



a xylem brand

CALIBRATION CERTIFICATE

Form No 853, Feb.6.2017

Certificate no: Oxygen Optode 3835_1771_128703
FoillID: 1023

Product: Oxygen Optode 3835
Serial no: 1771
Calibration date: 22.03.2017

2-POINT RECALIBRATION, OXYGEN OPTODE

This is to certify that this product has been calibrated and verified using the following reference equipment:

| Reference Equipment | Serial |
|--|---|
| Calibration Bath Model Toho TM-005-P-A | 12-K |
| Fluke 5615 PRT | Serial No. 802054 and Serial No. 849155 |
| Fluke CHUB E-4 | Serial No. A7C677 |
| Reference sensor 4330 | 338 |

Specification

| | O2 Concentration | Air Saturation | Temperature |
|---------------------|--------------------------------|----------------|-----------------------------|
| Range | 0-500 μ M | 0 - 120% | -5 to +40°C |
| Accuracy | < $\pm 8\mu$ M or $\pm 5\%$ 1) | $\pm 5\%$ 2) | $\pm 0.03^\circ\text{C}$ 3) |
| Resolution | < 1 μ M | < 0.4% | 0.01°C |
| Settling Time (63%) | < 25 seconds | < 25 seconds | < 2 seconds |

1) Requires salinity compensation for salinity variations > 1mS/cm, and pressure compensation for pressure > 100meter

2) Within calibrated range 0 - 120% / 0 - 30°C

3) Within calibrated range 0 - 36°C

Calibration points and readings:

| | Air Saturated Water | Zero Solution (Na2SO3) |
|--------------------------|---------------------|------------------------|
| Phase reading (°) | 31.87 | 64.01 |
| Temperature reading (°C) | 10.00 | 22.63 |
| Air Pressure (hPa) | 986.40 | |

Giving these coefficients

| Index | 0 | 1 | 2 | 3 |
|-----------|---------------|--------------|--------------|--------------|
| PhaseCoef | -3.757049E+00 | 1.184100E+00 | 0.000000E+00 | 0.000000E+00 |

With the following settings

| Index | 0 | 1 | 2 | 3 |
|------------------|---------------|---------------|---------------|---------------|
| Coef0 | 4.270190E+03 | -1.327240E+02 | 2.156300E+00 | -1.402760E-02 |
| Coef1 | -2.297299E+02 | 5.742419E+00 | -6.853580E-02 | 1.886120E-04 |
| Coef2 | 5.064020E+00 | -9.620850E-02 | 5.221810E-04 | 7.708902E-06 |
| Coef3 | -5.263319E-02 | 7.154669E-04 | 3.311850E-06 | -1.861240E-07 |
| Coef4 | 2.109169E-04 | -1.840879E-06 | -4.286460E-08 | 1.111200E-09 |
| TempCoef | 2.790461E+01 | -3.138950E-02 | 3.051687E-06 | -4.513907E-09 |
| Salinity (mS/cm) | 0.00 | | | |

Date:22.03.2017


Sr. Repair Technician



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CALIBRATION CERTIFICATE

Form No 853, Feb.6.2017

Certificate no: Oxygen Optode 3830_1128_128701
FoilID: 4807

Product: Oxygen Optode 3830
Serial no: 1128
Calibration date: 22.03.2017

2-POINT RECALIBRATION, OXYGEN OPTODE

This is to certify that this product has been calibrated and verified using the following reference equipment:

| Reference Equipment | Serial |
|--|---|
| Calibration Bath Model Toho TM-005-P-A | 12-K |
| Fluke 5615 PR | Serial No. 802054 and Serial No. 849155 |
| Fluke CHUB E-4 | Serial No. A7C677 |
| Reference sensor 4330 | 338 |

Specification

| | O2 Concentration | Air Saturation | Temperature |
|---------------------|--------------------------------|----------------|-----------------------|
| Range | 0-500 μ M | 0 - 120% | -5 to +40°C |
| Accuracy | < $\pm 8\mu$ M or $\pm 5\%$ 1) | $\pm 5\%$ 2) | $\pm 0.03^\circ$ C 3) |
| Resolution | < 1 μ M | < 0.4% | 0.01°C |
| Settling Time (63%) | < 25 seconds | < 25 seconds | < 2 seconds |

1) Requires salinity compensation for salinity variations > 1mS/cm, and pressure compensation for pressure > 100meter

2) Within calibrated range 0 - 120% / 0 - 30°C

3) Within calibrated range 0 - 36°C

Calibration points and readings:

| | Air Saturated Water | Zero Solution (Na2SO3) |
|--------------------------|---------------------|------------------------|
| Phase reading (°) | 33.92 | 65.40 |
| Temperature reading (°C) | 9.99 | 22.66 |
| Air Pressure (hPa) | 986.40 | |

Giving these coefficients

| Index | 0 | 1 | 2 | 3 |
|-----------|---------------|--------------|--------------|--------------|
| PhaseCoef | -2.656845E+00 | 1.157328E+00 | 0.000000E+00 | 0.000000E+00 |

With the following settings

| Index | 0 | 1 | 2 | 3 |
|------------------|---------------|---------------|---------------|---------------|
| Coef0 | 5.276020E+03 | -1.783356E+02 | 3.603367E+00 | -3.172573E-02 |
| Coef1 | -2.835152E+02 | 8.539261E+00 | -1.707122E-01 | 1.519272E-03 |
| Coef2 | 6.146133E+00 | -1.629492E-01 | 3.255790E-03 | -2.941464E-05 |
| Coef3 | -6.200037E-02 | 1.436286E-03 | -2.908785E-05 | 2.671883E-07 |
| Coef4 | 2.392831E-04 | -4.792503E-06 | 1.000596E-07 | -9.331836E-10 |
| TempCoef | 2.478123E+01 | -3.131412E-02 | 2.957635E-06 | -4.304316E-09 |
| Salinity (mS/cm) | 0.00 | | | |

Date:22.03.2017


Sr. Repair Technician



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CALIBRATION CERTIFICATE

Form No 853, Feb.6.2017

Certificate no: Oxygen Optode 3835_726_128702
FoilID: 4807

Product: Oxygen Optode 3835
Serial no: 726
Calibration date: 22.03.2017

2-POINT RECALIBRATION, OXYGEN OPTODE

This is to certify that this product has been calibrated and verified using the following reference equipment:

| Reference Equipment | Serial |
|--|---|
| Calibration Bath Model Toho TM-005-P-A | 12-K |
| Fluke 5615 PRT | Serial No. 802054 and Serial No. 849155 |
| Fluke CHUB E-4 | Serial No. A7C677 |
| Reference sensor 4330 | 338 |

Specification

| | O2 Concentration | Air Saturation | Temperature |
|---------------------|---|-------------------------|--|
| Range | 0-500 μ M | 0 - 120% | -5 to +40°C |
| Accuracy | < $\pm 8\mu$ M or $\pm 5\%$ ¹⁾ | $\pm 5\%$ ²⁾ | $\pm 0.03^\circ\text{C}$ ³⁾ |
| Resolution | < 1 μ M | < 0.4% | 0.01°C |
| Settling Time (63%) | < 25 seconds | < 25 seconds | < 2 seconds |

1) Requires salinity compensation for salinity variations > 1mS/cm, and pressure compensation for pressure > 100meter

2) Within calibrated range 0 - 120% / 0 - 30°C

3) Within calibrated range 0 - 36°C

Calibration points and readings:

| | Air Saturated Water | Zero Solution (Na2SO3) |
|--------------------------|---------------------|------------------------|
| Phase reading (°) | 33.69 | 63.92 |
| Temperature reading (°C) | 9.98 | 22.54 |
| Air Pressure (hPa) | 986.40 | |

Giving these coefficients

| Index | 0 | 1 | 2 | 3 |
|-----------|---------------|--------------|--------------|--------------|
| PhaseCoef | -4.035827E+00 | 1.206031E+00 | 0.000000E+00 | 0.000000E+00 |

With the following settings

| Index | 0 | 1 | 2 | 3 |
|------------------|---------------|---------------|---------------|---------------|
| Coef0 | 5.276020E+03 | -1.783355E+02 | 3.603367E+00 | -3.172573E-02 |
| Coef1 | -2.835151E+02 | 8.539261E+00 | -1.707121E-01 | 1.519272E-03 |
| Coef2 | 6.146133E+00 | -1.629492E-01 | 3.255790E-03 | -2.941463E-05 |
| Coef3 | -6.200037E-02 | 1.436285E-03 | -2.908786E-05 | 2.671883E-07 |
| Coef4 | 2.392831E-04 | -4.792503E-06 | 1.000597E-07 | -9.331836E-10 |
| TempCoef | 2.685690E+01 | -3.163586E-02 | 3.022679E-06 | -4.382699E-09 |
| Salinity (mS/cm) | 0.00 | | | |

Date:22.03.2017


Sr. Repair Technician