

# Helios

## PORTABLE ENERGY STORAGE SYSTEM



Helios 3



Helios 5

## Instruction Manual

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# Introduction

## 1. Application

The Helios series has three working modes: SOL (Solar first), UEI (Utility first), and SBU (Solar-Battery-Utility) modes. These models are explained in more details in the Helios working modes document.

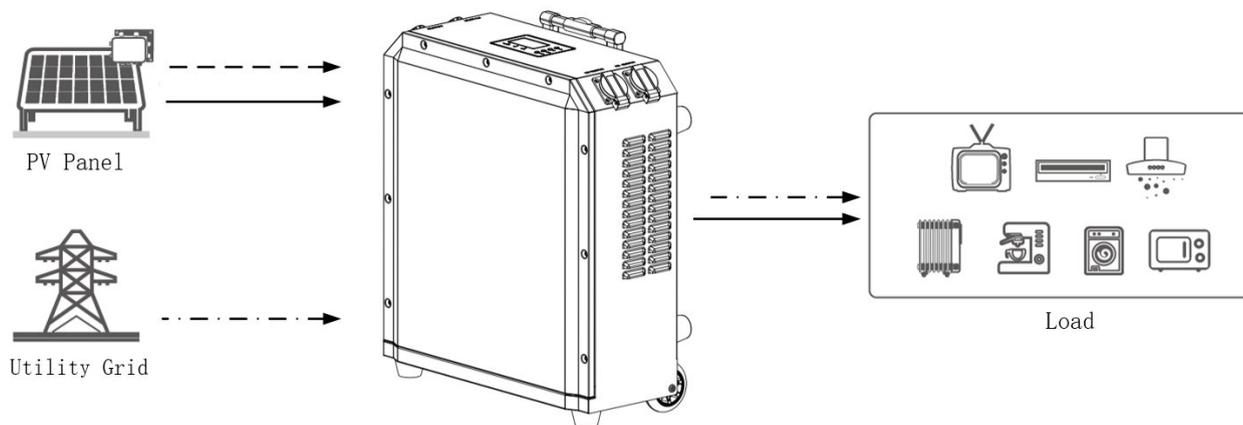
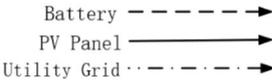
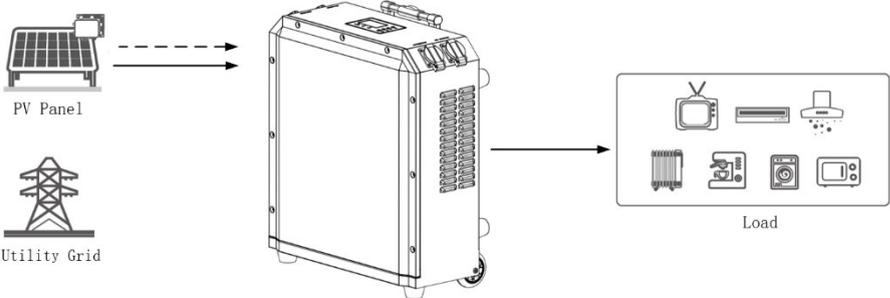
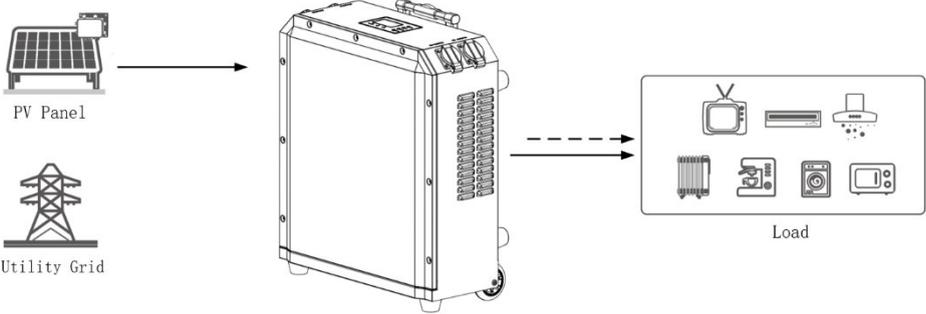
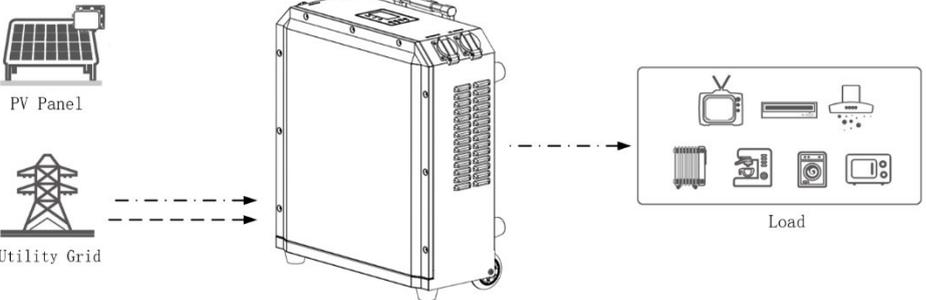
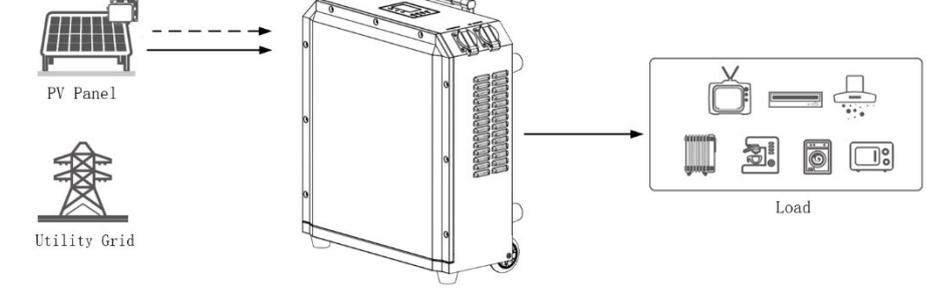
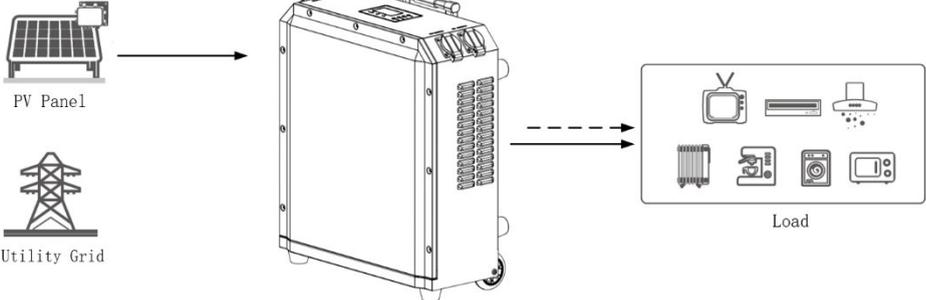
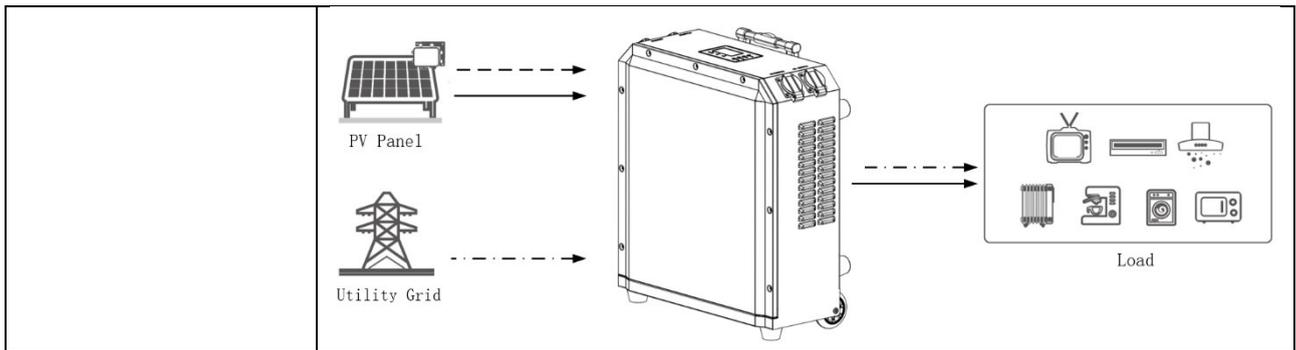


Figure 1 Helios Working Diagram

<p>Definition</p>	<p>Battery voltage too low: Lower than the value of setting #12.          Battery voltage too high: Higher than the value of setting #13.</p> 
<p>SOL (Solar first):          Solar energy provides power to the load as priority.</p>	<p>When PV power generation is greater than the consumption, and the remaining battery capacity is low, the PV will supply power to the load first and charge the battery at the same time with the excess PV.</p> 
	<p>When PV power generation is less than the consumption, and the remaining battery capacity is high, PV and battery supply power to the load at the same time.</p>

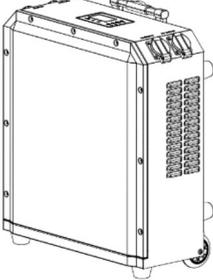
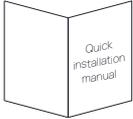
	 <p>PV Panel</p> <p>Utility Grid</p> <p>Load</p>
<p>UEI (Utility first): Utility grid will provide power to the loads as priority.</p>	<p>The grid supplies power to the load and charges the battery when the remaining battery capacity is low.</p>  <p>PV Panel</p> <p>Utility Grid</p> <p>Load</p>
<p>SBU (Solar-Battery-Utility), Solar energy provides power to the loads as priority.</p>	<p>When PV power generation is greater than the consumption, and the remaining battery capacity is low, the PV will supply power to the load first and charge the battery at the same time with the excess PV.</p>  <p>PV Panel</p> <p>Utility Grid</p> <p>Load</p>
	<p>When PV power generation is less than the consumption, and the remaining battery capacity is high, PV and battery supply power to the load at the same time.</p>  <p>PV Panel</p> <p>Utility Grid</p> <p>Load</p> <p>When PV power generation is less than the consumption, and the remaining battery capacity is low, grid supplies the load, PV charges the battery and if there is excess PV power it will be used to supply the load.</p>



## 2. Components

After unpacking the package, please inspect the components based on the below table.

Table 1 Component list

NO.	Pictures	Description	Quantity
1		Helios Portable Suitcase energy storage system	1 pc
2		AC input cable	1 pc
3		PV input cable	1 pc
4		User manual	1 pc

### 3. Helios Dimensions

Please note: The size will vary according to the model between Helios 3 and Helios 5.

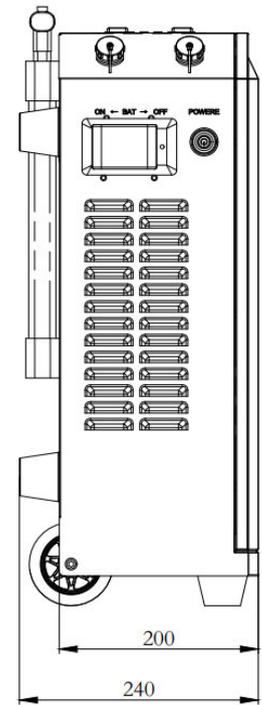
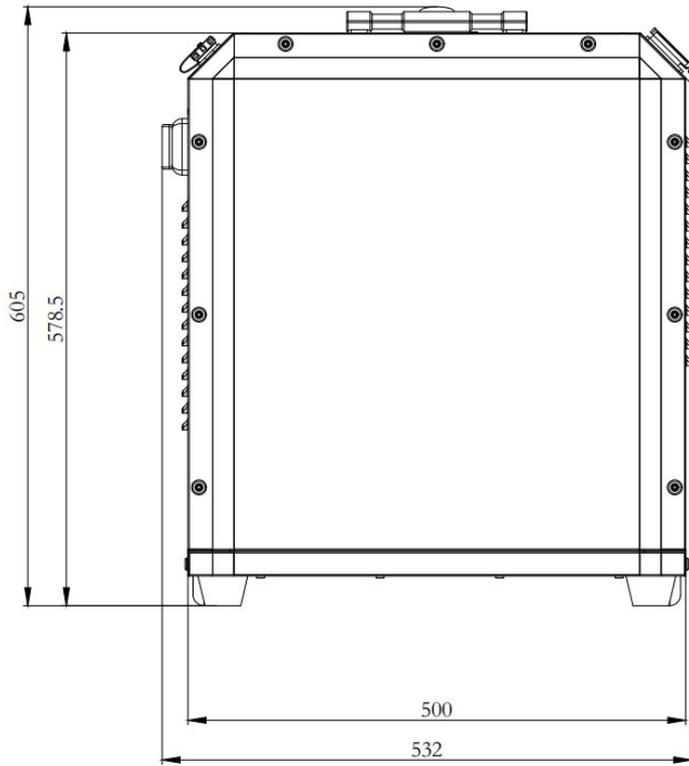


Figure 2 Helios 3 Dimension

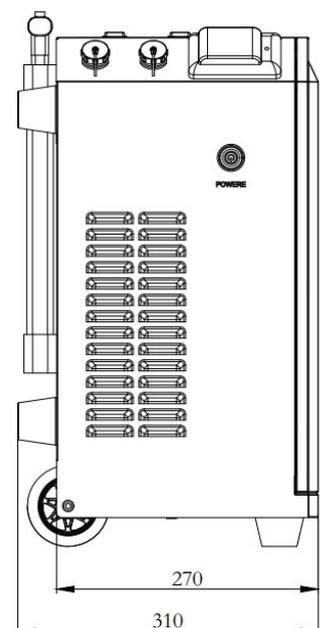
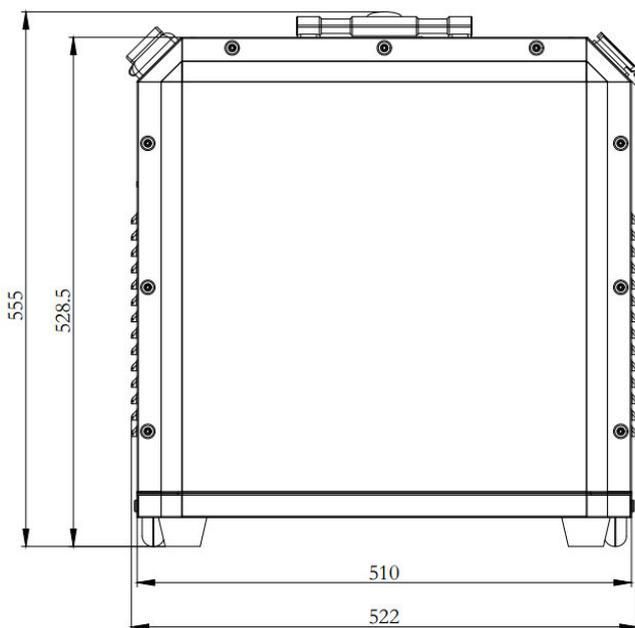


Figure 3 Helios 5 Dimension

## 4. Quality Inspection

Table 2 Quality Inspection

Operation	Warning
Check package	No damage
Check component	No loss or damage
Check built-in accessory	No loss or damage

## 5. Label

	<ul style="list-style-type: none"> <li>● Danger: Possibility of fatal voltage</li> </ul>
	<ul style="list-style-type: none"> <li>● Warning: Possibility of device damage or personal injury</li> </ul>
	<ul style="list-style-type: none"> <li>● Warning: Possibility of heat injury</li> </ul>

## 6. Safety

This user manual includes safety instructions. Please read this manual carefully before installing, maintaining, and operating the equipment. SR Portables will not be responsible for any equipment damage or personal injury/death if the unit is not operated in accordance with this manual.

	❖ Must be grounded before operation.
	❖ There are electrostatic sensitive devices inside the device. Under any circumstances, do not open the case without permission to prevent the device from being damaged by static electricity.
	❖ Only qualified electricians are allowed to perform the maintenance, inspection, and components replacement of this product.
	❖ Do not remove any part and component without approval or supervision.

## 7. Technical Specifications

Models		Helios 3.0	Helios 5.0
<b>Battery</b>	Nominal Voltage	51.2V	
	Voltage Range	44.8-57.6V	
	Capacity	3430Wh	5120Wh
	Max. discharge rate	1C	
	Max. charge rate	1C	
	Battery Type	Li-ion (LFP)	
	Rated Power	3000W	5000W
<b>AC Output</b>	Surge Power	6000W, 5s	10000W, 5s
	Output Voltage	220/230/240V ac	
	Output Current	13.7A	22.7A
	Rated Frequency	50/60Hz	
	THDv	< 3 %	
	Output Wave	Pure Sine Wave	
	Output Type	Multi-purpose AC Outlet x2; 48V DC Outlet x1	
<b>AC Input</b>	AC Input Voltage Range	170-280V ac	
	AC Input Frequency	50/60Hz	
	AC Charge Current (Battery)	15A (10/15A Adjustable)	30A (0-60A Adjustable)
<b>PV Input</b>	Max. PV Power (Connected)	1800W	4500W
	Max PV Absorbtion	1800W	3450W
	Max. PV Voltage	145V	150V
	MPPT Range	60V-115V	
	Max PV Charge Current	30A	30A
<b>Operating Conditions</b>	Operating Temperature	0-55°C	
	Storage Temperature	-15°C-60°C	
	Humidity	5%-95%	
	Weight	50KG	68KG
	Dimension [W x H x D]	500 x 578.5 x 200mm	510 x 528.5 x 270mm

# Installation

## 1. Device Overview

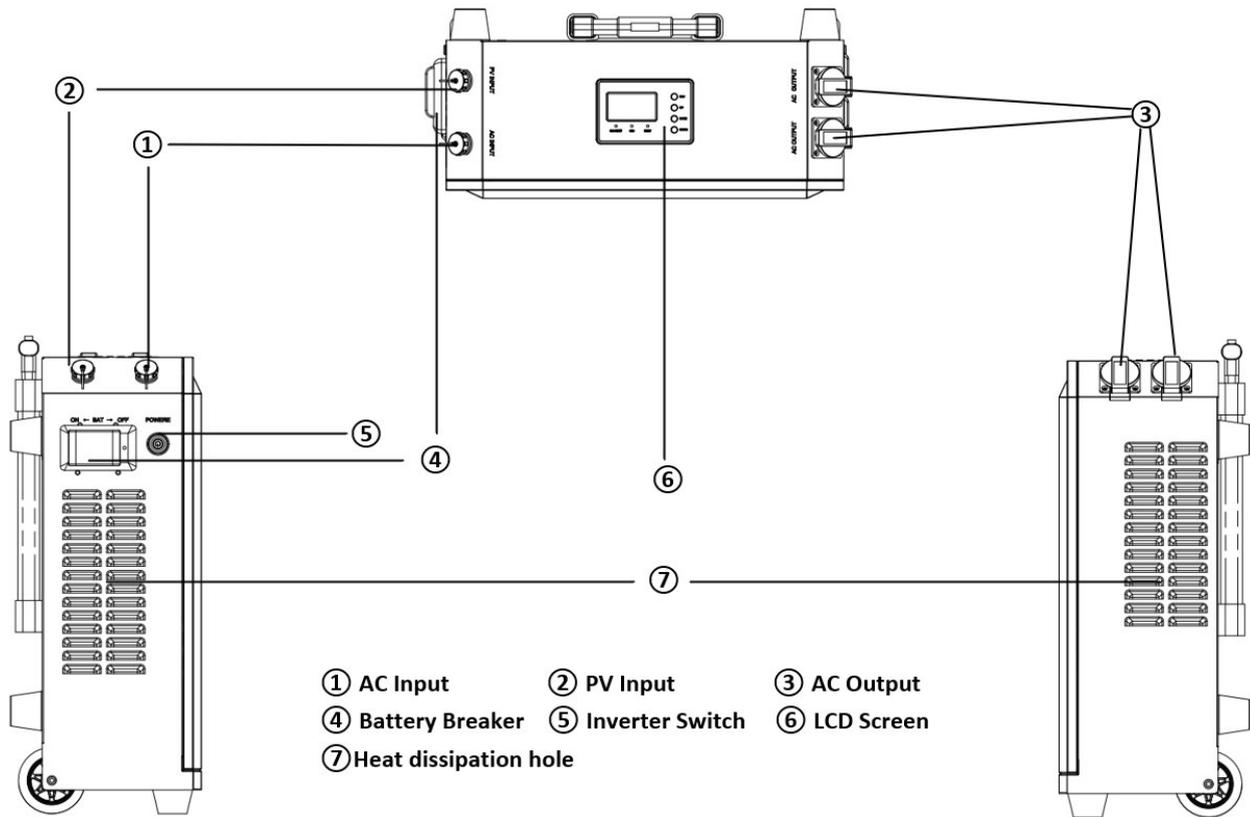


Figure 4 Helios 3 Overview

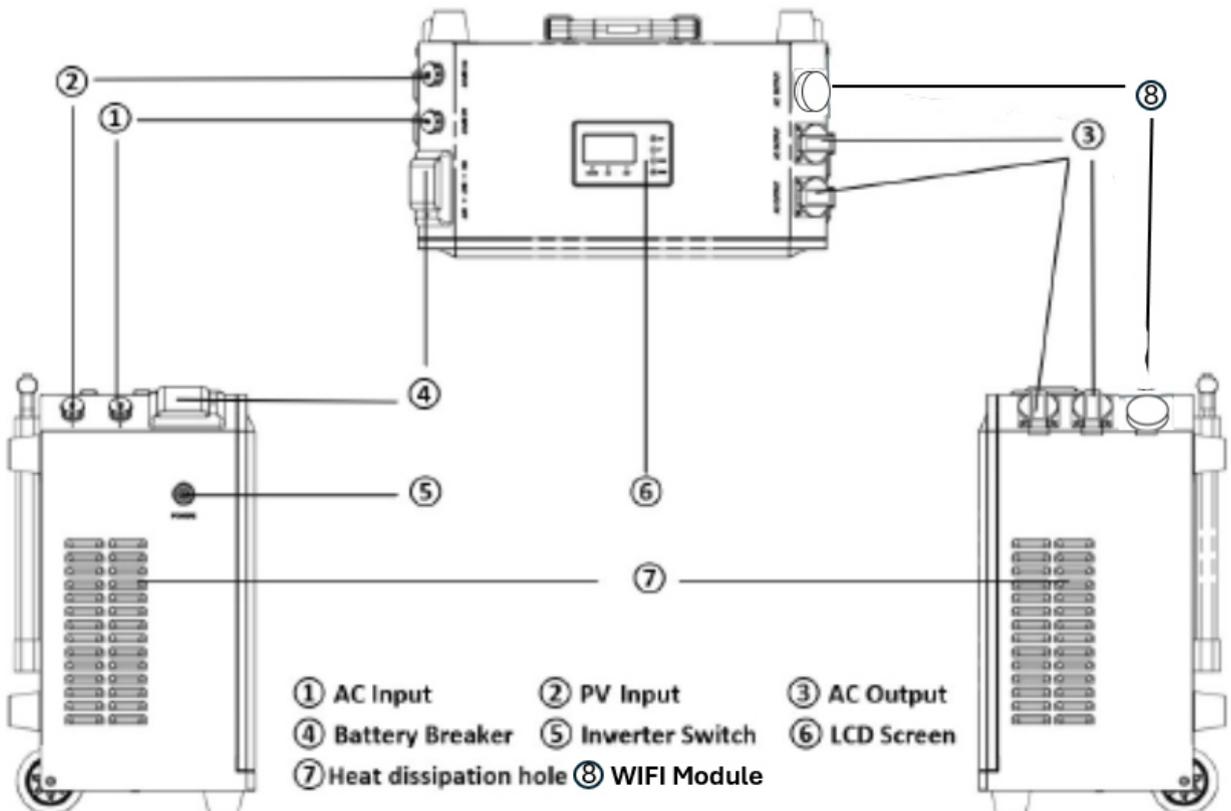


Figure 5 Helios 5 Overview

## 1.1 Moving the units



### Warning!

The device weight (50kg/68kg) may cause personal injury.

- ❖ Please note the device weight when moving or delivering the unit.
- ❖ Select a firm installation platform to keep the unit.
- ❖ Use proper tools for installation.
- ❖ We recommend at least two people to move and install the units.

## 1.2 Unboxing Guide

The iron buckle is sharp, please pay attention to personal safety when unboxing.

1. Use a screwdriver to pry off the top cover clasp.

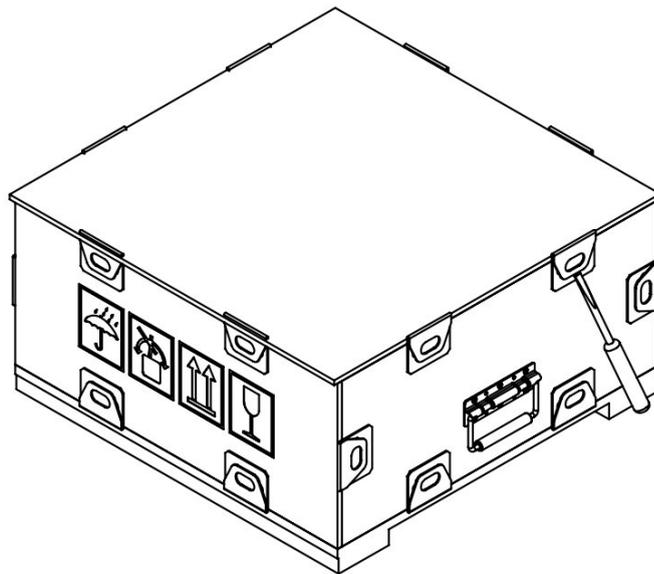


Figure 6

2. Remove the top cover after prying off all the cover buckles.

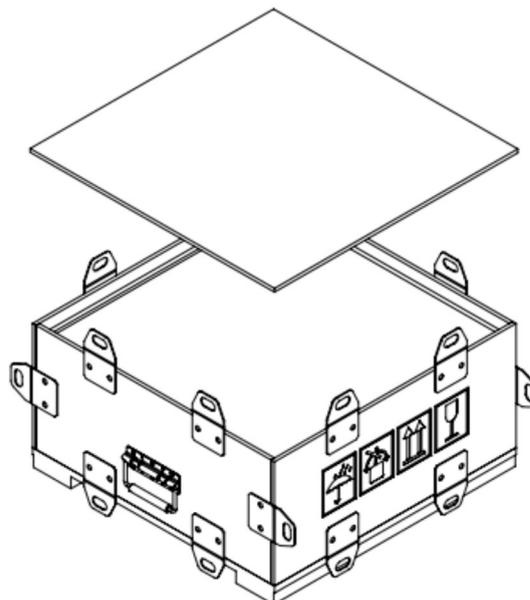


Figure 7

3. After prying off the side cover iron buckle, remove the four side covers.

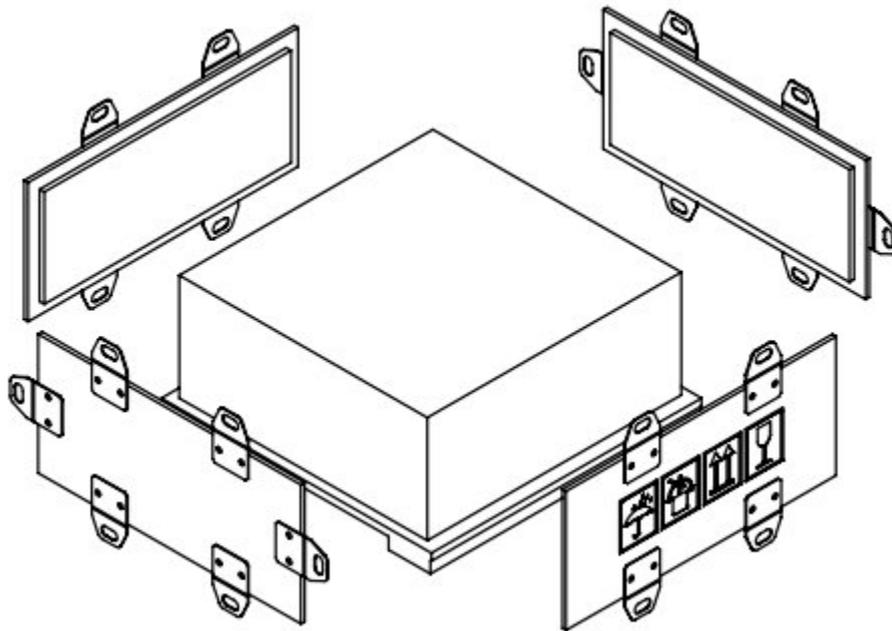


Figure 8

4. Take out the machine. The machine is heavy so please take proper precautions.

### 1.3 Operating Environment

The unit should be placed vertically and can be kept indoors or outdoors, preferably not in a wet or exposed area. We recommend a flat, stable and safe surface to place the product with at least a 200mm distance from other objects for ventilation and air flow management.

	<p>Warning :</p> <ul style="list-style-type: none"><li>❖ Ensure that the installation site is ventilated and conforms to device operating conditions.</li><li>❖ No flammable and combustible objects are allowed within 4m from the product.</li><li>❖ The environmental temperature shall be kept between 0°C and 40°C.</li></ul>
	<p>Warning :</p> <ul style="list-style-type: none"><li>❖ No smoking and setting off fireworks nearby.</li><li>❖ Ensure that the surrounding areas is clean and ventilated.</li><li>❖ Ensure that the wiring conforms to the operating requirements.</li></ul>

## 2. Electric Installation

The Helios unit is portable. Please ensure it is placed on the ground vertically.

### 2.1 Wiring Procedure

1. Cut off the circuit breakers for Grid and PV.
2. Ensure that the product is switched off.

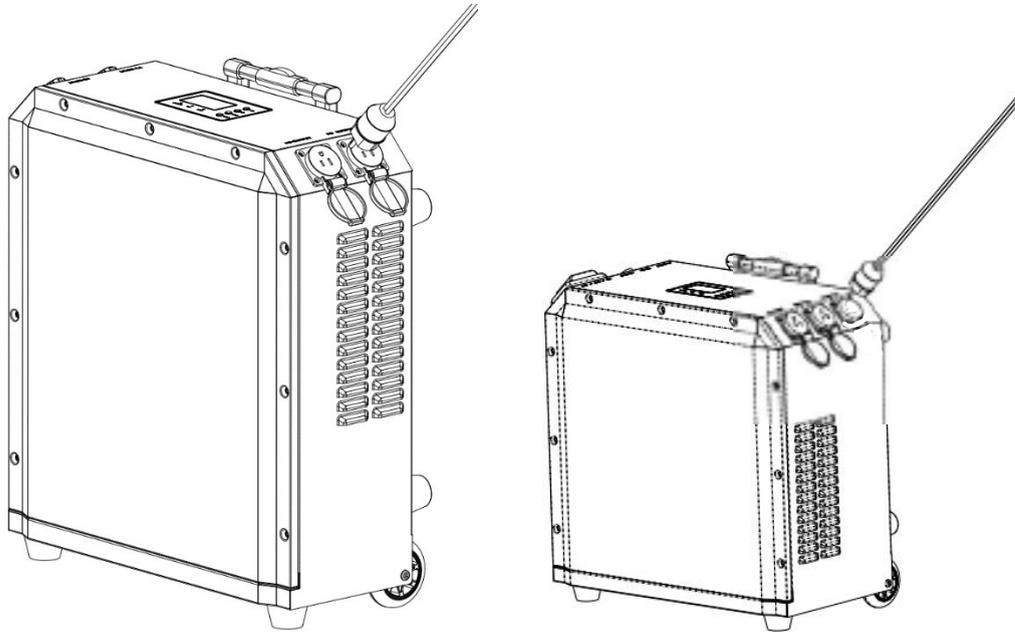


Figure 9 Helios AC Output Wiring

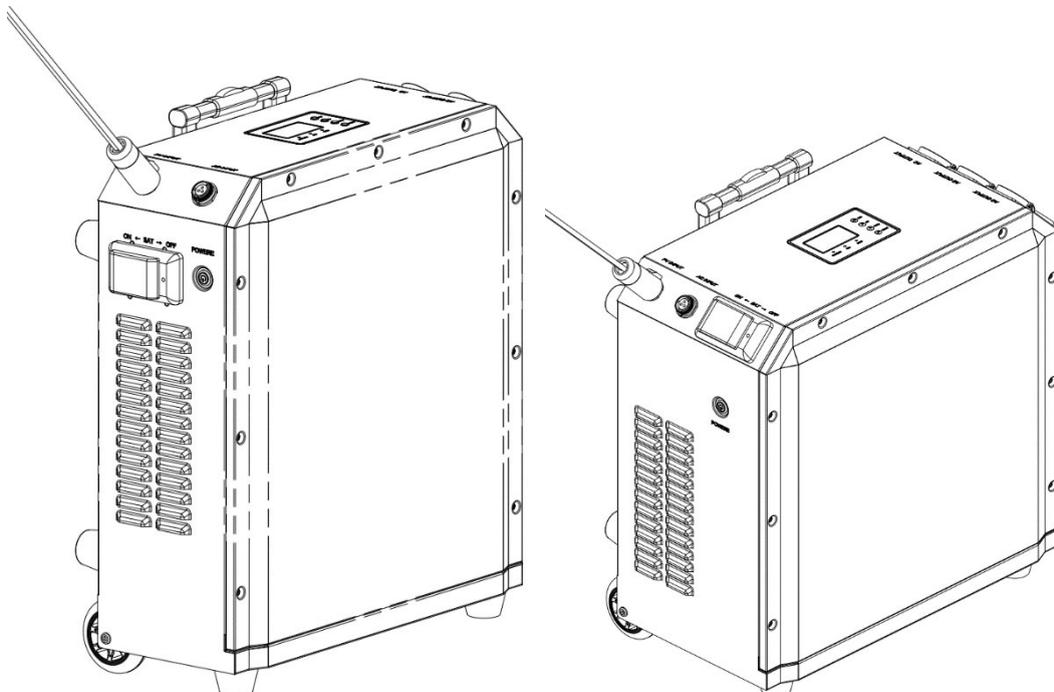


Figure 10 Helios PV Input Wiring

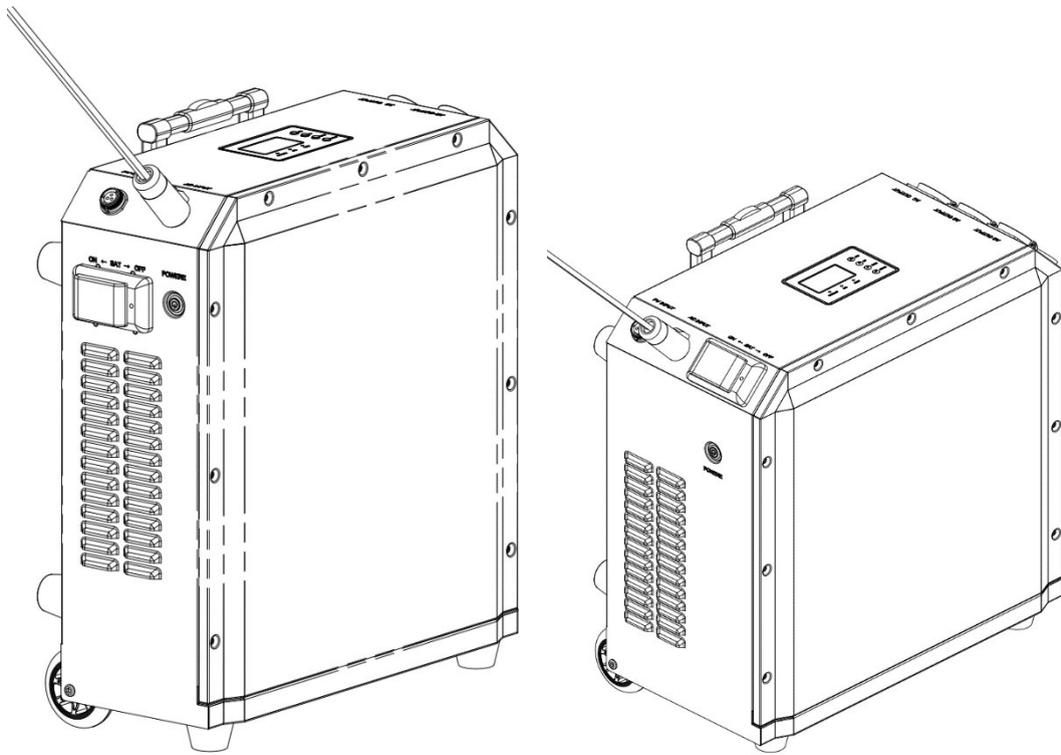


Figure 11 Helios AC Input Wiring

## 1. LCD Display Overview

The operation and display panel, shown in below chart, is on the front panel of the Helios. It includes three indicators, four function buttons and an LCD screen which indicates the operating status and provides input/output power information.

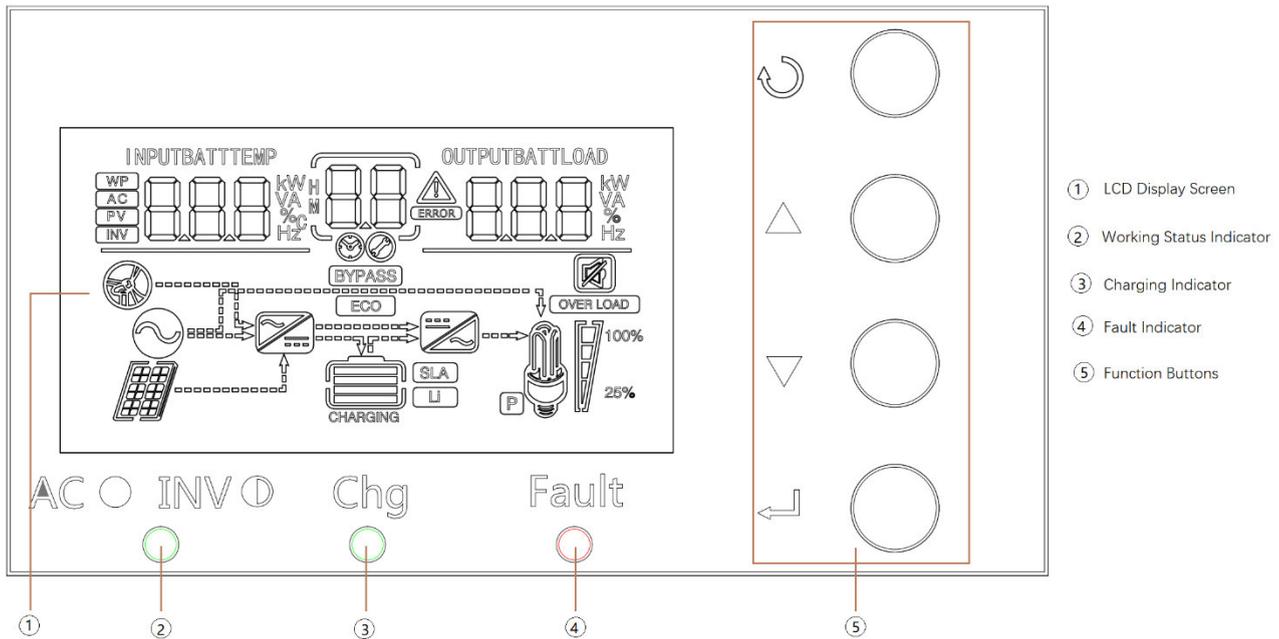


Figure 12 LED display

Table 4 LED Indicator

LED Indicator			
☀️ <b>AC / INV</b>	Green	On	Output is powered by utility grid
		Flashing	Output is powered by battery or PV in battery mode.
☀️ <b>CHG</b>	Green	On	Battery is fully charged.
		Flashing	Battery is charging.
⚠️ <b>FAULT</b>	Red	On	Fault in the inverter.
		Flashing	Warning condition in the inverter.

Table 5 Function Button

Function Button	Description
ESC	To exit setting mode
UP	To go to the previous selection
DOWN	To go to the next selection
ENTER	To confirm the selection in setting mode or enter setting

## 2. LCD Display icons

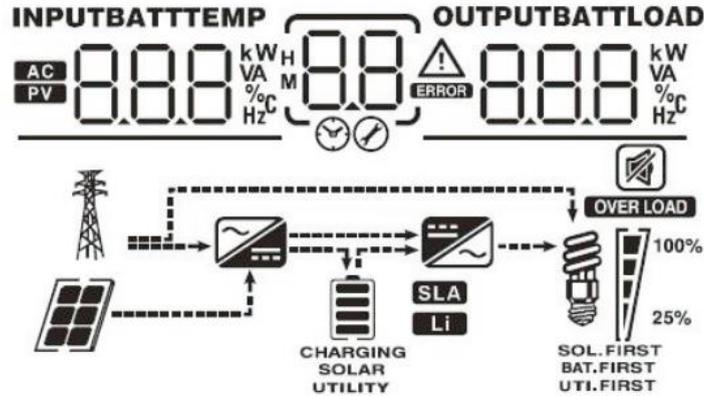


Figure 13 LCD Display Icons

Table 6 Input Information

	Indicates AC input
	Indicates PV panel input
	Indicates input voltage, input frequency, battery voltage, PV1 voltage, PV2 voltage, charger current

Table 7 Setting and ERRON Information

	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: Flashing  with warning code Fault: display  with fault code

Table 8 Output Information

	Indicates the output voltage, output frequency, load percentage, load VA, load W, and discharging current.
--	--

Table 9 Battery Information

	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% segments and charging status.
--	--

Table 10 Load Information

	Indicates overload.			
	Indicates the load level by 0-24%, 25-50%, 50-74%, and 75-100% segments.			
	0%~25%	25%~50%	50%~75%	75%~100%

Table 11 Setting and ERRON Information

	Indicates connecting to the mains.
	Indicates connecting to the PV panel
	Indicates the load is supplied by the utility grid
	Indicates the AC charger is working
	Indicates the DC/AC inverter circuit is working.

Table 12 Other Information

	Indicates that alarm is disabled.
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### 3. Setting the LCD Display

After pressing and holding the ENTER button for 3 seconds, the unit will enter setting mode. Press “UP” or “DOWN” button to select setting programs and then, press the “ENTER” button to confirm the selection or ESC button to exit.

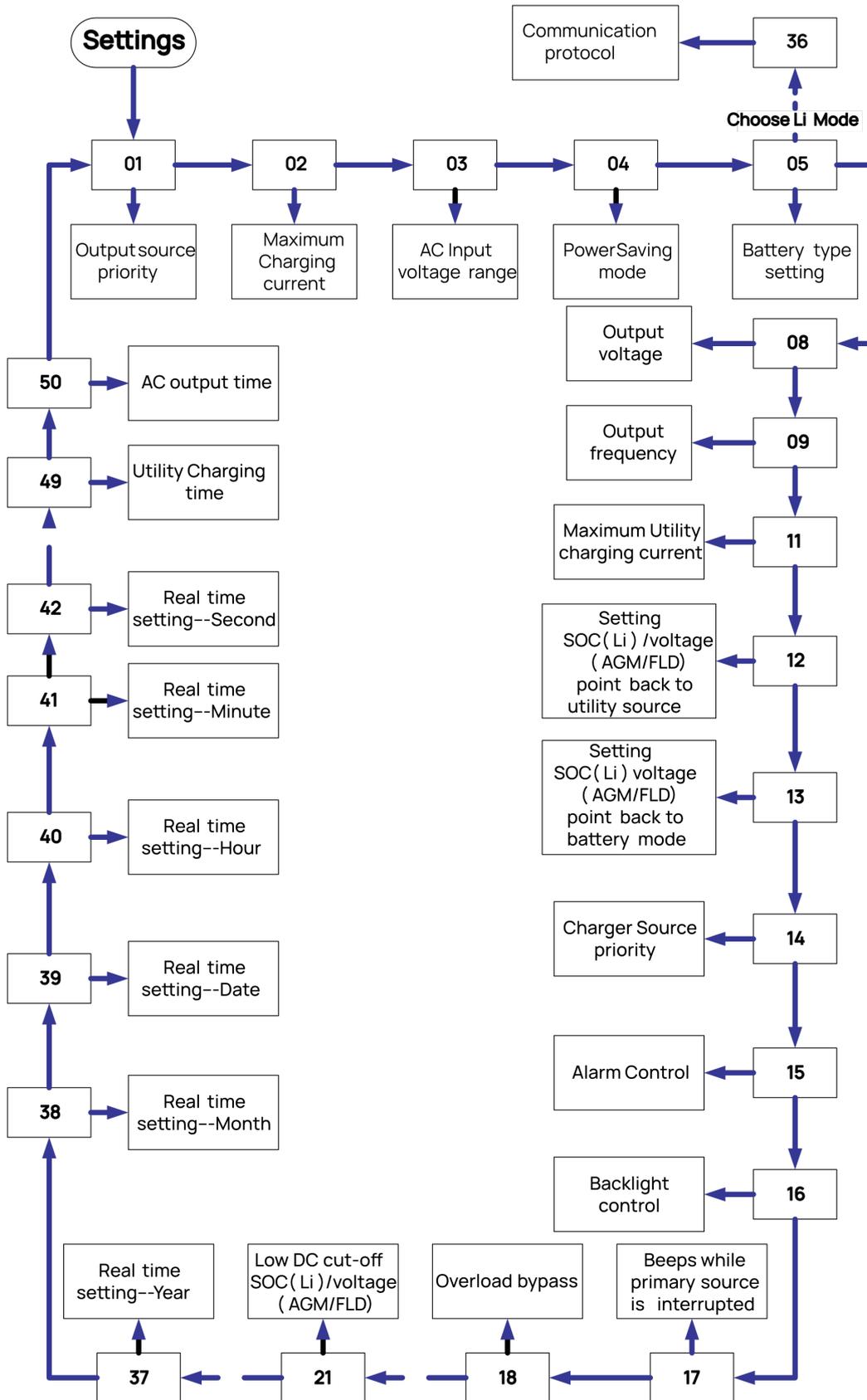


Table 13 Setting Program

Program	Setting option	Description	
00	Exit setting mode	Escape 00 ESC	
01	Output source priority selection	Solar First 01 SOL	Solar energy provides power to the loads as first priority. If solar energy generation is not sufficient to power all connected loads, battery energy will supply will power the load at the same time. Utility grid provides power to the load only when any one condition happens: -Solar energy is not available -Battery voltage drops to low-level warning voltage or the setting point in program#12.
		Utility Grid First 01 UGI	Utility grid will provide power to the loads as first priority. Solar and battery energy will provide power to the load only when utility grid power is not available.
		SBU ( Default) 01 SBU	Solar energy provides power to the loads as first priority. If solar energy generation is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility grid provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program #12.
03	AC input voltage range	Appliances (Default) 03 APL	If selected, acceptable AC input voltage range will be within 90 ~ 280Vac.
		UPS 03 UPS	If selected, acceptable AC input voltage range will be within 170 ~ 280Vac.
		Generator 03 GEN	If selected, acceptable AC input voltage range will be within 90 ~ 280Vac.
04	Power saving mode enable/disable	Disable (Default) 04 SDS	If disabled, the inverter will constantly output power to the load regardless of the connected load (low or high).
		Enable 04 SEN	If enabled, the inverter output will be off when connected load is low or not detected.
05	Battery type (Keep the default setting)	AGM 05 AGM	Lead-acid battery, can be setup in program 19, 20 and 21.
		Flooded 05 FLD	
		Lithium (Default) 05 LI	Only suitable when communicated with BMS
		User-defined 05 USE	If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
36	Protocol to communicate with battery BMS. (Keep the default setting)	PtC 36 LI1	This unit can support more than one battery communication protocol. These are preset and users need not change this setting.
		PtC 36 LI2	
		PtC 36 LI3	
		PtC 36 LI4	
NOTE 1: When set the battery type as "LI" in program 05, the setting option 12, 13 and 21 will change to display			

At the "LI" type battery, the maximum charge current can't be modified by the user. When the communication fails, the inverter will cut off the output.  
 If communication with the battery is lost, you can set the battery type to "USER" for emergency and then contact the installer for next steps.

12	Setting SOC point back to utility grid when selecting "SBU priority" or "Solar first" in program 01.	12 50%	Default 30% , set within 20%~50% range
13	Setting SOC point back to battery mode when selecting "SBU priority" or "Solar first" in program 01.	13 95%	Default 65% , set within 30%~100% range
21	Low DC cut-off SOC, If "LI" is selected in program #05, this program can be set.	21 20%	Default 10% , set within 5%~30% range

NOTE 2:

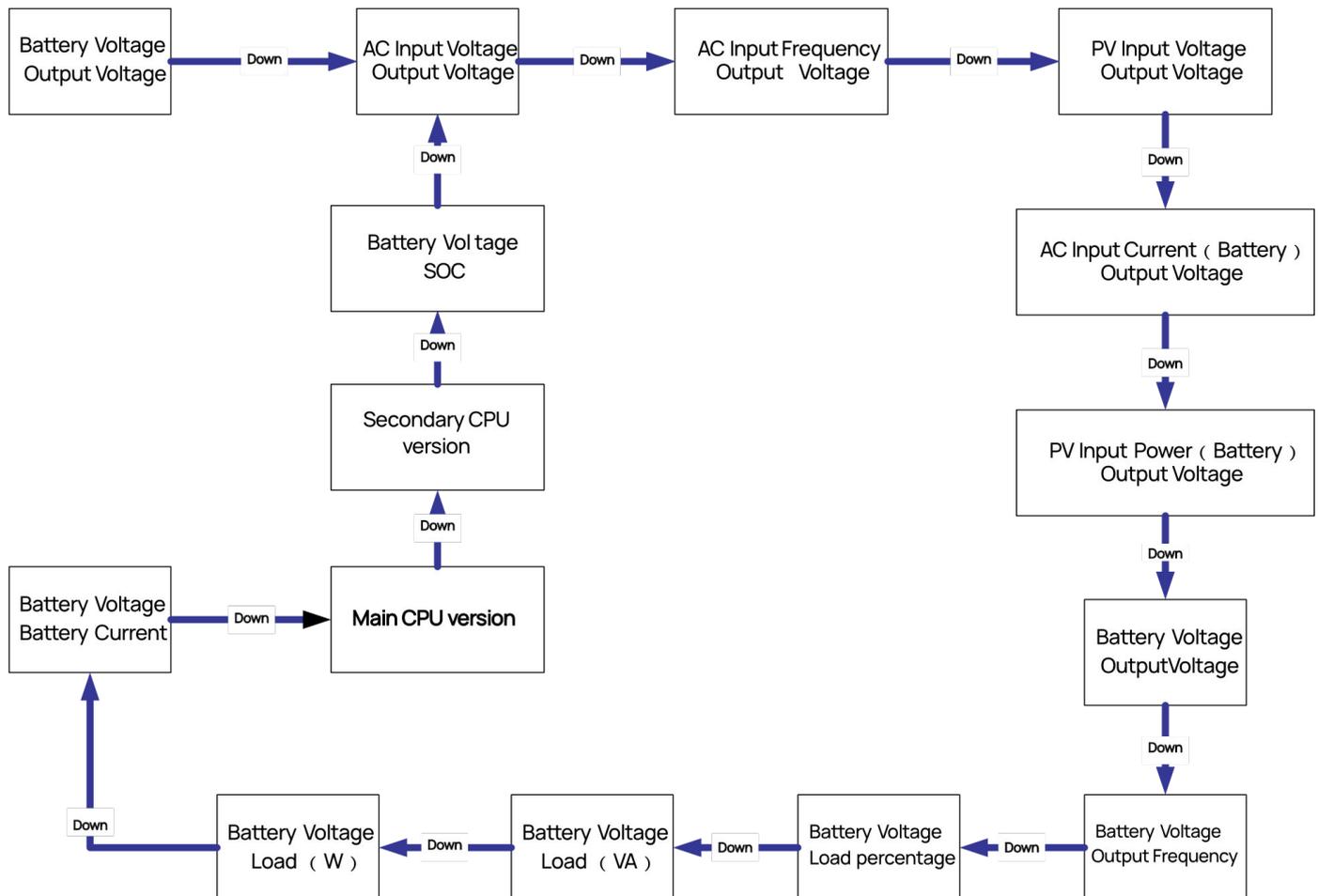
When the inverter is cut-off, it must charge by solar or utility until the SOC > setting 21+10% , then the inverter will

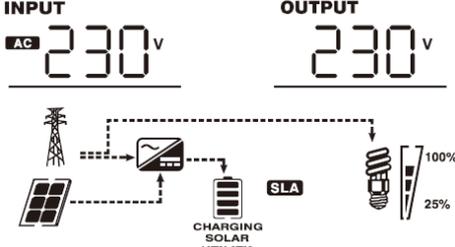
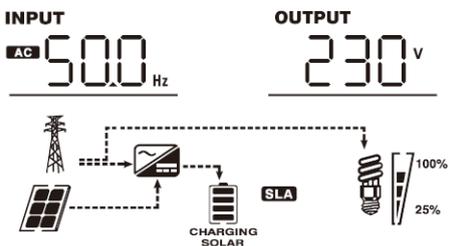
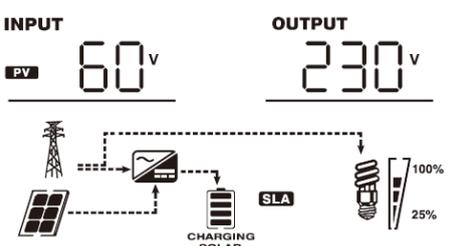
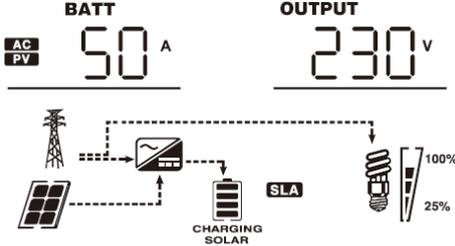
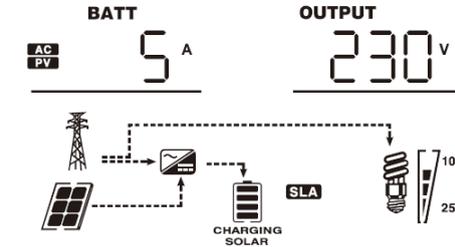
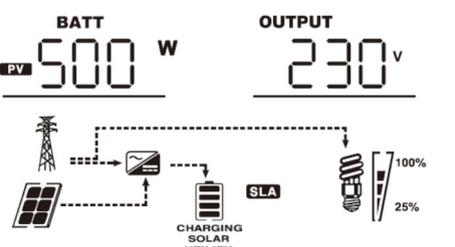
06	Auto restart after overload	Restart disable 06 Lfd	Can set the inverter to restart after overload
		Restart enable (Default)	
07	Auto restart after overheating	Restart disable 07 Lfd	Can set the inverter to restart after overheating
		Restart enable (Default)	
08	Output voltage	220V 08 220v	Can set the inverter output voltage
		230V(Default)	
		240V 08 240v	
09	Output frequency	60Hz 09 60 <sub>Hz</sub>	Can set the inverter output frequency
		50Hz(Default)	
10	Number of series batteries connected	Do not change, keep it at default settings.	
11	Maximum utility grid charging current	30A(Default) 11 30A	Helios 3 15A (10/15A Adjustable) Helios 5 30A (0~60A Adjustable)
14	Configure charger source priority	If the inverter/charger is working in utility grid, Standby or Fault mode, charger source can be programmed as below:	
		Solar first 16 C50	Solar energy will charge battery as first priority. Utility grid will charge battery only when solar energy is not available.
		Utility grid first 16 CUE	Utility grid will charge battery as first priority. Solar energy will charge battery only when utility power is not available.
		Solar and Utility (Default) 16 SNU	Solar energy and utility will charge battery at the same time.

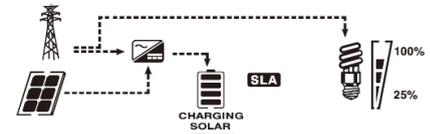
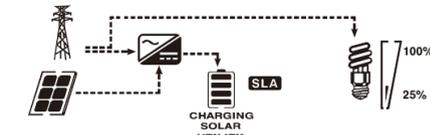
		Only Solar 16 050 ⊗	Solar energy will be the only charger source regardless of the availability of utility grid.
		If the inverter/charger is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.	
15	Alarm control	Alarm on (Default) 18 60N ⊗	Can set the inverter beep on or off during an ALARM
		Alarm off 18 60F ⊗	
16	Backlight control	Backlight on (Default) 16 L0N ⊗	Can set the inverter LCD Backlight on or off
		Backlight off 16 L0F ⊗	
17	Beeps while primary source is interrupted	Alarm on (Default) 17 A0N ⊗	Can set the inverter beep on or off when primary source is interrupted
		Alarm off 17 A0F ⊗	
18	Overload bypass	Disable 18 b3d ⊗	When enabled, the unit will transfer to utility mode if overload occurs in battery mode.
		Enable (Default) 18 b3E ⊗	
02/19/20/22/23/24/43/44/45/46/47/48 Do not change, keep it at default settings.			

## 4. Display Information

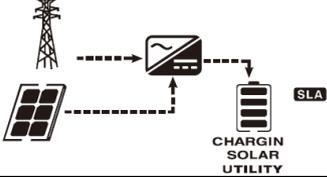
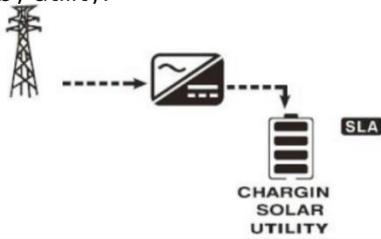
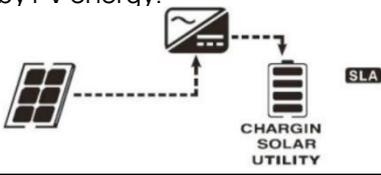
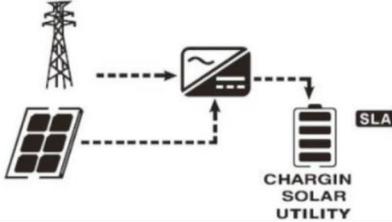
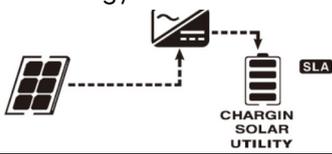
The LCD display information will be switched on by pressing “UP” or “DOWN” button. The selection information is switched as below order: input voltage, input frequency, PV voltage, MPPT charging current, MPPT charging power (only for MPPT models), battery voltage, output voltage, output frequency, load percentage, load in Watt, load in VA, load in Watt, DC discharging current, main CPU Version and second CPU Version.

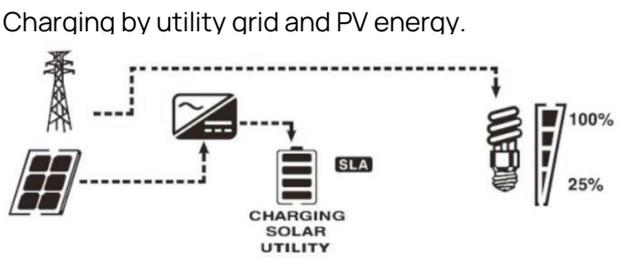
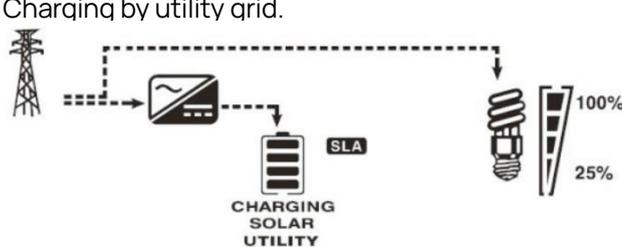
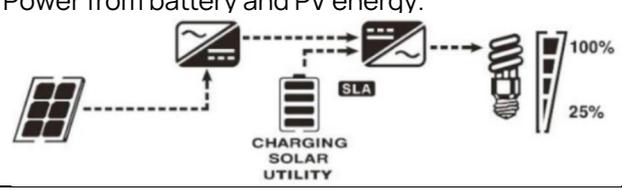
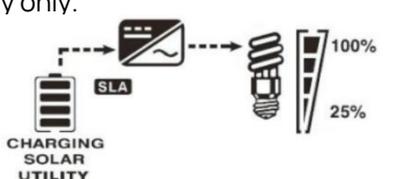


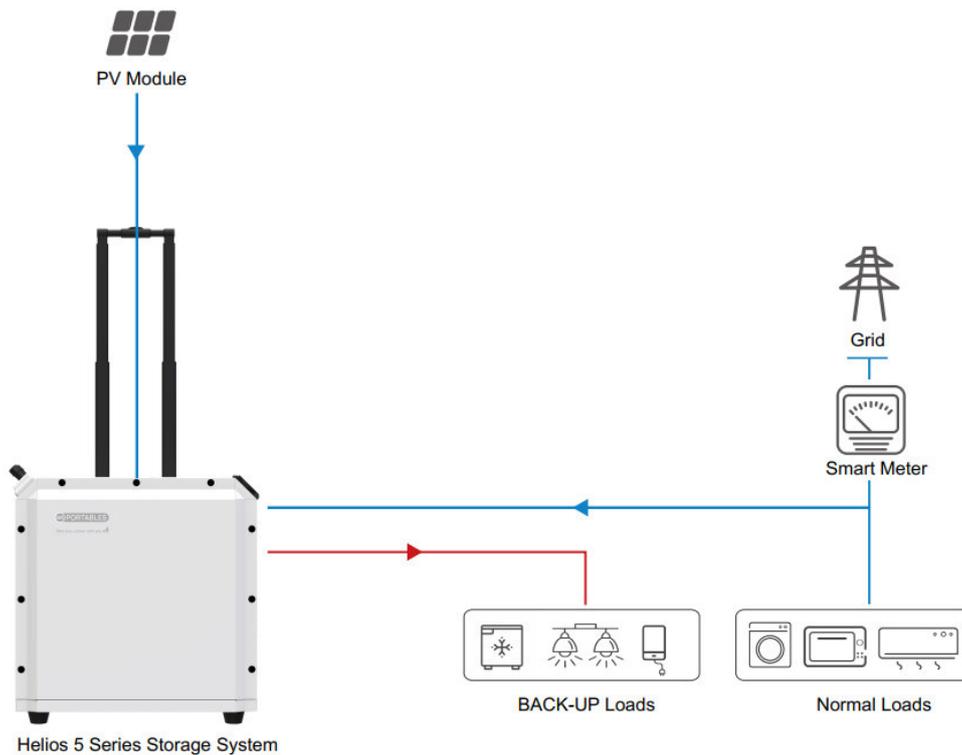
Information	LCD display
Input voltage/Output voltage (Default Display Screen)	<p>Input Voltage=230V, output voltage=230V</p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>
Input frequency	<p>Input frequency =50Hz</p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>
PV voltage	<p>PV voltage=60V</p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>
Charging current	<p>Current <math>\geq 10A</math></p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>
	<p>Current &lt; 10A</p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>
MPPT charging power	<p>MPPT charging power=500W</p>  <p>The diagram shows a solar panel connected to a tower, which is connected to a battery labeled 'CHARGING SOLAR UTILITY'. The battery is connected to a light bulb. The light bulb has two indicators: '100%' and '25%'.</p>

<p>Battery voltage</p>	<p>Battery voltage=51.0V</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BATT</p> <p>51.0<sup>v</sup></p> </div> <div style="text-align: center;"> <p>BATT</p> <p>0<sup>A</sup></p> </div> </div> 
<p>Output frequency</p>	<p>Output frequency=50.0Hz</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BATT</p> <p>51.0<sup>v</sup></p> </div> <div style="text-align: center;"> <p>OUTPUT</p> <p>50.0<sup>Hz</sup></p> </div> </div> 
<p>Load percentage</p>	<p>Load percent=70%</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>BATT</p> <p>51.0<sup>v</sup></p> </div> <div style="text-align: center;"> <p>LOAD</p> <p>70.0<sup>%</sup></p> </div> </div> 
<p>Load in VA</p>	<p>When connected load is lower than 1kva, Load in VA will be displayed in VA as xxx VA:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>INPUT</p> <p>AC 230<sup>v</sup></p> </div> <div style="text-align: center;"> <p>LOAD</p> <p>350<sup>VA</sup></p> </div> </div>  <p>When connected load is larger than 1kva, Load in VA will be displayed in kVA as x.xx kVA like:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>INPUT</p> <p>AC 230<sup>v</sup></p> </div> <div style="text-align: center;"> <p>LOAD</p> <p>150<sup>kVA</sup></p> </div> </div> 

## 5. Operating Mode

Operation mode	Description	LCD display
<p>Standby mode / Power Saving mode</p> <p>Note:</p> <p>*Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.</p> <p>*Power saving mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.</p>	<p>No output is supplied by the unit but it still can charge batteries.</p>	<p>Charging by utility grid and PV energy.</p> 
		<p>Charging by utility.</p> 
		<p>Charging by PV energy.</p> 
		<p>No charging.</p> 
<p>Fault mode</p> <p>Note:</p> <p>*Fault mode: Errors are caused by internal circuit error or external reasons such as overheating, output short circuited etc.</p>	<p>PV energy and utility grid can charge batteries.</p>	<p>Charging by utility grid and PV energy.</p> 
		<p>Charging by utility grid.</p> 
		<p>Charging by PV energy.</p> 
		<p>No charging.</p> 
	<p>Utility grid can power the loads when the unit starts up without Battery.</p>	<p>Power from utility grid only</p> 

<p>Utility Grid Mode</p>	<p>The unit will provide output power from the mains. It will also charge the battery in Utility grid mode.</p> <p>Charging by utility grid and PV energy.</p>  <p>Charging by utility grid.</p> 
<p>Battery Mode</p>	<p>The unit will provide output power from battery and PV power.</p> <p>Power from battery and PV energy.</p>  <p>Power from battery only.</p> 



The Helios series has three working modes: SOL (Solar first) mode, UEI (Utility First) mode, SBU (Solar-Battery- Utility) mode.

Backup Load : refers to the emergency electrical equipment that maintains constant power through the energy storage system in case of power grid failure, usually including lighting, refrigeration, wi-fi, TV and mobile phone charging, etc.

Normal Load: refers to the electrical equipment commonly used in the home, such as washing machine, air conditioning, etc.

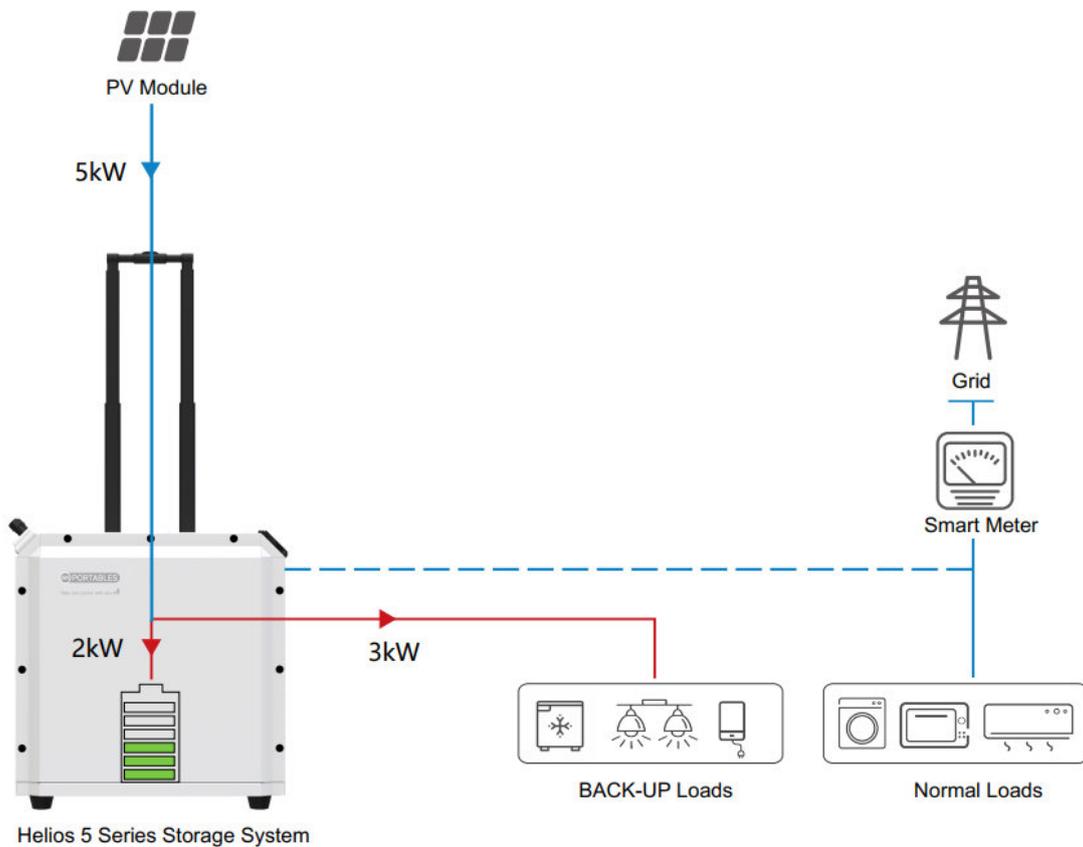
Working logic for different mode:

1. SOL ( Solar First ) Mode - solar first power supply mode to maximize the utilization efficiency of solar by powering the load on priority and excess (over the current load) solar power is used to charge the battery.

1. Solar → Load then 2. Solar → Battery

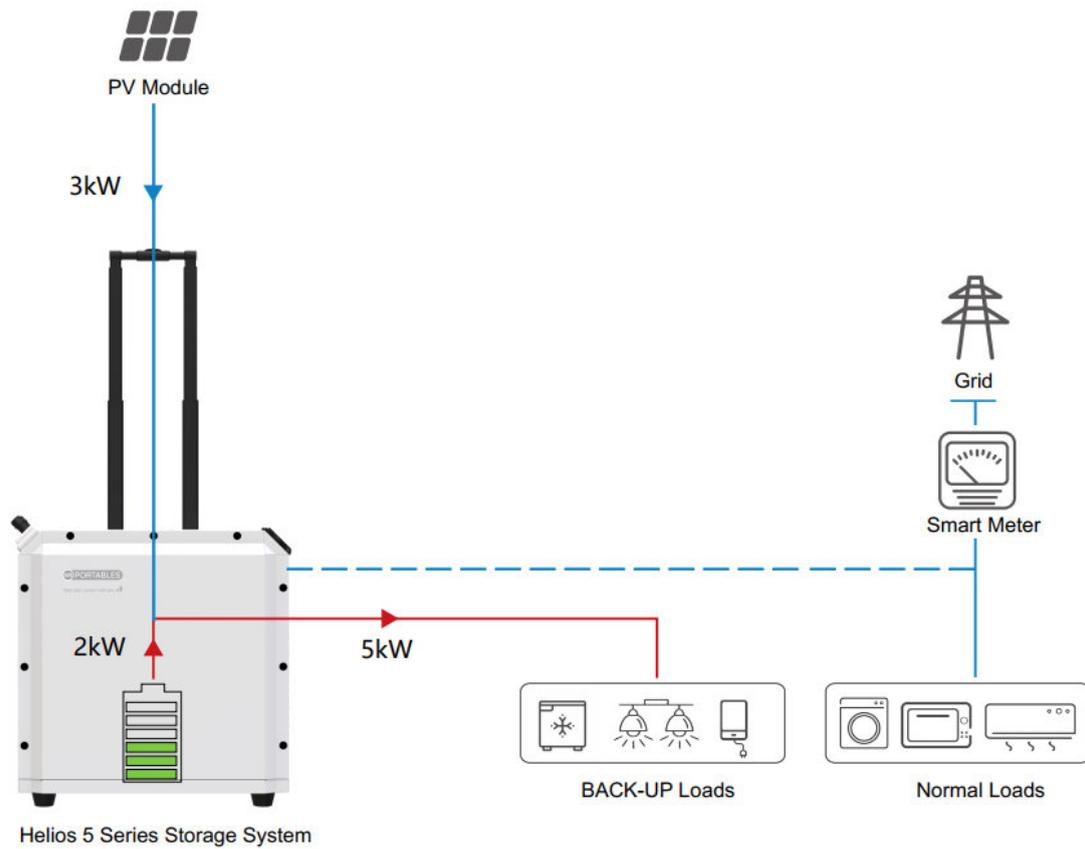
a. When the solar power generation is higher than the load consumption and the remaining battery

capacity is low, the solar power is supplied to the load directly and the remaining solar power is used to charge the battery at the same time.



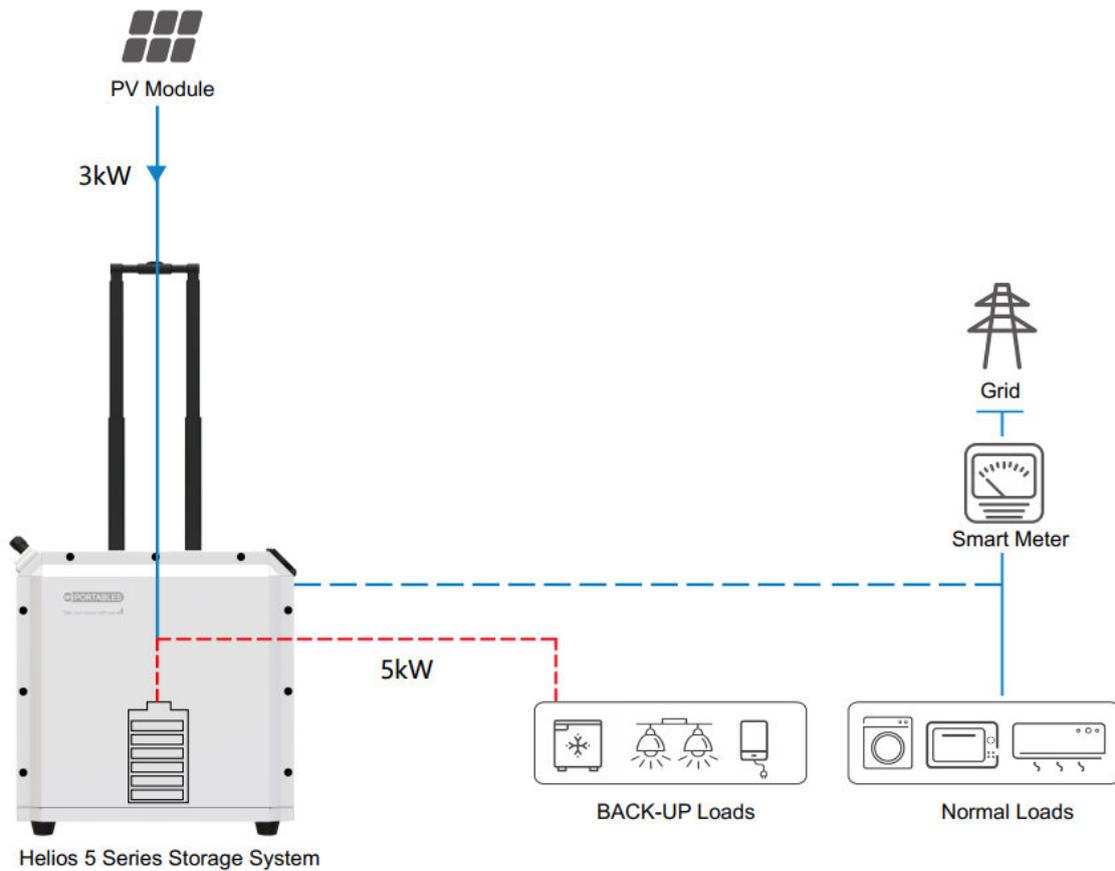
Example: The solar power is 5KW, the load consumption is 3KW, the solar directly supplies the load with 3KW, and the remaining 2KW of solar power charges the battery.

b. When the solar power generation is less than the load consumption and the remaining battery capacity is high, the solar and battery work together to supply the load.



Example: The solar power is 3KW, the load is 5KW, and the solar (3KW) and battery (2KW) work together to supply power to the load.

c. When the solar power generation is less than the load consumption and the remaining battery capacity is low, the system does not work.

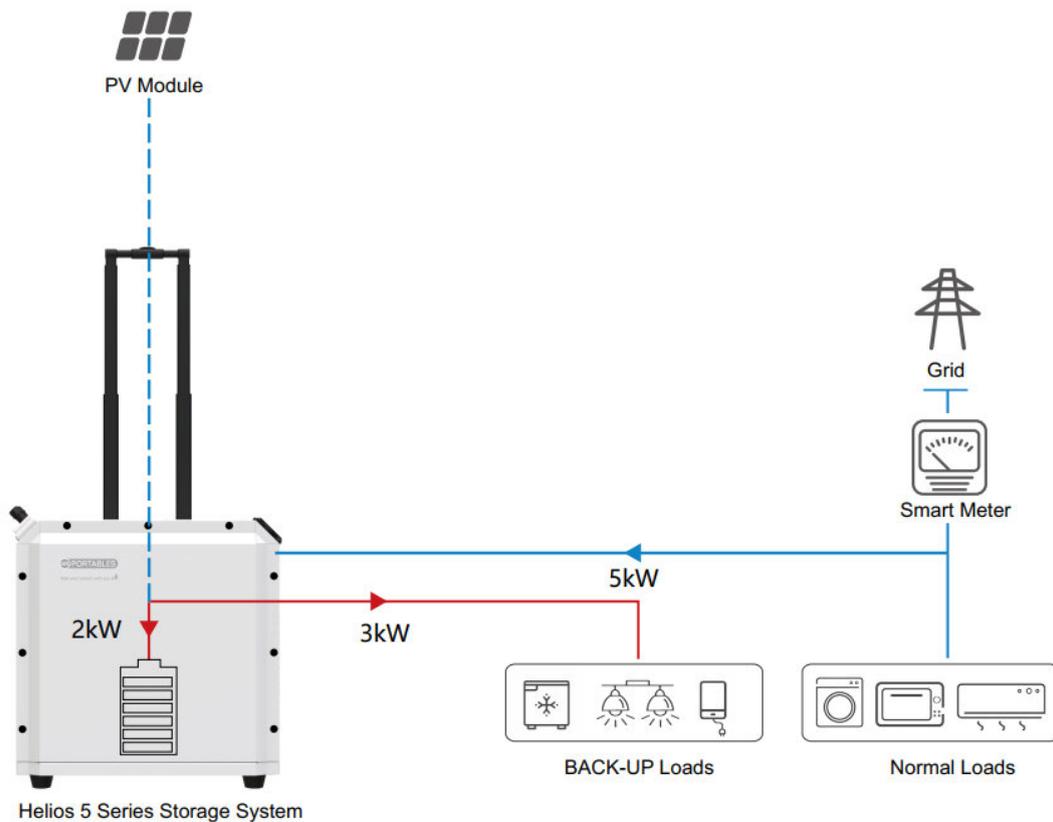


Example: The solar power is 3KW, the load power is 5KW, but at this time the battery capacity is too low to discharge, and the system cannot provide energy to the load.

## 2. UEI ( Utility First ) Mode -- utility first power supply mode

The utility gives priority to supplying power to the load and charging the battery. This mode is suitable during low or no solar power generation, unstable power grid, and/or large peak-to-valley electricity price difference. It can guarantee normal power supply from the utility and store energy in the battery to be used during power shortages or during peak electricity tariffs to reduce electricity costs.

a. In the utility first mode, when the remaining battery capacity is low, the utility will supply power to the load, and the utility charges the battery at the same time.

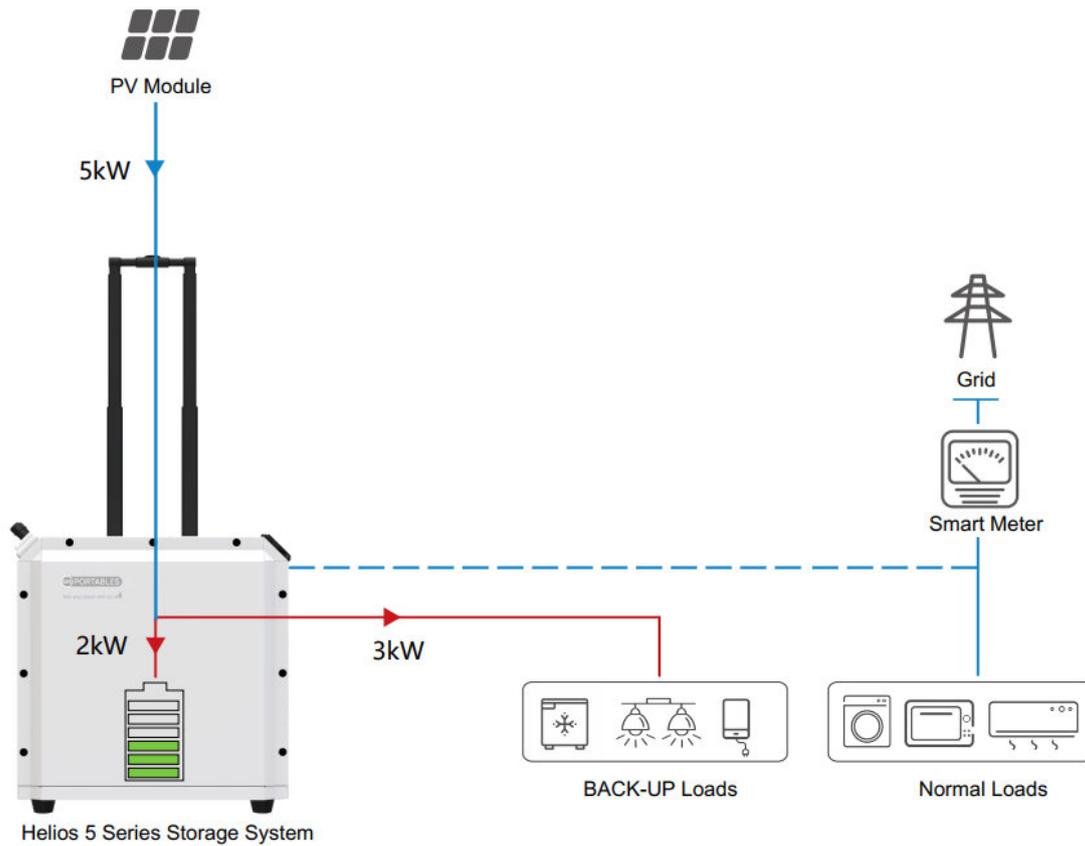


Example: If the load consumption is 3kW, then the utility will supply 3KW to the load, and charges the battery with 2kW power.

3. SBU ( Solar-Battery-Utility ) Mode - In this mode, solar power can be fully utilized to minimize utility power

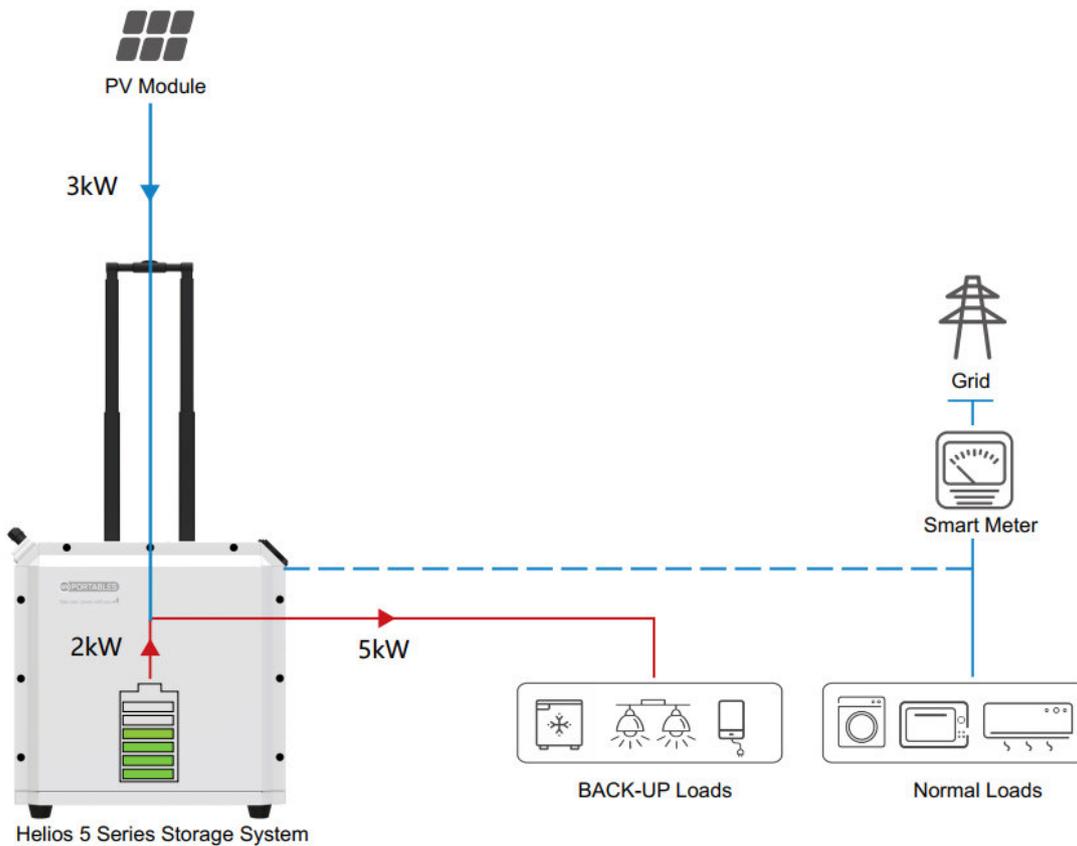
1. When solar power generation is sufficient, the priority is to supply solar power to the load, and the remaining power is used to charge the battery;
2. When solar power generation is insufficient, both battery and solar supply power to the load;
3. When both solar and battery power are insufficient, the utility supplies power to the load, and solar and grid charge the battery.

a. When solar power generation is greater than the load consumption and the remaining battery capacity is low, the solar power is supplied to the load on priority and it also charges the battery at the same time.



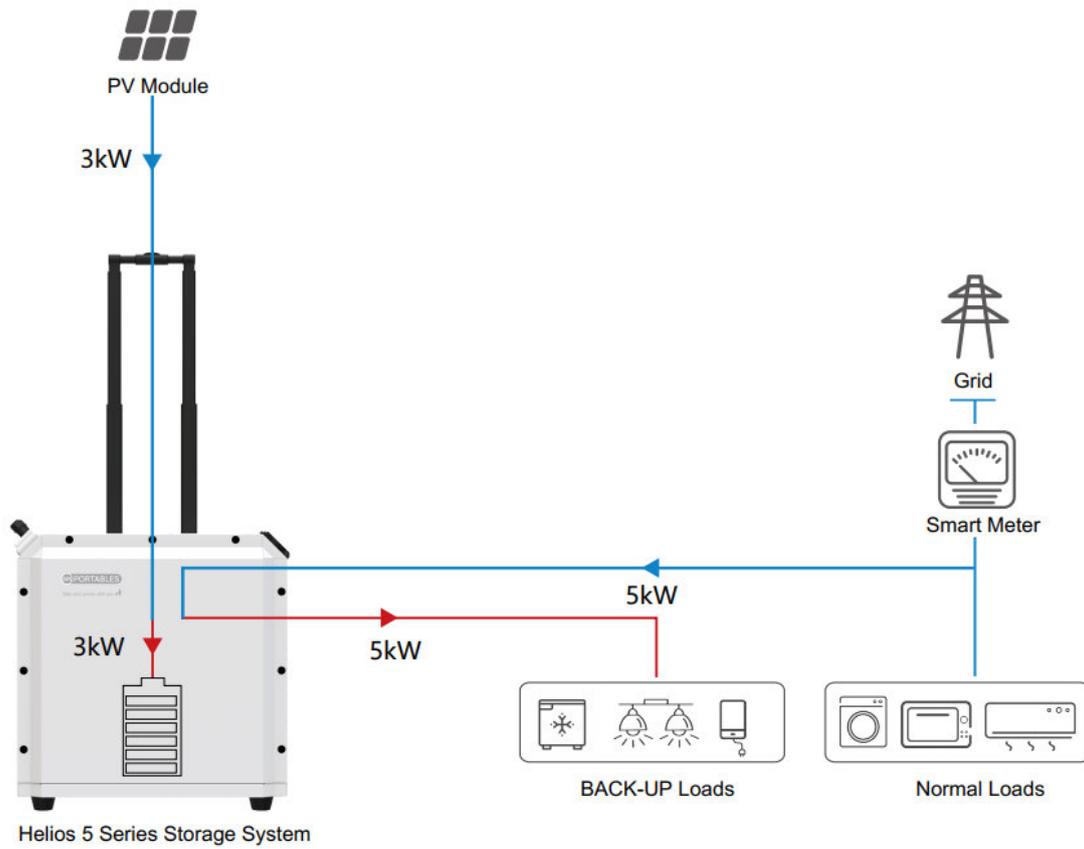
Example: Solar power generation is 5kW, the load is 3kW, the solar power will supply 3kW to the load, and the remaining 2kW of solar power is used to charge the battery.

b. When solar power generation is less than the load consumption and the remaining battery capacity is high, solar and battery directly supply the load.



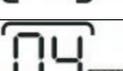
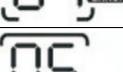
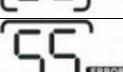
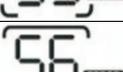
Example: Solar power is 3kW, the load consumption is 5kW, solar (3kW) and battery (2kW) work together to supply power to the load.

c. When the solar power generation is less than the load power and the remaining battery capacity is low, the utility directly supplies power to the load, and the solar power is used to charge the battery. If solar power generation recovers to be greater than the load consumption, then solar power will be supplied to power the load.

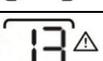
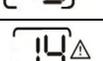


Example: Solar power is 3kW and the load is 5kW, at this time, the utility will supply power to the load with 5kW, and 3kW solar power will be used to charge the battery.

## 1. Fault Code

Fault Code	Fault Event	Icon on
01	Fan is locked	
02	Over heating	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuit	
06	Output voltage is too high	
07	Overload timeout	
08	Bus voltage is too high	
09	Bus soft start failed	
11	Main relay failed	
51	Over current or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
56	Battery connection is open	
57	Current sensor failed	
58	Output voltage is too low	
80	CAN fault	
81	Host loss	

## 2. Warning Indicator

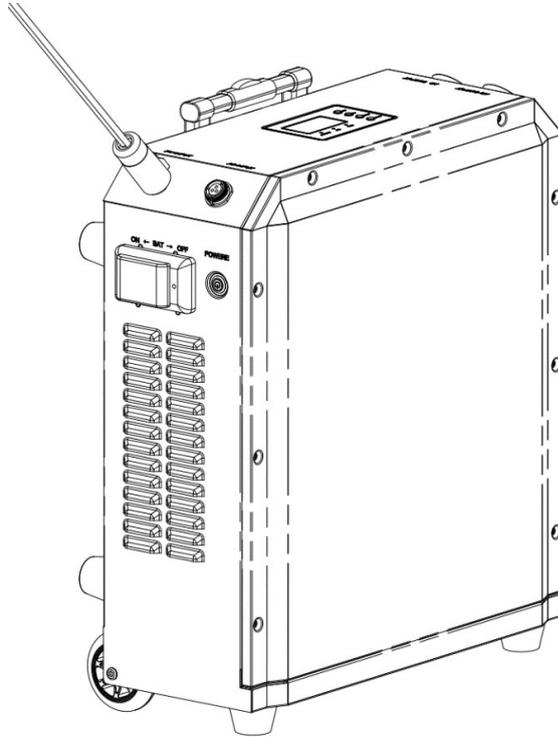
Warning Code	Warning Event	Icon flashing
01	Fan locked	
02	Over heating	
03	Battery over charged	
04	Low battery	
07	Overload	
10	Output power derating	
12	Solar charger stopped due to low battery	
13	Solar charger stopped due to high PV voltage	
14	Solar charger stopped due to overload	

### 3. Trouble Shooting

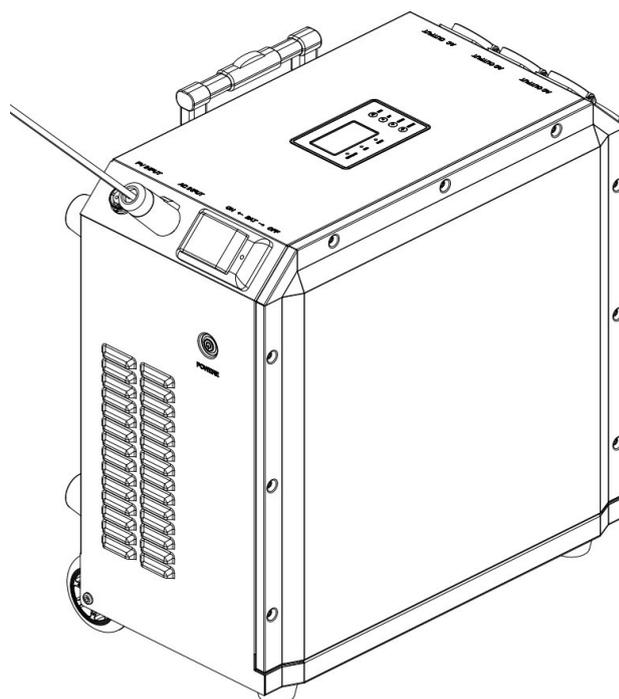
Problem	LCD/LED/Buzzer	Explanation / Possible cause		What to do
Unit shuts down automatically during startup Process.	LCD/LEDs and buzzer will be active for 3 seconds and then completely off.	The battery voltage is too low (< setting value in program #5)		1. Re-charge battery. 2. Replace battery.
No response after Power on.	No indication.	1. The battery voltage is too Low. 2. Battery polarity is connected in reverse.		1. Check if batteries and the wiring are connected properly. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in Battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped		Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing.	Insufficient quality of AC Power. (Utility or Generator)		1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well Or if input voltage range setting is correct. (UPS □ □ Appliance)
	Green LED is flashing.	Set "Solar First" as the priority of Output source.		Change output source priority to Utility grid first.
When the unit is turned on, internal Relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.		Check if battery wires are Connected well.
Buzzer beeps continuously and Red LED is on.	Fault code 01	Fan fault		Replace the fan.
	Fault code 05	Output short circuit.		Check if wiring is connected well and remove abnormal load.
	Fault code 02	Internal temperature of inverter is over 100°C.		Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 03	Battery is over-charged.		Return to repair center.
		The battery voltage is too high.		Check the spec and quantity of batteries.
	Fault code 06/58	Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac)		1. Reduce the connected load. 2. Return to repair center
	Fault code 07	Overload error. The inverter is Overloaded over 110% longer that permissible.		Reduce the connected load by switching off some equipment.
	Fault code 08/09/53/57	Internal components failed.		Return to repair center.
Fault code 51	Over current or surge.			
	Fault code 52	Bus voltage is too low.		Restart the unit, if the error happens again, please return to repair center.
	Fault code 55	Output voltage is unbalanced.		
		Battery is not connected well or the Fuse is burnt.		If the battery is connected Well, please return to repair center.
UCANESS/ Helios 5 Wifi Troubleshooting	Unable to connect over wifi	Ensure both Bluetooth and Wifi are enabled on your device. Ensure the Helios unit is on. Ensure there is a wifi connection in range.	If still unable to connect using the instructions in this manual, please go to <a href="http://srportables.com">srportables.com</a> and the online FAQ, under Helios remote connection, please find the full Uncaness manual.	

## 4. Activation

If you accidentally discharge the Helios unit battery capacity to zero and can't turn it on, you need to activate it by connecting Utility grid to restart and reuse the unit.



If you accidentally discharge the Helios unit battery capacity to zero and can't turn it on, you need to activate it by connecting PV to reuse the unit.



# UCANESS App - Helios 5 Wifi Connectivity

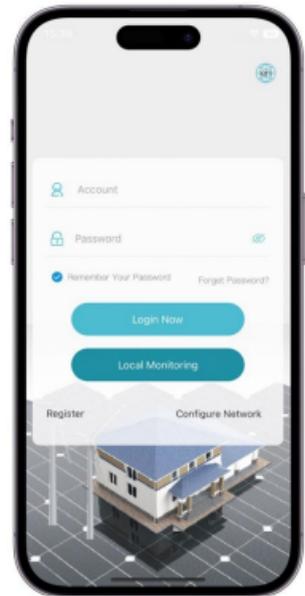
## 1. Register an account

If you do not have a UCANESS account, please open the UCANESS APP and click the "Register" button on the login page to enter the registration process.

During registering, you need to check the "Terms of Service and Privacy Policy", input the username and email, and set your account login password.

Click the "Verification Code" button to send verification to your email. Go to your email and input the verification code, and then click the "Register" button.

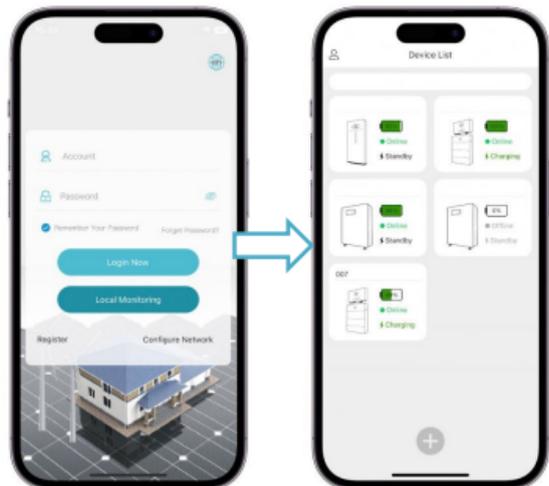
Your registration will be completed successfully.



## 2. Account Login

Click UCANESS APP and go to the login page.

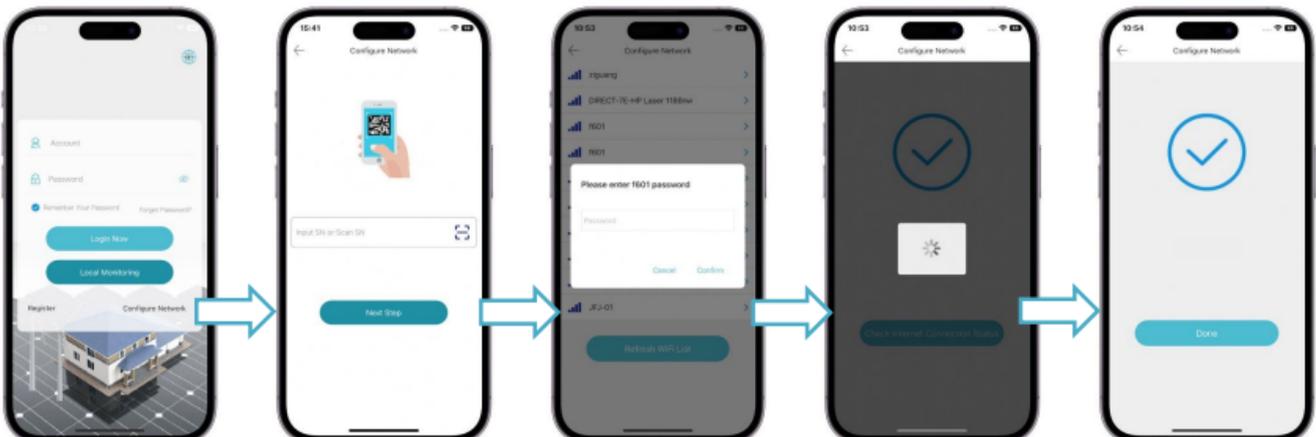
Input your registered account number and password and click the "Login" button to access the online "Device List" page



## 1. Network Configuration

If you want to monitor the device in WiFi mode, you need to configure the network for the device first. Please follow the below steps:

Click "Configure Device Network" → Enter or scan to identify SN (Serial Number) → Select the network and enter the correct password → Check the network connection status of the device → Click Done  
(Note: The device must be powered on and Bluetooth should not be connected to any other device)



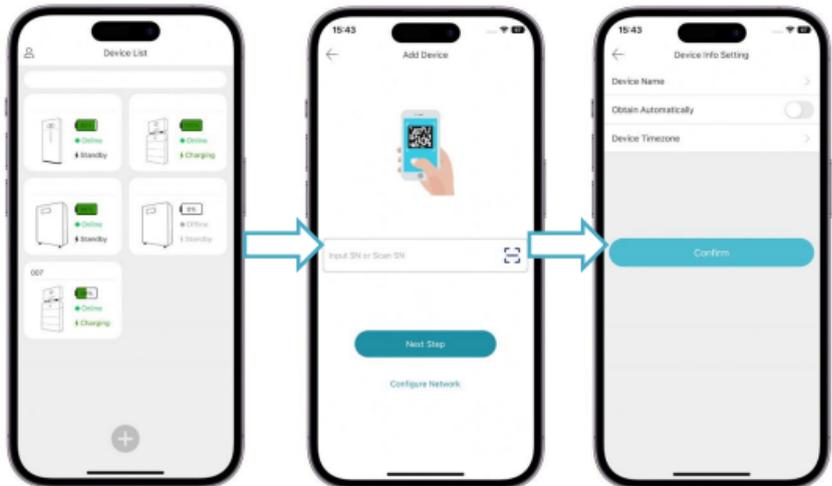
# UCANESS App - Helios 5 Wifi Connectivity

## 2. Adding device

After the device is connected to a network, click the **+** button in the device list.

Enter or scan the identification SN code on the add device page and click Next Step. Enter the device information setting page to set the device name and time zone and click OK to Confirm.

(Note: The device should be powered on and the Bluetooth should not be connected to any other device)



## 1. Device home page

On the device home page, you can monitor the total power generated/utilized from energy storage, utility grid, Solar PV, and the load through the energy flow diagram.

In the energy overview module, the daily total value and cumulative total value of the energy storage output, grid output, solar PV output and load consumption can be monitored.



Click "Data Report" on the setting page to enter the data report page, which displays the chart information according to the day, month, year, and total to date.

(Note: Click the legend to show/hide the corresponding item information in the chart)

