HALCYON™ AMBIOS

Photo: Michael Westreicher

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1 Introduction

Thank you for purchasing the SYMBIOS HANDSET dive computer.The SYMBIOS HANDSET is an advanced dive computer built from the toughest materials and highly sophisticated electronic components. The Hybrid Transflective Color Screen display is extremely easy to read, even in bright sunlight.
The SYMBIOS HANDSET can be used as a dive computer for air, NITROX, TRIMIX, and closed circuit rebreather diving.
The SYMBIOS HANDSET also features an innovative wireless interface. This interface allows data reception from multiple sources, including up to seven tank pressure transmitters, wireless rebreather interfaces, navigation systems, or, for example, a diver propulsion vehicle (DPV).

Currently, the device can receive wireless data from:

- SYMBIOS Tank Pod
- SYMBIOS pO_2 Transmitter
- SYMBIOS pO_2 Transmitter, P-Port version
- SYMBIOS CM ECCR
- SYMBIOS GPS Buoy
- DPV equipped with a Halcyon Symbios-compatible wireless transmitter
- External compass
- SYMBIOS wireless OEM interface

The SYMBIOS HANDSET, together with a compatible SYMBIOS Tank Pod, is classified as Personal Protective Equipment under the EU Regulation 2016/425 and protects against risks listed under PPE Risk Category III (a): substances and mixtures which are hazardous to health.
Based on EU PPE Regulation 2016/425 Annex I, the SYMBIOS HANDSET protects the user/diver from the risk of drowning (Category III (i)) by displaying vital tank pressure information which allows for appropriate life-saving action.

1.1 Safety Considerations

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

You should not use this SYMBIOS HANDSET if you are not aware of or if you do not accept those risks.

In this manual, the following three precautionary messages are used: WARNING, CAUTION, and NOTICE symbols provide users with necessary information about potential hazards and proper procedures.

⚠ WARNING

WARNING statements describe potentially hazardous situations which, if not avoided, could result in serious injury or even death.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE statements are used to provide important information regarding installation, operation, maintenance, performance, general important tips, or instructions for a procedure or situation

that, if not performed properly, might cause damage to the device but is unrelated to physical injury.

1.2 Warnings

⚠ WARNING

Before using the SYMBIOS HANDSET, read the manual in its entirety to familiarize yourself with all of the functions of the device.

⚠ WARNING

Do not use SYMBIOS HANDSET if it shows any signs of damage or malfunction. Contact HALCYON or an authorized repair center.

⚠ WARNING

You must have successfully completed a course in scuba diving. You must have knowledge about the potential risks and hazards of scuba diving.

⚠ WARNING

The risk from decompression sickness (DSC) or oxygen toxicity, even if you follow dive tables or a dive computer, cannot be totally eliminated. This risk also depends on your physiological condition, which can vary from day to day. The SYMBIOS HANDSET cannot account for these variations.

⚠ WARNING

We strongly advise you to stay within the exposure limits provided by the instrument to minimize the risk of DCS.

⚠ WARNING

No decompression algorithm can provide a guaranteed safe decompression. It is your responsibility to be trained, dive safely, carry backup tables and instrumentation, and compare any decompression schedules generated with the SYMBIOS HANDSET against established diving tables.

⚠ WARNING

Do not ignore warning signs and indicators on the SYMBIOS HANDSET. This may result in serious injuries and can be even lethal.

⚠ WARNING

You should never share the SYMBIOS HANDSET with other divers. Always use the same dive computer for repetitive dives. The SYMBIOS HANDSET features a built-in memory function that keeps track of your diving history. Substituting the SYMBIOS HANDSET between a series of repetitive dives may result in incorrect decompression calculations.

⚠ WARNING

Do not fly or travel to high altitudes while the NO-FLY indication remains active. Flying while the SYMBIOS HANDSET displays NO FLY can result in serious injury or death.

⚠ WARNING

If you omit one or more decompression stops, a symbol will indicate the current ceiling to which you should descend. If you continue to ignore these warnings, there is NO additional ERROR or LOCKOUT. Do not ignore these warnings. Decompression stops are your responsibility and must be performed for your safety.

⚠ WARNING

For safety reasons, always dive with backup instruments: depth gauges, pressure gauges, dive watches, or backup dive computers. While planning a dive with the SYMBIOS HANDSET, it is recommended that you have access to decompression tables.

⚠ WARNING

Contact your instructor or authorized dealer before diving with the SYMBIOS HANDSET if you do not fully understand how to use it or if you have any questions.

⚠ WARNING

Do not exceed the limits of your training/certification level.

⚠ WARNING

Always carry and frequently check a backup pO_2 monitoring device.

⚠ WARNING

Always carry and frequently check a backup dive computer.

⚠ WARNING

We strongly advise staying within the exposure limits provided by the instrument to minimize the risk of DCS. However, even if you stay within recreational limits and the no-decompression limits given by this dive computer, DCS may occur.

⚠ WARNING

Before diving, you should consult a physician regarding your fitness to dive.

⚠ WARNING

In recreational diving, do not dive with a pO_2 > 1.4 bar. Diving with a high pO_2 may lead to O_2 intoxication.
Never dive with a pO_2 > 1.6 bar. Diving with a pO_2 >1.6 bar will lead to O_2 intoxication.

⚠ WARNING

Do not dive deeper than what your current diving qualification allows.

⚠ WARNING

NITROX diving requires proper training. Do not dive with NITROX without a NITROX certification.

⚠ WARNING

TRIMIX diving requires proper training. Do not dive with TRIMIX without a TRIMIX certification.

⚠ WARNING

Do not use breathing gases other than air, including hypoxic TRIMIX breathing gases, with an O_2 fraction of less than 20% unless you have been properly trained in using those gases or unless you have a TRIMIX certification.

⚠ WARNING

Do not violate the ceiling depth during decompression. In order to avoid doing so by accident, stay slightly below the ceiling depth. Staying deeper than the required ceiling depth will increase the total time to surface.

1.3 Design Philosophy

The Halcyon SYMBIOS HANDSET dive computer embodies simplicity, reliability, and user-centric functionality. Engineered to seamlessly integrate with a diver's workflow, it prioritizes intuitive operation and robust performance in challenging underwater environments. Developed in collaboration with exploration divers with years of experience, the SYMBIOS HANDSET reflects a deep understanding of the practical needs of divers in the most demanding conditions. Its clean, easy-to-read interface with customizable displays presents information in a thoughtfully organized manner, allowing divers to access the specific data required for each phase of the dive while maintaining quick access to secondary information through different pages. Its ergonomic design ensures comfort and ease of use, even with thick gloves, while its durable construction is built to withstand the demands of technical and recreational diving. By blending advanced technology with insights from seasoned professionals, the Halcyon SYMBIOSIS HANDSET empowers divers to focus on their dive and inspires confidence in the performance of their equipment.

1.4 Operation

Powering On

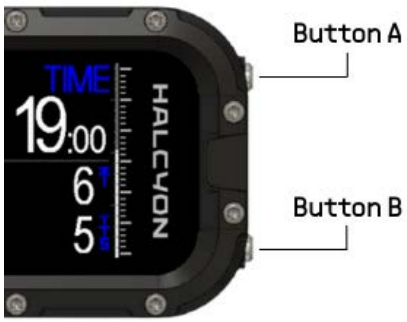
When the SYMBIOS HANDSET is not in use, it is in standby mode. In standby mode, the display is switched off to minimize power consumption.

Press and release the top or lower button to activate the computer.

The SYMBIOS HANDSET will automatically power off and switch into standby mode if it is not operated while on the surface or has not received wireless data from a CCR for more than two minutes.

Two-Button Operation

Two tactile push buttons are used to operate the SYMBIOS HANDSET with short and long pushes of the buttons. Use a short push to switch between screens, navigate in a menu, or increment or decrement user settings. Use a long push to confirm selections, enter the main menu, or activate a user-selectable custom function. Within the menu, the long push functions are indicated in boxes on top and bottom of the screen. Long button pushes have different functions.



During a dive, the buttons function as follows:

- Short push button A to toggle between different information screens.
- Long push button A to access the menu.
- Short push button B to toggle the custom field.
- Long push button B to perform the custom function set in MENU → SYSTEM → CUSTOM FUNC.
- Long push both buttons at the same time to acknowledge and reset various warnings and alarms.

Custom Field

The information presented in the custom field is dependent on the dive mode. You can select some parameters to be shown in the custom field (left lower field), including:

Tank pressure of selected gas
Tank pressure T1 –T4 (only available if a tank pod is paired to T1 – T4, respectively)
ASC – Ascent speed in m/min
BAT – Remaining battery charge in % or volts (depending on the operation mode, this can include the battery state of the Symbios CCR and the Greenflash™ digital oxygen sensor)
CNS – Central Nervous System O_2 Toxicity in %
AVG – Average depth
COMP – Compass heading in °
TEMP – Temperature
GF Now – Current Gradient Factor
GF Surf – Gradient Factor if the diver instantaneously surfaces
Ceiling – The depth ceiling that the diver can ascend without depth rounding
Gas Density – The density of the breathing gas
CCR FO_2 – Fraction of oxygen currently in the CCR breathing loop
CCR Dil PO_2 – Partial pressure of oxygen in the diluent at the current depth
CCR SP – CCR setpoint for oxygen

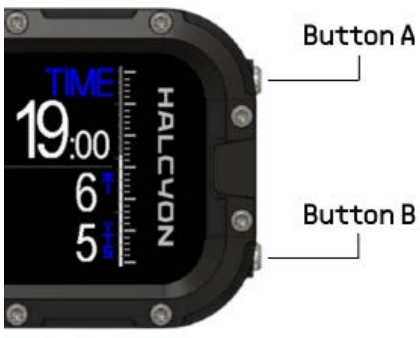
SCRUBBER – Usable time remaining of the CO_2 absorbent material in a CCR
TTS+5: the projected Time to Surface if the diver remains at the same depth for another five minutes
TRIM – Diver's trim in ° (requires a Symbios Tank Pod)
Lamp RRT: Not currently available
Lamp SOC: Not currently available
NF – No Fly time. (Only displayed on surface after a dive and while there is no fly time remaining)

Custom Function

Press and hold button B to perform the predefined custom function. Users can preset this custom function by navigating to MENU → SYSTEM → CUSTOM FUNC. The following functions are available:

Off (No Function)
Start/Reset the stopwatch
Select best gas (this is calculated according to the gas table and the maximum pO_2)
Save waypoint (only available when a wireless GPS signal is received)
BO/SP Low/SP Hi: When in CCR FSP mode, the handset switches between Bailout (OC), low setpoint, and high setpoint.

1.5 Surface Mode



On the surface, the SYMBIOS HANDSET is usually in standby mode to minimize power consumption. In standby mode, a fully charged battery can last as long as long as six months. However, you should plan to supply a maintenance charge with long-term storage.
Press and release either button A or B to activate the device.

In the image above, the top line of the surface screen displays the maximum depth of the last dive as well as the duration of the last dive. The compass tape is presented below the first line. The information for the gas used on the last dive is displayed on the third line on the left side; the Surface Interval (SI) is indicated on the right side. The pressure of the breathing gas is displayed on the bottom line; the ascent rate indicator is displayed on the bottom right.

1.6 Care and Maintenance

The SYMBIOS HANDSET is built from high-quality, seawater-resistant materials. The SYMBIOS HANDSET is designed to withstand diving in harsh conditions. However, users should still protect the SYMBIOS HANDSET from shock, excessive temperatures, chemicals, and mechanical tampering.

NOTICE

After diving, rinse the SYMBIOS HANDSET in fresh water to avoid corrosion.

NOTICE

Before connecting the SYMBIOS HANDSET to a USB cable, ensure that the USB connector on the SYMBIOS HANDSET is clean and dry. Failure to do so may lead to corrosion of the contacts.

⚠ CAUTION

Protect the SYMBIOS HANDSET during transportation and from mechanical shocks.

⚠ CAUTION

Never try to open or repair the SYMBIOS HANDSET yourself. The SYMBIOS HANDSET does not contain any user serviceable parts. Service may only be done by HALCYON or by any authorized service center.

⚠ CAUTION

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

NOTICE

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

1.6.1 Charging/USB Connection

Fig. D

The SYMBIOS HANDSET features a USB port which is also used for charging.

Fig. E

If the SYMBIOS HANDSET is plugged in, a charging screen will be displayed.
You may charge the SYMBIOS HANDSET using a variety of power sources: a USB outlet from a PC, a USB charger, or a power bank, for example.
If connected to a PC, the SYMBIOS HANDSET will also appear as a removable drive on the PC and can be accessed like a USB drive.

⚠ WARNING

If the battery indicator flashes red during a dive, this is a sign that the battery level is low and the dive computer may soon switch off or perform a reset. After a reset, dive data, depth, dive time, and decompression obligations are incorrect.

⚠ WARNING

Do not dive when the SYMBIOS HANDSET battery indicator is red. The dive computer might run out of battery. In such a case, the SYMBIOS HANDSET may give incorrect depth readings, incorrect decompression data, or may shut off completely. In case of a red battery indicator, recharge the SYMBIOS HANDSET before the next dive.

⚠ WARNING

Never fully discharge the SYMBIOS HANDSET as this might lead to damage of the lithium ion rechargeable battery.

⚠ WARNING

If the battery is completely discharged, the dive computer may reset and lose all decompression information. If reset occurred between repetitive dives, be aware that the SYMBIOS HANDSET loses decompression data and compartment inert gas pressure data from previous dives; thus, no decompression readings and none of the decompression calculations for following dives should be considered correct.

NOTICE

After a dive, before connecting the cable, rinse the SYMBIOS HANDSET in freshwater. Make sure that the USB connector is clean and dry before connecting the USB cable.

NOTICE

Do not disassemble or remodel any cables or connectors. Use only the original USB cable supplied with the SYMBIOS HANDSET. Check compatibility before use.

NOTICE

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

NOTICE

If the SYMBIOS HANDSET is completely discharged, let it charge for at least three hours before using it.

NOTICE

Before using SYMBIOS HANDSET for the first time, charge it for at least three hours.

NOTICE

The nominal output of the USB outlet/charger should be 5V and should be able to provide at least 500 mA electrical current.

2 Settings

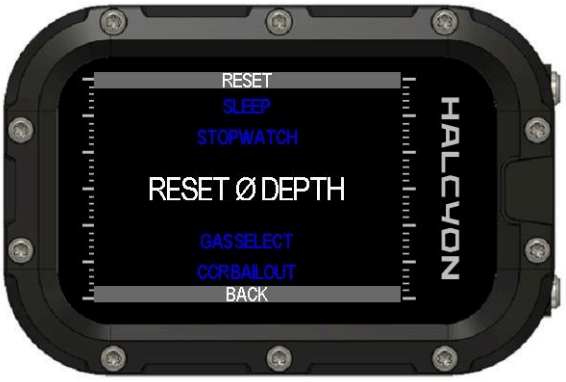


Fig. F

The SYMBIOS HANDSET has an intuitive menu which allows you to change settings quickly.

NOTICE

Press and hold button A to access the menu.

NOTICE

Press and release button A or B to navigate in a menu or to increment or decrement a setting.

NOTICE

Within the menu, the long press functions of both buttons are indicated in boxes on the top and bottom of the menu.
Press and hold button A to perform the function indicated on top of the menu.
Press and hold button B to perform the function indicated on the bottom of the menu.

2.1 Menu

See **Appendix: Menu Tree** at the end of this document.

2.2 Selecting a Gas

Divers can select the gas used during the dive using the SELECT GAS menu item. Alternatively, divers can switch to the prompted gas during the dive by pressing and holding button B. For this option to be available, divers must select BEST GAS as the custom function of button B.
Any of the gases activated in the gas table can be selected.

To select a gas from one of the main screens:
Long push button A to enter the menu
Short push button B to navigate to menu item SELECT GAS
Long push button A to open the SELECT GAS MENU

Within the SELECT GAS menu:
Short push either button to navigate between five open circuit gas and three diluent gas settings
Long push button A to select one gas setting. Long push button B to go back to the menu
Only the gases that are activated can be selected. Activate a gas during the dive via the GAS TABLE menu item.

2.3 Editing a Gas in the Gas Table

To edit the contents of the gases in the gas table or to activate and deactivate gases, navigate to the GAS TABLE menu found in SETTINGS.

Short push either button to navigate to the gas entry you want to modify. Long push button A to modify a gas entry.
Long push button B to step back into the menu.

Short push either button to navigate to the EDIT, ENABLE/DISABLE, or PRESET options in the MODIFY menu.
Long push button A to select the currently highlighted function in the center of the screen. Long push button B to return to the menu.

Editing Gas Content

To edit the contents of a gas in the gas table, short push either button to increment or decrement a digit. Long push button A to set the digit and move to the next digit.
Long push button B to delete the gas entry.

Enabling/Disabling a Gas

Enable, disable, or select a gas from a pre-programmed gas library in the gas modification menu.
Only enabled gases can be selected in the SELECT GAS menu.

Presets

The PRESET menu includes the following pre-programmed gases:

- TX10/85
- TX10/50
- TX15/55
- TX18/45
- NX21/35
- NX21(AIR)
- NX32
- NX35
- NX50
- NX80
- NX99(O2)

⚠ WARNING

Do not change gas settings unless you are familiar with NITROX and, respectively, TRIMIX/Mix Gas diving.

2.4 Pairing

Wireless Interface

The SYMBIOS HANDSET features an innovative wireless receiver capable of receiving data from multiple sources.
Those include:

- SYMBIOS Tank Pod
- SYMBIOS pO_2 Transmitter
- SYMBIOS pO_2 Transmitter, P-Port version
- SYMBIOS CM ECCR
- SYMBIOS GPS Buoy
- SYMBIOS wireless OEM interface

Pairing of wireless devices is done in menu/SETTINGS/PAIRING.

Halcyon App Pairing

Pair your Handset with the Halcyon App:

1. Open the Halcyon App on your phone.
2. Start your Halcyon computer menu and enter System/System Info/BT Code.
3. Write down the code.
4. Go to the Symbios icon at the bottom of your Halcyon app and click scan.
5. Locate your device and select it.
6. Enter the BT Code listed in the System menu of the Symbios unit.

⚠ WARNING

Always confirm the correct device is selected before pairing. Incorrect pairing may interfere with data transmission and system monitoring.

NOTICE

Leaving the Halcyon App active while paired to a device will maintain a live connection and may deplete the device battery. Close the app or pairing window, or disconnect from the device when pairing is not required.

Pairing a SYMBIOS Tank Pod

Pairing a SYMBIOS Tank Pod with Gas in the Gas Table

Pair the SYMBIOS Tank Pod in MENU → SETTINGS → PAIRING → TANK POD.

1. Install the SYMBIOS Tank Pod on a first stage. The SYMBIOS Tank Pod is suitable for tank pressures up to 300 bar.
2. Attach the first stage to the tank and open the tank valve.
3. Wait approximately 15 seconds for the transmitter to switch on.
4. The SYMBIOS HANDSET and the SYMBIOS Tank Pod should be in close proximity (ideally <40 cm/16 in).
5. Navigate to MENU → SETTINGS → PAIRING →TANK POD→TO GAS.
6. Short-press either button to navigate and select the gas entry that the SYMBIOS Tank Pod should be paired with.
7. Long push button A to select a gas entry.
8. Long push button A to start pairing.

If the pairing process is successful, the tank pressure will be shown.
To unpair the SYMBIOS Tank Pod, navigate to MENU → SETTINGS → PAIRING →TANK POD→TO GAS. Short push either button to select the gas you want to unpair. Long push button B to unpair the Symbios Tank Pod.

Pairing a SYMBIOS Tank Pod Independently from the Gas Table
It is possible to pair a SYMBIOS Tank Pod independently of a gas table. A SYMBIOS Tank Pod can be paired with either T1, T2, T3, or T4.
To pair a SYMBIOS Tank Pod :

1. Install the SYMBIOS Tank Pod on a first stage. The SYMBIOS Tank Pod is suitable for tank pressures up to 300 bar.
2. Attach the first stage to the tank and open the tank valve.
3. Wait approximately 15 seconds for the transmitter to switch on.
4. The SYMBIOS HANDSET and the SYMBIOS Tank Pod should be in close proximity (ideally <40 cm/16 in).
5. Navigate in the menu to MENU → SETTINGS → PAIRING →TANK POD→TO NUMBER.
6. Short push either button to navigate to T1, T2, T3, or T4.
7. Long push button A to select one of the menu entries.
8. Long push button A to start pairing.

Pairing the Trim Sensor

The SYMBIOS Tank Pod is equipped with a high-resolution, 3-axis accelerometer, which allows assessment of diver trim. After pairing a SYMBIOS Tank Pod, pair the trim sensor to either a gas entry in the gas table or an entry from the number table.

1. Ensure the SYMBIOS Tank Pod is pressurized and transmitting tank pressure data.
2. Navigate to MENU → SETTINGS → PAIRING → TRIM SENSOR.
3. Press and hold the top button to start pairing.

In the example above, the diver trim is indicated in the custom information field.

Calibrating the Trim Sensor

Calibration is required after pairing the trim sensor and each time the orientation of the SYMBIOS Tank Pod is changed with respect to the tank.

First, perform a horizontal calibration:

1. Pressurize the SYMBIOS Tank Pod and lay down the diving tank on its back.
2. Navigate to MENU → SETTINGS → TRIM SENSOR → HORIZONTAL.
3. Long push button A to perform the horizontal calibration.

In the second calibration step, perform a vertical calibration:

1. Orient the tank vertically with the valve up.
2. Navigate to MENU →SETTINGS → TRIM SENSOR → VERTICAL.
3. Long push button A to perform the vertical calibration.

NOTICE

A SYMBIOS Tank Pod can only be paired with one entry in the menu. It needs to be unpaired before pairing an already paired transmitter with a new gas entry.

⚠ WARNING

Even when using a Symbios Tank Pod Pod, always use a backup tank pressure gauge. Check the backup tank pressure gauge at regular intervals.

NOTICE

A trim sensor must be calibrated each time the orientation of the SYMBIOS Tank Pod in respect to the tank is changed; otherwise, the tilt reading may be incorrect.

Pairing a SYMBIOS CM ECCR

To pair the SYMBIOS HANDSET with a SYMBIOS CM ECCR:

1. Navigate to MENU → SETTINGS → PAIRING → CCR INTERFACE.
2. Turn on the SYMBIOS CM ECCR.
3. Press and hold the top button to start pairing.

NOTICE

After pairing the SYMBIOS CN ECCR Transmitter, the O_2 sensors have to be calibrated. Therefore, the sensors have to be exposed either to 100% O_2 or to air.

NOTICE

If a wireless transmitter is too far from the SYMBIOS HANDSET and data cannot be received, the values will be grayed out.

⚠ WARNING

Always use backup instruments to your SYMBIOS pO_2 Transmitter or SYMBIOS Tank Pod.

2.5 Compass Calibration

To perform a compass calibration, go to MENU → SYSTEM → CAL COMPASS.

The compass calibration takes approximately two minutes. Within these two minutes, move the SYMBIOS HANDSET in a "Figure 8" in front of you.

After the calibration, check the compass heading. If the compass heading is incorrect, recalibrate the handset. If the compass heading is still incorrect, there may be magnetic disturbances at your location. Go to a different location (outside a building and distant from electric power lines) and recalibrate the handset.

3 Diving

The SYMBIOS HANDSET can be used for recreational or technical diving. It is possible to use it for air, NITROX, or TRIMIX open circuit diving and closed circuit rebreather diving with a constant pO_2 setpoint.
The SYMBIOS HANDSET can also be used as a communication hub for the SYMBIOS CCR, offering live pO_2 sensor monitoring and information on the operating status of the rebreather.
The SYMBIOS HANDSET also offers support for sidemount diving (paired with SYMBIOS TANK PODS) and can operate in Bottom Timer mode, where no decompression calculations are performed.

Dive mode is automatically activated as soon as the diver reaches a depth >1 m/3 ft. After surfacing and after a two-minute timeout, surface mode is activated. You can adjust the time interval to enter surface mode.

During diving,

- Short push button A to switch between different screens.
The left lower field on the screen is the custom field. The default item shown in this field can be preset in MENU → SYSTEM → CF DEFAULT.
- Short push button B to switch between different items in the user-selectable custom field of the screen.
After 60 seconds, the item in the custom field will automatically switch back to the preset field in MENU → SYSTEM → CF DEFAULT, unless the user has selected the No Default option in the CF Default menu.
- Long push button A to enter the menu.
- Long push button B to perform the custom function (see MENU → SYSTEM → CUSTOM FUNC).
In open circuit diving mode or closed circuit bailout mode, the default setting for this function is to confirm a suggested gas switch.
In CCR FSP mode, the default setting for this function is to cycle the handset through Bailout, Closed Circuit Setpoint Low, and Closed Circuit Setpoint Hi.
In bottom timer mode, the default setting for this function is to start/reset the stopwatch.

The SYMBIOS HANDSET features different screens. Short push button A to switch between the various screens.
The main screen consists of four fields with a large font.

This example shows a screen during diving. The current depth is 22.8 m, the maximum depth achieved is 22.8 m, dive time is seven minutes, remaining tank pressure is 138 bar, and the remaining no-decompression limit is 13 minutes.

Short push button A to switch between different screens.

The second screen includes a compass scale and the ascent rate is indicated on the lower right field.

A third screen shows auxiliary data. This example shows the auxiliary information screen while diving.

Additional screens that show, for example, wireless information or a detailed decompression schedule can be enabled in the menu.

In the example above, the real-time depth profile is shown on the top screen, while the bottom screen displays the tissue compartment gas loading. Please find a detailed explanation about the tissue compartments gas loading screen later in the manual.

⚠ WARNING

The risk of decompression sickness (DSC) or Oxygen toxicity for any dive profile, even if you follow dive tables, or a dive computer, cannot be totally eliminated. This risk also depends on the individual diver's physiological condition, which can vary from day to day. The SYMBIOS HANDSET cannot account for these variations.

⚠ WARNING

We strongly advise that you stay within the exposure limits provided by the instrument to minimize the risk of DCS. However, even if you stay within recreational limits and the no-decompression limits given by this dive computer, DCS may appear.

⚠ WARNING

Before diving you should consult a physician regarding your fitness to dive.

⚠ WARNING

In recreational diving, do not dive with a pO_2 > 1.4 bar. Diving with a high pO_2 may lead to O_2 intoxication.
Never dive with a pO_2 > 1.6 bar. Diving with a pO_2 >1.6 bar will lead to O_2 intoxication.

⚠ WARNING

Do not dive deeper than what your current diving qualification allows.

⚠ WARNING

NITROX diving requires proper training. Do not dive with NITROX without a NITROX certification.

⚠ WARNING

Besides the decompression stops, there are no additional mandatory safety stops or error messages displayed when the decompression ceiling and time, or the recommended ascent rate are violated.

⚠ WARNING

Do not violate the ceiling depth during your decompression. In order to avoid doing so by accident, you should stay slightly below the ceiling depth. Staying deeper than the required ceiling depth will increase your total time to surface

⚠ WARNING

Do not use breathing gases other than air, unless you are properly trained and NITROX or TRIMIX certified.

⚠ WARNING

Do not use breathing gases other than air, in particular hypoxic TRIMIX breathing gases with a O_2 fraction of less than 20 %, unless you have been properly trained in using those and unless you have a TRIMIX certification.

3.1 Preparations Before the Dive

Switch on the SYMBIOS HANDSET before diving and complete all necessary settings changes on the surface. Check the SYMBIOS HANDSET for damage before diving. Before entering the water, check:

- Battery level
- Conservatism (gradient factors) settings
- Gas settings
- Time and date
- Units (imperial or metric)

Switch on the SYMBIOS HANDSET before you enter the water.

⚠ WARNING

Before each dive, check the battery power and recharge the battery if necessary. Recharge the battery when the computer has not been used for an extended time. Low temperatures can affect battery performance. Pay special attention to the charge level of the battery during cold-water dives.

⚠ WARNING

Before each dive, verify that the SYMBIOS HANDSET settings are correct.

⚠ WARNING

When using breathing gases other than air, analyze the breathing gas before the dive. Verify that the fractions in the gas table are correctly set.

⚠ WARNING

Set the SYMBIOS HANDSET to your preferred measurement units (imperial or metric).

3.2 Decompression Model

The SYMBIOS HANDSET calculates no-decompression times and decompression stops, depth, and duration using a mathematical decompression model which estimates the inert gas uptake and elimination during diving. The decompression model used in the SYMBIOS HANDSET is the Buhlmann ZH-L16C dataset. The model uses 16 hypothetical compartments for nitrogen and 16 for helium to estimate the inert gas loading of the body's tissues during a dive.

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

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

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

NOTICE

A lower GF High results in shorter No-Decompression Limits.

NOTICE

Diving with a lower GF High reduces the risk of decompression sickness.

NOTICE

GF Low is only relevant when doing dives requiring mandatory decompression stops. A GF Low setting lower than a GF high setting results in deeper stops.

⚠ WARNING

Do not change GF settings unless you have the required knowledge about decompression theory, the m-value concept, and gradient factors.

3.3 Time To Surface (TTS) Calculation

The SYMBIOS HANDSET calculates the Time To Surface (TTS) value based on parameters that affect the decompression calculations of the dive.
These parameters include:

- Inert gas loading at the beginning of the dive
- Dive profile (depth and bottom time)
- Gas used
- Partial pressure of oxygen when in closed-circuit dive modes
- The Gradient Factors selected by the user
- Ascent rate (an ascent rate of 9 m/29 ft per minute is used to calculate the TTS)

During the dive, the SYMBIOS HANDSET assumes that you will use all the gases marked as active on the gas table to calculate the TTS. If you lose access to any of the gases during the dive, remove the affected gas from the list of active gases in the gas table to ensure an accurate TTS calculation.

3.4 Training Mode

Training mode allows the user to create a simulated decompression plan while diving. This allows divers the opportunity to practice decompression stop diving in a real environment while still remaining within the NDL limit.
To enable the training mode, go to MENU → SYSTEM → TRAINING. Once enabled, a menu will be available while diving under the following conditions:

- Diver is within the NDL
- Depth is shallower than 30 m/100 ft.

To create a simulated decompression plan, long push button A to enter the menu and select Training. Choose one of the six simulated dive profiles, and the computer will generate a simulated decompression profile based on the user selection and the current tissue loading.

3.5 Dive Modes

The SYMBIOS HANDSET offers different dive modes which can be selected in menu→SETTINGS→DIVE MODE.
The user can choose between the following modes:

- OC – Open Circuit Mode, suitable for air, NITROX, and mixed gas diving
- CCR – Closed Circuit Rebreather Mode with pO_2 sensor readout
- CCR FIX SP – Closed Circuit Rebreather Mode with fixed pO_2 setpoints
- BOTTOM TIMER – Bottom timer mode; no decompression calculations are carried out
- SIDEMOUNT – Sidemount diving mode for diving with two separate tanks

NOTICE

In Bottom Timer mode, the dive computer is not performing any decompression calculations or compartment saturation updates.
It would be dangerous to use a dive computer in a different setting after using it in bottom timer mode as decompression information could be incorrect.
Therefore, after diving in Bottom Timer mode, you cannot change to a different dive mode within 24 hours.

3.6 Open Circuit Diving

To use the SYMBIOS HANDSET for open circuit diving, set the SYMBIOS HANDSET to open circuit diving mode in menu→SETTINGS→DIVE MODE→OC.

Diving with Air (NX21)

This is a typical example of the main screen during a dive with air (breathing gas NX21). The current depth is 22.8 m. The number in blue above the current depth indicates the maximum depth achieved during the dive, and the dive time is seven minutes. The remaining no-decompression limit is 13 minutes. The remaining tank pressure is 138 bar. The bar graph on the left side visualizes the tank pressure. The range of the bar graph is 0 to 300 bar. The bar graph on the right side displays the ascent speed (range 0 to 18 m/0 to 59 ft per min).

If the pO_2 of the breathing gas exceeds 1.6 bar or the maximum allowable pO_2 set by the diver, the depth indicator will start blinking white and red. The maximum pO_2 for the bottom gas can be set in menu→SETTINGS→OC PO_2 BOTT.
In this example, the remaining no-decompression limit is 0 minutes, and the remaining tank pressure is 108 bar.

In this example, the tank pressure is 45 bar and blinking red and white. If the tank pressure is below 50 bar, the pressure value and the bar graph are blinking red and white. The safety stop timer is also displayed.

A resettable stopwatch is available. You can activate it with a long push of button B (if the custom function is set to stopwatch) or from the main menu.

Decompression Diving

You may exceed the no-decompression limit during your dive. In this case, the SYMBIOS HANDSET will also display the decompression stop depth and the time to surface. In this example, the decompression stop depth is 6 m, and the estimated time to surface is five minutes. The current ascent rate is 10 m/min (bar on the right side, scale from 0 to18 m/0 to 59 ft per min maximum).

If you violate the current decompression stop depth, the current decompression stop depth will blink white and red.

Safety Stop Indicator

At the end of the dive, when there are no further decompression obligations, the SYMBIOS HANDSET proposes a three-minute safety stop at a depth between 3 and 5 m/10 to 16 ft. The safety stop timer counts from 3 minutes to 0, as long as you are at a depth between 3 and 5 meters. If you descend again to 10 m/30 ft depth or more, the safety stop counter will be reset to 3 minutes. The safety stop indicator can be enabled/disabled in menu→SYSTEM→SAFETY STOP.

Auxiliary Screen

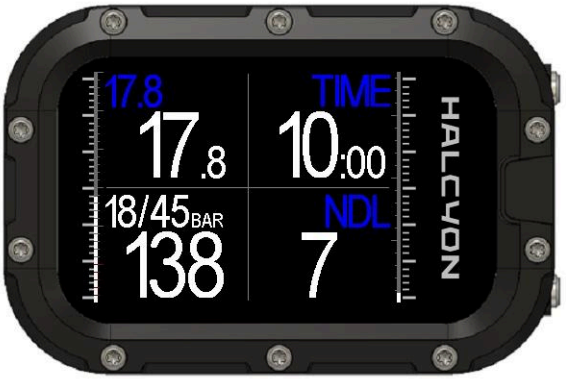
Short push button A to toggle screens. The auxiliary screens give additional information including maximum depth, current time and date, average depth, OTU, CNS%, and the current temperature. The gradient factor settings and the battery charge status are both displayed at the bottom of the screen.

Diving with NITROX

If a breathing gas other than air is used, this is also indicated. In this example, the current breathing gas is NITROX NX32,

containing 32% O_2, and 68% N_2. The remaining tank pressure is 138 bar.

Diving with TRIMIX



In this example, the current breathing gas is set to TRIMIX 18/45, containing 18% O_2, 45% He, and 37% N_2.

Gas Switches

To accelerate decompression, you can use different gas mixes. One gas frequently used for decompression is NITROX 50 (NX50). Before the dive, set the gas table according to the gases you plan to use during the dive (menu→GAS TABLE). The SYMBIOS HANDSET will automatically calculate the best gas for the current depth based on the max pO_2 selected by you. If the currently selected gas differs from the best, a popup field will prompt you to switch gases.
In this example, the currently selected gas is TRIMIX TX18/45. Based on the active g ases stored in the gas table, the SYMBIOS HANDSET proposes NX50 as the best gas. After performing the gas switch, select the correct breathing gas. There are two possible ways to select the best gas:

- Select NX50 in the gas table.
- Long push button A to select the best gas. This, however, requires that the custom function for Press and Hold button A is set to BEST gas (menu→SETTINGS→CUSTOM→BEST GAS)

Decompression Schedule Screen

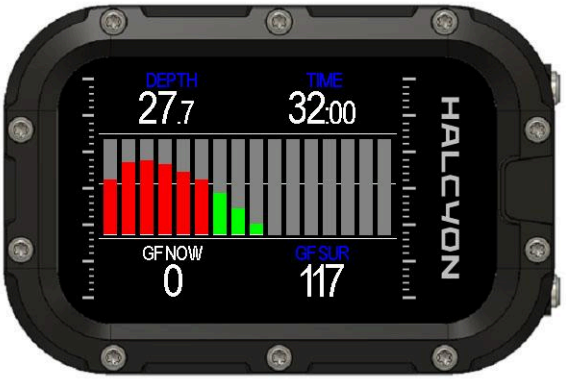
An optional DECO screen can be activated in menu→SYSTEM→DECO SCRN.

In the top row, the deco screen shows the current depth and dive time. The next three deco stops are shown in the middle section of the screen together with the best available gas for the stop depth (and its pressure if a tank pod is paired to the gas). The bottom row shows the custom field selected information on the left and the ceiling depth on the right.
Ceiling is the unrounded minimum depth that you can ascend to while still respecting the selected Gradient Factors.

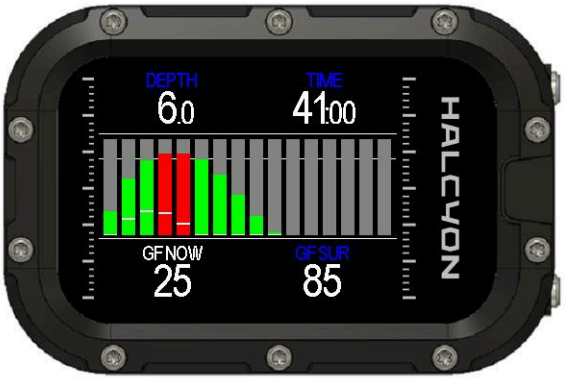
Tissues Loading Screen

An optional tissues loading screen can be activated in menu→SYSTEM→GF CHART.

In the tissues loading screen, you can monitor the gas loading of the 16 tissue compartments of the decompression model in real time. The fastest tissue compartment of the model is represented in the far left of the screen while the slowest tissue compartment is on the far right of the screen. In the example above, the loading of the tissues has not exceeded the Gradient Factor High set by you (all the tissues are green in color). The GF HI limit is represented by the line at the top of the screen in the example above.
On the lower right side, the GF surface value is displayed.



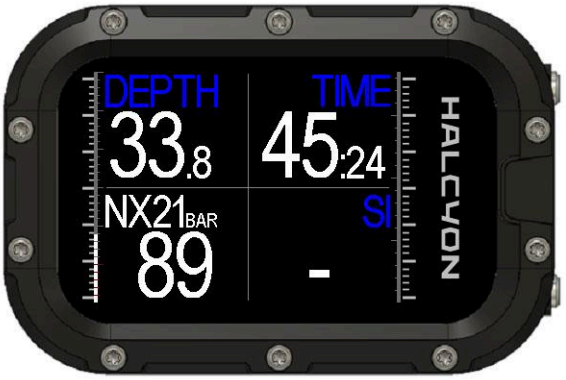
As you remain at depth, some of the tissue compartments have exceeded the Gradient Factor High that you set. The tissue compartments that have exceeded the limit are represented in red. The GF HI limit is represented by the line in the middle of the screen in the example above.



During the ascent and the required decompression stop, the tissue compartments are off-gassing. Given enough time, some of the tissue compartments will fall below the selected Gradient Factor HI (represented in green) while other tissue compartments will require more time to off-gas (represented in red). The GH HI limit is represented by the line near the top of the screen while the GF NOW value is represented by the short

white line within each tissue compartment bar.

After the Dive



After surfacing and a timeout of 2 minutes, the SYMBIOS HANDSET will switch to surface mode.

On the surface, the auxiliary screen shows additional data including the NO FLY timer and the current time and date.
The second and third rows show data from the last dive including average depth, OTU, minimum water temperature, and the current CNS% loading.

The bottom row shows the current Gradient Factor setting and the remaining battery capacity.
The NO FLY timer is also displayed on the custom information field on the main screen.

If you have violated a decompression stop depth ceiling and/or decompression obligations during the dive, a DECO warning is displayed at the end of the dive.

If you have enabled a safety stop (default setting), max depth of the dive was deeper than 10 m/30 ft, and the safety stop was not finished, a STOP warning is displayed.

3.7 Closed Circuit Diving

Preparation

NOTICE

To use the SYMBIOS HANDSET for closed-circuit diving, first set the SYMBIOS HANDSET to closed-circuit mode in

menu→DIVE SETTINGS→DIVE MODE→CCR.

In the next step, pair the SYMBIOS HANDSET with a wireless SYMBIOS CM ECCR interface. Various interfaces are available:

The diluent gas must be set in menu→SETTINGS→GAS TABLE→DIL 1-3

If you wish to have a tank pressure readout of the diluent tank, you must pair a tank pressure transmitter.

O_2 Sensor Calibration

CCR O_2 sensors need to be calibrated before diving.
Please consult your SYMBIOS CM ECCR user manual for specific instructions regarding the calibration of your O_2 sensors.

Diving

This is a typical example of the main screen during a CCR dive with air as diluent (NX21). The handset indicates the current average pO_2 of the sensors, the diving mode (CC), and the diluent used.The right bar graph indicates the tank pressure of the O_2 tank (98 bar). The left bar graph indicates the diluent pressure.
Short push button A to switch to the next screen. In this screen, the pO_2 of all the sensors is indicated. In this example, the sensor readout is 1.21, 1.2, and 1.19 bar. The SYMBIOS HANDSET is in closed-circuit mode and the selected pO_2 setpoint is 1.1 bar. The right bar graph indicates the tank pressure of the O_2 tank (98 bar). The left bar graph indicates the diluent pressure. The left the diluent pressure readout is indicated on the bottom of the screen.

If the no-decompression limit is exceeded, the handset indicates the decompression stop depth (in this example, 3 meters), the estimated time to surface (5 minutes in closed circuit (CC) mode and 7 minutes) in bailout mode (BO)).

If a pO_2 sensor reads a value above 1.6 bar, the value will blink white and red.

If a pO_2 sensor is reading a value below 0.3 bar pO_2, the value will blink red and blue.

If a pO_2 sensor is showing incorrect values, it can be excluded from the deco calculations. Sensors can be enabled/disabled from deco calculations in menu→SETTINGS→CCR SETTINGS→PO2 SENSORS

Bailout

If a pO_2 sensor displays values that are too low or too high, take immediate action—for example, bail out.
There are multiple ways to switch the SYMBIOS HANDSET to bailout mode:

- menu→CCR BAILOUT
- In certain rebreathers, the SYMBIOS HANDSET is automatically switched to BAILOUT mode when the rebreather is equipped with a BOV with a sensor; for instance, the SYMBIOS CM ECCR.

In this example, the SYMBIOS HANDSET is switched to BAILOUT which is indicated with BO at the bottom of the screen.

If the SYMBIOS HANDSET is set to BAILOUT mode, the computer will propose the best breathing gas (similar to the open circuit diving mode).

In this example, the current gas is set to NX21. The SYMBIOS HANDSET proposes that you switch to NX50.
After performing a gas switch, select the correct breathing gas. There are two possible ways to select the best gas:

- Select the proposed gas in menu→GAS TABLE.
- Long push button B to select the best gas. This, however, requires that the custom function for "Press and hold B button" is set to BEST GAS (menu→SYSTEM→CUSTOM FUNC→BEST GAS)

For more advanced functions of the SYMBIOS HANDSET while diving with a SYMBIOS CM ECCR, please consult your SYMBIOS CM ECCR user manual

NOTICE

After switching to bailout mode and the SYMBIOS HANDSET proposes a better breathing gas, select the best gas on the SYMBIOS HANDSET after performing the gas switch:
There are two possible ways to select the best gas:

- Select the proposed gas in menu→GAS TABLE.
- Long push button B to select the best gas. This, however, requires that the custom function for "press and hold button B" is set to BEST GAS (menu→SYSTEM→CUSTOM FUNC→BEST GAS)

NOTICE

Some wireless transmitters will not start transmitting data until the pO_2 within the loop exceeds at least approximately 0.4-0.5 bar.

NOTICE

A CCR sensor calibration will only be successful when the analog sensors can output at least 38mV @ 1 bar pO_2.

⚠ WARNING

If a pO_2 sensor is reading a pO_2 value below 0.3 bar, the value will blink white and blue. Take immediate action; for instance, bail out.

⚠ WARNING

If a pO_2 sensor is reading a pO_2 value above 1.6 bar, the value will blink white and red.. Take immediate action; for instance, bail out.

⚠ WARNING

If the values are displayed in grey, this means that the SYMBIOS HANDSET is not receiving pO_2 data from a wireless transmitter. Read your backup display and act immediately.

⚠ WARNING

Do not dive with a rebreather without proper training and certification.

3.8 Closed Circuit Diving with Fixed Setpoint

The CCR FIX SP mode can be used for closed circuit diving with a fixed pO_2 setpoint. This is the preferred mode when the SYMBIOS HANDSET is not paired with a CCR.
In this mode, divers can pair the dive computer with tank transmitters for O_2 as well as diluent.

NOTICE

The setpoints can be selected in menu→CCR SETPOINT.

NOTICE

Switch between CCR and Boilout in menu→CCR Bailout.

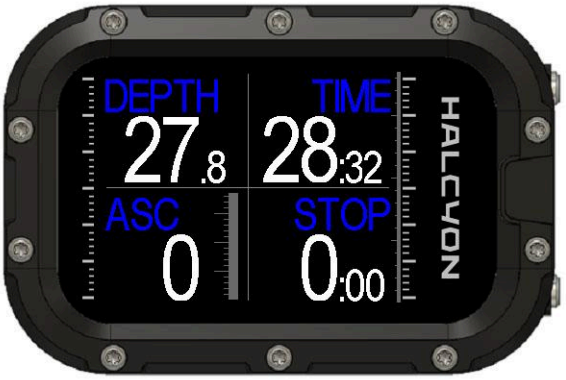
This is an example of the screen during closed circuit diving with a fixed setpoint. The left bar graph indicates the tank pressure of diluent (171 bar), and the right bar graph indicates the tank pressure of the O_2 tank (98 bar). Tank pod pressure transmitters are required to indicate the pressure of both oxygen and diluent gases.

If the no-decompression limit is exceeded, the computer indicates the decompression stop depth (in this example, 3 meters), the estimated time to surface (5 minutes) in closed- circuit (CC) mode, and the estimated time to surface (7 minutes) in bailout mode (BO).
The closed-circuit time to surface estimate is based on the current pO_2 setting. Bailout time to surface estimation is based on the enabled gases in the gas table.

Example of a screen during open circuit bailout
Long push button B to cycle between CC and BO mode, Low Setpoint, and High Setpoint.

3.9 Bottom Timer

To use the SYMBIOS HANDSET as a bottom timer, first set the SYMBIOS HANDSET to bottom timer mode in menu→SETTINGS→BOTTOM TIMER.



This is an example of the bottom timer screen. The top fields show depth and dive time.
The right field in the second row shows the stopwatch.
The left field in the second row can be toggled between different values:

- Short push button B to toggle the lower left field between:
  - Current time and date
  - CNS% (when a tank pod is paired to a gas in the gas table)
  - pO_2 (when a tank pod is paired to a gas in the gas table)
  - Maximum depth
  - Average depth
  - Tank pressure of a transmitter paired to gas in the gas table

- Long push the lower button to start/reset the stopwatch

A heading can be selected in menu→HEADING. If a heading is selected, arrows next to the heading indicate toward the selected heading.

⚠ WARNING

In bottom timer mode, the SYMBIOS HANDSET does not perform decompression calculations.

3.10 Sidemount Diving

The sidemount diving mode is used for diving with more than one sidemount tank. For sidemount diving with just one tank, open circuit diving mode is the preferred mode.

The left tank is the first gas entry in the gas table. The right tank is the second gas entry in the gas table.
The left tank transmitter needs to be paired with the first entry in the gas table. The right tank transmitter needs to be paired with the second entry in the gas table.

This sample screen shows a depth of 24 meters and 18 minutes of dive time. The remaining no decompression limit is 5 minutes. In this example, the remaining tank pressure of the left tank is 137 bar, and the remaining tank pressure of the right tank is 123 bar. Both pressure values are also visualized with the left and right bar graph.

This sample screen shows a depth of 36.7 meters and 23 minutes of dive time. The current time to surface is 7 minutes, and the next deco stop is at 6 meters.

If the difference of the tank pressure between the two sidemount tanks is greater than 30 bar, you will be notified with a popup window.

NOTICE

A popup message will notify you of a pressure difference greater than 30 bar between the two sidemount tanks.
This function is only available, however, when the fraction of the two gases is the same and no decompression gas is carried.

3.11 Navigation

In menu→HEADING, you can select and/or edit a target heading. In menu→SYSTEM→COMP DECLINATION, you can set a compass declination.

In this example, the selected target heading is 127° and the current heading is 115°.
A right-pointing arrow indicates that the target heading is right from the current heading.

Two arrows indicate that the current heading is equal to the target heading.

On this screen, the compass is represented with a moving scale. The 127° target heading is marked with a yellow line. The current heading is marked with a small triangle.

NOTICE

Before diving, make sure that the compass is correctly calibrated. See chapter 3.5 for compass calibration instructions.

3.12 Alarms and Notifications

Potentially dangerous parameters are highlighted with blinking colors. Additionally, pop up messages notify you of dangerous situations.

Tank pressure is too low: In this example, the tank pressure is 45 bar and blinking red and white. If the tank pressure is below 50 bar, the pressure value as well as the bar graph will blink red and white.

Decompression ceiling violation: The ceiling value will blink white and red and a pop up warning will be visible.

Gas MOD exceeded: If the selected pO_2 for the gas is exceeded, the depth value will blink white and red.

Safety stop incomplete: If the safety stop is not completed, a yellow warning will be visible at the end of the dive when the computer enters surface mode.

Tissues saturation reset: If the user performs a tissue saturation reset, a warning will appear while on the surface.

Battery low: When the battery level of the handset is below 15%, a battery low warning alert will appear.

Notifications in Sidemount Mode

SWITCH SIDE will appear as a pop up if the tank pressure between left and right tank differs by more than 30 bar.

NOTICE

This function is only available if both the left and right tanks are equipped with tank pods paired to the SYMBIOS HANDSET.

Alarms in CCR mode

In CCR mode, one pO_2 level below 0.3 bar: pO_2 value of a sensor will blink red and blue.

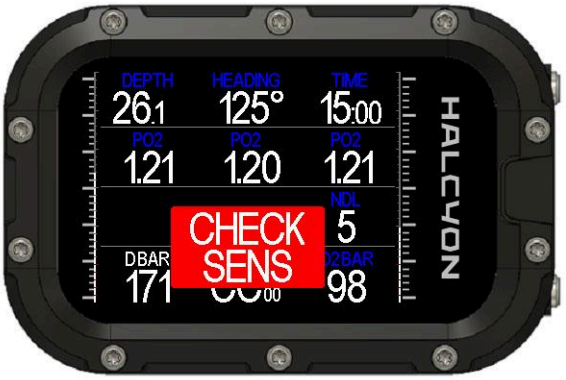
In CCR mode, one or more pO_2 levels above 1.6 bar: pO_2 value of a sensor will blink white and red.

In CCR mode, average pO_2 value below 0.3 bar: PO2 LOW warning will pop up.

In CCR mode, average pO_2 value above 1.6: PO2 HIGH warning will pop up.

NO CCR SIGNAL will pop up when no wireless data is received for more than 30 seconds.

BAT LOW will pop up when the remaining battery capacity of the CCR is less than 20%.



CHECK SENS will pop up when the controller and sentinel read pO_2 values which differ by more than 0.1 bar.

SCRUB LOW will pop up when the scrubber timer is used and the remaining scrubber time is less than 15%.

For more advanced notifications while diving with a SYMBIOS CM ECCR, please consult the SYMBIOS CM ECCR user manual.

NOTICE

Push and hold both buttons to confirm an alarm and deactivate a pop up message or vibration alarm.

3.13 Vibration Alarm

The SYMBIOS HANDSET features an integrated vibration motor to alert you of potentially dangerous situations.

Those include:

– Tank pressure below 50 bar
One vibration signal every 24 seconds
– Tank pressure below 25 bar
One vibration signal every 8 seconds
– Ceiling violation
One vibration signal per second
– pO_2 too high or too low:
One vibration signal per second

Moreover, vibration is also used to prompt the diver to do a:
– Gas switch
One vibration signal every 24 seconds
– Tank switch in sidemount diving mode when the tank pressure difference between the two tanks is greater than 30 bar
One vibration signal every 24 seconds

Vibration alarms can be enabled/disabled in menu→SYSTEM→VIB ALARMS

NOTICE

Push and hold both buttons to confirm an alarm and deactivate a pop up message or vibration alarm.

NOTICE

If new potentially dangerous situations occur, vibration alarms will be triggered even if previously a vibration alarm was confirmed.

4 Specifications

4.1 General Specifications

– Maximum operational depth: 120 m/394 ft
– Full color transflective sunlight readable TFT Screen, 320x240 pixel, RGB
– Digital Pressure Sensor, 300 m/984 ft rated
– Depth resolution: 0.1 m/4 in
– Temperature resolution 0.1 °C/32 °F
– Digital compass, tilt compensated
– 2 channel magnetic wireless interface,125 kHz
– Bluetooth interface
– USB interface
– Housing made from glass fiber reinforced polyamide
– The depth of equipment certification according to EN250:2014 is 50 m/164 ft.
– The air supply for equipment compliant with EN250:2014 shall meet the requirements for breathable air in accordance with EN 12021.

4.2 Decompression Algorithm

– Bühlmann ZH-L16C decompression model
– 16 compartments for nitrogen, 16 compartments for helium
– Gradient factors
– No-fly time indicator
– Automatic altitude adaptation

Air/NITROX/TRIMIX open circuit diving:
– 5 gas settings for open circuit diving
Closed circuit rebreather diving:
– 3 diluent gas setting for closed circuit diving

4.3 Electrical Specifications

– 32 bit microprocessor
– Rechargeable Li Ion battery, 4.2 V, 1000 mAh
– Rechargeable via USB, maximum charge current 350 mA

– Autonomy in standby mode: up to 1 year
– 25 hours (display brightness set to 5) operation during diving
– Charge time: 4 hours
– Interface: Wireless, Electromagnetic

4.4 Dive Data Storage

– 32 GB storage capacity
– Dive data storage interval in dive mode: 5 seconds
– Memory accessible via USB (SYMBIOS HANDSET is recognized as Mass Storage Device)
– Memory also accessible via wireless BT5.0 interface

4.5 Testing and Validation

The SYMBIOS HANDSET was tested according to various EU Normatives and has passed those tests. The SYMBIOS HANDSET is CE compliant. For more information, please see sections CE and FCC.
In addition to many test dives in both salt water and fresh water, numerous simulated dives were carried out in the laboratory and in the hyperbaric chamber to validate the correct function of the computer and the correct implementation of the decompression model. The code was validated against Eric C. Baker's implementation of the Buhlmann ZH-L16 algorithm with Gradient Factor extension. The SYMBIOS HANDSET, together with the SYMBIOS Tank Pod, were tested according to EN250:2014. Prior to shipment, every SYMBIOS HANDSET is tested for water and pressure resistance.

5 Troubleshooting

The SYMBIOS HANDSET does not switch on.

– Charge the SYMBIOS HANDSET for at least three hours. If the SYMBIOS HANDSET is completely discharged, it loses all decompression information and is reset to default settings. It should restart shortly after charging has started.

The SYMBIOS HANDSET is connected to a USB charger but does not charge.

– Check the cable and the connector pins for corrosion and dirt. Clean if possible.
– Use a charger that can output at least 800 mA and a voltage of 5 V.

The SYMBIOS HANDSET is outside the water, but it is in dive mode and the displayed depth is greater than 0.5 m.

– This can happen when the SYMBIOS HANDSET was exposed to a sudden drop of atmospheric pressure. In this case, reset the SYMBIOS HANDSET. Attach a USB cable to the SYMBIOS HANDSET and plug it into a charger. In this specific case, the SYMBIOS HANDSET will be reset after a few seconds. All decompression information and user settings are lost after a reset.

The tilt angle is incorrect.

– Check if the tilt sensor is paired.
– Perform a calibration of the tilt sensor.

The tank pressure is not reported correctly.

– Check to determine that the SYMBIOS Tank Pod is paired correctly.
– Check the battery voltage of the SYMBIOS Tank Pod in the pairing menu.
– Verify that the SYMBIOS Tank Pod is pressurized.

– Verify that the SYMBIOS Tank Pod is within the maximum transmission range of 90 cm/35 in.

6 Firmware Update

Complete the following steps to perform a firmware update:

1. Connect the SYMBIOS HANDSET to your PC.
2. The SYMBIOS HANDSET will be recognized as a mass storage device.
3. Download the latest firmware.
4. Unpack the firmware zip file: RNO_HUD_FW_Vx_xx_xx.zip.
5. Copy the files from the zip file to the mass storage device.
6. Safely remove the mass storage device.
7. Disconnect the SYMBIOS HANDSET from your PC.

The SYMBIOS HANDSET will then update with the new firmware.

Firmware updates can also be performed using the HALCYON Dive APP.

NOTICE

The version of the firmware on your SYMBIOS HANDSET is shown in menu→SYSTEM→FIRMWARE VERSION.

NOTICE

Make sure that the SYMBIOS HANDSET is fully charged before performing a firmware update.

⚠ WARNING

All decompression information and settings may be lost after a firmware update.

⚠ WARNING

Avoid a firmware update between repetitive diving. Performing a firmware update between dives will cause the SYMBIOS HANDSET to lose decompression data and the remaining compartment inert gas loadings from the previous dives; thus, the no-decompression times and decompression calculations for the next dives may be incorrect.

7 Warranty

HALCYON LIMITED WARRANTY

HALCYON warrants that during the warranty period HALCYON or a HALCYON authorized service center will, at its sole discretion, remedy defects in materials or workmanship free of charge either by repairing, replacing, or refunding, subject to the terms and conditions of this limited warranty.

Warranty period(s):

– Begins at the date of original purchase.

– Includes two years for products unless otherwise specified.

– Includes one year for accessories.

– Includes six months for rechargeable batteries.

The limited warranty does not cover:

– Normal wear and tear such as scratches, abrasions, alteration of the color, or defects caused by rough handling.

– Defects or damage resulting from use contrary to intended or recommended use, improper care, negligence, and/or accidents such as dropping or crushing.

– Printed materials and packaging.

The limited period is not enforceable if the product or accessory:

- Has been opened.
- Has been repaired using unauthorized spare parts.
- Has been repaired by an unauthorized service center.
- Has been exposed to chemicals including, but not limited to, sunscreen sprays, lotions, creams, and insect repellents.

7.1 Limitations of Liability

With The Purchase Of The Symbios Handset, You Hereby Agree To The Following Exclusions And Limitations Of Halcyon 'S Liability To You.

You Agree And Understand That Scuba Diving Is A High Risk, Possibly Life-Threatening Activity, And The Use Of The Symbios Handset Is In No Way A Substitute For Proper Scuba Training And Valid Certification.

Because Of The Number Of Variable Scenarios, As Well As The Different Degrees To Which They May Affect Individuals Engaged In Scuba Diving, Halcyon Does Not Warrant Nor Does It Guarantee That Use Of This Product Will Prevent Decompression Sickness Or Any Other Condition Or Injury Incurred While Using This Product.

These Influencing Variables May Include, But Are Not Limited To, Dehydration, Obesity, Advanced Age, Physical Injuries, Or Other Physical Or Mental Conditions Of The Diver, As Well As Environmental Extremes Of Heat Or Cold, Poor Training, Or Unsound Diving Practices, Any Of Which May Promote The Onset Of Decompression Sickness Or Cause Other Harmful Effects.

The Symbios Handset Was Tested According To En13319 And Was Evaluated In Numerous Test Dives. However, There May Still Be Errors In The Software, That Were Not Identified Yet And That May Lead To Malfunctions Of The Symbios Handset. Therefore, Halcyon Recommends That You Always Carry And Use A Backup Dive Computer Or A Dive Table In Combination With A Depth Gauge And A Watch.

You Agree That You Understand And Accept All Risks Associated With Diving, And That Halcyon, Its Elected And Appointed Officials, Employees, Volunteers, Or Others Working On Behalf Of Halcyon
Are Not Liable To You Or Any Other Person, Including Your Heirs, Executors Or Personal Representatives, For Any Loss, Damage, Cost, Expense Or Claim Arising From, Caused By, Or Relating To Your Personal Injury Or Death While Diving, Even If Your Personal Injury Or Death Is Caused, In Whole Or In Part, And Directly Or Indirectly, By The Purchase Of The Symbios Handset Or Your Use Thereof, Or Arising From Breach Of The Warranty, Breach Of Contract, Negligence, Strict Tort, Or Any Other Legal Or Equitable Theory, Even If Halcyon Knew, Or Should Have Known Of The Likelihood Of Such Damages, And Regardless Of Whether Or Not The Head Up Diving Computer Functioned Properly Or Was Defective In Any Way. Halcyon Shall Not Be Liable For Delay In Rendering Service Under The Limited Warranty, Or Loss Of Use During The Time The Product Is Being Repaired.

You Hereby Irrevocably Waive And Release Halcyon , Its Elected And Appointed Officials, Employees, Volunteers, Or Others Working On Behalf Of Halcyon From Any Liability Or Obligation To You Or Your Heirs,

Executors Or Personal Representatives For Any Loss, Damage, Cost, Expense, Or Claim Arising Out Of, Caused By Or Relating To Your Personal Injury Or Death While Diving, Even If Your Personal Injury Or Death Is Caused, In Whole Or In Part And Directly Or Indirectly, By The Symbios Handset Or Your Use Of The Symbios Handset, Or Arising From Breach Of The Warranty, Breach Of Contract, Negligence, Strict Tort, Or Any Other Legal Or Equitable Theory, Even If Halcyon Knew, Or Should Have Known Of The Likelihood Of Such Damages, And Regardless Of Whether Or Not The Symbios Handset Functioned Properly Or Was Defective In Any Way.

You Must Read And Accept The Agreement For All Limitations And Exclusions Of Halcyon 'S Liability To You.

8 Notices

8.1 CE Compliance

The SYMBIOS HANDSET complies with:

– EN250:2014: The combination of a Halcyon SYMBIOS HANDSET and the Halcyon SYMBIOS Tank Pod is a personal protective equipment under the Regulation (EU) 2016/425. Polski Rejestr Statków S.A, al. Gen. Józefa Hallera 12680-416 Gdansk, Poland, Notified Body No. 1463 performed EU type-examination (Module B) of the Regulation (EU) 2016/425 Personal Protective Equipment and issued EU type-examination certificate Nr CW/PPER/73/08/2025. The EC Type examination of the SYMBIOS HANDSET together with the Halcyon SYMBIOS Tank Pod was conducted by Polski Rejestr Statków S.A, al. Gen. Józefa Hallera 12680-416 Gdansk, Poland, Notified Body No. 1463 . In this case, the SYMBIOS HANDSET is in conformity with EN250:2014 – respiratory equipment - open circuit self-contained compressed air diving apparatus – requirements, testing and marking – clause 6.11.1 Pressure Indicator for use with equipment that is compliant with EN12021. The air supply for equipment compliant with EN250:2014 shall meet the requirements for breathable air in accordance with EN 12021. The depth of equipment certification is 50 m/164 ft.

– The HALCYON SYMBIOS HANDSET or Symbios HUD in combination with the Halcyon SYMBIOS Tank Pod are subject to the conformity assessment procedure conformity to type based on the quality assurance of the production process plus supervised product checks at random intervals (Module D) under surveillance of the Polski Rejestr Statków S.A, al. Gen. Józefa Hallera 12680-416 Gdansk, Poland, Notified Body No. 1463

– EN13319 (European standard for depth gauges) Regulation (EU) 2014/53, Radio Equipment Directive

– EN 300 330:2017 V2.1.1 (Radio spectrum), Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU. EN 55032:2015 + A1:2020 + A11:2020 (EMC), Electromagnetic compatibility of multimedia equipment

– Emission requirements

The full text of the EU declaration of conformity is available at https://halcyon.net/support under

Instructions/Manuals > EU Declaration of Conformity Documents.

8.2 Trademark

Halcyon® and the H logo® are registered trademarks of Halcyon Manufacturing, Inc. The Halcyon Cinch is protected by U.S. Patents Nos. 8,398,337 and 10,407,142 and a corresponding European Patent. Halcyon common law trademarks include, without limitation, Symbios™, Multifunction Compensator™, Cinch™, H-Lok™, X-Connector™, Eclipse™, Explorer™, and Evolve™ wings, BC Storage Pak™, Active Control Ballast™, Diver's Life Raft™, Surf Shuttle™, No-Lock Connector™, Helios™, Proteus™, and Apollo™ lighting systems, Scout Light™, Pathfinder™ reels, Defender™ spools, and the RB80™ rebreather.

8.3 Copyright

This manual is copyrighted, all rights reserved. It may not, in whole or in part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine readable form without prior consent in writing from Halcyon Manufacturing, Inc.
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8.4 Disclaimer

Halcyon Manufacturing, Inc. reserves the right to make changes or improvements to its products, manuals, and specifications at any time without prior notice.
While every effort has been made to ensure accuracy, Halcyon Dive Systems assumes no liability for errors or omissions in this document.
Users are responsible for familiarizing themselves with the latest version of this manual and for following all applicable safety and maintenance instructions.

8.4.1 Translation Note

This manual may be available in multiple languages to comply with regional requirements. In the event of discrepancies between translations, the English version shall prevail.

9 Identification

The SYMBIOS HANDSET is laser marked with a label containing information about the manufacturer, the model, CE and FCC symbol, and the serial number indicating also the manufacturing year and month. The first two digits of the serial number are the last two digits of the production year.

9.1 FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for

compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

10 Information

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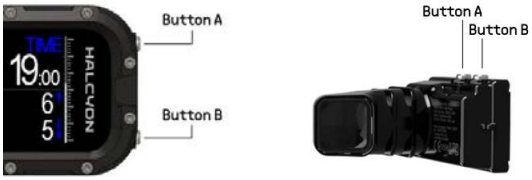
80-299 Gdansk, Poland

Appendix: Menu Tree

For a detailed visual overview, see the menu tree on the next page.

You can also view or download the Menu Tree as a separate PDF for reference or printing:
https://symbios.halcyon.net/files/Halcyon-Symbios-Menu-Tree-Full.pdf

Press and hold button A to enter the menu



Once in the menu
Press and release button A to navigate up in the menu
Press and release button B to navigate down in the menu
Press and hold button A to perform the function indicated in the top row of the screen
Press and hold button B to perform the function indicated in the bottom row of the screen

Note: This presentation is based upon surface mode. While diving the menu can vary slightly to reduce complication.

Quick Tips – Using the Dive Computer

Cancel Warnings & Alarms
–While diving, press and hold both Buttons A and B simultaneously to cancel active warnings or alarms

Custom Function Button (Button B)
–Button B can be configured in the SYSTEM → CUSTOM FUNC menu
–Available options: Best Gas, Stopwatch, Waypoint, or set to Off

CCR FSP Mode Behavior
–When operating in CCR FSP mode, Button B is automatically assigned to toggle between High Setpoint, Low Setpoint, and Bailout

- **STOP WATCH**
  Start/Reset to stop watch
- **RESET ⊘ DEPTH**
  Reset the average depth
- **GAS SELECT**
  Select a gas from the gas table
- **CCR BAILOUT**
  Only visible in FSP and CCR (when paired)
  - **AUTO**
    Automatic switch between Bailout and closed Circuit mode only available if the CCR has an automatic BO/CC sensor
  - **CC**
    Closed Circuit mode (overrides auto setting)
  - **BAILOUT/OC MODE**
    Bailout/OC mode (overrides automatic setting)
- **CCR SETPOINT**
  Only Available in menu while in CCR FSP Mode
  - **SETPOINT 1.2 HIGH**
    Select or edit high PO2 setpoint when diving in CCR FSP mode
  - **SETPOINT 0.7 LOW**
    Select or edit low PO2 setpoint when diving in CCR FSP mode
- **HEADING**
  Select or edit up to 3 headings
- **WAYPOINT**
  Select or save up to 64 waypoints
  This function requires a GPS signal
- **TRAINING**
  Only available in OC/SM mode
  - **PROFILES RESET**
    Only available when a profile is selected
  - **TRAINING PROFILES 1–6**
- **SETTINGS**
  - **DIVE MODE**
    - **OC**
      Open Circuit diving mode
    - **CCR**
      Closed Circuit Rebreather diving mode
      This mode only works with connected rebreather
      Use FSP mode for non-connected Rebreather
    - **CCR FIX SP**
      Closed Circuit Rebreather diving mode with Fixed Setpoints
    - **SIDEMOUNT**
      Sidemount diving
    - **BOTTOM TIMER**
      Bottom timer mode
      In this mode, no deco calculations are carried out
      After diving with the bottom timer mode, other dive modes cannot be enabled for a period of 24h
  - **EDIT GASES – MODIFY**
    - **EDIT**
      Allows to edit the O2 and He fraction of one gas
    - **ENABLE/DISABLE**
      Enabled gases are available for quick selection and used to calculate decompression obligation.
    - **PRESET**
      Allows to select a gas from the pre-programmed gas library
  - **GFL/GFH**
    Set gradient factor high and low
    The default is 45/80
  - **OC PO2 DECO**
    Used to suggest the best gas based upon the PO2 of the gas with the highest PO2 among enabled gases
  - **OC PO2 BOTT**
    Maximum allowed oxygen partial pressure for MOD calculation of the bottom gas
    Bottom gas is defined as the gas with the lowest oxygen fraction within the enabled gases for the dive
  - **CCR SETTINGS**
    - **SCRUBBER**
      - **TIMER**
        Shows the remaining scrubber time in min and allows to reset the timer
      - **ENABLE/DISABLE**
        Enables or disables the scrubber timer
      - **TIMER MAX**
        Sets the max allowable use time of the scrubber
    - **PO2 SENSOR**
      Only available with connected CCR
      Enabling or disable O2 sensors to include/exclude them from deco calculations

- **TRIM SENSOR** — *Only showing when a trim sensor has been paired*
  - **CALIBRATE**
    - **HORIZONTAL** — *This function requires that the dive computer is paired with a combined tank pressure/trim sensor and that the sensor is pressurized Bring the diving tank into a horizontal position, where the divers tank(s) is/are lying horizontally on the back use this menu item to perform then a horizontal calibration of the trim sensor*
    - **VERTICAL** — *This function requires that the dive computer is paired with a combined tank pressure/trim sensor and that the sensor is pressurized bring the diving tank into a vertical position, where the divers tank(s) is/are standing vertically with the tank valves up use this menu item to perform then a vertical calibration of the trim sensor*
- **GFL/GFH** — *Allows the diver to select or modify the Gradient Factor Low and Gradient Factor High. The default setting is 45/80*
- **PAIRING**
  - **TANK POD**
    - **TO GAS** — *Pair a tank pod with a gas setting in the gas table*
    - **TO NUMBER** — *Pair a tank pod to T1, T2, T3 or T4 (indipendent of the gases in the gas table)*
  - **CCR INTERFACE** — *Pair a CCR interface*
  - **GPS** — *Pair a GPS buoy*
  - **TRIM SENSOR** — *Pair a trim sensor*
  - **DPV** — *Pair a Diver Propulsion Vehicle*
  - **GAS ANALYZER** — *Pair a Gas Analyzer*
- **LOGBOOK** — *This sub menu contains all previous dives Each dive can be selected to display dive relevant information including the depth and temperature profile or the pO2 sensor signals in CCR mode*
- **SYSTEM**
  - **COMP CAL** — *Calibration of the internal compass Activate this menu item and move then the computer in a figure 8 in front of you*
  - **COMP DECLIN** — *Setting of the compass declination*
  - **BRIGHTNESS** — *Display brightness, default setting is 5*
  - **TIME** — *Set time*
  - **DATE** — *Set date*
  - **UTC** — *Set UTC time zone*
  - **SAFETY STOP** — *Enable/disable a safety stop If enabled, at each dive with a maximum depth >10m/30ft, the diver will be prompted to do a 3 min safety stop at a depth between 3 and 6m*
  - **LAST STOP** — *Allows user to set last stop at 3m or 6m*
  - **VIB ALARM** — *Enable/disable vibration alarms*
  - **LANGUAGE** — *Language setting*
  - **UNITS** — *Metric/imperial units*
  - **DENSITY**
    - **EN13319** — *Depth calculation is based on EN13319, where 1 bar pressure increase equals to 10m*
    - **SEA WATER**
    - **FRESH WATER**
  - **STYLE**
    - **CLASSIC**
    - **MODERN**
  - **SLEEP TIMEOUT** — *Time after which the dive computer switches into sleep mode*
  - **DIVE TIMEOUT** — *Time after which the dive computer switches from dive mode into surface mode*
  - **ORIENTATION** — *Orientation of the Handset on left or right where the buttons are facing the diver's hand*
- **SLEEP** — *Selection shuts down the computer*

WIRELESS SCRN

OFF

ADDITIONAL
Enables a wireless screen, which shows information from all transmitters in close vicinity, that are NOT paired with the dive computer. This is the preferred setting, if you want to monitor for instance the tank pressure of your buddy.

ALL
Enables a wireless screen, which shows information from all transmitters in close vicinity.

BUDDY SCREEN
Provides access to buddy's wireless data transmission

DECO SCRN
Enable or disable a deco screen, which show additional deco information including ceiling, deco stops, current gradient factor and surface gradient factor

DEPTH CHART
Provides graphical representation of dive profile

TRAINING
Enable or disable the training simulation function, which allows users to create and perform simulated decompression stops

CUSTOM FUNC
Setting of the default function of "Press and hold the button B

BEST GAS
Press and hold the button B is used to confirm the suggested gas switch

STOP WATCH
Press and hold the button B is used to start/reset the stop watch

WAYPOINT
Press and hold the button B is used to save a waypoint
This requires reception of a gps signal

OFF

CF DEFAULT
Enable/disable the default which governs the screen that will be present 30s after viewing other screens

NO/DEFAULT
Setting no default will maintain the selection and not return to any particular screen

ACTIVE GAS
Custom field will return to active gas as the default after 30s

T1
Custom field will return to T1 as the default after 30s

T2
Custom field will return to T2 as the default after 30s

T3
Custom field will return to T3 as the default after 30s

T4
Custom field will return to T4 as the default after 30s

CF CONTENT
Enable/disable the items for the custom field (lower left field on the left side)

AVERAGE DEPTH
Deactivated

BATTERY SOC
State of charge of the inbuilt battery

CNS
CNS O2 accumulation

TEMPERATURE

ASCENT SPEED

HEADING

PO2
Only in bottom timer mode
Current PO2 of gas being used

GF NOW
Current gradient factor

GF SURFACE
Hypethetical gradient factor if one would surface at this point of the dive

GAS DENSITY
Density of active gas being breathed

CCR FO2
Available in FSP and CCR mode

DILUENT PO2
Only available in CCR mode

CCR SETPOINT
Only available in CCR mode
Present by default in FSP

CEILING
Decompression ceiling

- **TTS +5**
  Total time to surface after 5min at current depth
- **LAMP SOC**
  State of charge for connected light
- **LAMP RRT**
  Remaining run time of connected light
- **SGC**
  Surface Gas Consumption
  Not present in CCR mode
- **RGT**
  Remaining Gas Time
  Not present in CCR mode
- **BUDDY GAS**
  Gas reading of nearby transmitter
- **CCR FO2**
  O2 fraction of the breathing gas in the loop
- **TIME**

CCR DIAGNOSIS
Only available in CCR mode while paired with a rebreather

SYSTEM INFO

- **SERIAL ID**
  Serial number of your Symbios Handset
- **FIRMWARE**
  Firmware number of your Symbios Handset
- **BUILD DATE**
  Build date of the firmware of your Symbios Handset
- **BT CODE**
  6 digits BT code of your Symbios Handset
- **RESET COMPTS**
  Can be used to reset the compartments of your Symbios Handset.
  Press and hold both buttons for 5s to confirm
- **RESET SETTINGS**
  Can be used to reset the settings of your Symbios Handset.
  Press and hold both buttons for 5 s to confirm
- **DIAGNOSIS**
  Information about your Symbios components

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