

BHARAT HEAVY ELECTRICALS LIMITED, JHANSI

TRANSFORMER TESTING LABORATORY



COMPLIANCE SHEET

Technical Specification for Winding Resistance Meter

SL NO	DESCRIPTION	Remarks/ Vendor to specify
1.	The test set should be automatic for finding out the winding resistance of three phase & single-phase power & Auto Transformers up to 400KV, 315 MVA rating & Rectifier transformer of 120 KA current rating. Instrument should be suitable to provide stable resistance value of high inductive winding quickly.	Vendor to confirm
2	The test set should be able to give direct readings of the resistance of test object automatically.	Vendor to confirm
3	No of channel – Dual	Vendor to confirm
4	Measurement Principle - four wire kelvin Bridge	Vendor to confirm
5	Display of resistance Value.	Vendor to confirm
6	The test set should be suitable for measurement of hot winding resistance during heat run test up to 01 Hour Continuously. Display of Internal timer during hot winding resistance measurement at the time of Heat run test.	Vendor to confirm
7	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.	Vendor to confirm
8	The test Voltage is 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.	Vendor to confirm
9	The accuracy, reliability, steadiness and the repeatability of the readings should not be affected with the test voltages.	Vendor to confirm
10	Input power supply :230 V AC ,10% , 50 Hz Single phase	Vendor to confirm
11	• Display : Large Graphic LCD display with backlit. The display shall be sun-light visible.	Vendor to confirm
12	Operator control : Key pad/ Menu driven for setup, data input , result storage.	Vendor to confirm
13	Real Time Clock should be provided.	Vendor to confirm
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	Vendor to confirm
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.	Vendor to confirm
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 exists, instrument should shut down immediately without any hazard/damage to instrument or operating personal.	Vendor to confirm
17	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.	Vendor to confirm
The ranges of the test set for different parameters should be at least as per the points mentioned below		
18	Resistance Range: 1 $\mu\Omega$ to 1000 Ω (Auto Range)	Vendor to confirm
19	Resolution: 0. 1 $\mu\Omega$ at 1 m Ω range or better	Vendor to confirm
20	Accuracy: $\pm$ 0.2% of reading or better .	Vendor to confirm

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21	Test Current Range : upto 50 Amp DC (Auto Range) & continuous. 50A, 25A, 10A, 5A & 1A	Vendor to confirm
22	Reading Stability : Reading should be stable & in steady state variation in measured value should not be more than $\pm 0.1\%$ of mean value.	Vendor to confirm
23	Time for winding resistance measurement of up to 315 MVA transformer shall be less than 90 sec or better.	Vendor to confirm
24	The instrument should have detachable test leads for avoiding damage to the cables as well as to the instrument.	Vendor to confirm
25	The test set should have safety monitoring system to ensure perfect grounding of test system while test is under progress and the accessories required for the same are to be supplied along with the instrument.	Vendor to confirm
26	The test kit shall meet all the relevant safety specifications / Standards.	Vendor to confirm
The test equipment shall be offered complete with the items mentioned below:		
27	Main Equipment with Transport/storage case & bag for cables .	Vendor to confirm and submit along with supply.
28	Window based PC software for report generation. Report format resistance against tap position in tabular form with all transformer details & temperature conversion from meas. Temperature to standard temperature.	Vendor to confirm and submit along with supply.
29	Power supply cord, Data Transfer Software & Leads.	Vendor to confirm and submit along with supply.
30	Cable Set for resistance measurement : 15 meter potential lead with proper termination: 04 Nos. 15 meter current lead with proper termination: 02 Nos. 10 meter Safety Ground lead with proper clamp. 10 meter Shorting Lead for dual channel winding resistance measurement. Any other Cable if required.	Vendor to confirm and submit along with supply.
31	Two sets of operating / maintenance manuals in English language.	Vendor to confirm and submit along with supply.
32	Three sets of calibration reports from NABL accredited Lab with following data: Calibration data periodicity, calibration validity duration & next calibration due date. At least 20 sample calibration results of which minimum 2 results at each resistance range. Traceability details of standard used for calibration. All documents should be endorsed by authorized signature.	Vendor to confirm and submit along with supply.
33	SPARES-	
33.1	Vendor to include one set of spare leads comprising of potential leads, current lead, safety ground lead, shorting leads in main offer.	Vendor to confirm and supply one set of all leads.
33.2	Vendor to furnish all necessary spares for five years trouble free operation & cost of same to be submitted separately.	Vendor to furnish the spare list.
33.3	Vendor to ensure availability of all spares item with OEM for atleast 5 years of operation.	Vendor to confirm
34	PACKING:	
	Air worthy/Sea worthy & rigid packing for all items of complete system, all accessories and other supplied items to avoid any damage/loss in transit. When	Vendor to confirm

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	system is despatched in containers, all small loose items shall be suitably packed in boxes.	
	GUARANTEE/WARRANTY :	
35	Performance & Warranty Certificate & Acceptance: Performance certificate of offered model supplied to different customer since last 02 years. Equipment must be warranted for 24 Months after commissioning at our work from the date of acceptance by BHEL irrespective of date of supply or installation.	Vendor to confirm and submit.
	Qualifying Requirements -	
36	The supplier should either be an Original Equipment Manufacturer(OEM) or an authorised dealer/system house/channel partner of the OEM. Non-OEM vendors should submit certificate of valid authorisation of OEM for quoting the system along with declaration for support during erection & commissioning, after sales service & necessary spares along with the offer.	Vendor to confirm and submit.
37	- One copy of purchase order (PO) for the quoted equipment to be furnished. - The purchase order may be in name of OEM or any Dealer/Vendor, having complete postal address of customer/company where above system is installed/supplied. - The PO date should be within 5 years from the date of the tender opening. - The PO copy and the co-related documents clearly mention name of item, type, Make and Model no. including other details in English language.	Vendor to confirm and submit.
38	Performance certificate of offered model supplied to at least two different transformer manufacturer / transformer testing labs, for transformer testing at last 2 years to be furnished.	Vendor to confirm and submit.
39	BHEL reserves the right to verify information submitted by vendor. In case, information is found false / Incorrect, the offer shall be rejected.	
40	Commissioning: Commissioning of the instrument to be done at BHEL Jhansi works by supplier's representative free of charge.	Vendor to confirm
41	Supplier to provide any other attachment/accessories required for smooth functioning of the instrument.	Vendor to confirm and submit along with supply.
42	Original technical catalogue to be included along with technical bid. Mentioned Technical data in catalogue shall only be considered during technical evaluation.	Vendor to confirm and submit.
43	Instrument live demonstration: Instrument live demonstration shall be given by supplier at BHEL Jhansi works when it is required at the time of technical evaluation.	Vendor to confirm
Note : Supplier should submit his technical compliance/comments against points in above format. Technical bid without complete technical compliance sheet will not be considered for technical evaluation.		

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