Operation manual of the rEvodream **P / P5** PPO2 monitor / HUD

Basic operation of the rEvodream P / P5

! All activations or settings on the rEvodream always start when the unit is OFF (except switching OFF)

1P (= 1 push on the window): the rEvodream switches ON (no confirmation needed)

3P: the rEvodream switches on and starts calibration: no need to confirm. During calibration the unit automatically detects the number of good sensors connected, calibrates them, and sets the rEvodream to only display the good sensors, until the next calibration is performed. Unless SCR mode is selected (see below) the calibration gas is assumed to be 100% oxygen at 1 bar

When the rEvodream is ON, 1P will switch the rEvodream OFF (if the rEvodream is ON for more then 2 minutes, the unit will only switch off if PPO2 < 0.5 bar)

Advanced settings of the rEvodream P / P5

4P rEvodream is set to factory setting: HUD shows PPO2 according to the rEvo1.3 green zone pulsing, CCR mode. No confirmation is needed.

5P rEvodream HUD will display the PPO2 using the rEvo 1.0 pulse code (modified 'smithers code') (see below) Conformation is required.

6P rEvodream HUD will display the PPO2 according to the SCR display mode. Confirmation is required. When set to SCR mode, automatically the rEvodream will assume air at 1 bar as calibration gas

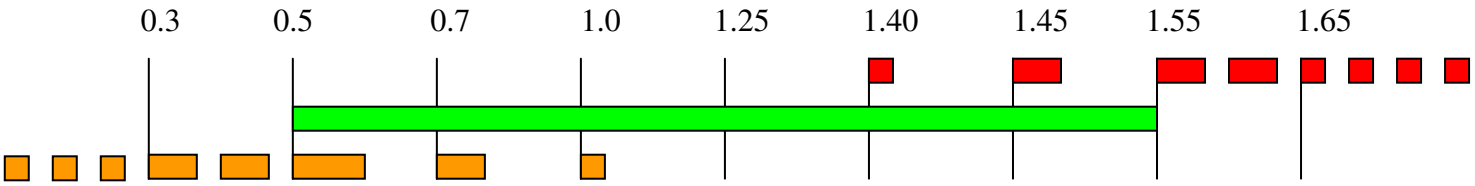
3P + confirmation at the end of the calibration sequence: the unit goes into altitude / low %O2 calibration mode

Definitions

• Sleep = when the rEvodream is in sleep-mode, or OFF (battery – life > 10 years)
• 1P = 1 push on the window of the rEvodream, on top of the piezo (yellow disk in the window)
• 2FL = 2 flashes: a Flash is a pulse of the three LEDs together
• Attention: 2FL is always a request for confirmation of the operation that has been just carried out, or of the operation that is going to start. If you agree, you confirm by 1P (one push).
• Wake-up Signal = O->OG->OGR (the Orange LED lights up, then the Green one, then the Red) the rEvodream is in service
• Attention: if 2 sensors are connected and correctly calibrated, the sequence OGR runs twice, if only 1 sensor is connected and calibrated, then the sequence only runs once.
• Display of the PPO2: when 2 sensors are connected and correctly calibrated, the gauge/HUD will show the PPO2 readings of both, alternating every 3 seconds
• Standard factory settings are: rEvo 1.30 PPO2 green zone, CCR mode

The HUD can display the PPO2 in 3 different modes:

A: Standard mode: rEvo 1.30 PPO2 green zone: the 'green-only' zone indicates PPO2 ranging between 1.25 and 1.40. The variations of PPO2 are symbolized as follows:
PO2 < 0.3 multiple fast Pulses Orange
> 0.3 < 0.5 2P Orange
> 0.5 < 0.7 1P long Orange + Green continuous
> 0.7 < 1.0 1P short Orange + Green continuous
> 1.0 < 1.25 very short Pulse Orange + Green continuous
> 1.25 < 1.40 continuous Green
> 1.40 < 1.45 very short Pulse Red + Green continuous
> 1.45 < 1.55 1P Red + Green continuous
> 1.55 < 1.65 2P Red
> 1.65 multiple fast Pulses Red



B: rEvo 1.0 pulse code: when PPO2 = 1.0, only the green LED is ON continuously. For every 0.1 bar above 1.0, the red LED will pulse once. (up to 1.5 bar). For every 0.1 bar below 1.0, the orange LED will pulse once.
Below 0.5 bar, the green LED will be off, and the orange LED will pulse continuously. Above 1.55 the green LED will be off, and the red LED will pulse continuously.
When 2 sensors are connected, the rEvodream / HUD will show the PPO2 of the 2 sensors individually, alternating every 3 seconds.

C: the SCR mode: when the SCR option is set the 'green-only' zone is between 0.50 and 1.45. The variations of PPO2 are symbolized as follows:

PO2 < 0.25 multiple fast Pulses Orange
> 0.25 < 0.5 1P Orange + Green continuous
> 0.5 < 1.45 continuous Green
> 1.45 < 1.55 1P Red + Green continuous
> 1.55 multiple fast Pulses Red

Calibration:

• Calibration: always assumed in pure oxygen at 1 bar. (unless SCR mode is selected) The display indicates initially the voltage (millivolt) of the sensor, then carries out the calibration if the voltage is correct (if it ranges between 36 and 64 mV in pure oxygen). At the end of the calibration of each sensor, you will see a 'pulse train':

• Pt = Pulse Train: a series of brief Pulses
• Pt O: Pulse Train of the Orange LED, means that the millivolt value of the sensor is too low, the calibration is not carried out. (the sensor is switched off and will not be displayed)
• Pt R: Pulse Train of the Red LED, the millivolt value of the sensor is too high, no calibration. (sensor switched off)
• Pt G: Pulse Train of the Green LED, the millivolt value is correct, its value is registered in the memory (setup: Pt G indicates that the value of the setup is registered in the memory)

When no sensor is correctly calibrated, the unit will show a fast alternating red/orange pulse train. (indicating both sensors are switched off). The rEvodream itself will switch off, and there is no correct PPO2 reading possible.

Also when the unit is switched ON with 1P, but all sensors are switched OFF, the HUD will signal the fast alternating red/orange, and the unit will switch off again. Only after correct calibration with good sensors, the unit will display the PPO2 again.

Altitude calibration / calibration with oxygen <100% pure

After calibration with oxygen , the display always shows 0.99 / 1.00. However, oxygen can have a lower purity then 100%, or calibration can be done at altitude (ambient pressure < 1 bar), so in those cases it is necessary to display a value less then 0.99 / 1.00. Decreasing the displayed values at the end of the calibration can be done by confirming with 1P at the end of the calibration sequence, when you see the 2FL. (The method is identical to reduce the 0.21 output when calibration with air at altitude for the SCR version).

When at the end of the calibration, after the 2FL, you confirm with 1 push, the rEvodream will reply with one 'wake-up signal'.
Immediately after this signal, it is possible to lower the reading by continuously pushing on the unit: you will see the value decrease, until you stop pushing. Once stopped, the rEvodream will give a green pulse train, confirming that the value is saved in memory, followed by again a 'wake-up signal'. By pushing again now you can decrease the reading of the second sensor (when 2 sensors are active). Again, once stopped, the unit will confirm the writing in memory by a green puls train. After this the unit returns to normal dive-mode.

Decreasing the displayed values is only possible for the active sensors.

Switching OFF

Once the rEvodream is switched on for **more then 2 minutes**, it is impossible to switch it off as long as the PPO2 > 0.50. While the PPO2 > 0.50 and the unit is on for more then 2 minutes, the rEvodream will not react to any push on the window, it will continue to display the PPO2 both on the display and on the HUD, but only the back-light will be on for 15 seconds.
To switch off the rEvodream, all is that is needed is to lower the PPO2 below 0.50 (rinsing with air/dil), and the unit will react to pushing again. Now you can switch the unit off by the normal single push (1P)
Alternatively you can lower the PPO2 below 0.25, and allow the unit to switch off by itself (+/- 15 minutes)

Auto-OFF

When the unit is in CCR mode, and the PPO2 of all readings is less then 0.25 bar for +/- 15 minutes, the unit will switch off automatically. (in SCR mode there is no auto-off)

Changing batteries:

A: rEvodream P

When the indication 'low battery' appears on the screen of the rEvodream (battery-sign in the left upper corner of the lcd), both batteries have to be replaced: (type: CR2450)

Unscrew the 8 bolts of the display, lift up the transparant window with the engraved plate, take away the neoprene cushion. Be carefull not to damage the wires that connect to the piezo in the window. Unscrew the battery clip. put 2 new batteries in place (+ up) and fix the clip again; the rEvodream goes into 'sleep-mode'. (If not loosen the clip shortly and fix again) If the polarity of the batteries is wrong, the rEvodream will not be damaged, but it wil not function eighter. Put the neopreen cushion, take care that the wires are not going over the LCD, but around, put the engraved plate and the transparant cover in place, and take care that the window has contact with the whole O-ring. There should be no dirt, hair or any dust visible on the O-ring! Fix the 8 bolts angain, but do not overtighten them!! (if so, the treath will be damaged!)
Now the unit can be used normally again.

After changing the batteries, all the setting- and calibrationdata still remains

B: rEvodream P5

For checking the battery life of the rEvodream P5, only the indication at room temperature should be regarded. Indications of low battery that appear only at temperatures below 15°C (59°F) can be disregarded: this is due to the temperature behaviour of the LCD when using a lower voltage battery, and not due to a real ‘low battery’.

When at room temperature, the first time a ‘low battery’ warning appears, the rEvodream P5 will work correctly for at least another month.

It is recommended to send the rEvodream P5 to a rEvo service center, for replacement of the battery, as the battery is soldered onto the printed circuit board. Users who are familiar with soldering on small electronics, can buy the specific battery from a rEvo service center.

After changing the batterie, all the setting- and calibrationdata still remains

Technical data

partial pressure oxigen gauge for max 2 sensor's type R22D
display of the PPO2 on the LCD screan and with 3 LED's (orange, green, red)
PPO2 between 0.00 and 2.00
max dept: 150m (pressure resistant) use is limited to divers certification
temp range: -5° + 40°

rEvodream P:
batteries: 2 x CR2450 lithium 3V
service life: +/- 200 diving hours

rEvodream P5:
battery: SAFT LS14500 with solder tag
service life: > 5 year in normal use, > 800 diving hours