



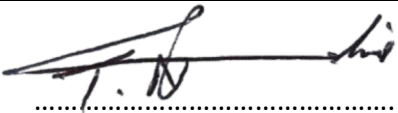


A Division of Transnet SOC Limited

INFRASTRUCTURE ENGINEERING

ELECTRICAL DEPARTMENT

SPECIFICATION

DIGITAL MULTIMETER

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1. GENERAL REQUIREMENTS

- 1.1. This specification outlines the requirements of a portable handheld, Fluke 177 True-RMS Digital Multimeter with a display backlight or similar.
- 1.2. The Digital Multimeter shall be ergonomically designed for maximum operator productivity and safety.

2. OPERATING CONDITIONS

- 2.1. The Digital Multimeter 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 Digital Multimeter 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 Digital Multimeter will be acceptable in standard factory production finish and colour.

4. FUNCTIONAL REQUIREMENTS

- 4.1. The Digital Multimeter shall be capable of testing the DC and AC volts, AC volts, Continuity, Ohms, Diode test, Capacitance, AC amps(True RMS 45Hz to 1kHz), DC amps, Hz, Temperature and Min-Max average.
- 4.2. It must be a fully Digital Display fitted with a display meter to display the measured values listed in Clause 4.1.
- 4.3. The Digital Multimeter must be fitted with Display Hold and Auto Hold functions irrespectively either to keep the highest reading or to maintain the reading on the display of the meter.
- 4.4. The Digital Multimeter meter must be protected by a fast-blowing fuse.
- 4.5. The accuracy levels shall be in accordance with applicable standards.

5. TECHNICAL REQUIREMENTS

5.1. General Description

- 5.1.1. A True-RMS Digital Display Multimeter capable of testing AC/DC voltages and currents, Resistance, Capacitance, and continuity/diode test, with a built-in thermometer which allows for temperature readings.
- 5.1.2. The equipment must come in a case/pouch capable of storing all accessories furnished with the device.

5.2. Operational Requirements

- 5.2.1. True-RMS AC voltage and current for accurate measurements on non-linear signals
- 5.2.2. Measure up to 1000 V ac and dc
- 5.2.3. Measure up to 10 A (20 A for 30 seconds)
- 5.2.4. 10,000 μ F capacitance range
- 5.2.5. Frequency to 50 kHz
- 5.2.6. Built-in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument
- 5.2.7. Resistance, continuity and diode test
- 5.2.8. The removable magnetic display can be conveniently mounted where it is easily seen
- 5.2.9. Make measurements without holding the meter to improve visual focus on probes and augment safe electrical measurements
- 5.2.10. Use as a conventional multimeter when the display is connected
- 5.2.11. Radio transmitter automatically turns off when the display is connected to the meter
- 5.2.12. Auto power off maximizes battery life
- 5.2.13. Min/Max and Average recording to capture variations automatically
- 5.2.14. Easy-to-read display with large digits and bright backlight

5.3. Power Supply Requirements

- 5.3.1. Digital Multimeter shall be fitted with replaceable batteries to operate the meter and also for flexible current probe meter display.
- 5.3.2. Batteries shall have a life of 400 hours or more

5.4. Measuring Capability

Description	Range	Accuracy
DC Voltage	0.1mV to 1000V	0.25% +2 digit
AC Voltage	0.1mV to 1000V	1.0% + 3 digit
DC Current	0.1mA to 10A	1.0% + 3 digit
AC Current	0.1mA to 10A	1.5% + 3 digit

Resistance	0.1Ω to 40MΩ	-
Counts	6000	-
Capacitance	1000nF to 9999 μF	-
Frequency	0.1Hz to 50.000kHz	-
Temperature	-40 °C to +400 °C	-
Power	Batteries:	-
Battery Life	400 hours	-
Wireless Frequency	2.4 GHz ISM Band 10 meter range	-
Safety Rating	CAT IV 600V, CAT III 1000 V	-

5.5. Additional requirements

- 5.5.1. All devices and equipment must be supplied complete with essential tools and consumable items as necessary i.e Manual, Multimeter Carry Pouch Case, Test Leads, and Operating batteries
- 5.5.2. The brand and model number of the Digital Multimeter must be clearly shown.
- 5.5.3. The actual weight in kilograms (g) of the Digital Multimeter must be shown either on the booklet or the machine.
- 5.5.4. The actual dimensions of the Digital Multimeter must be indicated in millimetres (mm or cm).

6. COMPLIANCE AND CERTIFICATION

- 6.1. The Portable handheld Digital Multimeter 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.