Instruction manual

Ⅰ.recount with emotion

The digital grounding resistance tester is a new generation of electrician test instrument, which improves the circuit, structure and technology of traditional grounding resistance tester, together with the beautiful and practical new wave style, making it more functional, more accurate, more convenient and reliable operation, more suitable for field use. It can be used to measure the grounding resistance value of all kinds of power systems, electrical equipment, lightning protection equipment and other grounding systems, but also can measure the resistance value of low-resistance conductors and AC voltage and DC voltage.

Ⅱ. Safety rules and precautions

This product complies with IEC61010 CAT III 1000V safety standard, read this manual carefully before use.

1. Before use, the insulating layer of the meter pen should be checked to be intact and free from damage, exposure and broken wires. It is forbidden to use it before the back cover is closed, otherwise there is a danger of electric shock.

2. While measurements are being made, do not touch exposed wires, connectors, or the circuit being measured.

3. Please make sure the range selector switch is set to the appropriate range before testing.

4. Make sure that the connecting plugs of the wires are tightly inserted into the terminals.

5. Do not connect the meter for test use or replace the battery when it is wet.

6. Do not turn the range function switch while measuring.

7. Do not apply AC voltage or DC voltage exceeding DC1500V between the V test terminal and COM terminal, or it will cause damage and damage the meter.

8. Do not test in flammable places, sparks may cause an explosion.

9. Stop using the instrument if it is damaged or if metal is exposed due to breakage of the test wire.

10. Do not place and store the meter for a long time under high temperature and humidity, condensation and direct sunlight.

11. Be sure to turn the range selector switch to the OFF position after use.

III. Electrical Symbols

DCV	Direct Current Voltage
ACV	Alternating Voltage and Ground Voltage
Ω	Earth resistance
HOLD	Data hold button
Work	Earth resistance Measurement Indicator
OK	Test connection OK indication
	Low battery indicator
⚠	Warning Caution Safety Signs
⚠	Danger of high voltage shock

IV. Performance characteristics

1. Ground resistance measurement range: 0-2000Ω.
2. Display mode: LCD display, maximum display 1999;
3. Over-range display OL.
4. Automatic shutdown: After power on, if there is no action of pressing the button and toggling the knob, it will shut down automatically after about 10 minutes. Pressing the HOLD key can wake it up when it is in hibernation state.
5. Response time: Measurement of grounding resistance, about 5 seconds. Measure the ground voltage for about 1 second.
6. 2 lithium batteries 14500-3.7V× .
7. External dimensions: 189× 89× 55mm.
8. Weight; about 400g (including battery).
9. Environmental conditions:
   working temperature: 0℃-40℃, relative humidity <80%
   Storage temperature: -10℃-50℃, Relative humidity <80%

V. Technical indicators

Accuracy:± (% of readings + words) Guaranteed for one year
Guaranteed Accuracy Environment: 23 C 5°±° C, less than 75% RH

1. Grounding resistance

range	accuracy	resolution
20Ω	2% reading + 10 characters	0.01Ω
200Ω	±(2% reading + 5 words)	0.1Ω
2000Ω		1Ω

Overload protection: 250V AC RMS

2. Ground or AC voltage

range	accuracy	resolution
200V	±(1.2% of readings + 5 words)	0.1V
1000V		1V

Overload protection: 1500V peak, internal resistance approx. 10MΩ Frequency range: 40Hz~400Hz

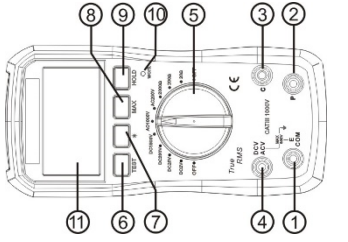
3. DC voltage

range	accuracy	resolution
2V	±(0.5% reading + 5 words)	0.001V
20V		0.01V
200V		0.1V
1500V	±(1% reading + 5 words)	1V

Overload protection: 1500V peak, internal resistance about 10MΩ.

VI. Operation Schematic

1. "E/COM" port (grounding body/voltage measurement negative terminal)
2. "P" port (potential pole)
3. Port "C" (current pole)
4. "DCV /ACV" port (voltage measurement positive)
5. Function changeover switches
6. TEST ground resistance test button
7. Backlit keys
8. MAX Maximum Voltage Measurement Key
9. HOLD data hold button
10. Ground resistance measurement work indicator (WORK)
11. LCD monitors



VII. Operating instructions

7-1, conventional grounding resistance test method

⚠DANGER: A voltage of up to 50 V will be generated between the terminals C-E or P-E when measuring ground resistance! Do not touch the test leads to avoid electric shock.

Please make sure that the test lead plug is securely connected to the test end before

measurement.

1) Connection of test leads

As in Figure 1, the auxiliary grounding rod P1 and C1 will be driven into the ground in a straight line at intervals of 5 to 10 meters from the grounding object under test, with the green wire clamped to the grounding object, connecting the green wire to the instrument terminal E, the yellow wire clamp P1 and the red wire clamp C1.

⚠Note: Please insert the auxiliary grounding rod into the soil with high moisture content. In case of dry ground, sandy ground or ground with gravel, water must be added to keep the grounding rod moist at the point where it is inserted. In case of concrete, put the grounding rod flat and add water, and cover the grounding rod with a wet towel before measuring.

2) Measurement of ground voltage

As shown in Figure 1 with AC voltage 200V gear, respectively, to measure the auxiliary grounding rod C1 to the grounding electrode E and P1 to the grounding electrode E between the AC voltage, please confirm that the value of this voltage must be less than 10V, if the value of this voltage is more than 10V, the measurement of the grounding resistance may produce errors, this time, first of all, will be measured grounding body of the equipment to be disconnected, so that Measurement is made after the ground voltage has dropped.

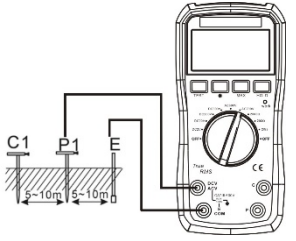


Figure 1

3) Working power supply and connection detection

Connect C1 to port C of the instrument and P1 to port P of the instrument according to Figure 2. Click the "TEST" test button, the work indicator light indicates that the grounding resistance measurement is in progress, if the display " ", indicating that the battery power is insufficient, please charge in time.

The display shows OK , indicating that the measuring circuit between the wire and the E and C terminals is in good condition and that the grounding resistance of the auxiliary ground is within tolerance (**note: when measuring the grounding resistance, the display does not show the OK symbol and the displayed value has no meaning**). If **the screen does not display the OK symbol**, test the wires connected to the E and C terminals or reduce the auxiliary earth resistance to an appropriate level by changing the position of the auxiliary earth rod or wetting the ground with water, and test the red and green wires for breakage by shorting them.

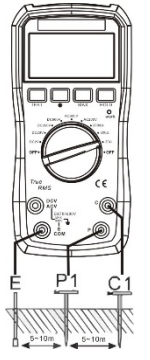


Figure 2

4) Ground resistance measurement

First from the 20Ω range, click the "TEST" button to measure, if the display value is OL, and then in turn with the 200Ω/2000Ω range measurement, the instrument displays the value of the measured ground Resistance value.

⚠Note: When wiring, make sure that the connecting wires are separated from each other. Testing in a state where the test wires are twisted around each other and connected to the void will result in mutual inductance, which will affect the readings, and the auxiliary ground impedance is too large, which will result in an error in the displayed value. Make sure that the auxiliary grounding rods, P and C, are driven into moist ground and make sure that the connecting parts are fully in contact with each other.

7-2 Simple grounding resistance measurement method

This measurement method is a convenient test method set up for cases where it is not possible to strike an auxiliary grounding rod. In this measurement method, an existing grounding electrode with a small grounding impedance, such as a metal water pipe, the common ground of a commercial power system, and the grounding end point of a building, is used in place of the auxiliary grounding rod C and P.

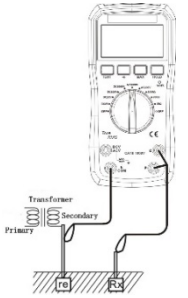


Figure 3

1) Connection of the test

Use a simple test lead to connect the wires as shown in Fig. 3, or short-circuit C and P if you are not using the simple test lead supplied with the instrument.

⚠DANGER: Beware of electric shock when using commercial electronic system grounding methods.

2) Measurement of ground voltage

Please change the range selector switch to AC200V range first and measure the voltage between two grounded objects. Make sure that the voltage is below 10V. If this voltage is more than 10V, the grounding resistance measurement may be inaccurate. In this case, please disconnect the grounding equipment to be measured and let the grounding voltage drop before measurement.

3) Ground resistance measurement

In 20Ω range, click "TEST" button to test, the work light indicates that the measurement is in progress. If OL is displayed, please switch to 200/2000Ω and measure again. The displayed value is the grounding resistance value.

Note: The measured current is about 2mA, so even if a leakage breaker is connected, it will not actuate the breaker.

The true grounding resistance value RX shall be calculated by the following formula:

RX=RE-Re

Re: ground resistance for common grounding such as commercial power systems, RE: meter ground resistance reading.

VIII. Precautions for the use of batteries

Do not change the battery during the test. In addition, to avoid electric shock, before changing the battery, turn the range switch to OFF and remove the test leads, etc. Loosen the screws on the battery cover of the unit and open the battery cover. Replace the battery with a charged battery, close the battery cover, and tighten the screws. **Note: The batteries must not be installed with the wrong polarity.**

When you receive the meter, please use our charging adapter with cell phone charger (DC5V-USB output: 1A or above charger is available) to charge the lithium battery first, and then load it into the meter to use it when it is fully charged. The charging adapter will limit the maximum charging current to about 350mA, when the battery shows the battery symbol in the meter, it will take about 2 hours to fully charge the battery.

Hours.

Before charging the battery, please check the battery not to break the skin, the

battery polarity do not install the reverse, install the reverse
When the charging seat indicator does not light up, found that the indicator does not light up when the battery is loaded, please immediately check whether the battery is loaded backwards or broken skin short circuit, remove the battery in time. Charging red light indicates that the lithium battery is charging state, green light indicates that the battery is full or not connected, in the instrument shows the battery symbol or not open, first to the lithium battery charging to ensure that the battery is sufficient to check whether the instrument is normal.

Lithium batteries should be avoided excessive charging and discharging, mechanical damage, high temperature environment, so as to avoid external or internal short circuit of the battery, resulting in thermal runaway combustion and explosion. When the meter is not used for a long time, the lithium battery should be fully charged and saved, and it is recommended to charge it not more than once in 3 months.

IX. Annexes

1) Auxiliary grounding rod 2 pcs
2) Test cable 1 set
(Including; red test line 15m/pc, yellow test line 10m/pc, green test line 5m/pc)
3) Simple test line 1 set
(Includes; 1.6 m/pc of red test line, 1.6 m/pc of green test line)
4) 1 pair of leads
5) Charging adapter 1pc
6) 1 copy of instruction manual
7) Cloth bag 1pc