

**Technical specification of digital insulation resistance tester**

**Voltage input range:** 85-265 V rms, 50/60 Hz, 60 VA

- The instrument should be suitable for operation with AC supply and D.C. battery.
- The D.C. batteries should be rechargeable with same A.C supply.

**Battery life:** Typical capacity is 6 hours continuous testing at 5 kV with a 100 M $\Omega$  load

**Test voltages:** 50 V to 1 kV in 10 V steps, 1 kV to 5 kV in 25 V steps

**Accuracy:**  $\pm 5\%$  to 1 T $\Omega$  and  $\pm 20\%$  to 10 T $\Omega$

**The instrument should have Guard terminal.**

**Display range:** Digital display (3 digits) 10 k $\Omega$  to 15 T $\Omega$  and Analogue display 100 k $\Omega$  to 1 T $\Omega$

- The instrument should display Resistance, voltage across terminal, leakage current, capacitance, battery status, time constant and elapsed time of test.
- Instrument should have analog bar graph for trend indication.
- Instrument should have Battery level indicator.

**Short circuit/charge current:** 3 mA @ 5 kV

**Capacitor charge time:** <3 seconds per  $\mu$ F at 3mA to 5 kV

**Capacitor discharge time:** <120ms per  $\mu$ F to discharge from 5000 V to 50 V

**Capacitance measurement :** 10 nF to 50  $\mu$ F

**Capacitance measurement accuracy:**  $\pm 5\%$   $\pm 5$  nF

**Voltage output accuracy:** +4%, -0%,  $\pm 10$  V of nominal test voltage at 1 G $\Omega$  load

**Current measurement range:** 0.01 nA to 5 mA

**Current measurement accuracy:**  $\pm 5\%$   $\pm 0.2$  nA at all voltages

**The instrument should have Interference rejection facility.**

**Timer range:** Up to 99 minutes and 59 seconds from start of test

- Instrument should have adjustable timers and limit alarm.
- At the end of the test the instrument should automatically discharge the energy transferred to the equipment during the test phase.

**Test regimes:** Auto IR, PI, DAR, SV and DD.

**Interface:** RS232

- Software for download of digital data to a computer or directly to the printer should be provided with the consignment.

**Data storage:** Voltage, test time, leakage current, resistance, PI, DAR, DD, capacitance and time constant

**Real time output:** Serial, once per second of test voltage, current and resistance

**Operating temperature:** -20 °C to 50 °C

**Storage temperature:** -25 °C to 65 °C

**Ingress protection:** IP65

**Humidity:** 90% RH non-condensing at 40 °C

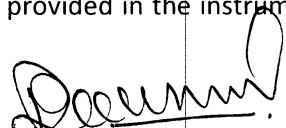
**Safety:** Meets the requirements of IEC61010-1 CATIV 600 V

- The instrument should indicate High Voltage danger indication, when the terminal voltage is 50 volt and above.

**EMC:** Meets the requirements of IEC61326-1

### **General requirements**

1. Calibration certificate traceable to national/international standard to be provided.
2. Instrument should have protection against incorrect connection, transient surges, output saturation, zero start interlock, short circuit and overload condition.
3. Two sets of instruction and maintenance manual with detailed circuit diagram should be supplied with the final consignment.
4. Inspection at supplier's works by BHEL before dispatch is required.
5. Successful bidder should provide training on operation of the above instrument to testing personnel during commissioning at BHEL Jhansi works.
6. Test and guarantee certificate required.
7. Instrument should be ideal for shop use with lightweight, portable and shielded against external charges.
8. One set of complete accessories should be supplied with this unit to extend the testing capability and application of instrument.
9. Necessary spares should be supplied with the instrument for at least three years of smooth operation.
10. Similar instrument must be in operational condition for at least five years in India and performance certificate of the above instrument obtained from the supplier's end (customer) should be submitted with the technical bid.
11. Commissioning spares required for commissioning of the instrument should be available at the time of commissioning at BHEL Jhansi works.
12. If any safety/environmental protection are required, it should be provided in the instrument by the vendor.

  
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