



## DET-20A

### DIGITAL EARTH TESTER WITH USB - BLUETOOTH

DET-20A is a conventional type 4 ½ 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-20A has 128Hz test frequency which eliminates the harmonics interference and has replaceable Alkaline battery which provides on site flexibility. 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-20A is designed as per IS 9223.

## Features

- ✓ 4 ½ digit LCD Display with pleasant backlit.
- ✓ 3 terminal and 4 terminal Measurement Method.
- ✓ Earth Resistance Range 0.01Ω to 19.999kΩ
- ✓ 4 Wire Soil Resistivity Measurement
- ✓ Replaceable Alkaline Batteries
- ✓ Earth Measurement Voltage up to 200V
- ✓ Ratio Metric Synchronous Rectification
- ✓ Store reading access with Galvanic isolated USB port
- ✓ Internal memory 1000 records
- ✓ Bluetooth Interface and Cloud Connectivity through Motware App
- ✓ Auto-ranging
- ✓ Lo Bat Indication

## 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

Therefore 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.

## Technical Details

### DET-20A

#### Power

<b>Mains Power Supply</b>	Internal, replaceable alkaline battery 1.5V x 6nos.
<b>Auto Power OFF</b>	After 10 min

#### Earth Resistance Range & Accuracy

<b>Range</b>	0.0001Ω to 20.000 kΩ Auto Range
<b>Accuracy</b>	at 25°C ± 2°C ±0.5% of reading ± 2 digits
3P	± 10mΩ

#### 3 and 4 pole ART selective resistance measurement

Sr. No.	Range	Current Injection	Resolution
1.	19.999Ω	10mA AC approx.	1mΩ
2.	199.99Ω	1mA AC approx.	10mΩ
3.	1999.9Ω	100μA AC approx.	100mΩ
4.	19.999kΩ	10 μA AC approx.	1 Ω

#### Test Parameters

<b>Test Frequency</b>	128Hz (± 0.5Hz)
<b>Test Current Injection</b>	10mA AC approx. @ 19.999Ω range 1mA AC approx. @ 199.99Ω range 100μA AC approx. @ 1999.9Ω range 10μA AC approx. @ 19.999kΩ range

Test Current is generally constant throughout the range

<b>Open Circuit Voltage</b>	< 40Volt AC approx.
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#### Earth Voltage Measurement

<b>Range</b>	2V to 200V AC (±2% of the range ±2v)
<b>Resolution</b>	0.1V
<b>Display</b>	4 ½ digit LCD Display with pleasant backlit
<b>PC Interface</b>	USB
<b>Report Storage</b>	1000 Reports
<b>Data Transfer</b>	Bluetooth (ISM Band 2.4GHz) (optional)
<b>Soil Resistivity</b>	Method Wenner: $PE = 2 \pi a R_w (\Omega m)$

#### General

<b>Dimensions</b>	230 mm(H) X 165 mm(W) X 95 mm(L).
<b>Weight</b>	1.35 Kg (Approx.)

**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%.

## Environmental

<b>Operating Temperature</b>	0°C to 55°C
<b>Storage Temperature</b>	-10°C to 60°C
<b>Relative Humidity</b>	95% RH at 40°C max. (Non Condensing)

## Accessories

### Standard

■ Spike 450mm long	: 4nos.
■ 10m, 20m, 30m & 40m of measurement Cable on a winder as standard	: 1 Set.
■ Hammer	: 1 No.
■ Carrying bag	: 1 No.
■ USB Cable	: 1 No.
■ Instruction Manual	: 1 No.

## 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.