



User Manual



Each Energy Technology (Suzhou) Co., Ltd.

www.eachenergy.com

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Notice:

The information in this document is subject to change without notice. Please adhere to the actual products in case of any discrepancy. Any statements, description, and recommendations in this manual do not constitute a guarantee or warranty of any kind, explicitly or implicitly.

Warranty:

Warranty terms and conditions can be downloaded from the Internet at www.eachenergy.com.

目录

User Manual.....	1
1. About the Manual.....	5
2. Product Overview	6
2.1 Product Description	6
2.2 Scope of Delivery	8
3. Safety.....	8
4. Storage	10
5. Installation and mounting	11
5.1 Installation Environment.....	11
5.2 Installation Location.....	12
6. Electrical Connection	14
6.1 Cable Connection	14
6.2 Ground Cable Connection	15
6.4 Communication Cable Connection	17
7. Operation	19
7.1 Check Before Power On	19
7.2 Start and Stop batteries	19
7.3 Overview of electrical connections	20
8. Maintenance	1
8.1 General Maintenance	1
8.2 Maintenance period	2
8.3 Disposing of batteries	2
9. Specification	4

1. About the Manual

The manual describes product information, mounting, installation, operation, maintenance, troubleshooting and specification of Each Energy batteries.

Validity

The document is valid for the following battery models: M10.

Target Group

The target group of this manual are end users and qualified persons who have knowledge of batteries or skills of battery installation, maintenance, etc. Only qualified persons are allowed to perform the installation and activities marked in this document under the guidance of safety instructions. Please read this manual carefully before conducting any kind of work on the batteries.

Valid Region

This manual applies to the operation of Each Energy batteries in Australia, New Zealand, the UK, EU, South America, North America, and Southeast Asia.

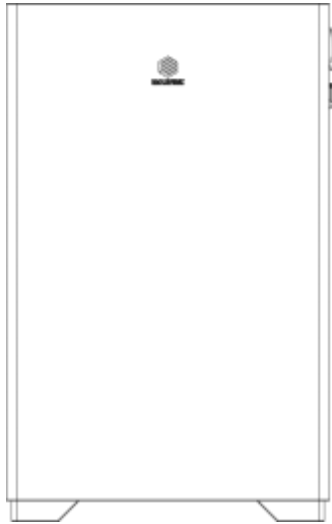
2. Product Overview

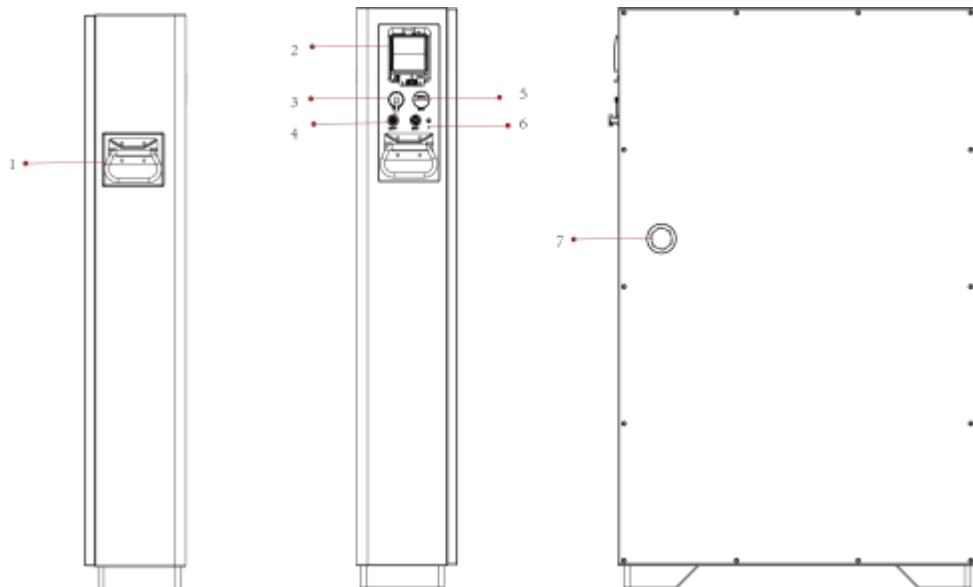
2.1 Product Description

- The battery system can be compatible with the following EachEnergy inverter series:

PHS3K-M1, PHS3.6K-M1, PHS4K-M1, PHS4.6K-M1, PHS5K-M1, PHS6K-M1, and PHS8K-M1

Product Appearance:





No.	1	2	3	4	5	6	7
Name	Grip	Switch	Communication Port	Battery input port	Communication Port	Grounding Port	Explosion-proof valve

2.2 Scope of Delivery



Battery * 1



Battery Cable Assembly * 2



Communication cable * 1



Screw Package *1



Documents * 1



Mounting plate *2

3. Safety

3.1 Safety Symbols

Symbol	Explanation
 DANGER	Indicates a high level of risk which, if not avoid, may result in death or serious injury
 WARNING	Indicates a medium level of risk which, if not avoid, may result in death or serious injury

	CAUTION	Indicates a low level of risk which, if not avoid, may result in minor or moderate injury
	NOTE	Indicates a situation which, if not avoided, may result in device damage or property damage
	ELECTRIC SHOCK	Indicates a danger of electric shock or high voltage
	HOT SURFACE	Indicates hot surface, do not touch
	WAIT	Notice of waiting at least 5 minutes before operation

3.2 Safety Instructions and Notice for Use

The batteries involved in this manual comply with applicable safety and technical regulations in design and test. To avoid personal injury and property damage and to ensure longer service life of the machines, please read this manual carefully and observe all safety information during operation.

Improper operation may result in risk of person injury or damage to the machine and to other property, so please ensure that the following requirements are met before or during operation.

- Installation of batteries must be performed by qualified technicians, and be in compliance with applicable electrical standards, regulations and the requirements of local power authorities.
- Wear protective equipment for all work on the machines: helmet, insulated footwear, gloves, etc.
- Ensure that unauthorized persons and children have no access to the

machines.

- Do not open the housing of the machines at any time. Unauthorized opening will void guarantee and warranty and may damage the machines.
- Do not touch non-insulated parts or cables, disconnect the machines from voltage sources and guarantee no possible re-connection before working on the machine.
- Use measuring devices with a DC input voltage range of 600 V or higher only.
- High voltage is present in the live parts and cables inside the product during operation, wait at least 5 minutes after disconnecting voltage sources.
- The temperature of some parts of the battery may exceed 60 °C during operation. To avoid being burnt, do not touch the battery during operation.
- Pack batteries properly during transportation, and do not transport them together with flammable material.
- This does not apply to equipment intended to be installed in restricted access areas.

4. Storage

4.1 Storage Environment

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

- Pack the equipment using a packing box and put some desiccant in

the box before sealing.

- Put the equipment back to the packing box if it is not to be installed in 3 days after unpacking.
- Storage SOC: 10%~15%SOC. Charge and discharge the battery every 6 months.
- Recommended storage temperature: 0°C~35°C (less than one year), -20°C~0°C or 35°C~40°C (less than one month).
- Recommended storage humidity: 0%~95%RH(no condensation). Do not install the battery if any moist or condensation is found.
- Place the equipment in a cool place where away from direct sunlight.
- Keep the equipment away from inflammable, explosive, and corrosive matters.
- Keep the equipment away from the rain.

5. Installation and mounting

5.1 Installation Environment

- Install the Battery on the even ground with sufficient bearing capacity and flatness. Increase the bearing capacity and flatness of the ground by laying the foundation, adding bearing plates and so on.
- The optimal temperature for the battery is 20~40°C .
- Avoid exposing the equipment to direct sunlight or rain.
- Install the equipment away from heat/cold source 1.5m at least.
- Do not install the equipment in the place where the temperature changes extremely.
- Install the equipment away from strong interferences to ensure its

regular work.

- Keep children away from the equipment.
- Do not install the equipment in places prone to accumulate water.
- Do not put inflammable or explosive matters near the equipment.

5.2 Installation Location

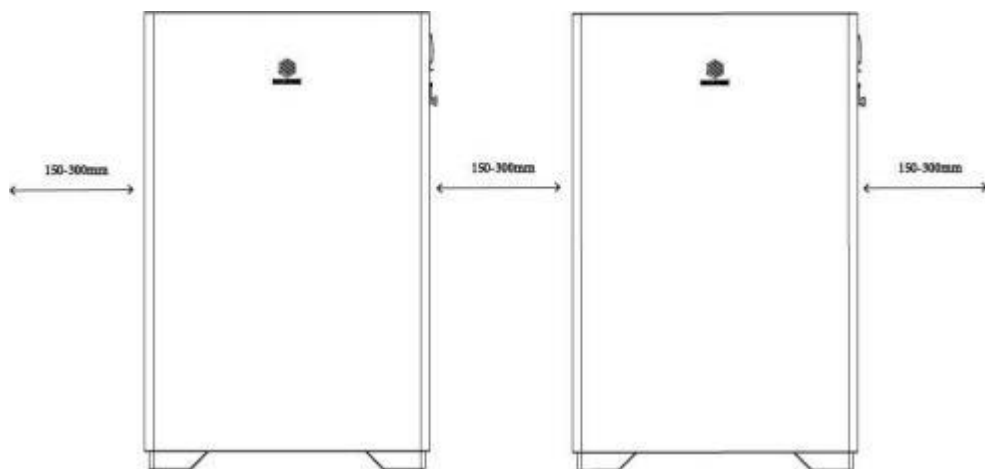


WARNING

Do not select locations storing flammable material which may cause fire or explosion!

The following points should be considered when selecting an installation location.

- The location shall be convenient for electrical connection, operation and maintenance.
- The ingress protection of the battery is IP66, so it can be installed both indoors and outdoors.
- The location must be well ventilated and sheltered from direct sunlight, rain or snow.
- Install batteries vertically.
- If more than one battery are installed in one location, a minimum 150 mm clearance should be kept between two batteries
- The battery is to be installed in a high traffic area where the fault is likely to be seen.



Mounting:

Fix the battery on flat ground against a wall with mounting brackets using screws and suitable tools.

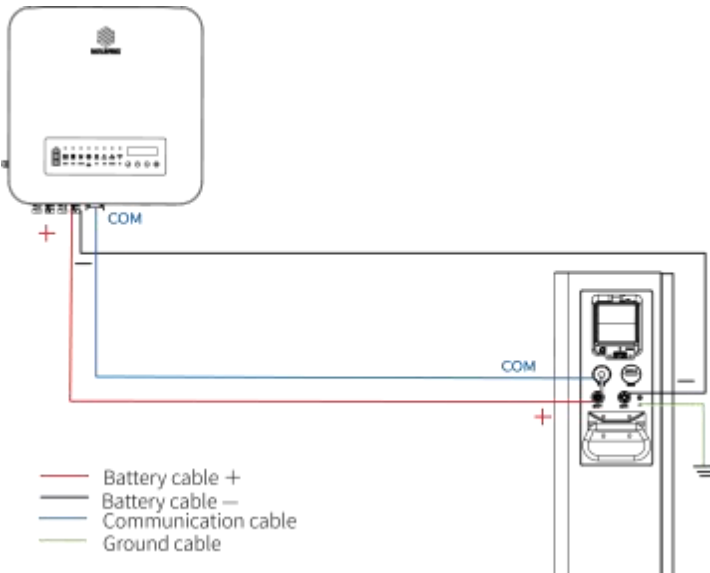


6. Electrical Connection

6.1 Cable Connection

Overview of the cable connection

Take PHS3-8KW inverter series as an example connection here:



Our battery itself does not have network connection function, his relevant information is monitored by inverter, and inverter is connected by CAN communication.



NOTE:

Parallel connection of the batteries is not recommended.



WARNING:

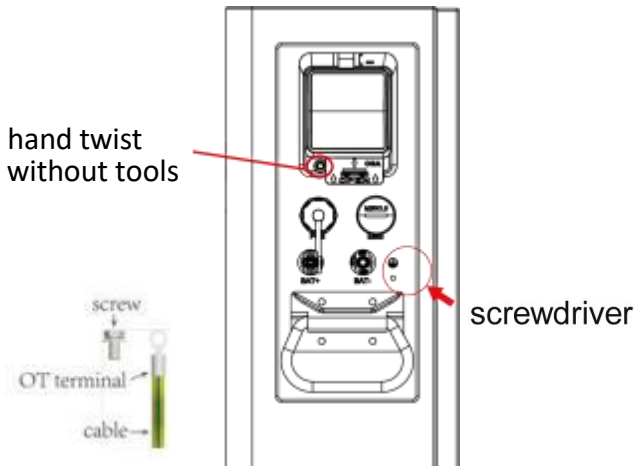
Please disconnect the power before wiring and do not touch the switch with wet hands! The battery is very heavy, please be careful !

6.2 Ground Cable Connection

The external grounding port is located beside the battery port.

Procedures:

Prepare an OT terminal M4, crimp a grounding cable to the terminal, insert a fastening screw into the OT terminal, insert them to the grounding port on the battery, and screw them tightly (the torque is 2 N.m.).



NOTE: Connect the PE cable first before installing the equipment. Disconnect the PE cable before dismantling the equipment.

- The drawing force of the cables after crimping is at least 400N.
- Connect any one of the two ground cables to the ground. Reserve the other ground cable.
- The cross-sectional area of the PE cable conductor: 4-6mm² . The cable should meet standards for outdoor use.

6.3 Battery input Connection

Step1 Turn the Grid Supply Main Switch OFF.

Step2 Turn the DC switch OFF, and for battery, turn the battery switch off.

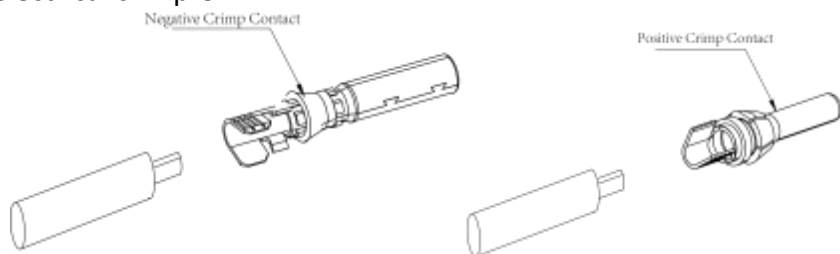
Step3 Prepare battery cables including one red cable and one black cable.

Step4 Plug the power connector of red cable in the battery port + on both inverter and battery.

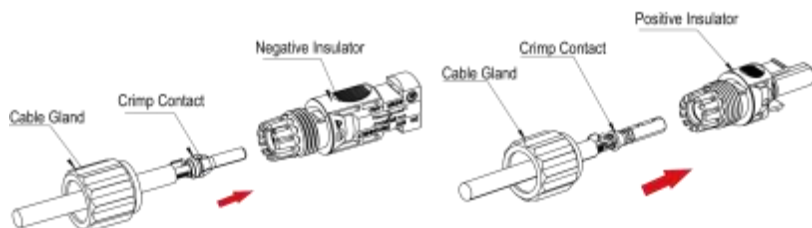
Step5 Plug the power connector of black cable in the battery port — on both inverter and battery.

Assemble power cables to power connectors:

- 1) Strip the insulation layer off the DC Cable for a little length.
- 2) Insert the wire into the Crimp Contact and crimp them with an electrical crimp-er.



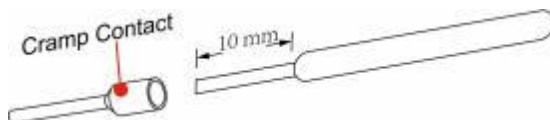
- 3) Thread the cable through the Cable Gland, insert it into the insulator, and gently pull backward the cable to ensure firm connection. Then screw up the Cable Gland to the Insulator.



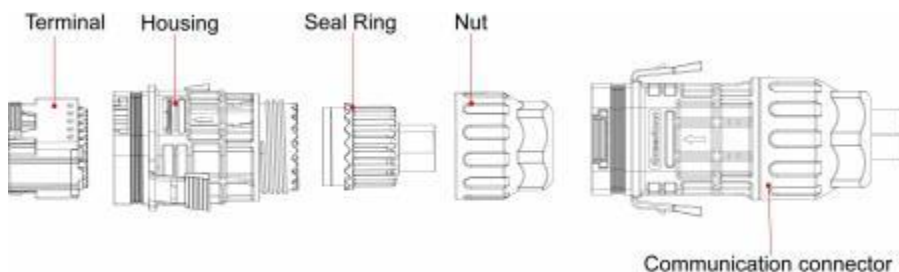
**NOTE:**

Power connectors The connector on the battery side has been wired, and the inverter terminal on the other end can be used by users with other brands of inverters

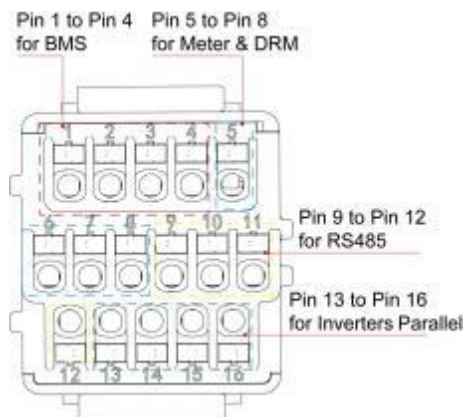
6.4 Communication Cable Connection



- 1) Strip the insulation layer off the communications cable for a little length.
- 2) Insert the wire into the Crimp Contact and crimp them with an electrical crimp-er.
- 3) Thread the communications cable through Nut, Seal Ring, and Housing successively, and insert the cable into the corresponding pin of the Terminal (Function of corresponding pin will be introduced below)
- 4) Plug the connector to the Communication port of the Battery.

**NOTE:**

Communication connectors has been wired, and the inverter terminal on the other end can be used by users with other brands of inverters



There are 16 pins of the connector, please insert the blue wire into the pin 2 and blue-white wire into the pin 1 for the intended function.

Connect the communication port of the inverter to the PCS port of the battery using the communication cable.



WARNING

Ensure that the open circuit voltage of PV array is within the max. input voltage of the battery!



WARNING: Do not turn off DC switch directly for accident reverse connection of DC inputs or any fault of batteries as it may damage batteries. In that case, turn off the DC switch only when the DC current is below 0.5 A.

7. Operation

7.1 Check Before Power On

Check the following items before power on. Otherwise, the Battery System may be damaged.

No.	Items
1	The equipment is installed firmly in a place where is convenient for operation and maintenance. The installation place is clean and well ventilated.
2	The ground cable, power cable, communication cable and terminal resistance are connected correctly and securely.
3	The cable ties meet the cabling requirements and are reasonably distributed. No cables or ties are broken.
4	Unused ports are sealed.

7.2 Start and Stop batteries

Turn the switch on when using the battery. Turn it off when not using the battery.

When the current is too large or the temperature gets too high, the switch will trip automatically.

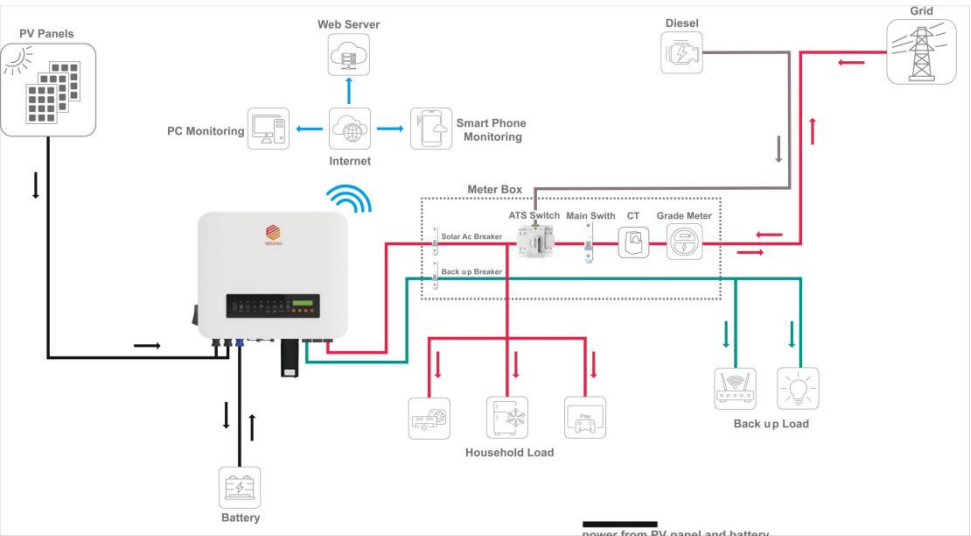
After the battery and inverter positive and negative terminals and

communication cables are connected, rotate the screws on the waterproof cover, open the waterproof cover, toggle the air switch to upward state by hand. Please observe whether the battery indicator on the control panel of the inverter is long lighted or not. If it's the former case, the system is turned on successfully.

Rotate the screws on the waterproof cover, open the waterproof cover, toggle the air switch to down state by hand. Please observe whether the battery indicator on the control panel of the inverter is extinguished or not, when extinguished, it means that the battery is turned off successfully.

7.3 Overview of electrical connections

The following is a diagram of a typical solar system for your reference for install inverters.



7.4 BATTERY INFO

You can find battery information in this sub-menu. This is the relevant battery parameter content on the inverter screen

No.	Display	Explanation
1	MANUFACTURER Each Energy	Name of Manufacturer
2	BATTERY STATUS DISCHARGING	The state of battery including: sleep, charging, discharging, idle, balance char req, forced char req, not connect, can loss
3	CUTOFF SOC 10%	Battery stops discharging when SOC falls below a certain value
4	BAT VOL: 50.50V BAT CUR: 58.02A	Battery voltage: 50.50V Battery current: 58.02A
5	BAT SOC : 80% BAT TEMP: 45°C	State of charge of battery Temperature of battery
6	BAT POWER 5800 W	Power of battery
7	RATED CAPACITY 20 Ah	Rated capacity of battery
8	TOTAL CHARGE 80 kWh	Total charging capacity of battery
9	TOTAL DISCHARGE 50 kWh	Total discharging capacity of battery



DANGER ELECTRIC SHOCK

High voltage may present, please beware of the risk of electric shock and take protection precautions!

8. Maintenance

8.1 General Maintenance

The batteries need regular check and maintenance conducted by technicians . Please ensure that they are free of dust, foliage and other dirt.



NOTE: The use of cleaning agents may damage the machine and its components. Only use a cloth moistened with clear water to clean the machine.

8.2 Maintenance period

Item	Period
Fully charge the battery and discharge it to 25~50% if the battery is not in use.	Once Every 3 months
Check the wall mounting plate, fix it if it is not secured.	Once Every 6 months
Check whether the outer shell is broken. Repair the painting or contact after-sales service if there is any broken.	Once Every 6 months
Check whether there is an exposed cable. Replace the exposed cable or contact after-sales service for help.	Once Every 6 months
Check whether there is debris accumulation around the battery to avoid affecting heat dissipation.	Once Every 6 months
Check for water and pest to avoid prolonged intrusion.	Once Every 6 months

8.3 Disposing of batteries

If the batteries need to be disposed of, please do that according to the

local regulations for electrical equipment waste, and choose the right site for the disposing specified for electrical equipment waste according to local regulations.

9. Specification

Model	M10
Battery Parameter	
Product description	Rechargeable Li-ion Battery Pack
Battery type	LFP
Battery Max Charge/Discharge Power	4.8kW
Nominal and Usable Battery capacity	9.12kWh
Nominal voltage of Battery	96V
Max charging voltage of Battery	108V
End of discharge voltage of Battery	81V
Rated capacity of Battery	100Ah
Maximum charge current of Battery	50A
Maximum discharge current of Battery	50A
Depth of discharge	0.95
Charging temperature range of Battery	0-45℃
Discharging temperature range of Battery	-20-55℃
Standard charging method (declared by manufacturer)	Charge with constant current 50A until the voltage reaches 108V, then charge with constant voltage 108V until the current reaches 5A.
Dimensions (W*H*D)	630mm*1010mm*178mm
Enclosure ingress protection	IP66
Weight	115Kg
Warranty	5 years
Manufacturer	Each Energy Technology (Suzhou) Co., Ltd.
Country	China



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