

Thank you for your purchase of the Airmaax 12/24v wind generator. We believe you will find it easy to install and are confident you will experience years of dependable service from it.

Before going any further please take the time to check that you have all of the components listed below in your package.

- 1: Airmaax Wind Generator
- 2: Nose cone
- 3: 6 Airmaax Blades
- 4: Electromaax **SMR-12/24-WS** Charge controller

If you have not received all of the above components please contact your supplier before you continue with your installation.

AIRMAAX WIND GENERATOR ASSEMBLY

Your Airmaax Wind Generator is supplied 95% assembled. Assembly requires mounting the blades on the blade hub and securing the nose cone.

The blades must be installed with the recessed part facing you as you tighten the nuts (see fig 1)

Two of the blades have a red mark and a white mark on them. These two blades must be attached to the hub directly opposite each other. (See figure 1)

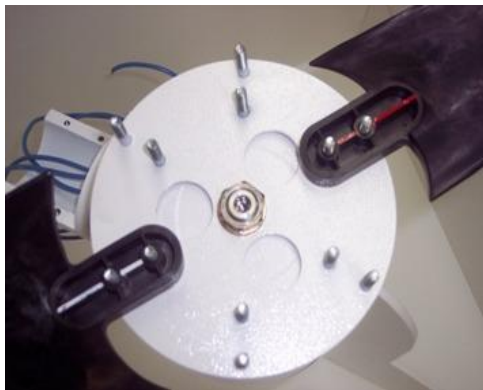


Figure 1

Once all six blades have been installed and the nuts tightened to 10ft-lbs you are ready to install the nose cone. You will see that the nose cone has red mark on the inside (See figure 2). Line this up with the blade that has a red mark you attached earlier. Place the nose cone over the blades and hub. In the two holes tighten the screws provided. This will now secure the nose cone to the blades and hub.

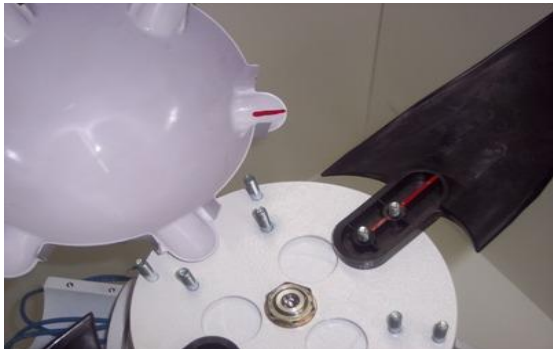
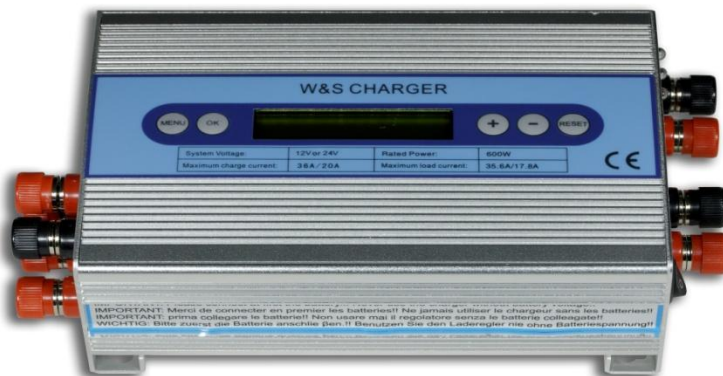


Figure 2

Your Airmaax wind generator is now ready to be mounted to your pole. The yaw clamp at the bottom of the wind generator is designed to fit over any tubing or pipe (With a rubber insulator *NOT SUPPLIED*) that has a nominal 1.875-2 inch outside diameter.

ELECTROMAAX SMR-12/24-WS CHARGE CONTROLLER



Your controller is equipped with the following LED status indicator lights:

- **CHARGE – BLUE** indicating that the system is connected and the batteries are in some state of charge
- **BRAKE - RED** indicates that the Brake function is on.
- **LOAD – GREEN** indicates that the load output terminals are switched on.

The unit Auto-Senses battery type voltage (12 or 24 volt). The unit accepts “3 phase AC” directly from your wind turbine so there is no need for a separate rectifier. The BRAKE switch allows you to manually slow or stop your turbine for an extended period of time. The internal fan protects against overheating during heavy operation caused by high wind events.

Connecting the controller to your system:



First hook up your battery bank to the connection Labeled “BATTERY” on the end of the controller. Failure to do this first may cause controller damage. The controller will auto sense and adjust to your 12 or 24 volt bank and is programmed to deliver bulk and float phase charging. The feature ensures that the batteries are optimally charged.



Next, hook up your wind turbine to the 3- phase AC connections. There is no certain order to connect the 3 wires from your wind turbine. Optional solar panels up to 100 watts total can be connected to the SOLAR terminals

The **OUTPUT terminals** can be connected in a couple of ways. You can use them to turn on and off different items such as a small grid tie inverter or to directly run loads up to 35.5 amps on 12 volt systems and 17.8 amps on 24 volt systems. It is not recommend that you connect this to large loads like power inverters, however you can still use the output terminals to run large loads by using starter solenoids to carry the heavy current up into the 100's amps, and allow the controller to switch the solenoid on and off at the selected voltage ranges to prevent the inverters load from running your battery bank down to low which could damage your battery bank. You can still connect loads like high wattage inverters and other DC powered items directly to your battery bank and ignore the OUTPUT terminals all together. The OUTPUT terminals are an easy way to control when an item connected to them gets power based on the voltage setting you choose in the software.

Using the buttons on the top panel:



MENU and OK buttons on the Electromaax Controller allows you to select the setting you would like to adjust or view. The + and – buttons allow you to adjust the settings on adjustable screens.

Make your settings according to the factors that best match your situation as explained below.

GENERATOR: Displays the voltage of two or the three phase AC inputs. Either A&B, A&C or B&C

BRAKE TIME: The user adjustable amount of time in seconds that the turbine is held down in brake mode.

BRAKE ON: The user selectable maximum amount of amperage from the turbine before the brake is applied used to protect smaller battery banks or protect the turbine and tower in high winds conditions. Adjust this setting according to your turbines high output specifications, or battery bank max input. (**NOTE:** do not go down to zero and back around for higher amperage settings). You must go from a smaller amperage setting UP in numbers or the controller will not recognize the setting.

USER: Displays the actual load in amps placed on the (OUTPUT) terminals when they are activated by the controller. (MAX 35.5A 12V/ 17.8A 24V)

USER ON: The user adjustable voltage point that the (OUTPUT) terminals switched on. This setting is used to switch on certain items like small grid tie inverters etc.

USER OFF: The user adjustable voltage point that the (OUTPUT) terminals are switched off. This setting is used to shut the output terminals off to prevent running your battery bank down. Set it at the lowest voltage point that you want the connected item to run.

USER Ah: The amount of AMP hours that have been consumed through the (OUTPUT) terminals.

POWER: The instant readout of wattage being produced by the turbine to the hundredth of a watt. If both wind and solar are being used, the reading will display total incoming power.



CHARGE TOTAL: The total amount of Kwh's that have been produced by all inputs

CHARGE AH: The amount of AMP hours produced into your battery bank.

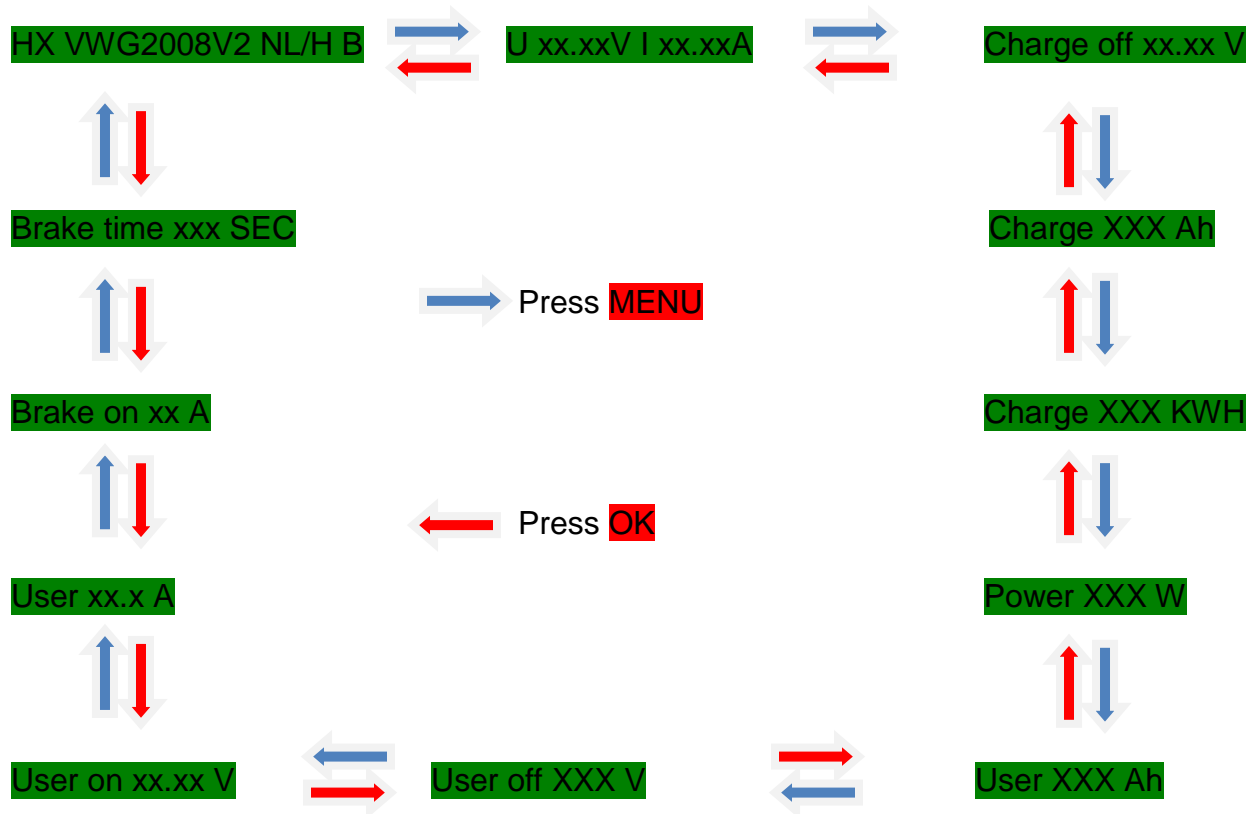
CHARGE OFF: The user adjustable voltage point that the controller stops charging and enters brake mode. Set this to best match your battery bank according to your battery supplier's specs. For Deep cycle 6 or 12 volt batteries a safe range is 12.8 to 13.2 V on a 12 volt system

V / I: The instant readout of the battery bank voltage and Amperage input to your battery bank to the hundredth

D: Menu system

HX VWG2008V2 NL/H B ---- LCD display **MENU** ---- press button

■ Menu display



■ Boot screen

HX VWG2008V2 NL B : 12V battery mode

HX VWG2008V2 NH B : 24V battery mode

■ Examine battery voltage and charge current

U xx.xxV I xx.xx A : U (Battery voltage, unit: V) I (charge current, unit: A)

■ Setup battery charge-off voltage

Charge off xx.xx V → + | - → Charge off xx.xx V

■ Examine charge cumulative AH:

Charge xxxAh Charge (charging AH , Unit: AH)

■ Examine wind generator and PV total power generated

Charge xxx KWH: Charge (power generated , Unit: KWH)

■ Examine wind generator and PV instantaneous power

Power xxx W Power (Instantaneous power , Unit: Watts)

■ Examine discharge total AH

User xxx Ah : User (discharge AH , Unit: AH)

■ Setup load power off voltage

User off xx.xx V → + | - → User off xx.xx V

■ Setup load boot-strap voltage

User on xx.xx V → + | - → User on xx.xx V

■ Examine discharge current

User XX.XX A

■ Setup brake current

Brake on XXA → + | - → Brake on XXA

■ Setup brake time

Brake time xxx SEC → + | - → Brake time xxx SEC

■ Load over current protection

Load overCurrent → Reset → HX VWG2008V2 XXV

E: Understanding batteries and suggested Menu settings

The HX-VWG2008 hybrid charge controller is preconfigured with default settings in the user programmable locations.

	Default 12 volt battery	Default 24 volt battery
Charge off	14.32 volts	28.64 volts
User off	10.98 volts	21.97 volts
User on	12.44 volts	24.88 volts
Brake current	40 amp	20 amp
Brake time	50 seconds	50 seconds

The information below is provided as a guide only. The users should do their own research.

Wet Cell (flooded), **Gel Cell**, and **Absorbed Glass Mat (AGM)** are various versions of lead acid batteries.

Lead acid batteries should never be run flat. The maximum recommended discharge is 75% of the total. This means that the battery should have a minimum of 25% of charge remaining when it is put on charge.

The chart below indicates the amount of charge a battery has at the voltages shown.

Charge State	12 volt battery	24 volt battery
100% (fully charged)	12.65 volts	25.30 volts
75%	12.45 volts	24.90 volts
50%	12.24 volts	24.48 volts
25%	12.06 volts	24.12 volts
Discharged	11.9 volts	23.8 volts

If you wish to get the maximum life from a battery it is best to ensure it is not discharged more than 75% at any time. In fact slightly less is ideal.

Therefore for maximum battery life set User off to 12.46V (24.92V) and User on to 12.65V (25.30V)

If you use very little load and the turbine is constantly braking due to a fully charged battery condition reducing the Charge off voltage to 13.5V (27V) will also prevent constant overcharge conditions.

F: Troubleshooting

Condition	Cause	Fix
No display	Battery discharged, not connected or faulty	Recharge battery, check connections or replace battery
LCD Display "Overload"	The load is drawing excess current	Correct overload condition (short circuit?) and press Reset
Turbine not spinning	Brake switch is on	Turn off brake switch
Battery not charging	Battery too old	Replace battery

G: Specifications

Main parameters:

MODEL	VWG2008
Rated Power	600W (Best ration: wind turbine500W, PV cells100W)
Applicable batteries	12/24V,100-300Ah(automatic distinguish voltage)
Wind turbine automatically braking voltage	17.5V/32.5V (DC voltage after rectification)
Battery full charge cut	14.4V/28.8V(default, adjustable)
Battery low voltage disconnect load	10.5V/21.8V (default , adjustable)
Load on voltage	12.6V/25.2V(default, adjustable)
Charge current max	40A/20A
Load current max	35.61A/17.80A
Recovery time after the automatic braking	1min(default, adjustable)
No load loss	≤40mA
Dimensions	228×133×75mm
Weight	1.2kg
Working environment	Environment temperature -10°C ~ +50°C , Relative humidity 0 ~ 90%

Technical Data for the AirMaax 12V Wind Generator

Technical Data	Airmaax 12V
nominal power	400 W
nominal wind speed	25 knots
cut in wind speed	6 knots
cut off wind speed	none
rotor diameter	59 inches (149.9 cm)
number of blades	6
blade material	CFRP
rotor speed	500 - 1300 rpm
generator	permanent magnet
nominal voltage	12 VDC
speed regulation	rotor blade pitch
power regulation	rotor blade pitch
brake	generator short-circuit
weight	21.45 lbs (9.75 kg)