

**SPECIFICATION CUM COMPLIANCE OF MICROOHM METER**

Spec. No.:QC-1/2014-15/MOHM/Rev 00

Indent No 20151233 dtd 27/05/15

1. Vendor must submit complete information against clause 12 (Pre- Qualifying Requirement) of this specification. The offer meeting this clause would only be processed.
2. The "offered" column and wherever applicable the "deviation" and "remark" column of this format shall be filled in by the vendor and submitted along the offer. Whenever range or accuracy is mentioned, offered value shall be mentioned by vendor. Inadequate, incomplete, ambiguous, unsustainable information against any of the clause of the specification or requirement shall be treated as non-compliance. In case of any noncompliance M/s BHEL has the right to cancel the offer.

Clause No.	Description for BHEL Requirement	Confirmation by Vendor	Offered	Deviation	Remark
<b>1</b>	<b>Purpose:</b>				
1.1	Micro ohm meter is required for stable , repeatable and accurate low resistance measurement of generator bars, Exciter fuses, rotor winding ,stator winding, Turbo generator components etc having DC resistance from microohm to kiloohm.	Vendor to confirm			
<b>2</b>	<b>Functional Requirements:</b>				
2.1	The Micro Ohm Meter is required for measurement of very low resistance value in order of micro ohms to kilo ohms.	Vendor to confirm			
2.2	The Micro Ohm Meter should be based on 4 wire / kelvin method. It should have two terminals for current output and two terminals for voltage drop measurement.	Vendor to confirm			
2.3	It should measure resistance of inductive loads and have ability to perform measurement in presence of high noise levels.	Vendor to confirm			
<b>3</b>	<b>Scope: Microohm Meter system shall include following units:</b>				
3.1	Digital read out & processing Unit with built in chargeable battery for on-site measurement and shall also operate on AC Voltage 230V ±10%, 50 Hz±3%.	Vendor to confirm			
3.2	Four wire instrument leads( 2 Sets), length 2 meter minimum	Vendor to confirm			
3.3	Carrying case( 1 no.)	Vendor to confirm			
3.4	Any other accessories required for the system( vendor to specify)	Vendor to specify	<i>2 Confirms</i>		
3.5	Calibration certificate : Calibration certificate for overall System Accuracy & Measurement Accuracy of all the instruments traceable to National /International standards shall be supplied along with the installation.	Vendor to confirm			
<b>4</b>	<b>Technical Specification for Microohm meter:</b>				
4.1	Measurement : 1 micro ohm to 10 kilo ohm.	Vendor to confirm			
4.2	Selectable Measurement range : 1milliohm(mohm),10 mohm,100 mohm,1 ohm,10 ohm,100ohm,1 kilo ohm,10 kilohm	Vendor to confirm			
4.3	Test Current up to 10 amps	Vendor to confirm			
4.4	Maximum Resolution 100 nano ohm or better	Vendor to confirm			
4.5	Measuring accuracy +/- 0.03% or better	Vendor to confirm			
4.6	Display LED, 4 ½ digits				
4.7	Temperature compensation for Cu & Al shall be provided -Manual temperature input/temperature probe -User selectable	Vendor to confirm			
4.8	Error detection prior to every single measurement for current connection error, voltage connection error and over range error	Vendor to confirm			
4.9	Measurement speed less than 6 seconds per measurement	Vendor to confirm			

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4.1	Weight of micro ohm meter shall not be more than 10 kg including carrying case.	Vendor to confirm			
4.11	Microohm meter shall come with PC software, necessary accessories and PC interface for transfer of stored data to PC	Vendor to confirm			
4.12	Microohm Meter should work in following environment condition	Vendor to confirm			
	Operating temperature : 0-50 ° C				
	Humidity: Up to 95%, non-condensing.				
	Max. altitude : 1000 M				
	Application : Indoor & at site both				
	Noise level : < 80 dBA				
<b>5</b>	<b>General requirement</b>				
5.1	The bidder's technical representative shall visit BHEL HEEP, Haridwar for technical discussions and on the spot finalization of technical issues, if needed, after technical bid opening and within four weeks from the date of first call by BHEL. Exact date will be confirmed to vendor by BHEL	Vendor to confirm			
5.2	The system offered shall be complete in all respects. It shall contain all hardware / accessories / software required for satisfactory operation of the system. Any additional hardware, software or accessories if required during commissioning, for satisfactory operation of machine shall be supplied by vendor without any price implication.	Vendor to confirm			
5.3	Supplier shall enclose the leaflets /Datasheet having detail specification, Model No & Manufacturers Name of Items to be quoted.	Vendor to confirm			
5.4	Instrument should meet all points of our above specification and bidders must furnish point to point replies against the points of our above specification failing which their offer may not be considered.	Vendor to confirm			
<b>6</b>	<b>Erection and Commissioning</b>				
6.1	Supplier to take full responsibility for carrying out the commissioning, start up, testing of Instrument, it's control & all types of other supplied equipment, resistance measurement of generator components etc	Vendor to confirm			
6.2	All tests, as mentioned at clause 11 (Instrument Acceptance) shall form part of the commissioning activity.	Vendor to confirm			
6.3	Demonstration of all functions of the complete system shall be done by the vendor to the satisfaction of BHEL Engineers at BHEL-HEEP, Haridwar.	Vendor to confirm			
<b>7</b>	<b>Guarantee/Warrantee :</b>				
7.1	The instrument should be guaranteed / warranteed with respect of design, material construction, operation and any manufacturing defects for a period of 18 months from the date of receipt of complete equipment at BHEL Haridwar or 12 months from the date of commissioning, whichever is later.	Vendor to confirm			
7.2	Free after sales service including spares is to be provided during the guarantee / warraty period at BHEL HEEP, Haridwar.	Vendor to confirm			
<b>8</b>	<b>Documents (to be supplied with equipment):</b>				
8.1	Two sets of user Manual shall comprise of operating procedure, calibration procedure, troubleshooting charts, circuit diagram and parts list etc.	Vendor to confirm			

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<b>9</b>	<b>Packing</b>				
9.1	Sea worthy & rigid packing for all items of complete machine, Measurement System, all Accessories and other supplied items to avoid any damage/loss in transit. When instrument is dispatched in containers, all small loose items shall be suitably packed in boxes. Any damage, loss, theft during transit shall be the sole responsibility of the vendor.	Vendor to confirm			
<b>10</b>	<b>Training</b>				
10.1	Training on operation of instrument, other supplied accessories, troubleshooting & maintenance of complete system shall be imparted to the satisfaction of engineers of BHEL-HEEP, Haridwar without any price implication.	Vendor to confirm			
<b>11</b>	<b>Instrument Acceptance: (Tests/Activities should be Performed by Vendor)</b>				
11.1	Physical Inspection (Scope of supply)				
11.2	Verification of instrument features as per clause 2 , 3&4.				
11.3	Demonstration of all features of the equipment, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine				
11.4	Job prove out through resistance measurement as provided by M/s BHEL & re-calibration from BHEL LAB.				
<b>12</b>	<b>Pre- Qualifying Requirement for Vendor:</b>				
12.1	Only those vendors should quote, who or their principal have supplied and commissioned at least one number of the quoted instrument having equal or better range & accuracy mentioned in clause 4 within last five years (on the date of opening of Tender) and worked satisfactorily for one year or more prior to tender floating date.	Vendor to confirm			
12.2	Vendor should be original equipment manufacturer (OEM) or authorized dealer/distributor of OEM having after sale service center in India. In case the party is dealer/distributor, they should furnish the details of OEM and valid authorization certificate from OEM.	Vendor to specify			
12.3	The vendor shall furnish following information of customers (to whom they have supplied the system as mentioned in clause 12.1	Vendor to confirm			
12.3.1	Name and address of customer	Vendor to furnish			
12.3.2	Name of Contact Person	Vendor to furnish			
12.3.3	Phone Number and mail ID of contact person.	Vendor to furnish			
12.4	The following documents shall be enclosed with offer by vendor.	Vendor to confirm			
12.5	Un priced copy of Purchase order of equipments supplied mentioned in clause 12.1.	Vendor to furnish			
12.6	Copy of Commissioning Reports of Equipment mentioned in clause 12.1	Vendor to furnish			
12.7	Performance certificate (Including Make and Model No) from at least one customer regarding satisfactory performance of machine supplied to them.	Vendor to furnish			
12.8	Supplier shall enclose the leaflets /Datasheet having detail specification, Model No & Manufacturers Name of Items to be quoted.	Vendor to furnish			
12.9	BHEL reserves the right to verify the information provided by vendor. If the information provided by vendor is found to be false/incorrect at any point of time, the offer shall be rejected.	Vendor to confirm			

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