



**NOVASAIL**

**NS360** *RC*

# Operating Manual

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# Introduction

Welcome to the *NS360RC*. As a complete racing system derived from the NS360 technology, which includes a GPS speedo, magnetic compass, wind shift indicator, race timer and all other essential race functions (VMG, distance to the start line), the new *NS360RC* features a wireless and real-time communication transceiver offering a wide range of new functions and applications:



- Record up to 500 hours of racing or training
- Replay on Google Earth and other navigational software
- On-board use of tactical and navigation software through wireless technology
- Computer management of 99 waypoints, including their coordinates and descriptions
- Update to new features

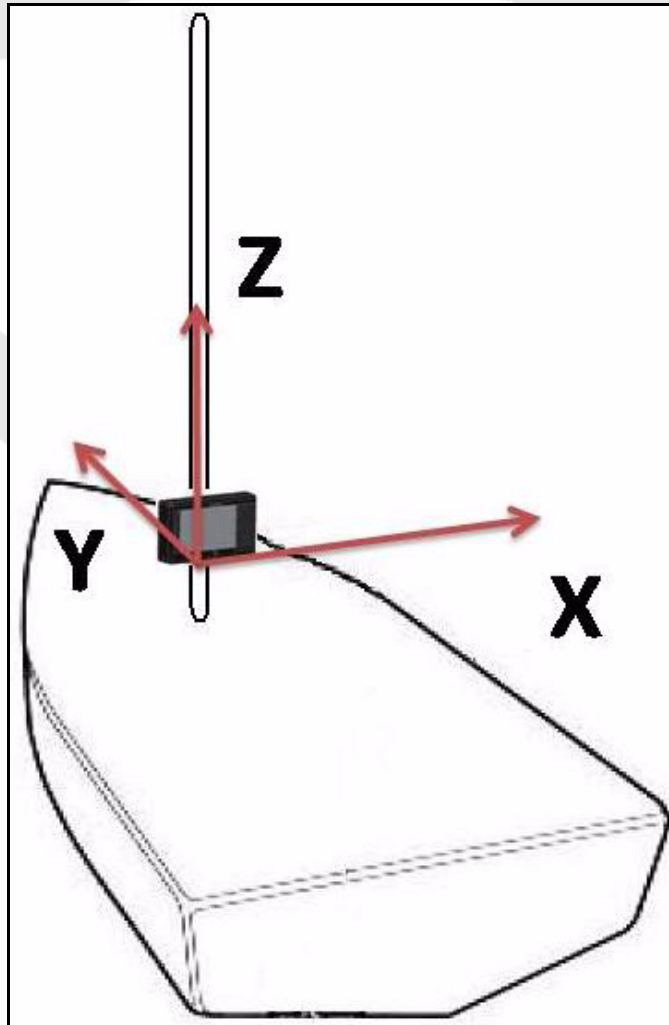
All this with one single AA battery giving 30 hours of use!

# Installation

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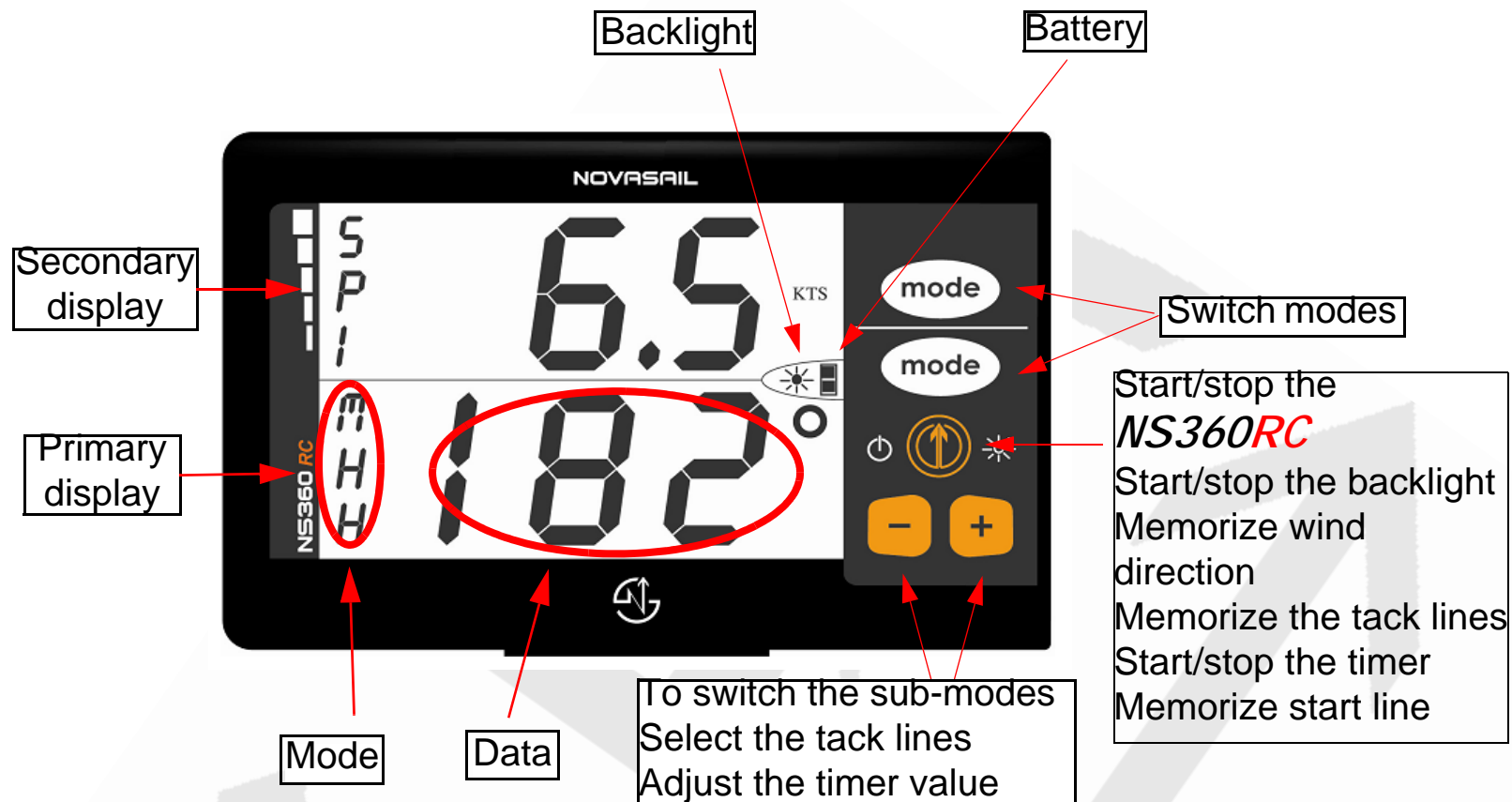
The mounting location should be as far as possible from any magnetic objects to avoid any interference with the compass sensor.

The *NS360RC* should be mounted as close as possible to the vertical and horizontal planes.



**Note:** Wherever you mount the *NS360RC*, it shouldn't be flush to any thick surface such as the hull, so that the sensitivity of the embedded GPS receiver is not affected.

# Controls and display description



## Modes and sub-modes

Speed :

- **SPI**: Instant speed
- **SPA**: Average speed
- **SPM**: Maximum speed
- **S+H**: Instant Speed & Heading
- **TRP**: Total distance

Magnetic Heading :

- **MHH**: High sensitivity
- **MHM**: Medium sensitivity
- **MHL**: Low sensitivity

Velocity Made Good : **VMG**

Wind Shift Indicator: **WIN**

TIMER : **TIM**

Roll angle : **ROL**

Start Line Distance : **SLD**

Waypoint memorization : **WAY**

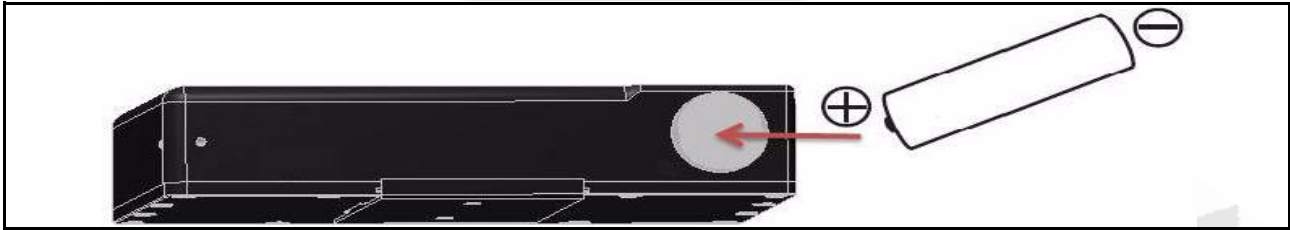
Recording of sailing : **GPS**



# Operations

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## Switching power on and off

- Make sure the battery is installed with the correct polarity and has enough remaining power (positive pole inserted first)



- Press  to start the device. A beep will be emitted
- Press and hold  for more than 4 seconds until the screen displays OFF and the sequence “3”, “2”, “1” is finished. A beep will be emitted when the device turns off

The device will turn off automatically when it remains in the horizontal position for more than 3 minutes. A beep will be emitted 3 seconds before it turns off.






*Note: If the device does not turn on, you need to check if the battery is fully charged, that the battery compartment is dry, and the polarity is correct.*

*Note: Until enough satellites are locked, the **NS360RC** is not ready to use. For the sub-modes SPI, SPA and TRP and the modes VMG, SLD and WP, the screen displays: “---”. For the SPM sub-mode, the maximum value is displayed but blinks until it is ready.*

*Note: Alkaline batteries should be used in order to result in a maximum lifespan of 30 hours. When using a disposable battery, it is also recommended to remove it if the device is not used for a prolonged period of time (in order to avoid a possible leakage inside the battery compartment).*





*If using rechargeable batteries, low self discharge rate battery types are preferred, because normal rechargeable batteries lose their stored energy more quickly. Recommended batteries are SANYO ENELoop, GP RECYKO+ or UNIROSS HYBRIO. This kind of rechargeable battery will last for approximately 20 hours.*

## Switching backlight on and off

- Press and hold  for more than 1 second until the icon  is displayed on the screen. If the OFF sequence starts, simply release the button  before the sequence “3”, “2”, “1” is finished.
- To turn off the backlight, press and hold  for more than 1 second until the icon  disappears from the screen.

*Note:* When you press and hold the select button to switch on/off the backlight, you will not make any selection and therefore will not change any parameter.

## Switching modes and sub-modes

- To have two different separate readings, first choose the mode and sub-mode required on the primary display by pushing  and then the arrows   for the sub-mode selection. Then, display the selected sub-mode on the secondary display using the  button.
- You are free to choose another mode/sub-mode on the primary display.

*Note:* Any sub-mode selection on the primary display will affect automatically the secondary display when both displays are in the same mode.

## SPeed mode

This mode provides the speed over ground of the boat as measured by the GPS receiver. Several speeds are available through the sub-modes: Instant, Average and Maximum as well as the trip distance.

- Use the arrows   to scroll the sub-modes.

# Operations

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## ***SPeed sub-modes***

- **SPI: SPeed Instant**

The Instant speed of the boat is displayed in knots (kts) with an accuracy of 0.1 knot. The minimum speed is 1 knot, and the maximum speed is 99.9 knots.




- **SPA: SPeed Average**

This sub-mode provides the average speed of the boat during the past 2 to 10 seconds. The average time can be adjusted in the setup menu, see “SPeed Average : SPA”, page 26. This is particularly useful when sailing with big waves upwind or downwind with lots of speed changes.

- **SPM: SPeed Maximum**

The Maximum speed that the boat has reached since the last reset.

### ***To reset the maximum speed:***

- Display SPM sub-mode in the lower screen using the arrows  
- Press 

*Note: For that sub-mode, don't forget to reset the maximum speed before your next sail begins to ensure the value displayed refers to the new trip.*

- **S+H : Speed + Heading**

This mode displays consecutively the instant speed and the heading information. The heading information is either coming from the magnetic compass or the GPS module depending on the selection done in the setup menu, see “Heading mode”, page 21.

- **TRP: TRiP distance**

The TRP mode displays the total distance made by the vessel since the last reset.

*Note: For that sub-mode, don't forget to reset the trip before your next sail begins to ensure the value displayed refers to the new trip.*

### ***To reset the trip distance:***

- Display TRP in the lower screen using the arrows   then press 



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## Magnetic Heading compass mode

To win races you need to react to even small wind shifts. The **NS360RC** digital compass delivers precise and reliable heading information to help you to tack and jibe at the most suitable times.

*Note: This mode must be enabled in the setup menu (see “Heading mode”, page 21)*

The sensitivity of the compass can easily be adjusted to High, Medium or Low by scrolling through the sub-modes.

- Use the arrows   to scroll the sub-modes.

### **Sub-modes of the Magnetic Heading compass:**

- **MHH: Magnetic Heading High** sensitivity

When sailing with light winds and flat seas, High sensitivity allows you to appreciate very small wind variation.

- **MHM: Magnetic Heading Medium** sensitivity

Medium sensitivity is more suitable for race boats under medium wind and sea conditions. Dinghy racers will appreciate this mode.

- **MHL: Magnetic Heading Low** sensitivity

Under Low sensitivity more subtle variations due to big waves and sudden gusts are filtered.

*Note: The magnetic variation of the area of use can be compensated by adjusting the compass offset. Please refer to the Advanced Operations “Compass offset (angle of magnetic variation/declination)”, page 22“ for more details on the compass offset adjustment.*

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## COG : Course over ground (GPS Heading mode)




When the **NS360RC** is mounted on a moving support (a rotating mast for example), it is possible to display the GPS heading. In that mode the heading information coming from the GPS receiver can be averaged from 1 to 5 seconds, see “Course Over Ground average (GPS heading) : COG”, page 27.


*Note: This mode must be enabled in the setup menu. As per all GPS devices available on the market, the accuracy of the GPS heading is lower compared to the magnetic heading. This mode must be used only when the **NS360RC** is used on a moving support.*

## VMG mode

This mode provides the projected speed of the boat on the wind direction. The higher the value, the faster the vessel is going upwind or downwind. First, the wind direction must be set to display a VMG value on the data line. If no wind direction is set, the screen displays “---”. The VMG is displayed in knots (kts). This mode is disabled if the GPS heading is enabled.

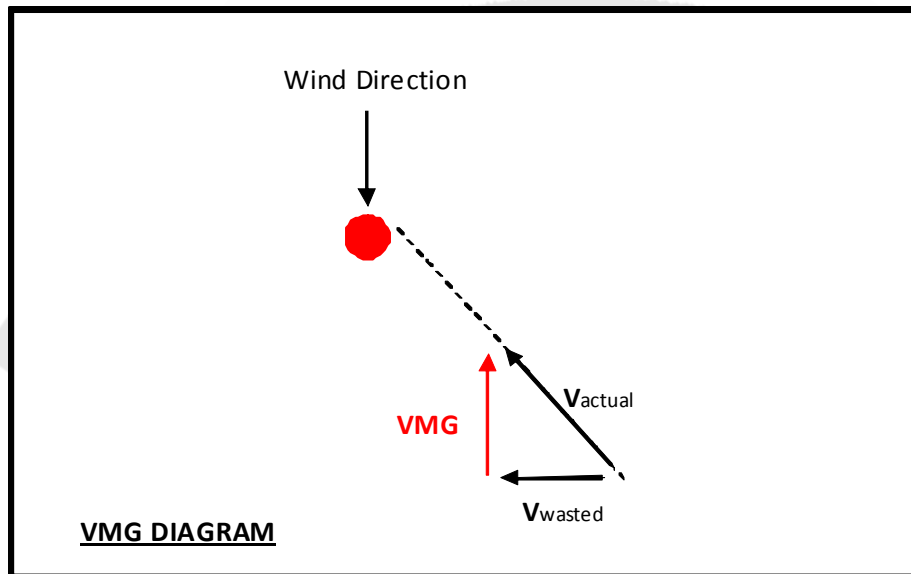
### **To set and adjust the wind direction in VMG mode**

- Press  to capture the wind direction as the current heading value.
- Adjust the wind direction value with the arrows  

*Note: Each time you press , the current vessel heading is used as the wind direction.*

*Note: The wind direction may also be calculated from the the starboard and port tack lines if you have already set the values in the WIN mode. (See WIN mode, page 11)*




*Note:* When you memorize a wind direction in VMG mode, the tack lines in WIN mode are updated, assuming that the boat makes the same upwind angle on starboard and port.




## WIND shift indicator mode

Used in Wind Shift Indicator (WIN) mode, the *NS360RC* displays numerical values of the wind shifts allowing an immediate and effortless interpretation. To use this mode, you need to memorize the tack lines on starboard and port. This mode is disabled if the GPS heading is enabled.

### **Memorization of the tack lines:**

- Sail upwind to your optimal VMG
- "D 1" is displayed on the data line of the lower screen
- Press  to use the current magnetic compass heading as the one of the tack line directions.
- The wind shift value is immediately displayed
- Press the arrows   to display "D 2" on the data line of the lower screen

# Operations

- Sail upwind to your optimal VMG on the other tack line
- Press  to use the current magnetic compass heading as the other tack line direction

*Note:* The sequence of memorization of the tack lines on starboard and port is not defined. You can do starboard then port or vice versa.

The WIN mode displays an angle in degrees which corresponds to the difference between the tack line direction and the current magnetic compass heading of the boat. It displays 'H' (for Heading) in front of the value if the wind is heading, and 'L' (for Lift) in front of the value if the wind is lifting. When sailing upwind, you need to sail inside the lifts 'L'.

When sailing downwind, the WIN mode will display 'd' (for downwind) in front of the value of the deviation from the wind direction.

*Note:* The first tack line memorized is by default considered to be the starboard line. However, if this was the port tack line, the product will understand it automatically.

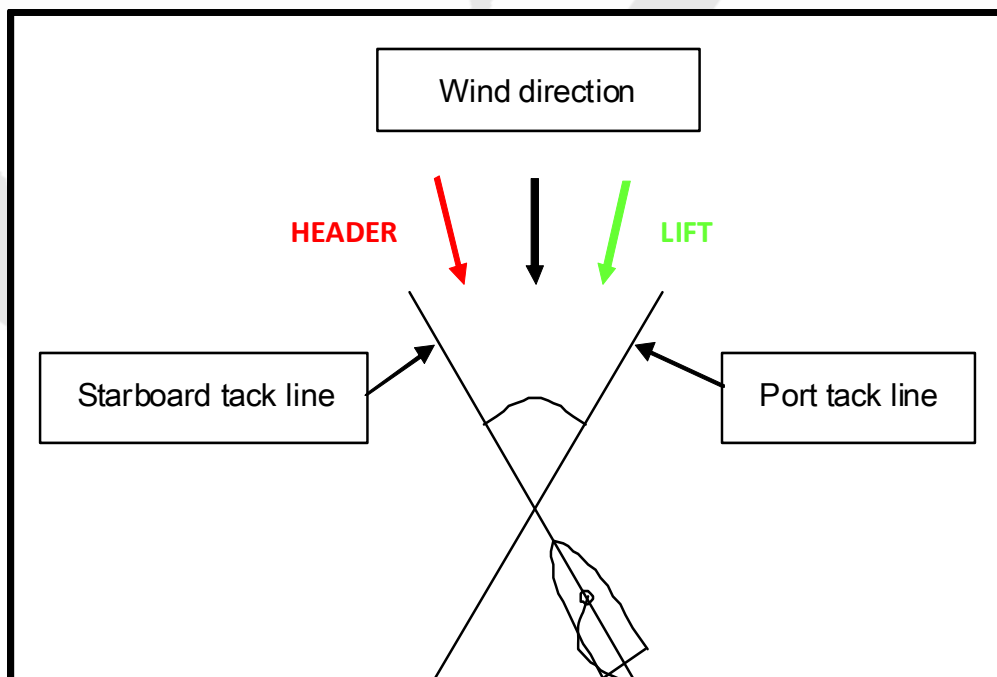


fig.1 WIN mode diagram when sailing on starboard

## TIMER mode

This mode offers a countdown timer which can be set from 1 to 9 minutes.




When counting down, a short beep sounds:

- each minute until the last minute
- each ten seconds until 10 seconds
- each second until the start time

At the start time:



- a long beep sounds
- the timer starts counting the race duration in minutes and hours


### ***Adjust, start and stop the TIMER:***

- Adjust the timer value with the arrows  .
- Press  to start and stop the TIMER.

### ***Resynchronize the TIMER to the nearest minute:***

When the TIMER is running, at any time, you can resynchronize to the upper or lower minute

- Press the arrow  to resynchronize the value to the **upper** minute.
- Press the arrow  to resynchronize the value to the **lower** minute.

**Note:** The timer continues to count down until you press  to stop it, even during resynchronization. When stopped, the display blinks and the timer remains frozen.

**Note:** After the start, the timer will switch automatically to the mode defined in the SET mode. Please refer to the Advanced Operations “Exit Timer mode: ETI”, page 24 for more details. (The default value of the Exit Timer mode parameter is “SP” mode).

**Note:** It is possible to start a GPS trace when the timer reaches 0:00 in downcounting mode. See “GPS trace start condition : REC”, page 26 in the SET

# Operations

mode. This is particularly useful in order to have a GPS trace starting on the start line.

*Note* : When the down counter reaches '0:00' (whether the TIM mode is displayed or not), it will automatically force the exit of the 'SLD' mode (if displayed) as defined in the SET mode. Please refer to the Advanced Operations "Exit mode of the Start Line: ESL", page 24" for more details.

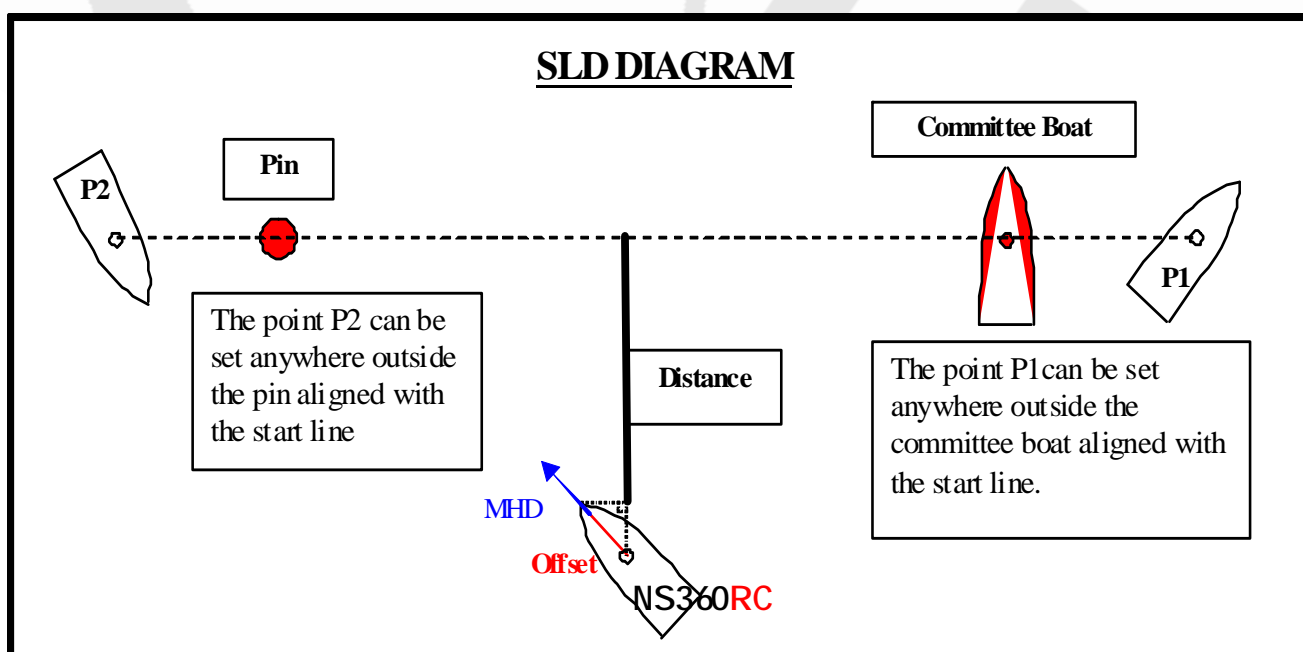
## Start Line Distance

Knowing the exact distance in meters to the start line gives a huge advantage in helping you start ahead of the fleet and even win the race. The **NS360RC** start line distance function is the most advanced on the market as it combines a 1 meter accuracy and a dynamic boat offset compensation calculated with the real boat magnetic heading to the start line.



The accuracy of the distance is 1 meter but it's safer to take a bigger margin. The maximum distance is 999 meters.




The start line consists of 2 points "P 1" and "P 2" that have to be aligned with the start line:

- P1: Committee boat
- P2: Pin



## **Memorize the start line points 'P 1' and 'P 2'**

- 'P 1' is displayed on the data line of the lower screen.
- Press  when you reach the committee boat reference point.
- 'P 2' is now displayed on the data line of the lower screen.
- Press  when you reach the pin reference point.
- The distance in meter is now displayed on the data line.

*Note:* If the start line is modified by the committee, you may be required to re-enter one or both reference points. It can be done by pressing the arrows   to select the desired reference point and to memorize it by pressing .

*Note:* The distance from the front of the boat to the **NS360RC** is called the Boat Offset (BOF). Please refer to Advanced Operations "Boat offset", page 23" for more details on the boat offset adjustment.

*Note:* After the start, the Start Line Distance (SLD) will switch automatically to the mode defined in the SET mode. If the TIM mode is used and the down-counter reaches '0:00' (displayed or not), it will force automatically the exit of the 'SLD' mode. Please refer to the Advanced Operations "Exit mode of the Start Line: ESL", page 24" for more details. (The default value of the Exit Start Line mode parameter is "MH" mode).

## **Roll angle indicator mode : ROL**

Used in Roll angle indicator (ROL) mode, the **NS360RC** displays the roll angle of the boat. The angle range can vary from 0 to 70 degrees; if the angle is greater than 70 degrees, the value blinks and remains unchanged.



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## WAYpoint mode

The waypoint mode has been made for those who require the features and information usually provided by a portable GPS. Up to 99 waypoints can be memorized either through the "Novasail wireless manager" software or passing over the position. Each time a waypoint is selected, the direction, speed and distance to reach it are displayed sequentially every 4 seconds.

### ***To use a waypoint***

- The active waypoint is the one previously used, or by default, waypoint 1
- Press the arrows   to select the required waypoint. The active waypoint automatically returns to waypoint number 1 at the end of the list
- The direction, speed and distance are displayed sequentially every 4 seconds

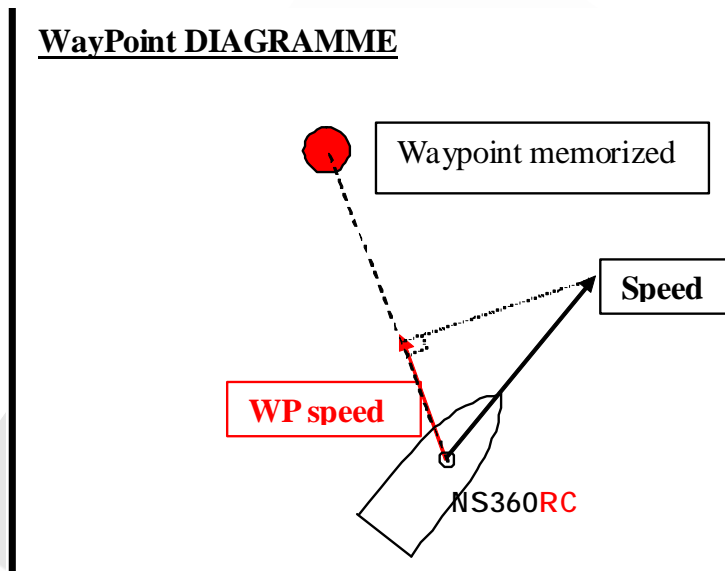
### ***To memorize a waypoint***

- Press the arrows   to select the waypoint number
- To avoid deleting an existing waypoint, select the empty one at the top of the list (the waypoint with the greatest number)
- Press  to memorize the current boat position into the selected waypoint
- The direction, speed and distance to reach it are displayed sequentially every 4 seconds

**Note:** The waypoint number has to be displayed on the screen before it can be memorized. Press  or the arrows   to display it.

The waypoint speed displayed in knots is calculated using the waypoint position, the boat position, the boat speed and the heading.






The sign '+' means that you are approaching the waypoint and '-' that you are going in the opposite direction.

## Memorization of sailings : GPS

This mode allows you to memorize up to 500 hours of sailing through a maximum of 999 navigations. During the recording, a set of information including the geographical coordinates, the magnetic heading, the speed and the angle of roll are memorized at regular time intervals from 1 to 60 seconds as defined by the parameter GPS. (*Please refer to Advanced Operations, page 24 for more details*). The recordings can be transferred to the computer, tracked on Google Earth or other softwares, and also erased from the computer and device.


### **Recording a navigation**

- Press  to start recording a new sailing
- The current number displayed on the screen corresponds to the total number of races currently stored in the memory. As soon as the GPS reception is good enough, depending on the **REC** parameter in the SET menu then :
  - if set to **ON**, the new race information starts recording immediately and the display shows the new race number





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- if set to **tUP** (timer upcounter mode), the new race information are recorded when the timer is downcounting and reaches 0:00 (typically on the start line); the display will show the new race number

- Press  to stop recording, the number will stop blinking

## ***Checking the available memory for recording***



- Press the arrows   to check the percentage of memory available. The sub-mode "MEM" is displayed instead of "GPS"
- Press the arrows   again to come back to "GPS"


## ***Erasing all the recordings***

- Press the arrows   simultaneously for 3 seconds. The display will show "DEL" during these 3 seconds. After the long beep, the entire GPS memory will be erased. If you stop pressing the arrows   before the 3 seconds are up, nothing will be erased

*Note: The sailing number blinks quickly when the GPS is not connected to the satellites. As soon as the satellite coverage is good, the recording starts automatically.*

## **Current GPS coordinates : LON & LAT**

This mode provides the current GPS coordinates as measured by the GPS receiver (degrees/minutes decimal). This mode is entered by pushing simultaneously the  and  buttons: the longitude and the latitude are displayed consecutively. The upper line indicates the current coordinate degrees, while the lower line will display consecutively the minutes and the minute decimal. For example, 2.345 minutes will be displayed in 2 steps: '2' is displayed first then '345' for the decimal value.

Any push on the  button will exit this mode.

*Note: The LON/LAT mode can be entered only if the current mode displayed is different from the 'GPS' mode.*






## SET mode

The **SET** mode allows the adjustment of your *NS360RC* parameters sequentially as follows:


- Heading mode
- Compass offset
- Boat offset
- Exit mode of the Timer
- Exit mode of the Start Line
- GPS activation and setting
- GPS trace start setting
- Speed average time
- Course over ground average time
- Wireless activation and NMEA channel selection
- Reset the product to the factory default values
- Compass calibration



*Note:* The functions using the GPS can be turned off if your sailing class does not allow them. OFF is displayed when you select any mode using the GPS module.

### **To enter the SET mode**

- The *NS360RC* must be switched OFF.
- Press the upper screen  first, then  simultaneously. “SET” is displayed on the data line of the upper screen.
- Each parameter is displayed on the mode line of the lower screen.
- You can select the required value for each parameter using the arrows  .
- Press  to memorize the parameter value and switch to the next parameter.
- You exit the **SET** mode automatically after the last parameter is memorized.

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*Note: Each parameter is memorized when  is pressed and before the next parameter is displayed, except for reset and calibration.*

Name	Display	Description
HEAding mode	HEA	This allows the selection of the magnetic or the GPS heading to be displayed - MH, magnetic heading (default value) - COG, GPS heading
Compass Offset	COF	This allows the compensation of the magnetic deviation. The default value is 0
Boat Offset	BOF	This is the length between the front of the boat and the <i>NS360RC</i> - default value 0, can be adjusted in 0.1 meter increments.
Exit Timer mode	ETI	- default alternate mode is the Speed mode - All other modes can be selected
Exit Start Line mode	ESL	- default alternate mode is the Magnetic Heading mode - All other modes can be selected
GPS activation and setting	GPS	- OFF (if your sailing class does not allow the GPS) - time interval between two recorded points. The default value is 3 seconds.
GPS trace start	REC	This parameter sets the start condition of the GPS trace - ON (default value), the trace is started when the  button is pushed - tUP (timer UP), the trace is started when the  button is pushed and when the timer reaches 0:00 in down-counting mode




# Advanced Operations

Speed average time	SPA	Set the time used to compute the average value for the speed in SPA mode (2 to 10 seconds). Default value is 3 seconds.
Course over ground average time	COG	Set the time used to compute the average value for the GPS heading mode (COG, 1 to 5 seconds). Default value is 1 second.
Wireless activation and NMEA channel selection	RF	- OFF - NMEA channel selection from 1 to 99. The default value is OFF
RESet to factory default values	RES	- ON to retrieve factory values - OFF by default
Compass CaLibration	CAL	- ON to start - OFF by default

The **NS360RC** will automatically exit the SET mode upon completion of all parameters.

*Note:* You can also exit the SET mode anytime by switching off and on the product.

## Heading mode






- Press  until HEA (HEAding mode) is displayed on the data line of the lower screen.
- Use the arrows   to enter the required heading mode : MH for the embedded magnetic compass, COG for the GPS heading.

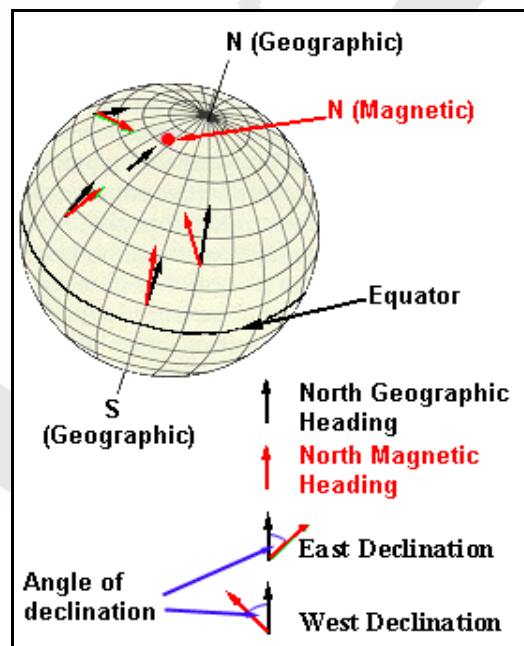
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## Compass offset (angle of magnetic variation/declination)

Because the angle of variation varies with respect to the geographic position, the **NS360RC** must be adjusted according to the specific location to achieve the maximum accuracy and synchronization between the GPS unit and the magnetic compass. The angle of variation is the actual angle observed between the true North geographic position and the actual North magnetic position.

To compensate for the magnetic variation, you need to adjust the parameter **COF** (Compass Offset) as follows:

- Press  until COF (Compass Offset) is displayed on the data line of the lower screen.
- Use the arrows   to enter the required variation corrective value. The first digit will display 'W' or 'E' for a west or a east variation, and the remaining 2 digits are the actual angle, adjustable from 0 to 45 degrees.
- Press  to store the value, BOF (Boat Offset) is now displayed.
- Go through all the parameters to exit the SET mode or press and hold  for more than 4 seconds until the device turns off.



There are a number of resources available on the web that compute angles of variation for any location in the world. A “world Magnetic Model Calculator” is available from both the National Geophysical Data Center and the British Geological Survey:

- <http://www.ngdc.noaa.gov/seg/geomag/jsp/struts/calcDeclination>
- [http://www.geomag.bgs.ac.uk/gifs/wmm\\_calc.html](http://www.geomag.bgs.ac.uk/gifs/wmm_calc.html)





Here’s some examples of magnetic variation for different geographic locations:

- Hong Kong: 2 degrees west
- Melbourne: 11 degrees east
- Marseille: 0 degree
- San Francisco: 14 degrees east

## **Boat offset**


The boat offset corresponds to the distance from the front of the boat to the *NS360RC*. The remaining distance to the start line is calculated taking the boat offset and the current magnetic heading into account. The default value is 0, the maximum value is 99.9 meters and the increment is 0.1 meter.

Example: The real distance between the front of the boat to the *NS360RC* is 3.6 meters. You need to enter a boat offset equal to 3.6 meters. Then, considering that the *NS360RC* is 10 meters from the line. When you face the start line, the displayed remaining distance is equal to the 10-3.6 meters, rounded to 6 meters. However, using the magnetic heading of the boat, if you sail parallel to the line, then the display value is equal to the real distance between the line and the *NS360RC*, 10 meters.

- Press  until BOF (Boat Offset) is displayed on the mode line of the lower screen.
- Use the arrows   to enter the length between the front of the boat to your *NS360RC*.
- Press  to store the value, ETI (Exit mode of the Timer) is now displayed.






# Advanced Operations

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- Go through all the parameters to exit the SET mode or press and hold  for more than 4 seconds until the device turns off.

## **Exit Timer mode: ETI**

After the start, the Timer mode is not needed anymore, for this reason the **NS360RC** will switch automatically to the desired exit mode by simply setting the parameter ETI (Exit Timer mode) as follows:


- Press  until ETI (Exit Timer mode) is displayed on the data line of the lower screen.
- Use the arrows   to select the desired exit mode for your **NS360RC**.
- Press  to store the value, ESL is now displayed.
- Go through all the parameters to exit the SET mode or press and hold  for more than 4 seconds until the device turns off.

*Note: Only a mode (SP, MH, VMG, WIN, TIM, SLD, WP) and not a sub-mode (SPI, SPA, SPM, TRP, MHL, MHM, MHH, WP1, ...etc) can be memorized in the ETI parameter. However, the timer will switch automatically to the memorized mode and the sub-mode that you are currently using.*

*Note: The mode by default is SP (Speed mode).*





## **Exit mode of the Start Line: ESL**

After the start, the Start Line Distance (SLD) mode is not needed anymore, for this reason the **NS360RC** will switch automatically to the desired exit mode by simply setting the parameter ESL (Exit mode of the Start Line) as follows:

- Press  until ESL (Exit mode of the Start Line) is displayed on the data line of the lower screen.



# Advanced Operations

- Use the arrows   to select the desired exit mode for your *NS360RC*.
- Press  to store the value, GPS (GPS function parameter) is now displayed.
- Go through all the parameters to exit the SET mode or press and hold  for more than 4 seconds until the device turns off.

*Note:* The ESL parameter can only be a mode (SP, MH, VMG, WIN, TIM, SLD, WP) and not a sub-mode (SPI, SPA, APM, TRP, MHL, MHM, MHH, WP1, ...etc). However, the SLD will switch automatically to the memorized mode and the sub-mode that you are currently using.

*Note:* The mode by default is MH (Magnetic Heading mode).

## GPS module activation and setting: GPS

If your boat class does not allow electronic navigation aids and/or a speedometer, you are required to switch off all the functions issued with the embedded GPS module. When the GPS feature is turned off, the battery life is increased to approximately 150 hours. To check more details about the functions affected when switching off the GPS module, please refer to the table 1: GPS functions activation.

**Table 1: GPS functions activation**

	GPS Off
Speed: <b>SP</b> ( <b>SPI/ SPA/ SPM/ S+H/ TRP</b> )	Off
Magnetic Heading: <b>MH</b> ( <b>MHH/ MHM/ MHL</b> )	On
Velocity Made Good: <b>VMG</b>	Off
Wind Shift Indicator: <b>WIN</b>	On
Roll indicator: <b>ROL</b>	On
Timer: <b>TIM</b>	On

# Advanced Operations






**Table 1: GPS functions activation**

	<b>GPS Off</b>
Start Line Distance: <b>SLD</b>	Off
Waypoint: <b>WAY</b>	Off
Memorization of sailings: <b>GPS</b>	Off
<b>GPS coordinates : LON &amp; LAT</b>	Off

*Note:* During normal usage, if you select a mode which has been disabled by setting off the GPS module, then 'OFF' will be displayed on the screen.




This parameter also allows to define the time interval between two recorded positions in the GPS mode. The interval value is between 1 second and 60 seconds. The default value is 3 seconds.

## **GPS trace start condition : REC**




- Press  until REC (RECORD mode) is displayed on the data line of the lower screen.
- Use the arrows   to validate the required record mode : ON for an immediate GPS trace record when  is pushed in GPS mode. tUP for a trace to be started when  is pushed and when the timer reaches 0:00 in downcounting mode (typically on the start line).

*Note:* the GPS trace can start only if enough satellites are detected

## **SPeed Average : SPA**

- Press  until SPA is displayed on the data line of the lower screen.
- Use the arrows   to choose the required average time for the speed computation in SPA mode : the speed is averaged on the last 2 to 10 seconds according to this parameter.

## **Course Over Ground average (GPS heading) : COG**

- Press  until COG is displayed on the data line of the lower screen.
- Use the arrows   to choose the required average time for the GPS heading computation in COG mode : the heading is averaged on the last 1 to 5 seconds according to this parameter (the default value is 1 second, no average)

## **Wireless activation & NMEA channel selection: RF**

To be connected together, the *NS360RC* and the RF dongle should communicate using the same NMEA channel. This channel defined by the parameter RF can be set from 1 to 99. If set to "OFF", then the RF communication is stopped. The default value is 1, meaning that the NMEA channel 1 is active. When the *NS360RC* is used in standard user mode, the NMEA data are sent through RF in real time to the RF receiver and can be used by some navigation softwares by selecting the NOVASAIL USB dongle as the communication interface. The following messages are transmitted : GPVTG, GPGSA, GPRMC, GPGGA, GPGSV.

*Note: If, within a range of 20 meters, another boat is using the same NMEA channel, this may create interference. It is recommended to select a different channel.*

*Note: It is recommended to disable the wireless communication when not in use, as this will help decrease the power consumption*

## **RESet to factory compass calibration values: RES**

When set to ON and when the select key is pushed, the default factory calibration values of the compass are restored and the *NS360RC* is powered off automatically.

# Calibration

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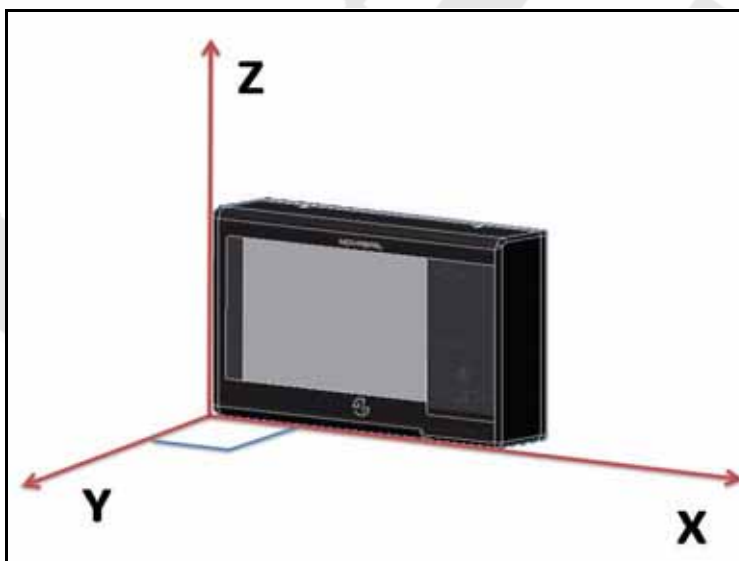
## ***User CALibration of the magnetic compass: CAL***

When set to ON and when the select key is pushed, the **NS360RC** enters a set of sub-menus to allow a user calibration of the magnetic compass. There are 10 sub-menus for which the user has to follow the sequence described below. To allow the maximum accuracy of the calibration procedure, it is recommended to perform this outdoors to avoid any magnetic disturbing fields. A wooden surface is highly recommended (eg a table) and it is necessary to ensure that there are no ferrous materials nearby (wrist watches should be removed).

To start with draw 2 perpendicular lines (X and Y axis) on a perfectly horizontal plan. On the lower screen of the display, the calibration sub-menu number is displayed. There are 10 steps to follow in order to complete the calibration of your **NS360RC**. Upon completion of the sequence, the **NS360RC** will memorize the new values and shut down automatically. If the **NS360RC** is shut down during the calibration, nothing will be memorized.

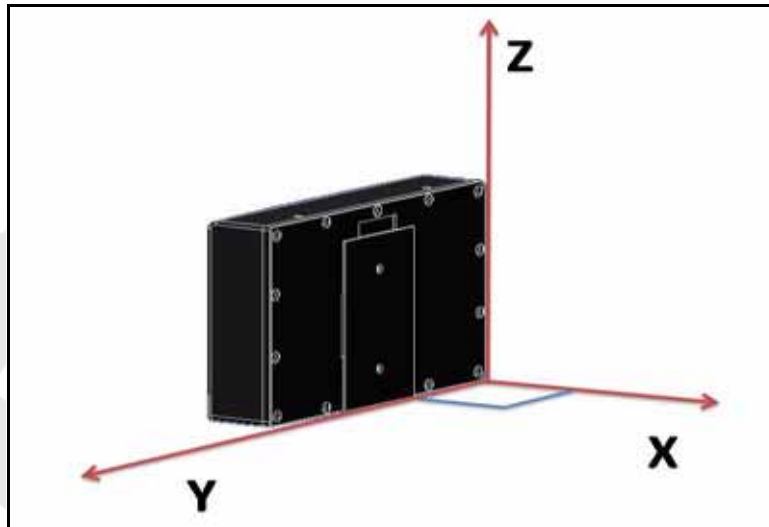
**Note:** Whenever necessary, the factory calibration values can be restored at any time by setting the RES menu to ON in the SET mode.

- Step 1: '1' is displayed on the lower screen. The **NS360RC** must be oriented as follows:



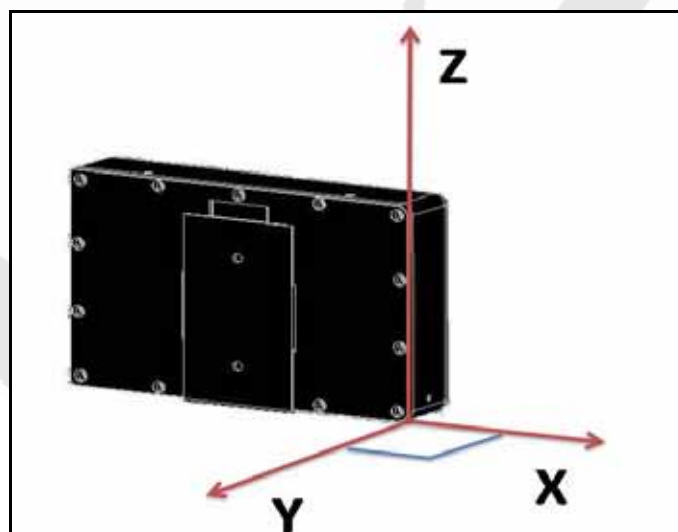
Push the select key when ready. The **NS360RC** will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 1.

- Step 2: '2' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 2.

- Step 3: '3' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:

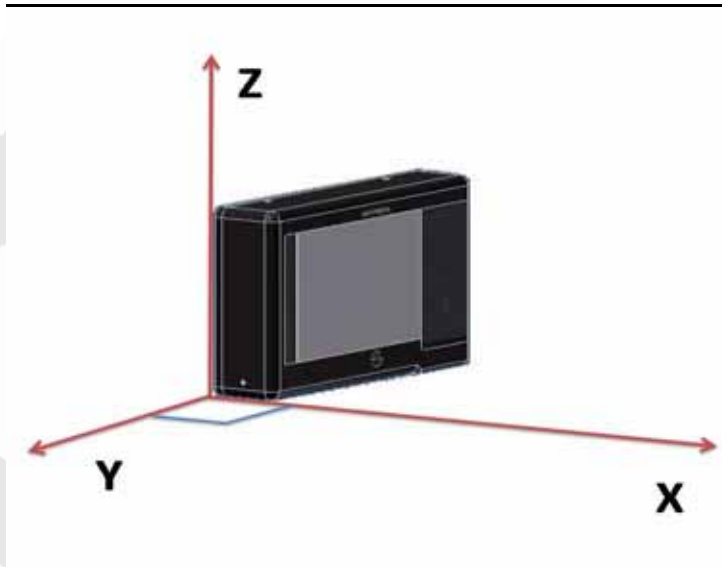


Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 3.

# Calibration

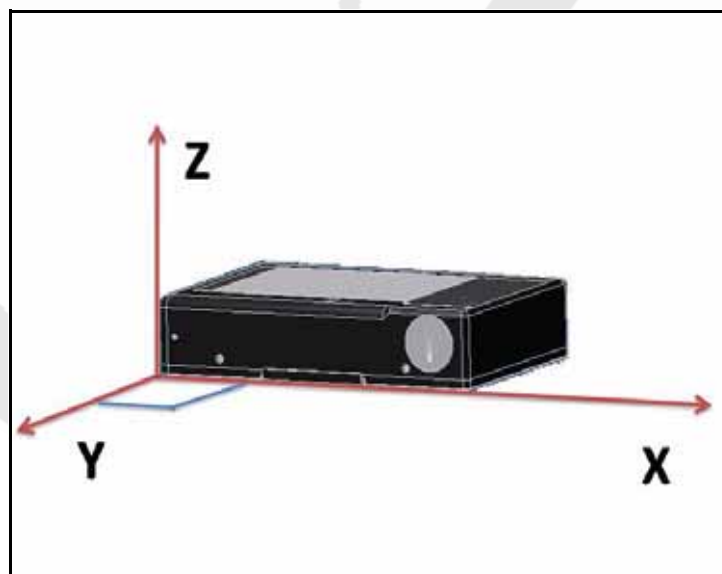
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- Step 4: '4' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



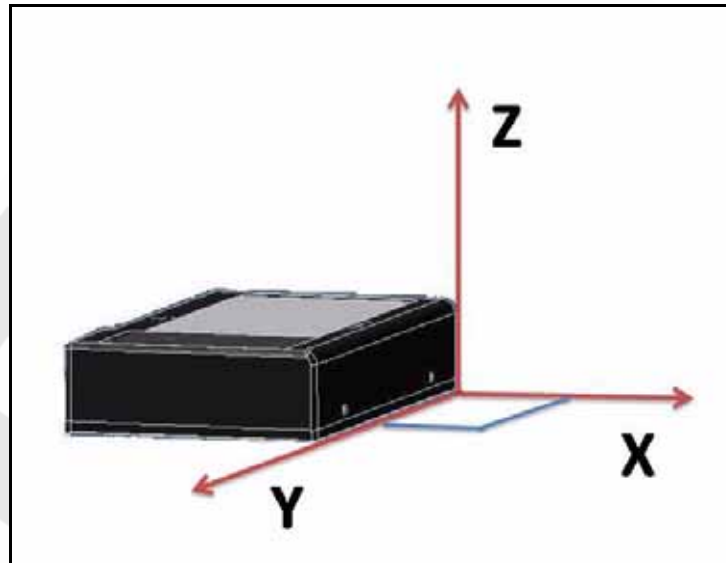
Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 4.

- Step 5: '5' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



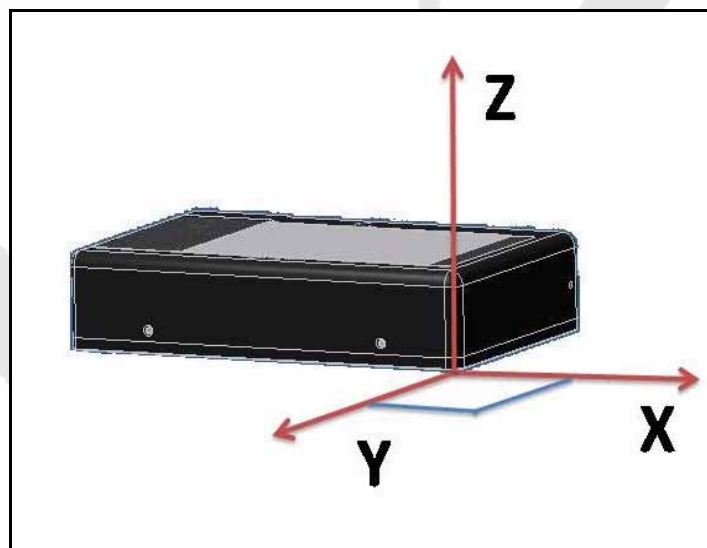
Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 5.

- Step 6: '6' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 6.

- Step 7: '7' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:

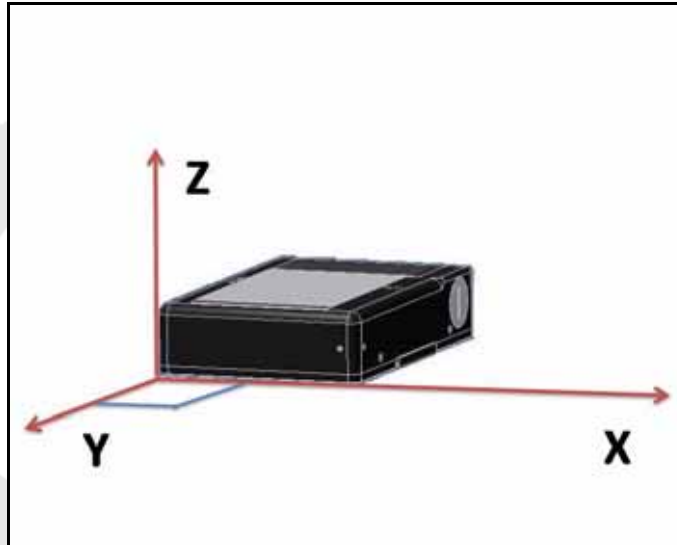


Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 7.

# Calibration

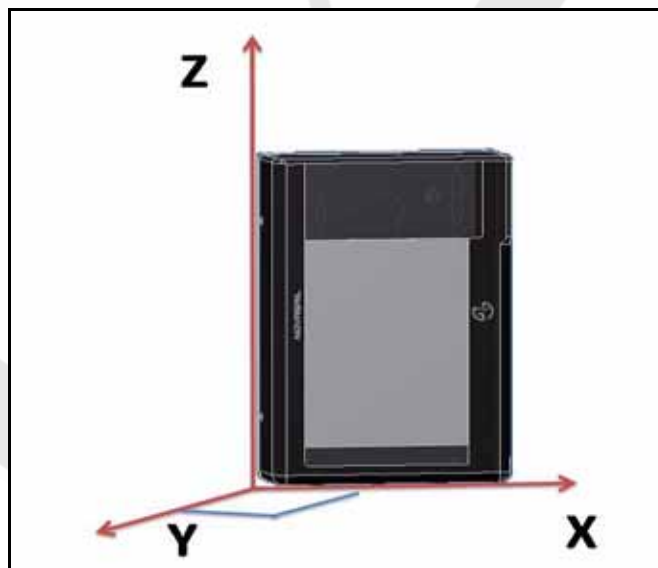
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- Step 8: '8' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 8.

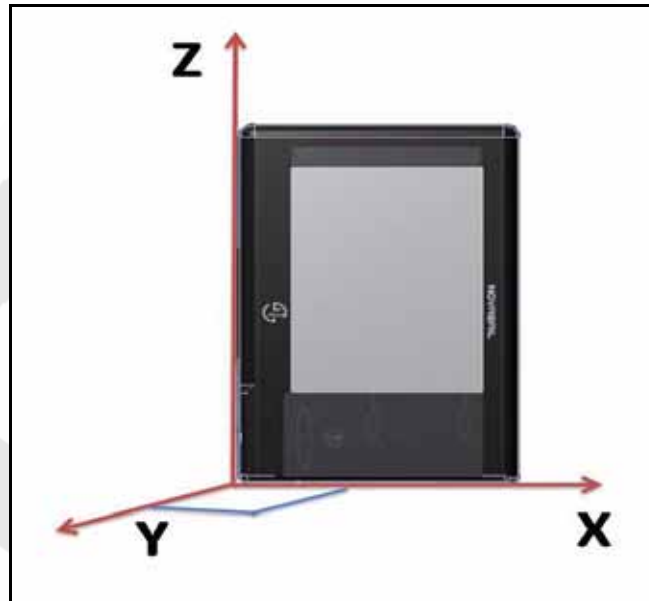
- Step 9: '9' is now displayed on the lower screen. The *NS360RC* must be oriented as follows:



Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 9.



- Step 10: '10' is displayed on the lower screen. The *NS360RC* must be oriented as follows:



Push the select key when ready. The *NS360RC* will enter the calibration along the axis. After a few seconds, 3 beeps will be emitted to notify the end of step 10.

The *NS360RC* will store the new values and switch off automatically.




# Computer Communication

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## PC Mode

The **PC** mode is activated to exchange data between the **NS360RC** and the dongle connected to the computer. The "Novasail wireless manager" software allows you to check the communication status. *Please refer to the "Novasail wireless manager" documentation for more details about its functions.*

### **To enter in PC mode**

- With the product switched off, press the lower screen  button and then  simultaneously. "PC" is displayed on the data line of the upper screen (blinking).
- To switch off the product to exit the PC mode, press and hold  for more than 4 seconds until the screen displays "OFF" and the sequence "3", "2", "1" is finished. A beep will be emitted when the device turns off

### **Troubleshooting**

- Switch off the product
- Unplug the dongle from the USB port of the computer
- Close the "Novasail wireless manager" window
- Re-open the "Novasail wireless manager" window
- Plug-in the dongle USB connector into the computer USB port. The message "USB connected" should appear in green at the bottom of the "Novasail wireless manager" window
- Enter the PC mode. The message "**NS360RC**" and the quality of the RF reception should appear on the right side of the "Novasail wireless manager" window. The device should now be working
- If not, please contact your retailer or check the FAQ on [www.nova-sail.com](http://www.nova-sail.com)



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Version 1.0: First version

Version 2.0: 1/12/2009

- Updated pictures
- Updated MH mode description
- Added COG mode description
- Added S+H submode description in SP mode
- Updated TIM mode description
- Updated GPS mode description (REC setting description)
- Added ROL mode
- Added GPS coordinates mode (LON/LAT)
- Added new setting description in SET mode: HEA/REC/SPA/COG
- Updated Wireless activation & NMEA channel selection

Version 2.1: 15/2/2010

- Updated TIM mode description (force SLD exit mode when down counter reaches '0:00')
- Updated SLD mode description
- updated LON/LAT mode description



# Limited warranty

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This product meets or exceeds all of Novasail's rigorous quality controls and inspection standards. Complete services will be provided in accordance with the statement of warranty set forth below if any manufacturing defect or natural failure occurs within the warranty period.

## ***Warranty Terms and Conditions***

- If any defect arises under normal conditions of use within the warranty period, our customer service center or specified partner will provide the required repair services at no charge, or legally applicable services according to the appropriate consumer protection laws and regulations of the country in which the product was purchased by the warranty holder.
- The product has to be registered using the online service available on the Novasail web site: [www.nova-sail.com](http://www.nova-sail.com)
- Please submit the proof of purchase (Invoice) when requesting service.
- The actual cost of repair may be charged to the customer or the performance of warranty service may be rendered impossible, even within the warranty period, under the following circumstances:
  - Product failure caused by accident or carelessness
  - Disassembly or modification for purposes other than it was originally intended for
  - Failure caused by a fire, earthquake or flood
  - Damage/failure caused by an impact
  - Failure caused by inappropriate services performed by anyone other than Novasail's customer service center or one of Novasail's service specified partners
- For assistance in obtaining service, please contact Novasail service center:

E-mail: [contact@nova-sail.com](mailto:contact@nova-sail.com)  
[www.nova-sail.com](http://www.nova-sail.com)

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