

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: 9232
CALIBRATION DATE: 23-Sep-14

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

COEFFICIENTS:

g = -9.795244e-001
h = 1.508169e-001
i = -2.661028e-004
j = 4.278731e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 5.2246e-007

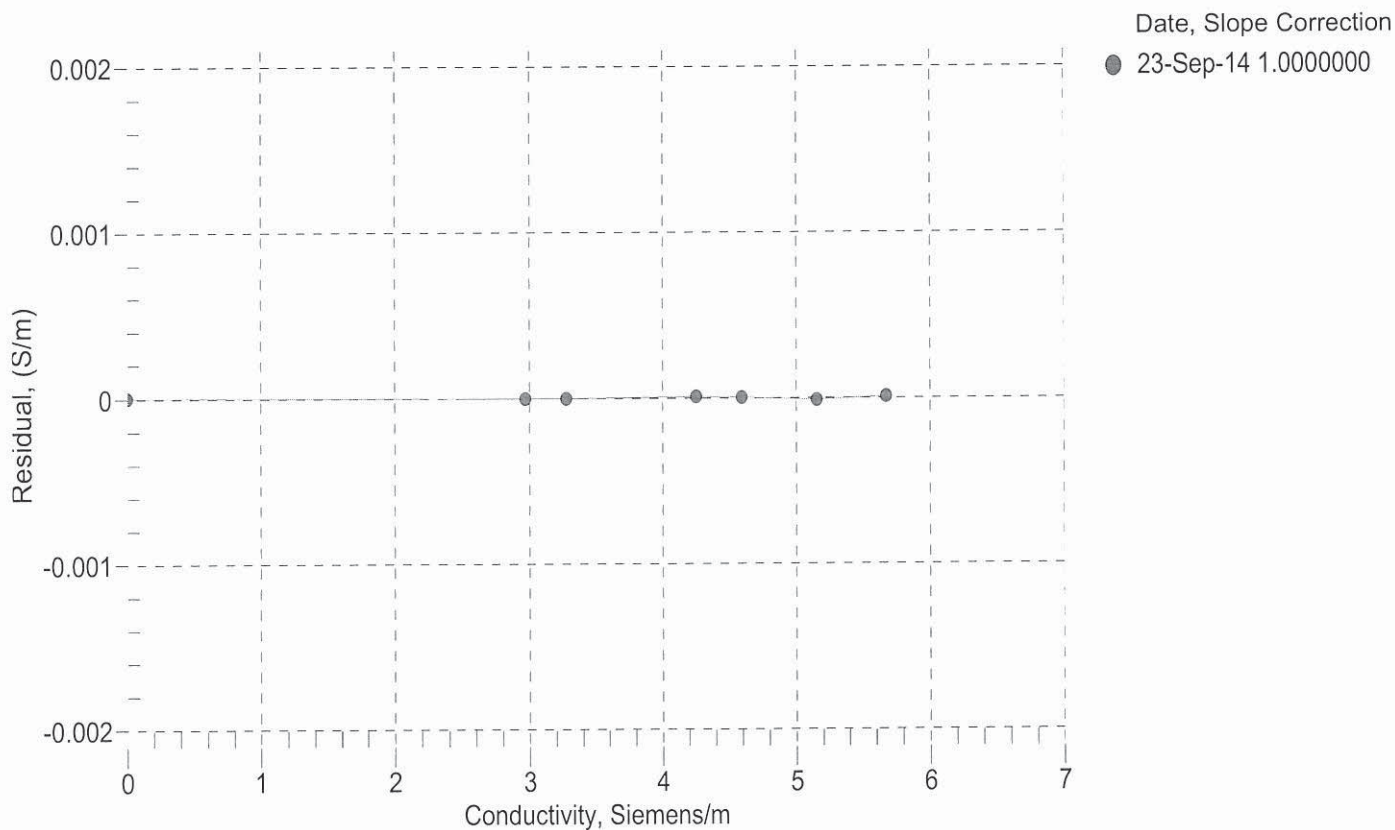
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2551.86	0.00000	0.00000
1.0000	34.7066	2.96748	5119.84	2.96748	-0.00000
4.5000	34.6868	3.27371	5314.14	3.27371	-0.00000
15.0000	34.6444	4.25275	5891.78	4.25276	0.00001
18.5000	34.6349	4.59689	6081.53	4.59689	0.00000
23.9999	34.6243	5.15320	6376.04	5.15319	-0.00001
29.0000	34.6183	5.67353	6639.39	5.67353	0.00001
32.5000	34.6139	6.04467	6820.89	6.04481	0.00014

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

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

$$t = \text{temperature} [^{\circ}\text{C}]; p = \text{pressure} [\text{decibars}]; \delta = \text{CTcor}; \epsilon = \text{CPcor};$$

$$\text{Residual} = \text{instrument conductivity} - \text{bath conductivity}$$



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CALIBRATION DATE: 17-Sep-14

Slocum Payload CTD PRESSURE CALIBRATION DATA
FSR: 1450 psia S/N 4207725

COEFFICIENTS:

PA0 =	2.274062e-001	PTCA0 =	5.244838e+005
PA1 =	4.549760e-003	PTCA1 =	2.009805e+000
PA2 =	-1.229446e-011	PTCA2 =	-1.332813e-002
PTEMPA0 =	-6.695203e+001	PTCB0 =	2.547137e+001
PTEMPA1 =	5.254237e-002	PTCB1 =	-3.325000e-003
PTEMPA2 =	-8.012073e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.49	527658.0	1761.0	14.53	0.00
314.79	593456.0	1764.0	314.75	-0.00
614.76	659222.0	1766.0	614.72	-0.00
914.77	725023.0	1766.0	914.74	-0.00
1214.74	790842.0	1765.0	1214.73	-0.00
1464.72	845698.0	1767.0	1464.69	-0.00
1214.76	790856.0	1766.0	1214.80	0.00
914.76	725042.0	1766.0	914.83	0.00
614.77	659239.0	1766.0	614.80	0.00
314.87	593474.0	1766.0	314.84	-0.00
14.49	527649.0	1767.0	14.49	-0.00

THERMAL CORRECTION

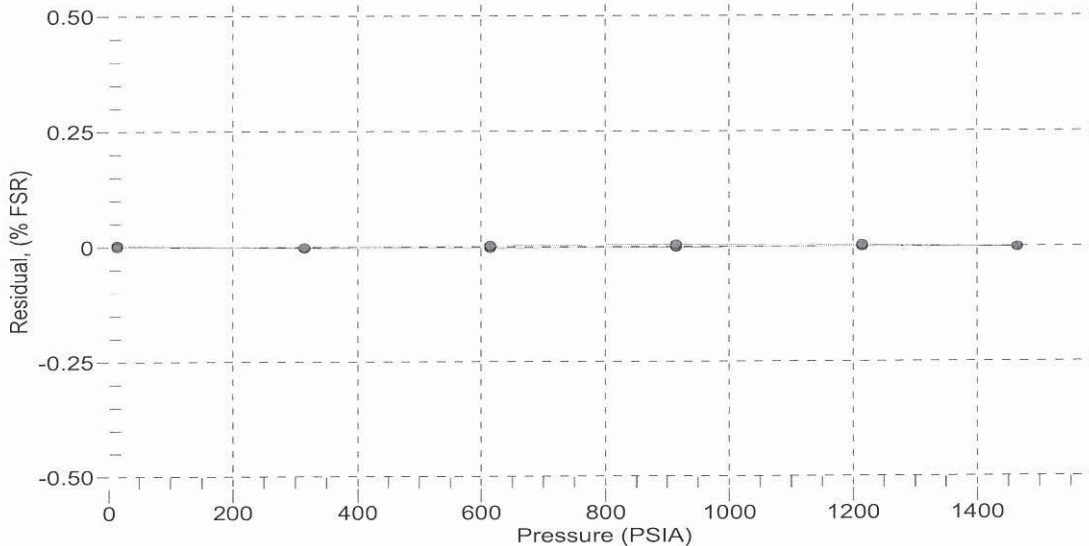
TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	1951	527729.50
29.00	1880	527727.25
24.00	1779	527720.00
18.50	1669	527711.00
15.00	1599	527705.00
4.50	1389	527690.25
1.00	1320	527679.50

TEMP (ITS90)	SPAN (mV)
-5.00	25.49
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

● 17-Sep-14 0.00



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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.450920e-004
a1 = 3.171661e-004
a2 = -5.310227e-006
a3 = 2.242565e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	569787.0	1.0000	0.0000
4.5000	487300.5	4.4999	-0.0001
15.0000	310853.5	15.0001	0.0001
18.5000	269270.0	18.5000	0.0000
23.9999	216163.8	23.9998	-0.0001
29.0000	178115.3	29.0000	0.0000
32.5000	156063.0	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

n = instrument output

