

# **CALIBRATION CERTIFICATE**

Form No 854, May 5th 2020

Certificate no: Oxygen Optode 4831\_317\_207863

FoilID:

1517M

Product:

Oxygen Optode 4831

Serial no: 317

Calibration date:

18.11.2022

# 2-POINT RECALIBRATION, MULTIPOINT CALIBRATED OXYGEN OPTODE

This is to certify that this product has been calibrated and verified using the following reference equipment:

| Reference Equipment                    | Serial                                  |  |  |  |
|--|---|--|--|--|
| Calibration Bath Model Toho TM-005-P-A | 12-K                                    |  |  |  |
| Fluke 5615 PRT                         | Serial No. 802054 and Serial No. 849155 |  |  |  |
| Fluke CHUB E-4                         | Serial No. A7C677                       |  |  |  |
| Reference sensor 4330                  | 338                                     |  |  |  |

#### **Specification**

|                     | O2 Concentration | Air Saturation | Temperature |  |
|---------------------|------------------|----------------|-------------|--|
| Range               | 0-500 μΜ         | 0 - 120%       | -5 to +40°C |  |
| Accuracy            | < ±3µM or ±2% 1) | ±2% 2)         | ±0.03°C 3)  |  |
| Resolution          | < 1 µM           | < 0.4%         | 0.01°C      |  |
| Settling Time (63%) | < 25 seconds     | < 25 seconds   | < 2 seconds |  |

<sup>1)</sup> Requires salinity compensation for salinity variations > 1mS/cm, and pressure compensation for pressure > 100meter

### Calibration points and readings:

|                          | Air Saturated Water | Zero Solution (Na2SO3) |  |  |
|--------------------------|---------------------|------------------------|--|--|
| Phase reading (°)        | 33.58               | 60.22                  |  |  |
| Temperature reading (°C) | 10.13               | 21.17                  |  |  |
| Air Pressure (hPa)       | 977.43              |                        |  |  |

### Giving these coefficients

| Index    | 0 (Offset)    | 1 (Slope)    |  |  |
|----------|---------------|--------------|--|--|
| ConcCoef | -5.568889E-01 | 1.035455E+00 |  |  |

### With following settings

| Index            | 0            | 1.32          | 2            | 3             | 4            | 5            | 6           |
|------------------|--------------|---------------|--------------|---------------|--------------|--------------|-------------|
| SVUFoilCoef      | 2.56157E-03  | 1.08221E-04   | 2.18603E-06  | 1.62520E+02   | -2.35562E-01 | -3.87195E+01 | 3.25071E+00 |
| PhaseCoef        | 0.000000E+00 | 1.000000E+00  | 0.000000E+00 | 0.000000E+00  |              |              |             |
| TempCoef         | 2.602061E+01 | -3.111602E-02 | 2.960121E-06 | -4.383990E-09 | 0.000000E+00 | 0.000000E+00 |             |
| Salinity (mS/cm) | 0.00         |               |              |               |              |              |             |
| Firmware Version | 5.3.1        |               |              |               |              |              |             |

Date:18.11.2022

<sup>2)</sup> Within calibrated range 0 - 120% / 0 - 30°C
3) Within calibrated range 0 - 36°C for standard version and 0 - 30°C for multipoint version