

AUTEL®



MaxiEV CDT100

BATTERY DISCHARGE-CHARGE UNIT

USER MANUAL

CONTENT

1. OVERVIEW	1
1.1 Features	1
1.2 System Component Unit.....	2
1.3 Impact on the Environment and Energy.....	3
1.4 Device Safety	3
2. Safety Precautions	4
3. Main Technical Parameter.....	7
4. Installation.....	8
5. Device Description.....	8
5.1 Panel Description.....	8
5.2 Cables Description	9
5.3 24CH Terminal Definition	10
6. Connecting Diagram	12
6.1 DC Test Cable Connection	12
6.2 Cell Voltage Acquisition Connection	12
6.3 Temp Acquisition Wire Connection	14
6.4 AC Power Cord Connection	14
7. Operating Instruction.....	15
7.1 Settings.....	15
7.1.1 General Setting.....	15
7.1.2 24CH Sampling Box Data Acquisition.....	17
7.1.3 Data Rentention.....	18
7.1.4 Log Management	18
7.1.5 FMW & System Update.....	18
7.2 Discharge	20
7.2.1 Parameters	20
7.2.2 View Cell Data	22
7.2.3 Discharge Test	23
7.3 Charge.....	25
7.3.1 Parameters	25
7.3.2 View Cell Data	27
7.3.3 Charge Test	28
7.4 Data.....	30
8. Repair & Maintenance	31
9. Transportation & Storage	31
10. Environmental Statement.....	31
Appendix 1. Withstand Voltage Precautions	32
Appendix 2. FCC Warning	33
Appendix 3. ISED Statement.....	34

1. OVERVIEW

MaxiEV CDT100 Battery Discharge-Charge Unit is an all-in-one instrument for charging and discharging lithium batteries with a voltage range of 2-285V. It incorporates various testing and maintenance modes tailored to lithium batteries' charging and discharging characteristics. This unit enables discharge and charge tests for lithium batteries.

The large screen interface, user-friendly operation, and intuitive UI design make it easy for users to maintain and manage battery packs scientifically, thereby extending their service life.

It can be widely used in storage maintenance, aftermarket lithium battery modules/packs maintenance, and other scenarios.

1.1 Features

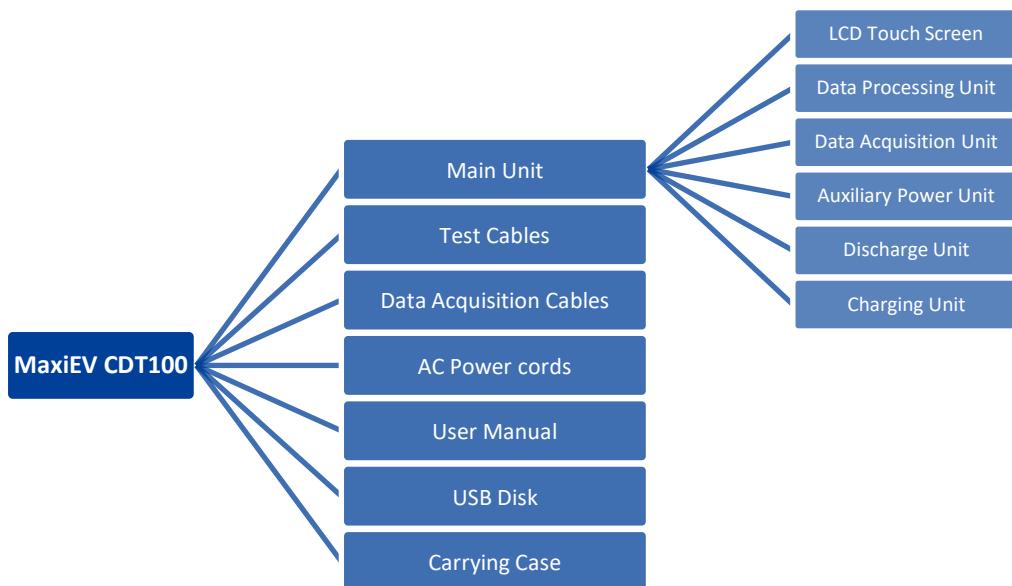
- **Multi-function into one unit:** collecting discharge, charging, and charge-discharge cycle (activation) function into one, just one device can complete all test and maintenance works of the battery maintenance technician;
- **Built-in various maintenance modes for lithium battery:** the optimal charge and discharge mode can be selected according to the type of battery to achieve the best test maintenance effect.
- **Wide voltage design:** it is suitable for testing all kinds of lithium battery modules/packs with voltage levels of 2-285V.
- **Multiple discharge modes:** supports constant current, constant power discharge mode, can simulate a variety of actual battery packs with load working conditions scenarios, and comprehensive test battery pack performance.
- **High-efficiency charging:** complete three-stage charging mode (constant current-constant voltage-floating charge) to improve charging efficiency;

- **Battery activation** (optional): supports adding the cycle function to set charge and discharge rules and cycle times freely, effectively agitating the battery activity and improving the battery pack capacity.
- **Cell voltage acquisition**: the device collects cell voltage in real-time by CAN communication or physical sampling mode, which can quickly and accurately measure capacity during the charging and discharging test and protect the battery from damage due to over-discharge and overcharging.
- **Multiple protections**: It supports adequate protection for various abnormal conditions during the test process. The system triggers the automatic termination of the test; the LCD prompts and beep warning to assist users in proper processing.
- **Highly intellectualization**: using an intelligent operating system, large screen interaction, straightforward operation, and humanized UI design makes maintenance work more intelligent, efficient, and accurate
- **Calibration correction**: The device's voltage and current values can be calibrated and corrected at any time to ensure measurement accuracy.

1.2 System Component Unit

MaxiEV CDT100 Battery Discharge-Charge Unit configured with a main unit, test cables, data acquisition cables, AC power cord, USB disk, user manual, and carrying case. Please check the actual configuration subject to the packing list.

The main unit is organized by LCD touch screen, data processing unit, data acquisition unit, auxiliary power unit, discharge unit, and charging unit.



1.3 Impact on the Environment and Energy

The built-in load of the device discharges the battery. The discharge test will convert the battery's chemical energy into heat energy. Please notice heat dissipation and ventilation of the test area.

1.4 Device Safety

The device is equipped with multi-protection of reverse connection, over-voltage, over-current, over-temperature, communication, etc.

2. Safety Precautions

2.1 Operator Requirements

Alarm

- 1) Operators are required to receive training related to the use of the equipment before operating.
- 2) Before operating, operators should read the user manual and the related regulations.

2.2 Operating Environment

Alarm

- 1) Operating temperature: -5~50°C
- 2) Relative humidity: 0~90% (40±2°C); rainy-day outdoor use is prohibited.
- 3) Non-corrosive, explosive, and destructive insulation gases and conductive dust of the test environment are required.
- 4) Ensure ventilation of the operating environment.

2.3 Connection Precaution

Alarm

- 1) Ensure the unit's AC input breaker and DC breaker stay off before connecting the cables.
- 2) Please strictly follow the instructions to connect the cables properly.

Danger

- 1) Warning signs need to be placed in the test work area to avoid the risk of tripping over the cable.
- 2) Place the equipment properly to avoid danger caused by equipment

movement during the test.



Danger

When the equipment is running, it is necessary to ensure that the air inlet and outlet are free of obstructions.

2.4 Operating Precautions

The operation of the device is by touching the screen input. Please follow the screen prompts. Close the DC breaker before executing the charge/discharge test.



Danger

- 1) The maximum output voltage of this device is 285Vdc. Please pay attention to personal safety.
- 2) The working power of this device is AC input. Please make sure the operating power is reliably grounded.



Danger

The device in the discharge test process will emit a lot of heat. The temperature of the air outlet is high. Please do not approach or touch to avoid high-temperature burns.



Danger

When the discharge test is finished, please do not shut down the device immediately if you do not continue with the charging test. Run continuously and wait for the built-in fan to dissipate the heat for at least 3 minutes before shutting down. Avoid scald caused by the operator accidentally touching the hot air outlet when transferring the device.

2.5 Common Misoperation

- 1) Operating tools are not insulated.
- 2) Operating the device without following the user manual.

2.6 Possible Damage Caused by Misoperation

- 1) The operating tool is not insulated. The positive and negative poles of the battery pack are too close to cause a short circuit accident.
- 2) If you are not operating correctly, it will fail to start the test.

2.7 Emergency Treatments on Abnormal Conditions

Disconnect the unit's operating power and test cables.

2.8 Precaution of Special Conditions

Disconnect the cable in time if the operator does not make insulation measures or causes a short circuit due to improper operation.

2.9 Other Safety Warnings

Strictly observe safe operating practices and correct operation methods.

3. Main Technical Parameter

Model:	MaxiEV CDT100
Applicable	suitable for battery modules/packs with voltage levels of 2~285V
Charge/Discharge Technical Index	
Voltage Range	2~285V (working voltage range: 2~250V; max range: 285V)
Discharge Current	0~150A
Charging Current	0~100A
Discharge Power	7.2kW max
Charging Power	4.4kW max (220Vac supply); 2.2kW max (110Vac supply)
Discharge Mode	constant current, constant power
Charge Control	constant current + constant voltage
Protection	<ul style="list-style-type: none"> • input overvoltage, LCD promote+beep warning • battery polarity reverse connection, LCD promote+beep warning • overcurrent, LCD promote+beep warning • overheat, LCD promote+beep warning • communication alarm, LCD promote+beep warning
Accuracy	test current $\leq \pm 1\% \text{FS} + 0.2\text{A}$; module voltage $\leq \pm 0.5\% \text{FS} + 0.3\text{V}$; cell voltage: $\leq \pm 0.1\% \text{FS} + 5\text{mV}$
Communication	RS485, USB
Internal Memory	8G
Working Condition	
Cooling Mode	forced-air cooling
Temperature	working: -5~50°C; storage: -20~70°C
Humidity	RH: 0~90% (40±2°C)
Rated Altitude	4000m
Noise	< 60dB
Working Power	
Voltage	single-phase three-wire 100~264Vac, frequency: 45~65Hz
Withstand Voltage	input-shell: 2200Vdc 1min / input-output: 2200Vdc 1min / output-shell: 700Vdc 1min <i>Note:</i> Refer to Appendix 1. for important points.
Mechanical Character	
Dimension	530x300x350mm
Weight	23.4kg

4. Installation

This device is mobile portable equipment and does not involve installation.

5. Device Description

5.1 Panel Description



No.	Part Name	Description
1	Carrying Handle	easy to move the device
2	Operating Screen	7-inch LCD touchscreen
3	EXTEND Port	extend port for communication port
4	USB Port	for data download and device system update
5	TCP/IP Port	reserved for functional expansion
6	Test Cable Socket (-)	connect with the charge-discharge cable (black)
7	Test Cable Socket (+)	connect with the charge-discharge cable (red)
8	Antenna	to enhance the received signal
9	Emergency Stop Button	for emergency stop the test
10	DC Breaker	DC side closing switch
11	AC Input Power Switch	device's power switch
12	AC Input Socket	100-264Vac single-phase three-wire input socket

5.2 Cables Description

There are 3 types of cables for MaxiEV CDT100 tester : DC Test Cables, Data Acquisition Cables, and AC Power Supply Cables.

A. DC Test Cables

Discharge-Charge cables for the test; connect with the device end and battery module/pack poles.



Note: Must follow the red-positive/black-negative principle.

B. Data Acquisition Cables

24CH Sampling Box



1) 24CH Box Comm Wire

For 24CH sampling box communication; connect with the 24CH sampling box and the extend (comm) port of the tester.



2) Cell Acquisition Harness – Clips Type

For cell voltage collecting; connect with cell ends follow clip marks and clip in order from B1-, B1+, B2+...B12+ with the cell poles.



3) Temp Acquisition Wire

For temperature data collecting; connect with the T1~T4 terminals of the 24CH sampling box and the battery.



C. AC Power Cord

1) 10A (max) Power Cord

Supports a maximum of 2.2kW for discharging power, and connects to the power socket.

There are two power cords with different plugs for meeting:

European Standard: 220Vac single phase three-wire, 2.2kW max.

American Standard: 110Vac single phase three-wire and the power will be halved.



Note: Please see the real product for detailed information.

2) 20A (max) Power Cord

Supports a maximum of 4.4kW for charging power when connected to a 220Vac distribution box.

When connected with the 110Vac power input, the power will be halved.



Note:

- Please refer to the provided image for reference. Actual product details may vary slightly.
- The average service life of the harness connector is about 200-300 times. Please check and replace it regularly.
- Please refer to the packing list with the shipment for the actual configuration.

5.3 24CH Terminal Definition



1 13 Pin + 12 Pin Terminal Block

No.	Definition	Note	No.	Definition	Note
00	cell 1# - negative	B1-	13	cell 13# - positive	B13+
01	cell 1# - positive	B1+	14	cell 14# - positive	B14+
02	cell 2# - positive	B2+	15	cell 15# - positive	B15+
03	cell 3# - positive	B3+	16	cell 16# - positive	B16+
04	cell 4# - positive	B4+	17	cell 17# - positive	B17+
05	cell 5# - positive	B5+	18	cell 18# - positive	B18+
06	cell 6# - positive	B6+	19	cell 19# - positive	B19+
07	cell 7# - positive	B7+	20	cell 20# - positive	B20+
08	cell 8# - positive	B8+	21	cell 21# - positive	B21+
09	cell 9# - positive	B9+	22	cell 22# - positive	B22+
10	cell 10# - positive	B10+	23	cell 23# - positive	B23+
11	cell 11# - positive	B11+	24	cell 24# - positive	B24+
12	cell 12# - positive	B12+			

Note:

- 1) A total of 24 cells' data can be collected. Users can cascade additional sampling boxes for single string cells over 24.
- 2) Most manufacturers' cell numbers start with the negative end.
- 3) A total of 25 positions and the 00# pin is the first cell position, which is connected to the negative of the starting cell (1# cell).

2 8 Pin Terminal Block

No.	Definition	Note	No.	Definition	Note
T1	temp point 1	1-, 1+	T3	temp point 3	3-, 3+
T2	temp point 2	2-, 2+	T4	temp point 4	4-, 4+

Note:

- 1) It is an optional function. Please check the configuration with the manufacturer before ordering.
- 2) To access the temperature monitoring or NTC analysis, you must set the thermal coefficient value.

6. Connecting Diagram

Please do not switch on the device before connecting!

6.1 DC Test Cable Connection

Following the red-positive and black-negative principle, connect the test cables to the device's test cable sockets and the battery's positive and negative terminals.

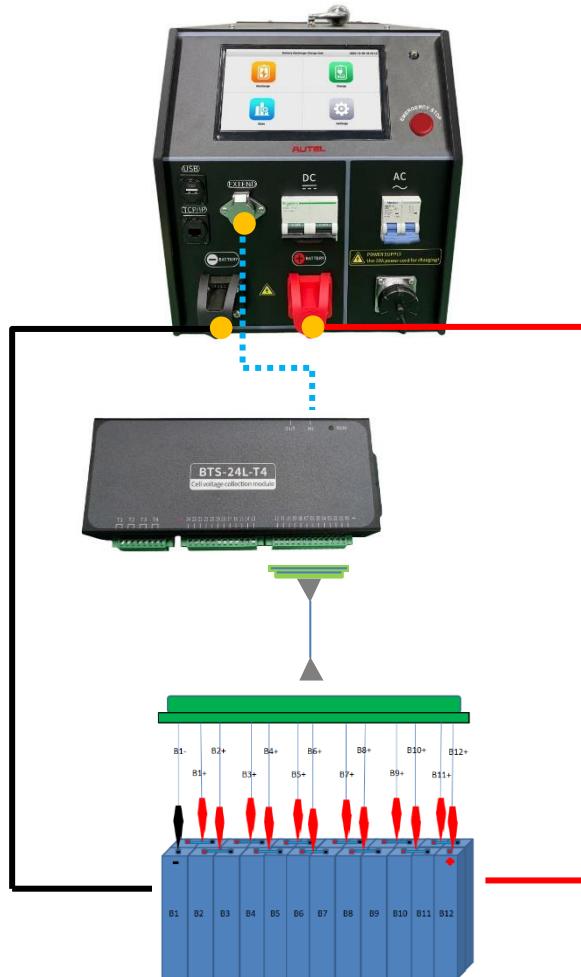
- 1) Connect test cable camlock connectors with the test cable sockets on the panel following the corresponding colors.
- 2) Connect the other ends of test cables with two poles of the battery pack, the screws for connecting must be securely fastened.

6.2 Cell Voltage Acquisition Connection

The tester will equip a 24CH Sampling Box to monitor the cell data. One box can monitor 24 cells, and users can cascade additional sampling boxes for single string cells over 24.

Additionally, we offer various cell sampling harnesses to suit different battery structures and support customized tooling options to meet specific requirements. The following explains a common type of connection: Clips-type harness.

The clips-type sampling harness is suitable for the unpacked battery test. Users can directly connect the cell poles with clips or other customized fixtures. The following will take clips connection of a 1P12S battery module with opened cover as an example.



Connection Cables Required:

- A. DC Test Cables ( / )
- B. Data Acquisition Cables
 - 1) 24CH Box Comm Wire ()
 - 2) Cell Acquisition Harness - Clips Type

Connecting Order:

- 1) Connect the 24CH Box Comm Wire with the device's communication port and input (IN) port of the 24CH Sampling Box.
- 2) Follow clip markers, and join in order from B1- (black), B1+, B2+...B12+ with the cell poles of the battery. (*Note: please confirm the cell sequence first, then clip cells in sequence accordingly.*)

- 3) Connect the cell acquisition harness with the 24CH Sampling Box.

6.3 Temp Acquisition Wire Connection

The 24CH Sampling Box is equipped with a temperature monitoring function. Connect one end to the T1~T4 terminal, and contact the four temperature sensors to different positions of the battery to obtain the temperature value.

6.4 AC Power Cord Connection

MaxiEV CDT100 configured different power cords for realizing charging with different power.

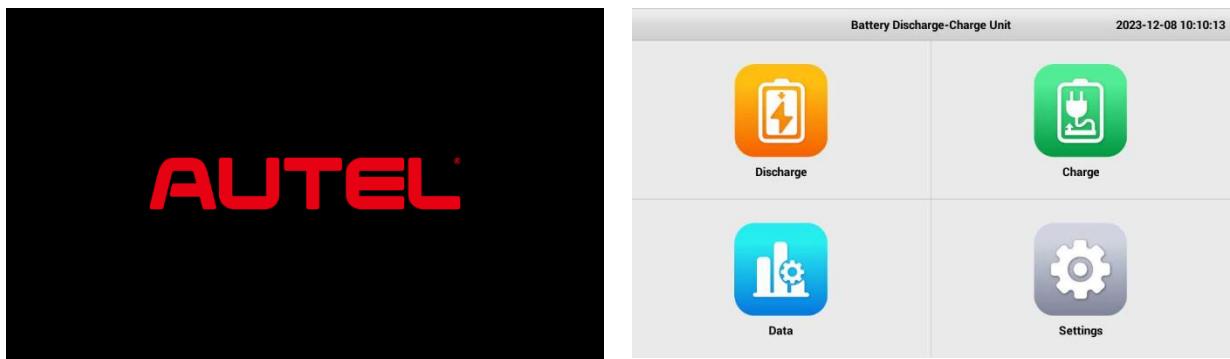
- a) Connect one end of the 10A power cord to the AC Power Input of the tester, and connect the other end to the 110Vac/220Vac power socket, the max power can reach 2.2kW. (*Please note that the power will be halved when connecting to 110Vac power input.*)
- b) Connect one end of the 20A power cord to the AC Power Input of the tester, and connect the other end to the 110Vac/220Vac distribution box, the max power can reach 4.4kW. (*Please note that the power will be halved when connecting to 110Vac power input.*)

Please ensure the max charging current is set appropriately based on the AC input load to prevent overcurrent.

Note: Please connect the cables strictly according to the instructions. For connecting with all plugs and sockets, please observe the positioning grooves and holes, confirm the plug's correct direction, and check that the connecting is fastened after joining.

7. Operating Instruction

After the device connection, turn on the AC Power Switch to start up. The device will show the **Welcome Page** and the operating system is automatically loaded to enter the **Main Menu Page**, including **Discharge**, **Charge**, **Data**, and **Settings**.



Welcome Page

Main Menu Page

7.1 Settings

Press the **Settings** on the **Main Menu Page** to set system parameters.

7.1.1 General Setting



Settings Page > General Setting

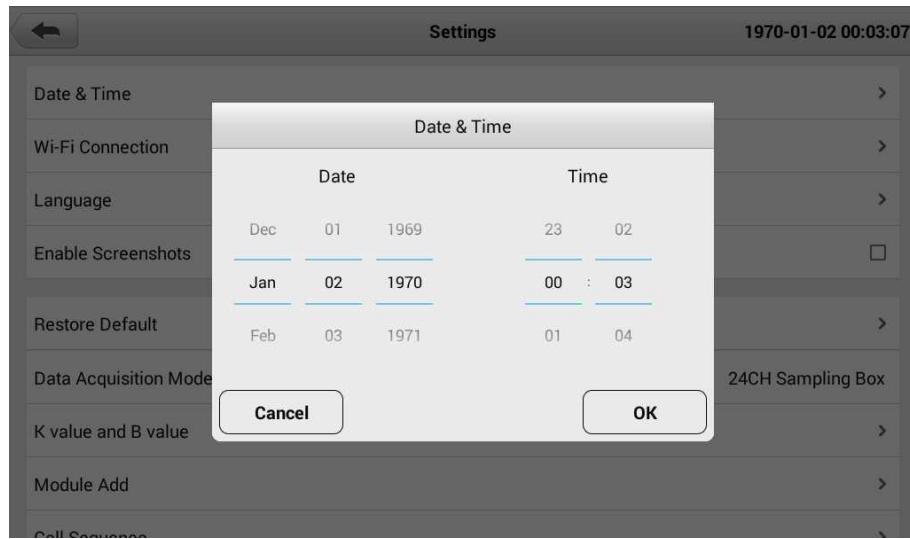
1) Date & Time

Press **Date & Time** to modify the system's date and time by scrolling numbers or pressing the item to input values directly. Press **OK** to save.

2) Wi-Fi Connection

It is mainly used to upgrade the device OS and firmware module program online. Press **Wi-Fi Connection**, choose the wireless network and input the

password to connect. Press  to back to the [Settings Page](#).



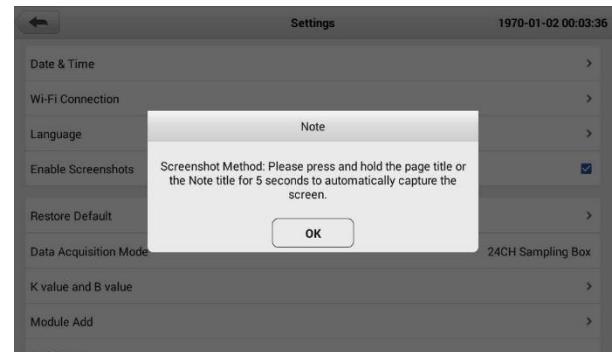
[Settings > Date & Time](#)

3) Language

The system supports three language switching, including English, Simplified Chinese, and Traditional Chinese. After confirming the language switch, the device will restart.



[Settings > Language](#)



[Settings > Enable Screenshots](#)

4) Enable Screenshots

The system supports the screenshots function. Press and hold the page title or the Note title for 5 seconds to capture the screen. The screenshots can be exported via the USB disk.

Enable the function by checking the “” symbol.

7.1.2 24CH Sampling Box Data Acquisition

The device supports collecting data by a 24-channel sampling box.

Data Acquisition Mode	24CH Sampling Box
K value and B value	>
Module Add	>
Cell Sequence	>
Acquisition Box	□
Sampling Interval	10s >

1) Data Acquisition Mode

Display the data collecting mode and no need to modify it.

2) K value and B value

Set the KB Value and read/input according to the actual NTC KB value of the battery.

3) Module Add

It is used to check and add a sampling box address. The device comes standard with one 24CH sampling box, which supports testing up to 24 cells.

The box can cascade if the quantity of test cells exceeds 24.

Select the 24CH box module to be acquired.		
<input checked="" type="checkbox"/> Module 100 <input type="checkbox"/> Module 101 <input type="checkbox"/> Module 102		
<input type="button" value="Cancel"/>	<input type="button" value="OK"/>	

4) Cell Sequence: Positive/Negative

Choose the sequence of cell numbers that start from Positive or Negative by actual (default: Negative).

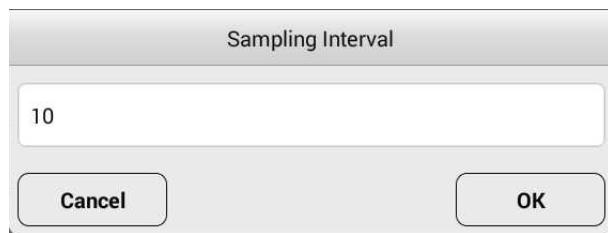
Positive
Negative

5) Acquisition Box: Enable/Disable

Enable/Disable the module sampling kit (accessory) during the test. Please check by actual.

6) Sampling Interval

To set the interval for saving data, input the value, and press **OK** to save (default: 10s).

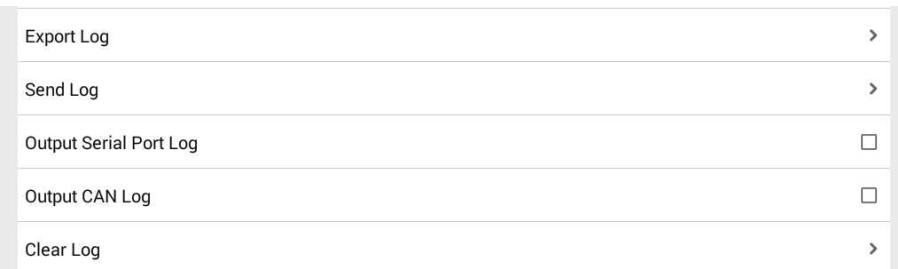


7.1.3 Data Retention

The system supports continuing to record data when completing the test. Users can set the continuous recording time.



7.1.4 Log Management



The options in this part are to provide the running logs to the manufacturer by local/online way for fault diagnosis. Please do not operate by yourself.

7.1.5 FMW & System Update

1) FMW Upgrade

The two items are used for local or online software upgrades of the device firmware modules.

- **FMW Module Update:** Insert a USB disk with the upgrade program into the USB Port of the tester. Name the program Unit.bin and put it in the root directory. Select the upgrade program to complete the upgrade.
- **FMW Online Update:** Users need to confirm an available upgrade file with the manufacturer and send them the Device ID. Connect a network in the Wi-Fi Connection function, and the system will automatically receive the update package.



2) System Upgrade

The two items are used for local or online software upgrades of the device operating system.

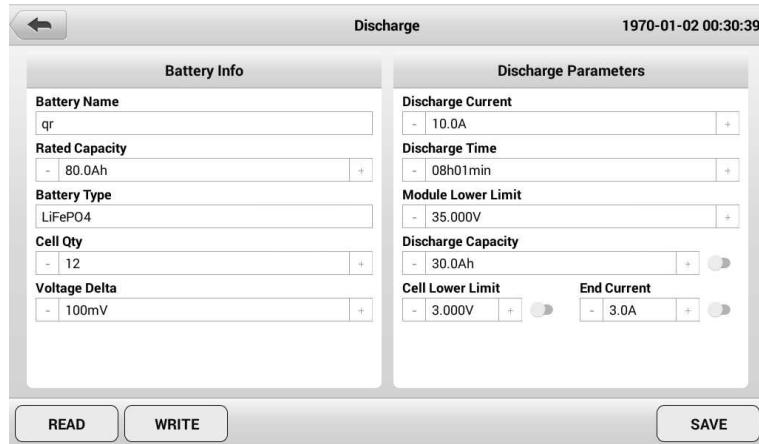
- **System Update:** Insert a USB disk with the upgrade program into the USB Port of the tester. Name the program update.apk, put it in the root directory, and select the upgrade program to complete the upgrade.
- **Sys Online Update:** Users need to confirm an available upgrade file with the manufacturer and send them the Device ID. Connect a network in the Wi-Fi Connection function, and the system will automatically check the current version and receive the upgrade package.

3) Device ID

It's for device identification management.

7.2 Discharge

The Discharge function is a single discharge test mode. Press the **Discharge** icon on the **Main Menu Page**, and the system will first enter the **Parameters Setting Page**.



Discharge > Parameters Setting Page

7.2.1 Parameters

The **Parameters Setting Page** will display the parameters of the last test. Users can create, read and save the test parameters on this page.

Parameters	Description	Stop Threshold
<u>Battery Name:</u>	Name the battery for the tested battery recognition.	-
<u>Rated Capacity:</u>	The nominal capacity of the battery.	-
<u>Battery Type:</u>	The type of tested battery, LiFePO4, Li(NiCoMn)O2, LiTiO, and LiMnO2 selectable.	-
<u>Cell Qty:</u>	Cells quantity in the battery.	-
<u>Voltage Delta:</u>	To set the highest and lowest voltage difference threshold between the cells during discharging.	✓
<u>Discharge Current:</u>	Set the discharge current value.	-
<u>Discharge Time:</u>	Set the discharge test time.	✓
<u>Module Lower Limit:</u>	The lower limit voltage of the battery.	✓
<u>Discharge Capacity:</u>	Set the discharge capacity of the battery.	✓
<u>Cell Lower Limit:</u>	Set the lower limit voltage of cells.	✓
<u>End Current:</u>	When the voltage reaches the Module Lower Limit & the current reduces lower than the End	✓

Current will trigger the stop.

Note:

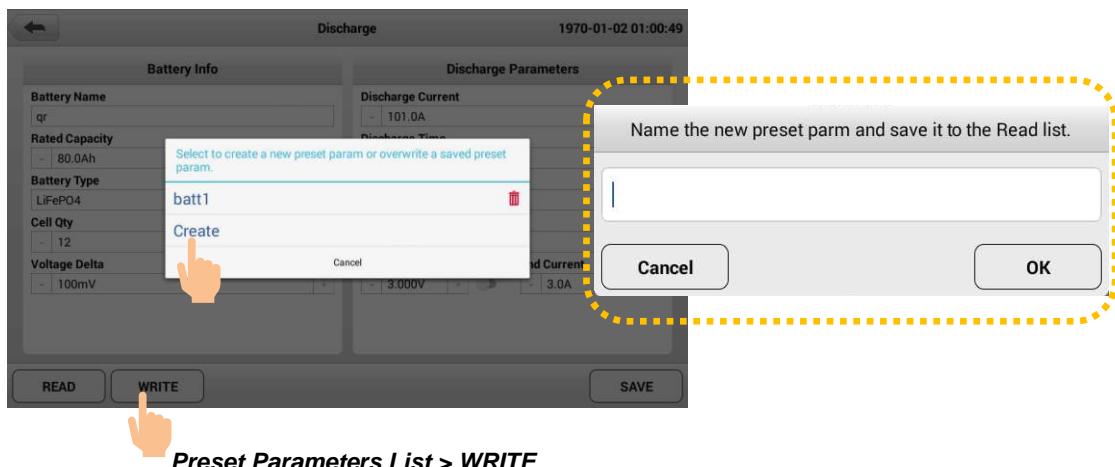
- Stop Threshold: The tester will automatically stop the test when one of the test conditions reaches the presetting value.
- For **Discharge Capacity**, **Cell Lower Limit**, and **End current**, please choose whether to use them as the stop threshold by turning the switch on or off.

1) Parameters Setting

Users must fill in all parameters to create a new parameter set for the first use and press **Save** to save the settings. Then the system will automatically enter the **Discharge Test Page**. It supports modifying the parameters during the test process, and the final test parameters will be displayed on the **Parameters Page** directly when entering the discharge test next time.

2) Write-in Preset Parameters

The system provides a parameter preset function. Users can write common test parameters into the Preset Parameter List and then select and read from the list before testing.



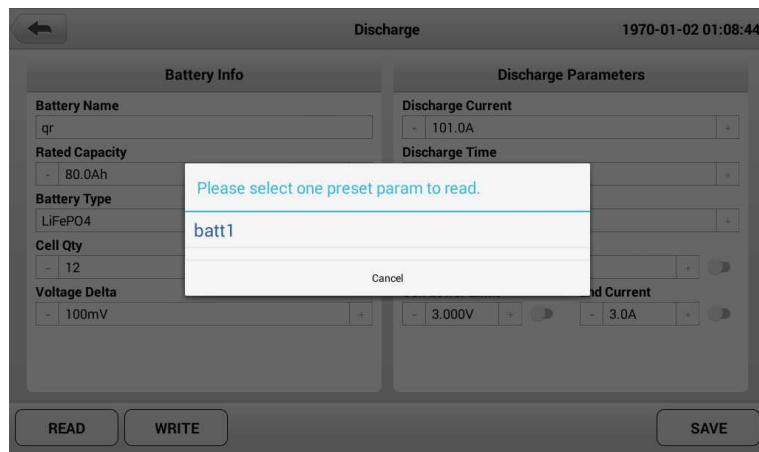
01. After filling in a set of parameters, press **WRITE**.
02. Select **Create** on the pop-up box to set the parameter name, and the parameters will be saved in the Preset Parameters List. (Note: For the first use, the system will prompt to enter the parameter name directly, and no

need to press **Create** to set.)

03. Users can cover the preset record by pressing the file name and delete the preset parameter by pressing .

3) Read Preset Parameters

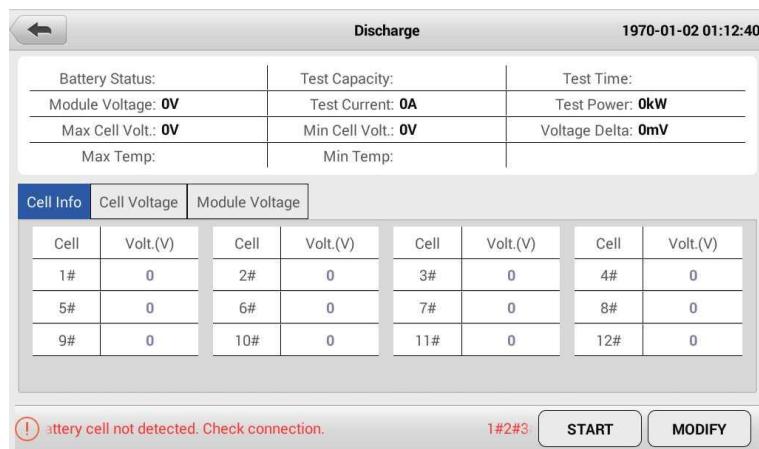
Press the **READ** button. Select the preset parameters that have been saved in the pop-up box to read.



Discharge > Read

7.2.2 View Cell Data

After creating or reading the test parameters, press **SAVE** to enter the **Discharge Test Page**. Before testing, you can press **MODIFY** to double-check or modify test parameters.



Discharge Test Page > Cell Info

The last step before starting discharge is to confirm the cable connection and

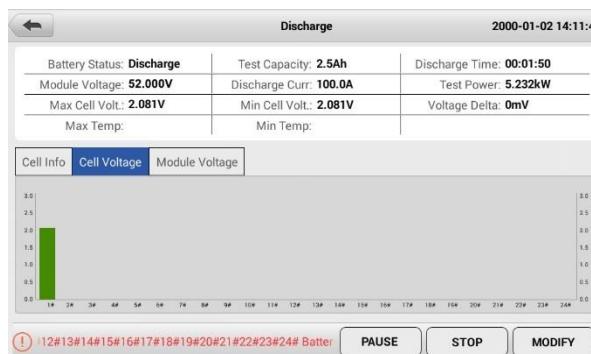
cell data reading status. Users can check by viewing **Cell Info** to ensure that the system collects the data of the Module Voltage, Max Cell Volt, Min Cell Volt, and voltage of each cell.

The test page offers multiple ways to view real-time data. Users can switch between **Cell Info**, **Cell Voltage**, and **Module Voltage** anytime during the test to view detailed data.

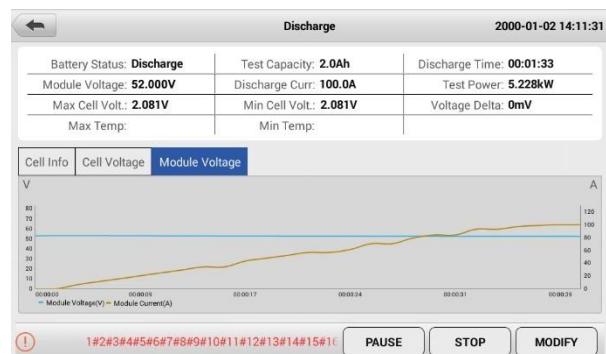
7.2.3 Discharge Test

1) Startup

Close the DC breaker, press **START**, and observe the discharge current rising and stable at the setting value. It means the discharge test is running normally.



Discharge > Cell Voltage



Discharge > Module Voltage

2) Modify Parameter

It supports modification of test parameters during the test (ensuring that the stop thresholds are not triggered). Press **MODIFY** to change the test parameters, and press **SAVE**. The system will execute the new parameters to continue the test.

3) Pause/ Stop

Users can press **PAUSE/CONTINUE** to control the test at any time.

In addition, there are three methods to stop the test during the process:

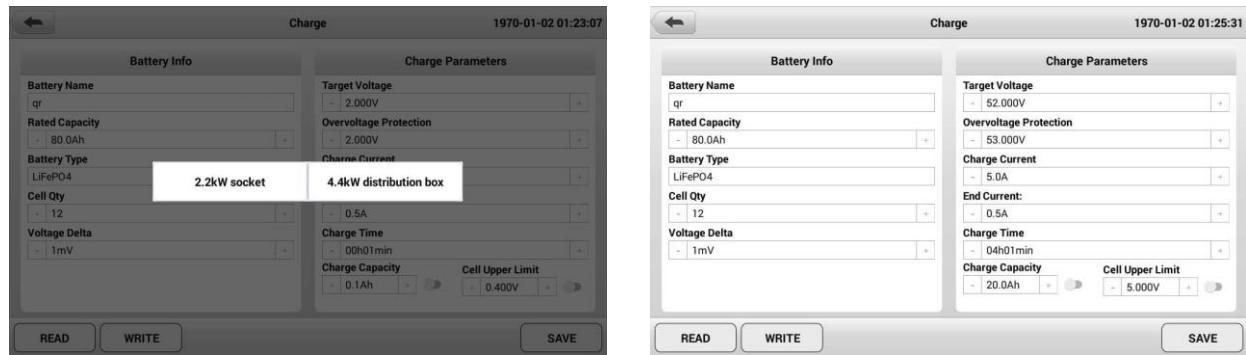
- Press the **STOP** icon on the screen;
- Press the emergency button on the device panel;
- Turn off the DC breaker directly.

Note: When the discharge test is complete, turn off the device, disconnect the power cord, and remove the test cable. (Note: disconnect the test cable from the battery end first.)

7.3 Charge

It is a single charge test mode. Press the **Charge** icon on the [Main Menu Page](#).

Users must select the input (charging power) before entering the [**Parameters Setting Page**](#).



Charge > Parameters Setting Page

7.3.1 Parameters

The [**Parameters Setting Page**](#) will display the parameters of the last test.

Users can create, read and save the test parameters on this page.

Parameter	Description	Stop Threshold
<u>Battery Name:</u>	Name the battery for the tested battery recognition.	-
<u>Rated Capacity:</u>	The nominal capacity of the battery.	-
<u>Battery Type:</u>	The type of tested battery, LiFePO4, Li(NiCoMn)O2, LiTiO, and LiMnO2 selectable.	-
<u>Cell Qty:</u>	Cells quantity in the battery.	-
<u>Voltage Delta:</u>	Set the highest and lowest voltage difference threshold between the cells during charging.	✓
<u>Target Voltage:</u>	The target voltage of charging. The device starts to reduce the current at constant voltage when it reaches this value.	-
<u>Overvoltage Protection:</u>	The upper limit voltage of the battery.	✓
<u>Charge Current:</u>	Set the max charging current according to the test requirements.	-
<u>End Current:</u>	When the voltage reaches the Target Voltage & the current reduces lower than the End Current will trigger the stop.	✓
<u>Charge Time:</u>	Set the test time.	✓

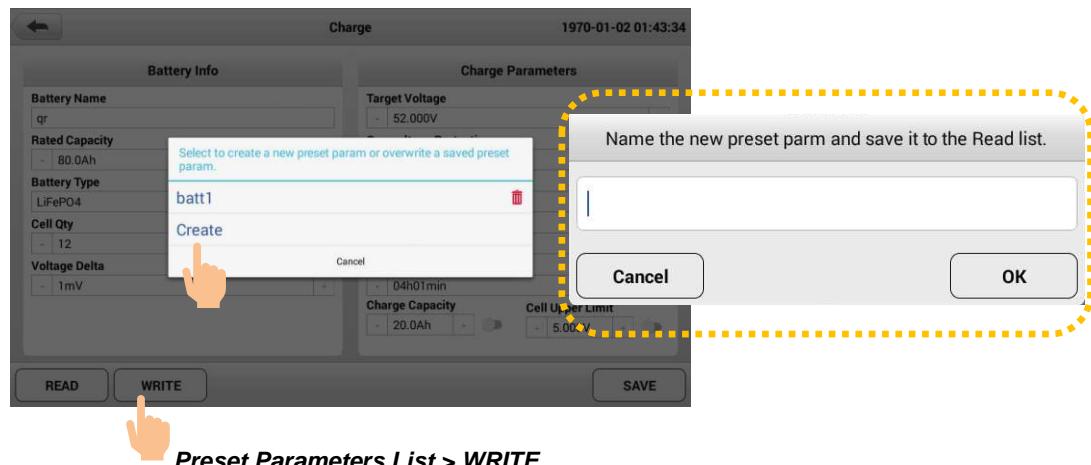
Charge Capacity:	Set the charging capacity of the battery.	✓
Cell Upper Limit:	Set the upper limit voltage of cells.	✓
Note:		
<ul style="list-style-type: none"> Stop Threshold: The tester will automatically stop the test when one of the test conditions reaches the presetting value. For Charge Capacity and Cell Upper Limit, please choose whether to use them as the stop threshold by turning the  switch on or off. 		

1) Parameters Setting

Users must fill in all parameters to create a new parameter set for the first use and press **Save** to save the settings. Then the system will automatically enter the **Charge Test Page**. It supports modifying the parameters during the test process, and the final test parameters will be displayed directly when entering the charge test next time.

2) Write-in Preset Parameters

The system provides a parameter preset function. Users can write common test parameters into the Preset Param List and then select and read from the list before testing.



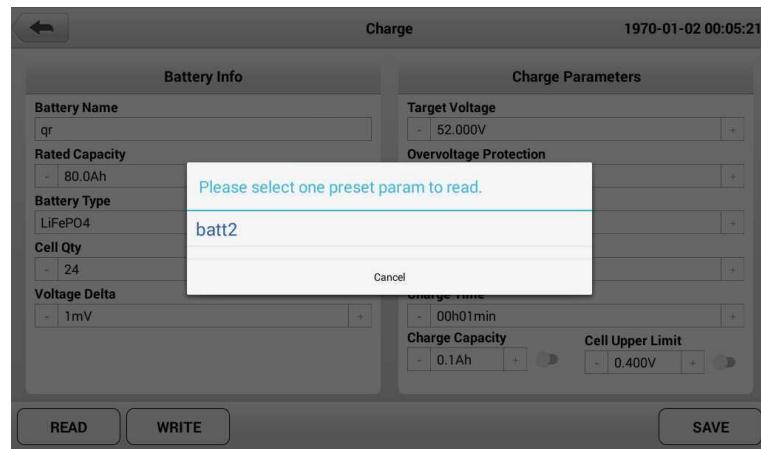
01. After filling in a set of parameters, press **WRITE**.
02. Select **Create** on the pop-up box to set the parameter name, and the parameters will be saved in the Preset Parameters List. (**Note:** For the first use, the system will prompt you to enter the parameter name directly, and

no need to press **Create to set.**)

03. Users can cover the preset record by pressing the file name and delete the preset parameter by pressing .

3) Read Preset Parameters

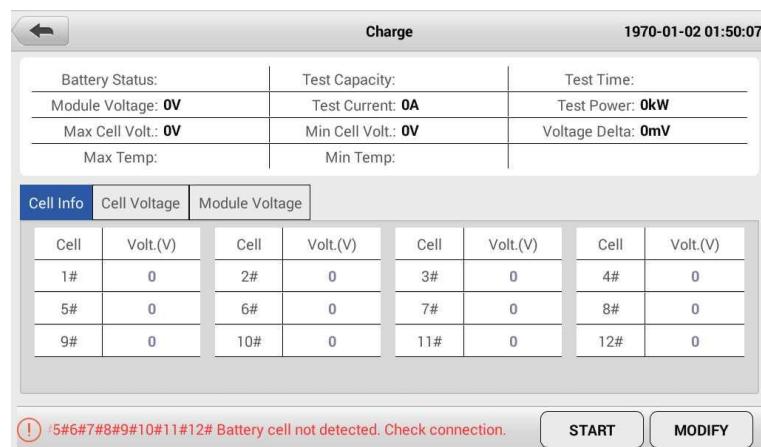
Press the **READ** button. Select the preset parameters that have been saved in the pop-up box to read.



Charge > Read

7.3.2 View Cell Data

After creating or reading the test parameters, press **SAVE** to enter the **Charge Test Page**. Before testing, you can press **MODIFY** to double-check or modify test parameters.



Charge Test Page > Test Info

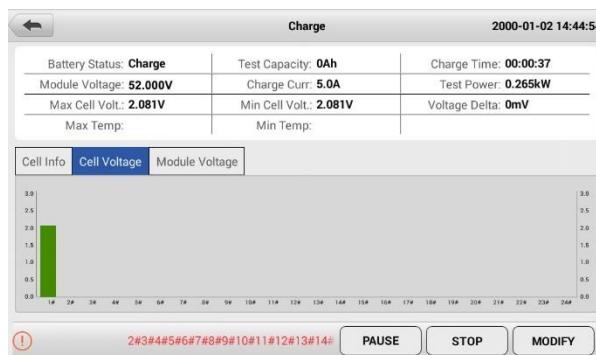
The last step before starting charge is to confirm the cable connection and cell data reading status. Users can check by viewing **Cell Info** to ensure that the system collects the data of the Module Voltage, Max Cell Volt, Min Cell Volt, and voltage of each cell.

The test page offers multiple ways to view real-time data. Users can switch between **Cell Info**, **Cell Voltage**, and **Module Voltage** anytime during the test to view detailed data.

7.3.3 Charge Test

1) Startup

Close the DC breaker, press **START**, and observe the charging current rising and stable at the setting value. It means the charging test is running normally.



Charge > Cell Voltage



Charge > Module Voltage

2) Modify Parameter

The device supports modification of test parameters during the test (ensuring that the stop thresholds are not triggered). Press **MODIFY** to change the test parameters, and press **SAVE**. The system will execute the new parameters to continue the test.

3) Pause/ Stop

Users can press **PAUSE/CONTINUE** to control the test at any time.

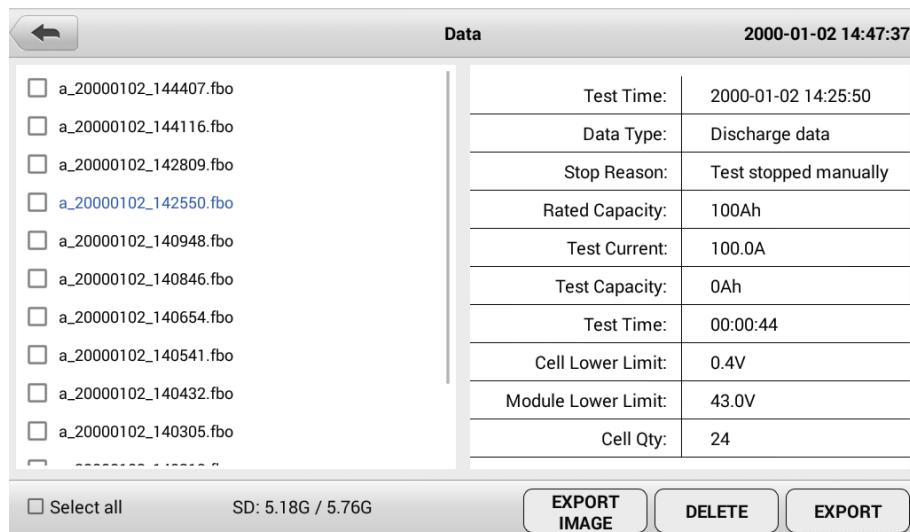
In addition, there are three methods to stop the test during the process:

- Press the **STOP** icon on the screen;
- Press the emergency button on the device panel;
- Turn off the DC breaker directly.

Note: When the charge test is complete, turn off the device, disconnect the power cord, and remove the test cable. (Note: disconnect the test cable from the battery end first.)

7.4 Data

The system supports automatic data saving during all testing processes. Press **Data** on The Main Menu Page to enter the Data Page, and users can check, delete, and download data on the page after testing. On the left side of the page is a list of all data. Press the data name and the corresponding data information will be displayed on the right side of the page.



The screenshot shows the 'Data' page with a list of saved data files on the left and their details on the right. The details include Test Time, Data Type, Stop Reason, Rated Capacity, Test Current, Test Capacity, Test Time, Cell Lower Limit, Module Lower Limit, and Cell Qty. At the bottom, there are buttons for 'EXPORT IMAGE', 'DELETE', and 'EXPORT'.

File Name	Test Time	Data Type	Stop Reason	Rated Capacity	Test Current	Test Capacity	Test Time	Cell Lower Limit	Module Lower Limit	Cell Qty
a_20000102_144407.fbo	2000-01-02 14:25:50									
a_20000102_144116.fbo		Discharge data								
a_20000102_142809.fbo										
a_20000102_142550.fbo										
a_20000102_140948.fbo										
a_20000102_140846.fbo										
a_20000102_140654.fbo										
a_20000102_140541.fbo										
a_20000102_140432.fbo										
a_20000102_140305.fbo										
...										

Data Page

There are three functions that users can operate on the page:

1) EXPORT IMAGE

It is used for exporting screenshots. Insert the USB disk into the USB port of the tester, press the **EXPORT IMAGE**, and select USB to export.

2) DELETE

Check or Select all saved data, and press **DELETE** to complete the deletion.

3) EXPORT

Check or Select all saved data, and press **EXPORT** to download the corresponding data to the USB disk.

8. Repair & Maintenance

- 1) The warranty period of the main tester is one year from the date of receipt, and the warranty does not cover artificial damage.
- 2) The manufacturer provides free repair during the defects liability period and technical consulting services for a lifetime. If you have any technical problems or advice, please get in touch with us.
- 3) When the voltage and current accuracy of the equipment are over the range of technical specifications, please contact the manufacturer for accuracy calibration.
- 4) When the equipment is stored for a long time, there may be dust and other dirt on the mesh cover of the heat outlet, which needs to be cleaned regularly. If you find that the fan does not work when you start the equipment after a prolonged storage period. Please stop the unit, remove the net cooling cover, dust the fan, and brush the lubricant.

9. Transportation & Storage

- 1) The tester is equipped with a particular carry case and transported in a carton, which is shock-resistant and reliable.
- 2) Storage conditions: placed in a dry equipment storage room, temperature: -20~70°C, humidity: <90%.

10. Environmental Statement

- 1) The tester uses a transport carton which is a recyclable material.
- 2) The main machine and other components are non-polluting sources.

Appendix 1. Withstand Voltage Precautions

Alarm

According to the Chinese National Standard GB/T 24344-2009 "Specifications of Withstand Voltage Test for Industrial Machinery and Electrical Equipment", prior to conducting the withstand voltage test, the external power supply circuit of the entire electrical equipment should be disconnected. Additionally, the connection between the tested circuit and the protective grounding circuit should be severed.

For this tester, the equipment needs to disconnect the external power supply circuit and remove the surge protection discharge tube on the power module inside the equipment. This involves removing the screw located at the indicated position in the following picture.



Appendix 2. FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Appendix 3. ISED Statement

English: This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES - 3 (B)/NMB - 3(B).

French: Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'exploitation est soumise aux deux conditions suivantes :

- (1) Cet appareil ne doit pas provoquer d'interférences.
- (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

l'appareil numérique du ciem conforme canadien peut - 3 (b) / nmb - 3 (b).

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 2.5 du cnr - 102 et conformité avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

This equipment should be installed and operated with minimum distance 20cm

between the radiator & your body.

Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et votre corps.