Standards and Certifications ①

- UL Listed
- UL tested to Canadian safety standards
- CE
- RoHS Compliant

c UL us Listed CE RoHS COMPLIANT

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

EAC Series CurrentWatch Current Sensors

Top Terminal Current Sensors

	Power Supply	Aperture Size	Output Signal	Current Range	Catalog Number
Solid-Core Housing	**Solid-Core Housings**				
	Self-powered (no external power needed)	0.74 in (19 mm)	0–5 Vdc	10, 20 or 50 A	**EAC105SC**
				100, 150 or 200 A	**EAC205SC**
			0–10 Vdc	10, 20 or 50 A	**EAC110SC**
				100, 150 or 200 A	**EAC210SC**
	24 Vdc loop-powered		4–20 mA	2 or 5 A	**EAC0420SC**
				10, 20 or 50 A	**EAC1420SC**
				100, 150 or 200 A	**EAC2420SC**
Split-Core Housing	**Split-Core Housings—Self-Powered and 24 Vdc**				
	Self-powered (no external power needed)	0.85 in (21.6 mm)	0–5 Vdc	10, 20 or 50 A	**EAC105SP**
				100, 150 or 200 A	**EAC205SP**
			0–10 Vdc	10, 20 or 50 A	**EAC110SP**
				100, 150 or 200 A	**EAC210SP**
	24 Vdc loop-powered		4–20 mA	2 or 5 A	**EAC0420SP**
				10, 20 or 50 A	**EAC1420SP**
				100, 150 or 200 A	**EAC2420SP**
Split-Core Housing	**Split-Core Housings—120 Vac and 24 Vac/Vdc**				
	120 Vac	0.85 in (21.6 mm)	4–20 mA	2 or 5 A	**EACP0420120SP** ②
				10, 20 or 50 A	**EACP1420120SP** ②
				100, 150 or 200 A	**EACP2420120SP** ②
	24 Vac/Vdc		4–20 mA	2 or 5 A	**EACP042024USP** ②
				10, 20 or 50 A	**EACP142024USP** ②
				100, 150 or 200 A	**EACP242024USP** ②

Notes

① EACP models not listed.

② Not UL listed.

Accessories

DIN Rail Mounting Kit

EAC Series CurrentWatch Current Sensors

Description	Catalog Number
DIN rail mounting kit ①	**EDINKIT**

Technical Data and Specifications

EAC Series CurrentWatch Current Sensors

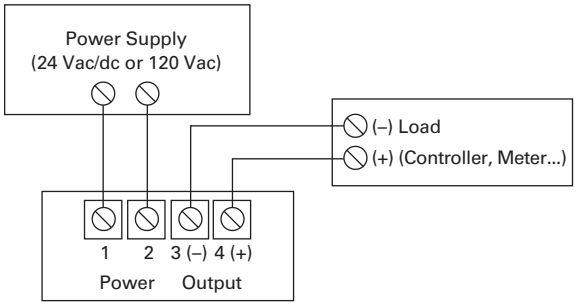
Description	Models with 0–5 Vdc Output Specification	Models with 0–10 Vdc Output Specification	Models with 4–20 mA Output Specification	EACP Series Only Specification
Power supply	Self-powered—no power supply needed	Self-powered—no power supply needed	12–40 Vdc loop-powered	Models ending -0SP: 120 Vac Models ending -USP: 24 Vac/Vdc (40 V maximu m)
Output signal	0–5 Vdc	0–10 Vdc	4–20 mA	4–20 mA
Output limit	8.2 Vdc	15 Vdc	23 mA	22.4 mA
Accuracy	1.0% FS	1.0% FS	1.0% FS	1% FS
Response time	100 ms	100 ms	300 ms	100 ms
Frequency range	50–60 Hz	50–60 Hz	20–100 Hz	40–100 Hz
Loading	1M ohm minimum rated accuracy 100 kohms, add 1.3% error	1M ohm minimum rated accuracy 100 kohms, add 1.3% error	See power supply above	50 kohms minimum 500 kohms maximum
Isolation voltage	UL listed to 1270 Vac (tested to 5 kV)	UL listed to 1270 Vac (tested to 5kV)	UL listed to 1270 Vac (tested to 5kV)	UL listed to 1270 Vac (tested to 5kV)
Input ranges	Field selectable ranges from 0–200 A ③	Field selectable ranges from 0–200 A ③	Field selectable ranges from 0–200 A ③	0–200 A jumper selectable
Sensing aperture	Solid-core: 0.74 in (19 mm) dia. Split-core: 0.85 in (21.6 mm) sq.	Solid-core: 0.74 in (19 mm) dia. Split-core: 0.85 in (21.6 mm) sq.	Solid-core: 0.74 in (19 mm) dia. Split-core: 0.85 in (21.6 mm) sq.	0.85 in (21.6 mm)
Housing	UL94 V0 flammability rated	UL94 V0 flammability rated	UL94 V0 flammability rated	UL94 V0 flammability rated
Environmental	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing

Notes

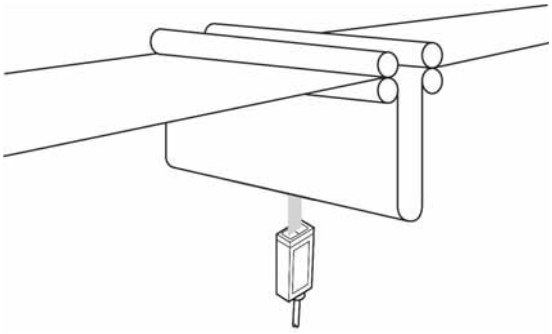
① Sensor pictured for reference and not included in kit.
② Does not apply to EACP series.
③ Additional custom ranges available from factory.

Wiring Diagrams

EACP Models



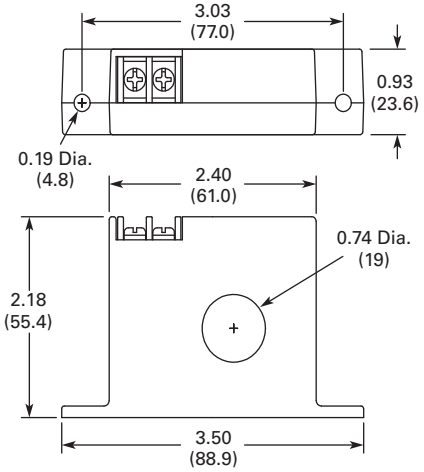
All Other Models ①



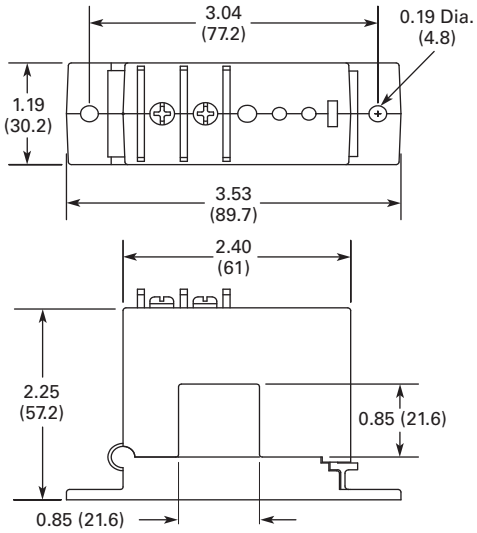
Dimensions

Approximate Dimensions in Inches (mm)

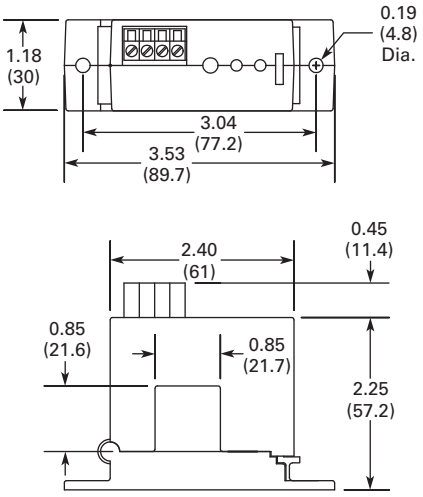
Solid-Core Housing



All Other Models



EACP Series



Note

① Pressure plate screw terminals.
12–22 AWG solid or stranded.
Field adjustable set point.

EACR Series CurrentWatch Current Sensors

Contents

7

EACR Series CurrentWatch Current Sensors

Product Description

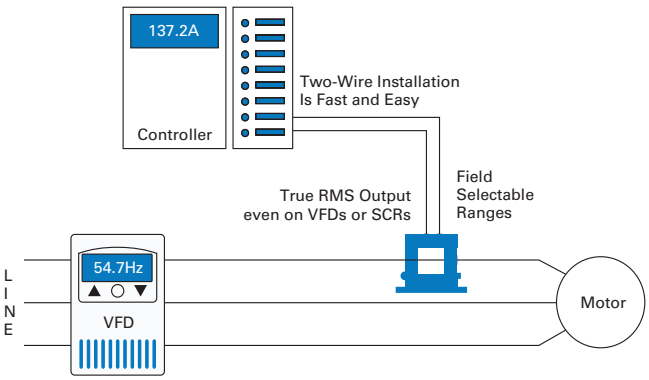
The CurrentWatch EACR Series current sensor family from Eaton's Electrical Sector combines a current sensor and a "True RMS" signal conditioner into a single package. The EACR Series provides True RMS output on distorted waveforms found on VFD or SCR outputs, and on linear loads in "noisy" power environments.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

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

Example Application—
Current Sensing for Non-Linear AC Loads



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.

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

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.

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)

Standards and Certifications

- UL Listed
- UL tested to Canadian safety standards
- CE
- RoHS Compliant

c UL us Listed CE RoHS COMPLIANT

⚠ 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				
 Solid-Core Housing				
24 Vdc loop-powered	0.74 in (19 mm)	4–20 mA	2 or 5 A	**EACR0420SC**
			10, 20 or 50 A	**EACR1420SC**
			100, 150 or 200 A	**EACR2420SC**
Split-Core Housing				
 Split-Core Housing				
24 Vdc loop-powered	0.85 in (21.6 mm)	4–20 mA	2 or 5 A	**EACR0420SP**
			10, 20 or 50 A	**EACR1420SP**
			100, 150 or 200 A	**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

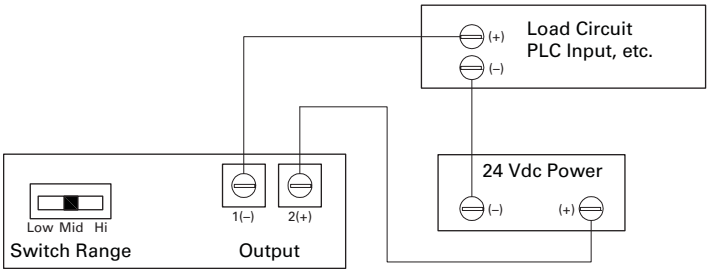
EACR Series CurrentWatch Current Sensors

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 0–200 A 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

7

Wiring Diagram

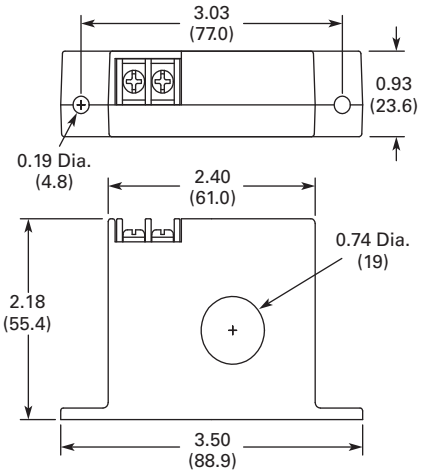
EACR Series CurrentWatch Current Sensors ②



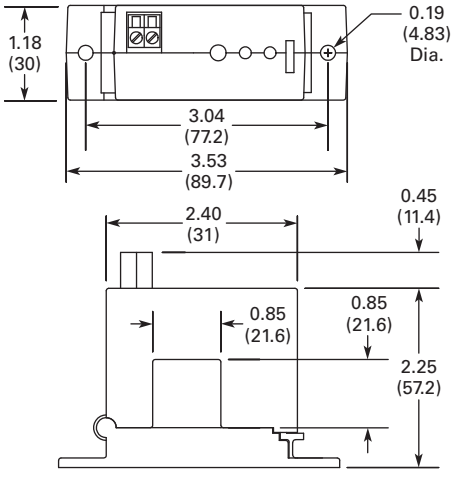
Dimensions

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.

EDC Series CurrentWatch Current Sensors

Contents

EDC Series CurrentWatch Current Sensors

Product Description

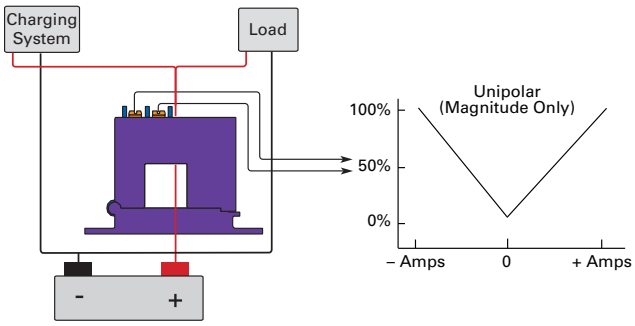
The CurrentWatch EDC Series from Eaton's Electrical Sector combines a hall effect sensor and signal conditioner into a single package for use in DC current applications up to 300 A. The EDC Series has jumper-selected current input ranges and industry standard outputs: 4–20 mA, 0–5 Vdc or 0–10 Vdc. Available in split-core models for quick and easy installation.

Application Description

Typical Applications

- **Battery Banks**—Monitor load current, monitor charging current and verify operation
- **Transportation**—Measures traction power or auxiliary loads
- **Electric Heating Elements**—Monitor heater loads with a faster response time than temperature sensors

Example Application—Battery Charging System



Features

- **Jumper-Selectable Ranges**—Reduce inventory and eliminate zero or span pots
- **Isolation**—Output is magnetically isolated from the input for safety, also eliminating insertion loss (voltage drop)
- **Internal Power Regulation**—Works well with low cost, unregulated power supplies
- **Split Core Design and Built-In Mounting Brackets**—Make installation quick and easy

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

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.

Standards and Certifications

- UL Listed
- UL tested to Canadian safety standards
- CE
- RoHS Compliant

c UL us Listed CE RoHS COMPLIANT

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

EDC Series CurrentWatch Current Sensors

Top Terminal Current Sensors

	Power Supply	Aperture Size	Output Signal	Current Range	Catalog Number
Split-Core Housing 	**Split-Core Housing—Uni-Polar Output, see Output Graph on Page V8-T7-37**				
	24 Vac/Vdc	0.85 in (21.6 mm)	0–5 Vdc	50, 75 or 100 A	**EDC205SP**
				100, 150 or 200 A	**EDC305SP**
				150, 225 or 300 A	**EDC405SP**
			0–10 Vdc	50, 75 or 100 A	**EDC210SP**
				100, 150 or 200 A	**EDC310SP**
				150, 225 or 300 A	**EDC410SP**
			4–20 mA	50, 75 or 100 A	**EDC2420SP**
				100, 150 or 200 A	**EDC3420SP**
				150, 225 or 300 A	**EDC4420SP**
Split-Core Housing 	**Split-Core Housing—Bidirectional Output, see Output Graph on Page V8-T7-37**				
	24 Vac/Vdc	0.85 in (21.6 mm)	–10 to +10 Vdc	0–100 A	**EDCB100SP**
				0–300 A	**EDCB300SP**
				0–400 A	**EDCB400SP**
Solid-Core Housing 	**Solid-Core Housing—Single-Polarity Output, see Output Graph on Page V8-T7-37**				
	24 Vac/Vdc	0.75 in (19 mm)	4–20 mA	5, 10 or 20 A	**EDC1420SC**

Accessories

DIN Rail Mounting Kit

CurrentWatch EDC Series

Description	Catalog Number
DIN rail mounting kit ①	**EDINKIT**

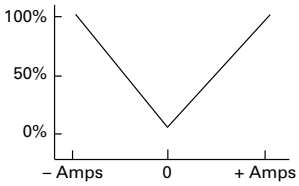
Technical Data and Specifications

EDC Series CurrentWatch Current Sensors

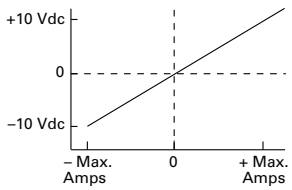
Description	Models with 0–5 Vdc Output Specification	Models with 0–10 Vdc Output Specification	Models with 4–20 mA Output Specification
Power supply	24 Vac/Vdc (22–38 Vac/Vdc) 2 VA maximum	24 Vac/Vdc (22–38 Vac/Vdc) 2 VA maximum	24 Vac/Vdc (22–38 Vac/Vdc) 2 VA maximum
Output signal	0–5 Vdc	0–10 Vdc	4–20 mA
Output limit	5.75 Vdc	11.5 Vdc	23 mA
Accuracy	Solid-core models: 1% FS Split-core models: 2% FS 300 A models: 1.5% FS	Solid-core models: 1% FS Split-core models: 2% FS 300 A models: 1.5% FS	Solid-core models: 1% FS Split-core models: 2% FS 300 A models: 1.5% FS
Response time	Solid-core models: 20 ms (to 90% of step change) Split-core models: 100 ms (to 90% of step change)	Solid-core models: 20 ms (to 90% of step change) Split-core models: 100 ms (to 90% of step change)	Solid-core models: 20 ms (to 90% of step change) Split-core models: 100 ms (to 90% of step change)
Frequency range	DC	DC	DC
Loading	25 kohms minimum	50 kohms minimum	650 ohms maximum
Isolation voltage	3 kV (monitored line to output)	3 kV (monitored line to output)	3 kV (monitored line to output)
Linearity	0.75% FS	0.75% FS	0.75% FS
Current ranges	Field selectable ranges from 0–300 A	Field selectable ranges from 0–300 A	Field selectable ranges from 0–300 A
Sensing aperture	Solid-core housings: 0.75 in (19 mm) dia. Split-core housings: 0.85 in (21.6 mm) sq.	Solid-core housings: 0.75 in (19 mm) dia. Split-core housings: 0.85 in (21.6 mm) sq.	Solid-core housings: 0.75 in (19 mm) dia. Split-core housings: 0.85 in (21.6 mm) sq.
Environmental	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing

Output Graphs

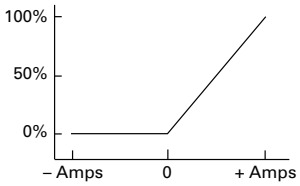
Uni-Poler Output for Split-Core



Bidirectional Output for Split-Core



Standard Analog Output for Solid-Core

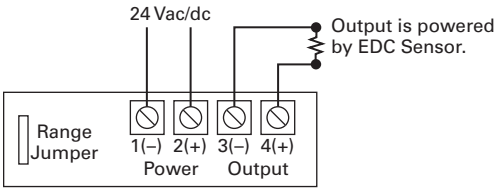


Note

① Sensor pictured for reference and not included in kit.

Wiring Diagram

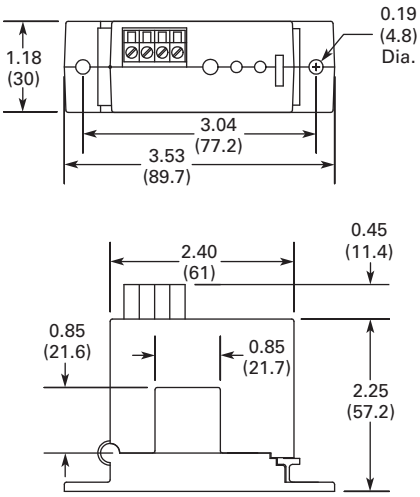
EDC Series CurrentWatch Current Sensors



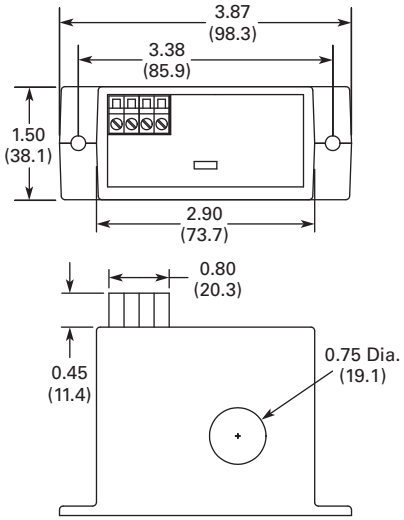
Dimensions

Approximate Dimensions in Inches (mm)

Split-Core Housing



Solid-Core Housing



EGF Series CurrentWatch Current Sensors

Contents

7

EGF Series CurrentWatch Current Sensors

Product Description

The CurrentWatch EGF Series from Eaton's Electrical Sector is a family of ground fault (earth leakage) sensors. Ground fault sensors help protect people, products and processes from damage by ground fault conditions by monitoring all current-carrying conductors in grounded single- and three-phase delta or wye systems.

The EGF Series with solid-state outputs offers the benefit of reliable, long-lasting solid-state switches. Solid-state design provides unlimited switch operating life, superior resistance to shock and vibration, zero off-state leakage, high switch speeds and high input-output isolation.

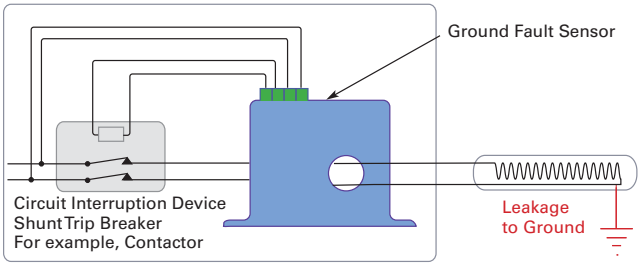
The EGF Series with mechanical relay outputs is available in solid-core housings with a choice of NO or NC SPST latching relays and a SPDT Form C relay with auto-reset.

Application Description

Typical Applications

- **Personnel Protection (Typically 5 mA)**—Detects sensitive ground fault conditions, which could cause injury to people, and functions as a sensor and alarm trigger when applied as an input to an overall ground fault protection system
- **Equipment Protection (Typically 10 or 30 mA)**—For applications where personnel protection is not the primary concern, higher set point capability helps eliminate nuisance tripping while still providing adequate ground fault detection to protect machine electronics
- **Regulatory**—Meets requirements as stipulated by governmental and industrial regulatory groups for ground fault sensing

Example Application—Insulation Breakdown Monitoring



"Zero Sequence" Operating Principle

In three-phase delta and wye systems, under normal conditions, current in the "hot" leg of a two-wire load is equal in magnitude but opposite in sign to the current in a neutral leg. As a result, the electromagnetic fields surrounding these two conductors cancel, producing a "zero sum current." As soon as current leaks to ground (fault condition), the two currents become imbalanced and a net magnetic field results. The CurrentWatch EGF Series sensors monitor this field and trip the contacts when the leakage rises above the set point.

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

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.

Features

- **Broad Range of Options to Meet Application Needs**—NO or NC, solid-state or mechanical relays, normally energized or normally de-energized contacts
- **Set Point Options Maximize Ease-of-Use and Application Flexibility**—Field selectable 5, 10 or 30 mA set points on the EGF "tri-set" models make user adjustments fast, sure and convenient
- **Compatible with Standard Equipment**—Application on single- and three-phases systems, ideal for use with shunt trip breakers, and magnetically isolated from monitored circuit and control power

Standards and Certifications

- UL Listed
- UL tested to Canadian safety standards
- CE
- RoHS Compliant

c UL us Listed

CE

RoHS COMPLIANT

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

EGF Series CurrentWatch Current Sensors

Solid-State Output Sensors

Solid-Core Housing

Power Supply	Set Point	AC Solid-State Output	DC Solid-State Output	Contacts	Catalog Number
Solid-Core Housings					
120 Vac	Fixed, 50 mA	Solid-state, NO, 1 A at 240 Vac	—	Normally energized	**EGF1NOACNE050**
				Normally de-energized	**EGF1NOACDE050**
		Solid-state, NC, 1 A at 240 Vac	—	Normally energized	**EGF1NCACNE050**
				Normally de-energized	**EGF1NCACDE050**
		—	Solid-state, NO, 0.15 A at 30 Vdc	Normally energized	**EGF1NODCNE050**
				Normally de-energized	**EGF1NODCDE050**
		—	Solid-state, NC, 0.15 A at 30 Vdc	Normally energized	**EGF1NCDCNE050**
				Normally de-energized	**EGF1NCDCDE050**
120 Vac	Fixed, 100 mA	Solid-state, NO, 1 A at 240 Vac	—	Normally energized	**EGF1NOACNE100**
				Normally de-energized	**EGF1NOACDE100**
		Solid-state, NC, 1 A at 240 Vac	—	Normally energized	**EGF1NCACNE100**
				Normally de-energized	**EGF1NCACDE100**
		—	Solid-state, NO, 0.15 A at 30 Vdc	Normally energized	**EGF1NODCNE100**
				Normally de-energized	**EGF1NODCDE100**
		—	Solid-state, NC, 0.15 A at 30 Vdc	Normally energized	**EGF1NCDCNE100**
				Normally de-energized	**EGF1NCDCDE100**
120 Vac	Tri-set adjustable, 5, 10 or 30 mA	Solid-state, NO, 1 A at 240 Vac	—	Normally energized	**EGF3NOACNET3**
				Normally de-energized	**EGF3NOACDET3**
		Solid-state, NC, 1 A at 240 Vac	—	Normally energized	**EGF3NCACNET3**
				Normally de-energized	**EGF3NCACDET3**
		—	Solid-state, NO, 0.15 A at 30 Vdc	Normally energized	**EGF3NODCNET3**
				Normally de-energized	**EGF3NODCDET3**
		—	Solid-state, NC, 0.15 A at 30 Vdc	Normally energized	**EGF3NCDCNET3**
				Normally de-energized	**EGF3NCDCDET3**

Mechanical Relay Output Sensors

Solid-Core Housing

Power Supply	Set Point	Mechanical Relay Output	Contacts	Catalog Number
Solid-Core Housings				
120 Vac	Fixed, 50 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NOLA050**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NCLA050**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF1SPDTNE050**
			Normally de-energized	**EGF1SPDTDE050**
	Fixed, 100 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NOLA100**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NCLA100**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF1SPDTNE100**
			Normally de-energized	**EGF1SPDTDE100**
	Tri-set adjustable, 5, 10 or 30 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NOLAT3**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF1NCLAT3**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF1SPDTNET3**
			Normally de-energized	**EGF1SPDTDET3**
24 Vac/Vdc	Fixed, 50 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NOLA050**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NCLA050**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF2SPDTNE050**
			Normally de-energized	**EGF2SPDTDE050**
	Fixed, 100 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NOLA100**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NCLA100**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF2SPDTNE100**
			Normally de-energized	**EGF2SPDTDE100**
	Tri-set adjustable, 5, 10 or 30 mA	Mechanical relay, NO SPST relay, Form A (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NOLAT3**
		Mechanical relay, NC SPST relay, Form B (1 A at 120 Vac, 2 A at 30 Vdc)	Latching relay	**EGF2NCLAT3**
		Mechanical relay, SPDT Form C, auto-reset (1 A at 120 Vac, 2 A at 30 Vdc)	Normally energized	**EGF2SPDTNET3**
			Normally de-energized	**EGF2SPDTDET3**

Accessories

DIN Rail Mounting Kit

EGF Series CurrentWatch Current Sensors

Description	Catalog Number
DIN rail mounting kit ①	**EDINKIT**

Note

① Sensor pictured for reference and not included in kit.

Technical Data and Specifications

EGF Series CurrentWatch Current Sensors

Description	Solid-State Output Models Specification	Mechanical Relay Output Models Specification
Power supply	120 Vac (55–110% of nominal voltage) 24 Vac/Vdc (± 20%)	120 Vac (55–110% of nominal voltage) 24 Vac/Vdc (± 20%)
Output contact type	Isolated dry contact	Mechanical relay
Output rating (switching current and switching voltage)	AC output switching models: 1 A at 240 Vac DC output switching models: 0.15 A at 30 Vdc	Auto reset models, SPDT relay: 1 A at 120 Vac; 2 A at 30 Vdc Latching models, SPST relay: 1 A at 120 Vac; 2 A at 30 Vdc
Off-state leakage	NO models: <10 µA NC models: <2.5 mA	None
Response time	200 ms at 5% above trip point 60 ms at 50% above trip point 15 ms at 500% above trip point	200 ms at 5% above trip point 60 ms at 50% above trip point 15 ms at 500% above trip point
Frequency range	50–400 Hz (monitored circuit)	50–400 Hz (monitored circuit)
Loading	2 VA maximum	2 VA maximum
Isolation voltage	5000 Vac (tested)	5000 Vac (tested)
Sensing aperture	0.74 in (19 mm) diameter	0.74 in (19 mm) diameter
LED indicator	Green LED for power ON status; red LED for contact status	Green LED for power ON status; red LED for contact status
Housing	UL94 V0 flammability rated	UL94 V0 flammability rated
Environmental	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing	Operating temperature: –4 to 122 °F (–20 to 50 °C) Humidity: 0–95% RH, non-condensing

Output Tables

Protection from faults and control power loss.

Normally Energized Models

		Control Power Applied	
	No Power	No Fault	Fault
Normally open models	Open	Closed	Open
Normally closed models	Closed	Open	Closed

Normally De-Energized Models

		Control Power Applied	
	No Power	No Fault	Fault
Normally open models	Open	Open	Closed
Normally closed models	Closed	Closed	Open

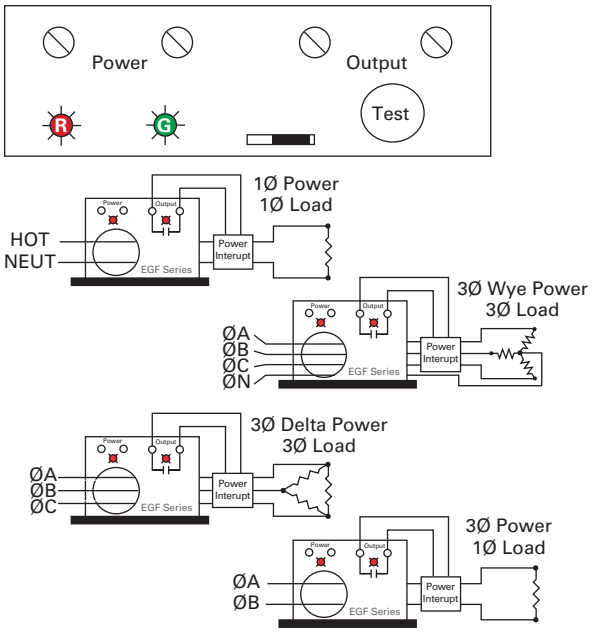
Latching (Mechanical Relay Output) Models

Latching models power up initially in the rest (normal) mode. If there is a fault condition or the test button is pushed, the output contacts will change state and latch. The output will remain latched regardless of whether the fault is cleared or control power is removed. To reset the output, apply a momentary contact across "reset" terminals.

Wiring Diagrams

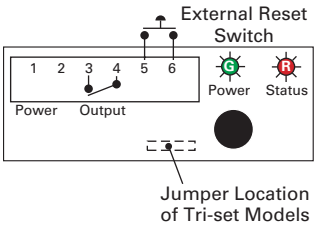
Solid-State Output Models

All Models

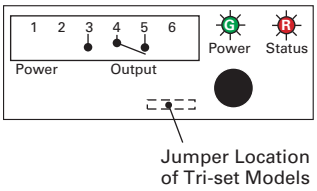


Mechanical Relay Output Models

Latching Models



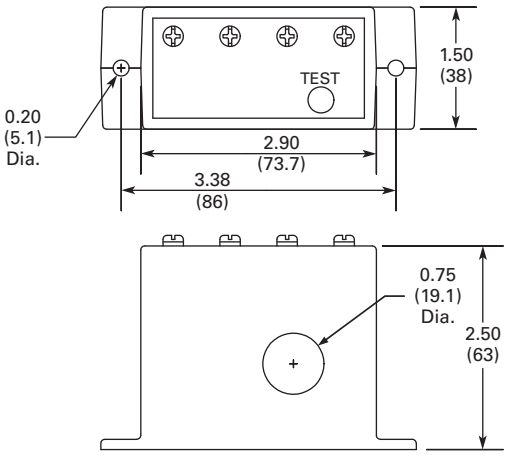
Auto Reset Models



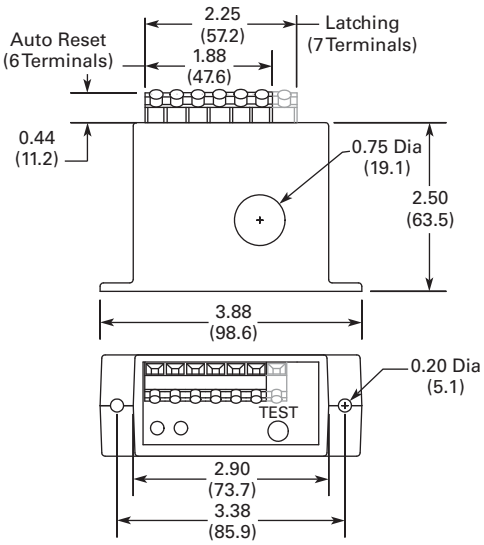
Dimensions

Approximate Dimensions in Inches (mm)

Solid-State Output Models



Mechanical Relay Models



EGFL Series CurrentWatch Current Sensors

Contents

7

EGFL Series CurrentWatch Current Sensors

Product Description

The CurrentWatch EGFL Series from Eaton's Electrical Sector is a family of ground fault (earth leakage) sensors. Ground fault sensors help protect people, products and processes from damage by ground fault conditions by monitoring all current-carrying conductors in grounded single- and three-phase delta or wye systems. For more information, see "Zero Sequence" Operating Principle on this page. The EGFL Series is available with either solid-state or mechanical relay outputs.

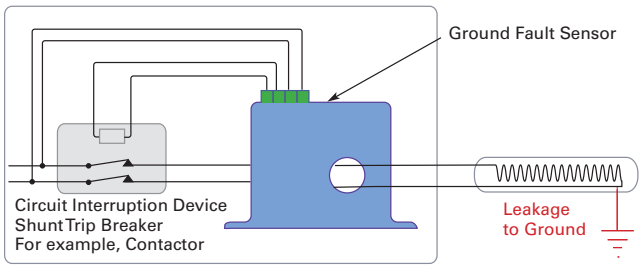
The EGFL Series with mechanical relays are available in solid-core housings with a choice of NO or NC SPST latching relays and a SPDT Form C relay with auto-reset. All mechanical models can be ordered with a fixed set point or with a "tri-set" option, which provides three factory-set, field adjustable set points.

Application Description

Typical Applications

- **Personnel Protection (Typically 5 mA)—** Detects sensitive ground fault conditions, which could cause injury to people, and functions as a sensor and alarm trigger when part of an overall ground fault protection system
- **Equipment Protection (Typically 10 or 30 mA)—** For applications where personnel protection is not the primary concern, higher set point capability helps eliminate nuisance tripping while still providing adequate ground fault detection to protect machine electronics
- **Regulatory—** Meets requirements as stipulated by governmental and industrial regulatory groups for ground fault sensing

Example Application—Insulation Breakdown Monitoring



"Zero Sequence" Operating Principle

In three-phase delta and wye systems, under normal conditions, current in the "hot" leg of a two-wire load is equal in magnitude but opposite in sign to the current in a neutral leg. As a result, the electromagnetic fields surrounding these two conductors cancel, producing a "zero sum current." As soon as current leaks to ground (fault condition), the two currents become imbalanced and a net magnetic field results. The CurrentWatch EGFL Series sensors monitor this field and trip alarm contacts when the leakage rises above the set point.

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

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.

Features

- **Broad Range of Options to Meet Application Needs**—Mechanical relays, normally energized or normally de-energized contacts
- **Set Point Options Maximize Ease-of-Use and Application Flexibility**—Field selectable 5, 10 or 30 mA set points on the EGFL "tri-set" models make user adjustments fast, sure and convenient
- **Compatible with Standard Equipment**—Application on single- and three-phase systems, ideal for use with shunt trip breakers, and magnetically isolated from monitored circuit and control power

Standards and Certifications

- UL Listed
- UL tested to Canadian safety standards
- CE
- RoHS Compliant

c UL us Listed

CE

RoHS COMPLIANT

⚠ 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.

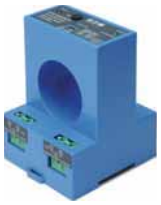
7

Product Selection

EGFL Series CurrentWatch Current Sensors

Mechanical Relay Sensors

Solid-Core Housing



Power Supply	Set Point	Output Type	Contacts	Catalog Number
Solid-Core Housings				
120 Vac	Tri-set adjustable, 5, 10 or 30 mA	Mechanical relay, NO SPST relay, Form A	Latching relay	**EGFL1NOLAT3**
		Mechanical relay, NC SPST relay, Form B	Latching relay	**EGFL1NCLAT3**
		Mechanical relay, SPDT Form C, auto-reset	Normally energized	**EGFL1SPDTNET3**
			Normally de-energized	**EGFL1SPDTDET3**
24 Vac/Vdc	Tri-set adjustable, 5, 10 or 30 mA	Mechanical relay, NO SPST relay, Form A	Latching relay	**EGFL2NOLAT3**
		Mechanical relay, NC SPST relay, Form B	Latching relay	**EGFL2NCLAT3**
		Mechanical relay, SPDT Form C, auto-reset	Normally energized	**EGFL2SPDTNET3**
			Normally de-energized	**EGFL2SPDTDET3**

Technical Data and Specifications

EGFL Series CurrentWatch Current Sensors

Description	Specifications
Power supply	120 Vac (55–110% of nominal voltage) 24 Vac/Vdc (± 20%)
Output signal	Mechanical relay
Output rating	Auto reset models, SPDT relay: 1 A at 125 Vac; 2 A at 30 Vdc Latching models, SPST relay: 1 A at 125 Vac; 2 A at 30 Vdc
OFF-state leakage	None
Response time	200 ms at 5% above trip point 60 ms at 50% above trip point 15 ms at 500% above trip point
Frequency range	50–400 Hz (monitored circuit)
Loading	2 VA max.
Isolation voltage	5000 Vac (tested)
Sensing aperture	1.83 in (46.5 mm) diameter
LED indicator	Green LED for power ON status Red LED for contact status
Housing	UL94 V0 flammability rated
Environmental	Operating temperature: –4 to +122 °F (–20 to +50 °C) Humidity: 0–95% RH, non-condensing

Output Tables

Protection from faults and control power loss.

Normally Energized Models

		Control Power Applied	
	No Power	**No Fault**	**Fault**
Normally open models	Open	Closed	Open
Normally closed models	Closed	Open	Closed

Normally De-Energized Models

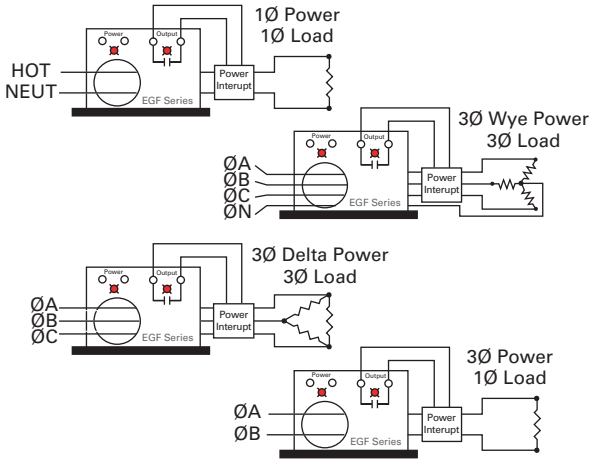
		Control Power Applied	
	No Power	**No Fault**	**Fault**
Normally open models	Open	Open	Closed
Normally closed models	Closed	Closed	Open

Latching Models

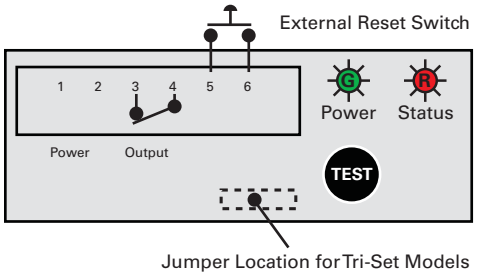
Latching models power up initially in the rest (normal) mode. If there is a fault condition or the test button is pushed, the output contacts will change state and latch. The output will remain latched regardless of whether the fault is cleared or control power is removed. To reset the output, apply a momentary contact across "reset" terminals.

Wiring Diagrams

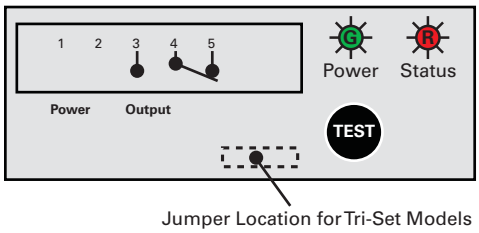
General Wiring Diagram for Ground Fault Sensors



Latching Models



Auto Reset Models



Dimensions

Approximate Dimensions in Inches (mm)

Mechanical Relay Models