

FN Serial

Wind Turbine Generator

1000W

3 or 5 Blades

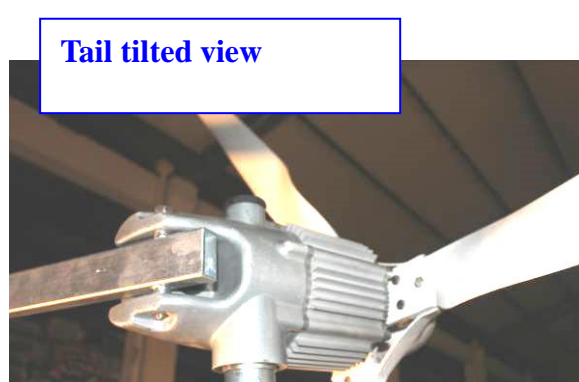
User's Manual

CE&ROHS/ISO9001



One: Product picture display

1. FN serial wind turbine pictures



Under larger wind, the generator tail tilted will limit speed to protect the turbine not damaged

Two: Product usage and introduction

1. Products Usage

The product is driven as a natural wind; bring the wind wheel and the wind turbine rotation, converse wind energy into three-phase AC power, after the controller, transform the current electric, stored into the battery pack. The stored energy in the battery pack is directly to supply DC electrical use or converted 220V/50 HZ AC power supply electrical use by inverter

The product is kind of New green energy, suitable for urban outdoor lighting / urban household electricity, also suitable for rural / mountain / pastoral areas / islands / border post / weather station / radar station / repeater station / field exploration where power shortage or no electricity, it is the ideal invest and

lifetime benefit of small power generator for street lighting / home / fishermen / herdsman / field operation persons.

On the basis of wind turbine, matched solar cells to compose wind and solar systems so that enhance system generating capacity. This system required for wind and solar energy are the green and natural energy.

2. Product Introduction

FN Series wind generator has same shape, the power depend on the size and number of wind blade and specification of rotor and stator.

FN series wind generator adopted proprietary technology with independent intellectual property rights, use imported Japan NSK Bearings greatly reduced starting torque and starting wind speed, meanwhile effectively reducing friction and wear during the operation, significantly increase the generating capacity, and extend the lifetime; tail rod is connected with tin bronze, tin bronze has high mechanical properties, wear properties and corrosion resistance.

FN series wind turbine blades using advanced polymer composites with good strength and toughness, light weight, no deformation without maintenance. Wind turbine blade is designed by airfoil aerodynamic experts, wind energy utilization is high, running noise is low. Blade rotor is processed by impeller balance which ensure that run quiet and balanced, the design lifetime about 5-10 years.

FN Series wind generator is designed by high efficiency permanent magnet and magnetic circuit; select high permeability, high temperature materials, the stator processed by vacuum dipping so that insulation performance and lifetime is greatly improved.

FN series wind turbine shell manufactured by the advanced technology of precision casting with high strength aluminum alloy, light weight, high strength, no rust, corrosion-resistant body and cooling ribs greatly enhanced thermal performance.

FN series of wind turbines has a brush and brush the ring structure, can pass power from the carbon brushes to brush ring, brush ring makes electrical leads; when wind generator rotating, cable will not rotate meanwhile, so that eliminate cable be twist off.

FN series wind turbine using the automatic device to the wind, make wind turbine automatically adjust to the alignment of the windward direction, meanwhile taking into account to adjust the sensitivity and tone to the stability.

FN series anti-rust treatment: the tail pole and tail plate is galvanized; body with high strength aluminum alloy, the whole machine is done by outdoor protective paint double rust treatment to ensure that does not rust.

FN Series waterproof performance: the junction use ring assemble, the flange where process the water trough

This series of products have passed CE / GMC Certified, and tested by Machinery Industry wind Machinery Products Quality Supervision Testing Center reach GB/T19068.1-2003 standard requirements.

Three: Technical Specification

1. Main specification

specification	unit	Model
		FN-1000W
rated output power	W	1000
start wind speed	m/s	2.5
rated wind speed	m/s	12
cut-in wind speed	m/s	3.5
Max safety wind speed	m/s	40
working wind speed	m/s	5-20
rotor diameter	m	2.7
numbers of blades	pieces	3/5
noise	db	63
net weight	Kg	20.3
machine length	mm	1650
output voltage	V	AC 24/48 three phase three wires
matched system DC voltage	V	DC 24/48
working temperature range	°C	-40~+40
blade material		high strength composite
hub		die-casting aluminum, steel tube
generator style		permanent magnet AC generator
brake protection		Blades stall, magnet brake, tail tilted speed limitation
drive ways		Direct drive
body material		die-casting aluminum/aluminum
connecting ways		tube connecting
painting		Outdoor protection paint (multiple spray paint)

Four: Install operation

1. Selection of installing sites

Wind turbine placed site selection is good or bad, is directly related to the wind turbine whether can output the required electrical energy. Please consult the wind energy expert or the recommendations of the manual to select the installation location.

Some suggestions of the wind turbine installation site are listed below:

- 1) Wind power is proportional to the cube of the wind speed, which means that the wind speed increased by and the wind will be increased by 8 times, it should try to choose the annual average wind speed where install wind turbines. In additional, usually far away from the ground the wind speed is also heavier, so try to install the wind turbines in the height.
- 2) Recommend mounting height: unobstructed where wind wheel center to more than 6 meters height from the ground. Install at the roof platform, the wind wheel centers should be more than 2 meters above the parapet so that wind wheel does not fill the block.
- 3) When wind faced obstacles such as buildings or trees, will form turbulence not only affects the generation efficiency, but also threat to the turbine running, so the site selection should avoid tall obstacles. Suggestions are below:

It should select flat & open terrain, and where unimpeded airflow, or choose where growth rate of the airflow. Within 100 m around the tower, there should be no obstacles more than eight meters, the tower around 30 meters, there should be no more than three meters obstacles. If it is necessary to install wind turbine close to the obstacles, the tower height should be more than two times the height.

- 1) Tower should be installed downwind position in the local environment, in order to ensure that the wind turbine lies in the windward position, and enhance power generation efficiency.
- 2) Site selection should avoid the storm, hail, lightning and other disaster-prone areas.
- 3) Wind turbine should be installed in a solid land, in order to ensure basis reliable, otherwise should strengthen deal with the basis.
- 4) The wind turbine should install far away from transmission lines and communication lines, and should comply with local provisions and requirement. If possible, it should install wind turbines where facilitate to observe.

2. Installation steps

1.) Package Details

Number	spare parts	quantity
		FN 1000W
1	generator	1
2	wind blades	3/5
3	flange	1
4	front cover	1
5	rod	1
6	tail plate	1
7	Fastener	1

2.) Fan and tower connections



Figure1

(1) Use the tube connection (Figure1) is easy to assembly, this tube is 120MM length, weld this tube at 40MM height of tower, set aside height of 80MM) install the generator head into the tower tube, and then install the side screws, relative to the flange connection is more humane.

3.) Wind Generator Install Steps

(1) The tower diagonal (diagonal angle is easy to install wind turbine); put through wind generator leading wire, wire is lead in from the tower pole square hole, then leads out from the bottom of the tower.

(2) Connect three wires of wind turbine and tower poles with insulating tape wrapped and put the cable into the tower, connect generator support shaft tube and the tower tube with M8 * 25 hex screws and lock with flat elastic cushion

(3) Install the blades, blades installed at surface of the flange, take care of the blades upwind side out, pre-lock with M8 * 35 hex screw and flat shells self lock nut (blades and screw direction as shown in Figure 2), pay attention to wind blade balance when install, the distance of two blades tips should adjust equal, and then tighten the bolts (see Figure 3).



Figure 2

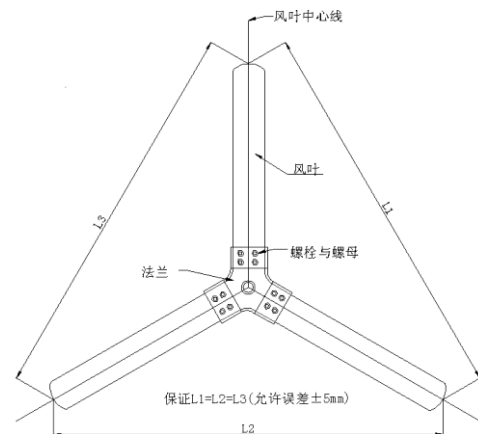


Figure 3

(4) Flange and blades mounted generator rotor shaft and tight flat the flange with the M16 nut and elastic cushion

(5) Fixed front cover at the rotor shaft. with M6 cross screws and flat elastic cushion

(6) Assemble the tail plate and tail rod direction as shown Figure 4, with M6*16 round head cross screws and the flat washer (6 * 14) and elastic cushion.

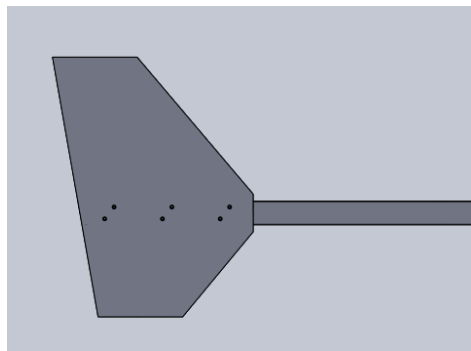


Figure4

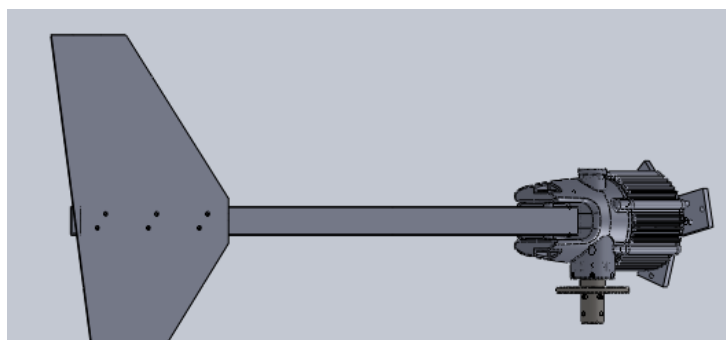


Figure 5

(7) Take apart the tail rod pre-lock screw and install the tail rod, the direction as shown in Figure 5, the screw is assembled from the top and down and lock tightly with nuts.

(8) Tower lifting (make three wires of wind turbine short-circuit to ensure that the generator at a brake status, and operate safely.

(9) Connect lines

Five: Fault resolution

This wind power system has a high design requirement; usually it does not occur during the normal installation and use. If face special circumstances please refer to the following table:

fault	Fault reason	ways of resolve
wind turbine shake	1. steel rope loose 2. nuts fixed blades loose 3. blade defected by external forces 4. Blade attachments caused imbalance	1. adjust tight and loose steel rope 2. tighten loose parts 3. replace blades 4. clear attachment
Abnormal noise	1. fastened parts loose 2. Generator bearing damage 3. Wind turbine's friction with other parts	1. Down wind turbine bracket, check the various spare parts 2. replace bearings 3. check and debug
Rotor rotate apparently low	1. stator and rotor friction 2. Stator winding short circuit or output short circuit 3. Controller switch in the stop position	1. replace bearings 2. Insulate short circuit 3. Controller switch set at power on location
Generator output voltage	1. low rpm	1. Check reason and restore normal

low	2.stator winding three phase has short circuit 3.controller short circuit 4.Low-voltage output wire is too long or too short	rpm 2.Insulate short circuit 3.replace controller 4.shorten wire, bold wire diameter
Generator AC circuit no output	1.output wire short circuit	1.Check the reasons and connected circuit
Generator output normal, but no DC output	1.DC fuse blow 2.output wire circuit 3.controller's rectifier broken	1.replace fuse 2.Check the reasons and connected circuit
Less battery output capacity	1.lower generator output voltage 2.Bad battery terminal conductive 3.battery invalid	1.Check the lists above 2.maintain battery

Six: Product warranty

1. Warranty is one year.
2. Warranty valid is from the date of purchase.
3. One of the following situations happened, not within warranty service:
 - 1) Failure to follow the instructions to install that caused wind turbine damage.
 - 2) Wind turbine damage due to irresistible natural disasters
 - 3) All accidents caused damage to the wind turbine.
 - 4) Customers privately modified the wind turbine.