
INTERFACE FOR ULTRASONIC WIND VANE-ANEMOMETER

User manual

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LCJ Capteurs

ZA Le Chêne Ferré

44120 VERTOU (France)

Tel: +33 (0)2 40 05 08 55

<http://www.lcjecapteurs.com>

contacts@lcjecapteurs.com

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This manual does not create any legal bond between LCJ CAPTEURS and the customer of final user and LCJ CAPTEURS does not assume any responsibility for any damage and/or injury resulting from the use of the product described in this manual.

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1. General information

A. About this manual

This manual brings all the required information to install and use the STBGv5 interface. Read all the information contained in this manual carefully before using the sensor, as misuse can cause mistakes and damage to the product.

B. Warnings

Important points are highlighted in this document as follow:



Warning! Serious hazard. Read carefully and follow the instructions. High risk of injury or even death.



Warning: Potential hazardous situation. Read carefully and follow the instructions to avoid damages on the product or loss of important data.



Note: Important information regarding use of the product.

C. Your experience

LCJ CAPTEURS values your feedback and suggestions to improve the manual. Should you find any mistake, please contact us indicating the chapter, section and page to correct. You can find our details on the manual's cover page and on our website: www.lcjcpteurs.com.

D. Safety

When using the product, safety measures described below must be followed to avoid damage and legal responsibility. Follow all safety and use instructions regarding the product. Follow all warning notices indicated in the product's use instructions. The following instructions are meant to reduce all risk of personal injuries, electric shock, fire and damage of the equipment. Read carefully and follow all instructions contained in this manual to avoid measures errors caused by misuse.



Warning! Follow all safety measures applicable for the product's installation.

A. Recycling

LCJ Cpteurs encourage recycling of all material when possible, following local regulations. You can find more details about recycling by contacting the local authorities in charge of Environment Protection in your country.

B. Warranty

Your LCJ CAPTEURS product is warranted against manufacturing defects in materials and workmanship for a period of 24 months from the date of purchase. LCJ CAPTEURS will at its discretion, repair or replace faulty products free of charge at their premises. The warranty does not cover the installation labour and shipping costs of the faulty parts. A proof of purchase can be asked when processing the warranty claim by written. Once LCJ CAPTEURS approve the warranty claim, the sensor must be sent to their workshop address. LCJ Cpteurs guaranties that each wind sensor is tested and calibrated before despatch.

The warranty does 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, open or repaired by an unapproved agent.
4. Damage resulting from lightning, fire or any similar circumstances.

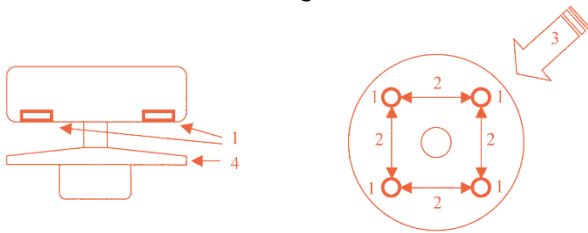
Warranty is void if operation, use, installation and technical service instructions have not been followed and if a repair has been carried out without prior agreement.

C. Product return

Contact your dealer prior to returning a product to LCJ CAPTEURS. A Return Merchandise Authorisation (RMA) must be issued and received before sending a product back.

2. Introduction

A conventional Wind-vane Anemometer includes mechanical rotating parts. These parts are subject to wear and they represent sources of failure of the sensor. Our ultrasonic sensor has been designed to avoid this and to ensure reliable and stable operation. This Wind-vane-anemometer shows very stable results over a long term and with no maintenance.



The sound (and ultrasound) is conveyed by the movement of the fluid in which it crosses. The electro acoustic transducers (1) communicate between themselves two by two using ultrasonic signals (2) to determine, following the orthogonal axes, the wave transit time differences induced by the air flow (3). The measurements are combined in

an integrated calculation to establish the wind speed and its direction in relation to a reference axis.

The temperature measurements are used for calibration corrections. The sensor's design minimises the effect of heel angle (4). The CV7 range of products features lateral transducers delivering four independent measurements. The validity checks are used to measure head wind vectors for calculations. This method gives a sensitivity of 0.15 m/s, a 40 m/s (144 km/h) reliability and excellent linearity.*

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

At LCJ Capteurs, each sensor is fully tested before despatch and the test results are saved against the serial number. The sensor is placed in our wind tunnel on a bracket that rotates through 9 degree steps. This is Computer Controlled. The sensor is aligned at 0 degrees of the air flow and then, 40 measure points are completed with data saved for speed and angle. The full document is available on our website.

A. Advantage of this interface

The case offers the benefits of an ultrasonic sensor to replace a mechanical mat head while maintaining your navigation screen.

B. Checking the delivery

Before opening the box, check it carefully to spot any damage that can have occurred in transport. If the packaging is damaged, fill in a Freight Claim with full description of the problem.

C. Opening the box

Unpack the parcel in a dry and clean place and check the delivery:

1. STBGv5 interface.	3. User manual
2. Mast angle sensor kit	



Warning: Unpack the product with care to avoid any damage

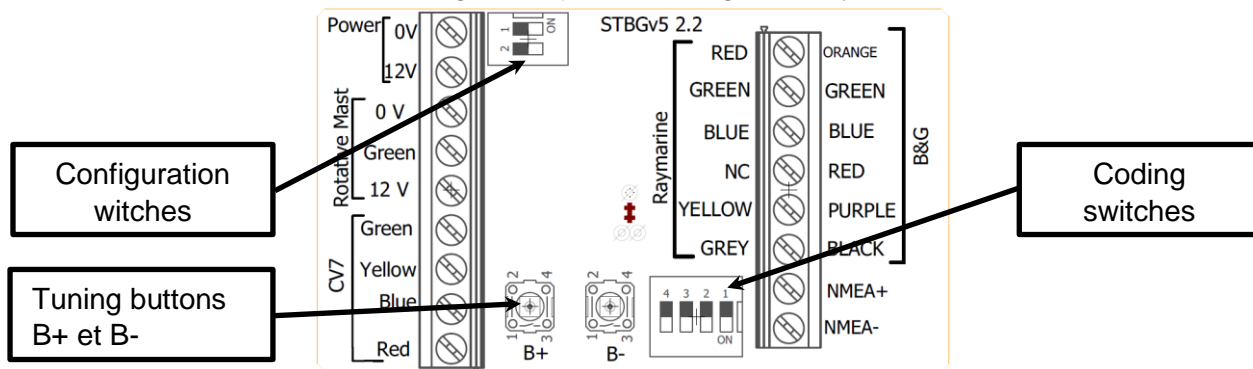
3. Technical specifications

A. Data characteristics :

Wind speed range	0,2-40 m/s (0,4 – 80 Knots)
Wind module resolution	0,1 m/s (0,1 Knots)
Wind module sensitivity	0,2 m/s (0,4 Knots)
Wind angle range	0-359 °
Direction resolution	1°
Direction sensitivity	+/- 1 °
Operating temperature range without iceeing	-10°C to 55 °C

B. Connections

To access the connections and settings, unclip the housing cover by hand.



Symbol	Parameter	value
Power		
0V	Power supply reference	0 V
12 V	Power supply voltage	12 V nominal / 14 V max
Rotative Mast		
0 V	Reference – bleu wire	0 V
Green	Mast angle voltage – black wire	0,5 - 4,5 V
12 V	Mast angle sensor power supply – brown wire	12 V
CV7		
Green	NMEA-	
Yellow	NMEA+	
Blue	Power supply reference	0 V
Red	Power supply voltage	12 V

Screen connection:

Depending on the type and brand of the screen follow the color indications in the table below :

SCREEN TYPE	CONNECTIONS (terminal on the right)
Network – H1000 – H5000	Folow instructions in column B&G
ST50 - ST60 – ST60+	Folow instructions in column Raymarine



The interface detects if the sensor is unplugged, in this case a fixed speed and angle are sent on the screen: speed: 31 knots; angle: 135 °.

C. Analog outputs

a) Wind direction

Determined by 2 or 3 phases according to the type of screen by a voltage proportional to the sine of the angle.

b) Wind speed

Given by a square frequency signal proportional to the speed. Open drain output.

D. Digital output

The NMEA0183® frames are sent at 4800 bauds to 2 Hz ⁽¹⁾ output.

Wind: \$IIMWV,136.0,R,004.80,N,A*05						
Identifier	Wind angle from 000.0° to 359.0°	Wind direction reference	Wind speed	Speed unit	Sensor status, A = Valid, V = Alarm	Checksum
\$IIMWV	136.0	R = relative T = true	004.80	K = km/h, M = m/sec, N = Kt	A	05

(1) Depend of the sensor type used.

Temperature: \$WIXDR,C,007,C*								
Identifier	type	Wind temperature	Unit					
\$WIXDR	C	007	C					

Mast angle ⁽²⁾ : \$IIHDT,037,T*			
Identifier	Mast angle	T	
\$IIHDT	37 degrees ⁽³⁾	T = true value	

(2) Available with rotative mast feature only.

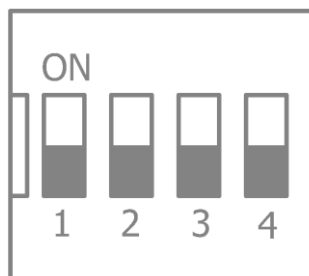
(3) Mast angle range : ± 50°.

E. Settings

Screen type selection :

Select the screen with the encoding switches 1,2,3,4 :

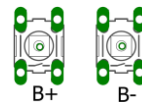
Unplug/plug the interface for updating.



Screen type	Coding position			
	1	2	3	4
Network	OFF	OFF	OFF	OFF
ST60 – ST60+	ON	OFF	OFF	OFF
H1000 – H5000	OFF	ON	OFF	OFF
ST50	OFF	OFF	ON	OFF

a) Heading line tuning

To tune the heading line use the buttons B+ et B- :



F. Interface configuration (rotative mast only)

Procedure :

The configuration of the interface is done with the configuration switch :

Put the 1 to position ON.



Set the desired coding with the encoding switches 1,2,3,4 :
desired configuration :



following the

a) Mounting configuration of the mast angle sensor

Normal : the cable comes out from below

Inverted : the cable comes out from above. It is necessary to tune the interface :

	Coding position			
	1	2	3	4
Inversion of the angle sensor	ON	ON	ON	ON

Press the button PLUS to enable the inversion. A new press will cancel the inversion (toggle function).

The inversion is reported on the screen.

Exit the configuration by put back the configuration switch 1 to the OFF position.

Put back the coding according to the screen type.

Unplug/plug the interface for updating.

b) Rotation sense configuration

Invert the rotation sense of the angle (trigonometric sense or clockwise).

	Coding position			
	1	2	3	4
Rotation sense angle	ON	ON	OFF	OFF

Press the button PLUS to enable the inversion. A new press will cancel the inversion (toggle function).

The inversion is reported on the screen.

Exit the configuration by put back the configuration switch 1 to the OFF position.

Put back the coding according to the screen type.

Unplug/plug the interface for updating.

c) \$IIHDT frame configuration

Enable/disable the frame.

	Coding position			
	1	2	3	4
Frame \$IIHDT configuration	OFF	ON	OFF	OFF

Press the button PLUS to enable/disable the frame (toggle function).

Exit the configuration by put back the configuration switch 1 to the OFF position.

Put back the coding according to the screen type.

Unplug/plug the interface for updating.

d) Factory reset

The factory reset cancels the the tuning of the heading line.

	Coding position			
	1	2	3	4
Reset the offset of the heading line	OFF	ON	ON	ON

Appuyer sur la touche PLUS pour valider la remise à zéro de l'offset.

Press the button PLUS to validate the reset of the offset.

Exit the configuration by put back the configuration switch 1 to the OFF position.

Put back the coding according to the screen type.

Unplug/plug the interface for updating.

e) Mast angle value

The interface outputs the mast angle on the \$IIHDT frame and recalculates the angle on \$IIMWV frame. In case of the mast angle sensor is disconnected the mast angle value is always set to zero degree.