

EGF Series CurrentWatch Current Sensors



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

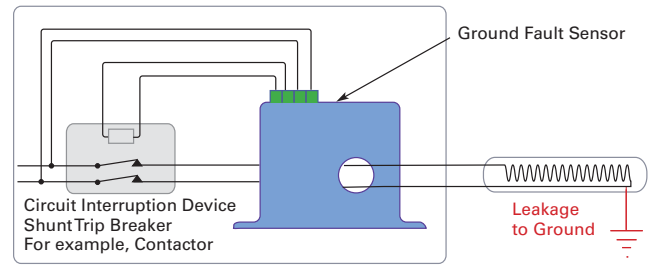
Typical Applications

- **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 setpoint 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

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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 setpoint.

For the most current information on this product, visit our Web site: [www.eaton.com](http://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
- **Setpoint Options Maximize Ease-of-Use and Application Flexibility**—Field selectable 5, 10 or 30 mA setpoints 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
- **Agency Approved**—UL and CE Certified, accepted worldwide

#### Standards and Certifications

- UL 1053, Class 1 Recognized
- CE



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

**Mechanical Relay Output Sensors**

**Solid-Core Housing**



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

**Accessories**

**DIN Rail Mounting Kit**



**EGF Series CurrentWatch Current Sensors**

Description	Catalog Number
DIN rail mounting kit ①	<b>EDINKIT</b>

**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	Mechanical Relay Output Models
	Specification	Specification
Power supply	120 Vac (55–110% of nominal voltage) 24 Vac/dc (± 20%)	120 Vac (55–110% of nominal voltage) 24 Vac/dc (± 20%)
Output contact type	Isolated dry contact	Mechanical relay
Output rating (switching current and switching voltage)	AC output switching models: 1A at 240 Vac DC output switching models: 0.15A at 30 Vdc	Auto reset models, SPDT relay: 1A at 120 Vac; 2A at 30 Vdc Latching models, SPST relay: 1A at 120 Vac; 2A 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

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

#### Normally De-Energized Models

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

### Latching (Mechanical Relay Output) Models

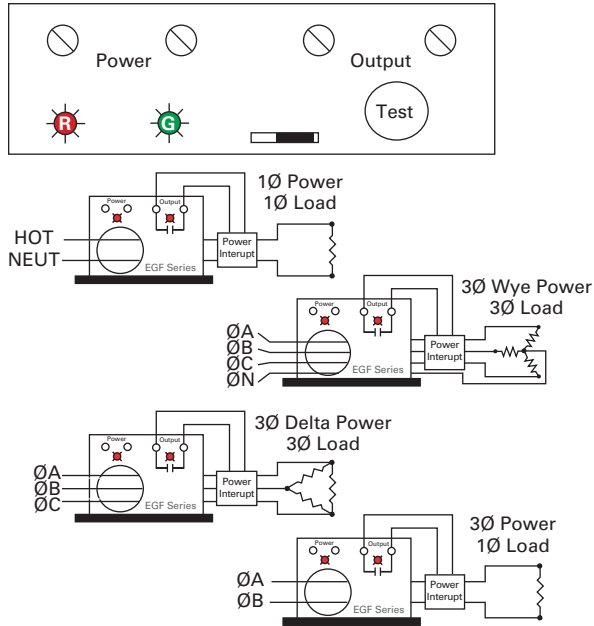
Latching models power up initially in the rest (normal) mode. If there is a fault condition or the test button is pushed, the output contacts will change state and latch.

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**

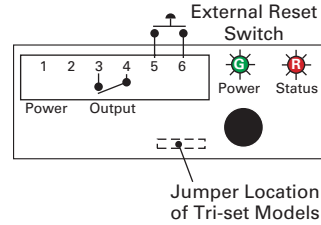
**Solid-State Output Models**

**All Models**

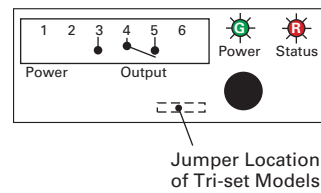


**Mechanical Relay Output Models**

**Latching Models**



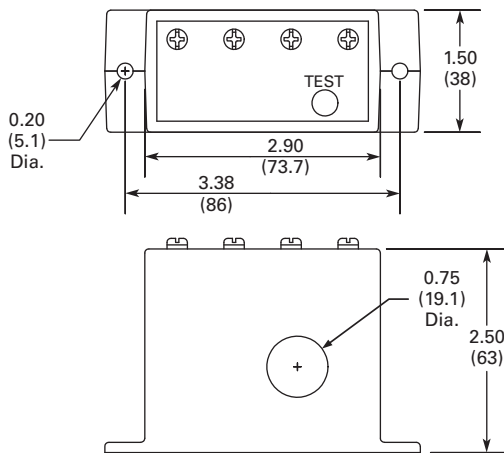
**Auto Reset Models**



**Dimensions**

Approximate Dimensions in Inches (mm)

**Solid-State Output Models**



**Mechanical Relay Models**

