

# CUTTING EDGE POWER

"Innovative Renewable Energy Solutions"

## SMART WIND TURBINE USER MANUAL



**CAUTION**

THINK SAFETY FIRST

The warnings, precautions, and instructions discussed in this instruction sheet cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator. **While Cutting Edge Power is proud to be an American company dedicated to producing a high quality product, we are not responsible for any property or personal damage to you or your device due to use/misuse of this product. Always use good judgment and never try to modify or disassemble this product.**



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## **SAFETY INFORMATION**

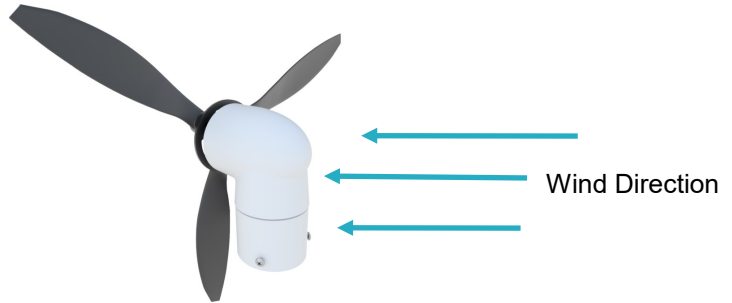
- Do not allow children under 15 years to use this device.
- Do not allow children to play under the turbine.
- Make a strong foundation for the turbine.
- Secure the blades by tighten the hub assembly with the m3 set screws supplied, to prevent them from getting thrown out.
- Always lower your turbine for maintenance. Never try to climb or use a ladder.
- Do not use the Smart Wind Turbine if the wind speed is over 60mph.
- Do not allow the turbine to work if it has missing cover spots or the wires are exposed.

**SPECIFICATIONS**

Rotor Type	Horizontal axis
Yaw Axis (wind direction)	360 degrees
Wind Configuration	Downwind
Mount Hole Diameter	1.06" [Inside diameter]
Suggested Mount Tube	<ul style="list-style-type: none"> <li>• 3/4" PVC pipe (1.050" Actual outside diameter) schedule 40 or 80</li> <li>• 3/4" steel pipe (1.050" Actual outside diameter) schedule 40</li> </ul>
Power Output	<ul style="list-style-type: none"> <li>• 14.0 VDC <math>\pm</math> 0.5 V output, regulated for charging 12VDC devices.</li> <li>• USB, standard 5VDC 3A for USB charging phones, tablets, etc. Using the latest USB identification circuit, the USB output is perfectly compatible with iPhones, Android phones, iPads, etc.</li> </ul>
Maximum Generator Output	33 watts
Cut in Wind Speed	<ul style="list-style-type: none"> <li>• 5 Blade: Approximately 10 mph*</li> <li>• 3 Blade: Approximately 15 mph*</li> </ul>
Blade Diameter	18" Swept diameter
Wi-Fi Requirement	Standard 2.4Ghz, internet access
Survival Wind Speed	60 mph
Operating Temperature	-40°F to 120°F
Turbine Weight	1 lb. 14 oz.

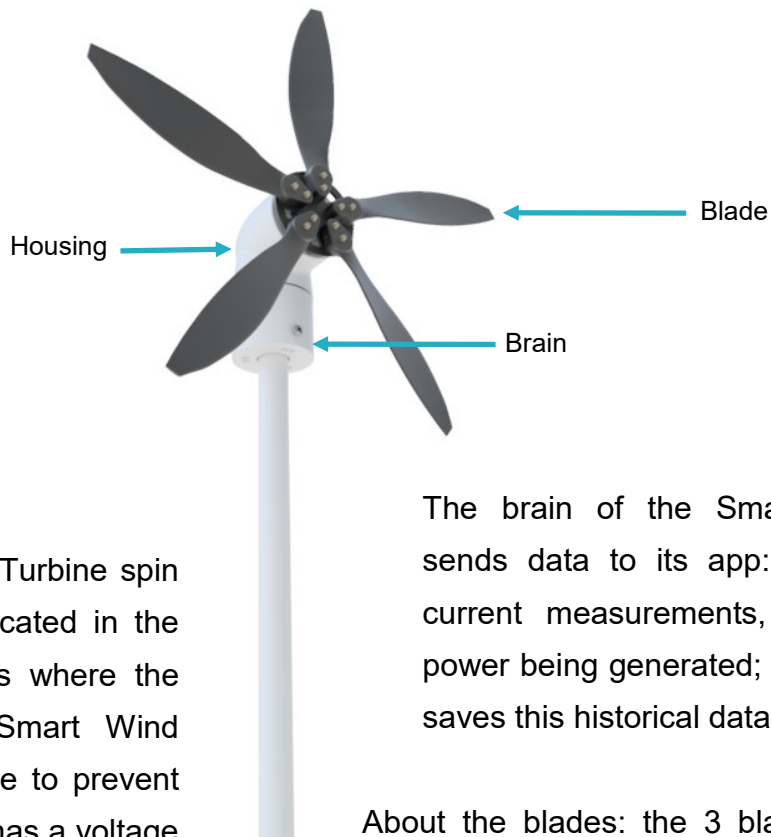
## HOW IT WORKS

This is a downwind turbine design; it does not need a tail to be pointed in the right direction. You can think of it as a “backwards” arrangement compared to the typical upwind turbine. It is designed for the wind to touch the white cover first and then the blades.



This is a simpler and more cost effective design which benefits us as the manufacturer as well as you, the purchaser/maintainer. Upwind turbine tails can become large and unwieldy at times, which can also be a safety hazard if they fall. The downwind turbine is not new. It is a proven design and has provided much success to manufacturers all around the world.

This Smart Wind Turbine is composed of the wind turbine housing, the wind turbine brain and a set of 3 or 5 blades.



The blades of the Smart Wind Turbine spin while moving the generator, located in the housing of the turbine. That is where the wind becomes power. The Smart Wind Turbine includes a built-in diode to prevent backfeed from the battery, and has a voltage output filtered and regulated at 14.0 VDC using a high-tech controller, to prevent damaging devices.

The brain of the Smart Wind Turbine sends data to its app: the voltage and current measurements, as well as the power being generated; while it builds and saves this historical data up to a month.

About the blades: the 3 blade assembly will need approximately 15 mph to start generating power; while the 5 blades assembly will only need approximately a 10 mph wind.

## SETTING UP YOUR APP

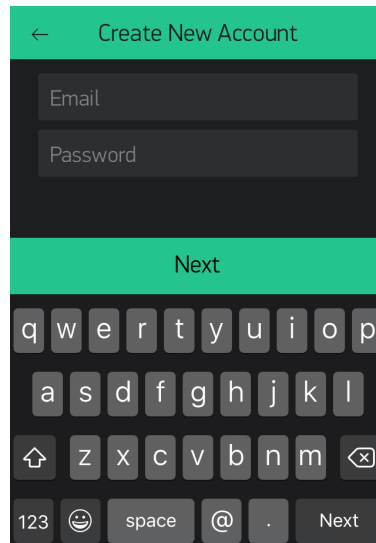
### Step 1:

Download the Cutting Edge Power App available in Google play



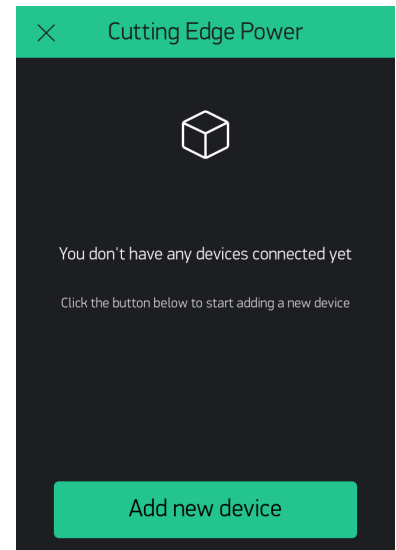
### Step 2:

Create your account



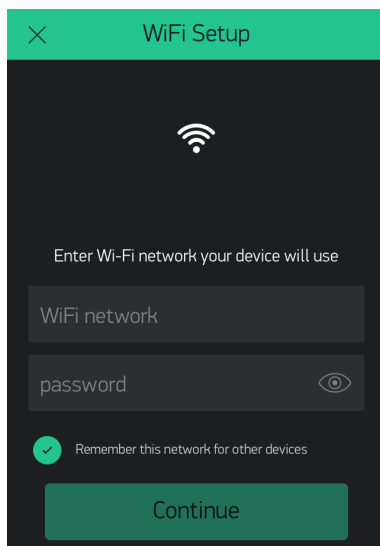
### Step 3:

Add new device



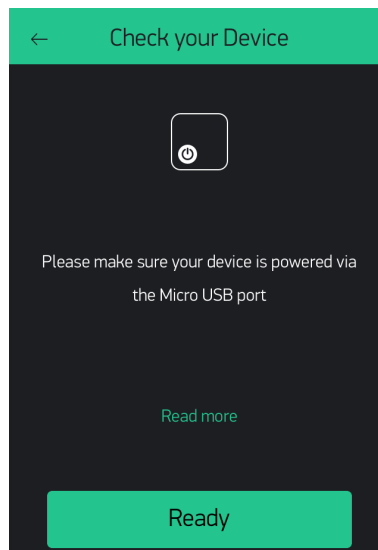
### Step 4:

Enter your wi-fi credentials



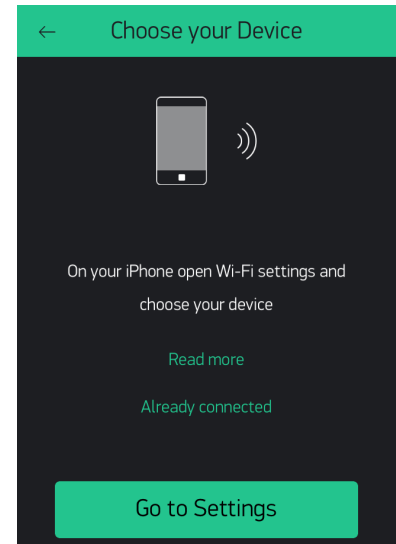
### Step 5:

Connect your wind turbine via micro USB port and click Ready.



### Step 6:

Connect to Wi-Fi of your Smart Turbine, the SSID starts with CuttingEdgePower...



You will now be able to track your Smart Wind Turbine locally and remotely, as long as it is connected to the internet. If you meet any problems during above steps, please visit the troubleshoot page.

## **SMART TURBINE INSTALLATION**

1. Set up your Cutting Edge Power app. (previous page)
  
2. Attach the blades to the hub: Follow the given example. All the blades need to be oriented in the same direction. **The arrow should always point towards the wind.** Do not overtighten the 10-24 screws as the hub may crack, but make sure to tighten them firmly so they don't vibrate loose. Torque specification for the 10-24 screws is 10 in-lbs. (0.83 Ft-lbs.)
  
3. Attach the blade assembly to the turbine: Attach the hub to the shaft of the Smart Wind Turbine. Then, tighten the rest of provided screws around the shaft of the hub/shaft. Do not overtighten the screws as the hub may crack.
  
4. Install your Smart Wind Turbine: This wind turbine is designed to mount on a 3/4" PVC or steel pipe (1.050" Actual outside diameter) schedule 40 or 80. We recommend at least 10 ft tall. Make a good basement for your turbine. Secure the bottom of the pipe well, as the vibration and overturning forces can be more than expected.
  
5. Place the Smart Wind Turbine on top of the PVC or steel pipe. Then, tighten the set screws provided around it, as needed. The turbine should be firmly attached. Make sure not to overtighten them as the cover may crack. Torque specification on these screws is 10 in-lbs. (0.83 Ft-lbs.)
  
6. Connect the wires you plan to use with your Smart Wind Turbine. It has USB and a 14V output. We recommend 18 AWG or larger for up to 8 ft. runs. Over 8 ft. run, use wire size calculator. We recommend 90°C or higher rated wire.
  
7. Finally put your Smart Turbine up and start powering your devices with Wind Energy.

## TROUBLESHOOT AND REPAIR

FEATURE	POSSIBLE CAUSE	RECOMMENDED ACTION
The Smart Wind Turbine does not connect to a new wi-fi network	It is paired to a different wi-fi network	<ul style="list-style-type: none"> <li>• Change the credentials to make them exactly like the network's the Turbine is paired to.</li> <li>• Hold the black button at the bottom of the Smart Wind Turbine for 10 seconds. Then, pair it to a new network.</li> </ul>
Can't connect to Smart Turbine (SSID doesn't show up)	<ul style="list-style-type: none"> <li>• Micro USB is not plugged in firmly.</li> </ul>	<ul style="list-style-type: none"> <li>• Make sure the micro USB is plugged in firmly.</li> </ul>
Wind turbine doesn't turn, or turns too slow.	Blades are facing the wrong direction.	Flip the blades. The arrow should be pointing toward the wind.
Blades are spinning, but there is no power output	<ul style="list-style-type: none"> <li>• Not enough wind.</li> <li>• Need more blades.</li> <li>• Worn slip ring.</li> </ul>	<ul style="list-style-type: none"> <li>• Raise your Smart Wind Turbine.</li> <li>• Upgrade to 5 blade assembly at the Cutting Edge Power website.</li> <li>• Replace slip ring, available at the Cutting Edge Power website.</li> </ul>
Blades are stationary, even in high winds.	<ul style="list-style-type: none"> <li>• "Dirty wind" as a result of buildings or structures near the turbine that can cause turbulence (wind going around in circles instead of straight through the turbine)</li> <li>• Worn yaw bearing.</li> </ul>	<ul style="list-style-type: none"> <li>• Trim back nearby trees, re-evaluate location of turbine. <ul style="list-style-type: none"> <li>• Raise turbine height.</li> </ul> </li> <li>• Replace yaw bearing, available at the Cutting Edge Power website.</li> </ul>
Generator and tower vibrate or shake excessively at all or some wind speeds.	<ul style="list-style-type: none"> <li>• Tower not secured enough. <ul style="list-style-type: none"> <li>• Blades damaged.</li> <li>• Loose parts</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Attach more guy wires to pipe.</li> <li>• Inspect turbine for damaged blades or loose parts.</li> <li>• Note: some vibration and/or noise is expected.</li> </ul>
In high wind speed condition for a long period of time, but the battery is still in a low charge condition.	Bad battery or wiring	Inspect wiring or replace battery if it can't hold a charge.

## CONTACT INFORMATION

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**P O W E R**

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