



H³

USER MANUAL

V0.12 (requires firmware V1.27)



INDEX

1	Introduction	7
2	Safety Considerations.....	8
2.1	Warnings.....	10
3	Using the SEABEAR H3.....	13
3.1	Activating the SEABEAR H3.....	13
3.2	Button Operation.....	14
3.3	Charging / USB connection	16
4	Settings.....	19
4.1	Overview menu structure	20
4.2	Main menu	23
4.3	Navigation sub menu	24
4.4	Editing a heading	24
4.5	Compass calibration	26
4.6	Gas submenu:.....	27

4.6.1	Selecting g a gas.....	27
4.6.2	Modifying a gas entry	28
4.7	MODES sub menu	30
4.8	Settings sub menu	31
5	SEABEAR H3 on the surface	33
5.1	Watch mode.....	33
5.2	main surface screen.....	35
5.3	Large number dive screen	38
5.4	Compass screen	39
5.5	Navigating with the compass	40
6	SEABEAR H3 automatic switch on	42
7	Diving with the SEABEAR H3.....	44
7.1	Preparations before the dive.....	44
7.2	SEABEAR H3 decompression model	46
7.3	No decompression diving.....	49
7.4	Safety Stop indicator.....	52

7.5 Decompression diving.....	53
7.6 Multi gas diving NITROX.....	56
7.7 Gas switches NITROX.....	58
7.8 Multi gas diving TRIMIX.....	59
7.9 Gas switches TRIMIX	61
7.10 Ascend speed bar graph.....	64
7.11 Dive profile.....	65
7.12 Inter gas loadings	66
7.13 Acoustic alarms	69
7.14 Bottom timer mode	70
7.15 Apnea mode	72
7.16 Closed circuit rebreather mode	74
7.16.1 CCR related settings	74
7.16.2 Selecting a setpoint.....	74
7.17 After Diving	75
7.18 Flying after Diving.....	76

8	Logbook	77
9	Dive data download	78
9.1	Immediate download with NFC	78
9.2	PC Mode	79
9.3	Customizing the SEABEAR H3	81
10	Outdoor modes	82
10.1	Stop watch	83
10.2	Altitude logging	83
11	Care and Maintenance	85
12	Specifications	87
12.1	General specifications	87
12.2	Decompression algorithm	88
12.3	Electrical Specifications	89
12.4	Dive data storage	89
12.5	Special software features	90
12.6	Testing and validation	90

13	Troubleshooting	91
14	Firmware update	92
15	Limitations of Liability	93
16	Contact	95

1 Introduction

Thank you for purchasing the SEABEAR H3 smart watch. It is an advanced outdoor watch fabricated from the toughest materials and highly sophisticated electronic components. The crispy color OLED display is extremely easy to read.

The H3 can be used as dive computer for Air, Nitrox, TRIMIX and closed circuit rebreather diving.¹

The H3 is not only great during diving. With its in-built altimeter and tilt compensated compass, it is also the perfect watch for outside the water outdoor activities.

The H3 is an active NFC tag, which means that dive data can instantly be transferred to NFC enabled mobile devices for detailed visuaklization and for sharing on soc ial networks.





¹ TRIMIX and CCR modes are only available if these features are unlocked.

2 Safety Considerations





Before using the SEABEAR H3 you must read and understand the information provided in this manual in its entirety. Be aware that diving has many inherent risks. A dive computer considerably increases your diving safety but it does not eliminate the remaining risk of serious injury, or death caused by decompression sickness, Oxygen toxicity or some other inherent risk of scuba diving.








Do not use this SEABEAR H3 if you are not aware of these risks, and you do not accept these remaining risks.






In this manual the following precautionary symbols are used to indicate the following important precautionary statements. Those statements provide information about potential hazards and proper procedures. Three different safety signs are used to rank their importance: red stands for vital information, which shall not be ignored under any circumstances; yellow advises for caution; blue indicates technical or other recommendations for safe and reliable operation of the device.

 WARNING	WARNING statements describe potentially hazardous situations, if not avoided, could result in death, or serious injury. Avoid these situations under any circumstances.
 CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	NOTICE statements are used to notify the user of information regarding installation, operation, maintenance, performance, general important tips , or statements describing a procedure, or situation that might cause damage to the device but is unrelated to physical injury .

2.1 Warnings

 WARNING	Before using the SEABEAR H3, read the manual in its entirety and get familiar with all the functions of the device.
 WARNING	Divers must have successfully completed a course in scuba diving. They must have knowledge about the potential risks and hazards of scuba diving.
 WARNING	<p>The risk from decompression sickness (DCS) or Oxygen toxicity for any dive profile, even if you follow dive tables, or a dive computer, cannot be totally eliminated. This risk also depends on the individual diver's physiological condition, which can vary from day to day. The SEABEAR H3 cannot account for these variations.</p> <p>We strongly advise you to stay within the exposure limits provided by the instrument to minimize the risk of DCS.</p> <p>No decompression algorithms can give a guaranteed safe decompression. It is your responsibility to be trained, dive safely, carry backup tables and instrumentation and compare any decompression schedules generated with the SEABEAR H3 against established diving tables.</p> <p>Before diving you should consult a physician regarding your fitness to dive.</p>
 WARNING	We strongly recommend diving within the recreational limits, not to surpass the maximum depth of 40 m, and to limit the pO ₂ to a maximum of 1.4 bar. Exposure to greater depths or pO ₂ increases the risk of Oxygen toxicity and/or decompression sickness. Diving beyond the recreational limits may

	greatly increase your risk of decompression sickness.
 WARNING	Diving should not be undertaken without obtaining the necessary training from a recognized training agency.
 WARNING	The SEABEAR H3 recreational version is designed for Nitrox with Oxygen content from 20 to 50%. It is possible to obtain an unlock code to use the SEABEAR H3 for TRIMIX diving. Proper training in TRIMIX diving is required before doing any TRIMIX or HeliOx dives.
 WARNING	Do not ignore warning signs and indicators on the SEABEAR H3, as this may result in serious injuries and can be even lethal.
 WARNING	Be aware of Nitrogen narcosis, this cannot be indicated on this computer, there are no warnings.
 WARNING	The SEABEAR H3 can be only used with open circuit breathing systems.
 WARNING	The SEABEAR H3 should never be shared between differed divers. Use always the same dive computer for repetitive dives. There is an in-built memory that keeps track of a diver's diving history. Substituting the SEABEAR H3 in between a series of repetitive dives may result in incorrect decompression calculations.
 WARNING	Should the SEABEAR H3 fail, you should immediately abort the dive by using a diving table or a back up dive computer.

 WARNING	If a reset of the SEABEAR H3 occurs, for instance, after a software update, information about tissue tensions from previous dives will be lost. When this situation happens in between a series of repetitive dives, the decompression schedule and the remaining no decompression time for the following dives may be incorrect.
 WARNING	Do not fly, or travel to high altitudes while the NO-FLY indication remains active. Flying while the SEABEAR H3 displays NO FLY can result in serious injury or death.
 WARNING	If you do not perform the proposed decompression stops, a flashing sign will indicate a ceiling to which you should ascend. If you still ignore these warnings, there is NO additional ERROR OR LOCKOUT. Do not ignore these warnings, decompression stops must be done for your own safety and on your own responsibility.
 WARNING	For safety reasons, you should always dive with backup instruments, including a depth gauge, pressure gauge, dive watch, or a backup dive computer, and have access to decompression tables while planning your dive with the SEABEAR H3.
 WARNING	If you do not fully understand how to use the SEABEAR H3, or if you have any questions, contact your instructor or your authorized Seabear Diving Technology dealer before diving with it.

3 Using the SEABEAR H3

3.1 Activating the SEABEAR H3

When the SEABEAR H3 is not used, it is in standby mode, which means, that the display is switched off to reduce the power consumption to a minimum. Press either the left or the right button shortly to activate the computer.

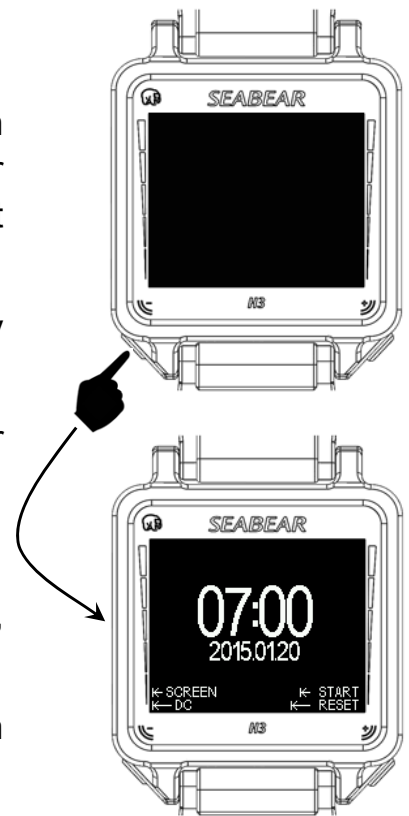
Then the SEABEAR H3 will start in Watch mode and display time and date.

Short press of the left button will toggle between outdoor screens.

Long press of the left button will start the dive computer mode.

Short press of the right button will start and stop the stop watch, while long press will reset the stop watch to 0.

The SEABEAR H3 will switch off the display after 5s if no button is pressed.



3.2 Button Operation

2 push buttons are used to operate the SEABEAR H3. The operation of the device is done with short and long pushes of the buttons.

Within the menu, the long push functions are indicated at the bottom of the screens directly above the buttons.

← SCREEN A short press of the left button, which is indicated with a short arrow, would toggle in this example the screens.

← DC A long press of the left button, which is indicated with a long arrow, would switch to dive computer mode (DC).



A short push of either button is used to switch between screens, navigate in a menu, increment (right button) or decrement (left button) user settings. The symbol for a short push is a hand with a stretched index finger.

To perform a long push, the button is pushed and held for 1s. Long button pushes have different functions. The menu is accessed from one of the main screens with a long push of the left button. The symbol for a long push is a hand with a watch symbol and a stretched index finger.



Symbol for a short push:



Symbol for a long push:

3.3 Charging / USB connection

The SEABEAR H3 is charged via USB. To charge the SEABEAR H3 or to download data from the SEABEAR H3, first, connect the USB cable to the SEABEAR H3. Then connect the USB cable to a personal computer USB port or to a USB charger. The output of the charger should be 5V. The charger should be able to provide at least 500 mA electrical current.



After connecting the SEABEAR H3 to a PC, navigate to menu/PC mode, and activate PC MODE by press and hold of the left button. The SEABEAR H3 should be automatically recognized as mass storage device.

Eject the SEABEAR H3 correctly from your PC before exiting PC mode. Further information can be found in chapter 10.2.



⚠ WARNING	Do not dive when the SEABEAR H3 battery indicator is red. The dive computer might run out of battery. In such a case, the H3 may give incorrect depth readings, incorrect decompression data or may shut off completely. In case of a red battery indicator, recharge the SEABEAR H3 before the next dive.
⚠ WARNING	If during a dive the battery indicator starts flashing red, this is a sign that the battery is discharged and the dive computer may switch off soon or perform a reset. After a reset, dive data, depth, divetime and decompression obligations are incorrect.
⚠ WARNING	If the battery was completely discharged, the dive computer may reset and lose all decompression information. If reset occurred between repetitive dives, be aware that the SEABEAR H3 loses decompression data and compartment inert gas pressure data from previous dives, thus decompression readings and no decompression calculations for following dives may be incorrect.

NOTICE	After a dive, before connecting the cable, rinse the SEABEAR H3 in fresh water. Make sure that the USB connector is clear and dry before connecting the USB cable.
NOTICE	Do not disassemble or remodel any cable or connectors. Use only the original USB cable, supplied with the H3. Check compatibility before use.

NOTICE

Use only a clean and dry USB cable. Clean and dry the connector surfaces of the cable.

4 Settings

The SEABEAR H3 has an intuitive menu which allows the user to change settings quickly.

To enter the menu, press and hold the left button for more than 1s.

It is possible to enter the menu on the surface as well as also during the dive. However, during the dive, not all menu items are available.

After 20s inactivity, which means that for 20s you do not press any button, the SEABEAR H3 will exit the menu automatically.



4.1 Overview menu structure

CCR		only available in CCR mode
	CCR GAS TABLE	diluent gas table
	SET CCR SP1	switch to setpoint 1
	SET CCR SP2	switch to setpoint 2
	SET OC	switch to open circuit
	EDIT CCR SP1	edit setpoint 1
	EDIT CCR SP2	edit setpoint 2
GAS		gas table with up to 8 gases
NAVIGATION		select one of 3 predefined headings
STOP WATCH		
	START	start stop watch
	STOP	stop stop watch
	RESET	reset stop watch
MODES		
	OC	open circuit diving mode
	APNEA	apnea diving mode
	BOTTOM TIMER	bottom timer mode
	CCR	closed circuit rebreather mode

SETTING

DIVE

CONSERVATISM	conservatism settings
DIVE DETECTION	automatic dive computer activation
DIVE TIMEOUT	dive mode timeout after surfacing
SAFETY STOP	enable/disable 3m safety stop
USER GF HIGH	Gradient Factor High setting
USER GF LOW	Gradient Factor Low setting
MAX PO2	max pO2 for depth warnings

TIME

TIME	set time, date and time zone
TIME ZONE 1	adjust time zone 1 (UTC +- h)
TIME ZONE 2	adjust time zone 2 for dual clock mode (UTC +-h)
ALARM CLOCK	set alarm clock
ALTITUDE	adjust altitude
LOG ALTITUDE	activate/deactivate altitude logging capability
COMPASS CALIBRATION	calibrate the compass
COMPASS DECLINATION	set compass declination
UNITS	set units to metric or imperial

DISPLAY

OLED BRIGHTNESS	set oled brightness
COLOR	
SCHEMES	color schemes for the dive computer
COLOR WATCH	color schemes for the watch mode

SYSTEM

RESET SETTINGS	reset all settings to default
FORMAT MEMORY	format internal memory

LOGBOOK	display logbook
PC-MODE	mass storage/USB mode
INFORMATION	information
STANDBY	switch off dive computer

At the bottom of the screen is written what function is performed when one button is pressed long:

SELECT: a menu item or gas is selected

EDIT: edit a value, gas, etc.

SAVE: save/store a value, like for instance O2 or He fraction or compass heading

EXIT: exit the menu

4.2 Main menu

The main menu consists of several sub menus.

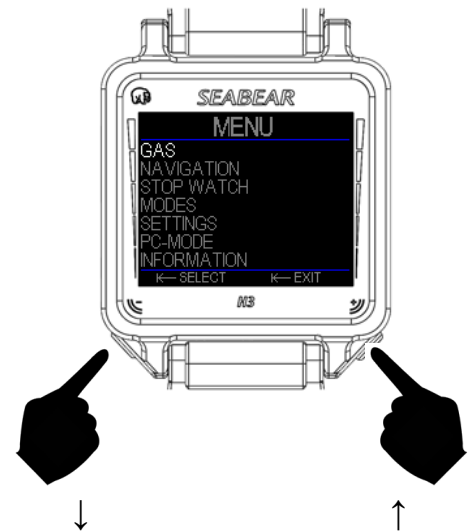
Shortly press the left and the right button to navigate in between the menu items.

Press and hold the left button to enter a sub menu or to select a menu item in the menu (like STANDBY).

Press and hold the right button to exit the main menu.

Selecting the menu item STANDBY switches the SEABEAR H3 into standby mode.

Selecting the menu item INFORMATION displays information about the SEABEAER H3. Serial number, firmware version and deco code version are shown.



4.3 Navigation sub menu

In the navigation sub menu it is possible to store and/or select up to 3 compass headings.

Shortly press the left or the right button to navigate down and up respectively.

Press and hold the left button to set one heading or to switch off navigation.

Press and hold the right button to edit one heading.

4.4 Editing a heading

First aim the H3 at the desired direction. Then long press the left button to store the direction that is displayed on the screen. In the next step you can modify the caption of the heading. Short press the left or the right button to scroll characters.

Press and hold the left button to save one character.



Use a space character at the end of the caption to indicate the end of the caption you want to enter. Press and hold the left button to save the current heading.

In the next step it is possible to save a depth. Shortly press the left or the right button to increase or decrease the depth.

Press and hold the left button to save the depth.

NOTICE	Iron, magnetic fields and electric fields can disturb the compass and can cause incorrect readings.
NOTICE	The magnetic field of the earth is not homogeneous. Be aware of declination. The declination can be set in menu SETTINGS/DECLINATION

4.5 Compass calibration

You can perform a compass calibration by entering the menu/SETTINGS/CAL COMPASS.

The compass calibration takes approximately 2 minutes. Within this 2 minutes rotate the SEABEAR H3 vertically around all its axes.

After calibration check the compass heading. If the compass heading is incorrect, redo the calibration process.

For further instructions on compass calibration visit the SEABEAR webpage www.seabear-diving.com.

4.6 Gas submenu:

This sub menu is used to program up to 8 different breathing gases and to activate a breathing gas.

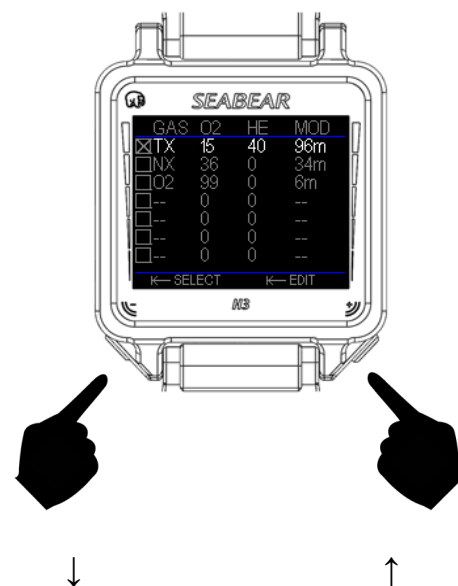
NOTE: It is only possible to save more than one gas, when the H3 MULTIGAS feature is unlocked.

Shortly press the left or the right button to navigate in between the gases.

Long press the left button to select a gas.

4.6.1 Selecting a gas

Press and hold the left button to select a specific gas. After setting one gas, the SEABEAR H3 exits the menu and returns to normal operation. The SEABEAR H3 uses then this gas for calculating compartment on and off gassing.



4.6.2 Modifying a gas entry

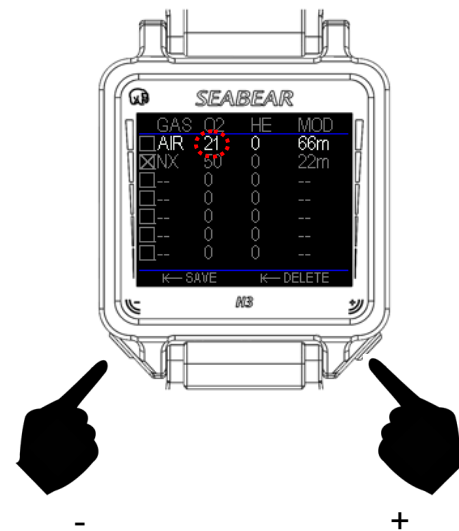
Press and hold the right button to modify or delete a gas entry. Then the O2 value of the gas entry will start blinking, which means that this value can be edited now.

Shortly press the right button to increment the O2 fraction.

Shortly press the left button to decrement the O2 fraction.

Press and hold the left button to store the O2 fraction.

Press and hold the right button to delete a gas entry. It is only possible to delete a gas entry which is not set.



If TRIMIX is unlocked, it is then also possible to set the He fraction of the gas. Again use right button short presses to increment and the left button short presses to decrement the Helium fraction. Press and hold the left button to store the Helium fraction.

NOTICE	The SEABEAR H3 uses the gas that is currently set for calculating compartment inert gas on and off gassing, which is the basis for no decompression time calculation and for calculating decompression stops.
NOTICE	The SEABEAR H3 uses all programmed gases to calculate decompression stops and to estimate time to surface.

⚠ WARNING	Make sure, that the gas, which is currently set, matches the gas you are breathing. If the gas fractions set in the SEABEAR H3 do not match the fractions of the gas you are actually breathing, decompression calculation will be wrong.
⚠ WARNING	Use multi gas diving only when you are trained to do so.
⚠ WARNING	Use O2 enriched breathing gases only when you are properly trained and you have a valid NITROX certification.
⚠ WARNING	Use breathing gases with a He fraction only when you are properly trained and you have a valid TRIMIX certification.

4.7 MODES sub menu

Modes sub menu: In this sub menu it is possible to switch between standard dive computer mode, apnea or breath-hold diving mode, bottom timer mode and closed circuit rebreather mode.

Shortly press the left or the right button to navigate up and down in the menu. Press and hold the left button to select a mode.

In the dive computer mode (default mode) the SEABEAR H3 is calculating compartment on and off gassing, no decompression times and decompression stops.

The apnea mode is especially designed for breath-hold diving. No decompression data are shown.

In the bottom timer mode, no decompression data are shown either.

**NOTICE**

When using the bottom timer mode, the SEABEAR H3 uses the Nitrogen fractions of air to calculate on and off gassing of compartments for the purpose of estimating no flight times.

4.8 Settings sub menu

The sub menu setting allows the user to modify many parameters of the SEABEAR H3.

Shortly press left or right button to navigate between menu items. Press and hold left button to select an item. Press and hold right button to exit the menu.

The sub menu SETTINGS contains the following items:

DIVE: dive relevant parameters can be set

ALTITUDE: allows setting the current altitude

TIME: time, date can be set (UTC)

TIME ZONE: the time difference is set (UTC+- h)

COMPASS: select this menu item to perform a compass calibration

DECLINATION: a compass declination can be set. Default value is 0°

OLED BRIGHTNESS: Use this sub menu to adjust the brightness of the OLED display.



UNITS: This sub menu allows switching between metric and imperial units.

COLORS: Use this sub menu to select different color appearances of the SEABEAR H3. There are two sub menus. In COLOR SCHEMES it is possible to set the color schemes of the SEABEAR H3. In COLOR WATCH it is possible to set the color of the watch screen.

H2O DENSITY: only available with Science unlock - the water density can be set in order to achieve geometrically accurate depth readings. In all other modes the SEABEAR H3 depth readings are according to EN13319.

TIME FROM GPS: only available with GPS unlock – use this menu item to obtain the time settings from the GPS receiver.

ALARM: in this menu it is possible to set the alarm timer. You can choose between one single alarm or daily alarm.

5 SEABEAR H3 on the surface

On the surface, the SEABEAR H3 is usually in a standby mode to reduce the power consumption to a minimum. In standby mode, a fully charged battery may last up to more than a year.

5.1 Watch mode

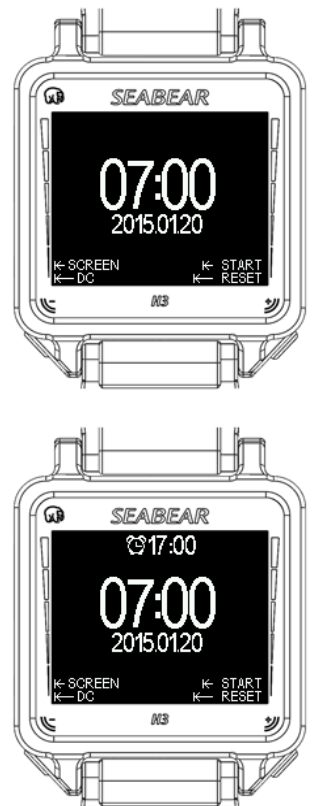
You can use the SEABEAR H3 as a watch. Shortly press the left or the right button, to switch on the display. The display shows time, date. Moreover there is an indicator for the alarm clock.

The example shows: time 7:00, January 20th 2015.

In the second example the alarm clock is set to 17:00.

After a few seconds the display will fade back and the SEABEAR H3 will return to standby mode.

During watch mode, press the left button long to activate the dive computer mode.



The SEABEAER H3 also features a dual time screen. This is especially interesting when you are on holidays and you would like to know also the time at your home for instance. It is possible to set 2 time. The time difference is simply set by adjusting the UTC offset in the menu SETTINGS/TIME ZONE 1 and TIME ZONE 2. Note: The first time is the time that is used by the dive computer for storing dive data in the logbook and for decompression calculation.

It watch mode a stop watch is available. Press the right button short to start and stop the watch, and press the right button long to reset the stop watch. In case that LOG ALTITUDE is activated, as soon as the stop watch is activated, the altitude profile will be logged.



5.2 main surface screen

In standby mode, shortly press either button to enter watch mode. Afterwards, press either button again, to switch on the SEABEAR H3.

The surface main screen of SEABEAR H3 shows a multitude of information:

In the top row local time and date are displayed. In the lower fields the ambient pressure is shown. In this example the ambient pressure is 1013 mbar. Below the current altitude is displayed (0 m). The conservatism setting is GF15/90. The battery is full. A red no fly indicator is visible – this means that at this moment flying is not allowed. In this example the no fly indicator will remain red for another 2h and 17 min, and then the no fly indicator will turn green.

The second example shows that the diver is at 350m altitude, the current atmospheric pressure is 980 mbar, the battery is only 75% charged and the conservatism setting is GF 30/80. The no

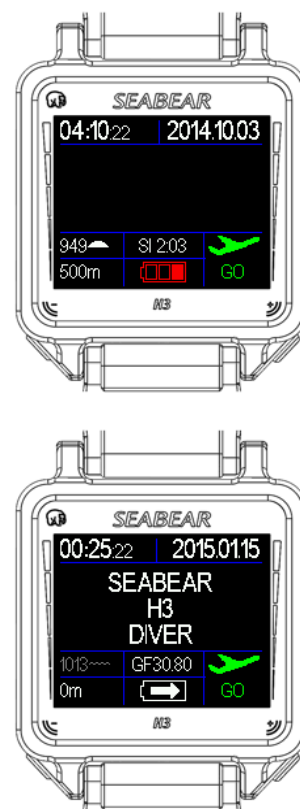


fly indicator is green, thus according to the algorithm in the SEABEAR H3, it is possible to fly.

Example 3 of the surface screen shows that the diver is at 500m altitude. In this example, the SEABEAR H3 is switched to Apnea or Bottom timer mode. In these mode a conservatism setting does not make sense, thus instead of GF data, the surface interval is shown. The surface interval is the elapsed time on the surface after end of the last dive. The surface interval in that example is 2h and 3 min. The remaining battery capacity is less than 30%, thus the SEABEAR H3 should be charged before the next dive.

When the SEABEAR H3 is charged via a USB cable, then the battery symbol shows a bold arrow.

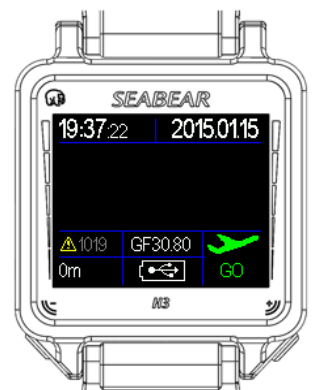
This example also shows how the SEABEAR H3 can be customized. SEABEAR H3 Diver data is stored in a file on the internal memory.



If the SEABEAR H3 is fully charged and is still connected to a USB charger or USB port, the battery symbol shows no arrow anymore. Instead a USB symbol is displayed (Example 4).

The SEABEAR H3 has an inbuilt algorithm to automatically adapt to altitude, therefore it is not required to manually set the SEABEAR H3 to altitude diving. The inbuilt algorithm measures the ambient pressure for 1 min. If the current displayed value is not validated by the in-built algorithm and needs to be updated, the small warning indicator is displayed left to the ambient pressure reading. In this case the ambient pressure reading is displayed grey instead of white.

The SEABEAR H3 offers alternative screens. Short press the left or the right button to switch between main surface screen, the large number dive screen and the compass screen.



5.3 Large number dive screen

Shortly press the left or the right button to navigate to the large number dive screen. The large number dive screen is available on the surface as well as during diving.

On the surface it shows data about the last dive, 40.2m maximum depth and 16 min and 44s dive time. The currently selected gas is AIR with an MOD of 66m. In the right field on the bottom the surface interval is shown. The surface interval is the time that has passed since surfacing after the last dive.

A yellow **STOP** sign (picture in the middle) indicates that the SAFETY STOP was missed. The red **DECO** sign (right picture) indicates that one or more DECO stops were missed.



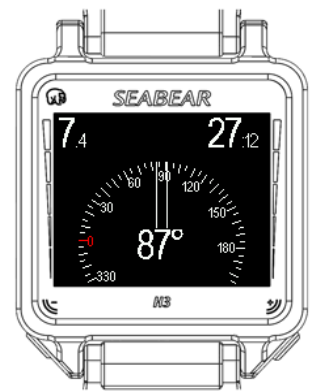
5.4 Compass screen

Shortly press the left or the right button to navigate to the compass screen. The large compass screen is also available during diving.

The compass screen shows the heading. The current depth is shown on top left of the screen. On the right side either the current time or the dive time is shown, dependent whether the diver is on the surface or is diving.

The example shows heading 87°, depth 7.4 m, and dive time 27 minutes and 12 seconds.

The compass screen is available on the surface as well as in water.



5.5 Navigating with the compass





Up to 3 compass headings can be stored in the SEABEAR H3. Select from the sub menu NAVIGATION one pre programmed heading.

Short press either button to navigate between pre-programmed headings.

Press and hold the left button to select one heading.

In the current example the preprogrammed heading “WRECK” was selected. The actual heading of the diver is 87°. The selected heading is 95° and is displayed in the same color as the name of the heading. A little arrow on top of the compass scale is directing to the right, suggesting the diver to turn a bit more right to meet the selected heading. If actual heading and selected heading match, a round circle will be displayed on top of the compass scale and the blue line on the compass scale will be exactly between the two green direction lines of the compass scale.



 WARNING	Attend a course in underwater navigation prior to using a compass underwater.
 WARNING	Exercise and become familiar with the compass of the SEABEAR H3 on land, before using it underwater.
 WARNING	Check before a dive, if the compass works correctly.
 WARNING	Metals, electric fields and magnetic fields may influence the compass and cause incorrect readings.

6 SEABEAR H3 automatic switch on

It is recommended to switch on the SEABEAR H3 before entering the water. However it is possible, that a diver forgets to turn it on. The SEABEAR H3 therefore includes a sophisticated algorithm, which detects the beginning of a dive and automatically turns it on, even when the dive computer is in standby mode.

The algorithm measures the ambient pressure in intervals of 10s. If the diver starts a dive, and the ambient pressure supersedes 1.1 bar absolute pressure, which equals to 1m depth at sea level, or if the diver descends more than 1m/min, the SEABEAR H3 is switched on.

The automatic switch on feature can be activated or deactivated in menu SETTINGS/DIVE/DIVE DETECTION/AUTO SWITCH ON.

NOTICE	It is recommended to switch on the SEABEAR H3 before entering the water.
NOTICE	If the automatic turn on feature is activated, the SEABEAR H3 will be automatically switched on at the beginning of the dive.

CAUTION	In case of a fast drop of atmospheric pressure it is possible that the SEABEAR H3 enters dive mode, even when not being immersed in water. This can only happen in rare cases, for instance during the free fall phase in sky-diving. Deactivate the automatic switch on feature when you use the SEABEAR H3 for sky diving activities.
----------------	---

WARNING	When the automatic switch on feature is deactivated, be aware, that in this case, if the diver does not switch on the dive computer before starting a dive, the depth, dive time and decompression calculation may be incorrect.
----------------	--

7 Diving with the SEABEAR H3





7.1 Preparations before the dive

Switch on the SEABEAR H3 before diving and make all necessary settings on the surface. Check the SEABEAR H3 for damages before diving.

Before entering the water check on the surface screen:

- Battery level
- Personal settings and Gradient settings
- Gas settings
- Time and date
- Units: use units you are familiar with (imperial or metric)

Switch on the SEABEAR H3 before you enter the water. If automatic switch on is activated, you do not need to switch on the SEABEAR H3. It will be activated automatically as soon as you dive deeper than 1m, however we still recommend to switch on the H3 before entering the water.

 WARNING	Before each dive check the battery power and recharge the battery if necessary. Recharge the battery when the computer has not been used for a long time. Low temperatures can affect battery performance. Pay special attention to the charge level of the battery during cold-water dives.
 WARNING	Verify before each dive, that the SEABEAR H3 settings are correct.
 WARNING	If you are using breathing gases other than air, analyze the breathing gas before the dive.
 WARNING	Set the SEABEAR H3 to units you are familiar with (imperial or metric units).

7.2 SEABEAR H3 decompression model

The SEABEAR H3 calculates no decompression times and decompression stops, depth and duration with a mathematical decompression model, which estimates the inert gas uptake and release during diving. The decompression model in the SEABEAR H3 uses the Buehlmann ZH-L16C dataset. The model uses 16 hypothetical compartments for Nitrogen to estimate the inert gas loadings of the tissues of the body during a dive. In case the SEABEAR H3 is enabled also for TRIMIX diving, additional 16 hypothetical compartments are used to estimate the Helium gas loadings.

The popular gradient factor (GF) concept allows customization of the algorithm. The gradient factor concept allows reducing the maximum allowable compartment gas loading to a percentage of the maximum allowable loading according to the original Buehlmann ZH-L16 model. In other words, a gradient factor below 100, results in shorter no decompression times, longer decompression schedules and is more conservative than the original algorithm.

There are two gradient factors. Gradient Factor High (GF High) limits the maximum allowable compartment tissue on the surface. Gradient Factor Low is only relevant for decompression diving. It reduces the maximum allowable compartment gas loading at depth. A short GF Low setting results in deeper decompression stops.

The SEABEAR H3 features a very precise pressure sensor, which can be also used as altimeter. This allows the SEABEAR H3 to adapt automatically to the reduced atmospheric pressure in altitude diving.

The SEABEAR H3 comes with 4 predefined Gradient factor settings.

- GF 35/85 standard – this is the default setting
- GF 30/70 more conservative
- GF 80/80 only shallow stops
- GF 95/95 no conservatism
- User setting (only available with MULTIGAS and TRIMIX unlock)

The conservatism can be set in
/SETTINGS/DIVE/CONSERVATISM

GF High and GF low can be set in /SETTINGS/DIVE



NOTICE	A smaller GF High allows you shorter No Decompression Times.
NOTICE	Diving with a smaller GF High reduces risk of decompression sickness.
NOTICE	GF Low is only relevant when doing decompression dives. A GF Low smaller than GF high results in deeper stops.

⚠ WARNING	Do not use GF setting 95/95. This enables longer no decompression times and short decompression schedules, but has nearly no safety margin in comparison to a plain Buehlmann ZH-L16 algorithm. GF setting 95/95 has an increased risk of decompression sickness.
⚠ WARNING	Do not program GF settings yourself, unless you have the required knowledge about decompression theory, the m-value concept and gradient factors.

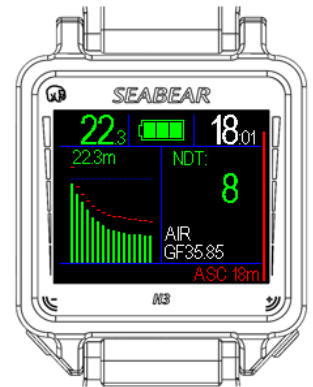
7.3 No decompression diving

During no decompression diving, the SEABEAR H3 shows all dive relevant information. There are 3 screens available.

The standard and default screen shows next to depth, dive-time, decompression information and maximum depth, as well as detailed information about compartment inert gas loadings, ascent and descent speed and battery voltage.

The example shows current depth 22.3m, maximum depth 22.3m, battery is full, dive-time is 18min 1s, remaining no decompression time NDT is 8 min, the water temperature is 22.5°C, the selected breathing gas is air, the conservatism setting is default GF35/85, and the diver is ascending with 10m/min. On the left side are 16 bar graphs showing the compartment inert gas loadings (left the fast compartments, right slow compartments).

The second screen shows only the most important data about the same dive situation, but in easy to read large numbers.



The depth field as well as the NDT field are color coded. The color coding of the depth field is based on the pO₂ of the current breathing gas, thus it is dependent on the O₂ fraction of the breathing gas and the depth.

The maximum pO₂ can be set in SETTINGS/DIVE/MAX PO₂

Green: pO₂ < MAX PO₂ – 0.2 bar

Yellow: MAX PO₂ - 0.2 bar < pO₂ < MAX PO₂

Red: MAX PO₂ < pO₂ < MAX PO₂ + 0.2 bar

Red blinking: pO₂ > MAX PO₂ + 0.2 bar






The NDT field is color coded as well:

Green: NDT > 1min

Yellow: NDT = 1 min

Red: NDT >= 0min



 WARNING	<p>The risk of decompression sickness (DCS) or Oxygen toxicity for any dive profile, even if you follow dive tables, or a dive computer, cannot be totally eliminated. This risk also depends on the individual diver's physiological condition, which can vary from day to day. The SEABEAR H3 cannot account for these variations.</p> <p>We strongly advise you to stay within the exposure limits provided by the instrument to minimize the risk of DCS. However, even if you stay within recreational limits and the no decompression limits given by this dive computer, DCS may appear.</p> <p>Before diving you should consult a physician regarding your fitness to dive.</p>
 WARNING	<p>In recreational diving do not dive with a $pO_2 > 1.4$ bar. Diving with a high pO_2 may lead to O_2 intoxication</p>
 WARNING	<p>Never dive with a $pO_2 > 1.6$ bar. Diving with a $pO_2 > 1.6$ bar will lead to O_2 intoxication.</p>
 WARNING	<p>Do not dive deeper than what your current diving qualification allows you to.</p>
 WARNING	<p>NITROX diving requires proper training. Do not dive with NITROX without a NITROX certification.</p>

7.4 Safety Stop indicator

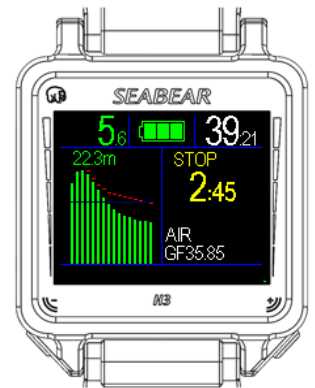
At the end of the dive, before surfacing, a diver should perform a 3 min safety stop between 3m and 6m depth.

The SEABEAR H3 includes a Safety Stop feature, which requests a 3 min safety stop between 3 and 6 m depth.

The SEABEAR H3 only requests a Safety Stop if the dive was deeper than 10m.

The Safety Stop feature can be enabled or disabled in the submenu SETTING / DIVE / SAFETY STOP

In the example on this page the diver has performed a dive to a maximum depth of 22.3 m and now at around 5m depth, the safety stop indicator suggests a 3min stop.

**⚠ WARNING**

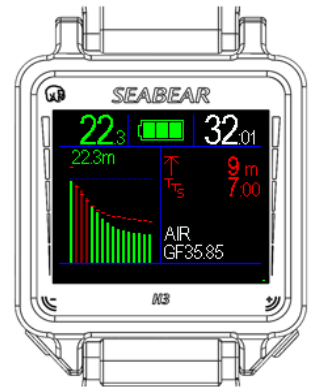
Perform a safety stop at the end of the dive to reduce the risk of decompression sickness.

7.5 Decompression diving

If during diving, the no decompression limits are exceeded and the remaining no decompression time is 0, then during ascend obligatory decompression stops are required. The SEABEAR H3 calculates the required decompression stops based on the compartment inert gas loadings and the programmed diving gases. In recreational mode, only one gas is available.

In decompression diving, the SEABEAR H3 shows a ceiling in m and the estimated time to surface. An additional screen is available, which gives detailed decompression stop information at which depth decompression stops have to be done as well as how long those have to be.

The example screen shows a current depth of 22.3m, dive time 32 min 1s, maximum depth is 22.3m, the depth ceiling is 9m, and the estimated time to surface (TTS) is 7 min. In this case, it is not safe to ascend shallower than 9m.



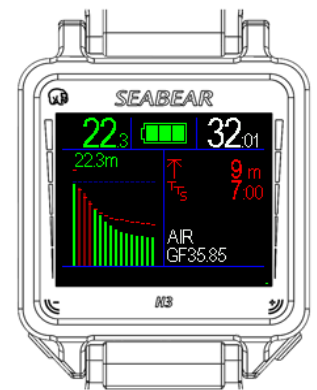
The same decompression information is also shown on the second screen in large numbers.






As soon as the diver has to perform decompression stops, in cases where there is a ceiling indicator and time to surface is displayed, additional screen shows the decompression schedule.

This screen shows next to current depth, dive-time and local time, also the current ascend speed, which is 5m/min in this example. Moreover the required decompression stops are listed:

One stop at 6m for 30s

One stop at 3m for 4 min, 20s



 WARNING	<p>The risk of decompression sickness (DCS) or Oxygen toxicity for any dive profile, even if you follow dive tables or a dive computer, cannot be totally eliminated. This risk also depends on the individual diver's physiological condition, which can vary from day to day. The SEABEAR H3 cannot account for these variations.</p> <p>We strongly advise you to stay within the exposure limits provided by the instrument to minimize the risk of DCS.</p>
 WARNING	<p>Besides the decompression stops, there are no additional mandatory safety stops or error messages displayed when the decompression ceiling and time, or the recommended ascent rate are violated.</p>
 WARNING	<p>Do not violate the ceiling depth during your decompression. In order to avoid doing so by accident, you should stay slightly below the ceiling depth.</p>
 WARNING	<p>Going deeper than the required ceiling depth will increase your total time to surface</p>
 WARNING	<p>Do not use breathing gases other than air, unless you are properly trained and NITROX or TRIMIX certified.</p>

7.6 Multi gas diving NITROX

If multi gas diving is unlocked, it is possible to use more than one breathing gas with your SEABEAR H3. A maximum of 8 different breathing gases can be programmed in menu GAS. The SEABEAR H3 suggests the best breathing gas for you dependent on the depth and the fractions of the programmed breathing gases. It suggests the breathing gas with the highest fO₂ fraction that at the current depth has still a pO₂ of less than 1.6 bar.

The TTS prognosis as well as the decompression schedule are calculated on the basis of the programmed breathing gases.

If the selected breathing gas is different than the breathing gas suggested by the SEABEAR H3, the SEABEAR H3 will highlight the better breathing gas with a blinking indicator.

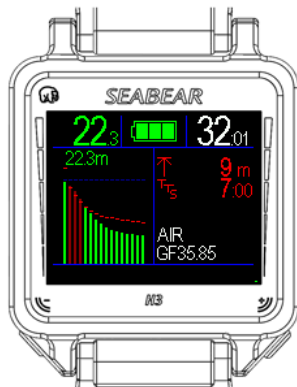
To select the breathing gas suggested by the SEABEAR H3, it is sufficient to press long the right button. Alternatively it is possible to select the breathing gas via the submenu GAS.

The following example shows a diving scenario where 2 breathing gases Air and NX50 are programmed.



In this example, the diver is at 22.3 and the dive time is 32min 1 s. The estimated Time to Surface TTS is 7min and the ceiling is 9m. The maximum depth is 22.3m.

The currently selected gas is Air. The MOD of Air is 66m. The second screen shows the values in big digits and the third screen shows the decompression schedule. The current ascent speed is 3m/min. Two decompression stops with NX50 are required, one for 30s at 6m and another one for 50s at 3m.



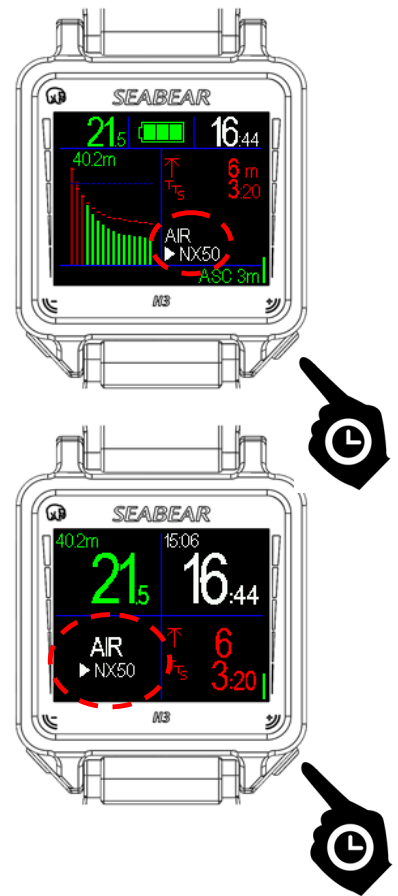
7.7 Gas switches NITROX

In this example there are 2 decompression gases programmed. The decompression gas is NX50, which has a MOD of 22m. The currently selected breathing gas is Air. As soon as the diver ascends to 22m, a blinking NX50 symbol appears in the screen meaning that the SEABEAR H3 suggests a gas switch to NX50.

If compass or deco schedule screen is selected, a blinking "GAS" symbol is displayed to notify the user that a gas switch should be performed.

After performing a gas change, after having changed the breathing regulators, the user has to confirm the gas change on the SEABEAR H3. This is a very simple task. A single long press of the right button is sufficient to confirm the gas change and change the selected gas.

Alternatively, it is also possible to enter the GAS submenu to change the gas.



7.8 Multi gas diving TRIMIX

If multi gas diving is unlocked, it is possible to use more than one breathing gas with your SEABEAR H3. At maximum 8 different breathing gases can be programmed. If TRIMIX is unlocked, then it is also possible to program TRIMIX gases, thus gases containing Oxygen, Helium and Nitrogen. Like in multigas diving with NITROX, The SEABEAR H3 suggests the best breathing gas for you, dependent on the depth and the fractions of the programmed breathing gases. It suggests the breathing gas with the highest fO₂ fraction that at the current depth has still a pO₂ of less than 1.6 bar.

The TTS prognosis as well as the decompression schedule is calculated based on the programmed breathing gases.

If the selected breathing gas is different than the breathing gas suggested by the SEABEAR H3, the SEABEAR H3 will suggest the better breathing gas with a blinking indicator.

To select the breathing gas suggested by the SEABEAR H3, it is sufficient, to perform a long press of the right button. Alternatively, it is possible to select the breathing gas via the submenu GAS.



The following example shows a diving scenario of 3 breathing gases. TX 15/40, NX 36 and O₂ are programmed. In this example, the diver is at 38.1m and the dive time is 18min 45s. The estimated Time to Surface (TTS) is 32min 30s and the ceiling is 30m. The maximum depth is 63.2m. Ascent speed is 10m/min.

The currently selected gas is TX 15/40 which means that the breathing gas contains 15% O₂, 40% Helium and 45% Nitrogen. The MOD of this breathing gas is 96m. The second screen shows the values in big digits and the third screen shows the decompression schedule. The current ascent speed is 10m/min.

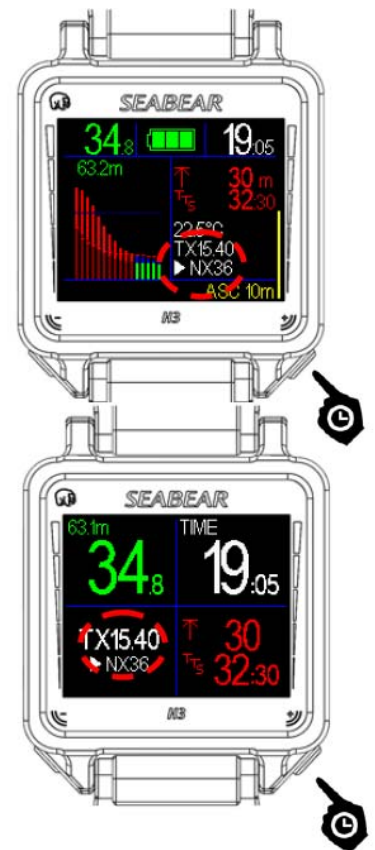


7.9 Gas switches TRIMIX

In this example 2 decompression gases are programmed. One is NX36, which has a MOD of 34m. The currently selected breathing gas is TX15/40. As soon as the diver ascends to 34m, a blinking NX36 symbol appears in the screen meaning that the SEABEAR H3 suggests a gas switch to NX36.

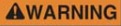

After performing a gas change and having changed the breathing regulators, the user has to confirm the gas change on the SEABEAR H3. This is a very simple task. A single long press of the right button is sufficient to confirm the gas change and change the selected gas.

Alternatively, it is also possible to enter the GAS submenu to change the gas.



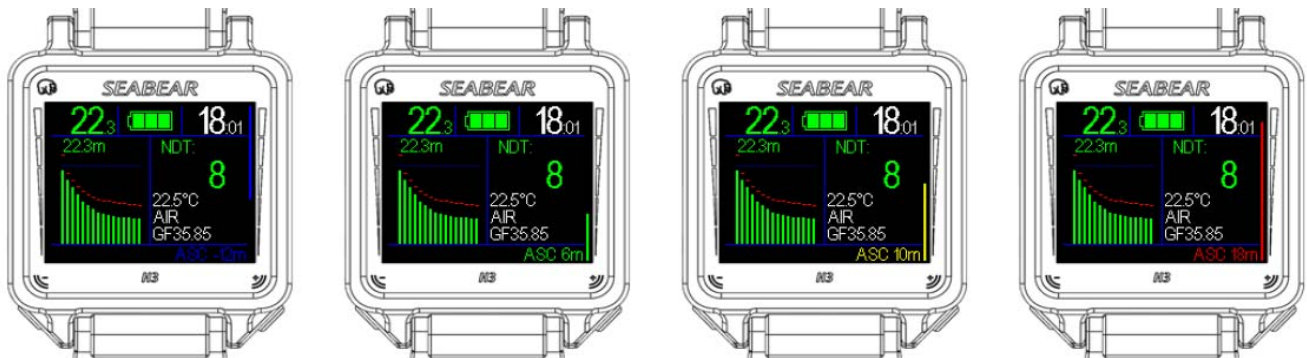
NOTICE	The SEABEAR H3 uses the currently selected breathing gas for calculation of the inert gas loadings. The selected gas does NOT automatically change. It is required to select the suggested breathing gas manually with a long press of the right button or selecting the suggested gas from the GAS submenu.
NOTICE	Using the SEABEAR H3 for multigas diving requires a multigas unlock.
NOTICE	Using the SEABEAR H3 for TRIMIX diving requires the TRIMIX unlock.

⚠ WARNING	Do not perform multigas diving without proper training
⚠ WARNING	Do not use breathing gases other than air, in particular NITROX breathing gases, unless you have been properly trained in using those and unless you have a NITROX certification.
⚠ WARNING	Do not use breathing gases other than air, in particular TRIMIX breathing gases, unless you have been properly trained in using those and unless you have a TRIMIX certification.
⚠ WARNING	The risk from decompression sickness (DSC) or Oxygen toxicity for any dive profile, even if you follow dive tables, or a dive computer, cannot be totally eliminated. This risk also depends on the individual diver's physiological

	condition, which can vary from day to day. The SEABEAR H3 cannot account for these variations. TRIMIX diving and diving beyond recreational limits bears a higher risk for decompression sickness.
 WARNING	Do not use breathing gases other than air, in particular hypoxic TRIMIX breathing gases with a O2 fraction of less than 20%, unless you have been properly trained in using those and unless you have a TRIMIX certification.
 WARNING	The SEABEAR H3 suggests a breathing gas solely based on the MODs of the breathing gases and the current depth, but does not account for isobaric counter diffusion.

7.10 Ascend speed bar graph

The SEABEAR H3 calculates ascent and descent speed. A bar graph on the right side of the display indicates the ascent and descent speed. A bar in blue color, starting on top, and pointing down, indicates descent speed. The maximum ascent and descent speed that can be indicated is 20m/min. The ascent speed is indicated with a bar graph starting on the right bottom. The indicator is color-coded. Green for an ascent speed less than 7m/min, yellow for an ascent speed above 7m/min and red for ascent speeds exceeding 12 m/min. In the first example the blue bar graph shows a descent speed of 12m/min. The second example shows an ascent speed of 6m/min, the third of 10m/min and the fourth of 18m/min.



⚠ WARNING	Do not exceed an ascend speed of 10m/min.
⚠ WARNING	Ascending faster than 10m/min increases the risk of decompression sickness.
⚠ WARNING	Do not descend faster than 20 m/min as this may increase the risk for inert gas narcosis.

7.11 Dive profile

The SEABEAR H3 continuously logs the dive profile. The dive profile screen is an alternative screen. Press the left or the right button short to toggle screens until the dive profile is shown.



7.12 Inter gas loadings

The SEABEAR inert gas loading graph visualizes the compartment gas loadings. There are 16 bar graphs, one for each of the 16 compartments. The compartments are sorted from left to the right, with the fastest gas loading displayed at the left and the slowest at the right. The 16 compartments differ in terms of halftime and maximum allowed gas loading. For more detailed information please refer to Alfred Buehlmann's book about decompression theory.

The maximum allowed compartment loading is visualized with a dashed red line. As soon as the compartment gas loading supersedes the dashed red line, it turns red. In this case, a decompression stop is required. Whether or not a compartment is on or off gassing can be seen on the blue horizontal ambient pressure line. If one bar graph is higher than the ambient pressure line, then this particular compartment is on gassing. If it is lower, it is off gassing.

When diving with TRIMIX, the Helium and the Nitrogen loading are displayed above each other. If the loading is below the maximum allowed value the Nitrogen loading is represented as blue bar and the Helium loading as a blue bar. As soon as the maximum allowed gas loading is superseded, the colors change to dark red and light red respectively.

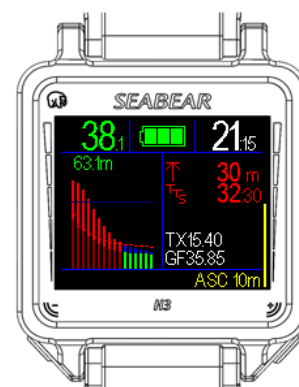
In this example the diver is at 5.6 m depth and performs a safety stop. All compartment bar graphs are green, which means, that there is no mandatory decompression stop required anymore. The 8 faster compartments have inert gas loadings higher than the ambient pressure line, which means that they are off-gassing. The 8 slower compartments are below the ambient pressure line, thus they are on-gassing.



In the second example compartments 2, 3 and 4 supersede the red dotted line. Therefore a decompression stop is required before surfacing. All compartments are below the dotted blue ambient pressure line, which means that all are on-gassing.



This example visualizes gas loadings during the ascent in a TRIMIX dive. The maximum depth was 63.1m and the current dive time is 21min 15s. The 11 faster compartments all supersede the red dotted line, thus decompression stops are required. In fact, the ceiling is 30m. Only the 4 fastest compartments are higher than the blue dotted ambient pressure line, which means that only the 4 fastest compartments are already off-gassing, while the remaining 12 slower compartments are on-gassing. The ascend speed is 10m/min.

**⚠ WARNING**

This manual does only describe the functionality of the SEABEAR H3. It is not intended as guidebook for decompression, multigas or trimix diving. It is the divers own responsibility to dive within the limits he is trained and certified.

7.13 Acoustic alarms

The SEABEAR H3 has an inbuilt piezo-sounder to indicate potentially dangerous situations.

The acoustic alarm is triggered in the following situations:

- Remaining no decompression time NTD = 1 min
- Ceiling violation
- Ascend speed is greater than 18 m/min

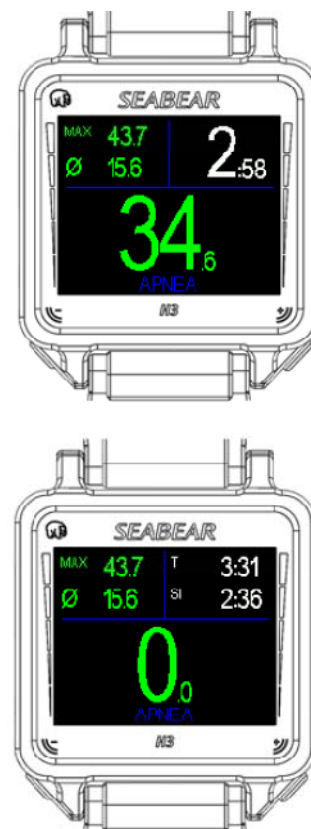
7.14 Bottom timer mode

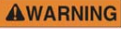


SEABEAR H3 has a bottom timer mode. To activate the bottom timer mode, enter the sub menu MODES. Shortly press the left button, navigate to the menu item bottom timer. Press and hold the left button to activate the bottom timer mode.

The SEABEAR H3 does not provide any decompression information while it is used in bottom timer mode.

The first example shows the SEABEAR H3 in bottom timer mode during a dive. It shows 27min 12 s dive time, 39.2m maximum depth, 24.7m average depth and a current depth of 30.6m. The ascend speed is approximately 10m/min.

The second example shows the SEABEAR H3 in bottom timer mode on the surface. It indicates maximum depth, average depth and dive time. Additionally the surface interval is shown. In this example the surface interval SI is 2h 36 min.



 WARNING	Be aware that during apnea mode and bottom timer mode no decompression calculations are carried out.
 WARNING	Nevertheless, the SEABEAR H3 estimates the no fly time after a dive even when the H3 was in bottom timer mode. This time was estimated by assuming that the diver was breathing air during the dive. Be aware that this is just a rough estimation. It is your responsibility to wait for sufficient time before flying. After recreational multi day diving one should wait at least 24h before flying. After technical diving wait at least 48h before flying.
 WARNING	Using the H3 in normal dive mode within 48h after using it in bottom timer mode or apnea mode may result in incorrect decompression calculations.

7.15 Apnea mode

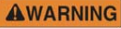


The SEABEAR H3 is the ideal tool for breath-hold diving. It can be switched into Apnea mode by entering the sub menu MODES. From there navigate to apnea item and long press the left button to activate apnea mode.

The apnea screen is similar to the screen in the bottom timer mode. In this example it shows 34.6m current depth, 43.7m maximum depth, 15.6m average depth and 2.58 min dive time.

On the surface it shows additionally the surface interval. The interval is given in minutes and seconds. In this example, the surface interval is 2min 36s.

The surface interval is the time that has passed since surfacing after the last dive.



 WARNING	Be aware that during apnea mode and bottom timer mode no decompression calculations are carried out.
 WARNING	Nevertheless, the SEABEAR H3 estimates the no fly time after a dive even when the H3 was in bottom timer mode. This time was estimated by assuming that the diver was breathing air during the dive. Be aware that this is just a rough estimation. It is your responsibility to wait for sufficient time before flying. After recreational multi day diving one should wait at least 24h before flying. After technical diving wait at least 48h before flying.
 WARNING	Using the H3 in normal dive mode within 48h after using it in bottom timer mode or apnea mode may result in incorrect decompression calculations.

7.16 Closed circuit rebreather mode

The SEABEAR H3 supports closed circuit rebreather diving (CCR unlock required). In the example screens the SEABEAR H3 is set to constant setpoint SP2 1.1bar, Diluent Air.

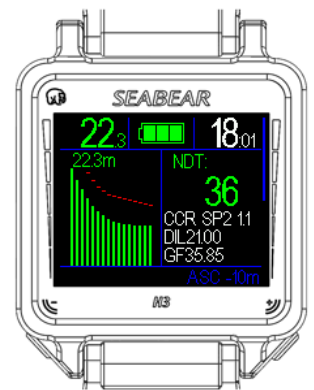
7.16.1 CCR related settings

In this mode the decompression algorithm performs decompression calculation with the selected pO₂ setpoint and the currently selected diluent gas. Note: there is an extra gas table for diluents gas in CCR/CCR GAS TABLE. Up to 8 diluent gases can be programmed. 2 setpoints SP1 and SP2 can also be programmed/edited in the CCR menu. During diving it is possible to edit and change diluent gases.

7.16.2 Selecting a setpoint

The 2 setpoints SP1 and SP2 and also open circuit mode (bailout) can be selected in the CCR menu.

Alternatively it is possible to long press the right button to toggle between setpoint 1, setpoint 2 and open circuit mode.



⚠ WARNING	Closed circuit rebreather diving requires proper training. Do not dive closed circuit rebreathers without a rebreather certification for the rebreather you are intending to dive. Do not dive beyond the limits you are certified for.
⚠ WARNING	Do not use setpoints lower than 0.5 bar or larger than 1.6 bar.
⚠ WARNING	Currently no CNS or OUT warning is implemented in the SEABEAR H3
⚠ WARNING	Always monitor the pO2 or your rebreather
⚠ WARNING	Be aware that the H3 is performing the decompression calculation according to a fixed pO2, but is not able to measure the pO2 inside the loop. If the pO2 inside the loop is different, decompression calculation will most likely be wrong and decompression sickness may occur.



7.17 After Diving


After each Dive, rinse the SEABEAR H3 in fresh water and let it dry. Be sure, that the SEABEAR H3 is dry and clean before connecting it to a USB cable.

NOTICE	After diving, rinse the SEABEAR H3 in fresh water to avoid corrosion.
NOTICE	Before connecting the SEABEAR H3 to a USB cable, make sure that the USB connector on the SEABEAR H3 is clean and dry. Failure to do so may lead to corrosion of the contacts.

7.18 Flying after Diving

The SEABEAR H3 has integrated algorithm to calculate the compartment desaturation time and the no fly time. The No Fly time is shown on the surface screen.

 WARNING	Do not fly directly after a dive. Flying after diving may cause decompression sickness.
 WARNING	Wait at least 24h after the last dive before flying.

 WARNING	It is your own responsibility to avoid flying directly after diving. No decompression algorithm can totally eliminate the risk of decompression sickness when flying after diving, even if the no flight times indicated by the dive computer are obeyed.
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8 Logbook

The SEABEAR H3 stores all dive data on the internal memory. To access the logbook enter the menu by pressing and holding the left button. Navigate with short presses of the left button to the menu item Logbook. Press and hold the left button to enter the logbook.

The logbook screen shows the most significant data of the dives. The current example shows dive number 55, date February 2nd, 2014, beginning of the dive 15:13:25. The maximum depth was 47.4m, average depth was 16.2m, the dive duration was 80min and 35s and the minimum water temperature was 16.5°C. The breathing gas was air and the Gradient factors were set to GF 30/80.

Shortly press the left button to navigate to the dive before. Shortly press the right button to navigate to the next dive.

Press and hold the left button to display the depth profile.

Press and hold the right button to exit the logbook mode.



9 Dive data download

9.1 Immediate download with NFC

After a dive, the dive data of the last dive can directly be uploaded to a mobile device. It is required to enable NFC on your mobile phone. Place the mobile device above the SEABEAR H3, and the dive data of the last dive will be automatically transferred to the mobile device. Pairing of the devices is not required. A dedicated SEABEAR App is available, which allows viewing dive data as well as sharing them in social networks.

It is also possible to view the last dives in the menu LOGBOOK. Alternatively one can download the dive data to a PC.

NOTICE	If you want to download the data of the last dive to a mobile device, make sure that the mobile device is equipped with an NFC interface and that the NFC interface is enabled.
NOTICE	Uploading the dive data from a mobile device to Facebook requires an internet connection.

9.2 PC Mode

Firstly, connect the USB cable to the SEABEAR H3. Then connect the cable to a USB port of your PC. Next, activate the PC mode on the SEABEAR H3 by selecting the menu item PC MODE in the main menu.

Now the SEABEAR H3 is automatically recognized as mass storage device. It is not required to install any additional drivers. Use the SEABEAR Diveapp to view the dives stored on the SEABEAR H3. The latest version of the Diveapp can be downloaded from the SEABEAR website www.seabear-diving.com.

Alternatively, it is possible to access the SEABEAR H3 with any file explorer. The SEABEAR H3 appears as local drive in your file explorer. Search for a drive with the name SEABEAR. There are several files:

LOGBOOK.txt contains a summary of all the dives done with your SEABEAER H3

Detailed information about each dive can be found in the .CSV files. There is one file for each dive.

BLACKBOX.DAT contains factory information about the SEABEAR H3. It is an encrypted file which can only be read by SEABEAR technicians. Do not attempt to read or modify this file.

info.txt is an optional file that may contain personal information about the diver.

NOTE: Before leaving the PC mode, correctly eject the SEABEAR H3 from your PC. Therefore click 'Safely Remove Hardware' in the System Tray of Windows before leaving the H3 PC mode. This is necessary to ensure that Windows is not busy reading / writing when you end the PC mode, as this may result in corrupted data on the SEABEAR H3.

NOTICE	Do not delete the file BLACKBOX.DAT. It contains encrypted information about the SEABEAR H3 that can be read only by SEABEAR technicians.
NOTICE	Before connecting the SEABEAR H3 to a USB cable, make sure that the USB connector on the SEABEAR H3 is clean and dry. Failure to do so may lead to corrosion of the contacts.
WARNING	Exiting PC mode without correctly ejecting the SEABEAR H3 from your PC may lead to a corrupt file system, which further may slow down the H3 during start up but also during write and read operations, and in the worst case may lead to one or multiple resets of the SEABEAR H3.

9.3 Customizing the SEABEAR H3

It is possible to add personal information to the surface screen of the SEABEAR H3. Therefore connect the SEABEAR H3 to a PC and enter PC mode through the menu. Open a file explorer and search for the SEABEAR drive. The SEABEAR H3 appears as a local drive in your file explorer. Create a text file in the root folder of the SEABEAR H3. Rename the file to user.info

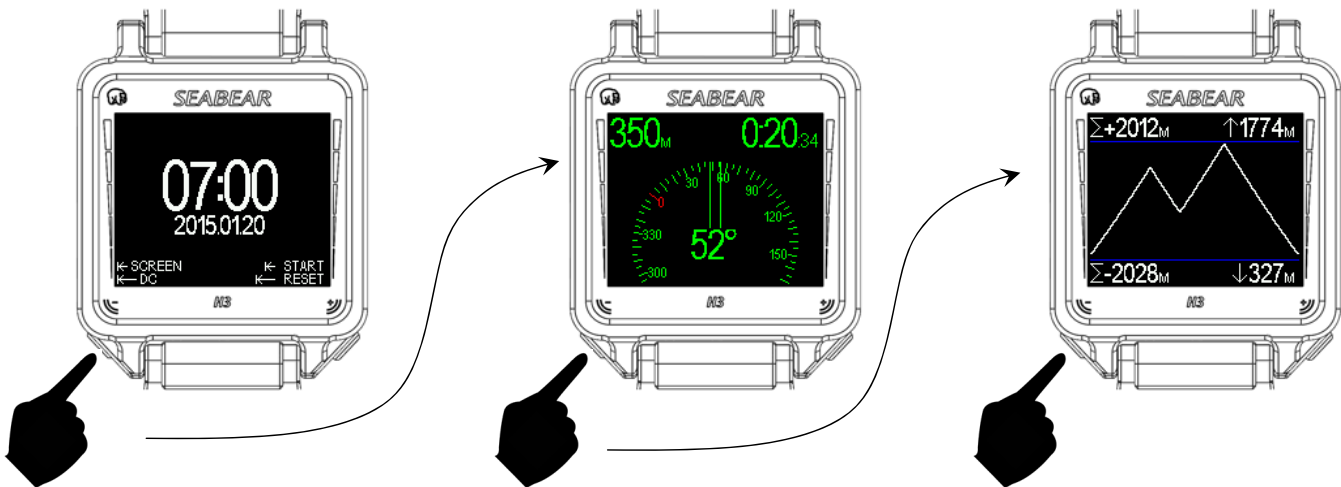
The file can contain 3 lines of characters and numbers, but at maximum 14 characters/numbers per line.

The text will be displayed after the next restart of the SEABEAR H3.

10 Outdoor modes

The SEABEAR H3 has an inbuilt compass and a precise pressure sensor which can also be used as an altimeter.

In watch mode, the screen can be switched between watch screen, compass screen and altitude profile. The altitude profile is only available if LOG ALTITUDE is activated and the stop watch is running. Switching between the screens in watch mode is done with a short press of the left button.



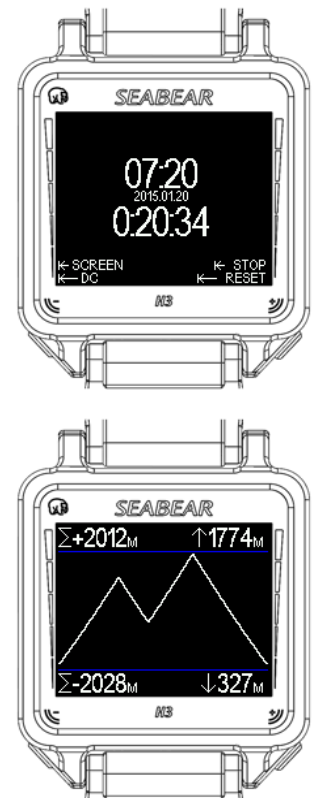
10.1 Stop watch

The SEABEAR H3 features a stop watch. In watch mode, press the right button shortly to start or stop the watch. Press the right button long to reset the watch.

10.2 Altitude logging

The SEABEAR H3 is capable of logging the altitude. Therefore it is necessary to enable this feature first in the menu SETTINGS/LOG ALTITUDE. When altitude logging is enabled, as soon as the stop watch is running, altitude is recorded. The altitude profile is shown on a separate screen.

When altitude logging is activated, the altitude profile screen also shows minimum and maximum altitude as well as cumulated ascent and cumulated descent.



As soon as the stop watch is reset, the altitude profile is saved in the internal memory in a file (ALT_XXXX.csv), whereas each recording is saved in a separate file. Similar to accessing the dive files, it is possible to access also the altitude files by simply connecting the SEABEAR H3 to a PC and entering USB mode.

NOTICE	The altitude is calculated from the atmospheric pressure. If the weather changes, this usually also induces atmospheric pressure changes, thus the altimeter may show incorrect values. During hiking or other outdoor activities frequently adjust the altimeter settings at points with known altitude.
NOTICE	Iron or magnets may influence the compass and cause erratic readings

11 Care and Maintenance

The SEABEAR H3 is built from high quality seawater resistant materials and features an ultra scratch resistant sapphire glass. The SEABEAR H3 is designed to withstand diving harsh conditions. However, you should still protect your SEABEAR H3 from shock, excessive temperatures, chemicals and mechanical tampering.

NOTICE	After diving, rinse the SEABEAR H3 in fresh water to avoid corrosion.
NOTICE	Before connecting the SEABEAR H3 to a USB cable, make sure that the USB connector on the SEABEAR H3 is clean and dry. Failure to do so may lead to corrosion of the contacts.

CAUTION	Protect your SEABEAR H3 during transportation and from mechanical shocks and excessive temperatures.
CAUTION	Never try to open or repair the SEABEAR H3 yourself.

⚠ CAUTION

The SEABEAR H3 should be inspected for mechanical damage and cracks before, and after each dive to ensure it is working properly.

Failure to observe the above precautions leads to loss of warranty and any product-related liability of Seabear Diving Technology.

12 Specifications

12.1 General specifications

Maximum operational depth: 130m

Full color OLED Display: 160 x 128 pixel, RGB, 1.7"

Digital Pressure Sensor, 130 m rated

Depth resolution: 0.1m

Temperature resolution 0.1°C

Imperial / metric mode

Digital Compass, tilt compensated

USB interface

NFC Interface

Housing made from stainless steel, 316L

Ultra scratch resistant Sapphire glass window

12.2 Decompression algorithm

Buehlmann ZH-L16 decompression model

16 compartments for Nitrogen, 16 compartments for Helium

Unlock code required for multigas diving

Unlock code required for TRIMIX diving

Gradient factors (4 pre set values)

No-fly time indicator

Automatic altitude adaption

8 gases for open circuit diving

8 diluent gases

2 setpoints for closed circuit rebreather diving

12.3 Electrical Specifications

32 bit microprocessor

Rechargeable Li Ion battery, 4.2V, 400mAh

Rechargeable via USB, maximum charge current 400mA

Autonomy in standby mode: 1y

15h operation during diving

Charge time 2-3 h

12.4 Dive data storage

32MBit storage capacity

Dive data storage interval in dive mode: 5s

Dive data storage interval in free-diving mode: 1s

Memory accessible via USB (SEABEAR H3 is recognized as Mass Storage Device)

NFC Tag capability – instant download of dive data to a mobile phone without pairing

12.5 Special software features

2 dive screens

Dive/apnea/bottom timer/CCR mode

Digital compass screen

3 pre-programmed headings

Logbook

Altitmeter

Altitude logging

12.6 Testing and validation

The SEABEAR H3 was tested according to the European Normative EN13319. About 10000 simulated dives were carried out in the laboratory and in the hyperbaric chamber to validate the correct implementation of the decompression model. The code was validated according to Eric C Bakers implementation of the Buehlmann ZH-L16 algorithm with Gradient Factor extension.

13 Troubleshooting

Problem: The SEABEAR H3 does not switch on

Charge the SEABEAR H3 for at least 2h. If the SEABEAR H3 is completely discharged, it loses all decompression information and is reset to default settings. It should restart shortly after the charging has started.

Problem: The SEABEAR H3 is connected to a USB charger but does not charge

Check the cable and the connector pins for corrosion and dirt. Clean if possible.



Problem: The SEABEAR H3 is outside the water, but it is in dive mode and the displayed depth is greater than 0.5m.

This can happen when the SEABEAR H3 was exposed to a sudden drop of atmospheric pressure. In this case it is necessary to reset the SEABEAR H3. Simply attach the USB cable to the SEABEAR H3 and plug it in a charger. The SEABEAR H3 will be reset after a few seconds. All decompression information and user settings are lost after a reset.

14 Firmware update

Download the latest firmware for your product from the SEABEAR website. Connect the SEABEAR H3 to your PC and enter PC mode in menu/PC MODE. Search in the file explorer for the SEABEAR drive. Unpack the firmware file to the SEABEAR drive. Exit USB mode and activate STANBY mode in menu /STANDBY.

The SEABEAR H3 is automatically updated with the firmware.

 WARNING	All decompression information are lost after a firmware update.
 WARNING	Avoid a firmare update between repetitive diving. Performing a firmware update between dives will cause the SEABEAR H3 to loose decompression data and the remaining compartment inert gas loadings from the previous dives, thus the no decompression times and decompression calculations for the next dives may be incorrect.

15 Limitations of Liability

WITH THE PURCHASE OF THE SEABEAR H3 YOU HEREBY AGREE TO THE FOLLOWING EXCLUSIONS AND LIMITATIONS OF SEABEAR'S LIABILITY TO YOU.

YOU AGREE AND UNDERSTAND THAT SCUBA DIVING IS A HIGH RISK, POSSIBLY LIFE-THREATENING ACTIVITY AND THE USE OF THE SEABEAR H3 IS IN NO WAY A SUBSTITUTE FOR PROPER SCUBA TRAINING AND CERTIFICATION.

BECAUSE OF THE NUMBER OF VARIABLES AND THE VARYING DEGREES TO WHICH THEY MAY AFFECT INDIVIDUALS ENGAGED IN SCUBA DIVING, SEABEAR DOES NOT WARRANT OR GUARANTEE THAT USE OF THIS PRODUCT WILL PREVENT DECOMPRESSION SICKNESS, OR ANY OTHER CONDITION, OR INJURY INCURRED WHILE USING THIS PRODUCT.

THESE INFLUENCING VARIABLES MAY INCLUDE, BUT ARE NOT LIMITED TO, DEHYDRATION, OBESITY, AGE, OLD INJURIES, OR OTHER PHYSICAL CONDITIONS OF THE DIVER, OR ENVIRONMENTAL EXTREMES OF HEAT OR COLD, OR POOR TRAINING, OR DIVING PRACTICES, ANY OF WHICH MAY PROMOTE THE ONSET OF DECOMPRESSION SICKNESS OR OTHER HARMFUL EFFECTS.

THE SEABEAR HEAD UP DIVING COMPUTER WAS TESTED ACCORDING TO RELEVANT NORMATIVES EN13319 AND EN250 AND WAS EVALUATED IN NUMEROUS TEST DIVES. HOWEVER THERE MAY STILL BE ERRORS IN THE SOFTWARE, THAT WERE NOT IDENTIFIED YET AND THAT MAY LEAD TO MALFUNCTIONS OF THE SEABEAR H3. THEREFORE, SEABEAR SUGGESTS TO ALWAYS CARRY AND USE A BACKUP DIVE COMPUTER OR A DIVE TABLE IN COMBINATION WITH A DEPTH GAUGE AND A WATCH.

YOU AGREE THAT YOU UNDERSTAND AND ACCEPT ALL RISKS ASSOCIATED WITH DIVING, AND THAT SEABEAR, ITS ELECTED AND APPOINTED OFFICIALS, EMPLOYEES, VOLUNTEERS OR OTHERS WORKING

ON BEHALF OF SEABEAR ARE NOT LIABLE TO YOU OR ANY OTHER PERSON, INCLUDING YOUR HEIRS, EXECUTORS OR PERSONAL REPRESENTATIVES, FOR ANY LOSS, DAMAGE, COST, EXPENSE OR CLAIM ARISING OUT OF, CAUSED BY OR RELATING TO YOUR PERSONAL INJURY OR DEATH WHILE DIVING, EVEN IF YOUR PERSONAL INJURY OR DEATH IS CAUSED, IN WHOLE OR IN PART, AND DIRECTLY OR INDIRECTLY, BY THE PURCHASE OF THE SEABEAR H3 OR YOUR USE THEREOF, OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF SEABEAR KNEW, OR SHOULD HAVE KNOWN OF THE LIKELIHOOD OF SUCH DAMAGES, AND REGARDLESS OF WHETHER OR NOT THE HEAD UP DIVING COMPUTER FUNCTIONED PROPERLY OR WAS DEFECTIVE IN ANY WAY. SEABEAR SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE TIME THE PRODUCT IS BEING REPAIRED.

YOU HEREBY IRREVOCABLY WAIVE AND RELEASE SEABEAR, ITS ELECTED AND APPOINTED OFFICIALS, EMPLOYEES, VOLUNTEERS OR OTHERS WORKING ON BEHALF OF SEABEAR FROM ANY LIABILITY OR OBLIGATION TO YOU OR YOUR HEIRS, EXECUTORS OR PERSONAL REPRESENTATIVES FOR ANY LOSS, DAMAGE, COST, EXPENSE OR CLAIM ARISING OUT OF, CAUSED BY OR RELATING TO YOUR PERSONAL INJURY OR DEATH WHILE DIVING, EVEN IF YOUR PERSONAL INJURY OR DEATH IS CAUSED, IN WHOLE OR IN PART AND DIRECTLY OR INDIRECTLY, BY THE SEABEAR H3 OR YOUR USE OF THE SEABEAR H3, OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF SEABEAR KNEW, OR SHOULD HAVE KNOWN OF THE LIKELIHOOD OF SUCH DAMAGES, AND REGARDLESS OF WHETHER OR NOT THE SEABEAR H3 FUNCTIONED PROPERLY OR WAS DEFECTIVE IN ANY WAY.

YOU MUST READ AND ACCEPT THE AGREEMENT FOR ALL LIMITATIONS AND EXCLUSIONS OF SEABEAR'S LIABILITY TO YOU.

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