AOPUTTRIVER AP-39C

AOPUTTRIVER AP-39C Smart Digital Multimeter User Manual

Model: AP-39C

1. Introduction

This manual provides detailed instructions for the safe and effective operation, maintenance, and troubleshooting of your AOPUTTRIVER AP-39C Smart Digital Multimeter. Please read this manual thoroughly before using the device to ensure proper functionality and safety.

2. Safety Information

Always adhere to basic safety precautions when using electrical testing equipment to prevent personal injury or damage to the meter or equipment under test.

- **Do not exceed the maximum input values** for any function. Refer to the specifications section for limits.
- **Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC.** These voltages pose a shock hazard.
- **Ensure the test leads are in good condition** and properly seated in the meter's input jacks.
- **Do not operate the meter if it appears damaged** or if the case is open.
- **Remove test leads from the circuit** before changing functions or ranges.
- **Always disconnect power to the circuit** before measuring resistance, continuity, diodes, or capacitance.
- **Replace the battery and fuses only with the specified type and rating.**

3. Product Overview

The AOPUTTRIVER AP-39C is a 6000-count digital multimeter designed for accurate measurement of various electrical parameters. It features auto-ranging, an automatic backlight, and a compact design for ease of use.

Figure 3.1: Front view of the AOPUTTRIVER AP-39C Digital Multimeter with key components labeled. This includes the LCD display, function buttons (SELECT, RANGE, REL, HOLD), rotary switch, NCV detection area, and input jacks.

3.1. Key Components

- **LCD Display:** 6000 counts digit display with full function symbols. Features automatic backlight for clear readings in varying light conditions.
- **Rotary Switch:** Used to select measurement functions and ranges.
- **SELECT Key:** Switches between different measurement modes within a function (e.g., AC/DC voltage, diode/continuity). Long press to disable automatic shutdown.
- **RANGE Key:** Switches between manual and automatic ranging modes.
- **REL Key:** Activates the Relative Measurement Mode, used for zeroing out the meter for more accurate micro-readings.
- **HOLD Key:** Locks the displayed measurement value.
- **Hz/% Key:** Used for frequency or duty cycle measurements.
- **NCV Detection Area:** Non-Contact Voltage detection sensor.
- **Input Jacks:** COM (common), VΩmA (voltage, resistance, current up to 600mA), 10A (current up to 10A).

Figure 3.2: The LCD display of the multimeter, showing 6000 counts and the automatic backlight feature for enhanced visibility.

4. Setup

4.1. Battery Installation

The multimeter requires a 9V battery for operation. A 9V battery is typically included with the product.

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment cover on the back of the meter.
3. Use a screwdriver to remove the screw securing the cover.
4. Carefully remove the cover.
5. Connect a new 9V battery to the battery clip, observing correct polarity.
6. Place the battery into the compartment and replace the cover, securing it with the screw.

Figure 4.1: The complete package contents, showing the multimeter, test leads, temperature probe, and the 9V battery required for operation.

4.2. Connecting Test Leads

Always connect the black test lead to the COM (common) jack. Connect the red test lead to the appropriate input jack based on the measurement function:

- **VΩmA Jack:** For voltage, resistance, continuity, diode, capacitance, frequency, duty cycle, and current measurements up to 600mA.
- **10A Jack:** For current measurements between 600mA and 10A.

5. Operating Instructions

Turn the rotary switch to the desired function. The meter will automatically select the appropriate range unless manual ranging is activated using the RANGE button.

5.1. DC/AC Voltage Measurement

1. Set the rotary switch to the **V~** (AC Voltage) or **V-** (DC Voltage) position.
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 circuit or component to be measured.

4. Read the voltage value on the display. Use the SELECT button to switch between AC and DC if the function combines them.

Figure 5.1: The multimeter in action, demonstrating its use for voltage testing, switch testing, power testing, and drive testing of electronic components.

5.2. AC/DC Current Measurement

1. Set the rotary switch to the **mA~** (AC Current), **mA-** (DC Current), **A~** (AC Current), or **A-** (DC Current) position.
2. For currents up to 600mA, connect the red test lead to the VΩmA jack. For currents up to 10A, connect the red test lead to the 10A jack. The black test lead always connects to COM.
3. **Important:** Disconnect power to the circuit. Open the circuit where current is to be measured and connect the meter in series.
4. Apply power to the circuit and read the current value.

5.3. Resistance Measurement

1. Set the rotary switch to the **Ω** position.
2. Connect the black test lead to COM and the red test lead to VΩmA.
3. **Important:** Ensure the circuit is de-energized before measuring resistance.
4. Connect the test probes across the component.

5. Read the resistance value.

5.4. Continuity Test

1. Set the rotary switch to the **Ω** position and press SELECT until the continuity symbol ()))) appears.
2. Connect the black test lead to COM and the red test lead to VΩmA.
3. **Important:** Ensure the circuit is de-energized.
4. Connect the test probes across the component or wire.
5. If resistance is less than approximately 50Ω, the meter will emit an audible beep, indicating continuity.

5.5. Diode/hFE Test

1. Set the rotary switch to the **Ω** position and press SELECT until the diode symbol (->|) or hFE symbol appears.
2. Connect the black test lead to COM and the red test lead to VΩmA.
3. **Important:** Ensure the circuit is de-energized.
4. For diode test, connect the red probe to the anode and the black probe to the cathode. Read the forward voltage drop. Reverse the probes; the display should show OL (Open Line) for a good diode.
5. For hFE test, insert the transistor leads into the appropriate hFE sockets.

5.6. Capacitance Measurement

1. Set the rotary switch to the **Cap** position.
2. Connect the black test lead to COM and the red test lead to VΩmA.
3. **Important:** Ensure the capacitor is fully discharged before measurement to prevent damage to the meter.
4. Connect the test probes across the capacitor.
5. Read the capacitance value.

5.7. Frequency and Duty Cycle Measurement

1. Set the rotary switch to the **Hz/%** position.
2. Connect the black test lead to COM and the red test lead to VΩmA.
3. Connect the test probes across the signal source.
4. Read the frequency (Hz) or duty cycle (%) value. Use the Hz/% button to toggle between them.

5.8. Temperature Measurement

1. Set the rotary switch to the **°C/°F** position.
2. Connect the temperature probe (thermocouple) to the VΩmA and COM jacks, observing polarity.
3. Place the tip of the temperature probe on or in the object to be measured.
4. Read the temperature value in Celsius or Fahrenheit. Use the SELECT button to switch units.

5.9. Non-Contact Voltage (NCV) Detection

1. Set the rotary switch to the **NCV** position.
2. Move the top part of the meter (NCV detection area) close to the conductor or outlet.
3. The meter will emit an audible beep and the NCV indicator light will flash if AC voltage is detected. The frequency of beeps and flashes increases with stronger signals.

5.10. REL (Relative Measurement) Function

The REL function allows you to zero out the meter's current reading, displaying subsequent measurements relative to that baseline. This is particularly useful for measuring small changes or compensating for test lead resistance.

1. Perform a measurement as usual.

2. Press the **REL** button. The display will show zero, and subsequent readings will be the difference from the initial value.
3. Press **REL** again to exit relative mode.

5.11. HOLD Function

The HOLD function freezes the current reading on the display, allowing you to record the value even after removing the probes from the circuit.

1. Perform a measurement.
2. Press the **HOLD** button. The current reading will be frozen on the display.
3. Press **HOLD** again to release the reading and return to live measurement.

6. Maintenance

6.1. Cleaning

Wipe the meter's case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep the input terminals free of dirt and moisture.

6.2. Battery Replacement

When the battery symbol appears on the display, the 9V battery needs to be replaced. Follow the steps in Section 4.1. Battery Installation.

6.3. Fuse Replacement

If the meter fails to measure current, the fuse may be blown. The AP-39C uses two fuses:

- **F1:** 800mA/600V fast-acting fuse for the VΩmA input.
- **F2:** 10A/600V fast-acting fuse for the 10A input.

To replace a fuse:

1. Ensure the meter is turned OFF and test leads are disconnected.
2. Remove the battery compartment cover as described in Section 4.1.
3. Carefully remove the old fuse and replace it with a new fuse of the exact same type and rating.
4. Replace the battery and cover, securing it with the screw.

7. Troubleshooting

If the meter does not function correctly, check the following:

- **No display or dim display:** Check the 9V battery. Replace if necessary.
- **Incorrect readings:** Ensure test leads are properly connected and not damaged. Verify the correct function and range are selected. For resistance, continuity, diode, and capacitance, ensure the circuit is de-energized.
- **Current measurement not working:** Check the fuses (F1 and F2) and replace if blown.
- **"OL" (Overload) displayed:** The measured value exceeds the selected range. Switch to a higher range or ensure the input is within the meter's maximum specifications.

If problems persist, contact AOPUTTRIVER customer support.

8. Specifications

Measurement Function	Range
DC Voltage	600.0mV - 600V
AC Voltage	6.000V - 600V
DC Current	600mA - 10A
AC Current	600mA - 10A
Resistance	600Ω - 60MΩ
Capacitance	9.999nF - 99.99mF
Temperature	-4°F to 1832°F (-20°C to 1000°C)
Frequency	9.999Hz - 9.999MHz
Duty Cycle	0.1% - 99.9%
Battery Test	1.5V/9V
Display	6000 Counts
Sampling Rate	2-3 times/second
Power Source	9V Battery
Dimensions	7.36 x 4.72 x 2.24 inches
Weight	8.82 ounces (250 Grams)

9. Warranty and Support

For warranty information and customer support, please refer to the documentation included with your purchase or visit the official AOPUTTRIVER website. You may also contact AOPUTTRIVER customer service directly for assistance with product inquiries, technical support, or service requests.
Additional resources, including a PDF version of the user manual, may be available on the manufacturer's website or through your retailer.