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:	41-8742
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2577.97
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	Druck	10300977	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 8742
CALIBRATION DATE: 05-Aug-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

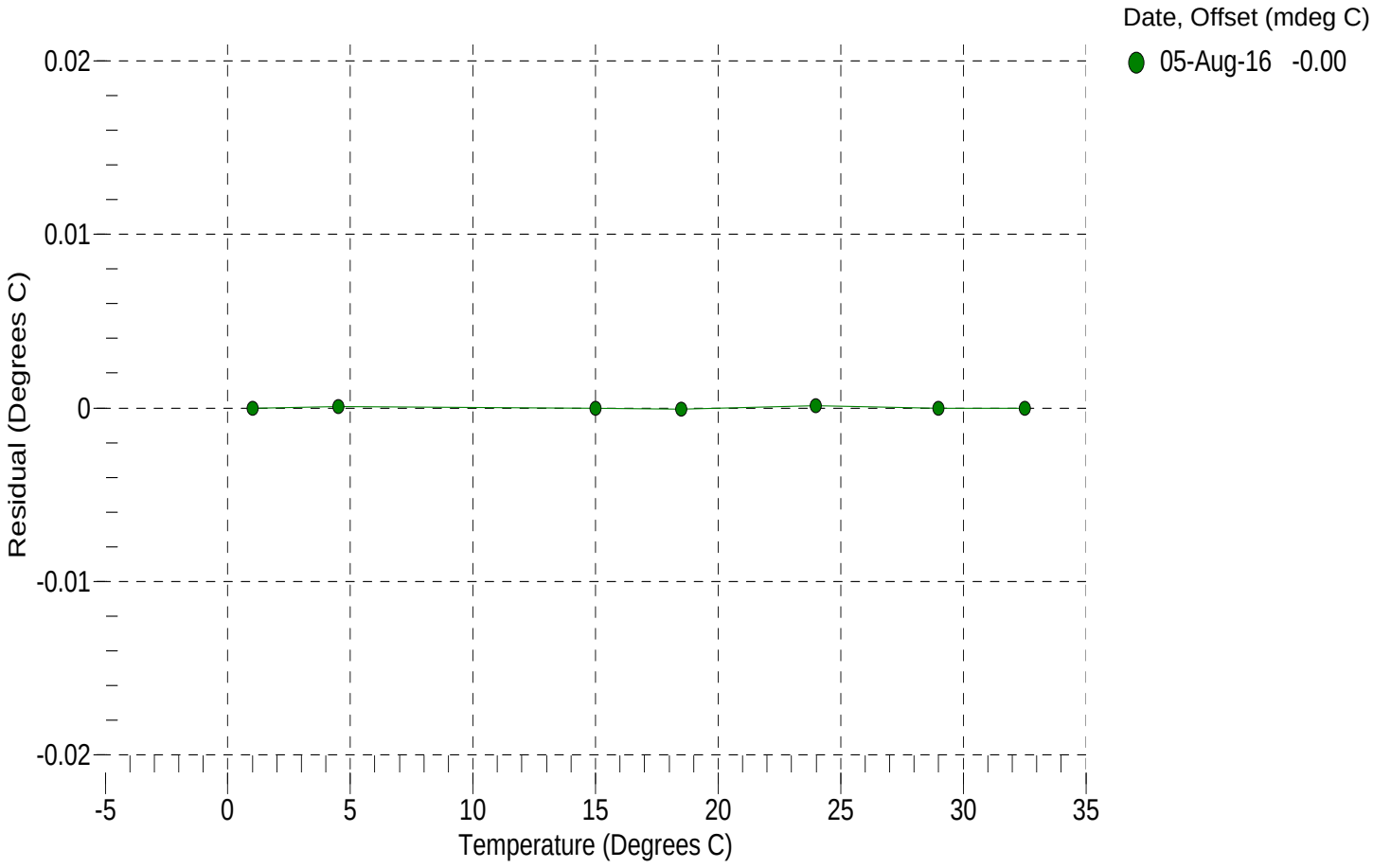
```
a0 = -8.338520e-004
a1 =  2.912865e-004
a2 = -3.727743e-006
a3 =  1.478431e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	16028769.0	1.0000	-0.0000
4.5000	13671714.7	4.5001	0.0001
15.0000	8653231.9	15.0000	-0.0000
18.5000	7476306.0	18.4999	-0.0001
23.9940	5978936.1	23.9941	0.0001
29.0000	4907430.8	29.0000	-0.0000
32.5000	4288832.3	32.5000	-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: 8742
CALIBRATION DATE: 05-Aug-16

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

COEFFICIENTS:

```
g = -1.008396e+000
h =  1.522608e-001
i = -3.259424e-004
j =  4.738099e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -1.2605e-006
```

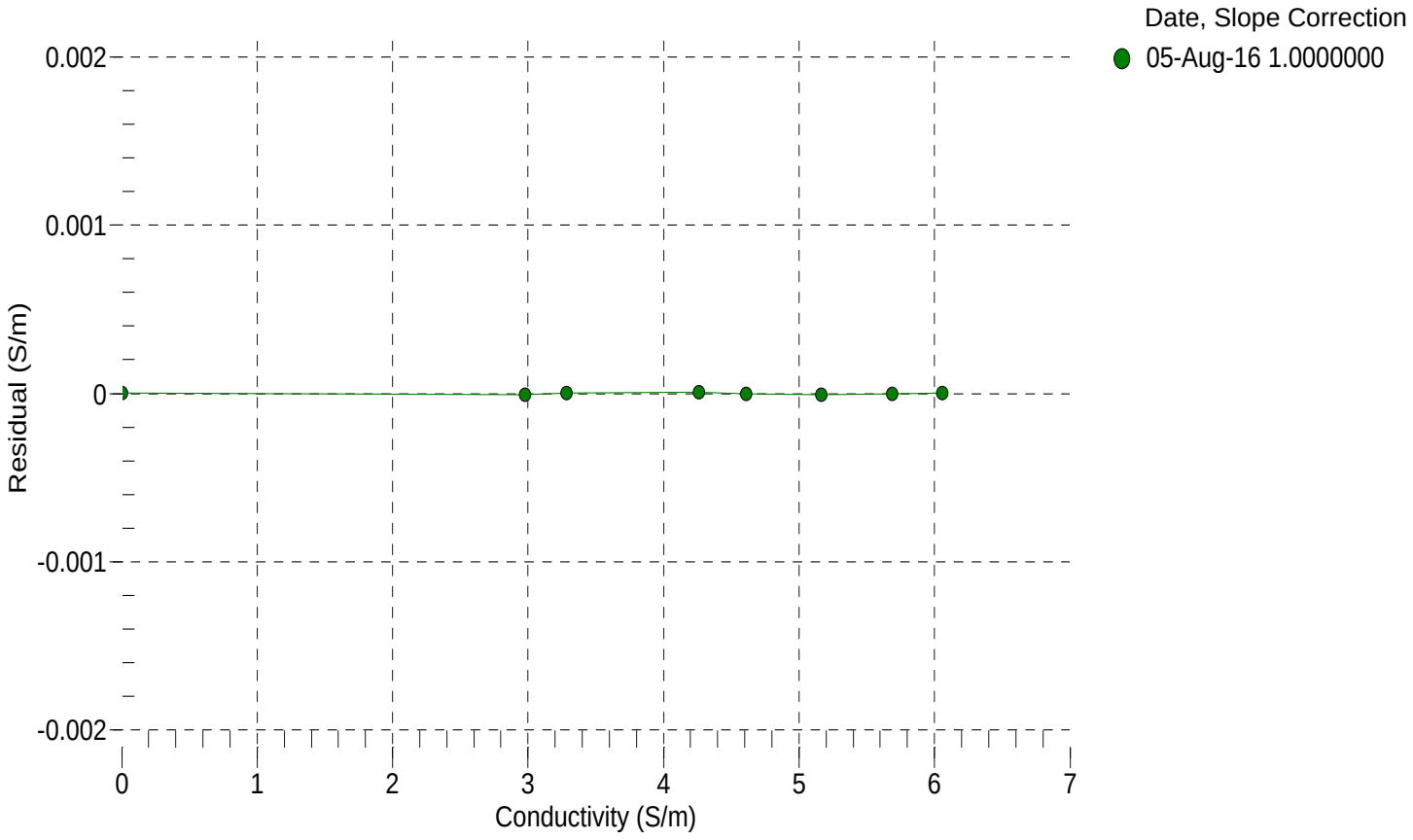
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2577.97	0.00000	0.00000
1.0000	34.8027	2.97491	5121.97	2.97491	-0.00001
4.5000	34.7829	3.28188	5315.14	3.28189	0.00000
15.0000	34.7405	4.26330	5889.63	4.26331	0.00001
18.5000	34.7311	4.60828	6078.42	4.60828	-0.00000
23.9940	34.7208	5.16537	6371.19	5.16536	-0.00001
29.0000	34.7143	5.68749	6633.54	5.68749	-0.00000
32.5000	34.7086	6.05933	6814.04	6.05933	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: 8742
CALIBRATION DATE: 29-Jul-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 10300977

COEFFICIENTS:

PA0 =	1.885134e-001	PTCA0 =	1.542865e+004
PA1 =	3.935580e-004	PTCA1 =	1.752938e+001
PA2 =	-2.980671e-013	PTCA2 =	1.830951e-001
PTHA0 =	3.091490e+002	PTCB0 =	2.510038e+001
PTHA1 =	-6.118290e-005	PTCB1 =	7.500000e-005
PTHA2 =	-1.261986e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.59	52737.2	4307521.8	14.68	0.00
590.72	1518041.6	4304683.6	590.65	-0.00
1166.74	2986994.9	4303376.2	1166.77	0.00
1742.68	4459017.3	4302228.6	1742.80	0.00
2318.65	5934285.8	4301169.8	2318.81	0.01
2894.53	7411905.8	4299962.2	2894.44	-0.00
2318.63	5933673.4	4299741.4	2318.57	-0.00
1742.82	4459055.6	4299634.4	1742.82	-0.00
1166.74	2986752.8	4299614.0	1166.67	-0.00
590.69	1517743.8	4299593.0	590.53	-0.01
14.59	52659.2	4298841.0	14.64	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	4164026.20	54576.40
29.00	4212820.40	54576.97
23.99	4282409.00	54458.01
18.50	4358632.80	54244.13
15.00	4407091.20	54100.91
4.50	4551955.60	53978.79
1.00	4600040.20	53881.63

TEMPERATURE (°C)	SPAN (mV)
-5.00	25.10
35.00	25.10

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