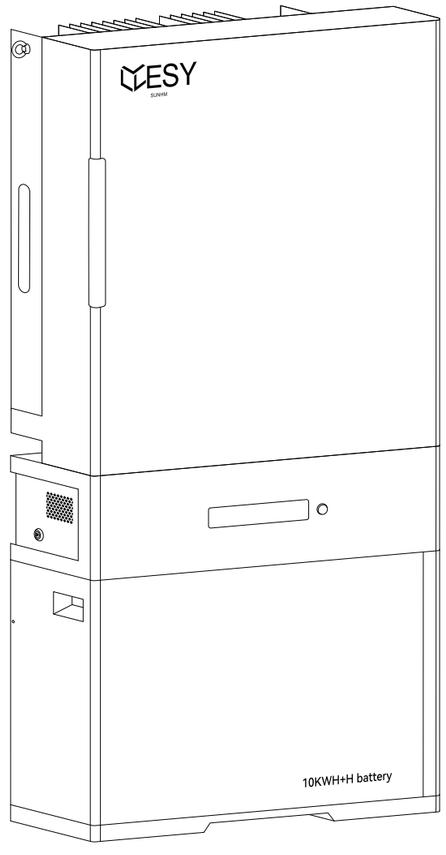
HM20/HM15/HM10-H
Inverter User Manual

(V240814)



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Made in China

CE RoHS

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1 Company Overview

With over two decades of experience, ESY SUNHOME hawsiftly gained prominence as a leading player in the energy storage industry, specializing in lithium battery technology and Battery Management Systems (BMS). Trusted by global giants such as Huawei, Dell, and Toshiba, ESY SUNHOME is renowned for its innovative solutions. Supported by advanced AI functionalities, protection systems and a highly skilled R&D team, the company's development of the HM series All-in-One residential energy storage systems marks a significant milestone in its pursuit of excellence.

With offices strategically located in Sydney, Australia, and Munich, Germany, ESY SUNHOME is well-positioned for global expansion, aiming to establish a significant international footprint. The company's unwavering commitment to making clean energy accessible drives its mission to empower communities worldwide in embracing sustainable solutions for a brighter future.

Mission

To provide safe and high quality energy products (batteries and power supplies) for every family.

Vision

Make Clean Energy Available to Every Family.

Core Values

Collaborative Spirit
Down-to-Earth Practicality
Forward-thinking Innovation
Rigorous Scientific Craftsmanship
Delivering Value for Clients
Making a Positive Impact on Society

2 Precautions

2.1 General Statement

- This manual is applicable for the installation, maintenance and repair of HM20 ENERGY STORAGE SYSTEM/HM15 ENERGY STORAGE SYSTEM/HM10-H ENERGY STORAGE SYSTEM. Please retain this manual properly, and strictly follow all safety and operational instructions contained herein.
- ESY SUNHOME bears no responsibility for any consequences arising from failure to comply with the general safety requirements or safety standards for design, production, and use.
- It is crucial to use this product under specified design conditions. Any damage to components, personal injury, or property loss resulting from improper use will not be covered under warranty.
- During installation, use, and maintenance, adherence to all local laws and regulations is mandatory. The safety instructions provided in this manual are supplementary to local laws and regulations.
- The content in this manual will undergo periodic review and updates as needed. ESY SUNHOME reserves the right to make improvements or changes to the products and procedures described in this manual at any time without prior notice.
- The product diagram in this manual are used for illustrative purpose only. The product models depicted in the illustrations may differ from the actual product.
- The circuit diagrams in this manual are used for illustrative purpose only. Actual installation may be adjusted according to the local requirements and application scenarios.
- Some products, accessories, functions, and services mentioned in this manual are optional items and may not be within your use scope.
- For further details, please consult authorized personnel or organizations of ESY SUNHOME.
- ESY SUNHOME reserves all rights to the final interpretation in this document.

2.2 Safe Transportation and Storage

- During transportation of the inverter, it is essential to utilize the original packaging to ensure the safety of the equipment throughout the shipping process.
- Upon receiving the shipments, please thoroughly inspect the external packaging of the inverter before opening the box for a comprehensive inspection.
- If any damage to the inverter occurs during transportation, please notify the shipping company immediately. The shipping company is responsible for any equipment damage incurred during transit. If necessary, seek assistance from the installation personnel or manufacturer.
- When handling inverters weighing 35 kg or more, please use appropriate equipment or collaborate with multiple individuals for safe handling.
- When storing the equipment, please use the original packaging and store it in a cool, dry, and well-ventilated area to prevent damage from moisture.

2.3 Important Safety Information

- Before installing, operating, and maintaining the equipment, please read this manual carefully.
- Make sure that the product is adequately grounded before operation. The grounding resistance should be less than 0.1Ω.
- Install all terminals of the energy storage system in accordance with the instructions provided in this manual. Follow the corresponding signs and symbols on the equipment during operation.
- During installation, please use the accessories provided in the product packaging.
- During maintenance, the maintenance personnel are prohibited from operating any equipment until all equipment has been shut down and completely discharged.
- The distribution box ports will be live during operation. Do not remove the protective cover from the parallel connection ports and communication ports on the distribution box when they are not in use.
- To ensure that the electrical parameters match requirements, relevant measuring equipment is required during system connection and testing. Ensure that the specifications of the equipment match to prevent arcing or impact.
- During installation, maintenance and repair, warning signs shall be set up in the operational area of the system to prevent accidents caused by unauthorized personnel.
- Before installation, maintenance, or repair, use professional equipment to measure the voltage of the inverter and battery terminals to prevent injury to operators from energized ports.

	**Danger!** Unauthorized removal, improper use, or incorrect installation or operation may result in serious personal injury or equipment damage. Therefore, transportation, installation, startup, dismantling, and maintenance must be carried out by qualified or trained personnel.
	**Danger!** Before undertaking any repair, electrical installation, or accessing any live parts, ensure that the inverter, distribution box, and battery are turned off, and that the port voltage is at a safe level.
	**Danger!** Do not connect the neutral (N) line of the load to the grid, or connect the grid cable to the output terminal of the load. Doing so may result in serious damage to the product and load.
	**Danger!** The external CT must be connected to the inverter properly and securely before use. Failure to do so may result in high voltage at the CT ports.
	**Warning!** Installation must fully comply with national and local laws and regulations.
	**Warning!** Due to the non-isolated topology is applied on the PV and grid side of the inverter, please use monocrystalline or polycrystalline silicon solar panels (the negative PV pole must not be grounded).
	**Warning!** When exposed to sunlight, the PV array will generate a high DC voltage. For installation safety, please make sure that the entire PV panel is covered with an opaque cover before connection.
	**Warning!** Ensure that the input voltage at the photovoltaic ports of the inverter never exceeds the maximum value. Exceeding the maximum voltage may result in permanent damage to the inverter or other losses. [Please consider the influence of temperature; the voltage of photovoltaic modules at -20 ℃ in winter is about 15% higher than at 30℃ in summer.] Do not connect any power source other than the PV module at the PV input port.
	**Warning!** Unauthorized replacement of the internal circuitry of the inverter is prohibited.
	**Warning!** Before connecting to the grid, the product must be securely grounded. Please follow the instructions in this manual. Improper operation may cause serious damage.
	**Warning!** Please ensure that a lightning protection device is installed in the combiner box.
	**Warning!** After installation, maintenance, or repairs, please remember to securely lock the side doors of both the inverter and distribution box. Access to these compartments should be restricted to qualified personnel only.

2.4 Installer Requirements

The operators should be professionally qualified or trained.

The operators should be familiar with the entire storage system, including its components and operating principles.

The operators should be familiar with the product instruction.

The grid-connected electricity selling of the energy storage system must be approved by the local power authority, or compliant with the relevant provisions of national and local laws and regulations.

It must be conducted by qualified personnel.

2.5 Safety Symbols Description

The symbols that may be found in this product are defined as follows:

MODEL: ESY SUNHOME HM10-H MODEL: ESY SUNHOME HM15 MODEL: ESY SUNHOME HM20	ESY SUNHOME: Brand Name HM10-H: Model, indicating that the inverter specification is 10 kW. HM15: Model, indicating that the inverter specification is 15 kW. HM20: Model, indicating that the inverter specification is 20 kW.
	Stay safe.
	Beware of hot surfaces.
	Caution: Risk of electric shock.
	Prior to attempting any repair, electrical installation, or accessing any live parts, make sure that the inverter is switched off and wait for 5 minutes until internal capacitors are discharged to a safe voltage.
	Professional recycling and reuse are required.
	Please read this manual before using the product.
	Compliant with CE safety certification standards.

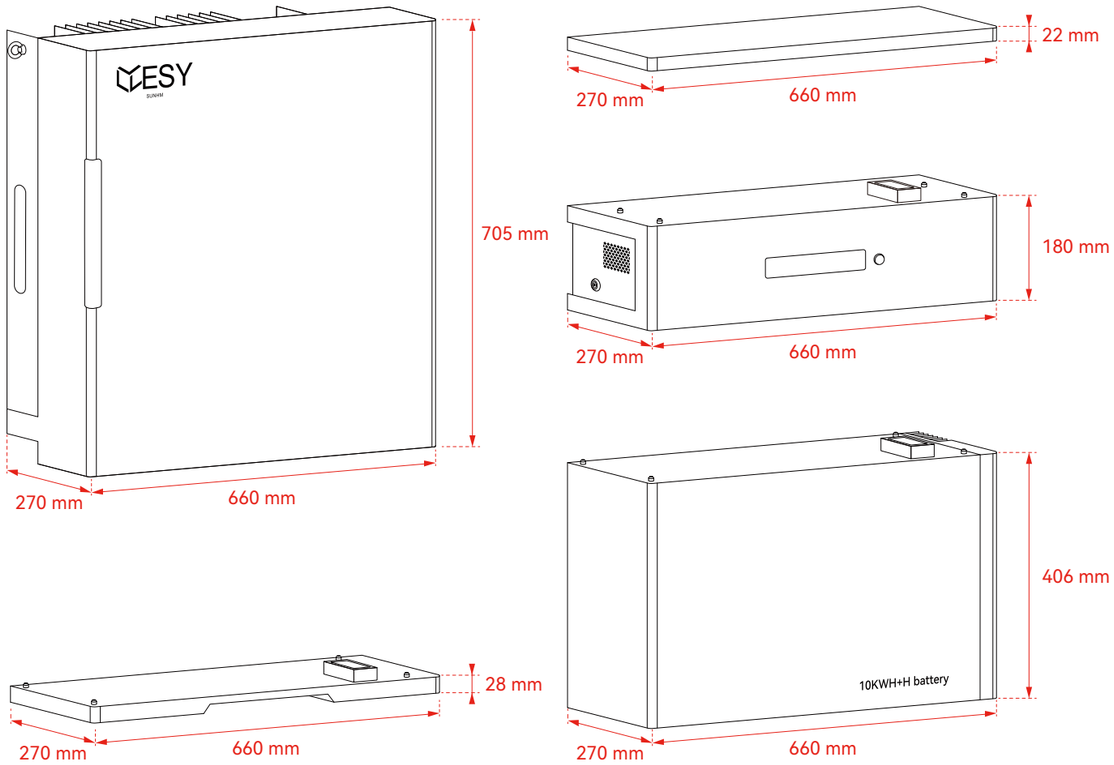
3 Product Introduction

3.1 Inverter Parameters

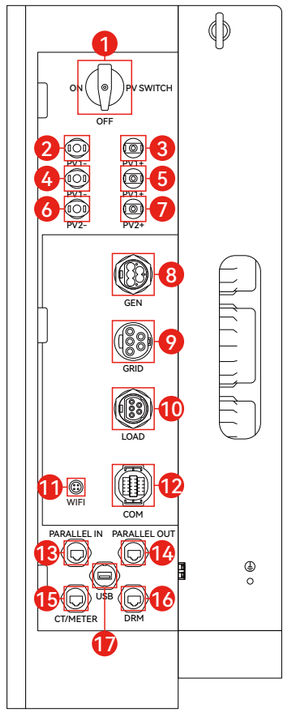
MODEL	HM10-H	HM15	HM20
PV（PV input）			
Max. input power	20 kW	30 kW	30 kW
Rated input voltage	650 Vd.c.		
Max.input voltage	1000 Vd.c.		
MPPT voltage range	160 ~ 950 Vd.c.		
Min. operating voltage	160 Vd.c.		
Starting voltage	180 Vd.c.		
Max. input current	16 A/16 A	16 A/32 A	16 A/32 A
Max. Short-circuit current	24 A/24 A	24 A/48 A	24 A/48 A
MPPT Quantity	2		
PV input backfeed short circuit current	0 Ad.c.		
Battery input/output rating			
Battery type	IFpP/Lithium Iron Phosphate		
Rated voltage	450 Vd.c.		
Grid charging	YES		
Battery voltage range	150 Vd.c. ~ 600 Vd.c.		
Max.charging power	10 kW	15 kW	20 kW
Max. charging current	25 Ad.c.	37.5 Ad.c.	50 Ad.c.
Max. discharging power	10 kW	15 kW	20 kW
Max. discharging current	25 Ad.c.	37.5 Ad.c.	50 Ad.c.
Battery output short circuit current	80 A		
Battery input backfeed short circuit current	80 A		
Grid rating			
Rated voltage	400 Va.c. 3L/N/PE		
Rated frequency	50 / 60 Hz		
Rated input/output power	10 kW	15 kW	20 kW
Rated apparent power	10 kVA	15 kVA	20 kVA
Max. input apparent power	15 kVA	22.5 kVA	30 kVA
Max.output apparent power	11 kVA	16.5 kVA	22 kVA
Rated input/output current	14.4 Aa.c.@ 400 Va.c.	21.7Aa.c.@ 400 Va.c.	28.9 Aa.c. @ 400 Va.c.
Max. input current	21.7 Aa.c.@ 400 Va.c.	32.6 Aa.c.@ 400 Va.c.	40.0 Aa.c. @ 400 Va.c.
Max. output current	15.8 Aa.c.@ 400 Va.c.	23.8 Aa.c.@ 400 Va.c.	31.8 Aa.c. @ 400 Va.c.
Power factor range	0.8 leading~0.8 lagging		
THDI(@Range power)	≤ 3%		
Max. output fault current	/		
Max. output overcurrent protection	95 A		
Grid port inrush current	/		
Grid Mains output short circuit current	260 A		
Grid input backfeed short circuit current	260 A		
Backup load output rating			
Rated output voltage	400 Va.c. 3L/N/PE		
Rated output frequency	50 / 60 Hz		
Rated output power	10 kW	15 kW	20 kW
Max. apparent output power	10 kVA	15 kVA	20 kVA

Backup load output rating			
Max. output current	14.4 Aa.c. @ 400 Va.c.	21.7 A a.c. @ 400 Va.c.	28.9 Aa.c. @ 400 Va.c.
THDV	≤ 3%（linear load）		
Overload capacity	105%, 60 s/120%, 30 s		
Switching time	≤ 10 ms		
Load output short circuit current	260 A		
Generator input			
Max. input power	10 kW	15 kW	20 kW
Max. input current	14.4 Aa.c. @ 400 Va.c.	21.7 Aa.c. @ 400 Va.c.	28.9 Aa.c. @ 400 Va.c.
Efficiency			
Max. efficiency（PV to Grid）	98.2%		
MPPT efficiency	99.9%		
General parameter			
Dimensions (LxWxH)	660 mm×270 mm×705 mm		
Net weight	49.2 kg	51.2 kg	51.2 kg
Gross weight	55.4 kg	57.4 kg	57.4 kg
Install method	Floor mounting/ Wall mounting		
Ambient temperature range	-25 ~ 60℃		
Storage temperature	-25~70 ℃		
Altitude	≤ 3000 m		
Noise level at 1m	≤ 45 dB		
Relative humidity	5~95% (No Condensation)		
Cooling method	Natural cooling	Intelligent air cooling	Intelligent air cooling
Environmental category	Outdoor		
Environment pollution degree	External: PD 3, Internal: PD 2		
Communication method	WiFi/Ethernet/GPRS (optional), USB/RS485/CAN		
Ingress protection rating	IP 66		
Protection rating	Class I		
Anti-islanding method	Active Anti-Islanding: Power Variation (Method C)		
Topology	Non-isolated		
Over voltage category	OVC II (for PV/Battery); OVC III (for AC Gird Mains)		
Protection	Over/Under-voltage; Over/Under-frequency; Overload; Short Circuit; Over-temperature; Reverse Polarity of Photovoltaic Modules and Batteries; Leakage Current; Insulation Resistance; Anti-island Protection		
Country of Manufacture	China		

3.2 Dimensions



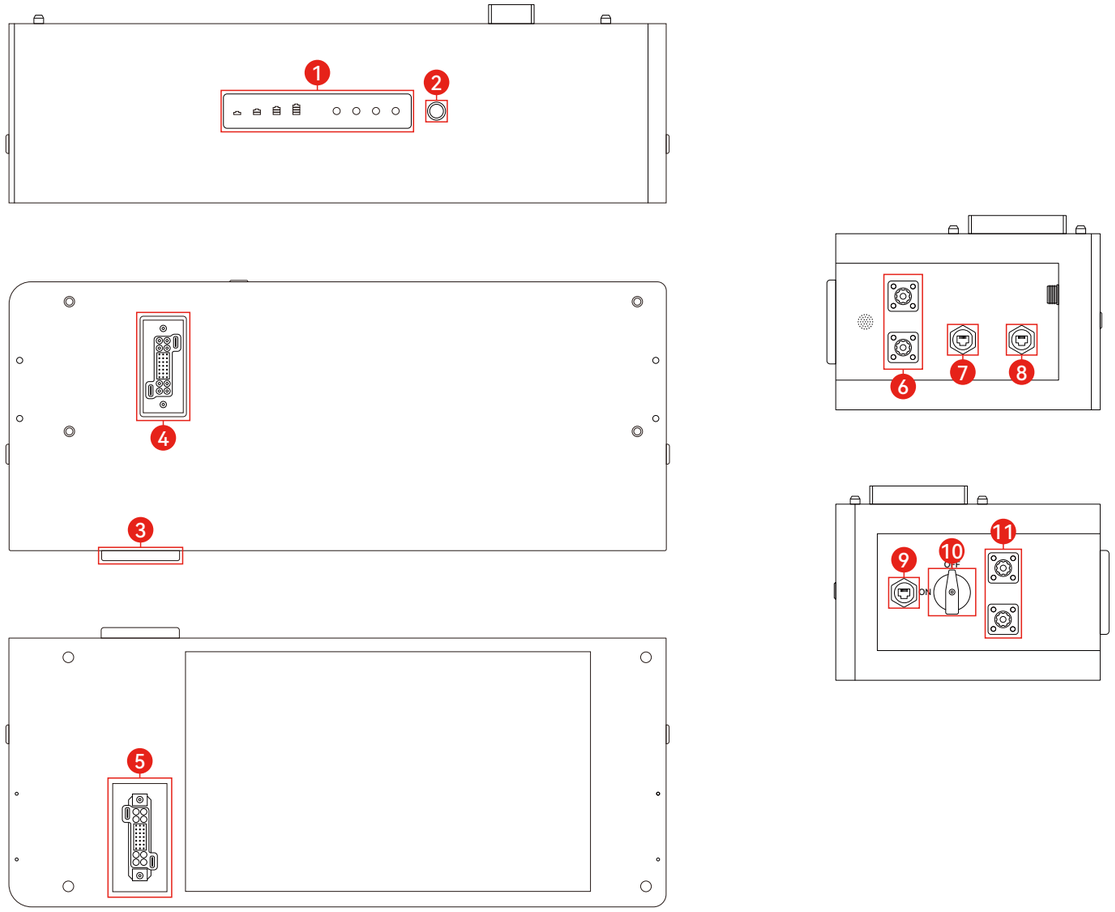
3.3 Inverter Port Descriptions



Purpose of each port on the inverter enclosure

S/N	Mark	Purpose
1	PV SWITCH	PV OFF/ON switch
2	PV1-	PV1 (1) Negative Input
3	PV1+	PV1 (1)Positive Input
4	PV1-	PV1 (2) Negative Input
5	PV1+	PV1 (2) Positive Input
6	PV2-	PV2 Negative Input
7	PV2+	PV2 Positive Input
8	GEN	Generator terminal connection
9	GRID	Grid connection
10	LOAD	Load connection
11	WIFI	WiFi-IoT Max port (optional)
12	COM	Communication port connection
13	PARALLEL IN	Parallel in port (optional)
14	PARALLEL OUT	Parallel out port (optional)
15	CT/METER	CT/METER port
16	DRM	DRM port (for Australia)
17	USB	USB port

3.4 Distribution Box Port Descriptions

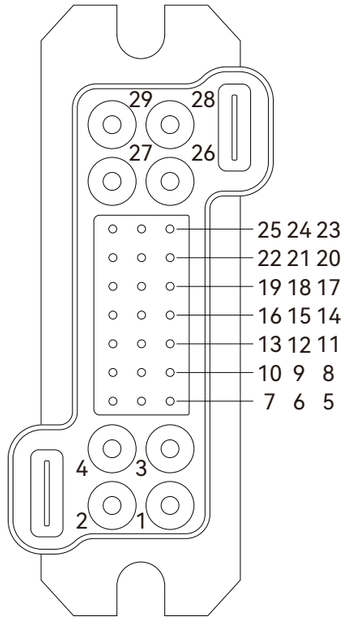


Description of Distribution Box Wiring Ports

S/N	Description	Mark
1	Indicator light	SOC/ALM/RUN/CHG/DCHG
2	Power Button	/
3	Fuse Interface	FUSE+/FUSE+/FUSE-/FUSE-
4	Inverter Connection Port (GP29Z)	/
5	Battery Connection Port (GP29T)	/
6	Positive/Negative Terminal Interface for Battery Tower in Parallel (Left)	DC 2+/DC 2-
7	Battery Tower Communication Interface (Left)	PARALLEL 2
8	Upper Computer Communication Interface	COM
9	Battery Tower Communication Interface (Right)	PARALLEL 1
10	Battery Isolation Switch	DC SWITCH（ON/OFF）
11	Positive/Negative Terminal Interface for Battery Tower in Parallel (Right)	DC1+/DC1-

Schematic of the GP29Z Connector

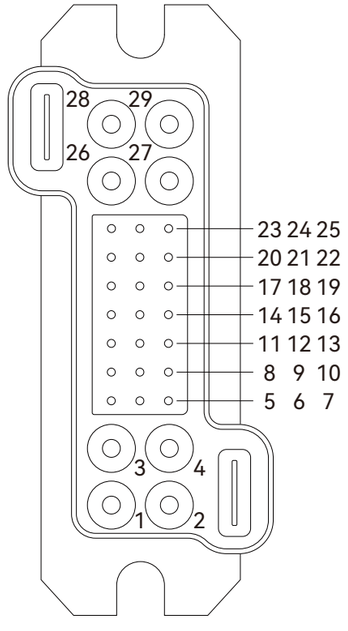
(10KWH+H Distributor Box)



1	PACK-	26	NC
2	PACK-	27	PACK+
3	PACK-	28	PACK+
4	GND	29	PACK+
5	NC	16	CAN1-L
6	NC	17	NC
7	NC	18	NC
8	NC	19	NC
9	NC	20	NC
10	NC	21	NC
11	CAN1-H	22	+5V
12	CAN1-H	23	DI3+
13	CAN1-L	24	NC
14	NC	25	NC
15	NC		

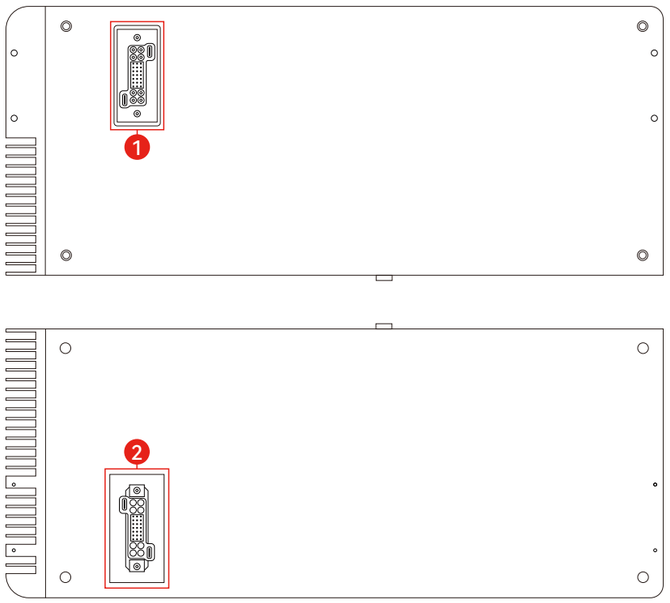
Schematic of the GP29T Connector

(10KWH+H Distributor Box/10KWH+H Battery)



1	PACK-	26	NC
2	PACK-	27	NC
3	NC	28	PACK+
4	GND	29	PACK+
5	485A	16	CAN-L
6	485B	17	Activation-
7	CAN-H	18	Activation+
8	485A	19	NC
9	485B	20	Activation-
10	CAN-H	21	Activation+
11	CAN1-H	22	SW+
12	CAN1-H	23	SW-
13	CAN-L	24	SW-
14	CAN1-L	25	SW+
15	CAN1-L		

3.5 Battery Port Descriptions

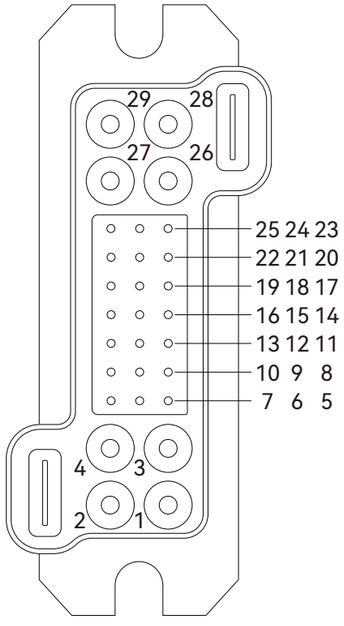


Description of Battery Wiring Ports

S/N	Description	Purpose
1	GP29Z (10KWH+H Battery)	Top Battery Connector
2	GP29T (10KWH+H Distribution Box/10KWH+H Battery)	Bottom Battery Connector

Schematic of the GP29Z Connector

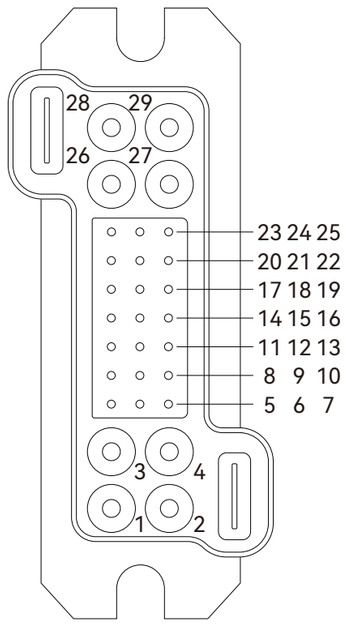
(10KWH+H Battery)



1	PACK-	26	NC
2	PACK-	27	NC
3	NC	28	PACK+
4	GND	29	PACK+
5	485A	16	CAN-L
6	485B	17	Activation-
7	CAN-H	18	Activation+
8	485A	19	NC
9	485B	20	Activation-
10	CAN-H	21	Activation+
11	CAN1-H	22	SW+
12	CAN1-H	23	SW-
13	CAN-L	24	SW-
14	CAN1-L	25	SW+
15	CAN1-L		

Schematic of the GP29T Connector

(10KWH+H Distributor Box/10KWH+H Battery)



1	PACK-	26	NC
2	PACK-	27	NC
3	NC	28	PACK+
4	GND	29	PACK+
5	485A	16	CAN-L
6	485B	17	Activation-
7	CAN-H	18	Activation+
8	485A	19	NC
9	485B	20	Activation-
10	CAN-H	21	Activation+
11	CAN1-H	22	SW+
12	CAN1-H	23	SW-
13	CAN-L	24	SW-
14	CAN1-L	25	SW+
15	CAN1-L		

3.6 System Model Overview

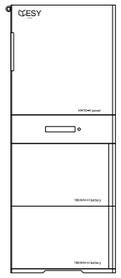
Warning!

Please ensure that a lightning protection device is installed in the combiner box.

Battery Capacity	Quantity of items required when installing batteries of different capacities				
	Inverter	10KWH+H Battery	10KWH+H Distribution Box	10KWH+H Cover	10KWH+H Battery Base
10 kWh	1	1	1	0	1
20 kWh	1	2	1	0	1
30 kWh	1	3	1	0	1
40 kWh	1	4	2	1	2
50 kWh	1	5	2	1	2
60 kWh	1	6	2	1	2
70 kWh	1	7	3	2	3
80 kWh	1	8	3	2	3
90 kWh	1	9	3	2	3

Overview of Different System Models:

HM10-H-20



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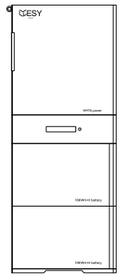

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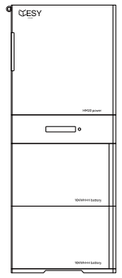

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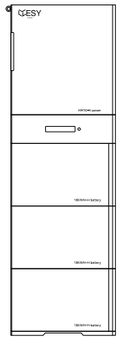

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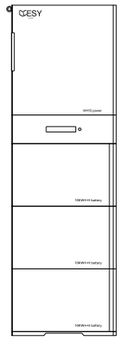

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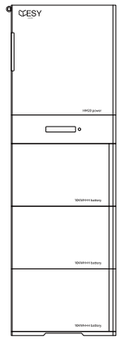

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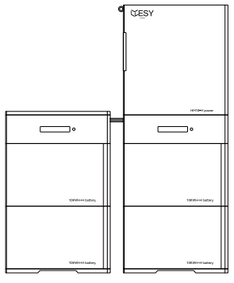

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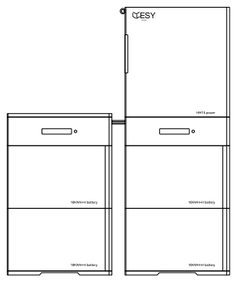

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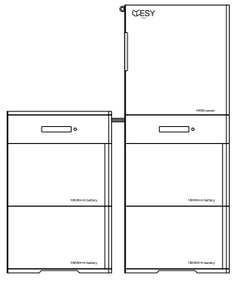

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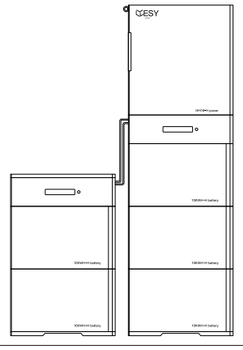

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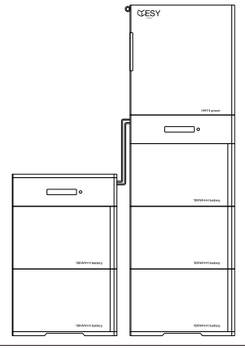

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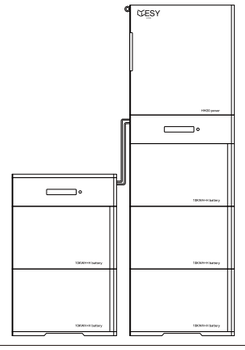

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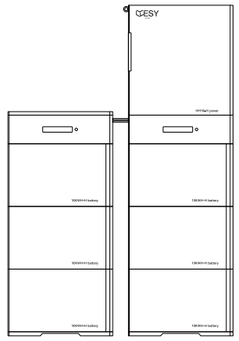

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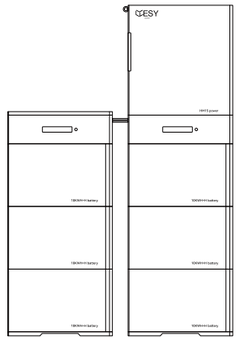

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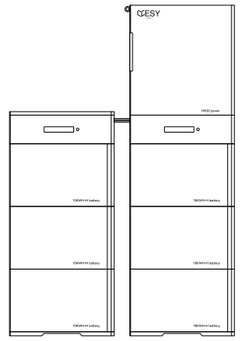
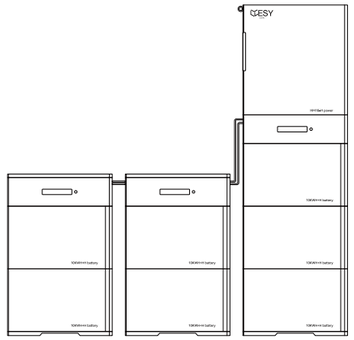
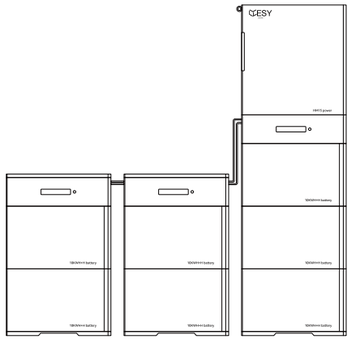


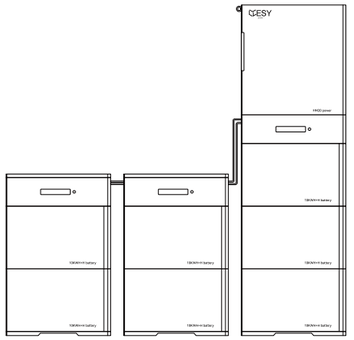
HM10-H-70



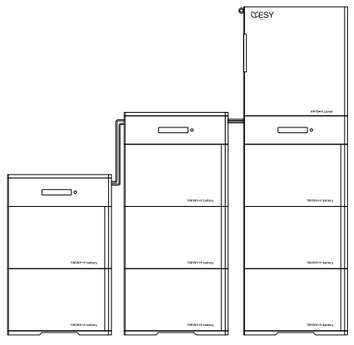
HM15-70



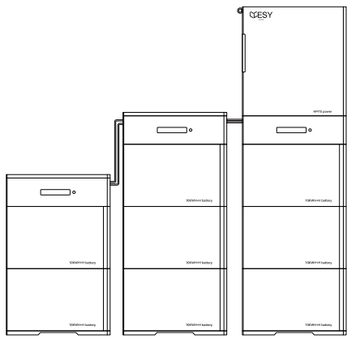
HM20-70



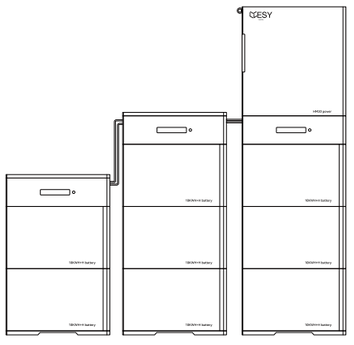
HM10-H-80



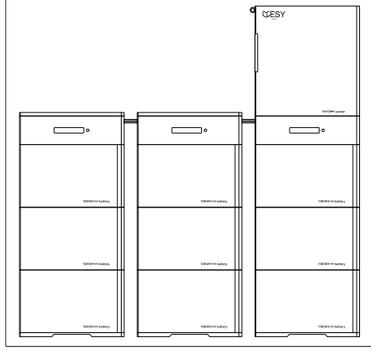
HM15-80



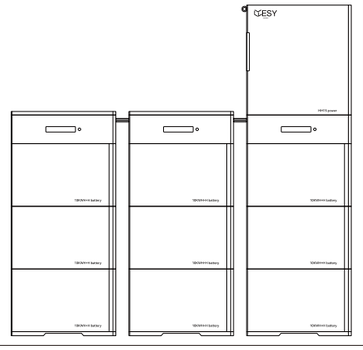
HM20-80



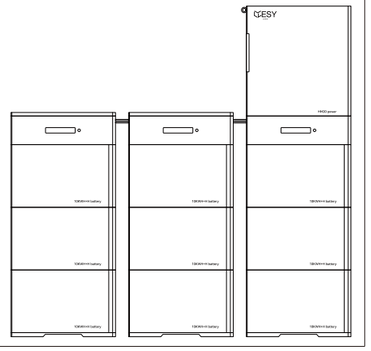
HM10-H-90



HM15-90

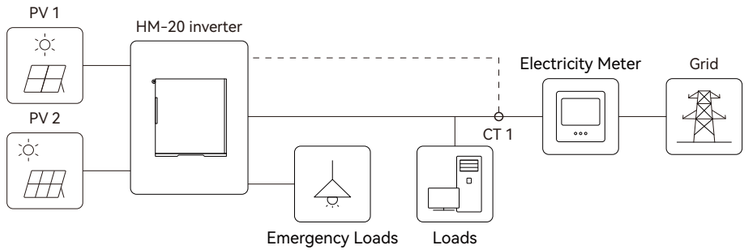


HM20-90

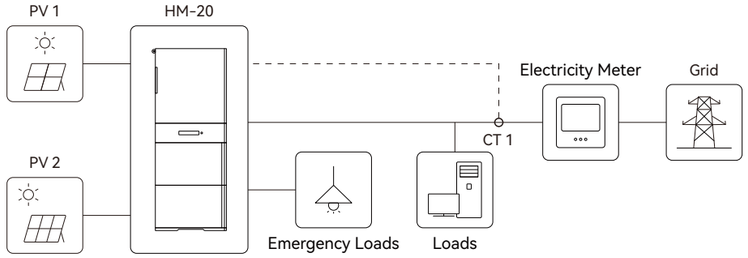


3.7 Application Scenarios

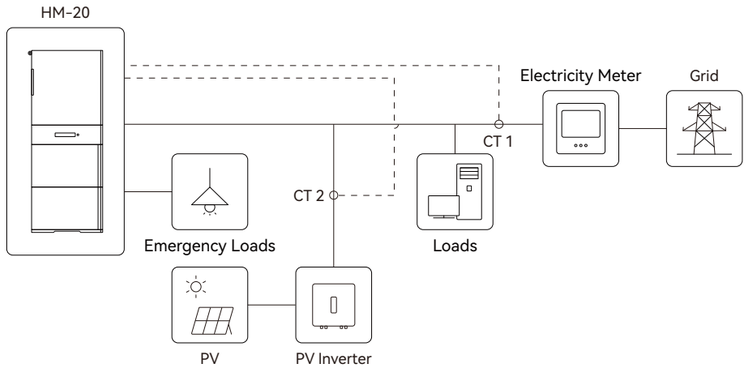
3.7.1 Used as A Photovoltaic (PV) Inverter



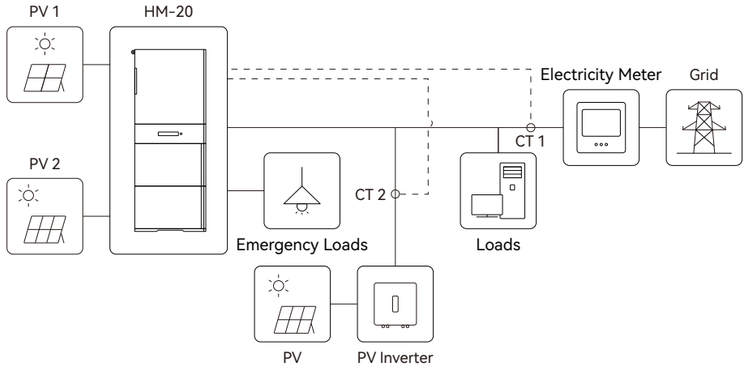
3.7.2 DC-Coupled Storage System



3.7.3 AC-Coupled Storage System

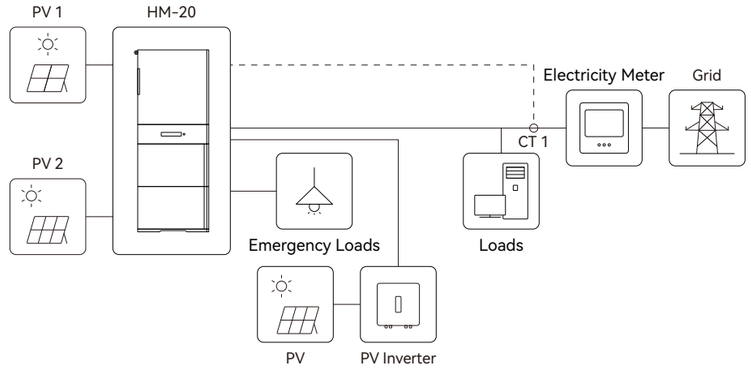


3.7.4 Hybrid-Coupled Storage System

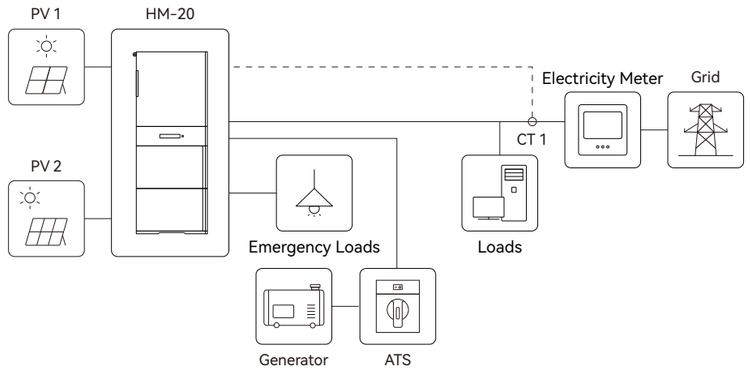


3.7.5 Micro Grid Storage System

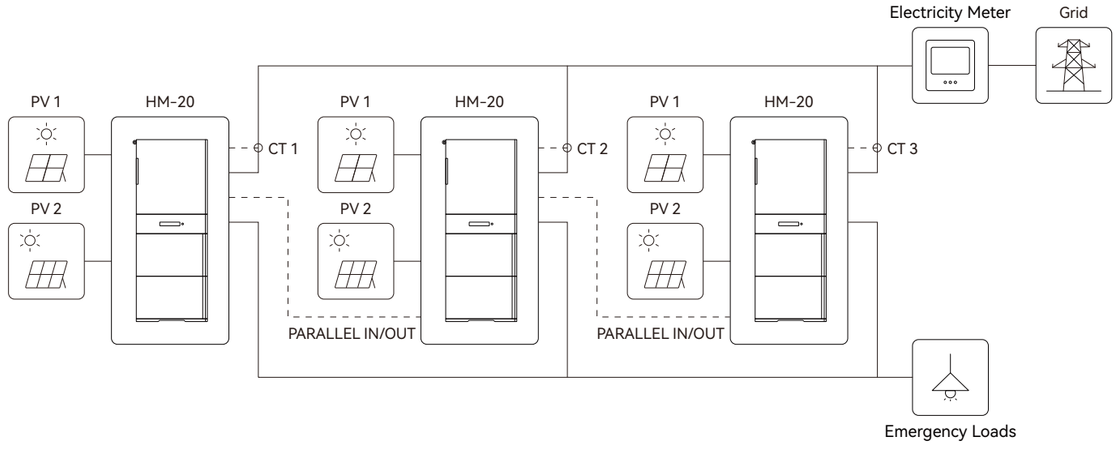
Micro Grid-Storage System (with PV inverter)



Micro Grid-Storage System (with Generator)



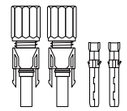
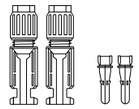
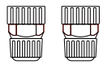
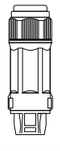
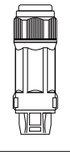
3.7.6 Parallel Mode

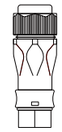
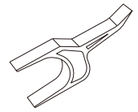
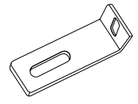
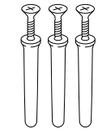
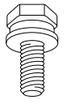
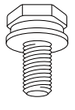


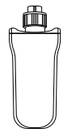
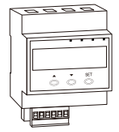
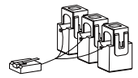
4 Preparation Before Installation

4.1 Packing List

4.1.1 Packing List of Inverter

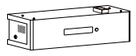
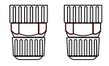
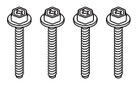
Item	Specifications	Quantity	Diagram
Inverter	HM20/HM15/HM10-H	1	
PV+ Connector	VP-D4B-CHSM4 external terminal casing, including metal terminal	3	
PV- Connector	VP-D4B-CHSF4 internal terminal casing, including metal terminal	3	
LAN Port Connector	RJ45; Assembly type; Line diameter ϕ3.0 mm²~ϕ6.0 mm²	4	
COM Port Connector	16 Pin, core diameterϕ0.5 mm²~0.75 mm²	1	
COM Port Waterproof Ring	External diameter Φ18.6 mm²; Line diameter ϕ4 mm²~ϕ6.1 mm², 4 holes	1	
COM Port Nylon Screw Plug	Diameterϕ5 mm², height 17 mm	4	
Load Output Terminal	RBH100-32-5P-W-M-26-BK	1	
Generator Port Connector	RBH100-32-5P-W-F-26-BK	1	

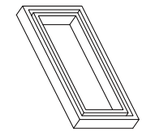
Grid Port Connector	AC5C Connector I 5PCF	1	
Connector Removal Tool	Used for Load/Generator/Grid port connector	1	
Insulated Cord End Terminal 4mm²	E4012, gray, used for load/generator port connector	20	
Insulated Cord End Terminal 6mm²	E6010, black, used for grid port connector	10	
Insulated Cord End Terminal 0.75mm²	E7512, red, used for COM port connector	16	
Angle Iron	L79.5×65×25mm	1	
Expansion Tubes with Screws	M6*40 mm, used for angle iron	1	
Angle Iron Screws	M4*12 mm	1	
Ring-Shaped Crimp Cable lug	RNB5.5-6, 48A, Φ=6.5 mm, 5.6×23 mm	1	
Ground Wire Screw	M6*12 mm	1	

Smart Dongle (Optional)	WiFi IoT Max	1	
Smart electricity Meter (Optional)	DTSD3366M-4-W1-A, CT*6pcs, 1-to-3*2pcs adapters	1	
CTs Components (Optional)	CT*3 with cable and RJ45 terminal	1	

4.1.2 Packing List of Distribution Box & Base

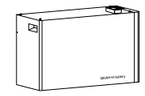
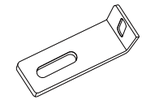
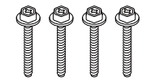
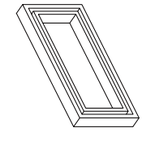
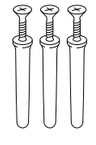
Suitable for floor-mounted installation mode.

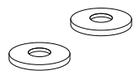
Items	Specifications	Quantity	Diagram
Distribution Box	10KWH+H Distribution Box	1	
LAN Port Connector	RJ45, assembly-type; Line diameter ϕ3.0 mm²~ϕ6.0 mm²	3	
Key	Triangular lock hole	2	
Handlebar Screws	M4*35 mm	4	

Waterproof Gasket	Silicone, black, matte, 104.5x50.3x10.6 mm	2	
Base	10KWH+H Battery Base	1	
Base Mounting Screws	M4*10 mm	4	

4.1.3 Packing List of Battery

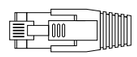
Suitable for floor-mounted installation.

Item	Specifications	Quantity	Diagram
Battery	10KWH+H Battery	1	
Angle Iron	L79.5×65×25 mm	2	
Handlebar Screws	M4*35 mm	4	
Angle Iron Screws	M4*8 mm	2	
Waterproof Gasket	Silicone, black, matte, 104.5x50.3x10.6 mm	1	
Expansion Tubes Screws	M6*40 mm, Used for Angle Iron	2	

Expansion Screw Gaskets	Inner diameter ϕ5 mm²; Outer diameter ϕ12 mm², SUS304 gasket	2	

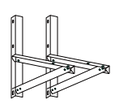
4.1.4 Packing List of Cover

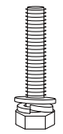
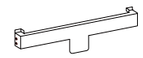
Suitable for multiple sets of battery energy storage system in parallel, and suitable for floor-mounted installation.

Item	Specifications	Quantity	Diagram
Cover	10KWH+H Distribution Box Cover	1	
Positive Connection Cable for Battery Parallel	3 AWG, orange, length: 1600 mm	2	
Negative Connection Cable for Battery Parallel	3 AWG, black, length: 1600 mm	2	
Communication Matching Resistor	120 Ω between pin 5 and pin 8	2	

4.1.5 Packing List of Wall Mounting Accessories

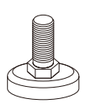
Only applicable for wall-mount installation.

Item	Specifications	Quantity	Diagram
Triangular Bracket	340 mm×280 mm×35 mm	2	

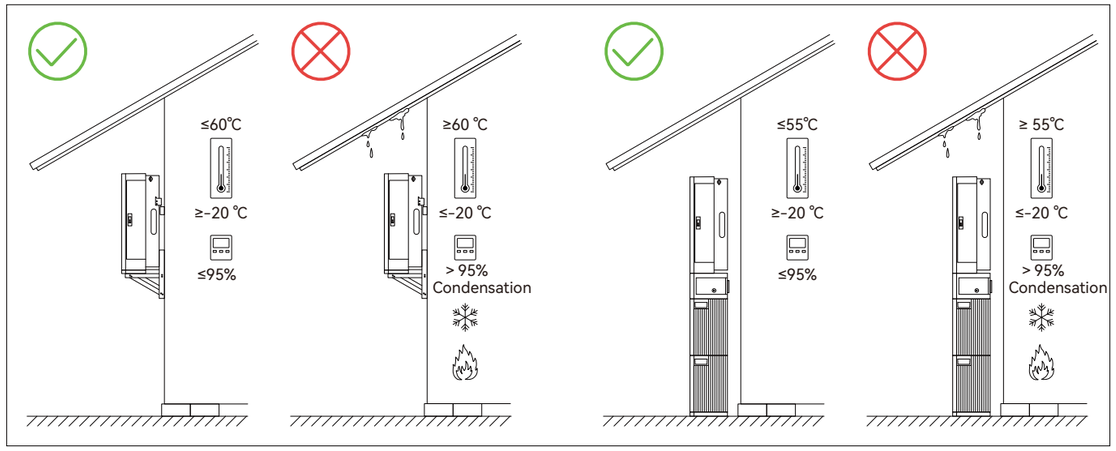
Bracket Base	660 mm×170 mm×45 mm	1	
Bracket Screws	M6×169, SUS304	12	
Bracket Base Screws	M5*12, SUS304	4	
Expansion Bolt	YPm6*70 mm, SUS304	12	
Handlebar Screws	M4*35 mm	4	
Rear Panel	510 mm×112 mm×42.5 mm	1	
Rear Panel Bracket	140 mm×60 mm×30 mm	1	
Rear Panel Screws	M6*16, SUS304	4	

4.1.6 Base Foot Packing List

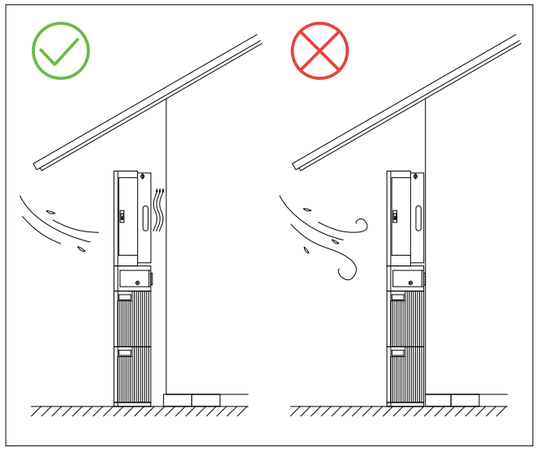
This accessory is used to adjust the height and balance of the base. It can be used when installing on the ground to accommodate uneven surfaces.

Item	Specifications	Quantity	Diagram
Base Foot	M12, Height adjustable	4	

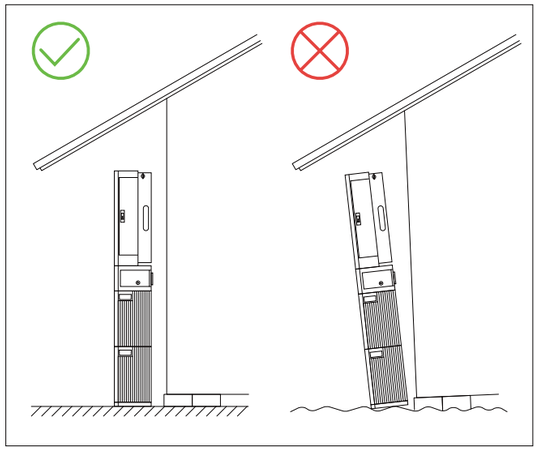
4.2 Selection of the Installation Environment



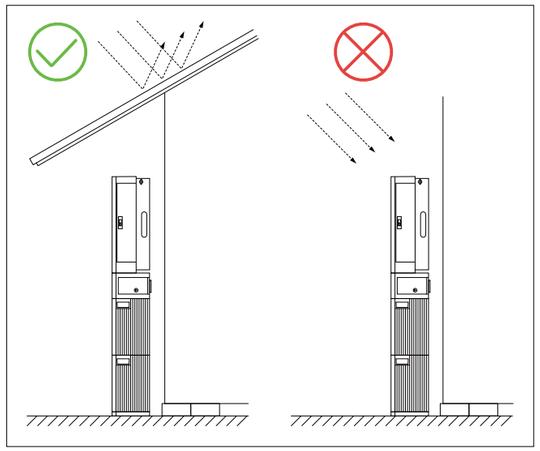
The ambient temperature range is -25 ℃ to 60 ℃, when the inverter is installed without batteries, and -20 ℃ ~ 55 ℃ when the inverter is installed with batteries. The relative humidity should be maintained between 5% to 95% (no condensation).



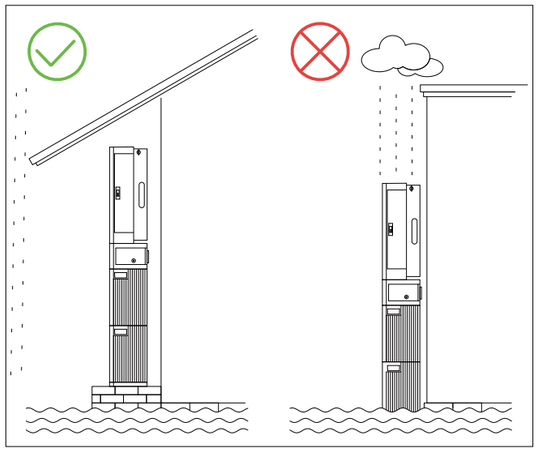
To ensure proper heat dissipation, please install it in a well-ventilated place.



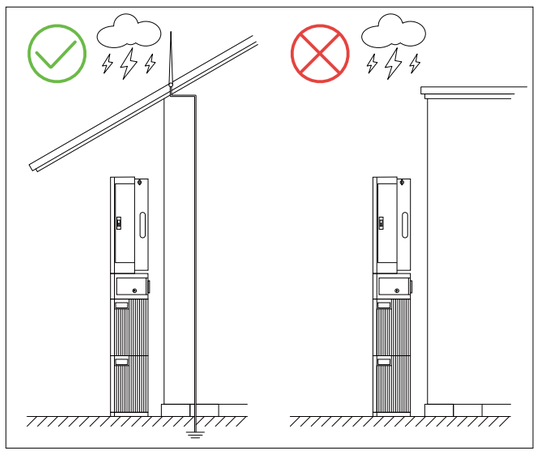
For stability, the product should be installed on solid and level ground.



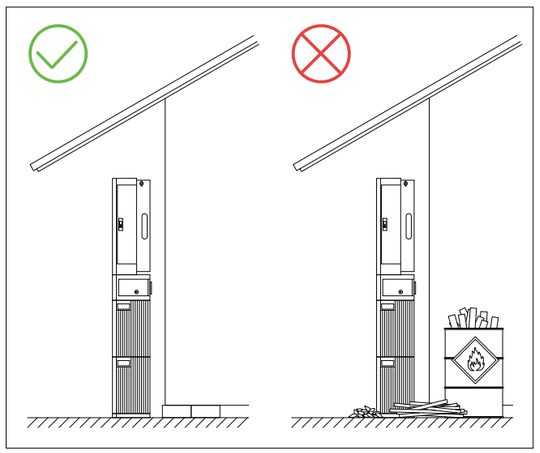
It can be installed outdoors, but must not be directly exposed to sunlight.



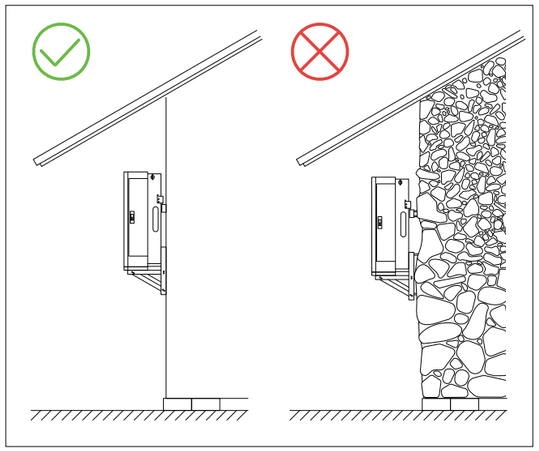
Do not install it in damp or submerged areas.



Do not install it in areas prone to lightning strikes.



Do not install it near combustibles.



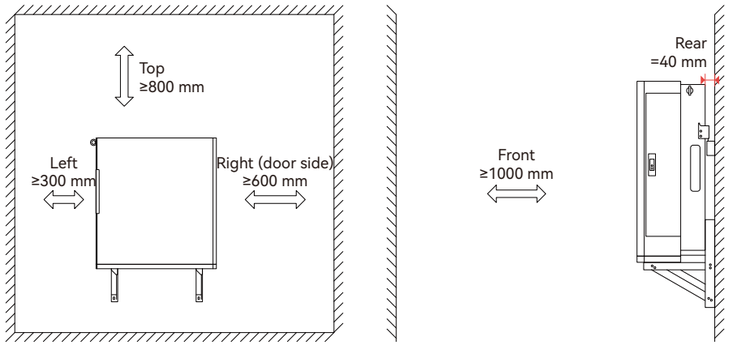
For stability, the product should be installed on solid and flat wall.

4.3 Selection of Installation Location

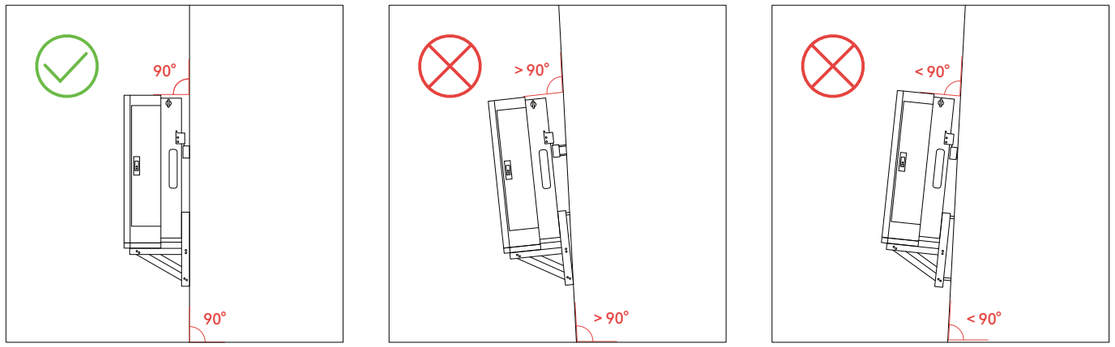
4.3.1 Selection of Wall Mounting Location

Applicable scenarios: When the inverter is used as a PV inverter.

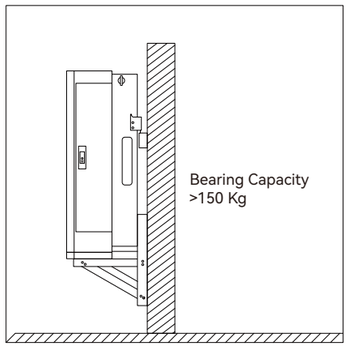
The clearances around the inverter must not be less than the following:



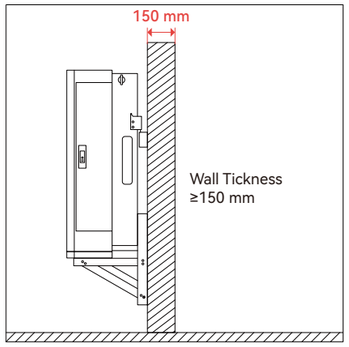
Top	800 mm
Front	1000 mm
Right (door side)	600 mm
Left	300 mm
Rear	40 mm



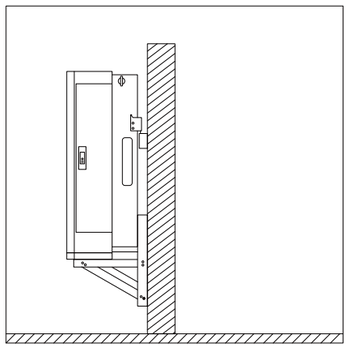
For vertical installation, ensure there is no forward or backward tilting.



The wall bearing capacity shall be greater than 150 Kg.



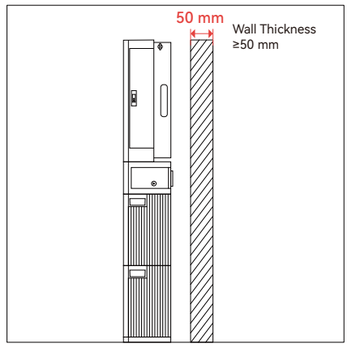
The wall thickness should not be less than 150 mm.



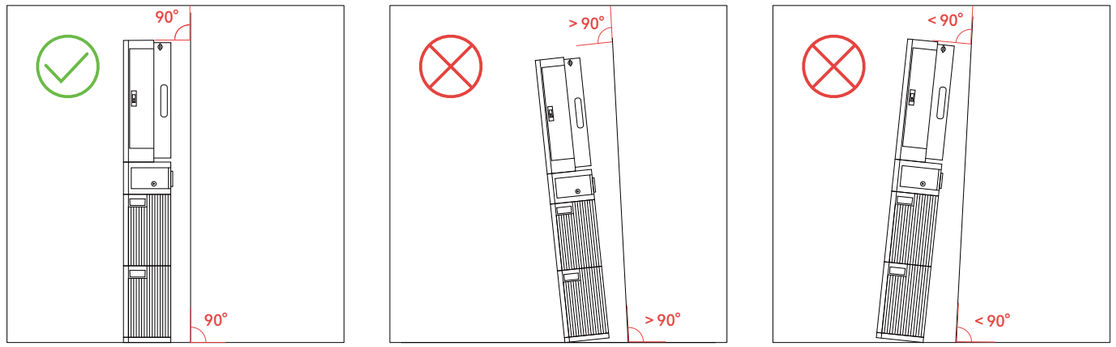
The inverter must be installed on a solid wall.

4.3.2 Selection of Floor Mounting Location

Applicable scenarios: When the inverter is used in the energy storage system.

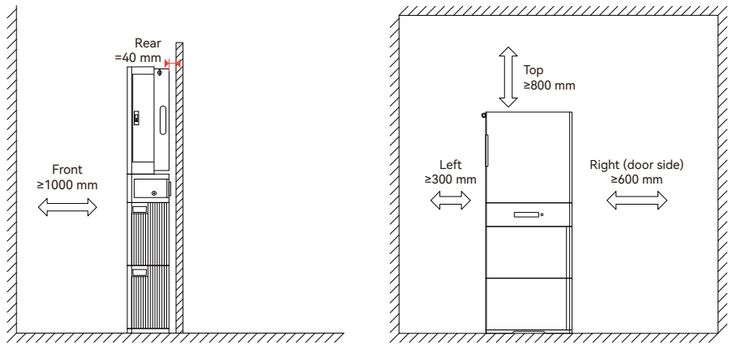


The wall thickness should not be less than 50 mm.



For vertical installation, ensure there is no forward or backward tilting.

The clearances around the inverter must not be less than the following:

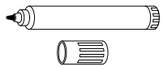
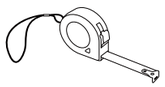
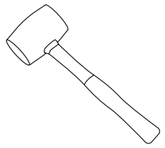
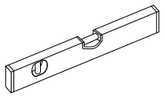
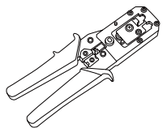
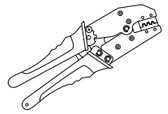
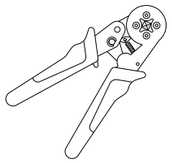
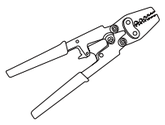
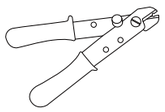
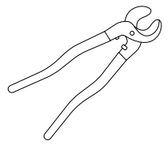
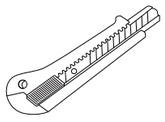


Top	800 mm
Front	1000 mm
Right (door side)	600 mm
Left	300 mm
Rear	40 mm

When the inverter is installed on the ground, the ground bearing capacity is as follows:

Quantity of batteries	1 Battery	2 Batteries	3 Batteries
Maximum Weight	164 kg	257.5 kg	351 kg
Weight capacity per square meter	920 kg/m²	1445 kg/m²	1970 kg/m²

4.4 Preparation of Installation Tools

				
Power Drill ϕM6	Marker	Measuring Tape	Hammer	Open-end Wrench S=7mm
				
Phillips Screwdriver PH1	Allen Screwdriver M2	Level	Crimping Pliers for RJ45	Crimping Pliers for PV Terminals
				
Ferrule Crimping Pliers	Crimping Pliers	Stripping Pliers	Diagonal Pliers	Cable Cutting Pliers (wire cutter)
				
Utility Knife	Safety Gloves	Dust Mask	Goggles	Safety Boots

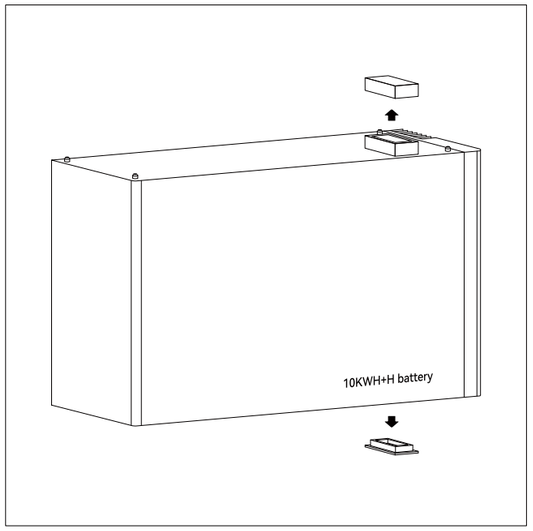
5 Installation

5.1 Floor-Mounted Installation

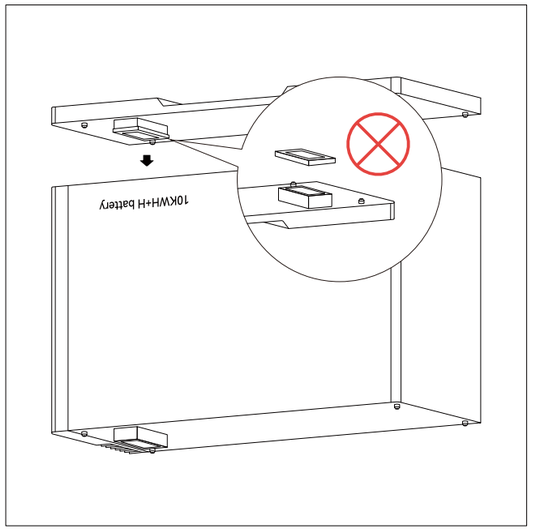
5.1.1 Base Installation

Tools and accessories required for this step:

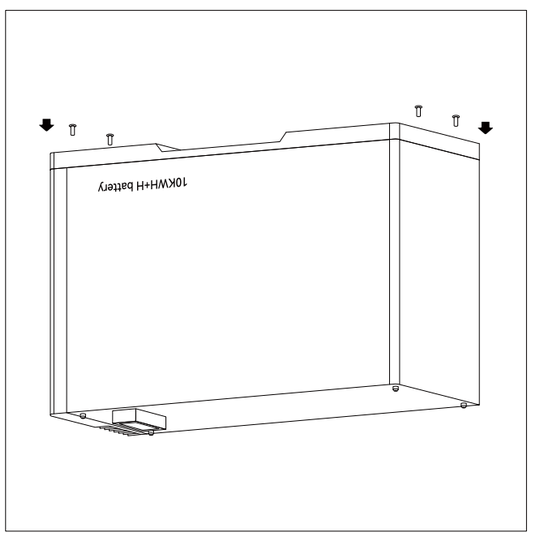
Packing List of Battery	Battery
Packing List of Distribution Box	10KWH+H Battery Base, Waterproof Gasket (for Connector), Base Mounting Screws
Tools	Phillips Screwdriver PH1, Measuring Tape, Level



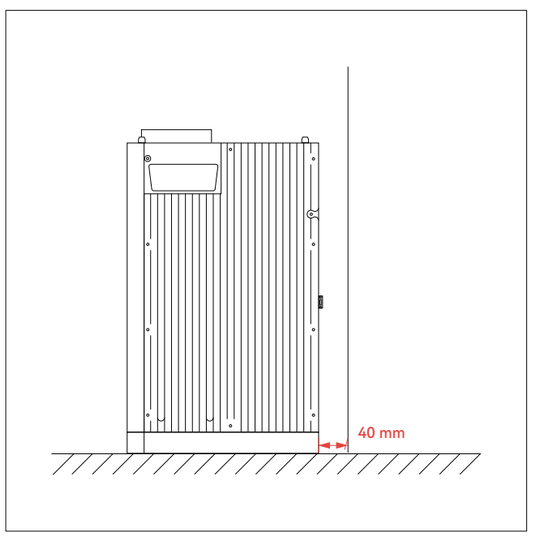
Step 1: Remove the dust cover from the connector port, flip the battery over with the bottom facing up.



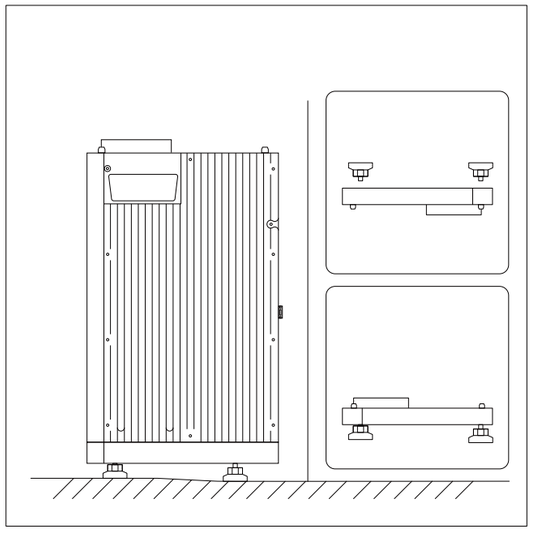
Step 2: Align the waterproof port of the base with the battery (Do not remove the waterproof gasket for connector on the base).



Step 3: Use the base mounting screws to tighten the base, ensuring alignment between the battery and the base.



Step 4: Place the battery, with the base installed, on a suitable surface. Ensure that the back of the battery is 40 mm away from the wall.



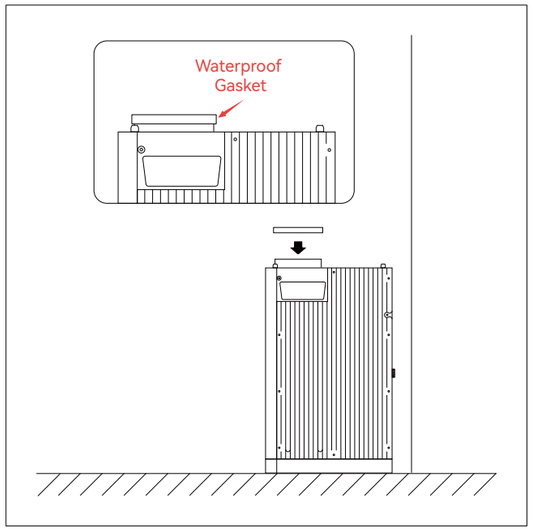
Note

For uneven ground, please consider utilizing base foot accessories.

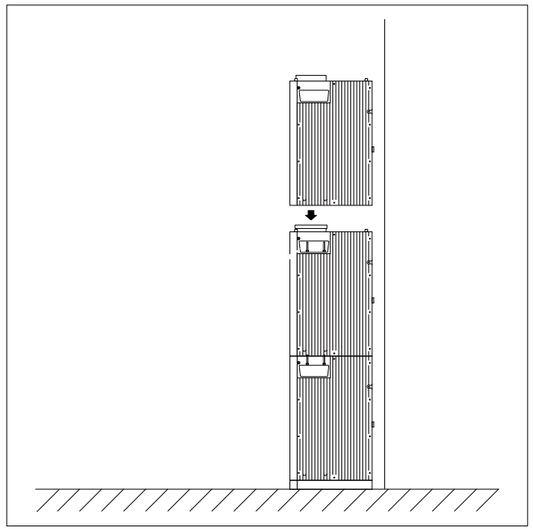
5.1.2 Batteries Installation

Tools and accessories required for this step:

Packing List of Battery	Batteries, Waterproof Gasket (for Connector), Handlebar Screws
Tools	Open-end Wrench S=7 mm



Step 1: Place the waterproof gasket onto the connector on the top of the battery.



Step 2: Stack the batteries in sequence, tighten the handlebar screws on both sides of the batteries.

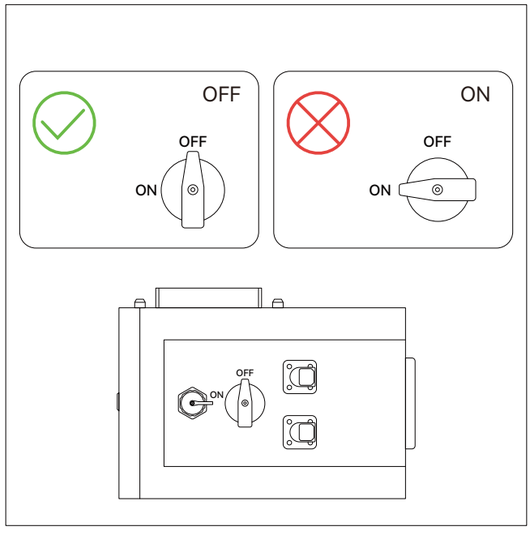
Warning!

Ensure that each battery tower contains NO more than 3 batteries.

5.1.3 Distribution Box Installation

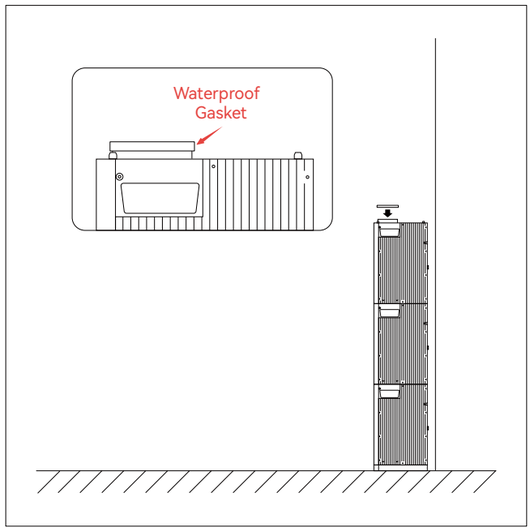
Warning!

Before completing the system installation, please check that the distribution box switch is in the "OFF" position.

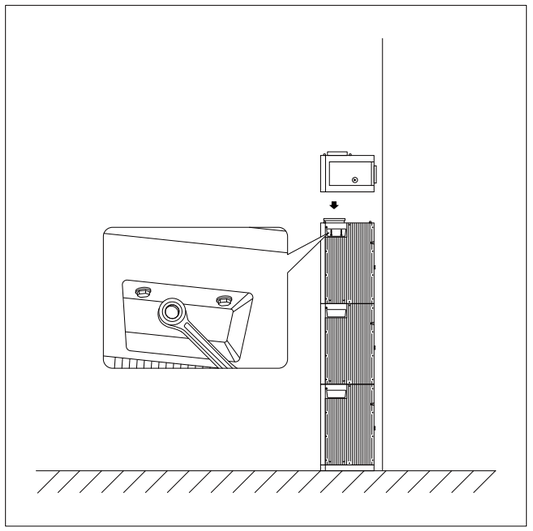


Tools and accessories required for this step:

Packing List of Battery	Handlebar Screws, Waterproof Gasket (for Connector)
Packing List of Distribution Box	10KWH+H Distribution Box
Tools	Open-end Wrench S=7 mm



Step 1: Place the waterproof gasket onto the connector at the top of the battery.

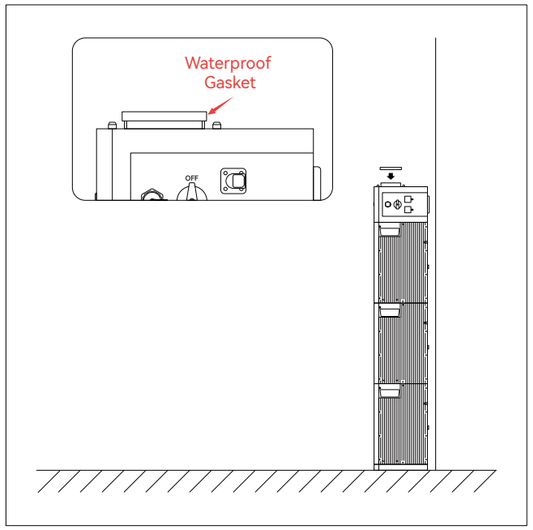


Step 2: Stack the distribution box on the battery, tighten the handlebar screws on both sides of the battery.

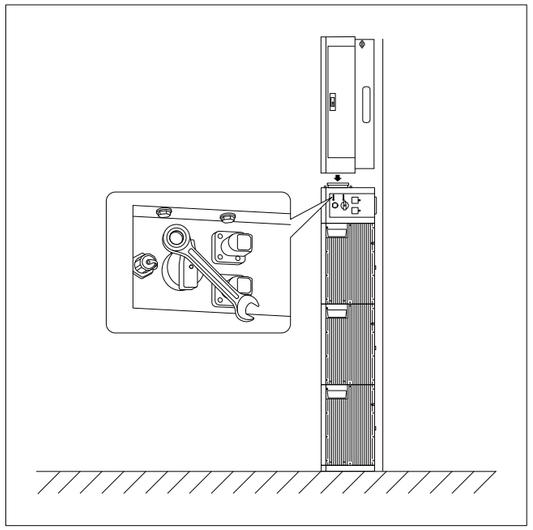
5.1.4 Inverter Installation

Tools and accessories required for this step:

Packing List of Distribution Box	Handlebar Screws, Waterproof Gasket (for Connector)
Packing List of Inverter	HM10-H/HM15/HM20 Inverter
Tools	Open-end Wrench S=7 mm



Step 1: Place the waterproof gasket onto the connector at the top of the distribution box.

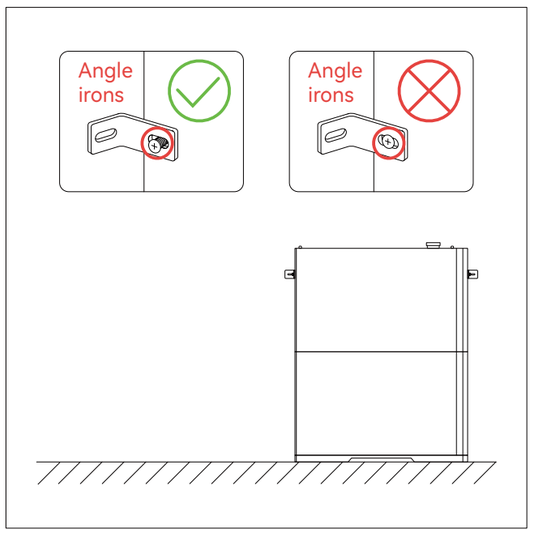


Step 2: Stack the inverter on the distribution box, tighten the handlebar screws on both sides of the distribution box.

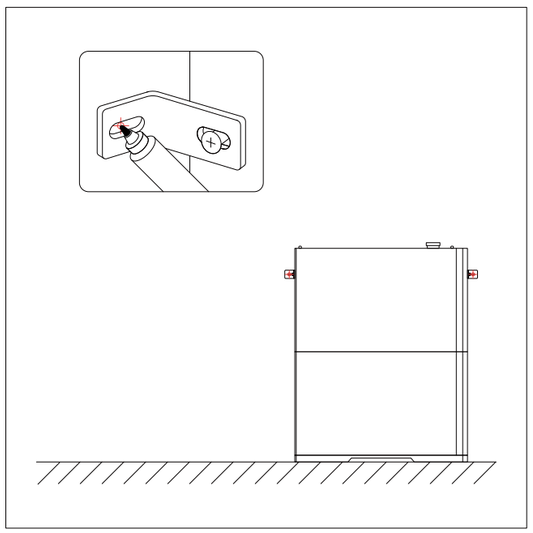
5.1.5 Angle Iron Installation

Tools and accessories required for this step:

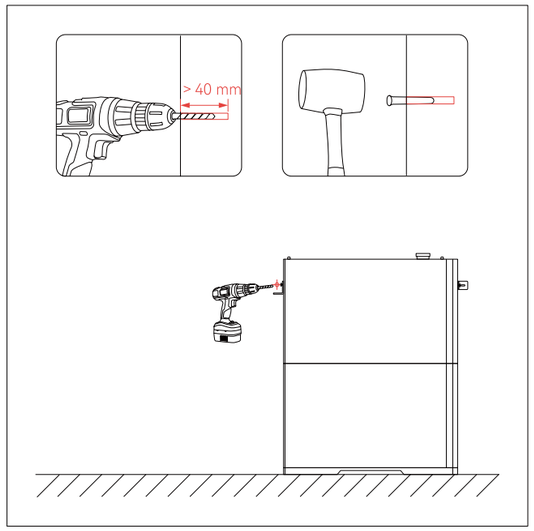
Packing List of Battery	Angle Iron, Angle Iron Screws, Expansion Tubes with Screws, Expansion Screw Gaskets
Packing list of inverter	Angle Iron, Angle Iron Screws, Expansion Tubes with Screws, Expansion Screw Gaskets
Tools	Power Drill ϕM6, Hammer, Phillips Screwdriver PH1, Marker



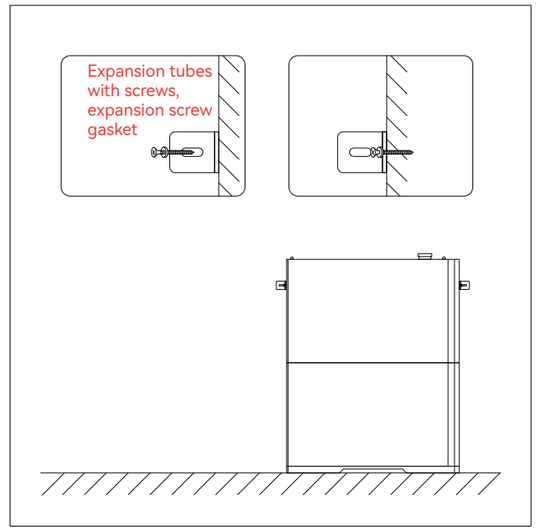
Step 1: Place the angle iron screws through the angle irons and secure the angle irons to both sides of the topmost battery, but do not tighten the screws.



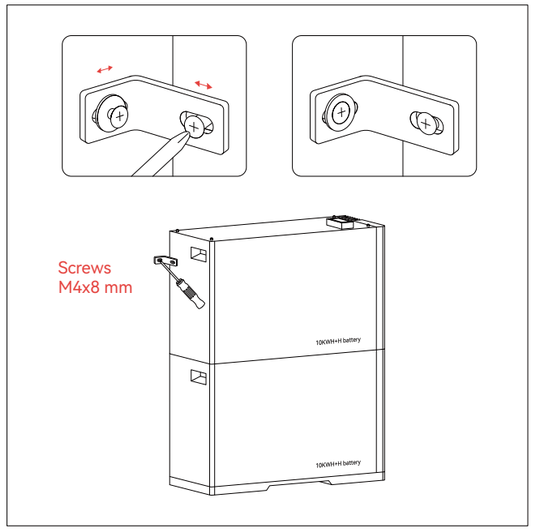
Step 2: Mark the position of the angle irons holes on the wall with a marker.



Step 3: Drill the holes at the marked positions with the power drill, and hammer the expansion tubes into the holes.



Step 4: Thread the expansion tube screws through the gaskets and angle iron holes, and secure them on the wall.



Step 5: Tighten the screws after adjusting the angle irons accordingly.

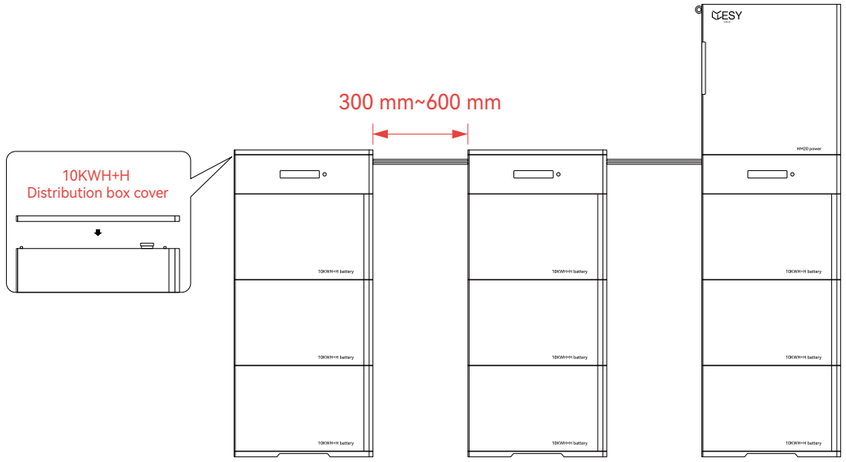
Step 6: Follow the same steps to install the inverter angle iron in the upper left corner of the inverter.

5.1.6 Battery Tower Installation

⚠	**Warning!** Only applicable for installation scenarios involving more than 3 batteries.
⚠	**Warning!** The spacing of the adjacent battery towers ranges from 300 mm to 600 mm.

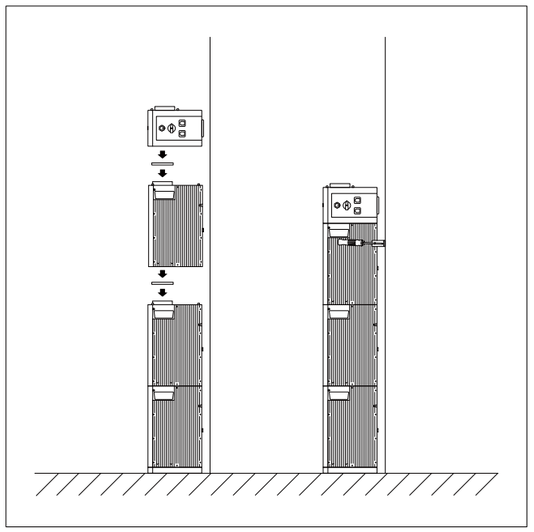
Warning!

For the battery towers without stacked inverter, the distribution box covers shall be installed.

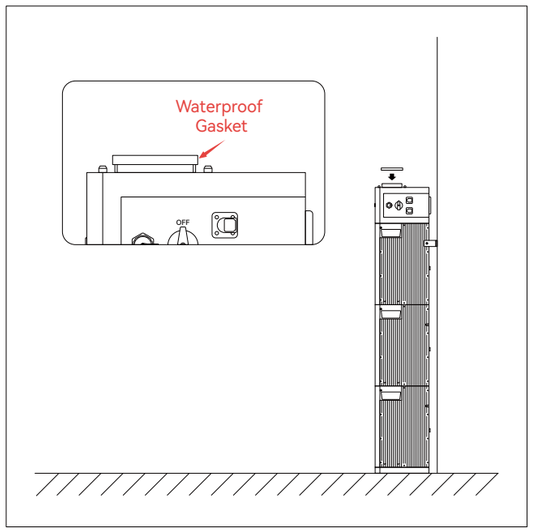


Tools and accessories required for this step:

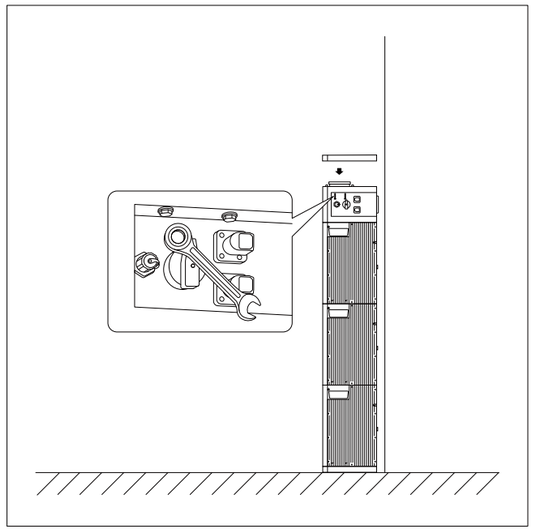
Packing List of Cover	10KWH+H Distribution box Cover, Positive Connection Cable for Battery Parallel, NegativeConnection Cable for Battery Parallel
Packing List of Distribution Box	Handlebar Screws, Waterproof Gasket (for Connector)
Tools	Hammer, Measuring Tape



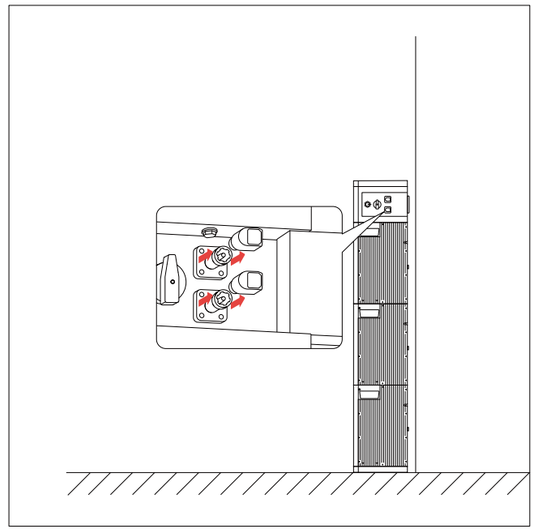
Step 1: Follow the battery installation steps, and install the battery towers.



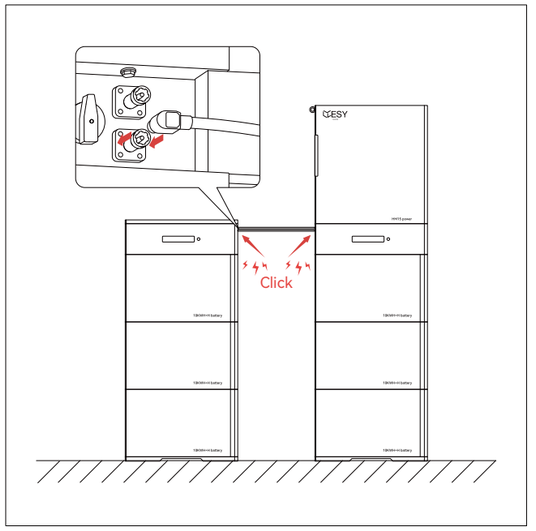
Step 2: Install the waterproof gasket on the top connector of the distribution box.



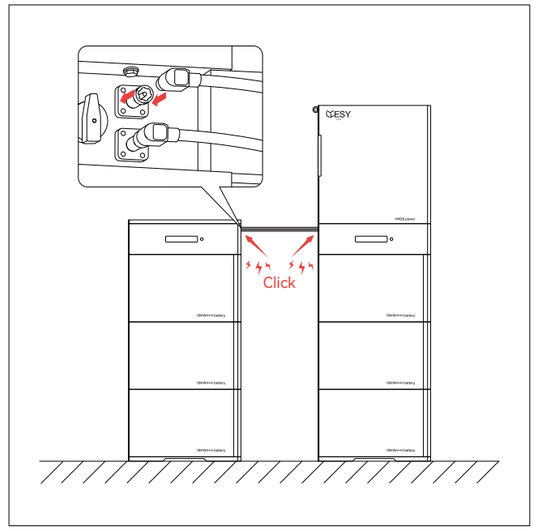
Step 3: Securely place the cover on the distribution box, and tighten the handlebar screws on both sides of the distribution box.



Step 4: Remove the waterproof covers from the “parallel +” and “parallel - ”ports of the distribution box.



Step 5: Connect the positive terminals of adjacent distribution boxes in parallel using the positive connection cable from the distribution box of the battery tower.



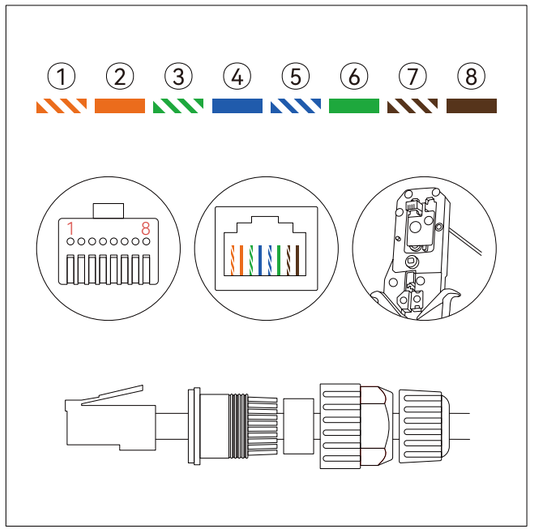
Step 6: Connect the negative terminals of the adjacent distribution boxes using the negative cable from the distribution box in the battery tower.

Warning!

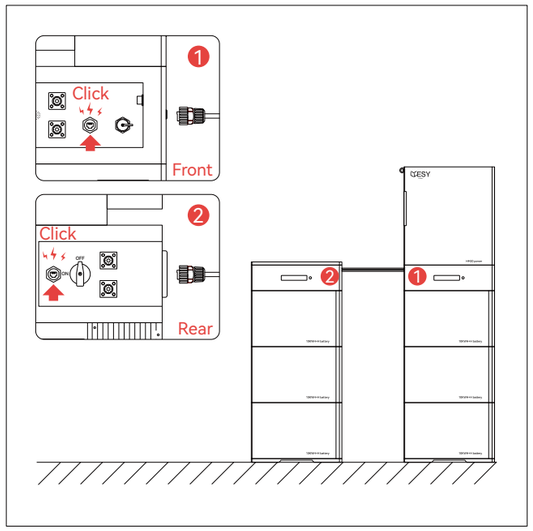
Please retain the waterproof covers for the parallel ports of the distribution boxes.

Warning!

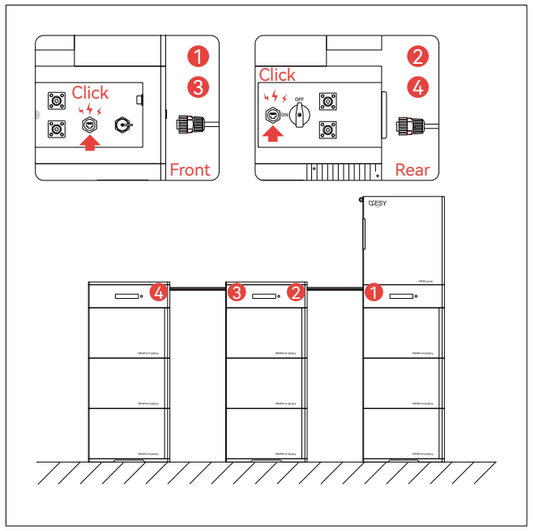
Please cover unused parallel ports with the waterproof covers.



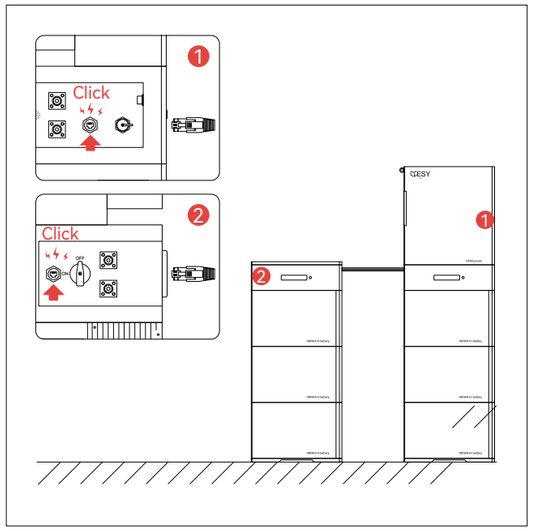
Step 7: Install the communication cable for parallel connection of the distribution box as shown in the diagram. For interace installation, please refer to section 6.7.2.



Step 8: Connect the parallel communication cables to the communication por on the distribution box.



Step 9: In the scenario with three battery towers, connect the parallel communication cables among the three distribution boxes as shown in the diagram.

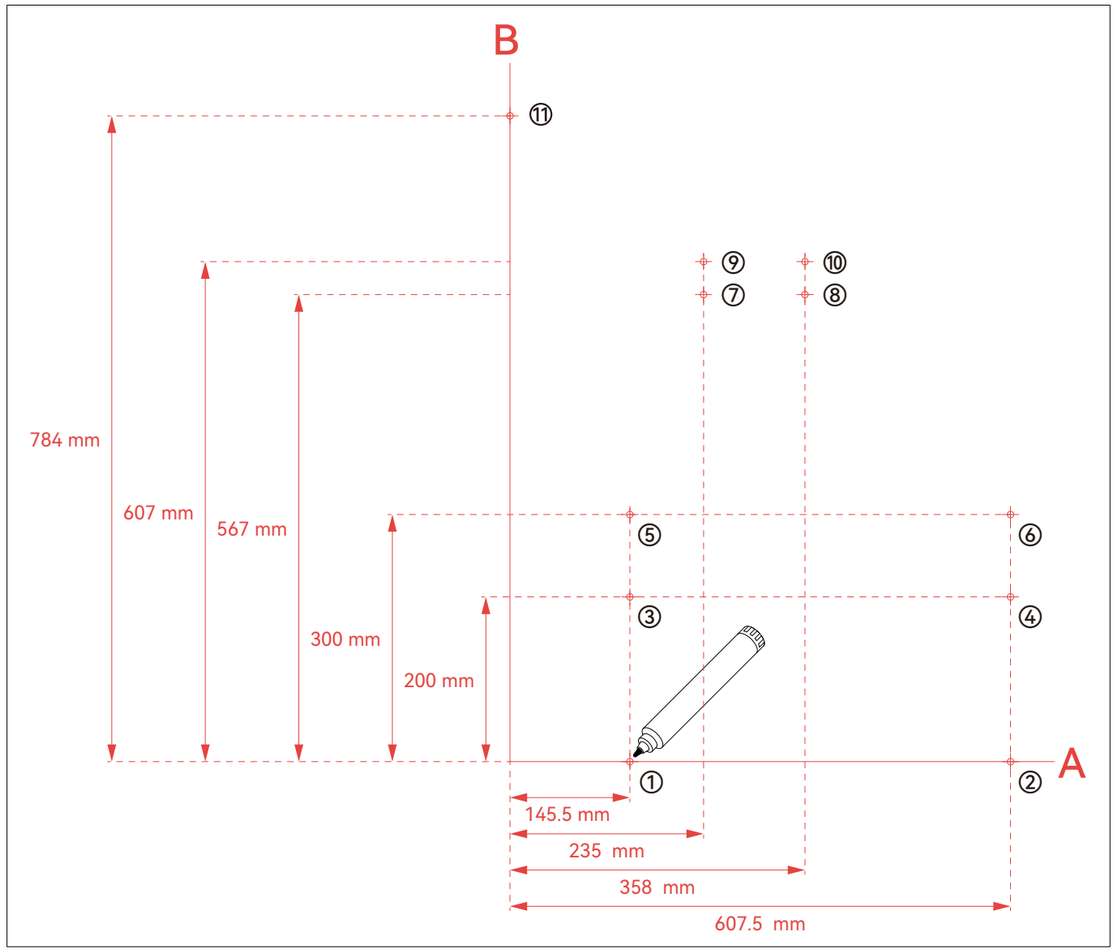


Step 10: Inspect the wiring and install the communication matching resistors into the parallel communication interfaces on both sides of the distribution box.

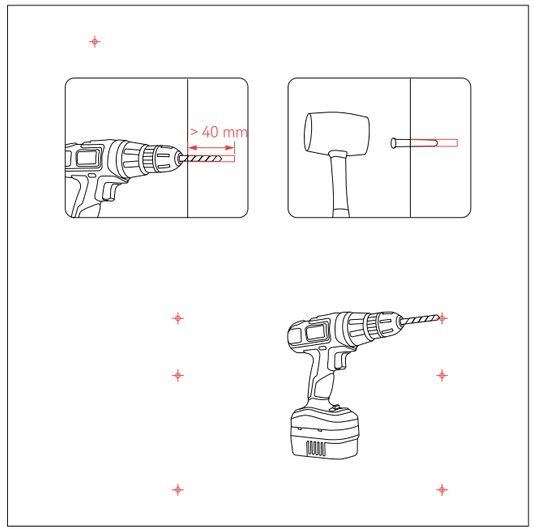
5.2 Wall-Mounted Installation

Tools and accessories required for this step:

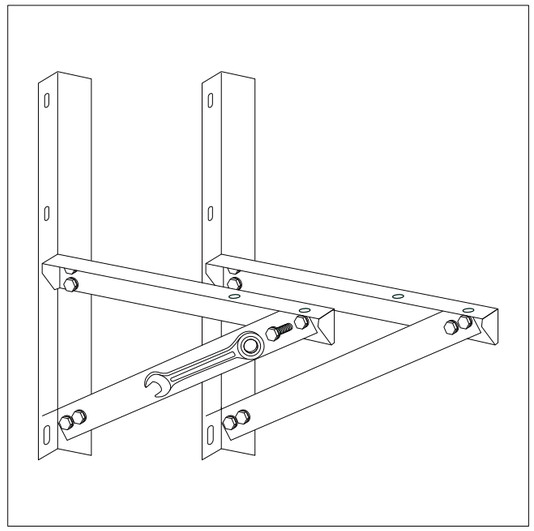
Packing List of Inverter	Inverter
Packing List of Wall Mounting Accessories	All Accessories
Tools	Power Drill ϕM6, Hammer, Phillips Screwdriver PH1, Marker



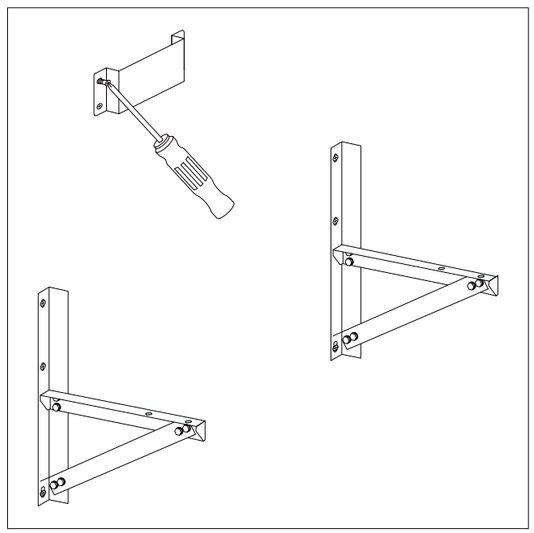
Step 1: Mark the positions of the angle irons holes on the wall with a marker.



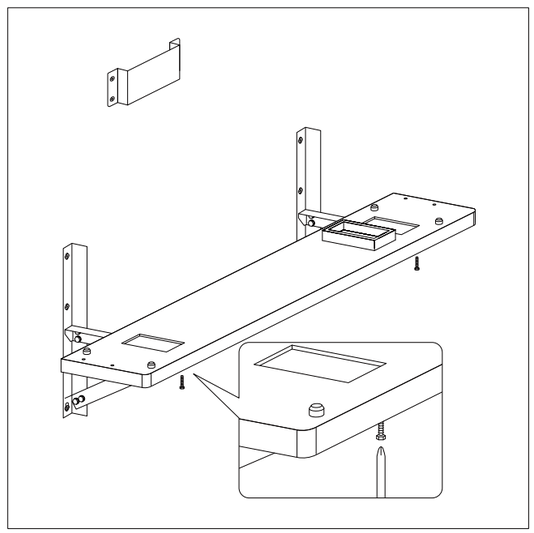
Step 2: Drill the angle iron holes with the power drill, and hammer the expansion bolts into the holes.



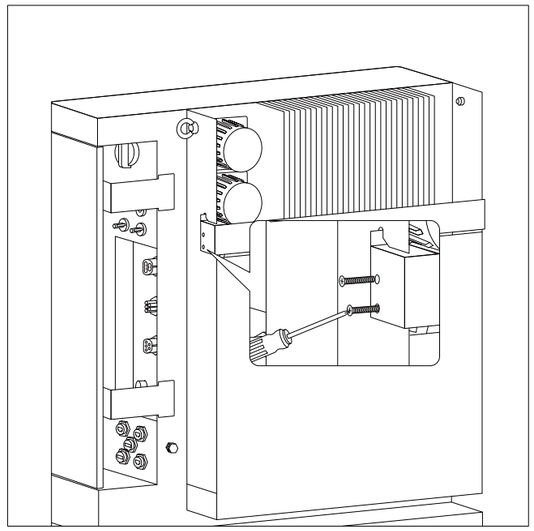
Step 3: Assemble the triangular brackets with bracket screws.



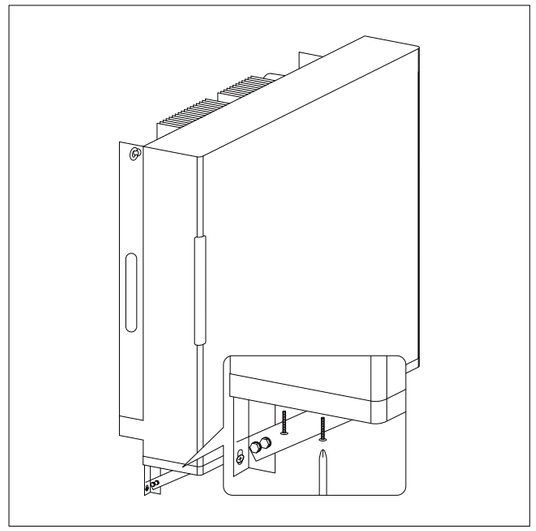
Step 4: Secure the triangular bracket and rear panel to the wall with the nuts of the expansion bolts.



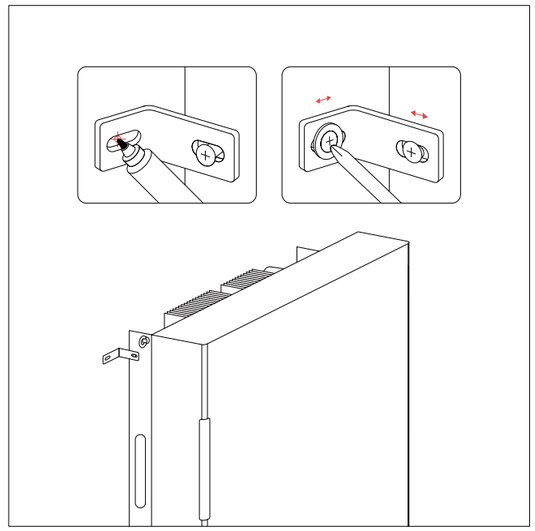
Step 5: Place the bracket base on the triangular bracket and secure it with the bracket base screws.



Step 6: Secure the rear panel to the heat sink of the inverter with the rear panel screws.



Step 7: Place the inverter on the triangular bracket and secure the inverter and bracket base with handlebar screws.



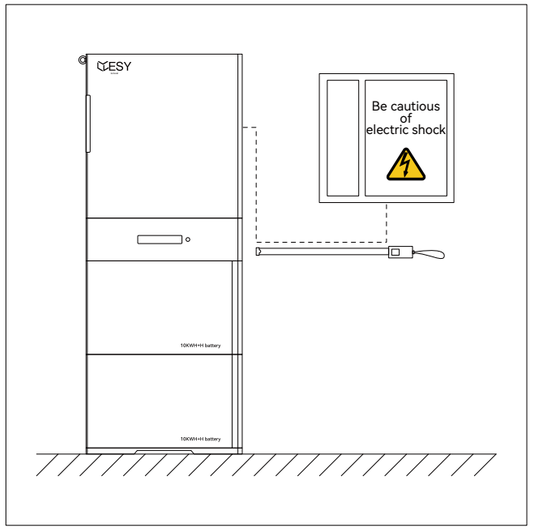
For angle iron installation, please refer to section 5.1.5.

6 Wiring

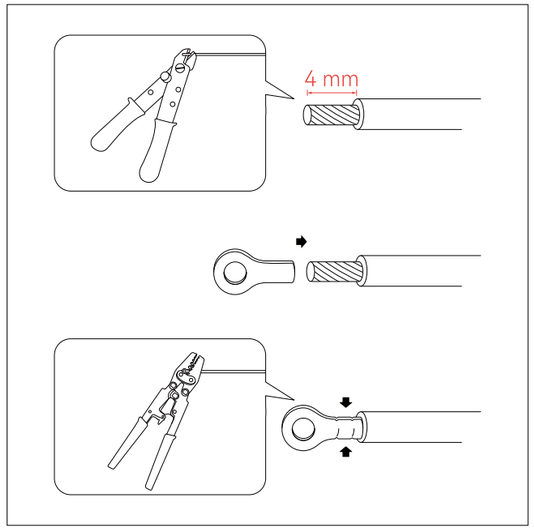
6.1 Grounding Connection

Tools and accessories required for this step:

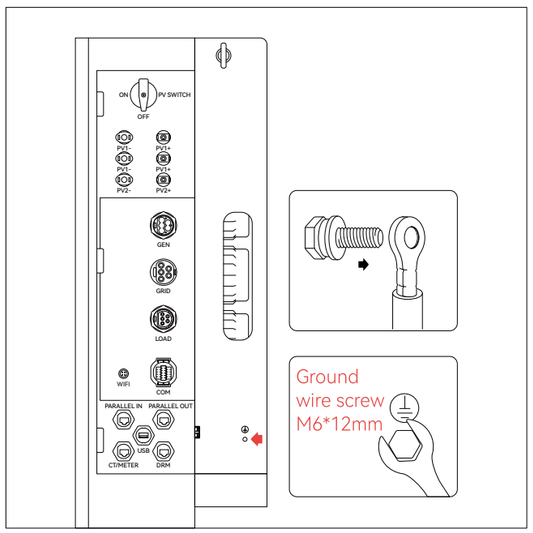
Packing list of inverter	Ring-Shaped Crimp Cable Lug, Ground Screw
Tools	Crimping Pliers, Diagonal Pliers, Stripping Pliers, Phillips Screwdriver PH1, Measuring Tape
Cable	Ground Cable ϕ6 mm²



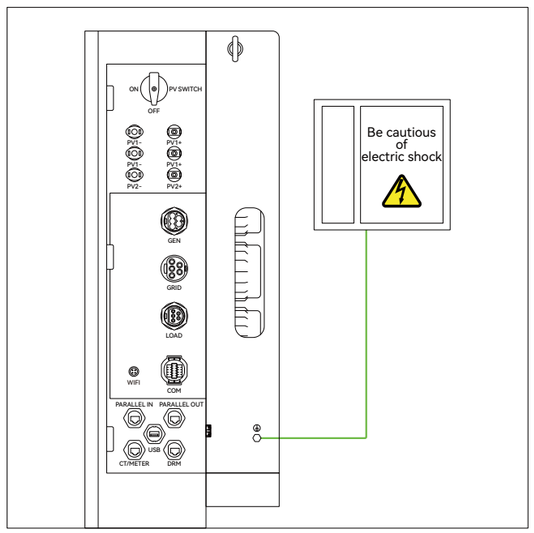
Step 1: Measure the distance between the ground wire connection aperture located on the side of the inverter and the combiner box using a measuring tape.



Step 2: Use stripping pliers to remove 4 mm of insulation from the grounding wire. Install the grounding wire terminal and crimp it tightly using crimping pliers.



Step 3: Attach the ring-shaped crimp cable lug to the right-side heat sink of the inverter using the ground wire screw.

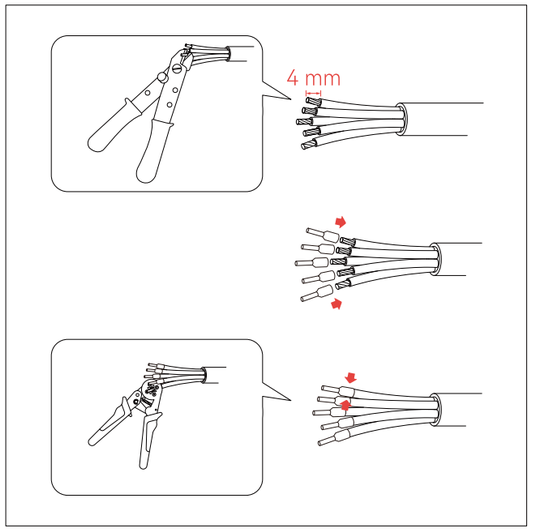


Step 4: Properly ground the other end of the wire with a grounding impedance of 0.1 Ω or less to ensure safety in installation and operation.

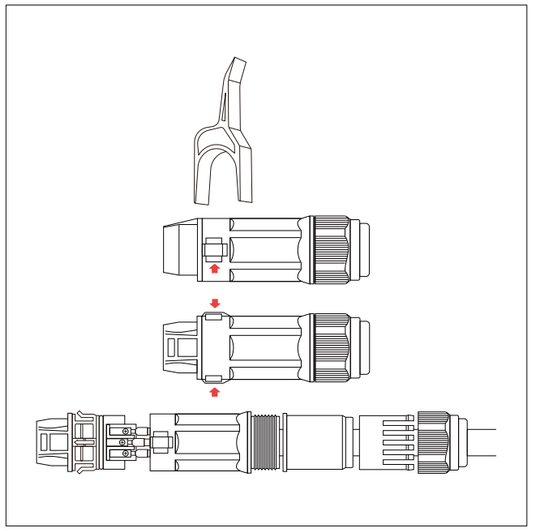
6.2 Load Connection

Tools and accessories required for this step:

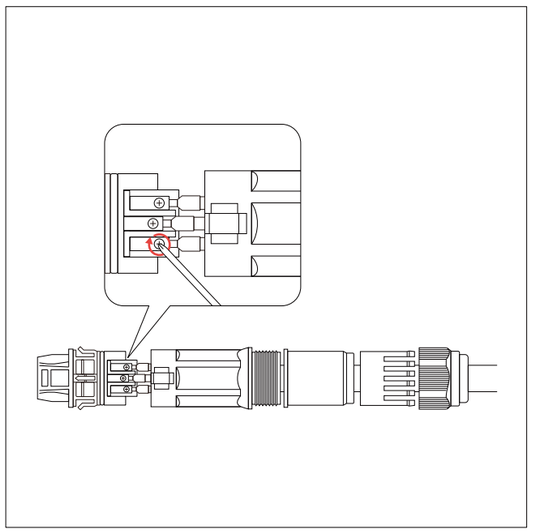
Packing List of Inverter	Load Output Terminal, Insulated Cord End Terminal 4 mm², Connector Removal Tool
Tools	Phillips Screwdriver PH1, Cable Cutting Pliers (wire cutter), Diagonal Pliers, Ferrule Crimping Pliers, Stripping Pliers
Cable	Five-Core Cable (copper) ϕ4 mm²/12 AWG
Breaker	Recommended Circuit Breaker Specification：40 A



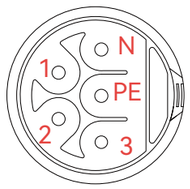
Step 1: Select an appropriate cable and use stripping pliers to remove the insulation. Use ferrule crimping pliers to crimp an insulated cord end terminal (4 mm²) onto the cable.



Step 2: Use the connector removal tool to disassemble the connector, and thread the cable through the connector as shown in the diagram.

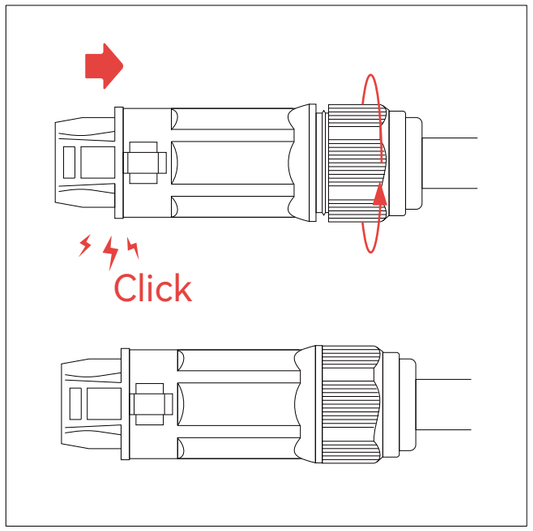


Step 3: Secure the terminal onto the connector using a Phillips screwdriver PH1.

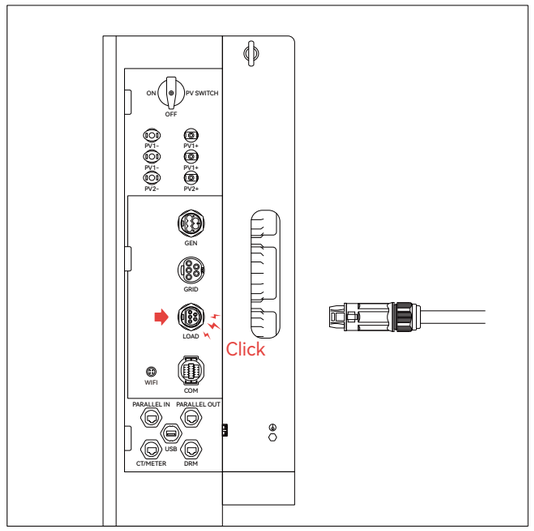


LOAD

Pin	Description
1	R/L1
2	S/L2
3	T/L3
N	N
⏚	PE

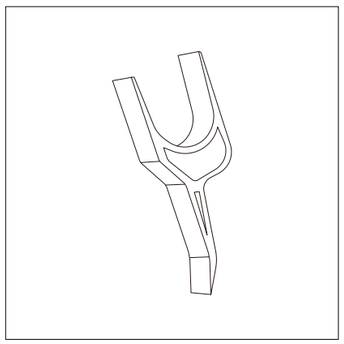


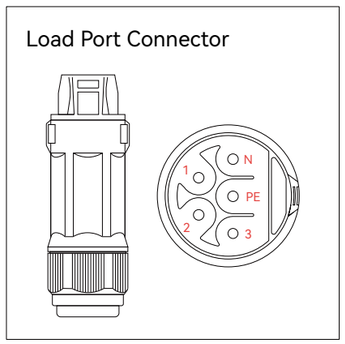
Step 4: Plug the connector head into the connector shell until a 'click' sound is heard, it indicates that the connector is securely in place. Tighten the connector tail end nut.

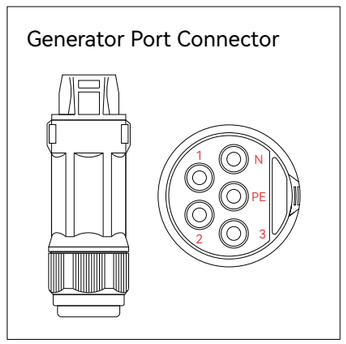


Step 5: Thread the connector through the slit of the inverter door and plug it into the LOAD port.

	Warning! When removing the connector from the inverter, please use the appropriate tools. Please keep the connector removal tool properly.
	Warning! Please make sure to distinguish between the connector for the load port and the connector for the generator port.
	Warning! On the load terminals of the inverter, ensure that each phase does not exceed 6.67 kW of connected load.
	Warning! 1. Inductive loads (e.g., air-conditioners, washing machines, and motors): Maximum individual power is 2.2 KVA, with a total maximum power of 20 KVA. 2. Capacitive loads (e.g., computers and switching power supplies): Total maximum power is 20 KVA.







6.3 Generator (GEN) Connection

Tools and accessories required for this step:

Packing List of Inverter	Generator Port Connector, Insulated Cord End Terminal 4 mm², Connector Removal Tool
Tools	Phillips Screwdriver PH1, Cable Cutting Pliers (wire cutter), Diagonal Pliers, Ferrule Crimping Pliers
Cable	Five-Core Cable (copper) ϕ4 mm²/12 AWG
Breaker	Recommended Circuit Breaker Specification: 40 A

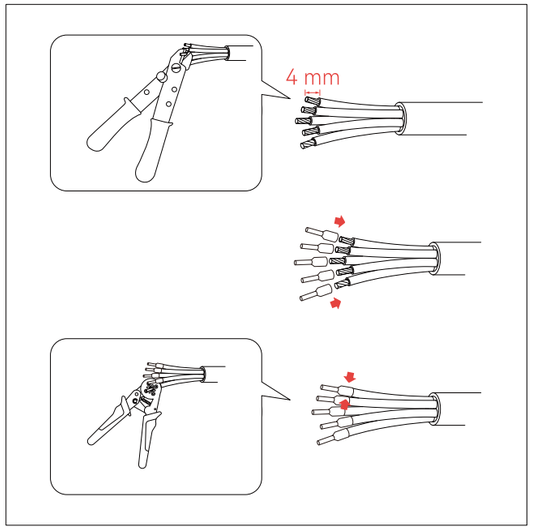
The steps for installing the generator port connector are the same as those for installing the load port connector.

	Warning! When installing the generator, it is essential to connect the wires to the COM-6/COM-7/COM-8 terminals on the COM port connector. Please refer to the instruction manual for the installation steps of the COM port.
COM	Pin Number: Definition 6: COM_GEN_NC 7: COM_GEN 8: COM_GEN_NO
	Warning! When the GEN port is connected to a generator or PV inverter, the energy storage system is in a micro grid state. Before performing any maintenance or inspection on the system, it is crucial to shut down the generator or PV inverter linked to the GEN port.
	Warning! The generator parameters must meet the requirements of the inverter parameters and include the Automatic Transfer Switch (ATS) function.
	Warning! Do not connect the load to the GEN port.
	Warning! The GEN port can also be used for PV inverter connection.

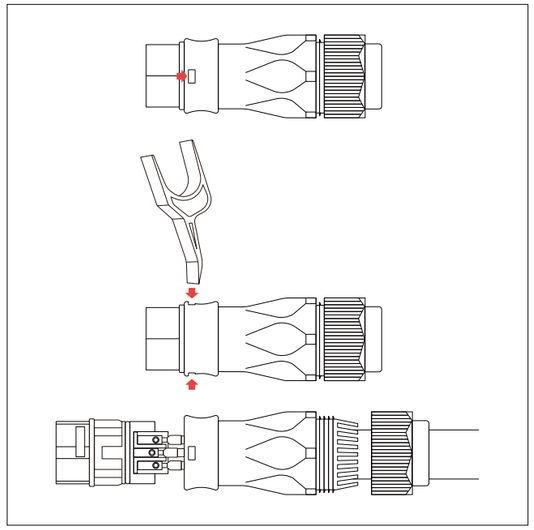
6.4 Grid Connection

Tools and accessories required for this step:

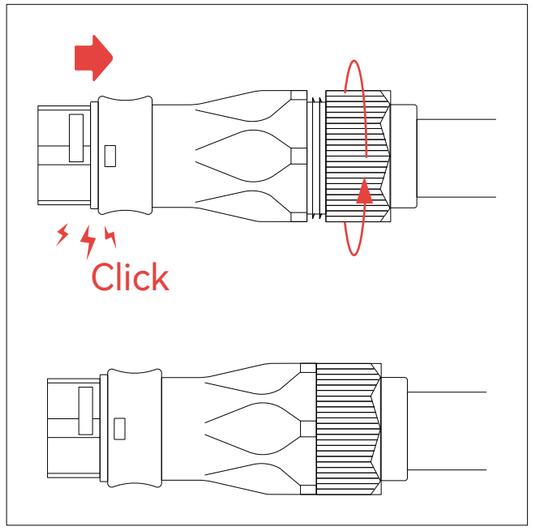
Packing List of Inverter	Grid Port Connector, Insulated Cord End Terminal 6 mm², Connector Removal tool
Tools	Allen Screwdriver M2, Cable Cutting Pliers (wire cutter), Diagonal Pliers, Ferrule Crimping Pliers
Cable	Five-Core Cable (copper) ϕ6 mm²/10 AWG
Breaker	Recommended Circuit Breaker Specification: 50 A



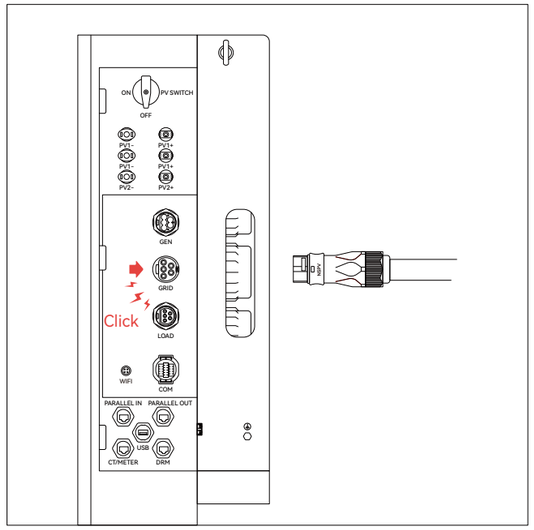
Step 1: Select an appropriate cable and use stripping pliers to remove the insulation. Use ferrule crimping pliers to crimp an insulated cord end terminal 6 mm² onto the cable.



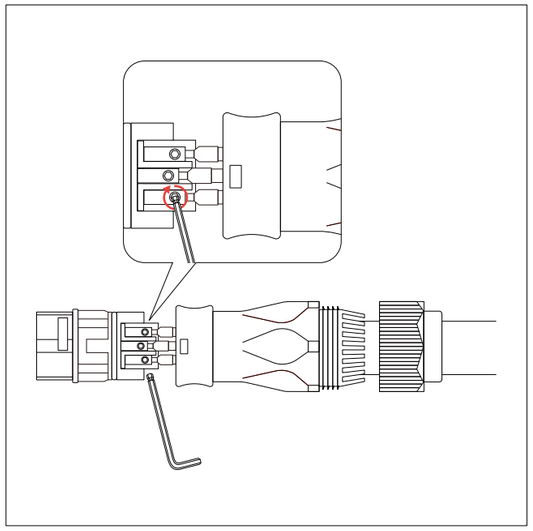
Step 2: Use the connector removal tool to disassemble the connector, and thread the cable through the connector as shown in the diagram.



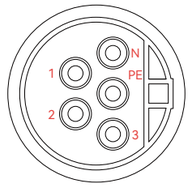
Step 4: Plug the connector head into the connector shell until a "click" sound is heard, indicating that the connector is securely in place. Tighten the connector tail end nut.



Step 5: Thread the connector through the slit of the inverter door and plug it into the Grid port.



Step 3: Secure the terminal onto the connector using an Allen screwdriver M2.



GRID

Pin	Description
1	R/L1
2	S/L2
3	T/L3
N	N
⏚	PE

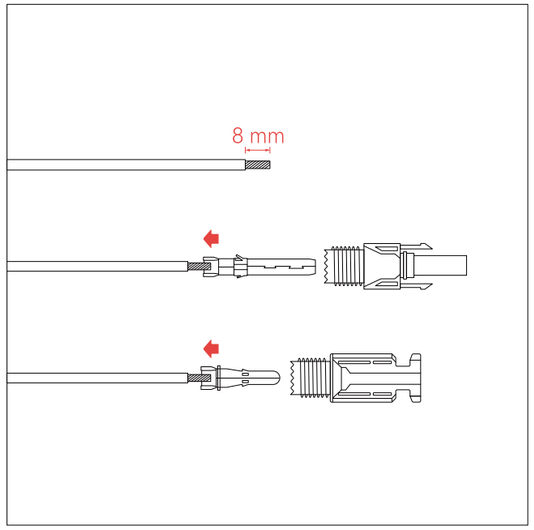
Warning!

When locking the power grid cable into the external grid connector, it is necessary to mark the corresponding cables with RST, because when installing the CT (Current Transformer), the three CTs with RST identifications need to be attached to the corresponding RST line.

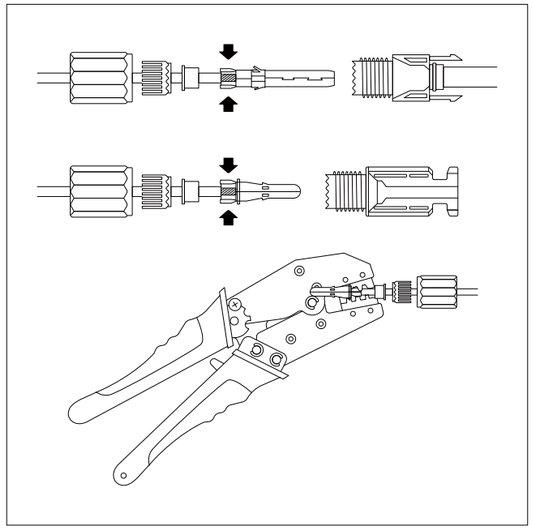
6.5 PV Connection

Tools and accessories required for this step:

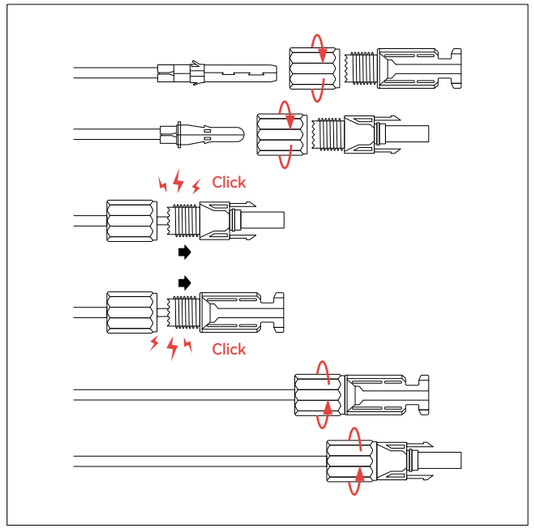
Packing List of Inverter	PV- Connector, PV+ Connector
Tools	Crimping Tool for PV Terminals, Wire Cutter
Cables	Specialized PV Cables ϕ4 mm²~6 mm² AWG 10~12
Breaker	/



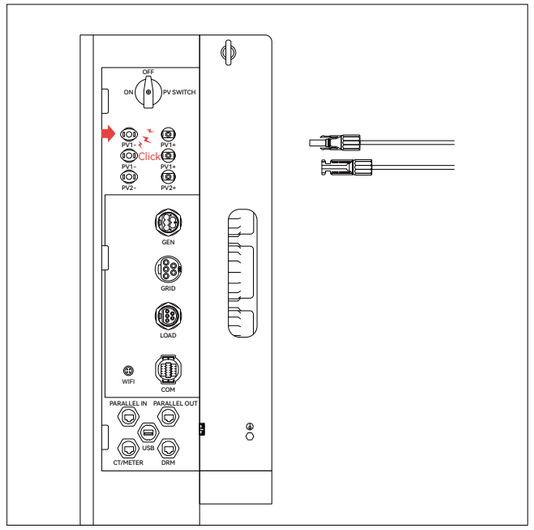
Step 1: Remove 8 mm of insulation from the PV cable, and insert the exposed end of the PV cable into the PV metal pin contacts.



Step 2: Crimp the PV terminal securely onto the the PV cable with an MC4 crimping tool .

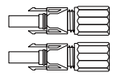
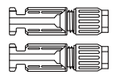


Step 3: Unscrew the connector at the rear of the PV connector slot in the PV terminals. Listen for a ‘click’ sound to confirm proper connection. Pull back on the cable to verify the terminals are securely inserted. Tighten the cover at the rear of the PV connector.



Step 4： Thread the connector through the slit of the inverter door and plug it into the PV ports.

	Warning! Please ensure that the polarity of the PV cables, PV terminals, PV connectors, and PV ports of the inverter are all aligned correctly.

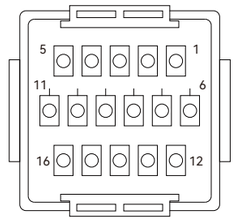
Polarity	Cables	Terminals	Connectors	PV ports
Positive Pole +	Red			
Negative Pole -	Black			

	Warning! Please use the PV connectors provided by the manufacturer.
	Warning! Please confirm that all PV modules are of the same type and installation angle.
	Warning! Please verify that the input voltage and current range of the PV modules aligned with the parameter requirements of ESY SUNHOME.

	Warning! PV modules must be installed by professional personnel.
	Warning! Once the PV modules are installed, employ a voltmeter (with a DC voltage range of 1500V or higher) to verify the polarity of the cables connecting the PV array is correct. Ensure that the open-circuit voltage does not surpass the specified value.

6.6 COM Connection

6.6.1 COM Port Connector Pin Definitions



COM

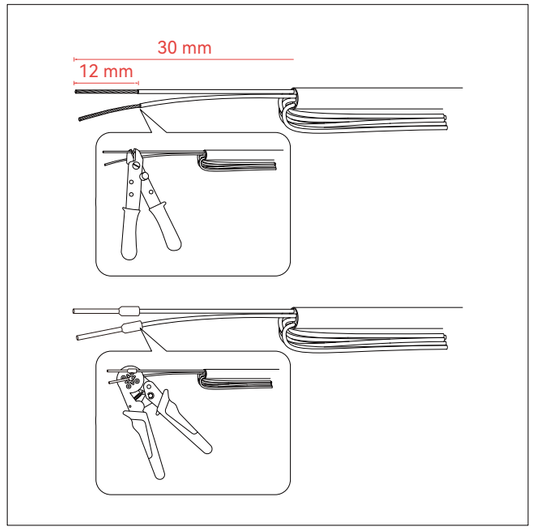
Pin Number	Definition	Description
1	RS485_GPS_B2	RS485 Upper Computer Communication
2	RS485_GPS_A2	
3	GND_COM	Signal Ground
4	RS485_METER_B	RS485 Meter Communication
5	RS485_METER_A	
6	COM_GEN_NC	GEN Dry Contact (Reserved)
7	COM_GEN	
8	COM_GEN_NO	
9	COM_NC	COM Dry Contact (Reserved)
10	COM	

6.6.2 Installation of COM Port Connector

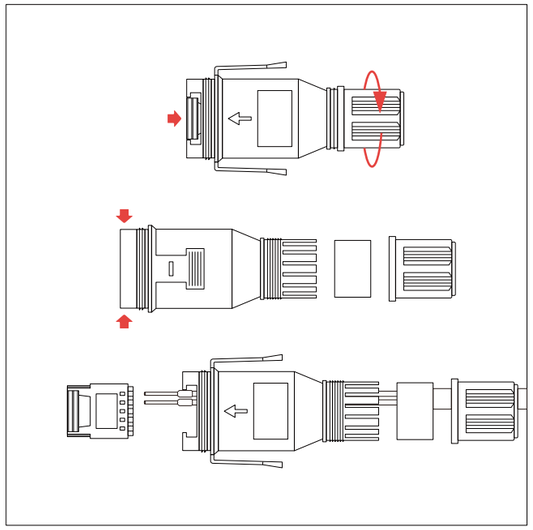
	Warning! Please select the appropriate cable length and quantity based on the actual installation scenario.
	Warning! Please select the correct COM port pin according to the actual installation scenario.

Tools and accessories required for this step:

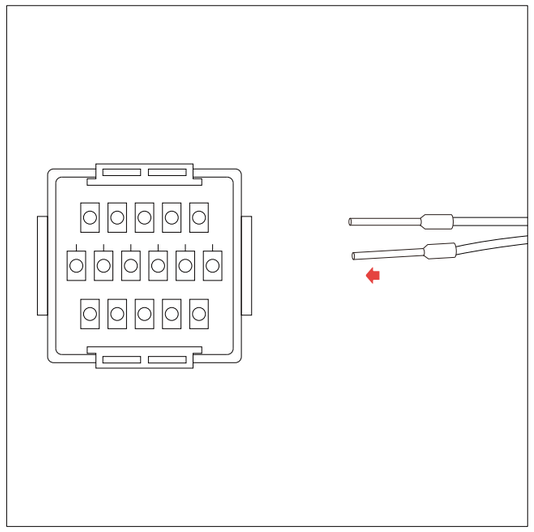
Packing List of Inverter	COM Port Nylon Screw Plug, COM Port Connector, Insulated Cord End Terminal 0.75 mm².
Tools	Ferrule Crimping Pliers, Stripping Pliers, Cable Cutting Pliers (wire cutter)
Cable	Multi-Strand Communication Cable, Core 0.5-0.75 mm², Cable Diameter 4-6 mm. The CAT5e network cable is recommended.



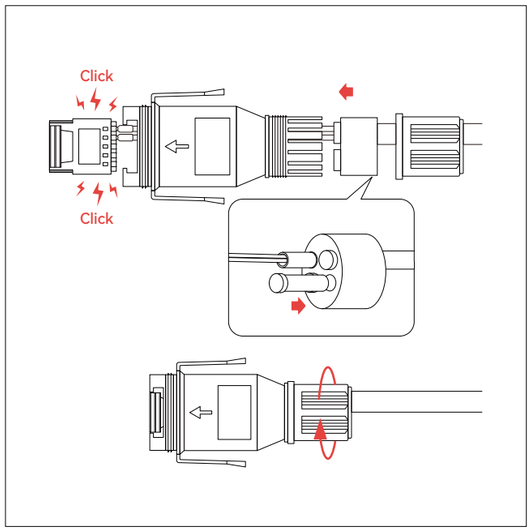
Step 1: Select the appropriate cable and strip off 12 mm of insulation using stripping pliers. Crimp insulated cord end terminal 0.75 mm² onto the cable using the ferrule crimping pliers.



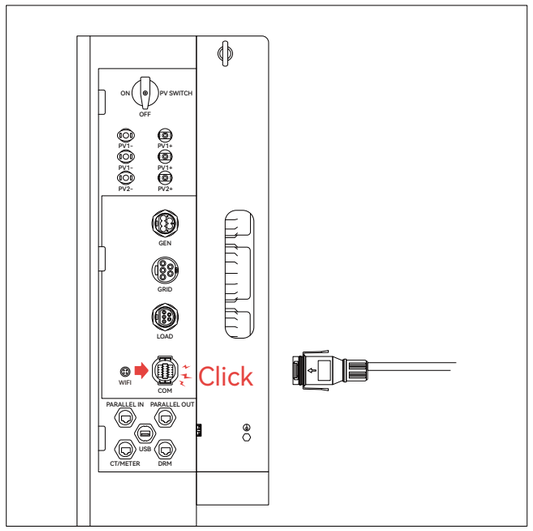
Step 2: Unscrew the nut at the connector end, and thread the cable through the connector following the diagram provided.



Step 3: Plug the cable terminal into the COM port connector, aligning it with the appropriate hole based on the pin definition of the COM port connector.



Step 4: Plug the connector head into the connector shell until a 'click' sound indicates it is locked in place. Seal any unused waterproof holes with the COM port nylon screw plug. Tighten the connector's rear nut.



Step 5: Thread the connector through the slit of the inverter door and plug it into the COM port.

6.7 RJ45 Port Connection

6.7.1 RJ45 Port Connector Pin Definitions

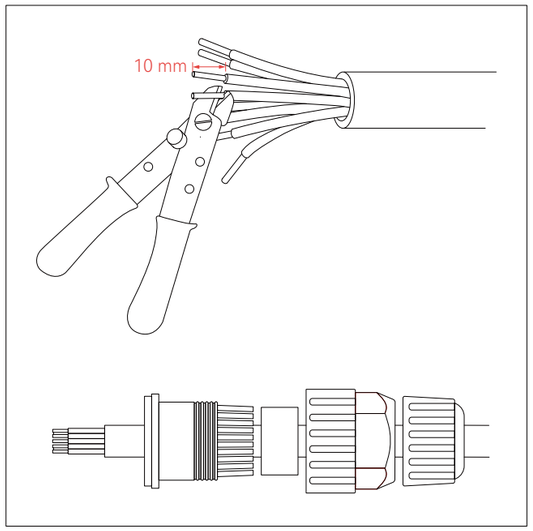
CT/METER Port Connector Pin Definitions				
This port can be used to connect both the electric meter and CT components.	1	CT_R1	5	METER485B
	2	CT_S1	6	CT_T2
	3	CT_T1	7	CT_S2
	4	METER485A	8	CT_R2
DRM Port Connector Pin Definitions				
This interface is exclusively for Australian products and is designed for DRED control, applicable to Australia and New Zealand only. DRED stands for Demand Response Enabling Device. According to the AS/NZS 4777.2:2010 standard, users must support the Demand Response Mode (DRM), which is specifically for inverters meeting the RJ45 requirements outlined in the AS/NZS 4020 standard and is intended for DRMS connections.	1	DRM1/5	5	REF GEN/0
	2	DRM2/6	6	COM LOAD/0
	3	DRM3/7	7	Reserved V+
	4	DRM4/8	8	Reserved V-
Parallel In Port (Reserved)				
Parallel Out Port (Reserved)				

6.7.2 RJ45 Port Installation

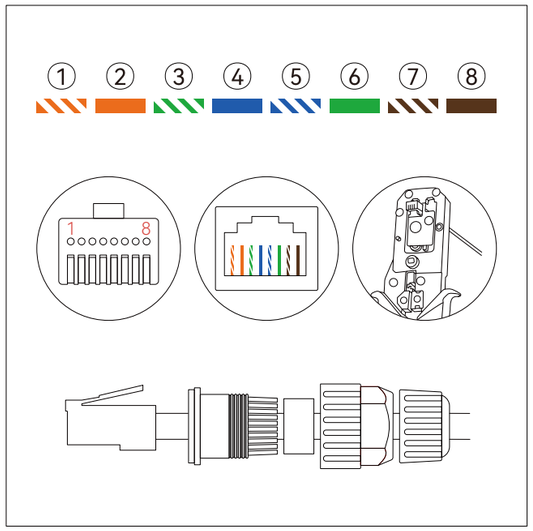
	Warning!
	Please select the appropriate cable length and quantity based on the actual installation scenario.

Tools and accessories required for this step:

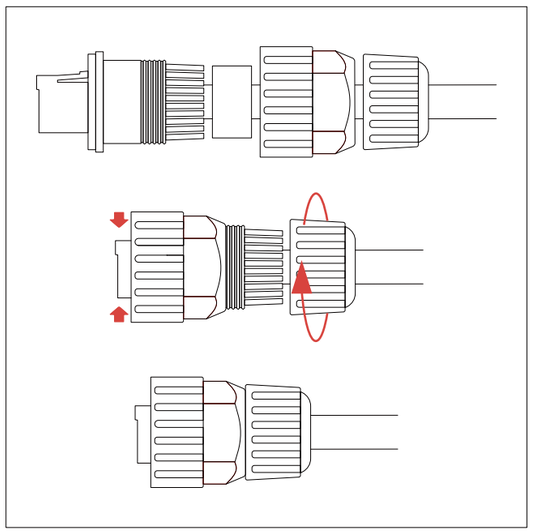
Packing List of Inverter	LAN Port Connector
Tools	Crimping Tool for RJ45, Stripping Pliers, Wire Cutter
Cable	8 strands of communication cable, core 0.5-0.75 mm², cable diameter 4-6 mm. The CAT5e network cable is recommended



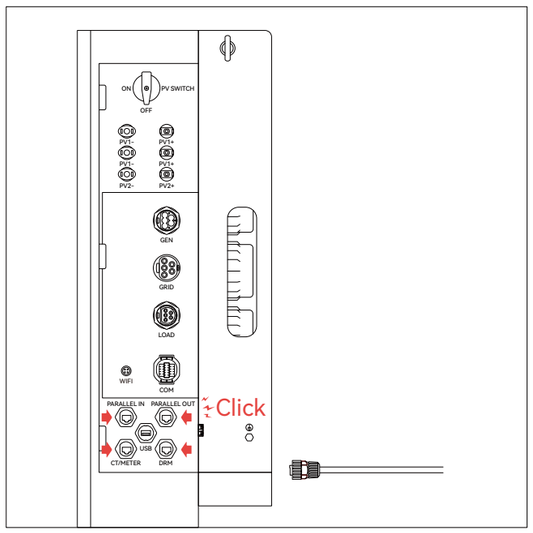
Step 1: Strip the network cable using the stripping pliers and install it through the parts as shown in the figure. Fit crystal head to the network cable according to the color sequence (1-8).



Step 2: Thread the cable through the RJ45 connector as shown in the figure.



Step 3: Tighten the connector end nut.



Step 4: Thread the connector through the slit of the inverter door and plug it into the correct RJ45 port.

6.8 Meter Connection (Optional)

Warning!

When using the meter, ensure to use the CT and 1-to-3 adapter provided in the meter package. The CT components equipped with RJ45 terminals are not compatible with this meter.

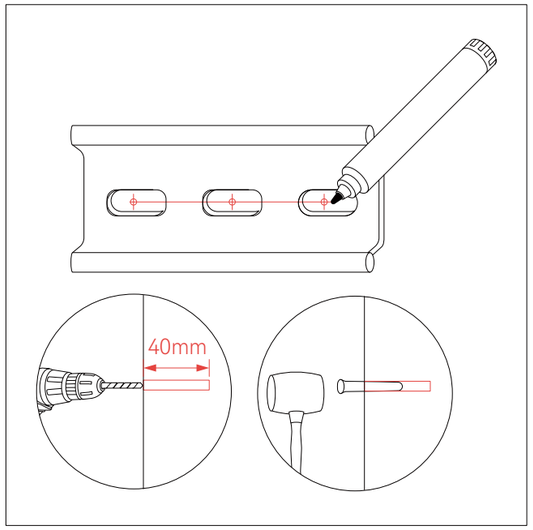
6.8.1 Meter Port Descriptions

Port No.	Label	Definition
1/2	POWER	POWER L (AC 85 V~256 V or Dc 85 V~330 V)
3/4	RS485 A/B	Communication Port with the Inverter
5	Ua	A Phase Voltage (AV 22 V~264 V, 45 Hz~65 Hz)
6	Ub	B Phase Voltage (AV 22 V~264 V 45 Hz~65 Hz)
7	Uc	C Phase Voltage (AV 22 V~264 V 45 Hz~65 Hz)
8	Un	Neutral
9	9	Reserved Interface
10	10	Grid CT Port
11	11	PV CT Port
12	12	CT Port. Reserved Interface
13	13	CT Port. Reserved Interface

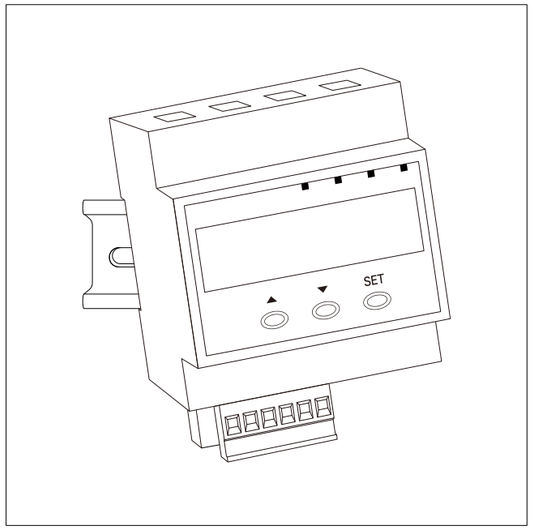
6.8.2 Meter Installation

Tools and accessories required for this step:

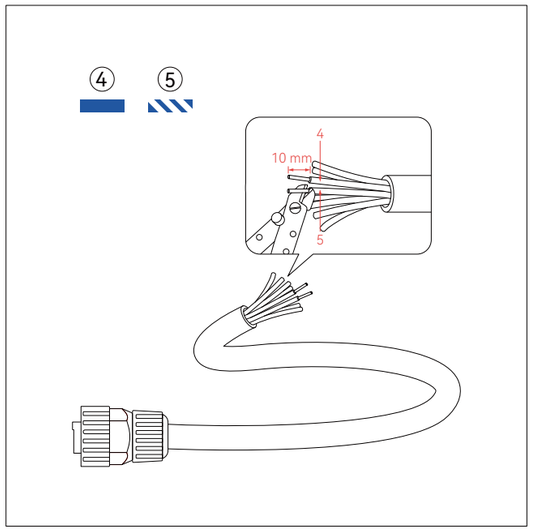
Packing List of Inverter	Smart Electricity Meter (Optional), Electricity Meter Guide Rail (Optional), Expansion Tubes with Screws (Optional)
Tools	Power Drill ϕM6, Hammer, Phillips Screwdriver, Marker
Cable	Communication Cable with RJ45 Connector



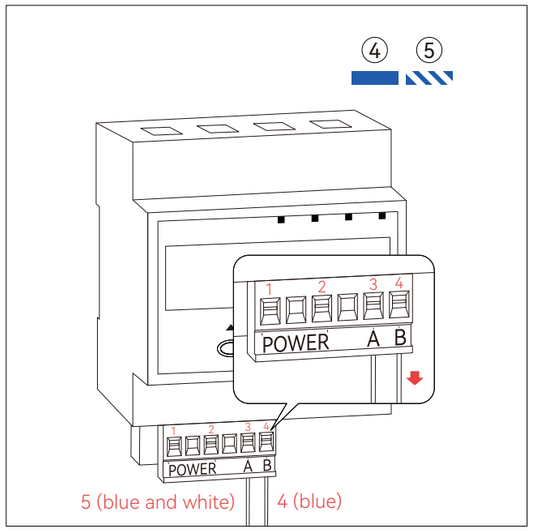
Step 1: Select an appropriate location for installing the electric meter, and mark the screw holes on the DIN rail. Drill and insert the expansion tubes to secure the rail.



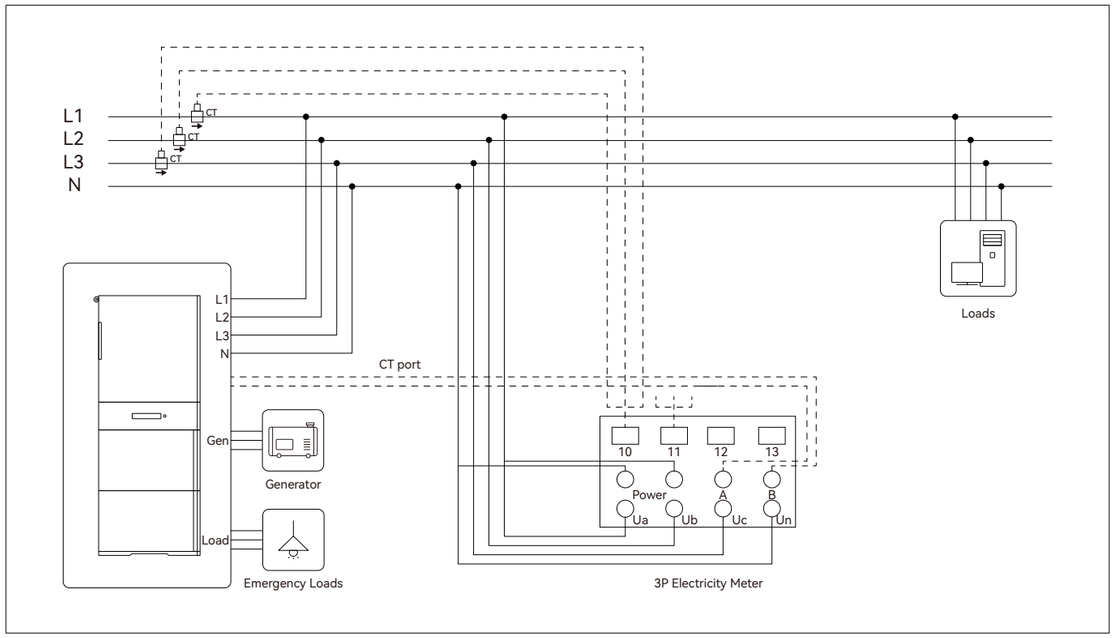
Step 2: Secure the meter onto the DIN rail provided in the inverter package (Electricity meter guide rail: DIN 35 mm).



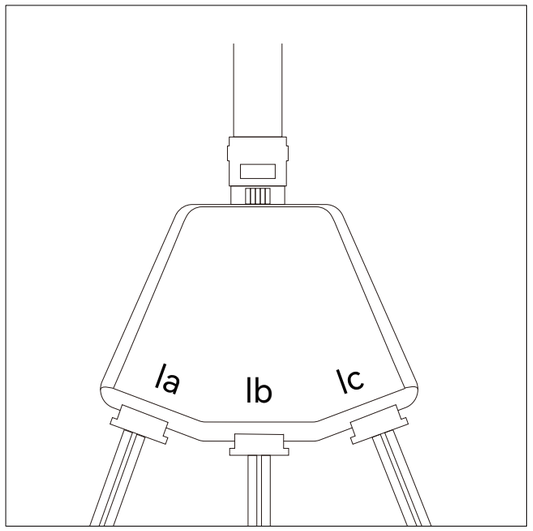
Step 3: Attach one end of the communication cable to the RJ45 connector, and use stripping pliers to carefully remove the insulation from wires #4 and #5 on the other end.



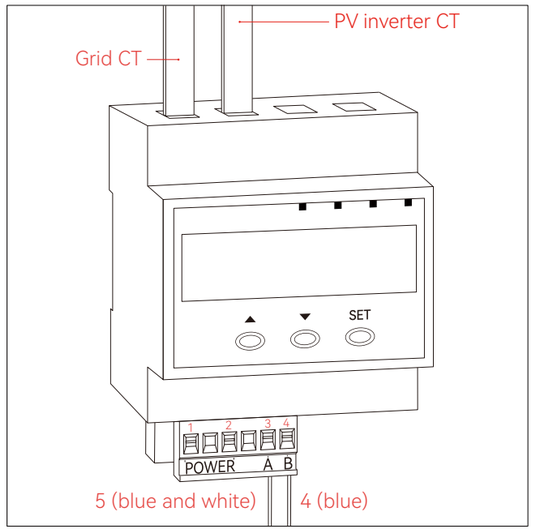
Step 4: Connect the #4 (blue) wire to Port B of the smart meter, and the #5 (blue and white) wire to Port A. Securely tighten the screws and verify the stability of the network cable.



Step 5: Place the CT clamp around the live wire where current measurement is required, and secure it with cable ties.



Step 6: Plug the CT terminals into the 1-to-3 adapter. Place the CT plug of phase A into the 'Ia' port, the CT plug phase B into the 'Ib' port, and the CT plug phase C into the 'Ic' port.

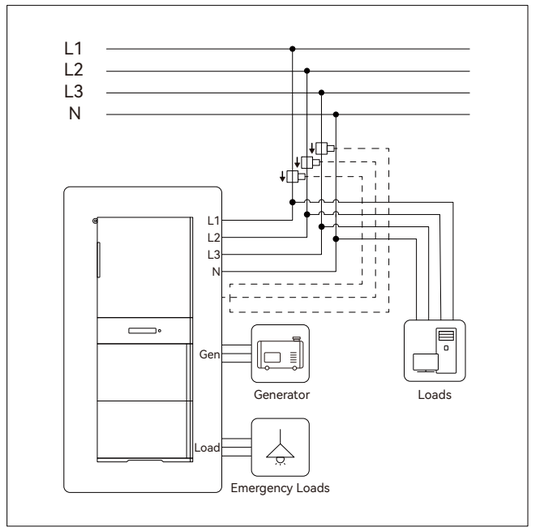


Step 7: Connect the 1-to-3 adapter to the CT ports of the smart meter.

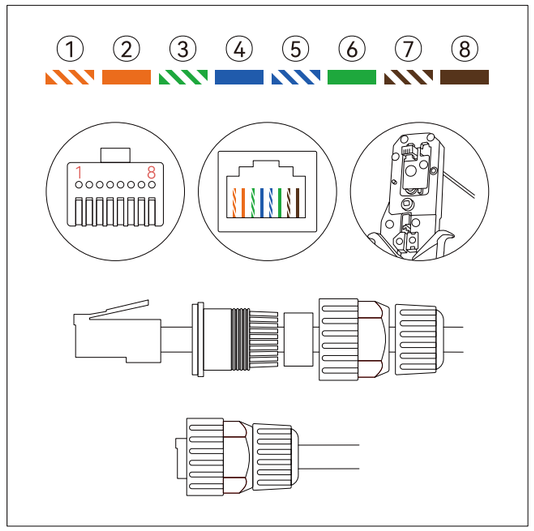
6.9 CT Installation

Tools and accessories required for this step:

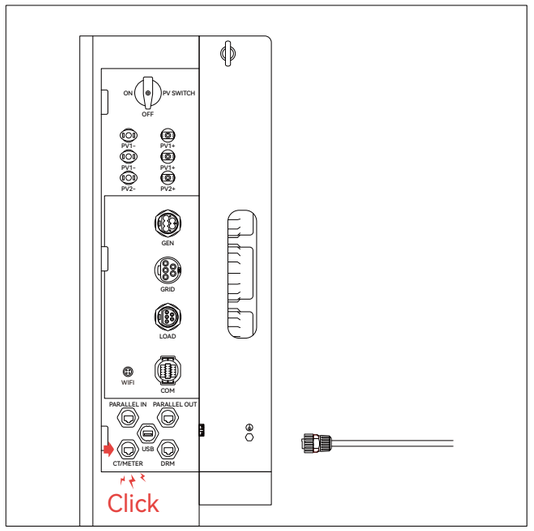
Packing List of Inverter	LAN Port Connector
Tools	CTs Components (Optional)



Step 1: Position the CT appropriately around the grid cable, ensuring correct alignment with the current flow direction.



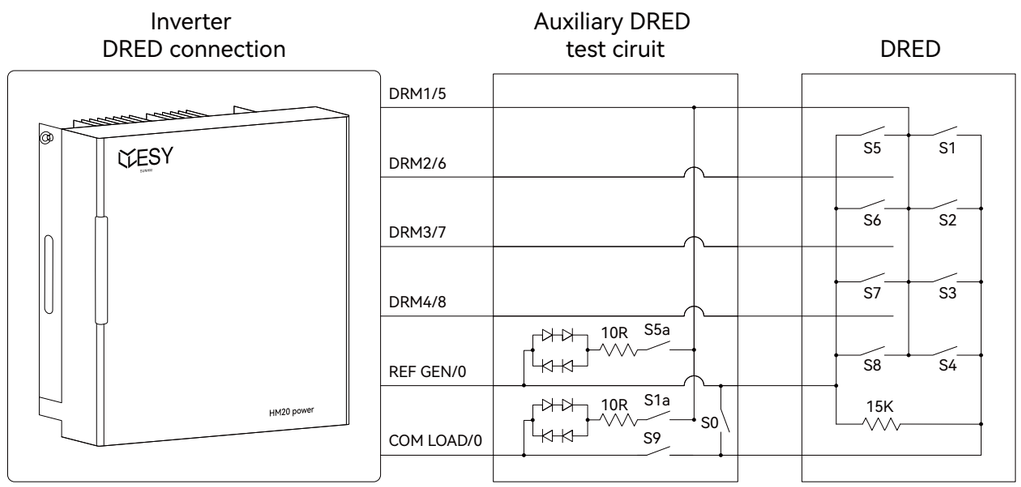
Step 2: Install the RJ45 connector onto the crystal head of the CT component.



Step 3: Plug the RJ45 connector of the CT component into the inverter CT/METER port.

6.10 DRM Connection

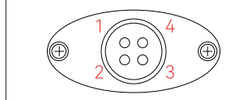
Illustration of the connection method between inverter DRM and DRED:



Please refer to the table below for DRM mode explanation. This product is only applicable to DRM0 mode.

Mode	Requirement.
DRM0	Operate the disconnection equipment.
DRM1	Do not consume power.
DRM2	Do not consume at more than 50% of rate power.
DRM3	Do not consume at more than 75% of rate power AND Source reactive power if capable.
DRM4	Increase power consumption (subject to constraints from other active DRMs).
DRM5	Do not generate power.
DRM6	Do not generate at more than 50% of rate power.
DRM7	Do not generate at more than 75% of rate power AND Sink reactive power if capable.
DRM8	Increase power generation (subject to constraints from other active DRMs).

6.11 Communication Dongle Connection (Optional)



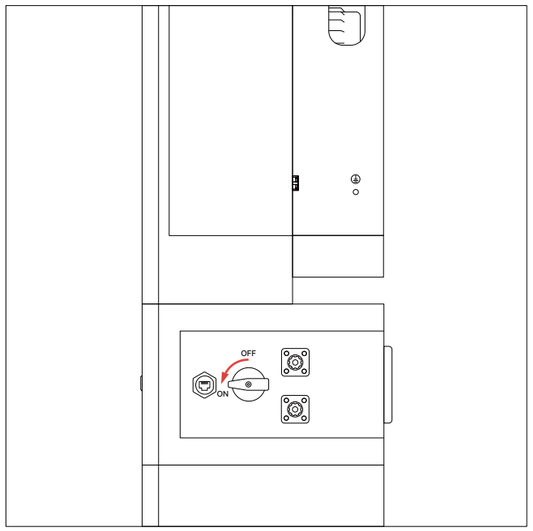
WiFi/Bluetooth Port Connector Pin Definitions	
1	VCC
2	GND
3	Data Communication A
4	Data Communication B

7 System Operation

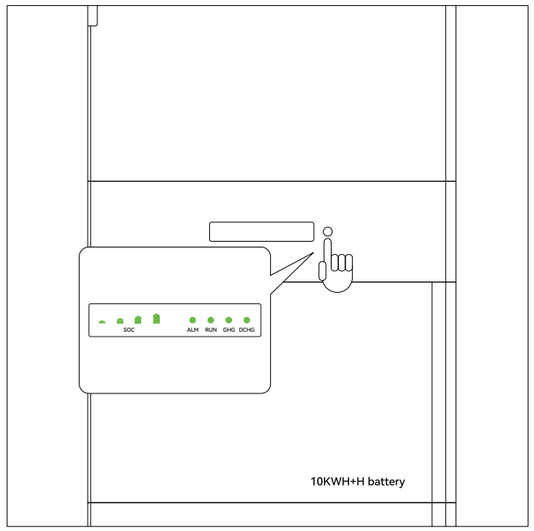
7.1 Power On

⚠	**Warning!** Please double-check that the installation to ensure it is correct and reliable before powering on.
⚠	**Warning!** If the backup load, generator, or PV inverter is not installed, do not place the connector into the port.
⚠	**Warning!** Please shield unused ports with waterproof caps.
⚠	**Warning!** After installation, please use the lock key to lock the door. Please take good care of the lock key.
⚠	**Warning!** Please keep the unused connectors and accessories properly.

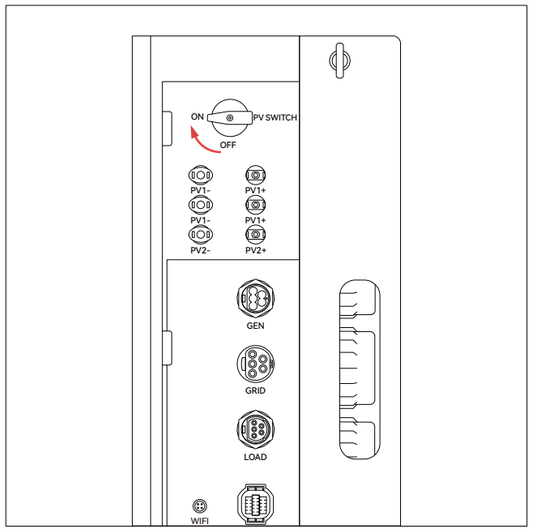
When powering on, please adhere to the following steps:



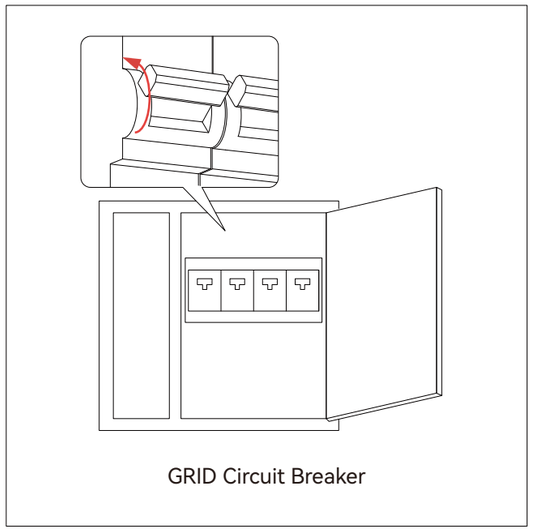
Step 1: Turn on the DC switch of the distribution box.



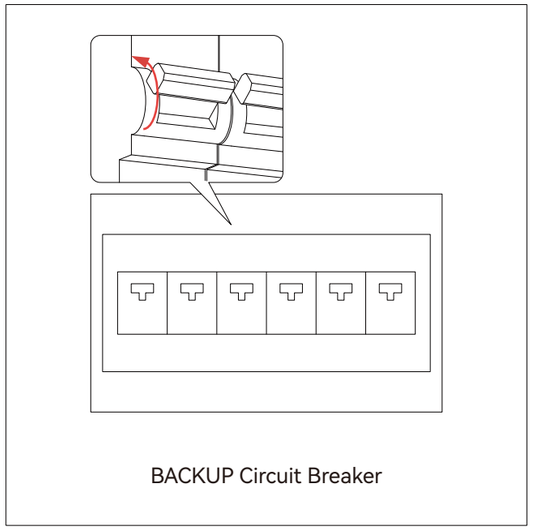
Step 2: Press and hold the power button on the distribution box for 10 seconds, and wait for the distribution box light to illuminate.



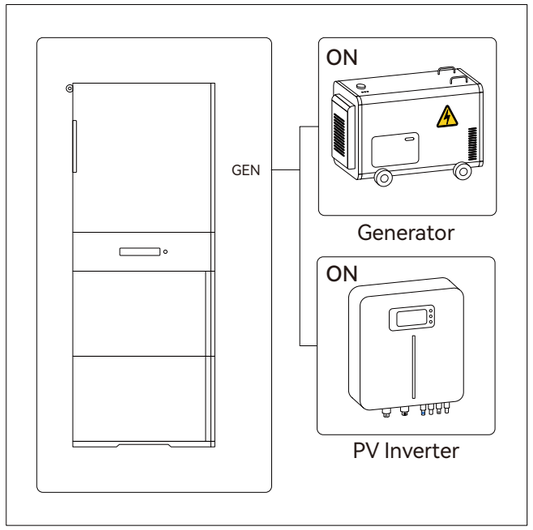
Step 3: Turn on the PV switch on the inverter.



Step 4: Switch the grid breaker to power on.



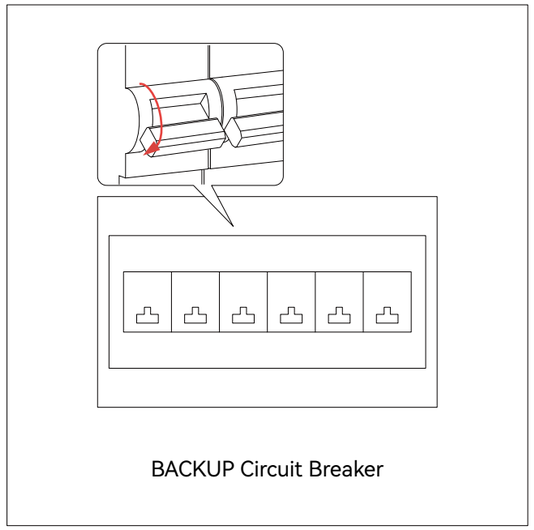
Step 5: Switch the backup load breaker to power on.



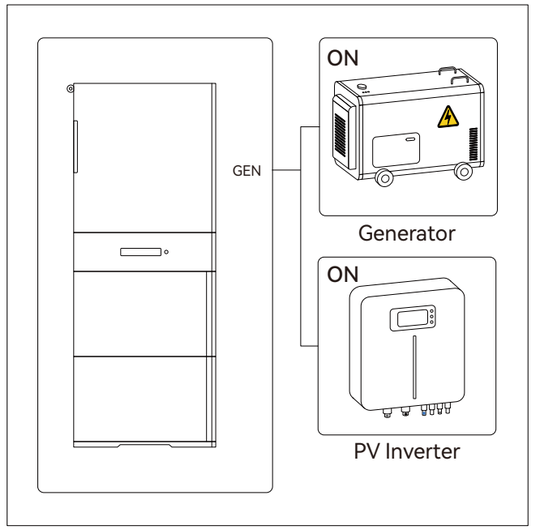
Step 6: If a generator or photovoltaic inverter is connected to the GEN port, power on the connected generator or PV inverter.

7.2 Power Off

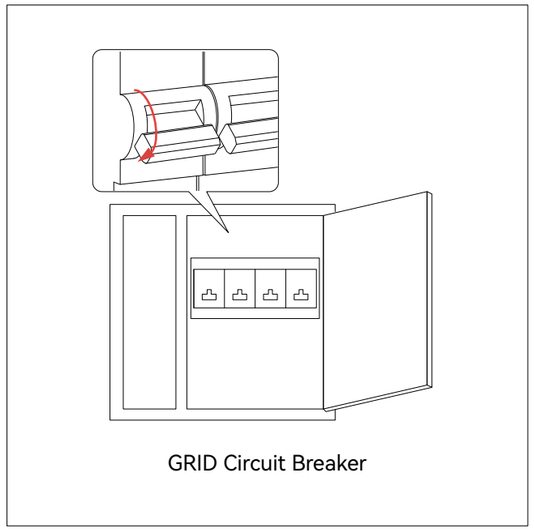
When powering off, please adhere to the following steps:



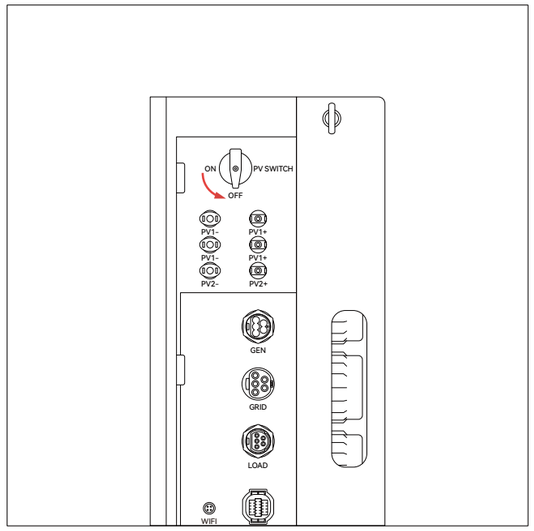
Step 1: Turn off the backup load.



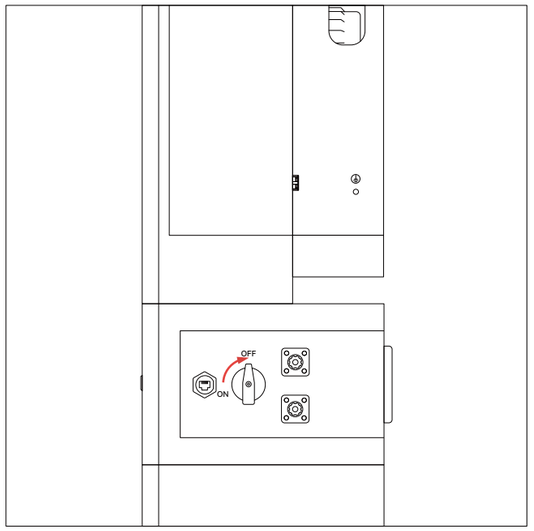
Step 2: Turn off the generator or PV inverter connected to the GEN port.



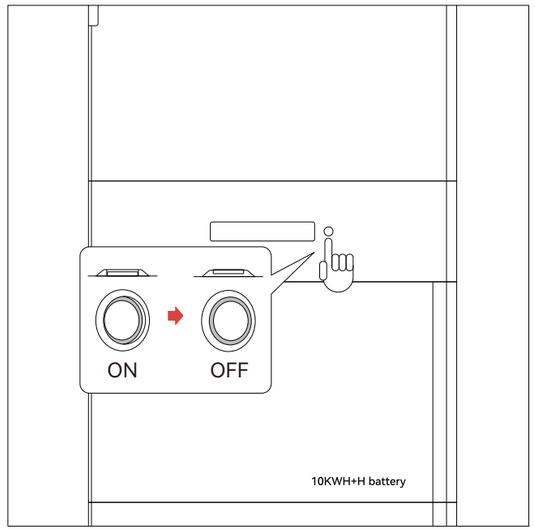
Step 3: Turn off the grid port.



Step 4: Turn off the PV Switch on the inverter.



Step 5: Turn off the DC Switch on the distribution box.



Step 6: Double-click the button on the distribution box to shut down the battery.

	Warning! After shutdown, please wait for at least 5 minutes before performing any other maintenance operations on the all-in-one equipment.
	Warning! After the system is shut down, ensure that the system status is checked and that the lights on both the distribution box and the inverter are off.
	Warning! In scenarios involving multiple battery towers, ensure that the DC switch for each battery tower is turned off when shutting down the system. Subsequently, double-click the button on each distribution box.

7.3 Precautions

If the inverter is not powered on for more than 7 days, please disconnect the circuit breakers for the battery, photovoltaic system, grid, and load.

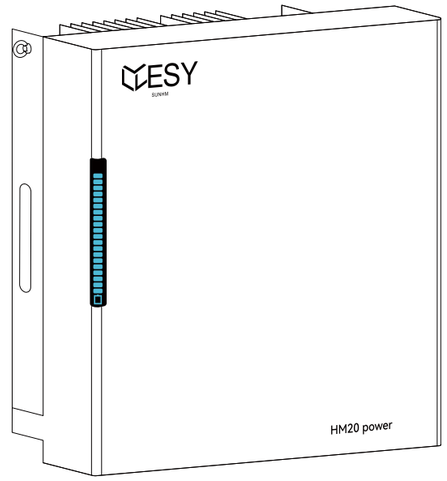
When shutting down the system with multiple battery towers, double-click the buttons on all distribution boxes to deactivate the batteries, and switch off the DC switches on all distribution boxes as well.

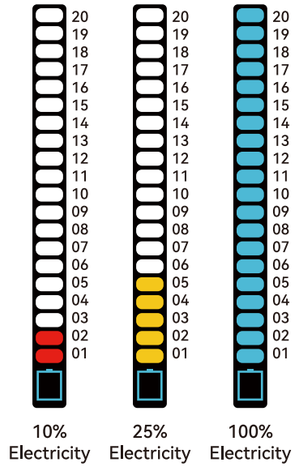
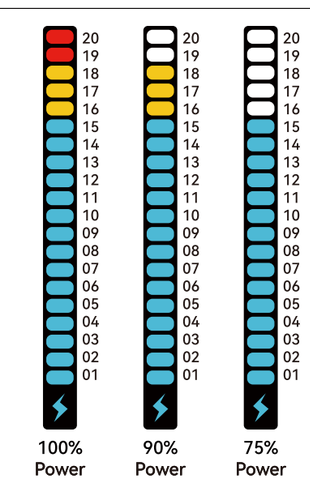
After the system has been shut down for more than 7 days, when using it again, the inverter needs to be set to charging mode to charge all batteries to SOC=100%.

After the initial installation of the system, all batteries need to be charged to SOC=100%.

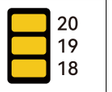
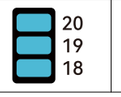
8 LED Display Description

8.1 Inverter LED Display



	The "▯" symbol located at the bottom of the light bar signifies the electricity level. It comprises 20 segments, each representing 5% of electricity. Whenever the power fluctuates by 5%, the light will remain ON for 60 seconds before turning OFF.
	The symbol "⚡" at the bottom of the light bar indicates the power level. It consists of 20 segments, each representing 5% of the power. Whenever the power changes by 5%, the corresponding segment will be ON for 60 seconds and then turn OFF.

When the indicator at the bottom of the light bar is OFF and the top three indicators are ON, it means that the equipment has an alarm or fault. If the equipment is faulty, please promptly seek assistance from professional personnel to resolve the issue.

Alarm Level	Definition	Buzzer	Light	Schematic Diagram	Alarm Signal Recovery Condition
1	Emergency	Buzzing by default	Top three red indicators ON		Troubleshooting
2	Major	Silent	Top two red indicators ON		Troubleshooting
3	Minor	Silent	Top three yellow indicators ON		60 s
4	Upgrading	Silent	Top three blue indicators ON		Upgrade Completed

Note

The inverter employs visual signals (LED lights) to comply with earth fault alarm requirements as per AS/NZS 5033.

The "Earth Fault" alarm is classified as a Level 2 critical alarm. When the inverter is not properly grounded, the top two red indicator lights will remain illuminated. Please ensure proper grounding to resolve the alarm.

This product should be installed in a high-traffic area where the alarm would be easily noticed.

8.2 Distribution Box LED Display

Purpose of LED on the distribution Box		
S/N	Mark	Purpose
1	SOC	SOC Indicator light
2	ALM	Alarm Status Indicator
3	RUN	Run (Operation) Status Indicator
4	CHG	Charging Status Indicator
5	DCHG	Discharging Status Indicator

8.2.1 Status LED Display Descriptions

LED Display Descriptions							
Status 1	Status 2	RUN	ALM	SOC Indicator Light			
		🟢	🔴	1 Bar	2 Bars	3 Bars	4 Bars
Power off	Sleeping	OFF	OFF	OFF	OFF	OFF	OFF
Standby	Normal	Flash	OFF	The display is determined by the Average SOC indicator light status, which represents the average battery level for each battery tower.			
	Warning	Flash	Flash				
	Fault	OFF	Flash				
Charging	Normal	ON	OFF	The display is determined by the Average SOC indicator light status, which represents the average battery level for each battery tower.			
	Warning	ON	Flash				
	Fault	OFF	ON				
Discharging	Normal	ON	OFF	The display is determined by the Average SOC indicator light status, which represents the average battery level for each battery tower.			
	Warning	ON	Flash				
	Fault	OFF	ON				
Maintenance	Updating	Flash	Flash	Flash			

8.2.2 SOC LED Display Descriptions

Average SOC Status Descriptions								
Status	Charging				Discharging			
SOC LED								
0%~25%	Flash	OFF	OFF	OFF	Flash	OFF	OFF	OFF
25%~50%	ON	Flash	OFF	OFF	ON	Flash	OFF	OFF
50%~75%	ON	ON	Flash	OFF	ON	ON	Flash	OFF
75%~100%	ON	ON	ON	Flash	ON	ON	ON	Flash
100%	ON	ON	ON	ON	ON	ON	ON	ON

9 Certification Standards

Safety	
PCS	IEC 62109 EN 62477-1
Battery	IEC 62619 IEC 62040
EMC	
PCS	EN 61000-6-1 EN 61000-6-3
Battery	IEC 61000-4-2/3/40
Grid Connection: (Local grid connection)	
Germany	VDE-4105
Austria	R25
Italy	CEI-021
Australia	AS/NZS 4777.2

10 After-sales Service

Service email: support@esysunhome.com

Or, contact the local installer.