WindWorks™
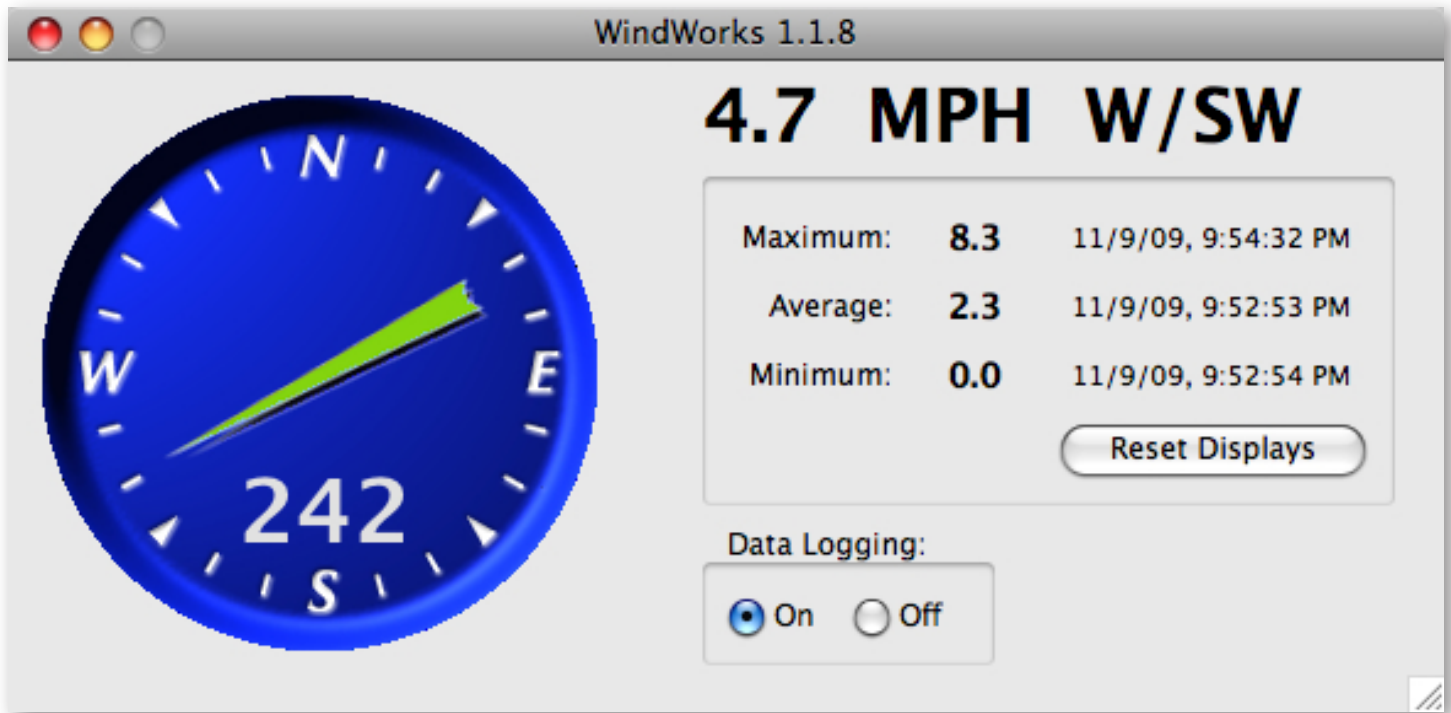
Wind Speed & Direction Data Acquisition Software for Mac & Windows

Thank you for purchasing WindWorks wind speed and direction data acuisition software. We hope it will provide you with valuable information about the wind patterns in your area. WindWorks currently only supports wind sensors from inspeed.com.

Please test everything before you install the sensors on your roof or wherever they will be.

INSTALLATION
WindWorks Interface Board(WWIB)
Attaching wires from Vortex Wind Speed Sensor and Vortex Wind Vane to the WWIB.

Important! Make sure you ground yourself before working on the WWIB.

The screw terminals are numbered 1- 4 from left to right when viewing them head on, screw heads up. Connect one wire from your Vortex Wind Speed Sensor to screw terminal 1 then connect the other wire from the wind speed sensor to terminal 2 (the colors do not matter).

Connect the black Ground wire from your Vortex e-Vane to terminal 2, the +5V red wire to terminal 3 and the white signal wire to terminal 4.

If you wish to trigger a low-level external electrical device based on the alarm in WindWorks, you can do so as follows:

Connect your low level device to digital pin8 on the board and ground.

See bythebeachsoftware.com for details and specification.

Close up WindWorks interface board.

INSTALLATION
WindWorks Software
!!! VERY IMPORTANT !!!
<u>**Do Not**</u> *plug the WWIB into the computer until after you have installed the USB drivers.*

Windows Installation

Download the WindWorks Installer from the URL provided on the slip of paper in the package you received. Unzip it to reveal the WindWorks installer "setup.exe" file.

Double-click "setup.exe" and follow through the setup wizard.

If you make no changes it will install the program to this location:

C:/Program Files/ByTheBeachSoftware/WindWorks

It will also place a shortcut on your desktop for easy access to the program.

After going through the installer there will be a USB Drivers folder in the WindWorks folder that you just installed. Double click the file named "CDM20600.exe" to install the USB Drivers for the WindWorks Interface Board.

The installation is now complete!

Plugin the supplied USB cable from the computer to the board. Watch the tray bottom right and wait for Windows to finish recognizing the new device.

Macintosh Installation

Download the WindWorks Installer from the URL provided on the slip of paper in the package you received. Unzip it to reveal the WindWorks disk image.

Mount the disk image by double clicking the .dmg file. Copy the WindWorks folder to your Applications Folder.

There is a USB Drivers folder in the WindWorks folder that you just installed. Double click the file named "FTDIUSBSerialDriver_v2_2_14.dmg" to mount the disk image. Then install the USB drivers for the WindWorks Interface Board.

The installation is now complete!

Plugin the supplied USB cable from the computer to the board.

Getting Started with WindWorks

Launch your WindWorks software. On the first launch you will be asked to set up your preferences.

1. Select the USB Port that the WindWorks interface board is connected to. It will be named something like "usbserial-A1001Nyz" on the Mac and "COM3" on Windows.

> **NOTE: Windows OS** If you have other COM ports in use and are not sure which one is WindWorks, here is a way you can see which port is being used for the WindWorks interface board. Right mouse click on My Computer and select Manage. Then select Device Manager and go down to Ports. If the WindWorks Interface board is plugged in and the USB Drivers were installed correctly, you should see an option for "USB Serial Port" and it will have COM# in paranthesis next to it. This is the COM port your board is connected to. Select this COM port in your WindWorks Preferences.

2. Select the Wind Speed measurement units.

3. Set the Alarm trigger speed.

4. Set the Rotor Value to 2.5 for the **D2** rotor and 3.4 for the **M1** rotor.

5. Set the Direction Smoothing value to 15 for a smoother display or 5 for a more responsive display. The value is an odd number from 5-15.

6. Set the Direction Adjustment value to calibrate for a more accurate North reading. The value is -179 to 179 degrees.

7. Direction Max Voltage Calibration: Only change this value if you have a voltage drop on the 5v supply line over a very long distance.

8. Set the name and path for the data file. The default path will be in the WindWorks folder and the name will be "WindData.csv".

9. Select the Averaging Method you wish to use.

Arithmetic Mean: add up samples and divide by number of samples. *(Note: display average uses this method.)*

Truncated(n%): throws out the highest and lowest n% and then does arithmetic mean

Root Mean Squared(RMS): square root of the mean of the squares of the values

Root Mean Cubed(RMC): cube root of the mean of the cubes of the values
(Note: Since power from wind energy is related to the cube of wind velocity, Root Mean Cubed(RMC) is the best way of looking at average wind speed.)

10. Set the Log Interval. The minimum is one minute. This is the interval that the software will use to add an entry to the WindData.csv file.

11. Set Auto Log Start. This will auto start logging when you launch the application.

12. Set Log to Internet. This feature will send the same info that is stored in the log file to the internet by way of an HTTP GET method. The message will be sent at the same interval as the log file. The message will be sent to the URL field directly below this checkbox. Appended to this URL will be the following field data:

currentspeed, averagespeed, maxspeed, minspeed, directiontext, directiondegrees.

13. Internet Log URL. If Log to Internet is turned on this is the URL that the log data message will be sent to. See step 12 for more info.

14. Live Display Interval. This feature will send current wind data to the internet by way of an HTTP GET method. The message will be sent at the interval set in this pulldown(seconds). The message will be sent to the URL field directly below this pulldown menu. Appended to this URL will be the following field data: *currentspeed, directiontext, directiondegrees*.

15. Live Display URL. If Log to Internet is turned on and the Live Display Interval is not off, this is the URL that the Live Display data message will be sent to. See step 14 for more info.

16. Save your preferences.

After saving the preferences you will see the main display show "Connecting..." for 5 to 10 seconds and then you will see it display the speed and direction once per second. If you are having trouble connecting, please verify that the operating system recognizes the device (see Note from step 1) and that you have selected the correct port in preferences. If you are still having trouble please email support at :
support@bythebeachsoftware.com, you can also find a link to this email in the About screen.

Wind direction defaults to a rolling average of the last 15 seconds/samples.

The display will hold the wind speed average since the application was launched or since the last reset.

The "Reset Displays" button does exactly that and resets the MIN, MAX and AVE. It has no effect on the data file.

The new Log to Internet features are intended for expert users who understand how to take this data and manipulate it with scripting languages such as PHP. We are happy to support any issues related to the data that we are sending to the URLs but from that point forward it is the users respondsibility. Please check back at the website as we will be posting sample PHP scripts that take the data into an internet hosted MYSQL Database.

About the data file...

Any spreadsheet or text editor can open the data file for plotting or analysis.

When opening the files in Microsoft Excel or comparable programs, make sure to look for "ALL FILE TYPES" in order to see the wind data file. The file is a CSV file. If you are outside the USA and your local language uses a comma as a decimal separator, you will need to adjust your settings to get around this problem.

Stopping and starting data logging APPENDS data to the existing file, with a new header; it will NOT overwrite existing data.

Although Windows Vista is not officially supported some users are using it. The biggest problem is WindWorks not having write permissions to the directory where the wwprefs.txt file and the log file are stored.

(Sample data file below)

First line contains date and time stamp when logging started, measurement units, log interval, and averaging method.

Second line contains column headers.

CurrentDateTime: date and time stamp for this entry

CurrentSpeed: speed at the above date and time

AverageSpeed: the average of a reading per second over the log interval. An example: if log interval is set to 3 minutes than 3x60 = 180 samples so the average will be for 180 samples

MaxSpeed: max speed recorded during that interval

MinSpeed: min speed recorded during that interval

DirectionText: direction text at the above date and time

DirectionDegrees: numerical direction value in degrees at the above date and time (rolling 15 second/sample average)

Third line contains sample data.

Fourth line contains log termination message.

Sample Data File

```
***** Logging Started 2009-06-25 23:06:07 Units = MPH  Log Interval = 1 min.  Averaging Method = Root Mean Cubed(RMC) *****

CurrentDateTime,CurrentSpeed,AverageSpeed,MaxSpeed,MinSpeed,DirectionText,DirectionDegrees

2009-06-25 23:07:07,0.0,1.0,2.7,0.0,S/SW,208

***** Logging Stopped 2009-06-25 23:07:42 *****
```

Thank you and enjoy your WindWorks Kit!

By TheBeach
Software