



RUIXU Tool Software Operation Instructions

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RuiXUTool Software Operation Instructions

1. Connection Setup

Connect a Windows computer to a free battery BMS communication port using either of the connection types below.

1.1 RS-485 Connection

Connect a RS485-USB communication cable to the master battery and computer.

FIGURE



Figure 1.1- 1 RS-485 Cable



Figure 1.1- 2 Cable Connection

Open the software package and install the USB to RS485 driver. Extract/Unpack the RuiXUTools archive package and double-click ruixutools.exe to run the program. Select the 485/232 connection option. Select port on the real-time monitoring page. The baud rate generally used is set at 9600 baud and is determined by the baud rate as selected by the master battery DIP switch position. (See the Battery Manual) Click open, and the computer automatically begins to search for the connected battery(s).

1.2 CAN Bus connection port

Using the appropriate CAN-BUS analyzer, connect the computer according to the corresponding CAN wire sequence in the table below.

Table 1.2- 1 RS-485 Cable Pinout

Pin #	BMS Definition	Line Color	Diagram
1	485_B-	Orange-White	
2	485_B+	Orange	
3	GND	Green-White	
4	CAN_H	Blue	
5	CAN_L	Blue-White	
6	GND	Green	
7	485_A+	Brown-White	
8	485_A-	Brown	

Note: that the CAN analyzer does not need to be connected to the 120Ω resistor. Run the RuiXUTools.exe and select the CAN connection mode, which is like that of RS485 described in section 1.1.

2. Using the program

After a successful connection is made, the battery information can be viewed on the various program tabs as described below:

- Real-time monitoring Tab,
- Multi monitoring Tab,
- History Tab,
- Parameter Setting Tab,
- User Parameters Tab, and
- Firmware burn Tab.

2.1 Real-time Monitoring Tab

The monitored content consists of a display of real-time acquisition of battery information as shown in the figure and further described below.

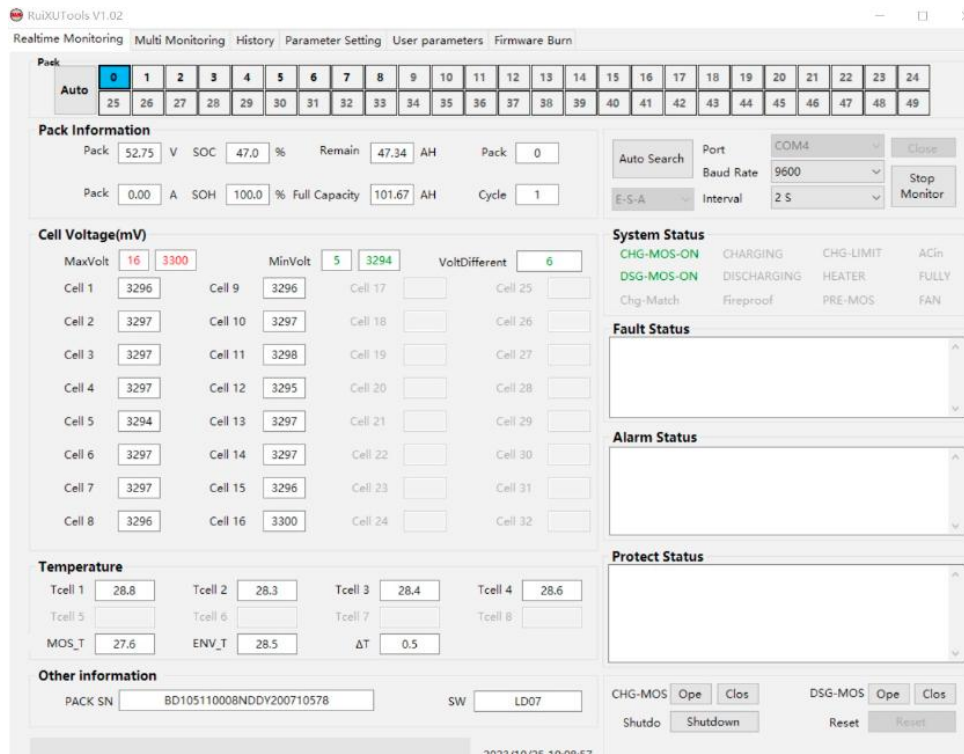


Figure 2.1- 1 Real-time Monitoring Tab

After establishing a successful connection as described in section 1, the information below is made available.

2.1.1 Pack Number Selection

The Pack Number Selection selects up to 50 batteries (1 at a time) and presents information that is displayed on this Tab. By depressing the Auto button, the program will sweep through each battery (up to 50) that are actively connected. Depressing one of buttons 0 through 49 will only display the information for the battery selected.

2.1.2 Pack Information

The Pack Information section of this Tab displays the following:

- **Pack Voltage (V)**
The current Pack voltage is stated in Volts (V).
- **State Of Charge (SOC)**
SOC is a percentage (%) and is a measure of how much energy is remaining in a battery as a percentage of its fully charged capacity.
- **Remaining Capacity in Amp-Hours (AH)**
AH is the amount of energy charge in a battery that enables 1 ampere of current to flow for one hour.
- **Pack Number being displayed as a number (#)**
The # represents the battery number being viewed.

- Pack Amperage in Amps (A)
The amount in amps being delivered by the selected battery.
- State Of Health (SOH) as a percentage (%)
SOH is a measure of the overall health and performance of the selected battery over time and reflects the battery's ability to hold a charge and deliver its rated capacity.
- Full Capacity Amp-Hours (AH)
AH is the capacity when fully charged.
- Number of Cycles for the current battery as a number (#)
provides the number of charge cycles to-date.

2.1.3 Cell Voltage (mV)

Each battery pack contains 32 cells. For each cell, the current voltage is displayed as read for the current pack.

- MaxVolt
Displays the maximum voltage read across the group of cells for the currently displayed pack.
- MinVolt
Displays the minimum voltage read across the group of cells for the currently displayed pack.
- VoltDifferent
Displays the voltage difference between maximum and minimum voltage read across the group of cells for the currently displayed pack.

2.1.4 Status Boxes

Status boxes convey the status of the various items described below.

- System Status
For each of the indicators item below, an indicator is highlighted when it applies to the currently displayed pack.
 - CHG-MOS-ON
Add description.
 - CHARGING
The current battery is charging.
 - CHG LIMIT
Add description.
 - AC-in
Add description.
 - DSG-MOS-ON
Add description.
 - DISCHARGING
The current battery is discharging.
 - HEATER
The heater is active for the currently displayed battery.
 - FULLY

Add description.

- Chg-Match

Add description.

- Fireproof

Add description.

- Pre-MOS

Add description.

- FAN

The fan is active for the currently displayed battery.

- Fault Status

Fault statuses are reported for the currently displayed battery.

- Alarm Status

Alarm statuses are reported for the currently displayed battery.

- Protect Status

Protection statuses are reported or the currently displayed battery.

2.1.5 Temperature

Temperatures are reported for each of the sensors below for the currently displayed battery.

- Tcell 1
- Tcell 2
- Tcell 3
- Tcell 4
- Tcell 5
- Tcell 6
- Tcell 7
- Tcell 8
- MOS_T
- ENV_T
- delta T

2.1.6 Other Information

Other information is display as described below.

- Pack SN

The serial number for the currently displayed battery is reported.

- SW

The SW version for the currently displayed battery is reported.

- CHG-MOS

Open or Closed

- DSG-MOS

Open or Closed

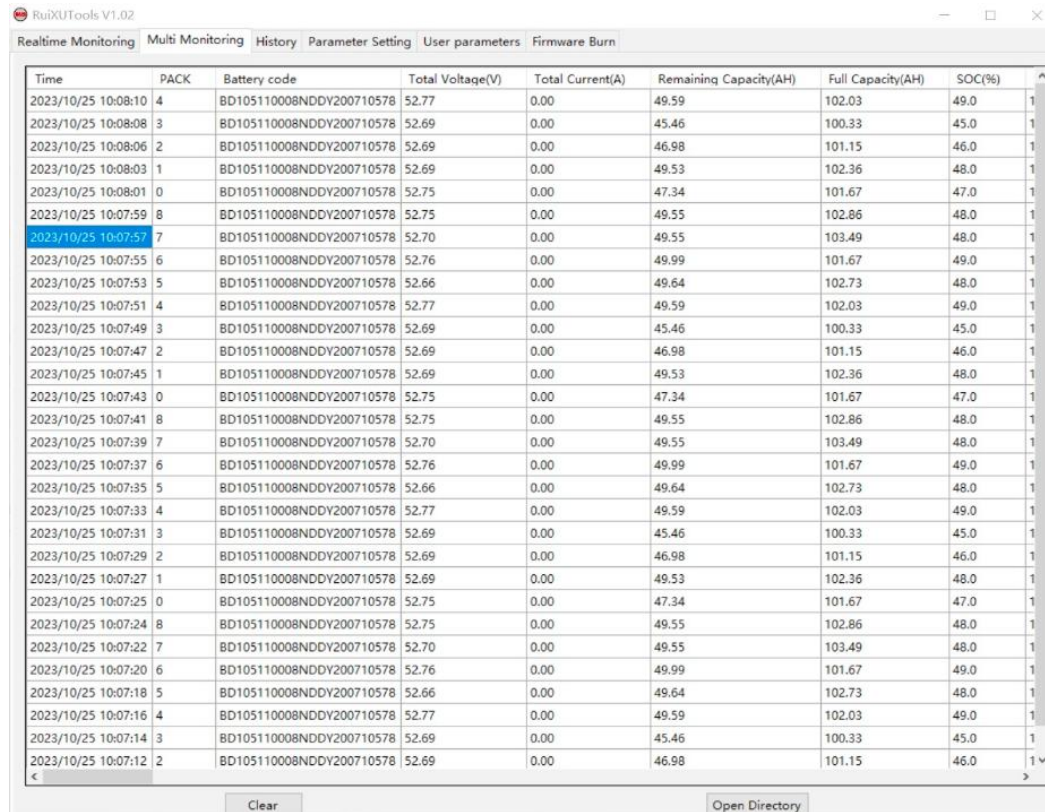
- Shutdown

Depress shutdown to shut-down the currently displayed battery.

- Reset
Depress reset to reset the currently displayed battery.

2.2 Multi monitoring Tab

This page displays real-time monitoring records. Click "Open Save directory" to open the xls file where the records are saved in the folder.



The screenshot shows the 'Multi Monitoring' tab in the RuiXUTools V1.02 application. The table displays the following data:

Time	PACK	Battery code	Total Voltage(V)	Total Current(A)	Remaining Capacity(AH)	Full Capacity(AH)	SOC(%)
2023/10/25 10:08:10	4	BD105110008NDDY200710578	52.77	0.00	49.59	102.03	49.0
2023/10/25 10:08:08	3	BD105110008NDDY200710578	52.69	0.00	45.46	100.33	45.0
2023/10/25 10:08:06	2	BD105110008NDDY200710578	52.69	0.00	46.98	101.15	46.0
2023/10/25 10:08:03	1	BD105110008NDDY200710578	52.69	0.00	49.53	102.36	48.0
2023/10/25 10:08:01	0	BD105110008NDDY200710578	52.75	0.00	47.34	101.67	47.0
2023/10/25 10:07:59	8	BD105110008NDDY200710578	52.75	0.00	49.55	102.86	48.0
2023/10/25 10:07:57	7	BD105110008NDDY200710578	52.70	0.00	49.55	103.49	48.0
2023/10/25 10:07:55	6	BD105110008NDDY200710578	52.76	0.00	49.99	101.67	49.0
2023/10/25 10:07:53	5	BD105110008NDDY200710578	52.66	0.00	49.64	102.73	48.0
2023/10/25 10:07:51	4	BD105110008NDDY200710578	52.77	0.00	49.59	102.03	49.0
2023/10/25 10:07:49	3	BD105110008NDDY200710578	52.69	0.00	45.46	100.33	45.0
2023/10/25 10:07:47	2	BD105110008NDDY200710578	52.69	0.00	46.98	101.15	46.0
2023/10/25 10:07:45	1	BD105110008NDDY200710578	52.69	0.00	49.53	102.36	48.0
2023/10/25 10:07:43	0	BD105110008NDDY200710578	52.75	0.00	47.34	101.67	47.0
2023/10/25 10:07:41	8	BD105110008NDDY200710578	52.75	0.00	49.55	102.86	48.0
2023/10/25 10:07:39	7	BD105110008NDDY200710578	52.70	0.00	49.55	103.49	48.0
2023/10/25 10:07:37	6	BD105110008NDDY200710578	52.76	0.00	49.99	101.67	49.0
2023/10/25 10:07:35	5	BD105110008NDDY200710578	52.66	0.00	49.64	102.73	48.0
2023/10/25 10:07:33	4	BD105110008NDDY200710578	52.77	0.00	49.59	102.03	49.0
2023/10/25 10:07:31	3	BD105110008NDDY200710578	52.69	0.00	45.46	100.33	45.0
2023/10/25 10:07:29	2	BD105110008NDDY200710578	52.69	0.00	46.98	101.15	46.0
2023/10/25 10:07:27	1	BD105110008NDDY200710578	52.69	0.00	49.53	102.36	48.0
2023/10/25 10:07:25	0	BD105110008NDDY200710578	52.75	0.00	47.34	101.67	47.0
2023/10/25 10:07:24	8	BD105110008NDDY200710578	52.75	0.00	49.55	102.86	48.0
2023/10/25 10:07:22	7	BD105110008NDDY200710578	52.70	0.00	49.55	103.49	48.0
2023/10/25 10:07:20	6	BD105110008NDDY200710578	52.76	0.00	49.99	101.67	49.0
2023/10/25 10:07:18	5	BD105110008NDDY200710578	52.66	0.00	49.64	102.73	48.0
2023/10/25 10:07:16	4	BD105110008NDDY200710578	52.77	0.00	49.59	102.03	49.0
2023/10/25 10:07:14	3	BD105110008NDDY200710578	52.69	0.00	45.46	100.33	45.0
2023/10/25 10:07:12	2	BD105110008NDDY200710578	52.69	0.00	46.98	101.15	46.0

At the bottom of the window, there are two buttons: 'Clear' and 'Open Directory'.

Figure 2.2- 1 Multi-Monitoring Tab

2.3 History tab

The items below described the contents of the history tab.

Number	Time	Mode	Tatol voltage(V)	Tatol current(A)	Remaining capacity(AH)	Full charge capacity(AH)	SOC(%)	Maximum v
1	2023-10-25 10:04:25	BMS start	52.75	0.00	47.34	101.67	46	3299
2	2023-09-19 17:55:09	soft switch sleep	52.78	0.00	47.34	101.67	46	3301
3	2023-09-19 16:53:03	BMS start	52.79	0.00	47.34	101.67	46	3302
4	2023-09-15 15:48:33	soft switch sleep	52.78	0.00	47.34	101.67	46	3301
5	2023-09-15 09:35:28	BMS start	52.79	0.00	47.34	101.67	46	3302
6	2023-09-12 10:53:09	soft switch sleep	52.79	0.00	47.34	101.67	46	3302
7	2023-09-12 10:53:06	BMS start	52.79	0.00	47.34	101.67	46	3302
8	2023-09-12 10:52:55	soft switch sleep	52.79	0.00	47.34	101.67	46	3302
9	2023-09-04 19:40:36	soft switch sleep	52.82	0.00	47.34	101.67	46	3304
10	2023-09-04 19:32:30	BMS start	52.83	0.00	47.34	101.67	46	3304
11	2023-09-04 00:24:53	soft switch sleep	52.85	0.00	47.34	101.67	46	3306
12	2023-09-03 21:20:45	BMS start	46.84	49.79	0.01	101.67	0	2952
13	2023-09-03 21:17:27	under voltage protect sleep	46.04	0.00	0.00	101.67	0	2905
14	2023-09-03 20:47:30	cell under voltage protect	43.48	-50.17	1.49	100.00	1	2760
15	2023-09-03 20:47:07	cell under voltage alarm	44.24	-50.17	1.49	100.00	1	2802
16	2023-09-03 20:46:48	pack under voltage alarm	44.78	-50.17	1.49	100.00	1	2832
17	2023-09-03 20:34:12	low capcity alarm	50.29	-50.14	9.46	100.00	9	3145
18	2023-09-03 18:46:01	cell over voltage protect recovery	53.01	-50.17	99.99	100.00	99	3316
19	2023-09-03 18:16:32	cell over voltage alarm recovery	54.89	0.00	100.00	100.00	100	3449
20	2023-09-03 18:15:59	cell over voltage protect	57.48	49.72	98.50	100.00	98	3654

Figure 2.3- 1 History Tab

2.3.1 Read history

Click "Read" and wait for the progress bar to complete. The pop-up completion prompt box indicates that all reading is completed.

2.3.2 Export history

Click Save. The save file window is displayed. Select the save path and save name to export the file to excel file.

2.3.3 BMS System time

Click "Read RTC" to read the BMS system time. Click "RTC= System time" to set the BMS system time in line with the computer time.

2.4 Parameter Settings Tabs

The items below described the contents of the parameter settings tab.

2.4.1 Parameter Settings 1 Tab

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Realtime Monitoring Multi Monitoring History Parameter Setting User parameters Firmware Burn

Parameter Setting 1 Parameter Setting 2 Parameter Setting 3

Cell Voltage Over		Cell Voltage Below		Pack Voltage Over		Pack Voltage Below	
Alarm	mV 3600	Alarm	mV 2750	Alarm	V 57.60	Alarm	V 44.80
Release	mV 3450	Release	mV 3200	Release	V 56.00	Release	V 51.20
Protect	mV 3650	Protect	mV 2700	Protect	V 57.60	Protect	V 43.20
Release	mV 3350	Release	mV 3100	Release	V 53.60	Release	V 49.60
Delay	S 3.0	Delay	S 3.0	Delay	S 1.0	Delay	S 1.0

Charging Overcurrent		Charging Temperature Below		Discharging Temperature Below		Environment Charging Temp Below	
Alarm	A 105.00	Alarm	°C 5.0	Alarm	°C -15.0	Alarm	°C -15.0
Release	A 100.00	Release	°C 5.0	Release	°C -10.0	Release	°C -10.0
Protect	A 110.00	Protect	°C 0.0	Protect	°C -20.0	Protect	°C -20.0
Delay	S 5.0	Release	°C 5.0	Release	°C -15.0	Release	°C -15.0
		Delay	S 4.0	Delay	S 4.0	Delay	S 4.0

Discharge Overcurrent		Charging Temperature Over		Discharging Temperature Over		Environment Charging Temp Over	
Alarm	A 110.00	Alarm	°C 50.0	Alarm	°C 60.0	Alarm	°C 55.0
Release	A 110.00	Release	°C 50.0	Release	°C 50.0	Release	°C 50.0
Protect	A 120.00	Protect	°C 55.0	Protect	°C 65.0	Protect	°C 65.0
Delay	S 5.0	Release	°C 50.0	Release	°C 60.0	Release	°C 55.0
		Delay	S 4.0	Delay	S 4.0	Delay	S 4.0

Get All Export Importing

Parameter Modification Password

Please contact techsupport@ruixubattery.com Request a dynamic password

Figure 2.4- 1 Parameter Settings 1 Tab

2.4.1.1 Cell Voltage Over

- Alarm mV
Add description...
- Release mV
Add description...
- Protect mV
Add description...
- Release mV
Add description...
- Delay S
Add description...

2.4.1.2 Cell Voltage Below

- Alarm mV
Add description...
- Release mV
Add description...
- Protect mV

- [Add description...](#)
- Release mV
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.3 Pack Voltage Over

- Alarm V
[Add description...](#)
- Release V
[Add description...](#)
- Protect V
[Add description...](#)
- Release V
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.4 Pack Voltage Below

- Alarm V
[Add description...](#)
- Release V
[Add description...](#)
- Protect V
[Add description...](#)
- Release V
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.5 Charging Overcurrent

- Alarm A
[Add description...](#)
- Release A
[Add description...](#)
- Protect A
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.6 Discharge Overcurrent

- Alarm A
[Add description...](#)
- Release A

- Add description...
- Protect1 A
Add description...
- Delay S
Add description...

2.4.1.7 Charging Temperature Below

- Alarm °C
Add description...
- Release °C
Add description...
- Protect °C
Add description...
- Release °C
Add description...
- Delay S
Add description...

2.4.1.8 Charging Temperature Over

- Alarm °C
Add description...
- Release °C
Add description...
- Protect °C
Add description...
- Release °C
Add description...
- Delay S
Add description...

2.4.1.9 Discharging Temperature Below

- Alarm °C
Add description...
- Release °C
Add description...
- Protect °C
Add description...
- Release °C
Add description...
- Delay S
Add description...

2.4.1.10 Discharging Temperature Over

- Alarm °C

- [Add description...](#)
- Release °C
[Add description...](#)
- Protect °C
[Add description...](#)
- Release °C
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.11 Environment Charging Temperature Below

- Alarm °C
[Add description...](#)
- Release °C
[Add description...](#)
- Protect °C
[Add description...](#)
- Release °C
[Add description...](#)
- Delay S
[Add description...](#)

2.4.1.12 Environment Charging Temperature Over

- Alarm °C
[Add description...](#)
- Release °C
[Add description...](#)
- Protect °C
[Add description...](#)
- Release °C
[Add description...](#)
- Delay S
[Add description...](#)

2.4.2 Parameter Settings 2 Tab

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Realtime Monitoring Multi Monitoring History Parameter Setting User parameters Firmware Burn

Parameter Setting 1 Parameter Setting 2 Parameter Setting 3

Environment Discharging Temp Below		Environment Discharging Temp Over		MOS Temperature Over	
Alarm	°C -15.0	Alarm	°C 60.0	Alarm	°C 100.0
Release	°C -10.0	Release	°C 50.0	Release	°C 100.0
Protect	°C -20.0	Protect	°C 65.0	Protect	°C 110.0
Release	°C -10.0	Release	°C 50.0	Release	°C 100.0
Delay	S 4.0	Delay	S 4.0	Delay	S 4.0

Balance		Invalid		Heater	
Open Voltage	mV 3350	CMOS Invalid Cell Voltage	mV 4000	Open Voltage	°C 0.0
Close Voltage	mV 3340	DMOS Invalid Cell Voltage	mV 1000	Close Voltage	°C 20.0
Open-Volt Different	mV 40	CMOS Invalid PACK Voltage	V 64.00	Charging Open Voltage	V 41.60
Close-Volt Different	mV 20	DMOS Invalid PACK Voltage	V 24.00	Without heating function, this parameter modification is invalid	
		Cell Invalid Voltage Different	mV 500		
		Release	mV 300		

Current Over Protect Recovery		Others	
Discharging Time Interval	S 180	Smart Interval Charging	% 95
Discharging Times	5	Capacity	% 10
Charging Time Interval	S 180	Capacity-Low Alarm	% 10
Charging Times	5	Alarm Release	% 30

Get All Export Importing

Parameter Modification Password

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Figure 2.4- 2 Parameter Settings 2 Tab

- Environment Discharging Temp Below
 - Alarm °C
Add description...
 - Release °C
Add description...
 - Protect °C
Add description...
 - Release °C
Add description...
 - Delay S
Add description...
- Environment Discharging Temp Over
 - Alarm °C
Add description...
 - Release °C
Add description...
 - Protect °C
Add description...

- Release °C
Add description...
- Delay S
Add description...
- MOS Temperature Over
 - Alarm °C
Add description...
 - Release °C
Add description...
 - Protect °C
Add description...
 - Release °C
Add description...
 - Delay S
Add description...
- Balance
 - Open Voltage mV
Add description...
 - Close Voltage mV
Add description...
 - Open-Volt Difference mV
Add description...
 - Close-Volt Difference mV
Add description...
- Invalid
 - CMOS Invalid Cell Voltage mV
Add description...
 - DMOS Invalid Cell Voltage mV
Add description...
 - CMOS Invalid Pack Voltage V
Add description...
 - DMOS Invalid Pack Voltage V
Add description...
 - Cell Invalid Voltage Difference mV
Add description...
 - Release mV
Add description...
- Heater

Without heating function these parameters are invalid.

 - Open Voltage °C
Add description...
 - Close Voltage °C
Add description...
 - Charging Open Voltage V
Add description...
- Current Over Protect Recovery

- Discharge Time Interval S
Add description...
- Discharging Time S
Add description...
- Charging Time Interval S
Add description...
- Charging Times S
Add description...
- Others
 - Smart Interval Charging Capacity %
Add description...
 - Capacity Low Alarm %
Add description...
 - Alarm Release %
Add description...

2.4.3 Parameter Settings 3 Tab

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Realtime Monitoring Multi Monitoring History Parameter Setting User parameters Firmware Burn

Parameter Setting 1 Parameter Setting 2 **Parameter Setting 3**

Short Current Params

Release Interval min

Release Times

Sleep Params

Sleep Time min

Charging current limiting

Current limiting value mA

Release interval min

Overcurrent protection 2

Discharge protection A

Discharge delay mS

charge protection A

charge delay mS

Get All Export Importing

Parameter Modification Password

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Figure 2.4- 3 Parameter Settings 3 Tab

- Short Current Params
 - Release Interval min
Add description...

- Release Times
Add description...
- Over Current Protection 2
 - Discharge Protection A
Add description...
 - Discharge Delay mS
Add description...
 - Charge Protection A
Add description...
 - Charge Delay mS
Add description...
- Sleep Params
 - Sleep Time min
Add description...
- Charging Current Limiting
 - Current Limiting Value mA
Add description...
 - Release Interval min
Add description...

2.5 User Parameters Tab

This tab allows obtaining and setting information about the capacity settings in this tab. Depressing "Get All" or "Set All" apply to the parameters on this tab only.

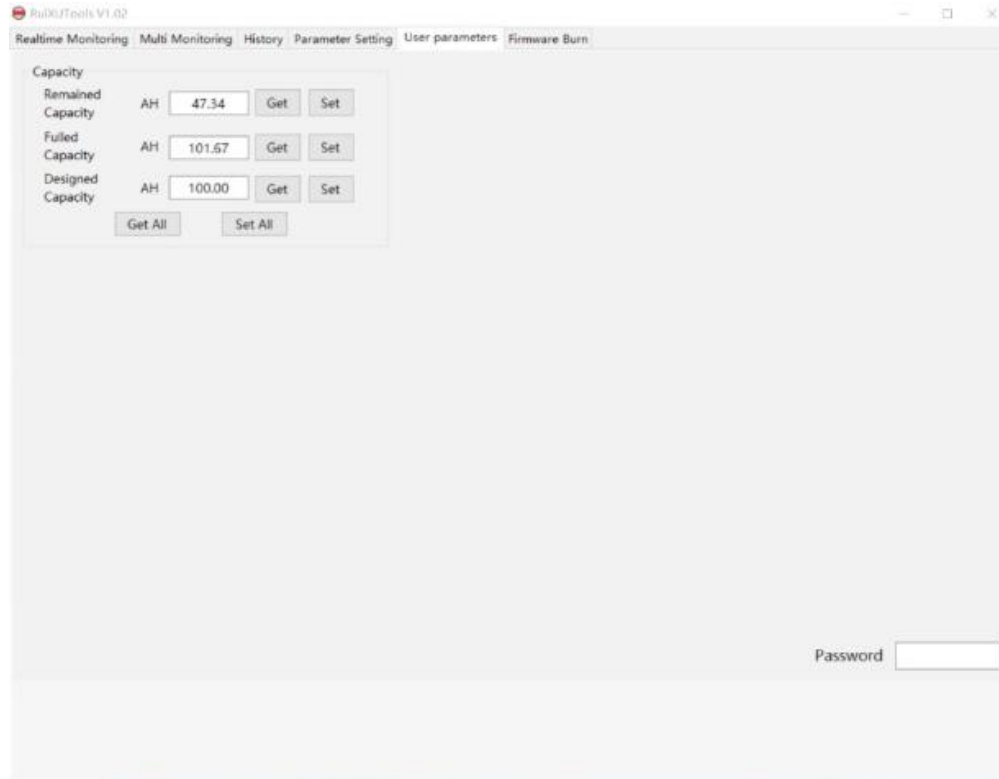


Figure 2.5- 1 User Parameters Tab

- Remaining capacity
Add description...
- Full capacity
Add description...
- Design capacity
Add description...

2.6 Firmware burn Tab

2.6.1 BMS Firmware Upgrade Procedure

This tab allows viewing revision level and upgrading as needed. Read the current BMS firmware information and confirm the version information. If you have obtained an upgrade file from techsupport@ruixubattery.com depress Open File and select the corresponding upgrade file that was provided. Depress "Burn" to start the upgrade and wait for the upgrade result. PASS indicates that the upgrade succeeds and FAIL indicates that the upgrade has failed. If the upgrade fails after multiple attempts, contact techsupport@ruixubattery.com for help.

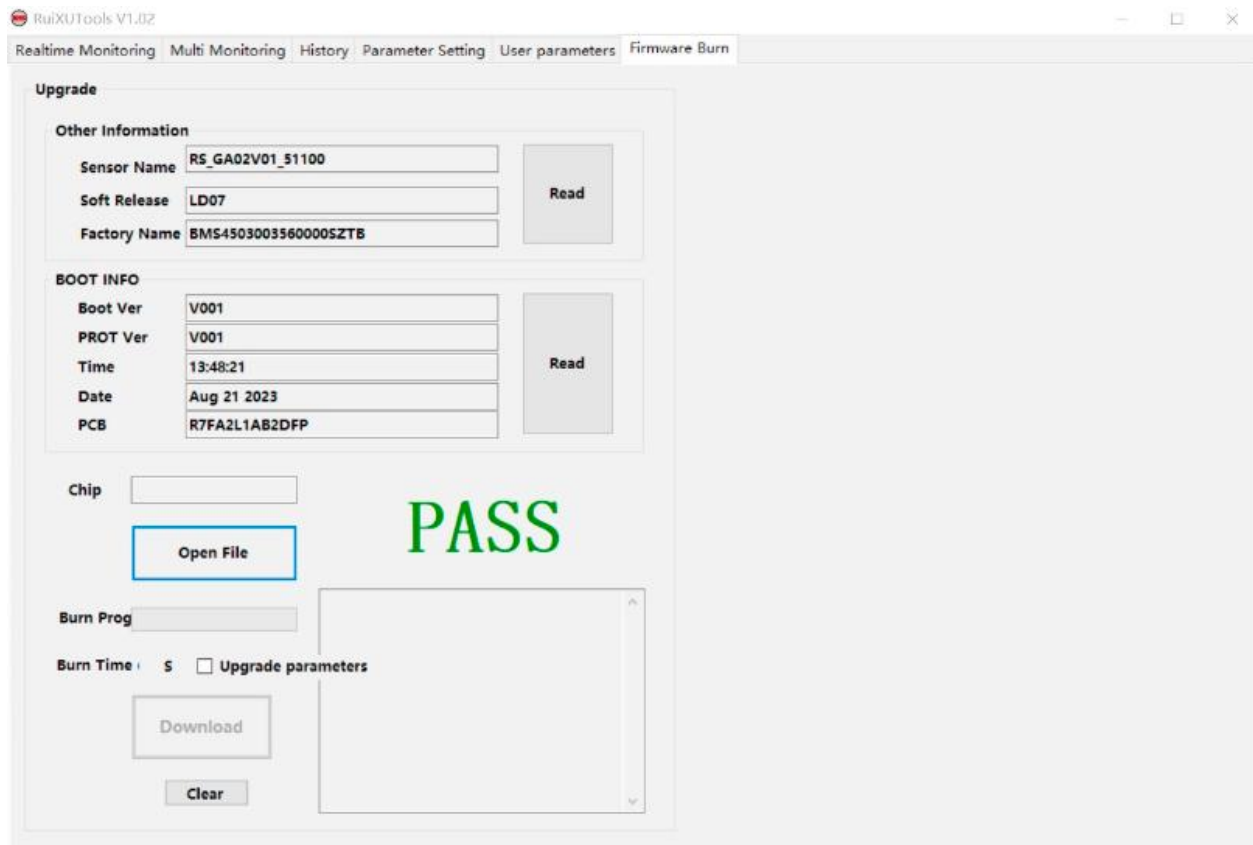


Figure 2.6- 1 Firmware Burn Tab