



a xylem brand

CALIBRATION CERTIFICATE

Form No 830, March 2021

Certificate no: 4831_1131_00217750
Foil batch no: 2310M

Product: 4831
Calibration date: 13.08.2023

Serial no: 1131
Page 1 of 2

Index	Temperature reference(°C)	[O2] Reference(µM)	Temperature raw data(mV)	Phase reading(°)
0	30.254	0.98	-153.493	60.80
1	20.282	0.55	165.080	61.67
2	10.223	0.41	491.480	62.39
3	0.871	0.72	776.140	62.97
4	0.948	20.37	773.940	60.27
5	1.121	38.50	768.980	57.98
6	1.192	59.26	766.933	55.64
7	1.202	107.44	766.627	51.09
8	1.292	142.33	764.040	48.27
9	1.309	214.31	763.560	43.71
10	1.324	321.78	763.107	38.72
11	1.347	410.13	762.440	35.66
12	1.331	511.76	762.907	32.96
13	10.582	15.47	480.040	59.37
14	10.402	30.92	485.780	56.69
15	10.345	47.23	487.587	54.18
16	10.306	79.85	488.813	49.95
17	10.293	117.81	489.240	46.04
18	10.223	165.02	491.467	42.18
19	10.209	246.68	491.907	37.28
20	10.187	328.17	492.627	33.79
21	10.150	411.15	493.773	31.14
22	20.433	11.78	160.127	58.45
23	20.280	24.65	165.113	55.40
24	20.262	39.75	165.733	52.30
25	20.243	63.97	166.340	48.14
26	20.246	92.67	166.213	44.24
27	20.249	133.01	166.153	40.03
28	20.276	196.83	165.260	35.26
29	20.280	262.22	165.127	31.85
30	20.288	328.75	164.887	29.32
31	30.465	9.63	-159.973	57.34
32	30.446	20.29	-159.400	54.03
33	30.444	31.97	-159.313	50.87
34	30.449	53.28	-159.487	46.20
35	30.456	74.68	-159.700	42.53
36	30.461	109.96	-159.853	38.00
37	30.465	163.52	-159.973	33.28
38	30.482	215.86	-160.500	30.11
39	30.499	272.52	-161.027	27.64



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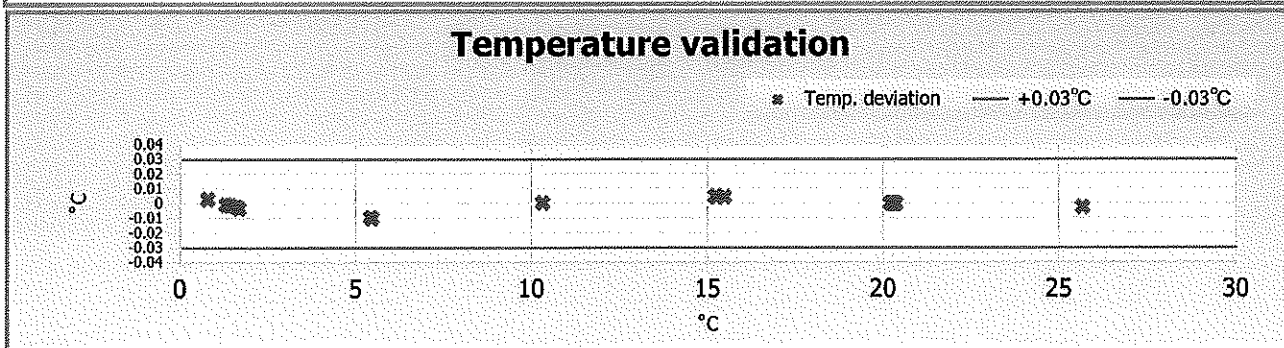
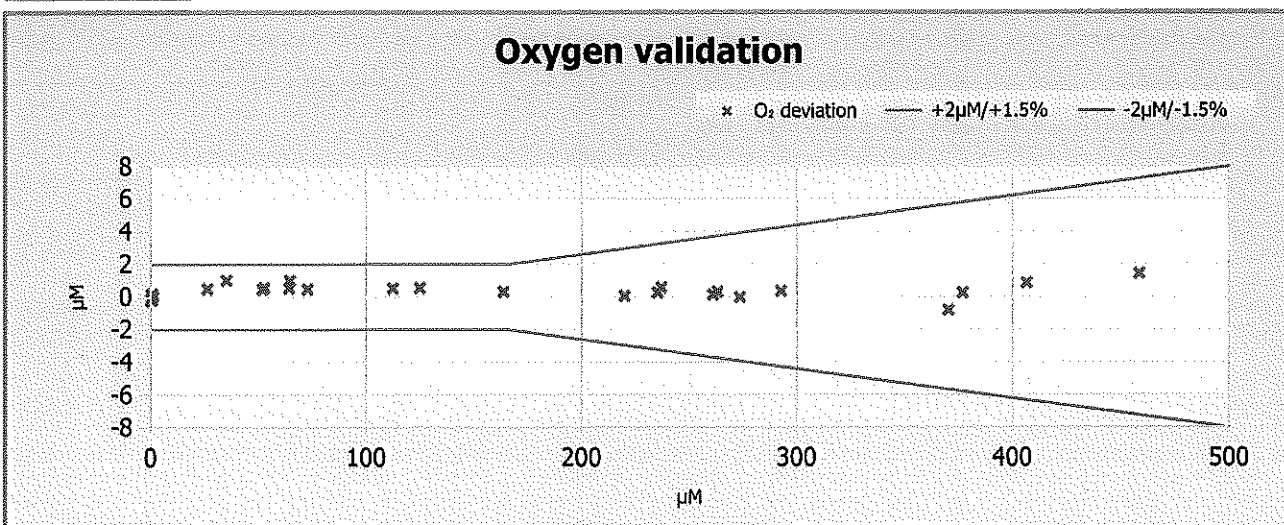
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Giving these coefficients

Index	0	1	2	3	4	5	6
SVUFoilCoef	2.78279E-03	1.16514E-04	2.18699E-06	1.63008E02	-2.23576E-01	-3.47354E01	3.25090E00
TempCoef	2.53756E01	-3.12279E-02	2.95483E-06	-4.37242E-09	0.00000E00	0.00000E00	



With following settings

Index	0	1	2	3
PhaseCoef	-2.30600E00	1.00000E00	0.00000E00	0.00000E00

Index	0 (Offset)	1 (Slope)
ConcCoef	0.00000E00	1.00000E00
Salinity	0.00	

Firmware Version	5.3.1
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Date: 13.08.2023

Tor-Ove Kvalvaag
Tor-Ove Kvalvaag, Calibration Engineer

Program Version: V5.3.1

Product: Oxygen Optode 4831IW

Serial No: 1131

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 μ A)	208	μ A
2.4	CANBus Current drain in sleep (Max.: 180 μ A)		μ A
2.5	DSP IO voltage, J4.18 (3.3 ± 0.15 V)	3.29	V
2.6	DSP Core voltage, J4.17 (1.8 ± 0.05 V)	1.82	V
2.7	Excitation driver voltage, C4 Analog Board (4.3 ± 0.1 V)	4.31	V

Performance test:

	Channel:	Blue	Red
3.1	Average of Receiver readings (0 ± 150 mV)	-10.2 mV	-5.7 mV
3.2	Standard Deviation of Receiver readings (Max.: 45mV/10mV)	2.19 mV	0.27 mV
3.3	Amplitude measurement with non-fluorescence foil (<60mV/650-1200mV)	7.9 mV	922.1 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)	754.2 mV	764.4 mV
4.2	Maximum amplitude measurement (Blue: <1600 mV, Red <1400 mV)	1159.3 mV	1233.5 mV
4.3	Minimum phase measurement (Blue: >32°, Red: >3°)	34.98 °	7.66 °
4.4	Maximum phase measurement (Blue: <45°, Red: <10°)	42.1 °	7.99 °
4.5	Maximum standard deviation of Phase measurement: (< 0.07°)	0.05 °	0.04 °
4.6	Minimum temperature raw data measurement: (<-200 mV)		-475.5 mV
4.7	Maximum temperature raw data measurement: (>450 mV)		713.5 mV

Date: 01 Sep 2023

Sign:

Laila A. Skålnes

Laila Skålnes, Production Engineer



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PRESSURE CERTIFICATE

Form No. 667, Sept 2009

Product: Oxygen Optode 48311W
Serial No: 1131
Date: 10.08.2023

Certificate No: 2184892601131

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: 01 Sep 2023

Sign:

Laila A. Skålnes

Laila Skålnes, Production Engineer

Product Name	4831	1131	Oxygen Optode									
Product Number	4831	1131	4831									
Serial Number	4831	1131	1131									
SW ID	4831	1131	1940031									
SW Version	4831	1131	5	3	1							
Node Description		4831	1131	Oxygen Optode #1131								
Owner	4831	1131										
Salinity[PSU]	4831	1131	35.00									
PhaseCoef	4831	1131	-2.306000E+00 1.000000E+00 0.000000E+00 0.000000E+00									
FoilID	4831	1131	2310M									
FoilCoefA	4831	1131	-4.429471E-06 -9.934120E-06 2.539297E-03 -2.623883E-01									
9.495663E-04			-1.385170E-06 1.384506E+01 -7.820107E-02 2.077827E-04 1.951742E-07									
-3.815226E+02			2.968714E+00 -4.551691E-03 -3.449760E-04									
FoilCoefB	4831	1131	5.200052E-06 4.547302E+03 -4.453296E+01 -1.936771E-01									
2.230949E-02			-4.134188E-04 1.497347E-06 0.000000E+00 0.000000E+00 0.000000E+00									
0.000000E+00			0.000000E+00 0.000000E+00 0.000000E+00 0.000000E+00									
FoilPolyDegT	4831	1131	1	0	0	0	1	2	0	1	2	
3	0	1	2	3	4	0	1	2	3	4	5	
0	0	0	0	0	0	0	0	0	0	0	0	
FoilPolyDegO	4831	1131	4	5	4	3	3	3	2	2	2	
2	1	1	1	1	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	
SVUFoilCoef	4831	1131	2.782790E-03 1.165138E-04 2.186991E-06 1.630080E+02									
-2.235763E-01			-3.473540E+01 3.250897E+00									
ConcCoef	4831	1131	0.000000E+00 1.000000E+00									
NomAirPress[hPa]		4831	1131	1013.25								
NomAirMix	4831	1131	0.20946									
CalDataSat[Deg]	4831	1131	0.00 0.00									
CalDataAPress[hPa]		4831	1131	1013.250								
CalDataZero[Deg]		4831	1131	0.000 0.000								
Mode	4831	1131	Smart Sensor Terminal									
Enable Sleep	4831	1131	No									
Enable Polled Mode		4831	1131	No								
Enable Text	4831	1131	No									
Enable Decimalformat		4831	1131	Yes								
Analog TempLimit[Deg.C]	4831	1131	-5.00 35.00									
Analog Conclimit[uM]		4831	1131	0.00 800.00								
Analog SatLimit[%]		4831	1131	0.00 200.00								
Analog PhaseLimit[Deg.]	4831	1131	10.00 70.00									
Analog Output	4831	1131	O2Concentration									
Analog1 Coef	4831	1131	0.000000E+00 1.000000E+00									
Analog2 Coef	4831	1131	0.000000E+00 1.000000E+00									
Enable AirSaturation		4831	1131	Yes								
Enable O2Content		4831	1131	No								
Enable Rawdata	4831	1131	Yes									
Enable Temperature		4831	1131	Yes								
Enable HumidityComp		4831	1131	Yes								
Enable SVUformula		4831	1131	Yes								
Interval[s]	4831	1131	2.000									
Location	4831	1131										
Geographic Position		4831	1131	60.323605,5.37225								
Vertical Position		4831	1131									
Reference	4831	1131										