Installation Instructions
CurrentWatch™ EAC and EACR Series Current Sensors

⚠ WARNING

IN ORDER TO AVOID ELECTRIC SHOCK OR OTHER POSSIBLE INJURY:

- **DO NOT USE THIS PRODUCT FOR HUMAN SAFETY APPLICATIONS. IT WAS NOT DESIGNED, TESTED OR RECOMMENDED FOR THIS USE.**
- **DO NOT USE THIS PRODUCT IN HAZARDOUS LOCATIONS (E.G. EXPLOSIVE ATMOSPHERES). IT WAS NOT DESIGNED, TESTED OR RECOMMENDED FOR THIS USE.**
- **ENSURE THE PRODUCT IS PROPERLY WIRED TO THE CORRECT POWER SUPLLY FOR THE APPLICATION. REFER TO THE SPECIFICATIONS AND WIRING DIAGRAMS IN THIS MANUAL.**

MODELS COVERED IN THIS MANUAL

Catalog Number	Description
EAC105SC	Self-Powered, Solid Core, 0-5V DC Output, 10/20/50A Range
EAC205SC	Self-Powered, Solid Core, 0-5V DC Output, 100/150/200A Range
EAC105SP	Self-Powered, Split Core, 0-5V DC Output, 10/20/50A Range
EAC205SP	Self-Powered, Split Core, 0-5V DC Output, 100/150/200A Range
EAC110SC	Self-Powered, Solid Core, 0-10V DC Output, 10/20/50A Range
EAC210SC	Self-Powered, Solid Core, 0-10V DC Output, 100/150/200A Range
EAC110SP	Self-Powered, Split Core, 0-10V DC Output, 10/20/50A Range
EAC210SP	Self-Powered, Split Core, 0-10V DC Output, 100/150/200A Range
EAC0420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 2/5A Range
EAC1420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 10/20/50A Range
EAC2420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 100/150/200A Range
EAC0420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 2/5A Range
EAC1420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 10/20/50A Range
EAC2420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 100/150/200A Range
EACR0420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 2/5A Range
EACR1420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 10/20/50A Range
EACR2420SC	24V DC Loop-Powered, Solid Core, 4-20 mA Output, 100/150/200A Range
EACR0420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 2/5A Range
EACR1420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 10/20/50A Range
EACR2420SP	24V DC Loop-Powered, Split Core, 4-20 mA Output, 100/150/200A Range

INTRODUCTION

The CurrentWatch™ EAC Series combine a current sensor and signal conditioner into a single package. The EAC Series are available in solid or split core with 4-20 mA, 0-5V DC or 0-10V DC outputs.

INTRODUCTION (Con't)

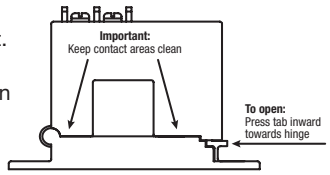
The CurrentWatch™ EACR Series provide "True RMS" output. Available only with a 4-20 mA output. Select EACR Series sensors for applications involving variable speed or SCR-controlled loads.

INSTALLATION

Considerations for all EAC and EACR Series models…

- Run wire to be monitored through the aperture (opening) in the switch body
- These sensors can be located in the same environment as motors, contactors, heaters, pull-boxes and other electrical enclosures
- Mounting can be done in any position or hung directly on a wire with a wire tie
- Be sure to leave at least one inch distance between sensor and other magnetic devices

Considerations for split-core models only…



- Press the tab in the direction shown in the diagram to the right.
- After placing the wire in the aperture, press the hinged portion firmly downward until a click is heard and the tab pops out fully.
- Keep split-core contact areas clean. Silicon grease is factory applied on the mating surfaces to prevent rust and improve performance. Be careful not to allow grit or dirt into the grease in the contact area, particularly on core mating surfaces of split core models. Sensor operation could be impaired if mating surfaces do not have good contact. Check visually before closing.

QUICK INSTALL GUIDE

The below steps can be followed to quickly install a CurrentWatch™ EAC or EACR Series switch.

1. Run the wire to be monitored through the aperture
2. Mount the sensor to a surface if needed
3. Connect output wiring
   a. Use up to 14 AWG copper wires
   b. If using a 0-5 or 0-10V DC output model, make sure output load is at least 1 megohm
   c. If using a 4-20 mA output model, make sure loop voltage is correct (see "Output Wiring" section)
4. Select range
   a. Choose the correct range by positioning the Range Jumper

RANGE SELECTION

The CurrentWatch™ EAC Series sensors feature field selectable ranges. The ranges are factory calibrated, eliminating time consuming and inaccurate field setting of zero or span.

Setting Range

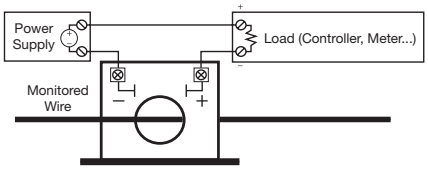
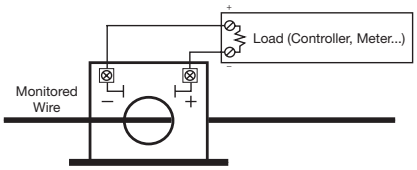
1. Determine the normal operating amperage of your monitored current
2. Select the range this is equal to or slightly higher than the normal operating amperage
3. Place the Range Jumper in the appropriate position

OUTPUT WIRING

Connect control or monitoring wires to the sensor. Use up to 14 AWG copper wire and tighten terminals to 5 inch-pounds torque. Be sure the output load or loop power does not exceed the sensor rating.

Connection Notes:

- Captive screw terminals
- Use 14-22 AWG solid or stranded
- Observe polarity
- See label for ranges and jumper positions

Model	Wiring Diagram
Current Output Models (4-20 mA)	
Voltage Output Models (0-5/0-10V DC)	 **Notes for Voltage Output Models:** • Recommended output load greater than 1 megohm • Add 1.3% error for 100 kilohm
Loop Voltage Requirements: • EAC Series: Min. Loop Voltage = 5V + (Loop Resistance x 20 mA) • EACR Series: Min. Loop Voltage = 12V + (Loop Resistance x 20 mA)	

MAXIMUM INPUT AMPS

	Maximum Amps		
Range	Continuous	6 sec.	1 sec.
0-2A	80A	125A	250A
0-5A	100A	125A	250A
0-10A	80A	125A	250A
0-20A	110A	150A	300A
0-50A	175A	215A	400A
0-100A	200A	300A	600A
0-150A	300A	450A	800A
0-200A	400A	500A	1,000A

TROUBLESHOOTING

Problem	Solution for Current Output Models	Solution for Voltage Output Models
Sensor has no output	Power supply is not properly sized. Check power supply voltage and current rating.	Monitored load is not AC or is not on. Check that the monitored load is AC and that it is actually on.
	Polarity is not properly matched. Check and correct wiring polarity.	
	For split core models, the core contact area may be dirty. Open the sensor and clean the contact area.	
Output signal is too low	The jumper may be set in a range that is too high for current being monitored. Move jumper to the correct range.	
	The load current is not sinusoidal (EAC Series only). Select an EACR Series sensor that works on distorted waveforms.	Output load may be too low. Check output load, making sure it is at least 100 kilohm and preferably 1 megohm.
	Monitored current is below minimum required. Loop the monitored wire several times throug the aperture until the "sensed" current rises above minimum. ('Sensed Amps' is equal to 'Actual Amps' multiplied by the 'Number of Loops.')	
Output signal is always at maximum	The jumper may be set in a range that is too low for current being sensed. Change the jumper position.	
Output signal is always at 4 mA	Monitored load is not AC or is not on. Check that the monitored load is AC and that it is actually on.	—

SPECIFICATIONS

Specification	Models with 4-20 mA Output	Models with 0-5V DC Output	Models with 0-10V DC Output
Power Supply	24V DC Loop-Powered	Self Powered–No Power Supply Needed	
Output Signal	4-20 mA	0-5V DC	0-10V DC
Output Limit	EAC Series: 32 mA EACR Series: 23 mA	10V DC	15V DC
Output Load	—	Recommended 1 megohm, add 1.3% error for 100 kilohm (see "Output Wiring")	
Response Time	EAC Series: 300 ms EACR Series: 100 ms	100 ms	
Frequency Range	EAC Series: 20-100 Hz EACR Series: 10-400 Hz (Both Sinusoidal)	50-60 Hz (Sinusoidal)	
Accuracy	1% FS		
Isolation Voltage	UL Listed to 1,270V AC, Tested to 5,000V AC		
Sensing Aperture	Solid Core Models: 0.75 in. (19mm) dia. Split Core Models: 0.85 in. (21.7mm) sq.		
Housing	UL94 V0 Flammability Rated		
Environmental	Operating Temperature: -4 to +122° F (-20 to +50° C) Humidity: 0-95% RH, Non-Condensing		
Approvals	UL and ULC Listed CE Certified		