

EACR Series CurrentWatch Current Sensors



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EACR Series CurrentWatch Current Sensors

Product Description

The CurrentWatch EACR Series current sensor family from Eaton’s electrical sector 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 CurrentWatch EACR Series, see listing on this page.

Application Description

Typical Applications

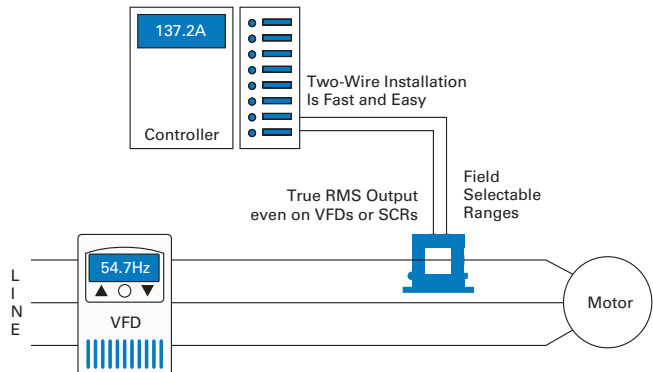
- **VFD Controlled Loads**—Monitoring VFD output indicates how the motor and attached load are operating
- **SCR Controlled Loads**—Accurate measurement of phase angle fired or burst fired (time proportioned) SCRs, with faster current measurement than temperature sensors
- **Switching Power Supplies 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 CurrentWatch 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.

Example Application— Current Sensing for Non-Linear AC Loads



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, cUL and CE Approved**—Accepted worldwide

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.

For the most current information on this product, visit our Web site: www.eaton.com

Standards and Certifications

- UL Listed
- cUL Listed
- CE Certified
- UL 508 Industrial Control Equipment (USA and Canada)





⚠ DANGER

THIS SENSOR IS NOT A SAFETY DEVICE AND IS NOT INTENDED TO BE USED AS A SAFETY DEVICE. This sensor is designed only to detect and read certain data in an electronic manner and perform no use apart from that, specifically no safety-related use. This sensor product does not include self-checking redundant circuitry, and the failure of this sensor product could cause either an energized or de-energized output condition, which could result in death, serious bodily injury, or property damage.

Product Selection


EACR Series CurrentWatch Current Sensors

Top Terminal Current Sensors

	Power Supply	Aperture Size	Output Signal	Current Range	Catalog Number
Solid-Core Housing 	24 Vdc 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 Housing 	24 Vdc 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

Accessories

EACR Series CurrentWatch Current Sensors

	Description	Catalog Number
DIN Rail Mounting Kit 	DIN rail mounting kit ①	EDINKIT

Note

① Sensor pictured for reference and not included in kit.

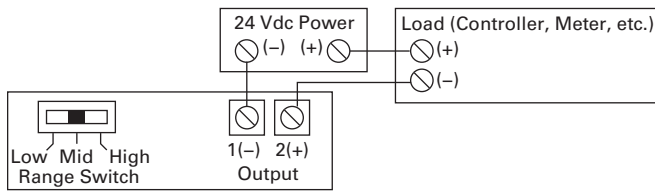
Technical Data and Specifications

EACR Series CurrentWatch Current Sensors

Description	Specification
Power supply	24 Vdc loop-powered, 40 Vdc 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 1270 Vac (Tested to 5 kV)
Input ranges	Field selectable ranges from 0–200A ^①
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

Wiring Diagram

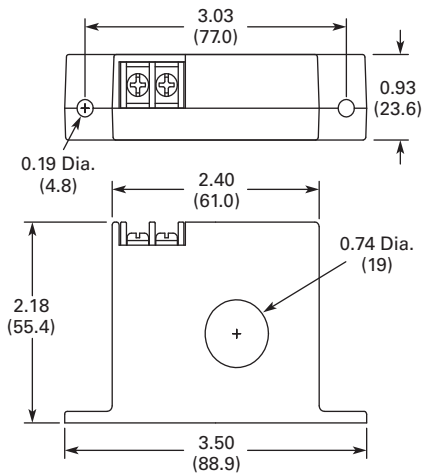
EACR Series CurrentWatch Current Sensors ^②



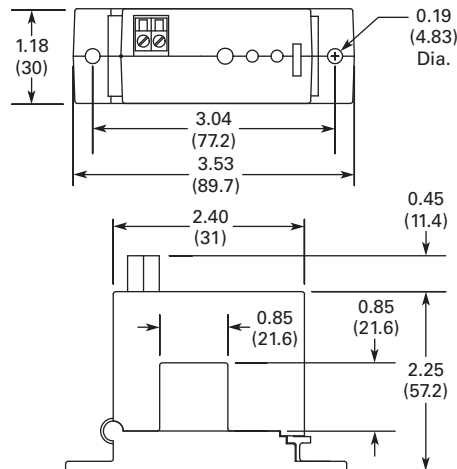
Dimensions

Approximate Dimensions in Inches (mm)

Solid-Core Housing



Split-Core Housing



Notes

- ^① Additional custom ranges available from factory.
- ^② Deadfront captive screw terminals (split-core housing models only).
12–22 AWG solid or stranded.
Observe polarity.