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 vane-anemometers. Our mission is to offer the best ultrasonic wind sensors, compact, lightweight, inconspicuous with low energy consumption at good value.

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. The majority of the supplies are sourced locally within a 50 km radius. The design, assembly and quality control processes are entirely handled in our workshops with control points at each stage of the manufacturing procedure.

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

The first model was sold in 2000 and proved its reliability and sturdiness after a one-year embedded 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 our sensors can resist harsh weather conditions, sea water and vibrations.

The sensors from the CV7 and SONIC-ANEMO range meet a wide range of needs for various marine and terrestrial applications, for leisure mariners as well as professionals. Our sensors are accurate, robust, reliable and interface with all modern instrumentation available on the market, including wireless on tablets and smartphones to use the latest applications.

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 :
www.lcjcapteurs.com

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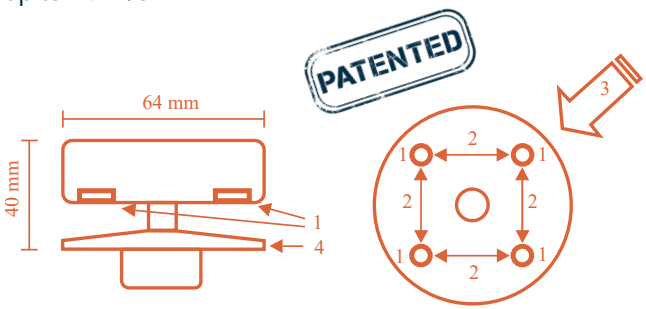
HOW DOES IT WORK?

The sound, the ultrasound, is conveyed by the movement of the fluid through which it passes. Our technology is based on electroacoustic transducers (1) that communicate two by two using ultrasonic signals (2) to determine, along 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 direction in relation to a reference axis. The temperature measurements are used for calibration corrections. The shape (4) partially corrects the effects of the tilt angle of the sensor against the wind module.

For the CV7 and SONIC-ANEMO range sensors, transducers communicate laterally, which results in four independent measurements. 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.



LCJ Capteurs' ultrasonic wind sensors are compatible with all industrial PLC systems. Besides, if you look for a black or NATO green design, LCJ Capteurs has a solution !

Our products are guaranteed for 2 years from date of purchase, with parts and labour in our workshops.

ULTRASONIC WIND SENSOR : TECHNICAL DATA

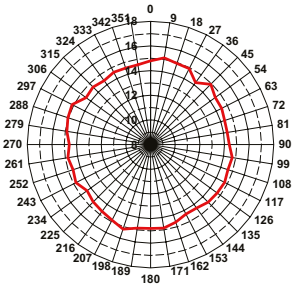
A conventional wind vane-anemometer includes mechanical rotating parts. These parts are subject to wear and they represent sources of failure of the sensor. The LCJ Capteurs' ultrasonic wind sensor is designed to be maintenance-free, in order to ensure stable and reliable operation. Since 2000, our wind sensors have shown durable results and have proven their robustness and accuracy in the maritime domain. They are now widely used in sectors as varied as :

- Smart buildings
- Wind farms
- Sports
- Precision agriculture
- Weather stations
- Fountains
- Pollution
- Public safety

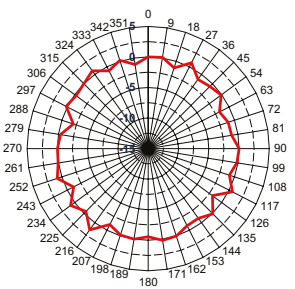
Each LCJ Capteurs' sonic sensor is fully tested before despatch and the test results are recorded alongside the unit's serial number. The sensor is placed in our wind tunnel on a bracket that rotates by 9 degrees steps. This operation is computer-controlled. The sensor is aligned at 0 degree from the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

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

Wind speed against direction



Wind angle against direction



Wind tunnel speed: 7.7 m/s - Test temperature: +20°C

SONIC-ANEMO-DLG-A

Built-in autonomous datalogger

NEW NEW NEW

Get your wind data records autonomously

Intended for integrators as well as for autonomous weather monitoring stations, it is perfectly suited to record the average wind speed and direction with its integrated datalogger. This wind sensor, self-powered by battery and photovoltaic cell, is available as an OEM version or complete version with cable, bracket and fixing clamp.

Output data format	Serial link TTL 3V
Information transmitted	Instant. W. Speed, Instant. W. Angle
Output rate*	Up to 1Hz
Wind module sensitivity	0.25 m/s
Wind module resolution*	Up to 0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution*	Up to 1°
Power supply	Photovoltaic cell, LiFePo4 battery
Autonomy*	480h in total darkness, autonomous from 50 W/m²
Operating temperature	-15°C (without icing) to +55°C
Cable* Support	According to the Standard / OEM version
Connection	3 conductors Tx / Rx / Vref
Weight*	Head = 180 g I Complete set = 240 gr

* According to the specifications

Versatile

Datalogger

Autonomous

SONIC-ANEMO-DLG-P

Integrated datalogger with low energy consumption

NEW NEW NEW

Get your wind data records at ultra low power

This ultrasonic wind sensor has an incorporated datalogger in its system to record the average wind speed and the average wind direction. Its ultra low power version (ULP) will fit perfectly in weather monitoring stations. Also available as an OEM version or with accessories (cable, bracket and fixing clamp).

Output data format	Serial link TTL 3V
Information transmitted	Instant. W. Speed, Instant. W. Angle
Output rate*	Up to 1 Hz
Wind module sensitivity	0.25 m/s
Wind module resolution*	Up to 0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution*	Up to 1°
Power supply	3.0 to 3.6 V DC stabilized
Power consumption*	Min. 200 µA at 1 Hz
Operating temperature	-15°C (without icing) to +55°C
Cable* Support	According to the Standard / OEM version
Connection	3 conductors Tx / Rx / Vref
Weight*	Head = 100 g I Complete set = 200 g

* According to the specifications

Lightweight

ULP

Ultra low power

Datalogger

SONIC-ANEMO-DZP

Autonomous in energy
Zero Power

compatible DAVIS

The self-powered solution for DAVIS and analog dataloggers

This ultrasonic anemometer is powered by its own solar panel. It is well suited to remote installations where power consumption matters. This unit connects directly to a pulse and potentiometer input (i.e. on Davis instruments). The equipment is intended for integrators of autonomous weather stations and for advanced users.

Output data format	WA: 25KΩ, 5V max, WS: Pulse open collector 10 mA max
Information transmitted	Instant. W. Speed, Instant. W. Angle
Output rate	1 measurement and update per second
Wind module sensitivity	0.25 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1° (9 bits)
Power supply	Photovoltaic cell, LiFePo4 battery
Power consumption	480h in total darkness, autonomous from 50 W /m²
Operating temperature	-15°C (without icing) to +55°C
Cable	12 m (included), 4 x 0.18 mm², UV proof
Connection	RJ11
Weight	Head = 180 g I Complete set = 240 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Versatile

EASY INSTALL

Easy mounting

Autonomous

SONIC-ANEMO-DVC

For analog datalogger

compatible DAVIS

Powered version for DAVIS stations

This ultrasonic wind vane-anemometer can also be connected directly to a pulse and potentiometer input (Davis type for example). This sensor is easy to integrate into a stand-alone weather station upon initial installation or as a replacement for a mechanical sensor.

Output data format	WA: 25KΩ, 5V max; WS: Pulse open collector 10 mA max
Information transmitted	Instant. W. Speed, Instant. W. Angle
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s (16bits)
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1° (9 bits)
Power supply	2.7 to 35 V DC
Power consumption	2.6 mA Avg. at 12 V
Operating temperature	-15°C (without icing) to +55°C
Cable	12 m / 4 x 0.18 mm² UV proof
Connection	RJ11, 2 wires Power Supply
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Accurate

Lightweight

Robust

SONIC-ANEMO-SDI

SDI-12 compatible

SDI-12 protocol with low power consumption

This static wind sensor integrates the SDI-12 protocol with optimized power consumption. Data available:

- Average speed and direction over 10 minutes
- Minimum wind speed and direction over this period
- Maximum wind speed (gust 3s) and direction over this period
- Software version and serial number
- Quality level of the measurement transmitted by the sensor
- Diagnostic data (manufacturer use only)

Output data format	SDI-12 V1.3
Information transmitted	Instant. W. Speed, Instant. W. Angle, availability, Gust, Avg, Min., Max.
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	2.7 to 35 V DC
Power consumption	2.9 mA Avg at 12 V
Operating temperature	-15°C (without icing) to +55°C
Cable	5 m (included), 3 x 0.22 mm² UV proof
Connection	3 wires + power / Vref / SDI
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

ROI

Cost effective

Lightweight

Robust

SONIC-ANEMO-MODBUS

Integrating the Modbus protocol

Adapted to industrial needs

This model of sonic anemometer meets a common industry standard e.g. for dust, soot or noise generation monitoring, or for intelligent building applications that interface the wind sensor with PLCs.

Output data format	ModBus RTU RS485 Half duplex
Information transmitted	Instant. W. Speed, Instant. W. Angle
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	24 V DC or 24 V AC
Power consumption	17 mA
Operating temperature	-15°C (without icing) to +55°C
Cable	25 m (included), UV proof
Connection	2 wires power / 2 wires Modbus / shield
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Accurate

EASY INSTALL

Easy mounting

Maintenance free

SONIC-ANEMO-ANA5

Variation of the CV7-V featuring two 0-5 V analog outputs

Ideal for PLC systems with analog interface

This model of wind sensor is an alternative to the Modbus version, in order to interface with systems featuring analog inputs. Another “ANA-5L” model is also available depending on the required power consumption.

Output data format	Two 0-5 V outputs
Information transmitted	Instant W. speed, Instant W. angle
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	2.7 to 35 V DC (10 to 16 V DC for “ANA-5L” model)
Power consumption	2.5 mA to 12V (12 mA for “ANA-5L” model)
Operating temperature	-15°C (without icing) to +55°C
Cable	5 m (included), 4x0.22mm² shield, UV proof
Connection	2 wires power / 2 wires analog. / analog ref.
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Lightweight

Cost effective

No maintenance

SONIC-ANEMO-ANA-AC

Variation of the CV7-V featuring three 0-10 V analog outputs

Alternative analog version

This ultrasonic wind sensor is supplied with an interface that converts the wind data into three 0-10 V outputs. This allows direct integration into existing systems that require an analog voltage signal.

Output data format	Three 0-10 V outputs
Information transmitted	Instant. W. Speed 0-15 m/s, 0-40 m/s, Instant W.Angle
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	2°
Power supply	24 V DC/AC
Power consumption	0.75 W
Operating temperature	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22mm²
Connection	4 wires
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Versatile

Robust

Accurate

SONIC-ANEMO-420-AC

With 4-20 mA interface

Two dry contacts for alarm management

The SONIC-ANEMO-420-AC is suitable for very powerful safety systems. This wind vane-anemometer is equipped with an interface featuring two 4-20 mA current loops, one for the anemometer, the other for the wind vane and two dry contacts with adjustable alarm thresholds. Its versatility makes it compatible with safety equipment.

Output data format	Two 4-20 mA current loops
Information transmitted	Instant. W. speed, Instant W. angle, availability
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.15 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	2°
Power supply	24 V DC or AC
Power consumption	0.75 W
Operating temperature	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22mm²
Connection	4 wires
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Accurate

Robust

Versatile

SONIC-ANEMO-MICRO

The most energy-efficient OEM solution

Sens Of Life project :
Protection of bats on wind farms
Credit photo : Sens Of Life

Very low power consumption for integrators and remote stations

The very particular electronic architecture of SONIC-ANEMO-MICRO allows a very low power consumption, which makes it the ideal sensor for remote or mobile stations.

Output data format	ASCII TTL 3 V
Information transmitted	Instant W. speed, Instant W. angle, availability
Output rate	Tx : every 1.6 or 18 s
Wind module sensitivity	0.25 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	3 to 3.6 V DC regulated
Power consumption	250 µA avg.
Operating temperature	-15°C (without icing) to +55°C
Cable	50 cm (included), 4 x 0.22mm²
Connection	4 wires
Weight	Head = 100 g

Maintenance free

ULP

Ultra low power

Lightweight

CV7-OEM

For integrators

Unimap by Acronex:
Optimization of input quantity in real time on agricultural parcels

Integration into a complete system

This OEM version of the CV7 sensor allows you to integrate an ultrasonic wind sensor into your own products and installations. It is powered by 8-33 V DC and outputs RS232/RS422 signal in NMEA0183.

Output data format	NMEA0183 (MWV, XDR)
Information transmitted	Instant W. speed, Instant W. angle, availability
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	8 to 33 V DC
Power consumption	9 mA
Operating temperature	-15°C (without icing) to +55°C
Cable	50 cm (included), 4 x 0.22 mm²
Connection	4 wires
Weight	Head = 100 g

Maintenance free

ROI

Cost effective

Versatile

CV7-E-OEM

The fastest OEM solution

Windfit by Sereema:
Optimization of wind turbine efficiency

Highly responsive sensor head for integrators

The CV7-E-OEM ultrasonic wind sensor has a data refresh rate of 4 Hz. It stands out for a high reactivity and a very low latency time in the measurements made.

Output data format	NMEA0183 (MWV, XDR)
Information transmitted	Instant W. speed, Instant W. angle, availability
Output rate	4 Hz (with 60 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	8 to 33 V DC
Power consumption	9 mA
Operating temperature	-15°C (without icing) to +55°C
Cable	50 cm (included), 4 x 0.22mm²
Connection	4 wires
Weight	Head = 100 g

Lightweight

Robust

Accurate

CV7-V

Flagship product

The versatile marine and terrestrial model that adapts to your needs

The CV7-V is easy to integrate into a measurement and data processing systems. Its vertical mounting makes it versatile for various applications. This ultrasonic wind sensor is powered by 8-33 V DC and outputs RS232/RS422 signal in NMEA0183.

Output data format	NMEA0183 (MWV, XDR)
Information transmitted	Instant W. speed, Instant W. angle, availability
Output rate	2 Hz (with 30 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	8 to 33 V DC
Power consumption	9 mA
Operating temperature	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22 mm²
Connection	4 wires
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Versatile

ROI

Cost effective

Maintenance free

CV7-E

Ultra reactive

High data rate with mounting accessories

The CV7-E is easy to integrate into a complete system. It detects gusts with high sensitivity and low latency. This ultrasonic wind vane-anemometer is powered by 8-33 V DC and outputs RS232/RS422 signal in NMEA0183.

Output data format	NMEA0183 (MWV, XDR)
Information transmitted	Instant W. speed, Instant W. angle, availability
Output rate	4 Hz (with 60 Hz measurements)
Wind module sensitivity	0.12 m/s
Wind module resolution	0.05 m/s
Wind module dynamic	0.12 to 40 m/s
Direction sensitivity	+/- 1,5°
Direction resolution	1°
Power supply	8 to 33 V DC
Power consumption	9 mA
Operating temperature	-15°C (without icing) to +55°C
Cable	25 m (included), 4 x 0.22mm²
Connection	4 wires
Weight	Head = 100 g I Complete set = 200 g
Mounting arm	Vertical, 310 mm, aluminium, Ø16 mm

Lightweight

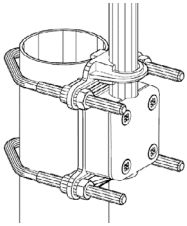
Robust

Accurate

Installation & accessories

LCJ Capteurs is committed to offer ultrasonic wind sensors that meet all the needs of each sector of activity. When you receive your static wind vane-anemometer, mounting accessories adapted to your needs are supplied to facilitate the installation and configuration of your sensor.

You will find the following installation kit:



1. Mounting base, mounting brackets and U-Bolts (including nuts)

2. Cable supplied (depending on the sensor model)

3. Sensor aligning tool

4. Support for installation on horizontal surface

5. User manual

To ensure a reliable wind direction, a “N” marking on the underside of the sensor head (cf. picture 3) will help you to align the sensor correctly to True North. When clipped on the anemometer tube, the pointed end of the provided alignment tool will point in the same direction the North mark faces.

Testimonials

Precision agriculture

«We use LCJ Capteurs ultrasonic wind sensors as part of our solution for agricultural sprayers. They work very well in really harsh environments and they outperform other sensors we have tested.»

Acronex, Argentina
integrating the CV7-OEM since 2014

Air quality

«The anemometer works really well. We are very happy with its robustness, quality of materials and, above all, the high quality of data it provides. In addition, it requires very little maintenance, which makes it a product that meets the quality standards that we apply to all our products.»

Kunak, Spain
integrating the SONIC-ANEMO-DZP since 2017

Sport - Biathlon

«We add wind information to our shooting data when we have possibilty to take equipment with us. This means that on most of world cups where they have our targets, the LCJ Capteurs anemometers are in use.»

Suomen Biathlon Oy, Finland
using the CV7-V since 2014

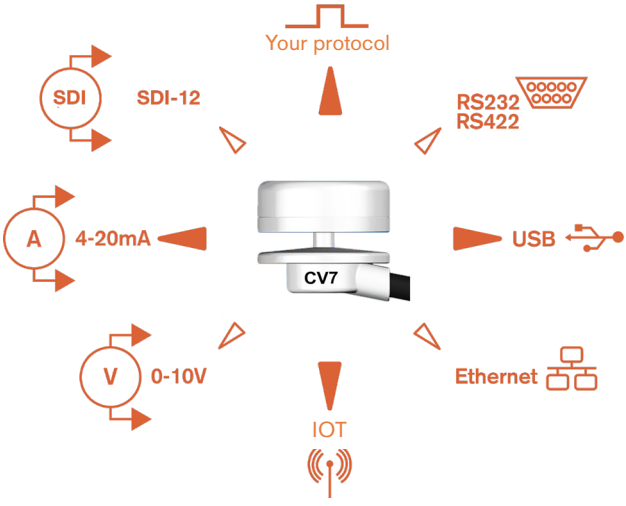
Custom-made sensors

Our Engineering Department is at your disposal to design ultrasonic wind sensors specifically adapted to your applications. The range of possibilities is wide : from a bare sensor for integration, to ready-to-install systems in situation.

Our ultrasonic wind vane-anemometers can be adapted to analog and digital systems.

The room available in the sensor head is sufficient to integrate a specific component, whether for Bluetooth communication or other IOT protocol for example. From the first draft to the prototype, we support your project through all the stages of production and development.

Do you have a challenging project ? Contact us and let's find the solution together !



Tailored to your needs

- Specific output,
- Adaptation to your hardware,
- Fully tested and calibrated in our workshops before delivery,
- Test logs related to serial number,
- Self-powered (photovoltaic cells) or powered from 2,7 to 35 V,
- Available alarms,

As a designer and manufacturer of ultrasonic wind sensors, LCJ Capteurs can provide you with customized solutions for your specific applications. You can benefit from our know-how and quality manufacturing procedures, approved since 1999.

The small-sized structure of our private and independent company gives us the necessary flexibility and adaptability to support special projects. Our R&D team adapts to your specifications in order to develop the product that meets your needs.

Thanks to a large choice of industrial interfaces, the CV7 and SONIC-ANEMO lines are easy to integrate into measurement and monitoring systems. The standard CV7 models can be powered by USB port, 8-33 V DC or 24 V AC power supply with the corresponding option.

If your application requires other power supply and special interface format, let us know and we will develop them for you !

LCJ CAPTEURS
29 allée des Cinq Continents
ZA Le Chêne Ferré
44120 Vertou - France
Tel : +33 (0)2 40 05 08 55
info@lcjcapteurs.com

MADE IN FRANCE

www.lcjcapteurs.com

Do not litter on public space