

PSI-X-5.8SLV-V2

EN

PSI-X-BT SERIES - HV STORAGE BATTERIES

User manual



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It should be noted that the technical data, information and representations contained in this document have a purely indicative value. Peimar reserves the right to modify the data, drawings and information contained in this document at any time and without notice.

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1.	Note on this Manual	6
1.1.	Scope of Validity	6
1.2.	Target Group	6
2.	Safety	7
2.1.	Safety Instructions	7
2.1.1.	General Safety Precautions	7
2.1.2.	Explanation of Symbols	8
2.2.	Response to Emergency Situations	9
2.2.1.	Leaking Batteries	9
2.2.2.	Fire	9
2.2.3.	Wet Batteries and Damaged Batteries	10
2.3.	Qualified Installer	10
3.	Product Introduction	11
3.1.	Product Overview	11
3.1.1.	Demension and Weight	11
3.1.2.	Appearance	12
3.2.	Basic Features	14
3.2.1.	Features	14
3.2.2.	Certifications	14
3.2.3.	Certifications	14
3.3.	Specifications	15
3.3.1.	PSI-X-5.8SLV-V2 Configuration List	15
3.3.2.	Performance	15
4.	Installation	16
4.1.	Installation Prerequisites	16
4.2.	Safety Gear	17
4.3.	Tools	17
4.4.	Installation	17

4.4.1.	Check for Transport Damage	17
4.4.2.	Unpacking	18
4.4.3.	Accessories	18
4.5.	Cable Connection	24
4.5.1.	Connecting Power Cables between Battery Packs	24
4.5.2.	Connecting Power Cables to Inverter	26
4.5.3.	Connecting BMS Communication Cable	31
4.5.4.	Connecting RS485 Communication Cable	32
4.5.5.	Connecting Ground Wire	32
4.5.6.	Overall Installation	33
4.6.	Overview of Installation	36
5.	Commissioning	37
5.1.	Configuring Battery System	37
5.2.	Commissioning	38
5.3.	Status Indicators	40
5.3.1.	BMS	40
5.3.2.	Battery Pack	41
5.4.	Shutting Down T-BAT System	42
6.	Troubleshooting	42
6.1.	Troubleshooting	42
7.	Decommissioning	44
7.1.	Dismantling the Battery	44
7.2.	Packing	44
8.	Maintenance	44
9.	Disclaimer	45

1. Note on this Manual

1.1. Scope of Validity

This manual is an integral part of T-BAT Series. It describes the assembly, installation, commissioning, maintenance and failure of the product. Please read it carefully before operating.



PLEASE NOTE

There are 4 models for PSI-X-BT system, including BMS and battery packs. Please refer to section 3.3.1 PSI-X-BT Configuration List on page 11 for more information.

1.2. Target Group

This manual is for qualified electricians. The tasks described in this manual may only be performed by qualified electricians.



DANGER!

“DANGER” indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!

“WARNING” indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION!

“CAUTION” indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



PLEASE NOTE

“NOTE” provides tips that are valuable for the optimal operation of your product.

2. Safety

2.1. Safety Instructions

For safety reasons, installers are responsible for familiarizing themselves with the contents of this manual and all warnings before performing installation.

2.1.1. General Safety Precautions



WARNING!

Please don't crush or impact the battery, and always dispose it according to the safety regulation.

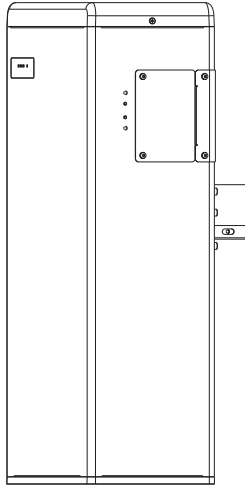
Observe the following precautions:

- Risks of explosion
- Do not subject the battery to strong impacts.
- Do not crush or puncture the battery.
- Do not dispose of the battery in a fire.
- Risks of fire
- Do not expose the battery to temperatures in excess of 55°C.
- Do not place the battery near a heat source, such as a fireplace.
- Do not allow the battery connectors to touch conductive objects such as wires.
- Risks of electric shock
- Do not disassemble the battery.
- Do not touch the battery with wet hands.
- Do not expose the battery to moisture or liquids.
- Keep the battery away from children and animals.
- Risks of damage to the battery
- Do not allow the battery to get in contact with liquids.
- Do not subject the battery to high pressures.
- Do not place any objects on top of the battery.

PSI-X-5.8SLV-V2 can only be used in the household energy field. It is not allowed to be used in other industries, such as the medical equipment industry and automotive application industry.

2.1.2. Explanation of Symbols

This section gives an explanation of all the symbols shown on the T-BAT system and on the warning label.



CE MARK

Devices with the CE mark meet the essential requirements of the Low Voltage Directive and the Electromagnetic Compatibility Directive.



This device MUST NOT be disposed as a municipal waste.

Please refer to the "Disposal" chapter of this manual for proper management of the disposal of the inverter.



INSTRUCTIONS

Refer to this manual for instructions regarding the installation, operation, maintenance, and troubleshooting of the inverter.

**DANGEROUS ELECTRICAL VOLTAGE**

This device is directly connected to the public power grid, therefore any work on the inverter must be carried out by qualified personnel.

**DANGER TO LIFE due to high electrical voltage**

In the inverter, there may be a residual voltage due to the high capacitance of the capacitors. Wait 5 minutes after disconnecting the appliance before removing the cover.

**WARNING, DANGER!**

The appliance is directly connected to electric generators and the public power grid.

2.2. Response to Emergency Situations

2.2.1. Leaking Batteries

If the battery leaks electrolyte which is corrosive, avoid contact with the leaking liquid or gas. Direct contact may lead to skin irritation or chemical burns. If one is exposed to the leaked substance, do these actions:

- Accidental inhalation of harmful substances: Evacuate people from the contaminated area, and seek medical attention immediately.
- Eye contact: Rinse eyes with flowing water for 15 minutes, and seek medical attention immediately.
- Dermal contact: Wash the affected area thoroughly with soap and water, and seek medical attention immediately.
- Ingestion: Induce vomiting, and seek medical attention immediately.

2.2.2. Fire

**WARNING!**

The battery pack may catch fire when heated above 150°C.

If a fire breaks out at where the battery is installed, do these actions:

1. Extinguish the fire before the battery catches fire;
2. If the battery has caught fire, do not try to extinguish the fire. Evacuate people immediately.

**WARNING!**

If the battery catches fire, it will produce noxious and poisonous gases. Do not approach.

2.2.3. Wet Batteries and Damaged Batteries

If the battery is wet or submerged in water, do not try to access it.

If the battery seems to be damaged, they are not fit for use and may pose a danger to people or property.

**CAUTION!**

Damaged batteries may leak electrolyte or produce flammable gas. If you suspect such damage, immediately contact our company for advice and support.

2.3. Qualified Installer**WARNING!**

All operations of PSI-X-5.8SLV-V2 relating to electrical connection and installation must be carried out by qualified personnel.

A skilled worker is defined as a trained and qualified electrician or installer who has all of the following skills and experience:

- Knowledge of the functional principles and operation of on-grid systems;
- Knowledge of dangers and risks associated with installing and using electrical devices and acceptable mitigation methods;
- Knowledge of the installation of electrical devices;
- Knowledge of and adherence to this Manual and all safety precautions and best practices;

3. Product Introduction

3.1. Product Overview

3.1.1. Demension and Weight

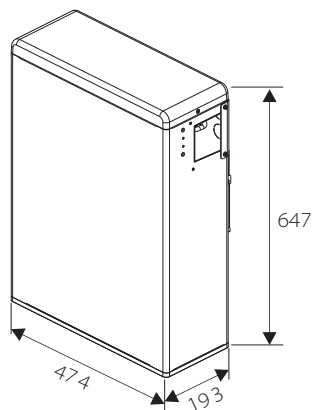
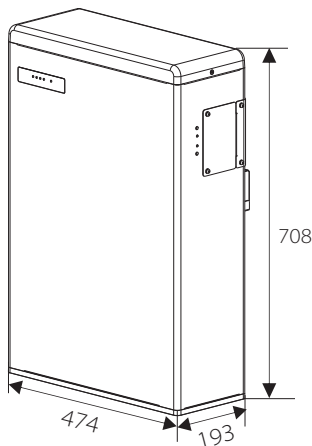
- A battery management system (BMS) is an electronic system that manages a rechargeable battery.
- Battery is a type of electrical battery which can be charged, discharged into a load.
- A battery system includes a BMS and battery pack(s).



PLEASE NOTE

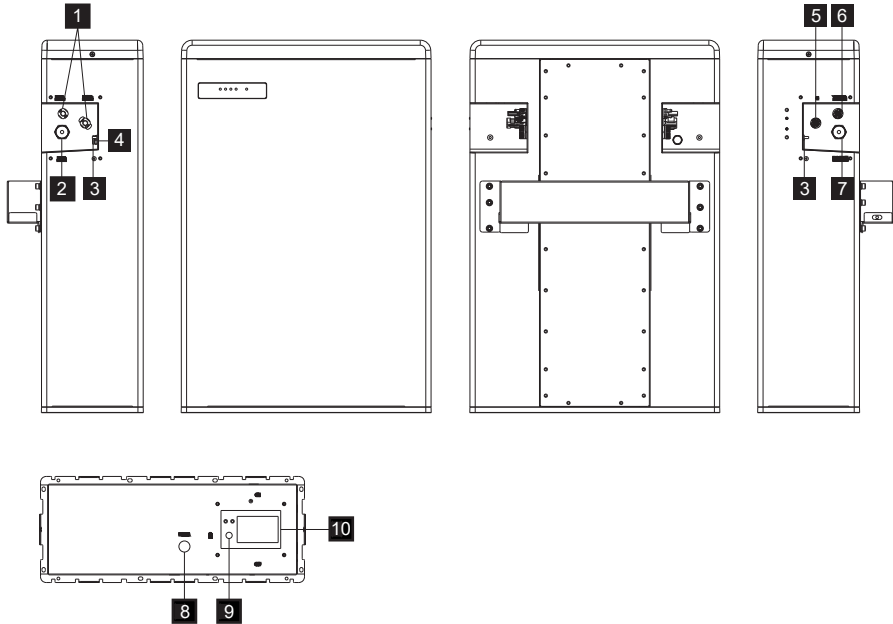
There are two generations of the device: the V1 and V2. All the drawings attached to the User Manual are the model of the second generation.

	PSI-X-BT-H5.8MST-HV PSI-X-5.8MST-V2	PSI-X-BT-H5.8SLV-HV PSI-X-5.8SLV-V2
Lenght	474 mm	474 mm
Width	193 mm	193 mm
Height	708 mm	647 mm
Weight	72.2 kg	68.5 kg



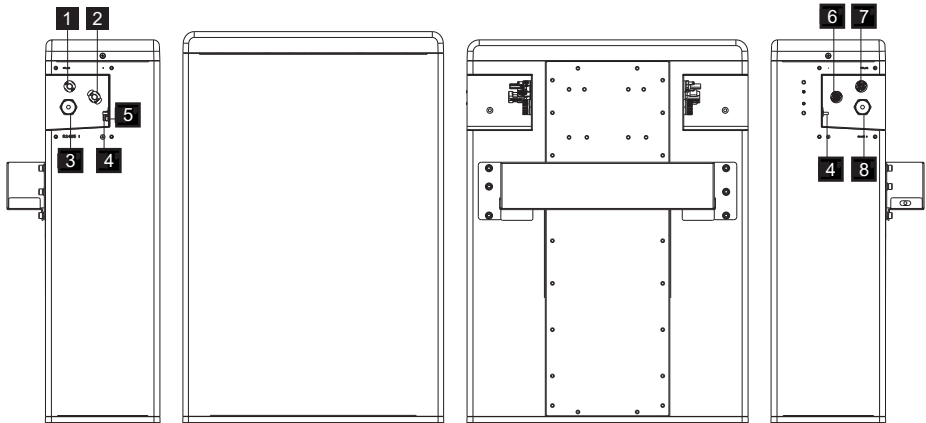
3.1.2. Appearance

Section view of PSI-X-BT-H5.8MST-HV / PSI-X-5.8MST-V2



Object	Mark	Description
1	BAT+/BAT	Charge/Discharge Connectors
2	BMS	BMS Connector
3	GND	GND
4	/	Air Valve
5	-	Power Connector to + of next battery pack, or to YPLUG of the same pack
6	YPLUG	Power Connector' to XPLUG of next battery pack, or to "-" of the same pack
7	RS485 II	RS485 Connector to RS485 I of next battery pack

8	POWER	Power Button
9	DIP	DIP Switch
10	ON/OFF	Circuit Breaker



Object	Mark	Description
1	XPLUG	Power Connector' to YPLUG of upper battery pack
2	+	Power Connector to "-" of upper battery pack
3	RS485 I	RS485 Connector to RS485 II of upper battery pack
4	GND	GND
5	/	Air valve
6	-	Power Connector to + of next battery pack, or to YPLUG of the same pack
7	YPLUG	Power Connector' to XPLUG of next battery pack, or to "-" of the same pack
8	RS485 II	Rs485 Connector to RS485 I of next battery pack

3.2. Basic Features

3.2.1. Features

The PSI-X-5.8SLV-V2 is one of the advanced energy storage systems on the market today, incorporating state-of-the-art technology, high reliability, and convenient control features shown as below:

3.2.2. Certifications

- 90% DOD
- 99% faradic charge efficiency
- 95% battery roundtrip efficiency
- Cycle life > 6000 times
- Secondary protection by hardware
- IP65 protection level
- Safety & reliability
- Small footprint
- Floor or wall mounting

3.2.3. Certifications

PSI-X-BT system safety	V1: CE, IEC 62619, UKCA, VDE2510 JET, UL1973, FCC V2: CE, IEC 62040, IEC 62619, UKCA, VDE2510, RoHS
Battery cell safety	UL 1642
UN number	UN 3480
Hazardous materials classification	Class 9
UN transportation testing requirements	UN 38.3
Ingress Protection	IP65

3.3. Specifications

3.3.1. PSI-X-5.8SLV-V2 Configuration List

No.	Model	Battery pack	Energy (kWh)	Voltage (V)
1	PSI-X-BT-H5.8MST-HV	PSI-X-BT-H5.8MST-HV*1	5.8	100-131
2	PSI-X-BT-H11.5MST-HV	PSI-X-BT-H5.8MST-HV*1 + PSI-X-BT-H5.8SLV-HV*1	11.5	200-262
3	PSI-X-BT-H17.3MST-HV	PSI-X-BT-H5.8MST-HV*1 + PSI-X-BT-H5.8SLV-HV*2	17.3	300-393
4	PSI-X-BT-H23.0MST-HV	PSI-X-BT-H5.8MST-HV*1 + PSI-X-BT-H5.8SLV-HV*3	23.0	400-524
5	PSI-X-5.8MST-V2	PSI-X-5.8MST-V2*1	5.8	100-131
6	PSI-X-11.5MST-V2	PSI-X-5.8MST-V2*1 + PSI-X-5.8SLV-V2*1	11.5	200-262
7	PSI-X-17.3MST-V2	PSI-X-5.8MST-V2*1 + PSI-X-5.8SLV-V2*2	17.3	300-393
8	PSI-X-23.0MST-V2	PSI-X-5.8MST-V2*1 + PSI-X-5.8SLV-V2*3	23.0	400-524

3.3.2. Performance

	PSI-X-BT-H5.8MST-HV / PSI-X-5.8MST-V2	PSI-X-BT-H5.8SLV-HV / PSI-X-5.8SLV-V2
Dimension (mm)	474 x 193 x 708	474 x 193 x 647
Weight (kg)	72.2	68.5
Nominal Voltage (Vdc)	115.2	115.2
Operating Voltage (Vdc):	100-131	100-131
Nominal Capacity (Ah):	50	50
Max. charge/discharge Current (A):	35	35
Recommend Charge/Discharge Current (A):	25	25
Standard Power (kW)	2.8	2.8
Maximum Power (kW)	4.0	4.0
Altitude (m)	≤ 2000	
Faradic Charge Efficiency (25°C/77°F)	99%	
Battery Roundtrip Efficiency (C/3, 25°C/77°F)	95%	
Expected Lifetime (25°C/77°F)	10 years	

Cycle life (90% DOD, 25°C/77°F)	6000 cycles
Available Operating Temperature	V1: 0~55°C V2: Charge: 0~55°C; Discharge: -10°C~55°C
Full-load Operating Temperature	5°C~48°C
Storage Temperature	-20°C~+30°C (12 months) / +30°C~+55°C (6 months)
Relative Humidity [%]	4 to100 (condensing)
Ingress Protection	IP65

4. Installation

4.1. Installation Prerequisites

Before installation, make sure that the installation site meets the following conditions:

- The building is designed with resistance to earthquakes;
- The location is far away from the sea, to avoid sea water and humid air;
- The floor shall be flat;
- There are no flammable or explosive materials nearby;
- The ambience shall be shady and cool, and avoid heat sources and direct sunlight;
- The temperature and humidity remain at a constant level;
- The installation site requires less dust and dirt;
- There are no corrosive gases, including ammonia and acid vapor; and
- The same generation products are recommended to give priority to use.



PLEASE NOTE

The Triple Power battery is rated at IP65. Thus, it can be installed outdoors as well as indoors. However, if the battery is installed outdoors, avoid direct exposure to the sun and humid air.



PLEASE NOTE

If the ambient temperature is beyond the operating range, the battery will stop operating

to protect itself. The optimal temperature range for the battery to operate is from 15°C to 35°C. Frequent exposure to harsh temperatures may deteriorate the performance and lifetime of the battery.



PLEASE NOTE

When installing the battery for the first time, the manufacturing date between battery modules should not exceed 3 months.

4.2. Safety Gear

Installation and maintenance personnel must operate according to applicable federal, state and local regulations as well as the industry standard. The product installation personnel shall wear safety gears, etc. in order to avoid short circuit and personal injury.

- Insulated Gloves
- Safety Goggles
- Safety Shoes

4.3. Tools

These tools are required to install the PSI-X-BT system.

- Torque Screwdriver
- Cruciform Screwdriver
- Hexagon Wrench
- Slotted Screwdriver
- Torque Wrench
- Tape Measure
- Driller
- Pencil or Marker

4.4. Installation

4.4.1. Check for Transport Damage

Make sure the battery is intact during transportation. If there are any visible damages, such as cracks, please contact your dealer immediately.

4.4.2. Unpacking

Unpack the battery package by removing the packing tape. Ensure the battery modules and relevant items are complete. See the package items on section 4.4.3 and check the packing list carefully. If any items are missing, immediately contact our company or your distributor.



PLEASE NOTE

According to regional regulations, several people may be required for moving the equipment.



PLEASE NOTE

Please strictly follow the installation steps. The company will not assume any responsibility for any hurting or loss caused by improper assembling and operation.

4.4.3. Accessories

Description	Quantity
Power cable between inverter and PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 (+) (2 m)*	1
Power cable between inverter and PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 (-) (2 m)*	1
BMS communication cable (2m)	1
Series-connected plug	1
Cover plate1	2
M4 screw	8
Cover plate2	2
Wall bracket	1
M5 screw	1
Expansion bolt	5
Ring terminal (for grounding)	2
Power cable disassembling tool	1
Document	2
M5*L14 screw	2



PLEASE NOTE

1. The above-mentioned accessories are only for one battery module. Peimar will provide corresponding accessories according to the number of battery modules.
2. The mark "*" indicates that the connector on one end of the charging cable, connecting the battery and inverter, is delivered with the inverter's kit. And both the charging cables meet the requirements of B2ca.

PSI-X-BT-H5.8SLV-HV / PSI-X-5.8SLV-V2:

Description	Quantity
Power cable between battery packs (650 mm)	1
Power cable between battery packs (650 mm)	1
RS485 communication cable (650 mm)	1
Cover plate1	2
M4 screw	8
Cover plate2	8
Wall bracket	1
M5 screw	1
Expansion bolt	5
Ring terminal (for grounding)	2
Document	1
M5*L14 screw	2

4.4.4. Battery Installation Steps



PLEASE NOTE

Before installing the device, connect the grounding cable first. For details, see 4.5.5 Connecting Ground Wire.

There are two installation ways, wall mounting and floor mounting.

1. Wall mounting

It is recommended to keep a distance of 350 mm between two battery packs. Such a distance must be between 320 mm and 380 mm.

Steps (for PSI-X-BT-H5.8MST-HV (PSI-X-5.8MST-V2) or PSI-X-BT-H5.8SLV-HV (PSI-X-5.8SLV-V2)): Make sure the wall is strong enough to withstand the weight of battery.

Step 1: Fix the wall bracket (H or G1) on the wall

- Use the wall bracket as a template to mark the position of the 5 holes;
- Drill holes with $\phi 10$ driller, make sure the holes are deep enough (at least 50mm) for installing and tightening the expansion bolts (J or I1);
- Install the expansion bolts in the wall, and tighten the screws on the bracket by using the screw driller.

Step 2: Match the battery with the wall bracket

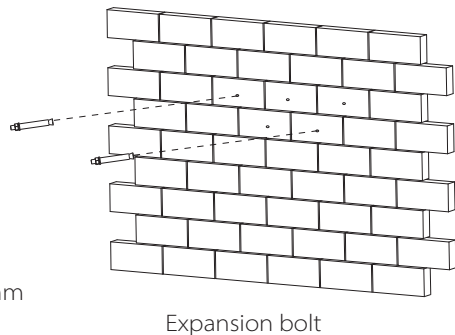
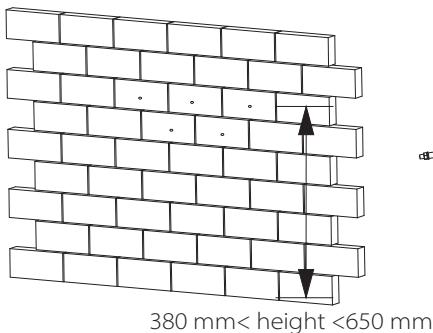
- Lift the battery to the wall bracket;
- Hang the battery over the wall bracket, move the battery close to the wall and match it on the wall bracket.

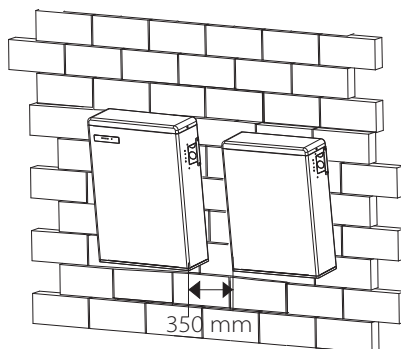
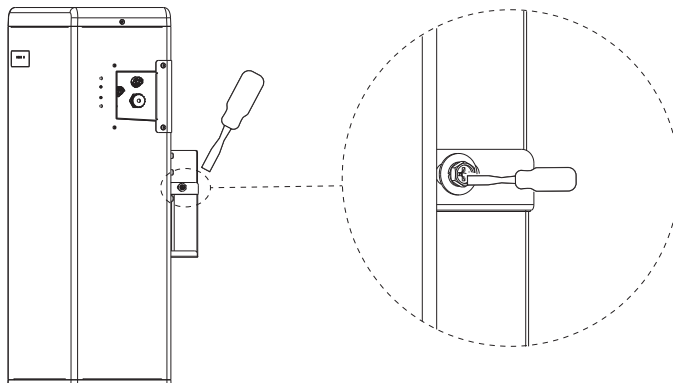
Step 3: Lock the joint between hanging board and wall bracket with M5 combination screw (I or H1) (Torque: 5 N·m).



PLEASE NOTE

Keep the distance from installation point to the floor less than 650mm.





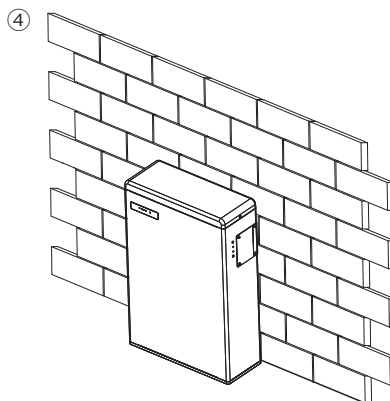
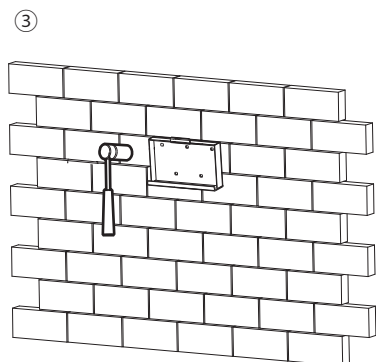
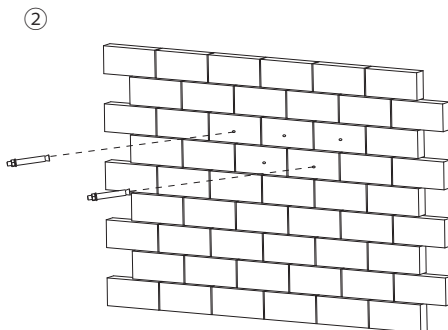
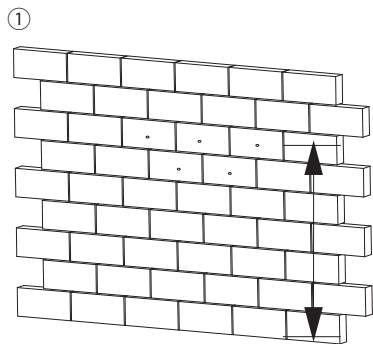
2. Floor mounting

Steps (for PSI-X-BT-H5.8MST-HV (PSI-X-5.8MST-V2) or PSI-X-BT-H5.8SLV-HV (PSI-X-5.8SLV-V2)), please refer to the steps for wall mounting on page 16.



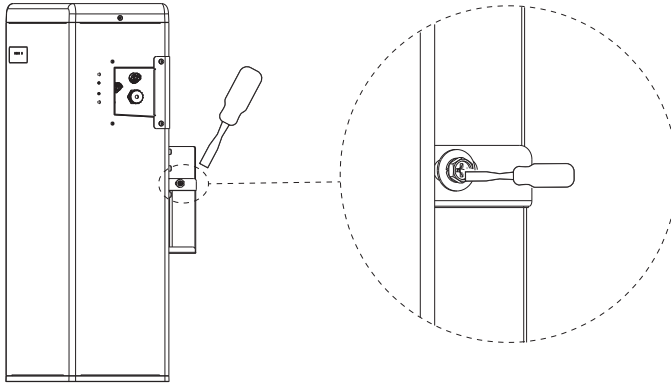
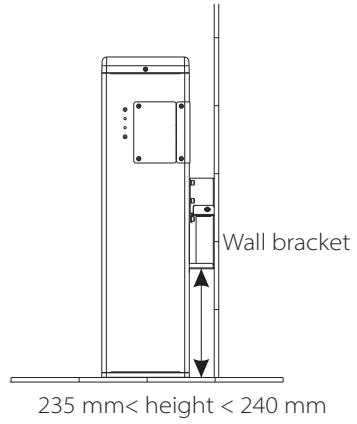
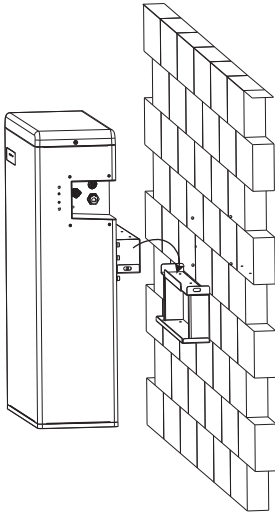
PLEASE NOTE

It is recommended to keep a distance of 350 mm between two battery packs. Such a distance must be between 320 mm and 380 mm.



PLEASE NOTE

To prevent the battery from becoming moist, it is recommended to place a foam cushion, or other cushion made up of other materials, with a height of 3 cm to 4 cm, under the battery.

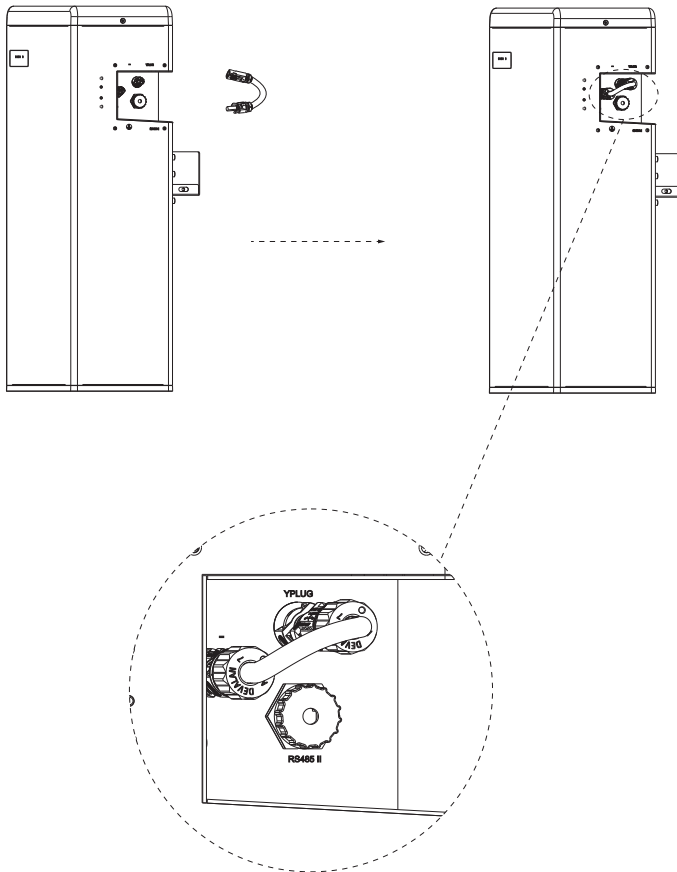


4.5. Cable Connection

4.5.1. Connecting Power Cables between Battery Packs

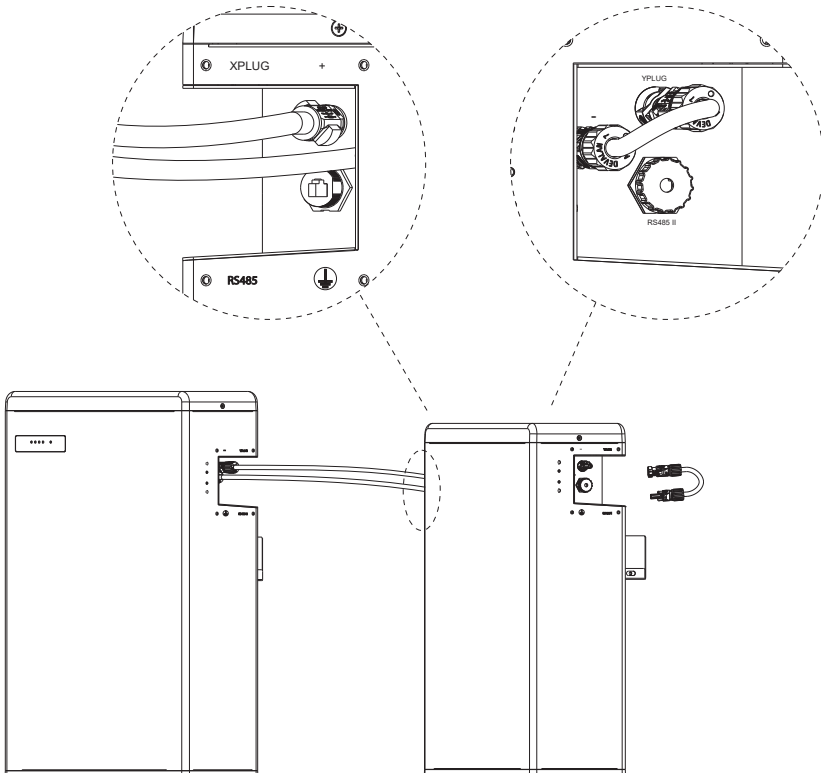
For PSI-X-BT-H5.8MST-HV / PSI-X-5.8MST-V2:

1. The only step of connecting power cable for PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 is connecting the series-connected cable to “-” and “YPLUG” on the right side. The series-connected cable is used to make a complete circuit.



For PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 + 1~3 battery packs:

1. Connect “-” (V for PSI-X-BT-H5.8MST-HV (PSI-X-5.8MST-V2) or VI' for PSI-X-BT-H5.8SLV-HV (PSI-X-5.8SLV-V2)) on the right side to “+” (II') on the left side of the next battery pack.
2. Connect “YPLUG” (VI for PSI-X-BT-H5.8MST-HV (PSI-X-5.8MST-V2) or VII' for PSI-X-BT-H5.8SLV-HV (PSI-X-5.8SLV-V2)) on the right side to “XPLUG” (I) on the left side of the next battery pack.
3. The rest battery packs are connected in the same way.
4. Insert the series-connected cable at “-” and “YPLUG” on the right side of last battery pack to make a complete circuit.





PLEASE NOTE

Regardless of how many battery modules the user install, please put a waterproof cap on the unconnected communication port of the battery module.

4.5.2. Connecting Power Cables to Inverter

This step is going to connect power cables between inverter and T-BAT system.

The default length of power cables are 2 meters, so customers can appropriately cut the cable according to the actual installation environment. As a result, each power cable has one terminal block when leaving the factory, and customers need to connect the other end of terminal block by themselves.

Cable Connection Steps:



PLEASE NOTE

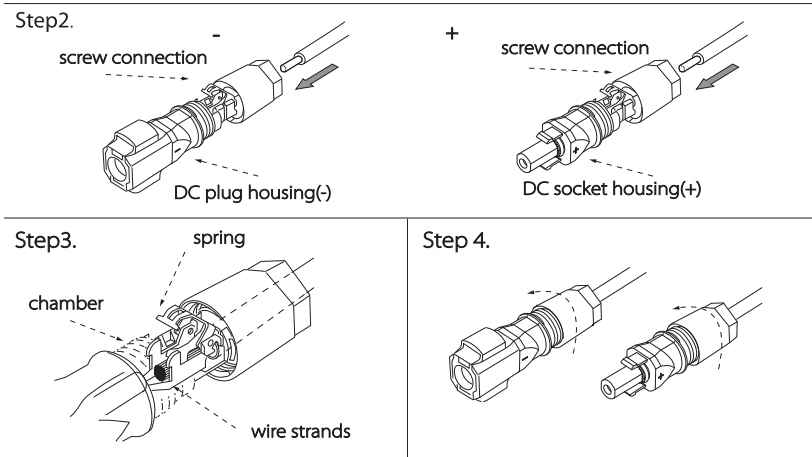
In case the Phoenix terminal is equipped on both ports "-" and "YPlug" on the battery and inverter, respectively, please strictly follow the steps below to install Phoenix terminals on power cables.

Step1: Strip the cable to 15mm.

Step2: Insert the stripped cable up to the stop (negative cable for DC plug(-) and positive cable for DC socket(+) are live). Hold the housing on the screw connection.

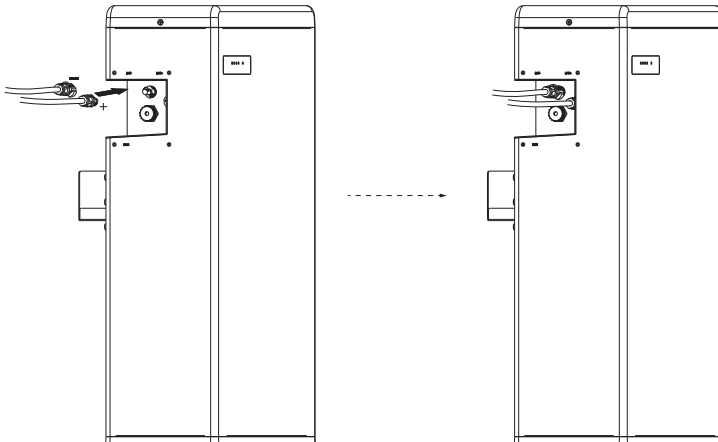
Step3: Press down the spring clamp until it clicks audibly into place (You should be able to see the fine wire strands in the chamber)

Step4: Tighten the screw connection (tightening torque: 2.0 ± 0.2 N·m)

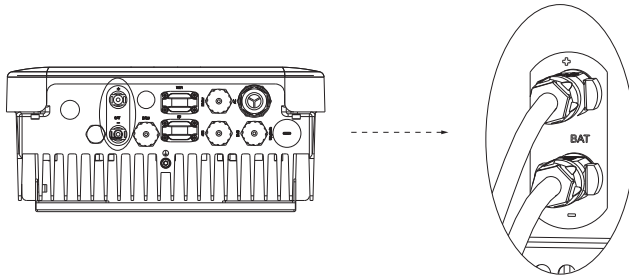


• Connecting Charging Cables between Inverter and PSI-X-BT System:

1. Connect the the positive cable (+) (A) and negative cable (-) (B) to the BAT+ and BAT- respectively as shown in the following figure.

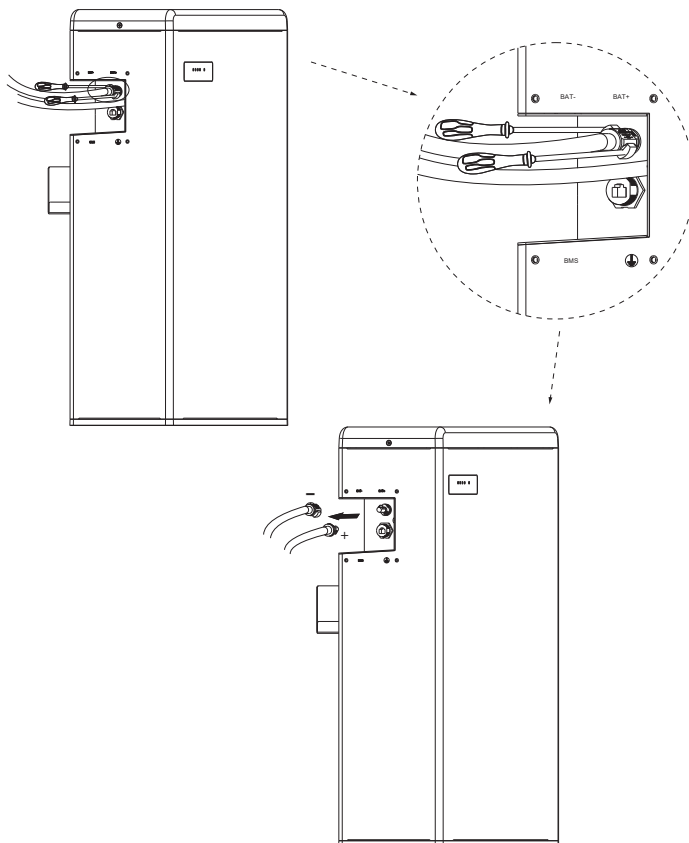


2. Keep the inverter off. Connect the other end of power cables (+,-) to the BAT (+, -) port on the inverter.



PLEASE NOTE

1. When connecting the cable to inverter, fit the two connectors together until the connection audibly locks into place.
 2. Check to make sure the connection is securely locked.
 3. Don't shake both ends of the cable at the joint once the connection is locked.
- Disassembling Power cable (on BAT+, BAT-, "+", XPLUG port)

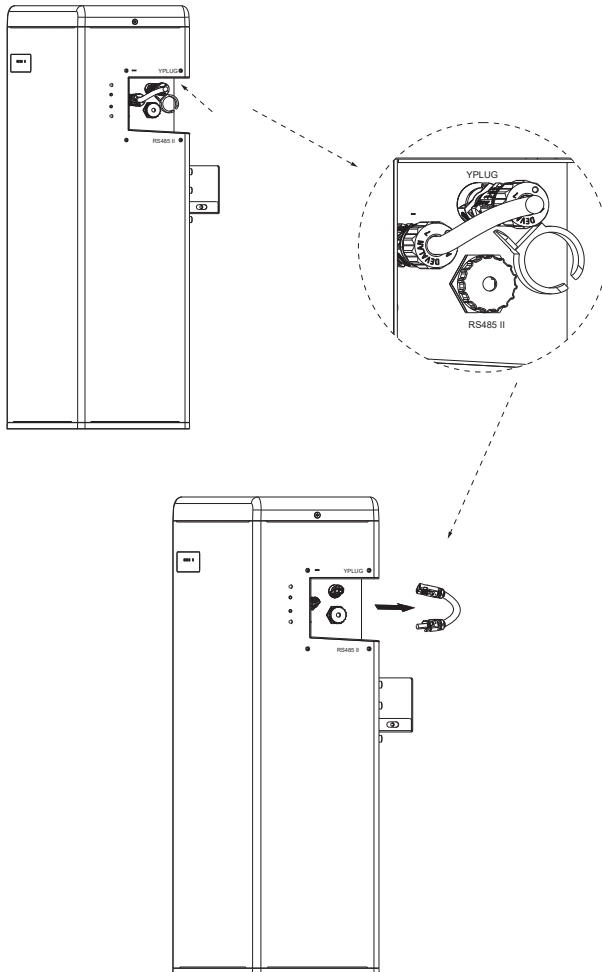


PLEASE NOTE

DO NOT disassemble power cables when the PSI-X-BT system is not turned off, otherwise there would be an arc discharge that could cause serious injury!

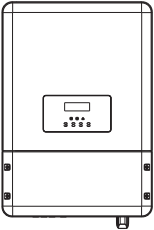
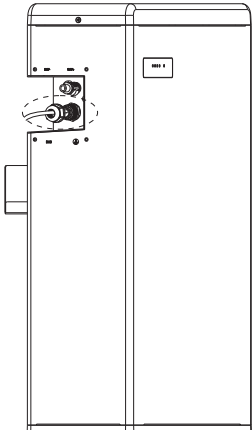
- Disassembling Power Cable (on "-", YPLUG port)

Disassemble the power line by plugging the Power cable disassembling tool (L) to the terminal groove of charging cable. Please see the illustration as shown below:

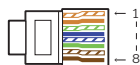
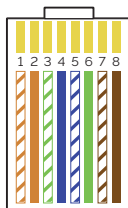


4.5.3. Connecting BMS Communication Cable

It is required for the BMS to communicate with the inverter for proper operation.

	<p>1. Insert one end of the BMS communication Cable (C) directly to the BMS port of inverter.</p>
	<p>2. Insert the other end of the BMS communication Cable to the BMS connector (II) on the first battery which is marked in red. Assemble the cable gland and tighten the cable cap.</p>

The wiring order of the communication cable is as follow:

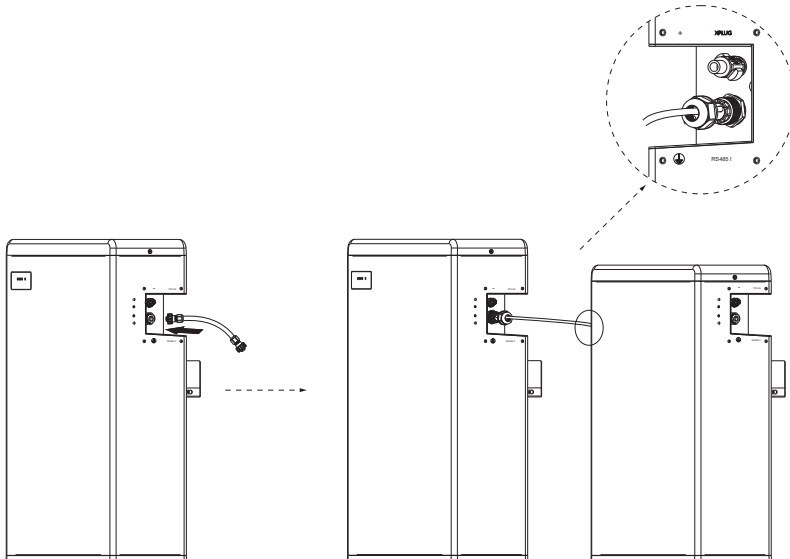


- 1) Orange stripes on white
- 2) Orange
- 3) Green stripes on white
- 4) Blue
- 5) Blue stripes on white
- 6) Green
- 7) Brown stripes on white
- 8) Brown

Sequence	1	2	3	4	5	6	7	8
BMS	/	GND	/	BMS_H	BMS_L	/	A1	B1

4.5.4. Connecting RS485 Communication Cable

For PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2: There's no need to use RS485 communication cable. For PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 + 1~3 battery packs: Connect RS485 II (VII for PSI-X-BT-H5.8MST-HV (PSI-X-5.8MST-V2) or VIII' for PSI-X-BT-H5.8SLV-HV (PSI-X-5.8SLV-V2)) of the first battery pack (as shown on the right) to RS485 I on the next battery pack (as shown on the left). Assemble the cable gland and tighten the cable cap.

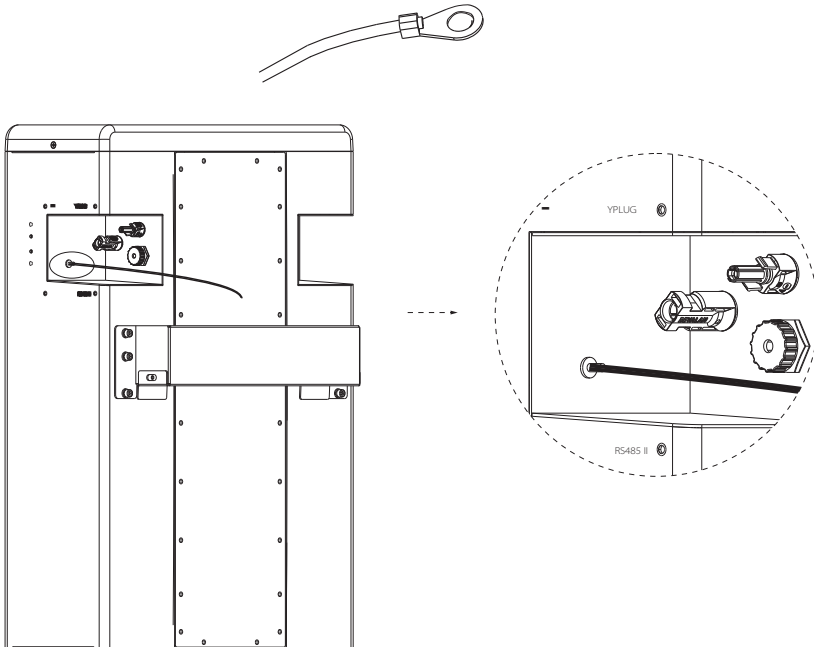


The wiring order of the communication cable is as follow:

Sequence	1	2	3	4	5	6	7	8
RS485I	VCC_485	GND_485	B2	N-	P+	A2	VCC_485_2	GND_485
RS485II	VCC_485	GND_485	B2	N-	P+	A2	VCC_485_2	GND_485

4.5.5. Connecting Ground Wire

The terminal point for GND connection is on the side of grooves as shown below:



CAUTION!

GND connection is mandatory!

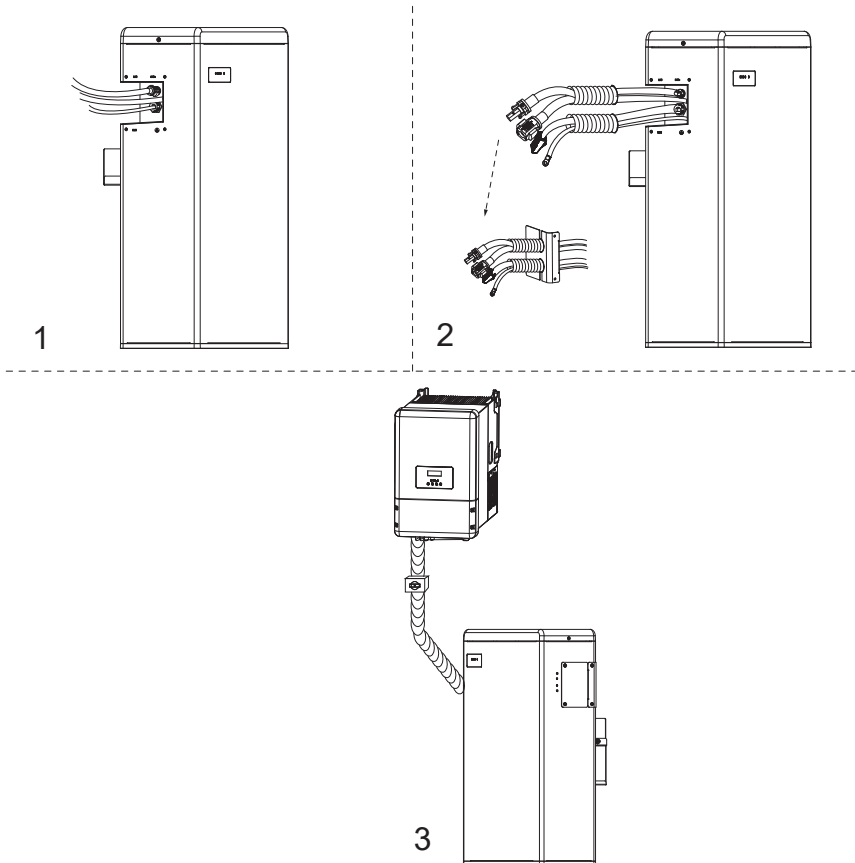
4.5.6. Overall Installation

It is recommended to protect the cables with corrugated pipe.

For PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2:

1. Connect all the cables on the left side of PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2.
2. Run the cables through the corrugated pipe.

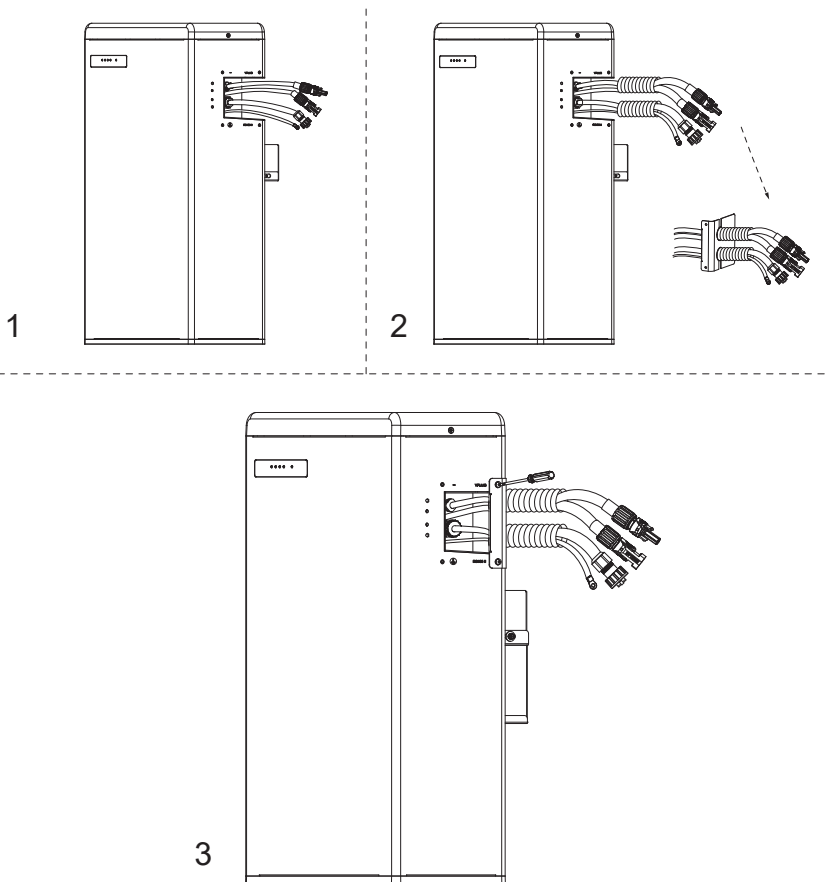
3. Do remember to insert the series-connected cable at “-” and “YPLUG” on the right side of the last battery pack to complete the internal circuit.
4. Set the cables into the groove of metal plates and screw them back to the battery pack on both sides.



For PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 + 1~3 battery packs:

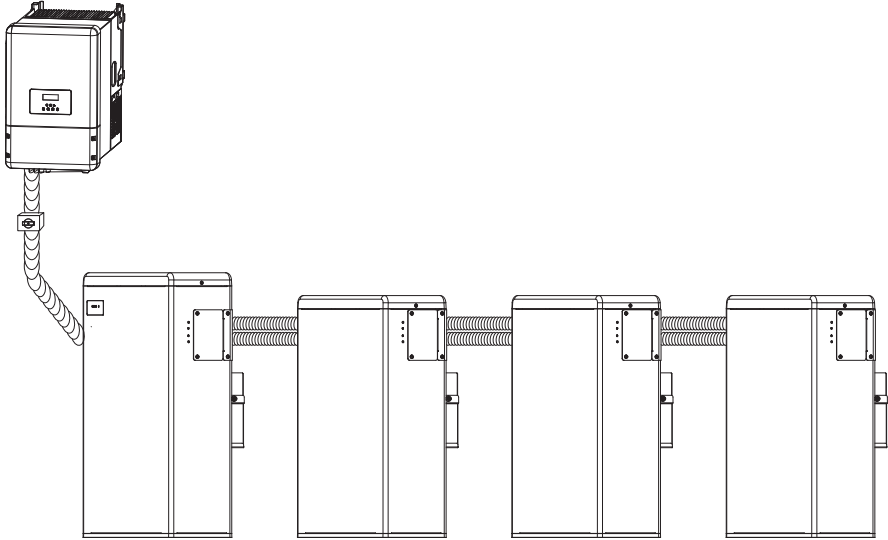
1. Connect the cables at one end of the PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 or PSI-X-BT-H5.8SLV-HV/PSI-X-5.8SLV-V2.
2. Run the cables through the corrugated pipe.

3. Set the cables into the groove of metal plates and screw them back to the battery packs on both sides.
4. Do remember to insert the series-connected cable at “-” and “YPLUG” on the right side of the last battery pack to complete the internal circuit.



4.6. Overview of Installation

The following diagram is a completed T-BAT system installation with PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 + three battery packs.



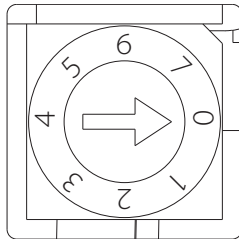
CAUTION!

One PSI-X-BT system is allowed to install one PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2 with three battery packs at most. Connecting more than three battery packs to the T-BAT system will blow the fuse, and the batteries will be damaged. Please keep in mind and follow this instruction.

5. Commissioning

5.1. Configuring Battery System

The DIP switch is used to configure the number of battery packs which are communicating to inverter. The detailed configuration information is shown as follows:



Configuration activated by inverters

0. Matching PSI-X-BT-H5.8MST-HV (default) (or matching PSI-X-5.8MST-V2 (default))
 1. Matching PSI-X-BT-H5.8MST-HV + 1*PSI-X-BT-H5.8SLV-HV (or matching PSI-X-5.8MST-V2 + 1*PSI-X-5.8SLV-V2)
 2. Matching PSI-X-BT-H5.8MST-HV + 2*PSI-X-BT-H5.8SLV-HV (or matching PSI-X-5.8MST-V2 + 2*PSI-X-5.8SLV-V2)
 3. Matching PSI-X-BT-H5.8MST-HV + 3*PSI-X-BT-H5.8SLV-HV (or matching PSI-X-5.8MST-V2 + 3*PSI-X-5.8SLV-V2)
- Black-start configuration

The black-start function is only used in the off-grid environment when there is no other power supply.



PLEASE NOTE

If the battery is started in black-start mode, although there is no BMS communication, the port still has high voltage and there is a risk of electric shock!

After the black-start mode is started, if the BMS communication couldn't be built within 3 minutes, the black-start fails.

4. Matching PSI-X-BT-H5.8MST-HV
(or matching PSI-X-5.8MST-V2)
5. Matching PSI-X-BT-H5.8MST-HV + 1*PSI-X-BT-H5.8SLV-HV
(or matching PSI-X-5.8MST-V2 + 1*PSI-X-5.8SLV-V2)
6. Matching PSI-X-BT-H5.8MST-HV + 2*PSI-X-BT-H5.8SLV-HV
(or matching PSI-X-5.8MST-V2 + 2*PSI-X-5.8SLV-V2)
7. Matching PSI-X-BT-H5.8MST-HV + 3*PSI-X-BT-H5.8SLV-HV
(or matching PSI-X-5.8MST-V2 + 3*PSI-X-5.8SLV-V2)

5.2. Commissioning



PLEASE NOTE

When powering on the BMS, the system will start self-testing. If the buzzer bips, it means DIP configuration fault or communication failure occurs. If the buzzer bips, please check if the number of battery packs is corresponding to the DIP configuration, and also check if the RS485 communication cables are correctly connected. After checking above two situations, press the POWER button to power on, and press the POWER button again 10s later. In addition: The buzzer will only alarm on the corresponding fault during the power-on self-test. When the self-test is completed, it won't bip again even if the same fault occurs.



PLEASE NOTE

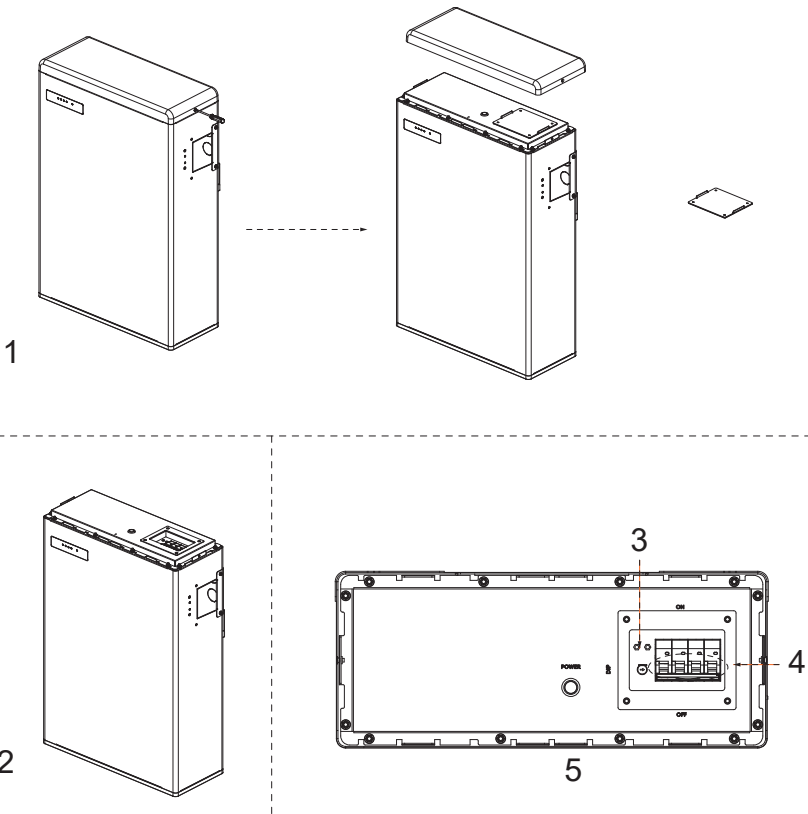
Frequently pressing the POWER button may cause system error. Please make sure at least 10 seconds is left before you pressing the POWER button the second time.

Commissioning Steps

If all the battery packs are installed, follow these steps to put it in operation.

1. Remove the upper cover board of PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2;
2. Remove the small cover plate;
3. Rotate the DIP to corresponding number with small tool according to the number of battery pack(s) that has(have) been installed;

4. Switch the circuit breaker to ON position;
5. Press the POWER button to turn on the PSI-X-BT system;
6. Put the small cover plate back;
7. Reinstall the upper cover board to PSI-X-BT-H5.8MST-HV/PSI-X-5.8MST-V2;
8. Power on the inverter.



5.3. Status Indicators

The LED indicators on the front panel of the battery pack are showing the operating status.

5.3.1. BMS



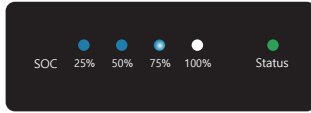
The following table shows the status of BMS.

No.	Status of BMS	Mode
1	Light off	Power off
2	The Green LED is light on for 1s, and light off for 4s	Inverter sends Idle command
3	The Orange LED is light on for 1s, and light off for 4s	BMS Protection
4	The Red LED keeps lighting on for 10min, then flickers with light on for 1s, and light off for 4s	Fault
5	The Green LED is light on for 0.3s, and light off for 0.3s	Upgrade for BMS
6	The Green LED keeps light on	Active

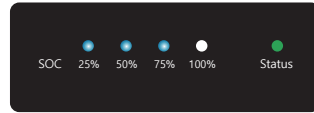
The capacity indicators show the SOC:

- When the battery pack is neither charging nor discharging, the indicator lights are off.
- When the battery pack is charging, part of the Blue LED is flashing with the frequency of light on for 0.5s, light off for 0.5s, and part of the Blue LED keeps light on. Take SOC 60% for instance, in charging state:
 1. The first two Blue LED indicators keep on
 2. The third Blue LED indicator flashes once every 1s
- When the battery pack is discharging, the Blue LED is flashing with the frequency of light on for 1s, and light off for 4s. Take SOC 60% for instance, in discharging state:

1. The first three blue LED indicators flash once every 5 seconds



Charging



Discharging

5.3.2. Battery Pack



S1 and S2 represent independent status indicators. The status of S1 and S2 have the same meaning for battery pack in the following table.



PLEASE NOTE

Only when both S1 and S2 are flashing once every 5s in Geen LED, it means the battery system is active.

No.	Status of battery pack	Mode
1	Light off	Power off/Sleep
2	The Green LED is light on for 1s, and light off for 4s	Active
3	The Orange LED is light on for 1s, and light off for 4s	Protection
4	The Red LED keeps lighting on for 10min, then flickers with light on for 1s, and light off for 4s	Fault
5	The Green LED is light on for 0.3s, and light off for 0.3s	Upgrade for BMS



PLEASE NOTE

After powering off the BMS, the LED lights of S1 and S2 will keep flashing in 20 minutes.

5.4. Shutting Down PSI-X-BT System

To shut down the system, follow the steps below:

1. Turn off the breaker between inverter and battery pack;
2. Open the upper cover board;
3. Power off the BMS;
4. Turn off the system by moving the circuit breaker switch to the OFF position;
5. Make sure that every indicator on the PSI-X-BT system is off;
6. Disconnect the cables.

6. Troubleshooting

6.1. Troubleshooting

Check the indicators on the front to determine the state of the T-BAT system. A warning state is triggered by a condition, for example, when voltage or temperature is beyond the designed limitations. The T-BAT system's BMS periodically reports its operating state to the inverter. When the T-BAT system falls outside prescribed limits, it enters a warning state. When a warning is reported, the inverter immediately stops operation. Use the monitoring software on the inverter to identify the cause of the warning. The possible warning messages are as follows:

Warning Messages	Description	Troubleshooting
BMS_External_Err	The communication between BMS and inverter is interrupted	Check if the communication cable between BMS and inverter is correctly and well connected.
BMS_Internal_Err	1. DIP switch at the wrong position 2. The communication between battery packs is interrupted	1. Move the DIP switch to the correct position; 2. Check if the communication cable between battery packs is correctly and well connected.
BMS_OverVoltage	Battery over voltage	Contact your distributor or our company directly for servicing.
BMS_LowerVoltage	Battery under voltage	Contact your distributor or our company directly for servicing.
BMS_ChargeOCP	Battery charge over current protection	Contact your distributor or our company directly for servicing.

BMS_DischargeOCP	Battery discharge over current protection	Contact your distributor or our company directly for servicing.
BMS_TemHigh	Battery over temperature	Wait till the temperature of cells go back to the normal state.
BMS_TemLow	Battery under temperature	Wait till the temperature of cells go back to the normal state.
BMS_CellImblance	The capacities of cells are different	Contact your distributor or Peimar directly for servicing.
BMS_Hardware_Protect	Battery hardware under protection	Contact your distributor or our company directly for servicing.
BMS_Insulation_Fault	Battery insulation fault	Contact your distributor or our company directly for servicing
BMS_VoltSensor_Fault	Battery voltage sensor fault	Contact your distributor or Peimar directly for servicing.
BMS_TempSensor_Fault	Battery temperature sensor fault	Contact your distributor or our company directly for servicing.
BMS_CurrSensor_Fault	Battery current sensor fault	Contact your distributor or our company directly for servicing.
BMS_Relay_Fault	Battery relay fault	<ol style="list-style-type: none"> 1. Make sure the power cable is correctly and well connected to the power connector (XPLUG) of the BMS; 2. If the first step still does not work, contact your distributor or our company directly for servicing.
BMS_SelfChk_Fault	BMS selfcheck fault	Contact your distributor or our company directly for servicing.
BMS_CellTempDiff_Fault	The temperature between cells are different	Stop charging or discharging for a while.
BMS_CapMismatch_Fault	The capacity of battery packs are different	Contact your distributor or our company directly for servicing.
BMS_SlaveSwVer_Mismatch_Fault	The software between slavers are different	Contact your distributor or our company directly for servicing.
BMS_SlaveSw&HwMismatch_Fault	The hardware is different	Contact your distributor or our company directly for servicing
BMS_Manu_Mismatch_Fault	The cell manufacture is different	Contact your distributor or our company directly for servicing.
BMS_MasterSw&SlaveSwMismatch_Fault	The software between Master and Slaver are different	Contact your distributor or our company directly for servicing.
BMS_ChgReqNoAck_Fault	No action for charging request	Check the information from inverter

7. Decommissioning

7.1. Dismantling the Battery

Shutting down PSI-X-BT system

Disconnect the cables between BMS and inverter

Disconnect the short-circuit plug on the last battery module

Disconnect the cables.

7.2. Packing

Please pack the BMS and battery modules with the original packaging.

If it is no longer available, you can also use an equivalent carton that meets the following requirements:

- Suitable for loads more than 70kg
- With handle
- Can be fully closed

8. Maintenance

- If the ambient temperature for storage is $-20\sim 30^{\circ}\text{C}$, recharge the batteries at least one time every 12 months.
- If the ambient temperature for storage is $30\sim 55^{\circ}\text{C}$, recharge the batteries at least once every 6 months.
- If the batteries have not been used for more than 9 months, these batteries must be charged to at least SOC 50 % each time.
- For the first installation, the interval among manufacture dates of battery modules shall not exceed 3 months.
- If a battery is replaced or added for capacity expansion, each battery's SOC should be consistent. The max. SOC difference should be between $\pm 5\%$.
- If users want to increase their battery system capacity, please ensure that the SOC of the existing system capacity is about 40%. The manufacture date of the new battery shall not exceed 6 months; in case of exceeding 6 months, please charge the new battery to around 40%.

9. Disclaimer

Our company protects this product under warranty when it is installed and used as listed in this manual. Violation of installation procedure or use of the product in any way not described in this manual will immediately void all warranties on the product. In case of any following circumstance, our company does not provide warranty coverage or shall not assume any responsibility for the direct or indirect damages or defects.

- Force majeure (flooding, lightning strike, overvoltage, fire, thunderstorm, flooding etc.)
- Improper or noncompliant use
- Improper installation, commissioning, start up or operation (contrary to the guidance detailed in the installation manual supplied with each product)
- Inadequate ventilation and circulation resulting in minimized cooling and natural air flow
- Installation in a corrosive environment
- Damage during transportation
- Unauthorized repair attempts
- Failure to adequately maintain the equipment.
- External influence including unusual physical or electrical stress (power failure surges, inrush current, etc.)
- Use of an incompatible inverter or devices
- Connect to other brands inverters without authority from our company

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