



Sea-Bird Scientific
13431 NE 20th Street
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USA

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www.seabird.com

SENSOR SERIAL NUMBER: 9033
CALIBRATION DATE: 30-Aug-12

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 3697023

COEFFICIENTS:

PA0 =	1.259373e-001	PTCA0 =	5.252389e+005
PA1 =	4.792780e-003	PTCA1 =	5.025699e-001
PA2 =	-2.210335e-011	PTCA2 =	3.328250e-002
PTEMPA0 =	-7.058361e+001	PTCB0 =	2.543338e+001
PTEMPA1 =	5.190039e-002	PTCB1 =	4.750000e-004
PTEMPA2 =	-5.595688e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

THERMAL CORRECTION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)	TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
14.61	528296.0	1821.0	14.64	0.00	32.50	2031	528364.60
314.95	590993.0	1823.0	314.91	-0.00	29.00	1960	528356.80
614.95	653668.0	1824.0	614.91	-0.00	23.99	1860	528346.20
914.94	716389.0	1824.0	914.95	0.00	18.50	1750	528333.60
1214.92	779137.0	1825.0	1214.94	0.00	15.00	1679	528328.20
1464.94	831447.0	1825.0	1464.90	-0.00	4.50	1470	528317.40
1214.92	779139.0	1825.0	1214.95	0.00	1.00	1400	528314.00
914.93	716393.0	1825.0	914.97	0.00	TEMPERATURE (°C)		SPAN
614.97	653677.0	1824.0	614.95	-0.00			
314.90	590997.0	1825.0	314.93	0.00			
14.61	528289.0	1825.0	14.61	-0.00			
					-5.00		25.43
					35.00		25.45

y = thermistor output (counts)

$$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$$

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

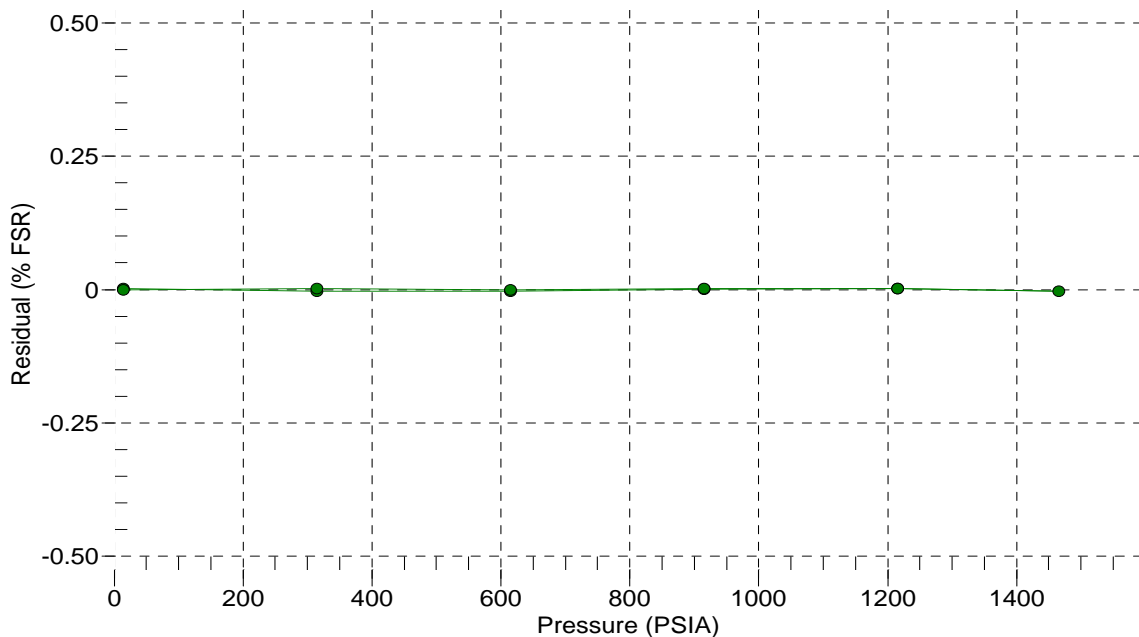
$$n = x * PTCB0 / (PTCB0 + PTCB1 * t + PTCB2 * t^2)$$

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

$$\text{Residual (\%FSR)} = (\text{computed pressure} - \text{true pressure}) * 100 / \text{Full Scale Range}$$

Date, Offset (%FSR)

● 30-Aug-12 -0.00





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SENSOR SERIAL NUMBER: 9033
CALIBRATION DATE: 07-Sep-12

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

COEFFICIENTS:

g = -9.752941e-001
h = 1.328790e-001
i = -1.873126e-004
j = 3.078732e-005

CPcor = -9.5700e-008
CTcor = 3.2500e-006
WBOTC = -3.3796e-007

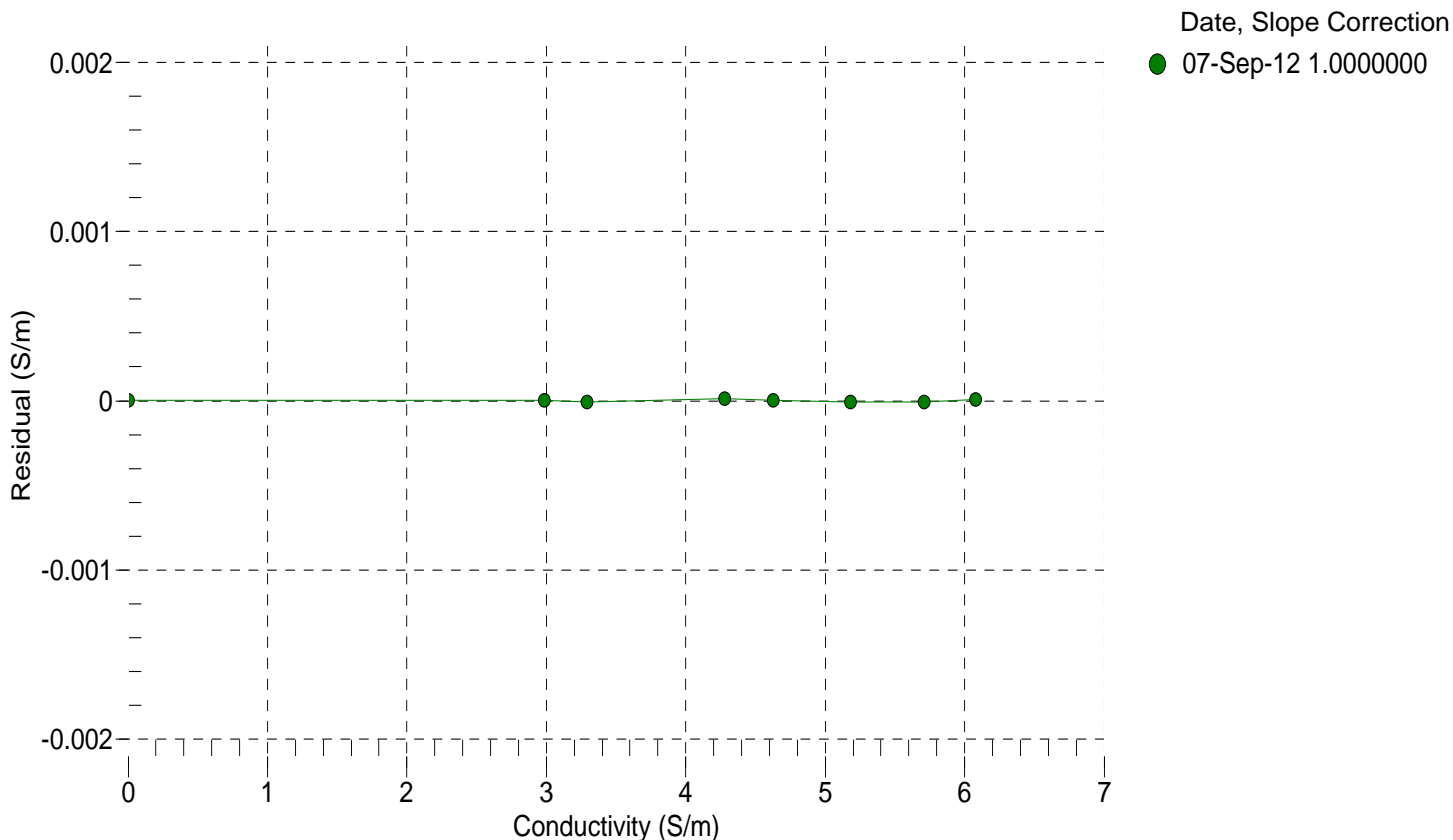
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2712.08	0.00000	0.00000
1.0000	34.9410	2.98561	5461.86	2.98561	0.00000
4.5000	34.9211	3.29363	5669.59	3.29363	-0.00001
15.0000	34.8782	4.27840	6287.10	4.27841	0.00001
18.5000	34.8690	4.62460	6489.95	4.62461	0.00000
23.9940	34.8587	5.18361	6804.45	5.18360	-0.00001
29.0000	34.8523	5.70755	7086.23	5.70754	-0.00001
32.5000	34.8479	6.08088	7280.16	6.08088	0.00001

$f = \text{Instrument Output(Hz)} * \sqrt{1.0 + \text{WBOTC} * t} / 1000.0$

t = temperature (°C); p = pressure (decibars); $\delta = \text{CTcor}$; $\epsilon = \text{CPcor}$;

Conductivity (S/m) = $(g + h * f^2 + i * f^3 + j * f^4) / (1 + \delta * t + \epsilon * p)$

Residual (Siemens/meter) = instrument conductivity - bath conductivity





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Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

a0 = -1.562008e-004
a1 = 3.109295e-004
a2 = -4.528941e-006
a3 = 2.046395e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	573998.4	1.0001	0.0001
4.5000	491984.8	4.4999	-0.0001
15.0000	315853.0	15.0001	0.0001
18.5000	274165.0	18.5000	-0.0000
23.9940	220838.6	23.9940	-0.0000
29.0000	182434.4	28.9999	-0.0001
32.5000	160150.6	32.5001	0.0001

n = Instrument Output (counts)

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

Residual (°C) = instrument temperature - bath temperature

