

BENNING 044104

Benning IT 115 True RMS Installation Tester User Manual

Model: 044104

1. INTRODUCTION

This manual provides essential instructions for the safe and effective operation of the Benning IT 115 True RMS Installation Tester. This multifunction device is designed for testing electrical installations in accordance with international standards such as DIN VDE 0100-600, IEC 60364-6, DIN VDE 0105-100, and EN 50110. Please read this manual thoroughly before using the instrument.

2. SAFETY INFORMATION

WARNING: Electrical shock hazard. Improper use of this instrument can result in injury or death. Always follow safety precautions.

- Always disconnect all test leads and switch off the instrument before opening the battery/fuse cover.
- Do not open the battery compartment if hazardous voltage is present.
- Ensure the instrument is in good working condition before use. Do not use if damaged.
- Observe all local and national safety regulations for electrical work.
- Only use the provided accessories or approved replacements.
- Do not attempt to measure voltages or currents exceeding the instrument's specified limits.

3. PRODUCT OVERVIEW

The Benning IT 115 is a robust installation tester featuring a backlit graphic display and intuitive controls. It is designed for comprehensive electrical installation testing.



Figure 3.1: Front view of the Benning IT 115 Installation Tester, showing the display, rotary switch, and control buttons.

Key components include:

- **Graphic Display:** Backlit screen for clear readings and connection diagrams.
- **Rotary Switch:** Selects measurement functions (e.g., R_ISO, R_LOW, Z_L-N/L, Z_L-PE, FI/RCD, SETTINGS).
- **Control Buttons:** Navigation, TEST, ON/OFF, HELP, ESC.
- **Test Lead Connections:** Input terminals for test leads.
- **LED Indicators:** Green/red LEDs provide quick pass/fail indications.



Figure 3.2: Rear view of the Benning IT 115, showing the battery compartment and safety warnings.

4. SETUP

4.1. Battery Installation and Charging

The Benning IT 115 operates on 6 rechargeable NiMH AA batteries. A charger is included for convenience.

1. Ensure the instrument is switched off and all test leads are disconnected.
2. Open the battery compartment cover on the rear of the device (refer to Figure 3.2).
3. Insert the 6 NiMH AA batteries, observing correct polarity.
4. Close the battery compartment cover securely.
5. Connect the charger to the instrument's charging port and to a suitable power outlet to charge the batteries. The integrated battery charging function will manage the charging process.

NOTE: Do not use non-rechargeable alkaline batteries with the integrated charging function.

4.2. Connecting Test Leads and Accessories

The device comes with a set of accessories for various measurements.



Figure 4.1: Included accessories: carrying case, test leads, probes, crocodile clips, and rechargeable batteries.

- Connect the test cable with the protective contact plug for standard outlet measurements.

- For other measurements, use the 3-conductor universal cable (1.5 m length) with the provided test probes or crocodile clips as required by the specific test.
- Ensure all connections are secure before performing any tests.

5. OPERATING INSTRUCTIONS

The Benning IT 115 offers a range of measurement functions accessible via the rotary switch and control buttons. The graphic display provides clear readings and a help function with connection diagrams.

5.1. Powering On/Off

Press the **ON/OFF** button to switch the instrument on or off.

5.2. Insulation Resistance Measurement (R_ISO)

Measures insulation resistance between 0.01 MOhm and 1000 MOhm.

1. Turn the rotary switch to **R_ISO**.
2. Select the desired nominal test voltage (50V, 100V, 250V, 500V, 1000V) using the navigation buttons.
3. Connect the test leads to the circuit under test as indicated by the on-screen help diagram.
4. Press the **TEST** button to initiate the measurement.
5. The result will be displayed, and the green/red LEDs will indicate pass/fail based on set limits.

5.3. Low-Ohm Resistance Measurement (R_LOW)

Measures low resistance from 0.01 Ohm to 2000 Ohms, typically for protective conductor continuity.

1. Turn the rotary switch to **R_LOW**.
2. Connect the test leads to the protective conductor.
3. Press the **TEST** button. The instrument uses a 200 mA test current with polarity reversal and a 7 mA test current for continuity.
4. Observe the displayed resistance value.

5.4. Earth Resistance Measurement (R_E)

Measures earth resistance using the 3-conductor method (requires optional earthing kit 044113).

1. Turn the rotary switch to **R_E**.
2. Connect the optional earthing kit according to the on-screen diagram.
3. Press the **TEST** button.
4. The earth resistance value will be displayed.

5.5. Loop and Line Impedance Measurement (Z_L-N/L, Z_L-PE)

Measures loop impedance (0.01 Ohm - 10 kOhm) for fault current path and short-circuit current determination.

- **Line Impedance (Z_L-N/L):** Measures impedance between Line and Neutral or Line and Line, including voltage drop and short-circuit current.
- **Loop Impedance (Z_L-PE):** Measures impedance between Line and Protective Earth without tripping RCD/FI, including short-circuit current.

1. Turn the rotary switch to **Z_L-N/L** or **Z_L-PE**.
2. Connect the test leads to the appropriate points in the circuit.
3. Press the **TEST** button.
4. The impedance value and calculated short-circuit current will be displayed.

5.6. RCD/FI Test

Tests Residual Current Devices (RCDs) / Fault Current Circuit Breakers (FI) of types AC, A, and F, including standard and delayed (S) types.

- Tests include automatic test sequences, touch voltage, trip time, and trip current (ramp test).
- Features an RCD/FI analysis function.

1. Turn the rotary switch to **FI/RCD**.
2. Select the RCD type (AC, A, F) and nominal current using the navigation buttons.
3. Connect the test leads to the circuit protected by the RCD.
4. Press the **TEST** button to start the test sequence.
5. The results (trip time, trip current, touch voltage) will be displayed.

5.7. Rotary Field Test

Determines the phase sequence in three-phase systems.

1. Turn the rotary switch to the rotary field test setting (refer to the device's specific icon).
2. Connect the test leads to the three phases.
3. The display will indicate the phase sequence.

5.8. Voltage and Frequency Measurement

Measures AC/DC voltage and frequency.

- **Voltage Range:** 1 V - 550 V AC/DC (True RMS measurement).
- **Frequency Range:** 0 Hz - 500 Hz.

1. The instrument continuously monitors line voltage.
2. Connect the test leads to the voltage source.
3. The voltage and frequency will be displayed automatically.

5.9. Help Function

The integrated help function provides connection diagrams and guidance for each measurement. Press the **HELP** button to access it.

6. MAINTENANCE

6.1. Cleaning

Clean the instrument regularly with a soft, damp cloth. Do not use abrasive cleaners or solvents.

6.2. Battery Care

Recharge the NiMH batteries when the low battery indicator appears. If the instrument will not be used for an extended period, it is recommended to fully charge the batteries and store the device in a cool, dry place.

6.3. Fuse Replacement

The instrument uses a 0.315 A fuse (part number 757211). If a fuse blows, ensure the instrument is off and disconnected from all circuits before replacing it. Only use fuses of the specified type and rating.

7. TROUBLESHOOTING

- **Instrument does not power on:** Check battery charge level. Ensure batteries are correctly inserted.
- **Inaccurate readings:** Ensure test leads are properly connected and not damaged. Verify the correct measurement function is selected.
- **RCD/FI test fails:** Check RCD type and nominal current settings. Ensure the RCD itself is functional.
- **Display shows "OVERLOAD" or "OL":** The measured value exceeds the instrument's range for the selected function. Disconnect immediately.

If problems persist, contact Benning customer support or a qualified service technician.

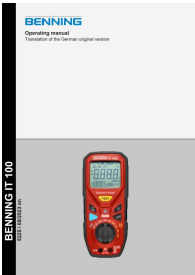

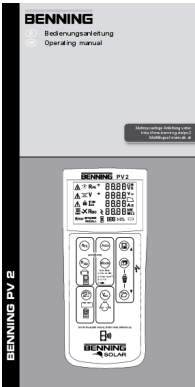
8. SPECIFICATIONS

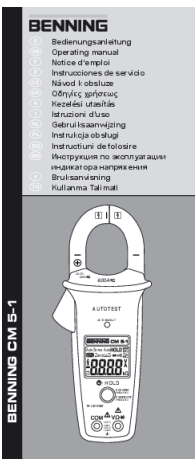


Feature	Specification
Manufacturer	Benning
Model Number	044104
Dimensions (L x W x H)	11.5 x 10.3 x 23 cm (4.5 x 4.1 x 9.1 inches)
Weight	1.01 kg (2.23 lbs)
Power Supply	6 AA NiMH rechargeable batteries (included)
Insulation Resistance Range	0.01 MOhm - 1000 MOhm
Insulation Test Voltages	50V, 100V, 250V, 500V, 1000V
Low-Ohm Resistance Range	0.01 Ohm - 2000 Ohms (200mA test current)
Loop/Line Impedance Range	0.01 Ohm - 10 kOhm
RCD/FI Test Types	AC, A, F (Standard and Delayed 'S')
AC/DC Voltage Range	1 V - 550 V (True RMS)
Frequency Range	0 Hz - 500 Hz
Compliance	DIN VDE 0100-600, IEC 60364-6, DIN VDE 0105-100, EN 50110, IEC
Minimum Operating Voltage	50 Volts
Maximum Operating Voltage	600 Volts

9. WARRANTY AND SUPPORT

Benning provides a 1-year availability for spare parts for the IT 115 Installation Tester. For technical support, service, or warranty claims, please contact your local Benning distributor or visit the official Benning website. Always refer to the official Benning documentation for the most up-to-date warranty terms and support information.

Related Documents - 044104

	<p>BENNING IT 100 Insulation and Resistance Tester Operating Manual</p> <p>Comprehensive operating manual for the BENNING IT 100 insulation and resistance measuring device, covering safety, operation, maintenance, and technical specifications. Includes detailed instructions for voltage, resistance, low-resistance, and insulating resistance measurements.</p>
	<p>Benning ST 725 Operating Manual: Electrical Safety Testing</p> <p>Comprehensive operating manual for the Benning ST 725 electrical safety tester. Learn about its features, safety instructions, and testing procedures for various electrical devices and installations.</p>
	<p>BENNING PV 2 Operating Manual: Solar PV Tester Guide</p> <p>Comprehensive operating manual for the BENNING PV 2 solar PV tester. Learn about its functions, safety guidelines, electrical specifications, and step-by-step procedures for testing photovoltaic systems, including insulation resistance, voltage, and current measurements.</p>

	<p>BENNING CM 5-1 Clamp Meter - Operating Manual and Technical Specifications</p> <p>Detailed operating instructions and technical specifications for the BENNING CM 5-1 True RMS clamp meter, covering voltage, current, resistance, continuity, and diode measurements with AUTOTEST functionality.</p>
	<p>BENNING PV 2 Short Instructions: Solar PV Tester Operation and Features</p> <p>Concise guide to operating the BENNING PV 2 solar photovoltaic tester, covering measurements, connectivity, data management, and troubleshooting. Includes safety information and accessory details.</p>
	<p>BENNING EV 3-3 Wallboxtester und Messadapter: Technische Daten, Anwendung und Funktionen</p> <p>Umfassende Informationen zum BENNING EV 3-3 Wallboxtester und Messadapter für die Prüfung von 1- und 3-phasigen EV-Ladestationen. Enthält technische Daten, Leistungsmerkmale, Anwendungshinweise und Gerätebeschreibung.</p>