

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: 9211
 CALIBRATION DATE: 27-Jun-14

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

COEFFICIENTS:

g = -9.870402e-001
 h = 1.445958e-001
 i = -1.392988e-004
 j = 3.096765e-005

CPcor = -9.5700e-008
 CTcor = 3.2500e-006
 WBOTC = 3.5063e-007

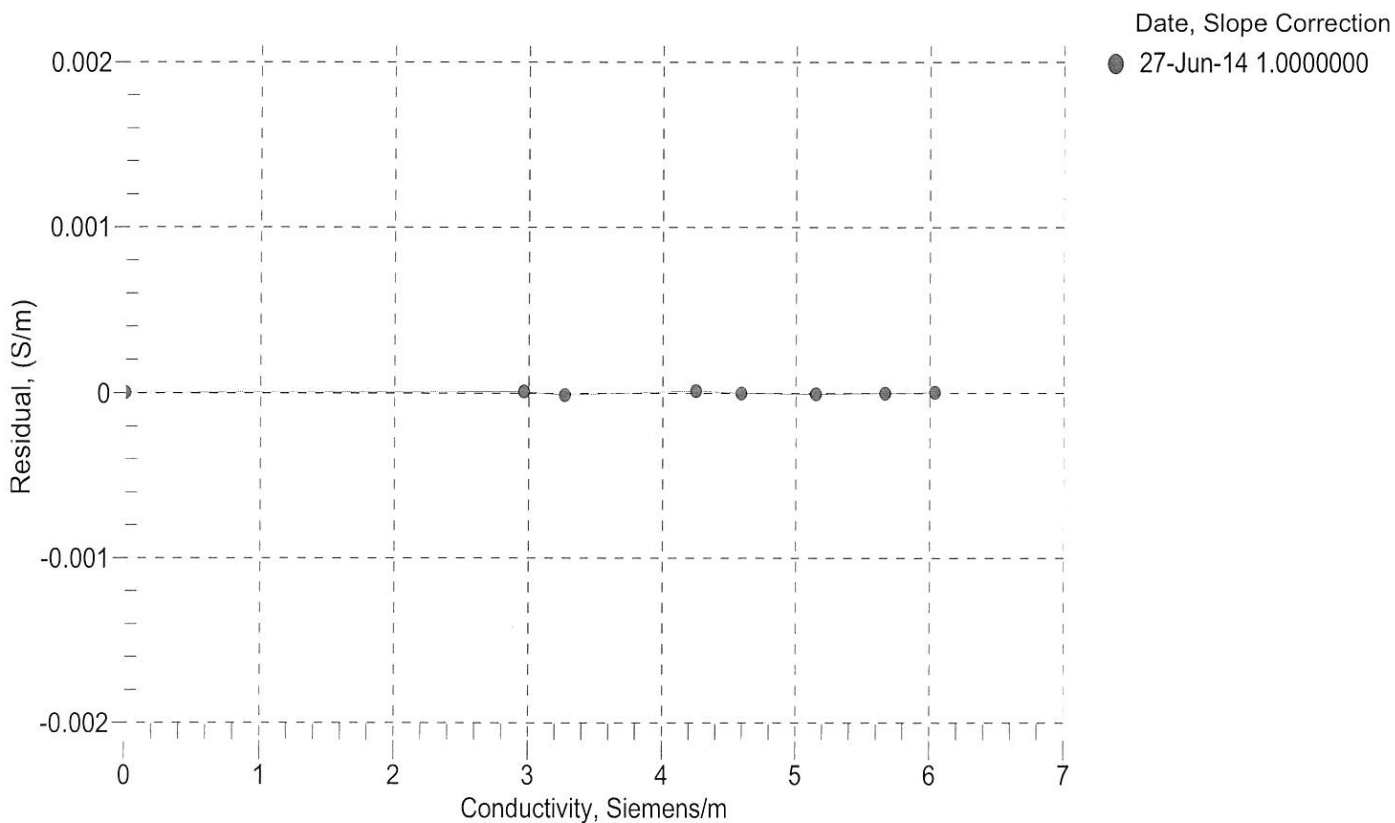
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2614.07	0.00000	0.00000
1.0000	34.6765	2.96515	5225.95	2.96516	0.00001
4.5000	34.6561	3.27110	5423.76	3.27108	-0.00001
14.9999	34.6116	4.24914	6011.94	4.24915	0.00001
18.4999	34.6007	4.59283	6205.14	4.59283	-0.00000
23.9999	34.5882	5.14842	6505.06	5.14841	-0.00001
28.9999	34.5807	5.66805	6773.27	5.66805	-0.00000
32.5000	34.5758	6.03878	6958.14	6.03878	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 = temperature[°C]; p = pressure[decibars]; δ = CTcor; ϵ = CPcor;

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 9211
 CALIBRATION DATE: 25-Jun-14

Slocum Payload CTD PRESSURE CALIBRATION DATA
 FSR: 1450 psia S/N 4174969

COEFFICIENTS:

PA0 =	6.249332e-001	PTCA0 =	5.248573e+005
PA1 =	4.572420e-003	PTCA1 =	2.870583e+000
PA2 =	-1.083264e-011	PTCA2 =	9.664005e-002
PTEMPA0 =	-6.797130e+001	PTCB0 =	2.544375e+001
PTEMPA1 =	5.150737e-002	PTCB1 =	-5.000000e-005
PTEMPA2 =	-5.411928e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

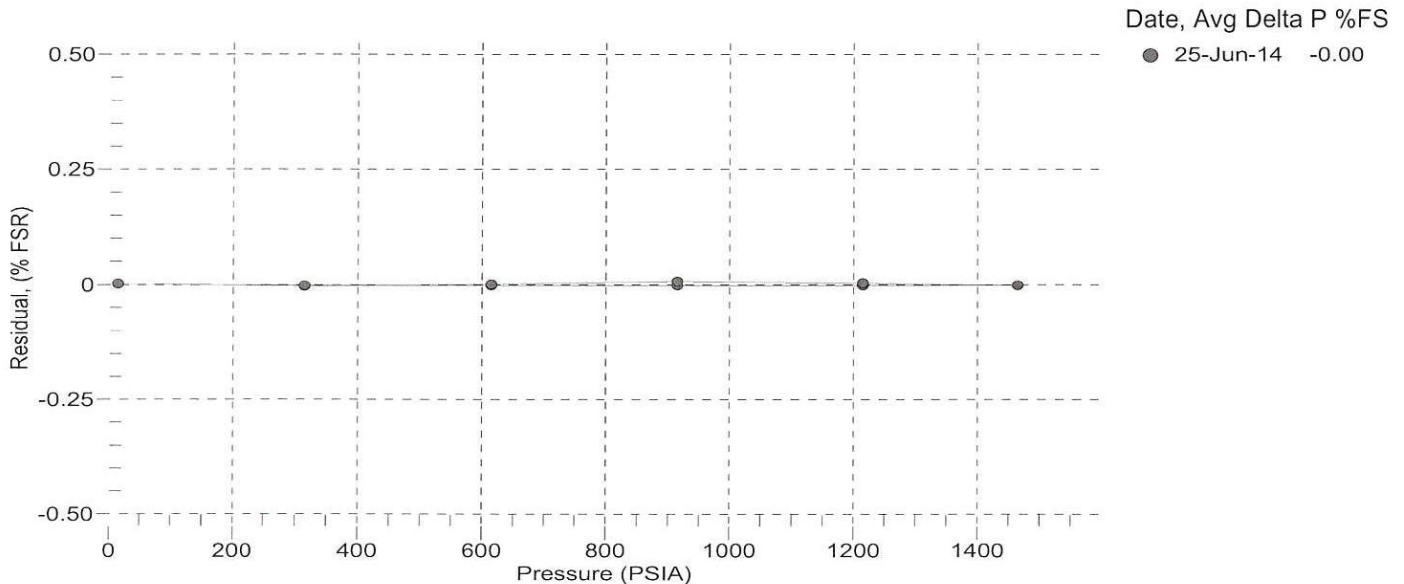
PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.57	528048.0	1852.0	14.59	0.00
314.82	593707.0	1854.0	314.77	-0.00
614.79	659343.0	1855.0	614.76	-0.00
914.78	725002.0	1856.0	914.75	-0.00
1214.71	790666.0	1856.0	1214.68	-0.00
1464.69	845413.0	1856.0	1464.67	-0.00
1214.74	790687.0	1857.0	1214.77	0.00
914.73	725018.0	1855.0	914.83	0.01
614.78	659352.0	1855.0	614.80	0.00
314.82	593713.0	1856.0	314.80	-0.00
14.57	528051.0	1857.0	14.60	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	1992	528136.60
29.00	1921	528109.20
24.00	1820	528069.80
18.50	1710	528025.00
15.00	1639	528008.20
4.50	1428	527959.80
1.00	1359	527944.60

TEMP (ITS90)	SPAN (mV)
-5.00	25.44
35.00	25.44

$y = \text{thermistor output}; t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$
 $x = \text{pressure output} - PTCA0 - PTCA1 * t - PTCA2 * t^2$
 $n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$
 $\text{pressure (psia)} = PA0 + PA1 * n + PA2 * n^2$



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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.131746e-004
a1 = 3.065758e-004
a2 = -4.421050e-006
a3 = 2.021601e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	576945.6	1.0000	0.0000
4.5000	493793.8	4.4999	-0.0001
14.9999	315680.7	15.0000	0.0001
18.4999	273638.8	18.4999	0.0000
23.9999	219897.7	23.9998	-0.0001
28.9999	181355.6	29.0000	0.0001
32.5000	158997.6	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

n = instrument output

