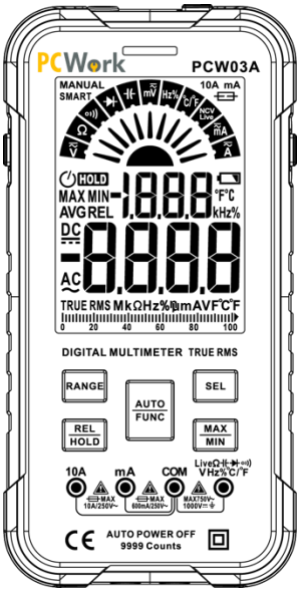


User Manual PCW03A

Digital Multimeter

PCWork

EN User Manual

Copyright Statement

Safety Statement

 The “**Caution**” symbol refers to any condition or operation which might cause damage to the instrument or equipment.

Any such operation has to be performed with caution. If incorrectly performed or without following the procedures, the instrument and equipment might get damaged. In case that conditions are not fully met or not fully understood, do not continue to perform any operation flagged with the “Caution” symbol.

 The “**Warning**” symbol refers to any condition or operation which might cause damage to the user. Any such operation has to be performed with caution. If incorrectly performed or without following the procedures, personal injury or casualties might result. In case these conditions are not fully met or not fully understood, do not continue to perform any operation flagged with the “Warning” symbol.

General Notes

- It is not permitted to change the manual in any way or add additional content, without given permission in written form by the distributor.
- The operator of this multimeter is obliged to ensure that every other person using this device has read and understood the manual, especially the safety instructions.
- The operator is obliged to ensure proper usage, a functioning device prior usage, the provision of the manual, and that only qualified users operate the device.
- Any change related to the design or construction of the device is not permitted.
- Warranty and any liability in regards to material damage or personal injury are suspended in the following cases:
  - Improper usage and operation of the device
  - Not following the instructions and safety regulations provided by the manual
  - Operation and usage without wearing proper personal protection equipment
  - Usage and installation of non-approved spare parts
  - Improper maintenance and changes related to the design or construction of the device; removal of the type plate

Safety Instructions

The instrument is designed according to the requirements of the international electrical safety standard IEC61010-1, which defines the safety requirements for electronic testing instruments. The design and manufacturing of this instrument strictly comply with the requirements of the IEC61010-1 CAT.III 1000V, CAT. IV 600V over voltage safety standards and pollution level 2.

⚠ Warning:

In order to avoid possible electric shock, personal injury, or any other safety accident, please abide by the following instructions:

- Please read this manual carefully before using the instrument, and pay special attention to safety warning information.
- Strictly follow this manual when using the instrument. In addition, pay attention to any safety information on the device itself. Otherwise, the protection function of the instrument may be damaged or weakened. Safe operation and safety for the user cannot be guaranteed in this case.

- Do not provide children access to the multimeter. Parents are fully responsible for any safety hazards caused by non-compliance.
- Please be careful if the measurement exceeds 30V AC True RMS, a 42V AC peak, or 60V DC. There might be the danger of getting an electric shock with this kind of voltage. Follow all relevant safety requirements.
- When measuring known voltage, in order to check if the multimeter works normally, results in the multimeter not working normally or being damaged, stop any measuring operation and do not continue using the multimeter.
- Before using the device, please check whether it has any crack or plastic damage. If so, do not use the device.
- Before using the instrument, please check whether the probes are cracked or damaged. If so, please replace them with the same type, having the same electrical specifications.
- The instrument shall be used in accordance with the specified measurement category, voltage, or current rating.
- Do not exceed the max. input values as specified in this manual.
- Never change the measurement function during a measuring operation on an object or circuit. Always disconnect the measuring object/circuit first.
- Opening, repairing, or maintenance should only be executed by trained/qualified professionals.

- Never look directly into the LED flashlight of the device. Non-compliance bears the risk of permanently damaging your eyesight.
- Please comply with the local and national safety code. Wear personal protection equipment to prevent any injury through being exposed to electrical shock or electrical arc caused by an exposed hazardous live conductor.
- When low battery is indicated, please replace the battery in time to prevent of any measurement error.
- Do not use the instrument around explosive gas, steam, or in an wet environment.
- When using the probe, please put your fingers behind the finger protector of the probe.
- When measuring, please connect the zero (neutral) line/ ground line first, then connect the live wire; when measuring is done, please disconnect the live wire first, then disconnect the zero (neutral) line / ground line.
- Before opening the outer cabinet or the battery cover, please remove the probes from the device. Do not use the device, when it is taken apart or the battery cover is open.
- The safety standards are only met when the instrument is used together with the supplied probes. If the probes are damaged and need to be replaced, only use probes with the same model number and the same electrical specifications for replacement.

Safety Symbols

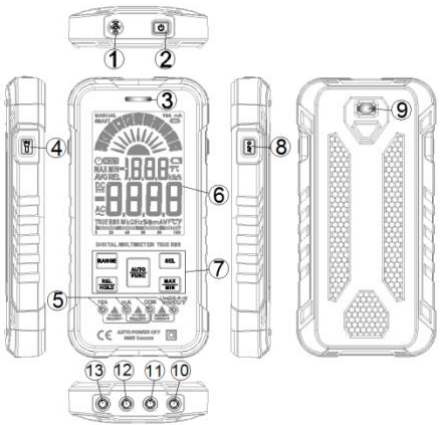
	High voltage warning (dangerous voltage might be present)
	AC (Alternating current)
	DC (Direct current)
	AC or DC
	Warning, important safety information
	Ground
	Fuse

	Equipment with double insulation/reinforced insulation protection
	Low Battery
	Product complies with all relevant European directives
	Do not dispose of this electrical/electronic product as unsorted household garbage.
CAT. II	Suitable for testing and measuring circuits directly connected to power points (sockets and similar) of low voltage power installations.

CAT. III	Suitable for testing and measuring circuits connected to the distribution part of low voltage power supply devices in buildings.
CAT. IV	Suitable for testing and measuring circuits connected to the power supply of low voltage power installations in buildings.

Product Description

Instrument Panel Description



① NCV probe
② Power button
③ Red / green indicator light
④ Flashlight button
⑤ Input socket indicator
⑥ LCD display
⑦ Function button
⑧ Auto power off button
⑨ Flashlight button
⑩ V & other than current and LIVE input socket
⑪ COM input socket
⑫ mA input socket (up to 600mA)
⑬ 10A input socket

Power Button
Press the ⏻ button for 2 seconds to turn the device on or off.

Manual Measurement Mode Selection
Press the "**AUTO/FUNC**" button to switch between measurement modes. After turning the meter on, it defaults to the smart measurement mode. Press the function selection button once to enter manual measurement mode selection. Then press the button to select among measurement function sections. Use the "**SEL**" button to toggle between multiple measurement functions in one measurement mode. Press the button again and hold it for 2 seconds to switch back to the smart measuring mode.

Manual Measurement Range Selection
Press the "**RANGE**" button once in the selected measurement function in order to enter manual range selection. Then press the button again to toggle between the different measurement ranges. Please note that this function is not available if the device is in Smart Measurement Mode. In addition this function is only available for the voltage, resistance, and mA current measurement functions.

Data Hold Function
Press the "**REL/HOLD**" button to turn on/off data holding.
Flashlight:
Press the "  " button to turn on/off the flashlight function.
True RMS
This device measures values in "True RMS".

Max / Min Measurement Function

Press the “**MAX/MIN**” button in order to use the maximum / minimum measurement function. Press the button again in order to toggle between the maximum and minimum measurement. Please note that the function is not available in the capacitance, frequency/duty cycle, temperature, and NCV/Live measurement functions. In addition, the device will enter automatically into the manual measurement range mode. If you hold the button for 2 seconds, you will turn of the Max/Min function.

Relative Value Measurement Function

Press the “**REL/HOLD**” button for 2 seconds to turn on/off the relative value measurement function. Please note that the function is not available in continuity, frequency / duty cycle, temperature, and NCV / live modes. In addition, the device will enter into the manual measurement range mode.

Auto Power Off

- If there is no operation for 15 minutes , the device will turn off automatically to save power. After an automatic shutdown, press any button to turn the device on again.
- If you press the “**APO**” button, the automatic shutdown function will be disabled. After turning off the device, the automatic shutdown function will be enabled again for the next measuring session. If the screen shows the ⏻ symbol, the auto power off function is enabled.

Burnt Fuse Warning

If the FUSE symbol is displayed, the fuse is burnt out and should be replaced. Do not continue to use the device bevor replacing the fuse!

Wrong Input Socket Warning

If the measuring probe is not inserted into the correct input socket when choosing the current measurement function, the LEAd symbol is displayed. Stop immediately the measurement operation, disconnect the probes from the testing object, and insert the probes into the correct input sockets.

Input Socket LED Indication

When you choose a measurement operation the lights of the input socket indicator will flash 5 times in order to indicate the correct input sockets for the corresponding measurement operation.

Measurement Operation

Connect Measuring Probes

Do not operate the device before the test probes are not connected correctly. To ensure this, push the cables fully into the input sockets.

Smart Measurement Mode

The device features a smart measurement mode, through which the device can automatically choose and determine which measurement function use, without the operator choosing it manually. The smart measurement mode is enabled by default when turning on the device. The mode is applicable for AC/DC voltage, resistance, and continuity measurement. **Note: Minimum measurable voltage: 0.5V AC; 0,8V DC**

1. Press the ⏻ button to turn on the device. The display will show Auto, indicating that the smart measurement mode is enabled
2. Insert the red probe into the Live Ω VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
3. Connect the probes' tips (red probe is the positive pole, black probe is the negative pole) in parallel to voltage source / resistor and the device will automatically recognize the signal and choose the correct measurement function.
4. When Measuring AC voltage, the frequency will be displayed at the same time.
5. When the measured resistance is less than 50Ω, the buzzer will sound and the indicator light will turn green. The device switches to continuity testing.
6. Results will be shown on the screen of the device.

⚠ WARNING:

- **Do not measure voltage above 1000V DC or 750V AC; otherwise the instrument might get damaged.**
- **If the display shows "OL", disconnect the probes' tips from the measuring circuit immediately (Overload)**
- **Never connect voltage if probes are in current measurement sockets. This could result in electric shock for the user and damage the device.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **Always test known voltage before using the device, in order to ensure that the device functions properly.**
- **Do not touch the bare tips of the probes; when measuring is finished, always remove the probes from the measuring object and the device.**

When measuring resistance / testing for continuity on the line, disconnect the power supply, ensure there is no source of voltage, and discharge all capacitors. Otherwise, the instrument might get damaged and might be in danger of an electric shock. When measuring is finished, always remove the probes from the measuring object and the device.

Manual Measurement Mode:

The device is per default in smart measurement mode. Press the "**AUTO/FUNC**" button to switch to the manual mode and select a measurement function from left to right by pressing the button again.

AC/DC Voltage "V" Measurement

1. Press the ⏻ button to turn on the device. Insert the red probe into the LiveΩ⊣⊢→+•)) VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the "**AUTO/FUNC**" button and choose the V function. Press the "**SEL**" button to switch between AC or DC voltage.
3. Connect the probes' tips (red probe is the positive pole, black probe is the negative pole) in parallel to the measuring circuit, measure the voltage.
4. The measurement result is displayed on the screen.

⚠ WARNING:

- **Do not measure voltage above DC 1000V or AC 750V; otherwise the instrument might get damaged.**
- **If the display shows "OL", disconnect the probes' tips from the measuring circuit immediately (Overload)**
- **Never measure voltage if probes are in current measurement sockets. This could result in electric shock for the user and damage the device.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **Always test known voltage before using the device, in order to ensure that the device functions properly.**
- **Do not touch the bare tips of the probes; when measuring is finished, always remove the probes from the measuring object and the device.**

Resistance Measurement

1. Press the ⏻ button to turn on the device. Insert the red probe into the Live Ω VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the "**AUTO/FUNC**" button and choose the Ω function.
3. Connect the probes' tips (red probe is the positive pole, black probe is the negative pole) to the measuring object, measure the resistance.
4. The measurement result is displayed on the screen.
5. When measuring large resistors (>1MΩ), it can take a few seconds for the measurement result to be stabilized. If the screen shows "OL", the measurement range has been exceeded or the measuring circuit is defective.

⚠ WARNING:

When measuring resistance on the line, disconnect the power supply, ensure there is no source of voltage, and discharge all capacitors. Otherwise, the instrument might get damaged and might be in danger of an electric shock. When measuring is finished, always remove the probes from the measuring object and the device.

Continuity Test

1. Press the ⏻ button to turn on the device. Insert the red probe into the LiveΩ VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the "**AUTO/FUNC**" button and choose the •))) function.
3. Connect the probes' tips to the measuring object.
4. The buzzer will signal if continuity is present (resistance is less than 50 Ω.) and the LED-indicator of the device will turn green. In addition the resistance will be shown on the screen. If the screen shows "OL", the measurement range has been exceeded or the measuring circuit is defective.

⚠ WARNING:

When testing for continuity on the line, disconnect the power supply, ensure there is no source of voltage, and discharge all capacitors. Otherwise, the instrument might get damaged and might be in danger of an electric shock. When measuring is finished, always remove the probes from the measuring object and the device.

Diode Test

1. Press the ⏻ button to turn on the device. Insert the red probe into the LiveΩ VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the "**AUTO/FUNC**" button and choose the diode function.
3. Connect the probes' tips with the measuring diode. If known, connect the red probe's tip with the anode and the black probe's tip with the cathode.
4. The measurement result is displayed on the screen.
5. If the screen shows "OL", the measuring diode is either in reverse direction or defective.

⚠ WARNING:

When doing a diode test on the line, disconnect the power supply, ensure there is no source of voltage, and discharge all capacitors. Otherwise, the instrument might get damaged and might be in danger of an electric shock. When measuring is finished, always remove the probes from the measuring object and the device.

Capacitance Measurement

1. Press the ⏻ button to turn on the device. Insert the red probe into the LiveΩ… VHz%°C/°F input socket and the black probe into the "COM" input socket. Let the probe's tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the "**AUTO/FUNC**" button and choose the ⊣⊢ function.
3. Connect the probes' tips (red probe is the positive pole, black probe is the negative pole) to the measuring capacitor.
4. The measurement result is displayed on the screen (when measuring larger capacitance, it may take longer for the results to stabilize).

⚠ **WARNING:**

When measuring capacitance on the line, disconnect the power supply, ensure there is no source of voltage, and discharge all capacitors. Otherwise, the instrument might get damaged and might be in danger of an electric shock. When measuring is finished, always remove the probes from the measuring object and the device.

AC/DC Voltage “mV" Measurement

1. Press the ⏻ button to turn on the device. Insert the red probe into the Live Ω Hz % °C/°F input socket and the black probe into the “COM” input socket. Let the probe’s tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the “**AUTO/FUNC**” button and choose the mV function. Press the “**SEL**” button to switch between AC or DC voltage.
3. Insert the red probe into the Live Ω Hz % °C/°F input socket and the black probe into the “COM” input socket. Let the probe’s tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound
4. Connect the probes’ tips (red probe is the positive pole, black probe is the negative pole) in parallel to the measuring circuit, measure the voltage.
5. The measurement result is displayed on the screen.

⚠ WARNING:

- **Do not measure voltage above DC/ AC 999,9mV; otherwise the instrument might get damaged.**
- **If the display shows “OL”, disconnect the probes’ tips from the measuring circuit immediately (Overload)**
- **Never measure voltage if probes are in current measurement sockets. This could result in electric shock for the user and damage the device.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **Always test known voltage before using the device, in order to ensure that the device functions properly.**
- **Do not touch the bare tips of the probes; when measuring is finished, always remove the probes from the measuring object and the device.**

Frequency / Duty Measurement

1. Press the ⏻ button to turn on the device. Insert the red probe into the LiveΩ VHz%°C/°F input socket and the black probe into the “COM” input socket. Let the probe’s tips touch one another, to check whether they are correctly connected. The indicator light should turn green and the buzzer sound.
2. Press the “**AUTO/FUNC**” button and choose the Hz% function.
3. Connect the probes’ tips (red probe is the positive pole, black probe is the negative pole) in parallel to the measuring circuit, measure the frequency and duty.
4. The measurement result is displayed on the screen.

⚠ WARNING:

- **Never measure voltage if probes are in current measurement sockets. This could result in electric shock for the user and damage the device.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **Always test known voltage before using the device, to ensure that device functions properly.**
- **Do not touch the bare tips of the probes; when measuring is finished, always remove the probes from the measuring object and the device.**

Temperature Measurement

1. Press the ⏻ button to turn on the device. Press the "**AUTO/FUNC**" button and choose the °C/°F function.
2. Insert the K-type thermo couple into the input sockets: the thermocouple's positive connector (red) is inserted into the " LiveΩ VHz%°C/°F " input socket, and the negative connector (black) is inserted into the "COM" input socket.
3. Connect the measuring object with the thermo couple.
4. The measurement result is displayed on the screen in °C/°F.

Note 1:

For obtaining the most accurate results possible, conduct measurements in 18-28°C room temperature. When switching within environments with different temperatures, wait 30 minutes, in order to prevent inaccurate results.

Note 2:

Always use a K-type thermo couple.

⚠ WARNING:

- **Remove all other probes from the device, before inserting the K-type thermo couple.**
- **Never let the thermo couple touch any voltage source or measure any voltage source when the "°C/°F" function is selected. This could result in personal injury or electric shock.**
- **Please adhere to the measuring range limits of the temperature measurement function of the device.**

“NCV” Test

1. Press the ⏻ button to turn on the device. Press the “**AUTO/FUNC**” button and choose the “**NCV/LIVE**” function. The display will show “NCV”.
2. Gradually approach the voltage source with the “NCV” probe, which sits on top of the device.
3. When the meter senses weak AC signals, the indicator lights up green and the display shows “---L”, while the buzzer sends out slow-paced acoustic signals.
4. When the meter senses strong AC signals, the indicator lights up red and the display shows “---H”, while the buzzer sends out fast-paced acoustic signals.

⚠ WARNING:

- **Do not measure voltage above DC 1000V or AC 750V; otherwise the instrument might get damaged.**
- **Remove all probes from the input sockets.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **The “NCV” test is only a first indication and cannot replace voltage measuring.**

”Live” Test

1. Press the ⏻ button to turn on the device. Press the “**AUTO/FUNC**” button and choose the “**NCV/LIVE**” function. Now the device is in the “NCV” mode. Then press the “**SEL**” button to switch to the “LIVE” mode. The display will show “LIVE”.
2. Insert the red probe in the “ LiveΩ VHz%°C/°F ” socket, then connect the probe’s tip with the measuring voltage source.
3. When the meter senses weak AC signals, the indicator lights up green and the display shows “---L”, while the buzzer sends out slow-paced acoustic signals.
4. When the meter senses strong AC signals, the indicator lights up red and the display shows “---H”, while the buzzer sends out fast-paced acoustic signals.

⚠ WARNING:

- **Do not measure voltage above DC 1000V or AC 750V; otherwise the instrument might get damaged.**
- **Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.**
- **The “LIVE” test is only a first indication and cannot replace voltage measuring.**

AC/DC “mA” Current Measurement

1. Press the ⏻ button to turn on the device. Press the “**AUTO/FUNC**” button and choose the “⎓mA” function or insert the red probe into the “**mA**” socket to let the device automatically select the “⎓mA” function. Press the “**SEL**” button to switch between AC or DC current measurement.
2. Insert the red probe in the “**mA**” socket and insert the black probe in the “COM” socket.
3. Connect the probes’ tips in series to the measuring circuit, measure the current.
4. The measurement result is displayed on the screen. When measuring AC current, the frequency is displayed on the screen simultaneously.

⚠ WARNING:

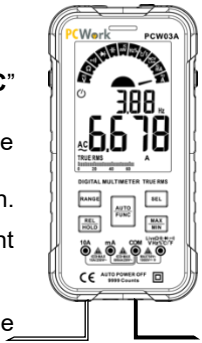
- **Do not measure current higher than 600 mA; otherwise the fuse will burn out and the device might get damaged.**
- **The voltage in the measured circuit cannot exceed 250V; otherwise the device might get damaged.**
- **If the display shows "OL", disconnect the probes' tips from the measuring circuit immediately (current exceeds measurement range).**
- **Always test known current before using the device, to ensure that device functions properly**
- **When measuring is finished, always remove the probes from the measuring object and the device.**

⚠ Caution:

To avoid damaging the instrument or equipment, check the fuses before measuring and ensure that the measured current does not exceed the rated maximum current. If the fuses are released during measurement, stop the operation immediately. Always use the correct input sockets.

AC/DC “A” Current Measurement

1. Press the ⏻ button to turn on the device. Press the “**AUTO/FUNC**” button and choose the “$\widetilde{\overline{A}}$” function or insert the red probe into the “**10A**” socket to let the device automatically select the “$\widetilde{\overline{A}}$” function. Press the “**SEL**” button to switch between AC or DC current measurement.
2. Insert the red probe in the “**10A**” socket and insert the black probe in the “COM” socket.
3. Connect the probes’ tips in series to the measuring circuit, measure the current.
4. The measurement result is displayed on the screen. When measuring AC current, the frequency is displayed on the screen simultaneously.



⚠ WARNING:

- **Do not measure current higher than 10A; otherwise the fuse will burn out and the device might get damaged.**
- **The voltage in the measured circuit cannot exceed 250V; otherwise the device might get damaged.**
- **If the display shows "OL", disconnect the probes' tips from the measuring circuit immediately (current exceeds measurement range).**
- **Always test known current before using the device, to ensure that device functions properly**
- **When measuring large current (>5A), continuous measurement should not exceed 10 seconds. After that, disconnect the device from the measuring circuit and do not use the multimeter for 10 minutes.**
- **When measuring is finished, always remove the probes from the measuring object and the device.**

⚠ Caution:

To avoid damaging the instrument or equipment, check the fuses before measuring and ensure that the measured current does not exceed the rated maximum current. If the fuses are released during measurement, stop the operation immediately. Always use the correct input sockets.

General Technical Specifications

- Environmental conditions of using the device:
  CAT. IV 600V；CAT. III 1000V；Pollution level 2, Altitude < 2000m
  Working environment temperature and humidity：0~40°C（<80% RH <10°C non condensing); Storage environment temperature and humidity: -10~60°C（<70% RH, remove the battery)
- Temperature coefficient 0.1× accuracy /°C（<18°C or >28°C)
- MAX. Voltage between input sockets and earth ground：DC1000V/AC750V
- Fuse protection： mA: F600mA/250V fuse
  10A: F10A/250V fuse
- Sampling rate: about 3 times/second.
- Display: 9999 counts readout. Automatically shows the unit's symbol corresponding to the chosen measuring function and range.
- Exceeding measurement range indication: The screen displays "OL".
- Low battery indication: when the battery voltage is lower than the normal working voltage, "  " will be displayed.
- Input polarity indication: screen automatically displays "–".
- Power supply: 3 x 1.5V AAA batteries.

Accuracy Specifications

The accuracy is valid for one year after calibration. Reference conditions: the environment temperature is between 18°C and 28°C, the relative humidity is no more than 80%.

DC voltage

Range	Resolution	Accuracy
99.99mV	0.01mV	±(0.5% +3)
999.9mV	0.1mV	
9.999V	0.001V	
99.99V	0.01V	
999.9V	0.1V	

Input impedance: 10MΩ;
Maximum Input voltage: 1000V DC
Overload protection: 1000V DC

AC voltage

Range	Resolution	Accuracy
99.99mV	0.01mV	±(0.8% reading+3)
999.9mV	0.1mV	
9.999V	0.001V	
99.99V	0.01V	
750V	0.1V	

Input impedance: 10MΩ
Maximum input voltage: 750V AC
Overload protection: 750V AC
Frequency Response: 40Hz~1kHz; True-RMS

DC current

Range	Resolution	Accuracy
9.999mA	0.001mA	±(0.8% reading+3)
99.99mA	0.01mA	
600.0mA	0.1mA	
9.999A	0.001A	±(1.2% reading+3)

Overload protection:

mA: F600mA/250V fuse

10A: F10A/250V fuse

Maximum input current:

mA: 600mA

A: 10A

When measuring large current, continuous measurement should be no longer than 10 seconds.

AC current

Range	Resolution	Accuracy
9.999mA	0.001mA	±(0.8% reading+3)
99.99mA	0.01mA	
600.0mA	0.1mA	
9.999A	0.001A	±(1.2% reading+3)

Overload protection:

mA: F600mA/250V fuse

10A: F10A/250V fuse

Maximum input current:

mA: 600mA

A: 10A

Frequency Response: 40Hz~1kHz; True-RMS

When measuring large current, continuous measurement should be no longer than 10 seconds.

Resistance

Range	Resolution	Accuracy
99.99Ω	0.01Ω	±(1.0% reading+5)
999.9Ω	0.1Ω	
9.999 KΩ	0.001 KΩ	
99.99 KΩ	0.01V KΩ	
999.9 KΩ	0.1V KΩ	
9.999MΩ	0.001 MΩ	
99.99 MΩ	0.01 MΩ	±(2.0% reading+10)

Overload protection: 250V

Capacitance

Range	Resolution	Accuracy
9.999nF	0.001nF	±(4.0% reading+3)
99.99nF	0.01nF	
999.9nF	0.1nF	
9.999μF	0.001μF	
99.99μF	0.01μF	
999.9μF	0.1μF	
9.999mF	0.001mF	±(5.0% reading+5)
99.99mF	0.01mF	

Overload protection: 250V

Frequency/Duty

Range	Resolution	Accuracy
9.999Hz	0.001Hz	±(1.0% reading+3)
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999KHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	
9.999MHz	0.001MHz	
1~99%	0.1%	±(1.0% reading+3)

Diode Test

	Function
	It displays the approximate forward voltage value of the diode.

Continuity Test

	Function
	<Approx. 50 Ω; Buzzer will sound and the indicator light will be on.

Temperature

Range	Resolution	Accuracy	
℃	1℃	-40℃~ 0℃	± 5.0%reading or ± 3℃
		0℃ ~ 400℃	± 1.0% reading or ± 2℃
		400℃ ~ 1000℃	± 2.0% reading
℉	1℉	-40℉~ 32℉	± 5.0% reading or ± 6℉
		32℉~ 52℉	± 1.0% reading or ± 4℉
		752℉~ 1832℉	± 2.0% reading

Resolution: 1°C / 1°F

Note: use a K-type thermocouple probe.

Maintenance

Cleaning

Clean the device with a dry cloth. When facing stronger contamination, use a slightly damp cloth. Only use water and never use any detergent or chemicals. Before using the device again, ensure that everything is dry and that there is no moisture.

⚠ **WARNING:**

- **Always switch off the device, disconnect it from any voltage source or power supply, and remove the test probes. Otherwise there might be the danger of damaging the device or personal injury.**
- **Ensure that after cleaning, the device is dry and that there is no moisture.**

Replacing Battery and Fuse

Replacing Battery

1. Turn off the power supply of the instrument, and remove the probes from the input sockets.
2. Remove the protective rubber casing. Use a screwdriver to unscrew the screw fixing the battery cover at the back of the device, then remove the battery cover.
3. Replace the old batteries with new ones having the same specifications.
4. Put the battery cover back in place and fix it with the screws. Put back the protective rubber casing.

⚠ WARNING:

- **Always switch off the device, disconnect it from any voltage source or power supply, and remove the test probes. Otherwise there might be the danger of damaging the device or personal injury.**
- **Only continue using the device, after the putting everything back together according to the instructions.**

Replacing Fuse

1. Turn off the power supply of the instrument, and remove the probes from the input sockets.
2. Remove the protective rubber casing. Use screwdriver to unscrew the screws fixing the back cover and remove the back cover.
3. Remove the burnt fuse, replace it with a new fuse of the same specifications (mA: F600mA/250V fuse, size: 6*32mm; 10A: F10A/250V fuse, size: 6*32mm), and ensure that the fuse is clamped in the safety clip.
4. Install the back cover, fix and lock it with the screws. Put back the protective rubber casing.

⚠WARNING:

- **Always switch off the device, disconnect it from any voltage source or power supply, and remove the test probes. Otherwise there might be the danger of damaging the device or personal injury.**
- **Always replaces fuses with new ones having the same specifications.**
- **Only continue using the device, after the putting everything back together according to the instructions.**

Information regarding waste disposal

You are not permitted to dispose of this device in household garbage. This multimeter corresponds to the EU-directive concerning the “Waste of Electrical and Electronic Equipment”. Please dispose of the device in your local collection point.
Please follow the decree related to the disposal of batteries. Used batteries are not permitted to be disposed of in household garbage. You are obliged to recycle them. Dispose of used batteries by bringing them to local collection points.

Creation date of manual: December 2021 – all technical changes reserved. No responsibility is taken for any technical or printing errors.