# ODYSSEY DIVING COMPUTER
# USER MANUAL



EN 13319:2000      CE EN 250:2014

# Preamble

Within the ODC range of dive computers, the ODYSSEY model covered in this User Manual has been designed for open-circuit and closed-circuit (rebreather, CCR) scuba diving with all types of binary and ternary gases (Air / Nitrox / Heliox / Trimix).

ODYSSEY is a technical dive computer offering a wide range of settings and dive modes. It is essential to read this User Manual carefully and to have appropriate dive training in order to fully understand how it works and the dangers associated with incorrect settings.

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WARNING

Although we make every effort to ensure that your computer functions correctly, it is certain that your computer's firmware contains undetected bugs. Your computer may fail at any time and without warning, before or during a dive, due to a software or hardware failure.

Never risk your life based on a single source of information. Plan all your dives carefully, use a second computer or dive tables, and be prepared to execute your backup plan at any time.

You risk your life when scuba diving, and no dive computer can eliminate that risk.

A dive computer is not a substitute for proper training, knowledge, and skills required for diving.

**It is strongly advised not to dive if you are tired, taking medication, have consumed alcohol, are sleep deprived, or in any other circumstances that could impair your judgment.**

**DANGER**

The ODYSSEY dive computer is designed to monitor your dive profile and calculate decompression stop requirements based on its internal model and the parameters you provide. These calculations are, at best, an estimate of actual physiological decompression requirements and never guarantee a safe ascent profile. Decompression sickness (DCS) is intrinsically linked to the amount of dissolved gas in the diver's body as a result of diving, which must be evacuated by the body during ascent and return to the surface. In scuba diving, there is no such thing as zero risk.

ALL DIVING IS EXPOSED TO THE RISK OF DECOMPRESSION SICKNESS (DCS)

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# 1. ODYSSEY main technical specifications

| | |
|---|---|
| **Maximum operating depth (technical capacity, excluding algorithm)** | 200 m |
| **Dive time start depth** | > 0.6 m (see § 9.) |
| **End of dive depth** | < 0.3 m (see § 9.) |
| **Operating temperature (air)\*** | -10°C à +50°C |
| **Operating temperature (water)\*** | -4°C à +35°C |
| **Storage requirements** | Product rinsed and dried, to be stored in a clean, dry environment, protected from light. Temperature range: –20°C to +50°C. |
| **Pressure sensor** | Piezo-resistive sensor with 24-bit CAN. Ref. TE CONNECTIVITY: MS5849-30BA |
| **Calibrated range\*** | 600 mbar – 30 bar |
| **Accuracy** | +/– 50 cm from 0 to 100 m (from 850 mbar to 10 bar) +/– 1 m from 100 to 200 m |
| **Surface pressure range** | 600 mbar – 1040 mbar (from sea level to approximately 4000 m altitude). |
| **Maximum operating pressure** | 20 bar |
| **Crush limit pressure** | > 25 bar |
| **Maximum recommended time interval for verifying the product's accuracy** | 2 years or 200 dives, whichever comes first |
| **Use above sea level High-altitude diving** | Auto calibration of atmospheric pressure between 1040 and 600 mb (approx. 4000 m altitude) see §9. Manual selection of fresh water or salt water (§4.) |
| **System micro-standby** | Automatic start-up (emergency mode) above an absolute pressure of 1100mb (when activated – see §9). |
| **Power supply** | AA/LR6 batteries: 1.5V lithium; 3.6V lithium; 1.5V alkaline; 1.2V NiMH |
| **Minimum battery life** | 20 hours at 0°C with a 1.2V NiMH battery |

*\* Note: PRODUCT ACCURACY: product calibrated at the factory.*

## 2. Other features

| | |
|---|---|
| **Azoth Systems computer reference code** | ODYSSEY ; ODC-R.01.582.25 |
| **Housing** | Injection-molded polymer plastic. |
| **Dimensions** | H 81mm x W 96mm x D 37mm |
| **Operating weight** | 200 g |
| **Mounting** | With straps or bungee cords |
| **Control** | 3 piezoelectric buttons – activation force: approx. 5 N |
| **Glass** | Polycarbonate |
| **Screen type** | 2.4" 18-bit TFT-LCD color screen with variable brightness |
| **Algorithm** | Bühlmann ZHL-16C |
| **Dive log sampling period** | 2 s |
| **Successive dive planner and tables** | Yes |
| **BLE connection** | Log export and firmware update |
| **Logbook** | More than 300 hours of dive time recording (128 Mb memory card) |
| **Compass function** | Accelerometer and magnetometer. Accuracy +/-5° |
| **Successive dive planner and tables** | Yes |
| **Programmable visual and vibrating alarms** | 3V electric motor - 11,000 rpm. Vibration force: 1.55 Grms Note: vibration function can be disabled |
| **Bottle pressure measurement function** | Simultaneous monitoring of up to 4 cylinders via ODC SENSOR |
| **Dive modes: open circuit (OC) and closed circuit (CC)** | OC: Air / Nitrox / Trimix / 100% Oxygen, CC: Air / Trimix / Heliox / 100% Oxygen |

# 3. Power supply

## 3.1. General

The ODYSSEY dive computer is designed to work with most commercially available AA/LR6 batteries.

- **Recommended batteries: 1.5V lithium** (and 3.6V lithium if applicable)
- Batteries that can be used provided the vibrate function is disabled: 1.5V alkaline and 1.2V rechargeable NiMH, with the vibrate function disabled.

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The recommended battery type is 1.5V lithium, which offers the best battery life, especially in very cold water.
SAFT 3.6V batteries offer similar performance and can be used without restriction.

The lower frequency of replacement of lithium batteries compared to alkaline batteries will reduce waste associated with having to discard the minimum reserve that the computer must have before each use.

1.5V alkaline and 1.2V NiMH batteries offer lower performance and do not fully ensure the operation of the vibrating alarm. These batteries are very sensitive to low temperatures, which affect their battery life.

⚠️ ⚠️

**It is strongly recommended not to use the vibrating mode with alkaline or rechargeable NiMH batteries due to their high power consumption. If the vibrating mode is used intensively, the insufficient power of these batteries may cause the computer to shut down unexpectedly.**

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## 3.2. Replacing the battery in the battery compartment: operating procedure

Unscrew the battery cover using the battery compartment key or a coin. Observe the polarity: positive terminal towards the bottom of the compartment, negative terminal towards the spring side of the cover.

Make sure there are no foreign objects or dust on the inner sealing surface of the battery compartment or on the O-ring of the cover. It is recommended that you lubricate this seal regularly with a suitable silicone grease.

The battery and the inside of the battery compartment must be clean, dry, and free of any traces of moisture.



| |
|---|
| Respecting polarities |
| Lubricated |
| Clean surface |
| Absence of moisture |
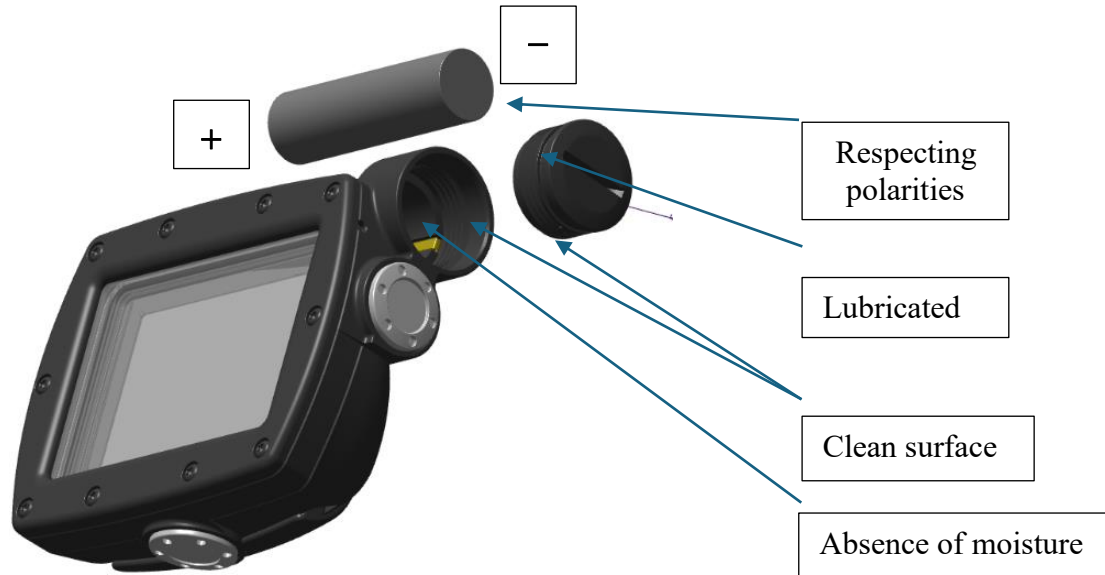
*Checks to be carried out when replacing the battery*

## 3.3. Battery life

The computer's battery life is 30 hours of diving on average. This duration can vary greatly depending on the water temperature, the brightness level of the screen, the intensity of use of the vibrate mode, and the type of battery used.
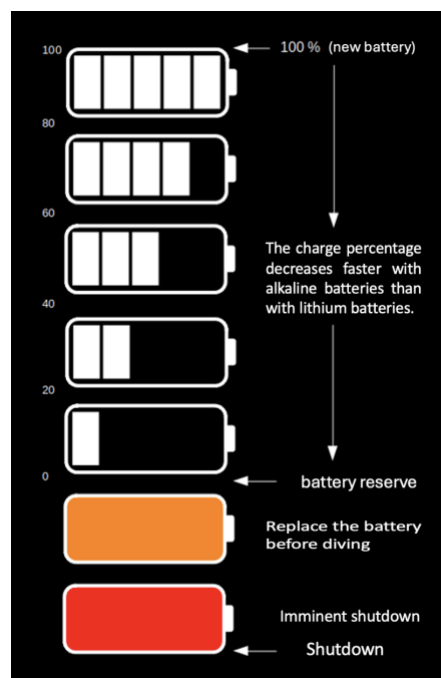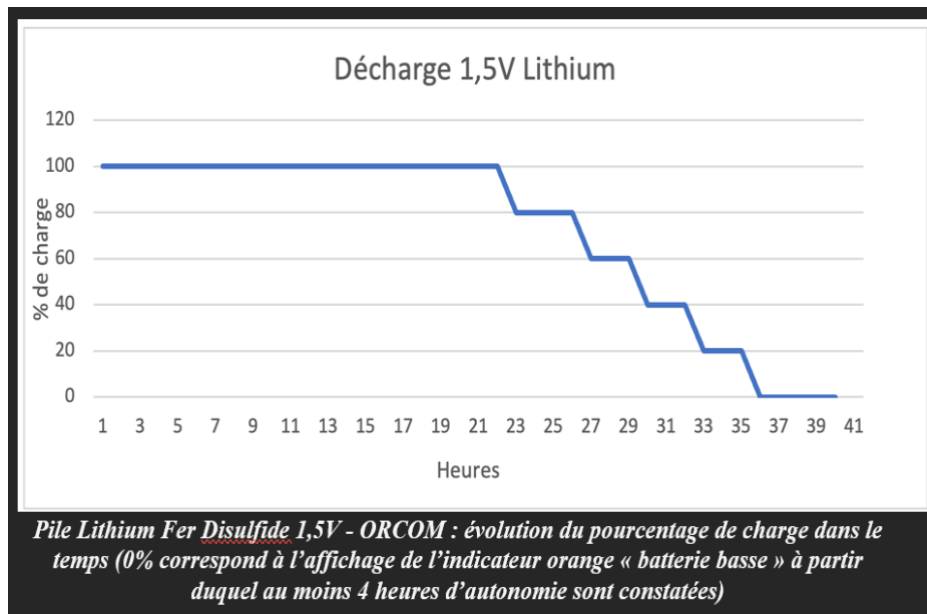


*Residual battery charge display convention*

Each bar displayed represents 20% of the usable battery charge, corresponding to between 5 and 8 hours of operation. Once the orange reserve is reached, the computer can operate for more than 4 hours.

The battery should be replaced immediately at the end of the first dive during which the orange level was reached (i.e., 5 bars of 20% consumed).

Note: special display feature when using lithium batteries:



*Pile Lithium Fer Disulfide 1,5V - ORCOM : évolution du pourcentage de charge dans le temps (0% correspond à l'affichage de l'indicateur orange « batterie basse » à partir duquel au moins 4 heures d'autonomie sont constatées)*

Unlike alkaline batteries, the capacity of lithium batteries remains at 100% for approximately half of the battery's life.
As a result, the "5 bars" display stage will appear to take a very long time to progress to the "4 bars" stage. Once this stage has been reached, it can be estimated that approximately 50% of the battery life has been consumed.

## 4. Getting started with the ODYSSEY computer

### 4.1. Packaging and delivery kit

The dive computer is delivered with a 1.5V lithium battery. To prevent unwanted power-up, the battery compartment cap is partially unscrewed, which prevents any possibility of simultaneous contact between the + and - terminals.
**To turn on your computer, screw the cap all the way down using the battery compartment key provided for this purpose.**

ODYSSEY computers are delivered in individual packaging with the following accessories:

- A pair of elastic fabric straps;
- An elastic "bungee" cord;
- A replacement O-ring for the battery cover;
- A battery compartment key for screwing and unscrewing the battery cover;
- A manufacturer's warranty and certification card.

- **Means for attaching the elastic fabric straps and bungees**

ODYSSEY has mounting points for two elastic fabric straps or two bungees, depending on the user's preference.
The removable bungee retention interfaces allow for precise, non-slip attachment.
If you wish to use the elastic straps with clips, the two rubber interfaces must be removed.
To install the bungees, it is advisable to first remove the two interfaces before threading the cord through the holes. Then replace the two interfaces to limit the movement of the cord.



*Rubber interfaces to be removed for use with fabric straps or*
*to be put in place for use with bungees*

## 4.2. Starting the computer and using the buttons



To turn on the computer, simply press the Left and Right buttons simultaneously.
The startup screen displays the firmware version number before automatically switching to the home screen.



*Displaying the firmware version*
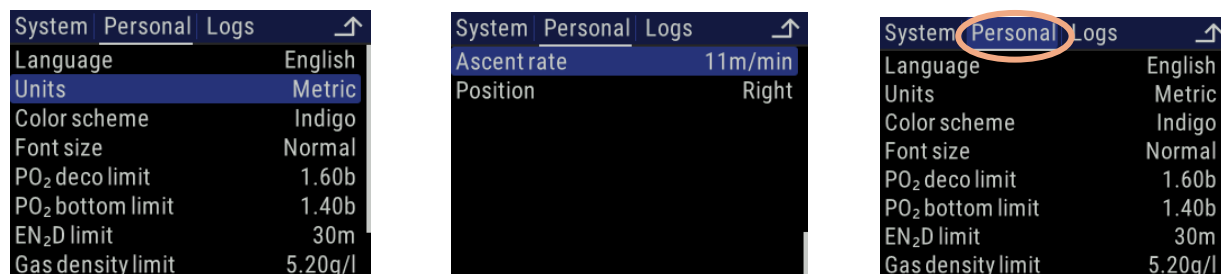


*Home screen*

## 4.3.  Navigating the computer menus



*Move through the menus on the "Settings" page by pressing the right button.*

Pressing the right button moves the highlighted field to the right, and pressing the center button enters the highlighted tab.
Above: moving from "Dive" to "Gas" via "Deco" with activation and scrolling of the "Gas" submenu.
In a vertical menu, the right button moves the highlighted selection field down and the left button moves it up.



Pressing both side buttons simultaneously will take you back to the previous selection.
This action allows you to exit the current page directly.

## 4.4. Checks before diving
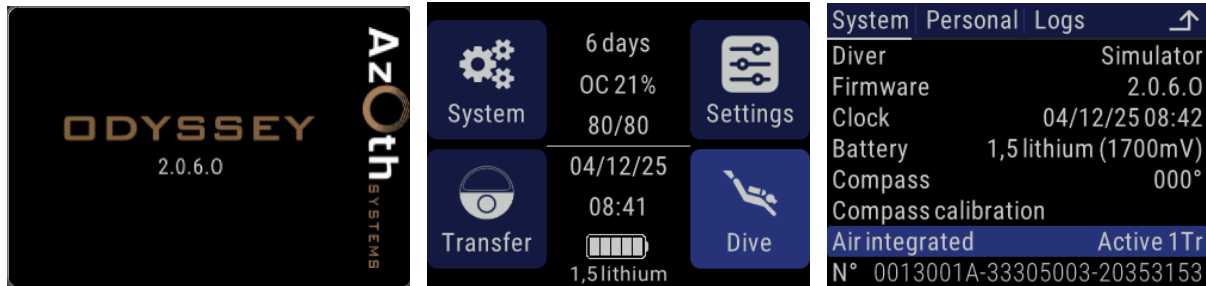


1. Start the computer and check the firmware version

2. On the home screen, check:
   - The diving mode – open circuit (OC) or closed circuit (CC)
   - The activated gases
   - Any alerts currently in progress
   - The surface interval between repetitive dives
   - The battery level
   - Gradient Factor (GF) settings

3. In the "Settings" - "Dive" menu, check:
   - Water type
   - The brightness level
   - The dive mode

Examples:



Dive mode: Closed Circuit (CC)
Trimix gas 18%O²/36%He
Conservatism: GF Low 50 and GF High 80
Surface interval: 6 days.
Battery level (100%).
Date and time



Dive mode: Open Circuit (OC)
Gas: Air
Conservatism: GF Low 80 and GF High 80
Surface interval: 6 days
Battery level: 0% - empty, needs replacing!
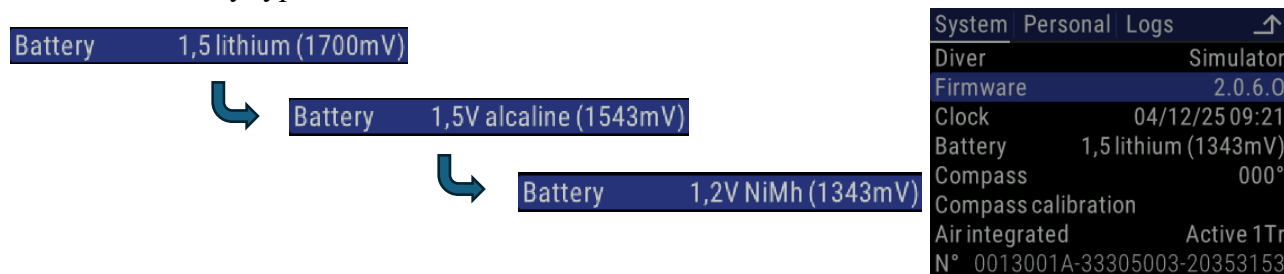Date and time

# 5. Overview of the "System" menu



The system menu allows you to change the computer's basic settings. Each line can be highlighted; you can enter the highlighted menu line by pressing the center "Enter/Confirm" button and scroll through the various options available:
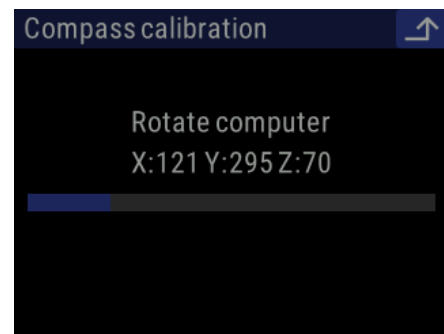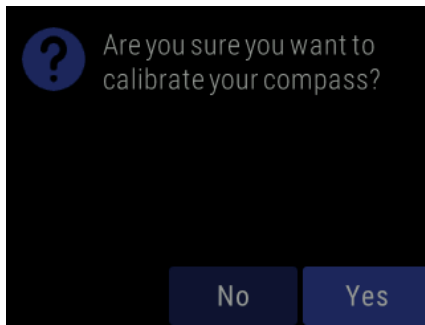
- Dive mode setting:
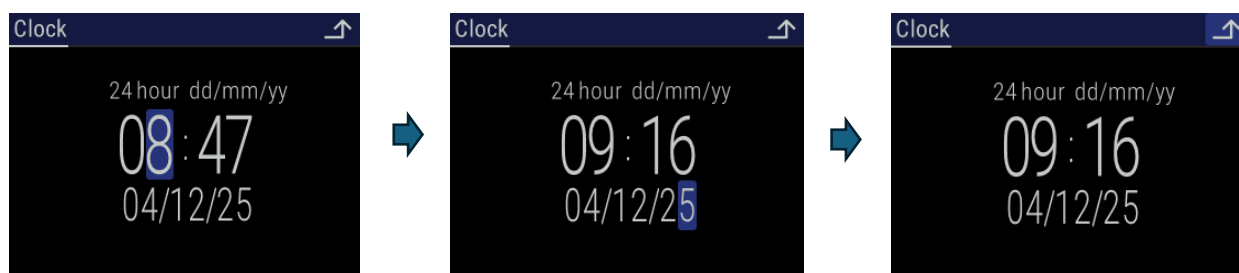


- Battery type information:



Note: It is essential to select the correct battery type in order to obtain accurate information about the actual battery charge level (i.e., the pictogram must correspond to the actual battery consumption level).
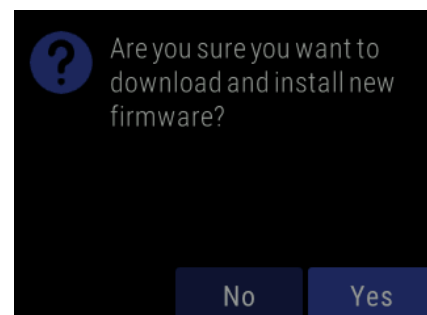
- Calibrating the compass:



To calibrate the compass, rotate it in both directions around each of the computer's three axes. For optimal accuracy, this operation should be repeated each time the battery is changed or the work area is changed.
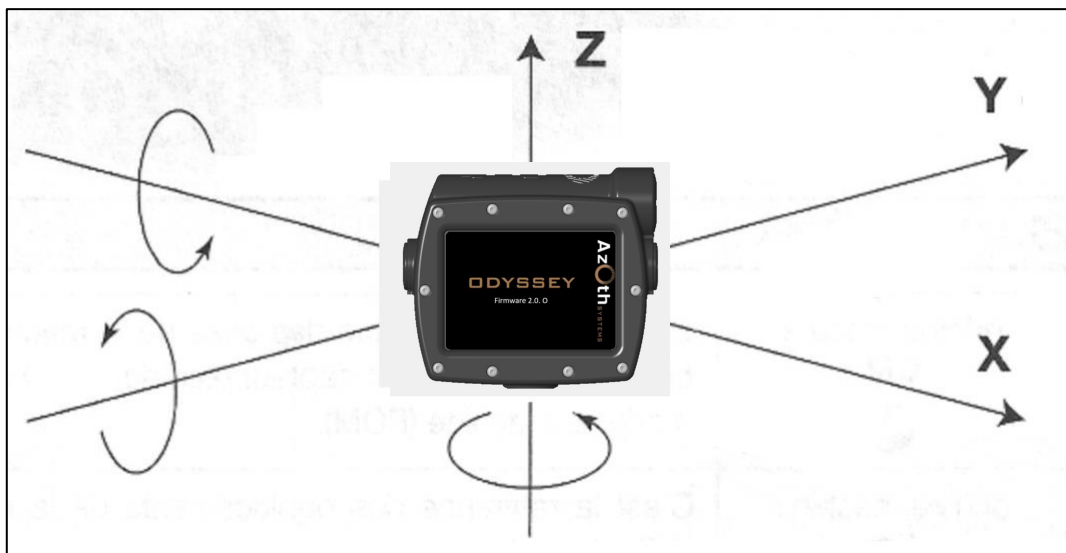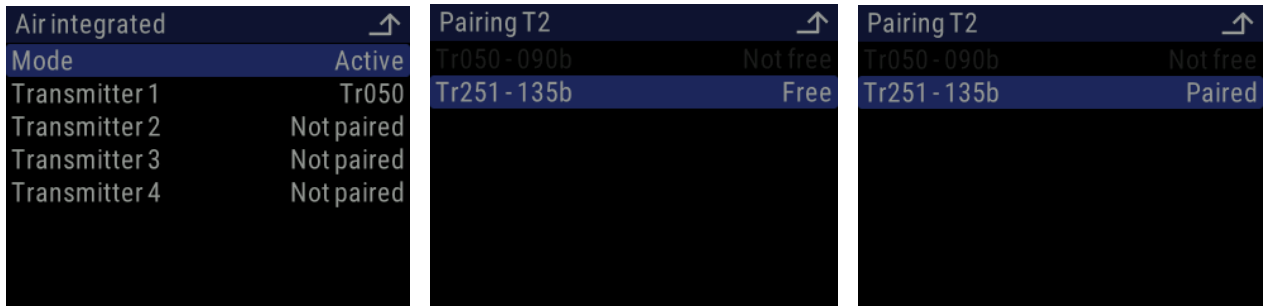


*Rotational movements to calibrate the digital compass*

- Firmware update – see detailed procedure in § 14:

- Pairing ODC SENSOR* cylinder pressure sensors (Tx transmitters) in the "Air Management" menu:



In "Active" mode, the "Air Management" page automatically searches for available tank pressure sensors within a 1.0 m radius of the computer.
In "Inactive" mode, the dive computer's radio reception circuit is not operational. This corresponds to use of the computer without a pressure sensor.

**To avoid unnecessary battery consumption when no pressure sensor is in use, be sure to leave "Mode" set to "Inactive."**

To pair with a pressure sensor, select the number of the desired sensor when highlighted. Once paired, it will automatically appear on the dive page. This operation only needs to be performed once between the computer and the pressure sensor: the sensor number is then stored in the computer menu.

It is possible to pair up to 4 pressure sensors simultaneously with the same computer and view the pressures of each of the 4 tanks on the dive screen.

If necessary, paired sensors stored in memory can be changed or deleted by selecting them via the highlighted field and pressing the center button (here: "delete"):
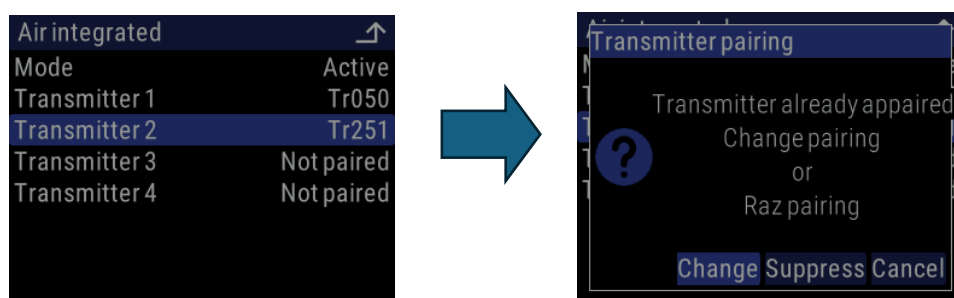


*See also: User Manual - ODC SENSOR*

*Illustration of the gas pressure available in tank N° 1*
*(pressure sensor n° 1): 148 bar*

## 5.1 Flying after diving

Odyssey offers simple management of the waiting time after a dive before you can fly.
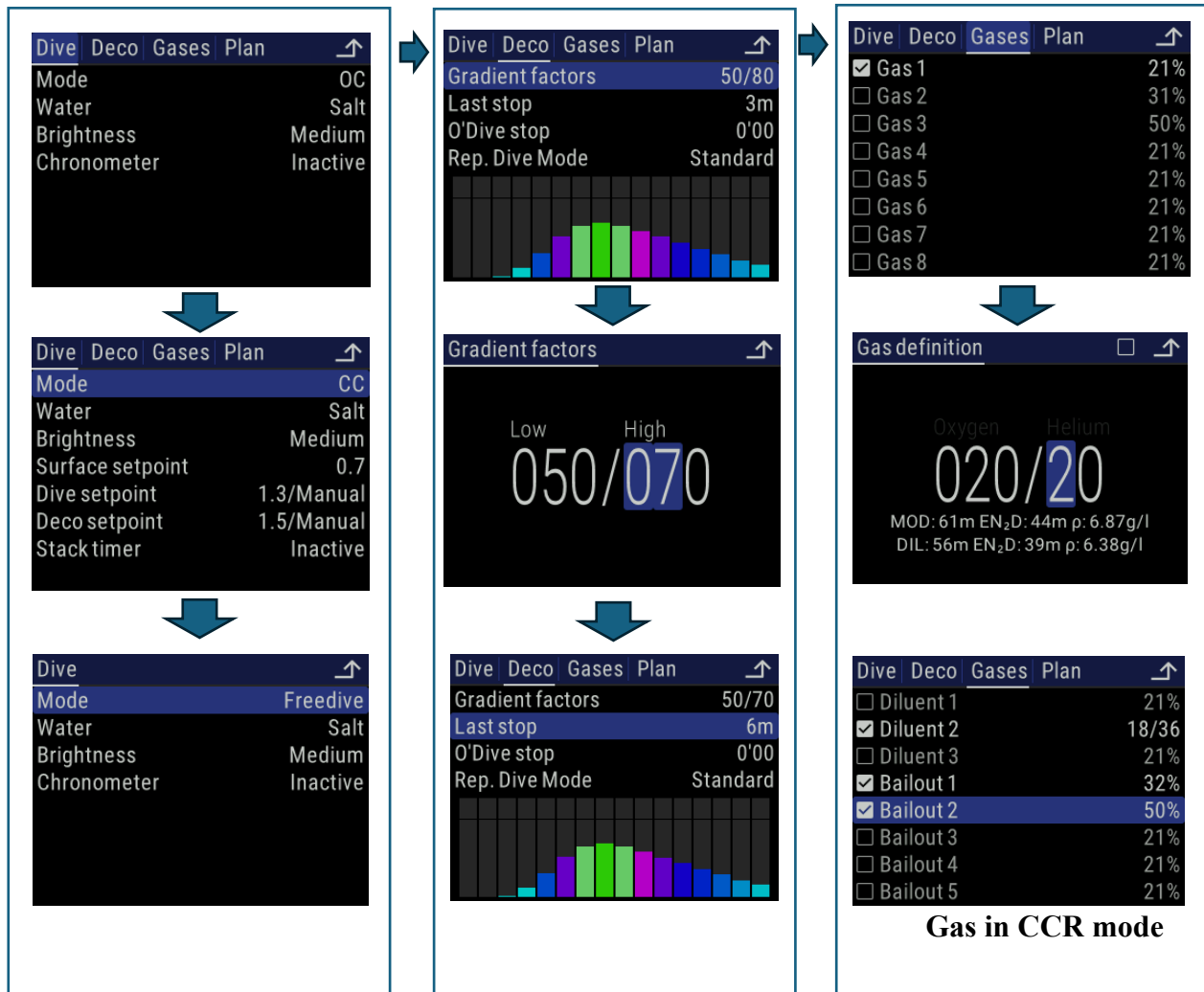The gas load is analyzed with a limit of 0.8 bar of residual nitrogen tension in the compartments.
A crossed-out airplane icon on the home screen indicates this reminder, and the time before flying is displayed on the dive page.



***Illustration of the no-fly indicator after diving***

# 6. Presentation of the "Settings" menu and the "Dive," "Deco," "Gas," and "Plan" submenus

The "Plan" menu allows you to plan a new dive taking into account the previous dive. The submenus give access to the dive mode settings and the water type, screen intensity, conservatism, gas, etc. settings:

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| Mode | | | | OC |
| Water | | | | Salt |
| Brightness | | | | Medium |
| Chronometer | | | | Inactive |

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| Mode | | | | CC |
| Water | | | | Salt |
| Brightness | | | | Medium |
| Surface setpoint | | | | 0.7 |
| Dive setpoint | | | | 1.3/Manual |
| Deco setpoint | | | | 1.5/Manual |
| Stack timer | | | | Inactive |

| Dive | | | | ⬏ |
|------|------|-------|------|---|
| Mode | | | | Freedive |
| Water | | | | Salt |
| Brightness | | | | Medium |
| Chronometer | | | | Inactive |

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| Gradient factors | | | | 50/80 |
| Last stop | | | | 3m |
| O'Dive stop | | | | 0'00 |
| Rep. Dive Mode | | | | Standard |

**Gradient factors** ⬏

Low  High
050/**070**

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| Gradient factors | | | | 50/70 |
| Last stop | | | | 6m |
| O'Dive stop | | | | 0'00 |
| Rep. Dive Mode | | | | Standard |

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| ☑ Gas 1 | | | | 21% |
| ☐ Gas 2 | | | | 31% |
| ☐ Gas 3 | | | | 50% |
| ☐ Gas 4 | | | | 21% |
| ☐ Gas 5 | | | | 21% |
| ☐ Gas 6 | | | | 21% |
| ☐ Gas 7 | | | | 21% |
| ☐ Gas 8 | | | | 21% |

**Gas definition** ☐ ⬏

Oxygen  Helium
020/**20**

MOD: 61m EN$_2$D: 44m ρ: 6.87g/l
DIL: 56m EN$_2$D: 39m ρ: 6.38g/l

| Dive | Deco | Gases | Plan | ⬏ |
|------|------|-------|------|---|
| ☐ Diluent 1 | | | | 21% |
| ☑ Diluent 2 | | | | 18/36 |
| ☐ Diluent 3 | | | | 21% |
| ☑ Bailout 1 | | | | 32% |
| ☑ Bailout 2 | | | | 50% |
| ☐ Bailout 3 | | | | 21% |
| ☐ Bailout 4 | | | | 21% |
| ☐ Bailout 5 | | | | 21% |

**Gas in CCR mode**

Gradient Factors correspond to decompression safety factors. The closer the GF value is to 100%, the lower the safety factor and the shorter the decompression stops will be.
The GF Low value between 20 and 100% determines the depth of the first stop. The lower the GF, the deeper the algorithm will suggest stops, and vice versa.
The GF High value between 40 and 100% determines the duration of the steps: the lower this value, the longer the duration of the steps.
*For more information and a better understanding of the concept of GF, see the document:*
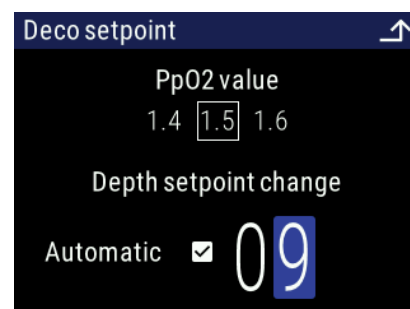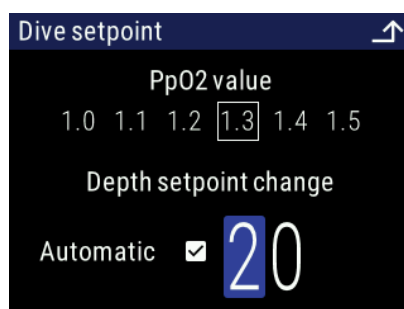*Clearing the Confusion About "Deep Stops" By Erik C. Baker, P.E*

**Specific adjustment of set point values with automatic or manual change:**
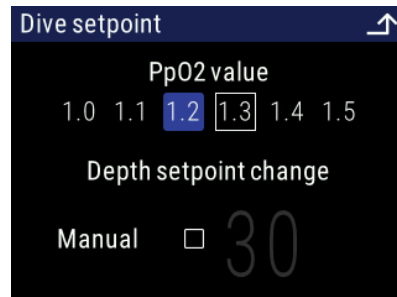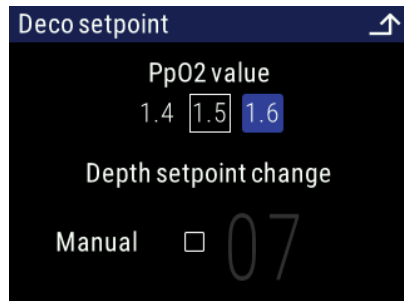




- The PpO² values for each set point—surface, bottom, and decompression—can be modified in a menu for each item.
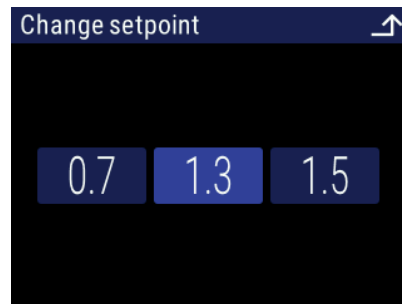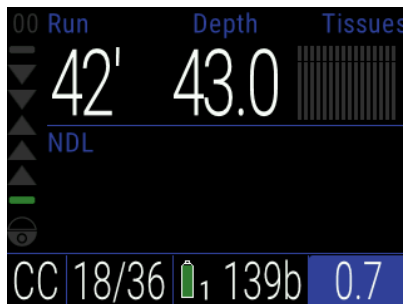




- In manual mode, it is up to the diver to change from one Set Point to another by manipulating the controls during the dive.





- In automatic mode, the diver determines the depth at which the Set Point switches during descent and ascent.
  In the event of a manual change, the automatic Set Point switchover is deactivated for the remainder of the dive.

**Programming the soda lime usage timer – CCR mode**
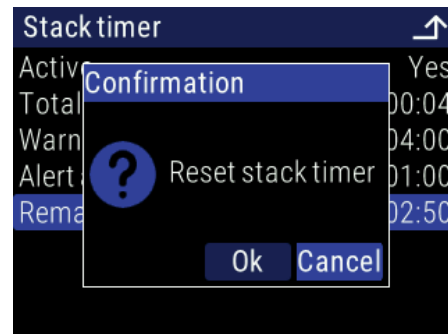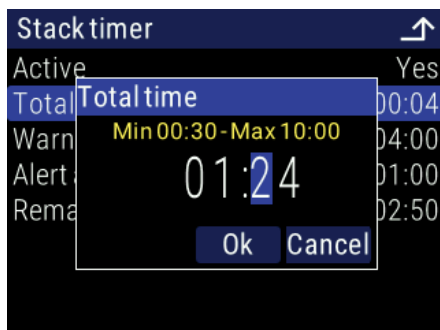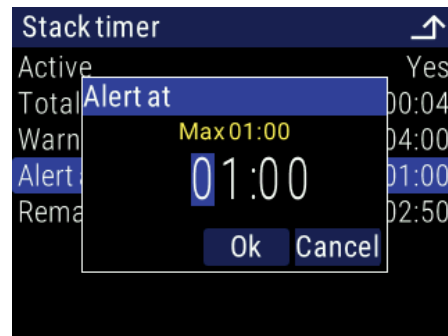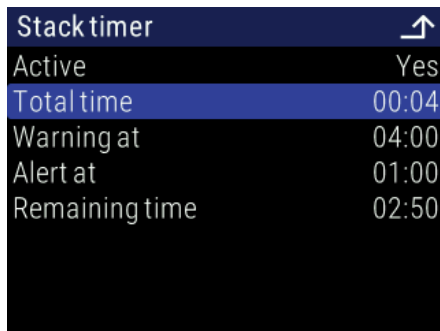








The total time is programmable according to the type of canister, in accordance with the rebreather manufacturer's instructions for the rebreather.

A reminder warning can also be programmed, as well as an alert prior to soda lime replacement.

The counter must be reset after each soda lime change.

**The soda lime usage lime counter is activated only during diving; when breathing from the loop at the surface, time is not counted.**

- **Dive planning:**

The ODYSSEY computer is equipped with a dive planner that can simulate square profile dives. The planner takes into account the gas load from the previous dive to calculate the decompression stops and all the activated gases.
Planning can be carried out in both CO and CC modes with the associated gases and conservatism.

**CC dive planning**                    **CO dive planning**



*Possible settings for the planner parameters*

The result is data on depth and duration of decompression stops, dive time, and total dive time based on the Pmax and bottom time values.
The "planning settings" menu allows you to adjust the descent speed, ascent speed, and consumption values used for the planning calculation. This setting is particularly useful for Bail Out planification
This planning remains an approximation based on a theoretical square profile, taking into account several assumptions in terms of descent and ascent rates.
The ODYSSEY dive planner is designed for single dives. **Multi-level dives are not taken into account.**

# 7. Presentation of the "Logbook" menu

The "Logbook" menu contains all the information related to recorded dives:
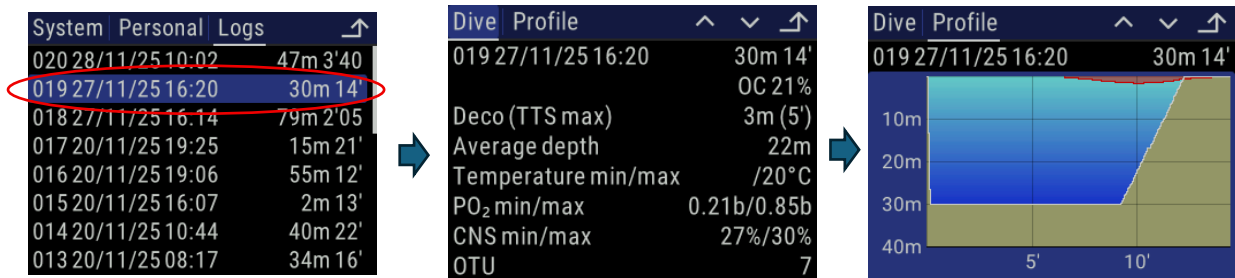


By selecting a dive, you can access its graphical profile and detailed data:

- Date, maximum depth, and total dive time;
- Dive mode;
- Gases used;
- Average depth;
- Calculated deepest stop and calculated maximum DTR;
- Minimum oxygen partial pressure and maximum oxygen partial pressure;
- O2 load: CNS and OTU;
- Minimum and maximum temperatures.

The computer's memory can store more than 300 dives of 1 hour each.

An automatic overwrite loop is activated when the memory is full; the oldest dive stored in memory will then be deleted to free up space for a new dive.

It is recommended that you export and save your dives at least once a year using the ODC Odyssey management software.
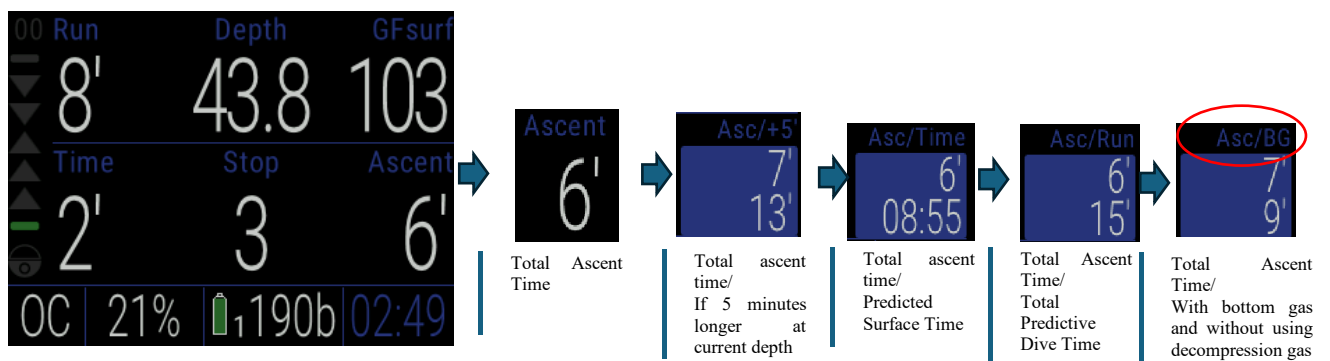
## 8. Overview of the "Dive" menu



By selecting the highlighted fields, it is possible to change the displays.
Use the "Left" and "Right" buttons to move the highlighted field and "Confirm / Enter" with the center button.

- Each adjustable field has submenus that provide access to additional information:



The dynamic field relating to the ascent allows you to view different ascent times calculated according to the bottom time and gases breathed. The total dive time and predicted surface time take into account the ascent time (12m/min) plus the stops calculated at that moment with the available gases and the stop change phases (6m/min).

Predictive ascent times are calculated continuously, taking into account the bottom gas used and the decompression gas available according to the programmed dive mode.

The ASC/BG information field displays the total predicted ascent time:
- ASC - taking into account the available decompression gas;
- BG (**Back Gas)** - considering only the bottom gas for the decompression calculation,
- Change in the dynamic field displays at the bottom of the screen: battery; % CNS; temperature in °C; max. depth.

- Tissue desaturation graph:



- **Digital** pressure gauge function*, air pressure display:



Pressure transmitter no. 1     Change of transmitter no. 2     3rd transmitter displayed

- Pressure alarm codes are displayed according to the following rule:

- **Green** from 250 to 100 bar   -  **Orange** from 99 to 50 bar     -  **Red** from 49 to 0 bar

*\* See also: User Manual  - ODC SENSOR*

- **Display of decompression dives**

- Example for an Air dive with Oxygen decompression:
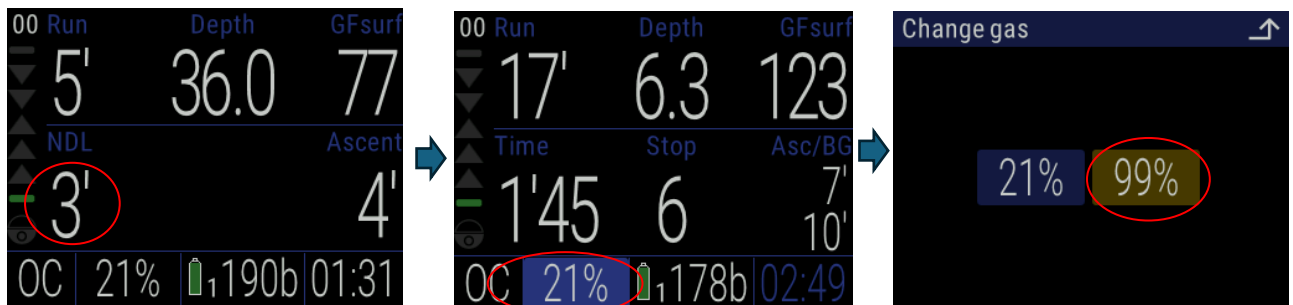


*NDL, 3 minutes remaining without stops     Selection of the 2nd available gas          Gas change*



*Oxygen validated as breathing gas*

- Display, activation mode, and decompression stop countdown:

Dives are "no-stop," i.e., within the safety curve, when the NDL (No Decompression Limit) field is displayed as a positive value.

E.g.: +240' means that more than 240' of diving can be carried out without decompression stops at the current depth.

The display 3' means that there are 3 minutes of diving time remaining without a decompression stop, staying at the current depth. When the no-decompression limit is reached "<3'", the computer displays the NDL field highlighted in gray and emits two series of vibration warnings. Beyond this point, the NDL display is replaced by STOP, specifying the depth of the first decompression stop and its duration calculated at the time of display.

Decompression stops are counted down optimally at the exact target depth given by the ODYSSEY, calculated in relation to the theoretical ceiling not to be exceeded.

If the stop depth is greater than the preset depth (e.g., 4 m instead of 3 m), the stop time will be extended.

If the depth is less than the **set depth for the stop**, the stop display field is highlighted in brown beyond -10cm.

If the depth is less than **the theoretical decompression ceiling**, the decompression stop display field is highlighted in red beyond -10 cm.

Display examples:
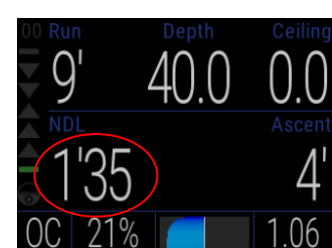


*More than 240' without a stop*  *195' without a stop remaining*  *NDL limit, 1'35 remaining*
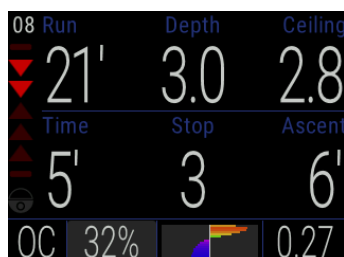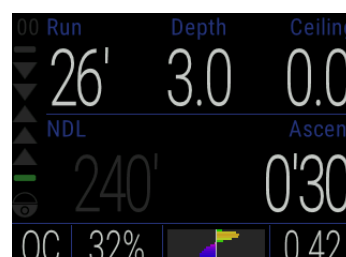
*Stop 1 min 45 sec at 6 m*  *-10 cm from the stop*  *-10 cm from the ceiling*

*Resumption of normal deco stop*  *End of deco stops – surface possible*

Note: the theoretical decompression ceiling is always lower than the stop setting!

# 9. Managing the start and recording of the dive

When the computer is powered on, depth is displayed on the screen as soon as it exceeds 30 cm. At this stage, no dive time measurement is taken into account.

Actual dive logging starts only when the depths exceeds 1.0m. From that moment, the computer retroactively integrates into the dive profile all measurements recorded 1100mb of absolute pressure. Within 10 seconds of start-up, a sequence of atmospheric at depths greater than 60 cm prior to this threshold being reached.
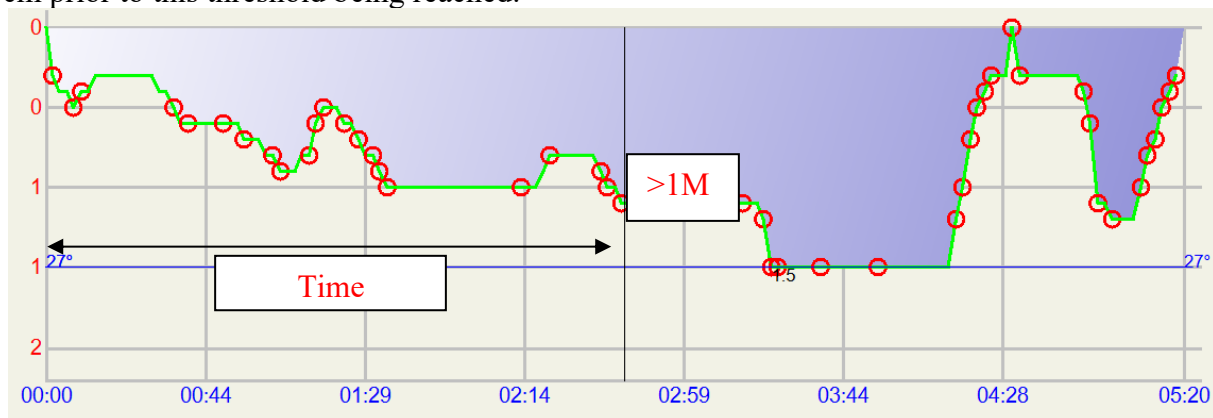


**Atmospheric pressure calibration function:**

### A. Normal mode (manual start)

After the computer is started by simultaneously pressing the two side buttons, an initial measurement of the ambient pressure is performed.

- This value is accepted as the reference atmospheric pressure if it falls within a range between 600 mbar and 1040 mbar, corresponding to an altitude from sea level up to approximately 4,000 m.
- If the measured pressure falls outside this range, it is considered invalid. The computer then retains the last valid atmospheric pressure value recorded during a previous start-up.

### B. Active micro-sleep mode (automatic start)

In micro-sleep mode, the microprocessor continuously measures the ambient pressure, including when the computer is powered off.

This mode enables automatic start-up of the computer (so-called "backup" mode), in particular in the event that the diver forgets to power it on at the surface.

- As soon as an absolute pressure greater than 1100 mbar is detected, the computer automatically switches to dive mode.

This pressure value corresponds to approximately 1 m of depth at sea level under normal weather conditions (atmospheric pressure of approximately 1013 mbar)

**Important note:**



*THE COMPUTER MUST BE STARTED BEFORE ANY DIVE TO CHECK ITS SETTINGS AND ALLOW ACCURATE CALIBRATION OF THE ATMOSPHERIC PRESSURE REFERENCE VALUE.*

*AUTOMATIC START-UP IN THE WATER IS AN EXCEPTIONAL EMERGENCY MEASURE.*

Note: Altitude diving.

The ODYSSEY computer automatically calibrates itself to the atmospheric pressure at each start-up. As a result, no user action is required to account for altitude.

Due to the lower atmospheric pressure at the surface, altitude diving may lead to significant variations in decompression parameters, in particular the no-decompression limit (NDL) and the total ascent time including decompression stops (TTS).

**Example:**
A "square" dive performed on air at a depth of 30 m with a GF setting of 80/80 will have an NDL of approximately 12 minutes at sea level. This NDL is reduced to approximately 7 minutes in the case of a lake located at an altitude of 3,200 m.



**During altitude diving, the automatic dive mode activation depth is modified due to the lower atmospheric pressure at the surface.**
**For example, at an altitude of 2,000 m, where the ambient pressure is approximately 800 mbar, the computer will automatically enter dive mode at a depth of around 3 m, corresponding to a pressure differential of 300 mbar between the surface and the activation pressure.**

**Microprocessor Sleep Mode / Disabled – Power saving**

Micro-sleep enables automatic start-up of the computer by detecting an increase in pressure above 1100 mbar. However, this mode results in higher power consumption when the computer is powered off, and therefore reduces overall battery life.

Micro-sleep can be enabled or disabled from the System menu:
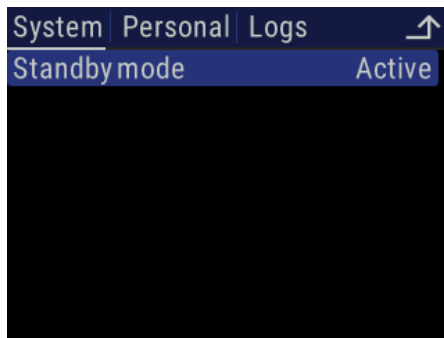


*Automatic start active*
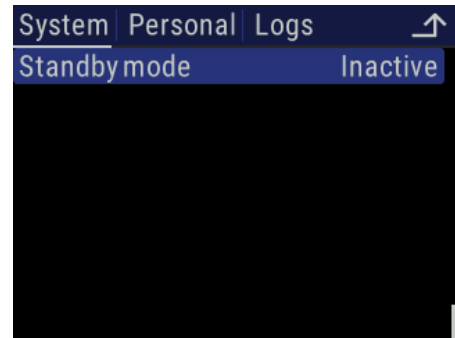


*Manual start only*

When micro-sleep is disabled, the computer can only be powered on manually by pressing the two side buttons.

In the event of a late underwater start by the diver, ODYSSEY then initiates an atmospheric pressure calibration cycle at the time of power-up: if the measured pressure is greater than 1040 mbar, it is rejected and replaced by the last valid atmospheric pressure value recorded during a previous start-up.

# 10. Alarm management

The ODYSSEY computer's alarms are indicated by visual displays and vibrations. Depending on the situation, a visual alarm indicated by the highlighting of a display field may be accompanied by vibration sequences.



*Examples of alarms with programmable thresholds in the "Personal" menu*

## 10.1. List of ODYSSEY alarms

- Maximum depth per gas use:
  - o Partial pressure of oxygen in the bottom gas;
  - o Partial pressure of oxygen in the decompression gas;
  - o Depth related to nitrogen partial pressure;
  - o Depth related to the density of the breathing gas.

- Gas reserve pressure:
  - o 50 bar

- Loss of connection with the ODC SENSOR pressure transmitter (see §10.2)
  - o After 1 min 45 sec of reception interruption (visual and vibrating alarm).

- Rapid ascent speed:
  - o Instantaneous if  V m/min > recorded setpoint.



- Decompression stages
  - o Layer maintenance relative to the setpoint;
  - o Maintenance of stop relative to decompression ceiling;
  - o Total interruption, non-compliance with decompression stops.

## 10.2. Alarm / Loss of ODC SENSOR connection

The computer may temporarily move out of the optimal reception range and no longer receive signals (see: ODC SENSOR User Guide). If the connection is lost for more than 45 seconds, dashes will appear on the computer screen:



*Dashes displayed in place of the pressure value if the connection is lost
for more than 45 seconds with the ODC SENSOR probe*

Moving the computer closer to the **parallel antenna** pressure probe within the optimal range will restore the connection, with data updating in approximately 3 seconds.

If the connection is lost for longer than 1 minute and 45 seconds, a series of 4 vibrations and a message will alert the diver to the loss of connection:
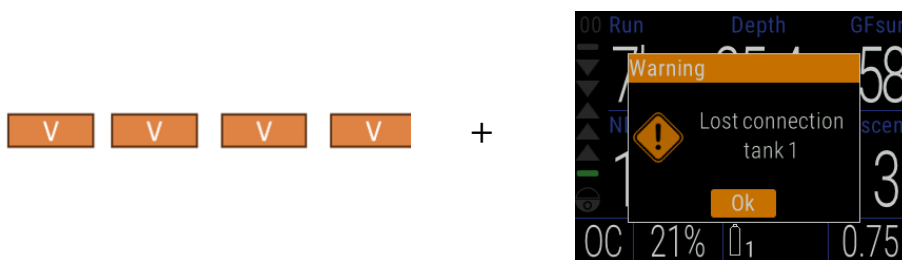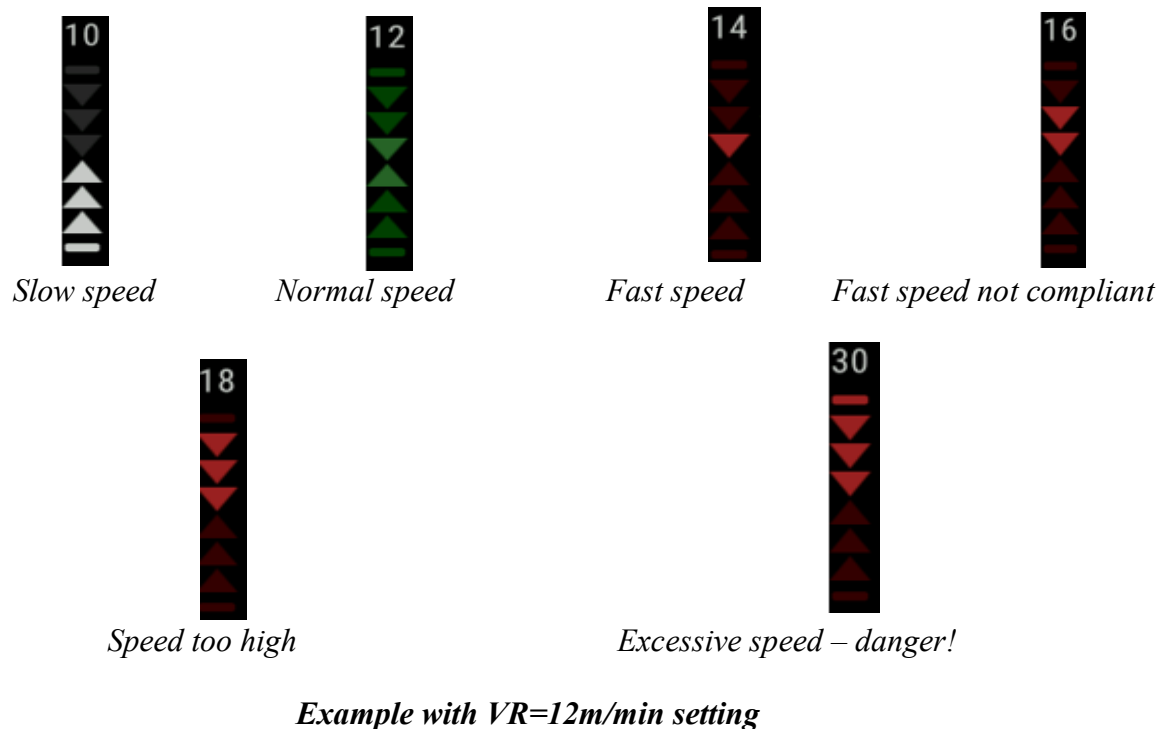


The alert message can be acknowledged ("OK") and cleared by simply pressing any of the three piezoelectric buttons.

If the connection is restored, a temporary display alerts the diver that the situation has returned to normal:
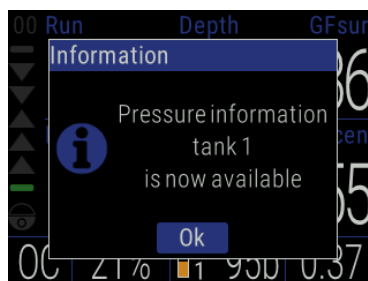


*Temporary message indicating a return to normal, if the ODC SENSOR connection is
restored and after acknowledging the first alert message.*

## 10.3. Visual indicator of ascent speed VR



*Slow speed*          *Normal speed*          *Fast speed*          *Fast speed not compliant*



*Speed too high*                              *Excessive speed – danger!*

***Example with VR=12m/min setting***

# 11. Repetitive dives

**Management and safety of successive dives**

When multiple dives are performed over the same period, the amount of dissolved gas remaining in the body after the first dive must be taken into account in order to ensure appropriate decompression during subsequent dives.

The ODYSSEY computer incorporates a patented repetitive dive management system designed to enhance diver safety during repetitive diving.

Bühlmann-type algorithms, like all Haldanian models, are designed to manage a single dive. In the case of repetitive dives, an adaptation of the decompression calculation is therefore required in order to take into account the residual gas load resulting from previous dives.

To meet this requirement, ODYSSEY offers three levels of conservatism dedicated to repetitive dives, without modifying the Gradient Factor setting selected by the user:

- **Standard level (default setting):**
  This level is designed to closely approximate the management of repetitive dives as defined by the Canadian DRDC tables. It provides a balanced compromise between safety and decompression duration.

- **Minimal level, below the standard level:**
  This setting results in a reduced adjustment, leading to shorter decompression times for the same sequence of dives.

- **Enhanced level, above the standard level:**
  This setting introduces increased conservatism, extending decompression times in order to further improve the safety margin during repetitive dives.

Disabling the repetitive dive safety system results in the use of the Bühlmann algorithm without any specific decompression adjustment for repetitive dives. This configuration reduces safety margins and increases the risk of decompression sickness (DCS).

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**It is possible to disable the repetitive dive safety system.**
**In this case, the Bühlmann algorithm operates without any specific decompression adjustment for repetitive dives. This configuration reduces safety margins and increases the risk of decompression sickness (DCS).**

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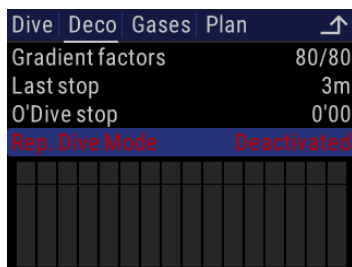




*Default setting*
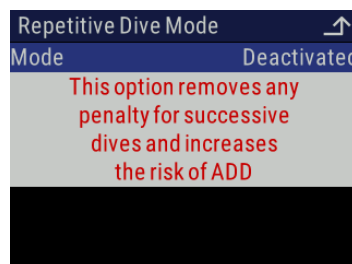


*Device disabled*

For further information on repetitive dive management and the absence of decompression over-penalization, please refer to:

Alain Foret, Éric Frasquet
*Dive Computers and the Absence of Over-Penalization in Repetitive Diving*
Worldivers Research & Reports, Montpellier, France
December 23, 2023.

## 12. ODYSSEY navigation compass

The ODYSSEY computer has a digital compass that allows underwater navigation with stored heading tracking. Changing the display reduces the digital information fields in favor of the compass. This display change can be made during the dive by simultaneously pressing the Center/Right or Center/Left buttons when worn on the right wrist.



Tracking a stored heading can be activated by pressing the left and right buttons simultaneously. The arrow indicator shows left or right drift from a 5° deviation from the selected azimut:



*Azimut tracked at 256°*
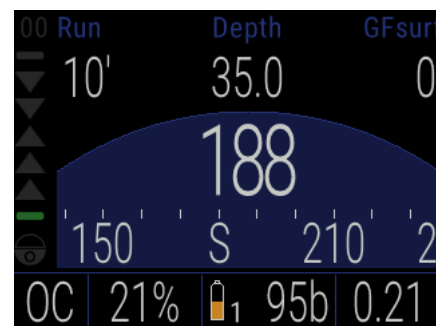


*No azimut selected*



*Trend to the right – go left*



*Trend to the left – go right*

Choice of compass control setting Left or Right hand:

- In the "Personal" menu, choose left or right orientation depending on whether the computer is worn on the left or right wrist.
- Pressing the Left Center or Right Center buttons simultaneously, depending on your choice, will display the compass or return to the normal display.
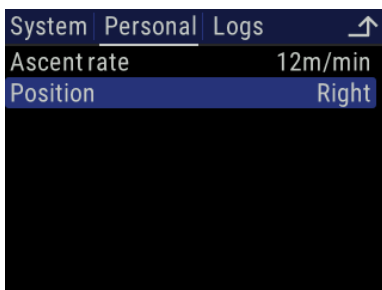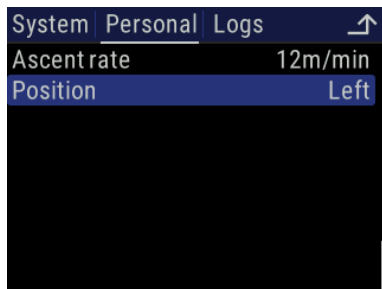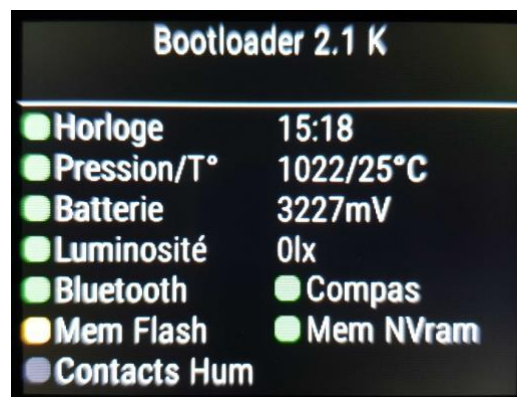
# 13. Firmware update and Bootloader mode features

The firmware update is performed from the "System" menu:
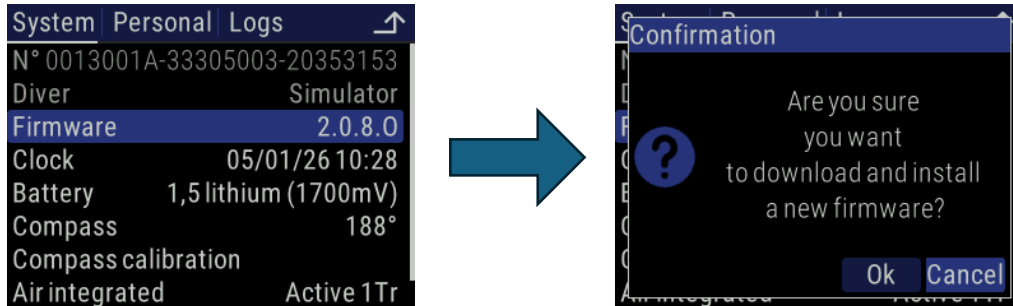


The Bootloader function is to update the firmware and view the computer's self-test. In Bootloader, Bluetooth is enabled in "update" mode and the following information is available:



Each indicator light shows the operation of the components mentioned and tested by a self-test program.

They should be green, except for the flash memory, which is in standby mode, and the wet contactors, which are dry.

The battery voltage expressed in millivolts, atmospheric pressure in mbar, and temperature in °C (instantaneous reading) can also be viewed in this mode.

The firmware is updated by connecting to the ODYSSEY computer management software.

# 14. Care

The computer must be thoroughly rinsed with fresh water after each use, dried, and stored in a dry, well-ventilated place, protected from light. Check the condition of the O-ring at each battery replacement (see §3.2) and replace it if it is damaged.

## 15. Maintenance

It is recommended to have the product's accuracy (depth measurement) checked within a period of 2 years following its first use or after 200 dives (whichever comes first), after any significant impact, or in case of doubt.

This check may be carried out by a technical service center (equipped with the appropriate facilities and measuring instruments) that is a member of, or approved by, Azoth Systems.

## 16. Warranty

The ODYSSEY dive computer is covered by a two-year warranty against manufacturing and operational defects.

The warranty does not cover defects or failures resulting from:

- excessive impacts or shocks;
- any disassembly of the computer by a person not authorized by Azoth Systems;
- pressure tests not performed in water.

## 17. Compliance

The ODYSSEY dive computer complies with the European Union standard **NF EN 13319** – *Depth gauges and combined depth and time-measuring devices – Functional and safety requirements, test methods*.

## 18. Manufacturer

AZOTH SYSTEMS SAS
Place Georges Pompidou
Maison du Numérique et de l'Innovation
83000 Toulon
France
www.azoth-systems.com
contact@azoth-systems.com



This device must be disposed of as electronic waste in accordance with applicable regulations. Do not dispose of it with regular household waste.

# Glossary

- Bootloader: System menu for updating the firmware or microprogram
- CC: Closed Circuit, (CCR)
- CNS: Central Nervous System Oxygen Toxicity
- OC: Open Circuit
- RUN: Total Dive Time
- ASC: Total Ascent Time
- ASC+5: Predictive ascent time by remaining 5 minutes longer at this depth
- Asc BG: Predictive ascent "Back Gas," i.e., remaining on the bottom gas used and without switching to a decompression gas
- Firmware: Computer software
- Air Management: Menu for managing tank pressure transmitters
- ST: Surface Time
- Logs: Dive data files stored in the computer
- NDL (No Decompression Limit): Time remaining available without decompression stop
- ODC: O'Dive Computer – Azoth Systems range of dive computers
- ODYSSEY: Model from the ODC range designed for recreational diving.
- ODC-M: ODC range of dive computers marketed to the military
- ODC-R: ODC range of dive computers marketed to the general public
- ODC SENSOR: Pressure sensor for diving tanks, connectable to AZOTH SYSTEMS computers
- OTU: Oxygen Time Unit
- Oxy: 100% oxygen
- VR: Ascent Speed

**End of document**