

HYSOLIS™

User Manual

Portable Solar Power Station

Apollo 5K



HYSOLIS™

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1.0 Introduction



Thank you very much for purchasing the Hysolis Apollo 5K unit! We designed this product to help grant you energy independence. We have the utmost confidence in this product's performance and quality. Please feel free to contact us at Hysolis.com if you have any questions. Enjoy using your Hysolis Apollo 5K, and may it positively affect your future endeavors!

The product has the following features:

- Dual-CPU Intelligent Control Technology manages energy input/output
- High-frequency pure sine wave output is clean and reliable for any load
- Wide input voltage range and consistent voltage output
- Three programmable working modes prioritize different energy needs:
 - **UPS mode:** Utility Power first, a.k.a. "Pass-through AC Power"
 - **AC Fast Charge (AC F.C.) mode:** 120V AC power Fast Charge, 500W-3,000W programmable
 - **Battery First mode:** The solar charges the battery and grid. AC Power is only used if battery is almost empty.
- Intelligent MPPT solar controller features over-charge & over-discharge protection, current limiting charging, and multiple other safety protections
- Battery over-voltage and low-voltage protection, overload protection, short circuit protection, over-temperature and under-temperature protection.
- A 4.3" touchscreen shows real-time running statuses at-a-glance
- Remote monitoring & control
- Compact and modular unit design for portability
- Smart Fan Control keeps the unit cool, safe, and reliable
- Multiple output power supply (120VAC/3000W, 12VDC/600W, 5VDC/120W)
- Unattended mode: If battery runs out, inverter auto-starts when solar power is available.

2.0 Safety

All personnel engaged with installation, use, or maintenance of this product must read, and understand the information in this manual. Please contact customer service if there are any questions before operating this product.

WARNING

- Inserting foreign objects into any of the product's port or ventilation holes may cause an electrical shock and result in death or serious injury. Never insert foreign objects into any of the product's port or ventilation holes.
- Improper connections between the unit and the power source may result in exposure to electricity and could result in death or serious injury. A licensed electrician is required to install the Apollo 5K as spacing installation involves connecting the wires from your home circuit breaker box to the Apollo 5K Wiring Box (optional purchase).
- Placement of the product near any heat sources may result in an explosion or toxic fumes and could result in death or serious injury. Never place and operate the product in an environment with flammable, explosive gas, or smoke.
- Operation of the product in wet conditions may conduct electricity and expose people and animals to electric shock resulting in minor injury or death. Always turn the power to the unit OFF if it is operating in wet conditions. Let the unit dry completely and ensure the unit is in a safe environment before turning the power to the unit on.
- This product utilizes high voltage solar array to charge. Exercise extreme caution when handling high-voltage PV (solar) wires. Do not use if wires are damaged. Use included Solar Input Breaker to connect to Apollo.
- Voltage may be present on PV (solar) Input when inverter is in operation.

CAUTION

Only use a dry chemical powder fire extinguishing agent if the product is exposed to flame or fire. Using a wet chemical fire extinguisher can conduct electricity and cause an electric shock and may result in minor or moderate injury as well as damage the product.

NOTICE

- Ensure proper ventilation while in use and do not obstruct fan openings. Inadequate ventilation may cause permanent damage to the equipment.
- Vibrations and impacts during product operation may damage the unit and lead to poor connectivity to the hardware inside. Do not move the product during operation.
- Stacking anything on top of the power station either in storage or while in use may cause damage the product. Do not stack anything on the product.
- Replacement of the internal battery or any other components of product by anyone other than authorized personnel may result in damage to the product. Always have authorized personnel perform hardware maintenance.

3.0 Initial Inspection

NOTICE

Inspect the product for damage during transit. Do **not** power the product ON. Check the following items are in the box (**Note:** Cables are shipped separately in the accessories box):

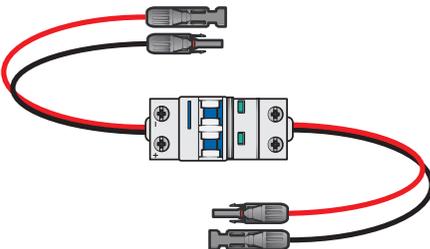
- AC charging cable



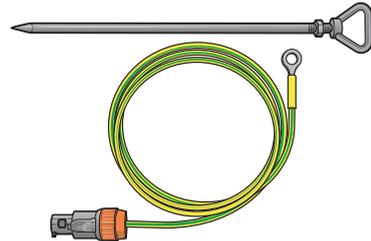
- DC charging cable



- Solar Input Breaker



- Ground cable and spike



- Wall-Outlet Adapter for AC charging cable
- User Manual
- Apollo 5K Unit

Report any damage to the product to the dealer and carrier. Contact Hysolis customer service regarding any missing items:

Phone: +1 (760) 410-5917

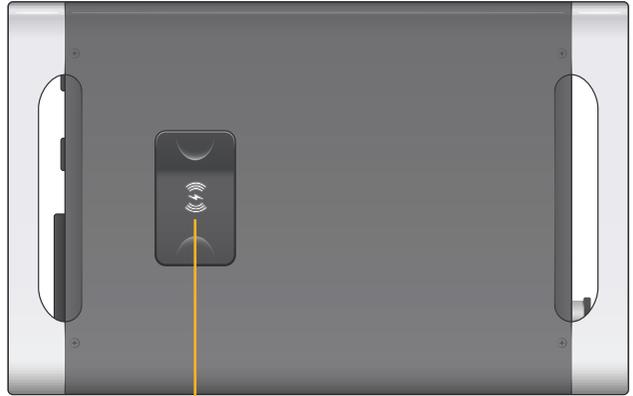
Email: support@hysolis.com

4.0 Product Features

4.1 Top Panel

1. Wireless Charger

Note: The wireless charger can be used to charge compatible electronic devices.



1

Fig. 4.1 • Unit top view

4.2 Front Panel

2. 12VDC Output 5210 Sockets (MAX 2A)

3. 12VDC Output Anderson Plug (MAX 30A)

4. 12VDC Output Cigarette Lighter Socket (MAX 10A)

5. 5VDC Output USB / TYPE C Charger

6. 120V AC Output NEMA 5-20R outlets (Max 20A)

7. 120V AC Output NEMA TT-30R receptacle

8. Touchscreen

9. Indicator Light

10. Air Vent (removable for cleaning)

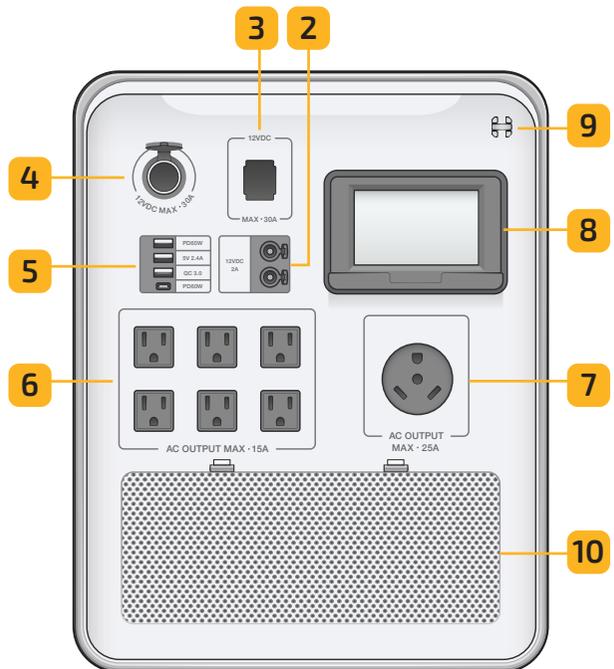


Fig. 4.2 • Unit front panel

4.3 Back Panel

11. 120V AC Input Port LP-28 (MAX 30A)
12. Inverter Reset Switch
13. AC Output parallel communication port (For AC output parallel set up)
14. Expansion Battery Port 1
15. Expansion Battery Port 2
16. AC Input Reset Switch
17. 12/24VDC Input Port (Max. 10A)
18. Power Switch (for Battery BMS)
19. Solar Input Port (Voc. Range 120V DC ~ 500V DC, Max. Charging Power 4,400W, Max. Total Input for Charging+Inverter 5,000W/18A)
20. BMS Working Status Indicator
21. Ground Port
22. BMS Reset Button

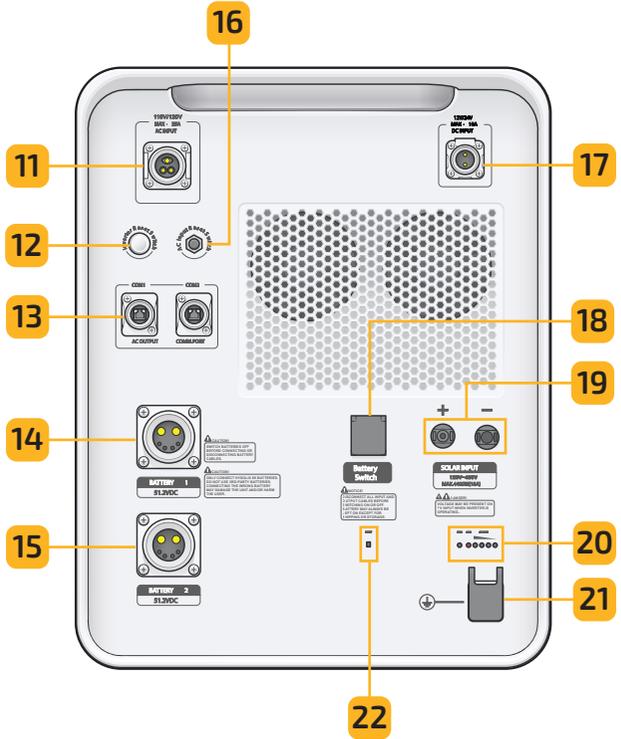


Fig. 4.3 • Unit back panel

4.4 Homepage UI Touchscreen

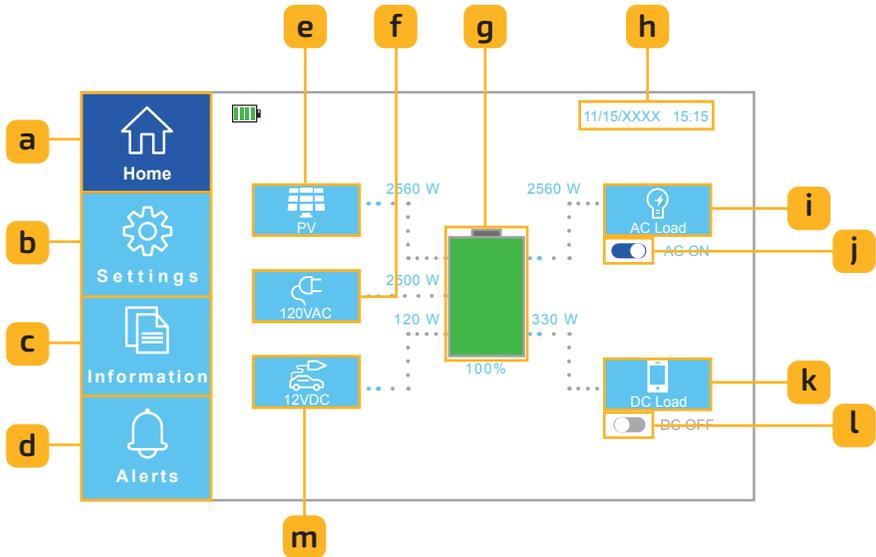


Fig. 4.4 • Homepage UI touchscreen features

- a. **Homepage Button:** Press to return to the Homepage UI touchscreen
- b. **Setting Screens Button:** Press to access the Settings screens
- c. **Information Screens Button:** Press to access the Information screens
- d. **Alert Screen Button:** Press to access the current Alert screen
- e. **PV (solar) Button:** Press to access the PV Input information screen
- f. **AC Button:** Press to access the AC Input information screen
- g. **Battery Button:** Press to access the Battery information screen
- h. **Date & Time:** Displays current Date and Time
- i. **AC Load Button:** Press to access the AC Output information screen
- j. **AC Output On/OFF Switch:** Toggle to turn AC Output ON or OFF
- k. **DC Load Button:** Press to access the DC Output information screen
- l. **DC Output ON/OFF Switch:** Toggle to turn DC Output ON or OFF
- m. **DC Button:** Press to access the DC Charge information screen

4.5 Homescreen UI Icons

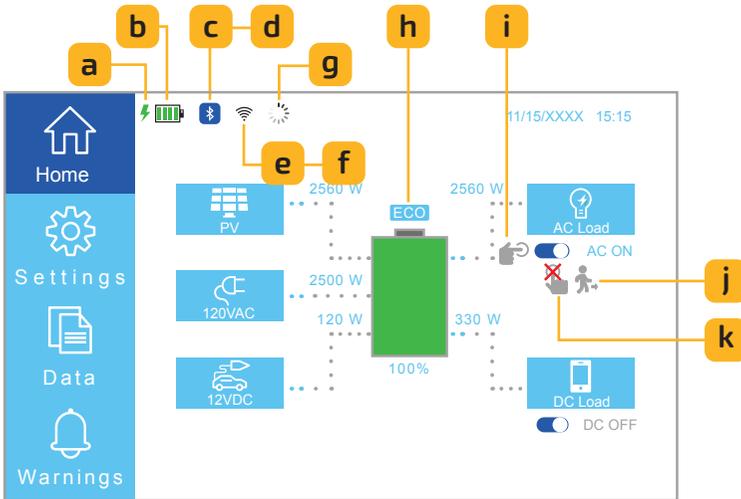


Fig. 4.5 • Homepage UI touchscreen icons

-  a. **AC/DC Status:** The unit is charging.
-  b. **Battery Status Indicator:** Battery charge level.
-  c. **Bluetooth Indicator (connected):** The unit is connected to Bluetooth.
-  d. **Bluetooth Indicator (not connected):** The unit is **not** connected to Bluetooth.
-  e. **WiFi Status (connected):** The unit is connected to a WiFi network.
-  f. **WiFi Status (ready to connect):** The WiFi settings have been reset and the device is ready to connect to a WiFi network.
-  g. **WiFi Status (connecting):** The unit is connecting to Bluetooth.
-  h. **Energy Saver Mode Status:** Energy saver mode is on.
-  i. **Inverter Status (disconnected):** The inverter is disconnected, click to power on the inverter.
-  j. **Unattended Mode Status:** Unattended mode is on.
-  k. **Inverter Status (disconnected):** Inverter may not be used when using AC F.C. mode greater than the default value.

5.0 Installation

Important! A licensed electrician is required to install the Apollo 5K in any hardwired fashion. An Apollo 5K Wiring Box (Optional Purchase) may be used in the installation. For all configurations, please consider the rated amperages of power sources, total loads, wires, and the Apollo 5K. Do not exceed limits.

The Apollo 5K factory default setting is “floating neutral” (i.e. the neutral and ground are unbonded).

The unit should be configured with floating neutral when connecting the load side of the Apollo to a separate ground (e.g. directly supplying power to a home breaker panel).

The unit may be configured with a neutral-ground bond, a.k.a. “bonded neutral”, which may be preferred for some off-grid applications. To bond the neutral to the ground, please follow instructions according to the label on the side panel of the Apollo as depicted in Fig. 5.1 and Fig. 5.2 below.

The Apollo ground port may be connected to a grounding rod, building rod, etc. by a qualified electrician. Ensure the Apollo neutral-ground is appropriately bonded or unbonded.

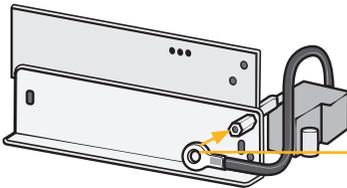


Fig. 5.1 Neutral-Ground Separated / Floating Neutral (Factory Default): The Neutral wires to the plastic pole

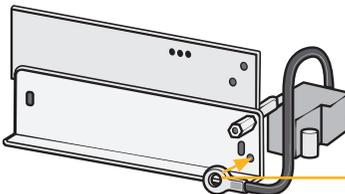
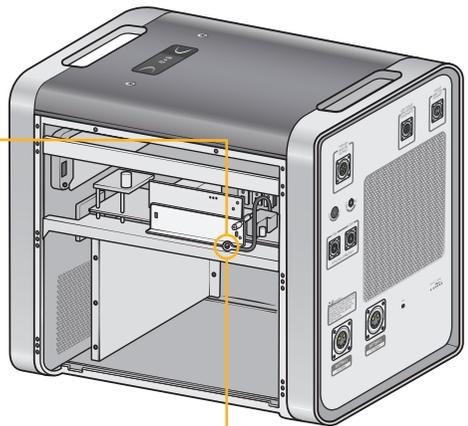


Fig. 5.2 Neutral-Ground Bonded: The Neutral wires to the metal structure



5.1 Overview

There are two installation options. These include Single Unit setup and Multi-unit setup. The power sources for each option include:

- AC input (i.e. utility power or generator)
- DC input (i.e. automobile with DC output)
- PV input (i.e. solar photovoltaic panels)
- Both setups provide AC and DC output.

5.2 General Installation Guidelines

During transport, the unit may have warmed or cooled outside of its working temperature range. Moisture may have condensed on the unit. Ensure it is dry and within the proper temperature range before using.

- Do not use the product in a wet or dusty environment.
- Do not use anything flammable or explosive near the product.
- Do not cover or block the vents in the product.
- Maintain 4 inches (10cm) of clear space around the unit to have good heat dissipation.

5.3 Single Unit Options

This section provides an overview of the single unit options. It shows input power options (Fig. 5.3), possible output capabilities, and describes the input and output power parameters for AC, DC, and PV (solar) input and AC, DC output.

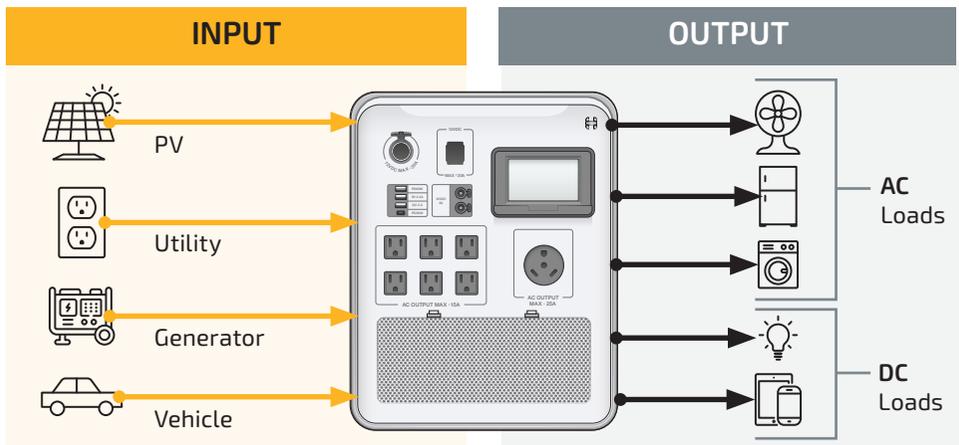


Fig. 5.3 Power options and output capabilities

5.3.1 Single Unit: 120V AC Input

Acceptable Voltage Range	65V~140VAC (for home appliances) 95V~140VAC (for computers)
Frequency	60Hz / 50Hz (auto-sensing)
Maximum Current	30A (3,600 watts)

Table 5.1 Single unit - 120V AC input power parameters

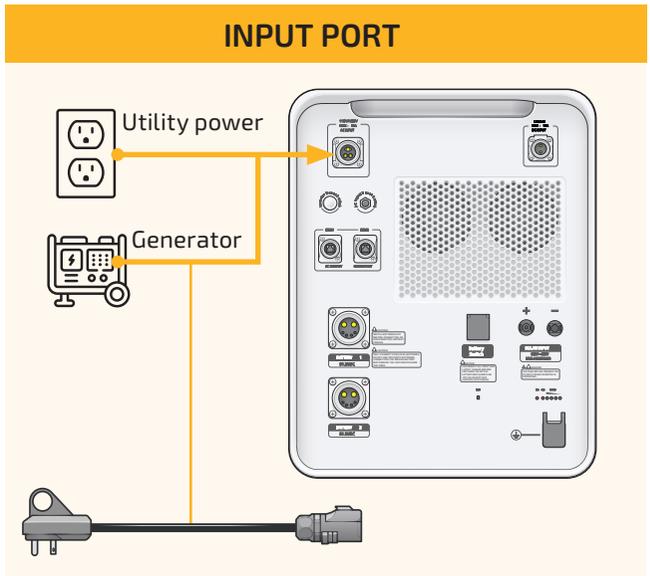


Fig. 5.4 Single unit - 120V AC input port and cable

5.3.2 Single Unit: 120V AC Output

Voltage Range	120VAC (+/-5%) 60Hz / 50Hz (auto sensing)
Wave Form	Pure sine wave
Rated Current	25A (3,000 watts) / Surge: 50A (6,000 watts)

Table 5.2 120V AC output power parameters

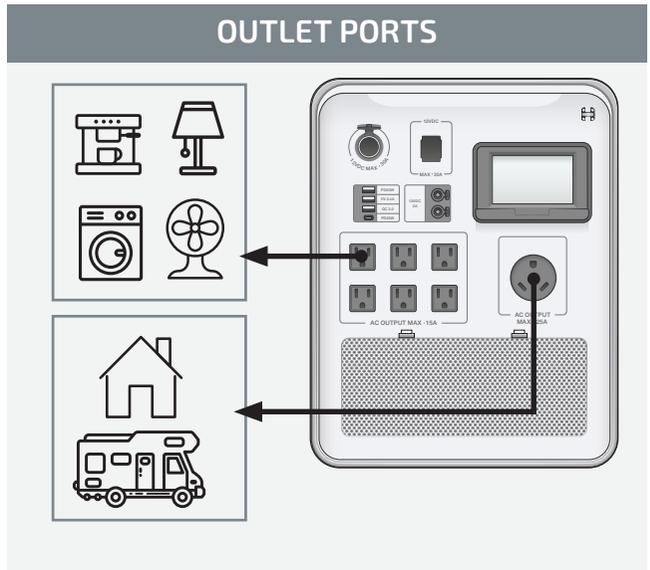


Fig. 5.5 120V AC output ports

5.3.3 Single Unit: 120V DC Input

Acceptable Voltage Range	12VDC or 24VDC
Maximum Current	10A

Table 5.3 120V DC input power parameters

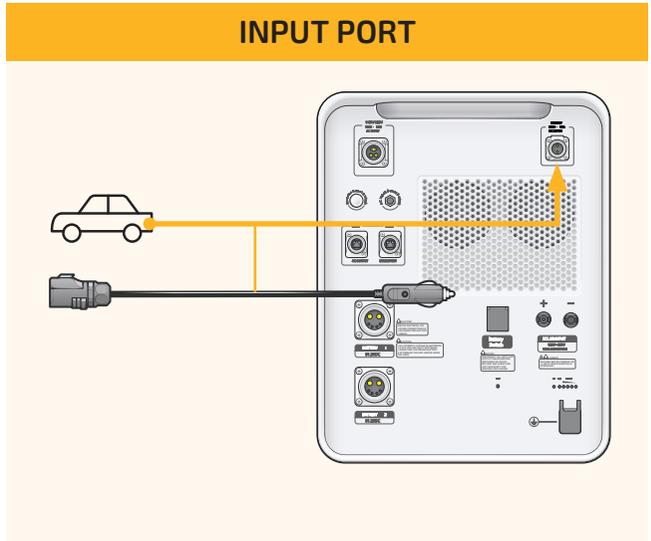


Fig. 5.6 Single unit - 120V DC input port and cable

5.3.4 Single Unit: 120V DC Output

Wireless Charger	Max 20W
12VDC Output Anderson Plug	Max 30A
12VDC Output Cigarette Lighter Socket	Max 10A
5VDC Output USB / TYPE C Charger	Max 100W
12VDC Output 5210 Sockets	Max 2A

Table 5.4 120V DC output power parameters

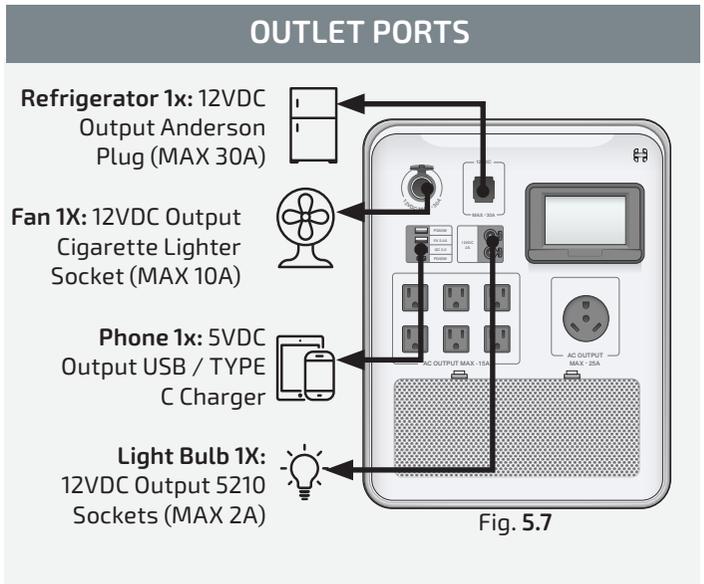


Fig. 5.7 Single unit - 120V DC output ports

5.3.5 Single Unit: PV (solar) Input

Solar MPPT Voltage Range	120VDC~500VDC
Maximum Solar Charging Power	4,400 watts
Maximum Solar Input Current	18A
Maximum Solar Input Power	5,000 watts*
Maximum MPPT Charge Current	DC 80A

* When Inverter is Active, some Solar Input Power may be used for Inverter Power

Table 5.5 PV input power parameters

N panels in series
 (Note: always configure your array within the MPPT specifications (Table 5.5))

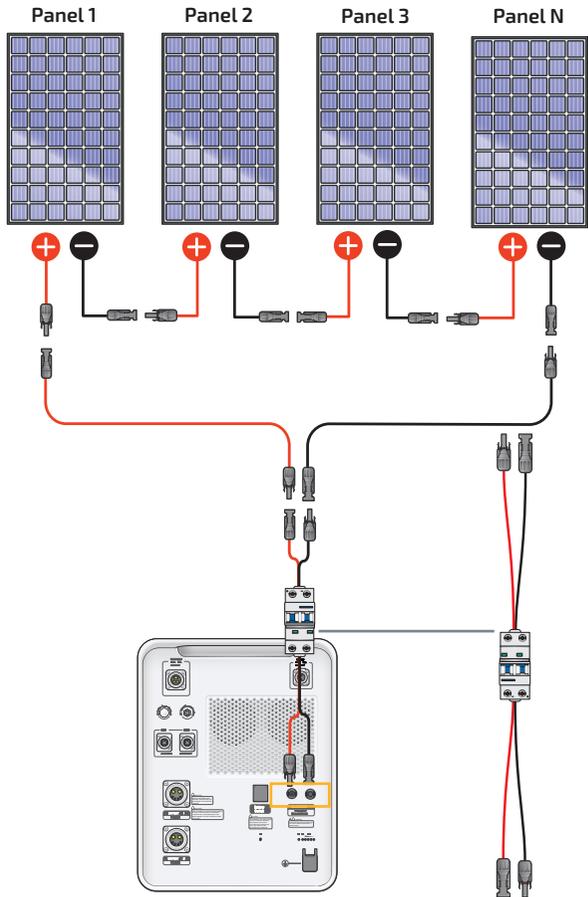


Fig. 5.8 Single unit - PV input port and cable (N panels)

5.4 Multi-unit Setup

This section provides wiring diagrams for a multi-unit setup. The Apollo 5K supports up to 12 units (36KW) working synergically for single-phase, split-phase or 3-phase power supply.

Important! Additional accessories are needed for setting up the Apollo 5K multi-unit system. They may be supplied by a qualified electrician. Hysolis split-phase and single-phase parallel accessories are available for purchase.

Possible configurations include (Table 5.6):

- Up to 12 units can be stacked in parallel for Single-phase
- Up to 6 units for each of the Lines 1 and 2 for Split-Phase
- Up to 4 units each for the lines 1, 2, and 3 for 3-phase.

Note: Each Apollo has a maximum output of 25A. Each line has a maximum current of 25A x N. Up to 12 units can be configured into Single-phase, Split-phase, or 3-phase AC Output.

Mode	Phase	Description
Single-phase 120V 60Hz	Single Unit	120V/60Hz, 25A
	Multi (N) Units $N \leq 12$	120V/60Hz, 25A x N (Stack Power & current)
Split-phase 240V 60Hz	P1 (Phase 1) x N Units $N \leq 6$	Line 1, 120V/60Hz, 25A x N (Stack Power & current)
	P2 (Phase 2) x N Units $N \leq 6$	Line 2, 120V/60Hz, 25A x N (Stack Power & current)
3-phase 208V 60Hz	P1 (Phase 1) x N Units $N \leq 4$	Line 1, 120V/60Hz, 25A x N (Stack Power & current)
	P2 (Phase 2) x N Units $N \leq 4$	Line 2, 120V/60Hz, 25A x N (Stack Power & current)
	P3 (Phase 3) x N Units $N \leq 4$	Line 3, 120V/60Hz, 25A x N (Stack Power & current)

Note: N = Number of Apollo 5K units

Table 5.6 Possible multi-unit configurations

5.4.1 Single-phase System (120VAC) Wiring Diagrams

Single-phase • 2 Units

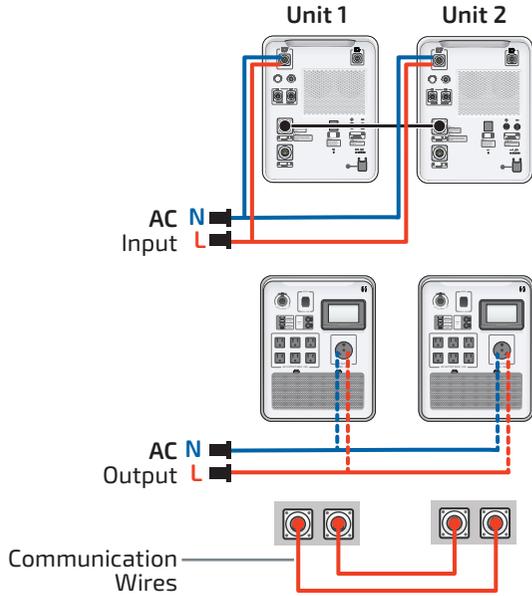


Fig. 5.10 Multi-unit single-phase wiring, 2 units

Single-phase • 3 Units

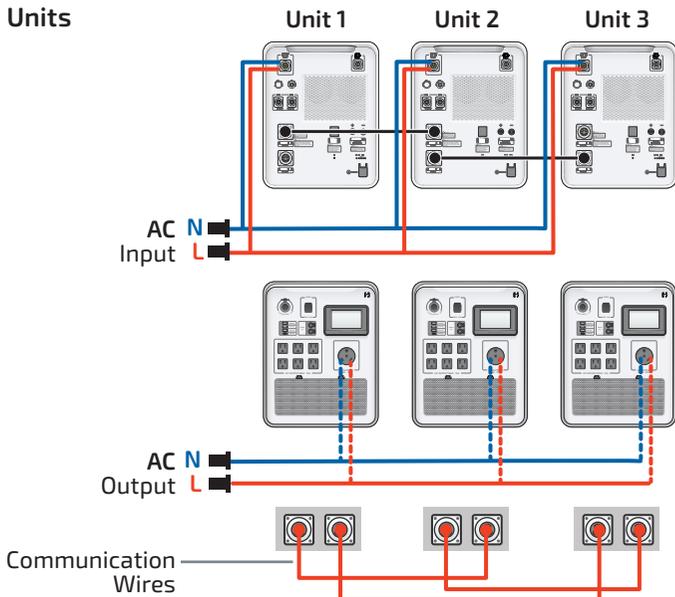


Fig. 5.11 Multi-unit single-phase wiring, 3 units

Single-phase • 4 Units

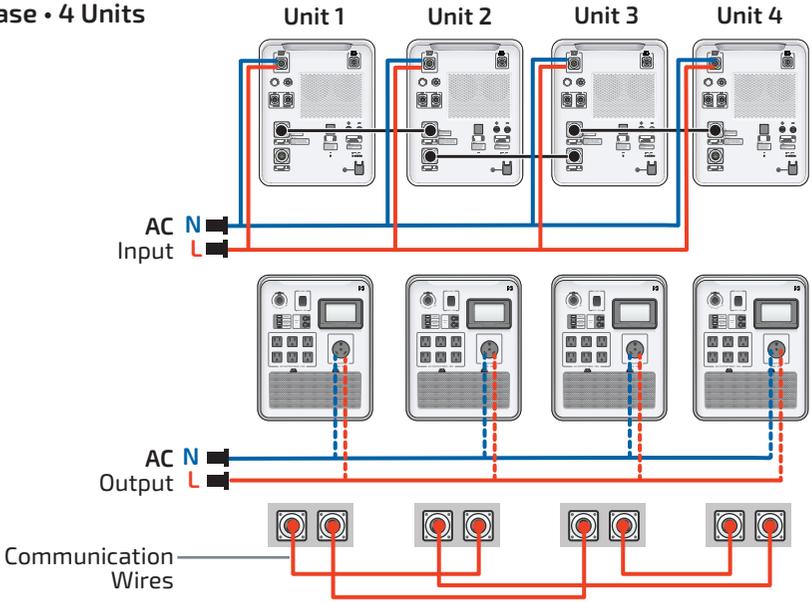


Fig. 5.12 Multi-unit single-phase wiring, 4 units

Single-phase • 5 Units

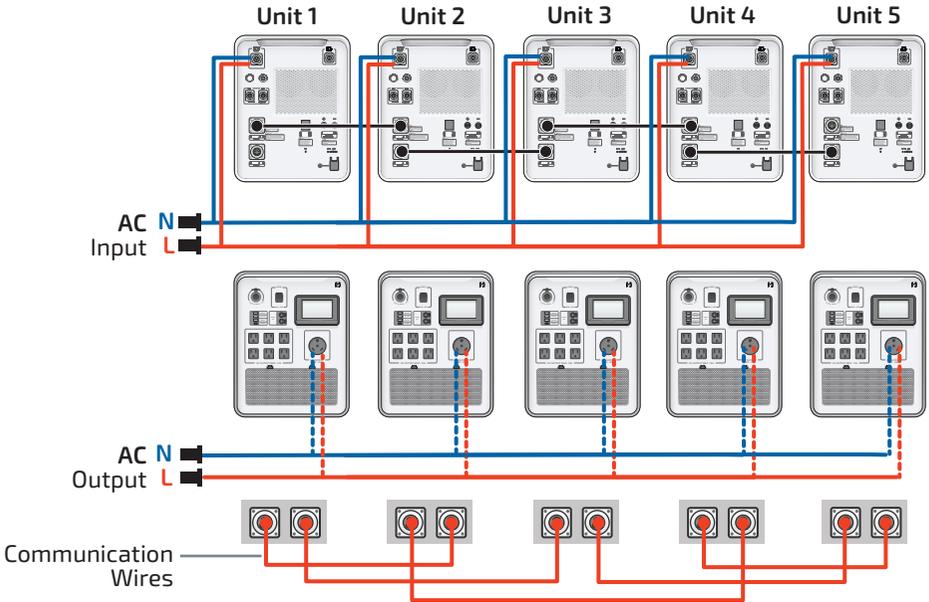


Fig. 5.13 Multi-unit single-phase wiring, 5 units

Single-phase • 6+ Units ($N \leq 12$) (Note: N = number of Apollo 5K units)

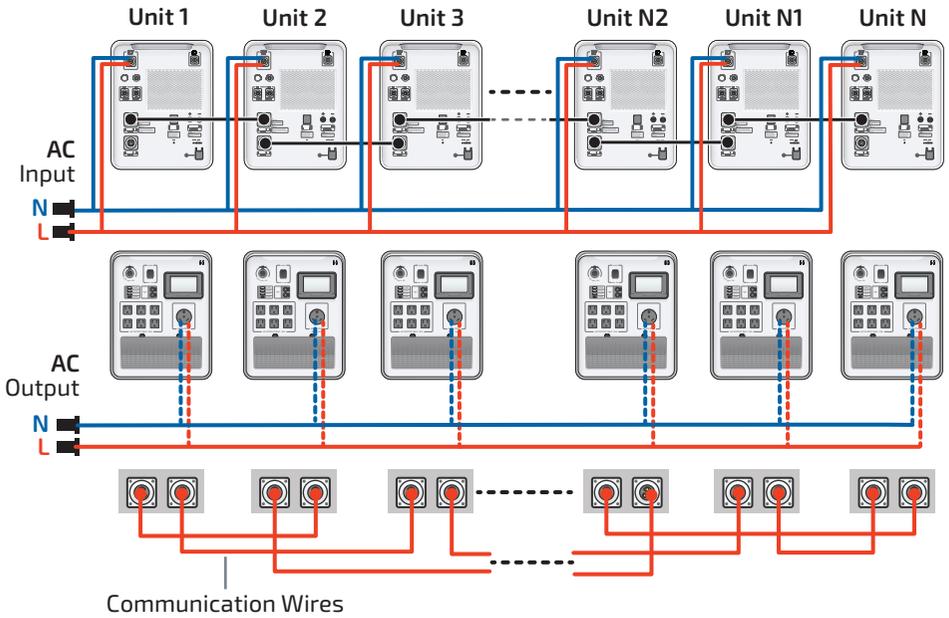


Fig. 5.14 Multi-unit single-phase wiring, 6+ units ($N \leq 12$)

5.4.2 Split-phase System (240VAC) Wiring

Split-phase • 2 Units

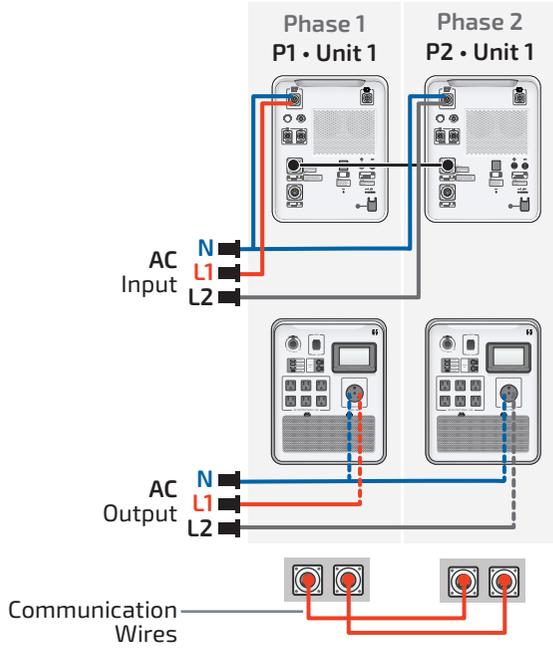


Fig. 5.15 Multi-unit split-phase wiring, 2 units

Split-phase • N units ($N \leq 6$) (Note: N = number of Apollo 5K units)

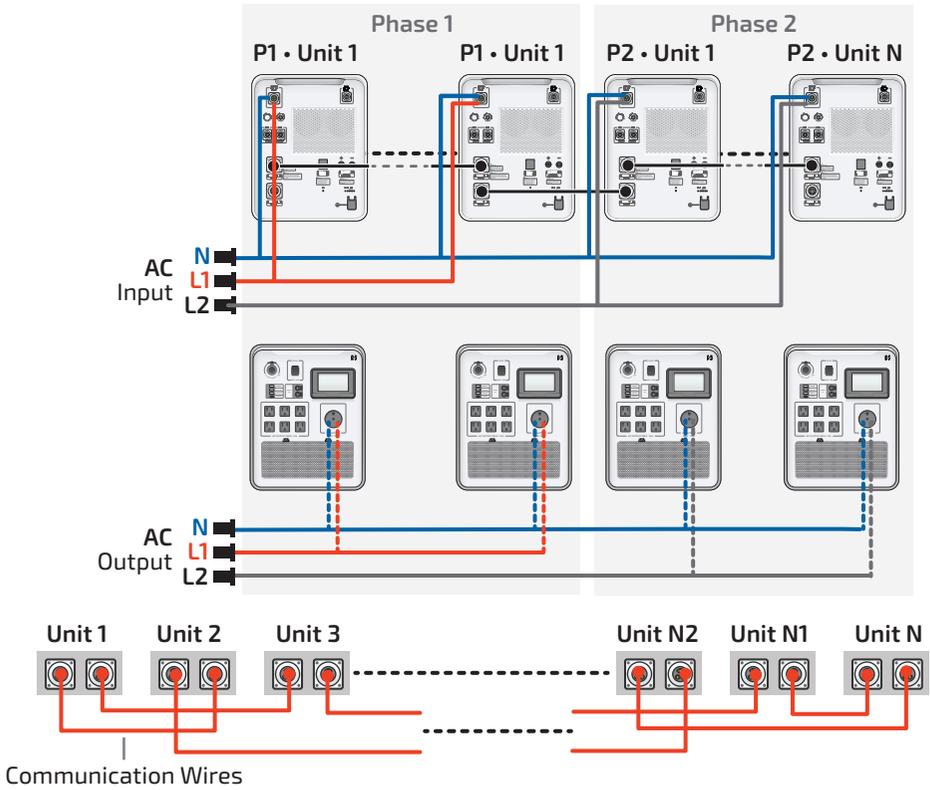


Fig. 5.16 Multi-unit split-phase wiring, N units

5.4.3 3-phase System (208VAC) Wiring

3-phase • 3 Units

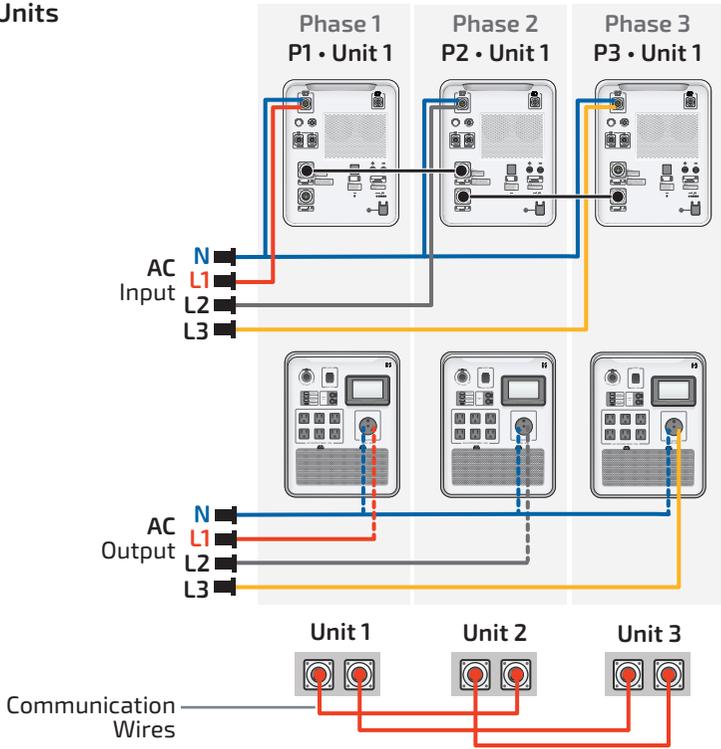


Fig. 5.17 Multi-unit 3-phase wiring, 3 units

3-phase • N Units ($N \leq 12$) (Note: N = number of Apollo 5K units)

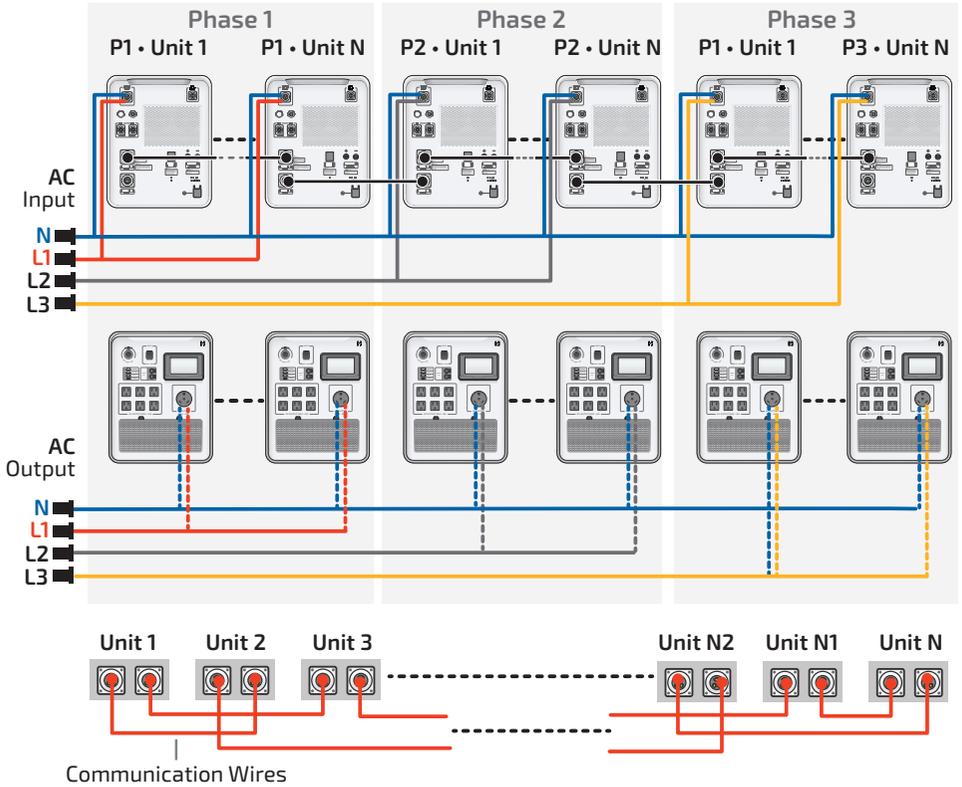


Fig. 5.18 Multi-unit 3-phase wiring, N units ($N \leq 12$)

Important! The Working Voltage must be within the Apollo’s range of 120–500V.

The following tables provide reference calculations to demonstrate the behavior of wattage, voltage, and amperage with solar panels in a series array.

The calculations are based on the voltage and wattage of the solar panel specifications of; 410W/37.1V (Table 5.7) and 200W/20.4V (Table 5.8).

The number of panels (i.e. 4–10, 7–20) multiply to produce the total voltage and power of the solar array. The total Open Circuit Voltage (Voc) and Short Circuit Current (Isc) must be within the unit’s operating range between 120-500V and <=18A, respectively.

Solar Panel Specifications (For reference)	PV Array	Open Circuit Voltage	Working Voltage	Working Current	Total Power
<ul style="list-style-type: none"> • Pmax: 410W • Vmp: 30.6V • Imp: 13.4A • Voc: 37.1V • Isc: 13.9A 	4 panels in series x 1 string	149.0V	122.0V	13.4A	1630W
	5 panels in series x 1 string	186.0V	153.0V	13.4A	2050W
	6 panels in series x 1 string	223.0V	184.0V	13.4A	2470W
	7 panels in series x 1 string	260.0V	214.0V	13.4A	2870W
	8 panels in series x 1 string	297.0V	245.0V	13.4A	3280W
	9 panels in series x 1 string	334.0V	275.0V	13.4A	3690W
	10 panels in series x 1 string	371.0V	306.0V	13.4A	4100W
	11 panels in series x 1 string	409.0V	337.0V	13.4A	4520W
	12 panels in series x 1 string	446.0V	367.0V	13.4A	4920W

Table 5.7 Example calculations based on 410W/37.1V

Note: The working current stays the same with each series array. Although the maximum total power is 4400W, you may safely “over-panel” the array up to 450V or approximately 4900W with 410W panels.

Solar Panel Specifications (For reference)	PV Array	Open Circuit Voltage	Working Voltage	Working Current	Total Power
<ul style="list-style-type: none"> • Pmax: 200W • Vmp: 20.4V • Imp: 9.8A • Voc: 24.3V • Isc: 10.2A 	7 panels in series x 1 string	170.0V	143.0V	13.4A	1400W
	8 panels in series x 1 string	194.0V	163.0V	13.4A	1600W
	9 panels in series x 1 string	219.0V	184.0V	13.4A	1800W
	10 panels in series x 1 string	243.0V	204.0V	13.4A	2000W
	11 panels in series x 1 string	267.0V	224.0V	13.4A	2200W
	12 panels in series x 1 string	292.0V	245.0V	13.4A	2400W
	13 panels in series x 1 string	316.0V	265.0V	13.4A	2600W
	14 panels in series x 1 string	340.0V	286.0V	13.4A	2800W
	15 panels in series x 1 string	365.0V	306.0V	13.4A	3000W
	16 panels in series x 1 string	389.0V	326.0V	13.4A	3190W
	17 panels in series x 1 string	413.0V	347.0V	13.4A	3400W
	18 panels in series x 1 string	437.0V	367.0V	13.4A	3600W
	19 panels in series x 1 string	462.0V	388.0V	13.4A	3800W
20 panels in series x 1 string	486.0V	408.0V	13.4A	4000W	

Table 5.8 Example calculations based on 200W/20.4V

6.0 Operation

The following section describes the power options and touchscreen operation of the unit.

6.1 Power-on Options

To enable battery power, press the **Battery Switch** on the back of unit.

Note: Make sure all cables are disconnected first.

6.1.1 Battery Power

Note: Switch off the battery for long periods of inactivity, for shipping, or for storage. **Important!** Make sure all cables are disconnected before switching the unit off.

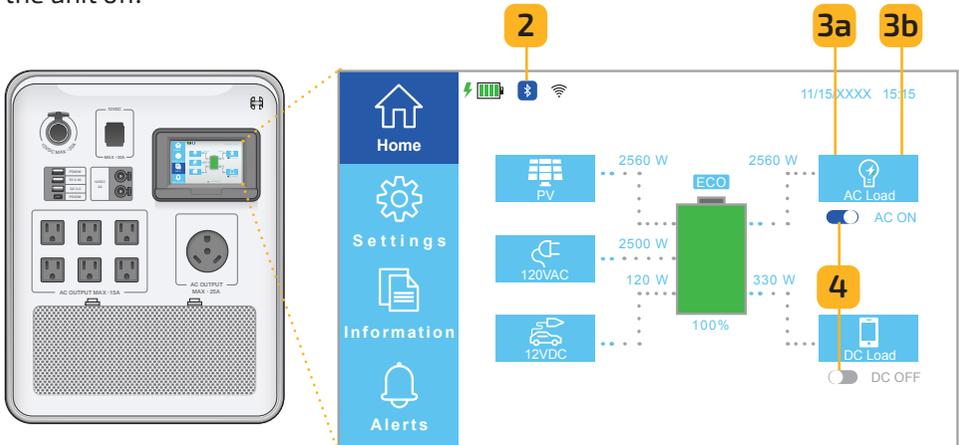


Fig. 6.1 Battery power setup



1. With all cables disconnected, press the **Battery Switch** to connect the battery. Touchscreen will light up.
2. Wait until the Bluetooth signal is ready. **Note:** Bluetooth icon is highlighted blue.
- 3a. Press **AC Output** once to turn on the Inverter. **Note:** The AC switch will toggle to ON then OFF.
- 3b. Press **AC Output** again to turn on the Inverter. **Note:** AC Output is now enabled.
4. Turn **AC Output** or **DC Output** on/off as needed.

6.1.2 AC Power

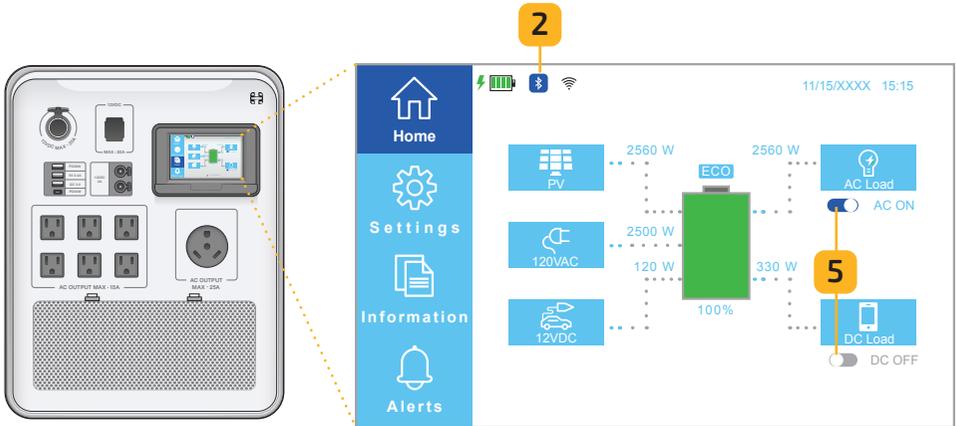
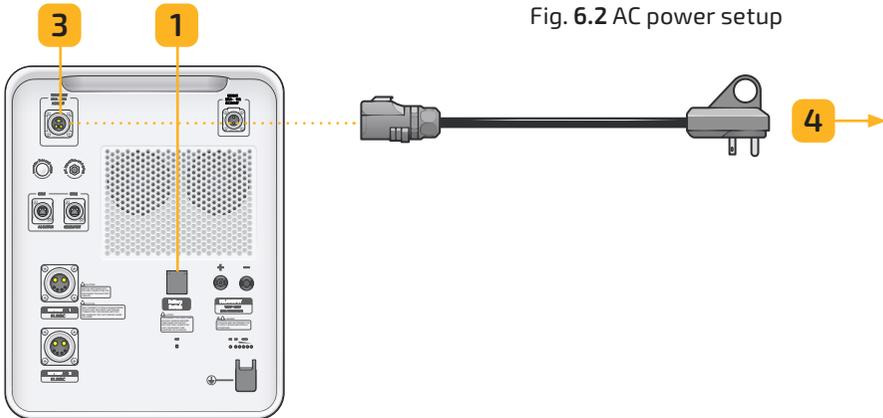


Fig. 6.2 AC power setup



1. With all cables disconnected, press the **Battery Switch** to connect the battery. Touchscreen will light up.
2. Wait until the Bluetooth signal is ready. **Note:** Bluetooth icon is highlighted blue.
3. Plug the **AC charging cable** into the AC Input port.
4. Plug the **AC charging cable** to the 110V/120V power source. **Note:** The inverter will be started automatically.
5. Turn **AC Output** or **DC Output** on/off as needed.

6.1.3 PV (solar) Power

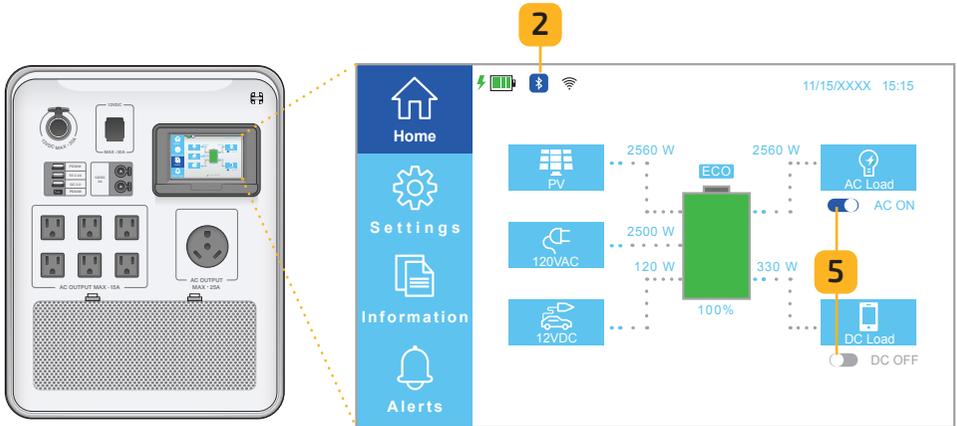
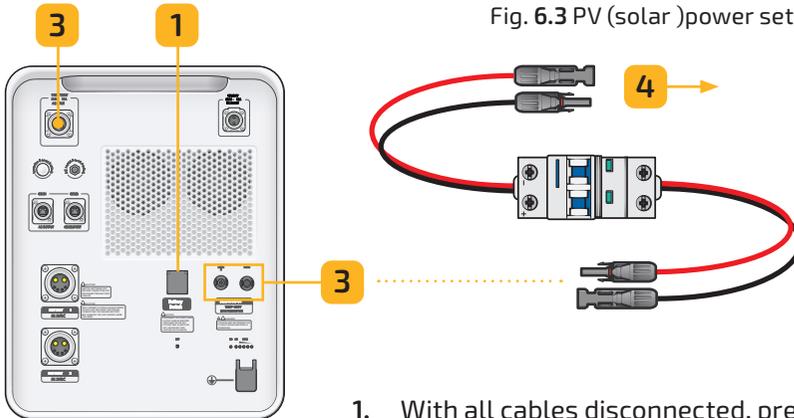


Fig. 6.3 PV (solar) power setup



1. With all cables disconnected, press the **Battery Switch** to connect the battery. Touchscreen will light up.
2. Wait until the Bluetooth signal is ready. **Note:** Bluetooth icon is highlighted blue.
3. Plug into solar power (Voc. Range 120V DC ~ 500V DC, Max. Charging Power 4,400W, Max. Input 5,000W/18A) using the included **Solar Input Breaker**.

Connect all cables when Breaker is in the OFF position. After cables are connected, flip Breaker ON. **Note:** The inverter will be started automatically.

4. Turn **AC Output** or **DC Output** on/off as needed.

6.1.4 Turn the Power OFF

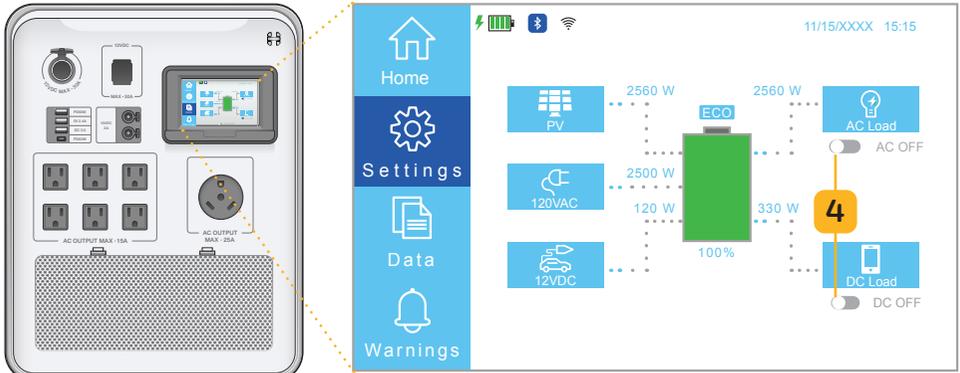
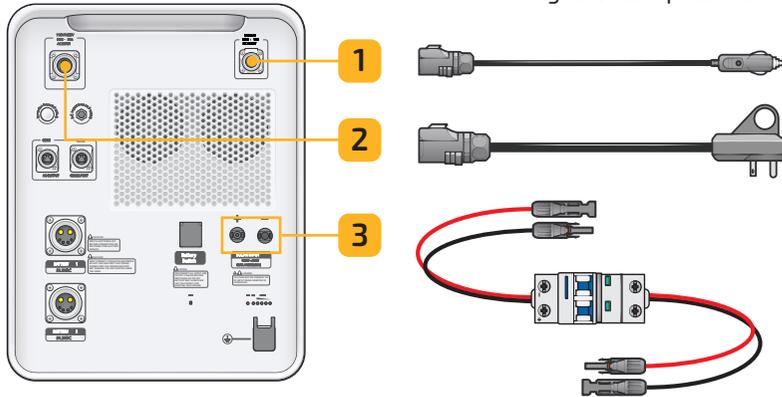


Fig. 6.4 Turn power OFF



1. Disconnect **DC** Input.
2. Disconnect **AC** Input.
3. Disconnect **Solar** Input.
4. On the touchscreen, switch the AC Output and DC Output to the OFF position.

Note: You do **not** need to turn the **Battery Switch** OFF. You may leave the **Battery Switch** ON.

Important! If you wish to switch the battery off for long periods of inactivity, storage, or transport, make sure all cables are disconnected before pressing the **Battery Switch** off.

6.2 Touchscreens

The touchscreens provide information or settings for operation. The Home, Data, and Warnings touchscreens provide information on the operation of the unit. The Settings touchscreens are used to customize the unit's settings (Fig. 6.5). The following sections will explain each touchscreen. **Note:** See Section 8 for Error Codes.

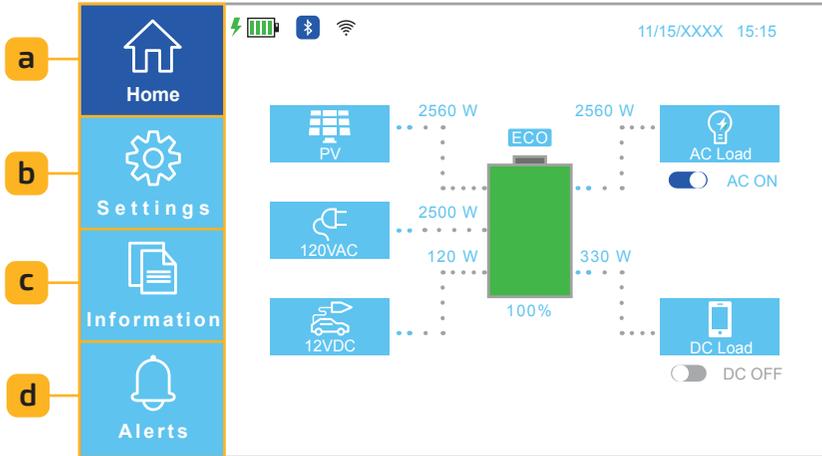


Fig. 6.5 Homepage UI screen

- a. **Home Touchscreens:** Select to see real-time information on the AC input, AC output, DC input, DC output, PV (solar) input, and the battery status.
- b. **Settings Touchscreens:** Select to set the settings for the Working Mode, Energy Saver, Unattended Mode, Parallel Mode, Language, Display Settings, and WiFi.
- c. **Information Touchscreens:** Select to see information about the product, the power generated by the different sources, and view the alert history.
- d. **Alerts Touchscreen:** Select to see the current error code and time.

6.2.1 Home Information Touchscreen

When selecting the **Home** button on the Homepage UI touchscreen you can find real-time information on the AC input, AC output, DC input, DC output, PV (solar) input, and the battery status. Select the appropriate button to see the desired information. (Fig. 6.6).

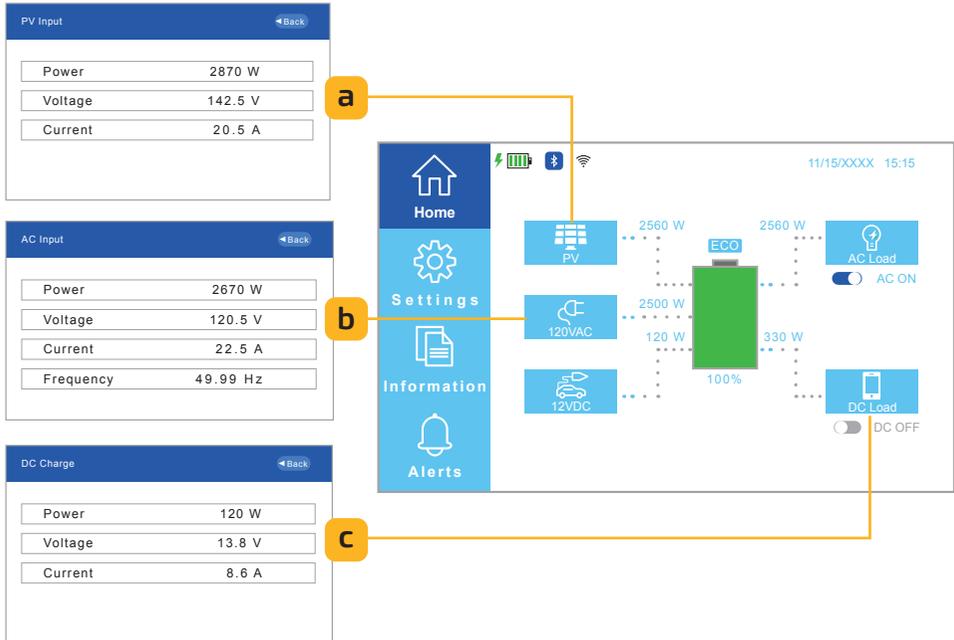


Fig. 6.6 Information screens

- a. **PV (solar) Input Information:**
Selecting the **PV (solar)** button on the Homepage UI touchscreen will show the real-time running status of Power, Voltage, and Current.
- b. **AC Input Information:**
Selecting the **120VAC** button on the Homepage UI touchscreen will show the real-time running status of Power, Voltage, Current, and Frequency.
- c. **DC Input Information:**
Selecting the **12VDC** button on the Homepage UI touchscreen will show the real-time running status of Power, Voltage, and Current.

Homepage UI screen (continued)

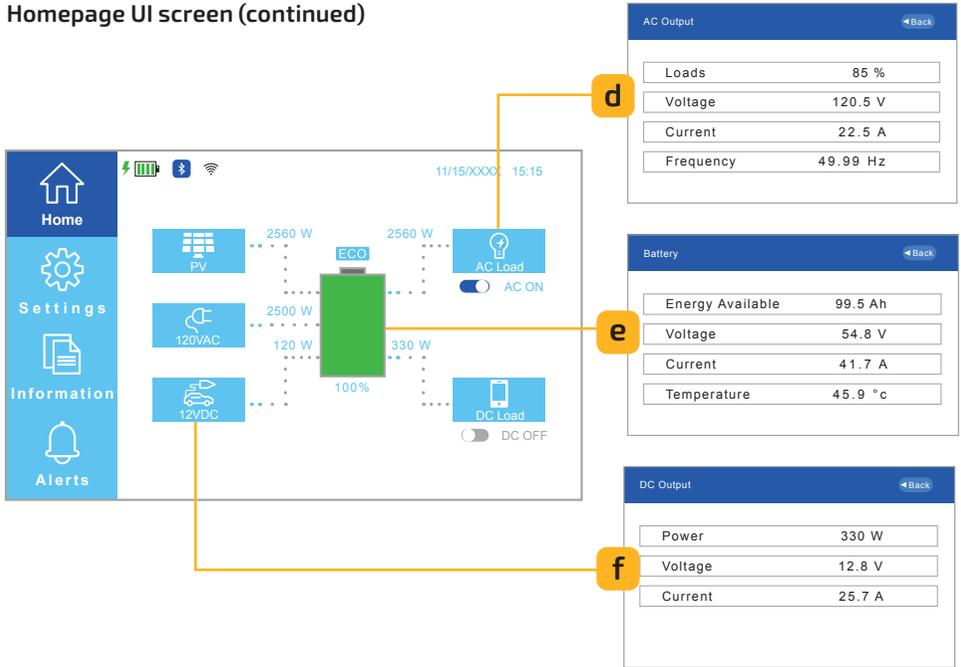


Fig. 6.7 Information screens

- d. AC Output Information:**
Selecting the **AC Load** button on the Homepage UI touchscreen will show the real-time running status of Loads, Voltage, Current, and Frequency.
- e. Battery Information:**
Selecting the **Battery** button on the Homepage UI touchscreen will show the real-time running status of the Energy Available, Voltage, Current, and Temperature.
- f. DC Output Information:**
Selecting the **DC Load** button on the Homepage UI touchscreen will show the real-time running status of Power, Voltage, and Current.

6.2.2 Settings Touchscreens

Selecting the **Settings** button on the Homepage UI touchscreen shows the **Settings Touchscreen** options (Fig. 6.8).

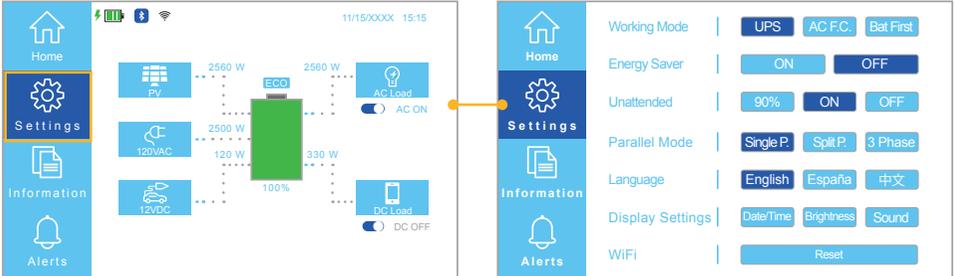


Fig. 6.8 Settings touchscreen

The **Settings Touchscreen** displays the setting options for the **Working Mode**, **Energy Saver**, **Unattended Mode**, **Parallel Mode**, **Language**, **Display Settings**, and **WiFi**. Select the appropriate option to setup the desired settings.

Working Mode Settings

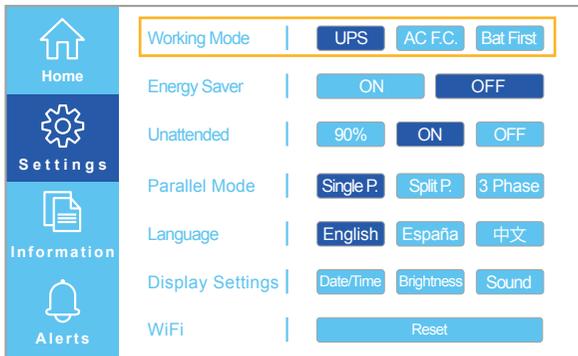


Fig. 6.9 • Working mode settings

The **Working Mode** settings option allows you to select the working mode. There are three working modes, these are Uninterruptable Power Supply (UPS - default), AC Fast Charge (AC F.C.), and Battery First (Bat First) (Fig. 6.9).

Uninterruptable Power Supply (UPS) Mode (default)

Uninterruptable Power Supply (UPS) mode is the units default working mode (Fig. 6.10).

Important! Uninterruptable Power Supply (UPS) mode, ensures total power draw, including charging and total loads, do **not** exceed rated amperage of utility power source (e.g. consider a standard U.S. wall outlet’s current rating of 15A).

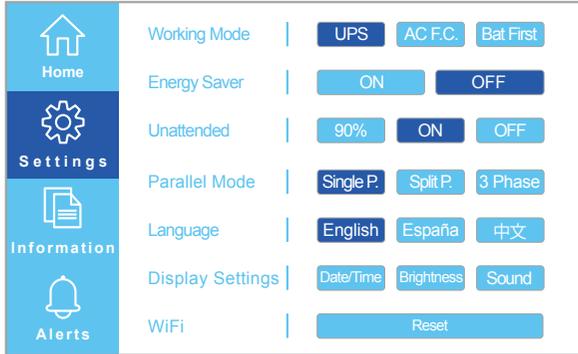


Fig. 6.10 UPS mode settings

The following table (Table 6.1) shows the power supply priority when the unit is in UPS mode.

Power Supply Priority	Description
1. PV (solar)	PV power is prioritized to charge the battery.
2. Utility	The utility power pass-through powers the Apollo’s loads. It also supplements battery charging (600W max) when PV power is insufficient. Total combined input (Utility Pass-Through + Utility Supplemental Charging + Solar Charging) is 7,400W.
3. Battery	The battery power will kick-in when the utility power is OFF, with a delay of <15 ms.

Table 6.1 Power supply priority - UPS mode

AC Fast Charge (AC F.C.) Mode

Important! In *AC F.C.* mode, do not exceed the rated limit of the power source. For a standard 15A U.S. wall outlet, the charging power should be programmed to 15A or less. For connections to a higher amperage outlet, such as a 30A outlet, the AC Charging Power could be set higher.

Note: AC Output is disabled in AC Fast Charge Mode. The maximum AC Charging Power Setting screen is disabled if the AC Output switch is set in the **ON** position.

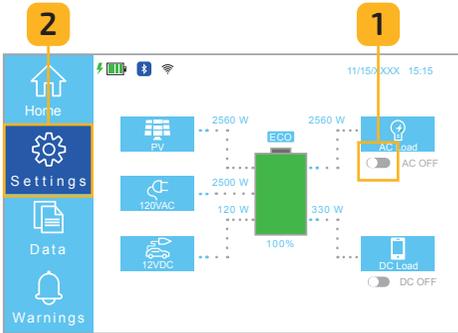


Fig. 6.11 Turn AC output switch OFF

Follow these steps to set the maximum AC power:

1. On the Homepage UI, toggle the **AC Output** switch to **OFF** (Fig. 6.11).
2. Select the **Settings** button to access the Settings menu.

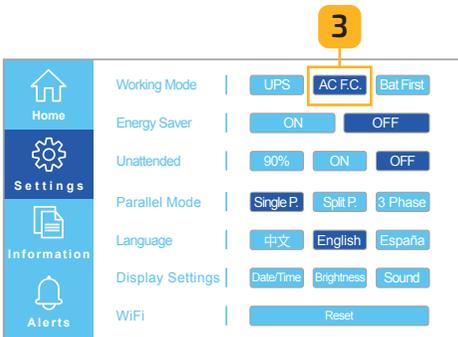


Fig. 6.12 Select AC F.C. button

3. From the Settings menu, select the **AC F.C.** button (Fig. 6.12).

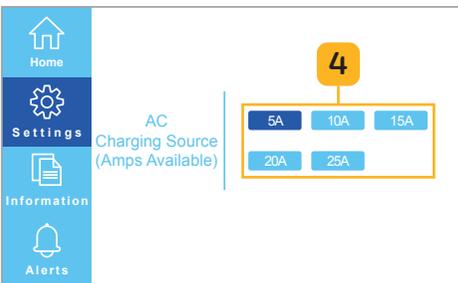


Fig. 6.13 Select maximum AC power

4. Select the available amperage of your **AC Charging Source** (Fig. 6.13). **Note:** AC Input will not exceed the rated amperage of the charging source (Ex. For a standard U.S. Wall Outlet, please select “15A.” For a 30A RV Outlet, you may select “25A.”)

Important! Ensure the **AC Output** is toggled to the **OFF** position.

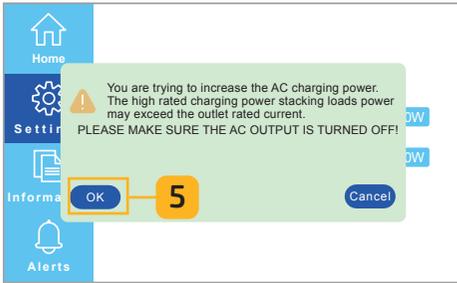


Fig. 6.14 Confirm maximum power

5. Select the **OK** button to set the maximum AC power.

The following table (Table 6.2) shows the power supply priority when the unit is in AC F.C. mode.

Power Supply Priority	Description
1. Utility (AC Input)	The Utility Power charges the battery. Note: The utility (AC Input) charging power is programmable for 5A - 25A (600W - 3,000W).
2. PV (solar)	PV power supplements the AC Charging (total combined max 80A (4,400W)).
3. Battery	The battery power will kick-in when the utility power is OFF and the PV power is insufficient.

Table 6.2 Power supply priority - AC F.C. mode

Battery First (Bat First) Mode

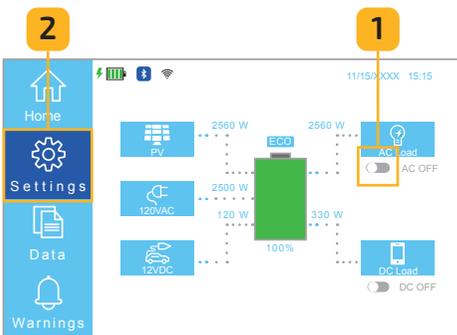


Fig. 6.15 Turn AC output switch OFF

Follow these steps to select the Battery First mode:

1. On the Homepage UI, toggle the **AC Output** switch to **OFF** (Fig. 6.15).
2. Select the **Settings** button to access the Settings menu.



- From the Settings menu, select the **Bat First** button (Fig. 6.16).

Fig. 6.16 Select bat first button

The following table (Table 6.3) shows the power supply priority when the unit is in Bat First mode.

Power Supply Priority	Description
1. PV (solar)	PV Power is prioritized to charge the battery.
2. Battery	The battery power will kick-in when the PV power is insufficient.
3. Utility (AC Input)	The utility pass-through powers the loads when both the PV power and the battery power are insufficient. The utility power will not charge the battery.

Table 6.3 Power supply priority - Bat first modes

Energy Saver Mode Settings

Note: The *Energy Saver* mode is **not** available for a multi-unit parallel system.

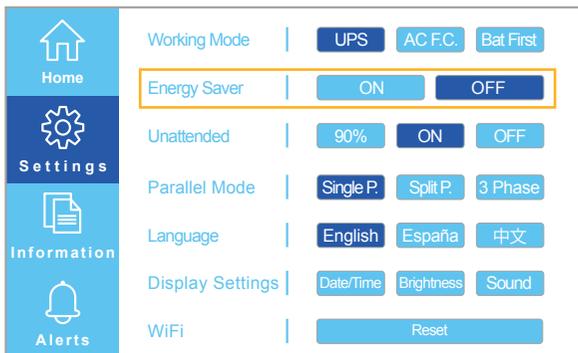


Fig. 6.17 • Energy saver mode settings

When the **Energy Saver** is **ON**, the Inverter turns off when the load draw is less than 30W. **Note:** Keeping the Inverter shut off ensures the lowest power consumption of the battery bank. The Inverter only turns on when it detects load power greater than 30W. Under the **Energy Saver** mode, the AC Input power will **not** charge the battery.

Unattended Mode Settings

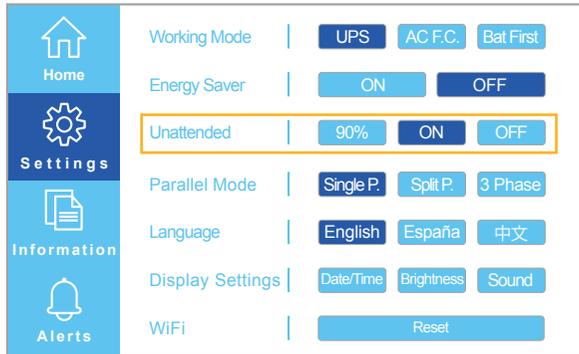
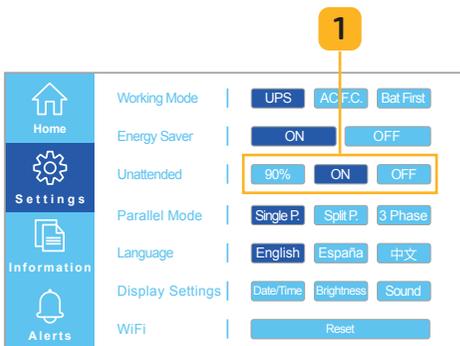


Fig. 6.18 Unattended mode settings

When **Unattended** mode is **ON**: if the battery runs out while a solar array is connected, the Apollo will automatically restart the AC Output once the battery charge level reaches the selected auto-start percentage. You may choose an auto-start percentage between 10% - 90%.

Note: If load power may exceed charging power, we recommend selecting an auto-start percentage at or above 50% to optimize battery life.

Follow these steps to choose the Unattended mode setting:



1. Set the **Unattended** mode **ON** or **OFF** (Fig. 6.19).

Fig. 6.19 Select unattended mode setting

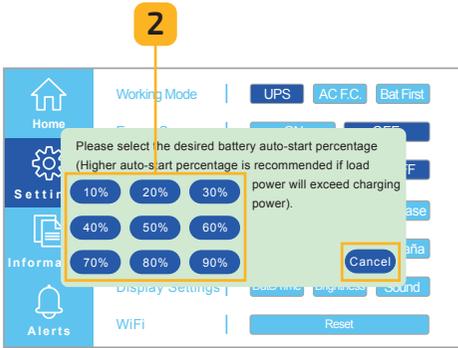


Fig. 6.20 Select auto-start percentage

2. Select the desired battery **Auto-start** percentage (Fig. 6.20).

Note: Be sure to consider your power consumption while selecting this percentage.

Click the **Cancel** button to return to the **Settings** touchscreen without saving the settings.

Parallel Mode Settings

Selecting **Parallel** mode (Fig. 6.21) allows you to set the phase of the unit(s). There are three phases to select from. These include, Single-phase (Single P.), Split-phase (Split P.), and 3-phase (3-Phase).

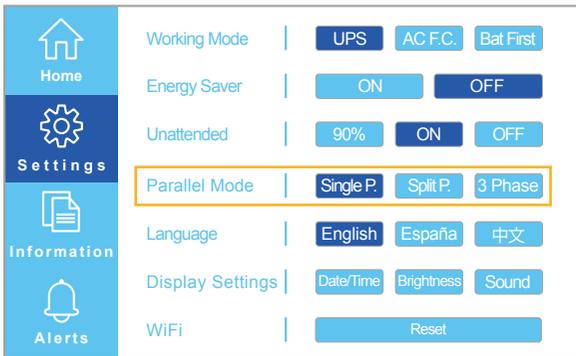


Fig. 6.21 Parallel mode settings

Important! If **Inverter Status Icon** [] is flashing on the home screen, press **AC ON** once to power on inverter; ensure icon is no longer flashing before changing Parallel Mode Settings. Do **not** press **AC ON** again: the toggle switch should indicate that AC Output is OFF before changing parallel mode settings.

Follow these steps to choose a **Parallel** mode setting:

Single-phase Settings

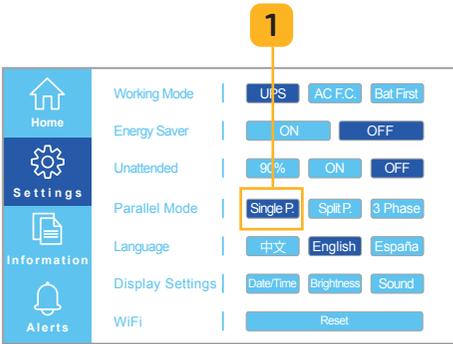


Fig. 6.22 Select single p. button

1. Select the **Single P.** button to set the unit's single-phase configuration (Fig. 6.22).

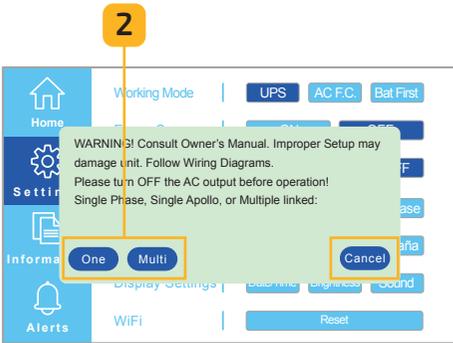


Fig. 6.23 Select single or multi option

2. Select the **One** or **Multi** button (Fig. 6.23):
 - One if you are using only one Apollo
 - Multi if you are connecting multiple Apollo for Single-Phase power.

Note: Click the **Cancel** button to return to the Information touchscreen without saving the settings.

Split-phase Settings

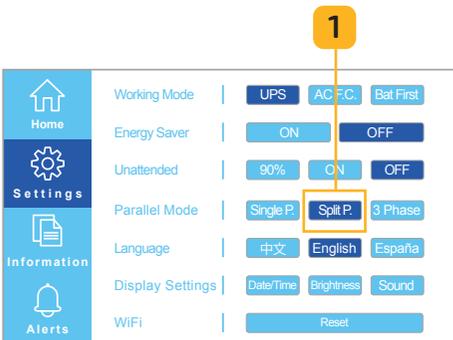


Fig. 6.24 Select split p. button

1. Select the **Split P.** button to set the unit's phase to P1 or P2 (Fig. 6.24).

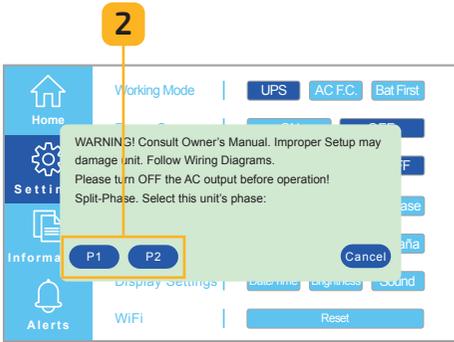


Fig. 6.25 Select P1 or P2 option

2. Select the **P1** or **P2** button (Fig. 6.25).

Note: Click the **Cancel** button to return to the **Settings** menu without saving the settings.

3-phase Settings

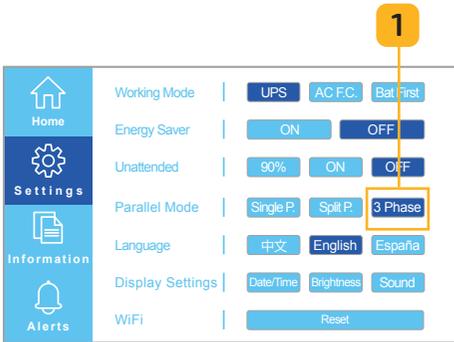


Fig. 6.26 Select 3-phase button

1. Select the **3-phase** button to set the unit's phase to P1, P2, or P3 (Fig. 6.26).

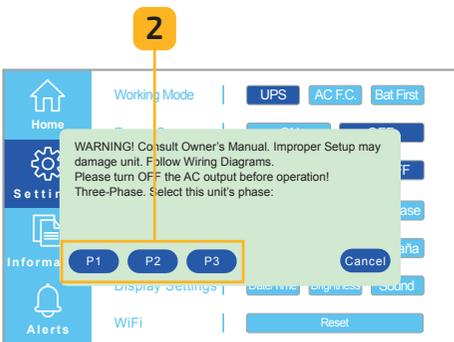


Fig. 6.27 Select P1, P2, or P3 option

2. Select the **P1**, **P2**, or **P3** button (Fig. 6.27).

Note: Click the **Cancel** button to return to the **Settings** menu without saving the settings.

In a multi-unit setup, up to 12 units can be configured into Single-phase, Split-phase, or 3-phase AC Output (Table 6.5). Possible configurations include:

- Up to 12 units can be stacked in parallel for Single-phase
- Up to 6 units for each of the Lines 1 and 2 for Split-Phase
- Up to 4 units each for the lines 1, 2, and 3 for 3-phase.

Note: Each Apollo outputs 25A max, so the max current of each line is 25A x N.

Power Supply	Phase	Instructions
Single-phase 120V 60Hz	Single Unit	120V/60Hz, 25A
	Multi (N) Units $N \leq 12$	120V/60Hz, 25A x N (Stack Power & current)
Split-phase 240V 60Hz	P1 (Phase 1) x N Units $N \leq 6$	Line 1, 120V/60Hz, 25A x N (Stack Power & current)
	P2 (Phase 2) x N Units $N \leq 6$	Line 2, 120V/60Hz, 25A x N (Stack Power & current)
3-phase 208V 60Hz	P1 (Phase 1) x N Units $N \leq 4$	Line 1, 120V/60Hz, 25A x N (Stack Power & current)
	P2 (Phase 2) x N Units $N \leq 4$	Line 2, 120V/60Hz, 25A x N (Stack Power & current)
	P3 (Phase 3) x N Units $N \leq 4$	Line 3, 120V/60Hz, 25A x N (Stack Power & current)

Table 6.5 Possible multi-unit configurations

Note: N: Number of the Apollo 5K units.

Language Mode Setting

Selecting the Language setting allows you to set the language to English, Spanish, or Chinese (Fig. 6.28).



Fig. 6.28 Select language

Display Mode Settings

The Display Settings option allows you to set the **Date**, **Time**, **Brightness**, and **Sound** (Fig. 6.29).

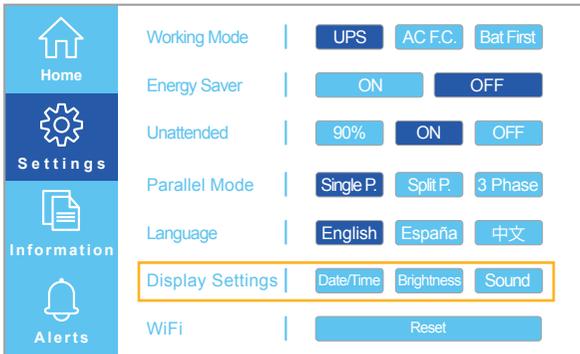


Fig. 6.29 Setup date, time, brightness, and sound

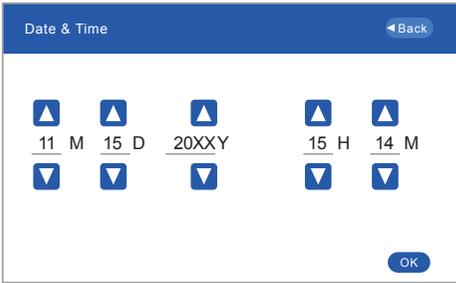


Fig. 6.30 Setup date and time

1. Selecting Date/Time:

Allows you to set the date and time on the unit. Click the up and down arrows to set each setting. Click **OK** to confirm or, **Back** to cancel (Fig. 6.30).

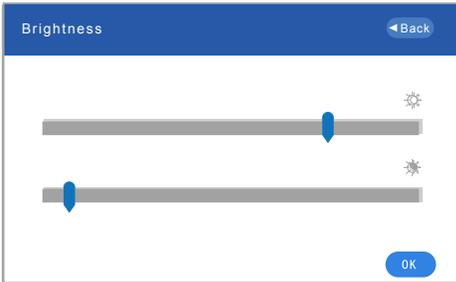


Fig. 6.31 Setup brightness

2. Selecting Brightness

Allows you to set the brightness of the touchscreen. The slider with the clear **sun** button sets the brightness during operation. The slider with the partially filled **sun** button sets the brightness when the unit is on standby (Fig. 6.31).



Fig. 6.32 Sound button

3. Selecting Sound:

Turn the sound on or off (Fig. 6.32).

Note: The sound is turned ON when the sound button is highlighted.

WiFi Settings

The Apollo 5K can be controlled from anywhere using the Hysolis App. Download the App by searching for “Hysolis” on the App Store or the Google Play Store.

You may need to reset the Apollo 5K WiFi module in some instances if the Apollo 5K loses connection to the WiFi network. In these instances, press the **Reset** button to reset the WiFi connection (Fig. 6.33).

Note: After resetting the WiFi, you will need to reconnect the Apollo 5K to the network via the phone app.

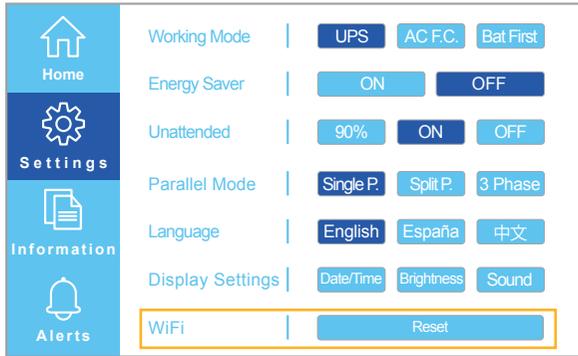


Fig. 6.33 WiFi reset button

6.2.2 Information Touchscreens

Selecting the **Information** button (Fig. 6.34) on the Homepage UI touchscreen opens the Information touchscreen options. The options include information **About** the product, the **Power Generated** by the different sources, and the **Alert History**.

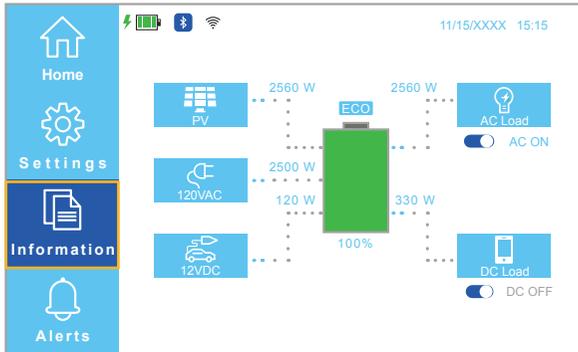


Fig. 6.34 Select information button

About Screen

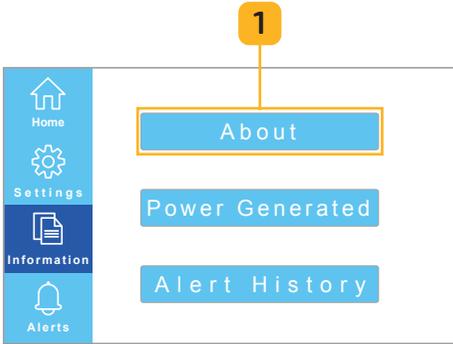


Fig. 6.35 • Select about button

1. Select the **About** button to view information about the unit's Hardware Model, Software Version, and General Parameters (Fig. 6.35).

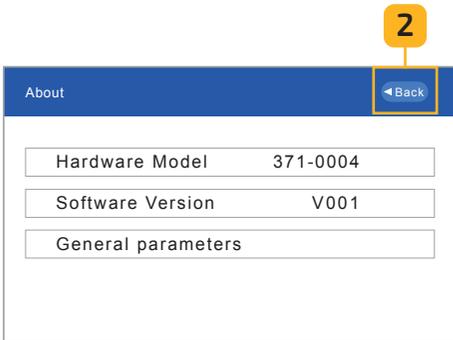
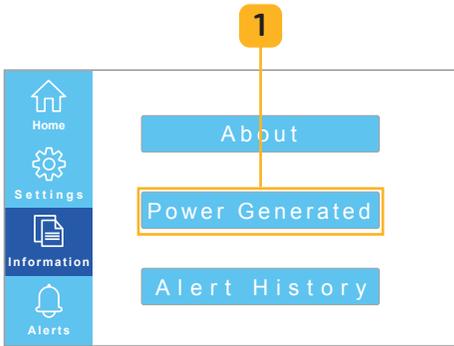


Fig. 6.36 • About screen

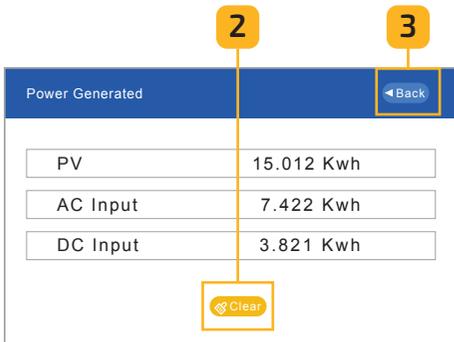
2. Click the **Back** button to return to the Homepage UI touchscreen (Fig. 6.36).

Power Generated Screen



1. Select the **Power Generated** button to view the total energy generated from the PV, AC, and DC power sources (Fig. 6.37).

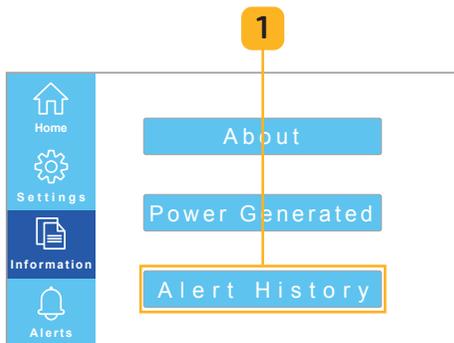
Fig. 6.37 • Select power generated button



2. Click the **Clear** button to clear power generation history (Fig. 6.38).
3. Click the **Back** button to return to the Homepage UI touchscreen.

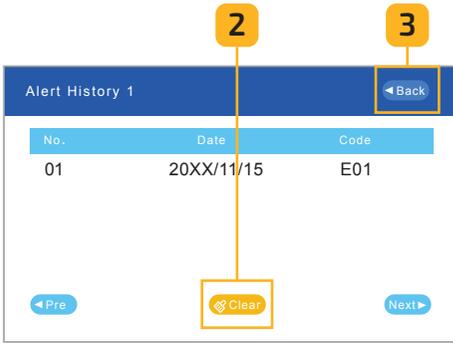
Fig. 6.38 • Power generated screen

Alert History Screen



1. Select the **Alert History** button to view the alert history details (Fig. 6.39).

Fig. 6.39 • Select power generated button



2. Click the **Clear** button to clear alert history (Fig. 6.40).
3. Click the **Back** button to return to the Homepage UI touchscreen.

Fig. 6.40 Alert history screen

6.2.3 Alerts Touchscreen

Selecting the **Alerts** button (Fig. 6.41) on the Homepage UI touchscreen opens the current **Alerts** screen.

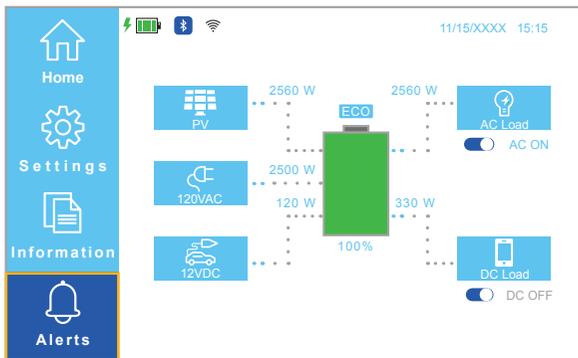
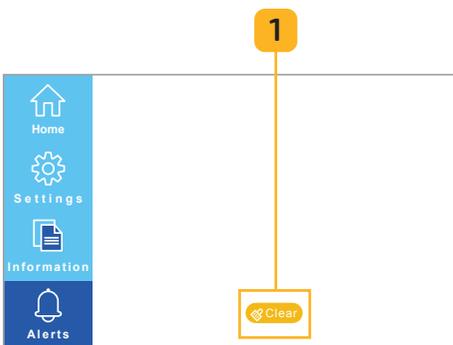


Fig. 6.41 Select alerts button

Current Alert Screen



After viewing the current alerts:

1. Click the **Clear** button to clear the current alerts (Fig. 6.42).
Note: See Section 8 for Error Codes.

Fig. 6.42 Select power generated button

7.0 Product Care

Please follow the following product care recommendations to ensure product functionality and avoid warranty issues.

- Charge the Apollo 5K to 50% capacity at least before shutting off and storing.
- To preserve the battery health, please discharge and fully charge the unit at least once every 6 months.
- Ensure proper ventilation when in use or in storage.
- Only operate within the proper temperature range: +32 to +115 F (0 to +45 C)
- A clean and dry environment is strongly recommended.
- Keep the unit away from children and pets.
- Do not stack anything on the top of the unit while in use or in storage.
- Avoid exposing the unit to rainy or wet environment and in direct sunlight.
- Before storage or other long periods of inactivity, turn off the battery switch.
- Front vent should be removed, checked for dust, and cleaned periodically.

8.0 Troubleshooting

The following tables describe error codes (Table 8.1), warning codes (Table 8.2), and troubleshooting (Table 8.3). If necessary, please have the unit information and working status as much as possible before contacting customer service. The following information is necessary for customer service.

- Unit hardware and software version
- Order information
- Detailed description of the problem

8.1 Alerts Touchscreen

Current error codes and time can be viewed by selecting the **Alerts** button on the Homepage UI touchscreen. Click the **Alert History** button from the **Information** screen to view a history of alerts. Click the **Back** button to return to the Homepage UI touchscreen.

Error Codes	Description	Error Codes	Description
E01	Inverter over-temperature	E14	Bus low-voltage
E02	Over-temperature	E16	Over DC voltage in AC output
E03	Battery over-voltage	E18	Output current offset
E04	PV over-temperature	E19	Inverter current offset
E05	Output short circuit	E20	Battery current offset
E06	Inverter over-voltage	E21	PV current offset
E07	Over-loaded	E22	AC output low-voltage
E08	Bus over-voltage	E23	Inverter negative power
E09	Bus soft-start failed	E24	Host loss under the parallel mode
E10	PV over-current	E25	Sync signal loss under the parallel mode
E11	PV over-voltage	E26	Incompatible battery type
E12	Battery over-current	E27	Firmware version inconsistent
E13	Inverter over-current or surge		

Table 8.1 Error codes

DC Error Codes	Description
D00	DC Input under voltage
D01	DC Input over voltage
D02	DC Output under voltage
D03	DC Output over voltage
D05	DC board over temperature
D06	DC board over current
D07	DC board short circuit

Table 8.2 DC Error codes

Warning Codes	Description
W00	Unidentified AC Input frequency
W01	AC Input wave abnormal
W02	AC Input over voltage
W03	AC Input under voltage
W04	AC Input over frequency
W05	AC Input under frequency
W06	PV Input low voltage
W07	Temperature is too high
W08	Low battery
W09	Battery disconnected
W10	AC Output overload
W12	Battery is depleted
W13	AC Output power reduced
W15	PV power too low
W16	Parallel communication interrupted
W17	Inconsistent parallel operating mode
W18	Battery voltage difference too high in the parallel system
W19	BMS communication failed
W20	Battery discharge over current

Table 8.3 Warning codes

Issue	Possible reason	Solution
The unit beeps during startup process	Low battery voltage	Recharge the battery
No response after powered on	<ol style="list-style-type: none"> 1. The battery voltage is far too low. BMS protected 2. Reversed battery polarity 	<ol style="list-style-type: none"> 1. Check the battery polarity connection 2. Recharge the battery 3. Replace the battery
AC Input doesn't charge battery	<ol style="list-style-type: none"> 1. Under the Energy Saver mode 2. Under the Battery First mode 	<ol style="list-style-type: none"> 1. Turn off the Energy Saver mode 2. Switch the working mode
DC Input doesn't charge battery	<ol style="list-style-type: none"> 1. Battery is full 2. DC Input voltage too low 	Use the proper DC Input voltage
Buzzer beeps continuously	E07: Overload error. An AC output surge above 3kW is lasting longer than acceptable	Reduce the loads
	E05: AC output short circuit	Check the output wiring. Remove the abnormal loads.
	E02: Inverter components temperature over 100° C.	Check the cooling fan and ventilation
	E03: Battery over-voltage (over charged)	Contact technical support
	E06/22: Abnormal AC output voltage (Too high or too low)	<ol style="list-style-type: none"> 1. Reduce the loads power 2. Contact technical support
	E08/09: Internal components failed	Contact for technical support
	E13: Over-current or surge	Restart the unit
	E14: Bus voltage is too low	Contact technical support if it happens again
	E16: AC output voltage is unbalanced	
Other failure	Contact technical support	

Table 8.4 Troubleshooting

9.0 Technical Specifications

Model		Apollo 5K
Rated AC Power		120 VAC / 3,000 W Continuous (6,000 W Surge)
Battery Bank	Rated voltage	51.2 VDC
	Battery capacity	5,376 Wh
	Battery Type	Lithium / LiFePO4
BMS & Inverter voltage settings	High voltage protection	60.0 VDC
	Low voltage protection	40.0 VDC
	Low voltage recovery	44.8 VDC
	Floating charge voltage	58.4 VDC
	Maximum current	105 A
AC Input	AC input voltage	65 VAC - 140 VAC
	Frequency	60Hz or 50Hz (Auto-detection)
Charge	AC charger	Max. 3,000 watts
	Solar Charger	(Max 4,400 watts charging, MPPT input Voc range 120 VDC-500 VDC)
	Car Charger	Max. 12 VDC x 10 A or 24 VDC x 10 A
AC Output	Voltage Range	120 VAC \pm 5% (Inverter mode)
	Frequency	60 Hz or 50 Hz \pm 1%(Inverter mode)
	Output wave	Pure Sine Wave
	Transfer time	<20ms (Typical load)
	Efficiency	>94%
DC Output	USB Ports	USB-QC3.0 x 2, USB-C 18 W x 1, USB-C 100 W x 1
	12V Outlets	12 VDC 30 A x 1, 12 VDC 10 A x 1, 12 VDC 2 A x 2
	Wireless charger	15 W

Table 9.1 Specifications for the unit.

10.0 Declarations

- Some changes may not be noticed specifically such as appearance or specifications due to the exterior material or hardware improvement of the product.
- Our company shall not be liable for any damage caused by force, nature such as fire, hurricane, flood, earthquake or the user's negligence, misuse or other abnormal conditions.
- No compensation for damages shall be made for utilizing non-standard adapters and accessories.
- Our company will not bear all responsibilities if the damage is caused by not operating the product properly according to the use method in operation manual.
- This unit is not suitable for use on the relevant equipment or machines involving:
- Personal safety, such as atomic energy devices, aerospace devices, transportation devices, medical devices, etc., or any equipment or machines that require highly reliable power sources. We are not responsible for accidents, fires, or wrongful or negligent actions done to the machine and equipment which results in damage.

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