MIF

M Family Digital Feeder Relay

Three-phase and ground, single-phase or ground feeder protection relay.

Features and Benefits

- Advanced 16-bit microprocessor
- Configurable logic, curves, digital I/Os and LEDs
- Flash memory for field upgrades
- Two settings groups
- Drawout case for easy maintenance
- AC/DC power supply
- Access via front panel keypad or communication links
- Compatible with M Family systems in half or full 19" racks

Applications

- Primary circuit protection on distribution networks at any voltage level
- Backup/auxiliary protection for transformers, generators and motors

NEW

Protection and Control

- Phase, ground TOC and IOC
- Thermal image protection
- Circuit breaker control (open and close)
- Reclosure

Monitoring and Metering

- 32-event record, analog/digital oscillography

User Interfaces

- M+PC software for setting, monitoring
- Front RS232 and rear RS485 ports using ModBus® RTU protocol up to 19,200 bps

GE Multilin

Protection

The MIF provides primary circuit protection for distribution networks of any voltage, and backup/auxiliary protection for transformers, generators and motors. As part of the M Family, the MIF provides advanced digital protection which includes:

Phase TOC

The TOC protection can be set from 0.1 to 2.4 times I_n. MIF-P models incorporate three-phase and ground TOC units, while MIF-N models incorporate a single-phase TOC unit. Four standard TOC curves can be selected in addition to a user configurable curve. Each curve can be set with customized time multipliers to coordinate with equipment.

ANSI	IEC/BS142
Normal inverse	IEC A
Very inverse	IEC B
Extremely inv.	IEC C
Definite time	Definite time

Ground TOC

This function has the same curve selection choices and settings as the phase time overcurrent unit. The ground signal is normally derived as the residual sum of the three-phase CTs eliminating the need for an additional ground sensor. For more sensitive detection, an additional core balance (zero sequence) ground sensor encircling the three-phase conductors can be used.

Instantaneous Overcurrent

The MIF includes two separately adjustable IOC units, each of which can be independently enabled. MIF models provide two three-phase IOC units and two ground IOC units, while MIFN models incorporate two single-phase or ground IOC units. The pickup setpoint can be set from 0.1 to 30 times I_n and a time delay from 0 to 100 seconds.

Thermal Image Unit

A thermal image unit protects equipment against overheating due to excessive load. Several operating curves can be set as a function of heating time constant T1 (adjustable between three and 600 minutes). Cool down time constant T2 is adjustable from one to six times the heating constant.

Inputs and Outputs

The factory configuration of MIF inputs and outputs can be easily modified using M+PC software. Two digital inputs and six relay outputs are provided, four of them programmable. These configurable outputs can be assigned either to a set of pre-configured values, or to an OR/NOT combination of the same values.

Cold Load Pickup (Optional)

This feature adapts the pickup of the overcurrent functions to override higher overload currents resulting from re-energization.

Breaker Failure Protection (Optional)

A simple "breaker has not opened" feature is standard. A more complex breaker failure scheme can be easily implemented through a digital input and configurable output logic (logic gates and timers).

Breaker Health (Optional)

The breaker health threshold is set by the user to achieve "just in time" maintenance. When the cumulative I^2 value exceeds the threshold, an alarm occurs.
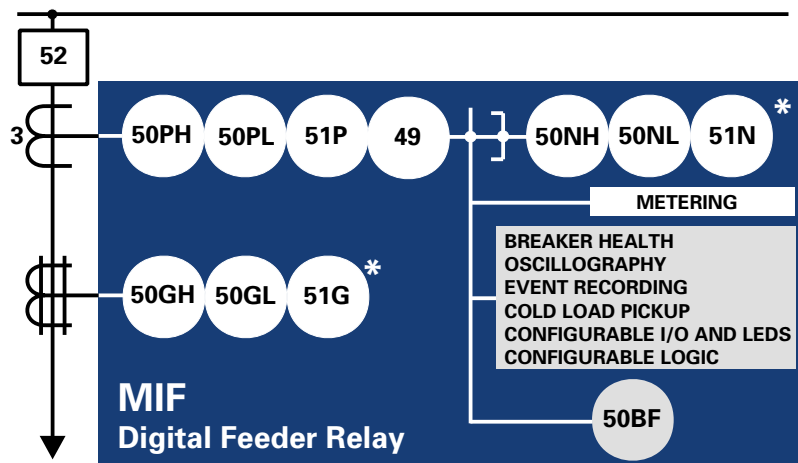
Circuit Breaker Control

The MIF permits operation of the circuit breaker. Breaker opening and closing operations can be carried out by programming specific outputs, and digital inputs can be used for verifying the success of the operation.

Primary or Secondary Metering

The MIF can monitor both the primary and secondary current metering values, by previously setting the corresponding CT ratio.

Functional Block Diagram

52

3

50PH **50PL** **51P** **49**   **50NH** **50NL** **51N** *

METERING

BREAKER HEALTH
OSCILLOGRAPHY
EVENT RECORDING
COLD LOAD PICKUP
CONFIGURABLE I/O AND LEDS
CONFIGURABLE LOGIC

50GH **50GL** **51G** *

MIF
Digital Feeder Relay

50BF
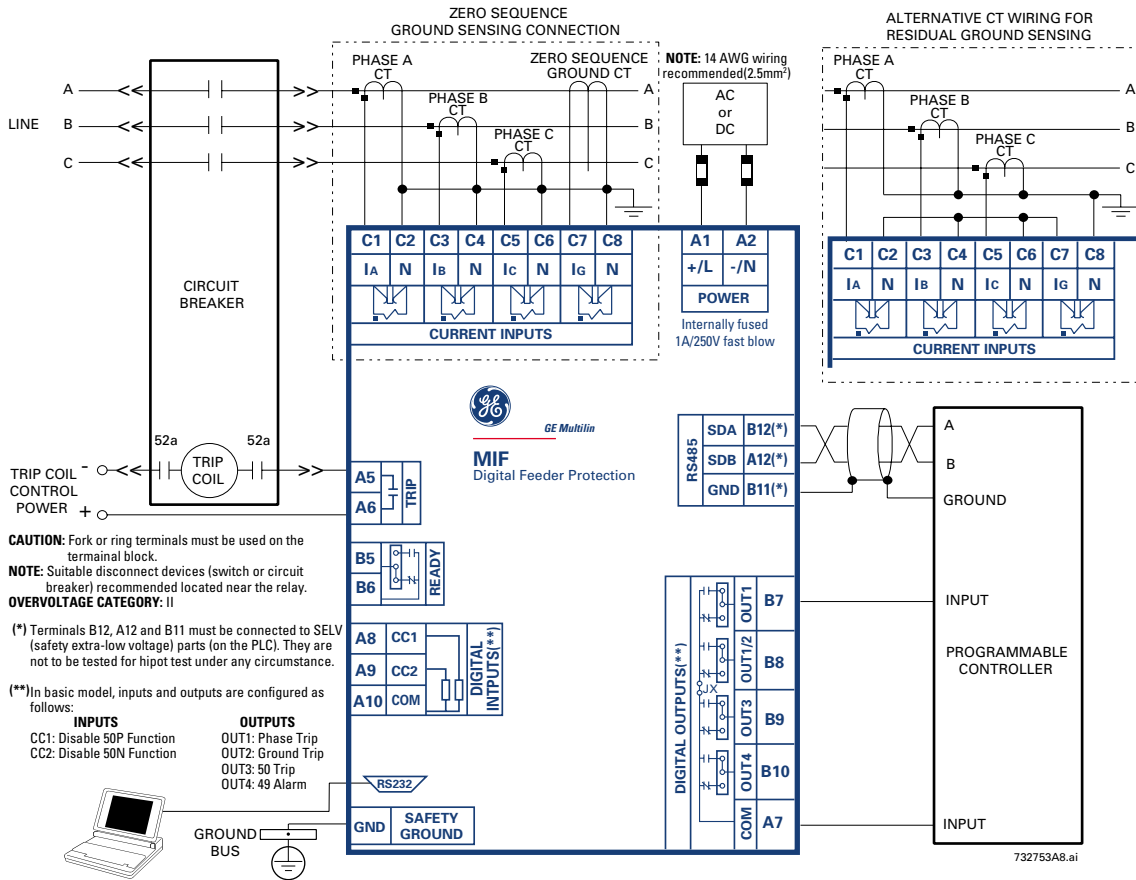
(*) Alternative Connections   ◯ Optional Features   732754A3.ai

Typical Wiring

NOTE: *For reference only. For connections for a specific MIF model, please refer to its external connections drawing.*

732753A8.ai

CAUTION: Fork or ring terminals must be used on the terminal block.
NOTE: Suitable disconnect devices (switch or circuit breaker) recommended located near the relay.
OVERVOLTAGE CATEGORY: II

(*) Terminals B12, A12 and B11 must be connected to SELV (safety extra-low voltage) parts (on the PLC). They are not to be tested for hipot test under any circumstance.

(**) In basic model, inputs and outputs are configured as follows:

INPUTS	OUTPUTS
CC1: Disable 50P Function	OUT1: Phase Trip
CC2: Disable 50N Function	OUT2: Ground Trip
	OUT3: 50 Trip
	OUT4: 49 Alarm

MIF Guideform Specifications

For an electronic version of the MIF guideform specifications, please visit: www.GEindustrial.com/Multilin/specs, fax your request to 905-201-2098 or email to literature.multilin@indsys.ge.com.

Guideform Specifications
Available on the Product CD, Online or from your Sales Representative.
www.GEindustrial.com/Multilin

enerVista enabled See page 275.
www.enerVista.com

Ordering

MIF * * * * E * 00 * 00 *

MIF										Digital feeder relay
	P									Three-phase + ground relay
	N									Single-phase or ground relay
		A								ANSI curves
		I								IEC curves
			0							MIF-N models
			1							MIF-P: In = 1 A (pickup range: 0.1 – 2.4 A)
			5							MIF-P: In = 5 A (pickup range: 0.5 – 12 A)
				1						Ground CT In = 1 A (pickup range: 0.1 – 2.4 A)
				5						Ground CT In = 5 A (pickup range: 0.5 – 12 A)
				N						Sensitive ground In = 1 A (pickup range: 0.005 – 0.12 A)
						0				No options, basic unit
						1				Option 1*
						2				Option 2 **
								F		24 – 48 VDC/AC power supply (range: 19 – 58 VDC)
								H		110 – 250 VDC (range: 88 – 300 VDC)
										110 – 230 VAC p.s. (range: 88 – 264 VAC)
									C	Individual relay
									S	Mounted in an M+ system†

* configurable I/O, event recording, oscillography
** I/O, cold load pickup, breaker failure protection, breaker health, configurable logic plus Option 1 features
† If relays are to be mounted in an M+ system, then either an M050 half 19" rack or M100 full 19" rack case must be ordered. The M050 and M100 racks are provided at no additional cost based on the number of relays ordered.

Accessories

B1315P1 Depth reducing collar, reduces the mounting depth by 63mm