

**Elenco M105
1015B POCKET
MULTIMETER INSTRUCTION MANUAL**

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1.0 Introduction
The 1015B Pocket Multimeter is a universally usable 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 1015B Pocket Multimeter is a useful aid, for all standard measurements, to the electrician on site, in industry or for hobby electronics.

- Analogue Display
- DC and AC voltage measurements up to 1000V
- DC current measurement up to 250mA.
- Resistance measurement up to 2M Ω

The 1015B Pocket Multimeter is supplied with test leads. When unpacking check that the instrument and the accessories are complete and in good condition.


Symbol marked on the instrument:

-  Warns of 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) the standards EN 50081-1:1992 and EN 50082-1:1992 Are fulfilled. It also complies with the Low Voltage Directive (73/23/EEC) the standards EN 61010-1:1993 is fulfilled.


- Scope of supply**
- 1 Pce. 1015B Pocket Multimeter
 - 1 Pce. Battery 1.5VIEC LR6 (include in meter)
 - 1 Pce Instruction Manual
 - 1 pair of test leads

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.

 **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 (60V)DC or 50V (25V)RMS AC. 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.

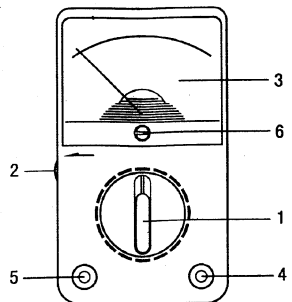
Never measure current in circuits with AC/DC voltage present.

 **Attention!** Only use the instrument 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 Measurements
4.1 Preparation and Safety Measures

 **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.
- Only use the multimeter in dry and clean environments. Dirt and humidity Lower insulation resistances and can lead to electric shocks in case of higher voltage.
- Only use 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 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 V.mA 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 V.mA 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 witch (1) to " Ω " range. Short two probes together and adjust the 0 Ω ADJ(2) knob to set the pointer to the "0" at the right end of the resistance scale, if you can not get it, replace the battery with a new one.
2. Connect test leads to UUT.
3. Read the resistance reading on the Ω 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 current in circuit with AC/DC voltage. Do not attempt to read AC current.

1. set range selection switch (1) to DCmA.
2. In case of unknown currents, always select 250mA current range and switch to the lower measurement range, if required. Disconnect test leads from UUT prior to changing measurement ranges.
3. Connect multimeter in series to UUT and make measurement once the multimeter is connected to UUT.
4. Read the current reading on the V.mA black scale.


4.5 Decibel Measurement

 **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.
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:

dB range	-20 to 22	-6 to 36	8 to 50
ACV range	10V	50V	250V
Add value	0	14	28

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

NOTE: for absolute dB measurement, circuit impedance must be 600 Ω . 0dB=1mW dissipated in a 600 Ω load.
3. For the signal with DC component, you have to insert a capacitor with voltage resisting high than 400V, capacity >0.1 μ F between test probe and circuit under test.

4.6 Battery check

1. Set selector switch to one of the BAT positions.
2. Connect probes to the battery with red probe to + end 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.

Calibration Interval:

To ensure accuracy and reliability of measurement results, we recommend to calibrate measurement instruments periodically.

5.1 Battery Replacement

Short the two probes together and adjust the 0 Ω ADJ (2) knob to set the pointer to the "0" at the right end of the resistance scale, if you can not get it, replace the battery with a new one as follows:

1. Remove instrument from all circuit.
2. Loosen the 2 screws, open the meter rear cover.
3. Replace the discharged battery by using one new battery (1.5V) battery IEC LR6). Respect correct polarity!
4. Close the rear cover and continue measurements.

Please consider your environment when disposing of used batteries. They belong in a rubbish dump for hazardous waste.

5.2 Fuse Replacement

If the fuse has tripped due to current range overload, please respect the following references for fuse replacement. Only use fuses with specified current and voltage values, switch-off characteristics and capacities.

1. Remove instrument from all circuits.
2. Loosen the 2 screws, open the meter rear cover.
3. Remove defective fuse.
4. Insert new fuse ensuring it is positioned correctly (Fuse: 500mA/250V, Fast Acting) Using auxiliary fuses and short-circuiting the fuse holders is prohibited and can lead to instrument destruction and serious personal injury.

5.3 Cleaning

If the instrument is dirty after usage, it is advised to clean it by using a humid cloth and mild household detergents. Never use acid detergents or dissolvants.

6.0 Technical Data

Operating temperature: 0 ... 40 $^{\circ}$ C, max 75% rel. Humidity
Display: Analogue display
Meter Movement: Wide 3 color scale 80 μ A movement

Overvoltage Category: II max. 300V
Pollution degree: 2
Battery: 1.5V battery IEC LR6
Fuse: 500mA/250V fast Acting
Dimensions: 116x65x35
Weight: 195g
Specifications and valid for 23 $^{\circ}$ C, max 75% rel. Humidity

Function	Range	Accuracy
DCV	0...2.5/10/50/250/1000V	\pm 5%
ACV	0...10/50/250/1000V	\pm 5%
DCA	0...10/250mA	\pm 5%
Ω	0...20k Ω /2M Ω (Rx10/Rx1k)	\pm 5%
BAT TEST	1.5V(250mA)/9V (10mA)	\pm 10%(Middle of GOOD line)

Resistance of meter: DC 10k Ω /V, AC 4.5k Ω /V