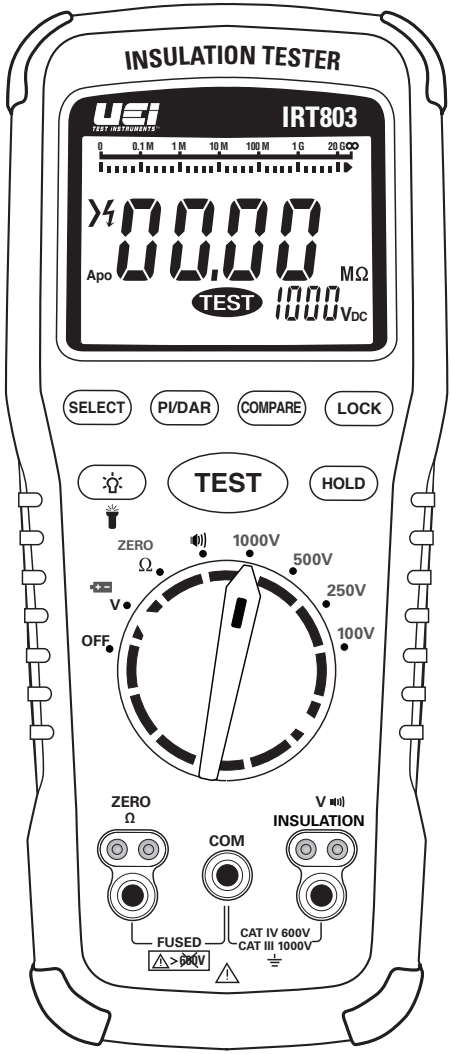
TEST INSTRUMENTS

IRT803

1000V AC/DC Digital Insulation Resistance Tester

INSTRUCTION MANUAL

ENGLISH



Intertek

600V CAT IV

1000V CAT III

RoHS Compliant

CE

Test Equipment Depot
1-800-517-8431

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Woburn, MA 01801
Phone: 781-665-1400
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GENERAL SPECIFICATIONS

- **Operating Temperature:** 32˚ to 122˚F (0˚ to 50˚ C)
- **Storage Temperature:** 14˚ to 122˚F (-10˚ to 50˚C)
- **Operating Humidity:** <75%
- **Operating Altitude:** 6,562 ft (2000m)
- **Pollution Degree:** 2
- **Backlight:** Yes
- **Refresh Rate:** 3/sec
- **Over-range:** "OFL" is displayed.
- **Dimensions:** 8.27" x 3.52" x 2.17"
- **Item Weight:** 1.283 lbs.
- **Calibration:** Recommended annually
- **CAT Rating:** CATIV 600V/CATIII 1000V
- **Certifications:** cETLus 3rd edition, CE Conformity, CATIV 600V, CATIII 1000V, IP42, RoHS, 6' Drop Protection, IEC/EN 61010-1: 2010
- **Battery Type:** (AA) 4
- **Test Leads:** Silicone test leads w/ alligator clips (red and black) (ATL57), Remote Probe
- **Accuracy: ± (% of reading + # of least significant digits)**
- **Bargraph:** 30 segments

IMPORTANT SAFETY WARNINGS

⚠ **WARNING**

Read entire Safety Notes section regarding potential hazard and proper instructions before using this meter. In this manual the word "**WARNING**" is used to indicate conditions or actions that may pose physical hazards to the user. The word "**CAUTION**" is used to indicate conditions or actions that may damage this instrument.

⚠ **WARNING**

To ensure safe operation and service of the tester, follow these instructions. Failure to observe these warnings can result in severe injury or death.

⚠ **WARNING**

- Before each use, verify meter operation by measuring a known voltage.
- Never use the meter on a circuit with voltages that exceed the category based rating of this meter.
- Do not use this meter during electrical storms or in wet weather.
- Do not use the meter or test leads if they appear damaged.
- Ensure meter leads are fully seated and keep fingers away from the metal probe contact when making measurements. Always grip the leads behind the finger guards molded into the probe.
- Do not open the meter to replace batteries while the probes are connected.
- To avoid false readings that can lead to electrical shock, replace batteries if a low battery indicator appears.
- Unless measuring voltage, shut off and lockout power before measuring resistance.
- Always adhere to national and local safety codes. Use proper personal protective equipment (PPE) to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Always turn off power to a circuit or assembly under test before cutting, unsoldering or breaking the current path. Even small amounts of current can be dangerous.
- Always disconnect the live test lead before disconnecting the common test lead from the circuit.
- In the event of electrical shock, ALWAYS bring the victim to the emergency room for evaluation, regardless of victim's apparent recovery. Electrical shock can cause unstable heart rhythms that may need medical attention.
- If any of the following occur during testing, turn off the power source to the circuit being tested: arching, flame, smoke, extreme heat, smell of burning materials or discoloration or melting of components.

⚠ **WARNING**

Higher voltages require greater awareness of physical safety hazards. Before connecting the test leads; turn off power to the circuit under test, set meter to the desired function and range; connect the test leads to the meter first, then connect to the circuit under test. Reapply power. If an erroneous reading is observed, disconnect power immediately and recheck all settings and connections.

⚠ **WARNING**

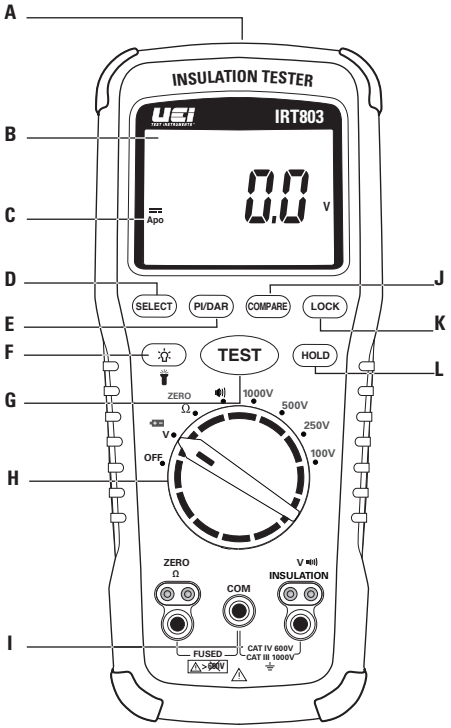
This meter is designed for trade professionals who are familiar with the hazards of their trade. Observe all recommended safety procedures that include proper lockout utilization and use of personal protective equipment that includes safety glasses, gloves and flame resistant clothing.

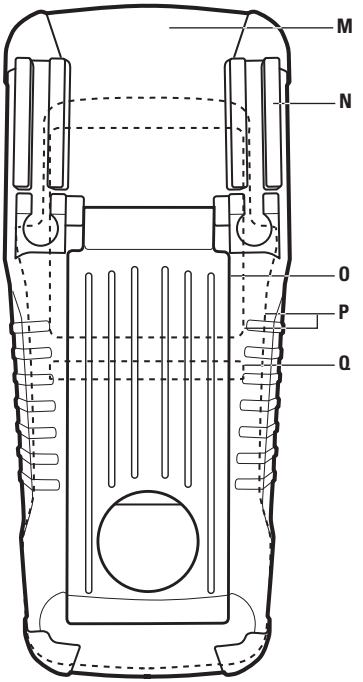
SYMBOLS

⎓	DC (Direct current)	~	AC (Alternating Current)
Apo	Auto Power Off Active	▬	Negative DC
⊟	Low Battery	ϟ	High Voltage
V	Voltage	COMPARE	Compare
Ω	Ohms/Resistance	PASS	Pass
⚠	Warning or Caution	TEST	Test
▭	Fuse	RUN TIME	Run Time
k	Kilo	HOLD	Hold
M	Mega	LOCK	Lock
G	Giga	〉	Greater Than
PI DAR	PI/DAR		
ZERO	ZERO	30 Segment Bargraph	
⏚	Ground		

CATEGORY DEFINITIONS

Measurement Category	Short-Circuit (typical) kA[a]	Location in the building installation
II	< 10	Circuits connected to mains socket outlets and similar points in the MAINS installation
III	< 50	Mains distributions parts of the building
IV	> 50	Source of the mains installation in the building





A. Worklight: Lights work area in dark environments.

B. Display: High contrast and backlit.

C. Apo: Auto power off after 10 minutes of use

D. Select Button:

- Used to choose measurement mode from a single dial selection.

E. PI/DAR (Polarization Index/Dielectric Absorption Ratio) Button: Use PI for test of insulation deterioration and DAR for extended insulation resistance test.

- Press x1 for PI mode.
- Press x2 for DAR mode.

F. Back light/ Worklight Button: Press to turn on worklight and back light.

G. Test Button: Start and stop measurement insulation, earth-bond resistance test and PI/PAR test. Also, used for testing the fuse.

H. Function Dial: Turns on meter and is used to select the function.

I. Category Max Indicator: Maximum CAT Rating for input jacks.

- Use CATIII test leads or higher
- Zero/Ω Test Lead Port: Fused, used for Zero Ohms.
- Common Test Lead Port:
- Volt/Insulation Test Lead Port: CATIV 600V/CATII 1000V, used for Volts, Continuity and Insulation test

J. Compare Button: Used to set a pass/fail compare level for insulation measurements.

K. Lock Button: Locks insulation or earth-bond resistance test to ON position. When pressed before the **TEST button**, the test remains active until you press the lock or test button again to release the lock.

L. Hold Button:

- Press x1 for Hold mode.

M. Protective Rubber Boot: With molded comfortable grip.

N. Test Lead Holders: Used for hands-free testing or storage

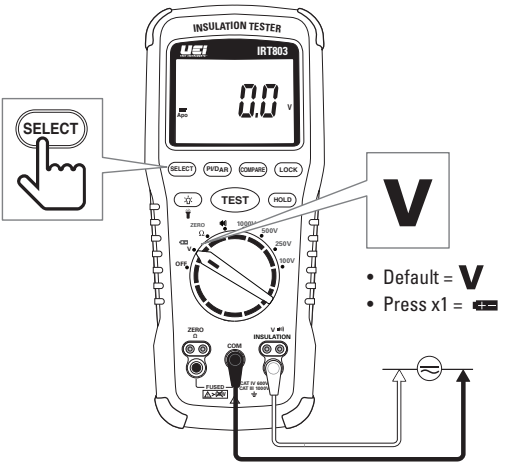
O. Kick Stand: For easy viewing of screen when testing.

P. Battery and Fuse Cover: (under protective rubber boot)

Q. Serial Number (under kick stand)

Voltage <600V AC/DC

If the meter detects higher than AC or DC 1.5V, the meter will automatically choose AC or DC.



⚠ **WARNING**

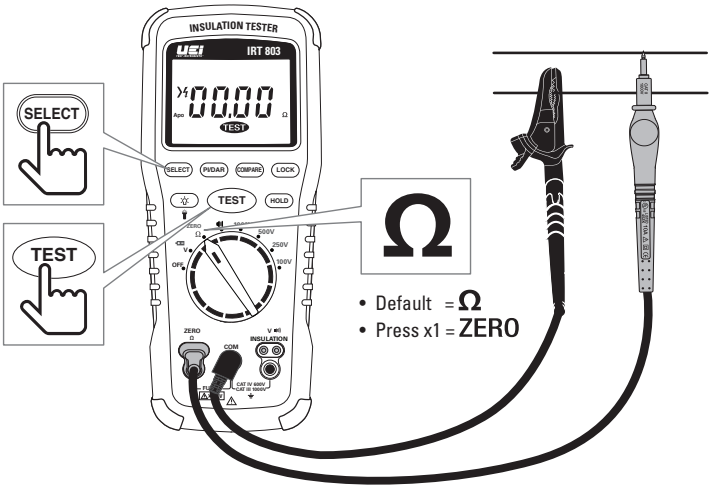
- **Use CATIII rated Test leads or higher.**
- **Do not attempt to measure more than 1000V AC/DC.**
- **Keep hands below finger guards when measuring high voltage levels.**

Features:

RANGE	RESOLUTION	ACCURACY
600V	0.1V	±(2% +3 dgts)

1. Bandwidth 45HZ to 400Hz
2. Input Impedance: 10MΩ (nominal), < 100pF
3. Overload Protection: AC 1000V rms or DC.

Earth-Bond Resistance <20kΩ



- Short the ends of the test leads together, press the **SELECT button** and wait until **ZERO** appears. The meter measures the test leads resistance, stores the data/results in memory and subtracts it from the reading. The test lead resistance is saved even after the meter is powered off.
- The display will show "----" until a valid resistance reading is detected.
- The High Voltage symbol will display if greater than 2V AC or DC is present. If the meter "chirps"when you press the **TEST button**, test is corrupted due to voltage being present.
- Press and hold the **TEST button** on the Meter or Remote Probe to start test. Test stops when the button is released.

Features:

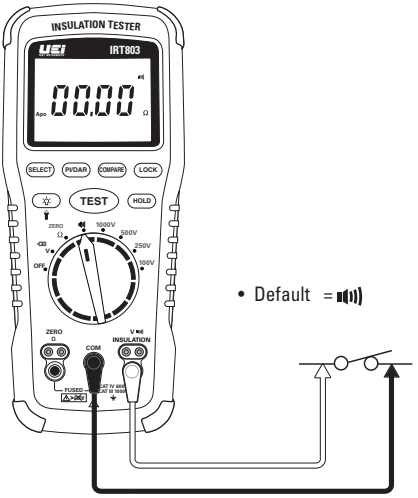
NOTE: *When the resistance is higher than the maximum display range the tester displays the > symbol and the maximum resistance for the range.*

⚠ WARNING
NEVER test resistance on a live circuit. (Overload Protection: AC 2V rms or DC)

RANGE	RESOLUTION	ACCURACY
20.00Ω	0.01Ω	±(1.5% +3)
200.0Ω	0.1Ω	
2000Ω	1Ω	
20.00kΩ	0.01kΩ	

1. Accuracies apply from 0 to 100% of range
2. Open Circuit Test Voltage: > 4.0V, < 8V
3. Short Circuit Current: > 200.0 mA

Continuity



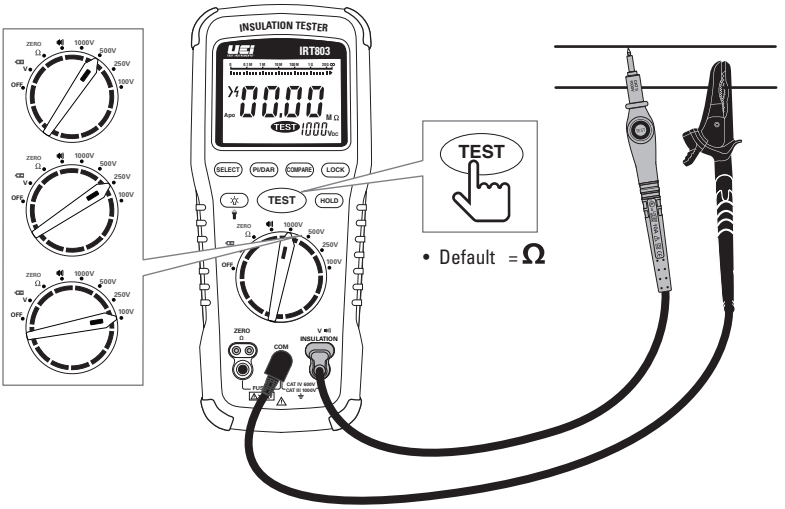
• Default =

Features: HOLD

⚠ **WARNING**

- **Do not measure resistance/continuity on a live circuit.**
- **Beeper sounds constant as long as circuit is complete.**
- **Beeper sounds when a short (<40Ω) is detected.**

RANGE	RESOLUTION	AUDIBLE THRESHOLD
400.0Ω	0.1Ω	Approx. 40Ω



- The display will show "----" until test button is pressed.
- The High Voltage symbol will display if greater than 30V AC or DC is present.
- Press and hold the **TEST button** on the Meter or Remote Probe to start the test. Test stops when **TEST button** is released.
- Keep test leads on test points after **TEST button** is released. The circuit under test will then discharge.

Features:

Note: *When the resistance is higher than the maximum display range the tester displays the > symbol and the maximum resistance for the range.*

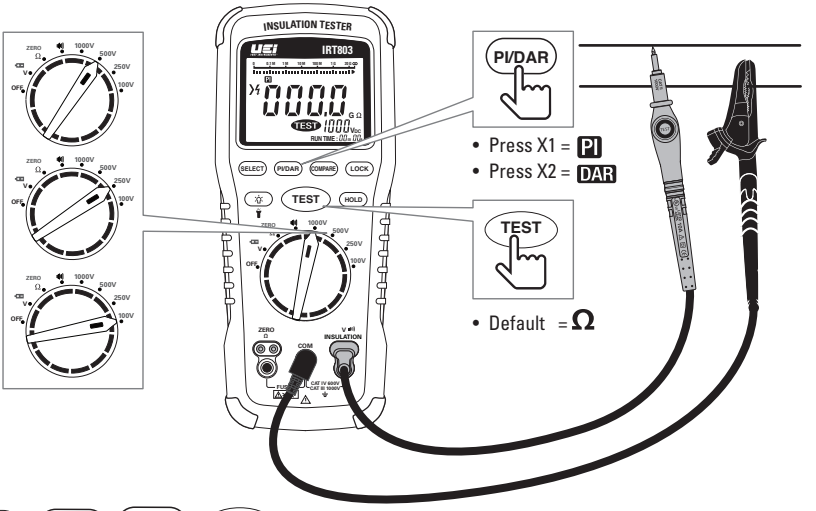
⚠ WARNING

Do not measure resistance on a live circuit.

OUTPUT VOLTAGE	DISPLAY RANGE	RESOLUTION	TEST CURRENT	ACCURACY
100V (0% to +20%)	0.01 to 20.00MΩ	0.01MΩ	1mA @ 100kΩ	±(3% +5dgts)
	20.0 to 100.0MΩ	0.1MΩ		
250V (0% to +20%)	0.01 to 20.00MΩ	0.01MΩ	1mA @ 250kΩ	±(1.5% +5dgts)
	20.0 to 200.0MΩ	0.1MΩ		
500V (0% to +20%)	0.01 to 20.00MΩ	0.01MΩ	1mA @ 500kΩ	±(1.5% +5dgts)
	20.0 to 200.0MΩ	0.1MΩ		
	200 to 500MΩ	1MΩ		
1000V (0% to +20%)	0.1 to 20.0MΩ	0.1MΩ	1mA @ 1MΩ	±(1.5% +5dgts)
	20 to 2000MΩ	1MΩ		
	2.0 to 20.0GΩ	0.1GΩ		±(10% + 3dgts)

1. Measurement Range: 0.01MΩ to 20GΩ
2. Test Voltages: 100, 250, 500, 1000V
3. Test Voltage Accuracy: 0 to +20%
4. Short-Circuit Test Current: 1mA nominal
5. Auto Discharge: Discharge time <0.5 sec. for C = 1μF or less
6. Live Circuit Detection: Inhibit test if terminal voltage >30V prior to initialization of test
7. Maximum Capacitive Load: Operable with up to 1μF load

Polarization Index & Dielectric Absorption Ratios (1000V, 500V, 250V, 100V)



Features:

- Because of the time required for the PI and DAR tests, alligator clips are recommended.
- Use rotary selector dial to select desired test voltage.
- The display will show "----" until test starts.
- The High Voltage symbol will display if greater than 30V AC or DC is present.
- Press and release the Test Button on the Meter or Remote Probe to start the test.

Note: *When the resistance is higher than the maximum display range the tester displays the > symbol and the maximum resistance for the range.*

⚠ **WARNING**
NEVER measure resistance on a live circuit.

Compare Function

Use the Compare Function to set "Pass/Fail" compare levels for insulation measurements.

Press the Compare Button to select the desired compare value. Choose from the following values:

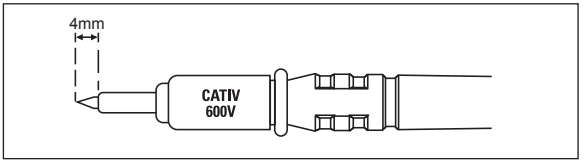
- 100kΩ
- 200kΩ
- 500kΩ
- 1MΩ
- 2MΩ
- 5MΩ
- 10MΩ
- 20MΩ
- 50MΩ
- 100MΩ
- 200MΩ
- 500MΩ

Perform Insulation tests as described in this manual. The PASS symbol will appear on display if the measured value is greater than the selected value.

Press and hold the **Compare button** to stop/disable the Compare function.

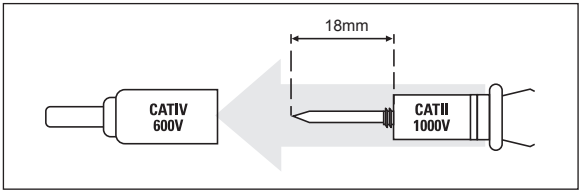
Test Lead Notes

CATIV 600V Measurement Locations



- Ensure the test lead shield is pressed firmly in place. Failure to use the CAT IV shield increases arc-flash risk.

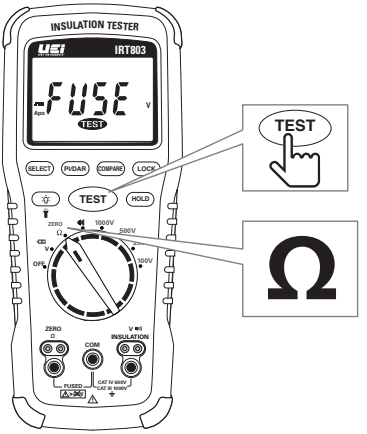
CAT II Measurement Locations



- CAT IV shields may be removed for CAT II locations. This will allow testing on recessed conductors such as standard wall outlets. Take care not to lose the shields.

⚠ **WARNING:** Test Lead category protections apply only to test leads and should not be confused with the meter's specific CAT rating. Observe the maximum category protection indicated on the meter the test leads are plugged into.

Testing the Fuse



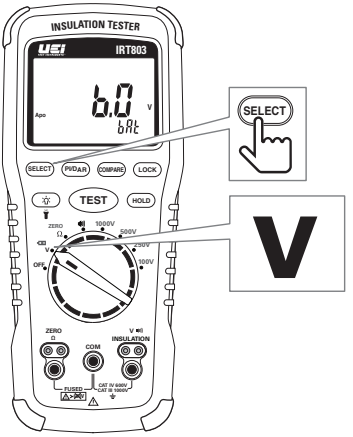
⚠ **WARNING:** To avoid electrical shock or injury, remove the test leads and any input signals/voltages before replacing the fuse.

- Turn the rotary selector dial to (ZERO/Ω) position.
- Press and hold the **Test Button**. If the display shows "FUSE" the fuse is bad and should be replaced. Please see Fuse Replacement section of this manual.

Testing the Batteries

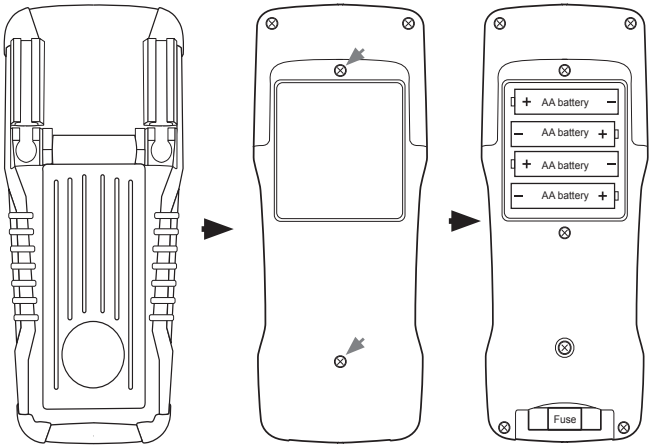
The meter continuously monitors battery voltage. If the Low Battery indicator is displayed, replace the batteries.

To manually test the batteries:



- Turn the rotary selector dial to the Battery/Voltage position, with no test leads connected.
- Press the **Select button** to start the battery test. The battery voltage is displayed for 5 seconds.Then the voltage function is displayed again.

Battery Replacement

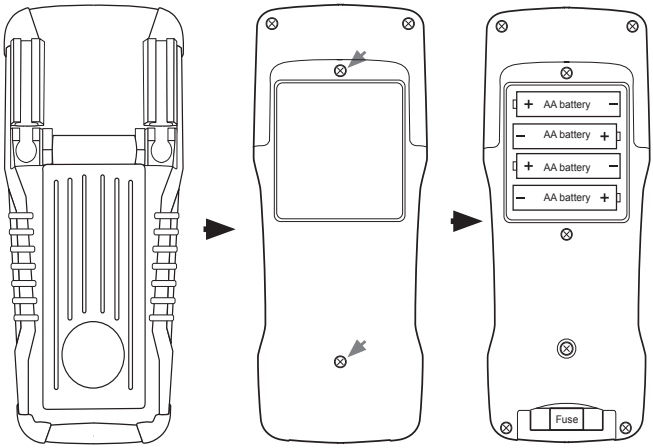


Removed protective rubber boot.

Removed battery cover.

- When the batteries are too low for safe operation, the Low Battery indicator will display
- Remove protective rubber boot.
- Remove battery cover.
- Replace the batteries (4 AA).
- Replace the battery cover
- Replace the protective rubber boot.

Fuse Replacement



Removed protective rubber boot.

Removed battery cover.

- Remove protective rubber boot.
- Remove battery cover.
- Replace the fuse (F 440mA 1000V 1R 10kA).
- Replace the battery cover.
- Replace the protective rubber boot.

DISPOSAL

⚠ **CAUTION:** This symbol indicates that equipment and its accessories shall be subject to separate collection and correct disposal.

CLEANING

Periodically clean your meter's case using a damp cloth. DO NOT use abrasive, flammable liquids, cleaning solvents, or strong detergents as they may damage the finish, impair safety, or affect the reliability of the structural components.

STORAGE

Remove the batteries when instrument is not in use for a prolonged period of time. Do not expose to high temperatures or humidity. After a period of storage in extreme conditions exceeding the limits mentioned in the General Specifications section, allow the instrument to return to normal operating conditions before using it.

WARRANTY

The IRT803 is warranted to be free from defects in materials and workmanship for a period of 1 year from the date of purchase. If within the warranty period your instrument should become inoperative from such defects, the unit will be repaired or replaced at UEi's option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Batteries and consequential damage resulting from failed batteries are not covered by warranty.

Any implied warranties, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the express warranty. UEi shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expenses or economic loss.

A purchase receipt or other proof of original purchase date will be required before warranty repairs will be rendered. Instruments out of warranty will be repaired (when repairable) for a service charge.

This warranty gives you specific legal rights. You may also have other rights, which vary from state to state.