



Meaningful Innovation.

WEEE Number: 80133970

INSTRUCTION MANUAL

LITHIUM-ION BATTERY



MODEL	SKU
VT-48290	12788



**IP65
RATING**

**10 YEAR
WARRANTY***

(subject to warranty conditions)

INTRODUCTION

Thank you for choosing a V-TAC product. V-TAC will serve you to the best of its ability. Please read these instructions carefully & keep this user manual handy for future reference. If you have any other queries, please contact the dealer or local vendor from whom you purchased the product. or local vendor from whom you have purchased the product. They are trained and ready to serve you at the best.



MULTI-LANGUAGE MANUAL QR CODE

Please scan the QR code to access the manual in multiple languages.



Points de collecte sur www.quefairedemesdechets.fr

ATTENTION!

Due to the extended transportation period, anomalies in the calculation of the battery's SOC (State of Charge) and capacity may occur.

Please follow the steps below during the initial commissioning of the battery:

- Discharge the battery until the low battery alarm is triggered.
- Fully charge the battery to its maximum capacity.

Performing these two steps will help recalibrate the SOC and ensure accurate capacity measurements.

IMPORTANT NOTES

- This product contains battery type "Secondary" (rechargeable).
- Electrical and electronic equipment that has become waste is known as old equipment/device. Old devices must not be disposed of with other household waste.
- Owners of old devices must return them at the end of their service life by taking them to the collection points ... to the collection points set up by public waste disposal authorities or distributors. This return does not entail any costs for you.
- Owners of old devices have an obligation to remove accessible batteries / rechargeable batteries as well as non-destructively removable lamps from the old device prior to return. This does not apply if old devices are being prepared for reuse with the participation of a public waste management authority
- Battery removal warning: The battery contained in this product must be removed by professional personnel only. The battery must never be removed by the end user. If it is not removed correctly, the battery could be damaged, which could cause a fire.
- Batteries removed from an old electronic device should be disposed of separately. Returning the battery does not entail any costs for you, and the user is obliged to return it.
- Please make sure that this product is not powered on when removing the battery. Fire hazard! Avoid short-circuiting the contacts of a detached battery. Do not incinerate the battery. Please
- If electrical appliances or batteries are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. handle the battery with caution!



- The crossed-out wheeled bin symbol indicates that this product should not be disposed of with other household waste... that this product should not be disposed of with other household wastes and must be collected separately from unsorted municipal waste at the end of its service life.
- Please use the link below to view the online directory of the collection and return points:
<https://www.ear-system.de/ear-verzeichnis/sammel-und-ruecknahmestellen>

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Overview

This user manual covers the product introduction, application description, installation, power-on and maintenance instructions for the VT-48290 series LFP battery pack. It is intended for technical support engineers, maintenance engineers and users.

Reader

This document is mainly intended for the following personnel:

- Technical Support Engineer
- Installation Personnel
- Maintenance Engineer

Signs

The following signs may appear in this manual; their meanings are as follows.

Sign	Meaning	Description
	Danger	Indicates a hazard with a high level of risk that will cause death or serious injury if not avoided.
	Warning	Indicates a hazard with a moderate risk that may cause death or serious injury if not avoided.
	Notice	Indicates a hazard with a low level of risk that may cause minor or moderate injury if not avoided.
 NOTE	Explanation	Supplementary explanation of key information in the main A "Note" is not a safety warning and does not relate to personal injury, equipment damage or environmental harm.
 IP65	IP rating	The IP rating of this product is IP65, which allows it to be used in A/B environments. However, for better performance, the use of an air-conditioned enclosure is recommended where possible.

1 Foreword

Symbol Description

	Potential risks exist. Wear proper personal protective equipment (PPE) before any operation.		Refer to instruction manual/booklet
	HIGH VOLTAGE HAZARD. High voltage is present while the equipment is running. Ensure the equipment is powered off before any operation.		Do not extinguish with water.
	Batteries contain flammable materials. Beware of fire.		Dispose of the battery at a designated collection point and recycle it in compliance with local environmental regulations.
	Install the equipment away from fire sources.		Product compliant with the requirements of European Union directives.
	This marking indicates that this product should not be disposed of ...with other household waste.		Designation of the packaging material – corrugated cardboard
	Symbol indicating that the manufacturer has contributed financially to the construction and operation of packaging material recovery and recycling system.		Contains a hot aerosol fire extinguishing device (extinguishant).

When installing, commissioning, operating, and maintaining the product, strictly observe the labels on the product and the safety requirements in the manual. Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- Damage to the product and other property.

WARNING

- **Do not perform any operation on the product (including but not limited to, handling, installing, powering on, or maintaining the product, making electrical connections, and working at height in harsh weather conditions, such as thunder and lightning, rain, snow, and Level 6 or stronger winds.**
V-TAC shall not be held liable for any damage to the device due to force majeure, such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weather events.
- **In case of fire, evacuate the building or product area, activate the fire alarm and call the fire service. Re-entry into the burning area is strictly prohibited under any circumstances.**

NOTICE

- **Tighten the screws with the specified torque using tools when fastening the product and terminals. Otherwise, the product may be damaged, and such damage is not covered by the warranty.**
- **Learn how to use tools correctly before using them to avoid hurting people or damaging the device.**
- **Maintain the device with sufficient knowledge of this manual and use proper tools.**

- The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual onsite conditions.
- V-TAC shall not be held liable for any damage caused by violation of general safety operation requirements, general safety standards, or any safety instruction in this manual.
- When installing, operating, and maintaining the product, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.
- During the product transport, installation, wiring, maintenance, etc., the materials and tools prepared by users must meet the requirements of applicable local laws and regulations, safety standards, and other specifications. V-TAC shall not be held liable for any damage to the product caused by the adoption of materials and tools that fail to meet the above-mentioned requirements.
- Operations on the product, including but not limited to, handling, installing, wiring, powering on, maintenance, and use of the product, must not be performed by unqualified personnel. V-TAC shall not be held liable for any damage to the product resulting from operations done by unqualified personnel.
- Where the transport of the product is arranged by users, V-TAC shall not be held liable for any damage to the product that is caused by users themselves or the third-party transport service providers designated by the users.
- V-TAC shall not be held liable for any damage to the product caused by the negligence, intent, fault, improper operation, and other behaviors of users or third-party organizations.
- V-TAC shall not be held liable for any damage to the product arising from reasons unrelated to V-TAC.

2.1 Notices for Safe Use

Read all safety instructions carefully prior to any work and observe them at all times when working on or with the battery. Failure to observe the precautions described in this section can cause serious injury to persons or damage to property.

DANGER

Risk of explosion

- Do not subject the battery to any strong force.
- Do not mechanically damage the battery (pierce, deform, strip down, etc.)
- Do not heat the battery or dispose of the battery in a fire.
- Do not install the battery in potentially explosive environments.
- Do not place the battery in water or other liquids.

DANGER

Risk of fire

- Do not place the battery near a heat source, such as direct sunlight, a fireplace, a thermally uninsulated wall exposed to sunlight, hot water, or a heater.
- Keep sources of ignition such as sparks, flames, and smoking materials away from the battery.

DANGER

Risk of electric shock

- Do not disassemble the battery.
- Do not handle a wet battery or use wet tools.
- Do not soak the battery in water or expose it to moisture or liquids.
- Keep the battery away from children and animals.
- Wear suitable clothing, guards and gloves to protect yourself from direct contact with DC voltage.
- Use insulated tools when working with the battery.
- Remove metal jewelry before working on the DC circuit.

2.2 Battery Handling Information

NOTICE

Follow local standards when using the battery.

Any damage caused by improper handling will void the limited warranty for the battery. Handle the battery with care to protect it from damage.

- Use the battery only as intended and designed.
- The battery must only be installed at a suitable location.
- Make sure the battery is properly grounded before use.
- Do not use the battery if it is defective, appears cracked, broken or damaged, or fails to operate.
- Do not use the battery together with other types of batteries.

- Do not pull, drag or step on the battery.
- Do not leave any foreign objects inside the battery.
- Do not repair or modify the battery. It is not user serviceable.
- Do not pull out any cables when the battery is powered on.
- Do not damage the sheath of cables, wire harness and connectors.
- While the battery is charged, used and stored, keep it away from materials that are prone to electric discharge, including static discharge.
- Keep the battery away from babies and children to avoid any accidents.
- Cover terminals with insulating tape before proper disposal.
- Avoid direct contact with rain, snow, and water, and prevent the battery from falling and mechanical impact during battery transportation.

2.3 Emergency Situations

2.3.1 Leaking Batteries

Abuse/misuse/damage of the battery ...may cause an increase in internal pressure in the battery cells, which may result in electrolyte venting. In the event that battery electrolyte is released:

- Do not enter the room under any circumstance.
- Avoid contact with the leaking liquid or gas.
- Call the local emergency number or fire brigade if necessary.

If one is exposed to the leaking substance, follow the suggestions below to minimize the chance of injury:

- Inhalation: Evacuate the contaminated area, and seek medical aid.
- Eye contact: Rinse eyes with copious amounts of water for at least 15 minutes, and seek medical aid immediately.
- Skin contact: Wash the affected area thoroughly with plenty of water for at least 15 minutes. If possible, remove or saturate contaminated clothing with water. Seek medical aid if the patient is distressed.
- Ingestion: Immediately rinse your mouth with clean water and seek medical attention promptly.

Wipe the affected area with a sponge or cloth soaked in water until you obtain medical aid. medical aid. These materials can damage skin and eyes, causing blindness.

2.3.2 Fire

Fire may occur with the battery despite its careful design. Likewise, a fire or unusually high temperatures near the battery can cause it to catch fire.

Protective equipment

A respirator is not required during normal operations.

In the event of a fire, hazardous fumes including carbon monoxide, carbon dioxide, and/or various hydrocarbons may be emitted. To comply with the Personal Protective Equipment Directive PPE Regulation(EU)2016/425, use a full-face self-contained breathing apparatus (SCBA) with full protective gear during firefighting

Firefighting

NOTICE

In the event of a fire, only qualified firefighters with appropriate protective equipment are permitted to enter the room where the battery is located. It may take a long time to completely extinguish the fire. Consider allowing the system to burn. Smoke indicates that the battery is still burning. Always note that there is a risk of the battery re-igniting.

Proceed as follows for fire-fighting.

1. Shut off any connected power system or electronics such as the battery, battery isolator, PV DC isolator(s), AC isolator, solar supply main switch and normal supply main switch.
2. Perform an adequate knock down on the fire before entering the incident's hot zone.
3. If the battery catches fire, use firefighting sand, a CO2 extinguisher or other emergency fire-extinguishing equipment approved by firefighters. emergency fire extinguishing equipment approved by fire fighters to extinguish the fire.
4. If the fire is not from the battery and has not spread to it yet, use an ABC fire extinguisher to extinguish the fire. Remove batteries and other ignition sources from the scene of a fire.

2.3.3 Wet Batteries

If the battery is submerged in water, do not let people access it,...and then contact V-TAC or an authorized service partner for technical support. for technical support.

If a battery is submerged in water or flooded, first, switch off all circuit breakers in the system to cut off the power supply to the battery. Wait until floodwaters subside and do not approach the battery. If someone needs to go into the flooded water, wear full-length insulated rubber boots and gloves.

Do not use a flooded battery again.

2.3.4 Damaged Batteries

The battery consists of lithium-ion cells. These are considered dry cell batteries. If the battery is damaged, only a small amount of battery fluid can leak.

A damaged battery can cause rapid heating of the battery cells. If you notice smoke coming from the battery area, assume that the battery is burning and take appropriate action as described in [2.3.2 Fire](#).

Damaged batteries are dangerous and must be handled with extreme caution. They are not fit for use and may pose a danger to people or property. If a battery seems to be damaged:

1. Pack it in its original container.
2. Store it in a separate room with conditions similar to the installation location.
3. Contact V-TAC. .

 DANGER

A damaged battery may release dangerous material and a flammable gas mixture. Never try to repair the battery even if you are a qualified electrician.

3.1 Product Description

The VT-48290 uses lithium iron phosphate (LFP) as the positive electrode material. It can be widely used in energy storage systems such as residential energy storage, back-up power, and PV self-consumption optimization.

The battery pack is composed of 16 LFP cells connected in series, with low self-discharge, high energy density, and no memory effect. This type of battery also offers excellent high-rate performance, a long cycle life, a wide temperature range and high safety.

The battery has an automatic BMS-controlled heating system.

The heating system consists of a silicone heating element rated 51.2 V / 300 W. The heating function activates automatically when required by the battery temperature; the user does not need to control it manually.

During heating, the system draws approximately 6 A from the battery system. If the battery SOC becomes too low, the BMS activates a Forced-Charge Request.

During forced charge, the inverter must provide charging power to the battery; if heating is active, part of that current is used by the heater and the rest charges the cells.

Grid Charge must remain enabled so the inverter can use grid power when PV power is insufficient. This is important to prevent deep discharge and loss of heating capability.

The inverter must follow the BMS charge/discharge permissions and current limits and must not override BMS protections.

Once the battery has recovered to a safe operating condition, heating and forced-charge recovery are managed automatically by the BMS.

3 Overview

▶ 3.1.1 Features

- **High energy density**

Higher volumetric and gravimetric energy density.

- **Maintenance-free**

The battery pack is maintenance-free during use, which saves operation, maintenance and testing costs and reduces the frequency of on-site replacement. Customers' battery operation, maintenance testing costs and reduce the frequency of on-site replacement.

- **Long cycle life**

The battery pack life is 3 times longer than that of ordinary lead-acid batteries.

- **Excellent temperature characteristics**

When charging, the operating temperature range is -20 °C to +55 °C. When discharging, the operating temperature range is -20 °C to +60 °C. reach -20°C ~ + 55°C. When discharging, the battery working temperature can reach -20°C ~ +60°C.

- **Hot Aerosol Fire Extinguishing Device**

The special hot aerosol fire extinguishing device for lithium-ion batteries has the advantages of being highly efficient and rapid in extinguishing lithium-ion battery fires. When the lithium battery pack experiences thermal runaway and the temperature reaches 175°C±15°C, the fire extinguishing device is promptly activated. Within 2 ~ 3s, the extinguishing agent is fully discharged and the fire is extinguished.

▶ 3.1.2 Basic Functions

- **Monitor**

- The battery system uses a high-performance BMS that monitors current, voltage and temperature and provides the corresponding protection functions.

- **Alarm**

- Supports alarms for abnormal conditions such as overvoltage, undervoltage, overcurrent, short circuit, high and low temperature, battery failure, hardware failure, etc. short circuit, high and low temperature, battery failure, hardware failure, etc.

- **Parallel connection application**

Supports up to 15 batteries connected in parallel. (**Recommendation: for better performance, when more than 2 batteries are used, connect all batteries to the busbar.**)

▶ 3.2 Application Scenario

The battery pack provides backup power, load shifting and peak shaving, and can be used for residential energy storage, solar energy storage and other applications.

The normal operating diagram of the battery pack is shown in the figure below.

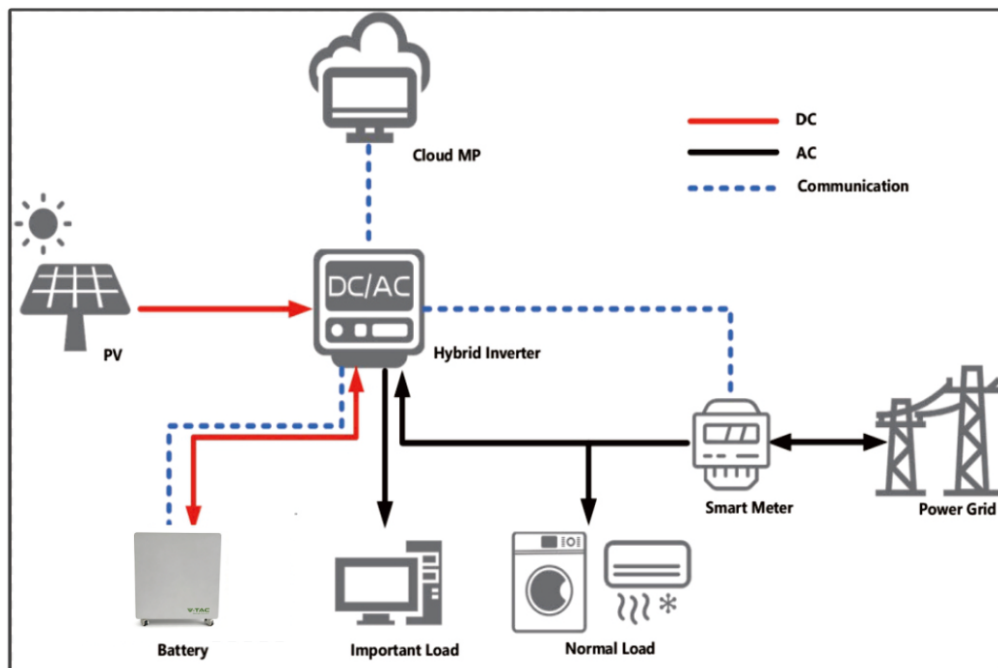
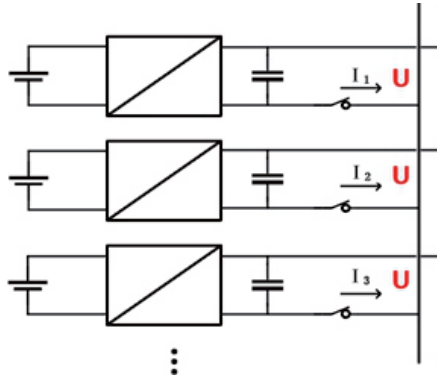


Fig. 3-1 Working Diagram of the Battery Pack

▶ 4.1 Parallel Connection Application



The battery packs support parallel connection, which increases the backup time or backup power accordingly.

Confirm the consistency between the battery packs, check the SOC and voltage and turn off the batteries before connecting them in parallel.

▶ 4.2 Low Battery-capacity Storage (SOC≤5%)

After the customer installs the energy storage box, if the battery pack is in a powered-off state, there will be BMS static power consumption and self-discharge loss. In actual scenarios, In practice, avoid storing the battery in a low state of charge (SOC≤5%) storage.

If unavoidable, the maximum storage period is 30 days at 25 °C or 15 days at 45 °C. @25°C, 15 days@45°C. The battery must be recharged promptly after storage; otherwise it may be damaged by over-discharge and the entire battery pack may need to be replaced.

▶ 4.3 Application Near the Ocean

The atmospheric corrosion environment is defined and classified according to the natural environment state, and the A/B environment is defined as follows:

- Environment A: the ocean or land near a pollution source, or an environment with only simple shelter (such as an awning). the environment with simple shelter (such as awning). "Near the ocean" refers to the area 0.5 ~ 3.7km away from the ocean; "Near the pollution source" refers to the area within the following radius: 3.7km from the saltwater lake, 3km from heavy pollution sources such as smelters, coal mines, and thermal power plants, chemical industry, rubber, electroplating, etc. 2km from medium pollution sources such as chemical industry, rubber and electroplating, etc. And 1km from light pollution sources such as food, leather and heating boilers, etc.
 - Environment B: an environment on land or outdoors with only simple shelter (such as an awning) within 500 m of the coast, or an environment at sea.
-

NOTE

The battery pack can be used in other environments but must not be used on its own in an A/B environment. If it is to be used in an A/B environment, it must be installed in a high-protection air-conditioned cabinet.

5.1 Dimensions

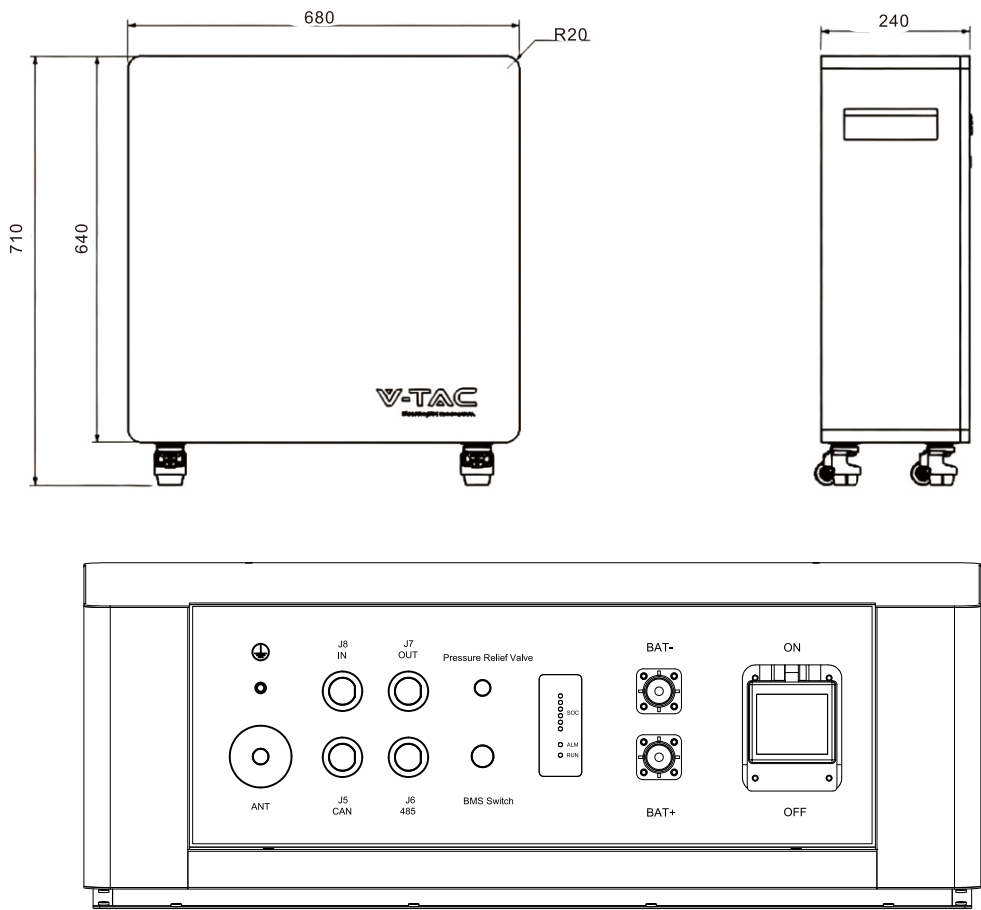
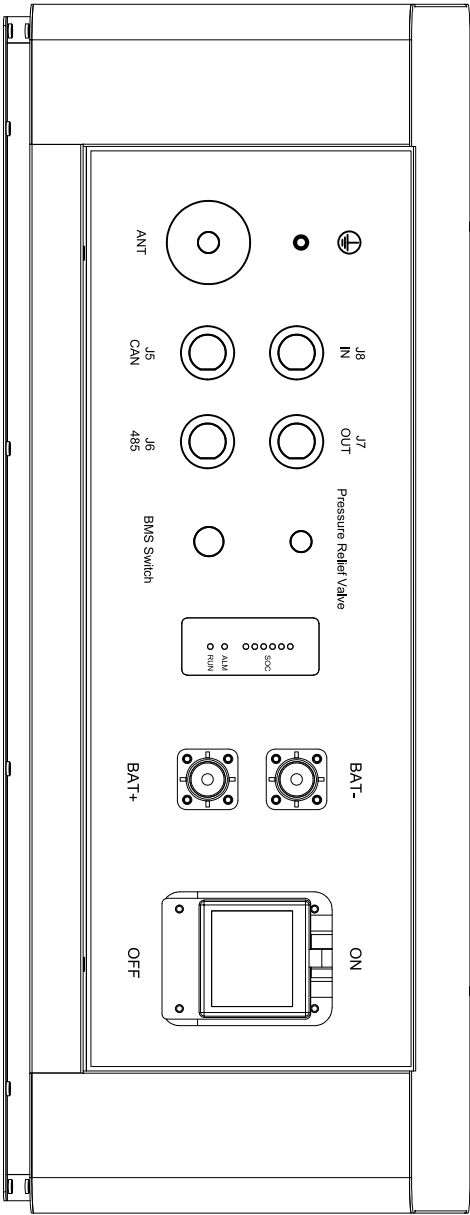
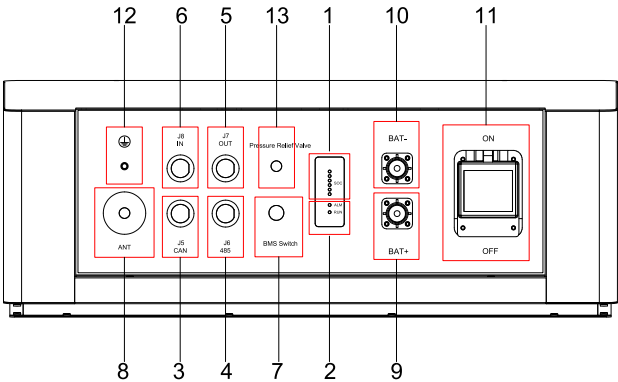


Fig. 5-1 Product Dimensions

5.2 Panel Introduction

The panel is shown as follows.





The definition of the VT-48290 operation panel is shown below.

Table 5-1 Operation Panel Interface Definition

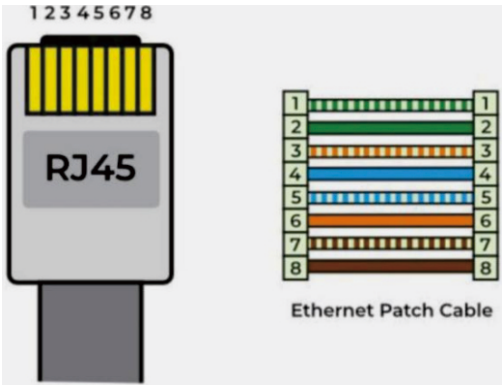
NO	Items	Remark
1	SOC	State of charge
2	RUN/ALM	To indicate the running or alarm status of battery
3	J5	J5 is used for CAN communication with the inverter.
4	J6	J6 is used for RS485 communication with the inverter.
5	J7	J7 is used for parallel output
6	J8	J8 is used for communication between batteries (parallel input) and for BMS debugging.
7	BMS SWITCH	When the button is pressed, the self-locking switch closes and the energy storage system starts.Press the button again to release the switch and shut down the system.
8	ANT	Bluetooth antenna
9	BAT+	Positive socket
10	BAT-	Negative socket
11	ON/OFF	Used to turn the battery on/off and to provide short-circuit protection by opening or closing the DC circuit.down the system.
12		Used for reliable grounding of the battery
13	Pressure Relief Valve	Designed to prevent battery explosion due to excessive pressure under abnormal conditions,...such as overcharging, over-discharging or external short circuits.

The SOC indicator shows the current capacity status of the battery. The number of lit or blinking indicators corresponds to the remaining capacity, as shown below.

Table 5-2 Alarm Indicator Definition

Indication Status	ON	OFF	Battery Status
Keep On			Fault (charge/discharge MOS, NTC, ADC fault, reverse connection fault)
Keep Off			Standby/Sleep/No issue

Cable specification:



As shown in the figure: with the clip facing away from you (contacts facing up), the pin sequence is 1 to 8 from left to right.

5.3 Definition of Indicator Light Sequence

Indicator							
							
L1	L2	L3	L4	L5	L6	L7	L8
SOC						Alarm	Running

state	Charge								
Capacity indicator	SOC	L1	L2	L3	L4	L5	L6	ALM	RUN
Capacity range (%)	0	Off	Off	Off	Off	Off	Off	Off	On
	$0 < \text{SOC} \leq 17$	Flash 2	Off	Off	Off	Off	Off	Off	On
	$17 < \text{SOC} \leq 34$	On	Flash 2	Off	Off	Off	Off	Off	On
	$34 < \text{SOC} \leq 50$	On	On	Flash 2	Off	Off	Off	Off	On
	$50 < \text{SOC} \leq 67$	On	On	On	Flash 2	Off	Off	Off	On
	$67 < \text{SOC} \leq 84$	On	On	On	On	Flash 2	Off	Off	On
	$84 < \text{SOC} < 100$	On	On	On	On	On	Flash2	Off	On
	100	On	On	On	On	On	On	Off	On
State	Discharge								
Capacity indicator	SOC	L1	L2	L3	L4	L5	L6	ALM	RUN
Indicator	0	Off	Off	Off	Off	Off	Off	Flash3	Flash3
	$0 < \text{SOC} < 10$	On	Off	Off	Off	Off	Off	Flash3	Flash3
	$10 \leq \text{SOC} \leq 17$	On	Off	Off	Off	Off	Off	Off	Flash3
	$17 < \text{SOC} \leq 34$	On	On	Off	Off	Off	Off	Off	Flash3
	$34 < \text{SOC} \leq 50$	On	On	On	Off	Off	Off	Off	Flash3
	$50 < \text{SOC} \leq 67$	On	On	On	On	Off	Off	Off	Flash3
	$67 < \text{SOC} \leq 84$	On	On	On	On	On	Off	Off	Flash3
	$84 < \text{SOC} < 100$	On	On	On	On	On	On	Off	Flash3
	100	On	On	On	On	On	On	Off	Flash3

5 Product Introduction

	Indicator light	LED1	LED 2	LED 3	LED 4	LED 5	LED 6	ALM	RUN	Buzzer sound
1	Environment H-T	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
2	Environment L-T	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
3	MOS High temp	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
4	Charge low-temp faults	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
5	Charge high-temp faults	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
6	Discharge low-temp fault	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
7	Discharge high-temp faults	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes
8	Low voltage	OFF	OFF	OFF	OFF	OFF	OFF	Flash 3	OFF	No
9	High voltage	ON	ON	ON	ON	ON	ON	OFF	ON	No
10	Charge Over current	Based on battery level display						OFF	Flash 1	Yes
11	Discharge overcurrent	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	Yes

Note: 1. "Failure" refers to abnormal charging and discharging MOS drive voltage, abnormal power supply voltage, charging and discharging MOS failure, AFE failure, NTC failure, cell failure, current sensor failure, precharge failure, and current limit failure.

2. "Alarm" refers to alarms triggered by low capacity, low cell voltage, low total voltage, overcurrent during charging, overcurrent during discharging, high cell temperature, low cell temperature, high ambient temperature, low ambient temperature, and high MOS temperature.

3. Buzzer action (configurable, only valid when configured to be on)

In case of a fault, it will sound for 0.25 seconds every second;

During protection, it will sound for 0.25s every 2s (excluding overvoltage protection);

When an alarm is triggered, it will sound for 0.25s every 3s (excluding overvoltage alarms);

The buzzer function can be enabled or disabled through the host computer, and it is disabled by default at the factory.

Meaning of the buzzer and LED indicators when the battery is normal

Legend:

Normal	Steady on	Off	According to the SOC display	Silent
Term		SOCLEDs		Buzzer
"Flash 1"		On 0.25 s, off 3.75 s		
"Flash 2"		On 0.5s, off 0.5s		
"Flash 3"		On 0.5s, off 1.5s		
In case of a fault				it will sound for 0.25 seconds every second
During protection				it will sound for 0.25s every 2s
When an alarm is triggered				it will sound for 0.25s every 3s

▶ 6.1 Preparation for Installation

- Adequate lighting is required at the installation location.
- applicable safety regulations when lifting and handling heavy objects. and handling heavy objects.
- Equipment and tools must be complete, intact, and reliable. It is strictly prohibited to use tools with cracks, burrs, loose handles, etc., that do not meet the safety standards.
- Installation operations must be guided by qualified engineers.
- During installation, two people must work together, one operating and the other inspecting.
- The original cable connections and operating procedures must not be changed without the company's authorization.

▶ 6.2 Tools Preparation



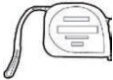
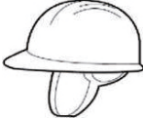
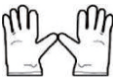
ATTENTION

Use insulated tools to avoid electric shock. If you use tools without insulation protection, If you use tools without insulation, wrap the exposed metal parts with insulating tape.

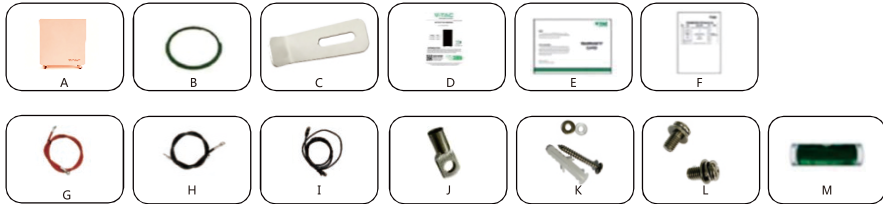
6 Installation

The following table lists the tools and instruments that may be required for installation.

Table 6-1 Installation Tools

Manual forklift	Electric forklift	Tape measure	Adjustable wrench
			
Phillips screwdriver	Ladder	Spirit level Instrument	Claw Hammer
			
Socket wrench	Multimeter	Insulated torque wrench	Helmet
			
Insulated shoes	Anti-static gloves	Goggles	Insulating tape
			

6.3 Packing List



Item	Description	Quantity
A	VT-48290 battery	1
B	GND cable	1
C	Bracket	2
D	User Manual	1
E	Warranty Card	1
F	Packing List	1
G	1.5 m positive power cable, battery-inverter	1
H	1.5m negative power cable,battery-inverter	1
I	1.5 m battery-inverter CAN communication cable	1
J	Copper Lug SC50-8	2
K	Screw 3.8*30mm	2
L	Screw 5*12mm	2
M	Spirit Level	1

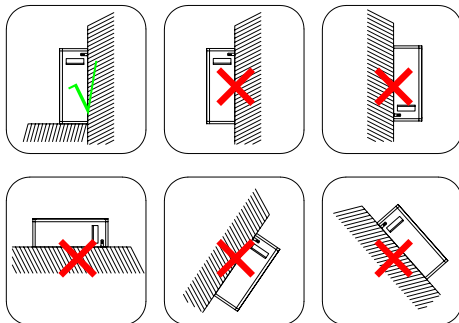
6.4 Unpacking and Inspection

After receiving the goods on-site, please check whether the packing box is intact and inspect the goods promptly. If the packing box is slightly damaged, please sign the cargo list to confirm receipt and indicate the extent of the damage. If the packing box is seriously damaged, please refuse to sign.

Please carry out an unpacking inspection after receiving all the goods. If users find that the received goods do not match the packing list, please contact V-TAC as soon as possible.

6.5 Installation Angle

It is recommended to install the battery on the wall or on the floor against the wall. Do not install it at an angle.



NOTE

- Please place the VT-48290 battery on a flat surface, ensuring there is adequate space on both sides of the battery (more than 200 mm recommended)
- The installation site should be as spacious and well ventilated as possible. If the site is small and confined, provide auxiliary heat-dissipation equipment.

To ensure a stable installation, secure the battery to the wall before use.

Step 1. Drill holes in the wall

Step 2. Insert the plastic expansion tube into the hole

Step 3. Fix the bracket to the battery with screws.

Step 4. Fix the battery to the wall with screws.

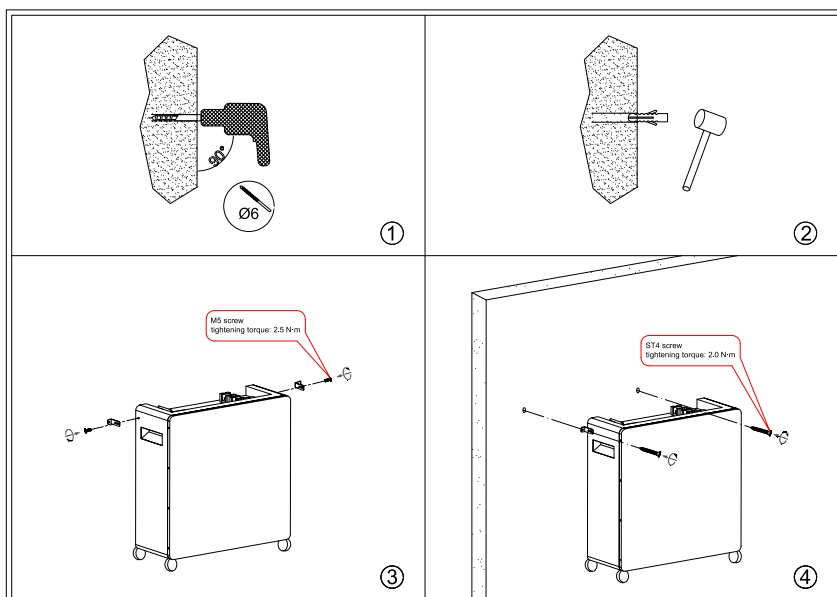


Fig.6-1 Fix the Brackets to the Battery

6.6 Cable Connection

6.6.1 Power Cable Connection

NOTE

- Please contact V-TAC Europe or the supplier to purchase the following cables.

They may not be included in the battery box and can be obtained in the Master/Slave Cable Kit provided by V-TAC or the supplier.

- **How to use the touch-safe power cable connectors**

Press the unlock button on the power cable connector while inserting the cable into the socket.



Press to unlock

Press to unlock

The power cable connection from the battery to the inverter is shown below.

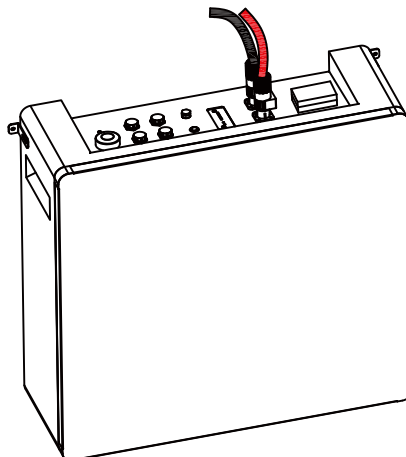


Fig. 6-2 Power Cable Connection Diagram

6.6.2 Communication Cable Connection

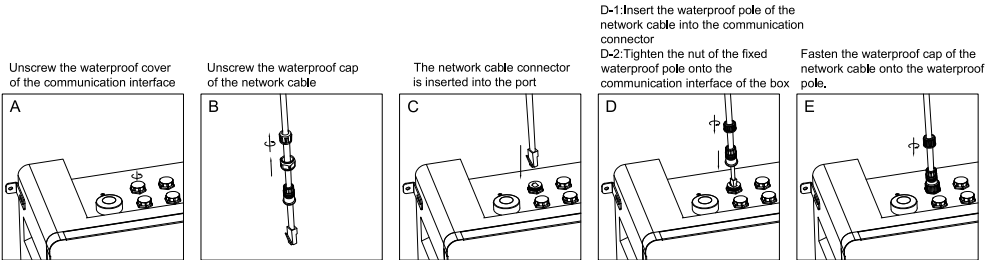
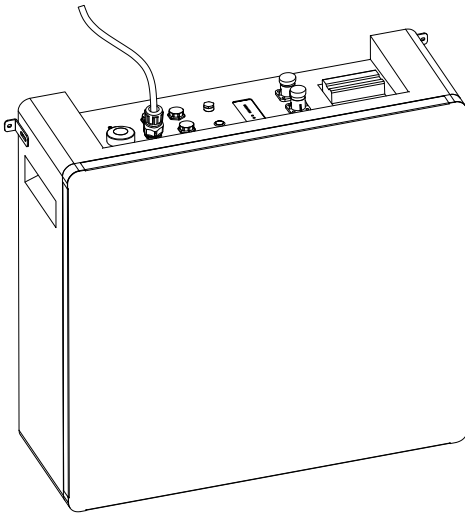


Fig. 6-3 Communication Cable Connection Diagram

6.6.3 Grounding Cable Connection
Connect the grounding cable to the grounding point.

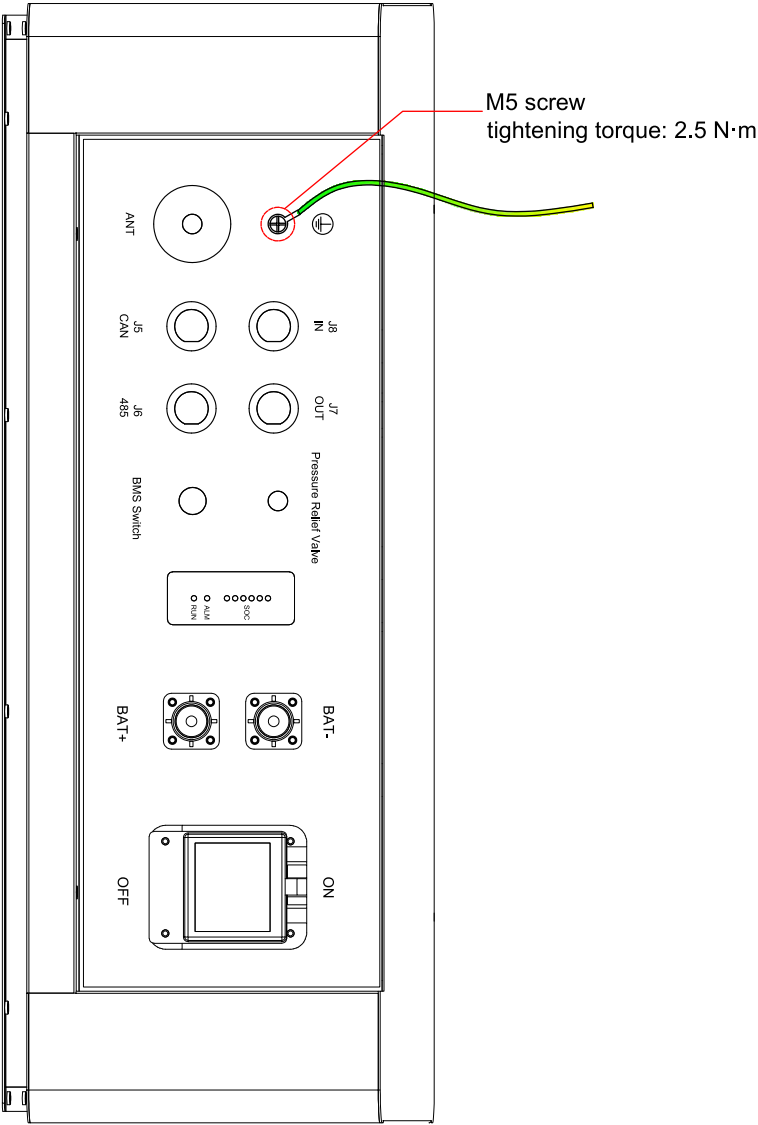
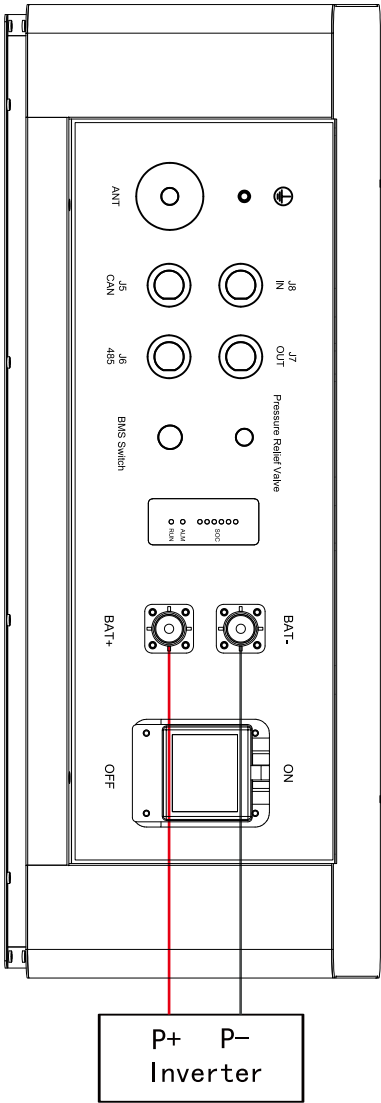


Fig. 6-4 GND Cable Connection Diagram

7 Parallel Connection

If you install only one battery (battery quantity < 2), refer to the following wiring configuration.

Number of Batteries in Parallel	Cable Kit
1 PC	Master Cable Kit x 1 set



Positive Power Cable

Negative Power Cable

7 Parallel Connection

If you install 2 or more batteries (max. 15), use the following wiring option:

Connect all batteries to the bus bar.



NOTE

- For this wiring solution, you will also need bus bars and power cables to connect the bus bars to the inverter. You can either purchase them independently.

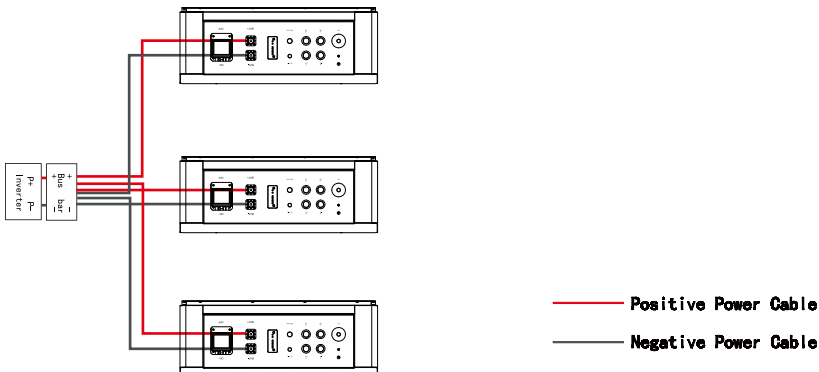
- During the parallel charging and discharging process, the actual SOC deviation is kept within 10 %.

During the parallel charging process, if the SOC deviation between the higher-pack and the lower-pack is greater than 10%, the higher-pack stops charging first and the lower-pack charges first. Before the higher-pack stops charging, the current applied to the inverter first decreases, and then the higher-pack performs the stop charging. After the lower-pack SOC rises, the deviation between the higher-pack and lower-pack SOC is less than 8%, and all battery packs are charged together.

During the parallel discharge process, if the SOC deviation between the higher-pack and the lower-pack is greater than 10%, the lower-pack stops discharging first and the higher-pack discharges first. Before the lower-pack stops discharging, the discharge current applied to the inverter is first reduced, and then the lower-pack performs the stop discharging. After the higher-pack SOC drops, the deviation between the higher-pack and lower-pack SOC is less than 8%, and all battery packs are discharged together.

- Parallel current = 150 A x number of parallel units. Depending on cell temperature and SOC, the 150 A limit may be reduced.

Battery Quantity of Parallel	Cable Kit
3 PCS	Master Cable Kit x 3 sets
⋮	⋮
N PCS (4≤N<15)	Master Cable Kit * N set (4≤N<15)
⋮	⋮
15 PCS	Master Cable Kit * 15 set



7 Parallel Connection

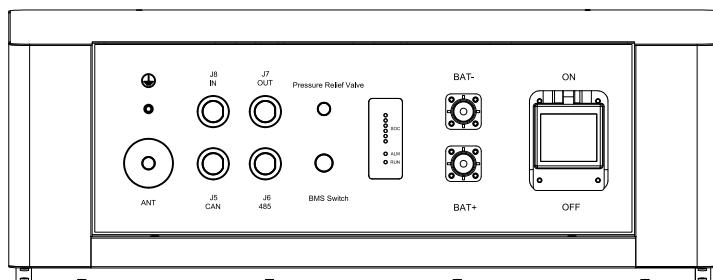


ATTENTION

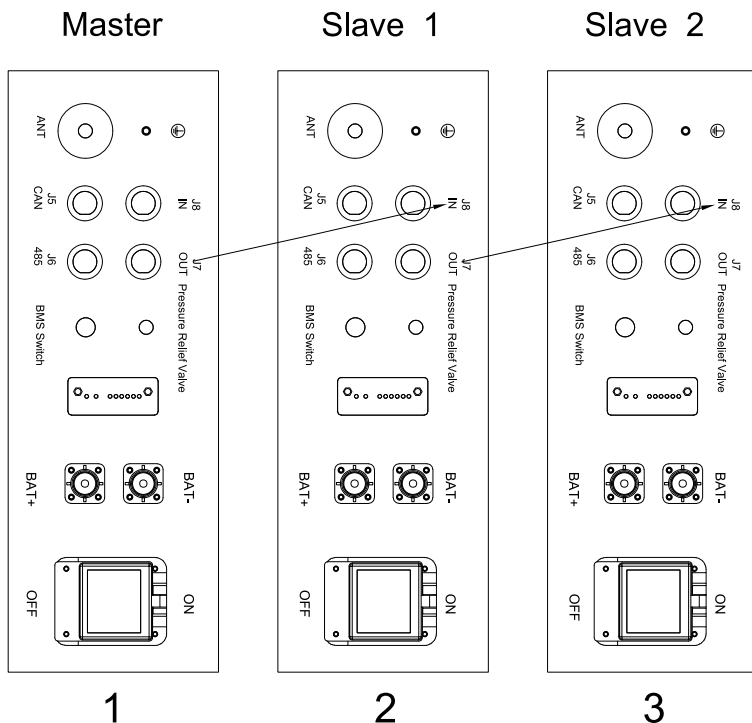
• If you install 2 or more batteries (max. 15), pay attention to the connection of the the parallel interfaces(J7, J8).

If you will install more than 2pcs batteries , Be sure to connect the J7 output of each battery to the J8 input of the next battery, to avoid

The connection diagram is as follows.



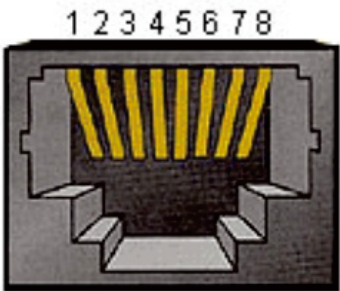
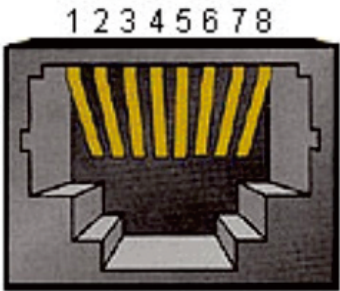
As shown in the diagram, J7 OUT of the master unit is connected to J8 IN of the slave unit.



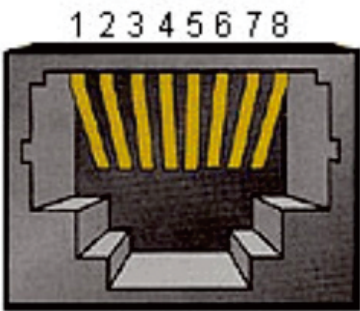
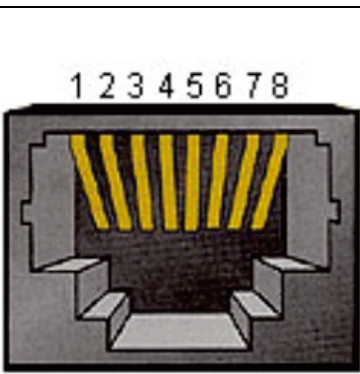
7 Parallel Connection

Communication Port Definition

RS485 and CAN communication
Parallel and PCS communication interfaces, utilizing RJ45 sockets:

Pin	Definition Description	Port description	top view
1	DI-B(RS485B)	Parallel operation and PCS interface IN (uplink port)	
2	DI-A(RS485A)		
3	Communication SGND		
4	CANH		
5	CANL		
6	Communication SGND		
7	RS485-A		
8	RS485-B		
1	DO-B	Parallel operation interface OUT (downlink port)	
2	DO-A		
3	SGND		
4	CANH		
5	CANL		
6	SGND		
7	RS485-A		
8	RS485-B		
1	RS485-B	PCS interface (RS485)	
2	RS485-A		
3	Communication SGND		
4	NC		
5	NC		
6	Communication SGND		

7 Parallel Connection

7	RS485-A		
8	RS485-B		
1	NC	PCS interface (CAN)	
2	NC		
3	SGND		
4	CANH		
5	CANL		
6	SGND		
7	NC		
8	NC		

CAN serves as the communication bus for inverters and battery master/slave devices, used for:

- ① inverters polling battery information;
- ② BMS master devices reporting aggregated information; and
- ③ inverters broadcasting upgrades to various BMS master and slave devices.

8 Make Your System Run

ATTENTION

- Please strictly follow the steps below for checking and operation. V-TAC will not be responsible for any issues caused by improper operation.

Parameter Setting

Table 8-1 Parameter Setting

No.	Description	Unit	Value
1	Nominal Voltage	V	51.2
2	Float Charge Voltage	V	57.6
3	Recommended Charge Current	A	140
4	Max. Charge/Discharge Current	A	150
5	Discharge Cut-off Voltage	V	43.2
6	Charge Temperature Range	°C	-20 - 55
7	Discharge Temperature Range	°C	-20 - 60
8	Storage Temperature Range	°C	15-35
9	Working Temperature Range	°C	-20-60
10	Rated Capacity	Ah	314
11	Nominal Energy	kWh	16.07
12	Communication	/	CAN
13	Cycle Life (@ 25 °C, 90 % DOD)	/	≥ 7000
14	End of Life (@ 25 °C, 70 % EOL)	/	≥ 7000
15	Protection Level	/	IP65

NOTE

- Settings vary between inverter models.
- Make sure the inverter/charger is powered on before powering on the battery.
- Do not change the parameters on site without authorization.

Check before Running

Step 1. Check whether the cables are connected correctly.

Step 2. Check whether the batteries are grounded.

Step 3. Check the status of the following switches:

The power switch of the battery should be off.

The DC switch of the inverter should be turned on.

The circuit breaker from the inverter to the grid should be off.

The photovoltaic switch (if any) should be off. The battery circuit breaker (if any) should be open.

Power-on

Step 4. Turn on the power switch of the battery. At this point, the inverter is powered on by the battery. Wait for 30 seconds until the system operates normally, then turn on the grid and PV switches.



NOTE

- ***If you want to power off your system***

If you need to shut down the system for some reason, please refer to the following steps.

Step 1. Turn off the inverter first.

Step 2. Then turn off the battery.

9.1 Shipment

The product is suitable for transport by road, sea and air. During transportation, protect it from direct sunlight and handle it carefully during loading and unloading. During transportation, shading, sun protection and civilized loading and unloading should be performed. The box containing the product is allowed to be transported by any means of transportation. In the process of loading and unloading, the battery should be handled with care to prevent falling, rolling, and heavy pressure. Avoid direct exposure to rain and snow, and mechanical impact, during transportation.

Recommended initial SOC before shipment, by mode of transport:

- Air:30%-50%
- Sea:40%- 50%
- Road:50%-60%



NOTE

- To confirm whether the shipping SOC of the battery is permitted, consult the relevant transport authority, the relevant government transportation department.

9.2 Maintenance

9.2.1 Battery Maintenance Considerations

When maintaining the battery, it is required to use insulated tools or wrap the tools in insulation.

- DO NOT place any debris on the top of the battery. DO NOT use any organic solvents to clean the battery. DO NOT smoke or use naked flames near the battery.
- After the battery is discharged, charge it promptly to avoid affecting the battery life.
- affecting the battery life.
- When the battery is not used for a long time, charge it to 40 %-50 % SOC. Long-term storage at low SOC may damage the battery.
- All maintenance work must be carried out by professionals .

9.2.2 Routine Maintenance

Staff should visually inspect the VT-48290 battery according to the inspection plan. Refer to the following table for maintenance.

Table 9-1 Routine Maintenance (every three months)

Items	Standard	Action
Battery Appearance	<ul style="list-style-type: none">• The surface is neat and clean without stains.• The terminals are in good condition.• The battery pack shell is intact, with no dents, cracks or leakage.• No leakage is visible on the battery pack.• No deformation or swelling of the shell.	<ul style="list-style-type: none">• If the surface is dirty, clean the exterior of the battery pack with a cotton cloth.• If a battery pack terminal is damaged, replace the cable.• If the casing is damaged, leaking or deformed, take a photo and replace the defective battery pack.• For other abnormal situations, contact the supplier or an authorized dealer promptly.
Alarm	<ul style="list-style-type: none">• No Alarm.	<ul style="list-style-type: none">• Find the solution as per alarm information.

NOTE

Routine maintenance is recommended every three months.

Table 9-2 Routine Maintenance (every six months)

Items	Standard	Action
(Suggested) Complete Cycle	<ul style="list-style-type: none"> Perform a complete charge and discharge cycle, provided the connected equipment will not lose power. 	<ul style="list-style-type: none"> Check whether any alarm occurs and refer to the alarm list. Contact the supplier or an authorized dealer if the alarm persists.
Cables	<ul style="list-style-type: none"> There is no aging of the connecting wire and no cracking of the insulation layer The bolts at the cable connection are not loose 	<ul style="list-style-type: none"> Replace the faulty connection Tighten the bolts.

9.3 Battery Storage

- The recommended storage temperature is 15°C-35°C.
- Battery performance degrades after long-term storage; keep the storage time as short as possible.
- Recharge the battery before use to recover the capacity lost through self-discharge during storage and transport.
- Store the battery at 40 %-50 % SOC when it is not used for a long time.
- Storing the battery above 40 °C or below 0 °C will reduce battery life.
- Store the battery in a dry, cool, well-ventilated place.

If the battery is not used for a long time, the battery must be charged at regular intervals. The charging requirements are as follows:

Table 9-3 Battery Charging Requirements During Storage

Storage Temp.	Charge Period	Charge Process
20°C-30°C	Every 6 months	1. Charge at 0.2C to 100 % SOC 2. Discharge at 0.2C to 0 % SOC 3. Charge at 0.2C to 40 %-50 % SOC
0°C- 20°C or 30°C-40°C	Every 3 months	

Please refer to the table below to resolve common faults:

Table 10-1 Troubleshooting

Symptom	Possible cause	Solution
The indicator does not flash	<ul style="list-style-type: none"> • The power cable of the battery pack is not properly connected. • The power switch is off. • The BMS is in a sleep state. • BMS is damaged. 	<ul style="list-style-type: none"> • Reconnect the power cable of the battery pack. • Turn on the power switch. • Charge the battery pack. • Replace BMS.
Unable to discharge	<ul style="list-style-type: none"> • The terminal of the battery pack is damaged. • BMS communication failure. • The power switch is off. 	<ul style="list-style-type: none"> • Replace the battery pack wiring terminals. • Reconnect the Communication failure line between the BMS and the battery pack. If the The communication cable is damaged, replace the communication cable. • Turn on the power switch.
Unable to charge	<ul style="list-style-type: none"> • The charger is malfunctioning. • The terminal of the battery pack is damaged. • BMS communication failure. • The power switch is off. 	<ul style="list-style-type: none"> • Replace the charger. • Replace the battery pack wiring terminals. • Reconnect the communication line between the BMS and the battery pack. If the communication cable is damaged, replace the communication cable. • Turn on the power switch.
Communication fail	<ul style="list-style-type: none"> • The power switch is off. • The BMS is in a sleep status. • The communication cable is damage. 	<ul style="list-style-type: none"> • Turn on the power switch. • Charge the battery pack. • Replace the network cable.
Inaccurate voltage display	<ul style="list-style-type: none"> • The voltage sampling line is damaged. • BMS is damaged. 	<ul style="list-style-type: none"> • Replace the voltage sampling line. • Replace BMS.
Low capacity	<ul style="list-style-type: none"> • The battery pack has not been maintained for a long time. • A single cell is damaged. • Inaccurate voltage sampling. 	<ul style="list-style-type: none"> • Use an equalizer to maintain the battery pack. • Replace the damaged single cell. • Replace the electrical sampling line or replace the BMS.
Low cell voltage	<ul style="list-style-type: none"> • The battery pack has not been maintained for a long time. • The single cell is damaged. • Inaccurate voltage sampling. 	<ul style="list-style-type: none"> • Use an equalizer to maintain the battery pack. • Replace the damaged single cell. • Replace the electrical sampling line or replace the BMS.

Except for the following and the conditions specified in the contract, ...you can contact the supplier or an authorized dealer for warranty service and maintenance.

1. Failure of equipment caused by unauthorized disassembly and maintenance operations without the supplier or the authorized dealers is not within the scope of the warranty.
2. Equipment damage caused by negligence during storage and transportation is not covered by the warranty.
3. The damage to the equipment Damage to the equipment caused by continuous overload operation outside its electrical specifications is not covered by the warranty.
4. Testing of the equipment without authorization from the supplier or an authorized dealer is not covered by the warranty.
5. Problems not related to the equipment, and adverse consequences caused by improper operation or incompatibility, are not covered by the warranty.
6. Equipment damage caused by natural forces, natural forces, force majeure and factors beyond control, such as earthquakes, typhoons, tornadoes, volcanic eruptions, floods, lightning, heavy snow, and wars, is not covered by the warranty.
7. If the product serial number is changed, blurred, or torn, it is not covered by the warranty.

12 Abbreviations

BMS	Battery Management System
D	Depth
H	Height
W	Width
LCD	Liquid Crystal Display
LFP	LiFePO ₄ (lithium iron phosphate)
MOSFET	Metal-Oxide-Semiconductor Field-Effect Transistor
NTC	Negative Temperature Coefficient
PC	Personal Computer
PCB	Printed Circuit Board
PCS	Power Conversion System
RTU	Remote Terminal Unit
SOC	State of charge

RoHS



1. App Introduction

TBESS App - Your Smart Home Energy Storage Butler

A mobile application designed specifically for home energy storage devices (hereinafter referred to as "home storage"), which enables remote control and Bluetooth/Wi-Fi

Core functions:

- Real-time monitoring
View key data such as device operating status, etc.
Obtain software and hardware version information and abnormal alarm reminders
Generate charge and discharge statistics to assist in energy efficiency analysis
- Intelligent control:
One-click firmware upgrade to continuously improve device performance
- Family sharing:
Multi-member device permission sharing, so the household's electricity usage is clear at a glance
- Service support:
Quickly submit usage feedback and connect directly to professional after-sales service
- Connection method:
Bluetooth (short-range operation)
Wi-Fi (remote control)

1.1. Accompanying products

The TBESS App is suitable for the home storage series products of V-TAC Energy Storage.

1.2. Download and Install App

Mobile phone requirements:

1. Mobile operating system requirements: Android version 7.0 or above, iOS version 13.0 or above.
2. The mobile phone supports a web browser and connects to the Internet.
3. The mobile phone must support WLAN/Bluetooth.

Method 1: Search for TBESS on the App Store (iOS) or Google Play (Android) to download and install it.



Method 2: Scan the QR code below to download and install.

13. Wireless module instructions(APP)



2. Login/Register/Forgot Password

2.1. Login



Figure 1

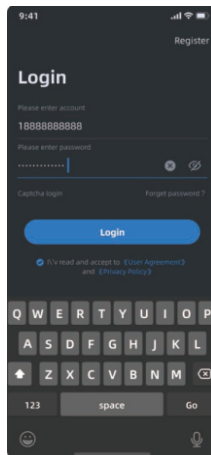


Figure 2

- 1) Figure 1: After launching the app, it automatically enters the login page.
- 2) Figure 2: Registered users enter their account and password, tick the box to accept the User Agreement and Privacy Policy, and then click "Login".

2.2. Register

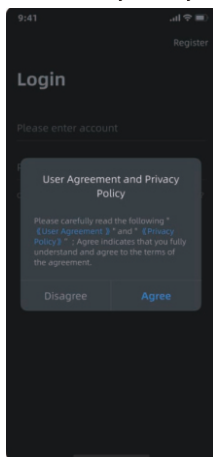


Figure 1

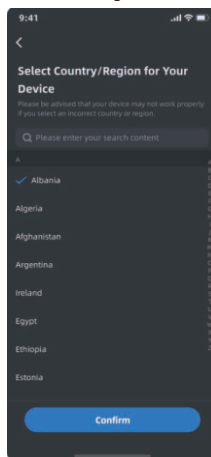


Figure 2

- 1) Figure 1: Unregistered users click on "**Register**" on the login page, Unregistered users click "Register" on the login page, read the agreement, click "Agree" and proceed to the next step.
- 2) Figure 2: Select the country/region where the device will be used and click "**Confirm**".

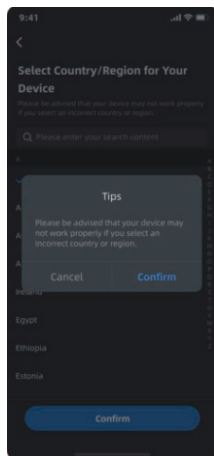


Figure 3

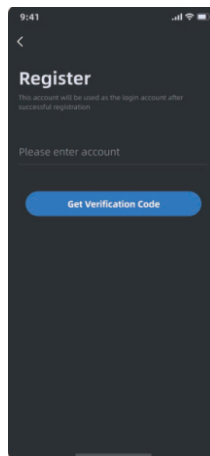


Figure 4

3) Figure 3: When prompted with "Select Country/Region for Your Device", click "Confirm" to go to the registration page.

4) Figure 4: Enter the account and click "**Get Verification Code**" to enter the verification code page.

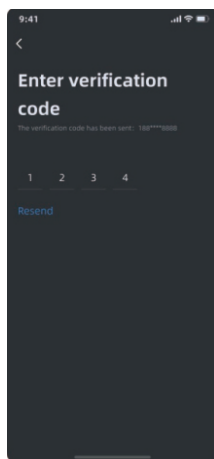


Figure 5

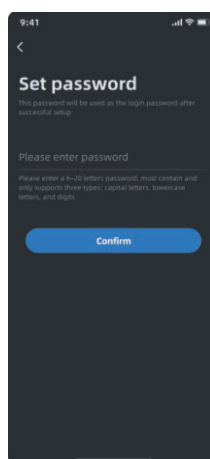


Figure 6

5) Figure 5: After entering the verification code, enter the password setting page.

6) Figure 6: Enter the required password and click "**Confirm**" to complete the registration.

Important note : registration is by email only.

2.3. Forgot password

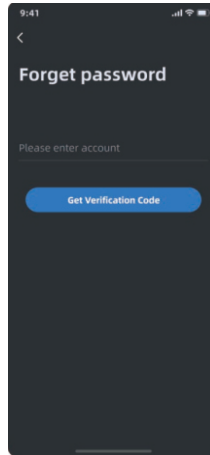


Figure 1

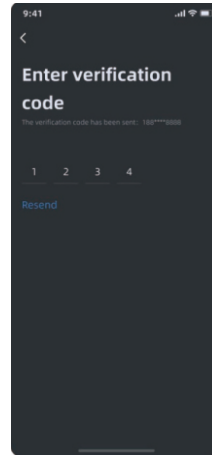


Figure 2

- 1)Figure 1: If you forget your password, you can reset it "Forgot Password". Click "**Forgot Password**" on the login page, enter your registered account and click "**Get Verification Code**" to enter the verification code page.
- 2)Figure 2: After entering the verification code, enter the password setting page.

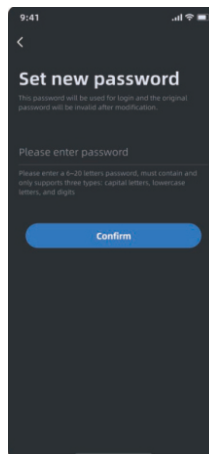
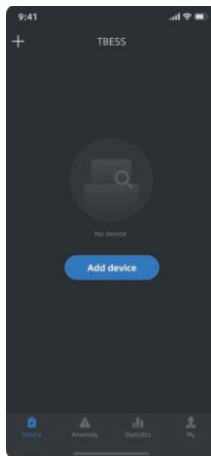


Figure 3

- 3)Figure 3: Enter the new password that meets the requirements and click "**Confirm**" to log in.

13. Wireless module instructions(APP)

3. Add Device



After logging in to your account, you can click on "Add Device" or the "+" in the upper left corner to open the Add Device page. There are three ways to add a device: via Bluetooth, manually, or by scanning a code. The default is Bluetooth.

Important Notice:

1. **When adding a device using Bluetooth**, please ensure:

- Home storage is activated
- The distance between mobile phone and home storage is within 5 meters
- If there are multiple home storage devices of the same model around, please compare **the last six digits of the device MAC address** in the displayed device list with **the last six the last six digits of the** on the label of the home storage body to be bound, and select the device that matches exactly.
- Use the 2.4GHz band. If the router has dual bands, it is recommended to separate the bands and select the 2.4 GHz network.
- Stable WiFi signal, speed test recommendation: upload/download ≥ 2 MB/s (16 Mbps)
- Enter the correct WiFi password, case-sensitive/space-sensitive
- The router's device limit has not been reached; otherwise, temporarily disconnect other devices. temporarily turned off
- If the router has wireless MAC address filtering turned on, please turn off or add the device's MAC address
- If you are using iOS 14, please go to "Settings → APP → Turn on local network permissions"

2. If there is connection failure:

- Restart the Bluetooth function of the phone and try again
- Try to restart the device or change the 2.4GHz WiFi to reconnect the network
- You can also switch to scanning the code or adding the device manually.

13. Wireless module instructions(APP)

3.1. Add device by Bluetooth

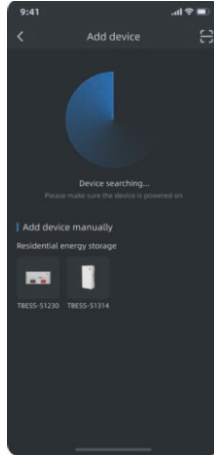


Figure 1

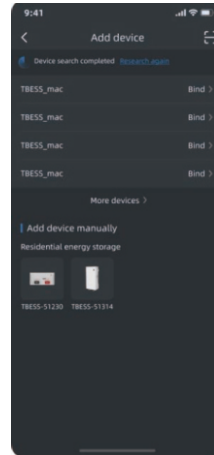


Figure 2

- 1) Figure 1: After enabling Bluetooth on the phone, start searching for Bluetooth signals from surrounding devices and try to add them as close to the device as possible. You can also click "manually add" or "scan code to add" to switch the adding method.
click on **manually add** or **scan code to add** to switch the additional method.
- 2) Figure 2: The list of found devices is displayed. Select the device to be added and click "Bind". If no device is found, click "Research again" or use another method.
click **"Bind"** to start adding the device; If no device is found, you can click **"Research again"** or use other ways to add it.

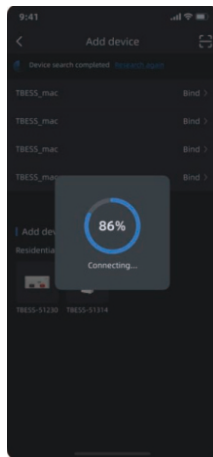


Figure 3

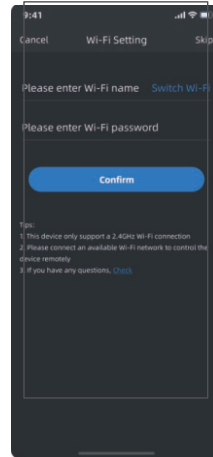


Figure 4

- 3) Figure 3: Bluetooth is **"Connecting"** and waiting for feedback on the connection result.
- 4) Figure 4: The Bluetooth **"Connection successful"** is displayed, and after 2 seconds, the **"WiFi settings"** page is entered.

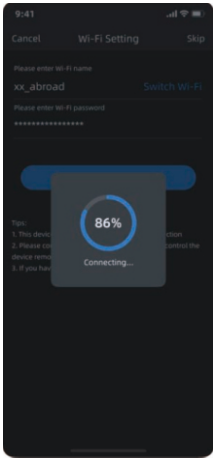


Figure 5

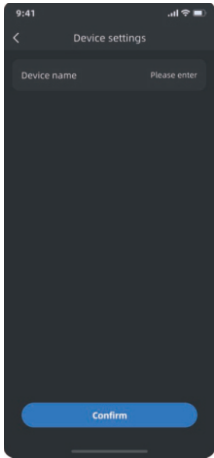


Figure 6

5)Figure 5: WiFi "**Connecting**", waiting for feedback on connection results;If the connection fails, you can try adding the device again based on the reason for the failure.

6)Figure 6: After successful WiFi setup, enter the "**Device Settings**" page to set personalized names for home storage.

3.2. Add Device Manually

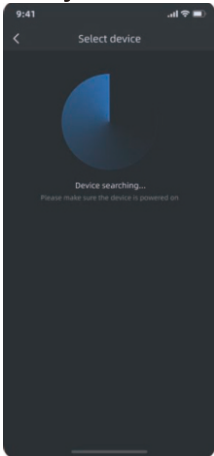


Figure 1

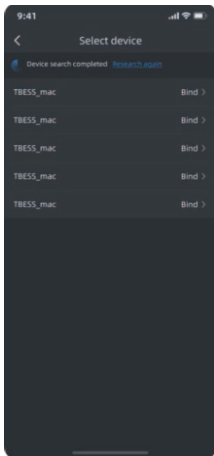


Figure 2

1)Figure 1: After selecting the device model, automatically search for the corresponding device.

2)Figure 2: Display the list of searched devices, select the device to be added, click "**Bind**" to start adding;If no device is found, you can click "**Research again**" or switch the addition method.

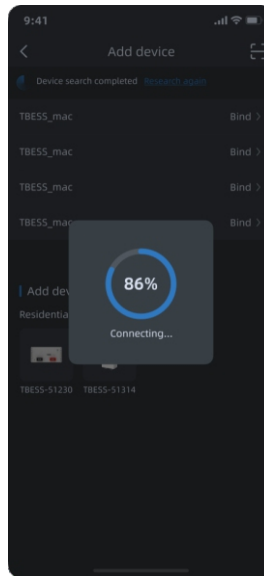


Figure 3

3) Figure 3: Bluetooth is "Connecting" and waiting for feedback on the connection result.

Note: Follow up steps can be found in "Add device by Bluetooth Figures 4-6".

3.3. Abnormal condition

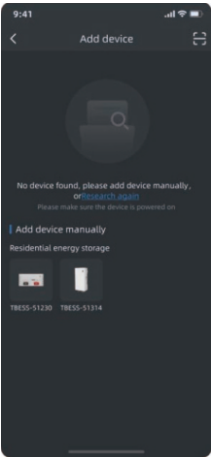


Figure 1

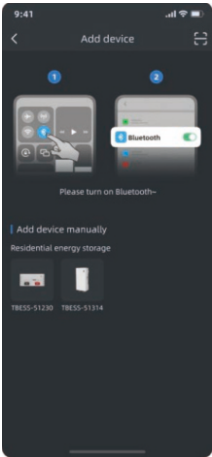


Figure 2

- 1)Figure 1: Confirm that the device has been turned on, try again near the device.
- 2)Figure 2: Please confirm that the Bluetooth on your phone is turned on.

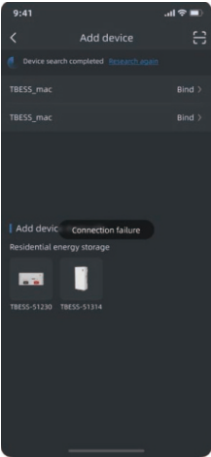


Figure 3

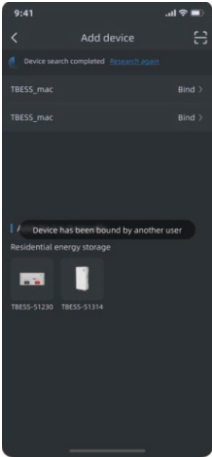


Figure 4

- 3)Figure 3: Restart the device and add it again.
- 4)Figure 4: The device has been bound. Please unbind it and add it again, or contact the device owner to share the device with you.

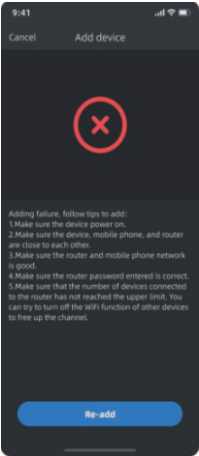


Figure 5

5)Figure 5: Refer to the prompt and add the device again.

4. Main functions

4.1. Main Information of Home Storage



Figure 1

1)Figure 1: Display battery system information in sequence from top to bottom:

- Add: Click to jump to the device addition page
- Name: Display the name of the current home storage
- More: Click to enter the "More" page to view and set home storage information
- System data: Display real-time data, including total voltage, total current, maximum cell temperature, cumulative charge and discharge capacity, and number of cycles
- Home storage status: display system remaining battery, Bluetooth/WiFi connection status, fault status
- Battery pack status: displays the number, serial number, remaining power, charging and discharging status, and fault status of the battery pack

Reminder:

- A multi-battery parallel system can be viewed via the master unit.
- Pull down to refresh the information. Online devices can view real-time data, while offline devices can view historical data.

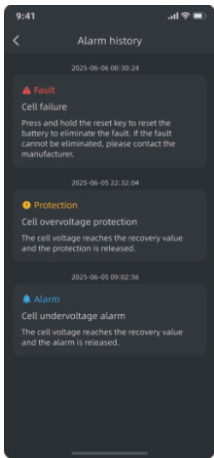


Figure 2

2)Figure 2: Click on "**Alarm Information - Alarm history**" to view the historical alarms of the battery pack.

5. More information

5.1. More information of device

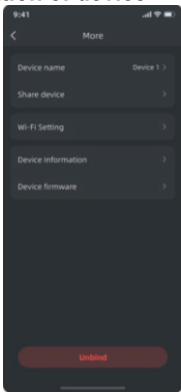


Figure 1

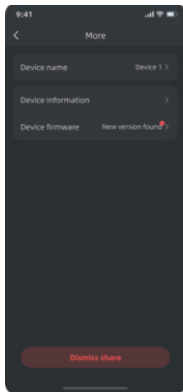


Figure 2

1) Figure 1: For the device owner, the following information is displayed from top to bottom:

- Device Name: Display home storage name, device owner can edit it
- Sharing device: Manage shared users
- WiFi setting: Configure WiFi for home storage connection
- Device information: View home storage parameters
- Device firmware: Check the system and DTU firmware versions, with a red dot indicating the new version
- Unbind: Unbind the device from the account

2) Figure 2: For a shared user, only the device name, device information, device firmware and the option to remove sharing are displayed.

devices can view historical data.



Figure 2



Figure 3

2)Figure 2: Click on the top home storage name to expand the menu and display the list of bound devices. Click on any device name to quickly switch.

3)Figure 3: When the device is abnormal, click on the abnormal information (blue alarm, yellow protection, red fault indicator) to jump to the **"Abnormal"** page to view details.

4.2. Home storage battery pack

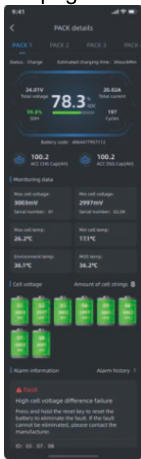
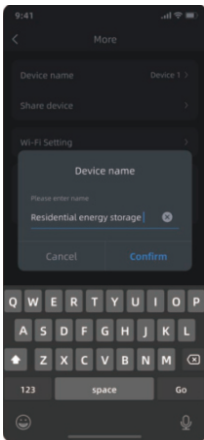


Figure 1

1)Figure 1: Display battery pack information in sequence from top to bottom:

- Battery pack: The current battery pack can be switched to other battery packs by clicking on it
- Battery pack status: display charging and discharging status, expected charging and expected charging/discharging duration, SOC, total voltage, total current, SOH, cycle count, battery code, cumulative charge and discharge capacity
- Monitoring data: Display the highest/lowest cell voltage and serial number of the battery pack, the highest/lowest cell temperature, ambient temperature, and MOS temperature
- Cell voltage: displays the number of cell strings and corresponding cell voltage
- Alarm information: Displays real-time and historical alarm information of the battery pack.

5.2. Device Name



Enter the device name that meets the requirements, click "**Confirm**" to complete the modification, and the name will be synchronized and updated to all device lists and shared user interfaces.

5.3. Share devices - via Account

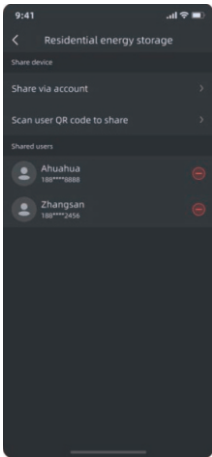


Figure 1

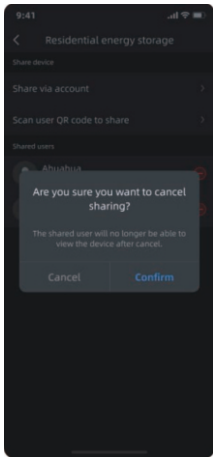


Figure 2

- 1)Figure 1: Supports sharing devices through accounts or QR codes;Display the shared users, click "**Delete**" to open a confirmation pop-up for cancelling the sharing.
- 2)Figure 2: Click "**Confirm**" to remove the other party's sharing permission;Click '**Cancel**' to keep the sharing.

Tips:

- The device owner can modify the sharing permissions at any time
- After removing the sharing, the other party will immediately lose access permission
- All changes take effect in real-time

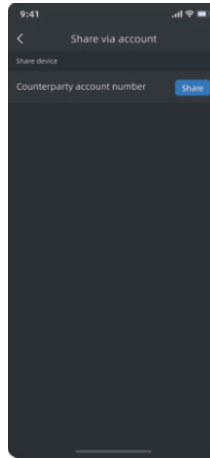


Figure 3

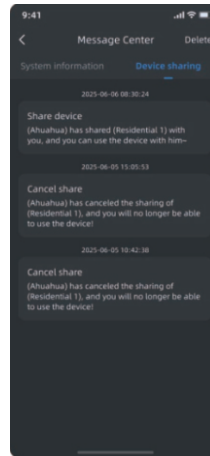


Figure 4

3)Figure 3: Enter the other party's account to share;If it fails, you can share again according to the prompts.

4)Figure 4: After entering the correct account to share, the other party can receive sharing messages in "**My - Message Center - Device Sharing**".

5.4. Share device - via QR code



Figure 1

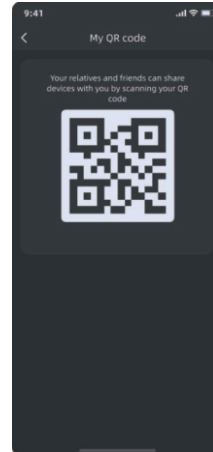


Figure 2

1)Figure 1: Place the other party's QR code into the viewfinder, and after successful scanning, select the device to share;When the light is dim, click "**Turn on the flashlight**" to turn on the flashlight for auxiliary scanning.

2)Figure 2: The other party can display the QR code of the sharing device in "**My - My QR Code**".

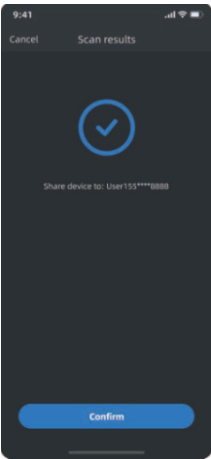


Figure3

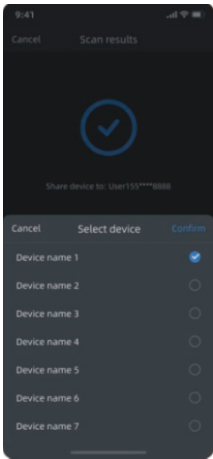


Figure 4

- 3)Figure 3: When there is only one device under your name, click "**Confirm**" to complete the sharing;If it fails, you can follow the prompts to share again.
- 4)Figure 4: When there are multiple devices under your name, you can select the device you want to share in the "**Select device**" pop-up window.

5.5. WiFi Settings

Before configuring WiFi, please ensure that the device is turned on and the Bluetooth of your phone is turned on. Only after the Bluetooth connection between your phone and the device is successful can you proceed with the configuration.

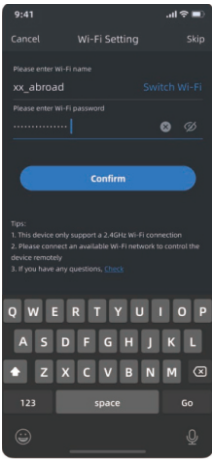


Figure 1

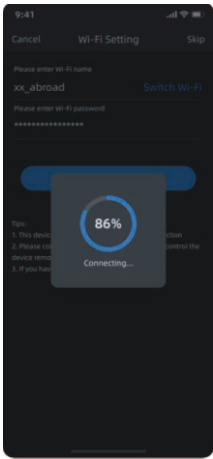
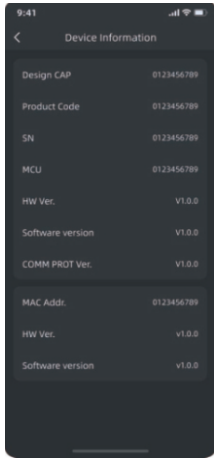


Figure 2

- 1)Figure 1: Display the "**WiFi Setting**" page.
- 2)Figure 2: WiFi "**Connecting**", waiting for feedback on connection results;If the connection fails, you can try adding again based on the reason for the failure.
- Note: If the setting fails, refer to "Important Notice" in section 3 (Add Device).

5.6. Device Information



Display the design capacity, finished product code, SN, MCU and other information of the device.

5.7. Device Firmware version

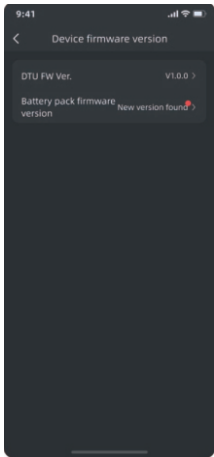


Figure 1

1)Figure 1: Check the current system firmware version and DTU firmware version of the device. When there is a new version, it will prompt **"New version found"** and can be upgraded.

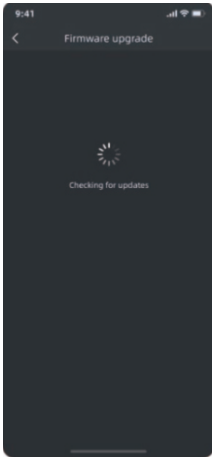


Figure 2

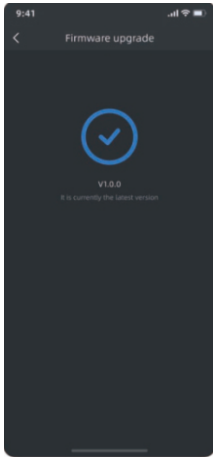


Figure 3

- 2)Figure 2: Check if there is a new firmware version available.
- 3)Figure 3: It shows that the current version is already the latest.

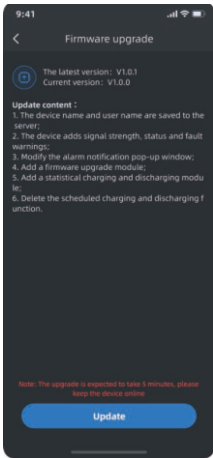


Figure 4

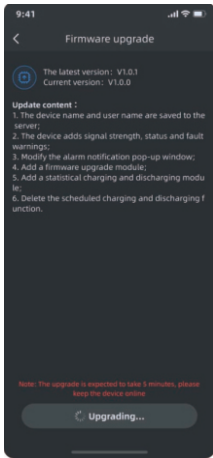


Figure 5

- 4)Figure 4: When a new firmware version is discovered, the update content will be displayed. Click "**Upgrade**" to start the upgrade process.
- 5)Figure 5: The upgrade progress is displayed. Keep the device online during the upgrade. The page closes automatically after a successful upgrade. If the upgrade fails, retry according to the prompt.

5.8. Unbind

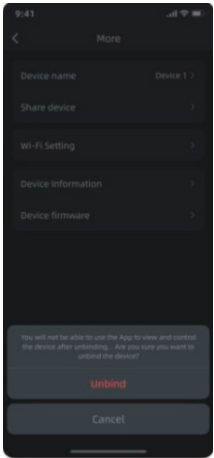


Figure 1

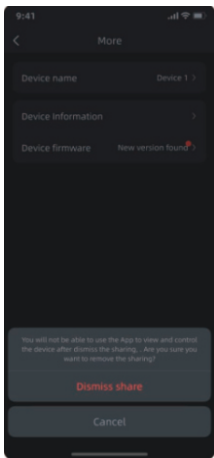


Figure 2

- 1) Figure 1: When the bound user clicks "Unbind" to unbind the device, sharing with the shared user is cancelled and that user receives a notification.
- 2) Figure 2: The shared user clicks "Dismiss share" to remove the device, and the bound user receives a notification.

6. Anomaly

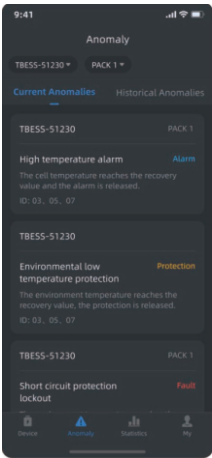


Figure 1

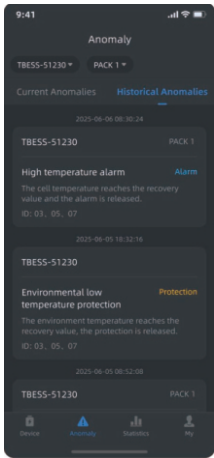


Figure 2

- 1) Figure 1: Display the current anomaly (alarm, protection, fault), showing the name of the home storage, battery pack number, anomaly title, level, and handling suggestions. It supports filtering by home storage name and battery pack number.
- 2) Figure 2: Display resolved historical anomalies in reverse chronological order, including the anomaly recovery time.

7. Statistics



Figure 1



Figure 2

- 1) Figure 1: The daily statistics page displays the statistical data of the selected device, including the clickable current date, the total amount of daily charging and discharging, as well as the line chart of daily charging and discharging.
- 2) Figure 2: The monthly statistics page displays the statistical data of the selected device, including the selectable month, the total monthly charging and discharging, and a bar chart of daily charging and discharging.



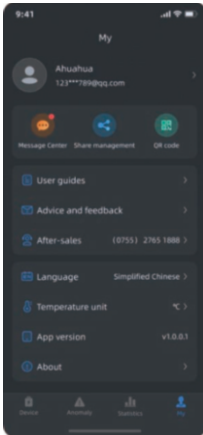
Figure 3



Figure 4

- 3) Figure 3: The annual statistics page displays the statistical data of the selected device, including the clickable total amount of current year, annual charging and discharging, as well as a bar chart of monthly charging and discharging.
- 4) Figure 4: The overall statistics page displays the total charging and discharging amounts of the selected devices, as well as a bar chart of the annual charging and discharging amounts.

8. My
8.1. My



Display the following information from top to bottom:

- User Center: Display the user's profile picture, nickname, and account. Click on the profile picture to enter the personal center.
- Message Center: System messages and device sharing can be viewed
- Share Management: Manage **"My Device"** and **"Share with Me"** devices
- My QR code: displays your personal QR code, used to bind shared devices.
- User guide: view the product guide, common Wi-Fi setup problems, etc.
- Advice and Feedback: Submit feedback on product issues, app issues, and other issues
- After-sales: Display after-sales service hotline
- Language: Select language, supports Chinese and English
- Temperature unit: Select the temperature display unit, supporting °C and °F
- APP version: Display the current version number of the app
- About: Displaying User Agreement and Privacy Policy

8.2. User Center

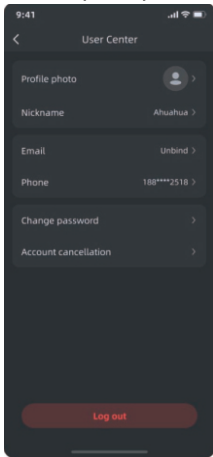


Figure 1

1) Figure 1: The following information is displayed in sequence from top to bottom:

- Profile photo: Supports taking photos or selecting images from albums as avatars
- Nickname: Customizable and modifiable nickname

13. Wireless module instructions(APP)

- Email/phone number: supports modifying registered email/phone number, or binding email/phone number for logging into the app
- Change password: Change login password through email or phone number
- Account cancellation: permanently delete the account and related data (non-recoverable)
- Log out: Log out of the current login status

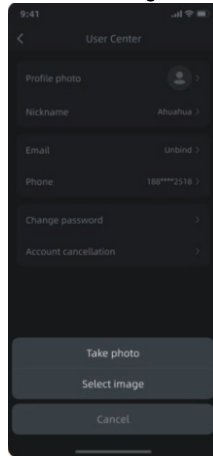


Figure 2

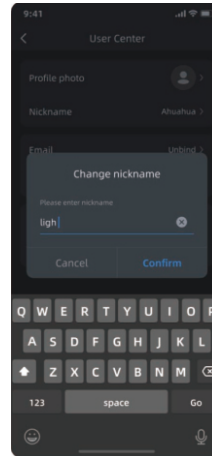


Figure 3

2) Figure 2: Select the replacement method, adjust the cropping area and save, and the avatar will be updated immediately.

3) Figure 3: Fill in the nickname in the input box and click "**Confirm**" to complete the modification.

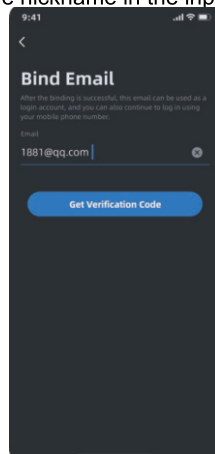


Figure 4

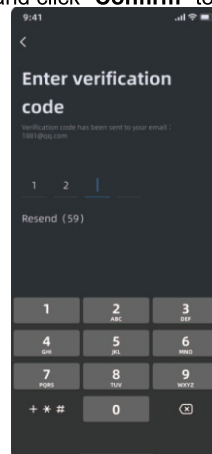


Figure 5

4) Figure 4: When the email/phone number is not bound, enter the email/phone number and click "**Get Verification Code**" to enter the verification code input page.

5) Figure 5: Enter the received verification code. If it is correct, the binding is successful. You can log in using your email/phone number next time.

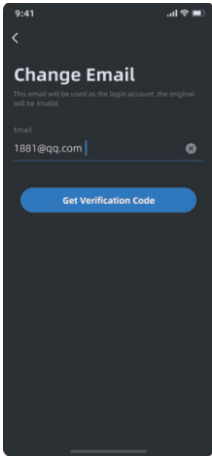


Figure 6

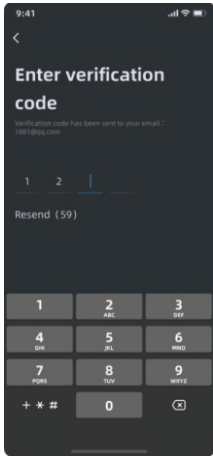


Figure 7

6) Figure 6: When modifying an email/phone number, enter the new email/phone number and click "**Get Verification Code**" to enter the verification code input page.

7) Figure 7: Enter the received verification code. If it is correct, the modification is successful. You can log in with a new email/phone number next time.

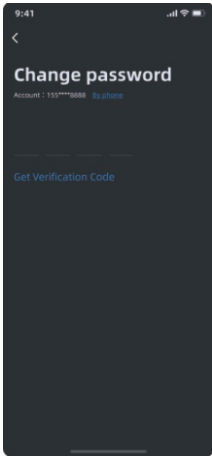


Figure 8

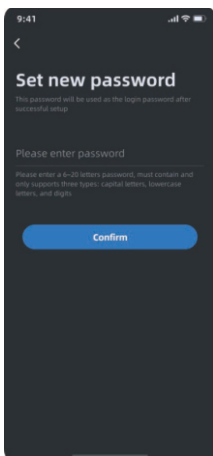


Figure 9

8) Figure 8: Already bound email/phone number, select the verification code acquisition method, enter the received verification code, and enter the password setting page.

9) Figure 9: Enter the new password that meets the requirements, click "**Confirm**" to complete the modification, and you can use the new password to log in next time.

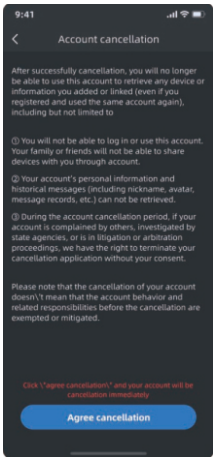


Figure 10

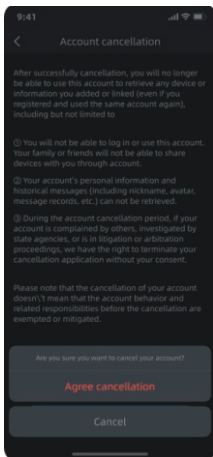


Figure 11

- 10) Figure 10: Display the prompt to cancel the account, click "**Agree cancellation**" to pop up a confirmation window for cancellation.
- 11) Figure 11: Click "Agree cancellation" to cancel the account and return to the login page. You will no longer be able to log in with this account. Click "Cancel" to keep the account.

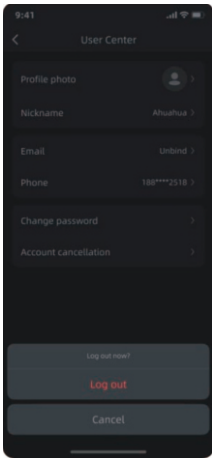


Figure 12

- 12) Figure 12: Click "**Log out**" to return to the login page;Click "**Cancel**" to keep the current login status.

8.3. Message Center

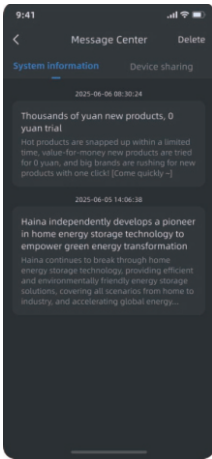


Figure 1

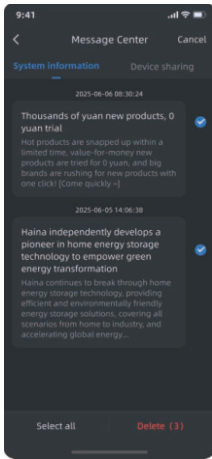


Figure 2

- 1) Figure 1: Display system or advertising messages, click to view message details.
- 2) Figure 2: Click on **"Delete"** in the upper right corner to select some or all messages for deletion.

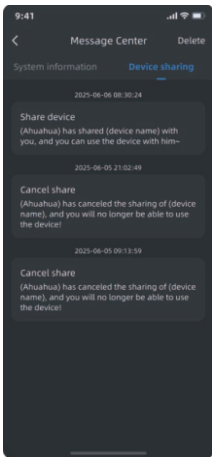


Figure 3

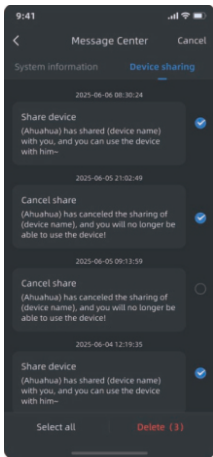


Figure 4

- 3) Figure 3: Display device sharing messages.
- 4) Figure 4: Click on **"Delete"** in the upper right corner to select some or all messages for deletion, but it will not affect the shared devices.

8.4. Share management

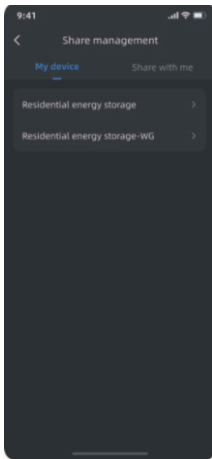


Figure 1

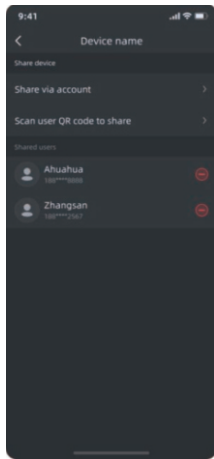


Figure 2

- 1)Figure 1: Display the bound devices, select the device to enter the "Device Sharing" page.
2)Figure 2: Supports sharing devices through accounts or QR codes;Display shared users.
Note: Follow up steps can be found in "5.3 Share devices - via Account" and "5.4 Share device - via QR Code" .



Figure 3

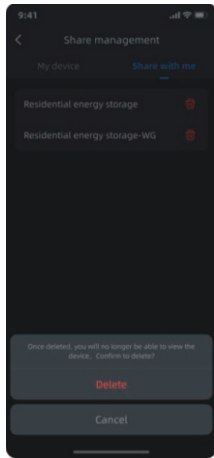
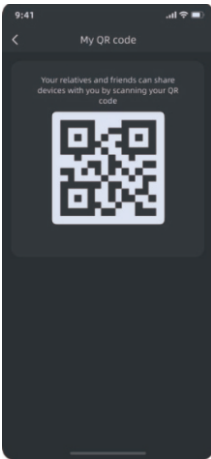


Figure 4

- 3)Figure 3: Display the device shared with you, click "Delete" to open a confirmation pop-up for cancelling the sharing.
4)Figure 4: Click "**Delete**" to remove the sharing device;Click "**Cancel**" to keep the sharing.

8.5. My QR code



Displays your QR code. Friends and family can scan it to share a device with you.

8.6. User guides

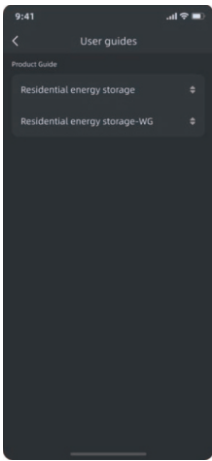


Figure 1

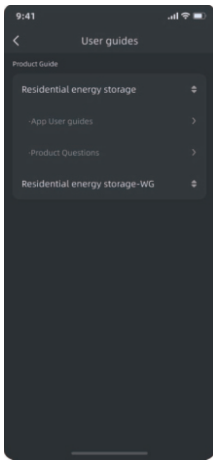
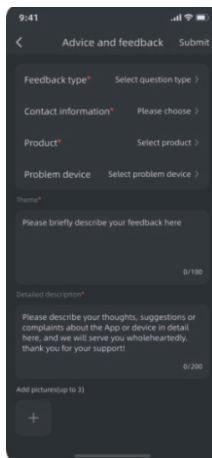


Figure 2

- 1)Figure 1: Display a list of all supported product models.
- 2)Figure 2: Click on the specific product model to view the corresponding user guide, problem description, and other documents.

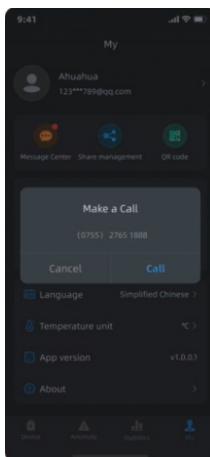
Note : The document content may be updated, please refer to the actual content of the app.

8.7. Advice and feedback



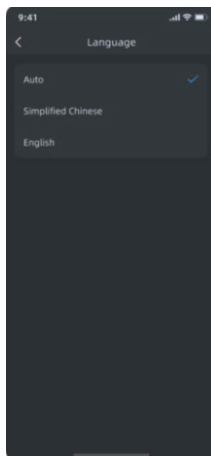
You can provide feedback on the product, app, and other issues in the interface, and we will optimize and improve them as soon as possible. Your feedback is the driving force behind our progress!

8.8. After-sales



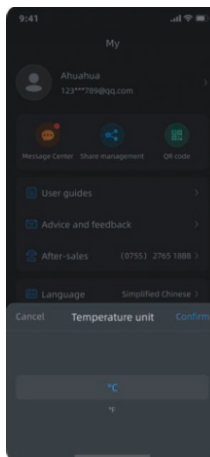
If you encounter any problems, please do not hesitate to call our after-sales hotline to contact us!

8.9. Language



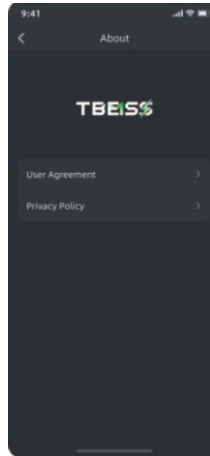
You can choose the language you want, currently supporting Chinese and English.

8.10. Temperature unit



After selecting the temperature unit, click "**Confirm**" and the app will switch to the corresponding unit.

8.11. About



Display the name and protocol information of the app, click to view details.

Charging method recommended by the manufacturer:

Charge the battery at a constant current of 140 A until the voltage reaches 57.6 V, then charge at a constant voltage of 57.6 V until the charge current drops to 15.7 A.

When the SOC falls below 5 %, communication remains normal but discharging is cut off. If no device with a communication protocol is connected, only forced discharge can continue until the SOC reaches 0 %.

Manufacturer's Name: LEDXPRESS LIGHTING TECHNOLOGY CO.,LTD

Product name: Lithium Ion Batteries

Model :VT-48290

Working Temperature Range: -20 °C to 60 °C

This device was tested for operation s. To comply with RF exposure requirements, a minimum separation distance of 20 cm must be maintained between the user's body and the handset, including the antenna . Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided . Use only the supplied or an approved antenna . This device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

All essential radio test suites have been carried out.

1. CAUTION:RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES

ACCORDING TO THE INSTRUCTIONS

2. The product shall only be connected to a USB interface of version USB 2.0
3. Adapter shall be installed near the equipment and shall be easily accessible.
4. The plug considered as disconnect device of adapter
5. The device complies with RF specifications when used at 20 cm from your body.
6. This product can be used across EU member states .



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