Megger

MGFL 100

Ground fault locator

USER GUIDE

EN - ENGLISH

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Section Description **Page**

1.0 Introduction

Section 1.0 Introduction

Thank you for your purchase of the Megger MGFL100 Ground Fault Locator. Be assured that your unit has been designed with emphasis on reliability, simplicity and ease of use. It will provide you with the information you need to locate various types of ground faults.

Section 1.1 PURPOSE OF THIS MANUAL

This document is the operator manual for the Megger MGFL100 Ground Fault Locator. It provides a description of the operation of the unit as well as installation and operating instructions. Read this manual before installing or using the equipment. Special emphasis should be placed on all safety discussions.

Section 1.2 AUDIENCE

This manual is written for technical personnel who are familiar with the various measurements performed by volt meters and current meters and have a general understanding of their use and operation. Such personnel should also be thoroughly familiar with the hazards associated with the use of this equipment and should have received proper safety training.

If you find any discrepancies in the MGFL100 or have any comments, please send them to Megger via fax, e-mail or phone.

Megger

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Phoenixville, PA, 19460

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E-mail: USTechSupportGrp@megger.com

For Technical Support please consult the Megger Web Site at www.megger.com for the local distributor near you.

Section 1.3 Items Received

Qty	Description	Image
1	**MGFL100 Transmitter**	
1	**MGFL100 Receiver**	

1.3 Items received

1	**Transmitter Output Cable** **Optional 6m (20ft) transmitter output cable available.**	
1	**Current Clamp (CT)**	
1	**Sync Cable**	
Optional	**Capacitive Pick Up**	
Optional	**Active mini CT**	
Optional	**IT Filter**	
Optional	**Wide CT**	
Optional	**9m (30') Sync Cable** **NOTE: 9m (30ft) sync cable not EMC complaint**	

1.5 Definitions

Section 1.4 Overview

The MGFL100 is a ground fault locator that is intended to be used to locate ground faults up to 400K ohms on online ungrounded DC systems. With use of the optional IT Filter the MGFL100 can also be used to locate ground faults up to 400K ohms on online IT grounded AC systems. The MGFL100 receiver can also be placed in a mode that will allow it to trace 60Hz and 50Hz currents on TT grounded systems with ground faults.

Section 1.5 Definitions

This section defines the terms used throughout this manual.

Term	Definition
Impedance	The combined resistive and capacitive components of the ground fault on the circuit being measured, when the sync cable or Capacitive Pick Up is not used. When the sync cable or Capacitive Pick Up are used the term will refer to only the resistive component of the ground fault on the circuit being measured.
Capacitance	The leakage capacitance present in the circuit being measured.
Fault Current	The current delivered by the transmitter, used for tracing the fault.
Reactive Current	The portion of the fault current drawn by the capacitive portion of the circuit.
Transmitter	The part of the MGFL100 that provides the fault current and the direct measurement of the resistance and capacitance of the circuit.
Receiver	The part of the MGFL100 that measures the fault current and reactive current of the circuit.
Capacitive Pick Up	The accessory that when connected between the receiver and the circuit being measured allows the receiver to distinguish between the resistive and capacitive components of the fault current.
Sync Cable	The cable that is connected between the transmitter and receiver that allows the receiver to measure the reactive current of the circuit, without the need for the Capacitive Pick Up
CT	The current transformer or current clamp that connects to the receiver.
Active Mini CT	A battery powered miniature current clamp used to measure the fault current. This miniature current clamp fits in tight locations and on small wires.
IT Filter Box	The filter box that is placed between the transmitter and the IT grounded AC system. The box blocks the AC current from damaging the transmitter.

Section 2.0 Safety

Warnings and Safety Precautions

WARNING!

Death, serious injury, or fire hazard could result from improper use/installation of this instrument. Read and understand this manual before installing this instrument.

Installation of this instrument MUST be performed in compliance with the National Electric Code and any additional safety requirements applicable to your installation.

Installation, operation and maintenance of this instrument MUST be performed by qualified personnel only. The National Electrical Code defines a qualified person as one familiar with the construction and operation of the equipment and the hazards involved.

Safety Precautions

The following safety precautions MUST be taken whenever the instrument is installed.

- Wear safety glasses and insulated gloves when making connections to power circuits
- Hands, shoes, floor/ground must be dry when making any connection to a powered line

These warnings and safety precautions are to be used where appropriate when following instructions in this manual.

CAUTION!

The equipment could be impaired from improper use. Read the complete manual before use.

CAUTION!

The system to be monitored might be influenced by the Insulation Fault Location System. IFLS.

CAUTION!

It is recommended to deactivate Insulation Monitoring Device (IMD) during ground fault tracing.

WARNING!

The equipment should not be used while its battery door is removed or if there is any visible damage to the case or if the hardware holding the unit together has been loosened.

Section 3.0 Technical Specifications

SPECIFICATIONS REFERENCE	25°C (77°F)
TRANSMITTER	
Working Voltage	600 VDC max using fused test leads.
AC Power Adapter	100 to 264Vac 47-63Hz.
Output Voltage Range	0.0 to 50.0 V RMS
Output Frequency	5.12 Hz
Output Current	0 to 160 mA RMS
Output Power	5 Watts
Display	LCD, TN, Positive, Reflective Size: 0.4" high digits Format: Seven segment with decimal points Digits: 3.5
DC Voltage Measurement Range	0.0 VDC to 600 VDC
Accuracy	0 to 199.0V the accuracy = ±5% of display ± 0.2V 199.1V to 600V the accuracy = ±5% of display ± 2V
Speed of Measurement	< 3 seconds
Display Resolution	0.0 VDC to 199.9 VDC / 200 VDC to 600 VDC Auto-ranging
Resistance Measurement Range	0.0 kΩ to 400 kΩ
Resolution	0.1 kΩ (<= 199.9 kΩ), 1 kΩ (> 199.9 kΩ)
Accuracy	(±10 ± 280 x RC) % ± 1 Least Significant Digit
Speed of Measurement	< 3 seconds
Display Resolution	0.0 kΩ to 199.9 kΩ / 199.9 kΩ to 400 kΩ Auto-ranging
Capacitance Measurement Range	0.00 µfd to 19.99 µfd
Resolution	0.01 µfd
Accuracy	±20% ± (.0027 / R) fd ± 1 Least Significant Digit
Speed of Measurement	< 3 seconds
AC Voltage Measurement Range	0.0 V RMS to 50.0 V RMS
Resolution	0.1 V RMS
Accuracy	±5% of reading ± 2 Least Significant Digit
Speed of Measurement	< 3 seconds

3.0 Technical specifications

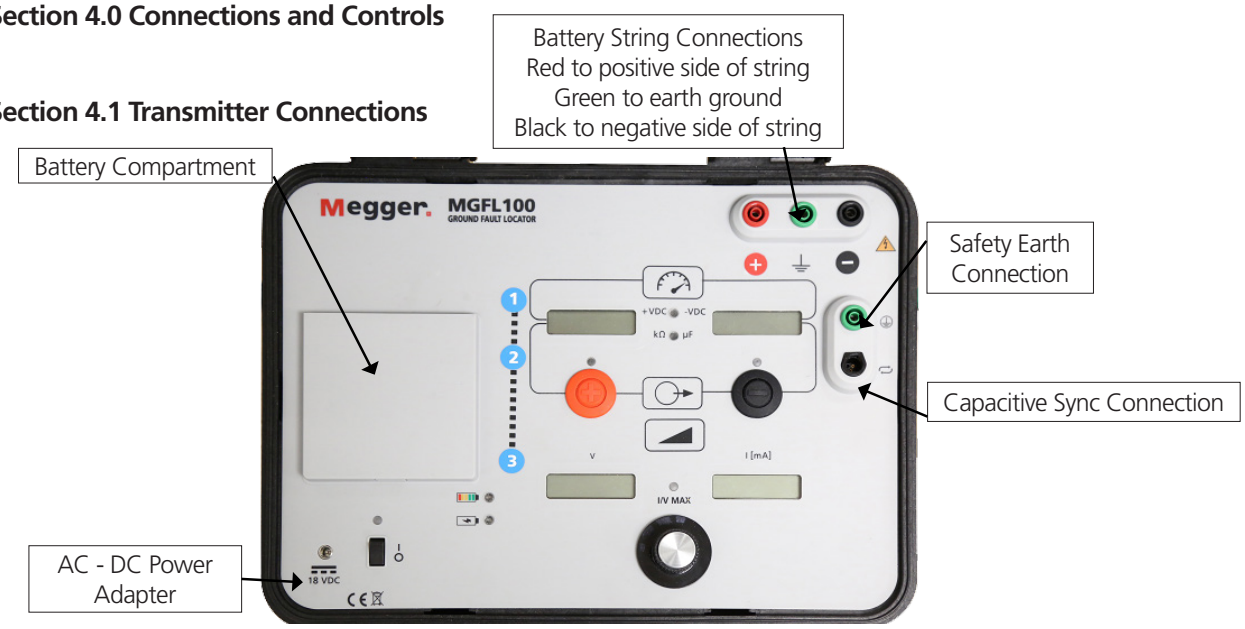
AC Current Measurement Range	0.0 mA RMS to 160 mA RMS
Resolution	0.1 mA RMS
Accuracy	±5% of display ± 0.2mA
Response time	< 3 seconds
Voltage limit	Password protected programmable from 0 to 50V
Current limit	Password protected programmable from 0 to 160mA
Battery Type	Four Li-Ion Protected Cells (18650)
Run Through Time	Up to 4 hours
Charge Time	Approx. 9.5 hours
Battery Status Indication	LED, Red / Amber / Green
RECEIVER	
Visual Alarm Range	Selectable - 30% / 40% / 50% / 60% / 70% of reference.
Audio Alarm Range	Selectable - 30% / 40% / 50% / 60% / 70% of reference.
Receiver Filter Range	Selectable 5.12Hz or 50 / 60Hz
Save	Saves Total Current, Resistive Current and Reactive Current
Recall	Recalls Total Current, Resistive Current and Reactive Current
Display	LCD, TN, Positive, Reflective Size: 0.4" high digits, Format: Seven segment with decimal points, Digits: 3.5
Resistive Current Measurement Range	0.00 mA to 160 mA
Resolution	0.01 mA (< 19.99 mA), 0.1 mA (> 19.99 mA)
Accuracy	±5% of reading ± 0.01 x IC ± 2 Least Significant Digits
Speed of Measurement	< 3 seconds
Capacitive Current Measurement Range	0.00 mA to 160 mA
Resolution	0.01 mA (<= 19.99 mA), 0.1 mA (> 19.99 mA)
Receiver IR Accuracy Receiver IC Accuracy	±5% of reading ± 0.1 x IC ± 2 Least Significant Digits ±5% of reading ± 0.1 x IR ± 2 Least Significant Digits
Speed of Measurement	< 3 seconds
Battery Type	Six AA alkaline cells. (Eveready EN91, or equivalent).
Run Through Time	Up to 4 hours
Battery Status Indication	Visual: LED, Red / Amber / Green
PHYSICAL	
Transmitter Size	36.1 x 30.5 x 19.5 cm (14.2" x 12.0" x 7.65")
Transmitter Weight	6.00 kg (13.2 lbs). (with batteries installed)
Receiver Size	22.1 x 10.4 x 5.1 cm (8.7" x 4.1" x 2.0")
Receiver Weight	1.00 kg (2.2 lbs) (with batteries installed)
ENVIRONMENTAL	
Operating Temperature	-10°C to +50°C.
Storage Temperature	-20°C to 60°C
Humidity	95% Relative Humidity, Non-Condensing
IP Rating	51 when closed
ALTITUDE	
<2000 meters	600V CAT IV
2000-4000 meters	600V CAT III / 300V CAT IV
SAFETY	
Safety Standard	IEC61010
CAT Rating	IV @ 600V
STANDARDS COMPLIANCE	
Conducted EMI Immunity	IEC 61000-4-6 at 3V (150kHz to 80 MHz) Performance Criterion A
Radiated EMI Immunity	IEC 61000-4-3 at 10V/m (80 MHz to 1 GHz), 3V/m (1.4 GHz to 2.0 GHz) and 1 V/m (2.0 GHz to 2.7 GHz) Performance Criterion A
ESD Immunity	IEC 61000-4-2 with 4 kV contact discharges and 8 kV air discharges. Performance Criterion B
Conducted EMI Emissions When operating using external power adapter	CISPR 11 Group 1 class A for emissions IEC 61326-1 Table A.1 for immunity
Radiated EMI Emissions	CISPR 11 Group 1 class A for emissions IEC 61326-1 Table A.1 for immunity
Shock	MIL-STD-810G method 516.6
Drop test	MIL-STD-810G method 516.6

Static Rigidity	IEC 61010-1 section 8.2.1
Impact	IEC 61010-1 section 8.2.2
Vibration	MIL-STD-810G method 514.6 Annex C
Loose Cargo	MIL-STD-810G method 514.6 category 5.

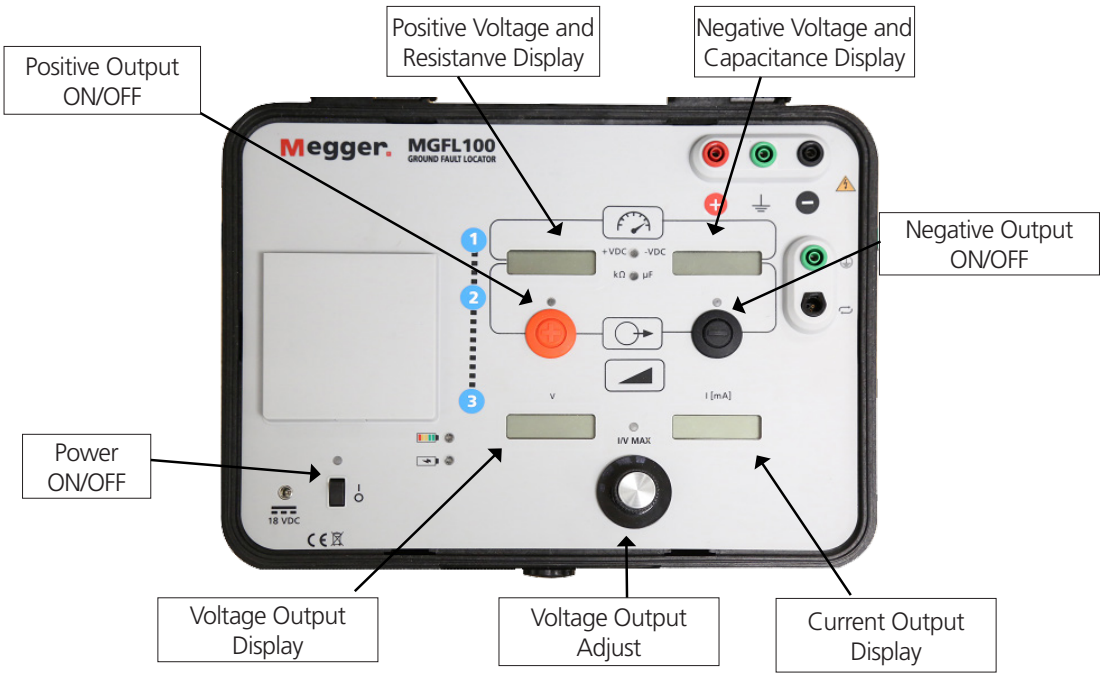
* Full Accuracy Specification guaranteed 0°C to 50°C

Section 4.0 Connections and Controls

Section 4.1 Transmitter Connections



Section 4.2 Transmitter Controls and Displays



4.3 Receiver connections

Section 4.3 Receiver Connections

The current clamp plugs into the CT inputs.

The sync cable will plug into the "SYNCH" input.

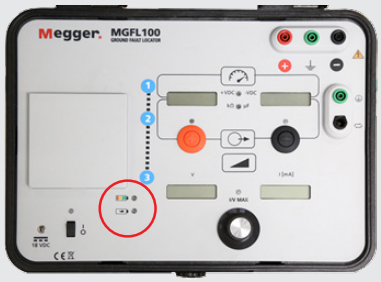
Section 4.4 Receiver Controls and Displays

Battery test button: Press to view the status of the receiver batteries. (Red should be replaced)		IT indicator: When lit this indicates the displayed value is total current. Alarm indicator: Lights when the receiver locates the circuit with the fault. Save LED: Lights during save operation.
Power On / Off: Press button to power the unit on and off.		
Function button: Press button to deactivate the low pass filter in order to trace 50/60Hz current.		Recall button: Press to recall saved values.
Alarm knob: Selects alarm level and audio / visual alarm.		Save button: Press to save values displayed on screens.

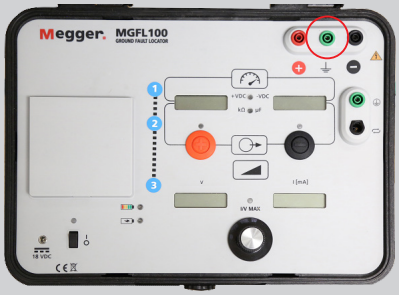
Section 5.0 MGFL100 Operation

Section 5.1 Locating ground faults on ungrounded DC systems

Before operating

Verify the battery in the transmitter is fully charged, if the unit is to be operated off of battery. Turn on the transmitter and verify the battery indicator displays a fully charged battery	
Verify the receiver batteries are good. .	
Fresh battery in the active mini CT if using	

Connection

Connect the green safety earth cable from the safety ground on the unit to earth. This can be a pipe or conduit that is tied to earth or an earth stake or equivalent.	
Connect the green terminal to earth. This can be a pipe or conduit that is tied to earth or an earth stake or equivalent.	

5.1 Locating ground faults on ungrounded DC systems

Connect the black terminal to the negative side of the battery string.	
Connect the red terminal to the positive side of the battery string.	

CAUTION

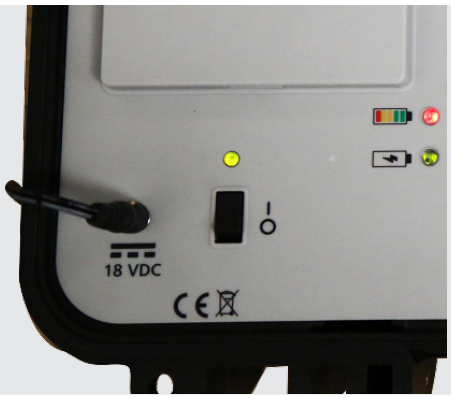
Do not connect the equipment across voltages that exceed 600Vdc. This could cause damage to the unit.

WARNING!

Use only the provided fused test leads for connection to the battery.

WARNING!

Wear proper PPE equipment when connecting the unit. Do not place the transmitter on unstable surfaces or on the batteries or battery rack.

If operating the transmitter off of AC then plug the power adapter into transmitter as shown. Then plug the power adapter into an AC outlet. The power outlet must be from 90 to 264Vac 47 – 63Hz. If powering off of battery the AC adapter is not required. A fully charged battery should last approximately 4 hours.	

After the MGFL100 is connected follow the procedure below.

Step 1: Turn ON the MGFL100 transmitter and allow it to boot up.

During boot up the following sequence will take place.

All LED's will display "1888" for 3 seconds.

The firmware version will be displayed on the lower left Voltage Display and the build on the right.

After the boot up is complete:

View the positive and negative voltages as displayed in the top displays.

The display with the lower voltage indicates the side of the string with the ground fault.

Step 2: Press the appropriate output button based on the side of the string that has the fault.

If the positive voltage reads lower than the negative voltage then press the "+" button.

If the negative voltage reads lower than the positive voltage then press the "-" button.

A count down will ensue while the isolation caps charge up.

Once the countdown is compete.

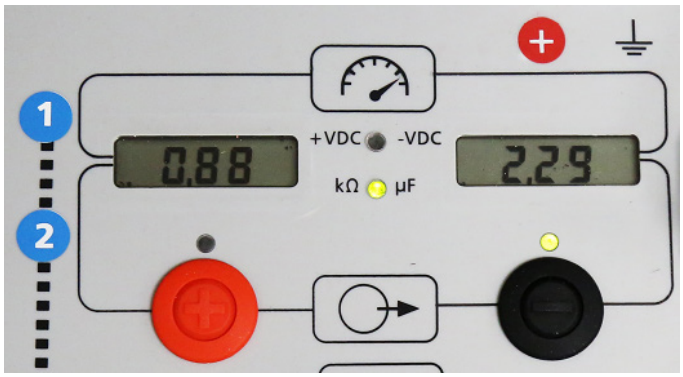
Turn the voltage adjustment knob clockwise until the voltage reads approximately 10V.

NOTE: If the IT filter and Transmitter are connected to a line that does not contain a ground fault then the transmitter may not transition from the voltage monitoring mode to the excitation mode. The countdown timer may stay at "10". This is due to the residual AC voltage appearing across the charging current limiter and never being balanced by the coupling capacitor.

Note the readings on the top displays.

The left display will indicate the resistive value of the fault.

The right display will indicate the capacitance on the circuit.



5.1 Locating ground faults on ungrounded DC systems

Problem: No readings are displayed.

If OL is displayed for the resistive reading then this can indicate a high impedance fault. Continue raising the voltage until a stable reading is shown.

There is no problem if the capacitive reading displayed is 0.00. This just means there is minimal stray capacitance on the circuit.

Step 3: Connect the receiver:

Connect the current clamp to the receiver and place the current clamp around either the positive or negative output lead. Whichever one is outputting the current to the fault.	
Connect the sync cable between the receiver and transmitter	

Note the readings on the displays.

The top display will indicate the current the fault is drawing.

The lower display will indicate the reactive current drawn by stray capacitance on the circuit.

It is the actual fault current on the top display that will be traced.

Step 4: Press the SAVE button on the receiver.

This will save 3 values.

The total current being drawn by the circuit.

The resistive current being drawn by the fault. (The fault current)

The reactive current being drawn by stray capacitance.

These values can be recalled by pressing the recall button on the receiver.

Set the alarm level on the receiver to 50%. This can be either a visual only alarm or a visual and audio alarm, depending on how it is set

If there are multiple panels then perform the procedure below. If there is only one panel skip to step 6.

Step 5: Place the CT around the wires that lead to each panel. **(Do not disconnect the sync cable)**

If the alarm is set to 50% then it will trigger if it sees a fault current in excess of 50% of the saved value.

Locate the panel drawing the fault current.

Problem: The measured value on the receiver will not stabilize.

This may indicate a level of low frequency noise on the circuit. Place the CT around both the positive and return wires of each circuit. This will cancel out any noise on the system.

5.1 Locating ground faults on ungrounded DC systems

Problem: More than 1 panel indicates fault current.

This may indicate that there are multiple faults. View the fault current on the top display of the receiver for each panel. Identify the panel drawing the highest level of fault current. This is the panel where to start the tracing process.

Problem: No panels indicate fault current.

There may be multiple faults on various circuits. Lower the alarm level on the receiver from 50% to a lower value then repeat the measurements. If no fault can be identified then the fault is before the panels. Begin tracing from the batteries to the panels.

Step 6: Once the panel is identified, remove the cover of the panel in order to expose the circuit wires.

Place the CT around the each wires of each circuit in the panel. **(Do not disconnect the sync cable)**

Problem: More than 1 circuit indicates fault current.

This may indicate that there are multiple faults. View the fault current on the top display of the receiver for each panel. Identify the circuit drawing the highest level of fault current. This is the circuit where to start the tracing process.

Problem: No circuits indicate fault current.

There may be multiple faults on various circuits. Lower the alarm level on the receiver from 50% to a lower value then repeat the measurements. If no fault can be identified then the fault is before the panel. Begin tracing from the batteries to the panel.

Once the circuit is identified the tracing of the fault can begin.

Step 7: Tracing the ground fault.

Be sure to have a schematic of the circuit being traced.

If using Capacitive Pick Up go to section on using the capacitive pick up.

Not using Capacitive Pick Up.

Disconnect the sync cable from the receiver.

The receiver will now only display the total current drawn by the circuit on the top display. This will be inclusive of both the fault current and any current drawn by stray capacitance.

The alarm will now be triggered when the measured current exceeds the selected percentage of total current.

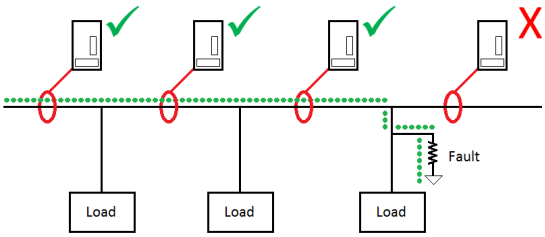
Push the recall button and note the value of the total current.

Using the schematic of the circuit, start tracing the fault current through the circuit.

Move the current clamp down the circuit to trace the fault.

If the fault current is displayed on the top display of the receiver then the fault is still downstream.

If the fault current is no longer displayed on the top screen of the receiver then you have passed the fault. Use this technique to narrow down the location of the fault until it is located.



Problem: The fault current splits along 2 different paths.

This may be due to 2 separate faults or it may be due to stray capacitance on the circuit. If you have a Capacitive Pick Up connect it to the receiver using the sync cable. Then place both the current clamp and the Capacitive Pick Up on the same line. The receiver will now display the fault current on the top display and leakage current on the bottom display. Continue tracing on the circuit that is drawing the most fault current, as shown on the top display.

If you do not have a Capacitive Pick Up then you can do the same procedure above by moving the transmitter and connecting the sync cable between the transmitter and the receiver.

5.1 Locating ground faults on ungrounded DC systems

Problem: The Current Clamp is too large to get around the cable.

Use the active mini CT to measure the fault current on the small insulated cables. Be sure the CT has a good battery. Since the active CT has a different size core the fault current measurement may not exactly match the larger CT. It is recommended to re-establish a reference value by placing the active mini CT on the last point measured and then pressing the SAVE button on the receiver. Note the saved value.

CAUTION!
Once fault is found turn off transmitter before clearing fault. Failure to do so, could trip a breaker.

Using Capacitive Pick Up.

Disconnect the sync cable from the transmitter and connect it to the Capacitive Pick Up.

Connect the Capacitive Pick Up ground cable to earth.

Then place both the current clamp and the Capacitive Pick Up on the same line. This needs to be an insulated wire. The receiver will now display the fault current on the top display and leakage current on the bottom display. If the value of the fault current on the top display exceeds the value of the leakage current on the bottom display then a real fault exists on the cable. If the leakage current on the bottom display exceeds the fault current on the top display then the cable has stray capacitance.

The alarm will trigger when the fault current exceeds the percentage set on the receiver.

Only trace the paths with the real fault current.

Push the recall button and note the total values of the fault current and reactive current.

Using the schematic of the circuit, start tracing the fault current through the circuit.

Move the current clamp down the circuit to trace the fault.

If the fault current is displayed on the top display of the receiver then the fault is still downstream.

If the fault current is no longer displayed on the top screen of the receiver then you have passed the fault. Use this technique to narrow down the location of the fault until it is located.

Problem: The Current Clamp is too large to get around the cable.

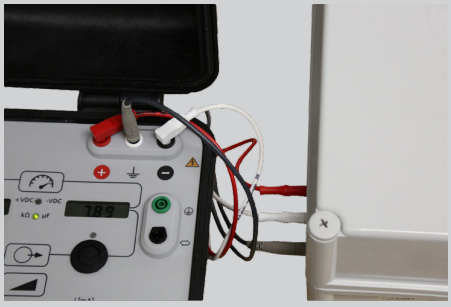
Use the active mini CT to measure the fault current on the small insulated cables. Be sure the CT has a good battery. Since the active CT has a different size core the fault current measurement may not exactly match the larger CT. It is recommended to re-establish a reference value by placing the active mini CT on the last point measured and then pressing the SAVE button on the receiver. Note the saved value.

CAUTION!
Once fault is found turn off transmitter before clearing fault. Failure to do so, could trip a breaker.

5.2 Locating ground faults on IT grounded systems

Section 5.2 Locating ground faults on IT grounded systems

Connection

Connect the green safety earth cable from the safety ground on the unit to earth. This can be a pipe or conduit that is tied to earth or an earth stake or equivalent.	
Connect the green terminal to the IT Filter box input.	
Connect the red terminal to the IT Filter box input.	
Connect the output of the IT Filter between earth and the IT circuit with the ground fault.	

CAUTION!
Do not connect the equipment across voltages that exceed 600Vac. This could cause damage to the unit.

5.2 Locating ground faults on IT grounded systems

WARNING!
Use only the provided fused test leads for connection to the battery.

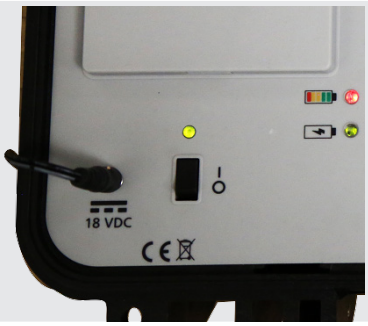
WARNING!
Wear proper PPE equipment when connecting the unit. Do not place the transmitter on unstable surfaces or on the batteries or battery rack.

If operating the transmitter off of AC then plug the power adapter into transmitter as shown.

Then plug the power adapter into an AC outlet.

The power outlet must be from 90 to 264Vac 47 – 63Hz.

If powering off of battery the AC adapter is not required. A fully charged battery should last approximately 4 hours.



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Step 1: Turn ON the MGFL100 transmitter and allow it to boot up.

During boot up the following sequence will take place.

All LED's will display "1888" for 3 seconds.

The firmware version will be displayed on the lower left Voltage Display and the build on the right.

Step 2: After the boot up is complete press the positive voltage "+" button.

A count down will ensue while the isolation caps charge up.

Once the countdown is compete.

Turn the voltage adjustment knob clockwise until the voltage reads approximately 10V.

NOTE: If a low impedance fault to earth is present you may see the current rising while the voltage does not. In this case adjust the voltage knob until the current display indicates approximately 10 to 25mA.

Note due to the inclusion of the AC rejection filter, the displayed resistance and capacitance readings are not the resistance and capacitance to ground of the IT system. Only measurements made with the Receiver on cables after the AC Rejection Filter using the Capacitive Pickup connected to the drive line after the AC Rejection Filter will be accurate.

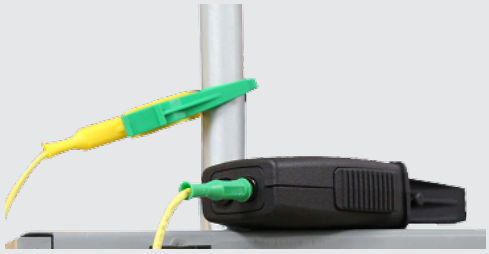
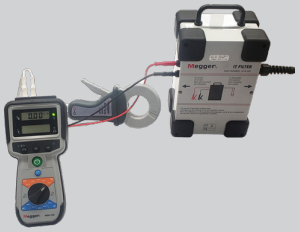
Problem: No readings are displayed.

If OL is displayed for the resistive reading then this can indicate a high impedance fault. Continue raising the voltage until a stable reading is shown.

There is no problem if the capacitive reading displayed is 0.00. This just means there is minimal stray capacitance on the circuit.

5.2 Locating ground faults on IT grounded systems

Step 3: Connect the receiver:

Connect the current clamp to the receiver.	
Connect the sync cable between the receiver and the Capacitive Pick Up.	
Connect the Capacitive Pick Up ground to earth.	
Place the current clamp on the positive lead of the transmitter after the IT Filter box.	
Connect the Capacitive Pick Up to the positive lead of the transmitter after the AC Filer box.	

Note the readings on the receiver displays.

The top display will indicate the current the fault is drawing.

The lower display will indicate the reactive current drawn by stray capacitance on the circuit.

It is the actual fault current on the top display that will be traced.

Step 4: Press the SAVE button on the receiver.

This will save 3 values.

The total current being drawn by the circuit.

The resistive current being drawn by the fault. (The fault current)

The reactive current being drawn by stray capacitance.

These values can be recalled by pressing the recall button on the receiver.

Set the alarm level on the receiver to 50%. This can be either a visual only alarm or a visual and audio alarm, depending on how it is set.

Be sure to have a schematic of the circuit being traced.

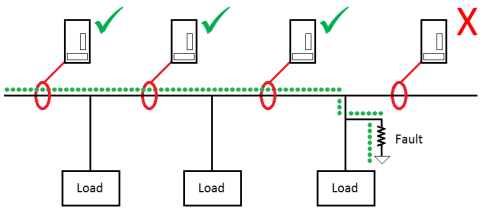
5.3 Locating ground faults on TT grounded systems

Step 5: Using the schematic of the circuit, start tracing the fault current through the circuit.

Move the current clamp down the circuit to trace the fault.

If the fault current is displayed on the top display of the receiver is approximately unchanged then the fault is still downstream.

If the fault current displayed on the top screen of the receiver is significantly lower then you have passed the fault. Use this technique to narrow down the location of the fault until it is located.



Problem: The Current Clamp is too large to get around the cable.

Use the active mini CT to measure the fault current on the small cables. Be sure the CT has a good battery. Since the active CT has a different size core the fault current measurement may not exactly match the larger CT. It is recommended to re-establish a reference value by placing the active mini CT on the last point measured and then pressing the SAVE button on the receiver. Note the saved value.

Section 5.3 Locating ground faults on TT grounded systems

To locate ground faults on TT grounded systems only the MGFL100 receiver is required.

Before operating verify the receiver has a fresh battery and schematics of the system to be troubleshot.

Connect the CT to the receiver.

Place the receiver in 50/60Hz mode by pressing the filter button.

In this mode the top LCD will display a tilde mark "~" and the lower LCD will be blank.

The receiver will now measure the fundamental current.

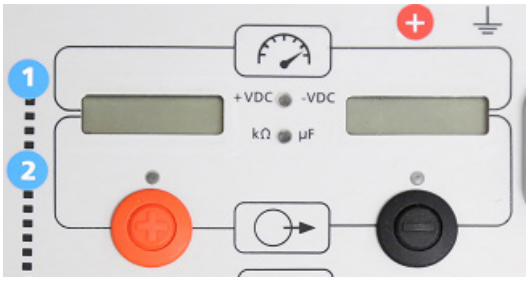
Place the CT around the wires to see the path of the current.

Place the CT around the earth and note the fault current. Now reference the schematic and trace back to locate the fault.

Section 6.0 Setting Voltage and Current Limits

To set maximum voltage and current limits verify the transmitter is powered off.

While holding down both the "+" and "-"buttons at the same time turn on the transmitter. Continue holding the down both the "+" and "-"buttons while the transmitter boots up.



Once the transmitter had completed booting the lower left voltage display will be flashing.

7.0 Replacement Parts

Turn the rotary knob clockwise until the password “527” is displayed.

Then push the “+” button to enter the password.

Set the maximum voltage limit by turning the rotary knob until the desired limit is displayed.

Then push the “+” button to enter the voltage limit.

Now set the maximum current limit by turning the rotary knob until the desired limit is displayed.

Then push the “+” button to enter the current limit.

Once the desired limits are set turn off the transmitter.

Turn the transmitter back on. During the boot up sequence the maximum voltage and current limits will be displayed in the voltage display and current display.

Section 7.0 Replacement Parts

Parts listed below are user replaceable consumable materials and accessories.

Item	Part Number	Description	Notes
Transmitter batteries	90028-218	Lithium Ion battery cells that power the transmitter.	Supplied by manufacturer only
Standalone Battery Charger	90037-318	Optional high speed standalone battery charger	Supplied by manufacturer only
Receiver batteries	23415	Standard AA battery	Alkaline or Lithium battery can be used.
Active CT battery	35940	Standard 9 Volt battery for active mini CT.	Alkaline or Lithium battery can be used.
Output cable fuse	90028-208	2A fast blow 1000V 32mm	
Transmitter output cables	1013-440	Set of output cables for transmitter including fuses.	Supplied by manufacturer only
Transmitter sync cable	1011-540	Cable that syncs the receiver to the transmitter and also used with capacitive pick up.	Supplied by manufacturer only
Transmitter AC Power Adapter	90028-308	AC Power Wall Adapter used for powering transmitter and charging batteries.	Supplied by manufacturer only

Transmitter	1011-308	Transmitter that outputs signal to locate fault. Complete with cables and AC power adapter.	Supplied by manufacturer only
Receiver	1011-309	Receiver that displays fault current and reactive current. Includes ICLAMP and sync cable.	Supplied by manufacturer only
ICLAMP	1011-353	Accessory – 2" ID current clamp.	Supplied by manufacturer only
Active mini CT	1013-424	Optional Accessory – Miniature CT for tight locations.	Supplied by manufacturer only
Capacitive Pick Up Probe	1011-354	Optional Accessory – Probe used for identifying false paths.	Supplied by manufacturer only
IT Filter Box	1014-289	Optional Accessory – Used for locating faults on IT grounded systems.	Supplied by manufacturer only
Magnetic Strap	1010-013	Optional Accessory – Connects to the receiver allowing it to be attached to ferrous metal surfaces.	Supplied by manufacturer only
Clip Strap	1011-374	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.	Supplied by manufacturer only
9m (30ft) Sync Cable	1015-367	9 Meter (30ft) Sync Cable - Useful when the panel is not close to the battery string.	Supplied by manufacturer only
6m (20ft) Transmitter Leads	1014-091	6m (20ft) Transmitter Leads - Useful when the transmitter cannot be easily located near the battery string.	Supplied by manufacturer only

Section 8.0 Maintenance

Section 8.1 General

1. The following general maintenance should be carried out on the MGFL100 in order to ensure proper operations.
2. Charge the transmitter batteries at least once every 4 months. This ensures the batteries do not overly self-discharge.
3. Clean the ICLAMP core mating surface using a clean cloth. This will remove any grease of contaminates and ensure a good mating surface.
4. The transmitter and receiver can be cleaned and disinfected by using alcohol.
5. Documentation will include instructions for cleaning and decontamination.

NOTE: Since this instrument is used for tracing faults and not for taking precise measurements, calibration is not technically required. Any desired calibration interval is at the user's discretion.

8.2 Receiver battery replacement

Section 8.2 Receiver battery replacement

Verify the receiver is powered off.

Remove the single screw holding the rear battery panel on the receiver.

Remove the panel to access and replace the batteries.

Receiver batteries should be removed when the receiver is stored for long periods.

Section 8.3 Transmitter Battery Replacement

Verify the transmitter is powered off.

Press in the front clip on the battery compartment and carefully remove the battery cover panel.

The batteries can now be replaced.

Section 8.4 Replacing source lead fuses

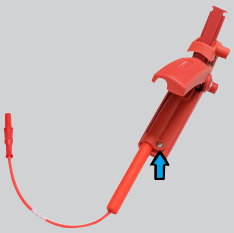
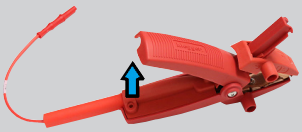
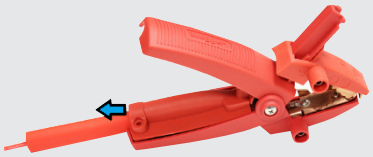
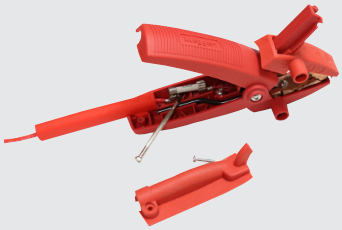
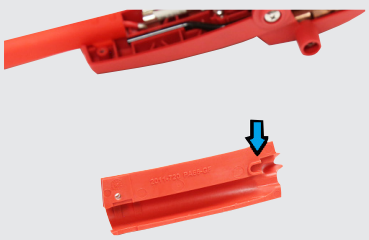
Each source lead (Both the red and black) contain a safety fuse in the handle.

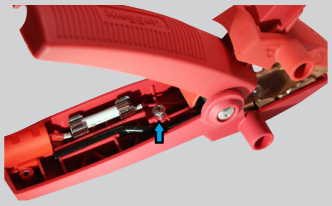
The fuse rating is 2A Fuse 1000V 32mm. Megger part number 90028-208

NOTE: The fuse cover should never be removed while the clamp is connected to the MGFL100 Transmitter or to a battery.

8.4 Replacing source lead fuses

Replacing the Source Lead Fuse

Step 1	
Remove the clamp screw on the inside of the handle.	
Step 2	
Lift up the rear of the plastic guard	
Then pull back to remove the guard and expose the fuse	
Step 3	
Use a small screw driver to gently pry out the fuse from the holder	
Step 4	
Replace the fuse	
Step 5	
Re-install the guard by sliding the guide slot under the guide screw	

	
Then push down on the rear of the guide	
Step 6	
Reinstall clamp screw