CV7

ULTRASONIC WIND SENSOR

CV7 is an updated wind sensor based on the CV3F series, already having a world wide distribution. It is light, compact and has a small consumption.

CV7 is designed to fit the specific needs of sailing boats through an easy to use programmable interface.

The sensor can be combined with a P.C., either with normalised NMEA$^®$ input equipment or with any specialised equipment having common interface.

In PC mode, this bi-directional sensor can be programmed and configured for: angle correction, smoothing time constants, measurements units and interface formats.

- **Robust**
- **No ageing**
- **Insensible to the gyroscopic effect**
- **Sensibility stability to light winds**
- **Minimum of resistance**
- **Compensation of inclination due to wind**
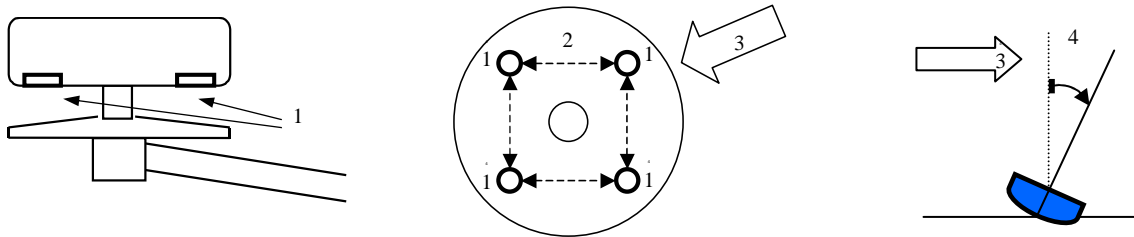
Scale 1/1

Principle of operation: how the equipment works

The sound, the ultrasonic sound is conveyed by the movement of the fluid in which it crosses. The electroaccoustic transducers[1] communicate between themselves two by two by 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 calculator in order to establish the wind module and its direction in relation to a reference axis. The temperature measurements are used for calibration corrections.

CV7 Transducers communicate between themselves delivering four independent measures while head wind measured vectors are preferably used for calculations.

This method gives a sensibility of 0,25 knots, a dynamic of 80 knots and an excellent linearity.

Characteristics

Numerical output signals : NMEA0183®, MWV, XDR or specialised program.
Wind sensor sensibility : 0,25 knots
Resolution : 0,1 knots
Wind sensor range : 0,25 to 80 knots
Directional sensibility : +/- 1 degree
Resolution : 1 degree
Power supply : 10 to 14 V DC 12 mA
Temperature range : -10 to 55 ° C
Weather proofing : IP67
Weight of the head : 150 g (including the support and clamp : 230g)
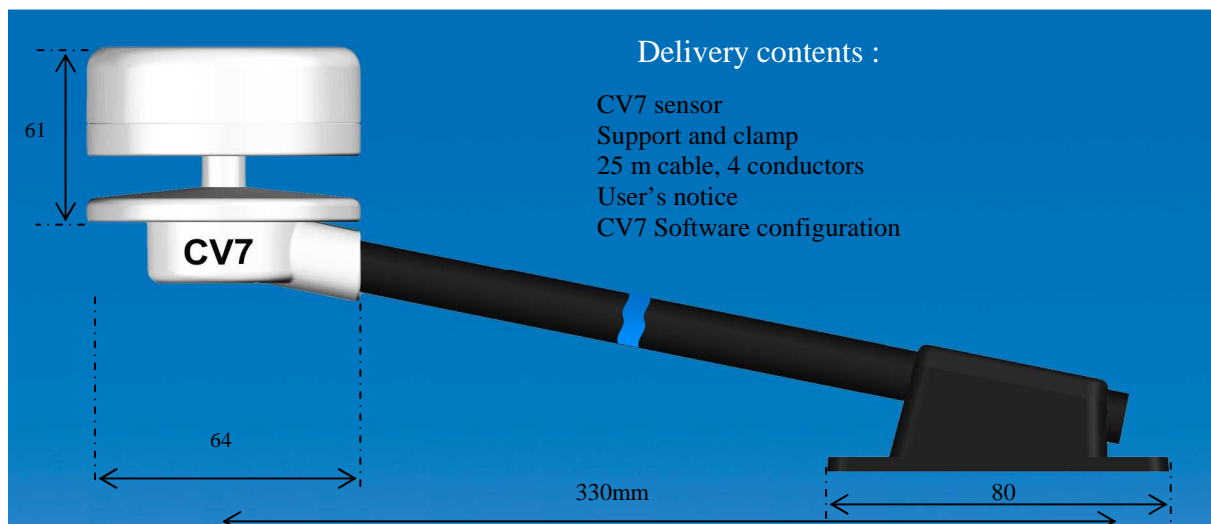
$C\epsilon$ EN 55022   EN 55024

Programmable parameters :

Angle correction in degrees
Smoothing time constant of speed and direction: 1, 2, 4, 8, 16 s
Speed units in knots, m/sec, km/h
Temperature units Centigrade or Fahrenheit
NMEA® interface formats or specialised programs.

Optional accessories :

ST option : compatible with ST40, ST60
BG option : compatible with network, Hydra, Hercule
SIL options: compatible with NEXUS
BARO option : measurement of the atmospheric pressure
StatFixBaro : CV7 software program
Vertical fixation adaptor for CV7
Numerical transmission speeds 4 800 or 38 400 baud / sec

Delivery contents :

CV7 sensor
Support and clamp
25 m cable, 4 conductors
User's notice
CV7 Software configuration

Summary

Installation

Determine a place free from obstacles to the wind, generally at the top of the mast.
Direct the stirrup of fixation so that CV7 is steered forward to the ship.
Fix the stirrup following the drillings defined by the joined size.
A better precision of the axis can be obtained by using the program of correction of angle.
Make the cable walk up to the place reserved for the billposter.
Avoid as possible the nearness of cables susceptible to make radio interferences of strong levels.

NMEA 0183 Interconnexions

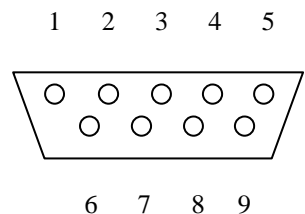|	
Red cable	+ Power source
Blue cable	- Power source
Yellow cable	+ NMEA
Green cable	- NMEA

Link the 12 V power source (10 to 14 VDC). Blue cable - / red cable +
Connect the receiving display to the connector NMEA :

- For a RS232 computer COM(1) entry

    Link + NMEA to COM1 Rx Terminal 2
    Link 0V to 0V the COM1 Terminal 5
    If it's necessary, link together the COM1 Terminals 6 and 7.
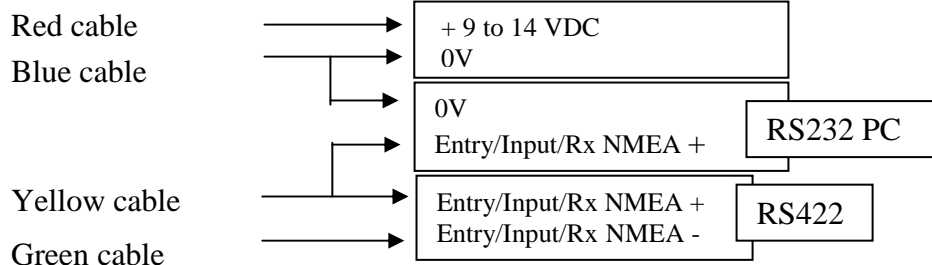
1 2 3 4 5

6 7 8 9

SUBD 9 COM1 points
PC plug
Soldering joint side

- For a normalised floating RS422 NMEA 183 entry

Make sure that none of the entries of the receiver is not connected with the 0 volts, otherwise to apply the typical connection RS232.
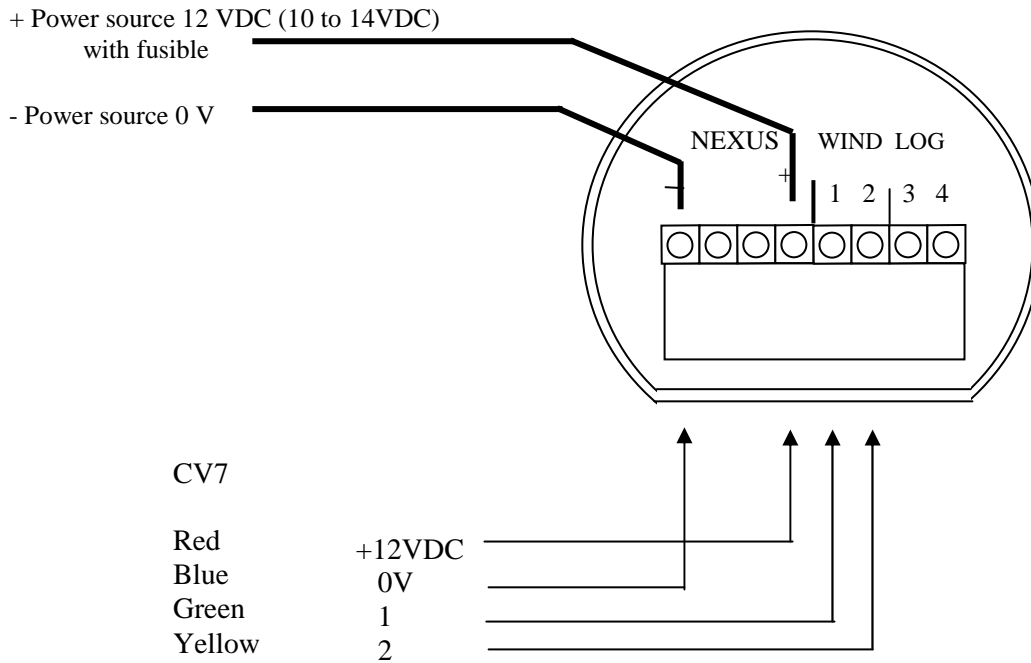
    Connect + NMEA with (following the naming) +Ve or In + or A of the indicator NMEA
    Connect - NMEA with (following the naming) -Ve or In - or B of the indicator NMEA

Red cable ──────→ + 9 to 14 VDC
Blue cable ──────→ 0V
            ──────→ 0V
            ──────→ Entry/Input/Rx NMEA +   RS232 PC
Yellow cable ──────→ Entry/Input/Rx NMEA +   RS422
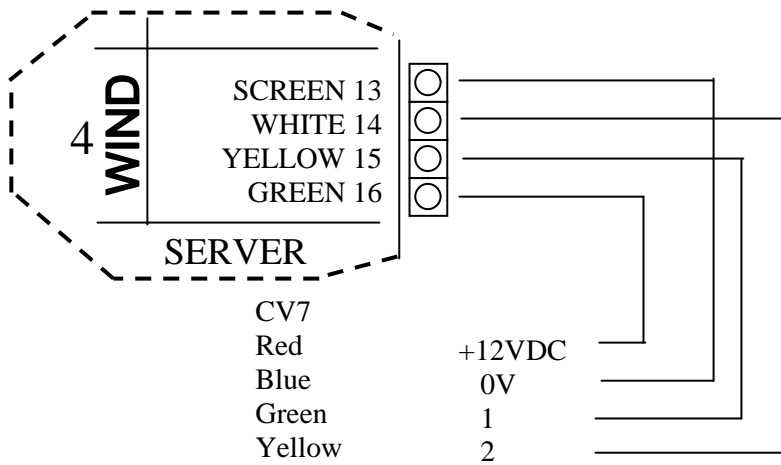Green cable ──────→ Entry/Input/Rx NMEA -

Example of message:
```
$IIMWV,226.0,R,000.00,N,A*0B
$WIXDR,C,036.5,C,,*52
$PLCJ,75FA,7DEA,03,,,,6D7C,837E
$PLCJEAC90,D35D,3F00,2161,FF
```

NX2 or FI30 interconnexions «WIND DATA Instrument»

+ Power source 12 VDC (10 to 14VDC)
with fusible

- Power source 0 V

NEXUS   WIND LOG

1 2 3 4

CV7

Red   +12VDC
Blue   0V
Green   1
Yellow   2

NX2 or FI30 «SERVER» Interconnexions

WIND

4

SCREEN 13
WHITE 14
YELLOW 15
GREEN 16

SERVER

CV7
Red   +12VDC
Blue   0V
Green   1
Yellow   2

FI50 (Fi501) FURUNO Interconnexions

+ Power source 12 VDC (10 to 14VDC)

Red

Black
- Power source 0 V

WIND

NMEA 2000   NMEA 2000 12VDC

FI 501

OptFI50 interface

FI50 Cable		FI50		CV7	CV7
2 Brown	→	Dir1			
3 Red	→	Dir2	Green		Green
4 Orange	→	Speed	Yellow		Yellow
1 Black	→	+V	Red		Red
5 Yellow	→	0V	Blue		Blue

CV7 configuration

CV7 is delivered with the following configuration :
NMEA0183®
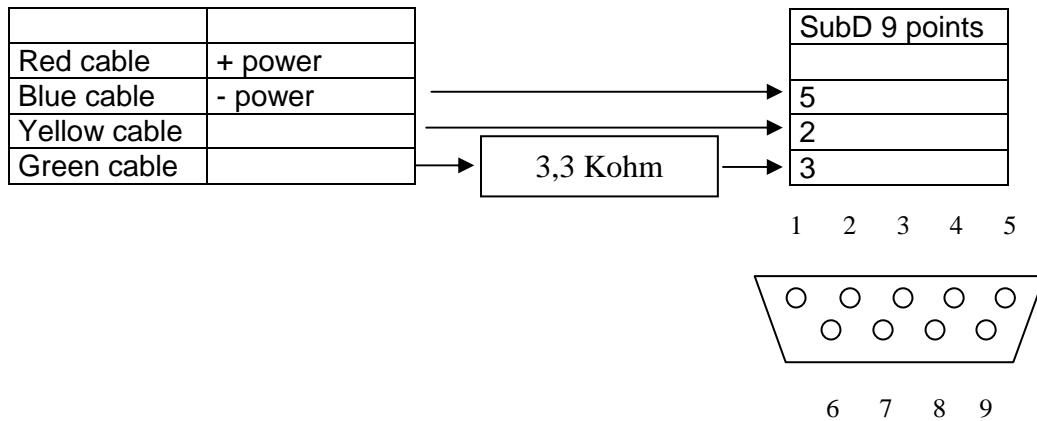Filtering: 2 s
Forces of wind unity : Nds
Temperature unity: °C
Adjustment of the angle of the wind: 0°

To choose other parameters, use the downloadable software on this website:
www.lcjcapteurs.com. « Configuration_CV7 ».

Realise the following connexions:

			SubD 9 points
Red cable	+ power		
Blue cable	- power	→	5
Yellow cable		→	2
Green cable		→ 3,3 Kohm →	3

1   2   3   4   5

6   7   8   9

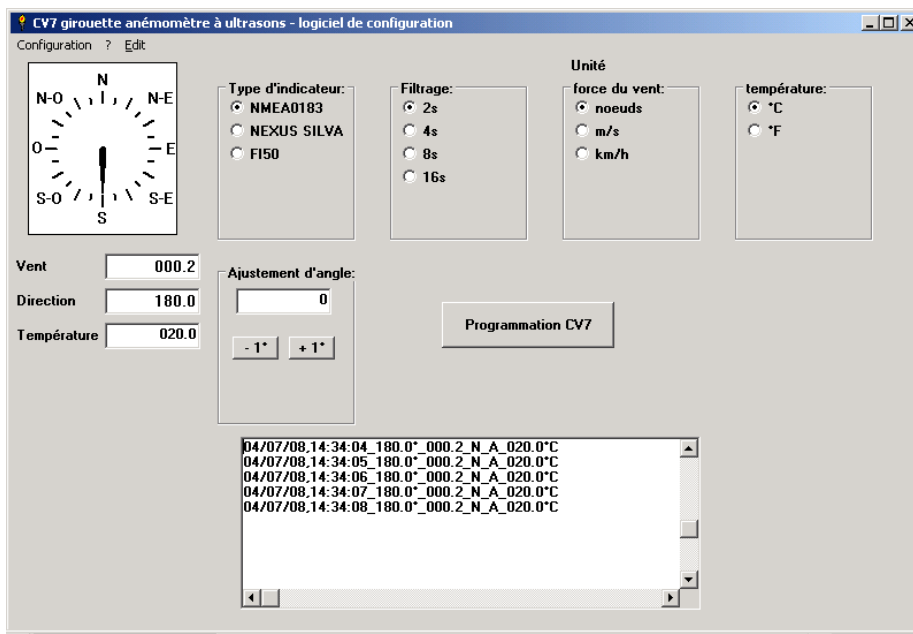Decompress the file in the directory of your choice, copy the shortcut to the office.
Double click the shortcut, choose the used serial port.
Put under stress CV7
Make the configuration by clicking the corresponding buttons.
Click the button " Programmation CV7 "
Follow the instructions in the screen to put the CV7 out of tension and to restart.

Piercing gauge