Sea-Bird Scientific
13431 NE 20th Street
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USA

+1 425-643-9866
seabird@seabird.com
www.seabird.com

SENSOR SERIAL NUMBER: 9177
CALIBRATION DATE: 26-Apr-14

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

COEFFICIENTS:

```
g = -9.860159e-001
h =  1.570799e-001
i = -1.365425e-004
j =  3.555230e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC =  3.3245e-008
```

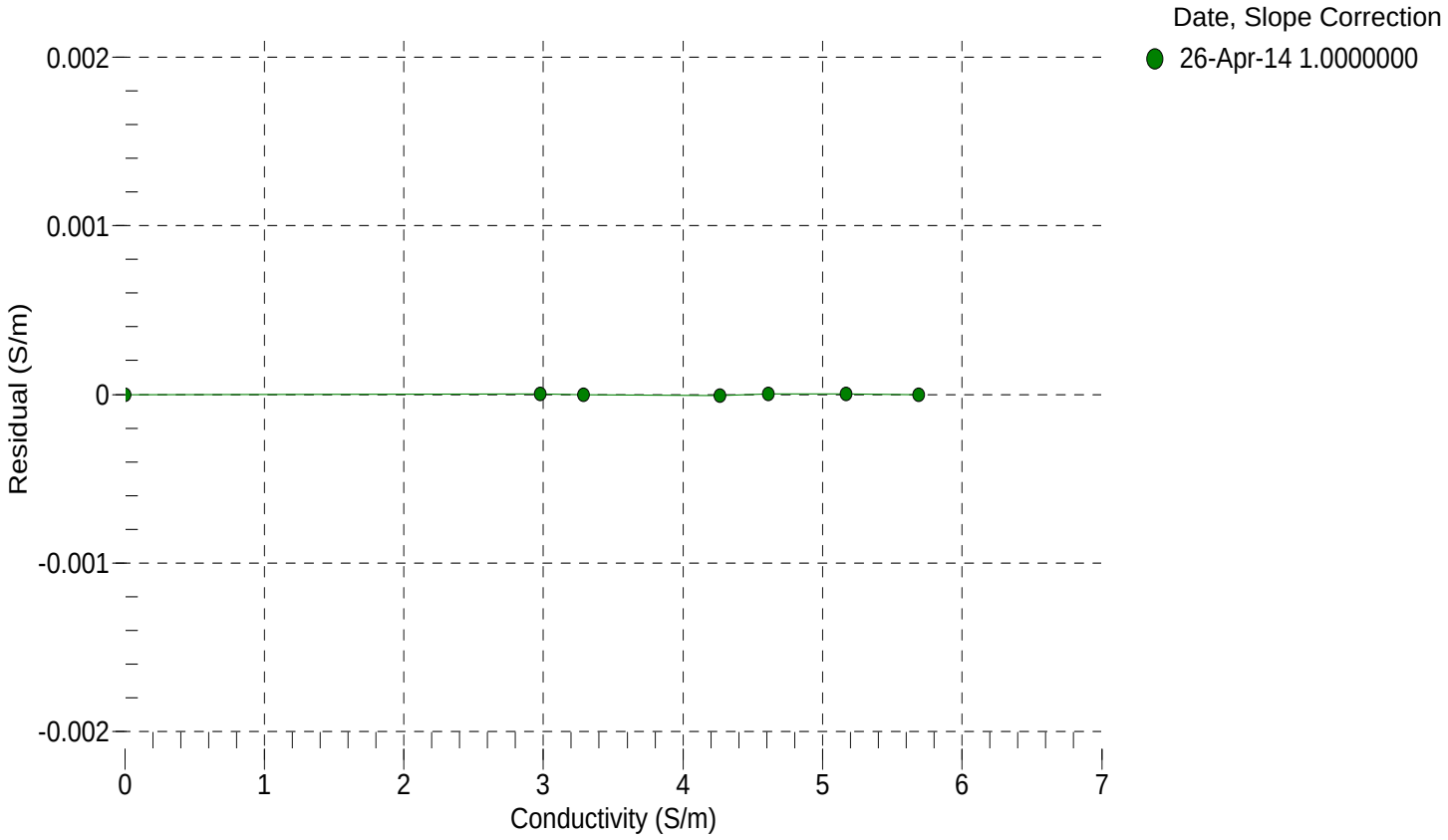
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2506.37	0.00000	0.00000
1.0000	34.8385	2.97768	5019.96	2.97769	0.00000
4.4999	34.8183	3.28489	5210.16	3.28488	-0.00000
15.0000	34.7733	4.26690	5775.63	4.26689	-0.00001
18.5000	34.7621	4.61195	5961.36	4.61196	0.00000
24.0000	34.7490	5.16972	6249.64	5.16972	0.00000
29.0000	34.7391	5.69110	6507.29	5.69109	-0.00000
32.5000	34.7338	6.06323	6684.92	6.06317	-0.00006

f = Instrument Output(Hz) * sqrt(1.0 + WBOTC * t) / 1000.0

t = temperature (°C); p = pressure (decibars); δ = CTcor; ε = CPcor;

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

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



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SENSOR SERIAL NUMBER: 9177
CALIBRATION DATE: 22-Apr-14

Slocum Payload CTD PRESSURE CALIBRATION DATA
1450 psia S/N 4168685

COEFFICIENTS:

PA0 =	2.657644e-001	PTCA0 =	5.245972e+005
PA1 =	4.481552e-003	PTCA1 =	1.331109e+000
PA2 =	-1.914283e-011	PTCA2 =	4.295375e-002
PTEMPA0 =	-7.164764e+001	PTCB0 =	2.538363e+001
PTEMPA1 =	5.185282e-002	PTCB1 =	-2.475000e-003
PTEMPA2 =	-4.963285e-007	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.54	527834.0	1843.0	14.57	0.00
314.85	594698.0	1847.0	314.79	-0.00
614.82	661547.0	1848.0	614.77	-0.00
914.82	728454.0	1848.0	914.84	0.00
1214.78	795369.0	1850.0	1214.78	0.00
1464.78	851163.0	1850.0	1464.73	-0.00
1214.79	795385.0	1849.0	1214.85	0.00
914.83	728458.0	1849.0	914.86	0.00
614.84	661562.0	1849.0	614.84	0.00
314.82	594708.0	1849.0	314.84	0.00
14.54	527829.0	1849.0	14.55	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	2049	527895.20
29.00	1978	527886.10
24.00	1878	527870.00
18.50	1768	527849.80
15.00	1699	527834.40
4.50	1490	527816.10
1.00	1420	527812.00

TEMPERATURE (°C)	SPAN
-5.00	25.40
35.00	25.30

y = thermistor output (counts)

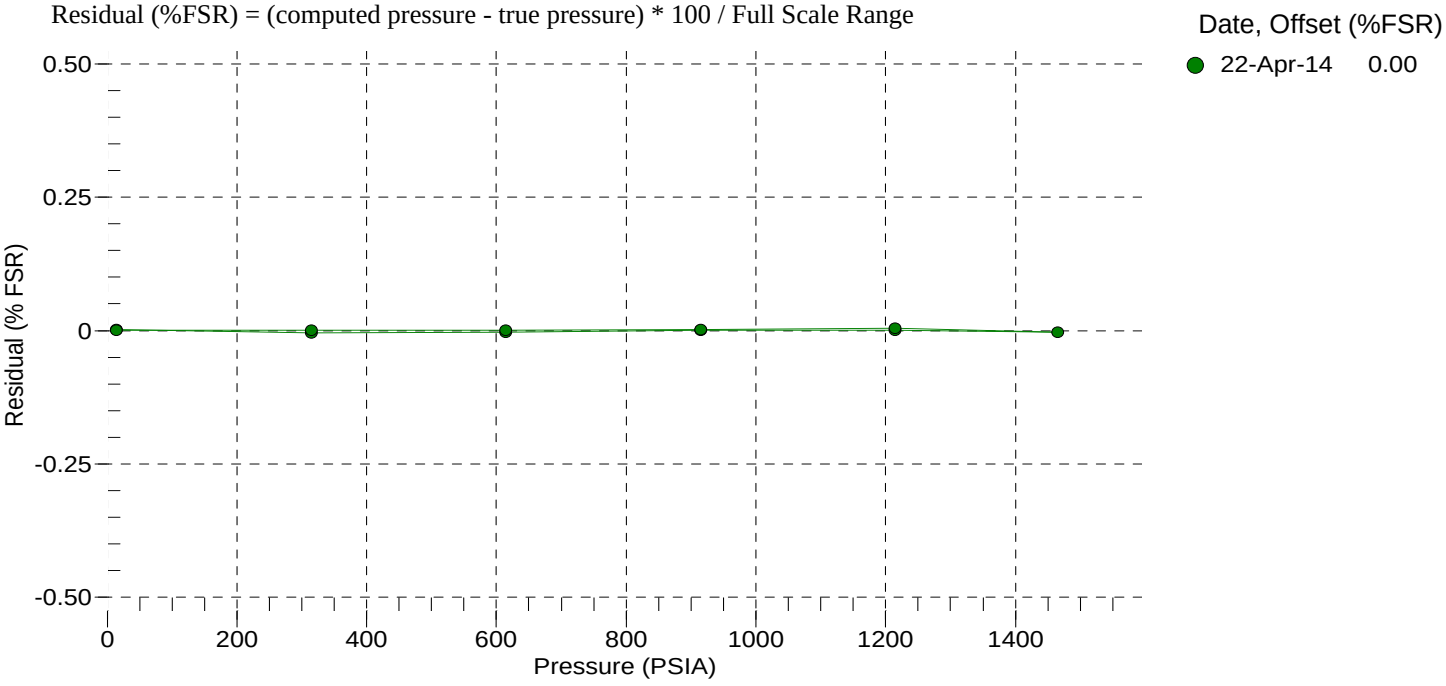
$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

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

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

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

Residual (%FSR) = (computed pressure - true pressure) * 100 / Full Scale Range



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SENSOR SERIAL NUMBER: 9177
CALIBRATION DATE: 26-Apr-14

Slocum Payload CTD TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

```
a0 = -1.411744e-004
a1 =  3.124891e-004
a2 = -4.783196e-006
a3 =  2.114525e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0000	560850.3	1.0000	-0.0000
4.4999	480270.1	4.5000	0.0001
15.0000	307515.4	15.0000	-0.0000
18.5000	266696.5	18.5000	-0.0000
24.0000	214488.9	24.0000	-0.0000
29.0000	177022.0	29.0001	0.0001
32.5000	155277.2	32.4999	-0.0001

n = Instrument Output (counts)

Temperature ITS-90 (°C) = $1/\{a0 + a1[ln(n)] + a2[ln^2(n)] + a3[ln^3(n)]\} - 273.15$

Residual (°C) = instrument temperature - bath temperature