

**Layout No:** 1308E, 1299G  
**Circuit Diagram No:**  
**Program Version:** 3, Build: 22

**Product:** Oxygen Optode 3835  
**Serial No:** 1415

**1. Visual and Mechanical Checks:**

- 1.1. O-ring surface
- 1.2. Soldering quality
- 1.3. Visual surface
- 1.4. Galvanic isolation between housing and electronics

**2. Current Drain and Voltages:**

- |  |        |
|--|--------|
| 2.1. Average current drain at 0.5Hz sampling (Max: 38mA) | 33 mA  |
| 2.2. Current drain in sleep (Max: 300µA)                 | 165 µA |
| 2.3. Quiescent current drain from -9V (Max: 5µA)         | 0 µA   |
| 2.4. DSP voltage, IC5.1 (3.3 ±0.15V)                     | 3.30 V |
| 2.5. Excitation driver voltage, IC1.1 (3.3 ±0.15V)       | 3.33 V |
| 2.6. Flash/RS232 driver voltage, IC7.4 (5 ±0.2V)         | 5.06 V |

**3. Receiver test:**

- |  |         |
|--|---------|
| 3.1. Average of Receiver readings (0 ±50mV)              | -14 mV  |
| 3.2. Standard Deviation of Receiver readings (Max: 10mV) | 2.27 mV |

**4. Performance Test in Air, 0°C Temperature:**

- |  |           |
|--|-----------|
| 4.1. Amplitude measurement (Blue: 220 – 470mV)             | 319.49 mV |
| 4.2. Phase measurement (Blue: 30 ±5°)                      | 33.2 °    |
| 4.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.005 °   |
| 4.4. Temperature measurement: (700 ±300mV)                 | 784.31 mV |
| 4.5. SR10 Output tested (Set_Output(-100))                 |           |

**5. Performance Test in Air, 20°C Temperature:**

- |  |           |
|--|-----------|
| 5.1. Amplitude measurement (Blue: 290 – 470mV)             | 377.53 mV |
| 5.2. Phase measurement (Blue: 25 ±5°)                      | 28.1 °    |
| 5.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.018 °   |
| 5.4. Temperature measurement: (100 ±300mV)                 | 9.56 mV   |
| 5.5. SR10 Output tested (Set_Output(-100))                 |           |

**6. Performance Test in Air, 40°C Temperature:**

- |  |            |
|--|------------|
| 6.1. Amplitude measurement (Blue: 320 – 500mV)             | 401.68 mV  |
| 6.2. Phase measurement (Blue: 22 ±5°)                      | 25.0 °     |
| 6.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.012 °    |
| 6.4. Temperature measurement: (-500 ±300mV)                | -473.74 mV |
| 6.5. SR10 Output tested (Set_Output(-100))                 |            |

Date: 02 Sep 2010

Sign:



Jan Øyvind Trellevik,  
Production Engineer

**Sensing Foil Batch No:** 5009  
**Certificate No:****Product:** Oxygen Optode 3835  
**Serial No:** 1415  
**Calibration Date:** 18 Aug 2010

This is to certify that this product has been calibrated using the following instruments:

Calibration Bath model FNT 321-1-40  
ASL Digital Thermometer model F250 Serial: 6792/06**Parameter: Internal Temperature:****Calibration points and readings:**

Temperature (°C)	0.97	11.91	23.86	35.87
Reading (mV)	761.75	421.67	30.10	-340.54

**Giving these coefficients**

Index	0	1	2	3
TempCoef	2.47928E01	-3.10190E-02	2.92928E-06	-4.28923E-09

**Parameter: Oxygen:**

	O2 Concentration	Air Saturation
Range:	0-500 µM <sup>1)</sup>	0 - 120%
Accuracy <sup>1)</sup> :	< ±8µM or ±5% (whichever is greater)	±5%
Resolution:	< 1 µM	< 0.4%
Settling Time (63%):	< 25 seconds	

**Calibration points and readings<sup>2)</sup>:**

	Air Saturated Water	Zero Solution (Na <sub>2</sub> SO <sub>3</sub> )
Phase reading (°)	3.10321E+01	6.52400E+01
Temperature reading (°C)	9.92542E+00	2.11634E+01
Air Pressure (hPa)	1.01214E+03	

**Giving these coefficients**

Index	0	1	2	3
PhaseCoef	-1.60056E00	1.12824E00	0.00000E00	0.00000E00

<sup>1)</sup> Valid for 0 to 2000m (6562ft) depth, salinity 33 - 37ppt<sup>2)</sup> The calibration is performed in fresh water and the salinity setting is set to: 0

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### SR10 Scaling Coefficients:

At the SR10 output the Oxygen Optode 3830 can give either absolute oxygen concentration in  $\mu\text{M}$  or air saturation in %. The setting of the internal property "Output"<sup>3)</sup>, controls the selection of the unit. The coefficients for converting SR10 raw data to engineering units are fixed.

Output = -1	Output = -2
A = 0	A = 0
B = 4.883E-01	B = 1.465E-01
C = 0	C = 0
D = 0	D = 0
Oxygen ( $\mu\text{M}$ ) = A + BN + CN2 + DN3	Oxygen (%) = A + BN + CN2 + DN3

<sup>3)</sup> The default output setting is set to -1

Date: 19 Aug 2010

Sign:



Tor-Ove Kvalvaag, Calibration Engineer

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a xylem brand

# CALIBRATION CERTIFICATE

Form No. 621, Dec 2005

**Certificate No:** 3853\_5009\_40331  
**Batch No:** 5009

**Product:** O2 Sensing Foil PSt3 3853  
**Calibration Date:** 02 Jun 2010

## Calibration points and phase readings (degrees)

Temperature (°C)		3.97	10.93	20.15	29.32	38.39
Pressure (hPa)		977.00	977.00	977.00	977.00	977.00
O2 in % of O2+N2	0.00	73.18	72.63	71.62	70.72	69.77
	1.00	68.01	67.02	65.42	63.92	62.31
	2.00	64.39	63.16	61.20	59.44	57.57
	5.00	55.80	54.16	51.76	49.56	47.45
	10.00	46.27	44.47	41.97	39.75	37.69
	20.90	35.09	33.38	31.14	29.24	27.56
	30.00	29.85	28.30	26.31	24.64	23.19

Giving these coefficients <sup>1)</sup>

Index	0	1	2	3
C0 Coefficient	4.53793E+03	-1.62595E+02	3.29574E+00	-2.79285E-02
C1 Coefficient	-2.50953E+02	8.02322E+00	-1.58398E-01	1.31141E-03
C2 Coefficient	5.66417E+00	-1.59647E-01	3.07910E-03	-2.46265E-05
C3 Coefficient	-5.99449E-02	1.48326E-03	-2.82110E-05	2.15156E-07
C4 Coefficient	2.43614E-04	-5.26759E-06	1.00064E-07	-7.14320E-10

<sup>1)</sup> Ask for Form No 621S when this O2 Sensing Foil is used in Oxygen Sensor 3830 with Serial Numbers lower than 184.

Date: 11/14/2013

Sign:

Tor-Ove Kvalvaag, Calibration Engineer

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