

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: 9065
 CALIBRATION DATE: 21-Apr-13

SLOCUM PAYLOAD CTD
 TEMPERATURE CALIBRATION DATA
 ITS-90 TEMPERATURE SCALE

ITS-90 COEFFICIENTS

a0 = -9.108827e-005
 a1 = 3.056123e-004
 a2 = -4.436191e-006
 a3 = 2.003753e-007

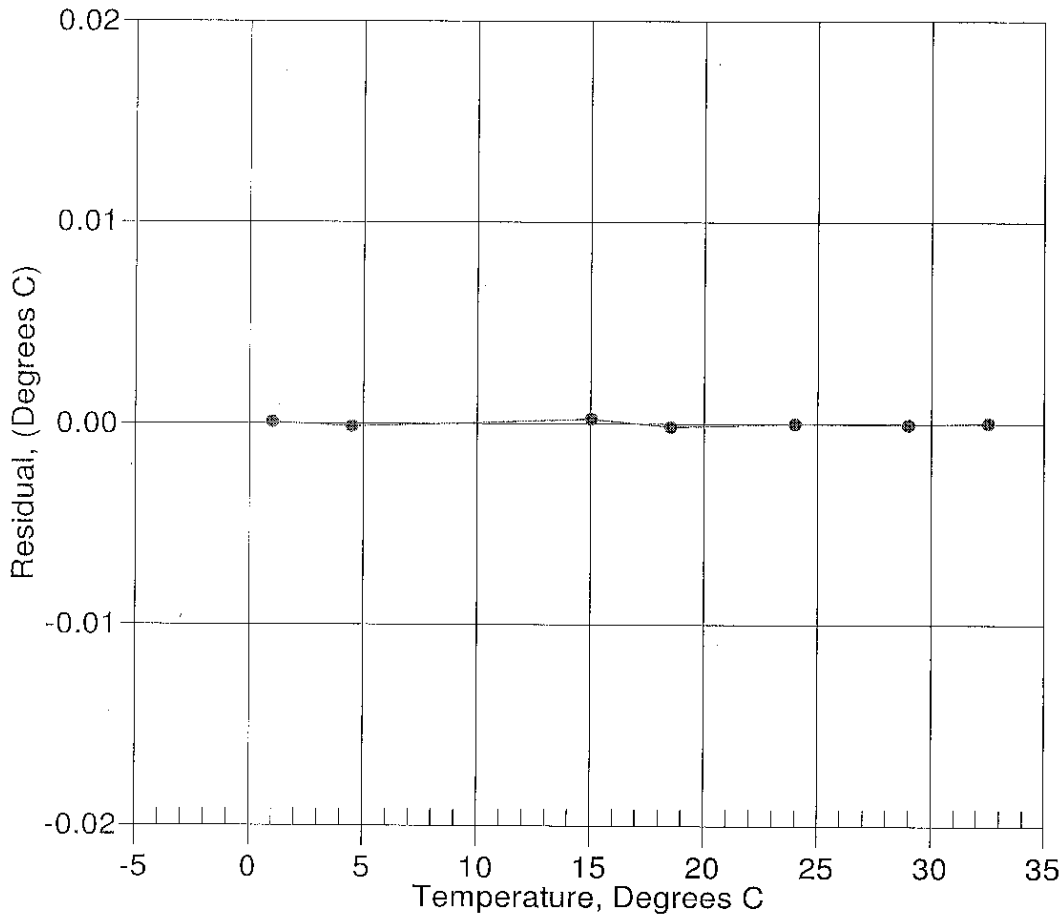
BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
0.9999	572105.2	1.0000	0.0001
4.5000	489039.2	4.4999	-0.0001
15.0105	311388.2	15.0107	0.0002
18.5254	269456.4	18.5252	-0.0002
24.0000	216387.8	24.0000	-0.0000
29.0000	178195.2	29.0000	-0.0000
32.5000	156068.0	32.5000	0.0000

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

Date, Delta T (mdeg C)

● 21-Apr-13 0.00



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CONDUCTIVITY CALIBRATION DATA

PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

g = -9.867427e-001

h = 1.404516e-001

i = -2.989887e-004

j = 4.176942e-005

CPcor = -9.5700e-008

CTcor = 3.2500e-006

WBOTC = 8.1590e-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	2655.27	0.00000	0.00000
0.9999	34.8920	2.98181	5323.36	2.98182	0.00001
4.5000	34.8720	3.28946	5525.22	3.28944	-0.00002
15.0105	34.8278	4.27390	6125.92	4.27391	0.00000
18.5254	34.8184	4.62116	6323.91	4.62116	-0.00000
24.0000	34.8059	5.17725	6628.34	5.17725	0.00000
29.0000	34.8004	5.70001	6901.93	5.70000	-0.00000
32.5000	34.7976	6.07310	7090.53	6.07310	0.00000

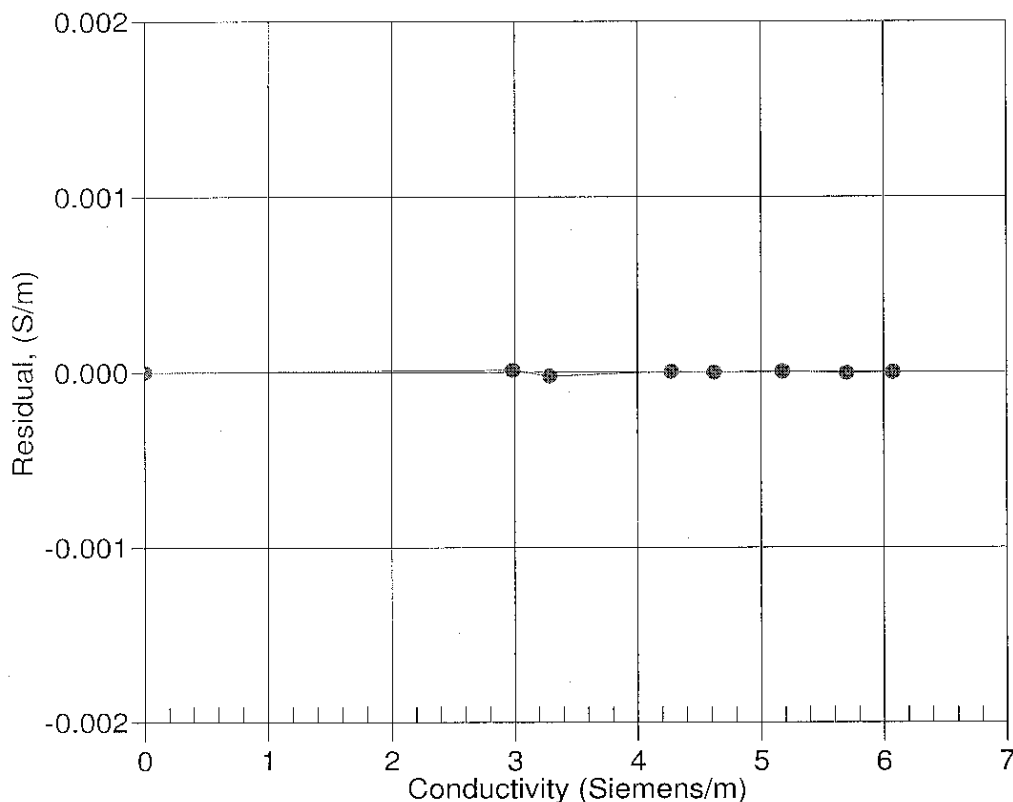
$$f = \text{INST FREQ} * \text{sqrt}(1.0 + \text{WBOTC} * t) / 1000.0$$

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

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

Residual = instrument conductivity - bath conductivity

Date, Slope Correction



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SENSOR SERIAL NUMBER: 9065
CALIBRATION DATE: 08-Apr-13

SLOCUM PAYLOAD CTD
PRESSURE CALIBRATION DATA
1450 psia S/N 3819474

COEFFICIENTS:

PA0 = 1.754132e-001
PA1 = 4.558102e-003
PA2 = -1.666731e-011
PTEMPA0 = -7.329548e+001
PTEMPA1 = 5.122266e-002
PTEMPA2 = -4.963670e-007

PTCA0 = 5.246083e+005
PTCA1 = 1.195584e+000
PTCA2 = 2.254992e-002
PTCB0 = 2.539712e+001
PTCB1 = -7.750000e-004
PTCB2 = 0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FSR
14.66	527828.0	1889.0	14.69	0.00
314.93	593658.0	1891.0	314.87	-0.00
614.93	659483.0	1892.0	614.89	-0.00
914.94	725347.0	1893.0	914.93	-0.00
1214.94	791232.0	1893.0	1214.93	-0.00
1464.99	846164.0	1894.0	1464.95	-0.00
1214.91	791239.0	1894.0	1214.96	0.00
914.88	725355.0	1892.0	914.97	0.01
614.93	659491.0	1893.0	614.92	-0.00
314.95	593671.0	1892.0	314.93	-0.00
14.66	527824.0	1894.0	14.67	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	2109	527906.40
29.00	2037	527900.00
24.00	1936	527889.60
18.53	1825	527874.00
15.01	1754	527866.20
4.50	1542	527852.80
1.00	1471	527845.80
TEMP (ITS90)		SPAN (mV)
-5.00	25.40	
35.00	25.37	

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

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

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

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

Date, Avg Delta P %FS

08-Apr-13 -0.00

