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RAIL NETWORK

TECHNICAL SPECIFICATIONS

Clamp Meter

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1 SCOPE

This specification details the requirements for an AC/DC clamp meter to be used for railway infrastructure maintenance.

2 PRODUCT DESCRIPTION

- 2.1. The clamp meter shall be portable and compact with a robust construction to sustain heavy duty demand under operational conditions.

3 OPERATING CONDITIONS

The clamp meter shall be required to function under the following operating conditions;

Altitude	From sea level to 2000 m above sea level
Relative Humidity	10 to 90 %
Temperature Ranges	-10 to 50 °C
Atmospheric Conditions	From heavily saline to dry and dusty

4 TECHNICAL REQUIREMENTS

4.1 General Requirements

- 4.1.1. The clamp meter shall be capable of reading the following measurements;

- AC and DC current measurement
- AC and DC voltage measurement
- True-rms AC voltage and current for accurate measurements on non-linear signals
- Resistance measurement to up to 40 k Ω with continuity detection
- Temperature and capacitance measurement
- Frequency measurement

- 4.1.2. The meter display unit shall have backlights for legible display even in environments with poor lighting.

- 4.1.3. The meter shall be powered by a rechargeable battery with a low battery indicator to warn users in advance.

- 4.1.4. The meter shall have a display hold button to enable continued measurement to be displayed unless reset.

- 4.1.5. The clamp meter shall be fitted with a torch to light up in dim environments.

4.2 Functional Requirements

AC Current	40A/400A
Accuracy	2% +/- 5 digits
DC Current	40A/400A
Accuracy	2% +/- 5 digits
AC Voltage	600V
Accuracy	1.5% +/- 5 digits
DC Voltage	600V
Accuracy	1.0% +/- 5 digits
Resistance	400Ω/ 4000Ω/ 40kΩ
Accuracy	1.0% +/-5 digits
Continuity	<30Ω
Capacitance	100.0μF to 1000μF
Frequency	5 – 500Hz
AC Response	True-rms
Contact temperature	-10 – 400 Degree Celsius
Safety rating	CAT III 600V / CAT IV 300V
Weight	< 300grams

5 MANUFACTURING

- 5.1. The test equipment shall be manufactured in accordance to ISO 9001-9004, SANS and IEC standards.
- 5.2. The test equipment shall be manufactured with a data plate with the following information:
 - Brand, model and serial number
 - Actual weight of the device in kg
- 5.3. All components and parts shall be industry standard and readily available as replacement parts.

6 ACCESSORIES

The clamp meter shall be supplied with the components;

- Test leads
- Soft case

7 DOCUMENTATION

The supplier shall submit the following documentation with the delivery of each device:

- Detailed user manual.
- Calibration certificates.
- Maintenance guide with spare parts list.
- Guarantee and/or warranty statement.

8 LEGAL AND SAFETY

- 7.1. All equipment to comply with the requirements of the SANS, IEC 61010-1/1990 and other specification(s)/standards applicable to testing instruments and safety.
- 7.2. The information as requested by the various clauses in this specification is to be supplied in the form of technical data, pamphlets and/or drawings.
- 7.3. Transnet Freight Rail reserves the right to verify the information as supplied by the tenderer. Upon request the device must be made available for testing/evaluations.
- 7.4. Maintenance/service/calibration centres for the device shall be available locally. Details of these centres are to be submitted at tendering stage.