AC Current Transmitters
Solid Core, High Current

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

Input: ***0-375 Amps AC to 0-2000 Amps AC True RMS***
Output: ***4-20 mA***

- ***4-20 mA Powered***
- ***Isolated Output***
- ***Measures Distorted or Sinusoidal Waveforms***
- ***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
1000 Amps true RMS
1333 Amps true RMS
2000 Amps true RMS



Specifications

Input Ranges and Overload Ratings

Overload Ratings		Maximum Current		
Model	**Range**	**Continuous**	**6 Sec**	**1 Sec**
CTX-ACR-3S	0-375 A	750 A	1500 A	3750 A
	0-500 A	750 A	1500 A	3750 A
	0-750 A	750 A	1500 A	3750 A
CTX-ACR-4S	0-1000 A	2000 A	4000 A	10000 A
	0-1333 A	2000 A	4000 A	10000 A
	0-2000 A	2000 A	4000 A	10000 A

Output
Loop-powered, 4-20 mA DC

Loop Power
12 VDC to 40 VDC max.

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

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

V_L = Loop Voltage (40 VDC max.)
R_L = Loop Resistance

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 1270 VAC
Tested to 5000 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
CE certified

Dimensions
Width 4.5" (114.3 mm)
Height 5.75" (146 mm)
Depth 0.94" (23.8 mm)

Features and 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.

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.

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

Installation and Setup

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.

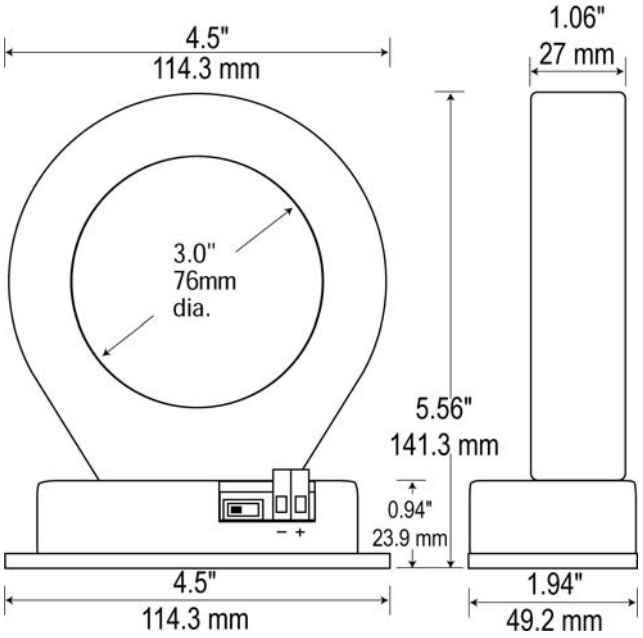
CTX-ACR series transducer work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

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.



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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.

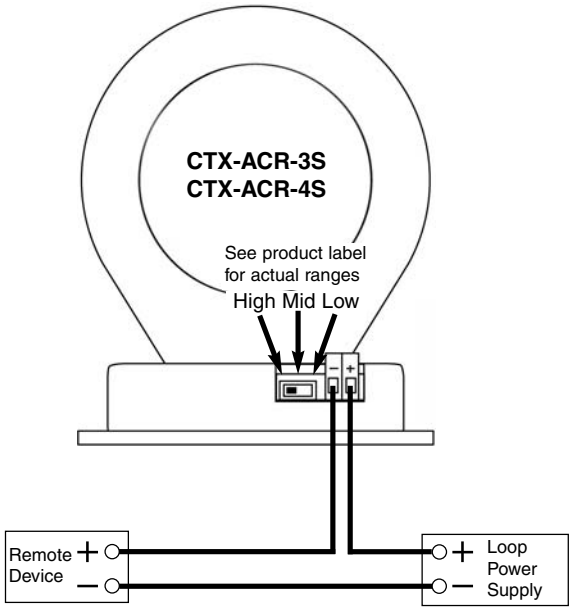
The output load or loop power requirements are determined by the formula below.

Loop Power Requirements

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

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

Where: V_L = Loop Voltage (40 VDC max.)
R_L = Loop Resistance



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.
2. **Output signal too low**
   - A. The switch may be set in a range that is too high for current being monitored. Set 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.

     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 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. Set switch to the correct range.

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

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Current Sensors