1 Introduction ............................................................................................................. 5
2 Getting the computer ready to work. ...................................................................... 7
   2.1 Bungee cord........................................................................................................ 7
   2.2 Changing the battery. ....................................................................................... 7
   2.3 Turning on. ....................................................................................................... 8
       2.3.1 Auto turn-on. ......................................................................................... 8
   2.4 Turning off. ...................................................................................................... 9
   2.5 Dive computer operation. ................................................................................ 9
   2.6 Compass calibration. ....................................................................................... 11
3 APNEA mode. ........................................................................................................ 12
   3.1 Computer screens at surface work .................................................................. 12
       3.1.1 Main surface screen. ............................................................................. 12
       3.1.2 Configuration screen. ........................................................................... 13
           3.1.2.1 SYSTEM SETUP. .......................................................................... 14
           3.1.2.2 Logbook. ....................................................................................... 15
           3.1.2.3 Compass calibration. .................................................................... 18
           3.1.2.4 Device information. .................................................................... 19
           3.1.2.5 Select operating mode of the device ............................................. 20
           3.1.2.6 Firmware update. ......................................................................... 21
       3.1.3 “Surface” compass. ................................................................................. 21
   3.2 Device screens when working underwater. ...................................................... 22
       3.2.1 Main underwater screen. ....................................................................... 22
       3.2.2 Underwater configuration screen. ........................................................... 23
       3.2.3 “Underwater” compass. ......................................................................... 24
   3.3 Menu layout. .................................................................................................. 25
4 Extended GAUGE mode. ...................................................................................... 26
   4.1 Device screens when working on the surface. .................................................. 26
       4.1.1 Main surface screen. ............................................................................. 26
       4.1.2 Detailed surface screen. ......................................................................... 27
           4.1.2.1 Graphs preview. ............................................................................ 28
           4.1.2.2 “Rescue” screen. ........................................................................... 28
           4.1.2.3 System settings - SYSTEM CONFIG. ............................................ 29
       4.1.3 “Surface” compass. ................................................................................. 30
   4.2 Device screens when working underwater. ...................................................... 31
       4.2.1 Main underwater screen. ....................................................................... 31
       4.2.2 Stopwatch choice screen. ...................................................................... 32
       4.2.3 Underwater configuration screen. ........................................................... 33
       4.2.4 “Underwater” compass. ......................................................................... 34
   4.3 Menu layout. .................................................................................................. 35
5 Recreational mode with open circuit - OC REC. ................................................... 36
   5.1 Device screens when working on the surface. .................................................. 36
5.1.1 Main surface screen. .................................................................................................................. 36
5.1.2 Surface configuration screen. ...................................................................................................... 37
5.1.2.1 Device information - UNIT SETUP. ........................................................................................... 38
5.1.2.2 Gas mix table configuration – GAS SETUP. .............................................................................. 39
5.1.2.3 Dive parameters configuration – DIVE SETUP. ....................................................................... 40
5.1.2.4 Dive Planner – NTX DIVE PLAN. ............................................................................................ 41
5.1.2.5 Logbook. ..................................................................................................................................... 43
5.1.2.6 System settings – SYSTEM SETUP. ........................................................................................... 46
5.1.3 “Surface” compass. ....................................................................................................................... 47

5.2 Dive computer screens when working underwater. ............................................................................ 48
5.2.1 Main underwater screen. ............................................................................................................... 48
5.2.1.1 Switching between gas mixes – GAS SWITCH. ........................................................................ 50
5.2.1.2 Change the Gradient Factor values .......................................................................................... 51
5.2.2 Underwater configuration screen. ................................................................................................ 52
5.2.3 Gas mix table configuration - underwater mode. .......................................................................... 53
5.2.4 “Underwater” compass. ............................................................................................................... 55

5.3 Menu layout ......................................................................................................................................... 56

6 Technical mode with open circuit – OC TECH. ...................................................................................... 57

6.1 Device screens when working on the surface. .................................................................................... 57
6.1.1 Main surface screen. ..................................................................................................................... 57
6.1.2 Surface configuration screen. ........................................................................................................ 58
6.1.2.1 Device information - UNIT SETUP. .......................................................................................... 59
6.1.2.2 Gas mix table configuration – GAS SETUP. .............................................................................. 60
6.1.2.3 Dive parameters configuration – DIVE SETUP. ....................................................................... 61
6.1.2.4 Dive Planner – NTX DIVE PLAN. ............................................................................................ 63
6.1.2.5 Logbook. ..................................................................................................................................... 65
6.1.2.6 System settings – SYSTEM SETUP. ........................................................................................... 68
6.1.3 “Surface” compass. ....................................................................................................................... 69

6.2 Dive computer screens when working underwater. ............................................................................ 70
6.2.1 Main underwater screen. ............................................................................................................... 70
6.2.1.1 Switching between gas mixes – GAS SWITCH. ........................................................................ 72
6.2.1.2 Change the Gradient Factor values .......................................................................................... 73
6.2.2 Underwater configuration screen. ................................................................................................ 73
6.2.3 Gas mix table configuration – underwater mode. .......................................................................... 74
6.2.4 “Underwater” compass. ............................................................................................................... 76

6.3 Menu layout. ......................................................................................................................................... 77

7 Closed circuit and fixed PPO2 (setpoint) work mode - CCR FIXED SP. .................................................. 78

7.1 Device screens when working on the surface. .................................................................................... 78
7.1.1 Main surface screen. ..................................................................................................................... 78
7.1.2 Setpoint configuration screen. ........................................................................................................ 79
7.1.3 Surface configuration screen. ........................................................................................................ 80
7.1.3.1 Device information - UNIT SETUP. .......................................................................................... 80
7.1.3.2 Gas mix table configuration – GAS SETUP. .............................................................................. 81
7.1.3.3 Dive parameters configuration – DIVE SETUP. ....................................................................... 83
7.1.3.4 Dive planner – TMX DIVE PLAN. ............................................................................................ 84
7.1.3.5 Logbook. ..................................................................................................................................... 86
7.1.3.6 System settings — SYSTEM SETUP. ……………………………………………………………………………………………………………………………………… 89
7.1.4 “Surface” compass. …………………………………………………………………………………………………………………………………………………………… 90

7.2 Dive computer screens when working underwater. ……………………………………………………………………………………………………………………………………………………………………… 91
7.2.1 Main underwater screen. …………………………………………………………………………………………………………………………………………………………………………………………………………………………… 91
7.2.1.1 Switching between gas mixes – GAS SWITCH. ……………………………………………………………………………………………………………………………………………………………………………………………………………………… 93
7.2.1.2 Change the Gradient Factor values …………………………………………………………………………………………………………………………………………………………………………………………………………………………… 94
7.2.2 Setpoint configuration screen. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 94
7.2.3 Underwater configuration screen. ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 95
7.2.4 Gas mix table configuration – underwater mode. …………………………………………………………………………………………………………………………………………………………………………………………………………………………… 96
7.2.5 “Underwater” compass. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 98

7.3 Menu layout. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 99

8 Pure Bühlmann mode …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 100

8.1 Device screens when working on the surface. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 100
8.1.1 Main surface screen. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 100
8.1.2 Surface configuration screen. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 101
8.1.2.1 Device information - UNIT SETUP. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 102
8.1.2.2 Gas mix table configuration – GAS SETUP. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 103
8.1.2.3 Dive parameters configuration – DIVE SETUP. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 104
8.1.2.4 Dive Planner – NTX DIVE PLAN. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 106
8.1.2.5 ??? – PPO2 SETUP. ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 108
8.1.2.6 Logbook. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 108
8.1.2.7 System settings – SYSTEM SETUP. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 111
8.1.3 “Surface” compass. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 112

8.2 Dive computer screens when working underwater. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 113
8.2.1 Main underwater screen. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 113
8.2.2 Underwater configuration screen. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 113
8.2.3 Gas mix table configuration – underwater mode. ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 114
8.2.4 Underwater” compass. …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 116

9 Technical aspects ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 117

9.1 Pressure sensor ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 117
9.2 Activation of underwater work mode ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 117
9.3 Device operating time ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 118
9.4 Technical parameters ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 120

10 Decompression calculation ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 121

11 Firmware update ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 122
11.1 Cumulative update – bootloader and main firmware ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… 127
1 Introduction

DIVECOMPUTER.EU product is a dive computer dedicated for open circuit (OC) and closed circuit (CC) diving. When designing this computer, we aimed at making its usage straightforward even without reading the manual. However, we ask you to spend some time on getting to know its content to make sure you are able to operate the dive computer comfortably. Scuba diving is fraught with risk, knowledge is the best tool to minimise this risk.

Product’s features.

❖ Depth and time display
❖ Bühlmann decompression model with gradient factors conservatism
❖ Metric and imperial units
❖ Automatic turn-off after 15 minutes on the surface
❖ Pressure sensor with work range to 300msw
❖ Dive planner
❖ Unlimited gas mixes (AIR, Nitrox, Trimix)
❖ Closed and open circuit modes switchable during a dive
❖ 3 CC and 7 OC gas mixes
❖ Gas mixes can be changed and added during a dive
❖ Fast switching between the gas mixes
❖ CNS tracking
❖ No device blocking after omitting decompression stop
❖ The configurable setpoints in range: 0.5 – 1.5
❖ Powered by majority of widely available AA batteries
❖ Digital compass with tilt compensation 90º
❖ 500 dive logs memory
❖ Firmware updates via radio data transmission
DANGER!

This computer is capable of calculating required decompression stops. These calculations are only an assumption of the real physiological decompression requirements. Dives that require staged decompression are considerably more risky than dives within “no-stop” restrictions.

Rebreather diving, diving with gas mixes, diving with required decompression stops or overhead environment diving significantly increases the risk of death.

YOU ARE RISKING YOUR LIFE WHEN SCUBA DIVING

WARNING!

The firmware of divecomputer.eu has been thoroughly checked and tested but it is likely that it still contains some undetected errors. These errors may cause the divecomputer.eu to show incorrect data and/or work not in accordance with the assumptions presented in the manual. Never risk your life by depending only on one source of information. Use tables or a second dive computer. If you decide to perform more advanced and risky dives, get proper training and gradually build up your experience and required skills.

Divecomputer.eu is an electronic device and as such may fail at any point of its life. Do not rely only on it. Always have backup plans. No device can replace proper training, knowledge and skills.
2 Getting the computer ready to work.

2.1 Bungee cord.

Bungee cord can be installed in many ways based on the user’s preferences. The holes are seized for bungee cord of max 5mm diameter. One example is shown below.

Put the bungee cord through the holes and tie knots at the ends stopping the bungee from getting pulled.

Always use good quality bungee cord to avoid losing the computer should it break.

2.2 Changing the battery.

Divecomputer.eu device was designed to work with a wide variety AA-size batteries of nominal capacity 1.5V. It is allowed to use a battery of different capacity (in the range 1.0 – 4.5V), however the battery icon will not be proper then.

Battery port is located on the right side of the device and is seal-closed with a battery cap.

When inserting the battery into the computer, it is important to pay attention to its polarisation. Battery should be inserted with positive contact first, as shown in the photo on the right:
After inserting a new battery, tighten the battery cap clockwise until the resistance is felt. It is advised to grease the sealing o-ring with an appropriate grease dedicated for scuba use. If the battery port cap is not tightened properly the battery chamber may get flooded and the metal contacts corroded, which may influence the work of the computer and make it impossible to use it.

2.3 Turning on.

To turn the divecomputer.eu device on, press both buttons (SELECT and CONFIRM) at the same time.

2.3.1 Auto turn-on.

Divecomputer.eu will automatically switch on when submerged underwater. It is a function that detects the presence of water with wet contacts. They are placed on the plug of the battery and the metal cover of the pressure sensor. These components should remain clean to ensure good electrical conductivity.

It is recommended to manually turn on the device and check the status of battery and current configuration before each dive.
2.4 Turning off.

Switching off the device is only possible when in surface mode. To turn the device off, press the SELECT and CONFIRM buttons simultaneously, then confirm with “CONFIRM” button.

Each time the device is turned off, a screen will be displayed informing about the operating time of the device with the currently inserted battery. This time is reset each time the battery is removed for more than 20 seconds.

2.5 Dive computer operation.

Dive computer has two control buttons: SELECT and CONFIRM.

SELECT button is used to switch between the functions and edit-fields available in a currently displayed screen. Below example shows switching between options on device configuration screen.
The default active function (marked in white colour) is to switch to the next screen. Pressing SELECT button causes repeated switch to the next available option. To increase the clarity, the following pointer is also present:

To increase the clarity, the following pointer is also present:

Options selected by consecutive pressing SELECT:

Pressing SELECT again will switch to the first option (move to the next screen):
CONFIRM button is used to validate the current option. For function options (eg MODE, COMPASS CALIBRATION, FIRMWARE UPGRADE from this example), you will be taken to the screen that serves the function. If you change the value of the parameter (eg BRIGHTNESS from this example), the value is changed to another available (eg LOW-> MEDIUM-> HIGH-> AUTO from this example). Values are cyclically changed.

2.6 Compass calibration.

The device has a built-in digital compass. For this item to work properly, it requires periodic calibration. The calibration process should be carried out in an environment free from magnetic interference, such as power lines, proximity to magnetic fields (most electrically powered), steel structures.

In order to properly calibrate the compass, select COMPASS CALIBRATION in the configuration menu, and then turn the machine several times around each of its rotation axis. The elapsed time is indicated by a percentage in the progress bar at the bottom of the screen:
3 APNEA mode.

3.1 Computer screens at surface work

3.1.1 Main surface screen.

The top part of the screen (informative row) is common to all operating modes and contains the following information:

- **Battery charge icon**: Current level of battery charge, given in percentage, colour coding: \(>=60\%), \,<60\%), \,<30\%.

**Surface interval**

The time elapsed since the last dive, in the format: days (d) hours (h).

**Temperature**

Current air / water temperature indicated in \(^{\circ}\text{C}\), measured by a pressure sensor.

**Current time**

The main part of the screen contains information about the dive just completed (before turning off the device) or the initial value (zero) - before diving begins.

- **DEPTH** – current depth, given in [m] or feet [ft]
- **MAX DEPTH** – maximum depth recorded during the dive
- **AVG DEPTH** – average depth, since the last reset of its value
- **TIME** – dive time, given in minute ‘seconds value.
**TIMER** – current counter value (stopwatch). In the initial state, it is stopped (indicator [II] ) and indicates value “0’00”. To run the stopwatch, select [START] and press CONFIRM button. The status indicator changes to [▶] and the timer will start counting the time. To stop counting select [STOP] . Selecting this option [RESET] will reset the stopwatch value.

### 3.1.2 Configuration screen.

![Configuration screen](image)

A screen containing all device settings groups - both functional and directly related to the hardware.

Please refer to the description of the functions of the individual parameters, described later in this manual, in order to properly configure the device.

**SYSTEM SETUP** – change basic settings of the device parameters

**LOGBOOK** – manage dive logs, such as: viewing, previewing detailed information, viewing dive charts.

**COMPASS CALIBRATION** – calibration of the compass. When this option is selected, the calibration will start automatically. The current settings will be erased. In order for the compass to work properly, the calibration process must be completed according to the calibration process instruction.

**UNIT SETUP** – display device information and edit user name

**COMPUTER MODE** – change the operating mode of the computer

**FIRMWARE UPGRADE** – update device firmware
3.1.2.1 SYSTEM SETUP.

Screen for configuration of basic device settings. Includes both main system parameter settings and parameters connected with diving directly.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes
3.1.2.2 Logbook.

The controller is equipped with memory to record the last 500 dives. The user has the ability to view logs, view detailed information about dives, view dive charts and delete selected logs.

Omitting a decompression stop is marked in the dive log. When viewing the dives in logbook, entry marked red means a dive with omitted decompression stop.

During a dive the following information is recorded:

- dive number
- date and time of dive start
- dive time
- maximum depth
- setpoint information
- surface interval
- water temperature
- air temperature

The course of diving is recorded after a depth of 1m is reached and a dive time of 5 seconds. The maximum registration time for one dive is 8 hours.

The main screen contains information on the numbers and dates of recent dives. To read details of a particular dive, select the appropriate entry from the list and then confirm the selection (confirm button). Use the navigation buttons to select the desired log.

- Scrolling the list every 30 logs (every 3 screens)
- Scrolling the list every 10 logs (every 1 screen)
- Go to the list and scroll through every log

To view details of the dive, select the log and confirm with the CONFIRM button.

The information about omitted decompression stop is also indicated in detailed dive log, with red message Lost deco shown in the log’s header.
The detail screen contains the following information:

**Dive Time** – dive time

**Max Depth** – maximum depth of current dive

**Average Depth** – average depth of current dive

**Surface Interval** – surface interval from the previous dive. If this is the first dive and the time interval can not be determined, this parameter is set to "---".

**Water Temperature** – water temperature, recorded one minute after the start of the dive. The time delay is used to obtain the ambient temperature by the sensor

**Air Temperature** – air temperature - recorded when passing from surface mode to dive mode

There are 2 buttons available:

- delete log
- display the dive charts

To delete a log, select delete log, then select YES: yes and press CONFIRM.
Dive graphs:

Depth graph

Oxygen partial pressure graph

Temperature graph

Summary graph
3.1.2.3 Compass calibration.

The device has a built-in digital compass. For this item to work properly, it requires periodic calibration. The calibration process should be carried out in an environment free from magnetic interference, such as power lines, proximity to magnetic fields (most electrically powered), steel structures.

In order to properly calibrate the compass, select COMPASS CALIBRATION in the configuration menu, and then turn the machine several times around each of its rotation axis. The elapsed time is indicated by a percentage in the progress bar at the bottom of the screen:

1 2 3

4 5 6
3.1.2.4 Device information.

The screen provides information about the hardware and firmware and the user's name (user name). Hardware information is useful when contacting the service and for a personalized software version.

**USER NAME** – user name of the device

**RESET TO DEFAULTS** – restore factory settings

**PIEZO TIME** – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

**RUN TIME** – work time of the device

**SOFTWARE VERSION** – the firmware version installed on the device

**HARDWARE VERSION** – hardware version number of the device

**SERIAL NUMBER** – serial number of the device

To change the user name, select the **USER NAME** field with the SELECT button and confirm with the CONFRM button.

The **USER NAME** field will be deleted and the cursor set to the first character: . Use the SELECT key to change the current character (cyclical, in alphabetical order) and CONFIRM to the next character. The username will be saved after all characters have been set. It is possible to insert a blank character (space) - this is the first character when the SELECT button is pressed.
3.1.2.5 Select operating mode of the device

Device mode selection screen. There are 5 modes available:

**APNEA** – timer, depth gauge + stopwatch

**EXT GAUGE** – extended GAUGE mode

**OC REC** – recreational mode in open circuit. In this mode, there are 3 configurable gas mixes without helium content

**OC TECH** – open circuit technical mode. 7 Trimix gas mixes are available

**CCR FIXED SP** – Closed circuit operation mode (CCR). There are 3 diluents and 7 Trimix gasmixes available. In this mode, the device allows you to configure three setpoints

To change the operating mode, press SELECT to select the desired option and confirm with the CONFIRM button. A message will be displayed informing you of the loss of decompression information and deleting the gas configuration, if you continue with this option.

To use the selected operating mode, select the option with the SELECT button and confirm with the CONFIRM button. The device will be turned off. Once restarted (by user) it will start working in the selected mode.
3.1.2.6 Firmware update.

The steps for updating the firmware are described in point:

10. Firmware update

3.1.3 “Surface” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
3.2 Device screens when working underwater.

3.2.1 Main underwater screen.

The main screen layout, when in underwater mode, is similar to surface mode. The only difference is the replacement of the surface interval information with the information about the possible alarms (the field marked in red) that occurred during the dive.

**Battery charge icon**
Current battery charge level, given by percentage. Colour coding:

- >=60%
- <60%
- <30%

**Temperature**
Current air / water temperature, indicated in °C, measured by pressure sensor.

**Current time**

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **DEPTH** – current depth, given in meters [m] or feet [ft]
- **MAX DEPTH** – maximum depth recorded during the dive
- **AVG DEPTH** – average depth, since the last reset of its value
- **TIME** – set the current time in format hour:minute
- **TIMER** – current counter value (stopwatch). In the initial state, it is stopped (indicator ) and indicates value “0’00”. To run the stopwatch, select START and press CONFIRM button. The status indicator changes to and the timer will start counting the time. To stop counting select STOP. Selecting this option will reset the stopwatch value
3.2.2 Underwater configuration screen.

The ability to change device configuration in underwater mode has been limited to basic system settings.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.
END OF DIVE – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

3.2.3 “Underwater” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
3.3 Menu layout.

Surface work

Underwater work
4 Extended GAUGE mode.

4.1 Device screens when working on the surface.

4.1.1 Main surface screen.

The upper part of the screen (information bar) is common to all operating modes and contains the information described below.

- **Battery charge icon**: Current battery charge level, given by percentage. Colour coding: $\geq60\%$, $<60\%$, $<30\%$.

- **SURF: 02d 23h**: Surface interval
  The time elapsed since the last dive, in the format: days (d) hours (h)

- **Temperature**: Current air / water temperature, indicated in oC, measured by pressure sensor

- **Current time**: 14:47

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **MAX DEPTH**: maximum depth recorded during dive, given in meters [m] or feet [ft]

- **AVG DEPTH**: average depth, since the last reset of its value

- **DIVE TIME**: set the current time in format hour:minute

- **O2 TIMER**: current Oxygen counter (stopwatch) value. This stopwatch should be started in a rescue situation at the time of administration of oxygen. This is an auxiliary function that makes it easy to measure the time a
diver spends with the administered oxygen. To start the oxygen timer, use the SELECT button to select **O2 TIMER** and then press CONFIRM. To stop the countdown, press CONFIRM again.

**DECO TIME** – the time that elapsed since the start of the decompression procedure - the first start of any stopwatch: Timer1 ... Timer4, given in minutes: seconds.

### 4.1.2 Detailed surface screen.

A screen showing the parameters of the last dive (or zero values when there was no dive since switching on the device) and extended functions and configuration sections of the device.

- **TEMP MIN** – lowest water temperature during the dive. It is recorded after the first minute of the dive elapses.
- **TEMP MAX** – the highest water temperature during the dive. It is recorded after the first minute of the dive elapses.
- **DECO TIME** – the time that elapsed since the start of the decompression procedure - the first start of any stopwatch: Timer1 ... Timer4, given in minutes: seconds.
- **TIMER 1...4** – the value of individual stopwatches, counted during the dive. Stopwatches can be managed from the stopwatch configuration screen, described later in this manual.
- **SHOW GRAPHS** – shows the preview the graphs of the last dive.
- **RESCUE SCREEN** – shows the "rescue" screen, showing detailed information about the last dive.
- **RESET TIMERS** – resets the value of all stopwatches.
- **SYSTEM CONFIG** – shows the system settings setup screen.
Select the **SHOW GRAPHS / RESCUE SCREEN / RESET TIMERS / SYSTEM CONFIG** option by marking it with the SELECT button and then pressing the CONFIRM button.

### 4.1.2.1 Graphs preview.

Diagrams showing the course of the dive:

- **DEPTH** – depth graph as a function of time (blue)
- **TEMPERATURE** – temperature graph as a function of time (yellow)

### 4.1.2.2 “Rescue” screen.

The screen contains the diving parameters (PARAMETERS column) and the list of all start/stop of stopwatches (TIMER LIST column). It is used in emergency situations to quickly learn the course of the dive. This is an information screen - without the ability to change the parameters shown.

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>TIMER LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP MIN: ---</td>
<td>---</td>
</tr>
<tr>
<td>TMP MAX: ---</td>
<td>---</td>
</tr>
<tr>
<td>DPT AVG: 0.9</td>
<td>---</td>
</tr>
<tr>
<td>DPT MAX: 1.3</td>
<td>---</td>
</tr>
<tr>
<td>DIVE TIME: 3'53</td>
<td>---</td>
</tr>
<tr>
<td>O2 TIMER: 000:00</td>
<td>---</td>
</tr>
<tr>
<td>TIMER 1: 000:22</td>
<td>---</td>
</tr>
<tr>
<td>TIMER 2: 000:15</td>
<td>---</td>
</tr>
<tr>
<td>TIMER 3: 000:09</td>
<td>---</td>
</tr>
<tr>
<td>TIMER 4: 000:57</td>
<td>---</td>
</tr>
</tbody>
</table>

- **TMP MIN** – lowest water temperature during the dive
- **TMP MAX** – highest water temperature during the dive
- **DPT AVG** – average depth, calculated since the last reset of its value
- **DPT MAX** – maximum depth recorded during dive, given in meters [m] or feet [ft]
- **DIVE TIME** – set the current time in format hour:minute
- **O2 TIMER** – current Oxygen counter value. This stopwatch should be started in a rescue situation at the time of oxygen administration
- **TIMER 1...4** – the value of individual stopwatches, added during the dive
4.1.2.3 System settings - SYSTEM CONFIG.

Screen for setting basic device settings and changing computer mode.

**COMPUTER MODE** – goes to the device mode change screen.

**UNITS** – Choice of units: IMPERIAL or METRIC.

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness.

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes
PIEZO TIME – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

4.1.3 “Surface” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
4.2 Device screens when working underwater.

4.2.1 Main underwater screen.

![Screen Screenshot]

**Battery charge icon**
Current battery charge level, given by percentage. Colour coding: 
> = 60%, <60%, <30%.

**Temperature**
Current air / water temperature, indicated in °C, measured by pressure sensor

**Current time**

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **DEPTH** – current depth, given in meters [m] or feet [ft]
- **MAX DEPTH** – maximum depth recorded during the dive
- **AVG DEPTH** – average depth, since the last reset of its value. To reset, select this counter by pressing the SELECT button - the average depth indicator will take the form: \[\text{RESET } 125.6\] and then confirm with the CONFIRM button. The average depth gauge will be set to a value equal to the current depth.
- **TIME** – set the current time in format hour:minute
- **TIMERS** – value of sum of times counted by all timers
MOMENT OF TIMER ON – information about the currently used stopwatch: depth and dive time recorded at the moment of starting the stopwatch.

4.2.2 Stopwatch choice screen.

The screen contains basic information about a dive, stopwatch status, and information about when the currently used stopwatch got switched on.

Battery charge icon
Current battery charge level, given by percentage. Colour coding: >=60%, <60%, <30%.

DEPTH – current depth, given in meters [m] or feet [ft]
AVG DEPTH – average depth, since the last reset of its value. To reset, select this counter by pressing the SELECT button - the average depth indicator will take the form: \( \text{RESET} \), and then confirm with the CONFIRM button. The average depth gauge will be set to a value equal to the current depth.
TIME – set the current time in format hour:minute.
TIMER1...4 – current values counted by each stopwatch.
MOMENT OF TIMER ON – information about the currently used stopwatch: depth and dive time recorded at the moment of starting the stopwatch.

Stopwatch usage.

To start counting one of the stopwatches, select its name using the SELECT button (for example \( \text{TIMER1} \)) and then press CONFIRM. The selected stopwatch will start counting, and the previously activated stopwatch will stop. Repeated pressing the CONFIRM button on the same stopwatch will stop its operation. The moment of starting the stopwatch will be stored in the device memory and information about the last used stopwatch will be displayed in the MOMENT OF TIMER ON section:
The first start of any stopwatch will begin counting the decompression time, visible after the end of the dive, in the DECO TIME section of the main screen.

### 4.2.3 Underwater configuration screen.

Screen for setting basic device settings.

In the underwater mode, the option COMPUTER MODE is not available. All other parameters are editable and their functions are described below.

- **UNITS** – choice of units: IMPERIAL or METRIC
- **BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depending on the outside lighting – the stronger the light, the higher the screen brightness
- **DATE** – set the current date in format: day.month.year
- **TIME** – set the current time in format hour:minute
- **UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode
- **SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water
- **ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value,
calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013 mBar, which may differ from the actual atmospheric pressure.

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

**PIEZO TIME** – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

4.2.4 “Underwater” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
4.3 Menu layout.

Surface work

- Main surface screen
  - depth max
  - average depth
  - dive time
  - O2 time
  - deco time
- Detailed surface screen
  - minimum temperature
  - maximum temperature
  - deco time
  - TIMERS 1-4
- Surface compass
- Dive graphs
- Rescue screen
  - depth max
  - average depth
  - dive time
  - minimum temperature
  - maximum temperature
  - O2 timer
  - TIMERS 1-4
- System setup
  - units
  - brightness
  - salinity
  - date
  - altimeter
  - end of dive
  - piezo time
- Device mode
  - APNEA
  - EXT GAUGE
  - OC REC
  - OC TECH
  - CORE Fixed SP

Underwater work

- Main underwater screen
  - depth
  - max depth
  - average depth
  - time
  - timer
  - moment of timer on
- Stopwatch choice screen
  - depth
  - average depth
  - time
  - TIMERS 1-4
  - moment of timer on
- Underwater configuration screen
  - units
  - brightness
  - salinity
  - date
  - altitude
  - end of dive
  - piezo time
- Underwater compass
5 Recreational mode with open circuit - OC REC.

5.1 Device screens when working on the surface.

5.1.1 Main surface screen.

Górna część ekranu (pasek informacyjny) jest wspólna dla wszystkich trybów pracy i zawiera informacje opisane poniżej.

**Battery charge icon**

Current battery charge level, given by percentage. Colour coding:

- >=60%
- <60%
- <30%

**SURF: 03d 16h**

Surface interval

The time elapsed since the last dive, in the format: days (d) hours (h)

**21'C**

Temperature

Current air / water temperature, indicated in °C, measured by pressure sensor

**15:23**

Current time

The main part of the screen contains information about the selected gas mixes, decompression information and basic current information.

**PRES. mBar** – current pressure in millibars [mBar]

**DESAT h:min** – information about the remaining time of desaturation

**06.06.2017** – date in format: dd.mm.rrrr
SOFT – the firmware version installed on the device

GAS – name of currently used gas mix. When settings in the gas table are not configured, the gas name is replaced by: When the minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red.

MOD – maximum depth of dive with currently used gas mix, calculated for 1.6Bar partial pressure, given in meters [m] or ft [ft]. When settings in the gas table are not configured, this value is replaced by:

GRAD. FACTOR – gradient Factors settings, given in percentage

CNS % – current value of central nervous system toxicity load, given in percentage

OTU – current value of the OTU variable (Oxygen Tolerance Unit)

5.1.2 Surface configuration screen.

Go to the device information screen and change the user name.

Go to the gas table configuration screen.

Go to Dive Planner configuration screen and Dive Planner

Go to dive log preview

Go to the system settings change screen
5.1.2.1 Device information - UNIT SETUP.

The screen provides information about the hardware and firmware and the user's name (user name). Hardware information is useful when contacting the service and for a personalized firmware version.

**USER NAME** – user name of the device

**RESET TO DEFAULTS** – restoring factory settings of the device

**PIEZO TIME** – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

**RUN TIME** – work time of the device

**SOFTWARE VERSION** – the firmware version installed on the device

**HARDWARE VERSION** – hardware version number of the device

**SERIAL NUMBER** – serial number of the device

To change the user name, select the **USER NAME** field with the SELECT button and confirm with the CONFIRM button.

The **USER NAME** field will be deleted and the cursor set to the first character: . Use the SELECT key to change the current character (cyclical, in alphabetical order) and CONFIRM to the next character. The username will be saved after all characters have been set. It is possible to insert a blank character (space) - this is the first character when the SELECT button is pressed.
5.1.2.2 Gas mix table configuration – GAS SETUP.

In **OC REC** mode, the device supports 4 gas mixes, not containing helium gas. The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed. Below you will find the necessary configuration information.

**CHANGE GAS**  – change of currently used gas mix

**GAS SETUP**  – change of gas table parameters

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted first gas on the list - **OC GAS1**).

2) Select gas mix for editing: **GAS1** ... **GAS4** (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

3) Set the desired oxygen content:
   use the CONFIRM button to set the value of the selected digit,
   use the SELECT button to move to the next digit.

   **It is not possible to set the oxygen content to a value greater than 100%.**

   When the oxygen content is set, the device will go to **ACTIVE** option.

4) Mark the edited gas mix as active [ACT] or inactive [----]. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner).

   Repeat steps 2) for all gases.
The gas list is saved when you exit the current screen (button ).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>NAME</th>
<th>%O2</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC GAS1: OXYGEN</td>
<td>100</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS2: NTX50</td>
<td>050</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS3: AIR</td>
<td>021</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS4: ----</td>
<td>000</td>
<td>----</td>
</tr>
</tbody>
</table>

After each edit of the gas mix table, the dive computer will automatically switch to the option , requiring the current gas to be re-set.

Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:

**SELECTED: AIR**

**MOD:** 56m

**SELECTED** – name of the currently selected gas mix

**MOD** – Maximum depth of a dive with selected gas, calculated for 1.4 Bar Oxygen partial pressure, in meters [m] or ft [ft]

**5.1.2.3 Dive parameters configuration – DIVE SETUP.**

**NTX DIVE PLAN** – going to the dive planner

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

**LAST STOP** – depth (in meters or feet) of the last decompression stop. Possible values are: 3m / 10ft and 6m / 20ft

All the parameters set here are used in planning a dive (Dive Planner).

The values entered also affect decompression stops, NDL, TTS, CNS and OUT.
**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.

**GF. LO/HI** – percentage values of Gradient Factors (distance from the "M" limit value).

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

The screen also provides information (not editable) of the currently selected gas mix:

**MOD OF DIVE** – maximum depth of dive, calculated for the Oxygen partial pressure 1.6Bar, given in meters [m] or feet [ft]

**NDL TIME** – the time (in minutes) that you can spend on the selected gas mix at the maximum operating depth (MOD), without the need for applying a decompression procedure

5.1.2.4 Dive Planner – NTX DIVE PLAN.

Planner is a module that calculates decompression stops, based on a decompression algorithm, using data from the gas mix table. Before using the planner, it is necessary to correctly configure the gas table as it is used by the algorithm to select the optimum gas mix at the given depth, at the particular moment of the decompression process. Gas mix selection is automatic (only active gases in the table - "act").

Before planning, you need to set the following parameters:

**Depth** – depth of a dive

**Time** – bottom time

For information purposes, the input parameters of the decompression algorithm are shown:

**Start CNS** – initial central nervous system load
**Last stop** – depth of the last decompression stop

**Low GF** – value of the "low" gradient factor (at maximum depth)

**High GF** – value of the "high" gradient factor (near the surface). The gradient factor values for the intermediate depths are calculated on an ongoing basis by the controller

**Gas** – name of currently selected gas. To change the gas, select its name (using the SELECT button) and then select the new gas (CONFIRM button). Gas is selected cyclically from the list of active gases (gas configuration table).

After setting the dive parameters, start the planner by selecting the option and confirming with the CONFIRM button. After a few seconds, the main frame will display information about the decompression stops and the current ascent time and used gas mix, and the planner screen will look similar to the illustration:

**Stop** – depth of the decompression stop

**Time** – time at the given stop

**Run** – the time elapsed since the start of the decompression procedure, calculated from the given stop

**Gas** – information about the gas mix selected by the planner algorithm you should switch to at the given stop

If there are a lot of decompression stops required and they do not fit in the table, only part of them is displayed. To see more stops (shallower), press .

When after starting the planner there is no suitable gas mix for any stage of the dive in the gas table, the planner will stop calculations and the following screen will be displayed:
In this case, change the dive information (depth and time), or change the gas mix settings (gas configuration table) to appropriate for this particular dive.

5.1.2.5 Logbook.

The controller is equipped with memory to record the last 500 dives. The user has the ability to view logs, view detailed information about dives, view dive charts and delete selected logs.

Omitting a decompression stop is marked in the dive log. When viewing the dives in logbook, entry marked red means a dive with omitted decompression stop.

During a dive the following information is recorded:

- dive number
- date and time of dive start
- dive time
- maximum depth
- setpoint information
- surface interval
- water temperature
- air temperature

The course of diving is recorded after a depth of 1m is reached and a dive time of 5 seconds. The maximum registration time for one dive is 8 hours.

The main screen contains information on the numbers and dates of recent dives. To read details of a particular dive, select the appropriate entry from the list and then confirm the selection (confirm button). Use the navigation buttons to select the desired log:

- Scrolling the list every 30 logs (every 3 screens)
- Scrolling the list every 10 logs (every 1 screen)
- Go to the list and scroll through every log
To view details of the dive, select the log and confirm with the CONFIRM button.

The information about omitted decompression stop is also indicated in detailed dive log, with red message Lost deco shown in the log’s header.

The detail screen contains the following information:

- **Dive Time** – dive time
- **Max Depth** – maximum depth of current dive
- **Average Depth** – average depth of current dive
- **Surface Interval** – surface interval from the previous dive. If this is the first dive and the time interval can not be determined, this parameter is set to "---"
- **Water Temperature** – water temperature, recorded one minute after the start of the dive. The time delay is used to obtain the ambient temperature by the sensor
- **Air Temperature** – air temperature - recorded when passing from surface mode to dive mode

There are 2 buttons available:
- **DELETE** - delete log
- **GRAPHS** - display the dive charts

To delete a log, select **DELETE**, then select YES: **no** **YES** and press CONFIRM.
Dive graphs:

Depth graph

Oxygen partial pressure graph

Temperature graph

Summary graph
5.1.2.6 System settings – SYSTEM SETUP.

Go to changing the device mode

Go to compass calibration

Go to firmware upgrade

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**TTS MODE** – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)
5.1.3 “Surface” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
5.2 Dive computer screens when working underwater.

5.2.1 Main underwater screen.

After crossing the maximum dive depth for the currently used gas mix, the **MOD** parameter value is shown in red colour.

- **Battery charge icon**
  - Current battery charge level, given by percentage. Colour coding: 
    - \textgreater等于60\%, \textless60\%, \textless30\%.

- **Temperature**
  - Current air / water temperature, indicated in °C, measured by pressure sensor

- **Current time**

- **Ascent rate**
  - range from 0 to 7 m / min (7-element scale). Display from 1 to 4 m / min - green colour, 5-6 m / min - yellow colour, 7 m / min - red colour.

- **DEPTH** – current depth, given in meters [m] or feet [ft]
- **MAX DEPTH** – maximum depth recorded during the dive
- **DIVE TIME** – dive time, given in format minutes: seconds
- **GAS** – name of currently used gas mix. When settings in the gas mix table are not configured, the gas name is replaced by: 
  
  When the
minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red.

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]. When settings in the gas mix table are not configured, the gas name is replaced by: 

**TTS** – total Time to Surface - time to make safe ascent from current depth and current tissue saturation

**NDL** – the time (in minutes) that you can stay on the selected gas mix at the current depth without the need for a decompression procedure. It is counted down from 99 to 0. In the case of doing a decompression dive, this section shows the current required decompression stop

Last stop 3m Stop 6min @ 21m
CC Tmx18/35 CNS 27% TTS 35’

**Stop** – information about the next required decompression stop: time of the stop (in minutes) and depth (in meters)

When the required depth of the stop is reached, the stop time is counted down from given value to zero. You can leave the stop only after its total time has cleared and the details of the next shallower stop are displayed.

**Omitting the current stop**, or shortening the stop time, is indicated by red colour in the field of the stop data: STOP 6min @ 21m

In this case, return to the depth indicated by the controller and complete the decompression stop. Current indications may change as the decompression algorithm continues calculations also when the stop is omitted, taking into account the current values of tissue saturation, calculated in real time.

**Failure to reach the stop** at the required time and staying at a depth greater than that determined by the decompression algorithm results in further saturation of the harder tissues above the value calculated during the planning phase of the decompression stop. In this situation, with real-time tissue calculations, the algorithm will change the data of subsequent stops, calculating them to the current continuous saturation level.
Safety Stop

After crossing a maximum depth of 10m during a dive, then during the ascent the device informs you that a safety stop is required at a depth of 5m (16ft). The safety stop lasts 5 minutes and the remaining time is displayed in minutes (5 minutes to 1 minute) or seconds (less than 1 minute) - SAFETY STOP section.

Safety stop information is displayed alternately with NDL. When the depth is between 4-6m, a safety stop is displayed. After going out of this depth range, the NDL value is displayed and the time of the safety stop is reset (5 minutes) and counted down again after entering the safety stop depth.

When in the underwater main screen, the user is able to switch the device quickly to another gas mix. To do this, press the SELECT button. The method of selecting "new" gas is described below.

5.2.1.1 Switching between gas mixes – GAS SWITCH.

In addition to the basic information about the dive: depth and time, a scrollable list of available gas mixes is displayed (Active option in the gas mix table set to "act"). The list also includes information about the currently used gas mix (GAS CHANGE FROM).

To change the currently used gas mix, select the gas (SELECT button) and confirm with the CONFIRM button.

In addition to the names of available gases, additional information is also provided:
MOD – maximum depth of dive on a given gas, calculated for a partial pressure of 1.6Bar, given in meters [m] or feet [ft]

min – minimum depth of dive on a given gas mix, calculated for a partial pressure of 0.18 Bar

Gas mix marked with red colour is a mix that is not suitable for a given depth. In the above example, the minimum depth of this gas mix is 8m and the controller is by the surface.

5.2.1.2 Change the Gradient Factor values

During the dive, the Gradient Factor values can be changed on the main screen. To do this, press the SELECT and CONFIRM buttons simultaneously. The default values on the GF change screen were set to: 99/99. In order to confirm them, simply select the "SET GF. TO:" with the SELECT button and confirm with the CONFIRM button. The new values will be set immediately and the device will return to the main underwater screen. To set other GF values, use the SELECT button to mark the selected parameter (GF LO or GF HI), and then use the CONFIRM button to set the desired value. The change in value is possible from 10 (%) to 99 (%) with a step of 5 (%).
5.2.2 Underwater configuration screen.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

- **Dpt** – current depth, given in meters [m] or feet [ft]
- **Time** – current dive time, given in minutes

Options **MODE**, **COMPASS CALIBRATION** and **FIRMWARE UPGRADE** are unavailable.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**TTS MODE** – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)
5.2.3 Gas mix table configuration - underwater mode.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

**Dpt** – current depth, given in meters [m] or feet [ft].

**Time** – current dive time, given in minutes.

In **OC REC** mode, the device supports 4 gas mixes, without helium content.

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information:

**CHANGE GAS** – change of currently used gas mix

**GAS SETUP** – change of gas table parameters

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the **GAS SETUP** option (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted first gas on the list - OC GAS1).

2) Select gas mix for editing: GAS1 ... GAS4 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

3) Set the desired oxygen content:
   - use the CONFIRM button to set the value of the selected digit,
   - use the SELECT button to move to the next digit.

   **It is not possible to set the oxygen content to a value greater than 100%.**

   When the oxygen content is set, the device will go to ACTIVE option.

4) Mark the edited gas mix as active **ACT** or inactive **-----**. Only active gas
mixes can be selected by the user while diving and planning a dive (by Dive Planner).
Repeat steps 2) for all gases.

The gas list is saved when you exit the current screen (button ).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>Name</th>
<th>%O2</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>OC GAS1: OXYGEN</td>
<td>100</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS2: NTX50</td>
<td>050</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS3: AIR</td>
<td>021</td>
<td>ACT</td>
</tr>
<tr>
<td>OC GAS4: ----</td>
<td>000</td>
<td>----</td>
</tr>
</tbody>
</table>

After each edit of the gas mix table, the dive computer will automatically switch to the option , requiring the current gas to be re-set.

Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:

**SELECTED: AIR**  **MOD: 56m**

**SELECTED** – name of the currently selected gas mix

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]
5.2.4 "Underwater" compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
### 5.3 Menu layout

#### Surface work

- **Main surface screen**
  - pressure
  - depth
  - software version
  - gas
  - mode
  - gradient factor

- **Configuration surface screen**

- **Surface compass**

- **Device information**
  - user name
  - software version
  - serial number

- **Gas mix table configuration**
  - gas change
  - gas setup
  - selected gas
  - MOD
  - gas list

- **Dive parameters**
  - salinity
  - last stop
  - altitude
  - gradient factors
  - end of dive
  - MOD, NDL

- **Logbook**

- **System setup**
  - units
  - brightness
  - date
  - time
  - use mode
  - graphics

- **Material list**

- **Dive planner**

- **Detail screen**
  - dive time
  - max depth
  - average depth
  - surface interval
  - water temperature
  - air temperature

- **Device mode**
  - AMBA
  - DIT 56/606
  - CO DEC
  - OC TECH
  - CORE New SP

- **Compass calibration**

- **Firmware upgrade**

#### Underwater work

- **Main underwater screen**
  - depth
  - max depth
  - dive time
  - gas
  - MOD
  - TTS
  - decompression info

- **Underwater configuration screen**

- **Gas mix table configuration**
  - change gas
  - gas setup
  - selected gas
  - MOD

- **Underwater compass**
6 Technical mode with open circuit – OC TECH.

6.1 Device screens when working on the surface.

6.1.1 Main surface screen.

The upper part of the screen (information bar) is common to all operating modes and contains the information described below.

- **Battery charge icon**
  - Current battery charge level, given by percentage. Colour coding:
    - >=60%, <60%, <30%.

- **Surface interval**
  - The time elapsed since the last dive, in the format: days (d) hours (h)

- **Temperature**
  - Current air / water temperature, indicated in °C, measured by pressure sensor.

- **Current time**

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **PRES. mBar** – current pressure in millibars [mBar]
- **DESAT h:min** – information about the remaining time of desaturation
- **06.05.2017** – date in format: dd.mm.rrrr
SOFT – the firmware version installed on the device

GAS – name of currently used gas mix. When settings in the gas table are not configured, the gas name is replaced by: [--- ---]. When the minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red.

MOD – maximum depth of dive with currently used gas mix, calculated for 1.6Bar partial pressure, given in meters [m] or ft [ft]. When settings in the gas table are not configured, this value is replaced by: [--- ---].

GRAD. FACTOR – gradient Factors settings, given in percentage

CNS % – current value of central nervous system toxicity load, given in percentage

OTU – current value of the OTU variable (Oxygen Tolerance Unit)

6.1.2 Surface configuration screen.

Go to the device information screen and change the user name.

Go to the gas table configuration screen.

Go to Dive Planner configuration screen and Dive Planner.

Go to dive log preview.

Go to the system settings change screen.
6.1.2.1 Device information - UNIT SETUP.

The screen provides information about the hardware and firmware and the user's name (user name). Hardware information is useful when contacting the service and for a personalized firmware version.

- **USER NAME** – user name of the device
- **RESET TO DEFAULTS** – restoring factory settings of the device
- **PIEZO TIME** – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons
- **RUN TIME** – work time of the device
- **SOFTWARE VERSION** – the firmware version installed on the device
- **HARDWARE VERSION** – hardware version number of the device
- **SERIAL NUMBER** – serial number of the device

To change the user name, select the **USER NAME** field with the SELECT button and confirm with the CONFIRM button.

The **USER NAME** field will be deleted and the cursor set to the first character: . Use the SELECT key to change the current character (cyclical, in alphabetical order) and CONFIRM to the next character. The username will be saved after all characters have been set. It is possible to insert a blank character (space) - this is the first character when the SELECT button is pressed.
6.1.2.2 Gas mix table configuration – GAS SETUP.

In **OC TECH** mode, the device supports 7 Trimix gas mixes.

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information.

**CHANGE GAS** – change of currently used gas mix

**GAS SETUP** – change of gas table parameters

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option **<GAS SETUP>** (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted first gas on the list - OC GAS1).

2) Select gas mix for editing: GAS1 ... GAS4 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

3) Set the desired oxygen content:
   - use the CONFIRM button to set the value of the selected digit,
   - use the SELECT button to move to the next digit.

   **It is not possible to set the oxygen content to a value greater than 100%.**

   When the oxygen content is set, the device will go to helium content setting.

4) Set the required helium content:
   - by pressing the CONFIRM button, set the required digit,
   - by pressing the SELECT button, move to the next digit.
After setting the required helium content, the device will go to ACTIVE option.

5) Mark the edited gas mix as active **ACT** or inactive **-----**. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner).

Repeat steps 2) for all gases.

The gas list is saved when you exit the current screen (button ▶).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>OC</th>
<th>NAME</th>
<th>%O2</th>
<th>%He</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS1:</td>
<td>---</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS2:</td>
<td>OXYGEN</td>
<td>100</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS3:</td>
<td>TMX50/30</td>
<td>050</td>
<td>30</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS4:</td>
<td>AIR</td>
<td>021</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS5:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS6:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS7:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
</tbody>
</table>

After each edit of the gas mix table, the dive computer will automatically switch to the option **ACT**, requiring the current gas to be re-set. Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:

**SELECTED:** AIR  **MOD:** 56m

**SELECTED** – name of the currently selected gas mix

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]

**6.1.2.3 Dive parameters configuration – DIVE SETUP.**

All the parameters set here are used in planning a dive (Dive Planner).

The values entered also affect decompression stops, NDL, TTS, CNS and OTU.
NTX DIVE PLAN – going to the dive planner

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water.

**LAST STOP** – depth (in meters or feet) of the last decompression stop. Possible values are: 3m / 10ft and 6m / 20ft.

**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.

**GF. LO/HI** – percentage values of Gradient Factors (distance from the "M" limit value)

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

The screen also provides information (not editable) of the currently selected gas mix:

**MOD OF DIVE** – maximum depth of dive, calculated for the Oxygen partial pressure 1.6Bar, given in meters [m] or feet [ft]

**NDL TIME** – the time (in minutes) that you can spend on the selected gas mix at the maximum operating depth (MOD), without the need for applying a decompression procedure.
6.1.2.4 Dive Planner – NTX DIVE PLAN.

Planner is a module that calculates decompression stops, based on a decompression algorithm, using data from the gas mix table. Before using the planner, it is necessary to correctly configure the gas table as it is used by the algorithm to select the optimum gas mix at the given depth, at the particular moment of the decompression process. Gas mix selection is automatic (only active gases in the table - "act").

Before planning, you need to set the following parameters:

- **Depth** – depth of a dive
- **Time** – bottom time

For information purposes, the input parameters of the decompression algorithm are shown:

- **Start CNS** – initial central nervous system load
- **Last stop** – depth of the last decompression stop
- **Low GF** – value of the "low" gradient factor (at maximum depth)
- **High GF** – value of the "high" gradient factor (near the surface). The gradient factor values for the intermediate depths are calculated on an ongoing basis by the controller
- **Gas** – name of currently selected gas. To change the gas, select its name (using the SELECT button) and then select the new gas (CONFIRM button). Gas is selected cyclically from the list of active gases (gas configuration table).
After setting the dive parameters, start the **planner** by selecting the option and confirming with the CONFIRM button. After a few seconds, the main frame will display information about the decompression stops and the current ascent time and used gas mix, and the planner screen will look similar to the illustration:

**Stop** – depth of the decompression stop  
**Time** – time at the given stop  
**Run** – the time elapsed since the start of the decompression procedure, calculated from the given stop  
**Gas** – information about the gas mix selected by the planner algorithm you should switch to at the given stop

If there are a lot of decompression stops required and they do not fit in the table, only part of them is displayed. To see more stops (shallower), press .

When after starting the **planner** there is no suitable gas mix for any stage of the dive in the gas table, the planner will stop calculations and the following screen will be displayed:

In this case, change the dive information (depth and time), or change the gas mix settings (gas configuration table) to appropriate for this particular dive.
6.1.2.5 Logbook.

The controller is equipped with memory to record the last 500 dives. The user has the ability to view logs, view detailed information about dives, view dive charts and delete selected logs.

Omitting a decompression stop is marked in the dive log. When viewing the dives in logbook, entry marked red means a dive with omitted decompression stop.

During a dive the following information is recorded:

- dive number
- date and time of dive start
- dive time
- maximum depth
- setpoint information
- surface interval
- water temperature
- air temperature

The course of diving is recorded after a depth of 1m is reached and a dive time of 5 seconds. The maximum registration time for one dive is 8 hours.

The main screen contains information on the numbers and dates of recent dives. To read details of a particular dive, select the appropriate entry from the list and then confirm the selection (confirm button). Use the navigation buttons to select the desired log:

- Scrolling the list every 30 logs (every 3 screens)
- Scrolling the list every 10 logs (every 1 screen)
- Go to the list and scroll through every log
To view details of the dive, select the log and confirm with the CONFIRM button.

The information about omitted decompression stop is also indicated in detailed dive log, with red message Lost deco shown in the log’s header.

The detail screen contains the following information:

**Dive Time** – dive time

**Max Depth** – maximum depth of current dive

**Average Depth** – average depth of current dive

**Surface Interval** – surface interval from the previous dive. If this is the first dive and the time interval can not be determined, this parameter is set to "---"

**Water Temperature** – water temperature, recorded one minute after the start of the dive. The time delay is used to obtain the ambient temperature by the sensor

**Air Temperature** – air temperature - recorded when passing from surface mode to dive mode

There are 2 buttons available:

- delete log
- display the dive charts

To delete a log, select , then select YES: and press CONFIRM.
Dive graphs:

Depth graph

Oxygen partial pressure graph

Temperature graph

Summary graph
6.1.2.6 System settings – SYSTEM SETUP.

Go to changing the device mode.

Go to compass calibration.

Go to firmware upgrade.

UNITS – choice of units: IMPERIAL or METRIC

BRIGHTNESS – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

DATE – set the current date in format: day.month.year

TIME – set the current time in format hour:minute

UW MODE – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

TTS MODE – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)
6.1.3 “Surface” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
6.2 Dive computer screens when working underwater.

6.2.1 Main underwater screen.

After crossing the maximum dive depth for the currently used gas mix, the MOD parameter value is shown in red colour.

Battery charge icon
Current battery charge level, given by percentage. Colour coding: \[\geq 60\%\], \(< 60\%\), \(< 30\%\).

Temperature
Current air / water temperature, indicated in °C, measured by pressure sensor

Aktualny czas

Ascent rate
range from 0 to 7 m / min (7-element scale). Display from 1 to 4 m / min - green colour, 5-6 m / min - yellow colour, 7 m / min - red colour.

DEPTH – current depth, given in meters [m] or feet [ft]
MAX DEPTH – maximum depth recorded during the dive
DIVE TIME – dive time, given in format minutes: seconds
GAS – name of currently used gas mix. When settings in the gas mix table are not configured, the gas name is replaced by: ______. When the
minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red.

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]. When settings in the gas mix table are not configured, the gas name is replaced by: ——.

**TTS** – total Time to Surface - time to make safe ascent from current depth and current tissue saturation

**NDL** – the time (in minutes) that you can stay on the selected gas mix at the current depth without the need for a decompression procedure. It is counted down from 99 to 0. In the case of doing a decompression dive, this section shows the current required decompression stop

**Stop** – information about the next required decompression stop: time of the stop (in minutes) and depth (in meters)

When the required depth of the stop is reached, the stop time is counted down from given value to zero. You can leave the stop only after its total time has cleared and the details of the next shallower stop are displayed.

*Omitting the current stop*, or shortening the stop time, is indicated by red colour in the field of the stop data: **STOP 6min @ 21m**

In this case, return to the depth indicated by the controller and complete the decompression stop. Current indications may change as the decompression algorithm continues calculations also when the stop is omitted, taking into account the current values of tissue saturation, calculated in real time.

**Failure to reach the stop** at the required time and staying at a depth greater than that determined by the decompression algorithm results in further saturation of the harder tissues above the value calculated during the planning phase of the decompression stop.

In this situation, with real-time tissue calculations, the algorithm will change the data of subsequent stops, calculating them to the current continuous saturation level.

When in the underwater main screen, the user is able to switch the device quickly to another gas mix. To do this, press the SELECT button. The method of selecting "new" gas is described below.
6.2.1.1 Switching between gas mixes – GAS SWITCH.

In addition to the basic information about the dive: depth and time, a scrollable list of available gas mixes is displayed (Active option in the gas mix table set to "act"). The list also includes information about the currently used gas mix (GAS CHANGE FROM).

To change the currently used gas mix, select the gas (SELECT button) and confirm with the CONFIRM button.

In addition to the names of available gases, additional information is also provided:

- **MOD** – maximum depth of dive on a given gas, calculated for a partial pressure of 1.6Bar, given in meters [m] or feet [ft]
- **min** – minimum depth of dive on a given gas mix, calculated for a partial pressure of 0.18 Bar.

Gas mix marked with red colour is a mix that is not suitable for a given depth. In the above example, the minimum depth of this gas mix is 8m and the controller is by the surface.

Gas marked in red is selectable, however using it at this depth poses a threat to your life!
6.2.1.2 Change the Gradient Factor values

During the dive, the Gradient Factor values can be changed on the main screen. To do this, press the SELECT and CONFIRM buttons simultaneously. The default values on the GF change screen were set to: 99/99. In order to confirm them, simply select the "SET GF. TO:" with the SELECT button and confirm with the CONFIRM button. The new values will be set immediately and the device will return to the main underwater screen. To set other GF values, use the SELECT button to mark the selected parameter (GF LO or GF HI), and then use the CONFIRM button to set the desired value. The change in value is possible from 10 (%) to 99 (%) with a step of 5 (%).

6.2.2 Underwater configuration screen.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

- **Dpt** – current depth, given in meters [m] or feet [ft]
- **Time** – current dive time, given in minutes

Options **MODE**, **COMPASS CALIBRATION** and **FIRMWARE UPGRADE** are unavailable.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute
**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode.

**TTS MODE** – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active).

### 6.2.3 Gas mix table configuration – underwater mode.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

- **Dpt** – current depth, given in meters [m] or feet [ft]
- **Time** – current dive time, given in minutes

In OC TECH mode, the device supports 7 Trimix gas mixes.

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information.

**CHANGE GAS** – change of currently used gas mix

**GAS SETUP** – change of gas table parameters.

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted...
first gas on the list - OC GAS1).

2) Select gas mix for editing: GAS1 ... GAS4 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

3) Set the desired oxygen content:
   Use the CONFIRM button to set the value of the selected digit,
   Use the SELECT button to move to the next digit.

   **It is not possible to set the oxygen content to a value greater than 100%.**

   When the oxygen content is set, the device will go to helium content setting.

4) Set the required helium content:
   by pressing the CONFIRM button, set the required digit
   by pressing the SELECT button, move to the next digit

5) After setting the required helium content, the device will go to ACTIVE option.

6) Mark the edited gas mix as active **ACT** or inactive **-----**. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner).
   Repeat steps 2) for all gases.

The gas list is saved when you exit the current screen (button ▶).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>OC</th>
<th>NAME</th>
<th>%O2</th>
<th>%He</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS1:</td>
<td>-----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS2:</td>
<td>OXYGEN</td>
<td>100</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS3:</td>
<td>TMX50/30</td>
<td>050</td>
<td>30</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS4:</td>
<td>AIR</td>
<td>021</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS5:</td>
<td>-----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS6:</td>
<td>-----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS7:</td>
<td>-----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
</tbody>
</table>

After each edit of the gas mix table, the dive computer will automatically switch to the option ▶CHANGE GAS◀, requiring the current gas to be re-set. Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:
**SELECTED** – name of the currently selected gas mix

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]

### 6.2.4 “Underwater” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
6.3 Menu layout.

Surface work

Underwater work
7 Closed circuit and fixed PPO2 (setpoint) work mode - CCR FIXED SP.

7.1 Device screens when working on the surface.

7.1.1 Main surface screen.

| Battery charge icon | Current battery charge level, given by percentage. Colour coding: 
|>=60%, <60%, <30% |
| SURF: 10d06h | Surface interval
The time elapsed since the last dive, in the format: days (d) hours (h) |
| 23°C | Temperature
Current air / water temperature, indicated in °C, measured by pressure sensor |
| 07:45 | Current time

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **PRES. mBar** – current pressure in millibars [mBar]
- **DESAT h:min** – information about the remaining time of desaturation
- **06.05.2017** – date in format: dd.mm.rrrr
- **SOFT** – The firmware version installed on the device
– **GAS section** – information about currently used gas mix: **CC DIL** when in closed circuit mode, **OC GAS** when in open circuit mode. name of currently used gas mix. When settings in the gas table are not configured, the gas name is replaced by: **———**.

**SETPOINT** – current set of PPO2 - setpoint

**GRAD. FACTOR** – gradient Factors settings, given in percentage

**CNS %** – current value of central nervous system toxicity load, given in percentage

**OTU** – current value of the OTU variable (Oxygen Tolerance Unit)

### 7.1.2 Setpoint configuration screen.

The screen provides basic information about the last or current dive: depth and time and information about setpoints.

**CURRENT SETPOINT** – current set of PPO2 – setpoint

The three fields at the bottom of the screen contain setpoint values:

When the depth is less than 1m or the dive computer is in surface mode, you can only select a setpoint of value less than or equal to 1.0.

To select another setpoint, select the appropriate field using the SELECT button:

Then confirm with the CONFIRM button. A new value will appear in the CURRENT SETPOINT field:
In order to change the value of one of the setpoints, select the appropriate field with the SELECT button and then press the CONFIRM button 3 times - the device will start editing the selected value. The next press of the CONFIRM button cycles from 0.5 to 1.5 cycles, with step of 0.1:

End editing by pressing the SELECT button.

7.1.3 Surface configuration screen.

Go to the device information screen and change the user name.

Go to the gas table configuration screen.

Go to Dive Planner configuration screen and Dive Planner.

Go to dive log preview.

Go to the system settings change screen.

7.1.3.1 Device information - UNIT SETUP.

The screen provides information about the hardware and firmware and the user's name (user name). Hardware information is useful when contacting the service and for a personalized firmware version.
USER NAME – user name of the device

RESET TO DEFAULTS – restoring factory settings of the device

PIEZO TIME – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

RUN TIME – work time of the device

SOFTWARE VERSION – the firmware version installed on the device

HARDWARE VERSION – hardware version number of the device

SERIAL NUMBER – serial number of the device

To change the user name, select the USER NAME field with the SELECT button and confirm with the CONFIRM.

The USER NAME field will be deleted and the cursor set to the first character: . Use the SELECT key to change the current character (cyclical, in alphabetical order) and CONFIRM to the next character. The username will be saved after all characters have been set. It is possible to insert a blank character (space) - this is the first character when the SELECT button is pressed.

7.1.3.2 Gas mix table configuration – GAS SETUP.

In CCR MODE mode, the device supports 7 OC gas mixes and three diluents.

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information.

CHANGE GAS – change of currently used gas mix

GAS SETUP – change of gas table parameters
Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option (using the SELECT button) and confirm with CONFIRM. The unit will go to editing the gas mix table (first diluent is highlighted in the list - DIL1).

2) Select the gas to edit: DIL1 ... GAS7 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the mix is highlighted.

3) Set the required oxygen content:
   a. use the CONFIRM button to set the value of the selected digit,
   b. use the SELECT button to move to the next digit.

   Nie jest możliwe ustawienie sumarycznej zawartości tlenu i helu na wartość większą niż 100%.

   It is not possible to set the total oxygen and helium content to a value greater than 100%. When the oxygen content is set, the device will go to helium content setting.

4) Set the required helium content:
   a. by pressing the CONFIRM button, set the required digit,
   b. by pressing the SELECT button, move to the next digit.

   After setting the required helium content, the device will go to ACTIVE option.

5) Mark the edited gas mix as active or inactive. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner). Only one diluent can be set as active, the others will be automatically changed to inactive.

   Repeat steps 2) for all gases.

The table row marked in blue indicates the currently selected (used) gas mix.

The list of gases is saved when you exit the current screen (button ). Switching the device off in edit mode will discard the changes.
Sample gas table view after entering parameters:

To change currently used gas mix, select the >CHANGE< option with the SELECT button and confirm with the CONFIRM button. The GAS SWITCH screen will be displayed. Please proceed as described in:

7.2.1.1 Switching between gas mixes – GAS SWITCH.

7.1.3.3 Dive parameters configuration – DIVE SETUP.

All the parameters set here are used in planning a dive (Dive Planner).

The values entered also affect decompression stops, NDL, TTS, CNS and OTU.

**TMX DIVE PLAN** – going to the dive planner

**SALINITY** – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

**LAST STOP** – depth (in meters or feet) of the last decompression stop. Possible values are: 3m / 10ft and 6m / 20ft

**ALTITUDE** – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other
devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.

**GF. HI/LO** – percentage values of Gradient Factors (distance from the "M" limit value)

**END OF DIVE** – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

The screen also provides information (not editable) of the currently selected gas mix:

**MOD OF DIVE** – maximum depth of dive, calculated for the Oxygen partial pressure 1.6Bar, given in meters [m] or feet [ft]

**NDL TIME** – the time (in minutes) that you can spend on the selected gas mix at the maximum operating depth (MOD), without the need for applying a decompression procedure

7.1.3.4 **Dive planner – TMX DIVE PLAN.**

Planner is a module that calculates decompression stops, based on a decompression algorithm, using data from the gas mix table. Before using the planner, it is necessary to correctly configure the gas table as it is used by the algorithm to select the optimum gas mix at the given depth, at the particular moment of the decompression process. Gas mix selection is automatic (only active gases in the table - "act").

Before planning, you need to set the following parameters:

- **Depth** – depth of a dive
- **Time** – bottom time
- **Setpoint** – oxygen partial pressure value

For information, the input parameters of the decompression algorithm are given:

- **Mode** – work mode with closed circuit (CC) when the CC gas mix was selected (diluent - DIL1 ...3 in the gas mix table), or with open circuit when a gas mix for OC was selected (GAS1 ...7) in the gas mix table)

- **Start CNS** – initial central nervous system load
**Last stop** – depth of the last decompression stop

**Low GF** – value of the "low" gradient factor (at maximum depth)

**High GF** – value of the "high" gradient factor (near the surface). The gradient factor values for the intermediate depths are calculated on an ongoing basis by the controller.

**Gas** – name of currently selected gas mix. To change the gas, select its name (using the SELECT button) and then select the new gas (CONFIRM button). Gas is selected cyclically from the list of active gases (gas mix configuration table). When the diluent is selected, the counting algorithm will work in CC mode, otherwise - OC. The mode of operation of the planer is visible in the **Mode** section.

After setting the dive parameters, start the planner by selecting the option and confirming with the CONFIRM button. After a few seconds, the main frame will display information about the decompression stops and the current ascent rate and used gas, and the planner screen will look similar to the illustrations:

**Calculations for closed circuit**

**Calculations for open circuit**

**Stop** – depth of the decompression stop

**Time** – time at the required stop

**Run** – the time elapsed since the start of the decompression procedure, calculated at the given stop.
Gas – information about the gas selected by the planner algorithm, which should be switched to at the given stop. In case of closed circuit, for each gas stop the diluent is used, and the Gas column contains the "DIL" information.

If there are a lot of decompression stops required and they do not fit in the table, only part of them is displayed. To see more stops (shallower ones), press .

When after starting the planner there is no suitable mix for any stage of the dive in the gas mix table, the planer will stop calculating and display the following information:

In this case, change the dive information (depth and time) or change the settings of the active diluent (gas configuration table) to appropriate for this dive.

7.1.3.5 Logbook.

The controller is equipped with memory to record the last 500 dives. The user has the ability to view logs, view detailed information about dives, view dive charts and delete selected logs.

Omitting a decompression stop is marked in the dive log. When viewing the dives in logbook, entry marked red means a dive with omitted decompression stop.

During a dive the following information is recorded:

- dive number
- date and time of dive start
- dive time
- maximum depth
- setpoint information
- surface interval
- water temperature
- air temperature
The course of diving is recorded after a depth of 1m is reached and a dive time of 5 seconds. The maximum registration time for one dive is 8 hours.

The main screen contains information on the numbers and dates of recent dives. To read details of a particular dive, select the appropriate entry from the list and then confirm the selection (confirm button). Use the navigation buttons to select the desired log:

- Scrolling the list every 30 logs (every 3 screens)
- Scrolling the list every 10 logs (every 1 screen)
- Go to the list and scroll through every log

To view details of the dive, select the log and confirm with the CONFIRM button.

The information about omitted decompression stop is also indicated in detailed dive log, with red message Lost deco shown in the log’s header.

The detail screen contains the following information:

- **Dive Time** – dive time
- **Max Depth** – maximum depth of current dive
- **Average Depth** – average depth of current dive
- **Surface Interval** – Surface interval from the previous dive. If this is the first dive and the time interval cannot be determined, this parameter is set to "---".
- **Water Temperature** – Water temperature, recorded one minute after the start of the dive. The time delay is used to obtain the ambient temperature by the sensor
- **Air Temperature** – Air temperature - recorded when passing from surface mode to dive mode

There are 2 buttons available:
- delete log

- display the dive charts

To delete a log, select DELETE, then select YES: no YES and press CONFIRM.

Dive graphs:

Depth graph

Oxygen partial pressure graph

Temperature graph

Summary graph
7.1.3.6 System settings – SYSTEM SETUP.

Go to changing the device mode.

Go to compass calibration.

Go to firmware upgrade.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**TTS MODE** – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)
7.1.4 “Surface” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
7.2 Dive computer screens when working underwater.

7.2.1 Main underwater screen.

The main screen layout, when working underwater, is similar to the surface mode. The only difference is the replacement of surface interval information with information about possible alarms (the field marked in red) that occurred during the dive.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery charge icon</td>
<td>Current battery charge level, given by percentage. Colour coding: &gt;=60%, &lt;60%, &lt;30%</td>
</tr>
<tr>
<td>Temperature</td>
<td>Current air / water temperature, indicated in °C, measured by pressure sensor.</td>
</tr>
<tr>
<td>Current time</td>
<td>phasis on 07:45</td>
</tr>
<tr>
<td>DEPTH</td>
<td>current depth, given in meters [m] or feet [ft]</td>
</tr>
<tr>
<td>MAX DEPTH</td>
<td>maximum depth recorded during the dive</td>
</tr>
<tr>
<td>DIVE TIME</td>
<td>dive time, given in format minutes: seconds</td>
</tr>
<tr>
<td>CC DIL AIR</td>
<td>GAS section – information about currently used gas mix: when in closed circuit mode, when in open circuit mode.</td>
</tr>
<tr>
<td>SETPOINT</td>
<td>current setpoint</td>
</tr>
<tr>
<td>TTS</td>
<td>total time to surface - time required to make safe ascent from current depth and current tissue saturation</td>
</tr>
</tbody>
</table>
Decompression section:

NDL – time (in minutes) that you can stay on the selected gas mix at the current depth without the need for a decompression procedure. It is counted from 99 to 0. In the case of decompression dives, this section is replaced with the current decompression stop.

Stop – information about the nearest decompression stop: stop time (in minutes) and depth (in meters).

When the required depth of the stop is reached, the stop time is counted down from given value to zero. You can leave the stop only after its total time has cleared and the details of the next shallower stop are displayed.

Omitting the current stop, or shortening the stop time, is indicated by red colour in the field of the stop data: STOP 6min @ 21m

In this case, return to the depth indicated by the controller and complete the decompression stop. Current indications may change as the decompression algorithm continues calculations also when the stop is omitted, taking into account the current values of tissue saturation, calculated in real time.

Failure to reach the stop at the required time and staying at a depth greater than that determined by the decompression algorithm results in further saturation of the harder tissues above the value calculated during the planning phase of the decompression stop. In this situation, with real-time tissue calculations, the algorithm will change the data of subsequent stops, calculating them to the current continuous saturation level.

When in the underwater main screen, the user is able to switch the device quickly to another gas mix. To do this, press the SELECT button. The method of selecting "new" gas is described below.
7.2.1.1 Switching between gas mixes – GAS SWITCH.

When in the underwater main screen, it is possible to quickly switch to another gas without having to go to the gas configuration table. To do this, press the SELECT button (this function works only on the underwater main screen).

In addition to the basic information about the dive: depth and time, a scrollable list of available gas mixes is displayed (Active option in the gas mix table set to "act"). The list also includes information about the currently used gas mix (GAS CHANGE FROM).

To change the currently used gas mix, select the gas mix (SELECT button) and confirm with the CONFIRM button.

Gas marked in the list with blue colour means the diluent gas, selecting this gas sets the mode of operation to closed circuit. Selecting a gas marked with white colour (OC gas mix) sets the mode of operation to open circuit.

In addition to the names of available gases, additional information is also provided:

**MOD** – maximum depth of dive on a given gas, calculated for a partial pressure of 1.6Bar, given in meters [m] or feet [ft]

**min** – minimum depth of dive on a given gas mix, calculated for a partial pressure of 0.18 Bar

Gas mix marked with red colour is a mix that is not suitable for a given depth. In the above example, the minimum depth of this gas mix is 8m and the controller is by the surface.

Gas marked in red is selectable, however using it at this depth poses a threat to your life!
As an example, Tmx30/20 gas mix was chosen, which is listed as OC gas:

Upon returning to the main underwater screen, the section on information about used gas mix shows the name of "new" gas and about the work in open circuit mode:

### 7.2.1.2 Change the Gradient Factor values

During the dive, the Gradient Factor values can be changed on the main screen. To do this, press the SELECT and CONFIRM buttons simultaneously. The default values on the GF change screen were set to: 99/99. In order to confirm them, simply select the "SET GF. TO:" with the SELECT button and confirm with the CONFIRM button. The new values will be set immediately and the device will return to the main underwater screen. To set other GF values, use the SELECT button to mark the selected parameter (GF LO or GF HI), and then use the CONFIRM button to set the desired value. The change in value is possible from 10 (%) to 99 (%) with a step of 5 (%).

### 7.2.2 Setpoint configuration screen.

The screen provides basic information about the last or current dive: depth and time and information about setpoints.

**CURRENT SETPOINT** – current set of PPO2 - setpoint.
The three fields at the bottom of the screen contain setpoint values:

When the depth is less than 1m or the dive computer is in surface mode, you can only select a setpoint of value less than or equal to 1.0.

To select another setpoint, select the appropriate field using the SELECT button:

![Setpoint Selection](image)

then confirm with the CONFIRM button. A new value will appear in the CURRENT SETPOINT field:

![Setpoint Confirmation](image)

In order to change the value of one of the setpoints, select the appropriate field with the SELECT button and then press the CONFIRM button 3 times - the device will start editing the selected value. The next press of the CONFIRM button cycles from 0.5 to 1.5 cycles, with step of 0.1:

End editing by pressing the SELECT button.

### 7.2.3 Underwater configuration screen.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

- **Dpt** – current depth, given in meters [m] or feet [ft]
- **Time** – current dive time, given in minutes

Options **MODE**, **COMPASS CALIBRATION** and **FIRMWARE UPGRADE** are unavailable.
UNITS – choice of units: IMPERIAL or METRIC

BRIGHTNESS – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

DATE – set the current date in format: day.month.year

TIME – set the current time in format hour:minute

UW MODE – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

TTS MODE – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)

7.2.4 Gas mix table configuration – underwater mode.

In CCR MODE mode, the device supports 7 OC gas mixes and three diluent gases

CHANGE GAS – change of currently used gas mix

GAS SETUP – change of gas table parameters

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option (using the SELECT button) and confirm with
CONFIRM. The unit will go to editing the gas mix table (first diluent is highlighted in the list - DIL1).

2) Select the gas to edit: DIL1 ... GAS7 (using the SELECT button) and confirm with the CONFIRM button. The first digit (Hundreds) of oxygen percentage content in the mix is highlighted.

3) Set the required oxygen content:
   a. use the CONFIRM button to set the value of the selected digit,
   b. use the SELECT button to move to the next digit.

   It is not possible to set the total oxygen and helium content to a value greater than 100%. When the oxygen content is set, the device will go to helium content setting.

4) Set the required helium content:
   a. by pressing the CONFIRM button, set the required digit,
   b. by pressing the SELECT button, move to the next digit.

   After setting the required helium content, the device will go to ACTIVE option.

5) Mark the edited gas mix as active [ACT] or inactive [-----]. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner). Only one diluent can be set as active, the others will be automatically changed to inactive.

   Repeat steps 2) for all gases.

The table row marked in blue indicates the currently selected (used) gas mix

The list of gases is saved when you exit the current screen (button [>] ).

Switching the device off in edit mode will discard the changes.

Sample gas table view after entering parameters:

<table>
<thead>
<tr>
<th>NAME</th>
<th>%O2</th>
<th>%He</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIL1: AIR</td>
<td>021</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>DIL1: NTX50</td>
<td>050</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>DIL3: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS1: OXYGEN</td>
<td>100</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS2: TMX10/70</td>
<td>010</td>
<td>70</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS3: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS4: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS5: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS6: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS7: ----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
</tbody>
</table>

To change currently used gas mix, select the ![CHANGE.GAS](<onChangeGas>) option with the SELECT button and confirm with the CONFIRM button. The GAS SWITCH screen will be displayed. Please proceed as described in:

7.2.1.1 Switching between gas mixes – GAS SWITCH.
7.2.5 “Underwater” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
7.3 Menu layout.

Surface work

Underwater work
8 Pure Bühlmann mode

8.1 Device screens when working on the surface.

8.1.1 Main surface screen.

The upper part of the screen (information bar) is common to all operating modes and contains the information described below.

- **Battery charge icon**
  Current battery charge level, given by percentage. Colour coding: 
  \(>=60\%\), \(<60\%\), \(<30\%\).

- **Surface interval**
  The time elapsed since the last dive, in the format: days (d) hours (h)

- **Temperature**
  Current air / water temperature, indicated in \(^\circ\mathrm{C}\), measured by pressure sensor.

- **Current time**

The main part of the screen contains information about the just completed dive (before turning off the device) or the initial value (zero) - before diving.

- **PRES. mBar** – current pressure in millibars [mBar]
- **DESAT h:min** – information about the remaining time of desaturation
- **30.05.2018** – date in format: dd.mm.rrrr
- **SOFT** – the firmware version installed on the device
**GAS** – name of currently used gas mix. When settings in the gas table are not configured, the gas name is replaced by: ****. When the minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red

**PPO2** – ???:  ****.

**GRAD. FACTOR** – gradient Factors settings, given in percentage

**CNS %** – current value of central nervous system toxicity load, given in percentage

**OTU** – current value of the OTU variable (Oxygen Tolerance Unit)

### 8.1.2 Surface configuration screen.

Go to the device information screen and change the user name.

Go to the gas table configuration screen.

Go to Dive Planner configuration screen and Dive Planner.

Go to dive log preview.

Go to the system settings change screen.
8.1.2.1 Device information - UNIT SETUP.

The screen provides information about the hardware and firmware and the user's name (user name). Hardware information is useful when contacting the service and for a personalized firmware version.

**USER NAME** – user name of the device

**RESET TO DEFAULTS** – restoring factory settings of the device

**PIEZO TIME** – minimum pressing time of PIEZO button on the device: from 10ms to 150ms. Setting a higher value reduces the "sensitivity" of the buttons

**RUN TIME** – work time of the device

**SOFTWARE VERSION** – the firmware version installed on the device

**HARDWARE VERSION** – hardware version number of the device

**SERIAL NUMBER** – serial number of the device

To change the user name, select the **USER NAME** field with the SELECT button and confirm with the CONFIRM button.

The **USER NAME** field will be deleted and the cursor set to the first character: . Use the SELECT key to change the current character (cyclical, in alphabetical order) and CONFIRM to the next character. The username will be saved after all characters have been set. It is possible to insert a blank character (space) - this is the first character when the SELECT button is pressed.
8.1.2.2 Gas mix table configuration – GAS SETUP.

In Pure Bühlmann mode, the device supports 7 Trimix gas mixes.

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information.

CHANGE GAS – change of currently used gas mix

GAS SETUP – change of gas table parameters

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

1) Mark the option (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted first gas on the list - OC GAS1).

2) Select gas mix for editing: GAS1 ... GAS4 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

3) Set the desired oxygen content:
   use the CONFIRM button to set the value of the selected digit,
   use the SELECT button to move to the next digit.

   It is not possible to set the oxygen content to a value greater than 100%.

   When the oxygen content is set, the device will go to helium content setting.

4) Set the required helium content:
   by pressing the CONFIRM button, set the required digit,
   by pressing the SELECT button, move to the next digit.
   After setting the required helium content, the device will go to ACTIVE option.

5) Mark the edited gas mix as active ACT or inactive ———. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive
Planner).

Repeat steps 2) for all gases.

The gas list is saved when you exit the current screen (button \[\rightarrow\]).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>OC</th>
<th>NAME</th>
<th>%O2</th>
<th>%He</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS1:</td>
<td>AIR</td>
<td>021</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS2:</td>
<td>NTX50</td>
<td>050</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS3:</td>
<td>OXYGEN</td>
<td>100</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS4:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS5:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS6:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS7:</td>
<td>----</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
</tbody>
</table>

After each edit of the gas mix table, the dive computer will automatically switch to the option \[\rightarrow\] \[\leftarrow\], requiring the current gas to be re-set. Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:

**SELECTED:** AIR  
**MOD:** 66m

**SELECTED** – name of the currently selected gas mix

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]

### 8.1.2.3 Dive parameters configuration – DIVE SETUP.

- Temperature: 23°C
- Time: 17:23
- Surface: 02d 08h
- Salinity: FRESH
- Altitude: SEA
- Last Stop: SURFACE
- G. LO/HI: 99 / 90
- End of Dive: 0min
- Mod of Dive: 66m
- NDL Time: 3min

All the parameters set here are used in planning a dive (Dive Planner).

The values entered also affect decompression stops, NDL, TTS, CNS and OTU.
NTX DIVE PLAN – going to the dive planner

ppO2 SETUP – ???.

SALINITY – selection of dives in saltwater (SALT) or fresh water (FRESH). This option affects the depth calculation by taking into account the various density of saltwater and fresh water

LAST STOP – depth (in meters or feet) of the last decompression stop. Possible values are: 3m / 10ft and 6m / 20ft

ALTITUDE – selection of surface pressure values: SURFACE / SEA. The SURFACE value assumes the limit pressure, considered to be the surface value, calculated as the average pressure value before the start of the dive. The SEA value assumes a constant surface pressure of 1013 mbar. During the active SEA option, depth indications may differ from other devices due to the assumed surface pressure of 1013mBar, which may differ from the actual atmospheric pressure.

GF. LO/HI – percentage values of Gradient Factors (distance from the "M" limit value)

END OF DIVE – time (in minutes) from the ascent, after which the device stops the dive mode and goes to surface mode: 0 - 10 minutes

The screen also provides information (not editable) of the currently selected gas mix:

MOD OF DIVE – maximum depth of dive, calculated for the Oxygen partial pressure 1.6Bar, given in meters [m] or feet [ft]

NDL TIME – the time (in minutes) that you can spend on the selected gas mix at the maximum operating depth (MOD), without the need for applying a decompression procedure.
8.1.2.4 Dive Planner – NTX DIVE PLAN.

Planner is a module that calculates decompression stops, based on a decompression algorithm, using data from the gas mix table. Before using the planner, it is necessary to correctly configure the gas table as it is used by the algorithm to select the optimum gas mix at the given depth, at the particular moment of the decompression process. Gas mix selection is automatic (only active gases in the table - "act").

Before planning, you need to set the following parameters:

**Depth** – depth of a dive

**Time** – bottom time

For information purposes, the input parameters of the decompression algorithm are shown:

- **Start CNS** – initial central nervous system load
- **Last stop** – depth of the last decompression stop
- **Low GF** – value of the "low" gradient factor (at maximum depth)
- **High GF** – value of the "high" gradient factor (near the surface). The gradient factor values for the intermediate depths are calculated on an ongoing basis by the controller
- **Gas** – name of currently selected gas. To change the gas, select its name (using the SELECT button) and then select the new gas (CONFIRM button). Gas is selected cyclically from the list of active gases (gas configuration table).
After setting the dive parameters, start the **planner** by selecting the option and confirming with the CONFIRM button. After a few seconds, the main frame will display information about the decompression stops and the current ascent time and used gas mix, and the planner screen will look similar to the illustration:

**Stop** – depth of the decompression stop

**Time** – time at the given stop

**Run** – the time elapsed since the start of the decompression procedure, calculated from the given stop

**Gas** – information about the gas mix selected by the planner algorithm you should switch to at the given stop

If there are a lot of decompression stops required and they do not fit in the table, only part of them is displayed. To see more stops (shallower), press .

When after starting the **planner** there is no suitable gas mix for any stage of the dive in the gas table, the planner will stop calculations and the following screen will be displayed:

In this case, change the dive information (depth and time), or change the gas mix settings (gas configuration table) to appropriate for this particular dive.
8.1.2.5 ??? – PPO2 SETUP.

SHOW VALUE: PPO2
MIN PPO2 : 0.18
MAX PPO2 : 1.60

SHOW VALUE – ???.
MIN PPO2 – a???
MAX PPO2 – ???

8.1.2.6 Logbook.

The controller is equipped with memory to record the last 500 dives. The user has the ability to view logs, view detailed information about dives, view dive charts and delete selected logs.

Omitting a decompression stop is marked in the dive log. When viewing the dives in logbook, entry marked red means a dive with omitted decompression stop.

During a dive the following information is recorded:

- dive number
- date and time of dive start
- dive time
- maximum depth
- setpoint information
- surface interval
- water temperature
- air temperature

The course of diving is recorded after a depth of 1m is reached and a dive time of 5 seconds. The maximum registration time for one dive is 8 hours.
The main screen contains information on the numbers and dates of recent dives. To read details of a particular dive, select the appropriate entry from the list and then confirm the selection (confirm button). Use the navigation buttons to select the desired log.

- Scrolling the list every 30 logs (every 3 screens)
- Scrolling the list every 10 logs (every 1 screen)
- Go to the list and scroll through every log

To view details of the dive, select the log and confirm with the CONFIRM button.

The information about omitted decompression stop is also indicated in detailed dive log, with red message Lost deco shown in the log’s header.

The detail screen contains the following information:

- **Dive Time** – dive time
- **Max Depth** – maximum depth of current dive
- **Average Depth** – average depth of current dive
- **Surface Interval** – surface interval from the previous dive. If this is the first dive and the time interval can not be determined, this parameter is set to "---"
- **Water Temperature** – water temperature, recorded one minute after the start of the dive. The time delay is used to obtain the ambient temperature by the sensor
- **Air Temperature** – air temperature - recorded when passing from surface mode to dive mode

There are 2 buttons available:

- **DELETE** - delete log
- **GRAPHS** - display the dive charts
To delete a log, select **DELETE**, then select **YES:** [no] [YES] and press **CONFIRM**.

**Wykresy nurkowania:**

**Dive graphs:**

- Depth graph
- Oxygen partial pressure graph
- Temperature graph
- Summary graph
8.1.2.7 System settings – SYSTEM SETUP.

**UNITS** – choice of units: IMPERIAL or METRIC

**BRIGHTNESS** – screen brightness: LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depends on the outside lighting – the stronger the light, the higher the screen brightness

**DATE** – set the current date in format: day.month.year

**TIME** – set the current time in format hour:minute

**UW MODE** – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

**TTS MODE** – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)
8.1.3 Surface" compass..

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
8.2 Dive computer screens when working underwater.

8.2.1 Main underwater screen.

![Depth Time Gas Ceil](image)

DEPTH – current depth, given in meters [m] or feet [ft]
TIME – dive time, given in format minutes: seconds
GAS – name of currently used gas mix. When settings in the gas mix table are not configured, the gas name is replaced by: ⬇️. When the minimum operating depth "MIN" (calculated for PPO2 = 0.18Bar) is exceeded, the gas name is displayed in red.
CEIL – ???
PPO2 – ???
TTS – ???

8.2.2 Underwater configuration screen.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

Dpt – current depth, given in meters [m] or feet [ft]
Time – current dive time, given in minutes

Options MODE, COMPASS CALIBRATION and FIRMWARE UPGRADE are unavailable.
UNITS – choice of units: IMPERIAL or METRIC

BRIGHTNESS – screen brightness: CAVE / LOW / MEDIUM / HIGH / AUTO. Selecting AUTO mode controls the brightness of the screen, depending on the outside lighting – the stronger the light, the higher the screen brightness

DATE – set the current date in format: day.month.year

TIME – set the current time in format hour:minute

UW MODE – underwater mode detection: SENSOR / PERMANENT. Selecting the SENSOR option detects the underwater / surface mode using the depth sensor. Selecting PERMANENT option keeps the device underwater permanently. This feature is applied when the depth sensor is damaged (so it does not go into surface mode and stops the dive) and when testing on the surface features of the unit specific for underwater mode

TTS MODE – selects the "time to surface" (TTS) calculation mode. Available modes: CURRENT GAS - TTS based on current gas; LIST OF GASES - TTS calculated from the optimum gas selected from the gas list (gases marked active)

8.2.3 Gas mix table configuration – underwater mode.

In underwater mode, the configuration screen differs in the information bar (at the top of the screen):

Dpt – current depth, given in meters [m] or feet [ft]

Time – current dive time, given in minutes

In Pure Bühlmann mode, the device supports 7 Trimix gas mixes

The gas configuration screen provides information on their setup and allows you to configure the gas mixes as needed.

Below you will find the necessary configuration information.

CHANGE GAS – change of currently used gas mix
GAS SETUP – change of gas table parameters.

Before entering the settings for the first time and after changing the operating mode, the gas table is reset (set to "0") and the gas names are "plotted".

Before using the dive computer, make sure that the used gas mixes are entered correctly. To do this:

4) Mark the option (using the SELECT button) and confirm with CONFIRM button. The device will go to the gas mix table configuration (highlighted first gas on the list - OC GAS1).

5) Select gas mix for editing: GAS1 ... GAS4 (using the SELECT button) and confirm with the CONFIRM button. The first digit (hundreds) of oxygen percentage content in the gas mix is highlighted.

6) Set the desired oxygen content:
   Use the CONFIRM button to set the value of the selected digit,
   Use the SELECT button to move to the next digit.
   **It is not possible to set the oxygen content to a value greater than 100%**.

   When the oxygen content is set, the device will go to helium content setting.

7) Set the required helium content:
   by pressing the CONFIRM button, set the required digit
   by pressing the SELECT button, move to the next digit

8) After setting the required helium content, the device will go to ACTIVE option.

9) Mark the edited gas mix as active or inactive. Only active gas mixes can be selected by the user while diving and planning a dive (by Dive Planner).
   Repeat steps 2) for all gases.

The gas list is saved when you exit the current screen (button ).

**Switching the device off while in edit mode will discard the current settings.**

Sample gas mix table view after entering the parameters:

<table>
<thead>
<tr>
<th>OC</th>
<th>NAME</th>
<th>%O2</th>
<th>%He</th>
<th>ACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS1:</td>
<td>AIR</td>
<td>021</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS2:</td>
<td>NTX50</td>
<td>050</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS3:</td>
<td>OXYGEN</td>
<td>100</td>
<td>00</td>
<td>ACT</td>
</tr>
<tr>
<td>GAS4:</td>
<td>---</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS5:</td>
<td>---</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS6:</td>
<td>---</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
<tr>
<td>GAS7:</td>
<td>---</td>
<td>000</td>
<td>00</td>
<td>----</td>
</tr>
</tbody>
</table>
After each edit of the gas mix table, the dive computer will automatically switch to the option, requiring the current gas to be re-set. Use the CONFIRM button to select the right mix of gases marked active (cyclically switched). The current selection is presented at section:

**SELECTED: AIR  MOD: 66m**

**SELECTED** – name of the currently selected gas mix

**MOD** – maximum depth of a dive with selected gas, calculated for 1.6Bar Oxygen partial pressure, in meters [m] or ft [ft]

### 8.2.4 Underwater” compass.

On the compass screen, in addition to the current direction (COURSE), there are basic information about diving: DEPTH and DIVE TIME. In surface mode these values are "0".

The compass allows you to "lock" the desired course (so-called LOCK) by pressing the SELECT button.

The saved direction value is indicated in the LOCK field and by the yellow dot (shown in the illustration). The compass wheel is rotated by an angle equal to the saved direction value.
9 Technical aspects

9.1 Pressure sensor

The depth measurement is carried out using a pressure sensor with a measuring range of 0 ... 30 Bar. This sensor is calibrated by the manufacturer to reduce nonlinearity and maximize precision. The accuracy of the measurement process is determined by the accuracy of the sensor. The measured value error is from -50mbar to +50mbar at operating temperature 0 ... +40°C and pressure range 0 ... 2Bar.

The pressure sensor is located in the side of the dive computer housing, protected against mechanical damage by the metal shield:

It is forbidden to cover the sensor housing and its openings in any way that prevents the water contact!

This shield also provides the high thermal conductivity necessary to precisely measure ambient temperature. Temperature accuracy is + -1°C.

The described pressure sensor is the only element of the device used to measure the depth. The sensor failure prevents the current depth reading and excludes the possibility of using the built-in algorithm to calculate the decompression process.

9.2 Activation of underwater work mode

During the right work of all measuring systems of the dive computer, the decisive element of active underwater or surface mode is the pressure sensor (and thus depth).

The device enters underwater mode when at least one of the following conditions is met:

- the value of the measured pressure will increase rapidly by 50 mbar
- the "UNDERWATER" option is set to “PERMANENT”
The last of the above conditions allows the user to manually force the device to work in underwater mode when the depth sensor is found to be working improperly. This prevents the device from going into Surface mode and automatically turning off after 15 minutes of inactivity.

9.3 Device operating time

The device is powered by standard AA alkaline battery (it is recommended to use a battery with a minimum capacity of 2000mAh). In the sleep state, the device consumes the electricity in the range of single milliamps - the discharge time of the battery is in this state is up to 400h. Power consumption in the sleep mode (when the device is off with the battery installed) is associated with the need for pressure measurement to detect immersion. Measurement is performed every 9 seconds.

When in use, the discharge time of the battery depends on several factors:

- screen brightness
- ambient temperature (lower temperature - lower battery performance and shorter operating time)
- battery age (over time, cell electrodes get partially degraded, which reduces battery performance and battery life, use of "fresh" battery is recommended)

Device operating time:

- “LOW” screen brightness: up to 20 hours
- “MEDIUM” screen brightness: up to 15 hours
- “HIGH” brightness: up to 9 hours

In the event of total battery discharge (battery voltage is less than 0.9V), the power system stops working. In this situation, the device is immediately shut down. If the situation occurs during a dive, except for retaining the basic functionality of the device, the decompression data is deleted because of the inability to continue the calculation and to protect against false values.

If you do not use the computer for a long time, it is recommended to remove the battery from the device.

The real time clock is still running, powered from the backup source, for up to 24 hours.
After each battery replacement, check the current date and time settings.

After replacing the battery (after removing it from the device for more than 2 seconds), the dive computer automatically switches on and displays the information screen with the current date and time. Confirm the correctness of the indications or enter the correct settings (SELECT switches between settings, CONFIRM changes values).

The unit will go to the battery type selection screen. Select the correct battery type by selecting CHANGE and pressing the CONFIRM button. There are two types of batteries: Alkaline 1.5V and rechargeable Ni-MH 1.2V.

All configuration parameters (menu settings) are stored in non-volatile memory and are insensitive to power failure.
### 9.4 Technical parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating modes</strong></td>
<td>APNEA</td>
</tr>
<tr>
<td></td>
<td>Ext Gauge</td>
</tr>
<tr>
<td></td>
<td>OC REC</td>
</tr>
<tr>
<td></td>
<td>OC TECH</td>
</tr>
<tr>
<td></td>
<td>CCR Fixed SP</td>
</tr>
<tr>
<td></td>
<td>Pure Bühlmann</td>
</tr>
<tr>
<td><strong>Decompression model</strong></td>
<td>Bühlmann ZHL-16C GF</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>65k colours 2,4’’ QVGA TFT with LED backlit</td>
</tr>
<tr>
<td><strong>Pressure sensor</strong></td>
<td>Piezo-resistive</td>
</tr>
<tr>
<td><strong>Work range</strong></td>
<td>0Bar to 30Bar</td>
</tr>
<tr>
<td><strong>Measurement accuracy at 0°C to +40°C, 0 to 10 Bar</strong></td>
<td>-50mBar to +50mBar</td>
</tr>
<tr>
<td><strong>Measurement accuracy at -20°C to +85°C, 0 to 10 Bar</strong></td>
<td>-100mBar to +250mBar</td>
</tr>
<tr>
<td><strong>Long-term accuracy</strong></td>
<td>50mBar / 6 months</td>
</tr>
<tr>
<td><strong>Surface pressure range</strong></td>
<td>600mBar to 1040mBar</td>
</tr>
<tr>
<td><strong>Depth of dive start</strong></td>
<td>1m</td>
</tr>
<tr>
<td><strong>Depth of dive end</strong></td>
<td>1m</td>
</tr>
<tr>
<td><strong>Operating temperature range</strong></td>
<td>0°C to 35°C</td>
</tr>
<tr>
<td><strong>Short-term temperature range (for a few hours)</strong></td>
<td>-15°C to 60°C</td>
</tr>
<tr>
<td><strong>Storage temperature</strong></td>
<td>2°C to 30°C</td>
</tr>
<tr>
<td><strong>Battery</strong></td>
<td>AA-size, 1,0V do 4,5V (alkaline)</td>
</tr>
<tr>
<td><strong>Battery operating life</strong></td>
<td>up to 9 hours (Alkaline 1,5V AA)</td>
</tr>
<tr>
<td></td>
<td>up to 20 hours (SAFT LS14500)</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>Radio Data Transmission</td>
</tr>
<tr>
<td><strong>Compass resolution</strong></td>
<td>1°</td>
</tr>
<tr>
<td><strong>Compass accuracy</strong></td>
<td>30°</td>
</tr>
<tr>
<td><strong>Dive log capacity</strong></td>
<td>500 logs</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>251g</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>90x80x46mm</td>
</tr>
</tbody>
</table>
10 Decompression calculation

The function calculating the decompression process uses the Buhlman method, taking into account the safety factor of gradient factors (ZHL16 + GF).

When the device is turned on, the decompressed data is loaded (from the non-volatile memory). In case of damage or lack of decompression data, they are replaced by default values - total saturation of tissues up to 1 bar in the air atmosphere.

At the beginning of the dive, the decompression model is initiated and the tissue saturation procedure is started. This feature runs continuously in real time, allowing you to enable / disable display of decompression information at any time without worrying about loss of calculation results and correctness of the data being served. The levels of saturation of the individual tissues of the decompression model are updated (converted) at constant intervals of 2 seconds. For calculations, the current depth and selected gas mix are used.

![Warning] Damage to the pressure sensor prevents the use of decompression functions and their indications can be dangerous or even life-threatening.

In addition to current tissue saturation, all decompression stops (depths and required stop time), TTS, CNS and OTU are calculated continuously (every 6 seconds), so values of these parameters can change during the dive.

Total time to surface (TTS) takes into account all the time required for decompression stops and the ascent rate of -7 m / min (-0.7 Bar / min). The descent rate is set at 15m / min (1.5Bar / min).

The decompression algorithm is the same for the planner and calculations of the current decompression model, which gives consistent readings of the dive computer with the planner’s calculations.

After completing the dive and going into surface mode, the decompression algorithm continues to work, calculating the decompression of tissues for atmospheric pressure and gas mix: air. Air is taken for active gas throughout the whole time of operation of the device on the surface.

At the moment of turning the device off, the dive computer writes in non-volatile memory the data used by the decompression algorithm: level of individual tissue saturation, CNS, date and time of the dive.
11 Firmware update

It is recommended that you change the firmware to a newer version only.

Operation of the device is controlled by the so called firmware. This firmware, provided by the device manufacturer, can be updated to a newer version directly by the user. A selected block of the device’s code, the so-called bootloader, is responsible for the update process (replacing the current version with the newer version). This program is triggered using the configuration menu option. It supports the hardware layer, is responsible for establishing a connection with the computer, for erasing the current firmware of the device, for downloading a new firmware version and verifying the correctness of the loaded code.

To switch to bootloader mode, select > [FIRMWARE UPGRADE] < from the configuration menu and confirm with "YES" > [no] > [YES] <.

The device will switch to bootloader mode and start and configure the radio data transmission module for communication with the computer.

To exit the bootloader mode without making any changes to the firmware, press both buttons simultaneously (CONFIRM and SELECT) and then confirm by selecting "YES":

It is not possible to leave the bootloader after the firmware update process has started.
After each startup, the device checks the installed software (CRC checksum) to ensure fault-free operation. In the event of a software error (non-compliant CRC checksum), it is deleted to prevent loading the damaged firmware and the device goes into UPGRADE mode. In this case, new software is required to be uploaded.

After fifth failed attempt of booting the device, BOOTLOADER mode is loaded to allow upload of the proper software.

A further process of software upgrades runs from the computer side, using the included PC / MAC / LINUX software:

1) Open the RDT program

2) Press Scan to search for the device. Scanning lasts up to 30 seconds. If your device is in BOOTLOADER mode, its name (Dive computer) will be listed:

Choose the device and press

If this is a first connection to your computer, the operating system will prompt you to "pair":
After clicking, you will be prompted to enter the device password. Type "1234".

The device information will be displayed in the application window:

<table>
<thead>
<tr>
<th>Device name</th>
<th>DiveComputer.eu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware version</td>
<td>v1.1</td>
</tr>
<tr>
<td>Device ID</td>
<td>00460028-30345119-38353334</td>
</tr>
</tbody>
</table>

**Device name** – name of the device  
**Firmware version** – the firmware version currently installed on your device  
**Device ID** – device identification / serial number

3) Load the file with new firmware version.
   a. Click ![Open file](BottomTimer.ocf)  
   b. Specify the location of the firmware file - only the .ocf file containing the device firmware can be loaded.  
   c. Click **Open** (in the file list window).

The file will be loaded and the firmware information displayed in the application window:
**File name** – name of uploaded file

**Device name** – name of the device for which the firmware is intended

**Software version** – firmware version loaded from the file

**Target device ID** – ID / serial number of the device for which the firmware file is loaded. For dashes "---" - for all devices given in the "Device name" field.

If the information contained in the file matches the information loaded from the connected device, the Upgrade button becomes active and the application window looks like this:
4) Click **Upgrade** button. The update process will start and its progress will appear in the progress bar:

   a. Deleting the current version of the firmware

   ![Status](image1)

   b. Saving the new firmware version

   ![Status](image2)

   The process is terminated by the message **"Upgrade finished"** in the Status field:

   ![Status](image3)

   If an error occurs while updating the firmware, the entire process must be repeated from the beginning.

   ![Warning](image4)

   **It is forbidden to change the firmware of the device to non-original, modified or derived from unauthorized sources! This is a direct threat to your life!**
11.1 Cumulative update – bootloader and main firmware

1. Load new battery with a large amount of energy into the divecomputer.eu device.
2. Turn on the dive computer in the “upgrade software” mode.
3. Run the RDT application downloaded from our website on a PC.
4. Click “Scan” button and wait until “Divecomputer” appears on the list.
5. Click “Connect” button and wait until Windows shows dialog box with information about new connection established.
6. Accept this connection and close Windows dialog box.
7. In the RDT application choose “Software” and point a file containing “bootloader” in its name.
8. Click “Upgrade” button.
9. When the update software is loaded, press CONFIRM (right) button on dive computer.
10. Dive computer will perform a bootloader upgrade from version 2 to version 3 and will wait for main software file.
11. Open radio connections on Windows PC and remove “Divecomputer” device.
12. Repeat steps from 3 to 6.
13. In the RDT application choose software and point a file containing “software 3_2C” in its name.
14. Click “Upgrade” button.
15. Divecomputer will upgrade the firmware and will reboot loading the newest firmware version.
16. Go to the PPO2 setup and set:
   - show ppo2
   - min ppo2 = 0.18
   - max ppo2 = 1.6