MIT480 Series
Telecommunications Insulation Testers



- **Insulation testing from 50 V to 1000 V**
- **Up to 200 GΩ range**
- **75 V test inhibit**
- **TRMS & DC Voltage measurement**
- **Continuity testing at 200 mA or 20 mA**
- **Capacitance measurement to 10 uF**
- **Cable length by capacitance**
- **Silicone test leads**

DESCRIPTION

The Megger MIT480 series instruments have been developed specifically for the telecommunications industry. The insulation and continuity testers combine the latest range of measurement techniques with new instrument design to provide a state-of-the-art tester that is compact and comfortable to hold.

The MIT480 series directly replaces the well-established BM80 product group, given greater functionality with simplified operation and greater application range.

The range:

MIT480 50 V, 100 V tester

MIT481 50 V, 100 V, 250 V, 500 V, 1000 V tester

MIT485 As 481 plus downloading results

INSULATION TESTING

- **Test voltages** - 50 V/100 V or 50 V to 1000 V insulation test voltages available depending on instrument. The actual test voltage is displayed on the smaller digital read-out, with the insulation result on the larger digital display.
- **Analogue arc** - The display also features an analogue arc to replicate the response of a moving coil display.
- **Insulation leakage current** - The MIT481 and MIT485 offer insulation leakage current display, in addition to insulation test voltage.
- **Insulation testing** - up to 100 GΩ or 200 GΩ test range are available.
- **Silicone test leads** - (supplied) are essential to prevent error in measurement on insulation tests of greater than 10 GΩ .
- **Test inhibit** - prevents testing if voltages in excess of 75 V are detected when making insulation tests.
- **Test lock** - allows the insulation test to be 'locked' on continuously.
- **Timed testing** - MIT481 and MIT485 have timed insulation test options.

CONTINUITY AND RESISTANCE

- **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.
- **Auto test** - on circuit contact enables real two handed operation without the need to press the test button.
- **Lead null** - Lead resistance compensation (NULL) operates up to 9 Ω of resistance.
- **Buzzer ON-OFF** - selected by puss button.
- **Limit alarm** - Continuity buzzer limit alarm provides adjustment of the maximum acceptable resistance. Resistance below the set limit sounds the buzzer. This is adjustable from 1 Ω to 20 Ω in 5 steps.
- **kΩ range** - extends resistance measurement from 10 Ω to 1 MΩ.

CAPACITANCE MEASUREMENT

- **Capacitance measurement** - auto ranges from 0.1 nF to 10 μF. Results are displayed on the primary digital display.
- **Cable length** - is displayed on the secondary display. Cable length is calculated from an adjustable cable capacitance reference (default 50 nF/km).
- **Cable capacitance reference** - A variable value for distance calculation is adjustable from 40 nF/km to 60 nf/km.
- **km or Feet** - Can be displayed, selected in set-up.

VOLTAGE AND FREQUENCY

- **CATIV** - Suitable for use on circuits up to 600 V CAT IV.
- **AC voltage** - measurement is True RMS up to 600 V.
- **DC Voltage** - measurement to 600 V.
- **Fully auto-ranging** - from 10 mV up to 600 V provides wide range of applications and suitable for transducer inputs
- **A default voltmeter** - is activated on any test function if a circuit voltage is detected.

OTHER INSTRUMENT FEATURES

- All tests will be inhibited if a live circuit voltage above 75 V is detected.
- Instrument fuse failure will not affect instrument safety functions.
- Rubber boot combines the tough shock absorbing outer protection with excellent grip, on a strong modified ABS housing, providing an almost indestructible case.
- Battery requirements are 5 AA batteries of either standard Alkaline or Nickel Metal Hydride (NiMH) rechargeable type.
- Battery condition status is permanently displayed.

STORAGE AND DOWNLOADING RESULTS

MIT481

The MIT481 is capable of saving test results for recall to the screen. A simple storage structure allows for a test number and screen results to be recalled individually.

MIT485

The MIT485 supports both test result storage and downloading.

Test results can be stored in the instrument and subsequently downloaded to a computer with the Megger download manager software.

Data transfer is by Bluetooth, with the MIT485 Bluetooth transmitter being enabled when the Download mode is selected on the instrument.

NOTE: The receiving PC needs to have Bluetooth capability or a USB port fitted a Bluetooth receiver. Class II (10m) is acceptable.

SAFETY

Meet the international requirements of IEC1010-2 as well as those for EN61557 (not MIT480 Vout. <100 V).

Live circuit detection inhibits insulation or continuity testing on circuits above 75 V.

Live circuit detection functions even if the protection fuse has failed.

TEST LEADS

The test leads supplied with the MIT480 series are high quality silicone leads, which are essential when measuring above 10 GΩ.

	Service & Telco		
Insulation Voltage range	**480**	**481**	**485**
50-100 V	■	■	■
250 V, 500 V, 1000 V		■	■
Insulation range	100 GΩ	200 GΩ	200 GΩ
Leakage current display		■	■
INS test voltage display	■	■	■
Live circuit warning at 75 V	■	■	■
Continuity measurement			
Variable current limit 200 mA/20 mA	■	■	■
Fast buzzer - selectable threshold	■	■	■
k Ω range to 999 kΩ		■	■
Voltage measurement			
Default voltmeter	■	■	■
TRMS measurement to 600 V	■	■	■
Other measurement			
Frequency Hz - 15 to 400 Hz		■	■
Capacitance (0.1 nF to 10 μF)		■	■
Distance by capacitance		■	■
mV/transducer (0.1 to 19.99 V)	■	■	■
Additional features			
Result storage		■	■
Bluetooth® downloading			■
Backlight	■	■	■
Battery condition display	■	■	■
Insulation Timed - PI – DAR Tests		■	■
Test button plus lock button	■	■	■
TNV 3 circuits	■	■	■
Included accessories			
Red / Black silicon lead set with clips	■	■	■
Protective rubber boot	■	■	■
Remote switch probe		■	■
Calibration certificate with product	■	■	■
Batteries	■	■	■

SPECIFICATION

All quoted accuracies are at +20°C.

Insulation

Nominal test voltages

MIT480	50 V, 100 V
MIT481, 485	50 V, 100 V, 250 V, 500 V, 1000 V

Insulation resistance range

MIT480	100 GΩ
MIT481, 485	200 GΩ

Range Full Scale Accuracy

1000 volts	±3% ±2 digits ±0.2% per GΩ
500 volts.	±3% ±2 digits ±0.4% per GΩ
250 volts.	±3% ±2 digits ±0.8% per GΩ
100 volts.	±3% ±2 digits ±2.0% per GΩ
50 volts.	±3% ±2 digits ±4.0% per GΩ
Analogue range	1 GΩ full scale

Short Circuit Current: 2 mA +0% -50%
Terminal voltage: -0% +20% ±1 V

Test Current on load:
1 mA at min. pass value of insulation specified in BS7671, HD384 and IEC364, 2 mA max.

EN61557 Operating range: 0,10 MΩ to 1,00 GΩ

Leakage Current: 10% ±3 digits

Voltage display: 3% ±3 digits ±0.5% of rated voltage

Polarisation Index (PI): 10 min / 1minute ratio

Dielectric Absorption Ratio (DAR): 60 sec / 30 sec ratio

Notes:
(1) All ranges measure from 0,00 MΩ upwards.

(2) Above specifications only apply when high quality silicone leads are being used.

Continuity

Measurement: 0,01 Ω to 99,9 Ω (0 to 100 Ω on analogue scale)
Accuracy: ±3% ±2 digits (0 to 100 Ω)
Open circuit voltage: 5 V ±1 V

Test current: 200 mA (–0 mA +20 mA)
(0.01 Ω to 9.99 Ω)
20mA (±1 mA)
(10.0 Ω to 99.9 Ω)

Zero offset at probe tips: 0,10 Ω typical
Lead resistance zeroing: Up to 9,00 Ω
Buzzer: Variable limit 1 Ω, 2 Ω, 5 Ω, 10 Ω, 20 Ω

Resistance

Measurement: 0,01 kΩ to 1000 kΩ (0 to 1 MΩ on analogue scale)
Accuracy: ±3% ±2 digits
Open circuit voltage: 5 V ±1 V
Short circuit current: 20 μA ± 5 μA

Voltage range

0 to 600 V d.c. ±2% ±2 digits
10 mV to 600 V TRMS sinusoidal (40 to 400 Hz) ±2% ±2 digits
0 to 1000 V on Analogue scale
Unspecified input level 0 - 10 mV (40 to 400 Hz)

For non-sinusoidal waveforms additional specification apply:
±3% ±2 digits 101 mV to 600 V TRMS and ±8% ±2 digits 10 mV to 100 mV TRMS

Default Voltmeter: Operates at >25 V a.c. or d.c. on any range except OFF

Frequency: 40-450 Hz (40 Hz - 99,9 Hz) ±0.5% ±1 digit (100 Hz to 450 Hz)

Capacitance measurement

MIT481 and MIT485.

Measurement range: 100 pF to 10 μF
Accuracy: ± 5.0% ±2 digits

Distance by capacitance:
MIT481, MIT485
Arithmetic conversion from capacitance measurement on
Default capacitance measurement: 50nF/m

Capacitance range: 40 nF/m to 60 nF/m

Result storage

Capacity: >1000 test results
Download: Bluetooth wireless
Bluetooth Class: Class II
Range: up to 10 m

Power Supply:
5 x 1,5 V cells type IEC LR6 (AA, MN1500, HP7, AM3 R6HP) Alkaline NiMH rechargeable cells may be used.

Battery life: 2200 insulation tests with duty cycle of 5 sec ON /55 sec OFF @ 1000 V into 1 MΩ

Dimensions

Instrument: 220 x 92 x 50 mm (8.66 in. x 3.63 in. x 1.97 in.)

Instrument + case: 456 x 178 x 89 mm (18 in. x 7 in. x 3.5 in.)

Weight

Instrument only: 590 gms, 775 gms with boot (20.73 oz., 27.22 oz.)
Instrument plus case: 1.75kg (3.86 lb)

Fuse

Use only a 500 mA (FF) 1000 V 32 x 6 mm ceramic fuse of high breaking capacity HBC 50 kA minimum. Glass fuses **MUST NOT** be fitted.

Safety Protection

The instruments meet EN 61010-1 (1995) to 600 V phase to earth, Category IV. Refer to safety warnings supplied.

E.M.C.

In accordance with IEC 61326 including amendment No.1

Temperature effects

Temperature coefficient: <0,1% per °C up to 1 GΩ

Environmental

Operating range: -10 to +55°C
Operating humidity: 90% RH at 40°C max.
Storage temperature range: -25 to +70°C
Calibration Temperature: +20°C
Maximum altitude: 2000 m
Dust and water protection:
IP54 Protected against dust and splashing water

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ORDERING INFORMATION

Item (Qty)	Order No.
Telecoms Base instrument with 50 V/100 V insulation	MIT480-EN
Telecoms 50 V to 1000 V + Storage	MIT481-EN
Telecoms 50 V to 1000 V + Storage & DL	MIT485-EN
Included accessories	
Test leads: 2 wire lead set to CAT IV 600 V, consisting of :	
1 x Red lead 1.25m complete with probe	
1 x Black lead 1.25m complete with probe	
1 x Red croc clip	
1 x Black croc clip	
1 x instrument rubber boot	
1 x Calibration certificate	
1 x Switched probe (not included with MIT480)	
Included accessories	
Replacement lead set	6220-813
SP5 remote switch probe	6220-812
Rubber boot with stand	6231-802
Hard case	5410-420

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