

## MIT480/2 Insulation testers



- Insulation testing up to 500 V and 100 GΩ range in a hand held instrument
- 3 wire connection for A, B and E (Tip, Ring and Earth) connection
- Gated access to 500 V to prevent accidental damage
- Rechargeable options for mains and car charging
- Single range, faster continuity testing from 0.01 Ω to 1 MΩ
- Differential measurement capability
- Stabilized insulation test voltage
- 600 V Trms AC and DC voltage measurement
- Test result storage and Bluetooth<sup>®</sup> downloading
- CAT IV 600 V and IP 54

### DESCRIPTION

The MIT480 mk2 series insulation and continuity testers replace the original MIT480 range and are designed specifically for the Telecommunications and Cable testing markets.

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

All instruments are over-molded for increased protection and achieve an IP54 weatherproof rating.

### THREE TERMINAL CONNECTION

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

Alternatively the units can be used as a conventional Two Terminal instrument.

### THE MIT480/2 RANGE

(for Telecommunications refer to the MIT480 datasheet)

The range consists of two instruments:

- MIT481/2 50 V, 100 V, 250 V, 500 V\* + Storage
- MIT485/2 50 V, 100 V, 250 V, 500 V\* + Storage + Download + recharge ready

\* Gated access – prevents accidental selection

### 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.

## MIT480/2 Insulation testers

### FEATURES INCLUDE

- **Test voltages**
  - 50 V, 100 V, 250 V, and 500 V
- **Variable test voltage**
  - 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**
  - 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**
  - 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**
  - The test range is displayed during selection
- **Measurement voltage display**
  - The measurement voltage is displayed during the test
- **Analogue arc**
  - The display also features an analogue 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**
  - 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**
  - Allows the difference between two consecutive continuity tests to be measured
- **REN** - 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
- Analogue 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.

### CURRENT MEASUREMENT

- ∅ - 400 mA AC/DC

## MIT480/2 Insulation testers

### DISPLAY

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

#### Analogue arc:

- Full display width analogue arc
- Analogue 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

Setup functions allow control of Buzzer limit alarms, Continuity test currents, k $\Omega$ /M $\Omega$ /G $\Omega$ .

#### 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.

\* Dependent on model

### STORAGE AND DOWNLOADING RESULTS

Smooth Bluetooth<sup>®</sup> and pairing procedures make the MIT480/2s easy to pair and download data.\* The test results are downloaded to a CSV file which can then be opened as an Excel<sup>®</sup> spreadsheet.\*

\* Dependent on model

### SAFETY

Designed to be exceptionally safe to use, fast detecting circuitry prevents damage to the instruments if accidentally connected to live circuits or across phases. Specifically, all instruments:

- Meet 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

\* Dependent on model

### FEATURES AND BENEFITS

- Designed for the Telecommunications and Cable TV markets
- Insulation testing up to 500 V and 100 G $\Omega$  range in a hand held instrument
- 3 wire connection for Tip, Ring and Earth connection
- Gated access to 500 V to prevent accidental damage
- Adjustable insulation test voltage from 10 V to 500 V \*
- Differential measurement capability
- New case design with optional magnetic hanging strap
- Rechargeable options for mains and car charging
- Single range, faster continuity testing from 0.01  $\Omega$  to 1 M $\Omega$
- Feedback controlled insulation test voltage
- Stabilised insulation test voltage
- 600 V Trms AC and DC voltage measurement
- Test result storage and Bluetooth<sup>®</sup> downloading\*
- Live circuit detection and protection
- CAT IV 600 V and IP 54

\* Dependent on model

## MIT480/2 Insulation testers

### SPECIFICATION SUMMARY TABLE

INSULATION RANGES	MIT481/2	MIT485/2
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	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		■
A/B/E or T/R/G switching	■	■
Number of terminals	3	3
On board memory	■	■
Bluetooth <sup>®</sup> and software		■
Recharger ready		■
AA Alkaline or NiMH	Both	Both
CAT IV / 600V	■	■
<b>ACCESSORIES</b>		
Silicone leads (R,B,G)	■	■
Switched probe supplied	■	■

### SPECIFICATIONS

All quoted accuracies are at +20 °C.

#### INSULATION

##### Test voltage

Nominal:

MIT481/2 and MIT485/2 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%

##### Display range

Analogue: 1 GΩ full scale

##### Resolution

0.1 kΩ

##### Short circuit/charge current

2 mA +0% -50% to  
EN 61557-2 (2007)

##### Open circuit voltage insulation

-0% +2% ± 2 V

##### Test current

1 mA at min. pass value of  
insulation to a maximum of 2 mA  
max.

##### EN61557 Operating range:

0.10 MΩ to 1.0 0GΩ

##### Leakage Current

10% ±3 digits

##### Timer control

Countdown timer 60 second

##### Note

Above specifications only apply when  
high quality silicone leads are being  
used

#### CONTINUITY

##### Continuity range

0.01 Ω to 1.0 MΩ

##### Continuity accuracy

± 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%

##### Open circuit voltage

5 V ± 1 V

##### Test current

200 mA (-0 mA +20 mA)  
(0.01 Ω to 4 Ω)

##### Lead resistance

Nulling up to 10 Ω

#### MA RANGE :

##### DC

0.0 mA - 500 mA:

+/-5%, +/-2 digits

##### AC

0.0 mA - 10.0 mA: unspecified

10.0 mA - 500 mA: +/-5%,

+/-2 digits (15 Hz - 400 Hz,  
sinusoidal)

# MIT480/2

## Insulation testers

### VOLTAGE RANGE

<b>Voltage range</b>	AC: 10 mV to 600 V TRMS sinusoidal (15 Hz to 400 Hz) DC: 10 mV to 600 V
<b>Volt range accuracy</b>	AC: $\pm 2\% \pm 2$ digits DC: $\pm 2\% \pm 2$ digits  Service Error: BS EN 61557-1 (2007) - $\pm 2.0\% \pm 2d$ , 0 V – 300 V AC/DC $\pm 5.1\%$
<b>Waveform</b>	Unspecified range: 0 – 10 mV (15 to 400 Hz)  For non-sinusoidal waveforms additional specifications apply:  Non-sinusoidal waveforms:  $\pm 3\% \pm 2$ digits >100 mV to 600 V TRMS  $\pm 8\% \pm 2$ digits 10 mV to 100 mV TRMS
<b>Default voltmeter</b>	Operates at > 25 volts ac or dc on any range except OFF

### FREQUENCY

<b>Frequency measurement range:</b>	15 Hz - 400 Hz
<b>Frequency measurement accuracy</b>	$\pm 0.5\% \pm 1$ digit

### CAPACITANCE MEASUREMENT

<b>Capacitance range</b>	0.1 nF to 10 $\mu$ F
<b>Accuracy</b>	$\pm 5.0\% \pm 2$ digits ( 1 nF-10 $\mu$ F)
<b>Cable coefficient</b>	40n F/ km to 70nF / km
<b>Unit of measure:</b>	50nF / km

### RESULT STORAGE

<b>Storage capacity</b>	>1000 test results
<b>Data download</b>	Bluetooth® wireless Bluetooth® Class II
<b>Range</b>	up to 10 m

### POWER SUPPLY

<b>Power supply</b>	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
<b>Battery life</b>	3000 insulation tests with duty cycle of 5 sec ON /55 sec OFF @ 500 V into 500 k $\Omega$
<b>Charger (Optional):</b>	12-15 V dc (accessory interface)
<b>Dimensions</b>	228 mm x 108 mm x 63 mm (9.00 in x 4.25 in x 2.32 in)
<b>Weight</b>	800 g (1.8 lb)
<b>Weight (instrument and case)</b>	1.75 kg (3.86 lb)
<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 MUST NOT 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 IEC 61326 including amendment No.1
<b>Temperature co-efficient</b>	<0,1% per °C up to 1 G $\Omega$ <0,1% per °C per G $\Omega$ above 1 G $\Omega$

### ENVIRONMENTAL

<b>Operating temperature range and humidity</b>	-10 to +55 °C 90% RH at 40 °C max.
<b>Storage temperature range</b>	-25 to +70 °C
<b>Calibration temperature</b>	+20 °C
<b>Maximum altitude</b>	2000 m
<b>IP rating</b>	IP 54

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### ORDERING INFORMATION

Description	Order Code	Description	Order Code
MIT481/2 - 3 terminal 50 V to 500 V + storage and recall	1004-741	<b>Optional accessories</b>	
MIT485/2 - as MIT481/2 + Bluetooth® download	1004-742	Mains Charger kit (MIT485/2 only)	1007-464
<b>Included accessories</b>		12 V DC battery charger (requires mains charger kit)	1004-183
Red/Black silicone test leads with prods and clips		Switched probe SP5	1007-157
SP5 Switched probe (not MIT400/2)		Test lead set and crocodile clips	1002-001
Batteries 6 x AA Alkaline		2 wire 500 mA fused test lead set	1002-015
Hard carry case		Batteries (6 x NiMH)	1002-735
Calibration certificate		Magnetic Hanging Strap	1010-013
		Carry Pouch MIT400/2 Series	1007-887

### SALES OFFICE

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### MIT4802\_DS\_en\_V04

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ISO 9001:2008  
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- Uitgebreid assortiment
- Deskundig advies
- Instrumenten worden geleverd met accessoirepakket en herleidbaar kalibratiecertificaat

## EURO-INDEX Academy

- Producttrainingen (individueel en klassikaal)
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Servicebalie



Kalibratie rookgasanalyse



Seminars en workshops



Kalibratie thermografie

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