

# TM25m

## High frequency earth tester

- Intended for measurement of earth resistance of electricity pylons
- Minimizes the influence of adjacent pylons, connected by the Guard cable
- Operation frequency: 25 kHz
- Resistance reading: up to 300  $\Omega$
- Automatic compensation of inductive component
- Automatic current injection
- USB interface
- Built-in memory and printer
- Rechargeable battery



## Description

Testing of the power transmission towers grounding (G) quality poses a serious problem as they are all electrically interconnected by means of Ground Wires which act as lightning rods, protecting the lines from atmospheric discharges.

Due to the existence of this connection, any attempt to measure a tower grounding (G) resistance using a conventional earth meter leads to wrong results as what is really being measured is all the shunt towers grounding (G) resistance (or, more precisely, its impedance at low frequency). Trying to disconnect the ground wire from an energized line is a risky operation due to the need for climbing to the tower highest part as well as for the proximity to the high-voltage conductors.

To make this kind of test feasible, which is of vital importance to ensure the transmission of the electrical power without interruptions, TM-25m grounding resistance meter for high frequency has been developed. This is the appropriate tool for a fast, safe and reliable grounding resistance measurement in each tower of a working line transmission, without disconnecting the ground wire.

Its operation is based on the use of a high-frequency measurement current (25 kHz), for which ground wire inductive impedance - taking into account a typical length span is reasonably high, making it possible to reduce the effect of the adjacent towers under measurement. The

equipment only measures the ground resistance of the surveyed tower, including its base. The extensive G systems, such as meshes, buried wires, metal pipes, etc, are measured only considering the closest section to the connection point, so that the measured value represents the performance, against a pulse signal similar to an atmospheric discharge. Thus, values that better represent the system capacity to ground lightning currents than the ones obtained with low frequency conventional equipments, even when disconnecting the ground wire, are obtained.

The test is performed by making the known-value current flow through the earth diffusion resistance and an auxiliary electrode, called the current electrode, and by measuring the voltage produced between grounding and another auxiliary electrode, thrust into the ground in the area of the potential created by flowing current (Potential Plateau).

The current injected by the earth meter is automatically adjusted to the predetermined value and the equipment and it directly indicates the resistance value on its ohms-grades scale. TM-25m is powered with its universal charger, from a built-in rechargeable battery. It is a strong equipment, easy to carry, resistant to the hard weather and geographical features of the tropical and high-mountain regions, that is why it is described as an excellent product for field works under the most severe environmental conditions.

# TM25m

## Technical specifications

### Measurement ranges

0 - 300  $\Omega$

### Operation frequency

25,000 Hz

### Test current

20 mA automatic

### Inductive component compensation

Through bank of capacitors integrated to the equipment

Maximum capacity: 4.2  $\mu$ F

Resolution: 10 nF

### Measurement accuracy

$\pm 2.5$  % of reading  $\pm 1$  digit

### Display

Alphanumeric display (LCD)

### Max. Earth resistance of auxiliary rods

2,000  $\Omega$  (current rod)

2,000  $\Omega$  (voltage rod)

### Built-in memory

It allows for the storage of 2,000 tests readings in its internal NVRAM memory.

### Interface

USB

### Power supply

Internal or external rechargeable battery, 12 V. Internal battery autonomy: at least 2 hours

### Battery charger

For 100 - 240 V~ 50/60 Hz

### Operating temperature

-5°C to 50°C

### Storage temperature

-15 °C to 65 °C

### Humidity

Up to 95% RH (non condensing)

### Dimensions

340 x 295 x 152 mm

### Equipment weight

Approx. 4.9 kg

### Accessories

- 4x 50 cm long steel core rods with copper coating
- 1x Rod extractor
- 1x 70 m shielded cable
- 1x 50 m shielded cable
- 1x 30 m cable to current rod
- 1x 70 m cable to auxiliary potential rod
- 1x 50 m cable to auxiliary potential rod
- 1x Cable adapter for current electrode
- 1x External battery cable
- 1x Cable for connection to the unknown electrode (Tower)
- 1x Case to carry accessories
- 1x Operating handbook



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