SBE49 FastCAT CTD Sensor

Instrument Configuration

Instrument Serial Number:	49-0720
Instrument Firmware Version:	1.3a
Zero Conductivity Frequency:	2585.15
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 Sensor	Druck	12421551	350m(350 dBar)

Maximum Depth: **350m**

CAUTION - The maximum deployment depth will be limited by the measurement range of the pressure sensor, if installed, an attached sensor, if installed, or the housing.

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SENSOR SERIAL NUMBER: 0720
CALIBRATION DATE: 16-Jun-24

SBE 49 TEMPERATURE CALIBRATION DATA
ITS-90 TEMPERATURE SCALE

COEFFICIENTS:

```
a0 =  7.867946e-004
a1 =  2.971306e-004
a2 = -3.780368e-006
a3 =  2.517069e-007
```

BATH TEMP (° C)	INSTRUMENT OUTPUT (counts)	INST TEMP (° C)	RESIDUAL (° C)
0.9999	753831.051	0.9999	0.0000
4.5000	668097.576	4.4999	-0.0001
15.0000	449759.034	15.0001	0.0001
18.5000	389746.983	18.5000	-0.0000
24.0000	307299.644	24.0000	-0.0000
29.0000	243776.051	29.0000	-0.0000
32.5000	205080.102	32.5000	0.0000

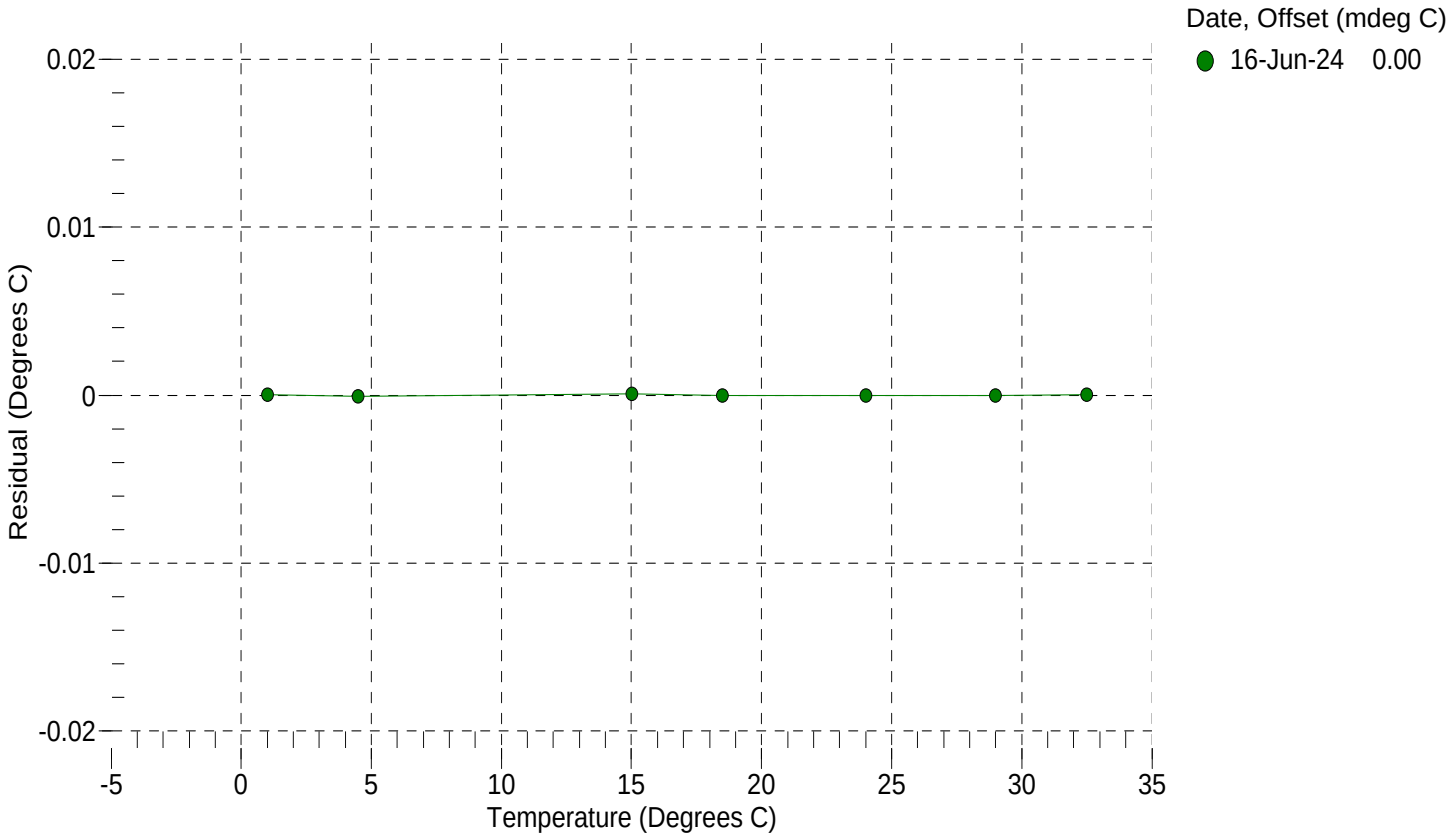
n = Instrument Output (counts)

MV = (n - 524288) / 1.6e+007

R = (MV * 2.295e+010 + 9.216e+008) / (6. 144e+004 - MV * 5.3e+005)

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

Residual (°C) = instrument temperature - bath temperature



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SENSOR SERIAL NUMBER: 0720
CALIBRATION DATE: 16-Jun-24

SBE 49 CONDUCTIVITY CALIBRATION DATA
PSS 1978: C(35,15,0) = 4.2914 Siemens/meter

COEFFICIENTS:

```
g = -9.810187e-001
h =  1.474725e-001
i = -4.054746e-004
j =  5.514128e-005

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

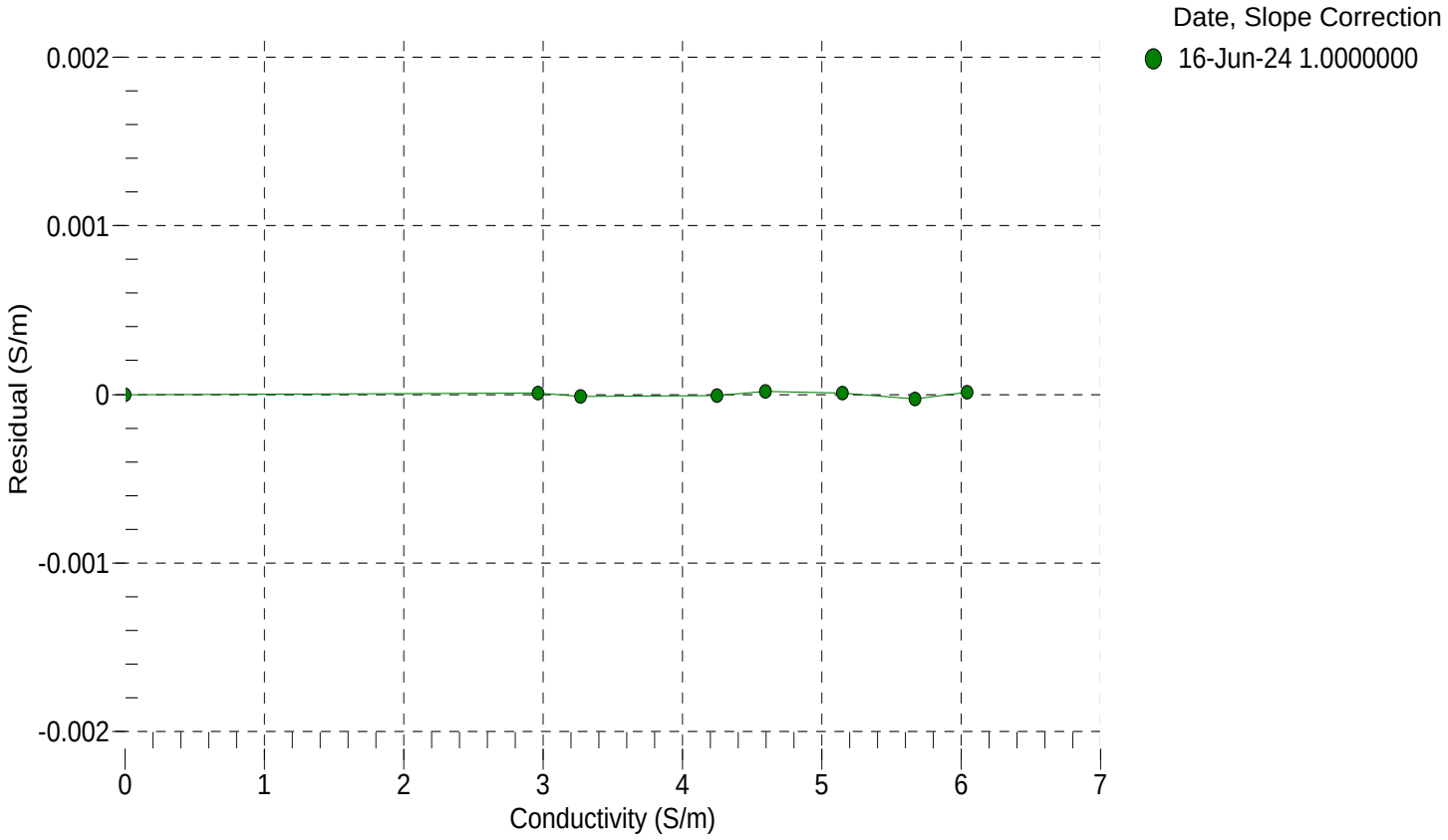
BATH TEMP (° C)	BATH SAL (PSU)	BATH COND (S/m)	INSTRUMENT OUTPUT (Hz)	INSTRUMENT COND (S/m)	RESIDUAL (S/m)
22.0000	0.0000	0.00000	2585.15	0.0000	0.00000
0.9999	34.7015	2.96708	5185.06	2.9671	0.00001
4.5000	34.6813	3.27324	5381.73	3.2732	-0.00001
15.0000	34.6373	4.25197	5966.24	4.2520	-0.00001
18.5000	34.6276	4.59603	6158.24	4.5960	0.00002
24.0000	34.6168	5.15222	6456.17	5.1522	0.00001
29.0000	34.6100	5.67232	6722.42	5.6723	-0.00003
32.5000	34.6033	6.04303	6905.73	6.0430	0.00001

f = Instrument Output (Hz) / 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: 0720
CALIBRATION DATE: 14-Jun-24

SBE 49 PRESSURE CALIBRATION DATA
508 psia S/N 12421551

COEFFICIENTS:

PA0 =	1.025158e-001	PTCA0 =	5.234009e+005
PA1 =	1.543162e-003	PTCA1 =	5.179836e+000
PA2 =	4.165187e-012	PTCA2 =	-9.527906e-002
PTEMPA0 =	-5.920771e+001	PTCB0 =	2.499388e+001
PTEMPA1 =	5.389609e+001	PTCB1 =	1.754386e-004
PTEMPA2 =	-3.378881e-001	PTCB2 =	0.000000e+000

PRESSURE SPAN CALIBRATION

PRESSURE (PSIA)	INSTRUMENT OUTPUT (counts)	THERMISTOR OUTPUT (volts)	COMPUTED PRESSURE (PSIA)	RESIDUAL (%FSR)
14.58	532862.0	1.5	14.59	0.00
113.10	596665.4	1.6	113.06	-0.01
211.64	660508.8	1.6	211.62	-0.01
310.28	724403.8	1.6	310.29	0.00
408.96	788281.4	1.6	408.97	0.00
507.70	852151.0	1.6	507.67	-0.01
409.30	788510.6	1.6	409.33	0.00
310.58	724606.0	1.6	310.60	0.00
211.82	660640.4	1.6	211.82	-0.00
113.18	596741.2	1.6	113.17	-0.00
14.58	532859.8	1.6	14.59	0.00

THERMAL CORRECTION

TEMP (°C)	THERMISTOR OUTPUT (volts)	INSTRUMENT OUTPUT (counts)
32.50	1.72	533562.31
29.00	1.65	533568.78
24.00	1.56	533567.90
18.50	1.46	533561.85
15.00	1.39	533550.25
4.50	1.19	533515.95
1.00	1.13	533504.15

TEMPERATURE (°C)	SPAN
-5.00	24.99
34.90	25.00

y = thermistor output (counts)

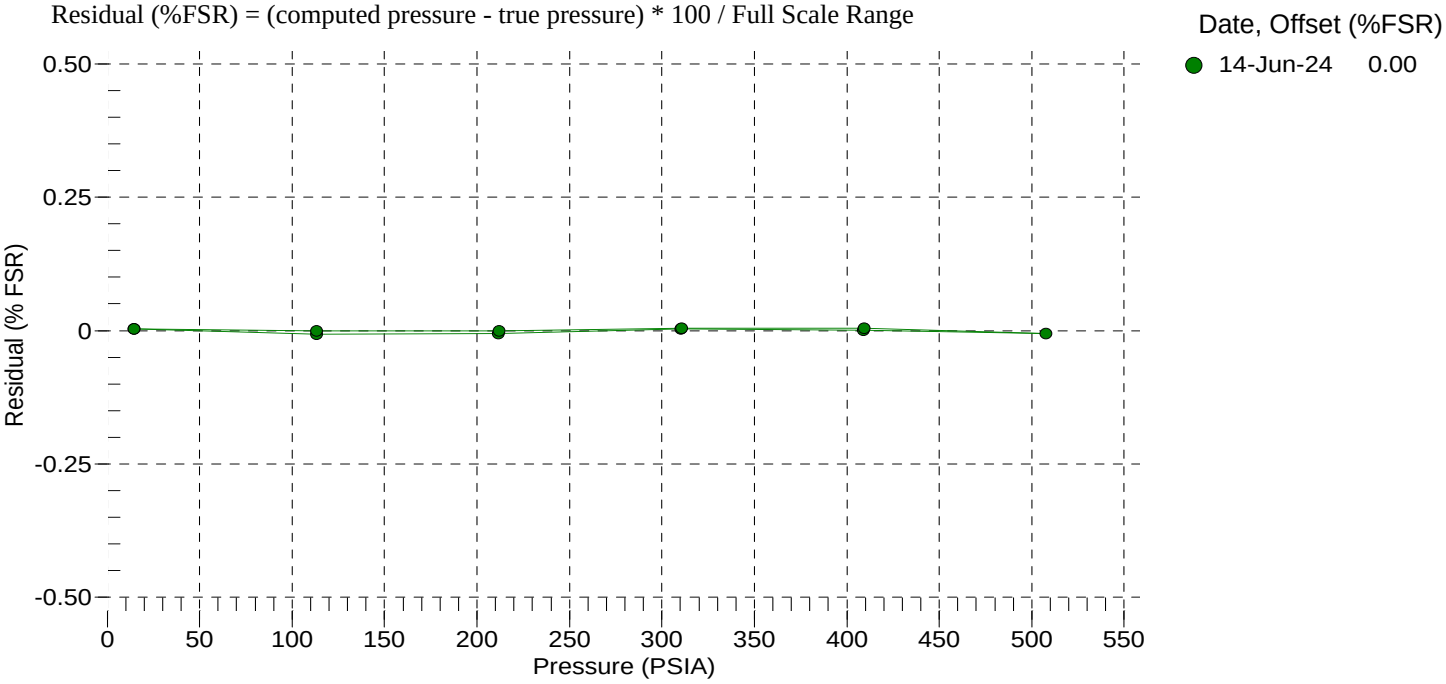
$t = PTEMPA0 + PTEMPA1 * y + PTEMPA2 * y^2$

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

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

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

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



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Pressure Test Certificate

Test Date: 2024-06-13

Description: SBE-49 FastCat Sensor

Sensor Information:

Model Number: SBE-49

Serial Number: 0720

Pressure Test Protocol:

Low Pressure Test:	40	PSI	Held For:	15	Minutes
High Pressure Test:	500	PSI	Held For:	15	Minutes

Passed Test: True

Tested By: s.a