

PATENT PENDING



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GMS-504DZ

Digital Continuity Ground Monitoring System With 4DZ Technology™



The GMS-504DZ with **4DZ Technology™** is a state-of-the-art ground monitoring system that combines a patent-pending, digital Ground Monitor (GM) with a fully programmable digital Ground Fault Relay (GFR), all in a single compact package.

4DZ Technology™ (Patent Pending) provides the most sophisticated, best performing Ground Monitor system available.

Features:

- Cutting-edge design, utilizing Digital Signal Processing (DSP) and modern components.
- On-board diagnostics and redundant key circuits for reliability.
- Fail-safe design ensures the GMS-504DZ trips if power fails, or if any failure is detected.
- Compatible with IE Expansion Modules for added interconnection/monitoring capabilities.
- Mode selection switches are protected under a clear window to prevent accidental changes. These switches are illuminated to make checking settings simple, even in poor light.
- Designed for power systems operating at up to 5kV.

Ground Monitor

- 4DZ Technology™ for reliable performance, and immunity from interference or turn-on surges.
- No need for the polarity switches needed with other ground monitors.
- Optional Parallel Path Protection Mode prevents parallel paths from masking ground problems.
- Latching or non-latching operation.

Ground Fault Relay

- Fully programmable digital ground fault relay.
- Settable trip current levels: 0.5A, 2A, 3A, 4A, 6A
- Delay time settable from instant to 2 seconds.
- "Normal" GFR mode with DSP harmonic filter to eliminate nuisance trips.
- "VFD mode" for accurate monitoring when used with Variable Frequency Drives (VFDs).

Controls and Connections

Front



Rear



4-DZ Technology™

4-DZ Technology is the most advanced Ground Monitor (GM) technology available.

Benefits include:

- Best available resistance to nuisance tripping, or, worse, failures to trip.
- 4DZ's digital test signal uses four independent signal components and detectors to prevent problems due to interference and surges.
- Advanced Digital Signal Processing provides extremely accurate ground monitoring and predictable, repeatable performance, even in complex systems.

Specifications:

System Voltage:	Up to 5kV
Control Voltage:	120VAC, 60Hz. Nominal power draw: 13 VA
Weight:	2.25 lbs / 1.0 kg
Ground Fault Relay:	
Current Trip Levels	Selectable to any of these values: 0.5A, 2A, 3A, 4A, 6A
Trip level accuracy	(Not including cabling impedances, using 1100-0006 or 1100-0007 CTs) Normal mode: +/- 5% (50 or 60 Hz, any trip level setting) VFD mode: +/- 5% (20-400 Hz, 2-6A trip level settings) VFD mode: +10%/-5% (10-20 Hz, 2-6A trip level setting) VFD mode: +/- 20% (10-20 Hz, 0.5A trip level setting)
Delay Time	Selectable to from Instant (no added delay) to 2 Seconds Trip delay (measured at 3x selected trip current): Normal mode: 55 ms (max) (50 or 60 Hz, delay set to Instant) Normal mode: 2 S, +/- 2.8% (50 or 60 Hz, delay set to 2 S) VFD mode: 55 ms (max) (10-400 Hz, delay set to Instant) VFD mode: 2 S, +/- 3% (10-400 Hz, delay set to 2 S)
Current Transformer	350:5 Current ratio, IE CT Part Numbers: 1100-0006 (2.5" ID) 1100-0007 (4.2" ID)
Maximum Current	Designed to operate with IE CTs above in systems NGR-limited to 25A or less
Detection Frequency	Digital filtering used to set detected frequency ranges: Normal mode: 50 or 60 Hz VFD mode: 10-400 Hz

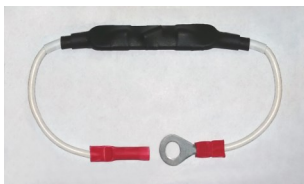
Ground Monitor:

GM Trip Level:	Pilot-Ground impedance above 45 ohms (nominal)
GM Delay:	Min: 150ms Max: 250ms
Required PWD:	IE PN 1020-0052 (Included with GMS-504DZ)
Optional GWD/CT:	Required when Parallel Path Mode is enabled. Two options available: IE PN 1100-6021 (CT and Diode-type GWD), <u>or</u> IE PN 1100-6010 Reactor-type GWD <u>plus</u> 2000-1367 CT

Accessories:

Required

Pilot Wire Device (PWD) (Included w/ GMS-504DZ)



1020-0052

GFR CTs

(Not included w/ GMS-504DZ)



1100-0006 2.5" window
1100-0007 4.2" window

Note: GFR CT required unless
GFR function is not used

Optional

IRC-1

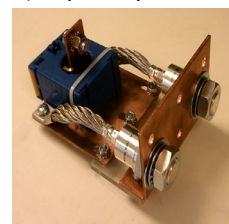
Remote Control



1100-4001

GWD/GM CTs

(Req'd only if P. Path Protection is used)

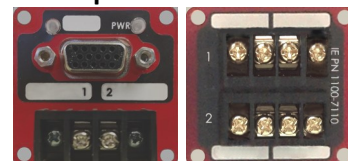


Option 1:
1100-6021 GWD/CT



Option 2:
1100-6010 GWD
& 2000-1367 CT

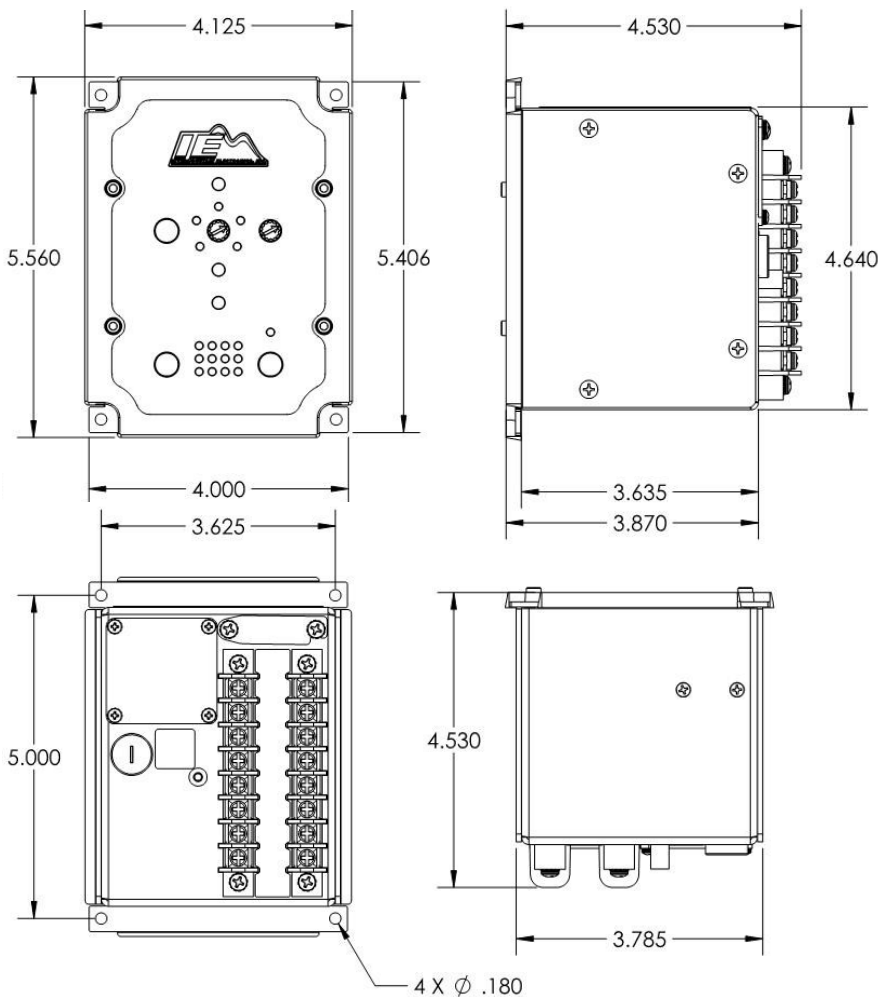
Expansion Modules



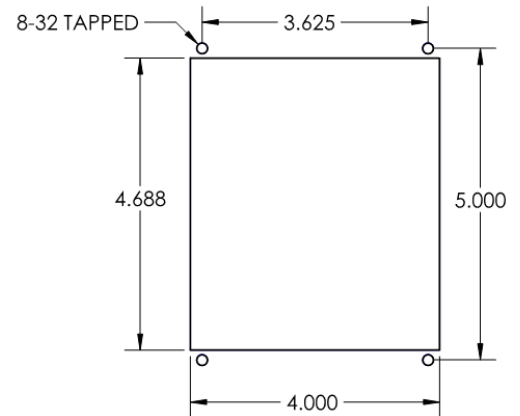
1100-7100

1100-7110

Mechanical Dimensions:



Panel Cutout:



Terminal Strip Pinout

A		B	
Pin	Function	Pin	Function
8	Do not Use	8	GM GND
7	GFR CT -	7	GM CT -
6	GFR CT +	6	GM CT +
5	Remote 1	5	GM PILOT
4	Remote 2	4	TRIP (N.O.)
3	Remote 3	3	TRIP (N.O.)
2	Remote 4	2	120V (Line)
1	Chassis Gnd (<i>rh</i>)	1	120V (Neutral)

Part Numbers:

- 1100-1050 GMS-504DZ Ground Monitor / Ground Fault Relay
- 1020-0052 Required Pilot Wire Device (PWD). Included with 1100-1050.
- 1100-6010 Optional reactor-type Ground Wire Device (GWD). Also use 2000-1367 CT.
- 2000-1367 Optional ground monitor CT. Required when 1100-6010 GWD is used.
- 1100-6021 Optional diode-type Ground Wire Device (GWD), plus integrated GM CT
- 1100-0006 Ground Fault Relay CT, 2.5" ID
- 1100-0007 Ground Fault Relay CT, 4.2" ID
- 1100-4001 Optional IRC-1 Remote Control
- 1100-7100 Optional expansion module, with D-SUB and 2-pin barrier Strip
- 1100-7110 Optional expansion module with two 2-pin barrier strips

Important Notice

This document contains information intended to aid in the proper installation, operation, and maintenance of the product described. Although this information will prove useful to the properly trained and qualified user, it is not practical to cover every possible situation, installation contingency, or other detail.

It is imperative that proper engineering and techniques are adhered to in the installation, operation, and maintenance of this product. It is the responsibility of the user to ensure that any system utilizing this product is safe, and that all personnel involved with the selection, installation, maintenance, and use of this product are properly qualified. This product must not be used in situations where its ratings are exceeded.

While every effort has been made to make sure the information in this document is accurate, IE cannot guarantee that there are no errors. Users of this product should verify any aspects of the product's design or performance that are critical to their application, and in particular, any aspects that may affect the safety of the overall system or installation.

Product design and specifications may change without notice.

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