

# Triple Power Parallel Box User Manual



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## 1 Note on this Manual

### 1.1 Scope of Validity

This manual is an integral part of the T-BAT Series. It describes the assembly, installation, commissioning, maintenance and failure of the product. Read carefully prior to operation.

Model: BMS Parallel Box-II

Note: It is s a BMS control box which needs our SolaX T58 battery module(s) to form a battery system system, and then it is used with our Solax Hybrid inverter (X1/X3).

Refer to section 3.3.1 T-BAT SYS-HV Configuration List on page 11 for details.

### 1.2 Target Group

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

### 1.3 Symbols Used

The following types of safety instructions appear in this document and are described below:



#### DANGER!

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



#### WARNING!

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



#### CAUTION!

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



#### 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!

Do not crush or impact the battery, and always dispose of it according to safety regulations.

Observe the following precautions:





- Risks of explosion:
  - Do not subject the battery module to heavy impacts.
  - Do not crush or puncture the battery module.
  - Do not dispose of the battery module in a fire.
- Risks of fire:
  - Do not expose the battery module to temperatures in excess of 140°F.
  - Do not place the battery module near a heat source, such as a fireplace.
  - Do not expose the battery module to direct sunlight.
  - Do not allow the battery connectors to touch conductive objects such as wires.
- Risks of electric shock:
  - Do not disassemble the battery module.
  - Do not touch the battery module with wet hands.
  - Do not expose the battery module to moisture or liquids.
  - Keep the battery module away from children and animals.
- Risks of damage to the battery module:
  - Do not expose the battery module to liquids.
  - Do not subject the battery module to high pressures.
  - Do not place any objects on top of the battery module.

T-BAT SYS-HV should only be installed for residential applications and is not for commercial applications.

#### 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.

Symbol	Explanation
	CSA mark for UL1973
	TUV mark for IEC62619
	The battery system must be disposed of at a proper facility for environmentally-safe recycling.
	The battery system should not be disposed of together with household waste. Disposal information can be found in the enclosed documentation.
	Wear protective glasses.
	Observe enclosed documentation.
	Keep the battery system away from open flames or ignition sources.

Symbol	Explanation
	Keep the battery system away from children.
	Danger of high voltages.
	Danger. Risk of electric shock.
	The battery module may explode.

## 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, perform these actions:

**Accidental inhalation of harmful substances:** Evacuate 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

In case of a fire, ensure that an ABC or a carbon dioxide extinguisher is nearby.



#### WARNING!

The battery module may catch fire when heated above 302°F.

If a fire breaks out where the battery module is installed, perform these actions:

- 1) Extinguish the fire before the battery module catches fire
- 2) If the battery module catches fire, do not try to extinguish the fire. Evacuate immediately.



#### WARNING!

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

### 2.2.3 Wet Batteries and Damaged Batteries

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

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

Please pack the battery in its original packaging, and return it to SolaX or your distributor.



#### CAUTION!

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

## 2.3 Qualified Installer



### WARNING!

All operations of T-BAT SYS-HV 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 grid-tied systems
- Knowledge of the 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



### CAUTION!

- If the battery is not installed within one month after receipt, it must be charged for maintenance.
- Wasted batteries must be discarded according to local regulations.

## 3 Product Introduction

### 3.1 Product Overview

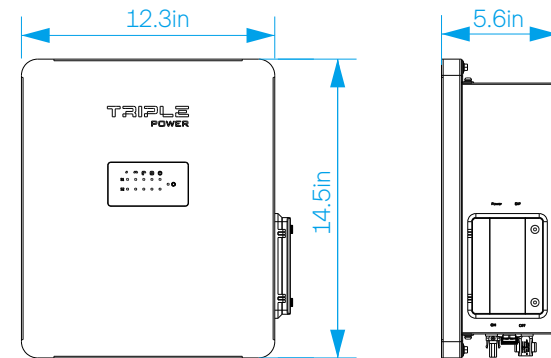
For safety reasons, installers are responsible for familiarizing themselves with the contents of this manual and all warnings before performing installation.

#### 3.1.1 Dimensions

A battery management system (BMS) is any electronic system that manages a rechargeable battery.

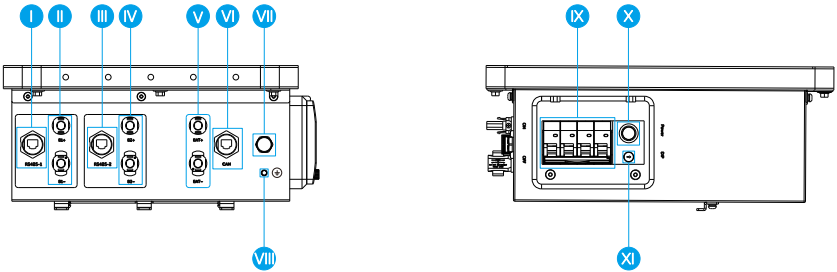
A battery module is a type of electrical battery which can be charged and discharged into a load.

A battery system includes the BMS and battery module(s).




3.1.2 Appearance

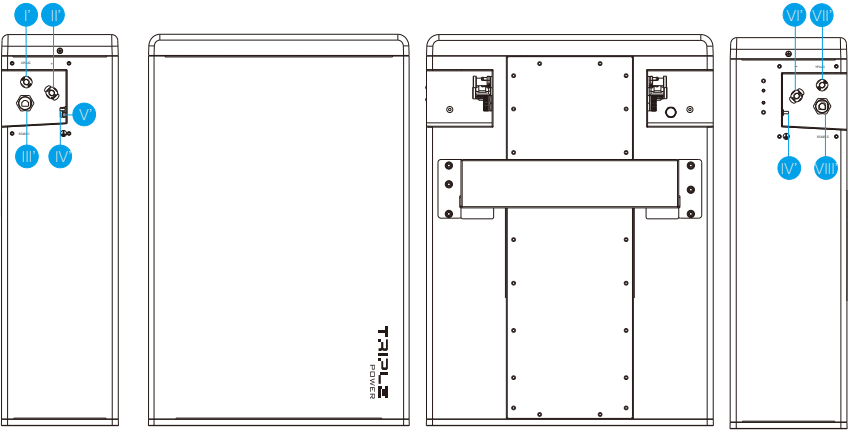
- Terminals of the Master Box



Object	Mark	Description
I	RS485-1	RS485-1 Connector
II	B1+/B1-	First slave battery pack
III	RS485-2	RS485-2 Connector
IV	B2+/B2-	Second slave battery pack
V	BAT+/BAT-	Charge/Discharge Connectors
VI	CAN	CAN Connector
VII	/	Air Valve
VIII	GND	GND
IX	ON/OFF	Circuit Breaker
X	POWER	Power Button
XI	DIP	DIP Switch

 Note  
The serial number of B1 and B2 slave batteries must be equal.

- Section view of HV11550



Object	Mark	Description
I'	XPLUG	Power Connector to BMS, or YPLUG of upper battery module
II'	+	Power Connector to “-” of upper battery pack
III'	RS485 I	RS485 Connector to BMS, or RS485 II of upper battery module
IV'	GND	GND
V'	/	Air Valve
VI'	-	Power Connector to “+” of next battery pack, or to YPLUG of the same pack
VII'	YPLUG	Power Connector to XPLUG of next battery pack, or to “-” of the same pack
VIII'	RS485 II	RS485 Connector to RS485 I of next battery module

## 3.2 Basic Features

### 3.2.1 Features

The T-BAT SYS-HV is one of the most advanced energy storage systems on the market today, incorporating state-of-the-art technology, high reliability, and convenient control features shown as below:

- 90% DOD
- 99% Faradic Charge Efficiency
- 95% Battery Roundtrip Efficiency
- Cycle Life > 6000 Cycles
- Secondary Protection by Hardware
- IP55 Protection Level
- Safety & Reliability
- Small Occupied Area
- Wall Mounting

### 3.2.2 Certifications

BAT system safety	CE, FCC, RCM, TUV (IEC 62619), UL 1973
Battery cell safety	UL 1642
UN number	UN 3480
Hazardous materials classification	Class 9
UN transportation testing requirements	UN 38.3
International protection marking	IP 55

## 3.3 Specifications

### 3.3.1 T-BAT SYS-HV Configuration List

No.	BMS	Battery Module	Energy(kWh)	Voltage (V)
1	Parallel Box x1	HV11550x1	5.8	100-131
2	Parallel Box x1	HV11550x2	11.5	200-262
3	Parallel Box x1	HV11550x3	17.3	300-393
4	Parallel Box x1	HV11550x4	23	400-524
5	Parallel Box x1	HV11550x2	11.5	100-131
6	Parallel Box x1	HV11550x4	23	200-262
7	Parallel Box x1	HV11550x6	34.6	300-393
8	Parallel Box x1	HV11550x8	46.1	400-524

### 3.3.2 Performance

Model	BMS Parallel Box-II	HV11550
Dimension (W/H/D)(mm)	368*310*140	474*193*647
Dimension of Packing (W/H/D)(mm)	440*397*257	671*403*808
Net Weight (kg)	5.2	68.5
Nominal Voltage (V)	70-550	115.2
Maximum Charge/Discharge Current (A)	35	35
Recommend Charge/Discharge Current (A)	25	25
Standard Power (kW)	11.6	2.9
Maximum Power (kW)	14	3.5
Altitude (m)	≤2000	
Battery Roundtrip Efficiency (C/3, 25°C/77°F)	95%	
Expected Lifetime (25°C/77°F)	10 years	
Noise Level	<25dB	
Cycle Life 90% DOD, (25°C/77°F)	6000 cycles	
Available Charge/Discharge Temperature Range	0°C/32°F--55°C/131°F	
Storage Temperature	-20°C/-4°F--55°C/131°F(3 months)	
	0°C/32°F--40°C/104°F(1 year)	
Ingress Protection	IP55	

\*\*

1)Test conditions: 100% DOD, 0.5C charge & discharge @+25°C

2) Discharging: 0-5°C and 45-55°C will be rating

Charging: 0-15°C and 40-50°C will be rating

System usable energy may vary with inverter different setting



## 4 Installation

### 4.1 Installation Prerequisites

When assembling the system, avoid touching the battery terminal with any metal objects or bare hands. T-BAT system provides a safe source of electrical energy when operated as designed. Potentially hazardous circumstances such as excessive heat or electrolyte leakage may occur under improper operating conditions, damage, misuse and abuse. The previous safety precautions and the warning messages described in this section must be observed. If any of the previous precautions are not fully understood, or if you have any questions, contact customer service for guidance. The Safety Section may not include all regulations for your region.

Ensure that the installation location meets the following conditions:

- The building is designed to withstand earthquakes
- The location is far from the sea to avoid salt water and humidity, over 0.62 miles
- The floor is flat and level
- There are no flammable or explosive materials, at a minimum of 3ft
- The ambience is shady and cool, away from heat and direct sunlight
- The temperature and humidity remain at a constant level
- There is minimal dust and dirt in the area
- There are no corrosive gases present, including ammonia and acid vapor

In practice, the requirements of battery installation may be different due to environment and locations.

In that case, follow up the exact requirements of the local laws and standards.



#### NOTE!

If the ambient temperature exceeds the operating range, the battery pack will stop operating to protect itself. The optimal temperature range for operation is 59°F to 86°F. Frequent exposure to harsh temperatures may deteriorate the performance and lifetime of the battery module.

### 4.2 Safety Gear

Installation and maintenance personnel must operate according to applicable federal, state, and local regulations as well as industry standards regarding product installation. Personnel must wear safety gear as indicated below 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 T-BAT system.



Torque Screw Driver



Phillips-Screw Driver



Hexagon Wrench



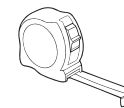
Phillips-Head Screw Driver



Flat-Head Screw Driver



Torque Wrench



Tape Measure



Drill



Pencil or Marker

### 4.4 Installation

#### 4.4.1 Check for Transport Damage

Ensure the battery is intact during and after transportation. If there are visible damages such as cracks, 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 SolaX or your distributor directly.



#### CAUTION!

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

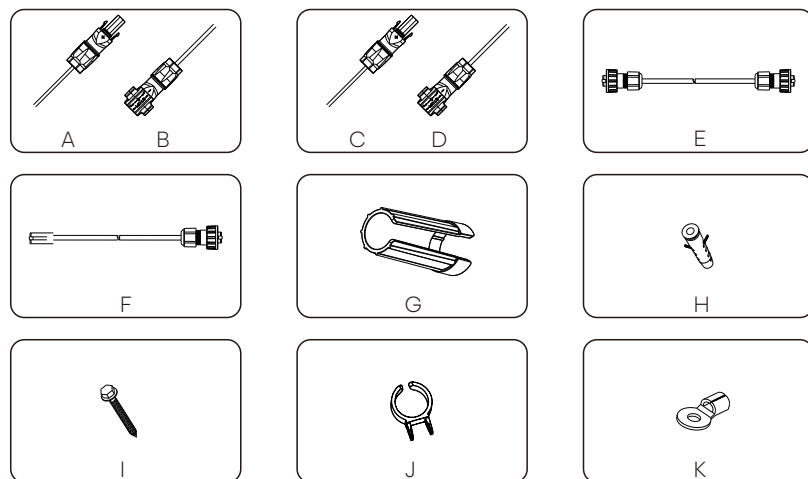


#### WARNING!

Strictly follow the installation steps. SolaX will not be responsible for any injuries or loss incurred by incorrect assembly and operation.

## 4.4.3 Accessories

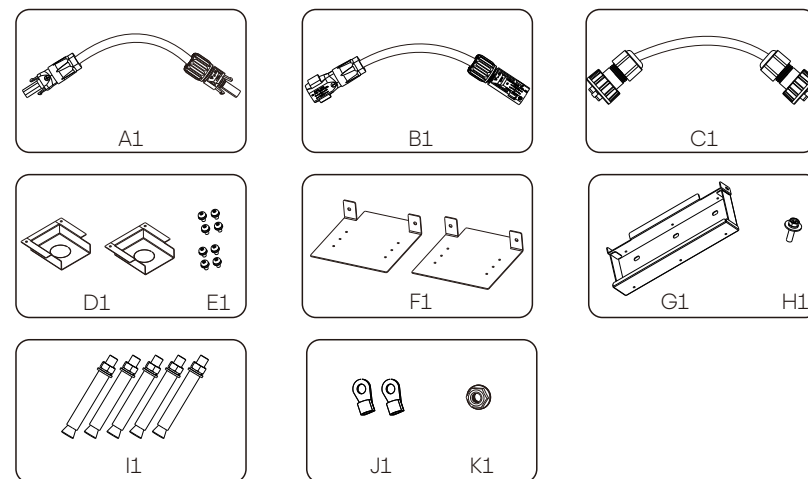
BMS (Master Box):



The table below lists the number of each component.

Object	Description	Quantity
A	Charging Cable (+) between BMS and Inverter (6.56ft)	1
B	Charging Cable (-) between BMS and Inverter (6.56ft)	1
C	Charging Cable (+) between BMS and Battery Module (3.28ft)	2
D	Charging Cable (-) between BMS and Battery Module (3.28ft)	2
E	RS485 Communication Cable (3.28ft)	2
F	CAN Communication Cable (6.56ft)	1
G	Rotation Wrench	1
H	Expansion tube	2
I	Expansion screw	2
J	Power cable disassembling tool	1
K	Ring Terminal (for grounding)	1

HV11550:



The table below lists the number of each component.

Object	Description	Quantity
A1	Power cable between battery packs (650mm)	1
B1	Power cable' between battery packs (650mm)	1
C1	RS485 communication cable (650mm)	1
D1	Cover plate2	2
E1	M4 screw	8
F1	Cover plate2	2
G1	Wall bracket	1
H1	M5 screw	1
I1	Expansion bolt	5
J1	Ring terminal (for grounding)	2
K1	Grounding nut	2

## 4.4.5 Mounting Steps

**CAUTION!**

The space between battery modules must be at least 9.84in.

**Floor Mounting:**

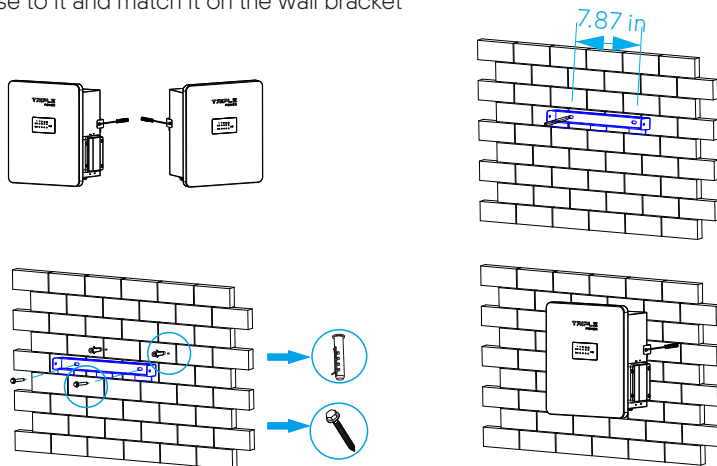
Step 1: Fix the wall bracket on the wall

- The distance between the bottom of a battery module and the lower hole of the wall bracket should be 14.76in. Measure it and mark the position of the two holes
- Drill holes with a drill, making sure the holes are deep enough (at least 1.97in) for installation and tighten the expansion screw sleeves
- Install the expansion screw sleeves (E1) on the wall, and screw the wall bracket (D1) by using a wrench

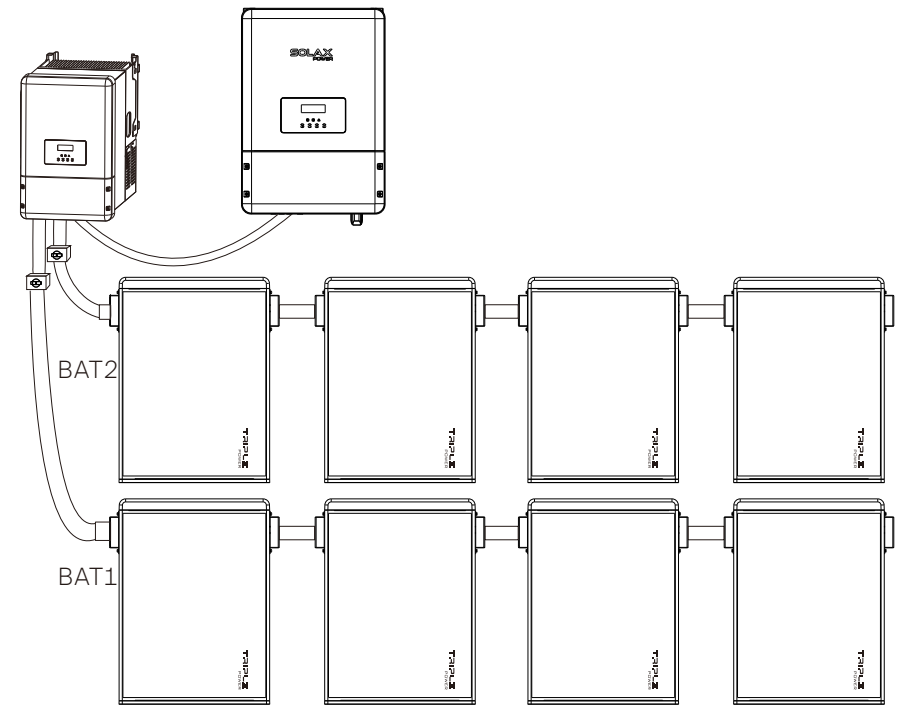
Step 2: Remove the lower installed hanging board

Step 3: Match the battery module with the wall bracket (D1)

- Transport the battery module to the wall bracket
- Hang the battery module over the wall bracket, move the battery module close to it and match it on the wall bracket

**CAUTION!**

Ensure that the system is always exposed to ambient air. The system is cooled by natural convection. If the system is entirely or partially covered or shielded, it may cause the system to stop operating.

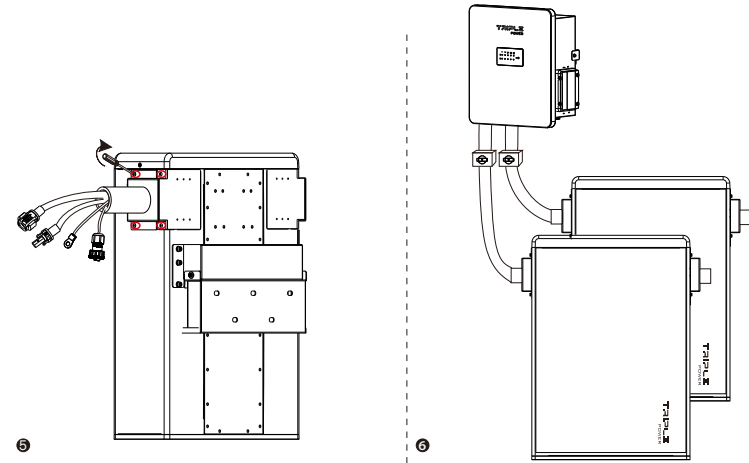
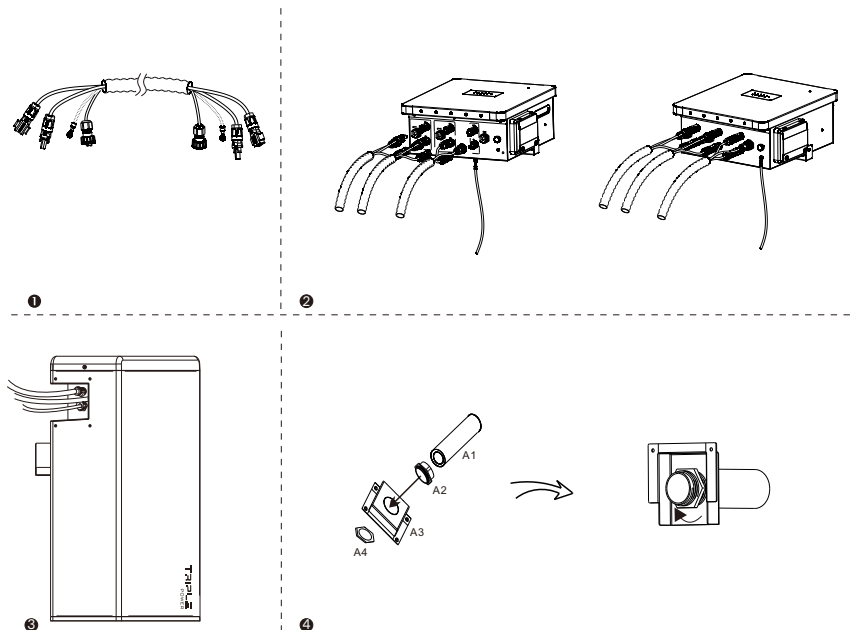
**CAUTION!**

- There are two mounting modes to choose between: floor mounting mode and wall mounting mode. Installers can choose either mode according to the homeowner's needs. However, once a mode is selected and the installation has begun, the installer will need to find the appropriate expansion screen sleeves to change modes.
- Floor mounting or wall mounting is a mandatory requirement for installation.
- Cable connection errors may occur if the battery modules are not aligned in a row with matching front sides.
- Finish the floor mounting or wall mounting before connecting the cables.

## 4.5 Overall Installation

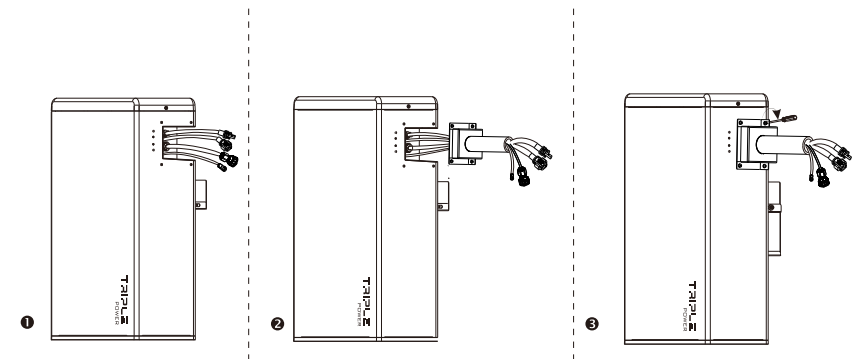
It is recommended to protect the cables by using corrugated pipe.

- 1) Connect all the cables of the parallel box
- 2) Connect all the cables on the left side of the battery pack (HV11550)
- 3) Install cover plates and conduits. Install cover plate and conduit. Pass the conduits(A1) and joint(A2) through the round hole of the cover plate(A3) and tighten it with the Hexagon flange head screw(A4). These conduits must be standard size and match the holes in the battery cover plate. The catheter fittings must be waterproof and preferably insulated.(conduit size: 1-1/1 inch)
- 4) Get the cables through the conduit .
- 5) Finally, screw the front and side cover plates onto the battery.(torque:2N.M)
- 6) DO remember to insert the series-connected plug at “-” and “YPLUG” on the right side of HV11550 to make a complete circuit.
- 7) Set the cables into the groove of metal plates and screw them back to the battery pack on both sides.



For 4~8 battery packs:

- 1) Connect the cables at one end of the HV11550.
- 2) Get the cables through the conduit.(conduit size: 1-1/2 inch)
- 3) Finally, screw the front and side cover plates onto the battery.(torque:2N.M)
- 4) DO remember to insert the series-connected plug at “-” and “YPLUG” on the right side of last battery pack to make a complete circuit.



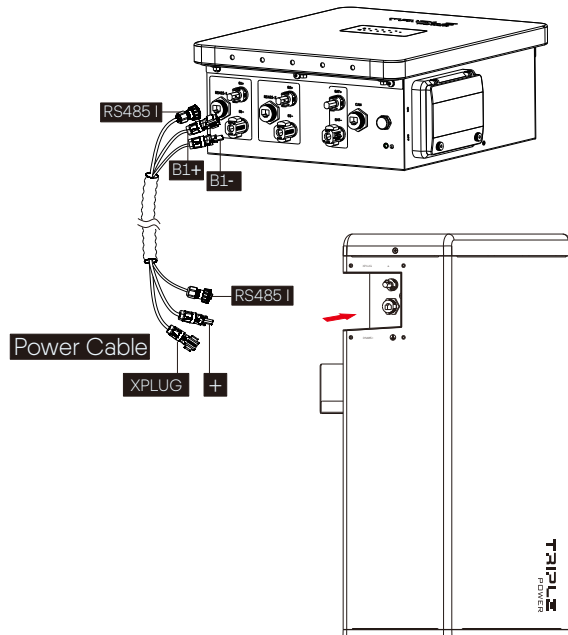
## 4.5.1 Cable Connection

Please refer to section 4.5 for the installation of conduit and cover plate, and then make connection.

On the left side of T-BAT H 5.8 , after the charging cables (please refer to section 4.5.2) and CAN communication cable (please refer to section 4.5.4) are correctly connected, screw the terminal box\_small (J) with M4 screws and lock the terminal box cover (K) also with M4 screws.

On the right side of T-BAT H 5.8 , after the battery modules (please refer to section 4.5.1 For 2~3 battery modules) are correctly ,screw the terminal box\_medium\_right (I1) with M4 screws and lock the terminal box cover (K1) in the same way as BMS.

Please see the installation diagram on the right.(screw torque:2N.M)



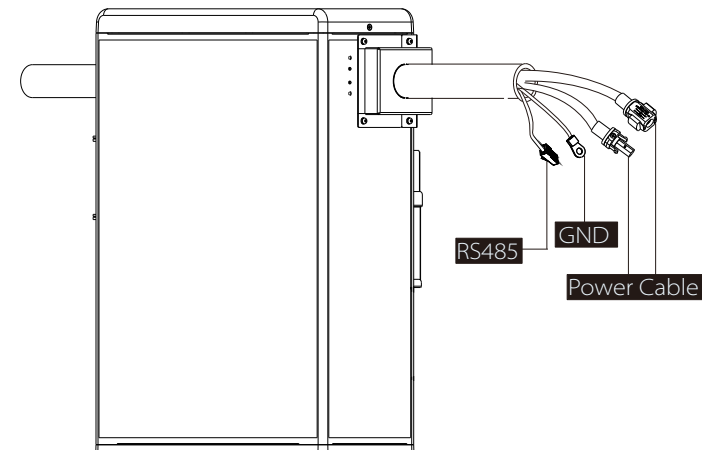
For 2-8 battery modules:

The power cable between battery modules (A1) is different from the one that runs between the BMS and battery module (C). The other end of the power cable is black, and this color is connected to the YPLG (V'), which is on the right side of the battery module.

1) Connect the YPLUG (V') on the right side of battery module to the XPLUG (I') on the left side of the second battery module. The remaining battery modules are connected in the same way. Refer to the installation diagram on the below.

2) Before connecting the cables to the XPLUG (I') on the left side of the subsequent battery module, lock the terminal box\_medium\_right (I1) on the right side of the previous battery module with M4 screws (H1). Then, place the cables through the conduit, measuring 7.87-9.45in. Lock the terminal box cover (K1) with M4 screws.

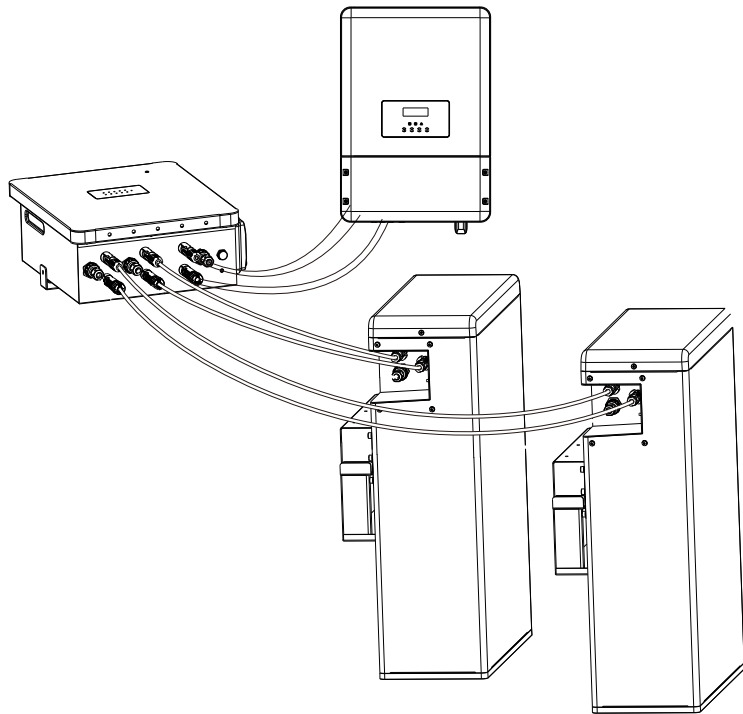
3) Lock the terminal box\_medium\_left (J1) on the left side of subsequent battery module, and keep the terminal box cover (K1) unlocked until the cables are correctly connected to the YPLUG.



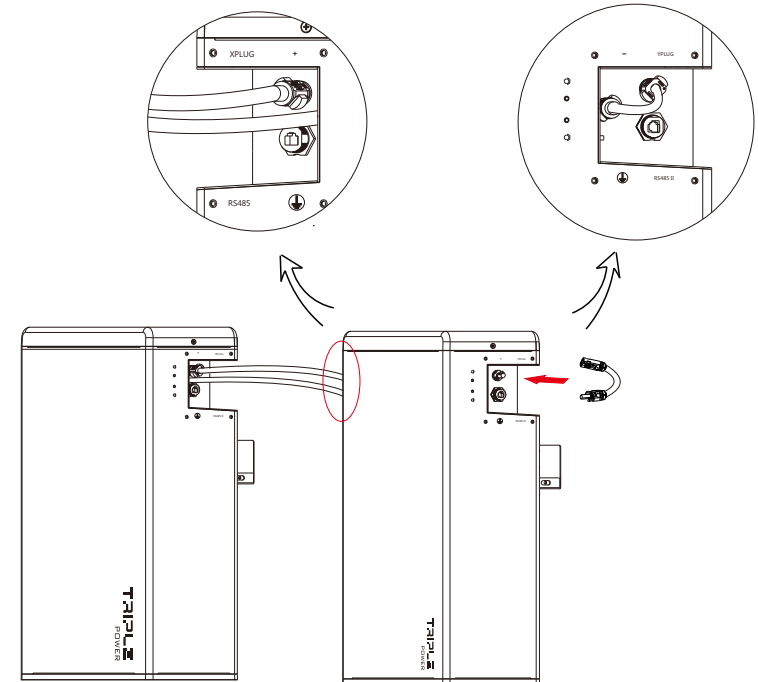
## 4.5.2 Connecting Power Cables

For the parallel box + 2~8 battery packs:

1. Connect the box of "BAT+", "BAT-" to the inverter corresponding "BAT+", "BAT-" and "B1+, B1-", "B2+, B2-" on the bottom to "XPLUG, +" on the left side of the battery pack.



2. Connect "YPLUG" on the right side to "XPLUG" 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 plug at "-" and "YPLUG" on the right side of last battery pack to make a complete circuit.



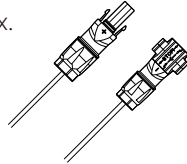
### 4.5.3 Connecting Power Lines

This step is going to connect power lines between Inverter and T-BAT system.

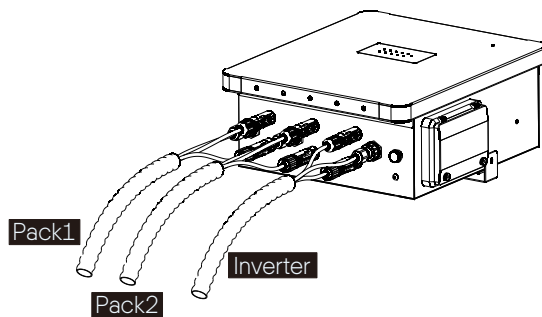
The default length of power lines are 2 meters, so customers can appropriately cut the cable according to the actual installation environment. As a result, each power line has one terminal block when leaving the factory, and customers need to connect the other end of terminal block by themselves.

Connecting Charging Cables between Inverter and T-BAT System:

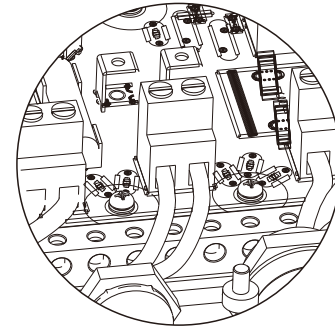
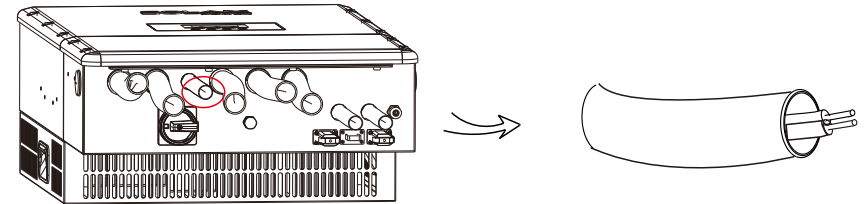
- 1) Connect the charging cables between the inverter and box. Ensure that the charging cables (+,-) are connected to the correct port on both the inverter and box.



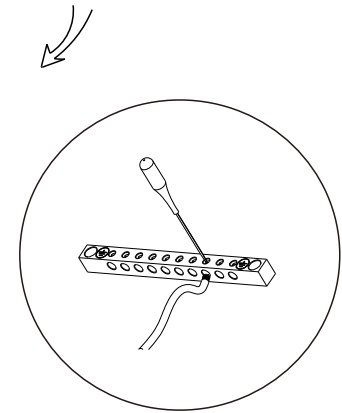
- 2) Connect the negative cable (-) (B) to the port on the right and the positive cable (+) (A) to the port on the left.



2. Place the other end of the charging cable through the conduit. Insert the stripped end of each wire into the holes, then tighten each screw.



Charging Cables



GND

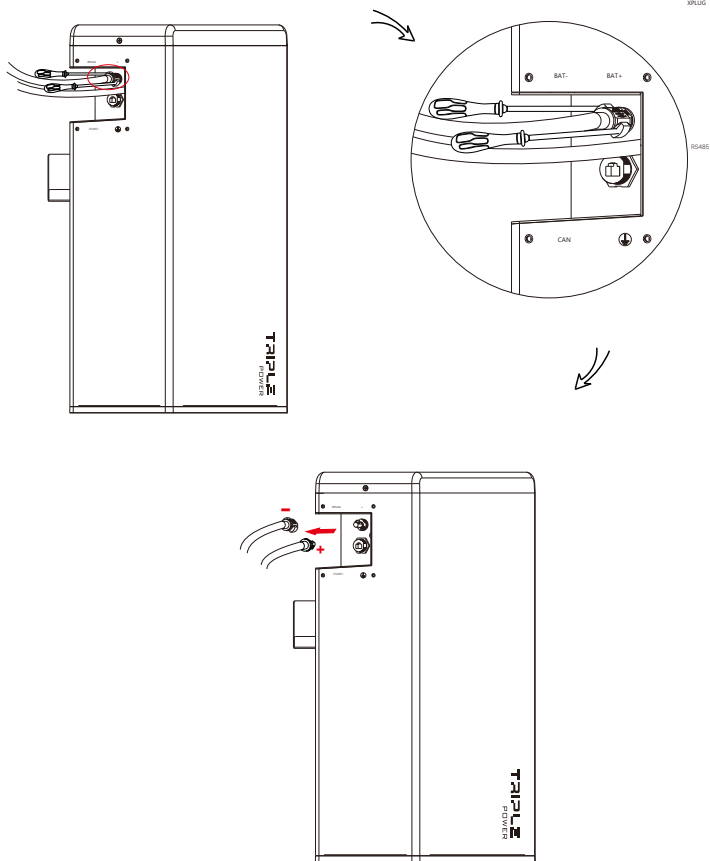


#### NOTE!

- When connecting the cable to the BMS, fit the two connectors together until the connection audibly locks into place.
- Check to make sure the connection is securely locked.
- Do not shake the ends of the cables at the joint once the connection is locked.
- To dismantle the charging cable, use a slotted screwdriver; do not try to unplug with brute force

➤ Disassembling Power Line (on "+", XPLUG port)

Disassemble the power line by plugging the slot type screwdriver to the terminal groove of charging cable. Please see the illustration as shown below:

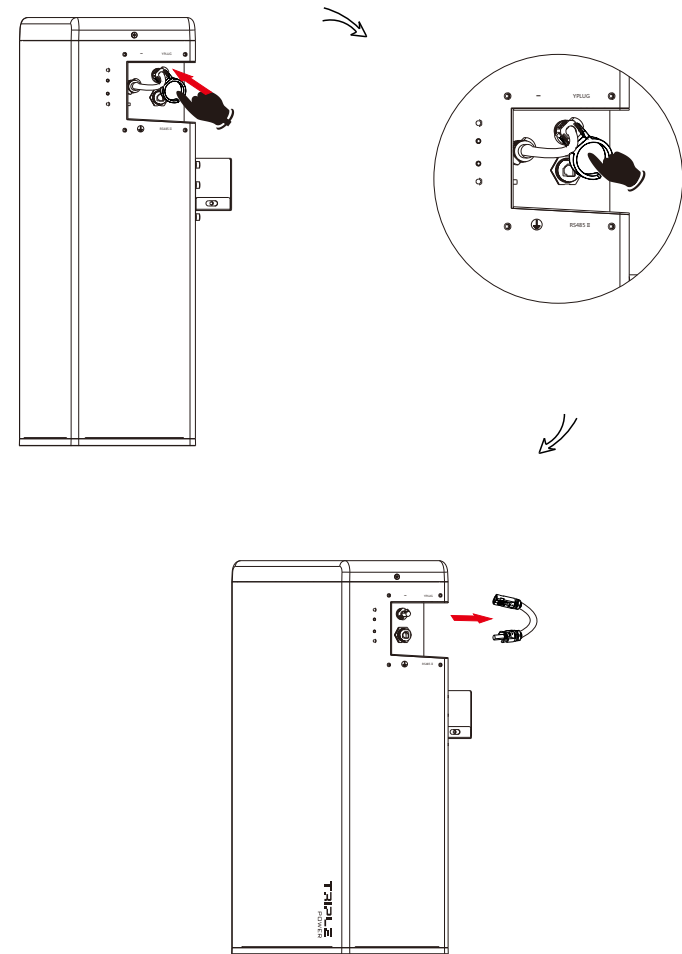


**⚠ CAUTION!**

DO NOT disassemble power cables when the T-BAT system is not turned off, otherwise there will 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:

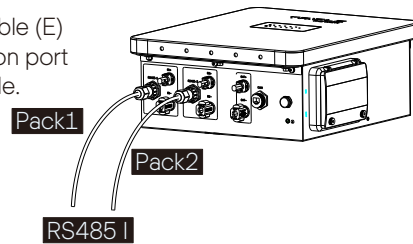




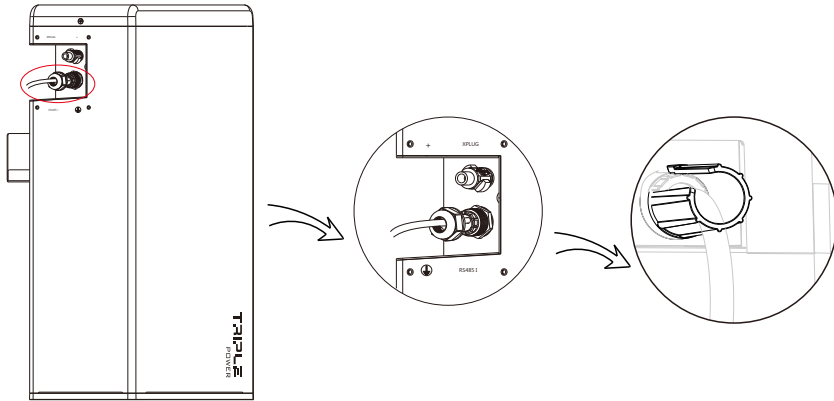
## 4.5.4 Connecting RS485 Communication Cable

1) There is a protection cover for the RS485 connector. Unscrew the cover and plug one end of the RS485 communication cable to the RS485 connector. Tighten the plastic screw nut which is set on the cable with a rotation wrench.

2) Connect the RS485 communication cable (E) from the box to the RS485 I communication port that is on the left side of the battery module.



3) Connect the RS485 II of the upper battery module on the right side to RS485 I of the follow-up battery module.

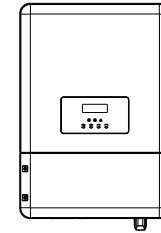


The wire order of the communication cable is as follows:

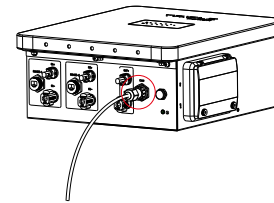
Sequence	1	2	3	4	5	6	7	8
RS485I	VCC_485	GND_485	B2	N-	P+	A2	VCC_485_2	GND_485
RS485II	VCC_485	GND_485	B2	N-	P+	A2	VCC_485_2	GND_485

## 4.5.5 Connecting CAN Communication Cable

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

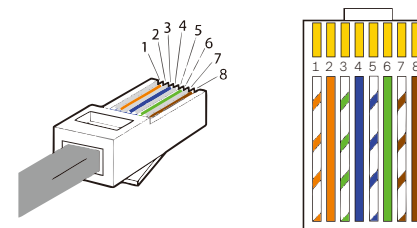


1. Insert one end of the CAN communication cable (C) which has no cable nut directly to the BMS port of the Inverter.



2. Connect the CAN communication cable to the CAN connector (II) which is marked in red. Insert the other end of the CAN communication cable to the CAN connector. Assemble the cable gland and screw the cable nut.

The wire order of the communication cable is as follows:



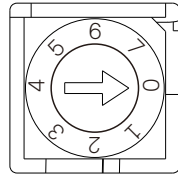
- 1) Orange stripes on white
- 2) Orange
- 3) Green stripes on white
- 4) Blue
- 5) Blue stripes on white
- 6) Green
- 7) Brown stripes on white
- 8) Brown

Sequence	1	2	3	4	5	6	7	8
CAN	/	/	/	CAN_H	CAN_L	/	A1	B1

## 5 Commissioning

### 5.1 Configuring Battery System

The DIP switch is used to configure the communication between battery module(s) and the inverter. Detailed configuration information is detailed as follows:



Configuration activated by inverter

0- Matching one battery module (default)

1- Matching two battery modules

2- Matching three battery modules

#### Black-start Configuration

The black-start function is only used in an off-grid application and when there is no other power supply.

If the battery is started in the black-start mode, even when there is no BMS communication, the port still contains high voltage with risk of electric shock.

After the black-start mode has started, if the BMS communication has still not been established within 3 minutes, the black start has failed.

4- Matching one battery module

5- Matching two battery modules

6- Matching three battery modules



#### NOTE!

When powering on the BMS, the system will start self-testing. If the buzzer beeps, it means the DIP configuration is in fault or communication failure has occurred. If the buzzer beeps check if the number of battery modules are corresponding to the DIP configuration, and also check if the RS485 communication cables are correctly connected. After checking that these two situations are set, press the POWER button to power on, and press the POWER button again 10 seconds later. In addition, the buzzer will only sound on the corresponding fault during the power-on self-test. After the self-test has already been completed, it will not beep again even if the same fault occurs.

### 5.2 Commissioning

Verify the model number of each battery module to ensure that they are all the same model.

Once all battery module(s) are installed, follow these steps for beginning operation:

1) Configure the DIP (VI) to the corresponding number according to the number of battery module(s) that has (have) been installed

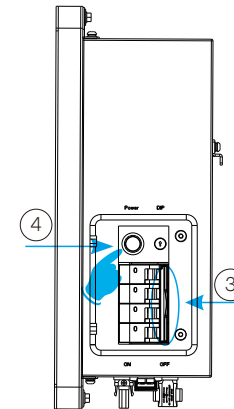
2) Remove the cover board of the BMS

3) Move the circuit breaker switch (V) to the ON position

4) Press the POWER button (VI) to turn on the T-BAT system

5) Re-install the cover board to the BMS

6) Turn on the inverter AC switch



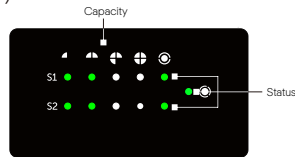
#### NOTE!

Frequently pressing the POWER button may cause a system error. Allow at least 10 seconds after pressing the POWER button prior to making another attempt.

### 5.3 Status Indicators

The LED indicators on the front panel of the BMS and the battery modules indicate the operating status.

#### 5.3.1 BMS (MC0500)

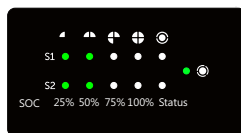


The following table shows the status of the BMS.

No.	Status of BMS	Mode
1	Green LED flashes on 1 sec and off for 4 sec	Inverter sends Idle command
2	Yellow LED flashes on 1 sec and off for 4 sec	Warning/Fault
3	Red LED keeps on 10min, then flashes on 1s and off for 4s	Protection
4	Green LED keeps on flashing	Normal
5	Green LED flashes once every 0.3 sec	Upgrade for BMS
6	Light off	Power off

The capacity indicators show the state of charge (SOC):

- When the battery module is neither charging nor discharging, the indicator lights are off.
- When the battery module is charging, a part of the blue LED flashes once every 5 seconds, and a part of the blue LED is on. Take SOC 60% for instance, when in a charging state:
  - The last two blue LED indicators are on
  - The last three blue LED indicators flash once every 5 seconds
- When the battery module is discharging, the blue LED indicators flash once every 5 seconds. Take SOC 60% for instance, when in discharging state:
  - The last three blue LED indicators flash once every 5 seconds



#### 5.3.2 Battery Module (T45/T63)



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

Note: only when both S1 and S2 are flashing once every 5 seconds in Green LED, it means the battery system is active.

No.	Status of battery module	Mode
1	Green LED flashes once every 5 sec	Active
2	Yellow LED flashes once every 5 sec	Protection
3	Red LED flashes once every 5 sec	Fault
4	Green LED flashes quickly	Upgrade for the BMS



#### NOTE!

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

### 5.4 Shutting Down T-BAT System

To shut down the system, follow the steps described below:

- Turn off the breaker between the inverter and T-BAT System
- Power off the BMS
- Turn off the system by moving the circuit breaker switch to the OFF position
- Ensure that every indicator on the T-BAT system is off
- 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 when a condition, such as voltage or temperature, is beyond design limitations. T-BAT system's BMS periodically reports its operating state to the inverter.

When the T-BAT system falls outside the prescribed limits, it enters into a warning state.

When a warning is reported, the inverter immediately stops its operation.

Use the monitoring software on the inverter to identify what caused the warning.

The possible warning messages are as follows:

Warning Messages	Description	Troubleshooting
BMS_External_Err	The communication between the BMS and an inverter is interrupted	Check if the communication cable between the BMS and inverter is correctly and properly connected.
BMS_Internal_Err	1) DIP switch on the wrong position 2) The communication between battery modules is interrupted.	1) Move the DIP switch to the correct position 2) Check if the communication cable between the battery modules is correctly and properly connected.
BMS_OverVoltage	Battery over voltage	Contact your distributor or SolaX directly for servicing.
BMS_LowerVoltage	Battery under voltage	Contact your distributor or SolaX directly for servicing.
BMS_ChargeOCP	Battery charge over current protection	Contact your distributor or SolaX directly for servicing.
BMS_DischargeOCP	Battery discharge over current protection	Contact your distributor or SolaX directly for servicing.

Warning Messages	Description	Troubleshooting
BMS_TemHigh	Battery over temperature	Wait until the temperature of the cells returns to the normal state.
BMS_TemLow	Battery under temperature	Wait until the temperature of the cells returns to the normal state.
BMS_CellImblance	The capacities of cells are different	Contact your distributor or SolaX directly for servicing.
BMS_Hardware_Protect	Battery hardware under protection	Contact your distributor or SolaX directly for servicing.
BMS_Insulation_Fault	Battery insulation fault	Contact your distributor or SolaX directly for servicing.
BMS_VoltSensor_Fault	Battery voltage sensor fault	Contact your distributor or SolaX directly for servicing.
BMS_TempSensor_Fault	Battery temperature sensor fault	Contact your distributor or SolaX directly for servicing.
BMS_CurrSensor_Fault	Battery current sensor fault	Contact your distributor or SolaX directly for servicing.
BMS_Relay_Fault	Battery relay fault	1) Ensure the power cable is correctly and properly connected to the power connector (XPLUG) of the BMS 2) If the first step still does not work, contact your distributor or SolaX directly.
BMS_Type_Unmatch	The type of BMS is unmatched	Contact your distributor or SolaX directly for servicing.
BMS_Ver_Unmatch	The version of BMS is unmatched	Contact your distributor or SolaX directly for servicing.

## 7 Decommissioning

### 7.1 Dismantling the Battery

#### Shutting down the battery unit

- Disconnect the cables between the BMS and inverter
- Disconnect the series wiring terminal on the battery
- Disconnect the cables

### 7.2 Packing

Pack the BMS and battery modules in the original packaging.

If the original packaging is no longer available, use an equivalent carton or box that meets the following requirements:

- Suitable for loads over 154.32lb
- Properly closed and sealed

## 8 Maintenance and Warranty

### 8.1 Maintenance

If the ambient temperature for storage is -4-113°F, recharge the batteries at least one time every 3 months.

If the ambient temperature for storage is -4-68°F, recharge the batteries at least one time every 6 months.

If the battery is not used for more than 9 months, the battery must be charged to at least SOC 50% each time.

If the battery is replaced or installed, the SOC between the batteries used should be as consistent as possible, with a maximum difference of  $\pm 2\%$ .

### 8.2 Warranty

Triple Power protects this product under warranty when it is installed and used as listed in this manual. Violation of the installation procedure or use of the product in any way not described in this manual will immediately void all warranties on the product.

Triple Power does not provide warranty coverage or assume any liability for direct or indirect damages or defects that result from the following causes:

- 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. An on-site inspection by a qualified technician is possible following 120 months of continuous use. Warranty claims made beyond 120 months from date of commissioning may be declined if it cannot be demonstrated that the equipment has been adequately maintained
- External influence including unusual physical or electrical stress (power failure surges, inrush current, etc.)
- Use of an incompatible inverter or devices