

ES3001 Soil Resistivity Tester



I . Characteristic

ES3001 soil resistivity grounding resistance tester is also called soil resistivity tester. It is a common instrument for testing and measuring grounding resistance commonly used instruments. It adopts large LCD gray and white screen backlight display and microprocessor technology. 3-wire, 4-wire French grounding resistance test and soil resistivity test. It brings together many grounding test functions, which can quickly and comprehensively measure various parameters in the grounding network. Widely used in telecommunications, electricity, meteorology, computer rooms, oil fields, power distribution lines, tower transmission lines, gas stations, factory grounding grids, lightning rods, etc. The instrument has the characteristics of accurate, fast, simple, stable and reliable testing.

ES3001 Soil Resistivity Grounding Resistance Tester is controlled by a microprocessor, which can accurately detect grounding resistance, soil resistivity and grounding voltage. It uses fast filtering techniques to minimize interference. The resistance value of the auxiliary electrode is displayed on the same screen, which is convenient for judging the measurement error caused by environmental factors, which is convenient for more accurate measurement of the real resistance value of the ground. At the same time, 500 sets of data are stored, and the data can be monitored online through the monitoring software, and the USB data can be uploaded to a PC and have numerical values. Unique features such as hold and intelligent alarm prompts.

ES3001 soil resistivity grounding resistance tester consists of host, monitoring software, test line, USB cable, grounding pin, and has functions such as historical data reading, consulting, saving, reporting, and printing.

II . Technical Specification

1. Range and Accuracy Error

| Measurement function | Measuring range | Accuracy | Resolution |
|-----------------------|-----------------|----------------------|------------|
| ground resistance (R) | 0.00Ω~30.00Ω | ±2%rdg±5dgt (Note 1) | 0.01Ω |
| | 30.0Ω~300.0Ω | ±2%rdg±3dgt | 0.1Ω |
| | 300Ω~3000Ω | ±2%rdg±3dgt | 1Ω |

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|---|-------------------------------------|-------------------------|-----------------|
| | 3.00k Ω ~30.00k Ω | $\pm 2\%rdg\pm 3dgt$ | 10 Ω |
| Soil resistivity (ρ) | 0.00 Ω m~99.99 Ω m | $\rho=2\pi aR$ (Note 2) | 0.01 Ω m |
| | 100.0 Ω m~999.9 Ω m | | 0.1 Ω m |
| | 1000 Ω m~9999 Ω m | | 1 Ω m |
| | 10.00k Ω m~99.99k Ω m | | 10 Ω m |
| | 100.0k Ω m~999.9k Ω m | | 100 Ω m |
| | 1000k Ω m~9999k Ω m | | 1k Ω m |
| ground voltage | AC 0.00~100.0V | $\pm 2\%rdg\pm 3dgt$ | 0.01V |

Note: 1. Reference condition: Accuracy when $R_h R_s < 100\Omega$.

Working conditions: $R_h \max = 3k\Omega + 100R < 50k\Omega$; $R_s \max = 3k\Omega + 100R < 50k\Omega$

2. It depends on the measurement accuracy of R, $\pi=3.14$, a: 1 m~100m;

2. General Specifications

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| Features | Two-three-four-wire measurement of grounding resistance and soil resistivity; Ground voltage measurement |
| Ambient temperature and humidity | 23 $^{\circ}$ C \pm 5 $^{\circ}$ C, below 75%rh |
| Power supply | DC 6V 4.5Ah lead-acid battery for 100 hours of continuous standby |
| Interference voltage | <20V (should be avoided) |
| Disturbance current | <2A (should be avoided) |
| Electrode spacing when measuring R | a > 5d |
| Electrode spacing when measuring ρ | a > 20h |
| Auxiliary grounding resistance value | Reference condition <100 Ω , working condition <5k Ω |
| Range | Grounding resistance: 0.00 Ω ~30.00k Ω |
| | Soil resistivity: 0.00 Ω m~9999k Ω m |
| | Ground voltage: 0.00V~100.0V |
| Measurement method | Precision 4-wire, 3-wire method measurement, simple 2-wire measurement ground resistance |
| Measurement methods | Grounding resistance: rated current pole change method Soil Resistivity: Quadrupole Method Ground voltage: average value rectification (between S-ES interface) |
| Test frequency | 128Hz |
| Short circuit test current | > 20mA (sine wave) |
| Open circuit test voltage | AC 28V max |
| Electrode Spacing Range | Can be set from 1m to 100m |
| Shift | Grounding resistance: 0.00 Ω ~30.00k Ω automatic gear shifting |
| | Soil resistivity: 0.00 Ω m~9999k Ω m automatic shifting |
| Backlight | Controllable gray and white backlight, suitable for use in dark places |
| Display mode | 4-digit large LCD display, gray and white backlight |

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| Measurement instructions | LED blinks during measurement |
| LCD size | 111mm×68mm |
| LCD display field | 108mm×65mm |
| Meter size | Length, width and height: 277.2mm×227.5mm×153mm |
| Standard test lead | 4 strips: 15m for red, 15m for black, 10m for yellow, 10m for green |
| Simple test lead | 2: Yellow 1.6m, 1 green 1.6m each |
| Auxiliary ground rod | 4 pieces: ϕ 10mm×200mm |
| Measure time | Voltage to ground: about 3 times/second |
| | Grounding resistance, soil resistivity: about 7 seconds/time |
| Ground voltage | AC 100V or less measurement (the ground voltage measurement function cannot be used to measure commercial power) |
| USB interface | With USB interface, software monitoring, storage data can be uploaded to the computer, save and print |
| Communication line | 1 USB communication cable, 1.5m long |
| Data storage | 500 groups, "MEM" storage indication, displaying "FULL" symbol means the storage is full |
| Data access | "MR" symbol indication when viewing data |
| Overflow display | "OL" symbol indication when overrange overflow |
| Interference test | Automatically identify interference signals, and the "NOISE" symbol indicates when the interference voltage is higher than 5V |
| Auxiliary ground test | With auxiliary grounding resistance value test function, $0.00k\Omega \sim 30k\Omega$ ($R_h \max=3k\Omega+100R < 50k\Omega$; $R_s \max=3k\Omega+100R < 50k\Omega$) |
| Alarm function | When the measured value exceeds the alarm setting value, an alarm prompt will be issued |
| Battery voltage | Real-time display of battery power, reminding to charge in time when the battery voltage is low |
| Automatic shut-down | The meter shuts down after about 15 minutes of inactivity |
| Power consumption | Standby: 40mA Max (backlight off) |
| | Turn on the backlight: 43mA Max |
| | Measurement: 120mA Max (backlight off) |
| Quality | Meter: 2406 (including battery) |
| | Test line: 1300g |
| | Auxiliary ground rod: 850g (4 pieces) |
| Working temperature and humidity | -10°C ~ 40°C; below 80%rh |
| Storage temperature and humidity | -20°C ~ 60°C; below 70%rh |
| Overload protection | Measuring ground resistance: AC 280V/3 seconds between each port of H-E and S-ES |
| Insulation resistance | Above 20M Ω (500V between circuit and case) |
| Pressure resistance | AC 3700V/rms (between circuit and case) |
| Electromagnetic | IEC61326(EMC) |

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| properties | |
| Suitable for safety regulations | IEC61010-1 (CAT III 300V, CAT IV 150V, pollution degree 2); IEC61010-031; IEC61557-1 (grounding resistance); IEC61557-5 (soil resistivity); JJG 366-2004. |

III. Packing List

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| Meter | 1 set |
| Instrument bag | 1 |
| Auxiliary ground rod | 4 sticks |
| Standard test lead | 4 strips (15 meters for red; 10 meters for yellow; 10 meters for green; 1 for each of 15 meters for black) |
| Simple test lead | 2 strips (yellow 1.6 meters; green 1.6 meters) |
| 6V lead-acid battery (built-in) | 1 |
| Charger | 1 |
| Monitoring software CD | 1 serving |
| USB communication cable | 1 |
| Manual, Warranty | 1 set |

GuangZhou ZhengNeng Electronics Technology Co.LTD

Address: 4th Floor, No. 771, Guangcong Eighth Road, Changyaoling Village, Zhongluotan Town, Baiyun District, Guangzhou, China

Tel: 86-181-22447729

E-mail: sales@fuzrr.com

Post code: 510540

Website: <https://www.fuzrr.com>