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:	41-8078
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2571.77
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	4713534	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 8078
CALIBRATION DATE: 17-Jan-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

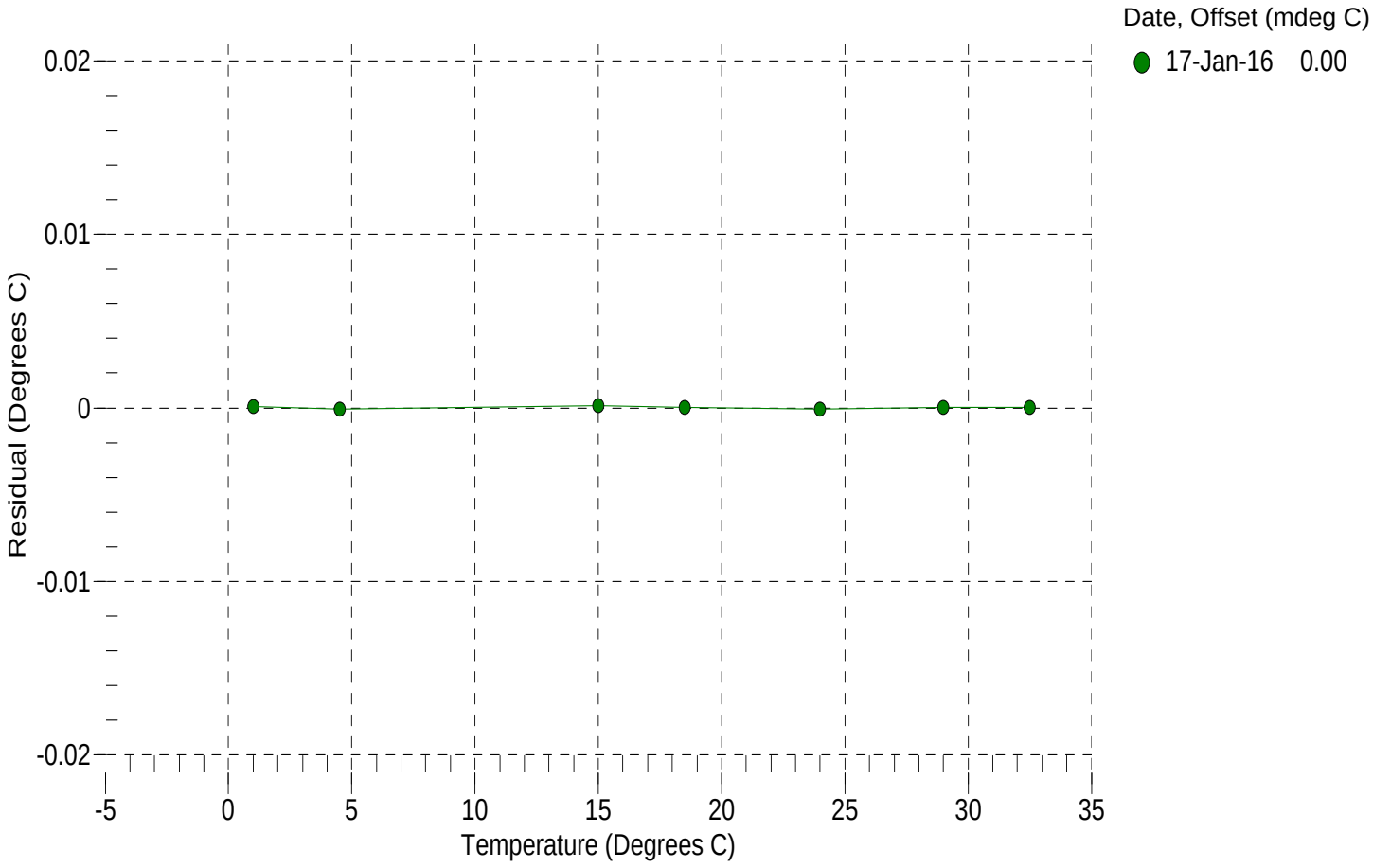
```
a0 = -7.181116e-004
a1 =  2.736868e-004
a2 = -2.606311e-006
a3 =  1.255255e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	14430681.2	1.0001	0.0001
4.5000	12311649.6	4.4999	-0.0001
15.0000	7797719.3	15.0001	0.0001
18.5000	6738681.5	18.5000	0.0000
23.9940	5390921.8	23.9939	-0.0001
29.0000	4426033.5	29.0000	0.0000
32.5001	3868850.0	32.5001	0.0000

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: 8078
CALIBRATION DATE: 17-Jan-16

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

COEFFICIENTS:

```
g = -9.860342e-001
h =  1.496829e-001
i = -3.582180e-004
j =  4.877399e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -3.5640e-007
```

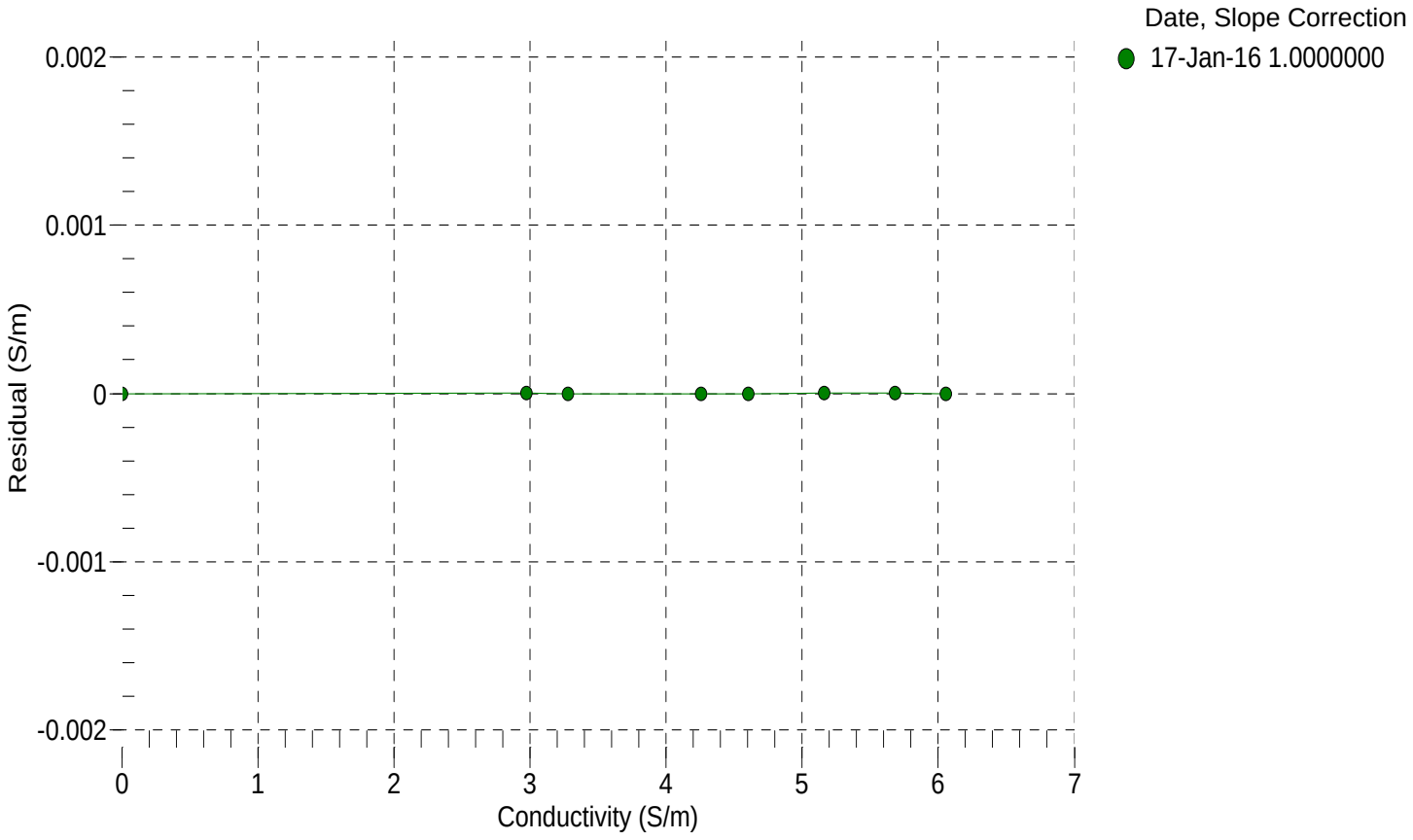
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2571.77	0.00000	0.00000
1.0000	34.7687	2.97228	5151.94	2.97229	0.00000
4.5000	34.7494	3.27903	5347.32	3.27903	-0.00000
15.0000	34.7072	4.25964	5928.15	4.25964	-0.00000
18.5000	34.6982	4.60439	6118.99	4.60439	-0.00000
23.9940	34.6884	5.16108	6414.87	5.16108	0.00000
29.0000	34.6834	5.68300	6680.04	5.68300	0.00000
32.5001	34.6810	6.05507	6862.63	6.05507	-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: 8078
CALIBRATION DATE: 15-Jan-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4713534

COEFFICIENTS:

PA0 =	-1.632532e-001	PTCA0 =	4.909268e+004
PA1 =	3.871478e-004	PTCA1 =	-2.006342e+002
PA2 =	9.635964e-014	PTCA2 =	8.182618e+000
PTHA0 =	3.273775e+002	PTCB0 =	1.055439e+002
PTHA1 =	-9.480902e-005	PTCB1 =	-6.736971e-003
PTHA2 =	3.349815e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.61	87179.6	3703456.8	14.77	0.01
592.11	1575740.4	3703057.0	592.10	-0.00
1169.51	3063624.1	3702712.4	1169.60	0.00
1746.86	4550235.1	3702423.0	1747.04	0.01
2324.23	6035713.8	3702117.2	2324.47	0.01
2901.55	7519004.4	3702013.4	2901.47	-0.00
2324.17	6034572.7	3702208.6	2324.02	-0.01
1746.81	4549366.3	3702293.6	1746.70	-0.00
1169.31	3062687.3	3702398.2	1169.24	-0.00
591.76	1574278.1	3702519.8	591.53	-0.01
14.61	86702.8	3702640.2	14.58	-0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3557364.60	90774.60
29.00	3606622.20	89748.39
23.99	3678055.40	88559.99
18.50	3756465.60	87756.37
15.00	3806885.20	87492.51
4.50	3959174.20	87921.92
1.00	4011080.00	88479.70

TEMPERATURE (°C)	SPAN (mV)
-4.84	105.58
35.93	105.30

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