

TECHNICAL SPECIFICATIONS
AUTOMATIC INSTRUMENT TRFR TEST SET (CT BRIDGE)

Sl. No.	Description	Vendor to Specify
1	Purpose: Automatic Instrument Transformer Test set suitable for precise measurements of Ratio and Phase error for both CTs and VTs of up to 400 kV class.	
2	General Requirements: 1: The CT Bridge should be able to give the direct readings of applied Current (in A / %), Voltage (in V / %), Frequency, Power Factor, burden, phase error, ratio error etc. 2: Suitable for testing of 1A or 5A CT using either 1A or 5A Standard CT. 2: Built-in date and time should be there. 3: Built-in data memory to store /recall minimum 500 measured data items with selectable storing & recalling intervals. 4: Built in external storage facility using pen drive. 5: VGA port- to connect any monitor /display.	
3	Software: 1: User-friendly PC based software for controlling the CT Bridge, acquisition of all parameters communicated and display for data, computation and analysis of the measured data. 2: Inbuilt USB, RS-232 Interface for PC communication, acquiring Software for communication, acquiring & managing measurement data on PC.	
4	Input power supply 230V AC $\pm 10\%$, 50Hz $\pm 10\%$ Single phase	
5	Display: Large size bright LED, LCD, TFT display with visibility in sun light.	
6	Standard CT Should be suitable with all rating standard CT with secondary selection of 1 and 5 Amps.	
7	Standard VT Compatible with existing Standard Capacitor (100.26pF, 300 kV class) and Electronic Potential Divider setup.	
8	Test Voltage for VT 1.5V to 400V secondary. Burden - <1 VA @ 110 V Readout – in volts / % of primary voltage (selectable) Accuracy - ± 1.0 % of reading or better	
9	Test Current for CT 0.05 A to 20 A at 5 Amp selection Burden - < 0.5 VA @ 5 Amp 0.01A to 4 A at 1 Amp selection Burden - < 0.5 VA @ 1 Amp Read out – in Amp/ % of primary current (Selectable) Accuracy - ± 1.0 % of reading or better	
10	Operation Range 1% to 400 % of rated voltage and current for both CT and VT selection	
11	Measuring Range (Ratio Error) 0 - ± 20 % Resolution – 0.0000 % Accuracy - ± 0.5 % of reading or better	

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12	Measuring Range (Phase Error)	0 - $\pm$ 500 Min Resolution - 0.00 Min or better Accuracy - $\pm$ 0.5 % of reading or better	
13	Burden measurement	VT Burden - 1 VA - 1000 VA Accuracy - $\pm$ 1.0 % of reading or better Voltage Impedance- Vendor to specify CT Burden - 1 VA - 500 VA Accuracy - $\pm$ 1.0 % of reading or better Current Impedance- Vendor to specify	
14	Accuracy class	Instrument recognizes the applicable standards of IEC, IS, BS accuracy classes	
15	Power factor	0 - 1.0	
16	Safety Arrangements	1: System should comply with applicable safety Standards IS/IEC. 2: All electronics parts should house in shielded enclosures. 3: Indication for earth connection should be there.	
17	Cables	All necessary power and control cables for smooth operation for the instrument will supplied with system.	
18	Spares & Accessories	1. All necessary spares for two years trouble-free operation. 2. Vendor to furnish list and details of accessories if any.	
19	Environmental conditions: Operating Temperature: 0 $^{\circ}$ C to 45 $^{\circ}$ C, Humidity: 0-90% non-condensing, Storage Temperature: 0 $^{\circ}$ C to 50 $^{\circ}$ C, Ambient Temperature: 0 $^{\circ}$ C to 50 $^{\circ}$ C		
20	Documents: 1. Three sets of operating / maintenance manuals in English language 2. Three sets of calibration reports from NABL accredited laboratory with following data: Calibration date, periodicity, calibration validity duration & next calibration due date. At least 20 sample calibration results of which minimum 2 results at each parameters range. Traceability details of standard used for calibration. Enclose all documents with authorized signature.		
21	Performance & Warranty Certificate & Acceptance: Equipment must warranted for 24 Months after successful commissioning at our works from the date of acceptance by BHEL irrespective of date of supply or installation and shall provide spares and services during warrantee period to maintain the supplied meter in working condition.		

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22	Qualifying Conditions: 1. At least two or more performance certificate of offered model supplied to different customer / manufacturer / testing labs for transformer testing since last 03 years to be furnished. 2. 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 3 years.	
23	Installation & Commissioning: 1. Commissioning of the instrument to be done at our work by supplier's representative free of charge. Supplier to take full responsibility for carrying out the startup and commissioning. 2. Successful proving of supplied components by the supplier shall be considered as part of commissioning. Following tests deemed necessary for system acceptance shall form part of the commissioning activity. i) Operational Tests ii) Calibration Tests 3. Demonstration of all features of the equipment & all accessories to the satisfaction of BHEL for their efficient and effective use. 4. Demonstration by actual use of all supplied components and accessories to their full capacity. 5. Commissioning schedule shall be submitted with the offer.	
24	Training: BHEL Testing & Maintenance Engineer should be trained by vendor mutually agreed period in the area of 1. Use of all system Features, programming for Measuring Systems & supplied accessories etc. 2. Electrical, Electronic & maintenance for system & other supplied equipment.	
25	Supplier should provide any other attachment/accessories required for smooth functioning of the instrument	
26	Original technical catalog to be included along with technical bid. Mentioned Technical data in catalog shall only be considered 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

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Checked & Approved by