

Ground Fault Relay

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Product Description

Eaton's Cutler-Hammer GFR Ground Fault Relays, current sensors, test panels and accessory devices are UL listed by Underwriters Laboratories in accordance with their standard for Ground Fault Sensing and Relaying Equipment, UL 1053, under File No. E48381.

Note: Suitable for either surface or semi-flush mounting.

A Type GFR ground fault protection system, when properly installed on a grounded electrical system, will sense phase-to-ground fault currents. When the level of fault current is in excess of the pre-selected current pickup and time delay settings, the GFR relay will initiate a trip action of a disconnect device which will open the faulted circuit and clear the fault.

The GFR devices are UL Class 1 devices designed to protect electrical equipment against extensive damage from arcing ground faults.

A basic Type GFR ground fault protection system consists of a ground fault relay, a ground fault current sensor, and a disconnect device equipped with a shunt trip device. This disconnect device can be a molded case circuit breaker, a power circuit breaker, a bolted pressure switch or other fusible disconnect device, suitable for application with UL Class 1 Ground Fault Sensing and Relaying equipment.

Note: Relays are also listed with CSA under File No. 43357.

Options and Accessories

Options

Additional optional equipment can be added to the protection system to meet the requirements of the specifying engineer, including:

- Ground fault test panel.
- Ground fault warning indicator relay.
- Ground fault indicating ammeter.

GFR relays are available with zone selective interlocking circuitry to interlock several relays within the same system. This allows the relay which detects a ground fault to instantly clear the fault by tripping the disconnect device. The relay simultaneously sends a signal to relay units "upstream" from the fault to time delay or to block their operation completely. Current sensors in various designs provide a range of "window" sizes to accommodate standard bus and cable arrangements.

Shunt trip attachments may be ordered for field mounting in Eaton's Cutler-Hammer molded case circuit breakers, or may be ordered factory installed in the breaker.

Accessories

Test Panel (120 Vac)

Used to test the ground fault system, to give an indication the relay has tripped the breaker, and to reset the relay after tripping. These functions may be separately mounted pilot devices.

Note: When a mechanically reset relay is used with a test panel, both the relay and test panel must be reset following either a simulated ground fault test or actual ground fault. Not UL listed.

Table 56-46. Optional Test Panel

Control	Test	Catalog Number	Price U.S. \$
120 volt 50/60 Hz	120 volt 50/60 Hz	GFRTP	

Ground Fault Warning Indicator

This is an accessory item for use with GFR relays with interlocking circuitry. At approximately 30 – 50% of the relay pickup setting, the indicator switches separate 120 Vac control power to a lamp or relay (not included) to give an indication of a ground fault. The indicator is rated 110/120 Vac 50/60 Hz for a maximum indicator load of .5 amperes.

Table 56-47. Ground Fault Warning Indicator

Description	Catalog Number	Price U.S. \$
Manual Reset	1234C67G01	
Self-Resetting	1234C67G02	

Indicating Ammeter

The optional indicating ammeter connects to the sensor terminals through a momentary contact pushbutton, and will indicate (in amperes) any ground fault current flowing through the sensor. Kit includes the ammeter and pushbutton.

Note: Not UL listed.

Table 56-48. Ammeter Kit

GFR System Used with	Kit Catalog Number	Price U.S. \$
1 – 12 Amperes	752B820G01	
5 – 60 Amperes	752B820G02	
100 – 1200 Amperes	752B820G03	

Shunt Trip Attachments

Use 120 Vac shunt trips.

Face Plate

Recommended when these relays are semi-flush mounted, to close the door cutout opening.

Table 56-49. Face Plate

Description	Catalog Number	Price U.S. \$
Face Plate	752B410G01	

Product Specifications

GFR Relay

- Ground fault detection ranges:
 - 1 – 12 amperes
 - 5 – 60 amperes
 - 100 – 1200 amperes
- Output contacts:
 - 240 Vac, 50/60 Hz: 3 amperes
 - 120 Vac, 50/60 Hz: 6 amperes
 - 28 Vdc: 3 amperes
 - 125 Vdc: .5 amperes
- Control power requirements:
 - 120 V, 50/60 Hz: .125 amperes, or 125 Vdc (optional)

Current Sensor

- 600 volt, 50/60 Hz maximum system voltage.

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Product Selection

Each installation requires:

- One relay unit (select trip ampere as required).
- One current sensor (select configuration required).
- One circuit breaker or disconnect device with shunt trip, or a shunt trip attachment for mounting in existing breaker.
- Test panel (optional).

Table 56-50. GFR Relay

GFR Relay Types	Ground Fault Pickup Amperes					
	1 – 12		5 – 60		100 – 1200	
	Catalog Number ①	Price U.S. \$	Catalog Number ①	Price U.S. \$	Catalog Number ①	Price U.S. \$
For 120 Volt 50/60 Hz Control						
Electrical Reset with Zone Interlocking	GFR12EI		GFR60EI		GFR1200EI	
Electrical Reset without Zone Interlocking	GFR12E		GFR60E		GFR1200E	
Mechanical Reset with Zone Interlocking	GFR12MI		GFR60MI		GFR1200MI	
Mechanical Reset without Zone Interlocking	GFR12M		GFR60M		GFR1200M	
For 120 Vdc Control						
Mechanical Reset without Zone Interlocking	—	—	—	—	GFR1200MD	

① Suitable for either surface or semi-flush mounting.

Table 56-51. Current Sensor

Window Size in Inches (mm)	Catalog Number	Price U.S. \$
Used with Relays Rated 1 – 12 Amperes		
5.50 (139.7) Inside Diameter	1283C45G01	
Used with Relays Rated 5 – 60 Amperes		
2.50 (63.5) Inside Diameter	179C768G01	
5.50 (139.7) Inside Diameter	1256C13G01	
7.81 x 11.00 (198.4 x 279.4) Rectangular ②	1257C88G04	
3.31 x 24.94 (84.1 x 760.5) Rectangular ②	1257C92G03	
Used with Relays Rated 100 – 1200 Amperes		
2.50 (63.5) Inside Diameter	179C768G02	
5.50 (139.7) Inside Diameter	1256C13G02	
8.25 (209.6) Inside Diameter	179C767G02	
7.81 x 11.00 (198.4 x 279.4) Rectangular ②	1257C88G03	
9.94 x 16.94 (252.5 x 430.3) Rectangular ②	1257C90G02	
9.94 x 23.94 (252.5 x 608.1) Rectangular ②	1257C91G02	
15.94 x 19.94 (404.9 x 506.4) Rectangular ②	1257C89G02	
3.31 x 24.94 (84.1 x 633.5) Rectangular ②	1257C92G04	
6.75 x 29.64 (171.5 x 752.9) Rectangular ②	1255C39G03	

② One end removable for installation.

Note: Instruction Leaflet 15321 available as a PDF at www.eaton.com (Go to Advanced Search and enter 15321).