

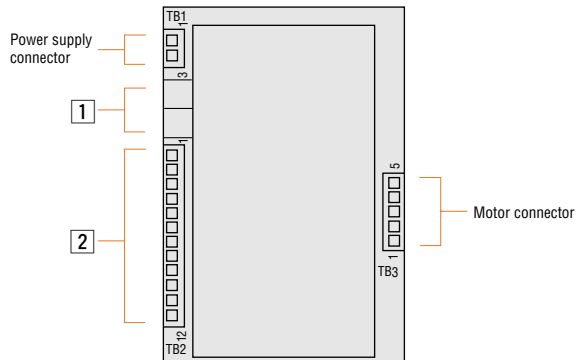
## Driver Model: CSD5807N-T

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

### ●A Full Range of Driver Functions

**Standard Type: CSK54□ Models**

**TH Geared Type: CSK543□ Models**



### 1 Current Adjustment Potentiometer

Indicator	Switch Name	Functions
RUN	Motor run current potentiometer	Can adjust the motor running current
STOP	Motor stop current potentiometer	Can adjust the current at the motor standstill

### 2 Input/Output Signal

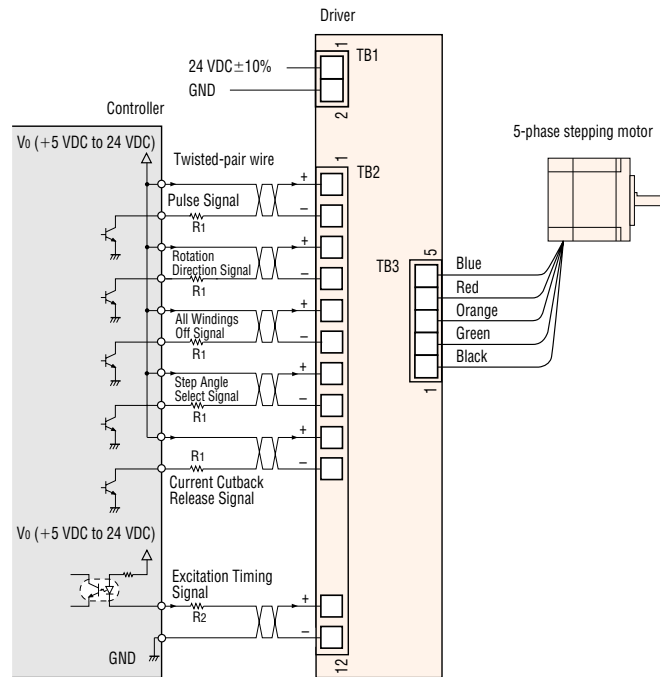
Indicator	Input/Output	Terminal No.	Signal Name
TB2	Input signals	1	Pulse Signal
		2	
		3	Rotation Direction Signal
		4	
		5	All Windings Off Signal
		6	Step Angle Select Signal
		7	
		8	Current Cutback Release Signal
		9	
		10	Excitation Timing Signal
	11		
	12		

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### ● Connection Diagrams

- ◆ Standard Type: **CSK54** Models
- TH Geared Type: **CSK543** Models



### ◆ Power Supply

Keep the input power voltage  $24\text{ VDC} \pm 10\%$ . 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 ( $0.2\text{ mm}^2$ ) 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 ( $0.5\text{ mm}^2$ ) 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 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 Input Signal

"Pulse" signal is input to the PULSE–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 DIRECTION–terminal. A "Photocoupler ON" signal input commands a clockwise direction rotation. A "Photocoupler OFF" signal input commands a counterclockwise direction rotation.

#### 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.

#### Step Angle Select Input Signal

When the "Step Angle Select" (FULL/HALF) signal is in the "photocoupler ON" state, half step mode has been selected; when the FULL/HALF signal is in the "photocoupler OFF" state, full step mode has been selected.

#### Current Cutback Release Input Signal

When the "Current Cutback Release" (C.D. INH) signal is in the "photocoupler ON" state, the "Automatic Current Cutback" function is not activated.

#### Excitation Timing Output Signal

The signal is output once each time the excitation sequence returns to step "0" in synchronization with input pulses. The excitation sequence is designed to complete one cycle as the motor shaft rotates  $7.2^\circ$ . A signal is output every 10 pulses in full step mode and every 20 pulses in half step mode. (When the "Excitation Timing" signal is output, the transistor turns ON.)

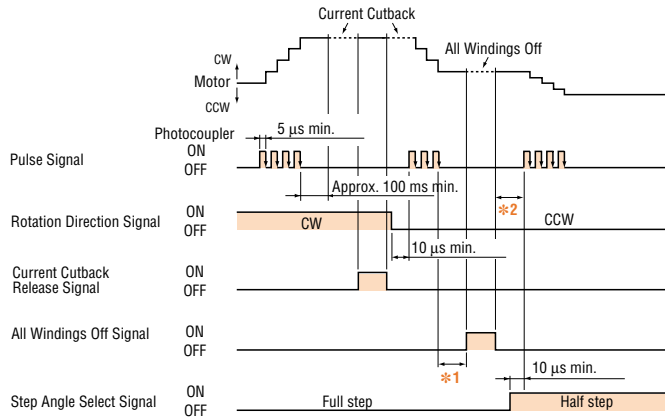
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### ● Timing Chart

◆ Standard Type: **CSK54** □ Models

◆ TH Geared Type: **CSK543** □ Models



#### Note:

10 μs 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" signal to "photocoupler OFF" state or the motor may lose synchronism. In general, a minimum interval of 100 ms is required.

The shaded area indicates when the photocoupler is ON.

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### ● Adjusting the Output Current

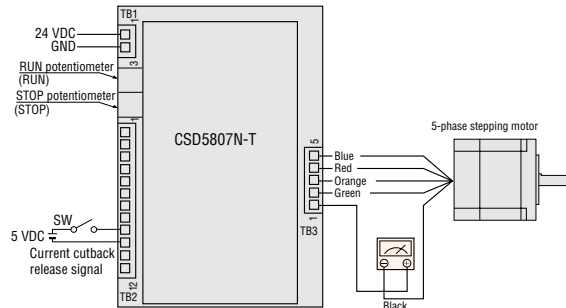
The rated output current is set at the factory. If it is necessary to change the current setting, follow the procedures described below.

### ◆ Connecting an Ammeter

**Standard Type: CSK54□ Models**

**TH Geared Type: CSK543□ Models**

Connect a DC ammeter between the motor and terminal ① of TB1 connector as shown below.



● After connecting the DC ammeter to the motor, turn on the power. (The excitation status at this point is fixed: power on reset.)

● When the power is turned on, the motor enters a 4 phase excitation state, and +directional positive current flows through the blue motor lead wire. (Even if 4-5 phase excitation has been selected, the motor enters a 4 phase excitation state when the power is turned on. Adjust the current in this state.)

● The value measured by the ammeter represents the total current in two phases. The current for one phase is equivalent to half of the ammeter value. (When setting the current to 1.0 A/phase, adjust the current level until the ammeter reads 2.0 A.)

#### Notes:

- Never input pulse signals.
- Select "photocoupler OFF" for "all windings off" signal. (Select "photocoupler OFF" when the switch is open.)
- When the RUN current is adjusted, the current at motor standstill also changes.

### ◆ Adjusting the Motor Running Current

Set the "current cutback release" signal to the "photocoupler ON" state (SW: ON) when adjusting the RUN current.

- (1) Adjust the motor RUN current with the RUN potentiometer.  
Adjusting range  
CSD5807N-T: 0.1 A/phase to 0.75 A/phase
- (2) The motor operating current is set for rated current (CSD5807N-T: 0.75 A/phase) at the time of shipping, but it can be readjusted using the RUN potentiometer. The operating current can be lowered to suppress temperature rise in the motor/driver, or lower running current in order to allow a margin for motor torque or to reduce vibration.

#### Note:

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

### ◆ Adjusting the Current at Motor Standstill

Set the "current cutback release" signal to the "photocoupler OFF" state (SW: OFF) when adjusting the current while the motor is stopped.

- (1) Adjust the current at motor standstill with the STOP potentiometer.  
Adjusting range  
CSD5807N-T: 0.1 A/phase to 0.56 A/phase
- (2) At the time of shipping, the current at motor standstill is set for half the rated current. (CSD5807N-T: 0.375 A/phase). The STOP potentiometer can be used to readjust the current at motor standstill to the current value required to produce enough holding torque.

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