Battery Internal Resistance Meter

Users Manual

Read this manual thoroughly before use

3610

INTRODUCTION

This Battery Internal Resistance Meter is an intelligent instrument which can be used for battery online measurements. It can be used to measure battery terminal voltage and internal resistance as well as to make normal resistance measurements. The internal resistance is measured with the international standard AC signal (1000Hz ± 10%) by means of four-wire method to eliminate the impact of the resistance of the test leads on the measured value, and the battery voltage can also be measured by the same connection method.

It is applicable for measurements of internal resistance of Lithium-ion, nickel-hydroxide, lithium-manganese cells or assembled battery.

GENERAL SPECIFICATION

Overrange Indication: only figure " 1 " shown on the display

Negative Polarity Indication: " – " shown on the display automatically

Operating Environment: temperature: 0 ~ +40°C
relative humidity: < 80%

Temperature Coefficient:
0.1 x (specified accuracy)/°C (< 18°C or > 28°C)

Storage Environment: temperature: -10 ~ +45°C
relative humidity: < 85%

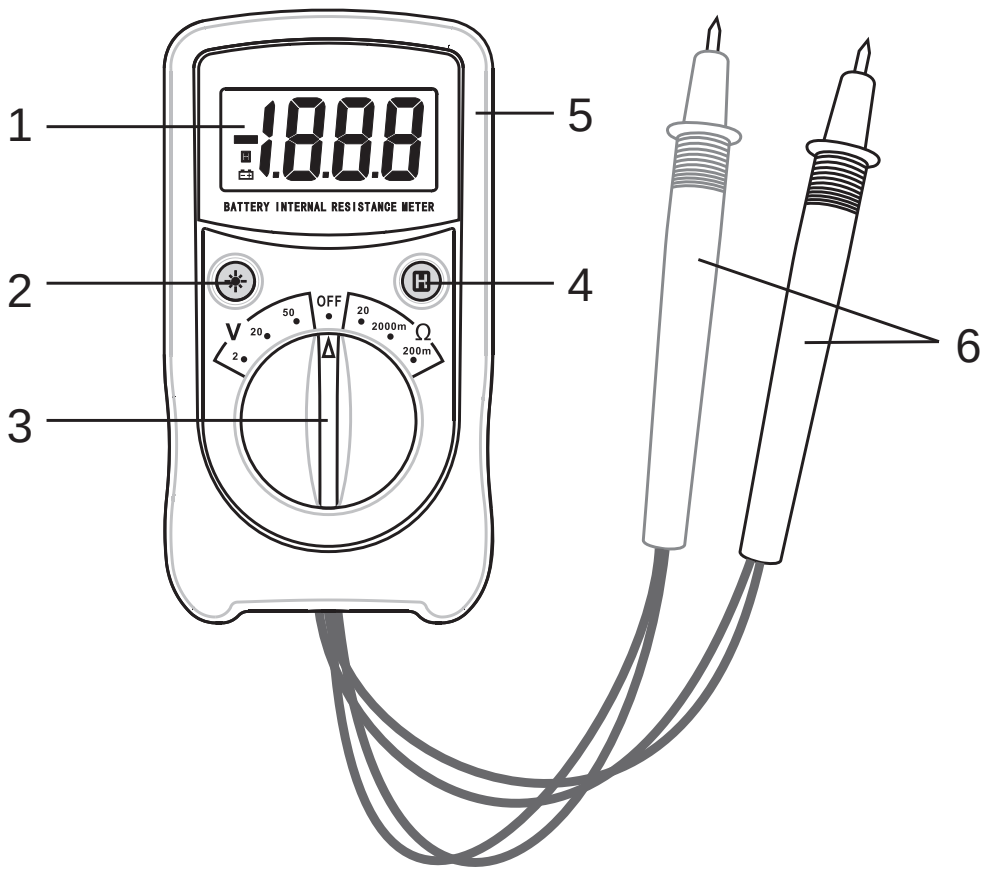
Battery: 9V battery, 6F22 or equivalent, 1 piece

Low Battery Indication: " " shown on the display

Size: 150×83×44mm (only mainbody)

Weight: about 315g (including battery)

STRUCTURE



1. **Display**
   3 1/2-digit LCD, with a max. reading of 1999
2. **" ☀ " Button**
   Press this " ☀ " button to turn on the backlight. The backlight will turns off automatically about 10 secs later.
3. **Function / Range Switch**
   Used to select desired function and range as well as to turn on or off the meter.
   To preserve battery life, set this switch to the " OFF " position when the meter is not in use.
4. **" H " Button**
   Press this " H " button to hold the present reading on the display, the symbol " H " will appear on the display as an indication. To exit the Data Hold mode, just press this button again. " H " disappears.
5. **Holster**
6. **Test Probes**

SPECIFICATIONS

Accuracy is specified for a period of one year after calibration and at 18°C to 28°C, with relative humidity < 75%. Accuracy specifications take the form of:

± ([% of Reading] + [number of Least Significant Digits])

Battery Voltage

Range	Resolution	Accuracy
0 ~ 1.999V	1mV	± (1% + 2)
2.00V ~ 19.99V	10mV	
20.0V ~ 50.0V	100mV	

Resistance / Battery Internal Resistance

Range	Resolution	Accuracy
0 ~ 199.9mΩ	0.1mΩ	± (3% + 5)
200mΩ ~ 1999mΩ	1mΩ	
2.00Ω ~ 19.99Ω	10mΩ	

OPERATION INSTRUCTION

Measuring Battery Internal Resistance

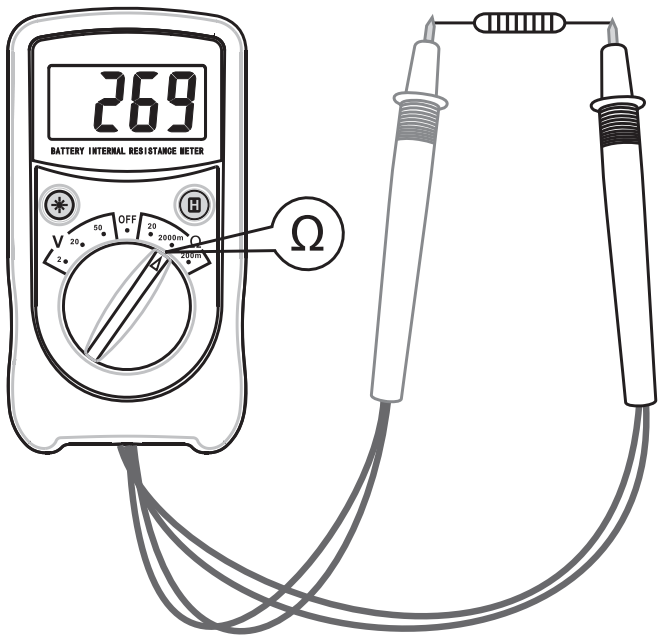
1. Set the range switch to desired Ω range position.
2. Connect the red test probe to the positive terminal of the battery to be measured and the black test probe to the negative terminal of the battery.
3. Read the reading on the display.
4. If the display shows " 1 ", it means that the measured value exceeds the selected range and you should set the range switch to a higher range position.

Note:

1. When the test probes are in open circuit state, the display will show " 1 " as an overrange indication.

2. For measurements in the 200mΩ range, set the range switch in the 200mΩ range position and short the two test probes, the display will show a reading. This reading must be subtracted from all the measurements in the 200mΩ range.

Measuring Resistance



1. Set the range switch to desired Ω range position.
2. Connect the test probes across the resistor to be measured.
3. Read the reading on the display.

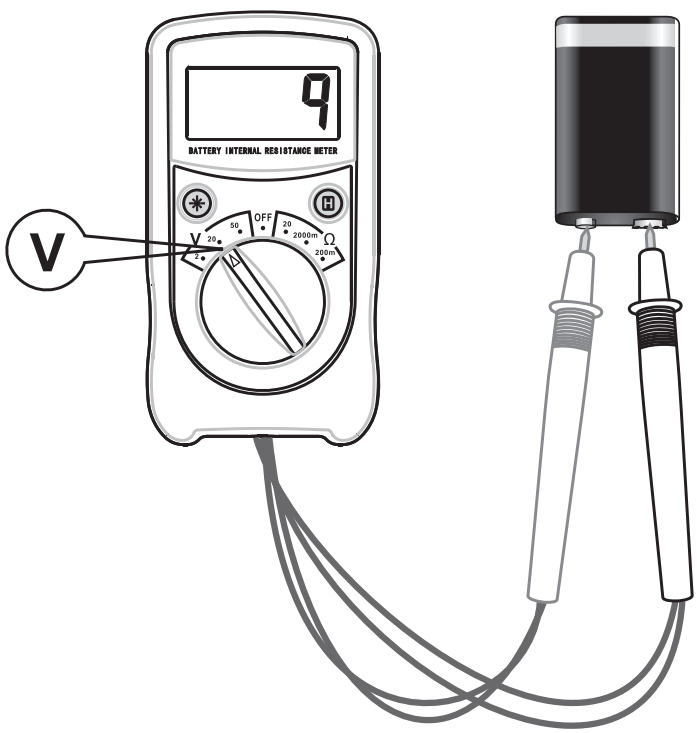
Note:

1. The resistance is measured by the meter with an AC signal so that the capacitance value and inductance

value of the resistor under test can affect the measurement result.

2. The frequency of the meter's test signal is 1kHz.
3. When the test probes are in open circuit state, the display will show " 1 " as an overrange indication.
4. Before measurement, disconnect all power to the circuit to be tested and discharge all capacitors thoroughly.
5. For measurements in the 200mΩ range, set the range switch in the 200mΩ range position and short the two test probes, the display will show a reading. This reading must be subtracted from all the measurements in the 200mΩ range.

Measuring Battery Voltage



1. Set the range switch to desire **V** range position.
   Note: a. The range you select must be higher than the battery's rated voltage.
   b. If the magnitude of the battery's voltage is not known beforehand, set the range switch to the highest range position and then reduce it range by range until satisfactory resolution is obtained.
2. Connect the red test probe to the positive terminal of the battery to be measured and the black test probe to the negative terminal of the battery.
3. Read the reading on the display. The polarity of red test probe connection will be indicated as well.

NOTE

1. Do not apply a voltage higher than 50V between the test probes; otherwise the meter will be damaged.
2. When you measure battery, the red test probe must be connected to the battery's positive terminal and the black test probe must be connected to the battery's negative terminal.
3. When you measure battery internal resistance, you must connect the test probes to the battery directly. To ensure measurement accuracy, do not use other lead(s) for connection; otherwise the resistance of the lead(s)

will be included in the measurement result.

4. Remove the battery in the meter's battery compartment from the meter if you don't use the meter in a long period.
5. Do not use the meter where explosive gas, vapor, or dust is present.
6. To void electric shock and personal injury, do not touch any naked conductor with hand or skin and do not ground yourself.
7. Do not use the meter if it is damaged or if it operates abnormally.
8. To avoid damage to the meter, do not apply any AC signal between the test probes.

BATTERY REPLACEMENT

When the symbol " 🔋 " appears on the display, the battery is low and should be replaced immediately.

To replace battery, remove the screws on the battery cover and remove the battery cover. Replace the exhausted battery with a new one of the same type (9V, 6F22 or equivalent). Reinstall the battery cover and the screws.

DECLARATION

1. This manual is subject to change without notice.
2. Our company will not take the other responsibilities for any loss.
3. The contents of this manual can not be used as the reason to use the meter for any special application.

DISPOSAL OF THIS ARTICLE

Dear Customer,
If you at some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled.

Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.