ANEMOMETER BT15i

USER'S GUIDE

CENTRE FOR MICROCOMPUTER APPLICATIONS

http://www.cma-science.nl

Short description

The Anemometer BT15i is a device for measuring wind speed between 0.4 and 35 m/s. The sensor is a propeller-type anemometer with the axis of rotation parallel to the direction of the wind. The number of revolutions is counted via a magnet and reed sensor and is converted to wind velocity.

The Anemometer BT15i can be directly connected to the analog BT inputs of the CMA interfaces.

Sensor recognition

The Anemometer BT15i has a memory chip (EEPROM) with information about the sensor: its name, measured quantity, unit and calibration. Through a simple protocol this information is read by the CMA interfaces and the sensor is automatically recognized when it is connected to these interfaces. If your Anemometer sensor is not automatically detected by an interface, you have to manually set up your sensor by selecting it from the Coach Sensor Library.

Collecting data

To use the Anemometer, hold it vertically so that the wind blows straight into the propeller. This will cause the propeller to spin. Wind speed must be at least 0.4 m/s to be measured accurately.
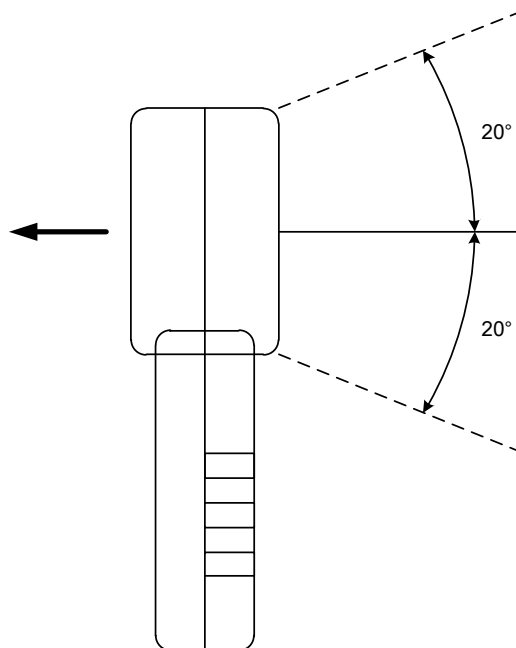

Figure 2. Make sure that the wind blows directly
into the anemometer propeller (±20 degrees maximum).

Calibration

The Anemometer is supplied calibrated. The output of the sensor is linear with respect to wind speed. The calibration function is

$$\text{Wind speed (m/s)} = 10 * V_{out}(V) - 10 \qquad (0.4 .. 35 \text{ m/s range})$$

For better accuracy the pre-defined calibration can be shifted or new calibrations can be made.

Suggested experiments

- Measure the wind speed of air generated by a variable speed fan.
- Investigate why wind speed is slower over land than it is over the ocean.
- Use an Anemometer and a compass to determine wind direction.

Technical Specifications

Sensor kind	Analog, generates an output voltage between 0 - 5 V
Measurement range	0.4 .. 35 m/s (sensor's EEPROM memory)
Resolution	0.1 m/s
Calibration function	Wind speed (m/s) = 10 * V_{out}(V) - 10
Accuracy	± 2% full scale
Response Time	200 ms
Operating Temperature	0 °C to 50 °C
Operating RH%	< 80%
Fan diameter	75 mm (2-7/8")
Fan spoke	# 8
Connection	Sensor cable attached to the sensor

Warranty:

The Anemometer BT15i is warranted to be free from defects in materials and workmanship for a period of 12 months from the date of purchase provided that it has been used under normal laboratory conditions. This warranty does not apply if the sensor has been damaged by accident or misuse.

Note: This product is to be used for educational purposes only. It is not appropriate for industrial, medical, research, or commercial applications.

Rev. 15/03/2018