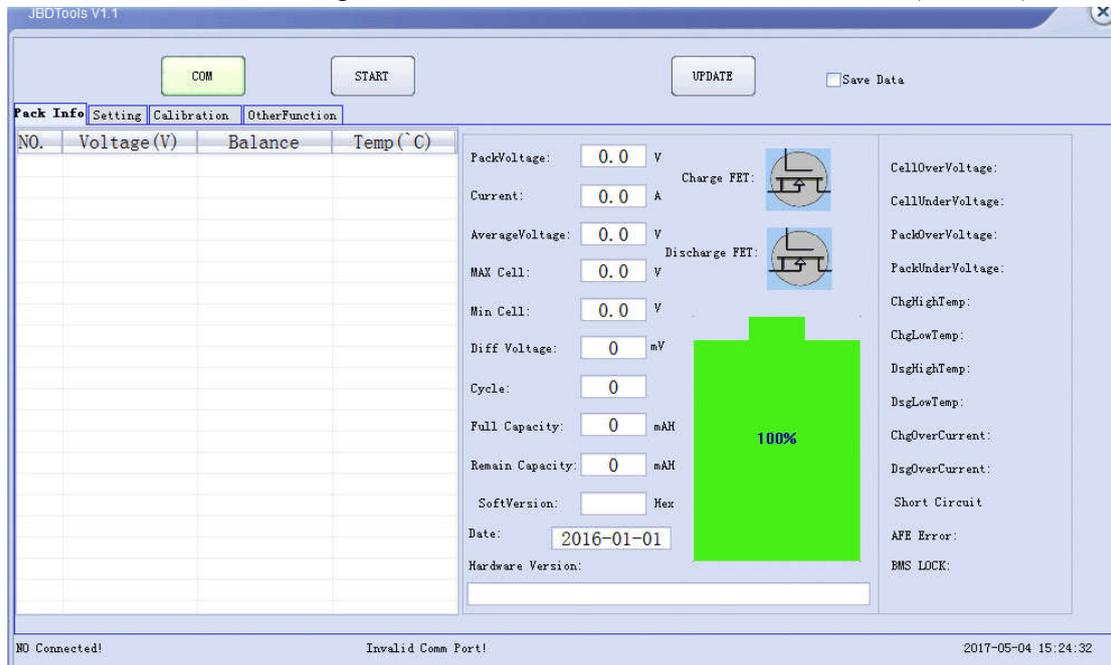


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First Part About our tools

This tool will be applied for our smart BMS which will be used for PC monitor on Battery information ,Parameter setting on BMS etc .The edit Interface will be as below: (Picture 1)



Picture 1

Windows of our software can be divided into these function parts :Battery message, parameters setting ,calibration and other functions .it is conveniently for our user to run it easily .

The second Part :How to use this PC software

2.1 Application environment :

Our TOOLS can be installed on Windows XP or Windows 7 above system .communication bridged through series communication methods, series communication tool is our USB converter for RS232 communication ,and it is suitable for almost all kinds of computer in our Market .

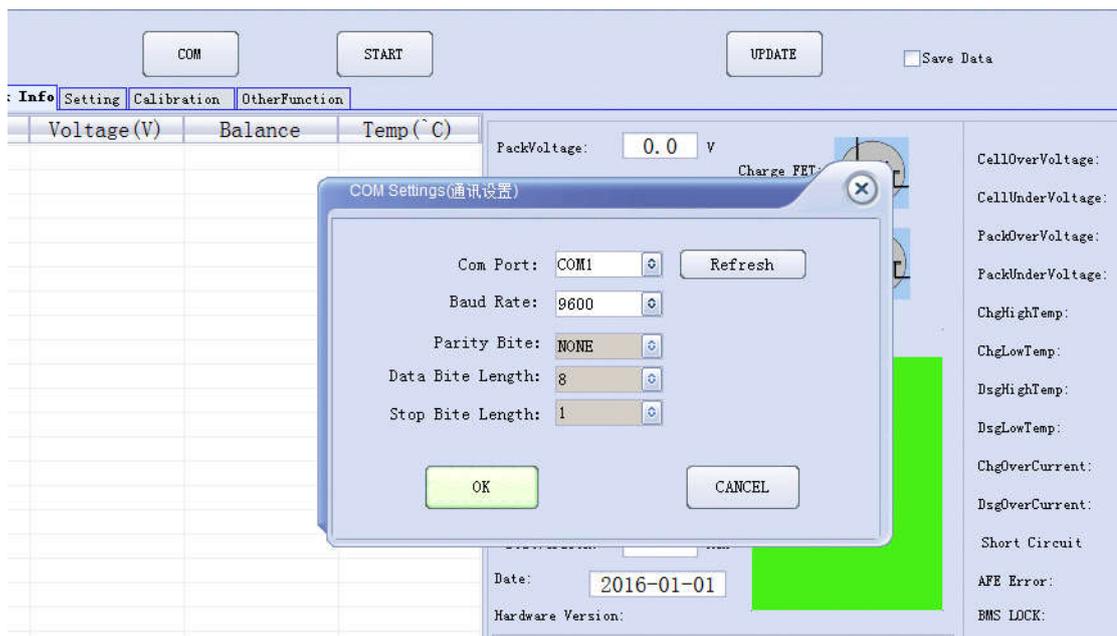
2.2 Communication port setting

Click the “COM “button ,COM setting page will show up and our PC software can recognize the available series communication port automatically

If PC software can not scan out the COM port ,please click the refresh button to see if it can find the COM port which is ready for application ,then click the button “back” our software can records the last setting of your COM port , it will automatically turn on your last COM port when you open PC software next time .this has no need to be changed if your communication USB converter is the same with your last time’s .



Picture 2



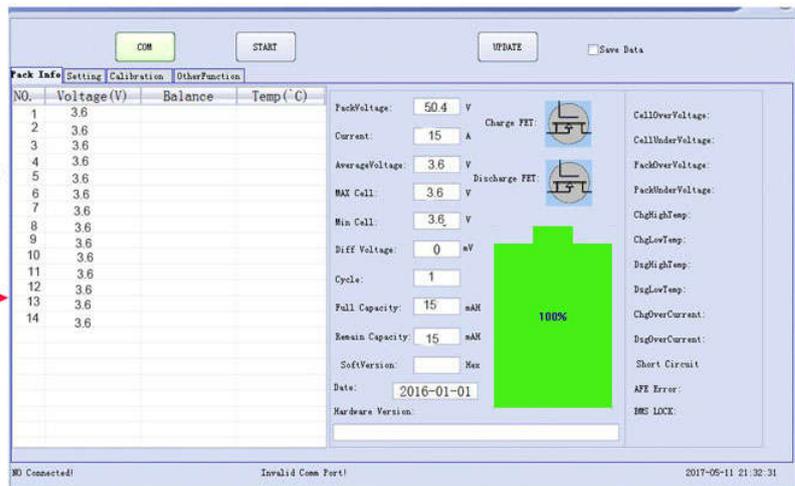
Picture 3

2.3 Communication establishment:

After setting process finished of COM port ,click the “start” button, and then the communication has been built with our BMS ,the software can read your battery basic information .including : single cell voltage ,capacity ,cycle times ,protection status ,charge and discharge current , Mos Fet work status as below screenshot :

the PC software will display like this when connection was successfully once

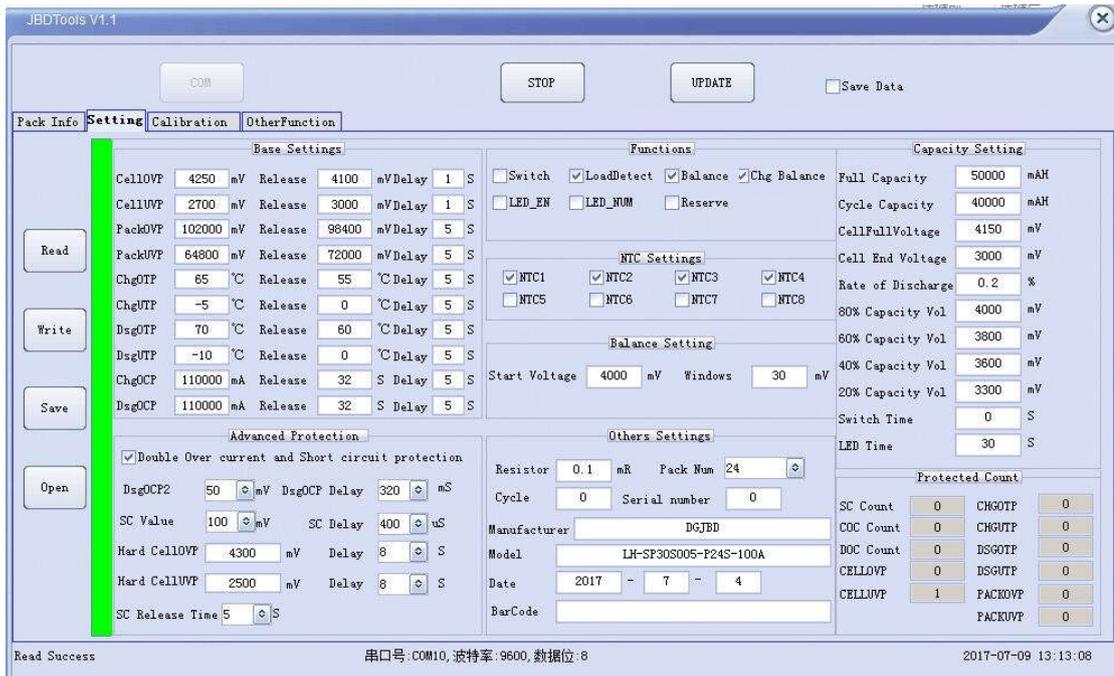
(each cell voltage ,total voltage ,protection status will be shown on this page)



Pic 4

2.4 Parameters setting :

Page of Parameters setting will be as below Picture 5:



Picture 5

1. Basic protection parameter setting : over-charge protection of single cell ,over-discharge protection of single cell and over-charge protection of whole battery pack ,over-discharge of whole battery pack ,temperature of charge and discharge ,over-current protection value of charge and discharge , recovery voltage, and protection delay time .client can set it based on your application .
2. High level protection : including second step protection of over-current ,short circuit ,over-charge and over-discharge . the over-current protection value and short protection value will be set by voltage ,if set by current ,the calculation format will be like this $I=v/R$,V is the voltage you will set on the software ,and R is the resistance .
- 3.Function setting : some mainly function of the BMS is on or off including switch function ,loading test function after short ,balance function ,LED function ,LED light numbers ,the balance function can be only valid after you selecting balance mode
- 4.NTC setting : It targets the different NTC numbers for different types of BMS ,usually we set it before the delivery .
- 5.Balance setting : Mainly setting including balancing start voltage and balance precision ,balance will work when it can meet such two conditions :
 - A. single cell voltage has exceeded the balance voltage
 - B. Single cell's voltage gap is bigger than the balance precisionOtherwise the balance will not work when there is one factor which can not match .
- 6.Other parameters setting : including battery series setting , resistance of detection resistor ,delivery and production time and other information etc . Battery series numbers and detection resistors setting can affect the BMS work status ,except them ,other setting parameters can not affect the work performance of the BMS , we have already set it when arrange the shipment . you do not to adjust it afterwards .
- 7.Capacity setting : as our BMS has self-learning function ,and self-learning value scope has been set by us , The Max tolerance is 20% and BMS will correct it automatically by 10% each time . so as for this part setting , it needs to set the value of resistor in according to your practical application

2.5 Parameters setting operation can be done by click left 4 buttons.:

- 1.Parameter reading: Parameters will be read from the BMS ,and then it displays on this software , reading progress will display as below picture 6 .

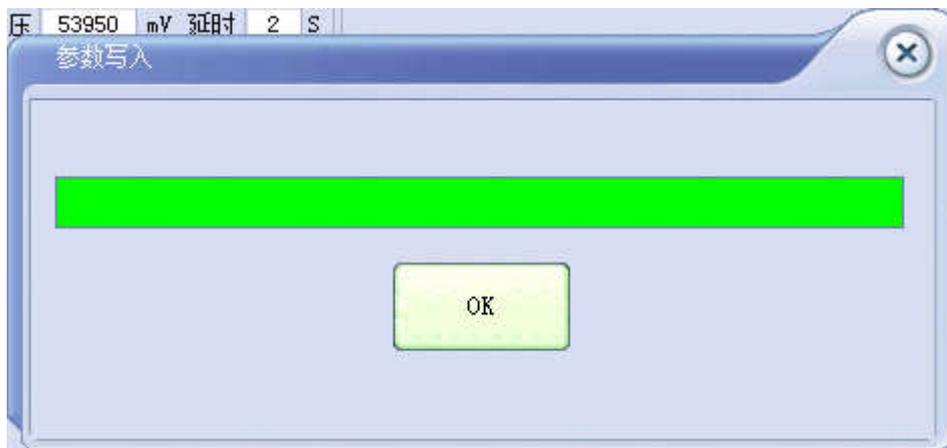


Picture 6

1.Parameters setting : Parameters data writing in this PC software will be Planted into the BMS , BMS them will work in according to the parameters had been set on this PC software , please set the parameters correctly otherwise the BSM will work abnormally . there are two procedures of setting parameters

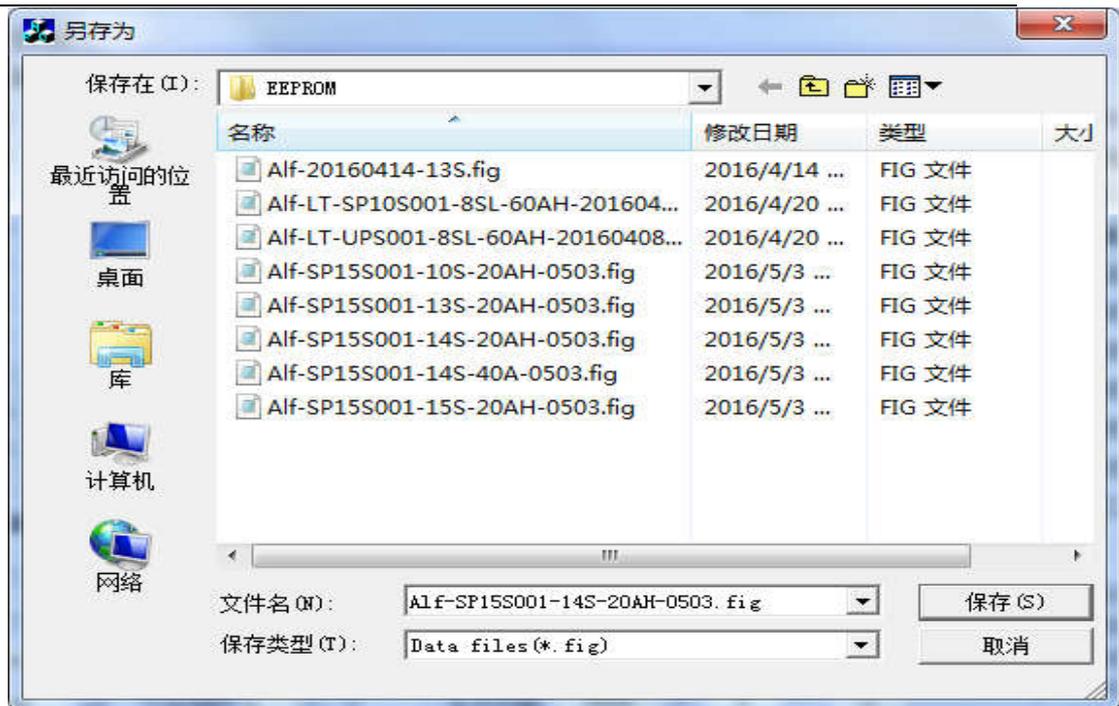
A .Read parameters firstly ,then input your parameters after adjustment confirmation .

B.Import your parameters files which you have stored previously . then confirm it and click to make setting . there will be a progress bar as Picture 7 ,it will show “OK “after setting successfully . please try it again if this bar does not display ”OK “ it means you are failed in setting your parameters . please try it again



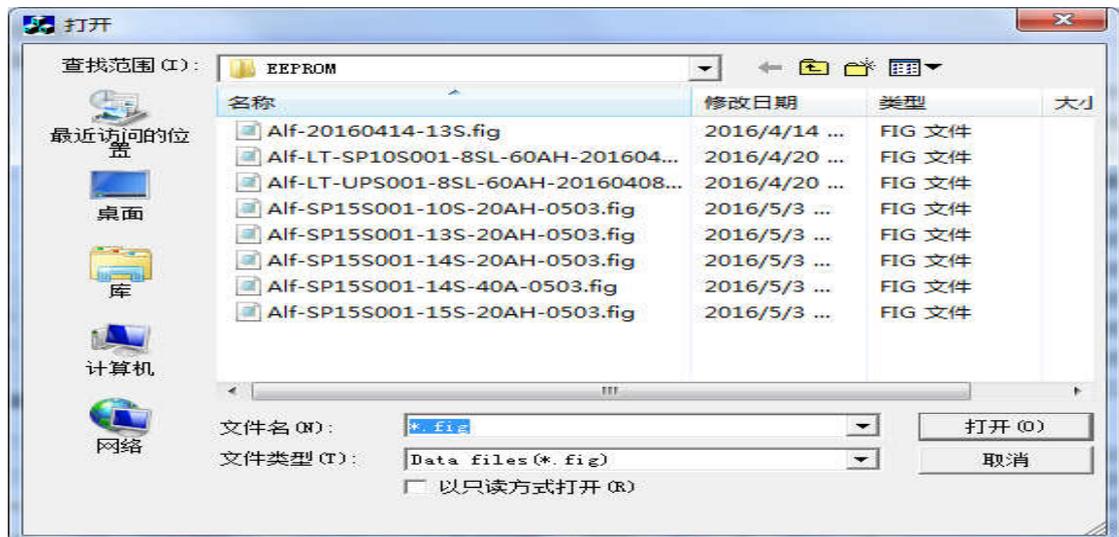
Picture 7

2.Parameter storage : This function will allow you to store your parameters on PC software in files of (*.fig) ,user can set the file name flexibly without any special requirement . details in Picture 8



Picture 8

3.File open: this function will allow the parameters you have stored previously to display again in this PC software . it can be used to make parameters adjustment and revision . Details in Picture 9



Picture 9

Calibration

2.5 Calibration function

Calibration function : it will be used to calibrate the Battery Voltage , current , and temperature.

Single cell voltage and temperature calibration : this function supports one or multiple of calibration ,you just need to input your calibrated value in the correspondent position . and

calibration will undergo when you click button of calibration .Calibration success button will turn out when calibration is successful

Detail in Picture 10



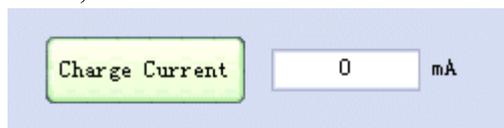
Picture 10

Current calibration : quiescent current calibration ,charge current calibration, discharge current calibration .

quiescent current calibration :it will take current conditions as 0 current and recover the charge current and discharge current to it's default values.

Charge current calibration :

Under conditions of charging status , please input your charge current value you have measured into this form as Picture 11 without writing unit in. for example .1A charging should write 1000 , then click the calibration button to start the charging current calibration .

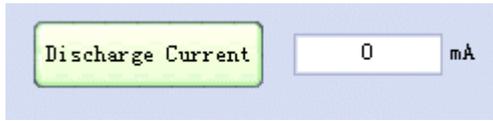


11

Discharge current calibration:

Under conditions of discharge status , please input your discharge current value you have

measured into this form as Picture 11 without writing unit in. for example .1A discharge should write 1000 , then click the calibration button to start the discharge current calibration .



12

2.5 Function Update



Operation button :

Clicking the above button to update you're your BMS protection program

Picture 13 will be sprung out . choose a suitable file save road (*.hex) ,then download it .detail in 14

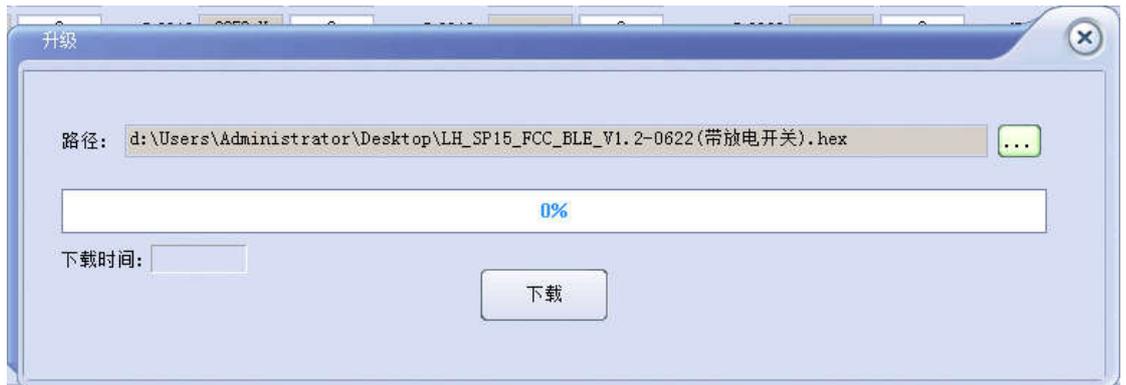


图 13



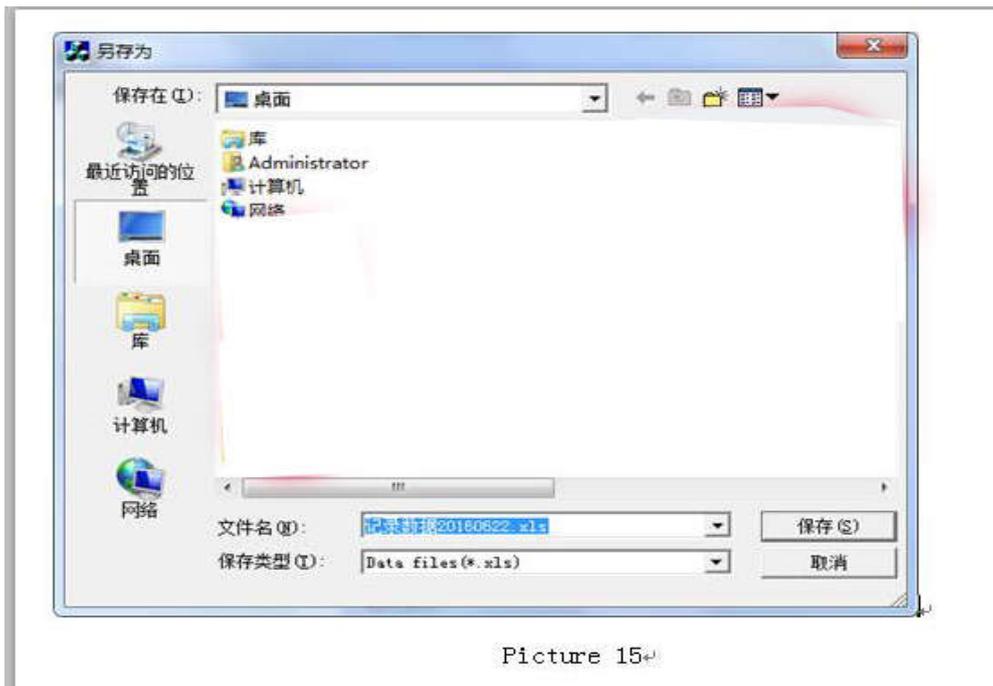
图 14

1.6 Data storage function:



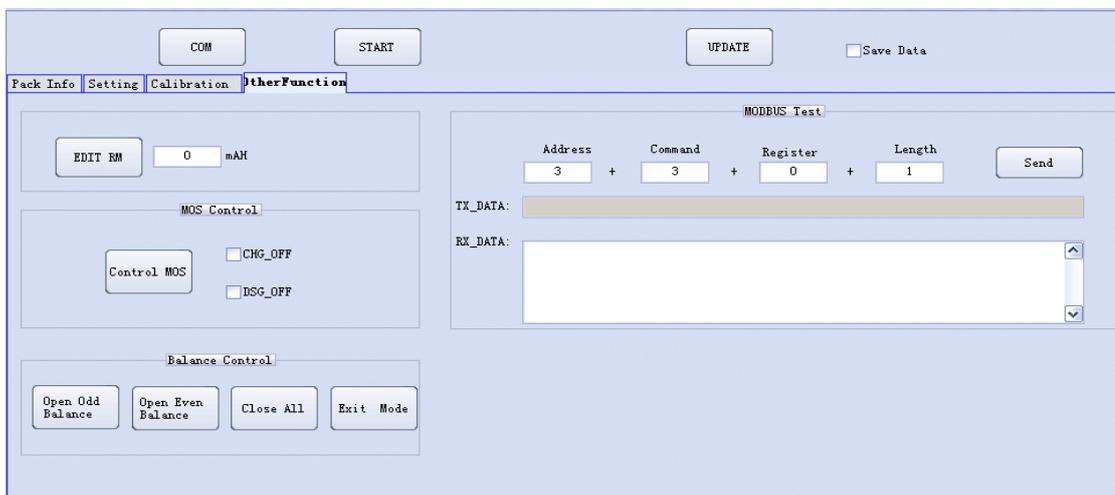
Operation button : , click this Button and dialogue box will pop up as Picture 15.

Then store this file in Excel .client can name it flexibly ,and then submit to store this file in according to you selected file storage road . and you can check the stored file later on . data storage will work in every 1Second after communication established including basic information of your battery pack .



Picture 15

2.8 Other functions :



Mainly include some test function : residual capacity edit , MOS FET controlling , Balance test function , and MODBUS protocol adjustment tools .

Residual capacity edit : you can change your residual capacity at any time , it is purposed for test mainly .

MOS FET controlling : it mainly control the charge and discharge MOSFET , Open or turn off the discharge circuit . it also can be used for vehicle lock function:

Our BMS can be connected with Bluetooth communication function , if you add this command on your APP ,you can lock your battery and disable it's charge and discharge . and unlock can be down also through your APP Bluetooth software operation .

Balance controlling : Enforce to turn on the correspondent balance to test if the balance circuit work or not .

User manuals

PC Tool Setting:

the PC software will display like this when connection was successfully once

(each cell voltage ,total voltage ,protection status will be shown on this page)



NO.	Voltage (V)	Balance	Temp (°C)
1	3.6		
2	3.6		
3	3.6		
4	3.6		
5	3.6		
6	3.6		
7	3.6		
8	3.6		
9	3.6		
10	3.6		
11	3.6		
12	3.6		
13	3.6		
14	3.6		

Click the "read button" will show your current functional setting value



You can set your parameter after read ,click the Write button on the left , you parameters will work With the BMS



You can save your set parameter in a file of your computer ,you can use it once you need .



Calibration works for setting your each cell's voltage when you found the actual voltage is not the same with PC software information , you can input the correct voltage on this software for calibration purpose



Cell	Actual Voltage	Set Voltage	Temp	Cell	Actual Voltage	Set Voltage	Temp
Cell1	4047mV	0	49mV	Cell 9	4047mV	0	49mV
Cell2	3987mV	0	3952mV	Cell10	3952mV	0	3952mV
Cell3	3941mV	0	4025mV	Cell11	3955mV	0	4117
Cell4	46mV	0	4015mV	Cell12	3955mV	0	4120
Cell5	3046mV	0	4113	Cell13	3971mV	0	4123
Cell6	3047mV	0	4012mV	Cell14	3965mV	0	4126
Cell7	3020mV	0	4015mV	Cell15	3964mV	0	4130
Cell8	47mV	0	4043mV	Cell16	3962mV	0	4132