

# MIT410-TC and MIT430-TC

## Insulation Resistance and Continuity Testers



- Insulation testing up to 1000 V and 200 GΩ
- Patented analog arc and dual digital display
- CAT IV 600 V rating
- TRMS & DC Voltage measurement
- Continuity testing at 200 mA or 20 mA down to 0.01
- Pass/Fail limit alarms
- PI/DAR and Timer function
- Test result storage (MIT430-TC)
- Bluetooth® wireless data transfer (MIT430-TC)
- Three year product warranty
- IP54 rated

### DESCRIPTION

The Megger MIT410-TC and MIT430-TC insulation resistance and continuity testers have 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 model MIT430-TC offers extensive results storage capability for later recall and Bluetooth download capability for wireless transfer of stored results to a PC.

The instruments allow 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.

### APPLICATIONS

The units provide 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 meters 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 air 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.

In addition to the insulation resistance test, the meters allow 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

- **CAT IV 600 V rating** – provides greater safety when testing at higher voltage levels.
- **Adjustable insulation test voltages** – provides 250 V to 1000 V or 50 V to 1000 V.
- **Dual digital display readout** – allows display of complimentary test information simultaneously (for example:  $M\Omega$  plus test voltage or  $M\Omega$  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.
- **Exceptional measurement range from 20 G $\Omega$  to 200 G $\Omega$**  - highest insulation test range available on the market, providing a superior range of measurement applications.
- **Choice of 20 mA or 200 mA continuity testing** – allows user to select lower continuity range thus increasing battery life considerably
- **Continuity auto-test capability** – enables real two-handed operation without the need to press the test button
- **Adjustable continuity limit alarm** – allows pass/fail limits to be sent to speed testing
- **Automatically perform PI and DAR tests** – user is able to quickly perform two important diagnostic tests. . . Polarization Index (PI) and Dielectric Absorption Ratio (DAR)
- **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
- **Extensive results storage capability** – store test date for later recall (Model MIT430-TC)
- **Bluetooth download capability** – wireless transfer of stored results to a PC (Model MIT430-TC)
- **Stylish 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, 1000 V

##### Insulation resistance range

MIT410-TC 100 G $\Omega$

MIT430-TC 200 G $\Omega$

##### Range Full Scale Accuracy

1000 volts  $\pm 3\%$   $\pm 2$  digits  $\pm 0.2\%$  per G $\Omega$

500 volts  $\pm 3\%$   $\pm 2$  digits  $\pm 0.4\%$  per G $\Omega$

250 volts  $\pm 3\%$   $\pm 2$  digits  $\pm 0.8\%$  per G $\Omega$

100 volts  $\pm 3\%$   $\pm 2$  digits  $\pm 2.0\%$  per G $\Omega$

50 volts  $\pm 3\%$   $\pm 2$  digits  $\pm 4.0\%$  per G $\Omega$

**Analog range:** 1 G $\Omega$  full scale

**Short Circuit Current:** 2 mA +0% -50%

**Terminal voltage:** -0% +20%  $\pm 1$  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 M $\Omega$  to 1.00 G $\Omega$

**Leakage Current:** 10%  $\pm 3$  digits

**Voltage display:** 3%  $\pm 3$  digits  $\pm 0.5\%$  of rated voltage

**Polarization Index (PI):** 10 min/1 minute ratio

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

#### Notes:

(1) All ranges measure from 0.00 M $\Omega$  upwards.

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



The MIT410-TC shown in its soft canvas carrying bag with shoulder strap.

**Continuity**

**Measurement:** 0.01 Ω to 99.9 Ω (0 to 100 Ω on analog 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:** 0.10Ω typical  
**Lead resistance zeroing:** Up to 9.00 Ω  
**Buzzer:** Variable limit 1Ω, 2Ω, 5Ω, 10Ω, 20Ω

**Resistance**

**Measurement:** 0.01 kΩ to 1000 kΩ  
 (0 to 1 MΩ on analog 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 Analog 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 (MIT430-TC)**

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

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

**Result storage (MIT430-TC)**

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

**Weight**

**Instrument only:** 590 gms (20.73 oz.), 775 gms (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 °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]	Cat. No.
Model MIT410-TC	MIT410-TC
Model MIT430-TC, result storage, download capability	MIT430-TC
<b>Included Accessories</b>	
Soft case	6420-136
Bed of Nails	EV6231-653
Quick Start Guide	2000-182EDI
Owner information CD	