

		normal. The main loop is closed to match the charging and discharging action of the inverter, and the charging and discharging limit is sent to the inverter according to the battery status.
5	Fault	<p>A fault event is reported when the battery system is powered on and the main loop is disconnected.</p> <p>(Note: If the battery is seriously undervoltage, the battery system will power off to avoid battery damage due to continuous power depletion)</p>

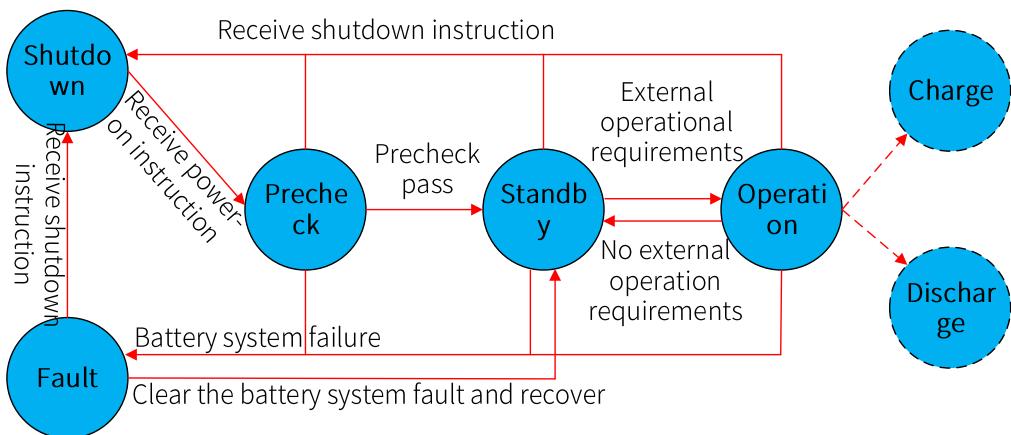


Figure 2-8 Product state logic diagram

3 Application Scenarios

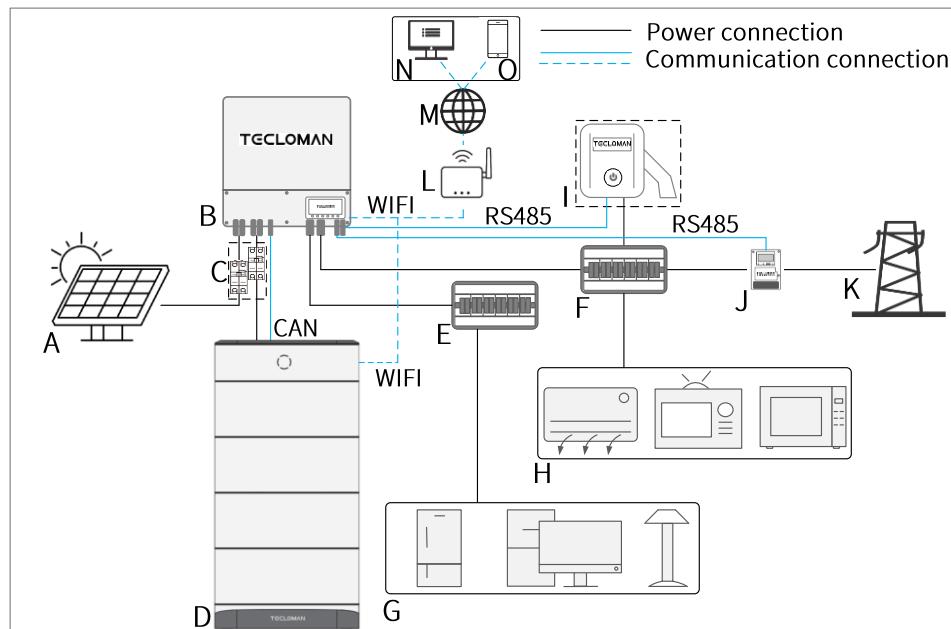
The Firefly Pro residential battery system is suitable for on-grid and off-grid PV energy storage systems in homes or small industrial and commercial buildings. Energy storage systems can be divided into two types according to different grid connections.

- On-grid system
- Off-grid system

3.1 On-grid system

Hybrid PV and energy storage on-grid system

Firefly Pro works with Hybrid inverter;



A: PV string

D: Firefly Pro

B: Hybrid inverter

E: Essential load distribution

board

C: DC switch

F: General load distribution

board

I: EV charger

J: Meter

K: Grid

L: Router

M: Internet

N: Tecloman cloud platform

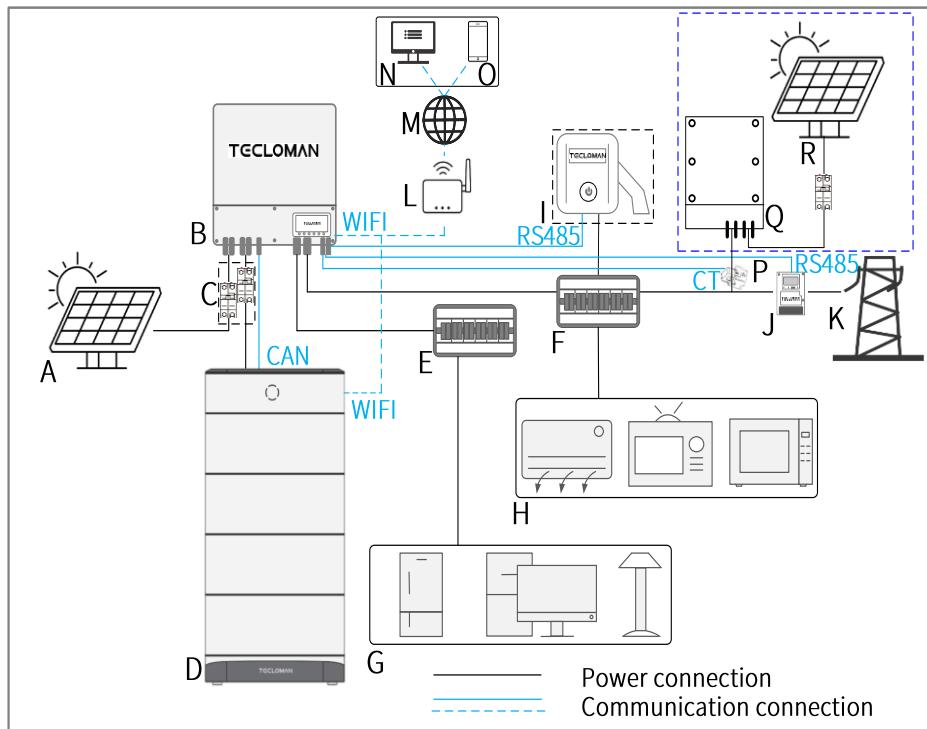
O: Firefly App

Figure 3-1 Hybrid PV and energy storage on-grid system topology

Hybrid inverter is a new generation of inverters. It integrates power modules (MPPT, DC/DC, and DC/AC) commonly used in PV systems, which facilitates coordination among modules and simplifies installation and connection of terminals. This Hybrid PV + energy storage on-grid system is suitable for the first installation of PV energy storage scenarios.

Reformed PV and energy storage on-grid system

The Firefly Pro can be used in conjunction with the Hybrid inverter and PV inverter.



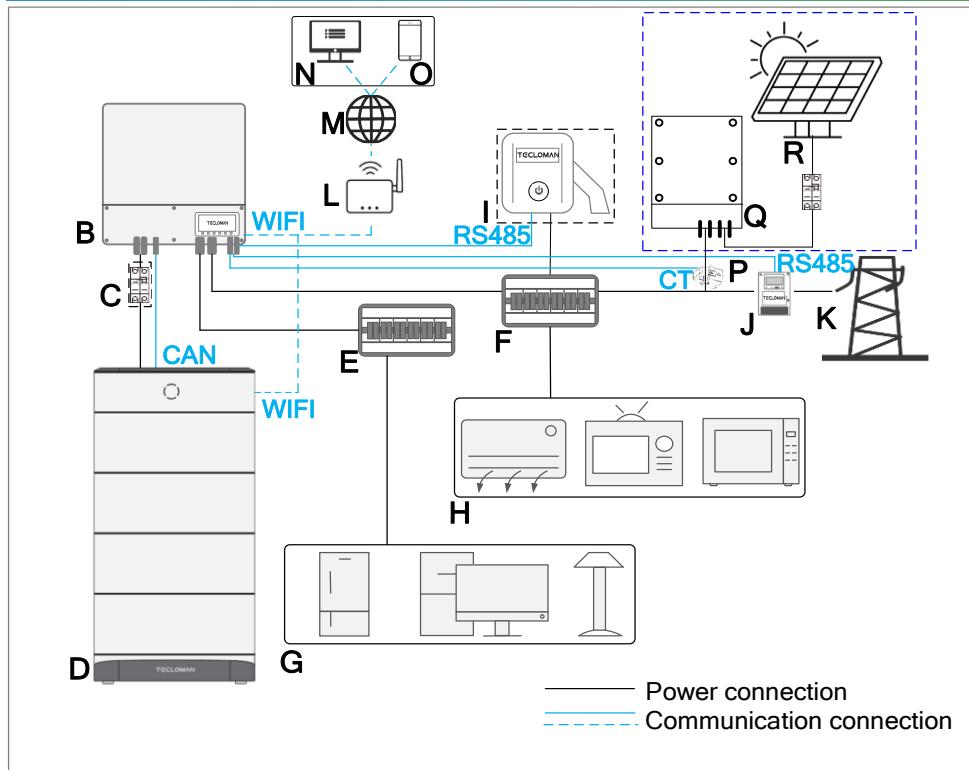
A: PV string	B: Hybrid inverter	C: DC switch
D: Firefly Pro	E: Essential load	F: General load
	distribution board	distribution board
G: Essential load	H: General load	I: EV charger
J: Meter	K: Grid	L: Router
M: Internet	N: Tecloman cloud	O: Firefly App
	platform	
P:CT(PV inverter generation current acquisition)	Q: PV inverter	R: PV string installed

Installed PV on-grid system

Figure 3-2 Reformed PV and energy storage on-grid system1 topology

The newly installed hybrid inverter is matched and connected with the installed PV inverter to meet the collaborative management of the power generation of the retrofitted PV and the installed PV; The modified PV and energy storage on-grid system is suitable for the scenario of increasing PV and energy storage after a small amount of PV has been installed.

Firefly Pro is used in conjunction with battery inverter and PV inverter.



A: PV string	B: Hybrid inverter	C: DC switch
D: Firefly Pro	E: Essential load distribution board	F: General load distribution board
G: Essential load	H: General load	I: EV charger
J: Meter	K: Grid	L: Router
M: Internet	N: Tecloman cloud platform	O: Firefly App
P:CT(PV inverter generation current acquisition)	Q: PV inverter	R: PV string installed

Installed PV on-grid system

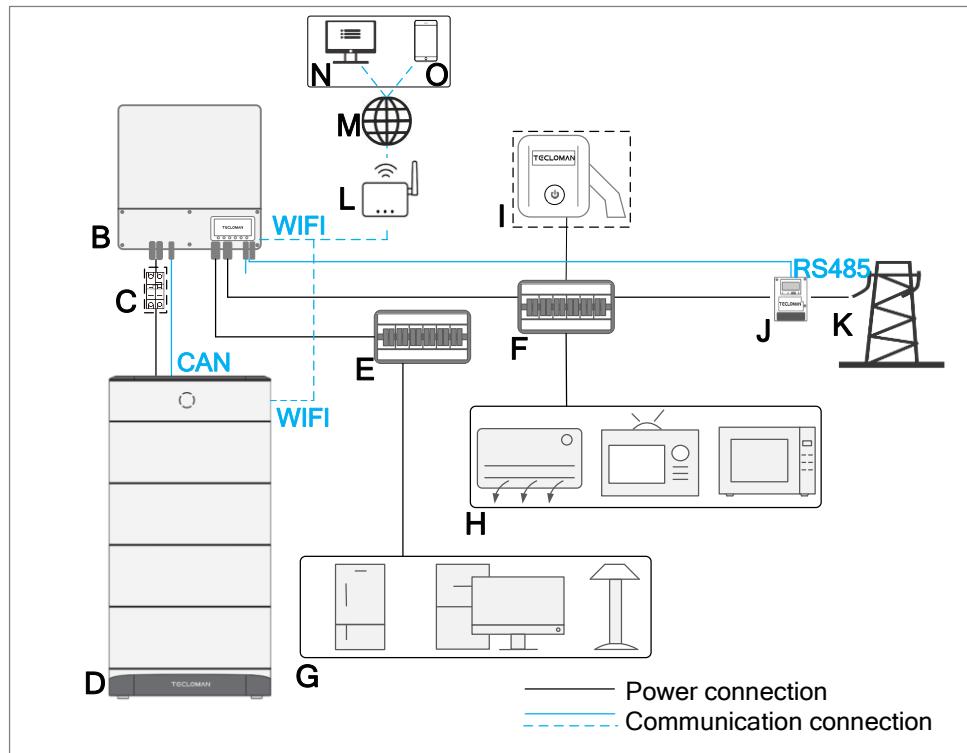
Figure 3-3 Retrofit PV and energy storage on-grid system 2 topology

The newly installed battery inverter matches and connects with the

installed PV inverter to meet the collaborative management of the new energy storage system and installed PV power generation. This reformed PV + energy storage on-grid system is suitable for scenarios where energy storage is increased after sufficient PV is installed.

Single energy storage on-grid system

Firefly Pro battery works with battery inverter;



D: Firefly Pro	B: Hybrid inverter	C: DC switch
G: Essential load	E: Essential load distribution board	F: General load distribution board
J: Meter	H: General load	I: EV charger
K: Grid	L: Router	

M: Internet N: Tecloman cloud platform O: Firefly App

Figure 3-4 Single energy storage on-grid system topology

This single energy storage on-grid system is suitable for scenarios where only energy storage is used as backup power.

Working mode of on-grid system description

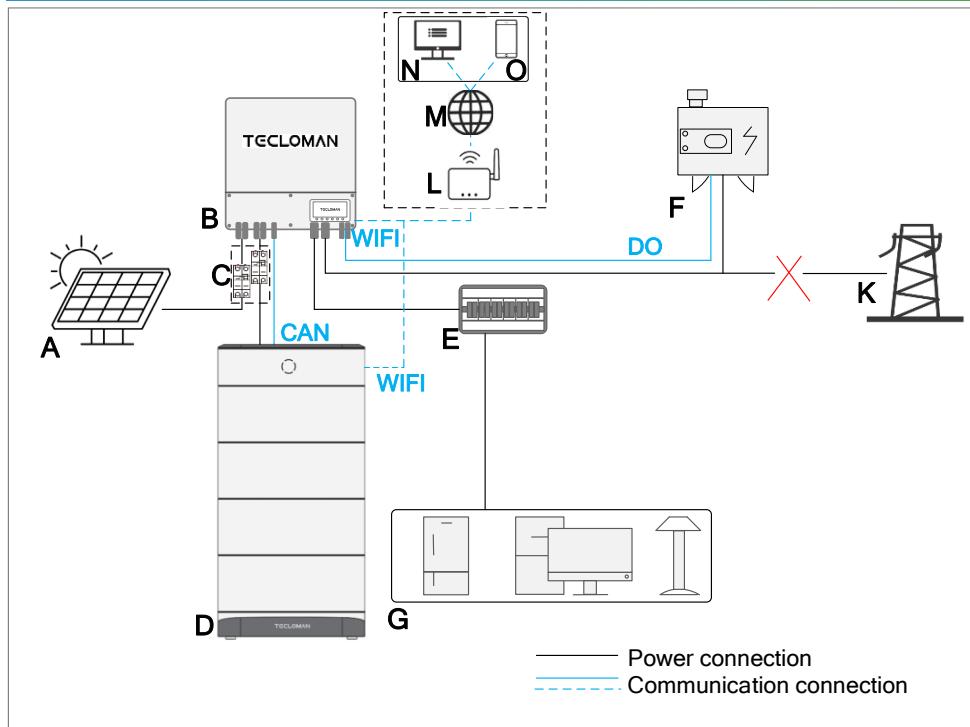
The on-grid optical storage system mainly has three working modes: self-generated self-use, time-of-use electricity price and emergency power backup.

All working modes are set in a Hybrid inverter or battery inverter. There is no need to set the Firefly Pro. The factory Settings can meet the above working modes of the optical storage system.

3.2 Off-grid system

Hybrid PV and energy storage off-grid system

The Firefly Pro battery can be used in conjunction with a Hybrid inverter or off-grid PV inverter.



A: PV string	B: Hybrid inverter	C: DC switch
D: Firefly Pro	E: Essential load distribution board	F: General load distribution board
G: Essential load	H: General load	I: EV charger
J: Meter	K: Grid	L: Router
M: Internet	N: Tecloman cloud platform	O: Firefly App

Figure 3-5 Hybrid PV and energy storage off-grid system topology

The Hybrid PV and energy storage off-grid system is applicable to the scenario of no grid or power failure.

4 System Installation

4.1 Pre-installation inspection

Outer packing inspection

Before opening the outer package of this product, check the outer package for visible damage, such as holes, cracks or other signs of possible internal damage, and check the product model number and product and module serial number. If there is any abnormal packaging or product model discrepancy, serial number missing, do not open, and contact your dealer as soon as possible.

Attachment check

After unpacking the stored product, please check whether the accessories are complete and complete and there is no obvious external damage. If anything is missing or damaged, contact your dealer.

Notes

For details about the items and quantities of accessories delivered with the package, see the "[Packing List](#)" on the packing box.

Français

Note

Pour plus de détails sur le nombre d' articles et d' accessoires livrés avec l' emballage, veuillez-vous référer à la [liste d' expédition](#) sur la boîte.

4.2 Installation tools

Table 4-1 Installation tools list

Kind	Tools			
Installation				
				
				
Individual protection				

4.3 Installation site

Basic requirements

- Do not install in areas where flammable and explosive materials are stored.
- This product installation is subject to corrosion in salt-affected

region, may cause a fire, please do not in salt-affected outdoor installation. Salt-affected areas are those within 500m of the coast or affected by sea breezes. The area affected by sea breeze varies according to meteorological conditions (e.g. typhoon, seasonal winds) or topography with dykes, hills);

- Do not install in a position accessible to children;

Installation method

This product is installed on the ground, and the installation ground requirements are as follows:

- Should be smooth, no pits, sloping slope, water, etc.;
- It should be hard ground, with certain bearing capacity, bearing capacity $> 300\text{kg}$;

Installation space

When installing the product, reserve a certain space to ensure sufficient space for installation.

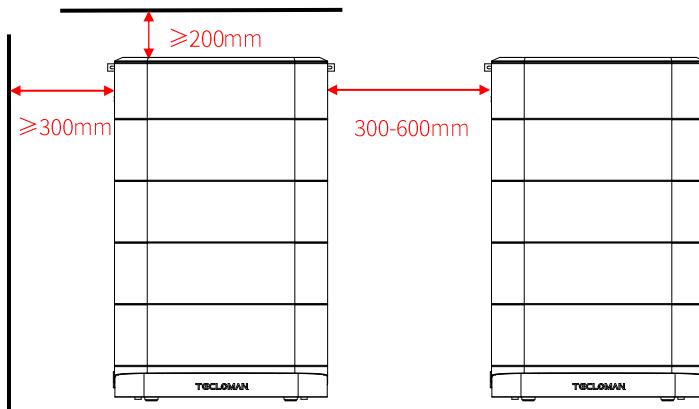


Figure 4-1 Installation reserved space diagram

4.4 Product installation

Installation notice

Before installation, estimate whether the installation space size meets the product size and reserved space size. The product size is as follows:

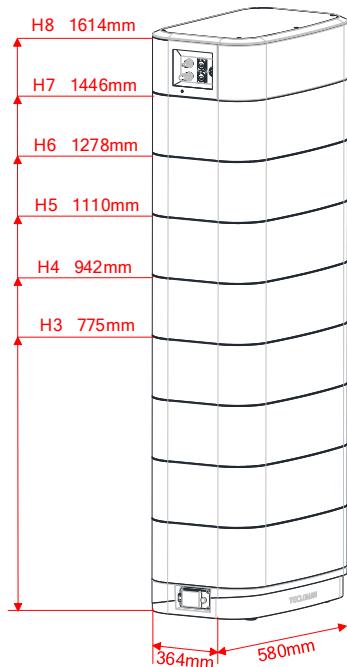


Figure 4-2 Product dimension diagram

Installation Steps

Step 1 Open the BCU + Base packing carton, take out the BCU + Base, and separate the BCU and Base; (There is no fixing between the BCU and the Base, it can be taken out directly from the top).

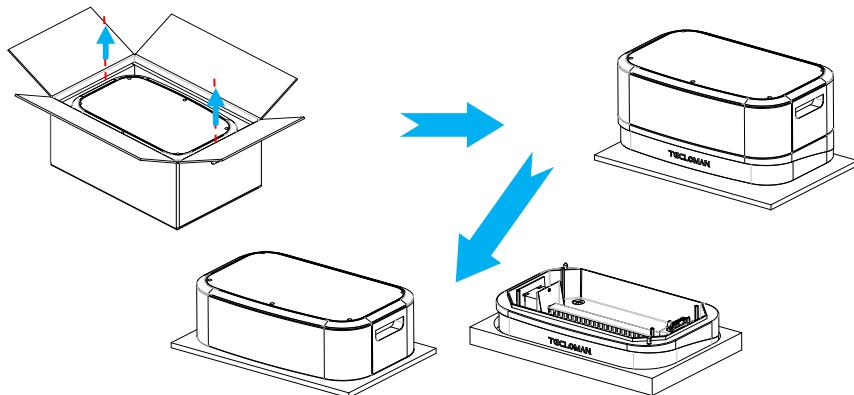


Figure 4-3 BCU and Base unpacking diagram

Step 2 Place the Base on the horizontal ground, the rear edge of the base is 15mm~30mm away from the wall surface, and confirm that the DC switch on the left side of the base is OFF;

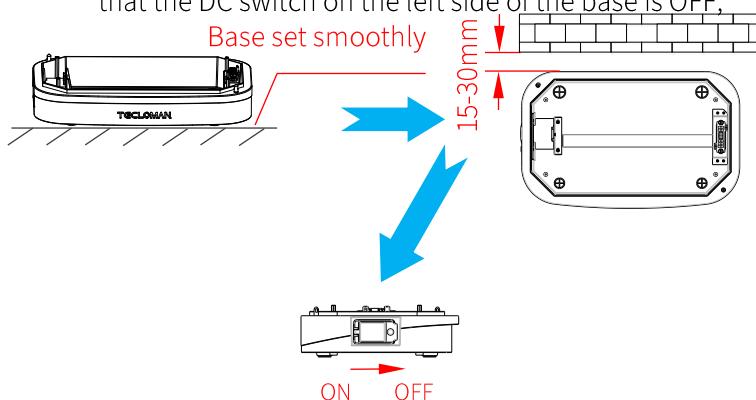


Figure 4-4 Base placement diagram

Step 3 Open the battery module packing carton, take out the battery module and put it on the base, pay attention to the orientation of the module, and ensure that the battery module and the base are inserted on the same side;

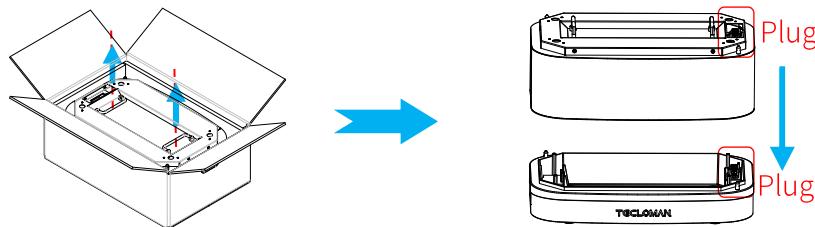
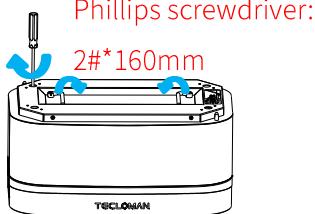


Figure 4-5 Battery module unpacking and placement diagram

Step 4 To secure the battery module and base, keep the screwdriver vertically downward, tighten the bolts clockwise, and rotate the handles on both sides toward the center to lay them flat. Take out the pad and screw in the battery module accessories, and fix them on the four corners of the battery module upper cover with a screwdriver;



Phillips screwdriver:

2#

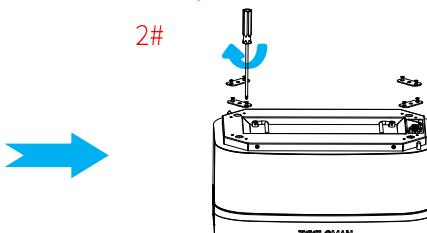


Figure 4-6 Battery module and base fixing diagram

Step 5 Repeat steps 3 and 4 for other battery modules to place them on the first battery module from bottom to top and secure them.



Warning

For each battery module, secure it to the lower module and install the four corner gaskets and screws before installing the next battery module.

Français



Avant d' installer le module de batterie suivant, fixez chaque module de batterie au module inf é rieur et installez les entretoises et les vis aux quatre coins.

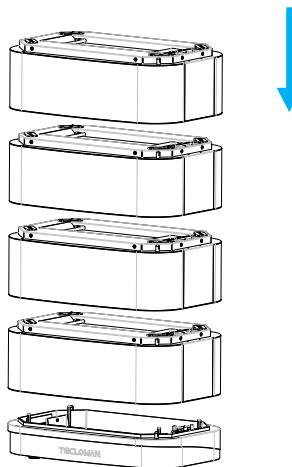


Figure 4-7 Schematic diagram of placement and fixing of multiple battery modules

Step 6 Take off the BCU top cover (BCU top cover is not fixed, directly from the top can be taken out);
Take out the [wall drawing part 1*2pcs](#) and [screws \(Phillips-M4*8\)*4pcs](#) in the attachment of the BCU and install the wall drawing part at the back of the BCU;

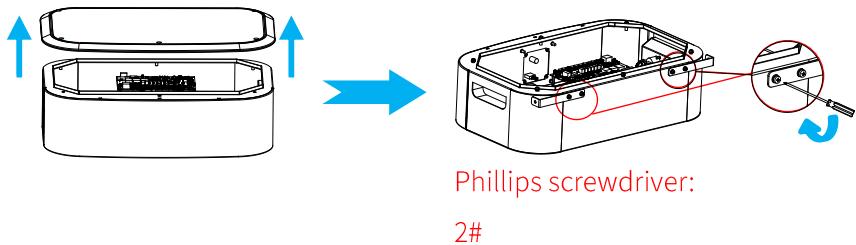


Figure 4-8 BCU cover removal and installation of wall structure 1 Schematic diagram

Step 7 Place the BCU with the top cover removed and the back draw wall structure 1 installed on the installed battery module. Pay attention to the orientation of the module to ensure that the blind insert of the BCU and battery module are on the same side; Secure the BCU and battery module. Keep the screwdriver vertically downward and tighten the bolts clockwise. Cover the top of the BCU, and lock the top with [screws \(Phillips-M4*8\) *6pcs](#);

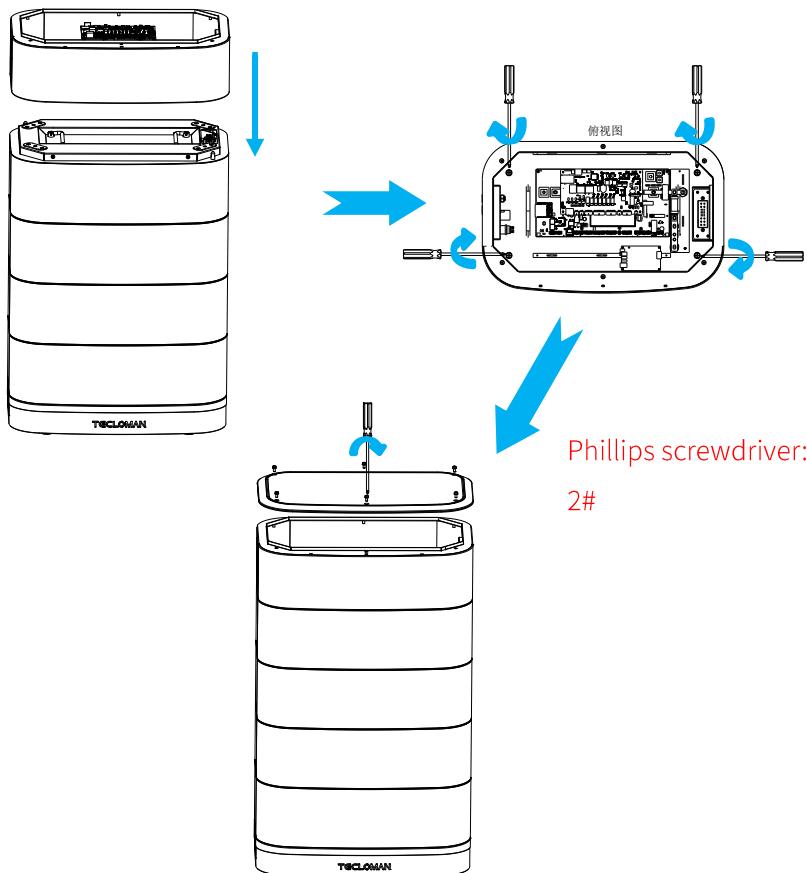
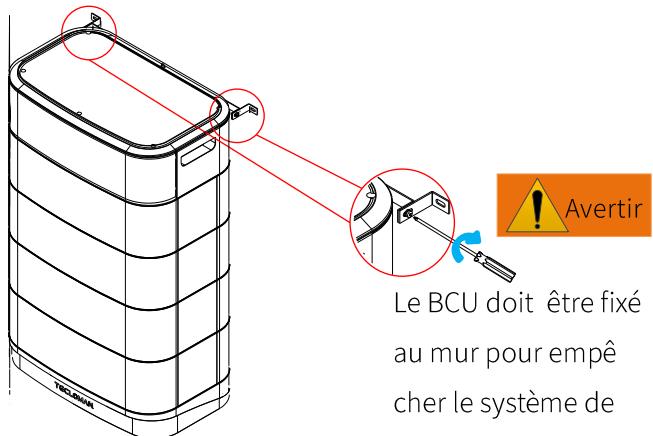


Figure 4-9 BCU placement and fixing and capping with battery module schematic diagram

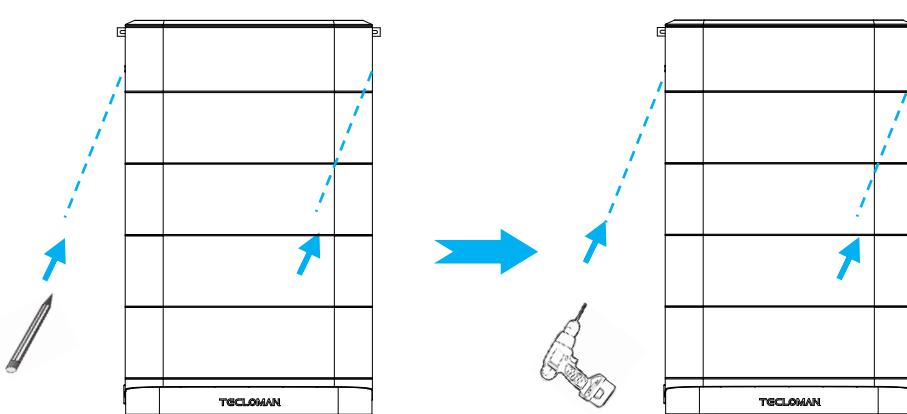
Step 8 Preinstall the **wall retaining structure 2*2pcs** on the **wall retaining structure 1** already installed in the BCU with **screws (M5*15)*2pcs**, and install the left and right sides;
Adjust **structural 2** to ensure contact with the wall, and use a pen to make the hole position fixed between **structural 2** and the wall;
Drill holes in the recorded holes ($\phi 10$) with an electric drill;
Install **expansion screws (M16*75)*2pcs** and secure them.



The BCU must be fixed on the wall to prevent the battery system from tipping over and causing damage

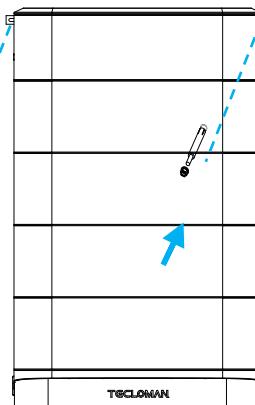


Le BCU doit être fixé au mur pour empêcher le système de batterie de basculer et d'endommager.



Socket spanner

Figure 4-10 BMS control box wall fastening schematic diagram



5 Electrical Connection

Announcements



Before electrical connection, ensure that the SWITCH of the Base and all external switches connected to the battery system are in the OFF state. Otherwise, the high voltage of the battery system may cause shock hazard.



- Product damage caused by incorrect wiring is not within the scope of product warranty;
- The operation related to electrical connection must be carried out by professional electrical technicians;
- When making electrical connections, the operator must wear personal protective equipment.



The cable colors in the electrical connection diagrams in this section are for reference only. The cables must comply with the local cable standards (yellow and green cables can be used only for grounding protection).

Français



Avant de brancher le circuit, assurez-vous que l' interrupteur de base et tous les interrupteurs externes connectés au système de batterie sont éteints. Dans le cas contraire, la tension élevée du système de batterie peut créer un risque de choc électrique.



- Les dommages causés par un câblage incorrect ne sont pas couverts par la garantie du produit ;
- Les opérations liées au raccordement électrique doivent être effectuées par un technicien électrique professionnel ;
- Lors de la fabrication des connexions électriques, l' opérateur doit porter un équipement de protection individuel



Note

Les couleurs des câbles dans le schéma de connexion électrique de cette section sont à titre indicatif seulement. Les câbles doivent être conformes aux normes locales de câblage (les câbles jaunes et verts ne peuvent être utilisés que pour la protection au sol).

5.1 Single battery system connection

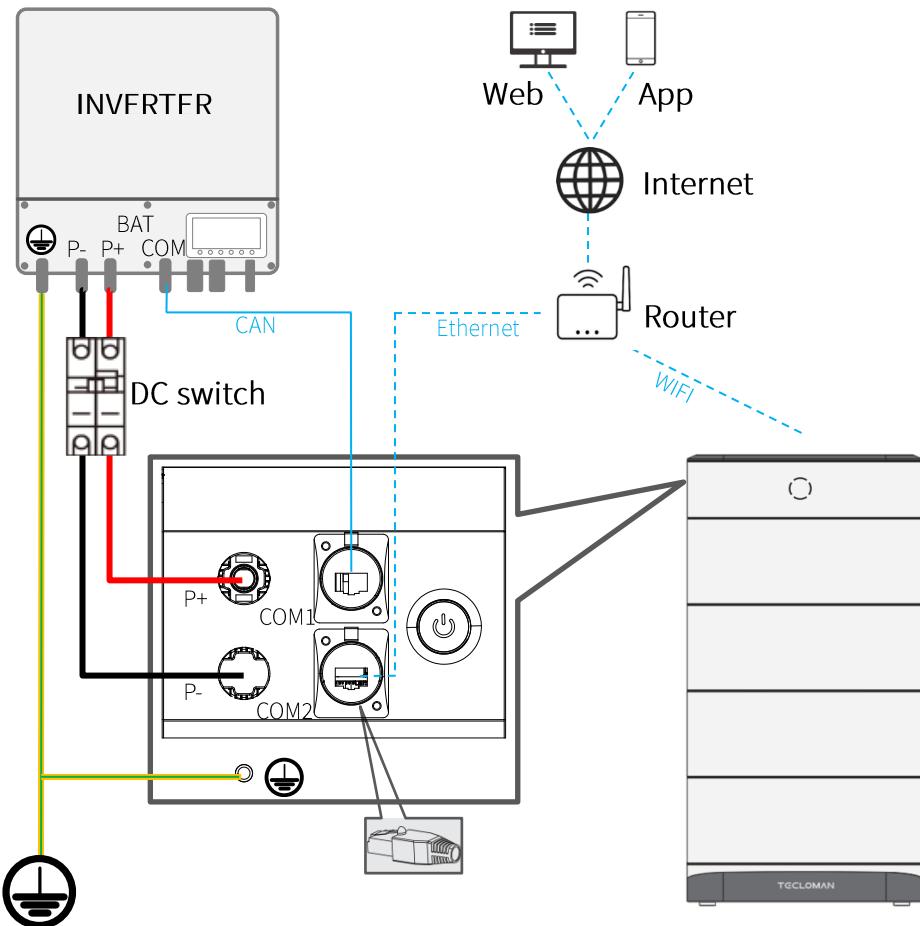


Figure 5-1 Single battery system connection diagram

5.2 Parallel connection of multiple battery systems (optional)

When used in parallel, note the following:

- A maximum of three battery systems can be connected in parallel, and each parallel battery system must have the same number of battery module layers, that is, the same specification and model.

- The parallel battery system should be as much as possible to ensure that the battery system produced in the same batch;
- In parallel connection, the SOC of each battery system should be the same as far as possible (difference < 5%). If the difference is too large, the parallel strategy will be automatically implemented when the parallel machine starts for the first time, and the corresponding power and electricity after the parallel machine cannot be timely output. For details, consult Tecloman;
- Parallel boxes need to consult Tecloman to purchase separately.

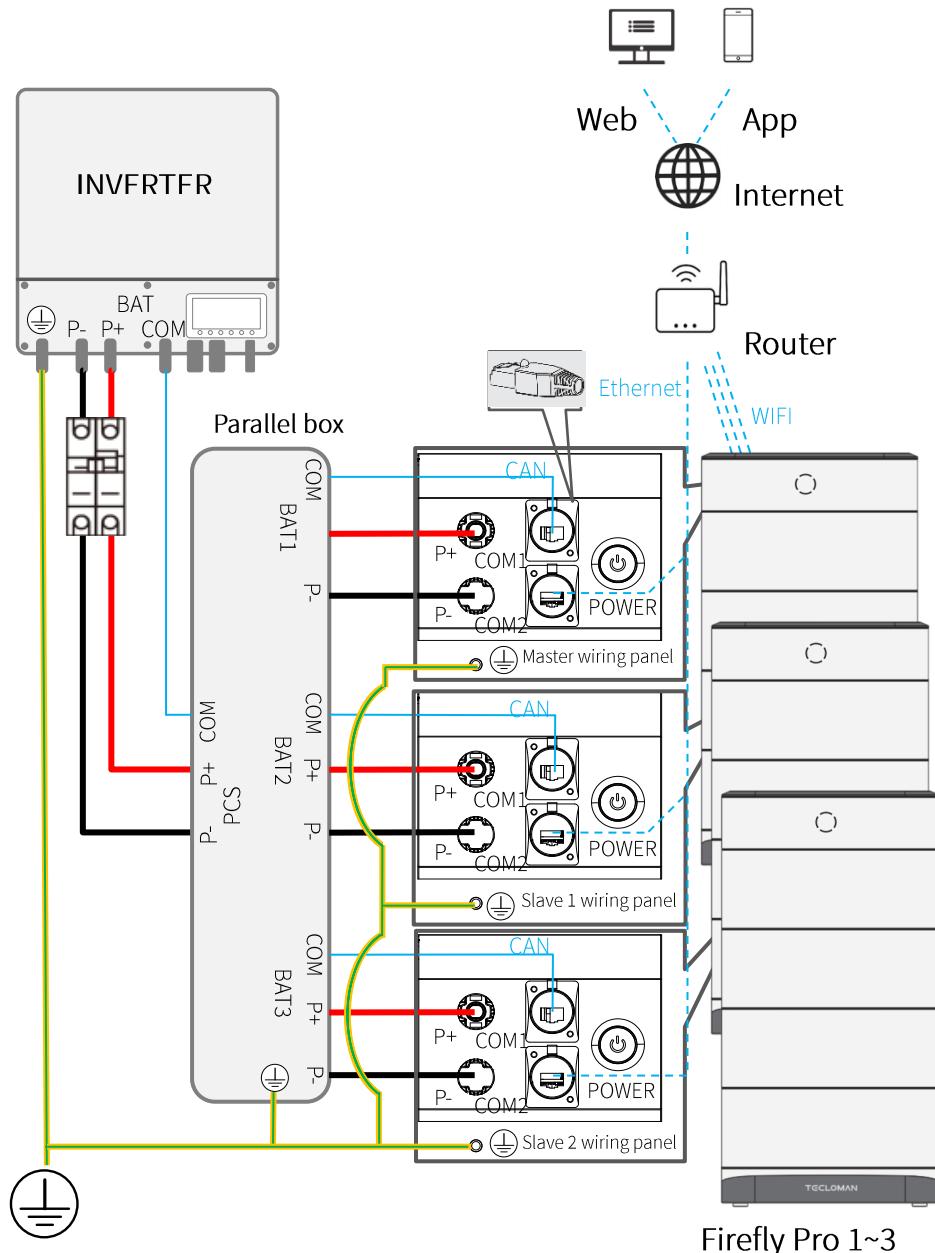


Figure 5-2 Parallel multiple battery system diagram

5.3 Connecting cable preparation

Table 5-1 System connection cables preparation table

No.	Cable	Type	Specifications (recommended)	Source
Single battery system				
1	Power cable (Battery-DC switch)	Universal energy storage cable	8AWG/black&red	Product delivery
2	Power cable (DC switch-inverter)	Universal energy storage cable	8AWG/black&red	Customer owned
3	Communication cable (Battery-inverter)	The definition and form of the interfaces on both ends are the same	Universal shielded 8-core network cable	—
		The definition or form of the interface on both ends are different	Make shielded 8-core network cables onsite	—
4	Communication cable, when choosing a wired network connection (Battery-router)	Universal shielded 8-core network cable	—	Customer owned
5	Ground cable	Yellow green ground cable	10mm ²	Customer owned
Parallel battery system				
1	Power cable (Battery-parallel box)	Universal energy storage cable	8AWG/black&red	Product delivery
2	Power cable (Parallel box-DC switch) (Inverter-DC switch)	Universal energy storage cable	8AWG~1AWG According to inverter power	Customer owned
3	Communication cable (Battery-parallel box)	Universal shielded 8-core network cable	—	Product delivery

4	Communication cable (Parallel box-inverter)	Universal shielded 8-core network cable	—	Customer owned
5	Ground cable	Yellow-green ground cable	10mm ²	Customer owned

5.4 DC switch preparation (Recommended)

Table 5-2 The battery system and the inverter connecting recommended table

Number	Specification	Quantity	Source
Single battery system			
1	Working voltage≥500Vdc; Working current 63A; 2P	1PCS	Customer owned
Parallel battery system			
1	Working voltage≥500Vdc; Working current 63A*N(N is the number of parallel machines); 2P	1PCS	Customer owned

5.5 Mounting power cable

Single battery system

Take out the power cable of the battery system, insert one end of the crimped quick-plug connector into the installed power cable interface of the battery system (P+, P-), and the other end of the cable crimp the corresponding cable terminal and connect it to the DC switch according to the on-site DC switch (on/off between the inverter and the battery). Connect the other side of the DC switch to the battery port of the inverter using a cable of the same specifications.

Notice

- After the end of the quick-plug connector is inserted into the positive and negative connectors of the product, pull back the DC

input wire does not fall off, indicating that it is stuck in place;

- The other end of the power cable is reserved bare wire, which shall be crimped according to the on-site connection;
- For details about the battery power port of the inverter, see the inverter manual.

Français

Remarque

- Après avoir inséré l' extrémité du connecteur de prise rapide dans le connecteur positif et négatif du produit, le fil d' entrée dc est tiré en arrière sans tomber, ce qui indique que ce câble de prise rapide est bloqué;
- L' autre extrémité du câble d' alimentation pour garder le fil nu, doit être courbé selon la connexion du site ;
- Voir le manuel de l' onduleur pour plus de détails sur l' interface d' alimentation de la batterie de l' onduleur.

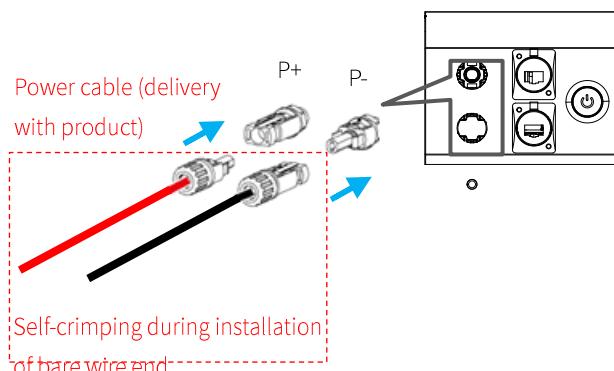


Figure 5-3 Single battery system power cable connection diagram

Multiple battery system parallel

Take out the power cable of each battery system, insert one end of the

crimped quick-plug connector into the installed power cable interface of the battery system (P+, P-), and crimp the other end of the cable into the accessory terminal provided by the parallel box and connect it to the power interface of the battery side of the parallel box. The connection between the power interface of the inverter side and the battery interface of the inverter is determined according to the actual situation and the cable type and terminal crimping and connection.

Notice

The power connection between the parallel box and the inverter should consider the maximum running current of the parallel system to ensure that the self-provided cable is suitable.

Français**Remarque**

Le raccordement de l' alimentation électrique entre le boîtier parallèle et l' onduleur doit tenir compte du courant de fonctionnement maximal du système parallèle pour assurer l' adéquation du câble autonome.

5.6 Communication cable installation

Single battery system

Take out the communication cable delivered with the battery system and insert one end into the installed battery system power communication port (COM1) and the other end into the inverter battery communication port.

Notice

- Both ends of the communication cable are standard RJ45 plugs with the same pin definition.
- If the battery communication port on the inverter is not the standard RJ45 network port and pin definition are different from those on the battery side, change the inverter communication cable based on the inverter definition onsite.

Français

Remarque

- Les deux extrémités du câble de communication sont des prises RJ45 standard avec la même définition de broches.
- Si le port de communication de la batterie sur l' onduleur n' est pas un port réseau RJ45 standard et que la définition de la broche est différente de celle du côté de la batterie, le câble de communication de l' onduleur est remplacé selon la définition du site de l' onduleur.

Multiple battery system parallel

Take out the communication cables of each battery system, insert one end into the installed battery system power communication interface (COM1), and the other end into the parallel box battery communication interface; The parallel box inverter communication port is connected to the inverter battery communication port.

Notice

- The parallel box battery communication port and inverter communication port are standard RJ45 network ports with the

same pin definition as the battery system communication port.

- If the battery communication port on the inverter is not the standard RJ45 network port and pin definition are different from those on the battery side, change the inverter communication cable based on the inverter definition onsite.

Français

Remarque

- L' interface de communication de la batterie de la boîte parallèle et l' interface de communication de l' onduleur sont tous les ports de réseau RJ45 standard, sa définition de position de pied est la même que l' interface de communication du système de batterie ;
- Si le port de communication de la batterie de l' onduleur n' est pas le port de réseau RJ45 standard et la définition de pied est différente du côté de la batterie, alors vous devez changer le câblage de communication de l' onduleur sur le site selon la définition de l' onduleur.

5.7 Ground installation

Announcements



Ensure that the ground cable is securely connected. If it is not connected or loose, electric shock may occur.



Notes

After installing the ground cable, you are advised to apply silicone gel or paint to the ground terminal for protection.

Français



Connexion solide avec le fil de terre. Si elle n' est pas connectée ou desserrée, elle peut causer un choc électrique.



Note

Après l' installation du câble de terre, il est recommandé d' appliquer du silicone ou de la peinture sur les bornes de terre pour la protection.

Crimp one end of the yellow-green ground cable to the OT terminal of the accessory, and use an accessory screw to lock the ground cable with OT terminal to the ground point of the BCU of the battery system, and connect the other end to the external ground point based on site conditions.

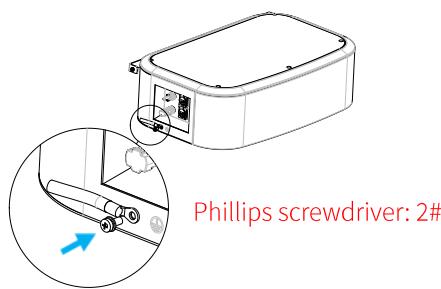


Figure 5-4 BCU ground connection diagram

6 System Debugging

6.1 Power-on precheck

Table 6-1 Battery system checklist before power-on

Number	Inspection item	Acceptance standard
1	Battery system installed in place	Install correctly and firmly
2	The installation environment meets requirements	The installation space is reasonable, the environment is clean and tidy, and there is no construction residue
3	Cable connection in place	Power cable and communication cable are connected correctly and firmly
3	Reliable grounding	The ground cable is connected correctly and firmly
4	Disconnect switch	The base "SWITCH" and all switches connected to the energy storage are in the "OFF" state
5	Connect cables properly	The cable layout is reasonable and meets customer requirements

6.2 System power-on

Notice

First turn on the DC switch between the inverter and the battery system power connection, and then power on the battery system; for details about how to power on an inverter, see the corresponding quick guide.

Français

Remarque

Ouvrez d'abord l'interrupteur dc entre l'onduleur et la connexion d'

alimentation du système de batterie, puis alimentez le système de batterie ; Pour le fonctionnement sous tension de l' onduleur, voir le guide rapide correspondant.

Turn the "SWITCH" of the base to ON, long press the POWER button until its button indicator is steady on, and release it. After the battery system is powered on for the first time, the LED light ring on the front of the BCU will light up.

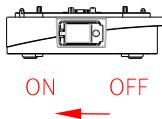


Figure 6-1 Base switch closure diagram

Lamp indication

Table 6-2 Battery system light display instruction table

Number	Classification		State		Definition
1	Power button indicator light		Normally on		System power-on
2			Normally off		System off
3			Button flashing		The system is in AP network distribution mode
3	LED lamp ring	SOC indication (static)		4 segments white glow	75% < SOC ≤ 100%
4				3 segments white glow	50% < SOC ≤ 75%

5				2 segments white glow	25% < SOC ≤ 50%
6				1 segment white glow	10% ≤ SOC ≤ 25%
7				1 segment orange glow	SOC < 10%
8	Running indication (Dynamic)		On the basis of the SOC value corresponding to the constant light ring, the unlit light ring is turned on successively in the counterclockwise direction until the four segments are fully lit and then extinguished, and then the process is repeated	Charge	
9					
10			Light ring stroboscopic, 0.5s frequency	Fault	

Notice

LED light ring has hibernation energy-saving design, it will automatically turn off after 30 seconds of steady light; After hibernation, it can be triggered again by radar. The triggering mode is that objects move within 20cm directly in front of the BCU.

Français

Remarque

Le cercle lumineux LED a une conception d' économie d' énergie dormante, qui s' éteint automatiquement après 30 secondes d' clairage stable ; Après hibernation, il peut être déclenché à nouveau par le radar. Déclenché lorsqu' un objet se déplace dans un rayon de 20cm directement devant le BCU.

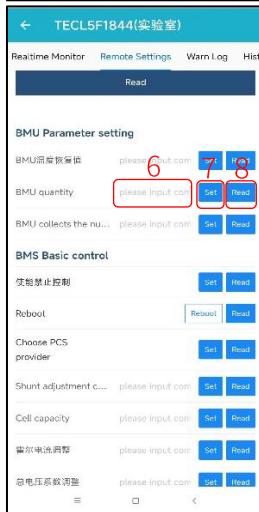
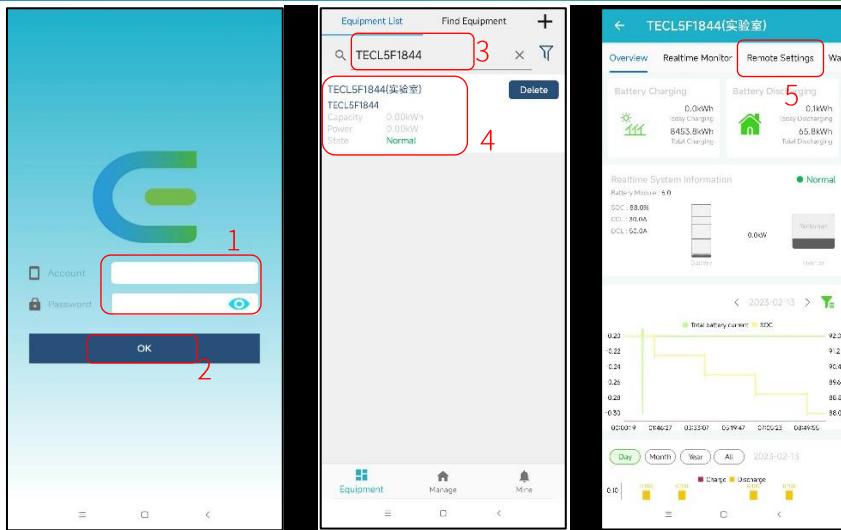
6.3 Battery system commissioning

Download and install the Firefly App first

Download and install the latest version of the Firefly App by referring to the Firefly App Quick Guide. You can register an account and perform operations such as network configuration, commissioning, monitoring, and upgrading of the battery system. You can obtain the Firefly App Quick Guide by scanning the QR code.

Set the number of battery module layers

This battery system BMS factory default management of battery modules number is 4 layers; If the number of modules installed onsite is not 4 layers, you need to set the number of battery modules through the App. The detailed setting procedure is as follows:



1. Open Firefly App, enter account & password;
2. Click "OK" to log in the App;
3. Enter the installed product WIFI SSID to be set and click search;
4. Click the corresponding product to enter the product main monitoring interface;
5. Click "Remote Settings" to enter the product parameter setting interface;
6. Enter the number of battery module installation layers in the blank area behind "BMU quantity", for example, 5, 6, 7, 8, etc.
7. Click the "Set" button, and click again to ensure that the filling is successful;
8. Click "Read" to check whether the value displayed in the blank is the set value. If yes, the setting is successful.

Figure 6-3 Battery modules layers settings procedure

Set the inverter brand

The factory default matching inverter brand of the BMS of this battery system is Tecloman self-branded inverter; If a third-party brand inverter is installed on site, you need to set the brand of the inverter through the App.

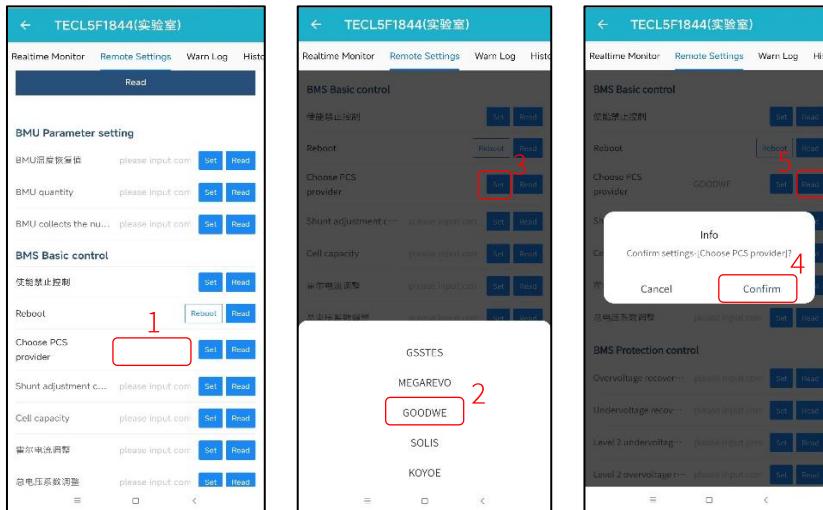


Figure 6-4 Setting the inverter brand for the battery system schematic diagram

Inverter brand setting item is also in the product parameter setting interface, enter the steps refer to the above;

1. Click "Choose PCS provider";
2. In the inverter brand list that is displayed, select the inverter brand to be installed, for example, GOODWE.
3. Click "Set" behind this parameter item;
4. Click "Confirm" in the pop-up window;
5. Click "Read" to check whether the inverter brand displayed in the blank is the set brand. If yes, the set is successful.

7 System Maintenance

7.1 System power-off

Announcements



When the energy storage system is running, only turning off the DC switch of the energy storage cannot completely power off the system. Therefore, the energy storage cannot be maintained.

Français



Lorsque le système de stockage d' énergie est en fonctionnement, l' arrêt du commutateur cc de stockage d' énergie seul ne peut pas mettre le système compl ètement hors tension. Aucune op é ration de maintenance ne peut être effectuée sur le stockage d' énergie à ce moment.

Power-off procedure

- Step 1 Long press the POWER button of the battery system until its button indicator is off to shut down the battery system;
- Step 2 Disconnect the DC switch between the inverter and battery;
- Step 3 Set the SWITCH of the Base to OFF.

7.2 Routine maintenance

To ensure the long-term running of the energy storage system, you are advised to perform routine maintenance according to this section.



Power off the system during system cleaning, electrical connection, and grounding reliability maintenance.

Français



Le système doit être mis hors tension pendant le nettoyage du système, le raccordement électrique et l'entretien de la fiabilité de la terre.

Table 7-1 Maintenance checklist

Examination content	Examination method	Maintenance period
System cleaning	Check the system interface regularly for blockage and dust blockage	Once every six months to once a year
System running state	Observe whether the appearance of the system is damaged or deformed; Listen to the system in the process of operation whether there is abnormal sound; Check whether battery parameters are correctly set when the system is running	Once every 3 months
Electrical connection	Check whether the cable connection is loose. Check whether the cable is damaged, especially whether the skin where the cable is in contact with the metal surface is cut. Check whether the waterproof cover of the unused COM port is in the correct state	3 months after each commissioning, and once every six months to a year thereafter
Reliable	Check whether the ground cable is grounded	3 months after each

grounding	reliably.	commissioning, and once every six months to a year thereafter
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7.3 Fault alarm handling

Fault alarm severities are defined as follows:

- Failure: The battery system fails, causing the battery system to stop or power off;
- Alarm: The rated operation of the battery system is affected by external conditions or does not respond to the operation of the inverter.

Fault alarm events can be viewed in real time through the App.

Table 7-2 Fault alarm definition table

Event name	Level	Cause	Handling suggestion
Battery severely under voltage	Fault	No protective charging action for a long time after battery undervoltage;	Check the inverter and battery communication and power connection; Check whether the inverter is normal; Check whether the power grid or PV is without power for a long time;
Battery sampling disconnected	Fault	Internal sampling harness or BMS acquisition module is damaged;	Replace corresponding battery module;
Acquisition module	Fault	The number of BMUs is incorrectly set;	Check the number of BMU Settings using

connection disconnected		Internal communication wiring harness or BMS acquisition module is damaged;	the App. Replace corresponding battery module;
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7.4 Battery storage and recharge

Battery storage requirements

1. When storing batteries, place them according to the label on the packing case. Do not place them upside down or on the side.
2. When stacking battery packing cases, comply with the stacking requirements on the outer packaging.
3. Handle the batteries with care. Do not damage the batteries.
4. Storage environment requirements:
 - Ambient temperature: $-10^{\circ}\text{C} \sim 55^{\circ}\text{C}$, Recommended storage temperature: $20^{\circ}\text{C} \sim 30^{\circ}\text{C}$;
 - Relative humidity: $5\% \text{RH} \sim 80\% \text{RH}$;
 - Dry, ventilated, clean;
 - Avoid contact with corrosive organic solvents, gases and other substances;
 - Avoid direct sunlight;
 - The distance from the heat source should not be less than two meters.
5. The battery must be disconnected from external storage.
6. Battery storage statistics should be collected monthly. For batteries whose storage time is close to 15 months ($-10^{\circ}\text{C} \sim 25^{\circ}\text{C}$), 9 months ($25^{\circ}\text{C} \sim 35^{\circ}\text{C}$) or 6 months ($35^{\circ}\text{C} \sim 55^{\circ}\text{C}$), supplementary electricity should be arranged in time.
7. When shipping stored batteries, the principle of first in first out should be followed;