User manual

Depth   Max. Depth   Divetime
39.0 93.0 12:49
@+1:12'

Clock   EAD/END   N2
18:38   EAD:17m   He
        END:20m

26°C   6m   2'
17/40   TTS 11'
0.90bar

Sensor monitoring with the

OSTC cR

heinrichs ⊘ weikamp

Your OSTC cR

The OSTC cR was specially developed for rebreather divers who also want to use their dive computer for O2 monitoring. The robust S8 connector allows to readout and monitor up to three oxygen sensors. Alternatively the calculation can be done with auto setpoints or fixed setpoints.

The OSTC cR runs with the firmware hwOS tech that offers various settings for diving with a rebreather. For example, the required bailout can be calculated and its range monitored in real time.

This supplementary manual only refers to the sensor operation of the OSTC cR. For a complete description of the functions and settings of your dive computer, please refer to the manual **OSTC dive computer with the firmware hwOS tech**.

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:

www.heinrichsweikamp.com

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

Contact

For any questions relating to your OSTC cR please contact us:

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1. S8 connector

With the S8 connector you can connect directly up to three oxygen sensors to your OSTC cR. Optionally you can use a digital connection via the hw HUD S8.

The S8 connector is triple O-ring sealed. This construction is very robust. The OSTC cR can be connected to standard oxygen sensors with a common ground.

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: ground, sensor 1,2 and 3
• Pin 1: plus, sensor 1
• Pin 2: plus, sensor 2
• Pin 3: plus, sensor 3

The maximum sensor voltage is 165mV per sensor.

The minimum voltage for calibration is 7 mV in air (21% O2) and 36 mV in pure oxygen (100% O2).

The products of heinrichs weikamp use a 100 kOhms load resistor for analog O2 cell inputs.

The remaining four pins are designated for the USB connection. Only use the included original cable! Via USB you can recharge the OSTC cR and connect it to a PC or notebook to read logbook data and install updates.

Caution

A dive with an open S8 connector can irreparably damage the OSTC cR. If no S8 cable is connected, always close the socket with the cap.

| Signal	Color of S8 cable	Pin number S8 socket
Sensor 1 +	black	1
Sensor 2 +	brown	2
Sensor 3 +	white	3
GND/Common	blue	G

2. Calibration of the sensors

Connect the sensors to the OSTC cR via the S8 cable. First plug the connection together and then screw down the plug. Do not use force.

Mode
To use the sensor operation in the OSTC cR first go to »Dive Mode« and select the dive mode CCR or pSCR. Then go to the CCR/pSCR Setup, go to »Mode« and select »Sensor« with the right ENTER button.
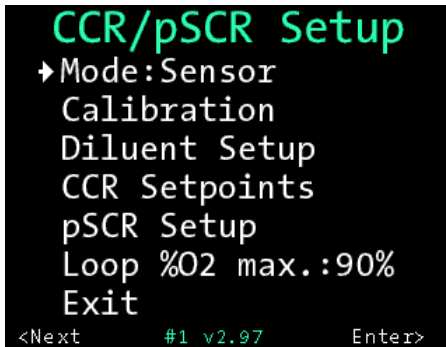
Under »Mode« you can select either Fixed Setpoint, Auto Setpoint or Sensor.

Calibration
Open the menu »Calibration« to calibrate the ppO2 values of your oxygen sensors. For each sensor, the voltage is displayed in millivolts (mV). With »Cal. Gas O2« you can set the oxygen content of the gas that you use for calibration.
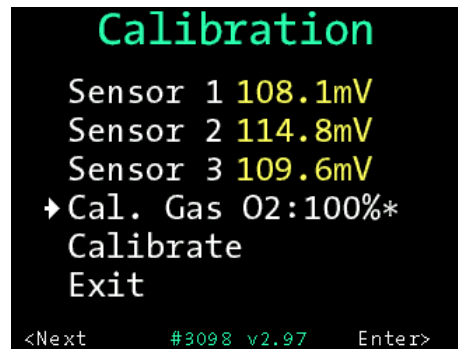Setting range: 21 –25 %, 95 –100 % (CCR)
21 – 100 % (pSCR)
Default: 21 %

Flush your system with the gas until the mV displays of the sensors do not change any more. Confirm with »Calibrate«. Check in surface mode whether the displayed ppO2 value is plausible.

The calibration takes the current surface pressure into account.

Menu »Calibration«. The calibration takes the current surface pressure into account.

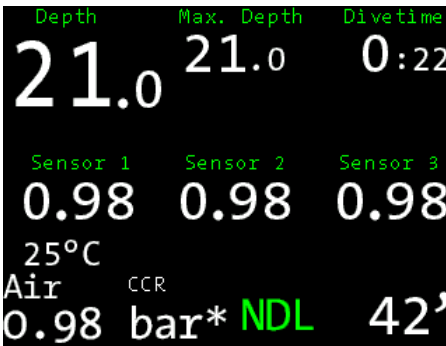# 3. Sensors in use

Surface mode
The measured values of the sensors are permanently displayed on the start screen in surface mode. A red down arrow appears next to the sensor value if the sensor delivers critically low mV values after calibration according to the ppO2 value. In the Custom View, also the voltage (in mV) for each sensor is displayed.
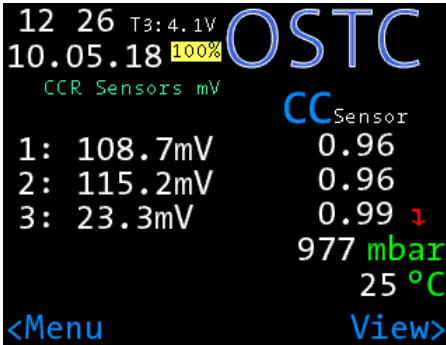
The red arrow appears if the voltage of a sensor is very low.

Dive mode

In dive mode, the OTSC cR shows the calculated average value of the sensors, which is used for the deco calculation, always on the main screen. It is marked with an asterisk *. The three individual sensor values can be displayed in the Custom View (right ENTER key).

The average value of the sensors (in this case 0.98 bar*) is always shown on the display. It is used for the deco calculation.

If one sensor is not calibrated, −−− appears on the display.

If a sensor value drops to zero (e.g. due to a broken cable), it is marked yellow and is no longer used for the calculation.

If a sensor value is colored red, it is outside the set ppO2 limits.

If the sensor values differ too much, the warning »Sensors <>« appears and the relevant ppO2 value is displayed inverted. The custom view with the three sensor values is switched on. The value is highlighted in white if the ppO2 is within the set minimum and maximum values. It is highlighted in red when the ppO2 is outside the limits.
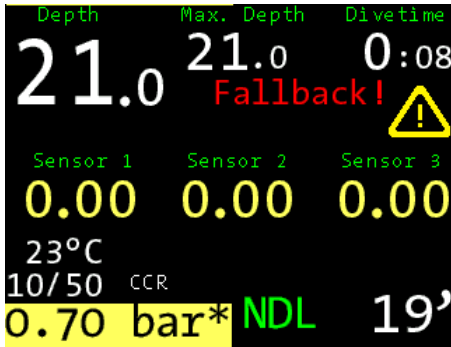

⚠ **Warning**

Check the reason for the deviation. Flush your breathing circuit with a known gas and decide which sensor or sensors may deliver incorrect values.

In the menu you can deactivate or reactivate each sensor individually and switch to the calculation with setpoints.

A deactivated sensor appears in blue and is no longer used for the calculation of the average value. No more warnings are generated for it.

You can set the minimum and maximum values for the ppO2 under Deco Setup > ppO2 Settings > Min Loop and > ppO2 max./ppO2 Deco.

In the event that all sensors fail or are manually deactivated, a **fallback** occurs. The dive computer switches to the calculation with fixed setpoints and immediately calculates with the ppO2 from setpoint 1. A fallback warning appears. Another setpoint can be selected manually.

If all sensors fail or are deactivated, there will be a fallback to setpoint 1.
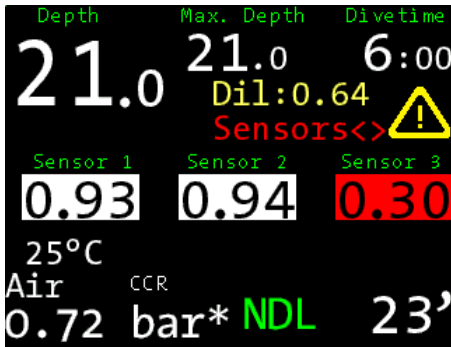
Sensor warning: The values of all sensors deviate too much from their common average value. The value of sensor 3 is also outside the set ppO2 warning threshold.

Note
Sensor operation can also be used in pSCR mode. In this mode the fixed setpoints become calculated setpoints. Auto setpoint is not selectable.
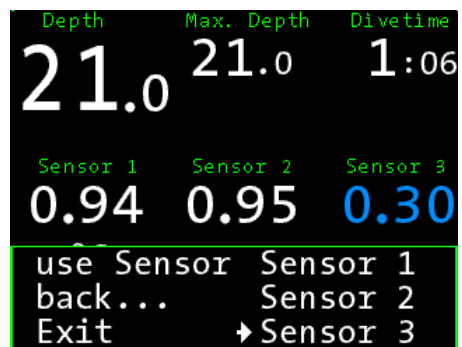
Menu in dive mode
In dive mode you can switch from sensor operation to operation with setpoints. You can activate or deactivate individual sensors.

Open the menu and select »Setpoint«. A submenu appears that shows the setpoints and the menu item »Sensor«. Select »Sensor«.

With »Use Sensor« you can switch from fixed setpoints to sensor mode. With »Sensor 1«, »Sensor 2« and »Sensor 3« you can activate or deactivate each sensor. Deactivated sensors appear in blue.
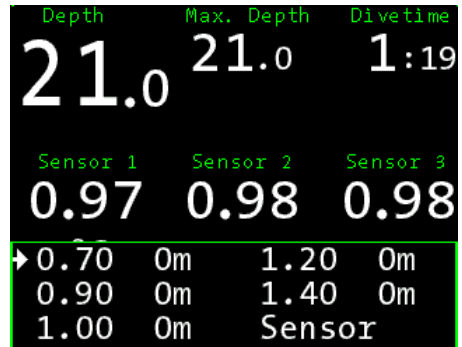
Under »Setpoint« you can select setpoints or open the submenu »Sensor«.

In the submenu »Sensor« you can activate or deactivate each sensor.

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