A Division of Transnet SOC Limited

INFRASTRUCTURE ENGINEERING

ELECTRICAL DEPARTMENT SPECIFICATION

CURRENT TRANSFORMER ANALYSER

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1. GENERAL REQUIREMENTS

1.1. The current transformer analyser shall be suitable for testing and evaluating all current transformer types including built in CT inside power transformers within the Transnet environment which are used in electrical systems rated up to 220kV AC.

1.2. The current transformer analyser shall be an MRCT type or another instrument with same or better features.

2. OPERATING CONDITIONS

2.1. The current transformer analyser shall be operated in all weather conditions as well as salt laden and industrial atmosphere.

Altitudes:	From sea level to 2000m above sea level.
Relative humidity:	10% to 95%
Atmospheric conditions:	May vary from heavily saline to dry and dusty conditions.
Ambient air temperatures:	-10º C to 50º C. (daily average +30˚C)

3. FUNCTIONAL REQUIREMENTS

3.1. The current transformer analyser should provide the following functionalities:

3.1.1. Automated plotting or calculation of CT magnetizing curves

3.1.2. Knee-point (saturation) analysis of current transformers

3.1.3. Ratio testing for multi-ratio CTs

3.1.4. Polarity testing

3.1.5. Error curve measurement (5% and 10%)

3.1.6. Resistance testing

3.1.7. Secondary load testing

3.1.8. Current injection

3.1.9. AC power frequency withstand testing

3.1.10. Degaussing/Demagnetization

3.1.11. Insulation resistance testing

4. TECHNICAL REQUIREMENTS

4.1. The current transformer analyser should operate within the following specified ranges or better:

4.1.1. Accuracy: < 0.5%

4.1.2. Excitation Voltage Output: 0-2000 Vrms

4.1.3. Excitation Current Output: 0-5 Amps

4.1.4. Large Current Output: 0-60 Amps

4.1.5. DC Winding Resistance Measurement: 0.1 – 30 Ω (±0.5% accuracy)

4.1.6. Burden Measurement: 5 VA – 1000 VA (±0.5% accuracy)

4.1.7. CT/PT Phase Error Measurement: ±4 minutes (0.01 minute resolution)

4.1.8. CT Ratio Measurement: ≤ 20,000 A/5 A (5,000/1 A) (±0.5% accuracy)

4.1.9. Insulation Resistance Test: 1000 VDC, 500 VDC (20 GΩ, 10 GΩ)

5. SOFTWARE FEATURES

5.1. The current transformer analyser shall have the following software features:

5.1.1. Its system must include test automation software compatible with Windows and Android platforms.

5.1.2. It must have features for storing and retrieving test data, with export options to CSV, PDF, and XML formats.

5.1.3. It must be capable for automated report generation with customizable templates for different tests.

5.1.4. It must be operatable from a computer and have the capability for remote diagnostics and software updates, ensuring the system remains up to date with the latest features and improvements.

5.1.5. It must have a built-in memory for storing test results and data, with options for exporting data via USB, ethernet or other interfaces. USB option is necessary.

5.1.6. It must be fitted with an LCD screen with high-resolution colour display for clear visualization of fault data.

5.1.7. It must be equipped with intuitive graphical user interface (GUI) for easy operation.

6. PHYSICAL AND MECHANICAL REQUIREMENTS

6.1. The current transformer analyser must be compact and lightweight design for ease of transport and use in the field. Its weight shall not exceed 20 kg excluding accessories.

6.2. It must be rugged and durable in construction to withstand harsh field conditions.

6.3. It must have an effective cooling system to prevent overheating during prolonged use.

6.4. The system must include built-in overvoltage protection to prevent damage to the equipment and ensure user safety.

6.5. The instrument design should include an interlock mechanism that prevents testing unless all connections are properly secured.

7. ACCESSORIES

7.1. The current transformer analyser must be supplied with all necessary auxiliaries and cables, connectors, and adapters for various test procedures. All main cables must have robust insulation and not less than 5m in length.

7.2. Its carry case must be durable, weather resistant (IP53) carrying case for protection during operation and transportation.

7.3. It must be supplied with a complete grounding kit to ensure safe operation during testing.

7.4. It must have an option of external power supply (230V AC @ 50Hz) for continuous operation in the field.

8. COMPLIANCE AND CERTIFICATION

8.1. The current transformer analyser must compliance with relevant international standards.

8.2. It must be supplied with calibration certificates traceable to national standards.

8.3. It must come with a minimum of 2 years warranty where the supplier shall take full responsibility in repairing or replacing the faulty unit and component unless it has been proven to be negligence on the side of the end user.

9. SUPPORT AND TRAINING

9.1. The OEM or contractor shall provide on-site training for not less than 10 operators and maintenance personnel.

9.2. The OEM shall be willing to provide technical support with quick response times.

9.3. The instrument shall be supplied with comprehensive user manual, service manual, and technical documentation.

10. TECHNICAL EVALUATION

10.1. All bidders shall submit data sheets with clear pictures of the instrument and its accessories.

10.2. Data sheets shall detail relevant technical, operational, functional, and other relevant requirements as indicated in the specification. Failure to provide detailed datasheets shall result in the disqualification of the bidder.