

MIT410-TC/3 Insulation Tester



- Insulation testing up to 500 V and 100 GΩ
- Patented analog arc and dual digital display
- CAT IV 600 V rating
- TRMS & DC Voltage measurement
- Continuity testing at 200 mA to 0.01 ohms
- Pass/Fail limit alarms
- Three year product warranty*
(*Extendable from one year when registered with Megger Instruments Ltd)
- IP54 rated

DESCRIPTION

The Megger MIT410-TC/3 insulation resistance and continuity tester has been designed specifically for use within the telecommunications industry. Unique telecommunications-related features include a soft canvas carrying bag with shoulder strap and rugged snap hook to attach to a tool belt, and a "bed of nails" test lead set.

The instrument allows the user to determine the condition of the insulation of the twisted copper cable pair, which could cause problems for services such as voice, video, and data or VoIP. When the insulation becomes weak or brittle, causing cracks or exposing copper within the cable, or water ingresses into the cable, the insulation resistance test will identify these situations immediately.

Replacing the original MIT410TC/2 instrument, the new unit features a redesigned case, back-stand, and 6 cell battery compartment with separate fuse access. All instruments are over-moulded for increased protection and continue to achieve an IP54 weatherproof rating.

INSULATION RESISTANCE TESTING

The stabilized insulation test voltage is now accurate to +2% -0%. This compares to the industry standard +20%, thus providing a more accurate test voltage without the risk of over-voltage damage to circuits or components. The output voltage is maintained between 0 and 2% throughout the test range.

Continuity testing is now significantly faster, and a single auto-ranging 0.01 Ω to 1.0 MΩ function replaces the "ohms" and "kOhms" ranges. Retained are the 200 mA and 20 mA test options.

APPLICATIONS

The unit provides for all metallic and resistive fault testing of the customers' inside premise wiring including:

- Shorts
- Grounds
- Cross voltage (for multi-lines)
- Voltage measurements (both AC and DC) to determine proper voltage levels for line and signaling voltages

By applying a test voltage, (for customer premise wiring or telecommunications cables, a voltage level of no more than 500 volts is recommended), the meter will measure the leakage current through the insulation and give the results in ohms. The results can then be reviewed to determine if the premise wire or cable pair can be used for voice grade or voice/video/data services according to the following industry standards:

- Readings greater than 100 Megohms indicate good insulation.
- Readings between 100 Megohms and 90 Megohms indicate marginal insulation (services may or may not work).
- Readings below 90 Megohms indicate bad insulation and further testing is required before service can be installed.

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In addition to the insulation resistance test, the meter allows the technician to conduct continuity tests throughout the customer's premise. Simply place a shunt strap at the location of the modem, then with the meter go to each outlet to test for continuity using the audible alert feature on the meter to determine correct wiring configurations. This feature would replace the need for a tone generator and amplifier.

FEATURES AND BENEFITS

- Stabilized output voltage to +2% -0% for increased test accuracy.
- Simplified continuity and resistance are now in one range from 0.01 ohms to 1000 kohms autoranging.
- CAT IV 600 V rating – provides greater safety when testing at higher voltage levels.
- Adjustable insulation test voltages – 50 V to 500 V.
- Dual digital display readout – allows display of complimentary test information simultaneously (for example: MΩ plus test voltage or MΩ plus leakage current).
- Digital and analog arc display – includes not only the digital readout but also Megger's patented analog arc to replicate the response of a moving coil display.
- 200 mA continuity.
- True RMS voltage measurement – allows accurate voltage measurement on noisy lines.
- Auto ranging voltage measurement – automatically adjusts range from millivolts to 600 V AC or DC, eliminating the need to keep changing ranges.
- Live circuit warning – automatically warns of contact to a live circuit, voltage is displayed and testing is inhibited.
- Auto fuse warning – warns of fuse failure automatically. No need to test the fuse manually.

- Buzzer select button – enable or disable buzzer as required with resistance also displayed on the screen.
- Ergonomic tapered design and center button placement – easy to use with either hand.

SPECIFICATIONS

All quoted accuracies are at +20° C.

Insulation

Nominal test voltages

50 V, 100 V, 250 V, 500 V

Insulation resistance range

100 GΩ at 500 V

Range Full Scale Accuracy

500 volts	±3%	±2 digits	±0.4% per GΩ	100 GΩ
250 volts	±3%	±2 digits	±0.8% per GΩ	50 GΩ
100 volts	±3%	±2 digits	±2.0% per GΩ	20 GΩ
50 volts	±3%	±2 digits	±4.0% per GΩ	10 GΩ

Analog 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

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 1000 kΩ

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)



The model MIT410-TC/3 shown with carry case, bed of nails lead set, certificate of calibration and user guide

MIT410-TC/3

Insulation Tester

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

Voltage range:

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

For non-sinusoidal waveforms additional specification apply:
 $\pm 3\%$ ± 2 digits 101 mV to 600 V TRMS and $\pm 8\%$ ± 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) $\pm 0.5\%$ ± 1 digit (100 Hz to 450 Hz)

Power Supply

6 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 M Ω

Dimensions

Instrument: 228 x 108 x 63 mm (9 in. x 4.25 in. x 2.32 in.)

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

Weight

Instrument only: 600 g (21.16 oz.), 775 g (27.22 oz.) with boot
Instrument and 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 $^{\circ}\text{C}$ up to 1 G Ω

Environmental

Operating range: -10°C to $+55^{\circ}\text{C}$ ($+14^{\circ}\text{F}$ to $+131^{\circ}\text{F}$)

Operating humidity: 90% RH at 40°C max.

Storage temperature range: -25°C to $+70^{\circ}\text{C}$ (-13°F to $+158^{\circ}\text{F}$)

Calibration Temperature: $+20^{\circ}\text{C}$ ($+68^{\circ}\text{F}$)

Maximum altitude: 2000 m (6562 ft)

Dust and water protection: IP54 protected against dust and splashing water

ORDERING INFORMATION

Item [Qty]	Cat. No.
Model MIT410-TC/3	MIT410-TC/3
Included Accessories	
Carry case and strap	1007-887
Bed of nails lead set	1002-021
User guide	
Battery 1.5V Alkaline AA [6 required]	23415
Certificate of calibration	
Holster and stand assy	6121-626

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