

Elettronica Tirrito srl

MPPT HYBRID 300W WIND + 500W SOLAR



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High-End type wind solar hybrid controller user manual

Type:ET-MPPT

version: 2.0



1. Please keep and read the instructions carefully during installation and carefully before using the product.
2. Experienced technical personnel must install, and the installation process must be in strict accordance with the user manuals to ensure that the product works normally.
3. This product should avoid long-term exposure to corrosive gas and moist environments.
4. Never place this product in damp, rain, exposure to the sun, serious dust, vibration, corrosion and strong electromagnetic interference.
5. Do not open this product or repair the shell.

I . Product overview

The controller is designed specifically for wind solar hybrid street light system, can make the wind solar hybrid street light system of various resources to achieve the best configuration, of course, the controller with some simple Settings can also be used in household system.

The Fan charging part and Solar charging part are independent of each other, can make fan controller or solar controller using independent (As a fan controller cannot use light control function).Fan charging adopted booster MPPT technology, which makes under low wind speed, the fan's electricity can still be used;In the high wind speed or the fan of power is beyond the scope of the battery and load absorption, the controller immediately launched the step-less unloading function (this function detailed description in later) protection system of the equipment.Solar charging using in series MOS tube PWM technology, which makes the controller power consumption is small, the system more stable.

Discharge part working mode can be set,light control mode, Period of time control function etc,The user can be set up according to the requirements on its own combination.

Man-machine interface of the controller USES a custom LCD screen and four key operation mode, the user to use simple and easy to use, popular and easy to understand, convenient and quick.

The controllers with perfect protection function, including: lightning counter-attack, solar charger, over-voltage automatic braking, storage battery reverse connect and open protection, etc.

II. Technical note

In off-grid system, there is always a pair of contradictions that produce energy source and energy absorption of load does not match the problem, may be the following situation: 1. The power supply can be issued under the condition of sufficient electrical energy of the load is not likely to work and the battery power is full, so this time we need to send power electricity do discharge processing,

otherwise may cause permanent damage to the equipment;2. In the power supply does not have enough electric power support is likely to appear when battery power is rarely lead to load can not have normal work, so we also need to improve power generation capacity in this situation.

In our wind solar system, solar panels power relative to the fan power is very stable power supply, so we had a wind solar hybrid controller mainly for fan design the booster MPPT charging technology and step-less unloading function, and in view of the solar panels still take simple and efficient PWM charging technology.

Booster MPPT mainly for most of the time in many parts of the wind power is not enough to support a generator to the condition of the battery charging, specific working principle is: the fan under the condition of wind speed reach the rated wind speed, the resulting voltage and power are not reach the rated power, we through real-time acquisition fan by means of booster circuit of voltage and current from the boost voltage to the battery voltage to the system requirements, using the software MPPT algorithm make the fan of power use as much as possible.

Step-less unloading function mainly aimed at the first case, when don't need additional energy, will generate the energy consumption of the fan on unloading device, the controller dedicated connection port of unloading device, the user can be selected according to actual condition when the choose and buy, we suggest in good wind conditions, such as coastal and western is empty,you must configure unloading;In some inland areas where wind conditions in general, we also recommend that try to configure unloading.

Other instructions:

III performance characteristics and protection function

Intelligent design succinct structure, control powerful, stable performance, safety and reliability of the products.

Choose MPPT fan charging ways, charging more efficiency than ordinary PWM way more superior

The boost charge function, solve the low charging efficiency problem of low wind

speed (optional)

Choose the big size LCD display, all parameters can directly visible

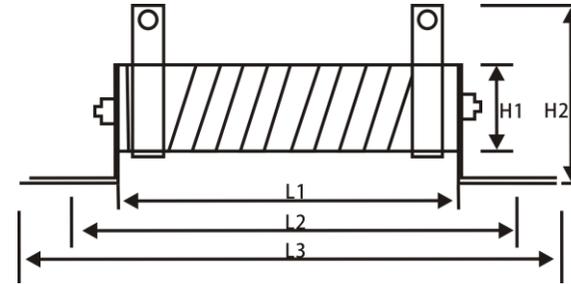
The humanized keys operate function, all of the parameters according to the request of customers in orders to adjust all kinds of using environment.

Choose PWM step less uninstal way.

With output state should set function, common power/half power/of period of time since the definition and characteristics (optional)

Using LCD to show the tinny battery voltage and electric current

Professional digital intelligent control.

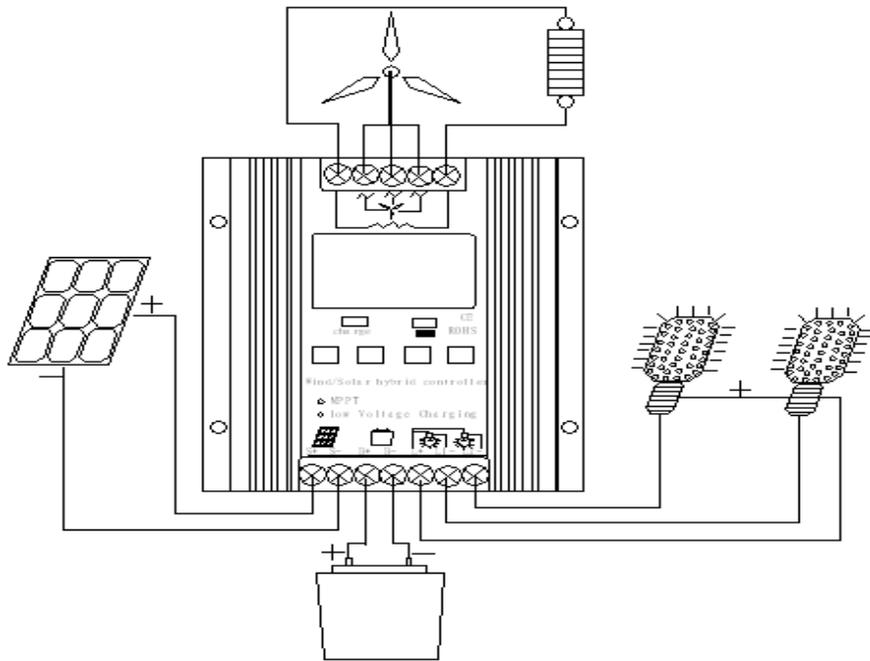


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IV. Operating instructions

The controller to operating personnel must be a range of electrical theory knowledge and practical experience of technical personnel, and strictly in accordance with relevant provisions of the manual steps and manner.

1. Install



4-1 wiring diagram

protection function		
protection function	Explain	notes
Solar prevent reverse charge	At night or the light is bad, the battery voltage may be higher than the solar array voltage. The controller can prevent the generation of solar cells reverse battery charge	
Reverse battery protection.	Reversed when the batteries have a huge transient current of the circuit fuse in the fuse will automatically make the battery circuit is disconnected, so as to effectively protect the battery and the device.	Electronic prevent reverse connection protection
Battery open circuit protection	Long-term use, the battery open-circuit may occur, or poor contact. The controller in the battery open-circuit protection device itself will not be damaged.	Regularly check the line connection

Power	resistance size (mm)				
	L1±5	L2±5	L3±5	H1±2	H2±5
300W	190	210	230	43	90
500W	180	210	240	63	110

Install step:

- ① Open the package; confirm the equipment without damage because of transportation
- ② Install the controller in the right place. Installation position should retain the necessary installation space, to ensure the normal heat dissipation of the controller, and installation, using the environment temperature is not more than the controller working temperature range.
- ③ When installation, please use the multi-strand copper insulated wires. First determine wire length, in the case of ensure the installation position, as far as possible, reduce loss of power and choose wire specifications as requested.
- ④ Connect the storage battery and equipment panel "BATTERY" item with a length of less than a meter of more than 4 square millimeters copper core cable, and please pay attention to the distinction between positive and negative electrode. When connect the wires, first use a suitable length wire to connect on the controller B+ terminals, then the other end is connected to the battery positive electrode; Then choose another a suitable length wire, the same first its one end connected to the controller B- terminal, then the other end connected to the battery negative electrode. If the positive and negative reversed, the controller has anti-reverse protection, found reverse, just dismantle wiring and wiring in accordance with this order to re-connection.
- ⑤ After finished the first step ④, the controller starts to work, the controller panel two lights flashing, LCD screen light up, if it is found that the controller is not normal, please check the attachment is the reverse, whether the battery voltage reaches more than 8 v voltage, to ensure normal and according to the step ④ connection again.
- ⑥ Choose the appropriate copper core cables connected load and load terminals

to the controller, and please pay attention to the distinction between positive and negative electrode, if the positive and negative connection errors may cause permanent damage to the load, because you do not necessarily have protection against reverse loads. The controller can connect two road load, if there are two road load needs to connect, please positive screwed together two loads connected to the controller L+ terminal and the negative electrode are connected to the controller L1-, L2- terminals. After connection, observe whether the load is normal work, if don't work properly, please observe whether the controller panel **out** light is flashing, If flashing battery under-voltage, need to charge to work properly.

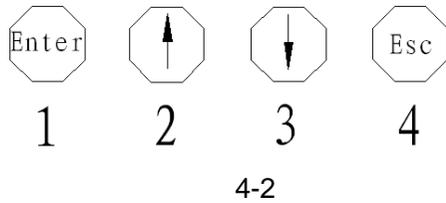
- ⑦ Choose appropriate copper core cable to connect the solar panels and solar controller terminal S+ S-, and please pay attention to the distinction between positive and negative electrode. If the positive and negative reversed, controller to start the reverse connect protection (premise is in front of the 6 steps is right). Connect the correct logo is the controller panel at the **charge** red light will light (the premise must be during the day).
- ⑧ Choose appropriate copper core cable to connect the unloading and controller unloading terminal, no positive negative distinction.
- ⑨ Choose appropriate copper core cable to connect the fan and controller fan terminal, if it is a three-phase ac fan, three terminal non-electrode distinguish, if it is a dc fan, connection in any controller fan three terminals of any two of the above. Please select when install the fan under the condition of low wind speed, so as to avoid accidents.

2.Operation debugging

(1)Status Indication:

LED	Status	Show
CHARGE 	ON	Charging
	OFF	No charging
OUT 	ON	normal
	OFF	Over voltage
	FLASH	Under voltage

(2)Button instructions

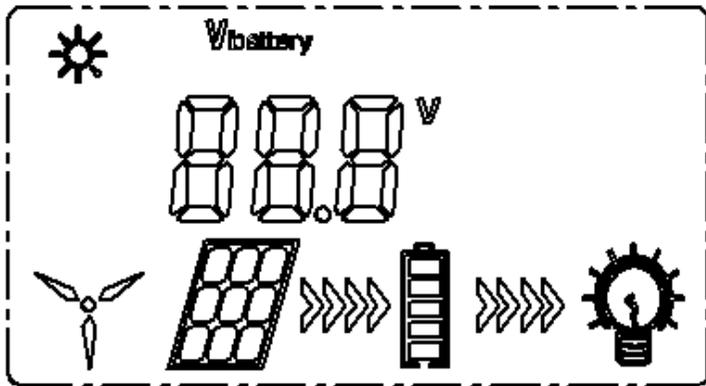


As shown in figure 4-2,

- Button①:Press this button to enter setup interface or switch set up program;
- Button②:Click this button to switch down in page views,in the setup interface click this button is used to reduce the parameter values, step 0.1 V.
- Button③:Click this button to switch up browsing on page views,in the setup interface click this button is used to increase the parameter value, step 0.1 V.
- Button④:Click this button to exit the setup interface, and save the parameters.

(3)LCD screen (the default interface)

To the user in accordance with the specifications, general automatically entered into the following interface (figure 4-3) :



4-3

Vbattery on behalf of the display Battery voltage at this time, digital is the Battery voltage readings;

represents the current day (if it is night, the icon into);

Two represent the charging and discharging, for charging, have the current will show effect, when there is no current or current is very small, the label

will disappear;For discharge, when the battery is in a state of under-voltage, flashing the overall effect, when the battery is in good state, according to static effect, marking can pick up the load, after loading,if there are current,will display effect.

On behalf of the solar panels, power generation, according to the sun;

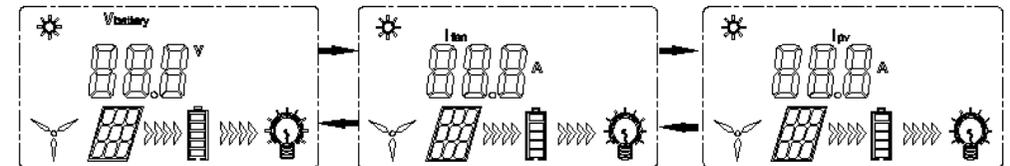
On behalf of the battery, the number of inside represent the current battery capacity;

on behalf of the load, the load output will be lighting effects under the condition of display;

On behalf of the fan, the wind will come, the animation will be shown.

(4)Parameters to browse

User press down key to view the fan charging current "**Ifan**",the solar charging current "**Ipv**", press the up button to return to the interface of a parameter.



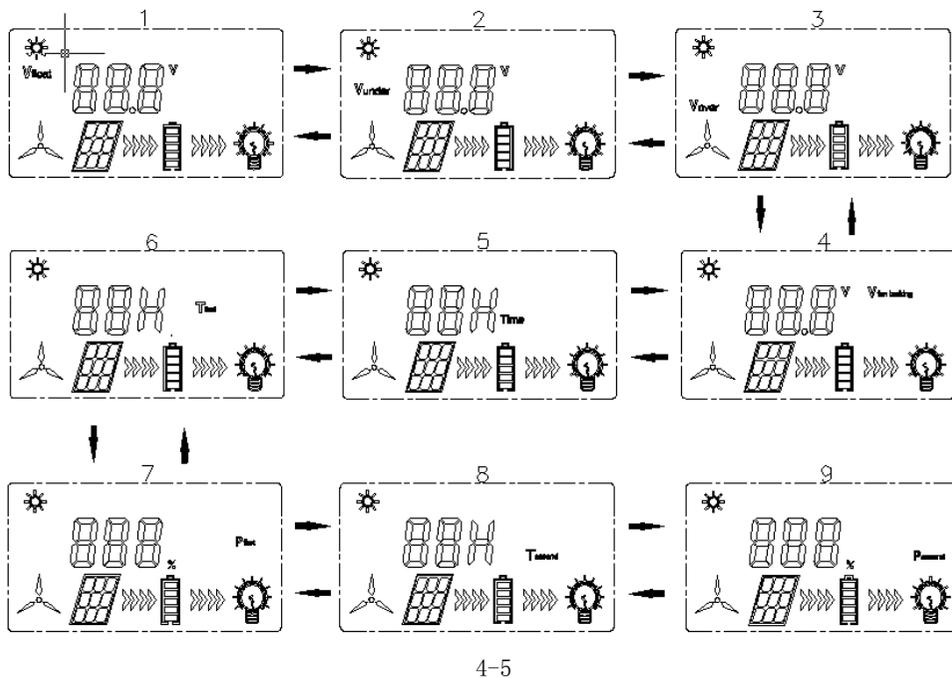
4-4

The above three pages, collectively known as browse pages, when a minute don't operating controller buttons, LCD back-light will automatically go out.after pressing any key will once again lit back-light and continuously for one minute.

(5)Parameter Settings:

Press Enter key,the controller into the parameter set interface, as shown in Figure 4-5,“Vfloat” represent this time can be set to float charging voltage value, the user can press or key numerical,each time you press the increase or decrease 1v,set up finished,the user can press the ESC key to exit to browse the first page, can also continue to press Enter to switch to the next project, operation method as

above.



The controller can be set to Float charging pressure point "VFloat", under-voltage point "Vunder", over-voltage point "Vover", fan unloading point "Vfan_bre", the operation method is the same as the first item.

Street light and household mode switch: as shown in figure 4-5, according to the method described in this section, switch to the fifth, data area show * * H, labeled Time, user can press the up and down key changes value, each Time you press the increase or decrease 1, when the number is 24, that is the controller is 24 hours working mode (that is, the household mode), for the other Numbers that controller model is street light, XXH is light on time.

The above part for this controller standard functions.

The following account only for a specific load effectively, the standard controller does not include these features. As a result, users before the order, please contact with the company.

Street light model first time **Tfirst** and power **Pfirst** setup instructions: as shown in figure 4-5, according to the method described in this section, switch to the sixth, data area shows XXH, labeled **Tfirst**, user can press the up and down key changes value, each time you press the increase or decrease 1, digital size is the

time value; according to the method described in this section, switch to the seventh, data area shows XXX (0-100), labeled **Pfirst**, user can press the up and down key changes value, each time you press the increase or decrease 10, the power value for XX % of full power. Street light model second time **Tsecond** power **Psecond**, set up means the same as the first time.

V. Use environment

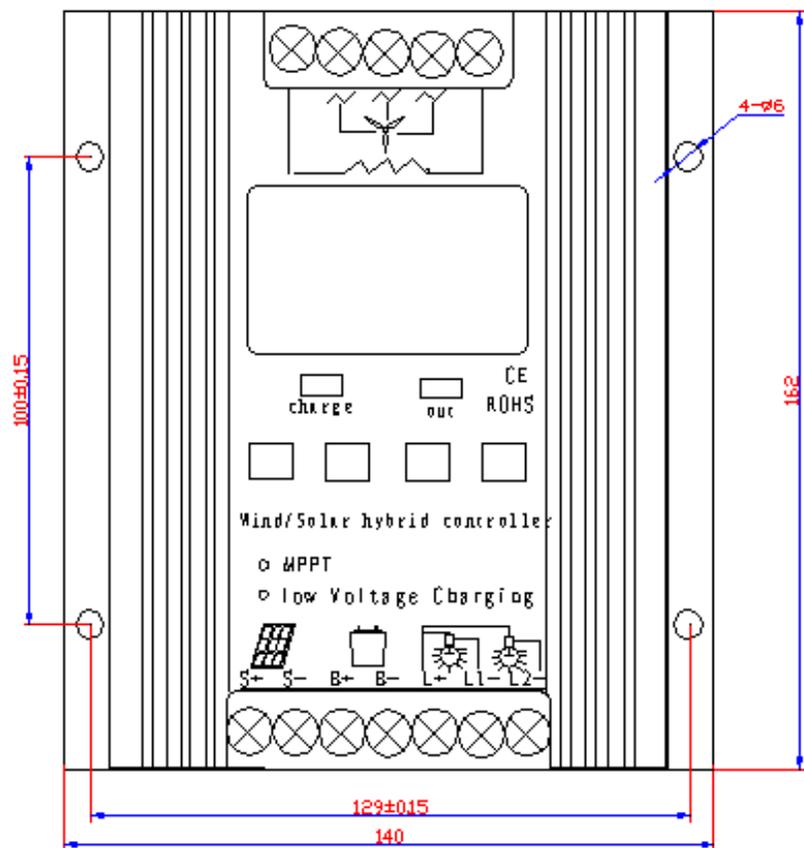
1. Should be in a clean dry ventilated environment.
2. Avoid direct sunlight and the sun, rain, humid mist of the environment.
3. To avoid dust in a soil, dust in the environment.
4. The battery should be placed away from 0.5m or more.
5. Is strictly prohibited in flammable, explosive gas environments, to guard against flames and sparks!
6. Ambient temperature -25 °C - +50 °C.
7. The air relative humidity less than 85% (25 °C ± 5 °C).

VI Safety and protection

The controller has the solar energy the counter-attack, reverse connect battery, battery open circuit, lightning protection, wind speed and over voltage protection function.

Note: lightning protection refers to the last level of protection, equipment necessary for lightning prone areas, need to use special multi-stage lightning protection system of lightning protection device, etc. If the user has this requirement, it is necessary to increase the corresponding cost of distribution system and indicate when you order it.

VII Dimension



The controller height is 66 mm.

VIII After-sales service

We provided product to the warranty period of one year since it is sold. If the product is exceed warranty or damaged by transportation, improper use, human element, force majeure, it is not under warranty.

Statement: we reserve the right to change products, product updates without prior notice

IX Technical Parameters

model	JW1230	JW2430	JW2450	JW2460
Rated voltage	12V	24V	24V	24V
Component power	200W	150W	300W	300W
Power of fan	300W	300W	500W	600W
charging	charging	30A	20A	23A
	Even charge protection	14.4V±1%	28.8V±1%	
	floating Charge	13.8V±1%	27.6V±1%	
	Even charge recover	13.2V±1%	26.4V±1%	
	Temperature Compensation	-24mV/°C	-48mV/°C	
Over Discharge	Shut off (DC)	10.8V±1%	21.8V±1%	
	Resume (DC)	12.3V±1%	24.6V±1%	
Over Voltage	Shut off (DC)	16V±1%	32V±1%	
	Resume (DC)	15V±1%	30V±1%	
No-load Current	≤0.1A		≤0.1A	
Voltage drop (DC)	≤0.5V			
Control mode	Fan MPPT charge function, PWM uninstal function, PWM over-current limiting			
Boost charge	Flexible independent step-up circuit (optional)			
Display	LCD			
Show parameters	voltage、 charge current、 battery volumetric			
Protected type	Lightning protection, solar cells, anti-anti-charge protection, battery open-circuit protection, battery reversal protection, over speed and over-voltage soft automatic brake protection, overload protection.			
Heat emanation way	radiator			

Working Temperature	-25°C~+55°C
Height	≤5500m(2000m above the need to reduce power use)
Environment humidity	0~90%, No condensation
Net Weight	1.20KG
Size(L*W*H)	162×140×64(MM)