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Anemometer Sensor

Product Number: ENANM012A

Overview

A critical part of studying weather is measuring wind direction and speed. The Anemometer is actually two sensors mounted onto one arm, capable of measuring wind speed and wind direction. The wind caps are used to measure wind speed and the wind vane measures the wind direction.

The Anemometer is meant to be used in various experiments in Climatology and Environmental Studies. The sensor can be connected to all einstein™ data loggers.

Typical experiments

Subject

- Measuring wind speed and direction

- Collecting weather data over an extended duration outside the classroom

How it works

Wind Direction:
The wind vane is mounted on a potentiometer. The output voltage of the potentiometer changes as the direction of the vane changes.

Wind Speed:
The wind cups catch the wind which causes them to spin. A small magnet is attached to the cups' hub. This magnet produces a pulse with every rotation. The data logger counts the pulses and then calculates the wind velocity.

Sensor specification – Wind Speed

Range:	1 to 200 mph, 1 to 173 knots, 0.5 to 89 m/s, 1 to 322 km/h
Accuracy:	±5%
Recommended Sampling Rate:	1 sample per second

Sensor specification – Wind Direction

Range:	0° - 360°
Accuracy:	±7%
Resolution (12-bit):	±1°
Recommended Sampling Rate:	1 sample per second

Note: Sensor cables sold separately

Technical Notes

- The maximum Sampling Rate is one sample per second

Data logging and analysis

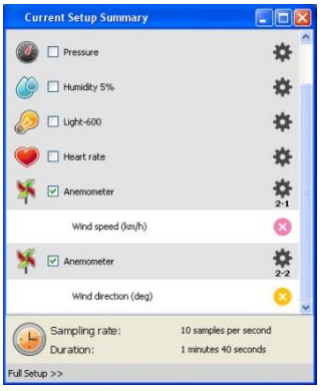
MiLAB™

1. Take your einstein™ Tablet OR pair your einstein™LabMate with your Android or iOS tablet via Bluetooth
2. Insert the sensor cable into one of the sensor ports via the DT to einstein™ Sensor Adaptor
3. Launch MiLAB
4. The Anemometer will appear twice, once as Wind speed and once as Wind direction (Wind 0-360 deg)

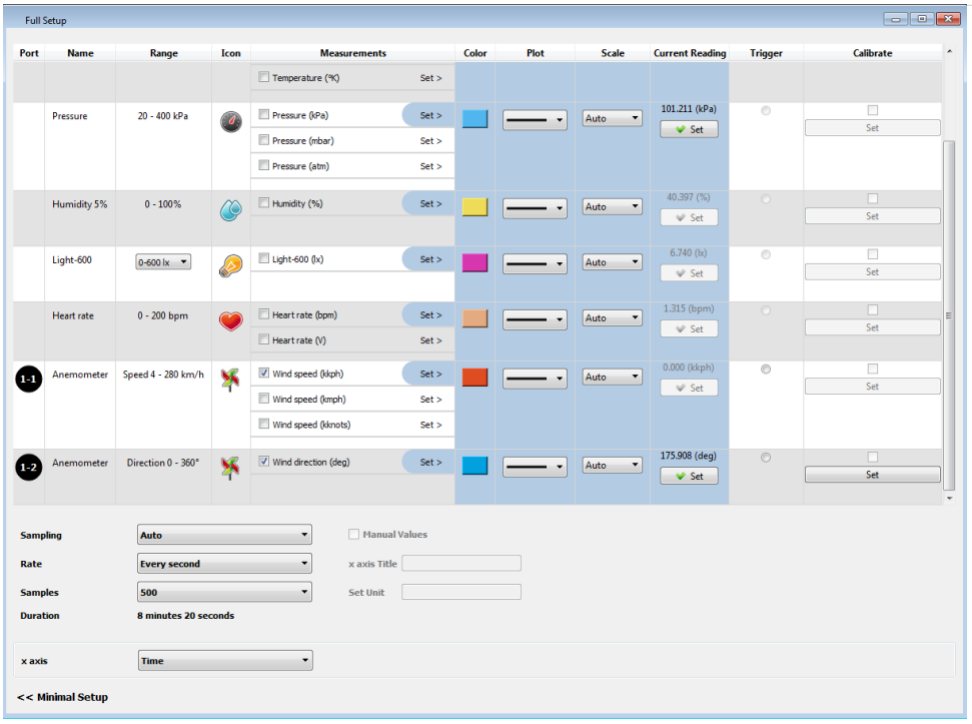
5. Make sure the icon(s) next to the sensor(s) is checked ( ) to enable it for logging

MiLAB™ Desktop

1. Pair your einstein™LabMate with your PC, MAC, or Linux machine via Bluetooth, or connect it via the USB cable (found in the einstein™LabMate™ box).
2. Insert the sensor cable into one of the sensor ports via the DT to einstein™ Sensor Adaptor
3. Launch MiLAB
4. MiLAB will automatically detect the sensor and show it in the Current Setup Summary window (it will appear twice, once for wind speed and once for wind direction)



5. Click Full Setup, located at the bottom of the Current Setup Summary window to program the data logger's sample rate, number of samples, units of measurement, and other options



6. Click the Run button ( )on the main toolbar of the Launcher View to start logging

Calibration

The Wind Speed function is fully calibrated. No further calibration is needed.
The Wind Direction function can be calibrated as follows.

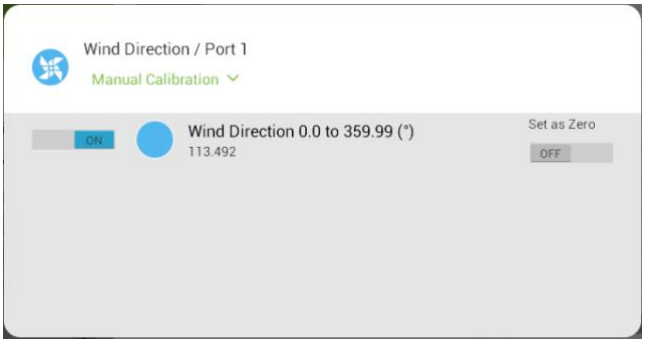
MiLAB™

Set Zero Calibration

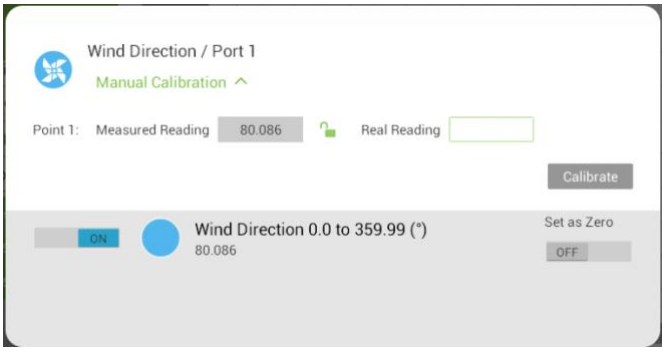
1. Tap the Settings button next to the sensor's name
2. Flip the Set as Zero switch to set the current value as the zero or base value.

One Point Calibration

1. Tap the Settings button next to the sensor's name



2. Tap Manual Calibration



3. Measure a direction of known value. Enter this known value in the Real Reading field
4. Tap the lock button
5. Tap Calibrate

Experimental Setup

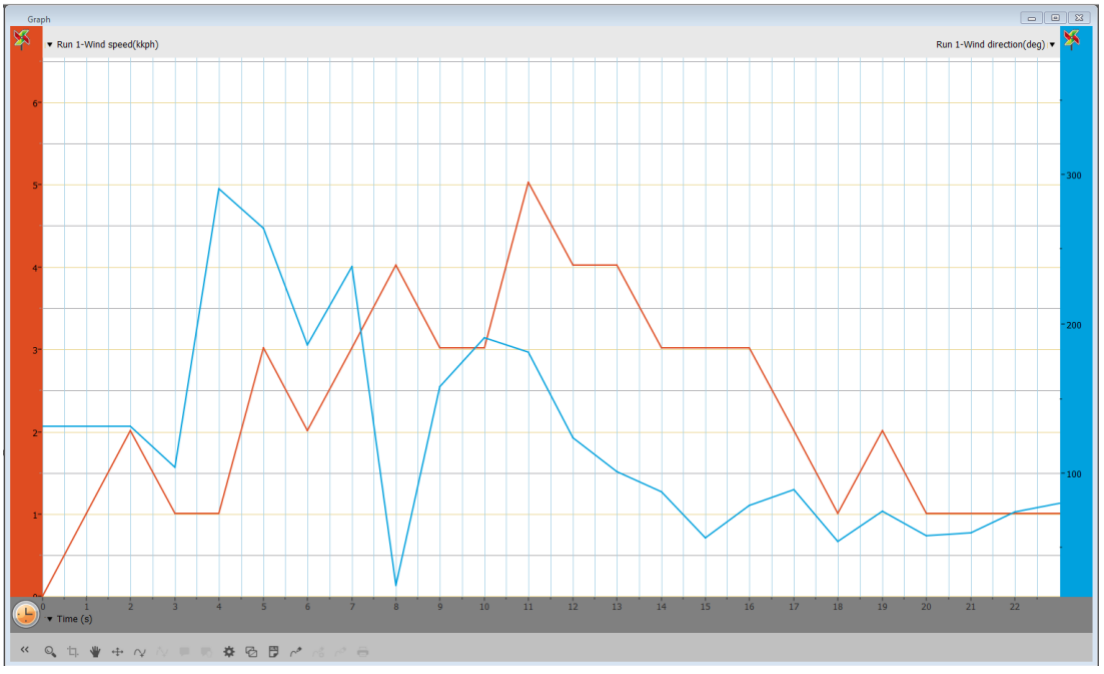
The Anemometer comes with:

1. Anemometer
2. DT-to-einstein™ adaptor

An example of using the Anemometer Sensor

Using a Fan as a Wind Source

1. Place the sensor in front of the fan.
2. Click the Run button ( ) to start logging.
3. Change the position of the sensor and see how it affects the wind speed and direction measurements.
4. Click the Stop button ( ).



Technical support

For technical support, you can contact the Fourier Education's technical support team at:
Web: www.einsteinworld.com/support
Email: support@fourieredu.com

Copyright and Warranty

All standard Fourier Systems sensors carry a one (1) year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.
This warranty does not cover breakage of the product caused by misuse or abuse.
This warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.

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