
★ Read the user manual carefully before use.

Small Wind Turbine Grid Connection Controller

User Manual

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The safety matter:

Please read this instruction book carefully before installation、running、maintenance or check-up.

As electronic product , it is all dangerous when touching the electricity part.



warning: Dismantlement of the unloader in the use is forbidden. The unloader must be connected in accordance with the wiring diagram strictly. Otherwise the wind turbine will be damaged because loss of control and the controller will be damaged due to the over-high voltage!



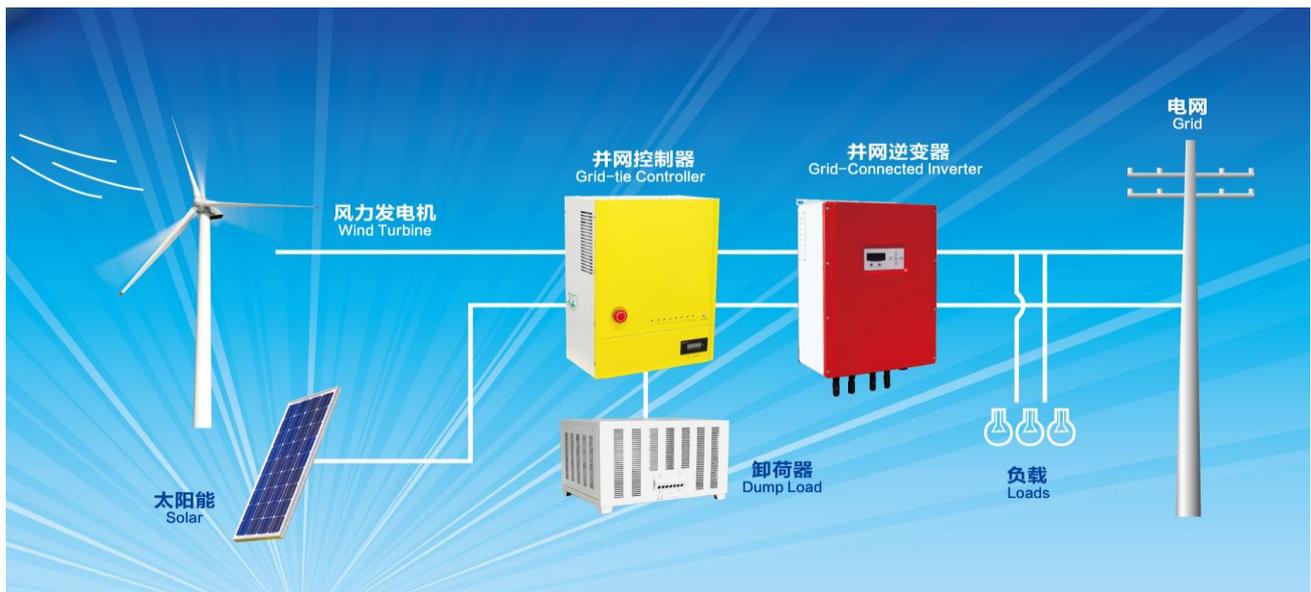
Attention :this device must request that electrician make a install.

Using direction

- make sure read this instruction book carefully before appliance;
- The equipment must be installed by professionals;
- To avoid personal injury, make sure it must be a good ground connection when installation;
- Not running in humidity or temperature is too high, volatile gases or flammable environments ;
- Against accidental use, to prevent power failures;
- When moving machines ,please put down carefully;
- Open the package, Please check the attached, as found in or damaged in transit phenomenon, to contact with, you will get satisfactory service;
- If emerge the installation of equipment damage not following the handbook; , The firm is entitled not to a quality assurance.

I Overview

Our company has been engaged in wind power generation for over 20 years and we made continuous updating relying on the practical experience for many years and in accordance with the characteristics of wind power generation. This system runs safely, stably and reliably with high work efficiency and long service life.



II Product Characteristics

- ◆ The product is manufactured according the JB/T6939.1-2004 industrial standard and GB/T 19115.1-2003 national standard also with users' technical requirements.
- ◆ Two sets of control systems: PWM constant voltage system and brake system.
- ◆ PWM constant voltage control is 120% of the rated power of the wind turbine. In case exceeding of PWM's capacity, the brake will automatically start immediately. After 10-20 minutes, the brake will stop and the wind turbine will re-start to resume power supply to ensure the safe running of the overall wind turbine generation system.
- ◆ Under the strong or super-strong wind conditions, the controller can conduct

constant voltage output to ensure the inverter safety running.

- ◆ Under the condition of disconnected grid-connected inverter, the controller can conduct constant voltage output and wait for inverter resumption.
- ◆ The brake of the controller will automatically start and the inverter will stop grid output when the power grid is off. As soon as the grid power resuming, the controller stops brake and the inverter will resume power supply.
- ◆ For the different wind turbine generator type, the controller can be equipped with mechanical yawing, furred empennage, mechanical or hydraulic, pneumatic, electric magnetic and other brake functions.
- ◆ The inside of the controller is equipped with surge arrester. Contain the over voltage into the wind turbine under the bearable voltage of the equipment or system. On another way, to conduct the strong lightening current into the earth directly to avoid any damage of equipment.
- ◆ The below LED status indication can be found on the front panel: indications of wind turbine, dump load, brake delay time, under pressure, grid power and DC output voltage.
- ◆ Voltmeter indication: Indicate the controller DC output voltage.
- ◆ The controller is equipped with emergency stop switch; in case of emergency, press down the emergency stop button in the front panel to cut off all power supply of the controller and the wind turbine will immediately carry out brake.
- ◆ The controller is equipped with manual brake switch. To using this switch, the wind turbine will carry out brake forcibly.
- ※ Under working conditions, the load discharger equipped for our equipment will

generate high temperature, please place it in a place beyond 2 meters away from the main engine of the controller with good ventilation and radiation inaccessible to humans and animals to avoid scalding. Strictly forbid covering by other articles or using in the environment with combustible and explosive gas to avoid fire accidents.

- ※ Connect the load discharger strictly abiding by the wiring diagram. During the use of our equipment, the removal of the load discharger is strictly forbidden. Or else, the wind turbine will be damaged by runaway accident due to lost control of the wind turbine generator and the controller may be destroyed due to over voltage!

III Operation Steps

 The controller should be strictly operated in accordance with the following operation steps by professionals.

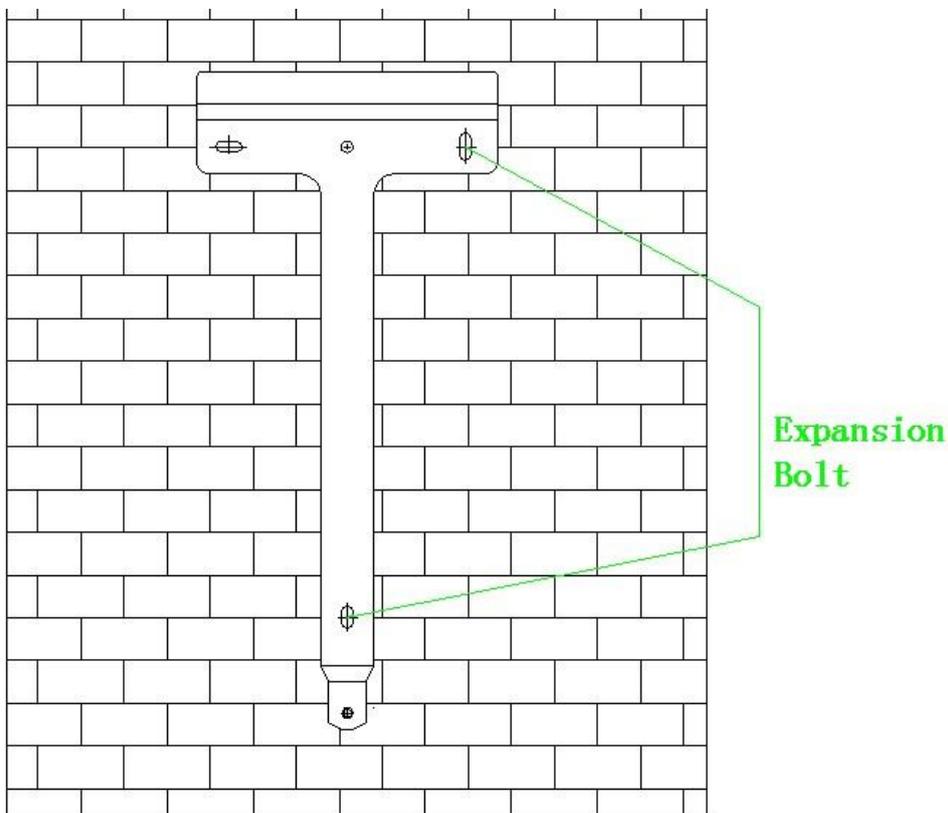
1. Place the electricity network switch and the brake switch of the wind turbine on brake and make sure that the fuse is in open circuit state. Install the connections under the conditions that the wind turbine is on brake and the electricity network is disconnected.
2. Connect the wind turbine with the three-phase terminal of the controller; connect the AC230V electricity network with the electric terminal of the controller; connect the grid-connected inverter with the output +, - terminals on the controller; connect the PWM dump load terminal on the unloader with the PWM dump load terminal on the controller (connect them in accordance with the wiring diagram strictly).
3. Connect the ground wire with the ground terminal on the controller and the

ground terminal on the loader with the ground wire. **The grounding must be reliable and good.**

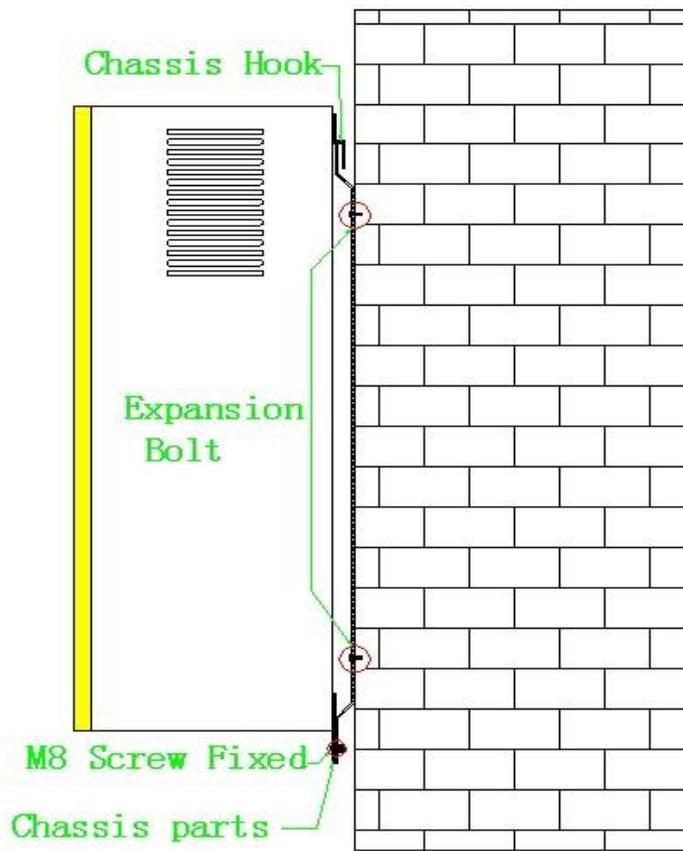
4. After the connections are finished and checking it carefully without any fault, start the machine in accordance with the following operation steps.

- ① Close the fuse to get good contact.
- ② Place the grid connection switch on RUN.
- ③ Place the brake switch of the wind turbine on RUN. \\\

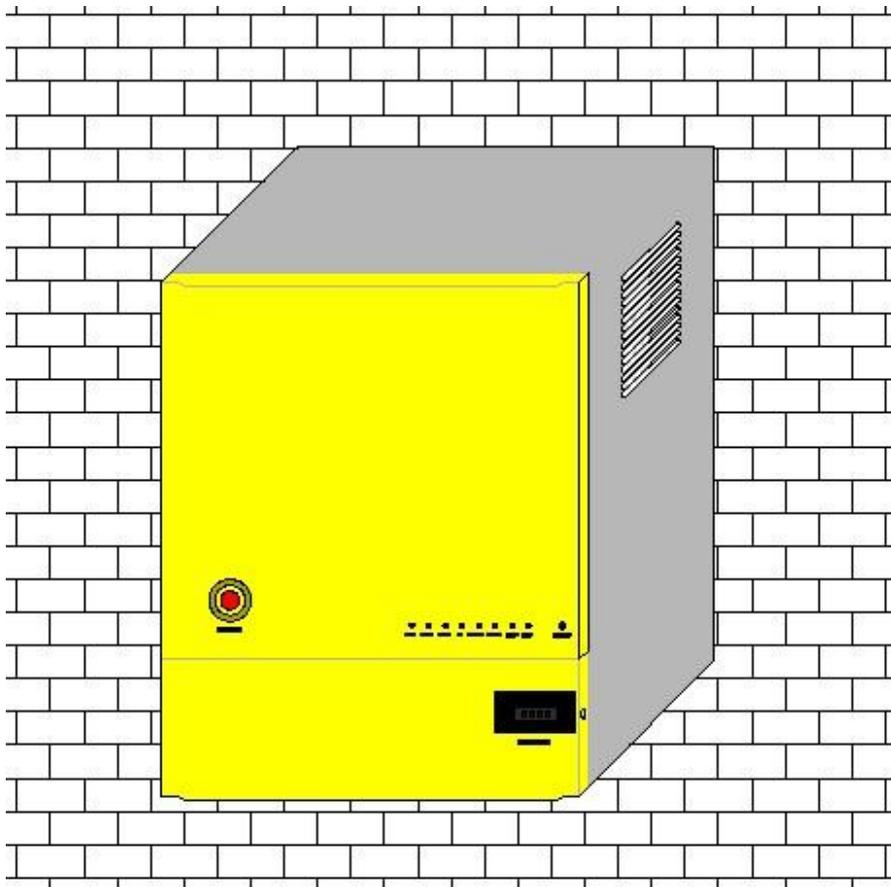
IV Installation Diagram



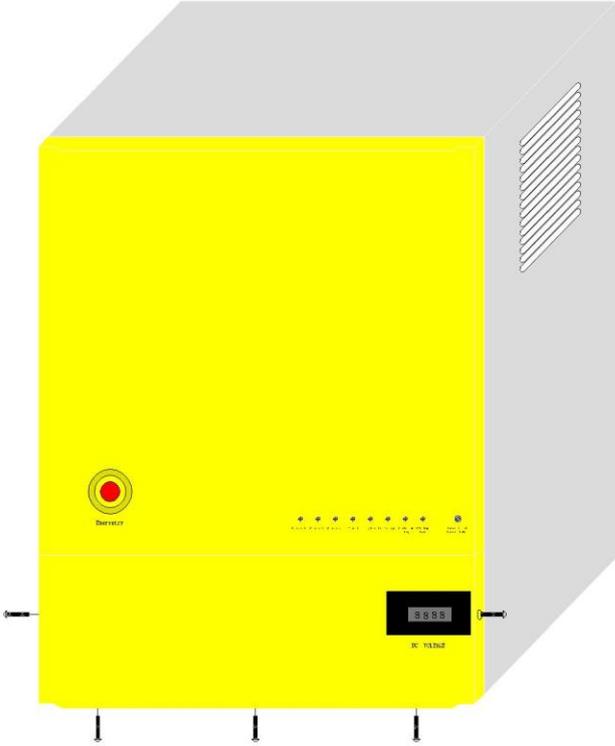
① **Wall hanging installation**



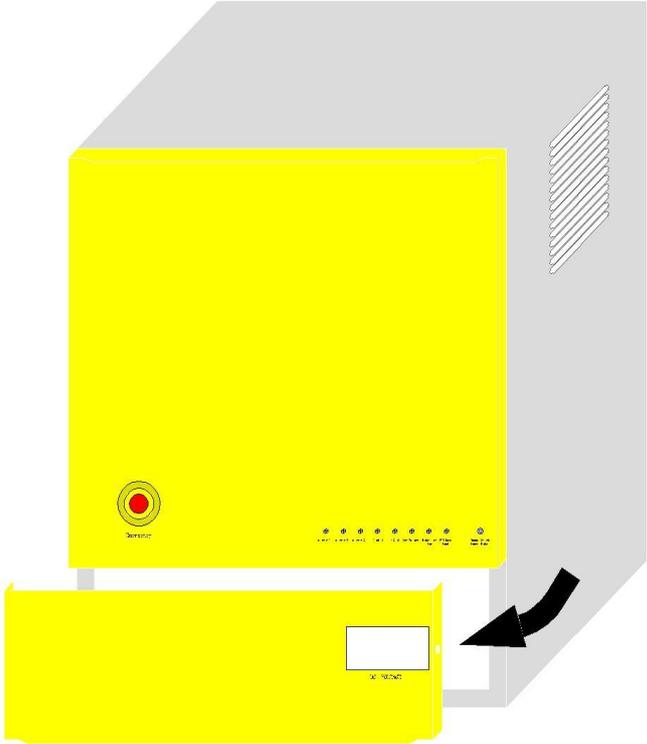
② Wall hanging installation diagram



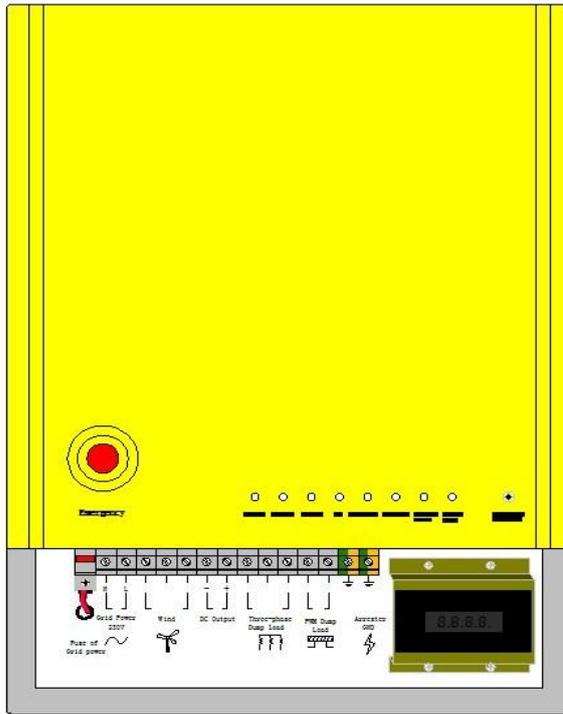
V Remove wiring step controller



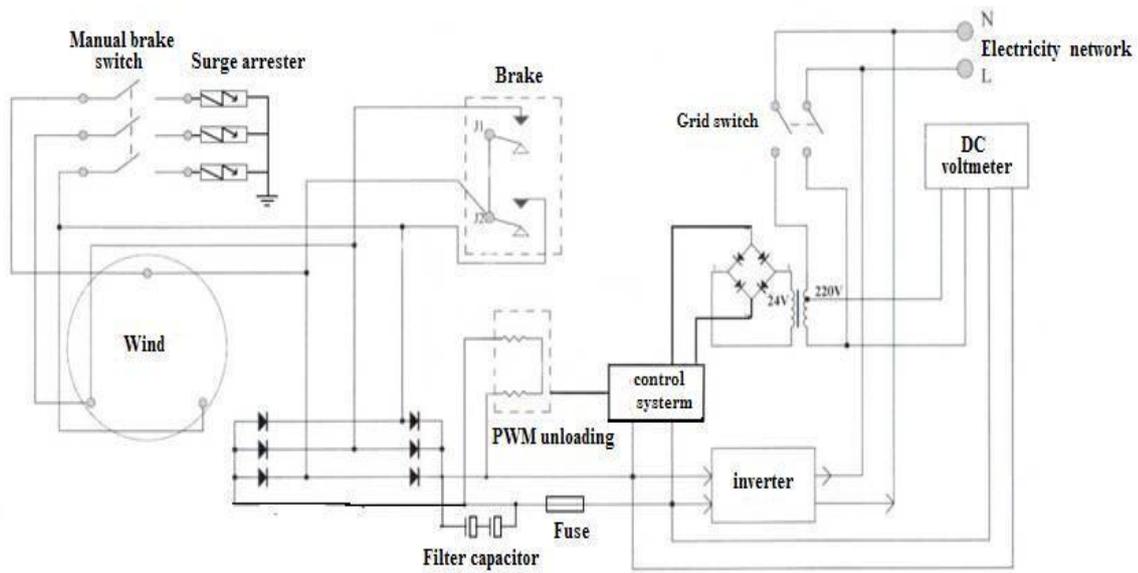
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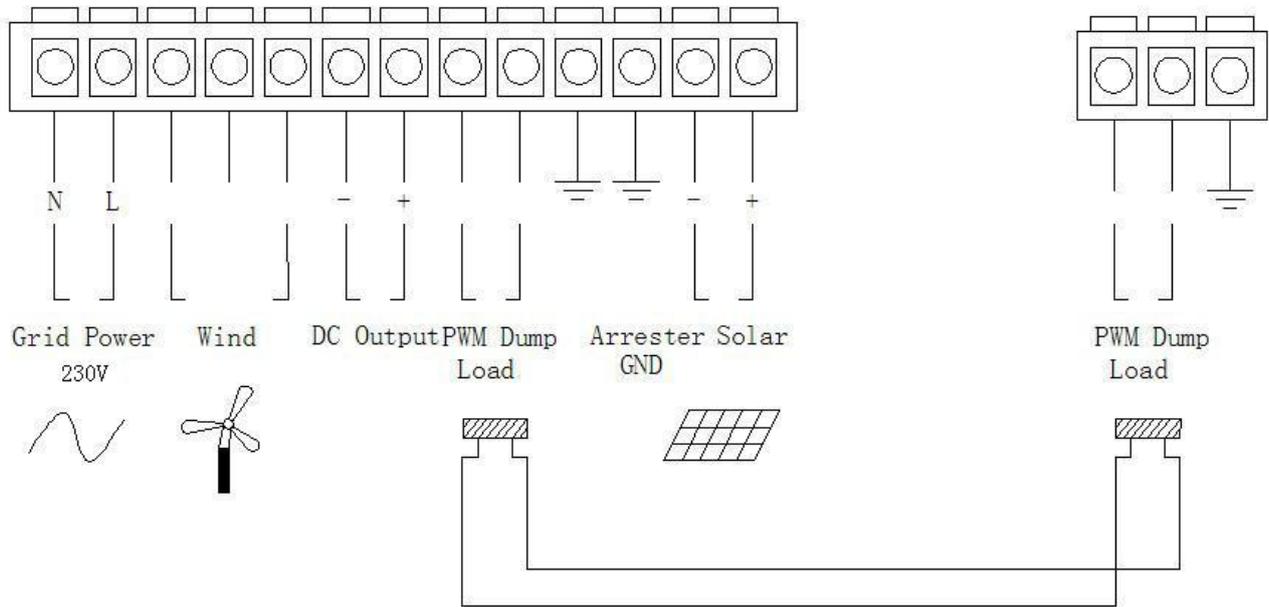
VI Schematic diagram



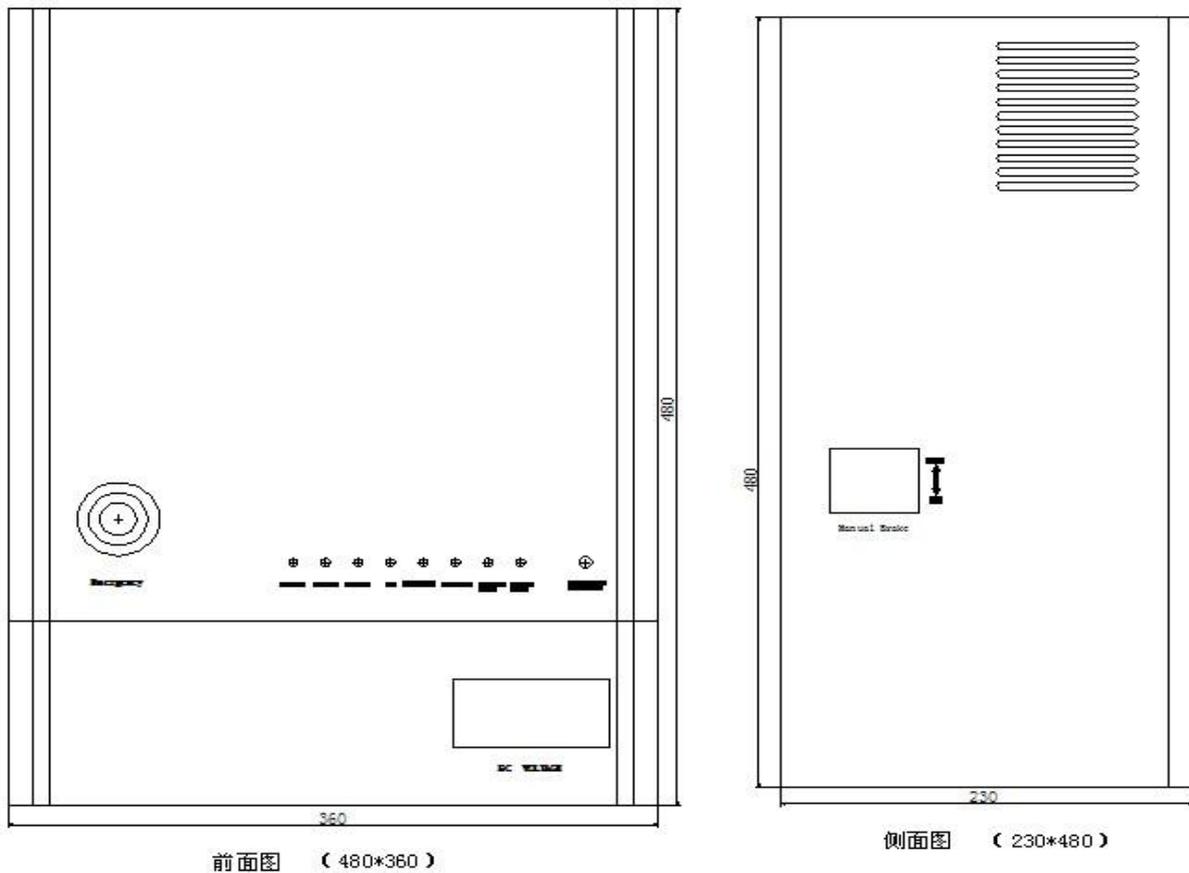
VII Wiring diagram

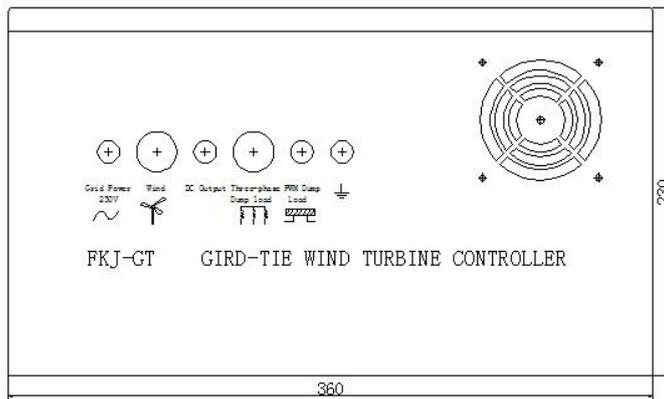
PWM grid connection controller connections

Unloader connections



VIII Box diagram





底面图 (230*360)

IX Attentions

-  1. The electricity network for the controller is AC230V. In the use, the controller will stop running and the wind turbine is in brake state if the electricity network fails or is cut down.
-  2. In the use of the controller, when the output voltage is higher than DC380V, the wind turbine will brake. At this time you should carefully find out the reasons for over voltage. If the fault needs to be eliminated, the wind turbine should be in the brake state through the manual switch. After the fault is eliminated, the wind turbine can run again.
-  3. The dump load wires of the controller should be firmly connected with that of the unloader. Miss-connection and dismantlement in the use is forbidden! If not, the over-high voltage can cause accidents endangering personal safety!! Damaging this controller may cause loss of control on the wind turbine and damage to the wind turbine.
-  4. Owing to the unloader equipped on this machine can produce high temperature in working , please put it in the place with better ventilation and heat dispersion and where the man or livestock can not reach. Covering with other

objects or using it under the flammable or explosive gas environment is forbidden to prevent fire.

 5. If the output wires of the inverter or DC voltage need to be connected or arranged, the switches of electricity network and wind turbine must be in brake state. The DC fuse should be in open circuit state or taken out, to avoid that the capacitor discharge injury the personnel.

 6. The controller is equipped with emergency stop switch. In cases of emergency, press the emergency stop button on the front panel, so the power supply of the controller can be cut off to stop running and the wind turbine brake. Rotating the button in accordance with the marked direction can re-start this controller.

 7. The machine should be managed by professionals for your safety. It should be grounded reliably to resist electric shock. The ground resistance should be less than 1Ω and the connecting wire should be larger than 10^2mm .

 8. When the machine is not in use or the wind is too strong, loof the wind turbine, then place the switch of the wind turbine on **STOP** and make the wind turbine in brake state.

X Indicator Description

Wind- wind indicator. When the wind turbine runs normally, this indicator is on.

When the wind turbine is not connected, the indicator is off.

Grid power- electricity network indicator. After the electricity network is running, the indicator is on, if there is no electricity network, the indicator is off.

Low Voltage- low voltage indicator. When the voltage generated by the wind turbine is too low and there is no output, the indicator is on. When the voltage generated by the wind turbine is higher than 130V, the indicator is off.

Over Voltage- over voltage indicator. When there is strong wind and the voltage generated by the wind turbine is higher than 380V, the indicator is on.

Brake delay indicator. When there is strong wind and the voltage generated by the wind turbine is higher than 380V, the grid connection controller brake and the indicator is on in the process of the brake delay.

Dump Load-PWM voltage stabilizing indicator. When the voltage of the wind turbine is higher than 350V, PWM unloader automatically stabilizes the voltage to 350V and the indicator is on.

X I Technical Parameters

Power of the equipped wind turbine (W)	4K
Operating mode	Continuous
Function	Commutation, control
Operating environment	Temperature -30 ~ 60°C, humidity≤80%
PWM unloading voltage (DCV)	≥350V
brake voltage (DCV)	380±5V
brake delay time (min)	10-20 minutes
Low voltage indicator (V)	≤130V
Self-provided connecting wire of the brake (mm ²)	>2.5mm ²
Self-provided connecting wire of the PWM dump load(mm ²)	>2.5mm ²
PWM unloading fuse (A)	10A
DC output fuse (A)	10A