

# 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: 9347  
 CALIBRATION DATE: 11-Mar-16

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

**COEFFICIENTS:**

g = -9.802007e-001  
 h = 1.278715e-001  
 i = 8.797857e-005  
 j = 1.541646e-005

CPcor = -9.5700e-008  
 CTcor = 3.2500e-006  
 WBOTC = -3.0138e-008

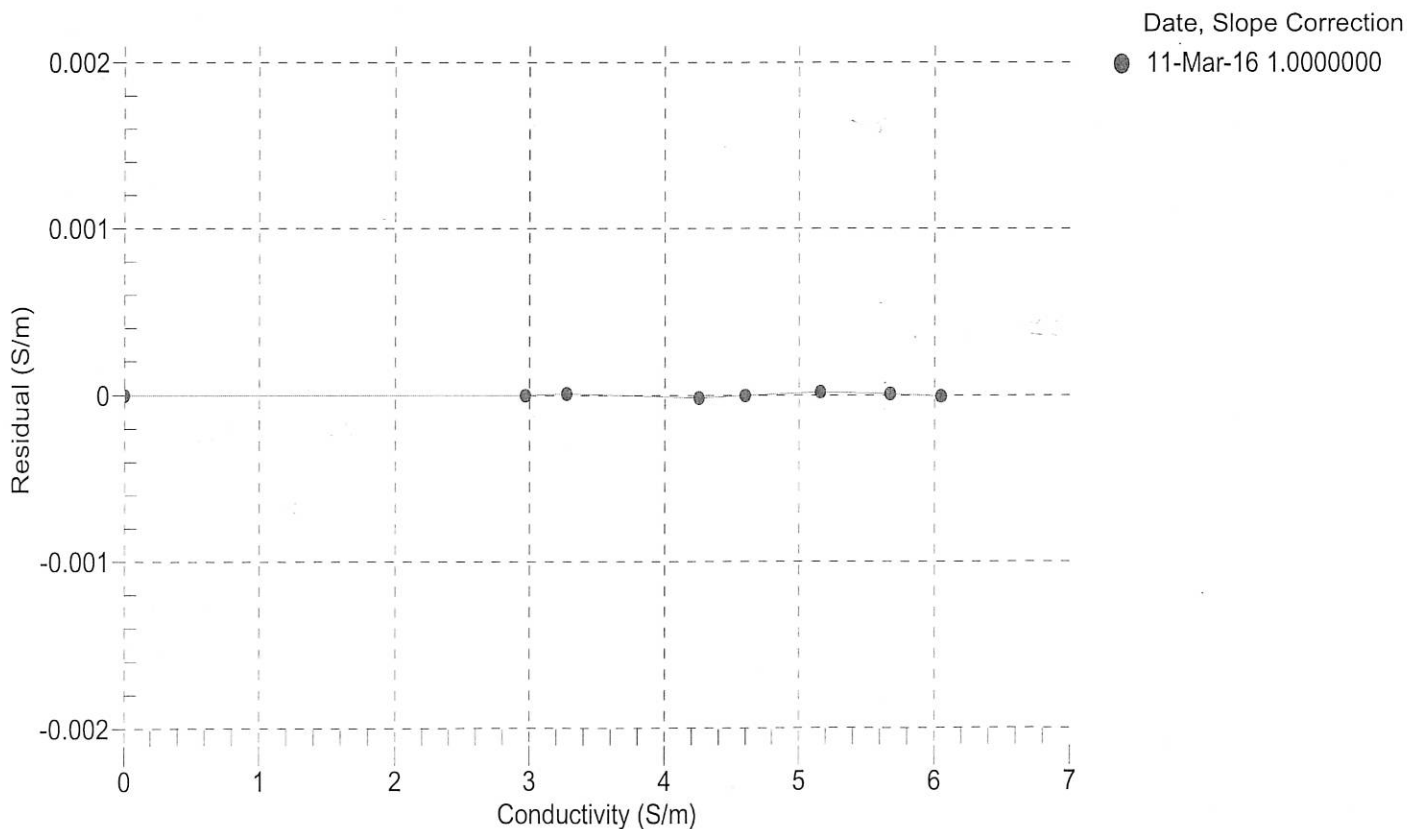
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2764.77	0.00000	0.00000
1.0000	34.7105	2.96778	5535.77	2.96778	-0.00000
4.5000	34.6907	3.27404	5745.28	3.27405	0.00001
15.0000	34.6483	4.25318	6368.08	4.25316	-0.00002
18.5000	34.6394	4.59743	6572.73	4.59742	-0.00000
24.0000	34.6296	5.15391	6890.38	5.15393	0.00002
29.0000	34.6245	5.67443	7174.42	5.67444	0.00001
32.5000	34.6222	6.04596	7370.27	6.04595	-0.00001

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

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

$\text{Conductivity (S/m)} = (g + h * f^2 + i * f^3 + j * f^4) / 10 (1 + \delta * t + \epsilon * p)$

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



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Slocum Payload CTD TEMPERATURE CALIBRATION DATA  
ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

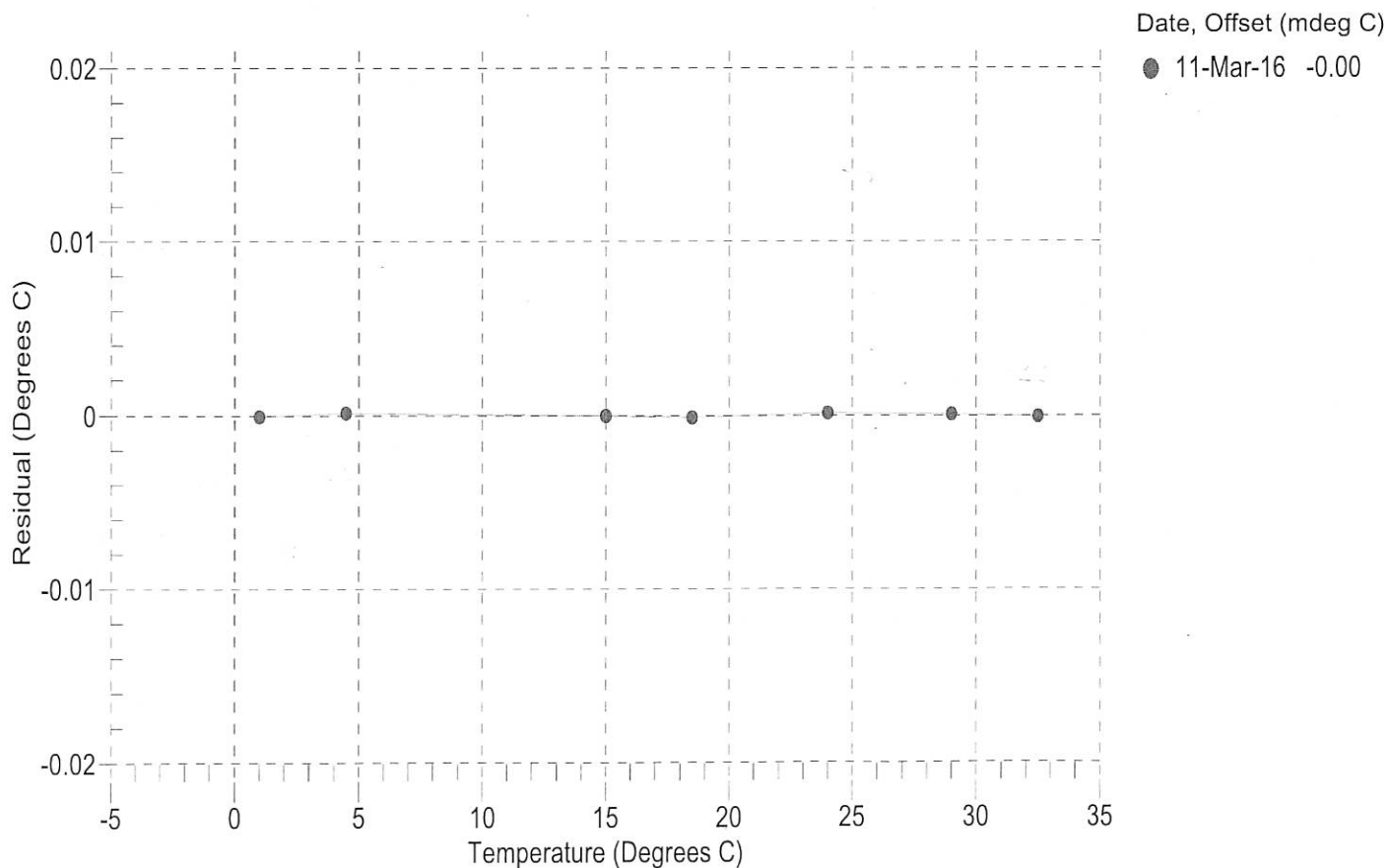
a0 = -1.055235e-004  
a1 = 3.061483e-004  
a2 = -4.373363e-006  
a3 = 1.991327e-007

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	570526.3	0.9999	-0.0001
4.5000	488080.3	4.5001	0.0001
15.0000	311654.5	15.0000	-0.0000
18.5000	270049.8	18.4999	-0.0001
24.0000	216892.0	24.0001	0.0001
29.0000	178794.8	29.0001	0.0001
32.5000	156704.8	32.4999	-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



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SENSOR SERIAL NUMBER: 9347  
CALIBRATION DATE: 12-Feb-16

Slocum Payload CTD PRESSURE CALIBRATION DATA  
1450 psia S/N 4417965

**COEFFICIENTS:**

PA0 =	-4.296108e-001	PTCA0 =	5.244139e+005
PA1 =	4.570648e-003	PTCA1 =	-1.428810e+001
PA2 =	-3.006162e-011	PTCA2 =	4.547010e-001
PTEMPA0 =	1.343004e+002	PTCB0 =	2.532125e+001
PTEMPA1 =	-6.579077e-002	PTCB1 =	-3.500000e-004
PTEMPA2 =	4.841442e-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)
14.63	527610.0	1730.0	14.62	-0.00	32.50	1565	527786.50
314.89	593323.0	1727.0	314.91	0.00	29.00	1620	527744.75
614.90	659000.0	1727.0	614.79	-0.01	24.00	1697	527693.75
914.91	724755.0	1726.0	914.76	-0.01	18.50	1784	527664.75
1214.90	790598.0	1725.0	1214.87	-0.00	15.00	1838	527647.25
1464.84	845485.0	1719.0	1464.84	0.00	4.50	2003	527741.25
1214.83	790601.0	1725.0	1214.88	0.00	1.00	2057	527744.00
914.77	724779.0	1725.0	914.87	0.01			
614.76	659018.0	1724.0	614.86	0.01	TEMPERATURE (°C)	SPAN (mV)	
314.82	593315.0	1725.0	314.87	0.00	-5.00	25.32	
14.65	527614.0	1729.0	14.63	-0.00	35.00	25.31	

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)

● 12-Feb-16 -0.00

