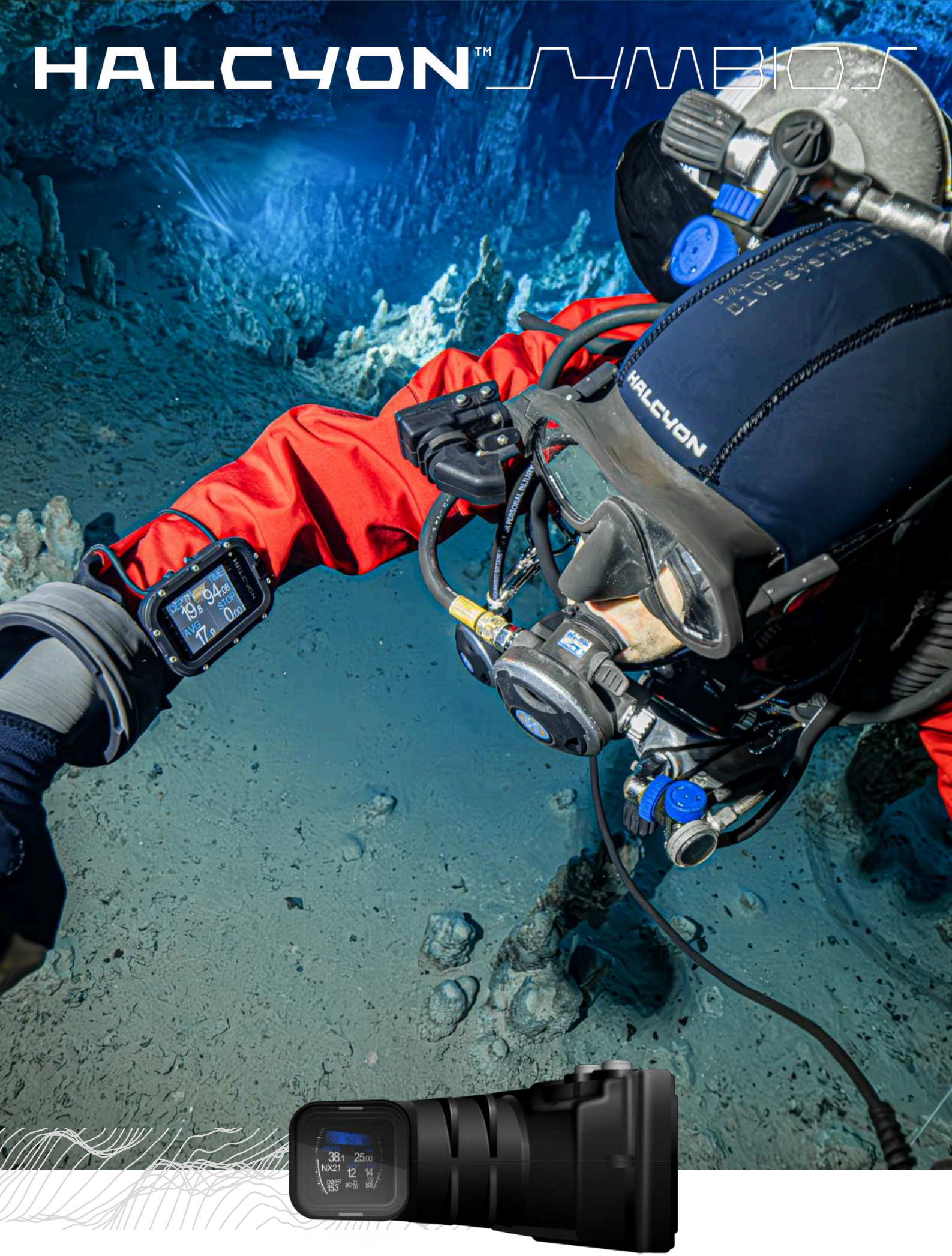
HALCYON™ AMBIOT



HALCYON™ WORLDWIDE
DIVE SYSTEMS EST.96

ON

_HUD MANUAL

v2.1.26 - Rev. 10/26

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Welcome to the future: Symbios HUD manual

Symbios HUD at a glance

_ **Symbios wireless ecosystem:** The Symbios HUD can receive wireless data from multiple sources, including tank pods, rebreathers, DPVs, GPS buoys, and lamps.

_ **Gradient factor chart:** Delivers real-time visualization of supersaturation in all compartments and provides deeper insight into decompression obligation and decompression stress.

_ **Patented trim indicator:** Provides accurate, real-time feedback on diver body position (trim) for optimal underwater efficiency and control (requires a Symbios Tank Pod).

_ **Training mode:** Allows divers to practice decompression schedules, precise stop-depth control, and gas-switch procedures during shallow training dives in a safe environment without actual decompression obligations.

_ **Full integration into the Halcyon app** (Android and iOS):

- _ Setting up the dive computer (settings, gas table, and gas presets)
- _ Interactive LEARN function that simulates all Handset functions on the surface, allowing you to explore and become familiar with its features before diving.
- _ Dive data download/logbook
- _ Integrated eCCR pre-dive checks
- _ Social platform

_ **Buddy screens:** See your dive buddy's pressure in open-circuit dives, or view a dedicated CCR buddy screen with pO_2 values and O_2 pressure on the Symbios eCCR. Instructors can view personal and team CCR data through the Symbios HUD or Handset.

_ **Full-featured dive computer at eye level,** mounted directly on the diving mask.

_ **High-resolution, full-color display.**

_ **Large virtual image**, 30 x 30 cm/12 x 12 in., at a virtual distance of 1 m/3 ft.

_ **Pre-programmed gas library.**

_ **Intuitive two-button operation.**

_ **High level of customization**, with a customizable field, custom screens, and custom functions.

_ **Trimix OC, CCR, and gradient factors.**

1 Introduction

Thank you for purchasing the Symbios HUD dive computer. The Symbios HUD is an advanced dive computer built from the toughest materials and highly sophisticated electronic components. The TFT full-color micro-display appears like a 20 x 20 cm^2 display at 70 cm. The Symbios HUD can be used as a dive computer for air, nitrox, trimix, and closed-circuit rebreather diving. The Symbios HUD 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, and diver propulsion vehicles (DPVs).

Currently, the device can receive wireless data from any Symbios-enabled device including:

_ Symbios Tank Pod

_ Symbios pO_2 Transmitter

_ Symbios pO_2 Transmitter, P-Port version

_ Symbios CM eCCR

_ Symbios GPS Buoy

_ External compass

_ DPVs , lights and more

_ Symbios wireless OEM interface (for non-Halcyon rebreathers)

The Symbios HUD, 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 that are hazardous to health. Based on EU PPE Regulation 2016/425 Annex I, the Symbios HUD 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.

Design philosophy

The Halcyon Symbios HUD 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 HUD 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 Symbios HUD empowers divers to focus on their dive and inspires confidence in the performance of their equipment.

Safety considerations

Before using the Symbios HUD, 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 (O_2) toxicity, or other inherent risks of scuba diving.

You should not use the Symbios HUD if you are not aware of or if you do not accept those risks.

This manual uses three precautionary messages. The WARNING, CAUTION, and NOTICE symbols provide users with necessary information about potential hazards and proper procedures.

⚠ WARNING

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

⚠ CAUTION

CAUTION indicates a hazardous situation that, 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.

⚠ WARNING

Before you dive:

_ Read this manual in its entirety before using the Symbios HUD, and familiarize yourself with all of the device's functions.

_ Do not dive with the Symbios HUD unless you have successfully completed a scuba diving course and understand the potential risks and hazards of scuba diving.

_ Consult a physician regarding your fitness to dive.

_ Do not use the Symbios HUD if it shows any signs of damage or malfunction. Contact Halcyon or an authorized repair center.

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

Training, certification, and breathing gas

_ Do not exceed the limits of your training and certification level, and do not dive deeper than your current qualification allows.

_ Nitrox diving requires proper training. Do not dive with nitrox without a nitrox certification.

_ Trimix diving requires proper training. Do not dive with trimix without a trimix certification.

_ 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 hold a trimix certification.

Oxygen exposure limits

_ In recreational diving, do not dive with a pO_2 > 1.4 bar/20.3 psi. And never dive with a pO_2 > 1.6 bar/23.2 psi. Diving with a high pO_2 may lead to oxygen toxicity.

Decompression

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

_ 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 occur.

_ 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 HUD against established diving tables.

_ Do not violate the ceiling depth during decompression. 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.

_ Do not ignore omitted decompression stops. If you omit one or more 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. Decompression stops are your responsibility and must be performed for your safety.

During and after the dive:

_ Do not ignore warning signs and indicators on the Symbios HUD. Doing so may result in serious injury and can even be lethal.

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

Backup instruments and shared use

_ Always dive with backup instruments: depth gauges, pressure gauges, dive watches, or backup dive computers. When planning a dive with the Symbios HUD, make sure you have access to decompression tables.

_ Always carry and frequently check a backup dive computer and a backup pO_2 monitoring device.

_ Never share the Symbios HUD with other divers, and always use the same dive computer for repetitive dives. The Symbios HUD features a built-in memory function that keeps track of your diving history. Substituting the Symbios HUD between a series of repetitive dives may result in incorrect decompression calculations.

2 Operation

2.1 Powering on

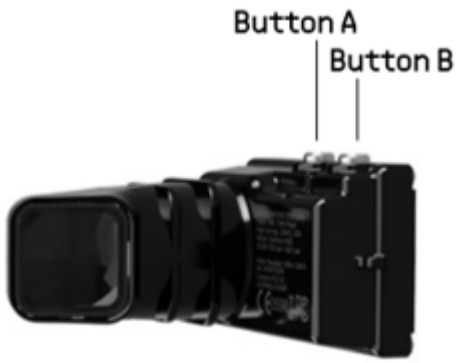
When the Symbios HUD is not in use, it is in standby mode. In standby mode, the display is switched off to minimize power consumption. Press and release button A or button B to activate the computer. The Symbios HUD will also start automatically when you begin descending.

2.2 Powering off

The Symbios HUD will automatically power off and switch into standby mode if it has been on the surface without being operated, or has not received wireless data from a CCR, for more than two minutes (unless reconfigured in the settings menu).

2.3 Two-button operation

Two tactile push buttons are used to operate the Symbios HUD. Press and release a button to switch between screens, navigate in a menu, or change user settings. Press and hold a button to confirm selections, enter the main menu, or activate a user-selectable custom function. Within the menu, the functions activated by pressing and holding each button are indicated in boxes at the top and bottom of the screen.



During a dive, the buttons function as follows:

_ Press and release button A to toggle between different screens.

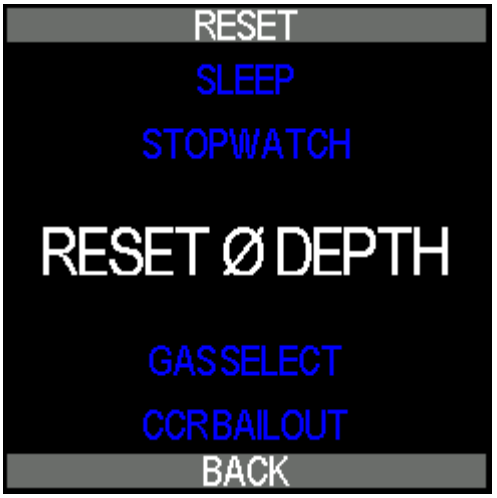
_ Press and hold button A to access the menu.

_ Press and release button B to toggle the custom field.

_ Press and hold button B to perform the custom function set in menu → SYSTEM → CUSTOM FUNC.

_ Press and hold both buttons simultaneously to confirm a warning or alarm.

2.4 Menu operation



The Symbios HUD has an intuitive menu that allows you to change settings quickly.

_ Press and hold button A to access the menu.

_ Press and release button A or B to navigate in a menu or to change a setting.

_ Within the menu, the functions activated by pressing and holding each button are indicated in boxes at the top and bottom of the menu.

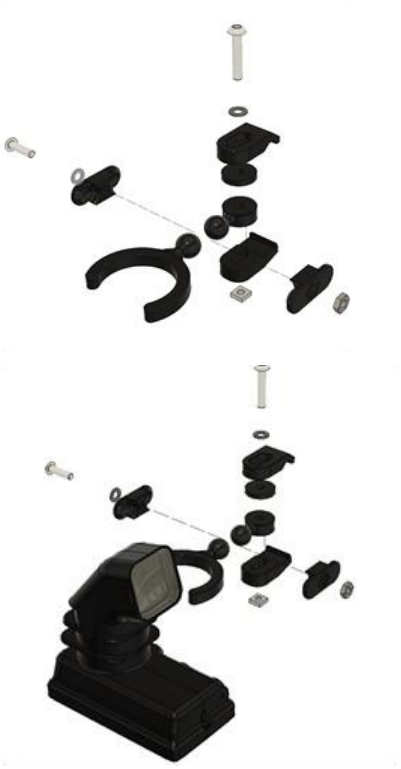
> _ Press and hold button A to perform the function indicated at the top of the menu.
>
> _ Press and hold button B to perform the function indicated at the bottom of the menu.

For a complete overview of the menu structure and available options, see the Symbios Menu Tree.

3 Installation of the HUD

The Symbios HUD is mounted directly on a diving mask, allowing real-time visual access to all relevant diving data. Mount the HUD by clipping it to the mask as outlined below, or by using a Halcyon Frameless Mask Mount.

The Symbios HUD support contains two ball joints, allowing for simple adjustment that accommodates each diver's eye positioning.



The support comes pre-assembled. Still, it may be necessary to add or remove washers of different thicknesses to secure the support on a diving mask frame.

The Installation Guide, the H-View Mask Installation Guide and the Omnis Mask Installation Guide give more detailed information about the correct assembly of the HUD support on a mask.

NOTICE

_ Washers of different thicknesses, or a combination of them, adjust the clamp to the size of the frame. The package includes 1 mm, 2 mm, and 4 mm washers.

_ The support cannot be installed on all diving masks. If you are not sure whether the support fits your mask, please contact your local Halcyon dealer.

⚠ CAUTION

_ Always use a secondary attachment method to secure your Symbios HUD to your diving mask (for example, nylon fishing line).

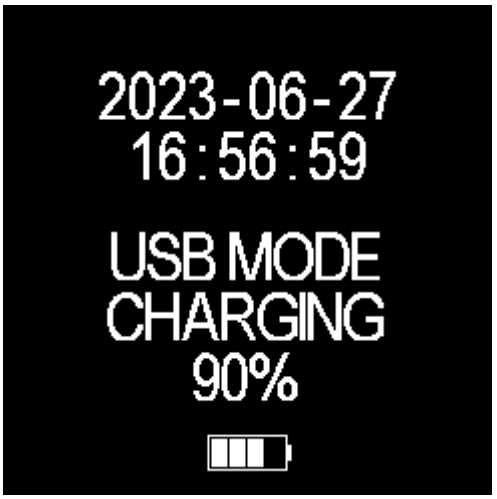
4 Before diving

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

In the image above, the second 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 appears above the first line. The third line on the left side shows the gas used on the last dive, and the surface interval (SI) is on the right. The bottom line shows the pressure of the breathing gas, with the ascent rate indicator at the bottom right.

4.1 Charging and USB connection

The Symbios HUD features a USB port, which is also used for charging.



If the Symbios HUD is plugged in, a charging screen will be displayed. You may charge the Symbios HUD using various power sources, such as a USB outlet from a PC, a USB charger, or a power bank. If connected to a PC, the Symbios HUD will also appear as a removable drive on the PC and can be accessed like a USB drive.

USB charger specifications:

_ Output voltage: 5 V DC
_ Minimum output current: 0.5 A
_ Maximum Handset charging current: 350 mA

⚠ WARNING

_ Do not dive when the Symbios HUD battery indicator is red. Recharge the device before the next dive. If the indicator flashes red during a dive, the battery is low, and the computer may shut off or perform a reset. After a reset, depth, dive time, dive data, and decompression obligations are all incorrect.

_ Never fully discharge the Symbios HUD, as this might damage the lithium-ion rechargeable battery.

_ If the battery is completely discharged, the dive computer may reset and lose all decompression information. If a reset occurs between repetitive dives, be aware that the Symbios HUD loses decompression data and compartment inert gas pressure data from previous dives. Therefore, neither the decompression readings nor the decompression calculations for subsequent dives should be considered correct.

NOTICE

_ After a dive, rinse the Symbios HUD in fresh water. Before connecting the USB cable, make sure both the cable and the connector on the device are clean and dry.

_ Do not disassemble or modify any cables or connectors. Use only the original USB cable supplied with the Symbios HUD.

_ Charge the Symbios HUD for at least four hours before using it for the first time, and after any complete discharge.

_ The nominal output of the USB outlet or charger should be 5 V and should be able to provide at least 350 mA of electrical current.

4.2 Making changes to settings or dive modes

The Halcyon app is a highly sophisticated interface, providing access to all functions of the Symbios HUD, Handset, and CM Rebreather. The settings for your Halcyon HUD can be adjusted directly on the device, but they are usually easier to manage from the Halcyon app, where you can also establish collections of settings and gases into profiles and push them straight to your HUD or Handset. Throughout this manual, keep in mind that using the Halcyon app is often a faster and more powerful way to adjust everything presented here.

4.3 Selecting the dive mode

The Symbios HUD supports several dive modes:

_ OC: Open-circuit diving

_ CCR: Closed-circuit rebreather diving with a wireless connection to a rebreather (not on all models)

_ CCR FSP: Closed-circuit rebreather diving with fixed setpoint

_ SIDEMOUNT: Sidemount diving

_ BOTTOM TIMER: Depth and time tracking without decompression calculations

To select a dive mode:

_ Press and hold button A to enter the menu.

_ Press and release button A or B to navigate to menu item SETTINGS.

_ Press and hold button A to enter the SETTINGS menu.

_ Press and hold button A to enter the DIVE MODE menu.

_ Press and release button A or B to navigate to the desired dive mode.

_ Press and hold button A to set the dive mode.

➔menu➔SETTINGS➔DIVE MODE

4.4 Selecting a gas

Divers can select a gas using the GAS SELECT 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:

_ Press and hold button A to enter the menu.

_ Press and release button A or B to navigate to menu item GAS SELECT.

_ Press and hold button A to open the GAS SELECT MENU.

➔menu➔GAS SELECT

Within the GAS SELECT menu:

_ Press and release either button to navigate between five open-circuit gas and three diluent gas settings.

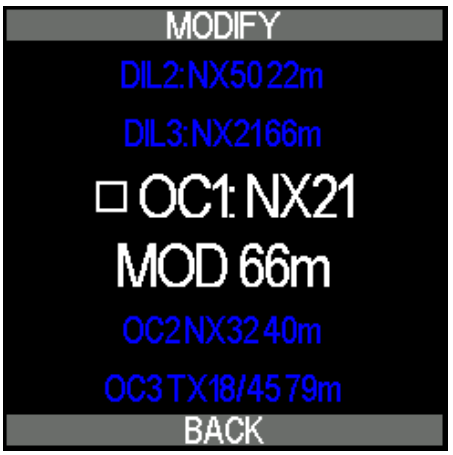
_ Press and hold button A to select one gas setting. Press and hold button B to return to the menu.

_ Only activated gases can be selected. Activate a gas in the EDIT GASES menu item.

4.5 Editing a gas

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

➔menu➔SETTINGS➔EDIT GASES



_ Press and release either button to navigate to the gas entry you want to modify.

_ Press and hold button A to modify a gas entry.

_ Press and hold button B to step back into the menu.

Inside the EDIT GASES menu:

_ Press and release either button to navigate to the EDIT, ENABLE/DISABLE, or PRESET options in the MODIFY menu.

_ Press and hold button A to select the currently highlighted function in the center of the screen.

_ Press and hold button B to return to the menu.

4.5.1 Editing gas fractions

_ To edit the fractions of a gas in the gas table, press and release either button to increase or decrease a digit.

_ Press and hold button A to set the digit and move to the next digit. Press and hold button B to delete the gas entry.

4.5.2 Enabling and disabling a gas

In the MODIFY menu, you can enable a gas, disable it, or select a gas mix from the pre-programmed library. Only enabled gases can be selected in the GAS SELECT menu.

4.5.3 Presets

You can also choose gas fractions from a preset gas library:

The following presets are available:

_ TX10/85

_ TX10/50

_ TX15/55

_ TX18/45

_ NX21/35

_ NX21 (air)

_ NX32

_ NX35

_ NX50

_ NX80

_ NX99 (O2)

4.6 Custom field

The lower left field on the screen is the custom field. This field can display a range of parameters.

Press and release button B to toggle between different parameters. Those parameters include:

Handset	HUD	Unit	Description
AVG	AVG	m or ft	Average depth
BAT	BAT	%	Battery state of charge
CNS	CNS	%	Central nervous system oxygen toxicity exposure
TEMP	TEMP	°C or °F	Temperature
ASC	ASC	m/min or ft/min	Ascent speed
COMP	COMP	°	Compass heading
GF NOW	GF N	%	Current Gradient Factor
GF SUR	GF S	%	Gradient factor if the diver surfaces immediately
GD	GD	kg/m^3	The density of the breathing gas
DIL pO_2	DpO_2	bar	CCR diluent pO_2

SP	SP	bar	CCR setpoint
CEIL	CEIL	m or ft	Unrounded minimum depth the diver can ascend to
TTS+5	TTS+5	min	The projected Time to Surface if the diver remains at the same depth for another five minutes
LAMP SOC	L SOC	%	State of charge lamp
LAMP RRT	L RRT	min	Remaining run time lamp
SGC	SGC	bar/min	Surface equivalent gas consumption rate
RGT	RGT	min	Remaining gas time
BDY BAR or PSI	B GAS	bar or PSI	Buddy gas
DIST DPV	D DPV	m or ft	Distance DPV
VEL DPV	V DPV	m/min or ft/min	Velocity DPV
RRT DPV	R DPV	min	Remaining run time DPV
BAT DPV	B DPV	%	State of charge DPV

NO FLY	NF	hh:mm	No flight time
BT pO_2	pO_2	bar	Partial pressure of oxygen in a gas connected to a tank pod in bottom timer mode
FO_2	FO_2	%	Fraction of oxygen currently in the CCR breathing loop
SCRUB	SCRU B	min	Usable time remaining of the CO_2 absorbent material in a CCR
DATE / TIME	DATE / TIME	—	Date and time
BAT O_2	B O_2	%	State of charge of GREENFLASH sensor
BAT CC	B CC	%	State of charge Symbios CCR
NX, TX, or CC	NX, TX, or CC	bar or PSI	Tank pressure (white if active gas, otherwise blue). CC indicates a diluent gas.
T1-T4	T1-T4	bar or PSI	Tank pressure of tank pods paired with T1 through T4
TRIM	TRIM	°	Diver's trim
ALT	ALT	m or ft	Altitude

Custom values displayed in the custom field can be enabled and disabled in ➔menu➔SYSTEM➔CF CONTENT

Press and release button B to toggle the custom field. After one minute, the item in the custom field will automatically switch back to the field preset in ➔menu➔SYSTEM➔CF DEFAULT, unless the user has selected the NO DEFAULT option in the CF Default menu. If NO DEFAULT is selected, the custom field will remain as selected unless warnings or safety data require presentation.

NOTICE

The availability of parameters depends on the dive mode. For instance, CCR SP cannot be displayed if the dive mode is set to open-circuit (OC).

4.7 Custom function

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

_ OFF: (No Function)

_ STOPWATCH: Start/Reset the stopwatch

_ BEST GAS: Select the best gas, calculated according to the gas table and the maximum pO_2 set by the diver

_ WAYPOINT: Save a waypoint (only available when a wireless GPS signal is received)

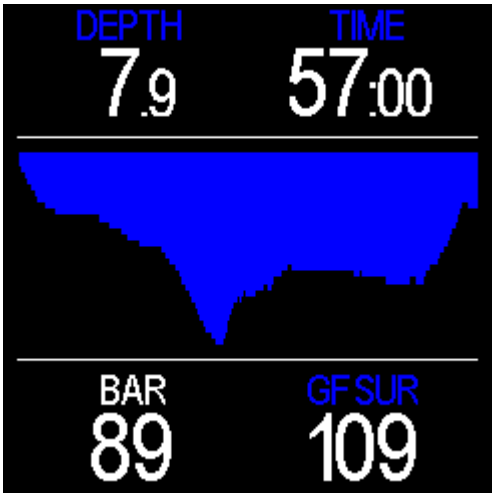
_ BO/SP Low/SP Hi: In CCR FSP mode, switch the HUD between bailout (OC), low setpoint, and high setpoint

4.8 Custom screens

Press and release button A to navigate between different screens. Additional screens can be enabled in ➔menu➔SYSTEM

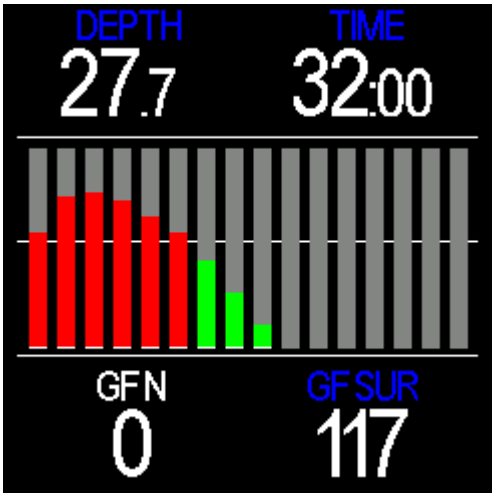
4.8.1 Depth chart

The depth chart can be enabled in ➔menu➔SYSTEM➔DEPTH CHART. It shows the dive profile.



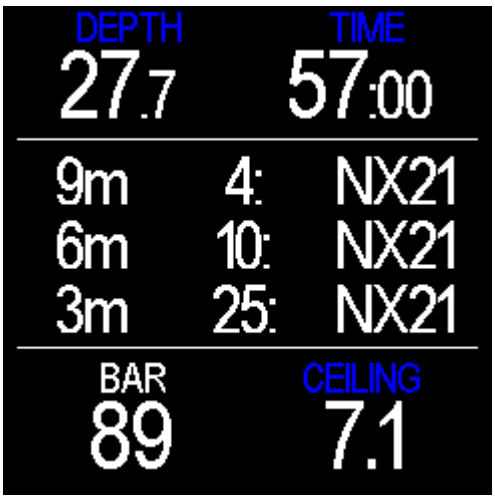
4.8.2 Gradient factor chart

The gradient factor chart can be enabled in ➔menu➔SYSTEM➔GF CHART. It depicts the gradient factor surface (GF SUR) and the gradient factor now (GF Now) for each of the 16 compartments.



4.8.3 Deco screen

The deco screen can be enabled in ➔menu➔SYSTEM➔DECO SCREEN. It shows detailed deco stop information.



4.8.4 GPS screen

The GPS screen can be enabled in ➔menu➔SYSTEM➔GPS SCREEN. For more information, please refer to the manual of the Symbios GPS devices.

4.8.5 Buddy screens

Open-circuit divers can set "Buddy Gas" as an optional custom field, where they can see the tank pressure of nearby divers while using a Halcyon Tank Pod. This is activated in the ➔menu➔SYSTEM➔CF CONTENT section.

The buddy screen can be enabled in ➔menu➔SYSTEM➔BUDDY SCREEN. If your buddy is using a Symbios CCR and you are within 90 cm/35 in., the parameters of that Symbios CCR can be monitored on the buddy screen.

4.8.6 DPV screen

The DPV screen can be enabled in ➔menu➔SYSTEM➔DPV SCREEN. It shows DPV-related information like voltage, current, and remaining runtime at current speed.

4.8.7 Wireless screen

The wireless screen can be enabled in ➔menu➔SYSTEM➔WIRELESS SCREEN. When set to ALL, the screen displays wireless data received from any Symbios device. If set to ADDITIONAL, only information from devices that are NOT paired to the Symbios HUD is shown.

4.9 Pairing to wireless devices

4.9.1 Wireless interface

The Symbios HUD features an innovative wireless receiver capable of receiving data from multiple sources. These include:

- Symbios Tank Pod
- Symbios pO_2 Transmitter
- Symbios CM eCCR
- Symbios GPS Buoy
- Symbios-enabled DPVs, lights, and more

Pair wireless devices in ➔menu➔SETTINGS➔PAIRING

All pairings can be reset in ➔menu➔SETTINGS➔PAIRING➔RESET PAIRING

Resetting pairings can help when you are having trouble with a new pairing and suspect that a device such as a tank pod is connected in two locations.

4.9.2 Symbios Tank Pod

To pair a Symbios Tank Pod with gas in the gas table:

_ Install the Symbios Tank Pod on a first stage. The Symbios Tank Pod is suitable for tank pressures up to 300 bar/4,350 psi.

_ Attach the first stage to the tank and open the tank valve.

_ Wait approximately 15 seconds for the transmitter to switch on.

_ Place the Symbios HUD and the Symbios Tank Pod close together, ideally within 40 cm/16 in.

_ Navigate to ➔menu➔SETTINGS➔PAIRING➔TANK POD➔TO GAS

_ Press and release either button to navigate to the gas entry you want to pair the Symbios Tank Pod with.

_ Press and hold button A to select a gas entry.

_ Press and hold button A to start pairing.

If the pairing process is successful, the tank pressure will be shown.

If you do not want to pair a tank pod to a gas in the gas table, you can also pair it independently to T1, T2, T3, or T4: ➔menu➔SETTINGS➔PAIRING➔TANK POD➔TO NUMBER

NOTICE

A Symbios Tank Pod can only be paired with one entry in the menu. Unpair it before pairing it with a new gas entry.

⚠ WARNING

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

4.9.2.1 Symbios trim sensor

The Symbios Tank Pod is equipped with a patented high-resolution, three-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 paired to T1 through T4.

_ Ensure the Symbios Tank Pod is pressurized and transmitting tank pressure data.

_ Navigate to ➔menu➔SETTINGS➔PAIRING➔TRIM SENSOR

_ Press and hold button A to start pairing.

4.9.2.2 Calibrating the trim sensor

A two-step 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.

Horizontal calibration:

_ Pressurize the Symbios Tank Pod and lay the diving tank on its back.

_ Navigate to ➔menu➔SETTINGS➔TRIM SENSOR➔HORIZONTAL

_ Press and hold button A to perform the horizontal calibration.

Vertical Calibration:

_ Orient the tank vertically with the valve up.

_ Navigate to ➔menu➔SETTINGS➔TRIM SENSOR➔VERTICAL

_ Press and hold button A to perform the vertical calibration.

Refer to the Symbios Tank Pod manual for a more detailed instruction.

4.9.3 Symbios CCR Pod

The wireless Symbios CCR Pod allows connection to non-Halcyon rebreathers with Fischer connectors, AK4-pin analog interface, and AK5-pin CAN interface.

_ Activate the CCR Pod (see separate manual for CCR Pods)

_ Navigate to ➔menu➔SETTINGS➔PAIRING➔CCR INTERFACE

_ Press and hold button A to start pairing.

⚠ CAUTION

After pairing to a CCR POD, you must calibrate the pO_2 sensors. For further information, please refer to the manual of the CCR Pod.

4.9.4 Symbios eCCR

To pair the Symbios HUD with a Symbios CM eCCR:

_ Turn on the Symbios CM eCCR.

_ Navigate to ➔menu➔SETTINGS➔PAIRING➔CCR INTERFACE.

_ Press and hold button A to start pairing.

For further information, please refer to the manual of the Symbios CM CCR.

4.10 Calibrating the compass

To perform a compass calibration, navigate to ➔menu➔SYSTEM➔COMP CAL and select it. The compass calibration takes approximately two minutes. Within these two minutes, move the Symbios HUD in a "figure 8" in front of you.

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

recalibrate the Symbios HUD. 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 Symbios HUD.

⚠ WARNING

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

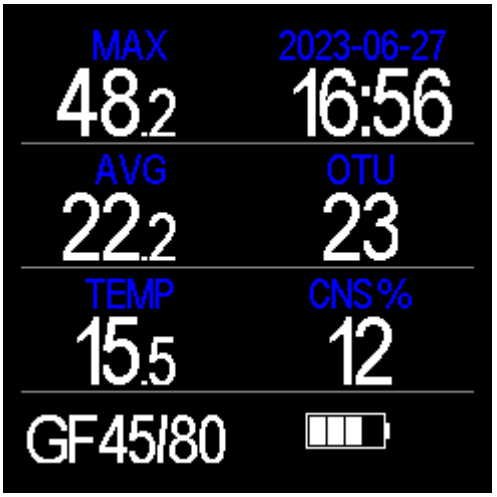
5 Diving

The Symbios HUD can be used for recreational or technical diving. It supports air, nitrox, and trimix open-circuit diving, and closed-circuit rebreather diving with a constant pO_2 setpoint. The Symbios HUD 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 HUD 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 greater than 1 m/3 ft. Two minutes after reaching the surface, surface mode is activated. You can adjust this time interval from within the settings menu.

Information is displayed on different screens.

The main screen shows the most important information. In this example, the diving depth is 22.8 m/75 ft, the dive time is seven minutes, the current no-decompression limit (NDL) is 13 minutes. The custom field in the lower left corner shows the currently selected gas (NX21) and the tank pressure. The left bar graph represents the tank pressure. The right bar graph reflects the ascent speed, which is currently zero.

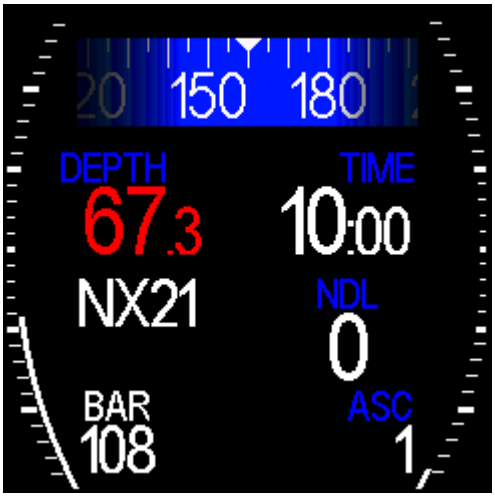


This screen shows maximum depth, time and date, average depth, oxygen tolerance units (OTU), temperature, central nervous system (CNS) oxygen toxicity percentage (CNS %), gradient factor setting, and a battery charge indicator.

5.1 OC diving with air

The OC diving mode is set in
➔menu➔SETTINGS➔DIVE MODE➔OC

This is the main screen during a dive with air (breathing gas NX21). The current depth is 22.8 m/75 ft and the dive time is seven minutes. The remaining no-decompression limit is 13 minutes. The remaining tank pressure is 138 bar/2,000 psi. The bar graph on the left side visualizes the tank pressure. The range of the bar graph is 0 to 300 bar/0 to 4,500 psi. The bar graph on the right side displays the ascent speed (range 0 to 18 m/0 to 59 ft per minute).



The remaining no-decompression limit is 0 minutes, and the remaining tank pressure is 108 bar/1,565 psi. When 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 blink white and red. Set the maximum pO_2 for the bottom gas in ➔menu➔SETTINGS➔OC pO_2 BOTTOM. Set the maximum pO_2 for a deco gas in ➔menu➔SETTINGS➔OC pO_2 DECO.

In this example, the tank pressure is 45 bar/650 psi. If the tank pressure falls below 50 bar/725 psi, the pressure value will blink red and white. The safety stop timer is also displayed. The ascent rate is 3 m/10 ft per minute.

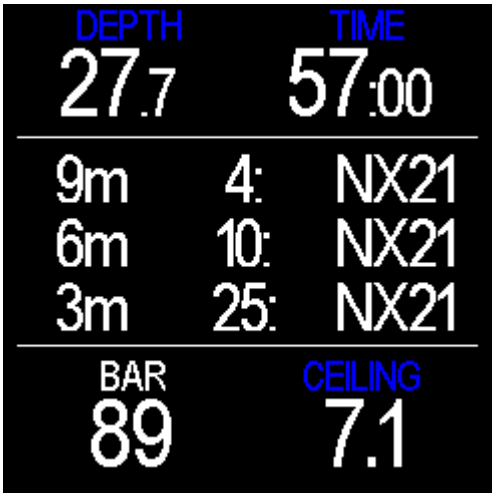
The stopwatch can be started and reset in ➔menu➔STOPWATCH. Alternatively, if the custom function is set to STOPWATCH, you can start or reset the stopwatch by pressing and holding button B.

You may exceed the no-decompression limit during your dive. In this case, the Symbios HUD will also display the decompression stop depth and the time to surface. In this example, the decompression stop depth is 6 m/20 ft, and the estimated time to surface is five minutes. The current ascent rate is 10 m/33 ft per minute (bar on the right side, scale from 0 to 18 m/0 to 59 ft per minute maximum).

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

At the end of the dive, when there are no further decompression obligations, the Symbios HUD proposes a three-minute safety stop at a depth between 3 and 5 m/10 and 16 ft. The safety stop timer counts from three minutes to zero, as long as you are at a depth between 3 and 5 m/10 and 16 ft. If you descend again to a 10 m/33 ft depth or more, the safety stop counter will be reset to three minutes. The safety stop indicator can be enabled and disabled in ➔menu➔SYSTEM➔SAFETY STOP.

An additional Deco Screen can be enabled in ➔menu➔SYSTEM➔DECO SCREEN. It shows detailed deco stop information.



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 selected custom field information on the left and the ceiling depth on the right. The ceiling is the unrounded minimum depth that you can ascend to while still respecting the selected gradient factors.

5.2 OC diving with nitrox

The current breathing gas is indicated in the lower left field. In this example, the current breathing gas is NX32, containing 32% O_2 and 68% N_2. The remaining tank pressure is 138 bar/2,000 psi.

When the pO_2 of the breathing gas exceeds 1.6 bar/23.2 psi or the maximum allowable pO_2 set by the diver, the depth indicator will blink white and red. Set the maximum pO_2 for the bottom gas in ➔menu➔SETTINGS➔OC pO_2 BOTTOM. Set the maximum pO_2 for a deco gas in ➔menu➔SETTINGS➔OC pO_2 DECO.

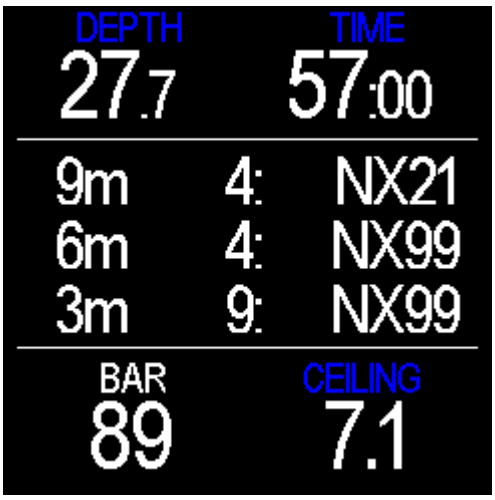
5.3 OC diving with trimix

Diving with trimix usually requires bottom and deco gases.

In this example, the current breathing gas is set to TX 18/45, containing 18% O_2, 45% He, and 37% N_2. The remaining no-decompression limit is seven minutes.

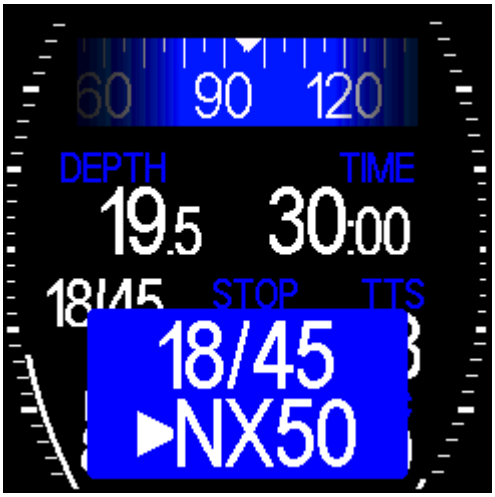
After 25 minutes of bottom time, the deepest deco stop depth is 21 m/69 ft and time to surface is 91 minutes.

An additional deco screen can be enabled in ➔menu➔SYSTEM➔DECO SCREEN. It shows detailed deco stop information.



In this example, two gases are used: air as bottom gas and NX99 (O_2) as decompression gas. 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 selected custom field information on the left and the ceiling depth on the right. The ceiling is the unrounded minimum depth that you can ascend to while still respecting the selected gradient factors. The remaining pressure of the air tank is 89 bar/1,290 psi. In this example, no tank pod is mounted on the decompression tank, so no tank pressure information is available.

5.3.1 Gas switches



To accelerate decompression, you can use different gas mixes. One gas frequently used for decompression is NX50. Before the dive, set the gas table according to the gases you plan to use during the dive (menu→SETTINGS→EDIT GASES). The Symbios HUD will automatically calculate the best gas for the current depth based on the maximum pO_2 you have selected. If the currently selected gas differs from the best gas, a popup field will prompt you to switch gases.

In this example, the currently selected gas is TX18/45. Based on the active gases stored in the gas table, the Symbios HUD 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 ➔menu➔SETTINGS➔GAS SELECT

_ Press and hold button B to select the best gas. This requires that the custom function for button B is set to BEST GAS in ➔menu➔SYSTEM➔CUSTOM FUNC➔BEST GAS

5.4 CCR diving

This is a typical example of the main screen during a CCR dive with air as diluent (NX21). The Symbios HUD indicates the current 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/1,420 psi). The left bar graph indicates the diluent

pressure. In this example, the sensor readout is 1.21, 1.20, and 1.19 bar.

When using a Symbios CCR, the selected setpoint is displayed at the top of the display and is color-coded to indicate differences between the selected setpoint and the current average pO_2:

- Green: the average pO_2 is within 0.15 bar/2.18 psi of the selected setpoint.
- Yellow: the average pO_2 is more than 0.15 bar/2.18 psi higher or lower than the setpoint, but less than 0.25 bar/3.6 psi.
- Red: if the average pO_2 is more than 0.25 bar/3.6 psi higher or lower than the selected setpoint.

A simplified screen is also available when using a Symbios CCR. This screen displays only the average pO_2, instead of the pO_2 value from each sensor.

If a disparity occurs between the sensor values, the HUD will automatically switch to the previous screen, which displays the pO_2 value of each sensor separately, to help the diver assess the situation.

If the no-decompression limit is exceeded, the Symbios HUD indicates the decompression stop depth (in this example, 3 m/10 ft) and the estimated time to surface (five minutes in this example).

If a pO_2 sensor reads a value above 1.6 bar/23.2 psi, the value will blink white and red.

If a pO_2 sensor reads a value below 0.3 bar/4.35 psi, 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 and disabled from deco calculations in ➔menu➔SETTINGS➔CCR SETTINGS➔pO_2 SENSORS

NOTICE

If sensor data are not available, the Symbios HUD displays — instead of a number.

5.4.1 Setpoint switch

Setpoint switches on the Symbios eCCR are done using the button on the CCR head. When using a CCR Pod, you can switch between different setpoints and bailout by pressing and holding button B.

5.4.2 Bailout

You can switch to bailout mode in two ways:

- Automatically, on the Symbios CCR, when the BOV (bailout valve) is turned to the OC position
- Manually, through the appropriate menu entry

The bailout mode can be set in ➔menu➔CCR BAILOUT. The following options are available:

- AUTO: Automatic switching between CC and open-circuit bailout mode (default for the Symbios CCR)
- BAILOUT: Open-circuit bailout
- CC: Closed-circuit mode
- FSP HIGH: Closed-circuit fixed setpoint high
- FSP LOW: Closed-circuit fixed setpoint low

5.5 CCR FSP diving

Use this mode if you are rebreather diving and you are using the Symbios HUD for decompression calculation without a connected O_2 sensor integration.

The CCR FSP mode can be used for closed-circuit diving with a fixed pO_2 setpoint. This is the preferred mode when the Symbios HUD 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.

This is an example of the screen during closed-circuit diving with a fixed setpoint. The diluent gas is air. The left bar graph indicates a diluent pressure of 171 bar/2,480 psi and the right bar graph indicates the tank pressure of the O_2 tank (98 bar/1,420 psi). 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 m/10 ft), and the estimated time to surface (five minutes) in closed-circuit (CC) mode. The closed-circuit time to surface estimate is based on the current pO_2 setting.

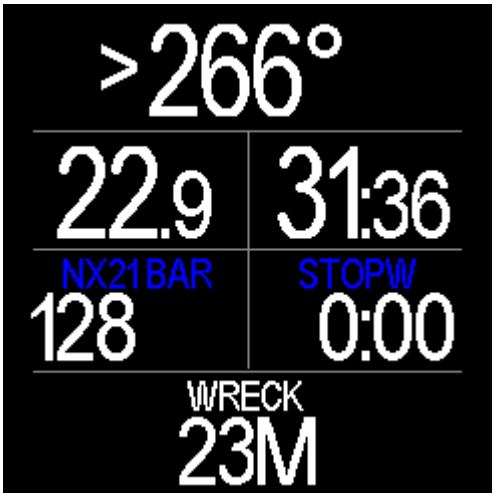
Example of a screen during open-circuit bailout.

_ Press and hold button B to cycle between CC and BO mode, low setpoint, and high setpoint

NOTICE

Compartment on-gassing and off-gassing and decompression forecasts are based on the currently selected setpoint and mode (CC or bailout).

5.6 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 as established in the custom field menu:

_ Press and release button B to toggle the custom field.

_ Press and hold button B to start or reset the stopwatch.

⚠ CAUTION

In bottom timer mode, the Symbios HUD does not perform decompression calculations.

NOTICE

For 24 hours after diving in bottom timer mode, you cannot change the dive mode.

5.7 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 m/79 ft and 18 minutes of dive time. The remaining no-decompression limit is five minutes. In this example, the remaining tank pressure of the left tank is 137 bar/1,990 psi, and the remaining tank pressure of the right tank is 123 bar/1,785 psi. Both pressure values are also visualized with the left and right bar graphs.

This sample screen shows a depth of 36.7 m/120 ft and 23 minutes of dive time. The current time to surface is seven minutes, and the next deco stop is at 6 m/20 ft.

NOTICE

A popup message will notify you if the tank pressure between the two sidemount tanks differs by more than 30 bar/435 psi. This function is only available, however, when the fraction of the two gases is the same and no decompression gas is carried.

5.8 Navigation

5.8.1 Inbuilt compass

The Symbios HUD features an inbuilt, tilt-compensated electronic compass.

The examples above show the compass scale in OC mode and in CCR fixed setpoint mode.

On screens without a compass scale, you can view the heading in the custom field.

In ➔menu➔HEADING, select a heading. On the scale, the selected heading will be displayed as a vertical line.

In fields with a numeric representation of the heading, an arrow points toward the selected heading.

5.8.2 Waypoint

For more information about navigating with GPS waypoints, please refer to the manual of the GPS buoy.

5.8.3 Body compass

This function is only available in the Tactical Model of the Symbios HUD.

The Symbios HUD switches automatically between the inbuilt compass and the external Body Compass (patented). If the diver is within ±45° of trim, the heading of the external body compass is displayed.

For more information, please refer to the body compass manual.

5.9 Training mode

The Symbios HUD supports your dive training with a training mode. In training mode, you can simulate decompression stops on shallow dives where there is no real decompression obligation. This is helpful for:

_ Practicing ascents with a decompression schedule

_ Practicing efficient and proper gas switches and tank handling

_ Practicing confirming proposed gas switches at relevant depths as if on a decompression dive

To use the training mode:

_ Enable the training mode in ➔menu➔SYSTEM➔TRAINING

_ Do a dive

_ Select a simulation profile ➔menu➔TRAINING

The following profiles are available:

Profile No	Depth	Bottom time
PROFILE 1	40 m/130 ft	10 min
PROFILE 2	60 m/195 ft	10 min
PROFILE 3	40 m/130 ft	20 min
PROFILE 4	60 m/195 ft	20 min
PROFILE 5	40 m/130 ft	30 min
PROFILE 6	60 m/195 ft	30 min

By selecting one of the training profiles, a simulated compartment loading equivalent to the selected profile (depth and bottom time) is added to the current compartment loading. The Symbios HUD or Handset displays the ceiling, decompression stops, and TTS while prompting relevant gas switches.

NOTICE

_ To indicate that the dive computer is in training mode, decompression-related parameters are displayed in yellow instead of white.

_ Deco training mode is only available if you have no real decompression obligation and your depth is shallower than 30 m/98 ft.

_ You can exit the training mode in ➔menu➔TRAINING➔RESET

5.10 Alarms and notifications

NOTICE

_ Push and hold both buttons to confirm an alarm and deactivate a popup message or vibration alarm.

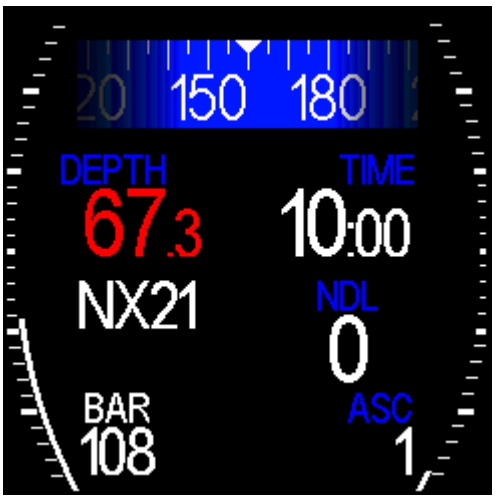
_ If new potentially dangerous situations occur, vibration alarms will be triggered even if previously a vibration alarm was confirmed.

5.10.1 General popup messages

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

Tank pressure is too low: In this example, the tank pressure is below 50 bar/725 psi and is blinking red and white.

Decompression ceiling violation: The ceiling value will blink white and red, and a popup warning will be visible. In the left screenshot, the decompression ceiling is violated, while on the right, the decompression stop depth is violated.



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

Decompression violation: Decompression was not completed, or the ceiling was violated.

Safety stop violation: The safety stop was not completed properly.

Tissue saturation reset: If you perform a tissue saturation reset, a warning will appear while on the surface.

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

5.10.2 Sidemount popup messages

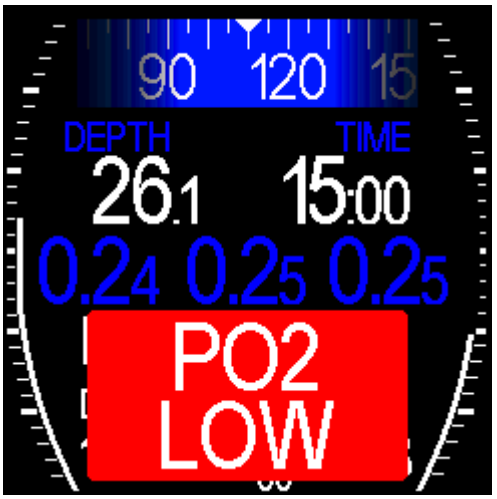
Switch side: The pressure difference between the left and right tanks exceeds 30 bar/435 psi.

5.10.3 CCR alarms

No CCR signal: No signal is being received from the CCR.

Check sensors: The controller and sentinel pO_2 readings differ by more than 0.1 bar/1.45 psi.

O_2 calibration failed: The most recent O_2 calibration failed.



Low pO_2: The pO_2 in the breathing loop is too low.

High pO_2: The pO_2 in the breathing loop is too high.

Check solenoid: The solenoid may be malfunctioning.

Linearity check failed: The linearity check performed during Symbios eCCR calibration failed.

5.10.4 CCR notifications

Scrubber low: The scrubber stack timer has expired.

CCR battery low: The CCR controller battery is low.

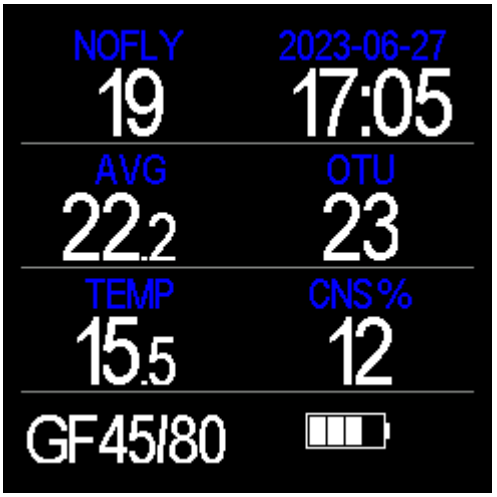
Safety setpoint: The CCR controller has switched to the safety setpoint.

CCR hardware error: A hardware error has been detected. Technical service may be required. Check the CCR diagnosis page on the handset; fields shown in red may be affected.

GREENFLASH battery low: The GREENFLASH sensor battery is low.

5.11 End of dive detection

After surfacing and a timeout of two minutes, the Symbios HUD 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 in the custom field on the main screen.

6 Algorithms

6.1 Decompression model

The Symbios HUD calculates no-decompression times and decompression stops, depth, and duration with a mathematical decompression model that estimates the inert gas uptake and release during diving. The decompression model in the Symbios HUD uses the Bühlmann ZH-L16C data set. The model uses 16 hypothetical compartments for nitrogen and 16 for helium to estimate the inert gas loadings of the tissues of the body during a dive.

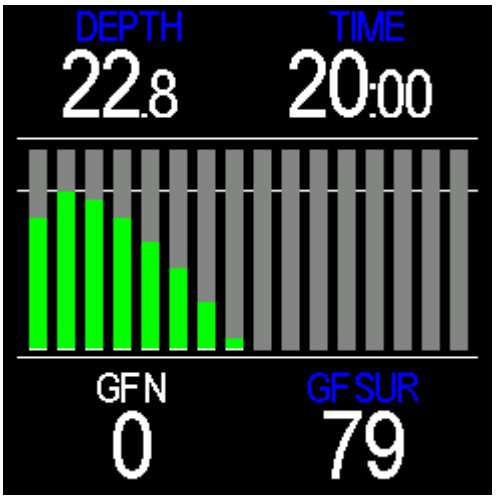
6.2 Gradient factors

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

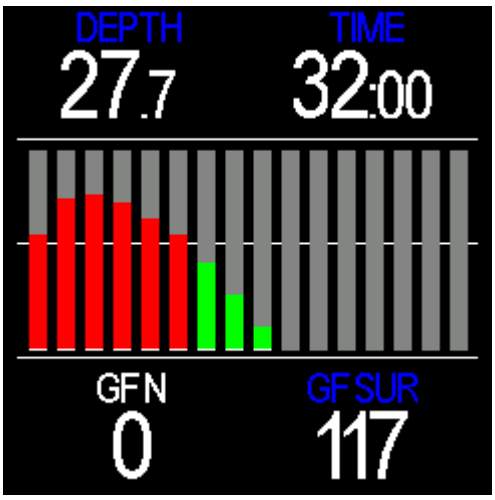
There are two gradient factors. Gradient Factor High (GF High) limits the maximum allowable compartment gas loading at the surface. Gradient Factor Low (GF Low) is only relevant for decompression diving. It reduces the maximum allowable compartment gas loading at depth. A lower GF Low setting results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

The gradient factors can be set in ➔menu➔SETTINGS➔GFL/GFH

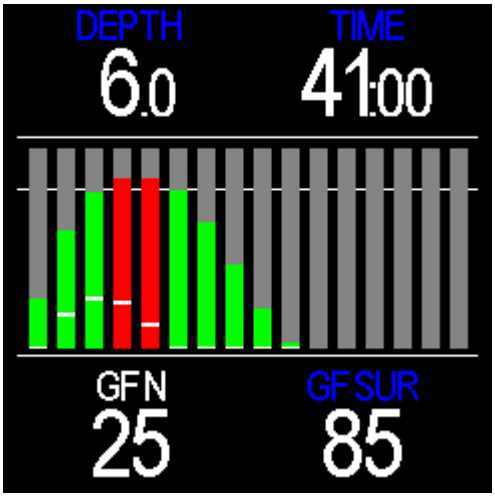
The gradient factor chart can be enabled in ➔menu➔SYSTEM➔GF CHART. It depicts the gradient factor surface (GF SUR) and gradient factor now (GF NOW) for each of the 16 compartments.



In the gradient factor chart, you can monitor the gas loading of the 16 compartments of the decompression model in real time. The fastest compartment of the model is represented at the far left of the screen, while the slowest compartment is on the far right of the screen. In the example above, the loading of the compartments has not exceeded the Gradient Factor High you have set (all the tissues are green in color). The GF High 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 compartments have exceeded the Gradient Factor High that you set. The compartments that have exceeded the limit are represented in red. The GF High 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 compartments are off-gassing. Given enough time, some of the compartments will fall below the selected Gradient Factor High (represented in green), while other compartments will require more time to off-gas (represented in red). The GF High 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 compartment bar.

6.3 OC diving

In open-circuit diving, on-gassing and off-gassing of the compartments are based on the selected gas. The deco schedule and TTS forecast are based on all enabled open-circuit gases.

6.4 CCR diving

In closed-circuit diving, on-gassing and off-gassing are based either on the current setpoint and the selected diluent, or the loop pO_2 and the selected diluent. Two modes can be selected for TTS and deco stop forecast:
➔menu➔SETTINGS➔CCR SETTINGS➔CC pO_2 DECO

_ LOOP pO_2: The current pO_2 of the breathing loop is used for the deco schedule and TTS forecast. This option is only available when using a Symbios CCR.

_ SETPOINT: The currently selected setpoint is used for the deco schedule and TTS forecast. When using the Symbios CCR in AUTO setpoint mode, the deco schedule and TTS forecast are depth-based: a constant fraction of O_2 from the surface to 12 m/39 ft, and a constant pO_2 at depths exceeding 12 m/39 ft.

6.5 Safety stop

If the maximum depth was deeper than 10 m/33 ft, a three-minute safety stop timer is displayed. The safety-stop timer counts down in a depth zone between 3 m and 6 m/10 ft and 20 ft. When descending deeper than 10 m/33 ft, the safety stop timer is reset to three minutes.

6.6 Gas consumption

If a Symbios tank pod is paired to the Symbios HUD, gas consumption metrics can be displayed in the custom field. Enable the gas consumption metrics in
➔menu➔SYSTEM➔CF CONTENT

_ SCR: The surface equivalent gas consumption rate, in bar/min. At sea level, this is equivalent to the gas consumption divided by the ambient pressure at the current depth.

_ RGT: The remaining gas time, in minutes, at the current depth.

NOTICE

Surface air consumption (SAC) can be calculated by multiplying SCR by the tank size. For instance, if you have an SCR of 2 bar/29 psi per minute and you are using a 10 L/2.6 gal tank, SAC would be 20 L/5.3 gal per minute. All gas consumption metrics are based on the gas consumption history of the last minute. As a result, no gas consumption metrics are available during the first minute of diving, or for one minute after a gas switch.

7 Logbook

The Symbios HUD stores dive data at five-second intervals. After a dive, the dives can be viewed directly on the device. Access the inbuilt logbook with ➔menu➔LOGBOOK

_ Press and release button A or B to navigate through the dives.

_ Press and hold button A to see details of one dive.

Dive data include depth, temperature, and, in the case of CCR diving, the values of the pO_2 sensors. Moreover, parameters like CNS %, OTU, and minimum water temperature can be viewed by pressing and releasing button B to toggle the custom field.

Alternatively, dive data can be viewed:

_ In the Halcyon app (available for Android and iOS mobile devices)

_ In third-party logbooks that are based on the libdivecomputer open-source Bluetooth library (https://www.libdivecomputer.org/)

_ With spreadsheet programs like Excel. A CSV file is generated for each dive, containing the dive data.

8 Specifications

8.1 General

_ Maximum operational depth: 120 m/394 ft

_ Full-color transflective sunlight-readable TFT screen, 320 x 240 pixels, RGB

_ Digital pressure sensor, 300 m/984 ft rated

_ Depth resolution: 0.1 m/0.3 ft

_ Temperature resolution: 0.1°C/0.2 °F

_ Digital compass, tilt compensated

_ Wireless receiver with dual orthogonal antennas, magnetic, 125 kHz

_ Bluetooth 5.0 interface

_ USB interface

_ Housing made from glass fiber-reinforced polyamide

_ The depth of equipment certification according to EN 250:2014 is 50 m/164 ft.

_ The air supply for equipment compliant with EN 250:2014 shall meet the requirements for breathable air in accordance with EN 12021.

8.2 Decompression algorithm

_ Bühlmann ZH-L16C decompression model

_ 16 compartments for nitrogen, 16 compartments for helium

_ Gradient factors

_ No-fly time indicator

_ Automatic altitude adaptation

_ Five gas settings for open-circuit diving

_ Three diluent gas settings for closed-circuit diving

8.3 Electrical specifications

_ 32-bit microprocessor

_ Rechargeable Li-ion battery, 4.2 V, 1,000 mAh

_ Rechargeable via USB, maximum charge current 350 mA

_ Autonomy in standby mode: up to one year

_ 25 hours of operation during diving, with display brightness set to five

_ Charge time: four hours

8.4 Dive data storage

_ 32 GB storage capacity

_ Dive data storage interval in dive mode: five seconds

_ Memory accessible via USB (the Symbios HUD is recognized as a mass storage device)

_ Memory also accessible via the Bluetooth 5.0 interface

8.5 Testing and validation

The Symbios HUD was tested according to various EU standards and has passed those tests. The Symbios HUD is CE compliant. For more information, please see Section 12.1, CE compliance. 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 Erik C. Baker's implementation of the Bühlmann ZH-L16 algorithm with gradient factor extension. The Symbios HUD, together with the Symbios Tank Pod, was tested according to EN 250:2014. Before shipment, every Symbios HUD is tested for water and pressure resistance.

9 Care and maintenance

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

NOTICE

_ After diving, rinse the Symbios HUD in fresh water to avoid corrosion.

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

_ Failure to observe the above precautions may void the warranty and any product-related liability of Halcyon.

⚠ CAUTION

_ Protect the Symbios HUD during transportation and from mechanical shocks.

_ Never try to open or repair the Symbios HUD yourself. The Symbios HUD does not contain any user-serviceable parts. Service may only be done by Halcyon or by any authorized service center.

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

10 Halcyon app

The Symbios HUD can be connected via Bluetooth to a mobile device (Android or iOS).

_ Install the app on your mobile device.

_ Open the Halcyon app on your mobile device.

_ Navigate to the Symbios icon at the bottom of the app and tap scan.

_ Locate your device and select it.

_ Enter the Bluetooth code. The Bluetooth code can be found in ➔menu➔SYSTEM➔SYSTEM INFO➔BT CODE

With the app, you can:

_ Set up the Symbios HUD

_ Establish and push settings and gas profiles to your device

_ Simulate dives on your Symbios HUD

_ Download dives and visualize dive data

_ Share dives with the community

11 Firmware update

Firmware updates may be performed using the Halcyon app or as detailed below.

If you do not have access to the Halcyon app, complete the following steps to perform a firmware update:

_ Connect the Symbios HUD to your PC. The Symbios HUD will be recognized as a mass storage device.

_ Download the latest firmware.

_ Unpack the firmware ZIP file.

_ Copy the files from the ZIP file to the Symbios HUD.

_ Safely remove the mass storage device.

_ Disconnect the Symbios HUD from your PC.

The Symbios HUD will then update with the new firmware. For more information, visit this link.

NOTICE

The version of the firmware on your Symbios HUD is shown in ➔menu➔SYSTEM➔SYSTEM INFO➔FIRMWARE

Make sure that the Symbios HUD is fully charged before performing a firmware update.

⚠ WARNING

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

Avoid a firmware update between repetitive dives. Performing a firmware update between dives will cause the Symbios HUD 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.

12 Warranty

12.1 Limited Warranty

12.1.1 Purpose

This Limited Warranty establishes the limited warranty provided by Halcyon Manufacturing, Inc. ("Manufacturer") for the Symbios HUD.

12.1.2 Nature of the Product

With the purchase of the Symbios HUD, you hereby agree to the following exclusions and limitations of Halcyon Manufacturing, Inc.'s liability to you.

Scuba diving is a high-risk, possibly life-threatening activity, and the use of the Symbios HUD is in no way a substitute for proper scuba training and certification.

Scuba diving contains inherent risks and due to the varying nature of such and the diverse potential effect on individuals engaged in scuba diving, Halcyon Manufacturing, Inc. does not warrant or guarantee that your use of this product will

prevent decompression sickness, embolism, narcosis, or any other condition or injury you may incur.

The Symbios HUD was tested according to EN 13319 and was evaluated in numerous test dives. However, there may still be errors in the software or other factors which may cause malfunctions of the Symbios HUD.

12.1.3 Limited Warranty

Manufacturer warrants to the original Owner that the Symbios HUD and its components will be free from defects in materials and workmanship under normal recreational or technical diving use, subject to the terms and conditions of this Limited Warranty. This Limited Warranty applies only to Symbios HUDs purchased through Halcyon Manufacturing, Inc. or an Authorized Dealer.

This Limited Warranty becomes effective upon the date of original retail purchase.

In the event of a covered defect during the warranty period, the Manufacturer may, at its sole discretion:

– Repair the affected component;

– Replace the affected component;

– Replace the complete product;

– Provide a functionally equivalent replacement; or

– Refund the original purchase price where repair or replacement is not commercially practical and where permitted by applicable law.

Repair, replacement or refund shall constitute the Owner's exclusive remedies under this Limited Warranty.

12.1.4 Warranty Period

Unless otherwise specified in writing by the Manufacturer:

Item	Warranty Period
Halcyon Symbios HUD	2 years
Accessories	1 year

Replacement components furnished under warranty shall be warranted for the remainder of the original Limited Warranty.

This Limited Warranty is valid only when:

– The product has been properly used, maintained, and serviced in accordance with the Halcyon Symbios HUD User Manual and any safety and/or service bulletins.

– Repairs or modifications have not been attempted by unauthorized persons or non-approved service centers.

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

– has been opened or tampered with by unauthorized individuals or entities;

– has been altered using unauthorized spare parts;

– has been repaired by an unauthorized service center;

– has been exposed to polymer-damaging chemicals, including but not limited to sunscreen, insect repellent, solvents, fuels, oils and other chemicals capable of degrading polymer components.

12.1.5 Conditions Not Covered - Exclusions

The limited warranty does not cover:

– normal wear and tear, such as scratches, abrasions, and alteration of the color;

– defects caused by inappropriate handling;

– defects or damage resulting from use contrary to intended and/or recommended use, improper care, negligence, and

accidents such as dropping, crushing, and flooding;

- printed materials and packaging.

12.1.6 Additional Exclusions

This Limited Warranty does not apply to failures resulting from unauthorized modification; improper assembly; improper storage; neglect; failure to perform required maintenance; use of counterfeit components, unapproved chargers, cables or components; use of non-approved replacement parts, Apps; commercial rental use (unless expressly authorized); use outside operational range or defined limitations of use; abuse; accident; fire; flood; lightning; chemical exposure; corrosion caused by improper cleaning; use contrary to Manufacturer instructions; modification or deleting firmware or system files; installation of unauthorized firmware or software; removal or alteration of serial numbers; normal aging or cosmetic deterioration; damage resulting from continued operation after discovery of a known malfunction or transportation damage occurring after delivery.

12.1.7 Configuration Control

The Manufacturer reserves the right to deny warranty coverage where unauthorized modifications prevent meaningful evaluation of the Halcyon Symbios HUD or use outside operational limits contribute to the claimed failure. Nothing in this section shall be interpreted to deny warranty coverage for defects where prohibited by applicable law.

12.1.8 Limited Warranty Claim Procedure

To request warranty service, the Owner shall:

1. notify an Authorized Dealer or Halcyon Manufacturing, Inc. promptly after discovery of the claimed defect;
2. provide the HUD serial number;
3. provide proof of purchase if requested;
4. discontinue operation if continued use may create an unsafe condition;
5. return the product as instructed by Halcyon when inspection is required.

12.1.9 Inspection and Failure Analysis

Every Limited Warranty claim is subject to technical evaluation by the Manufacturer. Where necessary, components may be disassembled, tested or subjected to engineering analysis. Inspection findings shall determine whether the claimed defect is covered under this Limited Warranty.

12.1.10 Safety Investigations

If a warranty claim involves an injury, fatality or significant safety event, Halcyon Manufacturing, Inc. reserves the right to retain possession of affected components for engineering evaluation. Nothing in this section alters ownership rights except to the extent reasonably necessary to complete the investigation or as otherwise agreed by the Owner.

12.1.11 Disclaimer of Other Warranties

Except as expressly stated herein and to the fullest extent permitted by applicable

law, Halcyon Manufacturing, Inc. disclaims all other warranties, whether express, implied, statutory or otherwise, including any implied warranties or merchantability, fitness for a particular purpose, title or non-infringement.

Where applicable law prohibits exclusion of implied warranties, such warranties shall be limited to the shortest period permitted by law.

12.1.12 Limitation of Liability

To the fullest extent permitted by applicable law, the Manufacturer shall not be liable for any indirect, incidental, consequential, exemplary, special or punitive damages including, but not limited to, personal injury or death, loss of use, loss of time or commercial losses.

The total liability of the Manufacturer arising from any claim relating to the Symbios HUD shall not exceed the original purchase price of the affected HUD except where prohibited by applicable law. Nothing contained herein excludes liability that cannot lawfully be excluded.

12.1.13 Transferability

This Limited Warranty applies only to the original retail purchaser unless expressly permitted by applicable law. Where Limited Warranty transfer is permitted, the transferee must satisfy all applicable Manufacturer requirements.

12.1.14 Governing Law

This Limited Warranty shall be governed by the laws designated by the Manufacturer at the time of sale, subject to mandatory consumer protection laws applicable in the Purchaser's jurisdiction. Nothing in this Limited Warranty is intended to limit statutory rights that cannot lawfully be waived.

12.1.15 Entire Warranty

This document constitutes the complete Limited Warranty provided by Halcyon Manufacturing, Inc. concerning the Symbios HUD.

No dealer, distributor, instructor, service technician, employee or representative is authorized to modify or expand this warranty except through a written instrument executed by an authorized officer of Manufacturer.

12.2 Assumption of Risk

12.2.1 Purpose

The Purchaser/Owner acknowledges that scuba diving contains inherent risk exposing the diver to serious injury or death and assumes such risk. In addition, the Purchaser/Owner acknowledges that the Symbios HUD may fail without warning, exposing the diver to serious injury or death and assumes such risk. The Purchaser/Owner releases and waives all claims against Halcyon Manufacturing, Inc.

12.2.2 Assumption of Risk

Purchaser/Owner acknowledges that scuba diving and the use of closed-circuit rebreather systems involve inherent risks including, but not limited to, drowning, hypoxia, hyperoxia, hypercapnia, decompression illness, barotrauma, equipment malfunction and other hazards associated with recreational, deep or technical diving. Purchaser/Owner further acknowledges that the safe use of the Halcyon Manufacturing, Inc. Symbios HUD requires formal training, continuing education, adherence to all manufacturer

instructions and personal diligence in equipment inspection and maintenance. Purchaser/Owner voluntarily assumes all such risks and responsibilities.

12.2.3 Additional Purchaser/Owner Responsibility

Safe operation requires strict adherence to the Symbios HUD Manual, EN 14143 standards, and recognized diving practices. The Purchaser/Owner is solely responsible for training, dive planning, monitoring of depth, time, gas mixes, other relevant parameters and proper pre-dive checks.

12.2.4 Limitation of Liability

Halcyon Manufacturing, Inc. and its distributors shall not be held liable for injury, death, or damage arising from:

- Diving beyond certified training, depth or exposure limits.
- Improper maintenance, servicing or use of non-approved parts.
- Neglect, misuse, tampering or unauthorized modifications.
- Environmental hazards such as entanglement, entrapment or uncontrolled ascent/descent.
- Use of incompatible gases, gas mixes or improperly analyzed cylinders.
- Diving outside the HUD's limits.

12.2.5 Limitation of Claims

Purchaser/Owner agrees, understands and accepts all risks associated with diving, and that Halcyon Manufacturing, Inc., its elected and appointed officials, employees, volunteers or others working on behalf of Halcyon Manufacturing, Inc. are not liable to you (Purchaser/Owner) or any other person, including your heirs, executors, agents, officers, attorneys, successors, assigns or personal representatives, for any loss, damage, cost, expense, or claim arising out of, caused by, or relating to your personal injury or death while diving, even if your personal injury or death is caused, in whole or in part, and directly or indirectly, by the purchase of the Symbios HUD 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 Manufacturing, Inc. knew, or should have known of the likelihood of such damages, and regardless of whether or not the Symbios HUD functioned properly or was defective in any way. Halcyon Manufacturing, Inc. 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.

Purchaser/Owner hereby irrevocably waives and releases Halcyon Manufacturing, Inc., its officials, employees, volunteers or others working on behalf of Halcyon Manufacturing, Inc. 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 (Purchaser/Owner) 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 HUD or your use of the Symbios HUD, or arising from breach of the warranty, breach of contract, negligence, strict tort, or any other legal or equitable theory, even if Halcyon Manufacturing, Inc. knew, or should have known of the likelihood of such damages, and regardless of whether or not

the Symbios HUD functioned properly or was defective in any way.

To the fullest extent permitted by law, Halcyon Manufacturing, Inc.'s liability is strictly limited to the repair or replacement of defective components. In no event shall Halcyon Manufacturing, Inc. be responsible for indirect, incidental or consequential damages, including property loss, personal injury, or death.

12.2.6 Owner Acceptance of Responsibility, Limitations and Assumption of Risk

The Purchaser/Owner acknowledges they have read this entire document and recognizes that it is their responsibility to ensure that they understand each item. The Purchaser/Owner has had ample opportunity to review this document and feels comfortable that any questions were answered to their satisfaction. The Purchaser/Owner understands that they may have this Agreement reviewed by legal counsel of their choosing at their cost.

The Purchaser/Owner voluntarily and freely enters into this contract based exclusively on the preprinted terms of this Agreement without modification and without relying on any other representations or assurances.

13 Notices

13.1 CE Compliance

The Symbios HUD complies with:

_ EN 250:2014: The combination of a Halcyon Symbios HUD and the Halcyon Symbios Tank Pod is an item of personal protective equipment under the Regulation (EU) 2016/425. Polski Rejestr Statków S.A., al. Gen. Józefa Hallera 126, 80-416 Gdańsk, 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. In this case, the Symbios HUD is in conformity with EN 250:2014 – 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 EN 12021. The air supply for equipment compliant with EN 250:2014 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 HUD, in combination with the Halcyon Symbios Tank Pod, is subject to the conformity assessment procedure for conformity to type based on quality assurance of the production process, plus supervised product checks at random intervals (Module D), under the surveillance of Polski Rejestr Statków S.A., al. Gen. Józefa Hallera 126, 80-416 Gdańsk, Poland, Notified Body No. 1463.

_ EN 13319 (European standard for depth gauges)

_ Directive 2014/53/EU: 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.

13.2 Trademarks

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.

Oxygen Scientific™ and Greenflash™ are registered trademarks of Oxygen Scientific GmbH.

The technologies, designs, and intellectual property of the Symbios products are owned by Oxygen Scientific GmbH and protected through patents, registered designs, trademarks, and proprietary know-how.

The Bail-Out Valve (BOV) is protected by European Patent EP 4 032 797 and U.S. Patent Application US 17/581,530. The Symbios GREENFLASH O_2 sensor is protected by European Patent EP 4 001 900. The Body Compass and Tilt Sensor technologies are protected by Austrian Patent AT 527773 and European Patent EP 4 578 776.

The Symbios HUD is protected by Registered Community Design No. 008834816-0001.

In addition, the mechanical designs, electronic designs, and firmware of the Symbios products are proprietary intellectual property owned by Oxygen Scientific GmbH.

13.3 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. and/or Oxygen Scientific GmbH.

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13.4 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 Manufacturing, Inc. 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.

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.

13.5 Identification

The Symbios HUD is laser marked with a label containing information about the manufacturer, the model, CE and FCC symbols, 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.

13.6 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.

14 Information

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