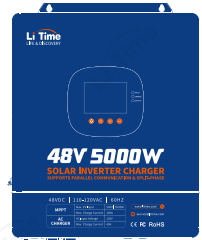




5000W

48VDC | 110-120VAC

PRODUCT MANUAL



All in One Solar Inverter Charger

www.litime.com



IMPORTANT SAFETY INSTRUCTIONS

Please read the following safety instructions carefully and perform installation and connection operations under the guidance of professionals. This manual contains important safety, installation, and operating instructions for the solar inverter charger.

General

- **Read all the instructions** and cautions in the manual before the installation.
- Installation and wiring must comply with the Local and National Electric Codes (NEC) and must be performed by a certified technician.
- There are no user-serviceable parts inside this product. **DO NOT** disassemble or attempt to repair the solar inverter charger.
- **ONLY 48V Battery Banks** are suitable for the solar inverter charger.
- The product is used with a permanent power source (battery, PV and grid power). Input and/or output terminals may still be dangerously energized, even when the product is switched off. ALWAYS make sure the solar inverter charger is **in the OFF position** and **disconnect all AC and DC connections** before carrying out maintenance or servicing the product.
- Consult the battery manufacturer's information to ensure that the product is intended for use with the battery. Carefully check the specific requirements of the batteries used in the system and always follow the battery manufacturer's safety instructions.
- Never use the product where there is a risk of gas or dust explosions.
- Do not remove the terminal panel or touch the wiring terminals when the product is working, the mains input and AC output are high voltage.
- This product is for off-grid use only.
- Never connect two AC power sources simultaneously. This will cause the product damage.

Installation

- It is recommended that the DC and AC input cables be fused and fitted with circuit breakers.
- NEVER connect the AC output of the product directly to an Electrical Breaker Panel/ Load Center which is also powered by the utility power/generator.
- Before applying power, ensure that the available power source matches the product configuration settings described in the manual.
- DO NOT connect the battery in reverse polarity, which can and will destroy the product and other electrical equipment.
- Keep the product away from sources of strong electromagnetic interference such as motors and strong magnetic fields.
- Keep out of reach of children.
- Do not touch the product housing and battery when it is working.
- Do not install this product in the same confined space as a lead-acid liquid battery.
- After installation, check whether all wiring connections are tight and reliable to avoid the danger of heat accumulation due to loose connections.

If you have any questions or need any help, please feel free to contact us (and leave your contact phone number) at service@litime.com, we will offer phone or email support in 12hrs.



UNITED STATES



Register Warranty



www.litime.com



service@litime.com

PRODUCT OVERVIEW

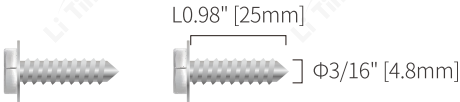
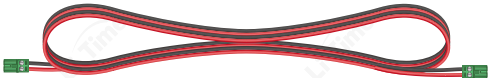
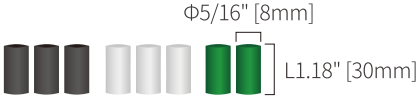
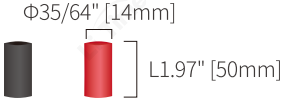
48V 5000W Solar Inverter Charger

Rated Output Power	5000W
DC Input Voltage	40V to 60V
AC Input Voltage	90 to 140VAC
AC Output Voltage	120V±5%
Max. Charge Current (PV+AC)	100A
Default Battery Type	LF16 (LiFePO4)
Solar Input Voltage Range	120V to 500V
Max. Solar Panel System Input Power	5500W



ADDITIONAL COMPONENTS

Additional components are included in the package.

Accessories	Image
Copper Wire Connectors * 8 Pcs	
M6*25/64"[10mm] Battery Post Bolts * 2 Pcs	
M6 Battery Wire Lugs * 2 Pcs	
Terminal Panel Spare Screws * 4 Pcs	
MC4 Connectors * 2 Pairs	
Self-tapping Screws * 2 Pcs	
Plastic Anchors * 2 Pcs	
Parallel Communication Cable * 1 Pc	
Current Balancing Cable * 1 Pc	
Heat Shrink Tubes (For PV&AC) * 8 Pcs	
Heat Shrink Tubes (For Battery) * 2 Pcs	



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SPECIFICATIONS

PV Input

Parameter	Value
Operating Voltage Range	120V to 500V
Recommended Operating Voltage Range	120V to 450V
Max. Power	5500W
Max. Input Current	22A

MPPT Output

Parameter	Value
Max. Charge Current	100A
Efficiency	>92%

Battery Input

Parameter	Value
Rated Voltage	48V
Voltage Range	40V to 60V
Max. Charge Current Range	100A
Terminal	M6
Battery Type	Lithium, Lead Acid, User

AC Input

Parameter	Value
Voltage Range	90 to 140VAC
Max. Input Current	63A
Charging Current Range	0A to 40A
Frequency	50Hz / 60Hz

AC Output

Parameter	Value
Voltage Range	120VAC $\pm$ 5%
Rated Power	5000W ^①
Surge Power	10000W
Max. Load Current	42A
Frequency	50Hz / 60Hz
Output Wave Form	Pure Sine Wave
Inverter Efficiency	>90%
Bypass Efficiency	>95%

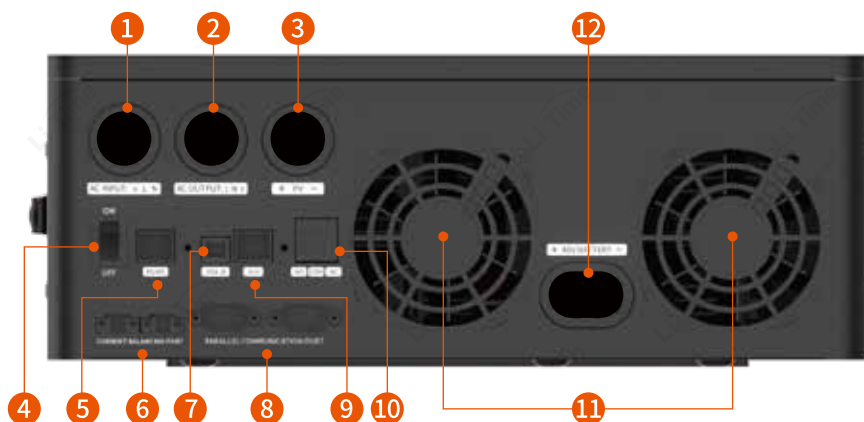
General

Parameter	Value
Max. Charge Current (PV+AC)	100A
No Load Power Consumption	Normal Mode $\leq$ 80W, ECO Mode $\leq$ 55W
Humidity Range	5% to 95%
Operating Temperature Range	14°F to 131°F/-10°C to 55°C
Storage Temperature	-13°F to 140°F/-25°C to 60°C
Protection Class	IP20
Safety Class	I
Max. Parallel Units	6
Dimension (L * W * H)	17.60 * 13.78 * 5.24 inch 447 * 350 * 133 mm
Weight	Appr. 30.86 lbs / 14 kg

① For best performance when powering AC loads for long durations, **operate the inverter function within 95% power.**

IDENTIFICATION OF PARTS





No.	Item
1	AC Input Terminal Block
2	AC Output Terminal Block (Continuous Output Power $\leq 5000W$, 110-120VAC)
3	PV Input Terminals
4	On/Off Switch
5	RS485 Port ^①
6	Current Balancing Port
7	USB-B Port
8	Parallel Communication Port
9	N/A
10	Dry Contact Ports ^②
11	Cooling Fans
12	Battery Positive and Negative Terminals

① To communicate with battery, check page 29 for details.

② To connect with external control devices.

INSTALLATION

1. The product should be installed by a qualified electrician.
2. Make sure the solar inverter charger is in the off position before connecting anything.

Choosing Location

Make sure the installation complies with the following guidelines.

○ In a well-ventilated, cool, and dry environment.

The product must be installed in an area protected from direct sunlight, high temperatures, and water. Make sure there is sufficient room for wiring and ventilation clearance from the DC and AC sides of the product, maintaining minimum clearances of 19.69" (500mm) above/below and 7.87" (200mm) left/right.

○ As close to the battery as possible.

Keep the product and battery as close as possible to minimize cable voltage loss and choose a proper wire size to connect the product and battery.

○ Securely placed or mounted.

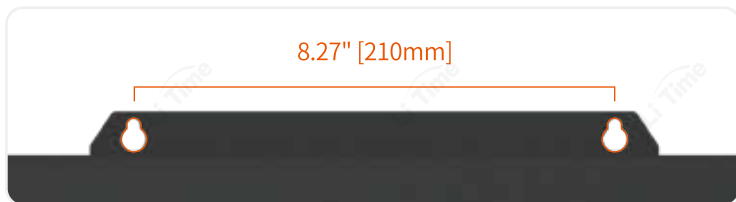
This product could be mounted vertically on the wall or panel.

Installation Steps

○ Installation Method ①: Wall Mount (Optional & Recommended)

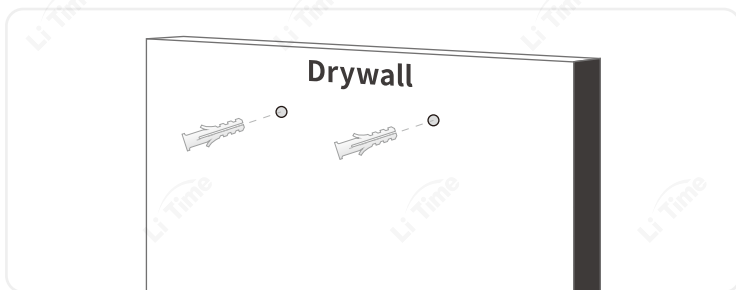
Step
1

Drill two holes on the wall with an electric drill.



Step
2

Hammer two plastic anchors into the prepared hole.



Step
3

Install the solar inverter charger, then secure with self-tapping screws.



○ Installation Method ②: Panel Mount (Optional)

Fix the solar inverter charger on the mounting panel by provided self-tapping screws with an electric drill.



Sizing a Battery Bank

The selection of the battery bank can be calculated to reach a suitable conclusion.

DATA TO BE CONFIRMED	The rated power(W) of the load ^① to be run.
	Expected runtime(Hrs) of the load.
	The nominal voltage of the selected battery type and voltage.
REFERENCE CALCULATION FORMULA	$\text{Energy(Wh)} = \text{Load Power(W)} * \text{Runtime(Hrs)} / \text{Inverter Efficiency}^{\textcircled{2}}$
	$\text{Capacity(Ah)} = \text{Energy(Wh)} / \text{Battery Nominal Voltage(V)}$

- ① The rated power(W) of the load should be less than the continuous power supported by the inverter (**5000W** for this product).
- ② Inverter Efficiency=Inverter Output Power/Inverter Input Power, 85% is the usual conversion efficiency of inverters on the market under normal conditions.

For LiTime lithium batteries and this solar inverter charger, the battery bank will be 48 volts direct current (48 VDC) with 51.2V nominal voltage.

Example	
○ 3000W Load(s)	$3000\text{W} * 3\text{Hrs} / 85\% \approx 10588\text{Wh}$ $10588\text{Wh} / 51.2\text{V} \approx 207\text{Ah}$
○ 3Hrs runtime/day	
○ 51.2V lithium battery	

To use the 3000W load(s) for 3 hours per day, at least a 48V (51.2V) 207Ah lithium battery should be selected on an everyday battery fully charged basis.

If there are different requirements for the time to fully charge the battery, the calculation method will be more complicated. Please feel free to contact us at service@litime.com for a free recommendation of a customized solution.

Connecting

Recommended Cable Sizing and Breaker

Terminal	Recommended Cable Size	Recommended Breaker
Battery	2AWG (within 6ft/2m)	160A
AC Input/Output	8AWG (within 6ft/2m)	63A
PV	10AWG (within 16ft/5m)	25A

Wiring lengths should be uniform within each group: battery, AC output, and AC input.

Single Machine Connection

DC Wiring

1. This product is **ONLY** suitable for a **48V battery bank**. Failure to comply with the proper DC voltage will cause irreversible damage to the product.
2. Avoid direct contact between the terminals of the positive and negative wires connected to the battery, and do not reverse the positive and negative connections. Damage to the LiTime solar inverter charger and battery due to reverse polarity is NOT covered by warranty.

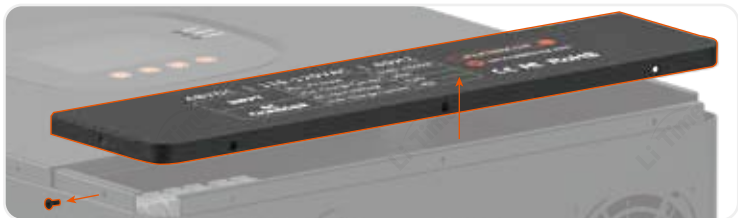
Step
1

Make sure the Power Switch is in the OFF position and all breakers are in the open status.



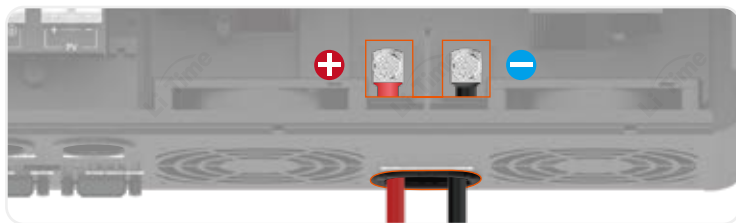
Step
2

Unscrew the terminal panel.



Step 3

Connect the battery to the solar inverter charger, **+** to **+**, **-** to **-**.



○ AC Wiring

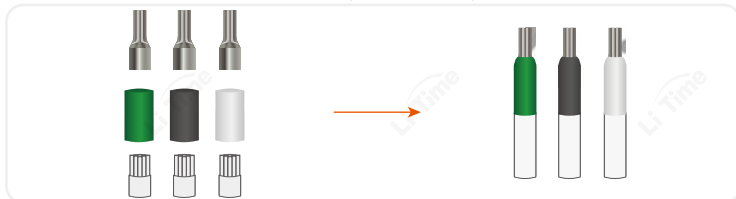
1. Avoid switching on the solar inverter charger with the load already turned on. This may trigger an overload since some electronic devices have an initial high power surge to start.
2. Be sure to turn off all loads first before switching off the solar inverter charger. Even if the solar inverter charger is turned off, the capacitors will still have a charge, so the DC and AC terminals must be disconnected if altering the circuitry.

☆ AC Input

Do not supply power to this product by the generator and the grid at the same time, as it will damage the product. Make sure that only one AC power input supplies power to this product.

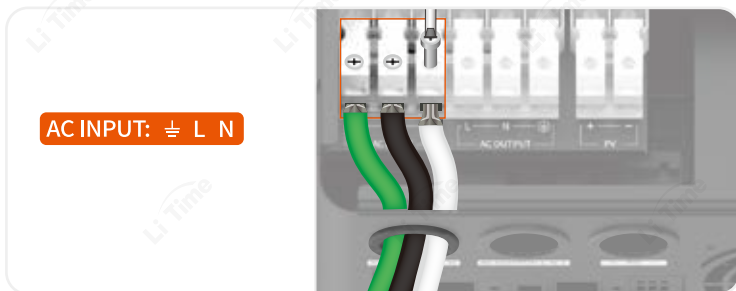
Step 1

Use the provided wire connectors and heat shrink tubes to prepare the cables for connection to the AC input and output terminal blocks.



Step 2

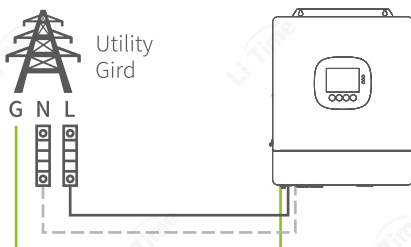
Connect the AC input terminals from left to right (Ground → Live → Neutral) with the slotted screwdriver.



Step 3

Grid (Optional)

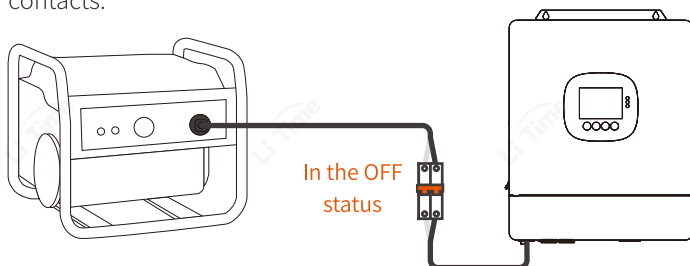
① Plug the connected cable to the grid.



Generator (Optional)

① Plug the connected cable to the generator.

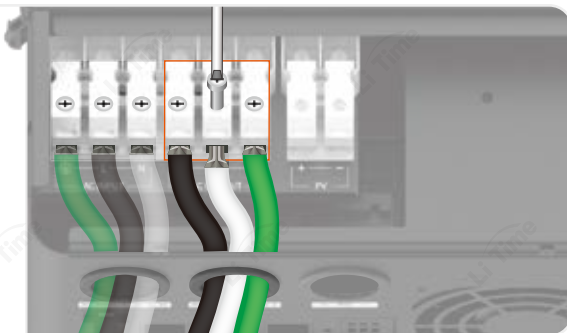
② Check the generator manual and connect to NC-COM or NO-COM of this product according to the control logic of the generator when connecting the generator to this product's dry contacts.



☆ AC Output

Connect the AC output terminals as the Ground → Live → Neutral with the slotted screwdriver.

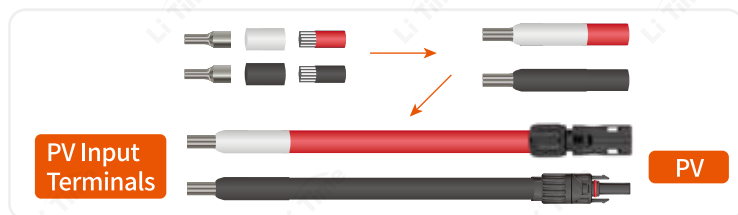
AC OUTPUT: L N $\perp$



○ PV Wiring

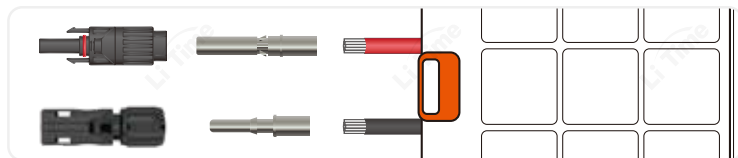
Step
1

Use the provided wire connectors and heat shrink tubes to prepare the cables for connection to the PV terminals on this product. One end of the wires is connected to the wire connector and the other end is connected to the MC4 connector.



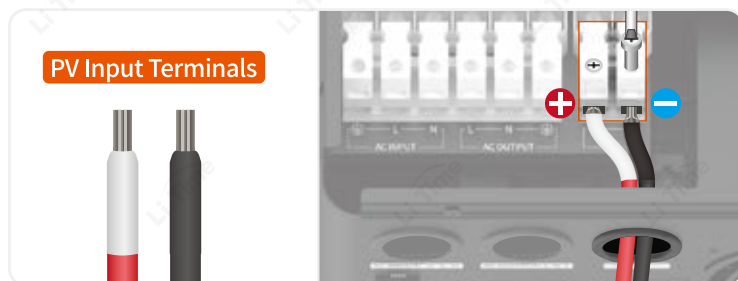
Step
2

(Optional) If the solar panel lacks the MC4 connectors or is incompatible with the solar inverter charger, use the provided MC4 connectors. Connect the red wire to the male connector, and the black wire to the female connector.



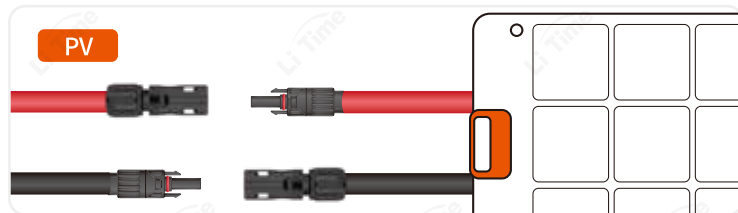
Step
3

Connect the wire connectors of the cables to the PV terminals on this product, MC4 female connector cable to **+**, MC4 male connector cable to **-**.



Step
4

Connect MC4 connectors to solar panels then screw the terminal panel.



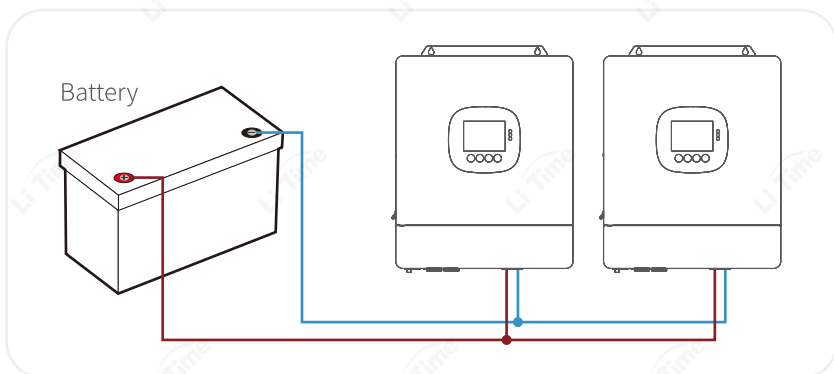
For single-machine use, refer to page 29 to complete the connections.

Single-Phase Parallel Connection

After the parallel connection, the **continuous power output** will be doubled according to the number of solar inverter chargers connected. Such as two machines in parallel, the system supports 120V **10,000W**; three machines in parallel, the system supports 120V **15,000W**.

Battery Wiring

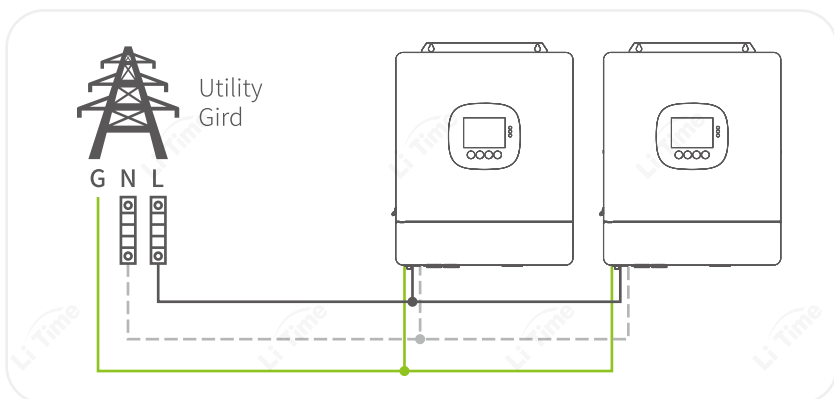
Connect all solar inverter chargers to the **same battery (system)** via wires of the identical length/specification, **+** to **+**, **-** to **-**.



AC Input Wiring

Connect all units to grid power:

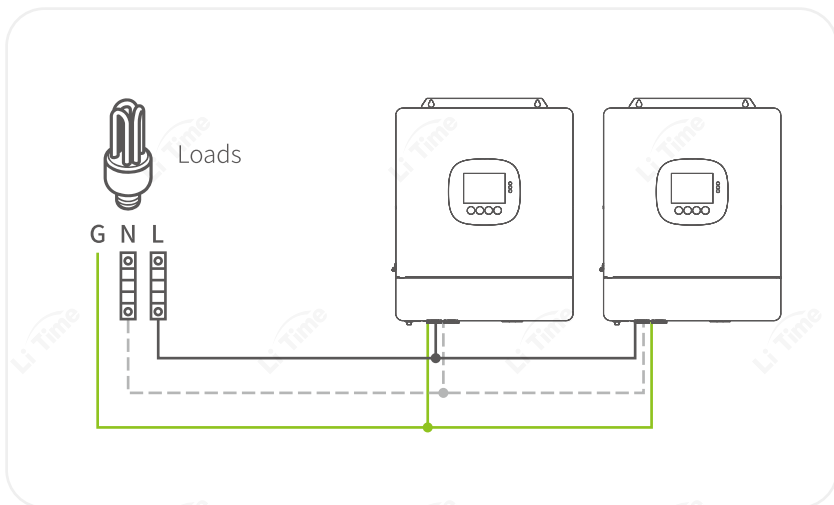
- **L terminals** → Grid **L** (via circuit breaker)
- **N terminals** → Grid **N** (via circuit breaker)
- **G terminals** → Grid **Ground**



○ AC Output Wiring

Connect all units to load:

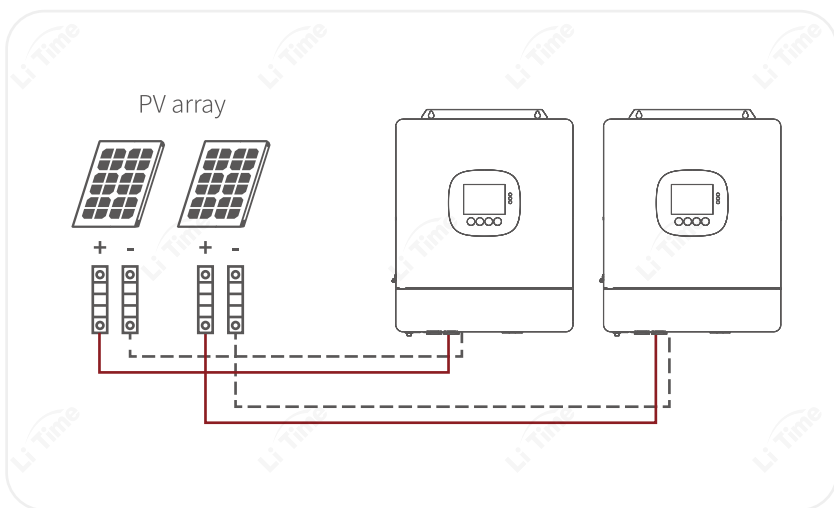
- **L terminals** → Load **L** (via circuit breaker)
- **N terminals** → Load **N** (via circuit breaker)
- **G terminals** → Load **Ground**



○ PV Wiring

Connect all units to the separate solar panel array, **+** to **+**, **-** to **-**.

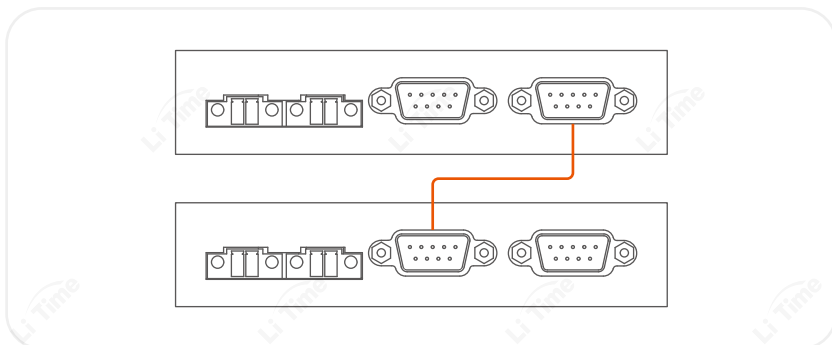
Never share PV arrays between units.



○ Parallel Communication Wiring

Connect the **first unit's parallel communication male port** to the **second unit's female port** by the provided parallel communication cable, then **tighten the screws**.

Repeat sequence for additional units, daisy-chaining each subsequent male port to the next unit's female port.

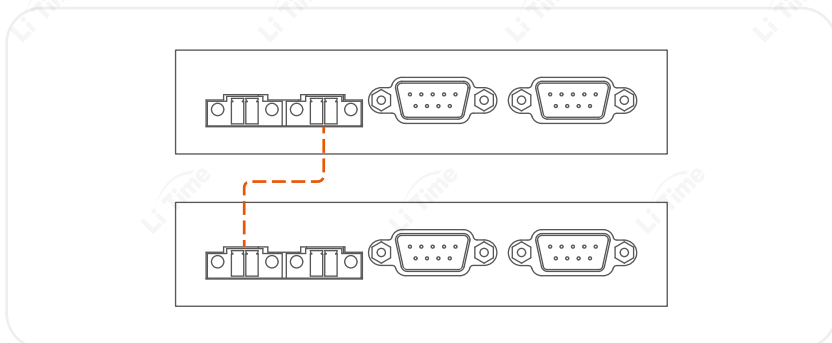


⊖ Note: Do not connect the parallel communication ports of the same inverter to each other.

○ Current Balancing Wiring

Connect the **first unit's second current balancing port** to the **second unit's first port** via the provided current balancing cable.

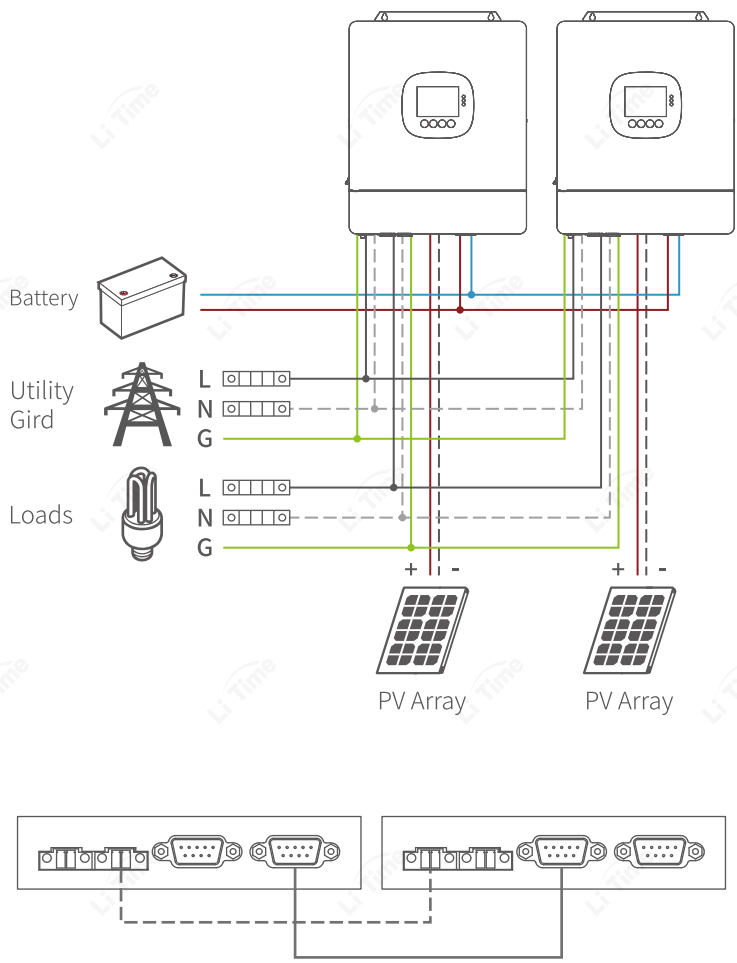
Repeat sequence for additional units, daisy-chaining each subsequent second port to the next unit's first port.



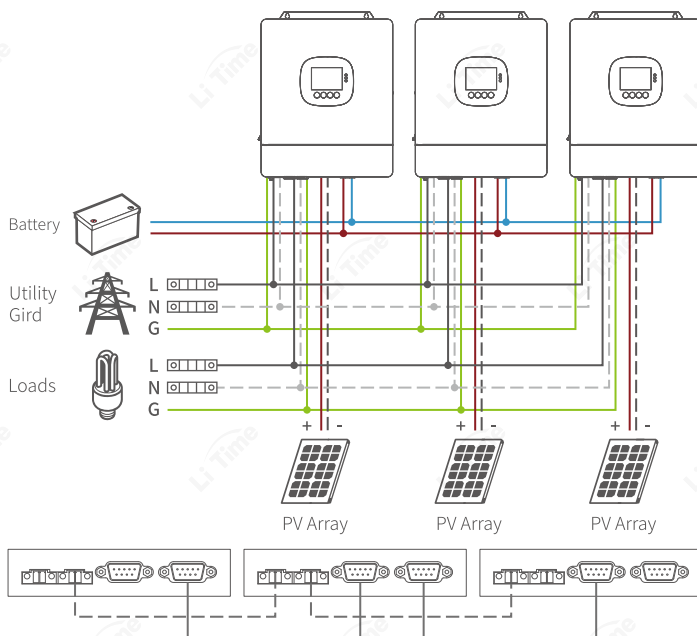
⊖ Note: Do not connect the current balancing ports of the same inverter to each other.

○ Wiring Diagram Reference

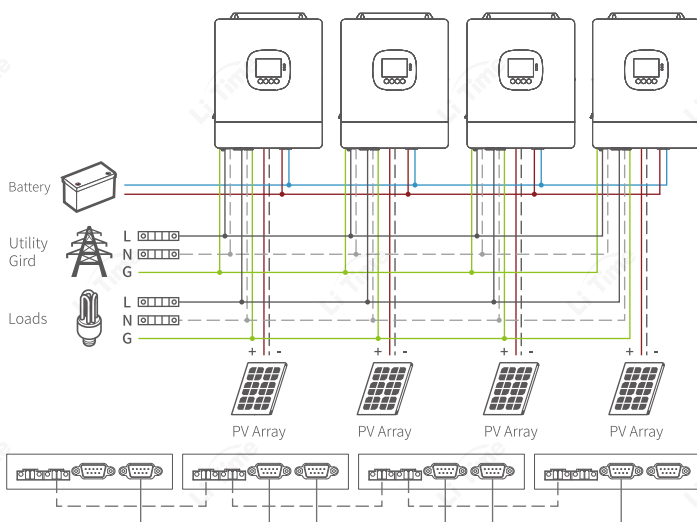
2P (120VAC, 10kW)



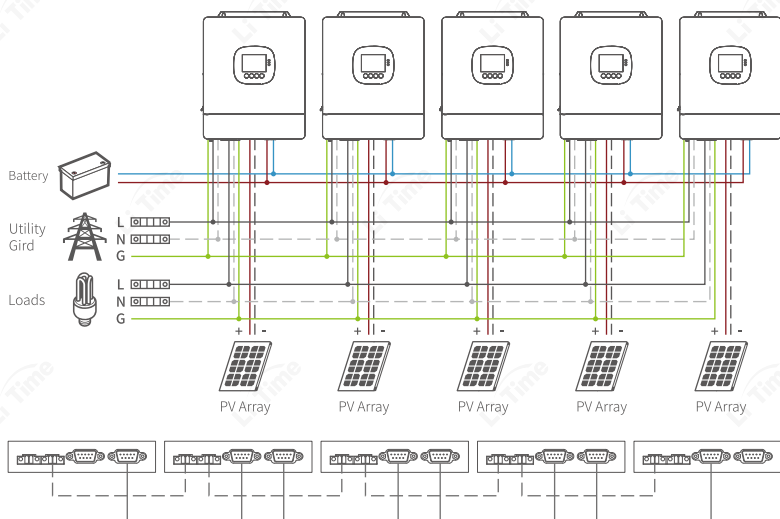
3P (120VAC, 15kW)



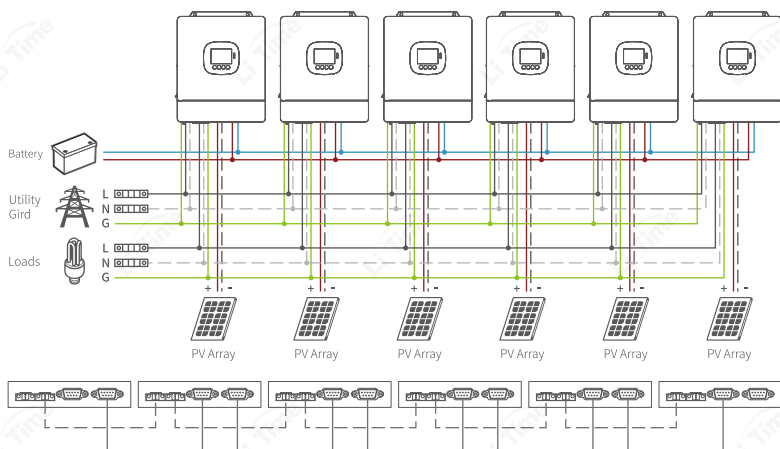
4P (120VAC, 20kW)



5P (120VAC, 25kW)



6P (120VAC, 30kW)



2-Phase/3-Phase Parallel Connection

This machine delivers 208V and 240VAC voltage via split-phase function. When combining parallel and split-phase, **always parallel first, then configure split-phase**.

Battery, PV, parallel communication wiring is identical to Single-Phase Parallel Connection (Refer to page 12~14).

Do not connect to the current balancing ports for the split-phase machine, which will cause damage from a high voltage drop in the machine.

○ AC Input Wiring

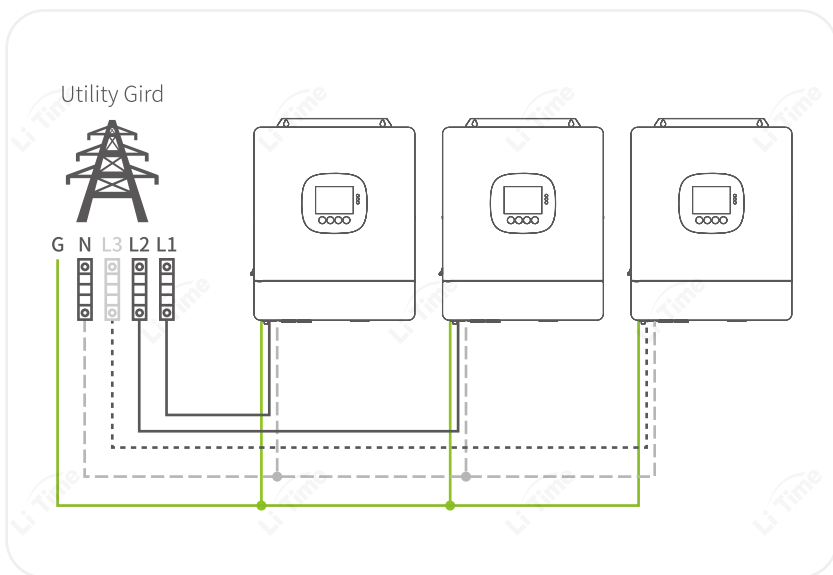
Phase terminals:

- Unit/System 1: L → Grid L1 (via circuit breaker)
- Unit/System 2: L → Grid L2 (via circuit breaker)
- *[For 3-phase Only]* Unit/System 3: L → Grid L3 (via circuit breaker)

Common terminals:

All units N → Grid Neutral (via circuit breaker)

All units G → Grid Ground



○ AC Output Wiring

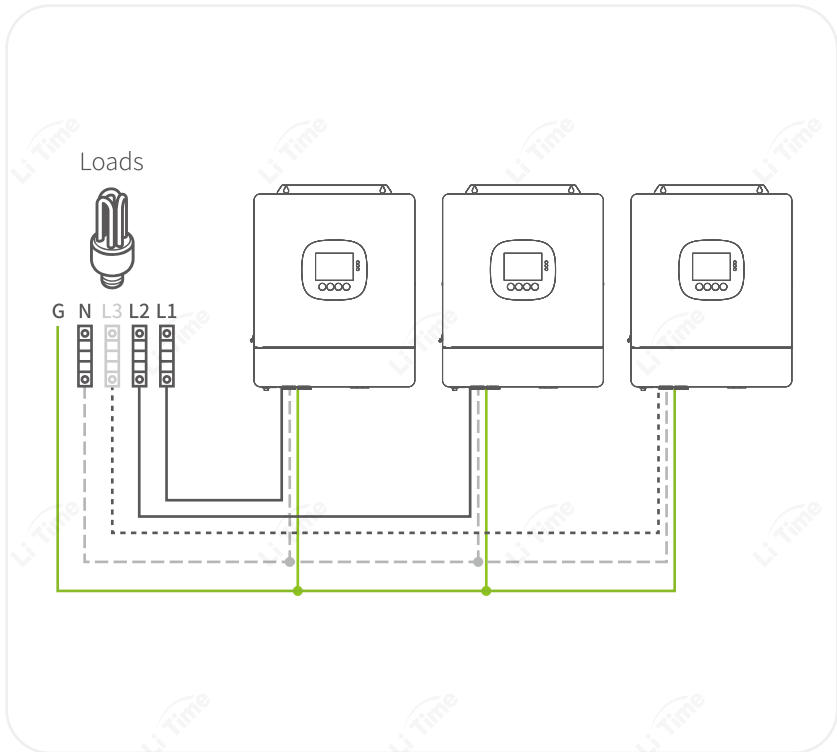
Phase terminals:

- **Unit/System 1: L** → Load **L1** (via circuit breaker)
- **Unit/System 2: L** → Load **L2** (via circuit breaker)
- ***[For 3-phase Only]* Unit/System 3: L** → Load **L3** (via circuit breaker)

Common terminals:

All units N → Load Neutral (via circuit breaker)

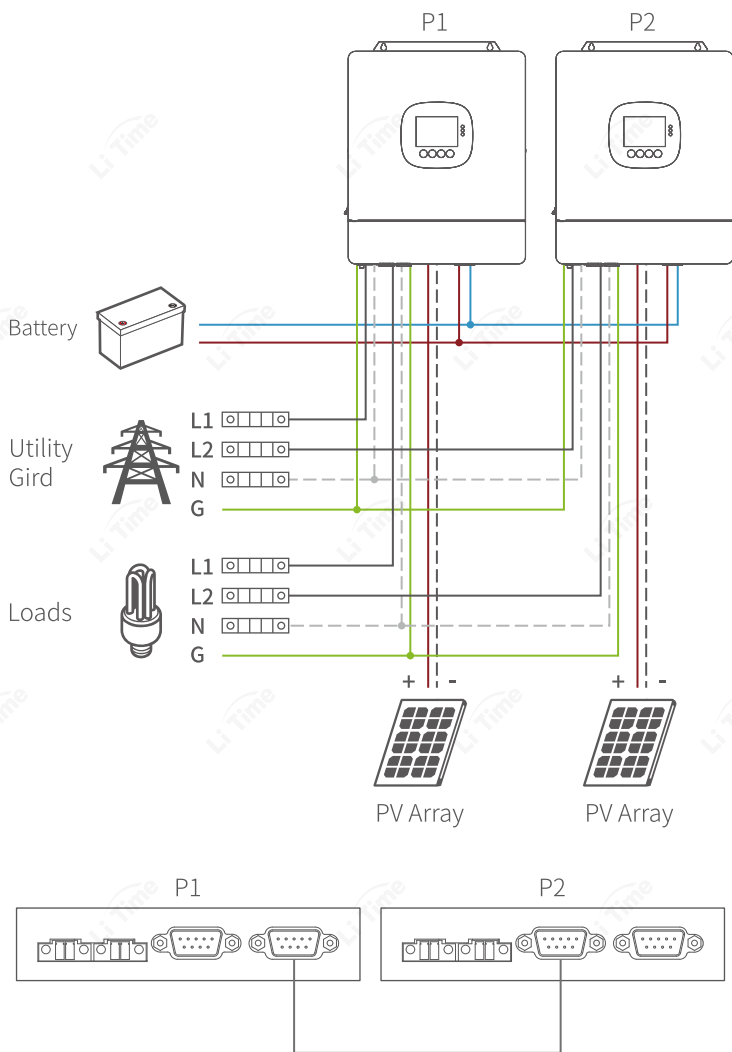
All units G → Load Ground



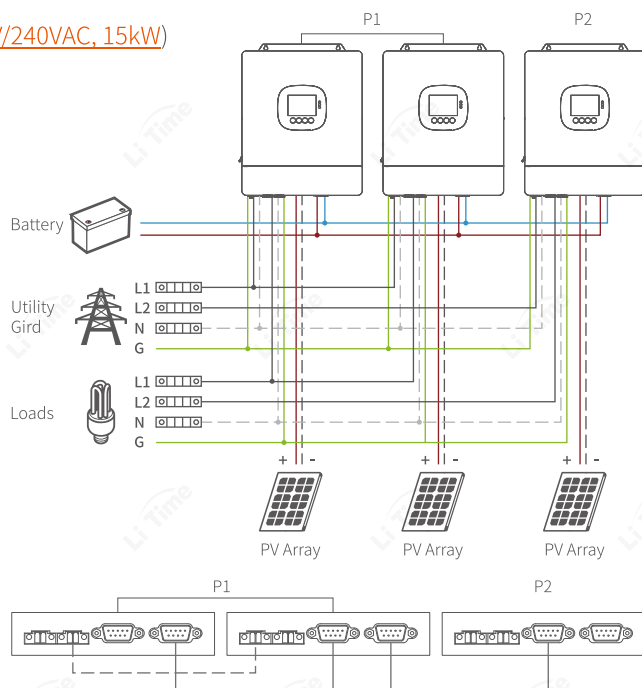
○ Wiring Diagram Reference

☆ 2-Phase (208V/240VAC Available)

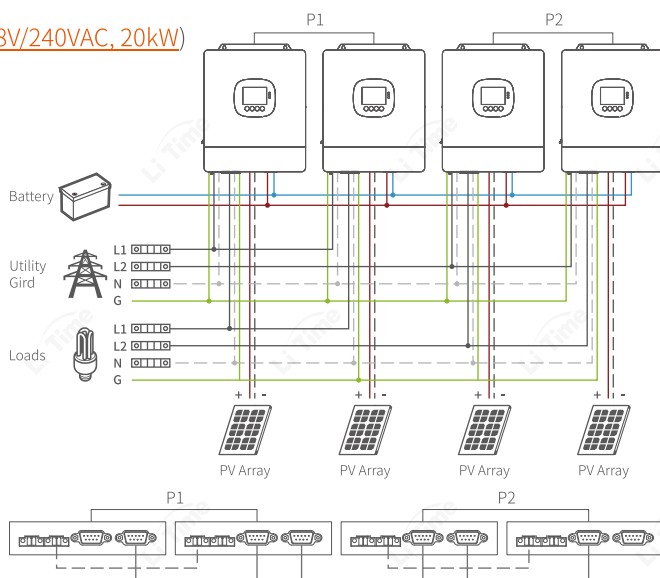
1+1 (208V/240VAC, 10kW)



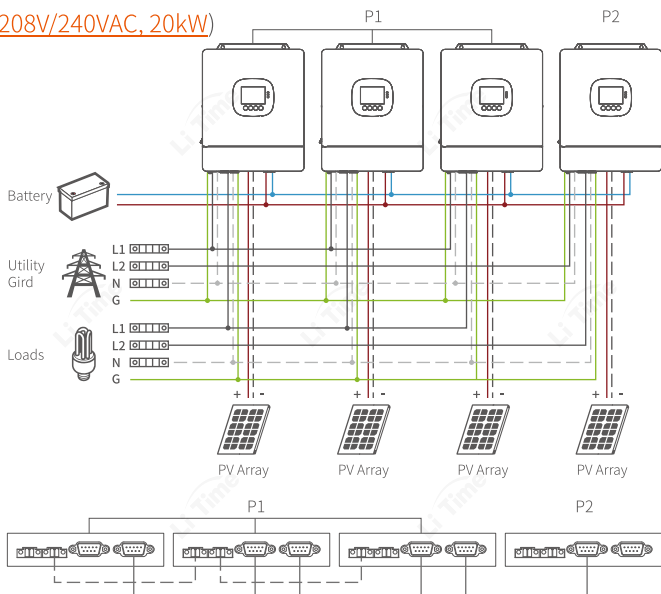
2+1 (208V/240VAC, 15kW)



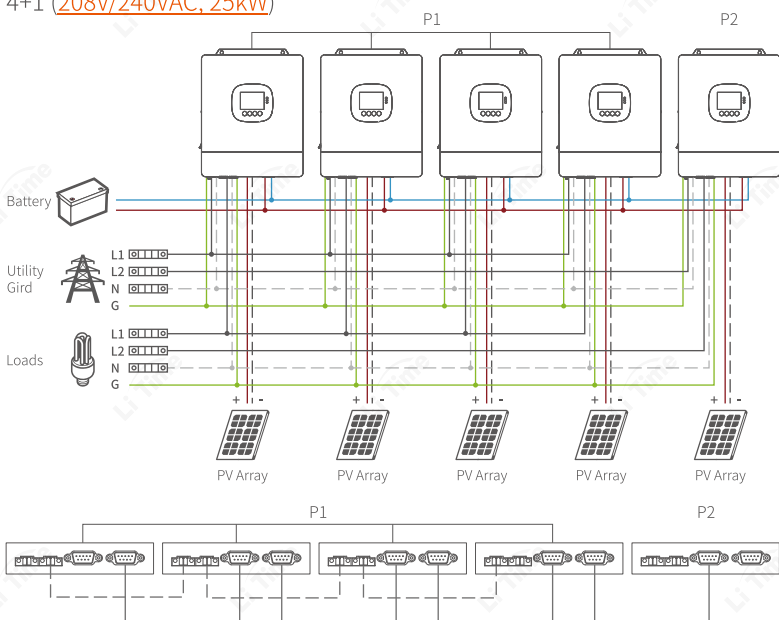
2+2 (208V/240VAC, 20kW)



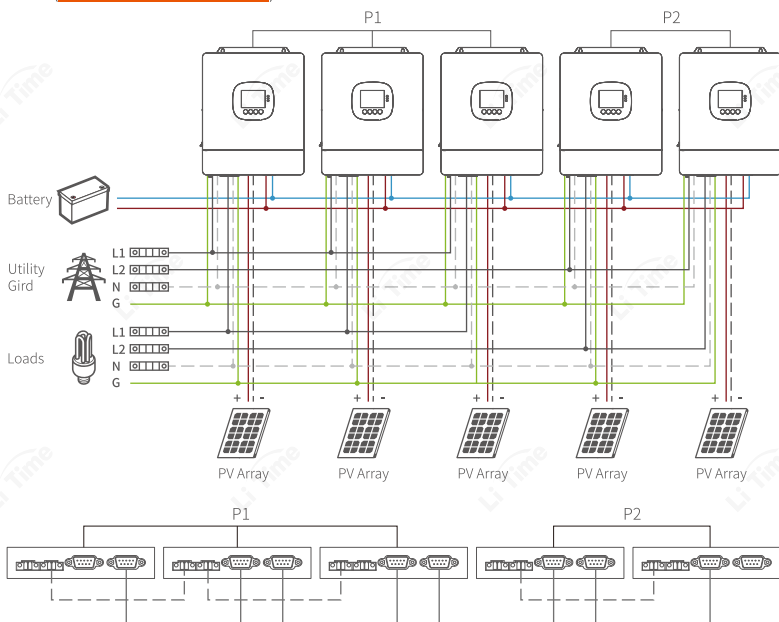
3+1 (208V/240VAC, 20kW)



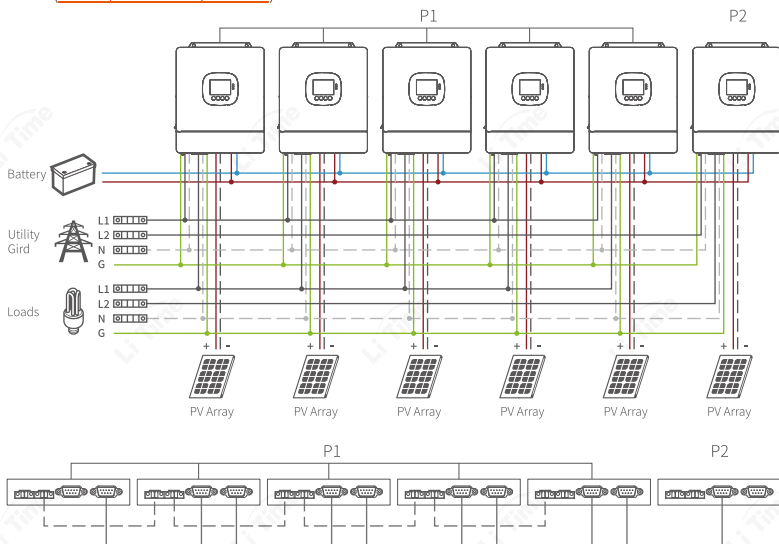
4+1 (208V/240VAC, 25kW)



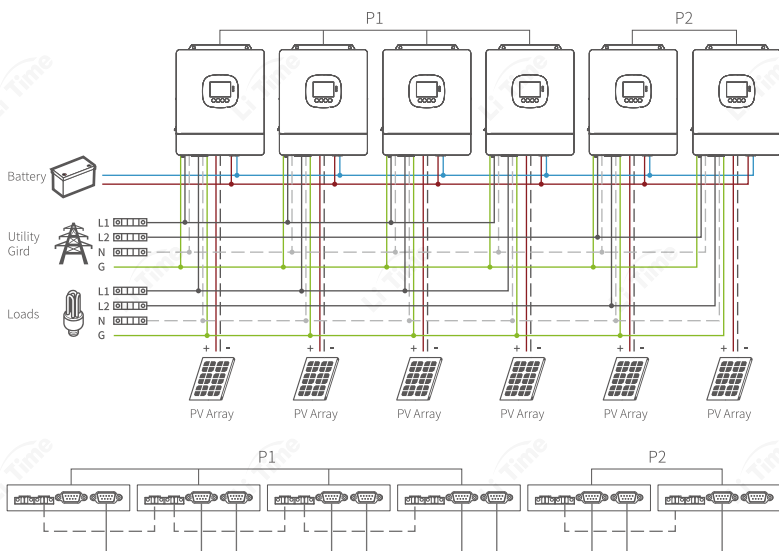
3+2 (208V/240VAC, 25kW)



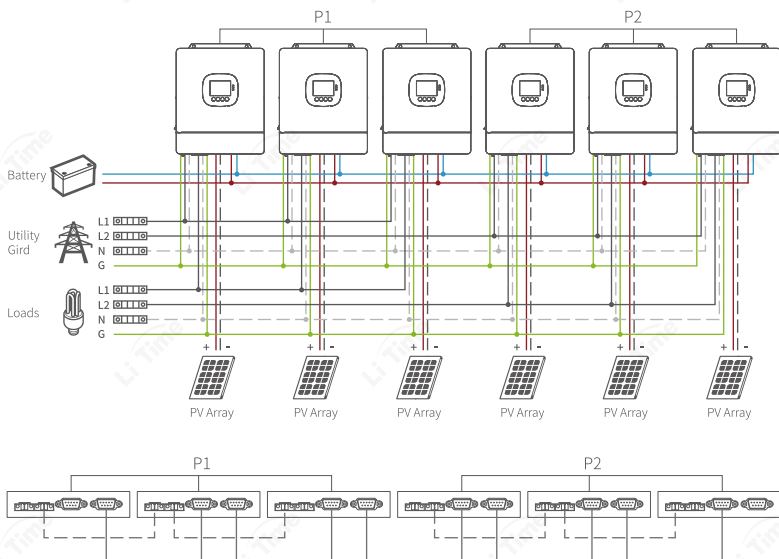
5+1 (208V/240VAC, 30kW)



4+2 (208V/240VAC, 30kW)

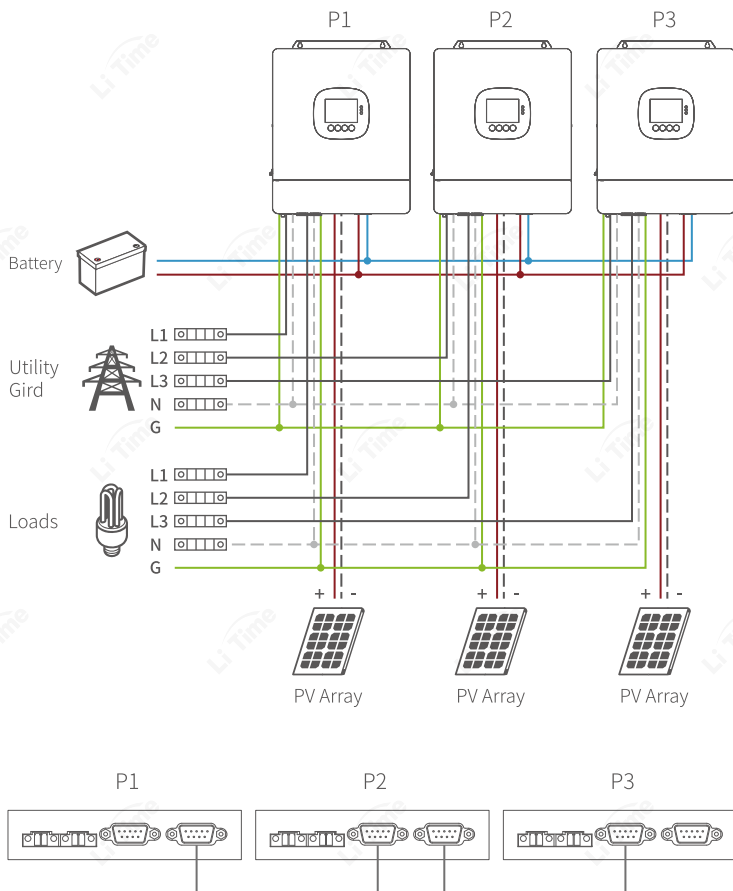


3+3 (208V/240VAC, 30kW)

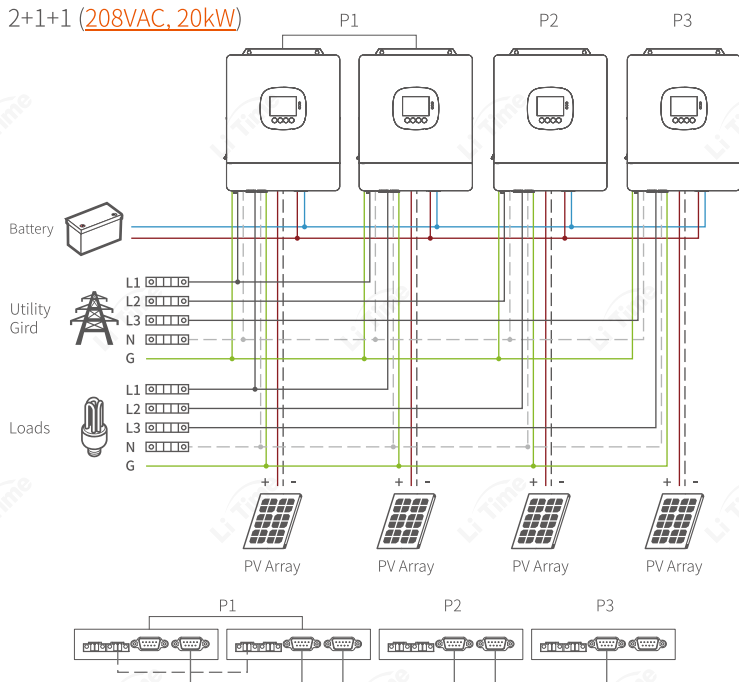


☆ 3-Phase (208V Available)

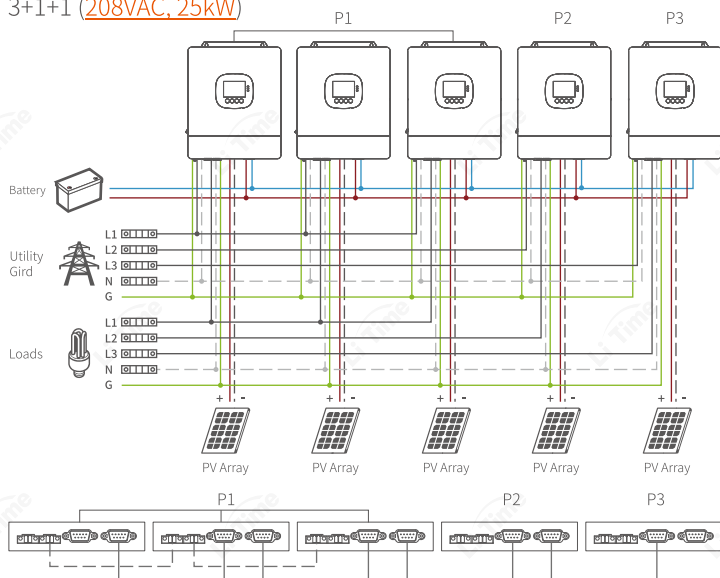
1+1+1 (208VAC, 15kW)



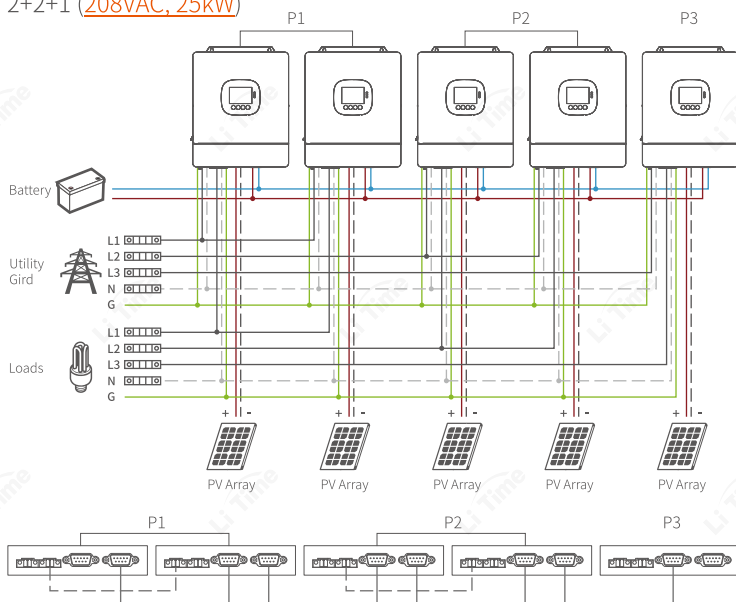
2+1+1 (208VAC, 20kW)



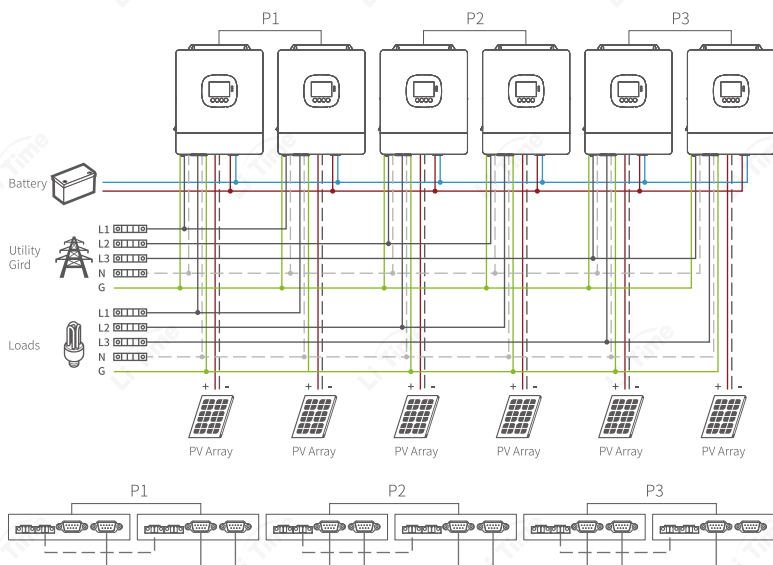
3+1+1 (208VAC, 25kW)



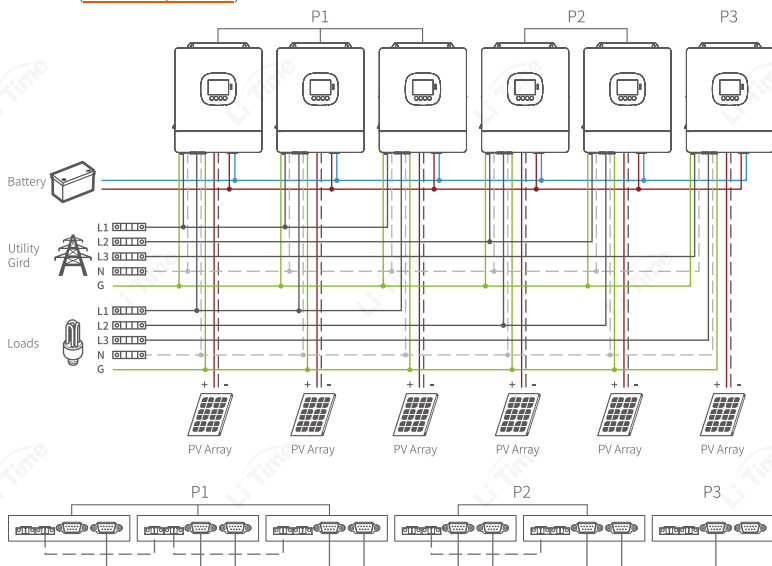
2+2+1 (208VAC, 25kW)



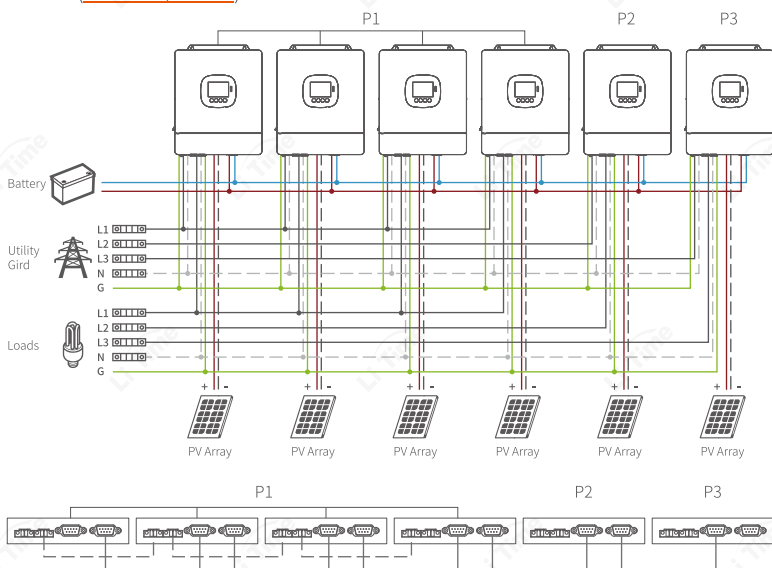
2+2+2 (208VAC, 30kW)



3+2+1 (208VAC, 30kW)



4+1+1 (208VAC, 30kW)



Communication Ports (Optional)

RS485 Communication Port

Communicate with a protocol-matched home energy storage battery through this interface, allowing the solar inverter charger to read the information from the home energy storage battery.

The RS485 port pin assignment of the battery is shown as right, make sure the battery connected to the solar inverter charger is Pin to Pin.

Pin Number	RS485
1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	RS485-A(+)
8	RS485-B(-)

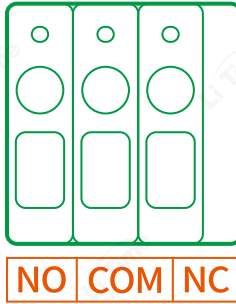
Dry Contacts

The dry contact on this product is used for communication with external devices, allowing seamless integration with other components for efficient operation.

The external device needs to be connected to the AC input/output ports of this product to provide or use power.

⚠ DO NOT supply power to this product by two AC power sources (such as grid power and generator) at the same time, otherwise, it will damage the product.

Port	Circuit Status		Common Connected Devices
	General	Battery Voltage Below Setting Code 04 ^③	
NC ^① -COM	Close (Power on & current flow)	Open (Power off & no current)	Devices with dry contacts or intermediate (/ control) relays
NO ^② -COM	Open (Power off & no current)	Close (Power on & current flow)	



- ① Normally Closed
- ② Normally Open
- ③ The circuit status will be back to general once the battery voltage is above setting code 05.

Power On after Finishing All Connections

After finishing all connections, make sure all connections are tight and turn on all switches or circuit breakers in the system in the following order:

Battery breaker → Solar inverter charger switch^① → PV breaker → AC input breaker → AC output breaker → AC loads

Before adding the new machine to an existing operational system, turn OFF all solar inverter chargers; disconnect battery input, PV input, AC input, and AC output. Then perform rewiring and connection to the system.

- ① After the machines are connected in a parallel/split-phase system, whichever one is powered on first is the master machine. Power them on in order according to actual needs.

LCD SCREEN OPERATING

Operation Buttons and LED Indicators



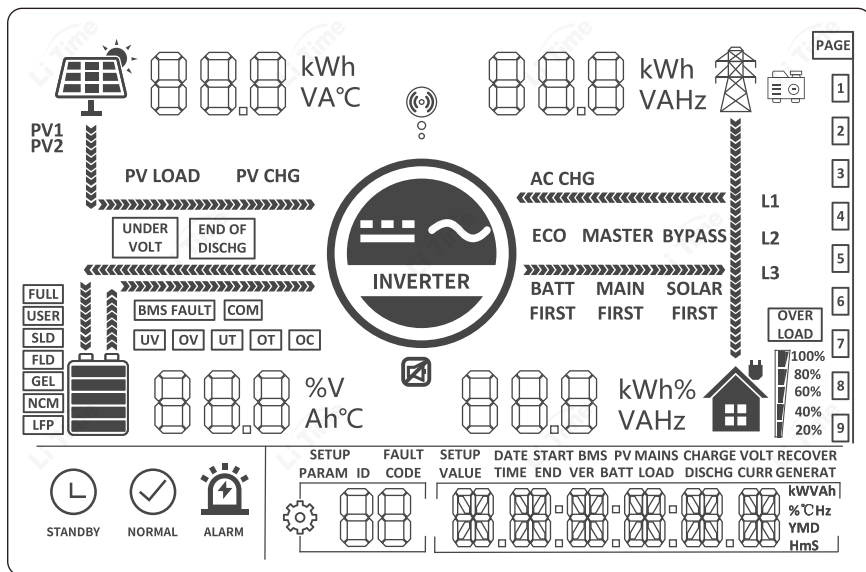
Operation Buttons

Buttons	Description
 SET	Enter/Exit Settings Menu
 UP	View Next Parameter/Increase the Value
 DOWN	View Previous Parameter/Reduce the Value
 ENTER	Confirm/Enter Options Under the Settings Menu

LED Indicators

Indicators / Color	Status	Description
OUTPUT (Yellow)	Steady on	The grid power is working.
	Flash	The inverter is working.
CHARGE (Green)	Steady on	Charge finished .
	Flash	The battery is charging.
FAULT (Red)	Steady on	The product is in fault status.

LCD Screen



Icon	Function Description	Icon	Function Description
	Solar panel		Grid power
	Battery capacity percentage (Each block represents 20% of the battery power)		AC load
	The product is connected to generator		Load level (Each block represents 20% of the load level)
	Indicates the AC output is in overload status		Not available for this product

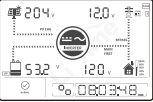
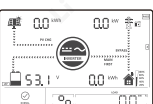
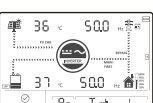
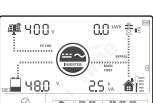
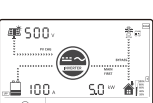
Icon	Function Description	Icon	Function Description
	The inverter is working		Indicates that the buzzer is disabled
PV LOAD	Indicates the solar panel is powering the load	PV CHG	Indicates the solar panel is charging the battery
AC CHG	Indicates the grid power is charging the battery	ECO	The product is in ECO (Economy) Mode
MASTER	Indicates the master machine	BYPASS	The AC load is supplied by grid power
BATT FIRST	Inverter First Mode	MAIN FIRST	Grid First Mode
SOLAR FIRST	MPPT First Mode		The battery is under voltage
	The battery is over-discharged		Battery BMS failure
	Indicates internal communication failure		Indicates system is under voltage
	Indicates system is over voltage		Indicates system is low temperature

Icon	Function Description	Icon	Function Description
	Indicates system is over temperature		Indicates system is over current
	Display parameters of PV, battery, grid power and load		Indicates that the battery is fully charged
	Indicates that the current battery type		Indicates the data page of the main display interface
 STANDBY	Indicates that the machine is idle	 NORMAL	Indicates that the machine is in normal operation
 ALARM	Indicates that the machine is in an alarm or fault status		Displays fault codes during system alarms/faults and shows setting options when the icon appears

Icon	Function Description
SETUP DATE START BMS PV MAINS CHARGE VOLT RECOVER VALUE TIME END VER BATT LOAD DISCHG CURR GENERAT kWhVAh %℃Hz YMD HmS	View Mode: display real-time time, date, total PV power generation, total load power consumption, RS485 address, version number Setting Mode: display setting contents

Real-time Data

Press the  or  buttons to scroll through the input and output real-time data of the product at the same time.

Page	Display Screen	Solar Panel 	Battery 	Grid Power 	AC Load 	Other Parameters (Lower right corner of the display)
1		Voltage (V)				Current Time
2		Current (A)				Current Date
3		Power (kW)	BMS Batt SOC (%)	Power (kW)	Power (kW)	Total PV Power Generation (kWh)
4		PV Daily Generation (kWh)	BMS Batt Voltage (V)	/	Load Daily Consumption (kWh)	Total Load Consumption (kWh)
5		Temperature (°C)		Frequency (Hz)		RS485 Address
6		Bus Voltage (V)	Battery Rated Voltage (V)	/	Load Apparent Power (kVA)	Software Version
7		PV Rated Voltage (V)	Battery Rated Charge Current (A)	/	Load Rated Power (kW)	Parallel Mode

Orange parameters are only visible when the machine communicates with the battery BMS.

Work Modes

Charging Modes

Setting Code	Description	Icon	Back Up Mode ^①
[06] Hybrid (Default)	MPPT and Grid		
[06] ONLYPV	Only MPPT		/

Output Modes

Setting Code	Description	Icon	Back Up Mode ^①
[01] PV 1ST	MPPT First		
[01] AC 1ST (Default)	Grid First		
[01] BT 1ST	Inverter First		
[01] MIX LOd	MPPT and Grid		

① The product will automatically switch to the back up mode if it is available when the selected primary charging/output source is insufficient.

Adjust Settings

Setting Operation

The parameters can be adjusted according to the following steps.

- **Step 1:** Short press the “” to enter the setup menu when it is in view mode, then the parameter number [00] will flash.
 - **Step 2:** Short press the “” or “” to select the setting code.
 - **Step 3:** Short press the “” to enter the parameter editing mode, and the value of the parameter is flashing.
 - **Step 4:** Adjust the parameter code value with the “” or “”.
 - **Step 5:** Short Press the “” to confirm the parameter, then set other settings codes continuously.
 - **Step 6:** Exit setting mode by short pressing the “” after finishing all settings.
- ⓘ Note: For non-single machine use, set the [31] as per the guideline in page 42.

Setting Parameters

Parameter codes in orange are the default settings. All voltage settings are in 0.4V increments/reductions, 5 for seconds/minutes/current (except for setting item 57), 1 for percentage/days/time/date.

Setting Codes	Parameter	Parameter Codes/Value	Description
00	Exit Setting Mode	[00] ESC	Exit the setup menu.
01	Output Modes	[01] AC 1ST	Grid First mode, the system prioritizes MPPT power for the load. When solar is insufficient, the grid and MPPT work together to power the load. If solar is sufficient for loads, the remaining power is used to charge the battery. The grid only charges the battery when it is over-discharged(The grid will not charge the battery when the setting item [06] is set ONLYPV). The battery discharges only when grid power is unavailable.

01	Output Modes	[01] BT 1ST	Inverter First mode, switching to the Grid when the battery is below the set value of the setting code [04] or the battery SOC is below the set value of the setting code [61] after communicating with battery BMS. It switches back to Inverter First mode when the battery exceeds the set value of the setting code [05] or the battery SOC exceeds the set value of the setting code [62].
		[01] PV 1ST	MPPT First mode, switching to the Grid when the PV fails, or the battery is below the set value of the setting code [04], or the battery SOC is below the set value of the setting code [61] after communicating with battery BMS. It switches back to MPPT First mode under PV normal working condition, when the battery exceeds the set value of the setting code [05] or the battery SOC exceeds the set value of the setting code [62].
		[01] MIX LOD	MPPT and Grid mode, the system prioritizes MPPT for charging. When solar is insufficient, the grid and MPPT work together to charge the battery and power the load. If solar is sufficient for charging but leaves excess power inadequate for the load, the system combines the remaining solar power with grid power to supply the load. The battery discharges only when grid power is unavailable.
02	Output Frequency	[02] 50.0	When grid-connected, the output automatically synchronizes to the grid frequency. When disconnected, the output frequency can be set via this menu.
		[02] 60.0	
03	AC Input Voltage Range	[03] APL	Input voltage range: 90~140V. (Same for this product)
		[03] UPS	
04	Battery Power to Grid Power	[04] 49.2V	Setting range: 40V~52.4V. Cannot exceed the value of [14] settings. When the setting code [01] =PV 1ST/BT 1ST and the battery voltage is lower than the set value, then output will be switched from the battery/MPPT to the grid.

05	Grid Power to Battery Power	[05] 54.4V	Setting range: 51.6V~60V. Cannot be lower than the value of [04] & [35] settings. When the setting code [01] =PV 1ST/BT 1ST and the battery voltage is higher than the set value, the output will be switched from the grid to the battery.
06	Charging Modes	[06] Hybrid	MPPT and Grid charging: MPPT charging first. Grid will supplement for charging only when the PV energy is insufficient. Once the PV energy is sufficient, the Grid charging stops. Note: The MPPT and Grid will charge at the same time only when the Grid bypass output supplies power to the load. When the inverter is working, only MPPT can be used for charging.
		[06] ONLYPV	Only MPPT charging, with the Grid charging not available.
07	Max Charging Current (PV+AC)	[07] 80A	Charging current range: 0~100A.
08	Battery Type	[08] USER	User-defined.
		[08] SLD	Sealed lead-acid battery.
		[08] FLD	Flooded lead-acid battery.
		[08] GEL	Gel lead-acid battery.
		[08] LF14/LF15/LF16	Lithium iron phosphate battery LF14/LF15/LF16, for 14 strings/15 strings /16 strings of lithium iron phosphate battery.
		[08] N13/N14	NCM lithium battery.
		[08] No battery	Battery disconnected.
09	Boost Charge Voltage	[09] 56.8V	Setting range: 54.8V~58.4V.

10	Boost Duration Time	[10] 120	Setting range: 5min~900min. It means the maximum charging time to reach the set voltage of setting code [09] during constant-voltage charging.
11	Float Charge Voltage	[11] 56.8V	Setting range: 54V~58.4V.
12	Low Voltage Disconnect	[12] 48.8V	Setting range: 43.6V~52V. The inverter output will be turned off after the battery voltage is lower than this set value and the time reach the setting code [13].
13	Over Discharge Delay Time	[13] 5s	Setting range: 5s~50s. The inverter output will be turned off if the battery voltage remains lower than the setting code [12] in excess of this time setting.
14	Under Voltage Warning	[14] 49.6V	Setting range: 40V~54V. The battery alarm will sound when the battery voltage is lower than this set value, the output is not turned off.
15	Discharging Limit Voltage	[15] 46.4V	Setting range: 43.2V~48.4V. When the battery voltage is lower than this setting, the output is turned off immediately.
16	Equalize Charge	[16] DIS	Equalizing charge is disabled.
		[16] ENA	Equalizing charge is enabled.
17	Equalize Charge Voltage	[17] 58.4V	Setting range: 48V~59.2V.
18	Equalize Duration Time	[18] 120	Setting range: 5~900min.
19	Equalize Charge Delay	[19] 120	Setting range: 5~900min.
20	Equalize Charge Interval	[20] 30	Setting range: 0~30 days.
21	Enable Equalize Charge	[21] DIS	Stop equalizing charge immediately.
		[21] ENA	Start equalizing charge immediately.

22	ECO (Economy) Mode	[22] DIS	Disable ECO mode.
		[22] ENA	Enable ECO Mode, which is only available when under “Inverter On”, and is not available for a parallel or split-phase system. ECO Mode conserves battery power when AC loads do not or rarely require AC power. In this mode, the inverter pulses the AC output searching for an AC load (ie, electrical appliance). Whenever an AC load ($\geq 50W$) is detected, the inverter automatically starts inverting and powering up fully. After 5 minutes of when no load ($< 50W$) is detected, the inverter automatically reverts to search mode to minimize energy consumption from the battery bank.
23	Overload Auto-start	[23] DIS	If an overload occurs and the output is turned off, the machine will not restart.
		[23] ENA	If the overload occurs, the machine attempts to restart the output after 3 minutes, after 5 attempts it will not longer resume to turn on the loads.
24	Over Temperature Auto-start	[24] DIS	If an over temperature shutdown occurs, the machine will not restart to resume output.
		[24] ENA	If an over temperature shutdown occurs, the machine will restart when the temperature drops.
25	Buzzer Alarm	[25] DIS	Disable alarm.
		[25] ENA	Enable alarm.
26	Mode Transition Alarm	[26] DIS	No alarm prompts when the status of the primary input source changes.
		[26] ENA	Enable alarm prompts when the status of the primary input source changes.

27	Bypass Output Once Inverter Overload	[27] DIS	Disable automatically switching to the Grid when the inverter is overloaded.
		[27] ENA	Enable automatically switching to the Grid when the inverter is overloaded.
28	Maximum AC Charging Current	[28] 40A	Setting range: 0~40A.
30	Serial Number of Parallel Machine	[30] 1	RS485 communication address can be set within the range of 1~254 for stand-alone mode and 1~6 for parallel mode.
31	AC Output Mode (only can be set in the standby mode)	[31] SIG	For single machine use.
		Important: Follow the steps below if it is not for a single machine use: ① Power ON only one machine, keep others OFF. ② Set Item [31] per system operation mode. ③ Power OFF the configured machine; wait for full shutdown. ④ Repeat steps 1~3 for each remaining machine. ⑤ Power ON all machines simultaneously to enter operational status.	
		[31] PAL	For single-phase parallel use.
		[31] 2P0/2P1/2P2	For 2-phase parallel use. Set all connected P1-phase machines to 2P0. Configure all connected P2-phase machines to 2P1 for 208VAC or 2P2 for 240VAC. The voltage of both the L1-N and L2-N is 120V.
		[31] 3P1/3P2/3P3	For 3-phase parallel use. Set all connected P1-phase machines to 3P1. Configure all connected P2-phase machines to 3P2 and all P3-phase machines to 3P3 for 208VAC output. The voltage of both the L1-N, L2-N, and L3-N is 120V.

32	BMS Communication Interface	[32] 485	Enable RS485 port communication. Set the 32 setting item to 485 and make sure the 33 setting item has the same protocol as the battery setting if communication is necessary.
		[32] SLA	Disable RS485 port communication.
33	BMS Communication Protocol	[33] LT	To select the below lithium battery manufacturer brand for the BMS communication: LT / DYE / LUX / PYT / GSL / SGP / UZE / WES / VOL / POW / XXI / SHO / PYL / WOW / DAQ / XWD / CEF / OLT / AOG / RDA / PAC
35	Low Voltage Reconnect	[35] 51.2V	Setting range: 40.4V~57.2V. When the battery is under voltage, its voltage needs to be higher than this set value before the inverter starts the output.
37	Boost Charge Recovery Voltage	[37] 53.6V	Setting range: 50.4V~55.6V. After the battery is fully charged, its voltage needs to be lower than this set value before it can be recharged.
38	AC Output Voltage (only can be set in the standby mode)	[38] 120VAC	Setting options: 100VAC/105VAC/110VAC/120VAC/127VAC.
39	Charging Current Limiting Method	[39] LC SET	The inverter charging current adopts the value set in item [07], in which case item [07] can be set to any value from 0 to the maximum charging current.
		[39] LC BMS	The charging limit current transmitted by BMS and the value set in [07] will be compared, and the smaller value will be taken as the current charging current, in this case, the charging current that can be set in [07] can not be greater than the charging limit current of BMS.

		[39] LC INV	It will compare the inverter's internal current limit value with the value set in item [07], and take the smaller of them as the current charging current. At this time, the charging current can be set in item [07] can not be greater than the inverter internal current limit value.
40	1-section Start Charging Time	[40] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
41	1-section End Charging Time	[41] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
42	2-section Start Charging Time	[42] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
43	2-section End Charging Time	[43] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
44	3-section Start Charging Time	[44] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
45	3-section End Charging Time	[45] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
46	Sectional Charging Function	[46] DIS	Disable this function.
		[46] ENA	After the sectioned charging function is enabled, the system will enable grid power charging only during the set charging period.
47	1-section Start Discharging Time	[47] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
48	1-section End Discharging Time	[48] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.

49	2-section Start Discharging Time	[49] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
50	2-section End Discharging Time	[50] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
51	3-section Start Discharging Time	[51] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
52	3-section End Discharging Time	[52] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
53	Sectional Discharge Function	[53] DIS	Disable this function.
		[53] ENA	After enabling the sectional discharge function, the system switches to the battery inverter power supply mode only in the set discharge period or grid power is off. The sectioned discharge function is only available for the AC 1ST/MIX load mode.
54	Current Date	[54] 00:00:00	Setting range: 00:01: 01~99:12:31.
55	Current Time	[55] 00:00:00	Setting range: 00: 00: 00~23: 59: 00.
57	Stop Charging Current	[57] 2A	Setting range: 2.0A~10.0A. 1A per step. Charging stops when the charging current is less than this setting.
58	Low Capacity Alarm (communicated with battery BMS)	[58] 15%	Setting range: 6%~60%. SOC alarm when capacity is less than this setting.

59	Low Capacity Disconnect (communicated with battery BMS)	[59] 5%	Setting range: 0%~14%. Discharge stops when the capacity is less than this setting value.
60	Full Capacity Disconnect (communicated with battery BMS)	[60] 100%	Setting range: 15%~100%. Charging stops when the capacity is greater than this setting value.
61	Battery Power to Grid Power (communicated with battery BMS)	[61] 10%	Setting range: 0%~95%. Cannot exceed the value of [58] settings. When the setting code [01] is PV 1ST/BT 1ST and the battery SOC is below the set value, the output will be switched from battery/MPPT to the grid.
62	Grid Power to Battery Power (communicated with battery BMS)	[62] 100%	Setting range: 20%~100%. Cannot exceed the value of [60] & cannot lower than [61] settings. When the setting code [01] is PV 1ST/BT 1ST and the battery SOC exceeds the set value, the output will be switched from the grid to the battery.
63	N-G Automatically Connect	[63] DIS	Disable automatic switching of N-G connection.
		[63] ENA	Enable automatic switching of N-G connection
78	Max. Battery Discharge Current	[78] 100A	Setting range: 0A~100A. When setting the timed discharge stage and in AC 1ST/MIX load mode, the maximum current that the battery can carry can be set.

BATTERY TYPES AND DEFAULT PARAMETERS

The parameter settings for the product are as follows without communicating with the battery. They will be automatically adjusted according to the current battery settings if successfully communicate with the battery.

Lithium Battery

Battery Type Setting	LF14	LF15	L16 (Default setting)	N13	N14	USER (User-Definable)
Over Voltage Disconnect	60V					
Boost Charge Recovery Voltage (Setting Code 37)	46.4V	50.4V	53.6V	50.4V	54.8V	50.4~55.6V
Equalize Charge Voltage (17)	/					48~59.2V
Boost Charge Voltage (09)	49.2V	53.2V	56.8V	53.2V	57.6V	54.8~58.4V
Float Charge Voltage (11)	/					54~58.4V
Under Voltage Warning (14)	43.2V	46.4V	49.6V	43.6V	46.8V	40~54V
Under Voltage Recover	Under Voltage Warning Value+0.8V					
Low Voltage Disconnect (12)	42V	45.6V	48.8V	38.8V	42V	43.6~52V
Low Voltage Reconnect (35)	46V	49.6V	51.2V	46V	49.6V	40.4~57.2V
Discharging Limit Voltage (15)	40.8V	42V	46.4V	36.4V	39.2V	43.2~48.4V
Over Discharge Delay Time (13)	30s		5s	30s		5~50s
Equalize Duration Time (18)	/					5~900 Min
Equalize Charge Interval (20)	/					0~30 Days
Boost Duration Time (10)	120 Min					5~900 Min

Lead Acid Battery

Battery Type Setting	SLD	GEL	FLD
Over Voltage Disconnect	60V		
Boost Charge Recovery Voltage (Setting Code 37)	52V		
Equalize Charge Voltage (17)	58.4V	/	59.2V
Boost Charge Voltage (09)	/		
Float Charge Voltage (11)	55.2V		
Under Voltage Warning (14)	44V		
Under Voltage Recover	Under Voltage Warning Value+0.8V		
Low Voltage Disconnect (12)	42V		
Low Voltage Reconnect (35)	52V		
Discharging Limit Voltage (15)	/		
Over Discharge Delay Time (13)	5s		
Equalize Duration Time (18)	120 Min	/	120 Min
Equalize Charge Interval (20)	30 Days	/	30 Days
Boost Duration Time (10)	120 Min		

The parameters that can be adjusted in the settings are shown in blue.

FAULT CODES

Fault Code	Parameter	Affects Output (yes or no)
01	Battery Under Voltage Alarm	NO
02	Battery Discharge Current Software Protection	YES
03	Battery Not Detected Alarm	YES
04	Battery Under Voltage Disconnect Alarm	YES
05	Battery Overcurrent Hardware Protection	YES
06	Battery Overvoltage Protection	YES
07	Bus Overvoltage Hardware Protection	YES
08	Bus Overvoltage Software Protection	YES
09	PV Overvoltage Protection	NO
10	PV Overcurrent Software Protection	NO
11	PV Overcurrent Hardware Protection	NO
13	Bypass Overload	YES
14	Inverter Overload Protection	YES
15	Inverter Overcurrent Hardware Protection	YES
17	Inverter Short Circuit Protection	YES
19	Controller Over Temperature Protection	NO
20	Inverter Over Temperature Protection	YES
21	Fan Failure	YES
22	Memory Failure	YES
23	Model Error	YES
26	Inverted AC Output Backfills to Bypass AC Input	YES
29	Internal Battery Boost Circuit Failure	YES

Fault Code	Parameter	Affects Output (yes or no)
30	Battery SOC below 10% Alarm	NO
31	Battery SOC below 5% Alarm	NO
32	Battery SOC 0%	YES
34	CAN Parallel Communication Fault	YES
35	Parallel ID(Address) Setting Error	YES
37	Parallel Current Balancing Fault	YES
38	Large Battery Voltage Difference in Parallel Mode	YES
39	Inconsistent AC Input Source in Parallel Mode	YES
40	Hardware Synchronization Signal Error in Parallel Mode	YES
41	Abnormal DC Component in Inverter Output Voltage	YES
42	Inconsistent System Firmware Version in Parallel Mode	YES
43	Parallel Wiring Fault	YES
44	If the serial number is not set by omission in production, please contact the manufacturer to set it	YES
45	[31]Settings Item Setting Error	YES
58	BMS Communication Failure	NO
59	BMS Alarm	NO
60	BMS Low Temperature Alarm	NO
61	BMS Over Temperature Alarm	NO
62	BMS Overcurrent Alarm	NO
63	BMS Under Voltage Alarm	NO
64	BMS Over Voltage Alarm	NO

TROUBLESHOOTING

Fault Code/Status	Description	Solution
Display	No display on the screen	① Check if the battery's breaker/fuse or the PV's breaker/fuse is in "OFF" status; ② Press any button on the screen to exit the screen sleep mode if the breaker/fuse is in the "ON" status. ③ Check if the product switch is in the "ON" status.
01, 04	Battery under voltage	Charge the battery until it returns to the Low Voltage Reconnect Voltage(setting item 35).
03	Battery not detected	Check if the battery is not connected well or if the battery circuit breaker is in "OFF" status.
06	Battery overvoltage protection	Turn off the charging inputs.
09	PV overvoltage	Reduce the PV's voltage to 120V~500V.
13, 14	Overload protection	① Reduce the use of AC output loads; ② Restart the machine to resume load output.
17	Inverter short circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Restart to resume load output.
19, 20	Heat sink over temperature protection	Cool down the machine to normal temperature.
21	Fan failure	Check if the fan is not turning or blocked by objects.

Fault Code/Status	Description	Solution
35	Parallel ID(address) setting error.	Make sure there is no duplication in the Parallel ID number settings.
37	Parallel current balancing fault.	Check if the current balancing cable is tight and correct.
39	Inconsistent AC input source in parallel mode.	Check whether the parallel AC inputs are from the same input interface.
40 , 43	Parallel wiring fault.	Check if the parallel communication cable is tight and correct.
42	Inconsistent system firmware version in parallel mode.	Check whether the software version of each solar inverter charger is consistent.
Others	/	Contact us at service@litime.com for further assistance.

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