DET 20

Digital Earth Tester

DET 20 is a conventional type 3 digit LCD display which is designed to measure Earth Resistance, Soil Resistivity & Earth Voltage. It has a unique RSR technology in which even at the drop of battery voltage the measurement reading remain constant. DET 20 has 128Hz test frequency which eliminates the harmonics interference and has rechargeable long-life battery which reduces the cost of battery. Earthresistance is measured by three wires & Soil Resistivity is measured by four wire measurement techniques. This meter is shock proof, drop and dust proof. It has ABS casing which is useful for heavy duty. DET 20 is Type tested as per IS 9223.

Features

- ✓ 3 ½ digit LCD Display with max reading 1999.
  3 terminal and 4 terminal Measurement Method
- ✓ Earth Resistance Range 0.01Ω to 1999Ω
- ✓ 4 Soil Resistivity Measurement
- ✓ Rechargeable Internal Ni-MH Battery
- ✓ Earth Measurement Voltage up to 200V
- ✓ Ratio Metric Synchronous Rectification

Applications

The integrity of the grounding system is very important in an electrical power system for the following reasons:

To maintain a reference point of potential (ground) for equipment and personnel safety. To provide a discharge point for travelling waves due to lightning. To prevent excessive high voltage due to induced voltages on the power system

Therefor to maintain sufficiently low resistance values of grounding systems, their periodic testing is required. The testing involves measurement to ensure that they do not exceed design limits.

The measurement of ground resistances may only be accomplished with specially designed test equipment. The most common method for measuring ground resistance uses the fall-of-potential principle of alternating current (AC) at higher frequency circulating between an auxiliary electrode and the ground electrode under test; the reading will be given in ohms and represents the resistance of the ground electrode to the surrounding earth.

Soil Resistivity is also the key factor that determines what the resistance of a grounding electrode will be, and to what depth it must be driven to obtain low ground resistance. The resistivity of the soil varies widely throughout the world and changes seasonally. Soil Resistivity is determined largely by its content of electrolytes, consisting of moisture, minerals, and dissolved salts. A dry soil has high resistivity if it contains no soluble salts. It figures has a direct impact on the overall sub-station resistance and how much earth electrode is required to achieve the desired values. Lower the resistivity, fewer the electrodes required to achieve the desired earth resistance value. Hence the Soil Resistivity is also important test.

The methods of measuring and testing the Earth Resistance and Soil Resistivity:

3 pole method used for Earth Resistance testing
4 pole method used for Soil Resistivity testing.

MOTWANE

Technical Details	DET 20

Earth Resistance Ranges

0.01Ω to 19.99Ω

0.1Ω to 199.9Ω

1Ω to 1999Ω

Accuracy (25°C ±5°C)

±1.5% of reading ±5 digits valid from 10% of reading to 95% of range.

Earth Voltage accuracy : 2% of Range

Earth Voltage resolution : 0.1V

Variants 128Hz 30.5Hz

Test Current

20 Ω Range : 10mA AC rms

200 Ω Range : 1mA AC rms

2000 Ω Range : 100QA AC rms

Test Current us generally constant throughout the range

Power Supply Internal, rechargeable Ni-MH 1.2V, 600mAh x 8nos.

Charging Time Recommended 16hrs.

Single Charge Battery life Approximately 5-6hrs of continuous operation on mid-range.

Interference

Interference voltage of 20V ±5% peak to peak, 50Hz in the potential circuit will have a maximum effect ±1% on the reading obtained form 20 Ω to 2KΩ ranges.

Influence of Temperature

<±0.2% per° C over the temperature range 0-20°C and 28-55°C.

Temperature Range

Operating : 0°C to +55°C <90% RH

Storage : -20°C to +70°C <90% RH

Humidity

Operating : 95% RH non condensing max at 40°C

Storage : 93% RH non condensing max at 55°C

Flash Test : 2KV AC

Voltage withstand

In the event of as system fault, the instrument will withstand 240V AC, applied between any two terminals.

Dimensions 180(H) x 100 (W) x54 (D) mm

Weight 550gms without accessories.

Accessories

Standard

- 4nos. Spike of 10mm dis, 450mm long
- 10m, 20, 30m &40m of measurement cable on a winder as standard.
- Battery Charger
- Hammer
- Carrying bag
- Instruction Manual

Typically used for

Standard

- Substation Earth Testing.
- To test telecom tower grounding, Railways Earthing.
- To test the quality of grounding without disconnecting the ground rod under test.
- Earth Resistance of Grid.

Notes : 1. The Instrument is accompanied with Test & Calibration sheet. **2.** Test Facilities can be provided at the factory with the available test set-ups only. **3.** The company's policy includes continuous improvement of its product. We, therefore, reserve the right of any deviation from illustration or specifications without notice. **4.** Stated accuracies are valid from 10% of the range to 95% of the range. **5.** Accuracy specified for temperature range of 25°C ± 5°C & 55% RH ± 10%.