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:	41-8708
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2608.41
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	10387028	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 8708
CALIBRATION DATE: 01-Aug-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

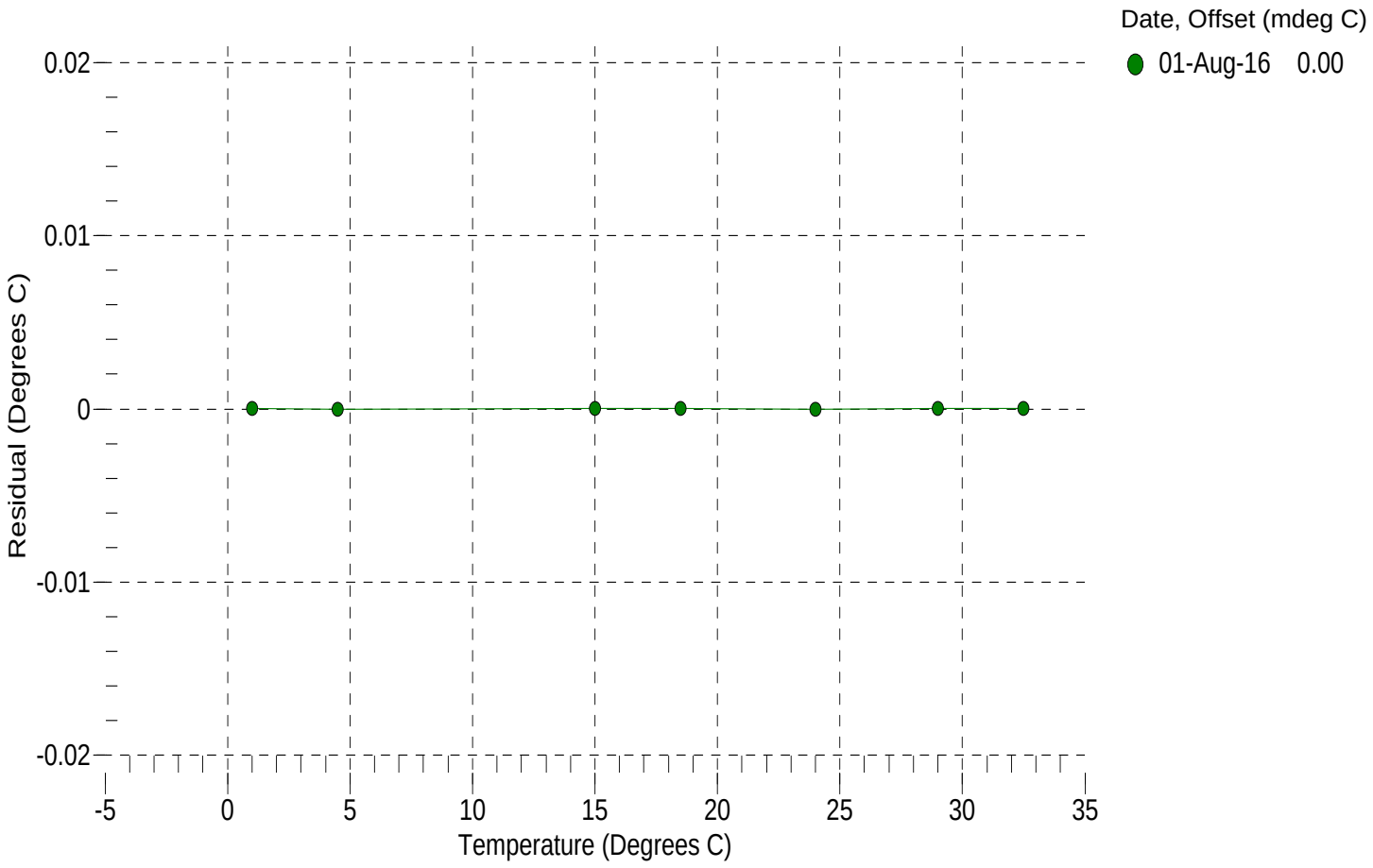
```
a0 = -7.548533e-004
a1 =  2.839726e-004
a2 = -3.260608e-006
a3 =  1.397587e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	13526559.9	1.0000	0.0000
4.5000	11539233.2	4.5000	-0.0000
15.0000	7306640.3	15.0000	0.0000
18.5000	6313730.5	18.5000	0.0000
23.9940	5050306.3	23.9940	-0.0000
29.0000	4145944.2	29.0000	0.0000
32.5000	3623780.8	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: 8708
CALIBRATION DATE: 01-Aug-16

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

COEFFICIENTS:

```
g = -1.005228e+000
h =  1.483074e-001
i = -3.372371e-004
j =  4.681494e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -3.1944e-007
```

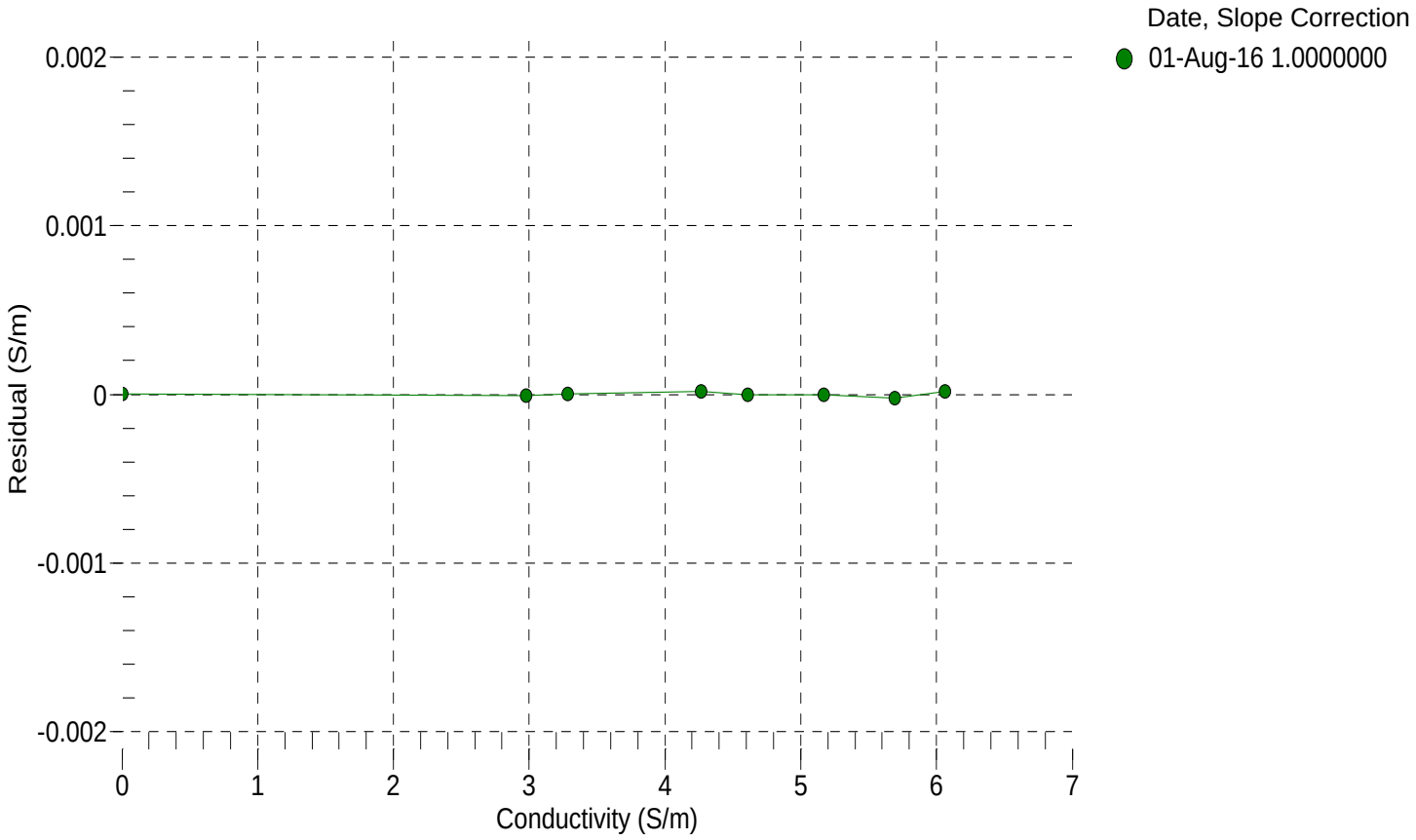
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2608.41	0.00000	0.00000
1.0000	34.8206	2.97630	5189.92	2.97629	-0.00001
4.5000	34.8012	3.28344	5385.86	3.28344	0.00000
15.0000	34.7595	4.26538	5968.50	4.26540	0.00002
18.5000	34.7511	4.61065	6160.00	4.61065	-0.00000
23.9940	34.7421	5.16819	6456.96	5.16819	-0.00000
29.0000	34.7370	5.69079	6723.06	5.69077	-0.00002
32.5000	34.7331	6.06312	6906.23	6.06314	0.00002

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: 8708
CALIBRATION DATE: 25-Jul-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 10387028

COEFFICIENTS:

PA0 =	6.127919e-001	PTCA0 =	-3.541887e+003
PA1 =	3.928274e-004	PTCA1 =	1.118060e+002
PA2 =	-2.951817e-013	PTCA2 =	-1.859957e+000
PTHA0 =	3.050102e+002	PTCB0 =	2.512963e+001
PTHA1 =	-6.011198e-005	PTCB1 =	-7.537688e-005
PTHA2 =	-1.342769e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.64	33855.9	4295666.8	14.69	0.00
591.09	1502654.0	4290479.8	591.04	-0.00
1167.28	2974572.7	4289093.4	1167.34	0.00
1743.43	4449480.8	4287899.6	1743.53	0.00
2319.53	5927534.5	4286789.8	2319.66	0.00
2895.66	7408329.4	4285485.6	2895.57	-0.00
2319.54	5927206.1	4285228.8	2319.53	-0.00
1743.53	4449375.4	4285171.4	1743.49	-0.00
1167.20	2973940.3	4285195.4	1167.09	-0.00
591.01	1502309.4	4285233.4	590.90	-0.00
14.64	33893.6	4279275.0	14.69	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	4148862.60	35441.50
29.00	4197961.80	35549.09
23.99	4267976.00	35512.58
18.50	4344639.40	35265.58
15.00	4393336.00	35014.50
4.50	4538964.40	34285.52
1.00	4587332.80	33963.27

TEMPERATURE (°C)	SPAN (mV)
-4.90	25.13
34.90	25.13

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