



SEA-BIRD
SCIENTIFIC

SBE Sea-Bird
Electronics

Sea-Bird Electronics
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SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number: 41-8077
Instrument Firmware Version: V 7.2.5
Zero Conductivity Frequency: 2627.41
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 | Kistler | 4708596 | 2000m(2000 dBar) |

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SENSOR SERIAL NUMBER: 8077
CALIBRATION DATE: 17-Jan-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

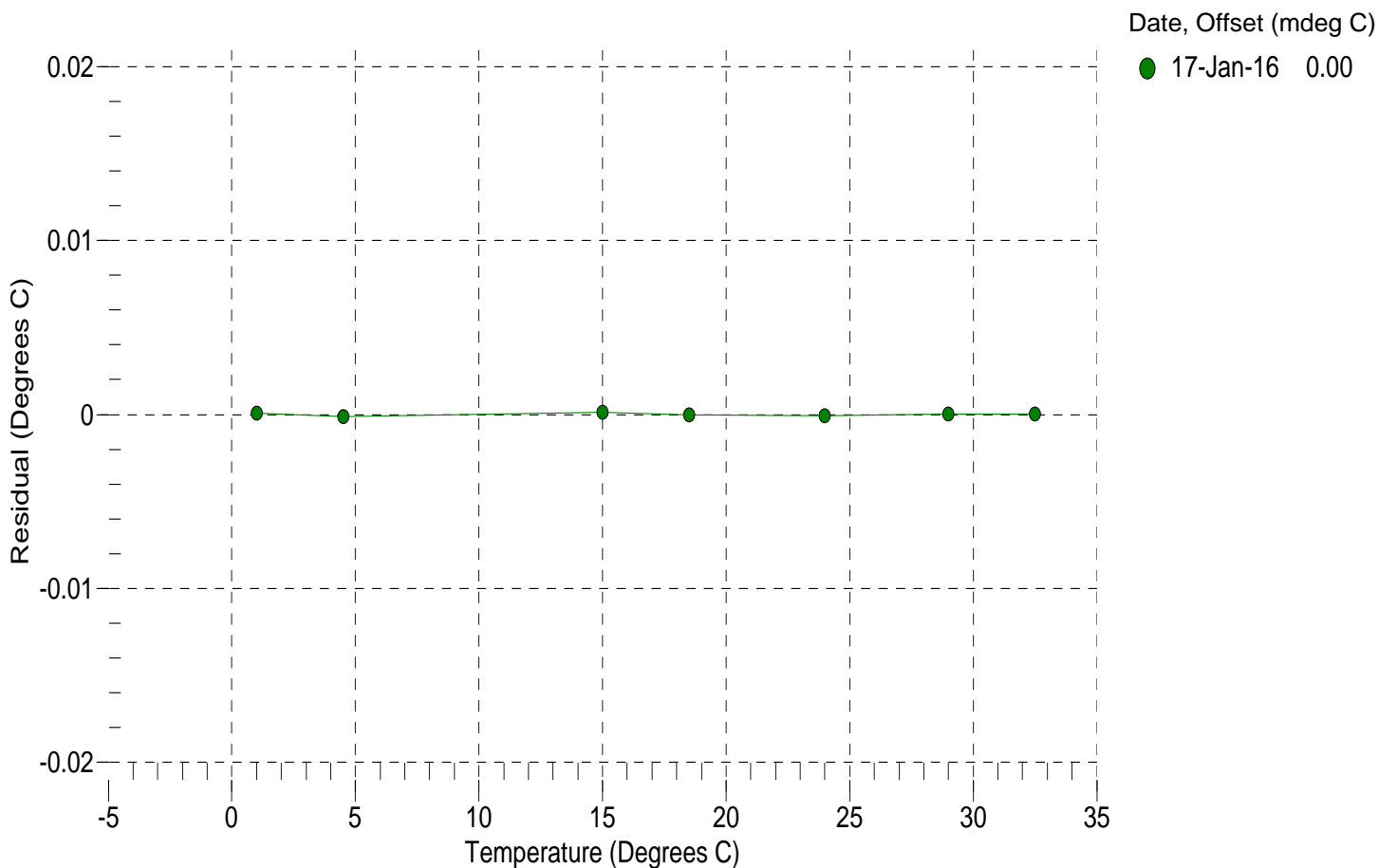
a0 = -7.336945e-004
a1 = 2.741373e-004
a2 = -2.639829e-006
a3 = 1.255336e-007

| BATH TEMP (° C) | INSTRUMENT OUTPUT (counts) | INST TEMP (° C) | RESIDUAL (° C) |
|--------------------|-------------------------------|--------------------|-------------------|
| 1.0000 | 15315068.9 | 1.0001 | 0.0001 |
| 4.5000 | 13064591.1 | 4.4999 | -0.0001 |
| 15.0000 | 8271747.5 | 15.0001 | 0.0001 |
| 18.5000 | 7147583.4 | 18.5000 | -0.0000 |
| 23.9940 | 5717096.0 | 23.9939 | -0.0001 |
| 29.0000 | 4693155.8 | 29.0000 | 0.0000 |
| 32.5001 | 4101956.3 | 32.5001 | 0.0000 |

n = Instrument Output (counts)

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 = -9.973804e-001
h = 1.451005e-001
i = -3.602797e-004
j = 4.704627e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 1.9028e-007

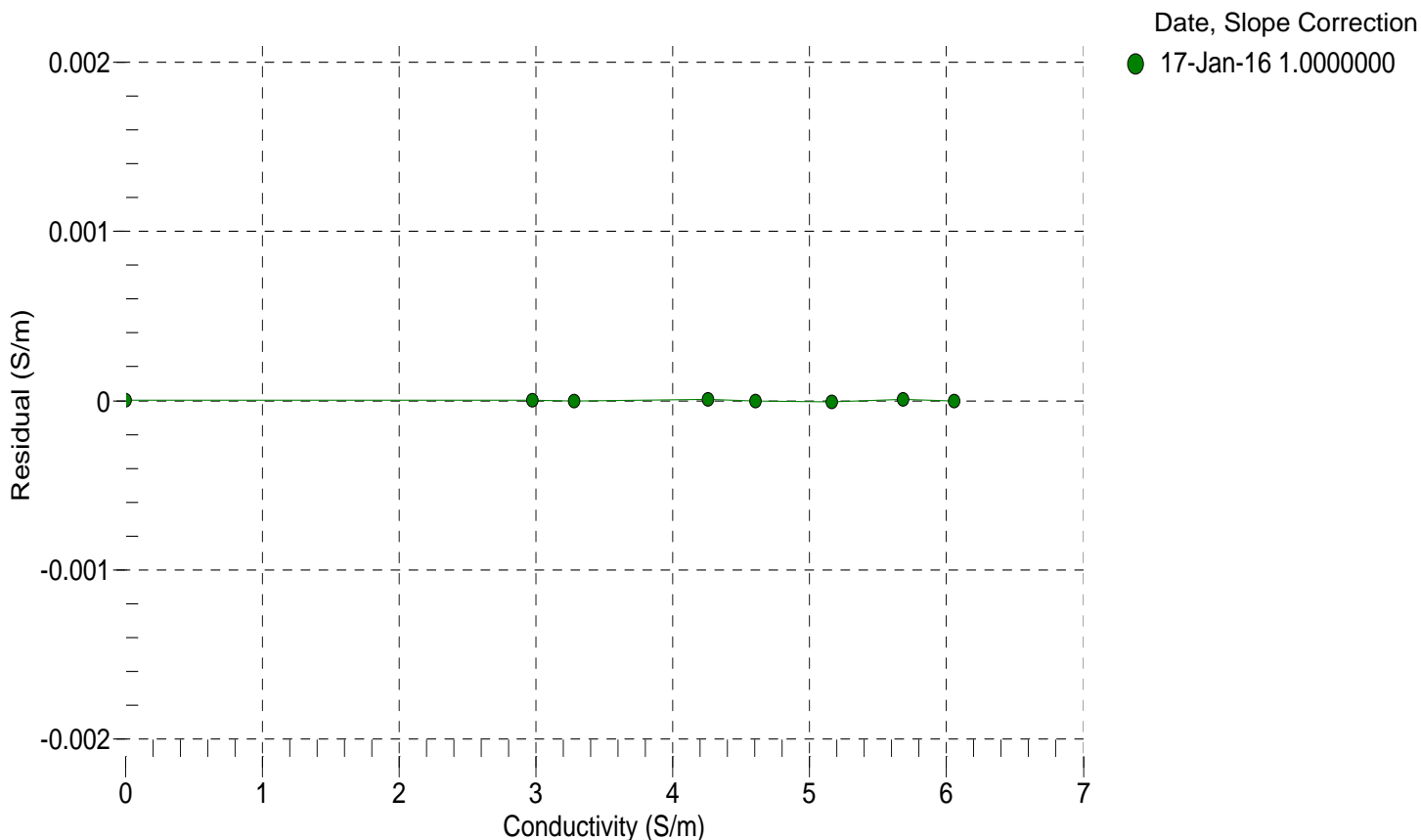
| BATH TEMP (° C) | BATH SAL (PSU) | BATH COND (S/m) | INSTRUMENT OUTPUT (Hz) | INSTRUMENT COND (S/m) | RESIDUAL (S/m) |
|--------------------|-------------------|--------------------|---------------------------|--------------------------|-------------------|
| 22.0000 | 0.0000 | 0.00000 | 2627.41 | 0.00000 | 0.00000 |
| 1.0000 | 34.7687 | 2.97228 | 5241.27 | 2.97228 | 0.00000 |
| 4.5000 | 34.7494 | 3.27903 | 5439.50 | 3.27903 | -0.00000 |
| 15.0000 | 34.7072 | 4.25964 | 6028.88 | 4.25965 | 0.00001 |
| 18.5000 | 34.6982 | 4.60439 | 6222.54 | 4.60439 | -0.00000 |
| 23.9940 | 34.6884 | 5.16108 | 6522.84 | 5.16107 | -0.00001 |
| 29.0000 | 34.6834 | 5.68300 | 6791.99 | 5.68300 | 0.00001 |
| 32.5001 | 34.6810 | 6.05507 | 6977.32 | 6.05507 | -0.00000 |

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

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

Conductivity (S/m) = $(g + h * f^2 + i * f^3 + j * f^4) / 10 (1 + \delta * t + \epsilon * p)$

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



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SENSOR SERIAL NUMBER: 8077
 CALIBRATION DATE: 15-Jan-16

SBE 41 PRESSURE CALIBRATION DATA
 2900 psia S/N 4708596

COEFFICIENTS:

| | | | |
|---------|----------------|---------|----------------|
| PA0 = | -8.077391e-001 | PTCA0 = | 5.649767e+004 |
| PA1 = | 3.933909e-004 | PTCA1 = | -2.555566e+002 |
| PA2 = | 1.003415e-013 | PTCA2 = | 7.352711e+000 |
| PTHA0 = | 3.308029e+002 | PTCB0 = | 1.045487e+002 |
| PTHA1 = | -9.640637e-005 | PTCB1 = | -5.952411e-003 |
| PTHA2 = | 3.573022e-012 | PTCB2 = | 0.000000e+000 |

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) |
|--------------------|-------------------------------|-------------------------------|-----------------------------|--------------------|--------------|-------------------------------|-------------------------------|
| 14.61 | 94030.8 | 3711862.2 | 14.78 | 0.01 | 32.50 | 3565380.60 | 96706.20 |
| 592.11 | 1559126.8 | 3711663.2 | 592.10 | -0.00 | 29.00 | 3614570.60 | 96056.42 |
| 1169.51 | 3023735.1 | 3711391.6 | 1169.65 | 0.00 | 23.99 | 3686253.20 | 95349.14 |
| 1746.86 | 4486872.2 | 3711140.8 | 1747.05 | 0.01 | 18.50 | 3764742.80 | 95049.94 |
| 2324.23 | 5948941.6 | 3710851.8 | 2324.47 | 0.01 | 15.00 | 3815356.80 | 95076.05 |
| 2901.55 | 7408853.0 | 3710722.0 | 2901.46 | -0.00 | 4.50 | 3967667.40 | 96259.94 |
| 2324.17 | 5947836.4 | 3710936.4 | 2324.03 | -0.00 | 1.00 | 4020292.00 | 97010.62 |
| 1746.81 | 4486000.3 | 3711019.0 | 1746.71 | -0.00 | | | |
| 1169.31 | 3022597.2 | 3711119.8 | 1169.20 | -0.00 | | | |
| 591.76 | 1557620.1 | 3711209.6 | 591.50 | -0.01 | | | |
| 14.61 | 93514.4 | 3711282.4 | 14.58 | -0.00 | | | |

| | | |
|--|------------------|-----------|
| | TEMPERATURE (°C) | SPAN (mV) |
| | -5.21 | 104.58 |
| | 34.42 | 104.34 |

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)

● 15-Jan-16 0.00

