Earth Resistance Tester
Model ER25

PHENIX TECHNOLOGIES

Testing Applications

Perform earth resistance measurements of simple or complex electrode systems, ground resistivity measurements (4-wire Wenner´s principle), and spurious voltage measurements according to IEC 61557-5.

The equipment injects an electronically generated current in the soil. Both current and voltage developed are measured with high precision.

Description

The ER25 earth tester is a digital, microprocessor controlled instrument that measures the earth resistance and ground resistivity (using Wenner´s method), as well as detect parasitic voltages present in the ground. This instrument is suitable to measure earth systems in power substations, distribution networks, and other industries, according to IEC 61557-5.

It is also suitable for soil resistivity measurements, in order to optimize an earth system project. Before starting each measurement, the equipment will check that conditions are within appropriate limits and will notify the operator of any abnormality (too high interference voltage, too much resistance in test spikes, very low test current). Then, it will look for the most suitable range and show measurement results in an alphanumeric display.

The ER25 performs measurements using the test current with an operator selected frequency (270 Hz or 1470 Hz). The lower frequency will analyze the earth system behavior related to fault currents of industrial frequency. A measurement performed with the higher frequency will show the behavior in connection with electrical currents caused by lightning and provide a very high immunity related to interference voltages that are usually present in soil, especially near substations.

The instrument has four ranges that are automatically selected, covering measurements from 0.01Ω up to 20kΩ, which allows to obtain very accurate measurements for any kind of soil. During ground resistivity measurement, the operator may indicate the distance between spikes in order for the equipment to apply Wenner's formula and to show the resistivity value directly.

GROUND PORTABLE

- Fully **automatic** and **easy-to-operate**
- **Lightweight** and **ruggedly constructed**
- **Rechargeable** battery

Design Features

- High spurious voltage rejection
- 0.1 Ω resolution
- Up to 20 kΩ resistance range
- Auto-range
- Alphanumerical display
- Automatic interference detection
- Rechargeable battery
- Built-in printer (optional)
- Direct reading of ground resistivity
- Up to 50 m selectable distance
- Built-in memory
- USB interface
- IP54 protection
- CE mark

OPERATION FREQUENCY	During R measurement, operator should select the following test frequencies: 270 Hz ± 1 Hz or 1470 Hz ± 1 Hz
VOLTMETER	In the voltmeter function, the equipment operates as a CA conventional voltmeter, making it possible to measure voltages generated by parasitic currents.
MEASUREMENT RANGES	Resistance: 0 - 20 kΩ (autoranging) Resistivity: 0 - 50 kΩm (autoranging) Voltage: 0 - 60 V
ACCURACY	Resistance and Resistivity measurements: R ≤ 2 kΩ: ± (2% of the measured value ± 2 digits) R > 2 kΩ: ± (5% of the measured value ± 2 digits) Voltage measurement: ± (3% of the measured value ± 2 digits)
READING RESOLUTION	0.01 Ω in the resistance measurement 0.01 Ωm in the resistivity measurement 0.1 V in the voltage measurement
OUTPUT CURRENT	The short-circuit current is limited to less than 3.5 mA RMS (according to IEC 61557-5 - 4.5)
IMMUNITY TO SPURIOUS VOLTAGE INTERFERENCE	During the R measurement, it allows the presence of spurious voltage up to 7 V.
EARTH RESISTANCE OF AUXILIARY RODS	In the R measurement it allows Raux up to 50 kΩ with error <30%.
BATTERY STATUS CHECK	The battery charge status is verified under normal use conditions.
ADVANCED FEATURES	Automatic detection of abnormal conditions that may cause excessive errors (low battery, too high noise interference, too high test spike resistance).
SOIL RESISTIVITY COMPUTING	When performing soil resistivity measurements, the operator provides the distance between spikes and the equipment automatically computes soil resistivity using the Wenner method.
DATA OUTPUT	USB interface
BUILT-IN PRINTER (OPTIONAL)	Print-out of measured values
POWER SUPPLY	Internal rechargeable battery, 12 V - 2.3 Ah
BATTERY CHARGER	For 100-240 V mains supply
SAFETY CLASS	Meets IEC 61010-1:1990,IEC 61010-1:1992 amendment 2.
E.M.C.	In accordance with IEC 61326-1
ELECTROSTATIC IMMUNITY	In accordance with IEC 1000-4-2
ELECTRO MAGNETIC IRRADIATION IMMUNITY	In accordance with IEC 61000-4-3
ENVIRONMENTAL PROTECTION	IP54 (with closed lid)
OPERATING TEMPERATURE	-10°C to 50°C
STORAGE TEMPERATURE	-25°C to 65°C
HUMIDITY	95% RH (without condensation)
DIMENSIONS (approx.)	11" (274 mm) L x 10" (250 mm) W x 5" (124 mm) H
WEIGHT (approx.)	10 lbs (3.6 kg)

Accessories Included

- 4 steel rods
- 1 rod extractor
- 1 charger power cord
- 1 131' (40 m) cable
- 2 65' (20 m) cable
- 1 16' (5 m) cable
- 1 16' (5 m) cable to connect to the grounding system to be measured
- 1 USB cable
- 1 canvas bag
- 1 user guide

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