User's Manual of AdvancedWind/Solar Hybrid Controller

Model： **WWS10A-24**

WWS10A-48

Version： 1.0

⚠ Notes

1. Thank you very much for purchasing our Wind/Solar Hybrid Controller. Please read the instructions carefully before installation and usage , and keep it properly.

2. The installation operation must be done by experienced technical personnel , and be strictly in accordance with the using manual to ensure the product can work properly.

3. This product should be avoided long-term exposure to corrosive gas and moisture environment.

4. Do not put this product in wet, rain, exposure, severe dust, shock, corrosion and strong electromagnetic interference environment.

5. Do not open the shell to repair this product by yourself.

Catalogue

1. General Description

The advanced wind/solar hybrid controller is specially designed for high-end small-scale wind/solar hybrid system and especially suitable for wind/solar hybrid power generation system system and wind/solar hybrid monitoring system. It can simultaneously control the wind turbines and solar batteries on the battery for safe and efficient charging.
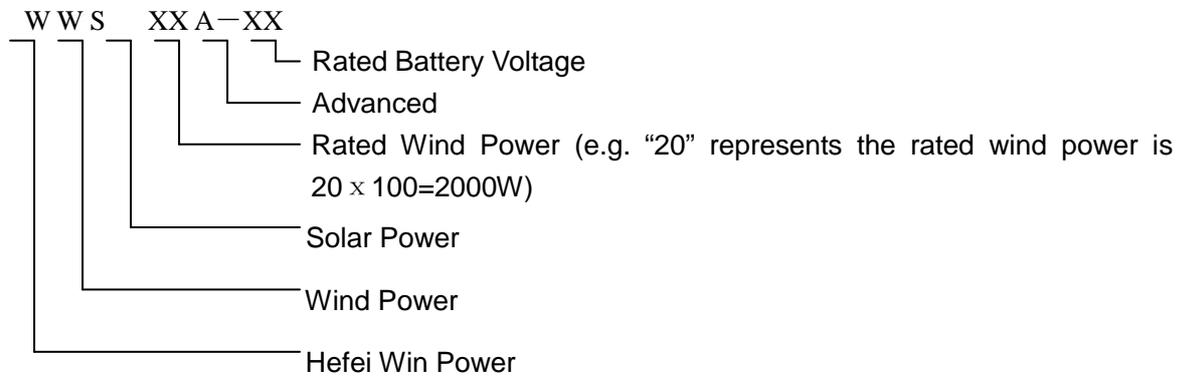
The controller adopts PWM to control wind turbine and solar cell charge the battery with voltage limitting and current limitting, namely, the controller will charge battery with current limitting when battery power is low and charge battery with voltage limitting when battery power is high. When the total charge current of wind turbine and solar cell is lower than current limitting point, the controller will charge the battery with the whole power generated by wind turbine and solar cell. When the total charge current of wind turbine and solar cell is more than current limitting point, the controller will charge the battery with the current limitting point, the excess energy will be unloaded by PWM. When battery voltage is lower than voltage limitting point, the controller will charge the battery with the whole power generated by wind turbine and solar cell. When battery voltage is up to voltage limitting point, the controller will charge battery with voltage limitting point and the excess power will be unloaded by PWM. For specify wind turbine, the controller can achieve accurate speed control, namely, you can set the stop rotation speed. When the wind turbine exceeds this speed, the controller will stop the wind turbine working and the controller will not run the wind turbine untill 10 minutes later.

The controller adopts LCD module especially designed for wind/solar hybrid system. The LCD can display battery voltage, wind turbine voltage, photoelectric voltage, wind power, PV power, wind turbine current, PV current and battery power status. Users can browse the parameters through the four keys of LCD

In addition, the controller has perfect protection functions, including: solar cells reverse charging, solar cells anti-reverse, battery over charge, battery anti-reverse, lightning protecting, wind turbine current limitting, wind turbine automatic brake and manual brake.

The controller has intelligent and modularized design, simple structure, powerful function. The controller use high quality industrial components and excellent production activity, which make the controller is suitable for relatively poor working environment and has reliable performance

and service life.

2. Model Description

W W S   XX A－XX

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W W S    XX A－XX
│ │ │    │  │   └── Rated Battery Voltage
│ │ │    │  └───── Advanced
│ │ │    └──────── Rated Wind Power (e.g. "20" represents the rated wind power is
│ │ │              20 x 100=2000W)
│ │ └───────────── Solar Power
│ └─────────────── Wind Power
└───────────────── Hefei Win Power
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eg. WWS 10A-48-E （1000W   Advanced Wind/Solar Hybrid Controller, Battery Voltage is 48V）

3. Features

➢ Intelligently and modularized design, simple structure, powerful function, stable performance.

➢ PWM charging with voltage limiting and current limiting, users can set the stop rotation speed of fan precisely.

➢ TVS lightning protection

➢ Using the LCD professionally designed for wind/solar hybrid street light .The LCD can displays all system status and system parameters with intuitive digital and graph.

➢ Perfect protection function.

4. Operational Regulations

The wind&solar hybrid system connection diagram is as follows:
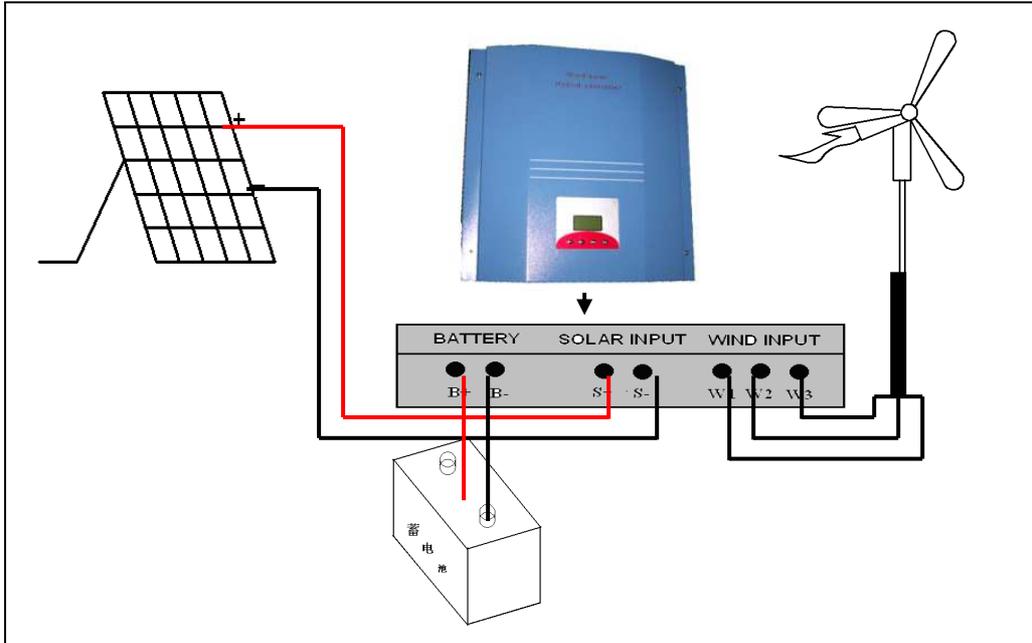
After wind/solar hybrid generator system and the various components of photovoltaic panels installed and the construction of the external circuit completed, the following order should be carry out to make the connection and operation safely and reliably.

(1). Open the package and ensure whether the equipment is damaged due to transportation or not.

(2). Connect the battery's positive pole to the positive (+) of "BATTERY" terminal, and connect the battery's negative pole to the negative(-) of "BATTERY" terminal with copper core cable(section surface≥6mm^2). Despite the controller has the battery reversed protection, but reversing battery is still forbidden!

(3). Make the wind turbine in brake status and then connect the output line of the wind turbine to the "WIND INPUT" terminal in back panel .

(4). Cover the solar panel with a shelter and the connect the solar panels to the "SOLAR INPUT" terminal in back panel.

(5). Users can check the parameters through the key of LCD.

5. LCD operation and Display Instructions

5.1 Description of the Key:

Press any key, LCD backlight lights. The backlight will auto-off while stop pressing the key 10 seconds later.

● " ↑(＋) " key symbolizes increase or next one. In browsing window, press this key to display next parameter. Press this key to look the next parameter which can be modified or increase the value of the current parameter.

● " ↓(－) " key symbolizes decrease or previous one. In browsing window, press this key to display the previous parameter. In setting window, press this key to look the previous parameter which can be modified or decrease the value of the current parameter.

● "Enter" key symbolizes set or confirm key. In browsing window, press this key to access setting window. In setting window, press this key to save parameter and return to browsing window.

● "Esc" key symbolizes cancel or manual switch. In setting window, press this key to return to browsing window and do not save the modification. In browsing window, the key is as a manual reset key when the load short-circuit or overload occur.

5.2 Displaying Contents Description

LCD screen displays the following picture.
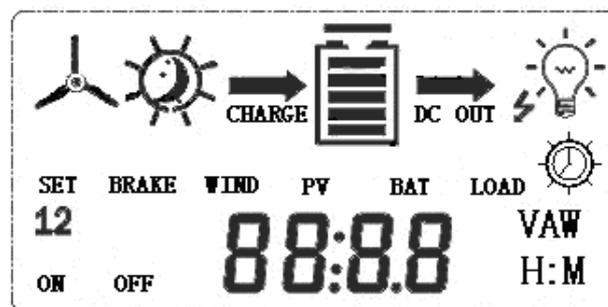
1) ✕ symbolizes the wind turbine.

2） ☼ symbolizes the day, ☽ symbolizes the moon.

3） ▤ symbolizes the battery，internal strip graph represents the status of battery power. When the battery is full, 5 power bars in the battery box will show all the instructions. When

the battery is over-voltage, the symbol ▤ flashing ,the flashing will not stop until over-voltage's recovering.

4) **88:88** is parameters showing. The LCD can displays system parameters with intuitive digital.

5.3 Browsing Parameters Description

1) Turn on the power, the LCD displays browsing window and battery voltage: XX.X V;

2) In browsing window, LCD will circularly display the following parameters by pressing " ↑(+) " key, battery voltage, wind turbine voltage, photoelectric voltage, wind power, PV power, wind turbine current PV current and so on. LCD will display parameters in reverse order by pressing " ↓(–) " key. (Notes: The controller just uses liquid crystal to display some functions but not all of that.)
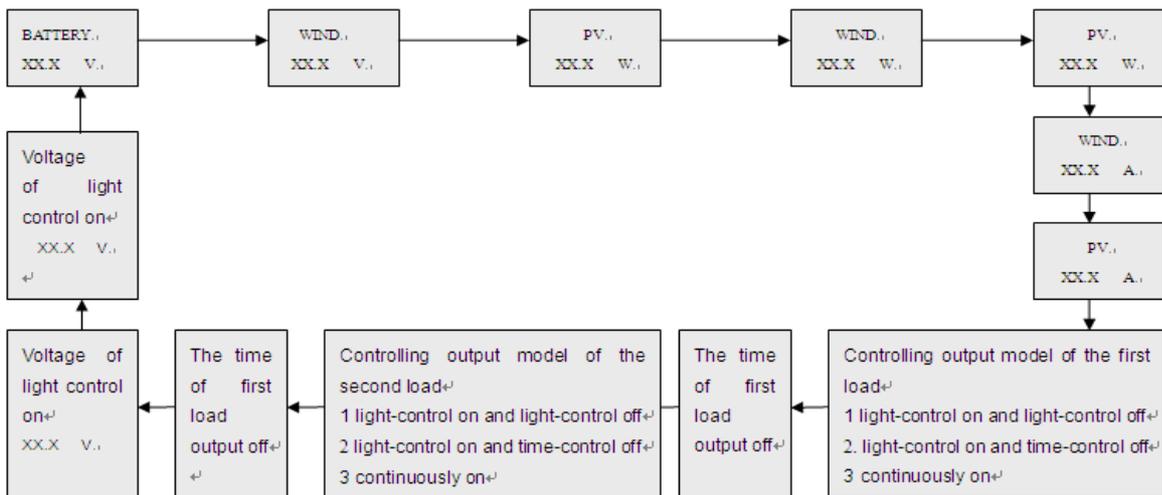
5. 4 Manual Brake Setting:

Press the "Enter" key and "Esc" key simultaneously, LCD displays the symbol **BRAKE** that suggests fan is in brake status. Press the "Enter" key and "Esc" key simultaneously in brake status, the symbol **BRAKE** will disappear and the brake status is released. In normal situation, the fan can not be set in brake status.

6. Parameters

Model	WWS10A-24	WWS10A-48
Rated Battery Voltage	24V	48V
Rated Wind Turbine Maximum Power	1000W	
Rated Wind Turbine Maximum Input current	60A	
Rated Wind Turbine Maximum instantaneous　Input current	1500W	
Unload Voltage （factory default)	28V	56V
Unload Current （factory default)	25A	
PV maximum charge Current	10A	
Control Mode	PWM	
Display Mode	LCD	
Display Parameters	Battery Voltage, Wind Turbine Voltage, PV Voltage, Wind Turbine Current, PV Current, Wind Turbine Power, PV Power .Etc	
Range of working Temperature &Humidity	-20~+55℃/35~85%RH（Without Condensation）	
Quiescent Current	30±2 mA (100mA if the interface is RS485)	
Protection Type	Solar cells reverse charging, solar cells anti-reverse, battery over charge, battery over-discharge, battery anti-reverse, Overloading, lightning protecting, wind turbine current limitting, wind turbine automatic brake and manual brake.	

7．Abnormal phenomenon and treatment

Phenomenon	Description
The symbol ▤ flashing, without charge or discharge	Battery is over-voltage, check battery voltage, and the cable is connected or not, reconnect all components;
LCD controller always displays "brake (BRAKE)", and the manual can not cancel	a) First of all, "Parameter" menu → "Control" menu through the software, to see if set to "brake" , cancel the brake status. b) Brake state is usually caused by over-speed of wind turbine. It will automatically return to normal after 10 minutes under normal circumstances. c)If not the above, first disconnect the fan and controller, and then disconnect the battery and controller . After a few minutes to start re-wiring work, observing whether it has returned to normal.

If the phenomenon do not meet the description or can not return to normal, please contact our service department or salesman to repair or replace.

8. Warranty and 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.

Declare: Our Company reserves the right to change products and without notice when products update.