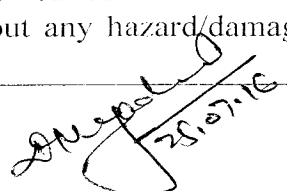
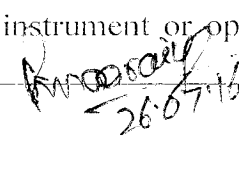


**TECHNICAL SPECIFICATIONS OF  
SINGLE CHANNEL 10A DIGITAL MICRO OHMMETER**

Sl. No	Description	Remarks / Vendor to Specify
1.	The test set should be fully automatic for finding out the winding resistance of three phase & single phase Transformers up to 400 kV, 315 MVA rating & Rectifier transformer of 120 KA current rating. Instrument should be 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-Single	
4.	Measurement Principle-Four Wire Kelvin Bridge	
5.	Display of Resistance Value	
6.	The test set should be suitable for Heat run test up to 30 Min Continuously. Display of Internal time timer during resistance measurement at the time of Heat run test.	
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	
8.	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.	
9.	The accuracy, reliability, steadiness and the repeatability of the readings should not be affected with the test voltages.	
10.	<b>Input power supply</b> 230 V +/- 10% , 50 Hz Single phase	
11.	<b>Test Current</b> Auto range 10 Amp & Continuous	
12.	<b>Display</b> Red LED & Display resistance value with appropriate unit	
13.	<b>Operator control</b> Key pad/ Menu driven for setup, data input, result storage	
14.	<b>Environmental conditions:</b> Operating Temp.: 0°C to 50 °C, Humidity: 0-90% non-condensing. Storage Temp.: 0°C to 50°C and Ambient Temp.: 0°C to 50°C	
15.	Computer Interface	
16.	Internal test record storage and Built-in Thermal Printer	
17.	Auto Power off	
<b>Protection: Instrument should be protected against following</b>		
18.	Discharge the specimen safely when test is completed, if lead accidentally disconnects or if power is lost	
19.	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.	

**TECHNICAL SPECIFICATIONS OF SINGLE CHANNEL 10A DIGITAL MICRO OHMMETER**

20.	Both visual & audio Hazard warning should be provided for following Test in progress Test specimen is discharging Test specimen is fully discharged ready for connection changing	
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**The ranges of the test set for different parameters should be at least as per the points mentioned below**

21.	Resistance Range : 1.0 mΩ to 100 Ω (Auto Range) Resolution: 4 <sup>1/2</sup> digit Accuracy : ± 1.0 % rdg or better	
22.	Current Range : 0-10 Ampere Auto Range & Continuous	
23.	Stability: Reading should be stable & in steady state variation in measured value shouldn't be more than ± 0.1% of mean value	
24.	Time for resistance measurement for 100 MVA transformer less than 90 sec	
25.	The instrument should have detachable test leads for avoiding damage to the cables as well as to the instrument.	
26.	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 also to be supplied along with the instrument.	
27.	The test kit shall meet all the relevant safety specifications	
28.	Response time (less than 2 secs)	

**The Test equipment shall be offered complete with the items mentioned below:**

29.	Main Equipment with Transport/storage case/bag for cables	
30.	Window based PC software for report generation Report format resistance against tap position in tabular form with all transformer details & temperature conversion from measuring temperature to standard temperature	
31.	Power supply cord	
32.	Cable Set for resistance measurement 15 meter potential lead with proper termination : 1 pair 15 meter current lead with proper termination : 1 pair 10 meter Safety ground lead with clamp	
33.	Two sets of operating and maintenance manuals in English language	
34.	Three sets of calibration reports from NABL Accredited Lab covering full range of the equipment with following details should be provided.  Calibration date, periodicity, calibration validity duration & next calibration due date. Traceability details of standard used for calibration. All documents should be endorsed by authorized signature.	

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25.07.16

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**TECHNICAL SPECIFICATIONS OF SINGLE CHANNEL 10A DIGITAL MICRO OHMMETER**

35.	<b>Performance &amp; Warranty/Guarantee certificate:</b> 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 condition.	
36.	Different type of accessories needed to connect the leads to equipment under testing.	
37.	<b>Installation/Commissioning/Acceptance:</b> Installation/Commissioning of the instrument to be done at BHEL work by supplier's representative free of charge. Demonstration of all features of meter & all accessories to satisfaction of BHEL for their efficient and effective use for at least five no of jobs. <b>Instrument shall be accepted only after successful commissioning at BHEL works.</b>	
38.	Supplier should provide any other attachment/accessories required for smooth functioning of the instrument	
39.	Original technical catalog to be included along with technical bid	
40.	Supplier should provide past performance certificate of similar equipment supplied within three years along with contact detail of customer (i.e. Name of organization, contact person, contact number).	
41.	<b>Live Demonstration:</b> Live demonstration of offered meter shall be called during technical evaluation if required.	

**Note: Supplier should submit his 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 *[Signature]*  
25/07/16

*[Signature]*  
26/07/16  
Checked & Approved  
(प्रमोद कुमार नोडरिया)  
(PRAMOD KUMAR NODARIYA)  
वरिष्ठ उप महाप्रबंधक (Sr. Dy. GM)  
(परिचालन व विकास विभाग)  
(Transformer Testing) & GM (TTL)  
बी.एस.टी. विभाग  
BHEL JHANSI