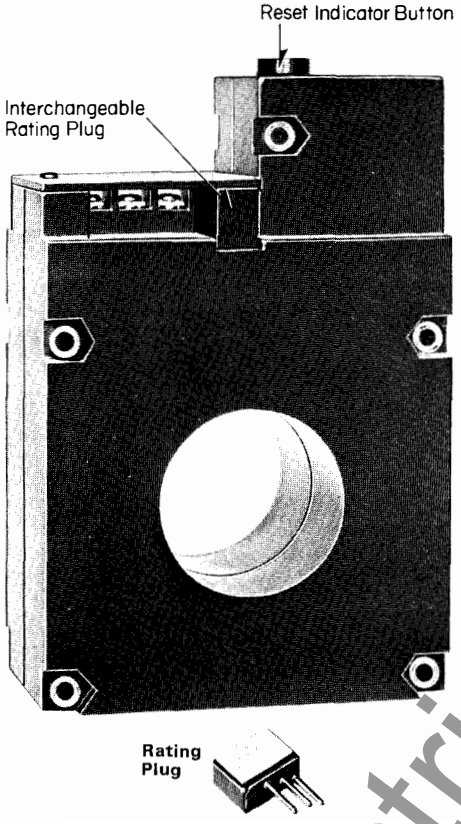
Westinghouse Electric Corporation
Low Voltage Breaker Division
Beaver, Pennsylvania 15009

June, 1984
Supersedes Technical Data 29-721,
pages 1-2, dated September, 1977
Mailed to: E, D, C/29-700A

600 Volts, 60/50 Hertz Maximum

Type GFM Ground Fault Protection Devices



Description

Westinghouse Type GFM devices are Class 1 Ground Fault Sensing and Relaying devices designed to comply with the requirements outlined in Underwriters' Laboratories, Inc. Standards for Safety entitled: Ground Fault Sensing and Relaying Equipment, UL1053.

Type GFM devices, when properly installed on a grounded electrical distribution system, will sense phase to ground fault currents and cause a disconnect to open and clear the fault instantaneously at predetermined current values. These devices have a maximum voltage rating of 600V, 50/60 Hertz and may be applied in accordance with Article 230-95 of the National Electrical Code.

Type GFM Ground Fault Protective Devices are self-contained combination sensing and relaying devices designed primarily for application on motor circuits and fixed loads where low level Ground Fault Equipment Protection is required.

GFM devices are available in two basic types with each type having two physical sizes. The two basic types differ in the type of output circuit provided. The first type, designated either GFM2 or GFM4, employs an internal relay having S.P.D.T. contacts that will operate a remote shunt trip device where control power is available.

The second type, designated either GFM2A or GFM4A, is completely solid state with an output SCR circuit designed to operate a remote, low-energy, flux transfer shunt trip mounted in a molded case breaker. No supplementary control power for the shunt trip is required.

Size Selection

The proper size selection is a function of the conductor size of the equipment being protected. Types GFM2/GFM2A have approximately a two-inch window opening. Types GFM4/GFM4A have approximately a four-inch window opening.

Rating Selection

The basic Ground Fault Current Pickup rating of either type GFM device is 5 amperes, i.e., each unit when properly installed will initiate a trip signal to a remote shunt trip with the presence of a 5 ampere Ground Fault Current within established tolerance limits. Separate optional rating plugs are available to alter the pickup rating to a maximum of 100 amps.

Control Power

Internal control power is not required to operate Type GFM Ground Fault Protective devices. All internal control power required is derived from the Ground Fault current through the internal current sensor.

External control power is required to operate the remote shunt trips used in conjunction with Type GFM2 and GFM4 devices.

External control power is not required with Type GFM2A and GFM4A devices to operate the special remote, low-energy, flux transfer shunt trips used in Molded Case breakers.

Trip Indication/Reset

A combination visual indicator and reset button is provided on the top of Type GFM2 and GFM4 devices to indicate the initiation of a tripping action to clear a Ground Fault. The operation of the internal relay will cause the white button to visibly raise.

To reset the device, the Indicator/Reset button must be depressed. Failure to reset the device will not allow the associated disconnect device to be reclosed.

No Indicator/Reset button is provided on Types GFM2A or GFM4A since an internal SCR is used in the output circuit. These devices reset automatically when the disconnect opens to clear the Ground Fault.

Application

Type GFM devices may be installed in Zero Sequence or Ground Return Sensing methods. Proper Ground Fault Protection schemes are dependent upon proper system installation and grounding methods.

Mounting

Each Type GFM device contains a Ground Fault Sensor which is a special current transformer. These are insulated devices which can be mounted directly to enclosure surfaces. Four tubular rivets secure the sensor housing. These four (0.200 dia.) mounting holes can be used to mount the GFM device in either a vertical or horizontal mounting position.

Optional mounting brackets as shown on next page are available. These brackets may be mounted on either the bottom or side depending upon the installation requirements.

Regardless of the mounting method used, the top of the device with the visual indicator/reset button and nameplate instructions should be maintained in a visual position after installation. GFM devices should be installed so that all conductors passing through the conductor window are physically centered.

Rating Plug Installation

To install an optional rating plug to obtain other than the minimum 5 ampere rating, remove the terminal cover held in position by a single screw and retention groove. With the cover removed, insert the rating plug in the position indicated. The rating plug is held captive in position with the addition of the terminal cover after the wiring is completed. With the terminal cover in position, the ampere rating of the rating plug remains visible.

Output Circuitry

Contact ratings for Type GFM2 and GFM4 are 10 amps continuous, 240 volts Ac max. Types GFM2A and GFM4A are intended to be used only with remote flux transfer shunt trips as listed on next page.

Type GFM Ground Fault Protection Devices

Selection Data

GFM Basic Units (Discount CB-7)

Catalog Number	Output Type	Approx. Window Opening, Inches	Basic Ampere Rating (Plug Omitted)	Operation Time @ 10 x Ampere Rating
Unit for Use With Standard Shunt Trip①				
GFM2	Relay	2	5	0.03 Sec.
GFM4	Relay	4	5	0.03 Sec.
Unit for Use With Flux Transfer Shunt Trips Listed Below				
GFM2A	SCR	2	5	0.03 Sec.
GFM4A	SCR	4	5	0.03 Sec.

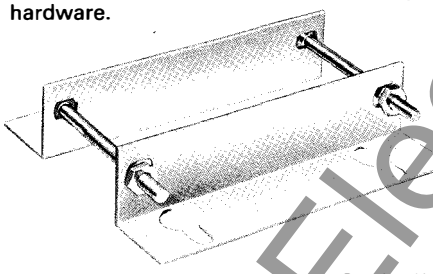
GFM Optional Rating Plugs (Dis. CB-7)

Catalog Number	Ampere Rating
GFMP10	10
GFMP25	25
GFMP50	50
GFMP75	75
GFMP100	100

Special Flux Transfer Shunt Trips for GFM2A and GFM4A Devices (Dis. CB-2)Ⓒ
Available for the following breaker types and ratings. Select desired breaker from TD 29-120. Order breaker and flux transfer shunt trip by description for factory mounting only.

Type Breaker	Max. Frame Rating, Amps.
FB/HFB	150
MCP (Size 0-4)	150
JB	250
KB/HKB	250
MCP (Size 5)	250
LBB	400
LB/HLB	400
MCP (Size 5)	400
LA/HLA③	600
NB/HNB③	1200
PB③	2500

Optional Mounting Brackets (Dis. CB-7)
Includes two (2) brackets and mounting hardware.



GFM Type	Bracket Kit Style Number
GFM2/2A	750B295G01
GFM4/4A	750B295G02

① Refer to 29-120 T WE A for breaker and shunt trip.
② May be field mounted but will void UL Listing of the breaker.
③ GFM application in zero sequence schemes is limited only by the size of the through conductors. These devices may be applied in higher rated systems by using source ground schemes. See AD 29-761.
④ Order by description. Factory mounted in the breaker or MCP.
Ⓒ Changed or added since previous issue.

Ordering Information

Order by catalog number or style number:
1 Basic GFM Unit
1 Rating plug if required
1 Mounting bracket if required
1 Circuit breaker with standard or special shunt trip factory installed (as required), or optionally when possible, a circuit breaker and field mountable shunt trip as separate items.

Further Information

List Prices: PL 29-020
Application: AD 29-761
Dimensions: DS 29-771
Instructions: I.L. 14945

Printed in USA

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Printed in U.S.A.

June, 1984