



**DAVIS** 

## **SONIC-ANEMO-DZP**

**Ultrasonic wind vane-anemometer compatible with Davis Equipments**

### **Technical specifications**

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#### **LCJ Capteurs**

ZA Le Chêne Ferré  
44120 VERTOU (France)

Tel : 02 40 05 08 55

<http://www.lcjecapteurs.com>  
[contacts@lcjecapteurs.com](mailto:contacts@lcjecapteurs.com)

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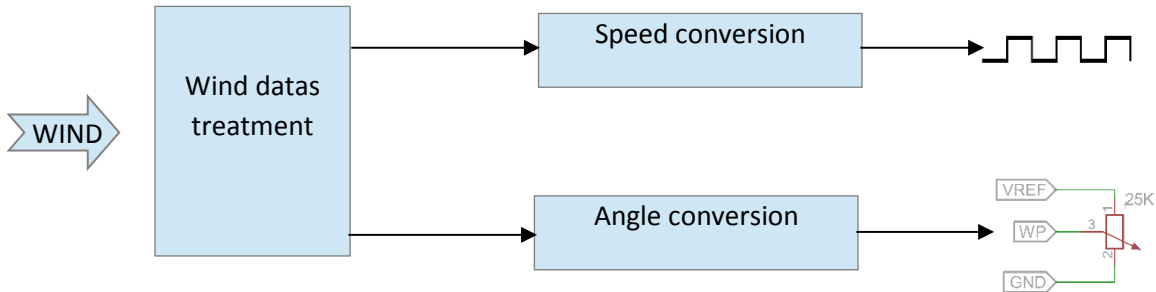
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## 1. Technical specifications

The ultrasonic wind sensor has an anemometer and wind vane. Wind speed and angle are provided in the form of analog signals. The characteristics of the sensor have been verified in the wind tunnel.

### 1. Synoptic :



### 2. Overviews:

Output characteristics :

Anemometer : open drain.

Wind vane : digital potentiometer.

Data update : 1 Hz (for higher frequency, choose SONIC-ANEMO-DVC)

Supplying : battery LiFePo4 3,2 V – 600 mAH, 20 g.

Cable : 4 conductors, 26 AWG, connector RJ-11, length 5 m.

### 3. Anemometer specifications

#### a) Wind speed

Range : 0,12 à 40 m/s

Resolution : 0,05 m/s

Accuracy : 0,12 m/s

#### b) Wind angle

Range : 0 à 360 degree

Resolution : 1 degree

Accuracy :  $\pm 1,5$  degree

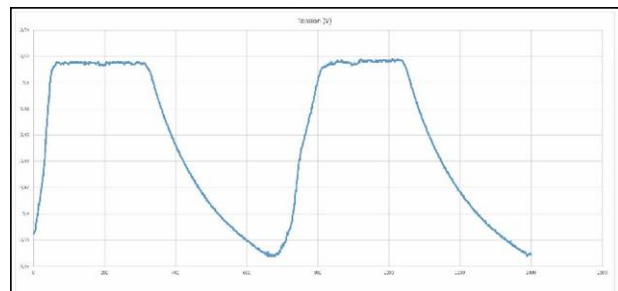
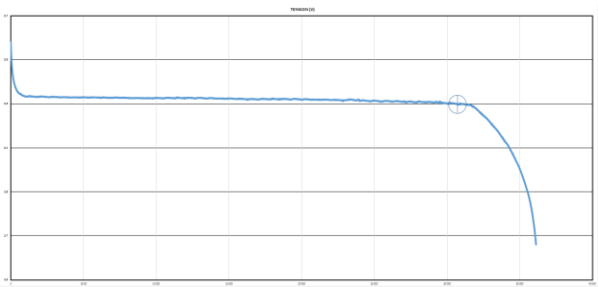
### 4. Electrical specifications

#### a) Autonomy – consumption of the sensor:

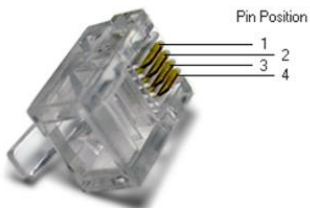
Battery with full charge: 23 days without sun.

Consumption: 8,6 mA/day.

Charge-discharge cycle (day-night) :



## b) RJ11 connector connection

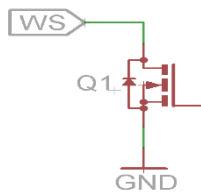


Wires arrangement:

- 1- white wire : potentiometer supply (VREF)
- 2- brown wire : wind speed (WP)
- 3- green wire : ground (GND)
- 4- yellow wire : anemometer (WS)

## c) Anemometer :

The output signal WS is an open drain. Max current : 170 mA. Max voltage : 100 V



The generated signal is a symmetrical square wave of frequency proportional to the wind speed. For a signal at frequency F, we have a speed:

$$V_{mph} = 2,25 F \text{ in mile/hour.}$$

$$V_{kt} = 1,95 F \text{ in knots.}$$

$$V_{km/h} = 3,62 F \text{ in Km/h.}$$

$$V_{m/s} = 1,006 F \text{ in m/s.}$$

16 bits resolution.

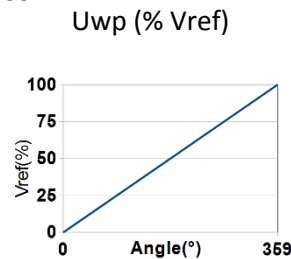
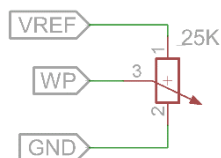
## d) Wind vane :

The sensor converts the wind angle to a potentiometer. The angular values to be converted range from 0 ° to 359 ° (0 ° being equal to 360 °) without dead band.

The potentiometer used is a 9-bit digital potentiometer.

The maximum allowable current is 1.3 mA and the maximum voltage Vref max is 5.5 V.

For a voltage Uwp, we have an angle:  $\text{Angle} = U_{wp} / V_{ref} \cdot 359$



## 5. Mechanical specifications

Conditions of use: -15 ° C (excluding frost) at + 55 ° C.

Materials: aluminium, high performance thermoplastics.

Dimensions :

Sensor : Ø 65 mm ; high : 47 mm.

Battery case: Ø 43 mm ; hauteur : 86 mm.

Weight : 160 g