User Manual
PT5515S

History

Date	Version	Description	Editor
2025/05/27	V1.0	First Version	Zhou Shien

目录

I. Safety Information

1.1. Scope of Application

• This specification document contains important information, guidelines, operating instructions, and maintenance procedures for the product and applies to the following model: PT5515S.

• Users must comply with the contents of this specification during installation, use, and maintenance.

1.2. Safety Instructions

• Batteries pose potential hazards and appropriate protective measures must be taken during operation and maintenance!

• Incorrectly operating the test experiments described in this specification may result in serious personal injury and property damage!

• Correct tools and protective equipment must be used when operating batteries.

• Battery maintenance must be performed by personnel with battery expertise and safety training.

• Failure to comply with the above warnings may result in various disasters.

II. Product Introduction

1.1. Product Description

is an integrated energy storage system that combines photovoltaic energy storage, mains charging and energy storage. It integrates an inverter and battery storage into a compact structure with wheels on the bottom for easy movement.

1.2. Product Model Naming Rules

ESS - L - 14.3 F 01 - P5.5M6

① ② ③ ④ ⑤ ⑥

Rules description

No.	Definition	Remark
1	Product category	**ESS** refers to energy storage system
2	Product voltage rating	**H**:high voltage; **L**: low voltage
3	Product power	**16** refers to 16kWh
4	Product temperature control method	**F**:Air cooling; **L**: Liquid cooling
5	Product series	**01**: Indicates the 01 series; can be distinguished by size
6	Product function options	**P**:PCS; **M**: MPPT; **A**: ATS; **S**: STS; Digital representation of the power parameters of the function

1.3. System Connection Diagram

The figure below shows the system application scenarios for this product. A complete system consists of the following components:

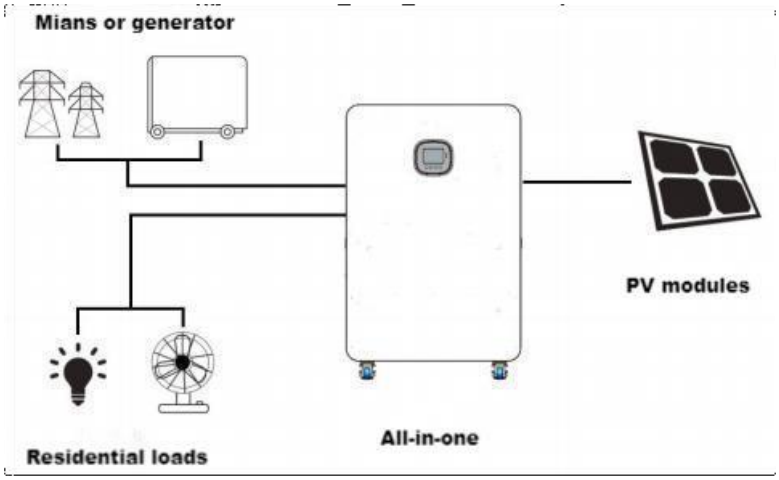
• PV modules: Convert sunlight into direct current (DC) electricity, which can be used to charge the product or directly converted into alternating current (AC) electricity via the product to power loads.

• Mains power or generator: Connected to the AC input, it can supply power to loads while charging the battery. When the battery and photovoltaic modules supply power to the load, the system can generally operate without mains power or a generator.

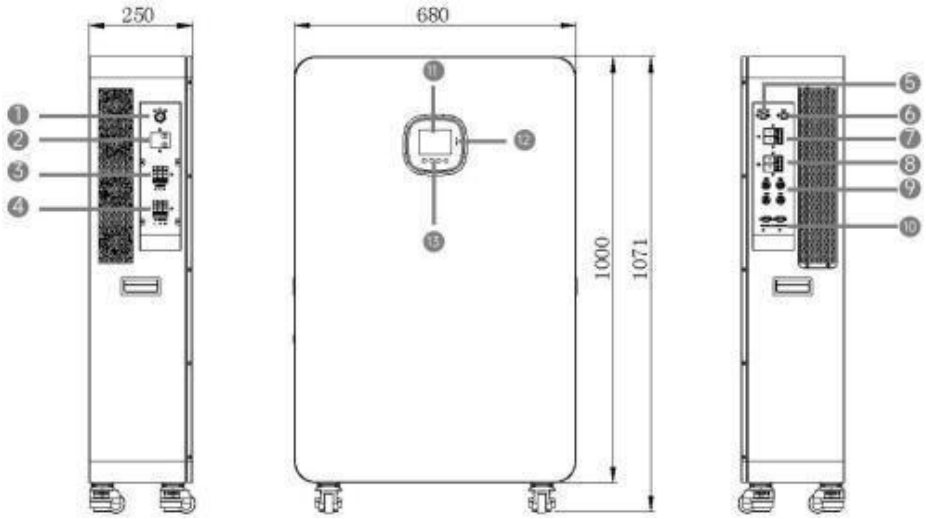
• Household loads: Can be connected to various household and office loads, including refrigerators, lighting, televisions, fans, air conditioners, and other AC loads.

• All-in-one: The energy conversion device for the entire system.

The actual application scenario determines the specific system wiring configuration



1.4. **Product Overview**



1	System switch	6	WIFI module interface (optional)	11	LCD screen
2	AC input switch	7	PV1 PV input switch	12	LED indicator light
3	AC input interface（L+N+PE）	8	PV2 PV input switch	13	Button
4	AC output interface（L+N+PE）	9	PV input interface PV1/PV2		
5	Communication/debugging port	10	Parallel communication port (only applicable to parallel modules)		

1.5. **Product Parameter**

Battery Parameter	
Battery Type	LFP,3.2V/280AH
In parallel and Series	1P16S
Energy	14.336Kwh
Voltage	51.2V
Voltage Range	43.2V~28.4(2.7v~3.65v)
C-rate	≤0.5C
Discharge Depth	95%
AC grid power input	
Rated input voltage	220/230Vac
Input voltage range	(170Vac~280Vac)+2% (90Vac-280Vac)+2%
Frequency	50Hz/ 60Hz(Automatic detection)
Frequency range	50/60Hz
Maximum bypass overload current	40A
Switching time	10ms(Typical value)
Inverter Output	
Output Voltage Waveform	Pure sine wave
Rated Output Power (W)	5500
Power Factor	1
Rated Output Voltage (Vac)	230Vac
Output Voltage Error	+5%
Output Frequency Range (Hz)	50Hz + 0.3Hz/60Hz±0.3Hz
Maximum Efficiency	>92%
Overload Protection	After triggering overload protection, the product will resume output after 3 minutes. Five consecutive overloads will shut down the output until the inverter is restarted. Overload Protection (102% < load < 110%) + 10%: Error, output shut down after 5 minutes. (110% < load < 125%) + 10%: Error reported and output shut down after 10 seconds. Load > 125% + 10%: Error reported, output shut off after 5 seconds.
Peak power	11000VA
Inverter maximum efficiency	92%
Maximum output current	24A
PV Input	
Maximum PV open-circuit voltage	500Vdc
PV operating voltage range	120~500Vdc
Maximum PV input power	6000W

Maximum PV input current	22A
Charging current range (adjustable)	0-100A
Maximum hybrid charging current (PV+AC)	
Maximum hybrid charging current (configurable)）	0-100A
General	
Size	970*860*250mm
Weight	138kg
IP Rating	IP20 Indoors
Ambient Temperature	-10~55℃,>45℃ d e r a t i n g
Noise	<60dB
Cooling Method	Bulit-in fan
Communication	
Interface	RS485/CAN
External network port module (optional)	Wi-Fi / GPRS

III. **Installation**

1.1. **Select Installation Location and Operation**

For indoor use only (protection rating IP20). Before selecting an installation location, users should consider the following factors::

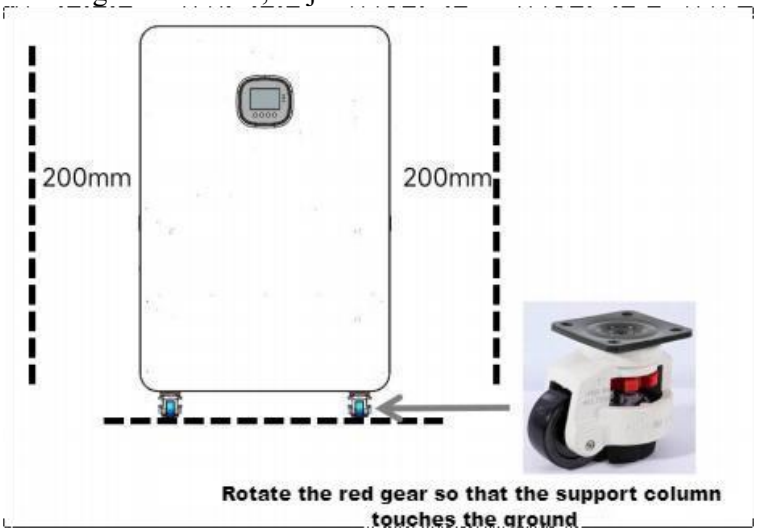
• Select a flat surface for product installation

• Select a dry, well-ventilated environment for product installation

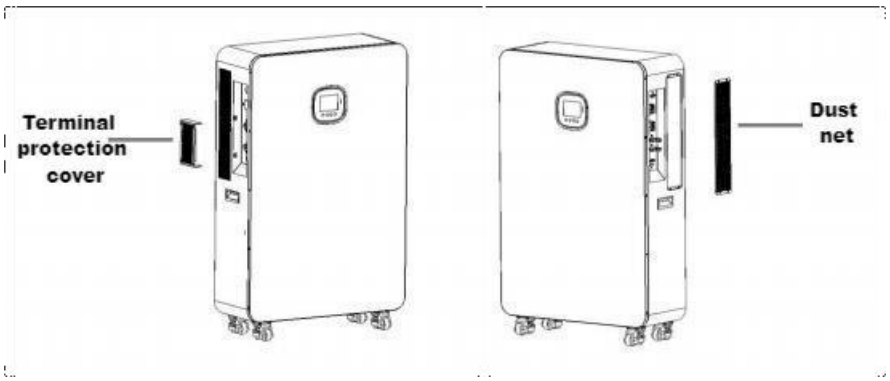
• Ensure sufficient heat dissipation space for the inverter

• The ambient temperature should be between -10°C and 55°C (14°F and 131°F) to ensure optimal performance

• After selecting the location, adjust the bottom casters.



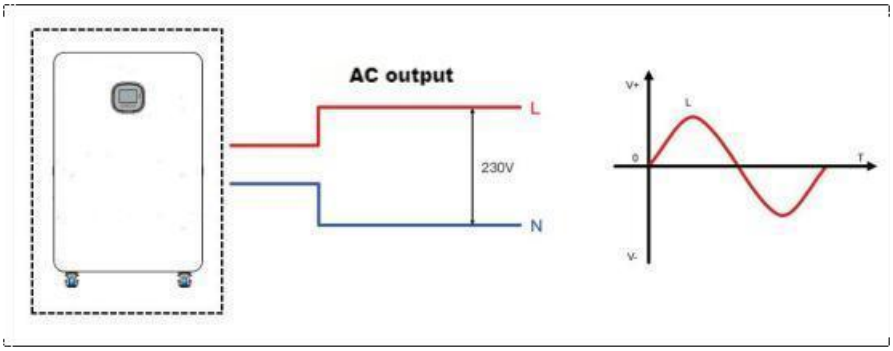
1.2. **Disassembly and Installation of Terminal Protection Cover and Dust Screen**



• In areas with poor air quality, the dust filter is easily clogged by airborne particles when the equipment is in use. Please disassemble and clean the dust filter regularly to avoid affecting the airflow velocity inside the inverter, which may trigger the device's over-temperature protection fault (**fault 19/20**) and affect power supply and product service life.

IV. **Wiring**

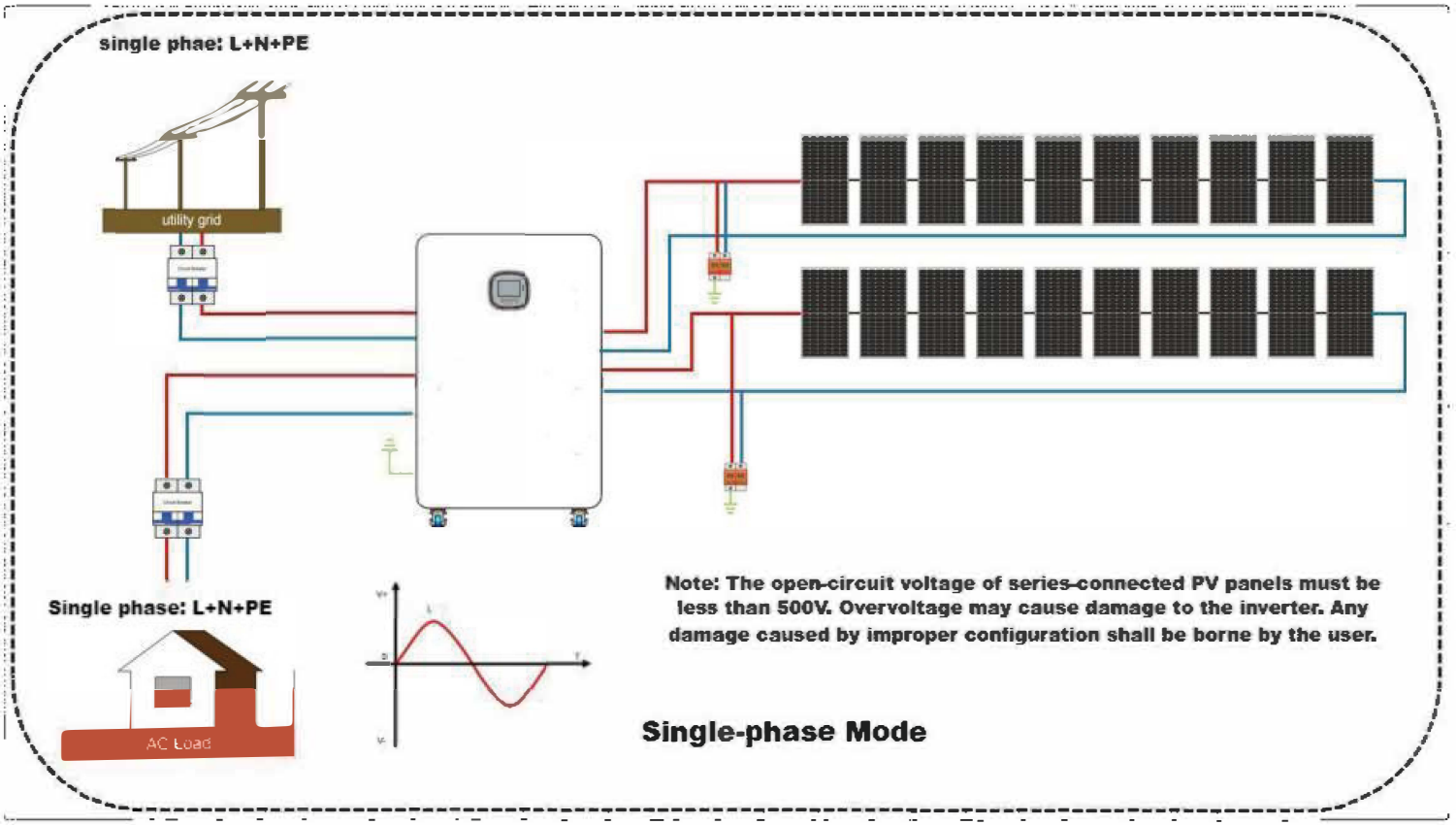
1.1. **Single-phase mode**



• AC output phase voltage (L-N): 200~240Vac, 230Vac default

• Users can change the output voltage through the settings menu. For details, please refer to Section 5.2.

• The output voltage corresponds to parameter setting **item 38**, and the output voltage can be set within the range of 200V~240V.


single phae: L+N+PE
utility grid
Single phase: L+N+PE
AC Load
Note: The open-circuit voltage of series-connected PV panels must be less than 500V. Overvoltage may cause damage to the inverter. Any damage caused by improper configuration shall be borne by the user.
Single-phase Mode

1.2. Cable and Circuit Breaker Selection

- PV input

Wire diameter	Max. input current	Circuit breaker specifications
6mm2/ 10 AWG	22A	2P-25A (Product comes with)

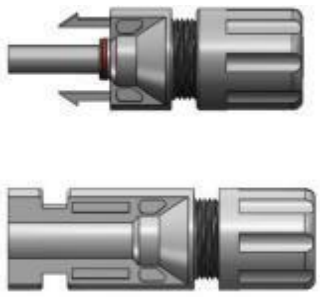
- AC input

Mode	Wire diameter	Max. input current	Circuit breaker specifications
Single phase	10mm2/6AWG (L/N)	40A	2P-40A（User-provided）

- AC Output

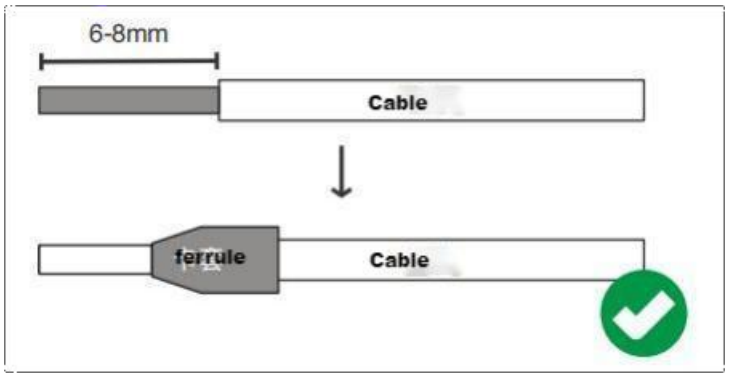
Mode	Wire diameter	Max. input current	Circuit breaker specifications
Single phase	10mm2/7AWG (L/N)	40A	2P-40A（User-provided）

- PV input terminal selection: MC4 line-end PV connector male and female connectors（User-provided）



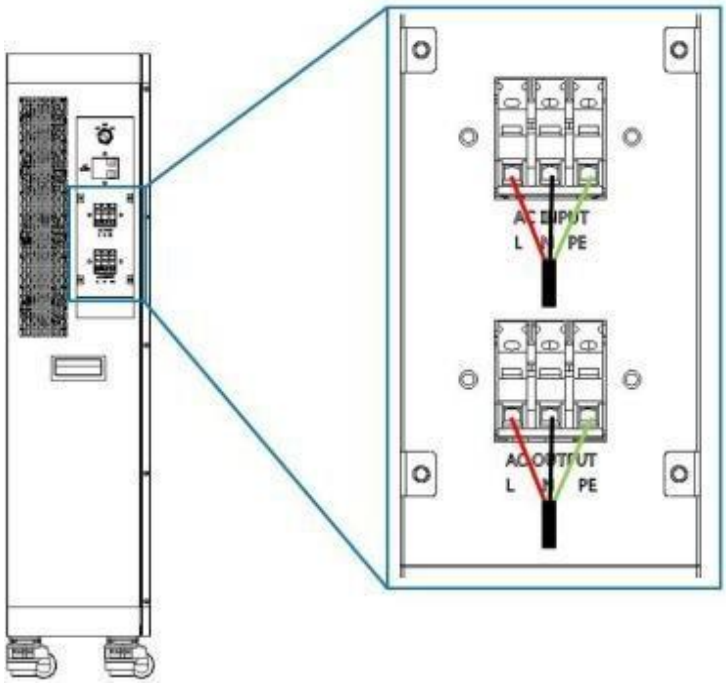
- AC input & AC output terminals

1. Use a wire stripper to strip 6–8 mm of insulation from the cable (wire stripper not included)
2. Secure a ferrule to the end of the cable (ferrule to be provided by the user).



The wire diameter is for reference only. If the distance between the PV array and the product is long, using thicker wire will reduce voltage and improve system performance.

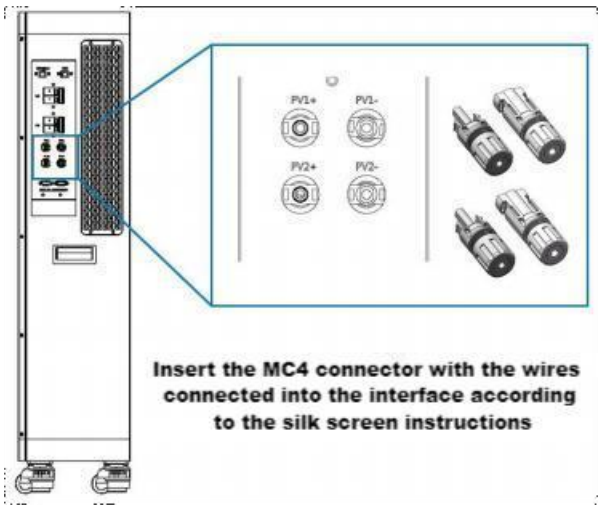
1.3. Wiring of AC Input & AC Output



• Before connecting the AC input and output, the circuit breaker must be disconnected to avoid the risk of electric shock. Do not operate while energised.

• Please check that the cables used are sufficient to meet the requirements. Cables that are too thin or of poor quality pose a serious safety hazard.

1.4. PV Input Wiring



• Before connecting the PV system, the circuit breaker must be disconnected to avoid the risk of electric shock. Do not operate while energised.

• Ensure that the open-circuit voltage of the series-connected PV modules does not exceed the maximum open-circuit voltage of the inverter (500V), otherwise the product may be damaged.

1.5. Starting Product

After ensuring that the wiring is reliable and the wire sequence is correct, replace the terminal protection cover.

• Step 1: Turn the start switch clockwise to the PCS position.

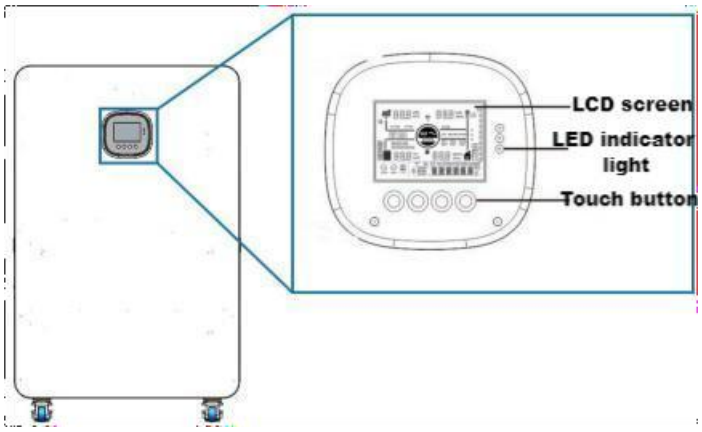
• Step 2: Close the photovoltaic, AC input, and AC output circuit breakers in sequence.

• Step 3: Start the loads one by one in order of increasing power.

V. Operation

1.1. Operation Interface

The product's operating and display interface includes 1pcs of LCD screen, 3pcs of indicator lights, and 4pcs of buttons.



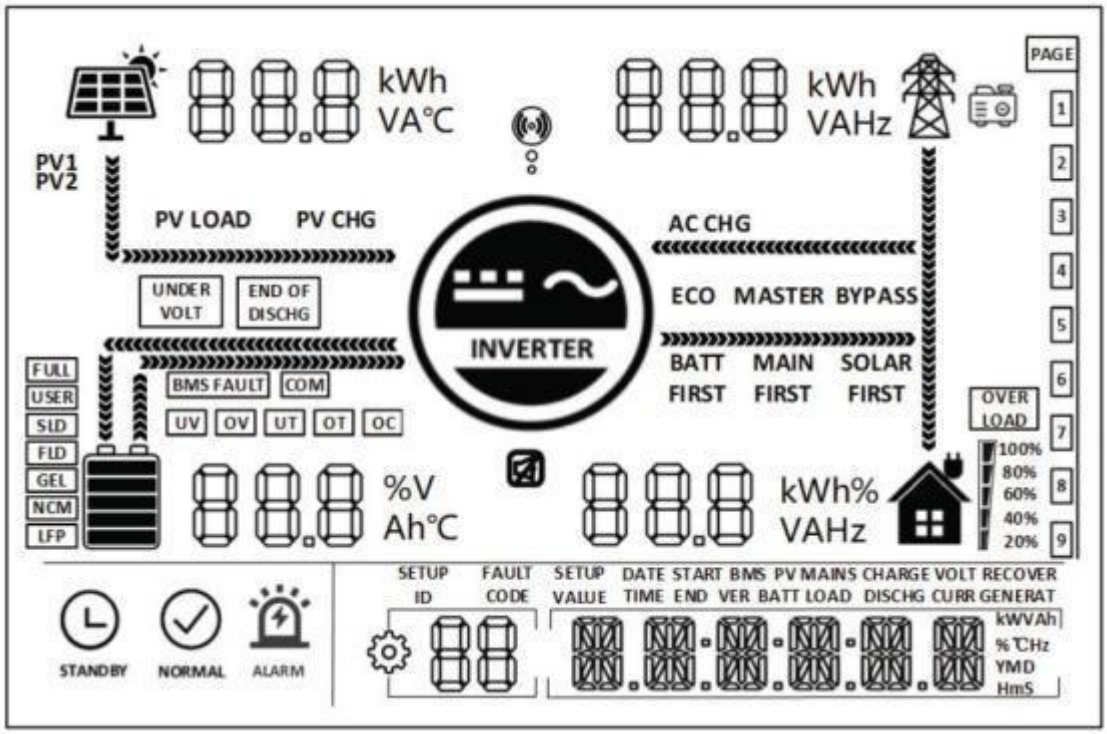
- Button

Button	Description
	Enter/exit settings menu
	Go to the next option
	Go to previous option
	Confirm/enter the selection in the settings menu

- LED indicator light

Indicator light	Color	Description
AC/INV	Yellow	Steady: Mains bypass output Flashing: Inverter output
CHARGE	Green	Steady: Charging complete Flashing: Charging in progress
FAULT	Red	Flashing: Fault occurred

• Display interface

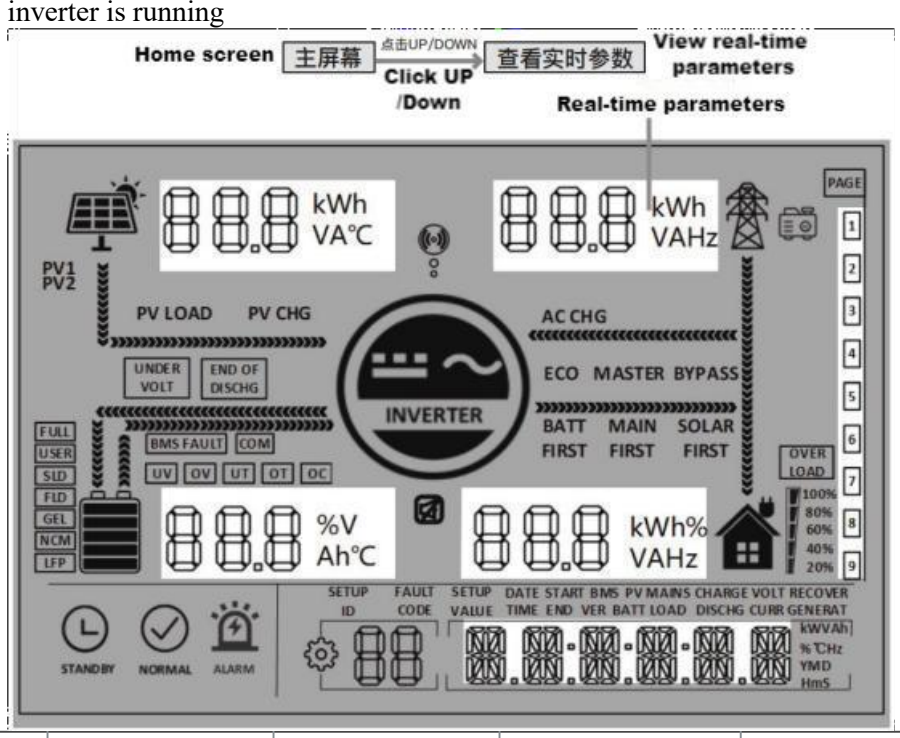


Icon	Description	Icon	Description
	Solar panel		Mains
	Battery		Generator
	Inverter is working		Load
	Indicates that the inverter is communicating with the data collector.		The buzzer is muted
	The direction of electrical current flow		

	The inverter is in standby mode		The inverter is functioning properly
	Indicate a fault		Settings
	Indicates load power 80% to 100%		Battery SOC is 80% to 100%
	Indicates load power 60% to 79%		Battery SOC is 60%~79%
	Indicates load power 40% to 59%		Battery SOC is 40%~59%
	Indicates load power 20% to 39%		Battery SOC is 20%~39%
	Indicates load power 50% to 19%		Battery SOC is 5%~19%
UNDER VOLT	Battery undervoltage	END OF DISCHG	Battery over-discharge
OVER LOAD	Overload	BMS FAULT	BMS failure
COM	System communication error	UV	Insufficient system voltage
OV	System overvoltage	UT	System temperature too low
OT	System temperature too high	OC	System over current
FULL	The battery is fully charged	USER	User-defined battery type
SLD	Sealed lead-acid battery	FLD	Open lead-acid battery
GEL	Gel battery	NCM	Ternary lithium-ion battery
LFP	LFP battery	ECO	Energy-saving mode
PV LOAD	PV is carrying loads	PV CHG	PV is charging the battery
AcchG	AC input power is charging the battery	MAIN FIRST	The output mode of the inverter is mains priority
BYPASS	The output mode of the inverter is bypass	SOLAR FIRST	The output mode of the inverter is PV priority

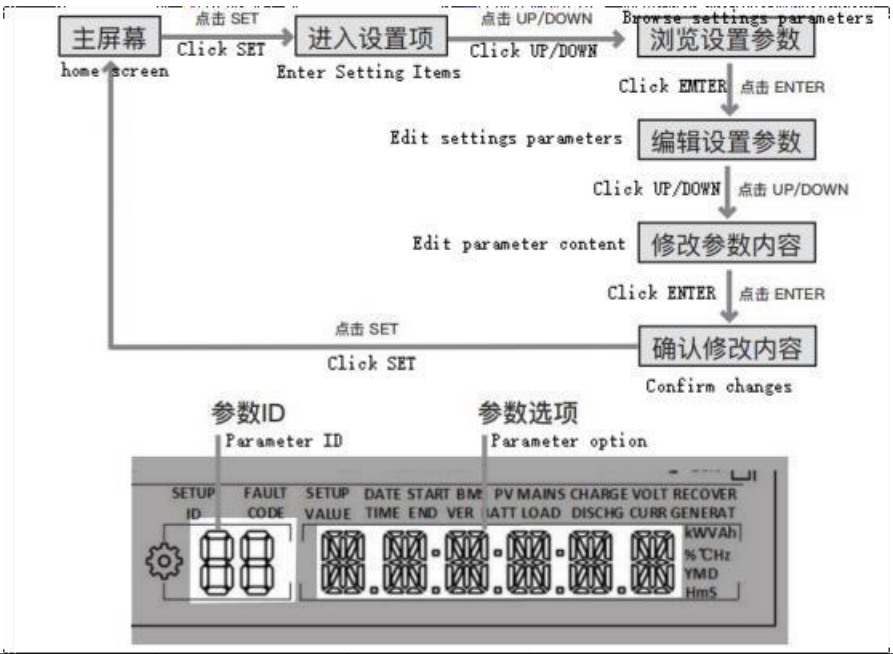
- Browse real-time parameters

  On the main screen, press the UP/DOWN keys to view real-time data while the inverter is running



Page	PV side	Battery side	AC input side	Load side	General information
1	PV input voltage	Battery voltage	Mains input voltage	Single-phase voltage	Current time
2	PV input current	Battery current	Mains input current	Single-phase current	Curent time
3	PV input power	Battery voltage	Charging power/Generating power	Single-phase active power	Total PV power generation
4	Daily PV power generation	Battery current	Daily charging volume of mains electricity	Single-phase apparent power	Total load power consumption
5	PV side heat sink temperature	Heat sink temperature	Mains frequency	Inverter frequency	RS485 address
6	Rated open-circuit voltage	Battery rated voltage	Bus voltage	Rated output power	Software version
7	Max. PV charging current	Max. battery charging current	Max. mains charging current	Output total active power	Parallel mode display
8	/	/	/	Total apparent power output	/

1.2. **Setting**



ID	Parameter meaning	Option	Description
Voltage setting logic： [15] < [12] < [04] < [14] < [35] < [37] < [05] < [09/11]			
00	Exit	ESC	Exit the settings menu
01	AC output mode	UTI default	Photovoltaic energy is prioritised and matched with the load. When PV energy is insufficient, the grid power source is mixed with PV to run loads. When photovoltaic energy is sufficient, it is matched with the load, and the excess energy is used to charge the battery. The grid power source only starts charging when the battery is over-discharged (when **06** is set to 'OSO (photovoltaic only)', the grid power source will not charge). The battery only discharges when it is off-grid.
		SbU	Inverter priority. Only when the battery voltage is lower than the set value in parameter 4 will it switch to mains power supply. When the battery voltage is higher than the set value in parameter 5 or fully charged, it will switch back from mains power supply to battery power supply.
		SOL	Photovoltaic priority. When photovoltaic power is ineffective or the battery voltage is lower than the set value in item 4, switch to mains power.
		SUB	Solar charging takes priority. When solar energy is insufficient, grid energy and solar energy are mixed for charging (if 06 is set to 'OSO (PV only)', grid energy will not be used for charging), and the grid carries the load. When solar energy is sufficient for charging, excess energy is insufficient to carry the load, and excess solar energy and grid energy are mixed to carry the load. The battery only discharges when off-grid.

ID	Parameter meaning	Option	Description
02	AC output frequency	50.0	In bypass mode, the AC output frequency will adapt to the mains frequency. In other cases, the output will follow the preset value.
		60.0 default	
03	AC input voltage range	UPS default	When the output voltage is 220/230V, the input voltage range is 170~280V.
		APL	When the output voltage is 220/230V, the input voltage range is 90~280V, and the frequency range changes to 40~70Hz. It can only be set in off-grid mode. Hybrid grid-connected mode (34 settings), automatically changes to UPS.
04	Battery to mains voltage point	43.6	When parameter 01 is set to SBU or SOL, the output switches from the battery to the mains when the battery voltage falls below the set value. The setting range is 40V to 52V.
05	Mains to battery voltage point	56.8	When parameter 01 is set to SBU or SOL, the output switches from mains power to battery power when the battery voltage exceeds the set value. The setting range is 48V to 60V.
06	Battery charging mode	SNU default	When charging the battery using both photovoltaic power and mains power, photovoltaic power is used first. When photovoltaic power is insufficient, mains power is used. Only in bypass mode can photovoltaic power and mains power be used simultaneously to charge the battery. During inverter operation, only photovoltaic charging mode can be enabled.
		OSO	Please do not enable mains charging mode when in photovoltaic charging mode only.
07	Battery charging current	60	ASP4880S180-H，setting range is 0~180A； ASP48100S200-H, setting range is 0~200A.
08	Battery type	USER	User-defined, all battery parameters can be set.
		SLd	Sealed lead-acid battery
		FLd	Open lead acid battery
		GEL default	Gel lead acid battery
		LI4/LI5/LI6	LiFePO4 LI4/ LI5/ LI6, corresponding to LiFePO4 battery with 14, 15, and 16 strings
		NI3/NI4	Ternary lithium battery， NI3/NI4 ,Corresponding to 13-series and 14-series ternary lithium batteries
		NOB	No battery
09	Battery boost charging voltage	57.6	Set range 48V~58.4V, step 0.4V, valid when battery type is custom and lithium battery.
10	Improve charging duration	120	Refers to the continuous charging time when the voltage reaches the voltage set in parameter 09 during constant voltage charging. The setting range is 5 minutes to 9 minutes, with increments of 5 minutes.
11	Battery float charge voltage	55.2	Set the range to 48V~58.4V, with increments of 0.4V. This parameter cannot be set after successful BMS communication.
12	Battery over-discharge voltage (delayed shutdown)	42	When the battery voltage falls below this threshold and the value of departure parameter 13 is reached, the output is shut down. The setting range is 40V to 48V, with increments of 0.4V.
13	Battery over-discharge delay time	5	When the battery voltage is lower than the value specified in parameter 12, and after the delay time set for this parameter has elapsed, the output is turned off. The setting range is 5S to 50S, with a step size of 5S.

ID	Parameter meaning	Option	Description
14	Battery low voltage alarm point	44	When the battery voltage falls below this threshold, the device will issue an under-voltage alarm but will not shut down. The setting range is 40V to 52V, with a step size of 0.4V.
15	Battery discharge limit voltage	40	When the battery voltage falls below the value specified in this parameter, the output is immediately shut off. The setting range is 40V to 52V, with a step size of 0.4V. This setting is effective when the battery type is set to 'custom' or 'lithium battery.'
16	Battery balancing charging	dIS default	Prohibited balanced charging
		ENA	Allows balanced charging, only effective for open lead-acid batteries, sealed lead-acid batteries, and custom batteries.
17	Balanced charging voltage	58	Set range 48V~58V, step 0.4V. Only valid for open lead-acid batteries, sealed lead-acid batteries, and custom types.
18	Balanced charging time	120	Set range: 5 min to 900 min, in 5-minute increments. Only applicable to open lead-acid batteries, sealed lead-acid batteries, and custom types.
19	Balanced charging delay time	120	Set range: 5 min to 900 min, in 5-minute increments. Only applicable to open lead-acid batteries, sealed lead-acid batteries, and custom types.
20	Balanced charging interval time	30	Set range 0-30 days, step 1 day. Only valid for open lead-acid batteries, sealed lead-acid batteries, and custom batteries.
22	Energy-saving mode (Supports standalone mode only)	dIS default	Disable energy-saving mode
		ENA	Enable energy-saving mode. When the load power is below 50W, the inverter output will shut down after a 5-minute delay. When the load exceeds 50W, the inverter will automatically restart.
23	Overload automatic restart	dIS	Automatic restart after overload. If the output is shut down due to overload, the machine will not restart.
		ENA default	Allows automatic restart after overload. If an overload occurs and the output is shut down, the machine will restart the output after a 3-minute delay. After a cumulative total of 5 occurrences, the machine will no longer restart.
24	Automatic restart after overheating	dIS	Prohibits automatic restarting due to overheating. If the output is shut down due to overheating, the machine will no longer turn on the output.
		ENA default	Allows automatic restart after overheating. If the output is shut down due to overheating, it will restart and turn on the output once the temperature has dropped.
25	Buzzer alarm	dIS	Prohibited buzzer alarm
		ENA default	Allow buzzer alarm
26	Mode change reminder	dIS	Prohibit alarm prompts when the status of the main input source changes.
		ENA default	Allow alarm prompts when the status of the main input source changes.
27	Inverter circuit overload switch to bypass	dIS	When the inverter is overloaded, automatic switching to mains power supply under load is prohibited.
		ENA default	Automatically switch to mains power when the inverter is overloaded.
28	Mains charging current	60	ASP4880S180-H, setting range is 0~100A; ASP48100S200-H, setting range is 0~120A。
30	RS485 communication address	Id: 1	RS485 communication address setting range: 1 to 254; In parallel mode, the range is: 1 to 6

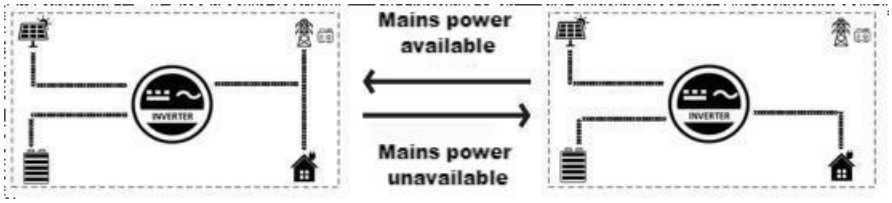
ID	Parameter meaning	Option	Description
31	AC output mode (Can only be set in standby mode)	[31] SIG default	Single-phase usage settings
		[31] PAL	Single-phase parallel operation settings
		[31] 3P1/3P2/3P3	Three-phase parallel operation settings
		All machine screens connected to P1 must be set to '3P1'; all machine screens connected to P2 must be set to "3P2"; all machine screens connected to P3 must be set to '3P3'. 1）1) Assuming that the output voltage set in the {38} setting is 230Vac (S series models), the voltage phase difference between (P1-P2, P1-P3, P2-P3) is 120 degrees. The voltage between the live wire L1 of phase P1 and the live wire L2 of phase P2 is 230*1.732=398Vac. Similarly, the line voltages between L1 and L3, and L2 and L3 are 398Vac; the voltages between L1 and N, L2 and N, and L3 and N are 230Vac.	
32	RS485 communication function	SLA default	Enable PC and remote monitoring protocol
		485	Enable BMS communication function based on RS485 communication
		CAN	Enable BMS communication function based on CAN communication
33	BMS communication	When item 32 is set to 485 or BMS, select the corresponding communication protocol in item 33.	
		PAC=PACE，RDA=RITAR，AOG=ALLGRAND，HWD=SUNWODA，DAQ=DYNESS，WOW=SRNE，PYL=PYLONTECH，UOL=VILION	
34	On-grid function	dIS default	Disable this feature
		ON GRd	Grid connection function, photovoltaic priority charging. After meeting the load power demand, the remaining power will be fed back to the grid (when this option is set, the settings are fixed as follows: item 01 is UTI, item 03 is UPS, item 06 is SNU>>).
35	Battery under-voltage recovery point	52	When the battery voltage drops below the set value, the battery voltage must exceed this set value to restore the battery inverter AC output. Setting range: 44V to 54.4V.
37	Recharge voltage point after battery is fully charged	52	Once the battery is fully charged, the inverter stops charging. When the battery voltage falls below this voltage value, charging resumes. Setting range: 44V to 54V.
38	AC output voltage	220	Setting range：200/208/220/230/240Vac
39	Charging current limit (when starting BMS)	LC SET	The maximum battery charging current shall not exceed the set value [Item 07]
		LC BMS default	The maximum battery charging current shall not exceed the maximum value specified by the BMS
		LC INV	The maximum battery charging current shall not exceed the logic judgment value of the inverter
40	Set the start time for scheduled mains charging/time settings	00:00:00	Setting range：00:00:00 ~ 23:59:00
41	Scheduled mains charging end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00
42	Set the start time for scheduled mains charging/time settings	00:00:00	Setting range：00:00:00 ~ 23:59:00
43	Scheduled mains charging end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00

ID	Parameter meaning	Option	Description
44	Set the start time for scheduled mains charging/time settings	00:00:00	Setting range：00:00:00 ~ 23:59:00
45	Scheduled mains charging end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00
46	Time-segmented mains charging/load-bearing function	dS default	Disable this feature
		ENA	After enabling time-based mains charging/load-bearing functionality, the power supply mode will switch to SBU and switch to mains power for charging during the set charging period or after the battery is over-discharged. If the timed discharge function is also enabled, the system power supply mode will switch to UTI, charging via mains power only during the set charging period, and switching to battery power supply during the set discharge period or when mains power is lost (limited to pure off-grid mode).
47	Set the start time for scheduled mains discharge/time settings.	00:00:00	Setting range：00:00:00 ~ 23:59:00
48	Timed mains discharge end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00
49	Set the start time for scheduled mains discharge/time settings.	00:00:00	Setting range：00:00:00 ~ 23:59:00
50	Timed mains discharge end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00
51	Set the start time for scheduled mains discharge/time settings.	00:00:00	Setting range：00:00:00 ~ 23:59:00
52	Timed mains discharge end/time setting	00:00:00	Setting range：00:00:00 ~ 23:59:00
53	Timed mains discharge function/time setting	dIS default	Disable this feature
		ENA	After enabling the time-segmented battery discharge function, the power supply mode will switch to UTI. The system will only switch to battery power supply during the set discharge time segment or when the mains power supply is interrupted.
54	Current date	00:00:00	Y/M/D Setting range：00:01:01 ~ 99:12:31
55	Current time	00:00:00	Setting：00:00:00 ~ 23:59:59
57	End charging current	2	Charging stops when the charging current is less than the set value (unit: A)
58	Discharge alarm SOC settings	15	When the capacity is less than the set value, SOC alarm (unit: %, only valid when BMS communication is normal)
59	Discharge cut-off SOC setting	5	When the capacity is less than the set value, stop discharging (unit: %, only effective when BMS communication is normal).
60	Charging cut-off SOC setting	100	When the capacity exceeds this setting value, charging stops (unit: %, only effective when BMS communication is normal).
61	Switch mains power SOC settings	10	When the capacity is less than the set value, switch to mains power (unit: %, only effective when BMS communication is normal).
62	Switching inverter output SOC settings	100	When the capacity exceeds this setting value, switch to inverter output mode (unit: %, only effective when BMS communication is normal).
63	N-PE connection	dIS default	Automatic switching of N-PE connections is not permitted.

1.3. **AC Output Mode**

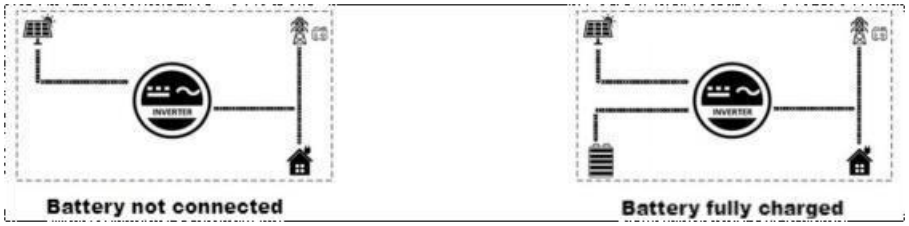
The AC output mode corresponds to parameter settings **01** and **34.** Allow users to manually set

• Mains priority"01 UTI" （default）
Mains power is the priority power source. When photovoltaic power is available, both mains power and photovoltaic power can supply power to the load simultaneously. The battery only supplies power to the load when mains power is unavailable (priority: mains power > photovoltaic power > battery).



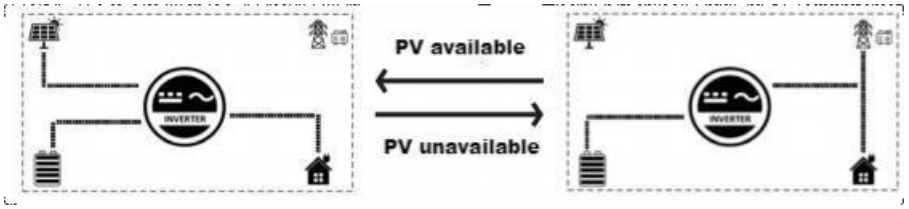
• Photovoltaic and mains power hybrid load

At UTI mode, when the battery is not connected or is fully charged, the PV and AC power supply the load at the same time (priority: PV > AC > battery).



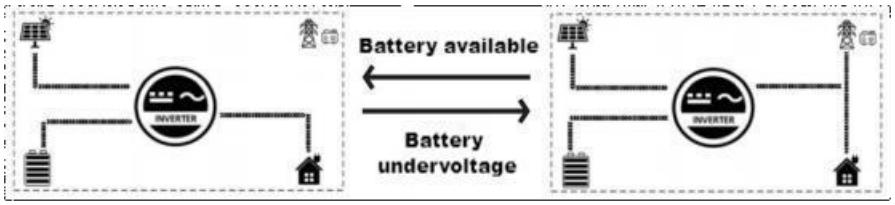
• PV priority output "5BL"

Photovoltaic power is supplied to the load first. If the photovoltaic power fails, it will switch to mains power. This mode maximises the use of photovoltaic power while maintaining battery power and is suitable for areas with relatively stable power grids. (Priority: photovoltaic > mains power > battery)



• Inverter output mode "01 SbU"

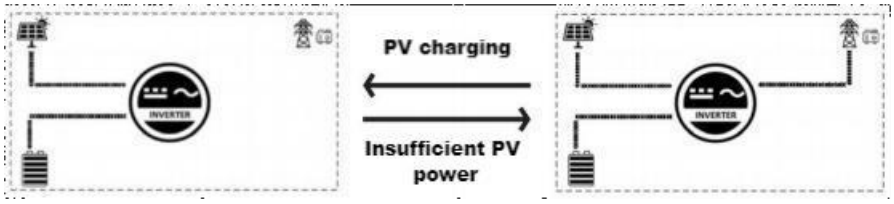
Photovoltaic power will be prioritised to supply electricity to the load. If photovoltaic power is insufficient or unavailable, the battery will be used as a supplement to provide electricity to the load. When the battery voltage reaches the value specified in parameter item 04 (battery switchover to mains voltage point), the system will switch to mains power to supply electricity to the load. This mode maximises the use of DC power and is suitable for areas with stable grid power. (Priority: photovoltaic > battery > mains power)



1.4. Battery Charging Mode

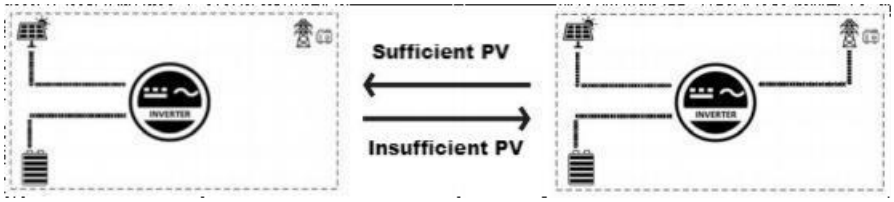
• Mixed charging “5H” （default）

Photovoltaic and mains power charge the battery simultaneously, with photovoltaic power taking priority and mains power supplementing when photovoltaic power is insufficient. This is the fastest charging method, suitable for areas with insufficient power supply, providing users with sufficient backup power. (Priority: photovoltaic > mains power)



• Solar charging only “050”

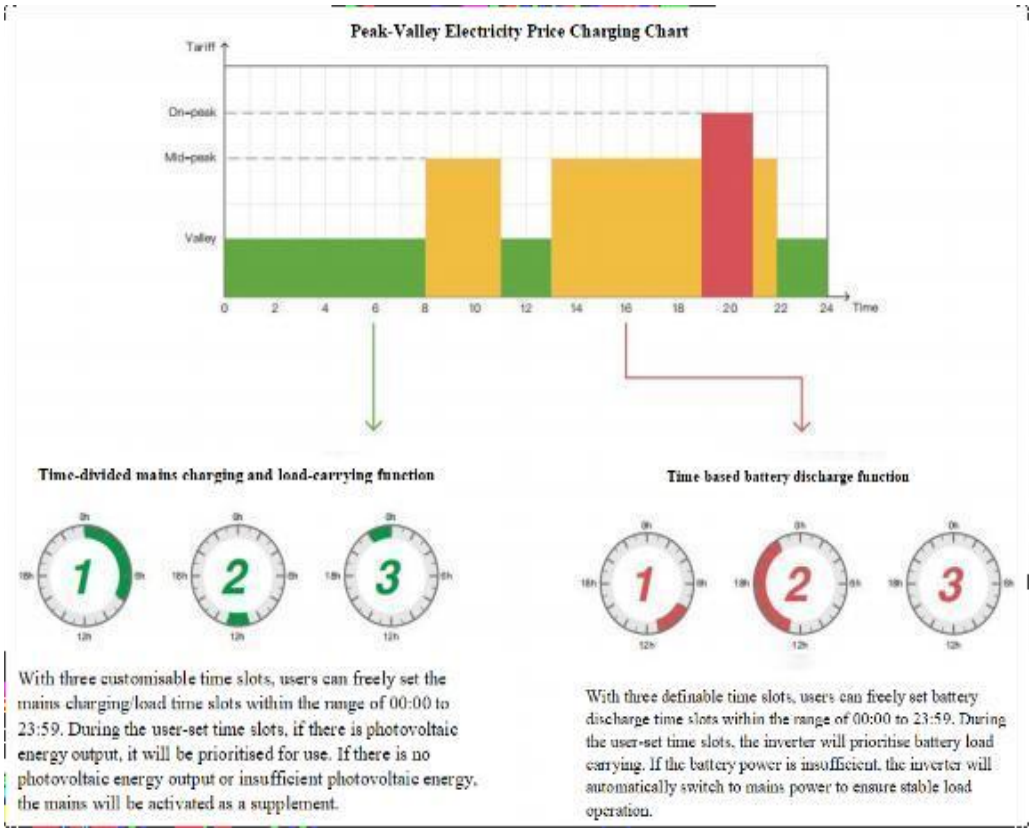
Only use photovoltaic power to charge the battery; do not start mains charging. This is the most energy-efficient method, with all battery power coming from solar energy, and is typically used in areas with good radiation conditions.



1.5. Time-sharing Charging/Discharging Function

The PT5515S features time-sharing charging and discharging functionality, allowing users to set different charging and discharging time slots based on local peak and off-peak electricity rates, thereby optimising the use of grid power and photovoltaic energy. When grid electricity rates are high, the battery is used to supply power to the load; when grid electricity rates are low, the grid can be used to supply power to loads and charge the battery, maximising cost savings for users. Users can enable or disable the time-sharing charging/discharging function in parameter settings **46** and **53**, and set charging and discharging time slots in parameters **40-45** and **47-52**. The following example illustrates how this function works.

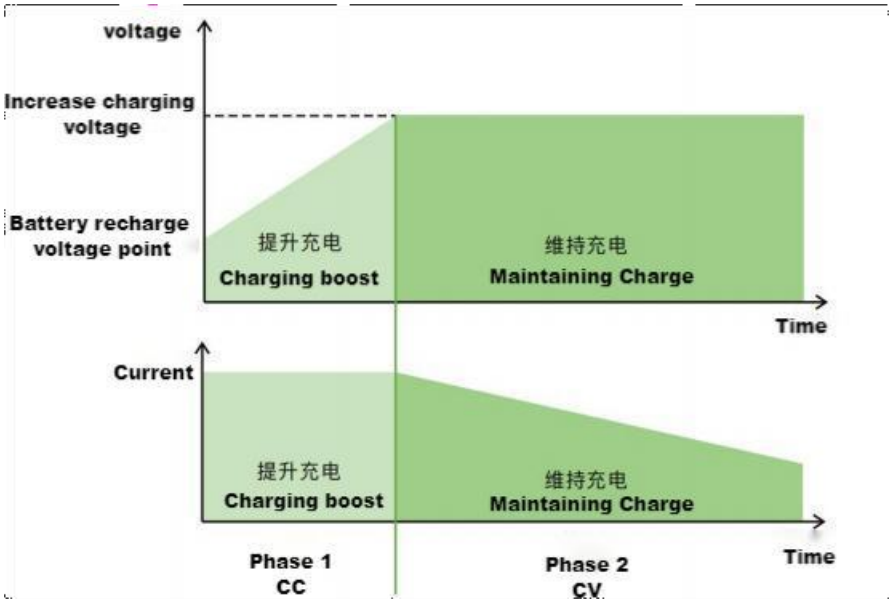
Before using this feature for the first time, please set the local time and date in parameters **54** and **55**. Users can then set the corresponding time slots based on the local peak and off-peak electricity pricing structure.



1.6. **Battery Parameter**

Parameter & battery type	LiFePO4			User-defined
	L16	L15	L14	USER
Super cut-off voltage	60V	60V	60V	60V
Equalizing charging voltage	-	-	-	40~60V adjustable
Increase charging voltage	56.8V	53.2V	49.2V	40~60V adjustable
Float charge voltage	56.8V	53.2V	49.2V	40~60V adjustable
Undervoltage alarm voltage	49.6V	46.4V	43.2V	40~60V adjustable
Undervoltage disconnect voltage	48.8V	45.6V	42V	40~60V adjustable
Discharge limit voltage	46.4V	43.6V	40.8V	40~60V adjustable
Over-discharge delay time	30s	30s	30s	1~30S adjustable
Equalisation charge duration	-	-	-	0~600min adjustable
Equalisation charge cycle	-	-	-	0~250d adjustable
Boost charge cycle	120min adjustable	120m adjustable	120m adjustable	10~600min adjustable

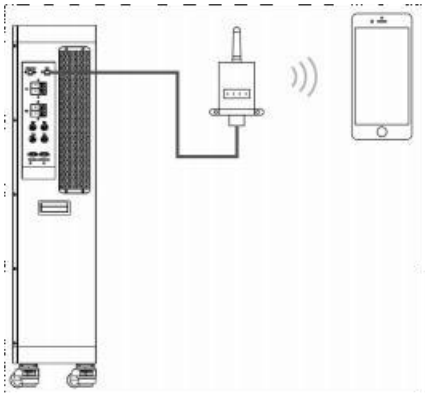
If there is no communication with the BMS, the inverter will charge based on the battery voltage and the preset charging curve. When the inverter communicates with the BMS, it will follow the BMS instructions and perform a more complex phased charging process.

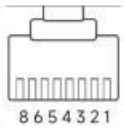

voltage
Increase charging voltage
Battery recharge voltage point
提升充电
Charging boost
维持充电
Maintaining Charge
Time
Current
提升充电
Charging boost
维持充电
Maintaining Charge
Time
Phase 1
CC
Phase 2
CV

VI. **Communication**

1.1. **WIFI Module (Optional)**

The Wi-Fi port is used to connect the Wi-Fi/GPRS data acquisition module, allowing users to view the inverter's operating status and parameters via a mobile app.

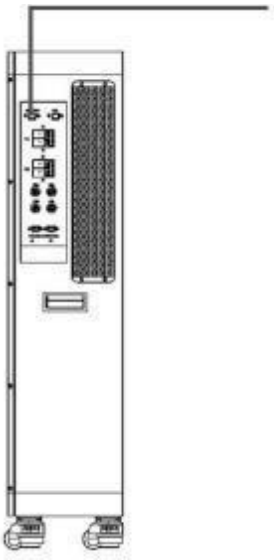


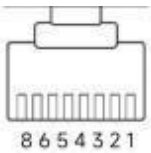


RJ45	Definition
Pin 1	5V
Pin 2	GND
Pin 3	/
Pin 4	/
Pin 5	/
Pin 6	/
Pin 7	RS485-A
Pin 8	RS485-B

1.2. **RS485/CANCommunication Port**

RS485/CAN communication ports are typically used for debugging, monitoring, and updating battery BMS programs.

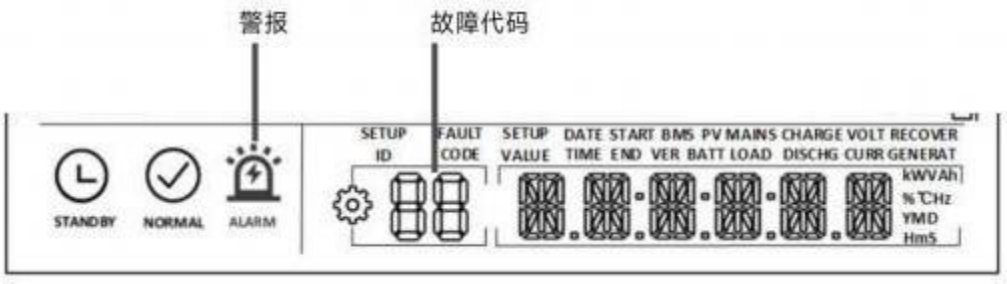




RJ45	Definition
Pin 1	RS485-B
Pin 2	RS485-A
Pin 3	GND
Pin 4	NC
Pin 5	NC
Pin 6	GND
Pin 7	RS485-A
Pin 8	RS485-B

VII. Fault Codes and Countermeasures

1.1. **Fault Codes**



Fault code	Meaning	Will it affect the output?	Description
01	BatVoltLow	Yes	Battery under-voltage alarm
02	BatOverCurrSw	Yes	Battery discharge average current overcurrent software protection
03	BatOpen	Yes	Battery not connected alarm
04	BatLowEod	Yes	Battery undervoltage stop discharge alarm
05	BatOverCurrHw	Yes	Battery overcurrent hardware protection
06	BatOverVolt	Yes	Charging over-voltage protection
07	BusOverVoltHw	Yes	Busbar overvoltage hardware protection
08	BusOverVoltSw	Yes	Busbar overvoltage software protection
09	PvVoltHigh	Yes	PV overvoltage protection
10	PvBoostOCSw	No	Boost overcurrent software protection
11	PvBoostOCHw	No	Boost overcurrent hardware protection
12	SpiCommErr	Yes	Master-slave chip SPI communication failure
13	OverloadBypass	Yes	Bypass overload protection
14	OverloadInverter	Yes	Inverter overload protection
15	AcOverCurrHw	Yes	Inverter overcurrent hardware protection
16	AuxDSpReqOffPWM	Yes	Slave chip request shutdown fault
17	InvShort	Yes	Inverter short circuit protection
18	Bussoftfailed	Yes	Busbar soft start fault
19	OverTemperMppt	No	PV heat sink over-temperature protection
20	OverTemperInv	Yes	Inverter heat sink over-temperature protection
21	FanFail	Yes	Fan fault
22	EEPROM	Yes	Memory fault

23	ModelNumErr	Yes	Incorrect model settings
24	Busdif	Yes	Positive and negative bus voltage imbalance
25	BusShort	Yes	Busbar short circuit
26	Rlyshort	Yes	Inverter AC output backfeeding to bypass AC output
28	LinePhaseErr	Yes	Mains input phase error
29	BusVoltLow	Yes	Bus voltage low protection
30	BatCapacityLow1	Yes	Battery capacity rate below 10% alarm (effective after successful BMS communication)
31	BatCapacityLow2	No	Battery capacity rate below 5% alarm (effective after successful BMS communication)
32	BatCapacityLowStop	Yes	Low battery capacity shutdown (effective after successful BMS communication)
33	CtrlCanCommErr	Yes	Parallel control CAN communication failure
34	CanCommFault	Yes	Parallel CAN communication failure
35	ParaAddrErr	Yes	Parallel ID (communication address) setting error
37	ParaShareCurrErr	Yes	Parallel operation current sharing failure
38	ParaBattVoltDif	Yes	Parallel operation mode, large battery voltage difference
39	ParaAcSrcDif	Yes	Parallel operation mode, inconsistent mains input source
40	ParaHwSynErr	Yes	Parallel operation mode, hardware synchronisation signal failure
41	InvDcVoltErr	Yes	Abnormal DC component of inverter voltage
42	SysFwVersionDif	Yes	Inconsistent parallel operation program versions
43	ParaLineContErr	Yes	Parallel operation wiring fault
44	Serial number error	Yes	Serial number not set at factory
45	Phase merging unit configured incorrectly	Yes	【31】Incorrect settings
58	BMSComErr	No	BMS communication fault
59	BMSErr	No	BMS error
60	BMSUnderTem	No	BMS low-temperature alarm (effective after successful BMS communication)

Fault code	Meaning	Will it affect the output?	Description
61	BMSOverTem	No	BMS over-temperature alarm (effective after successful BMS communication)
62	BMSOverCur	No	BMS over-current alarm (effective after successful BMS communication)
63	BMSUnderVolt	No	BMS under-voltage alarm (effective after successful BMS communication)
64	BMSOverVolt	No	BMS over-voltage alarm (effective after successful BMS communication)

1.2. **T**roubleshoot

Fault code	Meaning	Cause	Solution
/	No display on the screen	No power input, or the bottom switch of the device is not turned on	Check if the battery circuit breaker or PV circuit breaker is closed; ensure the switch is in the 'ON' position; press any button on the screen to exit the screen sleep mode.
1	Battery undervoltage	Battery voltage is below the value set in parameter item [14]	Charge the battery until the battery voltage exceeds the value set in parameter [14].
3	Battery not connected	The battery is not connected, or the lithium battery BMS is in discharge protection mode	Check if the battery is securely connected; check if the battery circuit breaker is closed; ensure that the lithium-ion battery BMS can communicate normally.
4	Battery over-discharge	Battery voltage is lower than the value set in parameter item 12	Manual reset. Turn off the power and restart. Automatic reset: Charge the battery to raise the battery voltage above the value set in parameter item [35].
6	Charging battery overvoltage protection	Battery is in an overvoltage state	Manually turn off the power and restart. Check if the battery voltage exceeds the limit. If it does, discharge the battery until the voltage is below the battery's overvoltage recovery point.
13	Bypass overload (software detection)	Bypass output power or output current is overloaded for a certain period of time	Reduce the load power and restart the device. For more details, please refer to item 11 in the protection function
14	Inverter overload (software detection)	The inverter output power or output current is overloaded for a certain period of time	

19	PV input heat sink temperature too high (software detection)	Photovoltaic input heat sink temperature exceeds 90°C for 3 seconds	When the heat sink temperature cools to below the over-temperature recovery temperature, normal charging and discharging resume
20	Inverter output heat sink temperature too high (software detection)	Inverter output heat sink temperature exceeds 90°C for 3 seconds	
21	Fan failure	Hardware detected fan failure	After shutting down, manually move the fan to check for foreign objects blocking it
26	AC input relay short circuit	AC output relay stuck	Manually shut down and restart. If the fault reappears after restarting, you need to contact after-sales service to repair the machine
28	Mains input phase fault	AC input phase does not match AC output phase	Ensure that the AC input phase matches the AC output phase. For example, if the output is split-phase mode, the input must also be split-phase mode

• If the product malfunction cannot be resolved using the methods listed in the table above, please contact our after-sales service department for technical support. Do not disassemble the equipment yourself.

VIII. **Protective Functions and Product Maintenance and Care**

1.1. **Protective Functions**

No.	Protective functions	Description
1	PV current limiting protection	When the charging current or power of the configured photovoltaic array exceeds the inverter's rated current or power, this machine will charge at the rated current or power.
2	PV overvoltage protection	If the PV voltage exceeds the maximum value allowed by the hardware, the machine will report a fault and stop photovoltaic boosting to output a sine wave AC.
3	Night-time reverse charging protection	At night, since the battery voltage is higher than the photovoltaic module voltage, the machine will prevent the battery from discharging to the photovoltaic module.
4	Mains input overvoltage protection	When the mains voltage exceeds 280Vac per phase, mains charging will stop, and the inverter will switch to output mode.
5	Mains input undervoltage protection	When the mains voltage falls below 170Vac per phase, mains charging will stop, and the inverter will switch to output mode.
6	Battery overvoltage protection	When the battery voltage reaches the overvoltage disconnect voltage point, charging from the PV system and mains power to the battery will automatically stop to prevent overcharging and damage to the battery.
7	Battery undervoltage protection	When the battery voltage reaches the undervoltage disconnect voltage point, discharging from the battery will automatically stop to prevent over-discharging and damage to the battery.
8	Battery overcurrent protection	When the battery current exceeds the hardware-allowed range, the machine will shut off the output and stop discharging from the battery.
9	AC output short-circuit protection	When a short-circuit fault occurs at the load output terminal, the AC output voltage will be immediately shut off. After 1 minute, the output will be attempted again. If the load terminal remains in a short-circuit state after three attempts, the short-circuit fault must be eliminated manually before powering on the machine again to restore normal output

10	Over-temperature protection for the heat sink	When the internal temperature of the inverter becomes too high, the inverter will stop charging and discharging; once the temperature returns to normal, the inverter will resume charging and discharging.
11	Overload protection	After overload protection is triggered, the inverter will resume output after 3 minutes. If overload occurs five consecutive times, the output will be shut off until the inverter is restarted. (102% < load < 110%) ± 10%: Error, output shuts off after 5 minutes. (110% < load < 125%) ± 10%: Error reported and output shuts off after 10 seconds. Load > 125% ± 10%: Error reported, output shuts off after 5 seconds.
12	AC backflow protection	Prevent AC (from battery to AC via inverter) backflow to the bypass AC input
13	Bypass overcurrent protection	Built-in AC input overcurrent protection circuit breaker
14	Bypass wiring error protection	When the phases of the two bypass inputs and the inverter phase are not the same, the machine will prohibit switching to the bypass to prevent load power loss or short circuits when switching to the bypass

1. 2. **Maintenance**

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

1. Ensure that airflow around the product is not obstructed;
2. Inspect all exposed wires for damage to insulation caused by sun exposure, friction with surrounding objects, dry rot, insect or rodent damage, etc. Repair or replace wires as necessary;
3. Verify that the indicators and displays align with the device's operations. Note any faults or incorrect displays and take corrective measures as needed.
4. Inspect all terminal connections for corrosion, insulation damage, high temperatures, or signs of burning/discolouration, and tighten the terminal screws;
5. Check for dirt, nesting insects, and corrosion, and clean the dust filter as required on a regular basis.
6. If the product is not used for an extended period, charge it at least once a month.

Before performing any inspections or operations, ensure the inverter is disconnected from all power sources and that the capacitors are fully discharged to avoid the risk of electric shock.

The Company shall not be liable for damages caused by the following reasons:

1. Damage caused by improper use or use in the wrong location.
2. Open-circuit voltage of photovoltaic modules exceeding the maximum allowable voltage.
3. Damage caused by operating temperatures exceeding the restricted operating temperature range.
4. Disassembly and repair of the inverter by unauthorised personnel.
5. Damage caused by force majeure: damage during transportation or handling of the inverter.