**ZKE Tech EBC-A10H**

# ZKE Tech EBC-A10H Electronic Load Tester User Manual

Model: EBC-A10H

## 1. Introduction

This manual provides essential instructions for the safe and effective operation of the ZKE Tech EBC-A10H Electronic Load Tester. This device is designed for comprehensive battery testing, including charging and discharging capacitance tests for various battery types such as Li/Pb, NiMH, NiCr, Lithium, and Lead Acid. It also supports mobile power supply discharge testing and charging head power performance evaluation. The EBC-A10H features PC connectivity for advanced functions and detailed data analysis.

### Key Features:

- **LCD Display:** Provides real-time display of test data including voltage, current, capacity, time, power, and energy.
- **4-Wire Detection:** Utilizes separate wiring for voltage and current channels to ensure accurate measurements.
- **Multiple Discharge Modes:** Supports Constant Current (DSC-CC), Constant Power (DSC-CP), and Constant Voltage Charging (CHG-CV) modes.
- **Automatic Test Cycles:** Features an automatic charge-discharge-charge mode for convenient battery capacity testing.
- **PC Connectivity:** Allows connection to a computer via USB for software-based control, curve plotting, benchmark tests, and detailed data observation.
- **High Accuracy:** Offers a test accuracy with a margin of error of approximately ±0.5%.

## 2. Safety Information

Please read and understand all safety instructions before operating the device. Failure to follow these instructions may result in electric shock, fire, or damage to the product or connected devices.

- Ensure the device is connected to a grounded power outlet.
- Do not operate the device in wet or damp conditions.
- Avoid short-circuiting the input/output terminals.
- Use only the provided power cable and accessories.
- Do not attempt to open or modify the device. Refer all servicing to qualified personnel.
- Keep out of reach of children.

- Ensure proper ventilation during operation to prevent overheating.

## 3. Package Contents

Verify that all items listed below are present in your package:

- EBC-A10H Electronic Load Tester Unit
- Power Cable (US Standard)
- Test Leads (4-wire connection)
- USB Communication Cable


Image 3.1: EBC-A10H Electronic Load Tester with power cable, test leads, and USB cable.

## 4. Product Overview

### 4.1 Front Panel


Image 4.1: Front view of the EBC-A10H showing the LCD, control knob, ON button, and terminals.

- **LCD Display:** Shows real-time test parameters and menu options.
- **SET Knob:** Rotary encoder for navigating menus and adjusting parameters. Press to confirm selections.
- **ON Button:** Power on/off switch for the load function.
- **A+** / **V+** / **V-** / **A- Terminals:**4-wire connection terminals for precise voltage and current measurement. A+ and A- are for current, V+ and V- are for voltage sensing.

Image 4.2: Close-up view of the A+, V+, V-, and A- terminals.

## 4.2 Rear Panel

Image 4.3: Rear view of the EBC-A10H showing the cooling fan, power input, and PC connection port.

- **Cooling Fan:** Ensures proper heat dissipation during operation.
- **Power Input:** Standard AC power inlet (100-240V).
- **Power Switch:** Main power switch for the device.
- **PC Connection Port:** For connecting the device to a computer via USB cable.

# 5. Setup

## 5.1 Power Connection

1. Connect the provided power cable to the power input port on the rear panel of the EBC-A10H.
2. Plug the other end of the power cable into a suitable grounded AC power outlet (100-240V).
3. Flip the main power switch on the rear panel to the 'ON' position. The LCD display on the front panel should illuminate.

## 5.2 Battery Connection (4-Wire Method)

The EBC-A10H uses a 4-wire connection method for enhanced accuracy. This separates the current path from the voltage sensing path, minimizing voltage drop errors.

1. Connect the **A+** terminal to the positive (+) terminal of the battery under test.

2. Connect the **V+** terminal to the positive (+) terminal of the battery under test.
3. Connect the **A-** terminal to the negative (-) terminal of the battery under test.
4. Connect the **V-** terminal to the negative (-) terminal of the battery under test.

**Note:** Ensure all connections are secure to prevent arcing or inaccurate readings. A+ and V+ connect to the battery positive; A- and V- connect to the battery negative.

### 5.3 PC Connection (Optional)

For advanced control and data logging, connect the EBC-A10H to a computer:

1. Connect one end of the provided USB communication cable to the PC connection port on the rear panel of the EBC-A10H.
2. Connect the other end of the USB cable to an available USB port on your computer.
3. Install the appropriate PC software (typically available from the manufacturer's website) on your computer. Follow the software installation instructions.

## 6. Operating Instructions

### 6.1 Basic Operation

1. After powering on the device and connecting the battery, the LCD will display the main menu or default test screen.
2. Use the **SET Knob** to navigate through menu options and adjust parameter values. Press the knob to confirm a selection or enter a value.
3. Press the **ON Button** on the front panel to start or stop the load/charge function during a test.

### 6.2 Discharge Modes

The EBC-A10H supports three primary modes for battery testing:

- **DSC-CC (Constant Current Discharge):** Discharges the battery at a constant current. Ideal for determining battery capacity under a steady load.
- **DSC-CP (Constant Power Discharge):** Discharges the battery at a constant power. Useful for simulating real-world loads that draw constant power.
- **CHG-CV (Constant Voltage Charging):** Charges the battery at a constant voltage. Used for measuring charging characteristics and capacity.

Select the desired mode from the menu, set the parameters (e.g., current, voltage, power, cut-off voltage), and press the ON button to start the test.

### 6.3 Automatic Charge-Discharge-Charge Mode

This mode automates the process of fully charging, discharging, and then recharging a battery to accurately determine its capacity. This is particularly useful for new batteries or for re-evaluating older ones.

1. Navigate to the 'Auto Test' or 'Capacity Test' option in the menu.
2. Set the required charging and discharging parameters (e.g., charge current, discharge current, cut-off voltages).
3. Start the test. The device will automatically cycle through charging, discharging, and final charging, displaying the measured capacity.

### 6.4 PC Software Operation

The PC software provides a graphical interface for controlling the EBC-A10H and visualizing test data.

- Launch the installed software on your computer.

- Ensure the EBC-A10H is connected via USB and powered on. The software should detect the device.
- Use the software interface to select test modes, set parameters, start/stop tests, and monitor real-time data.
- The software allows for plotting voltage, current, and capacity curves over time, saving test data, and performing advanced analysis.

## 7. Specifications

The following table details the technical specifications of the EBC-A10H Electronic Load Tester:

| Parameter | Value |
|---|---|
| Model | EBC-A10H |
| Input Voltage | 100-240V AC |
| Discharge Voltage Range | 0.00-30.00V (Minimum Step: 0.01V) |
| Charging Voltage Range | 0.00-22.00V (Minimum Step: 0.01V) |
| Discharge Current Range | 0.05-10.00A (Minimum Step: 0.01A) |
| Charging Current Range | 0.05-5.00A (Minimum Step: 0.01A) |
| Supported Charging Methods | Standard Charging (NiMH, NiCr, Lithium, Iron, Lead Acid) |
| Low Voltage Test Accuracy | 0.002-4.500V (Accuracy: 0.003V, Error ±0.5%) |
| High Voltage Test Accuracy | 4.50V-30.00V (Accuracy: 0.01V, Error ±0.5%) |
| Current Test Accuracy | 0.05-10.000A (Accuracy: 0.005A, Error ±0.5%) |
| Capacity Test Resolution (0-10Ah) | 0.001Ah |
| Capacity Test Resolution (10-100Ah) | 0.01Ah |
| Capacity Test Resolution (>100Ah) | 0.1Ah |
| Connection Method | 4-wire Detection |
| Dimensions (L x W x H) | 20.5 cm x 19 cm x 9 cm (approx. 8 in x 7.5 in x 3.5 in) |
| Weight | Approx. 2.4 kg (5.29 lbs) |


Image 7.1: Physical dimensions of the EBC-A10H unit.

## 8. Maintenance

Proper maintenance ensures the longevity and accuracy of your EBC-A10H Electronic Load Tester.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Do not use abrasive cleaners or solvents.
- **Ventilation:** Ensure the cooling fan and ventilation slots are free from dust and obstructions. Periodically clean with compressed air if necessary.
- **Storage:** Store the device in a cool, dry place away from direct sunlight and extreme temperatures when not in use.
- **Cable Care:** Inspect power and test cables regularly for any signs of damage. Replace damaged cables immediately.

## 9. Troubleshooting

If you encounter issues with your EBC-A10H, refer to the following common troubleshooting steps:

- **Device Not Powering On:**
  - Check if the power cable is securely connected to both the device and the power outlet.

- Ensure the main power switch on the rear panel is in the 'ON' position.
- Verify the power outlet is functional.

- **Inaccurate Readings:**
  - Confirm that the 4-wire connections (A+, V+, V-, A-) are correctly and securely attached to the battery terminals.
  - Ensure the test leads are not damaged.
  - Check for any external interference or unstable power supply.

- **PC Software Not Detecting Device:**
  - Verify the USB cable is properly connected to both the EBC-A10H and the computer.
  - Ensure the EBC-A10H is powered on.
  - Check if the correct USB drivers are installed on your computer.
  - Try a different USB port or cable.

- **Overheating:**
  - Ensure the cooling fan and ventilation slots are clear of obstructions.
  - Operate the device in a well-ventilated area.
  - Reduce the load if operating continuously at maximum capacity.

If the problem persists after attempting these steps, please contact customer support.

## 10. Warranty and Support

For specific warranty terms and conditions, please refer to the documentation provided at the time of purchase or contact your seller/manufacturer directly. Technical support and service inquiries should also be directed to the point of purchase or the manufacturer's official support channels.