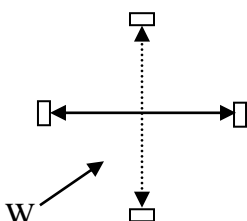# CV3Fm6

# ULTRASONIC WIND VANE-ANEMOMETER

CV3F is a new generation wind measurement sensor providing, on a standardised series electric line, the values from the wind module in knots or metres per second, relative wind direction and its temperature in degrees C.

The sensor can be used directly with a PC type computer or read by modern repeaters with a standard NMEA0183 input.

## Operating principle :

Sound, ultrasound, is carried by the movement of the fluid through which it passes.
Four electro-acoustic transducers communicate in twos using ultra-sound signals to determine, in two orthogonal axes, the differences in transit times of the waves, induced by the air flow. The measurements are used in an integrated computer to establish the wind module and its direction relative to a reference axis.
The measurement of temperature serves to refine the calibration.
The method provides a sensitivity of 0.5 knots, a range of up to 100 knots and excellent linearity.
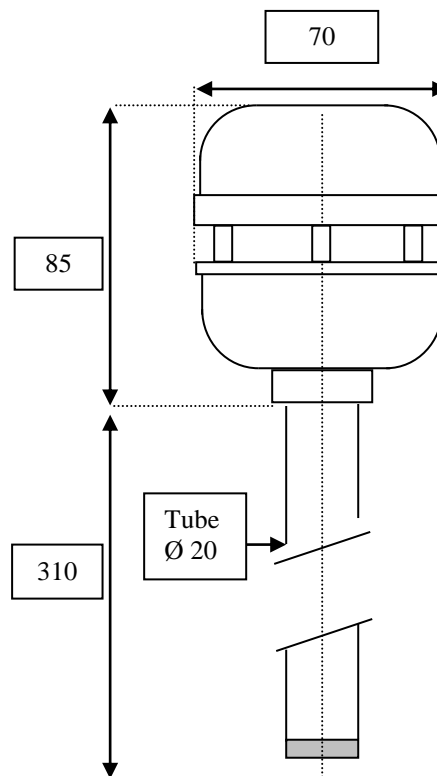
## Equipment supplied :

- CV3F sensor head and 300mm pole
- 2 stainless steel brackets
- 25m coaxial cable fitted with a connector
- Box for connecting power supply and display reader
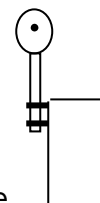- Installation instructions

## Electrical characteristics :

- Digital output signals:
    NMEA0183, MWV: 5 digits for the module, 4 digits for the direction, 1 digit for validity state.
    NMEA0183, XDR: 4 digits for the temperature.
    BARO Option
    NMEA0183, MDA: 4 digits for the pressure, 4 digits for the temperature.
    NMEA0183, XDR: 4 digits for the temperature, 4 digits for the atmospheric pressure.
- Wind module resolution: 0.1 knots
- Wind module dynamics: 0.5 to 99.5 knots
- Resolution: 1 degree
- Sensitivity to direction: + / 1.5 degrees
- Supply: 9,5 to 14 V DC
- Consumption: 25 milliamperes
- Operating temperature:  -10°C (without ice) to +50°C

CE

**Mechanical characteristics (mm):**

70

85

310

Tube
Ø 20

**Installation :**

Find a place free from obstructions to the wind.
The CV3F sensor can be fitted using the two stainless steel brackets
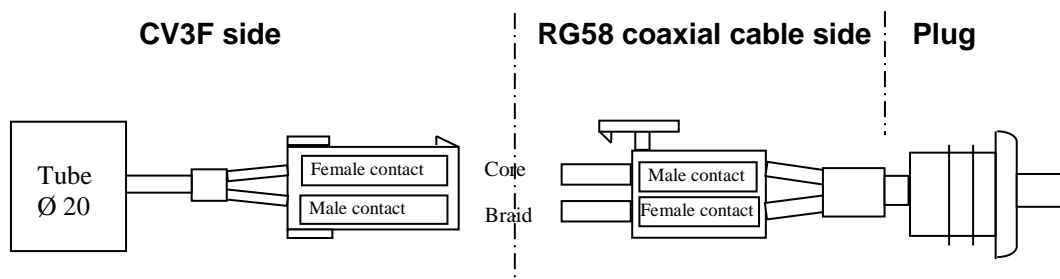to the side or top of the mast as shown.

Set up the alignment mark parallel to the axis of the vessel pointing towards the
bow or, when it is a land installation towards a reference direction, as a rule, true north.

Better precision is obtained by taking the struts linking the two halves of the sensor as an
axis for the alignment.
Join the coaxial cable to the sensor as in the diagram below and lead the cable to the site
for the display unit.

Avoid as far as possible closeness to cables which might induce high levels of radio-
electrical interference.

| **CV3F side** | **RG58 coaxial cable side** | **Plug** |
|---|---|---|

Tube
Ø 20

| Female contact |
| Male contact |

Core

Braid

| Male contact |
| Female contact |

The plug at the end of the tube has a hole to allow the passage of coaxial cable RG58 and
a small hole (1.5mm), sufficient to assure a natural weatherproofing and at the same time
to stabilize the internal and external pressures on CV3F. During installation, care must be
taken to ensure that this hole is not closed, and to be left in the same atmposphric
pressure as the sensor itself.

**Interconnections**

Connect the 12V (9,5 to 14VDC) supply. Blue - / Brown +

Connect the coaxial cable of the CV3F sensor correctly connecting the core and screening.
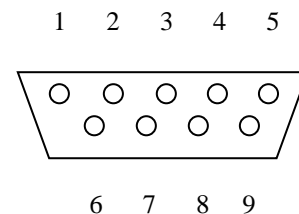
Connect the display receiver equipment to the NMEA connector:

- for the COM(1) port of an RS232 computer

Connect  b1 to Rx  terminal 2 of COM1
Connect  b3 to 0V terminal 5 of COM1
if necessary, connect terminals 6 and 7 of COM1 together.

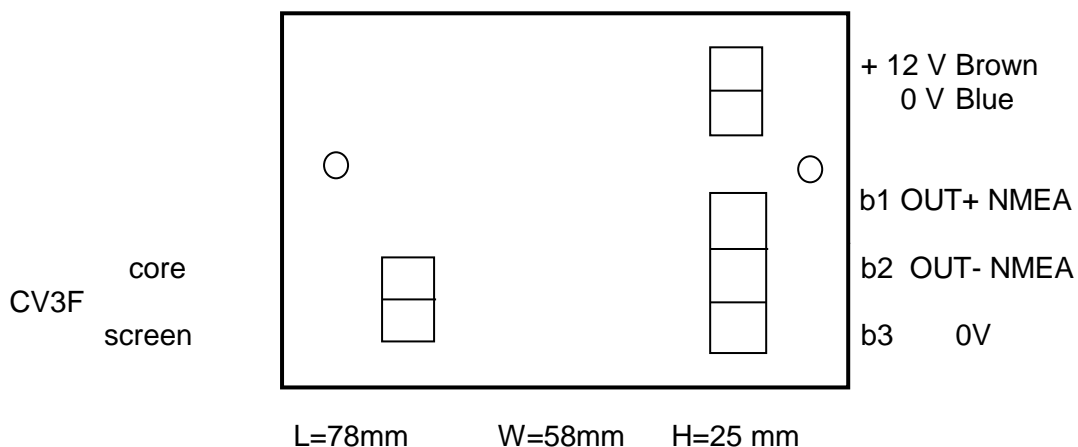1    2    3    4    5

6    7    8    9

 PC SUBD 9
terminal  COM1
type connector -
Soldering side

- <u>for a floating RS422 standardised NMEA0183 input</u>

Make sure in advance that none of the receiver inputs is connected to 0 Volts, otherwise use the RS232 type connection.

Connect b1 to +Ve (or In +) or A of the NMEA display
Connect b2 to -Ve (or In -) or B of the NMEA display

The b1 b2 output supplies a differential voltage greater than 2 Volts at a load of 4 mA which allows two receivers to be controlled simultaneously.



+ 12 V Brown
0 V Blue

b1 OUT+ NMEA

b2 OUT- NMEA

b3    0V

CV3F    core
screen

L=78mm        W=58mm        H=25 mm

**Output messages**
   *Example:*

$IIMWV,226.0,R,000.00,N,A*0B
$WIXDR,C,036.5,C,,*52
$PLCJ,67FF,6EFF,28,,,,5050,5050
$PLCJEA870,6D98,C500,0056,AC,