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:	41-9411
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2656.32
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	10490656	2000m(2000 dBar)

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SENSOR SERIAL NUMBER: 9411
CALIBRATION DATE: 27-Jan-17

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

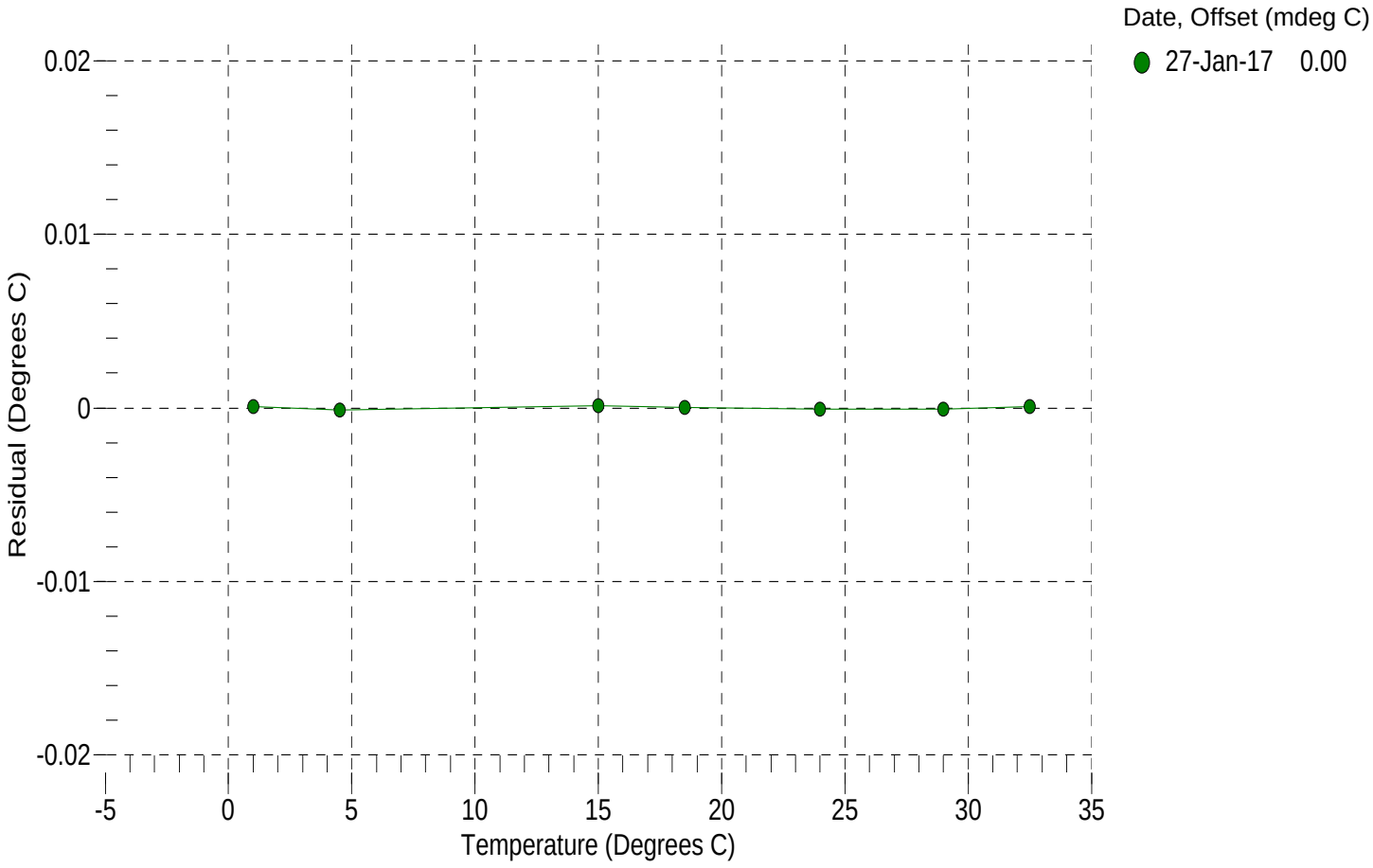
```
a0 = -8.046713e-004
a1 =  2.879399e-004
a2 = -3.513160e-006
a3 =  1.439590e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	15221705.6	1.0001	0.0001
4.5000	12984879.1	4.4999	-0.0001
14.9999	8220908.6	15.0000	0.0001
18.5000	7103472.5	18.5000	0.0000
23.9940	5681663.0	23.9939	-0.0001
29.0000	4664005.6	28.9999	-0.0001
32.5000	4076423.7	32.5001	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: 9411
CALIBRATION DATE: 27-Jan-17

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

COEFFICIENTS:

```
g = -1.001712e+000
h =  1.427275e-001
i = -4.201310e-004
j =  5.044519e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -8.4693e-007
```

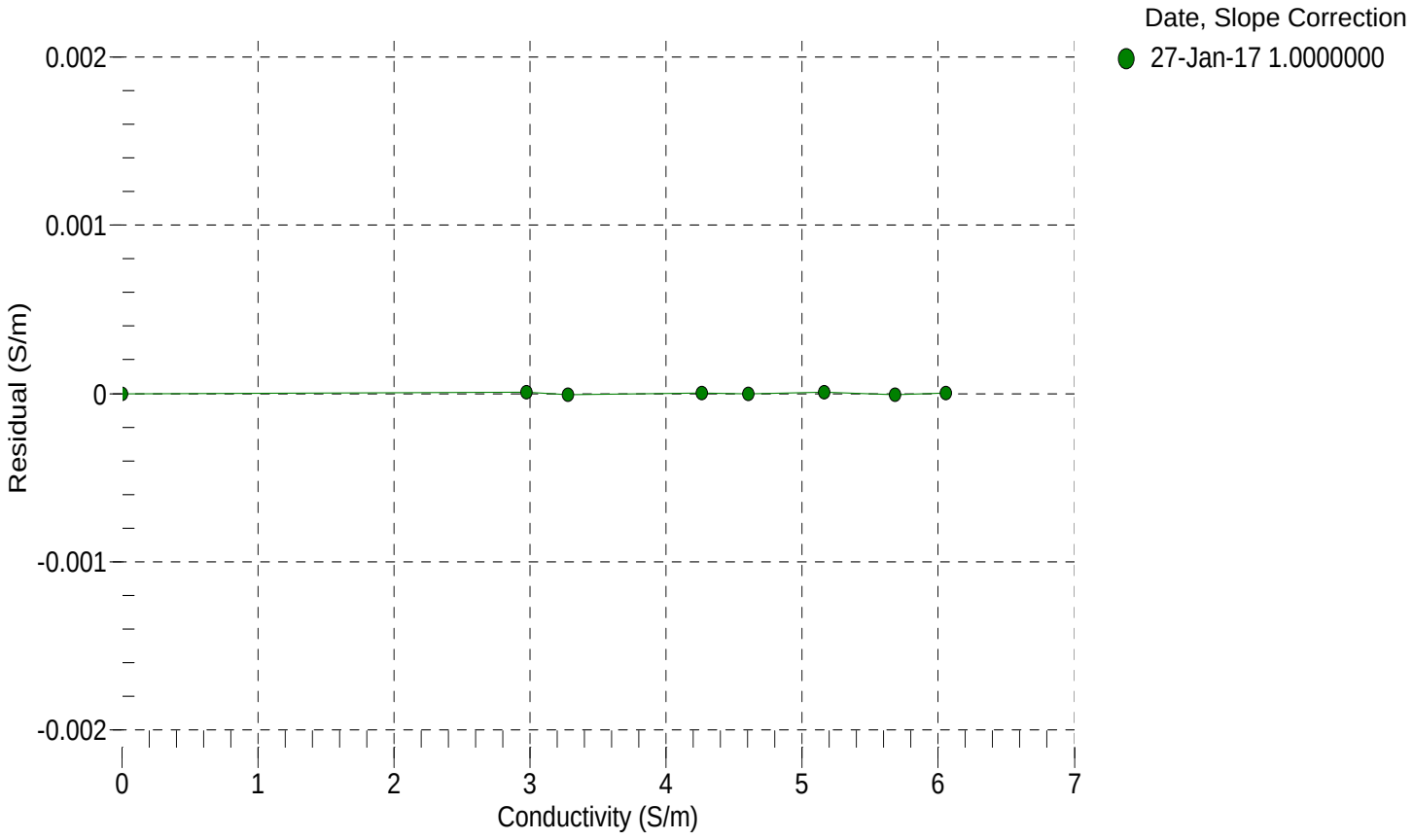
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2656.32	0.00000	0.00000
1.0000	34.7735	2.97266	5291.98	2.97266	0.00001
4.5000	34.7538	3.27941	5491.95	3.27940	-0.00001
14.9999	34.7121	4.26017	6086.64	4.26017	0.00000
18.5000	34.7034	4.60501	6282.08	4.60501	-0.00000
23.9940	34.6943	5.16186	6585.13	5.16187	0.00001
29.0000	34.6901	5.68397	6856.74	5.68396	-0.00001
32.5000	34.6885	6.05622	7043.79	6.05622	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: 9411
CALIBRATION DATE: 31-Jan-17

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 10490656

COEFFICIENTS:

PA0 =	-2.578935e+000	PTCA0 =	-1.004822e+005
PA1 =	3.959532e-004	PTCA1 =	-2.629601e+002
PA2 =	-3.114057e-013	PTCA2 =	-1.621421e+000
PTHA0 =	3.258452e+002	PTCB0 =	2.459350e+001
PTHA1 =	-6.278966e-005	PTCB1 =	-1.900000e-003
PTHA2 =	-1.313526e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.72	-63142.0	4431496.8	14.81	0.00
592.49	1395399.8	4431024.2	592.60	0.00
1170.29	2857060.4	4430579.4	1170.29	0.00
1747.99	4322277.2	4430033.0	1748.06	0.00
2325.79	5791046.5	4429593.6	2325.88	0.00
2903.60	7262759.1	4429159.4	2903.51	-0.00
2325.83	5790815.4	4429698.2	2325.79	-0.00
1748.27	4323352.4	4430191.0	1748.48	0.01
1170.34	2856621.1	4430675.4	1170.12	-0.01
592.50	1394544.6	4431228.6	592.26	-0.01
14.72	-63274.7	4431659.8	14.76	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	4287302.00	-65015.70
29.00	4334609.20	-63691.20
23.99	4402000.80	-61911.70
18.50	4475751.20	-60116.90
15.00	4522691.80	-59090.80
4.50	4662875.00	-55961.50
1.00	4709612.00	-54954.50

TEMPERATURE (°C)	SPAN (mV)
-5.00	24.60
35.00	24.53

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