MGFL100
Battery Ground Fault Locator

- **Alarms when the real fault is identified**
- **Direct measurement of resistance and stray capacitance**
- **Direct measurement of fault current and leakage current**
- **Adjustable current and voltage limits**
- **Powered off AC or internal battery**
- **Locates faults up to 400 kΩ**
- **Locate faults on AC or DC systems**
- **Operates on systems up to 600 V**

DESCRIPTION

The MGFL100 locates ground faults on ungrounded DC and AC systems, DC battery systems, as well as protected IT networks.

The MGFL100 alarms when the real fault is found, while automatically distinguishing between real fault current and reactive current drawn by stray system capacitance.

DC GROUND FAULTS

The MGFL100 measures the ground fault resistance, the system capacitance, the real fault current, and the reactive leakage current. It also locates high impedance ground faults due to water ingress, as well as ground faults on systems with high leakage current. The MGFL100 makes locating the ground fault fast and easy by alarming when the circuit with a real ground fault is located. No complicated tuning out of noise or capacitance is required. Easily trace the fault with the lightweight transmitter and receiver. Set both password protected voltage and current limits to ensure you never put too much current in your system.

AC GROUND FAULTS

Specially protected IT networks, such as those found in hospitals, are designed in such a way that any contact with a voltage carrying line is harmless; in the event of a short to earth, protection reduces current flow to zero.

Important control, signal and supply systems, such as those for railway installations, power plants or other industrial facilities, are designed to be potential-free and are monitored by earth fault indicators in order to ensure safe and uninterrupted operation.

Short-to-ground faults in IT networks, control lines or, for example, signal lines in railways are referred to as earth faults.

While a single earth fault will not disrupt the service, a second earth fault carries a high risk of partial or complete installation breakdown. For this reason, any earth fault must be located and repaired as fast as possible. The MGFL100 allows tracing of these faults by directly coupling to the line. This can be done either off line or on line using a coupling filter.

FEATURES AND BENEFITS

- Direct measurement of: (No Tuning)
  - Fault resistance
  - Fault current
  - Leakage capacitance
  - Leakage current
- Alarms on circuit with a real ground fault.
- Fused leads (ARC flash safety)
- Adjustable current and voltage limits (No breaker tripping)
- Save and Recall of measurement (Always have a reference)
- Locate faults on AC or DC systems (Versatile)

APPLICATIONS

- Ungrounded (DC) Battery Strings
  - Substations
  - Railway
- (AC) IT Networks
  - Hospitals
  - Railways
  - Maritime
- Industrial Facilities

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- **Direct measurement:** The MGFL100 transmitter measures the total fault resistance and leakage capacitance before you start tracing. This allows you to not only see the actual resistive value of the fault, but also determine if there will be phantom shorts due to leakage current.
- The receiver directly measures the resistive fault current and the leakage current. The MGFL100 will provide a visual, as well as an audible alarm when a real ground fault is located. It will not alarm on circuits that draw leakage current due to capacitance. You will be easily able to see which circuits have the real resistive fault. This will prevent you from chasing phantoms. There is no tuning required, and the measurements are done automatically.
- **Fused leads:** The transmitter leads are fused at the connectors for safety. ARC flash is always a concern when connecting to a battery string. The battery string is a DC system. There is no zero crossing to dampen an ARC flash on a DC system. The fused leads will open to prevent a hazard from arising. The fused leads will keep a mistake from becoming a disaster.
- **Adjustable current and voltage limits:** Set both voltage and current limits. This ensures that neither the voltage nor the current will exceed circuit limits. These limits are password protected, so they cannot be accidentally changed. This ensures there is no accidental breaker tripping.
- The transmitter can be powered off of AC or Battery power. This allows for fault locating in any location.
- The MGFL100 will identify the side of the string with the ground fault. No need to use a DMM.
- The MGFL100 outputs a 5.12Hz AC signal for tracing of the fault.
- This allows for operation on noisy systems. The AC output will not trip DC breakers like a DC pulsed output can. The low frequency output allows for operation on low frequency 16.67Hz systems.
- Locate faults on AC or DC systems. The MGFL100 will locate faults on ungrounded DC systems, (this includes high resistance center grounds) or IT grounded AC systems (with the use of an optional IT isolation filter). The receiver will also trace AC line current on any type of system.

SPECIFICATIONS

Input Power

AC / Adapter

Input	90 – 264 VAC
Output	18 VDC

Battery

Type Lithium Ion

Life	4 Hours / External Recharge Time < 8 Hours

Transmitter Output Voltage and Current

Range	0 to 50V
Range	0 to 160mA

Transmitter Voltage Measurement

Range	0 to 50V
Accuracy	±5% reading ±2 LSD

Transmitter Current Measurement

Range	0 to 160mA
Accuracy	±5% reading ±2 LSD

Transmitter Resistance Measurement

Range	0 to 400KΩ
Accuracy	(±10 ± 280 x RC) % ± 1 LSD

Transmitter Capacitance Measurement

Range	0 to 19.99µf
Accuracy	±20% ± (.0027 / R) fd ± 1 LSD

Receiver Resistive Current Measurement

Range	0 to 160 mA
Accuracy	±5% of reading ± 0.01 x IC ± 2 LSD

Receiver Capacitive Current Measurement

Range	0 to 160 mA
Accuracy at 5.12Hz	±5% of reading ± 0.01 x IR ± 2 LSD
Accuracy at 50 / 60Hz	+/-5% reading ± 2 LSD

Environmental

Operating	0° C to 50° C (32° F to 122° F)
Receiver	-20° C to 60° C (-4° F to +140° F)
Relative Humidity	0-95% non-condensing
Altitude	<2000m (600V CAT IV) 2000-4000m (600V CAT III)

Case

IP51 Ruggedized plastic case

Display (Transmitter and Receiver)

LCD

Safety/EMC/Vibration

Meets the requirements of IEC61010-1, CE, CAT IV @ 600

EMI	CISPR 11 Group 1 class A for emissions.
EMI	IEC 61326-1 Table A.1 for immunity.
Vibration	MIL-STD-810G

Weight / Dimensions

Transmitter Dimensions	36.1 x 30.5 x 19.5 cm (14.2" x 12.0" x 7.65")
Receiver Dimensions	22.1 x 10.4 x 5.1 cm (8.7" x 4.1" x 2.0")
Transmitter Weight	6.00 kg (13.2 lbs). (with batteries installed)
Receiver Weight	1.00 kg (2.2 lbs) (with batteries installed)
Receiver	0.66 lb (0.3 kg)

Compliance

IEC61010-1

CE Certified, UKCA Certified

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OPTIONAL ACCESSORIES		
	Active Mini CT – The Active Mini CT will fit around small conductors. The sliding latch allows it to easily fit in tight locations. Its flux gate technology will allow the CT to measure very low currents.	1013-424
	Capacitive Pick Up – Will allow identification of reactive leakage current due to stray capacitance during the fault tracing. When this pick up is used, the receiver will alarm on any line with a real fault anywhere in the tracing process. If this is not used, then the receiver needs to be connected to the transmitter in order to identify the line with the real fault.	1011-354
	IT Filter – The IT filter is used on IT grounded systems. This filter is connected between the transmitter and the circuit in order to provide isolation between the transmitter and the circuit.	1014-289
	Stand Alone Battery Charger – Allows rapid charging of transmitter batteries outside of the transmitter.	90037-318
	Magnetic Strap – Allows the receiver to be hung from ferrous metal surfaces.	1010-013
	Clip Strap – Allows the receiver to be hung from the lips of surfaces. Can be hung on lips of surfaces up to 6mm (¼") wide.	1011-374
	Wide CT - The Wide CT will fit around cable bundles as wide as 10.8cm (4.25"). Avoiding the need to open the bundle.	1014-472
	9 Meter (30 Foot) sync cable. Needed in locations where the panel is not close to the battery string	1015-367

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ORDERING INFORMATION

Item (Qty)	Cat. No.
MGFL100 "Includes MGFL100 Transmitter, Fused transmitter leads with different size clips, safety ground, AC Adapter, Receiver, 2" current clamp and receiver / transmitter sync cable	MGFL100
Included Accessories	
Transmitter	1011-259
Receiver	1011-261
Fused Transmitter Leads	1013-440
Transmitter AC Adapter	1014-426
Transmitter Rechargeable Batteries	90028-218
ICLAMP current sensor	1011-353
Receiver 9V battery	23415
Sync Cable	1011-540

Included Accessories cont.	
Transmitter Safety Ground	1011-352
Carry Bag	2012-180
Optional Accessories	
Magnetic Strap for receiver	1010-013
Clip on Strap for receiver	1012-068
Active CT	1013-424
Capacitive Pick Up	1011-354
Wide CT	1014-472
IT Filter	1014-289
Stand Alone Charger	90037-318
6m (20 ft) Transmitter Leads	1014-091
9m (30 ft) sync cable	1015-367

Megger®