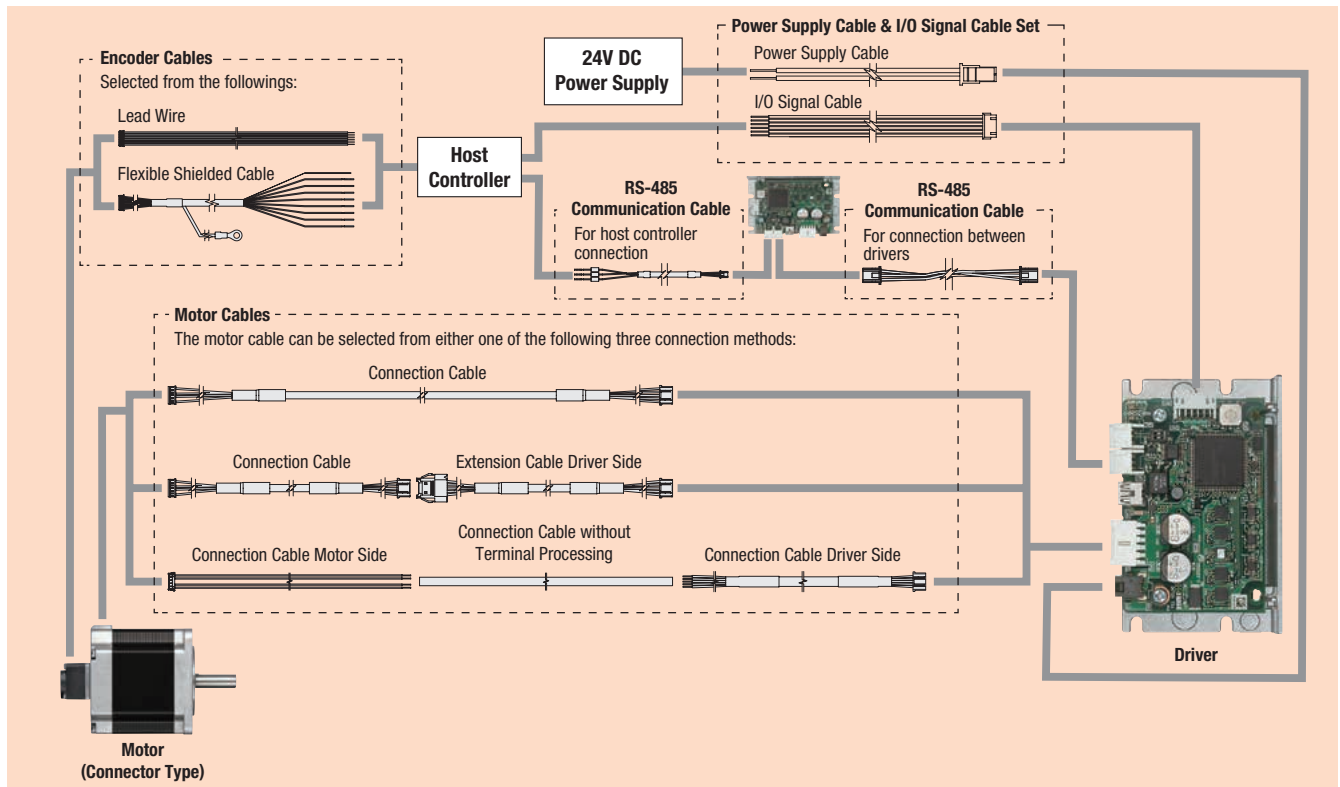
### Pulse Input Type Driver



#### Note

- Up to three cables can be used to connect the motor and driver.
- The maximum extension lengths between the motor and driver is shown below.  
2-Phase Bipolar Motor and 2-Phase **CVD** Driver: 10 m  
2-Phase Unipolar Motor and 2-Phase **CMD** Driver: 2 m  
5-Phase Motor and 5-Phase **CVD** Driver: 10 m

### RS-485 Communication Type Driver

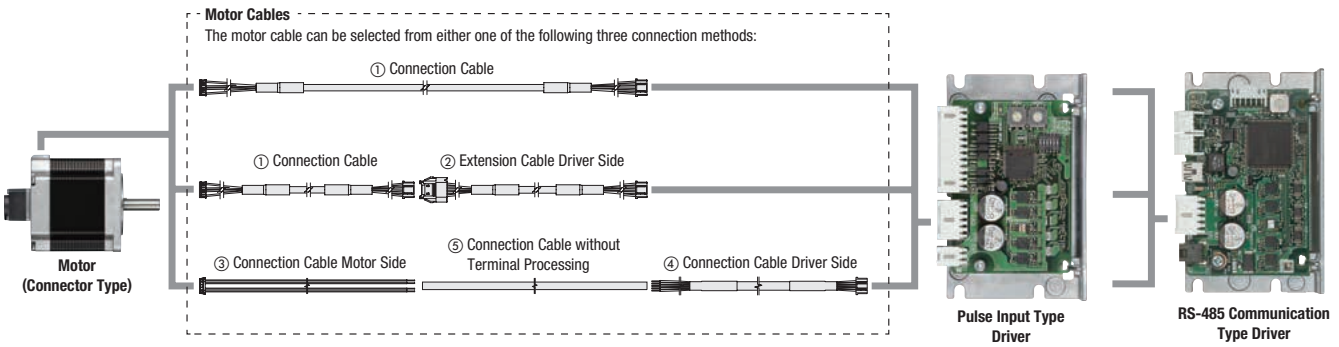


#### Note

- Up to three cables can be used to connect the motor and driver.
- The maximum extension lengths between the motor and driver is 10 m.



# Motor Cables



## ① Connection Cables

These cables are used to connect the connector type motor and the driver.

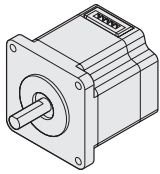
The motor and the driver can be connected directly since these cables have connectors on both ends.

### Notes on Applicable Products

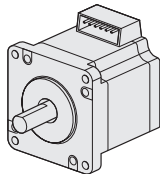
◇ Two connector shapes are available for the connector type motor.

Select a suitable cable for each connector shape.

Model A



Model B

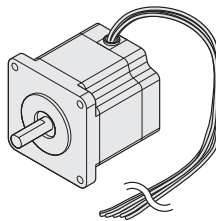


● Same for the geared motors and motors with encoder.

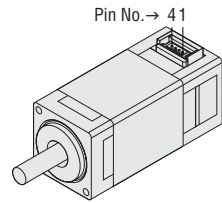
◇ Connection cables that can be connected to the following motors are not available:

- 2-Phase Unipolar (5 or 6 Lead Wires)
- Model C and Model D motors

Model C



Model D



## ● 2-Phase Frame Size 28 mm Bipolar (4 Lead Wires) Connector Type

◇ Product Line

### ● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2AAF  | 0.5          |
| CCM010V2AAF  | 1            |
| CCM015V2AAF  | 1.5          |
| CCM020V2AAF  | 2            |
| CCM025V2AAF  | 2.5          |
| CCM030V2AAF  | 3            |
| CCM040V2AAF  | 4            |
| CCM050V2AAF  | 5            |
| CCM070V2AAF  | 7            |
| CCM100V2AAF  | 10           |

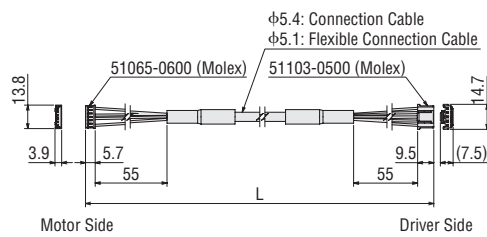
### ● Flexible Connection Cable

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2AAR  | 0.5          |
| CCM010V2AAR  | 1            |
| CCM015V2AAR  | 1.5          |
| CCM020V2AAR  | 2            |
| CCM025V2AAR  | 2.5          |
| CCM030V2AAR  | 3            |
| CCM040V2AAR  | 4            |
| CCM050V2AAR  | 5            |
| CCM070V2AAR  | 7            |
| CCM100V2AAR  | 10           |

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model B        | 28 mm      | <b>CVD215</b> | <b>CVD2</b>          |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that can be used to extend the connection cable.

## ● 2-Phase Frame Size 35/42 mm Bipolar (4 Lead Wires) Connector Type

◇ Product Line

### ● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2ABF  | 0.5          |
| CCM010V2ABF  | 1            |
| CCM015V2ABF  | 1.5          |
| CCM020V2ABF  | 2            |
| CCM025V2ABF  | 2.5          |
| CCM030V2ABF  | 3            |
| CCM040V2ABF  | 4            |
| CCM050V2ABF  | 5            |
| CCM070V2ABF  | 7            |
| CCM100V2ABF  | 10           |

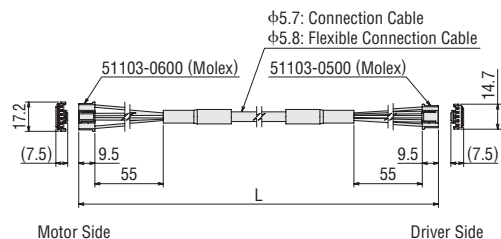
### ● Flexible Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2ABR  | 0.5          |
| CCM010V2ABR  | 1            |
| CCM015V2ABR  | 1.5          |
| CCM020V2ABR  | 2            |
| CCM025V2ABR  | 2.5          |
| CCM030V2ABR  | 3            |
| CCM040V2ABR  | 4            |
| CCM050V2ABR  | 5            |
| CCM070V2ABR  | 7            |
| CCM100V2ABR  | 10           |

◇ Applicable Products

| Motor          |                | Driver                         |                      |
|----------------|----------------|--------------------------------|----------------------|
| Connector Type | Frame Size     | Pulse Input                    | RS-485 Communication |
| Model B        | 35 mm<br>42 mm | <b>CVD215</b><br><b>CVD223</b> | <b>CVD2</b>          |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

● 2-Phase Frame Size 56.4 mm Bipolar (4 Lead Wires) Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2ACF  | 0.5          |
| CCM010V2ACF  | 1            |
| CCM015V2ACF  | 1.5          |
| CCM020V2ACF  | 2            |
| CCM025V2ACF  | 2.5          |
| CCM030V2ACF  | 3            |
| CCM040V2ACF  | 4            |
| CCM050V2ACF  | 5            |
| CCM070V2ACF  | 7            |
| CCM100V2ACF  | 10           |

● Flexible Connection Cables

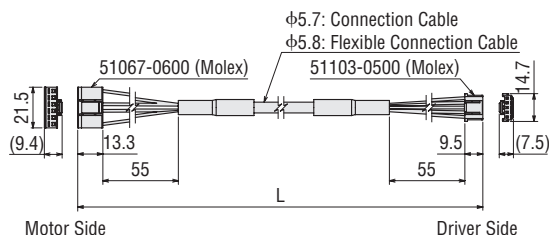
| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2ACR  | 0.5          |
| CCM010V2ACR  | 1            |
| CCM015V2ACR  | 1.5          |
| CCM020V2ACR  | 2            |
| CCM025V2ACR  | 2.5          |
| CCM030V2ACR  | 3            |
| CCM040V2ACR  | 4            |
| CCM050V2ACR  | 5            |
| CCM070V2ACR  | 7            |
| CCM100V2ACR  | 10           |

● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model B        | 56.4 mm    | <b>CVD228</b> | <b>CVD2</b>          |

◇ Dimensions (Unit: mm)



● 2-Phase Frame Size 42/50/51/56.4/60 mm Bipolar (4 Lead Wires) Mini-Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2AEF  | 0.5          |
| CCM010V2AEF  | 1            |
| CCM015V2AEF  | 1.5          |
| CCM020V2AEF  | 2            |
| CCM025V2AEF  | 2.5          |
| CCM030V2AEF  | 3            |
| CCM040V2AEF  | 4            |
| CCM050V2AEF  | 5            |
| CCM070V2AEF  | 7            |
| CCM100V2AEF  | 10           |

● Flexible Connection Cables

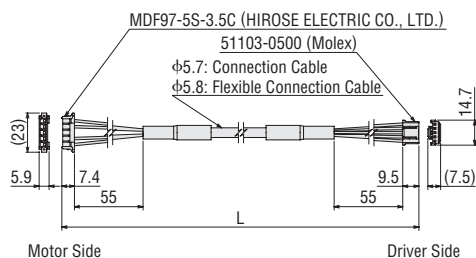
| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2AER  | 0.5          |
| CCM010V2AER  | 1            |
| CCM015V2AER  | 1.5          |
| CCM020V2AER  | 2            |
| CCM025V2AER  | 2.5          |
| CCM030V2AER  | 3            |
| CCM040V2AER  | 4            |
| CCM050V2AER  | 5            |
| CCM070V2AER  | 7            |
| CCM100V2AER  | 10           |

● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

◇ Applicable Products

| Motor          |            | Driver         |                      |
|----------------|------------|----------------|----------------------|
| Connector Type | Frame Size | Pulse Input    | RS-485 Communication |
| Model A        | 42 mm      | <b>CVD223F</b> | <b>CVD2</b>          |
|                | 50 mm      | <b>CVD228</b>  |                      |
|                | 51 mm      | <b>CVD223F</b> |                      |
|                | 56.4 mm    | <b>CVD228</b>  |                      |
|                | 60 mm      |                |                      |

◇ Dimensions (Unit: mm)



● 2-Phase Frame Size 56.4 mm Bipolar (4 Lead Wires) Mini-Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2BEF  | 0.5          |
| CCM010V2BEF  | 1            |
| CCM020V2BEF  | 2            |
| CCM030V2BEF  | 3            |
| CCM050V2BEF  | 5            |

● Flexible Connection Cables

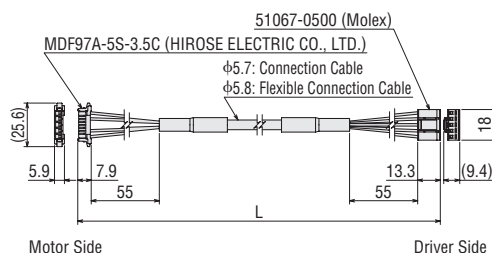
| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V2BER  | 0.5          |
| CCM010V2BER  | 1            |
| CCM020V2BER  | 2            |
| CCM030V2BER  | 3            |
| CCM050V2BER  | 5            |

● See page 167 for "Extension Cables Driver Side (CCM□□□V5BFFT)" that are used to extend the connection cable.

◇ Applicable Products

| Motor          |            | Driver        |  |
|----------------|------------|---------------|--|
| Connector Type | Frame Size | Pulse Input   |  |
| Model A        | 56.4 mm    | <b>CVD242</b> |  |

◇ Dimensions (Unit: mm)



● 5-Phase Frame Size 20/28 mm Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5AAF  | 0.5          |
| CCM010V5AAF  | 1            |
| CCM015V5AAF  | 1.5          |
| CCM020V5AAF  | 2            |
| CCM025V5AAF  | 2.5          |
| CCM030V5AAF  | 3            |
| CCM040V5AAF  | 4            |
| CCM050V5AAF  | 5            |
| CCM070V5AAF  | 7            |
| CCM100V5AAF  | 10           |

● Flexible Connection Cables

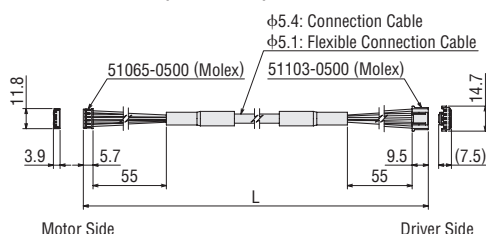
| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5AAR  | 0.5          |
| CCM010V5AAR  | 1            |
| CCM015V5AAR  | 1.5          |
| CCM020V5AAR  | 2            |
| CCM025V5AAR  | 2.5          |
| CCM030V5AAR  | 3            |
| CCM040V5AAR  | 4            |
| CCM050V5AAR  | 5            |
| CCM070V5AAR  | 7            |
| CCM100V5AAR  | 10           |

● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model B        | 20 mm      | <b>CVD503</b> | <b>CVD5</b>          |
|                | 28 mm      | <b>CVD512</b> |                      |

◇ Dimensions (Unit: mm)



● 5-Phase Frame Size 42/60 mm Mini-Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5AEF  | 0.5          |
| CCM010V5AEF  | 1            |
| CCM015V5AEF  | 1.5          |
| CCM020V5AEF  | 2            |
| CCM025V5AEF  | 2.5          |
| CCM030V5AEF  | 3            |
| CCM040V5AEF  | 4            |
| CCM050V5AEF  | 5            |
| CCM070V5AEF  | 7            |
| CCM100V5AEF  | 10           |

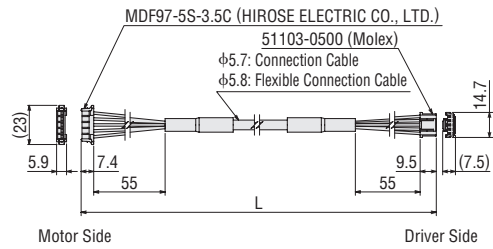
● Flexible Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5AER  | 0.5          |
| CCM010V5AER  | 1            |
| CCM015V5AER  | 1.5          |
| CCM020V5AER  | 2            |
| CCM025V5AER  | 2.5          |
| CCM030V5AER  | 3            |
| CCM040V5AER  | 4            |
| CCM050V5AER  | 5            |
| CCM070V5AER  | 7            |
| CCM100V5AER  | 10           |

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model A        | 42 mm      | <b>CVD518</b> | <b>CVD5</b>          |
|                | 60 mm      | <b>CVD524</b> |                      |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

● 5-Phase Frame Size 42 mm Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5ABF  | 0.5          |
| CCM010V5ABF  | 1            |
| CCM015V5ABF  | 1.5          |
| CCM020V5ABF  | 2            |
| CCM025V5ABF  | 2.5          |
| CCM030V5ABF  | 3            |
| CCM040V5ABF  | 4            |
| CCM050V5ABF  | 5            |
| CCM070V5ABF  | 7            |
| CCM100V5ABF  | 10           |

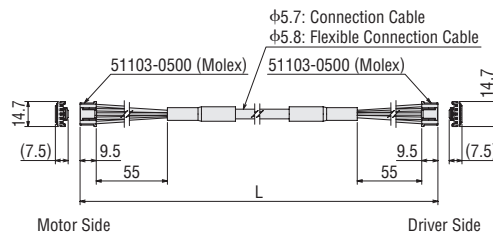
● Flexible Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5ABR  | 0.5          |
| CCM010V5ABR  | 1            |
| CCM015V5ABR  | 1.5          |
| CCM020V5ABR  | 2            |
| CCM025V5ABR  | 2.5          |
| CCM030V5ABR  | 3            |
| CCM040V5ABR  | 4            |
| CCM050V5ABR  | 5            |
| CCM070V5ABR  | 7            |
| CCM100V5ABR  | 10           |

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model B        | 42 mm      | <b>CVD518</b> | <b>CVD5</b>          |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

● 5-Phase Frame Size 56.4/60 mm Mini-Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5BEF  | 0.5          |
| CCM010V5BEF  | 1            |
| CCM020V5BEF  | 2            |
| CCM030V5BEF  | 3            |
| CCM050V5BEF  | 5            |

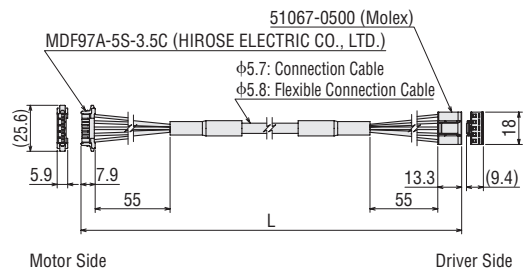
● Flexible Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5BER  | 0.5          |
| CCM010V5BER  | 1            |
| CCM020V5BER  | 2            |
| CCM030V5BER  | 3            |
| CCM050V5BER  | 5            |

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model A        | 56.4 mm    | <b>CVD528</b> | <b>CVD538</b>        |
|                | 60 mm      | <b>CVD538</b> |                      |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5BFFT)" that are used to extend the connection cable.

● 5-Phase Frame Size 60 mm Connector Type

◇ Product Line

● Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5ACF2 | 0.5          |
| CCM010V5ACF2 | 1            |
| CCM015V5ACF2 | 1.5          |
| CCM020V5ACF2 | 2            |
| CCM025V5ACF2 | 2.5          |
| CCM030V5ACF2 | 3            |
| CCM040V5ACF2 | 4            |
| CCM050V5ACF2 | 5            |
| CCM070V5ACF2 | 7            |
| CCM100V5ACF2 | 10           |

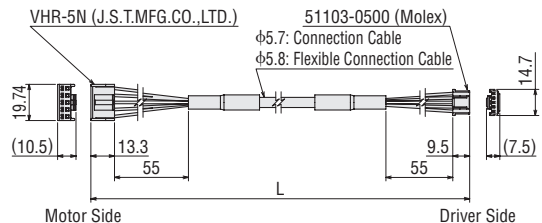
● Flexible Connection Cables

| Product Name | Length L (m) |
|--------------|--------------|
| CCM005V5ACR2 | 0.5          |
| CCM010V5ACR2 | 1            |
| CCM015V5ACR2 | 1.5          |
| CCM020V5ACR2 | 2            |
| CCM025V5ACR2 | 2.5          |
| CCM030V5ACR2 | 3            |
| CCM040V5ACR2 | 4            |
| CCM050V5ACR2 | 5            |
| CCM070V5ACR2 | 7            |
| CCM100V5ACR2 | 10           |

◇ Applicable Products

| Motor          |            | Driver        |                      |
|----------------|------------|---------------|----------------------|
| Connector Type | Frame Size | Pulse Input   | RS-485 Communication |
| Model B        | 60 mm      | <b>CVD524</b> | <b>CVD5</b>          |

◇ Dimensions (Unit: mm)



● See page 167 for "Extension Cables Driver Side (CCM□□□V5ADFT)" that are used to extend the connection cable.

2-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

T5 Geared Type

Common Specifications

Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## ② Extension Cables Driver Side

These cables can be used to extend the connection cables.  
The cables can connect the connection cable and the driver directly.



### ◇ Product Line

#### ● Extension Cables

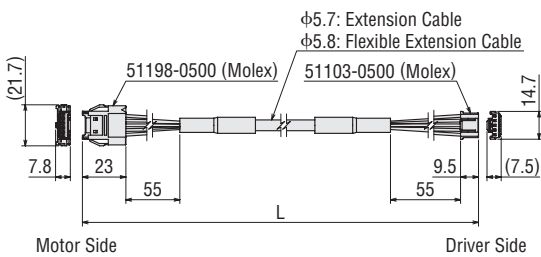
| Product Name        | Applicable Drivers                                                             |                      | Length<br>L (m) |
|---------------------|--------------------------------------------------------------------------------|----------------------|-----------------|
|                     | Pulse Input                                                                    | RS-485 Communication |                 |
| <b>CCM005V5ADFT</b> | <b>CVD215, CVD223, CVD223F,<br/>CVD228, CVD503, CVD512,<br/>CVD518, CVD524</b> | <b>CVD2, CVD5</b>    | 0.5             |
| <b>CCM010V5ADFT</b> |                                                                                |                      | 1               |
| <b>CCM015V5ADFT</b> |                                                                                |                      | 1.5             |
| <b>CCM020V5ADFT</b> |                                                                                |                      | 2               |
| <b>CCM025V5ADFT</b> |                                                                                |                      | 2.5             |
| <b>CCM030V5ADFT</b> |                                                                                |                      | 3               |
| <b>CCM040V5ADFT</b> |                                                                                |                      | 4               |
| <b>CCM050V5ADFT</b> |                                                                                |                      | 5               |
| <b>CCM070V5ADFT</b> |                                                                                |                      | 7               |
| <b>CCM090V5ADFT</b> |                                                                                |                      | 9               |
| <b>CCM005V5BFFT</b> | <b>CVD242, CVD528, CVD538</b>                                                  | -                    | 0.5             |
| <b>CCM010V5BFFT</b> |                                                                                |                      | 1               |
| <b>CCM020V5BFFT</b> |                                                                                |                      | 2               |
| <b>CCM030V5BFFT</b> |                                                                                |                      | 3               |
| <b>CCM040V5BFFT</b> |                                                                                |                      | 4               |

#### ● Flexible Extension Cables

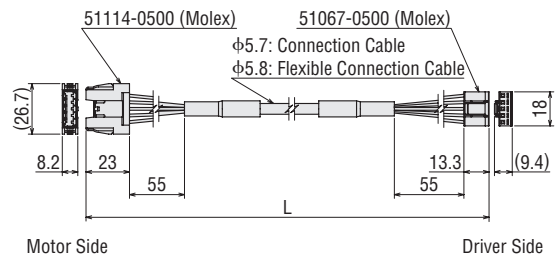
| Product Name        | Applicable Drivers                                                             |                      | Length<br>L (m) |
|---------------------|--------------------------------------------------------------------------------|----------------------|-----------------|
|                     | Pulse Input                                                                    | RS-485 Communication |                 |
| <b>CCM005V5ADRT</b> | <b>CVD215, CVD223, CVD223F,<br/>CVD228, CVD503, CVD512,<br/>CVD518, CVD524</b> | <b>CVD2, CVD5</b>    | 0.5             |
| <b>CCM010V5ADRT</b> |                                                                                |                      | 1               |
| <b>CCM015V5ADRT</b> |                                                                                |                      | 1.5             |
| <b>CCM020V5ADRT</b> |                                                                                |                      | 2               |
| <b>CCM025V5ADRT</b> |                                                                                |                      | 2.5             |
| <b>CCM030V5ADRT</b> |                                                                                |                      | 3               |
| <b>CCM040V5ADRT</b> |                                                                                |                      | 4               |
| <b>CCM050V5ADRT</b> |                                                                                |                      | 5               |
| <b>CCM070V5ADRT</b> |                                                                                |                      | 7               |
| <b>CCM090V5ADRT</b> |                                                                                |                      | 9               |
| <b>CCM005V5BFRT</b> | <b>CVD242, CVD528, CVD538</b>                                                  | -                    | 0.5             |
| <b>CCM010V5BFRT</b> |                                                                                |                      | 1               |
| <b>CCM020V5BFRT</b> |                                                                                |                      | 2               |
| <b>CCM030V5BFRT</b> |                                                                                |                      | 3               |
| <b>CCM040V5BFRT</b> |                                                                                |                      | 4               |

### ◇ Dimensions (Unit: mm)

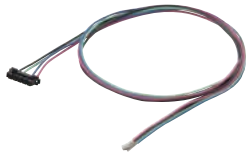
Product Name: **CCM□□□V5ADFT, CCM□□□V5ADRT**



Product Name: **CCM□□□V5BFFT, CCM□□□V5BFRT**



### ③ Connection Cables Motor Side



These cables have a connector on motor side. Refer to pages on motor specifications and dimensions for "Applicable Motors" and "Cable Dimensions."

#### ◇ Product Line (For 2-Phase Bipolar Motors)

| Product Name | Length L (m) |  |
|--------------|--------------|--|
| LC2B06A      | 0.6          |  |
| LC2B10A      | 1            |  |
| LC2B06B      | 0.6          |  |
| LC2B10B      | 1            |  |
| LC2B06C      | 0.6          |  |
| LC2B10C      | 1            |  |
| LC2B06E      | 0.6          |  |
| LC2B10E      | 1            |  |
| LC2B10G      | 1            |  |

#### ◇ Product Line (For 2-Phase Unipolar Motors)

| Product Name | Length L (m) |  |
|--------------|--------------|--|
| LC2U06A      | 0.6          |  |
| LC2U10A      | 1            |  |
| LC2U06B      | 0.6          |  |
| LC2U10B      | 1            |  |
| LC2U06C      | 0.6          |  |
| LC2U10C      | 1            |  |
| LC2U06E      | 0.6          |  |
| LC2U10E      | 1            |  |

#### ◇ Product Line (For 5-Phase Motors)

| Product Name | Length L (m) |  |
|--------------|--------------|--|
| LC5N06A      | 0.6          |  |
| LC5N10A      | 1            |  |
| LC5N06B      | 0.6          |  |
| LC5N10B      | 1            |  |
| LC5N06C2     | 0.6          |  |
| LC5N10C2     | 1            |  |
| LC5N06E      | 0.6          |  |
| LC5N10E      | 1            |  |

### ④ Connection Cables Driver Side



These cables are used to connect the motor and the driver.

These cables have a connector on driver side.

- Cables for connecting bipolar driver for 2-phase stepper motor (product name: **CVD2**~) are not available. The lead wire type driver cable set which is a set of cables for I/O signals, motor, and DC power supply (→ page 173) is available. (Pulse Input Type)

#### ◇ Product Line

| Product Name | Applicable Driver                                                           | Length L (m) | Type         | Conductor AWG                |  |
|--------------|-----------------------------------------------------------------------------|--------------|--------------|------------------------------|--|
| CC005N1      | Driver for 5-Phase Stepper Motors*<br>(Product Name: <b>CVD5</b> ~)         | 0.5          | Not Flexible | 22<br>(0.3 mm <sup>2</sup> ) |  |
| CC010N1      |                                                                             | 1            |              |                              |  |
| CC005N1R     |                                                                             | 0.5          | Flexible     | 22<br>(0.3 mm <sup>2</sup> ) |  |
| CC010N1R     |                                                                             | 1            |              |                              |  |
| CC005U1      | Unipolar Driver for 2-Phase Stepper Motors<br>(Product Name: <b>CMD2</b> ~) | 0.5          | Not Flexible | 22<br>(0.3 mm <sup>2</sup> ) |  |
| CC010U1      |                                                                             | 1            |              |                              |  |
| CC005U1R     |                                                                             | 0.5          | Flexible     | 22<br>(0.3 mm <sup>2</sup> ) |  |
| CC010U1R     |                                                                             | 1            |              |                              |  |

\*Excluding **CVD528** and **CVD538**.

- For dimensions, please see the Oriental Motor website.

### ⑤ Connection Cables without Terminal Processing



These cables are used to extend the connection between the 5-Phase or 2-Phase bipolar motors and the drivers. When wiring the motor and the driver, keep a maximum distance of 10 m.

#### ◇ Product Line

| Product Name | Cable Type                                   | Length L (m) | Conductor AWG                | Finished Diameter (mm) |  |
|--------------|----------------------------------------------|--------------|------------------------------|------------------------|--|
| CC05PK5      | Connection Cable for Stand Motor             | 5            | 22<br>(0.3 mm <sup>2</sup> ) | φ7.2                   |  |
| CC10PK5      |                                              | 10           |                              |                        |  |
| CC05PK5R     | Flexible Connection Cable for Standard Motor | 5            | 22<br>(0.3 mm <sup>2</sup> ) | φ5.8                   |  |
| CC10PK5R     |                                              | 10           |                              |                        |  |

- Cable Core Structure: 5 cores (blue, red, orange, green, black)
- Cable Rated Temperature: 105°C
- Cable Sheath: Oil-resistant, heat-resistant, non-transferable vinyl
- Applicable Products:
  - These cables can be used for 2-phase stepper motors with a motor rated current of 2.8 A or lower.
  - These cables can be used for 5-phase stepper motors with a motor rated current of 2.4 A or lower.
- The flexible connection cables can only be used for 5-phase stepper motors.
- For dimensions, please see the Oriental Motor website.

2-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

SH Geared Type

CS Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors PKP

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

TS Geared Type

Common Specifications

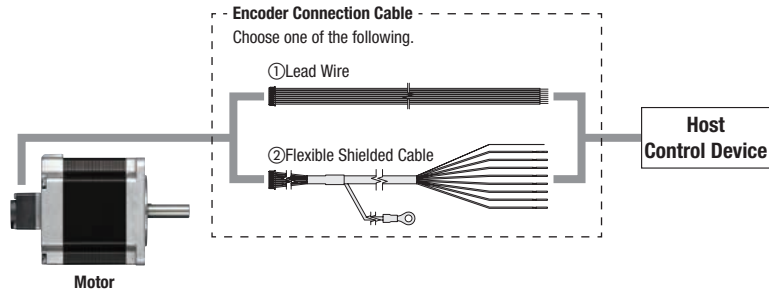
Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

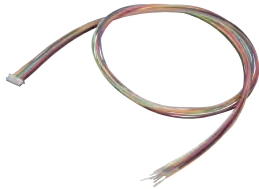
Cables

Peripheral Equipment

## Encoder Connection Cable



### ① Lead Wire



An encoder connection cable with an encoder connector on the motor end. Check the specifications and dimensions page of each motor for the cable dimensions.

#### ◇ Product Line

| Product Name      | Applicable Motor                    | Length L (m) | Conductor AWG              |
|-------------------|-------------------------------------|--------------|----------------------------|
| <b>LCE08A-006</b> | 2-Phase/5-Phase Motors with Encoder | 0.6          | 26 (0.13 mm <sup>2</sup> ) |

- A voltage output type cable is also available. For details, please contact your nearest Oriental Motor sales office.
- For dimensions, please see the Oriental Motor website.

### ② Flexible Shielded Cable



A flexible shielded cable with an encoder connector on the motor end. Features an exposed shielded ground wire for easy grounding.

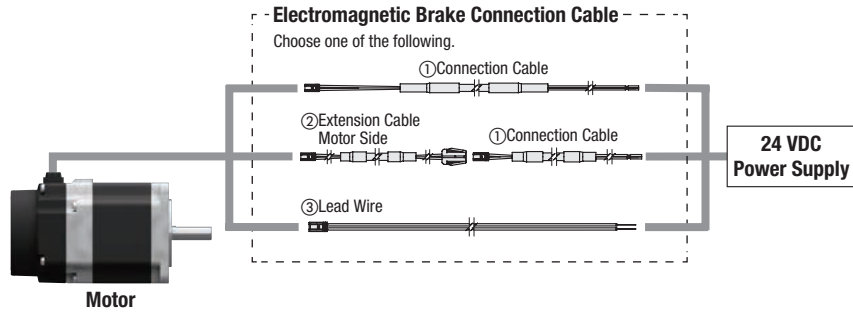
#### ◇ Product Line

| Product Name    | Applicable Motor                   | Length L (m) | Conductor AWG              |
|-----------------|------------------------------------|--------------|----------------------------|
| <b>CC010E1R</b> | 2-Phase/5-Phase Motor with Encoder | 1            | 26 (0.13 mm <sup>2</sup> ) |
| <b>CC020E1R</b> |                                    | 2            |                            |
| <b>CC030E1R</b> |                                    | 3            |                            |

- For dimensions, please see the Oriental Motor website.

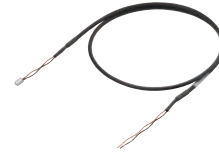


# Electromagnetic Brake Connection Cable



## ① Connection Cable

A connection cable with an electromagnetic brake connector on the motor end. Can be used on electromagnetic brakes with the connector connection method.



### ◇ Product Line

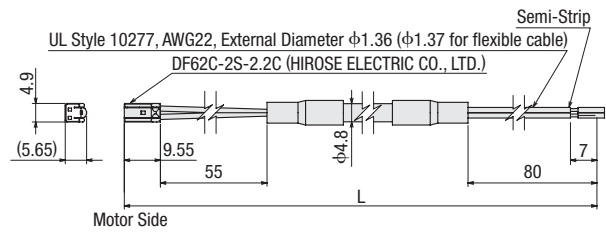
#### ● Connection Cables

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>CCB005VYAF</b> | 0.5          |
| <b>CCB010VYAF</b> | 1            |
| <b>CCB015VYAF</b> | 1.5          |
| <b>CCB020VYAF</b> | 2            |
| <b>CCB025VYAF</b> | 2.5          |
| <b>CCB030VYAF</b> | 3            |
| <b>CCB040VYAF</b> | 4            |
| <b>CCB050VYAF</b> | 5            |
| <b>CCB070VYAF</b> | 7            |
| <b>CCB100VYAF</b> | 10           |

#### ● Flexible Connection Cables

| Product Name      | Length L (m) |
|-------------------|--------------|
| <b>CCB005VYAR</b> | 0.5          |
| <b>CCB010VYAR</b> | 1            |
| <b>CCB015VYAR</b> | 1.5          |
| <b>CCB020VYAR</b> | 2            |
| <b>CCB025VYAR</b> | 2.5          |
| <b>CCB030VYAR</b> | 3            |
| <b>CCB040VYAR</b> | 4            |
| <b>CCB050VYAR</b> | 5            |
| <b>CCB070VYAR</b> | 7            |
| <b>CCB100VYAR</b> | 10           |

### ◇ Dimensions (Unit: mm)



## ② Extension Cable

These cables can be used to extend connection cables. They can be directly connected between the connection cable and the electromagnetic brake.



### ◇ Product Line

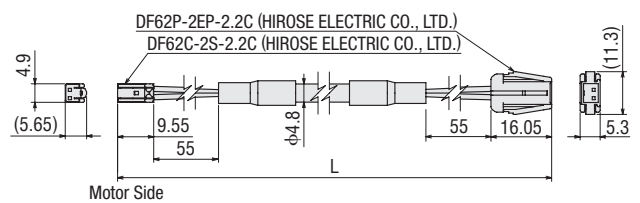
#### ● Extension Cable

| Product Name       | Length L (m) |
|--------------------|--------------|
| <b>CCB005VBAFT</b> | 0.5          |
| <b>CCB010VBAFT</b> | 1            |
| <b>CCB015VBAFT</b> | 1.5          |
| <b>CCB020VBAFT</b> | 2            |
| <b>CCB025VBAFT</b> | 2.5          |
| <b>CCB030VBAFT</b> | 3            |
| <b>CCB040VBAFT</b> | 4            |
| <b>CCB050VBAFT</b> | 5            |
| <b>CCB070VBAFT</b> | 7            |
| <b>CCB090VBAFT</b> | 9            |

#### ● Flexible Extension Cable

| Product Name       | Length L (m) |
|--------------------|--------------|
| <b>CCB005VBART</b> | 0.5          |
| <b>CCB010VBART</b> | 1            |
| <b>CCB015VBART</b> | 1.5          |
| <b>CCB020VBART</b> | 2            |
| <b>CCB025VBART</b> | 2.5          |
| <b>CCB030VBART</b> | 3            |
| <b>CCB040VBART</b> | 4            |
| <b>CCB050VBART</b> | 5            |
| <b>CCB070VBART</b> | 7            |
| <b>CCB090VBART</b> | 9            |

### ◇ Dimensions (Unit: mm)



## ③ Lead Wire



### ◇ Product Line

| Product Name      | Applicable Motor | Length L (m) | Conductor AWG          |
|-------------------|------------------|--------------|------------------------|
| <b>LCM02A-006</b> | <b>PKP24□M2</b>  | 0.6          | 22                     |
| <b>LCM02A-010</b> | <b>PKP26□M2</b>  | 1            | (0.3 mm <sup>2</sup> ) |

An electromagnetic brake connection cable with an electromagnetic brake connector on the motor end. Can be used on electromagnetic brakes with the connector connection method. Check the specifications and dimensions page of each motor for the cable dimensions.

2-Phase Motors  
**PKP**

Features  
Product Line

Product Number  
Product Line

Standard Type

High-Resolution Type

Flat Type

**SH** Geared Type

**CS** Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
**PKP**

Features  
Product Line

Product Number  
Product Line

Standard Type

High-Resolution Type

**TS** Geared Type

Common Specifications

Motor Pin Arrangement

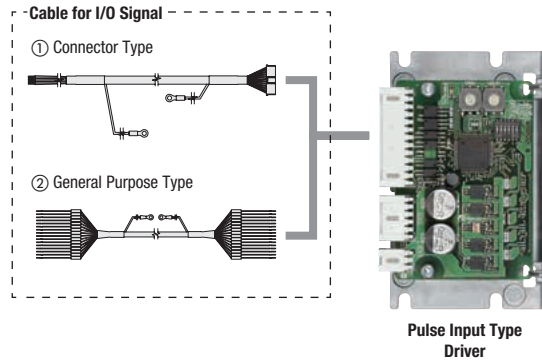
Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment



## Cable for I/O Signal (for pulse input type)



### ① Connector Type



These cables are used to connect the host system and the driver.  
A shielded cable is used, and both ends of the cable are equipped with ground wires for easy grounding.

#### ◇ Product Line

| Product Name      | Applicable Drivers                                                       | Length L (m) | Conductor AWG                |
|-------------------|--------------------------------------------------------------------------|--------------|------------------------------|
| <b>CC12D005-2</b> | Bipolar Driver for 2-Phase Stepper Motors (Product name: <b>CVD2</b> ~)  | 0.5          | 24<br>(0.2 mm <sup>2</sup> ) |
| <b>CC12D010-2</b> | Unipolar Driver for 2-Phase Stepper Motors (Product name: <b>CMD2</b> ~) | 1            |                              |
| <b>CC12D015-2</b> | Driver for 5-Phase Stepper Motors (Product name: <b>CVD5</b> ~)          | 1.5          |                              |
| <b>CC12D020-2</b> |                                                                          | 2            |                              |

● For dimensions, please see the Oriental Motor website.

### ② General Purpose Type



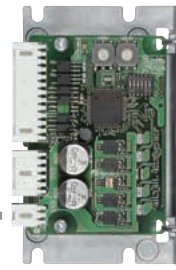
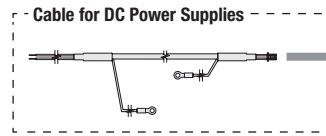
These cables are used to connect the host system and the driver.  
Both ends are unbundled.  
A shielded cable is used, and both ends of the cable are equipped with ground wires for easy grounding.

#### ◇ Product Line

| Product Name       | Length L (m) | Number of Lead Wire Cores | Outer Diameter D (mm) | AWG                          |
|--------------------|--------------|---------------------------|-----------------------|------------------------------|
| <b>CC06D005B-1</b> | 0.5          | 6                         | φ5.4                  | 24<br>(0.2 mm <sup>2</sup> ) |
| <b>CC06D010B-1</b> | 1            |                           |                       |                              |
| <b>CC06D015B-1</b> | 1.5          |                           |                       |                              |
| <b>CC06D020B-1</b> | 2            | 10                        | φ6.7                  |                              |
| <b>CC10D005B-1</b> | 0.5          |                           |                       |                              |
| <b>CC10D010B-1</b> | 1            |                           |                       |                              |
| <b>CC10D015B-1</b> | 1.5          |                           |                       |                              |
| <b>CC10D020B-1</b> | 2            | 12                        | φ7.5                  |                              |
| <b>CC12D005B-1</b> | 0.5          |                           |                       |                              |
| <b>CC12D010B-1</b> | 1            |                           |                       |                              |
| <b>CC12D015B-1</b> | 1.5          |                           |                       |                              |
| <b>CC12D020B-1</b> | 2            |                           |                       |                              |

● For dimensions, please see the Oriental Motor website.

## ■ Cable for DC Power Supply (for pulse input type)



Pulse Input Type Driver



These cables are used to connect the power supply and the driver.

A shielded cable is used, and both ends of the cable are equipped with ground wires for easy grounding.

### ◇ Product Line

| Product Name      | Applicable Drivers                                                                                  | Length L (m) | Conductor AWG                 |  |
|-------------------|-----------------------------------------------------------------------------------------------------|--------------|-------------------------------|--|
| <b>CC02D005-2</b> | <b>CVD205, CVD206, CVD215, CVD223, CVD228, CVD503, CVD507, CVD512, CVD514, CVD518, CVD524, CMD2</b> | 0.5          | 22<br>(0.3 mm <sup>2</sup> )  |  |
| <b>CC02D010-2</b> |                                                                                                     | 1            |                               |  |
| <b>CC02D015-2</b> |                                                                                                     | 1.5          |                               |  |
| <b>CC02D020-2</b> |                                                                                                     | 2            |                               |  |
| <b>CC02D005-4</b> | <b>CVD242, CVD245, CVD528, CVD538</b>                                                               | 0.5          | 18<br>(0.87 mm <sup>2</sup> ) |  |
| <b>CC02D010-4</b> |                                                                                                     | 1            |                               |  |
| <b>CC02D020-4</b> |                                                                                                     | 2            |                               |  |

● For dimensions, please see the Oriental Motor website.

2-Phase Motors  
**PKP**

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

Flat Type

**SH** Geared Type

**CS** Geared Type

Common Specifications

Inner Wiring of Motor

5-Phase Motors  
**PKP**

Features Product Line

Product Number Product Line

Standard Type

High-Resolution Type

**TS** Geared Type

Common Specifications

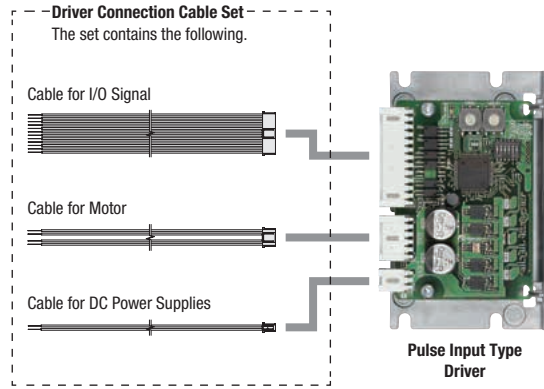
Motor Pin Arrangement

Drivers for 2-Phase/5-Phase Motors

Cables

Peripheral Equipment

## Driver Connection Cable Set (for pulse input type)



The connection cables to connect the motor to the driver, for the I/O signal, and for the DC power supply, bundled in a set. There are connectors on the driver end.



### Product Line

| Product Name     | Applicable Drivers                                          | Connector Name   | Connector Product Name | Length L1 | Length L2 | Conductor AWG             |       |                           |       |                           |  |
|------------------|-------------------------------------------------------------|------------------|------------------------|-----------|-----------|---------------------------|-------|---------------------------|-------|---------------------------|--|
| <b>LCS04SD5</b>  | <b>CVD503, CVD507<br/>CVD512, CVD514<br/>CVD518, CVD524</b> | For Motor        | 51103-0500             | 0.6 m     | 10 mm     | 22 (0.3 mm <sup>2</sup> ) |       |                           |       |                           |  |
|                  |                                                             | For Power Supply | 51103-0200             |           |           |                           |       |                           |       |                           |  |
|                  |                                                             | For I/O Signal   | 51103-1200             |           |           |                           |       |                           |       |                           |  |
| <b>LCS05SD5</b>  | <b>CVD528, CVD538</b>                                       | For Motor        | 51067-0500             |           |           | 0.6 m                     | 10 mm | 20 (0.5 mm <sup>2</sup> ) |       |                           |  |
|                  |                                                             | For Power Supply | 51067-0200             |           |           |                           |       |                           |       |                           |  |
|                  |                                                             | For I/O Signal   | 51103-1200             |           |           |                           |       |                           |       |                           |  |
| <b>LCS01CVK2</b> | <b>CVD205, CVD206<br/>CVD215, CVD223<br/>CVD228</b>         | For Motor        | 51103-0500             |           |           |                           |       | 0.6 m                     | 10 mm | 22 (0.3 mm <sup>2</sup> ) |  |
|                  |                                                             | For Power Supply | 51103-0200             |           |           |                           |       |                           |       |                           |  |
|                  |                                                             | For I/O Signal   | 51103-1200             |           |           |                           |       |                           |       |                           |  |
| <b>LCS02CVK2</b> | <b>CVD242, CVD245</b>                                       | For Motor        | 51067-0500             | 0.6 m     | 10 mm     |                           |       |                           |       | 20 (0.5 mm <sup>2</sup> ) |  |
|                  |                                                             | For Power Supply | 51067-0200             |           |           |                           |       |                           |       |                           |  |
|                  |                                                             | For I/O Signal   | 51103-1200             |           |           |                           |       |                           |       |                           |  |
| <b>LCS01CMK2</b> | <b>CMD2109P<br/>CMD2112P<br/>CMD2120P</b>                   | For Motor        | 51103-0600             |           |           | 0.6 m                     | 10 mm |                           |       | 22 (0.3 mm <sup>2</sup> ) |  |
|                  |                                                             | For Power Supply | 51103-0200             |           |           |                           |       |                           |       |                           |  |
|                  |                                                             | For I/O Signal   | 51103-1200             |           |           |                           |       |                           |       |                           |  |

● The applicable driver product names are listed such that the product names are distinguishable.

### Connector Arrangement

#### ◇ For Motor

##### ● LCS0□SD5

| Pin No. | Wire Color |
|---------|------------|
| 1       | Blue       |
| 2       | Red        |
| 3       | Orange     |
| 4       | Green      |
| 5       | Black      |

##### ● LCS0□CVK2

| Pin No. | Wire Color |
|---------|------------|
| 1       | Blue       |
| 2       | Red        |
| 3       | —          |
| 4       | Green      |
| 5       | Black      |

##### ● LCS01CMK2

| Pin No. | Wire Color |
|---------|------------|
| 1       | Blue       |
| 2       | White      |
| 3       | Red        |
| 4       | Black      |
| 5       | Yellow     |
| 6       | Green      |

#### ◇ For Power Supply

##### ● Common to All Cables

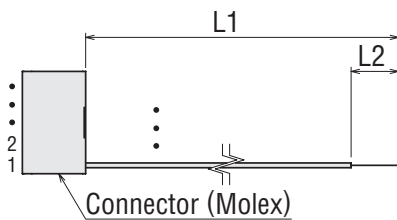
| Pin No. | Wire Color |
|---------|------------|
| 1       | Red        |
| 2       | Black      |

#### ◇ For I/O Signal

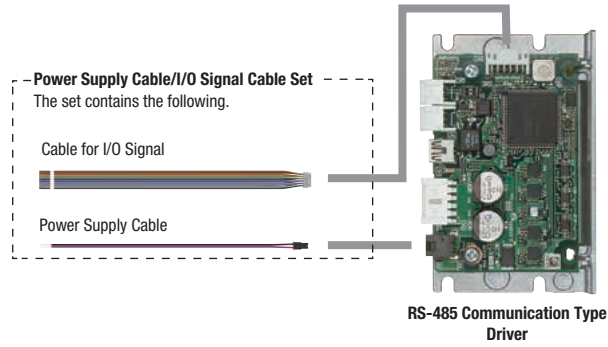
##### ● Common to All Cables

| Pin No. | Wire Color |
|---------|------------|
| 1       | Brown      |
| 2       | Red        |
| 3       | Orange     |
| 4       | Yellow     |
| 5       | Green      |
| 6       | Blue       |
| 7       | Purple     |
| 8       | Gray       |
| 9       | White      |
| 10      | Black      |
| 11      | Brown      |
| 12      | Red        |

### Dimensions



## Power Supply Cable/I/O Signal Cable Set (RS-485 communication type)



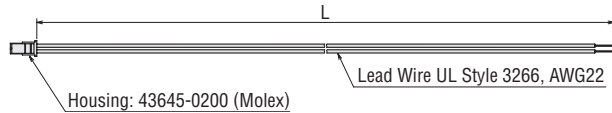
Power supply cables are used to connect the driver and the DC power supply.  
I/O signal cables are used to connect the driver and the host control device.  
A power supply cable and I/O signal cable come as a set.

### Product Line

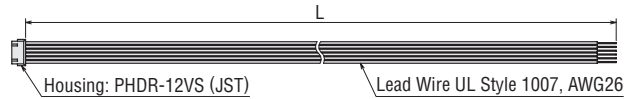
| Product Name    | Length L (m) |  |
|-----------------|--------------|--|
| <b>LHS003CC</b> | 0.3          |  |
| <b>LHS010CC</b> | 1            |  |

### Dimensions (Unit: mm)

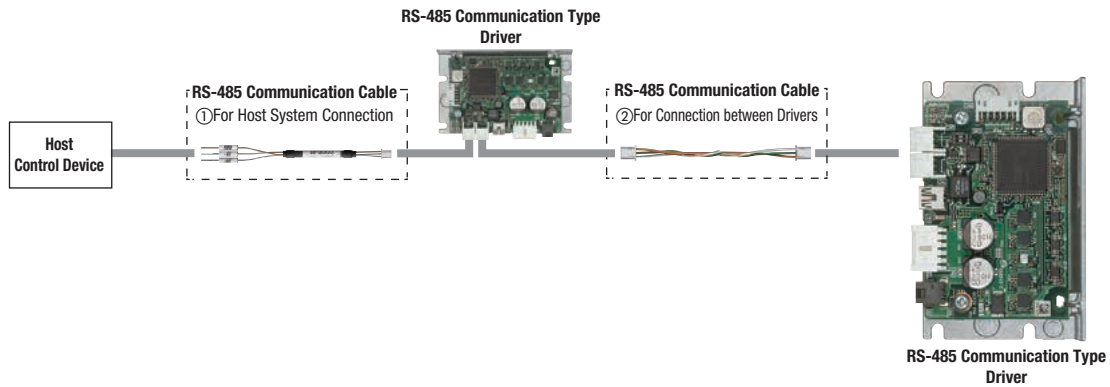
#### Power Supply Cable



#### Cable for I/O Signal



## RS-485 Communication Cable (RS-485 communication type)



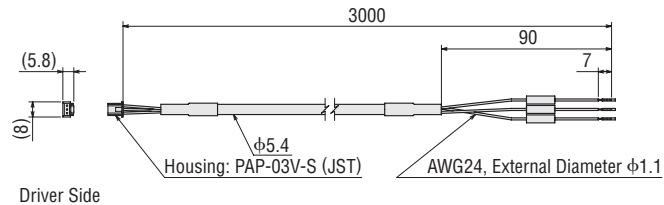
### ① For Host System Connection

These cables are used to connect the driver and the host control device.

#### Product Line

| Product Name    | Length (m) |  |
|-----------------|------------|--|
| <b>CC030-RS</b> | 3          |  |

#### Dimensions (Unit: mm)



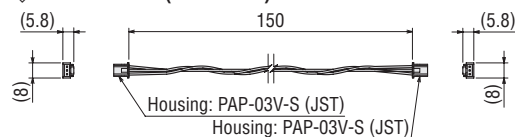
### ② For Connection between Drivers

These cables are used to connect between drivers.

#### Product Line

| Product Name      | Length (m) |  |
|-------------------|------------|--|
| <b>LH0015-RWN</b> | 0.15       |  |

#### Dimensions (Unit: mm)



2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors


Cables

Peripheral  
Equipment

# Peripheral Equipment (Sold separately)

For details, check the Oriental Motor website or contact the Oriental Motor sales office. <https://www.orientalmotor.co.jp/>

## Flexible Couplings

| Coupling Types           |                                                                                                                                                                                                                                      | XGT2*1                     |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| External View of Product |                                                                                                                                                     |                            |
| Coupling Type            | High-damping rubber                                                                                                                                                                                                                  |                            |
| Overview                 | Zero backlash with a one-piece configuration featuring high-damping rubber formed between aluminum alloy hubs. Excellent vibration absorption for high positioning accuracy operations by a control motor in a short period of time. |                            |
| Characteristics*2        | Zero Backlash                                                                                                                                                                                                                        | ◎                          |
|                          | Torque                                                                                                                                                                                                                               | ◎                          |
|                          | Torsional Rigidity                                                                                                                                                                                                                   | ○                          |
|                          | Permissible Misalignment                                                                                                                                                                                                             | ○                          |
|                          | Vibration Absorption                                                                                                                                                                                                                 | ◎                          |
| Fastening Method         | Clamping                                                                                                                                                                                                                             |                            |
| Materials                | Body                                                                                                                                                                                                                                 | Aluminum alloy             |
|                          | Vibration Absorption/Buffer                                                                                                                                                                                                          | Fluorine-containing rubber |

\*1 Manufactured by Nabeya Bi-tech Kaisha

\*2 The characteristics legend is as follows.

◎: Extremely good ○: Good

### ■ XGT2 Coupling

The coupling is a one-piece configuration featuring vibration-proof rubber formed between aluminum alloy hubs.

- For Standard Type, High-Resolution Type



### ● Product Line

| Product Name         |  |
|----------------------|--|
| <b>XGT2-15C</b> -□-■ |  |
| <b>XGT2-19C</b> -□-■ |  |
| <b>XGT2-25C</b> -□-■ |  |
| <b>XGT2-27C</b> -□-■ |  |
| <b>XGT2-30C</b> -□-■ |  |
| <b>XGT2-34C</b> -□-■ |  |
| <b>XGT2-39C</b> -□-■ |  |
| <b>XGT2-44C</b> -□-■ |  |

- A number indicating the inner diameter of the coupling is specified where the boxes □ and ■ are located in the product name.

# Motor Mounting Brackets

Mounting brackets convenient for installing motors are available.



**PFB**



**PAF**



**PALS**



**PALW01, PALW02,  
PALW03**



**PALW0, PALW1,  
PALW2, PALW4, SOL**



**SOLS**



**SOLW**

## ● Product Line

### ◇ For Standard Type, High-Resolution Type

| Product Name     | Motor Frame Size | Applicable Products              |
|------------------|------------------|----------------------------------|
| <b>PALS03P-2</b> | 20 mm            | <b>PKP21</b> □                   |
| <b>PALW03P-2</b> |                  |                                  |
| <b>PALS03P-5</b> | 20 mm            | <b>PK51</b> □                    |
| <b>PALW03P-5</b> |                  |                                  |
| <b>PALS02P</b>   | 28 mm            | <b>PKP22</b> □<br><b>PKP52</b> □ |
| <b>PALW02P</b>   |                  |                                  |
| <b>PFB28A</b>    |                  |                                  |
| <b>PALS01P</b>   | 35 mm            | <b>PKP23</b> □                   |
| <b>PALW01P</b>   |                  |                                  |
| <b>PAFOPA</b>    | 42 mm            | <b>PKP24</b> □<br><b>PKP54</b> □ |
| <b>PALWOP</b>    |                  |                                  |
| <b>PFB42A</b>    |                  |                                  |
| <b>PALW1P</b>    | 50 mm            | <b>PKP25</b> □                   |
| <b>PALW2P-2</b>  | 56.4 mm          | <b>PKP26</b> □<br><b>PKP56</b> □ |
|                  | 60 mm            | <b>PK26</b> □J                   |
| <b>PALW2P-5</b>  | 60 mm            | <b>PKP56</b> □F                  |
| <b>PALW4P-2</b>  | 85 mm            | <b>PKP29</b> □<br><b>PK59</b> □  |
| <b>PALW4P-5</b>  |                  |                                  |

● The stepper motor's pilot can be used for mated installation. (Excluding **PFB28A** and **PFB42A**)

### ◇ For SH Geared Type

| Product Name   | Motor Frame Size | Applicable Products |
|----------------|------------------|---------------------|
| <b>SOLS02P</b> | 28 mm            | <b>PKP223</b>       |
| <b>SOLW02P</b> |                  |                     |
| <b>PFB28A</b>  |                  |                     |
| <b>SOL0A</b>   | 42 mm            | <b>PKP243</b>       |
| <b>PFB42A</b>  |                  |                     |
| <b>SOL2A</b>   | 60 mm            | <b>PKP264</b>       |
| <b>SOL5A</b>   | 90 mm            | <b>PK296</b>        |

#### Note

● The above mounting brackets are not compatible with fitted installation.

### ◇ For CS Geared Type and TS Geared Type

| Product Name  | Motor Frame Size | Applicable Products             |
|---------------|------------------|---------------------------------|
| <b>SOL0B</b>  | 42 mm            | <b>PKP243</b><br><b>PKP54</b> □ |
| <b>SOL2M4</b> | 60 mm            | <b>PKP264</b><br><b>PKP56</b> □ |

#### Note

● The above mounting brackets are not compatible with fitted installation.

2-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

Flat  
Type

**SH** Geared  
Type

**CS** Geared  
Type

Common  
Specifications

Inner  
Wiring  
of Motor

5-Phase  
Motors  
**PKP**

Features  
Product  
Line

Product  
Number  
Product Line

Standard  
Type

High-  
Resolution  
Type

**TS** Geared  
Type

Common  
Specifications

Motor  
Pin  
Arrangement

Drivers for  
2-Phase/5-Phase  
Motors

Cables

Peripheral  
Equipment

# Motor Connector Set

This is a set of connector housings and contacts compatible with connector type (model B) motors. Use this set if extra housings and contacts are necessary, although they are included with the products.

## Product Line

| Product Name    | Applicable Products                                                     |
|-----------------|-------------------------------------------------------------------------|
| <b>CS2U30A</b>  | <b>PKP223, PKP225, PKP223M, PKP225M</b>                                 |
| <b>CS2U30B</b>  | <b>PKP233, PKP235, PKP243, PKP244, PKP245, PKP246, PKP243M, PKP244M</b> |
| <b>CS5N30A</b>  | <b>PK513, PK523, PK525</b>                                              |
| <b>CS5N30B</b>  | <b>PKP544, PKP546, PKP544M, PKP546M</b>                                 |
| <b>CS5N30C2</b> | <b>PKP564FM, PKP566FM, PKP569FM</b>                                     |

● Each package contains enough housings and contacts for 30 motors. Please order in units of 1 package.

### Note

● A crimp tool is not included. Please prepare separately.

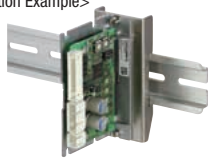


This photograph shows **CS5N30B**.

# Mounting Brackets for Circuit Products

This bracket is for installation on a DIN rail.

<MADP07 Application Example>



## Product Line

Material: SPCC

| Product Name    | Applicable Drivers | Surface Treatment          |
|-----------------|--------------------|----------------------------|
| <b>MADP01</b>   | <b>CMD21□□P</b>    | Electroless nickel plating |
| <b>MADP07</b>   | <b>CVD□□BR-K</b>   |                            |
|                 | <b>CVD□□B-K</b>    |                            |
|                 | <b>CVD□BR-KR</b>   |                            |
| <b>MADP01S1</b> | <b>CVD□□-K</b>     |                            |

# Driver Cover

This is a protection cover to prevent contact with the circuit board. Available for the right angle type driver with an installation plate.

<Application Example>



## Product Line

Material: Resin

| Product Name     | Applicable Drivers                   |
|------------------|--------------------------------------|
| <b>PADC-CVD2</b> | <b>CVD□□BR-K</b><br><b>CVD□BR-KR</b> |

# Clean Dampers

These mechanical dampers are effective for suppressing stepper motor vibration and improving high-speed performance.

They consist of an inertial load and silicon gel sealed inside a plastic case.



## Product Line

● Exclusively for the double shaft type.

| Product Name     | Inertia [kg·m <sup>2</sup> ] | Mass [g] | Motor Frame Size        | Applicable Products                                                                                                                              |
|------------------|------------------------------|----------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>D4CL-5.0F</b> | $34 \times 10^{-7}$          | 24       | 28 mm<br>35 mm<br>42 mm | <b>PKP223, PKP225, PKP523, PKP525</b><br><b>PKP233, PKP235</b><br><b>PKP243, PKP244, PKP543, PKP544</b><br><b>PKP245, PKP246, PKP545, PKP546</b> |
| <b>D6CL-6.3F</b> | $140 \times 10^{-7}$         | 62       | 50 mm                   | <b>PKP254, PKP256, PKP258</b>                                                                                                                    |
| <b>D6CL-8.0F</b> | $140 \times 10^{-7}$         | 61       | 56.4 mm<br>60 mm        | <b>PKP264, PKP266, PKP268</b><br><b>PK264, PK266, PKP564, PKP566</b><br><b>PK267, PK269, PKP568, PKP569</b>                                      |
| <b>D9CL-14F</b>  | $870 \times 10^{-7}$         | 105      | 85 mm<br>90 mm          | <b>PKP296, PKP299, PKP2913</b><br><b>PK296, PK596, PK599, PK5913</b>                                                                             |

Temperature environment: -20~+80°C



# ***Oriental motor***

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