AANDERAA a xylem brand

TEST & SPECIFICATIONS

Form No. 784, July 2008

Layout No:
Circuit Diagram No:
Program Version: 4:09:01 AM

Product: Oxygen Optode 4831F
Serial No: 596

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)	21.5	mA
2.2	CANBus Current drain at 0.5 Hz sampling (Max.: 33 mA)	mA	
2.3	Current drain in sleep (Max.: 180 µA)	225µA	
2.4	CANBus Current drain in sleep (Max.: 180 µA)	µA	
2.5	DSP IO voltage, J4.18 (3.3 ±0.15V)	V	
2.6	DSP Core voltage, J4.17(1.8 ±0.05 V)	1.81	V
2.7	Excitation driver voltage, C4 Analog Board (4.5 ±0.15 V)	4.35	V

Performance test:	**Channel:**	**BLUE**		**RED**	
3.1	Average of Receiver readings (0±150mV)	13.3	mv	5.2	mv
3.2	Standard Deviation of Receiver readings (Max.: 45mV/10mV)	6.11	mv	0.72	mv
3.3	Amplitude measurement with non- fluorescence foil(<110mV/1200-1200mV)	21.7	mv	1897.3	mv
3.4	Amplitude measurement with fluorescence foil (700-1200mV)		mv		mv
3.5	CANBus Output test				

Function test at 0°C Temperature (in air with reference foil):	**Channel:**	**BLUE**	**RED**
4.1	Amplitude measurement (Blue: 300 – 900mV,Red 300-900mV)	mv	mv
4.2	Phase measurement (Blue: 4 ±2°,Red: 4 ±2°)	°	°
4.3	Standard deviation of Phase measurement: (Max: 0.02°)	°	°
4.4	Raw data temperature measurement: (600 ±200mV)		mv

Function test at 20°C Temperature (in air with reference foil):	**Channel:**	**BLUE**	**RED**
5.1	Amplitude measurement (Blue: 300 – 900mV,Red 300-900mV)	mv	mv
5.2	Phase measurement (Blue: 5 ±2°,Red: 5 ±2°)	°	°
5.3	Standard deviation of Phase measurement: (Max: 0.02°)	°	°
5.4	Raw data Temperature measurement: (0 ±200mV)		mv

Function test at 40°C Temperature (in air with reference foil):	**Channel:**	**BLUE**	**RED**
6.1	Amplitude measurement (Blue: 300 – 900mV,Red 300-900mV)	mv	mv
6.2	Phase measurement (Blue: 5 ±2°,Red: 5 ±2°)	°	°
6.3	Standard deviation of Phase measurement: (Max: 0.02°)	°	°
6.4	Raw data Temperature measurement: (-400 ±200mV)		mv

Pressure test :

7.1	Pressure (IW version: 20MPa, DW version 60MPa)	60MPa

Date: 10 Mar 2016

Sign:

Vidar Selsvik, Production Engineer

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CALIBRATION CERTIFICATE

Form No. 710, Dec 2005

Sensing Foil Batch No: 1207
Certificate No:

Product: Oxygen Optode 4831F
Serial No: 596
Calibration Date: 10 Mar 2016

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

Parameter: Internal Temperature*:*

Calibration points and readings:

Temperature (°C)	1.00	11.97	24.02	36.00
Reading (mV)	815.94	491.95	109.34	-258.62

Giving these coefficients

Index	0	1	2	3	4	5
TempCoef	2.74736E01	-3.19018E-02	2.97791E-06	-4.45862E-09	0.00000E00	0.00000E00

Parameter: Oxygen:

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

Calibration points and readings[2)]:

	Air Saturated Water	Zero Solution (Na_2SO_3)
Phase reading (°)	3.16344E+01	6.19449E+01
Temperature reading (°C)	9.88609E+00	2.16074E+01
Air Pressure (hPa)	9.84278E+02	

Giving these coefficients

Index	0	1	2	3
PhaseCoef	-1.36000E-01	1.00000E00	0.00000E00	0.00000E00
ConcCoef				

[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:* 0

Date: 10 Mar 2016

Sign:

Tor-Ove Kvalvaag, Calibration Engineer

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PRESSURE CERTIFICATE

Form No. 667, Sept 2009

Product: Oxygen Optode 4831F
Serial No: 596
Date: 01.03.2016

Certificate No: 116527259596

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: 10 Mar 2016

Sign:

Vidar Selsvik, Production Engineer

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CALIBRATION CERTIFICATE

Form No 770. , Jun 2008

Certificate No: 3853_1207F_41134 **Product:** O2 Sensing Foil PSt3 **Serial No:** 1207
Batch No: 1207F **Calibration Date:** 13 Aug 2012

Calibration points and phase readings

Index	Temperature (°C)	Phase Reading (°)	Oxygen reference (µM)	Index	Temperature (°C)	Phase Reading (°)	Oxygen reference (µM)
0	3.078	63.538	0.00	32	39.161	34.153	87.25
1	3.079	59.229	19.28	33	39.160	26.001	182.36
2	3.080	56.275	38.55	34	39.161	22.454	261.75
3	3.081	49.226	96.38	35	6.516	63.298	0.00
4	3.081	41.360	192.75	36	6.515	58.785	17.71
5	3.083	32.328	402.84	37	6.513	55.714	35.42
6	3.083	28.099	578.23	38	6.517	48.450	88.54
7	9.954	63.059	0.00	39	6.516	40.546	177.09
8	9.950	58.341	16.14	40	6.516	31.567	370.11
9	9.946	55.152	32.29	41	6.515	27.431	531.28
10	9.952	47.675	80.71	42	14.855	62.720	0.00
11	9.952	39.731	161.42	43	14.851	57.706	14.52
12	9.950	30.806	337.39	44	14.849	54.355	29.05
13	9.946	26.764	484.33	45	14.853	46.672	72.61
14	19.755	62.380	0.00	46	14.851	38.687	145.22
15	19.751	57.072	12.90	47	14.852	29.875	303.51
16	19.752	53.558	25.80	48	14.852	25.913	435.67
17	19.754	45.670	64.51	49	24.642	61.830	0.00
18	19.751	37.643	129.02	50	24.630	56.386	11.73
19	19.754	28.945	269.64	51	24.629	52.760	23.46
20	19.758	25.063	387.00	52	24.630	44.729	58.64
21	29.528	61.280	0.00	53	24.630	36.710	117.29
22	29.509	55.700	10.55	54	24.633	28.165	245.11
23	29.506	51.961	21.11	55	24.636	24.374	351.81
24	29.506	43.787	52.78	56	34.348	61.000	0.00
25	29.509	35.777	105.55	57	34.337	55.061	9.64
26	29.513	27.386	220.58	58	34.334	51.218	19.28
27	29.514	23.685	316.62	59	34.332	42.931	48.20
28	39.167	60.720	0.00	60	34.335	34.965	96.40
29	39.165	54.423	8.72	61	34.336	26.693	201.47
30	39.161	50.474	17.45	62	34.337	23.069	289.18
31	39.157	42.075	43.63	63			

Giving these coefficients

Index	FoilCoefA	FoilCoefB
0	-3.176837E-06	9.131562E-07
1	-6.413872E-06	3.768247E+03
2	1.743939E-03	-4.024900E+01
3	-1.904569E-01	1.506045E-01
4	7.106918E-04	1.097636E-03
5	-5.010922E-07	-1.384983E-05
6	1.056089E+01	-3.184898E-07
7	-6.135393E-02	0.000000E+00
8	1.165880E-04	0.000000E+00
9	-3.871131E-07	0.000000E+00
10	-3.042181E+02	0.000000E+00
11	2.469668E+00	0.000000E+00
12	-7.050199E-03	0.000000E+00
13	-2.616267E-05	0.000000E+00

Using the following monomial degrees

Index	FoilPolyDegT	FoilPolyDegO
0	1	4
1	0	5
2	0	4
3	0	3
4	1	3
5	2	3
6	0	2
7	1	2
8	2	2
9	3	2
10	0	1
11	1	1
12	2	1
13	3	1
14	4	1
15	0	0
16	1	0
17	2	0
18	3	0
19	4	0
20	5	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0

Date: 13 Aug 2012

Sign:

Tor-Ove Kvalvaag

Tor-Ove Kvalvaag, Calibration Engineer