SEA-BIRD SCIENTIFIC

SBE Sea-Bird Electronics

Sea-Bird Electronics
13431 NE 20th Street
Bellevue, Washington
98005 USA

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

SBE41-CP ALACE

Instrument Configuration

Instrument Serial Number:	41-8759
Instrument Firmware Version:	V 7.2.5
Zero Conductivity Frequency:	2579.48
Communications Format:	RS232
Communications Settings:	9600 baud, 8 Data Bits, No Parity

Installed Devices/Sensors

Data Format	*Measurement*	*Sensor Type*	*Serial Number*	*Rating*
Count	Temperature	Internal	N/A	N/A
Frequency	Conductivity	Internal	N/A	N/A
Count	Pressure	Druck	10300913	2000m(2000 dBar)

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: 8759
CALIBRATION DATE: 09-Aug-16

SBE 41 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

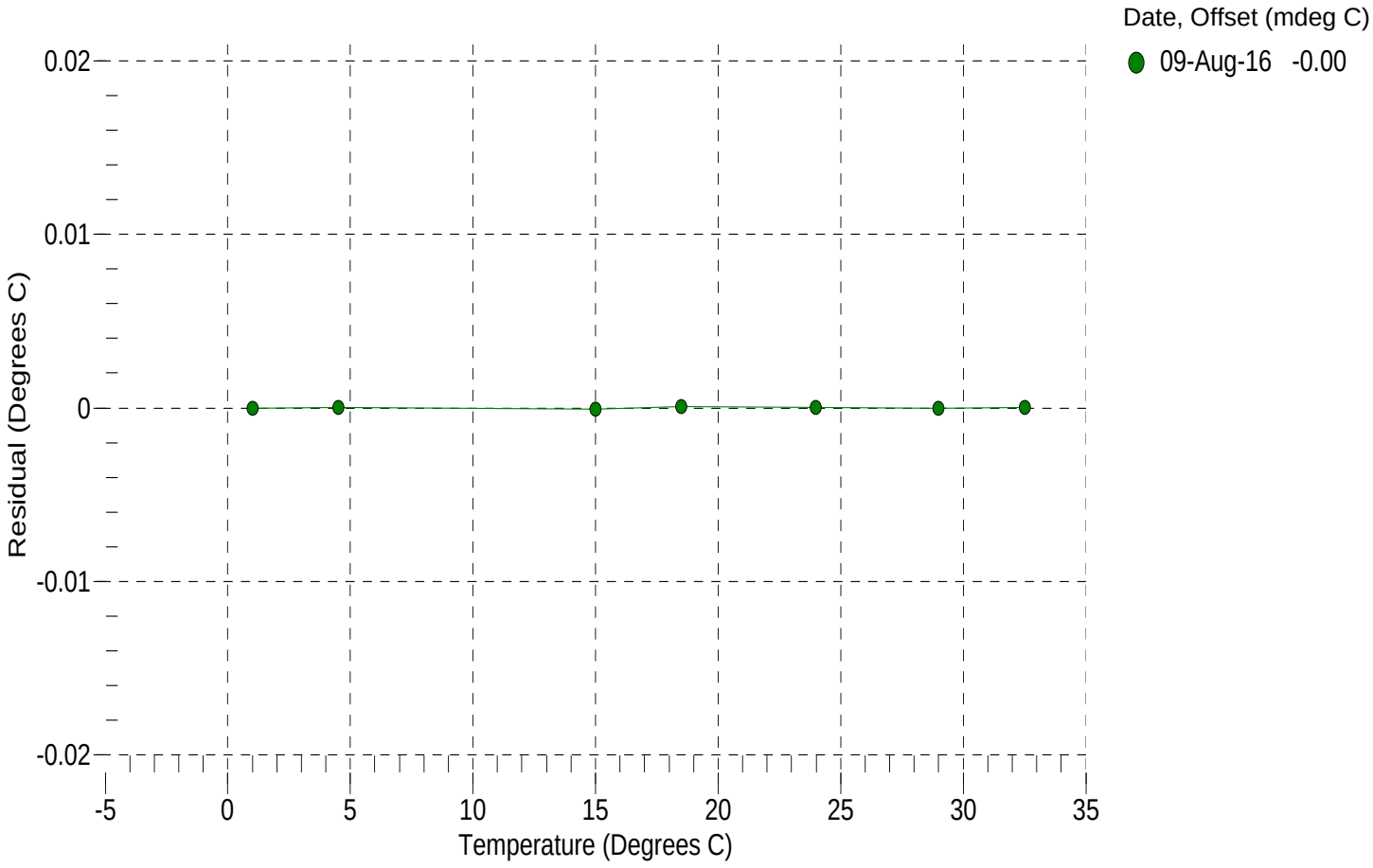
```
a0 = -8.514772e-004
a1 =  2.909853e-004
a2 = -3.706246e-006
a3 =  1.466361e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
1.0001	17307841.4	1.0001	-0.0000
4.5001	14762490.9	4.5001	0.0000
15.0001	9343206.2	15.0000	-0.0001
18.5001	8072282.6	18.5002	0.0001
23.9941	6455479.5	23.9941	0.0000
29.0001	5298450.2	29.0001	-0.0000
32.5001	4630512.7	32.5001	0.0000

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



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: 8759
CALIBRATION DATE: 09-Aug-16

SBE 41 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

```
g = -1.003425e+000
h =  1.514898e-001
i = -3.991872e-004
j =  5.231666e-005

CPcor = -9.5700e-008
CTcor =  3.2500e-006
WBOTC = -3.5532e-007
```

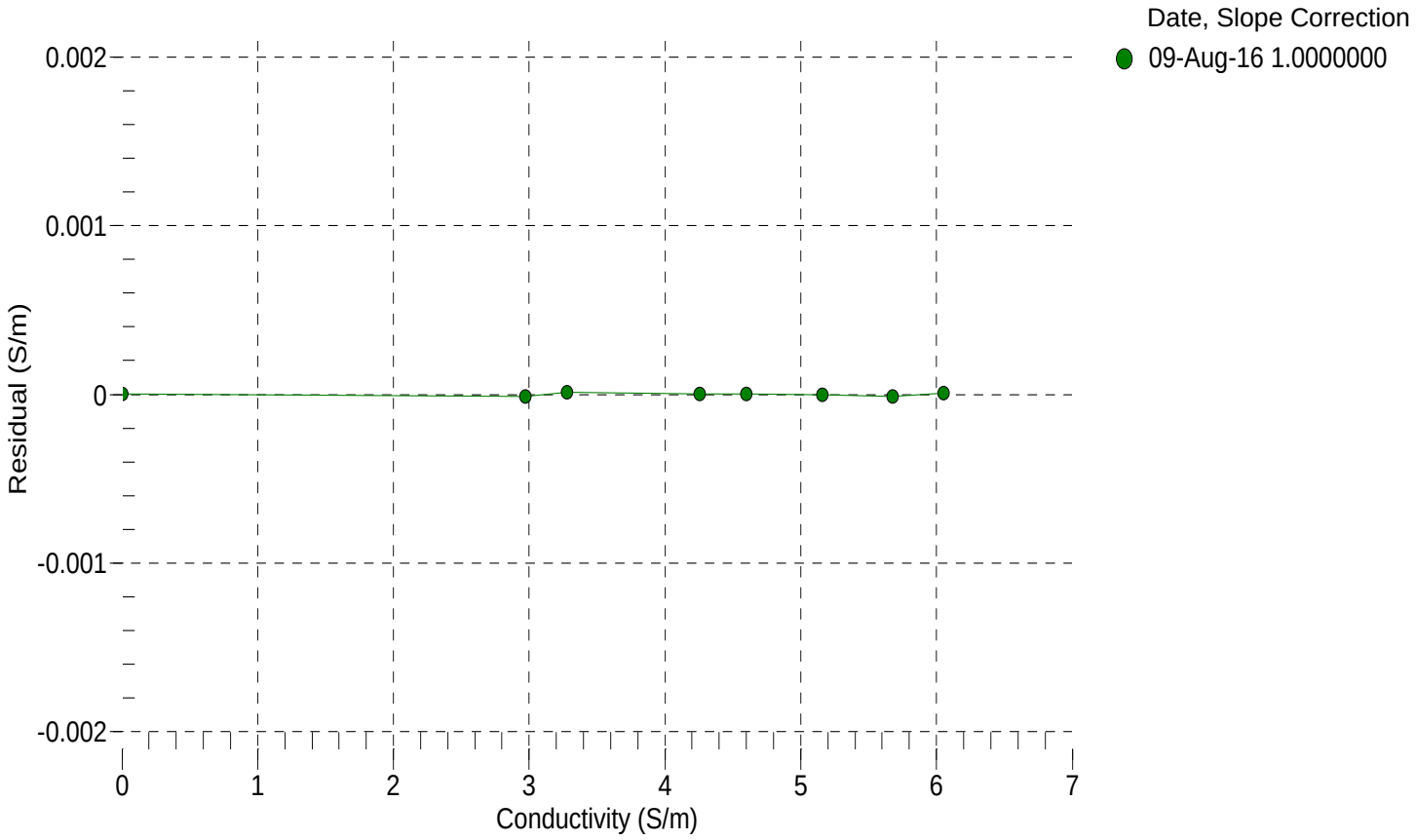
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2579.48	0.00000	0.00000
1.0001	34.7419	2.97022	5132.94	2.97021	-0.00001
4.5001	34.7220	3.27671	5326.75	3.27673	0.00001
15.0001	34.6798	4.25665	5903.10	4.25665	0.00000
18.5001	34.6712	4.60120	6092.53	4.60121	0.00000
23.9941	34.6618	5.15757	6386.26	5.15757	-0.00000
29.0001	34.6565	5.67909	6649.47	5.67908	-0.00001
32.5001	34.6535	6.05081	6830.71	6.05082	0.00001

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

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

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

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



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: 8759
CALIBRATION DATE: 02-Aug-16

SBE 41 PRESSURE CALIBRATION DATA
2900 psia S/N 10300913

COEFFICIENTS:

PA0 =	2.676646e-001	PTCA0 =	3.814048e+003
PA1 =	3.922557e-004	PTCA1 =	2.172150e+001
PA2 =	-3.060521e-013	PTCA2 =	4.243185e-001
PTHA0 =	3.039818e+002	PTCB0 =	2.513450e+001
PTHA1 =	-5.763853e-005	PTCB1 =	-3.000000e-004
PTHA2 =	-1.699839e-012	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (counts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.66	41313.0	4337784.0	14.71	0.00
591.51	1513012.1	4334176.8	591.45	-0.00
1168.17	2988285.4	4332987.8	1168.26	0.00
1744.85	4466772.6	4331900.8	1744.98	0.00
2321.62	5948638.0	4330864.2	2321.69	0.00
2898.24	7433445.0	4329699.0	2898.19	-0.00
2321.52	5948103.0	4329526.2	2321.48	-0.00
1744.80	4466196.6	4328960.0	1744.76	-0.00
1167.91	2987213.9	4328919.8	1167.84	-0.00
591.12	1511829.9	4328980.4	590.98	-0.00
14.67	41387.8	4324661.8	14.73	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (counts)	INSTRUMENT OUTPUT (counts)
32.50	4191978.40	43168.60
29.00	4240265.60	43086.57
23.99	4309923.80	42899.19
18.50	4385789.20	42615.22
15.00	4433892.00	42411.88
4.50	4577743.60	42177.30
1.00	4625633.80	42099.27

TEMPERATURE (°C)	SPAN (mV)
-5.00	25.14
35.00	25.12

y = thermistor output (counts)

$t = PTHA0 + PTHA1 * y + PTHA2 * y^2$

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

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

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

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