Part number: 90-60-539

USER MANUAL
&
INSTALLATION SHEET

V1.2

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1. INTRODUCTION

Analog Monitor is an interface to connect analog sensors to 0- 3,3 Volts to the Topline Bus. It is factory set as a rotating mast Interface (without Apparent Wind Angle correction processing).

The nke sensor 90-60-388 is waterproof and used as the angle sensor (mast, rudder, keel) with the ***Analog Monitor.***
Other sensors can be connected; providing taking care of the following points: The analog input must be modified according to the sensor, for example: for 0-5 V sensor. The modification request must be done when the order is placed, so that it is done by the factory.

2. OPERATION

Data are transmitted from the ***Analog Monitor*** to the "TOPLINE Bus" as channels:

- Mast angle
- Angle effect (mast + Wind Angle correction)
- Dynamic (8 channels)
- Keel Angle
- Tanks (4 channels)

The dynamic channels can be set up (name and unit). To do so, a request must be sent to your reseller so that the correct parameters are set up.

3. CONFIGURATION OF THE ANALOG MONITOR.

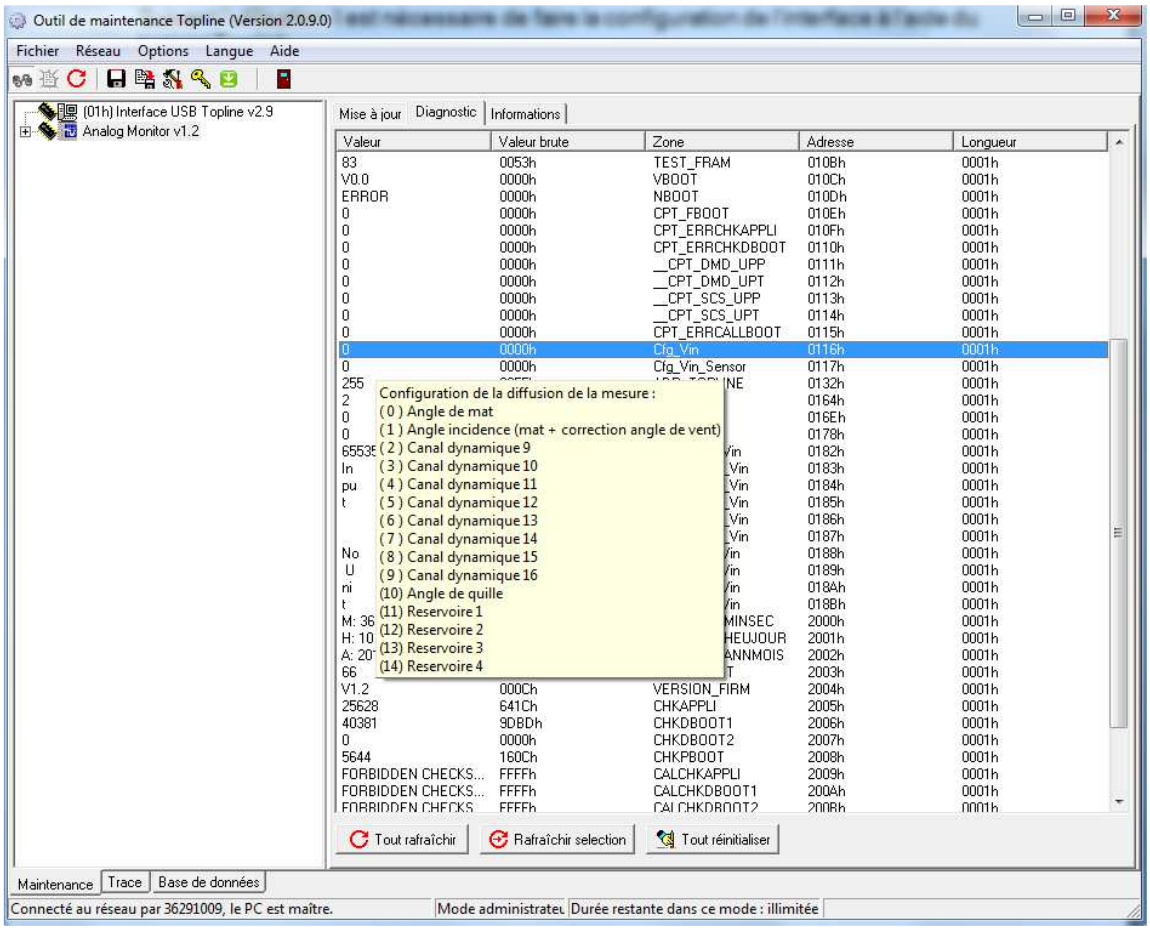
Depending on the use of the device, it is necessary to proceed to a configuration of the Interface with the Toplink software.

> Before starting the configuration, you must check the mechanical ends of the sensor and reset it.

3.1 Setting the operating mode

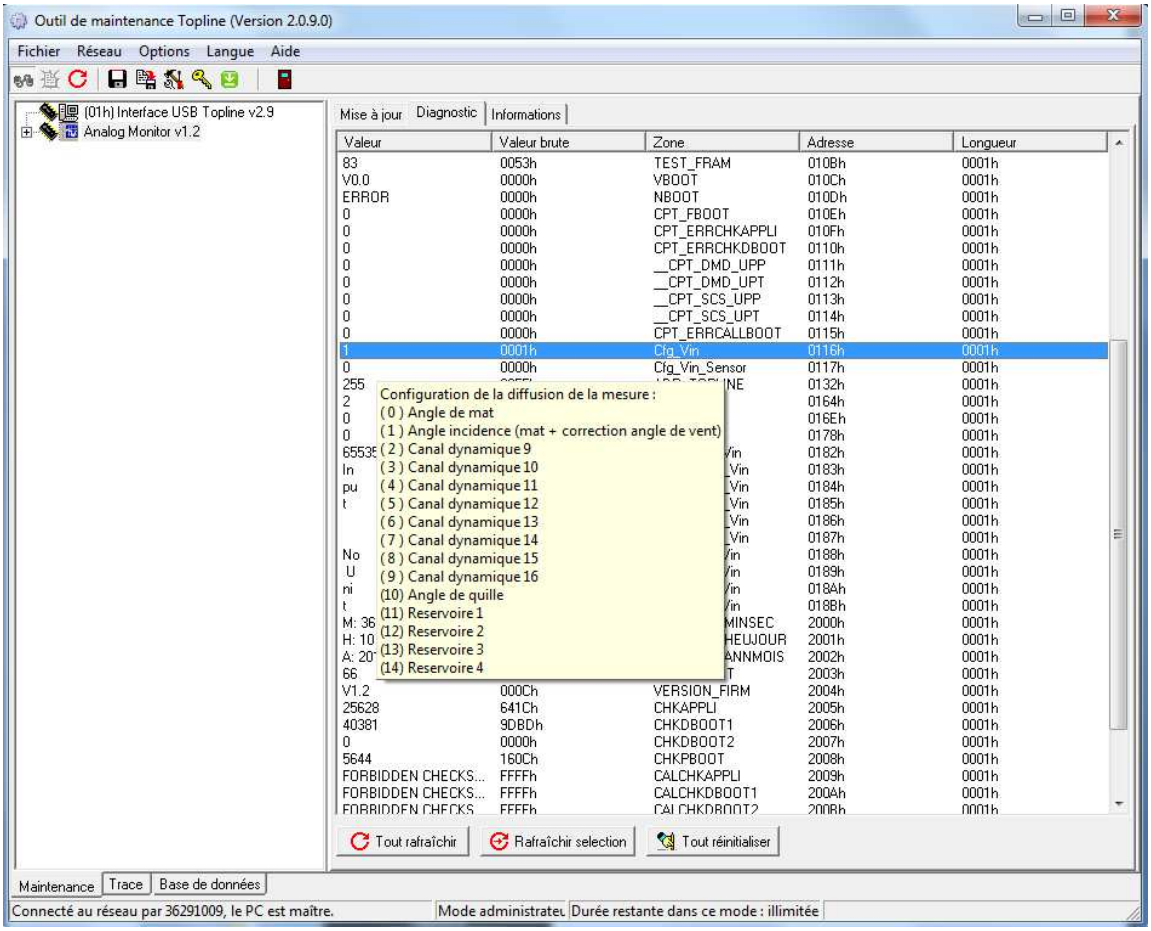
3.1.1 Mast angle

This is the factory default setting. In Diagnostic under Toplink, you can find the related value **Cfg_Vin =** 0.
This configuration broadcasts the mast angle value on the TOPLINE Bus without correction of the wind angle.



3.1.2 Angle effect (mast + Wind Angle correction)

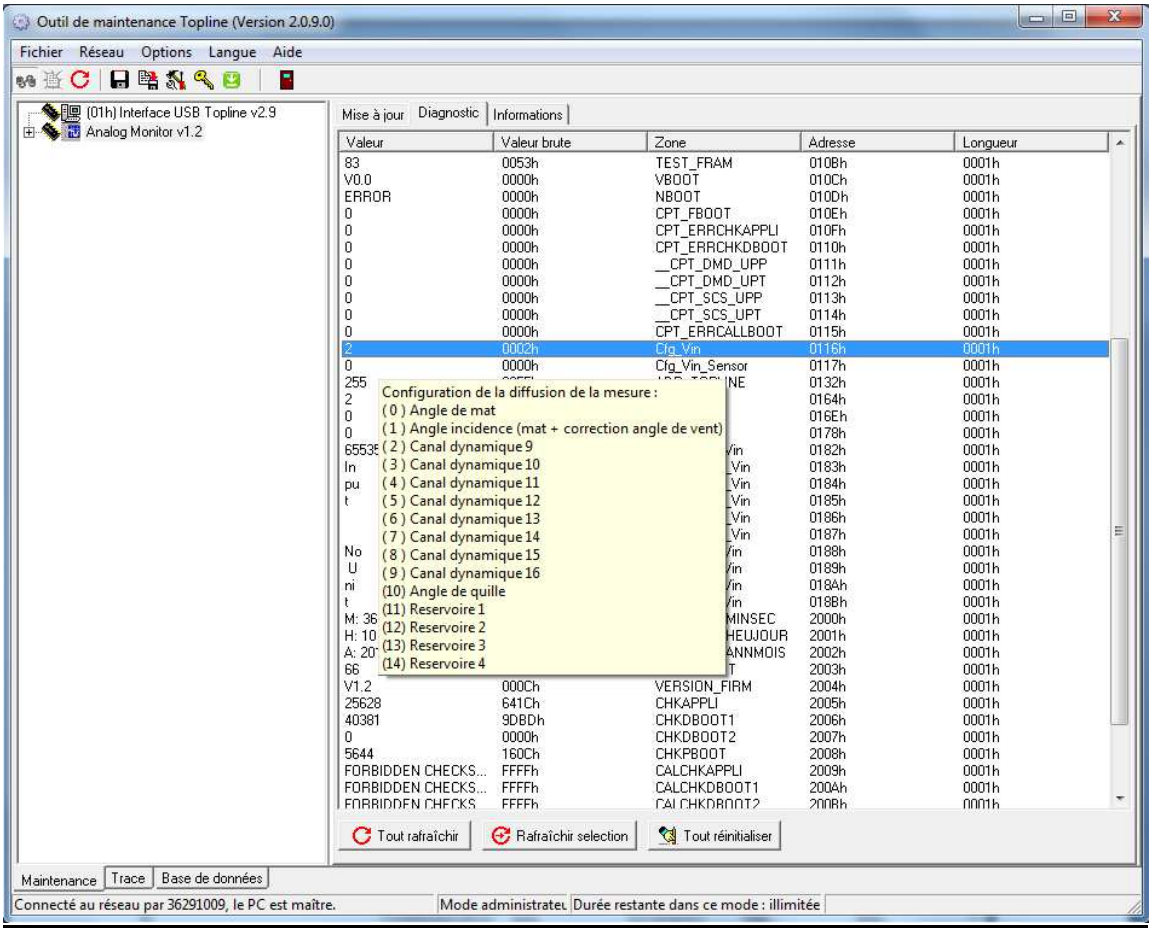
To configure the ***Analog Monitor*** in angle effect mode the value **Cfg_Vin** must be set to 1.
This configuration is made to broadcast the Mast Angle and Corrected Wind Angle on the TOPLINE Bus (Wind Angle corrected from the position of the mast). This is the most used configuration for boats equipped with a rotating mast.



3.1.3 Dynamic Channels

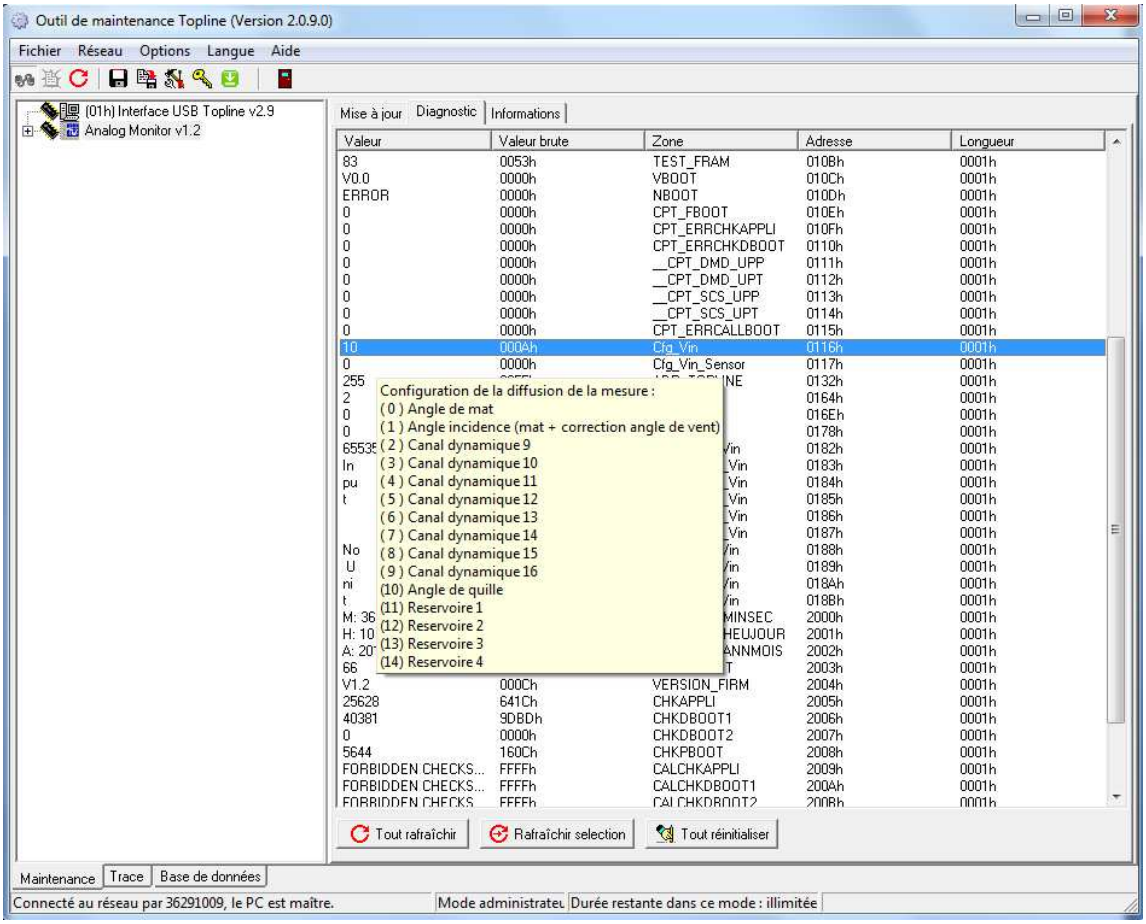
8 dynamic channels are available with the ***Analog Monitor***. For the configuration of the ***Analog Monitor*** in dynamic channel mode,the value **Cfg_Vin** must be set from 2 to 9, according to the channel in use. It is possible to use up to eight channels with the ***Analog Monitor*** in dynamic channel mode, on the same Topline Bus.
They are used to display values coming from sensors and *custom* values.

Example: Starboard foil incidence in degrees.
Use of a mast angle sensor to measure the angle and display "Foil TB" for the function's label and "Degree" for the unit.
Note: Refer to § 3.3.4 for the configuration of the label and unit.



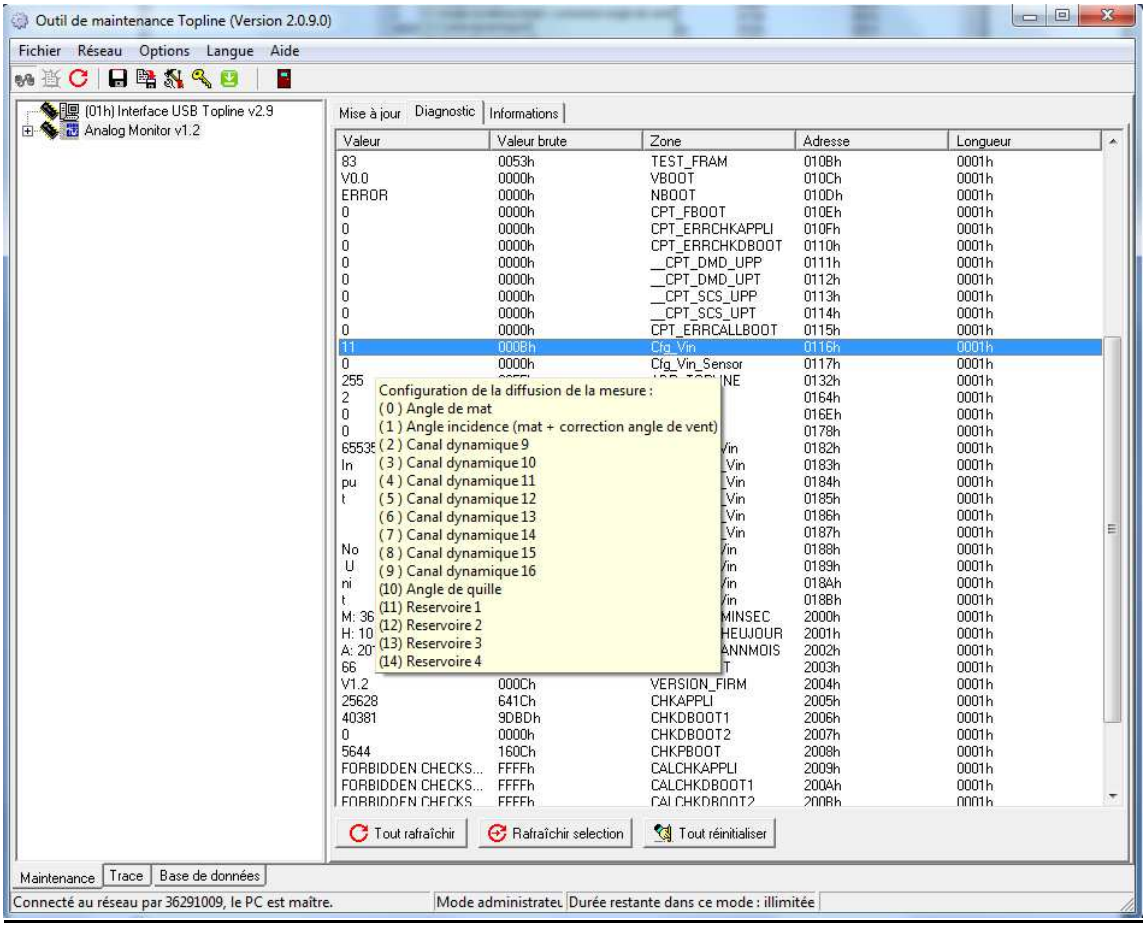
3.1.4 Keel Angle

To configure the ***Analog Monitor*** in keel angle mode, the value for **Cfg_Vin** must be set to 10.
That configuration gives the Keel Angle data to the TOPLINE Bus.



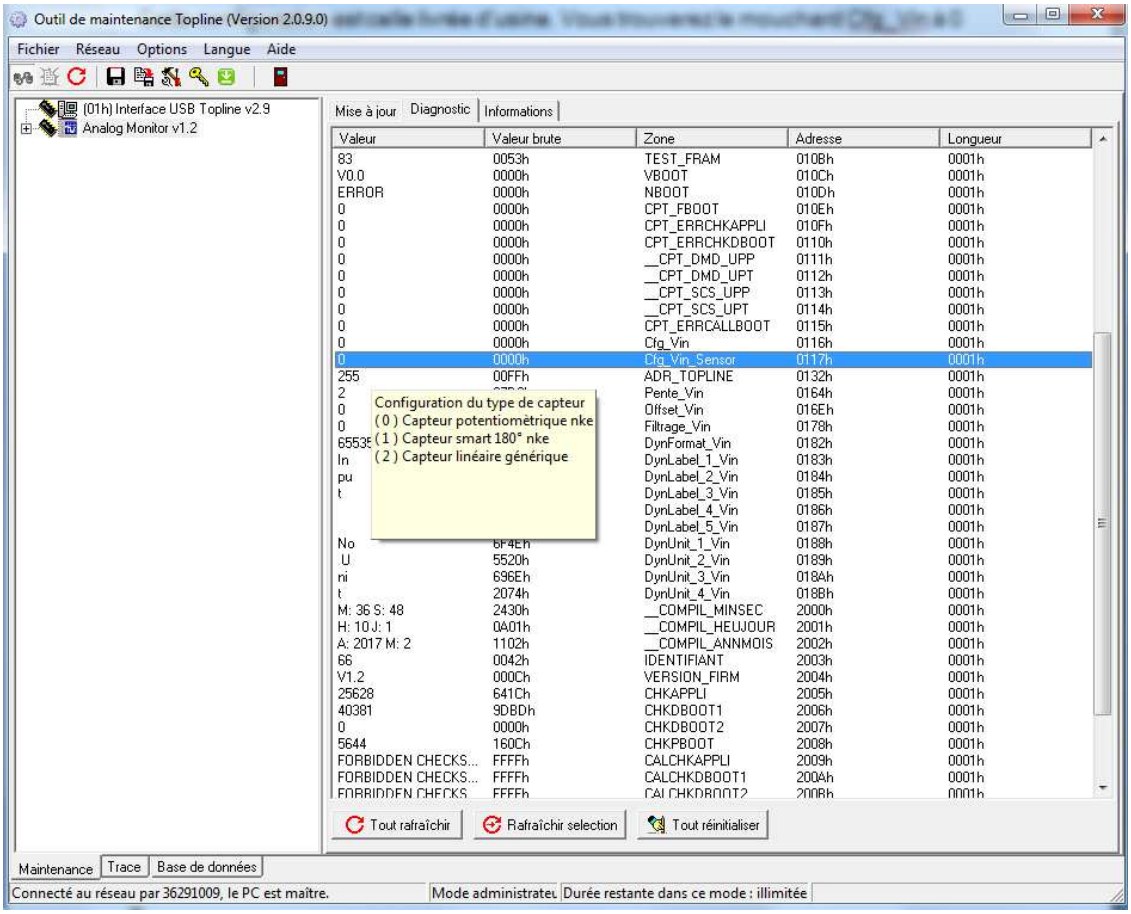
3.1.5 Tanks

4 channels for tank gauges are available with the ***Analog Monitor.***
The configuration on the ***Analog Monitor*** in tank gauge mode is done by setting **Cfg_Vin** from 11 to 14 according to the channel used.
It is possible to use up to four channels with the ***Analog Monitor*** in tank gauge mode, on the same Topline Bus. They are used to display values coming from customised tank sensors.
Example: water tank, ballast, fuel tank… etc.



3.2 Configuration of the sensor.

Three types of sensors can be set with the **Cfg_Vin_Sensor** value.
- **Cfg_Vin_Sensor = 0 is the factory setting for the nke waterproof mast angle sensor.**
- **Cfg_Vin_Sensor = 1 is used for the nke smart 180° sensor (non-contacting sensor).**
Cfg_Vin_Sensor = 2 is used for standard linear sensor. This sensor works only with dynamic and tank gauge modes.

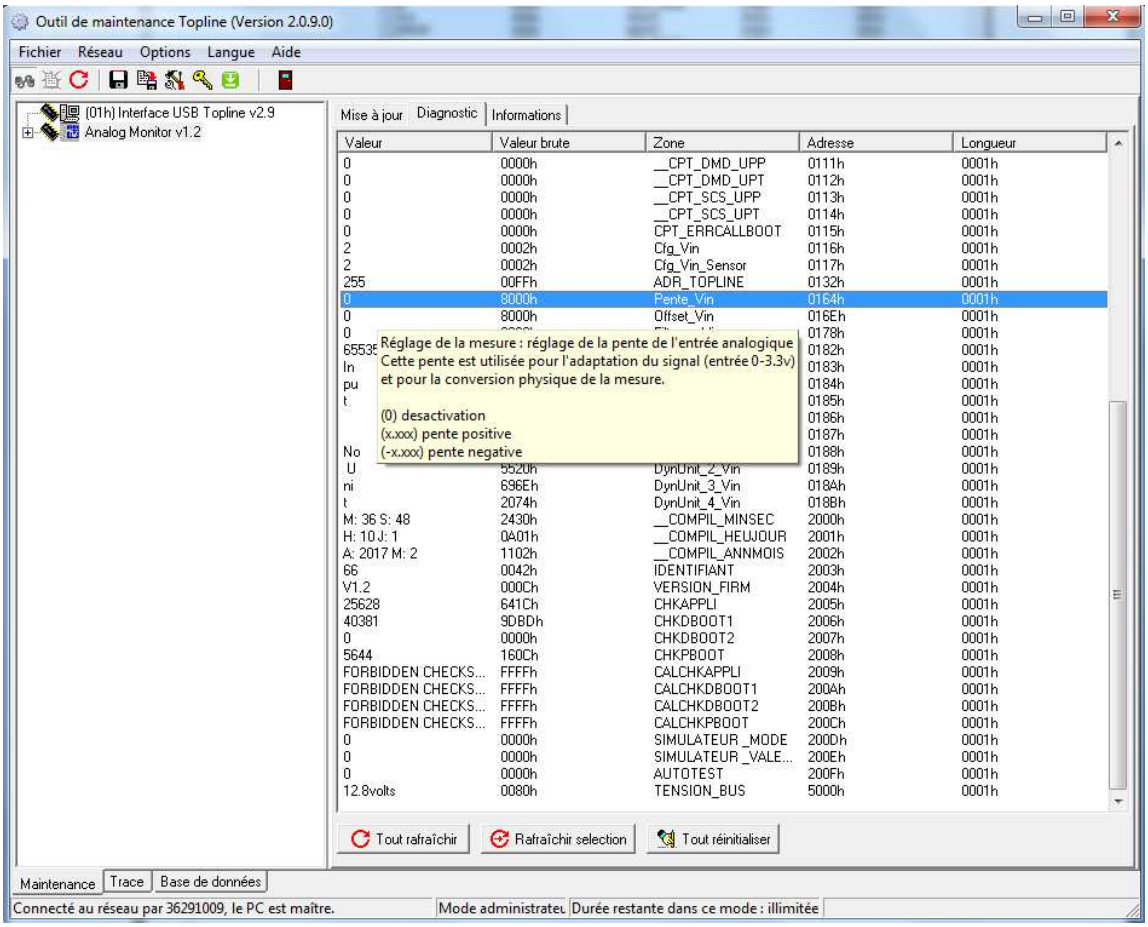


3.3 Configuration of the dynamic or tank gauge mode.

To operate with dynamic or tank gauge mode with a standard linear sensor, parameters must be adjusted in the configurations for gradient and offset.

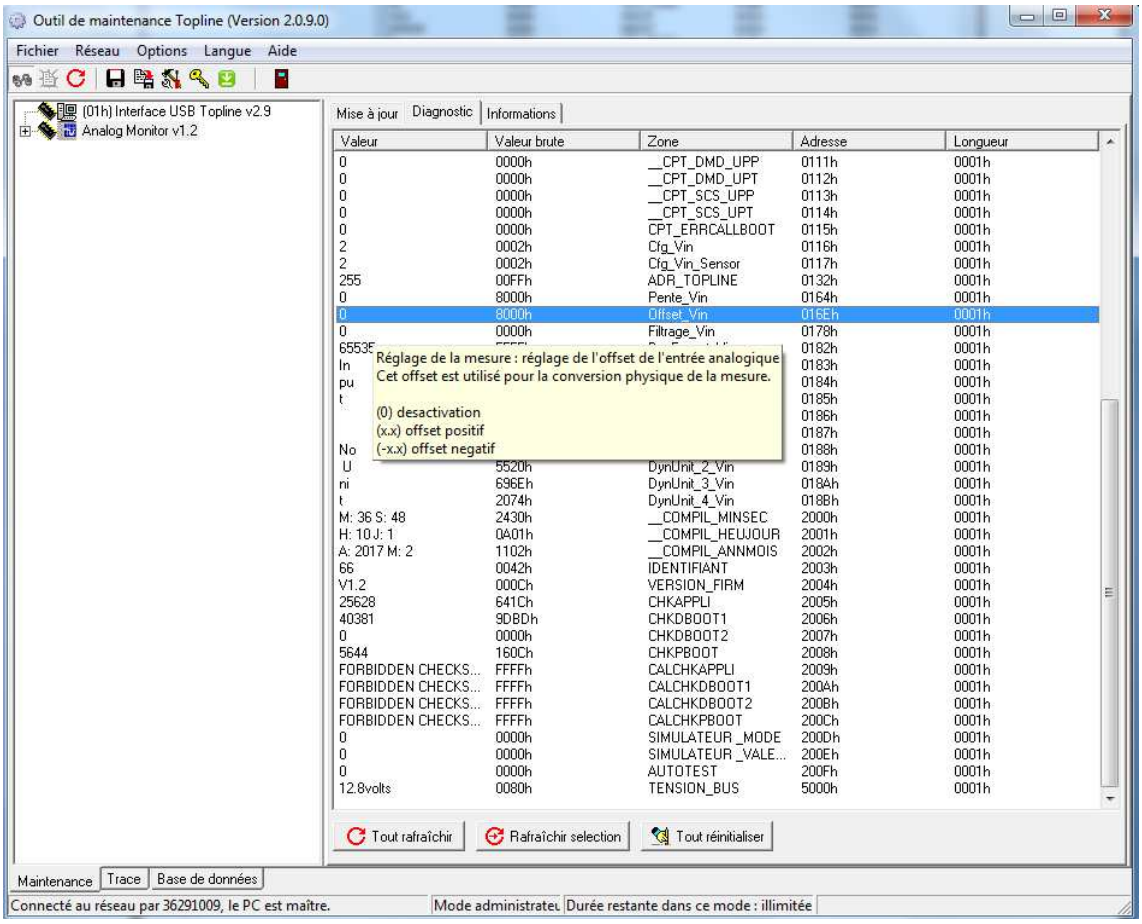
3.3.1 Gradient configuration

The Gradient is set up with the **Pente_Vin** value (set to 0 - disabled - as default factory setting). The gradient can be set with a positive or negative value with one thousandth precision.



3.3.2 Offset configuration

The Offset configuration is done with the Offset_Vin value (set to 0 - disabled - as default factory setting). This offset can be set with a positive or negative value with one tenth precision.



3.3.3 Display format configuration

The display format can be adjusted with the **DynFormat_Vin** value.

DynFormat_Vin = 0 : default factory setting is 0. **DynFormat_Vin =** 1 : positive display with four digits and no decimal.

DynFormat_Vin = 4: positive display with one decimal.

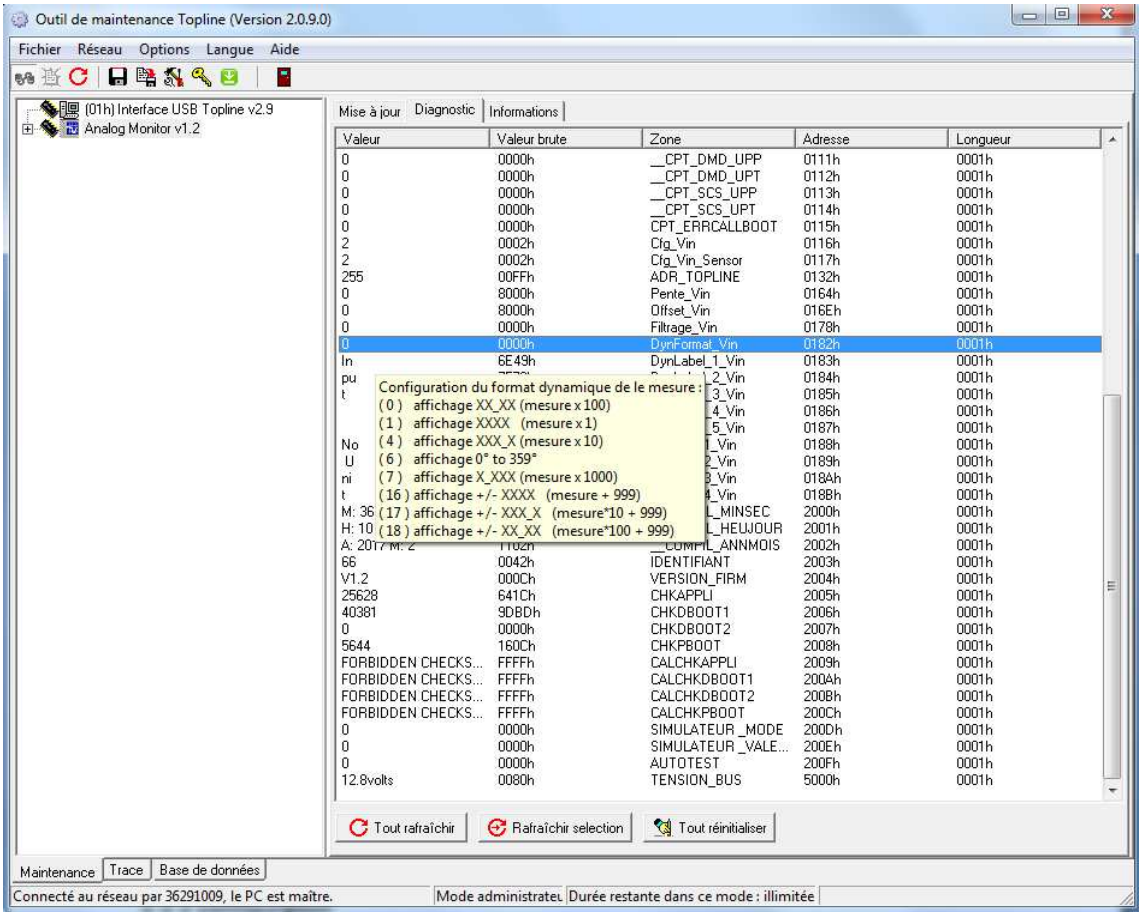
DynFormat_Vin = 6: Value displayed in degrees from 0° to 359°

DynFormat_Vin = 7: positive value with three decimals.

DynFormat_Vin = 16: positive and negative value with four digits, no decimal.

DynFormat_Vin = 17: positive and negative values with one decimal.

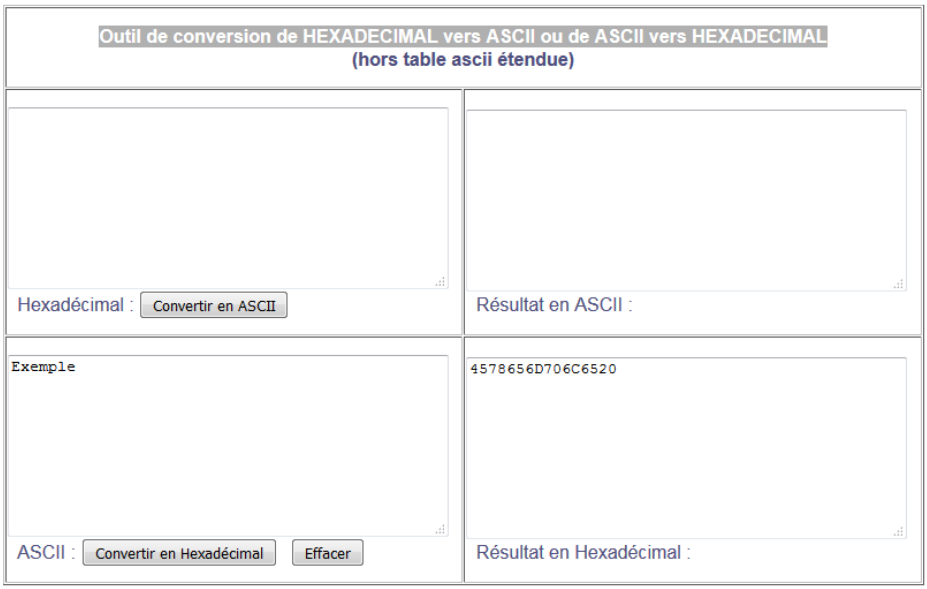
DynFormat_Vin = 18: positive and negative values with two decimals.



3.3.4 Label and unit configuration

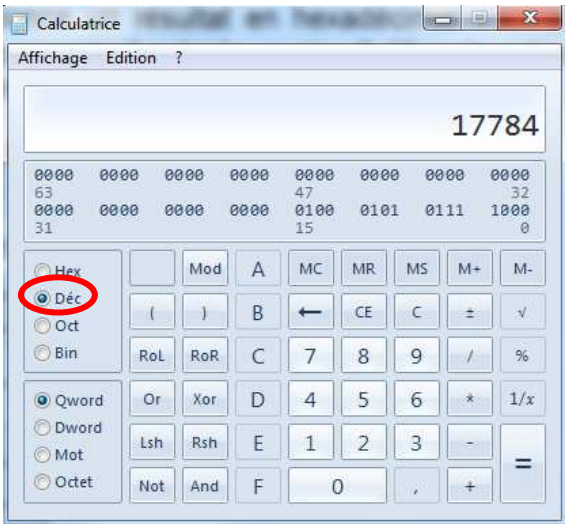
The configuration of the label and unit is used for the *custom* mode (dynamic and tank gauge channels) in order to get the related values displayed on one or several Multigraphic displays.
The label is made of 5 values of two digits, allowing to write a 10 letter word max.
The unit is made of 4 values of two digits allowing to write an 8 letter word max.
Spaces are counted as letters .

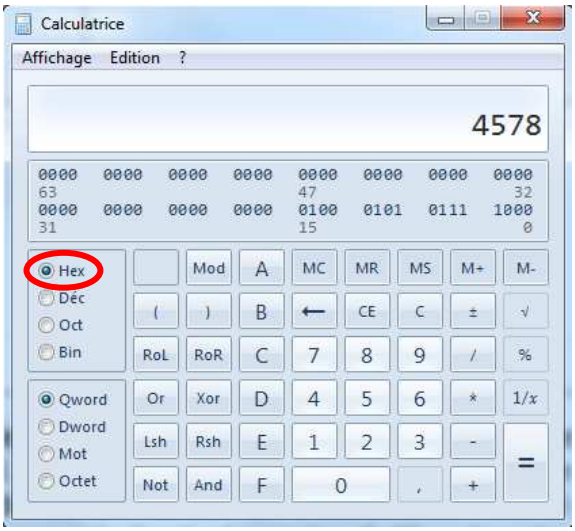
http://www.table-ascii.com/



In this example, we use the website to convert the text "Example" into hexadecimal code. The values integrate a pack of two letters. In this case, "Ex" is interpreted as the hexadecimal code "4578".
WARNING: a 7 letter word must end with a space, like in our Example.

The result must be converted in "decimal". To do this, use the calculator available in your OS in programming mode (see the example here below). Enter a hexadecimal value and click on "Dec" to get it in decimal format.

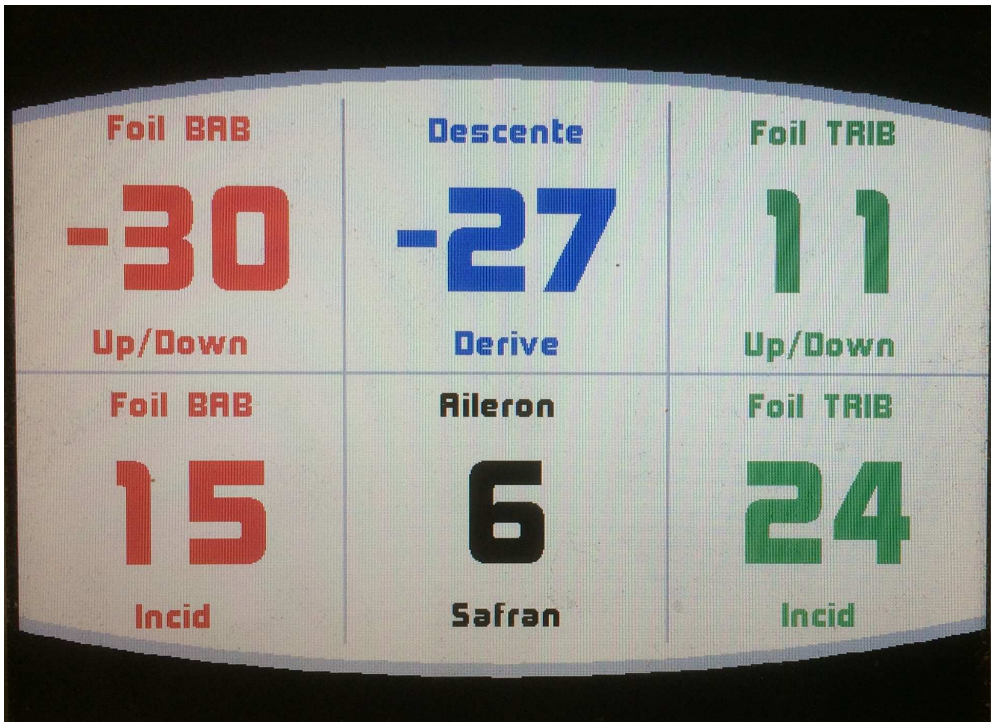




Enter that decimal value in Toplink. The principle is the same as for the Label and Unit values.

????	????	Filtrage_Vin	0178h	0001h
????	????	DynFormat_Vin	0182h	0001h
Ex	7845h	DynLabel_1_Vin	0183h	0001h
	0000h	DynLabel_2_Vin	0184h	0001h
	0000h	DynLabel_3_Vin	0185h	0001h
	2020h	DynLabel_4_Vin	0186h	0001h
	2020h	DynLabel_5_Vin	0187h	0001h
	0000h	DynUnit_1_Vin	0188h	0001h
	0000h	DynUnit_2_Vin	0189h	0001h
	0000h	DynUnit_3_Vin	018Ah	0001h
	0000h	DynUnit_4_Vin	018Bh	0001h

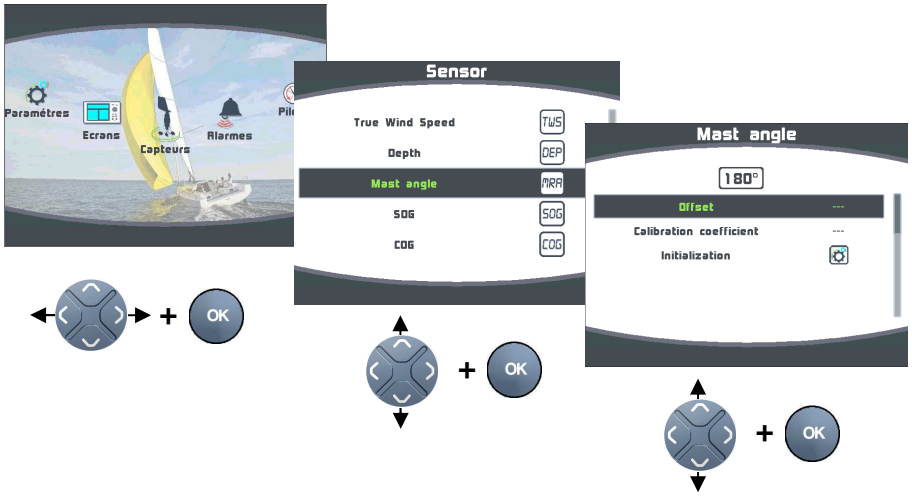
Example of display for Label and Unit on a Multigraphic.
In this example, the unit is replaced by text to separate the two actions on foils.



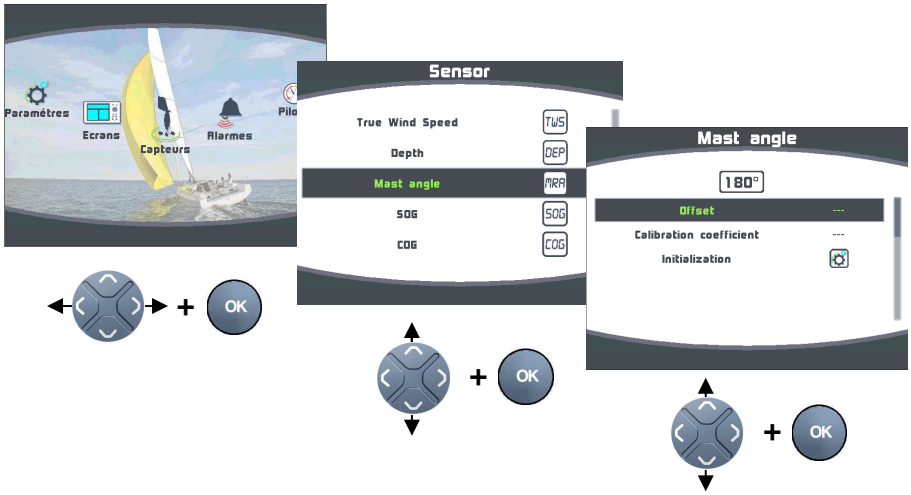
3.4 Setup with a *MULTIGRAPHIC* display

Press and hold PAGE to access the menu from which you can select  to display the "Sensors" page. Select the data generated by the ***Analog Monitor***, i.e. the Mast Angle.

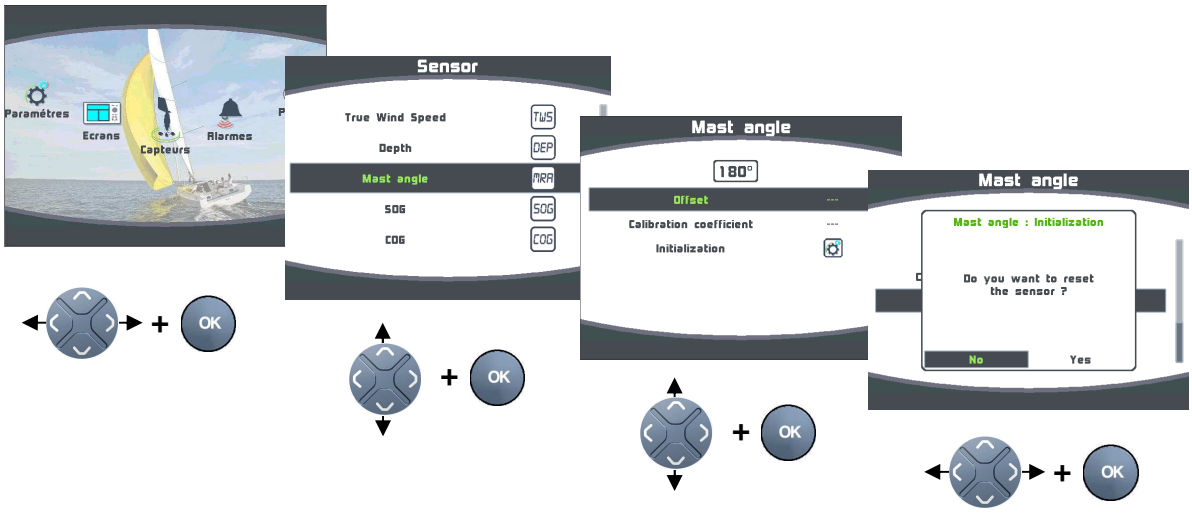
3.4.1 Offset configuration



3.4.2 Gradient configuration



Reset = full reset of the ***Analog Monitor*** to factory setting.



3.5 Manage several Analog Monitors

Several Analog Monitors can be connected on the same ***Topline Bus*** to manage various sensors.

Example of installation with 10 Analog Monitors:

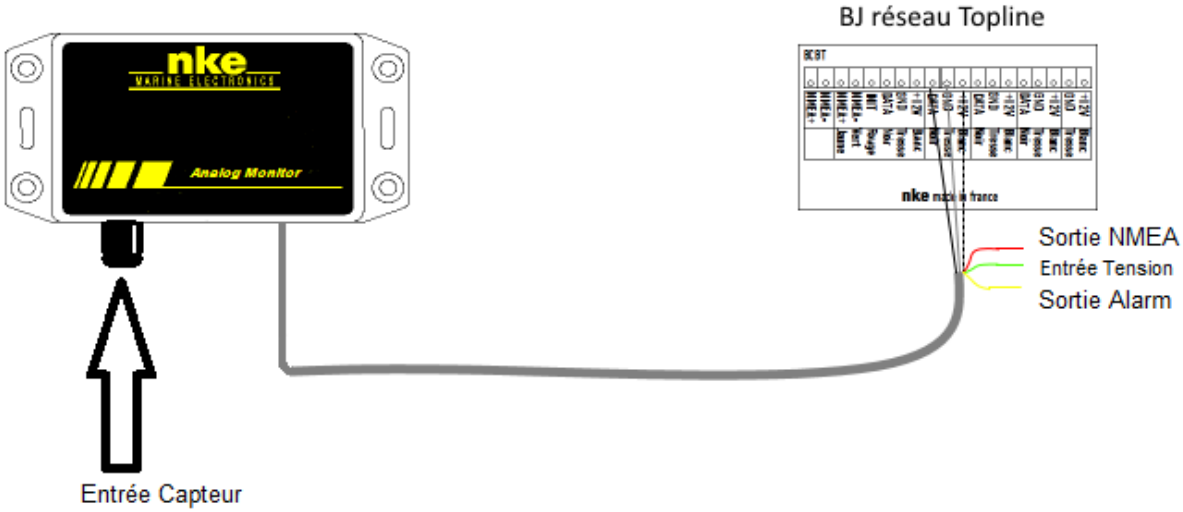
2 ***Analog Monitor*** for starboard foil. (Dynamic custom channel Mode)
2 ***Analog Monitor*** for port foil. (Dynamic custom channel Mode)
1 ***Analog Monitor*** for starboard rudder. (Dynamic custom channel Mode)
1 ***Analog Monitor*** for port rudder. (Dynamic custom channel Mode)
1 ***Analog Monitor*** for mast angle.
1 ***Analog*** Monitor for keel angle.
1 ***Analog Monitor*** for fore tank. (Tank Mode)
1 ***Analog*** Monitor for aft tank. (Tank Mode)

4. INSTALLATION

WARNING

Turn the power supply off before doing any work on the TOPLINE Bus.

4.1 Analog Monitor wiring



- Connect the bus cable to a Topline junction box as follow:

  White wire to the "+12 volts" terminal

  Shield to the "GND" terminal

  Black to the "Data" terminal

  Red is for the NMEA0183 output

  Yellow is for an Alarm output. (Not implemented)

  Green is for aux. voltage input (None)

Binder 620 5 connectors wiring.

Binder 620 5 connectors	Description	Rudder Angle and Mast Angle 90-60-010 and 90-60-388
1	GND (0V)	
2	V+ (3.3V)	Red
3	V- (0V)	Blue
4	VBus	
5	Vin	White

If the rotation direction is displayed reversed, the red and blue wires must be reversed in the Binder connections.

4.2 NMEA output

3 proprietary NMEA0183 (3400 bauds) sentences are available on the Topline red wire:

$PNKEV,Analog Monitor,V1.2,Feb 01 2017,10:36:49*36

This sentence is sent at the start. It gives the information about the ***Analog Monitor*** firmware version.

$IIXDR,A,x.x,D *hh<CR><LF>

_ angle in degrees

This sentence gives the Keel Angle or Mast Angle value.

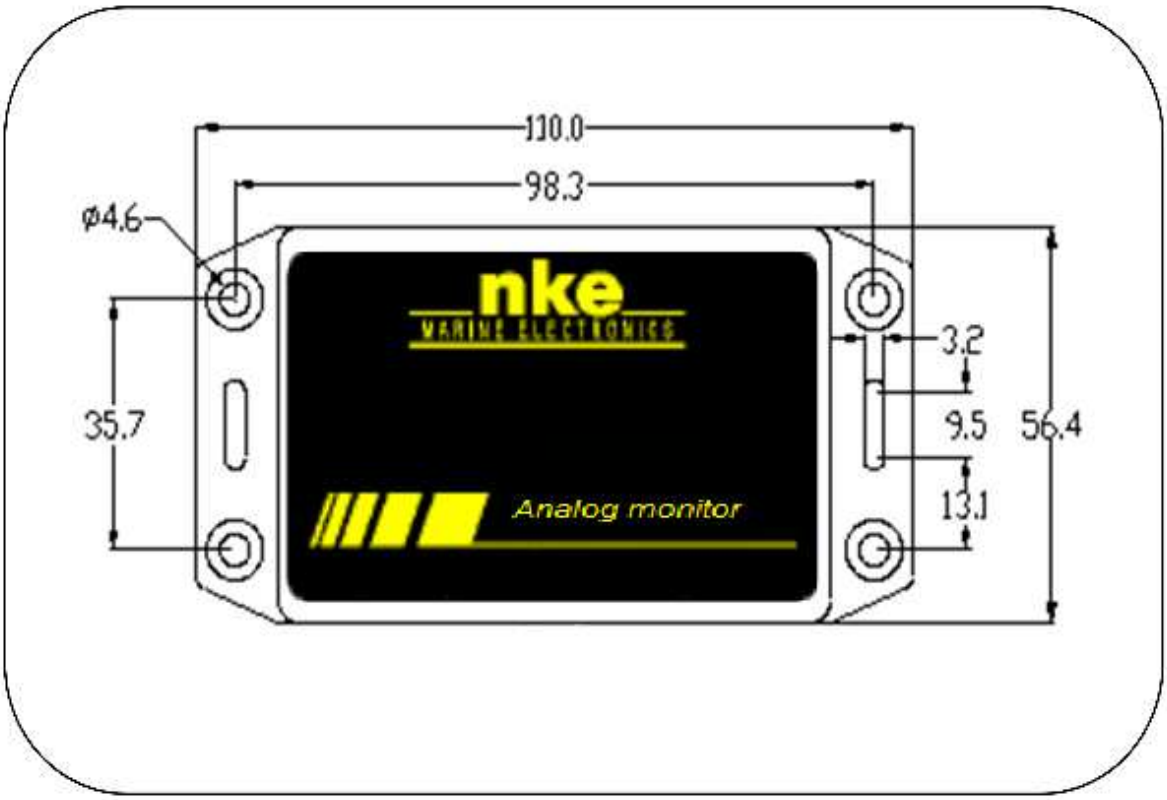
$IIXDR,U,x.xx,V *hh<CR><LF>

_ measure of the Voltage input after gradient set up and offset

This sentence gives the data in gauge or custom mode.

5. ANALOG MONITOR SPECIFICATIONS

5.1 Physical specifications of the *Analog Monitor* housing



5.2 Analog Monitor specifications

Description	Value
Power supply	8V – 32V DC
Measuring range of the sensor without divider	0 – 3.3V
NMEA output	NMEA 0183
Weight	300g
Operational consumption @ 12 V	< 20 mA
Topline bus power cable	Ø5.5mm, 4 wires + ground, length 6m
5 wires connector	Binder plug / 5 connectors / female
Operating temperature	-10°C / +50°C
Storage temperature	-20°C / +60°C
Protection rate	IP54 waterproof to water projections