

MIT410-TC2 and MIT430-TC2

Insulation Resistance and Continuity Testers



- **Insulation testing up to:**
 - 500 V and 50 GΩ (MIT410-TC2)
 - 1000 V and 200 GΩ (MIT430-TC2)
- **Patented analog arc and dual digital display**
- **CAT IV 600 V rating**
- **TRMS & DC Voltage measurement**
- **Continuity testing at 20 mA down to 0.01**
- **Pass/Fail limit alarms**
- **Test result storage (MIT430-TC2)**
- **Bluetooth® wireless data transfer (MIT430-TC2)**
- **Three year product warranty**
- **IP54 rated**

DESCRIPTION

The Megger MIT410-TC2 and MIT430-TC2 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-TC2 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 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.

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 – 50 V to 500 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
- 20 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
- Extensive results storage capability – store test date for later recall (Model MIT430-TC2)
- Bluetooth download capability – wireless transfer of stored results to a PC (Model MIT430-TC2)
- Stylish tapered design and center button placement – easy to use with either hand



The MIT410-TC2 shown with carry case, bed of nails lead set, quick-start guide, certificate of calibration and user guide

SPECIFICATIONS

All quoted accuracies are at +20° C.

Insulation

Nominal test voltages

MIT410-TC2	50 V, 100 V, 250 V, 500 V
MIT430-TC2	50 V, 100 V, 250 V, 500 V, 1000 V

Insulation resistance range

MIT410-TC2	50 $G\Omega$
MIT430-TC2	200 $G\Omega$

Range Full Scale Accuracy

		410	430
1 kV	$\pm 3\%$ ± 2 digits $\pm 0.2\%$ per $G\Omega$	NA	200 $G\Omega$
500 volts	$\pm 3\%$ ± 2 digits $\pm 0.4\%$ per $G\Omega$	50 $G\Omega$	100 $G\Omega$
250 volts	$\pm 3\%$ ± 2 digits $\pm 0.8\%$ per $G\Omega$	20 $G\Omega$	50 $G\Omega$
100 volts	$\pm 3\%$ ± 2 digits $\pm 2.0\%$ per $G\Omega$	10 $G\Omega$	20 $G\Omega$
50 volts	$\pm 3\%$ ± 2 digits $\pm 4.0\%$ per $G\Omega$	5 $G\Omega$	10 $G\Omega$

Analog range: 1 $G\Omega$ 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 $M\Omega$ to 1.00 $G\Omega$

Leakage Current: 10% ± 3 digits

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

Notes:

- (1) All ranges measure from 0.00 $M\Omega$ 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 analog scale)

Accuracy: $\pm 3\%$ ± 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 $k\Omega$ to 1000 $k\Omega$
(0 to 1 $M\Omega$ on analog scale)

Accuracy: $\pm 3\%$ ± 2 digits

Open circuit voltage: 5 V ± 1 V

Short circuit current: 20 μA ± 5 μA

Voltage range:

0 to 600 V d.c. $\pm 2\%$ ± 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)

Capacitance measurement (MIT430-TC2)

Measurement range: 100 pF to 10 μ F
Accuracy: $\pm 5.0\%$ ± 2 digits
Capacitance range: 40 nF/m to 60 nF/m

Result storage (MIT430-TC2)

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 M Ω

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 $^{\circ}\text{C}$ up to 1 G Ω

Environmental

Operating range: -10 to $+55^{\circ}\text{C}$
Operating humidity: 90% RH at 40°C max.
Storage temperature range: -25 to $+70^{\circ}\text{C}$
Calibration Temperature: $+20^{\circ}\text{C}$
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-TC2	1001-368
Model MIT430-TC2, result storage, download capability	1001-369
Included Accessories	
Carry case and strap	2001-322
Bed of nails lead set	2001-321
Quick-start guide	2000-182
User guide	6172-965
Battery 1.5V Alkaline AA [5 required]	25511-841
Certificate of calibration	6173-043
Holster and stand assy	6231-802
Download manager software (MIT430-TC2 only)	6111-442

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