MTI 801

(041710_1)

Insulation Resistance Tester

Safety Information

MTI 801 Insulation Resistance Tester is a handheld and battery operated, Average RMS insulation multimeter capable of testing Insulation, AC or DC Voltages, Resistance and Continuity.

This manual contains information and warnings that must be followed for operating the meter safely and maintaining the meter in a safe operating condition. If the meter is not used in a manner specified in this manual, the protection provid ed by the meter may be impaired.

This meter complies with UL 61010-1 : 3rd Edition, CAN / CSA - C22.2 No. 61010-1-12 : 3rd Edition, IEC / EN 61010-1 : 2010; Overload protection CAT IV 600V and CAT III 1000V.

TERMS IN THIS MANUAL

A **Warning** identifies conditions and actions that could pose serious hazards to the user. A **Caution** identifies conditions and actions that could cause damage the meter or the equipment under test.

⚠ WARNING

- Do not expose the meter to rain or moisture in order to reduce the risk of fire or electric shock.
- Observe the proper safety precautions when working with voltages above 30 V ac rms, 42 V ac peak, or 60 V dc. These voltage levels pose a potential shock hazard to the user.
- Inspect test leads, connectors and probes for damaged insulation or exposed metal before using the meter.
- Check the test leads for continuity before use. Do not use if the readings are high or noisy.
- Keep your fingers behind the finger guards of the test leads during measurement.
- Disconnect the test leads from the points before changing functions.
- Disconnect circuit power and discharge all high voltage capacitors before testing resistance.
- Always use the proper terminals, switch position, and range for measurements before connecting the meter to circuit under test.
- When servicing the meter, use only specified replacement parts.
- Remove test leads from the meter before you open the battery cover.
- Do not operate the meter with the battery cover removed or loosened.
- To avoid false readings, which could result in possible electric shock or personal injury, replace the battery as soon as the low battery indicator appears.
- Avoid working alone.

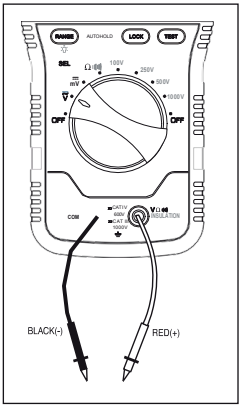
⚠ CAUTION

- Disconnect the test leads from the points before changing functions.
- Disconnect circuit power and discharge all high voltage capacitors before testing resistance, or continuity.
- Always set the meter to the highest range and work downward for an unknown value in the manual ranging mode.

INTERNATIONAL ELECTRICAL SYMBOLS

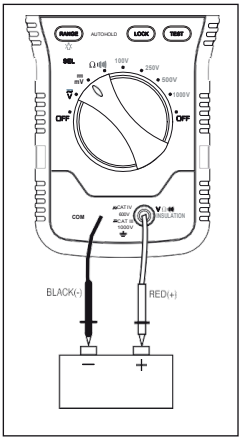
~	AC(Alternating Current)	⚠	Dangerous voltage (Risk of electric shock)
⎓	DC(Direct Current)	⏚	Earth(Ground)
≂	Either DC or AC	▣	Double insulation or Reinforced insulation
⚠	Caution! Refer to the explanation in the manual.	▭	Battery

OPERATING INSTRUCTIONS



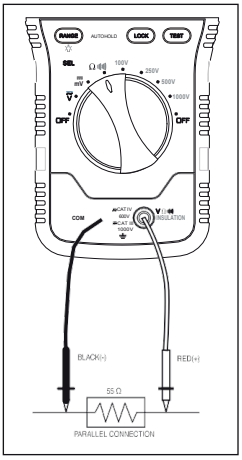
AC/DC Voltage

- Set the rotary selector to $\tilde{V}$ position.
- The meter defaults at AC. Press (SEL) button momentarily to toggle between AC and DC.
- Insert red lead into V terminal and black lead into COM terminal.
- Connect black probe to ground and red probe to the side of the circuit closest to the power source.



DC milli-Voltage

- Set the rotary selector to $\overline{\overline{mV}}$ position.
- Insert red lead into V terminal and black lead into COM terminal.
- Connect black probe to negative side of the circuit and red probe to positive side of the circuit coming from the power source.



Resistance

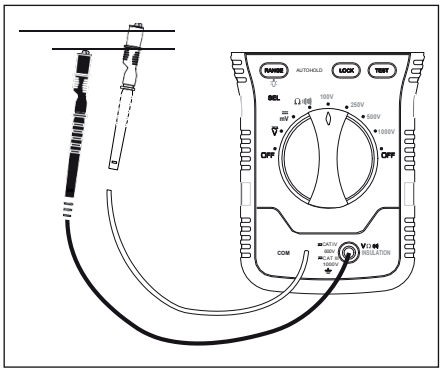
- Set the rotary selector to Ω position. is displayed.
  The meter defaults at Ω
- Press (SEL) button momentarily to select .
- Insert black lead into COM terminal and red lead into Ω terminal.
- Touch the probes across the resistance or circuit to be tested.

If the resistance of the device is below 40 Ω, there is a continuity beep tone.
If the resistance of the device is more than 40 Ω, there is no beep tone.
This is useful for checking wiring connections and operation of switches.

CAUTION

Turn off power and discharge all capacitors on circuit to be tested before attempting incircuit resistance measurements.
Accurate measurement is not possible if external or residual voltage is present.

INSULATION TEST



CAUTION

Turn off power and discharge all capacitors on circuit to be tested before attempting Insulation test.

- Insert test leads into V and COM input terminals.
- Set the rotary selector to the desired test voltage position.
- Connect the lead probes to the circuit under test.
  The display shows - - - - until you press (TEST) and a valid insulation resistance reading is obtained.
- Press and hold (TEST) button to start the test.
  The LCD shows ϟ (high voltage warning) symbol along with the resistance in MΩ or GΩ .
  The (TEST) symbol will be displayed on the LCD until the (TEST) button is released. The meter displays ❯ symbol along with the maximum resistance for the range when the resistance is higher than the maximum display range.

NOTE : ***When the*** (LOCK) button is pressed before the (TEST) ***button, the test remains active until the*** (LOCK) ***button is pressed again.***

- Release the (TEST) button before disconnecting the probes from the circuit under test. Then, the circuit will automatically be discharged through the meter.

CONTROL AND INDICATORS

1. LCD display LCD display with 28 segment bar-graph.

2. (TEST) Press this button to initiate an insulation test in the Insulation test mode.

3. (LOCK) Press this button to enter Test lock mode in the Insulation test mode. LOCK is displayed on LCD in this mode. Press again to release the lock.

4. Selector Turn the power **On** or **Off** and select a test function.

5. V Ω Input terminal for insulation test, voltage and resistance functions.

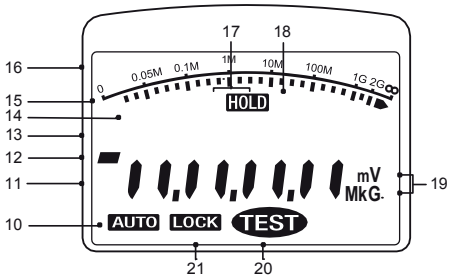
6. COM Common input terminal for all functions.

7. (SEL) Switch between AC and DC.
Switch between Ω and .
Press this button for 2 seconds to enable / disable lights. The backlight automatically turns off after 2 minutes.

8. (RANGE) Press this button repeatedly to cycle through manual ranges.
Press this button for 2 seconds to return to the auto ranging mode. AUTO is displayed on LCD only during auto ranging mode.

9. (AUTOHOLD) Press this button to activate HOLD for capturing the current displayed value. Press this button again to activate AUTO HOLD for automatically capturing a stable reading, beeping to acknowledge, and holding it on the LCD. Press again to return to normal operation.

DISPLAY AND INDICATORS



10. AUTO Indicates autoranging.

11. ⎓ Indicates direct current or alternating current is selected.

12. — Indicates Negative Polarity.

13. Indicates an out of range value in the Insulation test mode.

14. High voltage symbol.

15. Analog bar-graph with scale (Available in the Insulation mode only).

16. Low battery alert.
Replace the battery as soon as possible to ensure accuracy.

17. HOLD HOLD annunciator indicates the HOLD function is selected and HOLD annunciators indicate the Autohold function is selected.

18. Indicates the Continuity test function is selected.

19. mV… Indicates the function being selected and / or the appropriate measurement units.

20. TEST Indicates an insulation test is performed.

21. LOCK Indicates an insulation test is locked on.

Sleep Mode

The meter automatically enters “Sleep mode” after 30 minutes non -use. The meter comes out of the Sleep mode when a button is pressed.
The Sleep mode is always disabled in the Hold or Autohold mode and when performing an insulation test.

Maintenance

Turn instrument off and disconnect test leads.
Clean the instrument by using a damp cloth. Do not use abrasive cleaners or solvents.

GENERAL SPECIFICATIONS

Operating Temperature : 0 °C to 50 °C (32 °F to 122 °F) at <75% R.H.

Storage Temperature : -20 °C to 60 °C (-4 °F to 140 °F) at <80% R.H.

Temperature Coefficient : nominal 0.15 x (specified accuracy) / °C @ <18 °C or >28 °C (<64 °F or >82 °F), or otherwise specified

Relative Humidity : 0% to 95% @ 10 °C to 30 °C (50 °F to 86 °F)
0% to 75% @ 30 °C to 40 °C (86 °F to 104 °F)
0% to 40% @ 40 °C to 50 °C (104 °F to 122 °F)

Altitude : Operating – up to 2000m
Storage – 10000m

Safety : Complies with UL61010-1: 3rd Edition, CAN / CSA-C22.2 No. 61010-1-12 : 3rd Edition, IEC / EN 61010-1 : 2010 ; Overload protaction CAT IV 600V and CAT III 1000V

Overload protection : CAT IV 600V and CAT III 1000V

Certifications : ETL & cETL and CE

Battery : 6 x AAA batteries (NEDA 24A or IEC LR03)

Battery Life : Meter use – 1000 hours
Insulation Test use – Meter can perform at least 1000 tests with alkaline batteries at room temperature. These standard tests of 1000 V into 1 MΩ with a duty cycle of 5 seconds on and 25 seconds off.

Pollution Degree : 2

Dimensions : 178mm x 89mm x 48mm

Weight : 425g

1. AC Voltage

Range	Resolution	Accuracy (50 Hz ~ 60 Hz)	Overload Protection
400.0 mV	0.1 mV	±(1.0 % + 8 dgts)	1000 Vrms
4.000 V	0.001 V		
40.00 V	0.01 V		
400.0 V	0.1 V		
1000 V	1 V		

Input Impedance (nominal) : 10 MΩ, < 100pF
Response : Average RMS

2. DC Voltage

Range	Resolution	Accuracy	Overload Protection
400.0 mV	0.1 mV	±(0.8% + 10dgts)	1000 Vrms
4.000 V	0.001 V		
40.00 V	0.01 V		
400.0 V	0.1 V		
1000 V	1 V		

Input Impedance (nominal) : 10 MΩ, < 100pF

3. Resistance

Range	Resolution	Accuracy	Overload Protection
400.0 Ω	0.1 Ω	±(1.0 % + 5 dgts)	400 Vrms
4.000 kΩ	0.001 KΩ		
40.00 kΩ	0.01 KΩ		
400.0 kΩ	0.1 KΩ		
4.000 MΩ	0.001 MΩ		
40.00 MΩ	0.01 MΩ	±(1.5% + 10dgts)	

Input Impedance (nominal) : 10 MΩ, < 100pF

4. Continuity Test

Overload Protection	Open Circuit Voltage	Threshold (Appx.)
400 Vrms	< 0.44 V	< 40 Ω

5. Insulation Test

Output Voltage	Display Range	Resolution	Test Current	Accuracy
100 V	0.01 ~ 20.00 MΩ	0.01 MΩ	0.5mA @ 100 KΩ	(3 % + 5)
	20.0 ~ 100.0 MΩ	0.1 MΩ		
250 V	0.01 ~ 20.00 MΩ	0.01 MΩ	0.5mA @ 250 KΩ	(3 % + 5)
	20.0 ~ 200.0 MΩ	0.1 MΩ		
500V	0.01 ~ 20.00 MΩ	0.01 MΩ	0.5mA @ 500 KΩ	(3 % + 5)
	20.0 ~ 200.0 MΩ	0.1 MΩ		
	200 ~ 500 MΩ	1 MΩ		(5 % + 5)
1000 V	0.01 ~ 20.00 MΩ	0.01 MΩ	0.5mA @ 1 MΩ	(3 % + 5)
	20.0 ~ 200.0 MΩ	0.1 MΩ		
	200 ~ 2000 MΩ	1 MΩ		(5 % + 5)

Short-Circuit Test Current (nominal) : 0.5 mA
Auto Discharge : Discharge time <1 sec. for C ≤ 1 uF
Minimum Measurement : 0.1 MΩ

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