

Unipolar Driver for 1.8°/0.9° Stepper Motor

Product Number

CMD 2 1 09 P

① ② ③ ④ ⑤

①	Driver Type	
②	2: 1.8°/0.9° Stepper Motor	
③	Power Supply Input Voltage	1: 24 VDC
④	Rated Current	
⑤	Signal I/O Mode	P: Photocoupler

Product Line

Product Name	List Price
CMD2109P	€111.00
CMD2112P	€111.00
CMD2120P	€111.00

Included

Type	Connector for Driver Connection	Operating Manual
Common to All Types	For CN1 (1 Piece) For CN2 (1 Piece) For CN3 (1 Piece)	1 set

Specifications

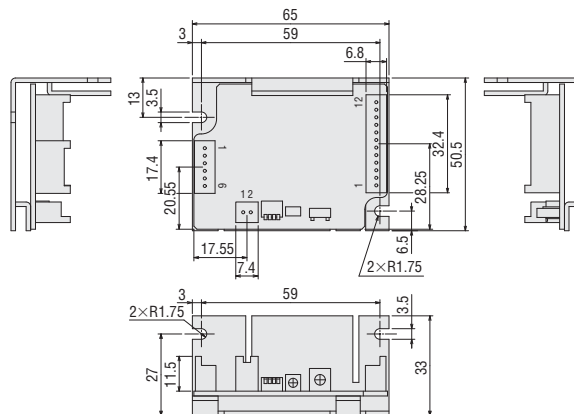
Product Name	CMD2109P	CMD2112P	CMD2120P	
Drive Method	Microstep Drive, Unipolar constant-current drive method			
Motor Drive Current (Factory setting)	0.95 A/Phase	1.2 A/Phase	2 A/Phase	
Power Supply Voltage	24 VDC±10%			
Input Current	A	1.5	1.7	2.9
Max. Input Pulse Frequency	100 kHz (When the pulse duty is 50%) 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)

Product Name	Mass kg
CMD2109P	0.05
CMD2112P	
CMD2120P	

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 (Factory Setting)	Applicable Motor
CMD2109P	0.95 A/Phase	PKP213U, PKP214U, PKP22□U, PKP243U09□2, PKP243MU
CMD2112P	1.2 A/Phase	PKP23□U, PKP24□U12□2, PKP244MU
CMD2120P	2 A/Phase	PKP25□, PKP26□U10□2, PKP26□U20□2, PKP26□MU

- 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.
Combination with the encoder type and geared type are also available.
For details on the product name, please see the Oriental Motor website.

Overview, Product Series

AC Input Motor & Driver

0.36°/Geared
αSTEP Absolute AZ

0.36°/Geared
αSTEP AR

0.72°/Geared
RKII

DC Input Motor & Driver

0.36°/Geared
αSTEP Absolute AZ

0.36°/Geared
αSTEP AR

1.8°/0.72°/0.36°
CVK

0.72°/0.36°/Geared
CRK

1.8°/Geared
RBK

Motor Only /Driver Only

1.8°/0.9°
PKP/PK

Geared
PKP/PK

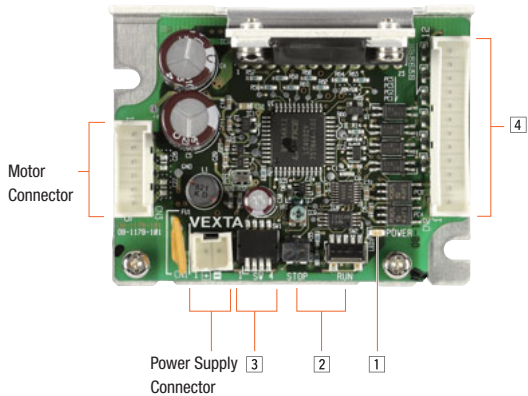
0.72°/0.36°
PKP/PK

Driver

Accessories

Connection and Operation (Unipolar Driver for 1.8°/0.9° Stepper Motor)

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 Switch

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

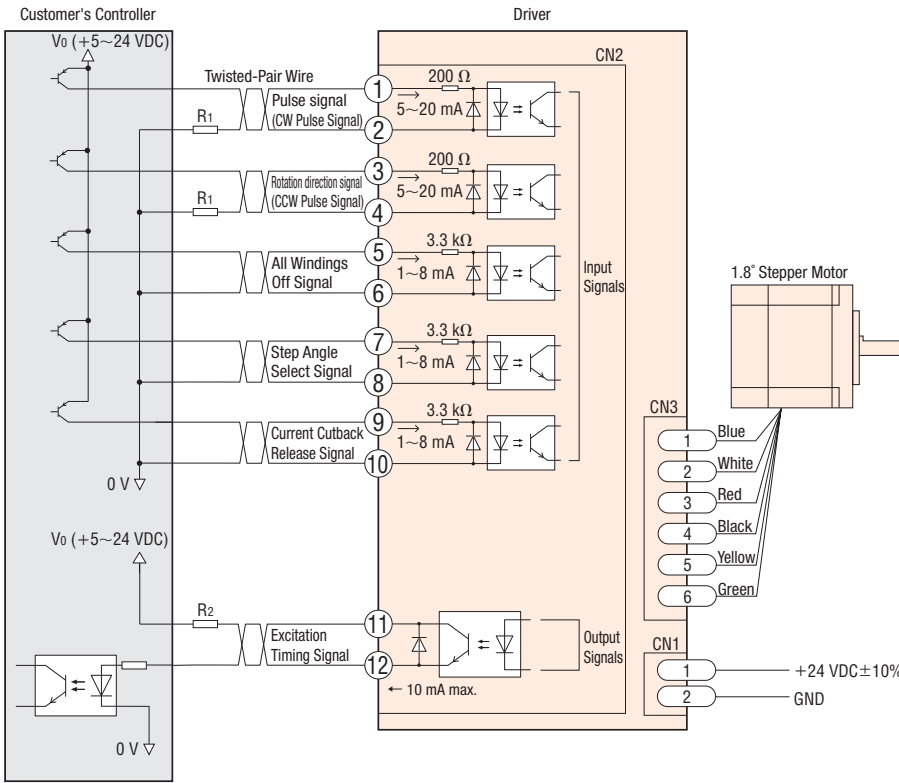
- If a combination not listed in the table is set, the resolution becomes 1, and the motor operates at the basic step angle.
- The step angle is calculated by dividing the basic step angle by the resolution number. The values above figures are based on a basic step angle of 1.8°.
- With the high-resolution 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 running. 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 Signal

Indication	I/O	Pin No.	Signal Name	Function
CN2	Input Signals	1	Pulse Signal (CW Pulse Signal)	Operation command pulse signal (Rotates the motor in the CW direction when in 2-pulse input mode.)
		2		
		3	Rotation Direction Signal (CCW Pulse Signal)	Rotation direction signal Photocoupler "OFF": CCW and photocoupler "ON": CW (Rotates the motor in the CCW direction when in 2-pulse input mode.)
		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		

● Connection Diagram

◇ Connection with Current Source Output Circuit



[Notes on Wiring]

◇ I/O Signal Connection

- **Input signal**
The external resistor is not needed when 5 VDC is applied. If voltage exceeding 5 VDC is applied, connect an external resistor R_1 so that the current becomes 5~20 mA.
Example) When V_0 is 24 VDC, R_1 : 1.5~2.2 k Ω 0.5 W min.
- **Output signal**
Check the specifications of the connected devices, and if the current exceeds 10 mA, connect the external resistor R_2 .
- Use twisted-pair cables of AWG24~22 (0.2~0.3 mm²).
- 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

- Use a wire of AWG22 (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.

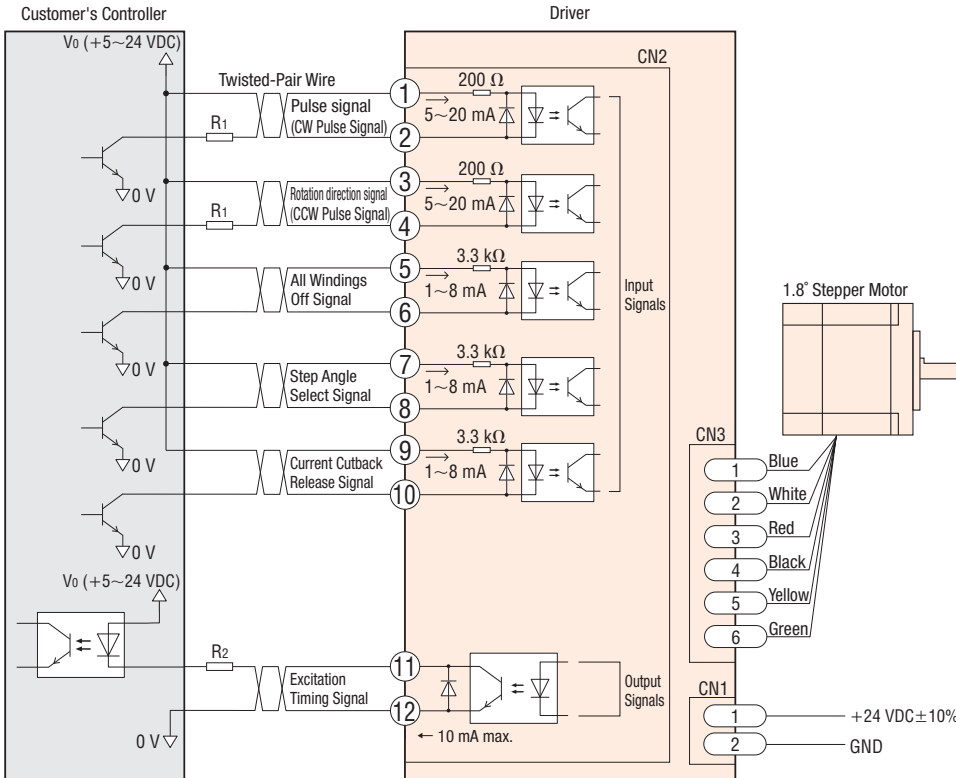
◇ Motor Cable Extension

- Use a wire of AWG22 (0.3 mm²) min.

◇ 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 Sink Output Circuit



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Motor Only /Driver Only

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Geared
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0.72°/0.36°
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Driver

Accessories