P/N:110401108709X

UNI-T®
UNI-TREND TECHNOLOGY（CHINA）CO., LTD.
No. 6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China

UNI-T®


# UT523A
## Earth Resistance Soil Resistivity Tester User Manual

## CONTENTS

## Precautions for Use

Thanks for your purchase of UT523A Earth Resistance Soil Resistivity Tester. For better use of the product, please make sure to:

**——Read this user manual in detail.**

**——Comply with the operating cautions in this manual.**

- The tester conforms to IEC61010 on design, production and test.
- The RS232 interface of the tester and the internal circuit are non-isolated interfaces. It is strictly forbidden to connect the computer when the voltage is tested. Otherwise, the tester may be burned out or an electric shock accident may occur. The voltage test line must be unplugged from the tester before the RS232 data cable can be connected with the computer to read the data. Online monitoring in the manual does not apply to monitoring voltages.
- Under any circumstances, pay special attention to safety in using this tester.
- Pay attention to words and symbols stuck on the tester.
- Make sure the tester and accessories are in good condition before use; it can be used only when there is no damaged, naked or broken part on test wires or insulation layer.
- During measurement, it is forbidden to touch bare conductors and the circuit under measurement.
- Before measurement, please confirm the position of the **FUNCTION** rotary switch.
- Confirm that connector plug of lead has been inserted in the tester interface closely.
- Do not apply more than AC/DC 600V between the tester terminals to prevent damage to the tester.
- Do not measure in flammable environments. Sparks may cause an explosion.
- Please stop using the tester when exposed metal is caused by damaged housing or test wires.
- Do not place or store the tester under high temperature, humidity, condensation or direct sunlight for a long time.





- If the tester is wet, please store it after drying.
- Before replacing batteries, please make sure test wires have been removed from the tester, and **FUNCTION** rotary switch is in “OFF” position.
- Please put the used batteries in a designated collection place.
- The tester has no auto power-off function. Please place **FUNCTION** rotary switch in "OFF" position after use.
- When the tester displays the low battery symbol “ ”, replace the batteries in time.
- If the tester is not in use for a long period, please remove the batteries.
- Pay attention to measuring range and working environment stipulated for the Tester.
- This tester is only to be used, disassembled, calibrated and repaired by qualified professionals.
- If it is dangerous to continue using the tester due to the reason of itself, stop using it immediately and deposit it at once, leaving it for disposal by an authorized agency.
- When it comes to the safety warning sign “ ”, users should strictly follow the contents of this manual for safe operation.

# 1. Introduction

UT523A Earth Resistance Soil Resistivity Tester is specially designed and manufactured for filed measurement of earth resistance, soil resistivity, earth voltage and AC voltage. Digital processing technology, precise 4-wire method, 3-wire method and simple 2-wire method are applied to measuring earth resistance; FFT (fast Fourier transform) technology and AFC (automatic frequency control) technology are adopted for automatic identification of interference and selection of measurement frequency, to minimize the impact of interference and provide more accurate earth resistance value. The unique anti-interference capability, environmental adaptability and retest consistency ensure high precision, high stability and high reliability for long-term measurement. The tester is widely used in power, telecommunications, meteorology, oil fields, construction, lightning protection and industrial electrical equipment, such as earth resistance, soil resistivity, earth voltage and AC voltage measurement.

UT523A Earth Resistance Soil Resistivity Tester is composed of host machine, monitoring software, test wires, auxiliary ground rods, communication wires, etc. The large LCD display, with white backlight and bar graph indication, makes readings absolutely clear. The tester can store 300 sets of data, fulfilling historical inquiry and online real-time monitoring through monitoring software. It also comes with dynamic display, alarm indication, and the functions like historical data access, reading, preservation, statement, and printing.

UT523A Earth Resistance Soil Resistivity Tester also named: Precision Earth Resistance Tester, 4-pole Earth Resistance Tester, 2/3/4-pole Earth Resistance Tester, Soil Resistivity Tester.





# 2. Technical Specifications

## 2.1. Base Conditions and Working Conditions

| Influence Constant | Base Conditions | Working Conditions | Remark |
|---|---|---|---|
| Ambient Temp | 23℃±1℃ | -10℃～40℃ | ---- |
| Ambient Humidity | 40%～60% | ＜80% | ---- |
| Working Voltage | 9V±0. 1V | 9V±1. 5V | ---- |
| Auxiliary Earth Resistance Value | ＜100Ω | ＜30kΩ | rC、rP |
| Interference Voltage | ---- | ＜20V | ---- |
| Interference Current | ---- | ＜2A | ---- |
| Electrode Distance of measuring R | a＞5d | a＞5d | ---- |
| Electrode Distance of measuring ρ | a＞20h | a＞20h | ---- |

## 2.2. General Specifications

| | |
|---|---|
| Function | 2/3/4-pole measurement for earth resistance and soil resistivity;<br>earth voltage and AC voltage measurement |
| Power Supply | DC 9V (6×1.5V LR14 alkaline batteries, continuous standby for 300 hours ) |
| Measurement Range | Earth Resistance: 0.00Ω-30.00kΩ |
| | Soil Resistivity: 0.00Ωm-9000kΩm |
| | Earth Voltage: 0V-600V |
| Measurement Mode | Precise 4-pole measurement, 3-pole measurement,<br>simple 2-pole measurement of earth resistance |

| | |
|---|---|
| Measurement Method | Earth Resistance: rated current change-pole method, test current 20mA Max<br>Soil Resistivity: 4-pole method (Wenner method)<br>Earth Voltage: average rectification (between P(S)-ES) |
| Test Frequency | 128Hz/111Hz/105Hz/94Hz (AFC) |
| Short-circuit Test Current | AC 20mA max |
| Open-circuit Test Voltage | AC 40V max |
| Test Voltage Wave | Sine wave |
| Electrode Distance Range | Can be set at 1m-100m |
| Shift | Earth resistance: 0.00Ω-30.00kΩ automatic shift |
| | Soil Resistivity: 0.00Ωm-9000kΩm automatic shift |
| Backlight | Controllable white screen backlight, suitable for dim environments |
| Display Mode | 4-digit super-large LCD display, white screen backlight |
| Measurement Indicator | During measurement, LED flash indicator, LCD count down display, progress bar indicator |
| LCD Frame Dimension | 128mm×75mm |
| LCD Window Dimension | 124mm×67mm |
| Tester Dimension | 212mm(L)×175mm(W)×76mm(H) |
| Standard Test Wire | 4 pcs: 20m red, 20m black,10m yellow,10m green (1 each) |





| | |
|---|---|
| Simple Test Wire | 2 pcs: 1.6m red, 1.6m black (1 each) |
| Auxiliary Ground Rod | 4 pcs: Φ10mm×150mm |
| Measurement Rate | Earth Voltage: about 3 times/second |
| | Earth resistance, soil resistivity: about 5 seconds/time |
| Measuring Times | Over 5000 times (for short-circuit test, interval time should be at least 30 seconds) |
| Circuit Voltage | below AC 600V |
| Communication Interface | With USB interface and software monitoring, storage data can be uploaded to computer to save or print. |
| Communication Wire | 1 pc: 1.5m USB communication wire |
| Data Storage | 300 sets, “MEM” storage indicator, “FULL” symbol to indicate full storage |
| Data Hold | “HOLD” indicator display |
| Data Read | “READ” indicator display |
| Over Range Display | “OL” symbol display |
| Interference Test | Recognize interference signal automatically; “NOISE” symbol display when interference voltage exceeds 5V |
| Auxiliary Earth Test | With auxiliary earth resistance test function, 0.00KΩ-30kΩ (100R+rC<50kΩ, 100R+rP<50kΩ) |
| Alarm Function | When measurement value exceeds alarm setting value, there will be “Toot-toot-toot” alarm hint |

| | |
|---|---|
| Battery Voltage | When battery voltage decreases to around 7.5V, the low battery symbol "▭" will be displayed, reminding to replace the batteries |
| Working current | Standby: about 20mA (Backlight off) |
| | Boot up and with backlight: about 45mA (25mA without backlight) |
| | Measurement: about 100mA (Backlight off) |
| Weight | Tester: 950g |
| | Test wires: 1560g |
| | Auxiliary ground rods: 935g (4pcs) |
| Working Temperature & Humidity | -10°C-40°C, below 80%rh |
| Storage temperature & humidity | -20°C-60°C, below 70%rh |
| Overload Protection | Measuring earth resistance: between each interfaces of C(H)-E and P(S)-ES, AC 280V/3 seconds |
| Insulation Resistance | Over 20MΩ (between circuit and enclosure it is 500V) |
| Withstand Voltage | AC 3700V/rms (Between circuit and enclosure) |
| Electromagnetic Property | IEC61326(EMC) |
| Protection Type | IEC61010-1 (CAT III 300V, CAT IV 150V, Pollution Degree 2), IEC61010-031, IEC61557-1 (earth resistance), IEC61557-5 (soil resistivity) |





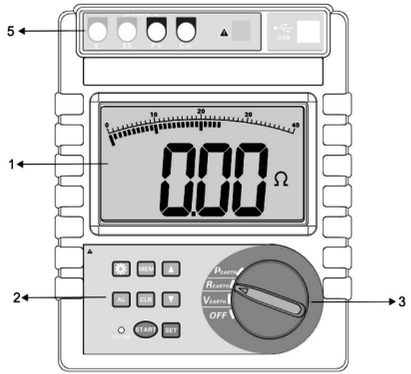
## 2. 3. Intrinsic Error and Performance Indicators under Base Conditions

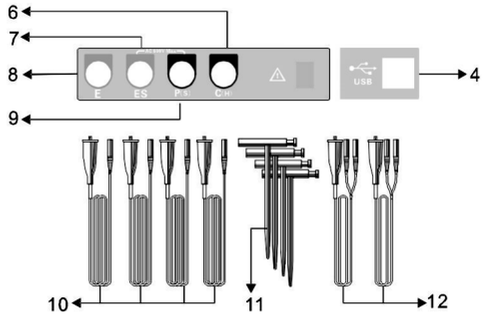
| Measurement Function | Measurement Range | Accuracy | Resolution |
|---|---|---|---|
| Earth Resistance (R) | 0. 00Ω～30. 00Ω | ±2%rdg±3dgt | 0. 01Ω |
| | 30. 0Ω～300. 0Ω | ±2%rdg±3dgt | 0. 1Ω |
| | 300Ω～3000Ω | ±2%rdg±3dgt | 1Ω |
| | 3. 00kΩ～30. 00kΩ | ±4%rdg±3dgt | 10Ω |
| Soil Resistivity (ρ) | 0. 00Ωm～99. 99Ωm | (ρ=2πaRa：1m～100m；π=3. 14) | 0. 01Ωm |
| | 100. 0Ωm～999. 9Ωm | | 0. 1Ωm |
| | 1000Ωm～9999Ωm | | 1Ωm |
| | 10. 00kΩm～99. 99kΩm | (ρ=2πaRa：1m～100m；π=3. 14) | 10Ωm |
| | 100. 0kΩm～999. 9kΩm | | 100Ωm |
| | 1000kΩm～9000kΩm | | 1kΩm |
| Earth Voltage | AC 0. 0～600V | ±2%rdg±3dgt | 0. 1V |

⚠ Note: 1. rC max or rP max, additional error ≤±3%rdg±5dgt
(rC max: 4kΩ+100R<50kΩ, rP max: 4kΩ+100R <50kΩ)
2. Interference voltage with 5V, additional error ≤±5%rdg±5dgt

⚠ Warning: Voltage measurement is strictly prohibited when the tester is charged, connected to a computer, or supplied with external power.

## 3. Tester Structure



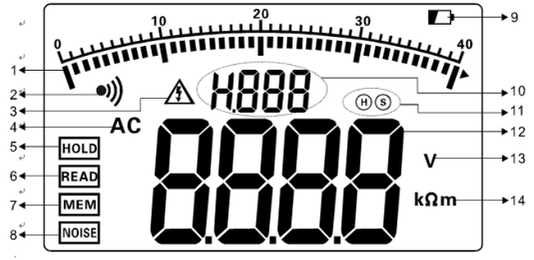




| | | | |
|---|---|---|---|
| 1 | LCD | 7 | ES interface: Auxiliary earth electrode |
| 2 | Button area | 8 | E interface: Earth electrode |
| 3 | Rotary switch for selecting function | 9 | P(S) interface: Voltage electrode |
| 4 | USB Interface | 10 | Standard test wires |
| 5 | Test wire interfaces | 11 | Auxiliary ground rods |
| 6 | C(H) interface: Current electrode | 12 | Simple test wires |





## 4. LCD Display

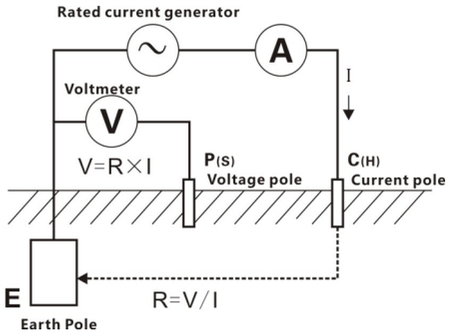



1. Test progress bar (dynamic display of the test progress)
2. Alarm indicator (displayed when the alarm function is activated; flashing when the alarm threshold is exceeded)
3. Overvoltage symbol (displayed when the tested voltage exceeds 30V, reminding users to pay attention to safety)
4. AC symbol
5. Data hold symbol (displayed when **MEM** is pressed to hold data)
6. Data read symbol (displayed when **MEM** is pressed for over 3 seconds to access data)
7. Data storage symbol (displayed when data is stored)
8. Interference signal symbol (displayed when interference voltage exceeds 5V)
9. Low battery symbol (displayed when battery voltage is below 7.5V)
10. Display of the group number of stored data and countdown
11. Interference electrode symbol (displayed when interference voltage of the electrode exceeds 5V)
12. Test data
13. Voltage unit symbol
14. Resistance, soil resistivity, length unit symbol (Ω, kΩ, Ωm, kΩm, m)

## 5. Measurement Principle

5.1. Earth voltage measurement adopts average value rectification method.

5.2. Earth resistance measurement adopts rated current change-pole method. That is, AC rated current **I** flows between the earth electrode **E** and current electrode **C(H)** of measuring object, the potential difference **V** between the earth electrode **E** and voltage electrode **P(S)** is obtained, and then the earth resistance value **R** can be calculated according to the formula **R=V/I**. To ensure the accuracy of the test, the 4-wire method is used to increase the auxiliary earth electrode **ES**. In actual test, the **ES** and **E** are clamped at the same point of the grounding body. The 4-wire method can eliminate influence of contact resistance between the measured grounding body, auxiliary ground rods, test clips, and tester input interfaces (usually with dirt or rust) on the measurement, and can also eliminate influence of line resistance for more precise measurement.




5.3. In the above methods, the working error **(B)** is the error obtained within the rated working conditions, which is calculated from the intrinsic error **(A)** and variable error **(Ei)** of the tester.

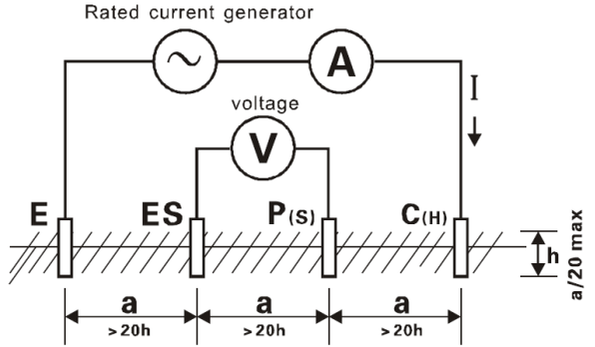
$$B=\pm\left(|A|+1.15\times\sqrt{E_2^2+E_3^2+E_4^2+E_5^2}\right)$$





**A:Intrinsic error**
**E2:** Variation due to power supply voltage
**E3:** Variation due to temperature change
**E4:** Variation due to interference voltage change
**E5:** Variation due to contact electrode resistance

5.4. Soil resistivity (ρ) measurement adopts 4-pole method (Wenner method): AC current **I** flows between the earth electrode **E** and current electrode **C(H)**, the potential difference **V** between the voltage electrode **P(S)** and auxiliary earth electrode **ES** is obtained, the potential difference **V** is divided by AC current **I** to get the earth resistance value **R**, the electrode distance is **a (m)**, and then the soil resistivity can be calculated according to the formula **ρ=2πaR (Ωm)**. If the electrode distance of **C(H)-P(S)** is equal to **P(S)-ES** (both a) it is the Wenner method. For the convenience of calculation, please make electrode distance **a** far greater than buried depth **h**, which generally should meet **a>20h**, as shown below.



# 6. Operation Methods

## 6.1. Turn On/Off

Use the **FUNCTION** rotary switch to turn on/off the tester. The tester has no auto power-off function. Please place the **FUNCTION** rotary switch in "OFF" position after use to avoid running out of batteries.

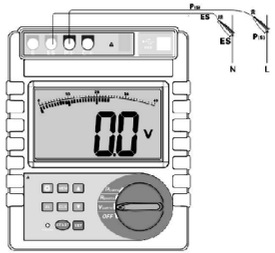
## 6.2. Battery Voltage Check

After power on, if the LCD displays the low battery symbol " ▭ ", please follow the instructions to replace the batteries. Only sufficient battery power can ensure the accuracy of measurement.

## 6.3. AC Voltage Measurement

| | |
|---|---|
| ⚠ | AC voltage measurement should not exceed 600 V. |
| | Connect P(S) and ES interfaces to test commercial AC voltage.<br>No need to connect C(H) or E interface. |

For AC voltage test, which refers to the general commercial AC voltage test, users should pay attention to distinguish the earth voltage. The tester can be used to test AC voltage below 600V. As shown below, firstly connect test wires with **P(S)** and **ES** interfaces, secondly connect test wires with tested line, and then turn the **FUNCTION** rotary switch to "**EARTH VOLTAGE**" position and start testing. LCD will display the test results.





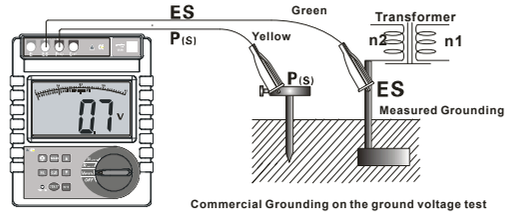



## 6.4. Earth Voltage Measurement

| | |
|---|---|
| ⚠ | Voltage measurement is strictly prohibited when the tester is charged, connected to a computer, or supplied with external power. |
| | Earth voltage measurement needs an auxiliary ground rod. |
| | Connect the tester with earth only by test wires and auxiliary ground rods. Other test wires of the tester interface cannot be connected with the commercial power line L or N. Otherwise, current leakage may occur and the circuit breaker may start, posing a hazard. |
| | Earth voltage measurement should not exceed 600 V. |

Earth voltage: the potential difference between grounding device outer shell, grounding wire, grounding body, etc. and the zero potential point, when an earth fault occurs in electrical equipment. The earth voltage is the potential difference from the earth, with the earth as the reference point. The earth is zero potential point.

Earth voltage measurement needs one auxiliary ground rod. Please pay attention to the difference from commercial AC voltage measurement. As shown below, connect the tester, auxiliary ground rods, and test wires well, turn the **FUNCTION** rotary switch to "**EARTH VOLTAGE**" position and start testing. LCD will display the test results.




Commercial Grounding on the ground voltage test

## 6.5. 4-Wire Precise Earth Resistance Measurement

| | |
|---|---|
| ⚠ | In the testing of earth resistance, firstly confirm the earth voltage value of the grounding wire, that is, the voltage value of C(H) and E or P(S) and ES must be below 20V. If the earth voltage is higher than 5V, the tester displays the **NOISE** symbol, and the measured value of the earth resistance may be in error. At this time, power off the grounding device under test, and test the earth resistance again after the earth voltage is lowered. |

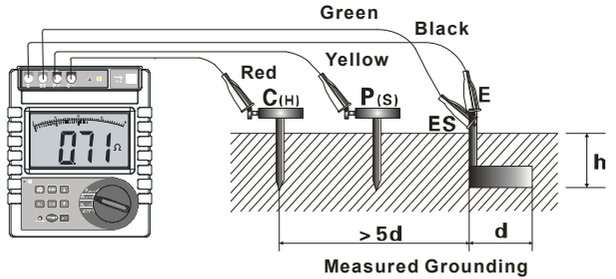
4-wire measurement: The 4-wire measurement can eliminate influence of contact resistance between the measured grounding body, auxiliary on the measurement, and can also eliminate influence of line resistance on the measurement. It is better than the 3-wire measurement.

As shown below, starting from the measured object, the general interval is 5-20m. Bury the **P(S)** and **C(H)** auxiliary ground rods in the ground in a straight line, and connect the **E, ES, P(S)** and **C(H)** interfaces of the tester with the measured earth electrode **E**, auxiliary voltage electrode **P(S)** and auxiliary current electrode **C(H)** correspondingly by the grounding test wires (black, green, yellow, red).

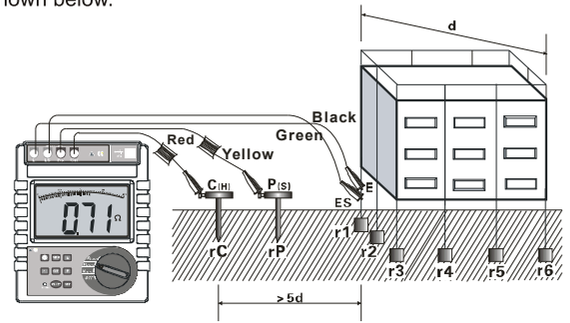
| | |
|---|---|
| ⚠ | The distance from the measured grounding body E to the current electrode C(H) should be at least 5 times the buried depth (h) of the measured grounding body or the buried electrode length (d) of the measured grounding body. |
| | In measurement of the total earth resistance of a complex grounding system, the (d) should be the maximum diagonal distance of the grounding system. |
| | The test wires cannot be entangled with each other in the test; otherwise the test accuracy may be affected. |








For multi-point independent grounding systems or grounding grids, users can select longer test wires, as long as the electrode distance is 5 times greater than the maximum diagonal length of the measured grounding grid, as shown below.



**R=r1 // r2 // r3 // r4 // r5 // r6 // // ·····rn** are all independent grounding points)
**R**——Reading, which is the total earth resistance value of the whole grounding system
**r1---m** ——All are independent grounding points. The grounding bodies are not connected under the ground.
**rC**——The earth resistance of auxiliary current electrode C(H)
**rP**——The earth resistance of auxiliary voltage electrode P(S)
**n**——The number of independent grounding points, the more points, the smaller the R value

After connecting test wires, turn the **FUNCTION** rotary switch to "**REARTH**" position to enter the earth resistance test mode, and press "**START**" button to start testing. During the test, there is a countdown indication and a test progress bar graph indication. After the test is completed, the stable data, which is the earth resistance value **R** of the measured grounding body, will be displayed.

After the test, press "**SET**" button to check the earth resistance values **rC** of auxiliary current electrode **C**(**H**) and **rP** of auxiliary voltage electrode P(S). After the display of **rC** and **rP**, the tester will automatically return to display the earth resistance value **R**.

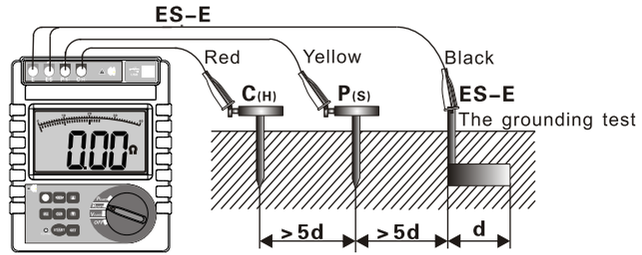
As shown below, the tested earth resistance value is 2.05Ω and the tester stores 8 sets of data; the earth resistance value **rC** of auxiliary current electrode **C(H)** is 0.36kΩ; the earth resistance value **rP** of auxiliary voltage electrode **P(S)** is 0.27kΩ.






## 6.6. 3-Wire Earth Resistance Measurement

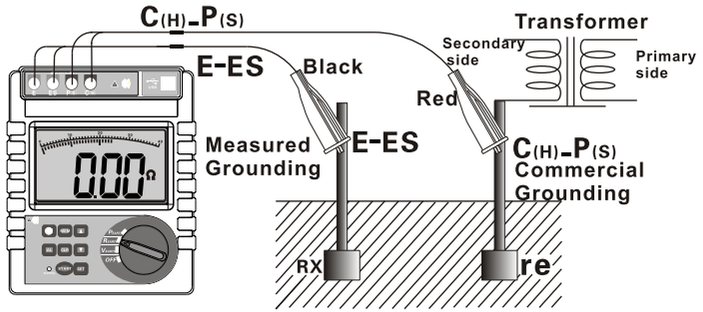
3-wire measurement: As shown below, short-circuit the interfaces **ES** and **E** of the tester and that is 3-wire measurement. Refer to 4-wire measurement for operation of the tester. The 3-wire measurement cannot eliminate influence of line resistance on the measurement, nor can eliminate influence of contact resistance change between the tester and test wires or between the test wires and auxiliary ground rods on the measurement. The oxide layer on the surface of the measured grounding body needs to be removed in the measurement.




## 6.7. 2-Wire Simple Earth Resistance Measurement

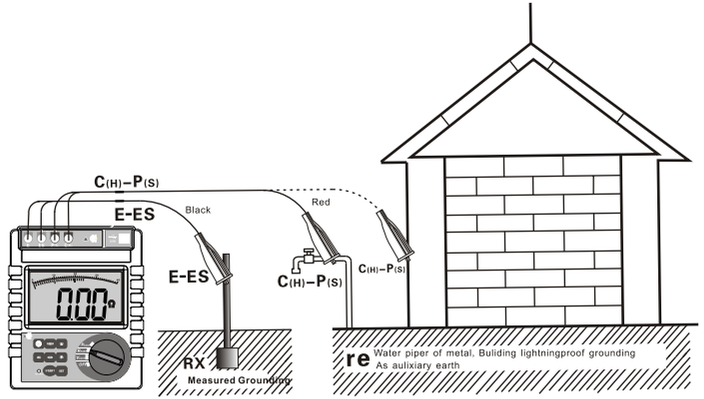
2-wire measurement: This is a simple measurement method without using an auxiliary ground rod. The existing earth electrode with the lowest earth resistance value is used as the auxiliary earth electrode, and two simple test wires are connected (i.e., the **C(H)-P(S)** interfaces are shorted and **E-ES** interfaces are shorted). Use the metal water pipe, fire hydrant and other metal burial materials, the common grounding of the commercial power system or the lightning protection grounding pole of the building instead of the auxiliary ground rods C(H) and P(S), and the oxide layer of the connection point of selected metal auxiliary grounding body should be removed in the measurement. Wire connection is as shown below. Refer to 4-wire measurement for operation of the tester.

| | |
|---|---|
| ⚠ | When using the commercial power system grounding as the auxiliary earth electrode for measurement, confirm it is the earth electrode of the commercial power system. Otherwise, the circuit breaker may start, posing a hazard. |
| | In measuring earth resistance by 2-wire method, try to select the grounding body with a small **Re** value as the auxiliary earth electrode, so that the tester reading is closer to the true value. Please choose the metal water pipe and metal fire hydrant as the auxiliary earth electrode first. |








For 2-wire measurement, the tester reading is the sum of the earth resistance of the measured grounding body and the earth resistance of the commercial grounding body.

**R=RX+re**
**R**——Reading
**RX**——The earth resistance of measured grounding body
**re**——The earth resistance of a common grounding body such as a commercial power system
Then, the earth resistance value of the measured grounding body is: **RX=R-re**

## 6.8. Soil Resistivity Measurement

Soil resistivity **ρ** is a determining factor of earth resistance of grounding body. Soils with different properties have different soil resistivity. Even for the same soil, the soil resistivity will change significantly due to differences in temperature and water content. Therefore, to have a correct basis for the designed grounding device and make it more suitable for the actual work, soil resistivity measurement is very essential.

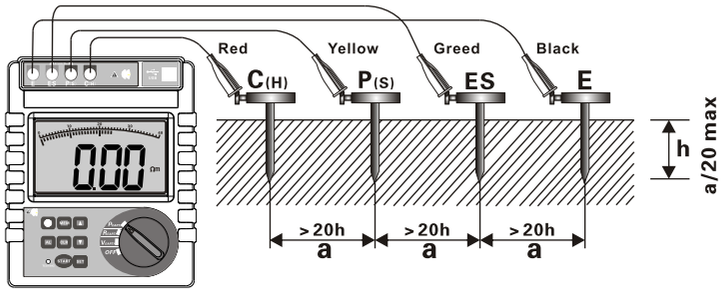
Soil resistivity measurement adopts 4-pole method (Wenner method).

Soil resistivity ρ can be calculated according to the formula **ρ=2πaR (Ωm)**, and Ωm is the unit.

**a**—— electrode distance

**R**——soil resistivity between electrode **P(S)-ES**

4-pole method (Wenner method): Connect test wires as shown below and pay attention to the interval and buried depth of auxiliary ground rods. Respectively bury the auxiliary ground rods **C(H), P(S), ES** and **E** deep into the earth in a straight line, and connect the **C(H), P(S)**, **ES** and **E** interfaces of the tester with the measured auxiliary ground rods **C(H), P(S)**, **ES** and **E** correspondingly by the grounding test wires (red, yellow, green, black).








According to the Wenner method, the measured soil resistivity value is about the soil resistivity at the distance a of the two ground rods. The soil homogeneity can be checked by changing a value to design a suitable earth electrode.

Interval of the auxiliary ground rods setting: After connecting test wires, turn the **FUNCTION** rotary switch to "**ρEARTH**" position to enter the soil resistivity measurement mode, and long press "**SET**" button (about 3 seconds) to enter the setting. Short press "**SET**" button to move the cursor, press " ▲ "or " ▼ " button to change current data value (range of **a** value: 1m-100m), then long press "**SET**" button to save the set **a** value, and return to soil resistivity measurement mode.

After setting **a** value, in the soil resistivity measurement mode, press the "**START**" button to start testing. During the test, there is a countdown indication and a test progress bar graph indication. After the test is completed, the stable soil resistivity value will be displayed.

As shown below, the measured soil resistivity is 53.38Ωm and 157 sets of data are stored. Press "**SET**" button to check the earth resistance values **rC** of auxiliary current electrode **C(H)** and **rP** of auxiliary voltage electrode **P(S)**. After the display of **rC** and **rP**, the tester will automatically return to display the measured soil resistivity ρ.

## 6.9. Backlight Control

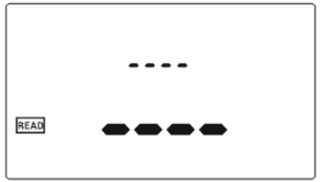
After startup, press "☼" button to turn on/off the backlight. The backlight function is suitable for dim environments. Working current of the backlight is about 25mA. The backlight is off by default each time the tester is turned on.

## 6.10. Alarm Setting

After startup, turn the **FUNCTION** rotary switch to corresponding position, short press "**AL**" button to turn on/off the alarm function, and long press " **AL**" button (about 3 seconds) to enter alarm limit value setting. Press "▲" or "▼" button to change current data value, short press "AL" button to move the cursor, and long press " **AL**" button to save and exit. When measurement value is greater than set alarm limit value and the alarm function is on, the tester will flash to display the " •)) " symbol and sound "toot-toot-toot--" alarming hint.

## 6.11. Data Hold/Storage

In test mode, short press "**MEM**" button to hold the current display data. The tester will display "**HOLD**" and "**MEM**" symbols and automatically store the data with serial numbers. If storage is full, the tester will display "**FULL**" symbol. Short press "**MEM**" button again to exit.
As shown on the left below, the held soil resistivity is 53.38Ωm, which is stored as the 28th set of data.






## 6.12. Data Reading/Deletion

In test mode, long press "**MEM**" button (over 3 seconds) to enter data reading. Press " ▲ "or " ▼ " button to select group number of reading data by step value 1, and press " ▲ " or " ▼ " button constantly to select group number of reading data by step value 10. When the current data set is earth resistance or soil resistivity value, press "**SET**" button to read data value of **rC, rP** and **a**. Long press "**MEM**" button to exit.

In reading if there is no storage data, LCD will display "- - - -", as shown at the bottom left.

In data reading status, press "**CLR**" button to enter data deletion. Press " ▲ " or " ▼ " to select "**NO**" or "**YES**". Select "**NO**" and press "**CLR**" button for not deleting and returning to data reading status, while select "**YES**" and press "**CLR**" button for deleting stored data. After deletion, LCD will display "- - - -", as shown at the bottom left.

**Note**: Data deletion function is used to delete all stored data at one time, which cannot be restored after deletion. Please be cautious.

at the bottom left

## 6.13. Data Upload

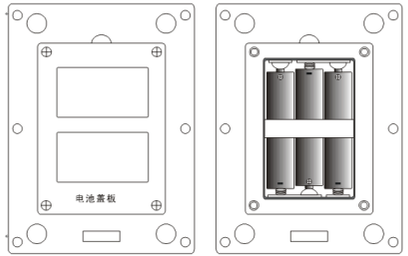
The stored data can be uploaded to a computer. Connect the USB communication wire from the tester to the computer, switch on the tester, and run the monitoring software. If the software shows that the serial port is open and connected successfully, then it can read the stored historical data and upload them to computer for saving.

The monitoring software has online real-time monitoring and historical inquiry functions. It also comes with dynamic display, alarm indication, and the functions like historical data access, reading, preservation, statement, and printing.

## 7. Battery Replacement

| | |
|---|---|
| ⚠ | Please do not replace batteries in flammable spots. |
| | Please do not replace batteries during measurement. |
| | Pay attention to battery polarity and specification, and do not mix used and new batteries to avoid damage to the tester. |
| | When the outer shell of the tester is wet, please do not open the battery cover. |
| | Please put the used batteries in a designated collection place. |

7.1. Switch off and make sure the tester is in switch-off state.
7.2. Loosen the four screws on battery cover at the bottom of the tester, and open battery cover.
7.3. Replace new batteries, pay attention to battery polarity and specification, close battery cover, and fasten screws.
7.4. Switch on the tester for verification.








## 8. Accessories

| | |
|---|---|
| Tester | 1 pc |
| Tester Bag | 1 pc |
| Auxiliary Ground Rod | 4 pcs |
| Standard Test Wire | 4 pcs: 20m red, 20m black,10m yellow,10m green (1 each) |
| Simple Test Wire | 2 pcs: 1.6m red, 1.6m black (1 each) |
| Alkaline Battery | 6 pcs (LR14 1.5V) |
| Monitoring Software Disk | 1 pc |
| USB Communication Cable | 1 pc |
| User Manual | 1 pc |

Uni-Trend is not responsible for other losses caused by use.
The contents of this manual cannot be used as a reason to use the product for special purposes.
Uni-Trend reserves the right to modify the contents of this manual. If there are any changes,
no further notice will be given.





UNI-T®
UNI-TREND TECHNOLOGY（CHINA）CO., LTD.
No. 6, Gong Ye Bei 1st Road,
Songshan Lake National High-Tech Industrial
Development Zone, Dongguan City,
Guangdong Province, China