User manual

OSTC cR

Open Source Dive Computer

heinrichs ⟁ weikamp

Thank you for choosing a heinrichs weikamp dive computer!

The OSTC cR was specially developed for rebreather divers. With the S8-connector it can be connected directly to the rebreather for oxygen monitoring. Besides the sensor mode you can also use fix setpoints. For OC technical diving the whole trimix-program with five gases is available. You can adjust the deco models to your own needs. They also use the calculation with gradient factors, which has become the standard for technical diving. In addition the OSTC cR offers an apnea and gauge mode as well as a digital compass.

The OSTC cR has a big, high-contrast display with a very wide viewing angle. The robust housing is equipped with two piezo buttons that can be operated even with thick gloves. The battery of the OSTC cR is large-dimensioned: It offers up to 60 hours of diving in combination with a sharp and coloured display. A special battery management system gives you a precise percentage display of the remaining battery load.

Your OSTC cR

The development of the dive computers of heinrichs weikamp is permanently going on. Use the firmware updates to keep your OSTC cR always up to date. Get it for free at

We hope you enjoy diving with your new OSTC cR dive computer!

You can use the OSTC cR intuitively. But to become familiar with its functions and to use it in the best way, we strongly recommend you to read this manual carefully.

Contact
For any questions relating to your OSTC cR**, please contact us via...**

• internet forum:
  forum.heinrichsweikamp.com

• E-Mail:
  info@heinrichsweikamp.com

• mail:
  heinrichs weikamp
  Adlerstraße 7
  79098 Freiburg im Breisgau
  Germany

Content

Common advices

Technical status

This manual corresponds to the technical status of OSTC cR and its firmware as of December 2014.

OSTC cR, its firmware and the documentation are subject to technical changes without notice.

The OSTC cR firmware (integrated software) is an ongoing development. To make the best use of OSTC cR, we advise you to use the latest stable firmware available on our website: www.heinrichsweikamp.com

How to update the firmware, please read

Standard settings

Unless noted differently, the information in this manual refers to OSTC standard settings.

For important settings, the OSTC cR shows an asterisk * behind the current setting, if the current setting is different from the default setting.

About this manual

Special markings

⚠ **Warning**
---

indicates a situation that carries a significant risk or injury.

Caution
---

indicates a situation that carries a risk of damage to the device.

Note
---

indicates additional information for advanced OSTC cR user.

Terms of use

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Functions overview

Your dive computer OSTC cR assists you with the following functions:

Display

Diving depth and duration according to EN 13319, maximum diving depth, ambient temperature, ambient pressure, bottom time, duration and depth of planned decostops, time to desaturation based on diving depth and duration

Oxygen monitoring in CCR diving (direct analog or using the optional hwHUD S8)

Additional informations (e.g. tilt-compensated compass, average depth, stopwatch, ppO2, CNS)

Planning

Configure and check gas mixtures as well as setpoints and sensor data in

CCR mode, calculate a decoplan in the
simulator

Record

Time, duration, depth profile,
temperature, reference pressure and
time of desaturation

```
→ 1 28.12   25.0m    2'
  2 28.12  102.0m   14'
  3 28.12   44.0m   21'
  4 11.01   49.8m    6'
  5 08.02    3.6m    9'

  Next Page
  Exit Logbook
```

Safety Advices

Requirements

The most important factor for safe diving is a competent and well trained diver.

This dive computer is intended for experienced divers. That implies:

A diving education including decompression diving is mandatory. Sufficient knowledge about the laws of physics in diving is required. It may harm your health if you rely on a wrong configured dive computer. Do not use this dive computer, if you don't know or understand the settings and displayed information of OSTC cR. If necessary, you must be able to finish your dive safely without a dive computer.

Don't adjust decompression parameters if you are not aware of their meanings.

Before every dive

Plan your dive.

Set up a dive plan independently from OSTC cR and take it with you when diving.

Make sure that your OSTC cR is ready for use and correctly configured.

Always confirm the following questions before diving:

Stable firmware?

Use only stable firmware provided by heinrichs weikamp. It has been tested and allows a proper and reliable performance of OSTC cR.

Configured correctly?

Check the settings of your OSTC cR. If necessary, adjust the settings according to your dive plan and equipment.

Battery full?

Check the battery status using the indicator on the display. To ensure reliable performance throughout your dive, the battery must be sufficiently loaded. We advise to recharge it at the latest when the capacity is on 20%. The integrated lithium ion battery offers 60 hours of diving in eco mode. It takes five hours to recharge it completely.

Device waterproof?

Ensure that the S8-connector is properly closed and watertight. Check the housing for cracks or damages which might allow water to intrude.
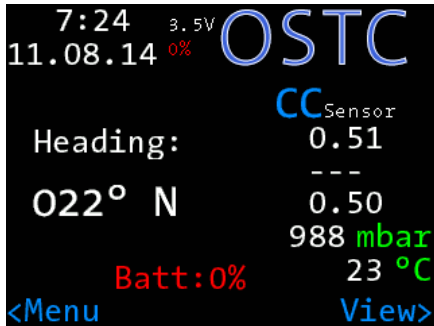
Safely attached?

Make sure that your OSTC cR can be fastened safely using either the bungees or a suitable alternative.

Display messages?

Check the screen of OSTC cR. Do not dive
if your dive computer displays a warning.
Check the cause of the warning.

While diving

Take a backup system with you

While diving, always carry a backup system to measure duration and depth of your dive independently from OSTC cR.

Take the OTSC cR with you on every repeat dive – don't lend it to anyone.

A correct calculation of tissue saturation requires that your OSTC cR is:
• configured correctly
• used on every dive
• only used during your own dives (and not shared with other divers).

Take a sufficiently long surface break before diving again.

The OSTC cR doesn't indicate how long to wait before the next dive. Please follow the guidelines you were taught during your dive training.

Caution

Saturation data is lost when updating the OSTC cR firmware or in the unlikely event of a failure. In these cases, do not dive any further until tissue saturation has returned to normal level.

Safe use of the OSTC cR

Do not modify the hardware. Modifications to the hardware of OSTC cR can damage its proper function and can damage the watertightness of its housing.

Only the bungee backplate and the cap of the S8-connector can be removed. There is no other way to open the housing without damaging the device.

Keep your OSTC cR out of children´s reach. Small parts such as the cap of the S8-connector may represent a choking hazard.

Caution

Surpassing the maximum water depth of 120 meters may cause malfunction or permanent damage of the device.

Environmental conditions

Store the OSTC cR in a cool, dry place.

Permissible temperature range for use and storage: between -5 °C and 40 °C.

Note

Decompression calculations and depth display are always based on the actual surface pressure. So if you are diving in **mountain lakes**, no further settings are needed. OSTC cR automatically adapts to the actual surface pressure.

Before first use

heinrichs weikamp delivers the OSTC cR ready for use with a high quality lithium battery (Saft LS14500). Anyway we recommand to load the OSTC cR completely before you use it the first time.

Before diving, you need to adjust some settings as described in this manual. Familiarize yourself with the OSTC cR. It is recommended that you read this manual carefully.

Handling

Operate the OSTC cR with the two piezo buttons Set/MENU and ENTER on the left and right side of the housing. The force required to push the buttons is independent to ambient pressure. You can't push and hold the button in order to change a data. You always have to push only one button.

Push the left button SET/MENU to enter the menu. To select a menu entry, push SET/MENU repeatedly until the cursor marks the required menu item. From the item on the bottom, the cursor jumps

SET/MENU   **ENTER**

back to the top with the next push. To confirm push ENTER.

In some menus you will find the entry **more**. Select this entry to access the next menu page with more menu items.

To change the setting of a menu item, push ENTER repeatedly until the required value is displayed.

Modes of operation

OSTC cR has three modes of operation and switches automatically between them: Surface mode, dive mode and sleep mode.

Surface mode

To wake up the OSTC cR, push one of the buttons SET/MENU or ENTER.

In surface mode the display shows general information as time, date, temperature, ambient pressure and storage-battery status. After a dive the display also shows tissue saturation and the no-fly-time.

In surface mode you can adjust the settings for the next dive, adjust the base settings of the OSTC cR and read recorded dive data.

Dive mode

The OSTC cR automatically switches into dive mode when it is at least 1,6 meter below the surface for five seconds.

Note

For a pre-dive-check of the functions and settings, we recommend to switch on the dive computer manually before every dive.

In dive mode the display shows current diving depth, dive time, maximum depth, the currently selected gas (in CCR diving the setpoint or the values of the sensors), decompression information and additional information.

It is not possible to switch underwater from dive mode to surface mode. You cannot change the base settings while diving. Note that exceptions apply to the **apnea mode**.

The integrated simulator allows you to get familiar with the functions of the

dive mode even before your first dive (look for page 52).

Sleep mode

When the OSTC cR isn't operated at the surface, it switches into sleep mode after two minutes to save energy.

In sleep mode the display is turned off. Ambient pressure is measured at regular intervals. After a dive, decompression calculation continues.

Modes of diving

In the main menu you can choose under **Deco mode**, if you want to use the OSTC cR for scuba diving, rebreather diving, apnea diving or as depth gauge. The chosen dive mode is shown permanently on the main display (OC, CC, apnea, gauge)

OC (open circuit): Use this dive setting with regular dive equipment (open circuit). This setting is pre-set on your OSTC cR.

CC (closed circuit): Use this dive setting with a closed circuit rebreather.

The decompression calculation model is Bühlmann ZH-L16 without or Bühlmann ZH-L16+GF with gradient factors (read more on page 58). You can switch from ZH-L16 to ZH-L16+GF under **Decotype**. With **Deco parameters** you can adjust the saturation factors and gradient factors.

Apnoe: Use this dive setting for apnea diving or snorkeling.

In apnea mode the OSTC cR serves as a depth gauge. Additionally displayed are ambient temperature and elapsed time since starting the dive. Decompression and saturation calculation are switched off. In apnea mode the OSTC cR remains in dive mode even when diving at low depths. You can switch into surface mode at any time by pushing SET/MENU. Push ENTER to confirm the **QUIT?** question.

The OSTC cR switches automatically from apnea mode into surface mode after a 15 minutes delay and above a depth of 1 meter.

Gauge: With this dive setting, OSTC cR serves as a depth gauge. Decompression and saturation calculation are switched off.
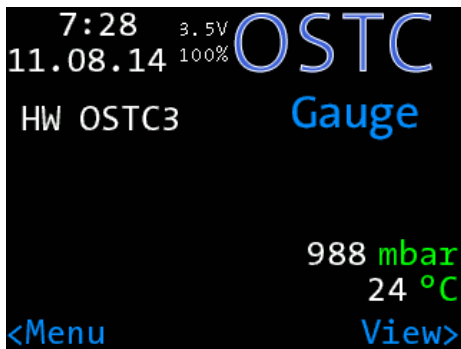
Compass calibration

OSTC cR has a tilt-compensated electronic compass. Like all other electronic compasses it must be calibrated before use. The calibration compensates aberration that can be caused by the battery.

For an exact heading, the calibration of the compass is absolutely necessary.

It is recommended to compensate the compass if your dive computer shows big deviations in the heading reading.

After starting the calibration menu, move the dive computer slowly around each axis. Do this a number of times within 60 seconds. After this while the calibration ends automatically. During the calibration routine the OSTC cR shows X-, Y- and Z-axis.
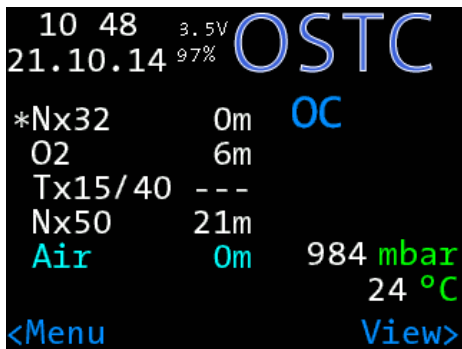
Note

The order of the axis rotation is not important. Keep OSTC C cR away from any metallic object during the calibration process (at least 50 centimeters).

Surface Mode

Display in surface mode

Permanent items

In the surface mode the OSTC CR shows the following items permanently:

- ambient pressure, clock, date
- temperature
- battery level
- dive mode: Open circuit (OC), Clodes Circuit (CC), Gauge or Apnea
- sensor data (CCR diving)
- after diving: No fly time, desaturation, and surface interval. Warnings for missed deco and too high CNS.

Selectable items

In the middle part of the display you can see extra information in the custom view. You can switch them with the right button.

- personal text (up to 60 characters)
- compass
- gaslist (OC) or setpoints (CC)
- current settings: deco type, gradient or saturation factors, time of future TTS, last deco, salinity
- desaturation diagram (After the dive, you can see the approximate tissue saturation in the desaturation diagram. The 16 types of tissue according to the Bühlman model are arranged horizontally. The fastest tissue is on top, the slowest is below. When the line is longer, the tissue is more saturated.)

Menu functions

In surface mode you can adjust the settings to prepare the next dive, adjust the base settings of OSTC cR and review your dives in the logbook.

To open the menu in surface mode push SET/MENU. With the left button you can scroll through the menu. To select an item push ENTER.

Logbook: Recorded data from recent dives

OC Gas setup: Set up your gas mix for scubadiving or your bailout gases for CCR diving. You can configure up to five gases (air, helium, oxygen up to 100 percent)

CCR Setup: Settings for rebreather diving (CCR). Configure setpoints and diluent gases

Simulator: Calculate deco and simulate the dive mode

Deco mode: Settings for deco calculation and dive modes (open circuit, closed circuit, gauge or apnea) of the OSTC cR.

Settings: Settings for time, language, display brightness, compass

Exit: Exit the main menu

These functions are described in the following chapters of this manual.

Logbook

The OSTC cR records data during every dive. It can be retrieved from the logbook. The OSTC cR stores data of up to 255 dives with a total duration of 500 to 1000 hours. The exact number of records depends on the overall size of data. If the memory is full, existing records will be overwritten, starting with the oldest.

Note

If you want to secure your recorded dive data, you can connect the OSTC cR via the S8-connector to a personal computer and readout the data (page 85).

Logbook entries are sorted in chronological order, starting with the most recent entry. Every entry shows position index, date, maximal depth and dive time.

To see details of the selected dive, push ENTER. The dive profile and details page shows up. The details page also shows position index, date, maximum diving depth, duration, minimum and maxiumum temperature, ambient pressure above water, desaturation time, the used gases and additional information of the dive. Switch from depth diagram to details page with the left button.

Note

Via **Settings** > **Display Settings** > **Logbook Offset** you can put in your own number of dives. It will be shown instead of the numbers of dives which are stored in the dive computer (page 66).

OC Gas setup

```
    OC Gas List

  ➤ Gas1:*Nx32      0m
    Gas2: O2         6m
    Gas3: Tx15/40   ---
    Gas4: Nx50      21m
    Gas5: Air        0m
    Exit
<Next      #2332 v1.60    Enter>
```

Use **OC gas setup** to configure presets for up to five gases for scubadiving as well as bailout gases for rebreather diving . You can switch between these presets when you change your gases while diving.

The presets are marked like this: **Air** for compressed air (21% oxygen) and **Nx** for Nitrox (e.g. a mix of Nitrox 31 is shown as Nx31). 100% oxygen is shown as **O2**. If the oxygen value is lower than 21% and no helium is added, the warning **Err** appears. This gas mix is unusual.

Choose a gas in the menu **OC gas setup** and push ENTER to see details or to change values.

Type

Each mix can be set to the following type:

First: The first gas which is used when the dive starts. Only one gas can be marked as first. If there is only one gas active, it will be automatically first gas. In the view the first gas is marked with a *. Each gas can be marked as first gas.

Travel: Gases used for descending or as bottom gas.

Deco: Gases used for decompression

Disabled: Gas is disabled and is not taken into account for the decompression prognosis.

Disabled gases are shown in blue letters.

Note

The first gas is used when starting the dive. All gases (even disabled ones) can be chosen underwater.

The OSTC cR always computes the tissue load and the decompression scheme using the selected gas. It takes all deco gases in account for the decompression phase.

The change of deco gases with configured change depth will be advised underwater.

Setup mix

For every gas you can set the percentage of oxygen and helium.

Select **O2+** or **O2-** to change the percentage of oxygen or **He+** or **He-** to change the percentage of helium. Repeatedly push ENTER (or hold down the ENTER button) until the required value is displayed. For reference, the OSTC cR displays the calculated maximum operating depth (**MOD**) and equivalent narcotic depth (**END**) for your mix.

Change depth

To set the operation depth for your deco gases, select **Depth+** or **Depth-**. The chosen operation depth will be shown in the first line of the display. It will turn red if the change depth is larger than the maximum operation depth (**MOD**). Use **Reset to MOD** to reset the value to the MOD. The change depth can only be configured for deco gases, not for travel gases.

Examples

Dive with only **one gas**: Configure one gas, for example gas 1 as first. Set up the mix using the submenu "setup mix". Disable the other gases (Type: disabled).

Dive with **one additional decompression gas**: Setup the first gas. Enable one other gas as deco and setup your gas mix. Disable the remaining gases.

Dive with **two decompression gases**: Setup another gas to deco and configure the second deco mix.

Dive with **two decompression gases** and **one travel/bottom gas**: Additionally to the first gas and the two decompression gases, configure a fourth gas as travel**.** Disable the unused gas.

Note

In surface mode the actual gas list is shown via the custom view (right button), also in dive mode. You can easily see which gas fits to the current depth (dynamic gaslist). Gases with a too high or too low ppO2 are marked red.

To change the gas while diving open the menu (left button SET/MENU) and go to **gaslist**.

CCR Setup

In **CCR Setup** you can configure all settings you need for diving with a closed circuit rebreather. For calculation you can use fixed setpoint or sensor readings.

```
           CCR Setup

      ➔ CCR Mode:Fixed SP
        CCR Sensor
        Diluent Setup
        Fixed Setpoints
        Exit

 <Next      #2332 v1.60      Enter>
```

CCR Mode

Fixed Sp: The OSTC cR will calculate the decompression using up to five fixed setpoints.

Sensor: The OSTC cR monitors up to three O2 sensors and uses the sensor readings for decompression calculation. Connect the OSTC cR to your rebreather with the S8-connector (direct analog or digitally with the hwHUD S8).

You can switch between **Fixed Sp** and **Sensor** mode even while diving.
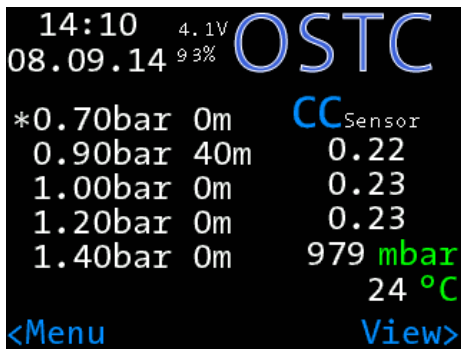
CCR sensor:

The CCR sensor shows ppO2 readings of each sensor attached with S8-connector. Additionally you can read mV voltages out of each sensor and see the battery level of the hwHUD S8.

In case of a sensor failure, you can activate the **fallback** (Fallback: Yes). When you have a sensor blackout while diving, there is a fallback warning and the dive computer switches to calculation with fixed setpoints. It starts automatically with the first setpoint. Manually you can choose another one.

Diluent Setup

In the **diluent setup** the five diluents gases are named as gas 6 to gas 10. The starting diluent (**first**) is marked with an asterisk *.

Setup diluent type

Every diluent can be one of the following type:

First: The starting diluent which is used in the loop when starting the dive. Only one diluent can be marked as **first.** If you use only one diluent, it is marked automatically as **first**.

Normal: Additional diluents which can be chosen underwater.

Disabled: The diluents is disabled and is not taken into account for decompression calculation. But it can be chosen underwater too.

Disabled diluents are shown dimmed (in blue). In dive mode you can make a quick gas change (better diluent). Close to the configured change depth the OSTC cR shows the better gas.

Setup of the diluents is the same as for OC gas setup (page 36).

Fixed Setpoints

You can configure up to 5 fixed setpoints for the decompression calculation. Each setpoint can be set between 0,5 bar and 1,6 bar, in 0,1 bar increments. You can also configure the change depth for each setpoint. But in dive mode OSTC cR will not indicate the change depth. Decompression calculation uses always the actual setpoint.

Calculations in mode **Fixed Sp** always start with SP1. It is marked additionally with an asterisk *.

Note

You can configure the bailout gases in the **OC Gas Setup**. The gases you configure for scubadiving can be used as bailout when you have to change from closed to open circuit.

Sensor calibration

The connected sensors are shown in mV. With **Calibration** you can adjust the oxygen percentage of the calibrating gas. Rinse your system with the gas until the mV-signaling is not changing anymore. Confirm with **calibrate**. Check in surface mode if the displayed ppO2 value is plausible.

In dive mode OSTC cR displays the three sensor values in the custom view (right button ENTER). If a ppO2 value is marked red, it will not be used for decompression calculation. It differs too much from the average value of ppO2 of the two other sensors. Check the reason for aberration.

S8-connector

With the S8-connector you can directly connect up to three oxygen sensors to your rebreather (CCR). Optionally you can use digital connection via the hwHUD S8.

The S8-connector is triple O-Ring sealed. Because of its construction it is very robust. The OSTC cR can be connected to standard oxygen sensors with a common ground. The minimum voltage for calibration is 7 mV in air (21% O2) and 36mV in pure oxygen (100% O2).

Before attaching the sensors the first time, pay attention to the correct configuration of the pins.

The S8-connector has the following pin configuration:

• Pin G: Minus, Sensor 1,2, and 3
• Pin 1: Plus, Sensor 1
• Pin 2: Plus, Sensor 2
• Pin 3: Plus, Sensor 3

The remaining four pins are designated for the USB connection. Only use the included original cable!

Signal	Colors of the heinrichs weikamp S8 cable	Pin-Nr. S8-Bulkhead
Sensor 1+	black	„1"
Sensor 2+	brown	„2"
Sensor 3+	white	„3"
GND/Common	blue	„G"

Simulator

Use the simulator to simulate the dive mode of the OSTC cR or to calculate the decoplan for your next dive. Using the simulator you can get familiar with your dive computer even before the first dive.

```
        Simulator

  → Start Simulator
    Interval :   0'
    Bot. Time: 31'*
    Max Depth: 51m*
    Calculate Deco
    Exit

<Next     #2332 v1.60    Enter>
```

Calculate decoplan

As a planning tool, the OSTC cR can calculate decompression stops in advance to planned dive. Hereby all settings of the OSTC cR and the tissue load of previous real dives are taken into account.

If you are planning a repetitive dive, set up the surface interval in minutes.

First set the values for **bottom time** and **maximum depth**. Select the menu entry and push ENTER (or hold down the ENTER button) until the required value is displayed.

To start calculation, select **calculate deco** and push ENTER.

Wait while the calculation is going on. Depending on the bottom time, the calculation can take some moment.

When the calculation is finished, the display shows the decoplan with the planned decostops. Depth is displayed in meters, duration in minutes. The duration is additionally represented graphically. If there are more than eight

stops, more stops can be shown with the ENTER button.

Interval: Increase interval in 10 minutes steps up to 240 minutes.

Bottom time: Can be increased in steps of 2 minutes up to a maximum of 59 minutes.

Maximum depth: Can be increased in steps of 3 meters up to a maximum of 120 meters.

Start simulator

Simulated dives can be maximum 90 minutes long and are not stored in your logbook. Simulated dives don't affect any settings of the OSTC cR. Of course there will be no influence on the tissue loads from real dives.

Select the **maximum depth** and select **start simulator** to start the simulation of the dive mode.

Change diving depth: In the simulator you can also change the depth while the dive computer is in dive mode. Push repeatedly SET/MENU to get into the

depth menu. Select the desired value with SET/MENU and confirm with ENTER.

Sim: -1m: descend 1 meter

Sim: + 1m: ascend 1 meter

Quit?: Quit dive mode simulation. **The simulation will stop after a short delay.**

All other functions are similar to the dive mode and are described there.

Note

The OSTC cR stays 90 minutes in the simulation mode until it switches to sleep mode. Stop the dive mode manually to save energy.

Deco mode

In **deco mode** you can configure the dive mode of your OSTC cR (OC, CC, gauge or apnea) and select important settings for the decompression calculation.

```
    Deco Mode
→Dive Mode:OC
 Decotype:ZH-L16+GF
 ppO2 Settings
 Safety Stop:Yes
 Future TTS:  5'*
 Deco Parameters
 Exit
<Next    #2332 v1.60    Enter>
```

Dive mode: There are several dive modes for open circuit (OC), closed circuit rebreather diving (CCR), gauge mode or apnea diving.

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Decotype: Toggles between decompression calculation using the Bühlmann ZH-L16 algorithm or the Bühlmann ZH-L16+Gf with gradient factors.

The classical algorithm Bühlmann **ZH-L16** calculates with maximum values (M-values) wich should not be exceeded. As safety margin to the M-values (100 percent) this decomodel uses saturation factors. The OSTC cR is pre-set to a value for saturation of 110 percent and a value for desaturation of 90 percent. Thereby there is a safety margin of 10 percent to the M-value.

The more modern algorithm Bühlmann **ZH-L16+GF** with gradient factors calculates with deeper decostops and a much bigger safety margin to the M-value. So you have less micro bubbles in your tissues. The **GF low** controls the allowed saturation for the deepest decostop, the **GF high** does it with the highest decostop. OSTC cR is set up to a GF low of 30 percent and a GF high of 85 percent (GF 30/85). With a GF low of 30 percent, you start your decompression

with a safety margin of 70 percent to the M-value. The GF high comes closer with 85 percent, until you can finish your dive. We suggest using the algorithm ZH-L16+GF with gradient factors.

ppO2 settings: Settings for maximum and minimum value of oxygen partial pressure (ppO2). You can set up the **ppO2 min** between 0,16 and 0,21 bar, the **ppO2** max between 1,20 and 1,60 bar.

Safety stop: The safety stop can be switched on or off. After a dive within the no deco limit (NDL) the OSTC cR shows a safty stop of 3 minutes in 5 meter. It is displayed as a countdown split to the second.

Future TTS: The future TTS makes a deco forecast. You can set this value between 0 (disabled) or 10 minutes. It shows the total time to surface (TTS) in xx minutes if you stay on the actual depth. For example: "Future TTS @5" shows your TTS in five minutes.

Deco parameters

The menu **deco parameters** contains settings for gradient factors (when using decompression calculation ZH-L16+GF) as well as settings for the saturation and desaturation factors (when using decompression calculation ZH-L16).

GF low: Lower value of the Gf-pair in percent (10 to 100%, default 30%)

GF high: Upper value of the Gf-pair in percent (70 to 110%, default: 85%)

Saturation: Multiplier for saturation process in the standard Bühlmann model without gradient factors (100 to 140%, default 110%)

Desaturation: Multiplier for desaturation process in the standard Bühlmann model (60 to 100%, default 90%)

Last deco: Setting for depth of last decompression stop. Choose here if the OSTC cR shall calculate its last stop at 3, 4, 5 or 6 meter (default: 3m). If you have heavy waves, a deeper last decostop can be better.

Alternative GF: Settings for an alternative GF-pair which can be switched while diving (toggle GF).

aGF selectable: *Yes*: the GF-pair can be toggled underwater. *No*: the GF-pair cannot be toggled.

aGF low: alternative value for the GF low in percent (60 to 100%, default 60%)

aGF high: alternative value for the GF high in percent (80 to 120%, default 85%)

⚠ **Warning**

Only change values for decompression calculation if you are aware of their meanings. The pre-settings of the deco parameters are well established and proven. Changes have direct influence on the decompression calculation and modify the conservatism of the Bühlmann model. Combinations for example a last stop at 6 meters and a low GF high (70%) need a matching diveplan and deco gases.

Settings

In this menu you can set up basic configurations, calibrate your compass and reset settings.

Settings
Information
Set Time & Date
→Display Settings
Language:English
Reset Menu
More...
Exit
<Next   #2332 v1.60   Enter>

Information

Shows some device specific information like serial number, number of total dives and the actual used firmware.

Set time and date

Menu to set time and date. With **set time** you can set the time, with **set date** you can set the date of the internal clock of the OSTC cR. You can set up time and date with the ENTER button.

Choose a date format:

YYMMDD: year, month, day
DDMMYY: day, month, year
MMDDYY: month, day, year

Note

You can also set up time and date with your personal computer.

Display settings

Settings for display and other settings.

Brightness: The OSTC cR uses a fixed brightness in three different settings. The three settings **Eco**, **Medium** and **High** set different brightness levels. In most cases the default **Eco** is recommended. If the OSTC cR is used often in low depths and bright sunlight, a higher setting is recommended.

Colour scheme: Choose the colour of display in dive mode. You can choose the schemes red, green, blue and standard.

Rotate screen: The display can be also shown upside down. With rotating the screen, you can put the sensor connector cable from the left or right side to your dive computer.

Language

The OSTC cR can be se tup in four languages: English, German, French and Italian. Choose your language with the ENTER button

More (more settings)

Under the menu item **more** you find more settings, like salinity or calibrating the compass.

Compass calibration: In this menu you can calibrate your digital compass. How to do exactly, look for page 27.

Logbook-Offset: With the **logbook-offset** you can adjust the dive number shown in the logbook to match your actual number of dives. In the detail view of the logbook the last dive isn't shown as dive number 1 but as number 349, if you have made 349 dives in total yet. This value will be increased after every dive automatically (Not for simulated dives).

Units: Display of depth and temperature in metric (m/°C) or imperial (ft/°F) units.

Sampling rate: the logbook sampling rate is adjustable from 2 to 10 seconds.

Salinity: This setting allows you to adjust salinity of water, used for calculating the actual and maximum depth. The default salinity is 0%. To increase this value, select the **salinity** menu and push ENTER repeatedly until the required value is displayed. The value range is from 0% to 4%.

Note

Decompression information is based on absolute pressure and not on relative pressure. Therefore salinity does not effect this calculation.

Reset menu

In the **reset menu** you can put the settings of the OSTC cR to its default values and start the dive computer from new. You can cancel your decompression information, clear the logbook and change the information for the battery.

Reboot: During a firmware update it may be required to reboot the OSTC cR. Choose **reboot** and push ENTER. You`ll be prompted to confirm the action. A reboot also deletes the current decompression data.

Reset deco: To delete the current decompression data choose reset decodata and push ENTER. You`ll be prompted to confirm the action. For the next dive the OSTC cR starts decompression calculation from new, without any data of former tissue load.

Caution

Use **reboot** and **reset decodata** only, if you don't plan a repetitive dive within the next 48 hours.

Reset all: Resets all settings (not time and date) to factory defaults. You'll be prompted to confirm the action. Dives in the logbook and the dive counter will not be reset.

Caution

Reset all really resets **all** settings in the OSTC cR to their factory defaults, it also occurs to the compass calibration and the personal text. Once confirmed this can't be undone! Saturation and no-fly-time will remain.

Reset logbook: Deletes all data in the logbook. The counter starts again with zero. If you want your personal number of dives to be shown in the logbook, you have to set up (again) the number via logbook offset (page 66).
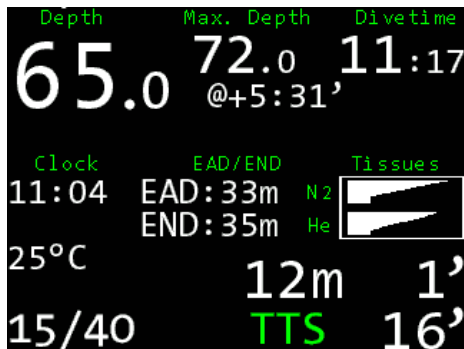
Dive mode

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Displays in dive mode

Permanently shown information

In dive mode the OSTC cR shows the following items permanently on the display:

- depth in meter or feet (also the maximum depth)
- divetime in minutes and seconds
- NDL (No Deco Limit) or TTS (time to surface including all decostops) in minutes.
- actual used gas (in CCR mode: the actual setpoint or the average value of the sensor data)

- water temperature in °C or °F
- Future TTS (@+xx): shows your deco in xx minutes at the same depth. Future TTS is only displayed, when the OSTC cR is in deco and no longer in the NDL (NO Deco Limit).

Selectable information in the center row of the screen

Selectabel items can be monitored in the center of the display. You can toggle through these with the right button.

- Stopwatch with average depth
- Decoplan: Display of all decompression stops. If there are no decostops necessary, there will be displayed "---". If there are decostops, the next decostop is permanently shown on the main display.

- time, MOD/END and graphical indication of tissue saturation
- current gradient factors or saturation factors and the alternative GF-pair
- Display of up to three sensor readings (using direct analog input or the optional hwHUD S8)
- Compass
- ceiling (the ceiling is corresponding to the GF high, without consideration of GF low)
- no information
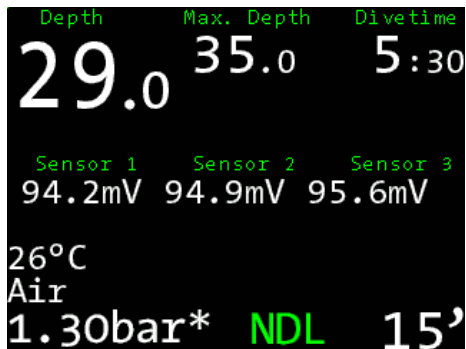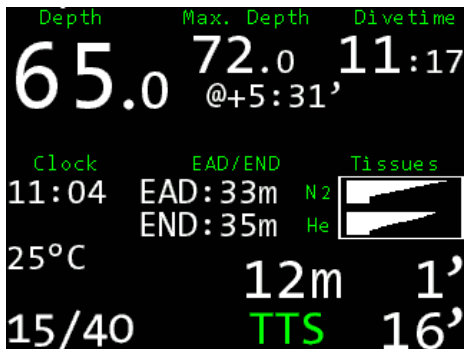
Warnings:

Warnings appear permanently on the display. Up to two warnings are shown simultaneously. If there are more than two warnings, the warning display toggles every two seconds. If there are critical warnings, a yellow warning sign is displayed additionally. Warnings are shown for the following items:

- low battery level
- ppO2 too high or too low
- CNS warning (danger of oxygen poisoning)
- too high gradient factors and missed decocstop (the missed decostop is marked red)
- too fast ascent
- when the decompression calculation is based on the alternative GF-pair
- fallback warning when all sensors have failed

Menu functions

In dive mode (OC) you can select your preset gases (**gaslist**) und reset the calculation of your average depth (**reset avr./stopwatch**). During CCR diving you can choose setpoints and bailout gases and switch to decompression calculation via O2-sensors. You can also use the alternative GF-pair for decompression calculation.

To open the menu, push the left button SET/MENU. On the display appears **Menu?**. Push ENTER to confirm. The pre-menu **Menu?** avoids that you push the button by accident. Confirm within five seconds or the OSTC cR returns to normal display.

Note

In the dive mode **apnea** there are no menu functions available.

Gaslist

In the menu **gaslist** you can make your gas changes and select the actual gas. You can choose the gas mixes that you prepared in **gas setup** in the surface mode. The actual gas always appears on the main display.

If you have forgotten to configure a gas on the surface you can catch this up while diving. Go to **gaslist** and then to **more**. This new gas (gas 6) will be used as current gas in the decompression calculation.

Note

Gases in red have too high or low ppO2 to be used in the current depth (they can be selected by the user anyway).

Gases in blue are disabled (they can be selected by the user anyway, but they haven't been part of the decompression calculation).

A gas turns yellow, when you get close to the configured change depth of the gas. Then push SET/MENU and the dive computer proposes you the better gas

(e.g. Nx50?). So you see at once which gas you shall use. Just confirm with ENTER.
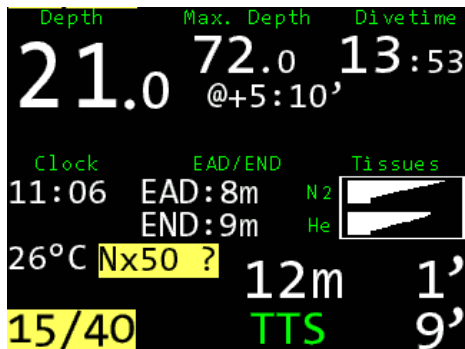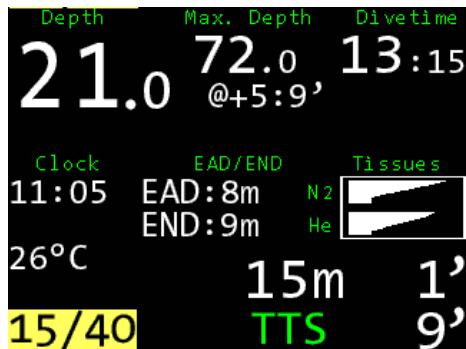
Setpoint change

While diving in CCR mode you can choose between the five setpoints that have been configured in surface mode. Choose **setpoint** in the menu (SET/MENU) and conform the selected value with ENTER.

If O2 sensors are connected via the S8-connector, the sensor readings can be used for the decompression calculation too. Choose **CCR sensor** for this.

Bailout

If you have to switch from closed circuit diving to open circuit diving, you can select your bailout gases in the menu (SET/MENU). You can choose between the five gases that were configured in **OC gas setup** in surface mode. The mix of the current gas is shown on the main display.

Reset Avr

Restarts the stopwatch and calculates the average depth from new.

In dive mode you can select the average depth and stopwatch with the right button. **Total avr** indicates the average depth since the start of the dive. **Stopped avr** indicates the average depth for a period of time that you choose.

The stopwatch starts with the beginning of the dive. While diving you can restart it in the **menu** function **reset avr**. The stopwatch starts from new and shows the average depth since the start of the stopwatch (stopped avr).

Maintenance

Housing

Wash your OSTC cR after every dive with fresh water, especially after diving in seawater. If the housing is very dirty, put your OSTC cR over night in fresh water. Don't use any cleaning agents or solvents.

⚠ Warning

If there is some sea water in compartment of the S8-connector, rinse it immediately with fresh water. Let it dry completely before using the OSTC cR again.

Bungee

The OSTC cR is delivered with bungees. The bungee wristband can be set to your arm diameter individually. To tighten the bungee, make a reef-knot above the circular cavity (tighten knot very strong). Cut remaining bungee after about 1cm and use a lighter to melt the small remains of nylon.

The bungees are hand washable and can be replaced if necessary.

Charging the battery

The OSTC cR has a high-capacity rechargeable battery. You can recharge it via USB-connection with your personal computer or any USB wall-charger. In eco mode the OSTC cR offers up to 60 operation hours. It takes five hours to recharge it completely.

Note

When the battery is totally empty, the desaturation time and no-fly-time are still remaining. But please check time and date after restarting the dive computer.

Spare parts

Bungees and spare parts are available in the online shop of heinrichs weikamp (**shop.heinrichsweikamp.com**) or at your dealer.

Readout the dive computer

USB-Connection

You can connect your OSTC cR easily via USB to your personal computer or notebook. So you can upload software and download your logbook. With the supplied cable you can connect the S8-bulkhead with the USB-interface of your personal computer.

Make sure the S8-cap is closed after downloading your dive data. Don't apply force when closing the cap.

⚠ **Warning**

Diving without the S8-cap can damage the OSTC cR.

If there is moisture in the S8-connector compartment, apply some water dispersant (e.g. WD40) to avoid corrosion.

When connecting our OSTC cR to a computer the first time, you may need to install a device driver. In most cases the driver will install automatically. But it may be required to install the driver manually:

Download the FT232R interface driver: www.ftdichip.com

Unpack the zip archive to a directory

Connect the USB interface of OSTC cR with your computer. It will be recognized as new device. When Windows asks for a driver medium, point to the directory containing the unpacked driver software.

When installation is finished, you can see OSTC cR interface in the COM&LPT ports section of the windows-device-manager (COM x). For MAC OS is a Disk-Image-file (.dmg) available.

Software for the OSTC cR

Data transfer with the OSTC cR is supported by many software applications for all common platforms. The applications provide easy-to-operate functions for transferring recorded dive data, and for configuring and remotely controlling your OSTC cR.

On our website you'll find a list of all OSTC cR supporting programs and applications: **www.heinrichsweikamp.com/ostc**

Note

OSTC cR is a open source dive computer. For programmers, we have the OSTC cR interface description available.

Updating the firmware

The OSTC cR firmware (integrated software) is in a constant process of improvement. To make the best of your OSTC cR, use the latest stable firmware that is available at the heinrichs weikamp website
www.heinrichsweikamp.com/ostc

Note

We recommend you to upgrade the firmware regularly - at least ones a year. Updates for the OSTC cR are free of charge, of course. On the homepage you can download the **OSTC companion**. With this software you can upload the newest firmware easiliy.

Technical data

Display	High resolution TFT monitor with 2,4" (6,1 cm), field of view: 170°, Resolution: 320 x 240 pixel, 65 000 colours, status display: 2 LEDs
Connections	S8-connector and USB
Sensor	Combined depth/temperature sensor 3D compass (fully tilt-compensated)
Power supply	Lithium battery Up to 60 hours operation, >1 year Standby
Operating elements	Two piezo buttons
Housing	ABS-housing, scratch resistant borosilicate-glass panel
Dimensions	80 mm x 68 mm x 34 mm
Weight	260 gr.
Max. Depth	120 Meter

Disposal

According to the European WEEE directive, electrical and electronic devices must not be disposed with consumer waste. It's components must be recycled or disposed apart from each other. Otherwise contaminative and hazardous substances can pollute our environment. You as the consumer are committed by law to dispose electrical and electronic devices to the producer, the dealer or public collecting points at the end of the lifetime for free. Particulars are regulated in national right.

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