



AANDERAA DATA INSTRUMENTS

TEST & SPECIFICATIONS

Form No. 620, Nov 2005

Layout No: 1308E, 1299F
Circuit Diagram No:
Program Version: 3, Build: 11

Product: Oxygen Optode 3830
Serial No: 762

1. Visual and Mechanical Checks:

- 1.1. O-ring surface
- 1.2. Soldering quality
- 1.3. Visual surface
- 1.4. Pressure test (60MPa)
- 1.5. Galvanic isolation between housing and electronics

2. Current Drain and Voltages:

- | | |
|---|--------|
| 2.1. Average current drain at 0.5Hz sampling (Max: 38mA) | 32 mA |
| 2.2. Current drain in sleep (Max: 300µA) | 220 µA |
| 2.3. Quiescent current drain from -9V (Max: 5µA) | 0 µA |
| 2.4. DSP voltage, IC5.1 ($3.3 \pm 0.15V$) | 3.32 V |
| 2.5. Excitation driver voltage, IC1.1 ($3.3 \pm 0.15V$) | 3.31 V |
| 2.6. Flash/RS232 driver voltage, IC7.4 ($5 \pm 0.2V$) | 5.09 V |

3. Receiver test:

- | | |
|--|---------|
| 3.1. Average of Receiver readings ($0 \pm 50mV$) | 1 mV |
| 3.2. Standard Deviation of Receiver readings (Max: 10mV) | 1.68 mV |

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

- | | |
|--|-----------|
| 4.1. Amplitude measurement (Blue: 220 – 470mV) | 387.26 mV |
| 4.2. Phase measurement (Blue: 30 ± 5) | 32.6 ° |
| 4.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.001 ° |
| 4.4. Temperature measurement: ($700 \pm 300mV$) | 595.25 mV |
| 4.5. SR10 Output tested (Set_Output(-100)) | |

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

- | | |
|--|-----------|
| 5.1. Amplitude measurement (Blue: 290 – 470mV) | 377.39 mV |
| 5.2. Phase measurement (Blue: 25 ± 5) | 29.0 ° |
| 5.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.003 ° |
| 5.4. Temperature measurement: ($100 \pm 300mV$) | 64.08 mV |
| 5.5. SR10 Output tested (Set_Output(-100)) | |

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

- | | |
|--|------------|
| 6.1. Amplitude measurement (Blue: 320 – 500mV) | 358.47 mV |
| 6.2. Phase measurement (Blue: 22 ± 5) | 25.7 ° |
| 6.3. Standard deviation of Phase measurement: (Max: 0.02°) | 0.009 ° |
| 6.4. Temperature measurement: ($-500 \pm 300mV$) | -447.73 mV |
| 6.5. SR10 Output tested (Set_Output(-100)) | |

Date: 24 April 2008

Sign:

Vidar Selsvik, Production Engineer



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CALIBRATION CERTIFICATE

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Form No. 622, Dec 2005
Page 1 of 2

Sensing Foil Batch No: 4804
Certificate No: 3830 762 38891

Product: Oxygen Optode 3830
Serial No: 762
Calibration Date: 23 June 2006

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

ASL Digital Thermometer model F250
Platinum Resistance Thermometer
Calibration Bath model FNT 321-1-40

Serial No. 06792/06
Serial No. 2H1072/1

Parameter: Internal Temperature:

Calibration points and readings:

Temperature (°C)	1.14	12.08	24.08	36.04
Reading (mV)	706.36	382.82	14.96	-330.31

Giving these coefficients

Index	0	1	2	3
TempCoef	2.45758E+01	-3.31947E-02	3.12854E-06	-4.39602E-09

Parameter: Oxygen:

	O2 Concentration	Air Saturation
Range:	0-500 μM ¹⁾	0 - 120%
Accuracy ¹⁾ :	< $\pm 8\mu\text{M}$ or $\pm 5\%$ (whichever is greater)	$\pm 5\%$
Resolution:	< 1 μM	< 0.4%
Settling Time (63%):	< 25 seconds	

Calibration points and readings ²⁾:

	Air Saturated Water	Zero Solution (Na_2SO_3)
Phase reading (°)	2.96303E+01	6.36611E+01
Temperature reading (°C)	1.98587E+01	2.06754E+01
Air Pressure (hPa)	1.00591E+03	

Giving these coefficients

Index	0	1	2	3
PhaseCoef	-9.14922E+00	1.22441E+00	0.00000E+00	0.00000E+00

¹⁾ Valid for 0 to 2000m (6562ft) depth, salinity 33 - 37ppt

²⁾ The calibration is performed in fresh water and the salinity setting is set to:

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CALIBRATION CERTIFICATE

Form No. 622, Dec 2005
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Sensing Foil Batch No: 4804
Certificate No: 3830 762 38891

Product: Oxygen Optode 3830
Serial No: 762
Calibration Date: 23 June 2006

SR10 Scaling Coefficients:

At the SR10 output the Oxygen Optode 3830 can give either absolute oxygen concentration in μM or air saturation in %. The setting of the internal property "Output"³⁾, 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 (μM) = A + BN + CN2 + DN3	Oxygen (%) = A + BN + CN2 + DN3

³⁾ The default output setting is set to -1

Date: 7 August 2006

Sign:

Tor-Ove Kvalvaag

Tor-Ove Kvalvaag, Calibration Engineer



AANDERAA DATA INSTRUMENTS AS

5851 BERGEN, NORWAY

Tel. +47 55 60 48 00

Fax. +47 55 60 48 01

E-mail: info@aadi.no

Web: <http://www.aadi.no>



CALIBRATION CERTIFICATE

AANDERAA DATA INSTRUMENTS

Form No. 621, Dec 2005

Certificate No: 3853 4804 38314
Batch No: 4804

Product: O2 Sensing Foil PSt3 3853
Calibration Date: 25 July 2006

Calibration points and phase readings (degrees)

Temperature (°C)		2.81	10.67	20.23	29.79	39.15
Pressure (hPa)		970.73	970.73	970.73	970.73	970.73
O2 in % of O2+N2	0.00	70.02	69.37	68.43	67.47	66.25
	1.00	65.87	64.80	63.36	61.92	60.25
	2.00	62.07	60.67	58.85	57.04	55.02
	5.00	53.10	51.16	48.76	46.46	44.13
	10.00	43.25	41.09	38.51	36.15	33.89
	20.90	31.53	29.52	27.21	25.18	23.31
	30.00	26.03	24.21	22.17	20.39	18.77

Giving these coefficients ¹⁾

Index	0	1	2	3
C0 Coefficient	3.17242E+03	-1.07261E+02	2.13316E+00	-1.79234E-02
C1 Coefficient	-1.73981E+02	5.10262E+00	-9.85758E-02	8.02240E-04
C2 Coefficient	3.95600E+00	-9.81040E-02	1.85346E-03	-1.42536E-05
C3 Coefficient	-4.26337E-02	8.78820E-04	-1.64409E-05	1.13709E-07
C4 Coefficient	1.76869E-04	-2.95502E-06	5.55039E-08	-3.08493E-10

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

Date: 4/24/2008

Sign:

AANDERAA DATA INSTRUMENTS AS

5851 BERGEN, NORWAY

Tel. +47 55 60 48 00

Fax. +47 55 60 48 01

E-mail: info@aadi.no

Web: <http://www.aadi.no>