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ZOYI VC17B+

ZOYI VC17B+ Digital Multimeter Instruction Manual

Model: VC17B+

1. INTRODUCTION

The ZOYI VC17B+ is a high-performance, True-RMS digital multimeter designed for accurate measurement of various electrical parameters. It features a large, backlit display for clear readings in diverse environments and a robust design suitable for electricians, students, and maintenance professionals. This manual provides essential information for the safe and effective operation of your device.

Key capabilities include:

- AC/DC Voltage and Current measurement
- Resistance, Capacitance, and Frequency measurement
- Continuity and Diode testing
- Temperature measurement
- Duty Cycle
- Additional functions: True-RMS, Data Hold, Backlight, Low Battery Alert, Auto Power Off, MAX/MIN, Relative Measurement (REL)

2. SAFETY INFORMATION

Always adhere to safety precautions when using any electrical testing equipment. Failure to do so may result in electric shock, injury, or damage to the meter or equipment under test.

- **Read this manual thoroughly** before operation.
- The ZOYI VC17B+ is rated for **CAT IV 600V** and **CAT III 600V**. Do not exceed these voltage limits.
- Inspect test leads for damage before each use. Replace if insulation is compromised.
- Do not use the meter if it appears damaged or is not operating correctly.
- Ensure the function dial is set to the correct range before making measurements.
- Avoid working alone.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC, as these pose a shock hazard.
- Replace batteries promptly when the low battery indicator appears.

3. PACKAGE CONTENTS

Verify that all items are present in your package:

- ZOYI VC17B+ Digital Multimeter
- Test Leads (2)
- AA Batteries (2)
- Thermocouple Probe (1)
- User Manual (this document)



Figure 3.1: Standard Accessories included with the ZOYI VC17B+ Multimeter.

4. PRODUCT OVERVIEW

Familiarize yourself with the components of the ZOYI VC17B+ multimeter:

ZOYI®



Figure 4.1: ZOYI VC17B+ Multimeter Components.

- **Display:** Large, high-definition backlit LCD for reading measurements.
- **Function Dial (Gear Knob):** Used to select the desired measurement function.
- **Input Jacks:**
 - **COM:** Common (negative) input for all measurements.
 - **VHzΩ:** Positive input for Voltage, Frequency, Resistance, Capacitance, Diode, Continuity, and Temperature measurements.
 - **mA/uA:** Positive input for milliampere and microampere current measurements (fused).
 - **20A:** Positive input for 20 Ampere current measurements (fused).
- **Buttons:**
 - **RANGE:** Manual/Auto Range selection.
 - **REL:** Relative measurement function.
 - **MAX/MIN:** Records maximum and minimum values.
 - **Hz%:** Selects Frequency or Duty Cycle.
 - **HOLD/*:** Data Hold function and Backlight activation.
 - **SELECT:** Toggles between functions on a single dial position (e.g., AC/DC, Diode/Continuity).

ZOYI®

Intelligent overload protection

True RMS Multimeter

Voltage/Current

Resistance/Frequency

Capacitance/Duty cycle

Auto Power off | Data Hold

MAX/MIN/REL

High-definition
backlit display



Figure 4.2: ZOYI VC17B+ Multimeter Front View.

5. SETUP

5.1 Battery Installation

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment on the back of the meter.
3. Use a screwdriver to open the battery cover.
4. Insert two AA batteries, observing correct polarity (+/-).
5. Replace the battery cover and secure it with the screw.

5.2 Connecting Test Leads

Always connect the black test lead to the COM jack. Connect the red test lead to the appropriate input jack based on the measurement type:

- **VHzΩ**: For Voltage, Resistance, Capacitance, Frequency, Diode, Continuity, and Temperature.
- **mA/μA**: For small current measurements.
- **20A**: For large current measurements (up to 20A).

5.3 Using the Kickstand

The multimeter includes a built-in kickstand for convenient hands-free operation. Gently pull out the kickstand from the back of the unit to prop it up at an angle. Push it back in when not needed.



Figure 5.1: Multimeter back view (left) and with kickstand deployed (right).

6. OPERATING INSTRUCTIONS

6.1 General Operation

- **Power ON/OFF:** Rotate the function dial from 'OFF' to any measurement function to turn the meter ON. Rotate back to 'OFF' to power OFF.
- **Auto Power Off (APO):** The meter will automatically power off after approximately 15 minutes of inactivity to conserve battery life. Press any button or rotate the function dial to wake it up.
- **Backlight:** Press and hold the 'HOLD/*' button to turn the backlight ON or OFF.
- **Data Hold:** Press the 'HOLD/*' button briefly to freeze the current reading on the display. Press again to release.
- **Auto/Manual Ranging:** The meter defaults to auto-ranging. Press the 'RANGE' button to switch to manual

ranging. In manual ranging, press 'RANGE' repeatedly to cycle through available ranges. Press and hold 'RANGE' to return to auto-ranging.

- **SELECT Button:** In certain dial positions (e.g., Voltage, Diode/Continuity), press 'SELECT' to toggle between AC/DC, Diode Test, or Continuity Test.

6.2 Specific Measurement Functions

6.2.1 Voltage Measurement (AC/DC)

1. Insert the black test lead into the COM jack and the red test lead into the VHz Ω jack.
2. Rotate the function dial to the 'V~' (AC Voltage) or 'V=' (DC Voltage) position. If both are on one position, use 'SELECT' to choose.
3. Connect the test probes in parallel to the circuit or component to be measured.
4. Read the voltage value on the display.

6.2.2 Current Measurement (AC/DC)

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

1. Insert the black test lead into the COM jack.
2. For mA/uA measurements, insert the red test lead into the mA/uA jack. For 20A measurements, insert the red test lead into the 20A jack.
3. Rotate the function dial to the appropriate 'A~' (AC Current) or 'A=' (DC Current) position (mA, uA, or 20A). Use 'SELECT' if needed.
4. Open the circuit and connect the test probes in series with the load.
5. Read the current value on the display.

6.2.3 Resistance Measurement (Ω)

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

1. Insert the black test lead into the COM jack and the red test lead into the VHz Ω jack.
2. Rotate the function dial to the ' Ω ' position.
3. Connect the test probes across the component to be measured.
4. Read the resistance value on the display.

6.2.4 Continuity Test

1. Insert the black test lead into the COM jack and the red test lead into the VHz Ω jack.
2. Rotate the function dial to the ' Ω ' position and press 'SELECT' until the continuity symbol (buzzer icon) is displayed.
3. Connect the test probes across the circuit or component.
4. If continuity exists (resistance below approx. 50 Ω), the buzzer will sound.

6.2.5 Diode Test

1. Insert the black test lead into the COM jack and the red test lead into the VHz Ω jack.
2. Rotate the function dial to the ' Ω ' position and press 'SELECT' until the diode symbol (->|) is displayed.
3. Connect the red probe to the anode and the black probe to the cathode of the diode. The display will show the forward voltage drop.
4. Reverse the probes. The display should show 'OL' (Open Loop) for a good diode.

6.2.6 Capacitance Measurement (F)

CAUTION: Discharge capacitors completely before testing to prevent damage to the meter.

1. Insert the black test lead into the COM jack and the red test lead into the VHzΩ jack.
2. Rotate the function dial to the 'F' (Capacitance) position.
3. Connect the test probes across the capacitor.
4. Read the capacitance value on the display.

6.2.7 Frequency Measurement (Hz) and Duty Cycle (%)

1. Insert the black test lead into the COM jack and the red test lead into the VHzΩ jack.
2. Rotate the function dial to the 'Hz%' position.
3. Press the 'Hz%' button to toggle between Frequency (Hz) and Duty Cycle (%).
4. Connect the test probes in parallel to the signal source.
5. Read the frequency or duty cycle value on the display.

6.2.8 Temperature Measurement (°C/°F)

1. Insert the thermocouple probe into the VHzΩ (positive) and COM (negative) jacks, observing polarity.
2. Rotate the function dial to the '°C/°F' position.
3. The display will show the ambient temperature. Place the thermocouple tip on or near the object whose temperature is to be measured.
4. Read the temperature value. The unit can be toggled between Celsius and Fahrenheit using the 'SELECT' button if available in this mode.

6.2.9 MAX/MIN Function

In any measurement mode, press the 'MAX/MIN' button to activate this function. The meter will display the maximum or minimum reading recorded since the function was activated. Press again to cycle between MAX, MIN, and current reading. Press and hold to exit.

6.2.10 REL (Relative Measurement) Function

Press the 'REL' button to store the current reading as a reference value. Subsequent measurements will be displayed as the difference from this reference value. Press 'REL' again to exit this mode.

7. MAINTENANCE

7.1 Cleaning

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

7.2 Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in Section 5.1. Use two new AA batteries.

7.3 Fuse Replacement

If the current measurement function fails, the fuse may need replacement. Refer to the specifications for the correct fuse type and rating. Fuse replacement should only be performed by qualified personnel.

7.4 Storage

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

8. TROUBLESHOOTING

Problem	Possible Cause	Solution
No display or dim display	Dead or low batteries; Incorrect battery installation.	Replace batteries; Check battery polarity.
No current measurement	Blown fuse; Incorrect input jack used.	Replace fuse (if qualified); Ensure red lead is in mA/uA or 20A jack.
'OL' (Overload) displayed	Measurement exceeds selected range or meter's maximum capacity.	Switch to a higher range (if in manual mode); Ensure measurement is within meter's limits.
Inaccurate readings	Poor test lead connection; External interference; Damaged meter.	Check connections; Move away from strong electromagnetic fields; Contact support if meter is damaged.

9. SPECIFICATIONS

Detailed technical specifications for the ZOYI VC17B+ Digital Multimeter:

9.1 General Specifications

- **Brand:** ZOYI
- **Model Number:** VC17B+
- **Display:** 6000 Counts, Large Backlit LCD
- **True-RMS:** Yes
- **Power Source:** 2 x AA Batteries
- **Safety Rating:** CAT IV 600V, CAT III 600V
- **Dimensions (L x W x H):** 180 x 90 x 45 mm (approx.)
- **Weight:** Approximately 310g (without batteries)
- **Auto Power Off:** Yes
- **Data Hold:** Yes
- **Low Battery Alert:** Yes

Function	Range	Accuracy
AC Voltage	60.00mV/600.0mV/6.000V/60.00V/600.0V/750V	±(1.0%+3)
DC Current	600.0uA/6000uA/60.00mA/600.0mA/6.000A/20.00A	±(1.2%+3)
AC Current	600.0uA/6000uA/60.00mA/600.0mA/6.000A/20.00A	±(1.5%+3)
Resistance	600.0Ω/6.000kΩ/60.00kΩ/600.0kΩ/6.000MΩ/60.00MΩ	±(1.0%+3)
Capacitance	9.999nF/99.99nF/999.9nF/9.999uF/99.99uF/999.9uF/9.999mF	±(5.0%+20)
Frequency	9.999Hz/99.99Hz/999.9Hz/9.999kHz/99.99kHz/999.9kHz/9.999MHz	±(0.1%+2)
Temperature	-20°C ~ 1000°C / -4°F ~ 1832°F	±(2.5%+5)
Diode/Continuity	Yes	Yes

10. WARRANTY AND SUPPORT

For warranty information, please refer to the warranty card included with your product or visit the official ZOYI website. For technical support or service inquiries, please contact your retailer or the manufacturer directly.

- **Manufacturer:** ZOYI & ZOTEK Instruments
- **Packer Contact Information:** Skyking Instruments, Mumbai, INDIA