



June, 1985
Supersedes Technical Data 29-722,
pages 1-2, dated July, 1982
Mailed to: E, D, C/29-700A

Type GFR Ground Fault Protection System

Description

The GFR ground fault relays, current sensors, test panels and accessory devices are UL listed by Underwriters' Laboratories, Inc. in accordance with their standard for Ground Fault Sensing and Relaying Equipment, UL 1053, under File E48381.②

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 pick-up 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 I 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 relay①, 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 I Ground Fault Sensing and Relaying equipment.

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.

① Suitable for either surface or semi-flush mounting.
② These devices are also listed with CSA under their file number 43357.



GFR Relay

Shunt trip attachments may be ordered for field mounting in Westinghouse molded case circuit breakers, or may be ordered factory installed in the breaker.

Electrical Ratings

GFR Relay

Ground Fault Detection Ranges:

1 to 12, 5 to 60 or 100 to 1200 amps

Output contacts:

240 Volt, 50/60 Hz: 3 Amps

120 Volt, 50/60 Hz: 6 Amps

28 Volt Dc: 3 Amps

125 Volt Dc: .5 Amps

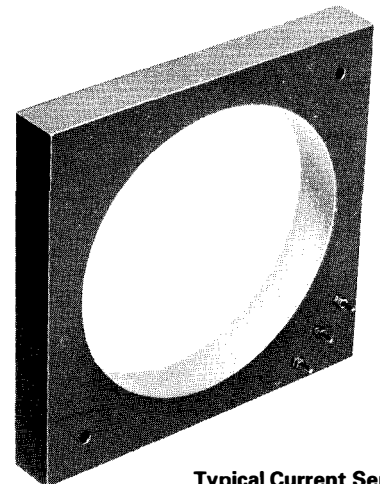
Control power requirements:

120 Volt, 50/60 Hz: .125 Amps, or

125 Volt Dc (optional)

Sensor:

600 Volts, 50/60 Hz max. system voltage



Typical Current Sensor

GFR Relay Selection

GFR Relay Types	Catalog Numbers ^①		
	Ground Fault Pick-up Amps		
	1-12	5-60	100-1200

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 125 Volt Dc Control

Electrical Reset with Zone Interlocking	GFR12EID	GFR60EID	GFR1200EID
Electrical Reset without Zone Interlocking	GFR12ED	GFR60ED	GFR1200ED
Mechanical Reset with Zone Interlocking	GFR12MID	GFR60MID	GFR1200MID
Mechanical Reset without Zone Interlocking	GFR12MD	GFR60MD	GFR1200MD

Sensor Selection

Window Size	Style Number
Used With Relays Rated 1-12 Amperes	
5.5 In. I.D.	1283C45G01

Used With Relays Rated 5-60 Amperes	
2.5 In. I.D.	179C768G01
5.5 In. I.D.	1256C13G01
8.25 In. I.D.	179C767G01
7.81 X 11 In.	Rect.② 1257C88G04
3.31 X 17.94 In.	Rect.② 1257C93G03
3.31 X 24.94 In.	Rect.② 1257C92G03

Used With Relays Rated 100-1200 Amperes	
2.5 In. I.D.	179C768G02
5.5 In. I.D.	1256C13G02
8.25 In. I.D.	179C767G02
7.81 X 11 In.	Rect.② 1257C88G03
9.94 X 16.94 In.	Rect.② 1257C90G02
9.94 X 23.94 In.	Rect.② 1257C91G02
15.94 X 19.94 In.	Rect.② 1257C89G02
3.31 X 17.94 In.	Rect.② 1257C93G04
3.31 X 24.94 In.	Rect.② 1257C92G04
5.19 X 35.94 In.	Rect.② 1257C94G02
6.75 X 29.64 In.	Rect.② 1255C39G03

Accessories

Test Panel (120 Volts Ac)^④

Used to test the ground fault system, to give an indication the relay has tripped the breaker, and to reset the relay after tripping^④. These functions may be separately mounted pilot devices. See AD 29-762.

For 120 Volt, 50/60 Hz Control and Test
Cat. Number: GFRTP Dis. CB-7

For 125 Volt Dc Control and 120 Volt 50/60 Hz Test
Cat. Number: GFRTPD Dis. CB-7

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 volt Ac control power to a lamp or relay, (not included) to give an indication of a ground fault. The indicator is rated 110/120 volts Ac 50/60 Hz for a maximum indicator load of .5 amps. This indicator does not interfere with the normal GFR installation or tripping. The indicator must be reset after operation by interrupting the 120 volt control power to the indicator. (Pushbutton or switch not included.)

Style No. 1234C67G01 ● Dis. CB-7

Ground Fault Warning Indicator

Similar to unit listed above except it is self-resetting when ground fault condition is corrected.

Style No. 1234C67G02 ● Dis. CB-7

Indicating Ammeter^③

The indicating ammeter is an accessory item for use with the GFR system. It connects to the sensor terminals, thru a momentary contact pushbutton, and will indicate in amperes any ground fault current flowing through the sensor. The kit includes the ammeter and pushbutton.

GFR System Used With	Kit Style Number
1-12 Amp	1255C51G07
5-60 Amp	1255C51G02
100-1200 Amp	1255C51G03

Discount CB-7

Shunt Trip Attachments

Use 120 volt Ac shunt trips listed in Tech. Data 29-120.

Face Plate

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

Style Number: 752B410G01 Dis. CB-7

Ordering Information

Each installation requires:

1. One relay unit (select trip amp. as req.)
2. One current sensor (select configuration req.)
3. One circuit breaker or disconnect device with shunt trip, or a shunt trip attachment for mounting in existing breaker.
4. Test panel. (Optional)

Further Information

List Prices: Price List 29-020.

Application: Application Data 29-762.

Dimensions: Dimension Sheet 29-772.