User Manual

Wind Solar Hybrid with Dump Load Controller series

NE-WWS30-48

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1. Safety Instruction

1.1 Operation Safety

This manual includes some safety sign, emphasizing the potential security risks and important safety information. Personal injury or equipment damage may be caused if improper operation happened.

Danger Do not install the equipment in a compartment with flammable liquids, such as gasoline, or explosive vapors. Be ware of flame and spark.

Danger In any work condition, please do not dismantle or connect wires when there is voltage or current

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Danger The PV panels would produce dangerous voltage, therefore, it should be installed by professional technicians. Cover the PV panels with opaque material during installation.

Danger Wind turbine would produce high voltage when there is wind blowing,please manually brake the turbine during the installation and installed by professional technician.

Warning Apparatus should be installed out of the range children can't touch, in order to ensure children's safety.

Warning During the inspection or maintenance, please remove the cable connection of wind and PV panels, and wait more than 10 mins to open the cover to avoid the dangerous of redundant charge.

Warning Apparatus should be installed out of the range children can't touch, in order to ensure children's safety.

1.2 Maintenance Safety

NOTE Battery virtual connection or damage is one main factor of malfunction. Please check battery voltage and connection status every two weeks, clear rust on positive, negative terminal in time; use lead terminal if available.

NOTE The apparatus requires regular cleaning the dust inside the equipment. The apparatus related cables should be disconnected when cleaning,waiting for 10 minutes.

2. Introduction

2.1 Product Introduction

Thank you for using this product and trust and support.This manual introduced fully wind solar hybrid controller whose safety instruction, installment, operation instruction included.The content of manual will be improved and update constantly. If there are any inconsistency with apparatus, please in kind prevail.

The wind and solar hybrid controller is a set of intelligent controller of solar and wind control, designed for the high-end wind and solar hybrid system, especially suitable for wind and solar power system and monitoring system. At the same time, it charges of the battery effectively and intelligently by controlling wind turbine and solar panel.

The device has the advantages of simple appearance, convenient operation, direct liquid crystal indication, perfect protection function, high charging efficiency and low no-load loss, and the system is safe, stable, reliable and long service life.

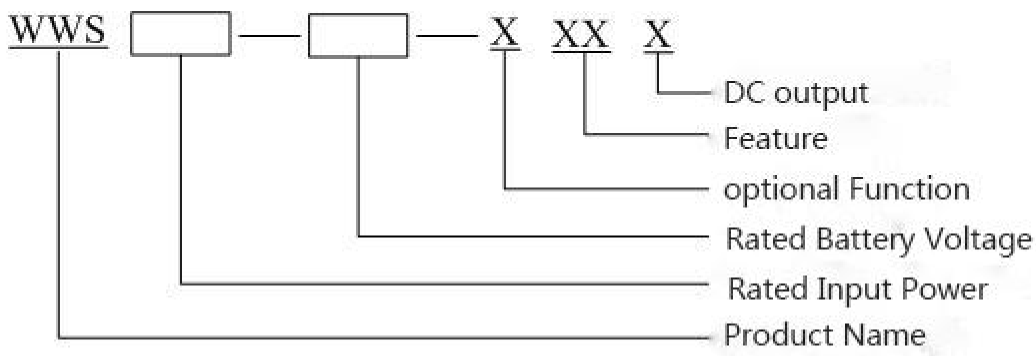
The wind and solar hybrid controller is the core component of the off grid system. Its performance affects the whole system's life and operation stability, especially the service life of the battery.

2.2 Performance Description

- **PWM Charging Mode:** When the battery power is full, adopting the PWM control mode to control the charging, which can not only charge the battery effectively, but also prevent the battery from overcharging and prolonging the service life of the battery.
- **Friendly human-machine interface:** Display wind solar hybrid system state and parameter with intuitive figures and graphics, including: battery voltage, wind turbine voltage, PV voltage , wind turbine power, PV power, wind turbine current, PV current, state of charge of battery. You can check the display content by the LCD four button.
- **Perfect protection function:** Battery overcharge, over discharge, anti-reverse protection; wind turbine current limiting, brake automatically and brake manually protection; PV anti-charge, anti-reverse protection; lightning protection and so on.
- **Remote Communication Function:** Choose the standard RS232/RS485/RJ45/GPRS communication interface, the software can monitor real-time system running status, which contain all the parameters on the LCD screen. Through the software, users can not only set and adjust relevant parameters, but also can control the wind turbine and solar panel running status, and alarm while malfunction happens.
- **The optional dry contact signal output function:** According to the actual needs of the battery, the dry contact signal will output when the battery voltage reaches the set voltage.

- **The optional temperature compensation function:** According to the change of the ambient temperature, the charging control voltage can be adjusted to charge the battery effectively.
- **The optional off-line storage module:** In the remote areas without network coverage and the use of computer inconvenience, you can use the storage function of the off-line storage module to view the history of the system running data (data recorded within a year).
- **Optional MPPT Charging Function:** Real-time monitoring of wind turbine voltage and tracking the maximum voltage and current value (VI), so that wind and solar hybrid system for charging the battery by maximum power.
- **The optional touch screen display:** 4.3 inch TET touch screen display, and set the relevant parameters by operating the touch screen.

3. Model Specification

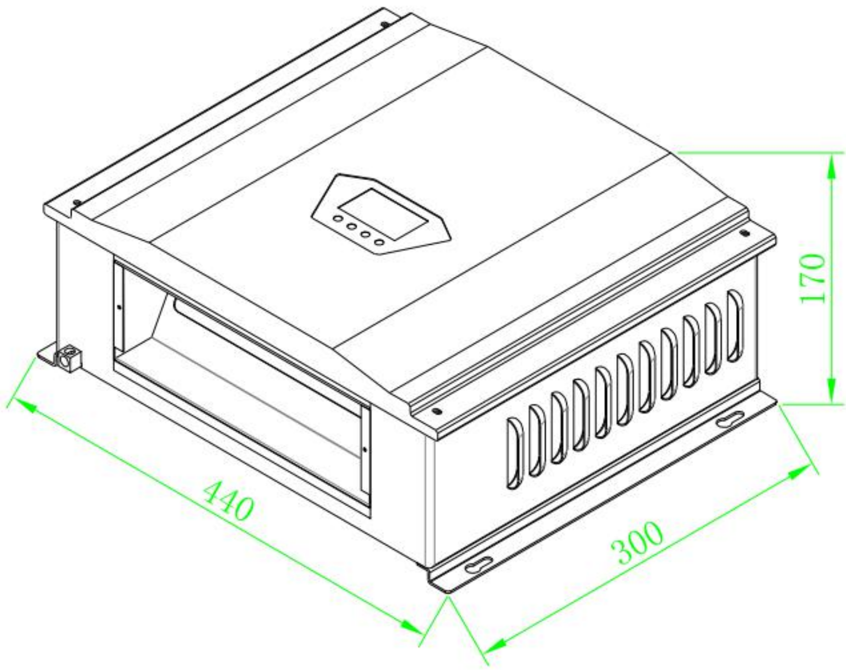


Model		Rated input power		Rated battery voltage		Optional function		Equipment feature		DC output	
NE-WWS	Wind solar hybrid controller	**06**	0.6 kW	**24**	24V	**N**	**Normal**	**0**	**Normal**	**D**	dc
		10	1kW	**48**	48V	**L**	**Low Voltage Charge**	**1**	**RS232**		
		20	2kW	**96**	96V	**D**	**Buck Voltage Charge**	**2**	**RS485**		
		30	3kW	**120**	120V	**B**	**Economic**	**4**	**Solar Dumpload Separately**		
		50	5kW	**220**	220V	**S**	**Micro-current Charge**	**10**	**Wind Turbine Single Phase DC**		
		100	10kW	**240**	240V			**11**	**RS232 Wind Turbine Single Phase DC, RS232**		
		200	20kW					**12**	**RS485 Wind Turbine Single Phase DC, RS232**		
								XX	**Other**		

EX：NE-WWS10-24-N00 Rated Wind turbine power :1KW Rated battery power:24V ;normal regular

4. Product Description

4.1 Product Structure



Controller

4.2 LCD Display Panel

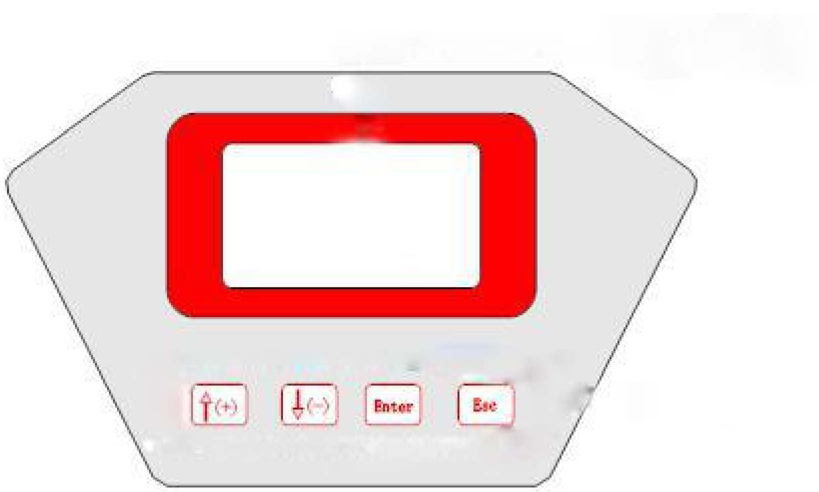


Fig. 2 LCD Display Chart

Name	Descriptions
LCD display	Display system state and relevant parameters
“↑(+)”button	press↑(+), you will check the next display parameters.
“↓(-)”button	Press ↓(-), you will check the last display parameters.
“Enter”button	Set and save modified values by pressing the “Enter”button
“Esc”button	Back to browse interface and modified values not be saved.
“Enter”+“Esc”button	Wind turbine brake.

5. Installation

5.1 Installation Procedure

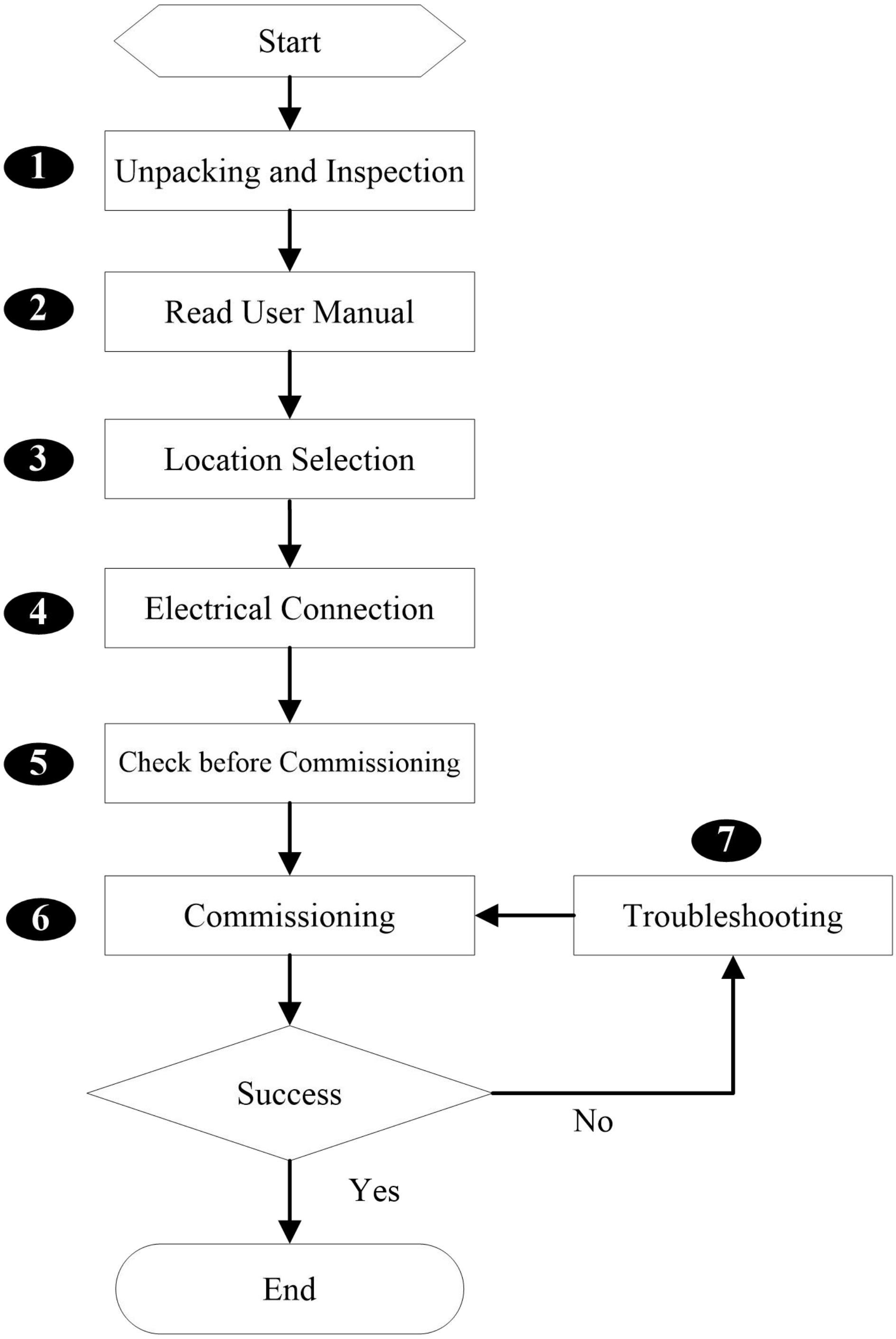


Fig.4 Installation Flow Chart

5.2 Installation Description

Item	Description	Remark
①	Box should be intact, without visible damages. Accessories are consistent with the packing list.	/
②	Read this manual carefully before installing and using the product. Please storage carefully the user manual of product.	/
③	Installation site please check section 5.3;	5.3
④	Electrical connection please check section 5.4	5.4
⑤	Make sure well ventilation for the heat; Make sure correct battery banks polarity connection; All cables must be firmly attached, properly insulated and adequately dimensioned;	/
⑥	Commissioning please check section 5.5	5.5
⑦	Troubleshooting please check section 8	8

5.3 Installation Site

NOTE

1) The controller should be put indoor where is well-ventilated.

2) Avoid exposing the apparatus under direct sunshine, exposure, rain, moist and dust.

3) Ambient Temperature is -20～+55℃; Ambient Humidity is 0～85%RH, no condensing.

4) Max altitude is 4000m. If the apparatus is used in the area of altitude higher than 1000m, output power shall be derated for usage accordingly GB/T3859.2

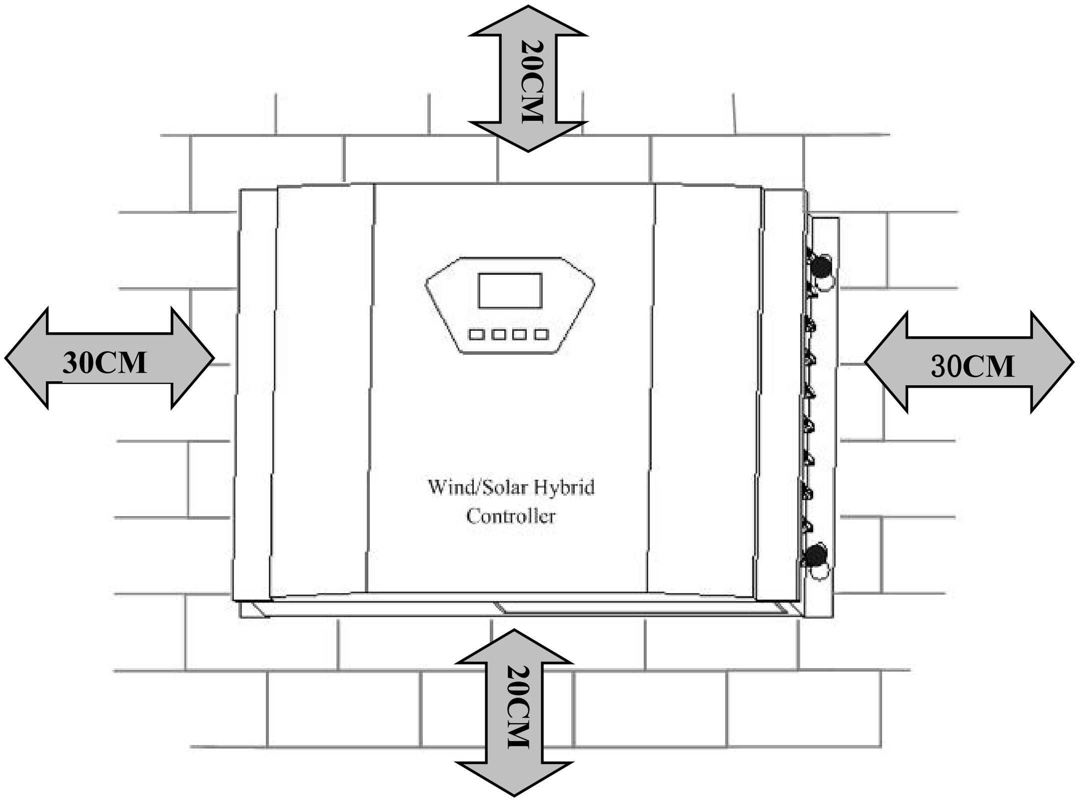


Fig.5 Installation picture

1.To ensure the controller life, please take enough space for convection into consideration during installation. For the radiator fan, at least 30CM for one without obstacles on left and right, at least 20CM for one without obstacles on front and back.

2.All installations and electrical work must only be performed by qualified personnel.

5.4 Electrical Connection

Electrical connection must strictly follow the below instructions.

5. 4. 1 Connections to dump load box and controller

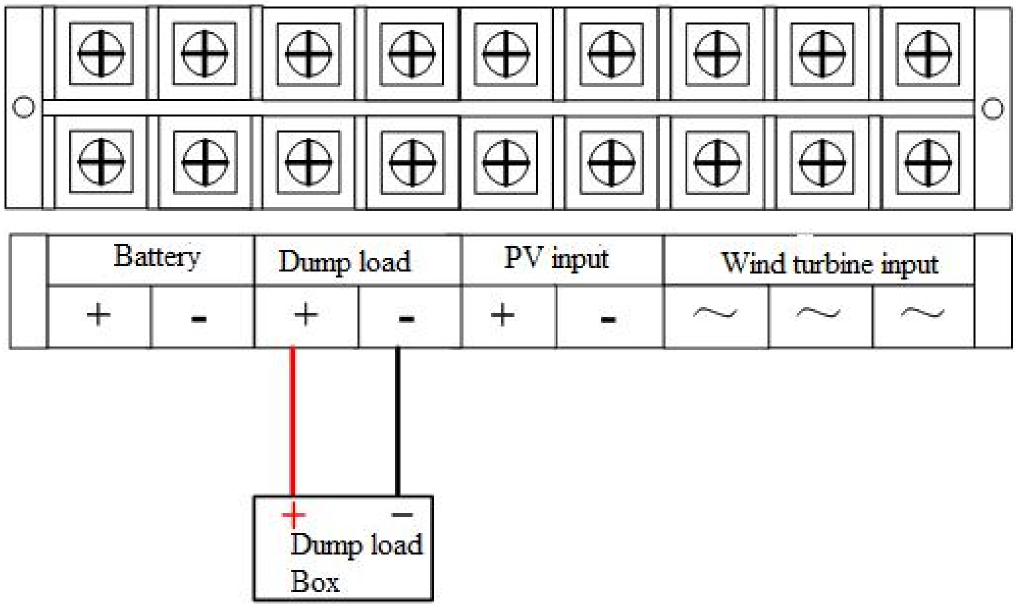


Fig.6 Connections to dump load and controller

① Connect the dump load terminals to dump load box. All the connections must be firmly attached.

② There are capacitors. Spark may appear when first connected. It is recommended that you should disconnect a circuit breaker of battery banks,then connect the cable of battery banks terminals.

5.4.2 Connections to battery bank and controller

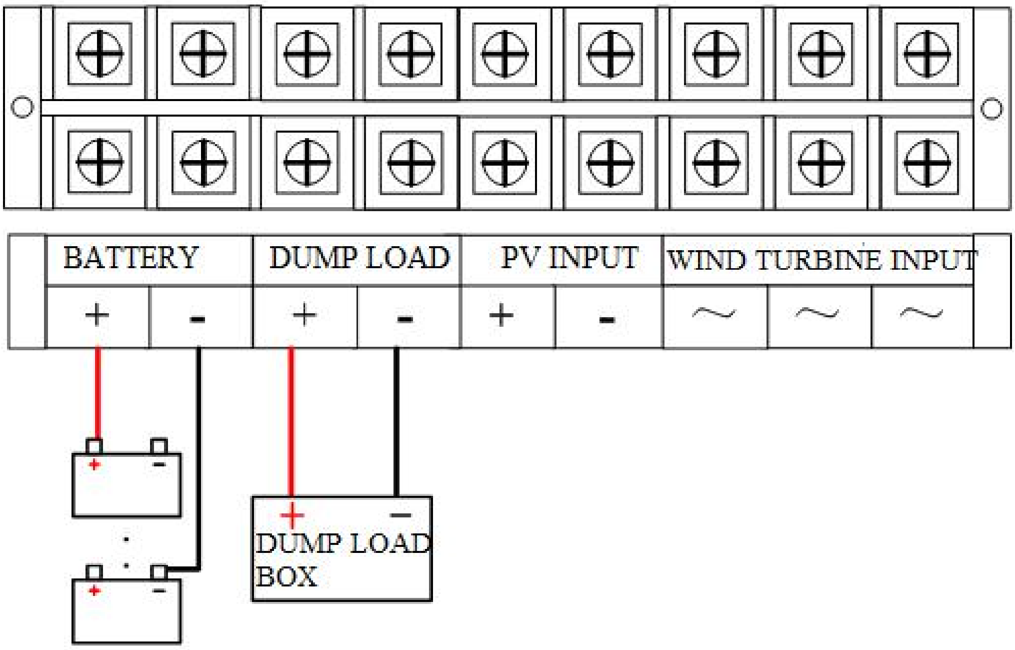


Fig.6 Connections to battery bank and controller

Note:

③ Connect the battery terminals to battery banks. All the connections must be firmly attached.

④ There are capacitors. Spark may appear when first connected. It is recommended that you should disconnect a circuit breaker of battery banks,then connect the cable of battery banks terminals.

WARNING

Battery banks inverse polarities is strongly forbidden.

Note: If reversed, the inverter can not work until the fuse is changed.

5.4.3 Connections to solar panels and controller

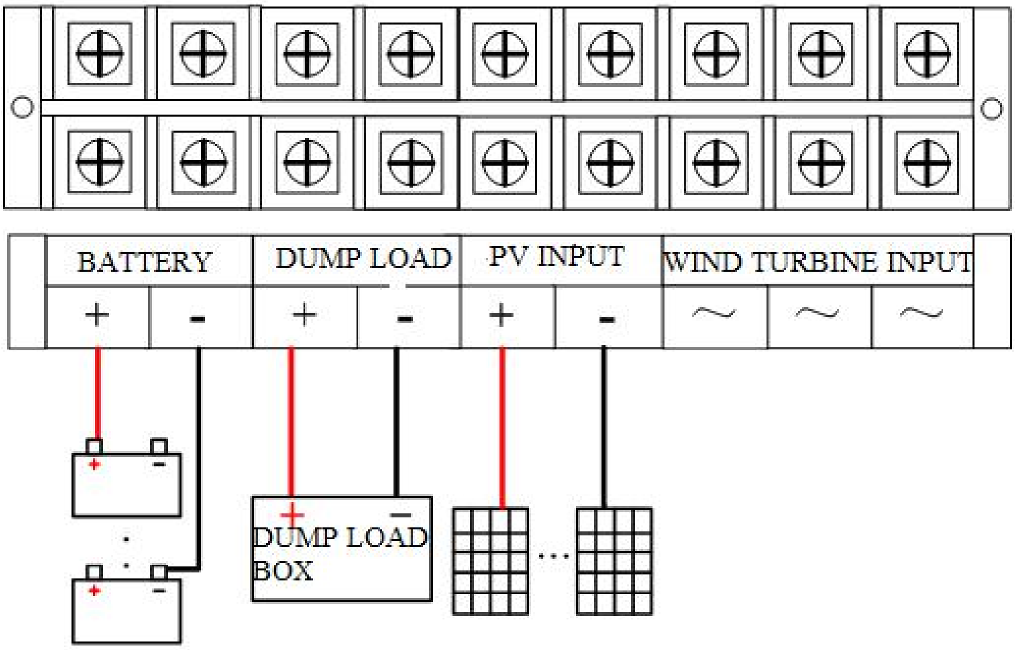


Fig.7 Connections to solar panels and controller

① Ensure the solar rated power not more than solar input rated power.

② Connect the solar terminals to solar panels. All the connections must be firmly attached.

WARNING

Solar panels to controller inverse polarities is strongly forbidden.

Note: If reversed, you need reconnect rightly the positive and negative polarities.

5.4.4 Connections to wind turbine and controller

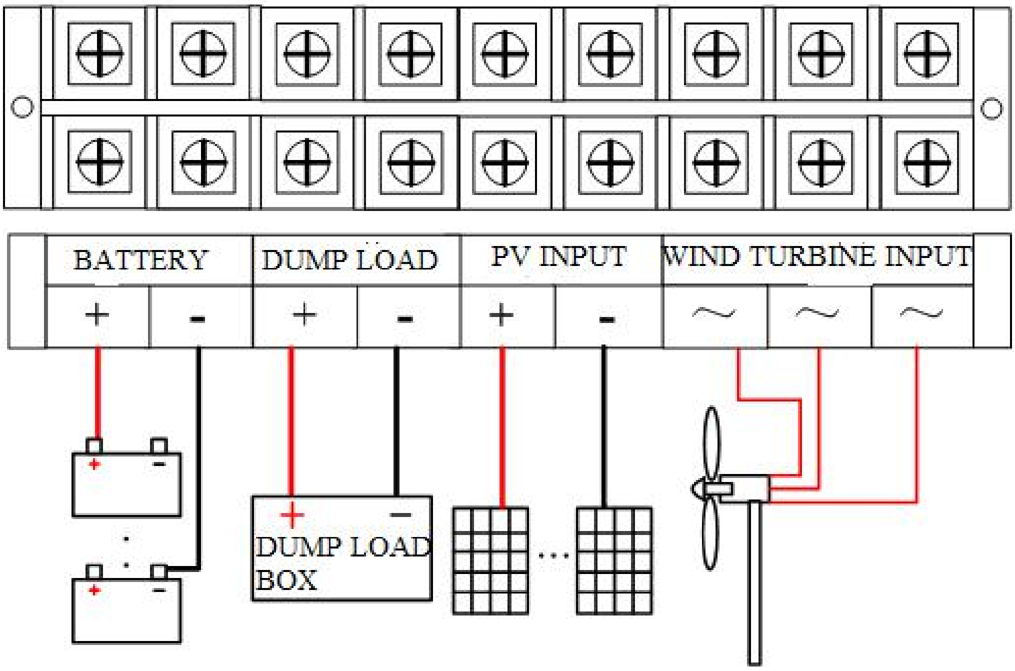


Fig.7　Connections to wind turbine and controller

① Ensure the wind turbine rated power not more than wind turbine input rated power.

② Connect the wind turbine input terminals to device. All the connections must be firmly attached.

WARNING

You must connect cable in standstill and low speed running state of wind turbine.

5.5 Commissioning

Trial operation is an important step in the installation of PV system, which can effectively avoid the system fire, equipment damage and personal electric shock accidents.

5.5.1 Check before commissioning

It is easy to operate and maintain in installment site.

Ensure that installment site is firm and reliable again.

The installment site should take shelter from rain.

The installment site should be far away from dust and sand.

Good ventilation in condition .

Leave the apparatus without outside object and part.

It is reasonable for cable site and far away from other apparatus,without damage ,keep in good protection.

5.5.2 commissioning Procedure

Step one: close the battery switch, LCD screen should display any manual operation and be consistent with the manual chapter six.

Step two: close the solar panel switch or the connection between the PV module, if it is OK, you can view the LCD screen on the PV voltage, PV current and PV power and other parameters.

Step three: close the wind turbine switch, if there is wind, you can see the LCD screen on the wind turbine voltage, wind turbine current and wind turbine power and other parameters.

If the equipment fails in the test run, please follow the troubleshooting plan in section seven. If there are other problems in the installation or operation of the equipment, please contact the service personnel.

6. LCD display and operating instructions

6.1 LCD display interface

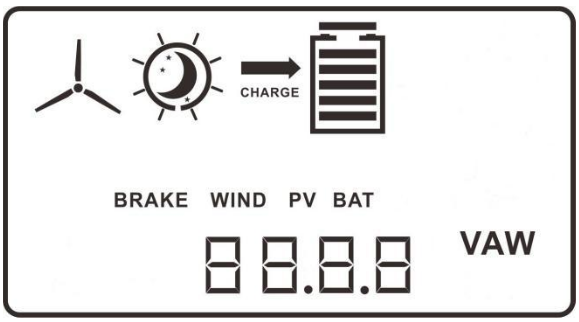
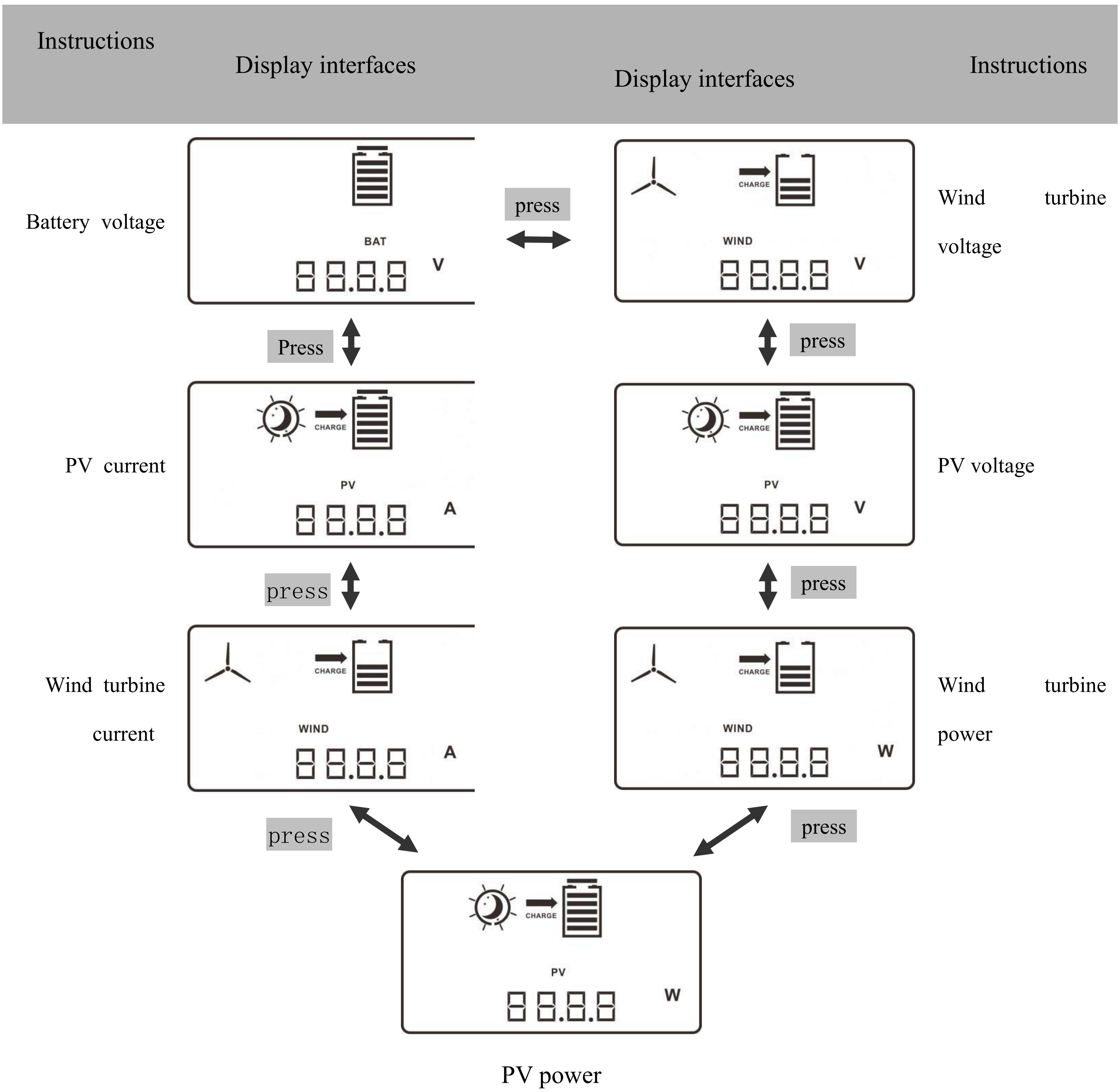
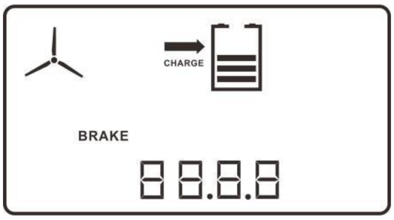


Fig.8 LCD display

6.2 operating instructions





Press“Enter”+“Esc”

Wind

Turbine

brake

Press any button, LCD would be lightened, 10 seconds later, LCD Screen dark again to save electricity.

7.Parameters

Model	NE-WWS30-48
General specs	
Rated Battery Voltage	48V
Rated Wind Turbine Input Power	3kW
Maximum Wind Turbine Input Power	4.5kW
Wind turbine brake current	60A
Rated solar Input Power	900W
Charge Shutoff Voltage	51.6V
Stand by power loss	≤65mA
Display mode	LCD
Cool mode	Fan
Protections	
Reverse battery protection	anti-reverse-connection protection device in the inside of controller.

Open circuit protection	The controller will not be demaged if the battary in open circuit.
Solar anti-charge protection	Battery don't charge PV board in reverse.
Solar anti-reverse protection	The controller will not be damaged when the PV is reverse-connection.
Manual brake	wind generator stop turning or slowing turning
Lightning protection	Lightning protection in inside of the controller.
Protection grade	IP(Indoor)
Insulation resistance	Resistance between DC/AC input and the housing≧50MΩ
System parameters	
Ambient Temperature & Humidity Range	-20～+55℃/35～85%RH（No Condensation）
Altitude	≤4000m
Dimensions (L x W x H)	Controller:440×300×170mm; Dumpload box：400×390×210mm
Net Weight	Controller ：7.5 kg; Dump load box：12 kg
In order to serve our customers better. Our company can adjust parameters configuration according to customer's requirement.	

8.Trouble shooting

Trouble	Analysis Trouble	Exclude and resolve
LCD no display	DC circuit breaker not close between battery and controller.	Closing the breaker
	The connecting line is insecure between battery and controller.	Visual connection,reconnect and Tighten it.
	The voltage of battery is too low	Check whether the controller parameter to match the parameter system or not.
		Battery banks have broken,replace them.

	The connecting line is reverse-connection in positive and negative pole between battery and controller.	Replace the fuse of the inner of controller and correct connect the battery banks.
Not charge	The connecting line of PV module and controller is fall off or loose.	Reconnect and tighten the connecting line of system
	The connecting line is reverse-connection in positive and negative pole between the PV board and controller.	To be corrected reconnect between PV board and controller.
	The mismatching between the rated output voltage of PV board and the voltage of system.	Check whether the rated output voltage of PV board is consistent with the voltage of system
	Full charge of the battery	Observe whether the voltage of battery reached the floating charge voltage or not.
	Brake switch in “BRAKE”	Switch in “RUN”

9. Guarantee and Liability

1) The warranty time is one year at the beginning of the date of delivery from factory.
2) If there is problem during the warranty time, please offer the pictures of barcode No. and the broken parts. Problem description details shall be necessary for cause analysis. Please contact our marketing representative for any help you need.
3) Guarantee or liability claims for damages of any kind are excluded if they are caused by one or more of the following:
   ① Out of the warranty;
   ② Ignore the safety warnings or instructions contained in all documents relevant to the product;
   ③ Install or operate the product without observing relevant safety regulations in the deployment location;
   ④ Improper or inappropriate use or install of the product;
   ⑤ Alter the product without authority.

Appendix. Specification of Cable Diameter and Circuit Breaker

Current Amp	Recommended Cable Diameter	Specification Recommended of Circuit Breaker
0~10A	2.5mm^2	10A
10A~20A	4 mm^2	20A
20A~30A	6 mm^2	32A
30A~50A	10 mm^2	63A

Specifications are subject to changes without advance notice.