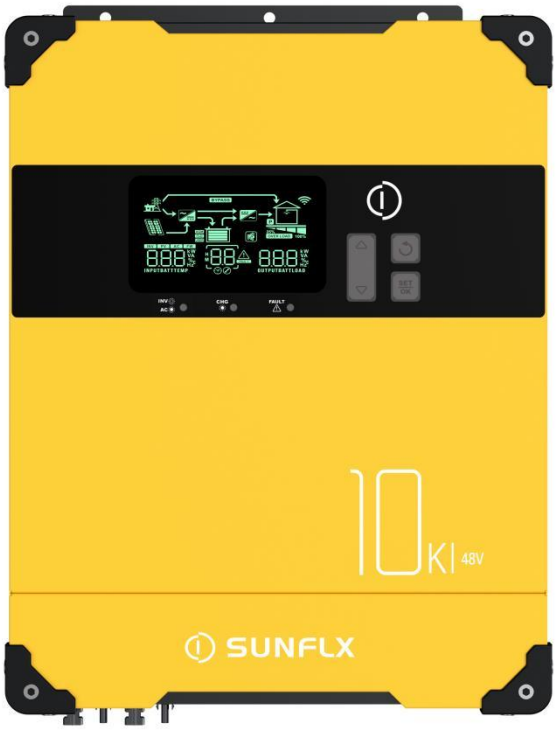
SUNFLX

USER MANUAL



Solar Storage Inverter

SF 8000 | SF 10000

Table of Contents

1. About This Manual 2

1.1 Purpose 2
1.2 Scope 2

2. Safety Instructions 2

3. Introduction 3

3.1 Features 3
3.2 Basic System Architecture 4
3.3 Product Overview 5

4. Installation 6

4.1 Unpacking and Inspection 6
4.2 Select the Mount Location 6
4.3 Mount the Inverter 7
4.4 Cable & Circuit Breaker Requirement 7
4.5 Battery Connection 8
4.6 AC Input & Output Cable Connection 9
4.7 PV Connection 10
4.8 Grounding Connection 12
4.9 Final Assembly 12
4.10 Start up the Inverter 13

5. Operation 13

5.1 System Commissioning by Sunflx Cloud APP 13
5.2 Power ON/OFF 13
5.3 Operation and Display Panel 14
5.4 LCD Display Icons 15
5.5 LCD Setting 17
5.6 Display Setting 23
5.7 Operating Mode Description 24
5.8 Battery Equalization Description 26
5.9 Fault Reference Code 29
5.10 Warning Indicator 29

6. Clearance and Maintenance for Anti-Dust Kit 30

6.1 Overview 30
6.2 Clearance and Maintenance 30

7. Specifications 31

8. Trouble Shooting 34

1. About This Manual

1.1 Purpose

Thanks for choosing Sunflx's SF 8000 and SF 10000 Series Solar Storage Inverter.
This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Keep this manual for future reference.

1.2 Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

2. Safety Instructions

Symbol	Instructions
⚠ DANGER	DANGER indicates a hazardous situation which if not avoided will result in death or serious injury.
⚠ WARNING	WARING indicates a hazardous situation which if not avoided could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a hazardous situation which if not avoided could result in minor or moderate injury.
NOTICE	NOTICE provide some tips on operation of products.

1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. ⚠ CAUTION – To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. ⚠ CAUTION – Only qualified personnel can install this device with battery.
6. Never charge a frozen battery.
7. For optimum operation of this solar storage inverter, please follow required spec to select appropriate cable size. It's very important to correctly operate this solar storage inverter.
8. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
9. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer

to installation section of this manual for the details.

10. A suitable fuse is suggested as over-current protection for the battery supply
11. Grounding instructions-This Solar Storage Inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
12. Never cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
13. **⚠ WARNING** – Only qualified service people are able to service this device. If errors still persist after following troubleshooting table, please send this solar storage inverter back to local dealer or service center for maintenance.

3. Introduction

The Sunflx's SF Series solar storage inverter is a combination of high frequency inverter, AC charger and high efficiency MPPT solar controller. It adopts DSP control and features high response speed, reliability, and industrial standard through an advanced control algorithm.

It is perfect for medium households and rural areas with limited power. It offers high conversion efficiency for a stable power supply and features multiple protections for safety.

Its user-friendly interface simplifies installation and maintenance, while the smart monitoring app enables real-time energy tracking, reducing electricity costs and providing clean energy for multiple application scenarios.

3.1 Features

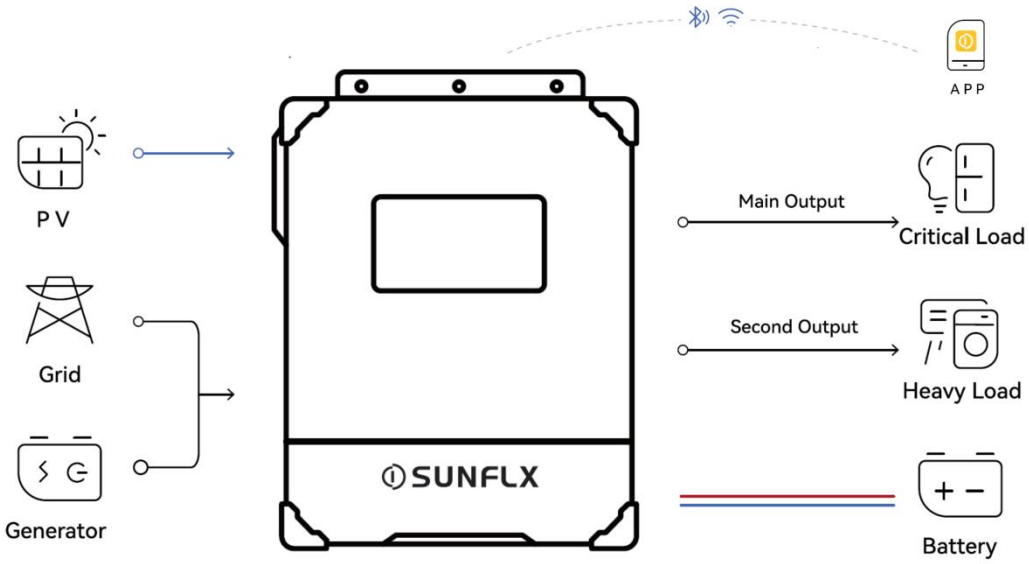
1. Two MPPTs, max. string current 22A, max. solar input 12kW
2. Dual AC outputs for smart load management
3. Wide PV input voltage range 60Vdc-500Vdc
4. Compatible with lithium, lead-acid and GEL batteries
5. Support generator input
6. Feed into Grid (Optional)
7. Plug-and-play quick connection MC4 PV terminals
8. PV and AC dual activation
9. Multi-customized modes for diverse scenarios
10. Dust-proof filter for harsh environment
11. WIFI & Bluetooth monitoring (APP available)
12. Single-phase pure sine wave output
13. Smart battery charger design for optimized battery performance
14. Configurable input voltage range for home appliances and personal computers
15. Configurable AC or Solar Charge priority

16. Auto restart while AC is recovering
17. 360°protection with complete overload, over temperature, short circuit protection, over/under voltage protection
18. Cold start function

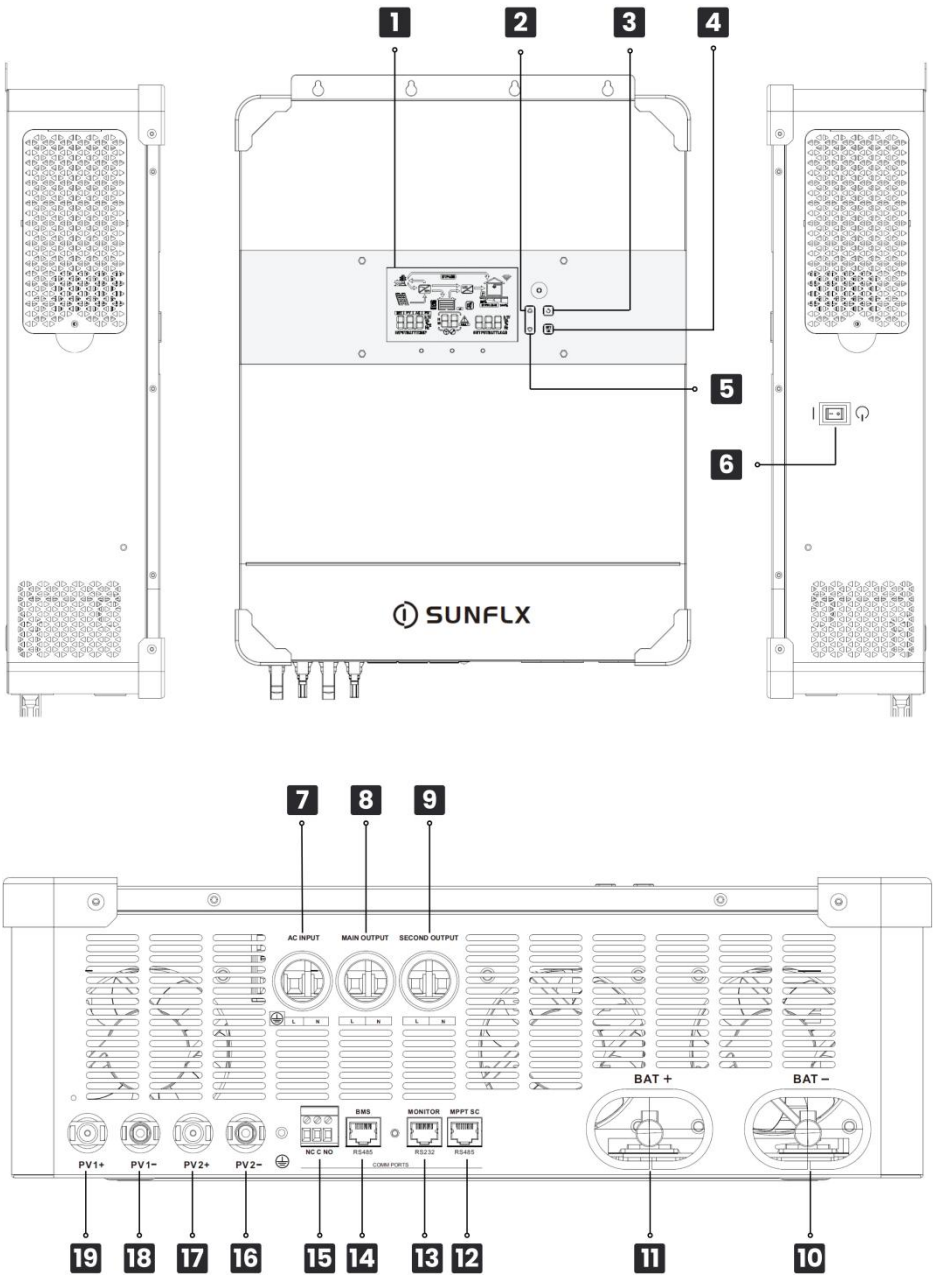
3.2 Basic System Architecture

The diagram below illustrates the system application scenario of this product. A complete system consists of the following components:

1. **Solar Panel:** Convert light energy into DC power, which can either charge the battery via an inverter or be directly converted into AC power to supply the load.
2. **Grid or Generator:** Connected to the AC input, it can supply power to the load and charge the battery simultaneously. The system can also function without mains or a generator when the battery and PV module power the load.
3. **Battery:** Ensures a consistent power supply to the system load when solar energy is insufficient and mains power is unavailable.
4. **Home Load:** Supports various household and office appliances, including refrigerators, lamps, televisions, fans, air conditioners, and other AC loads.
5. **Solar Storage Inverter:** The core energy conversion device of the entire system. The actual application scenario determines the specific system wiring method.
6. **Sunflx Cloud APP**：WIFI & Bluetooth monitoring APP used for viewing and configuring parameters.



3.3 Product Overview



1. LCD display
2. Function button (UP)
3. Function button (ESC)
4. Function button (SET/OK)
5. Function button (DOWN)
6. Power on/off switch
7. AC input
8. Main output
9. Second output
10. Battery - input
11. Battery + input
12. RS485 communication port (MPPT Solar Controller)
13. RS232 communication port (MONITOR)
14. RS485 communication port (BMS)
15. Dry Contact
16. PV 2- Terminal
17. PV 2+Terminal
18. PV 1- Terminal
19. PV 1+Terminal

4. Installation

4.1 Unpacking and Inspection

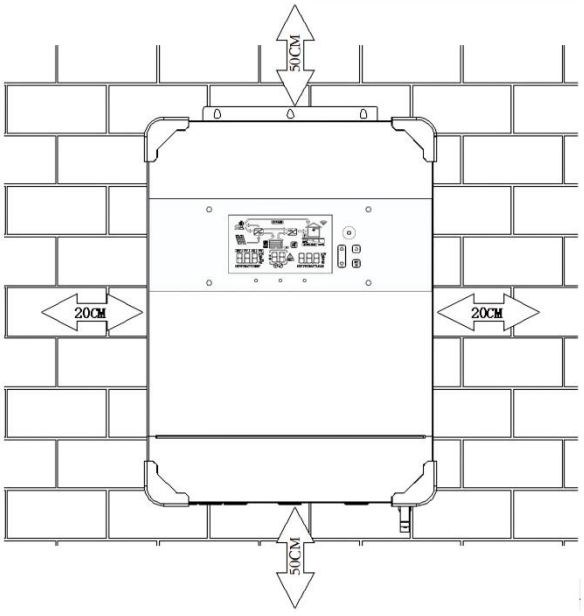
Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

- The inverter x 1
- User manual x 1
- Smart Dongle x 1
- Accessories bag x 1

4.2 Select the Mount Location

The SF series is designed for INDOOR USE ONLY (IP21). Please consider the following before selecting the installation location:

- Choose a solid wall to mount the inverter.
- Install the inverter at eye level.
- Ensure adequate space for heat dissipation around the inverter.
- Maintain an ambient temperature between -10~60℃ for optimal operation.



⚠ DANGER

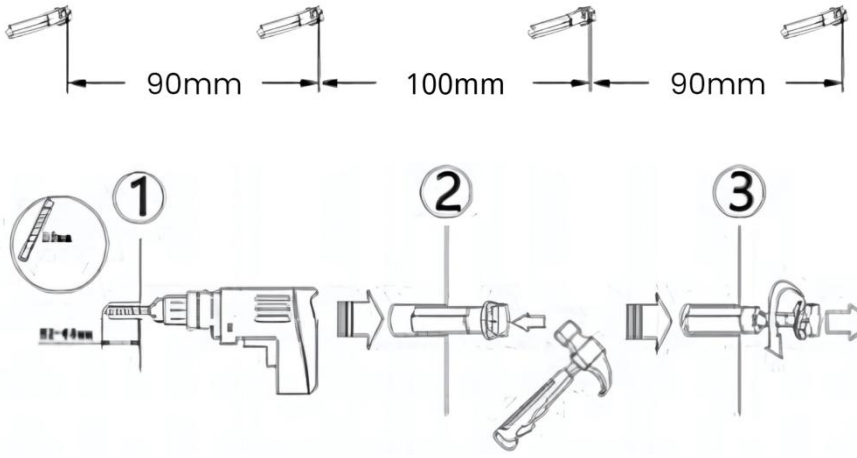
- Do not install the inverter near highly flammable materials.
- Do not install the inverter in areas with potential explosive hazards.
- Do not install the inverter with lead-acid batteries in confined spaces.

⚠ CAUTION

- Do not install the inverter in direct sunlight.
- Do not install or use the inverter in a humid environment.

4.3 Mount the Inverter

Make 4 mounting holes in the wall with a drill according to the specified dimensions, insert two expansion screws above and two M5 size screws below for fixing the inverter.



4.4 Cable & Circuit Breaker Requirement

PV INPUT

Model	Cable Diameter	Max. PV Input Current	Circuit Breaker
SF 8000	4mm²/ 1 x 12AWG	22A	2P 25A
SF 10000	4mm²/ 1 x 12AWG	22A	2P 25A

AC INPUT (Single Phase)

Model	Cable Diameter	Max. Input Current	Circuit Breaker	Torque value（max）
SF 8000	8.5mm²/ 1 x 8AWG	60A	2P 63A	1.2 Nm
SF 10000	8.5mm²/ 1 x 8AWG	60A	2P 63A	1.2 Nm

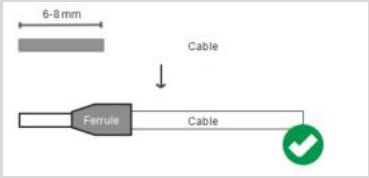
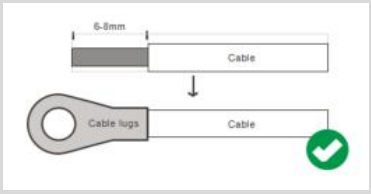
BATTERY CONNECT

Model	Cable Diameter	Max.Battery Current	Circuit Breaker	Torque value（max）
SF 8000	54mm²/1 x 0AWG	182A	2P 200A	2 Nm
SF 10000	2 x 35mm²/2 x 2AWG	210A	2P 250A	2 Nm

AC OUTPUT (Single Phase)

Model	Cable Diameter	Max. Output Current	Circuit Breaker	Torque value（max）
SF 8000	8.5mm²/ 1 x 8AWG	34.8A	40A	1.2 Nm
SF 10000	8.5mm²/ 1 x 8AWG	43.5A	50A	1.2 Nm

NOTICE

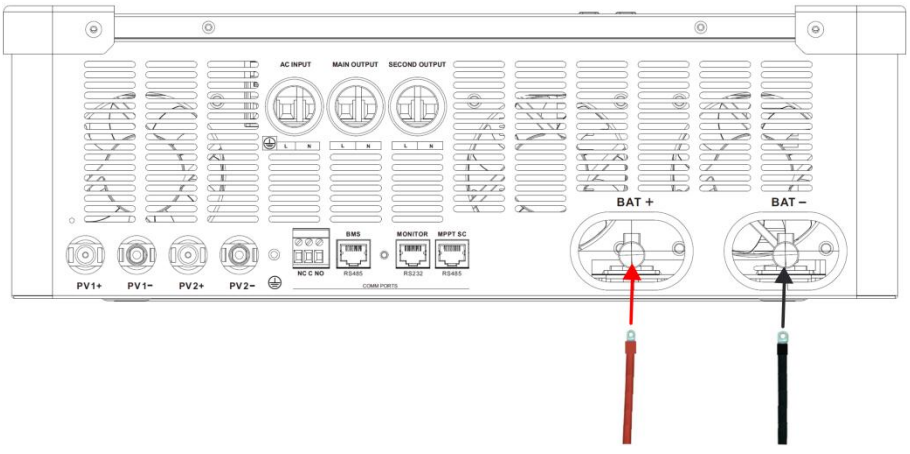
AC INPUT and AC OUTPUT Cable Making： Use a stripper to remove 6-8mm of insulation from the cable. Attach a ferrule to the end of the cable (ferrule must be provided by the user).	
Battery Cable Making： Use a stripper to remove 6-8mm of insulation from the cable. Attach a ferrule to the end of the cable (ferrule must be provided by the user).	

The wire diameter provided is for reference only. If the distance between the PV array and the inverter, or between the inverter and the battery, is long, using a thicker wire will reduce voltage drop and improve system performance.

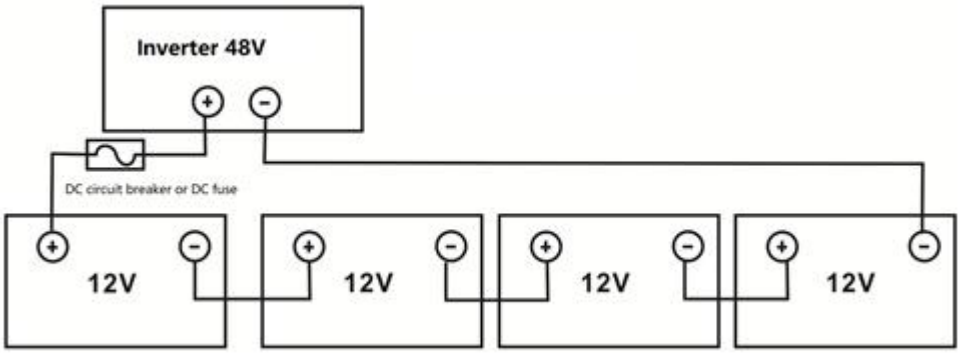
4.5 Battery Connection

Please follow the steps below to implement battery connection:

1. Use a proper copper terminal to crimp a suitable cable for battery.
2. Connect the battery cable to the correct battery terminal.
3. Tighten the cable with a nut using a special tool.



4. Connect all battery packs as below chart if battery need series connection.



DANGER

- Before connecting the battery, ensure that the circuit breaker is opened to prevent the risk of electric shock. Do not operate it with electricity.
- Ensure correct connection of the positive and negative terminals of the battery to prevent reversal, which may damage the inverter.
- Verify that the cable used meets the requirements; thin or poor-quality cables pose a serious safety hazard.

4.6 AC Input & Output Cable Connection

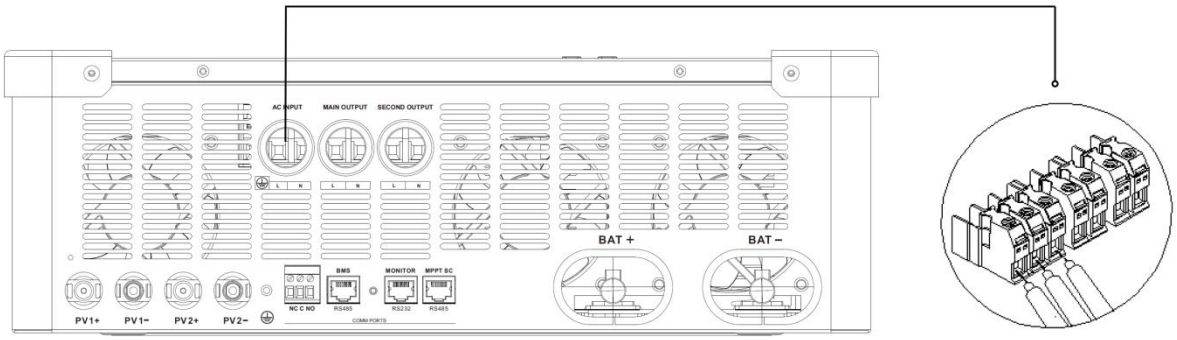
Please follow the steps below o implement AC input/output connection:

1. Before making AC input/output connection, be sure to open DC protector or disconnect first.
2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3 mm.
3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (⏚) first.

   ⏚ →**Ground (yellow-green)**

   L →LINE (brown or black)

   N →Neutral (blue)

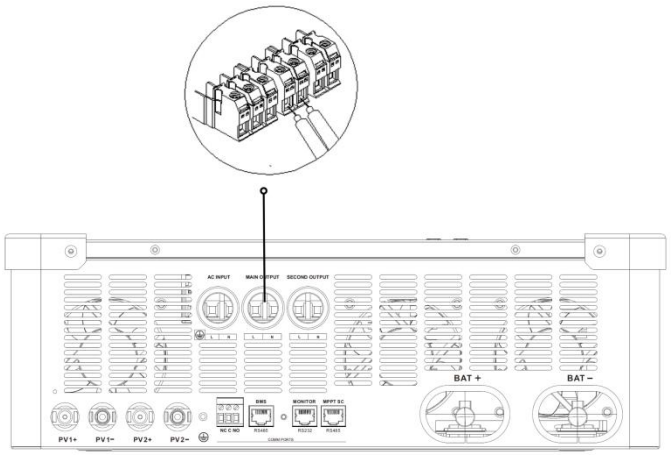


4. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor (⏚) first.

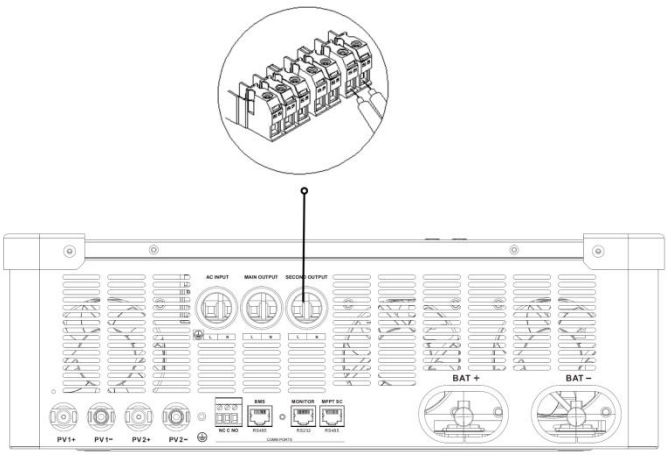
⏚ →**Ground (yellow-green)**

L →LINE (brown or black)

N →Neutral (blue)



Output 1: Main output
For important load.



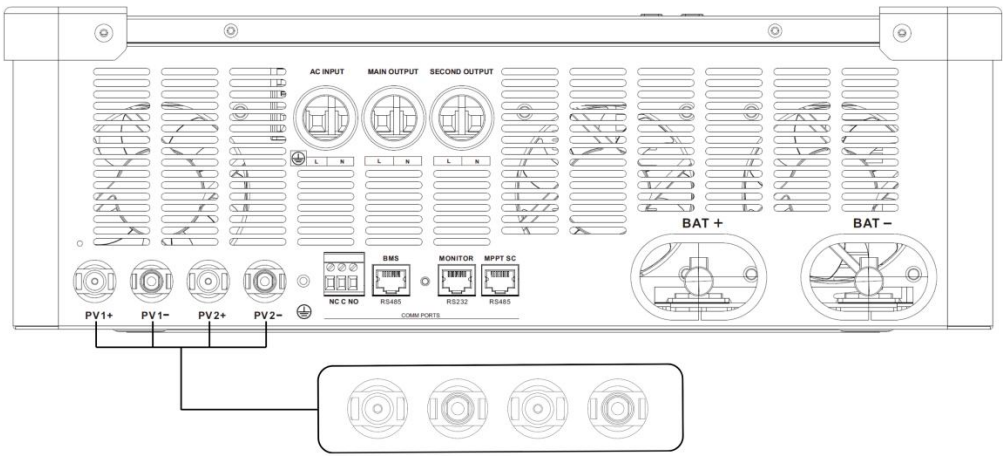
Output 2: Second output
If the battery voltage is lower than the set value, this output will be turned off.

⚠ DANGER

- Before connecting AC inputs and outputs, ensure that the circuit breaker is open to prevent the risk of electric shock. Do not operate it with electricity.
- Please ensure that the cable used meets the requirements. Thin or poor-quality cables pose a serious safety hazard.

4.7 PV Connection

Connect solar array positive and negative MC4 connector to Inverter PV+ and PV- Terminal according to the diagram below.



⚠ DANGER

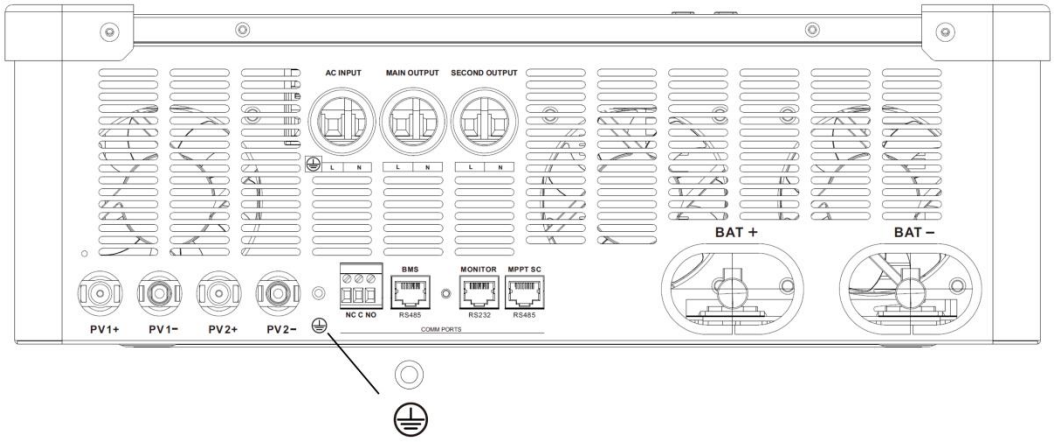
- Before connecting the PV modules, ensure the circuit breaker is opened to prevent the risk of electric shock. Do not operate it with electricity.
- Please ensure that the open circuit voltage of the PV modules in series does not exceed the maximum Open Circuit Voltage of the inverter (In the SF series, this value is 500V), as exceeding this limit may damage the inverter.
- Please ensure that the total PV input Array Power does not exceed the Max. PV Array Power.

Take 580Wp N type PV module as an example. After considering above two parameters, the recommended module configurations are listed as below table.

	PV INPUT Min in serial: 1 pcs	Q'ty of panels	Total Input power	Total Voc
Reference Solar Panel Size:2278*1134*35mm 144 cells, N type **STC condition:** Pmax:580Wp Vmp: 43.53dc Imp: 13.44A Voc: 52.47Vdc Isc: 14.07A	1 pcs in serial	1 pcs	580W	52.47 Vdc
	2 pcs in serial	2 pcs	1160W	104.94 Vdc
	3 pcs in serial	3 pcs	1740W	157.41 Vdc
	4 pcs in serial	4 pcs	2320W	209.88 Vdc
	5 pcs in serial	5 pcs	2900W	262.35 Vdc
	6 pcs in serial	6 pcs	3480W	314.82 Vdc
	7 pcs in serial	7 pcs	4060W	367.29 Vdc
	8 pcs in serial	8 pcs	4640W	419.76 Vdc
	9 pcs in serial	9 pcs	5220W	472.23 Vdc
	5 pcs in serial and 2 sets in parallel	10 pcs	5800W	262.35 Vdc
	6 pcs in serial and 2 sets in parallel	12 pcs	6960W	314.82 Vdc
	7 pcs in serial and 2 sets in parallel	14 pcs	8120W	367.29 Vdc
	8 pcs in serial and 2 sets in parallel	16 pcs	9280W	419.76 Vdc
	9 pcs in serial and 2 sets in parallel	18 pcs	10440W	472.23 Vdc

Note: The total solar Voltage = Voc* (in serial number) must be ≤ 500Vdc

4.8 Grounding Connection

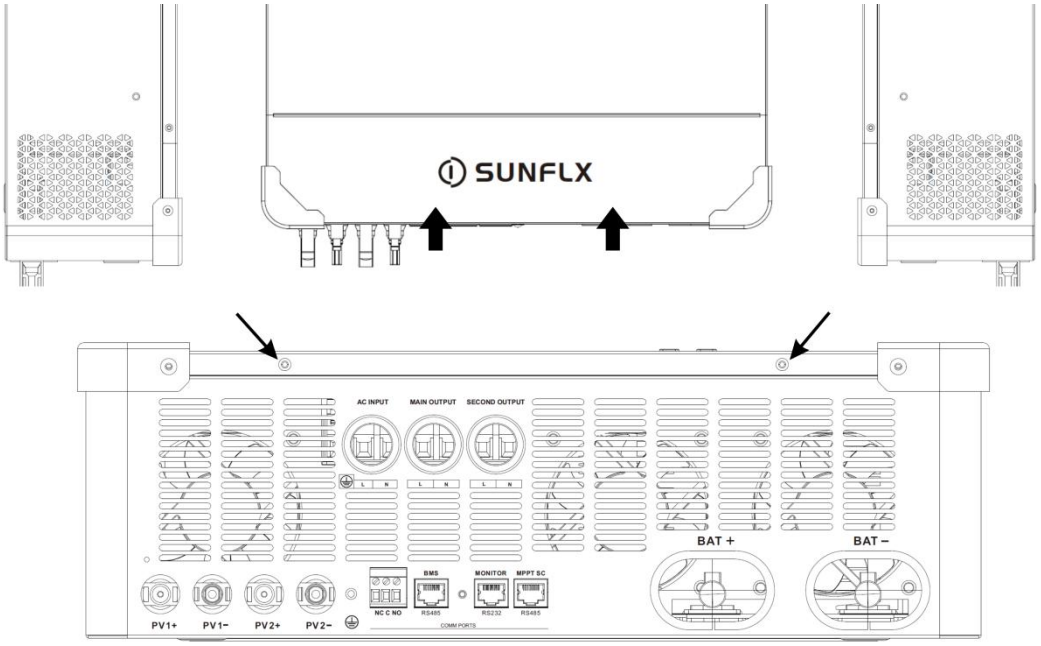


NOTICE

- The grounding cable should be at least 4 mm² in diameter and positioned as close as possible to the grounding point.

4.9 Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.



4.10 Start up the Inverter

Step 1: Close the battery circuit breaker.

Step 2: Press the rocker switch on the bottom of the inverter to activate it; the screen and indicators will light up.

Step 3: Sequentially close the circuit breakers for PV, AC input, and AC output.

Step 4: Start the loads gradually, beginning with lower power devices and moving to larger ones.

5. Operation

5.1 System Commissioning by Sunflx Cloud APP

Smart Dongle can connect with MONITOR port on inverter, enabling users to monitor operational status and configure parameters of the inverter using a mobile phone application.

User can scan the QR code or Search “Sunflx Cloud” to download the Mobile APP in Google Play and APP Store.

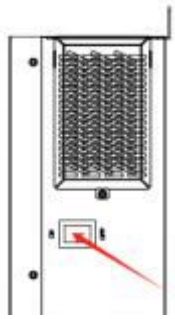






5.2 Power ON/OFF

Side view of unit



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

5.3 Operation and Display Panel

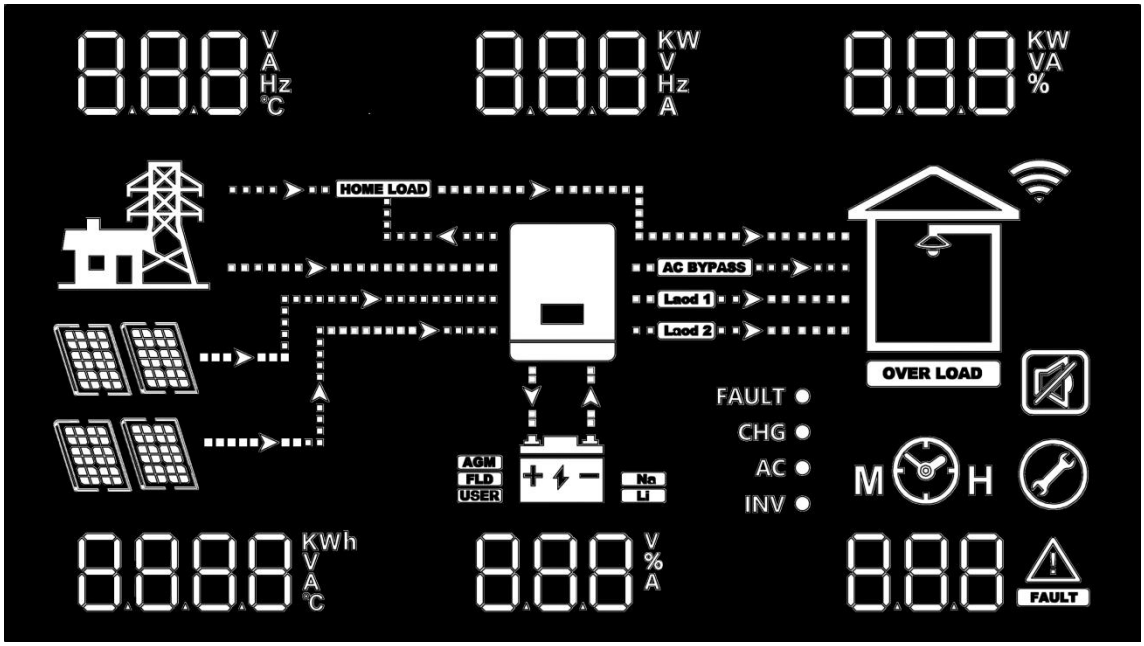
The operation and display panel, depicted in the chart below, is located on the front panel of the inverter. It consists of four function keys and an LCD display, providing information on the operating status and input/output power.

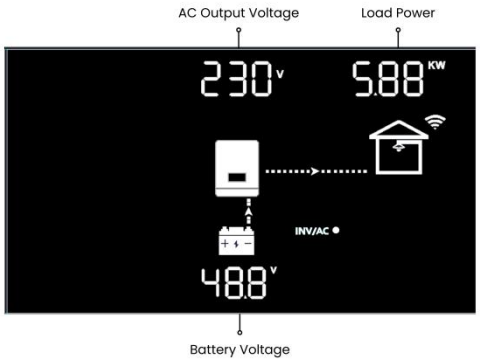
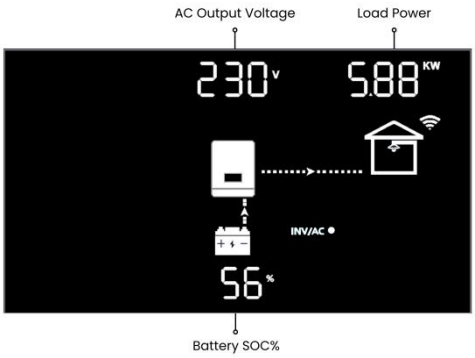
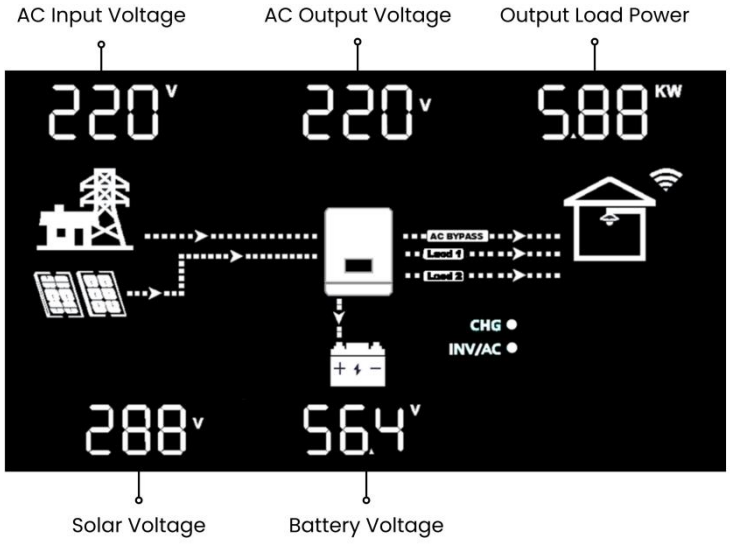


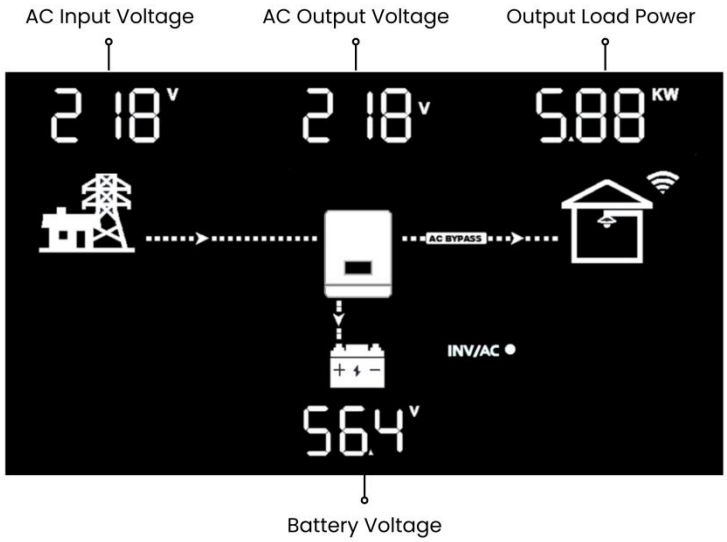
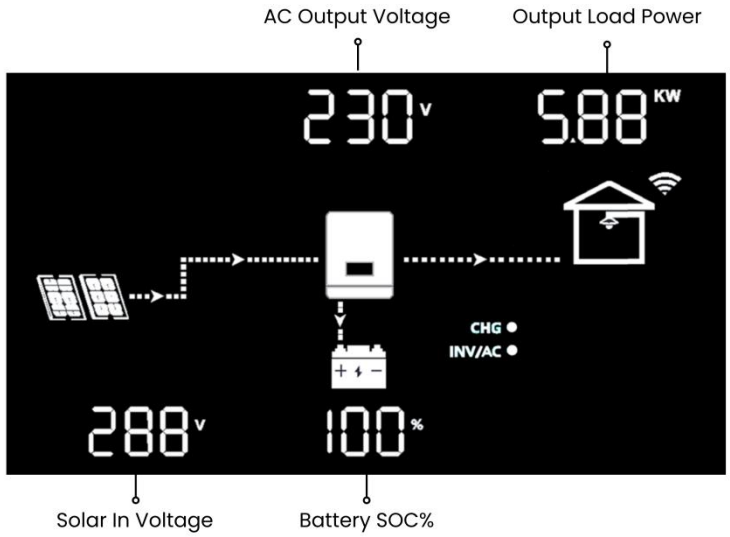
Function Key	Description
	To exit setting mode
	To go to previous selection
	To go to next selection
	To confirm the selection in setting mode or enter setting mode

LED Indicator			Messages
AC / INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
⚠ FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

5.4 LCD Display Icons



Working status (Home page)	LCD Indicates	
Battery discharging Inverter mode		
AC input bypass MPPT working Battery charging		

AC input bypass Battery charging	
MPPT working Battery charging	

Icon	Function description
Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes.
	Indicates overload.
Mode Operation Information	
	Indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
	Indicates load is supplied by utility power.

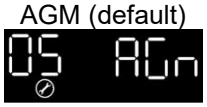
	Indicates main output from inverter.
	Indicates second output from inverter.
Mute Operation	
	Indicates unit alarm is disabled.

5.5 LCD Setting

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

Setting programs:

Program	Description	Selectable option	
00	Exit setting mode	Escape 	
01	Output source priority: To configure load power source priority	Utility first (default) 	Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.
		Solar first 	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power the loads at the same time. Utility provides power to the loads 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.

		SBU priority 	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.
02	Maximum charging current: To configure total charging current for solar and utility chargers. Range：10A to 150A	10A 	Refer to the example on the left to set the expected parameters.
		60A (default) 	
		80A 	
03	AC input voltage range	Appliances (default) 	If selected, acceptable AC input voltage range will be within 90-280VAC.
		UPS 	If selected, acceptable AC input voltage range will be within 170-280VAC.
04	On-Grid	On-Grid disable (default) 	On-Grid enable 
05	Battery type	AGM (default) 	Flooded 
		User-Defined 	If “User-Defined” is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
		Lib 	If the inverter is connected to a lithium battery without BMS communication, the Lib option can be selected. ⚠ ***CAUTION*** This option is only compatible with 16 Cells LFP4 battery for 48V models or 8 Cells LFP4 battery for 24V models.

<table>
<tr><td>06</td><td>Auto restart when overload occurs</td><td>Restart disable (default)
</td><td>Restart enable
</td></tr>
<tr><td>07</td><td>Auto restart when over temperature occurs</td><td>Restart disable (default)
</td><td>Restart enable
</td></tr>
<tr><td rowspan="3">08</td><td rowspan="3">485 BMS protocol</td><td>0.pace
</td><td>01.pylon v3.5
</td></tr>
<tr><td>02.pylon v3.6(default)
</td><td>03.growatt
</td></tr>
<tr><td colspan="2">If the communication is OK, the USER (battery type) icon on the LCD should be 1s On /1s Off.</td></tr>
<tr><td>09</td><td>Output frequency</td><td>50Hz (default)
</td><td>60Hz
</td></tr>
<tr><td rowspan="2">10</td><td rowspan="2">Output voltage</td><td>220V
</td><td>230V (default)
</td></tr>
<tr><td>240V
</td><td></td></tr>
<tr><td>11</td><td>Maximum utility charging current
Range：2A to 100A
Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger.</td><td>2A

30A (default)

80A
</td><td>Refer to the example on the left to set the expected parameters.</td></tr>
<tr><td>12</td><td>Setting voltage point back to utility source when selecting “SBU priority” or “Solar first” in program 01.

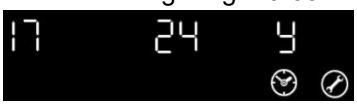
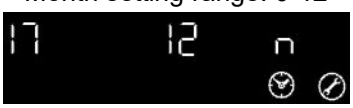
This parameter is also the battery voltage for the dry contact action.</td><td colspan="2">Available options in SF 8000/ SF 10000 model:
44V

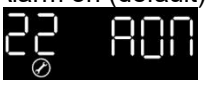
46V (default)

51V

Refer to the example on the left to set the expected parameters. Range: 42.0V-51.0V, increment of each click is 1V.</td></tr>
</table>

<table>
<tr><td rowspan="5">13</td><td rowspan="5">Setting voltage point back to battery mode when selecting “SBU priority” or “Solar first” in program 01.

This parameter is also the battery voltage for the dry contact reset.</td><td colspan="2">Available options in SF 8000/ SF 10000 model:</td></tr>
<tr><td>Battery fully charged
</td><td rowspan="4">Refer to the example on the left to set the expected parameters. Range: 48.0V-58.0V, increment of each click is 1V.</td></tr>
<tr><td>48V
</td></tr>
<tr><td>54V (default)
</td></tr>
<tr><td>58V
</td></tr>
<tr><td rowspan="6">16</td><td rowspan="6">Charger source priority:
To configure charger source priority</td><td colspan="2">If this solar storage inverter is working in Line, Standby or Fault mode, charger source can be programmed as below:</td></tr>
<tr><td>Utility first
</td><td>Utility will charge battery as first priority.
Solar energy will charge battery only when utility power is not available.</td></tr>
<tr><td>Solar first
</td><td>Solar energy will charge battery as first priority.
Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td>Solar and Utility (default)
</td><td>Solar energy and utility will charge battery at the same time.</td></tr>
<tr><td>Only Solar
</td><td>Solar energy will be the only charger source no matter utility is available or not.</td></tr>
<tr><td colspan="2">If this solar storage inverter 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.</td></tr>
<tr><td rowspan="2">17</td><td rowspan="2">RTC time Setting
Set the year, month, day, hour, minute, and second in sequence. After setting each value, press SET/OK to confirm and set the next value.</td><td colspan="2">Year setting range: 0-99
</td></tr>
<tr><td colspan="2">Month setting range: 0-12
</td></tr>
</table>

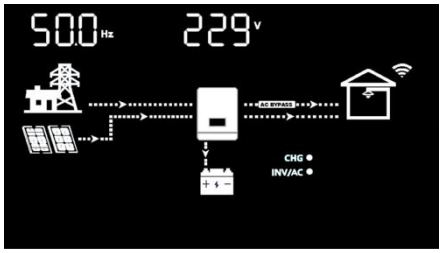
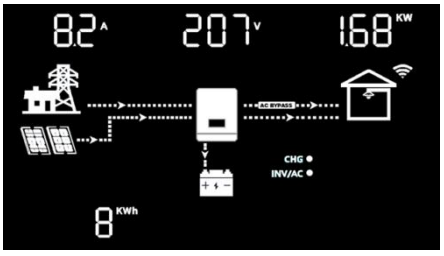
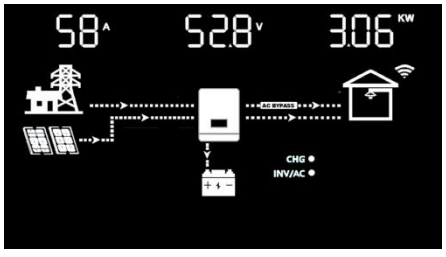
		Day setting range: 0-31 	
		Hour setting range: 0-24 	
		Minute setting range: 0-60 	
		Seconds setting range: 0-60 	
18	Alarm control	Alarm on (default) 	Alarm off 
19	Auto return to default display screen	Return to default display screen (default) 	If selected, no matter how users switch display screen, it will automatically return to default display screen (Input voltage /output voltage) after no button is pressed for 1 minute.
		Stay at latest screen 	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	Backlight on (default) 	Backlight off 
22	Beeps while primary source is interrupted	Alarm on (default) 	Alarm off 
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable (default) 	Bypass enable 
25	Record Fault code	Record enable (default) 	Record disable 

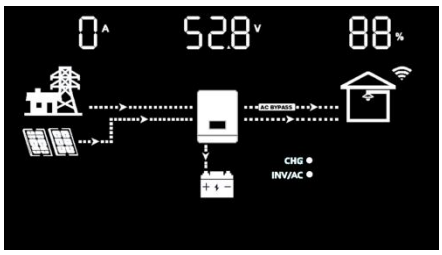
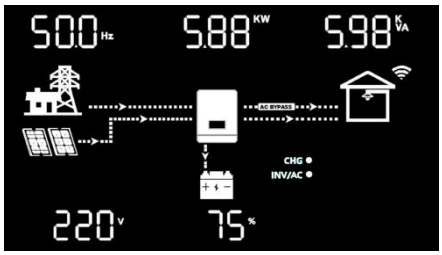
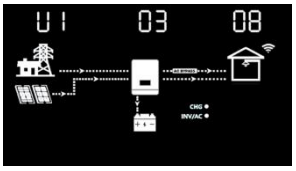
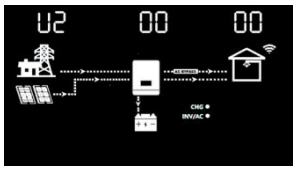
<table>
<tr><td rowspan="2">26</td><td rowspan="2">Bulk charging voltage
(C.V voltage)</td><td colspan="2">SF 8000/ SF 10000 default setting: 56.4V
</td></tr>
<tr><td colspan="2">If self-defined is selected in program 5, this program can be set up. Setting range is from 48.0V to 61.0V for SF 8000/ SF 10000 model. Increment of each click is 0.1V.</td></tr>
<tr><td rowspan="2">27</td><td rowspan="2">Floating charging voltage</td><td colspan="2">SF 8000/ SF 10000 default setting: 54.0V
</td></tr>
<tr><td colspan="2">If self-defined is selected in program 5, this program can be set up. Setting range is from 48.0V to 61.0V for SF 8000/ SF 10000 model. Increment of each click is 0.1V.</td></tr>
<tr><td rowspan="2">29</td><td rowspan="2">Low DC cut-off voltage</td><td colspan="2">SF 8000/ SF 10000 default setting: 42.0V
</td></tr>
<tr><td colspan="2">If self-defined is selected in program 5, this program can be set up. Setting range is from 40.0V to 51.0V for SF 8000/ SF 10000 model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.</td></tr>
<tr><td rowspan="2">30</td><td rowspan="2">Battery equalization</td><td>Battery equalization
</td><td>Battery equalization disable (default)
</td></tr>
<tr><td colspan="2">If “Flooded” or “User-Defined” is selected in program 05, this program can be set up.</td></tr>
<tr><td rowspan="2">31</td><td rowspan="2">Battery equalization voltage</td><td colspan="2">SF 8000/ SF 10000 default setting: 58.4V
</td></tr>
<tr><td colspan="2">Setting range is from 48.0V to 61.0V for SF 8000/ SF 10000 model. Increment of each click is 0.1V.</td></tr>
<tr><td>33</td><td>Battery equalized time</td><td>60min (default)
</td><td>Setting range is from 5min to 900min. Increment of each click is 5min.</td></tr>
<tr><td>34</td><td>Battery equalized timeout</td><td>120min (default)
</td><td>Setting range is from 5min to 900 min. Increment of each click is 5 min.</td></tr>
<tr><td>35</td><td>Equalization interval</td><td>30days (default)
</td><td>Setting range is from 0 to 90 days. Increment of each click is 1 day</td></tr>
</table>

36	Equalization activated immediately	Enable 	Disable (default) 
		If equalization function is enabled in program 30, this program can be set up. If “Enable” is selected in this program, it’s to activate battery equalization immediately and LCD main page will show “  ”. If “Disable” is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, “  ” will not be shown in LCD main page.	
37	WiFi Reset	Default 	Reset 
		After WiFi module reset，the inverter should be disconnected from the router，need WiFi configuration again.	

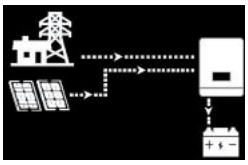
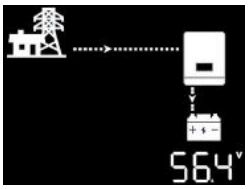
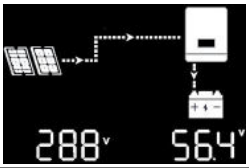
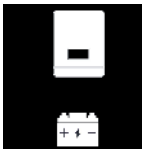
5.6 Display Setting

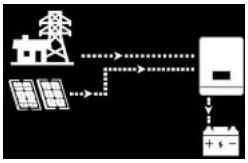
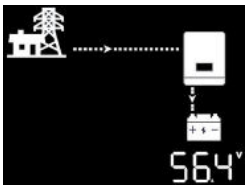
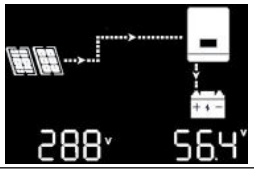
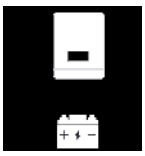
The LCD display information will be switched in turns by pressing “UP” or “DOWN” key. The selectable information is switched as below order: AC input, PV1, PV2, battery, AC output load and software Version.

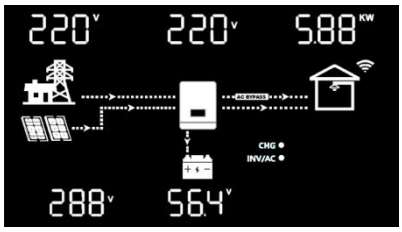
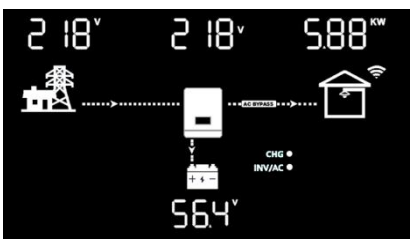
Icon	LCD Indicates
 Grid icon 1s ON 1s OFF LCD display AC input frequency and voltage.	
 Solar icon 1s ON 1s OFF LCD display PV input current, input voltage, MPPT power and total power generation.	
 Battery icon 1s ON 1s OFF LCD display battery charging current, battery voltage and charging power.	

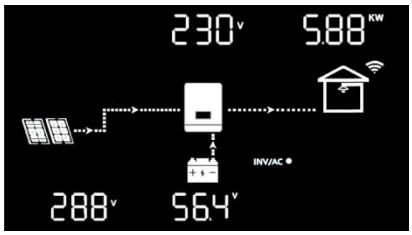
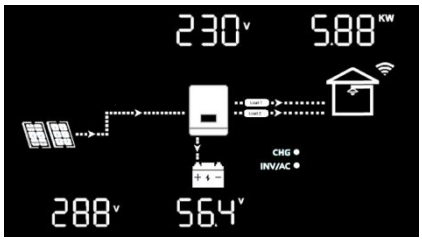
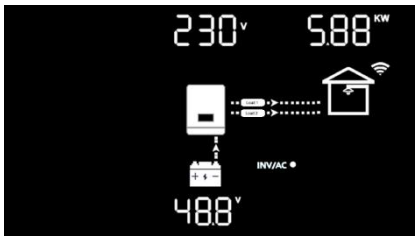
Battery icon 1s ON 1s OFF LCD display battery discharging current, battery voltage and battery capacity percentage.	
Output load icon 1s ON 1s OFF LCD display AC output frequency, load active power, reactive power, AC output voltage and battery and battery voltage/capacity percentage.	
Software Version	 

5.7 Operating Mode Description

Operation mode	Description	LCD display
Standby mode / Power saving mode **Note:** *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. *Power saving mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.	No output is supplied by the unit but it still can charge batteries.	Charging by utility and PV energy. 
		Charging by utility. 
		Charging by PV energy. 
		No charging. 

Fault mode Note: *Fault mode: Errors are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.	PV energy and utility can charge batteries.	Charging by utility and PV energy. 
		Charging by utility. 
		Charging by PV energy. 
		No charging. 

Operation mode	Description	LCD display
Line Mode	The unit will provide output power from solar and grid (solar first). It will also charge the battery at line mode. If the PV energy is more than the energy required for output load and charging, the excess solar energy can be fed back to the “HOME Load” output port (AC input bypass).	Charging by utility and PV energy. 
	The unit will provide output power from the grid. It will also charge the battery at line mode.	Charging by utility. 

<table>
<tr><td rowspan="3">Battery Mode</td><td rowspan="3">The unit will provide output power from battery and PV power.</td><td>Power from battery and PV energy.
</td></tr>
<tr><td>PV energy will supply power to the loads and charge battery at the same time.
</td></tr>
<tr><td>Power from battery only.
</td></tr>
</table>

5.8 Battery Equalization Description

Equalization function is added into charge controller. It reverses the buildup of negative chemical effects like stratification, a condition where acid concentration is greater at the bottom of the battery than at the top. Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked, this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommended to equalize battery periodically.

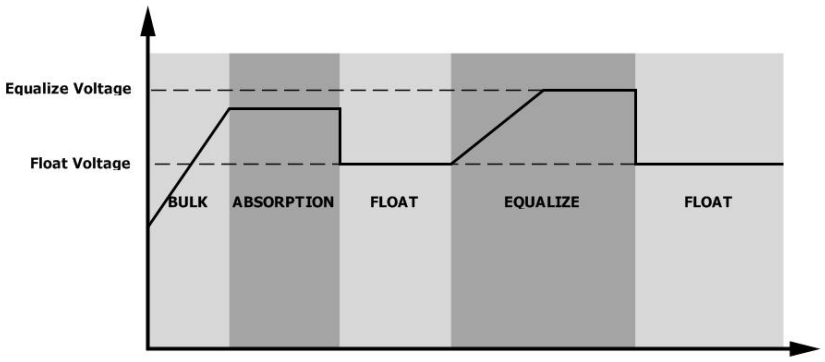
- **How to apply equalization function**

You must enable battery equalization function in monitoring LCD setting program 30 first. Then, you may apply this function in device by either one of following methods:

1. Setting equalization interval in program 35.
2. Active equalization immediately in program 36.

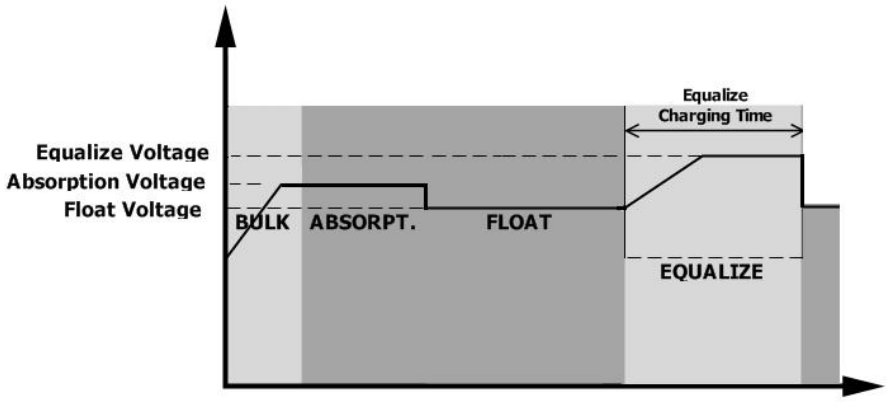
- **When to equalize**

In float stage, when the setting equalization interval (battery equalization cycle) is arrived, or equalization is active immediately, the controller will start to enter Equalize stage.

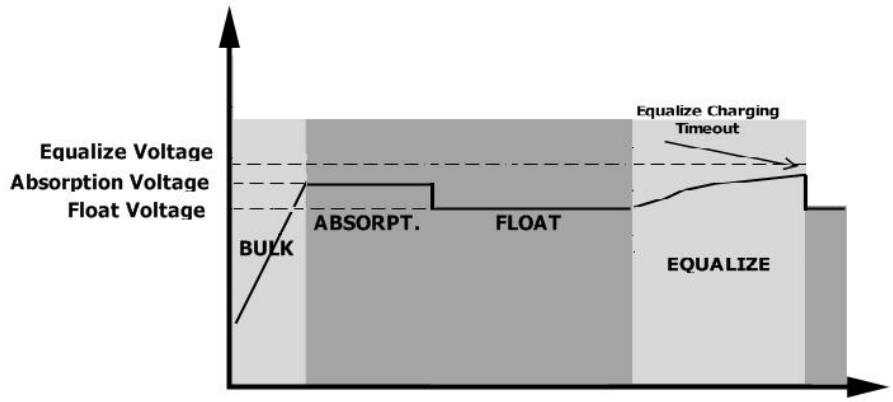


- **Equalize charging time and timeout**

In Equalize stage, the controller will supply power to charge battery as much as possible until battery voltage raises to battery equalization voltage. Then, constant-voltage regulation is applied to maintain battery voltage at the battery equalization voltage. The battery will remain in the Equalize stage until setting battery equalized time is arrived.



However, in Equalize stage, when battery equalized time is expired and battery voltage doesn't rise to battery equalization voltage point, the charge controller will extend the battery equalized time until battery voltage achieves battery equalization voltage. If battery voltage is still lower than battery equalization voltage when battery equalized timeout setting is over, the charge controller will stop equalization and return to float stage.



- **Battery Voltage Setting:**

Below the default battery voltage setting for Multiple battery types. Please note if you choose User-defined battery, please follow below sequence:

Battery Charging Voltage: [30] Equalized Charging Voltage ≥ [26] Bulk charging voltage(CV charging)≥[27] Float charging voltage＞[29] Low DC Cut-off Voltage

Battery Discharging Voltage： [13] Setting voltage point back to battery mode＞[12] Setting voltage point back to utility source＞[29] Low DC Cut-off Voltage

Parameter/Battery type	Lead-Acid battery	Flooded	Li-ion battery	User-defined
	AGM/GEL	FLd	LIB	USE
	SF 8000/ SF 10000 Model			
Nominal DC Input Voltage	48Vdc	48Vdc	48Vdc	48Vdc
Cold Start Voltage	46Vdc	46Vdc	46Vdc	46Vdc
Low DC Cut-off Voltage @ load < 50% @ load ≥ 50%	43Vdc 42Vdc	43Vdc 42Vdc	44.8Vdc 44.8Vdc	40-48Vdc
Low DC Warning Voltage @ load < 50% @ load ≥ 50%	45Vdc 44Vdc	45Vdc 44Vdc	46.8Vdc 46.8Vdc	Low DC Cut-off Voltage+2Vdc
Low DC Warning Return Voltage @ load < 50% @ load ≥ 50%	47Vdc 46Vdc	47Vdc 46Vdc	48.8Vdc 48.8Vdc	Low DC Cut-off Voltage+4Vdc
High DC Recovery Voltage	62Vdc	62Vdc	62Vdc	62Vdc
High DC Cut-off Voltage	63Vdc	63Vdc	63Vdc	63Vdc
Bulk charging voltage	56.4Vdc	58.4Vdc	57.6Vdc	48-61Vdc
Float charging voltage	54Vdc	54Vdc	56.8Vdc	48-61Vdc
Equalize charging voltage	58.4Vdc	58.4Vdc	N/A	48-61Vdc
Battery Equalized time	60min	60min	N/A	5~900min
Battery Equalization interval (days)	30d	30d	N/A	0~90d
Battery Equalized timeout	120min	120min	N/A	5~900m

NOTICE

- If no BMS is connected, the inverter will charge according to the battery voltage with a pre-set charging curve. When the inverter communicates with the BMS, it will follow the BMS instructions to perform a more complex stage charging process.
- The inverter will start power load when battery reach battery cold start voltage.

5.9 Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	
02	Over temperature	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Overload time out	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over current or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

5.10 Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	

03	Battery is over-charged	Beep once every second	
04	Low battery	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	
15	PV energy is low.	Beep twice every 3 seconds	
EQ	Battery equalization	None	

6. Clearance and Maintenance for Anti-Dust Kit

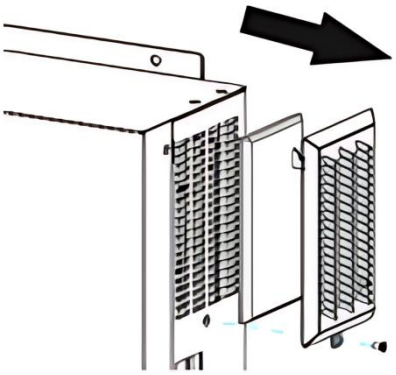
6.1 Overview

Every inverter is already installed with anti-dusk kit from factory. Inverter will automatically detect this kit and activate internal thermal sensor to adjust internal temperature. This kit also keeps dusk from your inverter and increases product reliability in harsh environment.

6.2 Clearance and Maintenance

Step 1: Please release the screws on the side of the inverter counterclockwise.

Step 2: Then, dust proof case can be removed and take out air filter foam as shown in below chart.



Step 3: Clean air filter foam and dust proof case. After clearance, re-assemble the dust-kit back to the inverter.

NOTICE

- The anti-dust kit should be cleaned from dust every one month.

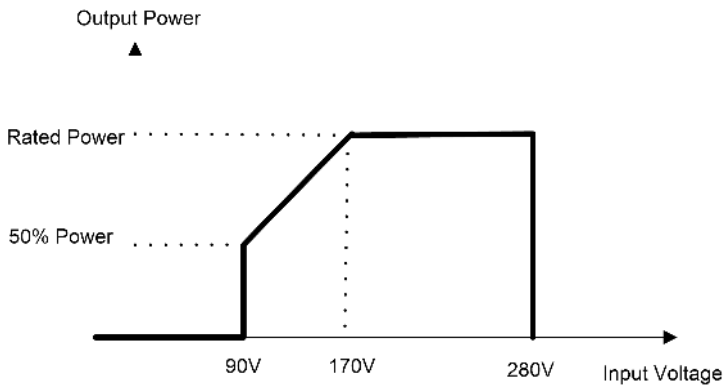
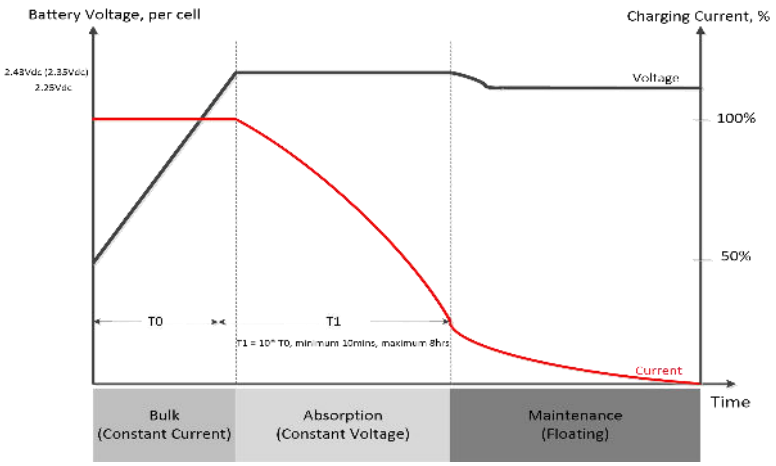
7. Specifications

Model	SF 8000	SF 10000	User-Settable
Nominal Battery Voltage	48Vdc		
Battery Type	Lithium LiFePO4/Lead-Acid/Flooded/User defined		✓
AC INPUT			
Nominal AC Input Voltage/Waveform	230Vac/Sinusoidal (Utility or Generator)		
AC Input Range	90~280Vac (Appliances); 170Vac~280Vac (UPS)		✓
Nominal Input Frequency	50/60Hz (Auto Detection)		✓
AC Input Frequency Range	40~65±1Hz; (>42 or <63±1Hz Comeback)		
Max Bypass Current	60Amp		
Output Short Circuit Protection	Circuit Breaker		
Transfer Time	15ms Typical (UPS); 25ms Typical (Appliances)		
AC CHARGER			
Charging Algorithm	3-Step		
Max AC Charging Current	120Amp (@VI/P=230Vac)		✓
Bulk Charging Voltage	56.4Vdc (AGM/Gel Battery); 58.4Vdc (Flooded Battery)		✓
Floating Charging Voltage	54Vdc		✓
Max Hybrid Charging Current (Solar & Utility)	150Amp		✓
PV INPUT			
Num. Of Independent MPPT Tracker	2		
MPPT Input Current	2*22Amp		
Max PV Array Power	12000W	12000W	
Max Solar Charge Current	150Amp		✓
PV Array MPPT Voltage Range	60~450Vdc		
Max PV Array Open Circuit Voltage	500Vdc		

MPPT Tracking Efficiency	99.9%		
INVERTER OUTPUT			
Num. of Output Ports (Main & Second Output)	2		
Rated Output Power of Main/Second Output *[1]	8.2KW/8.2KW	10KW/10KW	
Max. Output Current of Main/Second Output	34.8A/34.8A	43.5A/43.5A	
Surge Capacity	16.4KVA/16.4KW for 5 Seconds	20KVA/20KW for 5 Seconds	
Output Voltage Waveform	Pure Sine Wave		
Overload Protection	5s@150% Load; 10s@110%~150% Load		
Output Voltage	220/230/240 Vac ± 5%		
Output Frequency	50Hz/60Hz ±1Hz		
Peak Efficiency	94%		
Low Voltage Cut-off Voltage	42Vdc		✓
High Voltage Cut-off Voltage	63Vdc		
Cold Start Voltage (When Only Connect with Battery)	46.0Vdc		
No Load Power Consumption	<70W@48Vdc		
Parallel Capacity	NO		
GENERAL			
Operating Temperature Range	-10°C~ 50°C		
Storage Temperature	-15°C~ 60°C		
Humidity	5% to 95% Relative Humidity (Non-Condensing)		
Altitude	<2000m		
Noise	≤60dB		
Protection Degree	IP21, Indoor Only		
Cooling Method	Intelligent Fan		
Net Dimension (H*W*D)	605*440*143mm		

*[1] Two Output Total Power Will Not Exceed Rated Output Power

Net Weight	17.5 KG	
Warranty	2 Years	
COMMUNICATION		
Embedded Interface	RS232*1/RS485*2/Dry Contact	
Work with WIFI & Bluetooth Monitoring Dongle	YES, by RS232	
Work with Lithium Battery BMS	YES, by RS485	
CERTIFICATION		
Certification/Standard	CE (IEC61000, IEC62109); IEC61683, IEC60068; RoHS	

Output power derating: When AC input voltage drops to 170V, the output power will be derated.	
AC charging curve	

8. 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 complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (<1.4V/Cell) 2. Internal fuse tripped.	1. Contact repair center for replacing the fuse. 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. (Shore 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 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 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature of internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C.	
	Fault code 03	Battery is over-charged.	Return to repair center.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.

	Fault code 01	Fan fault	Replace the fan.
	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 08/09/53/57	Internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	

SunflxSolar
SunflxSolar
SunflxSolar
SunflxSolar

sunflx.com
sales@sunflx.com

SUNFLX NEW ENERGY CO.,LTD

Headquarter: No 1-1, South Yixing Innovation Park ,Huangpu, Guangzhou,Guangdong,P.R.China

Chengdu Branch: Room 907,F9,Building A,Fucheng International Zone, No 722 Yizhou Avenue Chengdu, Sichuan,P.R.China

Manufacture Unit

F2-4,No 1. Zhanye Road,Sunde,Foshan,Guangdong,P.R.China