



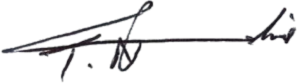


A Division of Transnet SOC Limited

**RAIL NETWORK**

**ELECTRICAL DEPARTMENT**

**SPECIFICATION**

**PORTABLE LCR METER**

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## **1. GENERAL REQUIREMENTS**

- 1.1. The Portable handheld LCR Meter shall be digital and be capable of testing the capacitance(C), resistance(R) and inductance(L) similar to Fluke LCR55A or better.
- 1.2. The Portable LCR Meter shall be ergonomically designed for maximum operator productivity and it shall comply with National and International Standards.

## **2. OPERATING CONDITIONS**

- 2.1. The Portable LCR Meter will be operated in all weather conditions as well as salt-laden and industrial atmospheres.

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: -10° C to 50° C. (daily average +30 °C)

## **3. DESIGN REQUIREMENTS**

- 3.1. The design of the Portable LCR Meter is to be that of the manufacturer but must be of robust construction to meet sustained heavy-duty demands. Yet, it must be light and easily handled by one operator.
- 3.2. The Portable LCR Meter should be acceptable in standard factory production finish and colour.

## **4. FUNCTIONAL REQUIREMENTS**

- 4.1. The Portable LCR Meter shall be capable of testing the capacitance(C), resistance(R) and inductance(L).
- 4.2. It must be a fully Digital Display fitted with a display meter to display measured values of the capacitance, resistance and inductance.
- 4.3. The verifier or LCR meter must be fitted with Max, Hold functions irrespectively either to keep the highest reading or to maintain the reading on the display of the meter.
- 4.4. The LCR meter must be protected by a fast-blowing fuse.
- 4.5. The accuracy levels of the shall be in accordance with applicable standards.

## 5. TECHNICAL REQUIREMENTS

### 5.1. General Description

- 5.1.1. A heavy-duty, hard plastic, Digital Display, Portable Handheld LCR Meter verifier measures capacitance, resistance and inductance.

### 5.2. Operational Requirements

- 5.2.1. 11 000 Count Display
- 5.2.2. Min/Max record mode
- 5.2.3. Relative mode
- 5.2.4. Measures inductance to 20H
- 5.2.5. Measures Resistance to 11M $\Omega$
- 5.2.6. Measures Capacitance to 110mF
- 5.2.7. Zero adjustments for low capacitance range
- 5.2.8. Easy-to-read 11 000 count LCD Display with annunciators
- 5.2.9. Double injection rubber housing with IP67 waterproof O-Ring sealed case
- 5.2.10. Data hold function
- 5.2.11. Auto Power Off
- 5.2.12. Low Battery Indication

### 5.3. Power Supply Requirements

- 5.3.1. The operating voltage shall be batteries.
- 5.3.2. Batteries shall have a life of 400 hours or more

### 5.4. Measuring Capability

Measurement	Range	Resolution	Accuracy
<b>Resistance</b>	110.0 $\Omega$	0.01 $\Omega$	$\pm 1.2\%$ of rdg $\pm 0.5\Omega$
	1.1000k $\Omega$	0.1 $\Omega$	$\pm 1.2\%$ of rdg $\pm 10$ dgts
	11.00k $\Omega$	1 $\Omega$	
	1100.0k $\Omega$	10 $\Omega$	
	1.1000M $\Omega$	100 $\Omega$	$\pm 2.5\%$ of rdg $\pm 10$ dgts
	11.000M $\Omega$	1k $\Omega$	
	40.00M $\Omega$	10k $\Omega$	
<b>Capacitance</b> (Auto-ranging)	11.00nF	1pF	$\pm 5.0\%$ of rdg $\pm 0.7$ nF
	110.00uF	10pF	$\pm 5.0\%$ of rdg $\pm 15$ dgts
	1.1000uF	100pF	

	11.000uF	1nF	±3.0% of rdg ±10 dgts
	110.00uF	10nF	
	1.1000mF	0.1uF	
	11.000mF	1uF	±10.0% of rdg ±10 dgts
	110.00mF	10uF	
<b>Inductance</b> (Manual-ranging)	11.000mH	1uH	±2.0% of rdg ±0.05mH
	110.00mH	10uH	
	11.00H	1mH	±5.0% of rdg ±0.05H
	20.00H	10.0mH	±5.0% of rdg ±0.2H
<b>Measurement</b>	<b>Test Current</b>	<b>Resolution</b>	<b>Accuracy</b>
<b>Diode Test</b>	0.3mA typical	1 mV	±10% of rdg ±5 dgts

## 5.5. Additional Requirements

- 5.5.1. The equipment must come in a lockable soft pouch case capable of storing all accessories furnished with the device
- 5.5.2. A user manual, calibration chart and accessories must be supplied with each device to ensure that the device is operated in accordance with the manufacturer's instructions.
- 5.5.3. All devices and equipment must be supplied with essential tools and consumable items.

## 6. COMPLIANCE AND CERTIFICATION

- 6.1. The Portable handheld LCR Meter must comply with relevant international standards.
- 6.2. It must be supplied with calibration certificates traceable to national standards.
- 6.3. It must come with a minimum of 1-year 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.

## 7. TECHNICAL EVALUATION

- 7.1. All bidders shall submit data sheets with clear pictures of the instrument and its accessories.
- 7.2. Datasheets 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.

