

**Input:** 2 to 100 Amps AC/DC  
**Output:** SPDT Relay or Normally Open SSR, 4 to 100 A Setpoint

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- Low Voltage AC/DC Powered
- 0.15 A Solid State Switch or 5 A Relay
- Adjustable 2 to 100 Amp Setpoint
- LED Power and Status Indicators

**Applications**

- Signal Amps Out of Normal Range
- Detect Motor and Drive Over-current
- Monitor Battery Banks, Welders, Solar Panels

**Switch Type and Rating**

CS-DC-1S SPDT mechanical relay  
 5 A @ 240 VAC max. resistive  
 3 A inductive, 1/8 HP @ 240 VAC  
 3 A @ 30 VDC

CS-DC-2S Normally open isolated solid state switch  
 0.15 A @ 240 VAC/VDC  
 Not polarity sensitive  
 Off state leakage: <10 µA

**Setpoint Adjustment**

11 turn potentiometer

**Hysteresis and Repeatability**

Approximately 5% of setpoint hysteresis, ±5% repeatability

**LED Alarm Indication**

Red LED on when tripped

**Response Time**

100 ms (10% above setpoint)  
 20 ms (100% above setpoint)

**Frequency Range**

DC to 400 Hz

**Isolation Voltage**

Tested to 3000 V

**Sensing Aperture**

0.74" diameter (19 mm)

**Power Supply**

CS-DC-1S-24, CS-DC-2S-24: 20-28 VAC/DC  
 CS-DC-1S-12, CS-DC-2S-12: 12 VAC/DC  
 Use Class 2 or limited power source supply only

**Environmental**

CS-DC-1S -4 to 122 °F (-20 to 50 °C)  
 CS-DC-2S -40 to 140 °F (-40 to 60 °C)  
 0-95% RH, non-condensing  
 Protect from weather, water, condensation, corrosion  
 Max. altitude 2000 meters

**Listings**

UL & CUL 508 industrial control equipment, CE certified  
 UL 94V-0 flammability rated housing

Model	Relay	Power	DC Input Ranges		
			Low	Mid	High
CS-DC-1S-12	SPDT	12 VAC/DC,	2 to 20 A	10 to 50 A	20 to 100 A
CS-DC-2S-12	SSR	±10%, 2 VA			
CS-DC-1S-24	SPDT	20-28 VAC/DC,	2 to 20 A	10 to 50 A	20 to 100 A
CS-DC-2S-24	SSR	2 VA			

**Description**

The CS-DC-1S has a SPDT relay, and the CS-DC-2S has a normally open (NO) solid state relay (AC or DC). They have a hall effect sensor, signal conditioner, and limit alarm in one compact package.

The user can set the desired current range by changing a jumper. The trip point potentiometer can be set to any value between 2 Amps and 100 Amps, and when exceeded, will activate either a relay output or solid state output, depending on the model.

They can be mounted in virtually any position and either panel mounted using the built-in mounting bracket or hung directly on the wire to be measured and secured with a wire tie.

A green LED indicates "power on" and a red LED will activate when the alarm setpoint has been exceeded. 5% setpoint hysteresis is used to prevent false trips or "chattering" of the output.



**Instructions**

**Range Selection**

The sensing ranges are jumper-selectable. It is often easier to set ranges before installation. See product label for ranges. The ranges are factory calibrated.

Determine the desired amperage to be monitored. Depending on your application this may be normal or maximum amperage. See the product label and place the range jumper in the appropriate position that is equal to or slightly higher than the desired amperage.

**Installation**

**WARNING!** Turn all power off before connecting or disconnecting wiring, or removing or installing this device. All wiring must be performed by a qualified electrician or instrumentation engineer.

This device must be protected from the environment or mounted in an enclosure. It can be mounted in any position or hung directly on wires with a wire tie. Leave at least one inch distance between sensor and other magnetic devices.

If this equipment is not used as specified, safety and reliability may be impaired.

Run wire to be monitored through the sensing aperture.

**Output Wiring**

For the relay connections use 14-22 AWG copper wires rated 75/90 °C. Terminals should be tightened to 5-7 in-lbs torque.

See wiring diagram. Terminals are removable to make wiring easier. Be sure to seat the connector properly.

**CAUTION: Do Not Disconnect Output Terminals Under Load!**

Be sure the output load does not exceed the switch rating. **CAUTION:** Incandescent lamps have a "Cold Filament Inrush" current of up to 10 times their rated amperage. Use caution when switching lamps.

**Power Wiring**

For device power use 14-22 AWG copper wires rated 75/90 °C. Terminals should be tightened to 5-7 in-lbs torque.

See wiring diagram and product label. The connection is not polarity sensitive. Be sure to seat the connector properly.

**Setpoint Adjustment**

The 11-turn pot is shipped from the factory set fully counter-clockwise (CCW) to the lowest setpoint.

Turning the pot clockwise (CW) will increase the setpoint.

Turning the pot counter-clockwise (CCW) will decrease the setpoint.

The pot has a slip-clutch to prevent damage at either end of its rotation. To return the pot to the minimum setpoint, turn it all the way CCW.

CS-DC-2S output contacts are solid-state. Check output status by applying voltage to the contacts and reading the voltage drop across the contacts. An ohmmeter set on "Continuity" will give misleading results.

**Typical Adjustment**

1. Make sure all wiring is correct, the jumper is set to the desired range, all terminals are tight, and the green power LED is on.
2. Turn the pot to minimum setpoint (11 turns CCW).
3. Have normal operating current running through sensor. The output should be tripped and the red LED should be ON.
4. Turn the pot CW until the unit resets. This is indicated by the red LED turning off and by the changing of the output switch status.
5. Turn the pot CCW slowly until the unit trips again. It now set at the current level being monitored.
  - A. To set UNDERLOAD turn the pot about 1/8 turn further CCW.
  - B. To set OVERLOAD turn the pot about 1/8 turn further CW.
  - C. It may be necessary to fine-tune the setpoint to allow for normal voltage variations.

Amps	CS-DC-1S		CS-DC-2S	Red LED
	NC (3-4)	NO (4-5)	NO (3-4)	
None or < range	Closed	Open	Open	Off
Below trip level	Closed	Open	Open	Off
Above trip level	Open	Closed	Closed	On

**Troubleshooting**

**Sensor is always tripped**

1. The jumper may be set in a range that is too low for current being monitored. Move jumper to the correct range.
2. The setpoint is too low. Turn pot CW to increase setpoint.
3. Switch has been overloaded and contacts are burned out. Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).

**Sensor will not trip**

1. Unit is not powered. Check power supply and wiring.
2. The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range.
3. The setpoint is too high. Turn pot CCW to decrease setpoint.
4. Switch has been overloaded and is burned out. Check output load, including inrush or inductive loads (coils, motors, ballasts).

