

TECHNICAL SPECIFICATIONS
25A DUAL CHANNEL TRFR WINDING RESISTANCE METER

Sl. No.	Description	Remarks / Vendor to Specify
1	The test set should be fully automatic for measuring the winding resistance of Power Transformers (up to 400 kV, 125 MVA rating), high inductive electrical devices, HVR up to 95 kVp, 1600mA & Dry type transformer up to 15 MVA, 33 kV Class. Instrument suitable to provide stable resistance value of high inductive winding quickly.	
2	The test set should be able to give direct readings of the resistance of test object automatically.	
3	No of channel—Two	
4	Measurement Principle—Four Wire Kelvin Bridge to eliminate the requirement of lead compensation.	
5	The test set should be suitable for heat run test up to 01 hour Continuously. Display of Internal time timer during resistance measurement at the time of Heat run test.	
6	The test current should be automatic up to the preset value, which shall be determined by the resistance value or measurement range selected under test	
7	The test voltage to be applied on the object under test should be independent of the supply frequency to avoid any variation in the frequency during the testing.	
8	The accuracy, reliability, steadiness and the repeatability of the readings should not be affected with the test voltages.	
9	Input power supply : 230 V AC $\pm$ 10% , 50 Hz Single phase	
10	Display Easily readable with large character size LCD/LED display viewable in direct sunlight and low light level. Display of resistance value with appropriate unit.	
11	Printer In built thermal printer.	
12	Memory Internal test storage for minimum 1000 test results/measurements	
13	Operator control Key pad/ Menu driven for setup, data input, result storage	
14	Environmental conditions: Operating Temperature: 0 °C to 50 °C, Humidity: 0-90% non-condensing, Storage Temperature: 0 °C to 50 °C, Ambient Temperature: 0 °C to 50 °C	
Protection: Instrument should be protected against following		
15	Discharge the specimen safely when test is completed, if lead accidentally disconnects or if power is lost	
16	Monitoring circuit for contact operation of on load tap changer for proper make before break sequence/High speed current interrupt detector. If open circuit exist instrument should shut down immediately without any hazard/damage to instrument or operating personal.	
17	Both visual & audio Hazard warning should be provided for following Test in progress, Test specimen is discharging and Test specimen is fully discharged ready for connection changing	
The ranges of the test set for different parameters should be at least as per the points mentioned below		
18	Resistance Range : 100 $\mu\Omega$ to 2000 Ω (Auto Range) Resolution: 4 ^{1/2} digit Accuracy: ($\pm$) 0.2 % of rdg or better for range 1 m Ω to 100 Ω ($\pm$) 0.5 % of rdg. or better above 100 Ω	
19	Test Current Range : (1-5-10-20-25) Amp DC or more selectable range (User selectable) & Continuous	

20	Reading Stability: Reading should be stable & in steady state variation in measured value should not be more than $\pm 0.1\%$ of mean value	
21	The instrument should have detachable test leads for avoiding damage to the cables as well as to the instrument.	
22	Safety: - The test set should have safety monitoring system to ensure perfect grounding of test system while test is under progress and the accessories required the same are to be supplied along with the instrument. - The test kit shall meet all the relevant safety specifications / Standards.	
The Test equipment shall be offered complete with the items mentioned below:		
23	- Main Equipment with Transport/storage case & bag for cables - Power supply cord, test lead set including safety/ground leads with proper termination for resistance measurement of min 10-meter length each. - Window based PC Software CD for Data transfer for report generation, analysis & PC interface cable (RS232/USB). - Two sets of operating / maintenance manuals in English language - Different type of accessories required to connect the leads to equipment under testing.	
24	Calibration reports with following data: Two sets of calibration reports from <u>NABL Accredited Lab</u> covering full range (Resistance & Current) of the equipment with following details... Calibration date, periodicity, calibration validity duration & next calibration due date. Traceability details of standard used for calibration. All documents endorsed by authorized signature.	
25	Qualifying Conditions: - At least two or more performance certificate of offered model supplied to different customer / manufacturer / testing labs for transformer testing having at least 02 years working period to be furnished. Certificate should not be older than 12 month. - Party to furnish contact name, address and contact numbers of the users where the offered equipment, same model, is in successful operation for similar purpose since more than last 02 years.	
26	Warranty/Guarantee: The Supplier shall guarantee the product performance for 24 months from the date of successfully commissioning at BHEL Jhansi works and shall provide spares and services during guarantee period to maintain the Meter in working.	
27	Commissioning/Acceptance: Commissioning of the instrument at BHEL work by supplier's representative free of charge. Demonstration of all features of Winding Resistance meter for their efficient and effective use. Instruments shall be acceptable only after successful commissioning at BHEL Jhansi works.	
28	Supplier should provide any other attachment/accessories required for smooth functioning of the instrument	
29	Original technical catalog to be included along with technical bid. Mentioned Technical data in catalog will consider only for technical evaluation.	
Note: Supplier should submit technical compliance/comments against each of the above points in above format. Technical bid without complete technical compliance sheet will not be considered for technical evaluation.		

Prepared by

Checked & Approved by