High-End type wind solar hybrid controller user manual

Type:JW-MPPT

version 2.0

Safety

1. Please keep and read the instructions during installation and before using the product carefully.

2. The Installer should be experienced, and the installation process must be in accordance with the user manuals strictly to ensure that the product works normally.

3. Product should avoid long-time exposure to corrosive gas and moist environment.

4. Never place this product in damp, rain, exposure to the sun, serious dust, vibration, corrosion and strong electromagnetic interference, etc.

5. Do not disassemble this product or repair the shell.

Directory

Ⅰ. Product overview

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

The wind generator charging part and Solar charging part are independent from each other, wind generator charging adopts booster MPPT technology, which makes under low wind speed, the wind generator's electricity can still be used; In the high wind speed or the wind generator power beyond the scope of the battery and load absorption, the controller launches the unloading function by dump load resistor, protects the system and controller, battery. Solar charging use in series MOS tube PWM technology, which makes the power

consumption small, more stable.

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

LCD screen and four key operation mode, easy to understand, very convenient.

Perfect protection function,including:lightning counter-attack,over-voltage automatic braking, storage battery reverse connect and open circuit protection

Ⅱ. Technical note

1. When battery is fully charged but the charging is still continued by solar or wind,at this time,we need to do discharge processing, otherwise it may cause permanent damage to the devices;
2. When the power generation source does not have sufficient power support, battery may be under-voltage and cannot support for loads normal working.At this time, we also need to improve the power generation capability,in our wind solar hybrid system, comparing to the wind generator power, solar power is very stable power supply, so we had a wind solar hybrid controller mainly for wind

generator and design the booster MPPT charging technology as well as step-less unloading function. PWM charging technology for solar charge.

Boost MPPT is mainly designed for the situation that most of the time in most regions where wind energy is not enough to support the generator to generate electricity to charge the battery. The specific working principle is: the voltage generated by the fan under the condition that the wind speed does not reach its rated wind speed, and The power does not reach its rated power. We use the MPPT algorithm to make the power generated by the fan as much as possible by collecting the voltage and current of the wind turbine in real time through the means of a boost circuit to raise the voltage it sends to the charge voltage of the system battery. Get used.

The step-less unloading function is mainly for the first case. When no additional energy is needed, the extra energy will be consumed on dump load. The controller has terminals for connecting the dump load. According to the actual situation, we suggest that in areas with good wind energy conditions such as the coast and open area, the dump load must be installed.In the inner-land area, where wind is very big,we also recommend controller with dump-load.

Ⅲ. Performance characteristics and protection function

◆ Intelligent design, simple structure, powerful control function, stable performance, product safety and reliability.

◆ Using MPPT fan charging method, the charging efficiency is more superior than ordinary PWM method

◆ Boost charging function solves the problem of low charging efficiency due to fan's low wind speed (optional)

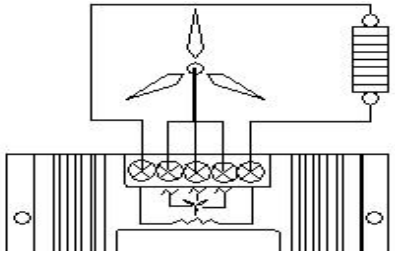
◆ Use large LCD display, all parameters are visible

Ⅳ. Operating instructions

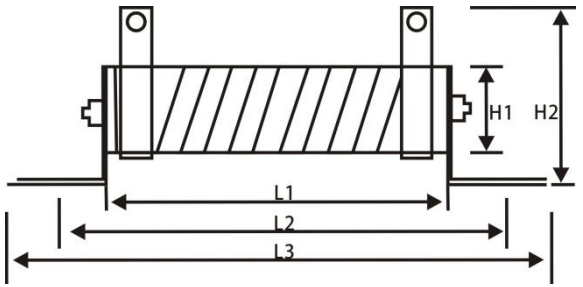
The installer (user) must have electrical theory knowledge and practical experience, and strictly in accordance with relevant provisions of the manual steps and manner.

1.Install

Protection function		
protection function	Explain	notes
Solar reverse charge	The voltage of the battery may be higher than the terminal voltage of the solar array when in bad light conditions such as at night,the controller is equipped with anti-reverse charging circuit to prevent the battery from producing counter-charge to the solar battery.	
Battery Reverse	It will cause a huge current when battery reversed .Controller do not work until right connection done.	Electronic prevent reverse connection
Battery open circuit	After long-term use, the battery may be open or poorly contacted. The controller will protect the device itself from damage after the battery is opened.	Regularly check the connection status.



4-1 wiring diagram



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7

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 Unpack and confirm that controller is not damaged by shipping.

2 Install the controller in a suitable location. The necessary installation space should be reserved during the installation to ensure the normal heat dissipation of the controller, and the ambient temperature should not exceed the operating

temperature range of the controller.

3 Use multiple copper core insulated conductors for installation. First, determine the length of the wire. Ensuring the installation position, and to reduce the electrical loss as much as possible, pay attention to select the wire specifications as required.

4 Use a 4mm copper cable or more to connect the battery to the controller. Pat attention for the positive and negative electrodes, not reverse.

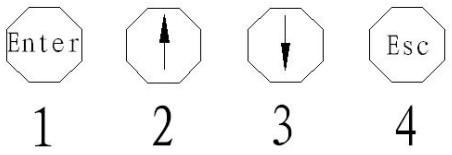
5. After the above operations are completed, the two indicators on the panel of the controller flash and the LCD screen lights up.

6 If the controller does not work properly, check whether the connection is reversed and if the battery voltage reaches above 8V.

7. Select the appropriate copper core cable to connect the load to the controller. Note that the positive and negative poles can be distinguished. If the positive and negative poles are connected incorrectly, the load may be permanently damaged because your load may not be protected against reverse polarity. This controller can connect two loads as well, if there are two loads that need to be connected, twist the positive terminals of the two loads together and connect them to the L+ terminal of the controller, and connect the negative terminal to the L1-, L2- terminals of the controller. After connecting, observe whether the load is working properly. If it is not working, observe whether the “out” indicator on the controller panel is flashing. If it flashes, it indicates that the

battery is under voltage and it needs to be charged before it can work normally.

8. Connect the solar panel to the controller S+, S-. Note the polarity of the positive and negative poles will start reverse polarity protection. If the c the controller panel lights up (during day



9. Connect the dump load between positive and negative poles.

10. Connect the fan and the controller. If it is a three-phase AC fan, the three terminals have no distinction between positive and negative poles. If it is a DC fan, connect any two of the three terminals on the fan side of the controller. Note: When installing the fan, please make sure lower wind speed to avoid accidents.

2.Operation debugging

(1)Status Indication:

LED	Status	Show
CHARGE	ON	Charging
	OFF	No charging
OUT	ON	normal
	OFF	Battery over voltage
	FLASH	Battery under voltage

4 - 2

(2)Button description

4-2

As shown in figure 4-2,

Button①**:** Press this button to enter setup interface or switch program;

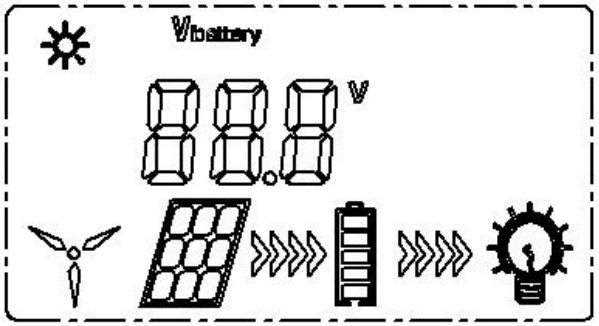
Button②: Click this button to switch down in first views page,in the setup interface click this button is to increase the parameter values, step 0.1 V each.

Button③: Click this button to switch up browsing on page views,in the setup interface click this button is used to decrease the parameter value, step 0.1 V each.

Button④: Click this button to exit the setup interface, and save the parameters.

(3)LCD screen (the default interface)

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



4-3

Vbattery shown Battery voltage.

represents the daytime for the time being (if it is night, shown ☾);

Two represents charging and discharging respectively. For the charging indicator, when there is current, it will show like “horse-racing” state. When there is no current or the current is small, the indicator will disappear; for the discharging indicator, when the battery is in the under-voltage state, the whole flashing effect will be displayed. When in the normal state, the static effect is displayed, and the indicator can be connected to the load. After the load is connected, if a current is generated, the “horse racing” state is displayed.

represents the solar panels, power generation, according to the sun;

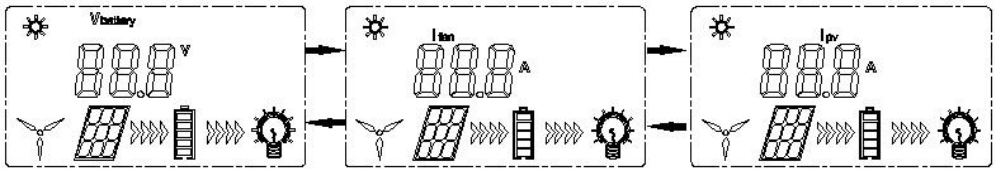
represents the battery, the number of inside represent the battery capacity;

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

represents the fan,it shown turning,when there is wind.

(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.

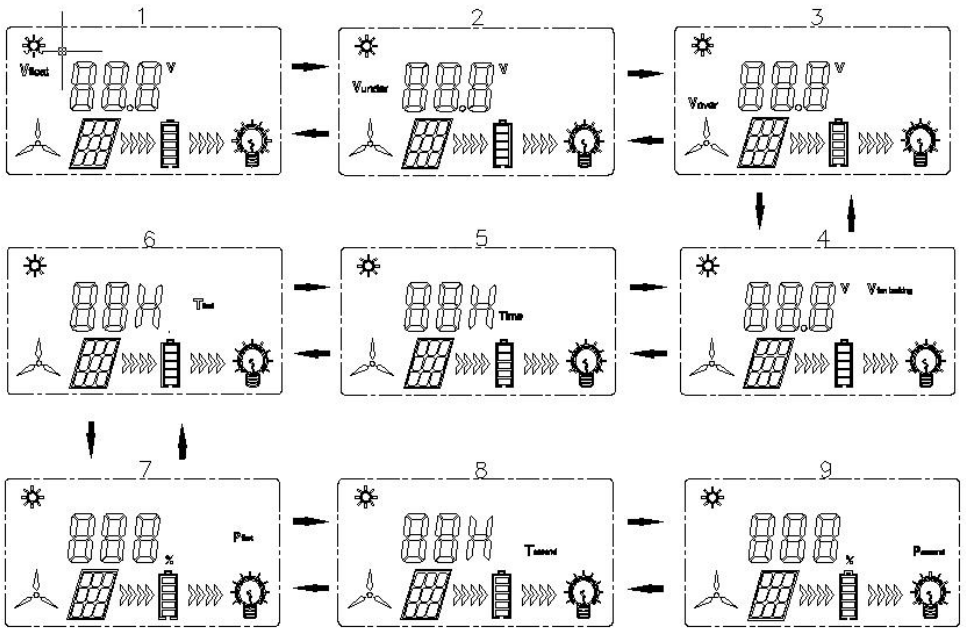


4-4

The above three pages (Figure 4-4) are browse page. When the controller button is not operated within one minute, the LCD backlight will automatically be extinguished. Pressing any key after extinguishing will light the backlight again for one minute.

(5)Parameter Settings:

The user presses the Enter key to enter the parameter setting interface. “Vfloat” means that the float voltage value can be set at this time. The user can press the up/down key to change the value. Each time the user can presses increase or decrease 0.1V, the user can press the ESC key after the setting is completed. Exit to browse the first page, you can continue to press the Enter key to switch to the next item. The operation method is the same as above.The flow chart is shown in Figure4-5



4-5

The controller has following items which can be set: float voltage "Vfloat", undervoltage "Vunder" ,overvoltage "Vover", fan dump load Point "Vfan_breaking", the operation method is the same mentioned before.

How to switch street lamp and household mode: as shown in Figure 4-5, according to the method described in this section and switch to the fifth item, the data area shows **H which mean “Time”, the user can press the up and down key to change the value. Each press increases or decreases 1 and when the number is 24, the controller indicates the 24-hour working mode (home mode). When the other numbers indicate the controller is the street light Mode, XXH indicates the lighting time.

Above part is the standard function of the controller.

The following description is valid only for specific loads and standard controllers do not include these features. Therefore, please ask the company before ordering.

In the streetlight mode, the first time Tfirst and the power Pfirst setting description: as shown in Figure 4-5, according to the method described in this section, switch to the sixth item, the data area shows XXH, marked as Tfirst, the user can press

the up and down keys to change the value. Each time you press increase or decrease by one, the digit size is the time value; according to the method described in this section, you switch to the seventh item, the data area displays XXX (0-100), marked as Pfirst, the user can press the up and down keys to change the value. Increase or decrease by 10 each time, this value represents the power is XX% of full power. The second time Tsecond and power Psecond in the street light mode are set in the same manner as the first time period.

V. Use environment

1. The controller should be used in a dry, clean and ventilated environment.

2. Avoiding under direct sunlight, exposure to sunlight, rain, moisture, dust, and acid mist.

3, Placement position should be more than 0.5M away from the battery pack

4, Strictly prohibited in the use of flammable, explosive gas environment, beware of flames and sparks!

5, Ambient temperature -25 ° C - +55 ° C.

6, Relative humidity of air is not more than 85% (25 ° C ± 5 ° C).

Ⅵ.Safety and protection

The controller has various protection functions such as solar protection, reverse battery, open battery, lightning protection, over wind speed and over voltage.

Note: Lightning protection refers to the last level of protection for the equipment. For lightning-prone areas, multi-stage lightning protection systems composed of special lightning arresters are required. If the user has this requirement, the corresponding distribution system and costs must be increased.

Ⅸ.Technical Parameters

Model		JW1230	JW2430	JW2450	JW2460	JW2480
Rated voltage		12v/24v	24V	24V	24V	24V
Component power		100W	200W	300W	400W	400W
Power of fan		300W	300W	500W	600W	800W
Charging	Charging current	33.33A	21A	33.33A	42A	50A
	Equalization charge	14.4V±1%	28.8V±1%			
	Floating Charge	13.8V±1%	27.6V±1%			
	Equalization charge recovery	13.2V±1%	26.4V±1%			
	Temperature Compensation	-24mV/℃	-48mV/℃			
Over Discharge	Disconnect (DC)	10.8V±1%	21.8V±1%			
	Recovery (DC)	12.3V±1%	24.6V±1%			
Over Voltage	Shut off (DC)	16V±1%	32V±1%			
	Recovery (DC)	15V±1%	30V±1%			
No-load		≤0.1A	≤0.1A			
Voltage drop (DC)		≤0.5V				
Control mode		Wind generator MPPT charge function, PWM uninstall function, PWM over-current limiting				
Boost charge		Flexible independent step-up circuit (optional)				
Display		LCD				
Show parameters		Voltage、charge current，battery voltage				
Protected type		Lightning protection, solar cell anti-reverse protection, open battery protection, reverse battery protection, over-wind speed and over-voltage soft automatic braking protection				
Heat emanation way		Radiator				
Working Temperature		-25℃~+55℃				
Height		≤5500m(2000m above the need to reduce power use)				
Environment humidity		0~90%，No condensation				

Ⅶ. Dimension