



SEA-BIRD
SCIENTIFIC

SBE Sea-Bird
Electronics

Sea-Bird Electronics
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SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number: 41-7302
Instrument Firmware Version: ALACE-CP V 3.0C
Zero Conductivity Frequency: 2696.06
Communications Format: RS232
Communications Settings: 9600 baud, 8 Data Bits, No Parity

Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A
Frequency	Conductivity	Internal	N/A	N/A
Count	Pressure	Kistler	4645066	2000m(2000 dBar)

CAUTION - This instrument is not intended for underwater use

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SENSOR SERIAL NUMBER: 7302
CALIBRATION DATE: 09-Jun-15

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

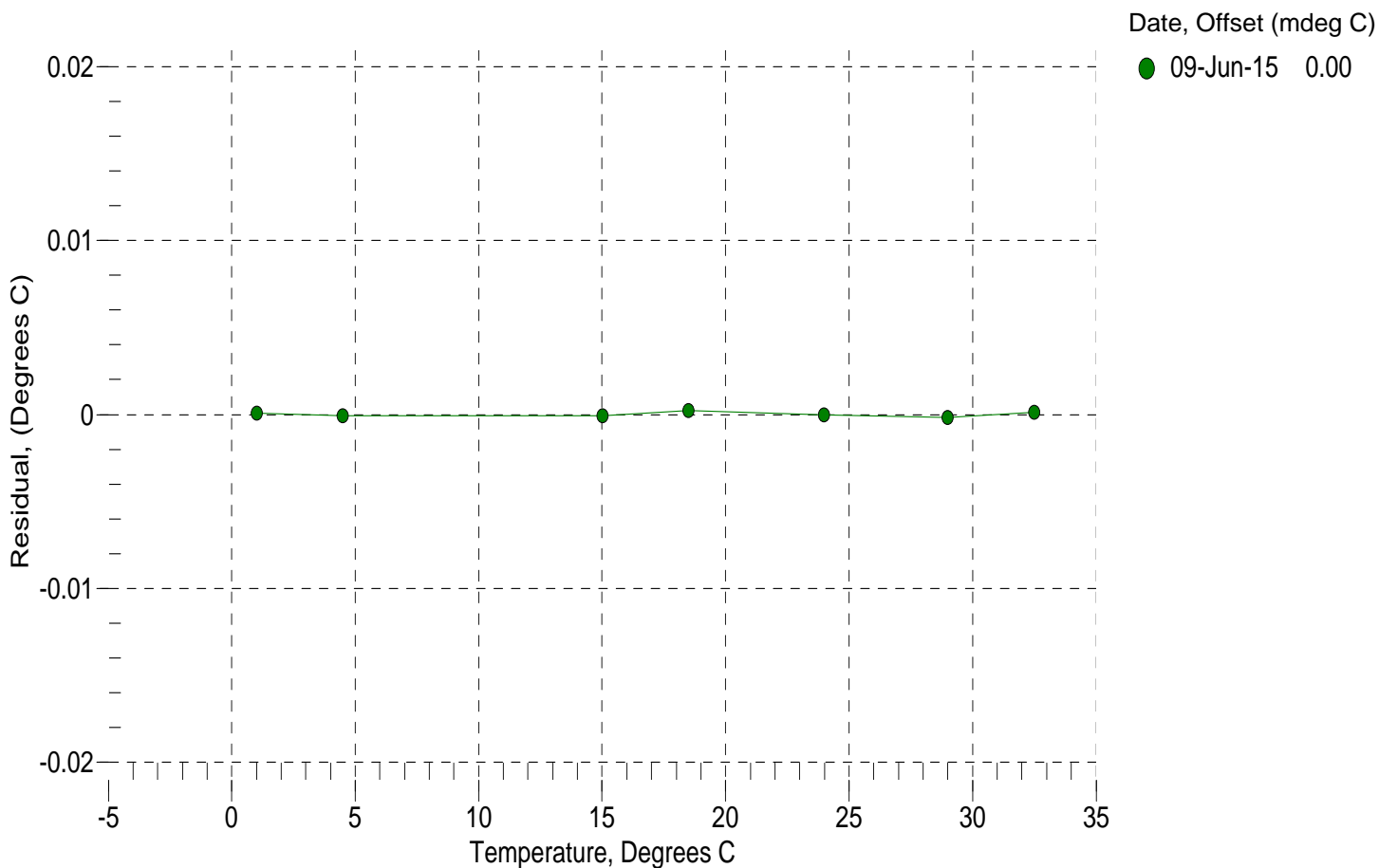
a0 = 9.108401e-005
a1 = 2.619322e-004
a2 = -1.539699e-006
a3 = 1.274310e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	698755.8	1.0001	0.0001
4.5000	596027.2	4.4999	-0.0001
15.0000	377278.4	14.9999	-0.0001
18.5000	325970.7	18.5002	0.0002
23.9940	260699.5	23.9940	-0.0000
29.0000	213983.9	28.9998	-0.0002
32.5000	187010.5	32.5001	0.0001

Temperature ITS-90 = $1 / \{ a_0 + a_1[\ln(n)] + a_2[\ln^2(n)] + a_3[\ln^3(n)] \} - 273.15$ (°C)

Residual = instrument temperature - bath temperature

n = instrument output



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SENSOR SERIAL NUMBER: 7302
CALIBRATION DATE: 09-Jun-15

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

COEFFICIENTS:

g = -9.791911e-001
h = 1.352723e-001
i = -3.176751e-004
j = 4.052051e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 6.1812e-007

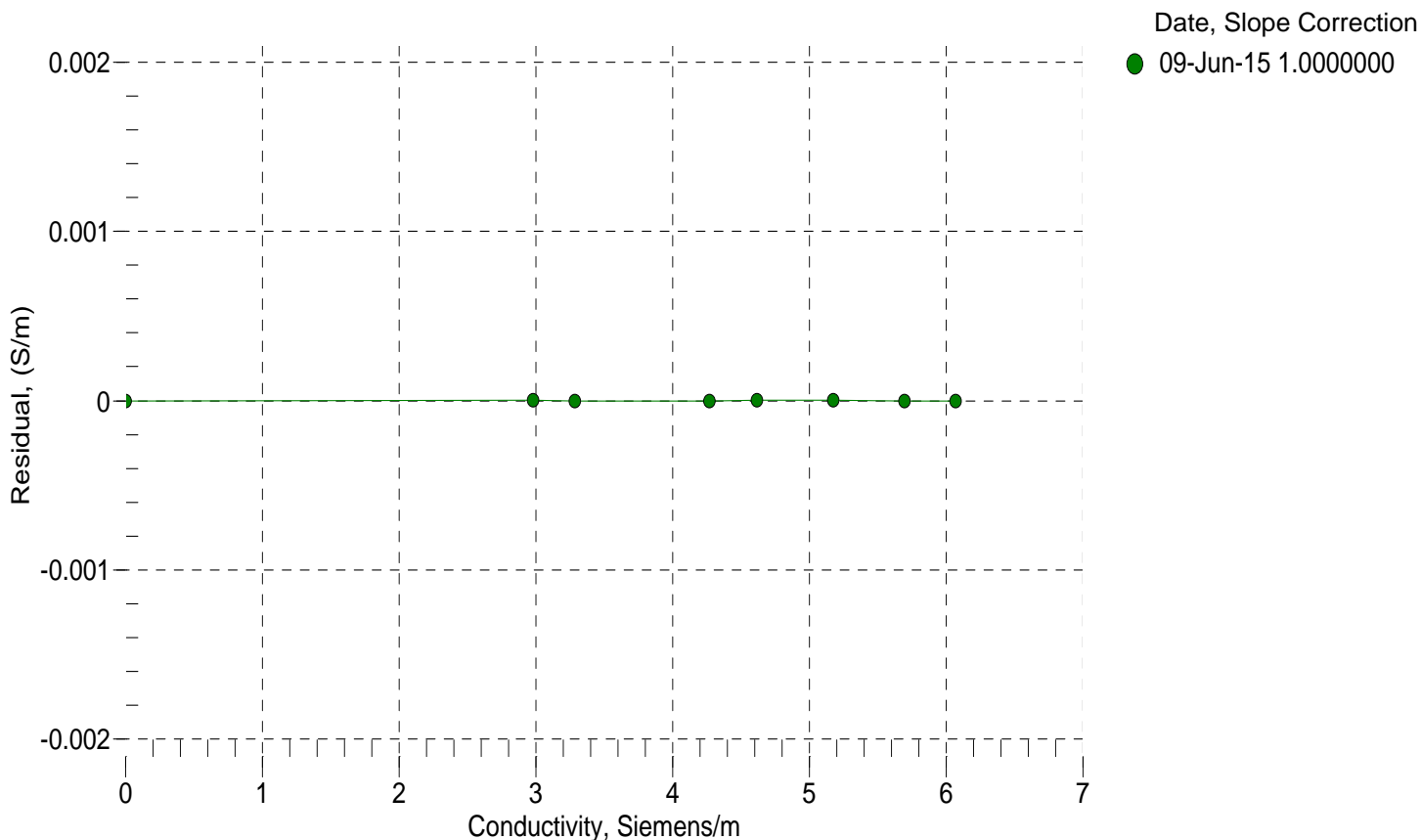
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2696.06	0.00000	0.00000
1.0000	34.8842	2.98121	5421.51	2.98122	0.00000
4.5000	34.8647	3.28884	5627.59	3.28884	-0.00000
15.0000	34.8228	4.27233	6240.14	4.27232	-0.00000
18.5000	34.8139	4.61808	6441.38	4.61809	0.00000
23.9940	34.8043	5.17642	6753.36	5.17642	0.00000
29.0000	34.7992	5.69983	7032.91	5.69983	-0.00000
32.5000	34.7966	6.07294	7225.37	6.07294	-0.00000

$$f = \text{INST FREQ} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$$

$$\text{Conductivity} = (g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \epsilon * p) \text{ Siemens / meter}$$

t = temperatur e[°C]; p = pressure[decibars]; δ = CTcor; ϵ = CPcor;

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 7302
CALIBRATION DATE: 02-Jun-15

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 4645066

COEFFICIENTS:

PA0 =	2.636616e-001	PTCA0 =	1.943174e+002
PA1 =	1.358068e-001	PTCA1 =	-4.329258e-001
PA2 =	9.380004e-009	PTCA2 =	2.227830e-002
PTHA0 =	-9.837473e+001	PTCB0 =	1.079530e+002
PTHA1 =	4.127274e-002	PTCB1 =	-5.284635e-003
PTHA2 =	9.527386e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.61	302.1	2768.3	14.65	0.00
592.34	4549.5	2775.4	592.30	-0.00
1169.84	8794.3	2776.4	1169.95	0.00
1747.18	13034.7	2777.3	1747.34	0.01
2324.55	17272.2	2778.3	2324.68	0.00
2901.95	21505.8	2778.9	2901.83	-0.00
2324.51	17271.0	2779.2	2324.52	0.00
1747.03	13032.2	2779.2	1747.00	-0.00
1169.82	8792.2	2779.2	1169.66	-0.01
592.26	4547.7	2779.2	592.04	-0.01
14.61	303.0	2780.9	14.73	0.00

THERMAL CORRECTION

TEMP ITS90	PRESS TEMP	INST OUTPUT
32.50	2967.80	316.90
29.00	2892.80	313.72
23.99	2785.70	309.98
18.50	2667.60	307.08
15.00	2591.90	305.98
4.50	2363.60	305.98
1.00	2287.00	307.10

TEMP(ITS90)	SPAN(mV)
-3.92	107.97
35.78	107.76

$$y = \text{thermistor output}; \quad t = \text{PTHA0} + \text{PTHA1} * y + \text{PTHA2} * y^2$$

$$x = \text{pressure output} - \text{PTCA0} - \text{PTCA1} * t - \text{PTCA2} * t^2$$

$$n = x * \text{PTCB0} / (\text{PTCB0} + \text{PTCB1} * t + \text{PTCB2} * t^2)$$

$$\text{pressure (psia)} = \text{PA0} + \text{PA1} * n + \text{PA2} * n^2$$

