Lithium Battery DC Internal Resistance (DCIR) Diagnostic Instrument - Product Manual

Version: V1.2
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1. Product Description

1.1. Product Introduction

Product Name: Lithium Battery DC Internal Resistance (DCIR) Tester
Model: DCIR-5000
Scope of Application: This instrument adopts the DC short-time high-current pulse discharge method (DCIR) and is specially designed for the rapid and accurate measurement of DC internal resistance and open circuit voltage (OCV) of lithium-ion battery cells, modules, and PACKs. It is widely used in scenarios such as lithium battery R&D, production quality inspection, sorting and grouping, after-sales maintenance, and cascade utilization.

1.2. Core Functions

- **Real-time Voltage Monitoring:** Collects cell voltage with 1mV accuracy, supporting up to 300 cells.
- **Dynamic/Static Voltage Difference Monitoring:** Observes dynamic voltage difference according to varying discharge currents.
- **DC Internal Resistance (DCIR) Calculation:** Calculates the relative value of the DC internal resistance of cells within the pack based on a built-in algorithm to finely observe consistency.

2. Technical Parameters

Parameter Item	Technical Specifications
Internal Resistance Measurement Range	0.1μΩ~30 (Manual 3 gears)
Internal Resistance Accuracy	±(0.5% reading + 10 digits)

Parameter Item	Technical Specifications
Internal Resistance Resolution	
Voltage Measurement Range	0-200V
Voltage Accuracy	±(0.01% reading + 3 digits)
Test Current	1mA~100A (Pulse, adjustable)
Measurement Speed	50Hz
Display Method	10.1-inch color serial port screen (1080×600)
Working Power Supply	DC 12V/3A
Working Environment	Temperature: 0~40°C; Humidity: ≤80%RH (non-condensing)
Dimensions	650mm (L) x 500mm (W) x 200mm (H)
Instrument Weight	Approx. 25kg

3. Structure and Interface Description

Front Panel

1. **Serial Port Screen:** Displays internal resistance, voltage, status, and menu.
2. **Functional Button Area:** Power Switch.
3. **Wiring Terminals:** C1-C48 measurement channels.
4. **B-:** (Connect to battery negative pole).
5. **C-:** (Connect to load negative pole).

Top Panel

1. Cooling fan.

4. Instructions for Use

4.1. Pre-measurement Preparation

1. **Environmental Check:** Place the instrument in a horizontal, dry area free of strong electromagnetic interference, with an ambient temperature of 10~35°C.
2. **Battery Preparation:**

- The battery under test must be rested for ≥1 hour (rested for ≥2 hours after discharging) to ensure stable voltage.
- Clean the battery poles to remove oxide layers and oil stains.

3. **Instrument Self-test:** Connect to power and turn on.

4.2. Four-wire Connection (Crucial)

Correct Connection (Kelvin):

- **Current wire (thick):** HI+ connects to battery positive, LO- connects to battery negative (outer side).
- **Voltage wire (thin):** S+ is closely attached to the inside of the positive current clip, S- is closely attached to the inside of the negative current clip.

4.3. Measurement Operation

1. Connect the test wires, ensuring firm contact without looseness.
2. Start measurement according to internal instrument instructions.

5. Precautions and Maintenance

5.1. Safety Warnings

- Testing during battery charging/discharging is strictly prohibited.
- Over-range testing (>200V) is strictly prohibited to prevent damage to the instrument.
- When testing high-current power batteries, ensure good contact between clamps and wires to avoid heat generation.
- There are no user-repairable parts inside the instrument; unauthorized disassembly is prohibited.

5.2. Daily Maintenance

- Keep the instrument clean and avoid dust and liquid intrusion.
- Calibrate regularly (monthly recommended) with a standard resistor to ensure accuracy.
- When not in use for a long period, please shut down and disconnect the power supply.
- Replace test wires/clamps promptly when worn or oxidized.

6. Standard Accessories

- Detector, DC power adapter 12V × 1 pair
- Alligator clip wires (several)
- Product Manual × 1 copy

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