SWS Series

— Wind&Solar Hybrid Controller

User Manual

WIND & SOLAR HYBRID
CONTROLLER
Enter
Esc

SP	Model
300W 12V	WWS03-12
400W 12V	WWS04-12
600W 24V	WWS06-24

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1. Important Safety Warning

Before Using the controller, please read all instructions and cautionary markings on the unit and this manual. Store the manual where it can easily be accessed.

This manual includes all safety warnings, installation, and operation guidance of SWS series wind&solar hybrid controllers.

- Before installing and using this controller, read all instructions and cautionary markings on the controller and all appropriate sections of this guide.
- Do not use the machine in the place where has flammability and explosive gas/articles. Beware of flames and sparks.
- Please Contact our after-sales person if the machine doesn't work.
- Do not change the electrical components and parts yourself, or we will not be responsible for the warranty items and related duties.
- Please install the machine indoor to avoid the rain water enter the controller inside.
- Please keep good ventilation and heat dissipation.
- Please install a circuit breaker outside the controller if conditions are allowed.
- Please use copper cable for line connection, and choose the right diameter of cable according to the actual current.
- To avoid a risk of fire and electric shock, make sure the existing wiring is in good condition and that the wire is connected tightly.
- Do not restart the controller immediately when it alarms. Please analyze the fault reasons and repair them at first.

2. Basic I Information

2.1 Introduction and Features

SWS is a kind of MPPT wind &solar hybrid controller. It can control the wind tubine generation and solar generation to charge the battery in an efficient and safe way.

Features:

- Wind&Solar hybrid controller in high quality.
- LCD Display. Easy setup.
- Complete protection functions.
- RS232/RS485/RJ45/GPRS/ WiFi /Bluetooth Optional (For those with GPRS/WiFi/Bluetooth/RJ45 can also be monitored though App.)

2.2 Product Structure

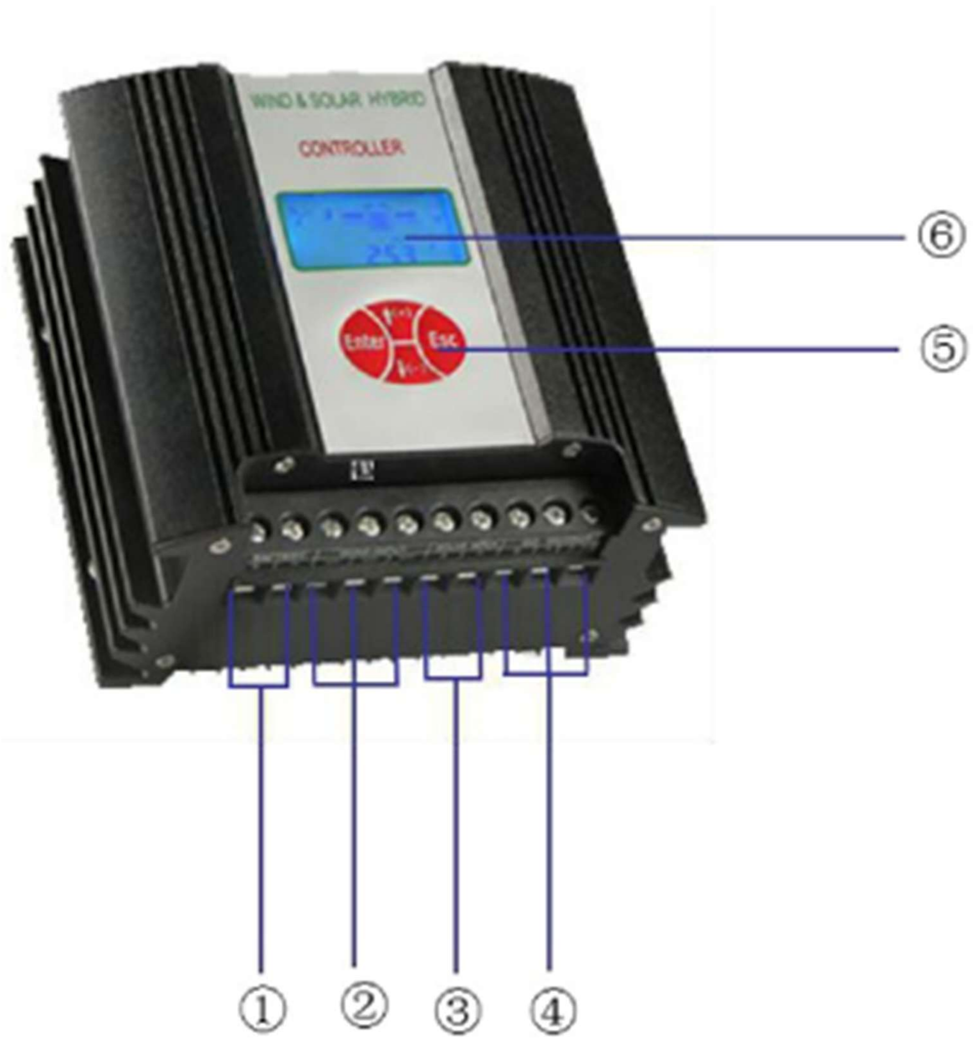
WIND & SOLAR HYBRID
CONTROLLER
Enter
Esc
⑥
⑤
①
②
③
④

Chart1. Product Overview

Table of Contents

①	Battery terminal	④	Load terminal
②	Wind turbine terminal	⑤	Button
③	PV panel terminal	⑥	LCD display

3. Product Installation

3.1 Installation Notes

1) The machine should be kept indoors and well ventilated;

2) Environment temperature: -20 ~ +40℃; Humidity: <=95%，no condensing

3) Altitude should not be more than 40000m。 (when the altitude is more than 1000m, the machine should be used according to the GB/T3859.2 regulations）

4) Avoid using the machine in direct sunlight, sun exposure, rain, humidity, acid fog, and dust.

5) To guarantee the lifespan, it is suggested that the space around the device has no other items within 30CM.

6) The machine can only charge for the battery in the rated voltage range.

7) The machine can only be connected to the wind turbine and PV with allowed power and voltage.

3.2 Installation and Wiring

3.2.1 Installation Steps

Please refer to the specific installation situation. Generally speaking, if it is used in street light pole, you can fix the controller to the rail inside the light pole.

If it is installed in the power box, the power box is drilled according to the hole size, and the controller is fixed with M4 screw.

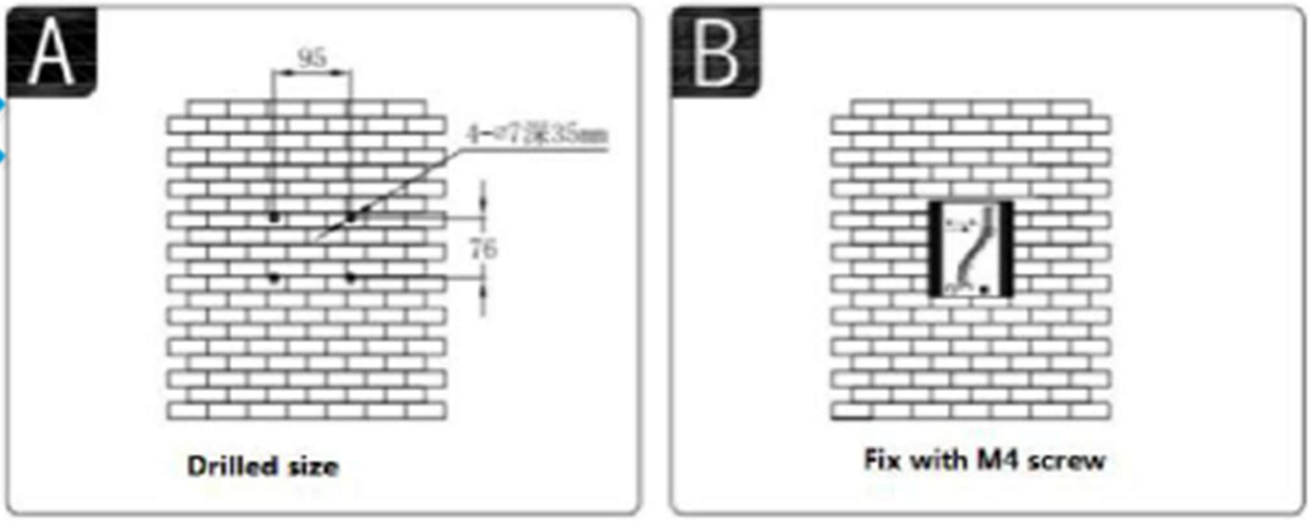
A
95
4-⌀7深35mm
76
Drilled size
B
Fix with M4 screw

Chart 2: Installation Steps

3.2.2 Electrical Connection

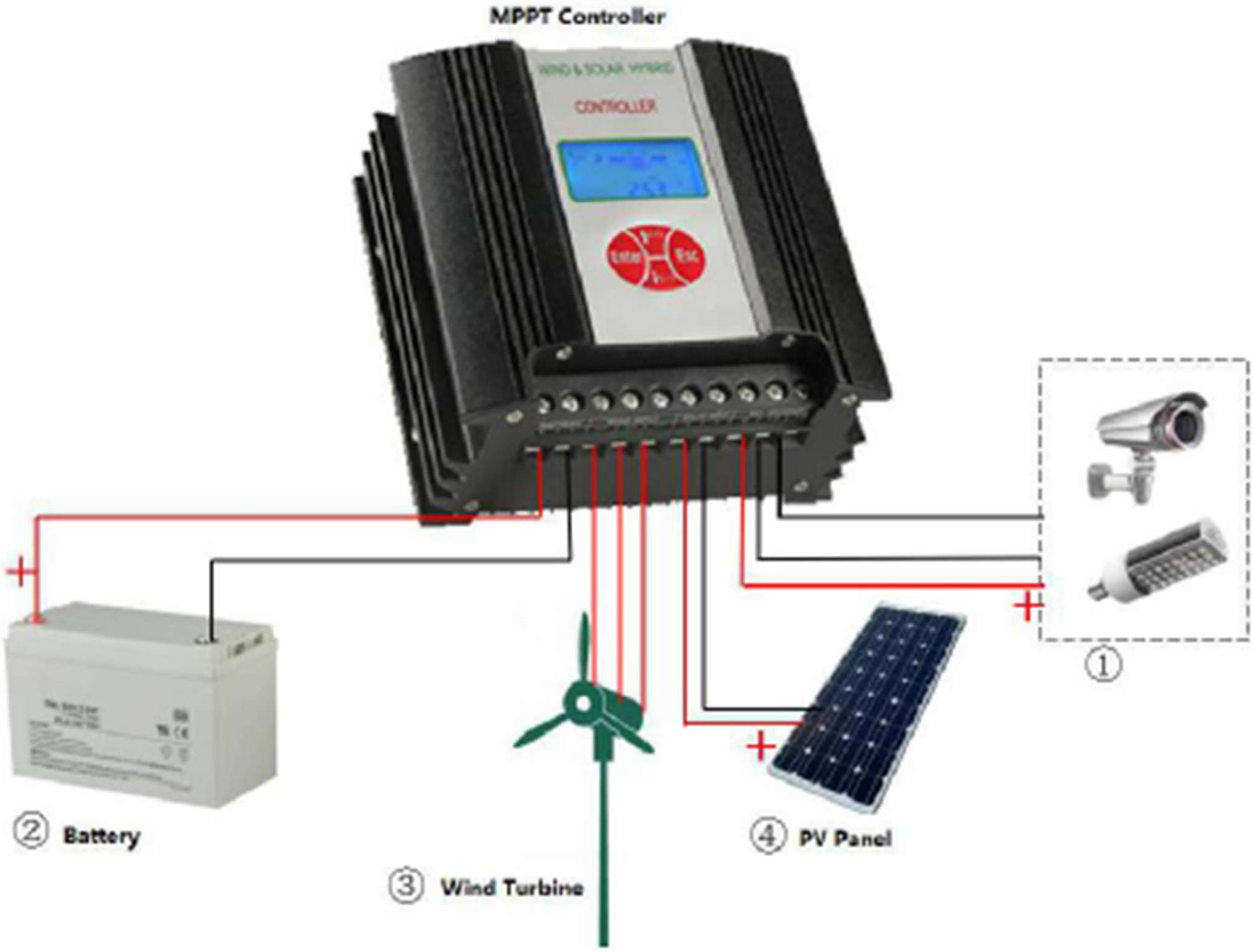
MPPT Controller
WIND & SOLAR HYBRID
CONTROLLER
Enter
Esc
+
+
+
①
② Battery
③ Wind Turbine
④ PV Panel

Chart 3: System Overview

Please connect those parts according to the order of ①-④, and notice the following items.

1) Connect the load positive and negative terminal to the "DC OUTPUT" terminals as"+""-1""-2"relatively. 2 output loads share the same "+" terminal.

2) Connect the battery bank to the controller by the terminal which marks "BATTERY". (do not reversed the connection of positive and negative terminals)

3) When wind turbine is still or running in a low speed, connects its output cable to the "WIND INPUT" terminal on the controller.

4) Connected the terminals of solar panels to "SOLAR INPUT" terminals "+""-"on the controller;

5) Check all the connection to make sure they are connected rightly and tightly.

4. Operation Interface Introduction

4.1 LCD Display

After the power is connected, the whole screen is in a browsing status. It shows battery voltage, and can be changed to the following information by press related buttons.

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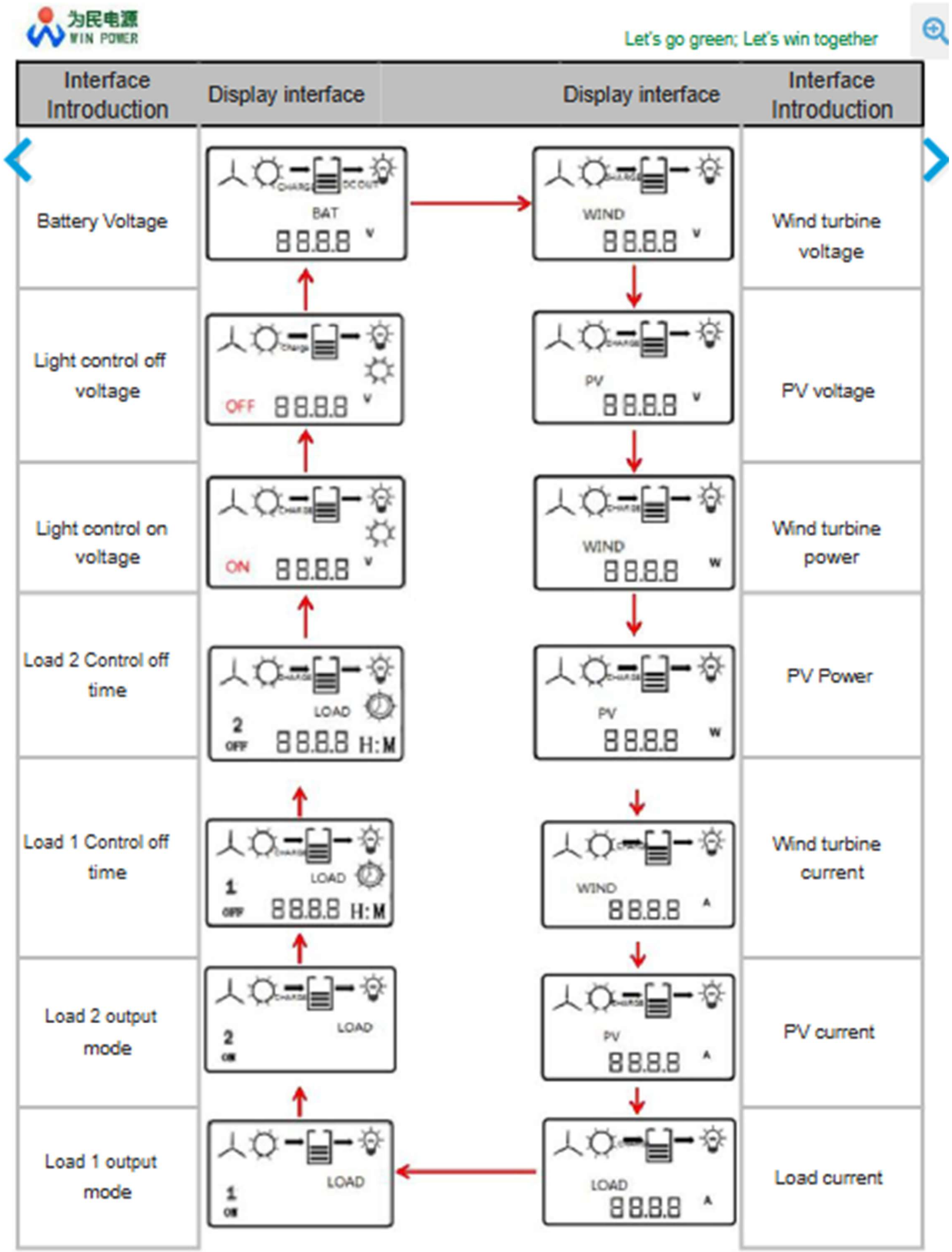
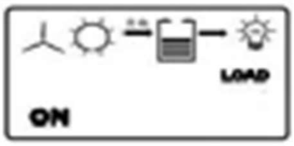
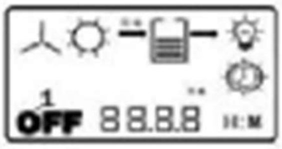


为民电源 WIN POWER

Let's go green; Let's win together

Interface Introduction	Display interface	Display interface	Interface Introduction
Battery Voltage	CHARGE DC OUT BAT 88.8.8 V	CHARGE WIND 88.8.8 V	Wind turbine voltage
Light control off voltage	Charge OFF 88.8.8 V	CHARGE PV 88.8.8 V	PV voltage
Light control on voltage	CHARGE ON 88.8.8 V	CHARGE WIND 88.8.8 W	Wind turbine power
Load 2 Control off time	CHARGE LOAD 2 OFF 88.8.8 H:M	CHARGE PV 88.8.8 W	PV Power
Load 1 Control off time	CHARGE LOAD 1 OFF 88.8.8 H:M	WIND 88.8.8 A	Wind turbine current
Load 2 output mode	CHARGE 2 ON LOAD	CHARGE PV 88.8.8 A	PV current
Load 1 output mode	1 ON LOAD	LOAD 88.8.8 A	Load current

4.2 LCD Information Define

Name	Icon	Status
Wind Turbine	⅄	Rotate means wind turbine works normally
	BRAKE	Brake by hand. Press "Esc" and "Enter" at the same time, cancel brake status or enter brake status.
PV	☼	Day
	☽	Night or PV is not connected
Battery	🔋	Charging
	▤	Fully charged. flickering for over voltage, stop flickering when it recover from over voltage
	▯	Flickering means over -discharge
Load	💡	Output normally
	💡	No output. Flickering for overload
	⚡💡	Flickering means short circuit
Load output control mode	☼	Light control on/off
	⏲	Light control on, time control off
	ON 88.8.8 V	Light control on voltage
		When "ON"&"LOAD "appeared, load is always on
	OFF 88.8.8 V	Light control off voltage
		Show "OFF" and time. The time is the control off time.
	1 、2	Show 2loops relatively

Buttons		Set/confirm: Enter setting status when it's pressed on browsing status. Save data and back to browsing status when it's pressed on setting status.
		Page down/Reduce Show next parameter when it's pressed on browsing status. Change to next value of the parameter or reduce the value of the paremeter when it's pressed on setting status.
		Page up/Add Show last parameter when it's pressed on browsing status. Change to last value of the parameter or add the value of the paremeter when it's pressed on setting status.
		Cancel/ Manual Reset Back to browsing status and not save the parameters when it's pressed on setting status. Manual reset when load short circuit or overload if it's pressed on browsing status.
Others	88:88	Parameters display
	"SET"	Set icon. When it appears, you can set related parameters by press the browsing button.

4.3 Load Output Modes

7 load output modes optional, and can be set on the LCD display or software on computer.

①	light control off / on	⑤	Keep on
②	Light control on, time control off	⑥	Keep off
③	Light control on/off, and time control half power.	⑦	Keep half power
④	Light control on, and time control half power and off.		

4.4 Parameters Setting

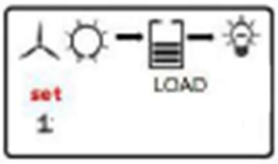
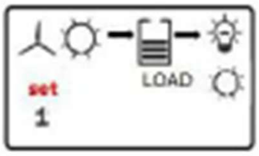
When you need adjust specific parameters, Please follow below steps:

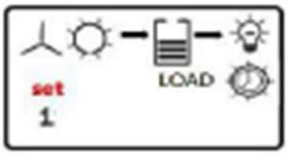
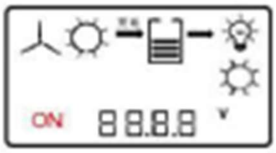
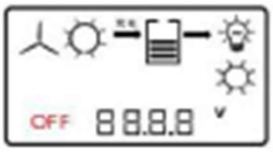
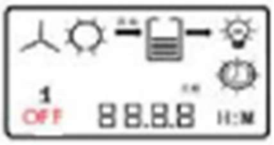
1. Press " ↑ (+)" or " ↓ (−)" to browse the interface. And then press " Enter " to enter the setting interface. (LCD shows "SET")

2. Press " ↑ (+)" or " ↓ (−)" to adjust the parameter values.

3. Press " Enter " to save the setting and back to the browsing status. Or press "Esc" to cancel the adjustment and back to the browsing status.

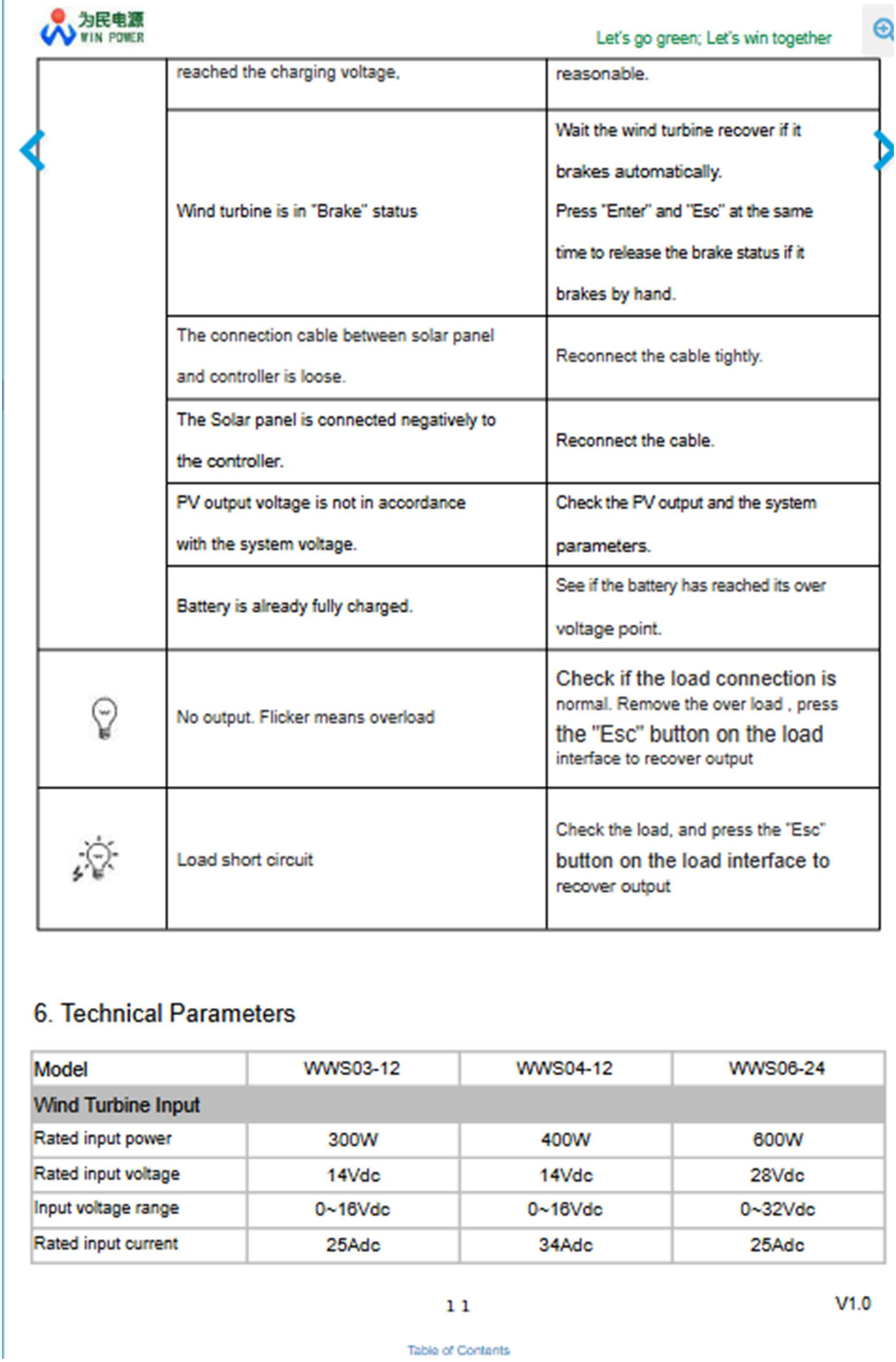
See the following table for specific parameter setting:

Settings	Operation Steps	Operation Interface
Load keep on output mode	Press "Enter" on the load 1/2 output interface to enter the setting interface.	
Load light control on/off	Press "Enter" on the load 1/2 output interface to enter the setting interface.	

Load light control on, time control off	Press "Enter" on the load 1/2 output interface to enter the setting interface.	
Night voltage point	Press "Enter" on the light control on interface to enter the setting interface.	
Day voltage point	Press "Enter" on the light control off interface to enter the setting interface.	
Time control duration	Press "Enter" on the load1/load2 time control off interface to enter the setting interface.	

5. Trouble Shooting

Fault Type	Description	Possible reasons and solutions
No display on LCD	The connection between the battery and the controller is not tight	Check the wiring, and reconnect it.
	DC breaker is not on between battery and controller	Turn on the breaker
	Low battery voltage	The system parameters are not matched correctly. Recheck the label and parameters on the machine.
		The battery doesn't work. Change a new one.
	The battery is connected negatively to the controller.	Need change the internal fuse in controller, and reconnect to the battery.
No charging	The connection cable between wind turbine and controller is loose.	Reconnect the cable tightly.
	Wind turbine output voltage haven't	Check whether the system voltage is



	reached the charging voltage,	reasonable.
	Wind turbine is in "Brake" status	Wait the wind turbine recover if it brakes automatically. Press "Enter" and "Esc" at the same time to release the brake status if it brakes by hand.
	The connection cable between solar panel and controller is loose.	Reconnect the cable tightly.
	The Solar panel is connected negatively to the controller.	Reconnect the cable.
	PV output voltage is not in accordance with the system voltage.	Check the PV output and the system parameters.
	Battery is already fully charged.	See if the battery has reached its over voltage point.
💡	No output. Flicker means overload	Check if the load connection is normal. Remove the over load , press the "Esc" button on the load interface to recover output
💡	Load short circuit	Check the load, and press the "Esc" button on the load interface to recover output

6. Technical Parameters

Model	WWS03-12	WWS04-12	WWS06-24
Wind Turbine Input			
Rated input power	300W	400W	600W
Rated input voltage	14Vdc	14Vdc	28Vdc
Input voltage range	0~16Vdc	0~16Vdc	0~32Vdc
Rated input current	25Adc	34Adc	25Adc

Brake by hand	Press button "Enter" "Esc" at the same time to unload completely. Then recover by hand.		
Brake by over current	25A（factory default,0~25A settable）Unload completely when reached the set current, and recover automatically after working 10mins.	34A（factory default,0~34A settable）Unload completely when reached the set current, and recover automatically after working 10mins.	25A（factory default,0~25A settable）Unload completely when reached the set current, and recover automatically after working 10mins.
Brake by overvoltage	Refer to "output overvoltage" control		
Brake by over wind speed（optional）	14m/s（0-30m/s settable）,Unload completely when reached the set wind speed, and recover automatically after working 10mins.		
Brake by over rotational Speed（optional）	500r/min（factory default,0~1000r/min settable）Unload completely when reached the set rotational speed, and recover automatically after working 10mins.		
PV Input Parameters			
Rated input power	150W		300W
Max. open circuit voltage	24V		48V
Rated input current	13A		
Reversed connection protection	YES		
Charge Parameters			
Rated battery voltage	12V		24V
Temperature compensation function(optional)	-3mV/ ℃ /2V		
Output Parameters			
Rated output voltage	12V		24V
Start unload voltage	13.5V（factory default,11Vdc~16Vdc settable）		27V（factory default,22Vdc~32Vdc settable）
Complete unload voltage	14.5V(factory default, add 1V to the start unload voltage)		29V(factory default, add 2V to the start unload voltage)
Max. Output current	25A	34A	25A
DC load output			
Output loops	2 loops		
Output control mode	Both 2 loops could be set in 7 modes, such as light control on&off, light		

	control on and time control off.	
Output voltage range	10.8V~16V	21.6V~32V
Rated output current	10A/each loop	
Overload protection	120% rated DC output -1min,150% rated DC output -10s	
Short circuit protection	200% rated DC output, instant protection	
General Parameters		
Rectifier mode	Uncontrolled rectifier	
Display mode	LCD	
Display information	Battery voltage, wind turbine voltage/current/ power, PV power/voltage/current, light control-on voltage, light control-off voltage, time control duration, load current and so on.	
Monitoring mode(optional)	RS232/RS485/RJ45/GPRS/WIFI/Bluetooth/Zigbee	
Monitoring Contents	Real-time display: Battery voltage, wind turbine voltage/current/ power, PV power/voltage/current, wind power generation capacity, solar power generation capacity, Battery status, wind turbine status, day and night, DC overload, DC load short circuit, and so on.	
	Parameter setting: Output overvoltage point, wind turbine over current point, wind turbine start voltage, DC load overvoltage/undervoltage /undervoltage recovery point, output mode choice for two loops, light control on voltage, light control off voltage, and wind turbine brake settings.	
Lightning protection	YES	
Conversion efficiency	≥95%	
Static loss	＜0.5W	
Environment temperature	-20 ℃ ～+40 ℃	
Humidity	5%~95%,No condensing	
Noise	≤65dB	
Cooling mode	Natural cooling	
Installation mode	Wall-mounted	
Cover protection class	IP52	
Product dimension(W*H*D)	150×143×83mm	
Product net weight	1.8kg	
Note: the listed specs are just for your reference		

7. Warranty

The product shall be in warranty for one year from production. Please take contract as the final one if it has special terms on warranty.