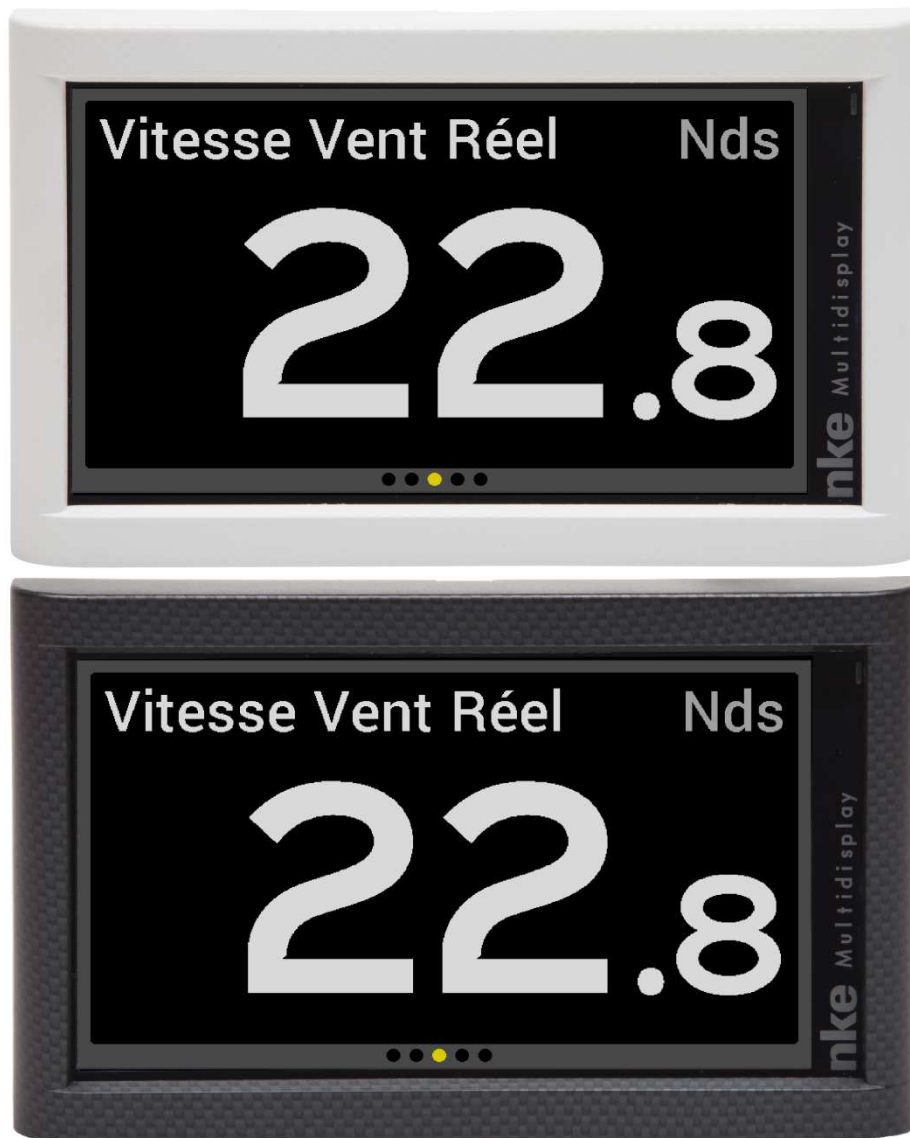


MULTIDISPLAY

Item number: 90-60-543



USER MANUAL & INSTALLATION SHEET

V1.1

nke
MARINE ELECTRONICS

6 Rue Gutenberg - Zi de Kerandré
56700 – HENNEBONT – FRANCE
www.nke-marine-electronics.com



+33 297 365 685

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1 PRESENTATION

Thank you for purchasing the **nke Multidisplay**.

The **Multidisplay** features a 7 inch colour screen. A transfective polarizer enhances daylight reading and integrated LED backlighting ensures clear readability at night. The backlight intensity can be automatically adjusted or user adjusted.

The **Multidisplay** is a multifunction device that enables to:

- Control the **nke Gyropilot2** or **Pilote HR**
- Display data from the sensors connected to the **Topline** bus in digital, analog or graphic format and access to setup parameters and alarms.
- Interface to NMEA 183 devices to provide relevant data to the **Topline** bus.

2 USE

The Multidisplay doesn't have an integrated keyboard, therefore it is necessary to use a Pad (display or pilot) or a transmitter (display or pilot) in order to control the display.

See Pad (display or pilot) or transmitter (display or pilot) manuals.

- **PAGE**
Successive presses will scroll through the pre-set data pages, the pilot page and the setting page.



Press and hold (at least 3 seconds) to open the Menu page.

- **OK**
A single press confirms the current selection, or opens specific setup features on some pages.



Press and hold (at least 3 seconds) to open the settings page for backlighting, keyboard lock and stand-by mode.

- **Cursor pad**
Use for the selection of pages and menu options.
- . A,B,C,D (Pad display)

Those keys are shortcuts allowing access to different pages already programmed.

- **-1, +1, -10, +10 (Pad Pilot)**

Use to control the autopilot's course in 1° or 10° increments to Port or Starboard.



Press and hold the 10° to tack.

- **AUTO**

Single press to engage the autopilot.



Press and hold this key to go directly to the Pilot Mode menu.

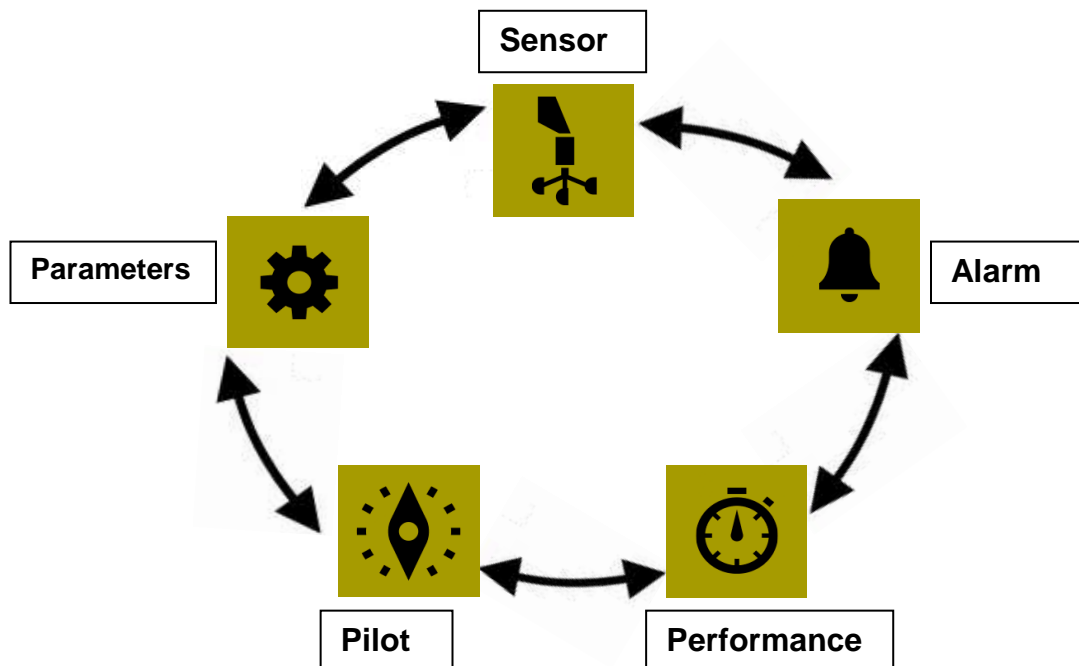
- **STOP**

Single press to disengage the autopilot.

- **Mob**

Press and hold to activate the man Over Board function on the **Topline** bus.

2.1 MENU PAGE



When the **Multidisplay** is used for the first time it displays a screen with a menu providing access to:




- the sensor settings
- the alarm settings
- the pilot settings
- the Performance page setup
- the parameter settings

Press the cursor pad's arrows « left » and « right » to scroll through the menu icons for selection.

2.2 PAGE BUILDING WIZARD

The **Multidisplay** has been designed to enable the user to customise pages. 10 pages can be set up according to the user's preference with the first 8 pre-set to default settings.



To build a page, first select the  « Parameters » icon in the menu.

- Select pages and press .
- Select the page you want to build or edit with the up and down arrows . Empty pages are grayed out. Once you have made your selection, confirm with .



11 pages are available; the first one is for the pilot and the other are numbered from 0 to 9.

2.2.1 Page format

You can choose between different layouts for the page. Press , a list will appear. Select the screen layout template with the « up » and « down » arrows on the pad. , depending on the format you wish to display on the page.

Screen types available in landscape orientation :

1 line	Displays 1 data
2 lines	Displays 2 data
4 lines	Displays 4 data
6 lines	Displays 6 data
1+3 lines	Displays one main data on the left and superimposes 3 thumbnail data to the right
4/4 page	Displays 4 data on the same page and alternates every 3 seconds with 4 other data
1/1 page	Displays 1 data and alternates with 1 other data every 3 seconds
XTE page	Displays the waypoint difference at Waypoint
Waypoint page	Displays the Waypoint heading from the COG

Screen types available in portrait orientation :

1 line	Displays 1 data
2 lines	Displays 2 data
3 lines	Displays 3 data
4 lines	Displays 4 data

Once you have made a choice, press  to confirm.

4/4 et 1/1



This page is used to display 4 information that alternate with 4 other information. It can also be used with feedback from racing software (ADRENA, EXPEDITION,...) via the NMEA input after initialization (see "NMEA initialization"). For example, the ADRENA software can be used to feedback 8 information according to the phases of race, those information can be read on these alternative pages. This information can be read on all Multidisplay of the Topline network. The 8 channels available are named DYN1 to DYN8.

2.2.2 Edit a page

This setting selects the data that will be displayed on the selected page

FOLLOWING to accept the current data in that selected part of the screen (only for multiple line pages) and go to the next page partition.

MODIFY to change the information and the colour in which it will be displayed by selecting from a list.

Groupe	Data
Wind	Apparent wind angle
	Apparent Wind Speed
	True Wind angle
	True Wind Speed
	Magnetic True Wind Direction
Navigation	Depth
	Boat Speed
	Ultrasonic Speed Sensor
	Magnetic heading
	True Heading
	Corrected Heading
	Trip Log
	Total Log
	Maximum Speed
	Average Speed
	DR1 distance
	Reckoned bearing
Pilot	Pilot consumption
	Pilot Voltage
	Rudder Angle Sensor
Energy	Bus Voltage
	BAT1 Voltage
	BAT1 Current
	BAT1 Capacity
	BAT1 Level


	BAT1 Energy
	BAT2 Voltage
Performance	Timer
	CMG
	Optimum Wind Angle
	Drift Angle
	Direction of measured current
	Speed of measured current
GPS	Speed over ground
	Heading over the ground
	Magnetic COG
	Distance to Waypoint
	Bearing to Waypoint
	Cross-Track Error
	Position
	Time
	Date
Declination	
Weather	Air Pressure
	Sea temperature
	Air temperature
Specific sensors	Heel
	Pitch
	Forestay tension
	Mast Angle Sensor
	HR Mast Angle Sensor
	Engine hours
All

FINISH to confirm the page and save the settings.



Note:


Some partitions of the page can display the information in analogue, graphic or digital format.

Once the page has been built a window opens allowing you to save and rename the page.


Press  to save the page.


Select Name with the pad and press  button to access the virtual keyboard.

Use the pad keys  to select letters and press  to confirm your choice. Repeat the action for each entry.

 Toggle between numbers and letters.


 Caps lock.

 Delete last digit

 Enter, to confirm the name and save the page.

2.2.3 Visible

The six first pages are visible by default.

Press  to hide the page.


Unhidden "ON"

Hidden "OFF"

2.2.4 Edit name

Edit the page name with the virtual keyboard.

2.3 DISPLAY PAGES

Scroll through the build pages, the pilot and menu pages by pressing the  button with successive presses.

2.4 USE OF THE *MULTIDISPLAY* AS MULTIFUNCTION DISPLAY

Multidisplay is a multifunction display from the **TOPLINE** range of products. It connects to the **TOPLINE** bus on your system and displays all data available on the bus.





The keyboard, curser pad and scroll down menus make all aspects of the system easy to use. **Multidisplay** facilitates control and use of your **Topline** system.

2.4.1 Edit an existing page

Once a page has been built (see paragraph 2.2), it can be edited to show temporary or permanent changes.

2.4.2 Temporary modification

Temporary modification of a page allows data of your choice to be displayed without saving a new layout.

- Browse through the page with .
- Highlight the data to modify and press .
- With  choose the replacing data and press .



This modification has not been saved and the previous layout will return the next time the system is powered on.

2.4.3 Permanant modification of a page constructed

Permanent modification allows modifying the page constructed and saving new elements.

This is carried out in « parameters ». In order to modify a page, see chapter 2.2 page building wizard.

2.5 SETTING PARAMETERS

Press and hold  to display the main menu in which you select  for the «Parameters» page.

Use the up and down arrows of the pad  to select and  to confirm.

2.5.1 Display Settings




The Display Settings menu gives access to:

- The Display Mode
- The Daylight Mode settings
- The Night Mode settings
- The Stand-by timing

2.5.2 Backlighting

The backlighting can toggle automatically between Night and Day settings, driven by a light sensor, or can be manually set. Backlight settings can be adjusted as required for each Multigraphic independently.

Backlight setup process:

- Select «Display setting » and press .
- Highlight « Display mode » and press .
- Choose « Auto » or « day » or « Night » and press .

Auto: Backlighting toggles automatically between Night and Day settings, driven by a light sensor. The Backlight intensity and the Skin are those set for each Mode.

Day: Backlighting is on with the light intensity and the Skin set for Day Mode.

Night: Backlighting is on with the light intensity and the Skin set for Night Mode.

There are 20 levels of Backlighting.








Whatever page is currently displayed press and hold « OK » for 3 seconds to access directly to the backlight levels settings.

2.5.3 Setting Night and Day modes






Setting procedures are identical for Day mode and Night mode.

Backlight intensity setting: 1 to 20

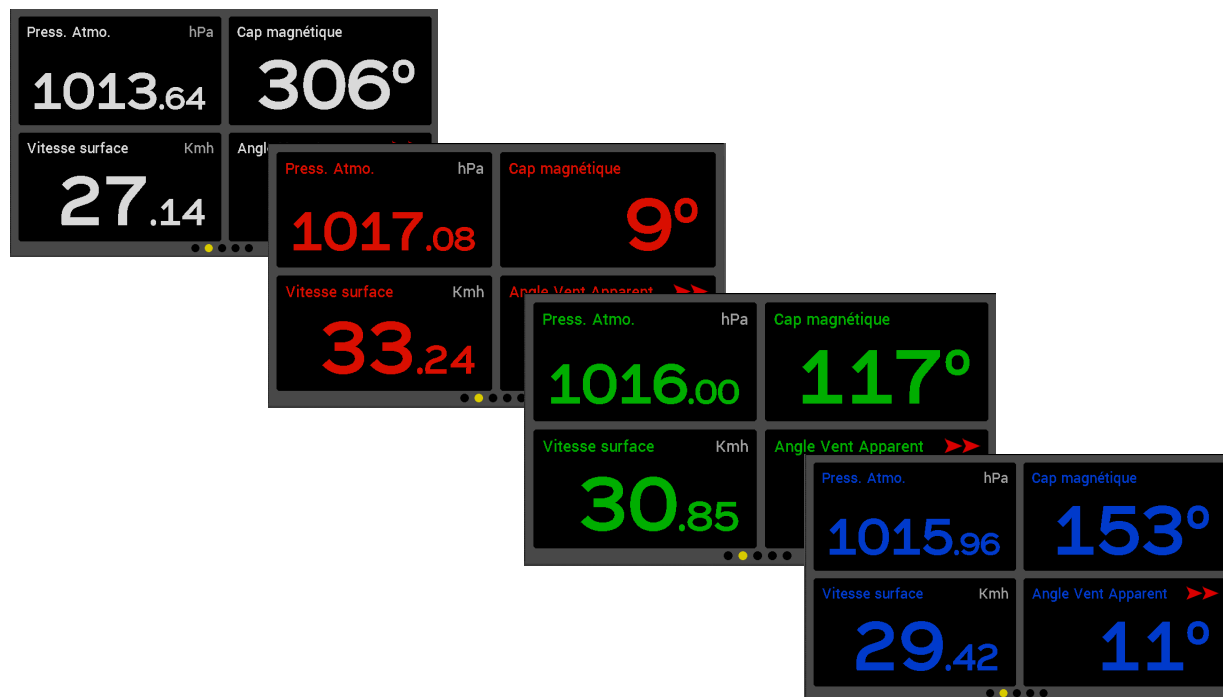
- Go to «Display setting» and press .
- Choose « Day adjustment » or « Night adjustment » and press .

- Press again  and modify the value « light level » with . Then press  to save the parameter.

2.5.4 Skin Settings

- In « parameters » choose « Display Setting » and press .
- Choose « Day adjustment » or « Night adjustment » and press .
- Select « Skins » and press .
- Select the skin desired with the  key and press  to save the parameter.

You can choose between 5 Skins for Day and Night modes. The default Skins are white for Day and black/red for night.






Some skins are more appropriate than others, depending on the reading angle.

2.5.5 Display's Standby timing

A time can be set up to 30 minutes. When the selected time is reached the display will be put in a "sleep mode" for power saving. The Multigraphic will keep working and the screen can be resumed with the simple press of any key or selecting the display on a remote control.

Setting the Display's Standby timing:

- In « parameters » select « Display setting » and press .

- Choose « Standby time » and press .
- Modify the value with  and save with .







Press and hold the “OK” key for 3 seconds to enter the Display Standby setting menu. This can be done from any page.

2.5.6 Data logging : « stripcharts » settings


4 different sets of data can be logged simultaneously over a 48 hour period with a 15 seconds log rate. The logged data can be displayed on stripcharts on the “**Multidisplay**”.

“stripcharts” settings process:

- In « parameters » select « Logger configuration » and press .
- Choose the logger to modify among the 4 available and press .
- With , modify the data and save with .

2.5.7 A,B,C,D keys configuration of the multifunction Pad

Keys A, B, C and D enable to display the pages programmed on all the displays.

In >> Parameters >> shortcuts configuration: select one of the keys to program and press . Choose in the list the page desired. By default no key is programmed.

2.5.8 Language selection

Your Multigraphic can be set to display menus in various languages.



Language setting process:

In « parameters » choose the language and press  to save your choice.

2.5.9 Unit selection

The **Multidisplay** can be set to use various units for boat speed, depth, air temperature, sea temperature and wind speed.

Depending on the information selectable units are “knots”, “meters per second”, kilometres per hour”, “degrees Celsius” and “degrees Fahrenheit”.

- In parameters go to « Unit Selection » Select the unit and press 
- Choose the unit and press  to save.



2.5.10 Maintenance

2.5.10.1 Multidisplay node address in the Topline system

In this menu you have to give a **Topline** address to the **Multidisplay**. With address n°1 it will be considered as « Master » and manages the whole system. If there is already a Master », the **Multidisplay** will get an address different from 1 and it will behave as « Slave ». This process is carried out automatically: if there is no « Master » in the system, the **Multidisplay** will automatically be selected as « Master ». Systems with an existing « Master » will automatically deliver a « Slave » address to the **Multidisplay**.

Note: the **Multidisplay** comes with a factory default setting as n°0. It has no address and it cannot work with your system. Giving an address to the **Multidisplay** is the very first setting to do once the display is connected to the **Topline** bus and the installation complete.

Multidisplay address process:

- Connect the red wire of the **Multidisplay** on the braid and start the installation.
- A message appears on the display : « disconnect the red wire to start initialization » (follow this procedure)
- The **Multidisplay** starts automatically and takes the first Topline address available. After this procedure, please isolate the red wire in your nke bus junction box.
- Resetting the address to 0 :
- With the **Pad display**, go to >>  >> Maintenance >> Topline address. Select « Erase » and save with .

Address change process :

- With the **Pad display**, go to >>  >> Maintenance >> Topline Address. Select « Yes » and save with .
- The **Multidisplay** takes another address and takes the first one available.



Once this procedure is complete, the Pad won't have any control on the Multidisplay, you'll have to execute the address taking process to be able to control the display. In case of "master bus lost" it is possible to reconnect the red wire to reset the address to zero and start the address taking process.

2.5.10.2 *Auxiliary inputs*






2.5.10.2.1 *Console*

The **Multidisplay** has a NMEA console allowing NMEA input data to be displayed.

2.5.10.2.2 *NMEA settings*

The **Multidisplay** features a NMEA0183 input which allows any compatible instrument (GPC, PC...) to be connected. This port converts any NMEA incoming data to **Topline** channels if they do not already exist on the **Topline** bus. The data will be used by the **Topline** system. Baud rate is automatically detected between 4800 or 38400 Bauds.

NMEA input settings:

- In >> parameters >> maintenance >> external devices >> NMEA init, Select « NMEA init », then press , to initialize press  again.
- A window opens and asks: « Do you want to start a capture? »
- Press . Wait during the capture. Once complete, a certain amount of channels will be available.
- Press « Validate », channels available will be listed.
- On the Topline network it is possible to display or not, the channels available in NMEA. All NMEA channels are activated by default. You can choose to inhibit some channels. This is done by selecting the chosen channel and pressing .
- Pressing  ends the NMEA initialisation by updating all channels available on the Topline bus.


2.5.10.3 *Topline Instrument system*

This system menu displays the properties and software versions of all the sensors and displays connected to the Topline bus.

2.5.10.3.1 *GPS statistics*

If a GPS is connected in NMEA it is possible to see the statistics of this GPS

2.5.10.4 **Orientation**

It is possible to change the layout of your Multidisplay. To do so, go in >> parameters >> maintenance >> orientation: select « landscape » or « Portrait » and save with .



WARNINGS:

By default, the Multidisplay is in landscape with the logo nke on the right. In portrait, the logo is at the bottom of the screen.

Some parameters are not available in Portrait such as the type of page.



2.5.10.5 **Keypad Beep**

The keypad beep is a sound emitted by the Multidisplay when a command is sent by the **Pad display** or **Pad pilot**. It is possible to activate or inhibit this sound in >> parameters >> maintenance >> Keypad Beep.

2.5.10.6 **Firmware**

This page displays the **Multidisplay** software version and date of issue.



Display the firmware:

- In parameters >> maintenance >> Software: press  to see the Firmware and bootloader version.
- Press  to quit.

2.5.10.7 **Memory**

This menu allows the user to reset the **Multidisplay** to factory settings.


Reset the **Multigraphic** :

- Select « Memory » and access to the options by pressing .
- Select « Yes » to erase the memory by pressing .

2.5.10.8 **Simulator**

There is a simulator available in the **Multidisplay**. Once activated, it sends random data to the **Topline** bus.

Simulator menu:

Select « Simulator » and choose « on » or « off », save your choice with .

2.5.10.9 **Autotest**

Autotest is useful to check the **Multidisplay**. This procedure verifies the following functions step by step:


- keys
- colour display
- light sensor (vlight), internal temperature sensor, power supply.
- backlighting
- memory
- **Topline** bus
- NMEA input and output (connect the yellow and red wires together for that operation).
- Data logged in cookies


Proceed to each step by confirming with .



WARNING :

If your display is in portrait orientation, the autotest process is not available.

- Select « Autotest » and choose the option with .

Follow the instructions and press  to go to the next page.

2.6 SENSOR SETTINGS

Go to the main menu by pressing



and select



to display the « sensors » page.

All sensors connected to the **Topline** bus can be calibrated from this menu. Settings are different for each sensor. Refer to the sensor's manual for more information.

Main settings:

- **Filter** : the **filter** takes the data average value to set a data refresh rate. This damping set for apparent wind speed, boat speed and heading (Regatta compass) affects the autopilot's "True Wind" mode.
- **Offset** : applies a correction to data for some sensors.
- **Coefficient** : applies a correction factor for calibration.
- **Reset** : back to default settings of the selected sensor.

Data set up process:

- Select the data you want to modify and press .
(Trip Log, Apparent Wind Angle, Boat speed...)
- Modify it with and confirm with .

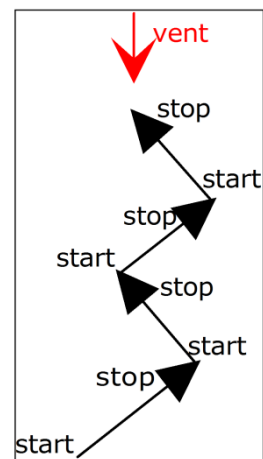
2.6.1 Calibration wizard

Calibration wizards are available to help you calibrate the apparent wind angle, the boat speed and a fluxgate compass (not available for the REGATTA compass).









2.6.2 Apparent Wind Angle calibration wizard

Sail 4 legs upwind to measure the average wind angle on each tack. A wind vane offset will be calculated and applied to correct the Apparent Wind Angle.

Apparent Wind Angle values must be similar from one tack to another ($\pm 1^\circ$) when the calibration is correct. If this is not the case, the wind may have shifted, or the crew cannot sail with the same angle on each tack upwind!



Calibration of the Apparent Wind Angle:









- Select « Apparent Wind Angle » and press .
- Choose « Calibration Wizard » and press .
- Select « Start » and press .
- Go on **Starboard Tack** and press . Wait and press .
- Go **on the Port Tack** and press . Wait and press .
- Repeat this procedure one more time.
- A window will open with the new Offset and ask to save the new one or keep the old one. To save the new one select « yes » and confirm with .

2.6.3 Speed through water calibration wizard

The boat speed is calibrated with the speed over ground as reference. You have to sail 0.5 nM on a constant heading and then sail back (180°) the same distance. The new calibration is processed from the current calibration value already saved (there is no need to reset the calibration value to 1).

The COG (Course Over Ground) function must be displayed on the Topline network to achieve the boat speed calibration.

Boat speed calibration:

- Select « Boat speed » and press .
- Choose « Calibration Wizard » and press .
- Select « Start » and press .
- When your heading and speed are approximately steady, press .
- Go about 0.5 Nm in those conditions and press .
- Make a U turn (Your current heading + 180°) and press .
- Hold your course at a constant speed during 0.5Nm. Once complete press .
- A window will open and ask you to save the new factor. If satisfied, select “yes” and save with .

This page displays the current calibration value (old correction), the new calibration value (new correction), the factors calculated from the runs (ratio FW/BW) and the correction factor for boat speed.

2.6.4 Compass Auto-adjustment

Some magnetic deviation errors are unique to each boat, due to the magnetic environment. An auto-adjustment of the compass is required to make the compass learn this environment and achieve acceptable accuracy.

2.6.5 Auto-adjustment principle

To achieve this a swing procedure is required which consists of turning the boat through a complete and perfect 360° turn clockwise at a constant rate of turn and boat speed.

During this procedure the compass builds its own deviation curve table. Corrections will be applied accurately from 0 to 359° in the sectors of sluggishness and unsteadiness.




2.6.6 Compass auto-adjustment procedure

Conditions to achieve a successful auto-adjustment manoeuvre:

- Steady waters without current.
- Safe distance from any source of magnetic field such as cargo ships.
- Safe area for free manoeuvre in a 5 boat length radius.
- Motor at constant low speed (2 or 3 knots).



WARNING: the auto-adjustment operation needs to be carried with a lot of care. Motor the boat at 2 or 3 knots in a perfect circle. For the *Regatta compass*, the compass swing must be performed in less than 5 minutes. Providing you match these conditions the auto-adjustment will be successful.

- Select « Magnetic heading » and press .
- Choose « Autocompensation » and press .
- Select « yes » and press .
- Make a constant circle clockwise

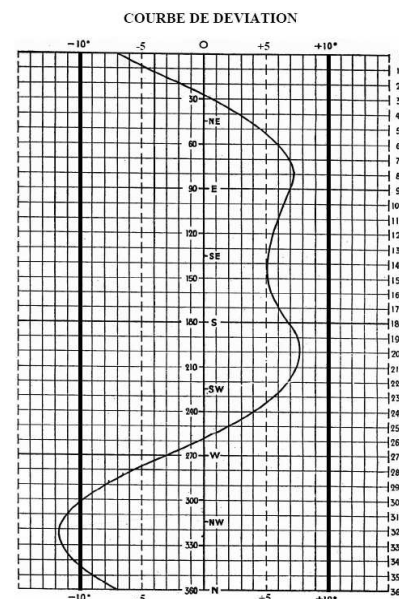
While swinging the **fluxgate**, or **Regatta** compass, you can display the Course Over Ground in a window to show the progress of the manoeuvre. In the case of the **Regatta** compass without COG data on the bus the progression will not be displayed and you will need to follow the procedure from the bowl compass at the helm.

Once the auto-adjustment has been completed a message will be displayed telling you that the operation was successful or not.






2.6.7 Compass deviation table

Can be used solely for the fluxgate compass

This method can be used to set up the fluxgate compass when it is not easy to complete the automatic compensation. The deviation curve needs to be set at points every 30°. Each point can be determined using leading lines, or by comparing headings against a calibrated compass with the results being used to fill the correction table with the measured values.



How to fill the correction table :

- Select « Magnetic heading » and press .
- Choose « Correction Table » and press .
- Select « Start » and press .
- Use  key to set up different offsets depending on the headings and confirm with .





When this table is completed your compass is corrected for the deviation curve.

2.6.8 Compass adjustment wizard

This method can only be used with the fluxgate compass

It consists of sailing the boat on the nke compass heading (+/-5°), comparing this heading with the magnetic heading over the ground and noting the value every 30° to determine the values for the correction table.

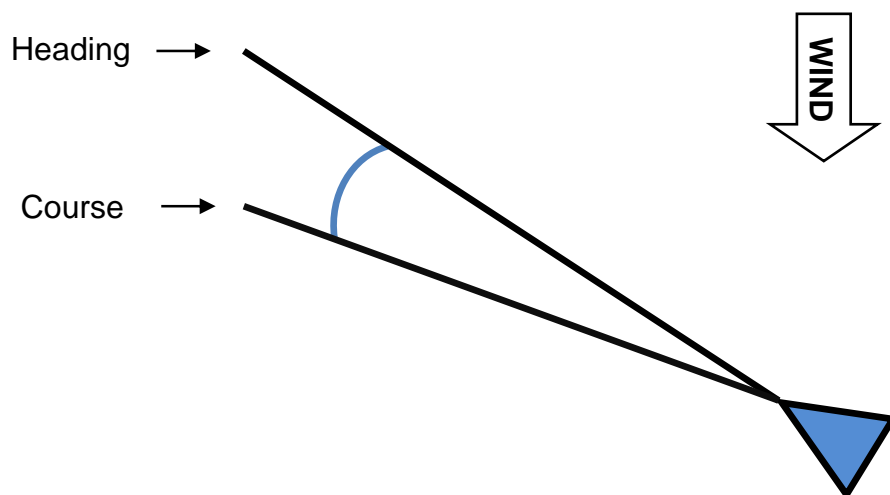
Compass adjustment procedure:

- Select « Magnetic heading » and press .
- Choose « Calibration Wizard » and press .
- Choose « Start » and press . You will have to follow nke compass information as precisely as possible every 30°.
- Choose « start » and confirm with OK. Follow nke compass' instructions as precisely as possible every 30°.
- Once nke compass is ready choose “validate” and press . Repeat this procedure every required angle and then validate to save the correction.

Press “**OK**” to save the new correction. You can highlight “Abort” and press “OK” if you want to cancel a correction. Repeat this operation every 30° to fill the whole correction table. The compass will have its deviation curve implemented once this table is completed.

2.6.9 Drift angle

Drift angle is measured between the boat's heading and its course.



This value is used for true **wind**, **VMG**, **corrected heading** and **current** calculation. Therefore it **must** be calculated optimally.

We use the following formula:

$$\text{Drift} = \frac{\text{Drift adjustment} \times \text{Heel angle}}{\text{Boat speed}^2}$$

The correction factor is linked to the hull shape and the boat's performance. Lower values indicate higher performance. The drift value is always applied whatever the

navigation conditions. Therefore, it has to be an average value, valid for all weather conditions or alternatively, you can alter that value upon the wind strength.

The drift angle for each boat speed and heel angle is shown with the polar tables supplied by your architect. Calculate the drift factors with the formula below, and determine the average value.

$$\text{Drift adjustment} = \frac{\text{Drift} \times \text{Boat speed}^2}{\text{Heel angle}}$$

Use a 10.0 factor if you cannot find the relevant data.





i.e. the drift with 17° heel angle and 7 knots boat speed is:

$$10 \times 17^\circ / 7_{nds}^2 + 0^\circ = 3.46^\circ \text{ drift angle}$$

As an alternative to this formula, an offset value can be set to force the drift angle by setting the factor to 0 and entering the desired value of the drift angle as an offset.

A maximum value can be set for the drift angle, i.e. with a 5° limit; the final result will never exceed 5° even though the data is still processed in the same way.

Drift angle data processing procedure:


- Select « Leeway Angle » and press .
- Choose « Calibration coefficient » and press .
- With , adjust the value selected and save with .


The procedure is the same for setting the maximum drift angle and the offset for drift angle.

2.6.10 Sensor access code


The sensors access code is meant to protect all calibrations for the sensors connected to the Toplevel bus. Once activated, the access to the calibration menu is locked.

Procedure for sensor access code setting:



- Select « Access code » and press .

- Choose a code and enter it with the keypad appearing on the screen. Select Enter and press .

Procedure to unlock the sensor menu:

- Enter into « Sensors »
- Enter the code configurated previously.
- Select “Ent” and press .
- The « Sensor » menu is available again.

2.7 ALARMS SETTINGS

Press and hold  to display the main menu from which you select  to display the « Alarm » page.

Setting alarms allow keeping watch on the value of set channels. Once the set value is reached a message is displayed and an audible signal is emitted.

For example, low and high values can be set for the **Boat Speed** channel.


High alarm will be activated when the data reaches the set value and above.

Low alarm will be activated when the data reaches the set value and below.




Note that for channels with angle data such as magnetic heading or wind angle the alarms sub-channels are based on a value +/- x from a reference angle called “**base alarm**”.

Setting alarms is an efficient way to monitor the **TOPLINE** system and the way your boat is sailing.


2.7.1 Alarm setting procedure

In order to use alarms you must first select the data you want to monitor and then determine the low and high values or the base and ranges for angles. Once set up, the  icon indicates the validation of the relevant channel.

Here is an example of alarm setting for low value of the apparent wind speed:

- Select « Apparent Wind Speed » and press .
- Press  again to « Set on alarm ».
- Set up a low alarm and high alarm. Confirm with , your alarm will trigger beyond those limit configurated.

2.7.2 Activation of an alarm

When an alarm is activated a window will appear showing which data is activating the alarm and an audible signal is emitted. The data for this channel is displayed in red on the relevant page of the **Multidisplay**. Press  to pause for 10 minutes. If after 10 minutes the conditions are still met for the alarm to activate, the window will resume.

If you want the rest of your instruments to ring when an alarm triggers on the Multidisplay, you need to activate the Topline alarm, first line in the alarm menu.

2.8 RACE TIMER

The race timer works as a countdown before the start of a race. Two different race procedures can be set up as « **T1** » and « **T2** ». The default settings are 5 minutes for « **T1** » and 4 minutes for « **T2** ». At the end of the countdown, a short audible signal is emitted at the 10 last seconds signal and the start time triggers a long audible signal. These audible signals are repeated by every display.





Once the countdown reaches « 0 », the timer starts for the race time in hours and minutes.

The timer data is available on the **Topline** for any display to repeat it.

2.8.1 Using the race timer

- Setting the race timer with the **Pad Display**
(See **Pad Display manual**)
- Starting the race timer with the **Pad Pilot or Display**

To start the timer, proceed as follow:

- Set up a page with the timer (See display setting [2.3](#))
- Once on your timer page, press  a window will appear to « Start timer T1 », press .
- A single press on  enables to start the timer. If you want to synchronize Time T2, press again  and start the second timer.

To start the race timer with the remote:





To start the race timer with the remote, your timer will have to be on an X1 page.

Press  for a while to start the timer.

- 1st short press to start T1
- 2nd short press to start T2

2.8.2 Setting the race timer

The default settings are 5 minutes for « **T1** » and 4 minutes for « **T2** ». Here is the procedure to set the timers to your own values:

- Select « sensors » in the menu and press .
- Choose « Timer » and press .
- With , Set the timer T1 or T2 at the value desired and confirm with .

2.9 PERFORMANCE FUNCTIONS

The performance function is available in the menu and represented by this icon



2.9.1 Calculation of the current

The Multigraphic will automatically calculate the current when it is set as a master.

The following channels are created:

Speed of measured current (in knots).

Direction of measured current (in degrees True).

The data can be displayed on the Multigraphic.

Contrary to wind direction, which is measured as the bearing the wind is blowing from, the current's direction is measured in the direction it is travelling towards. This value is a True Heading (geographic).

The calculation of the current requires the following channels to be active:

- Magnetic Heading
- Magnetic Variation
- Heading Over Ground
- Boat speed
- Drift angle

The primary sensors must be correctly calibrated to ensure reliable and accurate information.

2.9.2 True wind tables

The data measured by the wind sensor placed on top of the mast, even when on a long carbon arm, is affected by the sails.

The wind flow is disturbed around the sails and rig. This is called the “upwash”.

This “upwash” affects the measured raw data measured for the calculation of the true wind direction. Therefore, the true wind direction may be different from one tack to another and the wind speed varies from upwind to downwind.

The errors due to upwash can be repeated with sail configurations and wind speed combinations making it possible to apply corrections. A correction table can be filled for true wind speed and angle.



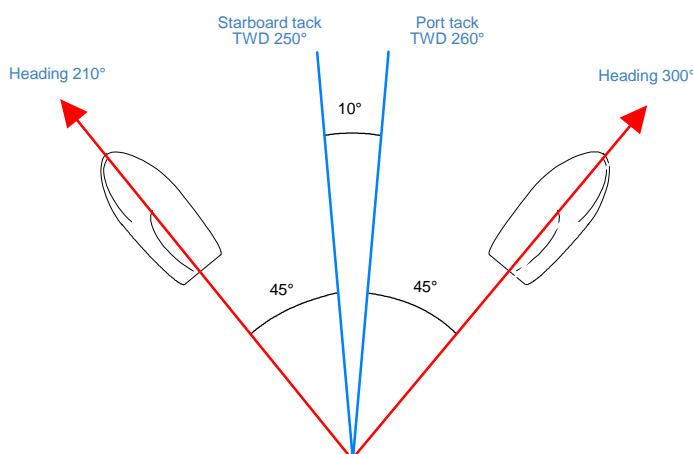
Warning:

The true wind correction tables only work with the **HR or Carbowind** sensors featuring the V2.5 (or newer) firmware.

2.9.3 True wind angle table





The true wind angle table allows correction of the true wind angle value without researching the causes of angle’s errors. It corrects all repeatable errors (twist, flow over-speed downwind, sensor).

The true wind data is calibrated by logging the true wind direction differences from one tack to another repeatedly. It is recommended that these calibration sessions are run from 5 to 50 knots in winds that are stable in direction.



TWD port tack > TWD starboard tack:

Add half of the difference between the two True Wind Directions.

- Select « Performance » and press .
- Choose « Wind Table » and press .
- Choose « True Wind Angle Table » and press .
- Select the value you need to modify and save with .



Select the value to be corrected.



Modify the value

The column on the left indicates the true wind speed in knots, the “V1” column is the correction to apply in degrees and the “A1” column indicates on which angle the correction will apply. The same pattern applies for “V2” and “A2” for sidewind and “V3” “A3” for downwind.

2.9.4 True wind speed table

Even when placed one meter above the mast head on top of a carbon arm the wind sensor will measure a flow altered by the effects of the mainsail. When sailing downwind the mainsail causes an acceleration of the air flow at the mast head and when the boat is heeling the measurement of the wind will be altered. A calibration of the wind speed is required for all these reasons.

Procedure for measurement:

Hold the boat upwind at no boat speed and measure the average wind speed shown by the display. Then, while sailing at all wind angles log the wind speed shown on the displays. The average values can be used in the correction table. Always think about logging these values whenever you sail between 5 and 30 knots.

The column on the left indicates the true wind speed in knots, the “V1” column is the correction to apply in degrees and the “A1” column indicates on which angle the correction will apply. The same pattern applies for “V2” and “A2” for sidewind and “V3” “A3” for downwind.

2.9.5 Resetting the tables

The “RESET TABLE” command can be used at any time to reset the table to the default values.

2.9.6 Activating the true wind tables

The corrections will be implemented once the true wind tables are activated.

2.9.7 Statistics for the last hour

True Wind Direction, average of the true wind direction during the past hour.

Wind shift, calculation of the true wind direction standard deviation for the past hour.

Average wind speed, average of the true wind speed data for the past hour.

Gusts, calculation of the of true wind speed standard deviation for the past hour.

Maximum Speed, maximum speed averaged on 12 seconds laps time.

It is necessary to set up “stripchart configuration” to have access to the last hour statistics.

2.9.8 Boat's Parameters

Enter the relevant data for increased accuracy in the Regatta page.

Tack Angle: enter the boat's tack angle so the boat speed recovering after a tack can be displayed.

Boat's size: this data is used to calculate the distance to the starting line in boat's lengths.

GPS antenna's distance to bow: this data is required to calculate the distance to the starting line in meters and the time to the starting line.

2.10 INSTRUMENTS CALIBRATION

2.10.1 Introduction

Accurate and realistic data requires good calibration of the sensors. Without calibration you will not get accurate data for true wind direction, true wind speed, measured drift,...

Poor calibration will produce mistakes that will affect your tactical decisions.

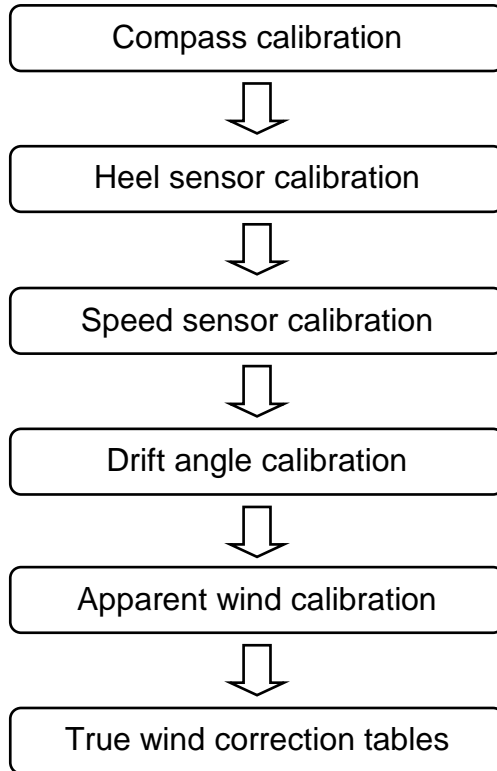
It is recommended to proceed to calibration in moderate wind conditions and steady water. Better results can be achieved when there is no current in the sailing area being used for calibration.

2.10.2 Calibrations order

Check and calibrate the primary sensors before filling the true wind correction tables:

- Compass
- Speed sensor
- Heel angle sensor

Here is the order in which the primary sensors need calibration:



For sensor calibration, see the [“Sensors setting”](#) section.

2.11 MULTIDISPLAY OPERATION WITH THE GYROPILOT 2 PROCESSOR

Gyropilot is an automatic pilot designed to steer the boat. It is intended to assist the helmsman and should never be used without state of the art navigation equipment handled by a qualified navigator.

Once the pilot has been engaged by the helmsman the **Gyropilot 2 processor** will save the current value of the relevant channel: ie. magnetic heading, wind angle or GPS course. This value becomes the reference for course to steer.

From that point the processor uses the data coming from the sensors to control the rudder using the following criteria:

- the error to the course to steer, from data coming in from the compass (compass mode) or the wind unit (wind mode).
- the boat motion delivered by the gyrometer. This sensor measures boat rotation due to the action of the rudder, the wind or the waves.

The correction value is linked to:

- The error from the course to steer,
- The gain value,
- The boat speed (the correction factor is opposite to the boat speed. i.e. with a very low boat speed the correction factor is high, and with no boat speed the **Gyropilot** will not perform).











Warning:

- Never leave the helm unattended. The helmsman has responsibility for keeping an efficient watch and to be ready to act in case of any event affecting the route of the boat. He must be ready to disengage the pilot and control the helm at any time.

2.11.1 Keys to control the Gyropilot

In order to control the pilot you need to use a Pad Pilot.

	<p>Press once to engage the pilot on the current course relevant to the pilot mode selected. In compass mode it will be the compass heading at the time you press the button and in wind mode it will be the wind angle at the time you press the button. Press and hold this key (>3s) to go directly to the Pilot Mode menu.</p>
	<p>Press once to disengage the pilot and take the helm back under manual control.</p>
	<p>Press once to change the course to steer by +1°</p>
	<p>Press once to change the course to steer by -1°</p>
	<p>Press once to change the course to steer by +10° Press and hold for automatic tack from starboard tack or gybe from port tack.</p>
	<p>Press once to change the course to steer by -10° Press and hold for automatic tack from port tack or gybe from starboard tack.</p>
	<p>Press the up and down arrows to adjust the gain from 1 to 9 and press OK to confirm.</p>
	<p>Press this button for access to the pilot's mode and settings.</p>

2.11.2 Pilot page selection

2 different pilot pages are available: analogue format or digital format.

2.11.2.1 Standard page

The image shows a digital display titled "Simulateur" with the following elements and callouts:

- Course to steer:** A callout box points to the word "OFF" in blue text.
- Sensor identification and value related to the pilot mode:** A callout box points to the large white number "351°".
- Cap magnétique:** The text "Cap magnétique" is positioned below the large number.
- Mode Compas:** A callout box points to the text "Mode Compas" on the left side of the scale.
- Rudder angle indicator:** A callout box points to a white triangle marker on a curved scale ranging from -30 to 30.
- Gain value adjustable with the up and down arrows on the pad:** A callout box points to the text "Gain 1" on the right side of the scale, with a sub-callout showing a directional pad icon.
- Access to the pilot mode with:** A callout box points to a circular "OK" button icon.

2.11.2.2 Custom page

The screenshot shows a marine electronic display with the following elements:

- Simulateur**: A heading display showing **-30°** (Consigne) and **-31°** (Angle Vent Réel). Below it is a curved scale from -30 to 30 with a green needle pointing to -30.
- Vitesse surface Nds**: A digital display showing **15.44**.
- Ang. Vent app.**: A digital display showing **11°** with two red arrows pointing right.
- TWD vrai**: A digital display showing **-----**.
- Gain 1**: A digital display showing **-----**.
- Auto**: A blue button at the bottom right.

Callouts and annotations:

- Pilot's course to steer**: Points to the **-30°** value.
- Pilot Mode. Accessible with the** : Points to the **Gain 1** display.
- Sensor and value for the related and selected pilot mode.**: Points to the **Gain 1** display.
- User's selected data, set up according to the user's preference**: Points to the **Ang. Vent app.** display.

Press to access the pilot mode and settings. Press to cancel the last action.

2.11.3 Pilot Modes

Select the pilot mode as follow:

- On the page Pilot, Press .
- A window will open, « Mode select » is highlighted, press .
- Select the mode desired and confirm with .



Press and hold (>3s) to go directly to the Pilot Mode menu. This shortcut is available from any page

True Wind Mode

This mode requires a speed sensor, a compass sensor, a wind sensor and the software add-on « true wind ». Once this mode has been selected the pilot steers the boat to a set true wind angle as calculated by the processor.

The true wind mode is particularly well adapted to downwind conditions in waves. These are the conditions where the nke pilot demonstrates its true capability. If apparent wind was used you would get the following issues:

- The boat sails down the wave and apparent wind speed increases, the apparent wind angle decreases: it is a header, the pilot bears away to maintain the wind angle it is set to steer to.
- The boat sails up the wave and apparent wind speed decreases, the apparent wind angle increases: it is a lift, the pilot luffs up to maintain the wind angle it is set to steer to.

As a result, in waves the apparent wind mode is not efficient and it is better to select the compass mode to keep a straight course.

With true wind mode the pilot steers the boat on a straight course keeping the optimum wind angle in the waves. The wind angle to steer is not affected by boat speed variations. While sailing solo it is very efficient to leave the pilot to steer the boat and focus on sails trim (just watch power consumption).

True Wind software add-on

A code is required to activate the *true wind mode* function. Please contact your **nke** dealer to get this code. The code number is linked to each **Gyropilot 2 processor**, your dealer will need your processor's serial number to issue the code for the software add-on. This serial number can be found on a label on the processor itself or in the *true wind menu* of the **Multidisplay**.

Activation of the true wind add-on:

The hexadecimal code is entered with the virtual keyboard. Once the function is activated the little padlock symbol will turn open and green.

Apparent Wind mode

This mode requires a speed sensor, a compass sensor and a wind sensor.

With the apparent wind mode the pilot uses data from the mast head unit through the **Topline** bus to steer the boat on a set apparent wind angle. This mode is mainly used while sailing upwind.

Compass mode

This mode requires a speed sensor and a compass sensor.

With the compass mode the pilot uses the compass heading data from the **Topline** bus to steer the boat on a set heading.

Rudder mode


The rudder mode allows the rudder to be set at a fixed angle. The value can be between -35° and $+35^\circ$ to the mid-ship position.


Autopilot in GPS mode

In **GPS** mode the **Gyropilot** steers the boat to a route provided by the GPS or the navigation software connected to the NMEA input of your **Topline** system.

2.11.4 Pilot settings

Select the pilot's settings page:

Select the parameter that needs to be modified, press  to modify it.

Press right and left arrow to change the value. Once you have the right value, press  to save your choice.

Rudder coefficient

Principle: the **Gyropilot** processor automatically adjusts the value of the rudder angle to apply which is proportionally opposite to the boat speed. The faster the boat sails the lower the rudder angle.

This can be tuned to achieve best results by modifying the rudder coefficient between the 1 and 53 value range. The higher the value is, the greater the rudder angle proportionally to boat speed. The default setting is 6, which is valid for a 30 footer. Examples: a Figaro 2 or similar boat will require this factor to be 15, for a 60 footer it can be 20 and a multihull will be better with 30.

Note: if there is no boat speed data on the **Topline** bus, the **Gyropilot** uses SOG (Speed Over Ground) if available.



A good way to learn the effect of this value setting is to enter an extreme value, i.e. 50, and note the different behaviour of the boat before and after the setting change.

Counter rudder / gain

When you are steering you will often apply "counter rudder" by moving the rudder to the opposite direction allowing the heading to be maintained without overshoot. The pilot can be set up to control the boat in a similar way and the importance of this

feature will depend on the type of boat and sea conditions. The boat rotation speed measured by the gyrometer embedded in the **Gyropilot processor** is used to provide this feature.

The factory default setting is **AUTO**. This adjusts automatically with the gain. The setting value ranges from 1 to 9. The counter rudder angle is the lowest at 1.

Note that when the counter rudder setting is on AUTO, the counter rudder action is dependent on the gain setting. For a rudder gain between 1 and 3, the gyrometer is not active and there is no counter rudder. For a gain value between 4 and 9, the gyrometer is active and the counter rudder value is automatically adjusted.

Wind damping

The wind damping value adjusts the treatment of the raw data coming from the sensor and how it is used by the pilot while steering in wind mode. For example, in rough seas it is useful to increase the damping value because the mast head unit is subjected to a lot of extreme movements and the wind measurements resulting from this need to be treated differently to maintain appropriate pilot performance and sea keeping. In light wind and quiet sea conditions a low damping value will allow a finer response to changes measured optimising the performance of the pilot for the conditions. The damping value ranges from 1 to 9. The default setting is 1.

The value set to 0 means automatic wind damping. In that case the damping is linked to the wind vane oscillations with 0.5 seconds for each degree of oscillation.

Example: if the wind vane oscillation is $\pm 10^\circ$, the damping is **10** seconds.

Damping value	effect
L = 0	automatic
L = 1	1s
L = 2	2 s
L = 3	4s
L = 4	8 s
L = 5	16 s
L = 6	32 s
L = 7	64 s
L = 8	128 s
L = 9	256 s

Tacking angle

Set the tacking angle value for automatic tack performed by the **Gyropilot**.

For the compass mode the tacking angle can be set between 70° and 115° (by 5° steps). The default setting is **100°** .

Tack speed

The speed at which tacks are performed by the **Gyropilot** can be set from 1° per second to 32° per second. The default setting is 9° per second.

Man Over Board

The Man-Over-Board function can be activated from any MOB button on a **Topline** display or a wireless remote control (Gyropilot, Multifonction or Crew) if the MOB function has been set.

This function works with two selectable modes: *Crew* and *Solo*.

- **Crew mode**

This mode is selected to assist the crew for a Man-Over-Board manoeuvre. The system will not act on the rudder but activate an audible alarm and display dead reckoned bearing and distance to the MOB event.

- **Solo mode**

If the Gyropilot is in stand-by it will automatically engage and push the rudder by + 40° or – 40°, in relation to the rudder's position at the moment the MOB function has been activated.

If the Gyropilot is activated and the system features a wind sensor, the Gyropilot switches automatically to wind mode and steers the boat up to the wind (with a 0° wind angle course to steer).

If the Gyropilot is activated and the system does not feature a wind sensor, the Gyropilot switches automatically to rudder mode and applies + 40° or – 40°, in relation to the rudder's position at the moment the MOB function has been activated.

Speed reference

If the **true wind mode** is activated the **Gyropilot** will use the speed over ground (if available on the **Topline** bus) or the boat speed through the water, at your choice.

Time out setting

This sets the time the **Gyropilot** can steer the boat with the gyrometer data in case of **Topline** bus data dropout. The setting can range from 0 to 60 seconds.

Rudder offset

This calibration sets the rudder to mid-ship position. The default setting is 0°. It can be adjusted from –3° to +3.

Dead Angle

Allows a dead angle from 0 to 3° on the rudder angle.

2.11.5 Gyropilot operation

This section of the manual describes the use and operation of the **Multidisplay** once installed and calibrated. For installation and calibration, refer to the [installation](#) section, page 70.

The default factory settings of the **Gyropilot** will perform well on most boats.

To power your system on use the general switch panel where two separate 12 V power supplies are installed for:

- The power drive and the processor (refer to the installation guide of the **Gyropilot2**)
- The **Topline** bus where all sensors and displays are connected.



Warning:

Always turn the power drive and processor on **before** the **Topline** bus.

Operation with compass mode

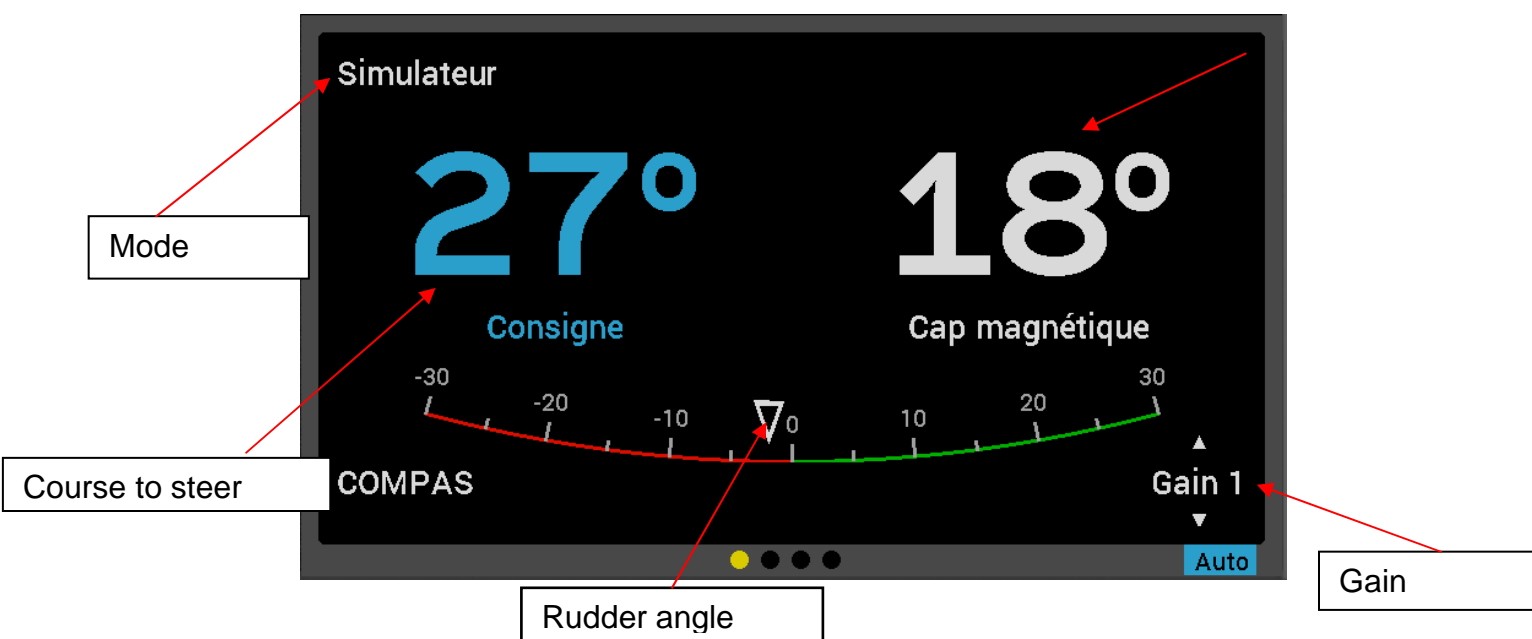
The compass mode requires a compass sensor and a boat speed sensor.

Steer the boat onto a suitable heading, allow time for the boat to settle on this course with the rudder on mid-ship position and press **Auto** to engage the **Gyropilot**.

The pilot will steer to the current heading which is automatically set as course to steer.

Return to manual steering by pressing **stop** once when you are ready at the helm.

The following graphic shows the pilot page as it will be displayed on the **Multidisplay** when the **Gyropilot** is engaged in compass mode.



Note: when the pilot is disengaged «---» is displayed instead of the course to steer.



Warning:

The **Auto** button engages the pilot and the **Stop** button disengages the pilot. Make sure the pilot is disengaged before turning the power supply off.

Operation with Apparent wind mode

The apparent wind mode requires a compass sensor, a boat speed sensor and a wind sensor.

The apparent wind mode uses data from the mast head unit made available on the **Topline** bus to steer the boat on a set **Apparent Wind Angle**. This mode is mainly used while sailing upwind.

Operation with true wind mode

This mode requires a speed sensor, a compass sensor, a wind sensor and the software add-on « true wind ». Once this mode has been selected the pilot steers the boat to a set true wind angle calculated by the Gyropilot processor.

Operation in rudder mode

The rudder mode allows the rudder to be set at a fixed angle. The value can be between -35° and $+35^\circ$ to the mid-ship position.

This mode can be used to check the drive unit or just to lock the rudder in a given position.

Using the GPS mode

In **GPS** mode the **Gyropilot** steers the boat to a route provided by the GPS or the navigation software connected to the NMEA input of your **Topline** system.

To achieve this, the GPS or the navigation software must feed the system with the following NMEA sentences:

- **\$xxXTE** : cross-track error and
- **\$xxBWC** : bearing and distance to waypoint (DTW and BTW) or
- **\$xxRMB** : XTE, latitude, longitude and bearing and distance to waypoint (DTW and BTW as minimum data).



WARNING:

The GPS mode uses the “Cross-track error” provided by your GOS compared to the course chosen.

The pilot uses this value to steer the boat and respect strictly the course over ground.

If you engage the pilot far from the route it will choose the shortest way to join it and might steer hard. To avoid it, put your boat on the route before engaging your pilot or engage the route on your map and engage the pilot.

It is therefore very important to be the closest from the route before engaging your GPS mode because if the cross-track error is $>$ to 0.4 Mn, the gyropilot will steer the boat on the route with a 45° angle.

When arriving to the waypoint, if the next waypoint activation isn't automatic, the pilot rings, follows the compass heading and leave GPS mode. The skipper must therefore verify that his route is free and that the direction of the next waypoint is correct. Press AUTO again will engage the GPS mode, steering the boat toward the next waypoint. The procedure must be repeated at each new Waypoint.



WARNING:





Your GPS or navigation software which is connected to the pilot may be able to activate the next waypoint automatically. In that case the pilot will follow the route's legs accordingly.

2.11.6 Pilot setup saving and recall

Up to 10 pilot setups can be saved and used at any time. For example, you can save a setup for upwind conditions and another one for downwind.




Saving a pilot setup:

On the pilot page :

- Press , a window will appear.
- Select «Save config.» and press .
- With the up and down arrows , select the desired setup N° and press . Then confirm with « Yes ».
- Give a name to your configuration and press « Ent » to confirm.

Recall a pilot setup:

On the pilot page:

- Press , a window will open.
- Select « Restore config. » and press .
- Select the desired back-up and press .

2.11.7 Pilot alarm

You can set two different alarms. One is for wind direction variation and another one for low voltage.

- The first alarm is called “Wind/Head’ in the system. It measures variations in wind direction when the pilot is in compass mode or heading in wind mode.




A value can be set up for the system to trigger the alarm. The default value is 15°. The alarm will sound when the wind angle variation is greater than the set value for more than 30 seconds in compass mode and when the heading variation is greater than the set value for more than 30 seconds in wind mode. The **Multidisplay** will display a message and sound beeps.

- The second alarm is called “Power Battery” in the system. It measures variations in the charge level of the battery powering the pilot’s drive unit. The default value is 8 V DC

The alarm is triggered when the voltage is lower than the set value. The Multigraphic will display a message and sound beeps.

Alarm setup procedure for the pilot:

On the pilot page:

- Press , a window will open.
- Select « Pilot alarms » and press .
- Select « Wind/head ON/OFF » and press .
- With your keypad it is possible to modify Wind/head settings but also the battery level.

2.11.8 Pilot page on remote display

The Pilot page can be temporarily displayed on a remote display, according to the Pilot actions generated on the bus (Gyropilot, Gyrographic, Multigraphic and Pilot Pad). With this option enabled, the Pilot page will display during 5 seconds as soon as an action is made on the “Auto”, “± 10°”, “± 1°” or “tack” on a remote control or a Gyropilot control display.

3 INSTALLATION

This section describes the installation and configuration of the **Multidisplay** as well as setting the parameters for an installation with a **Gyropilot 2 processor**. Refer to the **Gyropilot 2** manual for the full pilot installation (drive unit, processor, rudder feed-back...).



Warning:

- Please take time to read this manual carefully before you start installation
- Any connection to the **TOPLINE bus** must be performed through the specific interface box # 90-60-417 (featuring an NMEA port)
- Use only with the **TOPLINE bus** cable # 20-61-001.
- All **Topline** bus connections must be performed while the system is powered off.

3.1 PACKING LIST



A blocking knurled nut M14

Fixamo M14

- A **Multidisplay** with 6m cable, featuring **TOPLINE bus** and an NMEA port.
- A sun cover
- Fixamo M14
- A blocking knurled nut M14

3.2 SUGGESTED ADD PARTS LIST

- TOPLINE bus standard junction box: 90-60-121
- TOPLINE connection box with a NMEA port : 90-60-417

3.3 BEFORE INSTALLING CHECK

The best location for the unit must be:

- Easy for the helmsman to read and operate,
- Safe location with low risk of shocks,
- More than 40 cm from a compass,
- Not horizontal.

3.4 BULKHEAD INSTALLATION

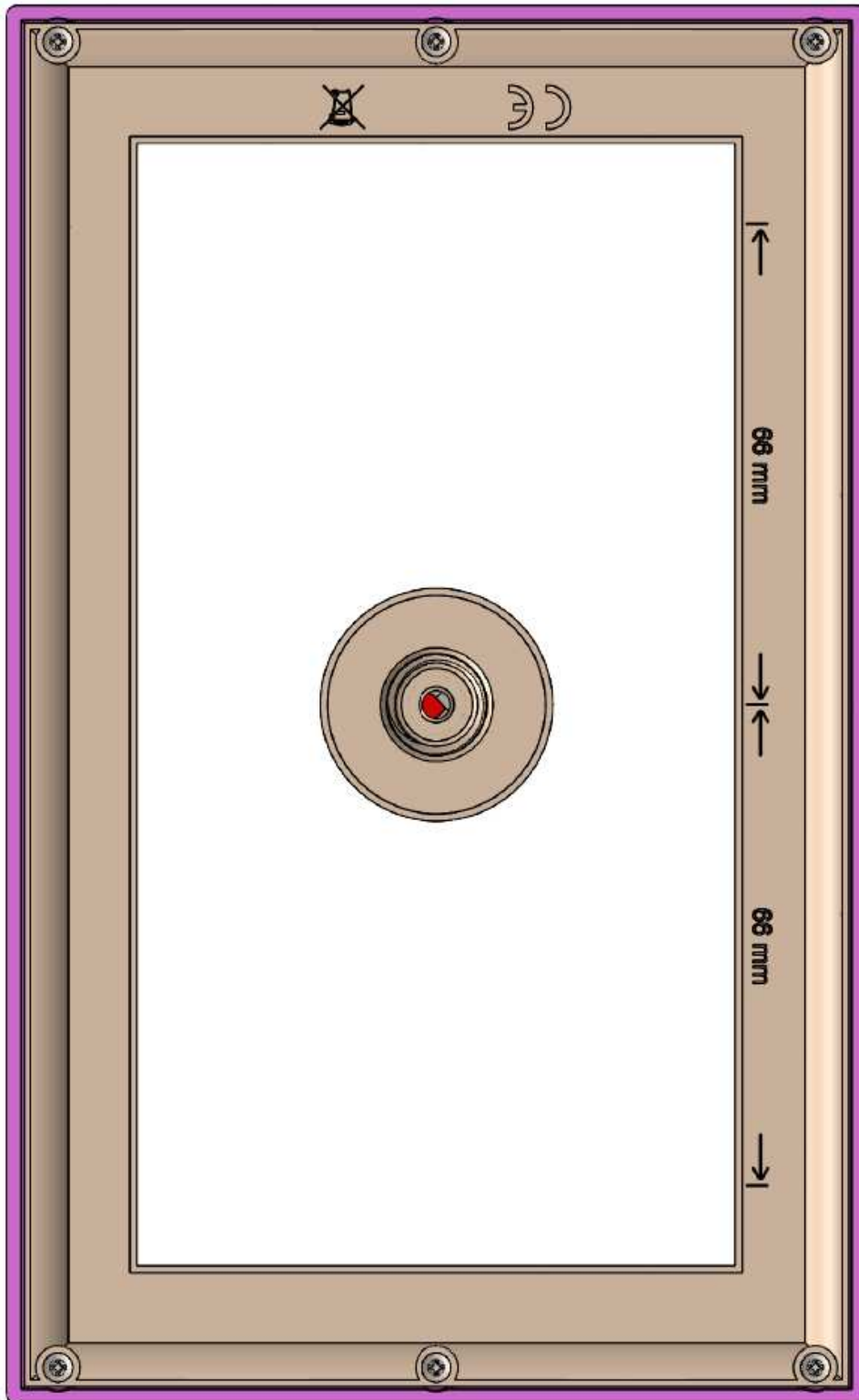
Check that the surface is clean, flat and straight. There must be enough space on the other side to run the cable.

- Drill at $\varnothing 15$ according to the drawing below
- Clean the surface with alcohol.
- Remove the protection layer at the back of the Multidisplay
- Pull the cable through the $\varnothing 18$ mm hole
- If the thickness of your support is between 1 to 3mm, you don't need the blocking knurled nut. On the contrary, for a thickness between 3.1 and 40mm, install the fixamo in advance.
- Place the display and Hand bolt.



Warning:

- The default factory setting of your Multidisplay is landscape orientation with the nke logo on the right, If you want to change the orientation see: parameters >> Maintenance.
- It is recommended to set up the orientation before installing it.
- When you fix the display, gently tighten the bolt by hand. Over tightening may damage the housing and cause a leak.
- Do not use a sealant to fix the display.



Guide size

3.5 INSTALLATION AND RECOMMENDATION FOR THE MAST MOUNT BRACKET

Mechanical resistance for the double vertical mount bracket:

In accordance with the dimensions and the aging test report, NKE recommends:

- A maximum 15kg load in the transverse axis of the boat to preserve the quality of the mount bracket.
- It is strongly recommended, not to use the mount bracket as a step or support for any manoeuvre onboard.

Installation on the mast:

It is strongly recommended not to open the rim of your mount bracket beyond 15mm compared to their initial position. Improper handling could damage the piece and annul warranty.

It is recommended to use 6mm diameter screws with wide head and add a plastic or stainless steel washer to protect the piece while tightening.

Before fixing the displays, make sure your mount bracket is well fixed. Fixings must be strongly tightened on the flat surface of the mast. Strongly tightened means to the right extent and by avoiding to crush the mount bracket. The mount bracket must be still on the mast. An abusive tightening causes deformation and damaging of the piece.

It is highly recommended to drill the mast to make the flat surface of the rim coincide perfectly with the flat surface of the mast.

For a better rigidity, rims of the mount bracket must fully rest on the flat surface of the mast.

Maintenance and cleaning of the piece:

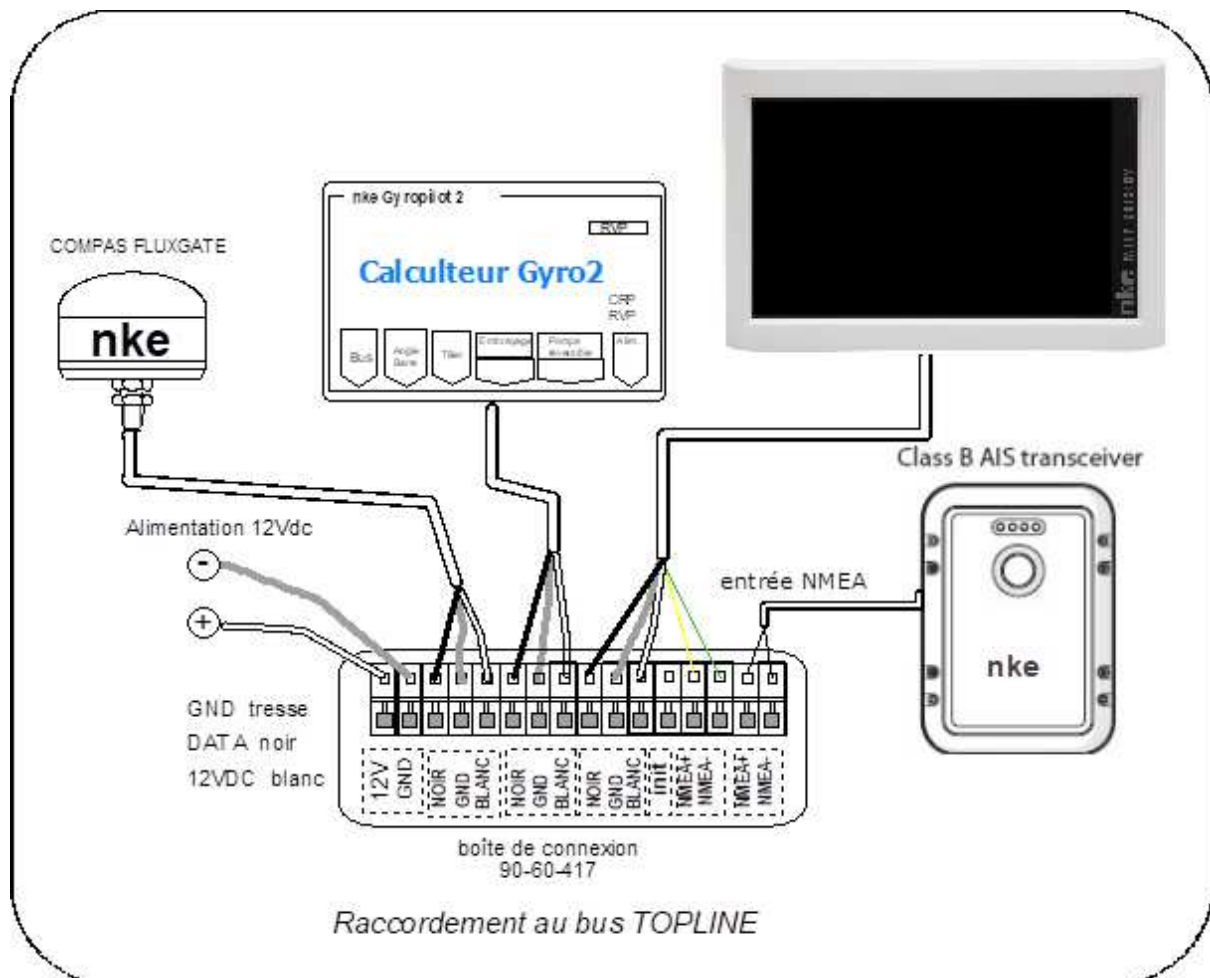
- It is possible to sand the mount bracket with 600, 800 and 1000 grit sandpaper to correct small scratch.
- To get the piece's brilliance back it is recommended to complete the sand with a polishing.
- The piece can be cleaned with white or alcohol vinegar.
- Do not use acetone, it would degrade the piece's surface.
- In case of PMMA rupture or mount bracket peeling due to a severe impact, it is recommended to use bicomponent glue such as ARALDITE 2031 to repair it.

Installation of the Multidisplay :

- Clean the fixing surface with alcohol
- Put the cable through the Ø18 drill
- Remove the protection layer at the back of the Multidisplay
- Place the display and fasten M3 screws with a lock washer and a wide flat washer.
- Tighten firmly
- To tighten the display you can use the fixamo and the blocking knurled nut.
Warning: do not tighten excessively.
- Make sure the display can't move by hand once tightened.

3.6 CONNECTION TO THE TOPLINE BUS AND NMEA

1. Run the bus cable from the **Multidisplay** to the **TOPLINE** junction of your system.
2. Connect the cable in the junction box.



Should you want to cut the bus cable to length, uncover and tin the wires before connecting them.

Cable colour code

White cable / 5 wires	functions	
white	+12V	TOPLINE Bus
black	Data <i>Topline</i>	
braid	commun	
red	INIT adress	Isolate after taken address
yellow	NMEA +	NMEA input
green	NMEA –	

3.7 NODE ADRESS FOR THE MULTIDISPLAY

At the first power on, you must give a node address to the **Multidisplay** to enable it to work on the system's bus.

The default address is **0**.

During the address taking, connect the red wire on the INIT terminal and start the installation. A message is displayed and indicates to unplug the red wire and then to plug it again. The Multidisplay will automatically take a place into the TOPLINE bus instruments' list of your installation:

- Either as "Master" with node 1 if this address is available on the bus,
- Either as "slave" with node 2 to 20 if node 1 is already taken by an existing "master".

To follow the address taking procedure of your Multidisplay, see Chapter 2.5

To follow the address resetting procedure of your Multidisplay, see Chapter 2.5

3.8 CONNECTING TO A NMEA SOURCE AND CONFIGURATION

The **Multidisplay** features an interface which converts **NMEA** sentences to the **Topline** protocol. This allows the system to display the data coming from a NMEA source on the **nke** displays.

Connect the **NMEA** device to the NMEA- and NMEA+ terminals of the 90-60-417 junction box. Be careful to respect the polarity ([refer to the connection drawing](#)). The configuration is described in the section [2.7.5.2.2](#) of this manual.

3.9 INSTALLATION AND CONFIGURATION OF THE GYROPILOT

Once the *Gyropilot* is installed, you need to configure the system. This consists of teaching the pilot the rudder's positions: place the rudder in the mid-ship position, then at the starboard lock and then the port lock. These three rudder positions are essential for the processor to run the drive unit.

Procedure :

- Press **PAGE** until you have access to the menu
- Select « pilot » and press **OK**.
- Select « Pilot setting » and follow the instructions displayed.
- Start by putting the rudder at mid-ship and press **OK**
- Push the rudder all the way to come to starboard and press **OK** , push the rudder all the way to come to port and press **OK**
- Lastly, place the rudder at mid-ship and press **OK** . The Gyropilot initialisation is complete.



Warning

The Gyropilot can only perform the automatic tack if the rudder ends are perfectly symmetrical. While setting the rudder ends, check that this is the case. Port lock to mid-ship and starboard lock to mid-ship must be the same.

4 MULTIDISPLAY SPECIFICATIONS

Feature	Value
Dimensions	With sun cover: 196 x 122 x 28mm (length x height x depth) Without sun cover: 192 x 118 x 23mm ((length x height x depth)
Weight	850g with 6m de cable (32g/m) and sun cover
Power supply	DC (continue) 8V – 32V
Consumption at 12 Volts	Day backlight: Niveau 10 = 150mA
NMEA input	NMEA 183, baud rate configurable automatically from 4800 or 38400 bauds.
Environment	Protection IP 68 (waterproof at permanent immersion and to high pressure water flow) Operation temperature -20°C - +50°C Storage temperature -20°C - +60°C
Power supply cable	Ø 5.5 mm, 4 wires + braid, length 6m.
Display	7" colour graphic screen, translective, embedded LED backlight.

5 EVENTS MESSAGES



Message at system start up, indicating the Multidisplay address.



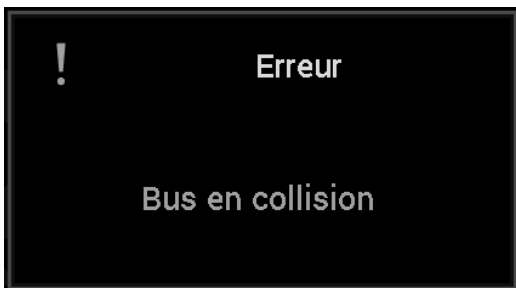
Multidisplay being set as "Master", when the system creates the list (search all sensors and displays in the bus), it displays addresses for slave displays.



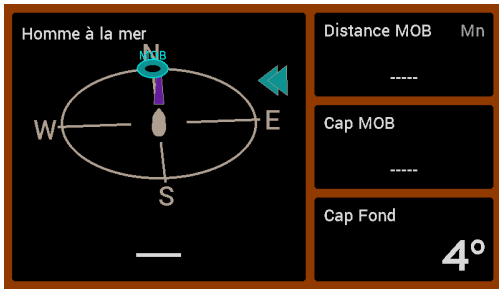
The "master" display is unplugged or out of order. This can be solved by replacing the "master" display by another one. (Refer to "Toplines addresses" section).



The black wire of the Topline bus cable, carrying the data is in short-circuit with one of the 2 other wires. This can happen in a junction box, the cable itself or one of the units connected to the bus.



2 similar sensors are connected to the bus and transmit the same data, or an NMEA input has been set for the same data as a sensor present in the bus. Check the connected sensors and reset the NMEA inputs.



This page is shown when the Man Over Board function has been triggered. The **dead reckoned** distance and bearing to the man over board are displayed together with the boat's course over ground. The timer is triggered to give the time from event.



This message displays when the power supply to the Topline bus is below 9 Volts. Data is saved and the system switches off. Check the battery level and eventually charge it.



With the pilot in wind mode when an alarm has been set and the apparent wind angle is over the defined range. Press any key to inhibit the alarm for 7 minutes.

When the pilot in compass mode and an alarm has been set this will be displayed when the compass heading is over the defined range. Press any key to inhibit the alarm for 7 minutes.

The battery powering the pilot's drive unit has reached a lower voltage than defined in the setup. Press any key to inhibit the alarm for 7 minutes.

WARNING: THIS ALARM IS ALWAYS ACTIVATED.

Charge the battery.

6 MULTIDISPLAY SOFTWARE EVOLUTION



YOU CAN HELP PROTECT THE ENVIRONMENT!
Please remember to respect the local regulations:
Hand in the non-working electrical equipment
to an appropriate waste disposal center.