FNIRSI HRM-10

FNIRSI HRM-10 Voltage Internal Resistance Battery Tester User Manual

Model: HRM-10 | Brand: FNIRSI

Introduction

The FNIRSI HRM-10 is a high-precision voltage and internal resistance battery tester designed for comprehensive battery diagnostics. It simultaneously measures internal resistance and voltage, allowing users to assess battery quality and performance. This versatile device is compatible with a wide range of battery types, including car batteries, household batteries, AAA, AA, lithium, and lead-acid batteries. Its advanced features, such as a TFT HD color display, sorting mode, and data export capabilities, make it an essential tool for professionals and enthusiasts alike.

Figure 1: FNIRSI HRM-10 Battery Tester and its accessories, including Kelvin clips, tester clamp, tester probe, and data cable.

Setup

1. Unboxing and Components

Upon unboxing, verify that all components are present:

- FNIRSI HRM-10 Tester Unit
- Kelvin Clip (for general battery testing)
- Tester Clamp (for larger batteries like car batteries)
- Tester Probe (for small cells like AA/AAA/18650)
- USB Type-C Data Cable (for charging and data transfer)

Figure 2: Key features of the HRM-10, highlighting its capabilities in resistance and voltage measurement, historical data, sorting, and data hold.

2. Charging the Device

The HRM-10 features a built-in 1000mAh lithium battery. To charge the device, connect the provided USB Type-C cable to the Type-C port on the side of the tester and plug the other end into a 5V/1A USB power source. The battery indicator on the display will show charging progress.

3. Connecting Test Leads

The HRM-10 uses a specialized interface for connecting test leads. Align the connector of your chosen test lead (Kelvin Clip, Tester Clamp, or Tester Probe) with the port on the top of the device and push it in until it locks securely. Ensure a firm connection for accurate measurements.

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Video 1: Demonstration of connecting the test probe and powering on the FNIRSI HRM-10, showing initial setup and basic operation.

4. Powering On and Initial Language Selection

To power on the device, short press the 'OK' button. The device will boot up quickly. If prompted, select your preferred language (English is available) using the navigation buttons and confirm with 'OK'.

Operating Instructions

1. TFT HD Color Display and Controls

The HRM-10 features a vibrant TFT HD color display that presents test results clearly. Navigation is intuitive, utilizing directional buttons (up, down, left, right) and an 'OK' button for selection and confirmation. The display shows real-time voltage and resistance readings, along with battery status and other relevant information.

Figure 3: The clear and vivid TFT HD Color Display of the HRM-10, designed for enhanced user experience.

2. Measuring Voltage and Internal Resistance

The device automatically tests internal resistance and voltage simultaneously. It employs a customized Kelvin four-wire connection method to minimize errors from wire and contact resistance, ensuring high accuracy. The voltage measurement range is up to 100V DC, and the resistance measurement range is up to 200Ω. Users can manually adjust voltage and resistance ranges if needed, though the auto-ranging feature is generally sufficient.

Figure 4: The Kelvin 4-wire connection method used by the HRM-10 for precise and accurate measurements, minimizing external resistance interference.

3. Applicable Battery Types

The HRM-10 is compatible with a wide variety of batteries, including:

- Car Batteries
- Household Batteries
- Button Batteries (e.g., CR2032)
- AA/AAA Batteries
- Rechargeable Batteries
- Lithium Batteries
- Lead-acid Batteries

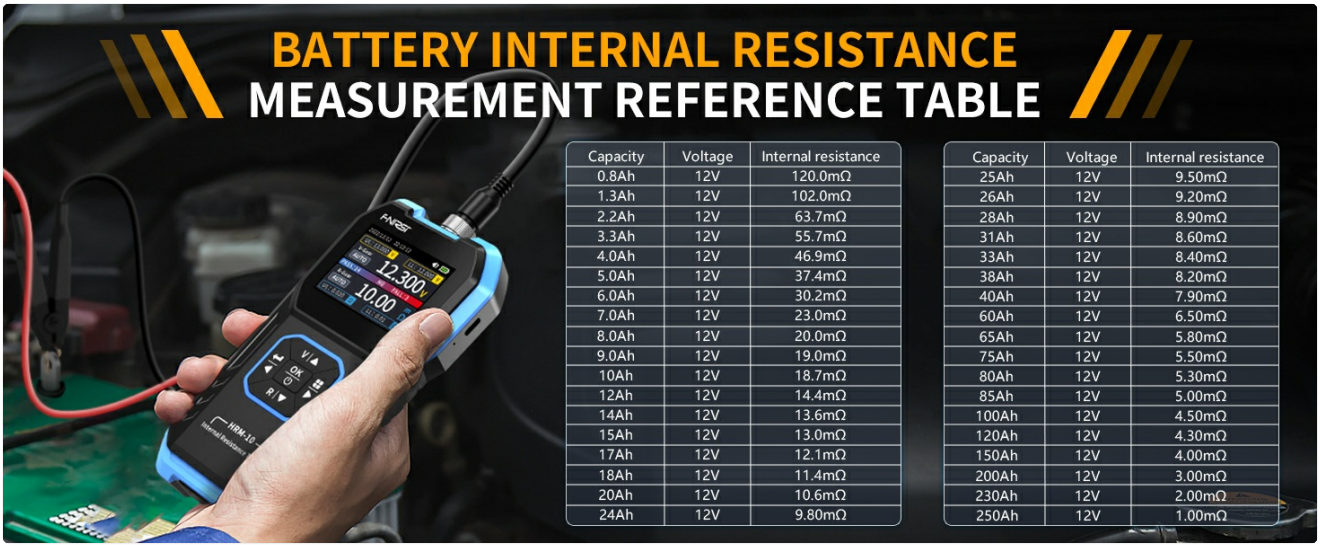

Figure 5: The HRM-10's broad compatibility with different battery chemistries and sizes.

4. Sorting and Comparison Function

The sorting mode allows you to preset up to 8 sets of voltage and resistance values to quickly identify good or faulty batteries in batches. The device will indicate pass or fail based on your defined thresholds, making it efficient for sorting multiple cells.

Figure 6: The sorting and comparison function helps in quickly identifying qualified and unqualified batteries based on preset voltage and resistance thresholds.

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Video 2: Overview of the Internal Resistance Battery Tester, demonstrating its sorting mode and quick pass/fail indications.

5. Historical Records and Data Export

The HRM-10 supports historical records, automatically saving test results. You can view up to 8 sets of voltage and resistance values directly on the device. For detailed analysis, data can be exported to a computer via the USB Type-C cable, appearing as a U disk with recorded data in a table format.

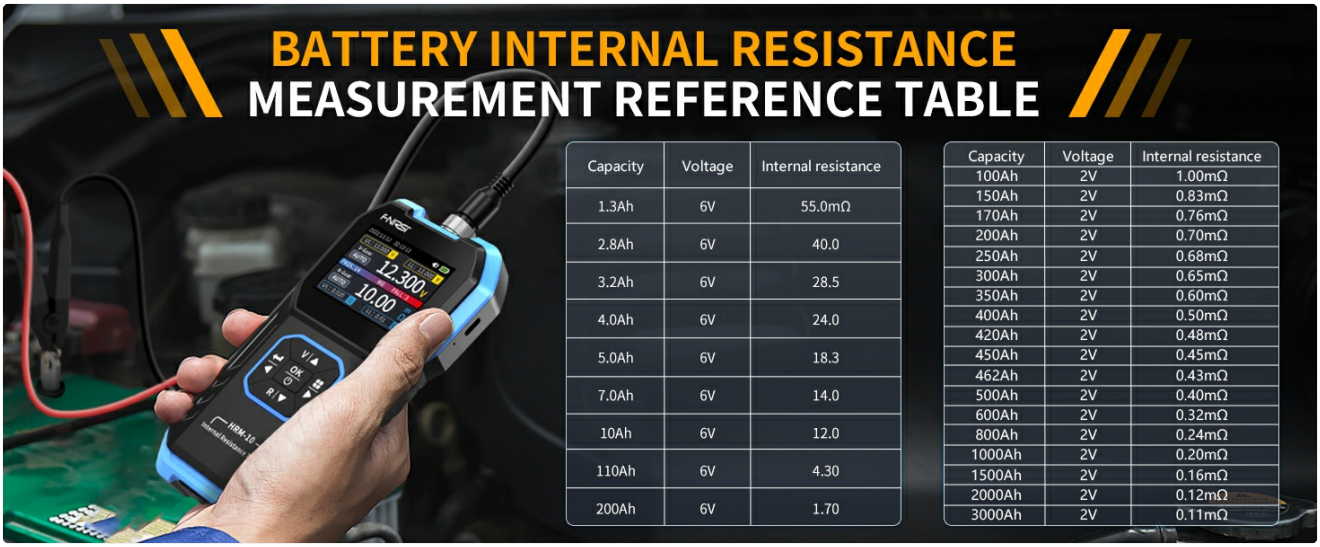

Figure 7: The HRM-10's ability to store and export full test records for easy analysis on a PC.

Maintenance

1. Cleaning and Storage

Keep the device clean by wiping it with a soft, dry cloth. Avoid using abrasive cleaners or solvents. Store the HRM-10 in a dry environment with temperatures between -20°C and +80°C (-4°F to 176°F) and relative humidity below 80%.

2. Battery Care

To prolong the life of the built-in lithium battery, avoid fully discharging it frequently. Recharge the device when the battery indicator is low. If storing for extended periods, charge the battery to approximately 50% and recharge every few months.

3. Calibration

The HRM-10 supports voltage and resistance calibration. Refer to the device's system settings for instructions on how to perform manual adjustments to ensure continued accuracy. Factory defaults can also be restored if needed.

Troubleshooting

If you encounter issues with your HRM-10, consider the following:

- **"OL" Reading:** This indicates an overload or open circuit. Check that the test leads are properly connected to the device and the battery terminals. Ensure the battery is within the measurable voltage and resistance ranges.
- **Inaccurate Readings:** Verify that the test leads are clean and making good contact. Ensure the device's battery is sufficiently charged. Consider performing a voltage and resistance calibration if readings remain inconsistent.
- **Device Not Powering On:** Check the battery charge level. Connect the device to a power source using the USB Type-C cable and attempt to power on again.
- **Data Export Issues:** Ensure the USB Type-C cable is securely connected to both the device and the computer. Try a different USB port or cable.

For persistent issues, contact customer support for further assistance.

Specifications

Parameter	Value
Voltage Measurement Range	0 - ±100V (DC)

Resistance Measurement Range	0 - 200Ω
Accuracy	±0.5%
Instrument Test Signal Frequency	AC 1kHz
Built-in Battery	1000mAh Lithium Battery
Charging Interface	Type-C (5V/1A)
Working Environment	-10°C to +45°C, Relative humidity <80%
Storage Environment	-20°C to +80°C, Relative humidity <80%
Dimensions	158.7 x 80.5 x 28.4 mm
Weight	225g

Figure 8: Detailed technical specifications of the HRM-10.

What's in the Box

- FNIRSI HRM-10 Tester Unit
- Kelvin Clip
- Tester Clamp
- Tester Probe
- USB Type-C Data Cable

Warranty and Support

FNIRSI products are designed for reliability and performance. For warranty information and technical support, please refer to the official FNIRSI website or contact their customer service directly. Keep your purchase receipt for warranty claims.