




Wind Turbine (300W-1000W)
User Manual


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1. Notice for installation


 The installation should be arranged at daytime without rain or strong wind..


 Before repairing or dismantling the wind turbine system, adjust the switch on controller panel to “off” position, making the rotor at brake. Do not get close to rotor when the wind turbine is rotating, preventing personal injury.

 Never use cables with too fine diameter or with poor quality , for fear of leakage or even fire.

 Installation and repairing of the wind turbine system should be carried out under the guidance of professionals.

 When transporting or moving the main body of the wind turbine, neither grab its spindle, nor use it as a pivot point.

 When lifting or transporting, keep the balance of the body, preventing machinery breakdown or personal injury caused by inclination or slippage.

 No inflammable materials or explosive are allowed at the installation site, or there will be danger of fire.

 There should be good ventilation at the installation site,

avoiding small animals (rat, snake, etc) getting into the inner system through connection holes, which might cause accidents such as short-circuit, leading to machinery breakdown or fire.

2. Working principles & application range

2.1 Working principles

The wind turbine system uses natural wind as its energy resource, transferring wind energy into electric energy. It generates power independently. Wind energy can be used around the clock.

2.2 Application range

The wind turbine system uses the clean green natural wind resources, which is pollution-free to the environment. The product is widely applied in wind-solar hybrid street lighting system, household power supply system, power supply for e-surveillance, communication base station, farming, maritime application, billboard lighting, etc. It can be connected to the state grid, or work standalone (off-grid).

3. Product features

- The product uses natural green energy resource. No connecting external power is required. So there's no need to embed or erect cables.
- The blades are made of aluminum alloy, which has good strength and toughness, light weight, stable shape and long service life. The blade airfoil is designed elaborately by aerodynamic experts, enabling the blades with high efficiency and low noise. Dynamic balance is done for impellers, to make sure about smoothness and steadiness.
- The product is designed with high-efficiency permanent magnet and optimized magnetic circuit, with high-permeable and heat-resistant material. The stator module is treated with vacuum impregnation, making insulativity and service life greatly improved.
- The shell of the wind turbine is made of high-strength aluminum alloy, dealt with "micro-die-cast" technology. Accordingly, it has the characteristics of light-weight,

high-strength, rust-proof and anti-corrosion.

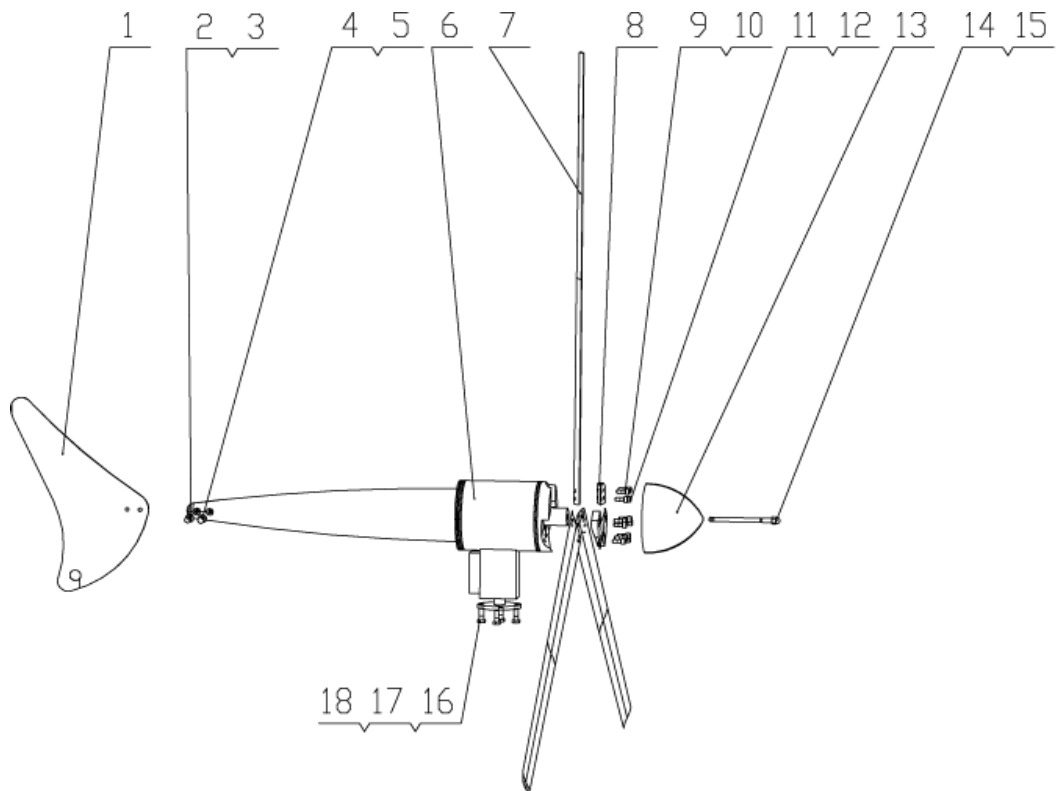
- Adopting wind alignment device, enabling it heading toward the wind automatically, with sensitivity and stability of the direction adjustment.
- The matching wind turbine controller uses intelligent controlling, with the functions of controlling charging, over-charging and over-discharging of the batteries, etc.
- Speed controlling technology is adopted with the matching controller. The wind turbine will keep power generation with a limited set speed (rated rpm) even in high winds, protecting the system from being damaged, while still generating.

4. Technical parameters of wind turbine (FS series)

Model	FS-300	FS-400	FS-600	FS-1000
Rated voltage (VDC)	24/12	24/12	24/48	48/24/96/ 120
Rated power (W)	300	400	600	1000
Rotor diameter (m)	2	2	2.5	2.5
Blade material & quantity	Aluminum alloy *3	Aluminum alloy *3	Aluminum alloy *3	Aluminum alloy *3
Rated RPM	450	450	450	450
Start up wind speed (m/s)	2.3	2.3	2.5	2.5
Cut-in wind speed (m/s)	3	3	3	3
Rated wind speed (m/s)	10	10	10	10
Safety wind speed (m/s)	35	35	35	35
Weight (KG)	32	33	36	42

Generator type	3-phase AC synchronous permanent magnet
Controlling	Electromagnetic control, automatic headwind, automatic dump load
Working temperature (°C)	-40-+60

Wind turbine diagram



Serial number	Name	Quantity	Serial number	Name	Quantity
1	Tail rudder	1	10	Spring shim $\phi 8$	12
2	Pan head bolt M6x40	1	11	Spring washer	12
3	Check out nut M6	1	12	Nut	12
4	Pan head bolt M6x58	1	13	Air deflector	1
5	Check out nut M6	1	14	Screw stem M10	1
6	Main body	1	15	Cap nut M10	1
7	Blade	3	16	Ring flange	1
8	Blade platen	3	17	Outside hex bolts M10x30	4
9	Inside hex bolts M8x30	12	18	Nut M10	4

5. Installation

Step 1: wind turbine wire connection. Make tight connection with insulation tape between the 3 wires out of the wind turbine and the 3 connecting wires. The 3 wires can be connected to any of the 3 terminals on the controller.



Step 2: connecting wind turbine with the supporting pole. Align the 4 holes between the pole flange and the turbine flange, tightly screw the 4 M10x35 connecting screws. Then support the pole with a tripod, to make the wind turbine installation easier.



Step 3: taking off the dome. First unscrew the M10 screw, then take off the dome.



Step 4: taking off the blade press board. When unscrewing, take care that the screw and the blade press board are not apart, to

prevent using the wrong screw when installing again..



Step 5: installing the blades. During blade installation, place the turbine head upwards, unscrew and remove the 4 screws on the blade press board, put the blades into place, then tightly screw over. Rotate the wheel-boss to make sure all its screws are in due position and are working properly.



Step 6: putting on the dome.



Step 7: screwing the M10 screw over. Caution: the screwing must be very tight.



Step 8: putting the tail-fin into place. Make sure about its direction.

Step 9: connecting with the wind turbine controller (see the wind controller manual).

6. Maintenance & safety notices

- 1) The wind turbine is prohibited to work continuously with empty load or at high rotating speed.
- 2) People are forbidden to stand under the wind turbine when the rotor spins quickly.
- 3) Stop and check the wind turbine when there is abnormal noise or vibration.
- 4) When connecting the wind turbine system, battery must be connected first, and then the turbine's output. When disconnecting, the turbine's output be disconnected first, and then the battery.
- 5) When encountering strong typhoon, it's better to stop the turbine manually and set it at brake.
- 6) Climbing up the pole is forbidden when the wind turbine is rotating, to prevent personal injuries and mechanical damage.
- 7) System components should be checked often. looseness and disconnection should be handled in time, preventing occurrence of accidents.
- 8) Do not start the turbine when the battery electrodes are reversely connected, to prevent damage to the turbine.
- 9) Battery capacity, voltage and connections should be checked regularly. Clean in time the dirt and rust stain on battery terminals.

7. Breakdowns & treatment

Wind turbines are designed and manufactured under the principles of fault-free and maintenance-free. Normally, correct installation and application would not cause breakdowns. The following table is for reference when failure happens:

Breakdowns	Causes	Solutions
Excessive vibration of wind turbine	1. looseness of steel rope	1. tight steel rope moderately
	2. looseness of blades' fixed bolts	2. screw on and fix the bolts
	3. rotor blades damaged by outside force	3. replace the blades and make them balance
	4. imbalance caused by blades' frozen surface	4. clear the ice
Veering does not work	1. too much oil loam and dirt inside gyrator	1. clear oil loam and dirt, lubricate and maintain
	2. rotational parts distorted by outside force	2. adjust the distorted shape
Abnormal noise	1. looseness of fastening parts	1. take down wind turbine, check each fastening part and take correspondent measures
	2. generator bearings destroyed	2. replace the bearings
	3. rubbing between rotor and other components	3. check to find resolutions

Rotor speed drops markedly	1. rotor blades with variable pitch control do not work	1. check, lubricate and maintain
	2. short-circuit in bridge rectifier	2. replace the bridge rectifier
	3. short-circuit in generator stator winding or output line	3. find out short circuited position, separate and insulate it
	4. rubbing between brake discs	4. adjust the space between brake discs
	5. the switch stays "off"	5. switch to "on"
Low output voltage	1. low rotational speed	1. check out to revert to the normal speed
	2. permanent magnetic rotor demagnetizes	2. magnetize or replace the p-m rotor
	3. short-circuit in three-phase stator winding	3. find out short circuited position, isolate, dip coating and insulate
	4. connection points in transmission slip-ring and outlet line don't have good conduction	4. clear slip-ring and connection points, reduce contact resistance
	5. short-circuit in bridge rectifier	5. replace the bridge rectifier

	6. low-voltage transmission line is long, lead wire diameter is thin	6. shorten transmission line or thicken lead wire diameter, reduce line loss
No output current	1. open-circuit of generator (stator-winding) or blown fuse	1. find out the cause and connect the wires
	2. open-circuit of output line	2. find out the broken position and connect the wires