Elenco M105
10158 POCKET
MULTIMETER INSTRUCTION MANUAL
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1.0 Introduction
The 10158 Pocket Multimeter is a very useful multi-function instrument. The instrument has been designed in accordance with the most up-to-date safety regulations and ensures safe, reliable measurement. The compact 10158 Pocket Multimeter is a useful aid, for all standard measurements, to the electrician on site, in industry or for hobby electronics.

Symbol marked on the instrument:
Wears a potential danger, observe the advice given in the instruction manual.
Indicates a dangerously high voltage.
Conformity Symbol, the instrument complies with the valid directives. It complies with the EMC Directive (89/336/EEC) and the standards EN 50051-1:1992 and EN 50082-1:1992.

Scope of supply:
1 Pcs. 10158 Pocket Multimeter
1 Pce. Battery 1.5V/6ECR (include in meter)
1 Pce Instruction Manual
1 pair of test leads

2.0 Operating Safety
The instrument has its factory in safe and perfect condition to maintain this condition the user must pay attention to the safety reference contained in this instruction manual.

4.0 Measurements
4.1 Preparation and Safety Measures
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 using 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 120V (60VDC or 50V (25V) RMS). These voltages represent the threshold contact voltages represent the threshold contact voltages according with DIN VDE (German Standard).
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 instruments may only be opened for fuse or battery replacement by authorized persons.
Prior to opening the instrument, ensure that the meter is switched off and disconnected from any circuits.
Attention!
Never measure circuits in circuits fused with max. 16A.
To ensure correct functioning and long life span-avoid leaving the instruments in direct sunlight where they can heat up.

3.0 Operating Elements and Connections
1. Measurement Range Switch
2. Resistance-Zero-Adjustment
3. Analogue Display
4. Input Positive Socket
5. Input Negative Socket
6. Mechanical Zero Adjustment

4.0.1 DC Voltage Measurement
Attention!
Set range selection switch to desired function prior to connecting test probes to UUT.
Prior to switching to a new function or measurement range always disconnect measurement leads from UUT.
Use only the multimeter in dry and clean environments. Dirt and humidity Lower insulation resistances and can lead to electric shocks in case of higher voltage.
Use only multimeter 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 AC Voltage Measurement
Attention!
Never apply more than 1000V 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 DC voltage measurement (DCV), 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 VmA black scale.

4.2.2 AC Voltage Measurement
1. Set measurement range switch (1) to AC voltage measurement (ACV), 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 VmA black scale (for AC 10V range, read on the red AC 10V 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 range selection switch (1) to “Ω” range.
2. Short two probes together and adjust the 0Ω AGU (Ω) knob to set the pointer to the “0” at the right end of the scale, if you can not get it, replace the battery with a new one.
3. Connect test leads to UUT.
4. Read the resistance reading on the Ω scale (green), use proper multiplier to get the correct value (Rx10, Rx1k, depending on the resistance range).

5.0 Maintenance
When using instrument in compliance with the instruction manual no special maintenance is required. Any adjustments and repairs may only be carried out by authorized staff.

6.0 Technical Data

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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 using 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 120V (60VDC or 50V (25V) RMS). These voltages represent the threshold contact voltages represent the threshold contact voltages according with DIN VDE (German Standard).

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 instruments may only be opened for fuse or battery replacement by authorized persons.
Prior to opening the instrument, ensure that the meter is switched off and disconnected from any circuits.

Attention!
Never measure circuits in circuits fused with max. 16A.
To ensure correct functioning and long life span-avoid leaving the instruments in direct sunlight where they can heat up.

Attention!
Never apply more than 1000V 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.

1. Set measurement range switch (1) to DC voltage measurement (DCV), 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 VmA black scale.

1. Set range selection switch (1) to “Ω” range.
2. Short two probes together and adjust the 0Ω AGU (Ω) knob to set the pointer to the “0” at the right end of the scale, if you can not get it, replace the battery with a new one.
3. Connect test leads to UUT.
4. Read the resistance reading on the Ω scale (green), use proper multiplier to get the correct value (Rx10, Rx1k, depending on the resistance range).

Attention!
Never measure current in circuit with AC/DC voltage. Do not attempt to read AC current.
1. Set range selection switch (1) to DCmA.
2. Connect test leads to the lower measurement range, if required.
3. Disconnect test leads from UUT prior to changing measurement range.
4. Connect multimeter in series to UUT and make measurement once the multimeter is connected to UUT.
5. Read the current reading on the VmA black scale.

Attention!
Never apply more than 250V 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.
1. Set the selector switch to one of the ACV modes.
2. For 10V AC range, read dB reading on the dB red scale directly, but for 50V or 250V ranges, calculate the reading by the table:

<table>
<thead>
<tr>
<th>dB range</th>
<th>-20 to 22</th>
<th>-6 to 36</th>
<th>8 to 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACV range</td>
<td>10V</td>
<td>50V</td>
<td>250V</td>
</tr>
<tr>
<td>Add value</td>
<td>0</td>
<td>14</td>
<td>28</td>
</tr>
</tbody>
</table>

Attention!
Never measure dB on 1000V range. Do not attempt to read|dB clipped value on 1000V range.

NOTE: for absolute dB measurement, circuit impedance must be 600Ω. 0dB = 1mW dissipated in a 600Ω load.

4.5 Decimal 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 selector switch to one of the BAT positions.
2. Connect probes to the battery with red probe to + and black to end respectively.
3. Read the GOOD BAD (green and red) scale.

5.0 Maintenance
When using instrument in compliance with the instruction manual no special maintenance is required. Any adjustments and repairs may only be carried out by authorized staff.

6.0 Technical Data

Operating Temperature: 0 ... 40°C, max 75% rel. Humidity
Display: Analogue display
Meter Movement: Wide 3 color scale 80 µA movement

Resistance of DC 10kΩ, AC 4.5kΩ/V

Overvoltage Category: II max. 300V
Pollution degree: 2
Battery: 1.5V battery 16LR6
Fuse: 500mA/250V fast Acting
Dimensions: 116x65x35
Weight: 190g
Specifications and valid for 220V, max 75% rel. humidity