

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: 9209
CALIBRATION DATE: 26-Jun-14

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

COEFFICIENTS:

g = -9.809446e-001
h = 1.480847e-001
i = -1.714677e-004
j = 3.419347e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = 3.5587e-007

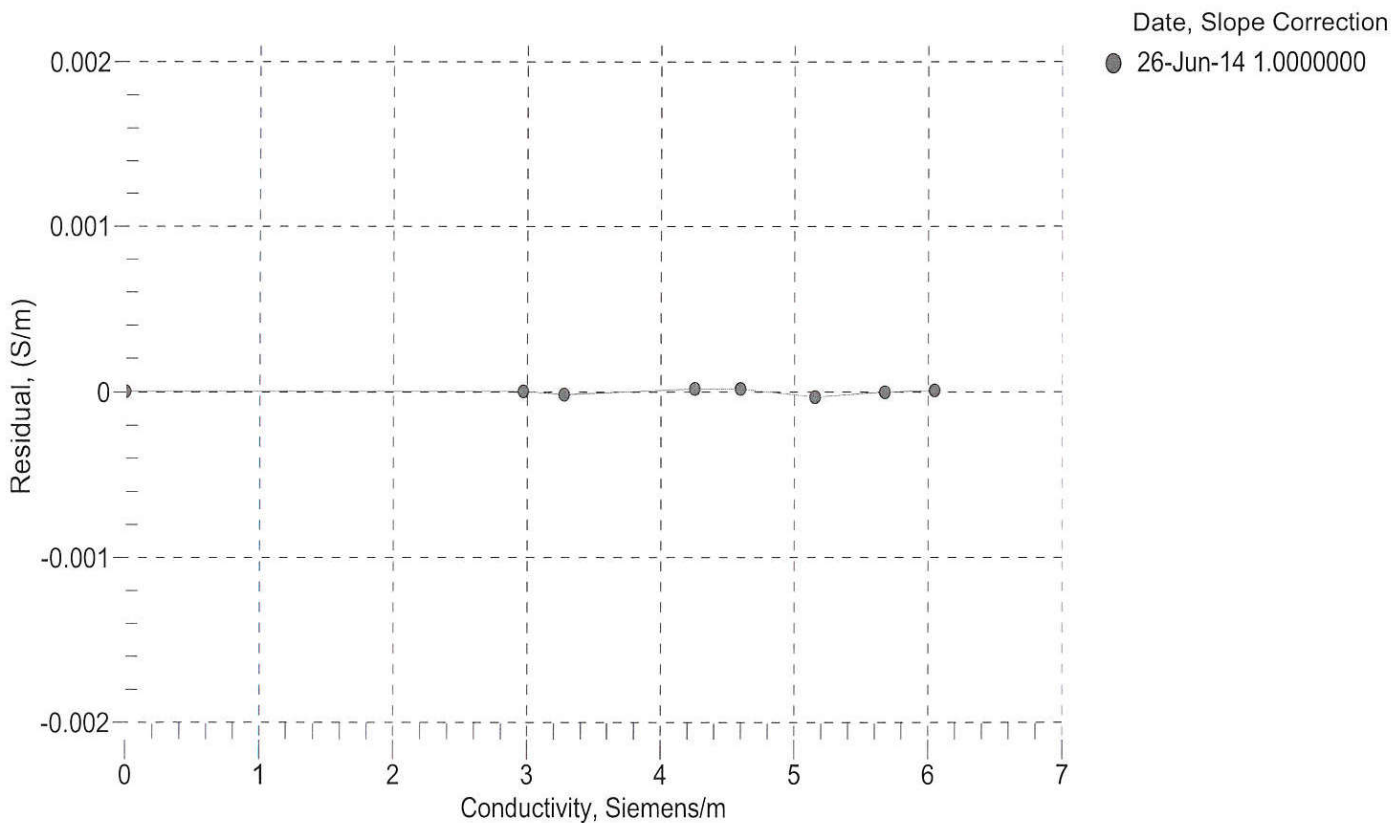
BATH TEMP (ITS-90)	BATH SAL (PSU)	BATH COND (Siemens/m)	INST FREQ (Hz)	INST COND (Siemens/m)	RESIDUAL (Siemens/m)
22.0000	0.0000	0.00000	2575.61	0.00000	0.00000
1.0000	34.7342	2.96962	5164.59	2.96962	0.00000
4.5000	34.7139	3.27601	5360.47	3.27600	-0.00002
15.0000	34.6697	4.25553	5942.87	4.25554	0.00002
18.5000	34.6593	4.59978	6134.18	4.59980	0.00002
24.0000	34.6475	5.15629	6431.11	5.15625	-0.00003
29.0000	34.6403	5.67673	6696.65	5.67673	-0.00000
32.5000	34.6353	6.04799	6879.63	6.04800	0.00001

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

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

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

Residual = instrument conductivity - bath conductivity



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SENSOR SERIAL NUMBER: 9209
 CALIBRATION DATE: 24-Jun-14

Slocum Payload CTD PRESSURE CALIBRATION DATA
 FSR: 1450 psia S/N 4174967

COEFFICIENTS:

PA0 =	6.299939e-001	PTCA0 =	5.243459e+005
PA1 =	4.560082e-003	PTCA1 =	-6.625873e-001
PA2 =	-1.174840e-011	PTCA2 =	3.001829e-001
PTEMPA0 =	-6.874000e+001	PTCB0 =	2.547250e+001
PTEMPA1 =	5.135279e-002	PTCB1 =	-1.700000e-003
PTEMPA2 =	-4.153839e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE PSIA	INST OUTPUT	THERMISTOR OUTPUT	COMPUTED PRESSURE	ERROR %FS
14.66	527557.0	1795.0	14.69	0.00
314.93	593297.0	1798.0	314.85	-0.01
614.88	659019.0	1798.0	614.84	-0.00
914.91	724775.0	1799.0	914.88	-0.00
1214.93	790545.0	1800.0	1214.88	-0.00
1464.89	845365.0	1800.0	1464.86	-0.00
1214.89	790559.0	1799.0	1214.94	0.00
914.90	724800.0	1800.0	914.99	0.01
614.88	659037.0	1799.0	614.92	0.00
314.92	593308.0	1799.0	314.90	-0.00
14.66	527559.0	1802.0	14.68	0.00

THERMAL CORRECTION

TEMP ITS90	THERMISTOR OUTPUT	INST OUTPUT
32.50	2004	527729.60
29.00	1933	527672.20
24.00	1833	527597.00
18.50	1722	527528.80
15.00	1653	527493.60
4.50	1443	527432.40
1.00	1373	527442.80

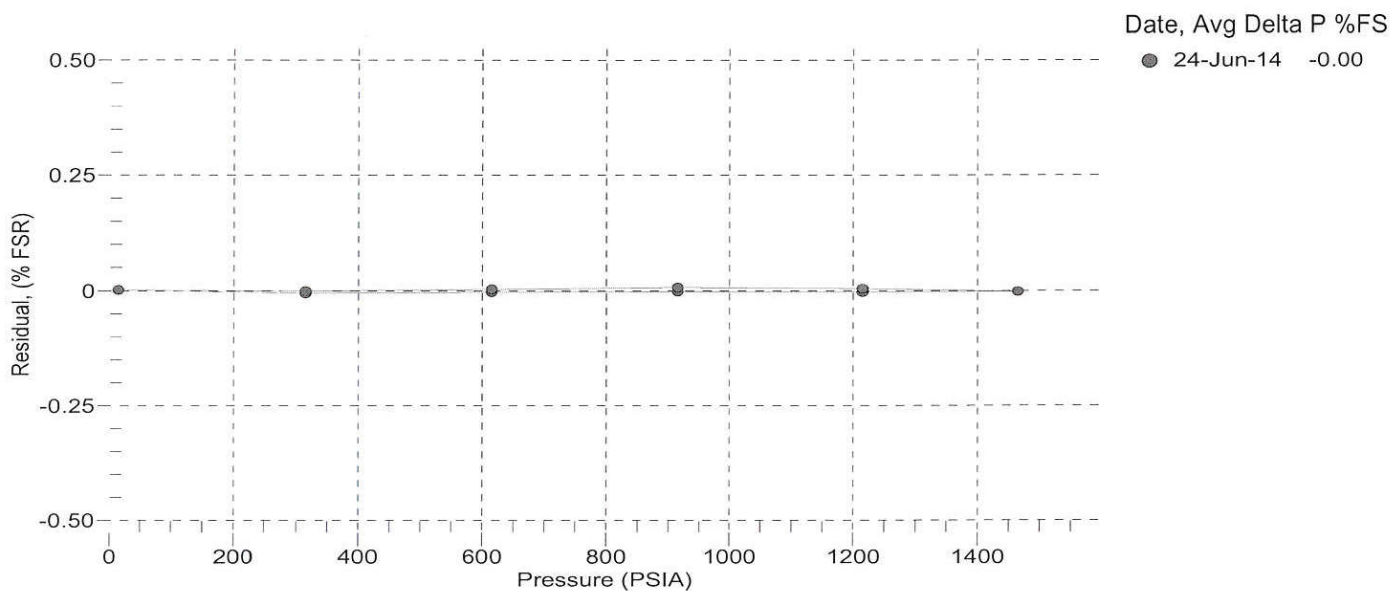
TEMP (ITS90)	SPAN (mV)
-5.00	25.48
35.00	25.41

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

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

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

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



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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.562678e-004
a1 = 3.168121e-004
a2 = -5.150690e-006
a3 = 2.209221e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
1.0000	561412.6	1.0001	0.0001
4.5000	480651.2	4.4998	-0.0002
15.0000	307555.8	15.0001	0.0001
18.5000	266677.8	18.5000	-0.0000
24.0000	214405.6	24.0000	0.0000
29.0000	176907.0	28.9998	-0.0002
32.5000	155144.0	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

