

## ES3002ES3002 Double Clamp Earth Resistance Tester



### I . Characteristic

ES3002 double-clamp multi-function grounding resistance tester is also called double-clamp grounding resistance tester. It is an advanced grounding resistance tester that integrates a variety of measurement methods. In addition to the traditional function of measuring grounding resistance with auxiliary grounding, the instrument also has the unique function of measuring without auxiliary grounding. It adopts large LCD gray and white screen backlight display and microprocessor technology, and measures ground resistance test by microprocessor-controlled precision 4-wire method, 3-wire method, simple 2-wire method, selection method, and double-clamp method. It adopts the design of large-caliber current clamp, and uses the double-jaw measurement technology to realize online measurement without the need for auxiliary grounding and isolation of the grounding body from the equipment. 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.

The ES3002 double-clamp multi-function grounding resistance tester is controlled by a microprocessor and can accurately detect grounding resistance, soil resistivity, grounding voltage, DC resistance and AC current. 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 and 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 the PC and has unique functions such as value retention and intelligent alarm prompts.

ES3002 double-clamp multi-function grounding resistance tester is composed of host, monitoring software, test lead, USB cable, grounding pin, and has the functions of reading, viewing, saving, reporting, and printing historical data.

### II . Technical Specification

#### 1. Range and Accuracy

Measurement	Measuring range	Accuracy	Resolution
Two-three-four-wire method to measure grounding resistance (Re)	0.00Ω~29.99Ω	±2%rdg±5dgt(Note 1)	0.01Ω
	30.0Ω~299.9Ω	±2%rdg±3dgt	0.1Ω
	300Ω~2999Ω	±2%rdg±3dgt	1Ω
	3.00kΩ~30.00kΩ	±2%rdg±3dgt	10Ω
DC resistance (R—)	0.0Ω~299.9Ω	±2%rdg±3dgt	0.1Ω
	300Ω~2999Ω	±2%rdg±3dgt	1Ω
	3.00kΩ~30.00kΩ	±2%rdg±3dgt	10Ω
Earth Resistance (Re) by Selection Method	0.00Ω~29.99Ω	±2%rdg±5dgt(Note 1)	0.01Ω
	30.0Ω~299.9Ω	±2%rdg±3dgt	0.1Ω
	300Ω~3000Ω	±2%rdg±3dgt	1Ω
Double clamp method to measure earth resistance (Re)	0.01Ω~0.99Ω	±10%rdg±10dgt	0.01Ω
	1.0Ω~9.9Ω		0.1Ω
	10Ω~100Ω		1Ω
Soil resistivity (ρ)	0.00Ωm~99.99Ωm	ρ=2πaR (Note 2)	0.01Ωm
	100.0Ωm~999.9Ωm		0.1Ωm
	1000Ωm~9999Ωm		1Ωm
	10.00kΩm~99.99kΩm		10Ωm
	100.0kΩm~999.9kΩm		100Ωm
	1000kΩm~9999kΩm		1kΩm
ground voltage	AC 0.00~100.0V	±2%rdg±3dgt	0.01V
Alternating current	AC 0.0mA~1000A	±2%rdg±3dgt	0.1mA

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,  $\pi = 3.14$ ,  $a: 1\text{ m} \sim 100\text{m}$ ;

## 2. General Specifications

Features	Ground resistance, soil resistivity, DC resistance, ground voltage, AC current,
Ambient temperature and humidity	23°C±5°C, below 75%rh
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
Power supply	DC 6V 4.5Ah lead-acid battery, continuous standby for more than 100 hours
Backlight	Controllable backlight, suitable for dark places
Measurement method	Precision four-wire, three-wire method measurement, simple two-wire method, selection method, double clamp method to measure grounding resistance

Measurement methods	Two-three-four-wire method measurement: pole-changing method, measuring current 20mA Max Soil Resistivity: Quadrapole Method Selection method measurement: pole-changing method, measuring current 20mA Max Double clamp method: non-contact mutual inductance measurement method, test current 1mA Max DC resistance: pole changing method AC current: average value rectification (clamp) Ground voltage: Average value rectification (between S-ES interface)
Test voltage waveform	sine wave
Test frequency	128Hz
Short circuit test current	AC 20mA max
Open circuit test voltage	AC 28V max
Electrode Spacing Range	1m~100m
Display mode	4-digit large LCD display with backlight
Measurement instructions	LED flashing indication during measurement
LCD size	111mm×68mm
LCD display field	108mm×65mm
Meter size	Length, width and height: 277.2mm×227.5mm×153mm
Current clamp size	Length, thickness and height: 101mm×27mm×214mm
Test line	4 strips: 15m for red, 15m for black, 10m for yellow, 10m for green
Simple test lead	2: Yellow 1.5m, 1 green 1.5m each
Auxiliary ground rod	4 pieces: $\phi$ 10mm×200mm
Current clamp	2: Banana plugs
Current clamp diameter	$\phi$ 50mm
Current clamp leads	2m long
Measure time	AC current: about 2 times/second Voltage to ground: about 2 times/second Grounding resistance, soil resistivity: about 7 seconds/time
Line voltage	AC 100V or less measurement (the ground voltage measurement function cannot be used to measure commercial power)
USB interface	With a USB interface, the stored data can be uploaded to the computer through the software
Communication line	1 USB communication cable, 1.5m long
Data retention	"HOLD" symbol indication when holding data
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
Current clamp low current indication	When the selection method or the double-clamp method is used for measurement, when the current signal received by CT2 is lower than 0.5mA, the symbol “ ” will be displayed, and the clamping direction of the CT2 current clamp should be checked at this time.

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, $0.00k\Omega \sim 30.00k\Omega$ ( $R_h \max=3k\Omega+100R < 50k\Omega$ ; $R_s \max=3k\Omega+100R < 50k\Omega$ )
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: 2430g (including battery)
	Current clamp: 940g (2 pieces)
	Test line: 1300g (including simple test line)
	Auxiliary ground rod: 850g (4 pieces)
Working temperature and humidity	$-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ ; below 80%rh
Storage temperature and humidity	$-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$ ; 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 $\Omega$ (500V between circuit and case)
Pressure resistance	AC 3700V/rms (between circuit and case)
Electromagnetic properties	IEC61326(EMC)
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 (earth resistance meter); JJG 1054-2009 (Clamp Earth Resistance Tester)

### III. Packing List

Meter	1 set
Instrument box	1
Auxiliary ground rod	4 sticks
Current clamp	2
Monitoring software CD	1 serving
USB communication cable	1
Test line	4
Simple test lead	2 pieces
6V battery (built-in)	1
Charger	1
User Manual Warranty	1 serving

#### GuangZhou ZhengNeng Electronics Technology Co.LTD

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

Tel: 86-20-36544172

E-mail: [sales@fuzrr.com](mailto:sales@fuzrr.com)

Post code: 510540

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