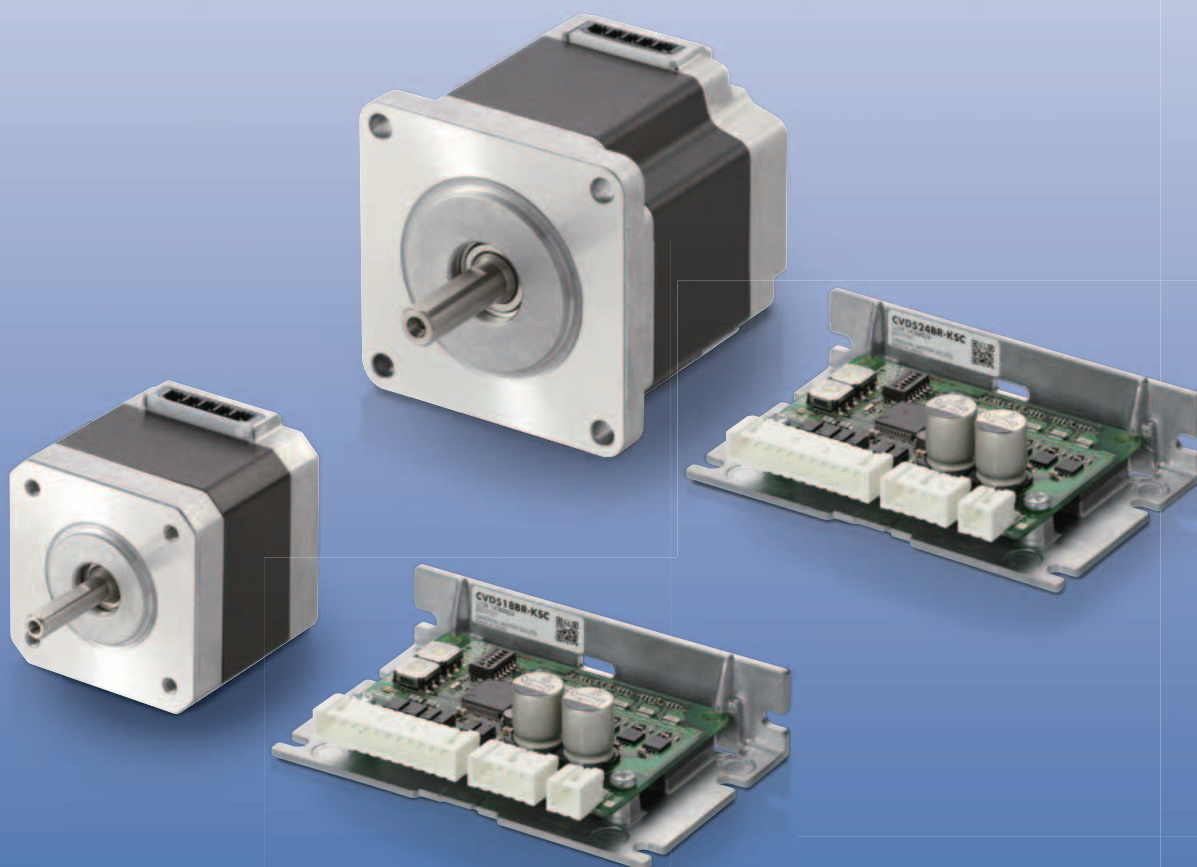
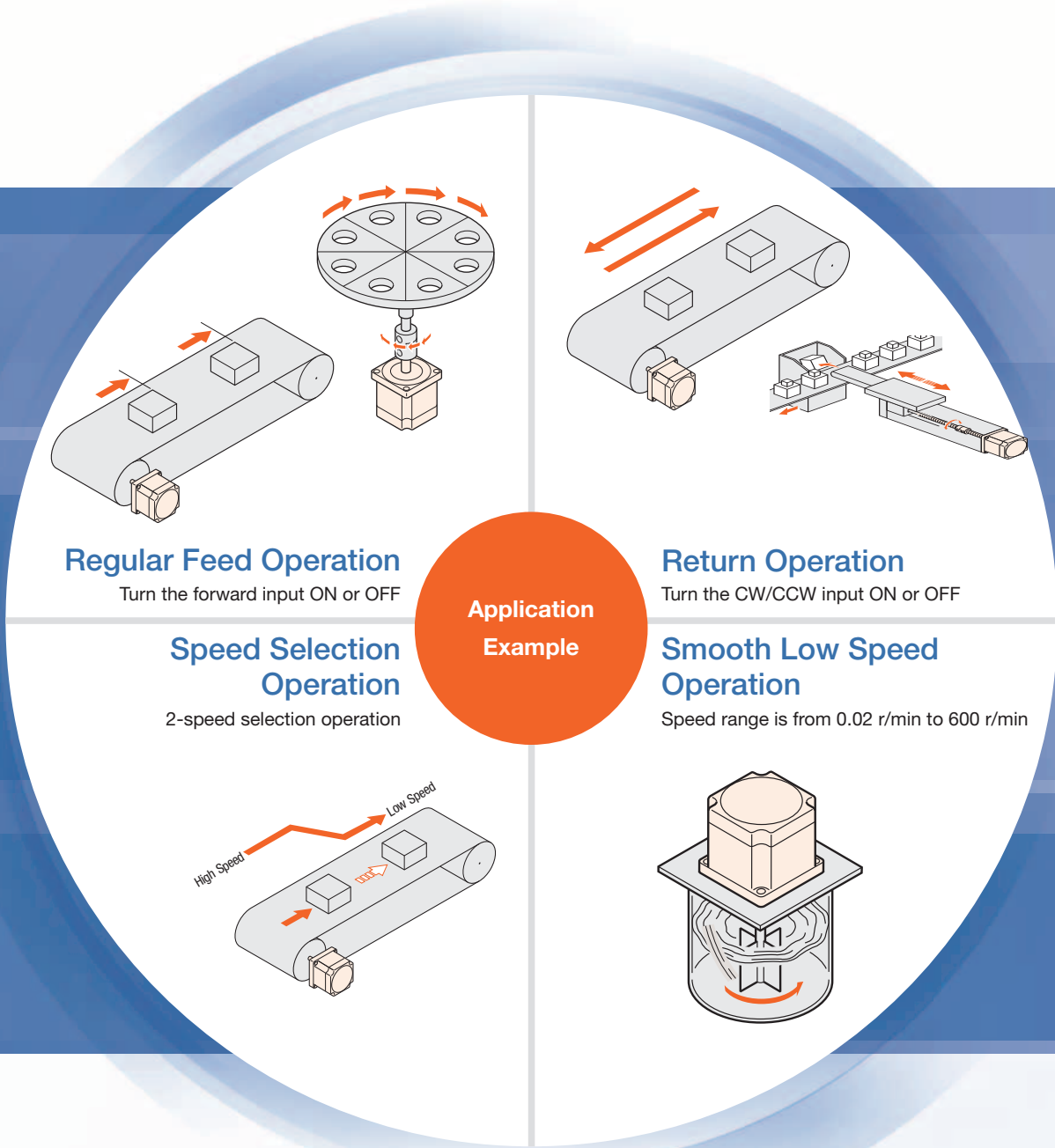


Improved Speed Control Made Simple



The simple motor and driver configuration makes speed control possible.
Control is easy. Select 2 speeds, and turn the start input ON or OFF.



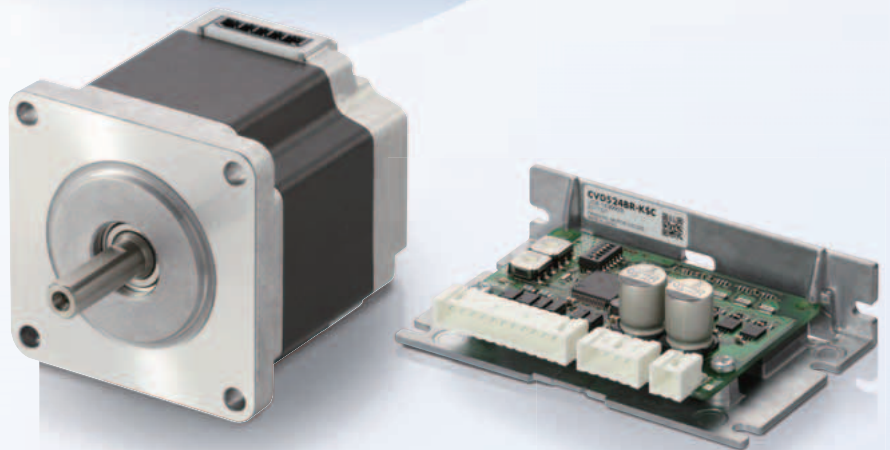
Stepper Motors

CVK Series SC Type

Operated via CW and CCW rotation input.

Stepper Motor & Driver

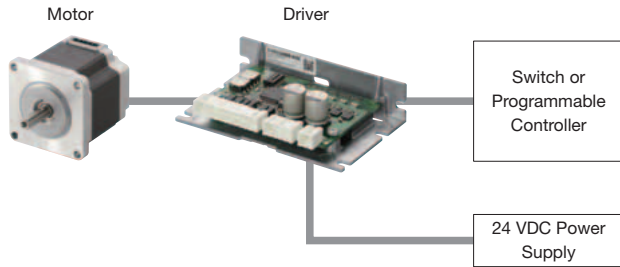
- No pulse generator needed
- 2 speed settings are possible
- Compact and high torque motor
- Improved stop position repeatability
- Maintains torque even when stopped



Speed Control

Simple System Configuration to Control I/O

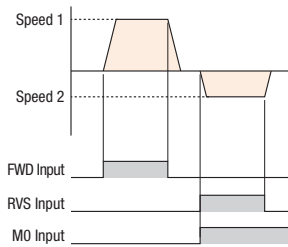
Simple configuration consisting of motor, driver and programmable controller. The operating speed, acceleration and deceleration time, running current can be set via the driver switches. Simply turn the FWD (RVS) input to ON or OFF allows for easy control.



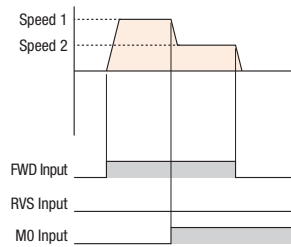
2 Individual Speed Setting are Possible

The driver can be set to 2 individual speeds, and can be easily controlled externally.

Return operation



2-speed selection operation



Maintains Torque When Stopped

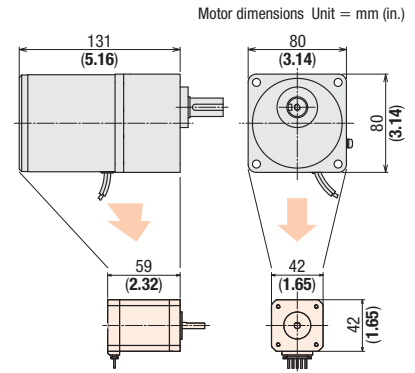
Motor current is supplied when stopped so torque is still generated. This provides load holding capability (holding force is 50% of max. holding torque).

The Motor can be Downsized Thanks to the Use of Compact, High Torque Motors

Because a stepper motor provides high torque at low operation speeds, it can be used without a gearhead. This allows for downsizing of the motor and decreasing the overall size of the equipment as compared to induction motors with almost identical speeds

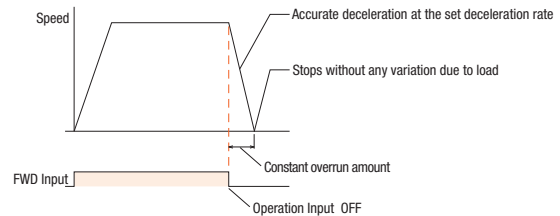
Induction Motor
Output 25 W, Gear Ratio 3
Mass: **2.45 kg (5.4 lb.)**
Torque: **0.39 N·m**

CVK Series **SC** Type
PKP546N18A2
Mass: **0.49 kg (1.08 lb.)**
Torque: **0.5 N·m**



When the Operation Input is Constant, Stop Position Repeatability is Improved

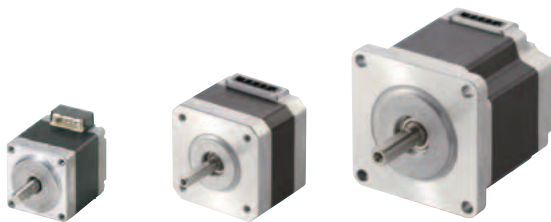
When the motor is stopped, even if the load weight is changed, if the operating conditions are the same the deceleration traveling amount does not change due to inertial load or frictional load. This allows for improvement of the stop position repeatability.



Product-Line

Motor

18 motor models in 3 frame sizes are available.



Frame size

28 mm (1.10 in.) 42 mm (1.65 in.) 60 mm (2.36 in.)

Maximum Holding Torque N·m (oz·in)

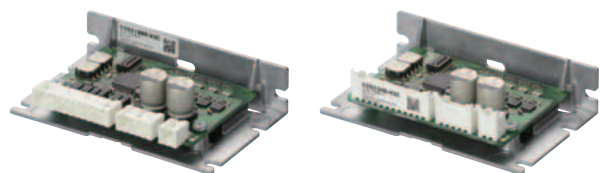
0.052 to 0.091 (7.3 to 12.9) 0.22 to 0.5 (31 to 71) 0.66 to 2.1 (93 to 290)

Driver

2 types of drivers are available.

With installation plate Right Angle Type
The connector points outward.

With installation plate
The connector points upward.

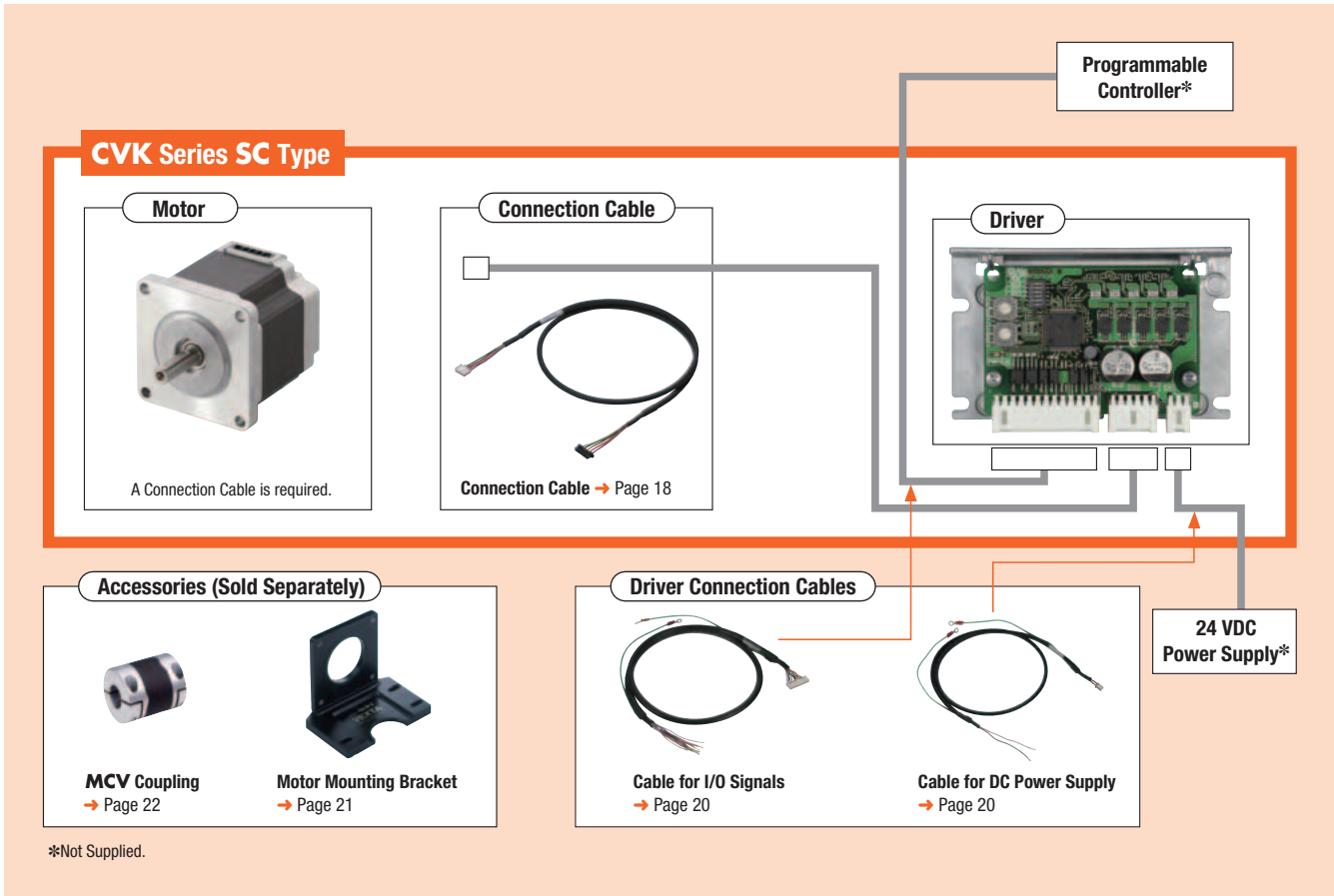


Dimensions mm (in.)

85 (W) × 24.5 (H) × 57.5 (D) 85 (W) × 24.5 (H) × 52.5 (D)
(3.35) (0.96) (2.26) (3.35) (0.96) (2.07)

System Configuration

This is an example of a system configuration with the programmable controller. Motors, cables and drivers need to be ordered individually.



Example System Configuration Price

CVK Series SC Type			Accessories	
Motor	Connection Cable (5 m)	Driver	Motor Mounting Bracket	Flexible Coupling
PKP566FN24A2	CCM050V5AEF	CVD524BR-KSC	PAL2P-5	MCV190808
\$75.00	\$41.00	\$188.00	\$17.00	\$72.00

+

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

Product Number

Motor

PKP 5 6 6 F N 24 A 2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series Name	PKP: PKP Series
②	5 : 5-Phase	
③	Motor Frame Size	2 : 28 mm (1.10 in.) 4 : 42 mm (1.65 in.) 6 : 56.4 mm (2.22 in.) 60 mm (2.36 in.) when the Motor Identification is F
④	Motor Case Length	
⑤	Motor Identification	F : Motor Frame Size 60 mm (2.36 in.)
⑥	Number of Lead Wires	N : 5
⑦	Motor Winding Specification	
⑧	Shaft	A : Single Shaft B : Double Shaft
⑨	Reference Number	

Driver

CVD 5 18 B R - K SC

① ② ③ ④ ⑤ ⑥ ⑦

①	Driver Type	CVD: CVK Series Driver
②	5 : 5-Phase	
③	Rated Current	
④	Driver Shape	B : with Installation Plate
⑤	Connector Shape	R : Right Angle
⑥	Power Supply Input	K : DC Power Supply
⑦	Driver Type	SC : Speed Control

Product Line

Please purchase motor, driver and connection cables separately.

Motor

Product Name (Single Shaft)	List Price	Product Name (Double Shaft)	List Price
PKP523N12A	\$64.00	PKP523N12B	\$66.00
PKP525N12A	\$74.00	PKP525N12B	\$75.00
PKP543N18A2	\$52.00	PKP543N18B2	\$54.00
PKP544N18A2	\$54.00	PKP544N18B2	\$56.00
PKP545N18A2	\$61.00	PKP545N18B2	\$64.00
PKP546N18A2	\$66.00	PKP546N18B2	\$69.00
PKP564FN24A2	\$69.00	PKP564FN24B2	\$72.00
PKP566FN24A2	\$75.00	PKP566FN24B2	\$78.00
PKP569FN24A2	\$92.00	PKP569FN24B2	\$95.00

Driver

◇ Right Angle Type with Installation Plate

◇ With Installation Plate

Product Name	List Price
CVD512BR-KSC	\$188.00
CVD518BR-KSC	
CVD524BR-KSC	

Product Name	List Price
CVD512B-KSC	\$188.00
CVD518B-KSC	
CVD524B-KSC	

Connection Cable

Cables for connecting the motor and driver and cables to connect the driver to the programmable controller are available. Refer to page 17 for details.

Included Items

Motor

Included Type	Operating Manual
Common to All Types	1 Copy

Driver

Included Type	Connector	Operating Manual
Common to All Types	Connector for CN1 1pc. Connector for CN2 1pc. Connector for CN3 1pc.	1 Set

Frame Size 28 mm (1.10 in.)

5-Phase Stepper Motors

Specifications



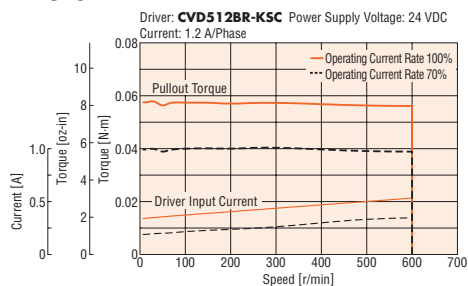
Motor Product Name	Single Shaft	PKP523N12A	PKP525N12A
	Double Shaft	PKP523N12B	PKP525N12B
Driver Product Name		CVD512B□-KSC	CVD512B□-KSC
Maximum Holding Torque	N·m (oz·in)	0.052 (7.3)	0.091 (12.9)
Holding Torque at Motor Standstill	N·m (oz·in)	0.026 (3.6)	0.045 (6.3)
Rotor Inertia	J: kg·m ² (oz·in ²)	9×10 ⁻⁷ (0.049)	18×10 ⁻⁷ (0.099)
Rated Current	A/Phase	1.2	
Setting speed range	r/min	0.02 to 600	
Speed accuracy*		±0.8%	
Power Supply Input		24 VDC±10% 0.9 A	
Excitation Mode		Microstep	

● For the right angle type with an installation plate, an **R** (right angle) indicating the connector configuration is specified where the box □ is located in the product name.

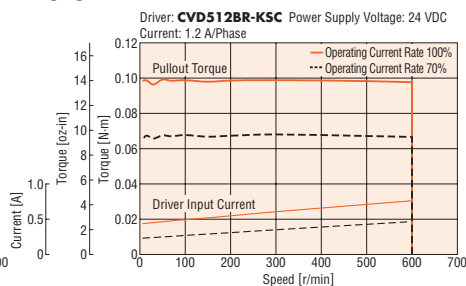
*The actual operating speed is accurate within ±0.8% against the set speed.

Speed – Torque Characteristics (Reference values)

PKP523



PKP525



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 (212°F), or less.

Explanation of Specifications Table Terminology

Max. Holding Torque	: This is the maximum holding force the motor has when power is supplied (at rated current) but the motor is not rotating.
Holding Torque While Stopped	: This is holding torque when the automatic current cutback function is active.
Setting Speed Range	: This is the settable speed range for the motor and driver combination.
Speed Accuracy	: Degree of operating speed errors due to individual differences, temperature and deterioration due to age of the driver.

Frame Size 42 mm (1.65 in.)

5-Phase Stepper Motors

Specifications



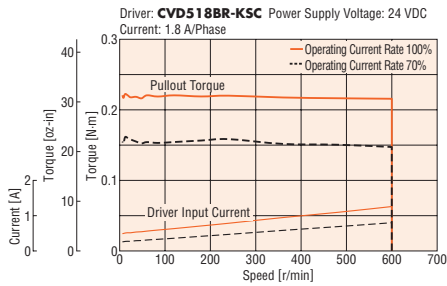
Motor Product Name	Single Shaft	PKP543N18A2	PKP544N18A2	PKP545N18A2	PKP546N18A2
	Double Shaft	PKP543N18B2	PKP544N18B2	PKP545N18B2	PKP546N18B2
Driver Product Name		CVD518B□-KSC	CVD518B□-KSC	CVD518B□-KSC	CVD518B□-KSC
Maximum Holding Torque	N·m (oz·in)	0.22 (31)	0.3 (42)	0.37 (52)	0.5 (71)
Holding Torque at Motor Standstill	N·m (oz·in)	0.11 (15.6)	0.15 (21)	0.19 (26)	0.25 (35)
Rotor Inertia	J: kg·m ² (oz·in ²)	35 × 10 ⁻⁷ (0.192)	55 × 10 ⁻⁷ (0.3)	71 × 10 ⁻⁷ (0.39)	110 × 10 ⁻⁷ (0.6)
Rated Current	A/Phase	1.8			
Setting speed range	r/min	0.02 to 600			
Speed accuracy*		±0.8%			
Power Supply Input		24 VDC ± 10% 2.5 A			
Excitation Mode		Microstep			

● For the right angle type with an installation plate, an **R** (right angle) indicating the connector configuration is specified where the box □ is located in the product name.

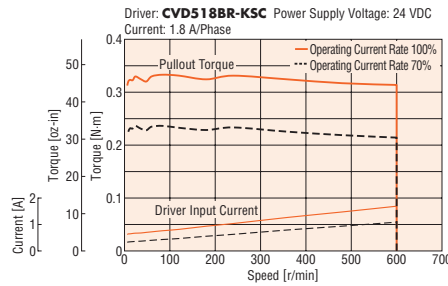
*The actual operating speed is accurate within ±0.8% against the set speed.

Speed – Torque Characteristics (Reference values)

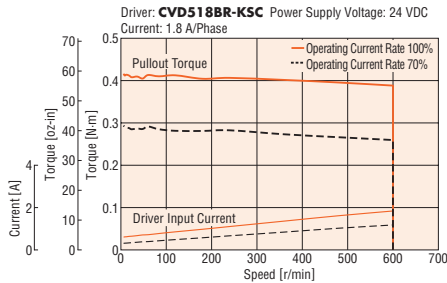
PKP543



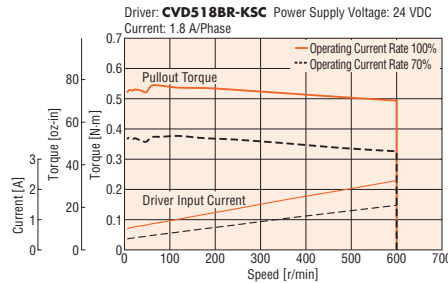
PKP544



PKP545



PKP546



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 (212°F), or less.

Frame Size 60 mm (2.36 in.)

5-Phase Stepper Motors

Specifications



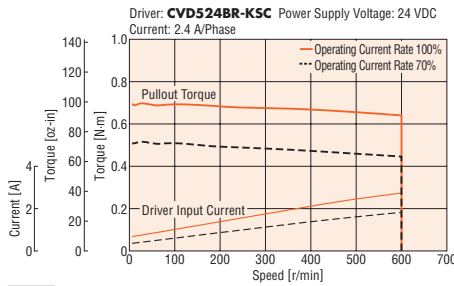
Motor Product Name	Single Shaft	PKP564FN24A2	PKP566FN24A2	PKP569FN24A2
	Double Shaft	PKP564FN24B2	PKP566FN24B2	PKP569FN24B2
Driver Product Name		CVD524B□-KSC	CVD524B□-KSC	CVD524B□-KSC
Maximum Holding Torque	N·m (oz·in)	0.66 (93)	1.15 (163)	2.1 (290)
Holding Torque at Motor Standstill	N·m (oz·in)	0.33 (46)	0.58 (82)	1.1 (156)
Rotor Inertia	J: kg·m ² (oz·in ²)	160×10 ⁻⁷ (0.88)	290×10 ⁻⁷ (1.59)	540×10 ⁻⁷ (3.0)
Rated Current	A/Phase	2.4		
Setting speed range	r/min	0.02 to 600		
Speed accuracy*		±0.8%		
Power Supply Input		24 VDC±10% 3.0 A		
Excitation Mode		Microstep		

● For the right angle type with an installation plate, an **R** (right angle) indicating the connector configuration is specified where the box □ is located in the product name.

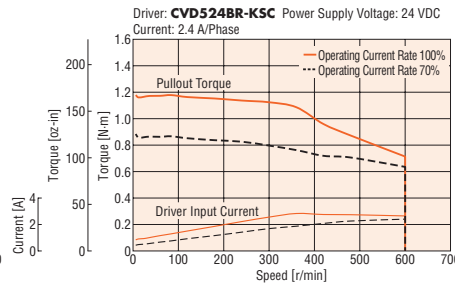
*The actual operating speed is accurate within ±0.8% against the set speed.

Speed – Torque Characteristics (Reference values)

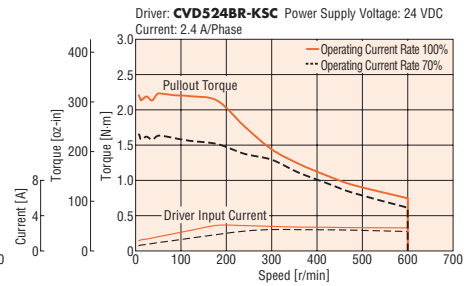
PKP564F



PKP566F



PKP569F



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 (212°F), or less.

Driver Specifications

Input Signal	<ul style="list-style-type: none"> Photocoupler input (FWD, RVS) Photocoupler [ON]: input voltage 3~5.25 VDC, Photocoupler [OFF]: input voltage 0~1 VDC (Terminal voltage) Photocoupler input (AWO, MO) Photocoupler [ON]: input voltage 4.5~5.25 VDC, Photocoupler [OFF]: input voltage 0~1 VDC (Terminal voltage)
Output Signal	Photocoupler and open-collector output, External operating conditions: 30 VDC 10 mA max. (ALM, PLS-OUT)

General Specifications

	Motor	Driver
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 Voltage	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. <ul style="list-style-type: none"> PKP52□, PKP54□: 0.5 kVAC 50/60 Hz PKP56□: 1.0 kVAC 50/60 Hz 	—
Operating Environment (In operation)	Ambient Temperature	−10~+50°C (+14~+122°F) (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 (176°F) max. (Based on Oriental Motor's internal measurement conditions)	—
Shaft Runout	0.05T.I.R (mm)*3	—
Radial Play*1	0.025 mm (0.001 in.) max. ((5 N load) (1.12 lb.))	—
Axial Play*2	0.075 mm (0.003 in.) max. ((10 N load) (2.2 lb.)) [PKP52□ is 2.5 N load (0.59 lb.)]	—
Concentricity of Installation Pilot to the Shaft	0.075T.I.R mm (0.003 in.)*3	—
Perpendicularity of Installation Surface to the Shaft	0.075T.I.R mm (0.003 in.)*3	—

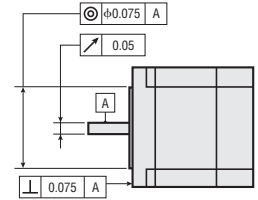
*1 Radial Play: Displacement in shaft position in the radial direction when a 5 N (1.12 lb.) load is applied perpendicular to the tip of the motor shaft.

*2 Axial Play: Displacement in shaft position in the axial direction when a 10 N (2.2 lb.) (PKP52□ is 2.5 N (0.59 lb.)) load is applied to the motor shaft in the axial direction.

*3 T. I. R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated once around the reference axis center.

Note

● When performing insulation resistance measurement or dielectric strength, please disconnect the motor and driver.

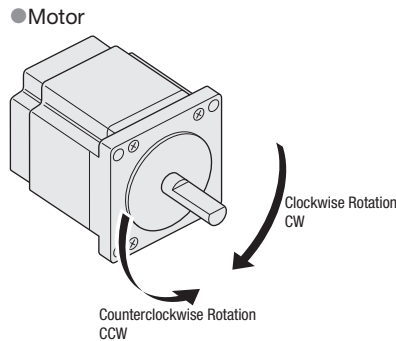


Rotation Direction

This indicates the rotation direction when viewed from the output shaft side of the motor.

When driver FWD input is ON: CW direction

When driver RVS input is ON: CCW direction



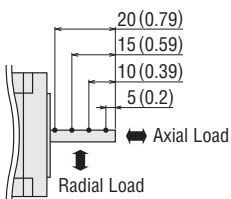
Permissible Radial Load and Permissible Axial Load

Unit: N (lb.)

Motor Frame Size	Product Name	Permissible Radial Load					Permissible Axial Load
		Distance from Shaft End mm [in.]					
		0 [0]	5 [0.2]	10 [0.39]	15 [0.59]	20 [0.79]	
28 mm [1.10 in.]	PKP523, PKP525	25 (5.6)	34 (7.6)	52 (11.7)	—	—	5 (1.12)
42 mm [1.65 in.]	PKP543, PKP544 PKP545, PKP546	35 (7.8)	44 (9.9)	58 (13)	85 (19.1)	—	15 (3.3)
60 mm [2.36 in.]	PKP564, PKP566, PKP569	90 (20)	100 (22)	130 (29)	180 (40)	270 (60)	30 (6.7)

Radial Load and Axial Load

Distance from Shaft End [mm (in.)]



Dimensions Unit = mm (in.)

● Motor

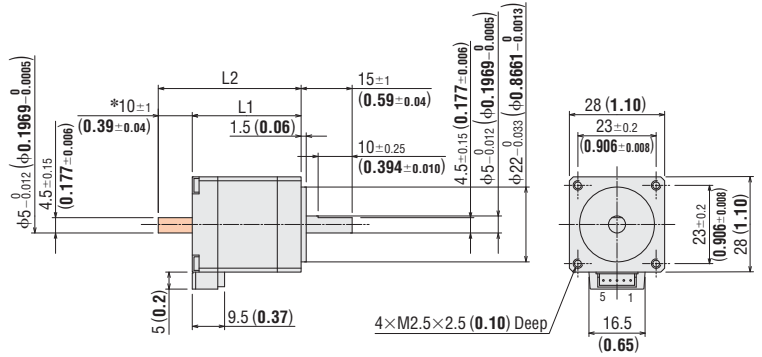
Frame Size 28 mm (1.10 in.)

2D & 3D CAD

Product Name	L1	L2	Mass kg (lb.)	2D CAD
PKP523N12A	32	—	0.11	B1146
PKP523N12B	(1.26)	42 (1.65)	(0.24)	
PKP525N12A	51.5	—	0.2	B1147
PKP525N12B	(2.03)	61.5 (2.42)	(0.44)	

● Connection Cable (Sold separately)

Product Name: LC5N06A



*The length of the shaft flat on the double shaft model is 10 ± 0.25 (0.394 ± 0.010).

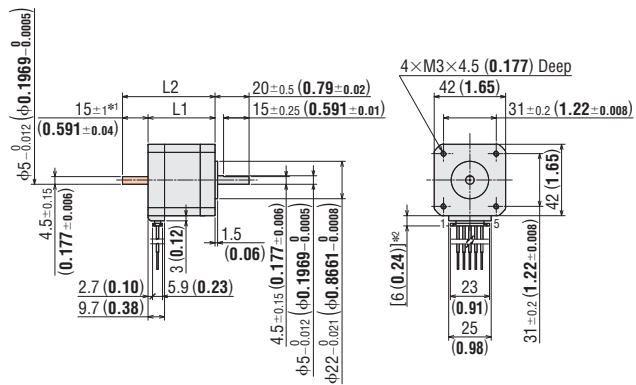
Frame Size 42 mm (1.65 in.)

2D & 3D CAD

Product Name	L1	L2	Mass kg (lb.)	2D CAD
PKP543N18A2	33	—	0.23	B1264
PKP543N18B2	(1.30)	48 (1.89)	(0.51)	
PKP544N18A2	39	—	0.29	B1265
PKP544N18B2	(1.54)	54 (2.13)	(0.64)	
PKP545N18A2	47	—	0.37	B1266
PKP545N18B2	(1.85)	62 (2.44)	(0.81)	
PKP546N18A2	59	—	0.49	B1267
PKP546N18B2	(2.32)	74 (2.91)	(1.08)	

● Connection Cable (Sold separately)

Product Name: LC5N06E



*1 The length of the shaft flat on the double shaft model is 15 ± 0.25 (0.591 ± 0.010).

*2 With connection cable

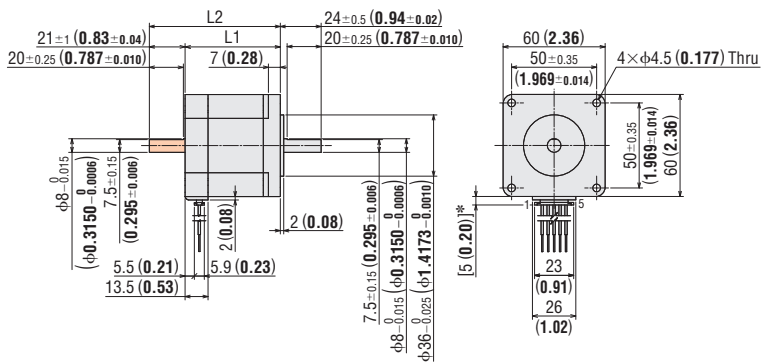
Frame Size 60 mm (2.36 in.)

2D & 3D CAD

Product Name	L1	L2	Mass kg (lb.)	2D CAD
PKP564FN24A2	44	—	0.56	B1252
PKP564FN24B2	(1.73)	65 (2.56)	(1.23)	
PKP566FN24A2	56	—	0.79	B1253
PKP566FN24B2	(2.20)	77 (3.03)	(1.74)	
PKP569FN24A2	84.5	—	1.3	B1254
PKP569FN24B2	(3.33)	105.5 (4.15)	(2.9)	

● Connection Cable (Sold separately)

Product Name: LC5N06E



*With connection cable

● Applicable Connectors

The table below shows the applicable connectors.

◇ Motor

Frame Size	Connector Housing	Contact	Crimping Tool	Manufacturer Name
28 mm (1.10)	51065-0500	50212-8100	57176-5000	Molex
42 mm (1.65), 60 mm (2.36)	MDF97-5S-3.5C	MDF97-22SC	HT801/MDF97-22S	HIROSE ELECTRIC CO.,LTD

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

● Driver

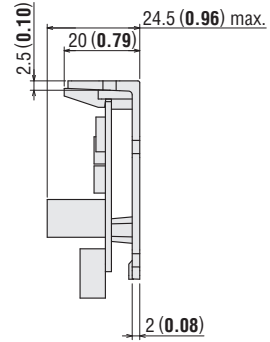
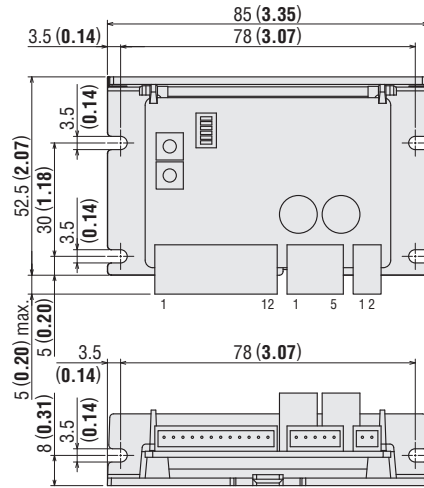
◇ Right Angle Type with Installation Plate

2D & 3D CAD

Product Name	Mass kg (oz.)	2D CAD
CVD512BR-KSC	0.06 (2.1)	B1210
CVD518BR-KSC		
CVD524BR-KSC		

● Included

- Connector Housing: 51103-0200 (Molex)
- 51103-0500 (Molex)
- 51103-1200 (Molex)
- Contact: 50351-8100 (Molex)



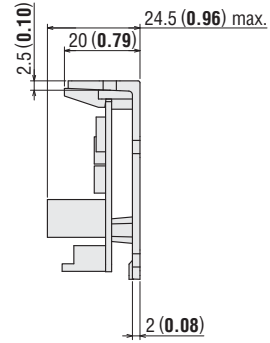
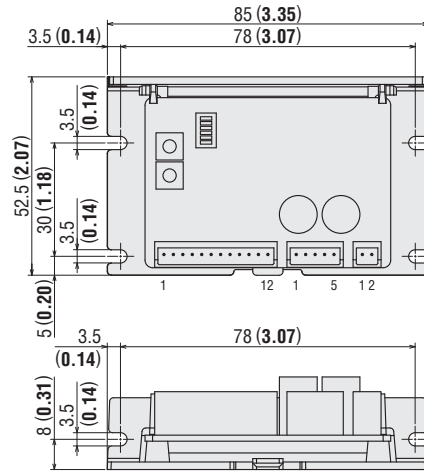
◇ With Installation Plate

2D & 3D CAD

Product Name	Mass kg (oz.)	2D CAD
CVD512B-KSC	0.06 (2.1)	B1255
CVD518B-KSC		
CVD524B-KSC		

● Included

- Connector Housing: 51103-0200 (Molex)
- 51103-0500 (Molex)
- 51103-1200 (Molex)
- Contact: 50351-8100 (Molex)



Connection and Operation

Names and Functions of Driver Parts

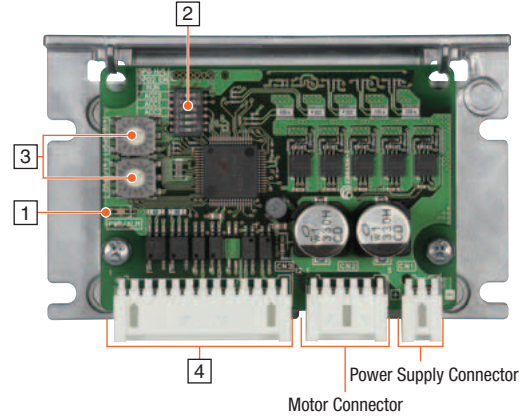
1 Signal Monitor Indicators

◇ LED Indicator

Display	Color	Function	Description
PWR/ALM	Green	Power Supply Indication	This LED is lit while the power supply is input.
	Red	Alarm Indication	This LED blinks if an alarm (protective function) generates.

◇ Alarm Contents

Number of Times Blinks	Function	Description
2	Overheat Protection	When the temperature of the driver circuit board reached 85°C (185°F).
3	Overvoltage Protection	When the power supply voltage of the driver exceeded the permissible value When a large load inertia was stopped abruptly. When an elevating drive of a large load was performed.
5	Overcurrent Protection	When an excessive current has flown through the driver output circuit for the motor. When the motor is stopped or decelerated abruptly.
9	EEPROM Error	When the data stored in the driver was damaged
Lit	CPU error	When the CPU of the driver malfunctioned.



2 Function Setting Switch

No.	Function
1	Selects the maximum speed of Speed 1. OFF: 600 r/min [Factory Setting] ON: 200 r/min
2	Selects the setting method of Speed 2. OFF: Fixed at 10% of Speed 1 [Factory Setting] ON: Selects from 16 types of speed ranging from 0.5 to 50% of Speed 1.
3	Switches the operating current rate of the motor between 100% and 70%. OFF: 100% [Factory Setting] ON: 70%
4	Sets the acceleration/deceleration time by using three switches in combination. [Factory Setting] 0.50 s (No.4: OFF, No.5: OFF, No.6: ON)
5	
6	

3 Speed Setting Switch

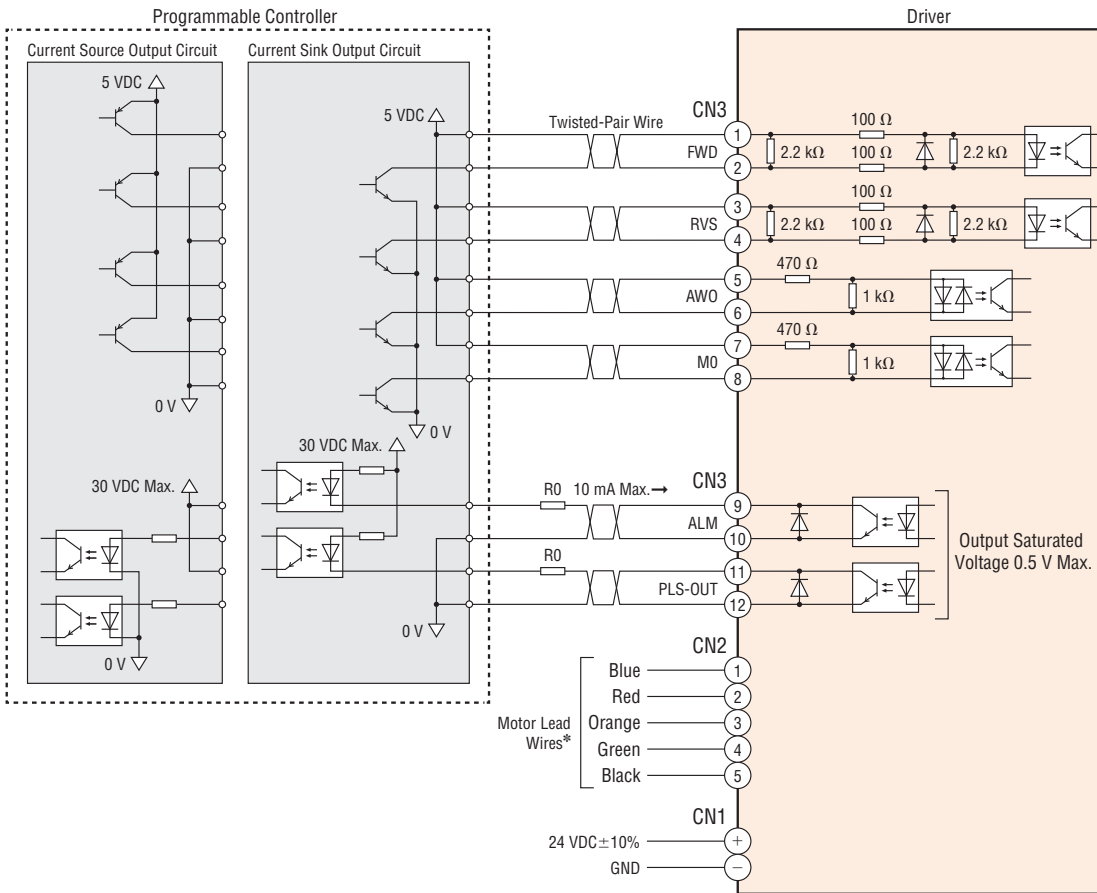
Display	Function
×16/SPD1	Sets Speed 1. [Factory Setting] 7
×1/SPD2	Sets Speed 1 or Speed 2. [Factory Setting] 7

4 I/O Signal Connector

Input/Output	Signal Name	Function
Input	FWD+	This signal is used to rotate the motor in the forward direction.
	FWD-	
	RVS+	This signal is used to rotate the motor in the reverse direction.
	RVS-	
	AWO+	This signal is used to put the motor into a non-excitation state.
	AWO-	
Output	MO+	This signal is used to switch the speed.
	MO-	
	ALM+	This signal is output when the driver is in the alarm status (normally closed).
	ALM-	
	PLS-OUT+	The PLS-OUT signal is output 50 times with each revolution of the motor output shaft.
	PLS-OUT-	

● Connection Diagrams

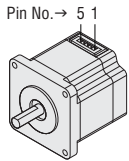
◇ When input-signal voltage is 5 VDC



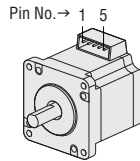
*Connector pin arrangement is different depending on the motor, please check the connection table below for details.

◇ Motor and Driver Connection Table

Model A



Model B



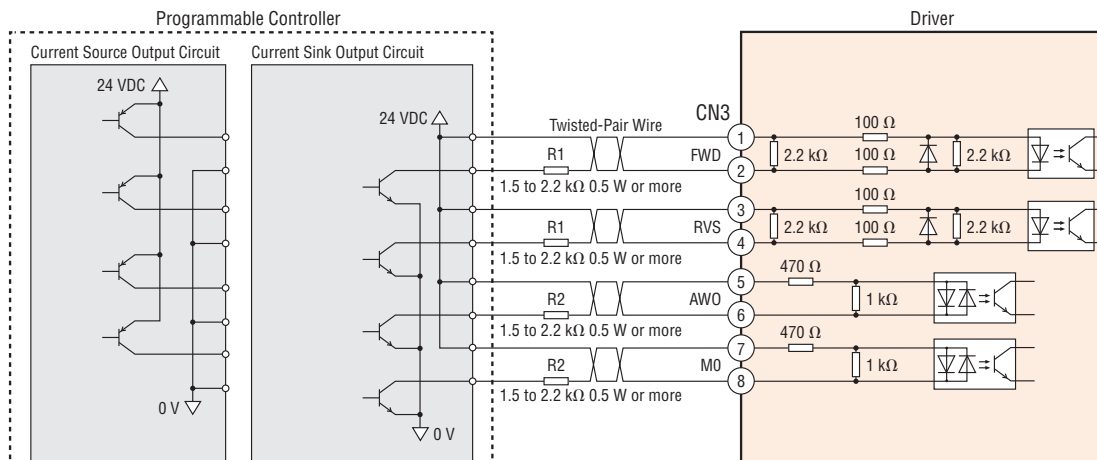
Driver CN2 Pin No.	Model A		Model B	
	Pin No.	Color	Pin No.	Color
1	5	Blue	1	Blue
2	4	Red	2	Red
3	3	Orange	3	Orange
4	2	Green	4	Green
5	1	Black	5	Black

● The "Color" in the table indicates the lead wire color of the connection cable sold separately.

Note

● The pin arrangement for Model A and Model B motors is different. Normal rotation may not occur if connected improperly.

◇ When input-signal voltage is 24 VDC



[Notes on Wiring]

◇ I/O Signal Connection

● Input Signals

- FWD input and RVS input use a 5 VDC specification. If voltage exceeds 5 VDC, connect an external resistor R1 to keep the input current between 7 mA to 20 mA. Example) For 24 VDC, R1: 1.5~2.2 kΩ 0.5 W min.
- AWO input and MO input use a 5 VDC specification. If voltage exceeds 5 VDC, connect an external resistor R2 to keep the input current between 5 mA to 15 mA. Example) For 24 VDC, R2: 1.5~2.2 kΩ 0.5 W min.

● Output Signals

Use output signals at 30 VDC 10 mA max. When the current value exceeds 10 mA, connect an external resistor R0.

- Use twisted-pair cables of AWG 24~22 (0.2~0.3 mm²).
- Provide a distance of 100 mm (3.94 in.) min. between the signal lines and power lines (such as power supply lines and motor lines).

◇ Connecting the Power Supply

- Use a wire of AWG 22 (0.3 mm²).
- Incorrect polarities of the DC power-supply input will damage the driver. Make sure that the polarity is correct before turning the power on.

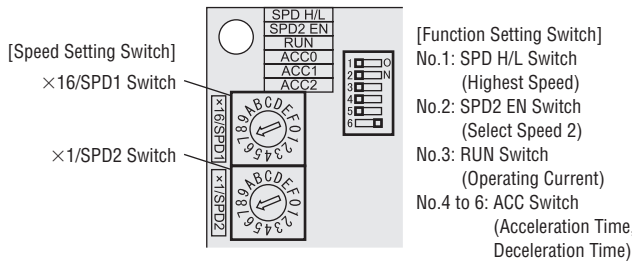
◇ Motor Cable Extension

- Use a thick wire of AWG 22 (0.3 mm²) min. A maximum of 3 cables can be used to connect the motor and the driver.
- The maximum extension length is 10 m (32.8 ft).

◇ General

- A separate hand crimp tool is required to crimp the connector and lead wires included with the driver. Connection cables which are available as accessories (sold separately) have already had their lead wires crimped.
- If noise generated by the motor cable or power supply cable causes a problem with the specific wiring or layout, shield the cables or use ferrite cores.

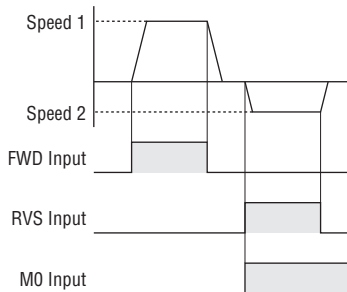
● Speed Setting Method



The **CVK Series SC** Type motors can be set with 2 types of operating speeds, a high speed and low speed.

The high speed "Speed 1" and low speed "Speed 2" are defined below.

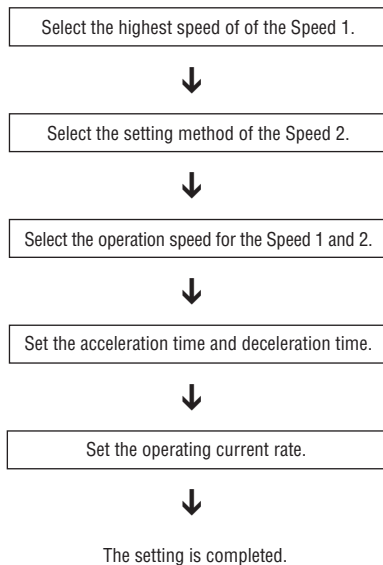
Speed 1...High speed side operating speed when M0 input is OFF.
Speed 2... Low speed side operating speed when M0 input is ON.



There are 2 setting patterns for Speed 1 and Speed 2, which varies according to the setting of the SPD2 EN switch (function setting switch No. 2).

Setting Pattern	SPD2 EN Switch	Speed Setting Method	Switch to Use
Pattern 1	OFF	Speed 1: Selects the speed from 256 types of speed.	Use ×16/SPD1 and ×1/SPD2
		Speed 2: Fixed at 10% of Speed 1	None
Pattern 2	ON	Speed 1: Selects the speed from 16 types of speed	×16/SPD1
		Speed 2: Selects the speed from 16 types of speed ranging from 0.5 to 50% of Speed 1.	×1/SPD2

◇ Setting Process



◇ Setting Item

● Maximum Speed

Select the Speed 1 max. speed using the SPD H/L switch (function setting switch No. 1).

The max. speed can be selected from either 200 r/min or 600 r/min. The speed which can be set using the speed setting switch is either 200 r/min or 600 r/min.

OFF: 600 r/min (Factory setting)

ON: 200 r/min

● Speed 2 Setting Method

Select the Speed 2 setting method using the SPD2 EN switch (function setting switch No. 2).

OFF: Speed fixed at 10% of Speed 1 (factory setting)

ON: Select 1 speed from 16 types in a range of 0.5 to 50% of Speed 1

● Operating Speed

Operating speed varies according to the setting pattern.

[Pattern]

Speed 1...Check the desired speed setting from the 256 types in the setting value list and set using a combination of "×16/SPD1 switch" and "×1/SPD2 switch".

Speed 2...Speed is fixed at 10% of Speed 1.

[Pattern 2]

Speed 1...Check the desired speed setting from the 16 types in the setting value list and set using a combination of "×16/SPD1 switch".

Speed 2...Check the desired speed setting from the 16 types in the setting value list and set using a combination of "×16/SPD2 switch".

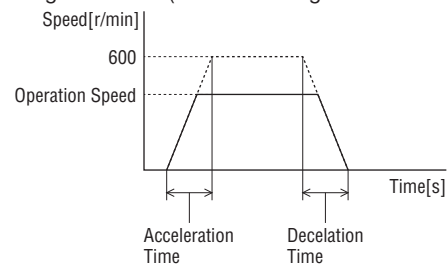
● Acceleration Time and Deceleration Time

Acceleration time is time required for the speed to reach 600 r/min from 0 r/min.

Deceleration time is time required for the speed to reach 0 r/min from 600 r/min.

The same time is applied to acceleration, deceleration and speed change.

Please set using ACC0 to 2 (function setting switch No. 4 to 6).



ACC0 (No.4)	ACC1 (No.5)	ACC2 (No.6)	Acceleration time Deceleration time
OFF	OFF	OFF	0.00 s
ON	OFF	OFF	0.05 s
OFF	ON	OFF	0.10 s
ON	ON	OFF	0.20 s
OFF	OFF	ON	0.50 s
ON	OFF	ON	1.00 s
OFF	ON	ON	2.00 s
ON	ON	ON	3.00 s

● **Running Current Ratio and Standstill Current Ratio**

[Running Current Ratio]

When the load is light and there is excess torque, by reducing the running current ratio, temperature rise in the motor can be suppressed. The actual running current is the value derived by multiplying the driver's rated current by the running current ratio.

$$\text{Running current} = \text{Rated current of driver} \times \text{Running current ratio}$$

The running current ratio can be selected using the RUN switch (function setting switch No. 3).

OFF: Running current ratio 100% (factory setting)

ON: Running current ratio 70%

Note

When the optional circuit product cover is installed on the **CVD524BR-KSC**, please set the running current ratio to 70%.

[Standstill Current Ratio]

When the motor is stopped, the current cutback function activates, and the motor current is lowered until the motor fully stops. Standstill current ratio is 50% of the running current.

$$\text{Standstill Current} = \text{Running Current} \times 50\%$$

◇ **Operating Speed Setting Values List**

When max. speed is 600 r/min

Pattern 1	Speed 1: Selects the speed from 256 types of speed.
	Speed 2: Fixed at 10% of Speed 1
Pattern 2	Speed 1: Selects the speed from 16 types of speed
	Speed 2: Selects the speed from 16 types of speed ranging from 0.5 to 50% of Speed 1.

● **Pattern 1**

Unit: r/min

		×1/SPD2 Switch															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
×16/SPD1 Switch	0	0.90	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40
	1	2.50	5.00	7.50	10.00	12.50	15.00	17.50	20.00	22.50	25.00	27.50	30.00	32.50	35.00	37.50	40.00
	2	42.50	45.00	47.50	50.00	52.50	55.00	57.50	60.00	62.50	65.00	67.50	70.00	72.50	75.00	77.50	80.00
	3	82.50	85.00	87.50	90.00	92.50	95.00	97.50	100.00	102.50	105.00	107.50	110.00	112.50	115.00	117.50	120.00
	4	122.50	125.00	127.50	130.00	132.50	135.00	137.50	140.00	142.50	145.00	147.50	150.00	152.50	155.00	157.50	160.00
	5	162.50	165.00	167.50	170.00	172.50	175.00	177.50	180.00	182.50	185.00	187.50	190.00	192.50	195.00	197.50	200.00
	6	202.50	205.00	207.50	210.00	212.50	215.00	217.50	220.00	222.50	225.00	227.50	230.00	232.50	235.00	237.50	240.00
	7	242.50	245.00	247.50	250.00	252.50	255.00	257.50	260.00	262.50	265.00	267.50	270.00	272.50	275.00	277.50	280.00
	8	282.50	285.00	287.50	290.00	292.50	295.00	297.50	300.00	302.50	305.00	307.50	310.00	312.50	315.00	317.50	320.00
	9	322.50	325.00	327.50	330.00	332.50	335.00	337.50	340.00	342.50	345.00	347.50	350.00	352.50	355.00	357.50	360.00
	A	362.50	365.00	367.50	370.00	372.50	375.00	377.50	380.00	382.50	385.00	387.50	390.00	392.50	395.00	397.50	400.00
	B	402.50	405.00	407.50	410.00	412.50	415.00	417.50	420.00	422.50	425.00	427.50	430.00	432.50	435.00	437.50	440.00
	C	442.50	445.00	447.50	450.00	452.50	455.00	457.50	460.00	462.50	465.00	467.50	470.00	472.50	475.00	477.50	480.00
	D	482.50	485.00	487.50	490.00	492.50	495.00	497.50	500.00	502.50	505.00	507.50	510.00	512.50	515.00	517.50	520.00
	E	522.50	525.00	527.50	530.00	532.50	535.00	537.50	540.00	542.50	545.00	547.50	550.00	552.50	555.00	557.50	560.00
	F	562.50	565.00	567.50	570.00	572.50	575.00	577.50	580.00	582.50	585.00	587.50	590.00	592.50	595.00	597.50	600.00

● **Pattern 2**

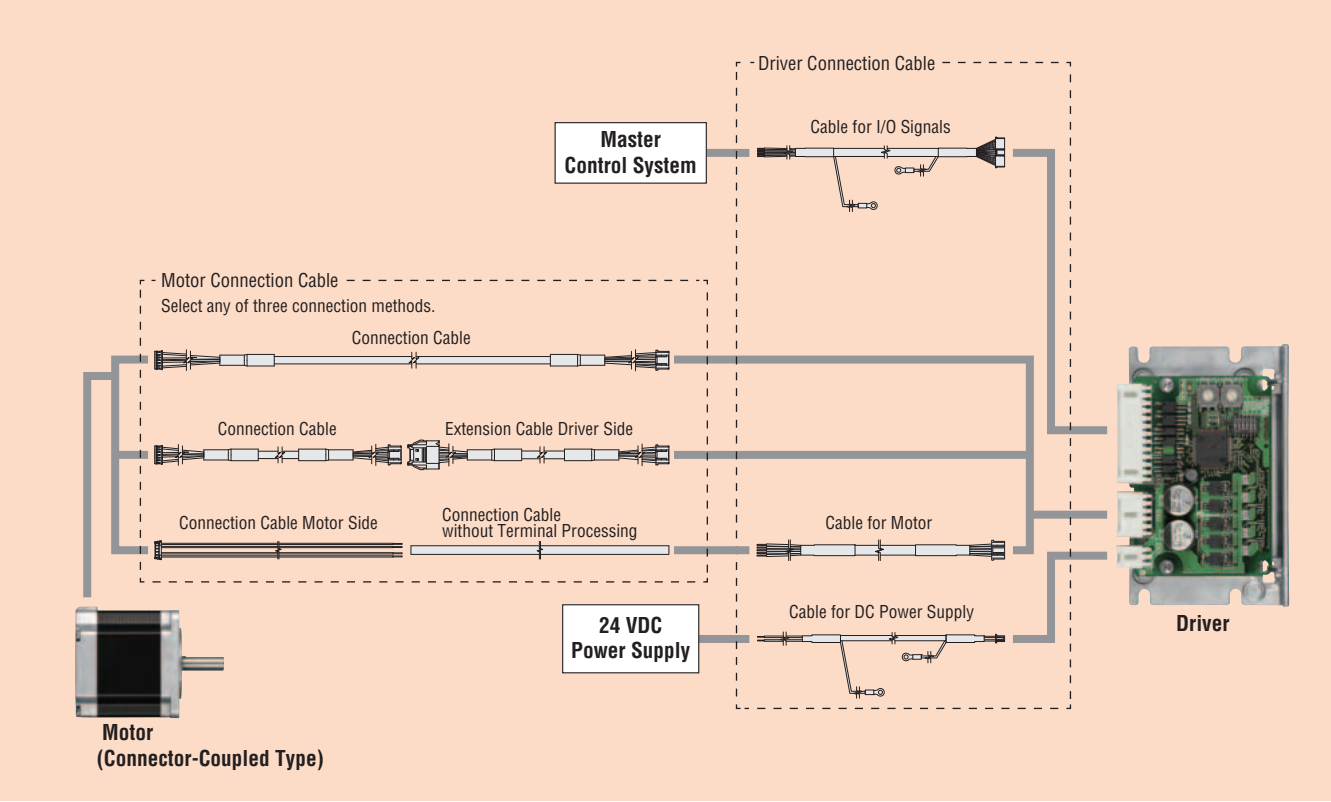
Unit: r/min

×16/SPD1 Switch (Speed 1)		×1/SPD2 Switch (Speed 2)															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	225 r/min	1.1250	2.2500	4.5000	6.7500	9.0000	11.2500	16.8750	22.5000	33.7500	45.0000	56.2500	67.5000	78.7500	90.0000	101.2500	112.5000
1	250 r/min	1.2500	2.5000	5.0000	7.5000	10.0000	12.5000	18.7500	25.0000	37.5000	50.0000	62.5000	75.0000	87.5000	100.0000	112.5000	125.0000
2	275 r/min	1.3750	2.7500	5.5000	8.2500	11.0000	13.7500	20.6250	27.5000	41.2500	55.0000	68.7500	82.5000	96.2500	110.0000	123.7500	137.5000
3	300 r/min	1.5000	3.0000	6.0000	9.0000	12.0000	15.0000	22.5000	30.0000	45.0000	60.0000	75.0000	90.0000	105.0000	120.0000	135.0000	150.0000
4	325 r/min	1.6250	3.2500	6.5000	9.7500	13.0000	16.2500	24.3750	32.5000	48.7500	65.0000	81.2500	97.5000	113.7500	130.0000	146.2500	162.5000
5	350 r/min	1.7500	3.5000	7.0000	10.5000	14.0000	17.5000	26.2500	35.0000	52.5000	70.0000	87.5000	105.0000	122.5000	140.0000	157.5000	175.0000
6	375 r/min	1.8750	3.7500	7.5000	11.2500	15.0000	18.7500	28.1250	37.5000	56.2500	75.0000	93.7500	112.5000	131.2500	150.0000	168.7500	187.5000
7	400 r/min	2.0000	4.0000	8.0000	12.0000	16.0000	20.0000	30.0000	40.0000	60.0000	80.0000	100.0000	120.0000	140.0000	160.0000	180.0000	200.0000
8	425 r/min	2.1250	4.2500	8.5000	12.7500	17.0000	21.2500	31.8750	42.5000	63.7500	85.0000	106.2500	127.5000	148.7500	170.0000	191.2500	212.5000
9	450 r/min	2.2500	4.5000	9.0000	13.5000	18.0000	22.5000	33.7500	45.0000	67.5000	90.0000	112.5000	135.0000	157.5000	180.0000	202.5000	225.0000
A	475 r/min	2.3750	4.7500	9.5000	14.2500	19.0000	23.7500	35.6250	47.5000	71.2500	95.0000	118.7500	142.5000	166.2500	190.0000	213.7500	237.5000
B	500 r/min	2.5000	5.0000	10.0000	15.0000	20.0000	25.0000	37.5000	50.0000	75.0000	100.0000	125.0000	150.0000	175.0000	200.0000	225.0000	250.0000
C	525 r/min	2.6250	5.2500	10.5000	15.7500	21.0000	26.2500	39.3750	52.5000	78.7500	105.0000	131.2500	157.5000	183.7500	210.0000	236.2500	262.5000
D	550 r/min	2.7500	5.5000	11.0000	16.5000	22.0000	27.5000	41.2500	55.0000	82.5000	110.0000	137.5000	165.0000	192.5000	220.0000	247.5000	275.0000
E	575 r/min	2.8750	5.7500	11.5000	17.2500	23.0000	28.7500	43.1250	57.5000	86.2500	115.0000	143.7500	172.5000	201.2500	230.0000	258.7500	287.5000
F	600 r/min	3.0000	6.0000	12.0000	18.0000	24.0000	30.0000	45.0000	60.0000	90.0000	120.0000	150.0000	180.0000	210.0000	240.0000	270.0000	300.0000

● For a list of the settings values when the max. speed is 200 r/min, please refer to the operating manual.

Cables

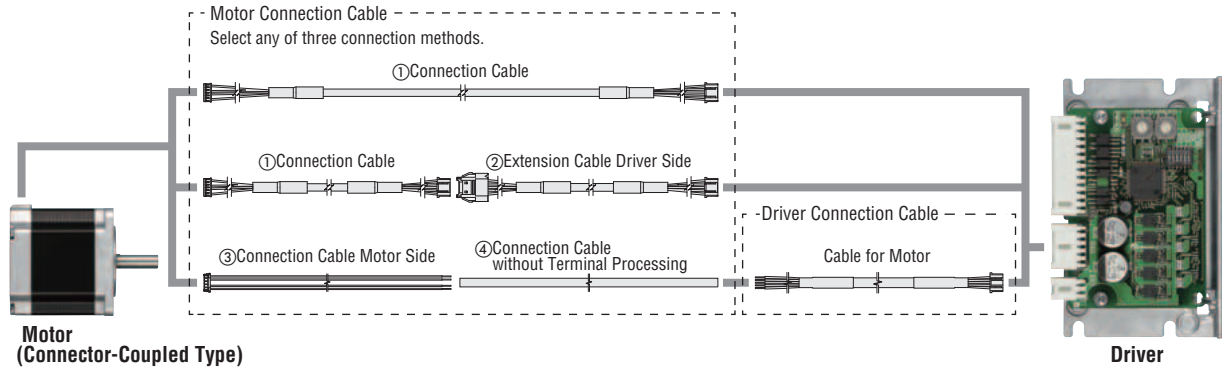
Cable System Configuration



Note

- A maximum of 3 cables can be used to connect the motor and the driver.
- The maximum wiring distance between the motor and the driver is 10 m (32.8 ft.).

Connection Cable for Motor



① Connection Cable

This cable is used to connect the connector-coupled motor with the driver. Because there are connectors on both sides, the motor and driver can be connected directly.



● 5 Phase Frame Size 28 mm (1.10 in.)

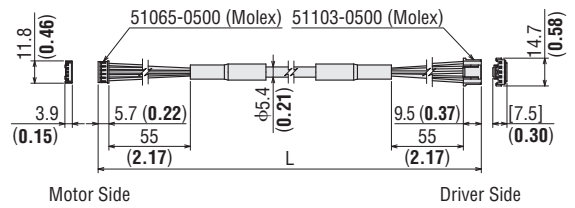
● Applicable Product

Motor Frame Size	Driver
28 mm (1.10 in.)	CVD512BR-KSC CVD512B-KSC

● Product Line

Product Name	Length L m (ft.)	List Price
CCM005V5AAF	0.5 (1.8)	\$23.00
CCM010V5AAF	1 (3.3)	\$25.00
CCM015V5AAF	1.5 (4.11)	\$26.00
CCM020V5AAF	2 (6.6)	\$29.00
CCM025V5AAF	2.5 (8.2)	\$30.00
CCM030V5AAF	3 (9.8)	\$32.00
CCM040V5AAF	4 (13.1)	\$36.00
CCM050V5AAF	5 (16.4)	\$41.00

● Dimensions Unit = mm (in.)



● For Extension Cables Driver Side (**CCM□□□V5ADFT**) to extend the connection cable, please check the notes below.

● 5 Phase Frame Size 42 (1.65 in.)/60 mm (2.36 in.)

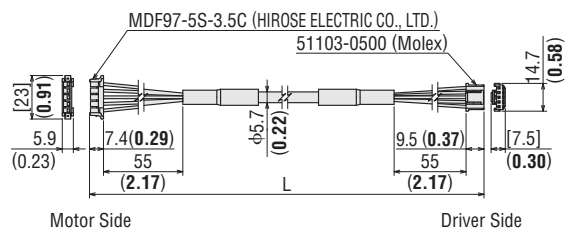
● Applicable Product

Motor Frame Size	Driver
42 mm (1.65 in.)	CVD518BR-KSC CVD518B-KSC
60 mm (2.36 in.)	CVD524BR-KSC CVD524B-KSC

● Product Line

Product Name	Length L m (ft.)	List Price
CCM005V5AEF	0.5 (1.8)	\$23.00
CCM010V5AEF	1 (3.3)	\$25.00
CCM015V5AEF	1.5 (4.11)	\$26.00
CCM020V5AEF	2 (6.6)	\$29.00
CCM025V5AEF	2.5 (8.2)	\$30.00
CCM030V5AEF	3 (9.8)	\$32.00
CCM040V5AEF	4 (13.1)	\$36.00
CCM050V5AEF	5 (16.4)	\$41.00

● Dimensions Unit = mm (in.)



● For Extension Cables Driver Side (**CCM□□□V5ADFT**) to extend the connection cable, please check the notes below.

② Extension Cable Driver Side

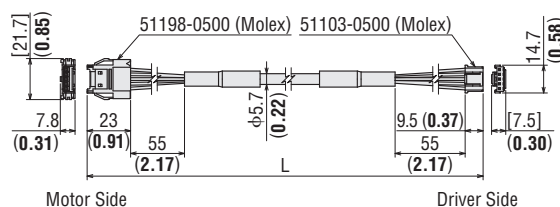
These cables can be used to extend the connection cables. They can be connected directly from the connection cable to the driver.



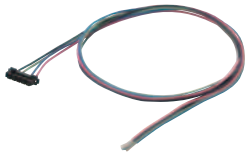
● Product Line

Product Name	Length L m (ft.)	List Price
CCM005V5ADFT	0.5 (1.8)	\$23.00
CCM010V5ADFT	1 (3.3)	\$25.00
CCM015V5ADFT	1.5 (4.11)	\$26.00
CCM020V5ADFT	2 (6.6)	\$29.00
CCM025V5ADFT	2.5 (8.2)	\$30.00
CCM030V5ADFT	3 (9.8)	\$32.00
CCM040V5ADFT	4 (13.1)	\$36.00
CCM050V5ADFT	5 (16.4)	\$41.00

● Dimensions Unit = mm (in.)



③ Connection Cable Motor



This connection cable has a connector on the motor side.

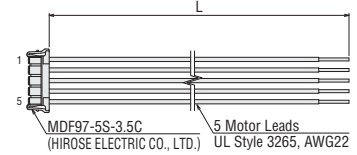
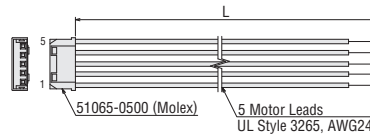
•Product Line

Motor Frame Size	Connection Cable Motor Side		
	Product Name	Length L m (ft.)	List Price
28 mm (1.10 in.)	LC5N06A	0.6 (2)	\$5.00
	LC5N10A	1 (3.3)	\$7.00
42 mm (1.65 in.) 60 mm (2.36 in.)	LC5N06E	0.6 (2)	\$6.00

•Dimensions

Product Names: **LC5N06A/LC5N10A**

Product name: **LC5N06E**



④ Connection Cable No Termination



These connection cables are used to extend the wiring distance between the motor and driver.

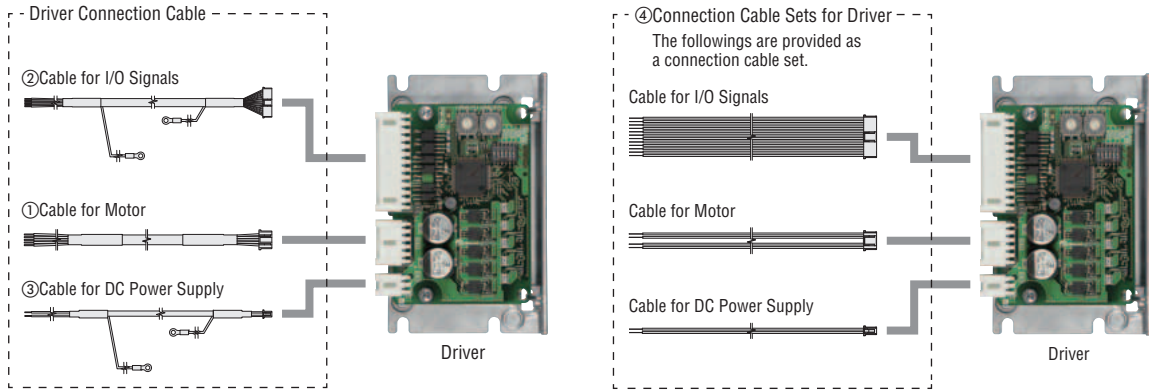
Keep the wiring distance between the motor and driver to 10 m (32.8 ft.) or less.

•Product Line

Product Name	Cable Type	Length L m (ft.)	Conductor AWG	Finished Outer Diameter mm (in.)	List Price
CC05PK5	Connection cable	5 (16.4)	22 0.3 mm ² (0.012)	φ7.2 (0.28)	\$50.00
CC10PK5		10 (32.8)			\$100.00

- Cable Core: 5 Cores (Blue, Red, Orange, Green, Black)
- Cable Rating: 105°C (221°F)
- Sheath of Armor: Oil Resistant, Heat-Resistant · Non Migration Property Vinyl

Driver Connection Cable



① Cables for Motor



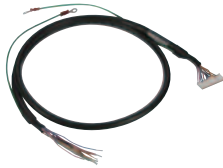
These cables are used to connect the motor and the driver. There is a connector on the driver side.

• Product Line

Product Name	Length L m (ft.)	Type	Conductor AWG	List Price
CC005N1	0.5 (1.8)	Fixed	22 0.3 mm ² (0.012)	\$19.00
CC010N1	1 (3.3)			\$22.00
CC005N1R	0.5 (1.8)	Flexible	22 0.3 mm ² (0.012)	\$25.00
CC010N1R	1 (3.3)			\$29.00

● For dimensions please visit our website.

② I/O Signal Cables



These cables are used to connect the host system and the driver.

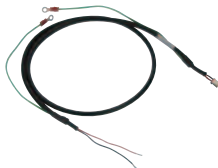
They utilize shielded cable and feature ground wires attached to both ends of the cable to make grounding easy.

• Product Line

Product Name	Length L m (ft.)	Conductor AWG	List Price
CC12D005-2	0.5 (1.8)	24 0.2 mm ² (0.008)	\$30.00
CC12D010-2	1 (3.3)		\$36.00
CC12D015-2	1.5 (4.11)		\$42.00
CC12D020-2	2 (6.6)		\$48.00

● For dimensions please visit our website.

③ Cables for DC Power Supply



These cables are used to connect the power line and the driver.

They utilize shielded cable and feature ground wires attached to both ends of the cable to make grounding easy.

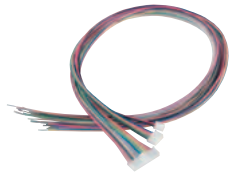
• Product Line

Product Name	Length L m (ft.)	Conductor AWG	List Price
CC02D005-2	0.5 (1.8)	22 0.3 mm ² (0.012)	\$18.00
CC02D010-2	1 (3.3)		\$20.00
CC02D015-2	1.5 (4.11)		\$22.00
CC02D020-2	2 (6.6)		\$25.00

● For dimensions please visit our website.

④ Driver Connection Cable Set

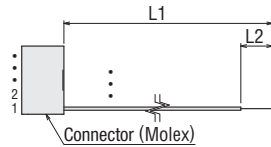
A set of connection cables to connect the motor to the driver, for I/O signals and for the DC power supply. There is a connector on the driver side.



● Product Line

Product Name	Connector	Connector Product Name	Length L1	Length L2	Conductor AWG	List Price
LCS04SD5	Connector for Motor	51103-0500	0.6 m (1.11)	10 mm (0.39)	22 0.3 mm ² (0.012)	\$27.00
	Connector for Power Supply	51103-0200				
	Connector for Input Signal	51103-1200				

● Dimensions



● Connector Arrangement

◇ For Motor

Pin No.	Color
1	Blue
2	Red
3	Orange
4	Green
5	Black

◇ For Power Supply

Pin No.	Color
1	Red
2	Black

◇ For I/O Signal

Pin No.	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

Motor Mounting Brackets



● Product Line

Material: Aluminum Alloy (SPCC)*

Product Name	List Price	Motor Frame Size	Applicable Product
PFB28A	\$26.00	28 mm (1.10 in.)	PKP52 □
PAFOP	\$13.00	42 mm (1.65 in.)	PKP54 □
PALOP			
PAL2P-5	\$17.00	60 mm (2.36 in.)	PKP56 □F

*The parentheses () indicate the specifications for **PFB28A**.

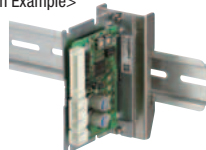
- The product names are listed such that the applicable product names can be determined.
- The mounting bracket base is built with holes large enough to allow for adjustments of the belt tension after mounting the motor.
- These mounting brackets can be perfectly fitted to the pilot of the stepper motors. (Except for **PALOP**.)

Mounting Brackets for Circuit Products

This is a DIN Rail mounting bracket for drivers with installation plates.

- Because it is made of metal, solid installation is possible.
- No horizontal slip even without an end plate.

<Application Example>



● Product Line

Material: SPCC Surface Treatment: Electroless nickel plating

Product Name	List Price	Applicable Driver
MADP07	\$11.00	with Installation Plate, Right Angle Installation Plate

Accessories (Sold separately)

For details, check the Oriental Motor website or contact the Oriental Motor sales office. <https://www.orientalmotor.com>

Flexible Couplings

A flexible coupling ideal for the **CVK** Series SC Type is available.

Once the type and/or applications of the motor has been selected, the recommended size of coupling can be selected easily.

Compatible with all motor shaft diameters.

■ MCV coupling

This one-piece coupling is made with anti-vibration rubber molded between aluminum alloy hubs.



● Product Line

Product Name	List Price
MCV15 □	\$75.00
MCV19 □	\$72.00

● The box □ in the product name indicates the number representing the inner diameter of the coupling.

Circuit Product Cover

This cover provides protection for the driver and prevents accidental contact. For use with the right angle type driver with an installation plate.



● **Product Line**

Material: Resin

Product Name	List Price	Applicable Drivers
PADC-CVD	\$14.00	CVD512BR-KSC, CVD518BR-KSC CVD524BR-KSC

Note

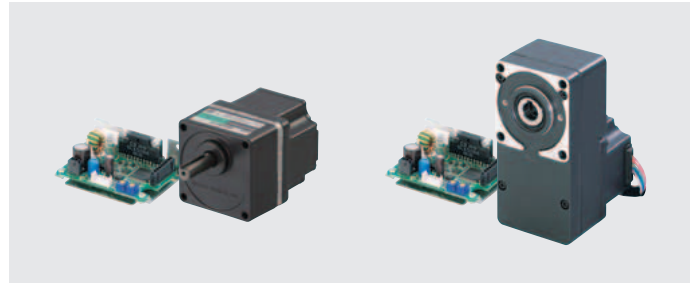
- When using the **CVD524BR-KSC** with a circuit product cover attached, set running current ratio to 70%.

Related Products

Brushless Motor

BLH Series

- This is a slim, high-power brushless motor with a 24 VDC board-type driver.
- Speed control range is 100 to 3000 r/min.
- Output power is 15 W (1/50 HP) to 100 W (1/8 HP).



Specifications are subject to change without notice. This catalog was published in June, 2018.

ORIENTAL MOTOR U.S.A. CORP.

Western Sales and Customer Service Center

Tel: (310) 715-3301 Fax: (310) 225-2594

Los Angeles

Tel: (310) 715-3301

San Jose

Tel: (408) 392-9735

Seattle

Tel: (425) 214-7559

Midwest Sales and Customer Service Center

Tel: (847) 871-5900 Fax: (847) 472-2623

Chicago

Tel: (847) 871-5900

Detroit

Tel: (734) 808-0003

Dallas

Tel: (214) 432-3386

Toronto

Tel: (905) 502-5333

Eastern Sales and Customer Service Center

Tel: (781) 848-2426 Fax: (781) 848-2617

Boston

Tel: (781) 848-2426

Charlotte

Tel: (704) 766-1335

New York

Tel: (973) 359-1100

Philadelphia

Tel: (610) 605-3103

Tampa

Tel: (813) 402-4439

Technical Support

Tel: (800) 468-3982 / 8:30 A.M. to 5:00 P.M., P.S.T. (M-F)
7:30 A.M. to 5:00 P.M., C.S.T. (M-F)

E-mail: techsupport@orientalmotor.com

**Obtain Specifications, Online Training
and Purchase Products at:
www.orientalmotor.com**

Copyright ©2018 ORIENTAL MOTOR U.S.A. CORP.

This printed material uses ECF (Elemental Chlorine Free) paper and vegetable oil based inks. This combination is environmentally friendly.

Printed in USA 17TC #516