AC High Current Transmitters CTX-AC-3S, -AC-4S, -ACR-3S, -ACR-4S

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

- ***Isolated Output***
- ***CTX-AC for Sinusoidal Waveforms***
- ***CTX-ACR True RMS for Distorted or Sinusoidal Waveforms***
- ***4-20 mA Powered***
- ***Switch Selectable Ranges***



Models

All models have 4-20 mA output and switch selectable ranges

CTX-ACR-3S	**CTX-AC-3S**
375 Amps true RMS	375 Amps
500 Amps true RMS	500 Amps
750 Amps true RMS	750 Amps
CTX-ACR-4S	**CTX-AC-4S**
1000 Amps true RMS	1000 Amps
1333 Amps true RMS	1333 Amps
2000 Amps true RMS	2000 Amps

Specifications

Input Ranges and Overload Ratings

		Maximum Current		
Models	**Range**	**Continuous**	**6 Sec**	**1 Sec**
CTX-ACR-3S, CTX-AC-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, CTX-AC-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,
23 mA DC over range limit

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

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	5.56" (141.3 mm)
Depth	1.94" (49.2 mm)

Features and Description

The solid-core **CTX-AC** and **CTX-ACR** series transmitters measure AC current in ranges up to 2000 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 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 transmitters operate over a wide frequency range of 10 to 400 Hz.

The **CTX-AC** is an economical solution where sinusoidal or undistorted wave forms are encountered, such as resistive loads.

The true RMS output **CTX-ACR** series transmitters can be used for both linear (sinusoidal) or non-linear (distorted) waveform applications. The **CTX-ACR** incorporates 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. 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.

CTX-AC and CTX-ACR Series Installation and Setup

DESCRIPTION

The CTX-AC and 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-AC series is for sinusoidal or undistorted waveforms. The CTX-ACR series measures the true RMS value of the current which allows it to be used for distorted waveforms such as those from variable speed or SCR controlled loads.

INSTALLATION

Run wire to be monitored through the sensing aperture.

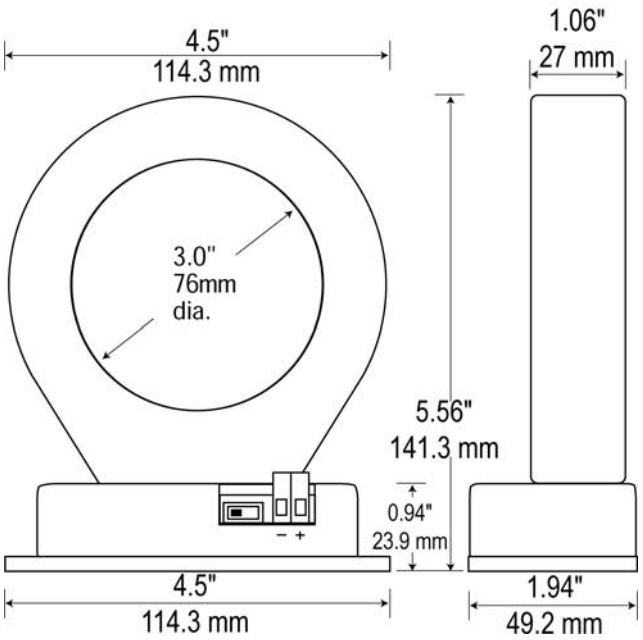
CTX-AC and CTX-ACR series transducers work in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures.

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-AC and 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.



CTX-ACR-3S
CTX-ACR-4S
CTX-AC-3S
CTX-AC-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.

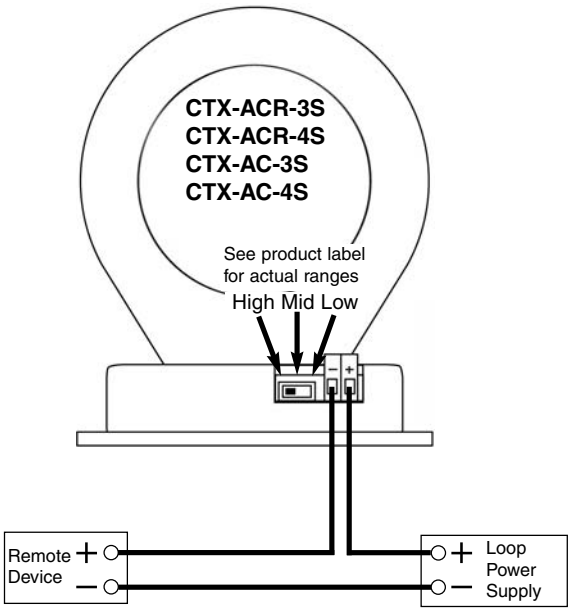
The output load or loop power requirements are determined by the formula below.

Loop Power Requirements

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

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

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.