

## VIII. Replacing Battery

- a. Do not open the battery cover if the outer casing is wet.
- b. Do not replace the battery during test. Please turn the range switch to "OFF" and remove testing leads, earth spikes, etc before replacing the battery to avoid electric shock.
- c. Undo the screw on battery cover at the bottom of the unit and open the battery cover.
- d. Put into new batteries, then put battery cover back and tighten the screw.

## IX. Accessories

- a. Four auxiliary earth spikes
- b. Testing Wires (Including Red testing wire 15 meters each, Yellow testing wire 10 meters each, Green testing wire 5 meters each, Black testing wire 5 meters each)
- c. 1.5V(AA) Battery 4 pcs
- d. Instruction Manual
- e. Tool Box
- f. Tool Bag

## DY4300

### 4 WIRES DIGITAL EARTH RESISTANCE

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### CAUTION

This user manual includes warning and safety specifications, which shall be strictly followed to ensure safety. Please be sure to read through this user manual before using this instrument.

#### I . General Introduction

DY4300 Digital Earth Resistance Tester is a new generation tester for electrician practice which is developed by our company in recent years. The circuit, structure and technique of traditional earth resistance tester have been improved and new design is both fine-looking and practical. This one has more complete functions, higher accuracy, more convenient and reliable for operation and more suitable for outdoor use with dust and wet proof structure. It can test earth resistance of various earth systems including power systems, electric equipments, lightning conductors as well as earth resistivity ( $\rho$ ) Measurement.

## II . Safety Rules and Precaution

1. Please read this manual carefully before use.
2. It should not be used before placing the back cover back to avoid risk of electric shock.
3. Please check the test leads's insulating layer is intact before used.
4. Please do not touch lead terminal and circuit under test to avoid electric shock.
5. Make sure the coupler plug of lead inserted in the terminal tightly.
6. Please do not test in flammable place, the spark may cause explosion
7. Please stop use when metal is exposed due to breakage of casing or testing wire.
8. Please make sure the testing wire has been removed from testing terminal and the range select switch is on OFF position before replacing battery.
9. Do not use it or replace the battery when the tester is wet.
10. Please make sure the range select switch is on OFF position after use.
11. Please remove the battery if not use it for long time .
12. Replacing the battery when  shown on tester to ensure testing accuracy.

d. Press the “TEST” button after distance setting, Soil resistivity value will be displayed on the LCD ,the unit is  $\Omega m$ .



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- e. If do not release the ‘TEST’ button, then it is in continuous measuring state, refreshing about once every second.
- f. The LCD displayed "OL" if releasing the "test" button, Meter goes into standby mode. If press the "TEST" button again, LCD will display the new measured value.

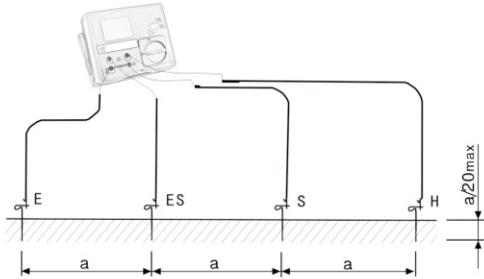
### CAUTION

- a. Must be inserted corresponding auxiliary earth spikes into soil and connected all leads well between meter and auxiliary earth spikes before power on meter. Never first power on meter then to connect wires, otherwise no correct measurement can be obtained.
- b. Must be shutted meter down first before to re-adjust auxiliary earth spikes position, Then re-power on meter after adjusting.

### 7-3 Soil Resistivity Testing

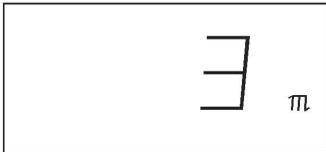
a. Line up 4 auxiliary earth spikes at equal distance in straight line called 'a' (m), driving depth of auxiliary earth spike is about 1/20a.

b. As the Reference Diagram 8, Four testing wires connect E,S,H,ES test terminal of meter with the four auxiliary earth spikes.



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c. Set the functional switch to earth position, then the instrument is powered on, LCD display after a few seconds was shown in Fig.9; where, 10m is the previously set distance, press  $\uparrow$  or  $\downarrow$  to reset distance (variable in 1m–30m, 1m each time). This distance must be equal to actual distance between auxiliary earth spikes.



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### III . Electrical symbol

~	AC
⚠	Refer to manual
⚡	Dangerous voltage (Danger! electric shock!)
⏏	Earth
□	Double insulation
Ω	Earth Resistance
⎓	Low battery when shown on display

### IV . Features

- 4 wires measurement can avoid 3 wires measurement error caused by E-pole lead resistance and clamp contact resistance;
- Auto range;
- LCD Display:4 Digit
- LCD displayed  $\text{⎓}$  low battery
- LCD Background Light
- LED Display Size: 65 × 48mm
- Power:1.5V(AA)x4 Batteries
- Dimension: 190 × 155 × 75mm
- Weight: approx. 900g(including batteries)
- Environmental Condition
 

Working Temperature	0°C–40°C	Relative Humidity
	<80%	
Storage Temperature	-10°C–50°C	Relative Humidity
	<85%	

## V . Electrical Specification

Guarantees the accuracy environment request:

Temperature: 18°C-28°C

Relative Humidity: <75%

Guarantees the accuracy period: one year.

### 1. Earth Resistance

( Ω ) Range	Accuracy	( Ω ) Resolution
0.00~6.99	± (3% dgt +6 Digit)	0.01
7.0~49.9	± (2% dgt +3 Digit)	0.1
50~299.5	± (2% dgt +3 Digit)	0.5
300~1500	± (2% dgt +3 Digit)	1

Maximal earth resistance at H-end :

$R_{cmax}=(0-100R_e)$  and 50KΩ less value

Maximal ground resistance at S- end:

$R_{pmax}=(0-100R_e)$  and 50KΩ less value

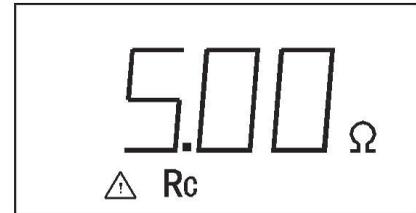
$R_{cmax}$  and  $R_{pmax}$  additional measurement error: ± ( 3% +10 Digit )

Maximum test current is approx. 2mA

### 2. Soil Resistivity

( Ω m )Range	Accuracy	(Ω m)Resolution
0.00~99.99	± (3% dgt +6 Digit)	0.1
100~999.9	± (2% dgt +3 Digit)	0.1
1000~9999	± (2% dgt +3 Digit)	1
10k~99.9k	± (2% dgt +3 Digit)	10
100k~300k	± (2% dgt +3 Digit)	100

e. Maximal earth resistance  $R_{pmax}$  which belong to “S” terminal must be less than  $100R_e$  ( $R_e$  = Earth resistance of grounding body to be measured) and below 50kΩ, The accuracy will be worse if exceeding these value. The value as (Reference Diagram 6)



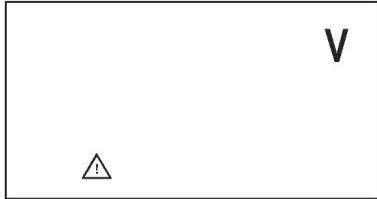
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f. If earth resistance of grounding body to be measured is greater than 1500Ω, LCD will displayed as



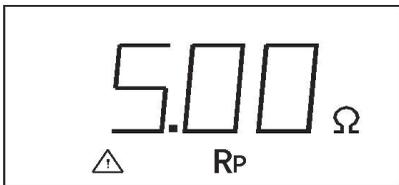
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c. Instrument can not measure when the earth voltage over 20V as (Reference Diagram 4)



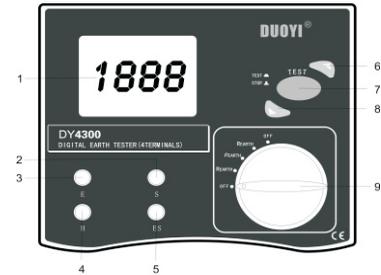
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d. Maximal earth resistance  $R_{cmax}$  which belong to "H" terminal must be less than  $100R_e$  ( $R_e$  = Earth resistance of grounding body to be measured) and below  $50k\Omega$ , The accuracy will be worse if exceeding these value. The value as (Reference Diagram 5)



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## VI、 Front Panel



1. LCD Display
2. Test terminal 'S'
3. Test terminal 'E'
4. Test terminal 'H'
5. Test terminal 'ES'
6. Increases spikes distance button
7. Test button
8. Decreases spikes distance button
9. Function Switch

## VII. Operation Instruction

7-1. Check battery voltage

When the Function Switch is on

'Rearth' or 'ρ earth', no symbol  on LCD indicates sufficient 6V battery. Symbol  on LCD, please replace batteries according to instruction.

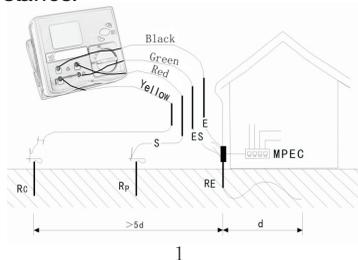
## 7-2. Earth Resistance Testing

a. Prior to measurement, please ensure that test wire plug has been inserted into test socket completely, otherwise, measurement error will occur or measuring will be impossible.

Wires connecting method:

- ① .Black wire one terminal inserted into "E" socket,another terminal clamp the earth body which want to be measured.
- ② .Green wire one terminal inserted into "Es" socket,another terminal clamp the earth body which want to be measured too.
- ③ .Yellow wire one terminal inserted into "S" socket,another terminal clamp the auxiliary earth spike which locating middle position.
- ④ .Red wire one terminal inserted into "H" socket,another terminal clamp the auxiliary earth spike which locating farthest position.

The function switch setting on  $R_{\text{EARTH}}$  it will be show  $0\ \Omega$   
 Press the 'TEST' button, Value displayed on LCD is earth resistance.



1

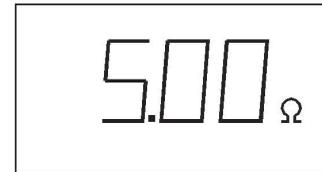
◆ Example of recommended measuring methods

b. When the function switch is on 'Rearth', after a few seconds LCD displayed as (Reference Diagram 2)



2

c. Press the 'TEST' button, LCD displayed the value which want to be measured object. (Reference Diagram 3)



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d. Do not release the 'TEST' button, then it is in continuous measuring state, refreshing about once every second.

e. The LCD displayed "OL" if releasing the "test" button, Meter goes into standby mode. If press the "TEST" button again, LCD will display the new measured value.

### NOTICE

a. Must be inserted corresponding auxiliary earth spikes into soil and connected all leads well between meter and auxiliary earth spikes before power on meter. Never first power on meter then to connect wires, otherwise no correct measurement can be obtained.

b. Must be shutted meter down first before to re-adjust auxiliary earth spikes position, Then re-power on meter after adjusting.