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:	41-9093
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2593.24
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	4978277	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 9093
CALIBRATION DATE: 23-Oct-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

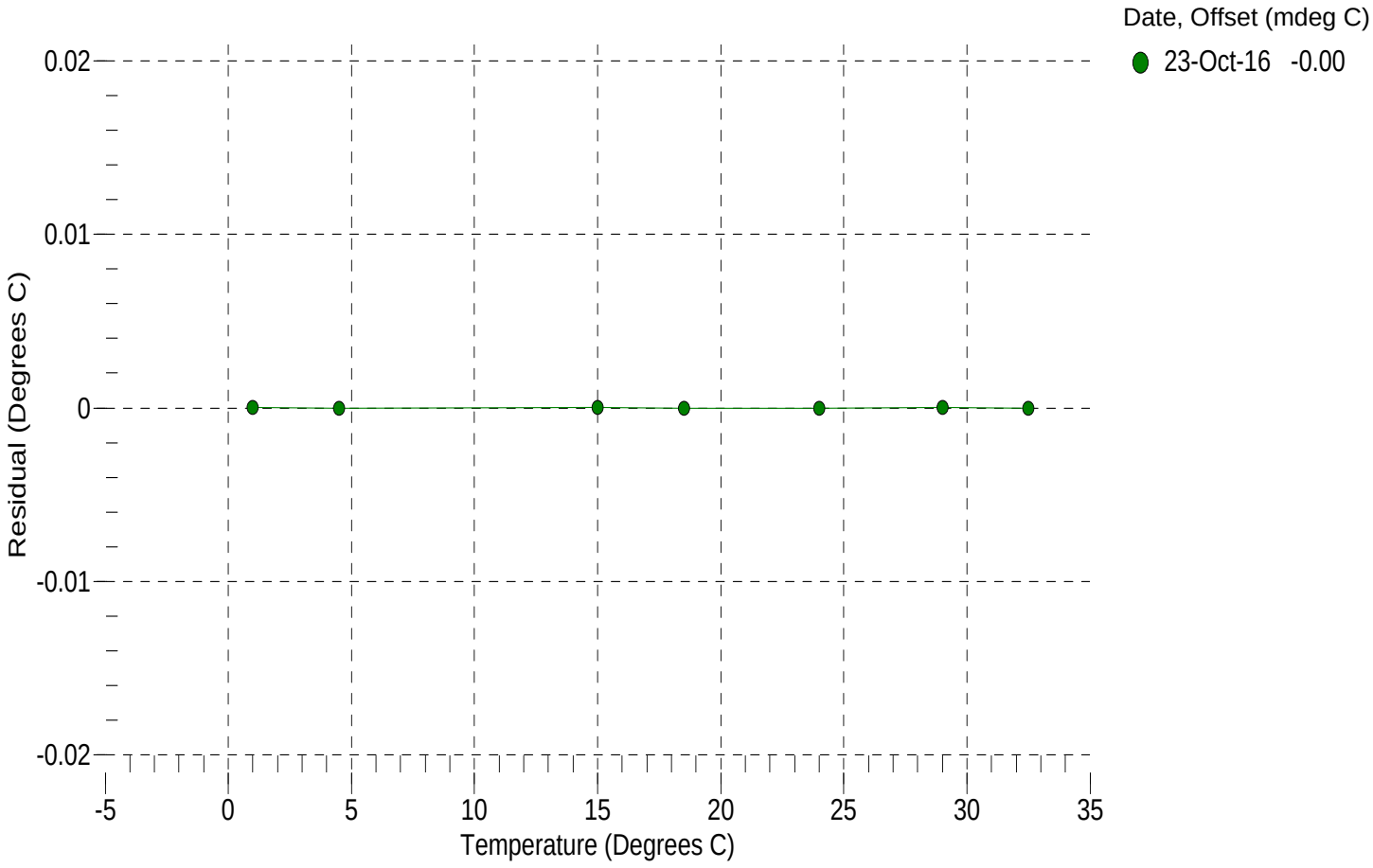
```
a0 = -7.359903e-004
a1 =  2.785046e-004
a2 = -2.952072e-006
a3 =  1.319332e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0001	14617445.8	1.0001	0.0000
4.5000	12462285.8	4.5000	-0.0000
15.0000	7877367.0	15.0000	0.0000
18.5000	6803158.5	18.5000	-0.0000
23.9940	5437174.0	23.9940	-0.0000
29.0005	4460116.6	29.0005	0.0000
32.4996	3896535.0	32.4996	-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: 9093
CALIBRATION DATE: 23-Oct-16

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

COEFFICIENTS:

```
g = -1.001731e+000
h =  1.496233e-001
i = -3.826674e-004
j =  4.943994e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -1.3495e-006
```

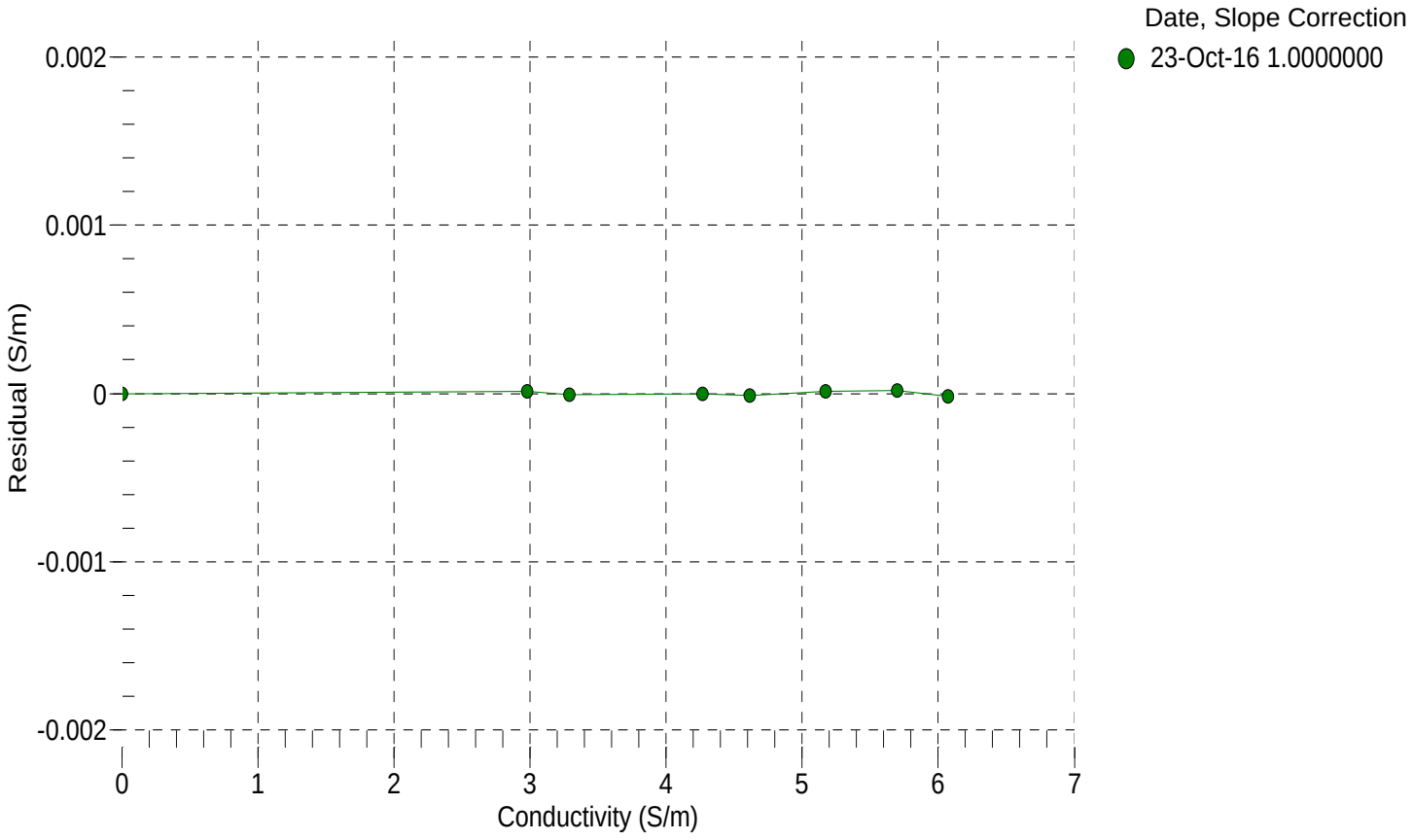
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2593.24	0.00000	0.00000
1.0001	34.8630	2.97958	5169.76	2.97959	0.00001
4.5000	34.8434	3.28703	5365.20	3.28702	-0.00001
15.0000	34.8007	4.26990	5946.38	4.26990	-0.00000
18.5000	34.7918	4.61547	6137.38	4.61546	-0.00001
23.9940	34.7822	5.17349	6433.57	5.17351	0.00001
29.0005	34.7767	5.69661	6699.03	5.69663	0.00002
32.4996	34.7727	6.06920	6881.64	6.06919	-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: 9093
CALIBRATION DATE: 18-Oct-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4978277

COEFFICIENTS:

PA0 =	1.106754e-001	PTCA0 =	5.912702e+003
PA1 =	3.886936e-004	PTCA1 =	-1.779879e+002
PA2 =	1.052173e-013	PTCA2 =	8.868557e+000
PTHA0 =	3.157611e+002	PTCB0 =	1.047620e+002
PTHA1 =	-8.850872e-005	PTCB1 =	-3.655450e-003
PTHA2 =	2.563767e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.59	43597.6	3726188.4	14.66	0.00
590.78	1524357.7	3724576.2	590.89	0.00
1167.17	3004327.5	3723753.4	1167.28	0.00
1743.62	4483400.9	3723021.6	1743.79	0.01
2116.04	5456687.3	3722463.6	2123.41	0.25
2896.34	7436709.8	3721650.0	2896.30	-0.00
2319.95	5960557.6	3721554.8	2320.01	0.00
1743.45	4482151.4	3721340.8	1743.30	-0.01
1167.18	3003741.0	3721092.4	1167.05	-0.00
590.54	1523066.1	3720924.2	590.37	-0.01
14.60	43486.2	3718865.0	14.57	-0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	3569437.60	48824.90
29.00	3619345.40	47574.98
23.99	3691158.20	46104.67
18.50	3770302.20	44991.32
15.00	3821008.80	44580.42
4.50	3974218.20	44633.05
1.00	4025722.00	45095.69

TEMPERATURE (°C)	SPAN (mV)
-4.62	104.78
35.67	104.63

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