



# GROUND FAULT CURRENT DETECTION

## GFM Relay (Models 353, 363, 453 & 463)

### Trip Currents 1.5 to 65 Amps

The GFM system is designed for electrical equipment protection, not for personnel protection

Application: These Class 1 (Model GFM) Ground Fault protection systems are used to minimize damage to equipment due to arcing ground faults. The GFM system is designed for all polyphase applications and is ideal for motor control, motor control centers and high voltage starters. Systems can be wye or delta, grounded or resistance grounded.

Note: Only for use with EI GFM sensors

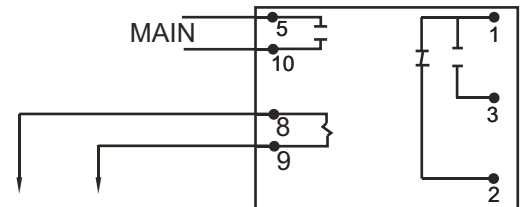
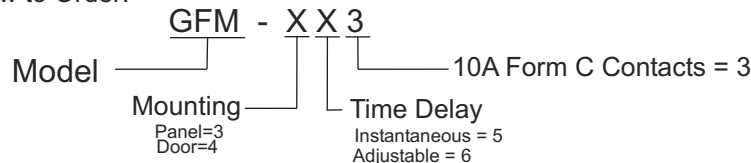
Operation: When the ground fault current exceeds a preselected condition (current and time settings) the relay trips. The relay contacts can be connected in the control circuit of a motor starter, to the shunt trip of a circuit breaker or other similar disconnect or alarm device.

Operating Range (Adjustable):	Trip Currents models available for 1.5 to 65 Amps, depending on sensor.
Time Delay (Adjustable):	Instantaneous to 36 Cycles
Input Power:	Self Powered
Frequency:	50/60 Hz.
Ambient Temperature Range:	-30 Deg. C. To 60

- Inverse time characteristic (to prevent nuisance trips)
- Field adjustable trip relay (trip current)
- Adjustable trip time delay relay (field settable for up to 36 cycles)
- Positive Visual Trip Indicator
- SPDT contacts: Form C, rated for 10 Amps continuous, 23 Amps inrush (250VAC)
- Door or panel mounted options
- Operates with molded case power circuit breakers, bolted pressure switches, or fusible disconnect switches.



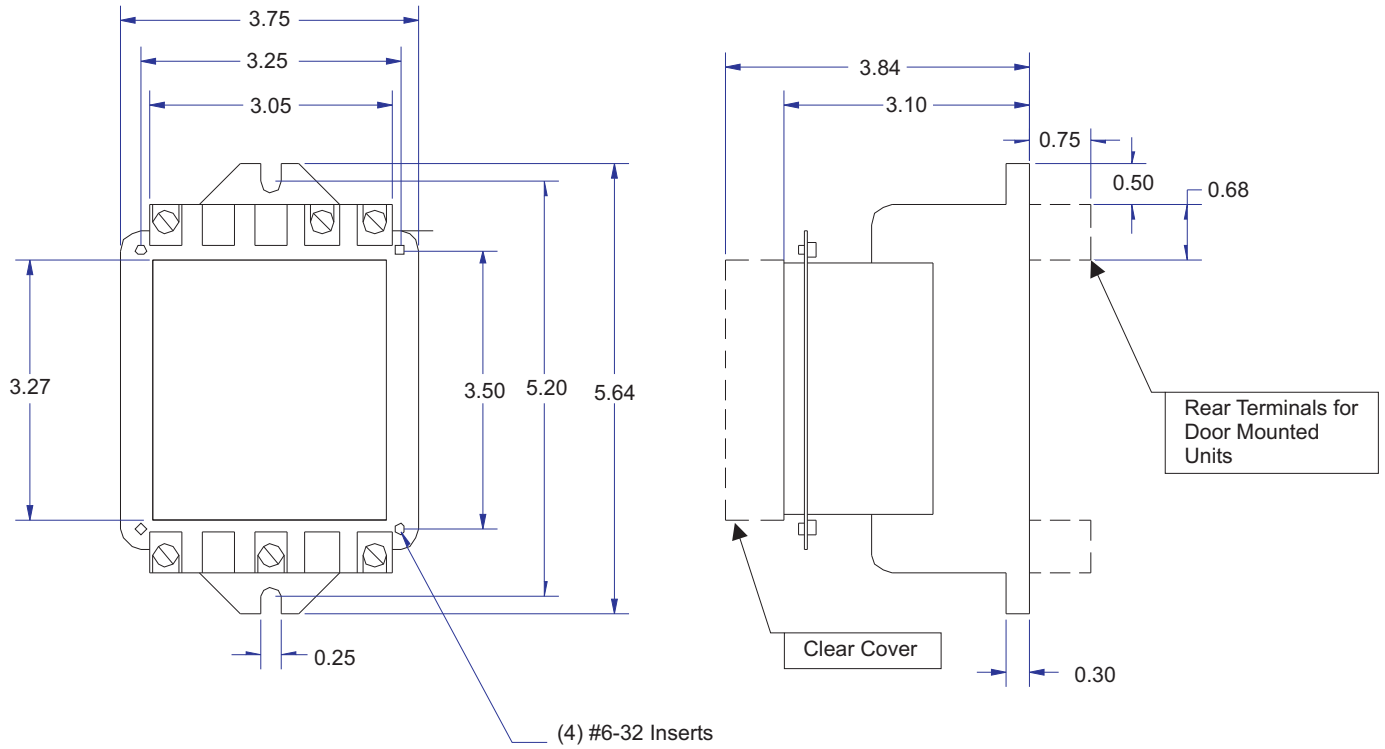
#### How to Order:



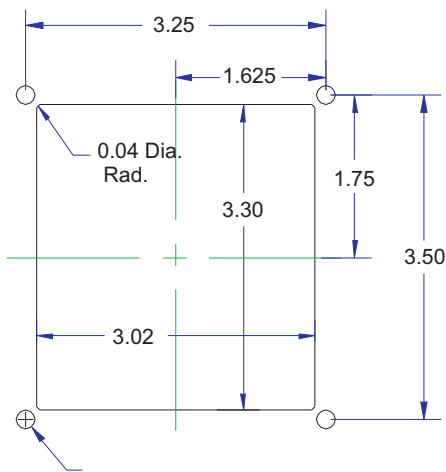
TO CURRENT SENSOR X1 AND X2  
ALL CONTACT SHOWN WITH THE RELAY IN THE TRIPPED POSITION



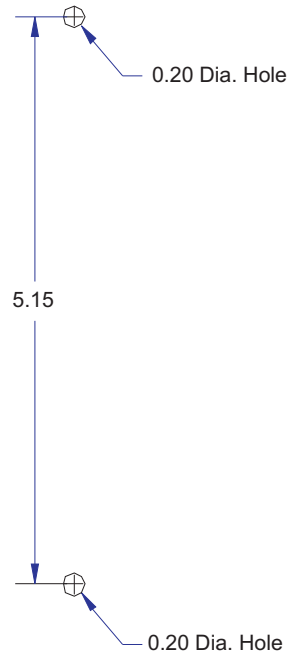
### TYPICAL GFM INSTALLATION:



#### Suggested mounting for Door Mount GFM Relay



#### Suggested mounting for Panel Mount GFM Relay





# GROUND FAULT CURRENT SENSOR

## Model GFM (Rectangular)

### Trip Currents 1.5 to 65 Amps

The GFL system is designed for electrical equipment protection, not for personnel protection



Application: These Ground Fault Sensors (type GFM) are available in a variety of sizes and current trip Ranges. Care should be taken when determining the physical size of the sensor window. The Ground Fault Sensor will only respond to ground faults that occur between the position of the sensor and the load. These sensors are only for use with EI GFM relays.

Operating Range: Trip Currents Models are available for 6-30, 9-39 or 15-65 with the current trip tolerance being +/- 15%

Frequency: 50/60 Hz.

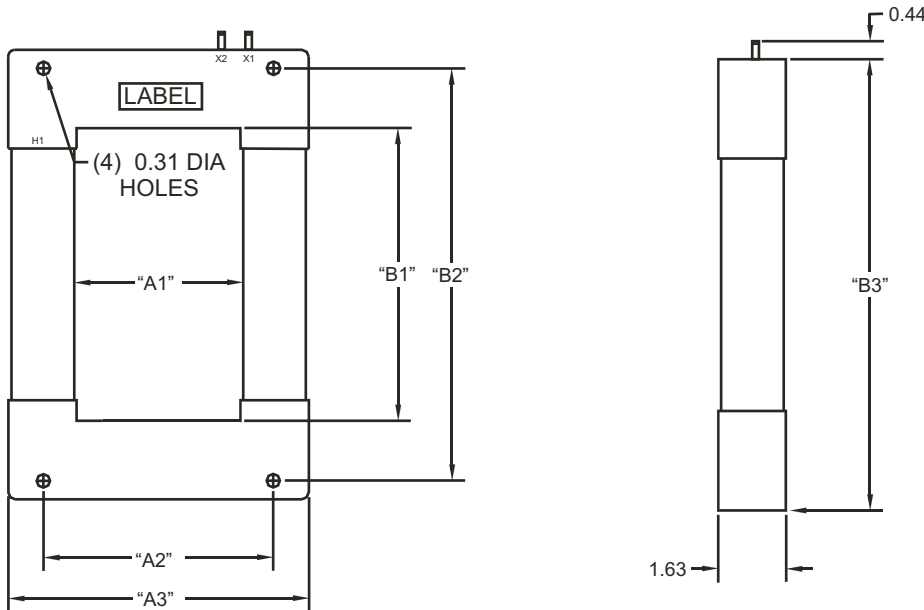
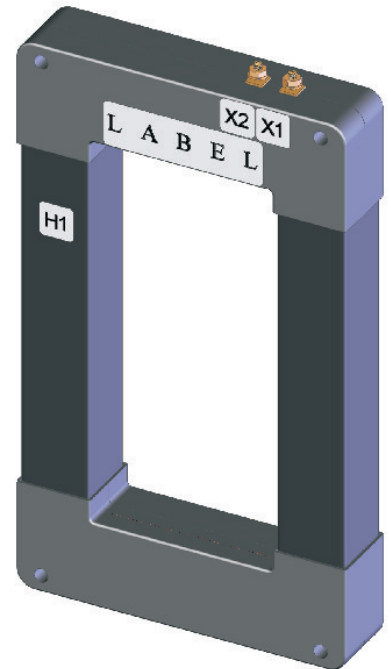
Insulation Level: 600 Volt, 10 kV BIL full wave

No. 8-32 brass terminals with flat washer, lock washer and nut.

#### CAUTION:

All appropriate safety precaution must be followed for the installation of these devices including de-energizing the incoming power prior to installation. It is recommended the sensor be installed by a trained electrician.

This sensor must have its secondary terminals shorted, or have the relay connected prior to energizing the primary circuit.



Model Number	Trip Current	A1	A2	A3	B1	B2	B3
GFM 041 X 071	6-30A	4.1	6.4	7.3	7.1	10	10.9
GFM 080 X 141	9-39A	8	9.5	11.1	14.1	17	17.9
GFM 080 X 117SC	15-65A	8	9.5	11.1	11.7	14.5	15.4



# GROUND FAULT CURRENT SENSOR

Model GFM (Toroidal)

Trip Currents 1.5 to 65 Amps

The GFM system is designed for electrical equipment protection, not for personnel protection



Application: These Ground Fault Sensors (type GFM) are available in a variety of sizes and current trip ranges. Care should be taken when determining the physical size of the sensor window. The Ground Fault Sensor will only respond to ground faults that occur between the position of the sensor and the load. These sensors are only for use with EI GFM relays.

**Operating Range:** Trip Currents models are available for 6-30, 9-39 or 15-65 with the current tolerance being +/- 15%

**Frequency:** 50/60 Hz.

**Insulation Level:** 600 Volt, 10 kV BIL full wave

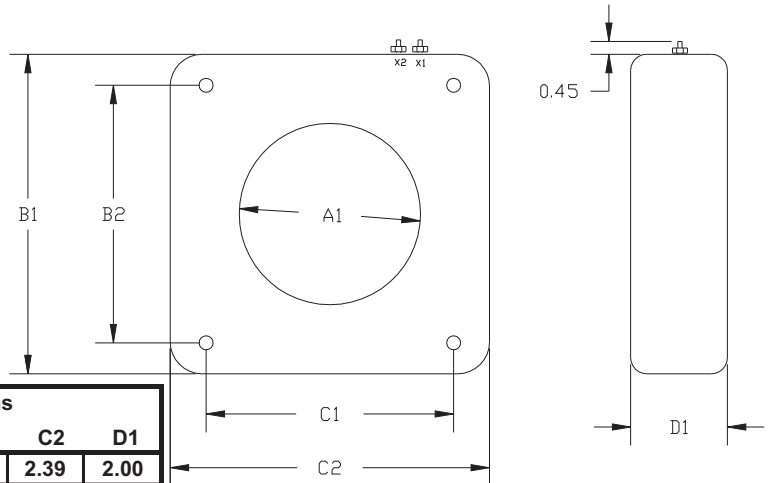
No. 8-32 brass terminals with flat washer, lock washer and nut.



### CAUTION:

All appropriate safety precautions must be followed for the installation of these devices including de-energizing the incoming power prior to installation. It is recommended the sensor be installed by a trained electrician.

This sensor must have its secondary terminals shorted, or have the relay connected prior to energizing the primary circuit.



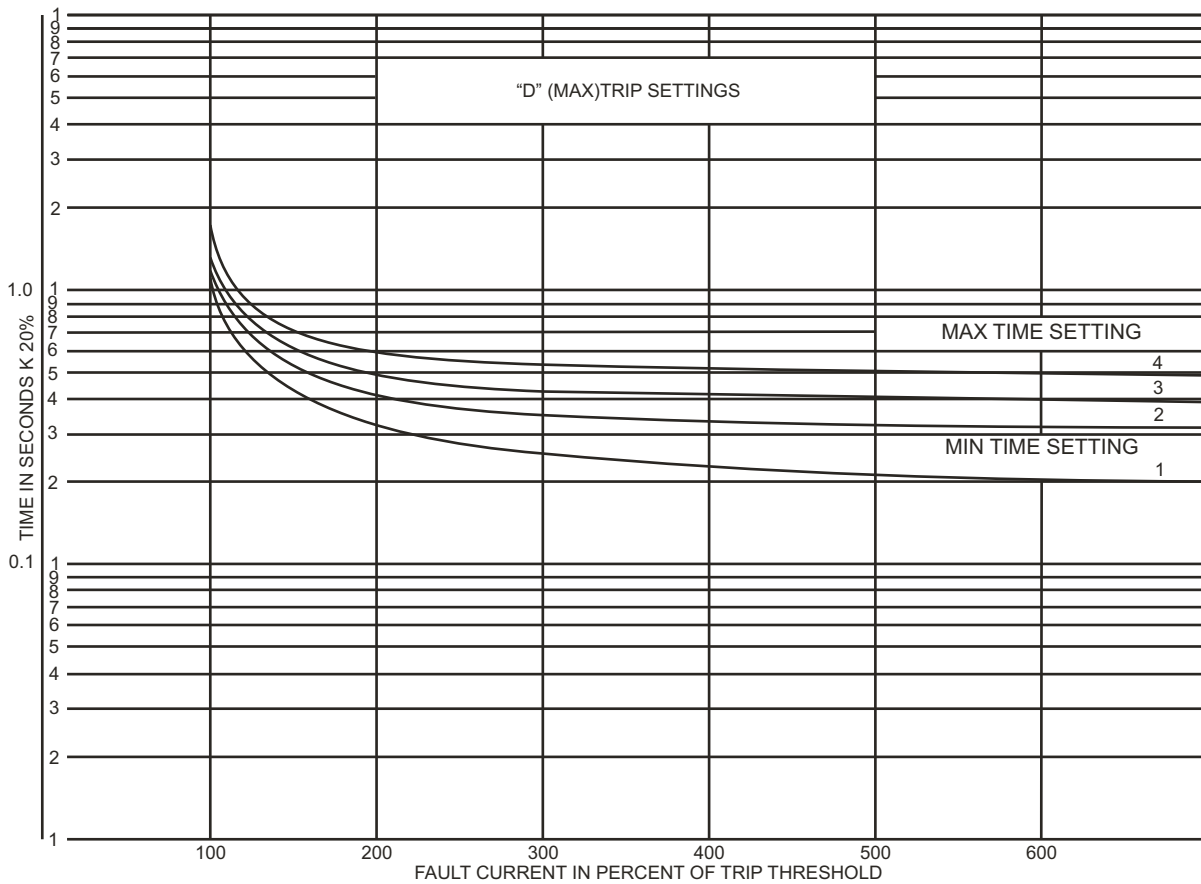
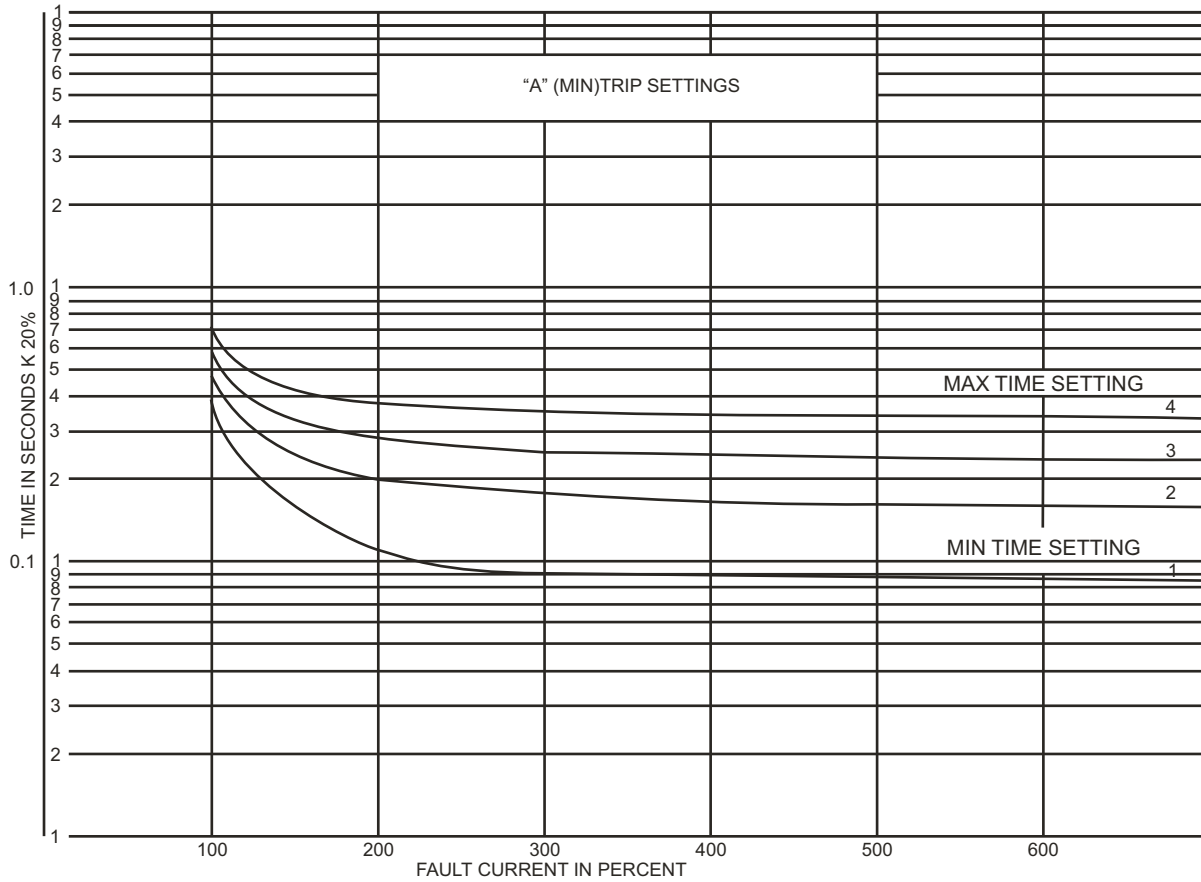
Model No.	Trip Currents	Sensor Dimensions					
		A1	B1	B2	C1	C2	D1
GFM 094	2.0 to 8.5	1.30	2.67	N/A	N/A	2.39	2.00
GFM 125	2.2 to 14	1.25	2.75	N/A	N/A	2.67	2.38
GFM 156	3.8 to 18	1.56	3.77	N/A	N/A	3.53	2.15
GFM 200	3 to 14.5	2.00	4.00	N/A	3.19	4.00	1.75
GFM 250	3.5 to 11	2.50	5.10	N/A	3.75	4.63	3.00
GFM 375	4 to 12	3.75	6.31	4.75	4.75	6.00	3.00
GFM 375D*	3.5 to 11 & 10 to 36	3.75	6.31	4.75	4.75	6.00	3.00
GFM 425	5 to 18	4.25	6.73	5.44	5.44	6.73	1.28
GFM 462	4 to 12	4.62	7.04	5.75	5.75	6.92	4.00
GFM 813	4 to 12	8.31	11.74	8.50	8.50	11.00	3.00

\* The "SC" indicates a Split Core design allowing for installation without disassembling of existing primary bus or cables.



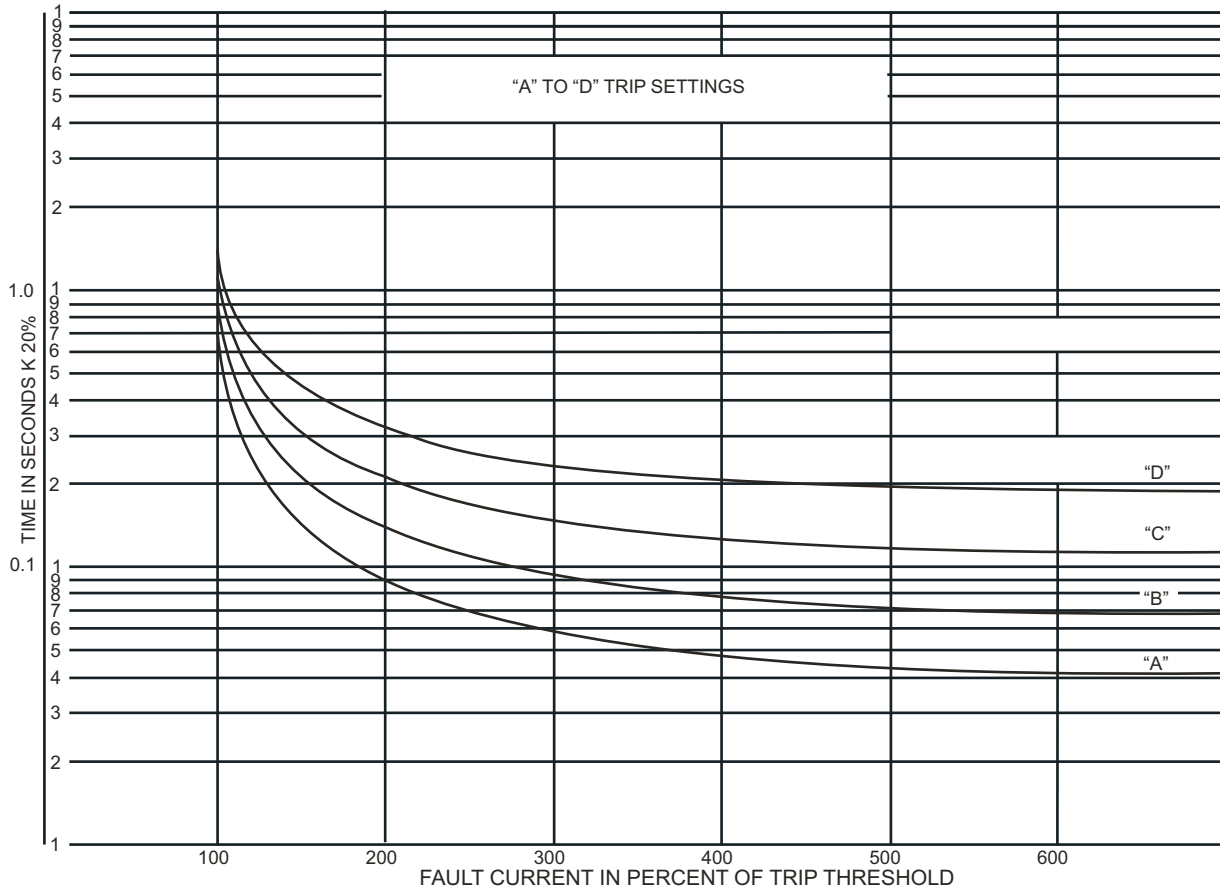
# ADJUSTABLE DELAY TYPES

## TYPICAL RESPONSE CURVES MODEL GFM

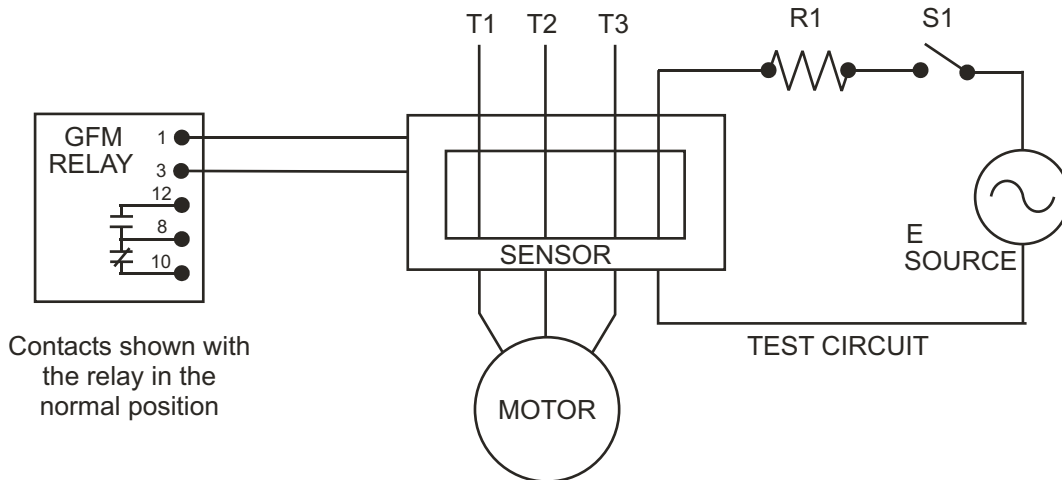




# FIXED DELAY TYPES TYPICAL RESPONSE CURVES MODEL GFM



## GFM TEST PROCEDURE



A simulated fault current can be applied by the above test circuit. An appropriate value of R1 should be selected to apply a minimum of 1.5 times the maximum trip rating of the sensor.

1. Assure that the GFM relay is in "NORMAL" (reset) position.
2. Close switch S1 and check for relay response. Relay handle will move to the tripped position.
3. Open S1, reset the relay and remove the test circuit from the system. System is now back to normal.

THE ABOVE TEST PROCEDURES SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.