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**TECHNICAL SPECIFICATIONS FOR STATIC PORTABLE AUTOMATIC
THREE PHASE CT/ PT TESTING ELECTRONIC EQUIPMENT FOR SITE
TESTING OF 33KV & 11 KV CT-PT SETS. against TN 2085.** 26/

1.0 SCOPE:

This specification covers design, manufacture, assembly, testing at manufacturer's works before dispatch, delivery, installation and commissioning of Portable automatic three phase CT/PT testing equipment for site testing of current & potential transformer of accuracy class 0.5 & 1.0, at Nizam Lab./site any where in the jurisdiction of Jaipur Discom, Jaipur.

2.0 TECHNICAL SPECIFICATIONS:

The offered test equipment is primarily intended for testing & analysis of errors of CT/PT Sets installed at consumer sites or Grid-sub-stations of JVVNL and therefore shall be microprocessor based and portable, light in weight.

2.1 Application: The function of the Electronic Three phase CT / PT testing equipment shall be to measure the system parameters and verify the accuracy of CT and PTs in the laboratory and at site. The testing equipment shall be extensively used in field & laboratory for verification of the accuracy of CT / PT(s).

The offered equipment shall be suitable for following testing on CT & PT of 33KV & 11 KV voltage rating.

- Ratio error test
- Phase error test
- Burden measurement
- Measurement of admittance of CT at high frequency (1.6 kHz) and at operating frequency.

2.2 Supply System details: The testing equipment shall have facility to power up from auxiliary power supply ranging from 110 V to 250 V AC, 50 Hz. The Test set should not draw more than 60 VA at maximum injection power and it should have its own internal solid state voltage source to test CT / PT. The equipment shall have facility to powered up from 12 V external car battery.

2.3 Accuracy Class: The class of accuracy of the testing equipment for RATIO Test would be as follows

S. N.	Load in %	Burden in %	Accuracy
1.	120 to 5	100 to 25	0.2

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2.4 Operating ranges:

- **PT Testing :**
 - The CT / PT test shall be capable to carry out the No Load voltage ratio test from 132 kV / 110 volts to 2.2 kV / 110 Volts
 - The offered test set shall be capable to test 1 VA to 200 VA PTs.
- **CT testing :**
 - The CT / PT test set shall be capable to carry the ratio test 1500 / 5 A to 2.5 / 5 A and 200 / 1 A to 10 / 1 A.
 - The offered test set shall be capable to test 1 VA to 100 VA CTs.
 - There shall be a provision to also select a test at any burden level 10 % to 100 %.

2.5 Power Factor: The test shall be capable to select any burden PF from 0.6 to 1.0 lag and this set shall compute the CT performance at the PF selected.

2.6 Display Resolution: The test set shall give resolution for various parameters as under.

Ratio error - $\pm 0.01\%$
Phase error - ± 0.1 Min
Burden VA - 0.1VA

2.7 Memory: The CT / PT test unit shall have the facility to store more than 50 Nos. test results which can be further download in the local PC.

Minimum following parameters should be available at the PC after downloading the test results from CT / PT test unit

- Operator ID Number
- Serial number of CT/PT under test
- Load
- Burden
- Power factor
- Primary / secondary ratio
- Ratio error
- Phase error

2.8 Interface: This RS 232 port shall be standard 9 pin socket which can be directly connected to PC. The equipment shall have numeric key board to enter the information. The keyboard shall be utilized for entering the various data input required at the time of testing.

2.9 Display: The test equipment shall have a user friendly back lit LCD display on the front panel with clear visibility.

2.10 Protection Features: The equipment shall have following protection features as follow:

- Fuses and Circuit Breakers.
- Flashing LED when terminals are live.
- Buzzer to indicate error conditions.

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2.11 **Constructional features:** Test equipment would be handy & would have moulded plastic / ABS case. This case shall be robust and hard wearing. There shall be an internal aluminum/polycarbonate chassis and front panel with screened polycarbonate finish. This case would be provided in the transit case to carry the equipment site to site. Transit case shall have a room for test leads and accessories. 27

2.12 **Size and weight:** The weight of the offered test equipment shall be within 15kgs and transit case supporting accessories shall not be more than 20Kgs.

2.13 **Standard Accessories:** Test equipment shall be provided with standard cable set, car battery of 12V and accessories for CT / PT testing

2.14 **Associate software:** The offered software with the test equipment shall be menu driven and shall be provided along with equipment to down load information from equipment to data base. The offered software shall be run under Windows 95/98/2000/XP/Vista. It should be compatible with Computer P-III and above.

The program shall be comprehensive on line pull down help menu to assists in the running the program. The minimum following options shall be available in the offered software.

- File: User access to the exit function for terminating the program.
- Data: Down load data from test equipment to initiate the download sequence.
- Database: Used for opening or closed existing data base.
- Results: To view results by selection all CT, PT, test types and serial numbers.
- Reports: Shall be used for repost generation.
- Tools: Shall be allowing selection of the serial port.
- Help: Online help to assist in program operation.

3.0 TEST CERTIFICATE:

The bidder shall have to submit a type test reports of test equipment as per relevant IS/IEC, if any, by any NABL accredited Laboratory at the time of bid or before commencement of supplies in the event of order.

4.0 SAFETY REQUIREMENTS:

The CT / PT test set shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal working conditions, so as to ensure especially Personal safety against electric shock/ against effects of excessive voltage and Safety against spread of fire etc. The Product should be produced from a special material which reduces electrical leakage through and across the moulding in a negligible minimum and all metal parts wherever provided should be well insulated. The metallic parts of the equipment shall not remain exposed.

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5.0 AUTHORIZATION CERTIFICATE:

Authorization letter from the manufacturers confirming that you are the authorized dealer / distributor in the region and you are authorized to quote on their behalf. In case of offering an imported brand a letter from the manufacturers confirming that you are their authorized representative in the country and you are authorized to quote on their behalf.

6.0 PACKING:

The packing of the equipment shall be such that it should not get damaged during transit. Each CT / PT test set shall be supplied with a hard plastic carrying case suitable for easy portability, rugged use and to prevent damage during transit in addition to packing as per relevant clause of GCC. The CT / PT test set should be immune to vibrations and shocks in normal transportation and handling.

7.0 INSPECTIONS AND TESTING:

It shall be governed by clause 1.27 of General conditions of Contract. Before dispatch, the CT / PT test set shall be inspected and tested by the authorized inspecting officer/Agency of the Nigam. The manufacturer/supplier shall furnish the details of tests, which shall be arranged at the time of inspection as per relevant ISS/IEC to ascertain routine testing at the manufacturer's works in presence of purchaser's representative.

Following Acceptance Tests shall also be carried out at the works of manufacturer during inspections:

1. Overall dimensional checking.
2. Voltage withstands test at 3 KV for one minute.
3. Insulation resistance test.
4. Demonstration of all tests of CT-PT Sets as per specs.

8.0 COMPLETENESS OF EQUIPMENT:

Any fittings accessories or apparatus, which may not have been specifically mentioned in the specification, shall be deemed to be included and shall be supplied by the supplier without any extra charges. The CT / PT test set shall be a complete unit in all respect whether such details are mentioned in this specification or not.

9.0 I.S.I. MARKED EQUIPMENT/ ISO-9001/9002 FIRM.

The firms offering ISI marked equipment/ the manufacturers having ISO-9001/9002 certificate shall be given preference.

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10.0 GUARANTEE:

It shall be governed by clause No.1.40 of General Conditions of Contract except that the successful bidder shall have to provide the guarantee of 36(thirty six) months from the date of dispatch from the manufacturer. The CT-PT test set found defective within the above guarantee period shall be repaired/replaced by the supplier free of cost within reasonable period of intimation.

11.0 GUARANTEED TECHNICAL PARTICULARS:

A statement of guaranteed technical particulars shall be furnished in the format attached as per Annex.-I along with the bid without which the Bid shall be treated as Non-Responsive.

12.0 SAMPLES:

The tenderer must demonstrate the samples CT/PT test at the time of offer. Samples shall accompany operating manual and all necessary accessories. The tenders received without demonstration of samples are liable to be rejected.

13.0 PRICES:

The tenderer must quote prices on "**FIRM**" price basis inclusive of packing and forwarding charges etc. as applicable should be indicated clearly.

14.0 Quantity to be purchase is approx. 15 Nos.

15.0 Bidder shall be furnish the relevant documents as per qualification requirements annexed at Schedule III-A.

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**STATEMENT OF GUARANTEED TECHNICAL PARTICULARS FOR
STATIC PORTABLE AUTOMATIC CT-PT TESTING ELECTRONIC
EQUIPMENT FOR SITE TESTING OF CT-PT SETS.**

S.No.	Description	Technical Particulars offered
1	a- Name of the supplier & address of office. b- Manufacturer's Address of works	
2	Make	
3	Type and Model of CT/PT testing unit	
4	Standards to which confirms to for: a- Accuracy b- Protection/safety	
5	Operating and storage temperature ranges	
6	Humidity range	
7	Power supply details i) Voltage range ii) Current range iii) Frequency range	
8	Basic Accuracy	
9	Details and list of various tests of CT/PT Set which can be carried out by this unit.	
10	Whether the test unit is capable of online testing of CT/PT Sets without interruption of consumer service.	
11	Operating principle and Comparison technique used for analysis of errors	
12	Power factor range	
13	Display details and Display Resolution for: Ratio error - $\pm 0.01\%$ Phase error - ± 0.1 Min Burden VA - 0.1VA	
14	Keypad details	
15	Protection features	
16	Withstand voltage	
17	Interface and software features	
18	Weight with and without accessories	
19	Standard Accessories with unit Instructions and operating manual	
20	Details of type test report enclosed with offer	
21	Any other information	

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