SEA-BIRD SCIENTIFIC

SBE Sea-Bird Electronics

Sea-Bird Electronics
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98005 USA

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SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number:	41-8276
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2560.28
Communications Format:	RS232
Communications Settings:	9600 baud, 8 Data Bits, No Parity

Installed Devices/Sensors

Data Format	*Measurement*	*Sensor Type*	*Serial Number*	*Rating*
Count	Temperature	Internal	N/A	N/A
Frequency	Conductivity	Internal	N/A	N/A
Count	Pressure	Kistler	4924213	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 8276
CALIBRATION DATE: 18-Mar-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

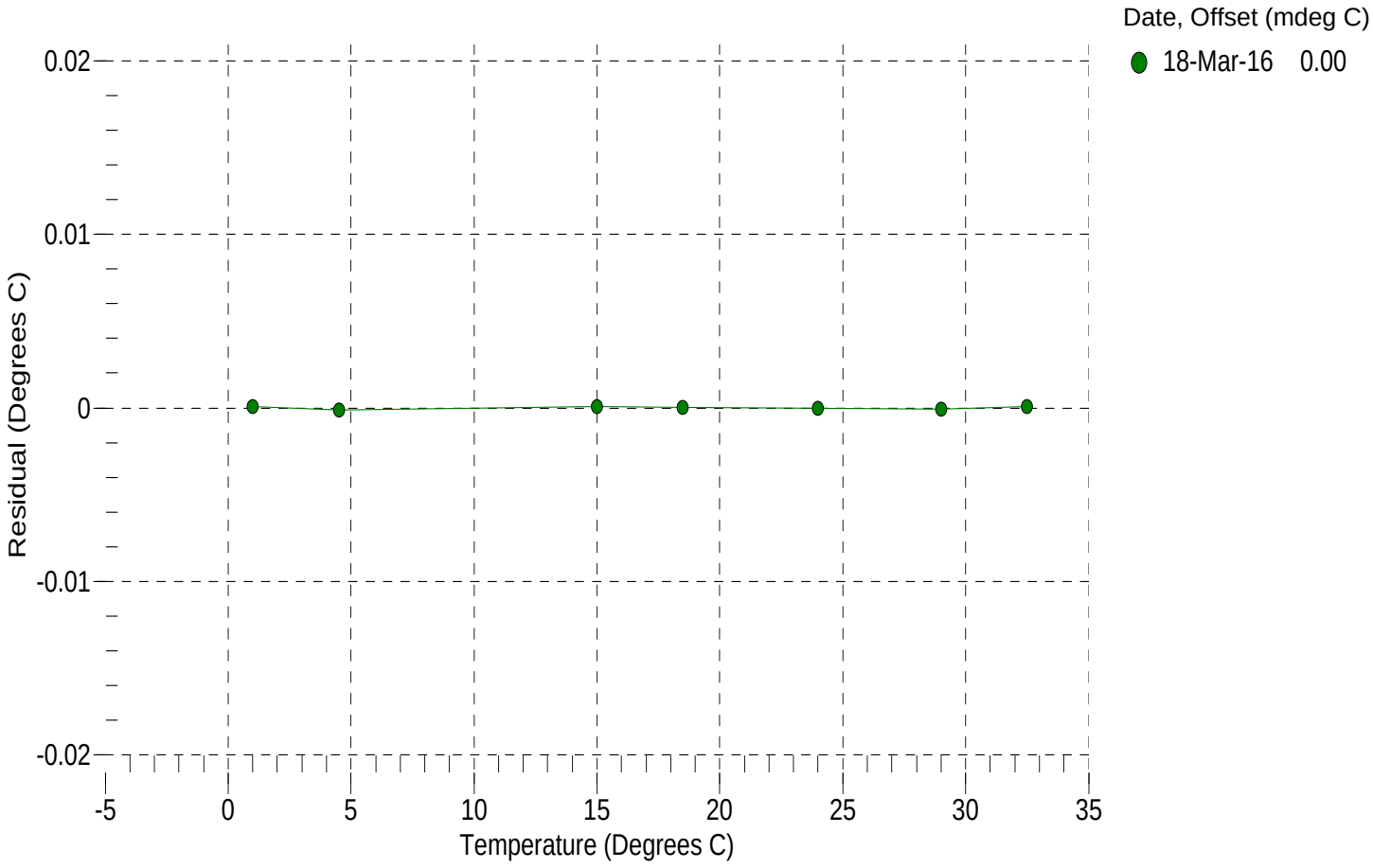
```
a0 = -8.427755e-004
a1 =  2.877910e-004
a2 = -3.503033e-006
a3 =  1.425542e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	17730026.4	1.0001	0.0001
4.5000	15125666.9	4.4999	-0.0001
14.9999	9578257.2	15.0000	0.0001
18.5000	8276833.9	18.5000	0.0000
23.9940	6620802.5	23.9940	-0.0000
29.0000	5435383.6	28.9999	-0.0001
32.5000	4750885.7	32.5001	0.0001

n = Instrument Output (counts)

Temperature ITS-90 (°C) = $1/\{a0 + a1[ln(n)] + a2[ln^2(n)] + a3[ln^3(n)]\} - 273.15$

Residual (°C) = instrument temperature - bath temperature



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SENSOR SERIAL NUMBER: 8276
CALIBRATION DATE: 18-Mar-16

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

COEFFICIENTS:

```
g = -9.921046e-001
h =  1.520783e-001
i = -4.231860e-004
j =  5.404406e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC =  3.9054e-007
```

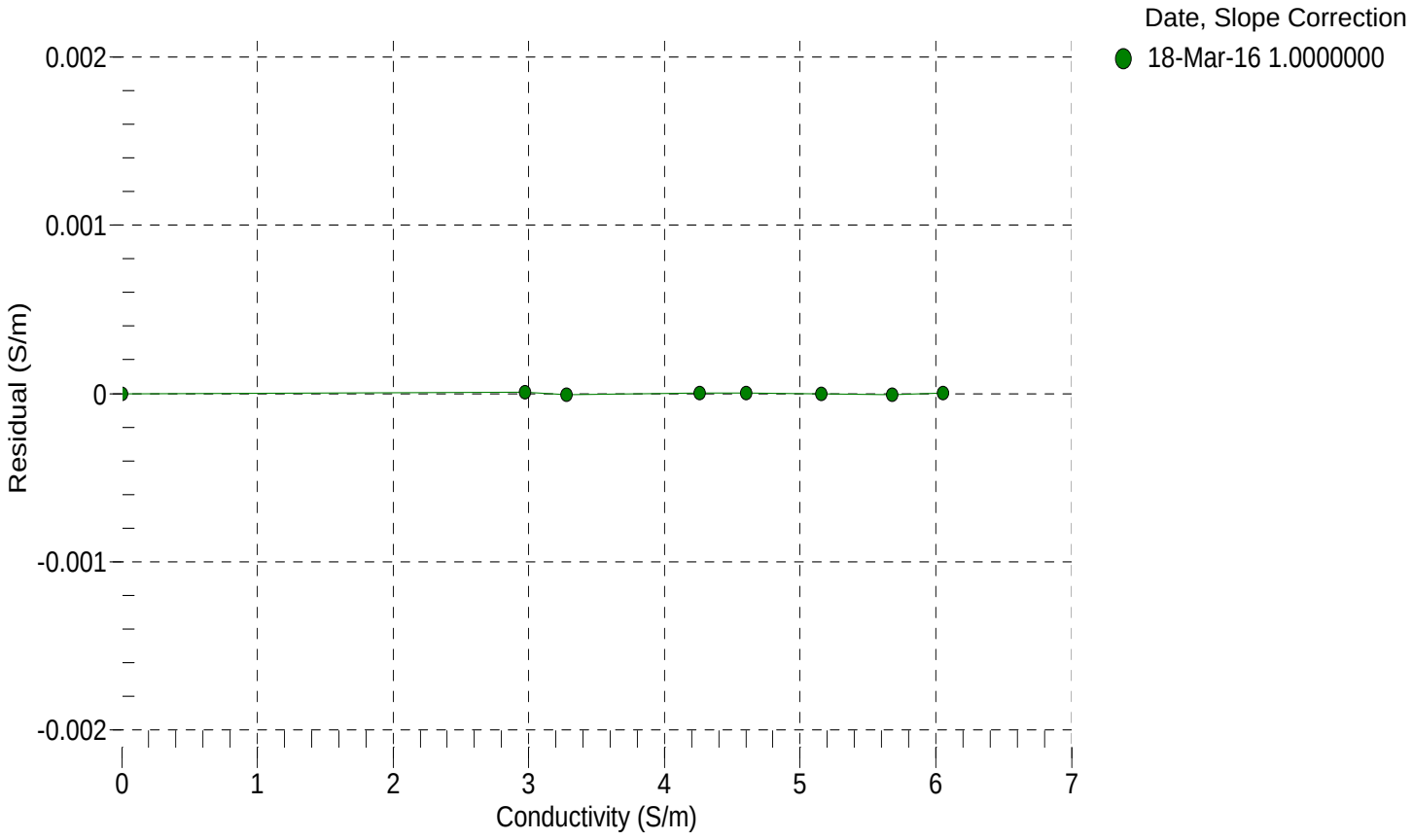
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2560.28	0.00000	0.00000
1.0000	34.7471	2.97061	5117.26	2.97062	0.00001
4.5000	34.7271	3.27714	5311.02	3.27713	-0.00001
14.9999	34.6841	4.25710	5887.15	4.25710	0.00000
18.5000	34.6750	4.60164	6076.47	4.60165	0.00000
23.9940	34.6650	5.15798	6369.98	5.15798	-0.00000
29.0000	34.6595	5.67952	6633.01	5.67951	-0.00001
32.5000	34.6565	6.05127	6814.10	6.05127	0.00000

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0

t = temperature (°C); p = pressure (decibars); δ = CTcor; ε = CPcor;

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

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



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SENSOR SERIAL NUMBER: 8276
CALIBRATION DATE: 14-Mar-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4924213

COEFFICIENTS:

PA0 =	-3.606343e-001	PTCA0 =	-1.259051e+004
PA1 =	3.905498e-004	PTCA1 =	-2.176089e+002
PA2 =	8.636331e-014	PTCA2 =	8.099082e+000
PTHA0 =	3.197753e+002	PTCB0 =	1.033414e+002
PTHA1 =	-9.066957e-005	PTCB1 =	-1.027111e-002
PTHA2 =	2.818421e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.55	24696.4	3718323.0	14.59	0.00
591.43	1498309.9	3716119.4	591.55	0.00
1168.28	2970564.2	3715098.4	1168.36	0.00
1745.15	4442008.0	3714257.4	1745.24	0.00
2321.96	5912460.6	3713571.2	2322.11	0.01
2898.78	7381211.0	3712974.6	2898.69	-0.00
2321.93	5911907.9	3712998.4	2321.90	-0.00
1745.19	4441715.8	3712892.4	1745.14	-0.00
1168.17	2969712.1	3712821.6	1168.04	-0.00
591.42	1497335.0	3712627.2	591.17	-0.01
14.55	24743.1	3712107.0	14.59	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3563082.40	29785.90
29.00	3612589.40	28834.90
23.99	3683982.00	27764.28
18.50	3763065.00	27049.81
15.00	3813349.20	26878.59
4.50	3966289.00	27496.88
1.00	4017410.60	28112.09

TEMPERATURE (°C)	SPAN (mV)
-4.99	103.39
35.48	102.98

y = thermistor output (counts)

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

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

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

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

Residual (%FSR) = (computed pressure - true pressure) * 100 / Full Scale Range