



ERT-40R

Earth Resistance & Soil Resistivity Tester Kit



Four Wires, One Sealed Case.

A full earth survey instrument rather than a single-purpose tester. The precision four-wire method removes the resistance of the test leads and the connection to the electrode from the reading, which is what separates a defensible grid measurement from an approximate one. Three-wire and simple two-wire methods are there for routine work where lead resistance is not significant.

Soil resistivity is measured by the Wenner four-pole method, with the electrode spacing entered on the instrument and the result computed as $\rho = 2\pi aR$. Spacings from 1 to 100 m let a survey build a resistivity profile with depth, which is the starting point for designing an earthing system rather than verifying one.

Site interference is dealt with in two ways: fast Fourier analysis identifies what is already on the ground, and automatic frequency control moves the test signal to whichever of four frequencies is quietest. Everything lives in a sealed IP65 case that closes on its own lid, runs from a rechargeable lithium pack, stores 300 readings and uploads them by USB or Bluetooth.

KEY FEATURES

- Precision 4-wire, 3-wire and simple 2-wire methods
- Soil resistivity by the Wenner four-pole method
- 0.00 Ω to 30.00 k Ω · 0.01 Ω resolution
- Earth voltage AC/DC to 600 V on its own range
- FFT and AFC reject interference on live sites
- IP65 sealed case, rechargeable lithium pack
- 300-group memory · USB and Bluetooth upload

IDEAL FOR

- Substation and distribution earth grids
- Lightning protection system verification
- Soil resistivity surveys for earthing design
- Telecoms, rail, renewables and oil and gas sites
- Periodic inspection and compliance records

MEASUREMENT RANGES

Range	Accuracy	Resolution	Method
Earth resistance · 2 / 3 / 4-wire · AFC selects 128, 111, 105 or 94 Hz			
0.00 to 30.00 Ω	±(2% rdg + 3 digits)	0.01 Ω	4, 3 or 2-wire
30.0 to 300.0 Ω	±(2% rdg + 3 digits)	0.1 Ω	4, 3 or 2-wire
300 to 3000 Ω	±(2% rdg + 3 digits)	1 Ω	4, 3 or 2-wire
3.00 to 30.00 kΩ	±(4% rdg + 3 digits)	10 Ω	4, 3 or 2-wire
Soil resistivity · Wenner four-pole · ρ = 2πaR, electrode spacing a from 1 to 100 m			
0.00 to 99.99 Ω·m	Derived from the measured earth resistance	0.01 Ω·m	Wenner 4-pole
100.0 to 999.9 Ω·m		0.1 Ω·m	Wenner 4-pole
1000 to 9999 Ω·m		1 Ω·m	Wenner 4-pole
10.00 to 99.99 kΩ·m		10 Ω·m	Wenner 4-pole
100.0 to 999.9 kΩ·m		100 Ω·m	Wenner 4-pole
1000 to 9999 kΩ·m		1 kΩ·m	Wenner 4-pole
Earth voltage			
AC/DC 0.0 to 600 V	±(2% rdg + 3 digits)	0.1 V	Average rectification, P(S) to ES

Earth resistance is measured by the rated-current pole-changing method at AC 20 mA maximum, sine wave, with an open-circuit test voltage of 40 V AC maximum. Measure earth voltage before resistance: a stray potential in the ground will corrupt a resistance reading. The instrument flags interference above 5 V with a NOISE indication and will not measure until it clears.

WHAT'S IN THE BOX



- ERT-40R earth resistance and soil resistivity tester
- Test lead set: 20 m red, 20 m black, 10 m yellow, 10 m green
- Simple test leads: 1.6 m red, 1.6 m black
- Auxiliary earth stakes, four, $\phi 9 \times 230$ mm
- USB communication cable, 1.5 m
- Battery charger
- Instruction manual
- Tool bag

LEAD LENGTHS · The 20 m reels reach the current and potential electrodes for a four-pole survey; the 1.6 m pair is for simple two-wire checks and continuity

GENERAL SPECIFICATIONS

Code	Item	Part Number
ERT-40R	Earth resistance and soil resistivity tester kit, 2/3/4-wire, with leads and stakes	800240

MEASURES

Earth resistance by precision 4-wire, 3-wire and simple 2-wire methods · soil resistivity by the Wenner four-pole method · earth voltage AC/DC

DISPLAY

4-digit LCD, 124 × 67 mm active area, white backlight with bar graph · HOLD, READ, OL, NOISE and FULL indications

MEASUREMENT TIME

About 15 s per resistance or resistivity measurement · about three readings per second on earth voltage · more than 5000 measurements per charge

PROTECTION

IP65 with the case closed · overload AC 280 V for 3 s across C(H) to E and P(S) to ES · insulation above 20 M Ω at 500 V · withstand AC 3700 V rms

ENVIRONMENT

Operating -10 to 40 °C, below 80% RH · storage -20 to 60 °C, below 70% RH

DIMENSIONS · WEIGHT

280 × 260 × 160 mm · 2.31 kg instrument with battery · about 6.3 kg complete kit

TEST SIGNAL

AC 20 mA maximum, sine wave · open-circuit 40 V AC maximum · AFC selects 128, 111, 105 or 94 Hz · FFT interference analysis

MEMORY · COMMUNICATION

300 groups, FULL indication when the store is used up · USB upload for saving, analysis and printing · Bluetooth to an Android app

POWER

DC 7.4 V 2600 mAh rechargeable lithium pack, about 8.4 V fully charged · low battery warning at about 7.2 V · 100 mA in measurement

SAFETY

IEC 61010-1, CAT III 300 V and CAT IV 150 V, pollution degree 2 · IEC 61010-031 · IEC 61557-1 and 61557-5 · IEC 61326 EMC · terminals AC 600 V max

ALARM · AUTO POWER OFF

Audible alarm when a reading passes a user-set threshold · powers off after 10 minutes without operation

WARRANTY

1 year, subject to product registration with GPS LTD · service and calibration available