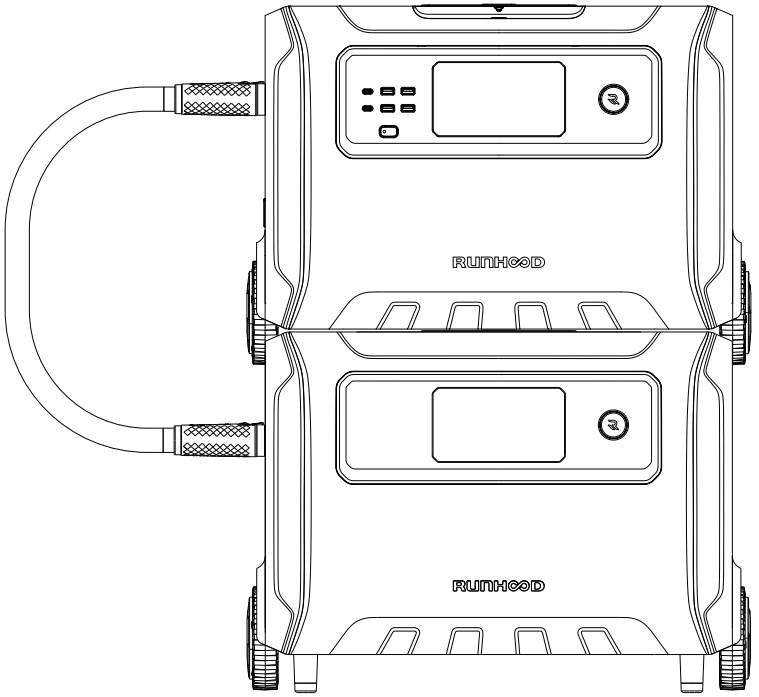
English

RUNHOOD

RESIDENTIAL ESS & PORTABLE POWER STATION

USER MANUAL



RUNHOOD

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Version: US_2024_04

Contents

Disclaimer

The length of all external cables shall not exceed 3m.

FCC Caution

a、§ 15.19 Labeling requirements. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. b、§ 15.21 Changes or modification warning.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. c、§ 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -Reorient or relocate the receiving antenna. -Increase the separation between the equipment and receiver. -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. -Consult the dealer or an experienced radio/TV technician for help. *RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

⚠ 1. SAFETY GUIDELINES

1.1 PRE-USAGE INSTRUCTIONS

Please read this manual carefully and follow the instructions when operating the RUNHOOD F3600 and B3600 product.

Abbreviation description:

F3600	Home ESS & portable power station
F3600-US	American standard F3600
B3600	Home ESS & portable battery
BMS	Battery Management System
SOC	State Of Charge
EV	Electric Vehicle
DC	Direct Current
AC	Alternating Current
USB	Universal Series Bus
LED	Light Emitting Diode
LCD	Liquid Crystal Display
AFE	Analog Front End
MOS	Metal Oxide Semiconductor
UPS	Uninterruptible Power Supply
MPPT	Maximum Power Point Tracking

Table 1-1

1.2 SAFETY PRECAUTIONS

As a home ESS & portable power station, this product is classified as a hazardous article. Improper installation or use by non-professionals may cause fire, property damage, or personal injury. Therefore, it should be installed and maintained by professional technicians and used strictly in accordance with relevant safety instructions. Using the product beyond its scope is prohibited. Attention should be paid to safety when using or disposing of this product.

1.2.1 Moisture-proof And Waterproof

This product should be kept dry during use. Usage in a humid environment or with liquid ingress may cause short circuits, electric leakage or corrosion as this product contains many control circuits and energy storage cells. Therefore, this product should not be exposed to environments that are prone to water immersion, rain, or long-term humidity. The moisture-proof and waterproof function should be fully considered for the installation space of the power supply. If this product is exposed to rain or soaked in liquid, please stop using it immediately and perform maintenance. Under no circumstances shall batteries that have been exposed to or soaked in liquid be reused.

1.2.2 Environmental insulation

When this product is in operation, it is necessary to maintain the ambient temperature of the battery within the optimal working temperature range in order to ensure the safe performance of the battery and extend its life cycle. The temperature should be controlled strictly in accordance with the specifications. For the installation space of the battery system, ventilation and thermal insulation functions should be fully considered, and exposure to direct sunlight is strictly prohibited.

1.2.3 Insulation protection

Before use, please ensure that this product's casing and socket are clean and intact. Do not insert pins, wires, or other metal objects into the device's casing, socket, or control device during use as this may damage the device and threaten personal safety. Additionally, do not puncture this product as this may cause material leakage inside or pose a fire hazard.

1.2.4 Keeping air ducts unobstructed

During the high current discharge process of this product, the thermal management system uses a fan to dissipate heat. Therefore, make sure to keep the ventilation openings unobstructed during installation. Otherwise, it may seriously damage the performance of the battery, leading to malfunction and even causing accidents such as fire.

2. PRODUCT DESCRIPTION

2.1 PURPOSE

This document specifies and describes the specific functions and parameter definitions of the RUNHOOD F3600 home ESS & portable power station (F3600) and B3600 home ESS & portable battery (B3600). RUNHOOD reserves the right to modify and update this manual based on different versions from different periods.

2.2 MANUAL DESCRIPTION

The RUNHOOD F3600 and B3600 use high energy density and high-reliability lithium iron phosphate batteries and are mature supporting power products designed with advanced battery management systems and integrated development technology.

This manual mainly introduces the product characteristics, performance indicators, external ports, installation and maintenance of the RUNHOOD F3600 and B3600.

2.3 TARGET GROUP

This manual is suitable for professional technicians who need to install, operate, and maintain RUNHOOD F3600 and B3600, as well as RUNHOOD F3600 and B3600 users.

2.4 WARNING SIGNS

Relevant information is provided in the manual and highlighted with warning signs in order to ensure users' personal and property safety and efficient and better use of this product.

Warning sign description:

	This sign indicates a warning and guides to proper operation.
	The battery pack may explode.
	This sign indicates the risk of high voltage and electric shock.
	No fire works.
	Do not dispose the end of life batteries into household waste.
	Refer to the user manual.
	Wear safety gear.
	Dispose the battery pack at a proper facility for environmentally safe recycling.

Table 2-1

2.5 PRODUCT FEATURES

- Standardized modular design
  The battery system comes with a standardized modular design, which allows for flexible extensibility and convenient system maintenance and repair.
- High-strength structural design
  High-strength structural design ensures the safety of the battery system during long-distance transportation.
- Online battery balancing technology and control strategy
  An advanced battery balancing control strategy effectively ensures the available capacity and life cycle of the energy storage system.
- Intelligent energy management
  Various optimization algorithms enable reasonable energy allocation and high system efficiency.
- Excellent safety design
  High-reliability software and hardware design and multiple protection mechanisms make the product safe and reliable.

2.6 PRODUCT ADVANTAGES

1. Supporting multiple application scenarios:
1)Portable energy storage application scenarios: this product supports various charging methods such as AC charging, photovoltaic charging, and EV charging. It also supports DC discharging such as USB, DC12V, DC24V, as well as AC discharging. In addition, it is portable and stackable with expandable battery capacity and power, which is suitable for self-driving tours, outdoor travel, and more.
2)Residential energy storage and power backup scenarios: The Sub Panel is connected to the residential power grid, and serves as a backup power source during a power outage.
3)Residential on-grid energy storage scenarios: In the energy storage system, for the battery part of this product that can be replaced (or newly installed), "F3600+B3600" or "B3600+B3600" expansion methods can be supported, which can be combined freely.
2. Due to its modular design, the battery pack features good consistency and is easy to expand and convenient for use. The maximum capacity of one group can be expanded to 28.8KWh (3.6KWh * 8).
3. Support AC parallel operation, and a maximum capacity of 7200W AC output for parallel operation of two sets of F3600.
4. The switching time of a single UPS is less than 10 ms.
5. This product is simple to install and convenient to use and is suitable for various application environments.

3. FUNCTION DESCRIPTION

3.1 INTRODUCTION TO SYSTEM COMPOSITION

This product consists of RUNHOOD F3600 home ESS & portable power station (F3600) and B3600 home ESS & portable battery (B3600).
F3600: A 5P15S lithium iron phosphate battery (a total of 75Ah) is used. F3600 comprises a battery management system (BMS), a main control system, an inverter management system, as well as related electrical components, connection cables, and structural parts. Additionally, F3600 comes with an LCD touch screen display where relevant functions of the system can be set and the working status of the system can be displayed.
B3600: A 5P15S lithium iron phosphate battery (a total of 75Ah) is used. B3600 includes a Battery Management System (BMS), as well as related electrical components, connection cables, and structural parts. B3600 comes with an LCD segmented display screen to display the working status of the battery.

3.1.1 Portable energy storage application scenarios

1. Multiple output interfaces can meet the needs of various electrical appliances.
2. This product can serve as an outdoor domestic power supply for RVs during travel.
3. It can recharge RVs or new energy vehicles.
4. This product can be charged by charging stations, photovoltaic panels or grid.

⚠	When charged by a charging station, the RUNHOOD AC EV charging adpater must be connected.

3.1.2 Residential energy storage and power backup scenarios

1. F3600 comes with a 3600W AC off-grid inverter and multiple socket ports. It can serve as a backup UPS when used alone, with an automatic switching time of less than 10 ms.
2. Two sets of F3600 can be connected in parallel for output to serve as a residential backup energy storage device. In this mode, the maximum power capacity can be expanded to 7200W. The maximum power capacity of one group can be expanded to 28.8KWh while that of two groups can be expanded to 28.8KWh * 2=57.6KWh. F3600-US can support 120V and 240V AC power output (two sets of F3600-US are connected in parallel through necessary cables). Please refer to instructions in 5.2.6 AC parallel mode for details.
The system connection diagram is as follows:

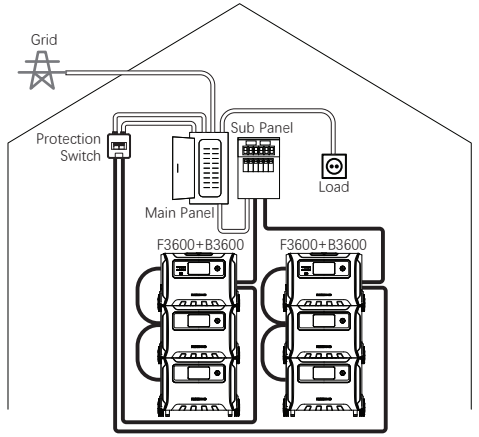


Figure 3-1

3.1.3 Application scenarios for home energy storage grid connection

Both F3600 and B3600 have DC ports that can be connected to hybrid inverters for use as energy storage batteries. As a home energy storage grid connected application, F3600 can only be charged and discharged through an external inverter, and other ports are not available.
The system architecture diagram is as follows:

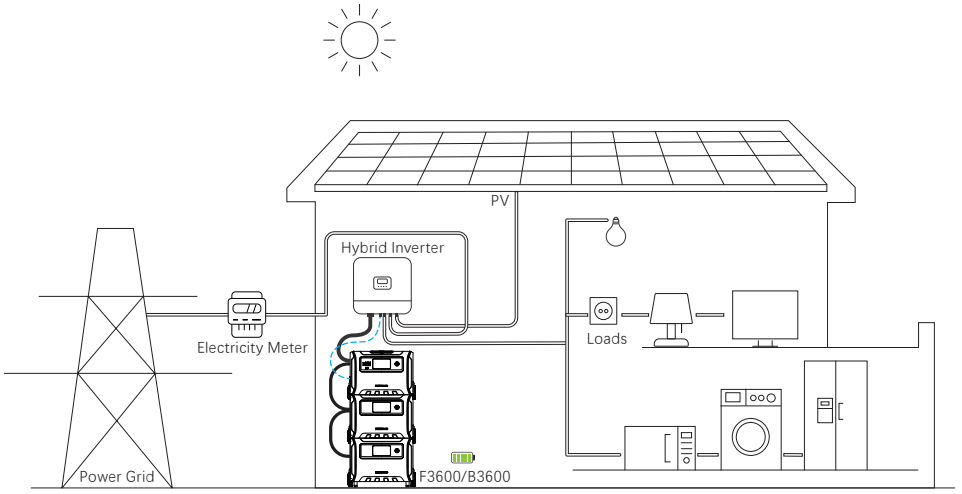


Figure 3-2

3.2 PRODUCT BREAKDOWN INTRODUCTION

3.2.1 F3600 residential ESS & portable power station

The diagram is as follows:

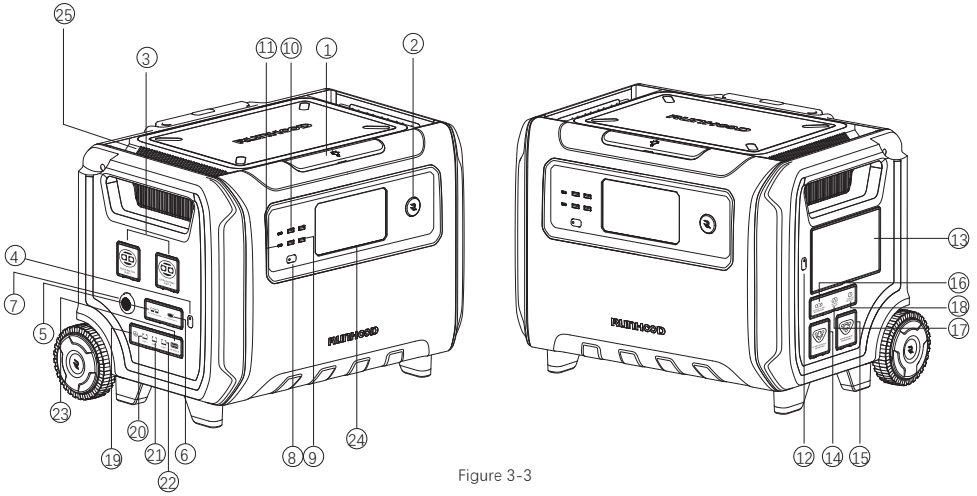


Figure 3-3

① LED
② Power On/Off switch
③ DC parallel ports PORT-1 and PORT-2
④ DC output switch
⑤ Anderson DC output port DC 12V/24V
⑥ Anderson output mode switch
⑦ Cigarette lighter port
⑧ USB output switch
⑨ USB-A*2 DC 12W
⑩ USB-A*2 DC 28W
⑪ USB-C*2 DC 100W
⑫ AC output switch
⑬ AC socket
⑭ EV charging port/DUPLEX port
⑮ HOME BACK UP port
⑯ DC charging port
⑰ AC charging port
⑱ AC overcurrent protector
⑲ Grounding screw
⑳ hybrid inverter communication port COM-1
㉑ Debugging communication port COM-2
㉒ Dry contact communication port
㉓ Dial switch
㉔ Touch screen
㉕ Ventilation openings

1.LED

LED is used for lighting and is turned on when the cover is opened. The lighting brightness can be adjusted by the LCD touch screen, with an adjustment range of 0-100. When adjusted to 0, the LED no longer lights up.

2.Power On/Off switch

Press the power On/Off switch for 1.5 seconds. After you hear a beep, turn on the RUNHOOD F3600. Press and hold the power On/Off switch for 3 seconds. After you hear a beep, release the button to power off. If F3600 cannot be powered off, press and hold the power On/Off switch for 10 seconds. After you hear three beeps, the system will attempt to forcibly power off. When the RUNHOOD F3600 is powered on, the LCD display screen will light up. If the power supply is idle (no system charging or discharging) for 2 minutes (adjustable), the LCD display screen will decrease in brightness. If the residential ESS & portable power station is idle (all output switches are turned off) for more than 5 minutes (adjustable), the RUNHOOD F3600 will automatically power off.
When connected to B3600, B3600 will powered on or off with F3600.

3.DC parallel ports PORT-1 and PORT-2

The DC parallel ports are protected by a cover which can be opened upwards during use. The ports are used to connect to extra battery cable to expand battery capacity when the device is in DC parallel operation. PORT-1 is connected to the front-end device, and PORT-2 is connected to the back-end device.

4.DC output switch

Press the DC output switch to turn on or off the DC output of the RUNHOOD F3600, and light up the button indicator light. This button controls the output of the Anderson output port and the cigarette lighter port of the RUNHOOD F3600.

5.Anderson DC output port DC 12V/24V

The Anderson port is protected by a cover which can be opened upwards during use. It can supply power to devices that support Anderson output ports, which support 12V or 24V DC output with a maximum current of 30A. If the 12V or 24V device is a non-Anderson port, an Anderson port adapter can be connected before use.

6.Anderson output mode switch

The left and right output modes of this switch are 12V and 24V respectively, and it defaults to the 12V output mode. When the DC output switch is turned on, this switch can be used to switch the voltage of the Anderson output port.

7.Cigarette lighter port

The cigarette lighter port supports 12V DC output, with a maximum output current of 10A, and can be used for general vehicle equipment.

8.USB output switch

Press the USB output switch to turn on or off the output of the RUNHOOD F3600 USB port, and light up the button indicator light. This button controls four USB-A and two USB-C output ports of the RUNHOOD F3600.

9.USB-A*2 DC 12W

It can be used to charge various devices that charged via USB ports, with a maximum output of 12W per port.

10.USB-A*2 DC 28W

It can be used to charge various devices that charged via USB ports, with a maximum output of 28W per port (which supports devices under the QC3.0 charging protocol).

11.USB-C*2 DC 100W

It can be used to charge various devices such as smartphones, tablets, cameras, speakers, and other devices that can be that charged via USB ports. The maximum output power of each USB-C port is 100W (which supports devices under the PD3.0 charging protocol).
Note: When USB-A 28W and adjacent USB-C 100W are used simultaneously, they enter the shared status. The output at USB-A and USB-C ports in the shared status is 5V, with a total maximum output power of 30W (5V, 6A).

12.AC output switch

Press the AC output switch to turn on or off the AC socket and HOME BACK UP port output of the RUNHOOD F3600, and light up the button indicator light.

13.AC socket

F3600-US provides four 120V (20A at maximum) and one 120V (30A at maximum) AC socket that output pure sine wave, providing your device with a maximum rated power output of 3600W. Please check and confirm before use to avoid property damage and ensure personal safety.

14.EV charging port/DUPLEX port

1) When used as a portable power station, the EV charging port can be connected to a charging station for charging. The RUNHOOD's dedicated EV charging adapter must be used. The maximum charging power of F3600 is 3400W.
The EV charging adapter is shown in the following figure:

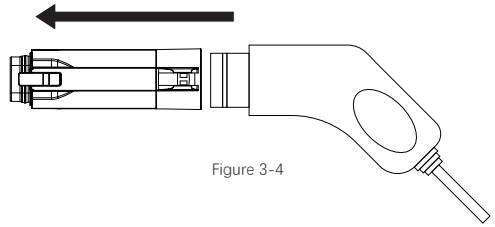


Figure 3-4

2) F3600-US supports two F3600 parallel outputs, with a maximum AC power of 7200W. The RUNHOOD DOUBLE VOLTAGE HUB product can be connected to this port.
The DOUBLE VOLTAGE HUB is shown in the following figure:

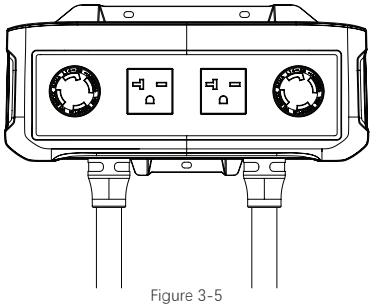


Figure 3-5

3) In residential power backup mode, it can serve as an AC input port, and the maximum charging power of one set of F3600-US is 1800W.

15.HOME BACK UP port

In residential power backup mode, F3600 uses this port as an AC output port, supporting a maximum power output of 3600W.

16.DC charging port

This port can be connected to devices such as photovoltaic panels to achieve DC charging. It supports the rated charging voltage of 12-60V DC, with the current of 25A and the power of 1500W, supports the maximum voltage of 150V DC, the maximum power of 2400W

17.AC charging port

This port can be connected to the grid for charging. The maximum charging power of F3600-US is 1800W.

18.AC overcurrent protector

When the AC input current exceeds 15A, the overcurrent protector action will be triggered. After the overcurrent protector action, it is necessary to press the overcurrent protector button again to reset.

19.Grounding screw

When this product is used for residential energy storage, a grounding screw is reserved andgrounded according to actual needs.
If it is used as a portable power station and the DC input exceeds 60V DC, it needs to begrounded.

20.hybrid inverter communication port COM-1

When this product is used for residential energy storage, this port is connected to a residential storage hybrid inverter for communication through CAN or RS485. Please refer to Section 3.3 Port definition for details.

21.Debugging communication port COM-2

This port is for professional technical maintenance personnel to use. Please refer to Section 3.3 Port definition for details.

22.Dry contact communication port COM-3

Dry contact signals are reserved for this product. Please refer to Section 3.3 Port definition for details.

23.Dial switch

1)Used for the number definition when this product is in parallel operation. Please refer to Section 3.3 Port definition for details.
2)Used to adjust the terminal resistance function of internal CAN communication. Please refer to Section 3.3 Port definition for details.
3)Used to clear the fault that locks equipment. Please refer to Section 3.3 Port definition for details.

24.Touch screen

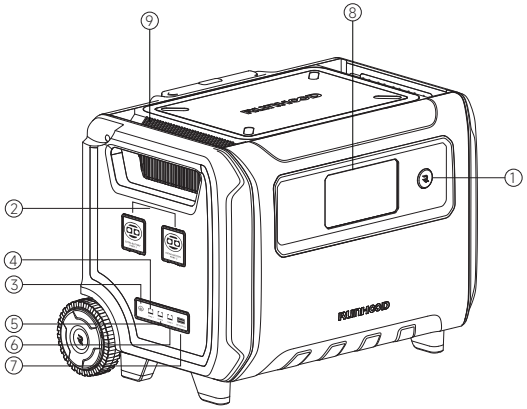
The touch screen displays DC input and output power, AC input and output power, encoding information, fault information, version information, function settings, etc.

25.Ventilation openings

During use, this product may generate a large amount of heat due to prolonged charging or discharging. Therefore, a built-in fan is required to actively dissipate heat to maintain the normal operation of this product and extend the battery life. Please ensure that the ventilation openings are clear and not obstructed by foreign objects during installation and use.

3.2.2 B3600 residential ESS & portable battery

B3600 is shown in the following figure:



① Power On/Off switch
② DC parallel ports PORT-1 and PORT-2
③ Grounding screw
④ hybrid inverter communication port COM-1
⑤ Debugging communication port COM-2
⑥ Dry contact communication port
⑦ Dial switch
⑧ Display screen
⑨ Ventilation openings

Figure 3-6

1.Power On/Off switch

Press the power On/Off switch for 1.5 seconds. After you hear a beep, turn on the RUNHOOD B3600. Press and hold the power On/Off switch for 3 seconds. After you hear a beep, release the button to power off. If B3600 cannot be powered off normally, press and hold the power On/Off switch for 10 seconds. After you hear three beeps, the system will attempt to forcibly power off. When the RUNHOOD B3600 is turned on, the LCD display screen will light up. If the power supply is idle (no system charging or discharging) for 2 minutes (adjustable), the LCD display screen will decrease the backlight brightness. If the residential ESS & portable power station is idle for more than 5 minutes (adjustable), the RUNHOOD B3600 will automatically power off.

2.DC parallel ports PORT-1 and PORT-2

The DC parallel ports are protected by a cover which can be opened upwards during use. The ports are used to connect to extra battery cable to expand battery capacity when the device is in DC parallel operation. PORT-1 is connected to the front-end device, and PORT-2 is connected to the back-end device. In residential energy storage applications, the PORT-1 of the topmost main station can be connected to the front-end device hybrid inverter or other power sources and loads, while the PORT-2 can be connected to the rear-end device expansion battery pack B3600.

3.Grounding screw

When this product is used for residential energy storage, a grounding screw is reserved andgrounded according to actual needs.
If it is used as a portable power station and the DC input exceeds 60V DC, it needs to begrounded.

4. hybrid inverter communication port COM-1

When this product is used for residential energy storage, this port is connected to the residential storage hybrid inverters for communication through CAN or RS485. Please refer to Section 3.3 Port definition for details.

5.Debugging communication port COM-2

This port is for professional technical maintenance personnel to use. Please refer to Section 3.3 Port definition for details.

6.Dry contact communication port COM-3

Dry contact signals are reserved for this product. Please refer to Section 3.3 Port definition for details.

7.Dial switch

1)Used for the number definition when this product is in parallel operation. Please refer to Section 3.3 Port definition for details.
2)Used to adjust the terminal resistance function of internal CAN communication. Please refer to Section 3.3 Port definition for details.
3)Used to clear serious system failures. Please refer to Section 3.3 Port definition for details.

8.Display screen

The display screen displays input and output power, encoding information, fault information, etc.

9.Ventilation openings

During use, this product may generate a large amount of heat due to prolonged charging or discharging. Therefore, ventilation openings are required for heat dissipation to maintain the normal operation of this product and extend the life cycle of the battery. Please ensure that the ventilation openings are clear and not obstructed by foreign objects during installation and use.

3.3 PORT DEFINITION

3.3.1 F3600 residential ESS & portable power station

1. The DC parallel upper connection port (PORT-1) is shown in the following figure:

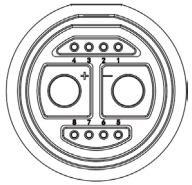


Figure 3-7

The port (orange) contains wires and communication cables, which have different functions in different scenarios:
1)When F3600 is used for home energy storage applications, this port is connected to the hybrid inverter battery port;
2)During DC parallel operation, this port is connected to the lower connection port of the front-end F3600 or B3600.

SN	Identification	Description
+	P+	Expansion positive pole for parallel operation
-	P-	Expansion negative pole for parallel operation
1	CAN0H	Parallel communication CAN_H
2	CAN0L	Parallel communication CAN_L
3	M_TX	Output signal
4	M_RX	Signal detection
5	GND	Ground wire
6	SYN_ON	System on signal
7	M_DET	Access signal detection
8	GND	Ground wire

Table 3-1

2. The DC parallel lower connection port (PORT-2) is shown in the following figure:

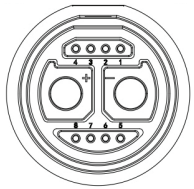


Figure 3-8

The port (black) contains wires and communication cables, connecting the upper connection port of F3600 or B3600.

SN	Identification	Description
+	P+	Expansion positive pole for parallel operation
-	P-	Expansion negative pole for parallel operation
1	CANH	Parallel communication CAN_H
2	CANL	Parallel communication CAN_L
3	S_RX	Signal detection
4	S_TX	Output signal
5	S_DET	Access signal detection
6	SYN_ON	System on signal
7	GND	Ground wire
8	GND	Ground wire

Table 3-2

3. The HOME BACK UP port is shown in the following figure:

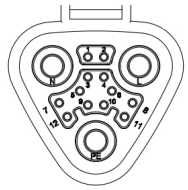


Figure 3-9

The AC discharging port (black) is used for AC discharging in home backup power scenarios.

SN	Identification	Description
1~12	NC	/
PE	PE	Ground wire
N	N-OUT	Neutral wire
L	L-OUT	Live wire

Table 3-3

4.The EV charging/DUPLEX port is shown in the following figure:

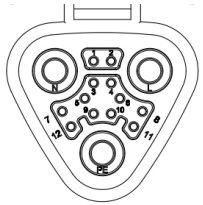


Figure 3-10

The port is orange and has different functions in different application scenarios:
1)Used as the backup charging port (connected to HOME SUB PANEL).
2)Used as the AC expansion discharging port during parallel connection (connected to DOUBLE VOLTAGE HUB).
3)Used as the AC charging port (connected to EV charging adapter).

SN	Identification	Description
1	CC	Connection signal detection signal line
2	CP	Charging control signal
3	NC	/
4	NC	/
5	0V	Low level signal
6	S1	HUB detection
7	CAN_L_AC	Communication CAN L
8	C1	EV mode detection
9	O1	AC parallel operation detection
10	NC	/
11	P1	AC parallel operation detection
12	CAN_H_AC	Communication CAN H
13	PE	Ground wire
14	N-IN	Neutral wire
15	L-IN	Live wire

Table 3-4

5. The COM-1 hybrid inverter communication port wire sequence is shown in the following figure:

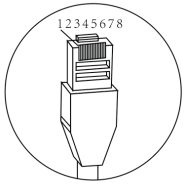


Figure 3-11

The external communication port is used for communication between the battery system and hybrid inverter, which is defined as follows:

SN	Identification	Description
1	NC	/
2	NC	/
3	NC	/
4	CAN1H	hybrid inverter communication CAN H
5	CAN1L	hybrid inverter communication CAN L
6	NC	/
7	RS485_A	RS485 A
8	RS485_B	RS485 B

Table 3-5

6. The COM-2 debugging port wire sequence is shown in the following figure:

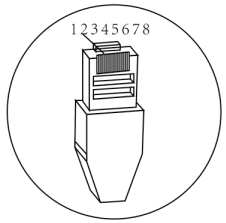


Figure 3-12

This is used for maintenance personnel only, and the ports are defined as follows:

SN	Identification	Description
1	CAN0H	Debugging communication CAN H
2	CAN0L	Debugging communication CAN L
3	GND	Ground wire
4	RS485_B1	RS485 B
5	RS485_A1	RS485 A
6	ACT	Activation signal
7	GND	Ground wire
8	RESET	Reset

Table 3-6

7. The backup port wire sequence of COM-3 is shown in the following figure:

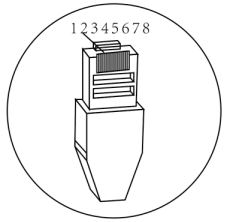


Figure 3-13

It is used to connect relay signals, and the ports are defined as follows:

SN	Identification	Description
1	NO1	Output signal 1
2	COM1	Output signal 1
3	NO2	Output signal 2
4	COM2	Output signal 2
5	DIN+	Input signal 1
6	DIN1	Input signal 1
7	DIN+	Input signal 2
8	DIN2	Input signal 2

Table 3-7

8. The dial switch port is shown in the following figure:

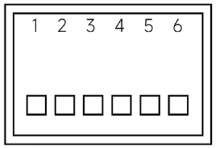


Figure 3-14

The dial switch has a total of 6 digits. The following are the instructions for the dial switch and its usage.
1)6-digit dial switch, 1-4 is the address dial switch, 5 is the reserved switch, and 6 is the access switch of communication terminal resistor 120 Ω.
2)When the devices are in parallel operation, the manual encoding shall be in a parallel encoding sequence. The encoding method is as follows: if the code is 0, automatic encoding will be performed during parallel operation.

Encoding bit				Encoding
1	2	3	4	
OFF	OFF	OFF	OFF	0
ON	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	2
ON	ON	OFF	OFF	3
OFF	OFF	ON	OFF	4
ON	OFF	ON	OFF	5
OFF	ON	ON	OFF	6
ON	ON	ON	OFF	7
OFF	OFF	OFF	ON	8

Table 3-8

3)When the device is locked due to a fault (fault code 68), toggle switches 1-5 to ON, and toggle all switches to OFF to clear the fault.

3.3.2 B3600 residential ESS & portable battery

1. The DC parallel upper connection port (PORT-1) is shown in the following figure:

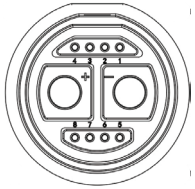


Figure 3-15

The port (orange) contains wires and communication cables, which have different functions in different scenarios:
1)When B3600 is used for residential energy storage applications, this port is connected to the hybrid inverter battery port;
2)During DC parallel operation, this port is connected to the lower connection port of the front-end F3600 or B3600.

SN	Identification	Description
+	P+	Expansion positive pole for parallel operation
-	P-	Expansion negative pole for parallel operation
1	CAN0H	Parallel communication CAN_H
2	CAN0L	Parallel communication CAN_L
3	M_TX	Output signal
4	M_RX	Signal detection
5	GND	Ground wire
6	SYN_ON	Judgment signal for access of upper connection port
7	M_DET	Access signal detection
8	GND	Ground wire

Table 3-9

2. The DC parallel lower connection port (PORT-2) is shown in the following figure:

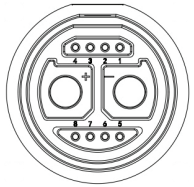


Figure 3-16

The port (black) contains wires and communication cables, which is connected to the upper connection port of F3600 or B3600, as defined below:

SN	Identification	Description
+	P+	Expansion positive pole for parallel operation
-	P-	Expansion negative pole for parallel operation
1	CANH	Parallel communication CAN_H
2	CANL	Parallel communication CAN_L
3	S_RX	Signal detection
4	S_TX	Output signal
5	S_DET	Access signal detection
6	SYN_ON	System on signal
7	GND	Ground wire
8	GND	Ground wire

Table 3-10

3. The COM-1 hybrid inverter communication port is shown in the following figure:

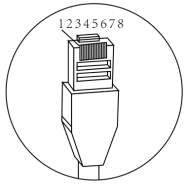


Figure 3-17

The external communication port is used for communication between the battery system and hybrid inverter, which is defined as follows:

SN	Identification	Description
1	NC	/
2	NC	/
3	NC	/

4	CAN1H	hybrid inverter communication CAN H
5	CAN1L	hybrid inverter communication CAN H
6	NC	/
7	RS485_A	RS485 A
8	RS485_B	RS485 B

Table 3-11

4. The COM-2 debugging port is shown in the following figure:

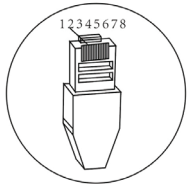


Figure 3-18

This is used for maintenance personnel only, and the ports are defined as follows:

SN	Identification	Description
1	CAN0H	Debugging communication CAN H
2	CAN0L	Debugging communication CAN H
3	GND	Ground wire
4	RS485_B1	RS485 B
5	RS485_A1	RS485 A
6	ACT	Activation signal
7	GND	Ground wire
8	RESET	Reset

Table 3-12

5. The COM-3 backup port is shown in the following figure:

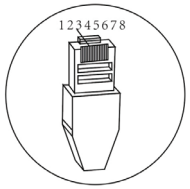


Figure 3-19

SN	Identification	Description
1	NO1	Output signal 1
2	COM1	Output signal 1
3	NO2	Output signal 2
4	COM2	Output signal 2
5	DIN+	Input signal 1
6	DIN1	Input signal 1
7	DIN+	Input signal 2
8	DIN2	Input signal 2

Table 3-13

6. The dial switch port is shown in the following figure:

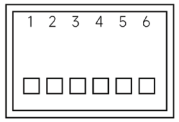


Figure 3-20

The dial switch has a total of 6 digits. The following are the instructions for the dial switch and its usage.

1)6-digit dial switch, 1-4 is the address dial switch, 5 is the reserved switch, and 6 is the access switch of communication terminal resistor 120 Ω.

2)When the devices are in parallel operation, the manual encoding shall be in a parallel encoding sequence. The encoding method is as follows: if the code is 0, automatic encoding will be performed during parallel operation.

Encoding bit				Encoding
1	2	3	4	
OFF	OFF	OFF	OFF	0
ON	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	2
ON	ON	OFF	OFF	3
OFF	OFF	ON	OFF	4
ON	OFF	ON	OFF	5
OFF	ON	ON	OFF	6
ON	ON	ON	OFF	7
OFF	OFF	OFF	ON	8

Table 3-14

3) When the device is locked due to a fault (fault code 68), toggle switches 1-5 to ON, and toggle all switches to OFF to clear the fault.

3.4 LCD DISPLAY CONTENT

3.4.1 F3600 residential ESS & portable power station

1. The main interface is shown in the following figure:

Figure 3-21

① Status prompt identifications: Include fan operating status, WiFi connection identification, Bluetooth connection identification, home storage mode identification, and HUB mode identification in sequence.
② Device parallel status and device code; this is displayed when the device is available for usage.
③ Real time AC/DC charging/discharging power. When in parallel mode, display the total power of the system; when in non-parallel mode, display the power of the current device.
④ The percentage of remaining battery capacity.
⑤ AC output voltage and frequency. It may vary with different specifications.
⑥ Operating status, alarm status, or fault status box; Alarm identifications or fault codes are displayed in the box.
⑦ Remaining time box for charging/discharging; The remaining charging and discharging time is displayed in the box.
⑧ System parallel connection quantity box: The number inside the box represents the total number of normally connected power stations and battery packs, with a maximum of 8 units.
⑨ System parallel available quantity box: The number in the box represents the total number of normally discharged power stations and battery packs in the system, with a maximum of 8 units.
⑩ Setting button.
⑪ Language switch button
⑫ Device information button.

2. The setting interface is shown in the following figure:

Figure 3-22

① AC output switch.
② DC output switch.
③ USB output switch.
④ WiFi password reset.
⑤ Bluetooth&WiFi switch
⑥ AC fast charging switch: enable or disable the fast charging function
⑦ Timed charging function switch: before use, it is required to set the timing time on the APP.
⑧ Lighting brightness setting.
⑨ Automatic screen off time setting.
⑩ Automatic shutdown time setting.
⑪ Return button.

Figure 3-23

The language selection interface is shown in the following figure:

Display information:
Multiple language selection.

Figure 3-24

The device information display interface is shown in the following figure:

① Device number.
② Device version information: the version information of the device's internal parts.
③ Return button.

Figure 3-25

The OTA upgrade interface is shown in the following figure:

OTA upgrading interface: display the upgrading part, upgrading status and upgrading speed

3. The hybrid inverter mode interface is shown in the following figure:

Figure 3-26

① Device parallel status identification and device code.
② Input power.
③ Output power.
④ Remaining fully charged/discharged time.
⑤ Hybrid inverter mode identification: this identification indicates that Hybrid inverter has been connected
⑥ The percentage of remaining battery capacity.
⑦ High/low-temperature alarm identification
⑧ Alarm identification and fault codes
⑨ Number of parallel connections.
⑩ Number of available devices in parallel operation.

3.4.2 B3600 home ESS & portable battery

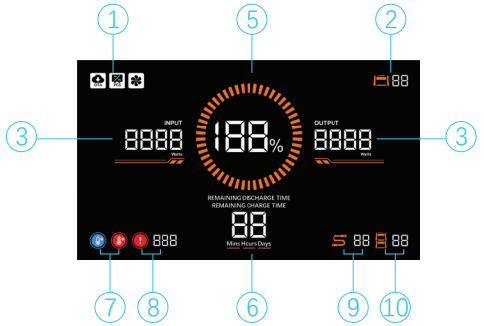


Figure 3-27

① Status prompt identifications: include OTA mode identification, hybrid inverter mode identification, fan status identification in sequence.
② Parallel status identification and device encoding
③ Real-time discharge power
④ Real-time charging power
⑤ Remaining capacity of the battery
⑥ Remaining charging/discharging time
⑦ High/low-temperature alarm identification
⑧ Alarm identification and fault codes
⑨ Number of parallel connections.
⑩ Number of available devices in parallel operation.

3.5 SPECIFICATIONS AND PARAMETERS

3.5.1 F3600 residential ESS & portable power station

Model	F3600-US
Net weight	48kg/105.8 lbs.Approx.
Dimensions	58.8cm*40cm*42.4cm/23.1in*15.7in*16.7in
Battery capacity	3600Wh (48V,75Ah)
Battery	LiFePO4
Input parameters	
AC input	120V AC 15A 1800W Max.
EV input	120V AC 30A 3400W Max.
DC input	Rated 12-60V DC, 25A 1500W,support max. 150V and max. 2400w,support MPPT
Output parameters	
AC output	120V AC,60Hz,3600W(7200W Surge),20A * 4,30A * 1
Back Up output	120V AC,60Hz,3600W(7200W Surge),30A * 1
DC output	2 * USB-A 12W Max(5V DC/2.4A)
	2 * USB-A QC3.0 28W Max.(5V DC/3A、9V DC/3A、12V DC/2.4A)
	2 * USB-C PD 100W Max.(5V DC/3A、9V DC/3A、15V DC/3A、20V DC/5A)
	1 * Anderson 12V DC/24V DC 30A 720W Max.
	1 * Car Port 12V DC 10A 120W Max.
Protection parameters	
Maximum charging current	55A
Maximum discharging current	140A
Working voltage range	38V DC - 53V DC
Charging temperature range	-28°C- 50°C
Charging temperature range	2°C - 50°C
Communication methods	CAN/RS485
Cycle life	6000 Cycles To 80%+ Capacity
Warranty period	10 Years

Table 3-15

3.5.2 B3600 residential ESS & portable battery

Model	B3600
Net weight	40kg/88.2 lbs.Approx
Dimensions	58.8cm*40cm*42.4cm / 23.1in*15.7in*16.7in
Battery capacity	3600Wh (48V, 75Ah)
Battery	LiFePO4
Protection parameters	
Maximum charging current	55A
Maximum discharging current	140A
Working voltage range	38V DC - 53V DC
Charging temperature range	-28°C - 50°C
Charging temperature range	2°C - 50°C
Communication methods	CAN/RS485
Cycle life	6000 Cycles To 80%+ Capacity
Warranty period	10 Years

Table 3-16

3.5.3 Double voltage hub (for use with F3600-US)

Model	Double voltage hub (for use with F3600-US)
Input voltage	120V AC, 60Hz
Output voltage	240V AC, 60Hz
Output Power	30A,7200W MAX
Operating temperature	-28℃ - 58℃
Dimension	28cm*10.8cm*6.5cm / 11.0in*4.3in*2.6in

Table 3-17

3.5.4 AC EV charging adapter

Model	EA120
Input voltage	120V AC, 60Hz
Output voltage	120V AC, 60Hz
Input/output power	30A, 3600W MAX
Operating temperature	-28℃ - 58℃

Table 3-18

4. APP USAGE INSTRUCTIONS

4.1 APP INTRODUCTION

An App is developed based on residential energy storage devices, which allows remote control of the device and viewing of its status information.

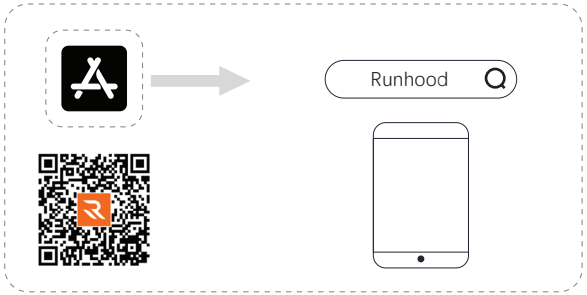
4.2 SCOPE OF APPLICATION OF THE APP

The app is applicable for residential energy storage devices.

4.3 SOFTWARE ACQUISITION

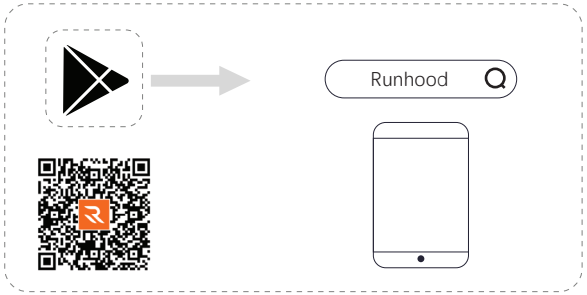
4.3.1 APP Store

The iOS users can search for "runhood" in the App store to download or scan the QR code to download.

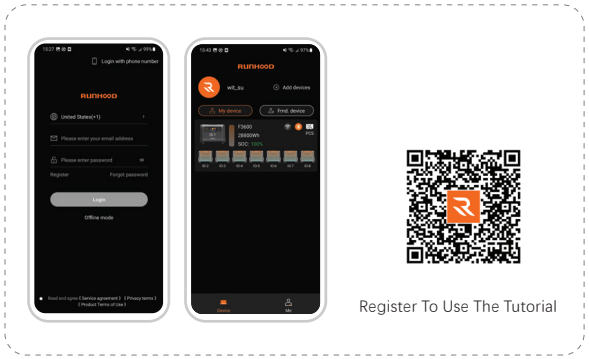


4.3.2 QR Code Download

The Android users can search for "runhood" in the Play Store market to download or scan the QR code below for downloading and installation.



After installation, the Runhood App can automatically prompt for software updates if there are any version updates in the future.

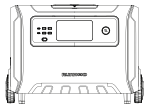
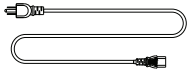
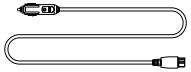
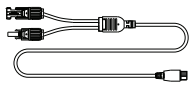
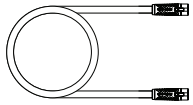
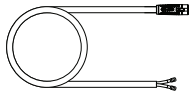
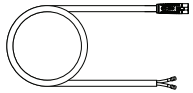


5.INSTALLATION AND MAINTENANCE

Please confirm that the accessories are complete and in good condition before installation. This product must be installed and maintained in strict accordance with the instructions in the manual, and relevant safety instructions must be strictly followed during use. RUNHOOD will not be responsible for any losses caused by non-compliance with relevant safety instructions or failure to follow the installation, maintenance, and use instructions in the manual.

5.1 Description of accessories

5.1.1 Description of F3600-US standard product accessories:

No.	Article name	Images	Specifications	Instructions for use	Remarks
1	F3600-US		F3600	Home Mobile Energy Storage Power Supply Host Product	Included in F3600
2	AC Charging Cable-US-plug		US standard/18AWG/black/US standard three- plug head to three-jack tail/wire length 1500 mm	Applicable for AC charging	Included in F3600-US
3	Car charging cable		16AWG/XT60F to 1019 cigarette lighter/PVC black/wire length 1,6m	Applicable for charging with one end inserted into the cigarette lighter port on the car, and the yellow end into the DC input port	Included in F3600
4	Solar to XT60F charging cable		MC4 to XT60F/12AWG/ Line length 3,5m	Connect the MC4 end to the photovoltaic panel, and insert the yellow end into the DC input port for charging	Included in F3600
5	Extra battery cable		2 * 2AWG+8 * 20AW/orange+black plug/wire length 1,5m	Used for parallel expansion of battery packs when F3600 or B3600 are placed side by side	Optional
6	AC EV charging adapter - US		F3600/US standard AC charging gun holder to 3+12 charging head/orange head	When using an AC charging gun to charge F3600, this adapter needs to be connected to F3600 to charge. Note: The specification of the charging gun is AC.	Optional
7	Hybrid inverter power cable A		2 * 2AWG/black/orange plug/wire length 2m	Used as a power cable when connected to a hybrid inverter. Note: Applicable to hybrid inverter power below 5KW	Optional
8	Hybrid inverter power cable B		2 * 1/0AWG/black/shielded/ orange plug/wire length 2m	Used as a power cable when connected to a hybrid inverter. Note: Applicable to hybrid inverter power above 5KW	Optional
9	Cat.6 ethernet cable (included in the hybrid inverter cable)		24AWG/8-core twisted pair/568B/black/wire length 2m	Used as a communication cable when connected to a hybrid inverter	Optional

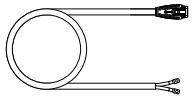
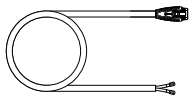
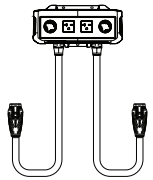
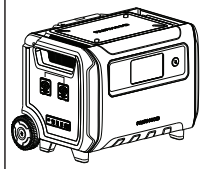
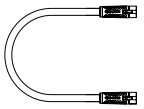
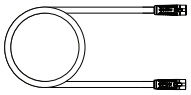
10	Panel AC input connection cable		3 * 10AWG+4 * 22AW black/orange plug/wire length 2000 mm	Used as an input connection cable for the backup function	Optional
11	Panel AC output connection cable		3 * 10AW black/shielded/black plug/wire length 2000 mm	Used as an output connection cable for the backup function	Optional
12	Communica-tion connection board		Size: 31.2x25.7mm	Used with the backup power function connected to the Panel input line side	Optional
13	Voltage doubling hub (HUB)		HUB/Black/AC 240V OUT	Used when two sets of F3600-US are in parallel operation	Optional

Table 5-1

5.1.2 Description of B3600 accessories:

No.	Article name	Images	Specifications	Instructions for use	Remarks
1	B3600		B3600	Home Mobile Energy Storage Power Supply Battery Product	Included in B3600
2	Extra battery cable		2 * 2AWG+8 * 20AWG/black/ orange+black plug/wire length 0,6m	Used for expansion of battery packs in parallel by stacking up and down	Included in B3600
3	Extra battery cable		2 * 2AWG+8 * 20AWG/black/or-ange+black plug/wire length 1,5mm	Used for parallel expansion of battery packs when F3600 or B3600 are placed side by side	Optional

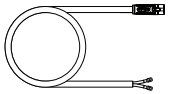
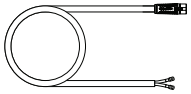
4	Hybrid inverter power cable A		2 * 2AWG/black/orange plug/wire length 2m	Used as a power cable when connected to a hybrid inverter. Note: Applicable to hybrid inverter power below 5KW	Optional
5	Hybrid inverter power cable B		2 * 1/0AWG/black/orange plug/wire length 2m	Used as a power cable when connected to a hybrid inverter. Note: Applicable to hybrid inverter power above 5KW	Optional
6	Cat.6 ethernet cable (included in hybrid inverter cable)		24AWG/8-core twisted pair/568B/black/wire length 2m	Used as a communication cable when connected to a hybrid inverter	Optional

Table 5-2

5.2 USAGE AND INSTALLATION GUIDELINES

5.2.1 Power on and off

1. When the device is not under parallel operation, press the power On/Off switch for 1.5 seconds. After you hear a beep, the LCD screen lights up and the device starts up; In the battery parallel system composed of F3600 and B3600, press the power On/Off switch of the first device for 1.5 seconds, and all the screens of the parallel devices will light up and the devices will be powered on.

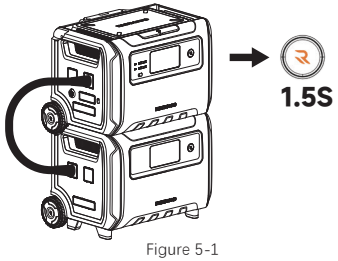


Figure 5-1

2. By default, after the device stands still for 2 minutes, the LCD screen will decrease brightness to save power; when the device is not connected to a charger or load and stands still for more than 5 minutes, it will automatically power off. These times can be set through F3600 or APP and automatically synchronized to other B3600 in the parallel system after modification.

3. When the device is not under parallel operation, press and hold the power On/Off switch for 3 seconds. After you hear a beep, release it, and the LCD screen will display a power-off prompt, indicating that the device is powered off; In the parallel system, press the power On/Off switch of the first device for 3 seconds and then release it, and all screens of F3600 and B3600 under parallel operation will light off and the devices will be powered off.

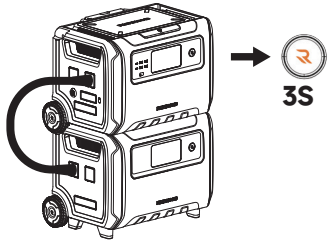


Figure 5-2

4. The device cannot be powered off directly during charging or discharging. Please turn it off after confirming that the DC, AC, and USB output switches are disconnected and the device is not being charged. If the device cannot be powered off properly, please press and hold the power On/Off switch for 10 seconds. After you hear three beeps, the device will attempt to forcibly power off.

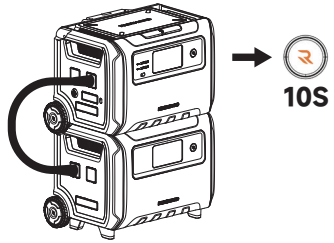


Figure 5-3

5.2.2 Charging

1. By connecting the AC charging cable to the wall socket and the AC input port of F3600, the device will automatically turn on and charge. It cannot be powered off during the charging process and will automatically stop charging when fully charged. F3600-US charging supports 1200W Max or 1800W Max, and you can set the maximum charging current through the screen. When Fast Charging is enabled, F3600-US can support a maximum charging power of 1800W.

Note: The socket in the figure is an example of US standards, and the AC output socket varies in different countries.

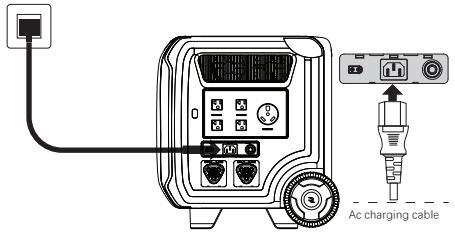


Figure 5-4

⚠	During AC charging, please pay attention to the voltage and frequency of the socket used, and confirm that it matches the specifications of this product that needs to be charged.

2. By connecting the solar to XT60F charging cable, 3.5 meter to the DC input port of the F3600 and the photovoltaic panel, the device will automatically start and charge (Rated 12-60V DC, 25A 1500W,support max. 150V and max. 2400w). The photovoltaic charging supports MPPT. During the charging process, the device cannot be powered off, and it will automatically stop charging when fully charged.

Note: The socket in the figure is an example of EU standards, and the AC output socket varies in different countries.

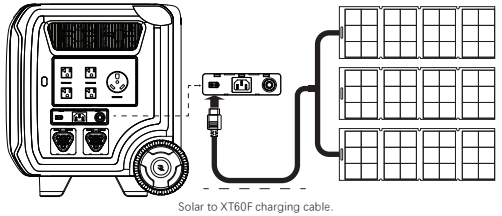


Figure 5-5

⚠	Before connecting, please check whether the output voltage of the photovoltaic panel meets the charging parameters of F3600.

3.By connecting the XT60F car charging cable to the car charging port and the DC input port of F3600, the device will automatically start and charge (12V/24V, 10AMax, 240W Max.). During car charging, please ensure that the engine is started to avoid running out of the car battery. During the charging process, the device cannot be powered off, and it will automatically stop charging when fully charged.

Note: The socket in the figure is an example of EU standards, and the AC output socket varies in different countries.

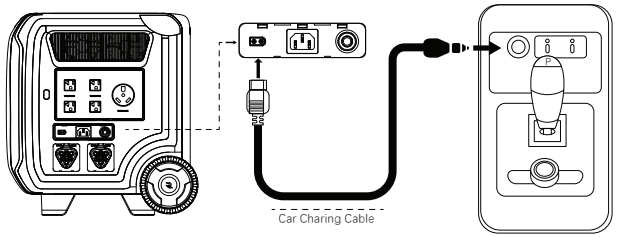


Figure 5-6

⚠	Please pay attention to safety when connecting.

4. By connecting the AC EV charging adapter to the charging station and F3600's EV input port, the device will automatically turn on and charge (3400W Max.). During the charging process, the device cannot be powered off, and it will automatically stop charging when fully charged.

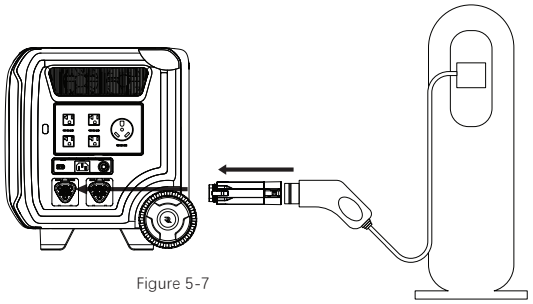


Figure 5-7

5.2.3 Discharging

1. We have designed various AC output sockets for F3600 according to different specifications, providing a maximum total power output of 3600W for your device. Please refer to 3.5 Specification and parameters for details.

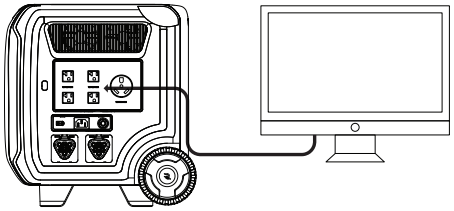


Figure 5-8

⚠	Before use, please check whether the total power of the electrical appliances meets the specifications of this product to avoid property damage and ensure personal safety.

2. F3600 is designed with two USB-A (12W Max.), two USB-A (28W Max.), and two USB-C (100W Max.) output ports to charge your device with USB ports. The USB-A (28W Max.) and USB-C (100W Max.) are fast charging ports, and the actual output power is determined by the charging device. When using adjacent USB-A and USB-C simultaneously, both USB ports have an output power of 15W MAX.

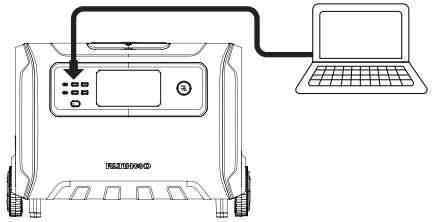


Figure 5-9

⚠	Before use, please check whether the total power of the electrical appliances meets the specifications of this product to avoid property damage and ensure personal safety.

3. F3600 is designed with a car power output port and an Anderson DC output port, which can be used to power general vehicle electrical equipment. The output voltage of the car power output port is 12V and the current is 10A. The charging voltage of the Anderson DC output port is 12V or 24V, and the output voltage level (12V or 24V) can be switched through the Anderson output mode switch.

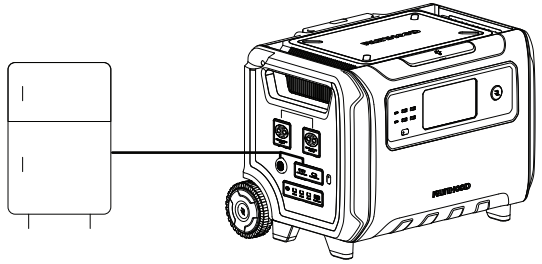


Figure 5-10

⚠	Before use, please check whether the total power of the electrical appliances meets the specifications of this product to avoid property damage and ensure personal safety.

4. As for F3600 AC output support and the use of a vehicle electrical charger, the charger can be used to connect to the F3600 AC socket to recharge the electric vehicle when the electric vehicle's power is depleted.

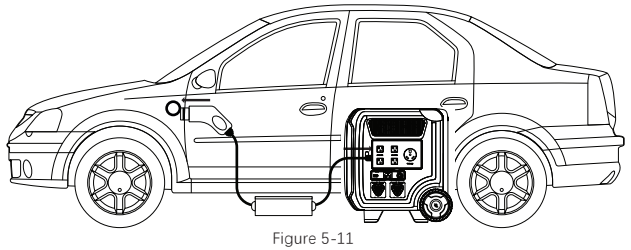


Figure 5-11

⚠	Before use, please check whether the total power of the electrical appliances meets the specifications of this product to avoid property damage and ensure personal safety.

5.2.4 DC parallel mode

The RUNHOOD F3600 and B3600 product supports both "F3600+B3600" and "B3600+B3600" parallel modes. By parallel operation, the total battery capacity of F3600 or B3600 can be expanded, with a maximum capacity of 8 * 3.6KWh. In parallel mode, the power of F3600 is displayed as the total charging/discharging power of the parallel battery system. The parallel operation method is as follows:

1. Ensure that all devices are powered off.
2. If automatic encoding is used, please ignore this step. Toggle the dial switches of all devices to be parallel in order to 1, 2, 3... The dial method is shown in Section 3.3 Port definition. Please note that the dial numbers cannot be repeated.
3. Use an extra battery cable to connect the lower and upper connection ports of the device in sequence, and turn on the communication internal resistance switch (the last bit of the dial switch) of the first and last devices.
4. Press and hold the power On/Off switch of the first device for 1.5 seconds, release the button after you hear a beep, and then the device will start up and go into the parallel operation. The screens of all devices will display the parallel status.

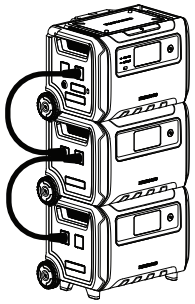


Figure 5-12

⚠	Please do not connect or disconnect the DC connection cable while the device is powered on to avoid device damage or electric shock accidents.

5.2.5 AC parallel mode

If electrical appliances require higher power or 240V AC power, you can use two sets of F3600-US to expand the output power to 7200W through DOUBLE VOLTAGE HUB connection. DOUBLE VOLTAGE HUB has two 240V/20A AC sockets and two 240V/30A AC sockets. During use, first connect the two cables of DOUBLE VOLTAGE HUB to the EV INPUT/DUPLEX ports of the two sets of F3600, DOUBLE VOLTAGE HUB can be fixed on the wall. Start F3600-US and turn on the AC output switch. DOUBLE VOLTAGE HUB can output 240V AC power.

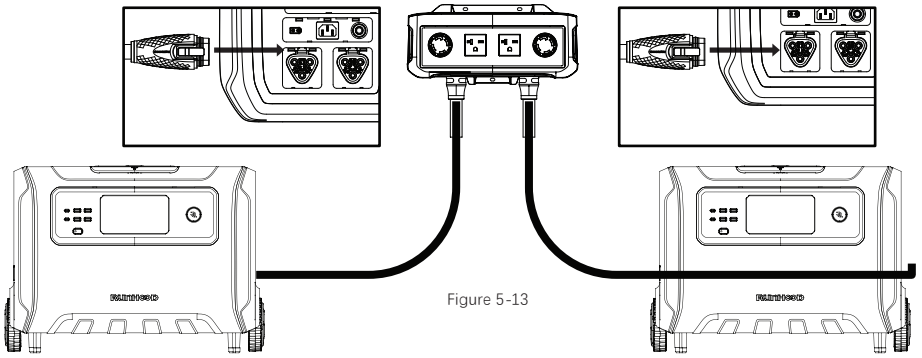


Figure 5-13

⚠	Please do not use DOUBLE VOLTAGE HUB to power devices with a total power exceeding 7200W.

5.2.6 Residential energy storage and power backup mode

5.2.6.1 Backup UPS

F3600 supports a backup UPS function, allowing you to connect loads while F3600 is connected to the power grid. When the power grid is normal, the power grid prioritizes supplying power to the load and charging the battery (when the battery is not fully charged). At this time, the load power cannot exceed the rated charging power; When in power grid outage, F3600 will switch to battery power within 10 ms to ensure uninterrupted electricity consumption. You can expand the capacity of F3600 through the "F3600+B3600" parallel mode. Note: The socket in the figure is an example of US standards, and the AC output socket varies in different countries.

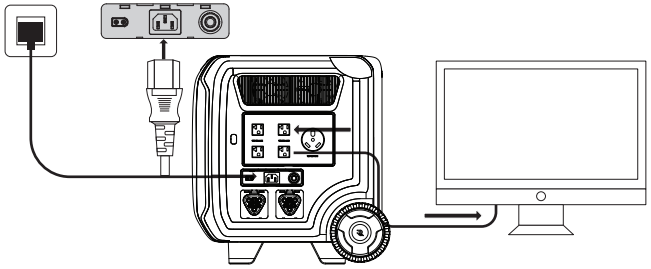


Figure 5-14

⚠	F3600 requires about 10ms to switch during a power outage, so it cannot be used as an online UPS. For electrical appliances with high requirements for UPS switching, please confirm whether the electrical appliance allows the required time for switching of this product before use. RUNHOOD will not be responsible for the loss caused by forced use in case of non-conforming switching time.

5.2.6.2 Residential energy storage and power backup

F3600 can be used as a residential backup energy storage battery After two sets of F3600-US are AC parallel connected, they can split the phase together through the HOME BACK UP interface to output 240V AC. In case of a power outage, you can expand the capacity of F3600 using the "F3600+B3600" parallel mode by switching through the Sub Panel switch.

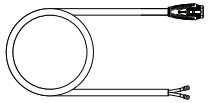
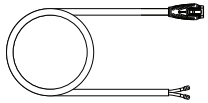
📖	The installation under this mode must be performed by professionals. Please read this section carefully before installation.

1) Installation and protective tools:

				
Diagonal plier	Screwdriver	Electric drill	Wrench	Protective gloves

🧤	Please use tools with good insulation performance during installation to avoid electric shock accidents.

2) Preparation of accessories:

			
Panel AC input connection cable	Panel AC output connection cable	Communication connection board	Sub Panel

3) Installation steps:

The Sub Panel mentioned in this manual specifically refers to the Transfer Switch of the Reliance brand, as shown in the following figure:

Figure 5-15

2. The setting interface is shown in the following figure:

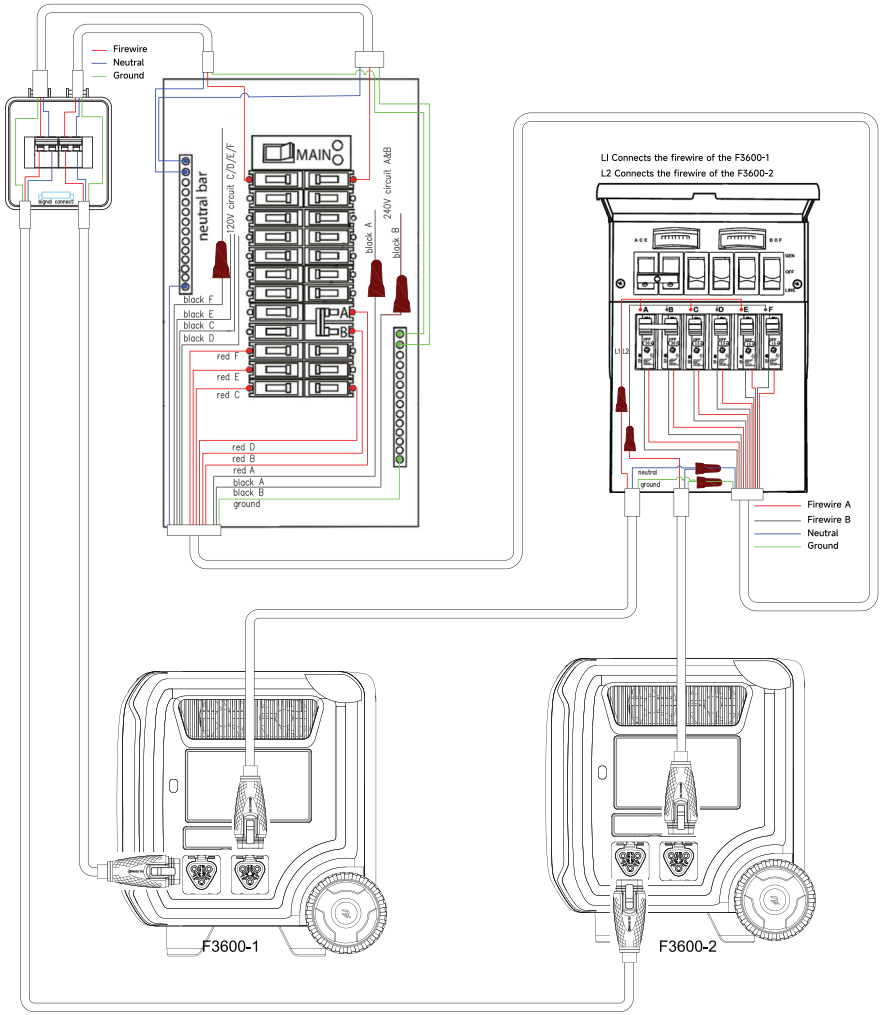


Figure 5-16

⚠	Please take insulation measures during the installation process. It is necessary to install with the grid disconnected to ensure that all devices are powered off.

Step 1: Use the Panel AC input connection cable and connect one end to the EV charging port of F3600.

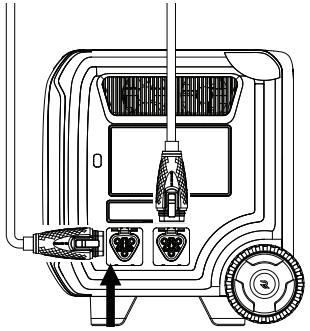


Figure 5-17

Step 2: Connect the other end of the Panel AC input connection cable to the main distribution box and connect the communication cable to the communication connection board. When connecting, it is necessary to add Protection Switch, or use the circuit breaker in the main distribution box. The "Signal connect" in the figure below is the "communication connection board", by which it mainly achieves the AC parallel communication of two sets of F3600. It can be placed in the main distribution box or external junction box.

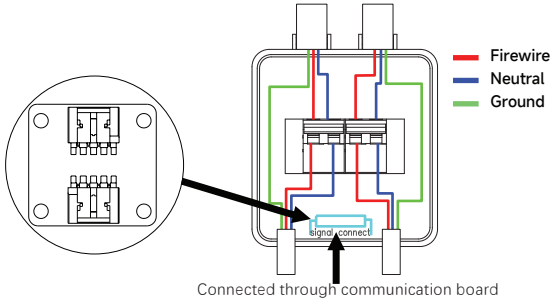


Figure 5-18 Protection Switch

Step 3: Use Panel AC output connection cable, and connect one end to F3600 HOME BACK UP output port.

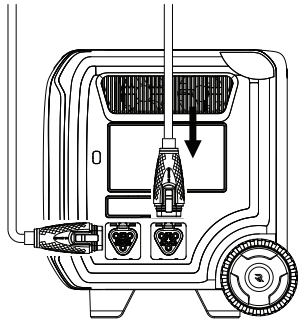


Figure 5-19

Step 4: The other end is connected to the neutral wire of the Sub Panel, the ground wire and the live wire of the input end, and is connected to the Sub Panel and the grid. For details, please refer to the manual of the Sub Panel you use. Sub Panel is the Transfer-Switch of Reliance brand. Please refer to Reliance' s product manual for the wiring method. The plan needs to be developed according to the residential load wiring.

LI Connects the firewire of the F3600-1
L2 Connects the firewire of the F3600-2

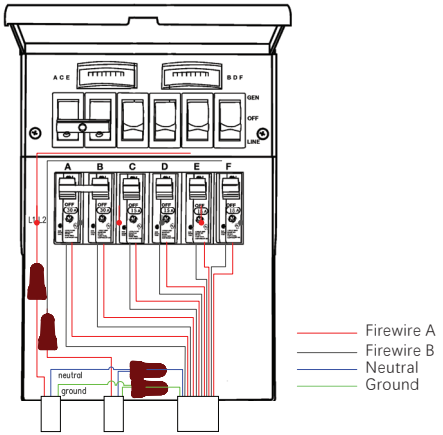


Figure 5-20 Sub Panel

Step 5: The DC connection cable is connected to the residential main distribution box, and the wiring method needs to be formulated according to the residential load wiring. The following figure is for reference only:

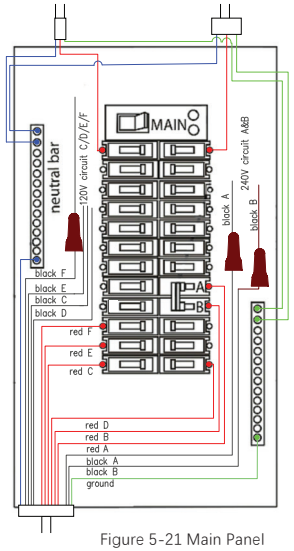


Figure 5-21 Main Panel

4) Usage:

a. When there is electricity in the power grid, F3600 can be charged via the grid port, and the charging will automatically wake up F3600. The device will automatically stop charging after it is fully charged.

b. When using batteries to supply power, turn on the AC output switches of F3600-1 and F3600-2 simultaneously, and close the circuit breaker switch in the Panel. At this time, F3600 outputs through the HOME BACK UP output port, with a single port output of 120V and a dual port output of 240V. You can switch and control the output of the device through the Panel.

⚠	When using batteries to supply power, please ensure that the total power output of one set of F3600 does not exceed 3600W (or 7200W when two sets are used together). RUNHOOD will not be responsible for any property damage or safety issues caused by power mismatch.

5.2.7 Residential on-grid energy storage mode

Both F3600 and B3600 can be connected to hybrid inverters for use as energy storage batteries in residential energy storage systems. You can expand the capacity of energy storage batteries through the parallel mode of "F3600+B3600" or "B3600+B3600". The communication method between the battery BMS and the inverter for parallel operation is CAN communication, and the SOC notified by the BMS to the inverter is the average SOC. After the battery is successfully connected to the inverter, F3600 can only be charged or discharged via the inverter, and other charging and discharging ports (such as USB output ports) are not available. You can expand your capacity through the "F3600+B3600" or "B3600+B3600" parallel mode.

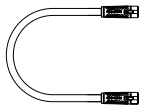
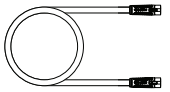
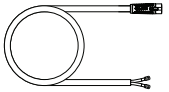
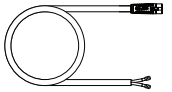
📖	The installation under this mode must be performed by professionals. Please read this section carefully before installation.

1) Installation and protective tools:

				
Diagonal plier	Screwdriver	Electric drill	Wrench	Protective gloves

🧤	Please use tools with good insulation performance during installation to avoid electric shock accidents.

2) Preparation of accessories:

				
Extra battery cable 0.6m	Extra battery cable 1.5m	Hybrid inverter power cable A	Hybrid inverter power cable B	Cat.6 ethernet cable

3) Installation steps:

The overall system wiring installation method is shown in the following figure:

⚠	Please take insulation measures during the installation process. It is necessary to install with the grid disconnected to ensure that all devices are powered off.

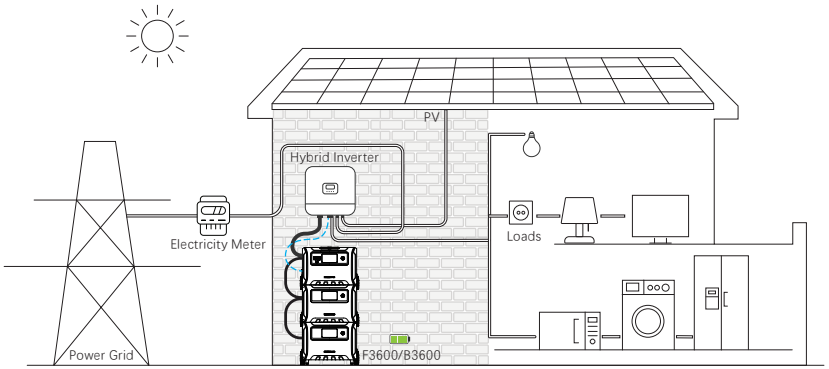


Figure 5-22

Step 1: Before installation, reserve enough space. Place this product against the wall, and it is recommended to stack more than two devices up and down. If more than three devices are stacked, it is recommended to add additional fixing measures to prevent this product from being stacked too high and tilting forward. This product is not waterproof, so please install it indoors, in a garage or basement. If placed outdoors, a waterproof and dustproof box can be installed outdoors before installing this product inside.

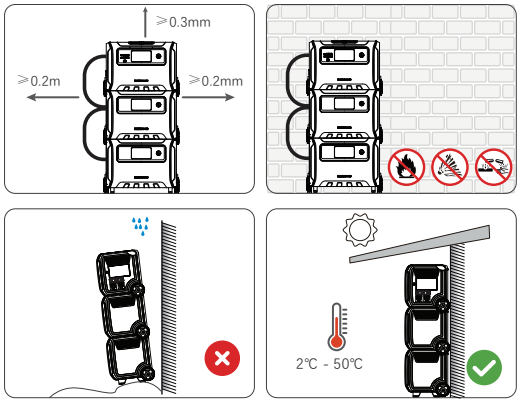


Figure 5-23

Step 2: Connect the extra battery cable to the DC parallel ports of two adjacent devices, with the fool-proofing design of the wiring harness ports. The black plug is connected to the black socket, and the orange plug is connected to the orange socket. With the installation method of stacking up and down, you can choose extra battery cable 0.6m. If the left and right devices are placed side by side, please use extra battery cable 1.5m.

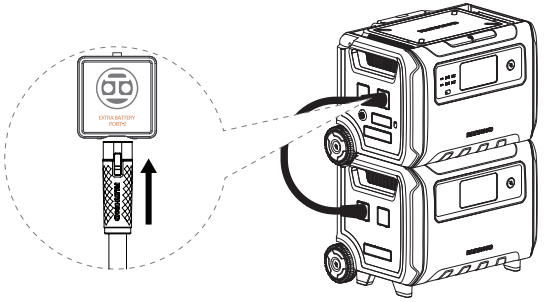


Figure 5-24

Step 3: Connect the battery power port of the inverter using the RUNHOOD's dedicated hybrid inverter power cable A. For hybrid inverter power of 5KW and below, use hybrid inverter power cable A (2AWG), and for hybrid inverter power above 5KW, use hybrid inverter power cable B (1/0AWG).

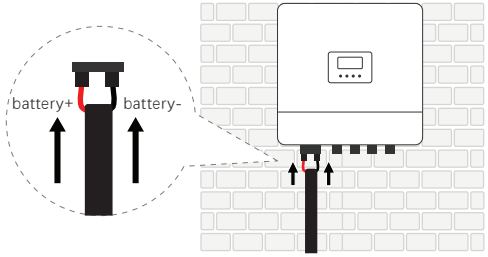


Figure 5-25

Step 4: Connect the other end to the upper connection port of the battery.

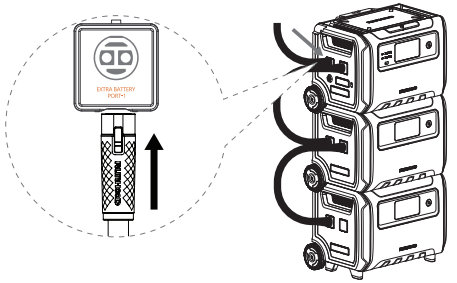


Figure 5-26

Step 5: Connect the BMS communication port of the inverter using an Ethernet cable.

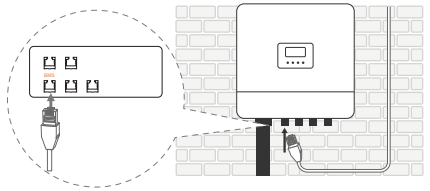


Figure 5-27

Step 6: Use an Ethernet cable to connect the hybrid inverter communication port of F3600 or B3600, with port identification: COM-1.

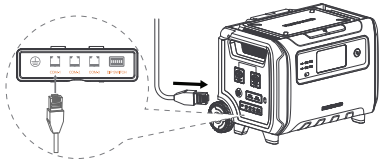


Figure 5-28

Step 7: Power-on: power on the RUNHOOD F3600 and B3600 product and confirm that the inverter is successfully connected. At this time, the product enters the hybrid inverter mode, and the LCD displays the hybrid inverter mode interface, indicating that the communication with the inverter is successful.

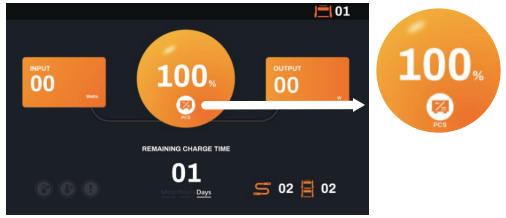


Figure 5-29

Step 8: Power-off: Before turning off the battery, stop the inverter, then disconnect the communication cable with the inverter and hybrid inverter power cable. After the product exits hybrid inverter mode, press and hold the power On/Off switch for 3 seconds to power off the product. If the device cannot be power off properly, press and hold the power On/Off switch of the product for 10 seconds to force the device to power off.

⚠	Please ensure that the device is powered off during the connection process; Please charge the battery in a timely manner when the battery level is depleted to extend its life cycle.

5.3 MAINTENANCE

5.3.1 Device maintenance instructions

1. Please use this product within a suitable ambient temperature range (10°C - 40°C) as much as possible.
2. Please place this product in a dry environment to avoid contact with liquids.
3. Please keep the surface of the battery pack clean, with clear ventilation openings to ensure that this product can dissipate heat properly. You can use a dry and soft cloth or tissue to wipe.
4. When stopping use, please cover the protective cover of the port to extend the life cycle of this product.
5. This product needs to be regularly checked for the integrity, damage, and aging of the connecting cables; Regularly check if the port connections are loose and if the surface is damaged. If the above problems occur, please replace them in a timely manner.
6. Please ensure that the charging and discharging power does not exceed specifications of this product during use to maintain the life cycle of the battery.
7. When left unused for a long time, this product should be fully charged at least every three months to maintain the life cycle of the battery.

5.3.2 Accident handling

1. Overheating: When the device is operating normally, the cooling system will dissipate heat to prevent harm caused by overheating of the battery. When the device cannot effectively cool down, the battery management system will issue a warning and automatically cut off the charging/discharging process. At this time, the use of this product should be stopped, and relevant technical personnel should be contacted for comprehensive troubleshooting before use.
2. Electric leakage: If there is electric leakage during the use of the device, evacuate the crowd immediately to stay away from the device, and contact relevant technical personnel for handling. It is prohibited to forcibly use the battery when it is damaged.
3. Over discharge: To protect the battery pack, the battery management system will provide protection and interrupt discharge when the individual voltage of the battery is too low, the overall voltage is too low, or the battery level is depleted. At this point, the device should be immediately stopped from discharging and charged in a timely manner. It is prohibited to forcefully discharge the device the battery level is depleted, otherwise it will damage the battery performance and may cause permanent damage to the battery.
4. Short circuit: In the event of short circuit in the battery, immediately stay away from the device and try to cut off the power supply and electrical appliances as well as the connection between the short circuit power supply and other power sources while ensuring your safety. It is required to immediately contact relevant technical personnel for on-site maintenance. Power devices that have been severely short circuited should not be used again. It needs to be returned to the factory for maintenance before the manufacturer decides whether it can be used again.
5. Combustion: If a battery pack combustion accident occurs, immediately evacuate the crowd and prohibit any unrelated personnel from approaching the device (there may be an explosion risk). Professional fire extinguishers should be used to extinguish the fire. After the fire extinguishing is completed, personnel wearing the necessary protective device should disconnect the connection cable, and the battery pack should be fully discharged with a resistor (voltage to zero volts) before the battery can be removed for subsequent operation analysis.
6. Collision deformation: If the device is collided, squeezed, deformed, or pierced by foreign objects due to various reasons, it should be immediately stopped from use and turned off, and all connecting cables should be disconnected. Notify professional technical personnel to be present for handling.
7. Others: If you need to disassemble the shell or replace the internal parts of the device due to other accidents, only professional personnel can perform this operation. When replacing, make sure the device is powered off. First, disconnect the battery cable to avoid electrical shock. In the case that the battery will not be shorted, replace the internal parts.

5.3.3 Battery disposal

Only dispose of the battery after it has been fully discharged. The battery contains hazardous chemicals, please comply with local regulations on battery disposal and recycling.

	The battery pack should be disposed of after proper treatment to ensure environmental safety.

5.4 FAULT HANDLING

Fault code	Fault content	Can it be automatically restored	Actions
15	Too high charging process temperature	Yes	Stop charging, check if the device temperature is too high, and wait for the device to cool down before use. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
16	Too low temperature in charging progress.	Yes	Stop charging, check if the ambient temperature is within the allowable range for product charging, and move the device to the environment with a suitable temperature before charging. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
17	Too high charging current	Yes	Immediately stop charging and check if the charging device meets the specifications of this product. Please use a charging device that meets the product specifications for charging. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
18	Too high individual voltage	Yes	Stop charging and automatically recover after a period of inactivity. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
35	Too high temperature in discharging process	Yes	Stop discharging, check if the device temperature is too high, and let it stand for a period of time before use. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
36	Too low temperature in discharging process	Yes	Stop discharging and check if the ambient temperature is within the normal operating range of the product. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
37	Too low individual voltage	Yes	Stop discharging and charge the device to see if it has been restored. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
38	Excessive discharging current	Yes	Stop discharging and check if the electrical appliance meets the specifications of this product. Please use electrical appliance that meets the product specifications. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
51	Abnormal total voltage sampling	Yes	Stop charging or discharging, let it stand for a period of time and check if it has recovered. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
52	Too high MOS temperature	Yes	Stop discharging, check if the device temperature is too high, and let it stand for a period of time before use. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
53	Abnormal communication between F3600 and other devices	Yes	Check if the DC parallel port and extra battery cable are connected properly, and automatically restore after the connection is correct. If it cannot be restored or cannot be used normally after restoration, please contact a professional.

54	Abnormal communication between the main station BMS and the DC main control	Yes	Check and restart the device for restoration. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
55	AFE communication abnormality	Yes	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
61	Discharging fault	No	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
62	Charging fault	No	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
63	Encoding fault	No	Check if the DC parallel port and extra battery cable are connected properly, and restart the device to restore it after confirming that the connection is correct. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
64	Battery short circuit fault	No	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
65	Voltage sampling disconnection	No	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
66	Abnormal temperature sampling	No	Restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
67	Abnormal pre-discharge	No	Disconnect the electrical appliance and power it off. Ensure that there is no device connected and restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
68	Fault that locks device	No	Use a dial switch to eliminate the fault. Please refer to the instructions for the dial switch in Section 3.3. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
101	USB-A1 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
102	USB-A2 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
103	USB-A3 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
104	USB-A4 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.

105	USB-C1 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
106	USB-C2 port fault	No	Disconnect the electrical appliance, and click the USB output switch to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
107	Cigarette lighter port fault	No	Disconnect the electrical appliance. Click on the DC output switch to clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
108	Anderson output port fault	No	Disconnect the electrical appliance. Click on the DC output switch to clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
109	DC power board communication failure	Yes	Check whether the power board can start normally. Wait for communication to resume and automatically clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
110	Inverter communica-tion failure	Yes	Check whether the power board can start normally. Wait for communication to resume and automatically clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
111	BMS communication failure	Yes	Check whether BMS can start normally. Wait for communication to resume and automatically clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
131	Cigarette lighter port undervoltage	No	Check if the battery is under voltage. If the battery is under voltage and charged, restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
132	Anderson DC output port 12V undervoltage	No	Check if the battery is under voltage. If the battery is under voltage and charged, restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
133	Anderson DC output port 24V undervoltage	No	Check if the battery is under voltage. If the battery is under voltage and charged, restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
134	Cigarette lighter port overload	No	Check if the electrical appliances meet the specifications of this product, and clear the fault after restarting this product. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
135	Anderson DC output port 12V overload	No	Check if the electrical appliances meet the specifications of this product, and clear the fault after restarting this product. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
136	Anderson DC output port 24V overload	No	Check if the electrical appliances meet the specifications of this product, and clear the fault after restarting this product. If it cannot be restored or cannot be used normally after restoration, please contact a professional.

137	12V radiator overheating	Yes	The output power decreases, and the idle device recovers after cooling down. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
138	12V Radiator malfunction	Yes	Disconnect the electrical appliance and wait for the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
139	24V radiator overheating	Yes	The output power decreases, and the idle device recovers after cooling down. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
140	24V Radiator malfunction	Yes	Disconnect the electrical appliance and wait for the device to restore. Restart the device to clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
147	Power board battery overvoltage	Yes	Stop charging and automatically recover after a period of inactivity. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
148	Power board battery undervoltage	Yes	Stop discharging and charge the device to see if it has been restored. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
149	Photovoltaic charging overvoltage	No	Stop photovoltaic charging and check if the photovoltaic charging meets the specifications. Restart the device to clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
150	Photovoltaic charging overcurrent	No	Stop photovoltaic charging and check if the photovoltaic charging meets the specifications. Restart the device to clear the fault. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
151	Photovoltaic charging power overload	Yes	Stop photovoltaic charging and wait for the device to naturally recover or restart to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
152	Photovoltaic charging radiator overheating	Yes	Stop photovoltaic charging and wait for the device to cool down to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
153	Photovoltaic charging radiator fault	Yes	Stop photovoltaic charging and wait for the device to cool down to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.

161	Inverter battery overvoltage	Yes	Stop charging and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
162	Inverter battery undervoltage	Yes	Stop discharging and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
163	Inverter over temperature	Yes	Stop discharging and wait for the device to cool down to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
164	Abnormal grid voltage	Yes	Disconnect the grid connection, and re-connect to the grid after restoration. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
165	Abnormal grid frequency	Yes	Disconnect the grid connection, and re-connect to the grid after restoration. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
166	Abnormal output voltage	Yes	Disconnect the electrical appliance and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
167	AC output short circuit	Yes	Disconnect the electrical appliance and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
168	AC output overload	Yes	Disconnect the electrical appliance and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.
169	Inverter malfunction	Yes	Disconnect the electrical appliance and wait for the device to restore or restart the device to restore. If it cannot be restored or cannot be used normally after restoration, please contact a professional.

6. TRANSPORTATION AND STORAGE

6.1 TRANSPORTATION

1.After this product is packed, it is suitable for transportation by any means. During transportation, the packaging box needs to be firmly fixed and not inverted to prevent severe vibration, compression, and impact. It is necessary to avoid exposure to sunlight and rain.
2.When loading and unloading this product, handle it gently and properly and beware of tumbling or heavy pressure.

6.2 STORAGE

1. This product should be stored in a dry environment with a temperature range of 5°C - 40°C (41.0°F - 104.0°F), avoiding high-temperature environments. When storing, it should be kept away from heat sources, water, and sharp objects.
2. This product should be stored at a SOC level of around 50%, and long-term storage at low battery levels will shorten the battery life. Therefore, before long-term storage of this product, ensure that the SOC is around 50%. Under storage conditions, it is required to replenish the battery every three months. For products stored for more than a year, they should be retested and approved before use.
3. Products should be stored in a dry warehouse to avoid direct sunlight and rain. The packing box of this product should be raised at least 10 cm above the ground and placed at least 50 cm away from the window.
4. Impacts and falls should be avoided.