Oriental motor

Stepper Motor

PKP Series

Additions to the Product Line

Flat Type with Encoder

Frame Size 42 mm

Frame Size 60 mm

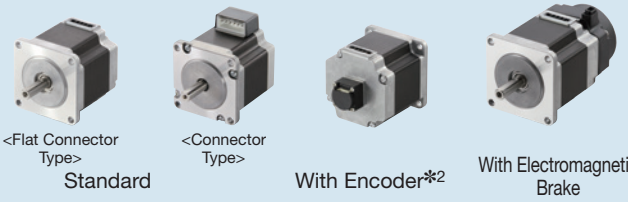
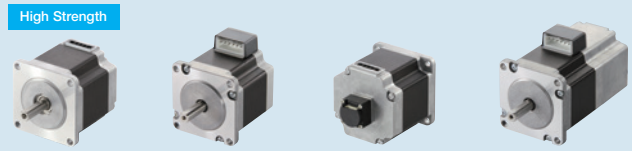
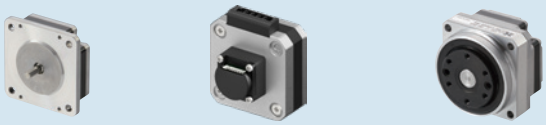
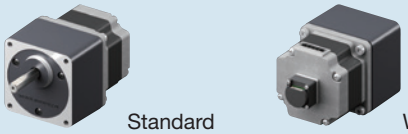
2-Phase **PKP** Series with **PLE** Gearhead NEUGART

- High Torque Combination Bipolar 2-phase Stepper Motors with Neugart Planetary Gearheads
- Motor and Gearhead are Pre-assembled

For detailed information please refer to the **PKP** Series catalogue on our website.

2-Phase Stepper Motors **PKP** Series High Torque Low Vibration

● Bipolar (4 lead wires) and unipolar (5 or 6 lead wires) wiring types are available.

Motor Type	Motor Frame Size	Additional Function		
		Standard	With Encoder	With Electromagnetic Brake
Standard Type (Basic Step Angle: 1.8°/step) Flat Connector / Reasonable / High Strength  <Flat Connector Type> Standard / <Connector Type> / With Encoder✻2 / With Electromagnetic Brake	☐ 13 mm	COMING SOON	–	–
	☐ 20 mm	●	●	–
	☐ 28 mm	●	●	●
	☐ 35 mm	●	●	●
	☐ 42 mm	●	●	●
	☐ 56.4 mm	●	●	●
	☐ 60 mm✻1	●	–	–
	☐ 85 mm	●	–	–
High-Resolution Type (Basic Step Angle: 0.9°/step) Flat Connector / Reasonable / High Strength  <Flat Connector Type> Standard / <Connector Type> / With Encoder✻2 / With Electromagnetic Brake	☐ 28 mm	●	●	–
	☐ 42 mm	●	●	●
	☐ 56.4 mm	●	●	●
Flat Type (Basic Step Angle: 0.018° to 1.8°/step)  Standard / With Encoder✻4 / With Harmonic Gears	☐ 42 mm	●	●	–
	☐ 60 mm	●	●	–
	☐ 51 mm✻3	●	●	–
	☐ 61 mm✻3	●	●	–
SH Geared Type (Basic Step Angle: 0.05° to 0.5°/step)  Standard / With Encoder✻2	☐ 28 mm	●	●	–
	☐ 42 mm	●	●	–
	☐ 60 mm	●	●	–
CS Geared Type (Basic Step Angle: 0.09 to 0.36°/step)  Standard	☐ 28 mm	●	–	–
	☐ 42 mm	●	–	–
	☐ 60 mm	●	–	–

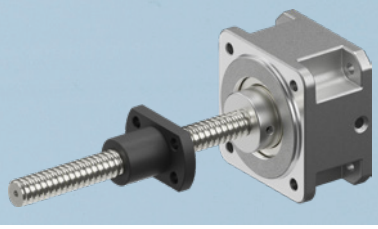
●: 2 types are available—the "Flat Connector Type" and the "Connector Type".

✻1 This is the conventional **PK** Series.

✻2 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

✻3 In case of Flat Type with Harmonic Gears

✻4 Resolution of 200, 400 and 1.000 P/R are available.



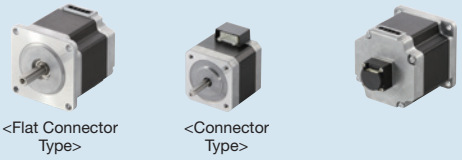
LA - Linear Attachment

- Thrust and self-locking force: Max. 100N
- Can be installed without a coupling, saving space
- Can be attached to □28mm and □42mm motors

Please check the website for details.

5-Phase Stepper Motors **PKP** Series

High Accuracy | Low Vibration

Motor Type	Motor Frame Size	Additional Function		
		Standard	With Encoder	With Electromagnetic Brake
Standard Type (Basic Step Angle: 0.72°/step) Flat Connector, High Strength, Reasonable  <Flat Connector Type> <Connector Type> Standard With Encoder*2	□ 20 mm*1	●	●	–
	□ 28 mm	●	●	–
	□ 42 mm	●	●	–
	□ 56.4 mm	●	●	–
	□ 60 mm	●	●	–
	□ 85 mm*1	●	–	–
High-Resolution Type (Basic Step Angle: 0.36°/step)  Standard	□ 28 mm	●	●	–
	□ 42 mm	●	●	–
	□ 60 mm	●	●	–
TS Geared Type (Basic Step Angle: 0.024 to 0.2°/step)  Standard	□ 42 mm	●	–	–
	□ 60 mm	●	–	–

●: 2 types are available—the "Flat Connector Type" and the "Connector Type".

*1 This is the conventional **PK** Series.

*2 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

2-Phase 5-Phase Stepper Motor Driver - **CVD** Series

Small | Low Vibration

The 2-Phase stepping motors are only bipolar (4 lead wires)

Pulse Input Type

RS-485 Communication Type

S Type: Board-mounted Type
Pulse Input / SPI Communication

- Detection of loss of synchronisation by encoder information capture
- Detection of wire breakage possible

Fully Closed Loop Control Type

- Full closed control of 5-phase stepping motors
- Sub-micron high-precision positioning
- Can be operated via Modbus RTU (RS-485 communication)

Multi-Axis Type - EtherCAT Compatible

- Control up to 4-axis
- Compatible with 2-phase and 5-phase motors with the same driver
- Detection of loss of synchronisation by capturing encoder information
- Automatic electromagnetic brake control

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.

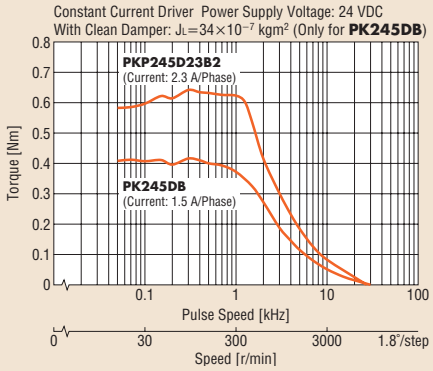
- Motor Frame Size 13 mm to 85 mm
- Standard Type with a Resolution of 200 Steps per Revolution (Basic step angle: 1.8°/step)
- High-Resolution Type with a Resolution of 400 Steps per Revolution (Basic step angle: 0.9°/step)
- Oriental Motor's Flat Type 2-phase Stepper Motor
- High-Torque and High-Resolution **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

Features

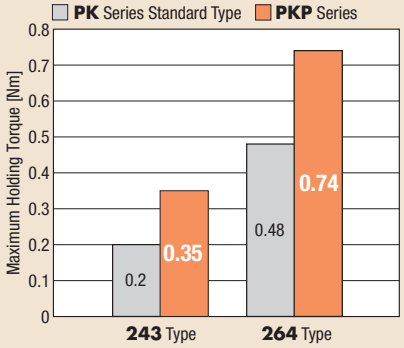
Increased Torque over the Entire Speed Range from Low to High

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



Comparison of Maximum Holding Torque

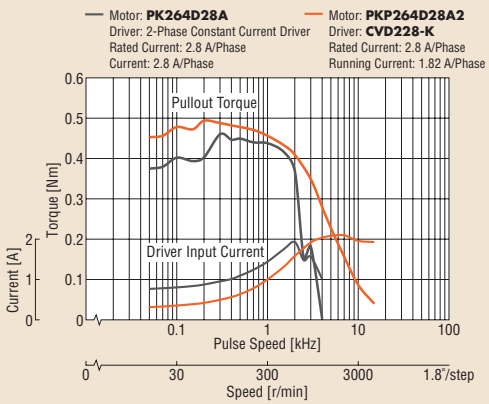


High current is possible due to the revised motor winding design and the highly efficient design of the drive circuit that can be combined. Increased torque over the entire speed range from low to high is achieved.

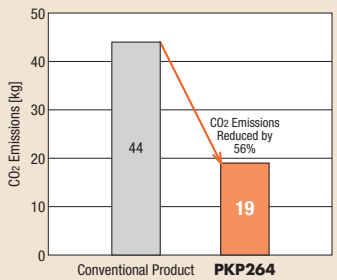
Conservation of Energy and Electrical Power

Reducing the running current supplied to **PKP** Motors achieves the same torque as conventional products while reducing power consumption and CO_2 emissions.

Reduced Running Current with the **PKP** Series



Power Consumption and CO_2 Emissions 56% Lower than Conventional Products

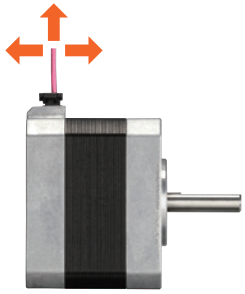


Speed	0.1 kHz (30 r/min)
Operating Time	24 hours, 365 days
Operating Conditions	50% operating, 50% stand-by
Power Supply Voltage	24 VDC
CO_2 Coefficient	0.519 kg-CO_2/kWh

Compact and Flat Connector

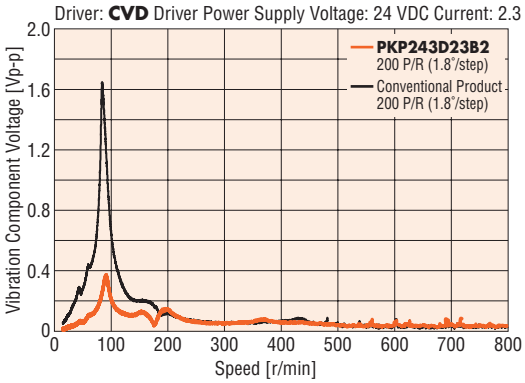
The **PKP** Series uses a compact flat connector, which shortens the length of the connector's overhang. In addition, the degree of freedom for the cable outlet direction has been increased because the outlet direction points upward.

●Since the connector is provided for select products only, please refer to the dimensions of each model for details.



Lower Vibration

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

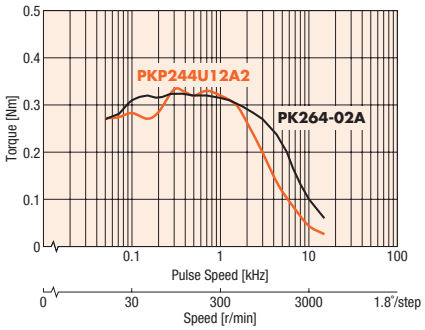


Saving Resources through Downsizing

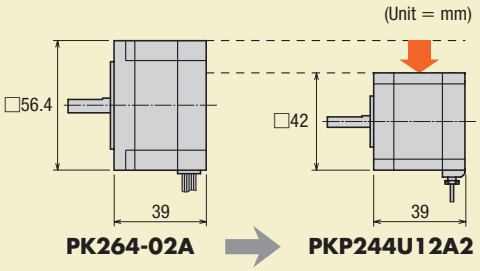
Use a **PKP** Series motor in place of a standard motor from the **PK** Series with the equivalent torque in order to downsize motors.

Volume reduced by 44%

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



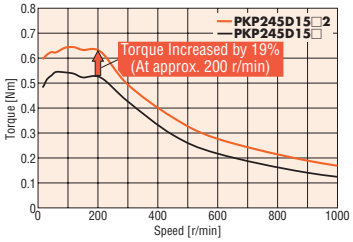
Downsizing is Possible with the Same Torque!



Select Motors by Price, Specifications and Characteristics

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

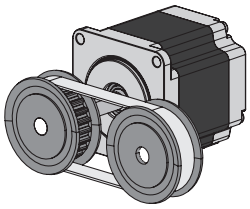
●Comparison of the Flat Connector Type and the Connector Type For 2-Phase Stepper Motors

		Flat Connector Type	Connector Type
Type			
Prices			
Features		・Using a compact flat connector that shortens the length of the connector's overhang ・High permissible radial load / permissible axial load ・High torque (excluding some types)	Standard Performance
Permissible Radial Load (Max. value)	□42 mm	85 N (63% Increase)	52 N
	□56.4 mm	270 N (68% Increase)	160 N
Permissible Axial Load	□42 mm	15 N (50% Increase)	10 N
	□56.4 mm	30 N	20 N
Speed – Torque Characteristics (Reference values)		◆Example of comparison of Torque characteristics with the same size motor (□42 mm bipolar) 	

●Permissible Radial Load Increased

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

◇**Applications**
Belt and Pulley Mechanism



◇**Advantages**

・The components for supporting 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

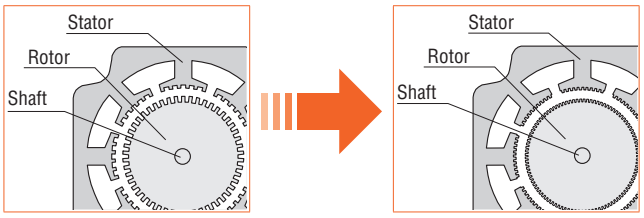
The torque characteristics of the Flat Connector Type is equal to or higher than those of the Connector Type (excluding some types). Reduced positioning time is achieved by increasing torque.

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.



Standard Type (50 teeth) High-Resolution Type (100 teeth)

●Avoidance of Resonance Regions

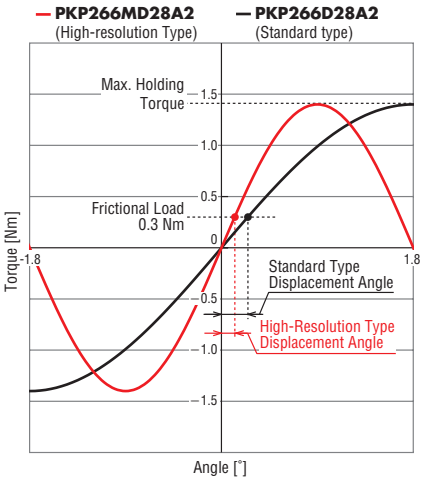
If the pulse speed is within a resonance region, vibration may increase. Resonance regions can be avoided by switching to a high-resolution type.

●Improved Stopping Accuracy

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

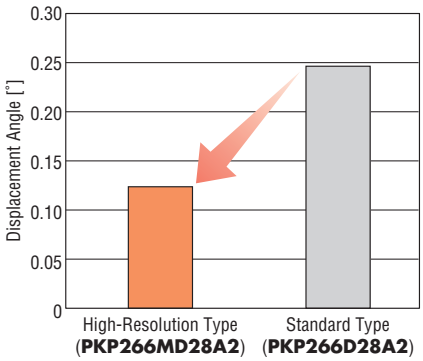
The stopping accuracy in applications that constantly apply a frictional load, such as a ball screw mechanism, is therefore improved.

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



*For frictional load 0.3 Nm

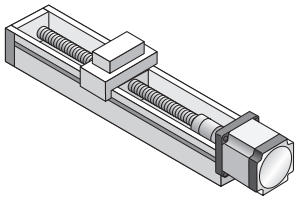
◇Comparison of Displacement Angles by Frictional Load* (Reference value)



*For frictional load 0.3 Nm

◇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.

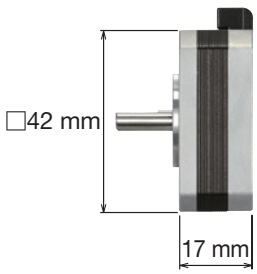


Flat Type

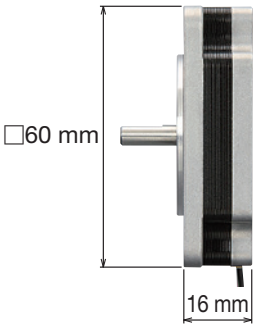
This is Oriental Motor's flattest type of 2-phase stepper motors.

●Flat and Lightweight Design

The motor can be installed in a narrow space.



Maximum Holding Torque: 0.1 Nm
Mass: 0.11 kg

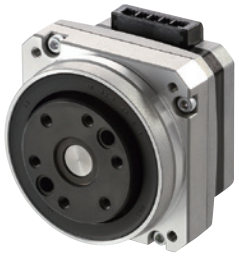


Maximum Holding Torque: 0.18 Nm
Mass: 0.2 kg

●With Harmonic Gears

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

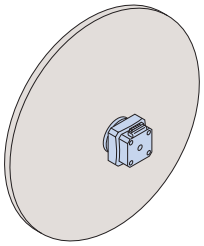
Example: Frame Size 51 mm



Gear Ratio 100
Maximum Holding Torque: 2.4 Nm
Mass: 0.32 kg

◇Makes drives with large inertia possible.

Example: Frame Size 51 mm



Inertia 0.12 kgm²
(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

● is a registered trademark of Harmonic Drive Systems Inc.

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				●Center Shaft Configuration ●High Torque ●High Permissible Radial Load	●Wide Variety ・90 mm Frame Size and Unipolar Wiring ・Includes Encoder ・Many Gear Ratio Types
Frame Size	28 mm	Maximum Holding Torque	[Nm]	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	[Nm]	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	[Nm]	1.3 - 4.5	1 - 4
		Speed Range (Max. value)	[r/min]	150 - 600	83 - 833
		Permissible Radial Load (Max. value)	[N]	260	160

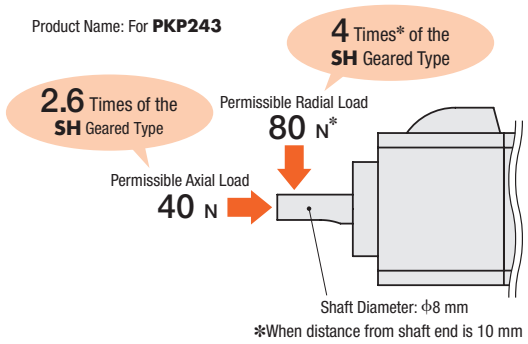
CS Geared Type

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

Increased shaft load capacity reduces assembly time

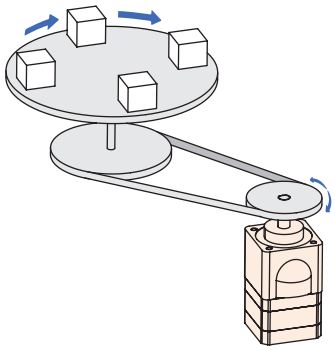
Increased permissible radial load and permissible axial load can reduce assembly time.

◇Permissible Radial Load and Permissible Axial Load



◇Applications

Belt and Pulley Mechanism

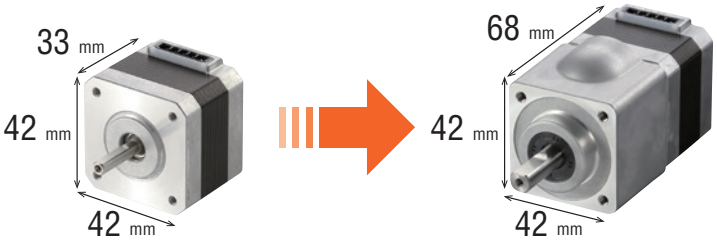


◇Advantages

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

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.



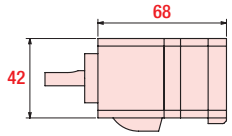
Standard Type	Motor Type	**CS** Geared Type
PKP243D15A2	Product Name	**PKP243D15A2-CS20**
0.35 Nm	Max. Holding Torque	**2 Nm**

Increased Torque Contributes to Reduced Size and Weight of the Motor

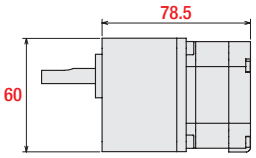
High torque, shorter motor length and a frame size that's one size smaller.

◇**Dimensions:** (Unit = mm)

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



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



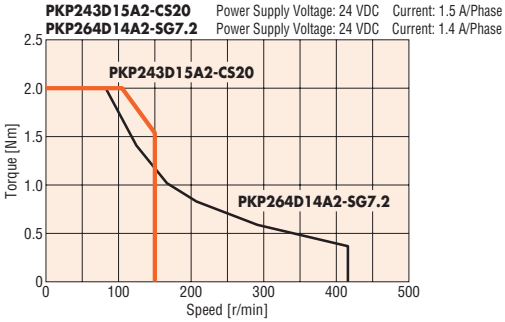
Maximum Holding Torque: Same

Frame Size: Reduced by **18** mm

Motor Length: Reduced by **10.5** mm

Mass: Reduced by **47** %

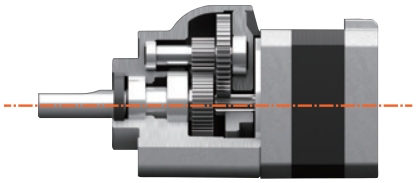
◇**Torque Characteristics Comparison**



Center Shaft Makes Designing Easier

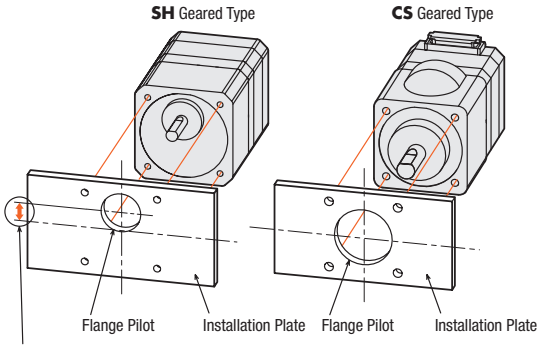
A review of the gear structure has led to the center shaft design. It is easier to design the installation plate.
In addition, the degree of freedom for the cable outlet direction has been increased.

Output Shaft now Placed in Center



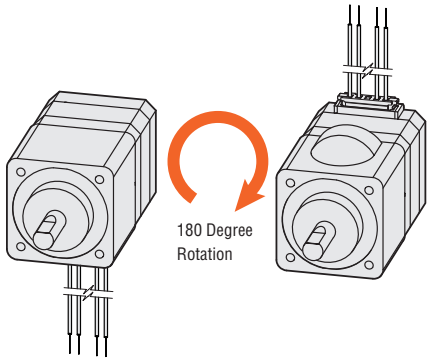
Internal Gearhead Structure Figure

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

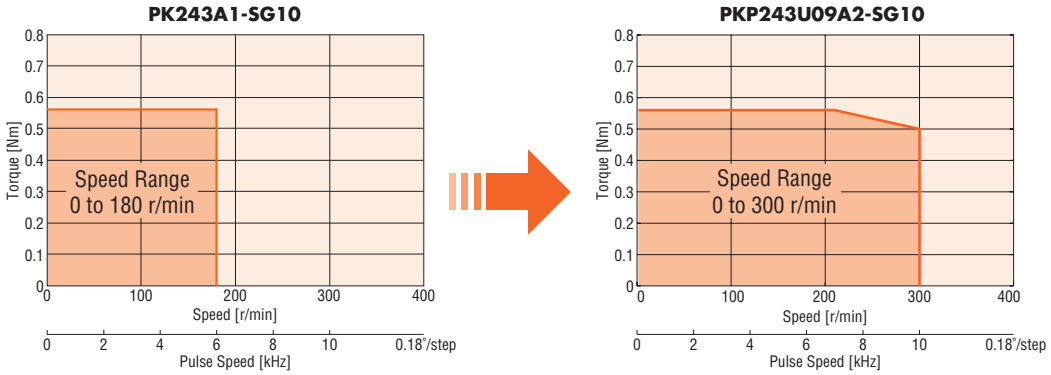
Increased Degree of Freedom for Cable Outlet Direction



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)

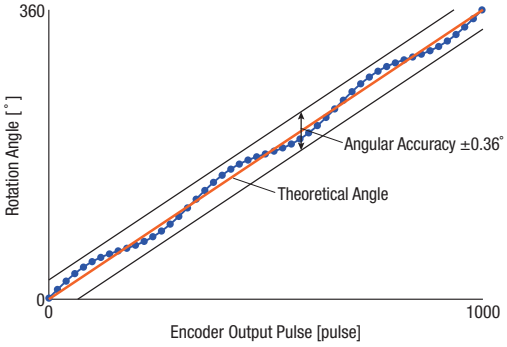
◇Main Specifications

Type	Standard Type*2	High-Resolution Type, **SH** Geared Type*2
Resolution	200 P/R, 400 P/R*1	400 P/R
Angular Accuracy	±0.36° (Motor output shaft conversion value)	
Output Signals	A phase, B phase, Z phase (3 ch)	

*1 A product line with resolution of 1000 P/R is available with frame sizes of 42 mm and 56.4 mm.
*2 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

• About Angular Accuracy (Diagram)

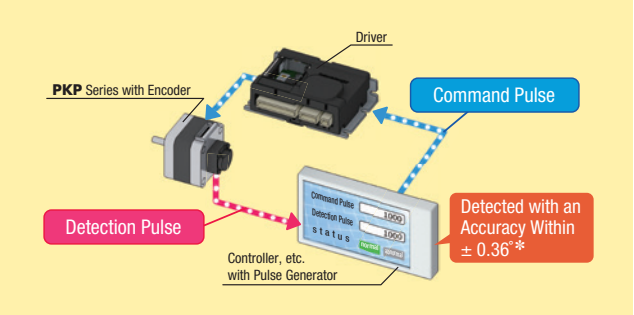
Angular accuracy is the error between the actual rotation angle and the angle output by the encoder.



◇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 ensure normal operation of the motor.

● System Configuration Example

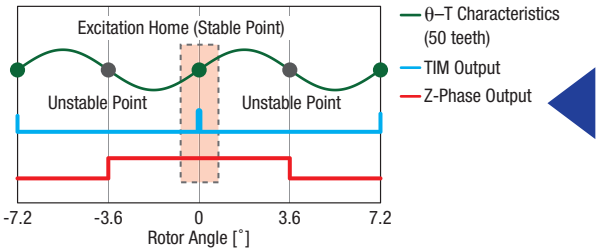


*Motor output shaft conversion value

◇Capable of Highly Repeatable Return-to-Home

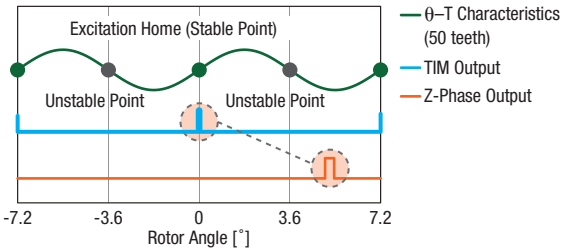
The Z-phase signal is output using the excitation home (stable point), so the home sensor (the sensor that detects the home within one rotation, installed on the motor shaft) can be used instead.
It is also easier for the Z-phase output signal and TIM output signal* to be used together, increasing the repeatability of return-to-home.
*The signal output by the driver every time the motor output shaft rotates 7.2° (3.6° for high-resolution type) from home.

● If the **Z**-Phase Output Timing is Fixed
New Encoder (Magnetic Type)



The Z-phase signal outputs with a width of ±3.6°, centered on the excitation home (stable point).

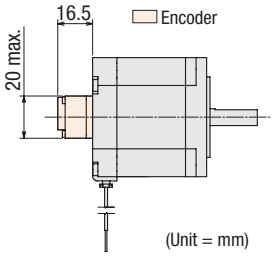
● If the **Z**-Phase Output Timing is not Fixed



The Z-phase signal output timing is unstable, making it difficult to use it as a home sensor substitute, and also making it difficult to use it in combination with the TIM signal.

◇Equipped with a Compact Encoder

● When frame size is 56.4 mm

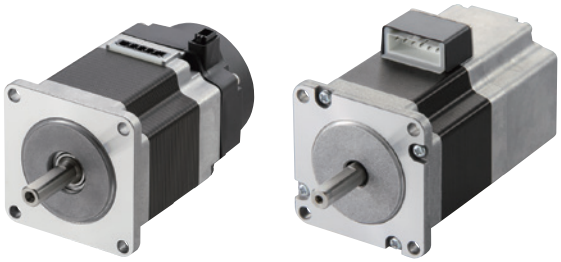


◇Voltage Output Type and Line Driver Output Type Available

Both a voltage output type and a line driver output type are available.

●With Electromagnetic Brake

(Provided for standard type and high-resolution type)



◇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.

Compatible Drivers (Sold Separately)

These are compact and lightweight bipolar drivers.

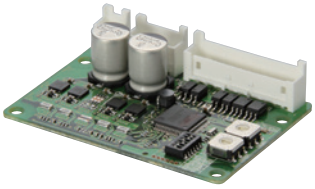
Bipolar Driver **CVD** Series

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

・SPI Communication-Compatible

・Pulse Input-Compatible

Multi-Axis Type - EtherCAT Compatible

Product Line

Motor Product Line (Basic Step Angle)		Frame Size, Wiring Type															
		13 mm		20 mm		28 mm		35 mm		42 mm		56.4 mm		60 mm		85 mm	
		Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar	Bipolar	Unipolar
Standard Type (1.8°)		●	–	○	○	●	●	●	●	●	●	●	●	○*3	○*3	○	○
	With Encoder*4	–	–	○	–	●	–	●	–	●	–	●	–	–	–	–	–
	With Electromagnetic Brake	–	–	–	–	●	●	●	●	●	●	●	●	–	–	–	–
High-Resolution Type (0.9°)		–	–	–	–	●	●	–	–	●	●	●	●	–	–	–	–
	With Encoder*4	–	–	–	–	●	–	–	–	●	–	●	–	–	–	–	–
	With Electromagnetic Brake	–	–	–	–	–	–	–	–	●	●	●	●	–	–	–	–
Flat Type (0.018° - 1.8°)		–	–	–	–	–	–	–	–	●	–	–	–	○	–	–	–
	With Harmonic Gears	–	–	–	–	–	–	–	–	●*1	–	–	–	○*2	–	–	–
SH Geared Type (0.05° - 0.5°)		–	–	–	–	●	●	–	–	●	●	–	–	●	●	–	–
																	
CS Geared Type (0.09° - 0.36°)		–	–	–	–	●	●	–	–	●	–	–	–	●	–	–	–
																	

●: Connector Connection Method ○: Lead Wire Type

*1 Flat Type - 51 mm with Harmonic Gears.

*2 Flat Type - 61 mm with Harmonic Gears.

*3 This is the conventional **PK** Series.

*4 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

5-Phase Stepper Motors

PKP Series

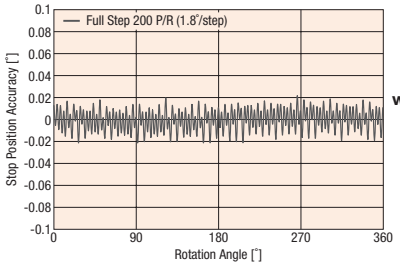
This is a high torque and low vibration stepper motor with a basic step angle of 0.72° (resolution of 500 steps per revolution).
High Positioning accuracy is possible, as well as low vibration and reduced noise.
(A separate dedicated driver is required to operate each motor.)

Features

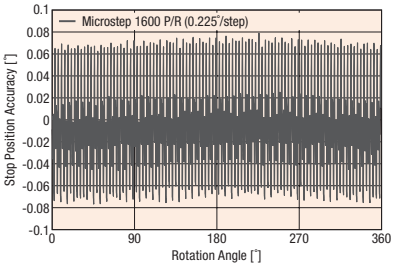
High Accuracy

Since the step angle of 5-Phase Stepper Motors in the **PKP** Series is at 0.72° (high-resolution type at 0.36°) and the stopping accuracy is at ±0.05°, 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.

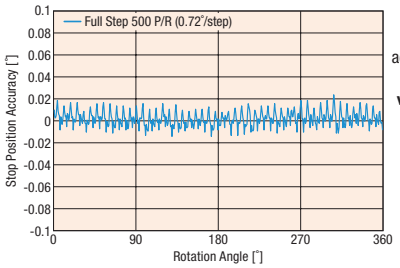
● Conventional 2-Phase Motor



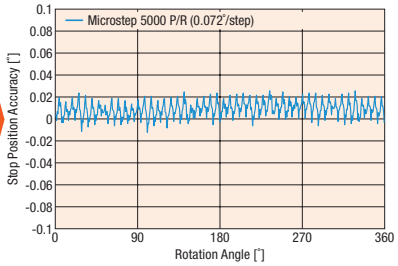
Stopping accuracy **gets worse** with Microstep



● 5-Phase **PKP** Series
(Driver: 5-phase **CVD** driver)



Stopping accuracy does **not get worse** with Microstep

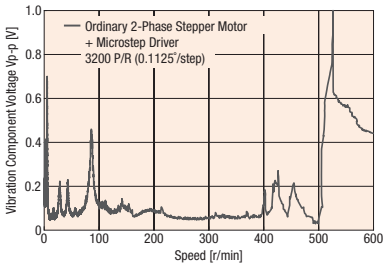


PKP Series Highly accurate positioning for 5-phase is possible

Low Vibration and Reduced Noise

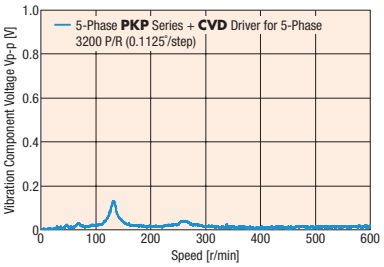
Because the basic step angle is small at 0.72° (0.36° for high-resolution type), the vibrations and noise are lower than the 2-phase stepper motor with a basic step angle of 1.8°. Also, vibrations and noise can be further reduced with a microstep driver.

● Example of 2-Phase Stepper Motor Vibration Characteristics



PKP Series Vibration characteristics for 5-phase are further improved

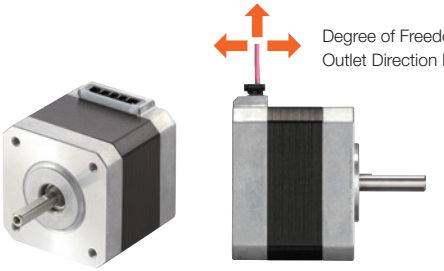
● Example of 5-Phase Stepper Motor Vibration Characteristics



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 (Basic Step Angle)	Features	Frame Size					
		20 mm	28 mm	42 mm	56.4 mm	60 mm	85 mm
Standard Type (0.72°)	・Standard model ・High torque, low vibration	 ✻1					 ✻1 Lead Wire Type
High-Resolution Type (0.36°)	・Resolution double that of standard type ・Results in high positioning accuracy and reduced vibration	–			–		–
Standard Type with Encoder✻4 (0.72°)	・Encoder resolution 500 P/R, A, B, Z (3 ch) signal output ・Uses compact encoder ・Angular Accuracy ±0.36°✻3 ・Capable of Highly Repeatable Return-to-Home	 ✻1		 ✻2		 ✻2	–
High-Resolution Type with Encoder✻4 (0.36°)	・Encoder resolution 1000 P/R, A, B, Z (3 ch) signal output ・Uses compact encoder ・Angular Accuracy ±0.36°✻3 ・Capable of Highly Repeatable Return-to-Home	–			–		–
TS Geared Type (0.024° - 0.2°)	・Spur gear mechanism ・A wide variety of low gear ratios, high-speed operations ・Gear ratio types: 3.6, 7.2, 10, 20, 30	–	–		–		–

✻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.
✻3 Motor output shaft conversion value
✻4 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

Product Line Equipped with Additional Functions to Broaden Applications

●With Encoder

(Provided for standard type and high-resolution type)

◇Main Specifications

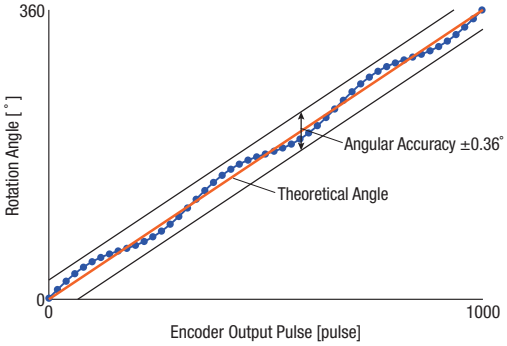
Type	Standard Type*2	High-Resolution Type*2
Resolution	500 P/R*1	1000 P/R
Angular Accuracy	±0.36° (Motor output shaft conversion value)	
Output Signals	A phase, B phase, Z phase (3 ch)	

*1 A product line with resolution of 1000 P/R is available with frame sizes of 42 mm and 56.4 mm.

*2 For resolutions between 100 and 4.000 P/R, please contact your nearest Oriental Motor sales office.

●About Angular Accuracy (Diagram)

Angular accuracy is the error between the actual rotation angle and the angle output by the encoder.

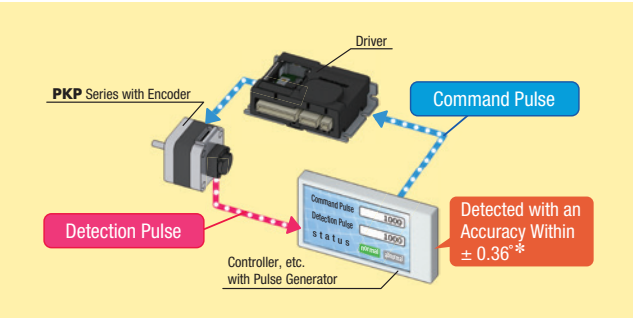


◇Motor Position Detection is Possible

Monitoring the current position and detecting positional errors is possible.

For example, comparing the command position and current position enables you to ensure normal operation of the motor.

●System Configuration Example



*Motor output shaft conversion value

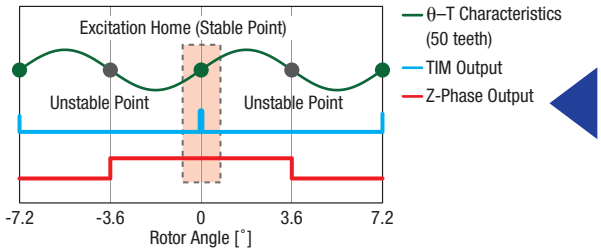
◇Capable of Highly Repeatable Return-to-Home

The Z-phase signal is output using the excitation home (stable point), so the home sensor (the sensor that detects the home within one rotation, installed on the motor shaft) can be used instead.

It is also easier for the Z-phase output signal and TIM output signal* to be used together, increasing the repeatability of return-to-home.

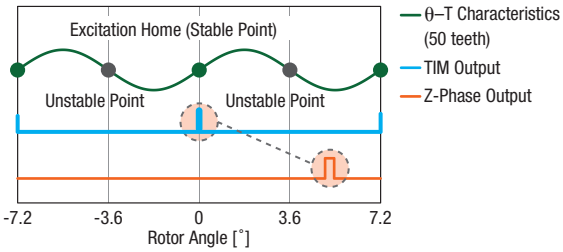
*The signal output by the driver every time the motor output shaft rotates 7.2° (3.6° for high-resolution type) from home.

●If the **Z**-Phase Output Timing is Fixed
New Encoder (Magnetic Type)



The Z-phase signal outputs with a width of ±3.6°, centered on the excitation home (stable point).

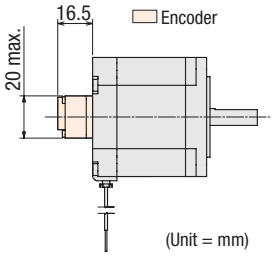
●If the **Z**-Phase Output Timing is not Fixed



The Z-phase signal output timing is unstable, making it difficult to use it as a home sensor substitute, and also making it difficult to use it in combination with the TIM signal.

◇Equipped with a Compact Encoder

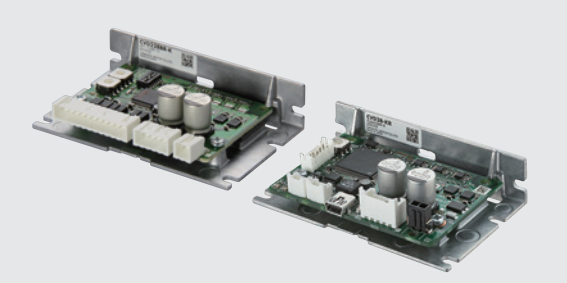
●When frame size is 56.4 mm



◇Voltage Output Type and Line Driver Output Type Available

Both a voltage output type and a line driver output type are available.

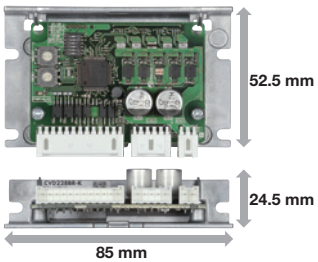
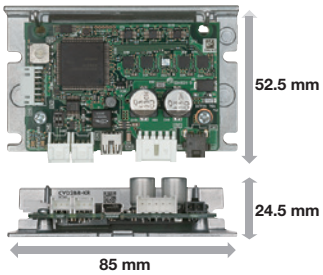
CVD Series Driver for 2-Phase/5-Phase Stepper Motors



These are DC power supply input drivers for stepper motors. 2-phase stepper motors (bipolar drive) and 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
CVD Series Pulse Input Type  ・Mass 20 g ~ 70 g (The value differs according to the driver type)	Right Angle with Installation Plate	The connector points outward. 	・Can be controlled depending on the positioning module (pulse generator) ・Running current can be easily set with the digital switch.	・Horizontal Installation ・Vertical Installation
	With Installation Plate	The connector points upward. 		
	Without Installation Plate	The connector points upward. 		
CVD Series RS-485 Communication Type  ・Mass 65 g	Right Angle with Installation Plate	The connector points outward. 	・Compatible with RS-485 communication (Modbus Protocol) ・Easy overwriting of data and multi-axis settings ・Reduced wiring of equipment and remote monitoring by host system possible ・Compatible with **MEXE02** support software	
	With Installation Plate	The connector points upward. 		

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

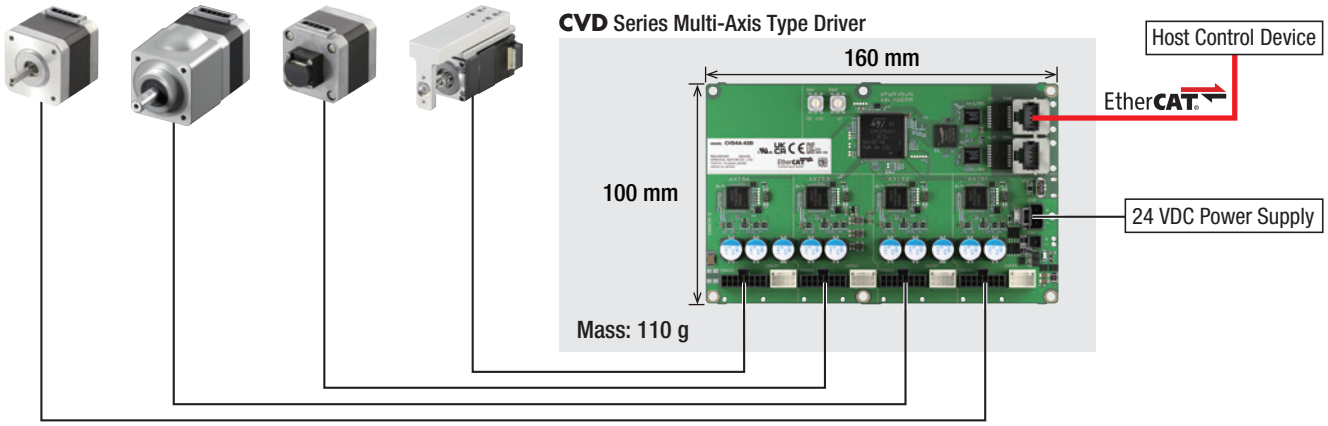
This driver can easily control speed by sensing the speed control motor. For details, please contact your nearest Oriental Motor sales office.

For 5-Phase Stepper Motors Driver **CVD** Fully Closed Loop Control Type

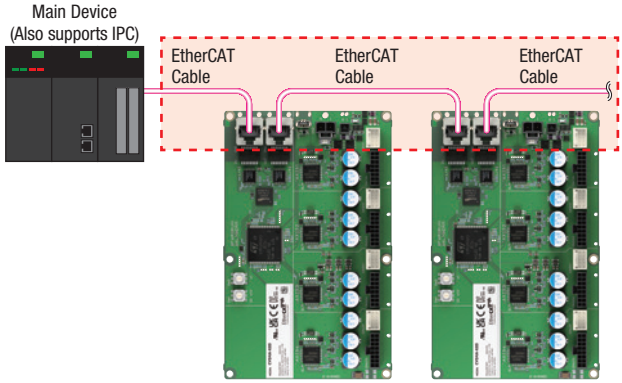
By combining it with an external sensor, you can achieve high-precision positioning operation while maintaining the ease of use of the stepping motor.

For 2-Phase/5-Phase Stepper Motors EtherCAT Compatible/4-Axis Control Reduces Wiring and Saves Space

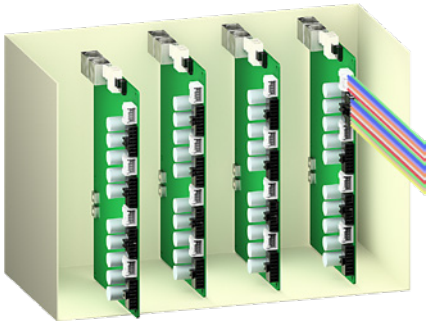
- I/O signals are consolidated into a single EtherCAT communication cable. Wiring for communication, power supply, etc. for 4-axis are integrated into a single driver
- Reduces work hours for wiring and decreases problems from mis-wiring
- Integrated management of device information including motor information by using an EtherCAT master



Daisy-chain connection of multi-axis drivers is possible



The right-angle connector direction type can be installed with several units placed side by side, eliminating crowded wiring and saving space.



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