RePower 瑞能

BATTERY TESTING EQUIPMENT

PRODUCT GUIDES

BATTERY TESTING EQUIPMENT &

AUTO-LINE SOLUTION PROVIDER

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1.1 Product Overview

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Desc: Primarily used for module electrical performance testing and FPC continuity testing
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Test Object: Post-Soldering module

Post-soldering Electrical Performance and FPC Integrated Test

Cell Stacking → Insulation /Withstand Voltage Test → Soldering → Electrical Performance Test → FPC Continuity Test → Module Off-line

Model: EOL-MOD-ISOxxS
Desc: Insulation/withstand Voltage test of cells
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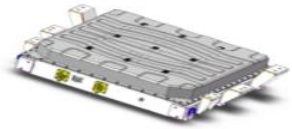

BMS

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Battery Cluster

Model: EOL-CES-xxxxV
Desc: Static testing & safety compliance testing for battery clusters and containerized battery
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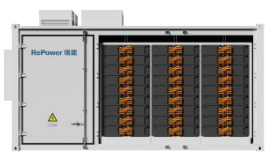


1.2 Insulation and Withstand Voltage Test Equipment

EOL-MOD-ISOxxS（for Pre-Soldering Module）

1) Product Features

(1) Independently designed and developed with leading technology.

(2) Modular design with quick-release and quick-change functionality for easy maintenance.

(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.

(4) High measurement accuracy and good stability.

(5) Fault diagnosis with audible/visual alarms.

(6) MES data integration capability.

2) Product Testing Functions※

✓ Cell Voltage Test	✓ Cell Polarity Test
✓ Insulation and Withstand Voltage Test Between Cells and Module Ground	
✓ Insulation and Withstand Voltage Test Between Cells	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Insulation Withstand Voltage Tester*	Tests for AC withstand voltage (ACW), DC withstand voltage (DCW), and insulation resistance (IR)
Multimeter*	Voltage measurement
Equipment Parameters	
Size	Customization
Number of Equipment Channels	1 channel
Operation Mode	Automatic testing
Internal Communication	LAN/RS232
Input Voltage	AC220V±10%, 50Hz
Input Power	≤6500W
dust protection and Heat Dissipation	Equipped with dust protection and heat dissipation devices
Cooling Method	Air cooling
Operating Environment Temperature	0℃～45℃
Storage Temperature of the Equipment	-10℃～70℃
Maximum Relative Humidity during Equipment Operation	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.3 EOL Universal Cabinet Introduction

1) Brief Introduction

Repower EOL equipment is a critical terminal testing system in the battery manufacturing industry, specifically designed for full-process performance validation and quality control of battery modules and packs. The dedicated cabinet adopts a highly integrated architecture, combining high-precision electrical performance testing, safety feature verification, and battery management system (BMS) communication protocol validation. It systematically executes core test items such as insulation resistance (IR), AC withstand voltage (ACW), and DC withstand voltage (DCW). This specialized structure is engineered to install and protect electronic, electrical, communication, or mechanical equipment.

2) Key Configurations

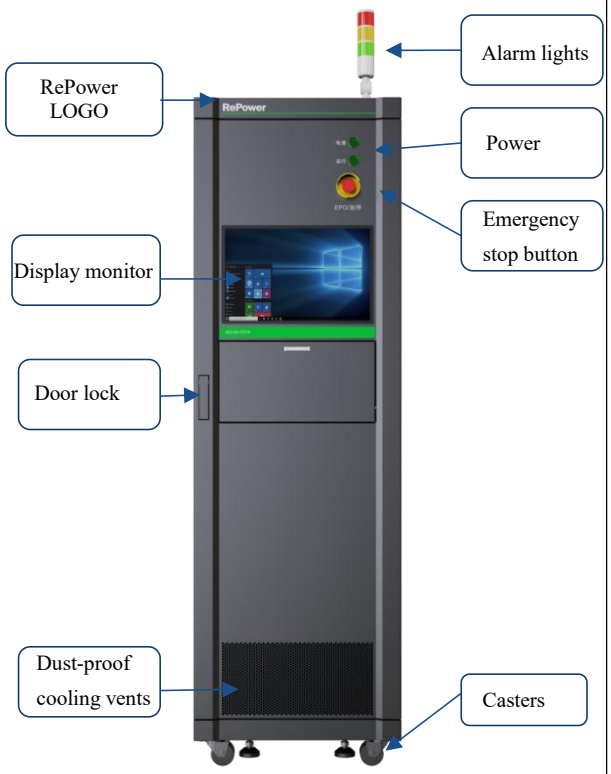
The cabinet adopts a modular design with high adaptability, scalability, shock resistance, dust protection, and electromagnetic interference (EMI) resistance. It can be equipped with:

- **Industrial-grade computer**
- **Insulation Withstand Voltage Tester**
- **AC impedance analyzer**
- **Multimeter**

The system supports real-time test data upload and includes safety-critical components such as an emergency stop button to ensure operational safety in high-voltage environments. Additional features include:

- **Three-color audible/visual alarm lights**
- **Power supply unit**
- **Display monitor**
- **Mouse and keyboard**
- **Door lock**
- **Dust-proof cooling vents**
- **Adjustable leveling feet and casters**

A schematic diagram of the configuration is provided below.



Front View of Cabinet

Detail View of Cabinet

3) Compatible Series

The EOL standard cabinet is compatible with the following series:

- **EOL-MOD-EPTxxV**
- **EOL-MOD-FPCxxS**
- **EOL-MOD-xxVxxS**
- **EOL-PACK-COMM**
- **EOL-PACK-EPTxxV**
- **EOL-CES-EPTxxxxV**

1.4 Electrical Performance Test Equipment

EOL-MOD-EPTxxV（for Post-Soldering Module）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular design with quick-release and quick-change functionality for easy maintenance.
(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.
(4) High measurement accuracy and good stability.
(5) Fault diagnosis with audible/visual alarms.
(6) MES data integration capability.

2) Product Testing Functions※

✓ Module Total Voltage Test	✓ ACIR Test
✓ Insulation and Withstand Voltage Test (HV Positive/HV Negative to Ground)	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Insulation Withstand Voltage Tester*	Tests for AC withstand voltage (ACW), DC withstand voltage (DCW), and insulation resistance (IR)
Impedance Analyzer*	Internal Resistance Test
Equipment Parameters	
Size	≤640*850*2000mm（W*D*H）
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.5 FPC Board Communication Test Equipment

EOL-MOD-FPCxxS（for Post-Soldering Module）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular design with quick-release and quick-change functionality for easy maintenance.
(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.
(4) High measurement accuracy and good stability.
(5) Fault diagnosis with audible/visual alarms.
(6) MES data integration capability.

2) Product Testing Functions※

✓ Individual Cell Voltage Test	✓ Individual Cell Temperature Test
✓ Ambient Temperature Calibration	✓ Post-Soldering Module Total Voltage Test
✓ Total Voltage Test	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Multimeter*	Voltage measurement
Equipment Parameters	
Size	≤650*850*2000mm（W*D*H)
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Noise Level	Noise is tested according to the method of IEC62040 - 3. The noise is less than 75dBA. The sound level meter used shall meet the requirements of Type I in IEC804, and the accuracy shall be better than ±0.5dB
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.6 Electrical Performance & FPC Test Equipment

EOL-MOD-xxVxxS（for Post-Soldering Module）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular design with quick-release and quick-change functionality for easy maintenance.
(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.
(4) High measurement accuracy and good stability.
(5) Fault diagnosis with audible/visual alarms.
(6) MES data integration capability.

2) Product Testing Functions※

✓ Module Total Voltage Test	✓ ACIR Test
✓ Individual Cell Voltage Test	✓ Individual Cell Temperature Test
✓ Insulation and Withstand Voltage Test (HV Positive/HV Negative to Ground)	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Insulation Withstand Voltage Tester*	Tests for AC withstand voltage (ACW), DC withstand voltage (DCW), and insulation resistance (IR)
Multimeter*	Voltage measurement
Equipment Parameters	
Size	≤650*850*2000mm （W*D*H)
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.7 Pack: Communication/Programming Test Equipment

EOL-PACK-COMM（for Pack）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular design with quick-release and quick-change functionality for easy maintenance.
(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.
(4) High measurement accuracy and good stability.
(5) Fault diagnosis with audible/visual alarms.
(6) MES data integration capability.

2) Product Testing Functions※

✓ Battery Pack CAN Communication Test	✓ Hardware/Software Version Verification
✓ BMS Firmware Programming Test	✓ Voltage Test

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
CAN *	Supports standard/extended frames, CAN FD, CAN 2.0A/B protocols; baud rate: 40 kbps–5 Mbps.
Equipment Parameters	
Size	Customization
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Dust Protection & Heat Dissipation	Equipped with dust protection and heat dissipation devices
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Noise Level	Noise is tested according to the method of IEC62040 - 3. The noise is less than 75dBA. The sound level meter used shall meet the requirements of Type I in IEC804, and the accuracy shall be better than ±0.5dB
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.8 Pack: Electrical Performance Test Equipment

EOL-PACK-EPTxxV（for Pack）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular intelligent management for high efficiency.
(3) Fault diagnosis with audible/visual alarms.
(4) MES data integration capability.
(5) DBC import & UDS unlock support.

2) Product Testing Functions※

✓ Total Voltage Test	✓ CAN Termination Resistance Test
✓ Earth continuity test	✓ CAN Communication Test
✓ Pack Insulation and Withstand Voltage Test	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Earth continuity tester*	Earth continuity test
Multimeter*	Voltage measurement
Insulation Withstand Voltage Tester*	Tests for AC withstand voltage (ACW), DC withstand voltage (DCW), and insulation resistance (IR)
Impedance Analyzer*	Internal resistance test
CAN*	Supports standard/extended frames; CANFD, CAN 2.0A/B
Equipment Parameters	
Size	≤650*850*2000mm （W*D*H)
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Cooling Method	Air cooling
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.9 Battery Cluster EOL Test Equipment

EOL-CES-EPTxxxxV（for Battery Cluster）

1) Product Features

(1) Independently designed and developed with leading technology.
(2) Modular design with quick-release and quick-change functionality for easy maintenance.
(3) Comprehensive testing functions, compatible with various cell series and parallel configurations.
(4) High measurement accuracy and good stability.
(5) Fault diagnosis with audible/visual alarms.
(6) MES data integration capability.

2) Product Testing Functions※

✓ Containerized Battery Insulation and Withstand Voltage Test、Earth continuity test
✓ Containerized Battery Voltage Test、Faults Test、Communication Test
✓ Battery Cluster Insulation and Withstand Voltage Test、Equipotential Test

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

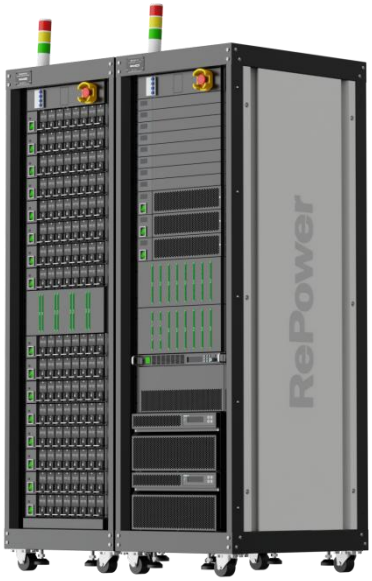
Core Instruments*	
Multimeter*	Voltage measurement
Equipment Parameters	
Size	≤650*850*2000mm （W*D*H)
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automatic testing,maximum concurrent testing one product
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Dust Protection & Heat Dissipation	Equipped with dust protection and heat dissipation devices
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Operating Ambient Temperature	0℃～45℃
Storage Temperature	-10℃～70℃
Maximum Operating Relative Humidity	30%～70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.10 BMS Test Equipment

BMS-xxxx

1) Product Features



(1) The equipment utilizes LAN communication with fast and stable data transfer rates.
(2) The equipment is designed with a modular architecture to support future expansions, upgrades, and simplified maintenance.
(3) The equipment supports secondary development for user-defined testing programs, enhancing device flexibility and utilization.
(4) The simulated battery employs an integrated source-load design for charging/discharging simulations, capable of detecting active/passive balancing functionalities.
(5) The equipment features multi-range, multi-stage, high-precision output, suitable for product calibration and accuracy comparison tests.
(6) It supports multiple communication tests and interactions, including I2C, SMBUS, UART, 1-Wire, RS232, RS485, and CAN.
(7) It complies with the national standard BMS test items and supports intelligent data management.

2) Product Testing Functions※

✓ Individual Cell Self-Discharge Test & Voltage Simulation	✓ Power-On, Power-Off, and Sleep Mode Power Consumption Measurement
✓ Total Voltage/Current Calibration & SOC (State of Charge) Simulation	✓ Overvoltage, Undervoltage, Overcurrent, and High/Low-Temperature Alarm Tests
✓ SOE (State of Energy) Curve Simulation	✓ Communication Fault Simulation Test
✓ Insulation Resistance Calibration Test	✓ PWM Signal Simulation Test
✓ Relay Switching & Sticking Simulation Test	✓ Temperature Simulation and Comparison
✓ Support for Test Function Expansion and Custom Non-Standard Testing	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Battery Simulator*	Voltage Range: 0.05V~6V Voltage Resolution: 0.01mV Current Ranges: 2mA、200mA、3A/5A/10A Current Resolution: 0.01uA Accuracy: ±0.01%F.S
High-Precision Constant Current Source*	Current Ranges: 0-300A/400A/500A/600A/1000A Current Accuracy: ±0.05%F.S
High-Voltage Programmable DC Power Supply*	Voltage Range: 0-1000V/2000V/3000V Voltage Accuracy: ±0.1%F.S

Programmable Resistive Load Unit*	Resistance Range: 10Ω~12MΩ Analog Temperature Range: -50℃~150℃ Resistance Accuracy: ±0.15%
High-Power Programmable Resistive Load Unit*	Resistance Range: 10Ω~100MΩ Resistance Resolution: 10Ω Resistance Accuracy: ±1%
Programmable DC Power Supply*	Voltage Range: 0.05V~36V Current Ranges: 15A Accuracy: ±0.05%F.S
High/Low-Side Driver Test Module*	Voltage Range: 0.05V~36V; Accuracy: ±0.05%F.S Current Ranges: 3A; Accuracy: ±0.05%F.S
Signal Simulation & Detection Units*	PWM Output Channels: 4 channels; Range: 0.1Hz–100kHz PWM Detection Channels: 4 channels; Range: 0.1Hz–100kHz Analog Input (AI) Detection Channels: 16 channels; Range: ±36V Analog Output (AO) Channels: 8 channels; Range: 0.1–36V Digital Input (DI) Detection Channels: 16 channels Digital Output (DO) Channels: 16 channels
Hall Effect Signal Simulation Module*	Voltage Range: 0.01~5V Current Ranges: 0~200mA Accuracy: ±0.01%F.S
Shunt Signal Simulation Module*	Voltage Range: 0.04~200mV Accuracy: ±0.01%F.S
Equipment Parameters	
Number of Device Channels	1 channel
Operation Mode	Manual wiring,Automated Testing
Input Voltage	AC 220V ± 10%, 50 Hz
Input Power	Varies according to actual conditions
Cooling Method	Air cooling
Operating Ambient Temperature	0°C to 45°C
Storage Temperature	-10°C to 70°C
Maximum Operating Relative Humidity	30% - 70% (RH, non - condensing)
Operating Environment Requirements	1.The environment should be free from strong vibrations, corrosive gases, metal powders or dust, and flammable and explosive gases. 2.The equipment should maintain an appropriate distance from the wall or other objects to ensure ventilation and heat dissipation.

*For reference only. Refer to the detailed technical specification for specific information.

1.11 EOL Test Equipment Series (CE-Certified)

RP-EOL-CE

1) Product Features

(1) The equipment adopts a modular design, allowing flexible configuration of testing modules to meet diverse product and testing requirements.

(2) Core components comply with CE certification requirements, and the testing system adheres to CE standards, ensuring full coverage of EU import regulations.

(3) Pre-installed test interfaces support secondary development of instruments for customized applications.

(4) Compact footprint with built-in wheels and adjustable leveling feet for easy mobility and placement.

(5) IP32 protection rating ensures reliable operation in complex or harsh environments.

2) Product Testing Functions※

Product Model	Main Functions
RP-EOL-CEPro	The professional version supports module testing and Pack testing
RP-EOL-CEM02	Electrical performance and insulation withstand voltage performance tests after module soldering
RP-EOL-CEM03	Communication test of the flexible printed circuit board after module soldering
RP-EOL-CEM04	Comprehensive test of electrical performance and flexible printed circuit board after module soldering
RP-EOL-CEP01	Electrical performance and insulation withstand voltage performance tests of Pack
RP-EOL-CEP02	Communication function test of Pack
RP-EOL-CEP03	PACK static tester (1000V)
RP-EOL-CEP04	PACK static tester (1500V)

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Multimeter*	Compliant with CE certification standards, capable of measuring parameters such as voltage, current, resistance, and capacitance.
Insulation Withstand Voltage Tester*	Compliant with CE certification standards, capable of measuring insulation resistance and leakage current.
AC Impedance Analyzer*	Compliant with CE certification standards, capable of measuring AC internal resistance.
Ground Bond Tester*	Compliant with CE certification standards, capable of measuring ground impedance.
CAN *	Compliant with CE certification standards, capable of implementing BMS (Battery Management System) communication functions.
Equipment Parameters	
Size	≤850*800*1980mm（W*D*H）
Number of Device Channels	1 channel
Operation Modes	Manual wiring,automated testing
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50/60Hz
Input Power	≤2kW
Protection Rating	IP32
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Noise Level	Noise is tested according to the method of IEC62040 - 3. The noise is less than 75dBA. The sound level meter used shall meet the requirements of Type I in IEC804, and the accuracy shall be better than ±0.5dB
Operating Ambient Temperature	0℃ ~ 45℃
Storage Temperature	-10℃ ~ 70℃
Maximum Operating Relative Humidity	30% - 70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

1.12 EOL Test Equipment Series (UL-Certified)

RP-EOL-UL

1) Product Features

(1) The equipment adopts a modular design, allowing flexible configuration of testing modules to meet diverse product and testing requirements.

(2) Core components comply with UL certification requirements, and the testing system adheres to UL standards,covering the equipment import requirements in the North American region.

(3) Pre-installed test interfaces support secondary development of instruments for customized applications.

(4) Compact footprint with built-in wheels and adjustable leveling feet for easy mobility and placement.

(5) IP32 protection rating ensures reliable operation in complex or harsh environments.

2) Product Testing Functions※

Product Model	Main Functions
RP-EOL-ULPro	The professional version supports module testing and Pack testing
RP-EOL-ULM02	Electrical performance and insulation withstand voltage performance tests after module soldering
RP-EOL-ULM03	Communication test of the flexible printed circuit board after module soldering
RP-EOL-ULM04	Comprehensive test of electrical performance and flexible printed circuit board after module soldering
RP-EOL-ULP01	Electrical performance and insulation withstand voltage performance tests of Pack
RP-EOL-ULP02	Communication function test of Pack
RP-EOL-ULP03	PACK static tester (1000V)
RP-EOL-ULP04	PACK static tester (1500V)

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

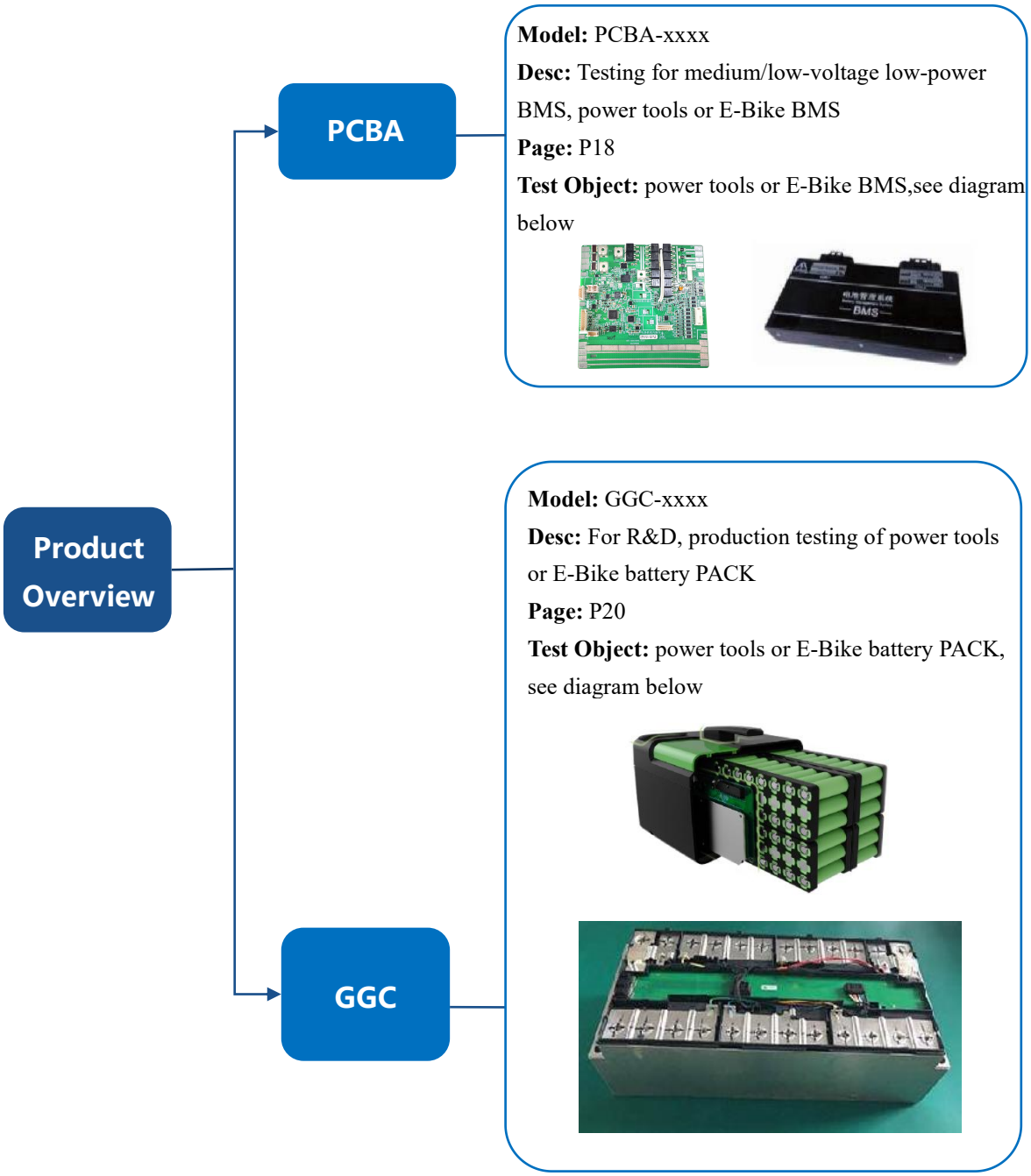
3) Product Equipment Parameters

Core Instruments*	
Multimeter*	Compliant with UL certification standards, capable of measuring parameters such as voltage, current, resistance, and capacitance.
Insulation Withstand Voltage Tester*	Compliant with UL certification standards, capable of measuring insulation resistance and leakage current.
AC Impedance Analyzer*	Compliant with UL certification standards, capable of measuring AC internal resistance.
Ground Bond Tester*	Compliant with UL certification standards, capable of measuring ground impedance.
CAN *	Compliant with UL certification standards, capable of implementing BMS communication functions.
Equipment Parameters	
Size	≤850*800*1980mm（W*D*H）
Number of Device Channels	1 channel
Operation Modes	Manual wiring, automated testing
Internal Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50/60Hz
Input Power	≤2kW
Protection Rating	IP32
Cooling Method	Air cooling
Safety Rating	Complies with the requirements of EN60950 and GB4943
Noise Level	Noise is tested according to the method of IEC62040 - 3. The noise is less than 75dBA. The sound level meter used shall meet the requirements of Type I in IEC804, and the accuracy shall be better than ±0.5dB
Operating Ambient Temperature	0℃ ~ 45℃
Storage Temperature	-10℃ ~ 70℃
Maximum Operating Relative Humidity	30% - 70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

2. Power Tools or E-Bike Battery Testing

2.1 Product Overview



2.2 Power Tools or E-Bike BMS Test Equipment

PCBA-xxxx

1) Product Features

(1) The equipment utilizes LAN communication with fast and stable data transfer rates.

(2) The equipment is designed with a modular architecture to support future expansions, upgrades, and simplified maintenance.

(3) The equipment supports secondary development for user-defined testing programs, enhancing device flexibility and utilization.

(4) The simulated battery employs an integrated source-load design for charging/discharging simulations, capable of detecting active/passive balancing functionalities.

(5) The equipment features multi-range, multi-stage, high-precision output, suitable for product calibration and accuracy comparison tests.

(6) The equipment supports multiple communication tests and interactions, including I2C, SMBUS, UART, 1-Wire, RS232, RS485, and CAN.

(7) It complies with the national standard BMS test items and supports intelligent data management.

2) Product Testing Functions※

✓ BMS Communication Test	✓ BMS Self-consumption Test
✓ BMS Protection Function Test	✓ Charge/Discharge Function Test
✓ Load Impedance Test (Internal Resistance)	✓ High-Current Short-Circuit Test
✓ Temperature Test	✓ Current Limiting Test
✓ Support for Test Function Expansion and Non-Standard Customization	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Battery Simulator*	Voltage Ranges: 0.05V~5V; Resolution: 0.01mV Current Ranges: 2mA、200mA、3A/5A/10A Resolution: 0.01uA Accuracy: ±0.01%F.S
High-Precision Constant Current Source*	Current Ranges: 0-300A/400A/500A/600A Current Accuracy: ±0.05%F.S
Programmable Resistive Load Unit*	Resistance Range: 10Ω~12MΩ Analog Temperature Range: -50℃~150℃ Resistance Accuracy: ±0.15%

Signal Detection Unit*	Voltage Measurement Range 1: 100mV, 4 channels Voltage Measurement Range 2: 6V, 4 channels Voltage Measurement Range 3: 50V, 4 channels Voltage Measurement Range 4: 150V, 4 channels Voltage Measurement Accuracy: ±0.05%F.S Resistance Measurement Range: 1Ω~1MΩ Relay Outputs:: 13 Normally Open channels Input Detection: 4 channels Power Supply Outputs: 3.3V, 5V, 12V (3 channels total)
Charge/Discharge System*	Voltage Output Measurement Range: 1~120V Current Output Measurement Range: 10~500mA Voltage Accuracy: ±0.05%FS Current Accuracy: ±0.1%FS
Equipment Parameters	
Number of Device Channels	1 channel
Operation Mode	Manual wiring,automated testing
Input Voltage	AC220V±10%, 50Hz
Input Power	Varies according to actual conditions
Cooling Method	Air cooling
Operating Ambient Temperature of the device	0℃ ~ 45℃
Storage Temperature of the device	-10℃ ~ 70℃
Maximum Operating Relative Humidity	30% - 70% (RH, non - condensing)
Operating Environment Requirements	1.The environment should be free from strong vibrations, corrosive gases, metal powders or dust, and flammable and explosive gases. 2.he equipment should maintain an appropriate distance from the wall or other objects to ensure ventilation and heat dissipation.

*For reference only. Refer to the detailed technical specification for specific information.

2.3 Power Tools or E-Bike Battery PACK Test Equipment

GGC-xxxx

1) Product Features

(1) The equipment utilizes LAN communication with fast and stable data transfer rates.

(2) The equipment supports secondary development for user-defined testing programs, enhancing device flexibility and utilization.

(3) The equipment features multi-range, multi-stage, high-precision output, suitable for product calibration and accuracy comparison tests.

(4) The equipment supports multiple communication tests and interactions, including I2C, SMBUS, UART, 1-Wire, RS232, RS485, and CAN.

(5) It complies with the national standard BMS test items and supports intelligent data management.

2) Product Testing Functions※

✓ Battery Pack Charge/Discharge Test	✓ Battery Pack Load Capacity Test
✓ DC/AC Internal Resistance Test	✓ NTC Resistance Test
✓ BMS Communication Test	✓ ID Resistance (IDR) Test
✓ Charge/Discharge Overcurrent OCP Delay Test	
✓ Support for Test Function Expansion and Non-Standard Customization	

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

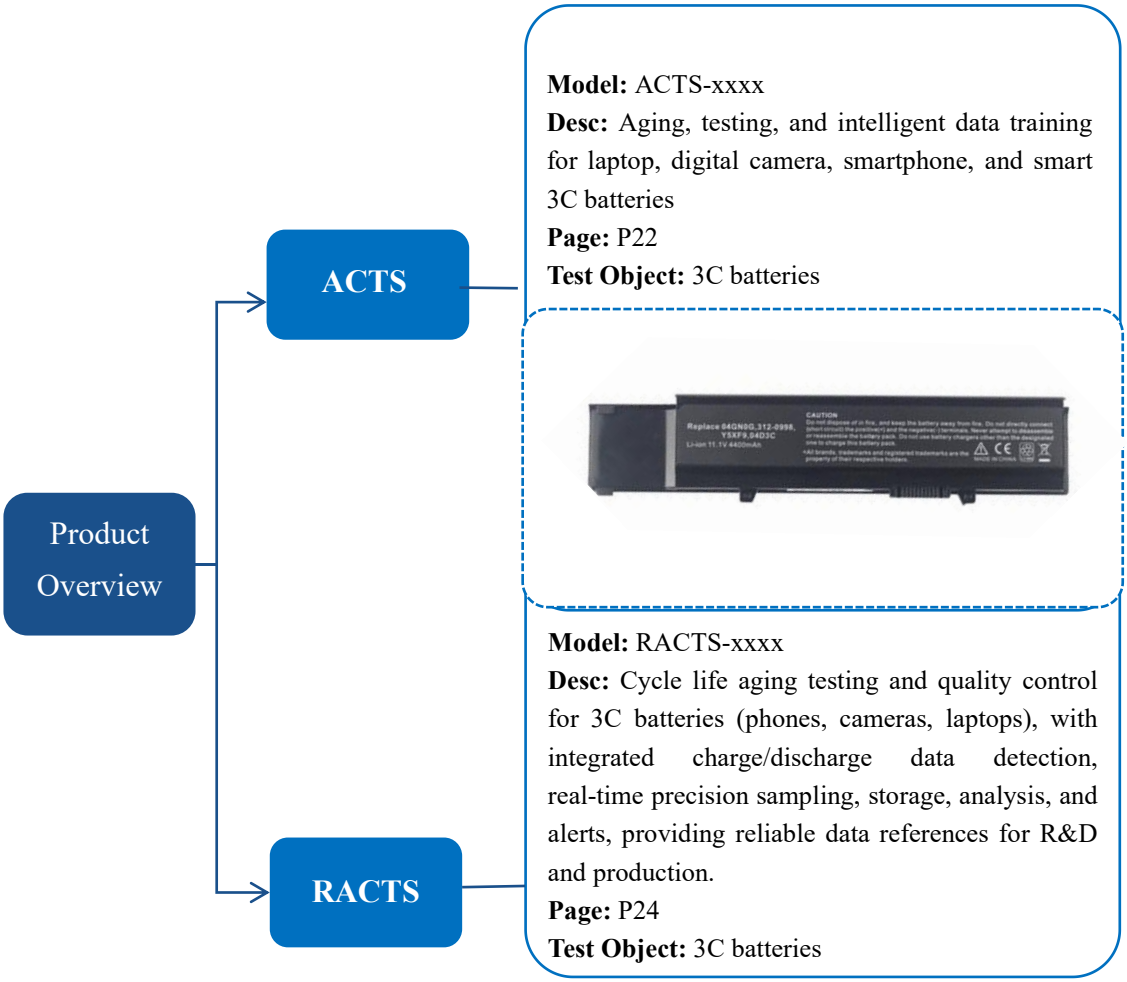
3) Product Equipment Parameters

Core Instruments*	
Voltage*	Ranges: 20V/60V/100V/150V/200V/300V/500V; Accuracy: ±0.05%FS
Current*	Ranges: 20A/60A/100A/200A/150A/300A/600A; Accuracy: ±0.05%FS
Equipment Parameters	
Number of device channel	1 channel
Internal Communication	LAN/RS232
Operation Mode	Manual wiring,automated testing
Input Voltage	AC380V±10%, 50Hz±5%
Input Power	Varies according to actual conditions
Cooling Method	Air cooling
Operating Ambient Temperature of the device	0℃ ~ 45℃
Storage Temperature of the device	-10℃ ~ 70℃
Maximum Operating Relative Humidity	30% - 70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

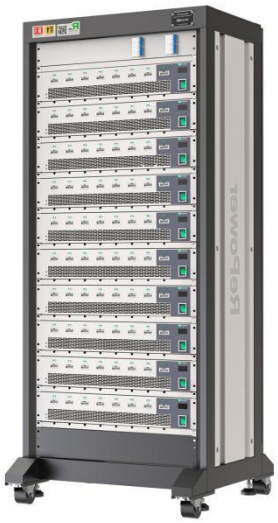
3. 3C（computer/communication/consumer）Battery Testing

3.1 Product Overview



3.2 3C Battery Charge/Discharge Test Equipment

ACTS-5V/20V



1) Product Features

(1) Current divided into 4 ranges with seamless auto-switching.
(2) The equipment supports multi-channel charge/discharge curve comparison.
(3) The equipment is compatible with GGS, I2C, SMBus, HDQ, and other protocols.
(4) The equipment supports adjustment of communication frequency (100 kHz/400 kHz) and platform voltage.
(5) The equipment supports multi-chip (multi-address) communication.
(6) The same equipment can support multiple IC types simultaneously.

2) Product Testing Functions※

✓ Cycle Life Test	✓ Overcharge/Overdischarge Test
✓ Charge/Discharge Test	✓ Dynamic/Static SOC Test

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

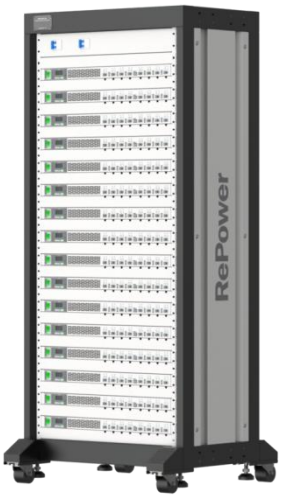
ACTS-5V **Core Instruments***		
Voltage Range*		5V
Voltage/Current Accuracy*		±0.02% F.S
5V/100mA*	Current Ranges/Accuracy	uA Range: ±10uA~1mA ±0.05% F.S mA Range: ±10mA~100mA ±0.02% F.S
5V/1A*	Current Ranges/Accuracy	20uA-10mA | 10mA-0.1A | 0.1A-0.5A | 0.5A-1A: ±0.05% F.S
5V/6A*	Current Ranges/Accuracy	30uA-60mA: ±0.05% F.S 60mA-600mA | 600mA-3A | 3A-6A: ±0.02% F.S
5V/15A*	Current Ranges/Accuracy	10uA-10mA: ±0.02% F.S 10mA-100mA | 100mA-1A | 1A-15A: ±0.02% F.S
Resolution*		0.1mV / 0.1mA
Communication*		LAN
Current Response Time*		1 ms（10%~90%F.S）
ACTS-5V **Equipment Parameters**		
Number of Device Channels		1channel
Operation Mode		Manual wiring,automated testing, maximum concurrent testing one product
Product Communication		CAN/CANFD
Input Voltage		AC220V±10%, 50Hz
Input Power		≤3500W

Dust Protection & Heat Dissipation		Equipped with dust protection and heat dissipation devices
Cooling Method		Air cooling
Safety Rating		Complies with the requirements of EN60950 and GB4943
Operating Ambient Temperature		0℃ ~ 45℃
Storage Temperature		-10℃ ~ 70℃
Maximum Operating Relative Humidity		30% ~ 70% (RH, non - condensing)
ACTS-20V **Core Instruments***		
Voltage Range*		20V
Voltage/Current Accuracy*		±0.02% F.S
20V10A*	Current Ranges/Accuracy	mA Range: ±10mA~1A ±0.05% F.S A Range: ±1A~10A ±0.02% F.S
20V20A*	Current Ranges/Accuracy	mA Range: ±10mA~1A ±0.05% F.S A Range: ±1A~20A ±0.02% F.S
Resolution*		0.1mV / 0.1mA
Communication*		LAN
Current Response Time*		10 ms（10%~90%F.S）
ACTS-20V **Equipment Parameters**		
Number of Device Channels		1channel
Operation Mode		Manual wiring,automated testing, maximum concurrent testing one product
Product Communication		RJ45
Input Voltage		AC220V±10%, 50Hz
Input Power		≤3500W
Dust Protection & Heat Dissipation		Equipped with dust protection and heat dissipation devices
Cooling Method		Air cooling
Safety Rating		Complies with the requirements of EN60950 and GB4943
Operating Ambient Temperature		0℃ ~ 45℃
Storage Temperature		-10℃ ~ 70℃
Maximum Operating Relative Humidity		30% ~ 70% (RH, non - condensing)

*For reference only. Refer to the detailed technical specification for specific information.

3.3 3C Battery Charge/Discharge Test Equipment (Grid-Feedback Type)

RACTS-xxxx



1) Product Features

(1) Current divided into 4 ranges with seamless auto-switching; compact design (smaller than ACTS series).
(2) The equipment supports multi-channel charge/discharge curve comparison and multi-chip (multi-address) communication.
(3) The equipment is compatible with GGS, I2C, SMBus, HDQ.
(4) The equipment supports adjustment of communication frequency (100 kHz/400 kHz) and platform voltage.
(5) The same equipment can support multiple IC types simultaneously; reduced heat generation without additional thermal load.
(6) The equipment supports energy recycling with an efficiency of up to 90%, saving electricity.

2) Product Testing Functions※

✓ Aging Test	✓ Overcharge/Overdischarge Test
✓ Charge/Discharge Cycle Test	✓ Dynamic/Static SOC Test

※These are the primary testing functions of the product; detailed testing functions can be found in the Technical Specification Document.

3) Product Equipment Parameters

Core Instruments*	
Voltage Range*	2V~20V
Current Ranges*	10A: 10mA-1A / 1A-2A / 2A-5A / 5A-10A 20A: 10mA-1A / 1A-5A / 5A-10A / 10A-20A
Voltage/Current Accuracy*	±0.02% F.S
Resolution*	0.1mV / 0.1mA
Current Response Time/Current Switching Time*	5ms（10%~90%F.S）/ 10ms（-90%~90% F.S）
Data recording conditions*	Time: ≥10ms, Voltage: ±0.02% F.S, Current: ±0.02% F.S
Equipment Parameters	
Number of Device Channels	1channel
Operation Mode	Manual wiring,automated testing
Product Communication	LAN/RS232
Product Communication	CAN/CANFD
Input Voltage	AC220V±10%, 50Hz
Input Power	≤3500W
Cooling Method	Air cooling
Operating Ambient Temperature	0℃ ~ 45℃
Storage Temperature	-10℃ ~ 70℃

*For reference only. Refer to the detailed technical specification for specific information.

4. Software Testing System