



# CFE-5100

## Residential ESS Manual

### About CFE-5100 ESS

CFE-5100 can be installed in Parallel or in Series, more attention should be paid to the DIP and Address selection following with part 5.3.2.

### About this Manual

The Manual is intended for the CFE-5100 Residential ESS. The hybrid inverter and any other equipment are not included.

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# 1 Safety Instructions

## 1.1 Important Safety Instructions

This Manual contains important instructions for:








### **CFE-5100 Residential ESS product (“Product”)**

This Manual must be followed when installing and using this Product.

The Product is designed and tested in accordance with international safety requirements IEC 60364, but as with all electrical and electronic equipment, certain precautions must be observed when installing and/or operating the Product. To reduce the risk of personal injury and ensure the safe installation and operation of the Product, you must carefully read and follow all instructions, cautions, and warnings in this Manual.

## 1.2 Warnings in the Document

A warning describes a hazard to equipment or personnel. It calls attention to a procedure or practice, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the CFE equipment and/or other equipment connected to the CFE equipment or personal injury.

Symbol	Description
	Caution, risk of electric shock
	Heavy enough, may cause severe injury
	Avoid the open flame or ignition sources
	Keep the Product away from children
	Do not dispose of the Product with household waste
	Recyclable
	Read this Manual before installation and operation

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

If the batteries are not used for more than 8 months from the production date, they shall be charged once. The failure caused by the overdue failure to perform the standard operation is not within the scope of a warranty.

### 1.3 Battery Handling Guide

Use the battery pack only as directed.

### 1.4 Emergency Situations

The Product is designed with multiple safety strategies to prevent hazards resulting from failures. However, CFE cannot guarantee their absolute safety in uncertain situations.

#### 1.4.1 Leaking Battery

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

**Inhalation:** Evacuate the contaminated area, and seek medical attention immediately.

**Eye contact:** Rinse eyes with flowing water for 15 minutes, and seek medical attention immediately.

**Skin contact:** Wash the affected area thoroughly with soap and water, and seek medical attention immediately.

**Ingestion:** Induce vomiting as soon as possible, and seek medical attention immediately.

#### 1.4.2 Fire

In case of a fire, make sure that an ABC or carbon dioxide extinguisher is nearby and does not use water to extinguish the fire.

### WARNING

The battery pack may catch fire when heated above 130°C.

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

- 1) Extinguish the fire before the battery catches fire.
- 2) If the battery has caught fire, do not try to extinguish the fire.

Evacuate people immediately.

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

### 1.4.3 Wet Battery

If the battery is wet or submerged in water, do not try to access it. Contact the CFE customer careline or your distributor for technical assistance.

### 1.4.4 Damaged Battery

If the battery is damaged, please contact the CFE customer careline or your distributor for help as soon as possible, because a damaged battery is dangerous and must be handled with extreme caution. Damaged battery is not suitable for use and may pose a danger to people or property. If the battery seems to be damaged, return it to CFE or your distributor.

## CAUTION

Damaged battery might export electrolyte or flammable gas, so contact CFE for advice and information immediately. They will deal with it within 48h.

### 1.5 Installers

The Product is suggested to be installed by a skilled worker or an electrician. A skilled worker is defined as a person who is a trained and qualified electrician or possesses all of the following skills and experience:

- ✓ Knowledge of the functional principles and operation of on-grid Energy Storage 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.

### 1.6 Scrap Battery

For the scrap batteries, please dispose according to local laws or regulations on recycling.

## 1.7 Customer Careline

Use the contact below for technical assistance. This phone number is available only during business hours on weekdays ( CET ).

Customer careline	+86 400 996 8377
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## 2 Product Introduction

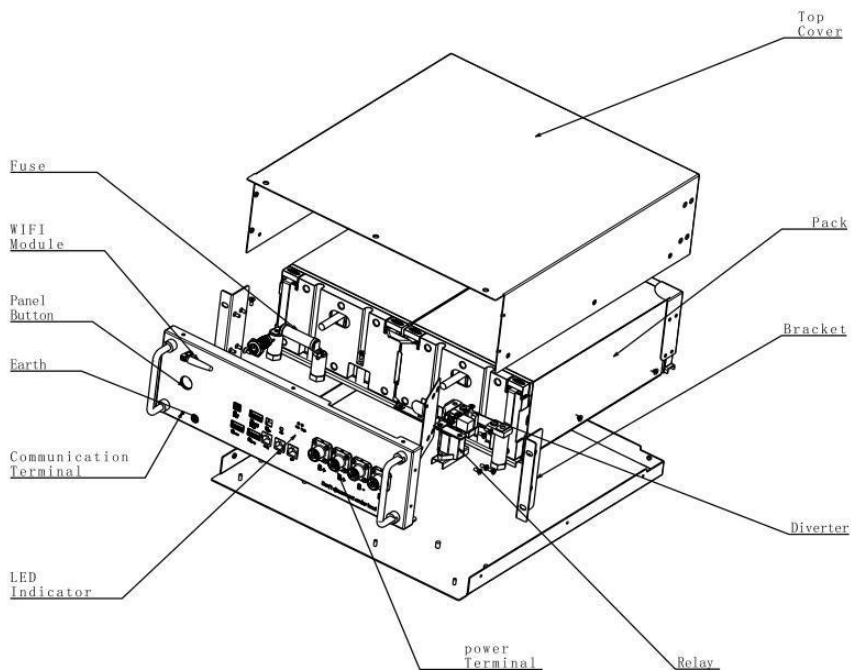
### 2.1 Technical Data

<b>Model</b>	<b>CFE-5100</b>
Total Energy*	5.1kWh
Battery Capacity (Ah)	100 Ah
Nominal Charge/Discharge Power	3 kW
Voltage	42-56 Vdc
Recommended C Rate	0.6 C
Nominal Voltage	51.2 Vdc
Nominal Current	60 A
Max. Charge Voltage	56 Vdc
Recommended DOD	90%
Operating Condition	Indoor
Operating Temperature (Charge)	0~45 °C
Operating Temperature (Discharge)	-10~55 °C
Dimensions (mm)	442*500*133
Weight	42 Kg
Relative Humidity (R H)	20~60% (No condensed water)
Cooling Type	Ambient cooling
Case Material	Metal
Color	Black
Installation	Cabinet, Wall Mounting, Ground Installation
Enclosure	IP20
Protective Class	I
Max. Number of Parallel	8
Wi-Fi Frequency Range	2400MHz - 2483MHz
Max. Transmission Power	< 20dBm
Warranty	10 Years or 6000 cycles
Communication	CAN/RS485
Protection Mode	Triple Hardware Protection

Battery Protection	Over-Current/Over-Voltage/Short Circuit/ Under-Voltage/Over-Temperature
Safety Certificate	CE & TUV (IEC 62619, IEC 62040) UL1973
Hazard Class of Dangerous Goods	9
Transportation	UN38.3

- ✧ Testing Conditions Based on Temperature 25°C at the Beginning of Life.
- ✧ Total Energy/Usable Energy Measured under Specific Conditions of CFE 0.2C CC/CV.

## 2.2 Exploded View of the Product



## 2.3 Indicators and Ports

There are two LED indicators on the front of the battery to show its operating status.

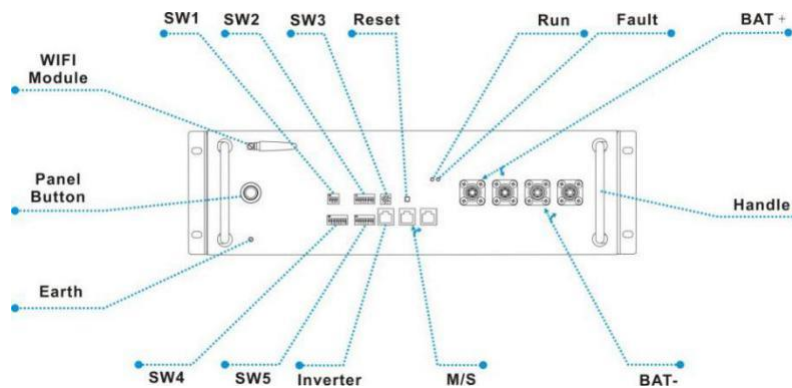
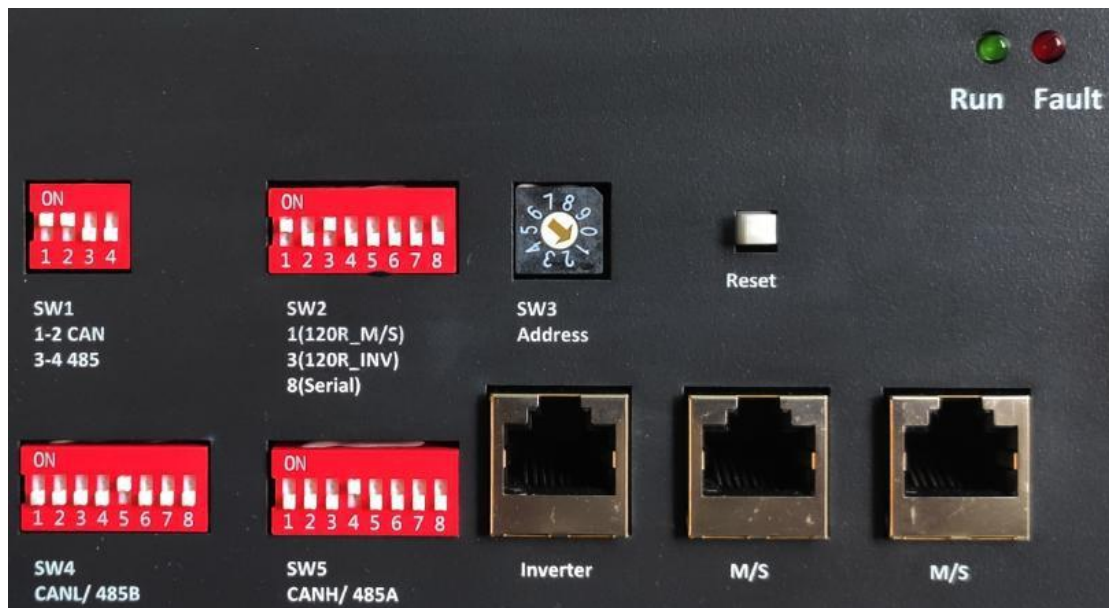


Table 2-1 Designations on the battery



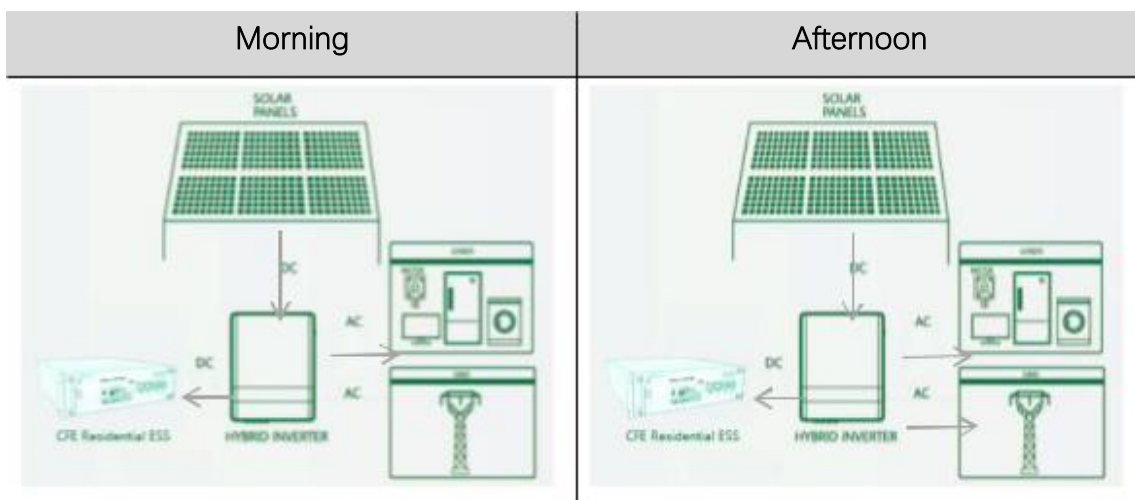
Item	Designation	Definition
1	Run	Battery is working normally, without faults
2	Fault	Battery is in a warning state, see <b>Troubleshooting</b> in <b>Chapter 8</b>

## 2.4 Communication Interface Panel



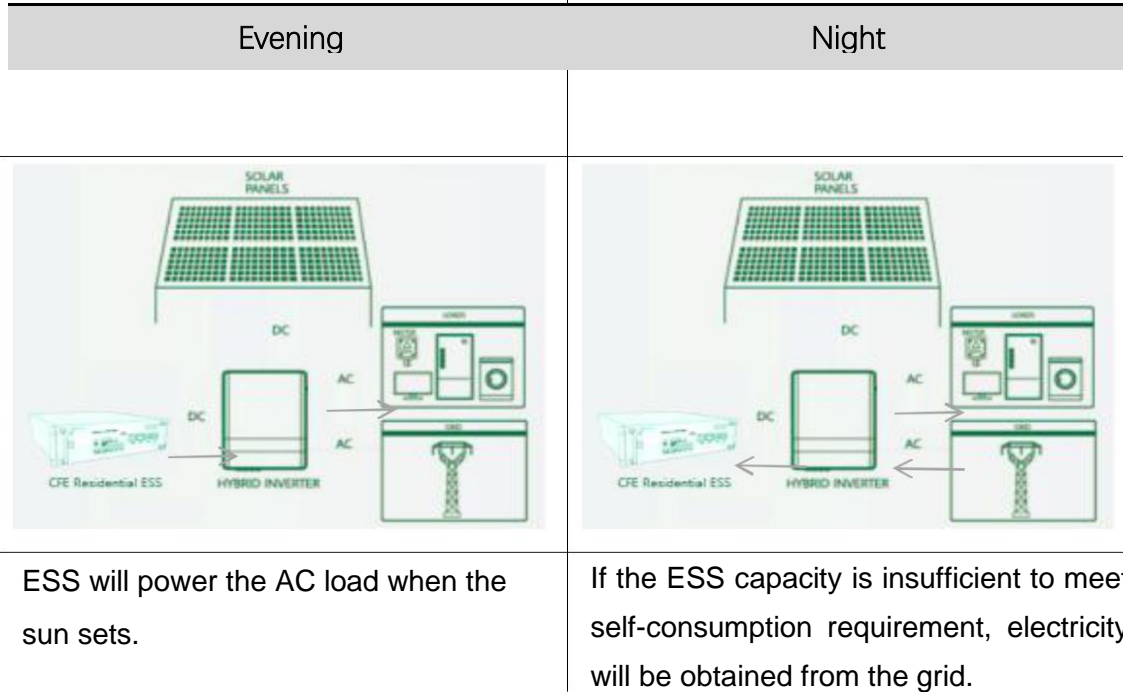
SW1	DIP switch selection for CAN or RS485
SW2	Resistance for communication and DIP switch for parallel connection
SW3	Switch for battery's Address select
SW4 & SW5	Communication interface for battery or master battery with Inverter
Reset	Reset for the Wi-Fi configuration

## 2.5 How it Works



Optimized self-consumption will be achieved. ESS is used to store the excess energy produced by PV system.

Extra energy will be fed into the grid when ESS is fully charged, and the system has already met its self-consumption requirement.



## 2.6 Feature

The Product has the following features:

- ✓ **Energy storage unit:** This battery is suitable for PV solar system compatibility.
- ✓ **Battery management system (BMS):** The battery's built-in BMS monitors and prevents the battery from running outside of the design limitations. See **Troubleshooting on Chapter 8**.
- ✓ **Monitor:** The battery's BMS is built-in with a Wi-Fi module, and the battery running information could be seeing in mobile phone.
- ✓ **Easy firmware update:** The BMS firmware can be updated to the latest version. See **Chapter 9 Firmware Update**.
- ✓ **Expandability:** The battery capacity can be increased by adding another battery. See **Part 5.4 Cable Connections**.

## 3 Guidance for Disconnection of Batteries during Shipment

- 1) Cartons that have been crushed, punctured, or torn in such a way that contents are revealed, shall be set aside in an isolated area and inspected by a skilled person, promptly collected, segregated, and either the consignor or consignee contacted.

- 2) The DC circuit of the Product has to be disconnected before outgoing.
- 3) A precautionary label has been affixed to the shipping carton to alert individuals as to the battery within the package has been disconnected; otherwise, the battery should not be transported.
- 4) We have conducted comprehensive tests to ensure the equipment they distribute around the world is safe for shipping transport. These products shall be handled with care and immediately inspected if visibly damaged. If the carton is visibly damaged, please contact the CFE customer careline to confirm whether the battery could be used safely or not.



## 4 Installation Prerequisites

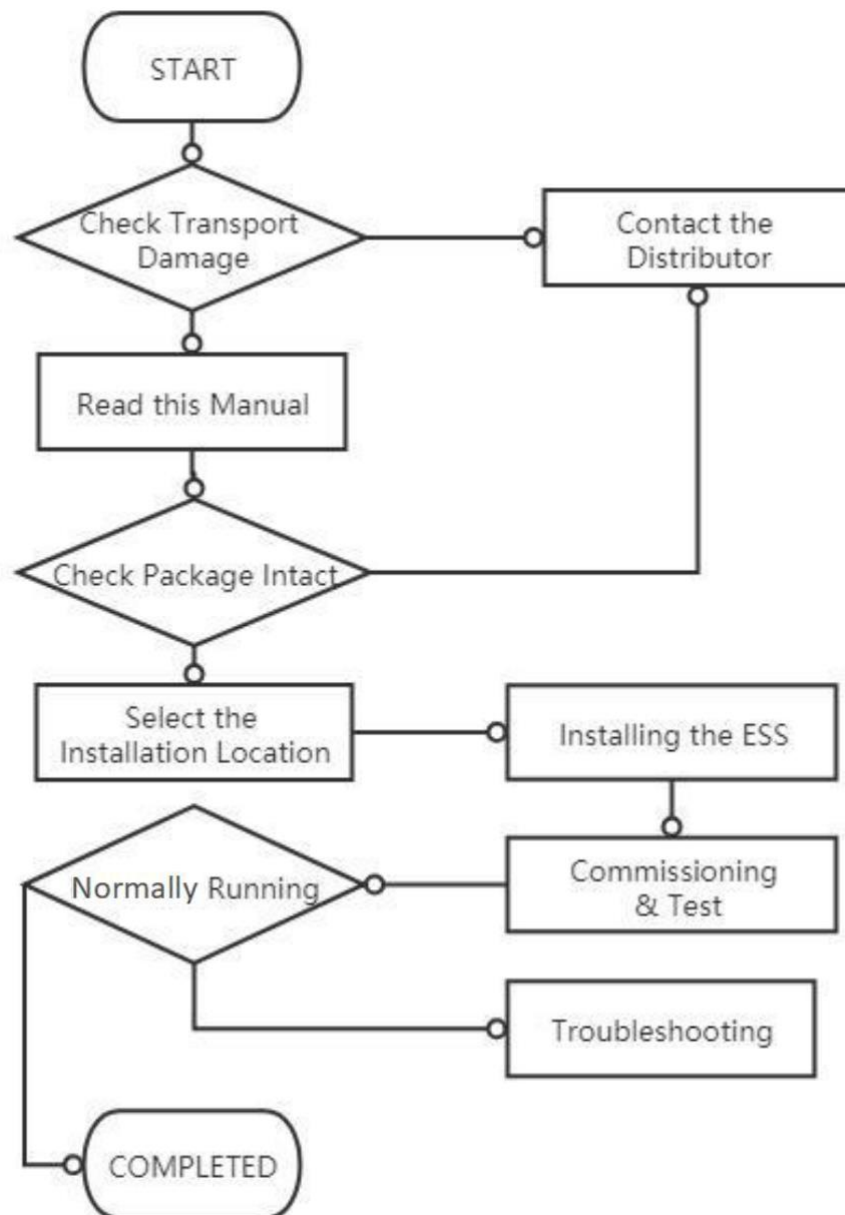
### 4.1 Installation Location

Make sure that the installation location meets the following conditions:

- ✓ Building designed to withstand earthquakes.
- ✓ At distance from the sea to avoid salt water and humidity.
- ✓ Flat and level floor or service.
- ✓ No flammable or explosive materials nearby.
- ✓ Optimal ambient temperature between 15°C and 30°C.
- ✓ Temperature and humidity at a constant level.
- ✓ Minimal dust and dirt in the area.
- ✓ No corrosive gases present, including ammonia and acid vapor.
- ✓ The Product is rated at IP20, so the battery could be installed indoors.
- If the ambient temperature is outside the operating range, battery will protect itself by shutting down. The Product's optimal operating temperature is 15°C to 30°C. Frequent exposure to severe operating conditions would adversely affect the performance and lifetime of the battery.

## 4.2 Installation Process

The Product should be installed according to the following flow chart.



## 4.3 Installation Materials

Following installation materials should be prepared by installers:

- ✓ Power cable
- ✓ Communication cable
- ✓ Ground wire

Bipolar external isolator, when two or more battery systems are in parallel, each of them shall have a bipolar isolator.



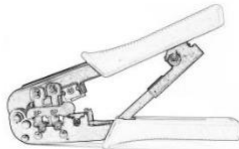
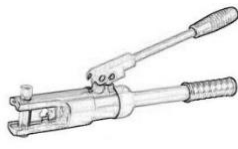




## NOTICE

Make sure that the cross-sectional area of charging cables is 25 to 35 mm<sup>2</sup>.

A breaker between the Product and inverter is recommended to install, and the breaker's min. current should be over 150A or following with local regulations.

### 4.4 Tools


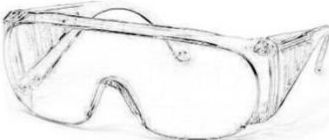

To install the battery pack, the following tools are probably required:

			
Phillips screwdriver	Torque wrench	Cable crimper	Wire clamp
			
Voltmeter	Tape measure	Drill	Flat-head screwdriver

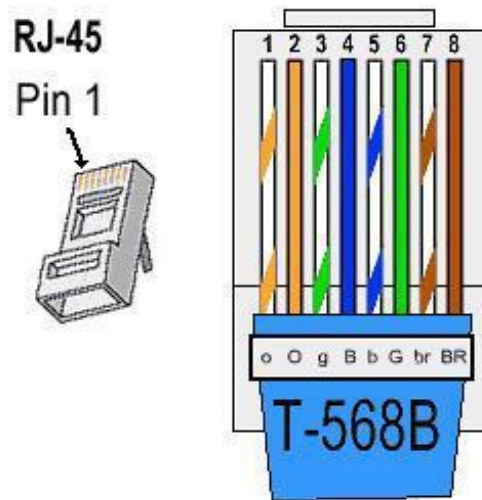
In order to protect operator and installer's safety, please select and use suitable tools and measuring instruments that are properly certified.

### 4.5 Safety instruments

When dealing with the Product, the following safety gears should be equipped. Installers must meet the relevant requirements of IEC 60364 or the domestic legislation and other relevant international standards.

		
Insulated glove	Safety goggles	Safety shoes

## 4.6 Communication Cable



If needed, the network cable should be made like the diagram shown above. But the network cable between the battery and Inverter should be made following the definition of Inverter. If available, use a LAN cable tester to check whether the cable is faulty.

## 4.7 Storage

If the battery is not to be installed immediately, or removed from operation and needs to be stored for a long period, please choose an appropriate location to store it. Instructions for storage are:

- ✓ Do not stack more than 8 battery boxes.
- ✓ The temperature of the battery stored recommended in the range of  $-20^{\circ}\text{C}$  to  $25^{\circ}\text{C}$ .
- ✓ Do not expose to water

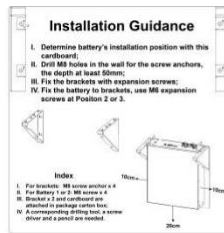
The ESS box should be upright and not stacked upside down when storing the ESS box.

If the ESS needs to be stored for over 3 months, the DC circuit of the battery should be disconnected. Otherwise, the battery would discharge at a minimum rate and capacity degrades depending on storage time, the battery self-consumption less than 5w. And, if the battery is stored for over 6 months, it is suggested to connect the battery with the inverter and commission the system.

## 5 Battery Installation

### 5.1 Package Items

These items are included in the package:



Battery\*1

Cardboard\*1

User Manual

## 5.2 Checks before Installation

There are a few things to check before installing the battery to ensure that it has no defects.

Check item 1: Check the Product's Voltage.

### WARNING



If this checking process is executed for any reason after the battery is fully installed, make sure that the inverter is turned off or break the connection between battery and inverter while checking the battery.

Press and hold the panel button for about 4s and then release it after the two LED lights on, measure the voltage at the terminal interface with a voltmeter. If the voltage is lower than 48 V, do not use the battery and contact the CFE customer careline or your distributor.

## 5.3 Installation of the Battery

### NOTICE



The symbol located on the front of the Product means the earth wire must be installed.

Apply silica gel or paint around the ground terminal after the ground cable is connected.

### 5.3.1 Connect with 51.2Vdc Inverter

To prevent the battery from moving, make sure the battery is fixed to a wall.

#### NOTICE

If the battery is installed above the floor or on a platform, make sure that the wall or platform is capable of supporting the battery's weight.

#### 5.3.1.1 Wall Mounting

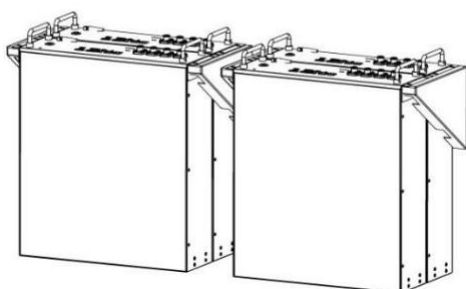


1. Use the Positioning cardboard to determine the bracket mounting place.

2. Drill holes in the wall for the M8 expansion screw anchors, which depth should be at least 50 mm. Tighten the screws to a torque around 2.5 N·m.

3. Fasten the battery to bracket fasten hole with M6 screws with 2.0N · m roughly.

4. Meanwhile, two or four batteries could be installed by these brackets.



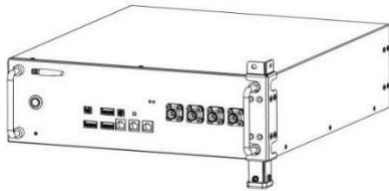
Note: if more than 4 batteries are installed, a cabinet is recommended to be selected for the battery's stable.



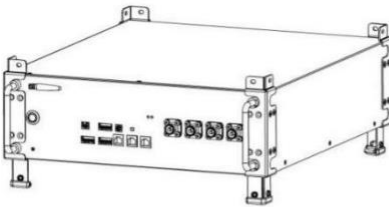
The installed location shall be restricted access or installed in a cabinet which provides a guard from pets and children.

### 5.3.1.2 Ground Installation

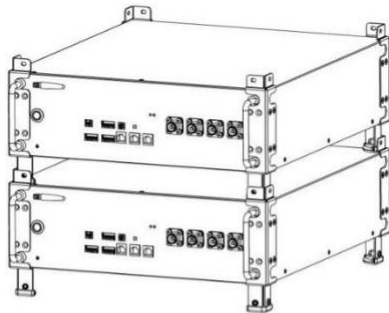
Meanwhile, CFE-5100 battery also could be installed on the floor, the installation steps are following:



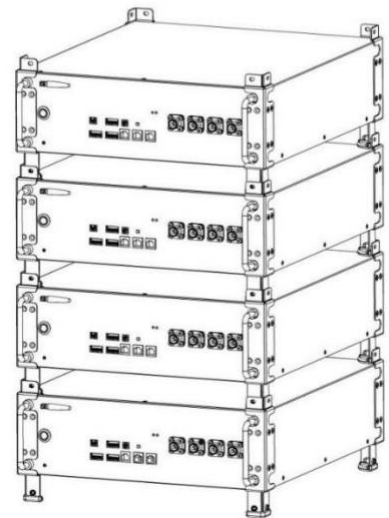
1. Fix the holders to the battery's mounting holes one by one.



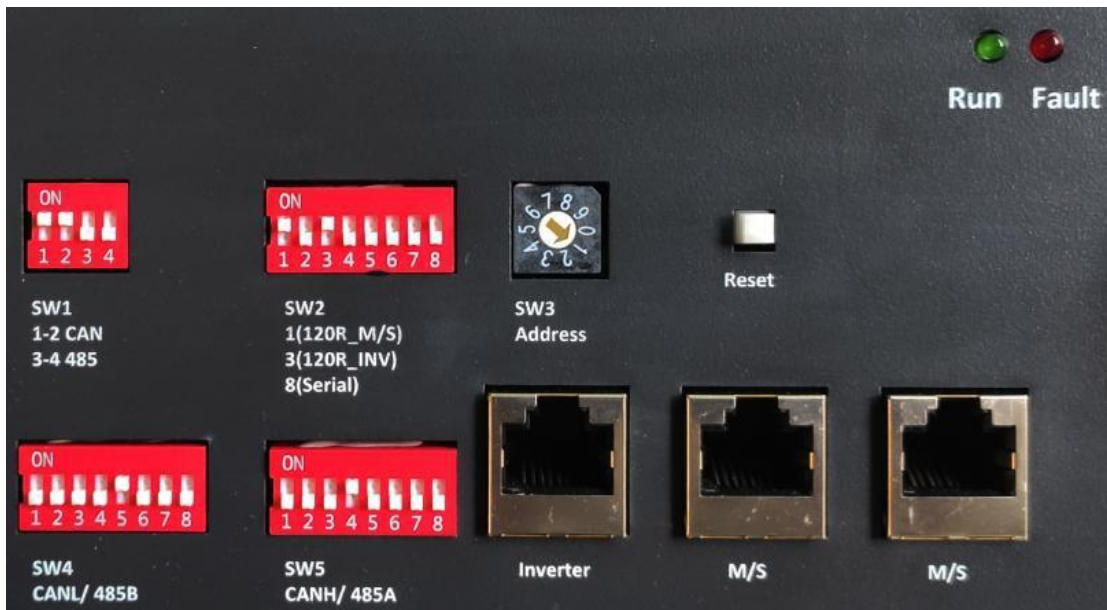
2. If more power and energy are needed, 2 to 4 batteries could be installed in one stack.



3. If the number of batteries at the range of 5 to 8, a cabinet is recommended to be selected.



### 5.3.2 Address selection of Master and Slave Battery (Batteries) Connection


































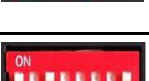


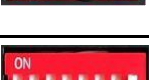






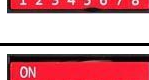






For Series connection, please make sure the SW2 DIP switch of selected as this type.

#### WARNING

Please make sure the SW2 DIP switch is selected correctly. If the battery is connected in Parallel mode, but the selection of SW2 DIP8 is done at the ON position, it might lead to a serious or even dangerous fault. Meanwhile, if the battery is connected in Series mode, the selection of SW2 DIP8 at the OFF status might also occur serious or even dangerous fault.

Connected battery number	Group	Set of SW2		Address Set (SW3)
		Series connect	Parallel connect	
1	—	13	13	1
2	Master	138	13	2
	Slave	18	1	1
3	Master	138	13	3

	Slave 1	 8	 0	 1
	Slave 2	 18	 1	 2
4	Master	 138	 13	 4
	Slave 1	 8	 0	 1
	Slave 2	 8	 0	 2
	Slave 3	 18	 1	 3
5	Master	 138	 13	 5
	Slave 1	 8	 0	 1
	Slave 2	 8	 0	 2
	Slave 3	 8	 0	 3
	Slave 4	 18	 1	 4
6	Master	 138	 13	 6
	Slave 1	 8	 0	 1
	Slave 2	 8	 0	 2
	Slave 3	 8	 0	 3
	Slave 4	 8	 0	 4

	Slave 5	18	1	5
7	Master	138	13	7
	Slave 1	8	0	1
	Slave 2	8	0	2
	Slave 3	8	0	3
	Slave 4	8	0	4
	Slave 5	8	0	5
	Slave 6	18	1	6
	8	Master	138	13
Slave 1		8	0	1
Slave 2		8	0	2
Slave 3		8	0	3
Slave 4		8	0	4
Slave 5		8	0	5
Slave 6		8	0	6
Slave 7		18	1	7

## 5.4 Cable Connections

### WARNING

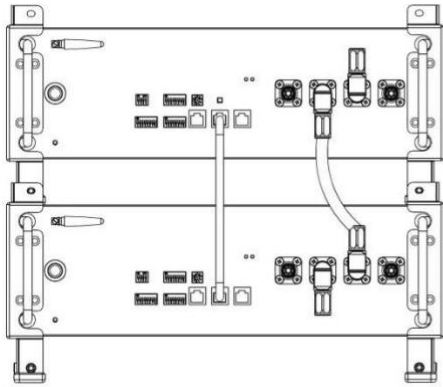
Before connecting the battery with the inverter, please make sure that no other inverter is connected and turned off.

### 5.4.1 Cable Connection for Series Connection

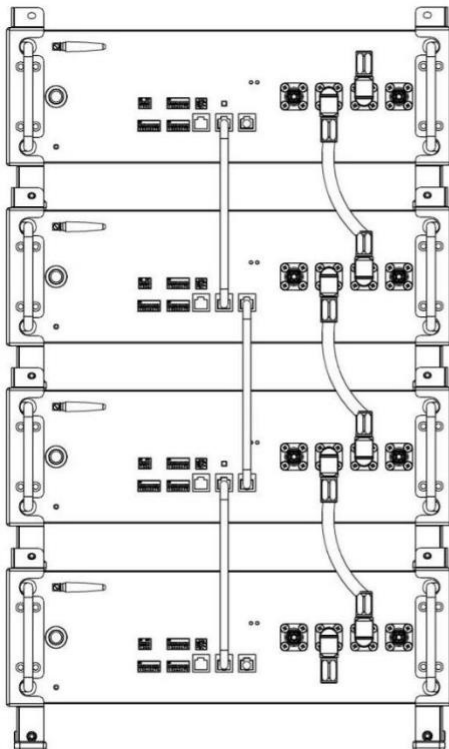
#### NOTICE

The voltage difference of each battery in series connection should be less than 100mV.

#### 5.4.1.1 Ground Installation

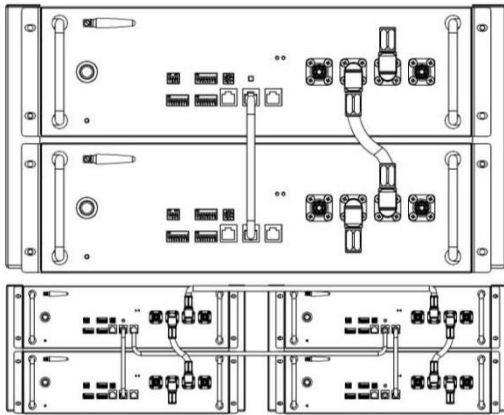


Connect a Communication cable to the M/S communication terminal interface one by one directly.



If more than 4 batteries are installed, a cabinet is recommended.

### 5.4.1.2 Wall Mounting



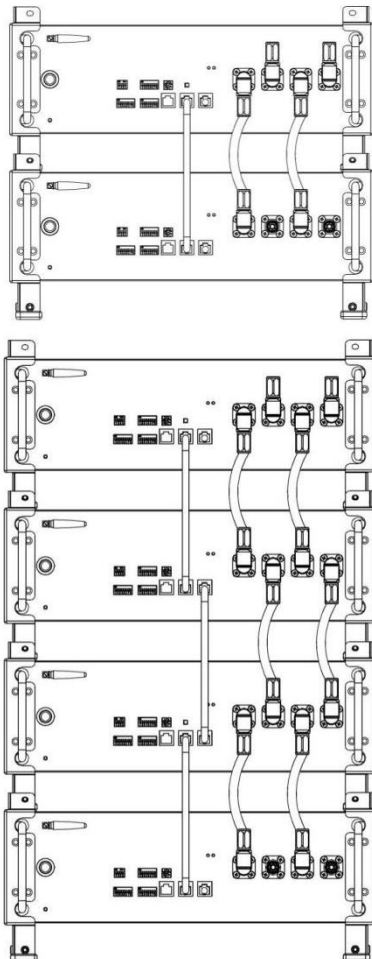
For wall mounting, the battery Series connection number should be less than 4, if more batteries need to be installed, a cabinet is recommended.

#### NOTICE

If the battery is connected in the Series mode, it is better for the Power cable resistance difference between stack and battery pack, which will have a fade effect on voltage balance, to be installed in the Ground installation method.

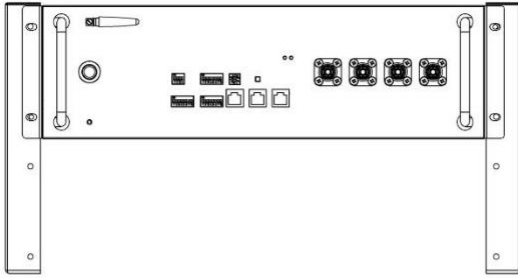
### 5.4.2 Cable Connection for Parallel Connection

#### 5.4.2.1 Ground Installation

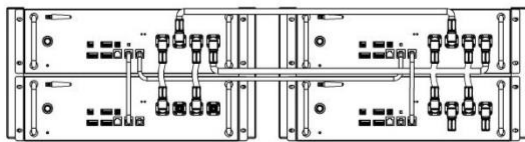
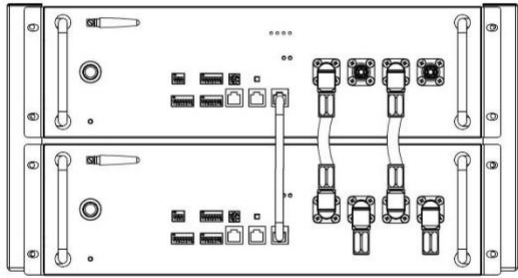


For Parallel installation, please pay attention to the Cable connection, and the DIP8 of SW2 will not need to be changed and stayed on the Initial Factory State.

### 5.4.2.2 Wall Mounting



For wall mounting, the battery Series connection number should be less than 4, if more batteries need to be installed, a cabinet is recommended.



#### NOTICE

Before two or more batteries are installed in Parallel, please check the voltage of each battery and make sure the voltage difference is less than 2.0V.

## 6 Configuration

DIP switch should be set correctly for proper communication between inverter and battery.

If parallel connecting multiple batteries, please set the DIP switches as follows:

### 6.1 Configure device Wi-Fi

The Product has a built-in Wi-Fi module for use with the CFE APP. The Wi-Fi setting of the battery should be as follows:



### 6.2 App Monitor "Smart BESS" Instruction

#### 6.2.1 Software Overview

##### 6.2.1.1 Summarize

Smart BESS is a data information system made for users to apply battery management. It can query the data update battery configuration key network, fault warning and other functions. It is uploaded to the battery network through the battery management system. Comprehensive management of mobile phone query system to create a more comfortable battery management experience for users

##### 6.2.1.2 Function

User registration: the user registers the APP account to realize the online data query and management of the battery under the personal name.

Battery distribution network: Users can upload real-time battery data and operating status to the Internet through the one-key distribution of the battery.

Battery addition: add the battery to the user account for the battery that has been distributed to the network (you need to log in in advance to use the user account) to realize the battery view data in real-time.



Data query: Supports users to view the current voltage, temperature and other operating data of the bound battery, supports to view any 24-hour battery operation data in the data record, supports to view the battery operation status, and the off-grid status.

Fault warranty: supports battery fault self-check, records battery fault status and fault information in real-time, and keeps data on battery faults

### 6.2.1.3 Operating environment

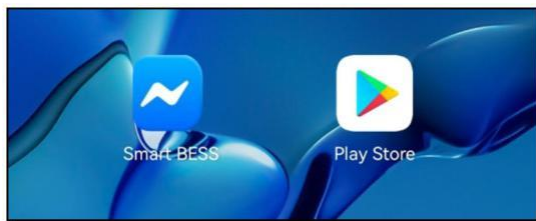
APP supports running on Android 7.0, IOS 8.0 and above mobile phones

### 6.2.1.4 Software Installation

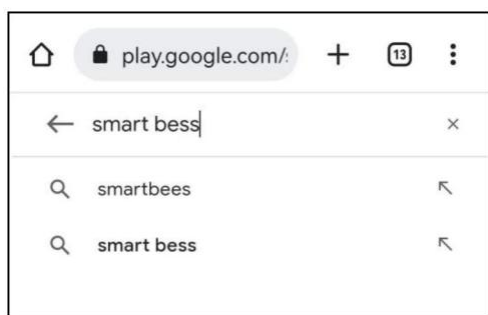
(1) Installation on Android

① Google mall installation

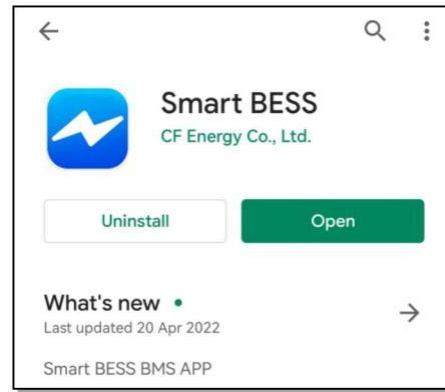
➤ Open Google Play Store



➤ Search Smart BESS on Google Play Store



➤ Select to enter the Smart BESS application details page, click to download and install

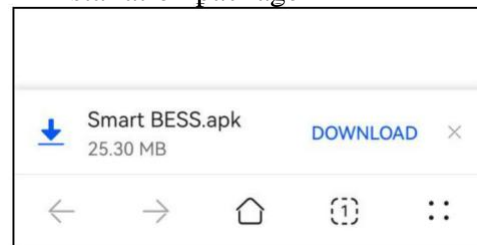


② APK installation page

➤ Scan the QR code of the APK installation package to download



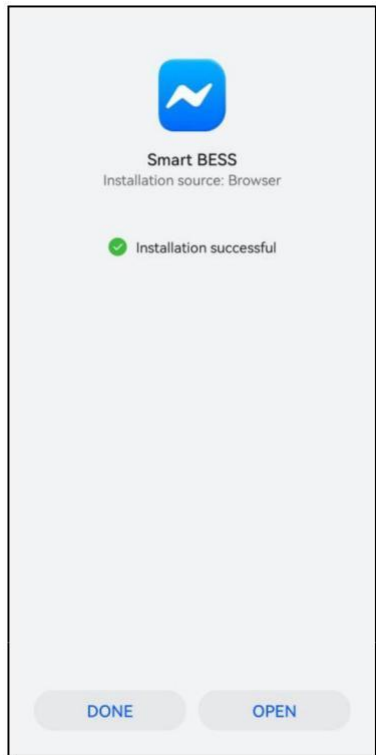
➤ The application download prompt pops up, choose to agree to download the Smart BESS installation package



➤ Manually install the downloaded Smart BESS installation package

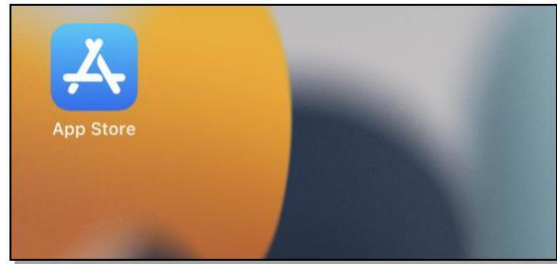


- Wait for the installation of the Smart BESS installation package to complete, you can open it for use

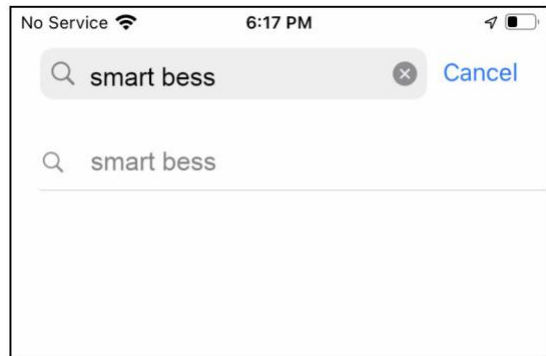


## (2)IOS installation

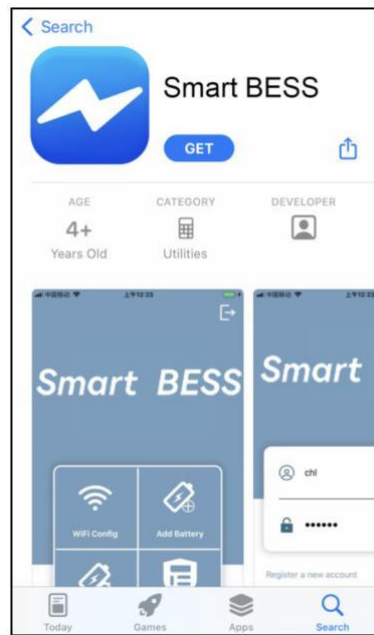
- Open IOS's own application store



- Search for Smart BESS in the APP Store



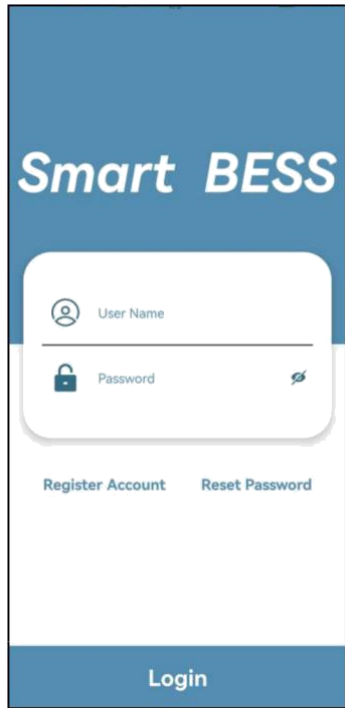
- Enter the Smart BESS application details page, click GET to install



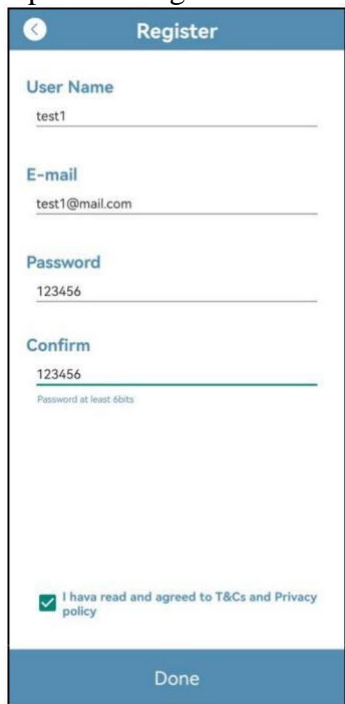
## 6.2.2 Instructions

### 6.2.2.1 User registration

- Open the Smart BESS APP and Click Register to continue

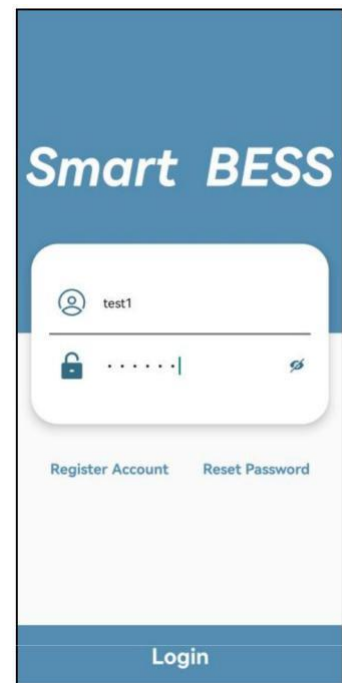


- Enter the Register page, enter the user name, email, and six-digit string password, click T&Cs and Privacy policy, you can view the user agreement, agree to the agreement to confirm the check, and then click the Done button to complete the registration



### 6.2.2.2 User Login

- After successful registration, it will automatically return to the login page, enter the registered user name and password, and click Login to log in



### 6.2.2.3 Homepage introduction

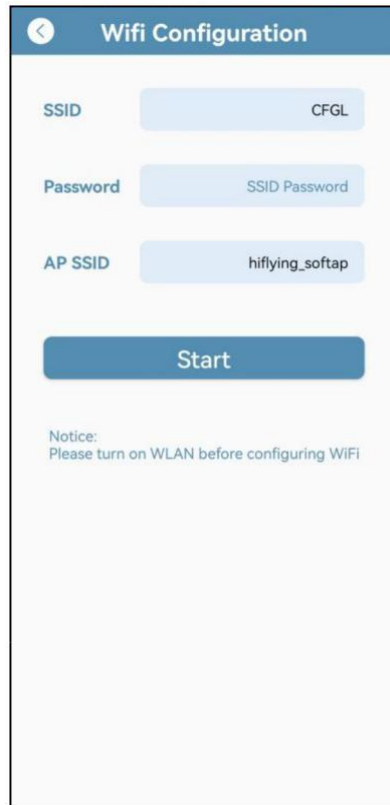
- After the login is completed, you will enter the main function page of the APP, which is: **Wi-Fi Config**

## Add Battery、 My Battery、 Warning & Services



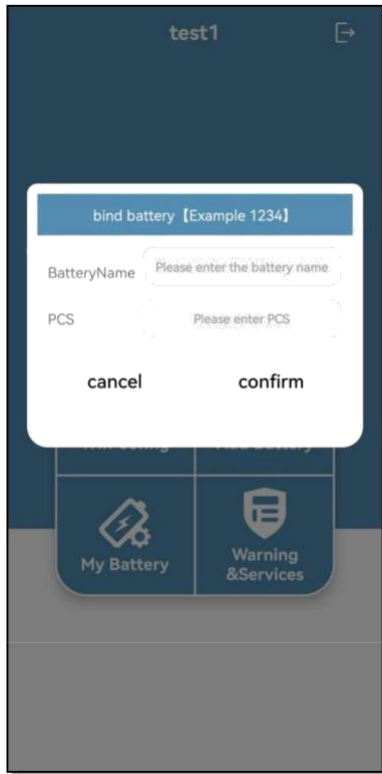
### 6.2.2.4 Wi-Fi Distribution Network

- Select Wi-Fi Config to configure the battery network. Before the operation, please pay attention to connecting to the Wi-Fi with network communication, and turn on the battery at the same time; SSID is the name of the current mobile phone connected to the Wi-Fi, this item is obtained automatically; Password is the current Wi-Fi password, This item needs to be entered manually; AP SSID is the hot spot name generated by the battery device, and this item is obtained automatically; after clicking Start, the APP will automatically connect to the battery for battery distribution network operation, and return to the main page after completion to add the battery



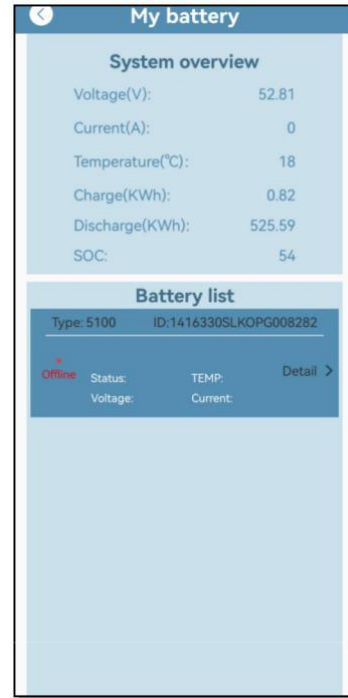
### 6.2.2.5 Add Battery

- After the battery is connected to the network, select Add Battery to add the battery, click it to enter the automatic code scanning page, scan the bar code of the battery shell at this time, and a battery information dialog box will pop up after success. You can customize the battery name and connect the PCS name. Click Confirm to save the battery information, and you need to add as many batteries as there are here

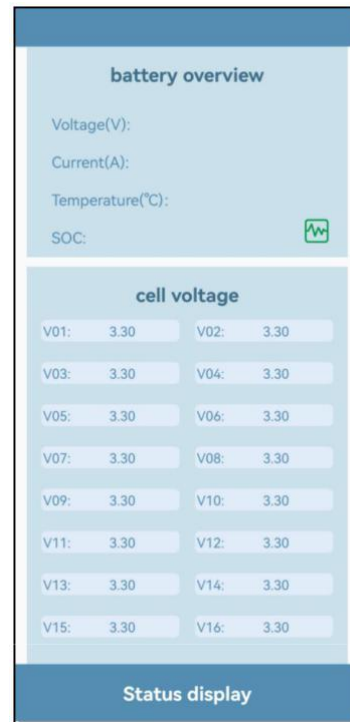


### 6.2.2.6 Battery Management

- After completing the distribution network and adding batteries, click My Battery to view the information of the added batteries, and the System overview displays the current battery system comprehensive data Voltage(V), Current(A), Temperature(°C), Charge(KWh), Discharge(KWh), SOC; all currently added batteries are displayed in the Battery List; Status, TEMP, Voltage, and Current information are displayed in the single battery list; and Online/Offline shows that the current battery is offline. Click Detail to view the details of the single battery data

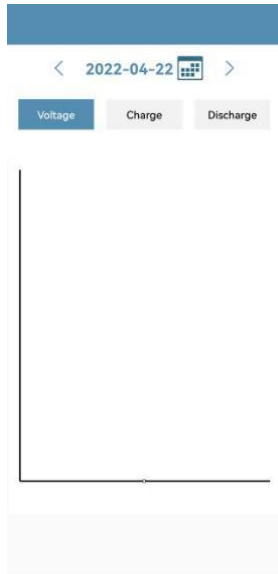


- The battery overview details page displays the current battery cell data Voltage(V), Current(A), Temperature(°C), SOC; and the single cell voltage of the battery is displayed under Cell Voltage. Click Status display to view the single cell data curve



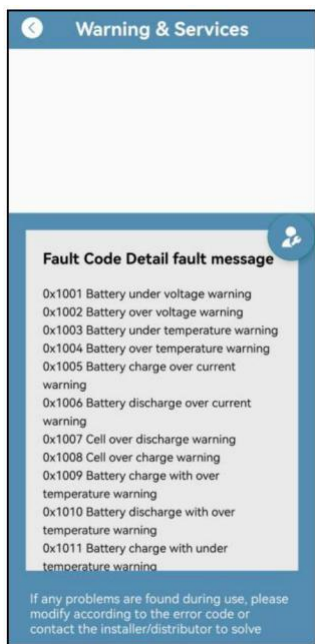
- The Status display page supports

querying the 24-hour battery voltage, charge and discharge history at any time point



### 6.2.2.7 Fault Warning

- After clicking on the Warning & Services page, the battery number, failure type, failure time, solution cycle and other information will be automatically displayed when the battery is faulty; if there is a problem that cannot be solved, you can also contact the local supplier to solve it



### 6.2.2.8 Other Functions

- User password modification: Click Reset Password on the login page to enter the password reset interface, enter the current user name in the User Name column, and enter the battery ID bound by the current user for Battery id or scan the code to enter the battery ID. After clicking Done, the password will be default reset to 123456



## 6.3 Settings for CAN /485 Bus Pins



Confirm that the CANL/485B DIP switch is set to SW4 which pin is used for CAN low signal by inverter (5-CANL/485B), and the CANH/485A DIP switch is set to SW5 which pin is used for CAN high signal by inverter (4-CANH/485A).

As SW1 the CAN/485 GND/DIP switch, the installer should confirm which pin is used for ground by inverter or not.

### NOTICE

The battery default protocol is CAN bus, if an inverter communication mode is RS485 or other protocol, please contact the CFE customer careline before installing the battery.

## 7 Commissioning

### 7.1 Commissioning of Battery

If there is only one battery installed, use the following steps to operate:

- 1) Press and hold the panel button on the left side of the unit for about 4s, after the indicator lights on, release the panel button.
- 2) Make sure that the Run light is on. If it stays off, do not use the battery and contact CFE or your distributor.
- 3) Turn the inverter on, and wait for the start-up sequence to complete fully. When there are two or more batteries connected with parallel mode, after the charging cable and the data cable has been connected correctly, follow these steps to operate:

- 1) Check battery voltage level is above 48V.  
If battery voltage is under 48V, contact your distributor or CFE after service customer careline for help.
- 2) Press and HOLD the panel button for about 4s, after four seconds the indicator lights will turn on.
- 3) Release the panel button.  
For all batteries, make sure that the Run light is on.
  - a. Make sure the maximum voltage difference between the batteries is less than 2.0V.
  - b. If not, the installer should balance the battery voltage and then parallel connect the batteries together.
  - c. Set the DIP switches like part 6-3 Settings for CAN /485 bus pins.
- 4) Turn the inverter on, and wait for the start-up sequence to complete fully.

## 7.2 Shutting Down of Battery

Shut down the battery only when the battery is no charge or discharge current which could be seen on your smartphone with APP.

- 1) Press and hold the Panel Button for about 8s, after a disconnected voice of relay comes than release it.
- 2) Make sure that every light on the battery is off.

## 8 Troubleshooting

- 1) Every fault is presented by a fault code. If the battery fault light is on, please check the Fault code on the Homepage in the CFE APP.
- 2) If the battery fault light on, please check the Troubleshooting number on the Homepage in your CFE APP, if the code is 0x1\*\*\*, this problem will recover by itself. But if the code is 0x2\*\*\* or 0x3\*\*\*, please contact the CFE after service customer careline or your distributor for help.
- 3) If the information of the battery cannot be seen in the monitoring system, check the battery status first. If the battery status is OFF, please turn the battery on, and then check if the WLAN is accessible for the battery.



- 4) If the registration of the battery fails, please check that the network is available and stable of the mobile phone near the battery installation site.

Table 8-1 Fault Code of Battery

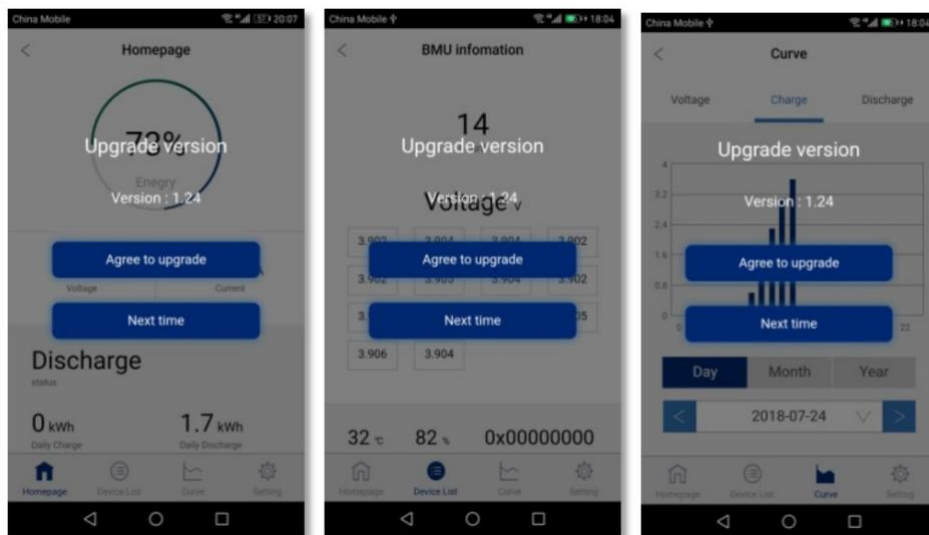
Fault Code	Detail fault message
0x1001	Battery undervoltage warning
0x1002	Battery overvoltage warning
0x1003	Battery under temperature warning
0x1004	Battery over temperature warning
0x1005	Battery charge over current warning
0x1006	Battery discharge over current warning
0x1007	Cell over discharge warning
0x1008	Cell over charge warning
0x1009	Battery charge with over temperature warning
0x1010	Battery discharge with over temperature warning
0x1011	Battery charge with under temperature warning
0x1012	Battery discharge with under temperature warning
0x2001	Battery undervoltage protection
0x2002	Battery and cell overdischarge protection
0x2003	Battery overcharge protection
0x2004	Battery overvoltage and cell overcharge protection
0x2005	Battery under temperature protection
0x2006	Battery over temperature protection
0x2007	Battery charge overcurrent protection
0x2008	Battery discharge overcurrent protection

0x2009	Cell over discharge protection
0x2010	Cell over charge protection
0x3000	Communication is broken between master and slave Battery
0x3001	Address select fault

## 9 Firmware Update

It is possible to update the BMS firmware version manually via the Wi-Fi monitor system App.

After a new firmware version is uploaded to the server, the firmware could be updated over the Internet by itself after the holder is confirmed.



# RED Declaration of Conformity (DoC)

Unique identification of this DoC: .....

**We,**

Manufacturer's name: CF Energy Co., Ltd.

Manufacturer's Address: Workshop No.18, Demonstration Base of Traditional Industry Transformation, High-tech Zone, Qindu District, Xianyang City, Shaanxi Province, PEOPLE'S REPUBLIC OF CHINA

.....

**declare under our sole responsibility that the product:**

product name: Lithium ion battery

trade name:

type or model: CFE-5100

relevant supplementary information: .....

(e.g. lot, batch or serial number, sources and numbers of items)

**to which this declaration relates is in conformity with the essential requirements and other relevant requirements of the RED Directive (2014/53/EU).**

**The product is in conformity with the following standards and/or other normative documents:**

HEALTH & SAFETY (Art. 3(1)(a)): IEC 62040-1:2017, IEC 62619:2017, EN 62311:2008; EN 50665:2017

EMC (Art. 3(1)(b)): EN IEC 61000-6-1:2019, EN 61000-6-3:2007/A1:2011, EN 301 489-1 V2.2.3:2019, Draft EN 301 489-17 V3.2.2:2019

SPECTRUM (Art. 3(2)): EN 300 328 V2.2.2:2019

OTHER (incl. Art. 3(3) and voluntary specs): N/A

Accessories: N/A

Software: N/A

Technical file held by: CF Energy Co., Ltd.

Place and date of issue (of this DoC): Du Teddy .....

Signed by or for the manufacturer: .....

(Signature of authorized person)

Name (in print): .....

Title: .....

# Warranty of CFE Residential ESS

This warranty specified below applies to ESS supplied by CFE, CFE LFP battery to consumer through authorized reseller. The accessories and tool kits provided are not included. If the unit suffers major failure you will be provided with a replacement unit and your warranty will be transferred to the new unit. The units must only be used with controllers or equipment which is explicitly deemed compatible by CFE. In order to supply a high quality service, you should make sure the unit remains connected with Internet so that it can be remotely checked.

## 1. Purpose

The purpose of this warranty is to define the matters related to warranty policy of products.

## 2. Warranty Condition

### 2.1 Warranty Period

The products warranty period is ten(10) years from the sales date as mentioned in the Seller's invoice to the End User("Invoice Date") or six(6) month from the date of manufacturing whichever comes first.

This Warranty period covers a capacity equivalent to one (1) full cycle per day. Full cycle:Discharge the nominal capacity of a fully charged battery and fully charge it afterwards.Micro cycles sum up to full cycles according to amount of energy charged and discharged. Note:Products are unavailable to protect itself from the deep discharge/charging in condition of without communication connection.

The products without communication connection warranty period is 5(five)years(1 full cycle per day) from the sales date as mentioned in the seller's invoice to the End User("Invoice Date") Regarding Self-discharging degradation,180 days after ex-work is ensured.

### 2.2 Limitation of Warranty scope

Under this Warranty, CFE is responsible for either battery replacement or battery repair. The Period of Performance Guarantee will continue on any repaired unit. In the event of a replacement units then the Period of Performance guarantee will transfer to the replacement unit.

In no event will CFE be liable for any consequential, incidental or punitive damages

(including without limitation of loss of profit, harm to goodwill or business reputation, or delay damages) arising from or out of the Product or its installation, use, performance or non-performance, or any defect or breach of warranty, whether based on contract, warranty, negligence, strict liability, or any other theory. CFE's aggregate liabilities, if any, in damages or otherwise, shall not exceed the purchase price paid by the Original Buyer for the product.

### 2.3 Exclusions of Warranty

Damage or impairment to the Products resulting from any of following activities are NOT covered by this Warranty:

- ✓ Installation or use with any devices not approved as compatible by CFE.
- ✓ Failure to install or use the battery in the way intended, or as demonstrated in the installation manual including incorrect-installation of cables and connections.
- ✓ Failure caused by charger or inverter unit.
- ✓ Incorrect transportation, storage, installation or wiring by consumer or installer; if buyer fails to use the original packing materials provided by seller during the transportation of equipment the products damage or failure shall not fall under the warranty scope of the product.
- ✓ Mistreatment of the product including incorrect installation environment, incorrect temperatures or using the units other than in the specified manner.
- ✓ Damage caused by any impact, physical trauma to the unit such as dropping or mishandling.
- ✓ Attempts to change the functionality of the unit in any way, exposure of the Product to movement or shaking following installation, or temperatures of more than 50°C or below -10°C;
- ✓ Using the battery outside of the clearly stated performance criteria for the unit.
- ✓ Water ingress, corrosive gas damage or installation in dirty environments causing particles to affect performance.
- ✓ Anyone other than those authorized by CFE may not modify, disassemble, repair or replace the product;
- ✓ The unit must have clearly identifiable and authentic serial number and labels on the unit.
- ✓ Products suffered any external influences including unusual physical force, electrical stress (power failure surges, inrush current, lightning, flood, fire, accidental breakage, etc)
- ✓ Extensive superficial damage to the case demonstrating impact or mishandling or poor protection of the battery.
- ✓ Product damage and defect caused by deliberately or willful act.
- ✓ Products failure is not reported to seller or CFE authorized service partner within 1 week of appearance.
- ✓ The Product not being operated for any period of 6 months or more.

- ✓ Unusual physical or electrical stress caused by **Force majeure**, such as power failure surges, inrush current, lightning, flood, fire, accidental breakage, etc.;

### 3 Performance Warranty

CFE guarantees that CFE-LFP battery will retain greater than or equal to 70% of output energy capacity for 10 years from the Invoice date and follow the specification and the user manual provided by CFE.

- ✓ Capacity measurement condition (referenced IEC: 62619)
- ✓ Ambient temperature:  $25 \pm 2^{\circ}\text{C}$
- ✓ 80%DOD
- ✓ Total energy/Usable energy measured under specific conditions from CFE 0.2CC-CV at DC side.

But, if you suspect CFE's verification, the Product must be tested by an EU certified origination or a certified 3rd party testing company. Meanwhile, the cost of any 3rd party evaluation service charge should be borne by yourself, unless your claim is proven to be valid, in which case CFE will be responsible for the testing costs.

### 4 Warranty Policy

If on arrival the product is not of acceptable quality the customer is entitled to have the goods repaired or replaced.

### 5 About Service Products/Parts

Service product or accessory could be used as new or refurbished condition and CFE guaranteed which performance is equal to or higher than replaced device. If the product is no longer sold in the market, CFE would replace it with different kind of product with equal or higher functions and performances, or the residual annual depreciation value of the buyer paid price within the time limit for performance guarantee.

### 6 Claim Policy

Whether to repair or replace the Product will be determined by CFE in its sole discretion. Claims under this warranty must be made from authorized distributor whom the product was purchased. Meanwhile, you must notify your distributor or CFE of a claim by:

- ✓ Give a call or E-mail to your distributor;
- ✓ Contact with CFE hotline or Email us directly within 48 hours of a faulty discovered.

The following items must be included:

- ✓ The original purchase receipt or equal valid document;
- ✓ Description of the alleged defect(s) to your distributor or CFE after service hot;line or send email to CFE;
- ✓ The product's serial number and the initial installation date.

If you suspect the battery to be faulty, the unit should be returned to appointed distributor at the cost of the customer at approved costs. Having been checked by designated expert, if the unit is deemed faulty, we will dispatch a REPLACEMENT or FIXED unit and would credit the cost of returning the unit to us for testing (based on standard acceptable logistical costs).

## 7 Out Of Warranty

In the event the Product is out of warranty, CFE may (in its discretion) provide certain after-sales service to Original Buyer, but all the costs and expenses, such as parts, labour costs and travel expenses, shall be borne by Original Buyer. To request such after-sales service Original Buyer must provide sufficient information about any defects, to enable CFE Partner to determine whether such defects are capable of repair.



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



**CNBM**

Fortune Global 500  
Global Exclusive Distributor

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