UOFKIPBA AT-9955

UOFKIPBA AT-9955 Professional Multifunctional Car Digital Multimeter User Manual

Model: AT-9955

1. Introduction

Thank you for choosing the UOFKIPBA AT-9955 Professional Multifunctional Car Digital Multimeter. This device is designed for precise electrical measurements and automotive diagnostics, featuring high accuracy, comprehensive overload protection, and an infrared temperature measurement function. It is suitable for private car maintenance, professional car repair, and automotive production inspection.
Please read this manual thoroughly before operating the device to ensure safe and correct usage, and retain it for future reference.

2. Safety Information

Warning: Failure to follow these safety instructions may result in electric shock, fire, or damage to the meter or the equipment under test.

- Always ensure the meter is in the correct function and range before making measurements.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and earth ground.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Before measuring current, ensure the circuit is de-energized and the meter is connected in series.
- Replace the battery immediately when the low battery indicator appears to ensure accurate readings.
- Do not operate the meter if it appears damaged or if the case is open.
- Observe all local and national safety codes.

3. Product Features

The AT-9955 Multimeter offers a wide array of functions designed for versatility and precision:

- **Infrared Temperature Measurement:** Non-contact temperature measurement capability.

- **14 Measurement Functions:** Includes DC voltage, AC voltage, DC current, AC current, resistance, speed (RPM), cylinder, duty cycle, frequency, temperature, capacitance, short circuit, and diode testing.
- **Engine Speed Measurement:** Induction clamp measures engine speed for 2-10 cylinder car engines.
- **Digital LCD Display:** 4000-bit digital display with backlight for clear readings in various lighting conditions.
- **Automotive Diagnostics:** Reads pulse duty cycle and closing angle of electronic fuel injection feedback carburetors for ignition. Tests millisecond pulse width for real-time fuel injectors, ineffective air controllers, and electronic transfer controllers.
- **Data Retention:** Hold function to freeze displayed readings.
- **Relative Value Function:** Measures changes relative to a stored reference value.
- **Overload Protection:** Fused current input and full-range overload protection for enhanced safety.
- **Automatic Shutdown:** Power-saving feature.
- **High Accuracy:** Ensures reliable and precise measurements.

4. Component Identification

Familiarize yourself with the components of your AT-9955 Multimeter:

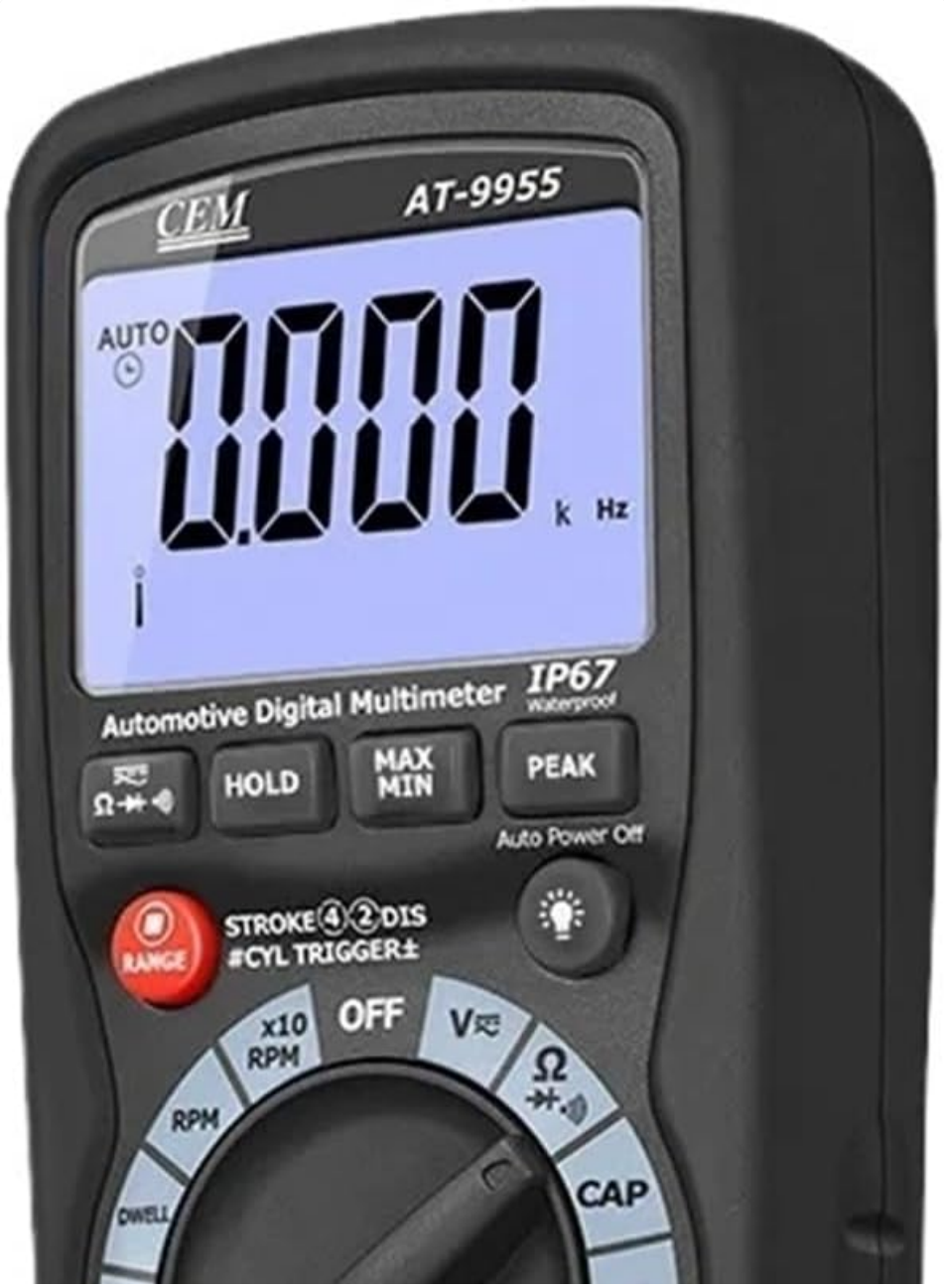

Figure 1: Front view of the UOFKIPBA AT-9955 Digital Multimeter. This image displays the main LCD screen, function dial, input jacks, and various buttons such as HOLD, MAX/MIN, PEAK, and RANGE. The dial clearly shows settings for RPM, DWELL, ms-PULSE, Hz, Duty, V, A, Ω, CAP, °C, °F, and IR temperature measurement.

- **LCD Display:** Shows measurement readings, units, and function indicators.
- **Function Dial:** Rotary switch to select desired measurement function.
- **Input Jacks:** Terminals for connecting test leads (VΩHzCAP, mA, 20A, COM).
- **Buttons:**
  - **RANGE:** Manual range selection.
  - **HOLD:** Freezes the current display reading.
  - **MAX/MIN:** Records maximum and minimum values.
  - **PEAK:** Captures peak values.
  - **Backlight Button:** Activates/deactivates the display backlight.
  - **STROKE/CYL TRIGGER:** For automotive specific functions.
- **Infrared Sensor:** Located at the top for non-contact temperature measurements.

5. Setup and Initial Operation

5.1 Battery Installation

The standard package does not include batteries. Before first use, install the required batteries (typically 9V, not specified in product details, but common for multimeters). Refer to the battery compartment cover on the back of the device for specific battery type and polarity.

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment cover on the back of the unit.
3. Use a screwdriver (if necessary) to open the cover.
4. Insert the batteries, observing the correct polarity (+ and -).

5. Replace the battery compartment cover and secure it.

5.2 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:

- **VΩHzCAP:** For voltage, resistance, frequency, capacitance, diode, and continuity measurements.
- **mA:** For current measurements up to 400mA.
- **20A:** For high current measurements up to 20A.

6. Operating Instructions

This section details how to use the various measurement functions of the AT-9955 Multimeter.

6.1 Automatic and Manual Ranging

This instrument features an automatic measuring range. To switch to manual range, press the **RANGE** key. Press the **RANGE** key repeatedly to cycle through available ranges. To return to automatic measurement, press and hold the **RANGE** key for 2 seconds.

Figure 2: The AT-9955 Multimeter demonstrating its automatic measuring range feature. The accompanying text explains how to use the RANGE key to switch between automatic and manual ranging, and how to adjust the range manually.

6.2 DC/AC Voltage Measurement (V)

1. Turn the function dial to the "V" position (DC or AC, as needed).
2. Connect the red test lead to the VΩHzCAP jack and the black test lead to the COM jack.
3. Connect the test probes in parallel to the circuit or component to be measured.
4. Read the voltage value on the LCD display.

6.3 DC/AC Current Measurement (A/mA)

Caution: Never connect the multimeter in parallel to a voltage source when measuring current. This can blow the fuse or damage the meter.

1. Turn the function dial to the "A" or "mA" position (DC or AC, as needed).
2. Connect the red test lead to the mA jack (for up to 400mA) or the 20A jack (for up to 20A). Connect the black test lead to the COM jack.
3. De-energize the circuit. Open the circuit where the current is to be measured.
4. Connect the test probes in series with the circuit.
5. Re-energize the circuit and read the current value on the LCD display.

6.4 Resistance Measurement (Ω)

Caution: Ensure the circuit is de-energized and all capacitors are discharged before measuring resistance.

1. Turn the function dial to the "Ω" position.
2. Connect the red test lead to the VΩHzCAP jack and the black test lead to the COM jack.
3. Connect the test probes across the component to be measured.
4. Read the resistance value on the LCD display.

6.5 Infrared Temperature Measurement (°C/°F)

1. Turn the function dial to the "IR" position.
2. Point the infrared sensor (located at the top of the meter) towards the object whose temperature you wish to measure.
3. Read the temperature value on the LCD display. Use the °C/°F button (if available, or cycle through with function button) to switch between Celsius and Fahrenheit.

6.6 Automotive RPM Measurement (RPM)

The induction clamp (not explicitly shown in images but mentioned in features) is used for this function.

1. Turn the function dial to the "RPM" position.
2. Connect the induction clamp to the appropriate input (refer to specific instructions for the clamp, usually a dedicated input or via test leads).
3. Attach the induction clamp to the spark plug wire of the cylinder you wish to measure.
4. Start the engine and read the RPM value on the LCD display.
5. Use the "STROKE/CYL TRIGGER" button to select the correct number of cylinders (2-10).

6.7 Duty Cycle and ms-Pulse Measurement

These functions are crucial for diagnosing electronic fuel injection systems.

1. Turn the function dial to "% DUTY" or "ms-PULSE" position.
2. Connect the test leads to the VΩHzCAP and COM jacks.
3. Connect the probes to the circuit point where the duty cycle or pulse width needs to be measured (e.g., fuel injector signal).
4. Read the value on the LCD display.

7. Maintenance

7.1 Cleaning

Wipe the meter with a dry, soft cloth. Do not use abrasives or solvents. Keep the input terminals free of dirt and moisture.

7.2 Battery Replacement

When the battery symbol appears on the LCD, the batteries should be replaced. Refer to Section 5.1 for battery installation instructions.

7.3 Fuse Replacement

If the current measurement function fails, the fuse may be blown. Replace with a fuse of the specified type and rating (e.g., Fused current input and full range overload protection, specific ratings not provided in product description, refer to device markings or manufacturer for exact fuse specifications).

1. Ensure the multimeter is turned OFF and test leads are disconnected.
2. Open the battery compartment/rear case (may require a screwdriver).
3. Carefully remove the blown fuse.
4. Install a new fuse of the identical type and rating.
5. Reassemble the meter securely.

7.4 Storage

If the meter is not to be used for an extended period, remove the batteries to prevent leakage and store the device in a cool, dry place away from direct sunlight.

8. Troubleshooting

Problem	Possible Cause	Solution
No display or faint display	Dead or low batteries; Incorrect battery installation.	Replace batteries; Check battery polarity.
Incorrect readings	Wrong function selected; Test leads not properly connected; Low battery; Out of range.	Select correct function; Reconnect leads securely; Replace batteries; Switch to a higher range or use auto-ranging.
Current measurement not working	Blown fuse; Incorrect lead connection; Circuit not in series.	Replace fuse; Connect red lead to A/mA jack; Ensure meter is in series with the load.

Problem	Possible Cause	Solution
"OL" (Overload) displayed	Input value exceeds selected range.	Switch to a higher range or use auto-ranging.

9. Specifications

The following are the general specifications for the UOFKIPBA AT-9955 Digital Multimeter:

Parameter	Value
Model Number	AT-9955
Display Type	Digital display (4000 bit LCD with backlight)
Measurement Functions	DC Voltage, AC Voltage, DC Current, AC Current, Resistance, Speed (RPM), Cylinder, Duty Cycle, Frequency, Temperature (Infrared), Capacitance, Short Circuit, Diode Testing
Engine Speed Measurement	2-10 cylinder car engine (induction clamp)
Overload Protection	Full range overload protection, fused current input
Special Features	Data retention, relative value function, overload prompt, automatic shutdown, millisecond pulse width testing
DIY Supplies	ELECTRICAL
Certification	CE
Item Weight	1.76 ounces (50 Grams)
Package Dimensions	1.18 x 0.79 x 0.39 inches
Brand	UOFKIPBA
Color	One Color

10. Warranty and Support

Warranty information for the UOFKIPBA AT-9955 Digital Multimeter is not explicitly provided in the product details. For warranty claims, technical support, or service inquiries, please contact your retailer or the manufacturer directly. Keep your purchase receipt as proof of purchase.