

# Another way *to read the wind*



ULTRASONIC  
WIND SENSOR

**LCJ CAPTEURS**

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**Since 1999 !**

LCJ Capteurs shows the way for rugged and accurate wind sensors. Our mission is to offer the best ultrasonic wind sensors, compact, lightweight, inconspicuous with low energy consumption at good value for money.

This innovative company is located in Pays de la Loire, a dynamic French region, where we manufacture our sonic wind sensors. All technical and manufacturing aspects are carried out in France in a 100 km radius from our premises. Each process of assembly and quality control is handled in our workshops.

Each sensor is calibrated and tested in our wind tunnel and climatic chamber. Data is recorded for each product by serial number. External tests on LCJ Capteurs' ultrasonic wind vane-anemometers have been run successfully by many independent laboratories.

The CV3F was the first model sold in 2000. It has proven its reliability and sturdiness after a one-year in-field test mounted on the rear stand of French trawlers from Boulogne and Lorient that fish in the North Sea and the Irish Sea. As a result, since 2001, we know that the CV3F sensor can resist harsh weather conditions, sea water and vibrations !

Today, the sensors from the CV7 range meet a wide range of needs for various marine and terrestrial applications, for leisure mariners as well as professionals. Our ultrasonic wind sensors are robust, reliable and accurate. They interface with all modern navigation equipment available on the market, including the most recent apps via a wireless connection to your tablet or smartphone.

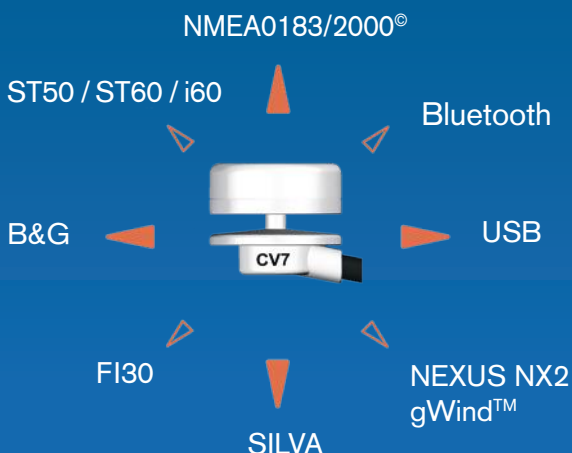
Our ultrasonic wind sensors are now in use on all oceans and continents, whether at sea and on land. You can rely on the LCJ Capteurs' ultrasonic wind vane-anemometers !

**Find us on Internet : [www.lcjcapteurs.com](http://www.lcjcapteurs.com)**



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# CV7

## The standard version for masthead mounting



### Wind sensor for sailboats !



The slanted arm of this ultrasonic wind sensor fits perfectly on a masthead that already carries antennas and navigation lights.

Output data format	NMEA0183 ; MWV, XDR
Output Rate	2 Hz (with 30Hz measurements)
Wind module sensibility	0.12 m/s   0.25 knots
Wind module resolution	0.05 m/s   0.1 knots
Wind module dynamic	0.12 to 40 m/s   0.25 to 80 knots
Direction sensibility	+/- 1,5°
Direction resolution	1°
Power supply	8 to 30 V DC
Power consumption	9 mA
Op. Temp.	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22 mm <sup>2</sup> , 20 gr/m
Weight	Head = 100 gr   Whole = 200 gr
Mounting arm	Oblique, 310 mm, aluminium, Ø12 mm



Accurate



Maintenance free



Cost effective

# CV7-V

Vertical arm for easy installation



**A versatile model  
adapted to your needs !**



This ultrasonic wind vane-anemometer is easy to install on any kind of boat and also on onshore infrastructures such as harbour master's offices and semaphores. The vertical installation of the CV7-V makes it versatile for various marine or terrestrial applications.

Output data format	NMEA0183 ; MWV, XDR
Output Rate	2 Hz (with 30Hz measurements)
Wind module sensibility	0.12 m/s   0.25 knots
Wind module resolution	0.05 m/s   0.1 knots
Wind module dynamic	0.12 to 40 m/s   0.25 to 80 knots
Direction sensibility	+/- 1,5°
Direction resolution	1°
Power supply	8 to 30 V DC
Power consumption	9 mA
Op. Temp.	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22 mm <sup>2</sup> , 20 gr/m
Weight	Head = 100 gr   Whole = 200 gr
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm



Versatile



Robust



Easy mounting

# CV7-C

For performance sailing



**High data rate,  
ideal for racers !**



This sensor with 700 mm long carbon arm is an excellent model for competitors. It features high data rate and is installed on top of masthead. This keeps the sensor head out of the upwash effects that affect the accuracy of wind data measurements.

Output data format	NMEA0183 ; MWV, XDR
Output Rate	4 Hz (with 60Hz measurements)
Wind module sensibility	0.12 m/s   0.25 knots
Wind module resolution	0.05 m/s   0.1 knots
Wind module dynamic	0.12 to 40 m/s   0.25 to 80 knots
Direction sensibility	+/- 1,5°
Direction resolution	1°
Power supply	8 to 30 V DC
Power consumption	9 mA
Op. Temp.	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22 mm <sup>2</sup> , 20 gr/m
Weight	Head = 100 gr   Whole = 200 gr
Mounting arm	Vertical, 700 mm, carbon, Ø16 mm



Cost effective



Lightweight



Maintenance free

# CV7-HR

## For offshore racing



**Reactivity that  
skippers look for !**

On demand of offshore racing skippers, we have developed this sensor based on the CV7-C from which reliability and technology have been validated for many years at sea all over the world. Its high raw data rate allows for communication with high-end autopilots.

Output data format	NMEA0183-HS   38400 Bauds
Output Rate	4 Hz (with 120Hz measurements)
Wind module sensibility	0.12 m/s   0.25 knots
Wind module resolution	0.05 m/s   0.1 knots
Wind module dynamic	0.12 to 40m/s   0.25 to 80 Nœuds
Direction sensibility	+/- 1,5°
Direction resolution	1°
Power supply	8 to 30 V DC
Power consumption	9 mA
Op. Temp.	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22 mm <sup>2</sup>
Weight	Head = 100 gr   Whole = 200 gr
Mounting arm	Vertical, 700 mm, carbon, Ø16 mm



Accurate



No mast climbing



Robust

# CV7SF2

Wireless wind sensor  
since 2013



**Wireless solution for your  
navigation system !**



This sensor is powered by its own solar panel. The receiver is power supplied. The radio protocol used has been widely tried and tested since 2013 on our previous versions. This model is suitable for cruising boats, sailing clubs, weather stations, sports clubs, harbour master's offices and many others.

Output data format	NMEA0183; MWV, XDR
Output rate	1Hz (with 16Hz measurements)
Wind module sensitivity	0,25 m/s   0,4 knots
Wind module resolution	0,05 m/s   0,1 knots
Wind module dynamic	0,25 to 40 m/s   0,4 to 80 knots
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	Photovoltaic (sensor)   5 to 15V DC (receiver)
Electric consumption	zero power (sensor)   6mA (receiver)
Autonomy	35 days at 1Hz (in total darkness)
Op. Temp.	-10°C (without icing) to +50°C
Wireless range	50 m (300 m in open space)
Weight	Head = 180 gr / Whole = 280 gr
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm



Versatile



Autonomous



Solar Energy



# CV3F

The reference for  
workboats



## Our very first model !

CV3F\* is the sensor that built our reputation in 1999 and is used worldwide due to its robustness and reliability in difficult climatic conditions. It is specifically designed for “all-weather” working boats.

Output data format	NMEA0183; MWV, XDR
Output Rate	2 Hz (with 30Hz measurements)
Wind module sensibility	0.31m/s   0.60 knots
Wind module resolution	0.05 m/s   0.1 knots
Wind module dynamic	0.31 à 51 m/s   0.60 à 99 knots
Direction sensibility	+/- 2,5°
Direction resolution	1°
Power supply	10 to 14 V DC   11V to 33 V (option)
Power consumption	25 mA
Op. Temp.	-10°C (without icing) to +50°C
Cable	25 m (included)   RG58 C/U coaxial
Weight	Head = 175 gr / Whole = 280 gr
Mounting arm	Vertical, 310 mm, aluminium, Ø20 mm

*\*Not available in North America*



Maintenance free



Cost effective



Robust

# Option STBG



**To replace a B&G or Raymarine masthead unit !**

Option STBG is a universal interface that allows to replace a masthead unit with a CV7 range ultrasonic solution. This interface communicates between a CV7 aerial unit and your display, whatever the model and brand.



*Examples of B&G compatible displays*

The STBG interface converts CV7 data relative to wind angle and speed. It transmits this data to your new or old equipment in analogue format. All usual setup data is saved on your instrument, including the mast angle offset.



Maintenance free



Versatile



Cost effective



## Option STBG : compatible instruments

- **B&G®** (Hornet IV, Hydra, Hercules, Network, H1000, H3000, H5000),
- **Raymarine®** (ST60, ST60+, ST70, i series, iTC5),
- **Autohelm®**, ST50
- **Navico®**, WD200
- **Microdata®**,
- **Stowe®**, Navigator, Stowe Dataline, Stowe Micro Range, Dataline X
- **Simrad®**, IS11
- **VDO®**



*Examples of Raymarine compatible displays*

Another option is also available for a rotating mast.

For other systems, we can manage a specific configuration on request.



Accurate



Easy connection



Robust

# CV7-SIL

No need to change your old navigation system

The ultimate solution  
to replace a Nexus,  
Silva or Furuno FI-30 !



With the CV7-SIL ultrasonic wind sensor, you can replace your old Nexus NX2, SILVA or FI30 masthead unit and keep your navigation system. The SIL option is a firmware setup for CV7 models.



**SILVA Wind**



**Furuno FI-30**



**Nexus NX2**

If you own one of these display models and your masthead unit no longer operates, the CV7-SIL will meet your expectations.



Accurate



Zero configuration



Cost effective

# RM-SMART100

## Static angle sensor for rotating mast



**Without mechanical parts !**

Static angle sensor SMART100 for rotating mast supplied with the RM processor that features a NMEA2000 interface (or with the RM-STBG interface compatible with B&G® and Raymarine®). It works with all wired sensors from the CV7 range. No mechanical wear thanks to the magnetic system.

Output data format	NMEA2000® or with RM-STBG
Output rate	10 Hz
Measured angle	+/- 50° (option for +/- 90°)
Angle resolution	0,5°
Angle accuracy	0,4%
Power supply	10 to 16 VDC
Consumption with interface box	100mA / 2 LEN
Terminaison connector	M12 connector
Cable SMART100 / interface box	5m
Compatible wind sensors	CV7   CV7-V   CV7-C
Weight of the head	190 gr
Weight of interface box	180 gr



**Robust**



**Maintenance free**



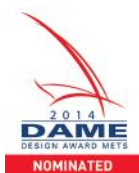
**Versatile**

# BaroPlug

## Plug and Play barometer



### Atmospheric pressure for NMEA2000® systems !



BaroPlug is an atmospheric pressure and ambient temperature sensor for NMEA2000® systems. It features a MICRO C male plug to connect directly to the NMEA2000® bus.

This is a “Plug and Play device”. Just install the BaroPlug on your NMEA system’s backbone !

Connector	MICRO C male NMEA2000®
Transmitted data	Atm. press., air temp.
Weight / Length / Diameter	20 gr / 82 mm / 17,5 mm
Operation indicator	1 flashing LED
Pressure sensor	Hydrophobic membrane
Pressure measure range	850 hPa / 1150 hPa
Resolution*	1 hPa with NMEA2000 V2 systems 0.1 hPa with NMEA2000 V3 systems
Relative precision*	+/- 0,5 hPa to 20°C
Absolute precision*	+/- 1,5 hPa to 20°C
Power supply	via NMEA2000® network. 8V / 28VDC
Electrical consumption	1 LEN
NMEA2000® V2 PGNs	TX : 59392; 60928; 126464; 126996; 130306; 130311 RX : 59392, 59904; 60928; 130315
NMEA2000® V3 PGNs	TX : 59904; 60928; 126464; 126996; 130306; 130312; 130314 RX : 59392; 59904; 60928; 130315



Barometer



NMEA2000®



Thermometer

# WindyPlug

## Plug and Play interface wind + barometer



### CV7 and CV3F sensors to NMEA2000 systems !

WindyPlug is an extension of BaroPlug with an interface to connect any of our ultrasonic wind sensors to a NMEA2000®. All the data is transmitted to the NMEA2000® network !

WindyPlug features a MICRO C male plug to connect directly to the NMEA2000® bus.

Connector	MICRO C male NMEA2000®
Transmitted data	Atm. press., wind speed, wind angle, wind temp
Weight / Length / Diameter	35 gr / 135 mm / 17,5 mm
Operation indicator	1 flashing LED
Pressure sensor	Hydrophobic membrane
Pressure measure range	850 hPa / 1150 hPa
Resolution*	1 hPa with NMEA2000 V2 systems 0.1 hPa with NMEA2000 V3 systems
Relative precision*	+/- 0,5 hPa to 20°C
Absolute precision*	+/- 0,5 hPa to 20°C
Power supply	via NMEA2000® network. 8V / 28VDC
Electrical consumption	1 LEN
NMEA2000® V2 PGNs	TX : 59392; 60928; 126464; 126996; 130306; 130311 RX : 59392; 59904; 60928; 130315
NMEA2000® V3 PGNs	TX : 59904; 60928; 126464; 126996; 130306; 130312; 130314 RX : 59392; 59904; 60928; 130315

\*1 hPa = 1 mBar = 0.003 inHg



NMEA2000®



Barometer



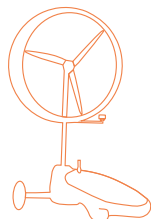
Plug and Play

# LCJ Capteurs and innovation

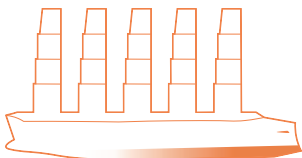
Innovation is a core value of LCJ Capteurs. Many projects come out in the maritime and terrestrial market, particularly in freight transport with sailing cargo ships. This sector innovates to reduce the carbon impact with new technologies. LCJ Capteurs' wind vane-anemometers contribute in these projects to improve the technology that uses wind energy. Below are some examples of projects that integrate our CV7 models.

## HVA Cleanmobility Project

Project of students participating in the world's largest race dedicated to sustainable development "Aeolus Racing".



## Retractable sails from Oceanbird



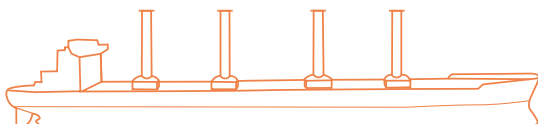
New generation cargo ship from the Swedish University KTH & Wallenius Marine.

## Seawings kite sail from Airseas or Skysails



**Purpose:**  
Reducing the carbon impact of container ships

## Rotor Sails project for cargo ships



Clients already trust us for their project : Farwind, VPLP Design, Ayro, Kai Projects, Avel-vor technologie and various prestigious universities.



# Testimonials

"We have used many anemometers, and the CV7-C is the best for our application. It has greatly improved our ability to measure the performance of our kiteboats".

**Jamie Schulte,**  
KAI project



"LCJ Capteurs wind sensors are really very robust, reliable and accurate. I have been using them since 2001, and have



never had a problem. I took part in several offshore races during which the mast head unit went under water three times, and I dismasted. Despite such events, my CV7-C survived and still runs smoothly. Nevertheless, it is important to know the sensor to set up the autopilot correctly and sail for easy calibration."

**Yannick Lemonnier,**  
Mini transat



"Because LCJ Capteur's ultrasonic wind sensors have no moving parts to wear out, rendering their performance constant and reliable, we at Tidal Transit took the decision to fit them to our fleet of four PTVs (Passenger Transfer Vessels). The ultrasonic wind sensors provide security for the vessels, which are in daily service on various UK offshore wind farm sites around the UK coast."

**Leo Hambro, Commercial Director of Tidal Transit**

# ULTRASONIC WIND SENSOR : TECHNICAL INFORMATION

A conventional wind vane-anemometer includes mechanical rotating parts. These parts are subject to wear and they represent sources of failure of the sensor.

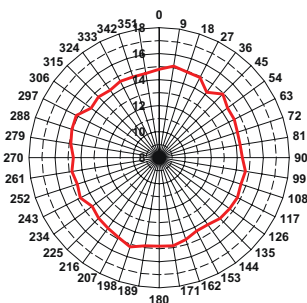
The LCJ Capteurs' ultrasonic wind sensor is designed to avoid this and ensure the most reliable and stable operation possible. Very stable results over time are significant and no maintenance is required.

LCJ Capteurs has designed and manufactured ultrasonic wind sensors since 1999. Our range of ultrasonic wind sensors covers the needs of many applications. They have proved their robustness and accuracy in the marine sector, and they are now widely used in other fields such as weather stations, industry, security, agriculture, and so on.

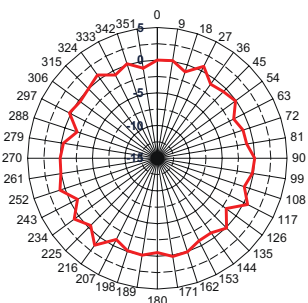
Each LCJ Capteurs' sonic sensor is fully tested before despatch and the test results are saved by serial number. The sensor is placed in our wind tunnel on a bracket that rotates by 9 degrees steps. This operation is computer-controlled. The sensor is aligned at 0 degrees from the air flow and then, 40 measure points are completed with data saved for speed and angle.

You can read a typical test report here below. The full document is available on our website.

Wind speed against direction



Wind angle against direction



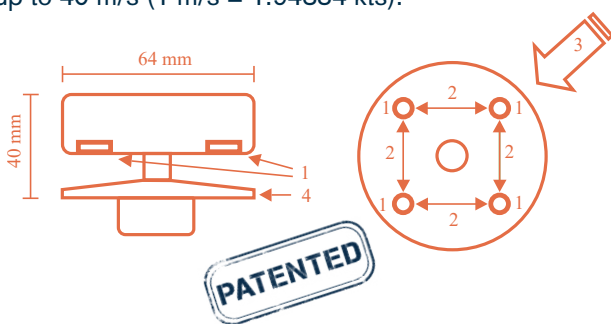
Wind tunnel speed: 11.4 Hz = 15.0 knts - Test temperature: +20°C

## HOW DOES IT WORK ?

The sound and ultrasound are conveyed by the movement of the fluid it crosses. Electro acoustic transducers (1) communicate two by two using ultrasonic signals (2) to determine, following two orthogonal axes, the wave transit time differences induced by the air flow (3). The measurements are combined in an integrated calculator to establish the wind speed and its direction in relation to a reference axis. The temperature measurements are used for calibration corrections. The shape shown in (4) partially corrects the effects of the tilt angle of the sensor against the wind module.

For the CV7 range sensors, transducers communicate laterally, which results in four independent measures. The validity checks are then strengthened and vectors measured windward are prioritized for wind speed and direction calculations.

This method gives a sensitivity of 0.12 m/s for wind speed, an excellent wind module dynamic and linearity up to 40 m/s (1 m/s = 1.94384 kts).



LCJ Capteurs' ultrasonic wind sensors are compatible with all multifunction screens and navigation system displays. Is your aerial sensor broken or obsolete ? Is it discontinued on the market ? Looking for a black or NATO green design ? LCJ Capteurs has a solution !

Besides, if your LCJ Capteurs' wind sensor is less than 2 years old, it will be replaced under warranty. If a CV3F or CV7 is older than 5 years, a standard exchange of product is offered at a competitive price.

QR CODE



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Products under 2-year warranty, in our workshops.*

