

## SAFETY INFORMATION

This multimeter complies to the IEC1010 standard and it is a CAT II. (600V) touch protection electronic measuring device. Follow the safety and usage instructions to ensure proper operation and good conditions of the device.

Compliance to the safety standards is only guaranteed if the measuring wires are intact. In case of their being damaged replace them immediately.

### Warning

The user of the device must consider the following safety instructions when using the device:

- Protect yourself from electric shock!
- Protect the device from damage resulting from improper usage!

### Safety warnings

- When using the device near equipment that may generate electric noise, note that the multimeter may show incorrect measuring results or nothing at all.
- Only use the device for purposes described in the user manual! Improper usage does not guarantee the further correct operation of the device.
- Never use the device near explosive or flammable gases or powders!
- Before measuring check if the device is in proper measuring position. Do this before every single measuring!
- To protect the device, never exceed the maximum inward values.
- Disconnect the measuring wires from the tested object or circuit when changing the measuring modes or functions!
- When measuring resistance, continuity or diode always make sure that the device is not connected to a circuit under power and that all high capacity capacitors are discharged.
- If the low battery signal appears on the screen, replace the battery.

### Symbols

Symbols used on the device and in the manual:



**WARNING:** Check the referring pages of the user manual! Improper use may lead to damage!

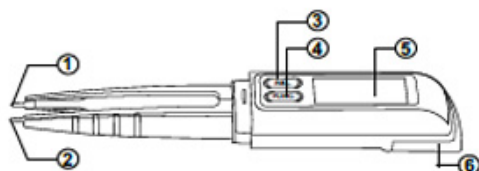


Compliance to European standards

### Tips

- If you encounter any abnormal phenomena during measuring, stop measuring and turn the device off.
- If the device is not used for a longer time, take out the battery and do not store the device at a place with high temperatures or humidity.
- Never use the device if the battery holder lid in the back is open or not properly in its place!

## DESCRIPTION



1. Negative peak
2. Positive peak
3. „REL“ button
4. „FUNC.“ button
5. LCD display
6. Battery holder



### LCD display

3 ¾ digit, 19 mm high LCD.

### REL button

For selecting relative measurement. If you press the button, the actual measured value gets memorized and the next measured result is

compared to it. To return to normal mode, press the button again.

### FUNC. button

A single short press turns the device on. This button also selects measuring modes. If you hold it down for more than 2 seconds, the device turns off.

### Measuring points

The „+“ goes to the anode, and the „-“ to the cathode in diode or polar capacity measurement mode.

## TECHNICAL DATA

### General

Altitude factor	<2000 m
Operating temperature	0°C - 40°C (<80% humidity)
Storage temperature	-10°C - 60°C (<70% humidity)
Temperature factor	0,1 x (determined accuracy)/ °C (<18°C or >28°C)
Sampling rate	3x/sec
Display	4 digit LCD
Range selection	automatic
Overload signal	„OL“ on the screen
Low battery signal	⚡ on the screen
Polarity display	“-“ appears on the display automatically
Automatic power off	yes
Power	2 x 1,5V battery (AG13 x 2)
Dimensions	181 x 35 x 20 mm
Weight	65g (with battery)

### Measuring specifications - accuracy

The below values measured in various ranges are the accurate values that the device guarantees within 1-2 years of proper usage at temperatures between 18°C-28°C and 80%

relative humidity. Accuracy display: ± (% read values + number of lower numbers).

### Resistance

Range	Resolution	Accuracy
400 Ω	0,1 Ω	±(1,2% + 3)
4 kΩ	1 Ω	
40 kΩ	10 Ω	
400 kΩ	100 Ω	
4 MΩ	1 kΩ	
40 MΩ	10 kΩ	±(2,0% + 5)

### Continuity test

Range	Resolution	Accuracy
4 nF	1 pF	±(5,0% + 5)
40 nF	10 pF	±(3,0% + 5)
400 nF	100 pF	
4 µF	1 nF	
40 µF	10 nF	
200 µF	100 nF	

### Diode test

Function	Description
	Shows the appr. opening voltage of the diode
Test circumstances	Opening DC current: appr. 1 mA, closing DC voltage: appr. 1,5V

## INSTRUCTIONS FOR MEASURING

### Resistance measuring

**WARNING:** To avoid damage to the device and electric shock turn off the power source of the measured circuit and discharge all high capacity capacitors.

- Set the device to mode with the FUNC

button.

- Touch the connectors of the device to the resistor and read the measured value from the screen.


**Note:**

The device may need a few seconds when measuring above 1M $\Omega$  to show a stable value. This is normal in such a high range.

If the inward signal is missing or the circuit is open, „OL“ is shown on the screen as for overloads.

### Capacity measuring

**WARNING: To avoid damage to the device and electric shock disconnect the measured circuit's power source and discharge all high capacity capacitors!**

- Set the device to  mode with the FUNC button.
- Touch the device to the measured capacitor and read the measured value from the screen.


**Note:**

The device may require a few seconds in a higher range (30 seconds in the 200 $\mu$ F range). This is normal for this range.

When measuring below 4nF the device's capacity value must be subtracted from the measured result (or you can switch the device to relative measuring mode with the REL button and then perform the measuring).

### Diode measuring

**WARNING: To avoid damage to the device and electric shock disconnect the measured circuit's power source and discharge all high capacity capacitors!**


- Set the device to  mode with the FUNC button.
- Touch the + pin to the diode's anode and the - one to the cathode.
- The display shows the opening voltage of the diode. If the polarity is reversed, the display shows „OL“.

## MAINTENANCE

**WARNING: To avoid electric shock, do not let water get inside the device!**

Clean the device regularly with a wet cloth. You may use water with mild detergent. Do not use strong detergents, solvents or abrasives!

### Battery replacement

- If battery power goes below the normal operational value a „“ icon will appear on the screen indicating the need for a battery replacement.
- Turn the multimeter off.
- Pull the battery holder cover off.
- Replace the batteries to 2 x 1,5V AG13 types.
- Replace the battery holder cover.

### Accessories

- 2 x 1,5V batteries (AG13)
- 1 user manual