

Mitsubishi Electric MELPRO-HA Series MGP-H1A Generator Protection Relay

**Small relays providing comprehensive
protection for large generators**



Mitsubishi Electric MELPRO-HA Series

MGP-H1A Generator Protection Relay

- ◆ All-in-one protection relay for large generators
- ◆ Versatile performance
- ◆ Flexible configuration based on extensive engineering experience

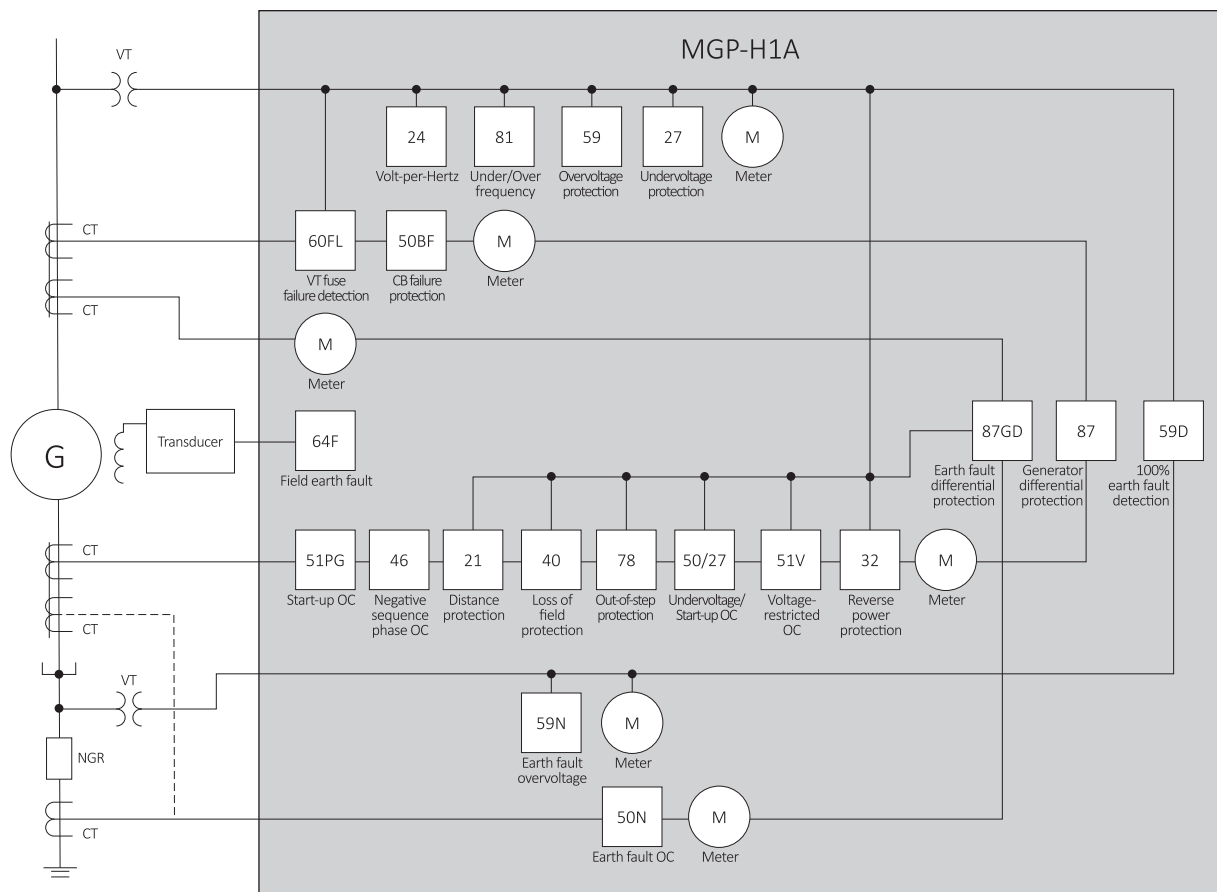


All-in-one protection relay for large generators

Protection functions

VT fuse failure detection	60FL	Loss of field protection	40 (2 stages)	100% earth fault detection	59D
Distance protection	21 (2 stages)	Under/Over frequency	81 (UF: 3stages, OF: 3stages)	Field earth fault	64F
Volt-per-Hertz	24 (4 stages)	Reverse power protection	32 (Forward: 2stages, Reverse: 2stages)	Out-of-step protection	78 (MHO/Quadrilateral)
Undervoltage/Start-up OC (inadvertent energization)	50/27	Overvoltage protection	59	CB failure protection	50BF
Voltage-restricted OC	51V	Negative sequence phase OC (Definite time/Inverse time)	46	Earth fault differential protection	87GD
Start-up OC	51PG	Earth fault OC	50N	Undervoltage protection	27
Generator differential protection	87	Earth fault overvoltage	59N (2 stages)		

Single line diagram



Versatile performance

Specifications

Model	MGP-H1A (Generator Protection Relay)	Remarks
Rated frequency	50Hz/60Hz ※	Applicable range ±5%
Rated current	5A/1A ※	
Control power supply	110, 125VDC/220,250VDC ※	Applicable range -15~+10%
Number of DI	28	
Number of DO	15 + 15 (option)	
Communication port	Front : 100BASE-TX (For laptop PC only)	
	Rear : 100BASE-TX Communication 2CH	Option Protocol: IEC61850
	Rear : RS-485 Communication 1CH	Protocol: Modbus
Insulation resistance	500VDC megger All electrical circuits to earth : 10MΩ or more Between independent circuits : 5MΩ or more	IEC60255-5 (JEC2500)
Withstand voltage	All electrical circuits to earth : 2,000VAC 1min Between each contact : 1,000VAC 1min	IEC60255-5 (JEC2500)
Surge withstand (1.2/50 μs)	All electrical circuits to earth : 5kV Between each terminal : 3kV	IEC60255-5
E M C	Electrostatic discharge	Contact discharge : 8kV, Air discharge : 15kV IEC60255-22-2 Class 4
	High frequency	2.5kV peak frequency : 1MHz±10% Damped oscillation 1/2 peak in 3~6 cycles IEC60255-22-1 Class 3
	Square wave	Voltage : 1kV±10% 2s Pulse width : 100ns±30% Pulse rise time : 1ns±30%
	Radio wave	Transceiver : 150/400/900MHz Mobile phone : 800MHz/1.8GHz Wireless LAN : 2.4/5GHz

※ Frequency, input current and control power voltage are selected when ordering.

Standards

International Standards

- IEC60255 Electrical Relays
- IEC61000 EMC
- IEC61850 Communication (Option)

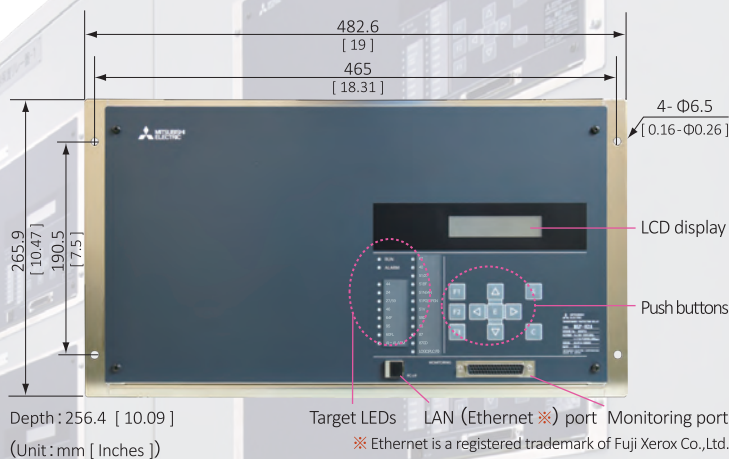
Compliance



This mark verifies compliance with the safety standards of EU directives.

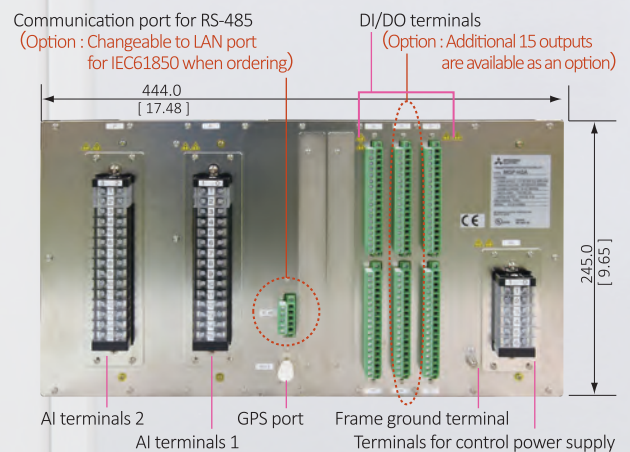
Front

All-in-one compact body



Rear

Abundant DI/DO terminals provide a solution for making complex logic.



Fault record function

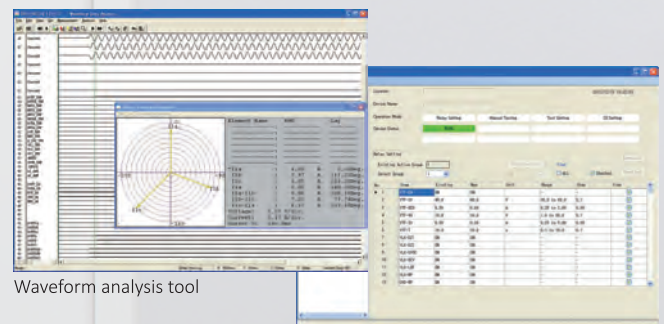
Waveform analysis tool

VT/CT input, circuit breaker status, protection function status, calculations and indications for characteristic values (e.g., symmetrics, harmonics, impedance values)

Recording duration : 4sec maximum (Sampling : Every 30 degrees of phase angle)

Self-diagnostics function

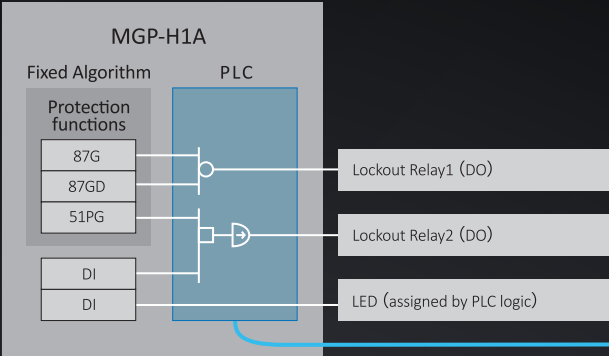
- ◆ Continuous monitoring AI, process, settings, power supply, etc.



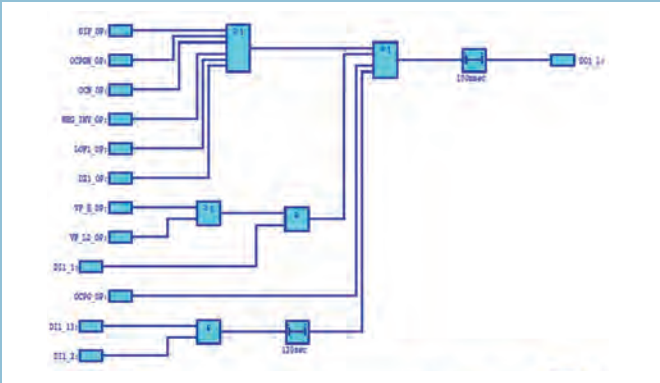
Flexible configuration based on extensive engineering experience

Programmable Logic Controller (PLC)

Applicable to all "plant-specific" interlocks
Adjust input/output logic as desired

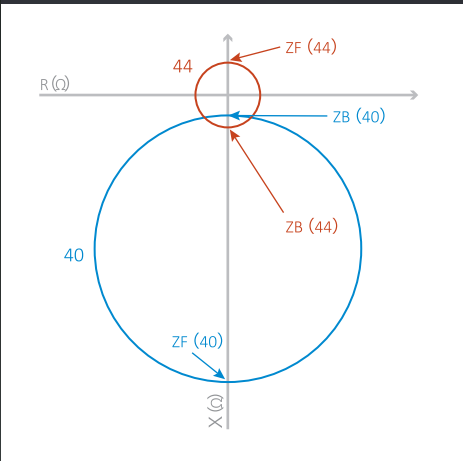


[Display of PLC edit (example)]



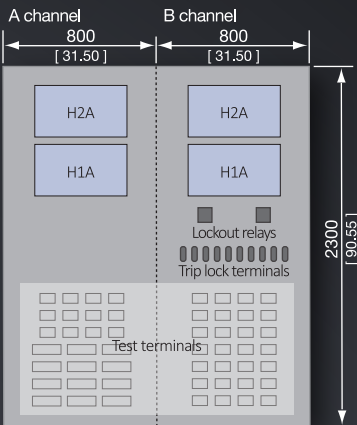
Settings

Settings provided considering protection



Protection System Construction

Provide protection for main circuit with MGP-H2A
(1) Includes generator step-up transformer, auxiliary transformer, excitation transformer and generator
(2) MELPRO-HA Series MGP-H2A transformer protection relay



(Unit : mm [Inches])
[Example arrangement of redundant system]

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Safety Warning

To ensure proper use of the product listed in this brochure,
please be sure to read the instruction manual prior to use.