

	BHARAT HEAVY ELECTRICALS LIMITED, JHANSI TRANSFORMER TESTING LABORATORY	Specification no - 636200002 Rev 00
Technical Compliance sheet for 3 Phase Digital Transformer turn Ratio Tester		
Sr. No	Technical Specification	Bidder's Confirmation
1	This Specification covers the requirement of three Phase fully automated measurement of Turn ratio, Excitation Current, Phase Angle displacement of Power, Instrument, and Distribution Transformer in a Substation & Manufacturing Environment.	Bidder to confirm
2	General Requirement	
2.1	Type - Three Phase Fully Automatic micro processor based instrument with Digital Display. The Equipment shall have automatic measurement of turn ratio, Phase Displacement (degree), %Error, and Excitation current.	Bidder to confirm
2.2	Display - The Equipment should have Suitable Colour Display facility of highest contrast to facilitate visibility in direct sunlight.	Bidder to confirm
2.3	Vector Group - Automatic Vector Group detection as defined in IS 2026 and IEC.	Bidder to confirm
2.4	The Equipment should perform Quick test to provide a fast determination of turn ratio in single and three phase transformer.	Bidder to confirm
2.5	The equipment should have facility to self checking at power up & self calibrate at each measurement.	Bidder to confirm
2.6	With pass/fail limit and all the data should be displayed during testing including turns ratio, Voltage ratio, Pass fail Indication, Variation and phase angle error.	Bidder to confirm
2.7	Option to make profile of transformer by filling all data in to profile and directly operated through software or on the unit itself so that the measured readings are stored in the profile created by user and can be imported to the PC with help of Software.	Bidder to confirm
3	Technical Requirement	
3.1	Test Voltage Range: Upto 250V with different ranges for Transformers and PT and separate for CT to make sure that CT dont get saturated.	Bidder to confirm

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3.2	Magnetizing (Leakage) Current Range and Accuracy Range: 0-1 Amps Accuracy: $\pm 0.5\%$ Resolution: 0.1mA	Bidder to confirm
3.3	Turn Ratio Range: 0.8 to 20000 or Better	Bidder to confirm
3.4	Ratio Measurement Accuracy : 0.06% Rdg., ± 1 LSD 5 Digit or Better	Bidder to confirm
3.5	Phase Angle Measurement Accuracy and Resolution : $\pm 90^\circ @ \pm 0.05\%$ Accuracy with 0.01° Resolution.	Bidder to confirm
3.6	Power Supply : 100-250V AC, 50 Hz, Single Phase	Bidder to confirm
3.7	Humidity : 1 to 90% or better none condensing	Bidder to confirm
3.8	Operating Temperature : up to 50 deg	Bidder to confirm
3.9	Storage Temperature : up to 60 deg	Bidder to confirm
3.10	Interface : Should have suitable interface with RS232/USB	Bidder to confirm
3.11	Weight : portable; not more than 10 KG without Cable.	Bidder to confirm
3.12	Memory:- Should have enough memory to Store at least 5000 test results and test setup there shall be provision to export data in to open data format like xml or excel.	Bidder to confirm
3.13	Software should be provided for downloading the results as well as making a profile of the transformers under test. Also the kit should have the provision of creating the profile in file which can be exported to external computer for report generation.	Bidder to confirm
4	Safety :	
4.1	For Wrong Connection on Object / Transformer : Unit will indicate when connection is wrong & will not generate voltage. Input Over voltage: Inbuilt, Instrument will not operate when input power supply is higher than unit's input voltage limit.	Bidder to confirm
4.2	Safety Standards : should follow any of EN 61010-1, EN 81326-1, EN 61100-3-2/-3, EN 61326-1, IEEE C 57.12.90-1993, IEC 76-1-1993	Bidder to confirm
4.3	Front panel board meter have emergency push button switch to protect any accident.	Bidder to confirm
4.4	The equipment should have Trouble free operation under electrostatic & magnetic interference condition	Bidder to confirm
4.5	Fuses and internal surge absorbers	Bidder to confirm
5	The test equipment shall be offered complete with the items mentioned below:	
5.1	Main Equipment with Transport/storage case & bag for cables .	
5.2	Power supply cord, Data Transfer Software & Leads.	

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5.3	Cable Set for resistance measurement :	
	One complete set of cable of sufficient length (Min 20 Mtr) with suitable clamps & connectors, compatible with the instruments should be provided for successfully carrying out the test at our works. Additionally all the required accessories should be provided for the smooth functioning of kit. Further hard carrying case (which should be robust/ rugged enough) for ensuring proper safety of the kit during transportation shall have to be provided. All the standard accessories for desired monitoring, operation & control of instrument shall have to be provided.	Bidder to confirm and submit along with supply.
5.4	Two sets of operating / maintenance manuals in English language.	
5.5	Two sets of calibration reports from NABL accredited Lab with essential data. Traceability details of standard used for calibration. All documents should be endorsed by authorized signature.	Bidder to confirm and submit along with supply.
6	SPARES-	
6.1	Vendor to ensure availability of all spares item with OEM for atleast 5 years of operation.	Bidder to confirm
7	PACKING:	
7.1	Air worthy/Sea worthy & rigid packing for all items of complete system, all accessories and other supplied items to avoid any damage/loss in transit. When system is despatched in containers, all small loose items shall be suitably packed in boxes.	Bidder to confirm
8	GUARANTEE/WARANTY :	
	Warranty Certificate & Acceptance:	
8.1	Equipment must be warranted for 24 Months after commissioning at our work from the date of acceptance by BHEL irrespective of date of supply or installation.	Bidder to confirm and submit.
9	Qualifying Requirements -	
9.1	The supplier should either be an Original Equipment Manufacturer(OEM) or an authorised dealer/system house/channel partner of the OEM.	
9.2	Non-OEM vendors should submit certificate of valid authorisation of OEM for quoting the system along with declaration for support during erection & commissioning, after sales service & necessary spares along with the offer.	Bidder to confirm and submit.

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9.3	5 number purchase order (PO) for the three phase transformer turns ratio meter to be furnished. - The purchase order may be in name of OEM or any Dealer/Vendor, having complete postal address of customer/company where above system is installed/supplied.	Bidder to confirm and submit.
9.4	- The PO date should be within 5 years from the date of the tender opening.	
9.5	- The PO copy and the co-related documents should clearly mention name of item, type, Make and Model no. including other details in English language.	
9.6	Performance certificate of three phase transformer turns ratio meter supplied to at least two transformer manufacturer / transformer testing labs, for transformer testing for last 5 years to be furnished.	Bidder to confirm and submit.
9.7	BHEL reserves the right to verify information submitted by vendor. In case, information is found false / Incorrect, the offer shall be rejected.	Bidder to confirm and submit.
10	Commissioning: Commissioning of the instrument to be done at BHEL Jhansi works by supplier's representative free of charge.	Bidder to confirm
11	Supplier to provide any other attachment/accessories required for smooth functioning of the instrument.	Bidder to confirm and submit along with supply.
12	Original technical catalogue to be included along with technical bid.	Bidder to confirm and submit.
13	Instrument live demonstration: Supplier must demonstrate the same model before technical evaluation as per requirement raised by BHEL at that time & Only those vendors who will be called for demo and qualify during demonstration would be consider for further evolution. During demonstration who has not qualified or not conducted the demonstration procedure will be disqualified.	Bidder to confirm
Note : Supplier should submit his technical compliance/comments against points in above		

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