

文件说明:

文件名: CFE-Power Stream 用户手册

版本号: V1.30

更新日期: 20230727

- 1、本页仅用于向供应商做文件说明, 实物不印刷
- 2、文件页面尺寸 A5 - 148mm*210mm

Residential ESS Lithium-ion Battery CFE Power Stream User Manual



2023 CF Energy Co., Ltd. All rights reserved.

CF ENERGY CO., LTD. mentioned later is abbreviated as CFE.

This document is provided "as-is." Information in this document, including URL and other Internet Web site references, may change without notice.

Usage Notice

In order to protect your legitimate rights and interests, please be sure to read our operating procedures and safety instructions carefully before using this product, and please be sure to operate the product in accordance with the operating procedures and safety instructions provided in this manual.

Once you start using this product, you are considered to have read, understood, approved and accepted all the terms and content of the operating procedures and safety instructions of this product, and the user promises to be responsible for his or her actions and all consequences arising therefrom. The user undertakes to use the product for legitimate purposes and agrees to these terms and conditions and the relevant policies or guidelines of the country in which the product is used.

In the course of using this product, you must strictly comply with and implement the requirements including but not limited to the operating procedures and safety instructions. The user shall be responsible for any personal injury, accident, property damage, legal dispute, and any other adverse events resulting in conflict of interest that may arise from the use of the product in violation of the safety instructions or force majeure, and the Company shall not be held responsible for any loss or damage. All rights reserved. Contents are subject to change without notice.

	<p>Attention!</p> <p>Failure to follow the warnings in this manual could result in personal injury.</p>
	<p>Risk of high voltage and electric shock!</p>
	<p>Ref operating instructions.</p>
	<p>Please perform the installation operation 5 minutes after the inverter is turned off and disconnected to ensure safety, otherwise there will be a risk of electric shock.</p>
	<p>Be careful of surface temperature to prevent burns!</p>
	<p>Protective grounding</p>

Installation risk notice

 Warning	<p>When carrying equipment by hand, wear protective gloves to prevent sharp objects from being cut.</p>
 Attention	<p>Before connecting the cables, verify that the cable labels are correct.</p>
 Dangerous	<p>Construction operations on high-voltage lines may cause fire or electric shock. The erection and routing of AC cables must comply with the local regulations and specifications.</p>

Please follow the relevant construction safety regulations and standards to avoid safety accidents;

Personnel responsible for the installation of this product must be strictly trained to master the correct installation method and various safety precautions before carrying out the various operations of the product;

The installation site should choose a well-ventilated location and should maintain a safe distance from the surrounding fire-explosive facilities and underground pipelines, the installation location should be far away from open fire, high temperature, dust and corrosive environment, and the protection level of the product shell selected should be compatible with the installation environment;

Installation of the selected cables, terminals and other components should meet the current requirements, before and after installation should ensure that all wiring related to charging equipment is tight, well insulated, wired correctly, no risk of wear and tear, extrusion damage, otherwise there is a risk of fire and electric shock; products on the power before, please be sure to confirm whether the system grounding is good, so as not to cause electric shock accidents;

If the installation produces parts damage should be repaired and replaced in time, to avoid using with disease;

Operation and maintenance risk notice

Operation and maintenance risk notification

 Dangerous	There are dangerous voltages in the equipment when the system is running, non-professionals must not operate and maintain.
 Dangerous	When performing maintenance such as system cleaning, electrical connection and grounding reliability, perform system power-off operations, otherwise there is a risk of electric shock or fire.

The operation and maintenance of the equipment must comply with the electrical safety operating procedures, otherwise there is a risk of electric shock or fire;

Personnel responsible for the operation and maintenance of this product must be qualified to work with high voltage and alternating current, and must be strictly trained to master the correct operation methods of the system and various safety precautions before carrying out various operations of the equipment, otherwise there may be a risk of electric shock;

Prohibit the operation and maintenance of the system without electricity, otherwise electric shock may occur; operation is strictly prohibited to wear watches, bracelets, bracelets, rings and other easily conductive objects on the wrist; do not disassemble, modify the product and wiring, otherwise it may cause fire, electric shock accidents;

No combustible and flammable materials shall exist around the product, and operation and maintenance personnel shall clean up in time, otherwise there is a risk of fire;

Use risk notification

Strictly prohibit the use of the system in the case of equipment failure, and do not operate the system without authorization when it is abnormal;

Strictly follow the operating procedures and tips in this manual, and must comply with industry safety norms, otherwise there is a risk of electric shock and fire; please strictly comply

In case of fire, water immersion and other accidents, it is strictly forbidden to approach the product and should contact the operation and maintenance personnel to deal with it in time;

Contents

1 Overview	1
2 Installation	5
2.1 Safety regulations	5
2.2 Installation Preparation	5
2.2.1 Unpacking and inspection	5
2.2.2 Cable and air switch models	6
2.2.3 Installation requirements	6
2.3 Installation	7
2.3.1 Installation steps	7
2.3.2 Electrical connection	7
2.3.3 Connecting PV Cables	9
2.3.4 Connect the AC cable	10
2.3.5 Connecting communication cables	11
2.4 Installation inspection	12
3 Group and parallel system	13
3.1 Group system	15
3.2 Paralleling	15
4 System debugging	16
4.1 Pre-commissioning check	16
4.2 Switching on and off	17
5 Product maintenance	18
5.1 Routine maintenance	18
5.2 Troubleshooting	19
6 Technical Parameter	20

1 Overview

The 5kW Power Stream (hereinafter referred to as PS) is a photovoltaic storage product that can be used for PV charging, power storage, and grid-connected applications on the AC side. This chapter describes the composition, working principle and mode of operation of the PS all-in-one

Composition and working principle of optical storage module

The product consists of power unit (battery charge/discharge circuit, PV boost circuit, inverter circuit, auxiliary power supply, filter circuit), control unit, monitoring unit, communication unit, connection components, lithium battery protection system, lithium iron phosphate battery, etc.

The products are usually used in photovoltaic energy storage system, the system mainly includes photovoltaic array, battery, photovoltaic energy storage converter, local load, power grid and other components, through energy management to achieve the photovoltaic array power generation to the grid, photovoltaic array power generation for local load power supply, photovoltaic array for battery charging, photovoltaic array + battery for local load power supply, power grid for battery charging five core functions, multi-dimensional, maximum to ensure that photovoltaic The five core functions of PV array power generation for local loads, PV array charging for batteries, PV array+battery powering for local loads, and grid charging for batteries are multi-dimensional and ensure the maximum efficiency of PV power generation, reliability of local load power supply, and long battery life.

Typical PV energy storage diagram is as follows

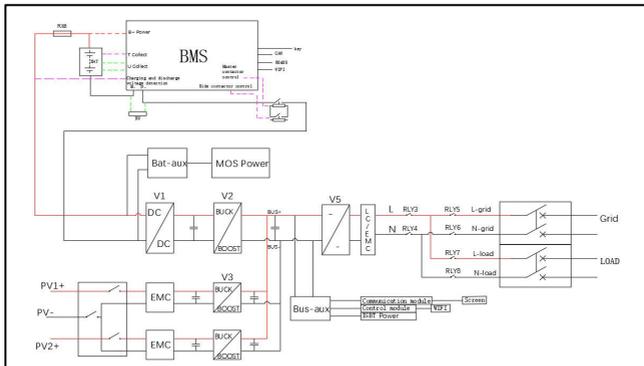


Figure 1-1 Optical storage module topology

Operating mode:

Five working modes: general mode, energy storage mode, microgrid mode, peak-valley mode, AC coupling mode.

Before running the inverter, the client must set in the application: working parameters (grid code, battery type), working mode parameters (working mode, grid-connected power supply, battery SOC lower limit), etc.

Enter the settings page as shown below:

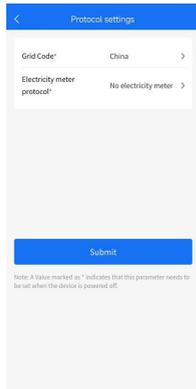


Figure 1-2

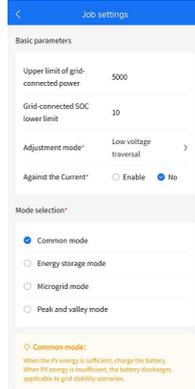


Figure 1-3

Mode 1:Common mode(Default)

Self-use

- 1.When the PV is sufficient, the PV will give priority to supplying power to the load, and then charge the battery, and then the remaining energy can be connected to the grid (Figure1-4).
- 2.When the PV is insufficient, the battery and the grid work together to supply power to the load (Figure1-5).
- 3.The anti-backflow function is disabled by default.

Typical Application Scenarios.

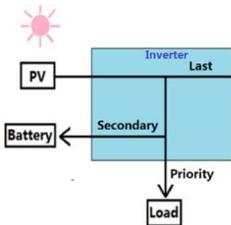


Figure 1-4

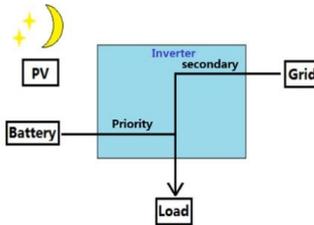


Figure 1-5

Mode 2:Energy storage mode

Battery backup mode

- 1.PV and grid work together to supply battery and load (Figure1-7).
- 2.When the grid is normal, the SOC of the battery is always fully charged.
- 3.Only when the grid is abnormal, the battery will discharge.
- 4.The anti-backflow function is enabled by default.

Typical Application Scenarios.

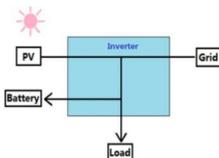


Figure 1-6

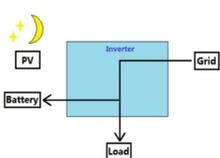


Figure 1-7(Grid abnormality)

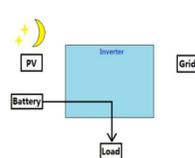


Figure 1-8(Grid abnormality)

Mode 3: The micro-grid mode

Suitable for gridless scenarios

1. PV and battery form a pure off-grid system.
2. If the PV is sufficient, the PV will give priority to supplying power to the load, and the excess energy will charge the battery (Figure 1-9).
3. If the PV is insufficient, the battery powers the load (Figure 1-10).

Typical application scenarios

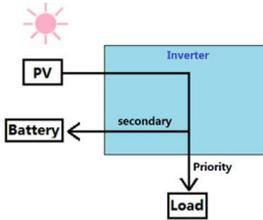


Figure 1-9

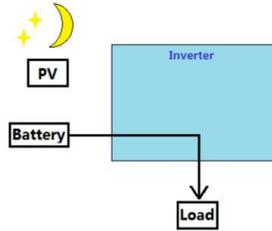


Figure 1-10

Mode 4: Peak Valley pattern

Depending on the price of electricity, the day can be divided into four time periods: tip, peak, flat and valley.

1. during the valley time period, the grid and PV charge the battery;
2. during the flat time period, when the PV is fully charged, the PV can charge the battery;
3. In the peak time period, the battery is discharged.

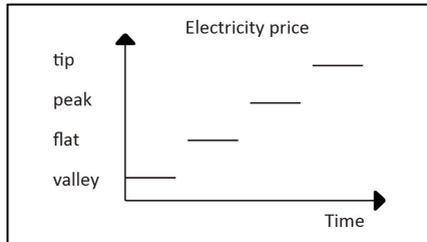


Figure 1-11

Typical application scenario:

1. During the valley period

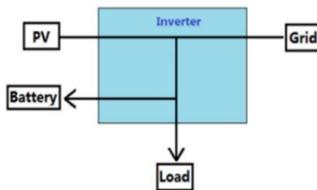


Figure 1-12

2. During the normal period

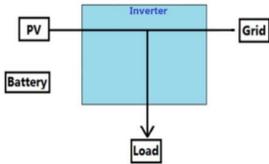


Figure 1-13 PV Insufficient

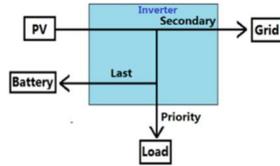


Figure 1-14 PV Sufficient

3. In the tip and peak time period

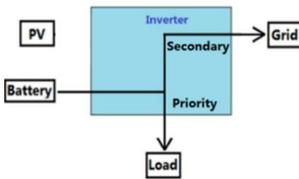


Figure 1-15 (No PV)

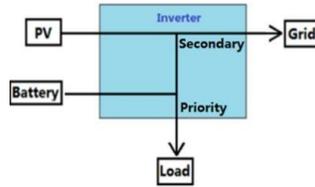


Figure 1-16 (PV)

Mode 5: AC coupling mode

Suitable for applications where PV inverters are already installed.

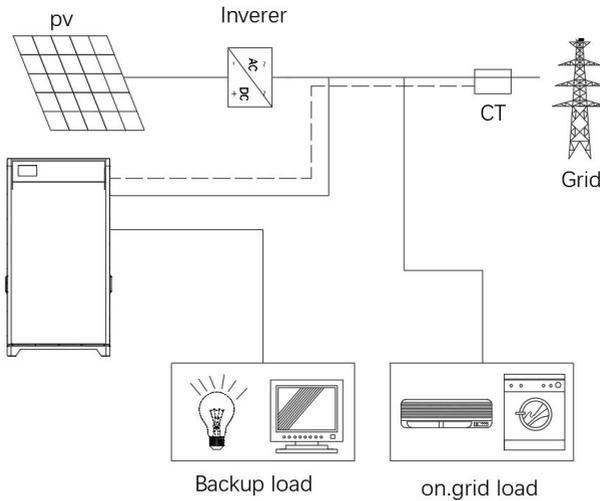


Figure 1-17

2 Installation

This section describes the mechanical installation and electrical connection of the product.

2.1 Safety regulations

High voltage hazards exist inside the product and the following regulations should be observed to ensure personal safety:

Only O&M personnel who have received training on the product and have sufficient knowledge of it are allowed to install this product. During installation, safety precautions in this manual and local safety regulations should be observed;

Not allowed to operate and maintain the product in thunderstorms or relatively humid conditions to avoid electric shock; if the product case needs to be disassembled, ensure that the system is completely under power;

Users if equipped with anti-theft locks, please keep your keys properly.

2.2 Installation Preparation

2.2.1 Unpacking and inspection

Unpacking of the boxes for inspection is allowed only after the arrival of the goods at the installation site. The inspection is done jointly by the representatives of the user and the supplier. Unpacking, take out the packing list, check the packing accessories according to the list.

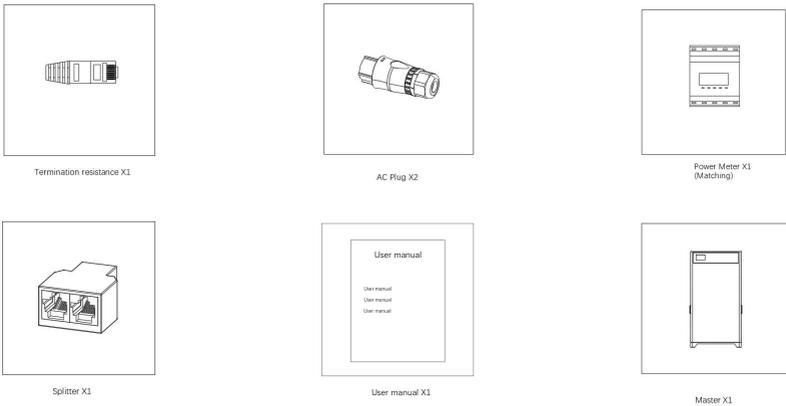


Figure 2-1 Package List

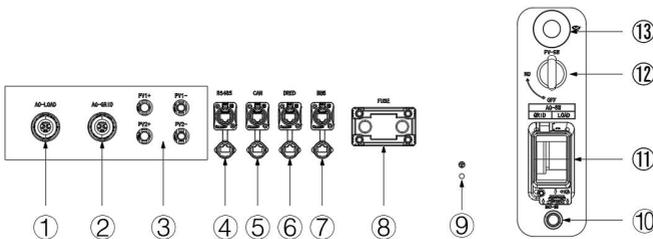


Figure 2-2 Interface definition of optical storage integrated machine

- ① Load side AC connector
- ② Grid side AC connector
- ③ PV Connector
- ④ RS485 communication port
- ⑤ CAN communication port
- ⑥ DRED communication port
- ⑦ BMS communication port
- ⑧ FUSE Box
- ⑨ Grounding screw
- ⑩ Battery switch (indicator)
- ⑪ AC switch box
- ⑫ PV Switch
- ⑬ WIFI Antennas

2.2.2 Cable and air switch models

No.	Cable Name	Recommend model	Cross-sectional area (mm ²)	Cable colour	Cable outer diameter (mm)
1	PV Input	UL1015 12AWG	4 ~ 6	Red, Black	4.00±0.15
2	AC Output	UL1015 10AWG	4 ~ 6	Red, black, yellow-green	4.60±0.20

Figure 2-3 Cable description

Note: The voltage and temperature resistance of the selected cable should be guaranteed to be equal to or better than the recommended cable type, and in accordance with the relevant regulations of the electrical industry.

Installation tools

- 1) screwdriver (cross cutter head: M3, M6; a word cutter head: M3)
- 2) Wire stripping pliers (4-6mm²)
- 3) Crimping pliers 1 (model: H4TC0001; manufacturer: Amphenol)
- 4) multi-meter
- 5) Protective gloves

2.2.3 Installation requirements

- a. Ground installation
 - ✓ ensures that the installation floor is well leveled with a slope of <10°;
 - ✓ ensure that the installation ground is firm and meets the load-bearing requirements for the installation of this product (250kg);
 - ✓ Choose the installation location to avoid rain and direct sunlight.
 - ✓ Allow 300mm space for maintenance and heat dissipation to the left, right and front.

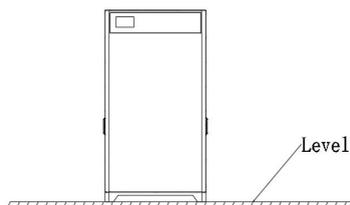


Figure 2.4 Ground level requirement

b. Installation space requirements

Allow 300mm of space for maintenance and heat dissipation to the left, right and front of the product installation.

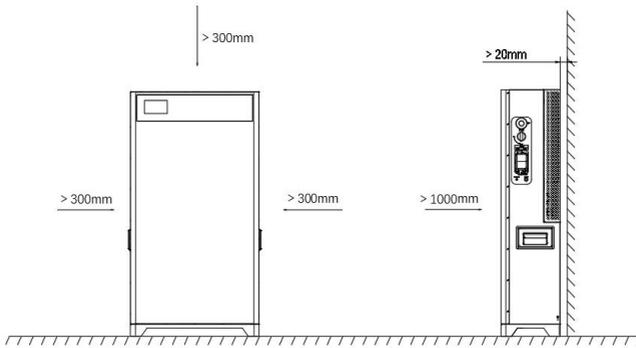


Figure 2-5 Installation distance requirement

2.3 Installation

2.3.1 Installation steps

Step 1: As shown in Figure 2-6, two people with protective gloves should lift the equipment to the wall with power distribution cables, and use a level to measure whether the equipment is level.

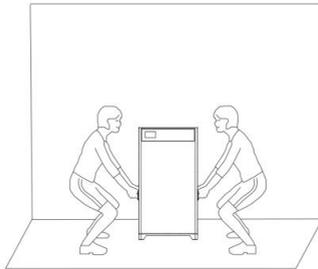


Figure 2-6 Installation Step 1

Step 2: Please connect the external AC cable, internal AC load cable and PV cable from the home distribution box and lead them to the all-in-one outlet cable jacket through the collector tube.

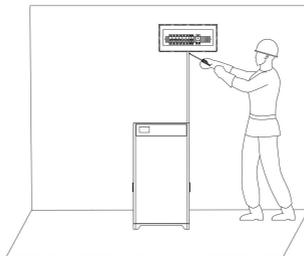


Figure 2-7 Installation Step 2

Step 3: If the home distribution box does not have a ground, you can use the external ground hole to ensure electrical safety!

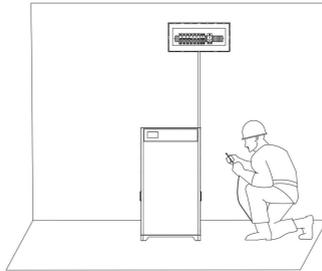


Figure 2-8 Installation Step 3

2.3.2 Electrical connection

Electrical connection block diagram of optical storage module

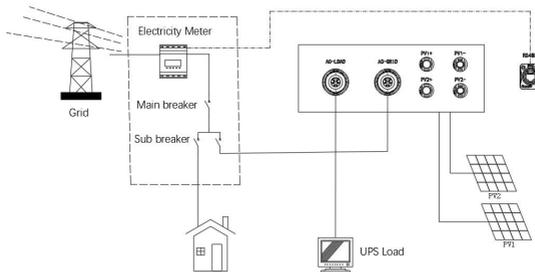


Figure 2-9 Block diagram of the electrical connection of the storage module

Electrical meter wiring diagram:

Australia

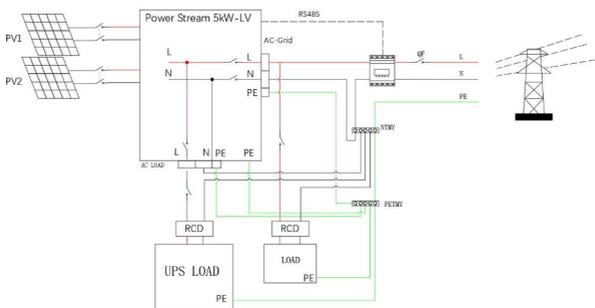


Figure 2-10 Australian Electricity Meter Wiring Diagram

Other countries

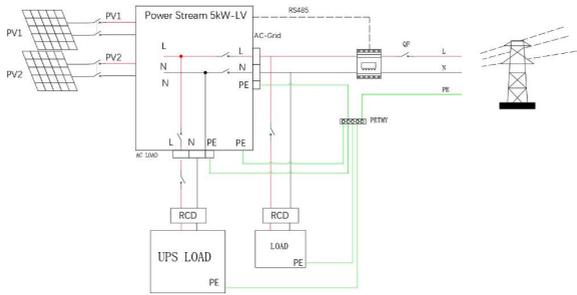


Figure 2-11 Meter wiring diagrams for other countries



Danger

- 1) Place all switches in the off position prior to electrical connection;
- 2) Installation of AC input and DC input cables can be performed by professionals only.

2.3.3 Connecting PV Cables



Note

It is strictly forbidden to connect the positive DC terminal (PV1+, PV2+) and the negative terminal (PV1-, PV2-) reversely and mixed, otherwise it will affect the normal operation of the product, and may even cause serious consequences such as product damage.

The external wiring length of PV side and battery side is recommended to be less than 30m.

PV array positive and negative poles can not be connected to ground

Must ensure that the PV array insulation impedance is greater than 33.3k, if the insulation impedance value is less than this value there is a risk of electric shock.

Step 1: Check and ensure that the PV knob switch is set to the "OFF" position;

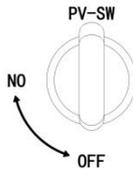


Figure 2-12 The switch on the PV side is turned off

Step 2: Reliably crimp the connectors provided in the accessories to the cable as required;

PV side cable diameter: 4~6 mm² Strip length of cable: 7mm

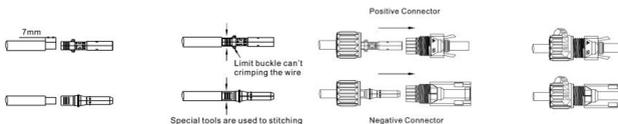


Figure 2-13 Connector (black) and cable installation on the PV side

Step 3: Use a multimeter to measure the PV-side voltage, check for correct polarity, and ensure that the open-circuit voltage does not exceed 580V;



Figure 2-14 PV polarity check

Step 4: Connect the positive and negative terminals to the corresponding connections

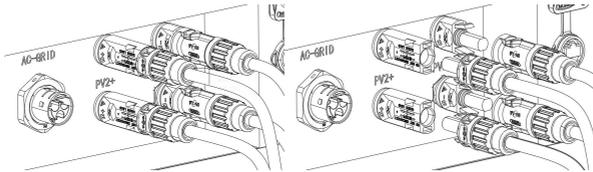


Figure 2-15 PV terminal connection

2.3.4 Connect the AC cable



Note

PE wire should be reliably connected, otherwise it will affect the normal operation of the product, or even cause serious consequences such as product damage; ground the PE ground terminal in the AC connector and the chassis grounding point at the same time;

PV side terminal and battery side terminal, PV input cable and battery input cable should not be connected backwards! Do not reverse the connection between the AC Load connector and AC Grid connector, or between the AC Load cable and AC Grid cable! Otherwise, it will affect the normal operation of the product.

Step 1: The connectors and cables need to be connected reliably as shown below. The connection sequence is L (red), N (black), -PE Cable cross-sectional area 6 mm, stripping length 6 mm

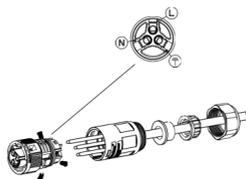


Figure 2-16 AC Connector Wiring

Step 2: Measure the grid voltage with a multi-meter to ensure that the grid voltage is below the high limit voltage required by all national grid standards Step 3: Connect the connectors to the AC load connector and the grid connector, rotate and lock them.

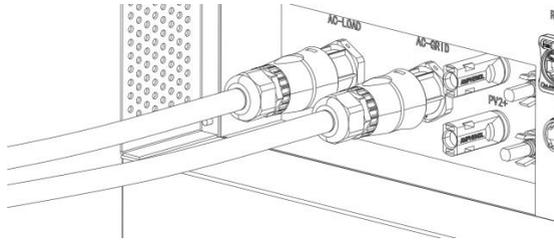


Figure 2-17 AC Connector Installation

Note: Do not reverse the connection of the load-side connector and the grid-side connector.

Step 4: PE Installation

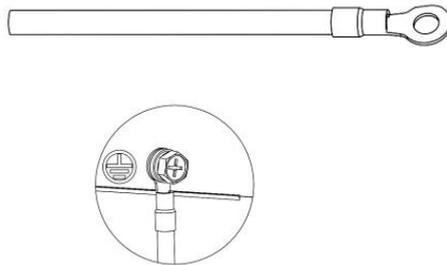


Figure 2-18 Installing PE cable

2.3.5 Connecting communication cables

Step 1: Connect the cable from the "RS485" interface to the meter interface.

Step 2: Install the network cable connector to the corresponding communication interface;

Step 3: Connect the cable from the "RS485" interface to the meter interface;

DRED Meter and battery management system connection:

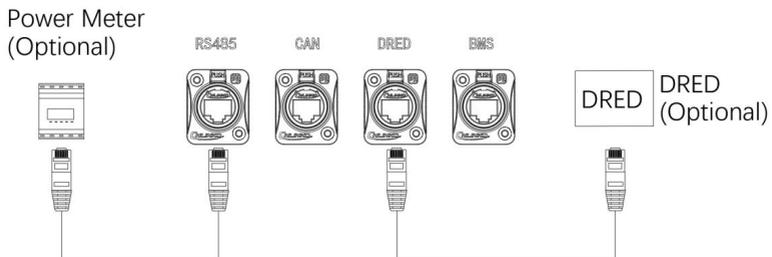
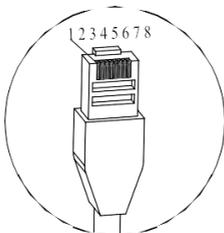


Figure 2-19 BMS/Meter connection

DRED The RJ45 socket pin assignment of the energy meter and the battery management system is as follows:



	DRED	RS485	
PIN	Signal Name	Signal Name	Cable Color
1	DRM 1/5	NC	Orange-white
2	DRM 2/6	NC	Orange
3	DRM 3/7	485B_B	Green-white
4	DRM 4/8	COM	Blue
5	RefGen	COM	Blue-white
6	COM/DRM0	485B_A	Green
7	N/A	485B_B	Brown-white
8	N/A	485B_A	Brown

Figure 2-20 RJ45 Interface Definition

2.4 Installation inspection

After the product is installed, be sure to check it according to the table below!

Table 2-2 Installation Checklist

Inspection items	No.	Inspection content
Install	1	Check that the product is mounted vertically and securely
	2	Check whether all the screws are tightened (especially pay attention to the electrical connection part), whether the flat pads and spring pads are complete, and whether they are installed in reverse.
	3	Check that the reserved distance below the product meets the requirements
	4	Check that accessories are complete and cables are in good condition and not broken

electrical connection	1	Check that the positive and negative terminals of the cable on the PV side are correct.
	2	Confirm that the PV side knob switch is "OFF"
	3	Check that the load-side connector and grid-side connector are correctly positioned
	4	Check that the chassis grounding is reliable
	5	Check all connectors for reliable connection
	6	Check that the cable type specification is correct
	7	Check that all cable connections are reliable
	8	Check whether the color of AC wires is standardized and whether the safety markings are complete
	9	Check that cables are neat and tied in accordance with process specifications

3 Group and parallel system

Notes for grouping and parallelizing:

1) Electric meter

Single machine and parallel machine connect a single-phase meter, group machine connect a three-phase meter, parallel machine or group machine meter communication line must be connected to the host; meter voltage sampling line and current sampling Hall to be correctly connected, otherwise can not be normal operation, single machine and parallel machine support meter self-test function, group machine does not support meter self-test function.

2) Parallel communication cable

Each machine has only one parallel network port, so when more than 2 machines are parallel, the parallel lines should be connected together through the network adapter, and the CAN matching resistor should be connected to the parallel lines through the network adapter, otherwise the CAN cannot communicate normally.

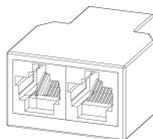


Figure 3-1 Network cable converter



Figure 3-2 CAN matched resistance

3) Grid

3.1 Group system

Machine grid port N line together and connected to the grid N line, the host (A phase) L line, from the machine 1 (B phase) L line, from the machine

2 (C phase) L line corresponding to the ABC phase of the power grid, phase sequence can not be connected to the wrong, in order to prevent the phase sequence connected to the reverse, the first time you turn on the machine, please first connected to the network, the machine will do phase sequence self-test.

3.2 Paralleling

The machine grid port L wires are connected together and to the grid L wire and the machine grid port N wires are connected together and to the grid N wire.

4) Load

4.1 Group system

Machine load port N line is connected together as load N line, master (A phase) L line, slave 1 (B phase) L line, slave 2 (C phase) L line is used as load ABC phase.

The L line of master (A phase), L line of slave 1 (B phase) and L line of slave 2 (C phase) are used as load ABC phase, and the phase sequence cannot be connected wrongly.

4.2 Paralleling

Machine load port L lines are connected together as load L lines, and machine load port N lines are connected together as load N lines.

5) PV

PV connection and stand-alone the same, one-to-one to the PV port, Note: It is strictly prohibited to connect a PV to the multiple PV inputs of the optical storage machine at the same time, violation of this operation will cause irreversible consequences!

The following diagrams are all wiring diagrams stand-alone

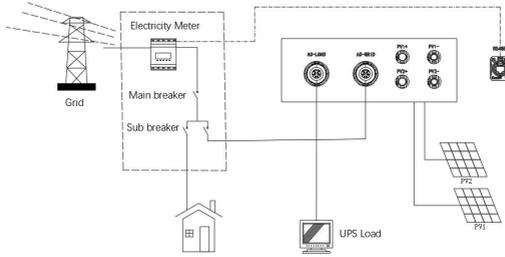


Figure 3-3

3.1 Group system

The grouping currently supports only 3 units to form the ABC three-phase, and strictly follows the ABC three-phase of master, slave 1 and slave 2!

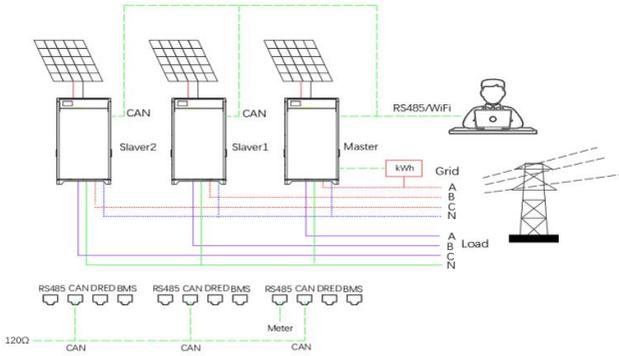


Figure 3-4

3.2 Paralleling

Parallel connection mode is the same, currently supports maximum of 4 units parallel connection.

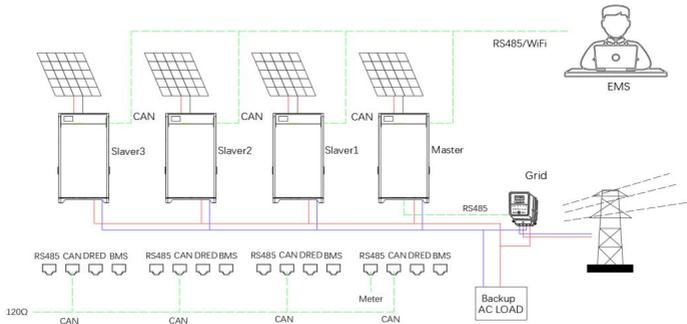


Figure 3-5

Start setting after all devices are connected

1. Setting (power on only once, power off to save) through the cell phone app one-to-one single machine settings

Set the "group parallel flag" to "group";

Master address: 1 (phase A) Slave address: 2 (phase B), 3 (phase C) Parallel Single parallel flag" is set to "parallel";

Master address: 1 Slave address: 2~4

Single machine: "Single parallel flag" is set to "Single machine", and the address is not set;

4 System debugging

This chapter introduces the commissioning work to be carried out after the installation of the PV energy storage system is completed; during the commissioning process, the corresponding safety regulations must be observed.



Danger

- When commissioning, please contact operation and maintenance personnel to complete the system commissioning work;
- Please remove rings, watches and other metal objects that may cause short circuit;
- In the operation process, pay attention to the high voltage hazard to avoid generating personal injury and property damage
- The system must be well grounded, and the installation must be checked before commissioning.

4.1 Pre-commissioning check

Table 4-1 Pre commissioning checklist

Inspection sequence	Inspection content	Inspection Standard	Note
1	Check that the DC circuit breaker is off	Switch off	PV, BAT
2	Check PV rotary switch is disconnected	Switch off	PV
3	Use a multi-meter to measure the PV voltage at the PV switch to ensure that the voltage is not more than 600V;		
4	Check to ensure that the air switch at the AC terminal is disconnected	Switch off	Grid, Load
5	Check to make sure the grid/load are normal	Normal	Grid, Load

4.2 Switching on and off

Step 1: Close the PV knob switch, PV input switch (optional), BAT input switch, AC side switch and load side switch;

Step 2: Open the "Smart Energy PLAT" APP, connect the product WiFi, and check whether there are abnormal alarms in the alarm interface;

Step 3: If there is no abnormal alarm, select the country and battery type in the working parameter setting interface, among which it is recommended to set the upper limit of grid-connected power "5000W" and the lower limit of grid-connected SOC "20%" and click "Set". Click "Set";

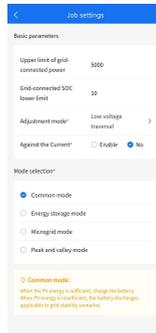


Figure 4-1

Step 4: click on the power on, return to the home page, if the system active power is normal, it means the power on is successful; ;

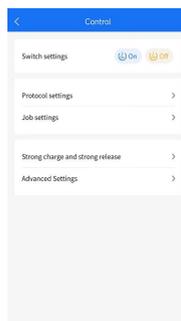


Figure 4-2

Step 5: Check the battery parameters, PV input and other information, run for about 5-10 minutes, you can check the PV voltage and current information in the home page;

If there is no need to continue running, you can click the "On/Off Setting Button" in the setup interface to put the system on standby;

5 Product maintenance

This chapter introduces the routine maintenance and troubleshooting of the product.



Danger

- 1) safety regulations must be observed when maintaining the product;
- 2) The operation must be performed by trained professionals with electrical knowledge.
- 3) When performing maintenance such as system cleaning, electrical connection, grounding reliability, etc., perform the system power down operation power down procedure:
 - a. Operate APP and execute shutdown command refer to 4.1.2
 - b. Disconnect the following switches in order
 - ① PV side switch.
 - ② Battery side switch.
 - ③ PV side switch of the optical storage module itself.
 - ④ AC side switch
 - ⑤ Load side switch.

5.1 Routine maintenance

Table 5-1

Inspection content	Inspection method	Maintenance period
System cleaning	Regularly check whether the radiator is covered and dirty	Once every six months to one year
System operation status	1.Observe whether the inverter appearance is damaged or deformed. 2.Listen for abnormal sounds during the running of the inverter. 3.When the inverter is running, check whether all parameters of the inverter are set correctly.	Once every six months
Electrical connection	1.Check whether the cable connection is loose. 2.Check whether the cable is damaged, especially the cable. 3.Any signs of cuts on the epidermis in contact with the metal surface. 4.Check whether the waterproof cover of the unused DC input terminal and GPRS interface is locked.	Half a year after the first commissioning, and then once every half a year to a year.
Grounding reliability	Check whether the ground cable is grounded reliably.	Half a year after the first commissioning, and then once every half a year to a year.

5.2 Troubleshooting

Table 5-2 Troubleshooting

Fault name	Possible Fault Causes	Processing Method
PV Over voltage	The PV voltage is higher than the maximum DC voltage limit	Check PV configuration and reduce PV open circuit voltage.
PV Under voltage	PV voltage below minimum DC voltage limit	Check PV configuration and increase PV open circuit voltage.
Battery over voltage	The battery voltage is higher than the maximum DC voltage limit	Check the energy storage battery configuration and reduce the output voltage of the energy storage battery pack
Battery under voltage	The battery voltage is below the minimum DC voltage limit	Check the energy storage battery configuration and increase the output voltage of the energy storage battery pack.
BMS communication abnormality	Communication failure between battery and optical storage module	Check whether the connection with the battery BMS is normal
Abnormal WIFI communication	Communication failure between APP and WIFI	Restart or check WIFI antenna
High grid voltage	The grid voltage is higher than the upper limit of the allowable grid voltage range	Check the power grid, and restart after the grid voltage is restored to the allowable range
Low grid voltage	The grid voltage is lower than the lower limit of the allowable grid voltage range	Check the power grid, and restart after the grid voltage is restored to the allowable range
High grid frequency	The grid frequency is higher than the upper limit of the allowable grid frequency range	Check the power grid, and the power grid can be operated again after the frequency is restored to the allowable range.
Low grid frequency	The grid frequency is lower than the lower limit of the allowable grid frequency range	Check the power grid, and the power grid can be operated again after the frequency is restored to the allowable range.
Abnormal phase sequence of power grid	1.Wiring phase sequence error; 2.Abnormal power grid voltage phase.	1.Check the wiring phase sequence; 2.Check the power grid and restart after the phase sequence is normal.
Reverse connection of battery	The positive and negative electrodes of the battery are inversely connected.	Check the wiring and run again after it is normal
Environmental over temperature	The internal temperature is higher than the allowable value	Check whether the product installation location is covered by foreign matters or whether the ambient temperature of the product installation location exceeds the upper limit of the product operating temperature.

6 Technical Parameter

Table 6-1 Technical parameter

Technical indicators	Parameter
PV Input (DC)	
Maximum photovoltaic power (W)	6000
Maximum DC voltage (V)	580
Rated DC working voltage (V)	360
Maximum input current (A)	12.5/12.5
Maximum short-circuit current (A)	15/15
MPPT Voltage range (V)	125-550
Number of MPPT routes	2
Maximum reflected current (A)	0
Battery	
Battery Type	LFP
Input and output at AC side	
Rated AC power (VA)	5000 (*)
Rated grid voltage (V)	220/230Va.c.
Electrical connection	1/N/PE
Rated grid frequency (Hz)	50/60
Rated AC current (A)	21.7
Maximum AC current (A)	22.8
Power factor	0.8 ahead~0.8 behind
Total harmonic distortion THD (rated power)	<3%
Parallel operation	NO
Load side output (connected to battery)	
Rated AC power (VA)	4600
Rated grid voltage (V)	220/230Va.c.
Electrical connection	1/N/PE
Rated frequency (Hz)	50/60
Rated AC current (A)	21.7
Maximum AC current (A)	22.8
Peak power (W) continuous @ Ta=25 ° C (grid connected)	Over Load 5 kw (30min) 、 6kw(5min)
UPS switching time (S)	<0.5

Total harmonic distortion THD (linear load)	< 3%
Parallel operation	NO
Efficiency	
MPPT Efficiency (%)	99.9
Euro efficiency (%)	97
Maximum efficiency (%)	97.8
Battery charging/discharging efficiency (%)	97.6/96
Power Dissipation	
standby power (W)	< 25
Standard	
Safety	DC II ; AC III
EMC	Natural cooling
Authentication	No transformer
Operating environment	
IP Level (IP)	IP 65
Protection class	class I
Charging operating temperature range	0°C~+45°C
Discharge operating temperature range	-10°C~+55°C
Altitude (M)	< 2000
Storage temperature (°C)	-10 ~ +35°C
Noise (dB)	< 30
Over voltage level	DC II ; AC III
General parameters	
Cooling Type	Natural cooling
Isolation type	No transformer
Communication Mode	WIFI, RS485



First-class power battery system supplier
First-class supplier of energy storage and microgrid

CF Energy Co., Ltd.

Company Address:

Intelligent Manufacturing Base , Xianyang , Shaanxi , PRC .

Tel: (+86) 029-38367888

Web: www.cfess.cn

E-mail: cfenergy@cfess.cn