

## **Technical Specifications for Digital Insulation Tester – 2.5 KV**

### **A: SCOPE:**

This specification covers Design/Engineering, manufacture, testing & calibration as well as supply & delivery of Digital Insulation Tester (5 kV) suitable for measuring insulation resistance, DAR, PI in live /running Switchyard as per applicable standard & testing procedure. The offer for supply should include all accessories even though not specifically mentioned but which are essential for complete & satisfactory operation. The instrument shall be portable, light weight with internal chargeable battery. Type test from NABL/ILAC should be submitted by the bidder (inhouse or factory test report shall not be considered).

### **B: SPECIFICATION:**

1. Insulation Tester should be suitable for application in
  - Insulation testing of EHV Power Transformers at charged Switchyard
  - Insulation testing of EHV under-ground Power Cables.
  - Insulation testing of EHV switchgears within charged Switch-yard.
  - Insulation testing of Capacitors.
2. **Testing surge protection devices (SPDs).**
3. **Measuring insulation in electrostatic protection areas (EPA).**
4. Insulation Tester should have in- built battery & battery charger. Battery should be rugged, long life& long working hours. Input Voltage for charging battery should be with charging adapter(230 V $\pm$ 15%, 50HZ $\pm$ 5%, AC)
5. Should display IR values at programmable time intervals set as Rt1, Rt2, Rt3, PI, DAR, Voltage applied, Leakage current, time, step voltage, Dielectric discharge etc. without applying any searching process
6. Instruments should have an insulation resistance measurement voltage range of 10–2500 V (steps of 10 V or presets: 10, 25, 100, 250, 500, 1000, 2500 V).
7. Instruments should have a measurement range of 0.0  $\Omega$  to 2.00 T $\Omega$ .
8. Instruments should have resistance accuracy of  $\pm$ (3% of measured value + 20 digits) across specified ranges.
9. Instruments should have the capability for continuous readings of insulation resistance or leakage current.
10. Rated short-circuit rejection current  $\leq$ 2 mA with high accuracy limit at 2.5KV injection to the object.
11. Instruments should have automatic discharge of capacitance after testing.
12. Instruments should have timed measurements (T1, T2, T3) for absorption coefficients (DAR, PI).
13. Instruments should have continuity testing functionality:
  - Current: 200 mA in both directions.
  - Resistance Range: 0.10–999  $\Omega$  with an accuracy of  $\pm$ (2–4% of measured value + 3 digits).
13. Instruments should have capacitance measurement capabilities:
  - Range: 0 to 9.99  $\mu$ F.
  - Accuracy:  $\pm$ (5% of measured value + 5 digits).
14. Instruments should have voltage measurement capabilities:

- Range: 0–1500 V (AC/DC).
- Accuracy:  $\pm(3\%$  of measured value + 2 digits).

15. Instruments should have a 5" graphical LCD with backlight.

16. Instruments should have storage for up to 9999 test results with USB data transfer.

#### **C: Safety Features**

- Instruments should have compliance with EN IEC 61557, EN IEC 61010-1, and EN IEC 61010-2-030 standards.
- Instruments should have double insulation per EN 61010-1.
- Instruments should have measurement category ratings:
  - CAT IV 600 V up to 2000 m altitude.
  - CAT III 600 V up to 3000 m altitude.
- Instruments should have IP65-rated housing for robust environmental protection.
- Instruments should have overvoltage protection.
- Instruments should have automatic discharge of high-capacitance objects post-measurement.

#### **D: SERVICE AFTER SALE:**

- Bidder will have to submit the documentary evidence of having established mechanism for prompt services as & when required.