

Technical Specification for Automatic Contact Resistance Meter

Scope :

This specification covers Design, Manufacture, Testing, Supply and Delivery of Fully Automatic Contact Resistance Measurement Kit and associated accessories suitable for offline measurement of contact resistance of the switchyard equipments i.e Circuit Breakers, Isolators, Clamps/connectors, joints as per standard testing procedure of KPTCL.

Functional Requirement :

1. The instrument shall be suitable for offline measurement of contact resistance of the switchyard equipments i.e Circuit Breakers, Isolators, Clamps /connectors, joints etc.,
2. The test results should have repeatability, consistency & immunity to interference in live switchyard upto 765 kV level.
3. The instrument shall perform properly on both side of the equipment under test with ground open as well as one side ground open condition of the equipment under test.

Test Current :

200A or Higher

Measurement Range:

0-199 $\mu\Omega$, 0-1999 $\mu\Omega$, 0-19999 $\mu\Omega$, Auto ranging

Resolution :

1. 0.01 $\mu\Omega$ for up to 199.9 $\mu\Omega$
2. 0.1 $\mu\Omega$ for 1999.9 $\mu\Omega$
3. 1 $\mu\Omega$ for 19.99 m Ω

Accuracy: $\pm 1\%$ of the reading ± 1 resolution

Display/control :

3 ½ digit LCD display (Back lit).

Operation mode :

Operation through built in keypad as well as external Lap top shall be possible. USB port shall be provided for communication with PC.

Test Lead / Accessories :

One complete set of cable of appropriate length (Min 20Mtr) and size to suit the requirement including input cable with suitable clamps & connectors, of size compatible with the instruments should be provided for successfully carrying out the test in KPTCL S/S. Additionally all the required accessories should be provided for the smooth functioning of kit. Further hard carrying case (which should be robust/ rugged enough) for ensuring proper safety of the kit during transportation shall have to be provided.

Design & Engineering : The complete equipment along with accessories must be designed/engineered by Original Equipment Manufacturer.

Power Supply :

Kit shall work on built-in rechargeable Li-Ion battery. Battery should be chargeable on single phase 230 Volts \pm 10%, 50 Hz \pm 5% AC supply with standard socket

Operating Temperature : 0 to +50 deg C

Relative Humidity : Max. 95% non-condensing.

Cooling Arrangement :

Necessary inbuilt cooling arrangement should be provided to dissipate the heat generated during testing. No external coolant / accessory shall have to be required.

Protection Control :

The kit shall have protection against short circuit, over load, improper ground connection, transient surges etc. The instrument should have alarm/cut-off settings to protect the instrument. Also the kit facility of discharging the specimen when test is completed or when current cable is accidentally disconnected or when instrument power supply is lost. The kit should have built in rapid discharge circuit for automatically discharging the stored energy in the transformer at the end of each test. The kit should have the indication of showing the status of discharge. The equipment should have inbuilt Induction suppression.

Weight : The kit shall be light enough to make it portable and enable easy movement.

Software :

The software should be suitable for automatic testing & report generation including temperature compensation & OLTC testing. The kit should have facility to conduct the test through laptop as well as in stand-alone mode. The kit should have facility to connect with windows based computer for exporting the test data. It should be possible to create the DUT Identification Library in software & upload the same to instrument. The tests done by instrument for specific DUT should be stored in same ID.

Memory : Non-volatile memory to store min. 1000 measurements

Printer : In built Printer.

Type Testing:

The test kit shall be type tested for Environmental Tests, EMI-EMC & Safety Tests as per relevant IEC Standard. The type test report from NABL accredited lab should be submitted along with the offer.

Warranty/Guarantee :

Kit shall be guaranteed for the manufacturing defects for minimum 36 months from date of successful demonstration at site. If the kit needs to be shifted to suppliers works for repairs, supplier will have to bear the cost of spares, software, transportation etc of kit for repair at test lab/works. All the materials, including accessories, cables, laptops (wherever supplied) etc. are to be covered under warranty/ guarantee period. The commencement of warranty period will start after the successful and final demonstration, inclusive of repetitive if any, of kit at site. All the materials, including accessories, cables, laptops (wherever supplied) etc. are to be covered under warranty/ guarantee period.

1. If any problem in the kit is reported in the guarantee period, then the kit shall be collected by the firm within ten days of the report of problem for free repairs and the transportation/transit insurance cost shall also be borne by the supplier .
2. Repair period shall be maximum of one month from the date of kit collected by the firm.

Any period over and above (as 1 & 2 above), stipulated time shall be liable to extend the guarantee period for the delay period for which firm shall arrange to extend the Bank Guarantee.

Calibration Certificate :

Unit shall be duly calibrated before supply and the date of calibration shall not be older than two months from the date of supply of Kit.

Training :

Supplier shall have to ensure that the kit is made user friendly. Apart from detailed demonstration at site, the supplier shall also have to arrange necessary training to end user engineers.

Commissioning, Handing over the Instrument:

Successful bidder will have to commission the instrument to the satisfaction of end user.

After Sales Service :

Bidder will have to submit the documentary evidence of having established mechanism in India for prompt services. The service support including supply of spares shall be ensured for a period of minimum 10 years.

