



NEW Industrial Current Sensors

Measure Power

- ✓ Motor & Pump Loads
- ✓ Generator Output
- ✓ SCR Controlled Loads
- ✓ Electric Heating Elements
- ✓ Input to Instrumentation, PLC, or Datalogger
- ✓ Battery Load or Charging Current
- ✓ Energy Management Systems

Monitor or Alarm

- ✓ Remote Indication of Electrical Loads
- ✓ Motor, Heater, Lighting On/Off Status
- ✓ Conveyor Jams
- ✓ Equipment Failures

AC Current Transmitters

- ❑ 4-20 mA Output
- ❑ True RMS
- ❑ Split or Solid Core
- ❑ 0-2 Amp through 0-2000 Amp

DC Current Transmitters

- ❑ 4-20 mA Output
- ❑ 24V AC/DC Powered
- ❑ Split Core
- ❑ 0-50 Amp through 0-400 Amp

AC Current Switches

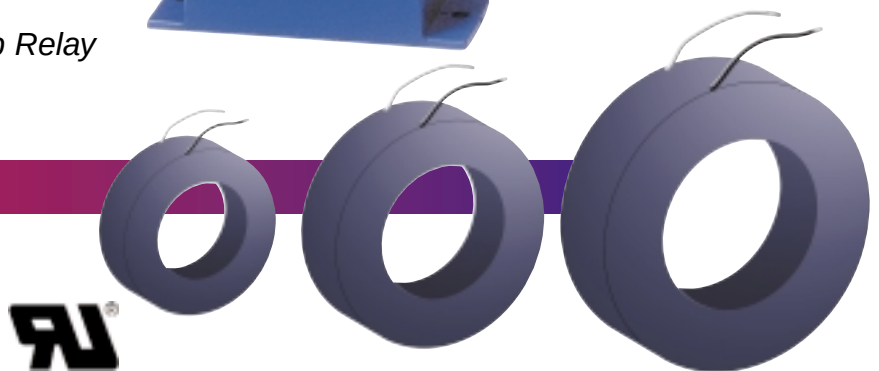
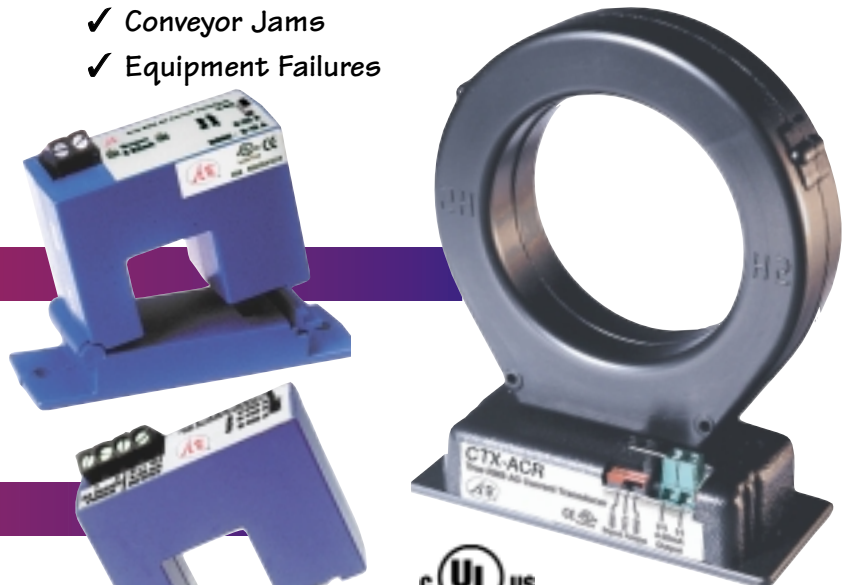
- ❑ Self-Powered
- ❑ 0.2 Amp Solid State Switch
- ❑ Split Core
- ❑ Adjustable 1.5 to 150 Amp Setpoint

DC Current Switches

- ❑ 12 or 24 VDC Powered
- ❑ 0.2 Amp Solid State Switch or 0.5 Amp Relay
- ❑ Solid Core
- ❑ Adjustable 4 to 100 Amp Setpoint

AC Current Transformers

- ❑ UL Recognized
- ❑ 1½" ID to 4¼" ID
- ❑ Solid Core
- ❑ 50:5 to 1600:5 Amp



MOD-TRONIC
INSTRUMENTS LIMITED

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AC CURRENT TRANSMITTERS

- ☐ Split Core
- ☐ True RMS
- ☐ 4-20 mA DC Output

CTX-ACR-0 0-2, 0-5 Amp
CTX-ACR-1 0-10, 0-20, 0-50 Amp
CTX-ACR-2 0-100, 0-150, 0-200 Amp



AC CURRENT TRANSMITTERS

- ☐ Solid Core, High Current
- ☐ True RMS
- ☐ 4-20 mA DC Output

CTX-ACR-3S 0-375, 0-500, 0-750 Amp
CTX-ACR-4S 0-1000, 0-1333, 0-2000 Amp



DC CURRENT TRANSMITTERS

- ☐ Split Core
- ☐ 4-20 mA DC Output
- ☐ 24 VAC/DC Power

CTX-DC-0 50, 75, 100 Amp
CTX-DC-1 100, 150, 200 Amp
CTX-DC-2 150, 225, 300 Amp
CTX-DC-3 200, 300, 400 Amp



AC CURRENT TRANSDUCERS

- ☐ Frequency: 50 to 400 Hz
- ☐ Insulation Level: 600 Volts, 10 kV BIL full wave
- ☐ Leads: 24" Long, Stranded #16 AWG, UL 1015 105°C, CSA Approved
- ☐ Approvals: UL recognized E93779, CSA approved LR89403

1.05" I.D.

2.46" O.D. X 1.05" W

Model	Ratio
2RL-500	50:5
2RL-600	60:5
2RL-750	75:5
2RL-800	80:5
2RL-101	100:5
2RL-1250	125:5
2RL-151	150:5
2RL-201	200:5
2RL-251	250:5
2RL-301	300:5

1.56" I.D.

3.56" O.D. X 1.10" W

Model	Ratio
5RL-500	50:5
5RL-750	75:5
5RL-101	100:5
5RL-151	150:5
5RL-201	200:5
5RL-251	250:5
5RL-301	300:5
5RL-401	400:5
5RL-501	500:5
5RL-601	600:5
5RL-751	750:5
5RL-801	800:5
5RL-102	1000:5
5RL-122	1200:5

AC CURRENT SWITCHES

- ☐ Split Core
- ☐ Adjustable Setpoint 1.5 to 150 Amps
- ☐ Universal Output Solid State Switch
- ☐ Self Powered
- ☐ Status LED

CS-AC-1 Normally Closed Solid State Relay
CS-AC-2 Normally Open Solid State Relay



DC CURRENT SWITCHES

- ☐ Solid Core
- ☐ Adjustable Setpoint
- ☐ 3 Jumper Selectable Ranges
5-20 A, 18-50 A, 50-100 A
- ☐ Power LED
- ☐ Output Status LED

CS-DC-1S-12 SPDT Relay; 12 VDC Power
CS-DC-2S-12 Normally Open Solid State Relay; 12 VDC Power
CS-DC-1S-24 SPDT relay; 24 VDC Power
CS-DC-2S-24 Normally Open Solid State Relay; 24 VDC Power



2.50" I.D.

4.58" O.D. X 1.10" W

Model	Ratio
7RL-101	100:5
7RL-151	150:5
7RL-201	200:5
7RL-251	250:5
7RL-301	300:5
7RL-401	400:5
7RL-501	500:5
7RL-601	600:5
7RL-751	750:5
7RL-801	800:5
7RL-102	1000:5
7RL-122	1200:5
7RL-152	1500:5
7RL-162	1600:5

3.25" I.D.

5.73" O.D. X 1.15" W

Model	Ratio
8RL-201	200:5
8RL-251	250:5
8RL-301	300:5
8RL-401	400:5
8RL-501	500:5
8RL-601	600:5
8RL-751	750:5
8RL-801	800:5
8RL-102	1000:5
8RL-122	1200:5
8RL-152	1500:5

API manufactures industrial plug-in and DIN style signal conditioners, converters, isolators and alarm trips.

Our products are proven problem solvers for analog process signal conversion.





AC Current Transmitters Split Core

- 4-20 mA Powered
- Measures True RMS Current
- Isolated Output
- Jumper Selectable Ranges

Models

CTX-ACR-0 4-20 mA output, jumper selectable ranges
0 to 2 Amps true RMS
0 to 5 Amps true RMS

CTX-ACR-1 4-20 mA output, jumper selectable ranges
0 to 10 Amps true RMS
0 to 20 Amps true RMS
0 to 50 Amps true RMS

CTX-ACR-2 4-20 mA output, jumper selectable ranges
0 to 100 Amps true RMS
0 to 150 Amps true RMS
0 to 200 Amps true RMS

General Description

The split-core CTX-ACR series transmitters measure true RMS AC current in ranges up to 200 Amps AC and convert it to an isolated, loop-powered, 4-20 mA DC output. These two-wire transmitters consist of a current transformer and a true RMS signal conditioner in one compact package.

Applications include measuring motor, heater, or other AC electrical loads for preventive maintenance, load shedding, overload protection, control, etc. The true RMS output CTX-ACR series transmitters can be used for both linear (sinusoidal) or non-linear (distorted) waveform applications.

Features

The CTX-ACR series transmitters operate over a wide frequency range of 10 to 400 Hz. They incorporate a mathematical algorithm that integrates the AC current waveform over time and provides an output equal to the true RMS value of the waveform. The true RMS output ensures accurate measurements in electrically noisy power environments as well as in applications where the waveform is a non-linear approximation of a sine wave such as outputs from variable frequency drives (VFDs) or SCRs.

The built-in current transformer physically isolates the high current from the 4-20 mA transmitter making this product much safer to use than other products or methods. The non-intrusive design also eliminates the insertion loss that exists when shunts are used.

The transmitters are designed to withstand harsh industrial environments and can be mounted in virtually any position. They can be panel mounted using the built-in mounting bracket or hung directly on the wire and secured with a wire tie. The split core design makes installation quick and easy in existing or new circuits by snapping the core shut around the wire to be measured.

Only two wire connections are necessary for the 4-20 mA DC output. Power is derived from the output loop eliminating the need for additional power wiring.



Specifications

Output	Loop-powered, 4-20 mA DC
Loop Power	12 VDC to 40 VDC Max $V_L = 12 \text{ VDC} + (R_L \times 0.020 \text{ A})$ $R_L = (V_L - 12 \text{ VDC}) \div 0.020 \text{ A}$
Output Limit	23 mA DC
Accuracy	$\pm 0.8\%$ full scale
Response Time	600 milliseconds (to 90% step change)
Frequency Range	10 to 400 Hz
Isolation Voltage	UL listed to 1,270 VAC Tested to 5,000 VAC
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: 1.18" (30.0 mm) Length: 3.53" (89.7 mm) Height: 2.70" (68.6 mm)

Overload Ratings		Maximum Current		
Model	Range	Continuous	6 Sec	1 Sec
CTX-ACR-0	2A	80A	125A	250A
	5A	100A	125A	250A
CTX-ACR-1	10A	80A	125A	250A
	20A	110A	150A	300A
	50A	175A	215A	400A
CTX-ACR-2	100A	200A	300A	600A
	150A	300A	450A	800A
	200A	400A	500A	1,000A

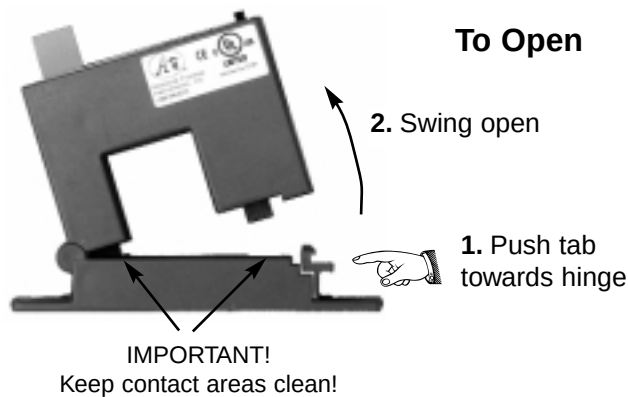
Absolute Process Instruments

Mod-Tronic Instruments Limited Tel: 1 800 794-5883 Fax: 1 800 830-7122 www.mod-tronic.com

Description

CTX-ACR series transducers combine a current transformer and a signal conditioner into a single package. This provides higher accuracy, lower wiring costs, easier installation and saves valuable panel space. The CTX-ACR series provides a true RMS output which allows it to be used for variable speed or SCR controlled loads.

Installation



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

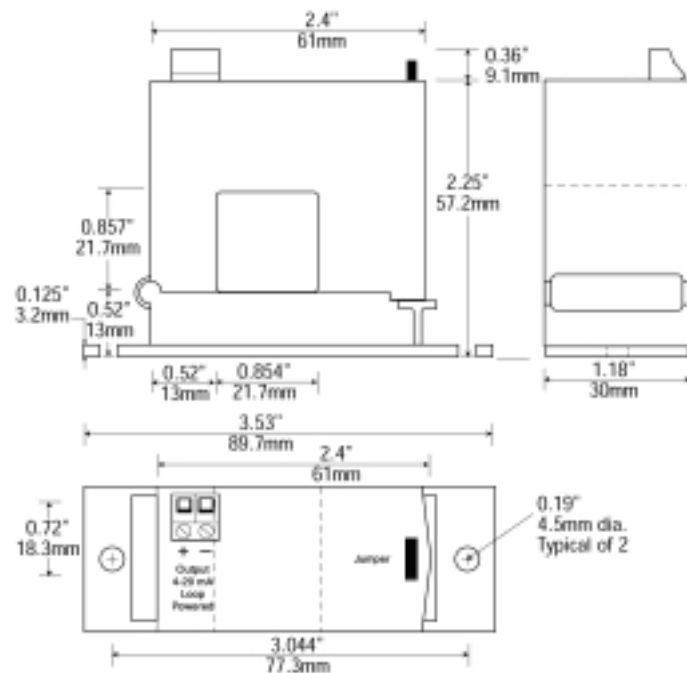
After placing the wire in the opening, press the hinged portion firmly downward until a definite click is heard and the tab pops out fully.

CTX-ACR series transducer 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.



Output Wiring

Connect control or monitoring wires to the sensor being careful to observe correct wiring polarity as shown in the diagram below.

Use up to 14 AWG solid or stranded copper wire and tighten terminals to 5 inch-pounds torque.

Be sure the output load or loop power requirements are met according to the formula below.

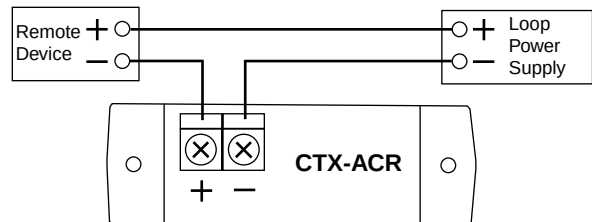
Loop Power Requirements

$$V_L = 12 \text{ VDC} + (R_L \times 0.020 \text{ A})$$

$$R_L = (V_L - 12 \text{ VDC}) \div 0.020 \text{ A}$$

Where: V_L = Loop Voltage (40 VDC Max!)

R_L = Loop Resistance



Range Selection

CTX-ACR series transducers feature field selectable ranges. The ranges are factory calibrated and there is no need to field set zero or span.

1. Determine the normal operating amperage of your monitored circuit.
2. Select the range that is equal to or slightly higher than the normal operating amperage.
3. Place the range jumper in the appropriate position.

Troubleshooting

1. Sensor has no output

- A. Loop power supply is not properly sized. Check loop power supply voltage and current rating.
- B. Wiring polarity is incorrect. Check and correct wiring polarity according to diagram above.
- C. The core contact area may be dirty. Open the sensor and clean the contact area.

2. Output signal too low

- A. The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range.
- B. Monitored current is below minimum required. Loop the monitored wire several times through the aperture until the "sensed" current rises above minimum.

$$\text{Sensed Amps} = (\text{Actual Amps}) \times (\text{Number of Loops})$$

Count loops on the inside of the aperture only.

3. Sensor is always at 4 mA

- A. Monitored load is not AC or is not on. Check that the load is AC and that it is actually on.

4. Output Signal is always at 20 mA

- A. The jumper may be set in a range that is too low for current being monitored. Move jumper to the correct range.



AC Current Transmitters

Solid Core, High Current

- 4-20 mA Powered
- Measures True RMS Current
- Isolated Output
- Switch Selectable Ranges

Models

CTX-ACR-3S 4-20 mA output, switch selectable ranges
375 Amps true RMS
500 Amps true RMS
750 Amps true RMS

CTX-ACR-4S 4-20 mA output, switch selectable ranges
1,000 Amps true RMS
1,333 Amps true RMS
2,000 Amps true RMS

General Description

The solid-core CTX-ACR series transmitters convert AC current ranges as high as 2,000 Amps AC to an isolated, loop-powered, true RMS 4-20 mA DC output. These two-wire transmitters consist of a current transformer and a true RMS signal conditioner in one compact package.

Typical applications include measuring motor loads, heater loads, or other AC electrical loads, for preventive maintenance, load shedding, overload protection, control, etc. Due to the true RMS output, the CTX-ACR series transmitters are recommended for both linear (sinusoidal) or non-linear (distorted) waveform applications.

Features

The CTX-ACR series transmitters operate over a wide frequency range of 10 to 400 Hz. They incorporate a mathematical algorithm that integrates the AC current waveform over time and provides an output equal to the true RMS value of the waveform. The true RMS output ensures accurate measurements in electrically noisy power environments as well as applications where the waveform is a non-linear approximation of a sine wave such as outputs from variable frequency drives (VFDs) or SCRs.

The built-in current transformer physically isolates the high current from the 4-20 mA transmitter making this product much safer to use than other products or methods. In addition, the non-intrusive design eliminates the insertion loss that exists when shunts are used.

The transmitters are designed to withstand harsh industrial environments and can be mounted in virtually any position. They can be panel mounted using the built-in mounting bracket or hung directly on the wire and secured with a wire tie.

Configuration and wiring are simple. Two different models are available, each user configurable to one of three switch selectable ranges. Once installed around the wire to be measured, only two wire connections are necessary for the 4-20 mA DC output. Power is derived from the output loop eliminating the need for additional power wiring.



Specifications

Output	Loop-powered, 4-20 mA DC
Loop Power	12 VDC to 40 VDC Max $V_L = 12 \text{ VDC} + (R_L \times 0.020 \text{ A})$ $R_L = (V_L - 12 \text{ VDC}) \div 0.020 \text{ A}$
Output Limit	23 mA DC
Accuracy	±1% full scale
Response Time	600 milliseconds (to 90% step change)
Frequency Range	10 to 400 Hz
Isolation Voltage	UL listed to 600 VAC
Sensing Aperture	3.0" dia (76 mm dia)
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: 4.5" (114.3 mm) Height: 5.75" (146 mm) Depth: 0.94" (23.8 mm)

Overload Ratings		Maximum Current		
Model	Range	Continuous	6 Sec	1 Sec
CTX-ACR-3S	375A	750A	1,500A	3,750A
	500A	750A	1,500A	3,750A
	750A	750A	1,500A	3,750A
CTX-ACR-4S	1,000A	2,000A	4,000A	10,000A
	1,333A	2,000A	4,000A	10,000A
	2,000A	2,000A	4,000A	10,000A

Absolute *process* **instruments**

Description

CTX-ACR series transducers combine a current transformer and a signal conditioner into a single package. This provides higher accuracy, lower wiring costs, easier installation and saves valuable panel space.

The CTX-ACR series provides a true RMS output which allows it to be used for applications with distorted current waveforms such as variable speed or SCR controlled loads.

Installation

Run wire to be monitored through the sensing aperture.

CTX-ACR series transducer work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

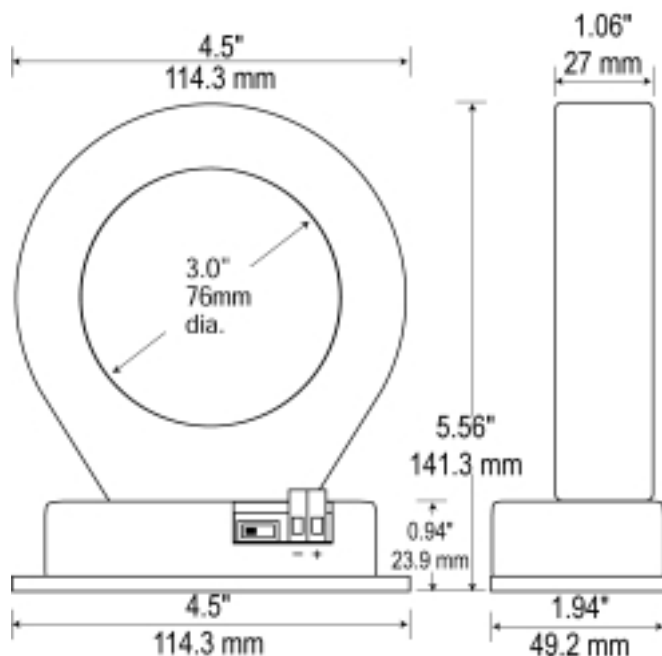
They can be mounted in any position or hung directly on wires with a wire tie. Just leave at least one inch distance between sensor and other magnetic devices.

Range Selection

CTX-ACR series transducers feature field selectable ranges. The ranges are factory calibrated and there is no need to field set zero or span.

1. Determine the normal operating amperage of your monitored circuit.
2. Select the range that is equal to or slightly higher than the normal operating amperage.
3. Move the three position range selector switch to the appropriate position.

Dimensions



CTX-ACR-3S
CTX-ACR-4S

Output Wiring

Connect control or monitoring wires to the sensor being careful to observe correct wiring polarity as shown in the diagram below.

Use up to 14 AWG solid or stranded copper wire and tighten terminals to 3.5 inch-pounds torque.

Be sure the output load does not exceed 800 ohms.

The output load or loop power requirements are determined by the formula below.

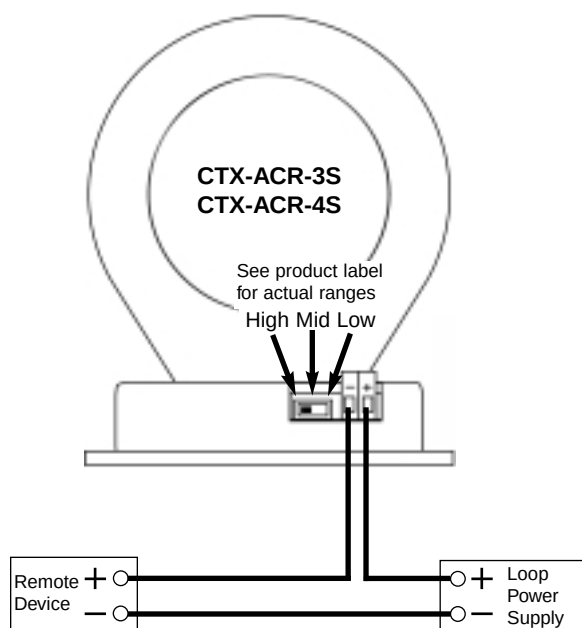
Loop Power Requirements

$$V_L = 12 \text{ VDC} + (R_L \times 0.020 \text{ A})$$

$$R_L = (V_L - 12 \text{ VDC}) \div 0.020 \text{ A}$$

Where: V_L = Loop Voltage (40 VDC Max)

R_L = Loop Resistance (800 Ohms Max)



Troubleshooting

1. Sensor has no output
 - A. Loop power supply is not properly sized. Check loop power supply voltage and current rating.
 - B. Wiring polarity is incorrect. Check and correct wiring polarity according to the wiring diagram.
2. Output signal too low
 - A. The switch may be set in a range that is too high for current being monitored. Move switch to the correct range.
 - B. Monitored current is below minimum required. Loop the monitored wire several times through the aperture until the "sensed" current rises above minimum.
$$\text{Sensed Amps} = (\text{Actual Amps}) \times (\text{Number of Loops})$$

Count loops on the inside of the aperture only.
3. Sensor is always at 4 mA
 - A. Monitored load is not AC or is not on. Check that the load is AC and that it is actually on.
4. Output Signal is always at 20 mA
 - A. The switch may be set in a range that is too low for current being monitored. Move the switch to the correct range.



DC Current Transmitters Split Core

- Low Voltage AC or DC Powered
- Measure 50 to 400 Amps DC
- 4-20 mA Output
- Jumper Selectable Ranges

Models

CTX-DC-0 4-20 mA output, jumper selectable ranges
0 to 50 Amps
0 to 75 Amps
0 to 100 Amps

CTX-DC-1 4-20 mA output, jumper selectable ranges
0 to 100 Amps
0 to 150 Amps
0 to 200 Amps

CTX-DC-2 4-20 mA output, jumper selectable ranges
0 to 150 Amps
0 to 225 Amps
0 to 300 Amps

CTX-DC-3 4-20 mA output, jumper selectable ranges
0 to 200 Amps
0 to 300 Amps
0 to 400 Amps

General Description

The CTX-DC series transmitters convert DC current as high as 400 Amps DC to an isolated 4-20 mA DC output. The design consists of a hall effect sensor and a signal conditioner in one compact split core package. Typical applications include measuring battery loads or battery charging currents, heater loads, or other DC currents, for preventive maintenance, overload protection, or control.

Features

The CTX-DC series transmitters have a built-in hall effect sensor that physically isolates the high DC current from the 4-20 mA output making this product much safer to use than other products or methods. In addition, the non-intrusive design eliminates the insertion loss that exists when DC shunts are used.

Installation, wiring and configuration are simple. The transmitters 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 wire and secured with a wire tie. Due to the split core design, these models are easily and quickly installed in existing or new circuits by snapping the core shut around the wire to be measured.

Four different models are available, each configurable by the user to one of three specific ranges by changing a jumper.

The transmitter can be powered by either AC (22 to 38 VAC) or DC (20 to 50 VDC) voltage and, due to internal power regulation, will work well even if the power source is unregulated. The transmitter also powers the 4-20 mA current loop simplifying installation.



Specifications

Output	4-20 mA DC
Accuracy	±0.8% full scale
Linearity	±0.75% full scale
Response Time	100 milliseconds (to 90% step change)
Frequency Range	DC only
Power Supply	20 to 50 VDC or 22 to 38 VAC Power input and output signal not isolated
Power	2 VA
Output Load	650 Ohms maximum
Output Limit	23 mA DC
Isolation Voltage	3,000 V monitored line to output
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	CE certified
Dimensions	Width: 1.18" (30.0 mm) Length: 3.53" (89.7 mm) Height: 2.70" (68.6 mm)

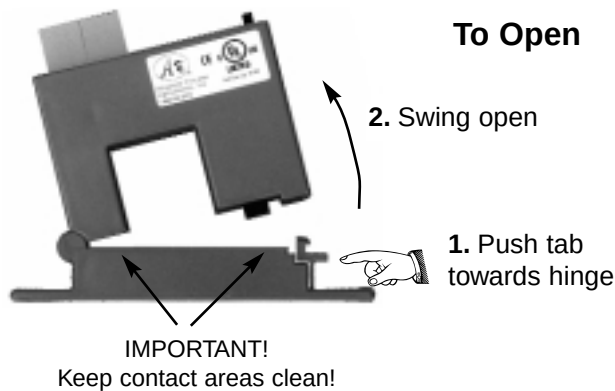
Absolute Process Instruments

Mod-Tronic Instruments Limited Tel: 1 800 794-5883 Fax: 1 800 830-7122 www.mod-tronic.com

Description

CTX-DC series transducers combine a hall effect sensor and a signal conditioner into a single package. This provides higher accuracy, lower wiring costs, easier installation and saves valuable panel space. The CTX-DC series provides a 4-20 mA output proportional to the DC current flowing through the aperture.

Installation



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.

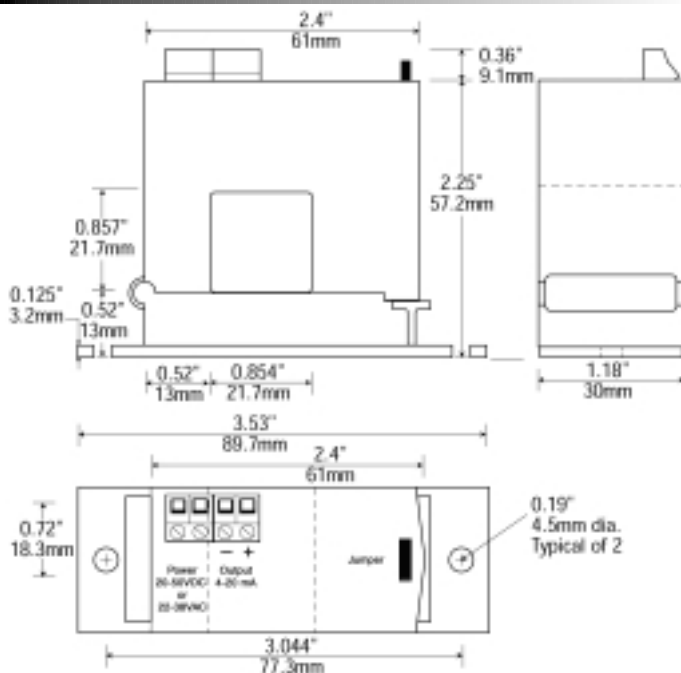
CTX-DC series transducer work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

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.

Dimensions



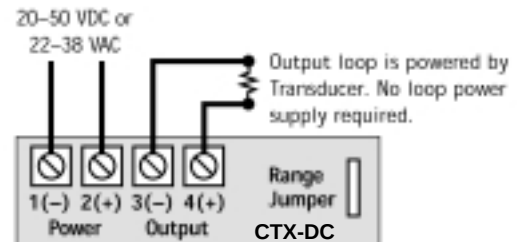
Output Wiring

Connect control or monitoring wires to the sensor using the wiring diagram below.

Note that if DC power is used, the negative of the power supply is considered to be common with the negative of the 4-20 mA output loop.

Use up to 14 AWG solid or stranded copper wire and tighten terminals to 3.5 inch-pounds torque.

Be sure the loop resistance does not exceed 650 Ohms.



Range Selection

CTX-DC series transducers feature field selectable ranges. The ranges are factory calibrated and there is no need to field set zero or span.

1. Determine the normal operating amperage of your monitored circuit.
2. Select the range that is equal to or slightly higher than the normal operating amperage.
3. Place the range jumper in the appropriate position.

Troubleshooting

1. Sensor has no output

- A. Power supply is not properly sized. Check power supply voltage and current rating.
- B. Loop wiring polarity is incorrect. Check and correct wiring polarity.
- C. The core contact area may be dirty. Open the sensor and clean the contact area.

2. Output signal too low

- A. The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range.
- B. Monitored 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.

3. Sensor is always at 4 mA

- A. Monitored load is not DC or is not on. Check that the load is DC and that it is actually on.

4. Output Signal is always at 20 mA

- A. The jumper may be set in a range that is too low for current being monitored. Move jumper to the correct range.



AC Current Switches Split Core

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

Models

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

General 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.

Features

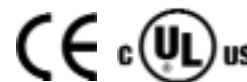
The CS-AC series are designed to withstand harsh industrial environments. They can be mounted in virtually any position and either panel mounted using the built-in mounting bracket or hung directly on the wires and secured with a wire tie. The split core case design makes installation in new or existing 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 which flashes slowly if the setpoint has not been exceeded (non-alarm condition) and flashes rapidly if the setpoint has been exceeded (alarm condition).



Specifications

Power Supply	None, self-powered
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
Frequency Range	50 to 100 Hz
Isolation Voltage	UL listed to 1,270 VAC Tested to 5,000 VAC
Off State Leakage	None
Response Time	120 milliseconds
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
Sensing Aperture	0.85" x 0.85" square (21.5 mm x 21.5 mm)
Case	UL 94V-0 flammability rated
Environmental	-58 to 149 °F (-50 to 65 °C) 0-95% RH, non-condensing
Listings	UL & CUL 508 industrial control equipment CE certified
Overload	150 Amps continuous 400 Amps for 6 seconds 1,000 Amps for 1 second
Dimensions	Width: 1.19" (30.2 mm) Length: 3.53" (89.7 mm) Height: 2.47" (62.9 mm)

Absolute Process Instruments

Description

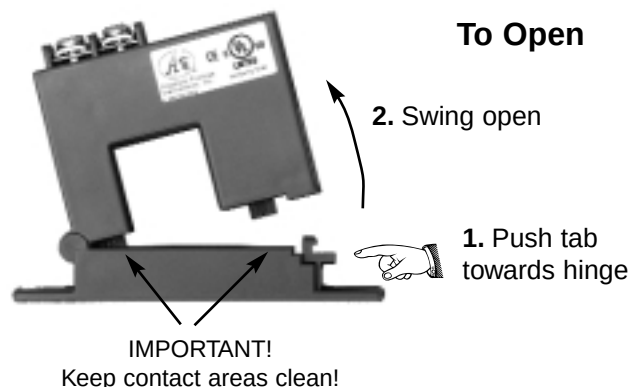
The CS-AC series are solid-state current operated switches.

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



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.

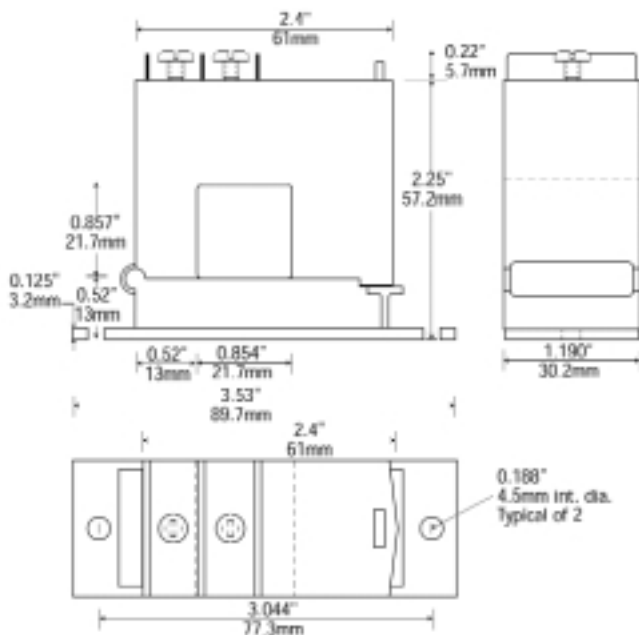
CS-AC switches work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

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.

Dimensions



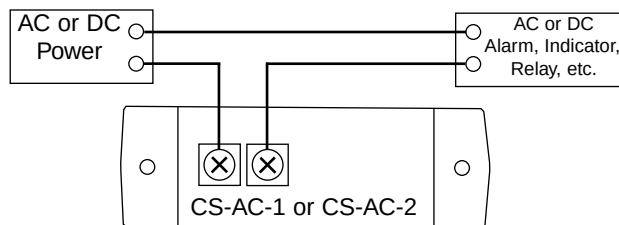
Output Wiring

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

CS-AC series 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 the 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 the contact area.
3. Monitored current is below minimum required. Loop the monitored wire several times through the aperture until the "sensed" current rises above minimum.

$$\text{Sensed Amps} = (\text{Actual Amps}) \times (\text{Number of Loops})$$

Count loops on the inside of the aperture only.

4. Switch has been overloaded and contacts are burned out. Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).



DC Current Switches Solid Core

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

Models

CS-DC-1S-24

Power: 20 to 28 VAC/DC

Output: SPDT Relay, 5 A @ 240 VAC & 3 A @ 30 VDC

CS-DC-2S-24

Power: 20 to 28 VAC/DC

Output: Normally Open, Solid State 0.3 A @ 135 VAC/DC

CS-DC-1S-12

Power: 12 VAC/DC $\pm 10\%$

Output: SPDT Relay, 5 A @ 240 VAC & 3 A @ 30 VDC

CS-DC-2S-12

Power: 12 VAC/DC $\pm 10\%$

Output: Normally Open, Solid State 0.3 A @ 135 VAC/DC

General Description

The CS-DC series current switches consist of a hall effect sensor, signal conditioner, and limit alarm in one compact package.

The field adjustable setpoint can be calibrated for any value between 5 Amps and 100 Amps, and when exceeded, will activate either a relay output or solid state output, depending on the model.

Features

The CS-DC series current switches are available in a top terminal solid core case and 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 wire to be measured and secured with a wire tie.

The solid core design physically isolates the high DC 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 DC shunts are used.

The CS-DC series current switches are user configurable by changing a jumper to a DC current range (5-20 A, 18-50 A, 50-100 A) that best fits the application. Once the overall range is configured, the setpoint is user adjustable by turning a potentiometer to any value within this range.

Two models are available, one with a SPDT relay and one with a normally open (NO) solid state relay (AC or DC). A green LED indicates "power on" and a red LED will activate when the alarm setpoint has been exceeded. A hysteresis of 5% of the setpoint is standard to prevent false trips or "chattering" of the output.

The switches are powered by either 12 VAC/DC or 24 VAC/DC depending on the model selected.



Specifications

CS-DC-1S Output	SPDT mechanical relay 5 A (3 A inductive) @ 240 VAC, or 3 A @ 30 VDC, or 1/8 HP @ 240 VAC
CS-DC-2S Output	Isolated solid state switch, Normally Open 0.3A@135VAC/DC Not polarity sensitive
Frequency Range	DC to 400 Hz
Isolation Voltage	3,000 Volts
Off State Leakage	None
Response Time	100 milliseconds (10% above setpoint) 20 milliseconds (100% above setpoint)
Setpoint Ranges	Low: 5 to 20 A Mid: 18 to 50 A Hi: 50 to 100 A
Setpoint Adjust	9 turn potentiometer
Hysteresis	Approximately 5% of setpoint
Alarm Indication	Red LED turns on above trip point
Overload	Low range: 6 sec @ 500 A, 120 A continuous Mid range: 6 sec @ 600 A, 200 A continuous Hi range: 6 sec @ 800 A, 300 A continuous
Power	20 to 28 VAC/DC or 12 VAC/DC $\pm 10\%$ depending on model
Power Indication	Green LED indicates when unit is on
Power Usage	10 VA
Sensing Aperture	0.75" (19 mm) dia
Case	UL 94V-0 flammability rated
Environmental	Solid state: -40 to 140 °F (-40 to 60 °C) SPDT relay: -4 to 122 °F (-20 to 50 °C) 0-95% RH, non-condensing
Dimensions	Width: 1.5" (38.1 mm) Length: 3.875" (98.4 mm) Height: 3.0" (76.2 mm)

Absolute *process* *instruments*

Description

CS-DC Series are current switches that are designed to monitor DC power. They operate (switch) when the current level through the opening exceeds the adjustable setpoint. The outputs are isolated from the input and the power supply.

The CS-DC-1S-24 and CS-DC-2S-24 operate on 24 Volts AC or DC. The CS-DC-1S-12 and CS-DC-2S-12 operate on 12 Volts AC or DC.

Installation

Run wire to be monitored through opening in the sensor.

CS-DC 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.

Power Wiring

See wiring diagram above right.

Connect low voltage power to terminals 1 and 2. Tighten to 4.5 in-lb torque. The connection is not polarity sensitive.

Terminals are removable to make wiring easier. Be sure to seat the terminal properly in the location marked "Power."

Output Wiring

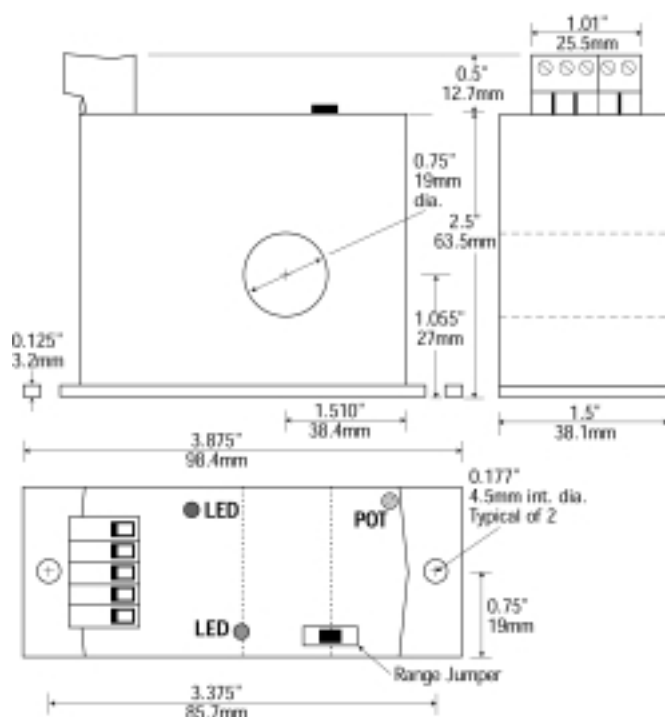
See wiring diagram above right.

Connect control or monitoring wires to the sensor. Use up to 12-22 AWG copper wire and tighten terminals to 4.5 In-Lb 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.

CAUTION! Do Not Disconnect Output Terminals Under Load!

Dimensions



Wiring Diagram

SPDT relay

CS-DC-1S-24
Power: 20 to 28 VAC/DC
CS-DC-1S-12
Power: 12 VAC/DC ±10%



Normally Open solid state relay

CS-DC-2S-24
Power: 20 to 28 VAC/DC
CS-DC-2S-12
Power: 12 VAC/DC ±10%



Range & Setpoint Adjustment

CS-DC switches have two setpoint adjustment mechanisms.

1. Select the setpoint RANGE with the Range Jumper.
2. Fine tune the SETPOINT with the 9 turn potentiometer

The 9 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. 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 CCW. This will return it to the minimum setpoint.

We recommend adjusting setpoint to allow for possible voltage variations.

Solid State Switch Output Status:

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, all terminals are tight and that the green power LED is on.
2. Move the jumper to the desired range.
3. Turn the pot to minimum setpoint (9 turns CCW).
4. Have normal operating current running through sensor. The output should be tripped and the red LED should be ON.
5. Turn the pot CW until the unit untrips. This is indicated by the red LED turning off and by the changing of the output switch status.
6. Now turn the pot CCW 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 CCW.
 - B. To set OVERLOAD - Turn the pot about 1/8 turn further CW.

MONITORED AMPS	OUTPUT CS-DC-2S (SS)	OUTPUT CS-DC-1S (SPDT)	Red LED
None or <Minimum	OPEN	3-4 closed, 4-5 open	OFF
Below trip level	OPEN	3-4 closed, 4-5 open	OFF
Above trip level	CLOSED	3-4 open, 4-5 closed	ON

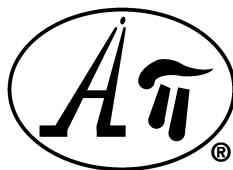
Troubleshooting

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 may be 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 power 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 may be 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).



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Phone: 800-942-0315 Fax: 800-949-7502
847-918-3510 847-968-4891

AC CURRENT TRANSDUCERS

Price List November 1, 2000

AC CURRENT TRANSDUCERS

Frequency Range

50 to 400 Hz

Insulation Level

600 Volts, 10 kV BIL full wave

Leads

24" long, stranded #16 AWG

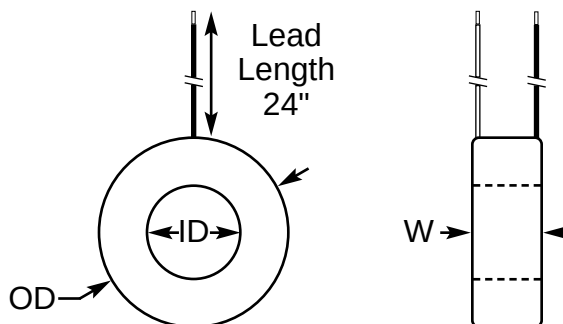
UL 1015 105°C, CSA approved

Approvals

UL recognized E93779

CSA approved LR89403

Prices subject to change without notice.
Call for availability.



1.05" I.D.

2.46" O.D. X 1.05" W

Part #	Ratio	Price
2RL-500	50:5	\$36.90
2RL-600	60:5	\$36.90
2RL-750	75:5	\$36.90
2RL-800	80:5	\$36.90
2RL-101	100:5	\$36.90
2RL-1250	125:5	\$36.90
2RL-151	150:5	\$36.90
2RL-201	200:5	\$36.90
2RL-251	250:5	\$36.90
2RL-301	300:5	\$36.90

1.56" I.D.

3.56" O.D. X 1.10" W

Part #	Ratio	Price
5RL-500	50:5	\$43.20
5RL-750	75:5	\$43.20
5RL-101	100:5	\$43.20
5RL-151	150:5	\$43.20
5RL-201	200:5	\$43.20
5RL-251	250:5	\$43.20
5RL-301	300:5	\$43.20
5RL-401	400:5	\$43.20
5RL-501	500:5	\$43.20
5RL-601	600:5	\$43.20
5RL-751	750:5	\$58.05
5RL-801	800:5	\$58.05
5RL-102	1000:5	\$58.05
5RL-122	1200:5	\$58.05

2.50" I.D.

4.58" O.D. X 1.10" W

Part #	Ratio	Price
7RL-101	100:5	\$53.55
7RL-151	150:5	\$53.55
7RL-201	200:5	\$53.55
7RL-251	250:5	\$53.55
7RL-301	300:5	\$53.55
7RL-401	400:5	\$53.55
7RL-501	500:5	\$53.55
7RL-601	600:5	\$53.55
7RL-751	750:5	\$53.55
7RL-801	800:5	\$77.85
7RL-102	1000:5	\$77.85
7RL-122	1200:5	\$77.85
7RL-152	1500:5	\$77.85
7RL-162	1600:5	\$77.85

3.25" I.D.

5.73" O.D. X 1.15" W

Part #	Ratio	Price
8RL-201	200:5	\$89.55
8RL-251	250:5	\$89.55
8RL-301	300:5	\$89.55
8RL-401	400:5	\$89.55
8RL-501	500:5	\$89.55
8RL-601	600:5	\$89.55
8RL-751	750:5	\$89.55
8RL-801	800:5	\$89.55
8RL-102	1000:5	\$89.55
8RL-122	1200:5	\$107.10
8RL-152	1500:5	\$107.10