



a xylem brand

# TEST & SPECIFICATIONS

Form No. 712 V2, March 2014

Program Version: V4.8.1

Product: Oxygen Optode 4831

Serial No: 416

## 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)         | 20.5 | mA      |
| 2.2 CANBus Current drain at 0.5 Hz sampling (Max.: 33 mA)          |      | mA      |
| 2.3 Current drain in sleep (Max.: 180 $\mu$ A)                     | 202  | $\mu$ A |
| 2.4 CANBus Current drain in sleep (Max.: 180 $\mu$ A)              |      | $\mu$ A |
| 2.5 DSP IO voltage, J4.18 ( $3.3 \pm 0.15$ V)                      |      | V       |
| 2.6 DSP Core voltage, J4.17 ( $1.8 \pm 0.05$ V)                    | 1.83 | V       |
| 2.7 Excitation driver voltage, C4 Analog Board ( $4.5 \pm 0.15$ V) | 4.60 | V       |

## Performance test:

|                                                                    | Channel: | Blue     | Red      |
|--------------------------------------------------------------------|----------|----------|----------|
| 3.1 Average of Receiver readings ( $0 \pm 150$ mV)                 |          | -24.8 mV | -7.0 mV  |
| 3.2 Standard Deviation of Receiver readings (Max.: 45mV/10mV)      |          | 11.40 mV | 2.70 mV  |
| 3.3 Amplitude measm. with non-fluorescence foil (<60mV/650-1200mV) |          | 10.2 mV  | 872.2 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 >650 mV)   |          | 716.2 mV  | 685.7 mV  |
| 4.2 Maximum amplitude measurement (Blue: <1600 mV, Red <1400 mV) |          | 1137.4 mV | 1152.5 mV |
| 4.3 Minimum phase measurement (Blue: >24°, Red: >1°)             |          | 36.31 °   | 8.3 °     |
| 4.4 Maximum phase measurement (Blue: <34°, Red: <5°)             |          | 43.21 °   | 9.2 °     |
| 4.5 Maximum standard deviation of Phase measurement: (< 0.02°)   |          | 0.08 °    | 0.03 °    |
| 4.6 Minimum temperature raw data measurement: (<-200 mV)         |          |           | -513.8 mV |
| 4.7 Maximum temperature raw data measurement: (>450 mV)          |          |           | 728.1 mV  |

## Pressure test :

|                                                    |       |
|----------------------------------------------------|-------|
| 5.1 Pressure (IW version: 20MPa, DW version 60MPa) | 60MPa |
|----------------------------------------------------|-------|

Date: 21 Jul 2014

Sign:

*Jan Øyvind Trellevik*

Jan Øyvind Trellevik,  
Production Engineer

# PRESSURE CERTIFICATE

Form No. 667, Sept 2009

**Product:** Oxygen Optode 4831  
**Serial No:** 416  
**Date:** 07.07.2014

**Certificate No:** 98989260416

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) |
|----------------|----------------------|
| 600            | 1                    |

Date: 21 Jul 2014

Sign:

*Jan Øyvind Trellevik*

Jan Øyvind Trellevik,  
Production Engineer

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# CALIBRATION CERTIFICATE

Form No 830, Juli 2012

Certificate no: 4831\_416\_00104392  
Foil batch no: 1206EM

Product: 4831  
Calibration date: 28.01.2015

Serial no: 416  
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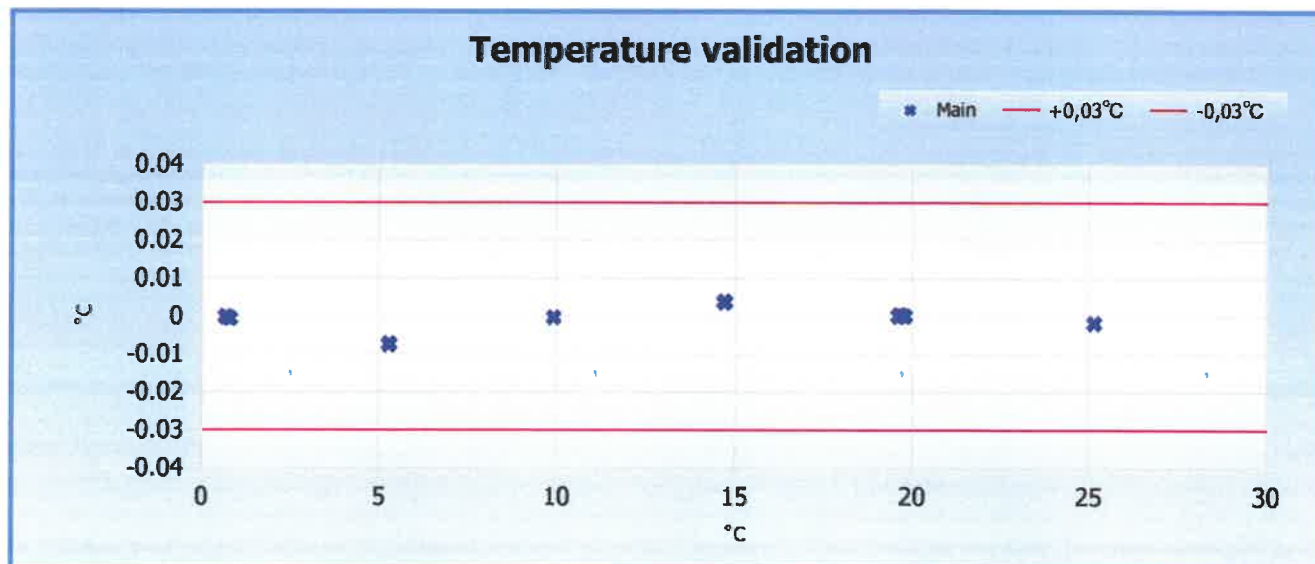
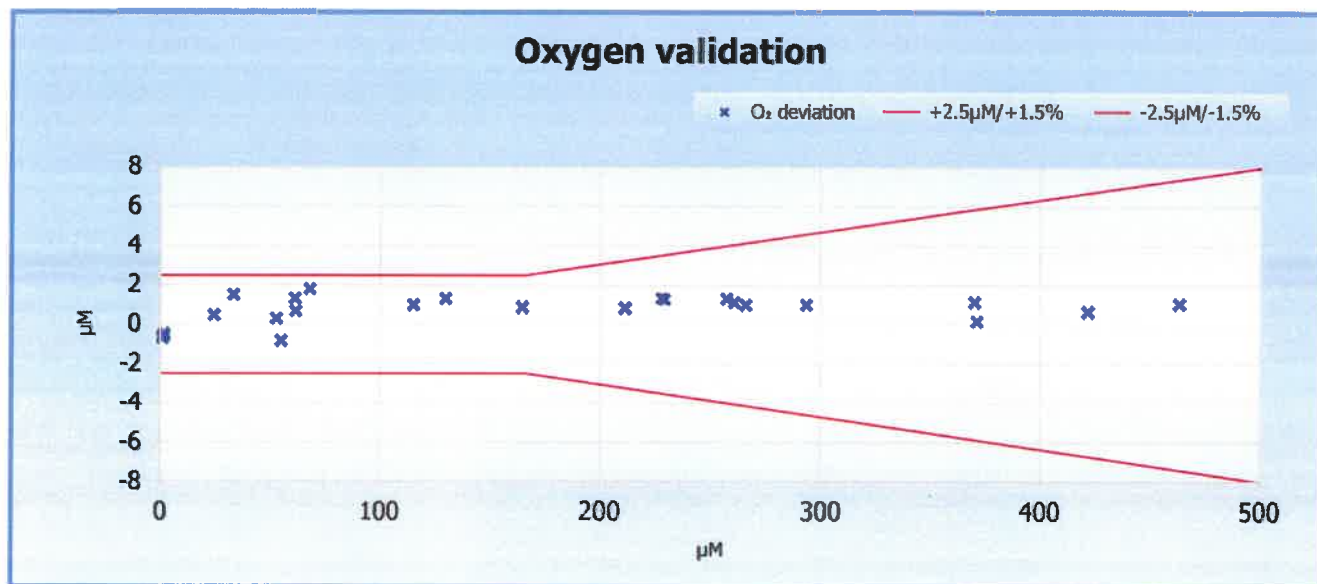
| Index | Temperature reference(°C) | [O2] Reference(µM) | Temperature raw data(mV) | Phase reading(°) |
|-------|---------------------------|--------------------|--------------------------|------------------|
| 0     | 30.267                    | 1.65               | -182.980                 | 59.99            |
| 1     | 19.764                    | 0.91               | 147.060                  | 61.30            |
| 2     | 9.880                     | 0.96               | 464.950                  | 62.13            |
| 3     | 0.716                     | 1.54               | 744.190                  | 62.82            |
| 4     | 0.664                     | 20.72              | 745.690                  | 60.28            |
| 5     | 0.625                     | 44.07              | 746.800                  | 57.56            |
| 6     | 0.593                     | 65.03              | 747.730                  | 55.36            |
| 7     | 0.564                     | 108.11             | 748.565                  | 51.46            |
| 8     | 0.533                     | 149.01             | 749.480                  | 48.31            |
| 9     | 0.538                     | 220.11             | 749.325                  | 43.92            |
| 10    | 0.576                     | 322.08             | 748.215                  | 39.19            |
| 11    | 0.590                     | 432.87             | 747.810                  | 35.54            |
| 12    | 0.638                     | 533.81             | 746.435                  | 32.88            |
| 13    | 10.082                    | 13.84              | 458.600                  | 59.43            |
| 14    | 10.014                    | 33.86              | 460.740                  | 56.14            |
| 15    | 9.959                     | 50.48              | 462.475                  | 53.73            |
| 16    | 9.919                     | 84.73              | 463.745                  | 49.51            |
| 17    | 9.873                     | 117.11             | 465.175                  | 46.20            |
| 18    | 9.854                     | 172.75             | 465.790                  | 41.75            |
| 19    | 9.850                     | 254.17             | 465.885                  | 37.00            |
| 20    | 9.849                     | 336.88             | 465.945                  | 33.53            |
| 21    | 9.853                     | 422.78             | 465.805                  | 30.87            |
| 22    | 19.888                    | 10.96              | 143.055                  | 58.39            |
| 23    | 19.830                    | 27.05              | 144.910                  | 54.73            |
| 24    | 19.778                    | 40.01              | 146.630                  | 52.18            |
| 25    | 19.737                    | 67.65              | 147.940                  | 47.63            |
| 26    | 19.688                    | 93.17              | 149.480                  | 44.24            |
| 27    | 19.664                    | 137.34             | 150.290                  | 39.72            |
| 28    | 19.655                    | 202.64             | 150.560                  | 34.99            |
| 29    | 19.652                    | 268.61             | 150.665                  | 31.61            |
| 30    | 19.653                    | 338.12             | 150.600                  | 29.04            |
| 31    | 30.078                    | 8.94               | -177.260                 | 57.38            |
| 32    | 30.084                    | 22.01              | -177.485                 | 53.38            |
| 33    | 30.091                    | 33.05              | -177.640                 | 50.49            |
| 34    | 30.099                    | 54.39              | -177.900                 | 45.91            |
| 35    | 30.107                    | 75.48              | -178.130                 | 42.34            |
| 36    | 30.113                    | 111.27             | -178.300                 | 37.76            |
| 37    | 30.119                    | 164.13             | -178.500                 | 33.09            |
| 38    | 30.121                    | 219.07             | -178.600                 | 29.79            |
| 39    | 30.124                    | 276.20             | -178.655                 | 27.32            |

Certificate no: 4831\_416\_00104392  
Foil batch no: 1206EM

Product: 4831  
Calibration date: 28.01.2015

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|-------------|-------------|--------------|-------------|--------------|--------------|-------------|------------|
| SUVFoilCoef | 2.70977E-03 | 1.17817E-04  | 2.13073E-06 | 2.29811E02   | -3.72605E-01 | -5.74369E01 | 4.55263E00 |
| TempCoef    | 2.43588E01  | -3.15935E-02 | 3.00210E-06 | -4.35530E-09 | 0.00000E00   | 0.00000E00  |            |



Date:28.01.2015

*Tor-Ove Kvalvaag*  
Tor-Ove Kvalvaag, Calibration Engineer