Wall Mounted Battery

Pack Installation & Operation Manual

BR-OW-LV 11.77KWH BR-OW-LV 14.33KWH BR-OW-LV 15.36KWH







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1. Preface

This manual will provide detailed product information and installation instructions for users of the wall-mounted series products of SHENZHEN BASENGREEN TECHNOLOGY CO.LTD (hereinafter referred to as BASENGREEN). Please read this manual carefully, and put this manual in a place where you can install, operate, and obtain it conveniently.

The safety precautions mentioned in the manual do not represent all the safety matters that should be observed, but are only supplementary to the safety precautions. When installing, operating, and maintaining equipment, local safety regulations and norms should be followed. Only trained professionals can install, operate and maintain equipment. Our company does not assume any responsibility for losses caused by violation of general safety operation requirements or violation of safety standards for the design, production, and use of equipment. Installation and maintenance personnel must have high-voltage and AC power operation skills. When installing, operating, and maintaining equipment, they must not wear any conductive objects, such as watches, bracelets, bracelets, and rings, and prevent moisture from entering the equipment.



Safety Instructions

High Voltage Danger

The high-voltage power supply provides power for the operation of the equipment. Direct contact or indirect contact with high-voltage power supply through wet objects will cause fatal danger.

Use Professional Tools

Always use professional tools instead of personal tools when working with high voltage and AC power

Anti-static

The static electricity generated by the human body will damage the electrostatic sensitive components on the board. Before touching the plug-in, circuit board or chip, make sure to take proper anti-static measures.

Operate Attention

The power must be cut off first before operation, do not hot-line work.

DC short circuit Danger

The power system provides a DC-regulated power supply, and a DC short circuit will damage the equipment and cause personal injury.

2. Label Explanation

The label contains the following information







3. Product Description

This product is a lithium iron phosphate battery (LFP LiFePO4) composed of 16 cells in series. Which is suitable for home energy storage systems. It can be customized according to customer needs to meet diverse application scenarios and provide stable power for various equipment of users.

4. Product Advantages

- a. Built-in Battery Management System (BMS): Overcharge, overdischarge, overcurrent, temperature control, short circuit and other protection functions.
- b. Passive Balance Function: There is a voltage equalization function during the charging.
- c. High Cost Performance: High safety performance, long service life, stable and reliable quality.
- d. Expandable: Equipped with RS232/RS485/CAN bus ports, support up to 15 units in parallel.

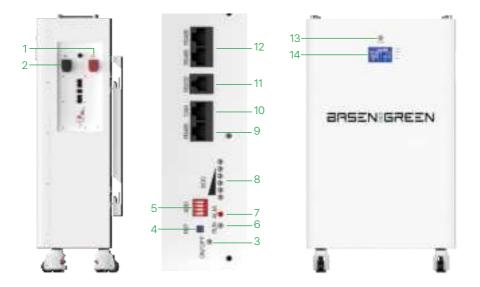
- e. Wide Working Temperature: -20 $^{\circ}$ C to 60 $^{\circ}$ C, excellent high-temperature discharge performance.
- f. Convenient: Modular design, small size and lightweight, easy to install and maintain.

5. Product Technical Parameters

5.1 Specification

Item	Specifications						
Model	BR-OW-LV 11.77KWH	BR-OW-LV 14.33KWH	BR-OW-LV 15.36KWH				
Nominal Voltage	51.2V	51.2V	51.2V				
Operating Voltage	43.2V-57.6V	43.2V-57.6V	43.2V-57.6V				
Nominal Capacity	230AH	280AH	300AH				
Total Energy	11776Wh	14336Wh	15360Wh				
Configuration	1P16S	1P16S	1P16S				
Charging Cut-off Voltage	58.4V	58.4V	58.4V				
Discharge Cut-off Voltage	43.2V	43.2V	43.2V				
Operation Temperature	-20°C ∼60°C	-20℃~60℃	-20℃~60℃				
Standard Charging Current	50A	50A	50A				
Max Continuous Charging Current	200A	200A	200A				
Max Continuous Discharge Current	200A	200A	200A				
Dimension	500*232*670mm	500*255*770mm	500*255*770mm				
Net weight	98KG	112KG	112KG				

5.2 Interface Overview



Position	Item	Description
1	P+	The positive terminal of the battery, can be connected to the positive pole of the inverter through a cable for DC output.
2	P-	The negative terminal of the battery, can be connected to the negative pole of the inverter through a cable for DC output.
3	Power Indicator	Turn on then light-on, turn off then light-off
4	RST	Manual-return switch button
5	ADD	Setting up battery parallel communication and inverter communication
6	RUN	Indicating the normal operation status of the battery
7	Alarm	Indicating the abnormal state of the battery, if there is an low voltage or over voltage, the alarm will sound.
8	SOC	6 indicators, indicating the remaining power status.
9	RS485 A	RS485 port for the inverter or the upper system communication
10	CAN	CAN port for the inverter communication
11	RS232	Communication port for the upper system.
12	RS485 B/C	RS485 port for parallel communication

13	Power switch	The switch for turn on/turn off the battery pack.	
14	LCD Screen	Display battery voltage, SOC, temperature, etc.	

5.3 Battery Management System (BMS)

5.3.1 Overcharge Protection

When the voltage of any single cell or whole battery pack is higher than the set value during the charging, and the duration reaches the limited time, the system enters the over charging protection state automatically, the charging MOS is turned off at the same time, and the battery cannot be charged. After the voltage of each cell and the whole battery pack drops below the cell over charging recovery value, the over charging protection state is released. It can also be released by discharging to return to normal state

5.3.2 Overdischarge Protection

When the voltage of any single cell or whole battery pack is lower than the set value during discharging, and the duration reaches the limited time, the system enters the overdischarge protection state, the discharge MOS is turned off, and the battery cannot be discharged. After the overdischarge protection of the battery pack occurs, it can be released by charging the battery pack.

5.3.3 Overcurrent Protection

During charging and discharging, when the current exceeds the set value of the protection current, and the duration reaches the limited time, the system enters the overcurrent protection state, the charging and discharging MOS will be turned off automatically, and the battery cannot be charged and discharged, charging and discharging the battery pack can release the overcurrent protection state.

5.3.4 Over Temperature Protection

When the NTC detects the temperature of the battery cell surface is higher than the setting value of over temperature protection during charging and discharging, the management system enters the over temperature protection state, the charging or discharging MOS is turned off, and the battery pack cannot be charged or discharged in this state.

5.3.5 Low Temperature Protection

When the NTC detects that the temperature of the cell surface is lower than the setting value of low temperature protection during charging and discharging, the management system enters the low temperature protection state, the charging or discharging MOS is turned off, and the battery pack cannot be charged or discharged in this state.

6. Installation and configuration

6.1 Packing

- a. After receiving the battery, open the box to check the battery surface if get any broken, cracks or other bad phenomena; if get that, please do not install, and need to contact the supplier, and wait for the supplier's reply before proceeding to the next step.
- b. Please ensure that the following items are included in the packaging:









Mounting Bracket*1

Expansion bolts*10

Positive and negative cable 100cm 35mm2









M8*12mm

Inverter combination screws*2 communication cable*1 communication cable*1

Parallel

Upper system communication cable*1

6.2 Recommended Tools

Before installing the battery pack, the user needs to have the tools as following list:

Picture	ltem	Description		
DO 10 28	Level	Make sure the bracket is properly installed		
7-7	Hammer Drill	Drill holes on the wall		
Z	Impact Wrench Set	Locking expansion bolts		
7	Electric Screwdriver	Wiring		

<	Hammer	Hanging the bracket
1	Crimping Tool	Crimping tool for RJ45 terminal
	Crimping Plier	Crimping tool for insulated electric connectors
2	Adjustable wrench	Loosening/tightening screws

6.3 Notice for Installation

- a. The wall for installation should be a solid brick or cement wall with a strong load-bearing capacity, and the thickness of the wall should not be less than 100mm.
- b. In indoor installation, it needs to leave enough space to be installed and operated easily and pay attention to ventilation. Do not place flammable materials around the battery.
- c. In outdoor installation, it needs to be surrounded by protective measures, and make a rain protection.

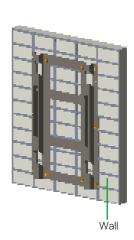
6.4 Installation Procedure

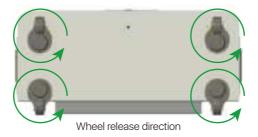
- a. Mark the drilling position using the wall mounting plate, and level using a spirit level.
- b. Place the wall mounting plate close to the wall firmly, mark the drilling position, and remove the wall mounting plate.
- c. Drill holes in the wall using the driller. The hole diameter is 12mm and the depth is 60mm.
- d. Fix the M8 Expansion bolts, tightening torque: 20N.m
- e. Loosen the 4 wheels on the battery, lift the battery parallel to the ground, and hang the battery module on the bracket as shown in the following figure:

Installation Diagram









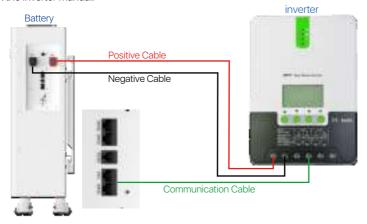




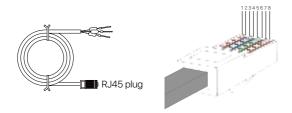
7. Connection

7.1 Precautions Before Connecting The Inverter

- a. Use a multi-meter to measure whether connection of the positive and negative cables are conducting, and check whether that connections are loose.
- b. The battery should be switched off before wiring to ensure that there is no DC output from the battery.
- c. Connect positive terminals of the battery and the inverter with red power cable, and then connect negative terminals of both sides with black power cable.
- d. Connect both communication ports of the battery(RS485A/CAN) and the inverter(BMS port) with the communication cable, BMS ports of inverter have different definitions for some brands, please check the inverter manual.



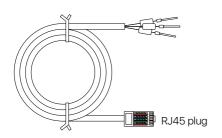
Communication cable connection Pin definition is as follows:

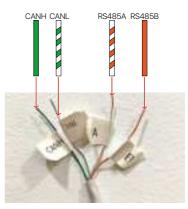




RS485A Port	PIN	1	2	3	4	5	6	7	8
	Define	RS485-B	RS485-A	GND	NC	NC	GND	RS485-A	RS485-B
CAN Port	PIN	1	2	3	4	5	6	7	8
	Define	NC	NC	NC	CAN-H	CAN-L	NC	GND	NC

7.2 RJ45 Connector Diagrams of Inverter's port

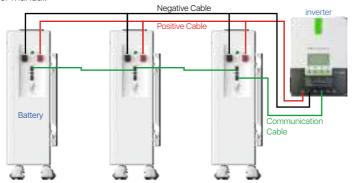




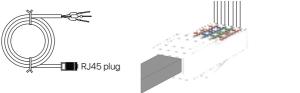
RJ45 Connector Diagrams	Communication				
Inverter Brand: DEYE, Growatt, Goodwe, Solis	CANH->pin4 CANL->pin5				
Inverter Inverter Brand: Victron	CANH->pin7 CANL->pin8				
Inverter Inverter Brand: Pylon, Growatt	RS485B->pin1 RS485A->pin2				
Inverter Inv	RS485B->pin3 RS485A->pin5				
Please set up the RJ45 connector according to the pin definition of the inverter					

7.3 Precautions Before Connecting The Inverter with The Battery Pack in Parallel

- a. Use a multi-meter to measure whether connection of the positive and negative cables are conducting, and check whether that connections are loose.
- b. The battery should be switched off before wiring to ensure that there is no DC output from the battery.
- c. Lock the parallel cable wires to the positive terminal of the battery pack first, then connect another end to the negative terminal.
- d. Parallel communication cable to the RS485 port of the battery pack.
- e. Connect positive terminals of the battery and the inverter with red power cable, and then connect negative terminals of both sides with black power cable.
- f. Connect both communication ports of the battery(RS485A/CAN) and the inverter(BMS port) with the communication cable, BMS ports of inverter have different definitions for some brands, please check the inverter manual.



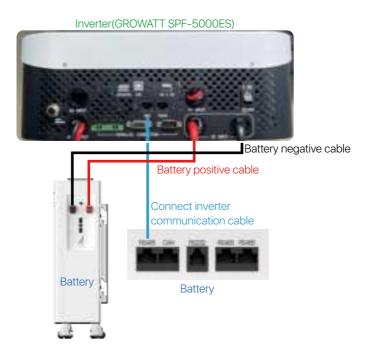
Parallel communication cable connection Pin definition is as follows:



RS485 Parallel	PIN	1	2	3	4	5	6	7	8
communi-	Define	RS485	RS485	GND	NC	NC	GND	RS485	RS485
cation interface definition		-B	-A					-A	-В

7.4 Battery & Inverter Connection

Connect the positive and negative cables of the battery to the positive and negative terminals of the DC input of the inverter, insert the RJ45 crystal plug at one end of the distributed inverter communication cable to the RS485 of the battery, and connect the other end to the BMS terminal of the inverter according to the defined line voltage, and then connect the battery to the inverter.



7.5 Dip Code Switch Definition and Setting

ADD switch is a 4-bit DIP switch to manually distribute the communication address of parallel batteries.

The BMS will only recognize the DIP address once it is reset, so please reset the BMS when the DIP address is changed (the BMS must be reset in the standby state). When the DIP address is 0, the battery is configured as the stand-alone working mode; when the DIP address is 1, the BMS is configured as the master working mode; when the DIP address is 2 to 6, the BMS is configured as the slave working mode.

Please refer to the table below to set the DIP switch for parallel connection of different batteries.

Battery pack	Master	Slave 2	Slave 3	Slave 4	Slave 5	Slave 6
1	ON L3					
2	ON L3	ON L3				
3	ON L3	ON L3	ON L3			
4	ON L3	ON L3	ON L3	ON L3		
5	ON L3	ON L3	ON L3	ON L3	ON L3	
6	ON L3	ON L3	ON L3	ON L3	ON L3	ON L3

8. Operation

8.1 Check Before Power on

- a. Check all positive, negative cables and communication lines are connected correctly and safely.
- b. Check the battery is firmly installed, easy to operate and maintain, and check ventilation.
- c. Insulate the unused ports.

8.2 Power on

- a. Turn on the switch on the battery.
- b. The green running LED is normal on(Check the status of the LED indicators)
- c. If it is failed to switch on the battery system, check if all the electrical connection is correct.
- d. If the electrical connection is correct, but the battery system is still unable to switch on, contact our after-sale service within 48 hours

LED Indicator Status

Status	Charging					
Capacity Indicator	L1•	L2•	L3•	L4•	L5•	L6•
0~16.6%	Light	OFF	OFF	OFF	OFF	OFF
16.6~33.2%	Light	Light	OFF	OFF	OFF	OFF
33.2~49.8%	Light	Light	Light	OFF	OFF	OFF
49.8~66.4%	Light	Light	Light	Light	OFF	OFF
66.4~83.0%	Light	Light	Light	Light	Light	OFF
83.0~100%	Light	Light	Light	Light	Light	Light

Status	Discharge						
Capacity Indicator	L1•	L2•	L3•	L4•	L5•	L6•	
0~16.6%	Light	OFF	OFF	OFF	OFF	OFF	
16.6~33.2%	Light	Light	OFF	OFF	OFF	OFF	
33.2~49.8%	Light	Light	Light	OFF	OFF	OFF	
49.8~66.4%	Light	Light	Light	Light	OFF	OFF	
66.4~83.0%	Light	Light	Light	Light	Light	OFF	
83.0~100%	Light	Light	Light	Light	Light	Light	

Flashing Definition

Item	Light	OFF
Flash 1	0.25 s	3.75 s
Flash 2	0.5 s	0.5 s
Flash 3	0.5 s	1.5 s

LED Flashing Faulty

Please turn to the next page



Otatora	Normal/warning/	RUN	ALM	Ва	atter	у са	pacit	ty LI	ΞD	Specification
Status	protection	•	•	•	•	•	•	•	•	
Power off	Sleep	OFF	OFF			ALL	OFF			
Stand by	Normal	Flash1	OFF							
Startu by	Warning	Flash1	OFF							
	Normal	Flash2	OFF							
	Warning (Not including temperature)	Flash2	OFF							
Charging	Over charging protection	Flash1	OFF			-				ALM OFF when protected during over charging
	Over Temperature, Low-temperature, Over current protection	Flash1	Flash2							
	Limited charging	Light	OFF	F Display ac						
	Normal	Light	OFF	Display according						
	Warning	Light	Flash3	to the actual SOC			ALM OFF when discharge over current			
	Over discharge Protection	Flash1	OFF					ALM OFF when protected during over charging		
Discharging	Over Temperature, Low-temperature Over current Shot Circuit Reverse Polarity Protection	Flash1	Flash2							
Invalidation	Error	OFF	Light			ALL	. OFF			Error refers to hardware defection such as BMS voltage sampling device,charging MOS damage, tempera ture sensor disconnection, etc.

9. Operation of Bluetooth

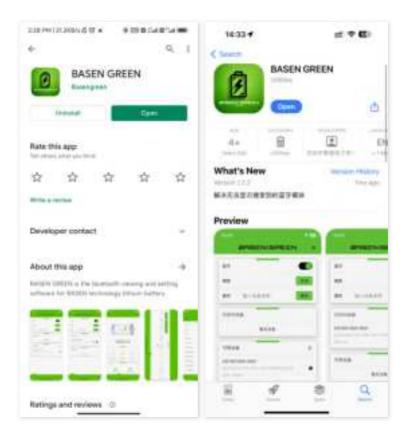
BASENGREEN 48V battery pack is equipped with a Bluetooth function, supports APP monitoring battery statuses. All information available in the battery, such as the state of charge, voltage, operating current, temperature, and other operating information are transmitted in real-time via the Bluetooth transmitter. The parameters can be made visible with the BASENGREEN App.

Download: Android: "BASENGREEN" in Play Store

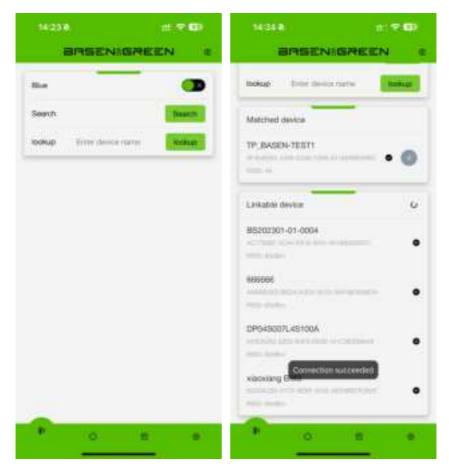
iOS: "BASENGREEN" in Apple Store

9.1 Bluetooth

a. For Android users, please visit the Google Play Store and search for 'BASENGREEN'. For iOS users, go to the Apple Store and look up 'BASENGREEN'.



b. Turn on Bluetooth and search for the corresponding product's Bluetooth code



NOTE:

1. If you selected a battery to connect to and the app doesn't confirm the connection, it might be someone else is already connected to the battery. Only one device connects to the battery at the same time.

2. The Bluetooth app supports status monitoring only. It does not support any modified operation except communication protocol switching

c. Menu



Bluetooth list: Check the Device list and connect it.

Homepage: Check the status of battery-SOC, Volt, Current, Temperature, etc.

Historical Data: Not available

Setting: Base Message: Check the pack voltage, current, cycle time, etc.

Cell Voltage: Check the cells voltage. **Language:** English/Chinese switching.

Fault Data: Not available

System Parameter: Not available

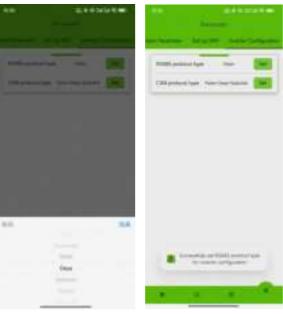
Set up WiFi: Setup WiFi function(Not available)

Inverter configuration: Communication protocol switching(Chapter 9.2)

- 9.2. Operation of Communication Protocol Switch(Via Bluetooth App)
- a. Connect to the Bluetooth app first(Chapter 9.1)
- b. Swipe left to find 'Inverter Configuration'. Set unlock code is 888888



c. Choose the communication protocol and set, the battery pack will be restart after few second with "bee" sound. Then set up is successful.



10. Operation of Upper System

BASEN 48V battery pack supports to connect with our upper system to monitor the status of the battery and modify the communication protocol, please contact our sales representative or visit our website to get the latest upper system software.

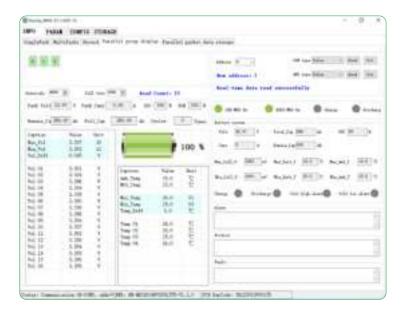
10.1 Log in

- a. The upper system communication cable connects to the RS485 port on the battery and then to the USB port on the PC/Laptop
- b. Download and open the upper system software
- c. Modify the language
- d. Updated the status of battery automatically

Notice: If it is failed to connect to the upper system, check if all the connection is correct. If the connection is correct, but the upper system is still unable to work, please contact our after-sale service







10.2 Operation of The Communication Protocol Switch

Connect to the upper system and follow the path:

INFO—Parallel Group Display—CAN Type/RS485 Type—Read—Choose the protocol—Set



10.3 Communication Compatible List

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BASEN BMS Inverter Communication Protocol Matching Table									
Section Section		Completed.	Resolution	Promot Remarks	Torrivosition Poster less	Triarileos Sedimos			
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GREEN-UT	Growatt	199	Solution (SEE CO) has seemed the unique (U.S.	Ameripinal	vin.	91.3			
5858-05-	Growatt	One	Const. Mill concurrency propert of primary fire whose VLST	Acceptant)	jex.	91.3			
Bit Style	Doyo ar	CPR0	Dept 11/ CM1 contractions promot	American .	195.0	49,8			
ARI-tone	SACOLAR	OH	Small MR DW he seems to unique 1176	Anter Option 1	100	01. S			
-	вороне	Grey	Super-Devict (SEE See Seider) - 01	Action regimes	1100	41.36			
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11. Storage

- a. External terminals of the battery pack are insulated and protected.
- b. If the battery pack is stored for a long period of time without use, it is recommended that it be charged 30%-60%, and it is prohibited to store it completely uncharged.
- c. Batteries that have been in storage for more than 3 months should be recharged for 2–3 hours at 0.2C~0.3C.
- d. Batteries should be stored in a dry, clean, ventilated, non-corrosive gas environment, away from sources of ignition, to avoid exposure to the sun.
- e. Do not store or put in high temperatures over 60°C for a long period of time, otherwise, it will cause function deterioration and life span reduction.

12. Warning

To prevent possible battery leakage, heat generation, and explosion, please observe the following warning:

Warning!

- a. It is strictly forbidden to immerse the battery in seawater or water. When not in use, it should be
 placed in a cool and dry environment;
- b. It is strictly forbidden to reverse the positive and negative poles to use the battery;
- c. It is forbidden to use metal to directly connect the positive and negative electrodes of the battery to a short circuit;
- d. It is forbidden to transport or store batteries together with metals, such as hairpins, necklaces, etc;
- e. It is forbidden to knock or throw, step on the battery, etc.;
- f. It is forbidden to directly weld the battery and pierce the battery with nails or other sharp objects.

Attention!

- a. It is forbidden to use or place the battery under high temperatures (in the hot sun or in a very hot car),
 otherwise, it may cause the battery to overheat, catch fire or fail to function, and shorten its life; the
 recommended temperature for long-term battery storage is 10-45°C;
- b. It is forbidden to throw batteries into fires or heaters to prevent fire, explosion, and environmental pollution. Scrapped batteries should be returned to the supplier or battery recycling point for disposal:
- c. Do not use it in places with strong static electricity and strong magnetic fields, otherwise it will easily damage the battery safety protection device and bring unsafe hidden dangers;
- d. If the battery leaks and the electrolyte enters the eyes, do not rub it. Immediately rinse the eyes with clean water and send them to the hospital for treatment, otherwise, the eyes will be hurt. If the battery emits and odor, heats up, discolors, deforms, or has any abnormality during use, storage, or charging, immediately remove the battery from the device or charger and stop using it;
- e. It is forbidden to insert the positive and negative poles of the battery directly into the power socket, and a special charger for lithium-ion batteries must be used;
- f. Check the battery voltage and connectors before installation, and use it only after everything is normal;
- g. The battery is stored in half power. If the battery has not been used for three months, it needs to be recharged once;
- h. If the electrode is dirty, it should be wiped with a dry cloth before use. Otherwise, it may cause poor contact and function failure:

Need additional information?

Just Contact BASEN!

BRSENIGREEN

BASENGREEN YOUR RELIABLE POWER

- Fax: (+86)0755-84737145
- Tex: (+86)130 0887 9993
- Email: info@Basengroup.com
- Shenzhen Basen Technology Co., Ltd.
- Add: Room 303, Building 3, 1980 Culture and Technology Industrial Park, Donghuan Road, Longhua District, Shenzhen