

Shutao 13973ST-1

Shutao 2 Channel 18650 Battery Capacity Tester User Manual

Model: 13973ST-1

1. INTRODUCTION

The Shutao 2 Channel 18650 Battery Capacity Tester is designed for comprehensive analysis of 18650 lithium-ion batteries. This device facilitates independent charging, discharging, and capacity testing, along with internal resistance measurement. It is suitable for tasks such as sorting used cells, testing household batteries, and maintaining battery collections.

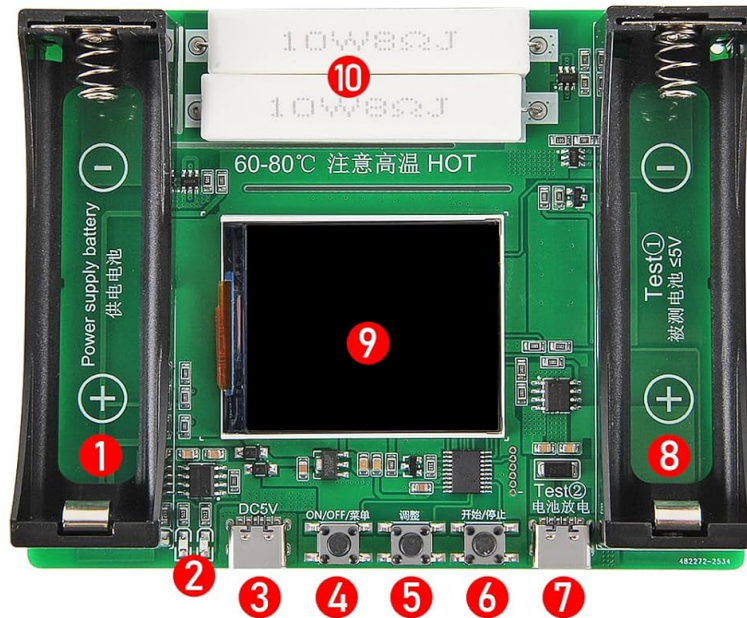
2. SAFETY INFORMATION

- The device features overheating protection and automatic power-off to prevent damage.
- The discharge current is fixed at approximately 1A and is not adjustable or constant current.
- The charging voltage is fixed at 4.2V.
- This tester is **not compatible** with LiFePO4 batteries.
- After installing a battery, allow a few seconds for voltage and internal resistance readings to stabilize before proceeding.
- Internal resistance readings may appear elevated at low battery voltages. For more accurate measurements, reinstall the battery or test when the battery is fully charged.
- The device may reach temperatures of 60-80°C during operation. Exercise caution and ensure adequate ventilation.

3. PRODUCT OVERVIEW

3.1 Components

The following diagram illustrates the key components of the battery capacity tester:



1. Power supply battery compartment
2. Blue and red indicator light: the charging monitoring indicator of the power supply battery, which has nothing to do with the 8/9 test.
3. Type-C 5V power supply interface
4. "ON/OFF/ Menu "button
5. "Adjust" button
6. "Start/Stop" button
7. Test ② Type-C external discharge interface
8. Test ① charging and discharging 18650 battery compartment
9. 1.77 inch display screen
10. 10W8QJ discharge cement resistance ×2

Note: 8 and 9 cannot be tested at the same time

Image: Labeled diagram showing the various parts of the battery tester, including battery compartments, buttons, and ports.

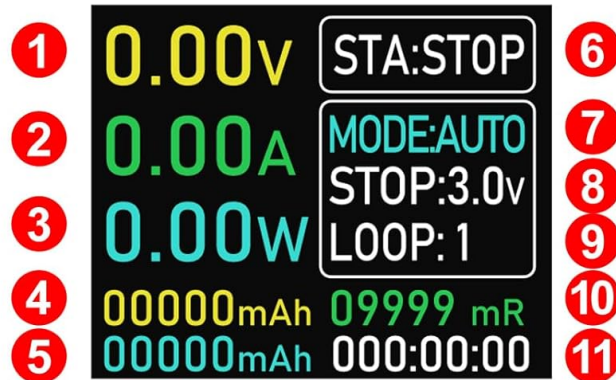
1. **Power supply battery compartment:** Used to power the device itself.
2. **Blue and red indicator light:** Indicates charging status of the power supply battery. This does not relate to the test channels.
3. **Type-C 5V power supply interface:** Primary power input for the device.
4. **ON/OFF/Menu button:** Powers the device on/off and accesses menu options.
5. **Adjust button:** Cycles through different test modes.
6. **Start/Stop button:** Initiates or terminates a test cycle.
7. **Test ② Type-C external discharge interface:** An alternative interface for testing batteries that do not fit the 18650 holder.
8. **Test ① charging and discharging 18650 battery compartment:** The primary slot for testing 18650 batteries.
9. **1.77 inch display screen:** Shows real-time test data and settings.
10. **10W8QJ discharge cement resistance ×2:** Resistors used for discharging batteries during tests.

Important Note: Despite some product descriptions, user feedback indicates this device functions as a single-channel tester. The left battery slot (1) is primarily for powering the device, and the right slot (8) is the main test channel. The Type-C external discharge interface (7) can also be used for testing, but not simultaneously with slot (8).

3.2 Display Interface

The 1.77-inch display provides comprehensive real-time information during testing:

Interface Introduction



- | | |
|------------------------------|---------------------------------------|
| 1 Real Time Voltage | 6 Status Indicator |
| 2 Real Time Current | 7 Work Pattern |
| 3 Real Time Power | 8 Stop Discharge Voltage |
| 4 Cumulative Capacity | 9 Cycles |
| 5 Accumulated Energy | 10 Battery Internal Resistance |
| | 11 Cumulative Time |

Image: Labeled diagram detailing the information displayed on the tester's screen.

- 1. Real Time Voltage:** Current voltage of the battery under test.
- 2. Real Time Current:** Current flowing during charge or discharge.
- 3. Real Time Power:** Instantaneous power (Voltage × Current).
- 4. Cumulative Capacity:** Total capacity measured in mAh.
- 5. Accumulated Energy:** Total energy measured in mWh.
- 6. Status Indicator:** Shows the current state (e.g., STA:STOP, STA:CHG, STA:DIS).
- 7. Work Pattern:** Indicates the selected mode (e.g., MODE:AUTO, MODE:CHG, MODE:DIS).
- 8. Stop Discharge Voltage:** The set voltage at which discharge will cease.
- 9. Cycles:** Number of charge/discharge cycles completed in Auto mode.
- 10. Battery Internal Resistance:** Measured internal resistance in mR.
- 11. Cumulative Time:** Total duration of the current test cycle.

4. SETUP

4.1 Powering the Device

The tester can be powered in two ways:

- **Via Type-C:** Connect a 5V Type-C power adapter and cable (included) to the Type-C 5V power supply interface (3).
- **Via Power Supply Battery:** Insert an 18650 battery into the Power supply battery compartment (1) on the left side of the device. This battery will power the tester's internal circuitry.

4.2 Battery Installation for Testing

To test an 18650 battery:

- Insert the flat-top 18650 battery into the Test ① charging and discharging 18650 battery compartment (8) on the right side of the device, ensuring correct polarity.
- Alternatively, for batteries that do not fit the 18650 holder, connect them to the Test ② Type-C external discharge interface (7) using appropriate cables.

18650 TERNARY LITHIUM BATTERY CHARGING AND DISCHARGING TESTER



Image: An overhead view of the battery tester, showing the two 18650 battery slots and the discharge resistors.

5. OPERATING INSTRUCTIONS

5.1 Power On/Off

- Press the **ON/OFF/Menu** button (4) to power on the device.
- Press and hold the **ON/OFF/Menu** button (4) to power off the device.

5.2 Selecting Test Mode

Press the **Adjust** button (5) to cycle through the available test modes:

- **AUTO Mode:** Performs a full charge, then discharges to measure capacity, and finally recharges the battery. This cycle can be adjusted from 1 to 9 loops.
- **CHARGE Mode:** Charges the battery to 4.2V.
- **DISCHARGE Mode:** Discharges the battery to the selected stop-discharge voltage.

5.3 Setting Stop-Discharge Voltage

In DISCHARGE or AUTO mode, you can select from 11 stop-discharge voltage levels ranging from 2.5V to 3.5V. Use the **Adjust** button (5) to change this setting before starting the test.

5.4 Starting and Stopping a Test

- Press the **Start/Stop** button (6) to begin the selected test mode.
- Press the **Start/Stop** button (6) again to pause or stop an ongoing test.
- When a test is stopped, a long press of the **Start/Stop** button (6) will reset the onscreen data.

5.5 Internal Resistance Measurement

The device utilizes the DC two-wire method to provide a reference internal resistance value. For the most accurate reading, measure the internal resistance when the battery is fully charged.

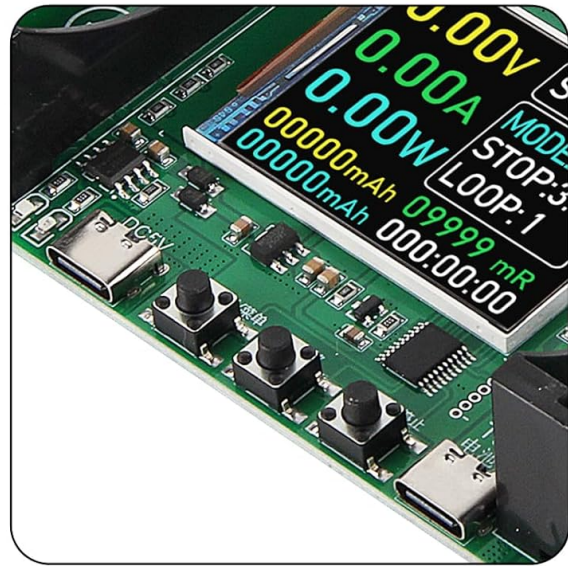


Image: A detailed view of the tester's screen, displaying voltage, current, power, capacity, energy, and internal resistance readings.

6. MAINTENANCE

- Keep the device clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Ensure proper ventilation during operation, especially during discharge cycles, as the device can generate heat. Do not obstruct the discharge resistors.
- Store the tester in a dry environment, away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

- **Device does not power on:** Verify that the Type-C power adapter is correctly connected and supplying 5V, or ensure the power supply battery in slot (1) is charged and properly inserted.
- **Test does not start:** Check that the battery is correctly inserted into the test compartment (8) with the correct polarity. Ensure a test mode (AUTO, CHARGE, DISCHARGE) has been selected.
- **Inaccurate internal resistance readings:** Reinstall the battery and ensure it is fully charged for the most accurate internal resistance measurement. Readings can be higher at low battery voltages.
- **Device feels hot:** This is normal during discharge cycles due to the resistive load. The device has built-in

overheating protection. Ensure good airflow around the device.

8. SPECIFICATIONS

Brand	Shutao
Model Number	13973ST-1
Input Power	DC 5V (via Type-C)
Battery Compatibility	Flat-top 18650 Lithium-ion batteries (Not compatible with LiFePO4)
Charging Voltage	Fixed 4.2V
Discharge Current	Fixed ~1A (non-adjustable, non-constant current)
Stop-Discharge Voltage	11 levels (2.5V to 3.5V)
Test Channels	1 (with an additional Type-C external discharge interface)
Display	1.77 inch
Included Components	Battery capacity tester module
Dimensions	108mm (4.25in) x 85mm (3.34in)

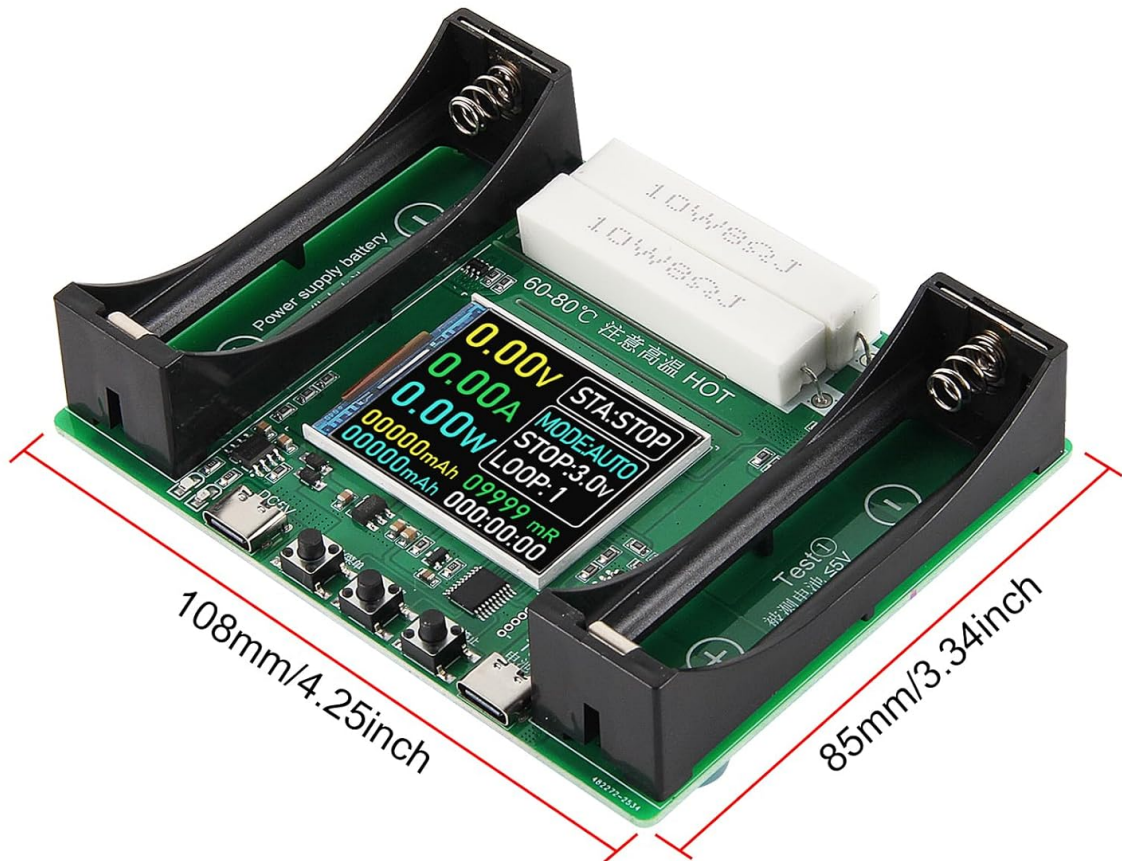


Image: Diagram showing the physical dimensions of the battery tester.

9. WARRANTY AND SUPPORT

Specific warranty information and direct support contact details are not provided in the product description. Please refer to your retailer or point of purchase for warranty claims and customer support inquiries.