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# TEST & SPECIFICATIONS

Form No. 712 V3, May 2020

**Program Version:** 5.3.1

**Product:** Oxygen Optode 4831IW
**Serial No:** 951

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**Visual and Mechanical Checks:**

1.1 Soldering quality
1.2 Visual surface
1.3 Galvanic isolation between housing and electronics

**Current Drain and Voltages:**

| | | | |
|---|---|---|---|
| 2.1 | Average current drain at 0.5 Hz sampling (Max.: 33 mA) | 22.4 | mA |
| 2.2 | CANBus Current drain at 0.5 Hz sampling (Max.: 33 mA) | | mA |
| 2.3 | Current drain in sleep (Max.: 270 µA) | 262 | µA |
| 2.4 | CANBus Current drain in sleep (Max.: 180 µA) | | µA |
| 2.5 | DSP IO voltage, J4.18 (3.3 ±0.15V) | 3.29 | V |
| 2.6 | DSP Core voltage, J4.17(1.8 ±0.05 V) | 1.80 | V |
| 2.7 | Excitation driver voltage, C4 Analog Board (4.3 ±0.1 V) | 4.32 | V |

| **Performance test:** | Channel: | Blue | | Red | |
|---|---|---|---|---|---|
| 3.1 | Average of Receiver readings (0±150mV) | -14.8 | mV | -10.8 | mV |
| 3.2 | Standard Deviation of Receiver readings (Max.: 45mV/10mV) | 1.89 | mV | 0.38 | mV |
| 3.3 | Amplitude measurement with non-fluorescence foil (<60mV/650-1200mV) | 8.8 | mV | 798 | mV |
| 3.4 | CANBus Output test | | | | |

| **Function test from 0 to 40°C:** | Channel: | Blue | | Red | |
|---|---|---|---|---|---|
| 4.1 | Minimum amplitude measurement (Blue: >550 mV, Red >550 mV) | 706.6 | mV | 667.8 | mV |
| 4.2 | Maximum amplitude measurement (Blue: <1600 mV, Red <1400 mV) | 1087 | mV | 1047.4 | mV |
| 4.3 | Minimum phase measurement (Blue: >32°, Red: >3°) | 34.13 | ° | 6.88 | ° |
| 4.4 | Maximum phase measurement (Blue: <45°, Red: <10°) | 40.04 | ° | 8.21 | ° |
| 4.5 | Maximum standard deviation of Phase measurement: (< 0.07°) | 0.05 | ° | 0.05 | ° |
| 4.6 | Minimum temperature raw data measurement: (<-200 mV) | | | -368.3 | mV |
| 4.7 | Maximum temperature raw data measurement: (>450 mV) | | | 785.6 | mV |

Date: 11 Feb 2021

Sign:
Laila A. Skålnes

Laila Skålnes, Production Engineer

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# PRESSURE CERTIFICATE

Form No. 667, Sept 2009

**Product:** Oxygen Optode 4831W
**Serial No:** 951
**Date:** 11.02.2021

**Certificate No:** 181483260951

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This is to certify that this product has been pressure tested with the following instrument, and we confirm that no irregularities were found during the test:

Autoklav 800 bar – sn: 0210005

**Pressure readings:**

| Pressure (Bar) | Pressure time (hour) |
|---|---|
| 300 | 1 |

Date: 11 Feb 2021

Sign:
Laila A. Skålnes

Laila Skålnes, Production Engineer

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# CALIBRATION CERTIFICATE

Form No 830, March 2021

Certificate no: 4831_951_00181649
Foil batch no: 1824M

Product: 4831
Calibration date: 17.02.2021

Serial no: 951


| Index | Temperature reference(°C) | [O2] Reference(µM) | Temperature raw data(mV) | Phase reading(°) |
|---|---|---|---|---|
| 0 | 30.289 | 1.43 | -29.580 | 60.10 |
| 1 | 20.346 | 1.15 | 291.660 | 61.05 |
| 2 | 10.193 | 0.90 | 614.420 | 61.86 |
| 3 | 0.844 | 0.73 | 884.073 | 62.54 |
| 4 | 0.897 | 20.81 | 882.660 | 59.82 |
| 5 | 0.944 | 42.15 | 881.393 | 57.19 |
| 6 | 0.979 | 63.00 | 880.447 | 54.91 |
| 7 | 1.010 | 106.55 | 879.607 | 50.80 |
| 8 | 1.033 | 147.09 | 878.987 | 47.64 |
| 9 | 1.052 | 215.44 | 878.480 | 43.31 |
| 10 | 1.070 | 320.86 | 878.000 | 38.39 |
| 11 | 1.085 | 425.63 | 877.587 | 34.85 |
| 12 | 1.098 | 533.37 | 877.253 | 32.10 |
| 13 | 10.755 | 15.66 | 597.173 | 58.78 |
| 14 | 10.649 | 34.05 | 600.407 | 55.59 |
| 15 | 10.582 | 50.46 | 602.467 | 53.12 |
| 16 | 10.523 | 84.50 | 604.273 | 48.80 |
| 17 | 10.476 | 117.64 | 605.713 | 45.40 |
| 18 | 10.434 | 168.54 | 607.020 | 41.25 |
| 19 | 10.400 | 257.33 | 608.053 | 36.06 |
| 20 | 10.369 | 335.85 | 609.000 | 32.85 |
| 21 | 10.354 | 417.61 | 609.467 | 30.31 |
| 22 | 20.552 | 12.52 | 284.933 | 57.73 |
| 23 | 20.487 | 27.40 | 287.060 | 54.16 |
| 24 | 20.442 | 40.68 | 288.513 | 51.45 |
| 25 | 20.405 | 67.65 | 289.700 | 46.89 |
| 26 | 20.378 | 94.82 | 290.593 | 43.27 |
| 27 | 20.351 | 134.91 | 291.487 | 39.13 |
| 28 | 20.326 | 200.70 | 292.287 | 34.32 |
| 29 | 20.307 | 270.03 | 292.880 | 30.84 |
| 30 | 20.294 | 339.43 | 293.327 | 28.31 |
| 31 | 30.359 | 10.22 | -31.793 | 56.73 |
| 32 | 30.352 | 22.54 | -31.600 | 52.83 |
| 33 | 30.352 | 33.44 | -31.587 | 49.92 |
| 34 | 30.353 | 54.51 | -31.600 | 45.32 |
| 35 | 30.352 | 76.75 | -31.587 | 41.56 |
| 36 | 30.361 | 110.49 | -31.840 | 37.25 |
| 37 | 30.379 | 165.33 | -32.400 | 32.45 |
| 38 | 30.379 | 218.57 | -32.400 | 29.27 |
| 39 | 30.381 | 277.57 | -32.473 | 26.77 |

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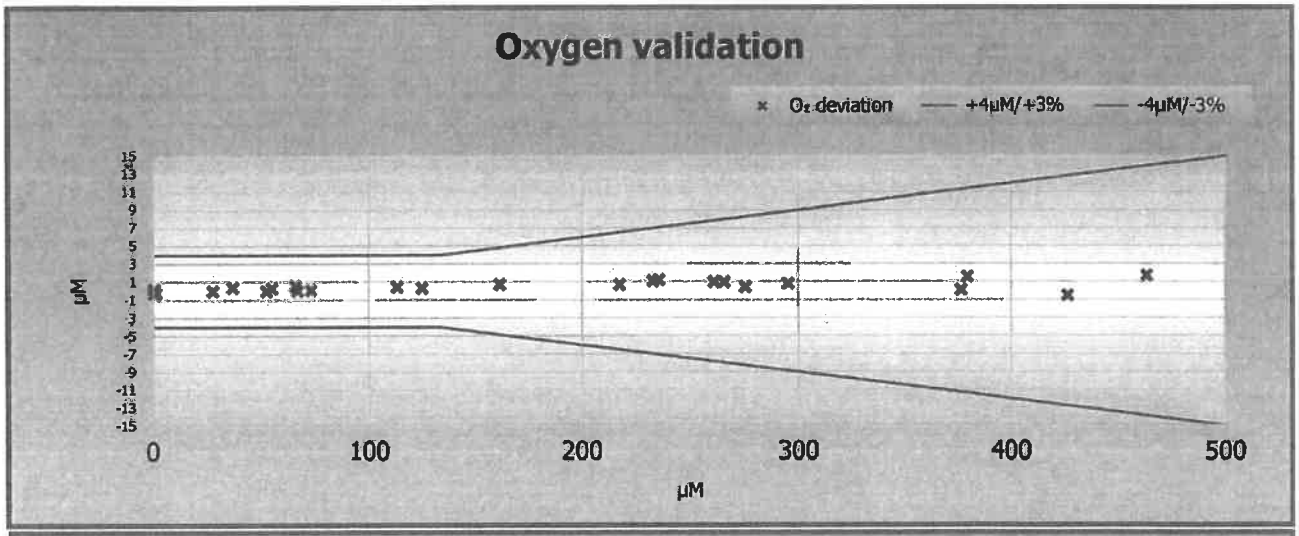
# CALIBRATION CERTIFICATE

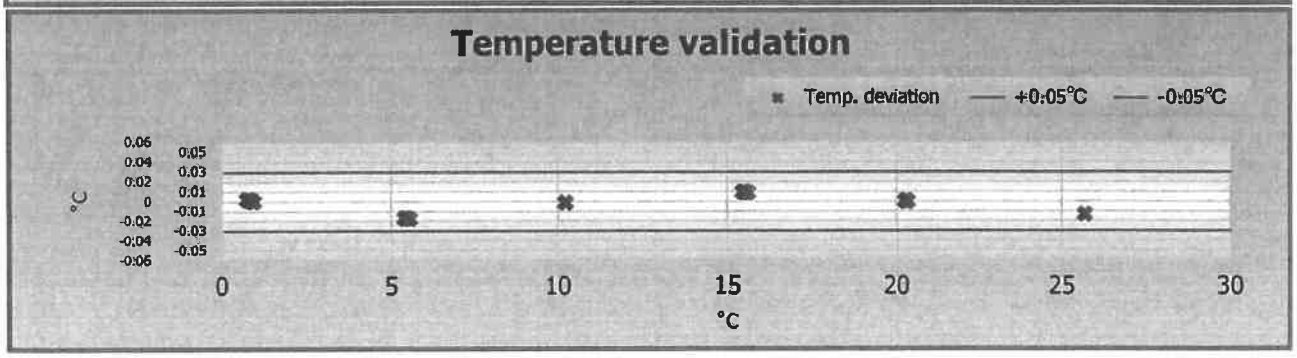
Form No 830, March 2021

Certificate no: 4831_951_00181649 | Product: 4831 | Serial no: 951
Foil batch no: 1824M | Calibration date: 17.02.2021 | 

**Giving these coefficients**

| Index | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| SVUFoilCoef | 2.79543E-03 | 1.18071E-04 | 2.34446E-06 | 1.47304E02 | -2.10486E-01 | -3.39037E01 | 2.93287E00 |
| TempCoef | 2.93530E01 | -3.15198E-02 | 3.65313E-06 | -5.06113E-09 | 0.00000E00 | 0.00000E00 | |




**With following settings**

| Index | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| PhaseCoef | -9.64000E-01 | 1.00000E00 | 0.00000E00 | 0.00000E00 |

| Index | 0 (Offset) | 1 (Slope) |
|---|---|---|
| ConcCoef | 0.00000E00 | 1.00000E00 |
| Salinity | 0.00 | |
| Firmware Version | 5.3.1 | |

Date:17.02.2021

Tor-Ove Kvalvaag, Calibration Engineer