
User Manual

Energy Storage System

YP-THEP-10LV2/YP-THEP-10LV3/YP-THEP-10LV4




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About This Manual

The manual primarily encompasses product information, along with installation, operation, and maintenance guidelines.

It will refer to the device as the "ESS" unless otherwise specified.

- **Target Group**

This manual is intended for professional technicians who have responsibilities for the installation, operation, and maintenance of inverters, as well as users who need to check inverter parameters.

Installation Requirements:

The installation of the ESS should only be carried out by professional technicians who meet the following requirements

- Possess knowledge of electronics, electrical wiring, and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received professional training related to the installation and commissioning of electrical equipment.
- Capable of promptly responding to hazards or emergencies that may arise during the installation and commissioning process.
- Familiar with local standards and relevant safety regulations pertaining to electrical systems.
- Thoroughly read this manual and understand the safety instructions associated with the operations.

- **Symbols**

This manual incorporates crucial safety instructions that are emphasized using specific symbols. These symbols are employed to ensure the safety of individuals and property during product usage or to assist in maximizing product performance efficiently.

It is essential to thoroughly comprehend the significance of the warning symbols to enhance your utilization of the manual.

Change History

Changes between document issues are cumulative, meaning that each subsequent document issue includes all the changes made in earlier issues.

V1.0 (2024-03-20)

This version is the first official release

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1 Safety Instructions

Before using , please read all instructions and cautionary markings on the unit and this manual. Store the manual where it can be accessed easily.

This manual is for qualified personnel. The tasks described in this manual may be performed by qualified personnel only.

Conventions used:**WARNING!**

Warnings identify conditions or practices that could result in personal injury;

CAUTION!

Caution identify conditions or practices that could result in damage to the unit or other equipment connected.

WARNING

- Avoid operating the product and cables (including but not limited to product movement, installation, operation, powering up, maintenance, and working at heights) under harsh weather conditions such as lightning, rain, snow, and level 6 or stronger wind.
- In case of fire, evacuate the building or the area where the product is located and immediately contact the fire department. Under no circumstances should re-entry into the burning area be attempted.

NOTICE

- Ensure that the product and terminals are securely fastened using the specified torque and appropriate tools. Failure to do so may result in product damage, and any resulting damage will not be covered by the warranty.
- Familiarize with the correct usage of tools to prevent injury to individuals or damage to the device.
- Maintain the device with sufficient knowledge of this manual and use proper tools.
 - ◆ The safety instructions provided in this manual are supplementary and may not encompass all precautions that should be followed. Always consider the actual on-site conditions when performing operations.
 - ◆ We will not be held liable for any damages caused by the violation of general safety operation requirements, general safety standards, or any safety instructions stated in this manual.
 - ◆ When installing, operating, and maintaining the product, comply with local laws and regulations. The safety precautions provided in this manual serve as supplements to local laws and regulations.

1.1 Unpacking and Inspection

WARNING

Before decommissioning the device, carefully inspect all safety signs, warning labels, and nameplates to ensure they are in place and clearly visible. These signs and labels should not be removed or covered at any time.

NOTICE

Upon receiving the product, conduct a thorough inspection to verify the condition of the device's appearance and structural components. Additionally, compare the contents of the packaging with the ordered product to ensure consistency. If there are problems with the above inspection items, do not install the device and contact your distributor first. If the problem persists, contact us for further assistance.

1.2 Installation Safety

DANGER

- Before installation, ensure that there is no electrical connection present.
- Before drilling, take precautions to avoid any water or electrical wiring in the wall.

CAUTION

Improper installation can result in personal injury!

- If the product supports hoisting for transportation using hoisting tools, it is strictly prohibited for anyone to remain under the product.
- When moving the product, take into account its weight and maintain balance to prevent tilting or falling.

NOTICE

Prior to operating the product, it is crucial to inspect and verify that the tools to be used have undergone regular maintenance.

1.3 Electrical Connection Safety

DANGER

Before making electrical connections, it is essential to ensure that the ESS is undamaged to prevent potential dangers!

Before electrical connections, confirm that all switches connected to the ESS are set to the "OFF" position to avoid the risk of electric shock!

DANGER

The PV string generates a lethal high voltage when exposed to sunlight. Please observe the following safety precautions during electrical connections.

- Operators must wear appropriate personal protective equipment.
- Use a measuring instrument to verify that cables are voltage-free before touching DC cables.
- Adhere to all safety instructions provided in relevant documents concerning PV strings.

DANGER

There is a risk of high voltage inside the ESS that can be life-threatening. Please take note of the following precautions!

- Use specialized insulation tools during cable connections.
- Follow and strictly adhere to the warning labels on the product and the safety instructions.
- Respect all safety instructions stated in this manual and other relevant documents.

DANGER

Batteries deliver electrical power and can cause burns or fire hazards when short-circuited or incorrectly installed. Lethal voltages are present at the battery terminals and cables connected to the ESS. Avoid touching the cables and terminals to prevent severe injuries or death.

WARNING

- Damage to the product resulting from incorrect wiring is not covered by the warranty.
- Electrical connections should be performed by professionals.
- All cables used in the PV generation system must be securely attached, properly insulated, and adequately sized.

WARNING

Ensure to check the positive and negative polarity of the PV strings and connect the PV connectors to the corresponding terminals only after confirming the correct polarity. During the installation and operation of the ESS, prevent the positive or negative poles of PV strings from short-circuiting to the ground to avoid AC or DC short-circuits that could lead to equipment damage. Such damage is not covered by the warranty.

NOTICE

Comply with the safety instructions regarding PV strings and adhere to the regulations applicable to the local grid.

1.4 Operation Safety

DANGER

- Do not touch the enclosure of the ESS while it is running.
- It is strictly prohibited to plug or unplug any connectors on the ESS while it is running.
- Avoid contact with any terminals of the ESS while it is running to prevent electric shock.
- Do not disassemble any parts of the ESS while it is running, as it may result in electric shock.
- Refrain from touching any hot parts of the ESS, such as the heat sink, while it is running to avoid burns.
- If the ESS is equipped with a DC switch, do not operate it while it is running to prevent device damage or personal injury.

1.5 Maintenance Safety

DANGER

There is a risk of ESS damage or personal injury resulting from incorrect service procedures!

- Prior to performing any service work, disconnect the grid-side AC circuit breaker and check the status of the ESS. If the ESS indicator is off, wait until nighttime before disconnecting the DC switch. If the ESS indicator is on, you can directly disconnect the DC switch.
- After the ESS has been powered off for at least 10 minutes, use a professional instrument to measure the voltage and current. Only when there is no voltage or current detected, and operators are wearing proper protective equipment, can they proceed with operating and maintaining the ESS.

- Even if the ESS is shut down, it may still be hot and cause burns. Wear protective gloves before operating the ESS after it cools down.

DANGER

Touching the power grid or the contact points and terminals on the ESS connected to the power grid can result in electric shock!

- The power grid side may have voltage. Always use a standard voltmeter to ensure there is no voltage before touching.

CAUTION

To prevent misuse or accidents caused by unauthorized personnel, prominently display warning signs or designate safety warning areas around the product.

NOTICE

To avoid the risk of electric shock, refrain from performing any maintenance operations beyond those described in this manual. If necessary, contact your distributor first. If the issue persists, contact us for maintenance. Failure to do so may result in losses that are not covered by the warranty.

1.6 Disposal Safety

WARNING

Please dispose of the product in accordance with the applicable local regulations and standards to prevent property losses or injuries

2 Product Description

2.1 System Introduction

This energy storage system can provide power to connected loads by utilizing photovoltaic power, utility power, and battery power, and store the remaining energy generated by photovoltaic solar modules for use when needed. When the sun sets, energy demand is high, or there is a power outage, you can use the energy stored in the system to meet your energy needs at no additional cost. In addition, this energy storage system can help you achieve your goals of energy self consumption and ultimate energy independence.

According to different power conditions, the energy storage system aims to generate continuous electricity through photovoltaic solar modules (solar panels), batteries, and utilities. When the MPP input voltage of the photovoltaic module is within an acceptable range (detailed information can be found in the specifications), the energy storage system can supply power to the load and charge the battery pack. This energy storage system is only compatible with single crystal and polycrystalline silicon photovoltaic module types. Do not connect any photovoltaic array type to the energy storage system, except for these two types of photovoltaic modules. Do not ground the positive or negative terminals of the solar panel. A simple schematic diagram of a typical energy storage system is shown in Figure 1.

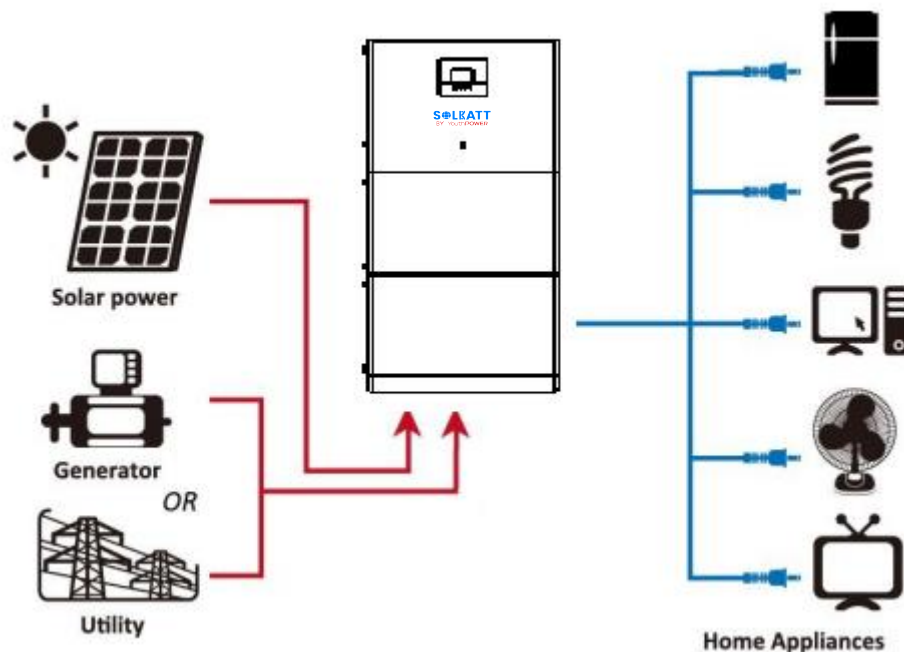


Figure 2-1 Energy storage System Overview

WARNING

- Operate the ESS only with PV strings having class II protection (IEC 61730, application class A). Avoid grounding the positive or negative poles of the PV strings to prevent damage to the ESS.
- Warranty does not cover damages caused by faulty or damaged PV installations.
- Only use the ESS as described in this document; any other use is not permitted.
- During installation and operation, ensure that the positive and negative polarities of PV strings and

batteries do not short-circuit to the ground to avoid equipment damage. Warranty does not cover damage resulting from such short-circuits.

- Avoid short-circuiting the main port during operation to prevent severe damage to the ESS or power distribution system. Such damage is not covered by the warranty.

NOTICE

- In a TT utility grid, ensure that the N line voltage to ground is 30V or below.
- The system is not suitable for powering life-sustaining medical devices, and it does not guarantee main power in all situations.
- The ESS is designed for the specific scenarios described in this manual.

2.2 Product Introduction

Model Description

The model description is follows (take YP-THEP-10LV2 as an example):

ESS10: All-in-one Energy Storage System, And Power level is 10kW

5kWh per Battery PACK

LV: 51.2Vdc Low Voltage Battery

include two battery PACK or 10kWh Battery

Appearance

The image shown here is for reference only. The actual product received may differ.

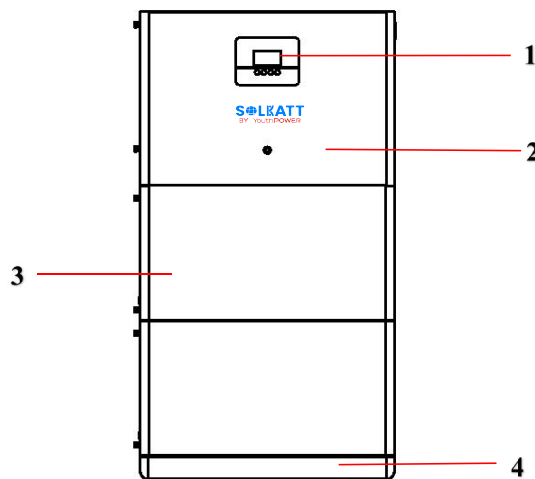


figure 2-2 ESS Appearance

No.	Name	Description
1	LCD indicator panel	Indicates the current operating state of the ESS.
2	Off-grid inverter	Indicates the current operating state of the inverter.
3	Battery	A Li-ion battery.
4	base	

Dimensions

The following table shows the dimensions of the ESS.

Model	W(mm)	H(mm)	D(mm)
YP-THEP-10LV2	640	1180	191.5
YP-THEP-10LV3	640	1525	191.5
YP-THEP-10LV4	640	1865	191.5

2.3 Off-grid inverter

2.3.1 LED Panel

The LED panel with a display screen and an indicator is on the front of the inverter.

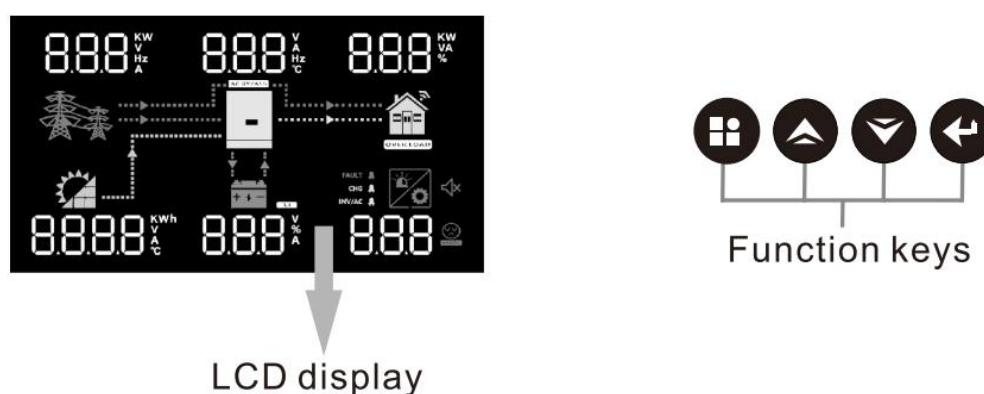


Figure 2-3 LCD Panel

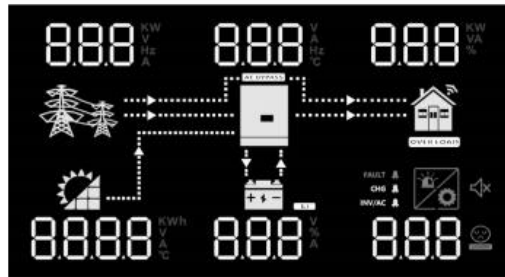
LED Indicator

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







Function Keys

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

2.3.2 LCD Display Icons



Icon	Function description
Input Source Information	
	Indicates the AC input.
	Indicates the PV input
	Indicate input voltage, input frequency, PV voltage, charger current (if PV in charging for 8 KW models), charger power, battery voltage.
Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: 8.8.8 flashing with warning code. Fault: 8.8.8 lighting with fault code
Output Information	
	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.
Battery Information	
Load Information	
	Indicates overload.

Mode Operation Information	
	Indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
	Indicates load is supplied by utility power.
	Indicates the utility charger circuit is working.
	Indicates the DC/AC inverter circuit is working.
Mute Operation	
	Indicates unit alarm is disabled.

2.3.3 LCD Setting

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

Setting Programs:

Program	Description	Selectable option	
00	Exit setting mode	Escape (default) 00 00E 00 00H	One-button restore setting options
01	Output source priority: To configure load power source priority	Utility first 01 0U6	Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.
		Solar first (default) 01 0S6	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, utility will supply power to the loads at the same time. Battery provides power to the loads only when any one condition happens: - Solar energy and utility is not available. - Solar energy is not sufficient and utility is not available.
		SBU priority 01 0S6U	Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 12.
02	Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	10A 02 10^	20A 02 20^
		30A 02 30^	40A 02 40^

02		50A 02 50 ^A	60A 02 60 ^A	70A 02 70 ^A	80A 02 80 ^A
		90A 02 90 ^A	100A (default) 02 100 ^A	110A 02 110 ^A	120A 02 120 ^A
		130A 02 130 ^A	140A 02 140 ^A	150A 02 150 ^A	160A 02 160 ^A
03	AC input voltage range	Appliances (default) 03 APL	If selected, acceptable AC input voltage range will be within 90-280VAC.		
		UPS 03 UPS	If selected, acceptable AC input voltage range will be within 170-280VAC.		
05	Battery type	AGM (default) 05 AGM	Flooded 05 FLd		
		User-Defined 05 USE	If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.		
		User-Defined 05 LIB	When the solar energy exists, Set this item to LIB, and the lithium battery will be activated for 3 second.		
		User-Defined 05 LIC	If selected, Lithium battery communication connection for PACE BMS.		
06	Auto restart when overload occurs	Restart disable (default) 06 Lfd	Restart enable 06 LfE		
07	Auto restart when over temperature occurs	Restart disable (default) 07 tfd	Restart enable 07 tFE		
09	Output frequency	50Hz (default) 09 50 ^{Hz}	60Hz 09 60 ^{Hz}		
10	Output voltage	220V 10 220 ^V	230V (default) 10 230 ^V		
		240V 10 240 ^V			
11	Maximum utility charging current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging	2A 11 2A	10A 11 10A	20A 11 20A	
		30A 11 30A	40A 11 40A	50A 11 50A	

	current from program 02 for utility charger.	60A 11 60A	70A 11 70A	80A (default) 11 80A
		90A 11 90A	100A 11 100A	110A 11 110A
		120A 11 120A	130A 11 130A	140A 11 140A
12	Setting voltage point back to utility source when selecting "SBU priority" or "Solar first" in program 01.	Available options in 7KW/8KW/10KW model:		
		42V 12 BATT 42v	43V 12 BATT 43v	44V 12 BATT 44v
		45V 12 BATT 45v	46V (default) 12 BATT 46v	47V 12 BATT 47v
		48V 12 BATT 48v	49V 12 BATT 49v	
		50V 12 BATT 50v	51V 12 BATT 51v	
13	Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01.	Available options in 7KW/8KW/10KW model:		
		Battery fully charged 13 BATT FUL	48V 13 BATT 480v	
		49V 13 BATT 490v	50V 13 BATT 500v	
		51V 13 BATT 510v	52V 13 BATT 520v	
		53V 13 BATT 530v	54V (default) 13 BATT 540v	

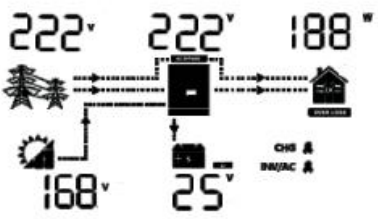
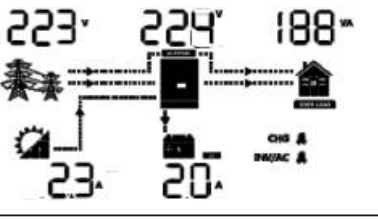

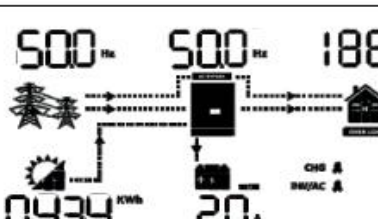
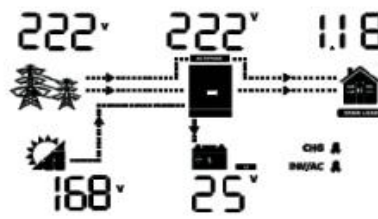
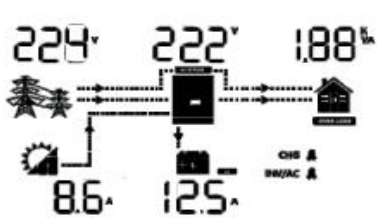
		55V 13 <u>BATT</u> 55.0v	56V 13 <u>BATT</u> 56.0v
		57V 13 <u>BATT</u> 57.0v	58V 13 <u>BATT</u> 58.0v
16	Charger source priority: To configure charger source priority	If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:	
		Solar first 16 <u>C50</u>	Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available.
		Solar and Utility (default) 16 <u>SNU</u>	Solar energy and utility will charge battery at the same time.
		Only Solar 16 <u>O50</u>	Solar energy will be the only charger source no matter utility is available or not.
		If this inverter/charger is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.	
18	Alarm control	Alarm on (default) 18 <u>6ON</u>	Alarm off 18 <u>6OF</u>
19	Auto return to default display screen	Return to default display screen (default) 19 <u>ESP</u>	If selected, no matter how users switch display screen, it will automatically return to default display screen (Input voltage /output voltage) after no button is pressed for 1 minute.
		Stay at latest screen 19 <u>1EP</u>	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	Backlight on (default) 20 <u>LON</u>	Backlight off 20 <u>LOF</u>

22	Beeps while primary source is interrupted	Alarm on (default) 22 AON	Alarm off 22 AOF
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable (default) 23 BYD	Bypass enable 23 BYE
25	Record Fault code	Record enable (default) 25 FEN	Record disable 25 FDS
26	Bulk charging voltage (C.V voltage)	7KW/8KW/10KW default setting: 56.4V CU 26 56.4 ^{BATT} V	
		If self-defined is selected in program 5, this program can be set up. Setting range is from 48.0V to 61.0V for 7KW/8KW/10KW model. Increment of each click is 0.1V.	
27	Floating charging voltage	7KW/8KW/10KW default setting: 54.0V FLU 27 54.0 ^{BATT} V	
		If self-defined is selected in program 5, this program can be set up. Setting range is from 48.0V to 61.0V for 7KW/8KW/10KW model. Increment of each click is 0.1V.	
29	Low DC cut-off voltage	7KW/8KW/10KW default setting: 40.0V COU 29 40.0 ^{BATT} V	
		If self-defined is selected in program 5, this program can be set up. Setting range is from 40.0V to 48.0V for 7KW/8KW/10KW model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected.	

30	Battery equalization	Battery equalization 30 EEN	Battery equalization disable (default) 30 EdS
		If "Flooded" or "User-Defined" is selected in program 05, this program can be set up.	
31	Battery equalization voltage	7 KW/8 KW/10 KW default setting: 58.4V E ^{BATT} 31 58.4V	
		Setting range is from 48.0V to 61.0V for 7 KW/8 KW/10 KW model. Increment of each click is 0.1V.	
33	Battery equalized time	60min (default) 33 60	Setting range is from 5min to 900min. Increment of each click is 5min.
34	Battery equalized timeout	120min (default) 34 120	Setting range is from 5min to 900 min. Increment of each click is 5 min.
35	Equalization interval	30days (default) 35 30d	Setting range is from 0 to 90 days. Increment of each click is 1 day
36	Equalization activated immediately	Enable 36 AEN	Disable (default) 36 AdS
		If equalization function is enabled in program 30, this program can be set up. If "Enable" is selected in this program, it's to activate battery equalization immediately and LCD main page will shows "E ⁹ ". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "E ⁹ " will not be shown in LCD main page.	
37	GRID-tie operation	Off grid (default) 37 OFF	Inverter operates only in off-grid mode. Solar energy provides power to the loads as first priority and charging second
		Hybrid 37 HYD	Inverter operates hybrid mode. Solar energy provides power to the loads as first priority and charging second Excess energy feed to grid.
38	GRID-tie current	10A 38 10 ^A	Increment of each click is 2A.
39	Led pattern light	Led pattern off 39 LOF	Led pattern on(default) 39 LON
41	Dual output	disable (default) 41 L2F	use 41 L2O
42	Enter the dual output functional voltage point	7 KW/8 KW/10 KW default setting: 44.0V 42 44.0	
		Setting range is from 40.0V to 46.0 V for 48VDC model. Increment of each click is 0.1V.	

2.3.4 Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: input voltage, input frequency, PV voltage, charging current, charging power, battery voltage, output voltage, output frequency, load percentage, load in Watt, load in VA, load in Watt DC discharging current, main CPU Version.

Selectable information	LCD display
Charged state, and the power is less than 1kw	
Input voltage=222V , PV voltage=168V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(Flashing), Inv/ac(bright)	
Input voltage=223V , PV current=2.3A, Battery current=20A, Output voltage=224V, Load in VA=188VA, Chg(Flashing), Inv/ac(bright)	
Input voltage=223V , Pv ntc temperture=71.0°C, Battery voltage= 25V, Inv ntc temperture=35.0°C, Load percentage=12% , Chg(Flashing), Inv/ac(bright)	
Input frequency=50.0Hz , PV power=0.434KWh, Battery current=20A, Output frequency=50.0Hz, Load in watt=188W, Chg(Flashing), Inv/ac(bright)	
Charged state, and the power is greater than 1kw	
Input voltage=222V , PV voltage=168V, Battery voltage= 25V, Output voltage=222V, Load in Watt=1.18KW, Chg(Flashing), Inv/ac(bright)	
Input voltage=224V , PV current=8.6A, Battery current=12.5A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flashing), Inv/ac(bright)	

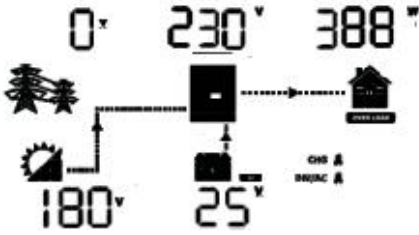
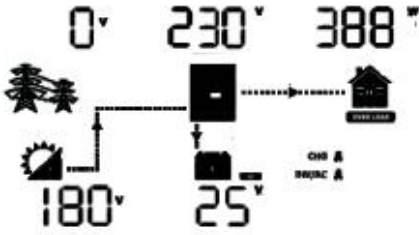
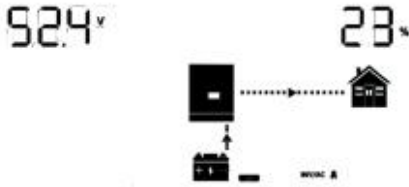
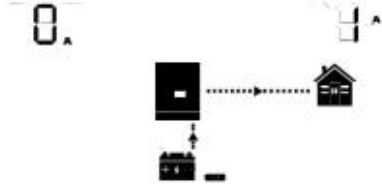
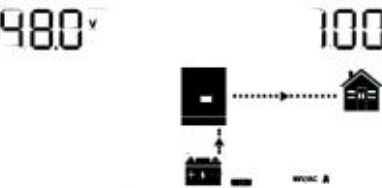

<p>Input voltage=223V , Pv ntc temperture=71.0°C, Battery voltage=25V, Inv ntc temperature=35.0°C, Load percentage=82%, Chg(Flashing), Inv/ac(bright)</p>	
<p>Input frequency=50.0Hz , PV power=1.434KWh, Battery current=20A, Output frequency=50.0Hz, Load in watt=1.88KW, Chg(Flashing), Inv/ac(bright)</p>	
<p>Discharged state, and the power is less than 1kw</p>	
<p>Input voltage=0V , PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input voltage=0V , PV current=0A, Battery current=12.5A, Output voltage=222V, Load in VA=188VA, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input voltage=0V , Pv ntc temperture=60.0°C, Battery voltage=24V, Inv ntc temperature=36.0°C, Load percentage=13%, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input frequency=0Hz , PV power=0KWh, Battery current=12A, Output frequency=50.0Hz, Load in watt=188W, Chg(turn off), Inv/ac(Flashing)</p>	

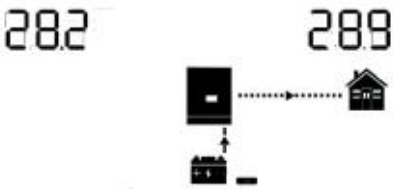
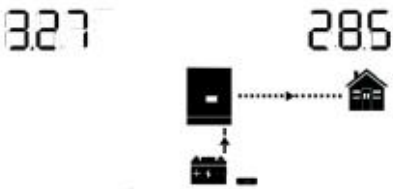
Discharged state, and the power is greater than 1kw	
<p>Input voltage=0V , PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=1.88KW, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input voltage=0V , PV current=0A, Battery current=111A, Output voltage=222V, Load in VA=1.88KVA, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input voltage=0V , Pv ntc temperture=68.0°C, Battery voltage= 24V, Inv ntc temperture=30.0°C, Load percentage=81% , Chg(turn off), Inv/ac(Flashing)</p>	
<p>Input frequency=0Hz , PV power=0KWh, Battery current=111A, Output frequency=50.0Hz, Load in watt=1.21KW, Chg(turn off), Inv/ac(Flashing)</p>	
<p>Main CPU version checking</p>	<p>Main CPU version 21 05</p>

Discharged state, and the power is greater than 1kw	
<p>Input voltage=0V , PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=1.88KW, Chg(turn off), Inv/ac(Flashing)</p>	<p>The LCD display shows 0V, 222V, 1.88KW, 0V, and 25V. A system diagram shows a battery connected to an inverter, which is connected to a house icon labeled 'OVERLOAD'. The battery is labeled 'CHG' and 'INVA/C'.</p>
<p>Input voltage=0V , PV current=0A, Battery current=111A, Output voltage=222V, Load in VA=1.88KVA, Chg(turn off), Inv/ac(Flashing)</p>	<p>The LCD display shows 0V, 222V, 1.88kVA, 0A, and 111A. The system diagram is identical to the first row.</p>
<p>Input voltage=0V , Pv ntc temperture=68.0°C, Battery voltage= 24V, Inv ntc temperture=30.0°C, Load percentage=81% , Chg(turn off), Inv/ac(Flashing)</p>	<p>The LCD display shows 0V, 300°C, 81%, 680°C, and 24V. The system diagram is identical to the first row.</p>
<p>Input frequency=0Hz , PV power=0KWh, Battery current=111A, Output frequency=50.0Hz, Load in watt=1.21KW, Chg(turn off), Inv/ac(Flashing)</p>	<p>The LCD display shows 0Hz, 500Hz, 1.21KW, 0000kWh, and 111A. The system diagram is identical to the first row.</p>
<p>Main CPU version checking</p>	<p>Main CPU version 21 05</p> <p>The LCD display shows 01, 21, and 05. The system diagram shows a house icon connected to an inverter, which is connected to a battery. The battery is labeled 'CHG' and 'INVA/C'.</p>

2.3.5 Operating Mode Description

Operation mode	Selectable information	LCD display
Stanby mode	Input voltage=222V , PV voltage=210V, Battery voltage=25V, Output voltage=0V, Load in Watt=0W, Chg(Flashing), Inv/ac(bright)	
	Input voltage=223V , PV voltage=0V, Battery voltage=25V, Output voltage=0V, Load in Watt=0W, Chg(Flashing), Inv/ac(bright)	
	Input voltage=0V , PV voltage=210V, Battery voltage=25V, Output voltage=0V, Load in Watt=0W, Chg(Flashing)	
Line mode	Input voltage=224V , PV current=8.6A, Battery current=12.5A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flashing), Inv/ac(bright)	
	Input voltage=224V , PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(Flashing), Inv/ac(bright)	
Grid-Tie Operation	Input voltage=224V , PV current=8.6A, Battery current=12.5A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flashing), Inv/ac(bright)	<p>When working in Grid-Tie mode, the will be flash 3S/times.</p>

Operation mode	Selectable information	LCD display
Battery mode	Input voltage=0V , PV voltage=180V, Battery voltage=25V, Output voltage=230V, Load in Watt=388W, Inv/ac(Flashing)	
	Input voltage=0V , PV voltage=180V, Battery voltage=25V, Output voltage=230V, Load in Watt=388W, Chg(Flashing), Inv/ac(Flashing)	
Selectable information		LCD display
LIC(Lithium battery communication connection)		
	Total battery voltage=52.4V Battery residual capacity=23%	
	Battery charging current=0A Battery discharge current=1A	
	Nominal battery voltage=48V Total battery capacity=100AH	
	Battery remaining capacity=23% Battery charger/discharge Times =8	

<p>Battery ambient temperature=28.2°C Battery MOS temperature=28.9°C</p>	
<p>Single battery voltage=3.27V Single battery temperature=28.5°C</p>	

2.3.6 Fault Reference Code

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

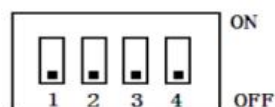
2.3.7 Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	01 ☹️
03	Battery is over-charged	Beep once every second	03 ☹️
04	Low battery	Beep once every second	04 ☹️
07	Overload	Beep once every 0.5 second	07 ☹️
10	Output power derating	Beep twice every 3 seconds	10 ☹️
15	PV energy is low.	Beep twice every 3 seconds	15 ☹️
E9	Battery equalization	None	E9 ☹️
bP	Battery is not connected	None	bP ☹️

2.4 Battery

2.4.1 BMS Comm. Address

After all wiring installation is complete, set up ID for each battery module. The ID code for each battery module MUST be unique. Not the same number for 2 battery modules in parallel system. Refer below chart for the details.

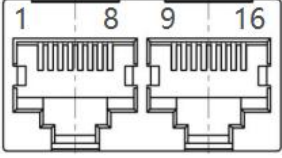
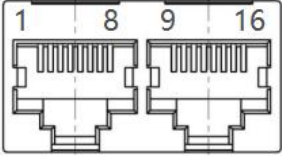
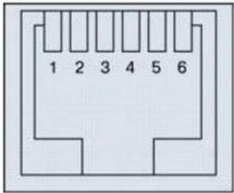


Address	Dial switch position			
	#1	#2	#3	#4
0	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

BMS Comm. Address










2.4.2 BMS Comm. Interface

If there is any change in the pin position of the communication line, the customer shall be notified in writing or provided with supporting communication wire.

Parallel communication		RS485-8P8C upright RJ45 socket		RS485-8P8C upright RJ45 socket	
		RJ45pin	defined declaration	RJ45pin	defined declaration
		1,8	RS485-B	9,16	RS485-B
		2,7	RS485-A	10,15	RS485-A
		3,6	GND	11,14	GND
External communication(RS485/CAN)		RS485-8P8C upright RJ45 socket		RS485-8P8C upright RJ45 socket	
		RJ45pin	defined declaration	RJ45pin	defined declaration
		1,8	RS485-B1	9,10,11,14,16	NC
		2,7	RS485-A1	12	CAN-L
		3,6	GND	13	CAN-H
Communication with host computer		RS232 upright RJ11 socket			
		RJ11pin	defined declaration	RJ11pin	defined declaration
		1	NC	4	RX
		2	NC	5	GND
		3	TX	6	NC

2.4.3 SOC Indicator & Status Indicator Guides

Battery Status:

								
SOC Indicator						Alarm	Run	On/Off

BMS LED flash and buzzer mode:

MODE	ON	OFF
Led Flash1	0.25S	3.75S
Led Flash2	0.5S	0.5S
Led Flash3	0.5S	1.5S
Buzzer1	0.25S	0.25S
Buzzer2	0.25S	2S
Buzzer3	0.25S	3S

Battery Capacity

O: LED OFF

F2:LED Flash2

L:LED Light

Status	Charge						Discharge					
	L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
SOC(%)												
0-16.6	O	O	O	O	O	F2	O	O	O	O	O	L
16.6-33.2	O	O	O	O	F2	L	O	O	O	O	L	L
33.2-49.8	O	O	O	F2	L	L	O	O	O	L	L	L
49.8-66.4	O	O	F2	L	L	L	O	O	L	L	L	L
66.4-83	O	F2	L	L	L	L	O	L	L	L	L	L
83-100	F2	L	L	L	L	L	L	L	L	L	L	L
RUN LED	L						Flash(flash 3)					

BMS LED Status Mode:

O: LED OFF

F1:LED Flash1

F2:LED Flash2

F3:LED Flash3

L:LED Light

System status	Run status	ON/OFF	RUN	ALM	SOC						REMARK	
Power off	SLEEP	O	O	O	O	O	O	O	O	O	O	All led Off
Stand by	NORMAL	L	F1	O	Lighting for SOC						stand by mode	
	ALARM	L	F1	F3	Lighting for SOC(The LED flash2,while it is the high SOC) Alarm LED do not flash,when the BMS into OVP mode.						Low volt alarm	
CHARGE	NORMAL	L	L	O	Lighting for SOC(The LED flash2,while it is the high SOC) Alarm LED do not flash,when the BMS into OVP mode.							
	ALARM	L	L	F3	Lighting for SOC(The LED flash2,while it is the high SOC) Alarm LED do not flash,when the BMS into OVP mode.							
	OVP	L	L	O	L	L	L	L	L	L		No chargeing ,in standby
	OTP,OCP,Fail	L	O	L	O	O	O	O	O	O		Stop charge
Discharge	NORMAL	L	F3	O	Lighting for SOC							
	ALARM	L	F3	F3	Lighting for SOC							
	UVP	L	O	O	O	O	O	O	O	O	Discharge Off	
	OTP,OCP,SCP,invert connect,Fail	L	O	L	O	O	O	O	O	O	Discharge Off	
FAIL		O	O	L	O	O	O	O	O	O	NO Charge or discharge	

2.4.4 Battery Management

Li-ion battery are compatible with the PV ESS, further battery models will be made compatible in the future. To optimize battery lifespan, the ESS will conduct battery charging, discharging, and maintenance activities based on the battery status information received from the Battery Management System (BMS).

NOTICE

The suggested parameters provided in this section are subject to updates and revisions as a result of product advancements. For the most up-to-date information, please consult the manual provided by the battery manufacturer.

State Definition

To prevent excessive charging or discharging of the battery, three battery statuses have been defined based on different voltage ranges. Please refer to the table below for more details.

SOC definition	Port Voltage / SOC		
	Empty	Normal	Full
By default	SOC < 10%	10%...95%	SOC = 100%

NOTICE

If the battery has remained unused or has not been fully charged for an extended period of time, it is advisable to manually perform a full charge every 15 days. This practice helps to maintain the battery's lifespan and optimal performance.

3 Unpacking and Storage

3.1 Unpacking and Inspection

The product undergoes comprehensive testing and rigorous inspection prior to shipment. However, there is still a possibility of damage occurring during transit. Therefore, it is essential to conduct a thorough inspection upon receiving the product. Please follow these steps:

- Examine the packaging case for any visible signs of damage.
- Verify the contents of the delivery to ensure completeness, referring to the packing list.
- After unpacking, carefully inspect the inner contents for any signs of damage.

If any damage or incompleteness is detected, promptly contact us or the transport company. It is advisable to provide photographs of the damage to facilitate the resolution process. It is important not to discard the original packaging case. When decommissioning the product, it is recommended to store it in the original packaging case for safekeeping.

NOTICE

Upon receiving the product, it is important to conduct a thorough inspection to ensure its integrity and avoid any potential damage. Please follow these steps:


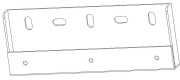
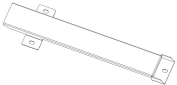

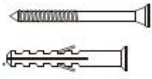



- Examine the appearance and structural parts of the device for any signs of damage.

- Verify that the contents of the package match the items listed on the packing list. Ensure that you have received the correct product.
- If any issues or discrepancies are found during the inspection, refrain from installing the device and immediately contact your distributor for assistance. If the problem persists or your distributor is unable to resolve the issue, promptly reach out to us for further support.

When unpacking the product, exercise caution to avoid causing any damage, especially if using tools. Take care to handle the product with care and ensure that no unintentional harm is inflicted upon it.

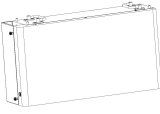


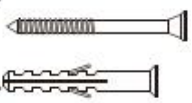



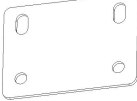
3.2 Scope of Delivery

Hybrid Inverter:

			
A	B	C	D
			
E	F	G	H

Item	Name	Quantity
A	Off-grid inverter	1
B	Top Bracket	1
C	Installing support	1
D	Manual	1
E	M8 Mounting screws	5
F	M4 combination screw	3
G	Negative connecting piece	1
H	Positive output line	1

Battery

			
A	B	C	D
			
E	F	G	H

Item	Name	Quantity
A	Battery Module	1~4
B	Base	1
C	Top Bracket	1~4
D	M8 Mounting screws	4~16
E	M4 combination screw	7~28
F	Negative connecting piece	1~4
G	Positive connecting piece	1~4
H	Fixed connecting piece	1~4

3.3 Product Storage

To ensure the proper storage of the ESS Product when it is not immediately installed, please adhere to the following guidelines:

- Store the ESS Product in its original packing case, ensuring the desiccant is kept inside.
- Maintain a storage temperature between -30°C and +70°C at all times.
- Maintain a storage relative humidity between 0% and 95%, ensuring it is non-condensing.
- If stacking storage is necessary, ensure that the number of stacking layers does not exceed the limit indicated on the outer side of the packing case.
- Keep the packing case upright during storage.
- If the ESS Product needs to be transported again, ensure it is properly packed before loading and transporting.
- Avoid storing the product in areas susceptible to direct sunlight, rain, or strong electric fields.
- Avoid placing the product near items that may affect or damage it.
- Store the product in a clean and dry location to prevent dust and water vapor from causing erosion.
- Avoid storing the product in areas with corrosive substances or at risk of being accessed by rodents and insects.
- Conduct periodic inspections, at least once every six months.
- If any signs of insect or rodent bites are detected, promptly replace the packaging materials.
- If the product has been stored for more than a year, it is necessary to have it inspected and tested by professionals before putting it into operation.

NOTICE

It is crucial to store the ESS in accordance with the specified storage requirements. Failure to meet these requirements may result in product damage, and it's important to note that such damage caused by improper storage is not covered by the warranty. To ensure the safekeeping of the ESS and maintain warranty coverage, please adhere to the storage guidelines provided.

4 Mechanical Mounting

WARNING

Respect all local standards and requirements during mechanical installation.

4.1 Safety during Mounting

DANGER

Make sure there is no electrical connection before installation. Before drilling, avoid the water and electricity wiring in the wall.

WARNING

The performance of the system can be affected by an inadequate installation environment. To optimize system performance, please consider the following:

- Install the ESS in a well-ventilated area to promote proper airflow and heat dissipation.
- Ensure that the heat dissipation system or vents of the ESS are not obstructed by objects or debris.
- Avoid installing the ESS in environments where flammable or explosive materials are present, as well as areas prone to smoke accumulation.

CAUTION

Improper handling may cause personal injury!

- When moving the ESS, be aware of its weight and keep the balance to prevent it from tilting or falling.
- Wear proper protective equipment before performing operations on the ESS.
- The bottom terminals and interfaces of the ESS cannot directly contact the ground or other supports. The ESS cannot be directly placed on the ground.

By following these guidelines, you can help maintain an optimal installation environment and ensure the reliable performance of the ESS.

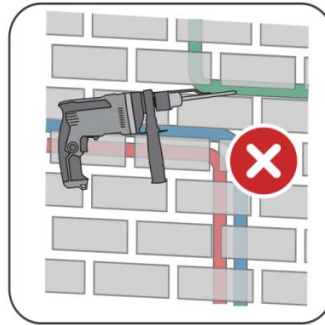
4.2 Location Requirements

To ensure safe operation, long service life, and expected performance, it is important to select an optimal mounting location for the ESS. Consider the following guidelines:

- Install the ESS in a location that allows for easy electrical connection, operation, and maintenance. This will facilitate access to the ESS for any necessary maintenance or troubleshooting tasks.

4.2.1 Environment Requirements

- Ensure an installation environment free from flammable or explosive materials.
- Choose a location that is not accessible to children to ensure their safety.
- Ensure that the ambient temperature and relative humidity of the installation site meet the specified requirements.
- To prolong the service life of the ESS, avoid direct exposure to sunlight, rain, and snow. Consider installing them in sheltered areas to provide protection from these elements.



- Ensure proper ventilation for the ESS with adequate air circulation.
- Due to operational noise, it is not recommended to install the ESS in living areas.

4.2.2 Carrier Requirements

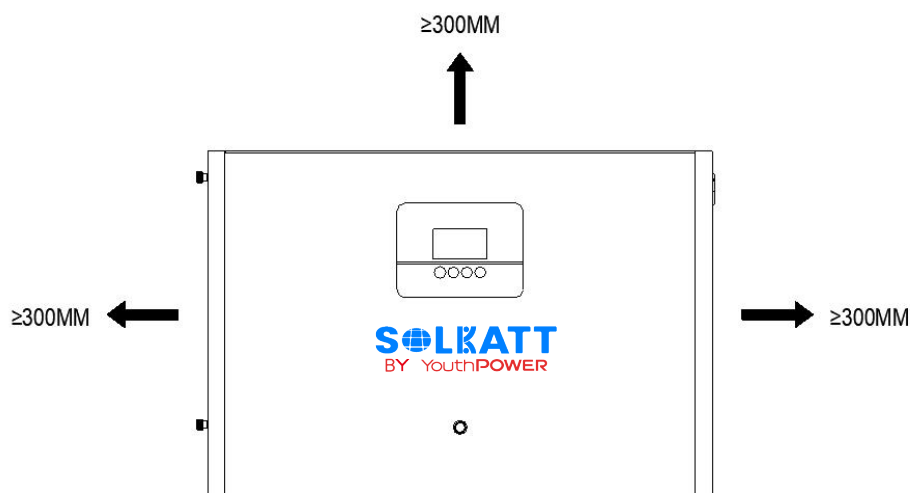
The mounting structure for the ESS must adhere to local/national standards and guidelines. The installation surface should be sufficiently sturdy to support four times the weight of the ESS and be suitable for its dimensions (e.g., cement walls, plasterboard walls, etc.).

4.2.3 Angle Requirements

The ESS should be installed in a vertical position. It should never be installed horizontally, tilted forward or backward, or upside down.

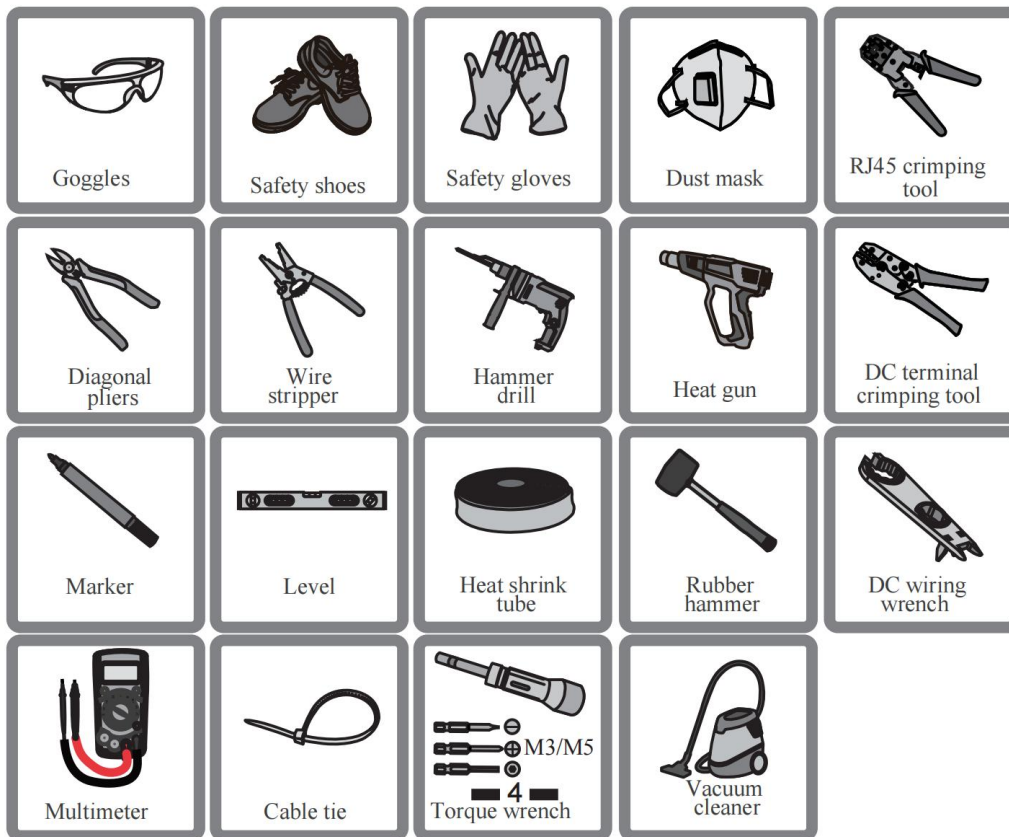
4.2.4 Clearance Requirements

Allow ample clearance around the ESS to ensure proper heat dissipation. Install the ESS at a suitable height for convenient viewing of the LED indicator and easy access to the operating switch(es).



4.3 Installation Tools

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site



4.4 Moving the ESS

When transferring the ESS to the installation location, please adhere to the subsequent guidelines:

- Maintain constant awareness of the ESS's weight.
- Employ the handles situated on both sides of the ESS to lift it.
- Mobilize the ESS with the assistance of one or two individuals or with the aid of an appropriate transportation device.
- Ensure that the equipment is securely fastened before releasing it.

CAUTION

Please exercise caution to prevent personal injuries while handling the ESS. Adhere to the following guidelines:

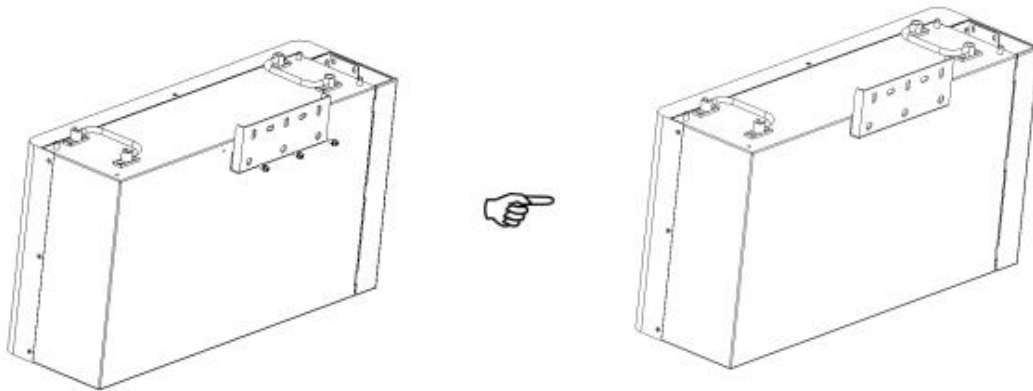
- Ensure an adequate number of personnel are assigned to carry the ESS based on its weight, and installation personnel should wear appropriate protective gear like impact-resistant shoes and gloves.
- Take note of the ESS's center of gravity to prevent tilting during handling.
- Avoid placing the ESS directly on a hard surface, as it may damage the metal enclosure. Instead, use protective materials such as a sponge pad or foam cushion underneath the ESS.
- When moving the ESS hold it by the designated handles and avoid gripping the terminals for transportation.

4.5 Installing the ESS

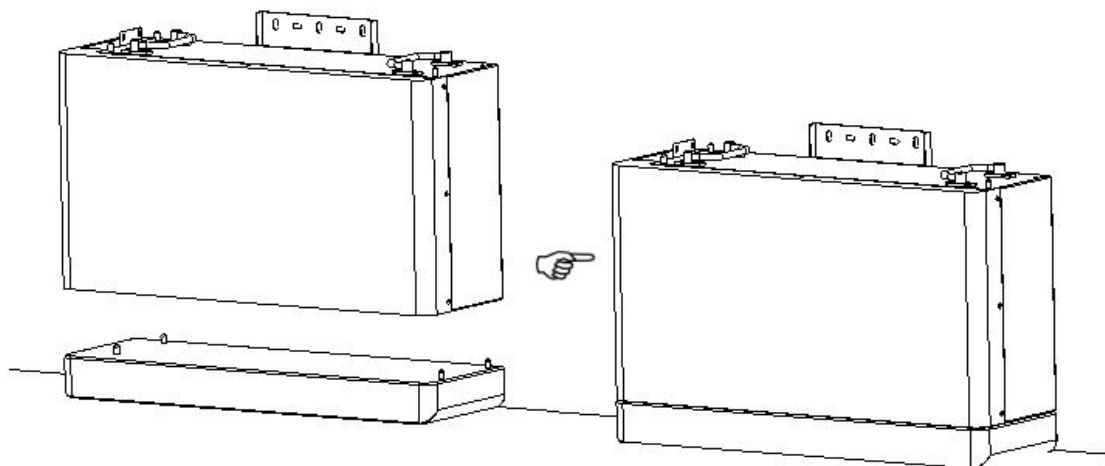
Note:

This ESS should be installed battery modules first on the bottom and then inverter module on the top.

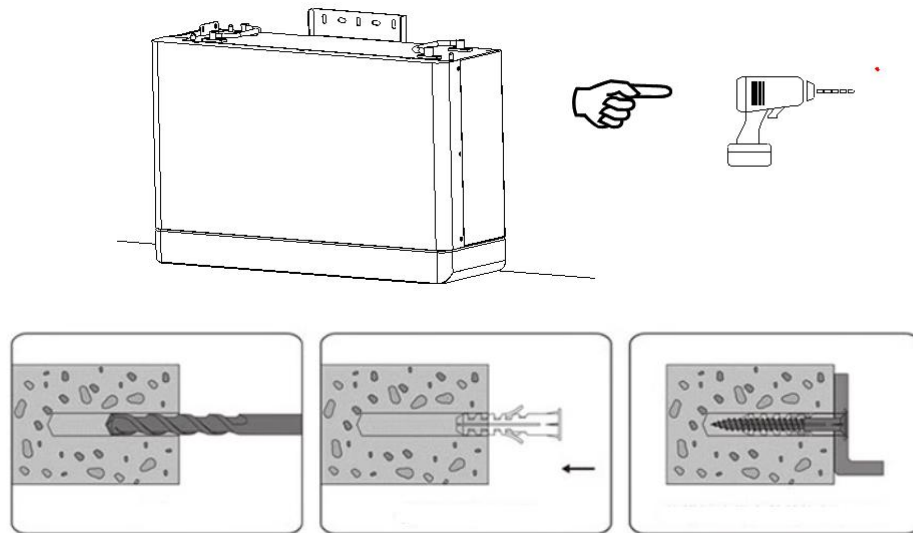
Step 1: First, fix the lug and the battery module with M4 head screws



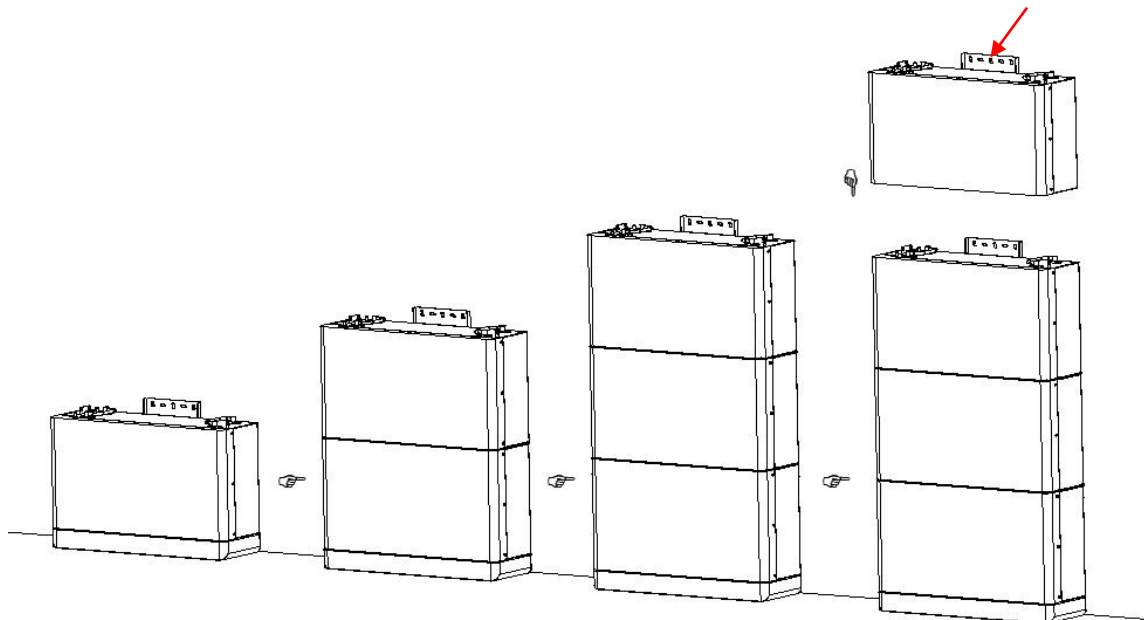
Step 2: Place the base in a suitable position, align the battery with the positioning pin on the base, and place it on top. Move the fixed bracket to the wall.



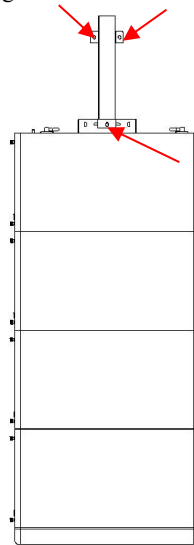
Step 3: After marking the wall with a marker, remove the battery pack. Drill a hole with a diameter of 10 on the wall using an impact drill, with a depth of 60MM. Knock the yellow rubber plug into the hole. Move the battery to the perforated wall and secure it with screws.



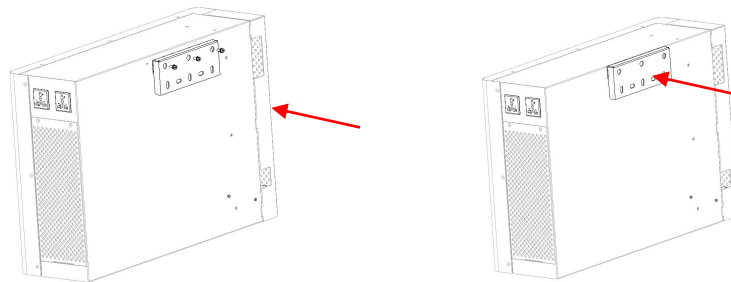
Step 4: Follow Step 4 to install the remaining battery packs in turn. (Note: The middle screw of the fourth battery pack is temporarily not locked.)



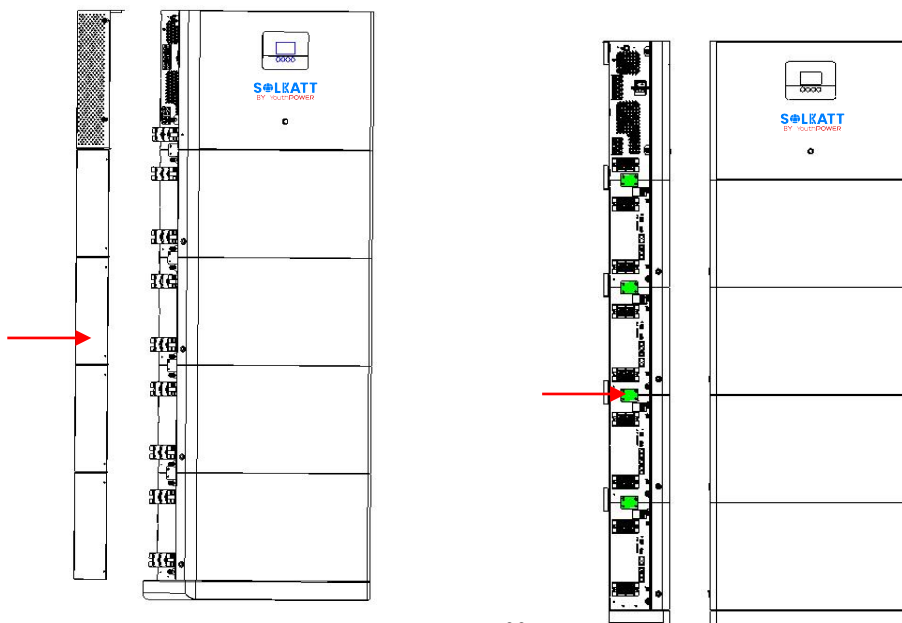
Step 5: Install the positioning accessories on the top surface of the battery pack. Then fix the ESS hanger to the wall with screws, as shown in the figure:



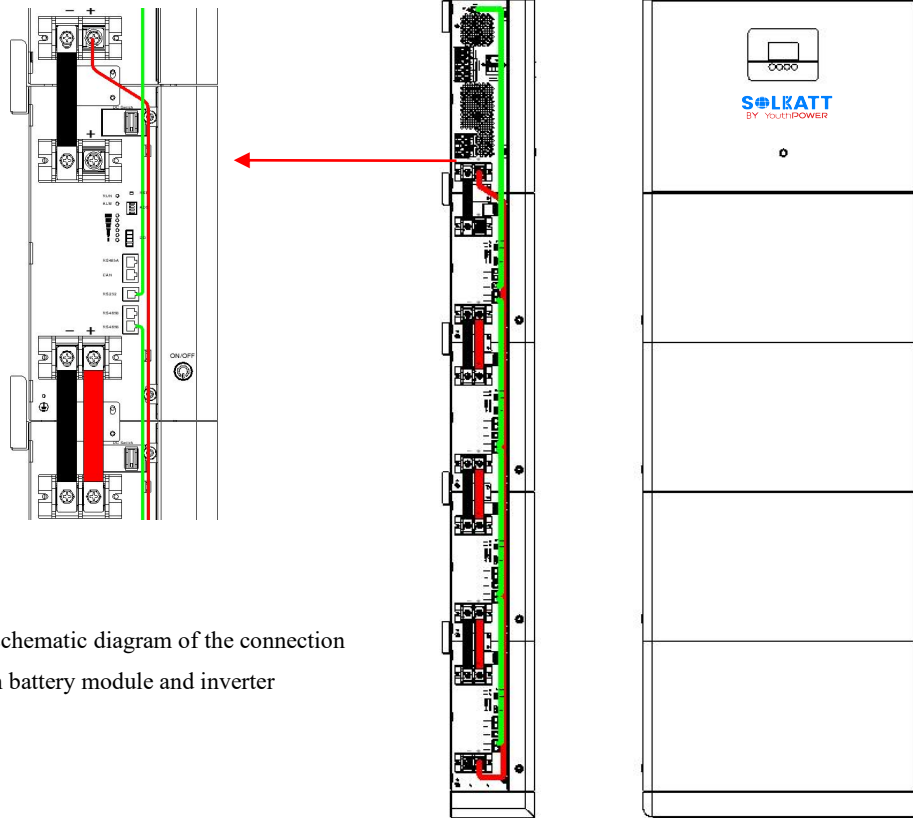
Step 6: Screw the inverter fixing bracket to the inverter box, as shown in the figure



Step 7: Place the inverter on top of the battery pack. Open the left side cover of the inverter and battery module, and then connect the battery module to the battery module through a fixed connector. The battery module is fixed to the inverter. As shown in the figure:



Step8: Connect the battery modules through a busbar connector as shown in the diagram. Before connecting, ensure that the battery pack is turned off. The communication lines between the battery modules are plugged into the RS485B communication port. The communication lines between the battery module and the inverter are plugged into RS232 and COM ports respectively. (Note: Equipment needs to be grounded)



Partial schematic diagram of the connection between battery module and inverter

5 Electrical Connection

5.1 Safety Instructions

DANGER

The PV string produces extremely high voltage when exposed to sunlight, which can be lethal. Operators must wear appropriate personal protective equipment during electrical connections. Before touching any DC cables, ensure that they are voltage-free using a measuring instrument. Follow all safety instructions provided in the relevant documents regarding PV strings.

DANGER

- Prior to electrical connections, ensure that the ESS switch and all switches connected to the ESS are set to the "OFF" position to avoid the risk of electric shock.
- Verify that the ESS is undamaged and all cables are voltage-free before performing any electrical work.
- Do not close the AC circuit breaker until the electrical connection is complete.

WARNING

Product damage resulting from incorrect wiring is not covered by the warranty.

- Electrical connections should only be carried out by professionals.
- Operators must wear proper personal protective equipment during electrical connections.
- All cables used in the PV generation system must be securely attached, adequately insulated, and correctly sized.

NOTICE

All electrical connections must adhere to local and national/regional electrical standards.

- Cables used by the user must comply with the requirements of local laws and regulations.
- Connection of the ESS to the grid requires permission from the national/regional grid department.

NOTICE

- All unused terminals must be covered with waterproof covers to maintain the protection rating.
- After completing the wiring, seal the cable inlet and outlet holes with fireproof/waterproof materials such as fireproof mud to prevent the entry of foreign matter or moisture, which may affect the long-term operation of the ESS.
- Adhere to the safety instructions related to PV strings and the regulations concerning the utility grid.

Note:

1. The cable colors shown in the figures in this manual are for reference only. Select cables according to the local cable standards.
2. Before connecting all wires, be sure that side covers of inverter and battery modules are removed. This step should be executed before modules are installed to the wall.

5.2 Utility Grid Connection

5.2.1. Preparation

Before connecting to AC utility, please install a separate AC circuit breaker between surge protection device (SPD) and AC utility. This will ensure the ESS can be securely disconnected during maintenance and fully protected from over current of AC input.

NOTICE

The overvoltage category of the AC input is III. It should be connected to the power distribution.

WARNING

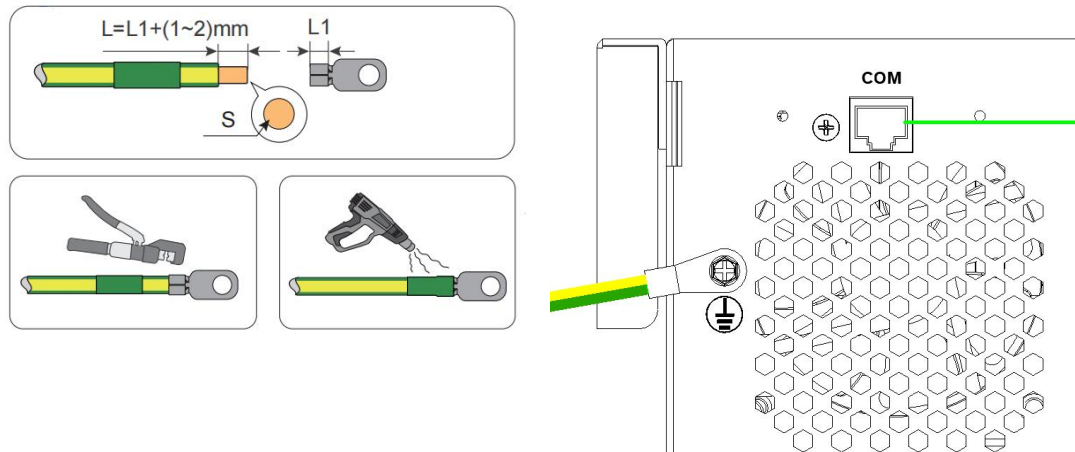
For safety and efficiency, it's very important to use appropriate cables for grid (utility) connection. To reduce risk of injury, please use the proper cable size recommended below.

Suggested cable requirement for AC wire

Nominal Grid Voltage	230VAC
Conductor cross-section (mm ²)	6
AWG no.	10

5.2.2. Connecting to the AC Utility

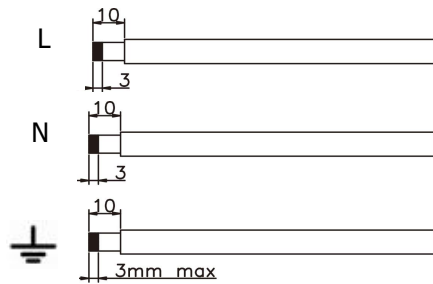
Step 1: equipment ground.



Step 2: Check the grid voltage and frequency with an AC voltmeter to see if it's same as the "VAC" value on the product label.

Step 3: Turn off the circuit breaker.

Step 4: Remove insulation sleeve 10 mm from three conductors and shorten phase L and neutral conductor N for 3 mm.



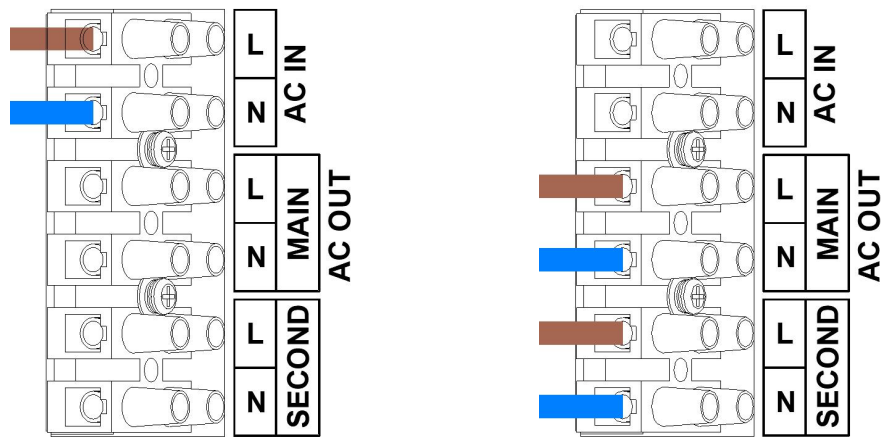
Step 5: Connect wires according to the polarities indicating on terminal block. Be sure to connect PE protective conductor (G) first.

L→LINE (brown or black)

N→Neutral (blue or white)

G→Ground (yellow-green)

Step 6: Make sure the wires are securely connected. The reference tightening torque is 0.6N.m.



5.2.3 PV Module (DC) Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

Please follow the steps below to implement PV module connection:

Model	Wire Size	Cable(mm ²)	Torque value(max)
YP-THEP-10LV2, LV3, LV4	1 x10AWG	6	1.2 Nm

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

MODEL	YP-THEP-10LV2, LV3, LV4
Max. PV Array Open Circuit Voltage	500Vdc
PV Array MPPT Voltage Range	90Vdc~450Vdc

Take 250Wp PV module as an example. After considering above two parameters, the recommended module configurations are listed as below table.

Solar Panel Spec.(reference)	SOLAR INPUT	Q'ty of panels	Total inputpower
250Wp Vmp: 30.1Vdc Imp: 8.3A Voc: 37.7dc Isc: 8.4A Cells: 60	Min in serial: 6 pcs, max.in serial: 13 pcs		
	6 pcs in serial	6 pcs	1500W
	8 pcs in serial	8 pcs	2000W
	12 pcs in serial	12 pcs	3000W
	13 pcs in serial	13 pcs	3250W
	12 pieces in serial and 3 sets in parallel	36 pcs	8200W
	10 pieces in serial and 4 sets in parallel	40 pcs	10200W

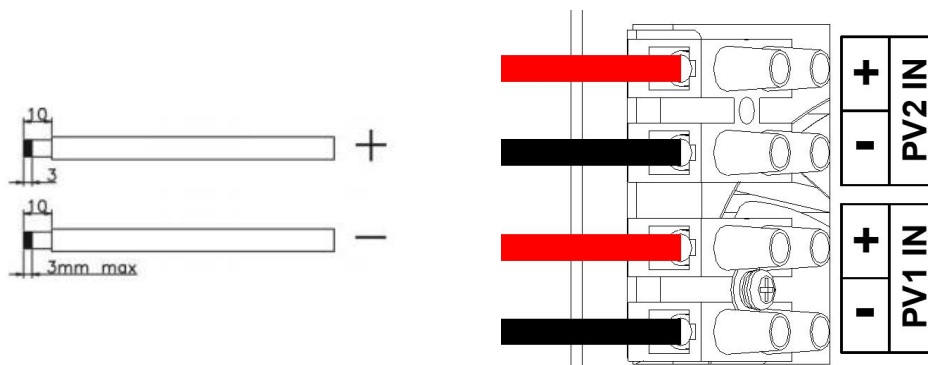
PV Module Wire Connection

Step 1: Check the input voltage of PV array modules. The acceptable input voltage of the inverter is 120VDc -500VDC, Please make sure that the maximum current load of each PV input connector is 10A.

CAUTION: Exceeding the maximum input voltage can destroy the unit!! check the system before wire connection.

Step 2: Disconnect the Dc circuit breaker.

Step 3:PV Module Wire ConnectionPlease follow below steps to implement PV module connection:Remove insulation sleeve 10 mm for positive and neative conductors.Suggest to put bootlace ferrules on the end of positive and negative wires with aproper crimping tool.



Step 4:Check correct polarity of wire connection from PV modules and PV input connectors. Then, connect positivepole (+) of connection wire to positive pole (+) of PV input connector. Connect negative pole (-) ofconnection wire to negative pole (-)of PV input connector.Recommended tool:4mm blade screwdriver

6 Commissioning

6.1 Inspection before Commissioning

Before starting the ESS, please ensure the following checklist items are checked:

- Confirm that all equipment has been installed securely and in accordance with the manufacturer's instructions.
- Verify that the DC switch(es) and AC circuit breaker are in the "OFF" position.
- Ensure that the ground cable is properly and securely connected.
- Check that the AC cable is correctly and reliably connected.
- Verify that the DC cable is properly and securely connected.
- Confirm that the communication cable is properly and securely connected.
- Seal any vacant terminals to prevent dust or moisture ingress.
- Ensure that no foreign items, such as tools, are left on top of the machine or inside the junction box (if applicable).
- Verify that the AC circuit breaker is selected according to the requirements specified in the manual and local standards.
- Check that all warning signs and labels on the ESS are intact and legible.

It is essential to complete these checks before starting the ESS to ensure safe and reliable operation.e.

6.2 Powering on the System

If all checklist items have been verified and meet the requirements, follow the following steps to start the ESS: Step 1: Open the battery start switch and circuit breaker switch Step 2: Open the inverter start switch. Step 3: Turn on the AC circuit breaker located between the ESS and the power grid. Step 4: The ESS will start normally. Observe the LED indicator light on the ESS to ensure that it is working properly. For an introduction to the LED screen and its indicator definitions, refer to the 2.3.1LED Board section in the manual.

7 System Decommissioning

7.1 Disconnecting the ESS

7.1.1 Disconnecting the ESS

CAUTION

To ensure safety and prevent the risk of burns, it is important to follow proper procedures when operating or performing maintenance on the ESS. Please adhere to the following steps to disconnect the ESS from the AC and DC power sources:

Step 1: Disconnect the external AC circuit breaker that supplies power to the ESS. Make sure to secure it against accidental reconnection.

Step 2: Rotate the DC switch to the "OFF" position to disconnect all PV string inputs from the ESS.

Step 3: Wait for approximately 10 minutes to allow the capacitors inside the ESS to completely discharge. This step is crucial to ensure that no residual electrical charge remains.

Step 4: Use a current clamp to verify that the DC cable is free from any electrical current. This is an important safety measure to prevent any potential shocks or hazards.

Please remember to wear protective gloves when operating the ESS, even after it has been shut down and allowed to cool down. In addition, always follow safety guidelines and refer to the manufacturer's instructions for specific procedures and precautions related to maintenance and service work on the ESS.

7.1.2 Dismantling the ESS

CAUTION

Risk of burn injuries and electric shock!

Do not come into contact with any internal live components until at least 10 minutes have elapsed after disconnecting the ESS from the utility grid and PV input.

Before disassembling the ESS, ensure that both AC and DC connections are disconnected.

Step 1: Disconnect all cables from the ESS in reverse order as described in the "Electrical Connection" section.

Step 2: Disassemble the ESS following the reverse steps outlined in the "Mechanical Mounting" section.

Step 3: If needed, remove the wall-mounting bracket from the wall.

Step 4: If the ESS will be stored for future use, please refer to the "ESS Storage" section for proper conservation guidelines.

7.1.3 Disposal of the ESS

Users are solely responsible for the proper disposal of the ESS.

WARNING

Please ensure that the ESS is disposed of in accordance with the relevant local regulations and standards to prevent any property losses or casualties.

NOTICE

Certain components of the ESS may pose a risk of environmental pollution. Please adhere to the disposal regulations for electronic waste that are applicable at your installation site when disposing of these components.

7.2 Decommissioning the Battery

To decommission a Li-ion battery after the ESS has been decommissioned, follow these steps:

Step 1: Disconnect the DC circuit breaker located between the battery and the ESS.

Step 2: Disconnect the communication cable that connects the battery to the ESS.

Step 3: Wait for approximately 1 minute to allow for any residual voltage to dissipate. Then, use a multimeter to measure the voltage at the battery ports.

Step 4: If the battery port voltage is zero, proceed to disconnect the power cables from the battery module.

Note: It is important to exercise caution and follow proper safety procedures when handling and decommissioning batteries.

CAUTION

We do not assume liability for the disposal of the battery. The responsibility for proper battery disposal rests with the user. Please ensure that the battery is disposed of in accordance with applicable local regulations and standards to avoid any property damage or harm.

8 Appendix

8.1 Technical Data

MODEL	YP-THEP-10LV2	YP-THEP-10LV3	YP-THEP-10LV4
Phase	1-phase		
Maximum PV Input Power	10000W		
Rated Output Power	10000W		
Maximum Solar Charging Current	160A		
PV Input(DC)			
Nominal DC Voltage/Maximum DC Voltage	360VDC/500VDC		
Start-up Voltage/Initial Feeding Voltage	60VDC/ 120VDC		
MPPT Voltage RangeMPPT	60~450VDC		
Number of MPPT Trackers/Maximum Input CurrentMPPT	1/27A		
GRID OUTPUT(AC)			
Nominal Output Voltage	220/230/240VAC		
Output Voltage Range	195.5~253VAC		

Nominal Output Current	44.3A		
Power Factor	>0.99		
Feed-in Grid Frequency Range	49~51±1Hz		
EFFICIENCY			
Maximum Conversion Efficiency	98%		
TWO LOAD OUTPUT POWER			
Full Load	10000W		
Maximum Main Load	10000W		
Maximum Second Load(battery mode)	3400W		
Main Load Cut Off Voltage	44VDC		
Main Load Return Voltage	52VDC		
AC INPUT			
AC Start-up Voltage/Auto Restart Voltage	120-140VAC/180VAC		
Acceptable Input Voltage Range	90-280VAC or 170-280VAC		
Maximum AC Input Current	50A		
Nominal operating frequency	50/60Hz		
Surge power)	20400W		
BATTERY MODE OUTPUT(AC)			
Nominal Output Voltage	220/230/240VAC		
Output Waveform	Pure sine wave		
Efficiency(DC to AC)	94%		
CHARGER			
Maximum Charging Current (Solar to AC)	160A		
Maximum AC Charging Current	140A		
PHYSICAL			
Communication Port	RS232WIFI/GPRS/LITHIUM BATTERY		
Dimension,D*W*H(mm)	191.5*640*1180	191.5*640*1520	191.5*640*1860
Weight (Kg)	113	162	211