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:	41-8683
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2679.39
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	10301011	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 8683
CALIBRATION DATE: 02-Aug-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

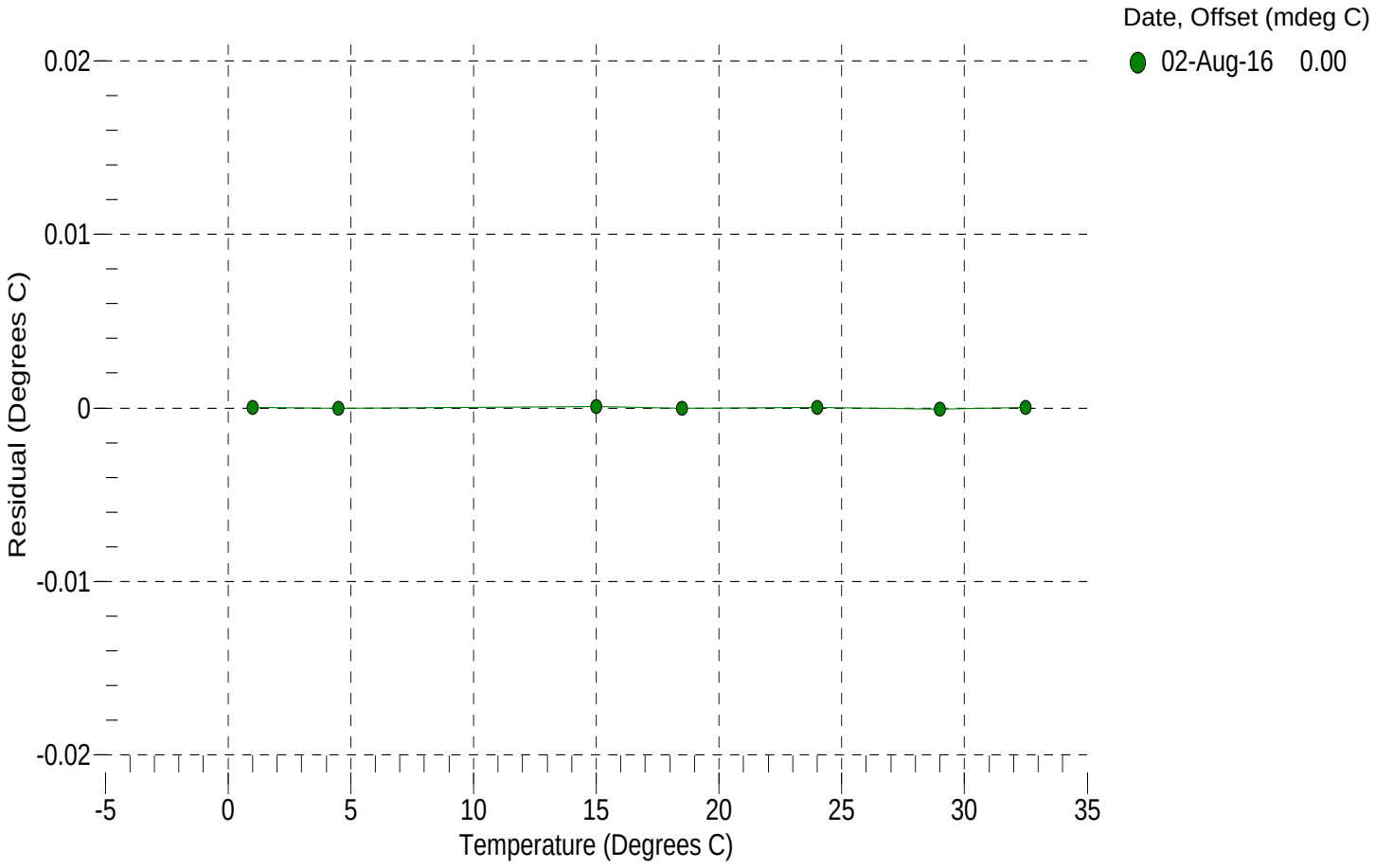
```
a0 = -8.205912e-004
a1 =  2.897275e-004
a2 = -3.622819e-006
a3 =  1.459971e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	15600925.7	1.0000	0.0000
4.5000	13308362.8	4.5000	-0.0000
14.9999	8425916.8	15.0000	0.0001
18.5000	7280644.5	18.5000	-0.0000
23.9940	5823402.2	23.9940	0.0000
29.0000	4780414.3	28.9999	-0.0001
32.5000	4178207.9	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: 8683
CALIBRATION DATE: 02-Aug-16

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

COEFFICIENTS:

```
g = -9.846018e-001
h =  1.377810e-001
i = -3.546445e-004
j =  4.461772e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -9.6404e-007
```

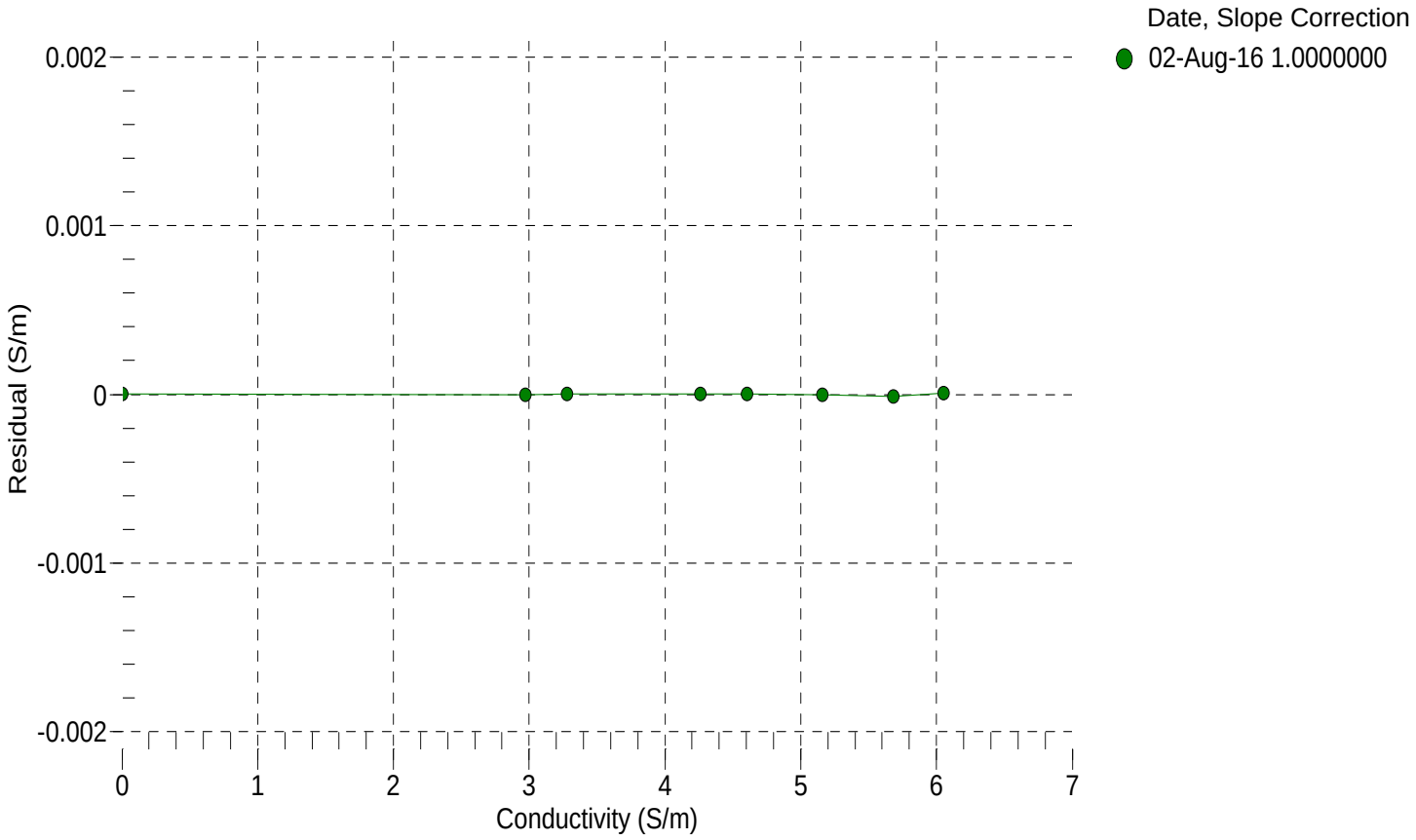
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2679.39	0.00000	0.00000
1.0000	34.7556	2.97127	5370.35	2.97127	-0.00000
4.5000	34.7359	3.27789	5574.08	3.27789	0.00000
14.9999	34.6940	4.25819	6179.71	4.25819	0.00000
18.5000	34.6852	4.60285	6378.70	4.60286	0.00000
23.9940	34.6757	5.15940	6687.20	5.15940	-0.00000
29.0000	34.6709	5.68118	6963.65	5.68117	-0.00001
32.5000	34.6681	6.05306	7153.96	6.05307	0.00001

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: 8683
CALIBRATION DATE: 19-Jul-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 10301011

COEFFICIENTS:

PA0 =	4.017948e-001	PTCA0 =	-1.224837e+004
PA1 =	3.930154e-004	PTCA1 =	2.945636e+001
PA2 =	-2.787390e-013	PTCA2 =	7.226326e-001
PTHA0 =	2.915105e+002	PTCB0 =	2.508284e+001
PTHA1 =	-6.136802e-005	PTCB1 =	-4.239401e-004
PTHA2 =	-9.118972e-013	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.66	25202.2	4131635.4	14.72	0.00
591.26	1493142.6	4127355.8	591.23	-0.00
1167.74	2964243.0	4125309.0	1167.78	0.00
1744.22	4438300.5	4123983.0	1744.28	0.00
2320.75	5915568.4	4122818.0	2320.82	0.00
2897.20	7395437.3	4121738.2	2897.15	-0.00
2320.71	5915169.2	4121753.4	2320.66	-0.00
1744.28	4438545.1	4121763.4	1744.37	0.00
1167.70	2963849.6	4121788.4	1167.62	-0.00
590.97	1492089.6	4121762.4	590.81	-0.01
14.65	25162.3	4121744.6	14.69	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3984697.20	27253.50
29.00	4035619.60	27076.93
23.99	4108372.40	26741.71
18.50	4188118.60	26349.12
15.00	4238812.80	26125.46
4.50	4390428.40	25765.82
1.00	4440863.20	25584.85

TEMPERATURE (°C)	SPAN (mV)
-5.10	25.09
35.00	25.07

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