Wind Monitor II   User's Manual

The Wind Monitor II is a basic wind speed display and data logger for a single anemometer. It is designed for wind generator monitoring and site analysis. It features a easy-to-read green LED display that shows the wind speed. When used as a data logger, it can record up to 32,768 instantaneous wind speeds to its non-volatile memory.

Anemometer Assembly and Mounting

The anemometer included with the Wind Monitor II is usually supplied in a partially assembled kit form. If using a kit anemometer please follow the accompanying assembly instructions.

Once the anemometer is assembled, it must be mounted in free flowing air. The anemometer has a stub section of 1.5" schedule 40 PVC. The anemometer can be mounted using sections of PVC pipe and PVC fittings available from any hardware store.

For wind generator site analysis, we recommend placing the anemometer at least 30 feet above the highest object within 500 feet.

Connecting the Wind Monitor
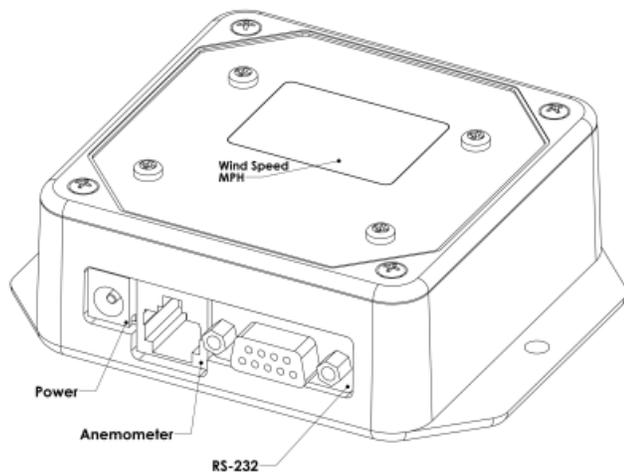
USB Wind Monitor II pictured above
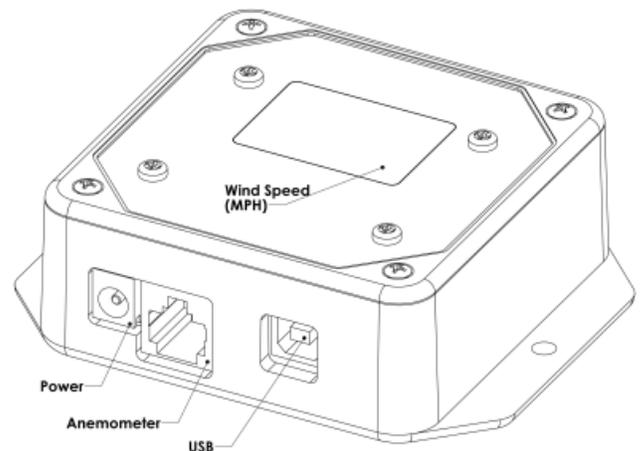
USB Wind Monitor II pictured above

Connecting the Anemometer

The anemometer included with the Wind Monitor II will either be assembled and tested, or it will be in a kit form. Assembled anemometers will have a connector on the bottom and a cable for connecting the anemometer to the Wind Monitor II. Kit anemometers will have the anemometer reed switch attached to cable with the connector that plugs into the Wind Monitor II. If a longer cable is needed, extend the orange / white and blue wires in the supplied cable.

Applying Power

To apply power to the Wind Monitor II, use a DC power source in the range of 7 to 20 volts and capable of supply at least 100 mA. A small "wall-wart" power supply or a 12-volt battery will work well. The center pin of the power connector is positive and the outer contact is negative.

Most Wind Monitor II kits come with a power connection with 12" of wire attached. The white striped wire is positive and the black wire is negative.

Ready to go!

Once the anemometer is connected and power is applied, the Wind Monitor II is ready to go! If the anemometer is spinning, the current wind speed in MPH will appear on the display. This is far as you need to go for most wind monitoring applications. If you would like to data log, please continue reading the manual.

Configuration and Download Software

The latest version of the Wind Monitor II software can be downloaded from our website. The software is compatible with Windows 98, Windows ME, Windows 2000, and Windows XP. The latest version of the software can be found on our website at:

http://www.aprsworld.com/windmonitor2/

Connecting to the Computer

To configure the Wind Monitor II and/or download data, connect the Wind Monitor II to the serial port on your computer. The Wind Monitor II kit includes a DE-9 male to DE-9 female extension cable (serial port). Use this cable to connect the Wind Monitor II to the serial port on the computer or you may use a USB to serial adapter. The Wind Monitor II needs power to communicate with the computer.

Starting the Software

The software consists of a single file called wdownload2.exe. Click on that file and the software will start. Once started, it will prompt for the serial port that the Wind Monitor II is attached to. Enter *1* if the data logger is connected to COM1, or *2* if it is connected to COM2, and then press Enter. Once the serial port is selected, the software will present a menu of operations:

The following serial ports are available on your computer:
    COM1 COM2 COM3 COM4
Please enter a serial port number:
> 1
 # Opening device COM1
 1. Set log interval.
 2. Download log.
 3. Set device to download mode.
 4. Set device to data logger mode.
99. Quit

Setup for Collecting Data

To configure the data logger to collect data, first input the sampling interval. Select menu option one by typing *1* and then pressing Enter. It will prompt:

Enter time interval. You may use half seconds.
To enter 2.5 seconds, enter 2.5

Enter the desired logging interval then press Enter. The data logger can store 32,768 measurements, thus, the

logging time span will decrease directly with the logging interval (Table 1).

Interval (Sec)	Time Span (Days)
1	0.38
10	3.8
30	11.37
60	22.8
120	45.5
300	113

Table 1. The logging time span (in days) decreases with decreasing data collection intervals.

Once the logging interval is set, the program will return to the main menu. Now set the mode by selecting menu choice four and pressing enter. The display on the Wind Monitor II should go blank briefly and then scroll *'L' 'L'* on the display. It is now data logging and will continue until it is powered off.

Downloading Collected Data

To download the data from the data logger, remove its power, connect it to the computer, then plug the power back in. The Wind Monitor II should flash *'O' 'O'* when it starts up, indicating that it is ready to be downloaded. Start the download software as outlined above and select menu option two, *Download Log*. You will be prompted for the start and stop time. Example:

*Enter Starting month: **6***
*Enter Starting day: **4***
*Enter Starting year: **2005***
*Enter Starting hour (24 hour clock): **13***
*Enter Starting minute: **57***
*Enter Ending month: **7***
*Enter Ending day: **1***
*Enter Ending year: **2005***
*Enter Ending hour (24 hour clock): **9***
*Enter Ending minute: **25***

After the start and stop dates are entered, the software will download all of the data from the data logger. This may take up to five minutes. A period should appear on the screen every few seconds. When all of the measurements have been downloaded, the software will write a file called **data.csv** to the current directory (the folder where the wdownload2.exe program is saved) and return to the main menu.

Importing the data into Microsoft Excel

The **data.csv** contains one line for each data point. For example:

2006-12-14 16:40:00, 3

This can be imported directly into Microsoft Excel or any other spreadsheet. Simply click on **data.csv** to load the file.

If you don't have spreadsheet software on your computer, we recommend downloading the superb free software from OpenOffice.org. If you mention it at the time of your order, we are more than happy to include a free OpenOffice.org CD with your order.

Graphing Data in Microsoft Excel

When opened in a spreadsheet program, such as Excel, the data will by in x-y format; thus the time (days) will be shown in the first column and the wind speed (MPH) is shown in the second column. To graph the data, simply highlight columns 'A' and 'B' by clicking and dragging your cursor on the column heading boxes. Once the two columns are highlighted, graph the data by going to 'Insert' and then clicking on 'Chart.'
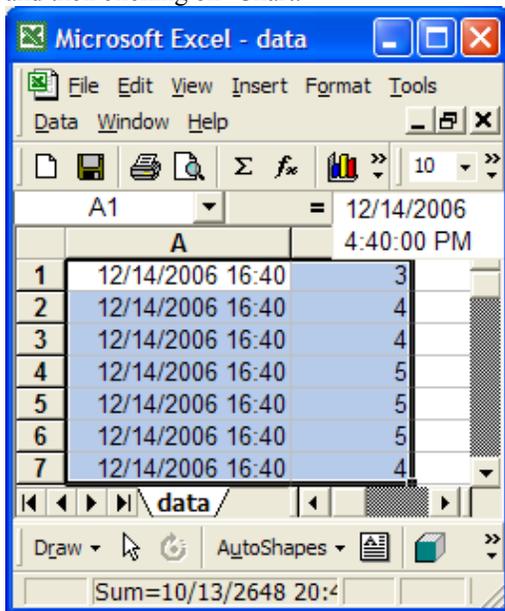
A series of 'Chart Wizard' windows will pop up. In the first window, select the 'XY (Scatter)' chart type. Select one of the two styles on the bottom row.
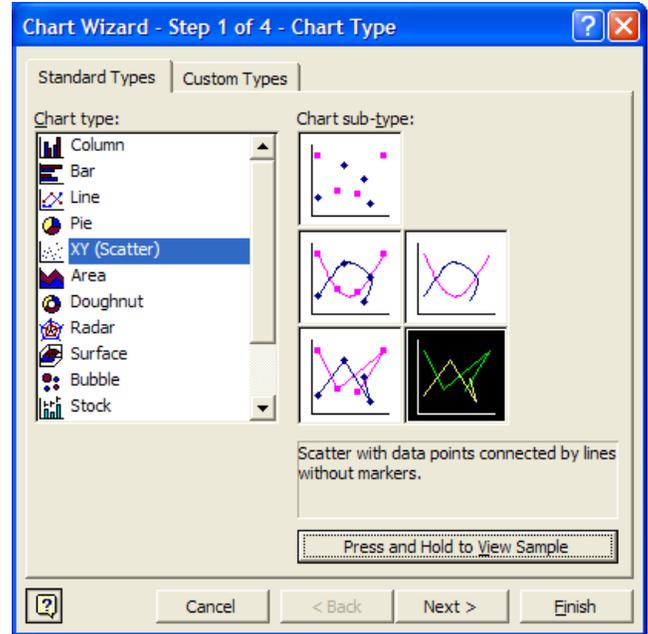
In the next window, choose to arrange your series in 'Columns.'
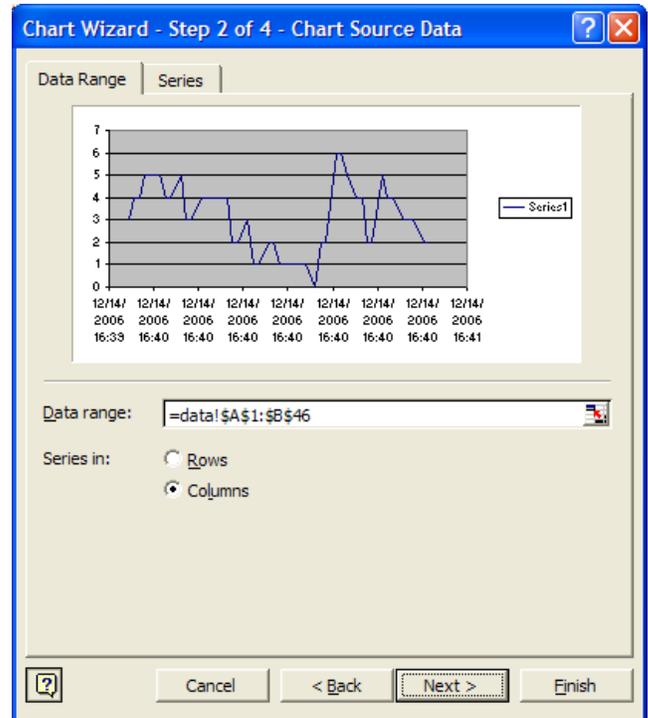
The next window allows you to title the chart and axes. It also displays an example of how the final product will look. Click 'Next' again and choose whether the chart should be displayed as a 'New sheet' or as an 'Object in'

the original table. Finally, click 'Finish' to view your finished data chart.
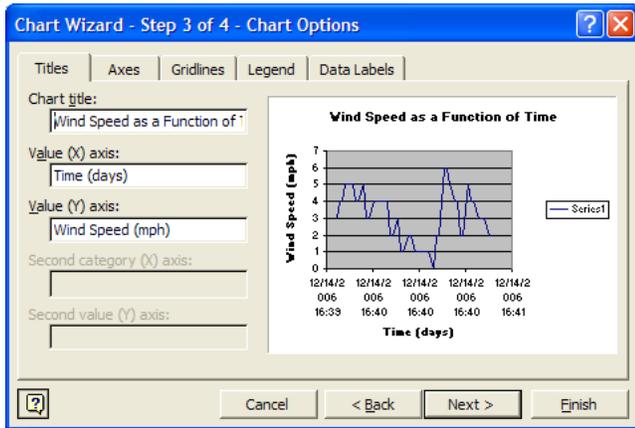
Specifications

Anemometers:
 • Single anemometer input
 • RJ-45 connector for anemometer
 • Displays and logs wind speed in miles per hour (MPH)
 • Calibration supplied for APRS World / Fascinating Electronics anemometer

Logging and Storage:
 • 32,768 data points
 • Records instantaneous wind speed at any interval from 0.5 to 16,000 seconds
 • Simple software for setup and download
 • Downloaded data stored in Comma Separated Vertical (CSV) file that can be open with any spreadsheet

Interfaces:
 • Green 7-segment LED display; Daylight readable
 • Serial port interface for configuration and downloading of logged data
 • RS-232A levels; DE-9 female; DCE; Compatible with all serial ports OR USB Full Speed
 • 9600 baud. 8 bits, no stop bit, 1 parity bit (8N1); ASCII based protocol
 • 6' serial cable, DE-9 female to DE-9 male included.

Power:
 • 7 to 20 volt DC
 • 2.1 x 5.5mm power jack

 • 48mA current consumption

Mounting:
 • Flanges on case accept #8 or #10 screw

Physical dimensions and materials:
 • Weight: 160 g (5.6 oz)
 • Overall Dimensions: 108mm wide, 84mm tall, 34mm deep (4.25 x 3.30 x 1.42 in)
 • Bezel material: Stainless steel
 • Case body material: ABS plastic, flame retardant, 94-5VA
 • Circuit board material: FR-4, 1.6mm (0.062 in), double sided, plated through holes, solder mask, silk screen
 • Hardware material: stainless steel, nylon
 • RoHS compliant, no lead used in manufacture

Warranty

APRS World's support policy is simple; we want you to be happy! If you have a problem, please feel free to contact us and we will do our best to get you up and running as soon as possible.

The Wind Monitor II has a one-year limited warranty. We will repair or replace your Wind Monitor II if you encounter any problems within one year of purchase. This warranty applies for lightning damaged equipment! We reserve the right to charge a reasonable fee for repairing units with user-inflicted damage. It is your responsibility to ship the defective unit back to APRS World, LLC. We will pay for shipping the replacement to you. We reserve the right to upgrade your equipment to an equivalent or better model. This warranty does not cover the accuracy of the sensors connected to the Wind Monitor II or the accuracy of the data collected by the Wind Monitor II.

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