ECO-WORTHY

Version: 1.0

3500W SOLAR ALL-IN-ONE ENERGY STORAGE SYSTEM PRODUCT MANUAL

MODEL: SL3500



Disclaimer and Warning

1. Thank you for choosing our product! Before using this product, please read this manual carefully. It includes important information and instructions for use, troubleshooting solutions, etc. Please keep this manual in a safe place.
2. The product warranty does not cover product failures due to accidental damage, unauthorized repairs, improper storage, and incorrect usage methods.

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Important Safety Instructions
Please retain this manual for future reference.

This manual contains all safety, installation, and operating instructions for the SL3500 Solar All-in-one Energy Storage System. Please read all instructions and precautions in this manual carefully before installation and use.

The internal components of the all-in-one machine operate at non-safe voltages. To avoid personal injury, do not disassemble the unit yourself. In case of any issues, contact our professional maintenance personnel.

Do not place the all-in-one machine within reach of children.

Do not install the all-in-one machine in damp, greasy, flammable, explosive, or dusty environments.

The mains input and AC output are high-voltage electricity. Do not touch the wiring connections.

The casing of the all-in-one machine may become hot during operation. Do not touch it.

Do not open the terminal cover while the all-in-one machine is in operation.

It is recommended to install appropriate fuses or circuit breakers externally on the all-in-one machine.

Before installing or adjusting the wiring of the all-in-one machine, ensure that the fuses or circuit breakers near the PV array, mains, and battery terminals are disconnected.

After installation, check all wiring connections to ensure they are secure, to prevent heat buildup and potential hazards due to loose connections.

The all-in-one machine is designed for off-grid use. Ensure that the load equipment is powered solely by this all-in-one machine and is not connected in parallel with other AC power sources.

I. Basic Information

1.1 Product Overview and Features

The SL3500 series is a new type of hybrid solar energy storage inverter controller integrated machine that combines solar energy storage and mains charging storage with AC sine wave output. It uses DSP control and advanced control algorithms, featuring high response speed, high reliability, and high industrial standards. It offers four charging modes: solar-only, mains priority, solar priority, and combined solar & mains charging, as well as two output modes: inverter and mains, to meet various application needs.

The solar charging module employs the latest optimized MPPT tracking technology, which quickly identifies the maximum power point of the PV array under any conditions to maximize energy capture from solar panels.

The AC-DC charging module uses advanced control algorithms to achieve fully digital voltage and current dual-loop control, with high control precision and a compact design. It has a wide AC voltage input range and comprehensive input/output protection functions, ensuring stable and reliable charging and protection of the battery.

The DC-AC inverter module is based on fully digital intelligent design, using advanced SPWM technology to output pure sine waves, converting DC power into AC power suitable for household appliances, power tools, industrial equipment, and electronic audio-visual devices. The product features a segmented LCD display that shows real-time system operating data and status. Comprehensive electronic protection functions ensure the entire system is safer and more stable.

Features:

1.Full digital voltage and current dual-loop control, advanced SPWM technology, and pure sine wave output.

2.Mains bypass and inverter output modes available, with uninterruptible power supply functionality.

3.Four charging modes: solar-only, mains priority, solar priority, and combined solar & mains charging.

4.Advanced MPPT technology with a tracking efficiency of up to 99.9%.

5.LCD screen and three LED indicators dynamically display system data and operating status.

6.ON/OFF toggle switch controls AC output.

7.Energy-saving mode to reduce no-load losses.

8.Intelligent adjustable-speed fan for efficient heat dissipation and extended system life.

9.With activation function for lithium batteries and mains, supporting both lead-acid and lithium batteries.

10.Comprehensive protection functions for 360° all-around protection.

11.Complete short-circuit protection, over/under-voltage protection, overload protection, and reverse current protection.

1.2 Basic System Introduction

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

1.PV Modules: Convert solar energy into DC power to charge the battery through the all-in-one machine or directly invert it into AC power to supply the load.

2.Mains or Generator: Connected to the AC input terminal, it can supply power to the load and charge the battery. If mains or a generator is not connected, the system can still operate normally, with power supplied to the load by the battery and PV modules.

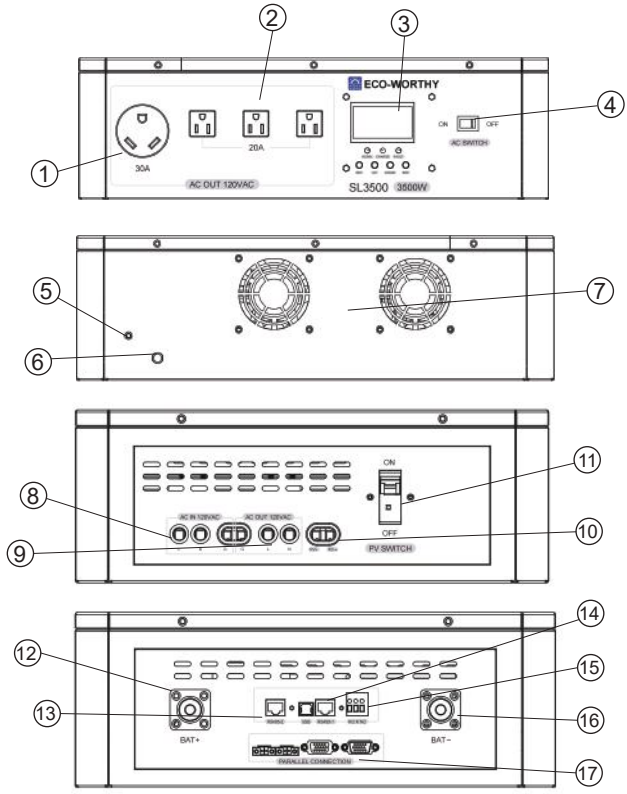
3.Battery: Ensures normal power supply to the system load when solar energy is insufficient or there is no mains power.

4.Household Loads: Various household and office loads, including refrigerators, lights, televisions, fans, air conditioners, etc., can be connected.

5.Inverter Controller Integrated Machine: The energy conversion device of the entire system.
The specific system wiring configuration depends on the actual application scenario.



1.3 Product Features



1	30A AC Output Socket	**10**	PV Charging Terminal
2	20A AC Output Socket	**11**	PV Switch
3	LCD Screen	**12**	Battery Positive Terminal
4	AC Switch	**13**	RS485
5	Grounding Screw	**14**	USB
6	Overload Protector	**15**	Generator Dry Contact
7	Cooling Fan	**16**	Battery Negative Terminal
8	AC Input Terminal	**17**	Parallel Interface
9	AC Output Terminal		

1.4 Dimension

Dimension: 483*390*145cm/19.01*15.35*5.7inch



II.Installation Instructions

2.1Installation Precautions

Before installation, please read this manual carefully and familiarize yourself with the installation steps.

☒When installing the cabinet, ensure sufficient space around the all-in-one machine for heat dissipation. Do not install the all-in-one machine in the same cabinet as lead-acid liquid batteries to prevent corrosion from acidic gases produced by the batteries.

☒Loose connections and corroded wires can cause significant heat generation to melt wire insulation, combustion of surrounding materials, and even fires. Ensure all connections are tightened, and use cable ties to secure wires to prevent them from shaking loose during movement.

☒Select system connection wires with a current density of no more than 5A/mm^2.

☒For outdoor installation, avoid direct sunlight and water ingress.

☒Even after the power switch is turned off, high voltage may still be present inside the all-in-one machine. Do not open or touch internal components until the capacitors have fully discharged.

☒Do not install the all-in-one machine in damp, greasy, flammable, explosive, or dusty environments.

☒Do not reverse the polarity of the battery input terminals, as this can damage the equipment or cause unpredictable hazards.

☒The mains input and AC output are high-voltage electricity. Do not touch the wiring connections.

☒Do not touch the cooling fan while it is in operation to avoid injury.

☒The input power of the load equipment must be confirmed to be the only input device of this all-in-one machine. It is prohibited to use it in parallel with other AC power sources to avoid damage.

2.2Wiring Specifications and Circuit Breaker Selection

Wiring and installation must comply with national and local electrical codes.
Recommended PV Array Wiring Specifications:
Since the output current of the PV array is affected by the type of PV modules, connection method, and angle of sunlight, the minimum wire diameter for the PV array should be calculated based on the short-circuit current of the PV array. Please refer to the short-circuit current value in the PV module specification sheet (the short-circuit current remains unchanged when PV modules are connected in series; when connected in parallel, the short-circuit current is the sum of the short-circuit currents of all parallel modules). The short-circuit current of the array must not exceed the maximum PV input current.

·PV Input Wire Diameter and Switch:

Model	Recommended PV Input Wire Diameter	Maximum PV Input Current
SL3500	10mm² /7AWG	50A

Note: When connecting in series, the voltage must not exceed the maximum PV input open-circuit voltage.

·Recommended AC Input Wire Diameter and Switch:

Model	Recommended AC Input Wire Diameter	Maximum Bypass Input Current
SL3500	10mm² /7AWG	40A

Note: The AC input terminal already has a corresponding circuit breaker, so an additional breaker is not required.

·Recommended Battery Input Wire Diameter and Switch:

Model	Recommend-ed Battery Wire Diameter	Rated Battery Discharge Current	Maximum Charging Current	Recommend-ed Circuit Breaker Model
SL3500	10mm² /7AWG	85A	120A	2P—140A

· Recommended AC Output Wire Specifications and Circuit Breaker:

Model	Recommended AC Output Wire Diameter	Rated Inverter AC Output Current	Maximum Bypass Output Current	Recommended Circuit Breaker Model
SL3500	10mm² /7AWG	30A	40A	2P—140A

Note: The wire diameter is for reference only. If the distance between the PV array and the all-in-one machine is relatively long, using thicker wire can reduce voltage drop and improve system performance.

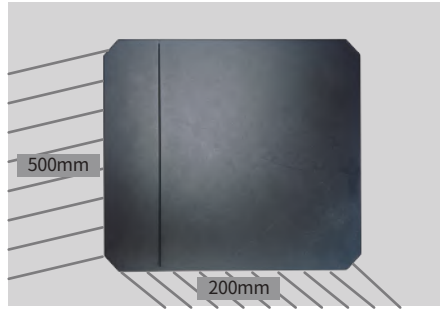
Note: The above wire diameters and circuit breakers are only recommendations. Please select appropriate wire diameters and circuit breakers based on actual conditions.

2.3Installation and Wiring

Installation Steps:

Step 1: Determine the Installation Location and Ventilation Space, Determine the installation location of the all-in-one machine, such as on a wall; ensure sufficient airflow over the heat sink of the all-in-one machine when installing it; leave at least 200mm to 500mm of space around the air inlets and outlets to ensure natural convection cooling. Refer to the overall installation diagram of the unit below.

Warning: Risk of Explosion! Do not install the all-in-one machine and lead-acid liquid batteries in the same enclosed space! Also, avoid installing in an enclosed area where battery gases may accumulate.



Step 2: BAT Wiring Method

Before wiring, disconnect the external circuit breaker and ensure the wire is thick enough. Refer to section "2.2 Wiring Specifications" for details. The BAT wire needs to be connected to the machine via an O-type terminal.

①Connect the BAT wire correctly according to the cable sequence and terminal position shown in the fig below.



BAT+: Positive Terminal of the Battery BAT-: Negative Terminal of the Battery

Quick AC Socket Wiring



PV Input Wiring Method：

①Before wiring, disconnect the external circuit breaker and ensure the wire is thick enough. Refer to section "2.2 Wiring Specifications" for details.

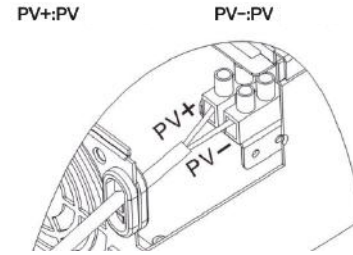
②Connect the PV input wire correctly according to the cable sequence and terminal position shown in the fig below.

③Unscrew the screws on the top cover



④ Open the top cover of the inverter to expose the wiring terminals and start wiring according to the positions marked on the white labels.

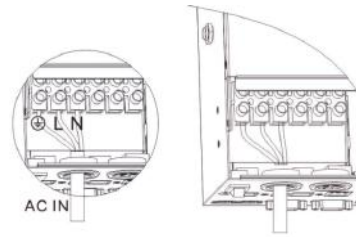




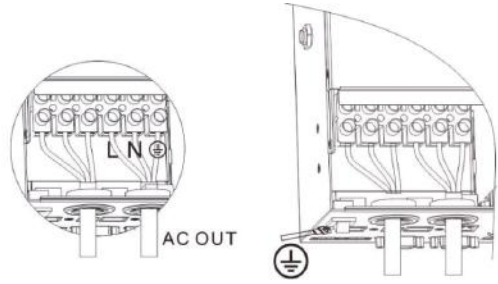
AC Input/Output Wiring Method (If the existing AC output socket is insufficient, you can choose to connect additional AC output wires):

①Before connecting the AC input/output wires, disconnect the external circuit breaker and ensure the wire is thick enough. Refer to section "2.2 Wiring Specifications" for details.

②Connect the AC input wire correctly according to the cable sequence and terminal position shown in the figure below. Connect the ground wire first, followed by the live and neutral wires.



Connect the AC output wire correctly according to the cable sequence and terminal position shown in the figure below. Connect the ground wire first, followed by the live and neutral wires. The ground wire should be connected to the machine's grounding screw hole via an O-type terminal.



Note: Use a thicker wire for the grounding cable (conductor cross-sectional area not less than 4mm^2). The grounding point should be as close to the all-in-one machine as possible, and the grounding wire should be as short as possible.

Warning:

①The mains input, AC output, and PV array can generate very high voltages. Before wiring, be sure to disconnect the circuit breaker or fuse.

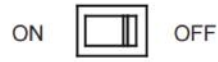
②During the wiring process, pay attention to safety. Do not close the circuit breaker or fuse, and ensure that the "+" and "-" leads of each component are connected correctly. The battery terminal must be equipped with a circuit breaker. Before wiring, be sure to disconnect the circuit breaker to prevent strong electrical sparks during wiring and to avoid short circuits in the battery.
If the all-in-one machine is used in an area with frequent lightning, it is recommended to install an external lightning arrester on the PV input terminal.

Step 3: Check the Wiring
Check whether the wiring is connected correctly and securely, especially checking whether the positive and negative terminals of the battery input are reversed, whether the positive and negative terminals of the PV input are reversed, and whether the AC input is incorrectly connected to the AC output terminal.

Step 4: Install the Terminal Cover of the SL3500

Step 5: Start the all-in-one Machine

First, close the switch at the battery terminal, then switch the toggle switch on the lower left side of the machine to the "ON" position. The "AC/INV" indicator light flashing indicates that the inverter is working normally. Next, close the circuit breakers of the PV array and mains power. Finally, after the AC output is normal, turn on the AC loads one by one to avoid large instantaneous impacts caused by turning on all loads at the same time, which may trigger protective actions. The all-in-one machine will operate normally according to the set mode.



AC SWITCH

Note: If supplying power to different AC loads, it is recommended to turn on the loads with high inrush currents first. After the load is stable, turn on the loads with low inrush currents.

Note: If the all-in-one machine does not work normally and the LCD or indicator lights display abnormally, refer to section 6 for trouble-shooting.

2.4 Parallel Wiring Connection

2.4.1 Introduction

1.Up to six SL3500 all-in-one machines can be connected in parallel.

2.When using the parallel function, it is necessary to correctly and securely connect the parallel communication cables as shown in the connection diagram (included in the packaging).

并机通讯线*1 ：



均流检测线*1：



2.4.2 Precautions for Parallel Connection Wiring

Warning:

Battery Wiring:
When connecting in parallel (single-phase or split-phase), all all-in-one machines must be connected to the same battery. Connect BAT+ to BAT+ and BAT- to BAT-. Ensure that the connections are correct and that the wire length and diameter are the same before powering up and starting the machines to avoid abnormal operation of the parallel system output.

AC OUT Wiring:
When connecting in parallel (single-phase), all all-in-one machines must have their L terminals connected together, N terminals connected together, and G terminals connected together. Ensure that the connections are correct and that the wire length and diameter are the same before powering up and starting the machines to avoid abnormal operation of the parallel system output. When connecting in split-phase, all all-in-one machines must have their N terminals connected together and G terminals connected together. All machines in the same phase must have their L terminals connected together, but L terminals of different phases must not be connected together. Other precautions also apply to single-phase parallel connections.

AC IN Wiring:
When connecting in parallel (single-phase), all all-in-one machines must have their L terminals connected together, N terminals connected together, and G terminals connected together. Ensure that the connections are correct and that the wire length and diameter are the same before powering up and starting the machines to avoid abnormal operation of the parallel system output. Additionally, there must not be multiple different AC power sources connected to avoid damaging the inverter or external electrical equipment. The consistency and uniqueness of the AC power source input must be ensured. When connecting in split-phase, all all-in-one machines must have their N terminals connected together and G terminals connected together. All machines in the same phase must have their L terminals connected together, but L terminals of different phases must not be connected together. Other precautions also apply to single-phase parallel connections.

Parallel Communication Cable Wiring:
Our parallel communication cable is a DB15 standard computer cable with a shielding function, used for both single-phase and split-phase parallel connections. When connecting each machine, it must be connected in a one-in-one-out manner, i.e., the male plug (output) of this machine should be connected to the female plug (input) of the machine to be paralleled. Do not connect the male plug of this machine to the female plug of this machine. Additionally, the parallel communication cables of each all-in-one machine must be securely tightened with the screws on the DB15 terminal to prevent the parallel communication cables from falling off or having poor contact, which may cause abnormal operation or damage to the system output.

Current Sharing Detection Cable Wiring:
Our current sharing detection cable is a twisted connection cable. When connecting in parallel (single-phase), each machine must be connected in a one-in-one-out manner, i.e., the current sharing cable of this machine should be connected to the green port of the machine to be paralleled (either port can be chosen, with no mandatory sequence). Do not connect the current sharing port of this machine to the current sharing port of this machine. Additionally, the red and black wires of the current sharing cable must not be swapped manually, and the screws of the current sharing cable must be tightened to prevent abnormal current sharing detection, which may cause abnormal system output or damage. When connecting in split-phase, all machines in the same phase must have their current sharing lines connected together, but current sharing cables of different phases must not be connected together.Other precautions also apply to single-phase parallel connections.

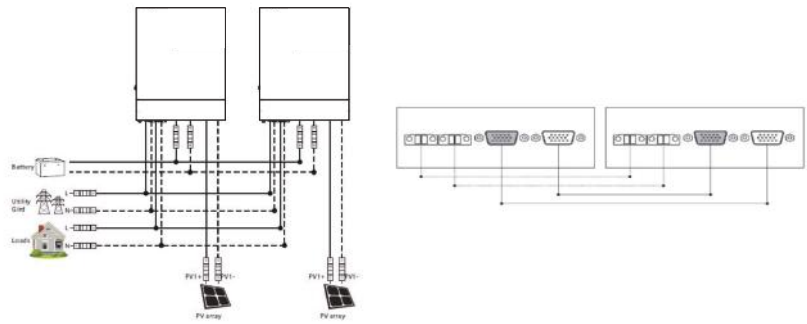
Before connecting the system and after the connection is completed, please carefully check the following system wiring diagram to ensure that all connections are correct and reliable before powering on. After the system is correctly wired, powered on and running normally, if you need to add new equipment, you must disconnect the battery input, PV input, AC input, and AC output. Only after ensuring that all all-in-one machines are completely de-energized can you rewire and integrate them into the system.

2.4.3 Single-phase Parallel Connection Instruction Diagram

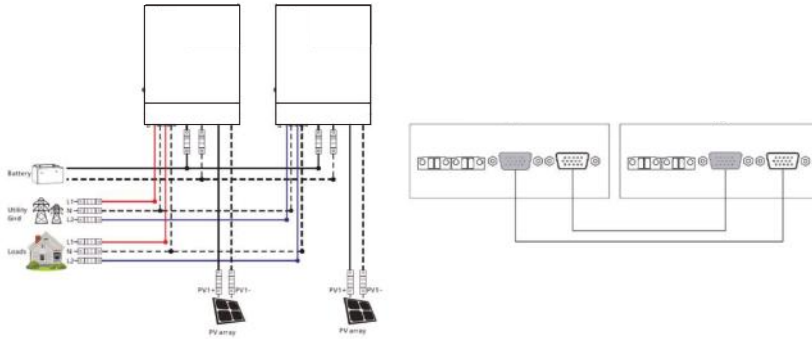
1.Both the parallel communication cable and the current-sharing detection cable of the all-in-one machine need to be connected and secured with screws. The diagram is as follows:



2.When connecting multiple machines in parallel, the connection diagram for parallel operation is as follows:
System connection for two all-in-one machines in parallel.



The two devices form a two-phase split-phase system:



Notes:

1.Before powering on and lighting up the screen, check the wiring according to the above diagram to ensure it is correct and to avoid system issues.

2.All connections must be securely fastened to prevent wire disconnections that could cause abnormal system operation.

3.When connecting the AC output wires to the load, follow the requirements of the electrical load equipment to avoid damage to the load devices.

4.Setting item [38] must be consistent across all units, or it should only be configured on the master unit. During parallel operation, the voltage set on the master unit will be enforced on all slave units. This setting can only be adjusted in standby mode.

5.When using the split-phase parallel function, setting item [31] must be configured according to the corresponding phase sequence.

For two-phase operation:
When setting item [38] is configured for an output voltage of 120Vac:

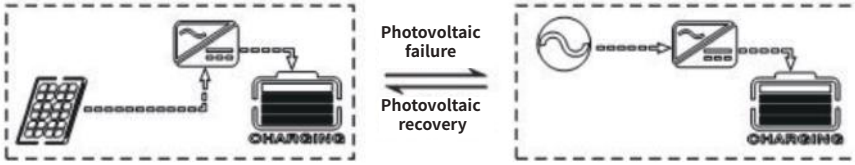
a. All machines connected to P1 should have their screens set to "2P0"; when all machines connected to P2 are set to "2P1," the phase difference between P1 and P2 is 120 degrees. The voltage between the live wires L1 of P1 and L2 of P2 is 120 × 1.732 = 208Vac, while the voltage between L1-N and L2-N is 120Vac.

b. All machines connected to P1 should have their screens set to "2P0"; when all machines connected to P2 are set to "2P2," the phase difference between P1 and P2 is 180 degrees. The voltage between the live wires L1 of P1 and L2 of P2 is 120 × 2 = 240Vac, while the voltage between L1-N and L2-N is 120Vac.

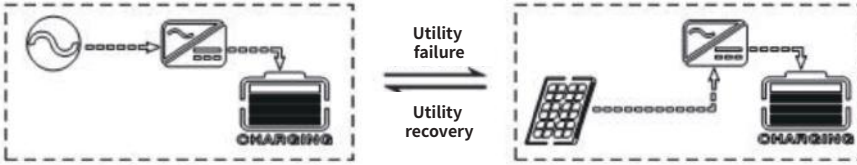
III. Operating Modes

3.1 Charging Mode

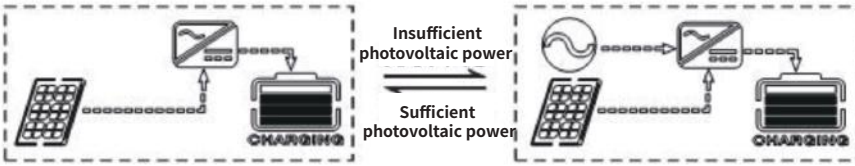
(1)**PV Priority:** The system prioritizes charging from PV (photovoltaic) sources. Grid charging is activated only when the PV source fails. This mode fully utilizes solar power during the day and switches to grid charging at night, maintaining battery charge levels. It is suitable for regions with relatively stable grid power and higher electricity costs.



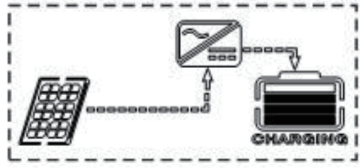
(2)**Grid Priority:** The system prioritizes charging the battery from the grid. PV charging is activated only when the grid power is unavailable.



(3)**Hybrid Charging:** The system uses a combination of PV and grid charging. It prioritizes MPPT charging from PV sources. When PV energy is insufficient, the grid supplements the charging. When PV energy is abundant, grid charging stops. This method provides the fastest charging and is suitable for regions with an unstable grid, ensuring a reliable backup power supply at all times.

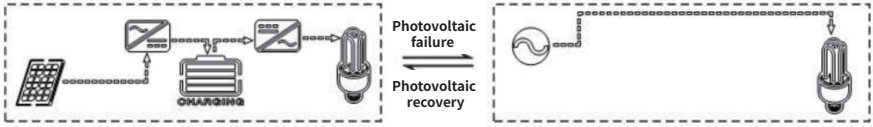


(4) **Only Solar:** The system charges exclusively from PV sources without using grid power. This is the most energy-efficient mode, with all battery power coming from solar energy. It is typically used in areas with good sunlight conditions.

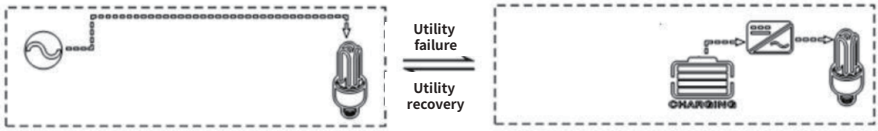


3.2 Power Supply Modes

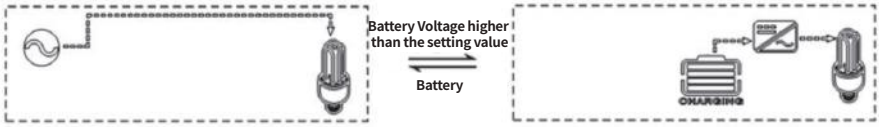
1.PV Priority Mode:
Switches to grid power supply and charging when PV power is unavailable. This mode maximizes the use of solar energy while maintaining battery charge levels. It is suitable for regions with a relatively stable grid. **The priority order of power supply is: PV → Grid → Battery.**



2.Grid Priority Mode:
Switches to battery inverter power supply only when there is no grid power available. When grid power is present, it switches to grid charging and power supply. The device acts as a backup UPS, suitable for regions with an unstable grid. Switching does not affect PV charging. **The priority order of power supply is: Grid → PV → Battery.**



3.Inverter Priority Mode:
Switches to grid power supply only when the battery voltage drops below the set point (Setting Item 04). When the grid charges the battery to a voltage above the set point (Setting Item 05), it switches to battery discharge mode, cycling between battery charging and discharging. This mode maximizes the use of DC power and is suitable for regions with a stable grid. Switching does not affect PV charging. **The priority order of power supply is: PV → Battery → Grid.**



IV. LCD Screen Operation Description

4.1 Operation and Display Panel

The operation and display panel is shown in the figure below, which includes one LCD screen, three indicator lights, and four operation buttons.



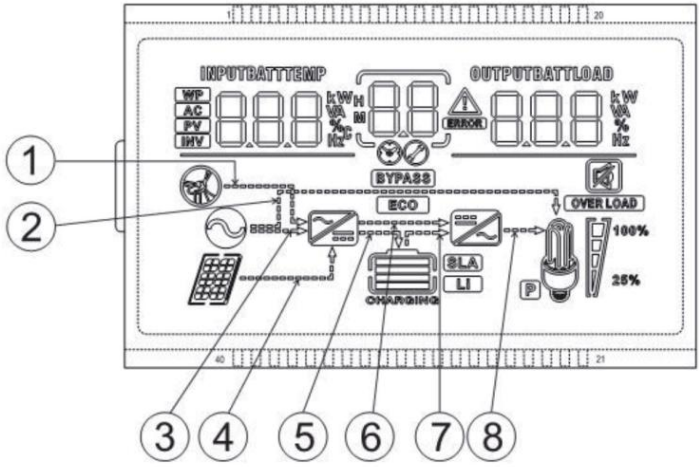
Operation Button Introduction

Function Button	Description
SET	Enter/exit menu pages
UP	Move to the previous option
DOWN	Move to the next option
ENT	Confirm/enter selection in the settings menu

Introduction of Indicator Light

Indicator Light	Color	Description
AC/INV	Yellow	Always on: Grid output
		Flashing: Inverter output
CHARGE	Green	Flashing: Fast charging
		Always on: Float charging
FAULT	Red	Flashing: Fault status

Introduction of LCD Screen



Icon	Function	Icon	Function
	Indicates AC input has been connected to AC input sources		Indicates inverter discharge circuit is active
	Indicates wider voltage AC input mode (APL mode)		Indicates the machine is in grid bypass mode
	Indicates PV input has been connected to solar panel		Indicates AC output is in overload status
	Indicates the machine has been connected to battery,  Indicates the remaining battery level 0%~24%I,  Indicates the remaining battery level 25%~49%,  Indicates the remaining battery level 50%~74%,  Indicates the remaining battery level 75%~100%		Indicates AC output load percentage, Indicates load percentage 0%~24%, Indicates load percentage 25%~49%, Indicates load percentage 50%~74%,  Indicates load percentage⩾75%
	Indicates the battery type is lithium		Indicates the buzzer is disabled
	Indicates the battery type is lead-acid		Indicates an alarm event
	Indicates the battery is charging		Indicates the machine is in fault status
	Indicates AC/PV charging circuit is active		Indicates the machine is in settings mode
	Indicates AC voltage occurs in AC output end		Screen Display 1. In non-setting mode, it shows alarms or fault codes. 2.In setting mode, it shows the current parameter code being set.

P	When in parallel, this icon indicates the machine is the master unit, valid only in parallel mode.
Left Display: Input Parameters	
AC	Indicates AC input
PV	Indicates PV input
INV	Indicates inverter circuit
WP	Indicate no icon displayed
	Indicates battery voltage,total battery charging current, grid charging power, AC input voltage, AC input frequency, PV input voltage, internal heat sink temperature, software version.
Right Display: Output Parameters	
	ndicates output voltage, output current, output active power,output apparent power, battery discharge current, software version. In setting mode, it shows the parameter value being set.
Arrow Display	

①	No arrow displayed	②	Indicates grid power to load
③	Indicates grid power to charging circuit	④	Indicates PV power to charging circuit
⑤	Indicates charging circuit to battery	⑥	No arrow displayed
⑦	Indicates battery to inverter circuit	⑧	Indicates inverter circuit to load

Real-Time Data Viewing Method

On the LCD main screen, press the "UP" or "DOWN" buttons to page through the machine's real-time data.

Page	Left Parameter	Middle Parameter	Page
1	INPUT BATT V (Battery Input Voltage)	Fault code	OUTPUT LOAD V (AC output voltage)
2	BMS BATT V (BMS battery voltage, BMS is effective when enable)		BMS BATT SOC (BMS remaining capacity percentage, BMS is effective when enable)
3	PV TEMP °C (PV Charging heat sink temperature)		PV OUTPUT KW (PV charging output power)
4	PV INPUT V (PV input voltage)		
5	INPUT BATT A (Input battery current)		OUTPUT BATT A (Battery output current)
6	INPUT BATT KW (Input battery power)		OUTPUT BATT KW (Battery output power)
7	AC INPUT Hz (AC input frequency)		AC OUTPUT LOAD Hz (AC output frequency)
8	AC INPUT V (AC input voltage)		AC OUTPUT LOAD A (AC output load current)
9	Inverter maintenance parameter display		OUTPUT LOAD KVA (Load Apparent Power)
10	INV TEMP °C (AC charging or battery discharging heat sink temperature)		INV OUTPUT LOAD KW (Load Active Power)
11	APP Software Version		Bootloader Software Version
12	Model Battery Voltage Level		Output Power Level
13	Model PV Voltage Level		PV Charging Current Level
14	RS485 Address		Phase Sequence Display

4.2 Parameter Setting Instructions

Button Operation Instructions:
To enter or exit the settings menu, press the "SET" button. Once in the settings menu, the parameter number [00] will flash. You can press the "UP" and "DOWN" buttons to select the desired parameter code. Press the "ENT" button to enter the parameter editing state, where the parameter value will flash. Adjust the parameter value with the "UP" and "DOWN" buttons. Finally, press the "ENT" button again to complete the editing and return to the parameter selection state.

Note: In parallel mode, before startup, all machines will synchronize the settings of the master unit (the unit with a "P" displayed on the screen). After startup, setting any parameter on one machine will synchronize it to the other machines in the system.

Parameter Code	Parameter Name	Setting Options	Description
00	Exit	[00] ESC	Exit settings menu
01	Operating First Mode	[01] SOL	PV First Mode (Switch to grid when PV input or battery is below setting [04])
		[01] UTI Default	Grid First Mode (Switch to battery or inverter when no grid is available)[01]
		[01] SBU	Inverter First Mode (Switch to grid when battery is under-voltage or is below setting [04]; switch to battery discharge when battery is overcharged or is above setting [05])
02	Output Frequency	[02] 50.0	Bypass adaptive,it will automatically adapt to the first utility power frequency when utility power is available; when it is not available,it can set output frequency via its menu. For 230V machines, the default is 50Hz; for 120V machines, the default is 60Hz.
		[02] 60.0	
03	AC Input Voltage Range	[03] APL	For 230V machines, the wide input range of the utility voltage is 90~280V; for 120V machines, the range is 90~140V.
		[03] UPS Default	For 230V machines, the narrow input range of the utility voltage is 170-280V; for 120V machines, the range is 90~140V.
04	Battery to Grid	[04]43.6V Default	When parameter [01] is set to SBU or SOL,battery voltage falls below this setting range,and output will switch from the inverter to utility power if the. The setting range is 40V~52V. It cannot exceed the setting in item [14] (It is invalid when BMS communication is normal).

05	Grid to Battery	[05] 57.6V Default	When parameter [01] is set to SBU or SOL, the inverter will switch from utility power to battery inverter if the battery voltage exceeds this setting (range: 48V~60V). It cannot be lower than the settings in items [04] and [35] (It is invalid when BMS communication is normal).
06	Charging Mode	[06] CSO	PV charging first. Utility charging starts only when solar is invalid.
		[06] CUB	Utility charging first. PV charging starts only when utility power is invalid.
		[06] SNU Default	When hybrid charging with PV and utility power, PV charging first; Utility charging supplements when solar energy is insufficient. Note: Only when utility bypass output with load can PV and utility charge the device at the same time; it can only start PV charging when the inverter operates.
		[06] OSO	PV charging only. Utility charging is disabled.
07	Max. Charging Current	[07] 80A Default	Setting Range 0~120A
08	Battery Type	[08] USE	User-defined, all battery parameters can be set.
		[08] SLd	Sealed lead-acid battery, constant voltage charging voltage is 57.6V, float charging voltage is 55.2V.
		[08] FLd	Flooded lead-acid battery, constant voltage charging voltage is 58.4V, float charging voltage is 55.2V.
		[08] GEL Default	GEL: Gel lead-acid battery, constant voltage charging voltage is 56.8V, float charging voltage is 55.2V.

08	[08] GEL Default	[08] LF14/LF15 /LF16	Lithium iron phosphate batteries LF16/LF15/LF14 are equivalent to batteries for 16 ,15 and 14 series. Default constant voltage charge voltages are 56.8V, 53.2V and 49.2V respectively, adjustable.
		[08] N13/N14	Lithium ternary batteries, adjustable. Default constant voltage charge voltages are 53.2V for N13 and 57.6V for N14.
09	Boost Charge Voltage	[09] 56.8V Default	The Range is 48V-58.4V, with an increase of 0.4V for each setting. Effective for user-defined and lithium batteries.
10	Boost Max. Charging Time	[10] 120 Default	Maximum Charging time for constant voltage charging to reach the set voltage in parameter [09]. Range is 5min - 900min, with an increase of 5min for each setting.
11	Float Voltage	[11] 55.2V Default	The range is 48V-58.4V, with an increase of 0.4V for each setting.
12	Over-discharged Voltage	[12] 42V Default	When the battery voltage falls below this point, the inverter output will be shut down after setting the delay parameter [13]. The range is 40V-48V, with an increase of 0.4V for each setting.
13	Over-discharged delay time	[13] 5S Default	Delay the setting time before shutting down the inverter output when the battery voltage falls below parameter [12]. The range is 5S-50S, with an increase of 5S for each setting.

14	Battery Under-voltage Alarm Threshold	[14] 44V Default	Alarm for battery under-voltage when the battery voltage falls below this point. AC Output will not shut down. The range is 40V-52V, with an increase of 0.4V for each setting.
15	Battery Discharge Limit Voltage	[15] 40V Default	Immediate shutdown of output when the battery voltage falls below this point. The range is 40V-52V, with an increase of 0.4V for each setting. Effective for user-defined and lithium batteries.
16	Equalization Charging	[16] DIS	No Equalization Charging
		[16] ENA Default	Enable equalization charging. Effective for flooded and sealed lead-acid batteries as well as user-defined settings.
17	Equalization Charging Voltage	[17] 58.4V Default	The range is 48V-58.4V, with an increase of 0.4V for each setting. Effective for flooded and sealed lead-acid batteries as well as user-defined settings.
18	Equalization Charging Time	[18] 120 Default	The range is 5min-900min, with an increase of 5min for each setting. Effective for flooded and sealed lead-acid batteries.
19	Equalization Charging Delay	[19] 240 Default	The range is 5min- 900min, with an increase of 5min for each setting. Effective for flooded and sealed lead-acid batteries as well as user-defined settings.

20	Equalization Charging Delay	[20] 30 Default	Lithium iron phosphate batteries LF16/LF15/LF14 are equivalent to batteries for 16 ,15 and 14 series. Default constant voltage charge voltages are 56.8V, 53.2V and 49.2V respectively, adjustable.
21	Equalization Charging Enable	[21] DIS	Stop equalization charging immediately.
		[21] ENA Default	Start equalization charging immediately.
22	Energy-saving Mode	[22] DIS Default	No energy-saving mode
		[22] ENA	Enable energy-saving mode. If the load is empty or less than 50W, the inverter output will be shut down after a delay. When the load exceeds 50W, the inverter will restart automatically.
23	Overload Auto Restart	[23] DIS	If an overload occurs, the output will be shut down and the machine will not restart.
		[23] ENA Default	If an overload occurs,the output will be shut down and the machine will restart the output after a 3-minute delay. After 5 cumulative occurrences, the machine will no longer restart.
24	Over-temperature Auto Restart	[24] DIS	No over-temperature auto-restart. If an over-temperature occurs, the output will be shut down and the machine will not restart.
		[24] ENA Default	Enable over-temperature auto-restart. If the output is shut down caused by an over-temperature,it will restart when the temperature drops.
25	Beeper Alarm	[25] DIS	No Alarm Activation.
		[25] ENA Default	Enable alarm.
26	Mode Change Reminder	[26] DIS	Disable alarm prompt when the main input source status changes.
		[26] ENA Default	Enable alarm prompt when the main input source status changes.

27	Inverter Overload to Bypass	[27] DIS	Disable automatic switch to utility power during inverter overload.
		[27] ENA Default	Enable automatic switch to utility power during inverter overload.
28	Max.AC Charging Current	[28] Default	For U Series,the range of Max.AC Charging Current is 0-40A,and the default is 40A.
			For S Series,the range of Max.AC Charging Current is 0-60A,and the default is 60A.
29	Output Phase Function	[29] DIS Default	Disable this function.
		[29] ENA	Enable output with a power-frequency transformer.
30	Unit ID Setting	[30] 1 Default	1-6 Required for parallel mode. The range is 1-6.
31	AC Output Mode (only settable in standby mode)	[31] SIG	Single-unit setting (applicable for U and S series models).
		[31] PAL Default	Single-phase parallel setting (applicable for U and S series models).
		[31] 2P0/2P1/2P2	Two-phase parallel setting (only applicable for U series models).
		1) When all machines connected to P2 are set to "2P1", the voltage phase between P1 and P2 is 120 degrees apart. The voltage between the hot wire L1 of P1 and the hot wire L2 of P2 is 120 * 1.732 = 208Vac; the voltage between L1-N and L2-N is 120Vac. 2) When all machines connected to P2 are set to "2P2", the voltage phase between P1 and P2 is 180 degrees apart. The voltage between the hot wire L1 of P1 and the hot wire L2 of P2 is 120 * 2 = 240Vac; the voltage between L1-N and L2-N is 120Vac.	

<table>
<tr><td rowspan="2">31</td><td rowspan="2">AC Output Mode (only settable in standby mode)</td><td>[31] 3P1/3P2/3P3</td><td>Three-phase parallel setting (applicable for U and S series models).</td></tr>
<tr><td colspan="2">All machines connected to P1 need to be set to "3P1";
All machines connected to P2 need to be set to "3P2";
All machines connected to P3 need to be set to "3P3".

1) Assuming that the output voltage set in item [38] is 120Vac (for U series machines): In this case, the voltage phase between (P1-P2, P1-P3, P2-P3) differs by 120 degrees. The voltage between the hot wire L1 of P1 and the hot wire L2 of P2 is 120 * 1.732 = 208Vac. Similarly, the wire voltages between L1-L3 and L2-L3 are 208Vac; the voltages between L1-N, L2-N, and L3-N are 120Vac.

2) Assuming that the output voltage set in item [38] is 230Vac (for S series machines): In this case, the voltage phase between (P1-P2, P1-P3, P2-P3) differs by 120 degrees. The voltage between the hot wire L1 of P1 and the hot wire L2 of P2 is 230 * 1.732 = 398Vac. Similarly, the wire voltages between L1-L3 and L2-L3 are 398Vac; the voltages between L1-N, L2-N, and L3-N are 230Vac.</td></tr>
<tr><td rowspan="2">32</td><td rowspan="2">RS485-2 Communication Function</td><td>[32] SLA Default</td><td>RS485-2 for our company's PC and remote monitoring protocol.</td></tr>
<tr><td>[32] BMS</td><td>RS485-2 for BMS communication.</td></tr>
<tr><td>33</td><td>BMS Communication Protocol</td><td colspan="2">When [32] is set to BMS, select the corresponding lithium battery brand for communication.</td></tr>
</table>

33	BMS Communi-cation Protocol	[33] WOW Default	PAC = Peicheng, RDA = Ruida, AOG = Aoguan, OLT = Oulite, CEF = Chang-feng, XYD = Xinwangda, DAQ = Dakin, WOW = Shorui, PYL = Paine, SHO = MaiTian, XXL = Xinxil, POL = Hehejin, VOL = Weilan
35	Low-volt-age Disconnect Battery Recovery Voltage (Fault 04)	[35] 52V Default	When the inverter output is discon-nected due to low battery voltage, the battery voltage must recover to a value higher than this setting to resume the battery inverter AC output.
36	Max.PV Charging Curren	[36] 80A Default	For Max.PV charging current setting,the range is 0-80A.
37	Battery Recharge Recovery Voltage	[37] 52V Default	The inverter will stop charging when the battery is fully charged; It will resume charging when the battery voltage falls below this value.
38	AC Output Voltage Level Setting	[38]120Vac	U Series Models: The AC output voltage can be set to 100/105/110/120Vac, with a default setting of 120Vac. AC output power = Rated power *(Setting voltage /120).
		[38]230Vac	S Series Models: The AC output voltage can be set to 200/208/220/230/240Vac, with a default setting of 230Vac. AC output power = Rated power *(Setting voltage /230).

57	Stop Charging Current	[57]3A Default	Charging stops when the charging current is below this value.
58	Discharge Alarm SOC Setting	[58] 15% Default	When the capacity is less than this setting value, an SOC alarm will be triggered (effective when BMS communication is normal).
59	Discharge Cut-off SOC Setting	[59] 5% Default	Stop discharging when the battery capacity is below this value (effective when BMS communication is normal).
60	Charge Cut-off SOC Setting	[60]100 % Default	Stop charging when the battery capacity is above this value (effective when BMS communication is normal).
61	Switch to Utility SOC Setting	[61] 10 % Default	Switch to utility power when the battery capacity is below this value (effective when BMS communication is normal).
62	Switch to Inverter Output SOC Setting	[62] 100 % Default	Switch to inverter output when the battery capacity is above this value (effective when BMS communication is normal).

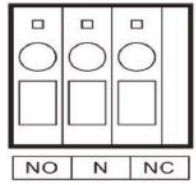
4.3 Battery Parameter

Battery Type / Parameter	LiFePO4 (LF16)	LiFePO4 (LF15)	LiFePO4 (LF14)
Over-voltage Disconnect Voltage	60V	60V	60V
Equalization Charging Voltage	56.8V(Adjustable)	53.2V(Adjustable)	49.2V(Adjustable)
Recharge Voltage after Full Charge (Setting Item 37)	53.6V(Adjustable)	50.4V(Adjustable)	47.6V(Adjustable)
Boost Charging Voltage	56.8V(Adjustable)	53.2V(Adjustable)	49.2V(Adjustable)
Float Charging Voltage	56.8V (Adjustable)	53.2V(Adjustable)	49.2V(Adjustable)
Under-voltage Alarm Voltage (Fault 01)	49.6V (Adjustable)	46.4V (Adjustable)	43.2V (Adjustable)
Under-voltage Alarm Recovery Voltage (Fault 01)	56.8V (Adjustable)	53.2V (Adjustable)	49.2V (Adjustable)
Under-voltage Alarm Recovery Voltage (Fault 01)	Under-voltage Alarm Voltage + 0.8V		
Low Voltage Disconnect Voltage (Fault 04)	48.8V (Adjustable)45.6V (Adjustable)		
Low Voltage Disconnect Recovery Voltage (Fault 04) (Setting Item 35)	52.8V (Adjustable)	49.6V (Adjustable)	46V (Adjustable)
Discharge Limit Voltage	46.4V	43.6V	40.8V
Over-discharge Delay Time	30S (Adjustable)	30S (Adjustable)	30S (Adjustable)
Boost Charge Duration	120min (Adjustable)	120min (Adjustable)	120min (Adjustable)

V. Other Functions

5.1 Dry Contact Function

*Operating Principle:
This dry contact can control the diesel generator switch to charge the battery.
1. Under normal conditions, the contact is closed at NC-N and open at NO-N.
2. When the battery voltage reaches the low-voltage disconnect point, the relay coil is energized, causing the contact to close at NO-N and open at NC-N. At this point, the NO-N contact can drive a resistive load of 125VAC/1A, 230VAC/1A, or 30VDC/1A.

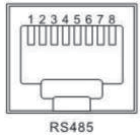


5.2 RS485 Communication Function

This port is an RS485 communication port. There are two RS485 ports: RS485-1 and RS485-2.
The RS485 ports have two functions:
RS485-1/RS485-2 can be connected to an optional RS485-to-WiFi/G-PRS communication module developed by our company.
With this module, the inverter can be connected via a mobile app to monitor the operating parameters and status of the inverter.

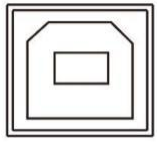
Pin definitions:

RS485-1: Pin 1 (5V Power), Pin 2 (GND), Pin 7 (RS485-A), Pin 8 (RS485-B).
RS485-2: Pin 1 (5V Power), Pin 2 (GND), Pin 7 (RS485-A1), Pin 8 (RS485-B1).



5.3 USB Communication Function

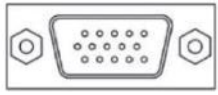
This port is a USB communication port. It can be used to communicate with the optional upper-computer software (requires application) from our company via USB. To use this port, the corresponding "USB to Serial Chip CH340T Driver" must be installed on the computer.



5.4 Parallel Communication Function (Only for Parallel Use)

A.This port is a parallel communication port that allows communication between parallel modules.
B.Each unit has two DB15 ports: one male and one female.
C.When connecting, the male port of one unit should be connected to the female port of another unit, or vice versa.
D.Connecting the male port to the female port of the same unit is not allowed.

(Male Port)



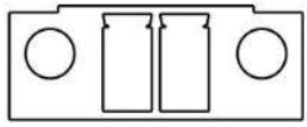
(Female Port)



5.5 Current Sharing Detection Function (Only for Parallel Use)

(a) This port is a current-sharing detection port, which can be used to detect current sharing among parallel modules (applicable only for parallel operation).

(b) Each machine has two current-sharing detection ports. These ports are internally connected in parallel. When connecting to other devices for parallel operation, you can choose either one based on convenience, with no specific mandatory wiring requirements.



VI. Protection

6.1 Protection Functions

No.	Protection Function	Description
1	PV Current/Power Limiting Protection	When the PV array charging current exceeds the rated PV current, it will charge at the rated current.
2	PV Nighttime Reverse Charge Protection	Prevents the battery from discharging through the PV module at night when the battery voltage is higher than the PV module voltage.
3	AC Input Over-voltage Protection	Stops AC charging and switches to inverter output when the AC voltage exceeds 280V (230V model) or 140V (120V model).
4	AC Input Under-voltage Protection	Stops AC charging and switches to inverter output when the AC voltage is below 170V (230V model/UPS mode) or 90V (120V model/APL mode).
5	Battery Over-voltage Protection	When the battery voltage reaches the over-voltage disconnect point, PV and AC charging will be automatically stopped to prevent damage from over-charging.
6	Battery Under-voltage Protection	Stops battery discharge to prevent over-discharge when the battery voltage reaches the low-voltage disconnect point.
7	Load Output Short-Circuit Protection	Immediately shuts off the output AC voltage when a short circuit occurs at the load output for more than 200ms.
8	Heat Sink Over-tempera-ture Protection	The all-in-one machine will stop charging and discharging when its internal temperature is too high; It will resume operation when the temperature returns to normal.
9	Overload Protection	After overload protection, the output will resume after 3 minutes. If overloading occurs continuously for 5 times, the output will be shut down until the machine is powered on again. For specific overload levels and duration, refer to the technical specifications table at the end of the manual.
10	PV Reverse Protection	The unit will not be damaged if the PV polarity is reversed.
11	AC Back-flow Protection	Prevents AC back-flow from the inverter to the bypass AC input.
12	Bypass Over-current Protection	Built-in AC input over-current protection circuit breaker.

13	Battery Input Over-current Protection	When the PV array charging current exceeds the rated PV current, it will charge at the rated current.
14	Battery Input Protection	The internal battery input fuse will blow if the battery is reversed or if there is an internal short circuit in the inverter, preventing battery damage or fire.
15	Charging Short-Circuit Protection	The inverter will protect and stop output current if the external battery terminal is short-circuited during PV or AC charging.
16	CAN Communication Loss Protection	It will alarm if CAN communication is lost during parallel operation.
17	Parallel Wiring Fault Protection	The device will enter into protection mode if the parallel connection cable is lost during parallel operation.
18	Parallel Battery Voltage Difference Fault Protection	When used in parallel, the device will enter protection mode if the battery connections are inconsistent and the detected battery voltage difference compared to the main unit is significant.
19	Parallel AC Voltage Difference Fault Protection	The device will enter into protection mode if the AC input voltage difference is inconsistent during parallel operation.
20	Parallel Current Sharing Fault Protection	When used in parallel, if the current-sharing cable is connected improperly or if a component failure causes a significant difference in the load carried by each machine, the equipment will enter protection mode during operation.
21	Synchronization Signal Fault Protection	For the Parallel buses, if it fails when guiding signal or the response of each unit is inconsistent, the equipment will enter protection mode.

6.2 Fault Code

Fault Code	Fault Name	Affects Output	Description
【01】	BatVoltLow	No	Low Battery voltage alarm.
【02】	BatOverCurr-Sw	No	Battery discharge, average current overload software protection.
【03】	BatOpen	No	Alarm for Battery not connected

【04】	BatOpen	No	When the battery voltage is low, it will trigger discharge alarm.
【05】	BatOverCurrHw	Yes	Battery over-current hardware protection.
【06】	BatOverVolt	Yes	Charging over-voltage protection
【07】	BusOver-VoltHw	Yes	Internal battery voltage boosts ; circuit over-voltage hardware protection.
【08】	BusOver-VoltSw	Yes	Internal battery voltage boosts; circuit over-voltage software protection.
【09】	PvBuckOCSw	No	Solar input voltage over-voltage protection.
【10】	PvVoltHigh	No	Solar charging over-current software protection.
【11】	BatOpen	No	Solar charging over-current hardware protection.
【12】	bLineLoss	No	Utility power loss.
【13】	OverloadBypass	Yes	Bypass AC output overload protection.
【14】	OverloadInverter	Yes	Inverter AC output overload protection.
【15】	AcOverCur-rHw	Yes	Inverter AC output over-current hardware protection.
【16】	-	-	-
【17】	InvShort	Yes	Inverter AC output short-circuit protection.
【18】	-	-	-
【19】	OverTemper-Mppt	No	Solar charging heat sink over-temperature protection.
【20】	OverTemperInv	Yes	Inverter AC output load or AC charging heat sink over-temperature protection.
【21】	FanFail	Yes	Fan blockage or failure.
【22】	EEPROM	Yes	Memory failure.
【23】	ModelNumErr	Yes	Unit model setting error.
【24】	-	-	-
【25】	-	-	-
【26】	RlyShort	Yes	Inverter AC output back-flow to bypass AC input.
【27】	-	-	-
【28】	-	-	-
【29】	BusVoltLow	Yes	Internal battery boost circuit failure.
【30】	BatCapacity-Low1	No	This function becomes effective after enabling BMS communication. For some models with setting items 58-62 (such as ASF, HES, and HYP series), this fault will be triggered when the battery level falls below the value set in item 58. The fault will be automatically cleared when the battery level rises above the value set in item 58 by more than 5%. For models that do not have setting items 58-62, the fault will be triggered when the battery level reaches 10%.

【31】	BatCapacity-Low2	No	Some models with setting items 58-62 (such as the ASF, HES, and HYP series) will not trigger this fault. Other models without setting items 58-62 will trigger the fault when the battery level falls below 5%.
【32】	BatCapacity-LowStop	Yes	This function becomes effective after enabling BMS communication. For some models with setting items 58-62 (such as the ASF, HES, and HYP series), this fault will be triggered when the battery level falls below the value set in item 59. The fault will be automatically cleared when the battery level rises above the value set in item 59 by more than 10%. For models that do not have setting items 58-62, the fault will be triggered when the battery level reaches 0%.
【34】	CanCommFault	Yes	Parallel CAN communication fault.
【35】	ParaAddrErr	Yes	Parallel ID setting error.
【36】	-	-	-
【37】	ParaShareCurrErr	Yes	Parallel current sharing failure.
【38】	ParaBattVolt-Diff	Yes	Significant battery voltage difference in parallel mode.
【39】	ParaAcSrcDiff	Yes	Inconsistent AC input sources in parallel mode.
【40】	ParaHwSyn-Err	Yes	Hardware synchronization signal failure in parallel mode.
【41】	InvDcVoltErr	Yes	Abnormal inverter voltage and DC current
【42】	SysFwVer-sionDiff	Yes	Inconsistent firmware versions in parallel mode.
【43】	ParaLineContErr	Yes	Parallel wiring failure.
【44】	Serial number error	Yes	Factory serial number not set.
【45】	The parallel machine setting is incorrect	Yes	Incorrect setting of parallel mode【31】.
【58】	BMS communi-cation error	No	Check if communication cables are correctly connected and if item [33] is set to the corresponding lithium battery communica-tion protocol.
【59】	BMS alarm	No	Identify the type of lithium battery BMS fault and clear the fault.
【60】	BMS battery low temperature alarm	No	Low-temperature alarm from the lithium battery BMS.

【61】	BMS battery over-temperature alarm	No	Over-temperature alarm from the lithium battery BMS.
【62】	BMS battery over-current alarm	No	Over-current alarm from the lithium battery BMS.
【63】	BMS battery over-current alarm	No	Under-voltage alarm from the lithium battery BMS.
【64】	BMS battery over-voltage alarm	No	Over-voltage alarm from the lithium battery BMS.

6.3 Partial Troubleshooting Measures

Fault Code	Fault	Solution
Display	No display on the screen	Check if the battery or PV circuit breaker is closed; ensure the switch is in the "ON" position; press any button on the screen to exit sleep mode.
【06】	Over-voltage protection during charging	Check if the battery voltage exceeds the protection threshold. If so, discharge the battery until the voltage is below the over-voltage recovery point.
【01】【04】	Under-voltage protection	Wait for the battery to recharge above the low-voltage disconnect recovery voltage.
【21】	Fan failure	Check if the fan is not rotating or if it is blocked by debris.
【19】【20】	Heat sink over-temperature protection	Allow the unit to cool down below the over-temperature recovery threshold before resuming normal charging and discharging.
【13】【14】	Bypass overload protection, Inverter overload protection	1. Reduce the load. 2. Restart the all-in-one machine to restore output.
【17】	Inverter short-circuit protection	1. Carefully inspect the load connections and clear any short-circuit faults. 2. Repower the unit to restore output.
【09】	PV over-voltage	Use a multi-meter to check if the PV input voltage exceeds the maximum allowable input voltage.
【03】	Alarm for battery not connected	Check if the battery is disconnected or if the battery-side circuit breaker is not closed.

【40】【43】	Parallel wiring fault	Inspect the parallel connection cables for looseness or incorrect connections.
【35】	Parallel ID setting error	Ensure there are no duplicate ID settings in parallel mode.
【37】	Parallel current sharing failure	Check the parallel current sharing cables for looseness or incorrect connections.
【39】	Inconsistent AC input sources in parallel mode	Verify that all parallel units share the same AC input source.
【42】	Inconsistent firmware versions	Ensure all units have the same software version.

VII. System Maintenance

To maintain optimal long-term performance, it is recommended to perform the following inspections twice a year:

1.Ensure that the airflow around the all-in-one machine is not obstructed and clean any dirt or debris from the heat sink.

2.Inspect whether exposed wires are damaged due to sunlight, friction with other objects, decay, insects, or rodents. Repair or replace wires as necessary.

3.Verify that indicators and displays match the unit's operation. Take corrective measures if any faults or incorrect displays are observed.

4.Check all terminal connections for corrosion, insulation damage, signs of high temperature, or burning/discoloration. Tighten terminal screws as needed.

5.Check for dirt, insect nests, and corrosion, and clean as required.

6.If the surge protector has failed, replace it promptly to prevent lightning damage to the inverter or other user equipment.

Warning: Electrical Shock Hazard!

Ensure that all power sources to the all-in-one machine are disconnected and that all capacitors are fully discharged before performing any inspections or operations.

Liability Disclaimer:

The company will not be liable for any damage caused by the following:

1.Improper use or installation in unsuitable locations.
2.Exceeding the maximum allowable open-circuit voltage of the PV array.
3.Operating in temperatures beyond the specified range.
4.Unauthorized disassembly or repair of the inverter.
5.Damage caused by force majeure, such as during transportation or handling of the inverter.

VIII.Technical Parameter

Model	SL3500
Parallel Mode	
Max. Parallel Units	1-6 units
Utility Mode	
Rated Input Voltage	110/120Vac
Input Voltage Range	(90Vac-140Vac)±2%
Frequency	50Hz/ 60Hz (Automatically detected)
Frequency Range	47±0.3Hz ~ 55±0.3Hz (50Hz); 57±0.3Hz ~ 65±0.3Hz (60Hz);
Overload/Short-Circuit Protection	47±0.3Hz ~ 55±0.3Hz (50Hz); 57±0.3Hz ~ 65±0.3Hz (60Hz);
Max. Efficiency	92%
Conversion Time (Bypass and inverter)	10ms (Typical Value)
AC Back-flow Protection	Yes
Max. Bypass Overload Current	40A
Inverter Mode	
Output Voltage Waveform	Pure sine wave
Rated Output Power (VA)	3500

Rated Output Power (W)	3500
Power Factor	1
Rated Output Voltage (Vac)	120Vac
Output Voltage Error	±5%
Output Frequency Range (Hz)	50Hz ± 0.3Hz/60Hz ± 0.3Hz
Max. Efficiency	91%
Max. Efficiency	91%
Overload Protection	**U Series Models:** (102% < Load < 110%) ±10%: Error and shut down output after 5 minutes; (110% < Load < 125%) ±10%: Error and shut down output after 10 seconds; Load > 125% ±10%: Error and shut down output after 5 seconds
Peak Power	6000VA
Motor Load Capability	2HP
Output Short-Circuit Protection	Circuit breaker
Bypass Circuit Breaker Specification	40A
Rated Battery Input Voltage	48V (Min. start-up voltage 44V)
Battery Voltage Range	40.0Vdc to 60Vdc ± 0.6Vdc (Under-voltage alarm / Shut-down voltage / Over-voltage alarm / Over-voltage recovery…adjustable via the LCD screen)
Energy-saving Mode	Load ⩽50W
Utility Charging	
Battery Type	Utility Charging

Max. Charging Current (adjustable)	40A
Charging Current Error	± 3Adc
Charging Current Error	± 3Adc
Charging Voltage Range	40 –60Vdc
Short-Circuit Protection	Circuit breaker and fuse
Circuit Breaker Specification	40A
Overcharge Protection	Alarm and shut down charging after 1 min
Solar Charging	
Max. PV Open-Circuit Voltage	145Vdc
PV Operating Voltage Range	60-145Vdc
MPPT Voltage Range	60-115Vdc
Battery Voltage Range	40-60Vdc
Max. PV Input Power	4400W
Max. PV Input Current	50A
Max. PV Charging Power	4200W
Solar Charging Current Range (adjustable)	0-80A
Max.MPPT Tracking Efficiency	99.9%
Charging Short-Circuit Protection	Fuse
Wiring Protection	Reverse polarity protection
Max. Hybrid Charging Current (PV+AC)	
Max. hybrid charging current (adjustable)	0-120A

Certification Standards	
Operating Temperature Range	-10°C to 55°C
Storage Temperature Range	-25°C ~ 60°C
Humidity Range	5% to 95% (protected by conformal coating)
Noise Level	⩽60dB
Cooling	Forced air cooling with adjustable fan speed
Forced cooling, speed adjustable	USB/RS485/WiFi/GPRS/Dry Contact Control
Dimensions (L×W×D)	485x398x145mm/19.09x15.66x5.7inch
Weight (kg)	13.1kg/28.88lbs

IX.Technical Support

1) Customer service email:

E-mail: customer. service@eco-worthy.com

2) Customer service telephone numbers:

Tel(DE): +49 693-1090-113

Tel(US): 1-866-939-8222

Tel(UK): +44 20 7570 0328

Note:
Customer Service Hours:

US: Mon-Fri 8：3AM - 6:00 PM(CST)

UK: Mon-Fri 9 AM - 5 PM(GMT)

DE: Mon-Fri 9 AM - 5 PM(CET)

3) Company address: USA/Germany

Address(US): 10920 W Sam Houston Pkwy N,Suite 700, Houston, TX 77064

Address(DE): ECO-Worthy Europe GmbH Otto-Hahn-Str. 20 61381 Friedrichsdorf - Köppern Germany

4) Official website address:

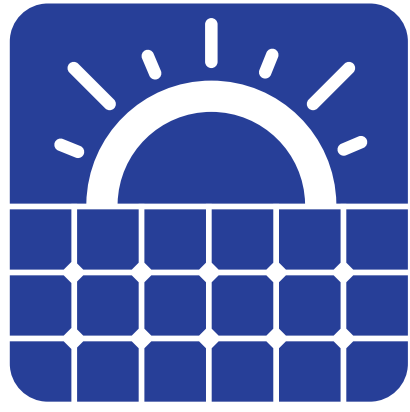
Web: https://www.eco-worthy.com/

5) Official social media:

Facebook: https://www.facebook.com/ecoworthy.store/

Youtube: @ecoworthy

Tiktok: https://www.tiktok.com/@eco_worthy



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