Model 117B Product Description

1.0 Introduction
This Multimeter is a versatile multi-function instrument, designed in accordance with current safety regulations. Used in accordance with the instructions in this Owner’s Manual, it will give safe and reliable measurement. The compact Multimeter is a useful aid, for all standard measurements, to the electrician on site, in industry or for hobby electronics.

• Analog Display
• DC and AC Voltage measurements up to 500V
• DC current measurement up to 250 mA
• Resistance measurement up to 1 MΩ

The Multimeter comes with test leads attached. When unpacking check that the instrument is complete and in good condition.

Symbols marked on the instrument:
△ Warns of a potential danger, observe the advice given in the Owner’s Manual.
● Indicates a dangerously high voltage.

Conformity Symbol. The instrument complies with all current EMC and safety regulations. Tested to EN61010-1, EN50081-1 and EN50082-1.

Scope of supply
1 Pce. Multi-meter
1 Pce. Instruction Manual

2.0 Operators Safety
The instrument has left our factory in safe and perfect condition - to maintain this condition the user must pay attention to the safety reference contained in this Instruction Manual.

Do not use this device if you are unfamiliar with electrical circuits and test procedures.
△ Attention! This Instruction Manual contains information and warnings necessary for safe operation and maintenance of the instrument.
It is recommended that you read and understand this Instruction Manual thoroughly prior to use the instrument: Failure to understand these instructions and to comply with the warnings and instructions contained herein can result in serious injury or damage.
△ Attention! In order to avoid electrical shock proper safety measures have to be respected when working with voltages exceeding 60VDC or 25V RMS AC.
△ Attention! Prior to taking any measurement ensure that test leads and test instrument are in perfect condition. These measuring instruments may only be used within the specified ranges.
The instrument must only be opened by the user for fuse or battery replacement while observing safety instructions in this manual. There are no user serviceable parts inside. Prior to opening the instrument, ensure that the instrument is switched off and disconnected from any circuits.

Never measure current in circuits with more than 240 V AC/DC voltage present.

3.0 Operating Elements and Connections
1. Measurement Range Switch
2. Resistance-Zero-Adjustment
3. Analogue Display
4. Protective Holster
5. Test Leads with Probes
6. Battery casing on rear of instrument
4.0 Measurements
4.1 Preparation and Safety Measures

△ Attention! Set range selection switch to desired function prior to connecting test probes to the Unit Under Test (UUT).

- Prior to switching to a new function or measurement range always disconnect measurement leads from UUT.
- Only use the instrument in dry and clean environments. Dirt and humidity lower insulation resistances and can lead to electric shocks in case of higher voltages.
- Only use the instrument within specified measurement ranges.
- Prior to instrument use always verify instrument for correct functioning (e.g. with known voltage source).
- Ensure that measurement leads are in perfect condition.
- Only use fuses of same type and characteristics. Short-circuiting the fuse holders is prohibited.

4.2 Voltage Measurement

△ Attention! Never apply more than 500 V AC/DC at input sockets. Exceeding these threshold values could lead to instrument being damaged or personnel injuries.

△ Attention! Disconnect test probes from UUT prior to selecting different measurement range.

4.2.1 DC Voltage Measurement
1. Set measurement range switch (1) to one of the DC voltage measurement (V=) settings. Always select highest measurement range for unknown voltages and select lower measurement range, if required, until maximum resolution is achieved.
2. Connect test probes to UUT.
3. Read the voltage on the black scale.

4.2.2 AC Voltage Measurement
1. Set measurement range switch (1) to one of the AC voltage measurement (V=) settings. Always select highest measurement range for unknown voltages and select lower measurement range, if required, until maximum resolution is achieved.
2. Connect test probes to UUT.
3. Read the voltage on AC scale (for 10 V range, read on the red AC10V scale).

4.3 Resistance Measurement

△ Attention! Prior to any measurement ensure that the UUT is not live. If required carry out voltage measurement for verification. See para. 4.2 for voltage measurement.

1. Set measurement range switch (1) to ‘Ω’ range. Short two probes together and adjust the OHM ADJ. (2) knob to set the pointer to “0” at the right end of the resistance scale. If you cannot get it, replace the battery with a new one.
2. Connect test leads to UUT.
3. Read the resistance reading on the OHMS scale (green); use proper multiplier to get the correct value (Rx10, Rx1K, depending on the resistance range).

4.4 DC Current Measurement

△ Attention! Never measure in circuits with more than 240V nominal voltage. Do not attempt to read AC current.
1. Set measurement range switch (1) to one of the DC current measurement (mA=) settings.
2. In case of unknown currents, always select 250 mA current range and switch to the lower measurement range, if required. Disconnect test leads from UUT prior to changing measurement ranges.
3. Connect the instrument in series to UUT and only switch on UUT once the Multimeter is connected to UUT.
4. Read the current reading on the current scale.

4.5 Decibel Measurement

△ Attention! Never apply more than 500 V AC/DC at input sockets. Exceeding these threshold values could lead to instrument being damaged or personnel injuries.

△ Attention! Disconnect test probes from UUT prior to selecting different measurement range.

6.0 Technical Data
Operating temperature: 0...40°C, max. 75% RH
Display: Analogue Display
Meter Movement: Wide 3 colour mirrored scale 180µA movement.
Overvoltage Category: II max. 300V
Pollution degree: 2
Battery: One AA alkaline battery (23-552 or equivalent)
Fuse: 500 mA/250 V Fast Acting
Dimensions: 120 X 80 X 30 mm
Weight: 125 g
Specifications valid for 23°C ± 5°C, max. 75% RH

<table>
<thead>
<tr>
<th>Function</th>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCV</td>
<td>0 - 10/50/200/500V</td>
<td>±5% (2kΩ/V)</td>
</tr>
<tr>
<td>ACV</td>
<td>0 - 50/250/500V</td>
<td>±5% (5kΩ/V)</td>
</tr>
<tr>
<td>DCA</td>
<td>0 - 25mA/250mA</td>
<td>±5%</td>
</tr>
<tr>
<td>Q</td>
<td>0 - 10k/1MΩ</td>
<td>±5%</td>
</tr>
<tr>
<td>Battery</td>
<td>1.5V (100mA), 9V(20mA)</td>
<td>±10%</td>
</tr>
<tr>
<td>dB</td>
<td>4 to 56dB</td>
<td>(0dB=1mW on 600Ω load)</td>
</tr>
</tbody>
</table>