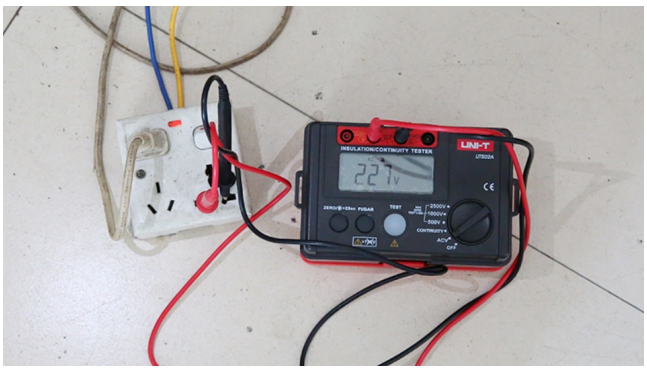


UNI-T UT501B Insulation Resistance Tester Instruction Manual

Contents

UNI-T UT501B Insulation Resistance Tester

Product Information

The product is a tester that is designed and manufactured in compliance with IEC61010 standard. The tester is equipped with features such as PI/DAR measurement, low resistance measurement, voltage measurement, automatic voltage release, backlight for work in dark sites, red light for warning, and low battery indication. It has a LCD display that shows the unit and function simultaneously. The tester complies with safety standards such as Overvoltage CATIII 600V and Pollution Degree 2 as per IEC61010. It comes with test leads, operating manual, and carrying case.

Product Usage Instructions

Before using the tester, read the safety information provided in the manual carefully. Use the tester always as specified in the manual and keep it for future use. When measuring high voltage, take extreme caution to avoid electric shock.

Insulation Resistance Measurement

1. Set the rotary switch to the desired test voltage (250V/500V/1000V).
2. Connect the red test lead to the HI terminal and the black test lead to the LO terminal.
3. Place the two test leads on the object to be measured.
4. Press the TEST button to start insulation resistance measurement.

Low Resistance Measurement

1. Set the rotary switch to CONTINUITY.
2. Connect the red test lead to the V jack and the black test lead to the G jack.
3. Press the ZERO/LIGHT button to reset the display to zero if necessary.
4. Place the two test leads on the object to be measured.
5. Press the TEST button to start low resistance measurement.

Voltage Measurement

1. Set the rotary switch to ACV.

2. Connect the red test lead to the V jack and the black test lead to the G jack.
3. Place the two test leads on the object to be measured.

PI/DAR Measurement

1. Press the PI/DAR button to select polarization index/dielectric absorption ratio measurement.
2. Press the TEST button to start PI measurement or press the PI/DAR button two times to select DAR parameter and then press TEST to start DAR measurement.

If the low battery indicator shows on the upper left corner of the LCD after turning on the tester, it means that the battery is almost used up and needs to be replaced. Take extreme caution to avoid electric shock when replacing the battery.

Overview

UT501B Insulation Resistance Tester is designed with brand-new design and combination of massive integrated and digital circuits; it can measure insulation resistance, low resistance, AC voltage, etc., and enjoys high degree of accuracy, stable performance, easy operation and reliability. It is used for insulation resistance measurement for insulation materials and various kinds of electric equipment's such as transformer, electric machines, cables, switches, electrical appliances, a ideal tool for electric equipment maintenance, testing and inspection.

Safety Information

The tester is designed and manufactured in compliance with IEC61010 standard. The manual covers safety information related to the safe operations and conditions of the instrument. please read carefully before using the instrument.

Warning

- Please read through and comprehend this Manual before using the device.
- Use always as specified in the manual, and keep it for future use.
- Wrong operation may cause accident and damage to instrument during test. On this instrument indicates for safe operation, user shall carry out operation according to relevant instructions in this Manual.

	**Danger**	conditions and actions that may cause serious or fatal damage.
	**Warning**	Alerts users to avoid electric shock.
	**Caution**	conditions and actions that may cause damage to the instrument or affect accurate m easurement.

Danger

- Do not measure circuit with voltage over 750VAC.
- Do not test in flammable place. The spark may cause explosion.
- Do not operate the instrument if the surface is humid or operator's hand is wet

- Do not touch conductive part of test leads lead when measuring.
- When test leads are shorted and connected to the instrument, do not press TEST key.
- Do not open battery cover during test.
- Do not touch the tested line during insulation measurement.

Warning

- If the instrument goes wrong, please stop using it. Eg: the instrument damaged or had exposed metal.
- Be extremely careful when the instrument is working under voltage exceeding 33Vrms,46.7Vacrms or 70Vdc. The voltage may cause electric shock.
- When high resistance measurement is conducted, electric storage in circuit under test must be discharged. • Do not replace battery when instrument is wet.
- Make sure secure connection between test leads and test ports of device.
- Make sure instrument is shutdown before opening battery cover. A Caution
- Circuit under test must be completely discharged and isolated from power circuit before resistance measurement.
- If test leads or adaptor need to be replaced due to damage, replace it with test leads or adaptor of the same model or electrical specification.
- Do not use the instrument if low battery indicator shows (k). If the instrument will not be used for a long time, please take out the battery and keep it properly.
- Do not keep or operate the instrument in high temperature, high humidity, inflammable, explosive and strong electromagnetic field environment.
- Clean instrument housing with wet cloth or cleaning agent. Do not use abrasives or solvent.
- When instrument is wet, dry it before storage.

Electrical Symbols

	Risk of electric shock
	Double insulation or reinforced insulation
	AC
	Grounding
	Comply with European Union standards

Technical Specifications

- Accuracv: #(a% of reading + b digits), calibration per year.
- Working conditions:
  - Temperature: 23‡5°C
  - Humidity: 45~75%RH

Insulation Resistance Measurement

Rated voltage	250V	500V	1000V
Measurement range	0.00MΩ～5.5GΩ	0.00MΩ～5.5GΩ	0.00MΩ～5.5GΩ
Open circuit voltage	DC 250V+10%	DC 500V+10%	DC 1000V+10%
Rated current	Under 250KΩ 1.00mA～1.10 mA	Under 500KΩ 1.00mA～1.10 mA	Under 1MΩ 1.00mA～1.10 mA
Shorted Current	Approx. 2mA		
Accuracy range	0.00MΩ～99.9MΩ:±(3%+5)		
	100MΩ～5.5GΩ:±(5%+5)		

Polarization Index/Dielectric Absorption Ratio Measurement

PI Measurement	10min insulation resistance/1min insulation resistance			
PI Value	Greater than or equal to 4	4—2	2.0—1.0	Less than or equal to 1.0
Criterion	Best	Good	Warning	Bad
DAR Measurement	1min insulation resistance/30s insulation resistance			
DAR Measurement	1min insulation resistance/15s insulation resistance			
DAR Value	Greater than or equal to 1.4	1.25–1.0	Less than or equal to 1.0	
Criterion	Best	Good	Bad	

Low Resistance Measurement

Open-circuit voltage	Approx. 5.0V
Measurement range	0.00～200Ω
Resolution	0.01Ω
Accuracy	±(2%+3)

Voltage Measurement

	AC voltage
Measurement range	30～750V(50/60Hz)
Resolution	1V
Accuracy	±(2%+3)

- Display: LCD, maximum reading is 1999
- Low battery indication:
- Overload indication: ” > 5.5G” shows under insulation resistance measurement.
- Automatic range
- Unit display: display the unit and function simultaneously
- Automatic voltage release Backlight for work in dark sites
- Red light for warning
- Work condition: 0°C~ 40°C/ relative humidity is 85% or less
- Storage condition: -20°C~ 60°C/relative humidity is 90% or less. Altitude: <2000m)
- Dimension: 150mm(L)x100mm(W)x71 mm(D)
- Current consumption: about 200mA (under maximum 2500V output) (about 10mA under normal condition.)
- Accessories: test leads, alkaline battery 1.5V (AA battery)X6, operating manual, carrying case.

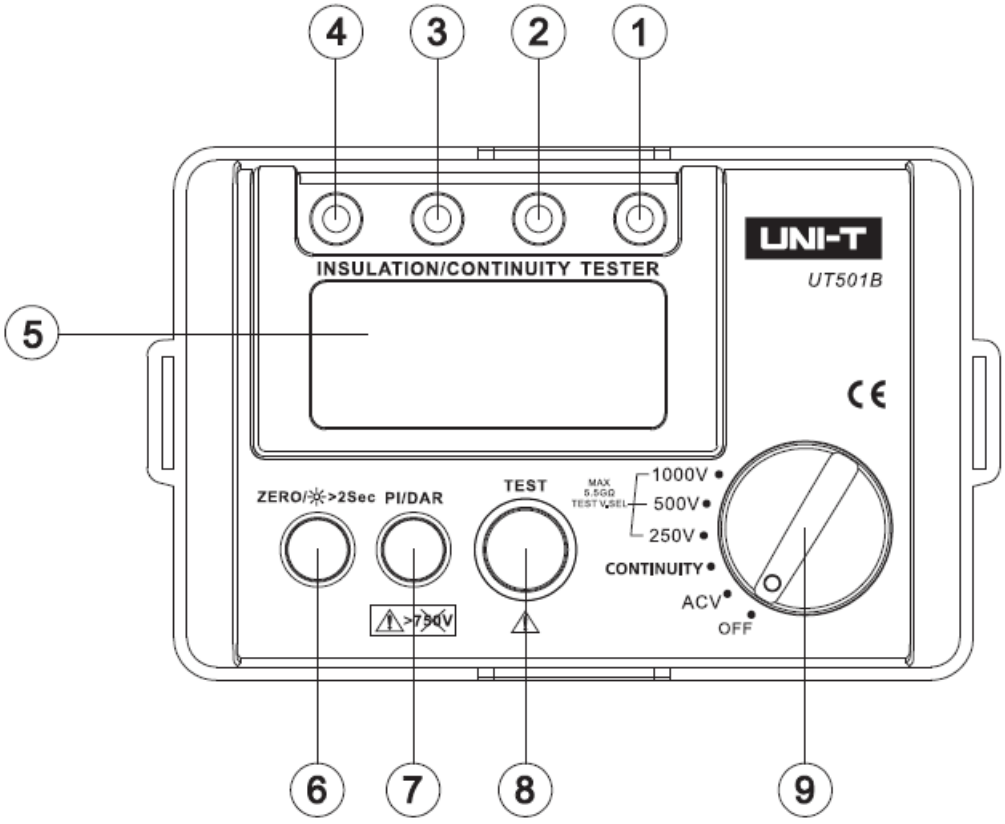
Weight	0.7kg (including battery)
Power	alkaline battery 1.5V (AA battery)X6

Safety compliances:

- Overvoltage CATIII 600V, Pollution Degree 2 as per IEC61010
- Compliance Standards: EN61010-1:2010 EN61010-2-030:2010 EN61557-1:2007 EN61557-2:2007 EN61557-4:2007
  EN61326-1:2013 EN61326-2-2:2013

Tester’s Structure(Front View)

1 EARTH: sampling jack of insulation resistance measurement
2 G. Negative jack of voltage measurement input
3 V: Positive jack of voltage measurement input
4 LINE: high voltage output jack for insulation resistance measurement
5 Display LCD screen
6 Backlight button
7 Switch button for PI/DAR
8 Test button
9 Rotary knob



Front View

LCD Display

Buttons and Rotary Knob

1. PI/DAR button: measures polarization index/dielectric absorption ratio.
2. ZERO/LIGHT button: turns on/off the backlight or resets the display to zero for low resistance measurement.
3. TEST button: turns on/off insulation and low resistance measurement.
4. Rotary knob set to ACV: to measure AC voltage.
5. Rotary knob set to CONTINUITY: to measure low resistance.
6. Rotary knob set to 250V/500V/1000V: to select test voltage for insulation resistance measurement.

Preparations before Measurement

If low battery indicator shows on upper left corner of LCD after the meter is turned on, it means battery is almost used up and need to be replaced.

AC Voltage Measurement (See Figure 1)

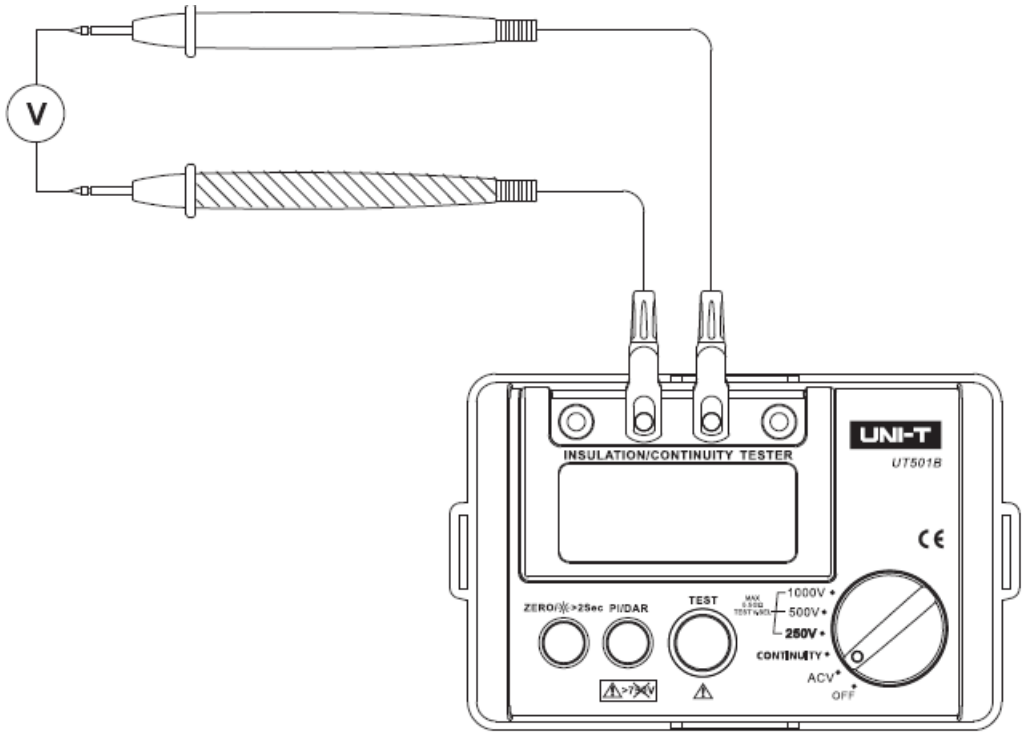


Figure 1

1. Set the rotary switch to ACV.
2. Insert the red test lead into “V” jack and the black test lead into “G” jack. A Caution * Do not input voltage higher than 750Vrms. It is possible to display higher voltage, but it may damage the instrument. * Please take extreme caution in order to avoid electric shock when measuring high voltage. * Disconnect test leads and tested circuits and remove test leads away from input jacks after completing the measurement. * If battery cover is opened, do not measure.

Low Resistance Measurement (See Figure 2)

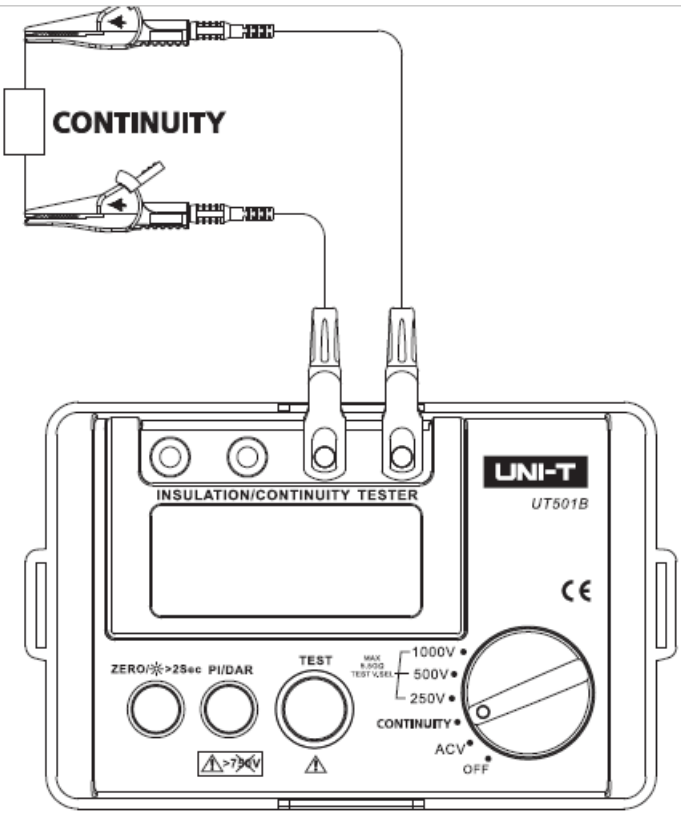


Figure 2

Wiring method:

1. Before insulation resistance measurement, the circuit under test shall be discharged completely and be totally isolated from power circuit.
2. Insert red test lead into EARTH port, black test lead into G port.
3. Connect red, black alligator clip or test probe with the circuit under test. With the instrument connected to tested circuit as described above, turn rotary switch to CONTINUITY, press TEST, ground continuity measurement will be conducted.

Insulation Resistance Measurement (See Figure 3)

Caution: Before test, make sure no electricity exist in circuit under test. Do not measure insulation of charged equipment or line.

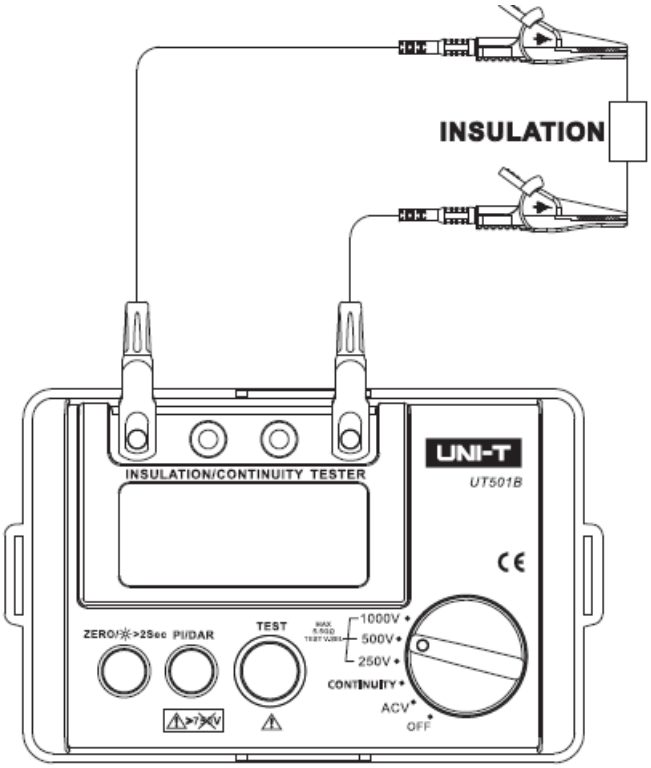


Figure 3

* Do not measure when the battery cover is opened. In order to check whether the measurement values are accurate or not, UT501B has been designed with a 10M resistor. The resistor offers 1% accuracy for self – check internally. Refer to the wiring operation as follows: (See Figure 4)
Operating instructions: connect wire as indicated in the figure 4, then switch to any insulation measurement range, press down TEST button, LCD will display the value 10.0M 2.

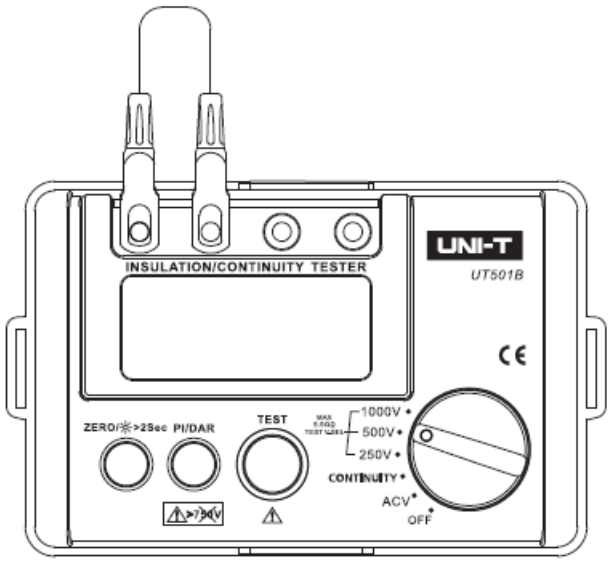


Figure 4

Caution: Do not short-circuit the test leads under high-voltage output status or make insulation measurement after high voltage has already been output.

- Turn the knob to select test voltage 250V/500V/1000V.
  - Before measuring insulation resistance, the circuit-under-test must be fully discharged and isolated from power circuit.
  - Insert red test lead into “LINE” input port, black test lead into “EARTH” input port.

    - Connect red, black alligator clip with circuit under-test, positive voltage output is from LINE port.
- Continuous measurement With the knob already set to test voltage 250V/500V/1000V, then press TEST button the instrument will be self-locked to measure continuously. The test voltage will be output and TEST button will light up. With the measurement finished, press TEST button to unlock and stop the measurement.

Caution:

- Before test, make sure no electricity exist in circuit under test. Do not measure insulation of charged equipment or line.
- In completion of test, do not touch circuit. Stored capacity in the
- In completion of test, do not touch circuit. Stored capacity in the circuit may cause electric shock. When red and black clips are connected to the circuit under test, high voltage is output from LINE jack and the current from EARTH jack.
- Do not measure when the battery cover is opened.
- Polarization index measurement Under insulation measurement mode, press PI/DAR button once to select PI parameter. the screen displays Time 1(1 min)/Time2 (10mins), then press TEST to start PI measurement.
- Dielectric absorption ratio measurement Under insulation measurement mode, press PI/DAR button two times to select DAR parameter, the screen displays Time 1(30s)/ Time2(1min), then press TEST to start DAR measurement, then press TEST three times to select another DAR, the screen shows Time 1(15s)/Time2(1min), press to begin another DAR measurement.

Battery Replacement (See Figure 5)

Danger
To avoid possible electric shock, remove wires from the instrument when replacing battery.

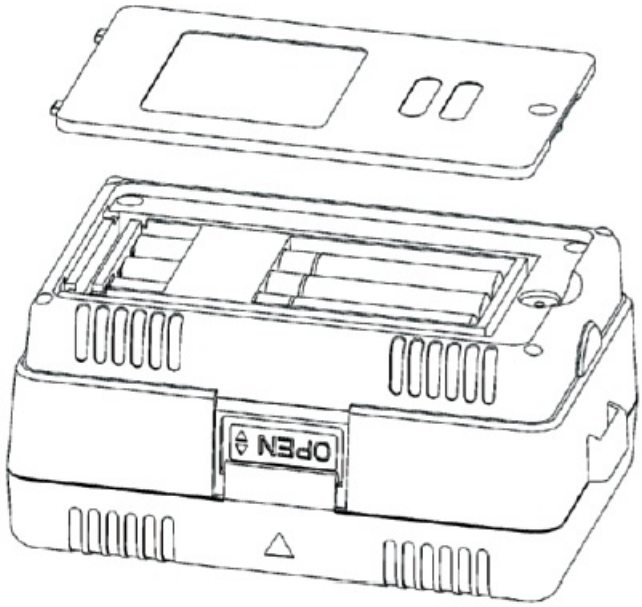


Figure 5

Caution

- Mixed use of new and old batteries is not allowed. * Please note battery polarity when installing the battery.

Danger

- Do not measure when battery box is open.

If ” ” appears on LCD, it means battery shall be replaced. Please follow the steps below:

- Turn off power (the knob set to OFF), and move test lead line away.
- Loosen screw on battery box, move the cover, and replace 6 batteries.
- After replacing battery, make sure screw is secured.

Maintenance

Cleaning the housing

- Clean the instrument surface with soft cloth or sponge dampened with clean water.
- To avoid damage to the instrument, do not submerge it into the water.
- If the instrument is wet, dry it before storage.
- When it is necessary to verify or repair instrument, please deliver the instrument to qualified professional serviceman or designated repairing department.

END
Manual content subject to change without notice!

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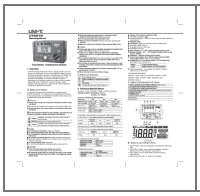	UNI-T UT501B Insulation Resistance Tester [pdf] Instruction Manual UT501B Insulation Resistance Tester, UT501B, Tester, Resistance Tester, UT501B Resistance Tester, Insulation Resistance Tester