Advanced Wind/Solar Hybrid Controller

Model: WWS10A-48

Version 1.0

⚠ Notes

1-Really appreicate purchasing our controller. Pls read manual with care before installation and keep

 it properly

2-Installation should be strictly in accordance with manual and done by experienced technicist

3-The equipment should avoide long-term exposure to corrosive gas and moisture enviornment.

4-Keep away from moist ,rain , insolation , severe dust,,shaking. corrosion and intensive electromagnetic

interface

5- Do not open enclosure and maintain personally

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 street light system and wind/solar hybrid monitoring system.

The controller adopts PWM to control wind turbine and solar panels and charges battery with current limitting and voltage limitting as follows :

Charge with Current Limiting : Controller will charge battery with current limitting when battery power is low .

Controller will fully charge battery with the whole power produced by wind turbine and solar panels when total charge current of wind turbine and solar panels is lower than current limitting point. Controller will charge battery with the current limitting point and the over power will be unloaded by PWM when total charge current of wind turbine and solar panels exceeds current limitting point,

Charge With Voltage Limiting : Controller will charge battery with voltage limitting when battery power is high.

Controller will fully charge battery with the whole power produced by wind turbine and solar panels when battery voltage is lower than voltage limitting point. Controller will charge battery with voltage limitting point and over power will be unloaded by PWM when battery voltage exceeds voltage limitting point.
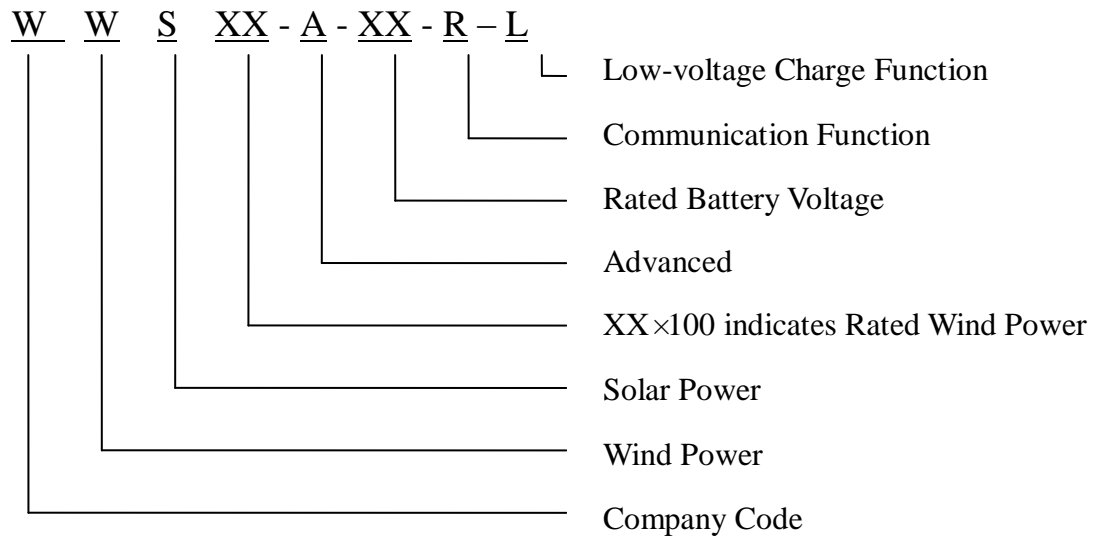
The controller adopts LCD module especially designed for wind/solar hybrid system. The LCD can display battery voltage, wind turbine voltage, solar panel voltage, wind power, solar panel power, wind turbine current, solar panel current, indicating lamp stands for day or night, battery power status, as well as over-voltage, under-voltage, etc. Users can browse and set parameters from the LCD key-press.

In addition, the controller has series perfect protection funtions, including: solar panel reverse-charging, solar panel reverse-connection, battery over-charge, battery over-discharge, battery reverse-connection, lightning, wind turbine current limitting, wind turbine automatic brake and manual brake.

The controller has intelligentized ,modularized, simple structure design with powerful funtion. All components are high quality industrial range and each controller is produced under excellent production activity. Ensure the controller can be used in relatively poor working environment and has reliable

performance and long useful life.

2.Model Description

W W S XX - A - XX - R – L

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│  │  │   │    │    │    │    └── Low-voltage Charge Function
│  │  │   │    │    │    └─────── Communication Function
│  │  │   │    │    └──────────── Rated Battery Voltage
│  │  │   │    └───────────────── Advanced
│  │  │   └────────────────────── XX×100 indicates Rated Wind Power
│  │  └────────────────────────── Solar Power
│  └───────────────────────────── Wind Power
└──────────────────────────────── Company Code
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3. Performance Features

➢ Intelligentized ,modularized, simple structure design with powerful funtion and stable performance.

➢ PWM charging with voltage limiting and current limiting,

➢ TVS lightening protection

➢ Protection for over-charging, over-discharging, short circuit, over-load and a unique anti-reverse protection

➢ Adopt the special LCD designed for wind/solar hybrid street light .The LCD can displays all system status and system parameters

4. Operation Process

The wiring diagram of wind&solar hybrid system as following.
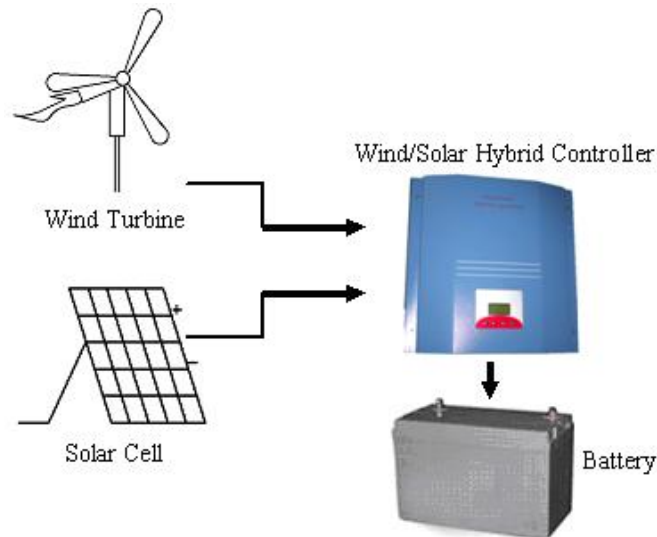
Picture 1, wind&solar hybrid system wiring diagram

After installing wind wind/solar hybrid system, please connect the controller accurately as the sequential operation

Open the package and check whether the equipment is damaged due to transportation or not.

➢ Connect battery positive pole to the positive (+) "BATTERY" terminal, Connect battery negative pole to the negative(-) "BATTERY" terminal with copper core cable(section surface≥6mm^2).

Although the conntroller has anti-reverse protection, but reversing battery is still forbidden!

➢ Ensure wind turbine in brake status and then connect the wind turbine output lines to the "WIND INPUT" terminals in back panel .

➢ Cover solar panel with a shelter and then connect solar panels to the "SOLAR INPUT" terminals in back panel.

➢ Remove the shelter of solar panle and release the brake switch of wind turbine.

➢ Users can set parameters and load output modes through the software and the LCD key-press

5. LCD operation and Display Instructions

5.1 Description of Key-Press:

LCD backlight is on after pressing any key. The backlight will auto-off 10 seconds later while stop pressing any key

"↑(+)" key symbolizes increase or next one. In browsing window, press this key to check next parameter. In setting window, press this key to check next adjustable parameter or increase the value of

the current parameter.

➢ " $\downarrow(-)$ " key symbolizes decrease or previous one. In browsing window, press this key to check the previous parameter. In setting window, press this key to check the previous adjustable parameter or decrease the value of the current parameter.

➢ "Enter" key symbolizes set or confirm . 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 modified parameters. In browsing window, the key is as a manual reset key for load short-circuit or overload

5.2 Displaied Content Description

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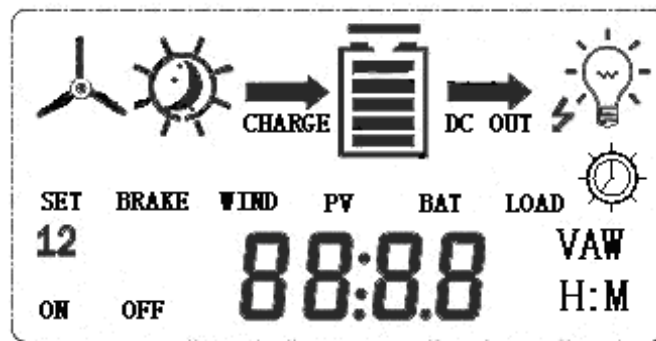
1) ⊼ symbolizes the wind turbine.

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

3）▤ symbolizes the battery，internal strip graph represents the status of battery power., The symbol ▯ is flashing when the battery is over-discharge, this flashing will not stop until over-discharging recover ;The symbol ▤ is flashing when the battery is over-voltage,The flashing will not stop until over-voltage receover.

4) ☼ symbolizes the status of load and error

   ➢ ♡ stands for normal load without output , ☼ stands for normal load with output .

   ➢ The symbol ♡ flashing stands for over-load, users must remove the extra load, click "Esc" key to recover the over-load

   ➢ The symbol of short-circuit ϟ flashing stands for short-circuit protection status, users should

check load wiring, confirm the line wiring is normal and press " Esc " key to recover the short-circuit

5) ⌚ symbolizes light-control and time-control. ☼ symbolizes light-controll on and light-control off.

⌚ symbolizes light control on and time control off.

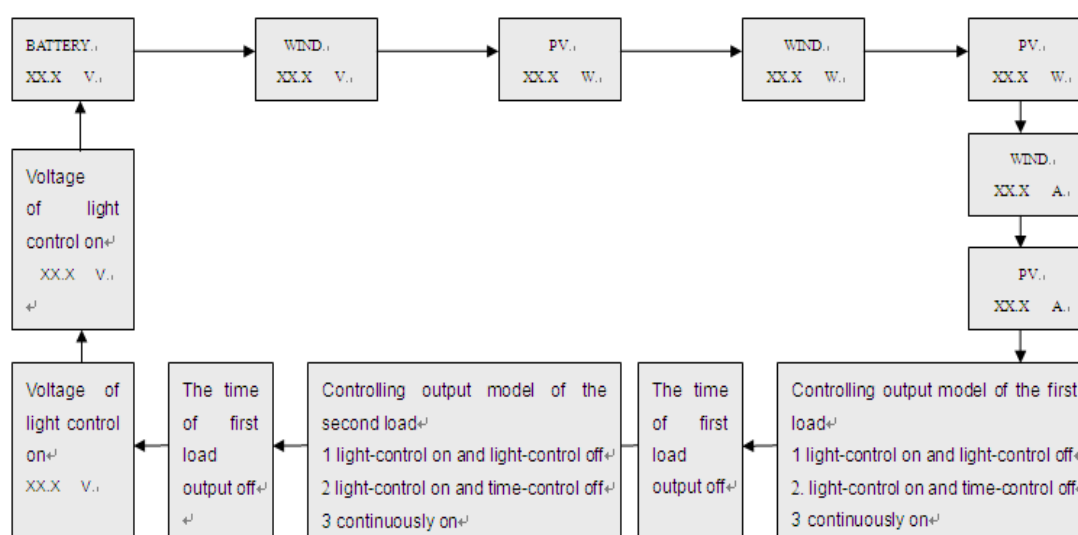6) The character "SET" symbolizes the setting status.

7) The character "12" symbolizes the first output and the second output.

8) **88:88** is parameters showing. The LCD displays all system status value and system parameters with intuitive digital and graph.

5.3 Browsing Parameters

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

2) In browsing window, LCD will circularly display the following parameters by pressing " ↑(+) " key, battery voltage, wind turbine voltage, solar panel voltage, wind power, solar panel power, wind turbine current, solar panel current,

| BATTERY. XX.X V. | → | WIND. XX.X V. | → | PV. XX.X W. | → | WIND. XX.X W. | → | PV. XX.X W. |

| WIND. XX.X A. |

| PV. XX.X A. |

| Voltage of light control on XX.X V. | | Voltage of light control on XX.X V. | ← | The time of first load output off | ← | Controlling output model of the second load 1 light-control on and light-control off 2 light-control on and time-control off 3 continuously on | ← | The time of first load output off | ← | Controlling output model of the first load 1 light-control on and light-control off 2. light-control on and time-control off 3 continuously on |

5.4 Manual Brake Setting:

Press the "Enter" key and "Esc" key at the same time, LCD displays the symbol **BRAKE** that suggests wind turbine is in brake status. Press the "Enter" key and "Esc" key at the same time in brake status, the symbol **BRAKE** will disappear and the brake status is released. In normal situation, the wind turbine can not be setted in brake status.

6.Performance Parameters

Model	WWS10A-48
Rated Battery Voltage	48V
Rated Wind Turbine Maximum Power	1KW
Rated Wind Turbine Maximum Input current	40A
Rated Wind Turbine Maximum instantaneous Input power	2KW
Unload Voltage （ factory default)	56V
Unload Current （ factory default)	25A
Rated PV Power	300W
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	≤30mA
Protection Type	Solar cells reverse charging, solar cells anti-reverse, battery over charge, battery over-discharge, battery anti-reverse, 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 well connected or not, re-connect all components;
The symbol ☐ flashing and no output	Battery is over-discharging and battery is empty. Please continue to use the battery after battery is fully charged. Remove the battery and recover it with battery-charging device if the battery is over discharging for a long time.

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

8. Warranty and after Sales Service

We provide 1 year warranty for our product from the date of delivery

If the product is exceed warranty or damaged by transportation, improper operation , human element, force majeure, it is not under warranty.

Declare: The product has applied for patent protection, counterfeiting will be subject to legal sanctions. Our Company reserves the right to change products and without notice when products update.