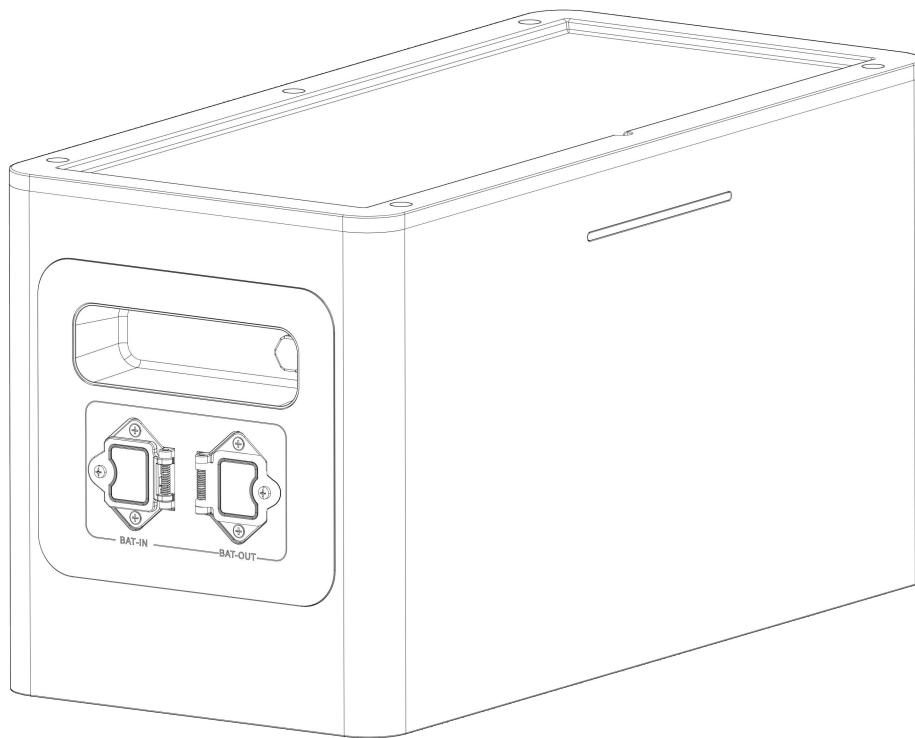


User Manual for AE-F2.0



- Please read this manual carefully before use.
- Keep it dry and away from an ignition source.
- Do not disassemble, puncture, or subject the product to strong impacts.
- Please recover or dispose of the product in accordance with local laws and regulations.

Contents

1. Safety Precautions	1
1.1 Preparations before Connection	1
1.2 Safety Precautions during Use	1
2.Product Introduction	2
3. Parameters and Specifications	2
4. Packing List	3
5. Quick Guide	3
5.1 Product Appearance	3
5.2 Product Usage	3
6. Guidelines for Use	4
6.1 Connection Method for AE-F2.0	4
6.2 Precautions during Use	5
7 FAQ	6
8.Battery Recovery	6
8.1 Recovery Process and Steps of Cathode Materials	7
8.2 Recovery of Anode Materials	7
8.3 Recycling of Diaphragm Materials	7
9. Transportation Requirements	8
10 After-sales Service	8

1. Safety Precautions



Reminder

1. It is crucial and necessary to carefully read the User Manual (provided in the Appendix) before installing or using the battery. Failure to do so or not following any instructions or warnings in this document may result in electric shock, serious injury, or damage to the battery, rendering the product non-functional.
2. If the battery is to be stored long-term, it is recommended that the product be charged once every month, ensuring that the State Of Charge (SOC) remains above 50%.
3. The battery should be recharged within 48 hours after being fully discharged.
4. Do not expose cables externally.
5. All power sources must be disconnected during maintenance.
6. In case of any abnormalities, please contact the supplier within 24 hours.
7. Do not use cleaning solvents to clean the battery.
8. Do not expose the product to flammable or corrosive chemicals or vapors.
9. Do not paint any part of this product, including internal or external components.
10. Direct or indirect damages resulting from the above circumstances are not covered by the warranty.
11. Do not insert any foreign objects into any part of this product.



Warning

1.1 Preparations before Connection

1. After unpacking, please check the product and the packing list first. If the product is damaged or any part is missing, please contact the local retailer.
2. Before installation, make sure to cut off the grid power supply and ensure the battery is turned off.
3. The connections must be correct, and there must be no short circuits with external devices.
4. Keep away from any ignition source.
5. Do not use parts or accessories that are not provided by the official supplier.
6. Do not stack heavy objects on this product.

1.2 Safety Precautions during Use

1. To move or repair this product, please disconnect the power supply and fully turn off the product first.
2. Do not connect the battery with other batteries of different models.
3. Do not remove any part of the product.
4. In case of fire, only liquid fire extinguishers should be used; dry fire extinguishers are prohibited.

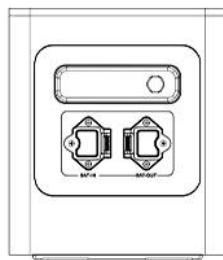
2.Product Introduction

This product is an extender battery pack designed to expand the capacity of the Balcony Energy Storage Products AE-FS2.0-2H2 and AE-F2.0-2H2. The extender battery pack cannot function independently and must be used with the AE-FS2.0-2H2/AE-F2.0-2H2 products. The product has built-in lithium iron phosphate batteries, which feature a long cycle life and high safety. Five additional such products can expand the capacity of the power supply by up to 10kWh.

3. Parameters and Specifications

Model	AE-F2.0
Battery Technical Specification	
Battery Chemistry	LiFePO ₄
Battery Nominal Voltage	51.2V
Battery Nominal Energy	2000Wh
Max.Charging/Discharging Current	40A
Battery Operating Voltage	44.8V~57.6V
Battery Cycle Life	≥6000(@25°C±2°C, 0.5C/0.5C, 70%EOL)
Parallel Capability	5 PCS
Other Technical Specification	
Display	LED(SOC, ALARM)
Communication interfaces	CAN2.0, LORA
Dimension(W × D × H)	450 × 210 × 244mm
Weight Appr.	20kg
Operating Temperature Range	-10°C ~ 50°C
Max.operating altitude	3000m
Relative Humidity	15% ~ 85% (No Condensing)
Certification	UN38.3, IEC62619, CE
Installation Style	Floor-Mounted

4. Packing list



Power Pack



Power Pack
Connection Cable



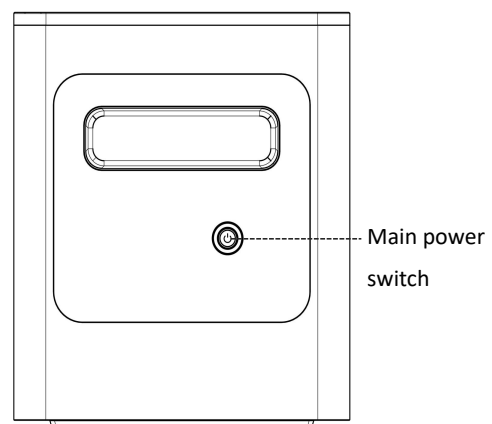
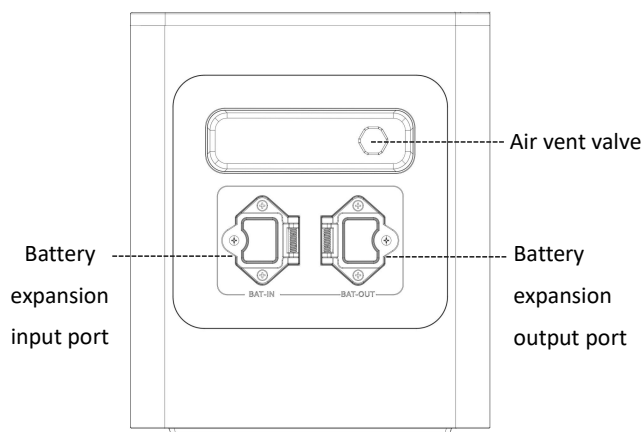
User manual



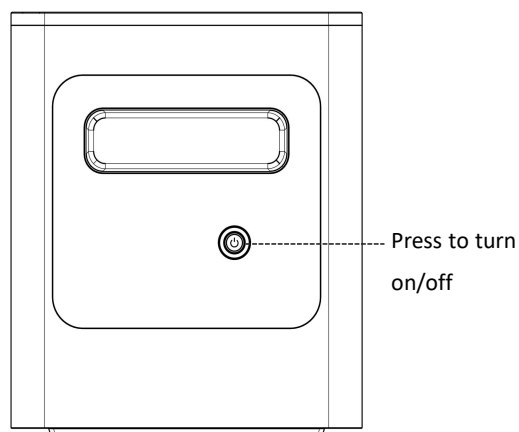
PCS
connection line

5. Quick Guide

5.1 Product Appearance



5.2 Product Usage



A single battery pack cannot function independently and must be matched with the AE-FS2.0-2H2 or AE-F2.0-2H2 for use.

Power On, Power Off and LED Lights Up

Press the battery pack switch to turn it on; once activated, the LED indicator will light up. The USB output will automatically shut off within 10 minutes by default if there is no activity. Press the switch again for use. The LED indicator will light up when the battery pack is being charged.

Press the power switch on the battery pack to power off this product.

Note: *This product has a default standby time of 10 minutes after being turned on. If there is no output from the USB within 10 minutes, the product will be automatically turned off.

6. Guidelines for Use

The extender battery pack is used in conjunction with the AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply. Up to four extender battery packs can be connected to AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply, enabling a capacity expansion by up to 8kWh to meet the user's demand for larger battery capacity.

6.1 Connection Method for AE-F2.0

Step 1

First, make sure that the extender battery pack and AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply are turned off, and protective cover on the connection port of the battery pack and the AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply.

Step 2

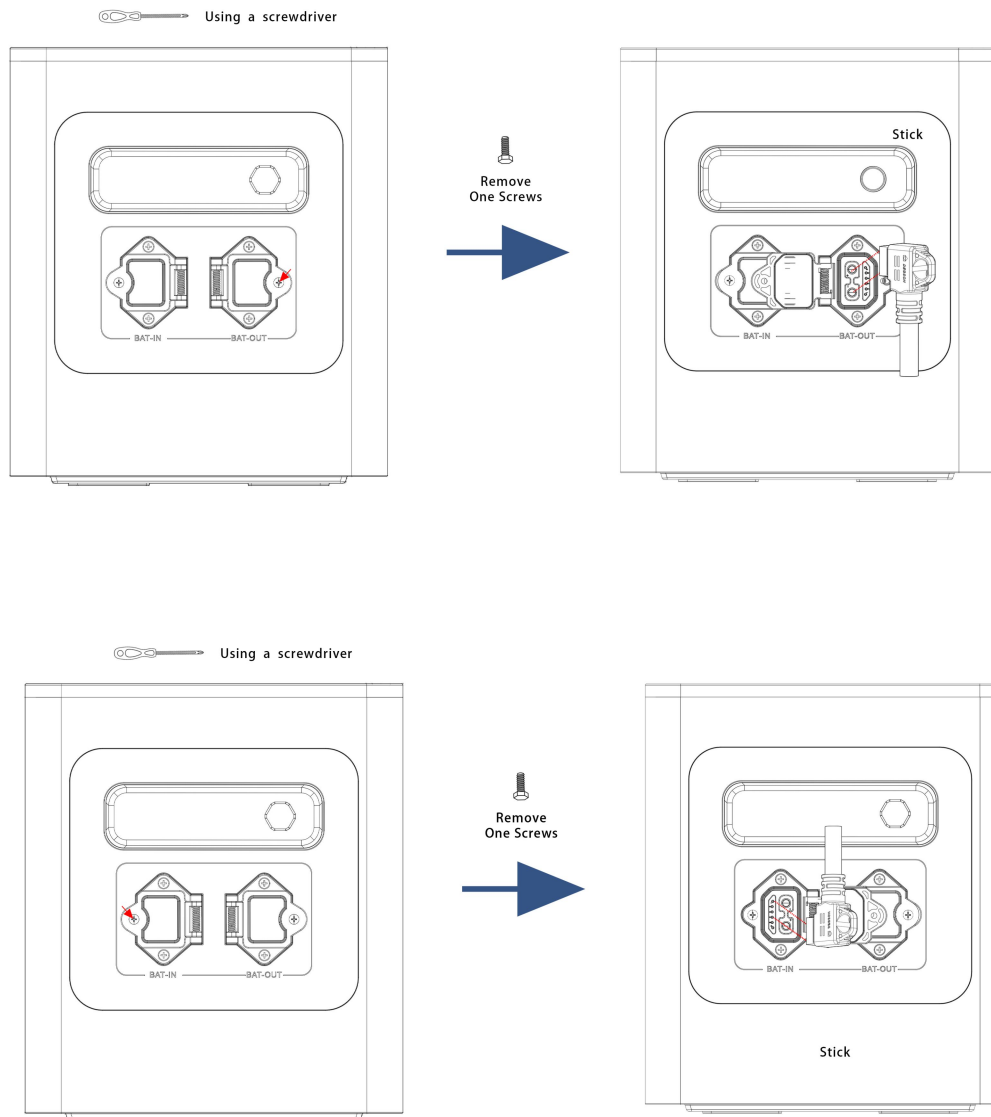
Connect the battery pack to the AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply using the connecting wire. (Note: The two connection ports on the battery pack are designated for input and output, respectively. Connect the BAT-IN port of the battery pack to the BAT-OUT port of the Portable Power Supply.)

Step 3

Check if the connecting wire between the extender battery pack and the AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply is securely plugged in.

Step 4

Turn on the switch button of the extender battery pack first and check that the LED indicator lights up, then turn on the switch of the AE-FS2.0-2H2 Portable Power Supply and check that the display screen lights up. Those steps are to test whether all extender battery packs are successfully connected.



6.2 Precautions during Use

Step 1

Before connecting AE-FS2.0-2H2/AE-F2.0-2H2 with the extender battery pack, please make sure that AE-FS2.0-2H2/AE-F2.0-2H2 and the battery pack are turned off.

Step 2

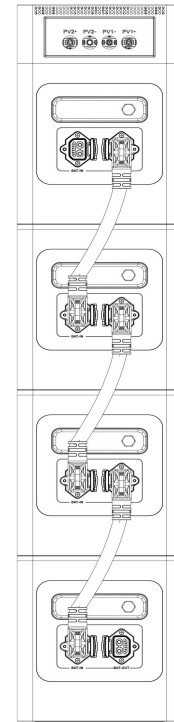
Do not directly connect or remove the extender battery pack during the charging or discharging process of AE-FS2.0-2H2/AE-F2.0-2H2. To disconnect or remove the AE-F2.0 product, please first turn off the product and the AE-FS2.0-2H2/AE-F2.0-2H2 Power Supply.

Step 3

Please do not touch the connection points of the AE-F2.0 product with hands or other objects. If foreign particles are found on the connection points, gently wipe them down with a dry cloth.

Step 4

During the connection of AE-F2.0, ensure that the connecting wire between the AE-F2.0 and the Power Supply AE-FS2.0-2H2/AE-F2.0-2H2 is inserted tightly. Failure to secure the connecting wire may result in overheating at the connection point, affecting the product's performance. In severe cases, it could lead to a fire hazard.



7. FAQ

Q1: What type of battery is used for the product? Is the battery safe?

The high-quality lithium iron phosphate battery is used for the product. The battery can operate safely and normally as the system is developed with multiple protection strategies, including charging overload protection and discharging overload protection.

Q2: How to determine if the product is charging or discharging?

During charging or discharging, the LCD screen will display the remaining charge and discharge time. The power indication icon next to the battery percentage icon starts to rotate circularly and displays the input/output power. The LED light will flash during charging and discharging.

Q3: Can the product charge and discharge at the same time?

Yes, but prolonged use in this manner may cause damage.

Q4: How to clean the product?

Please use a dry, soft, clean cloth or tissue to wipe this product.

Q5: How to store the product?

Please cut off the power supply of this product first, then store it in a dry, ventilated environment at a suitable temperature. Do not store the product in a damp, dusty environment

at a high temperature or with high salinity, as these conditions are not conducive to the storage of the product and may cause damage to it. For long-term storage, it is recommended to discharge the battery of this product to around 50% every month, then recharge it to 100% in order to extend the product's lifespan.

8. Battery Recovery

Aluminum, copper, lithium, iron, and other metal materials are recovered from discarded LiFePO_4 batteries by advanced hydrometallurgical process, and the comprehensive recovery efficiency can reach 80%. The specific process steps are as follows:

8.1 Recovery Process and Steps of Cathode Materials

Aluminum foil as collector is amphoteric metal. Firstly, it is dissolved in NaOH alkali solution to make aluminum enter the solution in the form of NaAlO_2 . After filtration, the filtrate is neutralized with sulfuric acid solution and precipitated to obtain $\text{Al}(\text{OH})_3$. When the pH value is above 9.0, most of the aluminum precipitates, and the obtained $\text{Al}(\text{OH})_3$ can reach the level of chemical purity after analysis.

The filter residue is dissolved with sulfuric acid and hydrogen peroxide, so that lithium iron phosphate enters the solution in the form of $\text{Fe}_2(\text{SO}_4)_3$ and Li_2SO_4 , and is separated from carbon black and carbon coated on the surface of lithium iron phosphate. After filtration and separation, the pH value of the filtrate is adjusted with NaOH and ammonia water. First, iron is precipitated with $\text{Fe}(\text{OH})_3$, and the remaining solution is precipitated with saturated Na_2CO_3 solution at 90°C .

Since FePO_4 is slightly dissolved in nitric acid, the filter residue is dissolved with nitric acid and hydrogen peroxide, which directly precipitates FePO_4 , separates impurities such as carbon black from acid solution, leaches $\text{Fe}(\text{OH})_3$ from filter residue respectively, and precipitates Li_2CO_3 with saturated Na_2CO_3 solution at 90°C .

8.2 Recovery of Anode Materials

The recovery process of anode materials is relatively simple. After the separation of anode plates, the purity of copper can be more than 99%, which can be used for further refining electrolytic copper.

8.3 Recycling of Diaphragm Materials

The diaphragm material is mainly harmless, and has no recycling value.

9. Transportation Requirements

The battery products should be transported after packaging and during the transportation process, severe vibration, impact, or extrusion should be prevented to prevent sun and rain. It can be transported using vehicles such as cars, trains, and ships.

Always check all applicable local, national, and international regulations before transporting a Lithium Iron Phosphate battery.

Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specially limited or prohibited.

The transport of the Li-Ion battery falls under hazard class UN3480, class 9. For transport over water, air and land, the battery falls within packaging group PI965 Section I.

Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium-ion batteries which are assigned Class 9. Refer to relevant transportation documents.



Figure 9-1: Class 9 Miscellaneous Dangerous Goods and UN Identification Label

10. After-sales Service

If malfunctions cannot be resolved by following the User Manual during product use, please contact the dealer promptly and provide clear feedback to the after-sales personnel, including the product model, purchase date, contact number, and issue details.

1. Product warranty period: 10 years

The warranty period starts from the date of purchase by the consumer. Consumers are advised to keep the purchase receipts and online shopping records to determine the purchase date.

2. During the warranty period, if damage is caused by product processes, materials, or non-human factors, the company will provide free repair and replacement of parts.

3. The following conditions are not covered by the warranty:

- Unauthorized disassembly for maintenance purposes;
- Product performance failure caused by human factors;
- Damage caused by force majeure, including natural disasters, lightning, and accidents;
- Appearance damage after use;