



a xylem brand

# CALIBRATION CERTIFICATE

Form No 830, March 2021

Certificate no: 4831\_1160\_00225443  
Foil batch no: 2310M

Product: 4831  
Calibration date: 11.04.2024

Serial no: 1160  
Page 1 of 2

Index	Temperature reference(°C)	[O2] Reference(μM)	Temperature raw data(mV)	Phase reading(°)
0	30.383	1.09	-207.047	60.29
1	20.294	0.61	109.180	61.19
2	10.324	0.28	431.380	61.93
3	0.873	0.26	722.587	62.54
4	0.986	23.76	719.273	59.36
5	1.040	46.95	717.707	56.60
6	1.079	68.91	716.527	54.27
7	1.171	107.70	713.847	50.66
8	1.221	149.82	712.387	47.40
9	1.247	215.07	711.607	43.34
10	1.275	319.12	710.800	38.51
11	1.291	423.86	710.313	34.96
12	1.300	529.92	710.053	32.24
13	10.287	14.14	432.567	59.31
14	10.258	35.06	433.493	55.73
15	10.252	52.09	433.700	53.19
16	10.254	84.90	433.600	49.04
17	10.249	118.41	433.800	45.62
18	10.255	170.21	433.600	41.44
19	10.225	252.85	434.527	36.60
20	10.248	336.53	433.800	33.10
21	10.273	419.08	433.000	30.49
22	20.333	10.75	107.953	58.49
23	20.311	27.43	108.640	54.50
24	20.297	40.92	109.107	51.75
25	20.290	67.05	109.320	47.32
26	20.313	93.73	108.580	43.72
27	20.350	134.73	107.373	39.44
28	20.396	200.17	105.907	34.60
29	20.418	266.57	105.200	31.20
30	20.433	334.46	104.700	28.64
31	30.533	8.59	-211.547	57.53
32	30.568	22.14	-212.600	53.20
33	30.598	33.21	-213.487	50.24
34	30.620	54.54	-214.167	45.59
35	30.632	76.31	-214.500	41.86
36	30.631	109.77	-214.487	37.54
37	30.595	164.29	-213.400	32.72
38	30.588	220.35	-213.213	29.38
39	30.568	278.27	-212.600	26.92

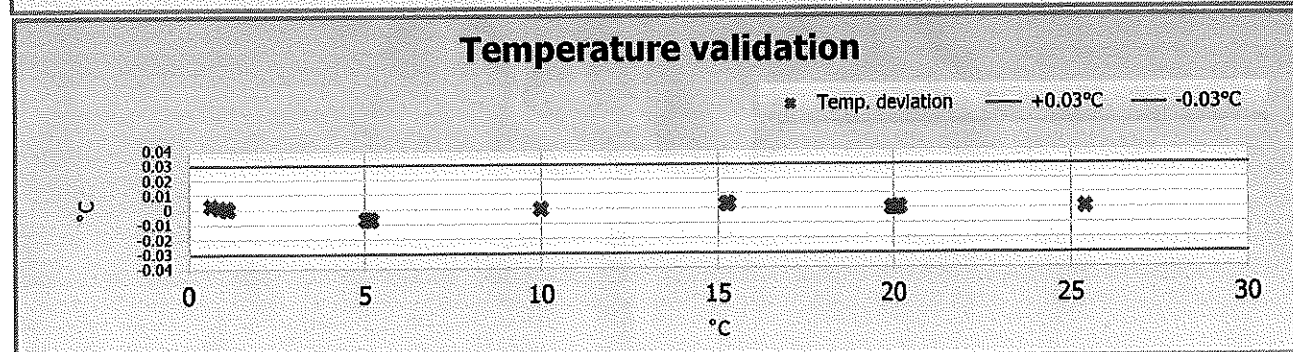
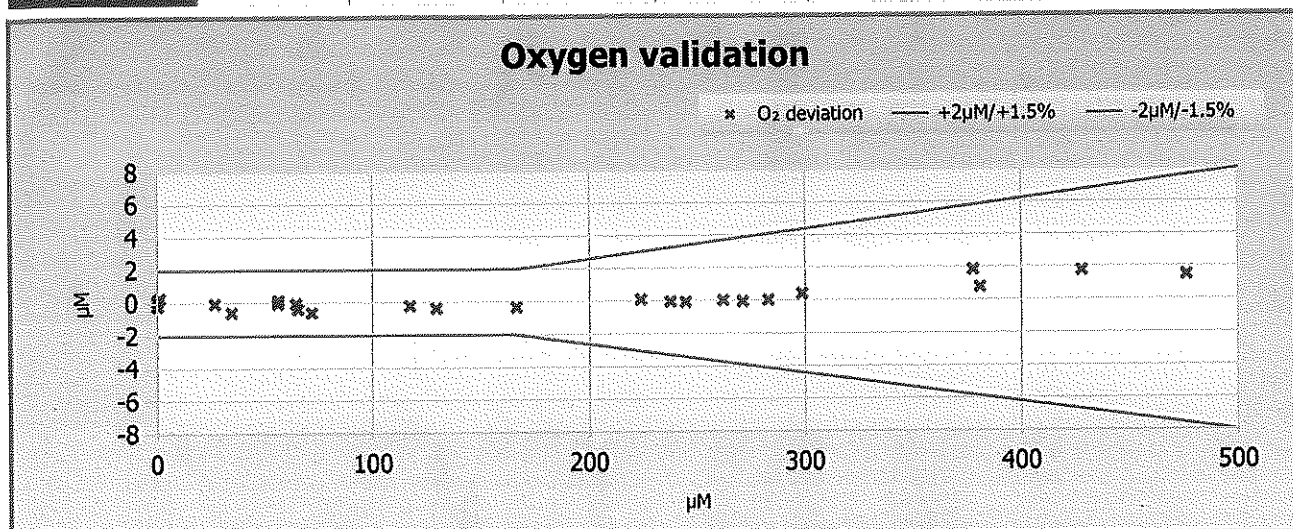
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### Giving these coefficients

Index	0	1	2	3	4	5	6
SVUFoilCoef	2.74281E-03	1.16155E-04	2.31407E-06	1.80994E-02	-2.06708E-01	-4.07153E-01	3.61377E-00
TempCoef	2.37021E-01	-3.14814E-02	2.92386E-06	-4.25693E-09	0.00000E-00	0.00000E-00	



### With following settings

Index	0	1	2	3
PhaseCoef	-1.24700E00	1.00000E00	0.00000E00	0.00000E00

Index	0 (Offset)	1 (Slope)
ConcCoef	0.00000E00	1.00000E00
Salinity	0.00	
Firmware Version	5.3.1	

Date: 11.04.2024

Laila A. Skålnes

Laila Skålnes, Production Engineer



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# TEST & SPECIFICATIONS

Form No. 712 V3, May 2020

Program Version: 5.3.1

Product: Oxygen Optode 4831IW

Serial No: 1160

## 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)	23.2	mA
2.2	CANBus Current drain at 0.5 Hz sampling (Max.: 33 mA)		mA
2.3	Current drain in sleep (Max.: 270 $\mu$ A)	232	$\mu$ A
2.4	CANBus Current drain in sleep (Max.: 180 $\mu$ A)		$\mu$ A
2.5	DSP IO voltage, J4.18 (3.3 $\pm$ 0.15V)	3.31	V
2.6	DSP Core voltage, J4.17(1.8 $\pm$ 0.05 V)	1.82	V
2.7	Excitation driver voltage, C4 Analog Board (4.3 $\pm$ 0.1 V)	4.36	V

## Performance test:

	Channel:	Blue	Red
3.1	Average of Receiver readings (0 $\pm$ 150mV)	-0.2 mV	-3.3 mV
3.2	Standard Deviation of Receiver readings (Max.: 45mV/10mV)	4.00 mV	2.17 mV
3.3	Amplitude measurement with non-fluorescence foil (<60mV/650-1200mV)	16.5 mV	1028.2 mV
3.4	CANBus Output test		

## Function test from 0 to 40°C:

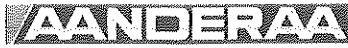
	Channel:	Blue	Red
4.1	Minimum amplitude measurement (Blue: >550 mV, Red >550 mV)	597.8 mV	554.6 mV
4.2	Maximum amplitude measurement (Blue: <1600 mV, Red <1400 mV)	1100.4 mV	1111.7 mV
4.3	Minimum phase measurement (Blue: >32°, Red: >3°)	35.45 °	8.4 °
4.4	Maximum phase measurement (Blue: <45°, Red: <10°)	42.94 °	8.82 °
4.5	Maximum standard deviation of Phase measurement: (< 0.07°)	0.04 °	0.03 °
4.6	Minimum temperature raw data measurement: (<-200 mV)		-521 mV
4.7	Maximum temperature raw data measurement: (>450 mV)		668.3 mV

Date: 23 Feb 2024

Sign:

Magne B. Lund

Magne B. Lund, Production Engineer



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# PRESSURE CERTIFICATE

Form No. 667, Sept 2009

**Product:** Oxygen Optode 4831IW

**Certificate No:** 2251982601160

**Serial No:** 1160

**Date:** 05.04.2024

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: 05 Apr 2024

Sign:

Laila A. Skålnes

Laila Skålnes, Production Engineer

unit N/A  
optode 4831 Configuration  
serial# 1160

02/12/2025 adam.ritterbush@teledyne.com

643.81	44.1	226.888	102.474	22.318	28.675	29.922	38.442	8.520	590.3
643.71	44.0	226.879	102.475	22.321	28.674	29.921	38.442	8.520	590.3
Product Name	4831	1160	Oxygen Optode						
Product Number	4831	1160	4831						
Serial Number	4831	1160	1160						
SW ID	4831	1160	1940031						
SW Version	4831	1160	5	3	1				
HW ID 1	4831	1160							
HW Version 1	4831	1160							
HW ID 2	4831	1160							
HW Version 2	4831	1160							
HW ID 3	4831	1160							
HW Version 3	4831	1160							
System Control	4831	1160	0	0	0				
Production Date	4831	1160							
Last Service	4831	1160							
Last Calibration		4831	1160						
Calibration Interval[Days]		4831	1160	0					
Node Description		4831	1160	Oxygen Optode #1160					
Owner	4831	1160							
Baudrate	4831	1160	9600						
Flow Control	4831	1160	Xon/Xoff						
Enable Comm Indicator	4831	1160	Yes						
Comm Timeout	4831	1160	1 min						
Salinity[PSU]	4831	1160	35.00						
-4.256928E-09	0.000000E+00	0.000000E+00	-3.148135E-02	2.923858E-06					
0.000000E+00	4831	1160	0.000000E+00	0.000000E+00	0.000000E+00				
0.000000E+00	4831	1160	1.000000E+00	0.000000E+00	0.000000E+00				
0.000000E+00	4831	1160	-1.247000E+00	1.000000E+00	0.000000E+00				
FoilID	4831	1160	2310M						
-4.449771E-06	8.465012E-07	-3.143506E+02	2.051116E+006	-2.987026E-03					
0.000000E+001	0.000000E+00	0.000000E+004	0.000000E+00	0.000000E+001					
OilPoly0egT	3831	4160	5	0	0	0	0	0	
OilPoly0eg0	0831	0160	0	0	0	0	0	0	
1.809944E+02	-2.067083E-01	-4.071530E+01	3.613774E+00	2.314068E-06					
ConcCoef	4831	1160	0.000000E+00	1.000000E+00					
NomAirPress[hPa]		4831	1160	1013.25					
NomAirMix	4831	1160	0.20946						
CalDataSat[Deg]	4831	1160	0.00	0.00					
CalDataAPress[hPa]	4831	1160	1013.250						
CalDataZero[Deg]	4831	1160	0.000	0.000					
Enable RedReference	4831	1160	Yes						
RedReference Interval	4831	1160	1						
Mode	4831	1160	Smart Sensor Terminal						

Enable Sleep	4831	1160	No							
Enable Polled Mode	4831	1160	No							
Enable Text	4831	1160	No							
Enable Decimalformat	4831	1160	Yes							
Analog TempLimit[Deg.C]	4831	1160	-5.00	35.00						
Analog ConcLimit[uM]	4831	1160	0.00	800.00						
Analog SatLimit[%]	4831	1160	0.00	200.00						
Analog PhaseLimit[Deg.]	4831	1160	10.00	70.00						
Analog Output	4831	1160	O2Concentration							
Analog1 Coef	4831	1160	0.000000E+00	1.000000E+00						
Analog2 Coef	4831	1160	0.000000E+00	1.000000E+00						
Enable AirSaturation	4831	1160	Yes							
Enable O2Content	4831	1160	No							
Enable Rawdata	4831	1160	Yes							
Enable Temperature	4831	1160	Yes							
Enable HumidityComp	4831	1160	Yes							
Enable SVUformula	4831	1160	Yes							
Enable Burn-In Mode	4831	1160	No							
Interval[s]	4831	1160	2.000							
Location	4831	1160								
Geographic Position	4831	1160	60.323605,5.37225							
Vertical Position	4831	1160								
Reference	4831	1160								
#										
644.7	43.9	227.083	102.577	22.326	28.662	29.909	38.437	8.527	590.0	
642.8	43.8	226.913	102.503	22.328	28.670	29.917	38.434	8.517	590.6	