Solight V15

Solight V15 II CAT III Multimeter User Manual

Model: V15 II | Brand: Solight

1. Introduction

Thank you for choosing the Solight V15 II CAT III Multimeter. This device is designed for safe and accurate measurement of DC/AC voltage, DC current, resistance, diode testing, and continuity. Please read this manual thoroughly before use to ensure proper operation and to prevent damage to the meter or injury to yourself.
Safety First: Always observe all safety precautions outlined in this manual. Electrical measurements can be dangerous if not performed correctly.

2. Product Overview

Figure 1: Solight V15 II Multimeter and Test Leads. The image displays the front of the Solight V15 II multimeter, which is dark gray with a large digital display at the top. Below the display is a central rotary switch for selecting measurement functions and ranges. To the left of the multimeter are two test leads: one red and one black, each with a pointed probe tip and a comfortable grip. The multimeter features input jacks at the bottom for connecting these leads.

2.1 Components

- **Digital Display:** Shows measurement readings, units, and other indicators (e.g., "HV" for high voltage, polarity).
- **Rotary Switch:** Used to select the desired measurement function (e.g., V~, V--, A--, Ω, Diode, Continuity) and range.
- **Input Jacks:**
  - **"COM" Jack:** Common (negative) input for all measurements.
  - **"VΩmA" Jack:** Positive input for voltage, resistance, diode, continuity, and current up to 500mA.
  - **"10A" Jack:** Positive input for high current measurements (up to 10A).
- **Test Leads:** Red (positive) and Black (common/negative) leads with probe tips for connecting to circuits.
- **Battery Compartment:** Located on the back for 2x AAA batteries.

3. Setup

3.1 Battery Installation

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment cover on the back of the unit.
3. Unscrew the retaining screw(s) and remove the cover.
4. Insert two (2) AAA (LR03) batteries, observing the correct polarity (+ and -) as indicated inside the compartment.
5. Replace the battery cover and secure it with the screw(s).
6. If the low battery indicator appears on the display, replace the batteries promptly.

3.2 Connecting Test Leads

- Always connect the black test lead to the "COM" jack.
- For voltage, resistance, diode, continuity, and current up to 500mA measurements, connect the red test lead to the "VΩmA" jack.
- For current measurements between 500mA and 10A, connect the red test lead to the "10A" jack.
- Ensure connections are firm and secure before taking any measurements.

4. Operating Instructions

Before taking any measurement, ensure the test leads are correctly connected and the rotary switch is set to the appropriate function and range. Always start with a higher range if the expected value is unknown to prevent overloading the meter.

4.1 DC Voltage Measurement (V--)

1. Set the rotary switch to the desired DC Voltage (V--) range (e.g., 500V, 200V, 20V, 2000mV, 200mV).
2. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
3. Connect the test probes across the component or circuit to be measured, observing polarity.
4. Read the voltage value on the digital display. If a negative sign appears, it indicates reversed polarity.

4.2 AC Voltage Measurement (V~)

1. Set the rotary switch to the desired AC Voltage (V~) range (e.g., 500V, 200V).
2. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
3. Connect the test probes across the AC voltage source.
4. Read the voltage value on the digital display.

4.3 DC Current Measurement (A--)

1. **IMPORTANT:** Current measurements require the meter to be connected in series with the circuit. Ensure the circuit is de-energized before connecting the meter.
2. Set the rotary switch to the desired DC Current (A--) range (e.g., 10A, 200mA, 20mA, 2000µA, 200µA).
3. For ranges up to 200mA, connect the red test lead to the "VΩmA" jack. For the 10A range, connect the red test lead to the "10A" jack. The black lead always connects to "COM".
4. Open the circuit where current is to be measured and insert the meter in series.
5. Apply power to the circuit and read the current value on the display.
6. After measurement, disconnect power, remove the meter, and restore the circuit.

4.4 Resistance Measurement (Ω)

1. **WARNING:** Ensure the circuit or component under test is completely de-energized before measuring resistance.
2. Set the rotary switch to the desired Resistance (Ω) range (e.g., 20000kΩ, 2000kΩ, 200kΩ, 20kΩ, 2000Ω, 200Ω).
3. Connect the black test lead to "COM" and the red test lead to "VΩmA".
4. Connect the test probes across the component.
5. Read the resistance value on the display.

4.5 Diode Test (→|→)

1. Set the rotary switch to the Diode Test position.
2. Connect the black test lead to "COM" and the red test lead to "VΩmA".
3. Connect the red probe to the anode and the black probe to the cathode of the diode. The display should show a forward voltage drop (typically 0.5V to 0.8V for silicon diodes).
4. Reverse the probes. The display should show "OL" (Overload) for a good diode. If it shows a reading in both directions or "OL" in both directions, the diode is likely faulty.

4.6 Continuity Test (•))))

1. Set the rotary switch to the Continuity Test position.
2. Connect the black test lead to "COM" and the red test lead to "VΩmA".
3. Connect the test probes across the circuit or component.
4. If the resistance is below approximately 50Ω (this value can vary), the buzzer will sound, indicating continuity. The display will also show the resistance value.

5. Specifications

Measurement Function	Range	Accuracy
DC Voltage (V--)	200mV, 2000mV, 20V, 200V, 500V	±1.0% of reading + 2 digits
AC Voltage (V~)	200V, 500V	±1.2% of reading + 10 digits
DC Current (A--)	200µA, 2000µA, 20mA, 200mA, 10A	±1.5% of reading + 2 digits
Resistance (Ω)	200Ω, 2000Ω, 20kΩ, 200kΩ, 2000kΩ, 20000kΩ	±1.0% of reading + 2 digits
Diode Test	Yes	Forward voltage drop display
Continuity Test	Yes (with buzzer)	Buzzer sounds below approx. 50Ω

General Specifications

- **Safety Rating:** CAT II 500V AC/DC, CAT III 300V
- **Overload Protection:** Fuses 500mA/500V (for VΩmA jack) and 10A/500V (for 10A jack)
- **Power Supply:** 2 x AAA (LR03) batteries
- **Display:** Digital LCD
- **Dimensions (L x W x H):** Approximately 11.8 x 6.5 x 3 cm (4.65 x 2.56 x 1.18 inches)

- **Weight:** Approximately 100 grams (excluding batteries)
- **Test Lead Length:** Approximately 75 cm

6. Maintenance

6.1 Cleaning

Wipe the meter casing with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the meter is completely dry before use.

6.2 Battery Replacement

When the low battery indicator appears on the display, replace the two AAA batteries as described in Section 3.1. Remove batteries if the meter is not used for an extended period to prevent leakage.

6.3 Fuse Replacement

If the current measurement function stops working, the fuse may be blown. Fuses are located inside the meter. Fuse specifications are 500mA/500V for the VΩmA input and 10A/500V for the 10A input. Fuse replacement should only be performed by qualified personnel. Always replace with fuses of the exact same type and rating.

7. Troubleshooting

- **No Display:** Check battery installation and ensure batteries are not depleted.
- **"OL" on Display:** Indicates an overload or out-of-range measurement. Select a higher range or check for an open circuit (for continuity/resistance).
- **Incorrect Readings:**
    - Ensure test leads are correctly connected to the appropriate jacks.
    - Verify the rotary switch is set to the correct function and range.
    - Check if the batteries are low.
    - Ensure the component or circuit is properly isolated for resistance/diode tests.
- **Current Measurement Not Working:** Check the fuse for the relevant current input (500mA or 10A).

8. Safety Information

This multimeter is designed to meet safety standards for electrical measuring instruments. However, improper use can result in electric shock or damage to the meter. Always follow these safety guidelines:

- Do not apply more than the rated voltage between the input terminals or between any terminal and earth ground.
- Use extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Always disconnect the circuit power and discharge all high-voltage capacitors before measuring resistance or continuity.
- Ensure the rotary switch is in the correct position for the measurement being performed.
- Never measure current on a circuit with power applied if the test leads are connected to the "VΩmA" or "10A" jacks and the rotary switch is set to a voltage or resistance function. This can blow the fuse or damage the meter.

- Do not use the meter if it appears damaged or if the test leads are damaged.
- Adhere to the CAT II 500V and CAT III 300V safety ratings. CAT III is for measurements in building installation (e.g., distribution boards, circuit breakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment, e.g., stationary motors with permanent connection to the fixed installation). CAT II is for measurements performed on circuits directly connected to the low-voltage installation (e.g., household appliances, portable tools).
- Keep fingers behind the probe barriers during measurements.

9. Warranty and Support

This Solight V15 II Multimeter is designed for reliability. For any warranty claims or technical support, please contact your retailer or the Solight customer service department. Please retain your proof of purchase for warranty purposes.