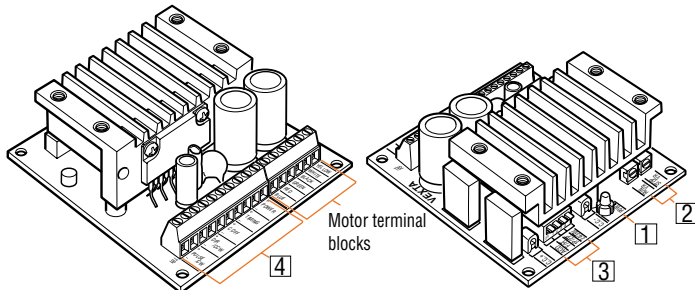


Driver Model: CSD2120-T

To see specifications and pricing, use the Web Catalog search function.

●A Full Range of Driver Functions



1 Signal Monitor Display

Indicator	Color	Functions
POWER	Green	Power input display

2 Current Adjustment Potentiometer

Indicator	Name of Potentiometer	Functions
RUN VR	Motor run current potentiometer	Can adjust the motor running current.
STOP VR	Motor stop current potentiometer	Can adjust the current at the motor standstill.

3 Function Select Switches

Indicator	Switch Name	Functions
ACD	Automatic current cutback function select switch	Output current automatically drops to 25~40% approximately 0.1 second after the pulse input rises.
F/H	Step angle select switch	Switches the motor's step angle. F (Full Step): 1.8°/step, H (Half Step): 0.9°/step (F: 0.9°/step, H: 0.45°/step for High-Resolution Type)
1P/2P	Pulse input mode switch	Switches between 1-pulse input and 2-pulse input.
24/36V	Power supply voltage select switch	Changes power supply voltage. For 24 VDC and 36 VDC

4 Input/Output Signal (TB1)

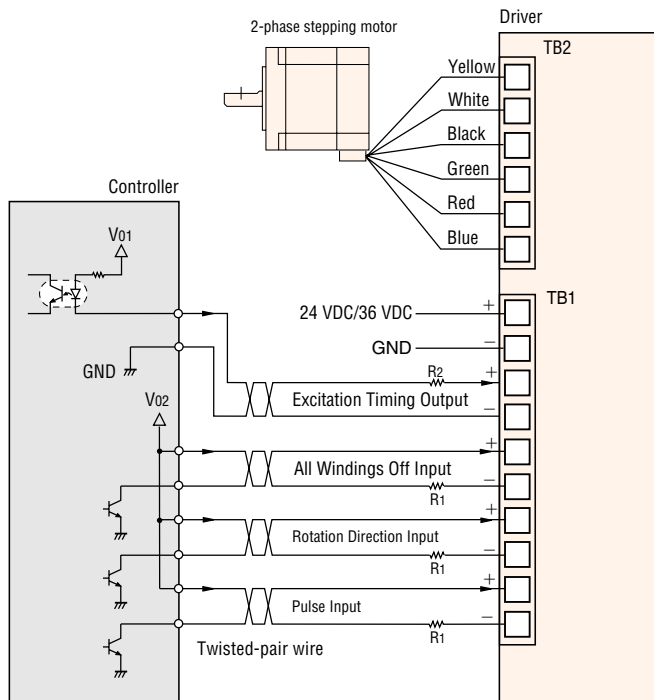
Indication	Input/Output	Signal Name
+24/36V	Input	+24 VDC ± 10% or +36 VDC ± 10%
GND		
+TIMING	Output	Timing Signal
-TIMING		
+C.OFF	Input	All Windings OFF Signal
-C.OFF		
+DIR./CCW	Input	Rotation Direction Signal (CCW Pulse Signal)
-DIR./CCW		
+PLS/CW	Input	Pulse Signal (CW Pulse Signal)
-PLS/CW		

Driver Model: CSD2120-T

To see specifications and pricing, use the Web Catalog search function.

● Connection Diagrams

- ◆ Standard Type: **CSK26**□
- High-resolution Type: **CSK26**□
- SG** Geared Type: **CSK264**□



◆ Power Supply

Keep the input power voltage $24 \text{ VDC} \pm 10\%$ or $36 \text{ VDC} \pm 10\%$. Use a power supply that can supply sufficient input current.

◆ Notes

- Keep the voltage V_0 between 5 VDC and 24 VDC. When they are equal to 5 VDC, the external resistance R_1 is not necessary. When they are above 5 VDC, connect R_1 to keep the current between 10 mA and 20 mA, and connect R_2 to keep the current below 10 mA.
- Use twisted-pair wire of AWG 24 (0.2 mm^2) or thicker and 6.6 feet (2 m) or less in length for the signal line.
- Suitable wire size for the TB1, TB2 and TB3 connector is between AWG 20 and 26. Use AWG 20 (0.5 mm^2) or thicker for motor lines (when extended) and power supply line.
- Signal lines should be kept at least 3.94 inch (10 cm) away from power lines (power supply lines and motor lines). Do not bind the signal line and power line together.
- Use spot grounding to ground of the driver and external controller.
- If noise generated by the motor lead wire causes a problem, try shielding the motor lead wires with conductive tape or wire mesh.
- Incorrect connection of DC power input will lead to driver damage. Make sure that the polarity is correct before turning power on.

● Description of Input/Output Signals

Pulse (CW) Input and Rotation Direction (CCW) Input Signal

1-Pulse Input Mode

Pulse Input Signal

"Pulse" signal is input to the PULSE/CW-terminal. When the photocoupler state changes from "ON" to "OFF", the motor rotates one step. The direction of rotation is determined by the rotation direction signal.

Rotation Direction Input Signal

The "Rotation Direction" signal is input to the DIR./CCW-terminal. A "photocoupler ON" signal input commands a clockwise direction rotation. A "photocoupler OFF" signal input commands a counterclockwise direction rotation.

2-Pulse Input Mode

CW Pulse Input Signal

"Pulse" signal is input to the PULSE/CW-terminal. When the photocoupler state changes from "ON" to "OFF", the motor rotates one step in a clockwise direction.

CCW Pulse Input Signal

"Pulse" signal is input to the DIR./CCW-terminal. When the photocoupler state changes from "ON" to "OFF", the motor rotates one step in a counterclockwise direction.

All Windings Off Input Signal

When the "All Windings Off" (A.W. OFF) signal is in the "photocoupler ON" state, the current to the motor is cut off and motor torque is reduced to zero. The motor output shaft can then be rotated freely by hand. This signal is used when moving the motor by external force or to the manual home position.

Excitation Timing Output Signal

The signal is output once each time the excitation sequence returns to step "0" in synchronization with input pulse. The excitation sequence is designed to complete one cycle as the motor shaft rotates 7.2° . A signal is output every 4 pulses in full step mode and every 8 pulses in half step mode. (When the "excitation timing" signal is output, the transistor turns ON.)

Driver Model: CSD2120-T

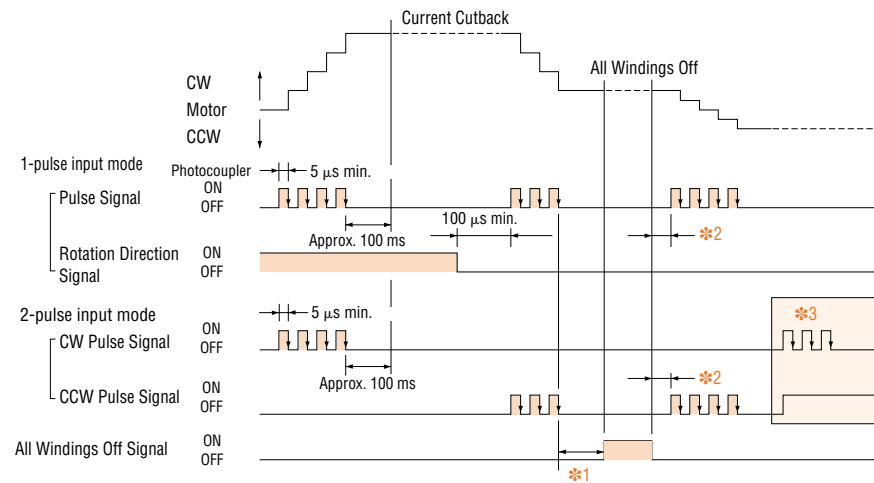
To see specifications and pricing, use the Web Catalog search function.

● Timing Chart

◆ Standard Type: **CSK26**□

High-resolution Type: **CSK26**□

SG Geared Type: **CSK264**□



Note: 10 μ s or more is the standard interval time for switching from CW to CCW. Note that the interval time greatly varies according the motor and load inertia.

- *1 Wait a period of time to allow the motor oscillations to end before inputting the "All Windings Off" signal. This time varies with the load inertia, the load torque and the starting pulse rate. The signal input must be stopped before the motor stops.
- *2 Never input a step pulse signal immediately after switching the "All Windings Off" input signal to the "photocopler OFF" state or the motor may lose synchronism. In general, a minimum interval of 100 ms is required.
- *3 The motor will not operate properly if a pulse signal is input when either the CW or CCW pulse is in the "photocopler ON" state.

The shaded area indicates when the photocopler is ON.

Driver Model: CSD2120-T

To see specifications and pricing, use the Web Catalog search function.

● Adjusting the Output Current

(Standard Type: **CSK26**□,

High-resolution Type: **CSK26**□,

SG Geared Type: **CSK264**□)

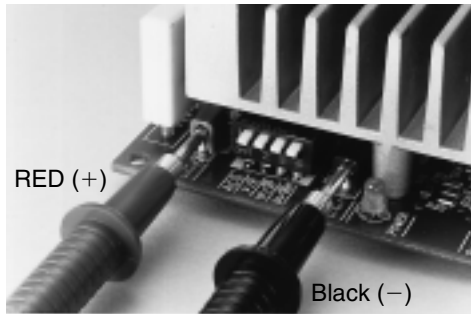
◆ Adjustment Method

The rated output current is set at the factory. When it is necessary to change the current setting, follow the procedures described below.

Connecting Voltmeter

Insert voltmeter test probes [approximately φ0.18 inch (φ2.1 mm)] as shown below. The current value for one phase is equivalent to the voltage shown by the voltmeter.

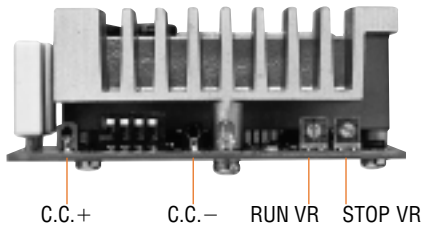
(ex : voltmeter voltage 1 V = 1 A/Phase)



Adjusting the Motor Running Current

To set the "Automatic Current Cutback" function to inactive (SW1: OFF):

- (1) Adjust the motor operating current with the RUN potentiometer. It can be adjusted from 0.3 A/phase to the rated value of the driver.
- (2) The motor operating current is set for the rated current at the time of shipping. The RUN potentiometer can be used lower the operating current to reduce temperature rise in the motor/driver, adjust torque margin and reduce vibration.



Note:

- The motor RUN current should be less than the motor rated current.

Adjusting the Current at Motor Standstill

To set the "Automatic Current Cutback" function to active (SW1: ON):

- (1) Adjust the current at motor standstill with the STOP potentiometer. It can be adjusted from 25% to 40% of the run operating current (0.3 A minimum).
- (2) At the time of shipping, the current at motor standstill is set for 40%. The STOP potentiometer readjusts the current to the value required to produce enough holding torque.

$$\text{Holding torque [oz-in (N-m)]} = \frac{\text{Maximum holding torque [oz-in (N-m)]} \times \text{Current at motor standstill [A]}}{\text{Motor rated current [A]}}$$