

Dear Client

Thank you for Purchasing our **HT2571 Earth Resistance Tester**. Please read the manual in detail prior to first use, which will help you use the equipment skillfully.



Our aim is to improve and perfect the company's products continually, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.



The input/output terminals and the test column may bring voltage, when you plug/draw the test wire or power outlet, they will cause electric spark. PLEASE

CAUTION RISK OF ELECTRICAL SHOCK!

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◆ **SERIOUS COMMITMENT**

All products of our company carry one year limited warranty from the date of shipment. If any such product proves defective during this warranty period we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

◆ **SAFETY REQUIREMENTS**

Please read the following safety precautions carefully to avoid body injury and prevent the product or other relevant subassembly to damage. In order to avoid possible danger, this product can only be used within the prescribed scope.

Only qualified technician can carry out maintenance or repair work.

--To avoid fire and personal injury:

Use Proper Power Cord

Only use the power wire supplied by the product or meet the specification of this produce.

Connect and Disconnect Correctly

When the test wire is connected to the live terminal, please do not connect or disconnect the test wire.

Grounding

The product is grounded through the power wire; besides, the

ground pole of the shell must be grounded. To prevent electric shock, the grounding conductor must be connected to the ground.

Make sure the product has been grounded correctly before connecting with the input/output port.

Pay Attention to the Ratings of All Terminals

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

Do Not Operate without Covers

Do not operate this product when covers or panels removed.

Use Proper Fuse

Only use the fuse with type and rating specified for the product.

Avoid Touching Bare Circuit and Charged Metal

Do not touch the bare connection points and parts of energized equipment.

Do Not Operate with Suspicious Failures

If you encounter operating failure, do not continue. Please contact with our maintenance staff.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in Explosive Atmospheres.

Ensure Product Surfaces Clean and Dry.

— **Security Terms**

Warning: indicates that death or severe personal injury may result if proper precautions are not taken

Caution: indicates that property damage may result if proper precautions are not taken.

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I. Introduction

1. Working Principle

The instrument is a newly developed earth resistance tester, which abandons the traditional way of generating electricity by hand operation, uses advanced middle-large scale integrated circuits and applies DC/AC transformation technology to combine three-terminal measurement method and four-terminal measurement method into one model.

The working principle is that: the built-in DC/AC converter transform DC current into AC low-frequency constant current through the auxiliary grounding electrode C and the circuit composited by the measured object E. Then on measured object generate AC voltage drop that will be sent to AC amplifier via the auxiliary grounding electrode P and be enlarged, and then display on the table through the detector. With magnification switch, three different range limits are available: $0 \sim 2\Omega$, $0 \sim 20\Omega$, $0 \sim 200\Omega$.

2. Application

The instrument applies to power industry, post and telecommunications, railway, communications, mining and other sectors to measure the grounding resistance of the various devices and the conductor resistance of low resistance; this instrument can also measure soil resistivity and ground voltage.

3. Main features

1) High-strength aluminum alloy shell body, the circuit equipped with phase locked loop and switched capacitor filter, based on which the instrument play an effective role in shielding power frequency and radio frequency interference.

2) DC/AC converter can transform DC current into AC low-frequency constant current for the measurement.

3) Auxiliary grounding resistance can change in the range of 0 ~ 2K Ω (RC), 0 ~ 40K Ω (RP), that will not affect measurement results.

4) Without manual adjustment to zero, with three and a half bits LED display, the instrument can be used for measuring the grounding resistance, the conductor resistance of low resistance, soil resistivity and AC ground voltage.

5) If tested loop encounter failure, the screen displays "1" indicating large range, which consistent with conventional measurement practices.

II. Technical Specifications

1. Operating Conditions

Temperature: 0 °C ~ +45 °C

Relative humidity: \leq 85%

2. Measuring range and constant current value (virtual value)

Resistance:

0 ~ 2Ω (10mA), 2 ~ 20Ω (10mA), 20 ~ 200Ω (1mA)

Voltage: AC 0 ~ 19.99V

3. Measurement accuracy and resolution

Accuracy: 0 ~ 0.2Ω ≤ ± 3% ± 1d

0.2Ω ~ 199.9Ω ≤ ± 1.5% ± 1d

1 ~ 19.99V ≤ ± 3% ± 1d

Resolution: 0.001Ω, 0.01Ω, 0.1Ω, 0.01V

4. Measurement errors caused by auxiliary grounding resistance and ground voltage

Auxiliary grounding resistance RC (between C1 and C2)

0 ~ 2Ω, 2 ~ 20Ω ≤ 1KΩ

20 ~ 200Ω ≤ 2KΩ

RP (between P1 and P2) < 40KΩ error ≤ ± 5%

Ground voltage (frequency virtual value) ≤ 5V error ≤ ± 5%

5. Power supply and power dissipation

Maximum power dissipation ≤ 2W

DC: 8 × 1.5V (AA, R6) Battery

AC: 220V/50Hz

6. Dimensions and weight

Dimensions: 220 × 200 × 105mm

Weight: ≤ 1.4kg

III. Operation Instructions

1. Grounding resistance measurement (Fig. 1)

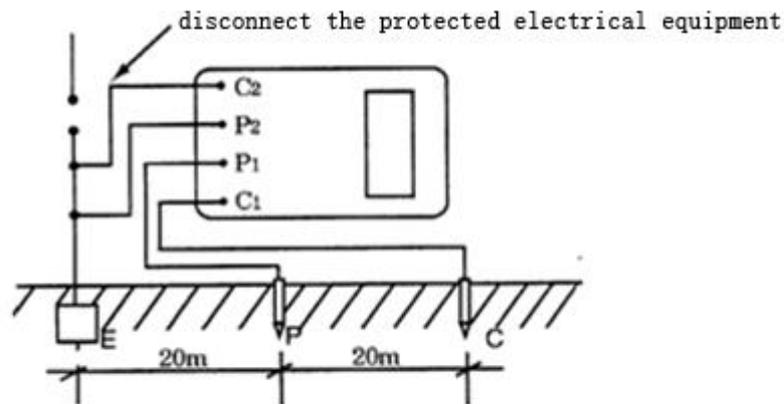


Figure 1

As Fig.1, the straight-line distance between ground electrode E (C2, P2) and current probe C1 is 40 meters. Put potential probe P1 on the center of E, C, so that E, P, C is 20 meters away from each other and make sure potential probe P1 grounded properly.

Connect ground resistance terminals E (C2, P2), P1, C1 to their corresponding probes with special wire.

Turn on the power switch; select the appropriate gear and press the “confirm” key, at selected gear the indicator lights, data display on LCD is the measured ground resistance.

2. Soil resistivity measurement (Fig. 2)

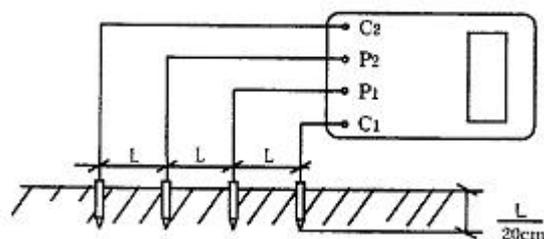


Figure 2

1) As Fig. 2: when measuring, insert four probes into the measured soil along a straight line, make sure the insertion depth is 20cm and spacing of each probes is 20cm. connect terminals C1, P1 , P2, C2 to the four probes with wire. If the measured resistance value is R, the soil resistivity can be calculated as follow:

$$\Phi = 2\pi RL$$

Among

Φ -soil resistivity ($\Omega \cdot \text{cm}$)

L-spacing of each probes (cm)

R-the readings of grounding resistance (Ω)

The measured soil resistivity by this method is approximately equal the average soil resistivity in the region where probes were inserted.

2) The probe used for measuring grounding resistance and soil resistivity is aluminum tube or round steel. Generally its diameter is 25mm and its length is 0.5 ~ 1m.

3. Conductor resistance measurement (Fig. 3)

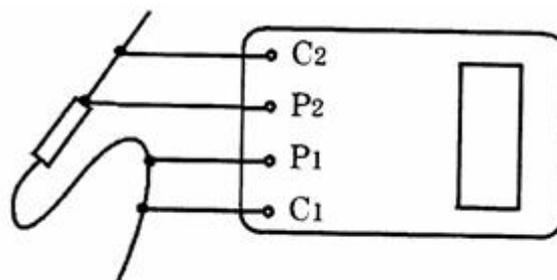


Figure 3

4. Ground voltage measurement

Wiring as Fig. 1, pull out the plug C1, insert the plug between E, P1, and start the ground voltage gear (EV), the indicator lights. The reading on LCD is AC ground voltage value between E, P1.

5. Completed measurement, turnoff power supply, the instrument shut down.

IV. Notes

1. When the instrument is stored you should pay attention to environment temperature and moisture. It should be placed in dry and ventilated environment and should be shielded from humidity, acid, soda and corrosive gas damage.

2. When measuring and protecting grounding resistance, you must disconnect power supply. For grounding resistance is less than 1Ω , you should separately connect it to the grounding object with special lead, C2 on the outside, P2 in the medial. Shown in Fig.

4:

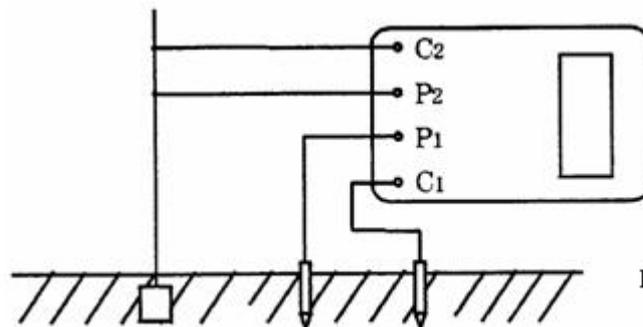


Figure 4

3. When measuring grounding resistance of large grounding grid, the wiring method is different from the general method, detailed wiring please refer the measurement requirement of current meter or voltmeter.

4. When measuring grounding resistance, you'd better measure in different directions for 3 to 4 times and take the average.

5. The instrument uses AC and DC power supply. When connect to AC power supply, the instrument will prior use AC power supply; when not connect to AC power supply, battery will power tester.

6. **“←” appearing on the top left corner of the screen says battery voltage is low and you should replace a new battery. If the instrument will not be used for a long time, all batteries should be removed to prevent the instrument from corrosion.**