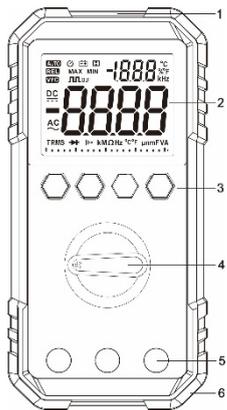


Thank you for purchasing our equipment. Please read this manual carefully and heed the safety warnings and instructions before installing, using or repairing the equipment. This will ensure not only the protection of persons, but also the long life of the equipment.

Introduction

This multimeter has been designed as a highly stable, reliable and comprehensive digital multimeter in a compact size with drop protection. It features a built-in 40mm LCD display with large characters for clearer readings and a precision A/D converter that forms the core of a large integrated circuit. As a result, this model allows measurement of AC/DC voltage, AC/DC current, resistance, diodes, continuity, temperature, frequency, capacitance, NCV detection, live wire recognition, and provides analog column display and low impedance measurement functions. The built-in EBTN display provides clear and readable readings from any angle. To make full use of this multimeter, retain this instruction manual.



1. Induction position of NCV
2. EBTN display: 51.5*40 mm
3. Function buttons
 - **SEL**: press lightly to activate scroll function, below ACV range and press and hold to enter VFC mode
 - **MAX/MIN**: press lightly to scroll MAX/MIN, hold down MAX/MIN to exit.;
 - **REL**: under capacity range and press slightly to activate relativity mode
4. Rotary switch for function selection
5. Input connectors
6. Rubber protective sleeve

Safety information

This multimeter has been designed in accordance with IEC1010 standard for electronic measuring instruments with 600 V CAT III voltage and 2 contamination.

⚠ This symbol indicates that the operator must follow the explanation in the operating instructions to avoid personal injury or damage to the measuring instrument.

⚡ Grounding **⚠** High Voltage **□** Double Insulation

Warning:

- Improper use of this equipment may cause damage and electric shock. Read this manual before using the equipment.
- Always disconnect the cables before changing the battery or fuses.
- Before using the device, check the condition of the measuring cables and the meter itself for damage.
- Use extra caution when making measurements if the voltage is higher than 30 VAC RMS or 60 V DC, these voltages are considered an electrical shock hazard.
- Always discharge the capacitors and disconnect the device under test from the power supply before performing diode, resistance or continuity tests.
- To avoid damage to the measuring instrument, do not exceed the maximum input limits specified in the specification.
- If the device will not be used for a long period of time, remove the batteries to prevent them from draining.

Maintenance

- To prevent electric shock, disconnect the test leads from the power source before removing the back cover or battery cover or fuses.
- To prevent electric shock, do not use the meter until the battery and fuse covers are in place and securely fastened.
- To protect the circuit, replace the fuse, it must be in the same specification.
- Do not clean the measuring instrument housing with chemical solvent.

Technical parameters

Accuracy: \pm (% of reading + digits), warranty period: 12 months

Ambient temperature: 18°C ~ 28°C ; humidity: \leq 80%.

Maximum distance between input voltage and earth: CATIII 600V

Fuse: CAT 600: F500mA/250V, F10A/250V

Battery: 2 x 1.5V AAA

Automatic shutdown: approx. 15 minutes after switching on

Max. display: 4000

Overload indication: max: "OL"

Polarity display: negative "-"

Fuse Alarm: Below the current range and displaying "FUSE" means the fuse has blown and needs to be replaced.

Strong magnet for attachment and more convenient measurement

Operating temperature: 0 -40°C

Storage temperature: -10 -50 °C

Low battery indication: 

Dimensions: 155x71,9x45mm

Weight: approx. 300 g (including batteries)

DC & AC Voltage

Scope	Resolution	DCV accuracy	ACV accuracy
400mV	0.1mV	$\pm 0.5\%$ 3 \pm	-
4V	1mV	$\pm 0.5\%$ 3 \pm	$\pm 1.0\%$ 5 \pm
40V	10mV	$\pm 0.5\%$ 3 \pm	$\pm 1.0\%$ 5 \pm
400V	100mV	$\pm 0.8\%$ 5 \pm	$\pm 1.0\%$ 5 \pm

Input impedance: 10M Ω

Overload protection: 600V DC or 600V AC RMS

Frequency Range: 40Hz - 1000Hz; Display: TRUE RMS

DC & AC current

Scope	Resolution	DCV accuracy	ACV accuracy
400 μ A	0.1 μ A	$\pm 1.0\%$ 5 \pm	$\pm 1.8\%$ 5 \pm
4000 μ A	1 μ A	$\pm 1.0\%$ 5 \pm	$\pm 1.8\%$ 5 \pm
40mA	0.01mA	$\pm 1.0\%$ 5 \pm	$\pm 1.8\%$ 5 \pm
400mA	0.1mA	$\pm 2.0\%$ 5 \pm	$\pm 2.5\%$ 5 \pm
4A	0.001A	$\pm 3.0\%$ 5 \pm	$\pm 3.0\%$ 5 \pm
10A	0.01A	$\pm 3.0\%$ 5 \pm	$\pm 3.0\%$ 5 \pm

Overload protection F500mA/250V fuse for mA range

F10A/250V fuse for 10A range

Frequency Range: 40Hz - 1000Hz; Display: TRUE RMS

Resistance

Scope	Resolution	DCV accuracy	ACV accuracy
400 Ω	0.1 Ω	$\pm 1.0\%$ 5 \pm	400 Ω
4k Ω	0.001k Ω	$\pm 1.0\%$ 5 \pm	4k Ω
40k Ω	0.01k Ω	$\pm 1.0\%$ 5 \pm	40k Ω
400k Ω	0.1k Ω	$\pm 1.0\%$ 5 \pm	400k Ω
4M Ω	0.001M Ω	$\pm 1.0\%$ 5 \pm	4M Ω
40M Ω	0.01M Ω	$\pm 1.2\%$ 8 \pm	40M Ω

Overload protection: 250 V DC or 250 V AC RMS

Frequency

Scope	Resolution	Accuracy
40Hz	0.01Hz	$\pm 0.5\%$ 4 \pm
400Hz	0.1Hz	
4kHz	1Hz	
40kHz	10Hz	
400kHz	100Hz	
4MHz	1kHz	
10MHz	10kHz	

Overload protection: 250 V DC or 250 V AC RM

Capacity

Scope	Resolution	Accuracy
40nF	0.01nF	±4.0%±25
400nF	0.1nF	±4.0%±15
4μF	0.001μF	
40μF	0.01μF	
400μF	0.1μF	
4mF	0.001mF	±5%±25

Overload protection:250V DC or 250V AC RMS

Diode test & circuit continuity

Scope	Resolution
Buzzer	Built-in buzzer sounds when resistance is less than 50Ω±30Ω
Diode	Display of approximate forward diode voltage

Overload protection:250V DC or 250V AC RMS

Temperature

Unity	Scope	Scope	Accuracy
°C	0°C~50°C	1°C	±(2.0%+3d)

Non-contact detection

AC voltage range > 30V-1000V/50Hz-60Hz)

Live conductor recognition

AC voltage range > 100V-250V/50Hz-60Hz)

Operating Instructions

Tips before operation:

- If the LCD displays the battery status  replace the new batteries.
- To prevent damage to the meter, do not attempt to draw voltage or current in excess of the rated values.
- Before measuring, set the rotary switch to the desired range.

Voltage measurement

1. Insert the red measuring cable into the "VΩ" connector and the black measuring cable into the "COM" connector.
2. Set the rotary switch to the voltage range and select DCV or ACV mode, touch the tips of the measuring probes of the circuit under test, and the voltage value will be displayed on the LCD display.
3. In AC voltage mode, hold down the "SEL" button to advance the V.F.C. measurement mode.
4. After the AC voltage range is measured, the frequency value of the voltage under test is displayed at the same time.

Remark

- If the voltage range is not known, set the rotary switch to a higher range. voltage under test, and then reduce until best accuracy is achieved.
- To avoid electric shock and/or damage to the device, do not attempt to attempt to measure voltages that could exceed 600VRMS.
- It is OK that without the measuring cables connected, the values appear on the display on the mV ranges. This does not affect the measurement

Current measurement

1. For measuring current below 400mA, insert the black measuring cable into the COM connector and the red measuring cable into the "VΩmA" connector, for measuring current between 400mA and 10A, insert the red measuring cable into the 10A connector.
 2. Set the rotary switch to the current range, and press the "SEL" button to switch to DCA or ACA mode, touch the probe tips of the test leads of the circuit under test, and the LCD display will show the current value.
- After measuring the ACA range, the frequency value of the current under test is displayed simultaneously.

Remark:

- If the current range being tested is not known, set the rotary switch to a higher range and then decrease the range until the best accuracy is achieved.
- If the display shows "OL" for over range, set the rotary switch to a higher range.
- To prevent damage to the measuring instrument, check the fuse of the measuring instrument before measuring the current.
-  Indicates a maximum current of 600 mA or 10 A based on the connectors into which the red measuring cable is to be inserted, the fuse will blow if the current is excessive.
- Fuse alarm mode: under current range and displaying "FUSE" means the fuse has blown and needs to be replaced.

Frequency measurement

1. Insert the black measuring cable into the "COM" connector and the red measuring cable into the "VΩHz" connector.
2. Touch the probe tips of the test leads to both sides of the signal source under test and read the value on the LCD display.

Diode, resistance and continuity measurements

1. Insert the black measuring cable into the "COM" connector and the red measuring cable into the "VΩ" connector, the polarity of the red measuring cable is "+".
2. Set the function selector rotary switch to Ω^+ , press the "SEL" button for the correct testing mode. 3. Place the red test lead on the anode of the diode and the black test lead on the cathode of the diode, the meter will display the values on the LCD.

Remark:

- If the measured resistance value exceeds the maximum value of the selected range, the display will show "OL" to exceed the range, then the rotary switch should be set to a higher value. When measuring high resistance above 1 MΩ, the meter may take several seconds for the readings to stabilize.
- To avoid electric shock, disconnect the instrument under test from the power supply and discharge all capacitors before measuring the resistance.
- During the continuity check, if the resistance between two points is less than $50\Omega \pm 30\Omega$, the built-in buzzer sounds.

Capacity measurement

1. Insert the black measuring cable into the "COM" connector and the red measuring cable into the "VΩmF" connector, the polarity of the red measuring cable is "+".
2. Set the rotary function selector switch to "mF", put the red measuring wire on the anode of the diode and the black measuring wire on the cathode of the diode, the meter will display the capacitance values on the LCD display.
3. When measuring small value capacitors, the meter may not return zero due to interference, read the residual value on the LCD displayed during measurement.

Remark:

To avoid electric shock, disconnect the power supply of the instrument under test and discharge all capacitors before measuring the resistance.

To avoid damage to the measuring instrument, do not input any voltage.

Temperature measurement

1. After switching on, the display will show the current ambient temperature (except for ACV/ACA/Low).

Remark:

Since the cold junction compensation circuit has stopped inside the meter, it takes a longer time to reach thermal equilibrium with the measuring environment due to the good sealing of the meter. The meter needs to be placed in the measurement environment for a longer period of time to get more accurate readings.

Non-contact voltage detection (NCV)

1. Set the rotary switch to **NCV/Live** and press the **SEL** button to activate NCV mode, "EF" will be displayed on the LCD.
2. Touch the top of the measuring instrument of the circuit under test, the audible warning signal sounds and the LED starts flashing, after the voltage output, the LCD display will show "- - - - -".

Remark

- The detection result is a reference, do not determine the voltage ONLY by NCV detection.
- Detection can be interfered with by socket design, insulation thickness and other variable conditions.
- External sources of interference such as flashlight, motor, etc. may cause incorrect detection.

Live Wire Recognition (Live)

1. Set the rotary switch to the **NCV/Live** range and press the **SEL** button to activate the Live mode, "LIVE" will appear on the LCD display.
2. Insert the red measuring cable into the VW socket and place the tip of the red measuring cable in contact with the AC voltage. When the meter beeps and "LIVE" appears on the LCD display, this indicates that the line under test is energized.

Remark

- If the circuit is in serious leakage, the red test lead even touches the grounded line, the meter buzzer will sound.
- Detection can be interfered with by socket design, insulation thickness and other variable conditions.
- External sources of interference such as flashlight, motor, etc. may cause incorrect detection.

Replacing the battery and fuses

1. To prevent electric shock, disconnect the test leads from the voltage source before removing the back cover or battery covers or fuses.
2. To prevent electric shock, do not use the meter until the battery and fuse covers are in place and securely fastened.
3. When the battery indicator appears , open the battery cover and replace the same type of battery in the battery holder, then put the battery cover back in place and secure it with the screws.
4. If you are replacing the fuse, carefully remove the old fuse and install the new fuse in the fuse holder, making sure the fuse specification is the same as the original fuse, then put on and secure the back cover.

The product has been issued with a CE declaration of conformity in accordance with the applicable regulations.

On request from the manufacturer: info@solight.cz, or downloadable from www.solight.cz/en.



 SOLIGHT

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