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1 Introduction

This document is prepared to mainly introduce the product information, installation, wiring, configuration, commissioning, troubleshooting and maintenance of the inverters. Before installation ruse of the inverters, please read this manual carefully to understand the safety information, functions and features of the inverters. This document may be updated from time to time. Please visit our official website for the latest version and more information.

1.1 Applicable product

This document is applicable to the following inverter models:

EAHI10KTH-S, EAHI15KTH-S and EAHI20KTH-S

1.2 Applicable personnel

This document is only applicable to the professionals who are familiar with local regulations and standards and electrical systems, and have received professional training and have knowledge about this product.

1.3 Symbol definition

Danger
This document is only applicable for the professionals who are familiar with local regulations and standards and electrical systems, and have received professional training and have knowledge about this product.
Warning
It represents moderate potential hazards that may cause death or serious injury if not avoided.
Caution
It represents low potential hazards that may cause moderate or minor injury if not avoided.
Attention
It represents the emphasis or supplement, which may provide tips or tricks to optimize the product, thus helping you to solve some problems or save time.

1.4 Version information

V1.0 First issue

2 Safety instructions

The safety instructions contained in this document must be followed during equipment operation.

Attention
The inverter has been designed and tested in strict accordance with safety regulations. However, it is required to read relevant safety instructions before making any operation on an electrical device. Any improper operation may result in serious injury or property damage.

2.1 General safety instructions

Attention
• This document may be updated from time to time due to product version upgrade or other reasons. Unless otherwise specified, the safety instruction provided in the product label or the user manual cannot be replaced by any part of this document. All information provided in this document is for instruction only. • Read this document carefully before installing the inverter to understand the inverter and relevant attention items. • All operations on the inverter must be made by qualified and professional electrical technicians who are familiar with the relevant standards and safety regulations of the place where the project is located. • During operation on the inverter, use insulation tools and wear personal protective equipment to ensure personal safety. During touching any electronic components, wear ESD gloves, ESD wrist straps and ESD clothing, etc. to protect the inverter against ESD. • The manufacturer will not be responsible for any equipment damage or personal injury resulting from the failure to install, use, or configure the inverter in accordance with this document. Contact your supplier in case of any such damage or injury.

2.2 PV array safety

Danger
Connect the PV cables of the inverter by using the DC wiring terminals delivered with the inverter. Using other DC wiring terminals may cause serious consequences. Therefore, the manufacturer will not responsible for any damages caused therefrom.
Warning
• Ensure that the array frame and the support systems are well grounded. • After connection of the DC cables, ensure that the cables are securely connected. • Measure the positive and negative terminals of the DC cable by a multimeter to ensure that they are correctly connected, and that the voltage is within the allowable range. • Do not connect the PV string on a same circuit to multiple inverters. Otherwise, the inverters may be damaged. • The photovoltaic modules used together with the inverter must comply with Class A requirements of IEC61730.

2.3 Inverter safety

Warning

- Ensure that the voltage and frequency of the grid connection point meet the grid connection requirement of the inverter.
- A protection device, such as a circuit breaker or fuse, is recommended for the AC side of the inverter. The specification of the protection device should be greater than 1.25 times the rated AC output current of the inverter.
- The protective earthing cable of any inverter must be securely connected. If multiple inverters are installed, ensure that the protective earthing points on the housings of all inverters are equipotential-connected.
- If a battery is not installed in the PV system, it is not recommended to use BACK-UP function. The system power risks caused therefrom will be excluded from the manufacturer's warranty.

Danger

- After the inverter is installed, the labels and warning signs on the housing must be clearly visible, and must not be blocked, altered or damaged.
- The signs on the inverter housing are as follows:

	Due to high surface temperature of the inverter, do not touch the inverter during its operation. Otherwise, it is possible to cause burning.		Delayed discharge. After the inverter is powered off, wait for 5min to fully discharge the inverter.
	Before operation, read this document carefully.		The operating inverters may cause potential risks. Take protective measures during making any operation.
	The inverter cannot be disposed as domestic waste, and should be disposed according to local laws and regulation, or sent to the manufacturer.		Connection point of protective earthing cable
	CE marking		RCM marking

2.4 Battery safety

Caution
• The batteries used for stacking with the inverters comply with relevant national and international certification standards. Please store, install and use such batteries correctly as required. • Read the user manual of the battery carefully before installing the inverter to understand the battery and its considerations. Operate strictly according to the user manual of the battery.
• Battery current may be affected by some factors, such as temperature, humidity and weather condition, which may cause battery current limiting and affect the carrying capacity. • In case of failure to normally start the battery, please contact the after-sales service center as soon as possible. Otherwise, the battery may be permanently damaged.

2.5 Personnel requirements

Attention
• The personnel in charge of inverter installation and maintenance must be strictly trained to master the safety instructions and the correct operation methods. • Only qualified professionals or trained personnel are allowed to install, operate, maintain or replace the inverter or its components.

2.6 EU compliance statement

The devices with wireless communication function that can be sold in the European market meet the following directive requirements:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

The devices without wireless communication function that can be sold in the European market meet the following directive requirements:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH).

For more EU compliance statements, please contact your supplier.

3 Product overview

3.1 Product description

EAHI10-20KTH-S-series, a hybrid system for residential buildings, consists of inverters and batteries. Through the system, the solar energy can be converted into electrical energy and stored in the battery for future use. The system can be operated in the mode of self-generating electricity and self use, the mode of supplying the excessive energy to the gird and other set operating modes, and featured with high efficiency, high reliability, parallel operation and intelligent monitoring, etc.

Product features:

- It supports PV inverters, generators and micro-grids;
- It supports multiple mode settings, local independent operation and off-peak settings;
- The inverter and the battery pack are stacked to facilitate installation;
- It is provided with real time monitoring on APP, and supports online remote OTA upgrade to facilitate operation and maintenance.
- It features a high-efficiency DCDC module in the high voltage battery which achieves more reliable expansion of the battery pack;
- It supports the parallel connection of multiple inverter EPS outputs, and can be expanded according to the requirements of small industrial and commercial applications.
- The input power of the mains and PV is over-configured by 1.5-2 times to achieve more stable system operation.
- RSD and AFCI are optional, which provides higher safety protection for the system;

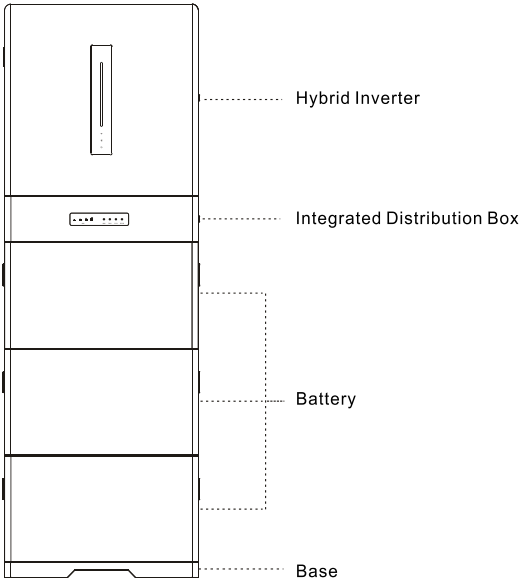
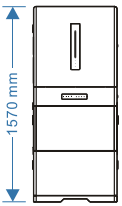
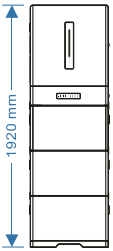
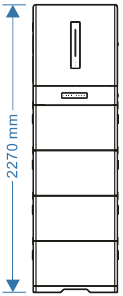


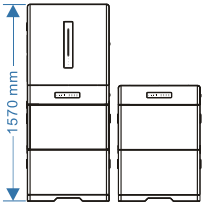
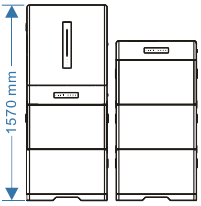
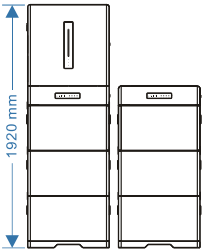
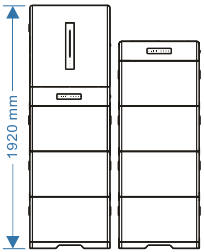
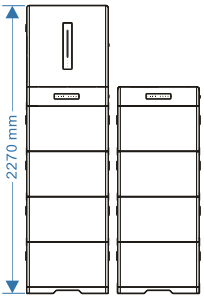
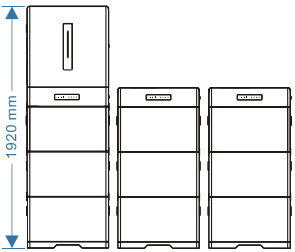
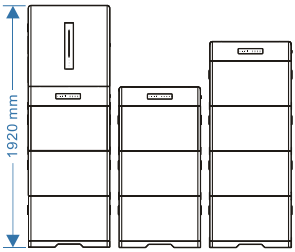
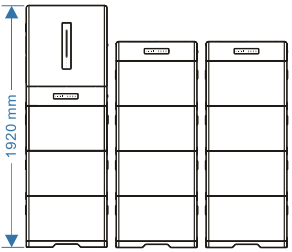
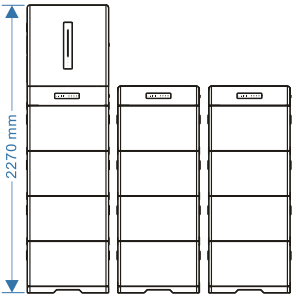
Fig. 3.1.1 Product appearance

3.2 System configuration option

System capacity Recommended configuration scheme	Master cluster configuration			Expanded cluster configuration	
	Inverter 10/15/20K	Distribution box for the master cluster PDU-GU-Y	High-voltage battery EHBS-P5-TH	Distribution box for the expanded cluster PDU-GU-F	High-voltage battery EHBS-P5-TH
10 kWh	1	1	2	0	0
15 kWh	1	1	3	0	0
20 kWh [1]	1	1	4	0	0
20 kWh [2]	1	1	2	1	2
25 kWh	1	1	2	1	3
30 kWh	1	1	3	1	3
35 kWh	1	1	3	1	4
40 kWh	1	1	4	1	4
45 kWh	1	1	3	2	6
50 kWh	1	1	3	2	7
55 kWh	1	1	3	2	8
60 kWh	1	1	4	2	8

System chart for the recommended system capacity configuration scheme

10 kWh / 10/15/20kW	15 kWh / 10/15/20kW	20 kWh [1] / 10/15/20kW
		

20 kWh [2] / 10/15/20kW	25 kWh / 10/15/20kW	30 kWh / 10/15/20kW
		
35 kWh / 10/15/20kW	40 kWh / 10/15/20kW	45 kWh / 10/15/20kW
		
50 kWh / 10/15/20kW	55 kWh / 10/15/20kW	60 kWh / 10/15/20kW
		

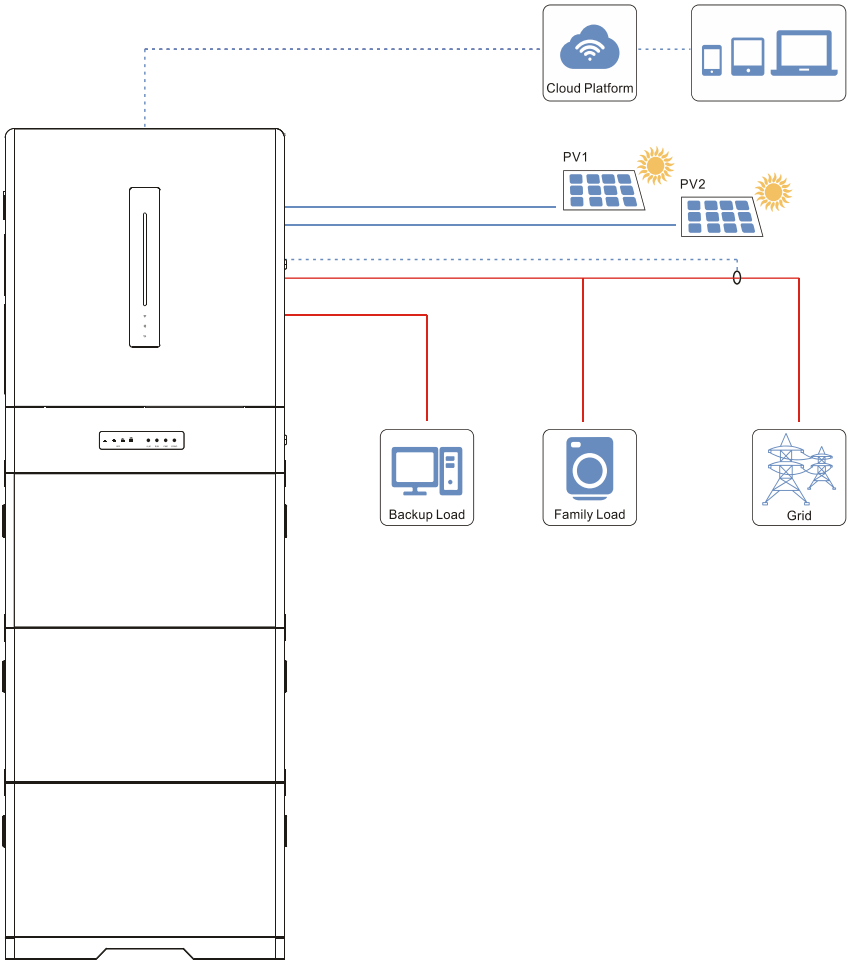
3.3 Application scenarios

Warning
➢ The photovoltaic system is not suitable for connecting with the equipment requiring stable power supply, such as life-sustaining medical devices and banking devices. Ensure that no personal injury is caused in case of the power failure in the system. ➢ If a battery is not installed in the PV system, it is not recommended to use BACK-UP function. The system power risks caused therefrom may be excluded from the manufacturer's warranty. ➢ Battery current may be affected by some factors, such as temperature, humidity and weather conditions, which may cause battery current limiting and then affect the carrying capacity. ➢ When the overload protection is triggered for a single time, the inverter can automatically restart; if the overload protection is triggered for multiple times, the restarting time may be delayed, and if it is required to restart the inverter as soon as possible, the inverter may be restarted immediately through the APP. ➢ When the load capacity exceeds the rated power of the inverter in case of the power failure on the grid, the inverter off-grid function will be automatically disabled; before restarting, stop the large load to ensure that the load power is less than the rated power of the inverter. ➢ The BACK-UP output port of the inverter has overload capability and EPS function (switching time < 20ms) to normally supply the power to ordinary household load in case of the power failure on the grid. To ensure EPS switching and the power supply stability of the load, do not use the loads requiring high starting current, such as high-power pumps. The loads supported by the inverter are as follows: ➢ Inductive load and capacitive load are provided with the total power ≤1/3 * rated output power of the inverter.

3.3.1 System connection method

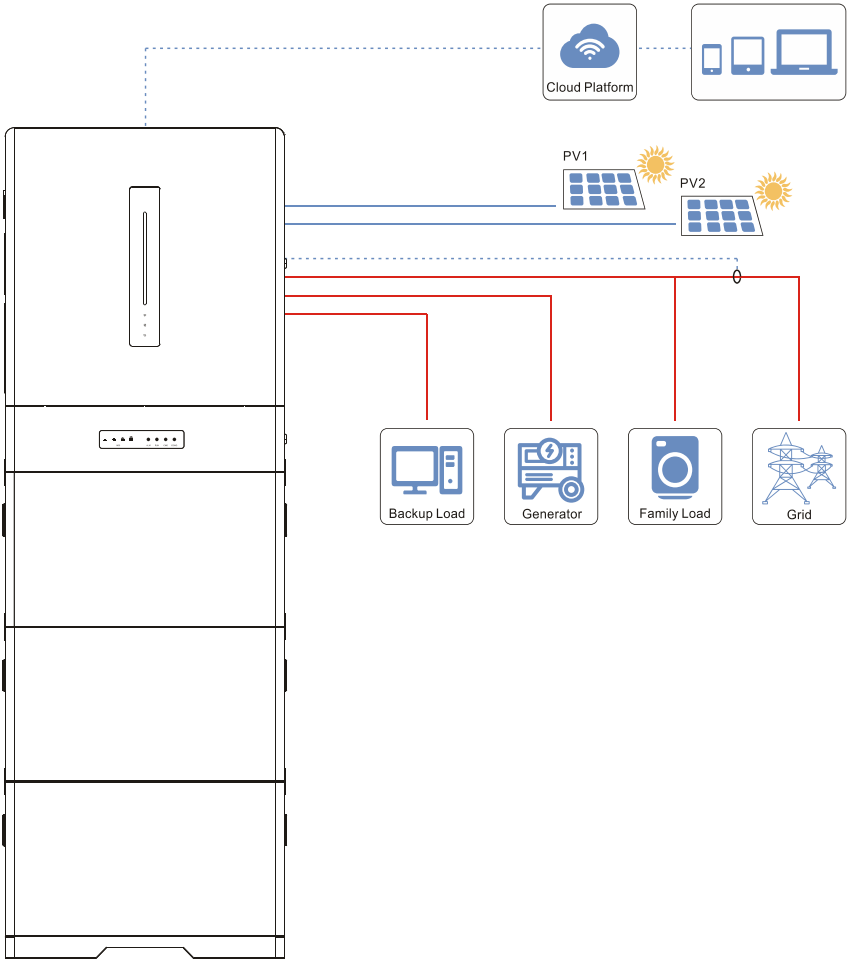
Connection method 1:

General system connection method: Used in new photovoltaic and energy storage scenarios.



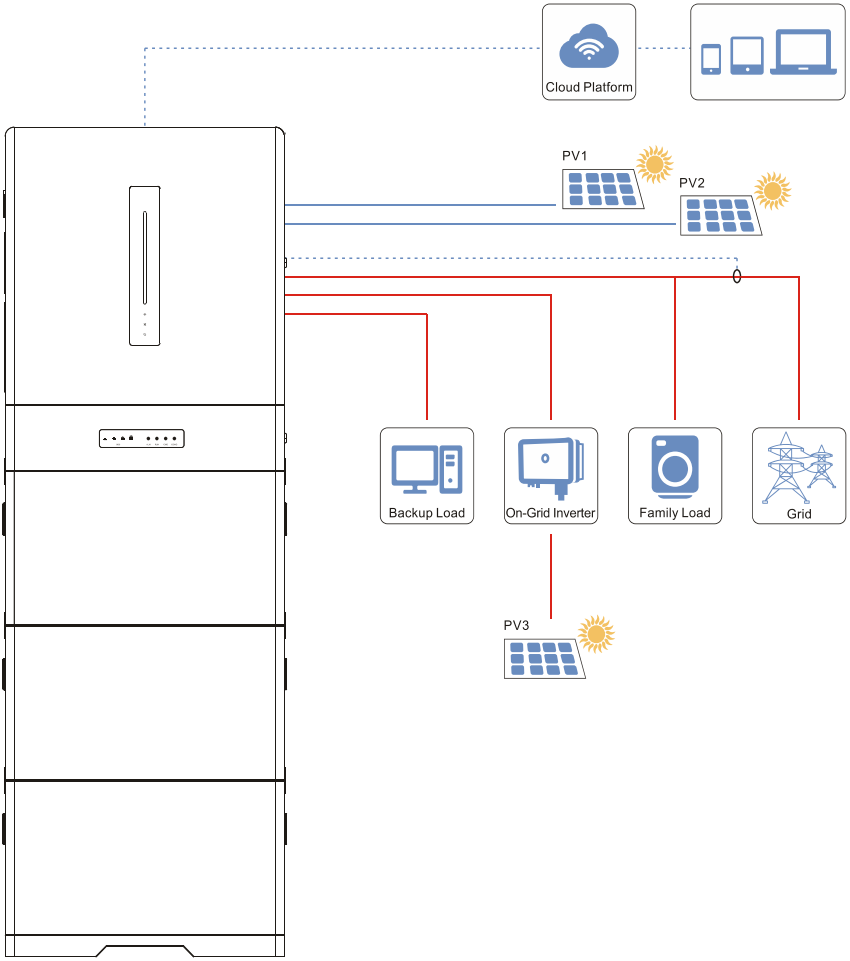
Connection method 2:

Generator connection: When it is required to install a generator, connect the generator output to the generator input port on the the inverter. See 3.5 “Generator Mode” for the specific operation mode.



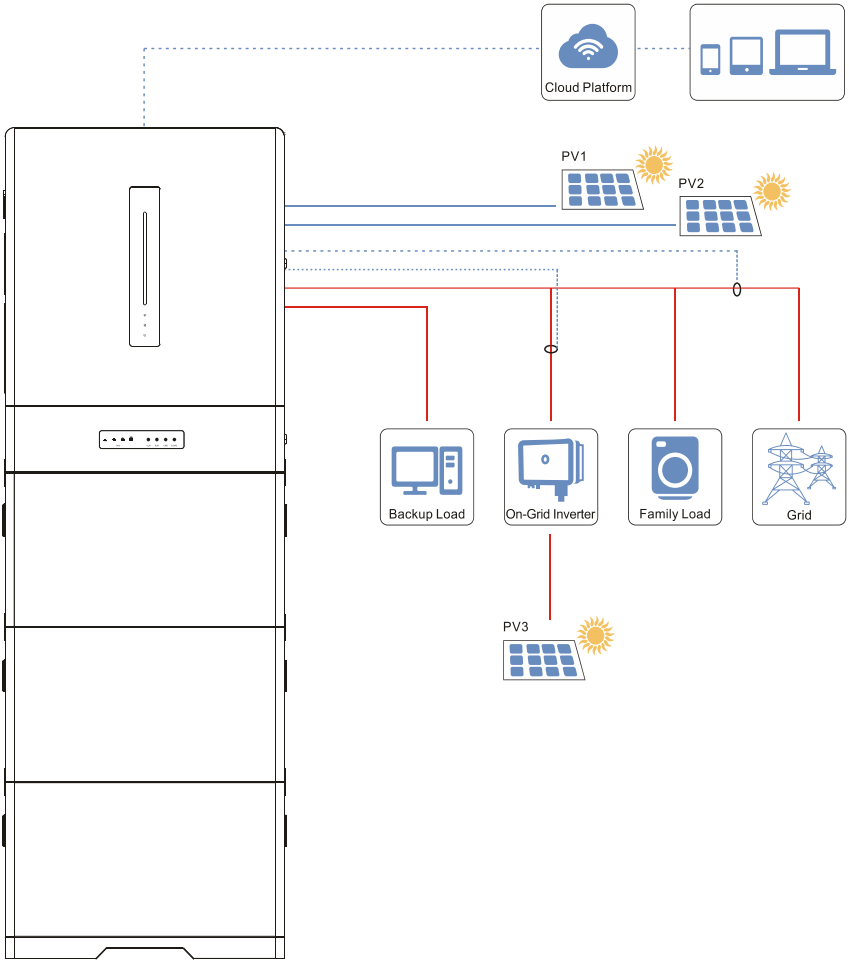
Connection method 3:

AC coupling 1: When a PV inverter has been installed, connect the output cable of the PV inverter to the generator input port of the inverter without needing additional CT.



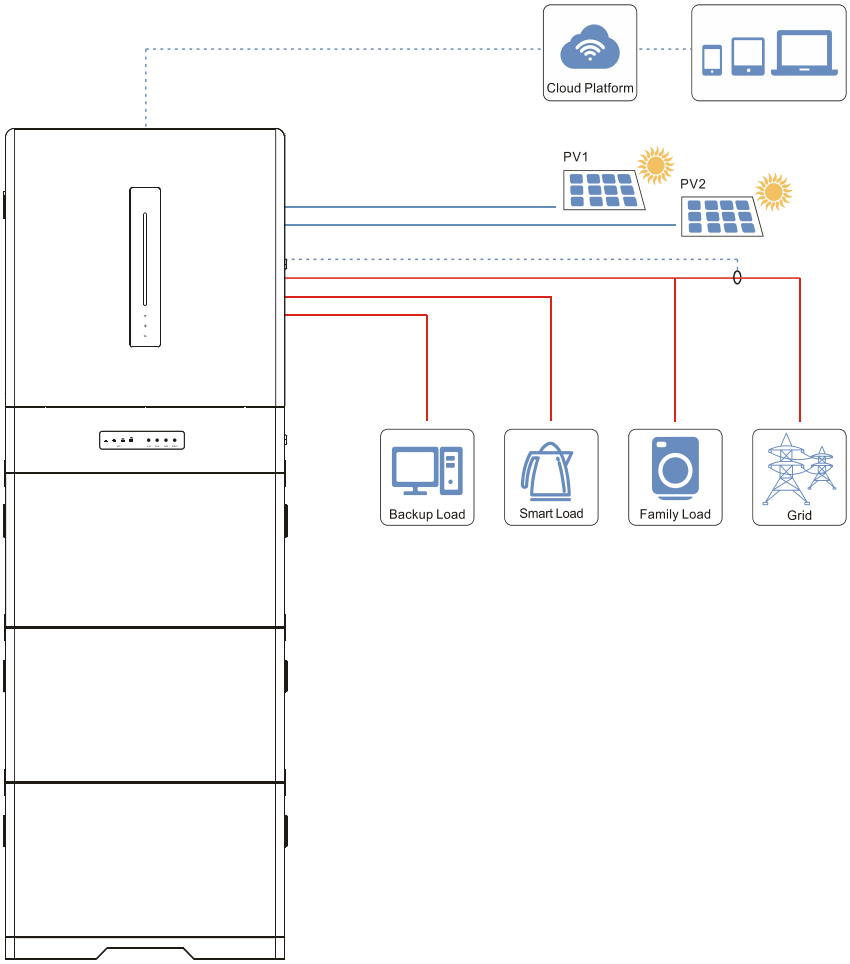
Connection method 4:

AC coupling 2: When a PV inverter has been installed, connect CT to the CT pin in the COM port on the local panel to collect the output current of the grid-tied inverter. For the wiring details, see 6.5.4 COM Communication Port. See 3.5 “PV Inverter Mode” for the specific operation mode.



Connection method 5:

Intelligent load mode: Set the generator input connection point as the load connection point. For the operation mode, see 3.5 “Intelligent Load Mode”.



Note 1: The figure shows the example of connecting through CT. If a watt-hour meter is used, replace the CT with the watt-hour meter. See 6.4 for installation of the CT and the watt-hour meter.

Note 2: see Section 6 for the detail about other electrical wiring.

3.4 Supported grids

EAHI10-20KTH-S intelligent household power supply may be connected with the grid system by four different wiring modes TN-C /TN-S/TN-C-S/TT. The supported grid types are as follows:

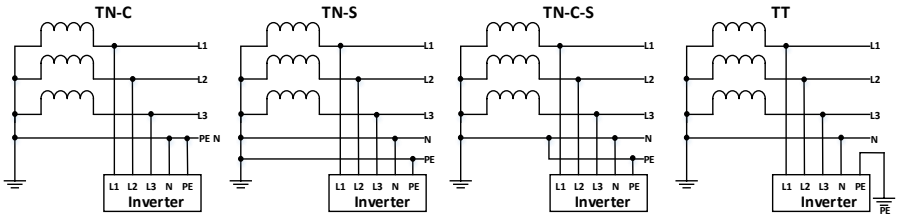


Fig. 3.4.1 Supported grid types

Note: if it is used for the TT network, the voltage of N to PE should be less than 30V.

3.5 Operating mode

Mode name		Operation logic
Anti-tied mode		During connection with the grid, the excessive energy is not supplied from the PV system to the grid in all operating modes.
Grid-tied mode	Battery priority mode	(1) The PV energy is supplied first to the backup load and then used for the battery charging. The excessive energy is supplied to the household load and the grid; (2) If the PV energy is less than that required by the backup load, the battery will discharge to further supply energy for the backup load, but it will not supply energy to the grid; (3) The grid will not supply power for the battery charging;
	Household load priority mode	(1) The PV energy is supplied first to the backup load and the household load, and then used for the battery charging, The excessive energy is supplied to the grid; (2) If the PV energy is less than that required by the backup load and the household load, the battery will discharge to further supply energy for the backup load and the household load, but it will not supply energy to the grid; (3) The grid will not supply power for the battery charging;
	Grid priority mode	(1) The PV energy is supplied first to the backup load and then to the household load, and the grid. The excessive energy is used for the battery charging; (2) If the PV energy is less than that required by the backup load, the battery will discharge to further supply energy for the backup load, but it will not supply energy to the grid; (3) The grid will not supply power for the battery charging;

	Full power grid feeding mode	(1) The PV energy is supplied first to the backup load and then to the household load, and the grid. The excessive energy is used for the battery charging; (2) If The PV energy is less than that required by the maximum output power of the inverter, the battery will discharge to further supply energy for maintaining the maximum power output of the inverter; (3) The grid will not supply power for the battery charging;
	Emergency backup mode	(1) The PV energy is first used for battery charging, and then for power supply to the backup load. The excessive energy is supplied to the household load and the grid; (2) If the PV energy is less than that required by the backup load, the grid will further supply power for the backup load and household load; (3) In case of no or very low PV power, the grid will supply power for battery charging, the backup load and household load;
	AC charging-Off backup mode	(1) The PV energy is first used for battery charging, and then for power supply to the load. The excessive energy is supplied to the grid; (2) If the PV energy is less than that required by the backup load, the grid will further supply power for the backup load and household load; (3) In case of no or very low PV power, the grid will supply power for the backup load and household load, but it will not supply power for the battery charging;
	Pure PV mode	The battery is chargeable but not dischargeable (1) The PV energy is first used for the backup load and the household load, and then for battery charging. The excessive energy is supplied to the grid; (2) If the PV energy is less than that required by the backup load and the household load, the grid will further supply power for the backup load and the household load; (3) The grid will not supply power for battery charging;
	Forced off-grid mode	When the grid is normal, it is forced to operate in off-grid mode
Off-grid mode (off-grid)		(1) The PV energy is first used for the load and then for battery charging; (2) In case of insufficient or no PV energy, the PV will supply power for the load together with the battery.

Intelligent micro-grid mode	Generator mode (No grid)	The generator can be started only in case of no mains or mains fault. (1) Enable the mode of charging the battery by generator: When the voltage and SOC of the battery are less than the set values, the generator will be started to charge the battery and also supply the power to the load; When the voltage and SOC of the battery are higher than the set values, the generator will be powered off, and then the battery will supply the power to the load; Disable the mode of charging the battery by generator: When the voltage and SOC of the battery are less than the set value, the generator will be started to supply the power to the load, but not to charge the battery. When the voltage and SOC of the battery are higher than set value, the generator will be powered off, and then the battery will supply the power to the load; Note: The generator is connected to the generator interface of the inverter
	PV Inverter mode	(1)The PV inverter is connected to the generator interface of the machine: Available mains: The relay of the generator interface is closed to connect the PV inverter and also to achieve the battery charging, the power supply to the load and grid-tied generation; No mains: When the voltage and SOC of the battery are lower than the set values, the relay of the generator interface will be closed to connect the PV inverter and also to achieve the battery charging and the power supply to the load; When the voltage and SOC of the battery are higher than set values, the relay of the generator interface will be disconnected to disconnect the PV inverter and then the battery will supply power to the load; (2)The PV inverter is directly connected to the grid and connected to the inverter through CT: Available mains: When the voltage and SOC of the battery are lower than the set values,?the PV inverter first supplies power to the load, and then supplies power to the backup load through the inverter and then charges the battery, and the remaining

		energy is supplied to the grid;If the energy of the PV inverter is insufficient, the grid adds energy to supply power to the load, and the gird does not charge the battery. When the voltage and SOC of the battery are higher than set values,the PV inverter first supplies power to the load, and then supplies power to the backup load through the inverter and then charges the battery. The remaining energy is csupplied to the grid;If the energy of the PV inverter is insufficient, the battery discharge to supply power to the load. No mains: The inverter works in off-grid mode. Note:The photovoltaic inverter is connected to the generator interface of this inverter, and the power of the photovoltaic inverter is less than the rated power of the generator;
	Intelligent load mode	In this mode, the generator input connection point is set as the load connection point. (1) Enable “intelligent load and mains normally-off mode” **In case of normal mains,** the relay of the generator interface will be closed to supply the power to the load connected with the generator interface; **In case of mains fault,** when the SOC and voltage of battery and PV power are higher than the set values, the relay of the generator interface will closed to supply the power to the load connected with the generator interface; when the SOC or voltage of battery or the PV power is less than the set value, the relay of the generator interface will be disconnected, and then the load connected with the generator interface will be disconnected from the power. (2) Disable “Intelligent load and mains normally-off mode” When the SOC and voltage of battery and the PV power are higher than the set values, the relay of the generator interface will be closed to supply power to the load connected with the generator interface; when the SOC or voltage of battery or the PV power is less than the set value, the relay of the generator interface will be disconnected, and then the load connected with the generator interface will be disconnected from the power.

Table 3.5.1 Description of operating mode

3.6 Operating status of inverter

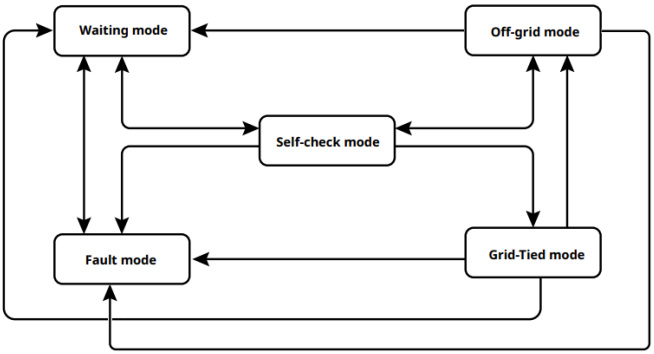


Fig. 3.6.1 Operating status of inverter

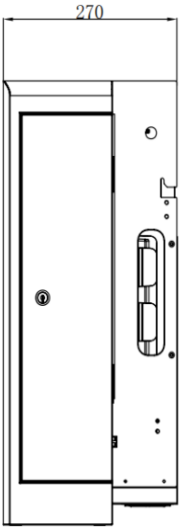
No.	Status	Note
1	Waiting mode	Operate in the waiting mode after powering on • When the conditions are met, the inverter will operate in the self-check mode; • In case of any failure, the inverter will operate in the fault mode
2	Self-check mode	Before starting, the inverter is in the self-check mode of self-check and initialization; • If the conditions are met, the inverter will operate in the grid-tied mode • If the grid is not detected, the inverter will operate in the off-grid mode • If the inverter has no off-grid function, it will operate in the waiting mode In case of failure in the self-check, the inverter will operate in the fault mode
3	Grid-tied mode	Grid-tied mode: • If the grid is not detected, the inverter will operate in the off-grid mode • If the fault is detected, the inverter will operate in the fault mode • If it is detected that the grid conditions fail to meet the requirements of grid-tied operation, and that the off-grid output function is not enabled, the inverter will operate in the waiting mode
4	Off-grid mode	In case of the gird failure, the operating mode of inverter will be switched into the off-grid mode: • If the fault is detected, the inverter will operate in the fault mode • If it is detected that the grid conditions meet the requirements of grid-tied operation, and the off-grid output function is enabled, the inverter will operate in the self-check mode;
5	Fault mode	• The inverter will operate in the failure mode if the fault is detected, and will operate in the waiting mode after the fault is removed

3.7 Appearance description

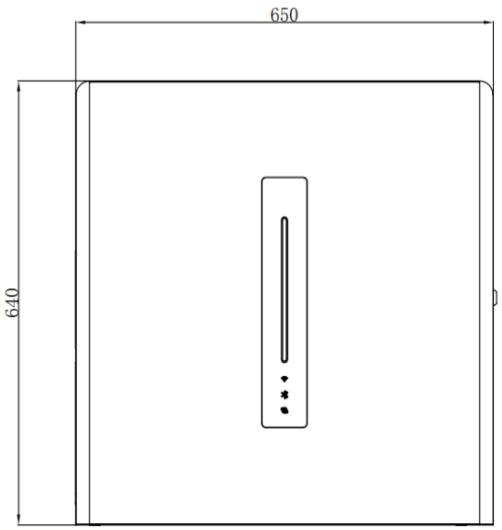
3.7.1 Inverter

1. Appearance and dimensions of inverter

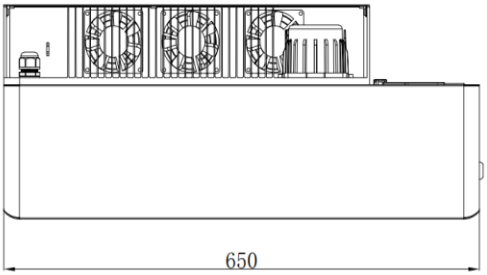
Dimensions: 650mm*270mm*640mm



Side View

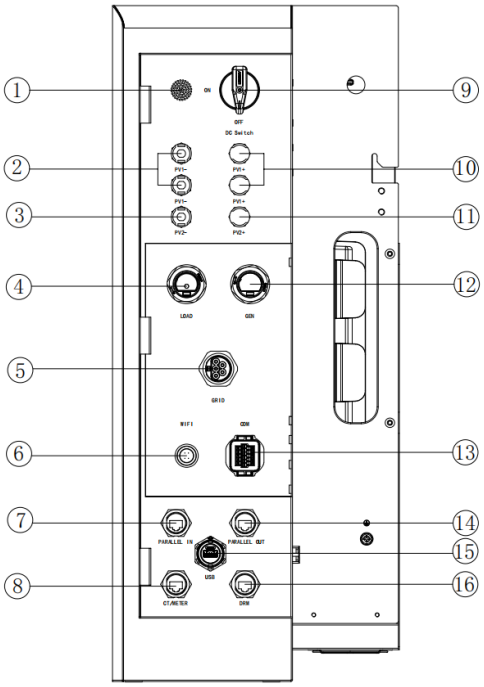


Front View



Top View

2. Side ports of inverter



No.	Identification	Purpose	No.	Identification	Purpose
1	Nil	Buzzer	**9**	DC SWITCH	PV switch
2	PV1-	PV1-input	**10**	PV1+	PV1+ input
3	PV2-	PV2-input	**11**	PV2+	PV2 +input
4	LOAD	Load interface	**12**	GEN	Generator interface
5	GRID	Grid interface	**13**	COM	Upper computer access communication
6	WIFI	Remote communication	**14**	PARALLEL OUT	Parallel output (reserved)
7	PARALLEL IN	Parallel input (reserved)	**15**	USB	Firmware upgrade
8	CT/METER	External CT or kilowatt-hour meter signal input	**16**	DRM	Requirement of Australian safety code (Reserved)

3. Bottom battery ports of inverter

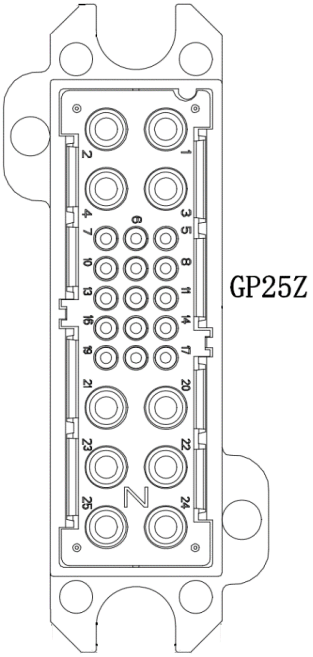


Fig. 3.7.1.1 Bottom battery ports of inverter GP25Z

No.	Identification	No.	Identification	No.	Identification
1	HV+	**2**	HV+	**3**	Reserved
4	Reserved	**5**	RS485A	**6**	RS485B
7	RS485A	**8**	RS485B	**9**	CANH
10	CANL	**11**	CANH	**12**	CANL
13	Reserved	**14**	START+	**15**	START-
16	Reserved	**17**	Reserved	**18**	Reserved
19	Reserved	**20**	Reserved	**21**	Reserved
22	Reserved	**23**	Reserved	**24**	HV-
25	HV-				

3.7.2. Distribution box

1. PDU-GU-Y (integrated) distribution box

(1) Appearance and dimensions

Dimensions: 650mm*270mm*150mm

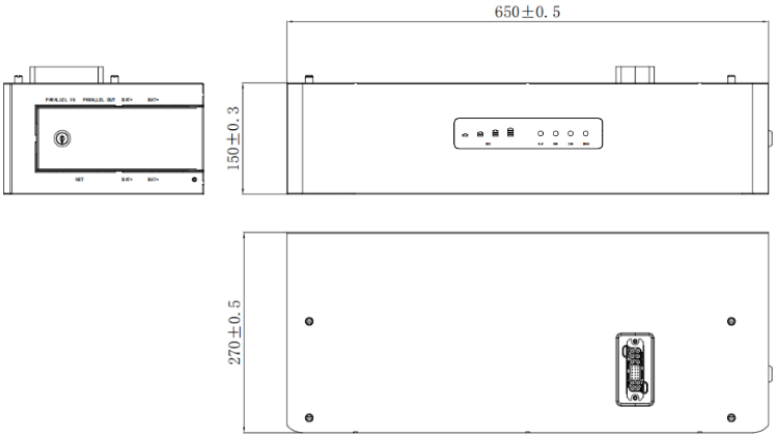


Fig. 3.7.2.1 Appearance of PDU-GU-Y

(2) Description of top ports for PDU-GU-Y

No.	Identification	No.	Identification	No.	Identification
1	HV+	**2**	HV+	**3**	Reserved
4	Reserved	**5**	RS485A	**6**	RS485B
7	Reserved	**8**	Reserved	**9**	Reserved
10	Reserved	**11**	CAN1H	**12**	CAN1L
13	Reserved	**14**	START+	**15**	START-
16	Reserved	**17**	Reserved	**18**	Reserved
19	Reserved	**20**	Reserved	**21**	Reserved
22	Reserved	**23**	Reserved	**24**	HV-
25	HV-				

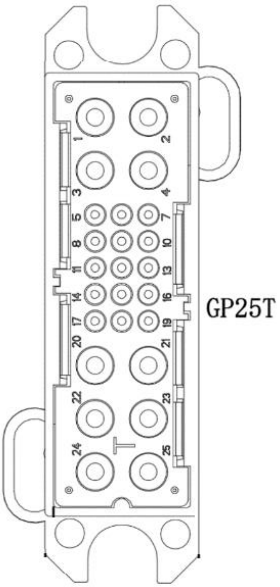


Fig. 3.7.2.2 Top ports of PDU-GU-Y

(3) Description of bottom ports for PDU-GU-Y

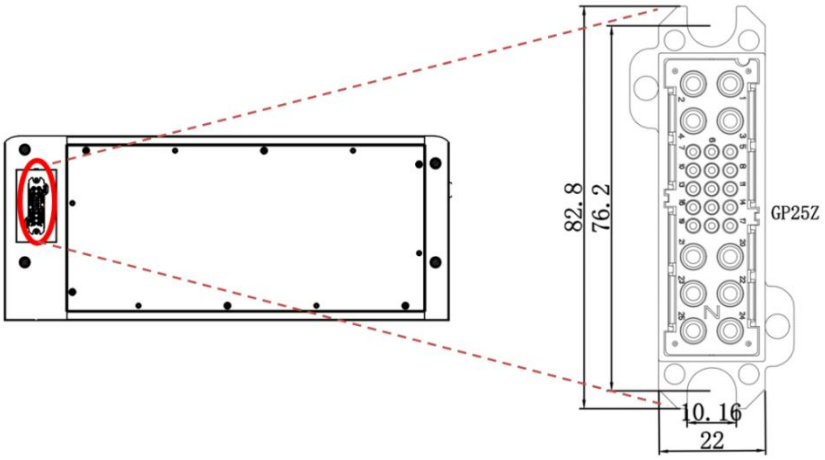


Fig. 3.7.2.3 Bottom ports of PDU-GU-Y

(4) Description of side panel

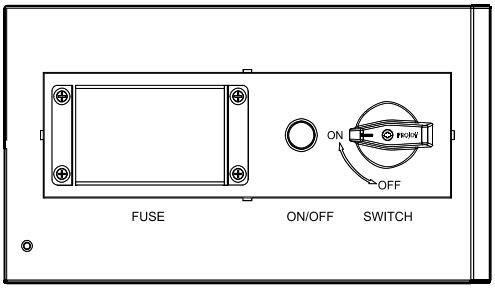


Fig. 3.7.2.4 Description of left side panel for PDU-GU-Y

Identification	Note
PUSE	Fuse of distribution box
ON/OFF	Switch of distribution box
SWITCH	Switch used to connect or disconnect the inverter with the distribution box

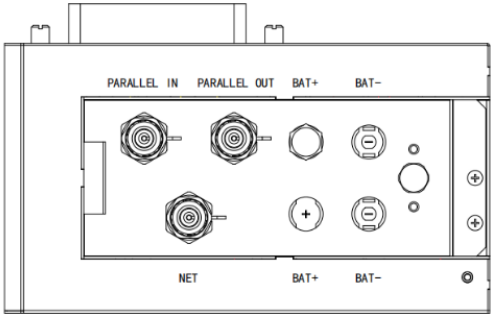


Fig. 3.7.2.5 Description of right side panel for PDU-GU-Y

Identification	Note
PARALLEL IN	Parallel input/distribution box connection interface, which can be used as a network port for communication/ a connection port for 120Ω terminal resistance
PARALLEL OUT	Parallel output/ distribution box connection interface, which can be used as a network port for communication/ a connection port for 120Ω terminal resistance
BAT+	Battery parallel/ input/ output
BAT-	Battery parallel/ input/ output
PCS	Communication port for inverter and distribution box
NET	Network communication port for distribution box

2. PDU-GU- F (split) distribution box

(1) Appearance and dimensions

Dimensions: 650mm*270mm*150mm

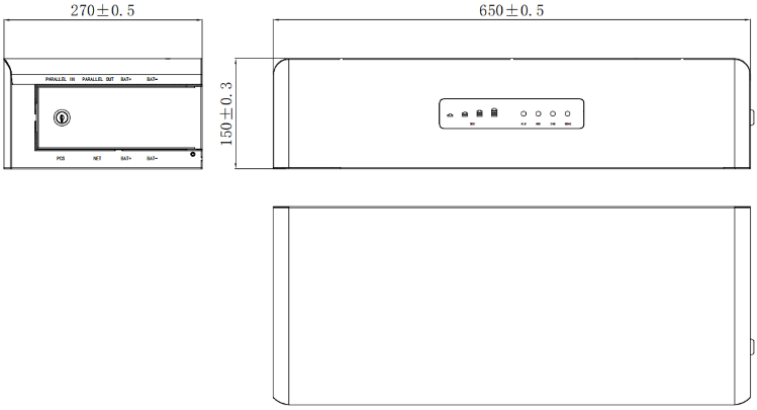


Fig. 3.7.2.6 Appearance of PDU-GU- F

(2) Description of bottom ports for PDU-GU- F

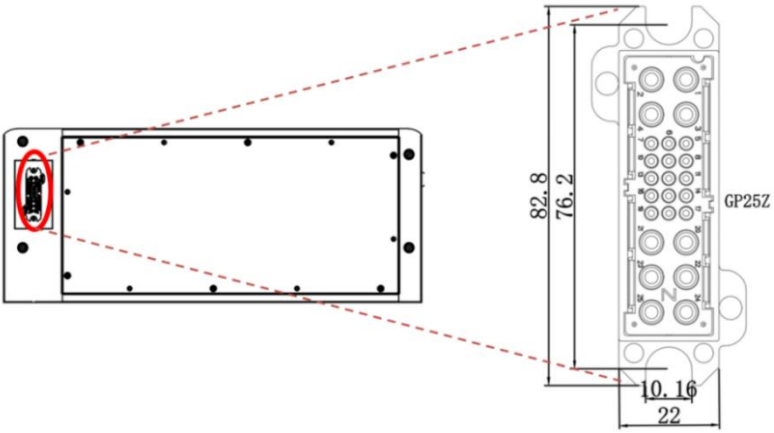


Fig. 3.7.2.7 Bottom ports of PDU-GU- F

(3) Description of monitoring panel for PDU-GU-Y and PDU-GU-F

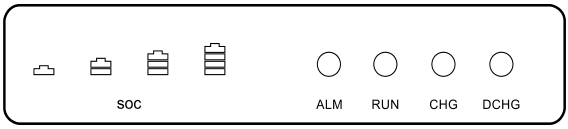


Fig. 3.7.2.8 Monitoring panel for PDU-GU-F

1) Description of operating and alarm indicator status

Status	Normal/ alarm/ protection	RUN	ALM	SOC LED indicator				Remark
		●	●	●	●	●	●	
Shutdown	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	Fully OFF
Standby	Normal	Flicker 2	OFF	Indicate according to SOC				Standby status
	Alarm	Flicker 2	Flicker 2					Alarm given
	Fault	OFF	Flicker 2					Failed
Charging	Normal	Normally ON	OFF	Indicate according to SOC				Normal operation
	Alarm	Normally ON	Flicker 2					Alarm given
	Fault	OFF	Normally ON					Failed
Discharge	Normal	Normally ON	OFF	Indicate according to SOC				Normal operation
	Alarm	Normally ON	Flicker 2					Alarm given
	Fault	OFF	Normally ON					Failed

Note: the “flicker 2”means flicker once every 1s: On for 0.5s and Off for 0.5s

2) Description of indicator lamp in charging and discharge mode

Status	Operation mode	CHG●	DCHG●
Charging	Constant current charge	Normally ON	OFF
	Constant voltage and limited current	Normally ON	OFF
	Floating charge	Normally ON	OFF
Discharge	Discharge	OFF	Normally ON

Note: the “flicker 2”means flicker once every 1s: On for 0.5s and Off for 0.5s

3) Description of SOC indicator status

Status		Charging				Discharge			
SOC indicator lamp		L4	L3	L2	L1	L4	L3	L2	L1
SOC (%)	0-25%	OFF	OFF	OFF	Flicker 2	OFF	OFF	OFF	Flicker 2
	25-50%	OFF	OFF	Flicker 2	Normally ON	OFF	OFF	Flicker 2	Normally ON
	50-75%	OFF	Flicker 2	Normally ON	Normally ON	OFF	Flicker 2	Normally ON	Normally ON
	75-100%	Flicker 2	Normally ON	Normally ON	Normally ON	Flicker 2	Normally ON	Normally ON	Normally ON
	100%	Normally ON	Normally ON	Normally ON	Normally ON	Normally ON	Normally ON	Normally ON	Normally ON
Operation indicator lamp		Normally ON				Normally ON			

Note: the “flicker 2”means flicker once every 1s: On for 0.5s and Off for 0.5s

4) Description of indicator lamp in program upgrading mode

Status	RUN	ALM	CHG	DCHG	SOC LED indicator			
Program upgrading	Flicker 2	Flicker 2	Flicker 2	Flicker 2	Flicker 2	Flicker 2	Flicker 2	Flicker 2

Note: the “flicker 2”means flicker once every 1s: On for 0.5s and Off for 0.5s

5) Description of LED flicker

Flicker mode	ON	OFF	Remark
Flicker 1	0.25S	3.75S	Flicker once every 4s
Flicker 2	0.5S	0.5S	Flicker once every 1s
Flicker 3	0.5S	1.5S	Flicker once every 2s

Note: when the module is powered on, constant current charging state is indicated by default, and the CHG is normally ON

(4) Description of side panel

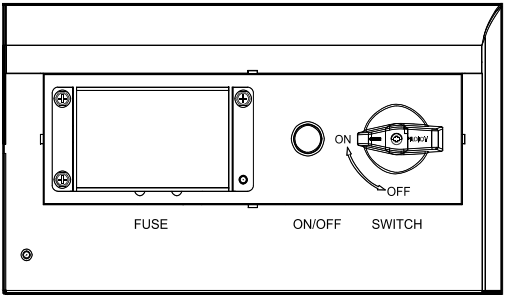


Fig. 3.7.2.9 Description of left side panel for PDU-GU-F

Identification	Remark
PUSE	Fuse of distribution box
ON/OFF	Switch of distribution box
SWITCH	Switch used to connect or disconnect the inverter with the distribution box

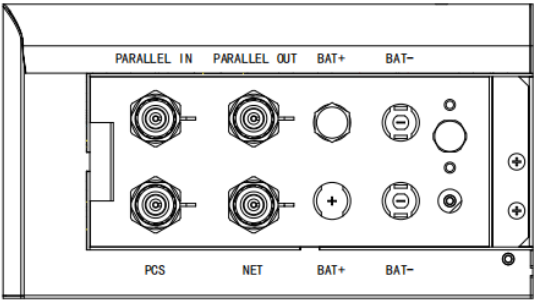


Fig.3.7.2.10 Description of right side panel for PDU-GU F

Identification	Note
PARALLEL IN	Parallel input/distribution box connection interface, which can be used as a network port for communication/ a connection port for 120Ω terminal resistance
PARALLEL OUT	Parallel output/ distribution box connection interface, which can be used as a network port for communication/ a connection port for 120Ω terminal resistance
BAT+	Battery parallel/ input/ output
BAT-	Battery parallel/ input/ output
PCS	Communication port for inverter and distribution box
NET	Network communication port for distribution box

3.7.3 Battery (EHBS-P5-TH)

1. Appearance and dimensions of battery

Dimensions: 650mm*270mm*370mm

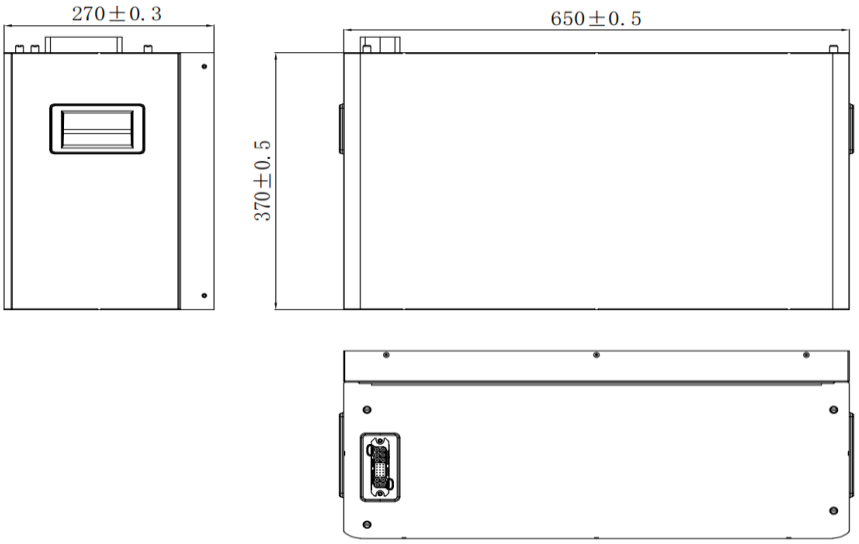


Fig. 3.7.3.1 Appearance of EHBS-P5-TH

2. Description of top ports for EHBS-P5-TH

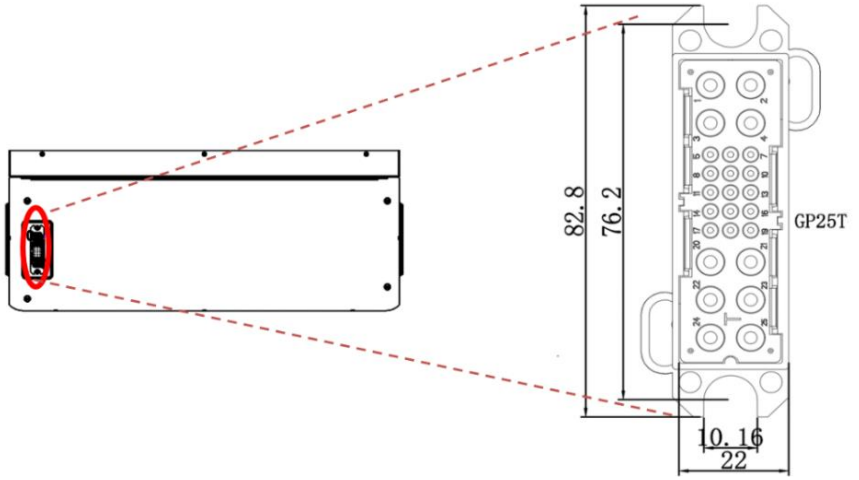


Fig. 3.7.3.2 Top ports for EHBS-P5-TH

3. Description of bottom ports for EHBS-P5-TH

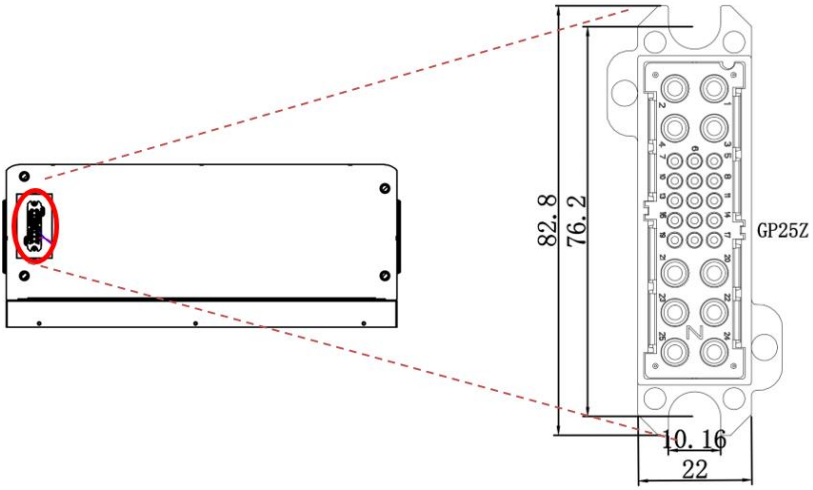


Fig. 3.7.3.3 Bottom ports for EHBS-P5-TH

3.7.4 Base support

1. Appearance and dimensions of abutment

Dimensions: 650mm*270mm*50mm

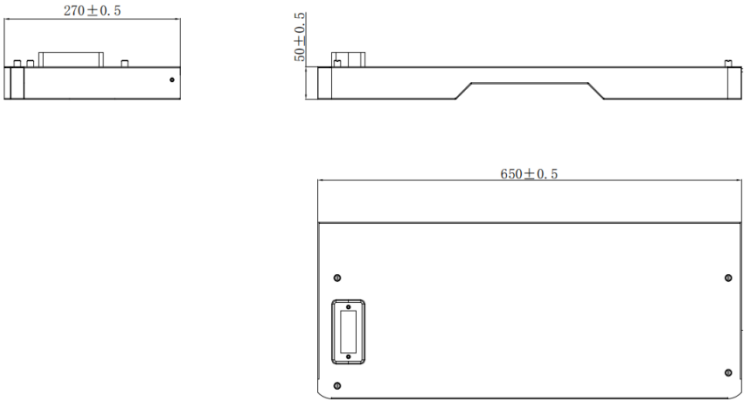


Fig. 3.7.4.1 Abutment appearance

2. Top ports on abutment

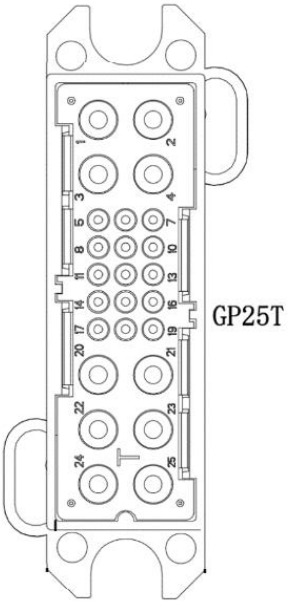


Fig. 3.7.4.2 Top ports of abutment

4 Storage and inspection of inverter

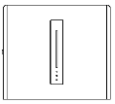
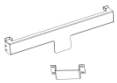
Warning
If the inverter is not put into use immediately, store the inverter according to the following requirements: 1. Ensure that the outer packing box is not removed. 2. Ensure that the storage environment is clean and non-condensing, and has appropriate temperature (-25℃ to +60℃). 3. Ensure that the inverters are stored according to the stacking height and direction specified in the label on the packing box. 4. Ensure that there is no toppling or falling risk after the inverters are stacked. 5. If the inverter is stored for a long period, the inverter should be checked by the professional personnel before use.

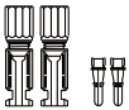
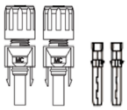
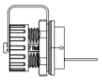
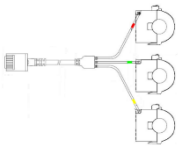
4.1 Inspection before acceptance

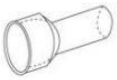
Before acceptance, check the inverter as described below:

1. Check the outer package for damage, such as distortion, holes, cracks or other signs that may cause damage to the inverter. If the outer package is damaged, do not open the package and contact the distributor.
2. Check whether the inverter model is correct, if not, do not open the package and contact the distributor.
3. Check the inverter for correct type and quantity and appearance damage. In case of damage, contact the distributor.

4.2 Packing list of inverter

No.	Name	Specification	Quantity	Picture
1	Household supply power	Inverter	1	
2	Wall fastener and hanging board assembly	Hanging board: 510*125*63mm (W*H*D) Wall fastener: 144*60*30mm (W*H*D)	1	
3	Angle iron	L98*75*35mm	1	
4	COM connector	16-pin connector plug,5A MAX,300VDC,1500VAC	1	

5	LOAD connector	Connector with 5-pin RBH100-32-5P-W-M-26-BK male plug on cable end, 32A	1	
6	GEN connector	Connector RBH100-32-5P-W-M-26-BK female plug on cable end, 32A	1	
7	PV connector (male)	PV connector with CT75A-1T-07 male plug on cable end and metal terminals	3	
8	PV connector (female)	PV connector with CT75A-1T-07 female plug on cable end and metal terminals	3	
9	GRID connector	Connector with 5-pin 5PCM male plug on cable end	1	
10	Removing tool	Removing tool, RBH100-32-5P-W-TL connector removing tool	1	
11	RJ45	Connector, waterproof RJ45 connector plug,YGC583-RJ45PA	3	
12	Wi-Fi stick	Communication equipment, WiFi data acquisition stick, IP66-12V	1	
13	User manual	User manual for EAHI10~20KTH-S	1	
14	CT	CT: Yada CTF16LA-4k-100	1	
15	Kilowatt-hour meter (Optional)	Kilowatt-hour meter: Yada DTSD3366M-4-W1-A	1	

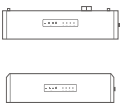
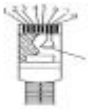
16	* M6 20 cross outer hexagon double cushioned screws	Cross outer hexagon double cushioned screws, M6× 20,	4	
17	* M4 10 cross outer hexagon double cushioned screws	Cross outer hexagon double cushioned screws, M4× 10	4	
18	* M6 12 cross outer hexagon double cushioned screws	Cross outer hexagon double cushioned screws, M6* 12	1	
19	M6*70 expansion screw	Expansion screw, M6*70 x 5 per set, 304 stainless steel, natural color	4	
20	RNB5.5-6 end soldering terminal	End soldering terminal, RNB5.5-6, 48A, Φ =6.5Mm, 5.6×23mm	1	
21	Kilowatt-hour meter guide rail (Optional)	Fixed energy meter (energy meter accessories)	1	
22	Key	Key of side wiring door	3	
23	Tube type pre-insulated end	Preinsulated tube end, E6012(10 AWg-6 mm^2), red	15	

4.3 Packing list of EHBS-P5-TH household energy storage battery

No.	Name	Specification	Quantity	Picture
1	Battery	EHBS-P5-TH energy storage battery	1	
2	Angle iron fixing screw	Cross outer hexagon double cushioned screws, M4*10mm	4	

4.4 Packing list of PDU-GU-Y /PDU-GU-F

No.	Name	Specification	Quantity	Picture
1	Base	650*270*50mm	1	

2	Integrated distribution box (PDU-GU-Y) Split distribution box (PDU-GU-F)	PDU-GU-Y (integrated) distribution box: 650*150*270mm PDU-GU- F (split) distribution box: 650*150*270mm	1	
3	Earthing angle iron	97*70*30mm	2	
4	Case connecting part	60*25*2mm	8	
5	Wall angle iron	65*60*30mm	2	
6	Adjustable foot support	M12*82mm	4	
7	Cross outer hexagon	Cross outer hexagon double cushioned screws, M4*10mm	4	
8	Flange nut	M6, material SUS304	4	
9	Expansion bolt	M6*70, material SUS304	4	
10	Matched resistance	RJ45 short circuit registered jack, 8P8C+ iron housing 5C-120 Ohm resistance -8C black PVC	2	
11	Parallel power line DC+	CT75-07A-1T, orange color,2.5m	1	
12	Parallel power line DC-	CT75A-1T-06, orange color,2.5m	1	
13	Parallel communication line	2.5m	1	

5 Installation

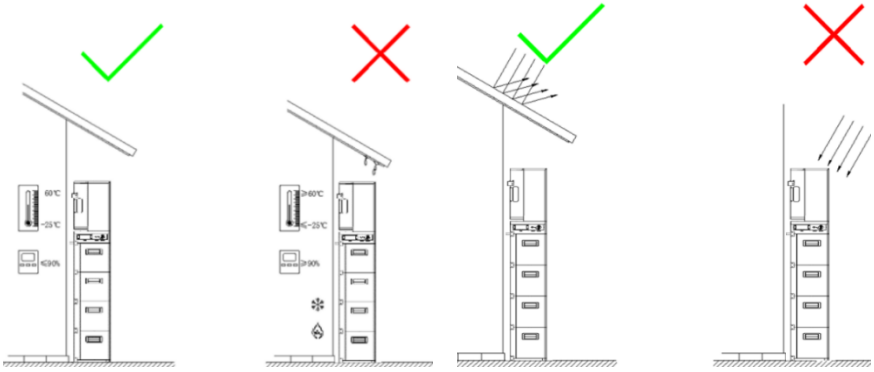
5.1 Installation preparation

5.1.1 Installation environment requirements

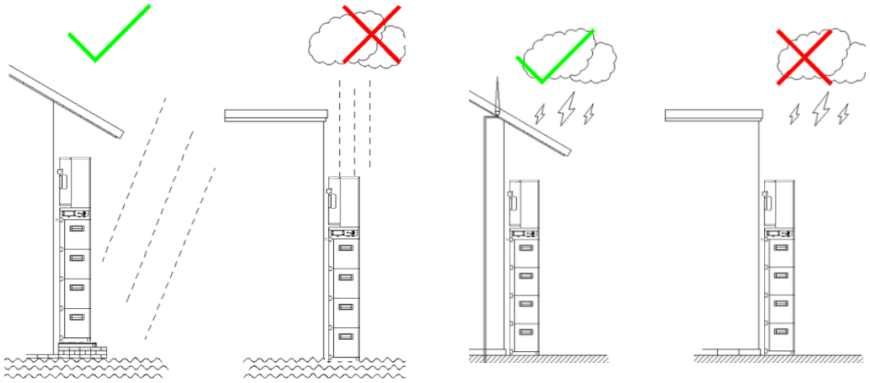
- The ambient temperature should be between -25℃ and +60℃, and the relative humidity should be between 0% and 90% (no condensation).
- The inverter may be installed indoor or outdoor, provided that the installation location is dry, dustless, well-ventilated, and kept away from direct sunlight or heating equipment.
- As the inverter will produce noise, install the inverter away from the rest area.
- Install the inverter on a firm surface and ensure that installation location and method support the weight and dimension of the inverter and the battery.
- The installation altitude of the inverter is lower than the maximum working altitude 3000m.
- Keep away from strong magnetic fields to avoid electromagnetic interference.

If a radio station or a wireless communication device below 30MHz is located near the installation location, install the device according to the following requirements:

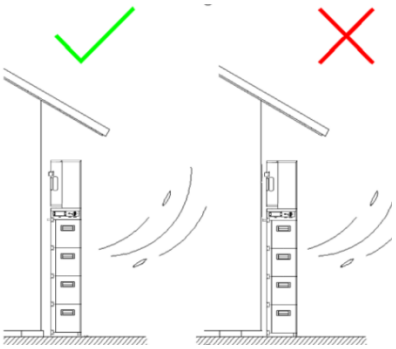
1. Install a ferrite core with multi-turn winding, or a low pass EMI filter for the DC input cable or AC output cable of the inverter;
2. Maritain more than 30m distance between the inverter and the wireless electromagnetic interference equipment.



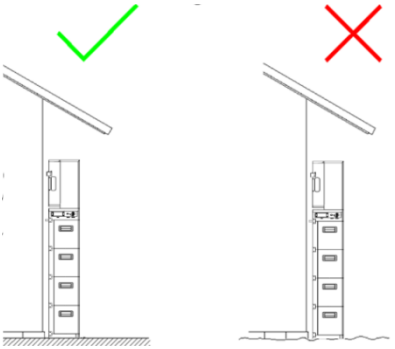
Install the inverter at -25 to +60℃ and 0%-90% relative humidity (no condensation). The inverter may be installed outside away from direct sunlight.



Do not install the inverter in a location which may be exposed to moisture, floor and lightning stroke.

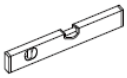
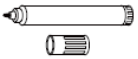
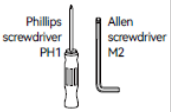
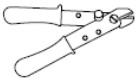
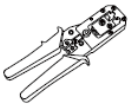


Self-cooling heat dissipation mode is used for the inverter. In order to ensure a good heat dissipation effect, install the inverter in well-ventilated environment.



Install the inverter on solid ground. The wall is vertical to the ground.

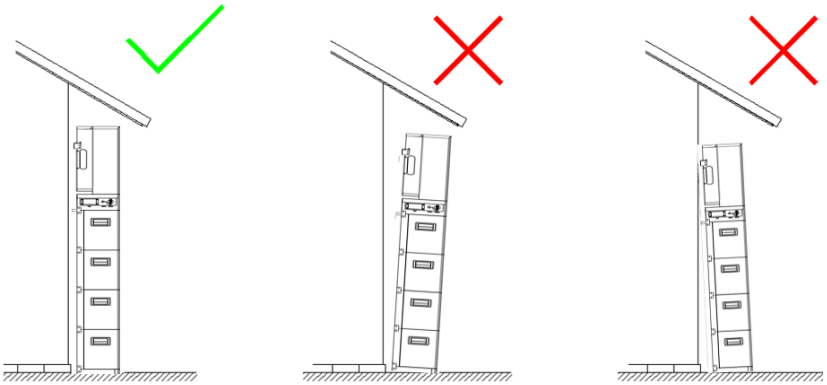
5.1.2 Requirements of installation tools

Type	Tools and description			
Installation	 Electric drill with M6 bit	 Spirit level	 Marker	 Ruler
	 Hammer	 Phillips screwdriver PH1 Allen screwdriver M2 Screwdriver	 Diagonal pliers	 Stripping pliers
	 Utility knife	 Crimping pliers	 Network cable crimping pliers	 Open-end wrench S=7mm
Safety protection tool	 Safety gloves	 Dust mask	 Goggles	

5.1.3 Selection of installation location

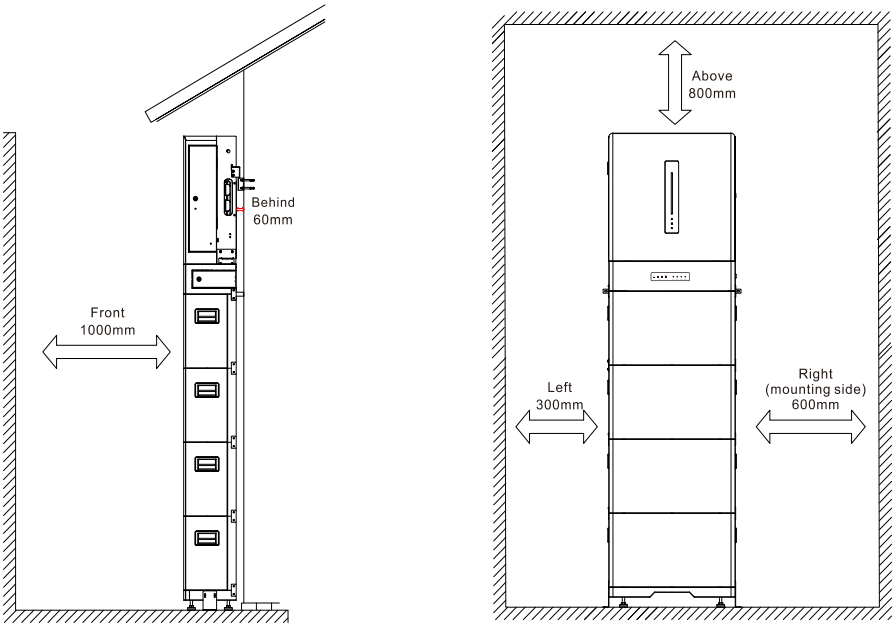
The installation location should be flat and solid and can support the weight of the whole system.

Vertically install and avoid tilting forward or backward:



The space around the power supply should meet the following requirement as a minimum:

Above	Front	Back	Left	Right (connection)
800mm	1000mm	60mm	300mm	600mm



5.2 System installation

5.2.1 Handling of inverter and battery

Caution
• During transport, handling, installation and other operations, it is necessary to comply with national and local laws and regulations and relevant standards of the installation site.
• Before installation, move the inverter to the installation location. During handling, pay attention to the following to avoid personal injury or equipment damage: 1. Please assign personnel based on the weight of the inverter to ensure it remains with in safe carrying limits, preventing any risk of injury. 2. Wear appropriate protective equipment to avoid the relevant injury. 3. Ensure that the inverter keeps balance to avoid falling during handling.

5.2.2 System installation

Attention
During installation, ensure that the installation of devices in the system does not affect the disconnection of the DC switch and the AC circuit breaker. • During drilling holes, ensure that the holes are drilled away from water pipes and cables in the wall, which can avoid dangers. • During drilling the holes, wear safety goggles and dust mask to protect respiratory tract or eyes against dust. • Ensure that the ground can support the weight of the system. • Ensure that the inverter and the battery are securely installed to avoid falling during handling.

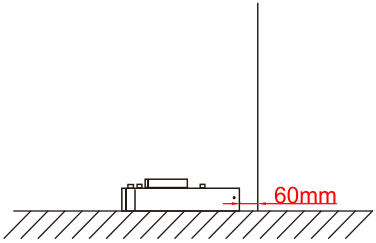
Installation procedure:

5.2.2.1 Base support installation

Tools: Ruler

Select a clean and stable wall to install the the abutment

Before installation, please use the ruler to measure the distance between the wall to the abutment, which should be 60mm. After determining the position, put the abutment down steadily.



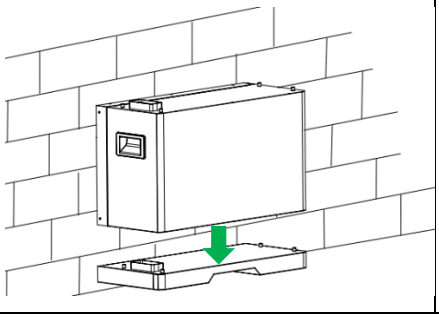
5.2.2.2 Battery installation

Tools: Ruler, screwdriver, screws (M4* 10mm) and case connector

1. Cell installation

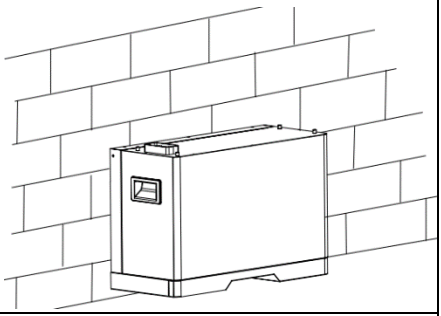
Step 1:

Align and gently pull the cell with and into the slot on the abutment.



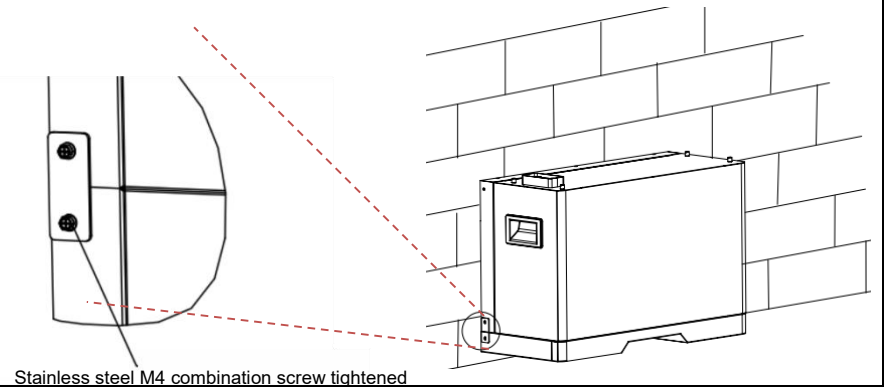
Step 2:

Check whether the battery fits closely with the abutment.



Step 3:

Install the case connector, adjust the location of the case connector between the battery and the case connector, and fix the case connector by the screws.

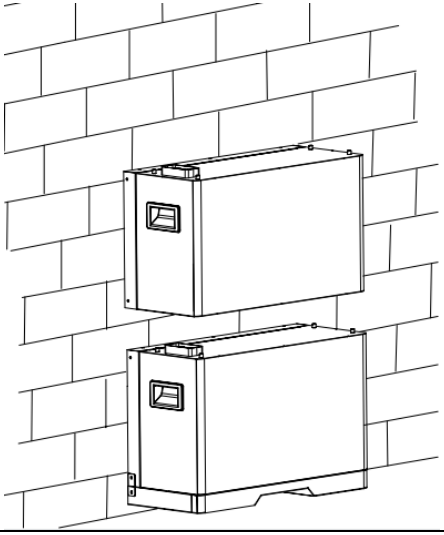


2. Installation of battery pack

Generally, it is recommended that the battery pack is installed by stacking 3-4 cells. When the installation space permits, the battery pack can be installed by stacking 4 cells. When at most 4 cells are stacked, 4 cells can not be installed due to limited installation space or other reasons, install the battery pack in the cell stacking mode of 2+2 or 3+1 and connect the battery pack by a connecting cable. See 3.2 Recommended Configuration Scheme for details. The stacking method is hereinafter described by exampling installation of the battery pack by stacking 4 cells.

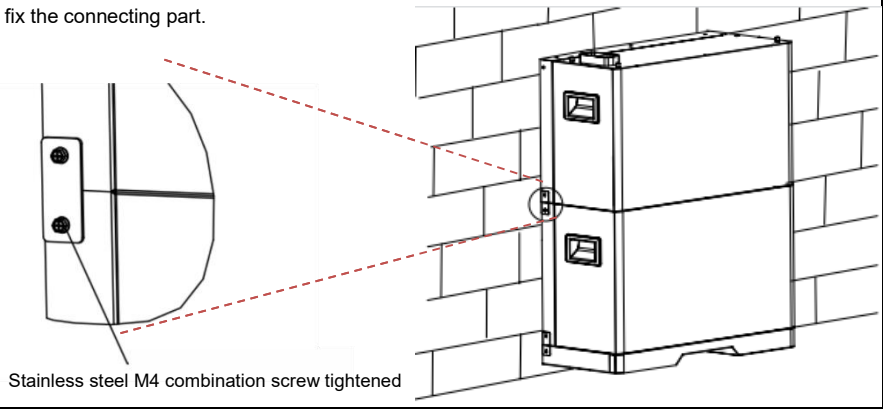
Step 1: stack the cells

Align and gently place the second cell with and onto the slot of the first cell and check that two cells fit closely.



Step 2: install case connecting part

Adjust the position of the connecting part between the cells, and tighten the screws separately to fix the connecting part.

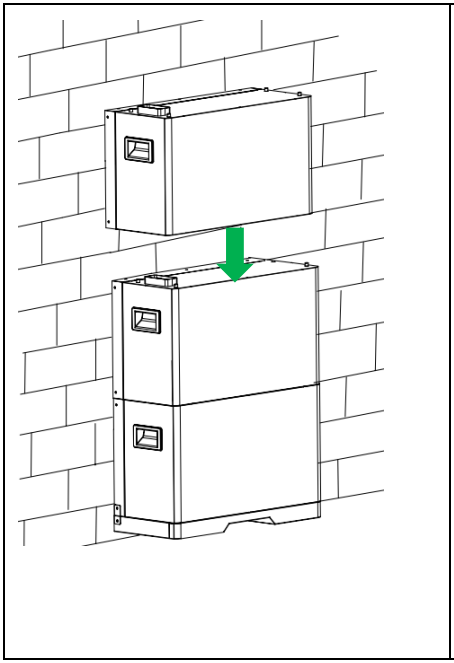


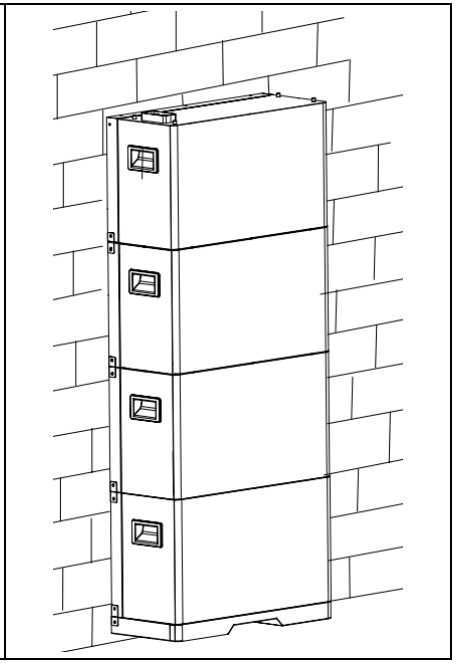
Step 3: stack the cell and install case connecting part

Stack and install the third cell according to Step 1 and Step 2.

Step4: stack the cell and install case connecting part

Stack and install the fourth cell according to Step 1 and Step 2. The effect picture of final installation is given below:

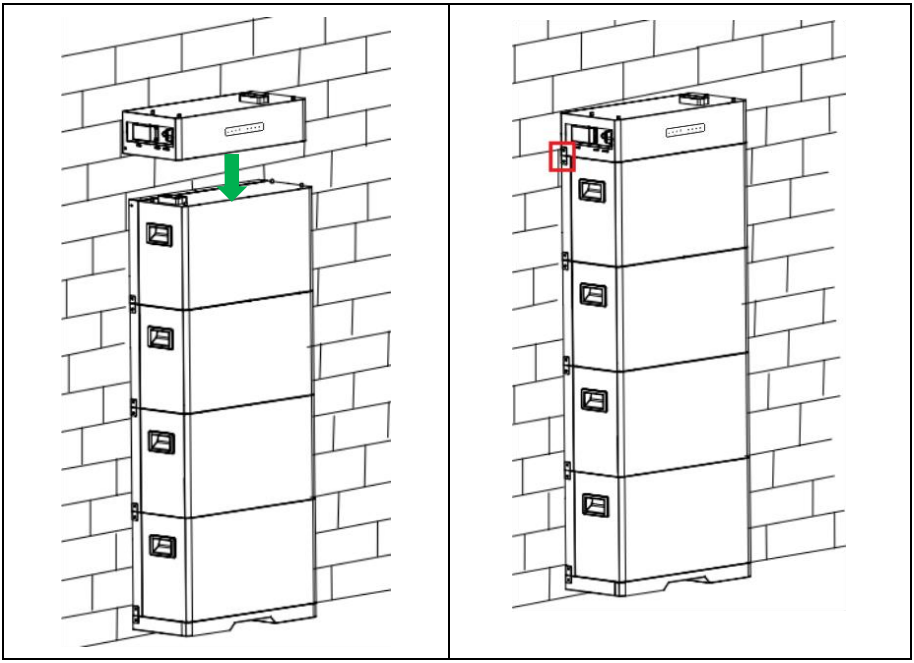




5.2.2.3 Installation of distribution box

1. Installation of single distribution box

Step 1: stack the distribution box Align and gently place the distribution box with and onto the slot and check that they fit closely.	Step 2: install case connecting part Fix the cell with the distribution box connecting part according to the step of installing the case connecting part provided in Section 5.2.2.2



Note: the same method is used to install the integrated and split distribution boxes

2. Connect the distribution box for the battery packs.

To connect more than 2 battery packs, connect the distribution boxes according to the following method:

Tools: Screwdriver and screws (M4* 10mm)

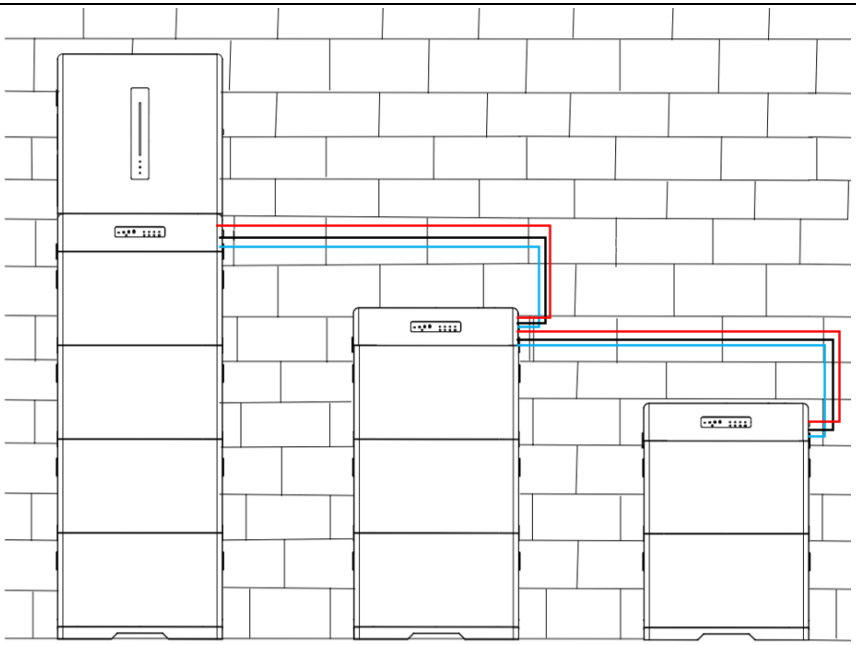
If required, connect more than 2 distribution boxes by the following steps:

(1) Connect two power cables of the ports BAT+ and BAT- of the main distribution box with two two corresponding power cables of the ports BAT+ and BAT- of the secondary distribution box 1;

(2) Connect the port PARALLEL OUT the main distribution box port with the port PARALLEL IN of the secondary distribution box 1;

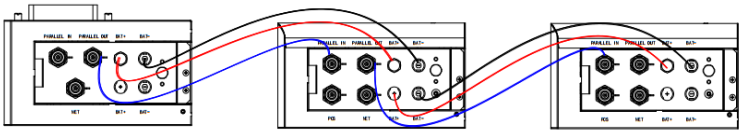
(3) If three distribution boxes are required, connect the distribution box 1with the ports BAT+ and BAT- of the distribution box 2 according to Step (1), connect the port PARALLEL OUT of distribution box 1 with the port PARALLEL IN of the distribution box 2. Connect more distribution boxes in the same method.

System connection diagram:



Note: Red represents BAT+, black represents BAT-, and blue represents parallel communication cable in the diagram.

Port connection diagram of distribution boxes:



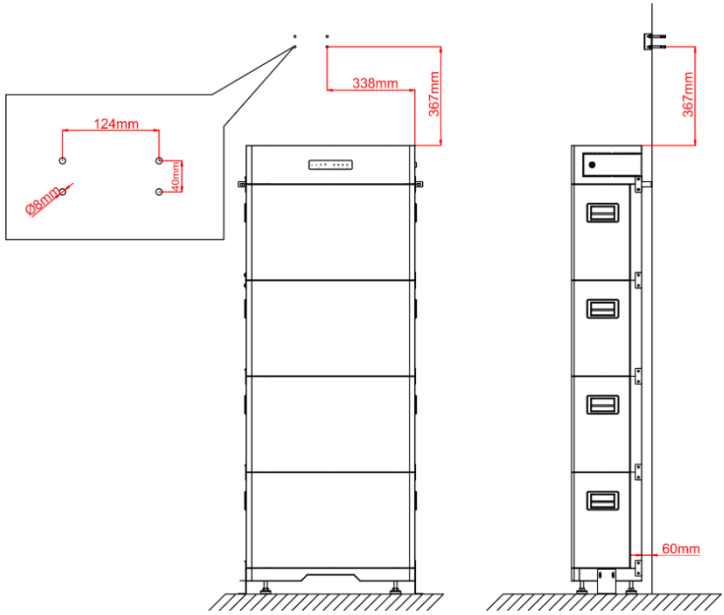
Note: When multiple battery packs are stacked, respectively connect 120Ω terminal resistance with the port PARALLEL IN of the first distribution box and the port PARALLEL OUT of the latest distribution box.

5.2.2.4 Installation of power supply

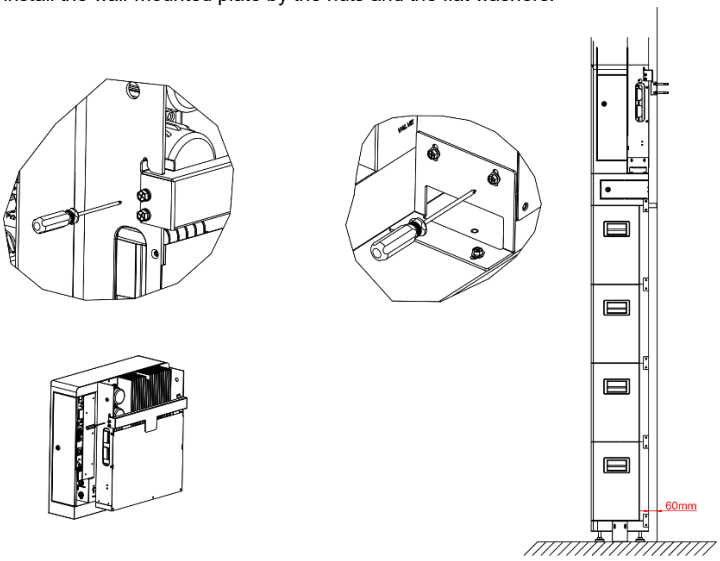
Tools: ruler, cross screwdriver, impact drill (8mm bit), open-end wrench (10mm)

Accessories: hanging plate, wall-mounted plate, fixing Angle iron, M6X20 combination screw (stainless steel), M4X10 combination screw (stainless steel)

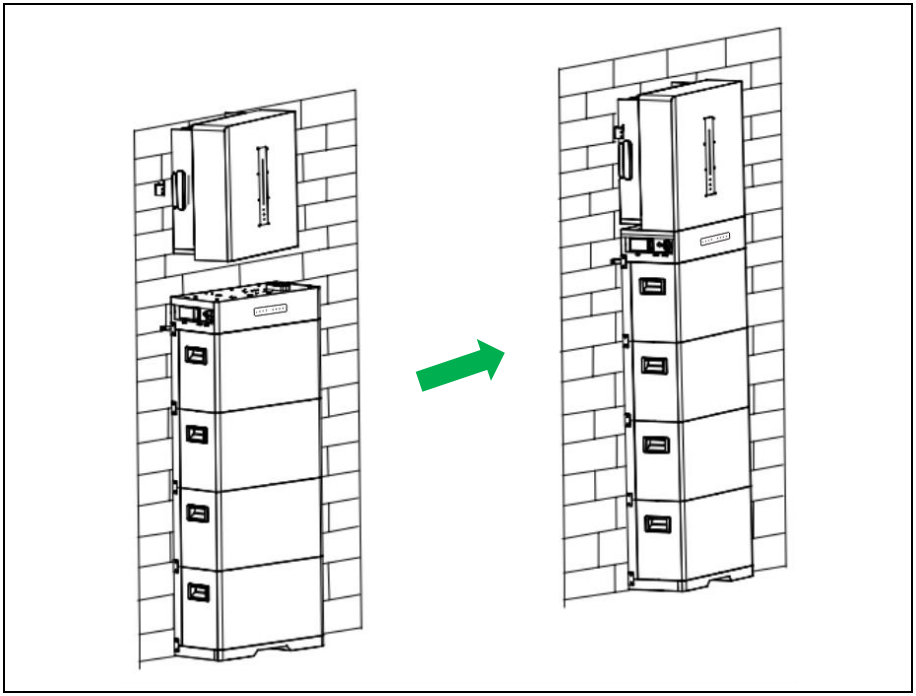
1. Installation of single power supply



Drill the holes (about 50mm deep) on the wall with the impact drill according to the location dimensions shown in the drawing. Hammer the expansion bolt and the bushing into the bottom hole and install the wall-mounted plate by the nuts and the flat washers.



Install the hanging plate onto the power supply by M6X20 screws, stack the power supply on the distribution box by aligning with the hanging plate, connect the power supply with the distribution box by the angle iron, and fix the angle iron by M4X10 screws to complete the stacking of the battery.



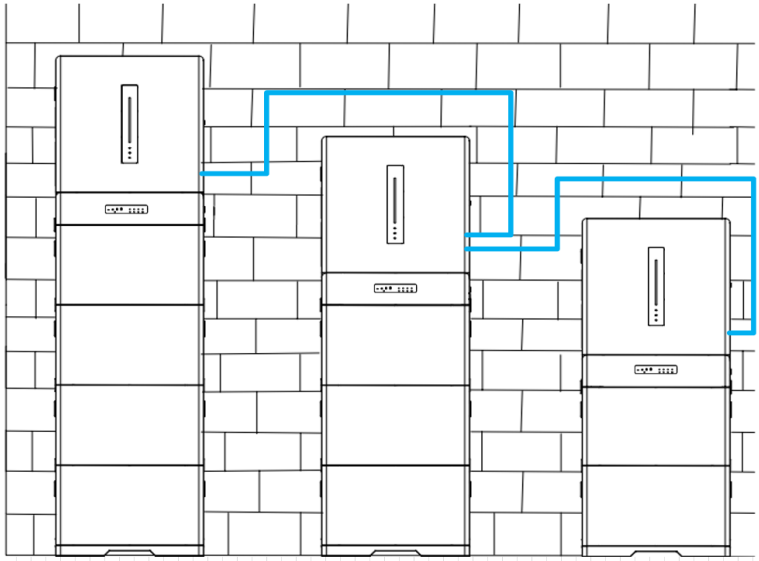
2. Installation of multiple power supplies

EAHI10 - 20KTH-S series inverters have parallel connection function, and a system can connect up to 6 inverters. In the system, set one inverter as a “main inverter”for the energy management and scheduling control of other inverters. Connect all secondary inverters in parallel, and connect them with the “main inverter” by the network cable for communication with the main inverter”. Connect the main inverter with the secondary inverters by the ports PARALLEL IN and PARALLEL OUT of the inverters. Requirements of parallel connection:

- The version of all inverters is same.
- The power range of all inverters is same.
- The port PARALLEL OUT of the main inverter is connected with the port PARALLEL IN of the secondary inverter 1;

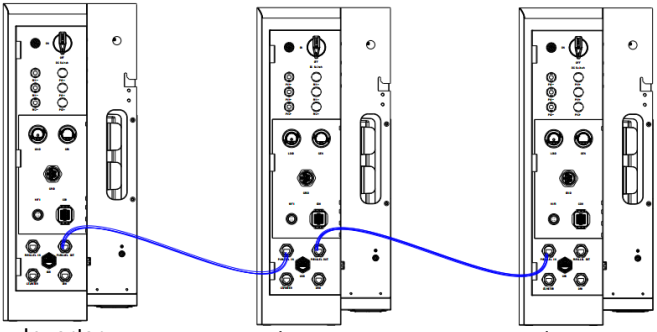
  The port PARALLEL OUT of the secondary inverter 1 is connected to the port PARALLEL IN of the secondary inverter 2, and so on. Up to 6 inverters are connected in parallel.

System connection diagram:



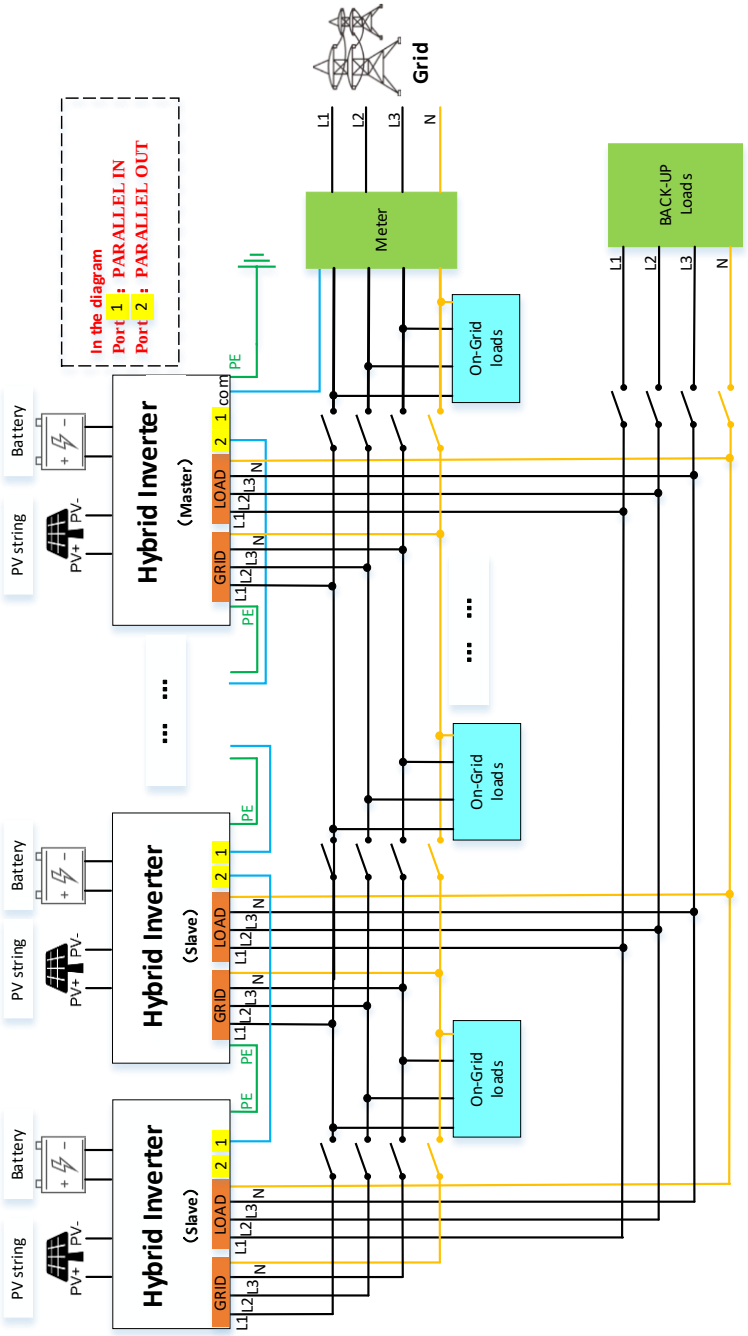
Inverter (master) | Inverter (slave 1) | Inverter (slave 2)

Port connection diagram:



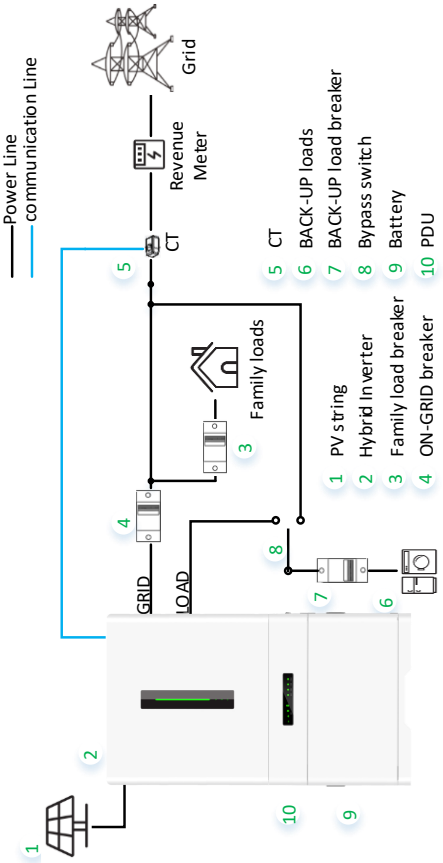
Inverter (master) | Inverter (slave 1) | Inverter (slave 2)

Net structure:



6 Electrical connection

Attention
1. Before the installation and use of the inverter, a cable (4 ~ 6 mm^2) with wire lugs must be used for special protective earthing. 2. The BACK- UP output end of the inverter has the following carrying capability: ① Inductive load (such as air conditioners, washing machines and motors), with the maximum power 20KVA for the total inductive load. ② Capacitive load (such as computers, switching power supplies, etc.), with the maximum power 20KVA for the total capacitive load . 2. For the above carrying capacity, it is required to connect the system with the grid or provide the batteries with sufficient capacity. If the energy is provided by only the PV, the maximum single off-grid load should be generally less than 2KW.



No.	Component	Note
1	PV string	The PV string is made by connecting multiple PV modules in series
2	Inverter	Support EAHI10KTH- S, EAHI15KTH- S and EAHI20KTH- S inverters
3	ON-GRID Load circuit breaker	The specifications should be determined according to the actual load. You are recommended to prepare the AC switches by yourselves.
4	ON- GRID circuit breaker	You are recommended to prepare the AC circuit breaker. Recommended specifications: • EAHI10KTH-S: rated voltage ≥400V, rated current ≥20A • EAHI15KTH-S: rated voltage ≥400V, rated current ≥30A • EAHI20KTH-S: rated voltage ≥400V, rated current ≥40A
5	Kilowatt-hour meter/ CT (optional)	Delivered together with the inverter, or purchased from the inverter manufacturer, recommended model: Kilowatt-hour meter: Yada DTSD3366M-4-W1-A; CT: Yada CTF16LA-4k-100.
6	BACK-UP Load	• Support connection with the backup loads, such as loads requiring 24-hour power supply or other critical loads; • Support unbalanced loads, such as: L1, L2, L3 respectively connected to the loads with different powers; • The BACK-UP port does not support connection with auto-transformers or isolation transformers.
7	BACK- UP load circuit breaker	You are recommended to respectively buy the AC circuit breaker. Recommended specifications: • EAHI10KTH-S: rated voltage ≥400V, rated current ≥20A • EAHI15KTH-S: rated voltage ≥400V, rated current ≥30A • EAHI20KTH-S: rated voltage ≥400V, rated current ≥40A
8	Single-pole double-throw switch	To ensure that the BACK- UP port can continue to work when the inverter is powered off for maintenance, it is advised to install a single-pole double-throw switch. Specification of single-pole double-throw switch • EAHI10KTH-S: rated voltage ≥400V, rated current ≥20A • EAHI15KTH-S: rated voltage ≥400V, rated current ≥30A • EAHI20KTH-S: rated voltage ≥400V, rated current ≥40A
9	Battery	Battery used with inverter (up to 4 cells) • EHBS-P5-TH: 5kWh, rated voltage 750V
10	Integrated Distribution Box	PDU-GU-Y

Recommended cables:

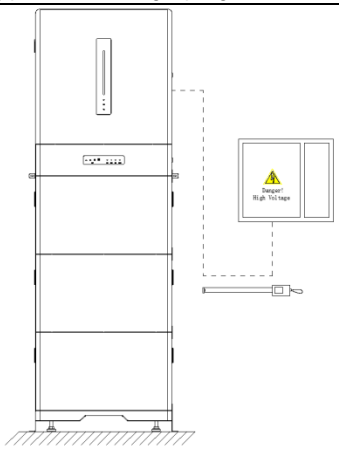
Attention
When external cables are selected, it is required to consider current size, system overload capacity, and ambient temperature. The following table provides the recommendation to select the cables. Engineers should select the cables according to the local standards and the following table. The cable length is generally 2-10m, and if the cable is too long, it is possible to cause the deviation of the voltage from the rated value, in this case, the cable section size should be increased correspondingly.

No.	Name	Type	Cross-sectional area of conductor
1	AC output cable	Outdoor copper-core cable	6mm²
2	PV DC input cable	Industrial general outdoor PV cable	4-6mm²
3	Battery cable	/	Stacked installation, and no additional cable required

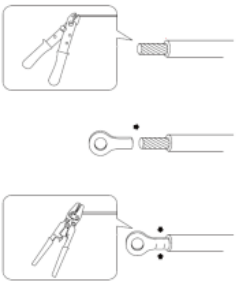
1. An insulation terminal (provided with the accessories) should be installed for grid input, AC load output, PV input and battery input cables and the power supply.
2. The terminals are securely fixed by pincers and other tools to ensure more secure and more stable wiring of the system.
3. All cables are routed through the back of the door to avoid security risks.

6.1 Connection of ground wire

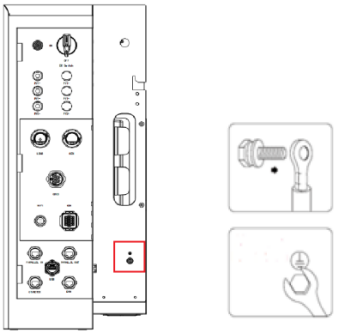
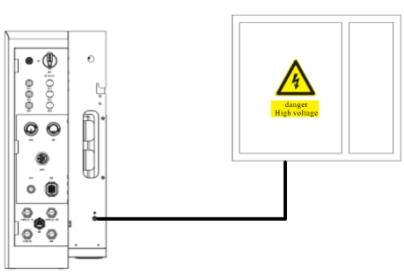
Tools: Screwdriver, ground wire screw (φ6mm), wire stripper, ground wire end soldering terminal, crimping pliers, measuring tape, ground wire.



Measure the distance between the equipment and the distribution box by the measuring tape and select the ground cable with appropriate length.



Strip 4mm insulation layer of the ground cable by the wire stripper, install the ground cable terminal, and press the ground cable terminal with the crimping pliers.

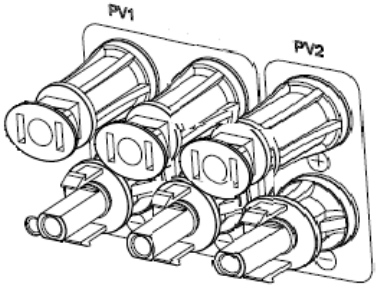
 Fix the ground cable terminal to the heat sink on the right side of the power supply by the ground cable screw (φ6mm). Properly ground other end of the ground cable with a ground impedance of no more than 0.1Ω.	 Check whether the ground cable is properly connected to ensure safe installation and use.

6.2 PV side connection

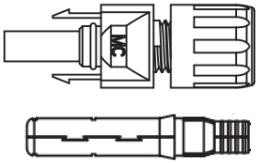
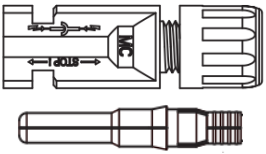
Danger
Make sure that: • Do not connect the PV string on same circuit to multiple inverters. Otherwise, the inverters may be damaged. • Before connecting the PV string to the inverter, confirm the following information. Otherwise, the inverter may be permanently damaged, or a fire may occur, causing personal injury and property losses. • Ensure that the maximum short-circuit current and maximum input voltage of each MPPT are within the allowable range of the inverter. • Ensure that the positive terminal of the PV string is connected to the PV+ of the inverter, and the negative terminal of the PV string is connected to the PV- of the inverter.

Procedure:

1. Disconnect all circuit breakers.
2. Check the positive and negative polarity of the PV array. Ensure that the maximum operating voltage of the EAH I 10-20KTH-S inverter does not exceed 1000V (according to the local minimum temperature, determine the number of components, and ensure that the maximum open circuit voltage of the components does not exceed 1000V maximum allowable operating voltage of the inverter).
3. Determine the polarity of the PV input side of the inverter.
   Polarity of the PV input side of the inverter:

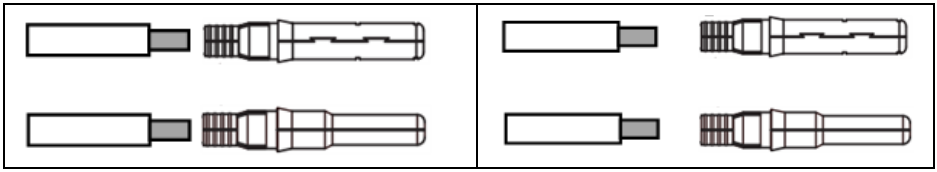


Polarity of input terminal of external input cable

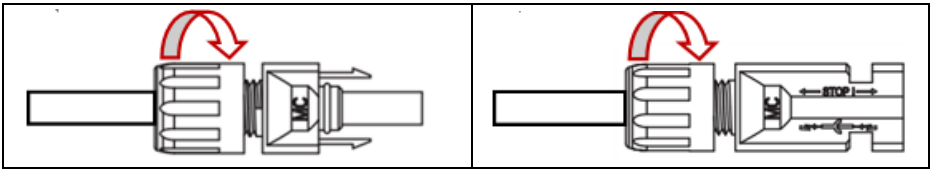
Positive (+) input terminal and terminal housing	Negative (-) input terminal and terminal housing
	

Wiring of DC side

1. Strip the about 8mm cable sheath of the DC cable to expose the copper conductor. Insert the copper conductor into the metal core of the connector and tighten it with the crimping pliers (as shown in the following figure)



2. Loosen the terminal cover and pass the cable through the terminal cover. Insert the mold into the wiring slot until sound is given to indicate the connection in place. Tighten the terminal cover (as shown in the following figure).



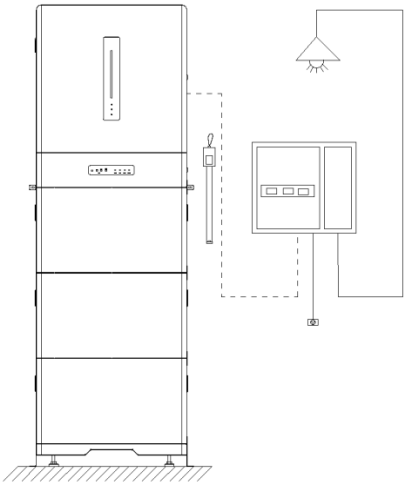
3. Use a voltmeter with measuring range of greater than 1000V DC voltage to check whether the connection polarity of the PV array cable is correct, and confirm that the operating voltage is within the specification scope.
4. Disconnect the circuit breaker on the DC side, and connect the PV input cable to the inverter separately.

6.3 AC side connection

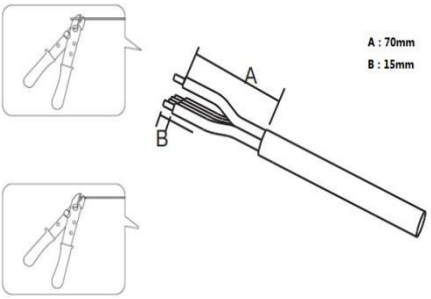
Warning
➢ Before connecting to the grid, install an AC circuit breaker between the inverter and the grid as well as the BACK- UP. ➢ During wiring, the AC cable fully matches with the ports “L1”, “L2”, “L3”, “N” and “PE”of the AC terminal. If the cable is incorrectly connected, the inverter may be damaged. ➢ Ensure that the cable core is fully connected to the wiring terminal hole and is not exposed. ➢ Ensure that the cables are securely connected; otherwise, it is possible to damage the inverter due terminal overheating during operation. ➢ According to the regulatory requirement of different regions, the N and PE cables of the ON-GRID and BACK-UP ports of the inverters are connected in different methods, and the specific connection method is determined according to the local regulations. ➢ The ON- GRID and BACK-UP AC ports of the inverter have built-in relays. When the inverter is in the off-grid mode, the built-in ON - GRID relay is in the opened status. When the inverter is in the grid-tied mode, the built-in ON - GRID relay is in the closed state. ➢ After the inverter is powered on, the BACK-UP AC port carries current. If the BACK-UP load is maintained, power off the inverter, otherwise, it is possible to cause electric shock. ➢ Do not connect any load between the inverter and the AC circuit breaker. ➢ The grid voltage must be within the allowable range, the inverter provides rated voltage 380Vac/400Vac and frequency 50/60Hz, and other technical requirements must meet the local grid safety requirement.
Attention
During wiring, a continuity test should be performed to ensure that the terminals are properly connected with the cables.

6.3.1 LOAD side connection

Tools: Hexagonal screwdriver (φ2mm), Tube type pre-insulated ends (5 PCS), wire stripper, measuring tape, cables L1 (red), L2 (red), L3 (red), N (black) and PE (yellow-green), M2.5 cross wrench.



Measure the distance between the distribution box or load and the inverter by the measuring tape and select the ground cable with appropriate length.



Strip 70mm cable sheath and 15mm insulation layer of the cable by the wire stripper.

Use the terminal crimping pliers to press the pre-insulated end of the tube to the cable.

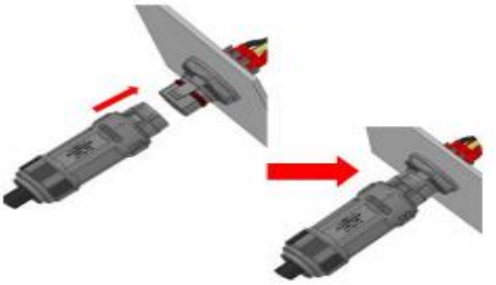
Terminal installation procedure

Install the cables to connectors (confirm the cable sequence)

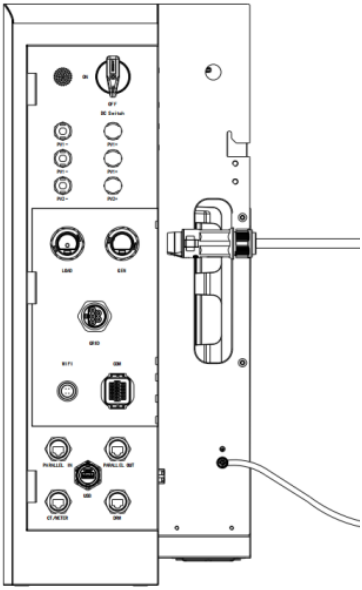
Crimp the cables, and tighten the screws at torque 0.8+/-0.1N·m

Place the cable ends in the housing.

Push the clamping claw into the securing ring and screw the cable fixing nut into the housing through the torque of 4.0+/-0.5N·m.



Connect the equipment with the cable while you can hear the ticking.

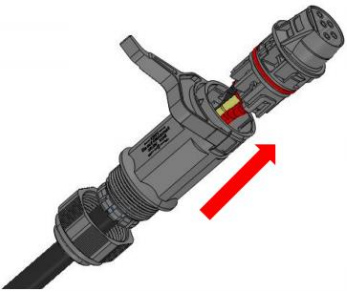


Insert the terminal into the load interface, rotate the terminal head to securely connect with the equipment, and check the connection.

Removal procedure:

Remove the cable end from the equipment.

Turn the nut in reverse.



Press the unlocking position with a removal tool, pull the cable and in the arrow direction to complete the removal.

6.3.2 GEN side connection

For details about how to install and remove GEN connectors, see 6.3.1 Installing and Removing Procedure for LOAD Connectors.

Note: The difference between GEN connector and LOAD connector is shown below:

LOAD connector with female plug

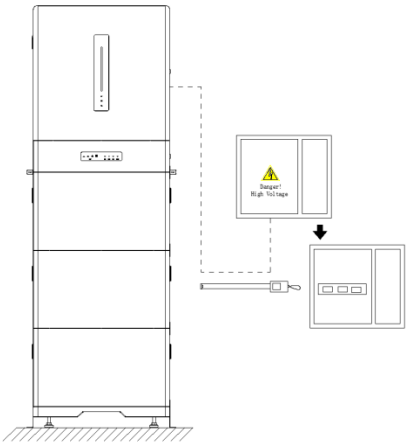
LOAD connector

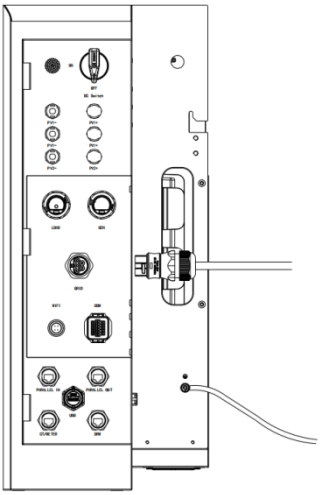
GEN connector with male plug

GEN connector

6.3.3 Grid side connection

Tools: Hexagonal screwdriver (φ2mm), Tube type pre-insulated ends (5 PCS), wire stripper, tape and cables (L1, L2, L3, N and PE)

<table>
<tr>
<td> 

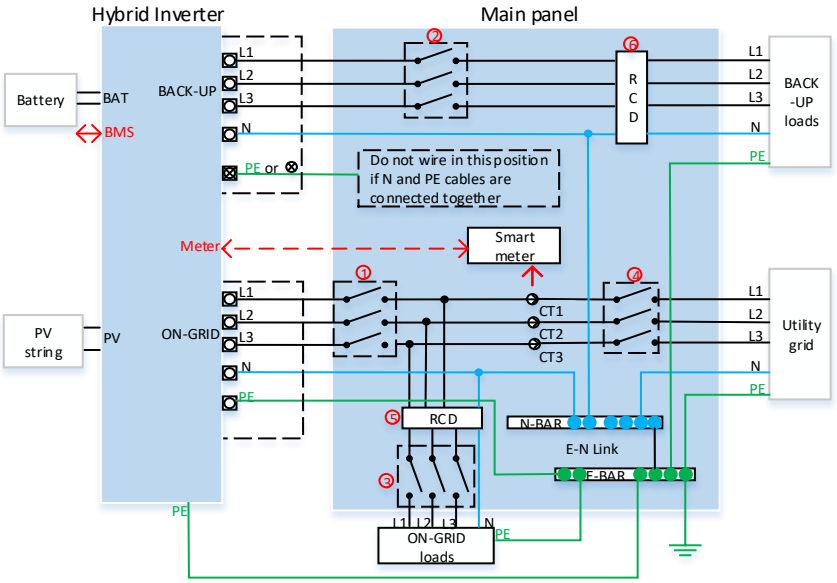
Make sure to turn off the grid circuit breaker, measure the distance between the grid and the distribution box by the measuring tape and select the ground cable with appropriate length. Install the terminals according to the load connection procedure of Section 6.3.1.</td>
<td> 
Insert the terminal into the Grid interface, rotate the terminal head to securely connect with the equipment, and check the connection.</td>
</tr>
</table>

6.3.4 Connecting N and PE cables in distribution box

1. Connecting N and PE cables together in distribution box

According to the safety regulation of Australia, the neutral cables on the ON-GRID side and the BACK- UP side must be connected together. Otherwise, the BACK- UP may not work properly. See the following future for an example application of connecting the N and PE cables together in the distribution box.

• During use in Australia, New Zealand and South Africa, please follow local wiring regulations.



No.	Note
①	50A/380V/400V AC circuit breaker
②	50A/380V/400V AC circuit breaker
③	Depend on the load
④	Depend on the household load and the inverter capacity
⑤	30mA RCD (subject to local regulations)
⑥	30mA RCD (subject to local regulations)

Note 1: If the battery is internally integrated with a DC circuit breaker that is easily accessible, no additional DC circuit breaker is required.

Note 2: The values recommended in the table are for reference only. The actual value should be subject to the local standards and actual conditions.

Note 3: it is recommended that the rated current of circuit breaker ① is lower than the rated current of circuit breaker ④.

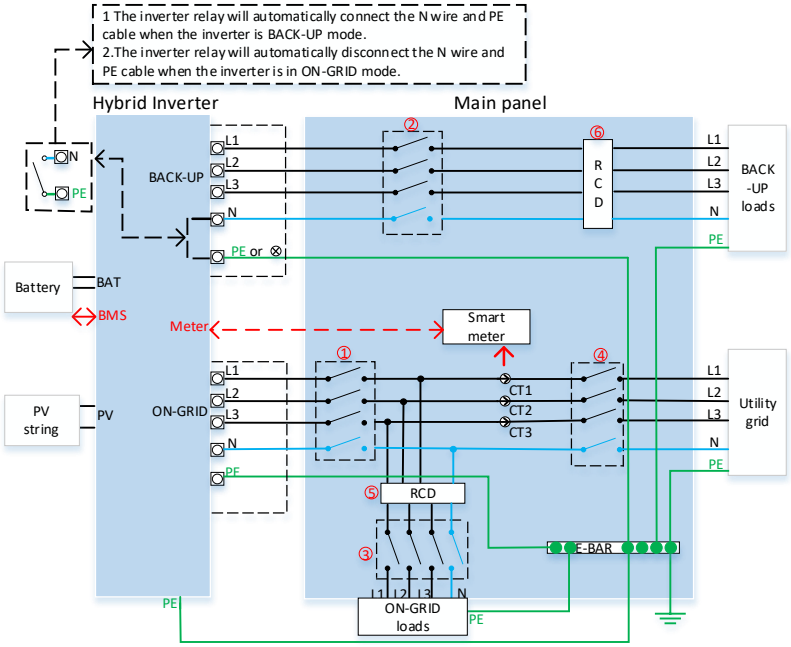
Note 4: When the rated current of the used cable is lower than the recommended current, priority is given to the circuit breaker with the specifications matching with the cables.

Note 5: The AC port obtains the power from the grid and is set according to the air switch of the grid.

2. Connecting N and PE cables respectively in distribution box

Ensure that the protective ground cable of BACK-UP is connected properly and securely. Otherwise, the BACK-UP function may be abnormal in case of a grid fault.

The following wiring method may be used in those other than Australia and New Zealand.



No.	Note
①	50A/380V/400V AC circuit breaker
②	50A/380V/400V AC circuit breaker
③	Depend on the load
④	Depend on the household load and the inverter capacity
⑤	300mA RCD (recommended)
⑥	30mA RCD (recommended)

Note 1: If the battery is internally integrated with a DC circuit breaker that is easily accessible, no additional DC circuit breaker is required.

Note 2: The values recommended in the table are for reference only. The actual value should be subject to the local standards and actual conditions.

Note 3: it is recommended that the rated current of circuit breaker is lower than the rated current of circuit breaker.

Note 4: When the rated current of the used cable is lower than the recommended current, priority is given to the circuit breaker with the specifications matching with the cables.

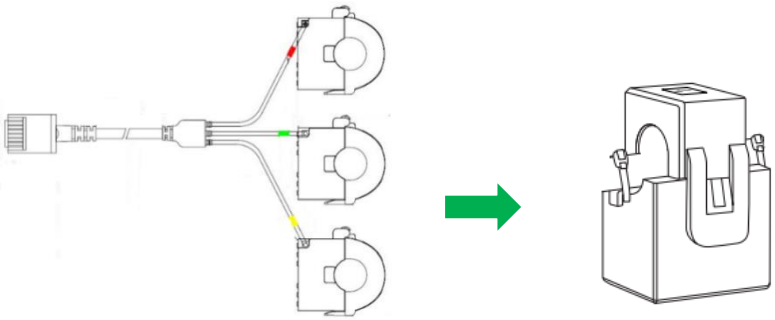
Note 5: The AC port obtains the power from the grid and is set according to the air switch of the grid.

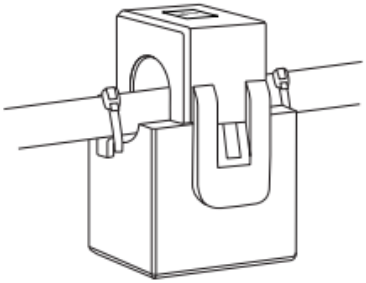
6.4 Connection of kilowatt-hour meter

Tools: Screwdriver (small cross), network cable, network cable pliers, wire strippers, tape measure, kilowatt-hour meter sliding rail, marker, hammer, electric drill and expansion screw.

Caution
Before connecting the smart kilowatt-hour meter to the CT, ensure that the AC cable is completely disconnected from the AC power supply.

6.4.1 CT connection mode (standard configuration)

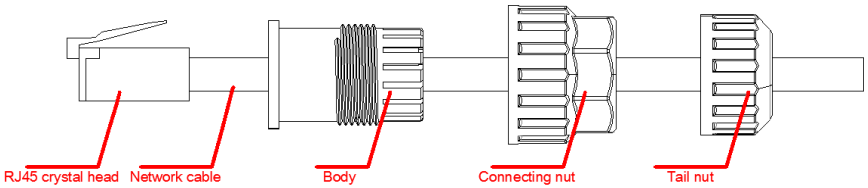




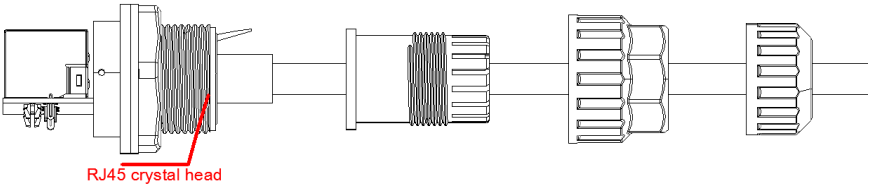
Pass the current wire through the current transformer and fix it with a cable tie.

Pay attention to the cable sequence: L1 is yellow, L2 is green and L3 is red.

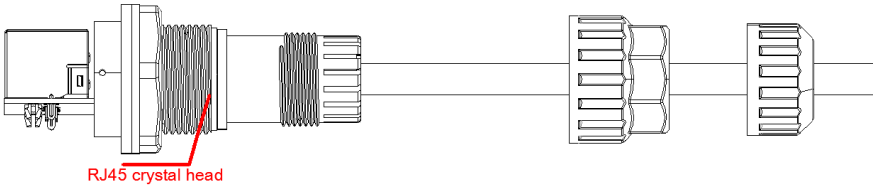
Wring procedure of RJ45 connector



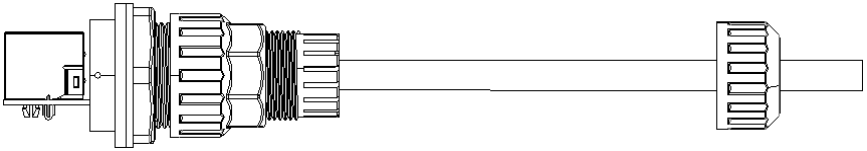
Insert the network cable into the connector components according to the figure;



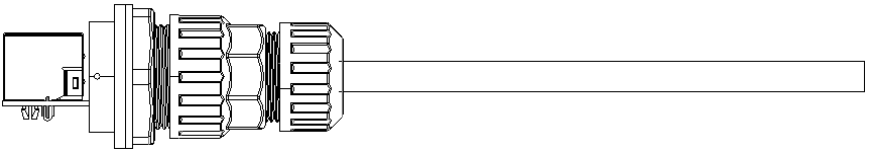
Insert the registered jack into the RJ45 connector until you hear a very clear " click";



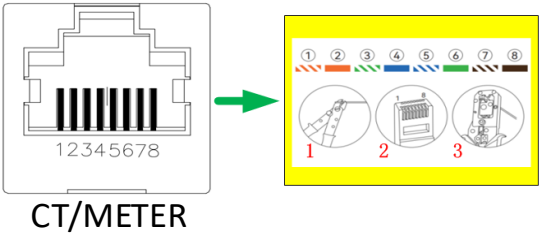
Press the fastener slightly to insert the registered jack into the RJ45 connector and contact the RJ45 connector.



Clockwise screw the the connecting nut onto the RJ45 connector with recommended torque 2N·m;



Clockwise screw the tail nut on the body with recommended torque 2N·m, and observe the wire inlet to check obvious dint on the seal ring .



CT/METER

Connect the registered jack in the CT to the CT/METER port on the side of the housing

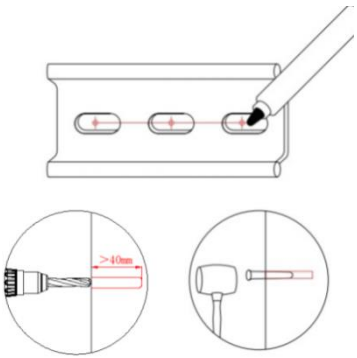
Description of CT/METER pins

Pin	1	2	3	4	5	6	7	8
Definition	EXT-CT1-AP	EXT-CT1-AN	EXT-CT1-BP	EXT-CT1-BN	EXT-CT1-CP	EXT-CT1-CN	RS485_METER_A	RS485_METER_B

Attention
Please note that the CT orientation must be correct, otherwise the system will not work properly.

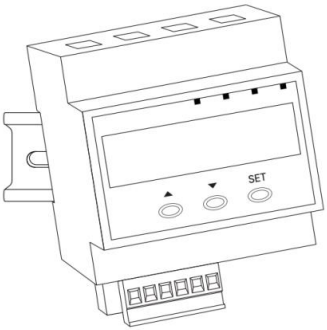
6.4.2 Connection mode of kilowatt-hour meter (optional)

1. Install the kilowatt-hour meter

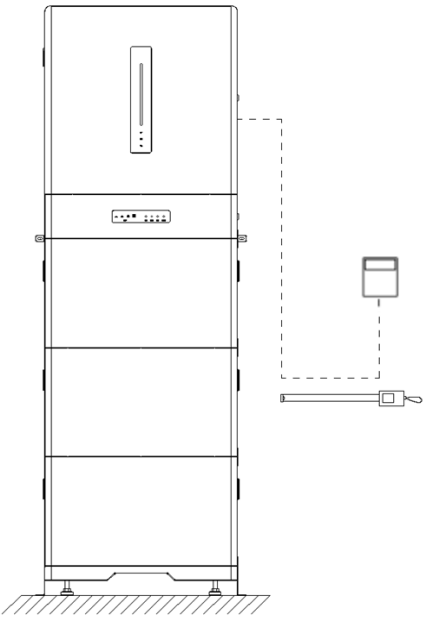


Select and mark an installation location for the kilowatt-hour meter according to the screw holes on the kilowatt-hour meter sliding rail.

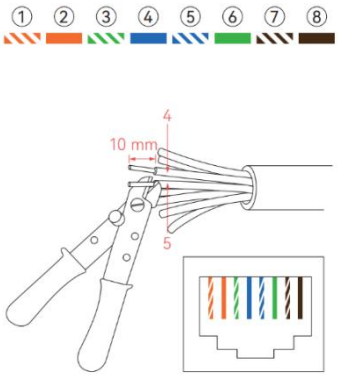
Drill the more than 40mm deep holes by the electric drill, and insert the expansion screws into the holes.



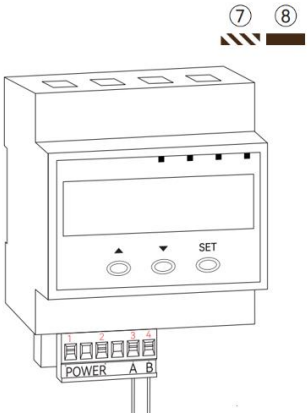
Install the kilowatt-hour meter on the guide rail.



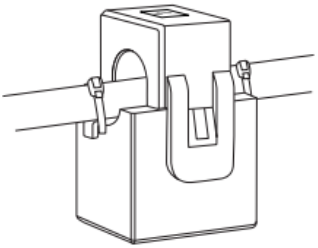
Measure the distance between the equipment and the kilowatt-hour meter by the measuring tape and select the network cable with appropriate length.



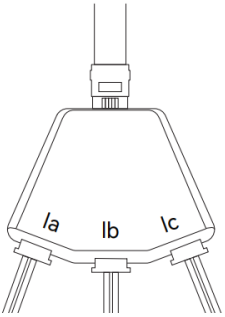
Strip 10mm insulation layer from one end of the network cables 7# (brown and white) and 8# (brown)



Insert the network cable 7# (brown and white)into the third port of the kilowatt-hour meter, and the network cable 8# (brown) into the fourth port of the kilowatt-hour meter, tighten the screws, and check whether the cables are connected securely .



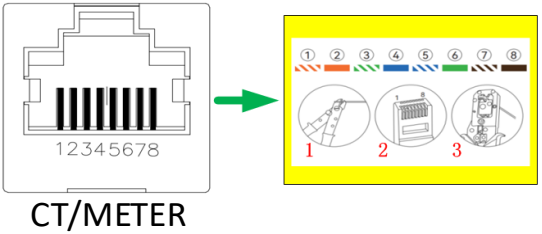
Pass the current wire through the current transformer and fix it with a cable tie.



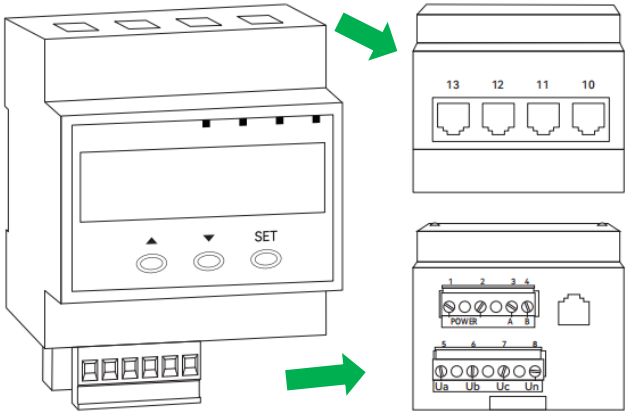
Insert the CT terminal into the adapter ports 1-3, the phase A CT plug into the 1a port, the phase B CT plug into the 1b port, and the phase C CT plug into the 1c port.

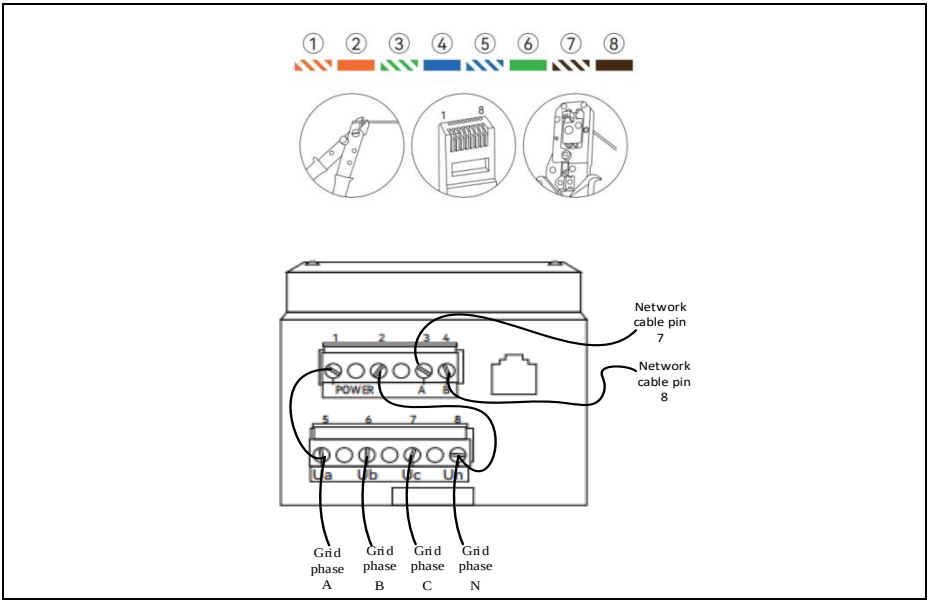
See 6.4.1 for the wring procedure of RJ45 connector

Plug the RJ45 into the corresponding port on the side of the corresponding machine.



CT/METER





As shown in the figure, strip the cable sheath of the network cable by the cable stripper, pass the network cable through the components in the sequence shown in the figure, and crimp the cable into the RJ45 registered jack according to the sequence 1-8 and the cable colors. Strip 10mm insulation layer from another end of the network cables 7# (brown and white) and 8# (brown). Connect the network cable 7# (brown and white) with the RS485A port of the kilowatt-hour meter, and the network cable 8# (brown) with the RS485B port of the kilowatt-hour meter.

Connect the cables L1/ L2/ L3 / N of the grid circuit breaker to Ua/ Ub/ Uc/Un of the INPUT of the DTSD33666-4-W1-A kilowatt-hour meter. (In this case, you can close the grid circuit breaker to power on and configure the the kilowatt-hour meter. For details, see the kilowatt-hour meter configuration. After the kilowatt-hour meter is configured, disconnect the grid circuit breaker and continue to operate.). Check whether the cables L 1/ 2/ 3/N are securely connected.

2. Kilowatt-hour meter configuration

DTSD3366M-4-W1-A
Press the “SET” button on the kilowatt-hour meter to access the setting interface; In the parameter interface, press the “▲” and “▼” buttons on the kilowatt-hour meter to adjust and change the parameter; press “SET” to confirm the adjustment and change; Change from the parameter interface to “ -rEtUrn- ”. Press SET to return to the home page.
Password interface: 3366
Press the “SET” button to access the password setting interface;

Press “▲” to adjust the number size, press “▼” to switch the digits, and set the PSD password to 3366;

Press the “SET” button to access the parameter setting interface.

Modbus address setting: 003

On the parameters interface, press “▲” and “▼” to switch to“ -ñRdSEt- ”;

Press“SET” to access Modbus address setting;

Press “▲” to adjust the number size, press “▼” to switch the digits, and set the communication address to “003”;

Press the “SET” button to return to the parameter setting interface.

Meter number/ equipment address: L 000003 / H 000000

On the parameters interface, press “▲” and “▼” to switch to“ -Rd SEt- ”;

Press“SET”button to access meter number / equipment address setting;

Press “▲” to adjust the number size, press “▼” to switch the digits, and set the communication address to “L 000003”;

Press the “SET” button to access the next setting“H 000000”;

Press the “SET” button to return to the parameter setting interface.

Communication baud rate and check bit setting: 4800 n

On the parameters interface, press “▲” and “▼” to switch to “ -bd SEt- ;

Press “SET”button to access the communication baud rate and check bit setting;

Press “▲, ▼” to switch the digits and set the baud rate and check bit to “4800 n”;

Press the “SET” button to return to the parameter setting interface.

Wiring mode -SYSt- : default value, no setting required	Current transformation ratio -Ct SEt- : default value, no setting required
Clock setting -rtCSEt- : default value, no setting required	Voltage transformation ratio -Pt SEt- : default value, no setting required

Attention

If the kilowatt-hour meter stops for more than 1 month after disconnection of the power supply, verify that the parameters of the kilowatt-hour meter are correct

During use, grid voltage, current frequency, and other grid information of the system may be viewed through the kilowatt-hour meter. During viewing, press the buttons “▲” and“▼” to switch the display interface of the kilowatt-hour meter. See the user manual of kilowatt-hour meter for the display interface details.

6.5 Communication side connection

The inverter is equipped with COM, USB, DRM, PARALLEL_IN and PARALLEL_OUT interfaces, as well as a WIFI/GPRS remote monitoring communication interface to upload the data to the cloud for data monitoring. The USB interface is used to upgrade software on a USB flash disk.

6.5.1 WIFI remote monitoring module

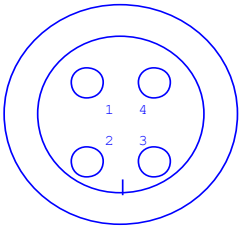


Fig. 6.5.1.1

Pin definition

Pin	Description	Network name	Type	Description
1	Power ground	GND_COM	GND	GND
2	Data communication	RS485_GPRS_A1	I/O	RS485_A cable
3	Data communication	RS485_GPRS_B1	I/O	RS485_B cable
4	Supply power	+12V_COM	POWER	External supply power

To use this port, simply insert the GPRS/ WIFI module (optional) into the guide slot along the connector and tighten the fastening cap counterclockwise.

Fig. 6.5.1.2

After the collector is installed, download the APP for registration and binding (see the WiFi manual for details).

6.5.2 DRM communication

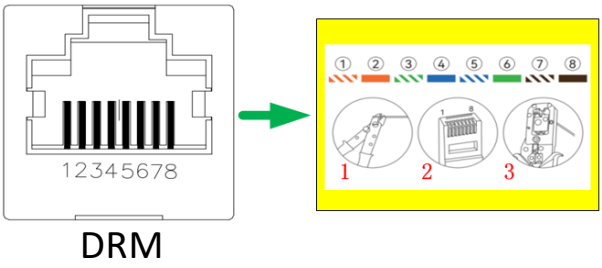


Fig. 6.5.2.1 Schematic diagram of LAN interface connection

DRM: Use according to safety regulations (Australia only):

Pin	1	2	3	4	5	6	7	8
Definition	DRM1/5	DRM2/6	NC	NC	DRM4/8	REF_GEN/0	COM_LOAD/0	DRM3/7

The inverters are equipped with the interfaces used for connection with the demand response enabled device (DRED). DRED asserts the demand response mode (DRMS). The inverter detects and responds to all supported demand response commands within 2s. The following table lists the DRMS supported by the inverter.

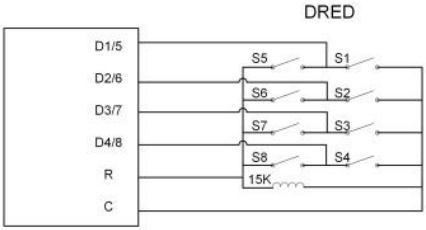
Mode	Note
DRM0	The inverter is in the Off status.
DRM1	The input power from the grid is 0.
DRM2	The input power from the grid shall not exceed 50% of the rated power.
DRM3	The input power from the grid shall not exceed 75% of the rated power.
DRM4	The input power from the grid shall be 100% of the rated power,but is subject to other active DRMS.
DRM5	The grid input power is 0.
DRM6	The input power to the grid shall not exceed 50% of the rated power.
DRM7	The grid-tied power shall not exceed 75% of the rated power.
DRM8	The input power from the grid shall be100% of the rated power, but is subject to other active DRMS.

DRED can respond to multiple signal DRMS once time, and the following shows the priority order of responding to multiple DRMS.

Multiple modes	Priority order
DRM1…DRM4	DRM1 > DRM2 > DRM3 > DRM4
DRM5…DRM8	DRM5 > DRM6 > DRM7 > DRM8

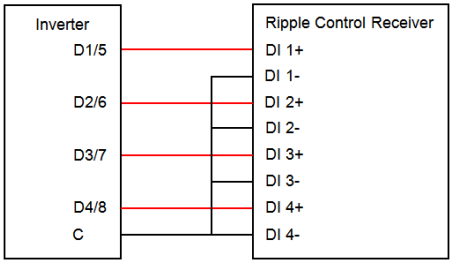
DRM connection: Both DRM and Ripple Control support only one function.

In Australia and New Zealand, the inverters support the demand response mode specified in the AS/NZS 4777 standard, and the wiring diagram of the inverters is shown below:



Mode	Short connected inverter	External DRED operation
DRM0	R & C	Disable S1 andS5
DRM1	D1/5&C	Disable S1
DRM2	D2/6&C	Disable S2
DRM3	D3/7&C	Disable S3
DRM4	D4/8&C	Disable S4
DRM5	D1/5&R	Disable S5
DRM6	D2/6&R	Disable S6
DRM7	D3/7&R	Disable S7
DRM8	D4/8&R	Disable S8

Ripple Control: In Germany, the grid companies use a Ripple Control Receiver to convert grid dispatch signals into dry contact signals for transmission. The dry contact of the control receiver is wired as shown in the following figure:



On/Off: press On/Off to send on/off instructions to the inverter. In Australia and New Zealand, the Boot option will be disabled when the DRM status is DRM0.

Date setting/time setting: The correct system time is very important, the wrong system time will directly affect data recording and power generation value, the 24-hour system is used for the clock.

Software version: the information on current firmware version.

6.5.3 Communication for parallel operation

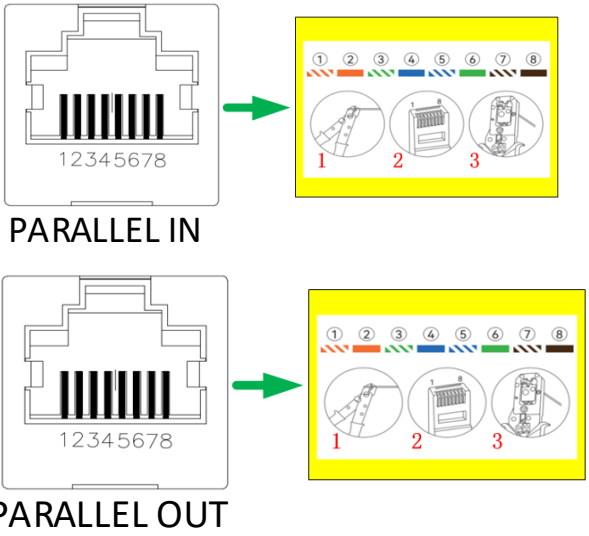


Fig. 6.5.3.1 Schematic diagram of LAN interface connection

Note: see Section 6.4.1 “Wiring Procedure of RJ45 Connector” for the specific wiring procedure.

PARALLEL IN and PARALLEL OUT communication interfaces are used for communication during the parallel operation. If the parallel operation is required, connect PARALLER_IN to PARALLEL_OUT of another inverter, and so on. Up to 6 inverters with same specification may be connected for parallel operation.

6.5.4 COM communication interface

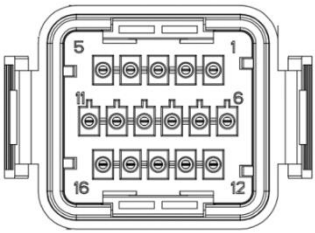
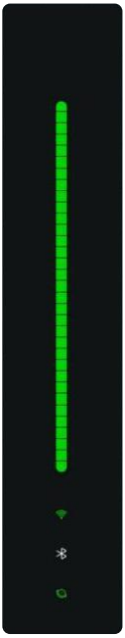


Fig. 6.5.4.1 COM communication interface

No.	Definition	Description
1	COM	COM dry contact (reserved)
2	COM_ON	
3	COM_GEN_NC	GEN dry contact (reserved)
4	COM_GEN	
5	RS485_GRRS_A2	RS485 and upper computer communication
6	RS485_GRRS_B2	
7	RS485_EV_A	RS485 charging station communication
8	RS485_EV_B	
9	BAT_ON/OFF_1	Battery starting signal
10	BAT_ON/OFF_2	
11	EXT-CT2_BN	External CT communication (Phase B)
12	EXT-CT2_BP	
13	EXT-CT2_CP	External CT communication (Phase C)
14	EXT-CT2_CN	
15	EXT-CT2_AN	External CT communication (Phase A)
16	EXT-CT2_AP	

7 Display panel

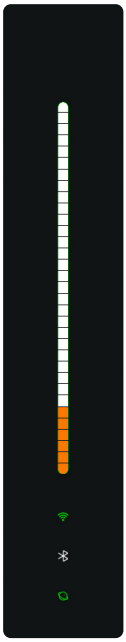
LED light bars are used for the display panel.

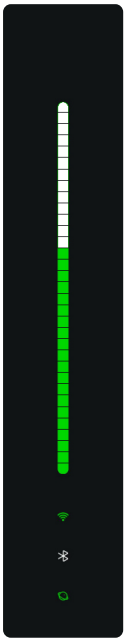


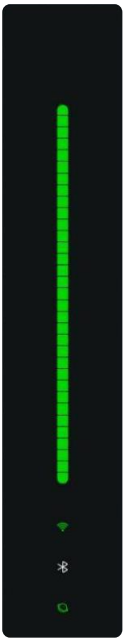
7.1 Description of signal indicator lamp

Icon	Name	Function
	WIFI connection	WIFI module successfully connected: normally On in green.
	Bluetooth connection	Bluetooth successfully connected: normally On in green.
	Upper computer	Upper computer successfully connected: normally On in green.

7.2 Definition of LED status display







LED display description:

1. The SOC of the battery is displayed by 33 LED indicator bars
2. When the SOC is less than 3% (including 0%), 1 LED indicator bar is displayed all the time;
3. When the SOC is more than 20%, the LED light is green.
4. When the SOC is less than 20%, the LED light is orange.

Charging status: the indicator bars are displayed by turns from top to bottom

Discharging status: the indicator bars are displayed by turns from bottom to top

Idle : when the SOC is greater than 20%, the SOC is displayed by the breathing lamp;

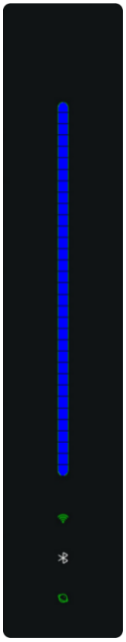
When the SOC is less than 20%, the LED light flashes every 2 seconds to indicate the SOC.

7.3 LED failure status

Steady yellow and red indicator bars indicate that an alarm or fault occurs on the equipment. In case of the fault, contact professional personnel in time.

When the indicator bars are steady blue, the equipment is being upgraded. In this case, wait until the upgrade is completed. If the upgrade is not completed for a long time, contact the professional personnel in time.

Level	Definition	Buzzer	Lamplight	Picture	Alarm signal recovery conditions
1	Emergency	Default: the buzzer keeps ringing	The LED indicator lamp is red and normally ON.		Remove the fault
2	Important	Quiet	The LED light flashes in red		Remove the fault
3	Minor	Quiet	The LED indicator lamp is yellow and normally ON		Go out after 60S

3	Upgrading	Quiet	The LED indicator lamp is blue and normally ON		Go out after upgrading

Priority: Upgrade > Fault/Alarm > SOC Display. If the alarm indicator works, the SOC is not displayed. If the alarm indicator is off, the SOC is displayed. The indicatorindicating the upgrade status is continuously on during the upgrade, and goes out after the upgrade is completed, and the current alarm and SOC are displayed according to the display logic

In case of multiple alarms, the sequence should be the upgrade status > Fault >Level 1 alarm > Level 2 alarm (see fault list for fault level)

8 Commissioning

8.1 Inspection before operation

Please check the following items before the operation.

1. The inverter is securely fixed.
2. The PV+/PV- cable is firmly connected with correct polarity, and the voltage is within the required range.
3. The BAT+/BAT- cable is firmly connected with correct polarity, and the voltage is within the required range.
4. The DC switch is properly connected between the battery and the inverter, and the DC switch has been disconnected.
5. The grid / load cable is firmly connected with correct polarity, and the voltage is within the required range.
6. The AC circuit breaker is correctly connected between the inverter grid port and the grid, and the circuit breaker has been disconnected.
7. The AC circuit breaker is correctly connected between the inverter load port and the emergency load, and the circuit breaker has been disconnected.
8. The communication cable is connected properly and firmly.

8.2 Powering on for the first time

If the above items meet the requirements, power on the inverter for first time according to the following procedure.

Step 1: Close the DC switch on the inverter.

Step 2: Close the AC circuit breaker between the inverter and the grid.

Step 3: Turn on the upper computer or APP to confirm the inverter status.

If no alarm is generated, the inverter is turned on normally.

If an alarm is given, remove the fault according to 11.2 Troubleshooting.

9 Use of APP for EAHI20KTH-S

9.1 Download and Installation of APP

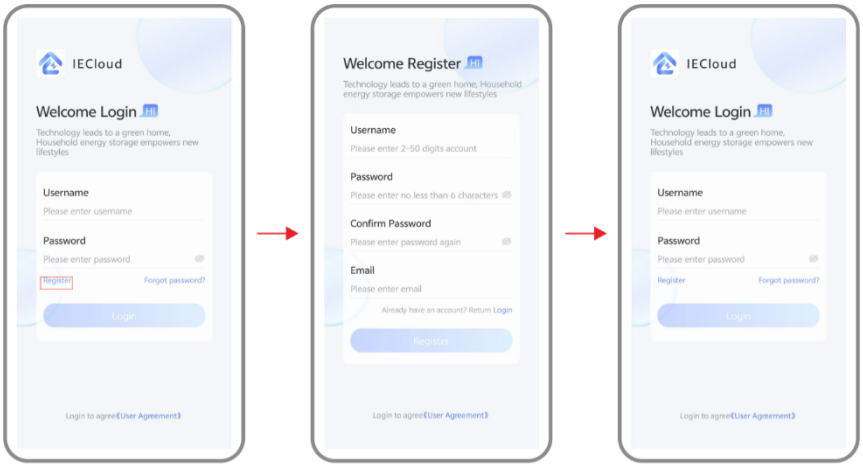
Scan the following QR code with your mobile:

Android

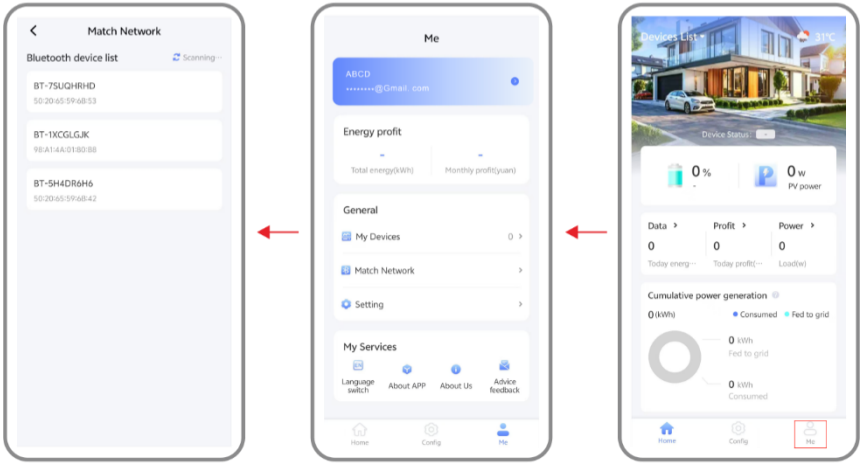
IOS

9.2 APP Registration and powering on inverter

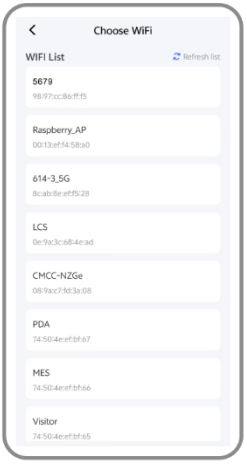
If the above items meet the requirements, power on the inverter for the first time according to the following procedure.

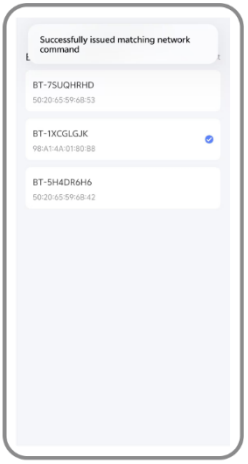


❶ Click on “Register”　❷ Fill in registration information　❸ Click on “Login”



❻ Choose the correct Bluetooth device　❺ Click on “Match Network”　❹ Click on 'Me' in the bottom right corner

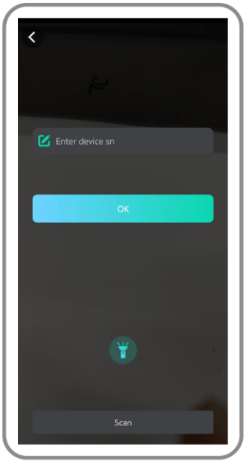


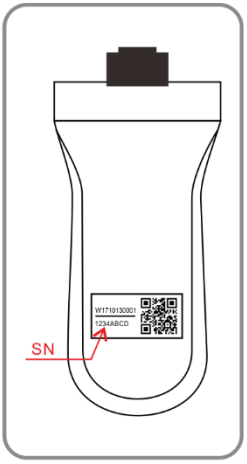


❼ Choose the WIFI that can be used

❽ Enter WIFI password

❾ Confirm successful distribution network

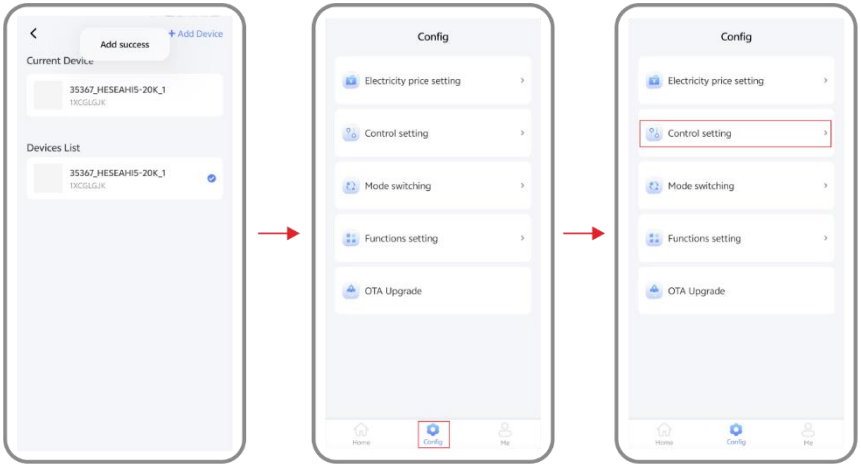




⓬ Scan/enter the SN code on the WIFI stick

⓫ Confirm SN code

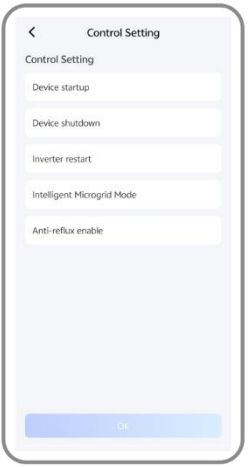
❿ Return to “Me” and add device



⓭ Complete binding

⓮ Click 'Config' after returning

⓯ Click on “Control Setting”



⓰ Click on “Device startup”

Note: If the inverter can be automatically turned on in case of the operation as described in 8.2, it will not be required to start the inverter through connecting APP/ with the upper computer.

10 System maintenance

Attention
• Ensure that the inverter is powered off. • During operating the inverter, please wear personal protective equipment.

10.1 Routine maintenance of inverter

Maintenance item	Maintenance method	Maintenance period
System cleaning	Check the cooling fin and the air inlet/outlet for foreign matter and dust.	Once/half a year - once/a year
DC switch	Turn the DC switch on and off for 10 consecutive times to ensure that the DC switch functions normally.	Once/a year
Electrical Connection	Check the cable connection for any looseness or disconnection. Check whether the cables are damaged. Mainly check any cut sign on the cables touching the metal surface. Check the unused DC input terminals, AC input and output terminals, COM ports, and waterproof covers for locking condition.	Once/half a year - once/a year
Electrical Connection	Turn the DC switch on and off for 10 consecutive times to ensure that the DC switch functions normally.	Once/half a year - once/a year
Grounding reliability	Check whether the ground cable is properly connected with the ground.	Once/half a year - once/a year

10.2 Maintenance of inverter unused for long period

If the inverter is not used for more than 7 days, shut down the AC input, PV input, and battery input switches.

If the inverter has not been used for more than 3 months, turn on the AC input switch (or PV input switch) and the battery switch and start the system to charge the battery once.

10.3 Power off inverter

Danger
• Before maintaining, power off the inverter. The hot-line job may cause inverter damage or electric shocks. • After the inverter is powered off, it takes some time for the internal components to discharge. Please wait according to the required time label till the inverter is fully discharged.

Step 1: Send a shutdown instruction through mobile APP or cloud platform or host computer

Step 2: disconnect the ON- GRID AC circuit breaker of the inverter

Step 3: disconnect the BACK- UP AC circuit breaker of the inverter

Step 4: disconnect the AC switch between the inverter and the battery

Step 5: disconnect the DC switch of the inverter

10.4 Battery maintenance

Warning
• The battery maintenance should be made or supervised by the personnel with battery knowledge and necessary preventive measures should be taken. • The risk of electric shock or high short-circuit current may be caused by the battery. • Do not place the battery into the fire, as battery overheating may cause an explosion. As the released electrolytes are harmful to skin and eyes and may be toxic, do not open or destroy the battery

10.5 Battery safety

1. During installing or replacing the battery, do not wear watches and rings to avoid burning resulting from short-circuit.
2. Wear the safety goggles and the protective gloves.
3. Keep the work place away from open flame, hydrogen and smoke.
4. Check whether there is earthing cable at two electrodes of the battery. If yes, remove the earthing cable.

Environmental factors may affect battery life. The stored battery energy decreases with ambient temperature rise. Frequent short-time discharge may shorten the battery's life. The battery maintenance is very important, and the following inspection should be completed every month:

- Keep the battery clean, and promptly clean the terminals and connectors.
- Regularly clean the cables and check them for proper connection.
- Do not use different types and capacities of the batteries simultaneously, please use the same model of the batteries.

10.6 Battery storage and charging

Battery storage requirements:

1. During storage, correctly place the battery in accordance with the mark on the packaging box, do not put upside down or tilt the battery.
2. If required, stack the battery packing boxes according to the stacking requirements on the outer packaging.
3. Handle the battery with care to avoid damage.

4. Storage environment requirements:

Ambient temperature: -10℃~55℃, recommended storage temperature: 20℃~30℃; relative humidity: 5%RH-80%RH

Dry, ventilated and clean.

Avoid contacting with corrosive organic solvents, gases and other substances.

Avoid exposing to direct sunlight

Maintain less than 2m away from heat sources

5. Warehouse manager should monthly check and record battery storage, regularly inform the battery inventory to the planning manager, and timely arrange the charging of the battery with storage time close to 15 months (-10℃ -25℃), 9 months (25℃ -35℃) or 6 months (35℃ - 55℃).
6. When the battery is ex-warehoused, the first-in-first-out principle should be followed.
7. After the battery production test is completed, charge the battery to at least 50% SOC before storage.

Judgment of storage exceeding time limit

In principle, it is not recommended to store the battery for a long time, and the battery should be used timely. The stored batteries should be treated according to the following requirements.

Charging period of lithium battery

Storage temperature requirement	Actual storage temperature	Charging period	Note
-10℃<T≤55℃	T <-10℃	Not allowed	During the period of supplementing electrical energy: No need for handling, use as soon as possible.
	-10℃<T≤25℃	15 months	
	25℃<T≤35℃	9 months	
	35℃<T≤55℃	6 months	
	T>55℃	Not allowed	

Inspection before battery charging

1. Inspect the battery appearance before the battery is charged, charge the qualified batteries only, and scrap the unqualified batteries.
2. In case of the following conditions, the battery will be considered to be unqualified:
   - Battery deformation
   - Battery case damage
   - Electrolyte leakage

Description of battery charging scenario:

EAHI10-20TH-S can provide 10-20kW power to charge the battery and supports simultaneous charging of 12 battery packs.

11 Troubleshooting

11.1 Fault level list

Fault type	Fault name	Alarm level
Grid failure	Failure in fast grid check	Prompt alarm
	Over-voltage of Phase A\B\C grid section 1	Prompt alarm
	Under-voltage of Phase A\B\C grid section 1	Prompt alarm
	Over-frequency of Phase A\B\C grid section 1	Prompt alarm
	Under-voltage of Phase A\B\C grid section 1	Prompt alarm
	Over-voltage of Phase A\B\C grid section 2	Prompt alarm
	Under-voltage of Phase A\B\C grid section 2	Prompt alarm
	Over-frequency of Phase A\B\C grid section 2	Prompt alarm
	Under-frequency of Phase A\B\C grid section 2	Prompt alarm
	Over-voltage of Phase A\B\C grid section 3	Prompt alarm
	Under-voltage of Phase A\B\C grid section 3	Prompt alarm
	Over-frequency of Phase A\B\C grid section 3	Prompt alarm
	Under-frequency of Phase A\B\C grid section 3	Prompt alarm
	10min average grid over-voltage	Prompt alarm
	Island fault	Prompt alarm
	Zero ground voltage fault	Minor alarm
	Phase locking failed	Prompt alarm
Output failure	Phase A\B\C output RMS over-voltage	Important alarm
	Phase A\B\C output RMS under-voltage	Important alarm
	Phase A\B\C output RMS over-current	Important alarm
	Phase A\B\C output over-frequency	Important alarm
	Phase A\B\C output under-frequency	Important alarm
	DC component over-voltage of Phase A\B\C output	Important alarm
Inverter failure	Phase A\B\C inverter RMS over-voltage	Prompt alarm
	Phase A\B\C inverter RMS under-voltage	Prompt alarm
	Fast over-current of Phase A\B\C inverter	Important alarm
	Phase A\B\C inverter RMS over-current	Important alarm
	Wave-by-wave inductive current limit of Phase A\B\C inverter	Prompt alarm
	Shutdown due to inductive over-current of Phase A\B\C inverter	Important alarm
	DC component one-stage over-current of Phase A\B\C inverter	Important alarm
	DC component two-stage over-current of Phase A\B\C inverter	Important alarm

	Inverter self-check failed	Important alarm
	Over-current of N-line balance bridge arm hardware	Prompt alarm
	Rapid over-current of N-line balance bridge arm	Prompt alarm
	Over-current of N-line balance bridge arm	Prompt alarm
Bus fault	Fast BUS+ over-voltage	Important alarm
	Fast BUS- over-voltage	Important alarm
	BUS+over-voltage	Important alarm
	BUS- over-voltage	Important alarm
	Bus hardware over-voltage	Important alarm
	Bus unbalance	Important alarm
	BUS+ under-voltage	Prompt alarm
	BUS- under-voltage	Prompt alarm
	Fast BUS+ under-voltage	Prompt alarm
	Fast BUS- under-voltage	Prompt alarm
	Bus short circuit	Emergency alarm
System fault	Internal over-temperature of inverter	Important alarm
	PV over-temperature	Important alarm
	Inverter over-temperature	Important alarm
	Phase A\B\C grid relay fault	Important alarm
	Phase A\B\C inverter relay fault	Important alarm
	Phase A\B\C generator relay fault	Important alarm
	Insulation impedance to ground fault	Important alarm
	Leakage current out of limits at section 1	Important alarm
	Leakage current out of limits at section 2	Important alarm
	Leakage current out of limits at section 3	Important alarm
	Leakage current out of limits at section 4	Important alarm
	Monitor SCI communication fault	Prompt alarm
	Bypass overload alarm	Prompt alarm
	Inverter overload alarm	Prompt alarm
	Short circuit of Phase A\B\C inverter	Emergency alarm
	Short circuit of Phase A\B\C bypass	Emergency alarm
	110% overload of Phase A\B\C inverter	Important alarm
	125% overload of Phase A\B\C inverter	Important alarm
	150% overload of Phase A\B\C inverter	Important alarm
	200% overload of Phase A\B\C inverter	Important alarm
	110% overload of Phase A\B\C bypass	Important alarm
	125% overload of Phase A\B\C bypass	Important alarm
	150% overload of Phase A\B\C bypass	Important alarm
	200% overload of Phase A\B\C bypass	Important alarm

	Fan 5# fault	Prompt alarm
	Reversed kilowatt-hour meter connection	Important alarm
	Kilowatt-hour meter communication fault	Important alarm
	Unmatched software and hardware versions	Important alarm
	Current country code unsupported	Important alarm
	SPIFlash fault	Important alarm
	Current model unsupported	Important alarm
	Not activated for Australia	Important alarm
	Repeated Parallel ID	Important alarm
	Fan 1# fault	Prompt alarm
	Fan 2# fault	Prompt alarm
	Fan 3# fault	Prompt alarm
	Fan 4# fault	Prompt alarm
PV side fault	Fast PV1 over-current	Important alarm
	Fast PV2 over-current	Important alarm
	PV1 over-voltage	Important alarm
	PV2 over-voltage	Important alarm
	PV1 over-current	Important alarm
	PV2 over-current	Important alarm
	PV hardware over-current	Important alarm
	Wave-by-wave inductive current limit of PV1	Prompt alarm
	Wave-by-wave inductive current limit of PV2	Prompt alarm
	No PV alarm	Prompt alarm
Generator fault	Generator RMS over-voltage	Prompt alarm
	Generator RMS under-voltage	Prompt alarm
	Generator over-frequency	Prompt alarm
	Generator under-frequency	Prompt alarm
	Failure in fast generator check	Prompt alarm
Distribution box alarm	BMU1 communication fault	Prompt alarm
	BMU2 communication fault	Prompt alarm
	BMU3 communication fault	Prompt alarm
	BMU4 communication fault	Prompt alarm
	BMU5 communication fault	Prompt alarm
	BMU6 communication fault	Prompt alarm
	BMU7 communication fault	Prompt alarm
	Main contactor closure fault	Important alarm
	Main contactor adhesion failure	Important alarm
	Bus over-voltage	Important alarm
	Bus under-voltage	Important alarm

	DC over-voltage	Important alarm
	DC under-voltage	Important alarm
	Battery over-current	Important alarm
	Pre-charging overtime	Important alarm
	BMS1 failure	Important alarm
	BMS2 failure	Important alarm
	BMS3 failure	Important alarm
	BMS4 failure	Important alarm
	BMS5 failure	Important alarm
	BMS6 failure	Important alarm
	BMS7 failure	Important alarm
	BMS8 failure	Important alarm
	BMS1 alarm	Prompt alarm
	BMS2 alarm	Prompt alarm
	BMS3 alarm	Prompt alarm
	BMS4 alarm	Prompt alarm
	BMS5 alarm	Prompt alarm
	BMS6 alarm	Prompt alarm
	BMS7 alarm	Prompt alarm
	BMS8 alarm	Prompt alarm
Battery BMS alarm	System over-voltage alarm	Prompt alarm
	System under-voltage alarm	Prompt alarm
	Charge over-current alarm	Prompt alarm
	Discharge over-current alarm	Prompt alarm
	Charge over-temperature alarm	Prompt alarm
	Charge under-temperature alarm	Prompt alarm
	BMU communication failure alarm	Important alarm
	Discharge under-temperature	Prompt alarm
	BMS balance chip over-temperature alarm	Prompt alarm
	Temperature unbalance alarm	Prompt alarm
	Cell unbalance alarm	Prompt alarm
	Cell over-voltage alarm	Prompt alarm
	Cell under-voltage alarm	Prompt alarm
	Discharge over-temperature alarm	Prompt alarm
	Discharge under-temperature alarm	Prompt alarm
	Ambient over-temperature	Important alarm
	Fan fault	Important alarm
	Input over-current	Important alarm
	Output over-current	Important alarm

	Output short circuit	Important alarm
	Low-temperature shutdown alarm	Prompt alarm
	Buck_Boost heat sink over-temperature	Important alarm
	LLC high-pressure side heat sink over-temperature	Important alarm
	LLC low-pressure side heat sink over-temperature	Important alarm
	Wave-by-wave current limiting fault	Important alarm
	Output over-voltage protection	Important alarm
	LLC high-pressure side heat sink over-voltage	Important alarm
	LLC high-pressure side heat sink over-current	Important alarm
	Module input over-voltage	Important alarm
	Internal module communication failure alarm	Important alarm
	Discharge output over-current	Important alarm
	Abnormal input connection alarm	Prompt alarm
	Abnormal SPIFlash	Important alarm
	Charging battery over-current	Important alarm
BMS protection event	Level 1 protection of system over-voltage	Important alarm
	Level 1 protection of system under-voltage	Important alarm
	Level 1 protection of charge over-current	Important alarm
	Level 1 protection of discharge over-current	Important alarm
	Level 1 protection of charge over-temperature	Important alarm
	Level 1 protection of charge under-temperature	Important alarm
	Level 1 protection of cell over-voltage	Important alarm
	Level 1 protection of cell under-voltage	Important alarm
	Level 1 protection of discharge over-temperature	Important alarm
	Level 1 protection of discharge under-temperature	Important alarm
	Level 2 protection of system over-voltage	Important alarm
	Level 2 protection of system under-voltage	Important alarm
	Level 2 protection of charge over-current	Important alarm
	Level 2 protection of discharge over-current	Important alarm
	Level 2 protection of charge over-temperature	Important alarm
	Level 2 protection of charge under-temperature	Important alarm
	Level 2 protection of cell over-voltage	Important alarm
	Level 2 protection of cell under-voltage	Important alarm
	Level 2 protection of discharge over-temperature	Important alarm
	Level 2 protection of discharge under-temperature	Important alarm

11.2 Troubleshooting

The users can troubleshoot and take corresponding measures according to the failure information of the inverter.

Fault information	Possible causes	Solution
Phase A\B\C grid RMS over-voltage	Grid fault	1. Check the grid voltage or frequency, if the grid voltage or frequency is out of the allowable range of the inverter protection parameters, turn on the inverter after the grid is normal. 2. If the grid voltage or frequency is within the allowable range, please contact your distributor or the after-sales service center.
Phase A\B\C grid RMS under-voltage		
Phase A\B\C grid over-frequency		
Phase A\B\C grid under-frequency		
Failure in fast grid check	The sudden change of external conditions causes failure in soft starting of the inverter.	1. Wait for the inverter to recover automatically; 2. Check the grid voltage or frequency, if the grid voltage or frequency is out of the range allowed by the inverter protection parameters, turn on the inverter after the grid is normal. 3. If the grid voltage or frequency is within the allowable range, please contact your distributor or the after-sales service center.
Island fault	An AC fault occurs on the grid, and the inverter detects the island by active means	1. Check whether the AC circuit breaker of the grid is tripped and whether the cables are firmly connected; 2. Check whether there is current on the grid. 3. If the fault still cannot be removed after the first two steps, please contact your distributor or the after-sales service center.
Zero ground voltage fault	1. The PE terminal on the AC terminal block and the secondary protection ground terminal at the bottom of the machine are not reliably connected; 2. High voltage to ground on L and N cables of inverter	1. Check whether the inverter isreliably connected with the grounding cable; 2. Ifthe fault still cannot be removedin the case that the inverter isreliably connected with the grounding cable, please contact your distributor or the after-sales service center.

Output RMS over-voltage Output RMS under-voltage Output RMS over-current Output over-frequency Output under-frequency Inverter RMS over-voltage Inverter RMS under-voltage	The protection is triggered by the instantaneous abnormal output of the inverter resulting from the sudden change or short circuit of the external grid.	1. Check whether the external load and the grid are out of the range of inverter specification. After the fault is removed, the inverter will be automatically restored to normal operating status. 2. If the alarm repeats, please contact your distributor or the after-sales service center.
Instantaneous over-current of inverter	The protection is triggered by the instantaneous abnormal output of the inverter resulting from the sudden change or short circuit of the external grid.	1. Check whether the external load and the grid are out of the range of the inverter specification. After the fault is removed, the inverter is automatically restored to normal operating status. 2. If the alarm repeats, contact your distributor or the after-sales service center.
Wave-by-wave inductive current limit of inverter Inverter shutdown due to inductive over-current	The output voltage of the inverter is out of the protection range.	1. Check whether the external load is out of the range of the inverter specification. After the fault is removed, the inverter is automatically restored to normal operating status. 2. If the alarm repeats, contact your distributor or the after-sales service center.
Too high DC component of inverter voltage Too high DC component of inverter current	The DC current component of the grid is out of the allowable range.	1. Wait for the inverter to recover automatically; 2. Check the grid voltage or frequency. If the grid voltage or frequency is out of the allowable range of the inverter protection parameters, please contact the grid company; 3. If the grid voltage or frequency is within the allowable range, please contact your distributor or the after-sales service center.
Inverter self-check failed Phase locking failed	Inverter bridge damaged, or too high harmonics of grid, and no grid-tied conditions	1. Wait for the inverter to recover automatically; 2. If the fault still cannot be removed, please contact your distributor or the after-sales service center.
Inverter over-temperature	The inverter temperature is higher than the allowable upper limit.	1.Check whether the heat sink temperature displayed on the LCD screen is too high, and if yes, wait till it recovers;

		2. Check that the inverter is installed in well-ventilated environment; 3. Check whether the inverter is exposed to direct sunlight, and if yes, install a sunshade. 4, If the fault still cannot be removed after the first three steps, please contact your distributor or after-sales service center.
Inverter overload 110% fault	Output over-load protection	1. Check the output load and reduce the load power; 2. If the fault still cannot be removed after the first step, please contact your distributor or after-sales service center.
Inverter overload 125% fault		
Inverter overload 150% fault		
Inverter overload 200% fault	Output over-load protection	1. Check the output load and reduce the load power; 2. If the fault still cannot be removed after the first step, please contact your distributor or after-sales service center.
Fast bus over-voltage	The instantaneous bus voltage is higher than the allowable upper limit of the inverter.	1. Wait for the inverter to recover after the bus voltage is reduced; 2. If the fault repeats, please contact your distributor or after-sales service center.
Bus over-voltage		
Bus hardware over-voltage	The hardware detects that the instantaneous bus voltage is higher than the allowable upper limit of the inverter.	1. Check whether the PV input voltage is out of the allowable range of the protection parameters of inverter; 2. After the bus voltage is reduced, restart the inverter; 3. If the fault repeats, contact your distributor or after-sales service center.
Bus under-voltage	The average bus voltage is lower than the allowable lower limit of the inverter.	1. Wait for the inverter to recover; 2. If the fault repeats, please contact your distributor or after-sales service center.
Fast bus under-voltage		
Bus short circuit	The internal components are damaged due to sudden change of external conditions.	Please contact your distributor or the after-sales service
Grid relay fault		Restart the inverter;
Inverter relay fault		

Generator relay fault	The relay can not be closed or disconnected properly.	If the alarm repeats, contact the distributor or after-sales service center.
Monitor SCI communication fault	No monitoring data received	1. Restart the inverter; 2. If the fault repeats, contact your distributor or after-sales service center.
Bypass overload 110% fault	Output over-load protection during change from off-grid to grid-tied	1. Check the output load and reduce the load power; 2. If the fault still cannot be removed, please contact your distributor or the after-sales service center.
Bypass overload 125% fault		
Bypass overload 150% fault		
Bypass overload 200% fault		
Fast PV1 over-voltage	The PV1 or PV2 voltage is higher than the bus voltage.	1. Check whether the PV input terminal is normal; 2. Check whether the PV input configuration is out of the allowable range of the protection parameters of the inverter; 3. If fault still cannot be removed after the first two steps, please contact your distributor or the after-sales service center.
Fast PV2 over-voltage		
Fast PV1 over-current	The average instantaneous input current of PV1 or PV2 is higher than the set upper limit.	1. Check whether the PV input terminal is normal; 2. Check whether the PV input configuration is out of the allowable range of the protection parameters of the inverter; 3. If fault still cannot be removed after the first two steps, please contact your distributor or the after-sales service center.
Fast PV2 over-current		
PV1 over-current	The average input current of PV1 or PV2 is higher than the set upper limit.	1. Check whether the PV input terminal is normal; 2. Check whether the PV input configuration is out of the allowable range of the protection parameters of the inverter; 3. If there are no above-mentioned problems, the fault still cannot be removed after restarting the inverter, please contact your distributor or the after-sales service center.
PV2 over-current		

Insulation impedance to ground fault	The PV string is short circuited with the protective ground, or the installation environment of the PV string is humid for a long time	1. Check whether the inverter is reliably grounded; 2. Check whether the positive and negative poles of the PV panel are short connected with the ground cable; 3. Wait for the inverter to recover; 4. If the fault still cannot be removed, please contact your distributor or the after-sales service center.
Battery unconnected	1.The battery is not properly connected; 2. The battery fuse is blown.	1. Check whether the battery cables are properly connected and whether the battery voltage is normal; 2. If there is still error message, please contact your distributor or the after-sales service center.
Battery over-temperature	1. The battery installation position is not ventilated; 2. High ambient temperature.	1. Check whether the operating environment temperature exceeds the operating temperature range of the inverter, if yes, please improve the operating environment; 2. If there is no above-mentioned problem, the fault still cannot be removed after restarting the inverter, please contact your distributor or the after-sales service center.
Fan fault	Fan fault	1. Check whether the fan works properly. Power off and restart the machine; 2. If there is still error message, please contact your distributor or the after-sales service center.

12 Technical data

12.1 System specification

Model	EAHI10KTHSeries	EAHI15KTHSeries	EAHI20KTH Series
System composition			
Battery system model	EHBS-P5-TH		
Battery type	IFpP（li-ion）		
Capacity of single module	5222.4Wh		
Module quantity of single battery pack system	1~4		
Capacity of single battery pack system	5-20 kWh		
Maximum quantity of expansible battery packs in battery system	3		
Quantity of battery distribution box	1, Expansible (1 distribution box per battery pack)		
Inverter model	EAHI10KTH-S	EAHI15KTH-S	EAHI20KTH-S
Inverter module	1, (Expansible to connect 6 inverters in parallel)		
Rated power of inverter	10kW	15kW	20kW
General system parameter			
Protection grade	IP66		
Operating temperature	-20ºC ~+55ºC		
Heat dissipation method	Natural cooling	Smart cooling	
Altitude	3000m		
Noise level (1m)	≤25dB	≤45dB	≤50dB
Installation mode	Floor and stacked type		

Inverter specification

Model	EAHI10KTH-S	EAHI15KTH-S	EAHI20KTH-S
PV input parameter			
Maximum input power	20kW	30kW	30kW
Maximum input voltage	1000Vdc		
Rated input voltage	650Vdc		
Starting voltage	180Vdc		
Minimum operating voltage	160Vdc		
MPPT voltage range	160~950Vdc		
MPPT voltage range at full power	625-800V		
Maximum input current per MPPT circuit	16A / 16A	16A / 32A	16A / 32A
Maximum short circuit current per MPPT	24A / 24A	24A / 48A	24A / 48A
MPPT quantity	2		
String quantity per MPPT	1/1	1/2	1/2
Battery input parameters			
Battery type	IFpP（li-ion）		
Voltage range	650~980Vdc		
Maximum charge/discharge current	15.4A / 15.4A	23.1A / 23.1A	30.8A / 30.8A
AC input/ output parameter (grid)			
Maximum apparent power of grid	15kVA	22.5kVA	30kVA
Maximum input current	21.7A	32.6A	40A
Input voltage range	320~480Vac		
Input frequency range	50±5Hz / 60±5Hz		
Rated output power	10kW	15kW	20kW
Maximum output apparent power	11kVA	16.5kVA	22kVA
Rated output voltage	3/N/PE,380Vac / 400Vac		
Rated output frequency	50 Hz / 60Hz		
Rated output current	15.2A / 14.4A	22.8A / 21.7A	30.4A / 28.9A
Maximum output current	16.7A / 15.8A	25.1A / 23.8A	33.5A / 31.8A
Power factor	>0.99 (0.8 leading ~ 0.8 lag)		
THDI	≤3% (at rated power)		
Generator input parameters			
Maximum input power	10kW	15kW	20kW
Maximum input current	15.2A	22.8A	30.4A

AC output parameter(backup load)			
Rated output power	10kW	15kW	20kW
Maximum apparent power	10kVA	15kVA	20kVA
Rated output voltage	3/N/PE,380Vac / 400Vac		
Rated output frequency	50Hz / 60Hz		
Rated output current	15.2A / 14.4A	22.8 / 21.7A	30.4A / 28.9A
Maximum output current	15.2A	22.8A	30.4A
THDV	≤ 3% (linear load)		
Switching time	≤20ms		
Efficiency			
Maximum efficiency	98.2%		
MPPT efficiency	99.9%		
Protection			
Protection	Over/under-voltage protection, over/under-frequency protection, overload protection, output short circuit protection, over-temperature protection, residual current monitoring unit, output over-current protection, insulation impedance detection, anti-island protection and surge protection		
Output over-voltage protection	DC Type II/AC Type II		
Other			
Dimensions (W*H*D)	650*640*270mm		
Packing size (W*H*D)	770*750*370mm		
Net weight	45kg		
Gross Weight	52kg		
Parallel operation	Support the parallel operation of 6 inverters		
Topology	Non-isolated		
IP protection grade	IP66		
Operating temperature	-25ºC ~+60ºC		
Heat dissipation method	Natural cooling	Smart cooling	
Altitude	3000m		
Noise level (1m)	≤25dB	≤45dB	≤50dB
Installation mode	Floor and stacked type		
Standard			
Grid-tied	VDE 0126, EN50549, DIN VDE V 0124-100:2020, VDE-AR-N 4105:2018,PPDS,CEI 0-21,NC RFG+PTPiREE		
Safety regulation	IEC/EN 62109-1/-2, AS62109		
EMC	EN 61000-6-1/-2/-3/-4		

Battery specification

Model	EHBS-P5-TH
System composition	
Battery type	IFpP（li-ion）
Module capacity	5222.4Wh
System capacity	5-20kWh, expansible
Module quantity of single battery pack system	1~4
Maximum quantity of expansible battery packs in battery system	3
Rated voltage	750Vdc
Voltage range	600~1000Vdc
Maximum charge/discharge current	3.4A / 5.5A
Communication port	CAN/RS485
Dimensions (W*H*D)	650*370*270mm
Packing size (W*H*D)	765*465*385mm
Net weight	59kg
Gross Weight	63kg
Topology	High frequency isolation
IP protection grade	IP66
Operating temperature	-20ºC ~55ºC
Heat-dissipating method	Natural heat dissipation
Heating mode	PTC heating
Altitude	⩽3000m
Noise level (1m)	< 40dB
Installation mode	Floor and stacked type
Standard	
Safety regulation	IEC/EN 62619 2022,IEC/EN 62477,ISO 13849,IEC/EN 62040-1,IEC/EN 60730-1
EMC	IEC 61000-6-1,EN/IEC 61000-6-3
Transport	UN 38.3
Warranty period	5 years

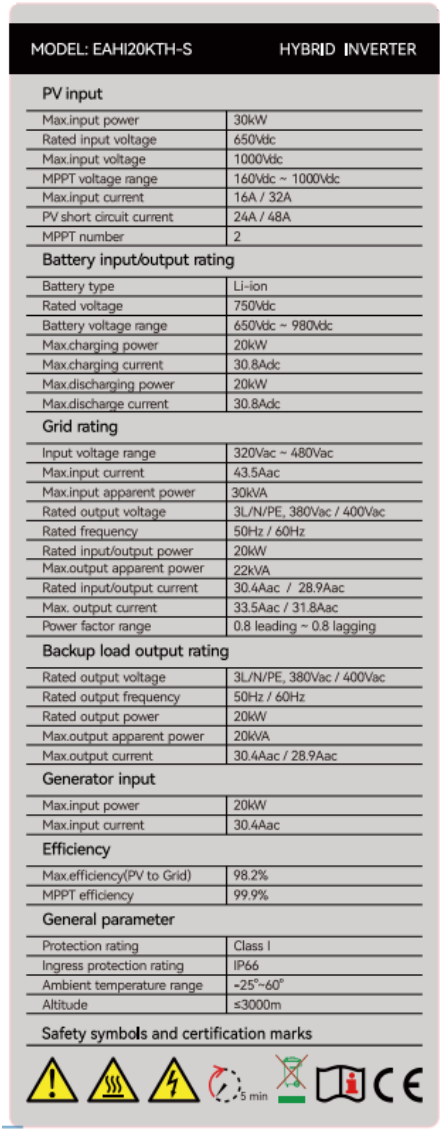
Short circuit explaination：Max. Short Circuit Current/Time：972A/500us.

Specification of battery distribution box

Model	PDU-GU-Y (integrated)	PDU-GU- F (split)
Parameter		
Battery interface	Yes	No
Maximum current	60A	
Voltage range	550~1000Vdc	
Display	LED	
Dimensions (W*H*D)	650*150*270mm	
Packing size (W*H*D)	765*370*385mm(including base)	
Net weight	12.5kg	
Gross Weight	23kg	
IP protection grade	IP66	
Warranty period	5 years	
Other		
Dimensions of fixing base (W*H*D)	650*100*270mm	
Net weight	6kg	

12.2 Nameplate

The user can identify the inverter through the nameplate on the side of the inverter, which contains the model, important parameters, certification mark and origin information of the inverter, and must not be damaged or blocked.



MODEL: EAHI20KTH-S HYBRID INVERTER

PV input

Max.input power	30kW
Rated input voltage	650Vdc
Max.input voltage	1000Vdc
MPPT voltage range	160Vdc ~ 1000Vdc
Max.input current	16A / 32A
PV short circuit current	24A / 48A
MPPT number	2

Battery input/output rating

Battery type	Li-ion
Rated voltage	750Vdc
Battery voltage range	650Vdc ~ 980Vdc
Max.charging power	20kW
Max.charging current	30.8Adc
Max.discharging power	20kW
Max.discharge current	30.8Adc

Grid rating

Input voltage range	320Vac ~ 480Vac
Max.input current	43.5Aac
Max.input apparent power	30kVA
Rated output voltage	3L/N/PE, 380Vac / 400Vac
Rated frequency	50Hz / 60Hz
Rated input/output power	20kW
Max.output apparent power	22kVA
Rated input/output current	30.4Aac / 28.9Aac
Max. output current	33.5Aac / 31.8Aac
Power factor range	0.8 leading ~ 0.8 lagging

Backup load output rating

Rated output voltage	3L/N/PE, 380Vac / 400Vac
Rated output frequency	50Hz / 60Hz
Rated output power	20kW
Max.output apparent power	20kVA
Max.output current	30.4Aac / 28.9Aac

Generator input

Max.input power	20kW
Max.input current	30.4Aac

Efficiency

Max.efficiency(PV to Grid)	98.2%
MPPT efficiency	99.9%

General parameter

Protection rating	Class I
Ingress protection rating	IP66
Ambient temperature range	-25°~60°
Altitude	≤3000m

Safety symbols and certification marks

Fig. 12.2.1 Nameplate information (which may be changed without prior notice, and subject to the actual product)

13 EAHI10-20KTH Series packaging and disposal

13.1 EAHI10~ 20KTH Series packaging

- When the equipment packaging permits, the inverter and the battery system equipment can be packed in the original material packaging;
- If the original packaging is not available, you can also pack the product by the packaging that conforms to the product packaging requirement and can pack the entire product by a easy carrying method.

13.2 EAHI10~ 20KTH Series disposal

Dispose of e-waste, including the inverters, the battery system equipment or other accessories, according to local regulations.

14 Appendix

14.1 Terminology

Name	Description
ANTI-TIED	It means that the inverter is not allowed to supply the power to the grid
GRID-TIED	It is opposite to ANTI-TIED, in which the inverter is allowed to supply the power to the grid
AC CHA.	It means that the inverter is allowed to receive the power from the grid to charge the battery, see Chapter 7 for details.
TIMER.SWITCH	It means that the inverter can be set to run in different operating modes at different time periods, see section 7.9.3 for details.
SOC	State of charge also known as remaining capacity refers to the ratio of the current available charge of the battery to the charge in fully charged state, which can be expressed in percentage ranging from 0% to 100%.
BMS	Battery manager system
EOD	End of discharge, in this series of PV energy storage products, refers to the voltage or SOC point at which the battery is prohibited from discharging. If the battery voltage is lower than this value or if the SOC is lower than the lower limit, the inverter will give the "battery under-voltage" alarm, and the battery is prohibited from discharging.
DOD	Depth of charge, is one of the ways reflecting the depth of battery discharge of the energy storage inverter, and another way to reflect the depth of discharge is the SOC.
Equalized charging	Constant current charging stage, in which the charging voltage gradually increases till the equalized charging voltage.
Equalized charging voltage	Target voltage value achieved by constant current charging, which can be set within the specified range.
Floating charge	Constant voltage charging phase, in which the charging current is gradually reduced to maintain the battery voltage at the set floating charge voltage.
Floating charge voltage	Constant charging voltage, which can be set within a specified range
Household load	It refers to the load that is connected between the “AC input” port of the inverter and the CT/ kilowatt-hour meter. The power of the household load is not limited by the inverter (see 6.1. System connection diagram).
Backup load	It refers to the load connected with the “Load output” port of the inverter. The power of the backup load is limited by the load capacity of the inverter during off-grid operation.
BACK-UP	It is indicated by silk-screen “Load output” or “EPS”. Here, they have the same meaning and all refer to the “off-grid load” port.