



## **SONIC-ANEMO & CV7**

ultrasonic wind vane-anemometer

### **User manual**

23/07/2025 rev2.1

### **LCJ Capteurs**

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As the products manufactured by LCJ Capteurs are constantly evolving, the content of this manual is subject to change without notice.

This manual does not create any legal obligation on the part of LCJ Capteurs towards the customer or end user. LCJ Capteurs accepts no liability for any damage and/or injury resulting from the use of the product described in this manual.

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## I. General information

### 1. About this manual

This manual provides all the information you need to install and operate the SONIC-ANEMO-DZP anemometer for Davis VP2.

Please ensure that you read and understand all the information in this manual before using the sensor, as improper use may result in errors or even damage to the product.

### 2. Warnings

Throughout the manual, important considerations are highlighted and marked as follows:



**Warning!** Serious hazard. Read and follow the instructions carefully, as there is a high risk of injury or even death.



**Warning.** Indicates a potential danger. It is vital that you read and follow the instructions carefully. Otherwise, you may end up damaging the product or losing important data.



**Note.** Important information regarding use of the product.

### 3. Your experience

LCJ Capteurs welcomes any feedback or suggestions you may have to improve this manual. If you notice a mistake, please get in touch with us. Be sure to specify the chapter, section and page number so that we can make the correction. You can find our details on this manual's cover page and in our website [www.lcjcapteurs.com](http://www.lcjcapteurs.com).

### 4. Safety

In order to avoid damage and legal liability, it is essential that the safety precautions listed below are followed when using this product. Keep and follow all safety and user instructions regarding the product. Read and follow all warnings provided in the product instructions. In order to reduce the risk of personal injury, electric shock, fire, or damage to the equipment, please observe the following precautions.

Read carefully and follow all instructions contained in this manual to avoid measure errors caused by improper installation.



**Warning!** Please comply with all applicable safety regulations when installing the product.

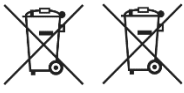
#### Electrical safety measures

This product has been designed to be powered by a battery or a specific power supply unit. Any other use of this product may be dangerous and will invalidate any approval that has been given for this product.

- Handle the battery with care

## 5. Recycling

LCJ Capteurs recommends that you recycle all materials in accordance with the regulations in your country. You can obtain further information on recycling from your country's Ministry of Environment.



### **European Union (and European Economic Area) only.**

These pictograms indicate that this product must not be disposed of with domestic waste, as specified in the European WEEE Directive (2002/96/EC), the European Directive on the disposal of used batteries and accumulators (2006/66/EC) and the laws in force in your country, applying these directives. When a chemical toxicity pictogram is printed below the symbol shown, according to the Directive applying to battery disposal, it means that it contains Heavy Metals (Hg = mercury, Cd = cadmium, Pb = lead) in the battery or accumulator in a concentration exceeding the threshold specified by the Directive. This product must be taken to a designated disposal facility when you purchase a new product of the same type, or to an approved electrical and electronic equipment (EEE), battery or accumulator recycling facility. Wrong behaviour in disposal can have consequences on the environment and human health, because of the potentially hazardous substances commonly found in electrical and electronic equipment. By disposing of this product correctly, you will be helping to make the best use of natural resources.

## 6. Warranty

LCJ Capteurs declares and guarantees that the product is free from defects in material and workmanship for a period of 24 months from the date of purchase. Should a defect be found during this period, LCJ Capteurs will repair it in its workshops or replace all or part of the product free of charge, at its discretion. The warranty does not cover labour costs for installation or shipping of defective parts. A proof of purchase may be required when applying for the warranty in writing. After approval by LCJ Capteurs, the sensor must be returned to the address of one of its workshops. LCJ Capteurs guarantees that all sonic wind sensors are tested and calibrated prior to delivery.

The warranty shall not apply in the following cases:

1. Damage resulting from misuse.
2. Improper installation or inappropriate conditions of operation.
3. If the product has been damaged, dismantled or repaired by an unauthorised third party.
4. Damage caused by lightning, fire, water, accident or any other similar circumstance.

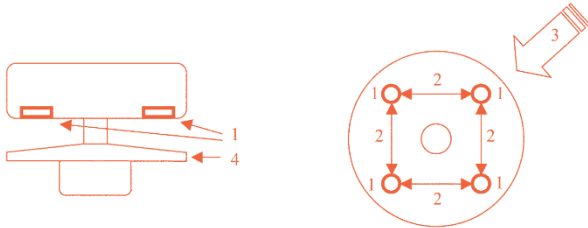
The warranty is void if the instructions for use, installation, repairs or intervention without prior agreement are not followed.

## 7. Product return

If the product needs to be returned to LCJ Capteurs, please contact your dealer first. A Return Merchandise Authorisation (RMA) must be obtained before returning any product.

## II. Presentation

A conventional wind vane/anemometer contains rotating mechanical parts. These parts are subject to wear and tear and are a possible cause of sensor failure. Our ultrasonic sensor has been designed to prevent this and to ensure the most stable and reliable operation possible. This wind vane anemometer provides very stable results over time, and requires no maintenance.



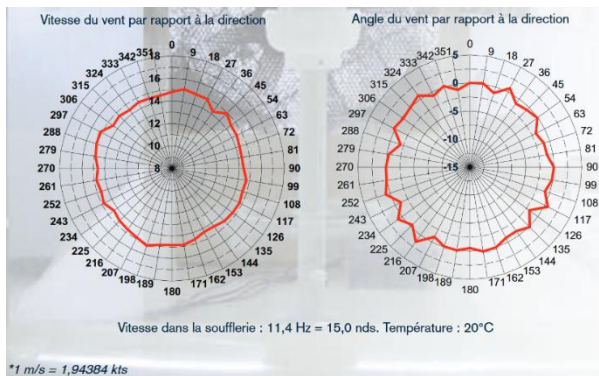
Sound, or ultrasound, is propagated by the movement of the fluid through which it transits. Electroacoustic sensors (1) communicate two by two using ultrasonic signals (2) to determine, along two orthogonal axis, the differences in the transit times of the waves induced by the air flow (3). The measurements are compiled in an integrated calculator, which determines the wind

module and its direction relative to a reference axis. Temperature measurement is used to fine-tune calibration. The effect of the sensor tilt on the wind measurement module is partially corrected by the profile given to the space (4). The CV7 range features lateral communication between transducers, providing four independent measurements. This enhances validity checks, and vectors measured at a headwind angle are preferred for establishing speed and direction. The method provides wind speed sensitivity of 0.12 m/s, as well as dynamics and excellent linearity up to 40 m/s (144 km/h).\*

LCJ Capteurs has been designing and manufacturing wind sensors since 1999. Our range of wind vane anemometers meets the needs of many applications. They have proven their robustness and accuracy in the marine sector, and are now widely used in a variety of fields such as weather stations, industry, security and agriculture, among others.

At LCJ Capteurs, every sensor is fully tested prior to delivery and the results are saved by serial number. The

sensor is placed in our wind tunnel on a rotating support that turns by 9° increments. This process is computer-controlled. The sensor is first aligned at 0° relative to the direction of the air flow, then 40 measurement data points are recorded for force and angle. An excerpt of a typical test report is given below. The full version is available on our website.



### III. Installation

#### 1. Packaging control

Before unpacking the product, inspect the package for any damage that may have occurred during shipping. If the box is damaged, file a claim against the shipping company and report the damage in detail.

#### 2. Opening the package

Unpack the product in a clean, dry place and check that the following items are included:

1. SONIC-ANEMO & CV7 supplied with a 30 cm, 5 m, 12 m or 25 m cable.
2. Mounting bracket with jaws and 4 nuts.
3. Alidade.
4. User manual (paper booklet)



Warning: Take the appropriate precautions to avoid damaging the product when unpacking it.

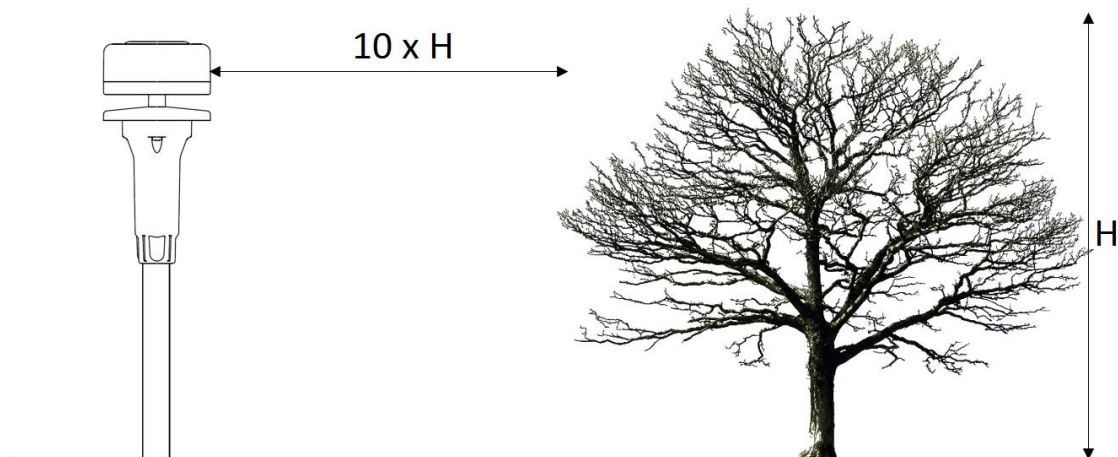
#### 3. Selecting the best location

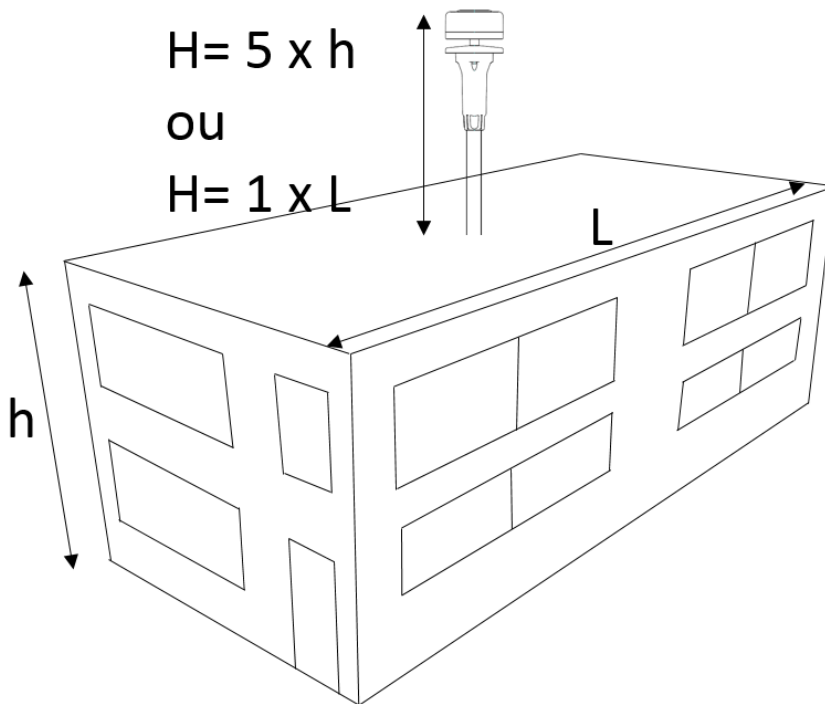
Finding a suitable location for sensor installation is essential in order to obtain reliable measurements. The location must be free from turbulence and any sources of magnetic fields, such as electricity, motors, radio transmitters, radar, etc. A raised edge or object close to the sensor can have a negative impact on measurements. For mobile installations, please note that the sensor measures the apparent wind speed and angle. When determining the actual wind vector, the speed of the vehicle must be taken into account.

##### a) Clearance distance

In order to avoid measurement errors, the sensor must be installed vertically at a minimum distance of 10 times the height of the nearest object.

We recommend installing the sensor at a height of 3 metres in a clear environment and at 10 metres in presence of nearby objects.





### b) Mounting height

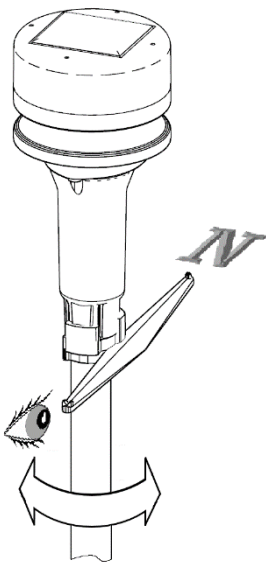
If the sensor is installed on a building roof, the height must be 1 time the length of the building or, if possible, 5 times the height of the building.

If possible, install the sensor in the middle of the roof. It is not recommended to install the sensor on sloping roofs. This is because they direct the turbulence generated by the building upwards. This means that the turbulence is directed towards the sensor.

### c) Alignment of the sensor

The sensor must be aligned to the North. For this purpose, an alidade is supplied with the sensor. Clip the alidade onto the tube and slide it so that it fits into the pins. Do not force the pins; the alidade should position itself naturally on the sensor.

Slightly loosen the 4 screws that secure the tube. Point the alidade to the north by rotating the sensor on its axle. Tighten the screws.

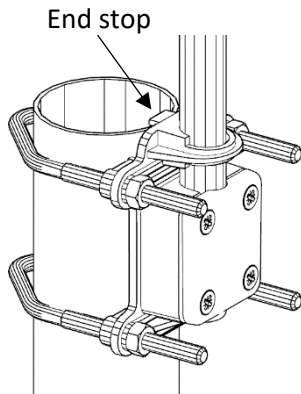


Note: Magnetic declination must be taken into account to relate measurements to the true north (geographical).

#### d) Mounting system

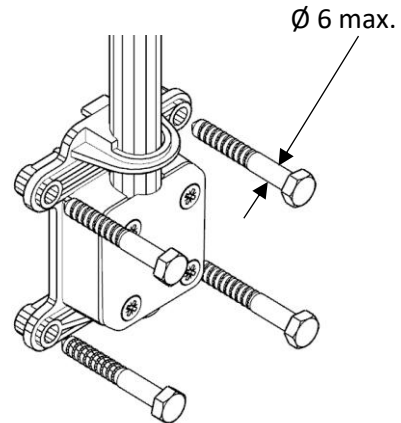
The SONIC-ANEMO & CV7 comes with a mounting bracket enabling two mounting modes:

On a pole:  
Pole diameter:  $\varnothing$  35 min. ;  $\varnothing$  48 max.



Max. tightening torque: 1.5 N.m

On a vertical surface:  
(the sleeper screws are not supplied)



#### 4. Wiring

Please refer to the technical data sheet in the appendix.

### IV. Maintenance

The SONIC-ANEMO-DZP does not require any particular maintenance. It may be necessary to clean the photovoltaic panel occasionally.



Warning: Do not use alcohol-based cleaning products. Use a soft cloth, fresh water or a neutral cleaning product.

### V. Technical specifications

Technical documentation is available upon request.

## VI. Declaration of conformity

LCJ Capteurs certifies that the following product:

SONIC-ANEMO & CV7, Ultrasonic Wind-vane-anemometer

complies with the following directives:

1. Electromagnetic compatibility: 2004/108 / CE
2. Low voltage: 2006/95 / CE

This declaration of conformity is based on the product's compliance with the following harmonised standards:

1. Electromagnetic compatibility: EN 61326-1 : 2006
2. Safety: EN 61010-1 : 2001

Date of issue: 14/10/2016

Signed by:

Christophe MICHEL

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