

# MIT485/2TC-LG2 Insulation Tester



- **Insulation testing up to 500 V and 100 GΩ range in a handheld instrument**
- **3-wire connection for Tip, Ring and Ground connection (NEW)**
- **Gated access to 500 V to prevent accidental damage (NEW)**
- **Rechargeable options for ac and car charging (NEW)**
- **Single range, faster continuity testing from 0.01 Ω to 1 MΩ (NEW)**
- **Differential measurement capability (NEW)**
- **Stabilized insulation test voltage (NEW)**
- **600 V Trms AC and DC voltage measurement**
- **Test result storage & Bluetooth® downloading**
- **CATIV 600V and IP54**

## DESCRIPTION

The MIT485/2TC-LG2 insulation and continuity tester replaces the original MIT480 range and is designed specifically for the Telecommunications and Cable testing markets.

The new unit features a redesigned case, back-stand, and 6 cell battery compartment with separate fuse access.

The instrument is over-molded for increased protection and achieves an IP54 weatherproof rating.

## THREE TERMINAL CONNECTION (NEW)

Three terminal measurement permits the connection of all three test leads for Tip, Ring and Grounds. The measurement pair is selected from the T-R-G button on the front panel (new). Selection is confirmed in the display. No disconnection of test leads to measure individual pairs are required.

## INSULATION RESISTANCE TESTING:

The feedback controlled insulation test voltage is now accurate to +2% -0% compared to the original +20%, providing a more accurate test voltage without the risk of over-voltage damage to circuits.

A variable range allows the exact test voltage to be selected from 10 V up to 500 V.

## FEATURES INCLUDE:

- **Test voltages (New)**
  - 50 V, 100 V, 250 V, and 500 V.
- **Variable test voltage (New)**
  - Adjustable test voltage from 10 V to 500 V.
- **2% test voltage accuracy**
  - The output test voltage is maintained within the tolerance or -0% +2% +2 V.
- **PASS/FAIL (✓/✗) indication (New)**
  - PASS or FAIL (✓/✗) displayed depending on threshold voltage.
- **Stabilized test voltage**
  - The voltage is feedback controlled to ensure it remains within specification throughout the full test range.
- **Test voltage display (New)**
  - The actual test voltage is displayed on the smaller digital readout, with the measurement on the larger digital display.
- **Test range**
  - Insulation testing up to 100 GΩ @ 500 V.
- **Measurement range displayed (New)**
  - The test range is displayed during selection.
- **Measurement voltage display**
  - The measurement voltage is displayed during the test.

**■ Analog arc**

- The display also features an analog arc to replicate the response of a moving coil display.

**■ Timed testing**

- Automatically test to a time limit.

**■ Silicone leads**

- High quality flexible silicone test leads are comfortable to use and prevent measurement errors on GΩ ranges above 5 GΩ.

**■ Test inhibit**

- Prevents testing if voltages in excess of 25, 30, 50, 75 or 100 V (set by the user) are detected when making insulation tests. Default is 50 V.

**■ Insulation buzzer**

- The buzzer can be set to buzz if the insulation resistance is above a user adjustable limit, set in the Setup menu.

**■ Test Lock**

- Holds insulation test on continuously.

\* Gated access – prevents accidental selection.

Test ranges extend from 10 GΩ to 100 GΩ depending on test voltage as below:

- 50 Volts up to 10 GΩ
- 100 Volts up to 20 GΩ
- 250 Volts up to 50 GΩ
- 500 Volts up to 100 GΩ

**CONTINUITY (RESISTANCE) TESTING****■ Single resistance range (New)**

- One range fully automatic from 0.01 Ω to 1.0 MΩ.

**■ 200 mA or 20 mA**

- Either 200 mA or 20 mA continuity test currents are available. 20 mA test current will considerably increase battery life.

**■ Lead null**

- Lead resistance compensation (NULL) operates up to 10 Ωs of resistance.

**■ Buzzer**

- ON/OFF selected by simple push button.

**■ Buzzer limit**

- Continuity buzzer limit alarm provides adjustment of the maximum resistance the continuity buzzer sounds. This is adjustable from 1 Ω to 200 Ω in 12 steps.

**■ Differential measurement (New)**

- Allows the difference between two consecutive continuity tests to be measured

**■ REN (New)**

- Displays the appropriate REN value for the circuit under test.

- Available on 100 V ins or continuity range

**VOLTAGE MEASUREMENT**

True RMS voltage measurement to 600 V ac or dc with resolution from 0.1 mV.

- Digital voltage measurement up to 600 V ac/dc
- Analog arc measurement to 600 V ac/dc
- Automatic display of frequency during voltage measurement.

Input impedance is 10 MΩ to prevent loading the circuit and reporting low voltages. (New)

**CURRENT MEASUREMENT**

- 0 - 400 mA AC/DC

**DISPLAY**

The display offers a combination of analog arc and a dual digital readout:

**Analog arc:**

- Full display width analog arc.
- Analog arc display shows essential charge and discharge characteristics not visible on a digital display.
- Single pointer “needle” response is similar to a moving coil meter.

**Dual digital display**

- Large main digital readout for good visibility of all main measurement results
- Second digital display for additional data such as:
  - Insulation test voltage.
  - Insulation leakage current.
  - Supply frequency (when measuring volts).
  - Differential measurement result display

**OTHER FUNCTIONS AND FEATURES**

**Weatherproof** - Every tester is sealed to IP54, providing a weatherproof case to reduce the chances of water ingress, including the battery and fuse compartment.

**Tough housing** - Rubber over molding combines the tough shock absorbing outer protection with excellent grip, on a strong modified ABS housing, providing an almost indestructible case.

**Batteries** - Battery requirements are 6 AA batteries of either standard Alkaline or Nickel Metal Hydride (NiMH) rechargeable type, providing a minimum of 3000 insulation tests at 500 V.

**VARIABLE INSULATION VOLTAGE TESTER**

The variable mode provides a unique solution for awkward insulation voltage measurement applications. The range option allows an insulation test voltage from 10 V to 500 V in 1 V steps.

**STORAGE AND DOWNLOADING RESULTS**

Revised Bluetooth® and pairing procedures have made the MIT485/2TC-LG2 far easier to pair and download data. The test results are downloaded to a CSV file which can then be opened as an Excel® spreadsheet.

**SAFETY**

Designed to be exceptionally safe to use, fast detecting circuitry prevents damage to the instrument if accidentally connected to live circuits or across phases. Specifically, the MIT485/2TC-LG2:

- Meets the international requirements of IEC61010 and EN61557.
- Live circuit detection inhibits insulation testing on circuits above 25, 30, 50, 75 or 100 V default (50 V).
- Live circuit detection and test inhibit on continuity measurements.
- Default display of live circuit voltage on all ranges.
- Detection and inhibit functions even if the protection fuse has failed.
- Suitable for use on CAT IV applications and supply voltages to 600 V.

## FEATURES AND BENEFITS

- Designed for the Telecommunications and Cable TV markets
- Insulation testing up to 500 V and 100 GΩ range in a hand held instrument
- 3 wire connection for Tip, Ring and Ground connection (New)
- Gated access to 500 V to prevent accidental damage (New)
- Adjustable insulation test voltage from 10 V to 500 V (New)
- Differential measurement capability (New)
- New case design with optional magnetic hanging strap (New)
- Rechargeable options for AC and car charging (New)
- Single range, faster continuity testing from 0.01 Ω to 1 MΩ (New)
- Feedback controlled insulation test voltage (New)
- Stabilized insulation test voltage (New)
- 600 V Trms AC and DC voltage measurement
- Test result storage and Bluetooth® downloading
- Live circuit detection and protection
- CAT IV 600 V and IP 54

## SPECIFICATION SUMMARY TABLE

INSULATION RANGES	MIT485/2TC-LG2
50 V / 100 V / 250 V / 500 V	■
Variable 10 V to 500 V	■
µA button (Leakage)	■
Lock button on MΩ	■
REN telephone count (discharge)	■
> 500 V Gated operation	■
<b>OHMS RANGES</b>	
Continuity 0.01 Ω - 10 MΩ	■
Isc: 200 mA R ≤ 4Ω	■
Isc 20 mA	■
Difference measurement [REL]	■
Lead null (<10 Ω)	■
<b>VOLTAGE FUNCTION</b>	
AC/DC Volts 600 V	■
mV AC/DC range	■
TRMS	■
Frequency measurement 15-400 Hz	■
Input impedance	10 MΩ
<b>CAPACITANCE</b>	
Capacitance 0.1 nF - 10 µF	■
Distance by µF (open loop)	■
REN calculation	■
<b>OTHER FEATURES</b>	
Current measurement mA AC/DC	■
PASS/FAIL on limit alarms	■
T/R/G switching	■
Number of terminals	3
On-board memory	■
Bluetooth® and software	■
Recharger ready	■
AA alkaline or NiMH	Both
CAT IV/600 V	■
<b>ACCESSORIES</b>	
Bed of nails, silicone leads (R,B,G)	■
Switched probe supplied	■

**SPECIFICATIONS**

All quoted accuracies are at +68° F (+20° C)

**Insulation.****Test voltage**

Nominal:

50 V, 100 V, 250 V, 500 V

**Insulation accuracy**

50 Volts	10 GΩ	± 2%	± 2 digits ± 4.0% per GΩ
100 Volts	20 GΩ	± 2%	± 2 digits ± 2.0% per GΩ
250 Volts	50 GΩ	± 2%	± 2 digits ± 0.8% per GΩ
500 Volts	100 GΩ	± 2%	± 2 digits ± 0.4% per GΩ

Service Error: BS EN 61557-2 (2007).

50V, ± 2.0% ± 2d, 100kΩ - 900kΩ ± 10.5%

100V, ± 2.0% ± 2d, 100kΩ - 900kΩ ± 10.3%

250V, ± 2.0% ± 2d, 100kΩ - 900kΩ ± 10.3%

500V, ± 2.0% ± 2d, 100kΩ - 900kΩ ± 10.3%

<b>Display range</b>	Analog: 1 GΩ full scale
<b>Resolution</b>	0.1 kΩ
<b>Short circuit/charge current</b>	2 mA +0% -50% to EN61557-2 (2007)
<b>Open circuit voltage insulation</b>	-0% +2% ± 2 V
<b>Test current</b>	1 mA at min. pass value of insulation to a maximum of 2 mA max. EN61557 Operating range: 0.10 MΩ to 1.0 GΩ
<b>Leakage current</b>	10% ± 3 digits
<b>Timer control</b>	Countdown timer 60 second
<b>NOTE</b>	Above specifications only apply when high quality silicone leads are being used.
<b>Continuity:</b>	
<b>Continuity range</b>	0.01 Ω to 1.0 MΩ
<b>Continuity accuracy</b>	± 3% ± 2 digits (0 to 100 Ω) ± 5% ± 2 digits (>100 Ω - 500 kΩ) (>500 kΩ - 1 MΩ unspecified) Service Error: BS EN 61557-4 (2007) - ± 2.0%, 0.1Ω - 2Ω ± 6.8%
<b>Open circuit voltage</b>	5 V ± 1 V
<b>Test current</b>	200 mA (-0 mA +20 mA) (0.01 Ω to 4 Ω)
<b>Lead resistance</b>	Nulling up to 10 Ω

**mA range:**

<b>DC</b>	0.0 mA - 500 mA ± 5%, ± 2 digits
<b>AC</b>	0.0 mA - 10 mA: unspecified 10.0 mA - 500 mA: ± 5%, ± 2 digits (15 Hz - 400 Hz sinusoidal)

**Voltage:****Voltage range**

AC: 10 mV to 600 V TRMS  
sinusoidal (15 Hz to 400 Hz)  
DC: 10 mV to 600 V

**Volt range accuracy**

AC: ± 2% ± 2 digits  
DC: ± 2% ± 2 digits  
Service Error: BS EN 61557-1 (2007) - ± 2.0% ± 2d,  
0V - 300Vac/dc ± 5.1

**Waveform**

Unspecified range:  
0 - 10 mV (15 to 400 Hz)  
For non-sinusoidal waveforms additional specifications apply:  
Non-sinusoidal waveforms:  
± 3% ± 2 digits > 100 mV to 600 V TRMS  
± 8% ± 2 digits 10 mV to 100 mV TRMS

**Default voltmeter**

Operates at > 25 volts ac or dc on any range except OFF

**Frequency:**

**Frequency measurement range** 15 Hz - 400 Hz

**Frequency measurement accuracy** ± 0.5% ± 1 digit

**Capacitance measurement:**

**Capacitance range** 0.1 nF to 10 μF

**Capacitance accuracy** ± 5.0% ± 2 digits (1 nF-10 μF)

**Cable coefficient** 40nF/km to 70nF/km

**Unit of measure** 50nF/km

**Result storage:**

**Storage capacity** >1000 test results

**Data download** Bluetooth® wireless  
Bluetooth® Class II

**Range** Up to 33 ft (10 m)

**Power supply**

6 x 1.5 V cells type IEC LR6 (AA, MN1500, HP7, AM3 R6HP)  
Alkaline  
6 x 1.2 V NiMH rechargeable cells may be used.

**Battery life**

3000 insulation tests with duty cycle of 5 sec ON / 55 sec OFF @ 500 V into 500 kΩ  
Charger (Optional): 12-15 V dc (accessory interface)

<b>Dimensions</b>	9.00 in x 4.25 in x 2.32 in (228 mm x 108 mm x 63 mm)
<b>Weight</b>	1.76 lb (800 g)
<b>Weight (instrument and case)</b>	3.86 lb (1.75 kg)
<b>Fuse</b>	Use only 2 x 500 mA (FF) 1000 V 32 x 6 mm ceramic fuse of high breaking capacity HBC 30 kA minimum. Glass fuses <b>MUST NOT</b> be fitted.
<b>Safety protection</b>	The instruments meet EN 61010-1 (1995) to 600V phase to earth, Category IV. Refer to safety warnings supplied.
<b>EMC</b>	In accordance with IEC61326 including amendment No. 1.
<b>Temperature coefficient</b>	<0,1% per °C up to 1 GΩ <0,1% per °C per GΩ above 1 GΩ

**Environmental**

<b>Operating temperature</b>	14° F to 131° F (-10° C to +55° C)
<b>Humidity</b>	90% RH at 104° F (40° C)
<b>Storage temperature</b>	-13° F to +158° F (-25° C to +70° C)
<b>Calibration temperature</b>	+68° F (+20° C)
<b>Maximum altitude</b>	6560 ft (2000 m)
<b>IP rating</b>	IP54

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**ORDERING INFORMATION**

Description	Order Code	Description	Order Code
MIT485/2TC-LG2	1010-627	<b>Optional accessories</b>	
<b>Included accessories</b>		AC charger kit	1007-464
Red/Black bed of nails lead set	1002-021	12 V DC battery charger (requires AC charger kit)	1004-183
Green ground lead with alligator clip	2010-559	SP5 Switched probe	1007-157
SP5 Switched probe	1007-757	Test lead set and crocodile clips	1002-001
Owners Information CD	download at <a href="http://www.megger.com">www.megger.com</a>	2 wire 500 mA fused test lead set	1002-015
Batteries 6 x AA Alkaline	1002-753	Batteries (6 x NiMH)	1002-753
Carry case and strap	1007-887		
Download manager software	download at <a href="http://www.megger.com">www.megger.com</a>		