BMS Software for LFP48100-Integrated LiFePO$_4$ Battery

OPERATION MANUAL

Version 2.2

Content

1. Foreword

The operation manual is only suitable to integrated LiFePO$_4$ battery system for telecommunications supplied by SHENZHEN NEATA POWER TECH CO.,LTD

Integrated LiFePO$_4$ battery system consists mainly of Cells and BMS (Battery Management System). BMS consists of five subsystems: charge and discharge management; heat management; communications management; data management; equalization management. For better maintaining battery or data acquisition, it is very useful to operate the BMS software. It can display real time information and find directly the reason that batteries have faults.

Note:

◆ **Setting battery parameters should be operated or supervised by engineers who are experienced.**

◆ **Don't revise battery parameters by the BMS software when a battery is running.**

◆ **The adverse consequences caused by incorrect operation (including revising battery parameters) shall be borne by the operator.**

◆ **Don't take it to the other norms battery for its incompatible.**

Operation Manual for BMS (VIDEO):

2. Preparation before Operation

The articles in table 2-1 below should be prepared well.

Table 2-1 the necessary articles

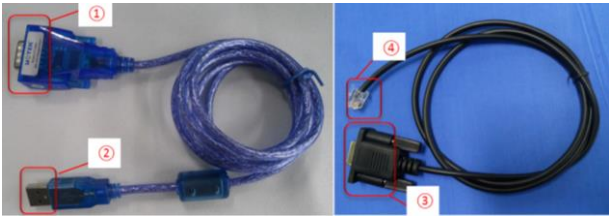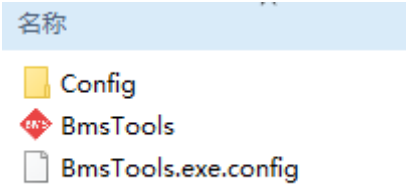| No.	articles	Pictures	Remark
1	One computer with USB ＆ interface, Windows7/ 8/10(or Windows XP) and 11		Provide for oneself
2	One RS232communication line; One USB to RS232transducer(Need to install driver)		Provided by Neata （if necessary）
3	"BMSToos-HS2.0.7" folder on the computer (RS232communication software)	名称 Config BmsTools BmsTools.exe.config	Provided by Neata
4	Integrated LiFePO$_4$ battery		Provided by Neata

You can download BMSTools-HS2.0.7 software:

3. Operation Illustration for Individual Battery

3.1 Connection Method

The connection method is shown in table 3-1 below.

Table 3-1 Connection method for BMS software

No.	articles	Pictures	Remark
1	One RS232 communication line; One USB to RS232transducer	Connect the interface ① to the interface ③, the interface② to USB interface of computer, the interface ④ to RS232 interface of the battery.	Provided by Neata （if necessary）
2	Press the "Reset" button about 6 seconds till all lamps light up after loosening and heard drip		
3	Open "BMSToos-HS2.0.7" folder and click the "BMSToos" file on the computer. Wait for some seconds until the communication successfully connected.		Provided by Neata

3.2 Software Display Interface

The software shows six display interfaces. They are realtime monitoring, multi monitoring, memory information, parameter setting, system configuration, change language, which can be switched by clicking them.

3.2.1 Realtime Monitoring

Fig. 3-1 Realtime monitoring display interface
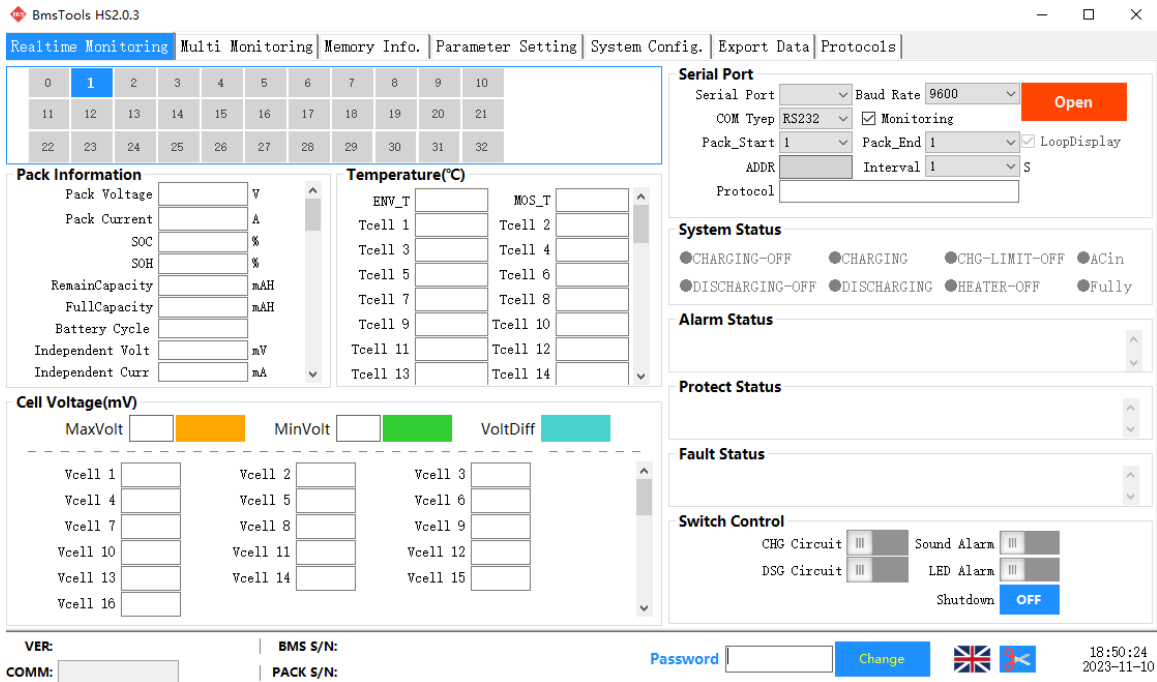
The areas of "Realtime Monitoring" display interface in fig. 3-1 are illustrated as follow:

"Pack Information" area: this area shows real-time information including the pack voltage, current, SOC (State of Charge), SOH (State of Health), remain-capacity, full-capacity and charge-discharge cycle.

"Temperature" area: this area displays real-time temperature of the MOSFET, environment and four cells in real time.

"Cell Voltage" area shows the real-time voltage of every cell. The maximum and minimum cell voltages are marked by yellow and green separately.

"Serial Port" area shows pack No, port, pack quantity and address, etc.

"System Status" area: This area displays system status in real time.

Note: "CHG" = "Charge", "DSG" = "Discharge"

"Alarm Status" area: The area displays alarm status in real time.

"Protect Status" Area: the area displays protection status in real time. For example, over-charge voltage protection, under-discharge voltage protection, discharge over-temperature protection and discharge under-temperature protection, etc.

"Fault Status" Area: If the battery has a fault, there is a red light in "Fault Status" area.

"switch control" Area: This is switch control area. When batteries are used in parallel, "CHG Limiter" button plays a very important role in the area.

"Administrator Password" Area: These display interfaces are under read mode when the password is not right in the frame. Meanwhile, you can watch the state information of the battery, but can't revise the parameter. "Change" Area: "Change" button is used to reset the password.

Note: "Chg" = "Charge", "Dsg" = "Discharge", "OTP" = "Over-Temperature Protection", "OVP" = "Over-Voltage Protection".

3.2.2 Multi Monitoring

Fig. 3-2 Multi monitoring display interface
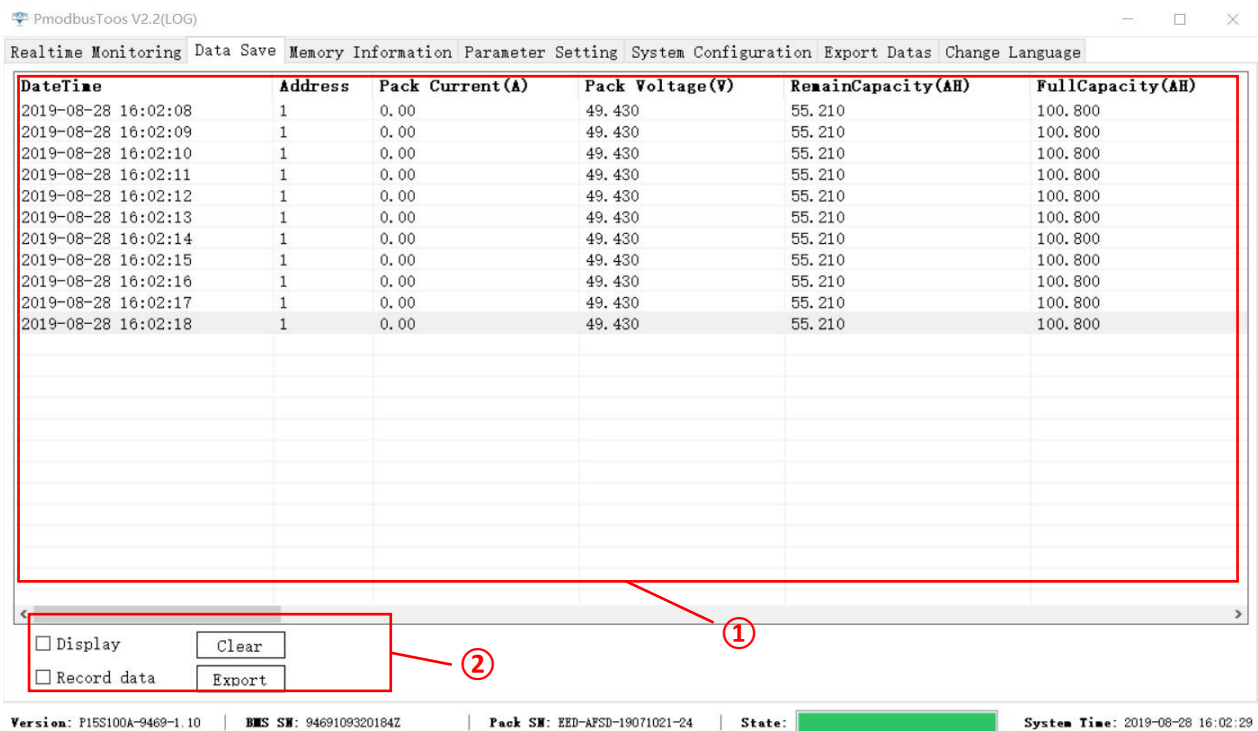
Two areas of "Multi monitoring" display interface are illustrated as follow:

Area①: Recording the real-time status (time, pack No, current, voltage, remain-capacity, etc) of individual battery.

Area②: Clicking "Display" frame, then "√" is shown in the frame. Meanwhile, the interface can display the real-time status in Area①.

Clicking "Clear" button can clear the real-time record in Area①.

Clicking "Save" button can save the real-time record in Area①.

Clicking "Auto Storage" frame can store automatically the real-time record in Area①.

3.2.3 Parameter Setting

Fig. 3-4 Parameter setting display interface
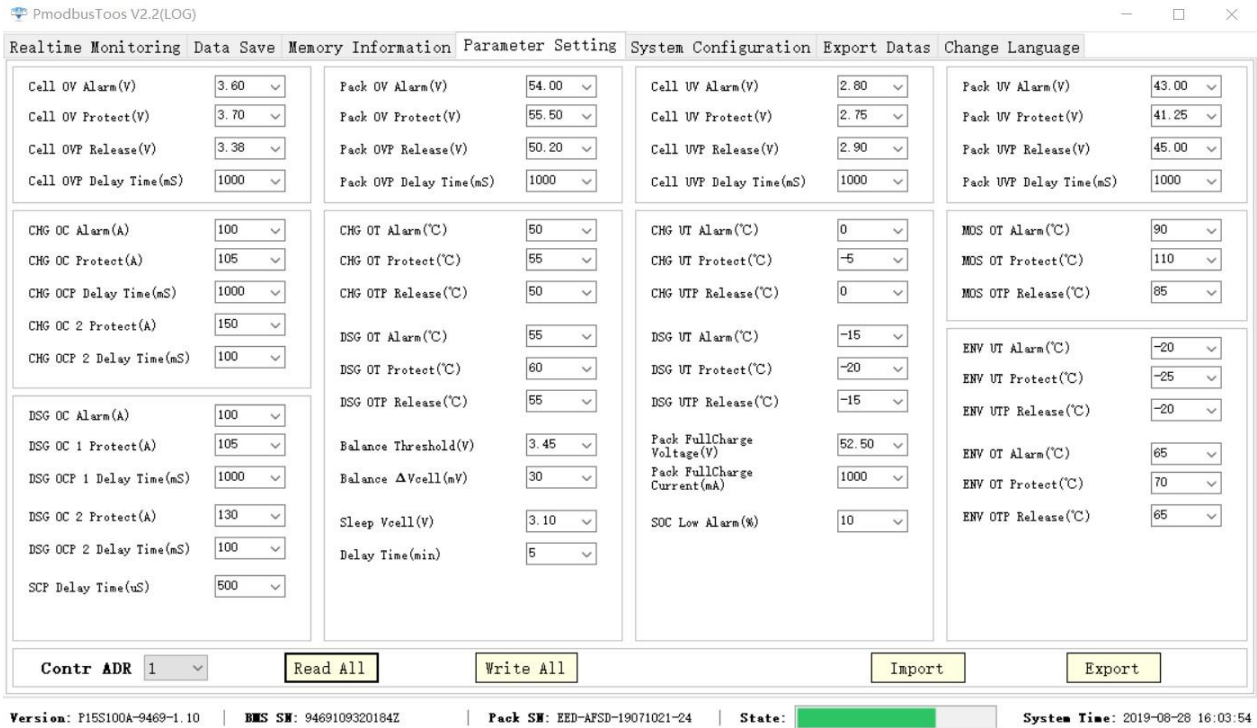
Note: Don't revise these parameters in the Fig. 3-4 above. Or the battery may have a fault when running.

3.2.5 System Configuration

Fig. 3-5 System configuration display interface
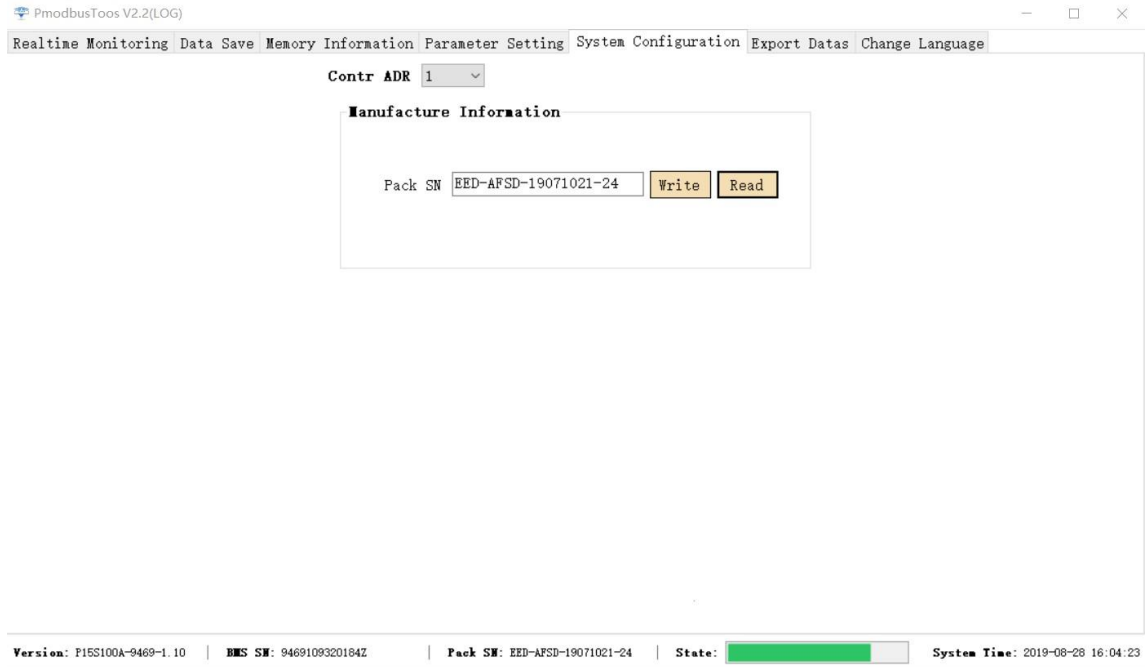
3.2.6 Export   Datas
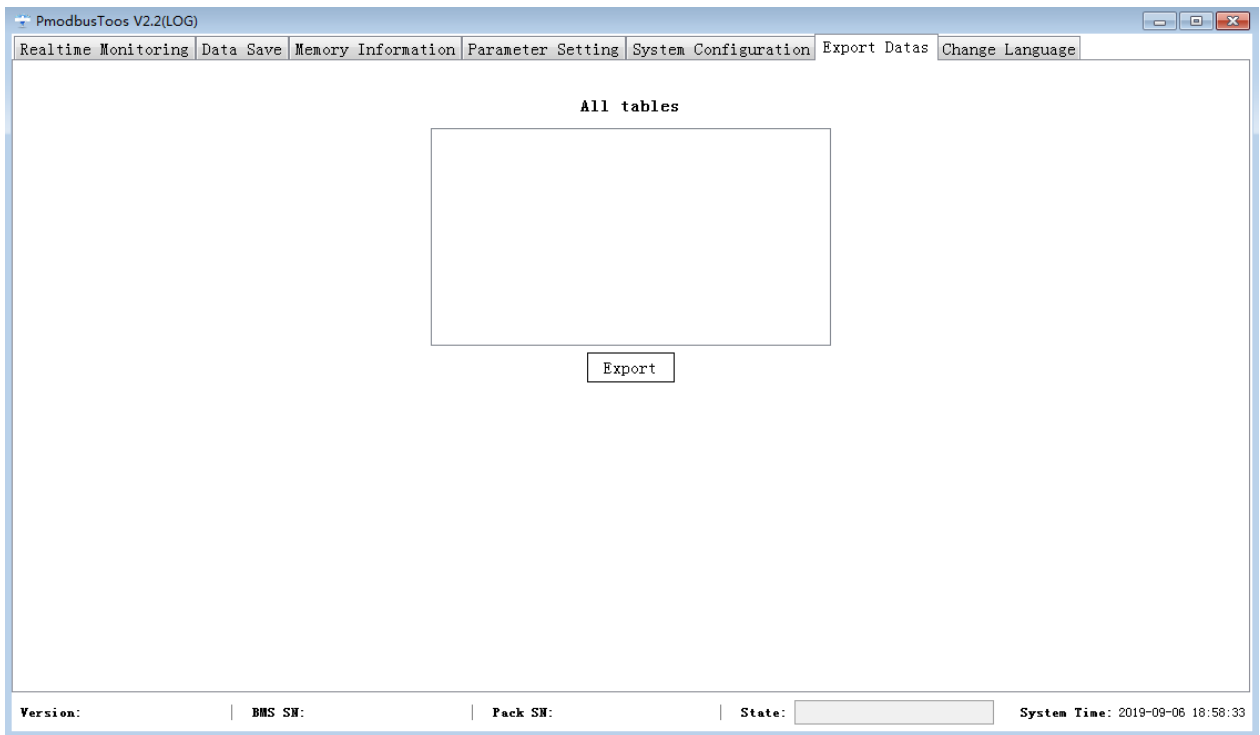
3.2.7 Change Language

Fig. 3-6 Change language display interface
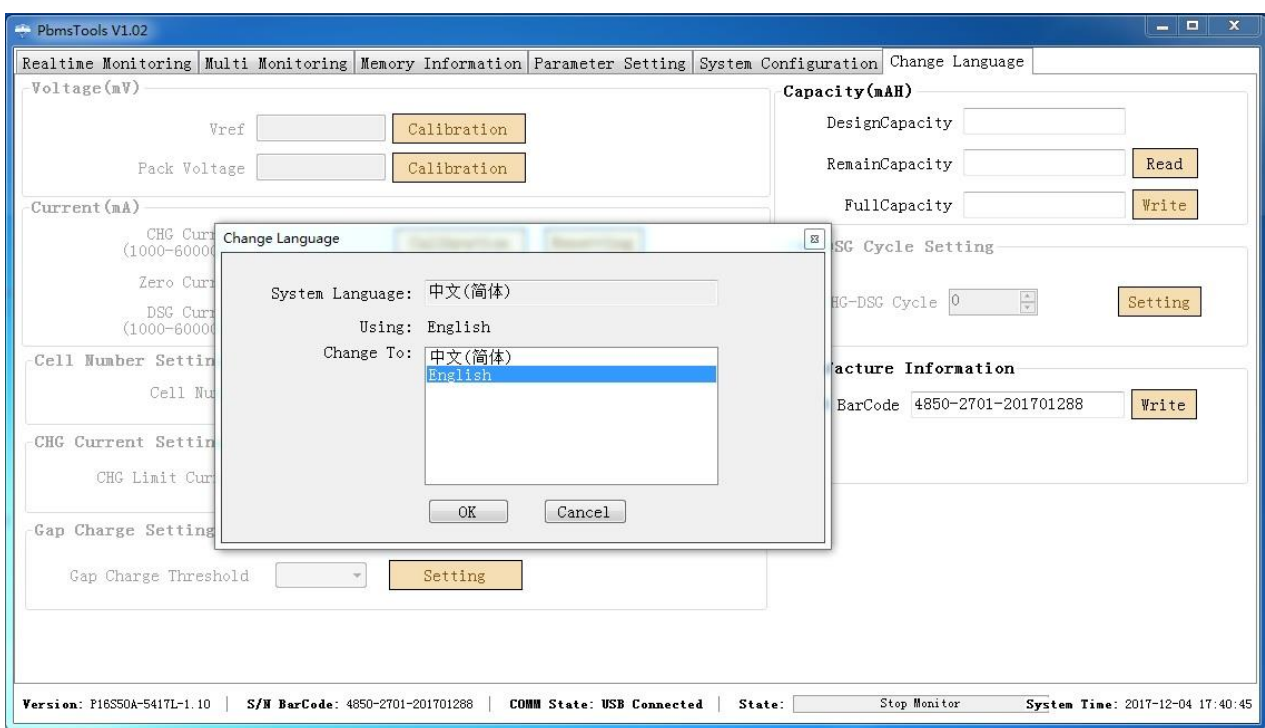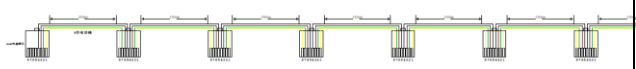
4. Operation Illustration for Batteries in parallel
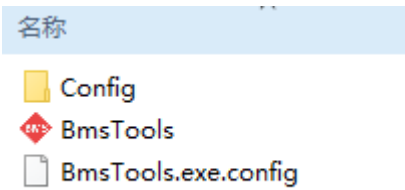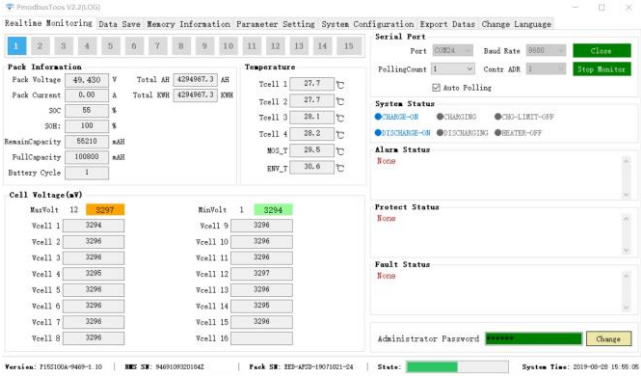
4.1 Connection Method

The connection method is shown in table4-1 below.

Table 4-1 Connection method for BMS software

No.	articles	Pictures	Remark
1	Connect RS485 communication line between batteries		RS485 communication line provided by Neata
2	One RS232 communication line; One USB to RS232 transducer	 Connect port ① to port ③, port ② to USB port of computer, port ④ to RS232port of the battery.	Provided by Neata （if necessary）

3	Set Band Switch Address Code.		Refer to "Annex3 Band Switch Address Code"

Table in cell:

地址	拨码开关位置			
	#1	#2	#3	#4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

4	Press the "Reset" button about 3 seconds till all lamps light up after loosening and heard drip		

5	Open "BMSToos-HS2.0.7" folder and click the "BMSToos" file on the computer. Wait for some seconds until the communication successfully connected.		Provided by Neata

| 6	BMS Software display interfaces are shown.		

4.2 BMS Software Display Interface

For finding the real time information of Master Pack and each Slave Pack, it is feasible to set the buttons in the area of Serial Port in "Realtime monitoring" display interface. The details are shown below.

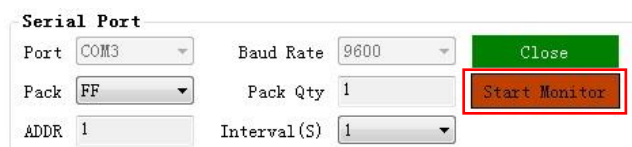Fig. 4-1 Area of Serial Port in "Realtime monitoring" display interface
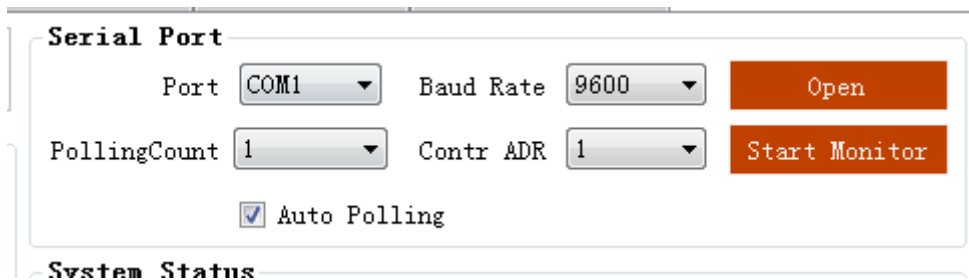
Step1: Click "Stop Monitor" frame.

Step2: Click "Pack" frame and choose the option "FF".
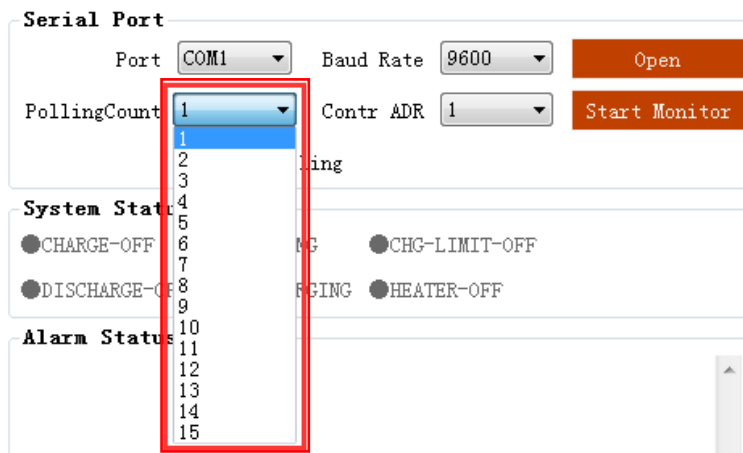
Step3: Click "Start Monitor" frame, and the software shows the real time information of Master Pack. We can click "1,2,3···" to show the real time information of Master Pack or each Slave Pack

5 Application of "CHG Limiter" Button

When a battery is used alone, it's not necessary to set the technical parameters by the BMS Software. Neata engineer set and check the suitable parameters before delivery.

When some batteries are used in parallel, it's vital to set "CHG Limiter" button related to charging limited current by the BMS Software. You must set the parameter of every battery by three steps below:

Step1: In the "Realtime Monitoring" display interface, there is an "Administrator Password" frame. Enter password "Pz#188178" in the frame.

Step2: Click "CHG Limiter" button to be in "Open" mode, then the maximum charging current of the battery is 20A.
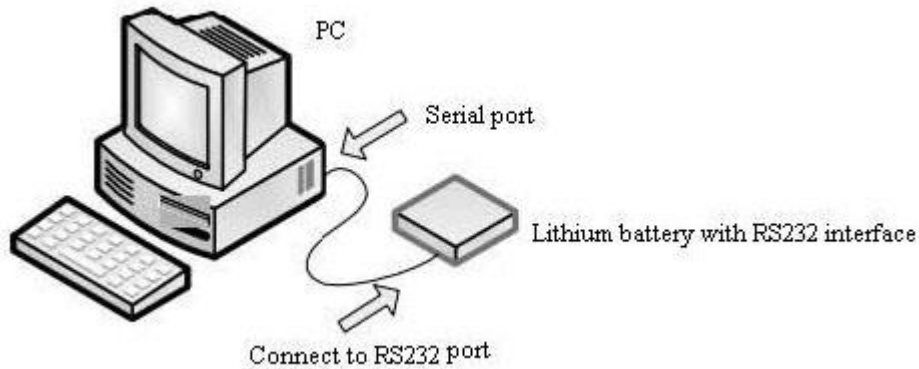
Step3: Close the software.

Annex1 RS232 Communication

BMS can communicate with "Bms Tools-EN" software via RS232 port so that various battery information is displayed in PC, including battery voltage, current, temperature, status, SOC, SOH and production information etc.. When using RS232 port, baud rate should be set to 9600.

The interface uses a vertical 6P6C RJ11 socket (round pin), pin definitions in the following table:

RJ45/RJ11 port	no	RS232	RS485	RS485
	1	NC	B：DATA -	B：DATA -
	2	NC	A：DATA+	A：DATA+
	3	TX	NC	NC
	4	RX	NC	NC
	5	GND	NC	NC
	6	NC	NC	NC
	7		A：DATA+	A：DATA+
	8		B：DATA -	B：DATA -
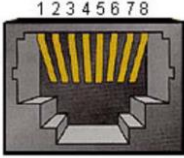
Annex2 RS485 Communication

When using the batteries in parallel, Master Pack can communicate with Slave Pack via RS485 port, so the information of Master Pack and each Slave Pack can be displayed in the PC by

"Bms Tools-EN" software. Using RS485 communication between systems, the default setting is 9600 baud.

The interface uses a vertical 8P8C RJ45 socket (round pin), pin definitions in the following table:

Pin No.•	Definition description
1、8•	RS485-B•
2、7•	RS485-A•
3、6•	GND
4、5•	NC•

Annex3 Band Switch Address Code

Band switch uses four DIP switches for setting mailing address of the battery system when it is used in parallel.

ON

1 2 3 4 OFF

Table A-3 Band switch address code

address •	dial the code switch position				
•	#1•	#2•	#3•	#4•	•
0	OFF	OFF	OFF	OFF	Independent, single use
1	ON	OFF	OFF	OFF	Set to Pack (main)
2	OFF	ON	OFF	OFF	Set to Pack1
3	ON	ON	OFF	OFF	Set to Pack2•
4	OFF	OFF	ON	OFF	Set to Pack3
5	ON	OFF	ON	OFF	Set to Pack4
6	OFF	ON	ON	OFF	Set to Pack5
7	ON	ON	ON	OFF	Set to Pack6
8	OFF	OFF	OFF	ON	Set to Pack7
9	ON	OFF	OFF	ON	Set to Pack8
10	OFF	ON	OFF	ON	Set to Pack9
11	ON	ON	OFF	ON	Set to Pack10
12	OFF	OFF	ON	ON	Set to Pack11
13	ON	OFF	ON	ON	Set to Pack12
14	OFF	ON	ON	ON	Set to Pack13
15	ON	ON	ON	ON	Set to Pack14