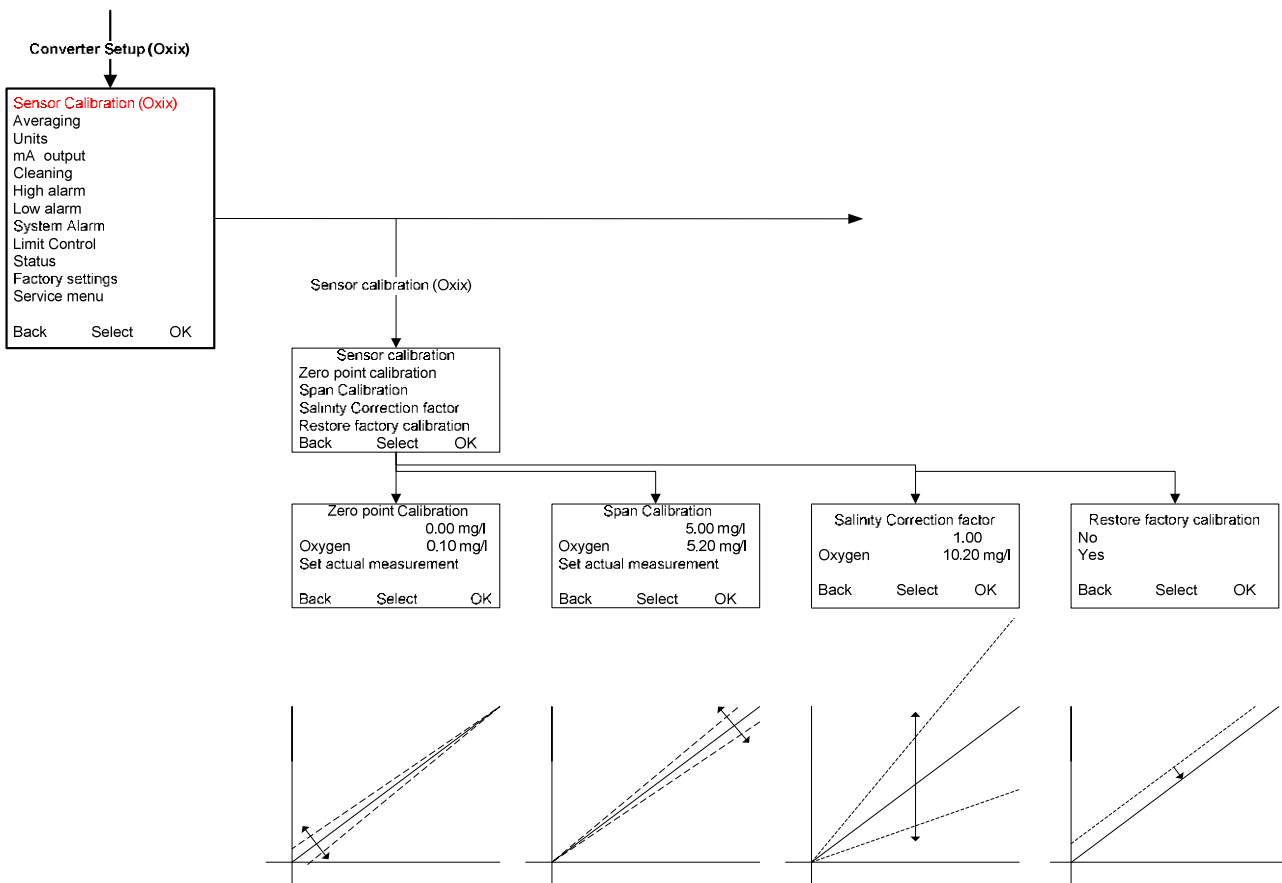# New Calibration Menu

Valid from firmware version 846003-001, a new calibration menu and method have been introduced in the Oxix converter.

A factory calibration of both zero point and span has been made at delivery; these calibrations can be done independently of each other. It is not usually necessary to calibrate. We recommend checking the zero position every 6 to 12 months.

The calibration is saved in the converter and you will need to conduct a new calibration if the sensor is moved to another converter.

We recommend conducting a factory reset of the sensor before conducting a new calibration, since you avoid that any errors in an existing calibration affect the new calibration.

We have also added a menu with the possibility of adjusting salinity levels in the measurement.

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Zero Point Calibration

```
Zero point Calibration
                    0.00 mg/l
Oxygen           0.10 mg/l
Set actual measurement

Back        Select        OK
```
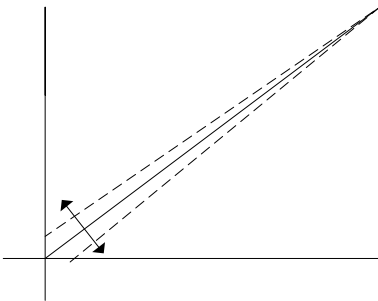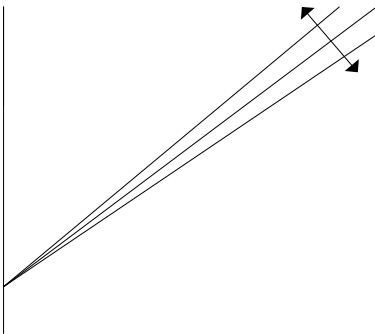

A zero point check or calibration is conducted as follows:

- The sensor is set for a zero point solution. The current measurement is shown in line 2 (0.10mg/l in this example).
- Set the desired measuring value on the first line using the up and down arrow keys.
- Save the current measurement setup by pressing OK.

The value is saved in the converter and will correct the measurement value of the sensor.
See section **Guide to Oxygen-free Solution for Checking Oxix D.O. Sensor Zero Point.**

Quick Guide for Oxix Calibration

Span Calibration

```
       Span Calibration
                    5.00 mg/l
Oxygen             5.20 mg/l
Set actual measurement

Back       Select      OK
```

A span check or calibration is conducted as follows:

- The sensor is measuring. The current measurement is shown in line 2 (5.20 mg/l in this example).
- Set the desired measuring value on the first line using the up and down arrow keys.
- Save the current measurement setup by pressing OK.

It is generally difficult to conduct a span calibration. Usually, a reference sensor is used to verify the measurement. For non-oxygen solutions, a variation of 1 to 5% between two sensors can occur (even when the sensors are placed right next to each other). Air bubbles on the optical window will create measurement variations.

**Theory on making oxygen saturated solution**

An oxygen saturated solution can be made from demineralised water being oxygenated for a minimum of 30 minutes with atmospheric air. This saturation can then be calculated into an oxygen concentration.
The temperature of the solution is measured with decimal and the atmospheric pressure is measured with mm Hg.

The ppm or mg/l value of the saturated solution at the given temperature can then be decided by using a matrix.

Salinity Correction Factor

```
Salinity Correction factor
                    1.00
Oxygen            10.20 mg/l

Back       Select       OK
```
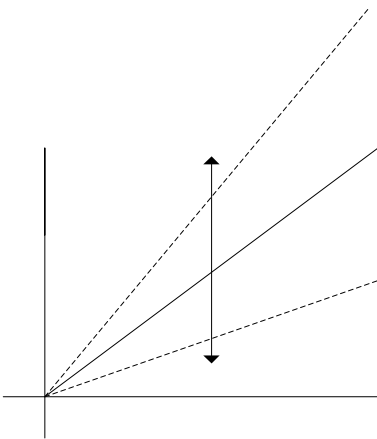

Oxix in salinity applications

A salinity correction factor is entered as follows:

- The sensor is measuring. The current measurement is shown in line 2 (10.20 mg/l in this example).
- Set the desired salinity correction factor on the first line using the up and down arrow keys. The interval is from 0.500 to 1.500.
- Save the current correction factor setup by pressing OK.

When measurement is done in the ppm or mg/litre units, a salinity correction is required (not when measuring in % SAT!).

The correction factor for the current application is found in a matrix with factors for different salinity levels, where the salinity level is shown by electrical conductivity.

It is assumed that the salinity level in the application is stable, as the factor can only be entered manually. Alternatively, Oxix can be used without correction factor and in itself correct the DO measuring based on the measured conductivity by third-party equipment.

Restore Factory Calibration

```
   Restore factory calibration
No
Yes


Back        Select        OK
```
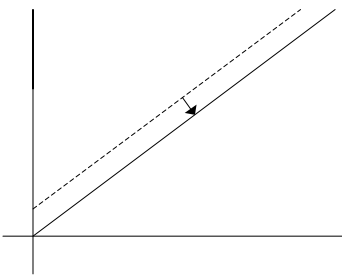
The sensor should be reset before calibrating zero point or span by using Reset Factory Calibration.

This helps avoiding any errors in an existing calibration affecting the new calibration.

Guide to Oxygen-free Solution for Checking Oxix D.O. Sensor Zero Point

Method

- Clean Oxix® and its optical window thoroughly.

- Dissolve 3 tablespoons Na_2SO_3 in 4 litres of tap water in an open container (bucket).

- Stir for about 1 minute.

- Immerse the sensor and let it rest in the solution for at least 30 minutes. (Towards the bottom with the window down; check that there are no air bubbles on the lens.

Notes

This solution actually contains a concentration of approximately 0.10 ppm dissolved oxygen.
In time, if the solution is left alone, stratification will occur so that the concentration will be higher towards to the surface.

If you need a reference sample with a dissolved oxygen concentration close to zero (approx. 0.02 ppm), the reference sample must be made with demineralised water and the solution must rest for 12-24 hours before measuring it.

It is important that the sensor and the optical window are completely clean when zero-point or calibration is conducted.

How it works

Na_2SO_3 (sodium sulphite) removes oxygen from the solution since Na_2SO_3 is oxidized by O_2 (oxygen) into Na_2SO_4 (sodium sulphate) following the reaction:

$$2Na_2SO_3 + O_2 \rightarrow 2\ Na_2SO_4$$
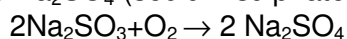
Materials

Bucket
Measuring jug
Tablespoon

Chemicals/Reagents

Sodium sulphite, Na_2SO_3, CAS-Nr. 7757-83-7 (Supplier VWR, Bie & Berntsen)
Tap water (alternatively, demineralised water)

Safety Precautions

Safety instructions for Na_2SO_3: None. There are no R- or S-phrases for the product.