

# ES3001 Soil resistivity grounding resistance tester



## I. Product Introduction

ES3001 soil resistivity grounding resistance tester, also called the soil resistivity tester, is a commonly used instrument for measuring commonly used grounding resistance meters. It uses a large LCD gray screen backlight display and microprocessor technology, through the microprocessor-controlled 2-wire, 3-wire, 4-wire method to test ground resistance and soil resistivity. It has a lot of grounding test function, can quickly and comprehensively measure the parameters in the grounding network. Widely used in telecommunications, electricity, meteorology, computer rooms, oil fields, power distribution lines, iron tower transmission lines, gas stations, factory grounding networks, lightning rods and so on. The instrument has the characteristics of precise, fast, simple, stable and reliable.

ES3001 soil resistivity grounding resistance tester is controlled by a microprocessor and can accurately detect ground resistance, soil resistivity, and ground voltage. It uses a fast filtering technique to minimize interference. Displaying the resistance value of the auxiliary electrode in the same screen, which is convenient for judging the measurement error caused by environmental factors, facilitating more accurate measurement of the grounding true resistance value, and storing 500 sets of data at the same time. The online monitoring data can be monitored by the monitoring software. USB data can be uploaded to the PC and has unique functions such as numerical maintenance and intelligent alarm prompting.

ES3001 soil resistivity grounding resistance tester consists of host computer, monitoring software, test line, USB cable, and grounding pin. It has the functions of reading, checking, saving, reporting and printing of historical data.

## II. Technical Specification

### 1. Range and Accuracy error

Measurement function	Measurement range	Accuracy	Resolution
Grounding resistance (R)	0.00 $\Omega$ ~ 30.00 $\Omega$	$\pm 2\%rdg \pm 5dgt$ (remark 1)	0.01 $\Omega$
	30.0 $\Omega$ ~ 300.0 $\Omega$	$\pm 2\%rdg \pm 3dgt$	0.1 $\Omega$
	300 $\Omega$ ~ 3000 $\Omega$	$\pm 2\%rdg \pm 3dgt$	1 $\Omega$
	3.00k $\Omega$ ~ 30.00k $\Omega$	$\pm 2\%rdg \pm 3dgt$	10 $\Omega$
Soil resistivity	0.00 $\Omega$ m ~ 99.99 $\Omega$ m	$\rho = 2 \pi aR$ (remark 2)	0.01 $\Omega$ m

( ρ )	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
<b>Grounding voltage</b>	AC 0.00~100.0V	±2%rdg±3dgt	0.01V

Remark:

1. Reference conditions: accuracy with Rh Rs < 100 Ω 。

Working conditions:Rh max=3k Ω +100R<50k Ω ; Rs max=3k Ω +100R<50k Ω

2.Depends on the measurement accuracy of R, π=3.14, a:1 m~100m

## 2. General specification

<b>Function</b>	Two three four-wire measure grounding resistance, soil resistivity; Ground voltage, AC voltage measurement
<b>Ambient temperature and humidity</b>	23℃±5℃, below 75%rh
<b>Power</b>	DC 6V 4.5Ah lead-acid battery lasts more than 100 hours standby
<b>Interference voltage</b>	<20V (should be avoided)
<b>Interference current</b>	<2A (should be avoided)
<b>Measure R electrode spacing</b>	a>5d
<b>Measured electrode spacing</b>	a>20h
<b>Auxiliary ground resistance</b>	Reference condition <100 Ω , working condition <5k Ω
<b>Range</b>	Grounding resistance: 0.00 Ω ~30.00k Ω
	Soil resistivity: 0.00 Ω m~9999k Ω m
	Grounding voltage: 0.00V~100.0V
<b>measurement mode</b>	Precise four-wire、 three-wire measurement, simple two-wire measurement
<b>Measurement methods</b>	Grounding resistance: rated current change pole method Soil resistivity: four-pole method Ground Voltage: Average Rectification(between S-ES interface)
<b>Test frequency</b>	128Hz
<b>Short circuit test current</b>	> 20mA (Sine Wave)
<b>Open circuit test voltage</b>	AC 28V max
<b>Electrode spacing range</b>	Can be set 1m ~ 100m
<b>Change gear</b>	fully automatic shifting 0.00 Ω ~ 30.00k Ω
	fully automatic shifting 0.00 Ω m~9000k Ω m
<b>Backlight</b>	Controllable gray screen backlight, suitable for use in dim places
<b>Display mode</b>	4-bit large LCD display, gray screen backlight
<b>Measurement instructions</b>	LED flashing indicator during measurement
<b>LCD size</b>	111mm×68mm
<b>LCD display field</b>	108mm×65mm
<b>Instrument size</b>	L/W/H: 277.2mm×227.5mm×153mm
<b>Standard test line length</b>	4 strips: red 15m, black 15m, yellow 10m, green 10m each one

<b>Simple test line</b>	2strips: yellow 1.6m, green 1.6m each one
<b>Auxiliary Grounding rod</b>	4PCS: $\phi 10\text{mm} \times 200\text{mm}$
<b>Measure time</b>	Ground voltage: about 3 times/sec;
	grounding resistance、soil resistivity: about 7 seconds/time
<b>Line voltage</b>	Measurement below AC100V (ground voltage measurement function cannot be used to measure commercial power)
<b>USB interface</b>	With USB interface, software monitoring, storage data can be uploaded to the computer, save and print
<b>Communication Line</b>	One USB communication line, 1.5m long
<b>Data storage</b>	500 groups, "MEM" storage indicates, flashing "FULL" symbol indicates that the memory is full
<b>Data review</b>	Data review function: "MR" symbol display
<b>Overflow display</b>	Over-range overflow function: "OL" symbol display
<b>Interference test</b>	Automatic identification of interference signals, "NOISE" symbol indication when the interference voltage is higher than 5V
<b>Auxiliary grounding test</b>	With auxiliary ground resistance test function, $0.00\text{k}\Omega \sim 30\text{k}\Omega$ ( $R_h \text{ max} = 3\text{k}\Omega + 100\text{R}$ $< 50\text{k}\Omega$ ; $R_s \text{ max} = 3\text{k}\Omega + 100\text{R} < 50\text{k}\Omega$ )
<b>Alarm function</b>	Alarm when the measured value exceeds the alarm setting value
<b>Battery voltage</b>	Real-time display of battery power, reminding timely charging when battery voltage is low
<b>Automatic Shutdown</b>	"APO" Indicates, automatic Shutdown After 15 Minutes
<b>Power consumption</b>	Standby: 40mA Max(Backlight off)
	Turn on backlight: about 43mA
	measuring: 75mA Max(Backlight off)
<b>Weight</b>	Instrument: 2450(including battery)
	Test lines: 1300g
	Auxiliary grounding rod: 850g(4PCS)
<b>Working temperature and humidity</b>	$-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ ; below 80%rh
<b>Storage temperature and humidity</b>	$-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$ ; below 70%rh
<b>Overload protection</b>	Grounding resistance: AC 280V/3 seconds between H-E and S-ES ports
<b>Insulation resistance</b>	$20\text{M}\Omega$ 以上(500V between circuit and housing)
<b>Pressure resistance</b>	AC 3700V/rms(between circuit and housing)
<b>Electromagnetic properties</b>	IEC61326(EMC)
<b>Suitable for safety regulations</b>	IEC61010-1(CAT III 300V、CAT IV 150V、pollution level 2); IEC61010-031; IEC61557-1(grounding resistance); IEC61557-5(soil resistivity); JJG 366-2004.

### III. Accessories

<b>Instrument</b>	1PC
<b>Instrument bag</b>	1PC
<b>Auxiliary grounding rod</b>	4PCS
<b>Standard test line</b>	4 Strips(red 15m; yellow 10m; green 10m; black 15m, each one)
<b>Simple test line</b>	2 Strips(yellow 1.6m; green 1.6m)
<b>6VLead-acid battery (internal)</b>	1PC

<b>Charger</b>	1PC
<b>Monitoring software CD</b>	1PC
<b>USB communication line</b>	1PC
<b>Manual, certificate</b>	1SET



GuangZhou ZhengNeng Electronics Technology Co.

Address: 2F, No.15 Baoshu Road, Taihe, Baiyun District, Guangzhou, Guangdong, China

Toll-free call: 4000-1515-38

Tel: 86-20-36544172

Fax: 86-20-37319075

Post: 510540

WebSite: [www.znele.com](http://www.znele.com)