

Sea-Bird Electronics, Inc.

13431 NE 20th Street, Bellevue, WA 98005-2010 USA
 Phone: (+1) 425-643-9866 Fax (+1) 425-643-9954 Email: seabird@seabird.com

SENSOR SERIAL NUMBER: 9086
 CALIBRATION DATE: 11-Jun-13

SLOCUM PAYLOAD CTD
 CONDUCTIVITY CALIBRATION DATA
 PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -9.800417e-001
 h = 1.371546e-001
 i = -2.854796e-004
 j = 3.937759e-005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = 1.1824e-006

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	2677.79	0.00000	0.00000
1.0000	34.8131	2.97572	5378.21	2.97571	-0.00001
4.5000	34.7934	3.28278	5582.46	3.28278	0.00001
15.0000	34.7510	4.26445	6189.58	4.26445	0.00001
18.5000	34.7421	4.60959	6389.04	4.60959	-0.00000
24.0000	34.7323	5.16751	6698.60	5.16750	-0.00001
29.0000	34.7261	5.68921	6975.29	5.68920	-0.00000
32.5000	34.7232	6.06159	7166.06	6.06159	0.00000

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

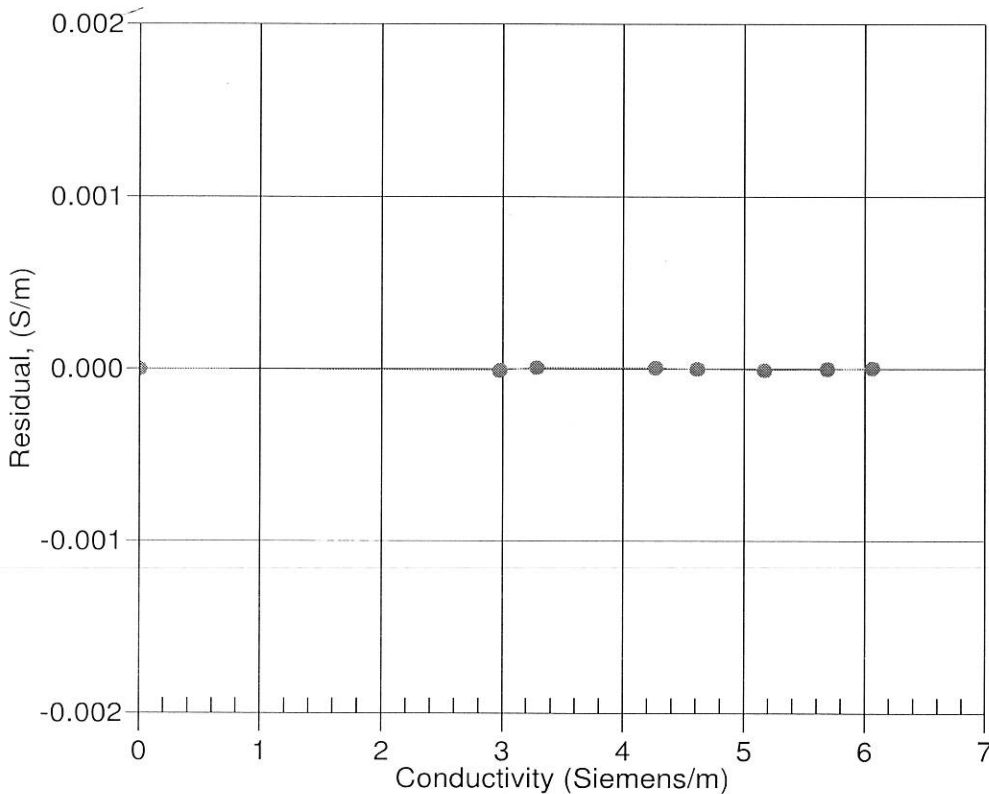
$$\text{Conductivity} = (g + hf^2 + if^3 + jf^4) / (1 + \delta t + \epsilon p) \text{ Siemens/meter}$$

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

Residual = instrument conductivity - bath conductivity

Date, Slope Correction

● 11-Jun-13 1.0000000



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SLOCUM PAYLOAD CTD
TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -8.092698e-005
a1 = 3.028618e-004
a2 = -4.237195e-006
a3 = 1.951531e-007

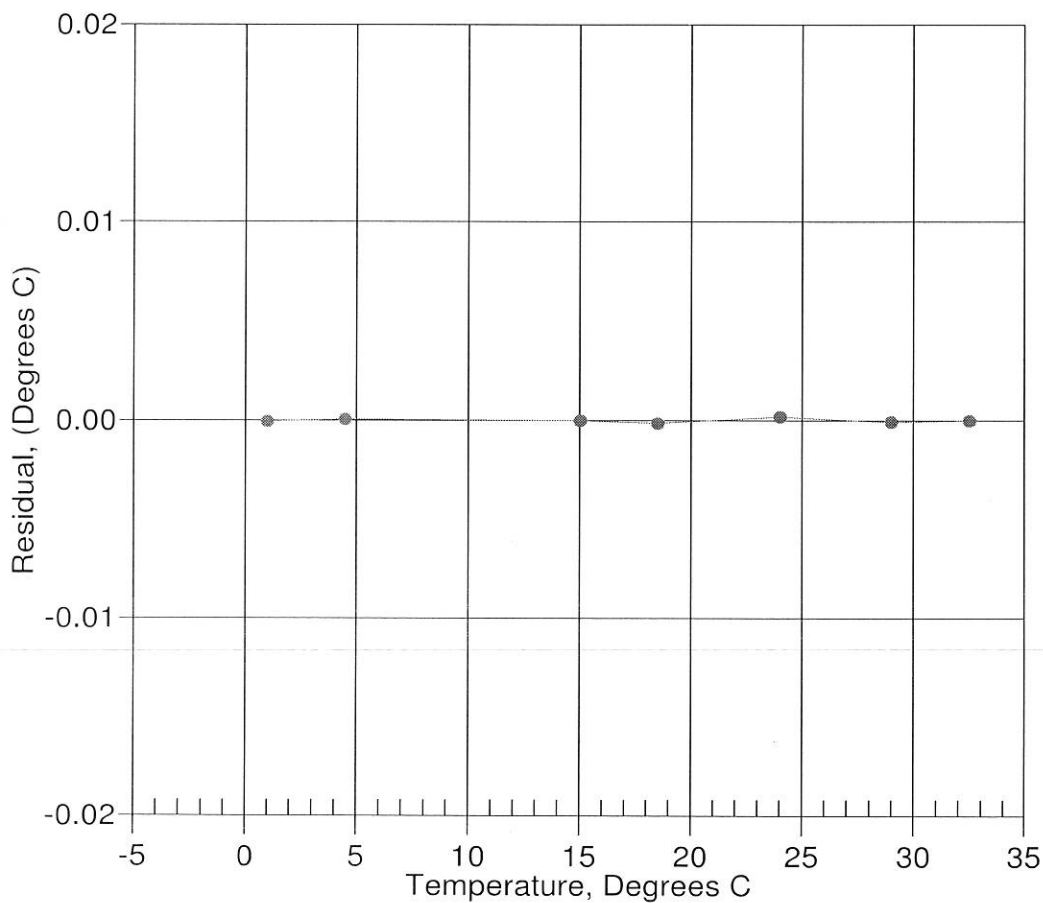
BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	578963.2	1.0000	-0.0000
4.5000	494858.3	4.5001	0.0001
15.0000	315165.8	15.0000	-0.0000
18.5000	272864.9	18.4999	-0.0001
24.0000	218871.0	24.0002	0.0002
29.0000	180222.1	28.9999	-0.0001
32.5000	157830.9	32.5000	0.0000

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

Residual = instrument temperature - bath temperature

Date, Delta T (mdeg C)

11-Jun-13 -0.00



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SENSOR SERIAL NUMBER: 9086

CALIBRATION DATE: 04-Jun-13

SLOCUM PAYLOAD CTD

PRESSURE CALIBRATION DATA

1450 psia S/N 3846545

COEFFICIENTS:

PA0 = -2.822653e-001
 PA1 = 4.592361e-003
 PA2 = -1.698016e-011
 PTEMPA0 = -7.727125e+001
 PTEMPA1 = 5.104057e-002
 PTEMPA2 = -6.738171e-007

PTCA0 = 5.237489e+005
 PTCA1 = -3.598142e+000
 PTCA2 = 3.444267e-002
 PTCB0 = 2.536613e+001
 PTCB1 = -1.750000e-004
 PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.66	526946.0	1997.0	14.69	0.00
314.98	592326.0	2002.0	314.91	-0.01
614.97	657691.0	2003.0	614.91	-0.00
914.99	723108.0	2004.0	915.00	0.00
1215.11	788530.0	2006.0	1214.98	-0.01
1465.10	843104.0	2006.0	1465.10	-0.00
1215.04	788565.0	2006.0	1215.14	0.01
914.99	723127.0	2006.0	915.09	0.01
614.99	657717.0	2007.0	615.03	0.00
315.00	592344.0	2006.0	314.99	-0.00
14.66	526944.0	2008.0	14.68	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	2215	526950.20
29.00	2143	526956.90
24.00	2039	526964.70
18.50	1925	526976.80
15.00	1853	526983.90
4.50	1638	527017.44
1.00	1566	527026.80
TEMP (ITS90)		SPAN (mV)
-5.00		25.37
35.00		25.36

$$y = \text{thermistor output}; t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$$

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

$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

Date, Avg Delta P %FS

04-Jun-13 0.00

