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:	41-9083
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2601.66
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	4978230	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 9083
CALIBRATION DATE: 21-Oct-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

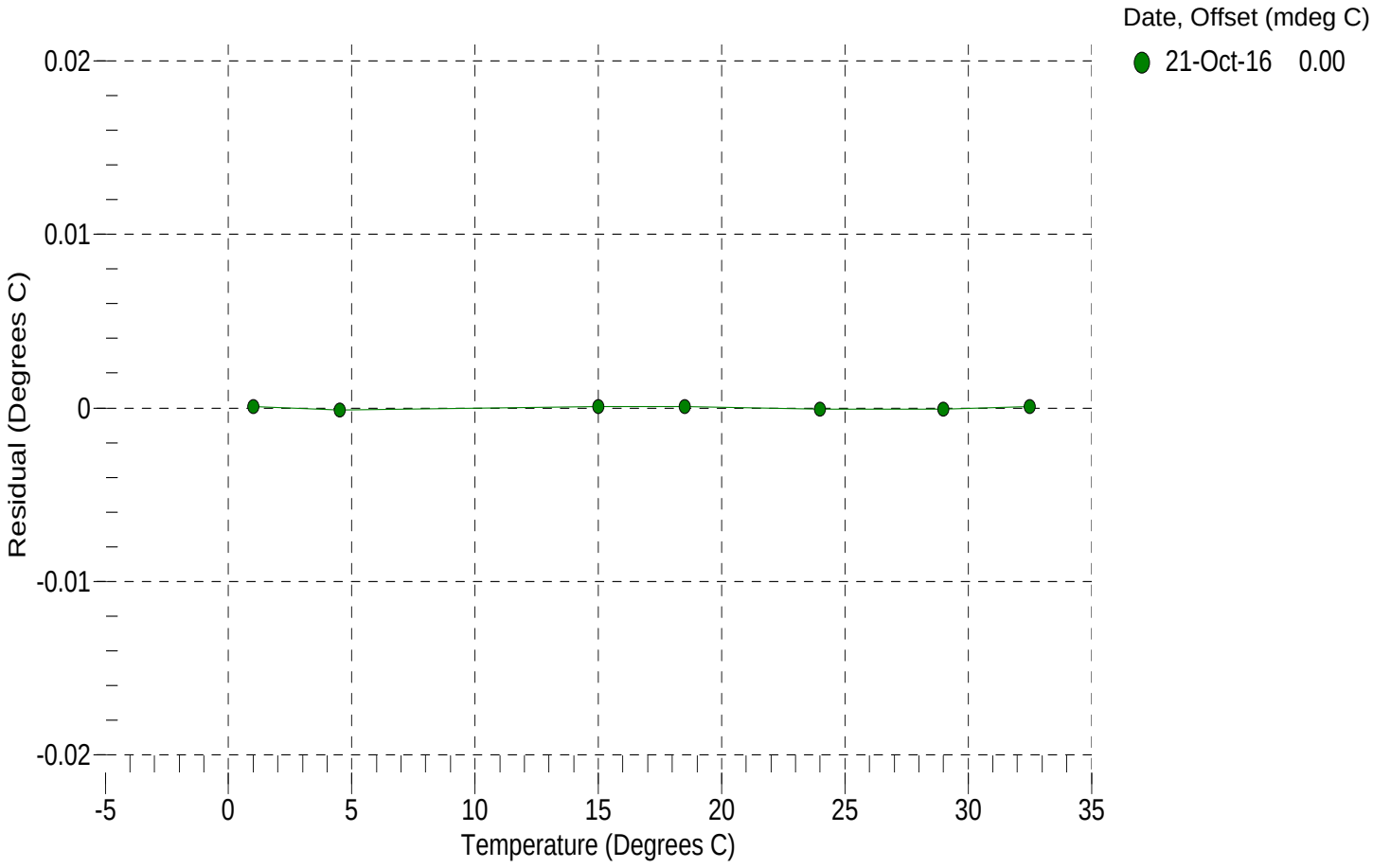
```
a0 = -6.744501e-004
a1 =  2.662417e-004
a2 = -2.141666e-006
a3 =  1.164305e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	14113513.2	1.0001	0.0001
4.5000	12043041.4	4.4999	-0.0001
15.0000	7631130.0	15.0001	0.0001
18.5000	6595634.3	18.5001	0.0001
24.0001	5276336.2	24.0000	-0.0001
29.0000	4333810.0	28.9999	-0.0001
32.5001	3788660.7	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: 9083
CALIBRATION DATE: 21-Oct-16

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

COEFFICIENTS:

```
g = -9.949490e-001
h =  1.475053e-001
i = -3.102045e-004
j =  4.441151e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -1.4412e-006
```

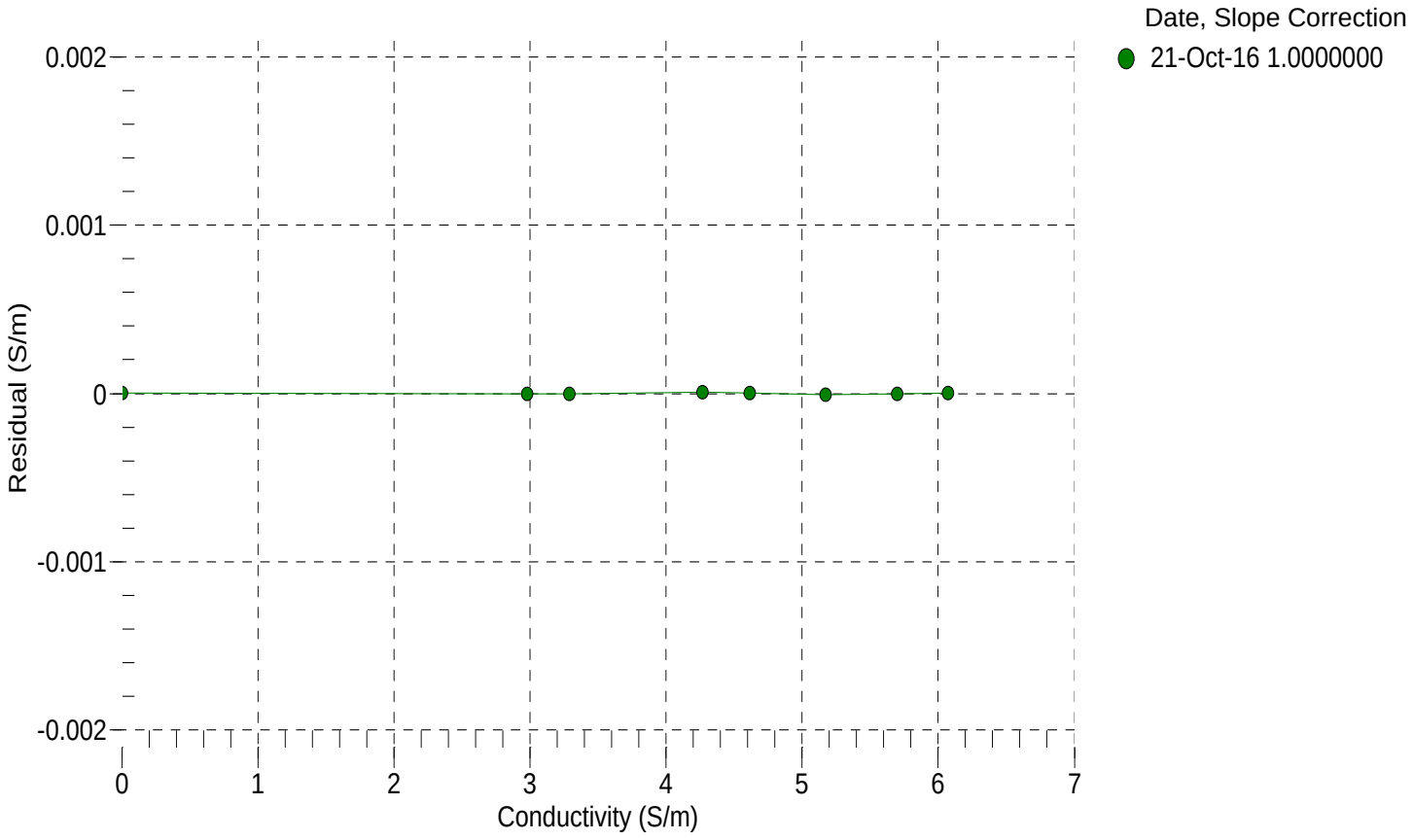
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2601.66	0.00000	0.00000
1.0000	34.8657	2.97978	5198.27	2.97978	-0.00000
4.5000	34.8459	3.28724	5395.04	3.28724	-0.00000
15.0000	34.8033	4.27019	5980.09	4.27020	0.00001
18.5000	34.7943	4.61577	6172.34	4.61577	0.00000
24.0001	34.7844	5.17442	6470.76	5.17441	-0.00001
29.0000	34.7793	5.69694	6737.61	5.69694	-0.00000
32.5001	34.7765	6.06985	6921.57	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: 9083
CALIBRATION DATE: 17-Oct-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4978230

COEFFICIENTS:

PA0 =	-1.334002e+001	PTCA0 =	-1.232310e+004
PA1 =	3.914336e-004	PTCA1 =	-1.593413e+003
PA2 =	1.250018e-013	PTCA2 =	7.463460e-001
PTHA0 =	3.235879e+002	PTCB0 =	1.036264e+002
PTHA1 =	-9.279733e-005	PTCB1 =	7.695880e-003
PTHA2 =	3.078185e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.42	24890.0	3710523.0	14.54	0.00
590.15	1497043.1	3708423.6	590.25	0.00
1166.18	2968819.4	3707606.6	1166.29	0.00
1742.20	4439255.2	3706820.4	1742.33	0.00
2318.22	5908283.6	3705825.2	2318.37	0.01
2894.17	7375173.8	3705070.0	2894.09	-0.00
2318.20	5907851.5	3704916.0	2318.23	0.00
1742.12	4437969.6	3704475.8	1741.91	-0.01
1166.16	2967793.3	3704110.6	1166.01	-0.01
589.95	1495536.0	3703785.8	589.84	-0.00
14.43	23551.0	3703240.2	14.33	-0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3556269.80	10266.20
29.00	3605882.40	15679.16
24.00	3676953.00	23439.22
18.50	3755365.20	32020.41
15.00	3805993.60	37557.11
4.50	3958086.20	54088.77
1.00	4009657.20	59674.83

TEMPERATURE (°C)	SPAN (mV)
-7.31	103.57
35.75	103.90

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