AC Current Switches
Split Core

CS-AC-1, CS-AC-2

Input: ***1.5 to 150 Amps AC Continuous***

Output: ***Normally Closed or Normally Open SSR, 1.5 to 150 A Setpoint***

- ***Self-Powered***
- ***0.15 Amp Solid State Switch***
- ***Adjustable 1.5 to 150 Amp Setpoint***
- ***LED Status Indicator***



Models and Ranges

CS-AC-1
Normally Closed (NC)
Switch opens when setpoint is exceeded
Solid state switch: 0.15 Amps max @ 130 VAC/VDC

CS-AC-2
Normally Open (NO)
Switch closes when setpoint is exceeded
Solid state switch: 0.15 Amps max @ 240 VAC/VDC

Specifications

Output
Magnetically isolated solid state switch

Switch Rating
N.O. version: 0.15 A @ 240 VAC or VDC
N.C. version: 0.15 A @ 130 VAC or VDC
Not polarity sensitive

Off State Leakage
None

Setpoint Range
1.5 to 150 A

Setpoint Adjustment
11 turn potentiometer

Hysteresis
Approximately 5% of setpoint

Normal Indication
Red LED flashes once every 2 to 3 seconds for normal operation

Alarm Indication
Red LED flashes 2 to 3 times per second when switch is tripped

Response Time
120 milliseconds

Frequency Range
50 to 100 Hz

Overload
150 Amps continuous
400 Amps for 6 seconds
1000 Amps for 1 second

Isolation Voltage
UL listed to 1270 VAC
Tested to 5000 VAC

Power Supply
None, self-powered

Sensing Aperture
0.85" x 0.85" square (21.5 mm x 21.5 mm)

Case
UL 94V-0 flammability rated

Environmental
–4 to 122 °F (–20 to 50 °C), 0-95% RH, non-condensing

Listings
UL & CUL 508 industrial control equipment, CE certified

Dimensions
Width: 1.19" (30.2 mm)
Length: 3.53" (89.7 mm)
Height: 2.470" (62.9 mm)

Features and Description

The **CS-AC** series Current Switches consist of a current transformer, signal conditioner, and limit alarm in one compact package. The CS-AC series products are self-powered, operate over a wide frequency range, and contain a universal solid-state output that will trip when a field adjustable setpoint is exceeded.

The **CS-AC** series are designed to withstand harsh industrial environments. They can be mounted in virtually any position and either panel mounted using the built-in mounting bracket or hung directly on the wires and secured with a wire tie. The split core case design makes installation in new or existing applications very quick and easy since the product can be snapped shut around the wire to be measured.

The built-in current transformer physically isolates the high current from the limit alarm circuitry making this product much safer to use than other products or methods. In addition, it eliminates the insertion loss that exists when shunts are used.

Configuration and installation are simple. The switch is powered by the induction from the line being monitored. The AC current is measured by the built-in current transformer, eliminating the need for both power and input wiring. Once installed around the wire to be measured, only two wire connections are necessary for the solid state output.

The setpoint of the **CS-AC** is user adjustable from 1.5 Amps AC to 150 Amps AC by turning a potentiometer.

Two models are available. The **CS-AC-1** includes a "normally closed" solid state output and the **CS-AC-2** a "normally open" solid state output. Both models include a status LED that flashes slowly if the setpoint has not been exceeded (non-alarm condition) and flashes rapidly if the setpoint has been exceeded (alarm condition).

Current Sensors

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CS-AC-1, CS-AC-2

Installation and Setup

DESCRIPTION

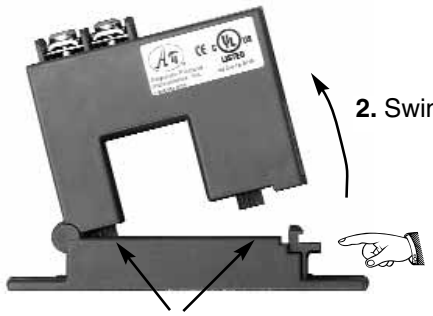
The CS-AC series are solid-state current operated switches.

The CS-AC-1 is a normally closed (NC) switch. It opens when the current level through the opening exceeds the adjustable setpoint. This makes it useful when detecting a drop in current such as a heater break.

The CS-AC-2 is a normally open (NO) switch. It closes when the current level through the opening exceeds the adjustable setpoint. This makes it suitable when detecting a current increase such as a motor overload.

The internal circuitry is totally powered by induction from the line being monitored. The solid state output contacts can switch AC or DC.

INSTALLATION



IMPORTANT!
Keep contact areas clean!

Press the tab in the direction as shown to open the sensor.

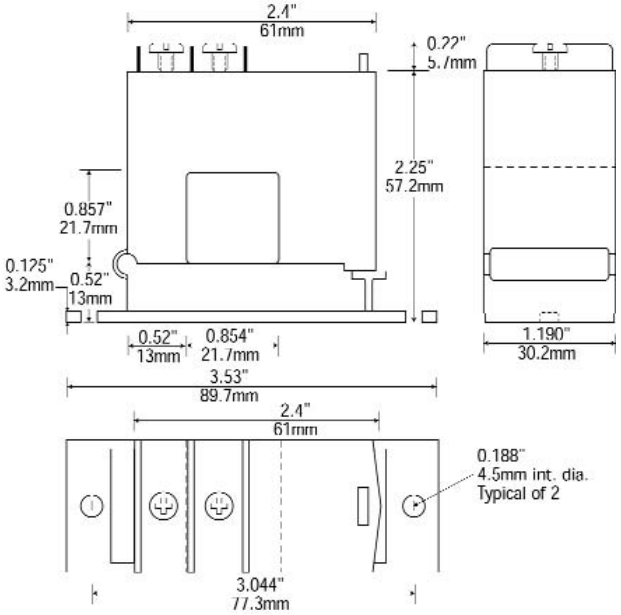
After placing the wire in the opening, press the hinged portion firmly downward until a definite click is heard and the tab pops out fully.

CS-AC switches work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

They can be mounted in any position or hung directly on wires with a wire tie. Just leave at least one inch distance between sensor and other magnetic devices.

KEEP SPLIT-CORE CONTACT AREAS CLEAN!

Silicone grease is factory applied on the mating surfaces to prevent rust and improve performance. Be careful not to allow grit or dirt onto the grease in the contact area. Operation can be impaired if the mating surfaces do not have good contact. Check visually before closing.



API maintains a constant effort to upgrade and improve its products. Specifications are subject to change without notice. Consult factory for your specific requirements.

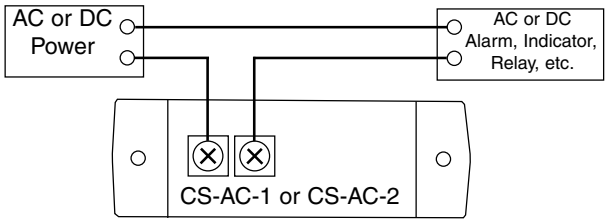
OUTPUT WIRING

Connect control or monitoring wires to the sensor.

Use up to 14 AWG copper wire and tighten terminals to 7 inch-pounds torque.

Be sure the output load does not exceed the switch rating.

CAUTION: Incandescent lamps can have “cold filament inrush” current of up to 10 times their rated amperage. Use caution when switching lamps.



SETPOINT ADJUSTMENT

The setpoint is adjusted with the 11 turn potentiometer. The pot is shipped from the factory set fully clockwise (CW) to the lowest setpoint. Turning the pot counter-clockwise (CCW) will increase the setpoint. The pot has a slip-clutch to prevent damage at either end of its rotation. To determine where the adjustment is, turn the pot all the way CW. This will return it to the minimum setpoint.

We recommend adjusting setpoint to allow for usual utility company voltage variations of 10 to 15%.

Checking Output Status

1. 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. Turn the pot to minimum setpoint (11 turns CW).
2. Have normal operating current running through sensor. The output should be tripped since the pot is at its minimum setpoint. The LED should be flashing fast (2 to 3 times per second).
3. Turn the pot CCW until the unit untrips. This is indicated by the slow flashing of the LED (once every 2 to 3 seconds), or by the changing of the output switch status.
4. Now turn the pot CW slowly until the unit trips again. It is now set at the current level being monitored.
   A. To set UNDERLOAD – Turn the pot about 1/8 turn further CW.
   B. To set OVERLOAD – Turn the pot about 1/8 turn further CCW.

MONITORED AMPS	OUTPUT CS-AC-1 (NC)	OUTPUT CS-AC-2 (NO)	LED
None or <Minimum	CLOSED	OPEN	OFF
Below trip level	CLOSED	OPEN	SLOW (2 sec)
Above trip level	OPEN	CLOSED	FAST (0.5 sec)

TROUBLESHOOTING

Sensor is always tripped

1. The setpoint may be too low. Turn pot CCW to increase setpoint.
2. Switch has been overloaded and contacts are burned out. Check output load, remembering to include inrush on inductive loads (coils, motors, ballasts).

Sensor will not trip

1. The setpoint may be too high. Turn pot CW to decrease setpoint.
2. The core contact area may be dirty. Open the sensor and clean contact area.
3. Current is below minimum required. Loop the monitored wire several times through the aperture until the “sensed” current rises above minimum.
   Sensed Amps = (Actual Amps) x (Number of Loops)
   Count loops on the inside of the aperture only.
4. Switch has been overloaded and contacts are burned out. Check the output load. Remember to include inrush on inductive loads (coils, motors, ballasts).

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