



Bharat Heavy Electricals Limited

Ceramic Business Unit- Electroporcelains Division
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MATERIALS MANAGEMENT

Date:27.08.2013

Dear Sir,

Sub: Requirement of 01 Number of ELECTRICAL PARAMETERS TEST SET

Ref: SPEC No.R&D/CTI/Elec-13 (AS PER ANNEXURE ENCLOSED.)

Please submit without obligation your lowest quotation in sealed cover super scribed with our Ref. NO. & Due Date. For the item above mentioned in the subject. Last date for submitting the quotation is 10.9.2013. Tender opening will be on 10.9.2013 2.30 P.M. offers received after 1.00 P.M. on 10.9.2013 is liable to be rejected.

The technical parameters which need to be adhered while quoting your offer. should be as per our Specification only. SPEC No R&D/CTI/Elec-13 . (AS PER ANNEXURE B ENCLOSED.)

BHEL Payment terms 30 days credit from GR date, Payment through **NEFT only**, mention Duties & Taxes, Weight & Delivery, Basic Price, Validity & Warranty clearly. Delivery FOR BHEL _EPD ,Bangalore

Please arrange to submit your quote by Hard copy or E-mail on before 10th Sep 2013 (01.00pm) clearly furnishing the above details as below.

Email: karthik@bhelepd.com _____ Sri B S Karthikeyan / Sr. Manager / MM

Email: elan@bhelepd.com _____ Sri A Elangovan / Sr. Engineer / MM

Phone No : 91- 080 - 22182306 /22182342

Thanking You,

A. Elangovan / Sr. Engg./ MM



BHARAT HEAVY ELECTRICAL LIMITED
CORPORATE R&D, CTI, BHEL MALLESWARAM COMPLEX
PROF CNR RAO CIRCLE, OPP. IISc, BANGALORE 560 012, INDIA

SPEC. No. R&D/CTI/Elec-13

Date: July 22, 2013

EQUIPMENT: ELECTRICAL PARAMETERS TEST SET

Automatic Dielectric Constant, Tan Delta & Resistivity Test Set

A. General Features:

The Test Set is to be used to measure the Dielectric Constant ϵ , Capacitance, Dielectric loss, Tan Delta (Dissipation Factor), Resistance/Resistivity of various insulating materials, particularly solid materials and hence should be capable to measure those parameters most reliably as per various international (ASTM or IEC standards) or national standards. Hence, all specific attachment/s for measuring those parameters for solid insulation materials along with the base equipment, if required, are also to be provided, i.e., suitable dielectric test cell for solid materials, standard calibrators for the measuring the parameters, suitable/specific cables for electrical connections, suitable software for interfacing with PC/Laptop for transferring, storing test results/data etc).

The equipment should be capable of measuring (microprocessor-based programmable) the said parameters for the AC test in the range of 200 - 2400 volts and 100 - 1,000 volts for the DC test respectively. All the measurements are to be performed by the equipment automatically and provision is to be made to display the results on the front panel. The equipment should also have the provision to repeat any test/s and display all the results accordingly. Besides, provision is also to be made with the equipment to transfer all the test data/results to a PC using suitable software (compatible to the equipment) that could be printed using the USB serial port, or provision to store the data in a non-volatile memory as well.

The vendor/s should have service centres and calibration service facilities in India. The address and contact details of service centres for the purpose should be listed.

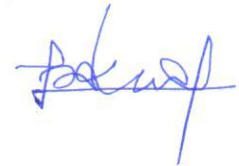
B. Technical Specifications:

Sl. No.	Description	BHEL Specifications	
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1.	Test Set Type	Automatic Test Set without any dials or potentiometers for balancing	
1A	Front panel operation	Preferably, soft touch keypad to be provided for entering parameters for testing	
2	Test Voltage	200-2400 AC in 1V steps at line frequency	
2A	Accuracy of the test voltage	±1% of output	
3	Tan Delta / Dissipation Factor		
3A	Range	0-1.000 or 0 to 100%	
3B	Resolution	0.00001	
3C	Accuracy	±1% of the reading ±0.0001	
4	Capacitance		
4A	Range	0 to 1600pF	
4B	Resolution	0.1pF	
4C	Accuracy	±0.1% of the reading ±0.1pF	
5	Dielectric Constant		
5A	Range	1 to 20 when using a typical test cell (C=60-70pF)	
5B	Resolution	0.001	
5C	Accuracy	Within ±0.1% of the reading	
6	Dielectric Loss		
6A	Range	0-10.0 Watts	
6B	Accuracy	±1% of readings ±10 ⁻⁵	
	Resistance – Resistivity		
7	Test Voltage	100-1000V, DC in steps of 1Volt	
7A	Accuracy	±1% of setting	

8	Resistance	
8A	Range	1M Ω to 10T Ω
8B	Accuracy	2% from 1 Mega Ω to 10 Giga Ω (10 ⁶ - 10 ¹⁰ Ω) Upto 5% from 10 Giga Ω - 1Tera Ω (10 ¹⁰ - 10 ¹² Ω) Upto 10% above 1 Tera Ω (1T Ω - 10T Ω) (10 ¹² - 10 ¹³ Ω)
9	Resistivity	
9A	Range	1000M Ω cm - 10 Peta Ω cm (10 ⁹ - 10 ¹⁶ Ω cm)
9B	Accuracy	2% (1G Ω cm - 10T Ω cm) (10 ⁹ Ω cm - 10 ¹³ Ω cm) Up to 5% (10T Ω cm - 1Peta Ω cm) (10 ¹³ Ω cm - 10 ¹⁵ Ω cm) Up to 10% (1 Peta Ω cm - 10 Peta Ω cm) (10 ¹⁵ Ω cm - 10 ¹⁶ Ω cm)
10	General & Standard Accessories	
10A	Input Supply	230V \pm 10%, 50 Hz
10B	Measurement	Automatic
10C	User Interface	Panel display with easy to use keypad
10D	Data Download option	Suitable & standard option
10E	Data Storage	Must be able to store at least 50 or more test results
10F	Temperature Range	-10 to 50 deg C
10G	Humidity	Ambient to 90%, RH
10H	Connecting Cables	All necessary cables for connection with AC mains and with accessories to be provided with suitable safety interlocks etc
10I	Catalogue Details	Detailed Catalogue of the instruments and accessories / attachments should be submitted with the offer

10J	Operating Manual	Supplier shall provide operation manual and other documents along with the Test and guarantee certificate
11	Software Program	Suitable Windows Interface Software shall be provided in CD which could be installed in BHEL PC/Laptop for connecting to the Test Set and Operating the test Set via PC/Laptop and retrieving stored test results from instrument
12	Standard Calibrator	Must provide calibrator with suitable test report for at least 1 value of capacitance, 3 values of tan delta and 4 values of resistance – for testing the accuracy of the test set
13	Compliance to Standards	The offered product should conform to testing of solid insulation materials as specified in the relevant international standards of IS, ASTM, IEC, specifications as the case may be
14	Time period for Supply	04 – 06 Weeks from the date of placing the PO
15	Demonstration	The vendor shall Demonstrate all features including trial runs to the satisfaction of BHEL during the Commissioning / Demonstration. Vendor to confirm and comply with the same.
16	After sales service & calibration service on call	The vendor/s should have service centres and calibration service facilities in India. The address and contact details of service centres for the purpose should be listed.



डॉ. सुकुमार राय, उपायुक्त प्रबंधक / चीफ
Dr. SUKUMAR ROY, Dy. General Manager / CTI
 Corp. R & D, BHEL, BANGALORE - 560 012.