



SEA-BIRD
SCIENTIFIC

SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number: 41-11690
Instrument Firmware Version: V 7.2.5
Zero Conductivity Frequency: 2691.44
Communications Format: RS232
Communications Settings: 9600 baud, 8 Data Bits, No Parity

Installed Devices/Sensors

| <i>Data Format</i> | <i>Measurement</i> | <i>Sensor Type</i> | <i>Serial Number</i> | <i>Rating</i> |
|--------------------|--------------------|--------------------|----------------------|------------------|
| Count | Temperature | Internal | N/A | N/A |
| Frequency | Conductivity | Internal | N/A | N/A |
| Count | Pressure | Druck | 11076168 | 2000m(2000 dBar) |



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SENSOR SERIAL NUMBER: 11690
 CALIBRATION DATE: 01-Apr-19

SBE 41 TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

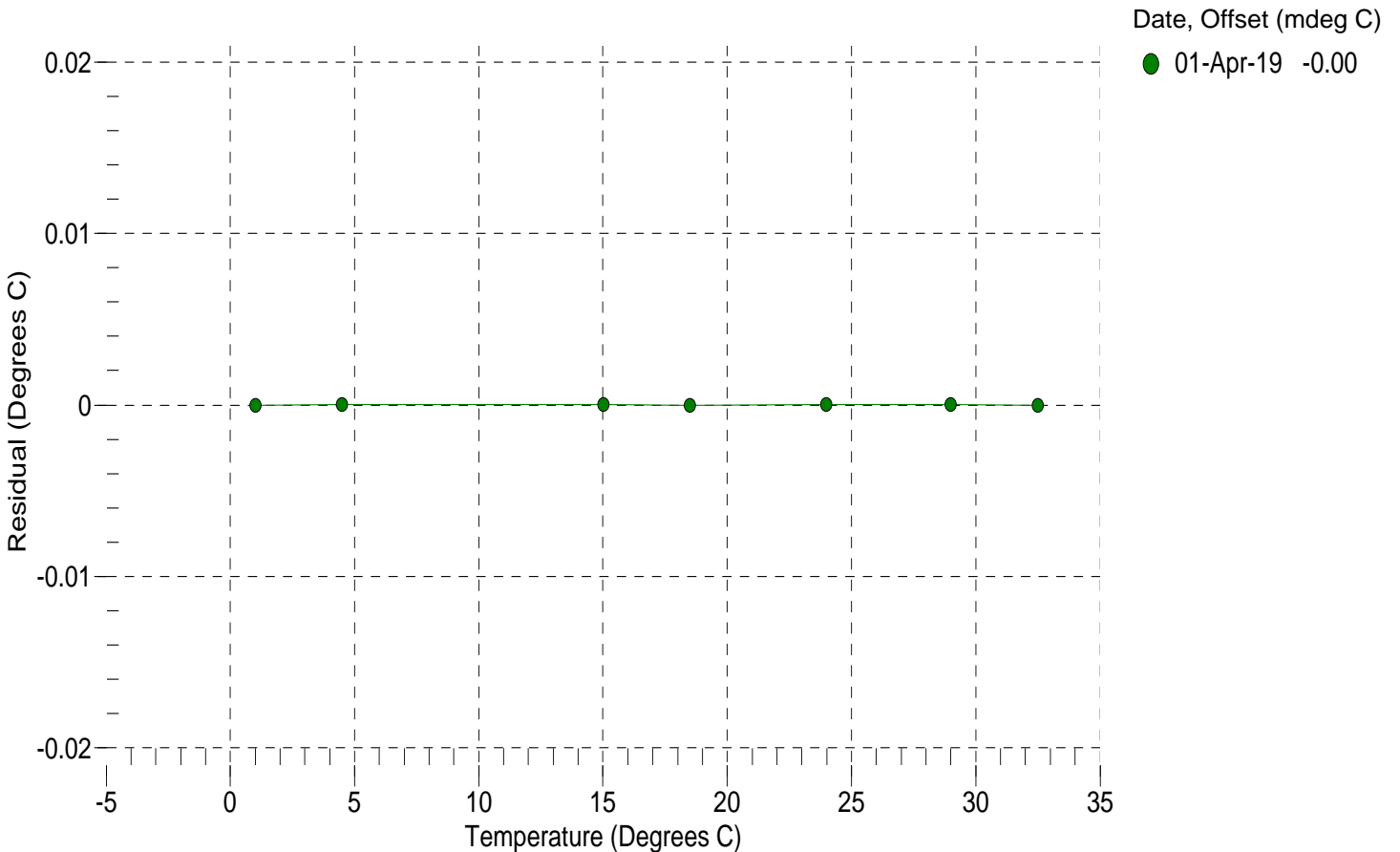
a0 = -9.259105e-004
 a1 = 3.009537e-004
 a2 = -4.171447e-006
 a3 = 1.597403e-007

| BATH TEMP (° C) | INSTRUMENT OUTPUT (counts) | INST TEMP (° C) | RESIDUAL (° C) |
|--------------------|-------------------------------|--------------------|-------------------|
| 1.0000 | 16000322.2 | 1.0000 | -0.0000 |
| 4.5000 | 13682571.3 | 4.5000 | 0.0000 |
| 15.0000 | 8724018.6 | 15.0000 | 0.0000 |
| 18.5000 | 7555174.5 | 18.5000 | -0.0000 |
| 23.9940 | 6063712.3 | 23.9940 | 0.0000 |
| 29.0000 | 4992733.8 | 29.0000 | 0.0000 |
| 32.5000 | 4372803.7 | 32.5000 | -0.0000 |

n = Instrument Output (counts)

$$\text{Temperature ITS-90 (°C)} = 1 / \{ a_0 + a_1[\ln(n)] + a_2[\ln^2(n)] + a_3[\ln^3(n)] \} - 273.15$$

Residual (°C) = instrument temperature - bath temperature





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SBE 41 CONDUCTIVITY CALIBRATION DATA
 PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -1.003537e+000 CPcor = -9.5700e-008
 h = 1.392562e-001 CTcor = 3.2500e-006
 i = -3.996464e-004 WBOTC = 6.1918e-008
 j = 4.916593e-005

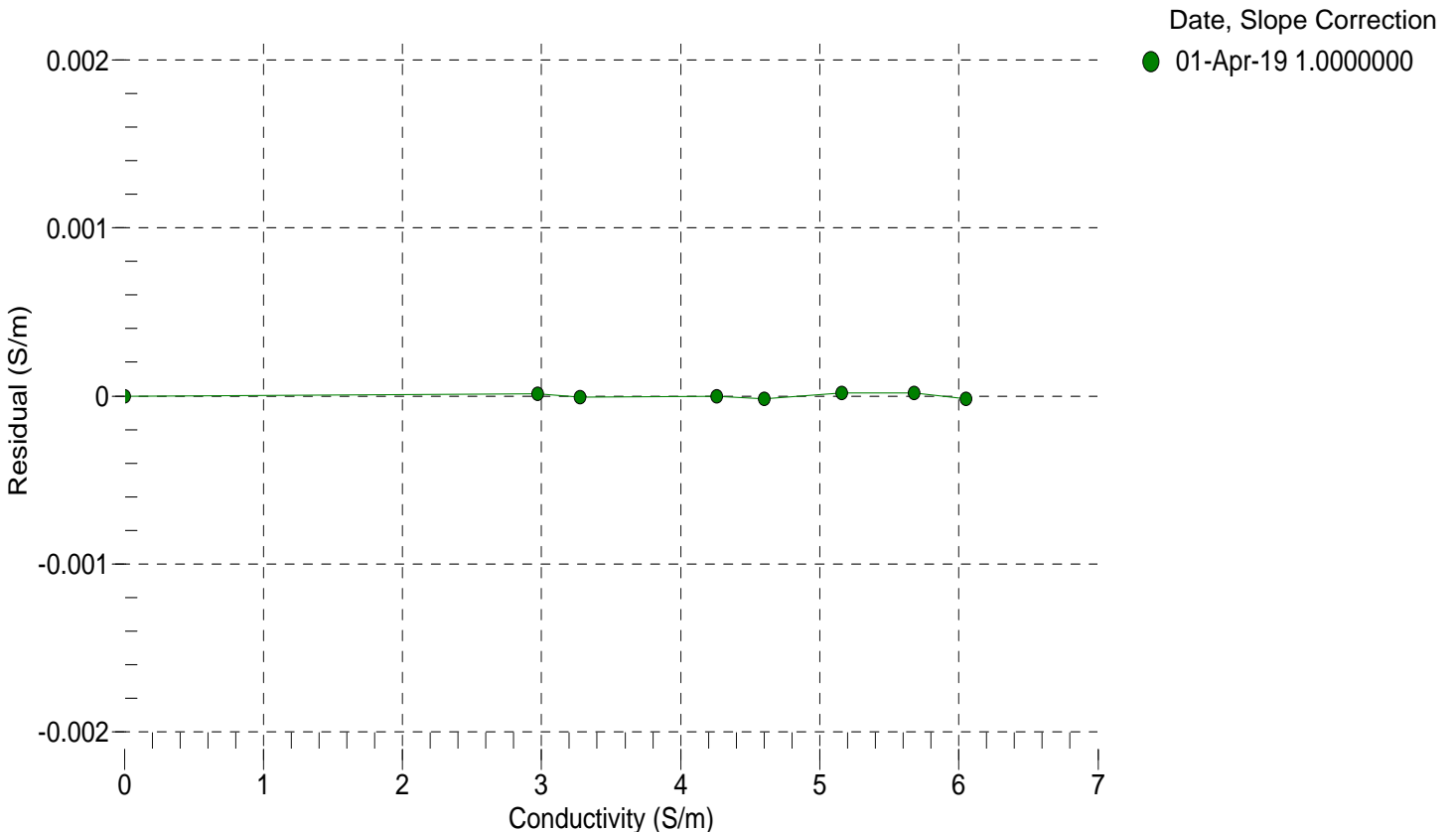
| BATH TEMP (° C) | BATH SAL (PSU) | BATH COND (S/m) | INSTRUMENT OUTPUT (Hz) | INSTRUMENT COND (S/m) | RESIDUAL (S/m) |
|--------------------|-------------------|--------------------|---------------------------|--------------------------|-------------------|
| 22.0000 | 0.0000 | 0.00000 | 2691.43 | 0.00000 | 0.00000 |
| 1.0000 | 34.7502 | 2.97085 | 5356.37 | 2.97086 | 0.00001 |
| 4.5000 | 34.7309 | 3.27746 | 5558.60 | 3.27745 | -0.00001 |
| 15.0000 | 34.6897 | 4.25772 | 6159.95 | 4.25772 | -0.00000 |
| 18.5000 | 34.6814 | 4.60240 | 6357.58 | 4.60238 | -0.00002 |
| 23.9940 | 34.6725 | 5.15898 | 6664.01 | 5.15899 | 0.00002 |
| 29.0000 | 34.6684 | 5.68081 | 6938.63 | 5.68083 | 0.00002 |
| 32.5000 | 34.6662 | 6.05277 | 7127.67 | 6.05275 | -0.00002 |

$f = \text{Instrument Output(Hz)} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$

t = temperature (°C); p = pressure (decibars); $\delta = \text{CTcor}$; $\epsilon = \text{CPcor}$;

$\text{Conductivity (S/m)} = (g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \epsilon * p)$

Residual (Siemens/meter) = instrument conductivity - bath conductivity





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SENSOR SERIAL NUMBER: 11690
 CALIBRATION DATE: 27-Mar-19

SBE 41 PRESSURE CALIBRATION DATA
 2900 psia S/N 11076168

COEFFICIENTS:

| | | | |
|---------|----------------|---------|----------------|
| PA0 = | 3.047882e-001 | PTCA0 = | 5.012205e+003 |
| PA1 = | 3.926012e-004 | PTCA1 = | -1.534148e+001 |
| PA2 = | -2.788474e-013 | PTCA2 = | 2.448643e+000 |
| PTHA0 = | 2.968145e+002 | PTCB0 = | 3.108847e+005 |
| PTHA1 = | -6.226573e-005 | PTCB1 = | 1.391414e+001 |
| PTHA2 = | -8.686358e-013 | PTCB2 = | -1.624805e-001 |

PRESSURE SPAN CALIBRATION

THERMAL CORRECTION

| PRESSURE (PSIA) | INSTRUMENT OUTPUT (counts) | THERMISTOR OUTPUT (counts) | COMPUTED PRESSURE (PSIA) | RESIDUAL (%FSR) | TEMP (°C) | THERMISTOR OUTPUT (counts) | INSTRUMENT OUTPUT (counts) |
|-----------------|----------------------------|----------------------------|--------------------------|-----------------|-----------|----------------------------|----------------------------|
| 14.57 | 42179.1 | 4182132.4 | 14.58 | 0.00 | 32.50 | 4019546.60 | 45325.20 |
| 592.16 | 1516209.6 | 4180961.0 | 592.24 | 0.00 | 29.00 | 4070074.40 | 44955.33 |
| 1169.82 | 2993375.9 | 4180147.8 | 1169.90 | 0.00 | 23.99 | 4142203.00 | 44408.91 |
| 1747.57 | 4473780.2 | 4179387.2 | 1747.62 | 0.00 | 18.50 | 4221114.40 | 43835.60 |
| 2325.23 | 5957083.3 | 4178663.0 | 2325.24 | 0.00 | 15.00 | 4271527.20 | 43537.96 |
| 2902.96 | 7443822.2 | 4177933.8 | 2902.97 | 0.00 | 4.50 | 4421898.00 | 43307.86 |
| 2325.29 | 5957131.6 | 4178170.0 | 2325.25 | -0.00 | 1.00 | 4471830.00 | 43275.82 |
| 1747.44 | 4473251.5 | 4178350.8 | 1747.41 | -0.00 | | | |
| 1169.97 | 2993346.0 | 4178519.0 | 1169.89 | -0.00 | | | |
| 592.06 | 1515606.0 | 4178665.8 | 591.99 | -0.00 | | | |
| 14.56 | 42098.3 | 4178338.8 | 14.54 | -0.00 | | | |

| TEMPERATURE (°C) | SPAN |
|------------------|-----------|
| 1.14 | 310900.26 |
| 20.40 | 311100.89 |
| 33.26 | 311167.72 |

y = thermistor output (counts)

$$t = PTHA0 + PTHA1 * y + PTHA2 * y^2$$

$$x = \text{instrument output} - PTCA0 - PTCA1 * t - PTCA2 * t^2$$

$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

$$\text{pressure (PSIA)} = PA0 + PA1 * n + PA2 * n^2$$

$$\text{Residual (\%FSR)} = (\text{computed pressure} - \text{true pressure}) * 100 / \text{Full Scale Range}$$

Date, Offset (%FSR)
 ● 27-Mar-19 -0.00

