ECO-WORTHY

1500W Solar Inverter Charger

User Manual

Tel: +44 20 7570 0328(EU)
1-866-939-8222(US)
E-mail:customer.service@eco-worthy.com
Web:www.eco-worthy.com

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About This Manual

1.1 Propose

This manual describes the assembly, installation, operation and troubleshooting of this product. Please read this manual carefully before installing and operating this product, and keep this manual.

1.2 Scope

This manual provides safety and installation and usage guidelines.

Safety Instructions

WARNING:
This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

1.Caution-only qualified personnel can install this device with battery and solar panels.

2.Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.

3.To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.

4.Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

Introduction

This is a multi-function inverter/charger, combining functions of DC-AC off-grid inverter and solar charge controller.The power supply voltage of the lead-acid battery or lithium battery is 24VDC, the rated output power of the inverter is 1500W, and the maximum power of PV charging is 800W.

3.1 Features

♦ High frequency digital control

♦ Pure sine wave inverter

♦ Built-in solar charge controller

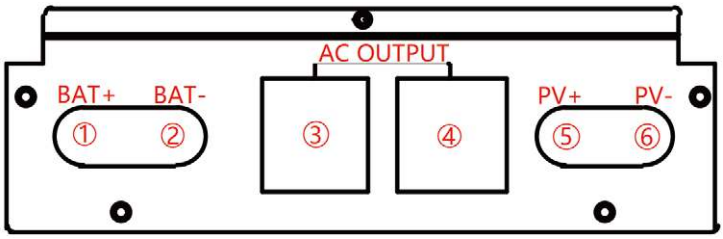
♦ LCD display for working states viewing

♦ Smart fan control, reduce noise and prolong unit lifespan

♦ The self-start function of photovoltaic power can activate the battery from under-voltage protection state

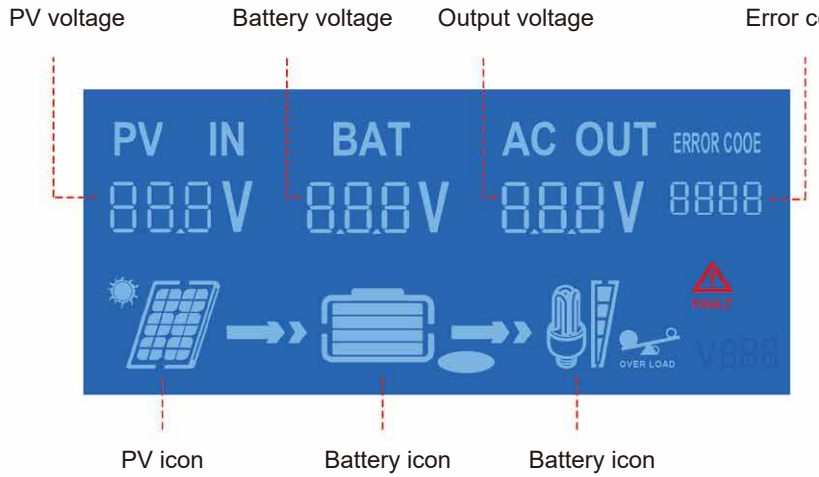
3.2 Overview

3.2.1Interface



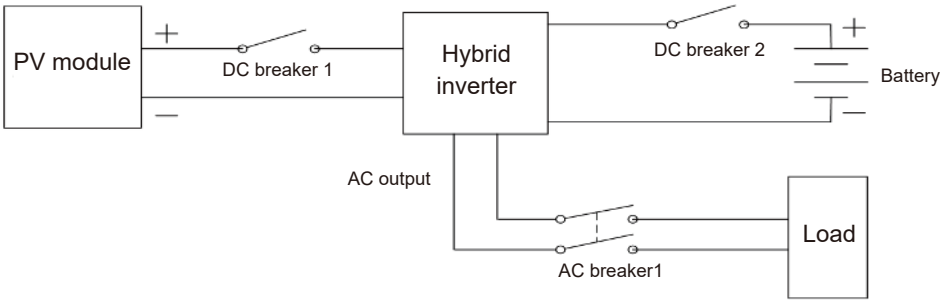
①Battery input positive terminal
②Battery input negative terminal
③AC output port
④AC output port
⑤PV input positive terminal
⑥PV input negative terminal

3.2.2 Display



Installation

4.1 Diagram



Caution

- DC breaker 1 (Recommended)
- DC breaker 2 (Necessary)
- AC breaker 1 (Optional)

4.2Unpacking And Inspection

♦ Before installation, please inspect the unit. Be sure that nothing inside the package is damaged

4.3 Mounting the Unit

Use the mounting holes on its back for fixing. The interface wiring should be correct as diagram.

Consider the following when choosing an installation location:

♦ Do not install the inverter on flammable materials.

♦ Install on solid wall.

♦ Please install the inverter at sight level to read the display easily.

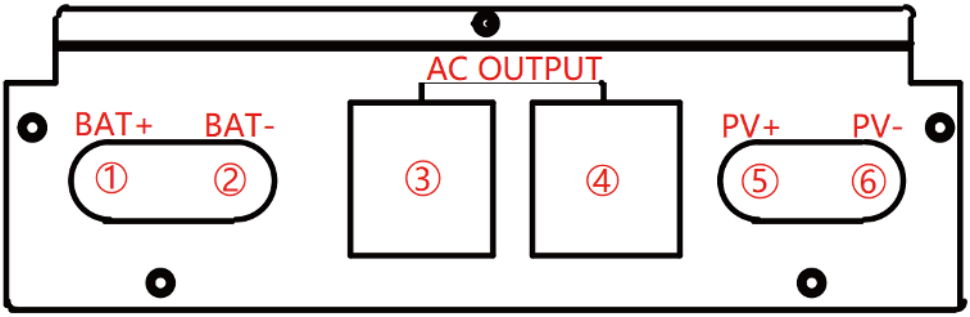
♦ The ambient temperature should be between 0 and 40°C.

♦ Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

It's suitable to install it on concrete or other non-combustible surfaces

4.4 Battery Connection

Please wire correctly according to the wiring diagram, from the inverter to the breaker, and then from the breaker to the battery, pay attention to the positive and negative poles, do not short circuit!



Mark ① to connect the positive pole of the battery through the breaker (100A fuse is recommended)

Mark ② to directly connect with the negative pole of the battery

Note:The battery voltage range of this hybrid inverter is below 30V DC, please make sure that the lead-acid battery or lithium battery bank voltage is lower than this threshold.

Do not short-circuit the battery wiring. Short-circuiting the battery may cause arc damage.

All wiring must be proceeded by professionals.

The use of suitable cables is very important for the safe and efficient operation of whole system, in order to reduce risks, please use the cable sizes recommended in this note

Inverter Module	Typical Current	Wire Gauge	Note
ECO-1500W (S)	70A	10AWG	You can derate cable size according to the actual use, but it is still recommended not to use excessive cables.

4.5 PV Connection

Note: It is recommended to install a DC breaker(fuse) between the PV modules and the inverter before connecting.

If there is no DC breaker, please read the following instructions carefully:
Please confirm that the battery input breaker is disconnected before wiring the PV, and then connect the PV positive (PV+) at ⑤ and the PV negative (PV-) at ⑥ according to the diagram. Pay attention to the positive and negative polarities when wiring, although this product has It has its own photovoltaic reverse connection function, but it is strongly recommended that it should not be reversed or short-circuited during operation.

Note: ECO-1500W photovoltaic operating voltage range is below 75V DC, please make sure that the total PV input voltage is lower than this threshold!

♦ The use of suitable cables is very important for the safe and efficient operation of whole system, in order to reduce risks, please use the cable sizes recommended in this note

Inverter Module	Typical Current	Wire Gauge	Note
ECO-1500W (S)	33A	10AWG	You can derate cable size according to the actual use, but it is still recommended not to use excessive cables.

4.6AC Output Connection

It is recommended to install an AC breaker between the inverter and the load, please use the cable sizes recommended in this note

Inverter Module	Typical Current	Wire Gauge	Note
ECO-1500W (S)	6.8A	14AWG*1	You can derate cable size according to the actual use, but it is still recommended not to use excessive cables.

All wiring must be proceeded by professionals

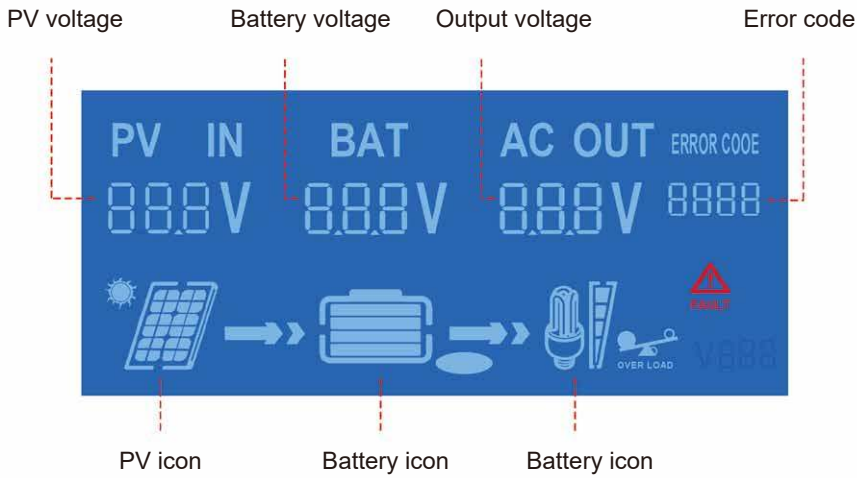
The use of suitable cables is very important for the safe and efficient operation of whole system, in order to reduce risks, please use the cable sizes recommended in this note

Operation

5.1 Operation And Display

Once the system is properly installed and connected, simply press the POWER ON/OFF button on the panel to turn it on. When the POWER ON/OFF button is pressed, the LCD on the screen will light up. After a few seconds, when BAT and AC OUT are displayed on screen, it means that the whole hybrid inverter is started.

5.2 Icons Description



LCD displays current photovoltaic voltage, battery voltage, AC output voltage and its working status

PV IN：PV input voltage　BAT：Battery voltage AC OUT：AC output voltage

Descriptions:

♦ PV icon on, indicates there is PV input current

♦ The arrow in between icons, indicates the power flow and working state

♦ Grids in battery icon, indicate the present battery power

♦ Bulb icon on, indicates the AC output stay normal. Bulb icon off, indicates no AC output

♦ Grids in load icon indicate the load capacity, it will get filled when actual load above 90% of rated number.

♦ Error code indicates present fault of the unit, If there is more than one fault, the code number will flash in cycle

♦ BAT icon will flash when battery bank voltage below 22V

♦ The number in bottom right is software version

5.3 Error Code Description

Error Code	Description	Troubleshooting
1	Battery over-voltage	Please check whether the battery input voltage exceeds the allowable value of 30V DC or whether there is an external charging input
2	Battery under-voltage	Please reduce or turn off the load to charge the battery
3	Cooling fan over-temprature	Please check the surrounding cooling conditions and whether the fan is running normally
4	PV input over-voltage	Please check if the battery input voltage exceeds the allowable value of 80V DC
6	AC output abnormal voltage	Please contact the manufacturer
7	AC output short-circuited	Please check whether the load is damaged or short-circuited
8	AC output overload	Please confirm whether the load is too high, or reduce the load power.
9	Inverter internal fault	Please contact the manufacturer
10	PV charging internal fault	Please contact the manufacturer

Technical Specifications

Type \ Module		ECO-1500W
Battery	Battery voltage range	19.5-30V DC
Inverter output	Output wave type	Pure sine wave
	Rated output voltage	120VAC
	Rated output power	1500W
	Output frequency	60Hz
PV charging	PV input power	800W
	PV input voltage range	10-80V DC
	PV input operation range	10-75V DC
Operating conditions	Working temprature	-20~40℃
	Storage temperature	-40~70℃
	Storage humidity	0-95%
	Altitude	0-2000m
	Cooling method	Smart cooling fan
Dimension	length width height	463.5mm*235mm*99.6mm
Protection	Solar charge controller	Reverse-polarity protection, short-circuit protection, over-temperature protection, over-current protection
	Inverter	Battery under-voltage protection, battery over-voltage protection, radiator over-temperature protection, output overload protection, output short-circuit protection, output over-voltage and under-voltage protection