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.

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 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 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.

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
GFR Relay Selection

<table>
<thead>
<tr>
<th>GFR Relay Types</th>
<th>Catalog Numbers</th>
<th>Ground Fault Pick-up Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Reset with Zone Interlocking</td>
<td>GFR12E1</td>
<td>GFR60E1</td>
</tr>
<tr>
<td>Electrical Reset without Zone Interlocking</td>
<td>GFR12E</td>
<td>GFR60E</td>
</tr>
<tr>
<td>Mechanical Reset with Zone Interlocking</td>
<td>GFR12M</td>
<td>GFR60M</td>
</tr>
<tr>
<td>Mechanical Reset without Zone Interlocking</td>
<td>GFR12M</td>
<td>GFR60M</td>
</tr>
</tbody>
</table>

For 120 Volt 50/60 Hz Control

- Electrical Reset with Zone Interlocking: GFR12E1, GFR60E1, GFR1200E1
- Electrical Reset without Zone Interlocking: GFR12E, GFR60E, GFR1200E
- Mechanical Reset with Zone Interlocking: GFR12M, GFR60M, GFR1200M
- Mechanical Reset without Zone Interlocking: GFR12M, GFR60M, GFR1200M

Sensor Selection

<table>
<thead>
<tr>
<th>Window Size</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5 ln. 1.0</td>
<td>1283C45G01</td>
</tr>
<tr>
<td>5.5 ln. 1.0</td>
<td>179C68G01</td>
</tr>
<tr>
<td>5.5 ln. 1.0</td>
<td>179C76G01</td>
</tr>
<tr>
<td>8.25 ln. 1.0</td>
<td>179C76G02</td>
</tr>
<tr>
<td>7.81 X 11 ln.</td>
<td>125C88B04</td>
</tr>
<tr>
<td>3.31 X 17.94 in.</td>
<td>125C93G03</td>
</tr>
<tr>
<td>3.31 X 17.94 in.</td>
<td>125C93G03</td>
</tr>
<tr>
<td>3.31 X 24.94 in.</td>
<td>125C92G03</td>
</tr>
</tbody>
</table>

GFR System

<table>
<thead>
<tr>
<th>Use With</th>
<th>Kit Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-12 Amp</td>
<td>125C51G07</td>
</tr>
<tr>
<td>5-60 Amp</td>
<td>125C51G02</td>
</tr>
<tr>
<td>100-1200 Amp</td>
<td>125C51G03</td>
</tr>
</tbody>
</table>

Accessories

- **Test Panel (120 Volts Ac)**
  - 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. See AD 29-762.
  - For 120 Volt, 50/60 Hz Control and Test Panel. 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

- **Indicating Ammeter**
  - 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 of any ground fault current flowing through the sensor. The kit includes the ammeter and pushbutton.

- **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: 752SA19G01 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.

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