

### EACR Series Current Sensor CurrentWatch Current Sensors

#### Contents

Overview .....	1
Model Selection, Switches .....	2
Model Selection, Accessories .....	3
Wiring Diagram .....	3
Specifications .....	3
Dimensions .....	4

The CurrentWatch EACR Series current sensor family from Eaton's electrical business combines a current sensor and a "True RMS" signal conditioner into a single package. The EACR Series provides True RMS output on distorted waveforms found on VFD or SCR outputs, and on linear loads in "noisy" power environments. Available in solid- or split-core housings.

For typical applications of the Current-Watch EACR Series, see listing to the right.

#### Approvals

- UL Listed
- C-UL Listed



Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

### True RMS AC Current Sensing with 4 – 20 mA Output



#### Product Features

- **True RMS Output** — True RMS technology is accurate on distorted waveforms like VFD or SCR outputs
- **Jumper-Selectable Ranges** — Reduces inventory and eliminates zero and span
- **Isolation** — Output is magnetically isolated from the input for safety and elimination of insertion loss (voltage drop)
- **UL, C-UL and CE Approved** — Accepted worldwide

#### Typical Applications

- **VFD Controlled Loads** — Monitoring VFD output indicates how the motor and attached load are operating
- **SCR Controlled Loads** — Accurate measurement of phase angle fired or burst fired (time proportioned) SCRs, with faster current measurement than temperature sensors
- **Switching Power Supplies and Electronic Ballasts** — True RMS sensing is the most accurate way to measure power supply or ballast input power

#### Why "True RMS"?

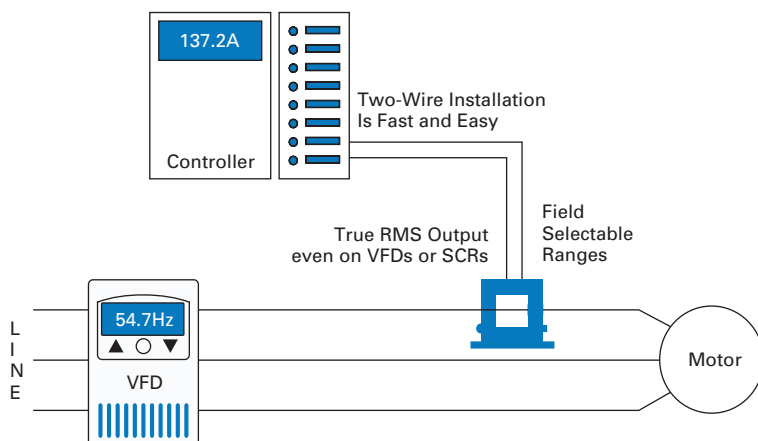
The current waveform of a typical linear load is a pure sine wave. In VFD and SCR applications, however, output waveforms are rough approximations of a sine wave. There are numerous spikes and dips in each cycle. The Current-Watch EACR Series current sensors use a mathematical algorithm called "True RMS" which integrates the actual waveform over time. The output is the amperage component of the true power (heating value) of the AC current waveform. True RMS is the only way to accurately measure distorted AC waveforms. Select the EACR Series sensors for nonlinear loads in "noisy" power environments.

For Customer Service in the U.S. call **1-877-ETN CARE (386-2273)**,  
in Canada call **1-800-268-3578**.  
For Application Assistance in the U.S. and Canada  
call **1-800-426-9184**.



August 2007


**Example Application — CurrentWatch EACR Series**

**Current Sensing for Non-linear AC Loads**




**Model Selection — CurrentWatch EACR Series**

	Power Supply	Aperture Size	Output Signal	Current Range	Catalog Number
<b>Top Terminal Current Sensors</b>					
Solid-Core Housings 	24V DC Loop-Powered	0.74 in. (19 mm)	4 – 20 mA	2 or 5A	EACR0420SC
				10, 20 or 50A	EACR1420SC
				100, 150 or 200A	EACR2420SC
Split-Core Housings 	24V DC Loop-Powered	0.85 in. (21.6 mm)	4 – 20 mA	2 or 5A	EACR0420SP
				10, 20 or 50A	EACR1420SP
				100, 150 or 200A	EACR2420SP

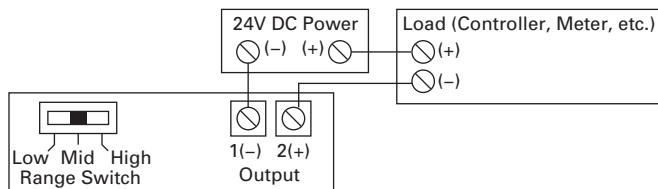
 Stocked product, typical order quantities guaranteed in stock.

### Accessories — CurrentWatch EACR Series

	Description	Catalog Number
	DIN Rail Mounting Kit (Sensor pictured for reference and not included in kit)	EDINKIT

■ Stocked product, typical order quantities guaranteed in stock.

### Wiring Diagram — CurrentWatch EACR Series



#### Notes:

- Deadfront captive screw terminals (Split-Core housing models only).
- 12 – 22 AWG solid or stranded.
- Observe polarity.

### Specifications — CurrentWatch EACR Series

Description	Specification
Power Supply	24V DC Loop-Powered, 40V DC Maximum
Output Signal	4 – 20 mA
Output Limit	23 mA
Accuracy	1.0% FS
Response Time	600 mS (to 90% step change)
Frequency Range	10 – 400 Hz
Isolation Voltage	UL Listed to 1,270V AC (Tested to 5 kV)
Input Ranges	Field Selectable Ranges from 0 – 200A, Additional Custom Ranges Available from Factory
Sensing Aperture	Solid-Core: 0.74 in. (19 mm) dia. Split-Core: 0.85 in. (21.6 mm) 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 508 Industrial Control Equipment (USA and Canada), CE Certified

August 2007

**Approximate Dimensions — CurrentWatch EACR Series**

Description	Approximate Dimensions in Inches (mm)
Solid-Core Housing	<p>Technical drawing of the Solid-Core Housing showing front and side views. Dimensions include: length 3.03 (77.0), height 0.93 (23.6), hole diameter 0.19 Dia. (4.8), width 2.40 (61.0), total height 2.18 (55.4), hole diameter 0.74 Dia. (19), and total width 3.50 (88.9).</p>
Split-Core Housing	<p>Technical drawing of the Split-Core Housing showing front and side views. Dimensions include: height 1.18 (30), hole diameter 0.19 (4.83) Dia., length 3.04 (77.2), length 3.53 (89.7), width 2.40 (31), height 0.45 (11.4), width 0.85 (21.6), and total height 2.25 (57.2).</p>