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:	41-9087
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2598.88
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	4978287	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 9087
CALIBRATION DATE: 21-Oct-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

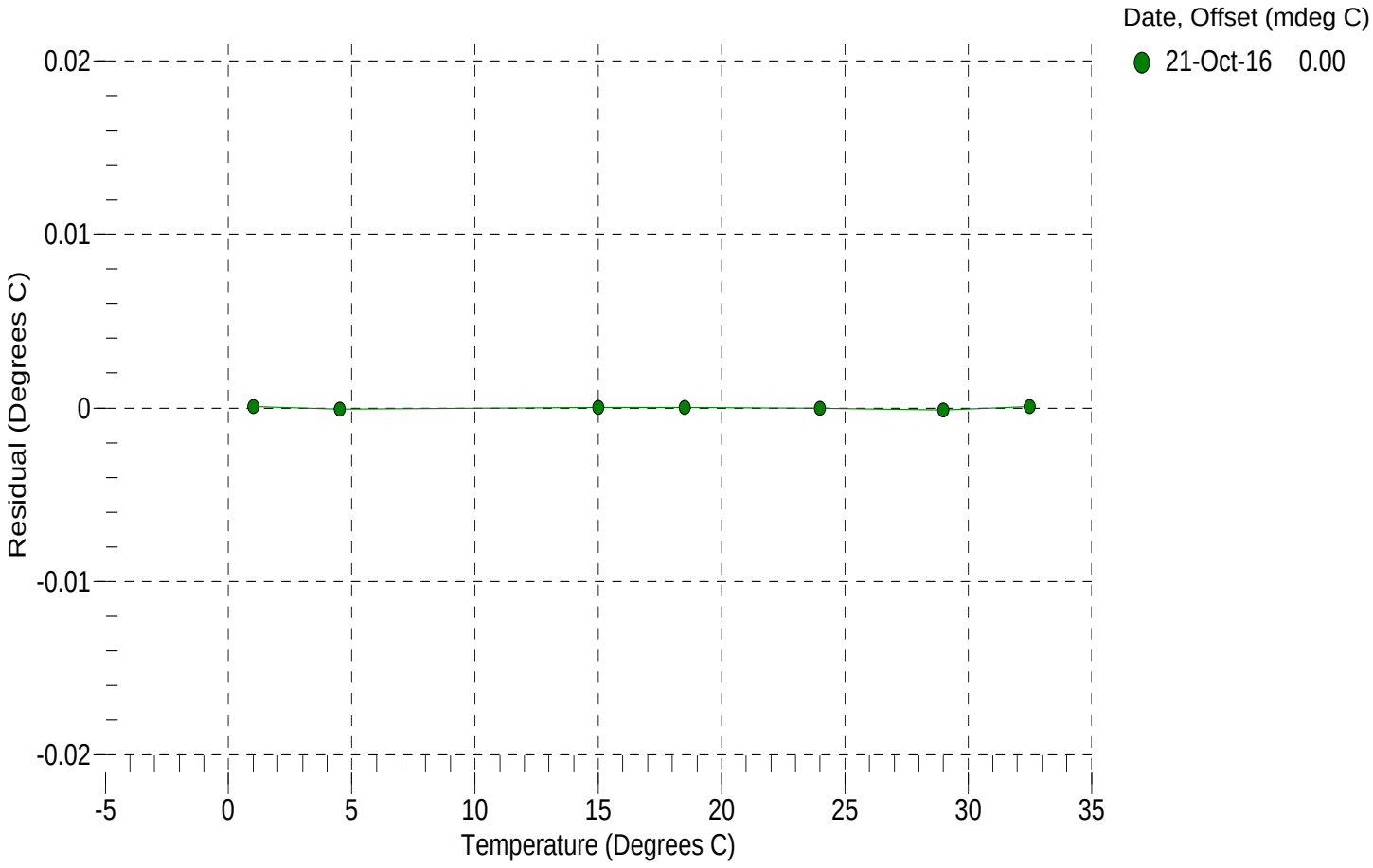
```
a0 = -7.343404e-004
a1 =  2.789343e-004
a2 = -2.959423e-006
a3 =  1.317942e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	14311254.1	1.0001	0.0001
4.5000	12200753.9	4.4999	-0.0001
15.0000	7711282.8	15.0000	0.0000
18.5000	6659535.5	18.5000	0.0000
24.0001	5320946.7	24.0001	-0.0000
29.0000	4365857.5	28.9999	-0.0001
32.5001	3813966.5	32.5002	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: 9087
CALIBRATION DATE: 21-Oct-16

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

COEFFICIENTS:

```
g = -1.014826e+000
h =  1.508529e-001
i = -3.586646e-004
j =  4.927048e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -7.0534e-007
```

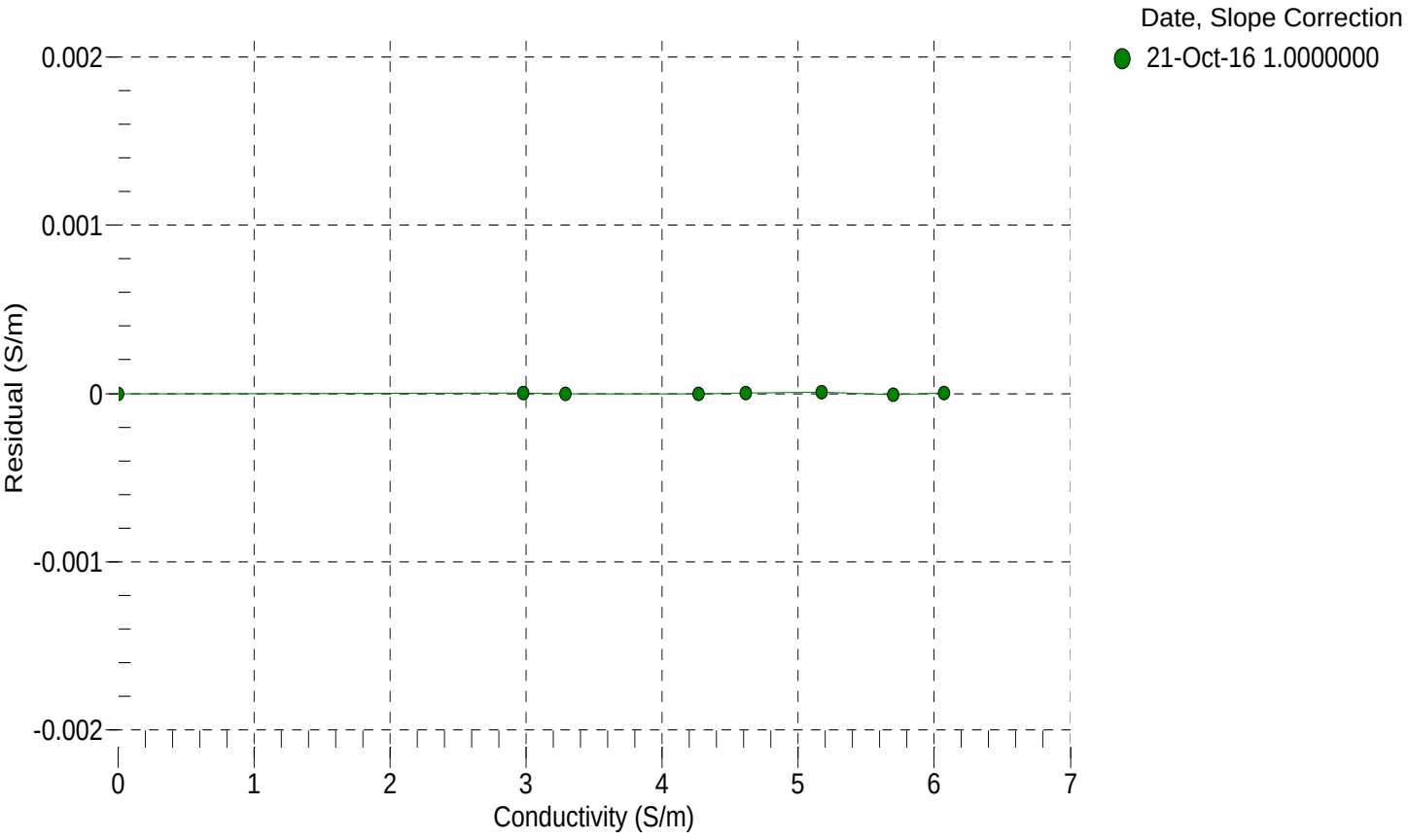
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2598.88	0.00000	0.00000
1.0000	34.8657	2.97978	5155.13	2.97979	0.00000
4.5000	34.8459	3.28724	5349.31	3.28724	-0.00000
15.0000	34.8033	4.27019	5926.88	4.27018	-0.00000
18.5000	34.7943	4.61577	6116.72	4.61577	0.00000
24.0001	34.7844	5.17442	6411.43	5.17442	0.00001
29.0000	34.7793	5.69694	6674.97	5.69693	-0.00001
32.5001	34.7765	6.06985	6856.67	6.06985	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: 9087
CALIBRATION DATE: 17-Oct-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4978287

COEFFICIENTS:

PA0 =	1.519937e-001	PTCA0 =	2.840664e+004
PA1 =	3.851043e-004	PTCA1 =	-2.010196e+002
PA2 =	1.423035e-013	PTCA2 =	1.023841e+001
PTHA0 =	3.218078e+002	PTCB0 =	1.059114e+002
PTHA1 =	-9.152006e-005	PTCB1 =	-7.841828e-003
PTHA2 =	2.921108e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.43	65787.7	3725015.2	14.42	-0.00
589.94	1557817.9	3721957.2	590.24	0.01
1165.66	3047340.4	3720583.0	1165.75	0.00
1741.41	4535716.8	3719378.0	1741.46	0.00
2317.24	6022661.2	3718300.2	2317.25	0.00
2892.92	7507878.5	3717068.4	2893.01	0.00
2317.11	6022184.9	3716742.2	2317.07	-0.00
1741.23	4534526.5	3716233.0	1741.00	-0.01
1165.72	3046843.0	3715849.4	1165.56	-0.01
589.68	1556724.4	3715516.0	589.80	0.00
14.44	65488.4	3715017.4	14.24	-0.01

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3567276.00	72123.80
29.00	3616991.40	70660.99
24.00	3688229.20	68960.56
18.50	3766907.00	67641.78
15.00	3817581.60	67133.81
4.50	3970181.00	67161.65
1.00	4021520.00	67680.72

TEMPERATURE (°C)	SPAN (mV)
-5.19	105.95
36.73	105.62

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