PBAT Battery Monitoring System Installation Instruction Manual V3.3

1 – 1 Solution

CONTENT

1. Precautions

When measuring lines are installed：

1. It is recommended to use a torque wrench , please refer to the parameters provided by the battery manufacturer for the torque size.
2. It is recommended to use insulating gloves when installing measuring lines.
3. To prevent the measuring wire from touching the positive and negative electrodes of other batteries , and the battery holder.

When battery cell sensor is installed：

1. Battery cell sensor breathing light facing outward , ensuring that measuring lines are firmly installed and then plugged directly.
2. When pasting 3M glue , it is necessary to clean the surface of the battery ,and make the battery cell sensor clip is clean and dry . Pasting 3M glue adhesive on the clip at first , and then pasting the clip on the surface of the battery , pressing for 30-60s,it is recommended to install battery cell sensor after 24 hours.

When battery cell sensor communication lines are installed：

1.It is need to follow the rules of “left in and right out” between battery cell sensors.(For details , refer to the step 2 of Chapter 4)
2.Communication lines should be installed in the slot , or away from the strong cable.

When battery string sensor is installed：

1.The string voltage terminals are connected to the positive and negative poles of the entire battery , it is recommended to connect a fuse in series.(Refer to the installation diagram in Chapter 2)
Note :The string voltage can be calculated by the unit accumulation method , for details , refer to the commissioning manual.
2. When battery count in the group is less than or equal to 60,connect Com1 directly to the first battery cell sensor.
When battery count in the group is greater than 60,it is recommended to adopt the connection mode of Com1 and Com2 dividing battery cell sensor.
For example：

① When battery count in the group is 40, connect Com1 directly to the first battery cell sensor.
② When battery count in the group is 80,connect Com1 to the battery cell sensor from 1 to 40, connect Com2 to the battery cell sensor from 41 to 80.

When Hall sensor is installed：

1. There are some direction requirements ,there is a black arrow above the Hall , the direction of the arrow is consistent with the direction of the current.
2. Try to make the cable through the Hall at a vertical angle.
3. Hall is generally installed in:

①the electrode cable of UPS positive ,that is the positive of the first battery.
②the electrode cable of the last battery negative , that is UPS negative.

When intelligent gateway is installed：

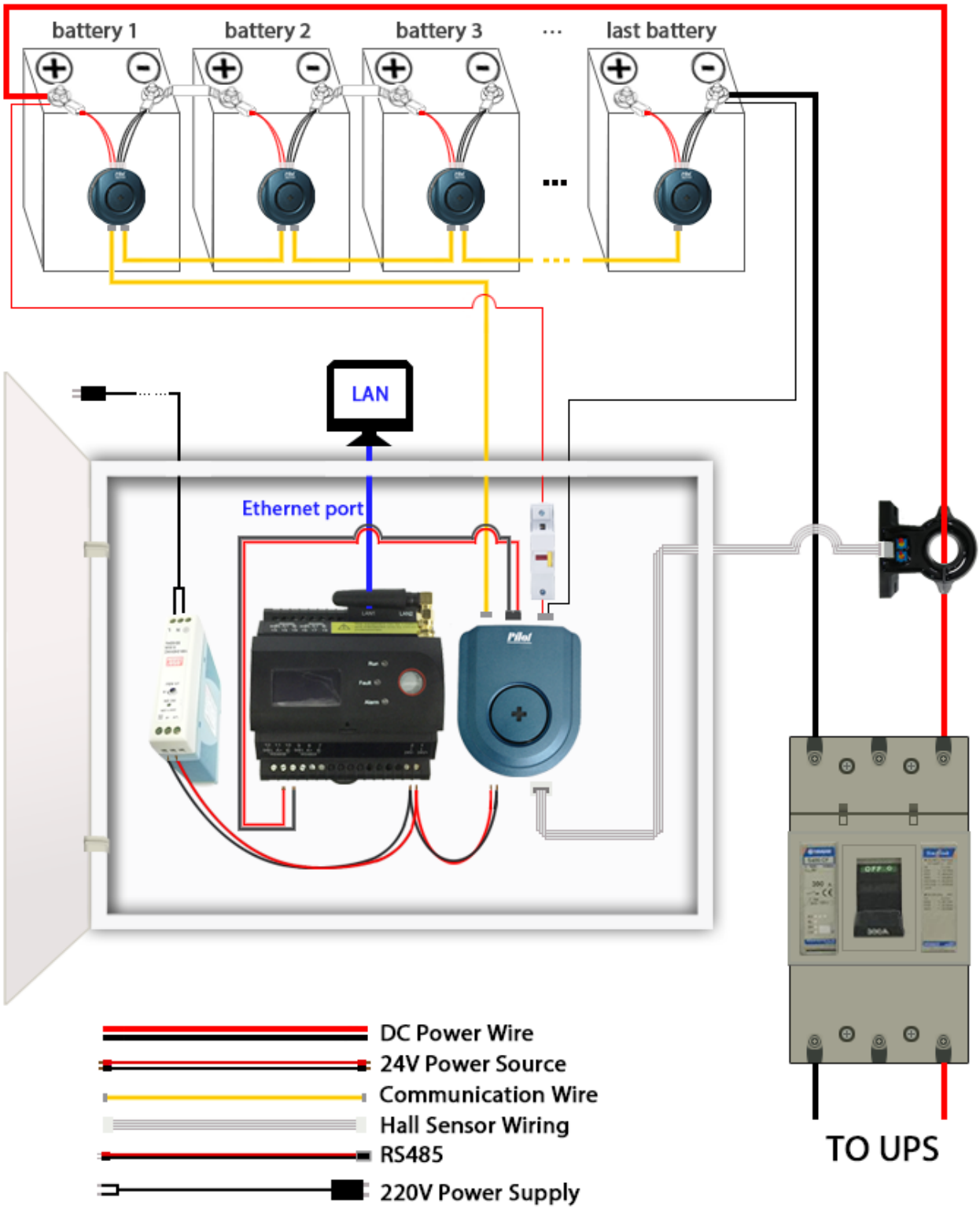
There is RS485A/B/C /D above the intelligent gateway,RS485A represents battery pack 1, RS485B represents battery pack 2, RS485C represents battery pack 3, RS485D represents battery pack 4,connect PBAT600 respectively.

Note : There is a special selection PBAT-GATE 2Z,only two sets of batteries are supported.

2. Product list

Model	Equipment diagram	Diagram
PBAT 61-02 / 61-12 Battery cell sensor		
PBAT 600 Battery string sensor		
PBAT-Gate Intelligent gateway		
24V DC power supply		
Hall sensor（Measuring string current）		
Battery measuring line (6Pin, U type connector, Φ8mm)		
Battery measuring line (6Pin, O type connector, Φ8mm)		
Battery cell sensor communication line (DL-BUS communication, RJ11 connector）		
RS485 communication line		
Hall connection line		

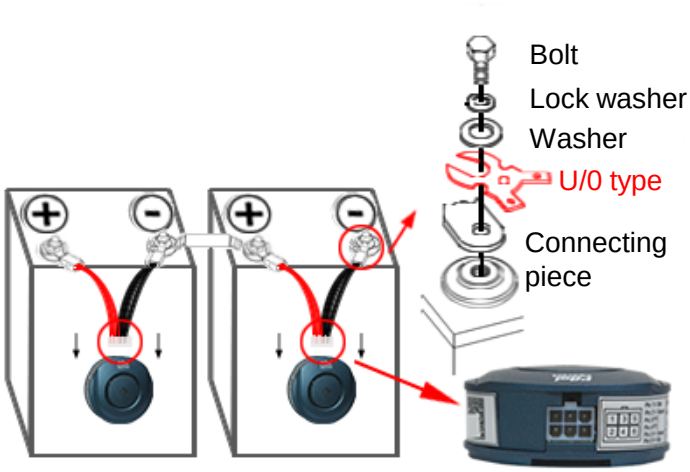
3. Wiring diagram(Take a group of batteries as an example)



4. Installation steps

Step1：

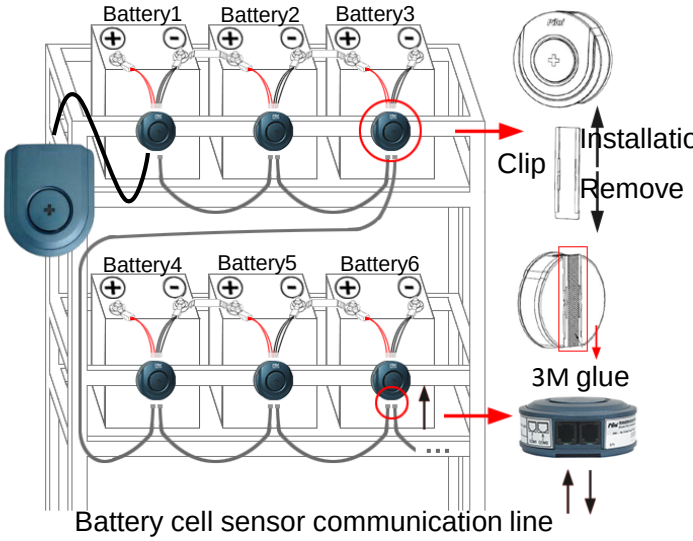
Connect the measuring lines of battery cell sensor , red terminal end positive and black terminal end negative.



Battery cell sensor measuring line

Step2：

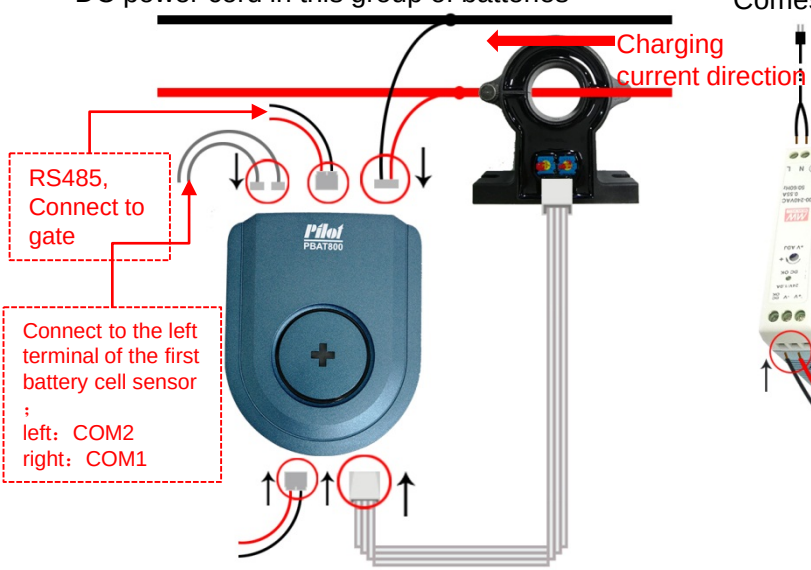
Connect the communication lines of battery cell sensor, it is need to follow the rules of ”left in and right out” between battery cell sensors , the last battery cell sensor is only connected to the left terminal.



Battery cell sensor communication line

Step3 ：

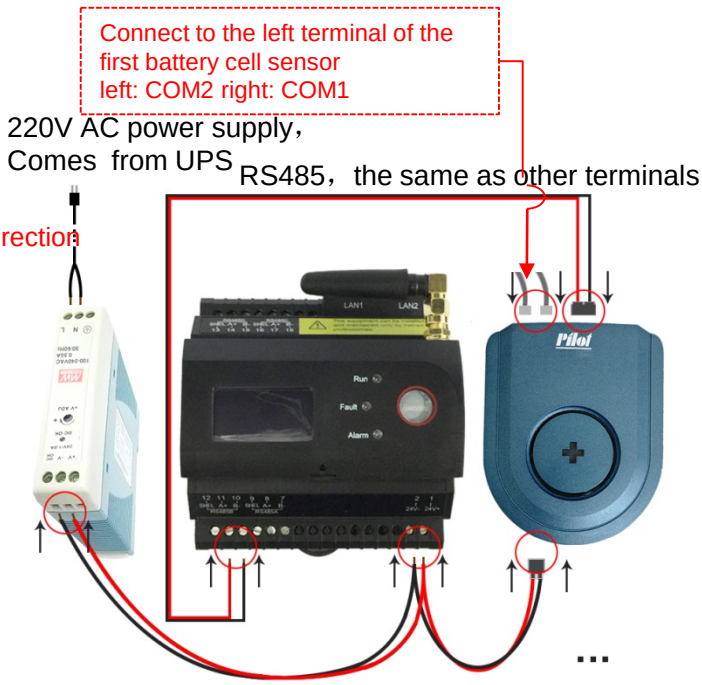
Connect the 24V power supply of PBAT600,Hall,group voltage, intelligent gateway , the first battery cell sensor.



24V DC power supply　　Hall connection line

Step4：

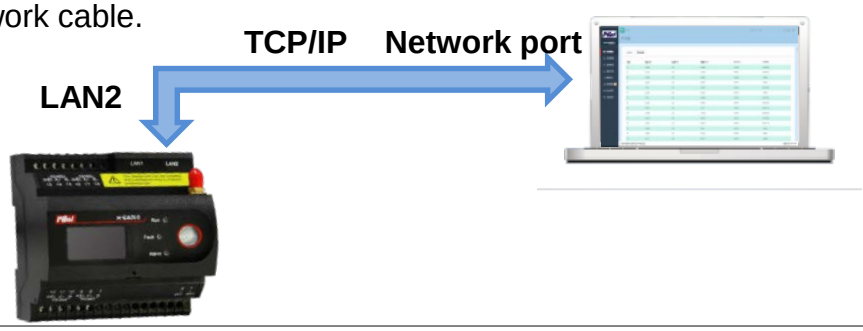
Connect PBAT600 to the RS485A/B/C/D port of intelligent gateway through RS485 line.



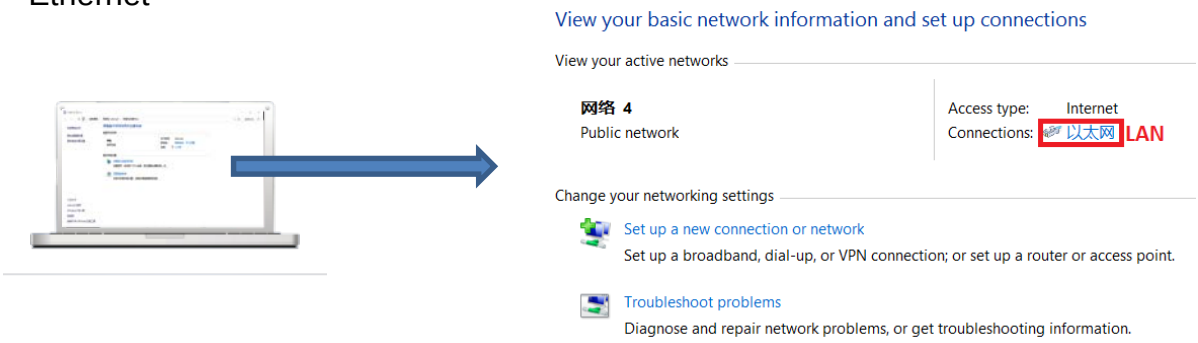
24V DC power supply

5. System basic commissioning

Step1：Connect the LAN2 port of the intelligent gateway to the computer network port by using a network cable.



Step2：Enter “Control Panel” →Open “Network and Sharing Center” →Click “Ethernet”



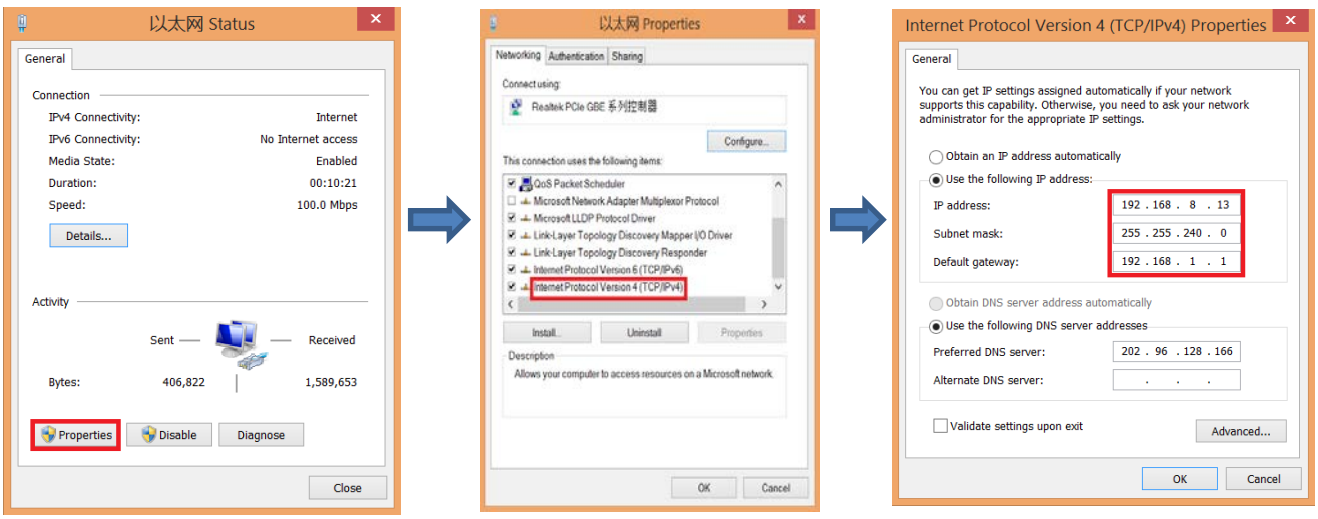
Step3： Click “Properties” → “Internet Protocol Version 4 （**TCP/IPv4**）” → “Use the following IP address”

Modify IP address ： 192.168.16.X

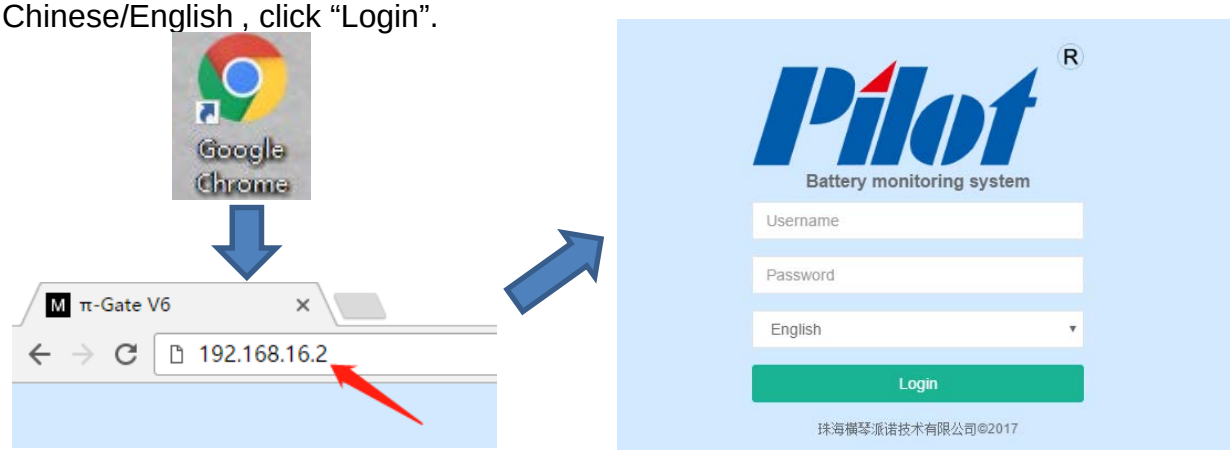
Subnet mask ： 255.255.255.0

Default gateway ： 192.168.1.1

Note: The modified IP address should not be the same as the network address of the battery gateway , it is not allowed to change the IP address to 192.168.16.2,subnet mask and default gateway address can be modified for local area network.



Step4:Download Google Chrome , enter the address “192.168.16.2” after opening ,enter the login screen . Default username: admin , password: admin , choose a language : Chinese/English , click “Login”.

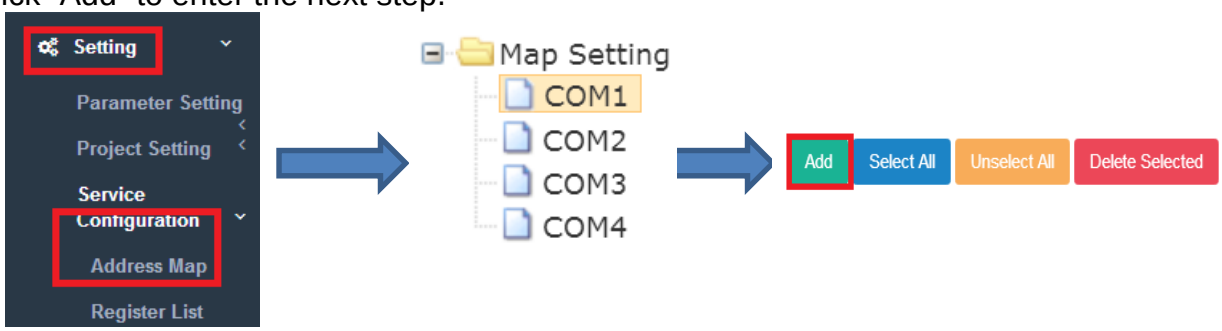


Step5:Select the left menu “Setting” → “Configuration” → “Address Map” Make communication setting.

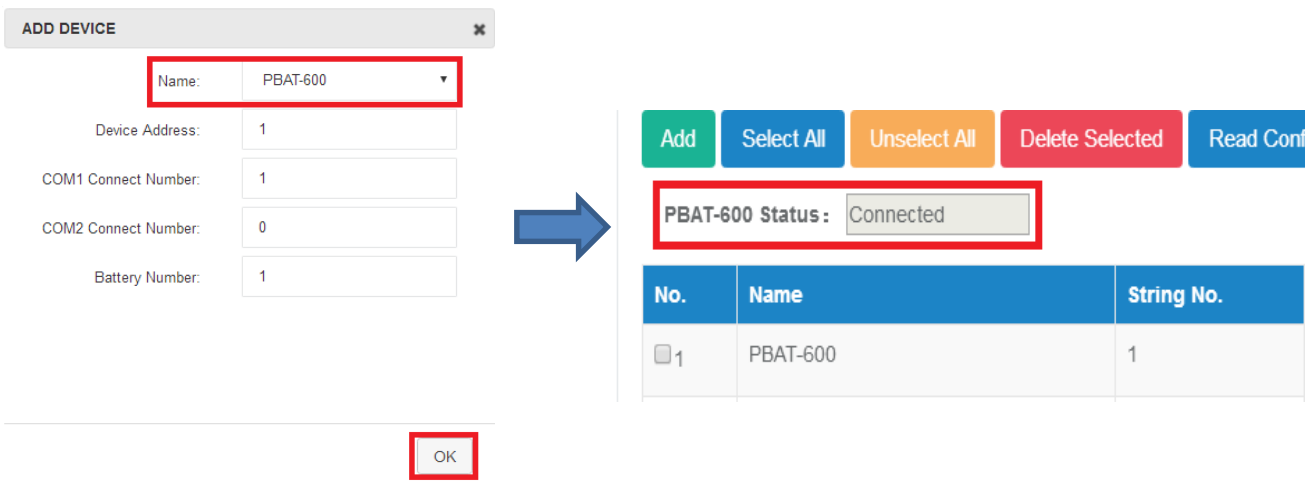
The COM1 to COM4 of the Map Setting is corresponding to the four interfaces “RS485A/B/C/D” of intelligent gateway , and corresponding to battery1 to battery4.

Note: There are only two RS485A/B interfaces for PBAT-GATE-2Z selection.

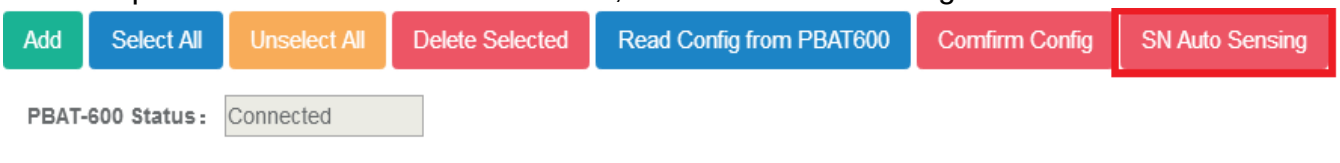
Click “Add” to enter the next step.



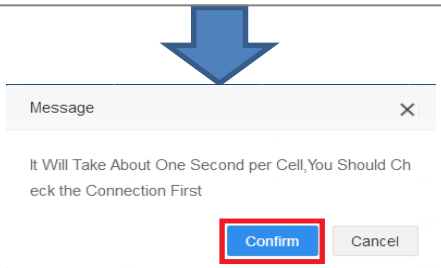
Step6： Add device name: PBAT600,then click “OK” , waiting for PBAT-600 Status：**Connected ,** show that connected completed.



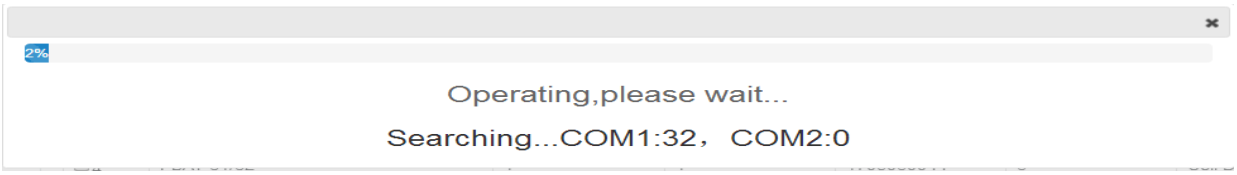
Step7： After PBAT600 is connected , click “SN Auto Sensing”



Click “Confirm”

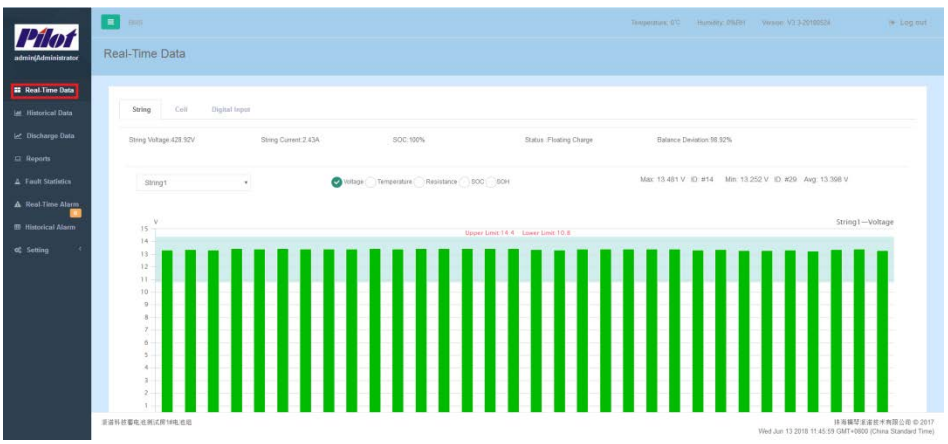


Searching for address



Click “OK” → “OK”

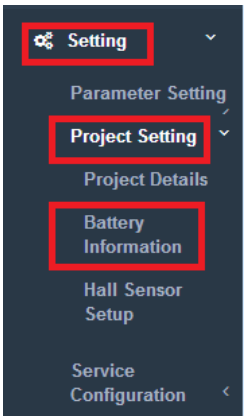
Click “OK” , return to real-time data interface



6. Battery information setting

Step1： Select the left menu “Setting” → “Project Setting” → “Battery Information” ；

Step2： Click “Modify ” in the lower right corner；



Step3： Fill in the information on the surface of the battery , and click “Confirm” ；

Step4： After the gateway is restarted , pop-up connection completed and click “Confirm”

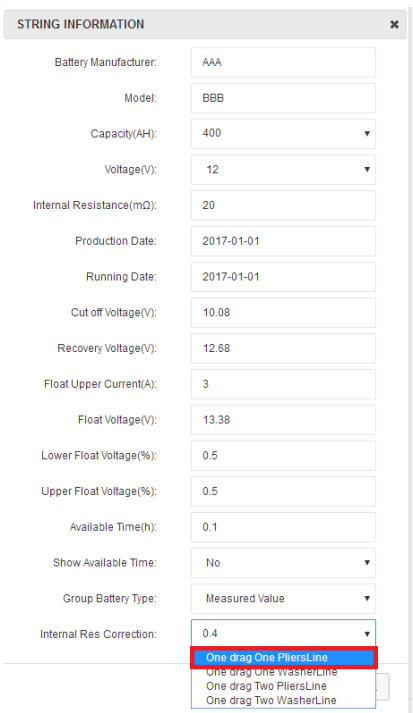
Note: 1.Battery information is for reference only , please contact the battery manufacturer for details.

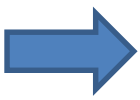
2.If using the recommended value , please select the correct capacity , voltage , the remaining information will have a recommended value.

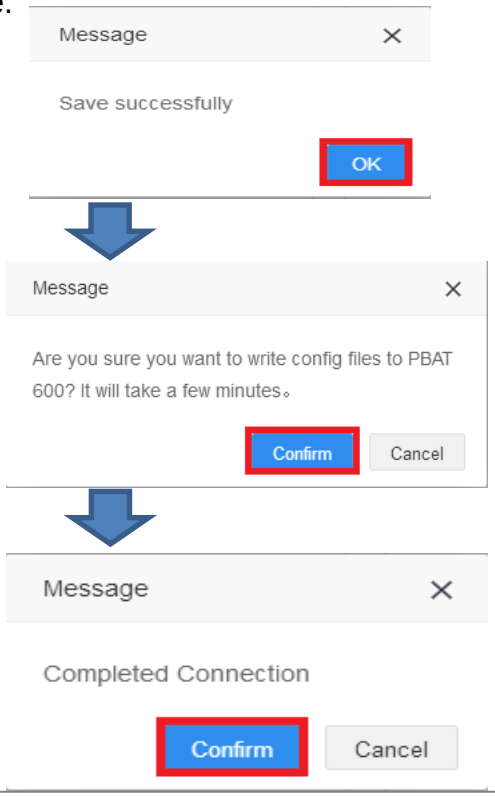
3.String voltage measuring mode : select battery cell sensor accumulation , we can calculation string voltage by battery cell sensor without wiring.

Select measuring value，PBAT600 connects the positive and negative polse of the entire battery pack for measurement.

4.Internal resistance correction : Select the type of wire used , it will correct the internal resistance data automatically , it will more accurate.

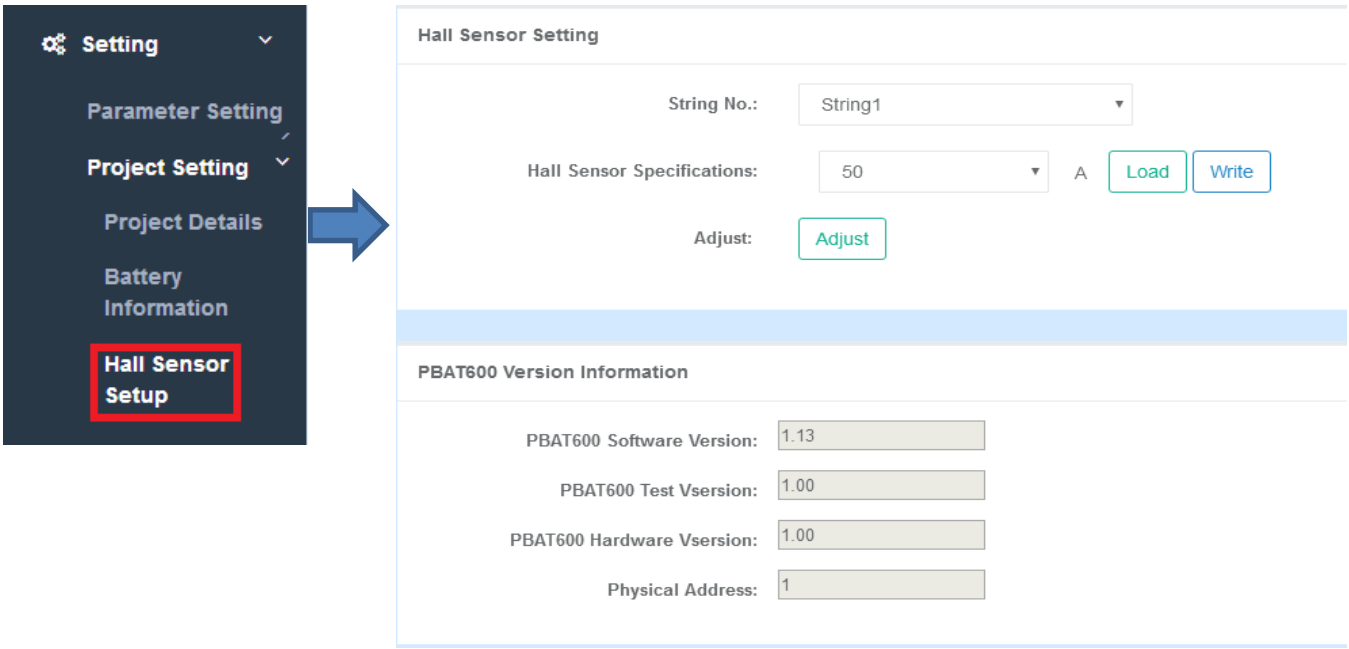






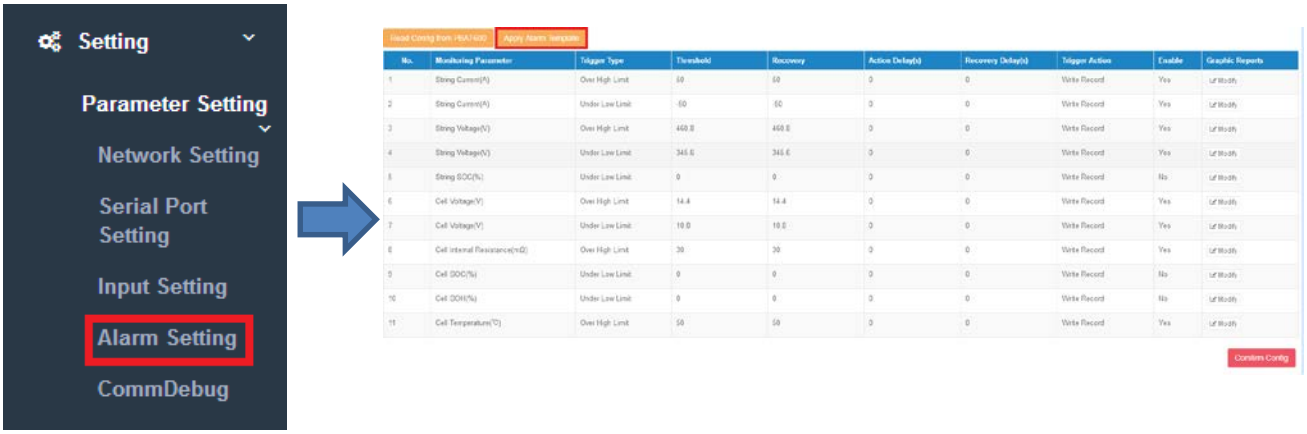
7. Hall sensor setup

Step1： Select the left menu “Setting” → “Project Setting” → “Hall Sensor Setup” ；
Step2： Select string NO., select Hall sensor specifications:50/100/200/300/400/500A,and then click “Write” ;You can click “Load” to confirm whether the setting is successful.
Note: 1.The adjust function is only used when the group current data error is very large , use with caution.
2.When calibrating , please make sure the current across the Hall’s cable is zero.

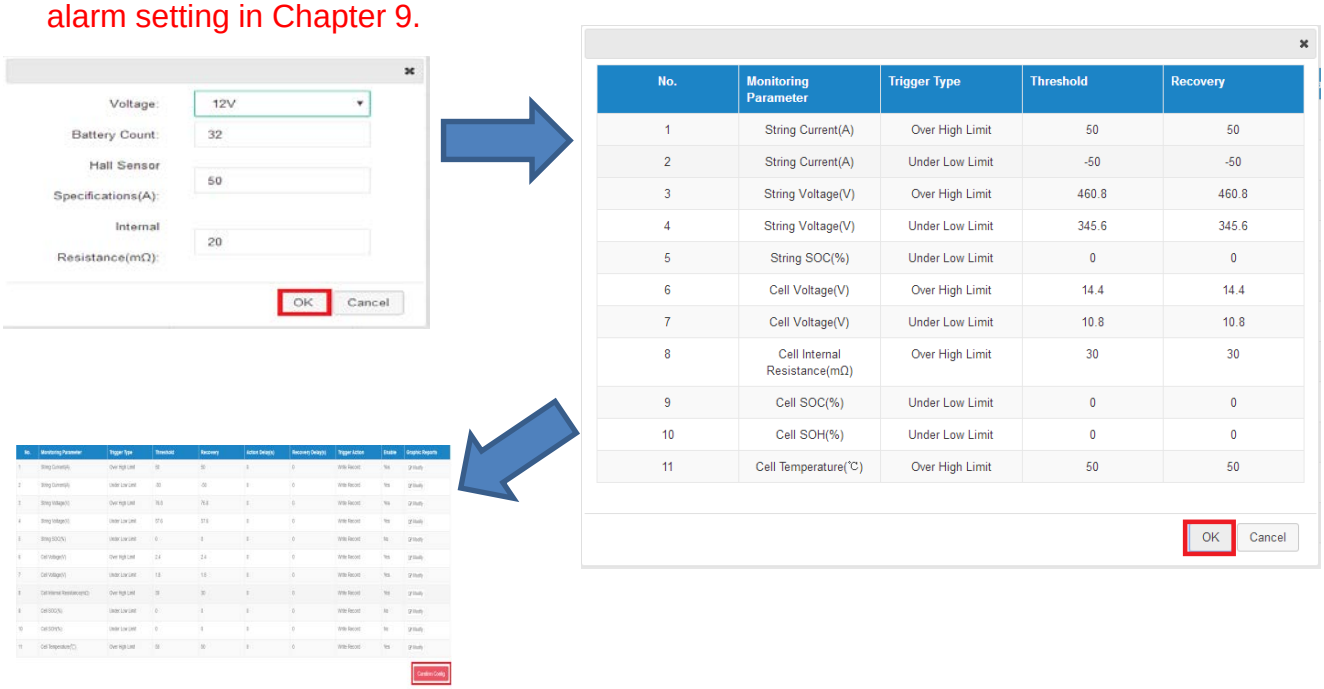


8. Rapid alarm setting

Step1： Select the left menu “Setting” → “Parameter Setting” → “Alarm Setting” ;
Step2： Select “Apply Alert Template”;

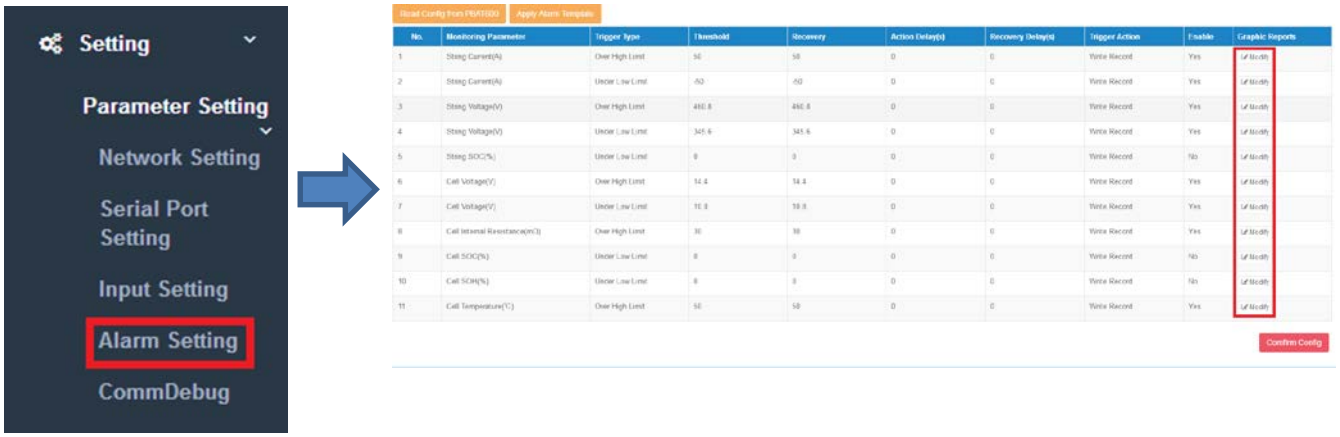


Step3: Voltage type **:**select the correct voltage type,2V or 12V ；
Battery count : enter the battery count in the current set of batteries ；
Enter Hall sensor specifications and internal resistance reference(It will obtain battery information automatically and the Hall setting of Hall sensor) ；
Click “OK”
Step4: Pop-up alarm parameter list , confirm that the set threshold and recovery are correct or not ; Click “OK” in the lower right corner.
Step5: Finally,in the lower right corner of the alarm settings ,click the red “Confirm Configuration” to complete the simple alarm setting.
Note: If you have some knowledge of the battery alarm parameters , please refer to the alarm setting in Chapter 9.

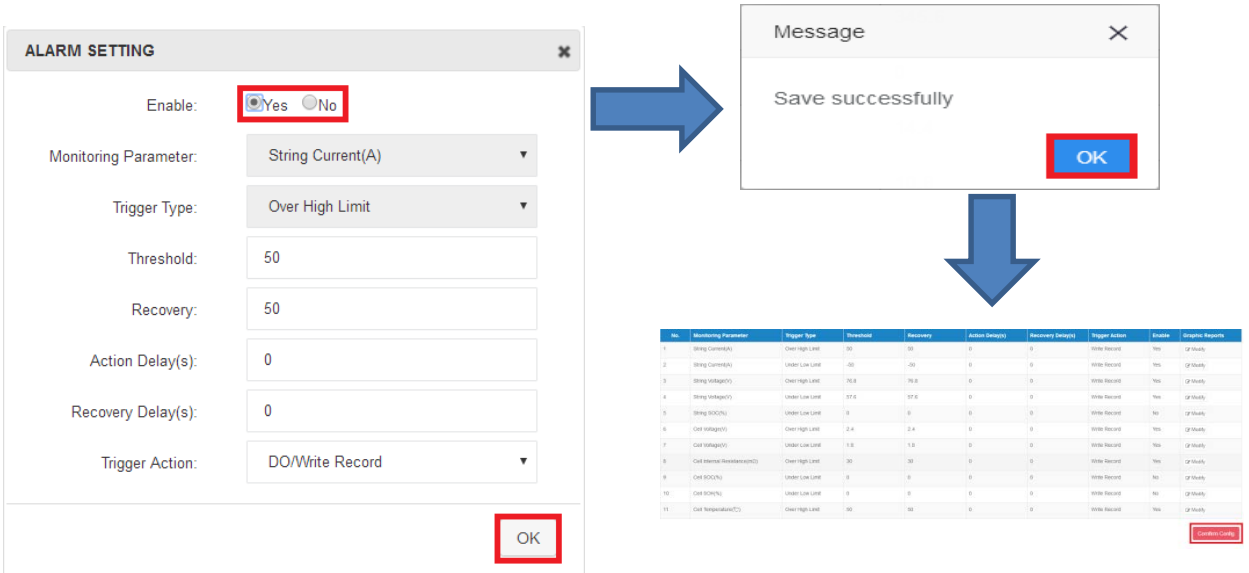


9. Alarm setting

Step1： Select the left menu “Setting” → “Parameter Setting” → “Alarm Setting” ;
Step2： Select the alarm parameters you want to set , then click “Modify” on the right side of the system;



Step3: Select “Yes” in enable ,enter the alarm threshold and recovery , and then click “OK”
Step4: Pop-up “ Save successfully” , click “OK”;
Step5: After confirming that all alarm configurations are correct , click the red “Confirm Configuration” in the lower right corner of the alarm settings page.
Note: When the trigger type is upper-limit ,the threshold value is greater than the hysteresis value; When the trigger type is lower-limit ,the threshold value is less than the hysteresis value
Threshold and hysteresis value please refer to the attached page : Alarm setting recommendation table.



Attachment: Alarm setting recommendation table

	2V	12V	2nd Upper limit	1st Upper limit	2nd lower limit	1st Lower limit
Float Voltage	2.23 ~ 2.27	13.38 ~ 13.62	2.40	2.56	1.95	1.80
Charge Voltage	2.35 ~ 2.39	14.10 ~ 14.40	2.45	2.60	1.95	1.80
Open Circuit Voltage	2.10 ~ 2.12	12.60 ~ 12.72	--------	--------	--------	--------
Cut-off voltage	1.75 ~ 1.80	10.50 ~ 10.80	--------	--------	1.95	1.80
Reset voltage	2.08 ~ 2.10	12.48 ~ 12.60	--------	--------	--------	--------
Internal Resistance	--------	--------	Standard*1.3	Standard*1.5	--------	--------
Ambient Temperature	--------	--------	30	40	10	0
Negative Temperature (Float)	--------	--------	TEMP+5	TEMP+10	--------	--------
Negative Temperature (Equal)	--------	--------	TEMP+10	TEMP+20	--------	--------
Negative Temperature (Discharge)	--------	--------	TEMP+15	TEMP+30	--------	--------

Note: The above parameters are for reference only, all based on the parameters provided by the battery manufacturer.

г. Екатеринбург, ул. Предельная, д.57 корп. 2.
Тел/факс (343) 379-98-38 e-mail: sales@nag.ru

г. Москва: 105082 ул. Б.Почтовая, д. 36 стр. 9 (15 подъезд) офис 212
Телефон: +7(495)950-57-11 e-mail: msk@nag.ru

г. Новосибирск: 630001, ул. Ельцовская 20
Телефон: +7(383)251-0-256 e-mail: ns@nag.ru