Rakstore ZB2L3

Rakstore ZB2L3 Battery Capacity Tester User Manual

Model: ZB2L3

1. Introduction

The Rakstore ZB2L3 Battery Capacity Tester is a versatile device designed to measure the capacity of various battery types, including 18650 Lithium batteries and Lead-Acid batteries. It functions as a discharge tester, allowing users to determine the actual capacity by discharging the battery through a load and measuring the discharged energy. This manual provides detailed instructions for the safe and effective use of the ZB2L3 tester.

2. Safety Information

- Always ensure correct polarity when connecting batteries to avoid damage to the tester and battery.
- Use appropriate discharge loads. Overloading the tester or using incorrect loads can cause overheating and damage.
- Do not short-circuit the battery terminals.
- Operate the device in a well-ventilated area, especially when discharging batteries, as they can generate heat.
- Keep the device away from moisture and extreme temperatures.
- This device is not a toy. Keep out of reach of children.

3. Product Features

- **Power Supply:** DC4.5-6V via micro USB interface.
- **Working Current:** Less than 70mA.
- **Discharge Voltage Range:** 1-15V with 0.01V resolution.
- **Termination Voltage Range:** 0.5-11.0V.
- **Supported Discharge Current:** Up to 3.000A with 0.001A resolution.

- **Voltage Measurement Error:** Less than 1% + 0.02V.
- **Current Measurement Error:** Less than 1.2% ± 0.002A.
- **Battery Capacity Range:** Up to 9999Ah (1Ah=1000mAh). Display adjusts decimal point for large values (e.g., X.XXX Ah, XX.XX Ah).
- **Compact Size:** Circuit board 50mm x 37mm, finished product 50mm x 37mm x 17mm (L x W x H, including copper foot height).

4. Package Contents

- 1 x Rakstore ZB2L3 Battery Capacity Tester Unit
- (Note: Discharge resistors and battery holders are typically sold separately and are required for operation.)

5. Setup

Before operating the ZB2L3 tester, ensure all connections are made correctly.

Figure 1: ZB2L3 Battery Capacity Tester showing the micro USB power input, battery terminals, and load terminals.

1. **Power Supply Connection:** Connect a DC 4.5-6V power source to the micro USB port on the tester. A standard phone charger or power bank can be used. The display should light up.
2. **Battery Connection:** Connect the battery to be tested to the "BAT+" and "BAT-" terminals. Ensure correct polarity. The tester will display the current battery voltage.
3. **Discharge Load Connection:** Connect an appropriate discharge resistor (load) to the "LOAD+" and "LOAD-" terminals. The resistance value of the load will determine the discharge current. Ensure the load can handle the expected power dissipation.

Important: The discharge current should not exceed 3.000A. Calculate the required resistance using Ohm's Law (R = V/I) and Power Law (P = V*I or P = I²*R) to ensure the resistor can handle the power. For example, if testing a 3.7V battery at 1A, you need a 3.7 Ohm resistor capable of dissipating at least 3.7W.

6. Operating Instructions

Follow these steps to perform a battery capacity test:

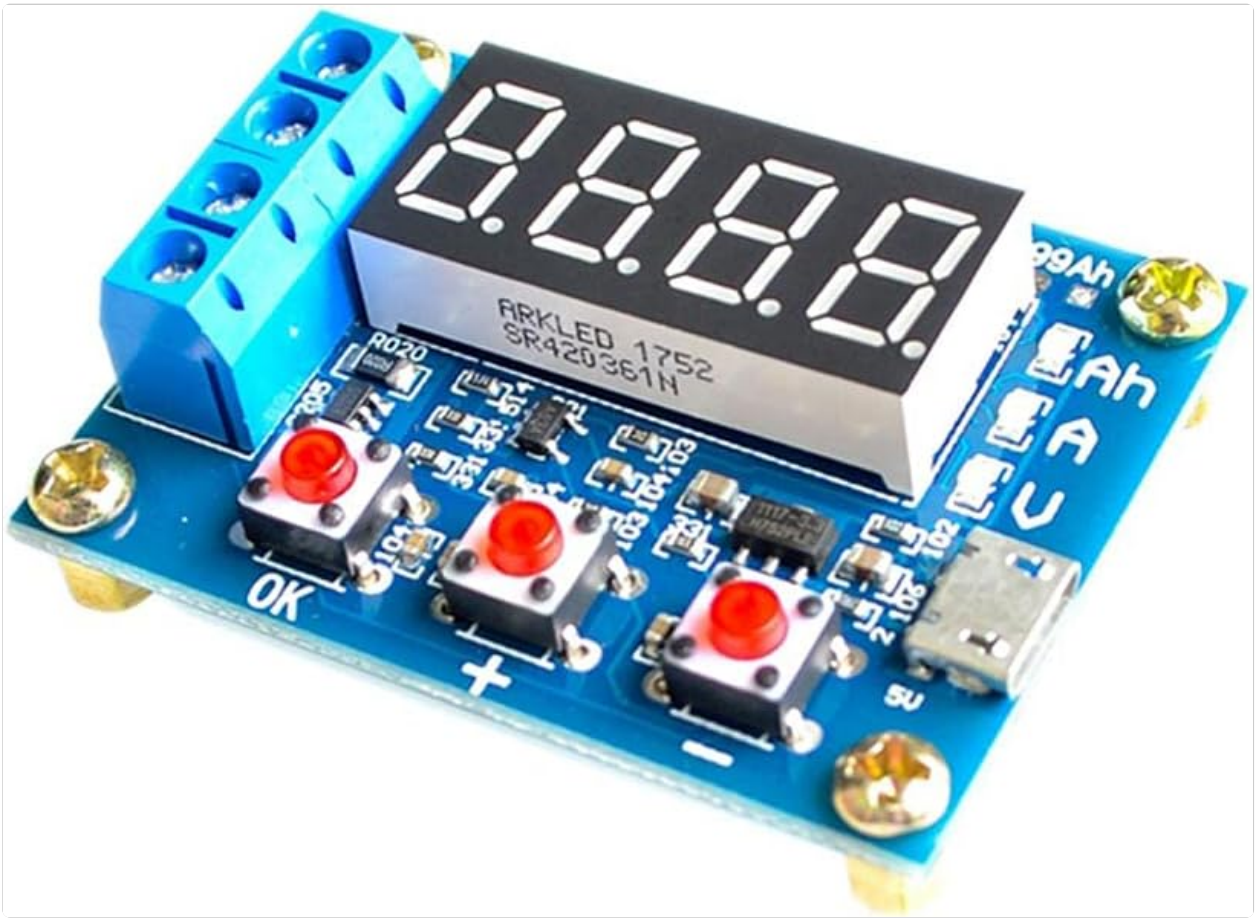

Figure 2: ZB2L3 Battery Capacity Tester showing the 'OK', '+', and '-' buttons for operation.

1. **Initial Display:** After connecting the power and battery, the tester will display the battery's current voltage.
2. **Set Termination Voltage:**
   - Press the "OK" button once. The display will show the current termination voltage (e.g., "U 3.00").
   - Use the "+" and "-" buttons to adjust the termination voltage. This is the voltage at which the discharge test will stop. For 18650 Lithium batteries, a common termination voltage is 3.0V. For Lead-Acid batteries, consult the battery's specifications.
   - Press "OK" again to confirm the setting and return to the main display.
3. **Start Discharge Test:**
   - With the battery and load connected, and the termination voltage set, press and hold the "OK" button for approximately 3 seconds.
   - The tester will begin discharging the battery through the connected load. The display will cycle through current voltage (V), discharge current (A), and accumulated capacity (Ah).
4. **Monitor Test Progress:** Observe the display. The voltage will gradually decrease, and the accumulated capacity will increase.
5. **Test Completion:** The test will automatically stop when the battery voltage reaches the set termination

voltage. The display will then show the final accumulated capacity (Ah) and flash.

6. **View Results:** After the test stops, you can press the "OK" button to cycle through the final voltage, current, and capacity readings.
7. **Reset for New Test:** To start a new test, disconnect the battery and load, then reconnect them, or simply press and hold the "OK" button again to clear the previous results and start a new cycle.

7. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the device. Do not use liquid cleaners or solvents.
- **Storage:** Store the tester in a cool, dry place away from direct sunlight and extreme temperatures.
- **Inspection:** Periodically check the terminals and connections for any signs of wear or damage.

8. Troubleshooting

Problem	Possible Cause	Solution
Display does not light up.	No power or incorrect power supply.	Ensure micro USB power supply is connected and providing DC 4.5-6V. Check cable and adapter.
Test does not start.	Battery not connected, load not connected, or "OK" button not held long enough.	Verify battery and load connections. Hold "OK" button for 3 seconds to initiate.
Incorrect capacity reading.	Incorrect termination voltage set, or load resistance is too high/low.	Verify the termination voltage setting. Ensure the discharge load is appropriate for the desired current.
Tester gets hot during operation.	High discharge current or insufficient ventilation.	Ensure the discharge current does not exceed 3.000A. Operate in a well-ventilated area. The discharge load resistor will also generate heat; ensure it is rated for the power.

9. Specifications

Parameter	Value
Power Supply Voltage	DC 4.5-6V (Micro USB)
Working Current	< 70mA
Discharge Voltage Range	1-15V (0.01V resolution)
Termination Voltage Range	0.5-11.0V
Supported Discharge Current	≤ 3.000A (0.001A resolution)
Voltage Measurement Error	< 1% + 0.02V
Current Measurement Error	< 1.2% ± 0.002A

Parameter	Value
Battery Capacity Range	0-9999Ah (1Ah=1000mAh)
Circuit Board Size	50mm x 37mm
Finished Product Size	50mm x 37mm x 17mm (L x W x H, including copper foot height)

10. Warranty and Support

This product is manufactured by Rakstore. For any technical support or warranty inquiries, please refer to the retailer where the product was purchased or visit the official Rakstore website for contact information.
Please retain your proof of purchase for warranty claims.