

USER' S MANUAL FOR E-SERIS 5KW



Warnings:

- Please excuse from specification alternations without notice;
- It is required to comply with the local law, regulations or the permission From local government before installing WTGS;.
- Only under no wind weather should carry out the installation, maintenance And dismantling of WTGS;.
- Please make sure the construction for WTGS mechanical and electronic facilities should be done by professionals;.
- Color or figuration of pictures might be varied against physical goods;.
- It is forbidden to leave the wind turbine generator working under unloaded state (such as without connecting with batteries)..
- The safety signs involving the manual are as followed;



Danger-Improper operation might lead to hurt people badly. .



Attention-Improper operation might lead to damage products or hurt People.

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1 Abstrunct

The wind turbine generator system is the equipments which could produce electricity by the rotating of blades. The function of the controller is to rectify the output and protect the generator under severe environment. The E-series generator could be applied in the system of wind and solar hybrid, as the controller of it has a solar connector.

2 Where to use

This E-series generator could be both applied for home use and factory use, which is available for on-gird and off-grid, While on-gird by matching on-grid inverter and off-gird by matching batteries and off-grid inverter.

Not available for below:

1 No loading

2 Directly connecting with consumption



3 Parameter

Item	Rated voltage (DCV)	Rated Current (DCA)	Rated Power (W)	Start-up wind speed (m/s)	Rated wind speed (m/s)	Security wind speed (m/s)	Wind diameter (M)	Generator type	RPM(r/m)	Blade material	Blade NO.
GUANG MANG	240	20	5000	2.5	12	35	6.2	PMG	200	GF RP	3

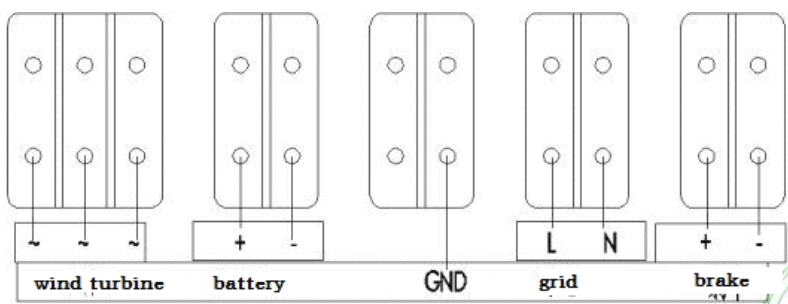
4 How to install the generator

4.1 Site choosing

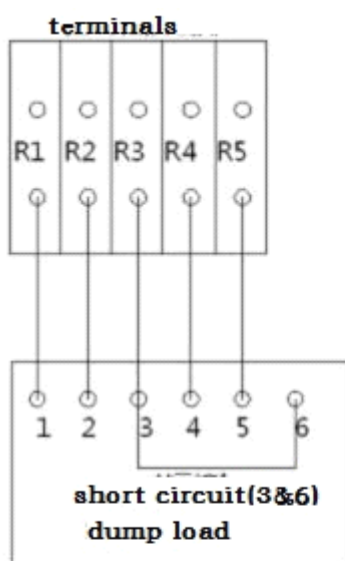
Wind turbine generator system should be installed at least 50m away from house or areas people gathering. It should be avoided to have trees or buildings nearby to affect the wind speed or wind direction. It is forbidden to install the wind turbine generator on soft lands, uneven ground or areas where the ground can be easily influenced by the climates. At the same time, the distance between generator and battery should be also considered, as the longer the distance, the less the wastage. And please use a thicker cable for long distance connection.

4.2 assembling and connection

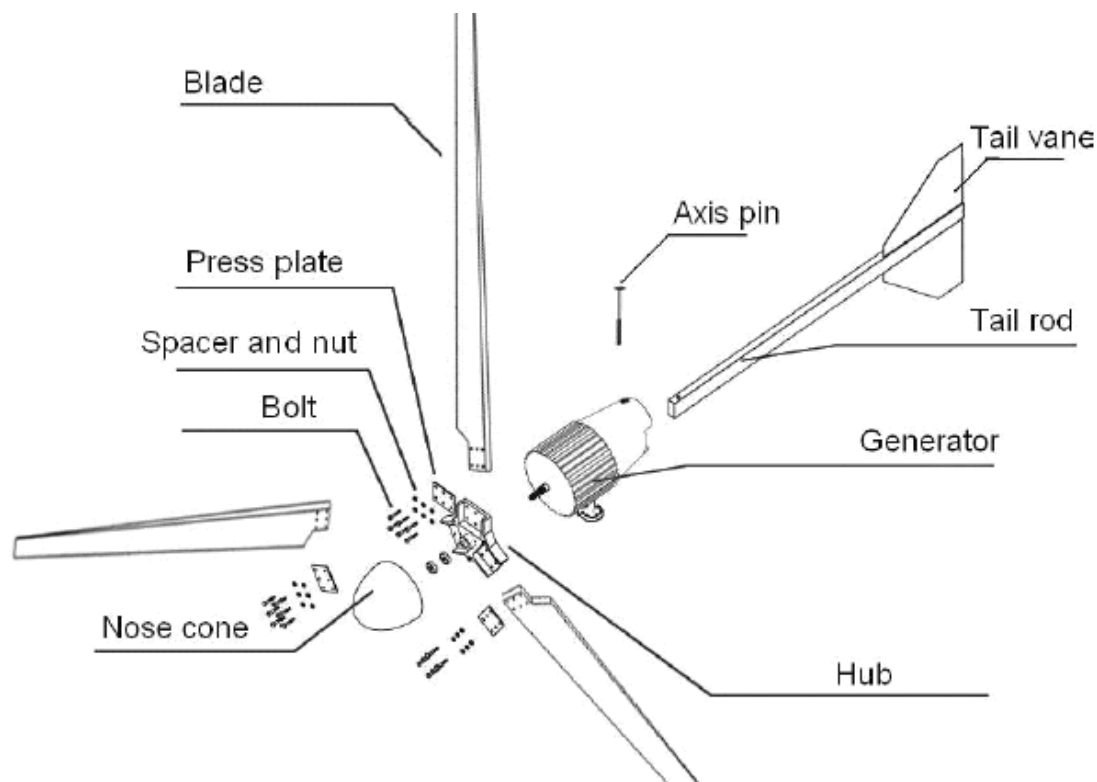
Note: Please, firstly connect the controller with battery, and then the generator 2、Instruction for connection of 5kw



3、Instruction for connection of dump loader of 5kw

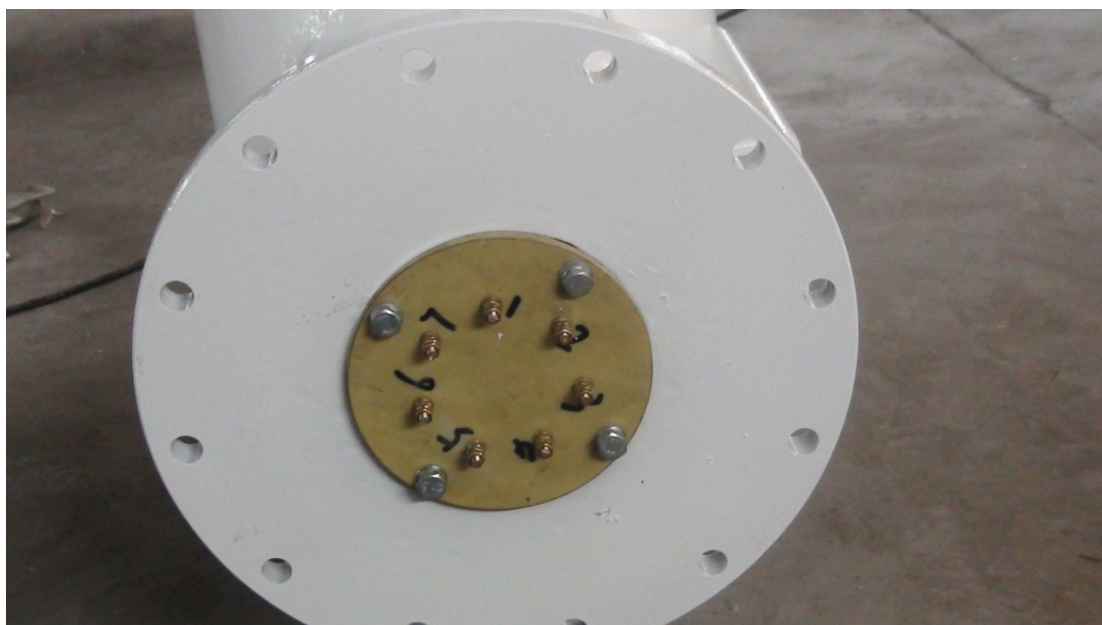


4.3 Diagram for generator



4.4 installation

Connect the cable to the bottom of generator, and then make the cable go through the pole center.



Below is the identifier and corresponding wire,

Number	1	2	3	4	5	6	7
Wire	Motor lead wire (A)	Motor lead wire (B)	Motor lead wire (C)	Temperat ure control (+)	Temperat ure control (-)	Brake(+)	Brake(-)

Note: About the temperature control wire, the red is positive and black is negative. The braking cable is 2*2.5mm², with red positive and blue negative.

The third screw shouldn't be release which closed to the insulating board. You could release the second screw, put in the end, and tighten the screw.

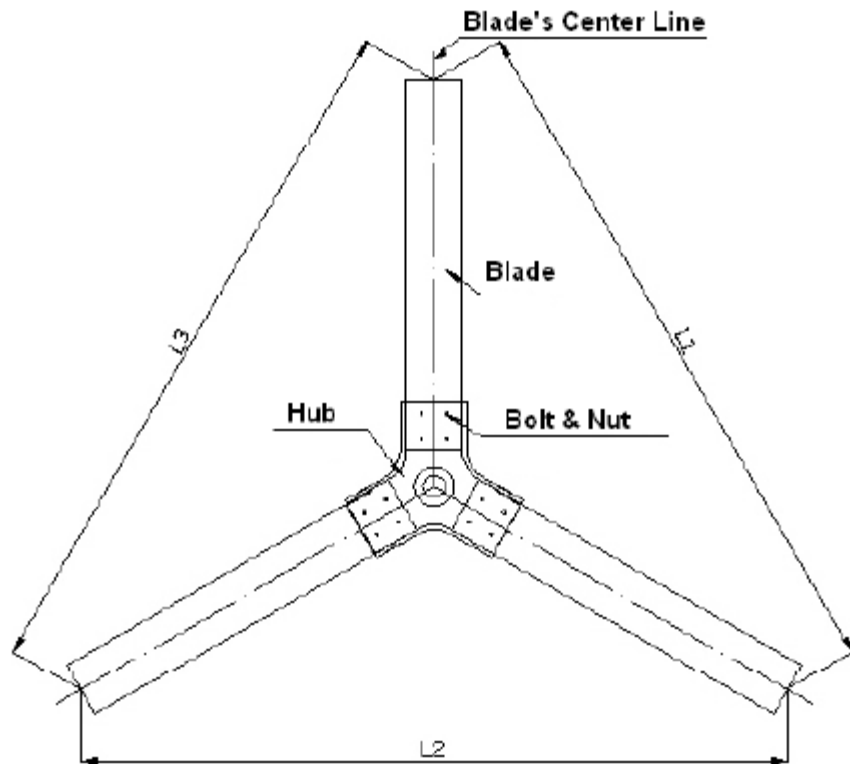
2 Connect the generator with the pole by screw



3 blades

(1) The flange has been assembled on the motor shaft before delivery

(2) Please note the concave part of blades should face the wind, and tight the blade with flap by screw. Balance is very important, and do not tight the screw before assembling all blades. For finding balance, please make a same distance for every apex, and then tighten the screw. (as below).



Note: $L1=L2=L3$ (with tolerance $\pm 5\text{mm}$). Tighten the screw after finding balance.



4、Assemble the nose cone by screw



5、Connect the tail with the generator with screw



6 Please connect cable from the tower to the controller. Note, controller should be firstly connect with battery

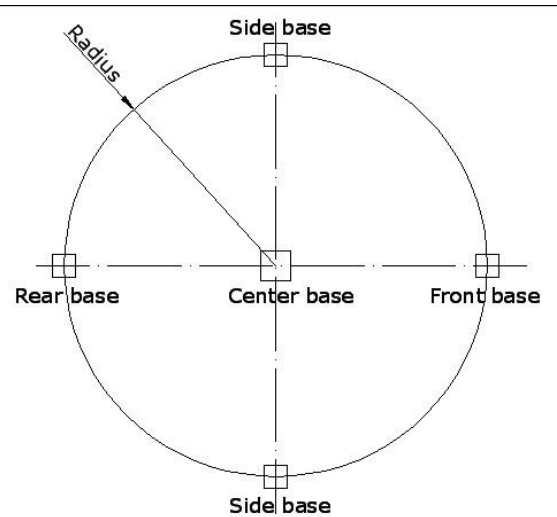


5 How to install guy cable tower

5.1 Foundation sizing

Please install the generator only under no wind weather.

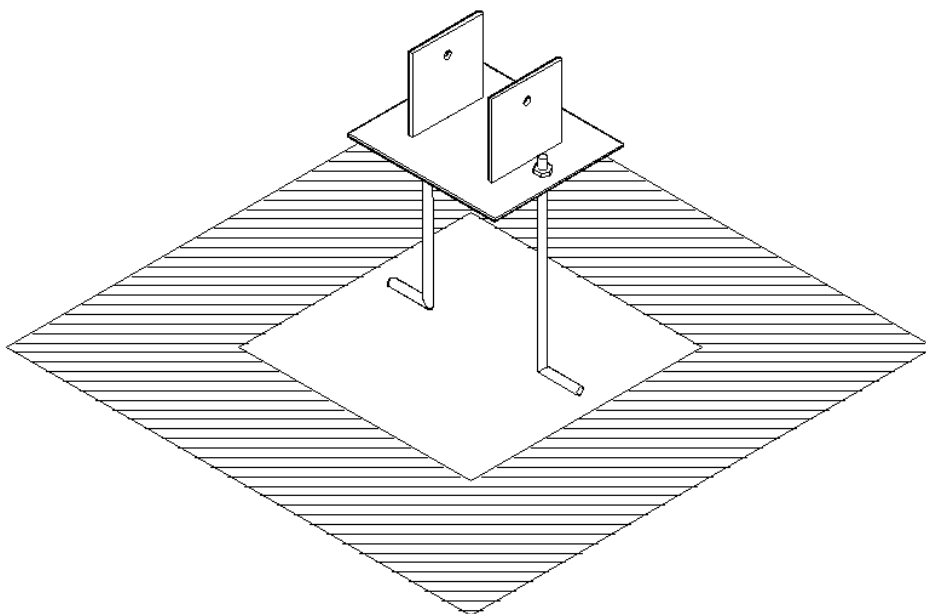
To make the foundation in an open area,



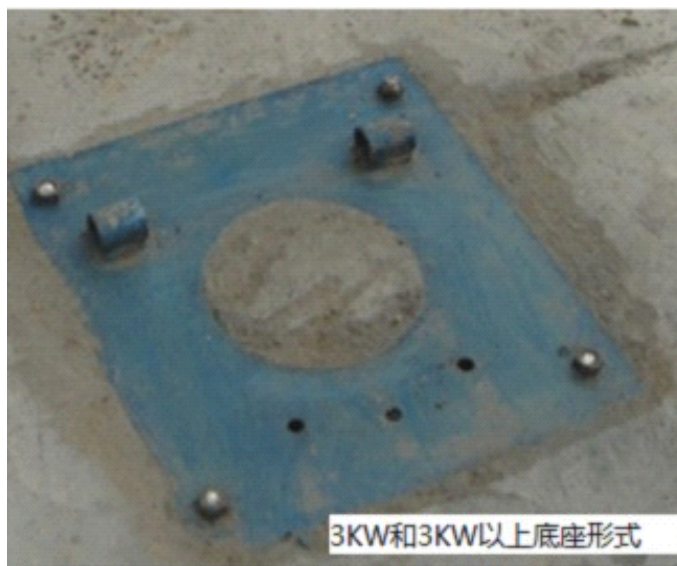
Model		5KW Guy cable tower
Foundation	Radius(m)	6
	Center foundation(m)	0.9*0.9*1.2
	Edge foundation (m)	0.8*0.8*0.9

5.2 For making basement

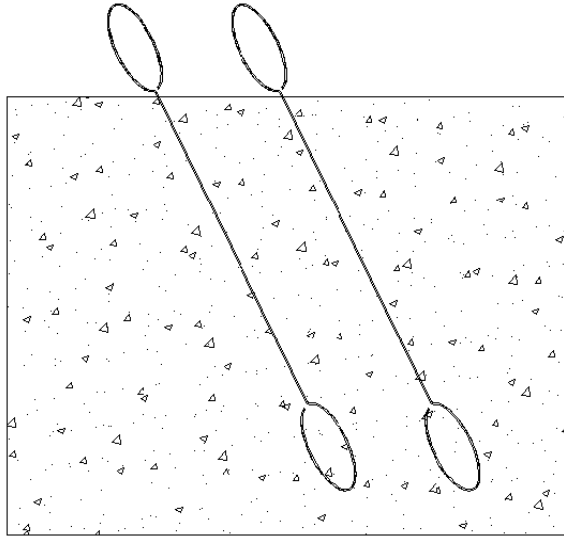
Please dig the basement according to the designed size. Then put the anchor in the basement. Please assemble the plate as below. For generator below 2kw, there are two pins needed to fit in the edge foundation; For above 3kw, there needs to be three screw tooth hole forwards to the front side.



Placing the concrete after making the basement ready (C25), as below,



Put the edge anchor into the edge basement, and please check the distance between the hook of basement and the center, including the basic level of basement, and then placing concrete. Do as below,



To keep the balance of the tension between each cable, the height of the basement need to be same with the base of the tower. Otherwise, the unbalance would cause trouble for the tower.

5.3 Assemble the tower

Connect the two section of subsidiary pole together, and insert it into the main tower, as below



Connect 4 pieces of steel wire to the end of the subsidiary pole, and then connect the steel wire which corresponding to the edge basement with the U-shape spend orchid, as below,



The steel which corresponding to the front basement need to connect with the chain block, as below,



Erect the subsidiary pole, and fix the steel wire to the edge basement, as below,



Aim the pin hole of tower to the basement, and insert the pin with smearing grease, as below



1. Connect each section of the pole by screw as below,



2. To connect the steel wire after connecting the tower as below picture. For safety, you could twine the tower with the steel wire for a circle before fixing the wire with the fixture. There need to be two fixtures for each steel wire, and 10-20 cm need to be left in the end of the wire



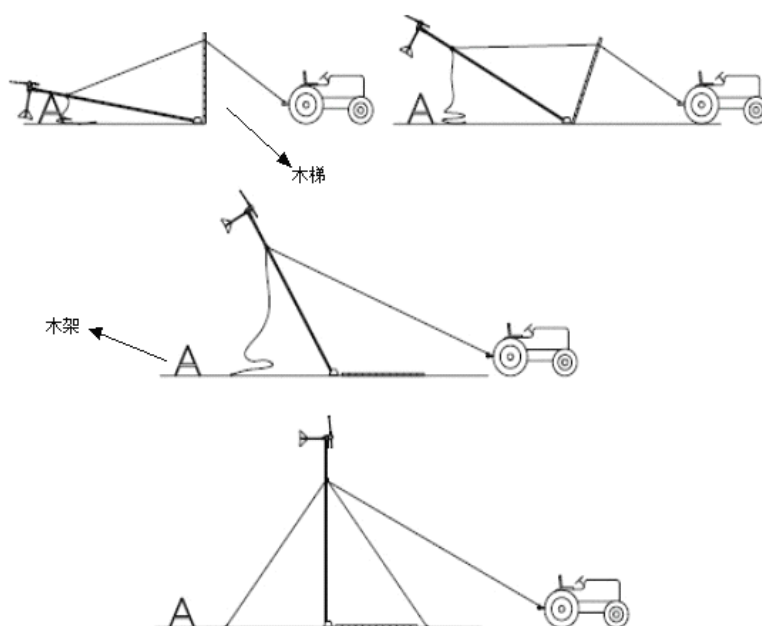
Besides aiming the steel wire for front basement, the ends of all other steel wire need to connect with the corresponding basement. And you could fix all wires after the installation of the tower as below



3. Put the tower on a wooden yoke, height of 1m to 1.5m, as below,



4. Generator installation (In the manual for generator part)
5. You could erect the tower with a winch, tractor and crane. Please note, when using a winch and tractor, there need to be a yoke for generator below 2kw, including 2kw. Pay attention to the tension of each steel wire in the process of erecting in case of any unbalance.



6. Please installing the bolts to the three hole at the bottom of the tower after the erecting of the tower
7. To check the length of 4 pieces of steel wire, and fix it with fixture. Note, please leave a proper radian for the steel wire.
10. You need to take the subsidiary pole away and release the steel wire after installation.

5.4 Lay down the tower

For laying down the tower, a no wind weather is needed, as well as a yoke, which is the same when for installing.

8. Break the connection to stop the generator, which could be checked in the user' s manual.
9. 【If using a crane】The harness should be tied to the generator by professional people. And then , release

the screw and steel wire to lay down the generator slowly to the yoke.

1. 【If using a tractor or winch】First, release the steel wire of the basement, and then connect the steel wire to tractor or winch according to the installing manner by reversing it. Finally, lay down the tower on the yoke slowly.

6. Battery Configuration

Battery should be placed in a dry building with constant temperature and 通风. By calculating the output of generator, you could decide the number of the battery and the connection, series and parallel. Then please design a cage for placing the battery, controller and inverter. To avoid electromagnetic interference, after connect the battery, please smear the end of wire with grease or anti-corrosion material. The connecting wire between battery and controller should be no less than 3M. You could check the parameter for choosing the battery.

Series connecting is to connect the anode of one battery to the cathode of another battery as below:



Parallel connecting is to connect the battery anode with anode, cathode with cathode as below:



※Please check the notification, using instruction and maintenance with BATTERY INSTRUCTION.

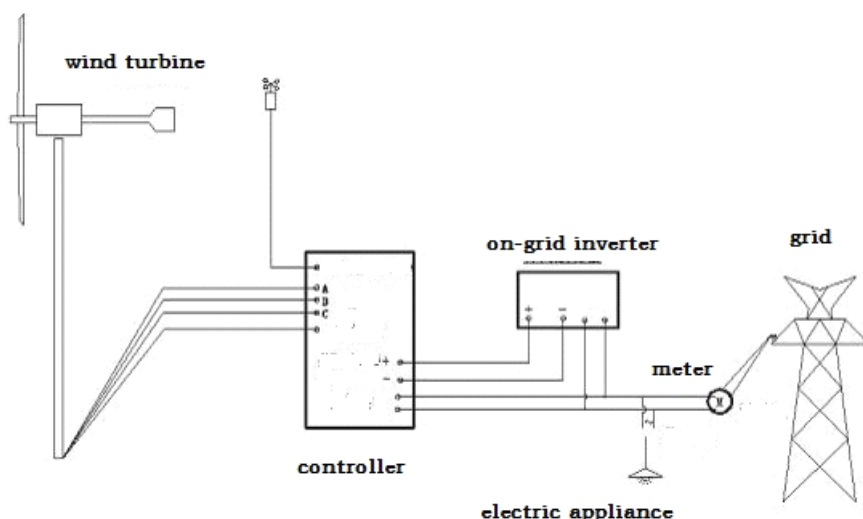
7 Wiring diagram

7.1 OFF GRID (Picture as below)



Please make sure that the output voltage, voltage of battery and the input voltage of battery should be same. Do not misconnect the end of battery, which would burn the generator, battery and inverter out.

7.2 ON-GRID (Picture as below)



Every model of E-series could be applied for on-grid system with the permission of local government, and on-grid inverter and on-grid controller should be purchased by your own part. .



Please turn off the main supply before connection.

8 Instruction for controller

8.1 Interface

The interface uses a 485 model to connect with the controller, which is applied with customized KNN LCD to display the data of voltage, current, power, and wind speed.

8.3 Instruction for controller

1 Summary

Brake: The brake system would act to stop the generator for protection when the wind speed, voltage, temperature overrun.

Dump loader : The dump loading system would act when the voltage overrun, which could release the electricity

Parameter setting

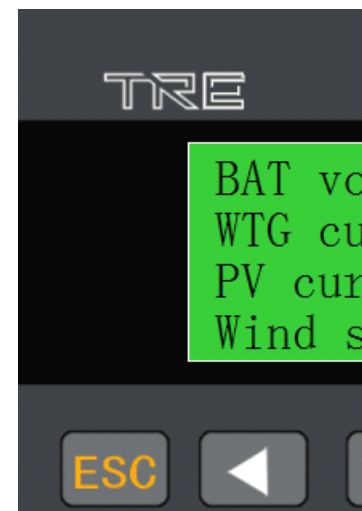
Parameter	Instructions
Voltage unloading 1	Dump loader 1 acting when over this voltage
Return of Voltage unloading 1	Dump loader 1 would stop action when the voltage is lower than this value
Voltage unloading 2	Dump loader 1 and 2 acting when over this

	voltage
Return of Voltage unloading 2	Dump loader 1 and 2 would stop action when the voltage is lower than this value
Brake voltage	The dump loader 1 and 3 would act when over this voltage; And the dump loader 1 and 2 would stop after the action of brake
Return of brake volatge	The brake would stop action when lower than this voltage
Security wind speed	The dump loader 1 and 2 would act when over this wind speed; And it would stop acting after the act of brake.
The return of security of wind speed	The brake would act after a while when the voltage is lower than this value
The protection time before brake t1	The acting time of dump loader before brake
The protection time after brake t2	The acting time of dump loader after brake
Brake pressue	The value of pressure on brake
Security current	The dump loader 1 and 2 act after the brake; and then it would stop acting.

Note: The PLC is closed before delivery, and it could only be turned on after the installation of wind turbine.

8.4、Interface

1. Button



: You could return to the front page by pressing this when you are in a page of non-installed state, which you could return to when you are in a installed state



: Cursor moves to left when setting



: Back to the previous page when in a non-setting page; The value would add one more one time when in a setting state.



: Move to the next page when in a non-setting page; The value would reduce one for one time when in a setting state.



: Cursor move to right when setting.



: Move to the state of choosing the set when in a non-setting state; Move to setting page when choosing the setting state.



: The confirm the revising in the state of setting and return to the state of choosing setting.



: Re-enter the initial setting (only available in page 10)



: Manual brake (Available in every page)



: Manual release (Available in every page)



: Error on timeout when clearing the release of brake (only available in page 10)



: To release the manual brake (only available in page 10)



: The clear the error on time out of brake (only available in page 10)

Page 1 to page 4 is the page for illustrating the state; Page 5 to page 10 is the page for setting the parameter

Page 1

```
BAT voltage : 1234 V :
WTG current : 12.3 A :
PV current  : 12.3 A :
Wind speed  : 12.3 m/s
```

Item:

Voltage of battery, the output current of wind turbine, the output voltage of solar panel, wind speed

Page 2

```
Pressure : -123 bar
WTG power : 1234.5 W
PV power  : 1234.5 W
.....
```

Item:

Pressure, the power of wind turbine, the power of solar panel

备注: 当温度过高报警时, 或者解刹到位时, 压力值显示为负值, 此为正常现象。

Note: The pressure value could be negative when the temperatur is so high or the brake releasing act, and this is normal state.

Page 3


```
Dumpload 1 ..... ○ .....
Dumpload 2 ..... ○ .....
Brake ..... ○ .....
Release brake ..... ○ .....
```

Item:

State if dump loader 1, state of dump loader 2, state of brake and state of releasing brake

Page 4

```
Brake overtime ..... ○ .....
Release overtime ..... ○ .....
Over temperature ..... ○ .....
Low voltage ..... ○ .....
```

Item

Error on brake timeout, error on release time out, alarming on over temperature and alarming on under vpoltage.

Page 5

```
Voltage 1 ..... 123 V
Voltage 1 backlash123 V
Voltage 2 ..... 123 V
Voltage 2 backlash123 V
```

Item:

Dump loading voltage 1, return of dum loading 1, dump loading2 and return of dump loading 2

Page 6

```
Voltage 3 ..... 123 V
Voltage 3 backlash123 V
Under voltage ..... 123 V
Protection WS 12.3 · m/s
```

Item

Brake voltage, return of brake voltage, the value of under voltage and security wind speed

Page 7

```
WS backlash : 12.3 m/s
Protection current 123 A
Current backlash : 123 A
Brake pressure : 123 bar
```

Item

Return of security wind speed, security current, return of security current and brake pressure

Page 8

```
Release pressure 123bar
Over V delay : 12.3 s
Over WS delay : 12.3 s
Pressure limit : 123bar
```

Item:

Release pressure, delay of over voltage, delay of over wind speed and pressure up limit


Page 9

```
Over A delay : 12.3 s
Brake time : 12.3 s
Protection time 1234.5s
Brake delay : 12.3 s
```

Item:

Delay of over current, the normal braking time, security time and delay of brake

Page 10

```
Brake overtime : 12.3 s
Brake time 2 : 12.3 s
Manual brake : 
```

Item

The over time of brake, the braking time when the brake system is abnormal and if to release the manual brake

All the parameter has been settled before delivery, and there is no need for users to revise the data again. If you need to revise it,

please feel free to contact us for confirm.

9 Maintenance

Please check and maintain the generator at a certain time as the environment for generator might be very scurviness. Please lay down the tower before storm coming in case of any trouble.

al er	Item	After storm	Every Moth	Every Year	Every 5 year
	Check blades: look for cracks or abnormal bends. If you locate any damage caused by storms or weather, replace the blades as using damaged or unbalanced blades will compromise the efficiency and lifetime of windmill.	√			√
	Replace lubricant			√	
	Check to see if nuts and bolts have remained tight on mill and tower	√			√
	Check electric power cables for corrosion and damage. If you detect any abnormal corrosion, replace cables.	√		√	
	Please repaint the tower if the painting failed by reason of climate.			√	
	To check if every control system working well		√		
	Please check the electrolyte level of the battery. And please add if not enough by following the instruction.		√		

10 Trouble shooting

(1) Why the Electrical equipment failure after connecting with the system?

○ Please check the remaining power the battery, and the electrical equipment would not work if the power is not enough. If the power is enough, please check if the connection between battery and inverter is correct.

(2) Why cannot charge the battery?

○ To check if the blades rotate, and the generator would not work if the wind speed is so low or so high. If the rotating of blade is Ok, please disconnect the battery and inverter from the generator, and then check the output of generator by voltmeter. If the output is OK, please check the battery follow the instruction to see if the battery damaged. If the voltmeter is zero, please check if it' s the problem of generator' s cable.

(3) Why the blade do not move or move slowly with a normal wind speed?

○ The rotating of blade would be abnormal if the output line is short-circuited. And please check the generator' s cable with disconnecting the battery and inverter from the generator.

(4) If we could extend the using of electrical equipment by adding the capacity of battery?

○ It would be a waste of battery and do harm to the battery, if add the capacity of battery without professional suggestion because it would put the battery always in the state of lacking power.

Please contact with our engineer by e-mail or mobile if you can 'not solve the problem.

*** Color may be different from physical products of picture.**

*** Please give a kind understanding if the manual has been modified without prior notification.**

*** Two years warranty would be offered from the date of purchasing (Non-artificial and Force majeure)**

