

TECHNICAL SPECIFICATIONS OF SINGLE PHASE
TRANSFORMER TURNS RATIO METER

(9)

| Sl. No. | GENERAL DESCRIPTION | Remarks |
|---|---|---------|
| 1 | The test set should be fully automatic for finding out the Turns ratio & Voltage ratio of three phase & single phase Power Transformers, Auto transformers up to 400 kV class & 315MVA, Rectifier Transformer, CT's, VT's etc. | |
| 2 | The test set should be able to give direct readings of the ratio of test object automatically without any bridge balancing method involved. | |
| 3 | Data Display: i) Turns ratio ii) Phase angle deviation iii) Excitation Current | |
| 4 | Display: Back lit graphic display / bright red LED easily readable with large character size viewable in direct sunlight and low light level. Display parameters ratio, excitation current, phase angle deviation | |
| 5 | The test voltage to be applied on the object under test should be independent of the supply frequency to avoid any variation in the frequency during the testing. | |
| 6 | The accuracy, reliability, steadiness and the repeatability of the readings should not be affected with the test voltages. | |
| 7 | Input power supply: 230V \pm 10% , 50 Hz Single phase, 2 Amp | |
| 8 | excitation voltage for Test 40 volt or higher with user selection criteria | |
| 9 | Internal test record storage with RS-232 Interface | |
| 10 | Reverse Polarity test – In phase or out of phase indication | |
| 11 | Environmental conditions: Operating Temp.: 0 ^o C to 50 ^o C, Humidity: 0-90% non-condensing. Storage Temp.: 0 ^o C to 50 ^o C and Ambient Temp.: 0 ^o C to 50 ^o C | |
| 12 | Protection: Instrument should be protected against following: Transformer high excitation current due to shorted turns/faults, incorrect connection, Transient voltage protection, Surge voltage protection etc. | |
| The ranges, resolution, accuracy of the test set for different parameters should be at least as per the points mentioned below | | |
| 13 | Ratio Range: 0.8 to 10000 (Auto Range) Resolution: 4 digit or better & Accuracy For: i) Range 0.8 to 1999: \pm 0.1% rdg. or better ii) Range 2000 to 3999: \pm 0.25% rdg. or better iii) Range 4000 to 10000: \pm 0.5% rdg or better | |
| 14 | Phase angle Range: \pm 90 degrees Resolution: 0.1 degree & Accuracy: \pm 0.2 degree or better | |
| 15 | Current reading range: 0 - 2 Amp Accuracy : \pm 2% rdg (\pm 1 mA) | |
| 16 | The instrument should have detachable test leads for avoiding damage to the cables as well as to the instrument. | |
| 17 | The test set should have safety monitoring system to ensure perfect grounding of test system while test is under progress and the accessories required for the same are also to be supplied along with the instrument. | |
| 18 | The test kit shall meet all the relevant safety specifications as per applicable standards. | |

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The Test equipment shall be offered complete with the items mentioned below:

| | |
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| 19 | Main equipment i.e. Transformer Turns Ratio meter, Power supply cord , Storage case and bag for cables |
| 20 | Cable Set: 15 meter single phase set with alligator clip termination Safety ground lead 10 meter (min) with clamp |
| 21 | Two sets of operating/maintenance manuals in English language. One additional set of all the above documentation in soft copy. |
| 22 | Three sets of calibration reports from NABL Accredited Lab covering full range of the equipment with following details should be provided. Calibration date, periodicity, calibration validity duration & next calibration due date, Traceability details of standard used for calibration. All documents should be endorsed by authorized signature. |
| 23 | Performance & Warranty/Guarantee certificate: The Supplier shall guarantee the product performance for 24 months from the date of successfully commissioning at BHEL Jhansi works and shall provide spares and services during guarantee period to maintain the single phase TTR in working condition. |
| 24 | Live Demonstration: Live demonstration of offered meter shall be called during technical evaluation if required. |
| 25 | Installation/Commissioning/Acceptance: Installation/Commissioning of the instrument to be done at BHEL work by supplier's representative free of charge. Demonstration of all features of TTR & all accessories to satisfaction of BHEL for their efficient and effective use for at least five no of jobs. Instrument shall be accepted only after successful commissioning at our end. |
| 26 | Original technical catalog to be included along with technical bid. |
| 27 | Spares: All types of spares for the Turn Ratio Meter and its accessories should be available for at least five years trouble free operation to be included after supply of the instrument. The vendor shall provide list of spares and drawing of parts/details of spares. Supplier should also provide any other attachment /accessories required for smooth functioning of the instrument. |
| 28 | Supplier should provide past performance certificate of similar equipment supplied within three years along with contact detail of customer (i.e. Name of Organization, Contact person & Contact Number). |

Note: Supplier should submit his 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

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