



Sea-Bird Electronics, Inc.  
*Advancing the Science of Ocean Measurement*

## Product Information Documentation

Contains (as applicable) for each device on this order:

Configuration

Calibration Certificates

Pressure Test Certification

Please see applicable manual for statement of liability and declaration of conformity

Manuals are located on the CD/DVD provided with your order and also on our website at [www.seabird.com](http://www.seabird.com)



Support Telephone: (+1)425-643-9866  
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Sea-Bird Electronics, Inc.

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## SBE 56 ECO Temperature Logger

### Instrument Configuration

Instrument Serial Number: 56-04591  
Instrument Firmware Version: 0.96  
Communications Format: RS232

### Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A

Maximum Depth: 1500m

**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: 04591

CALIBRATION DATE: 22-Jun-14

SBE 56 TEMPERATURE CALIBRATION DATA

ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

a0 = -1.220287e-003

a1 = 3.408670e-004

a2 = -6.307232e-006

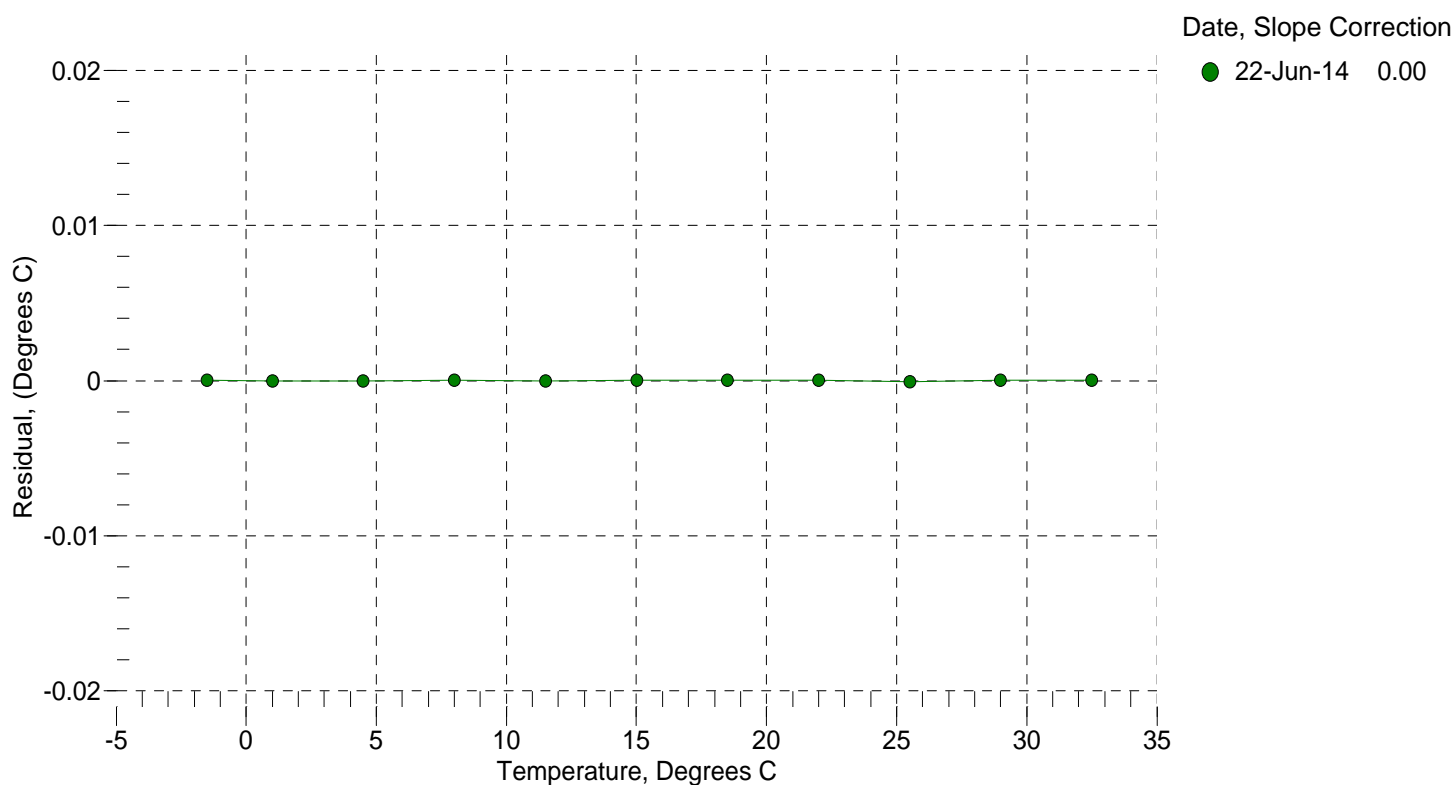
a3 = 1.981315e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	20844332.3	-1.5000	0.0000
1.0000	18614334.4	1.0000	-0.0000
4.5000	15933656.9	4.5000	-0.0000
8.0000	13684183.6	8.0000	0.0000
11.5000	11790186.7	11.5000	-0.0000
15.0000	10190102.9	15.0000	0.0000
18.5000	8833970.8	18.5000	0.0000
22.0000	7680972.5	22.0000	0.0000
25.5000	6697684.3	25.4999	-0.0001
29.0000	5856574.8	29.0000	0.0000
32.5000	5135030.9	32.5000	0.0000

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

Residual = instrument temperature - bath temperature

n = instrument output





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## Pressure Test Certificate

Test Date: **06/13/14**

Description: **SBE-56 Temperature Sensor**

### Sensor Information:

Model Number: **56**

Serial Number: **04591**

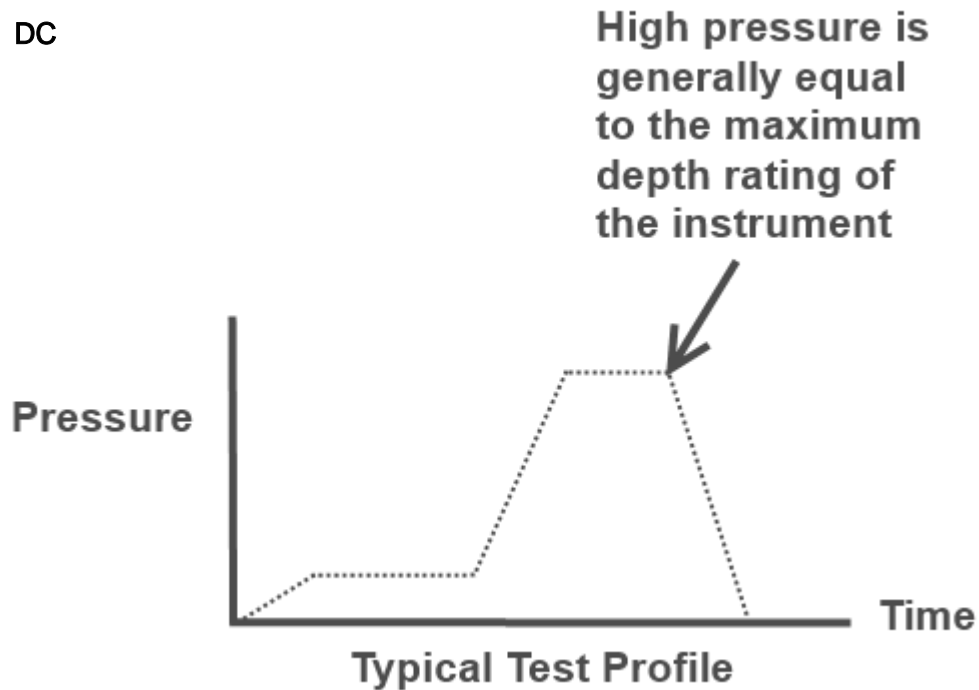
### Pressure Test Protocol:

Low Pressure Test: **40** PSI Held For: **15** Minutes

High Pressure Test: **2300** PSI Held For: **15** Minutes

Passed Test: **Yes**

Tested By: **DC**





## SBE 56 ECO Temperature Logger

### Instrument Configuration

Instrument Serial Number: 56-04593  
Instrument Firmware Version: 0.96  
Communications Format: RS232

### Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A

Maximum Depth: 1500m

**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: 04593

CALIBRATION DATE: 04-Jul-14

SBE 56 TEMPERATURE CALIBRATION DATA

ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

a0 = -1.210059e-003

a1 = 3.400429e-004

a2 = -6.232137e-006

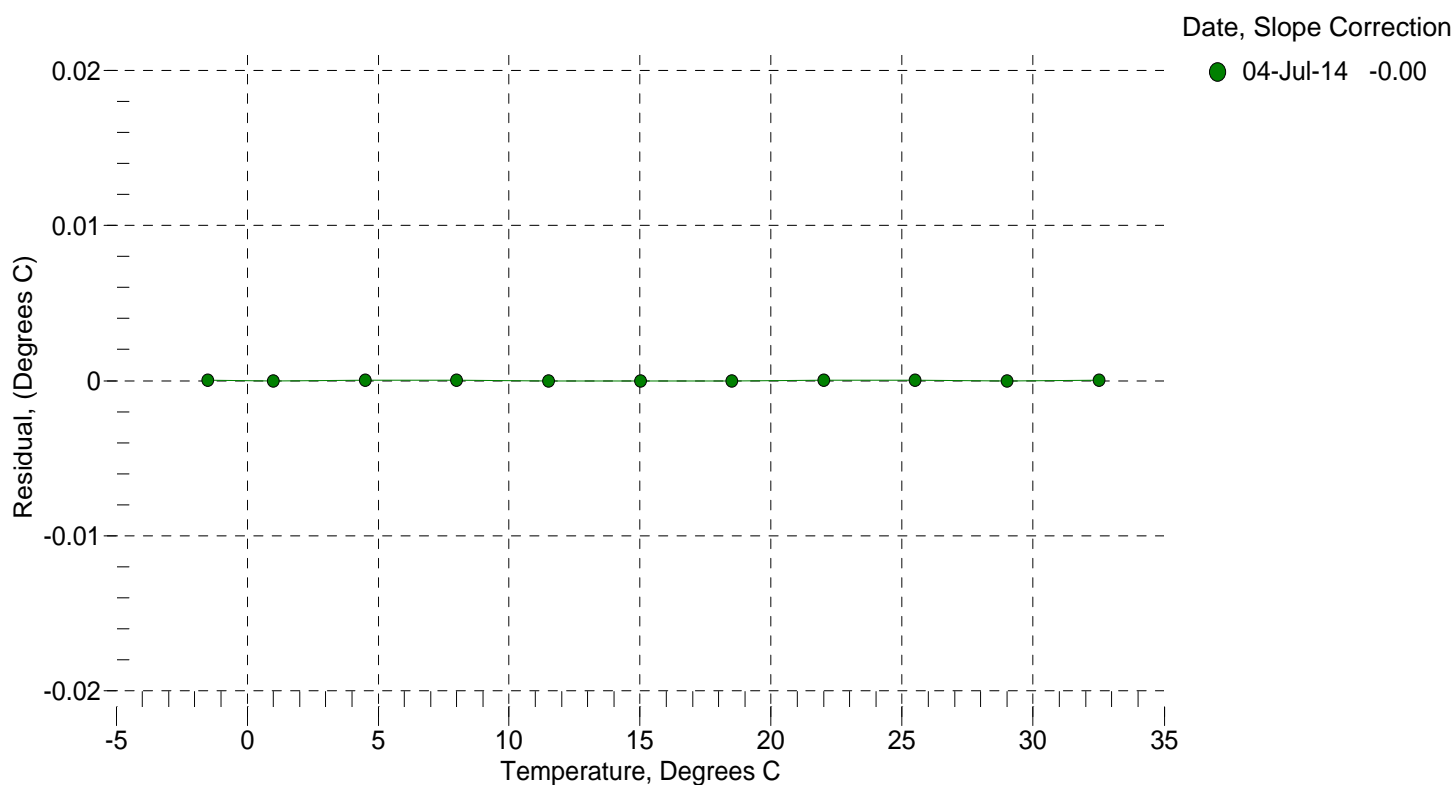
a3 = 1.944719e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	20833688.9	-1.5000	0.0000
1.0000	18594814.2	1.0000	-0.0000
4.5000	15905321.8	4.5000	0.0000
8.0000	13650303.8	8.0000	0.0000
11.5000	11753055.3	11.5000	-0.0000
15.0000	10151431.7	15.0000	-0.0000
18.5000	8794950.7	18.5000	-0.0000
22.0000	7642436.5	22.0000	0.0000
25.5000	6660198.0	25.5000	0.0000
29.0000	5820572.6	29.0000	-0.0000
32.5000	5100719.9	32.5000	0.0000

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

Residual = instrument temperature - bath temperature

n = instrument output





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## Pressure Test Certificate

Test Date: **06/13/14**

Description: **SBE-56 Temperature Sensor**

### Sensor Information:

Model Number: **56**

Serial Number: **04593**

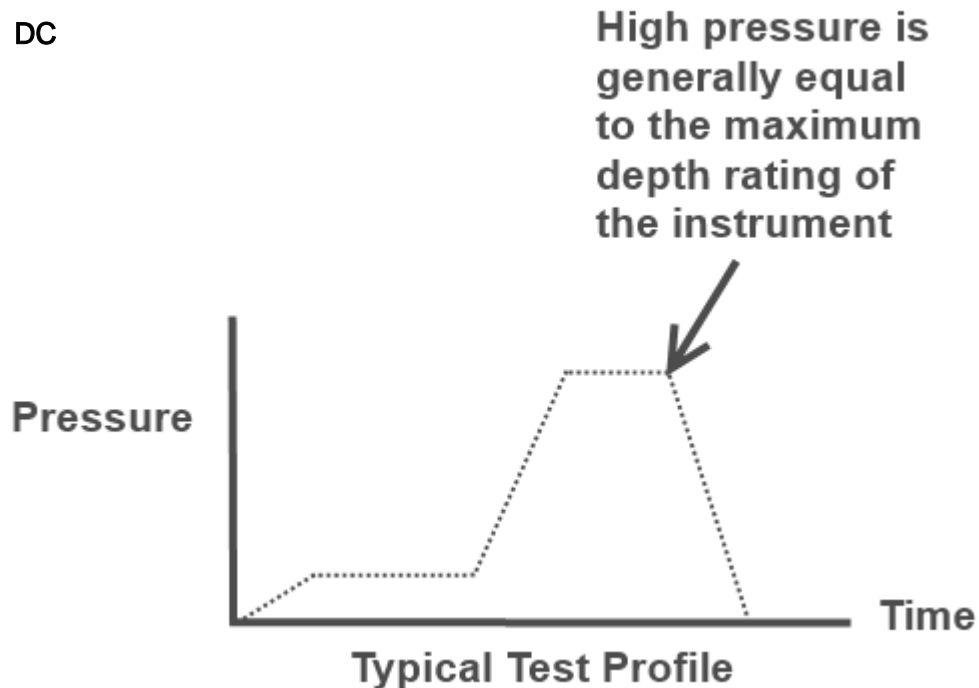
### Pressure Test Protocol:

Low Pressure Test: **40** PSI Held For: **15** Minutes

High Pressure Test: **2300** PSI Held For: **15** Minutes

Passed Test: **Yes**

Tested By: **DC**







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## SBE 56 ECO Temperature Logger

### Instrument Configuration

Instrument Serial Number: 56-04611  
Instrument Firmware Version: 0.96  
Communications Format: RS232

### Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A

Maximum Depth: 1500m

**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: 04611

CALIBRATION DATE: 25-Jun-14

SBE 56 TEMPERATURE CALIBRATION DATA

ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

a0 = -1.170492e-003

a1 = 3.323216e-004

a2 = -5.742699e-006

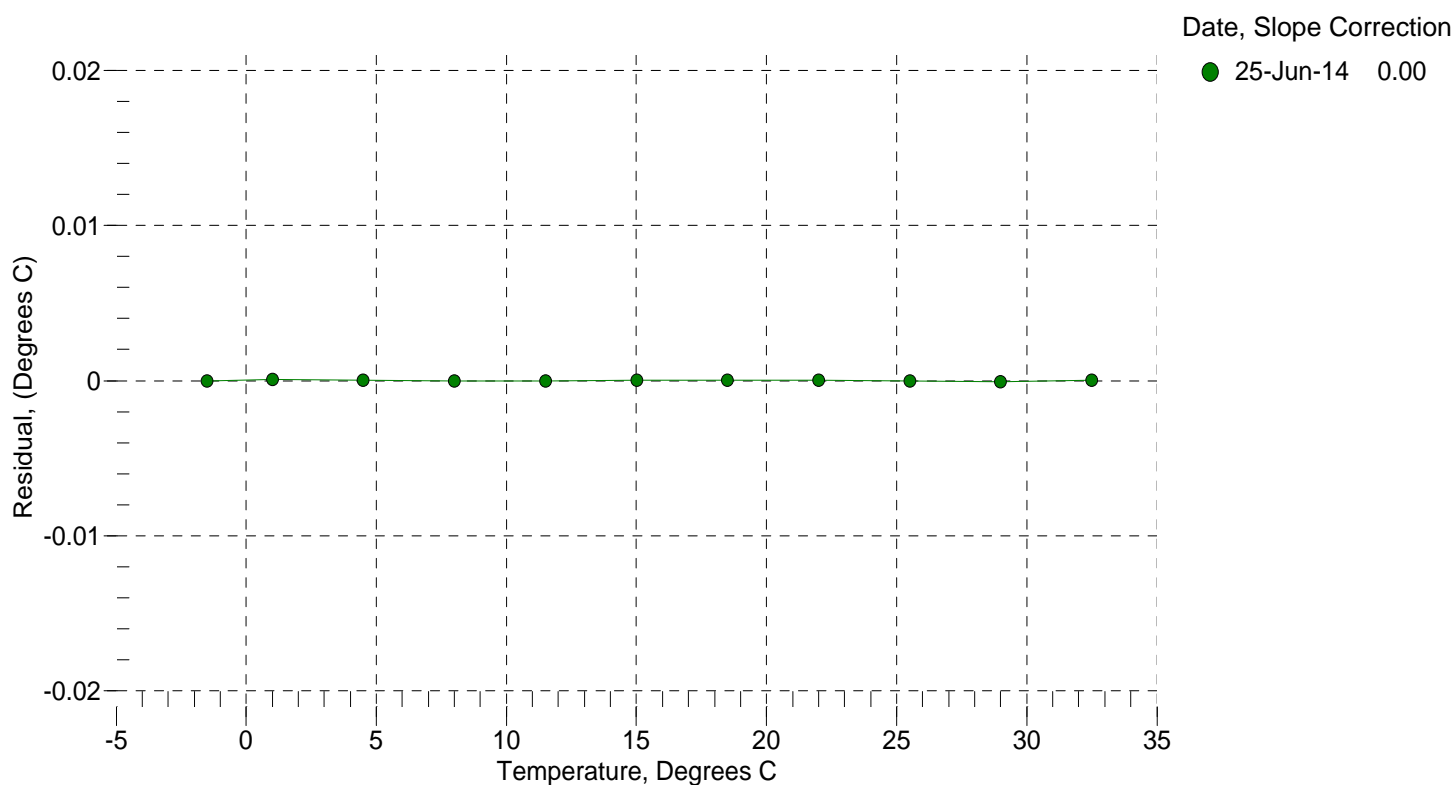
a3 = 1.851827e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	20555438.1	-1.5000	-0.0000
1.0000	18351770.0	1.0001	0.0001
4.5000	15703802.1	4.5000	0.0000
8.0000	13482695.3	8.0000	-0.0000
11.5000	11613198.9	11.5000	-0.0000
15.0000	10034346.1	15.0000	0.0000
18.5000	8696679.6	18.5000	0.0000
22.0000	7559732.0	22.0000	0.0000
25.5001	6590376.7	25.5001	-0.0000
29.0001	5761457.9	29.0000	-0.0001
32.5000	5050543.3	32.5000	0.0000

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

Residual = instrument temperature - bath temperature

n = instrument output





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## Pressure Test Certificate

Test Date: **06/14/14**

Description: **SBE-56 Temperature Sensor**

### Sensor Information:

Model Number: **56**

Serial Number: **04611**

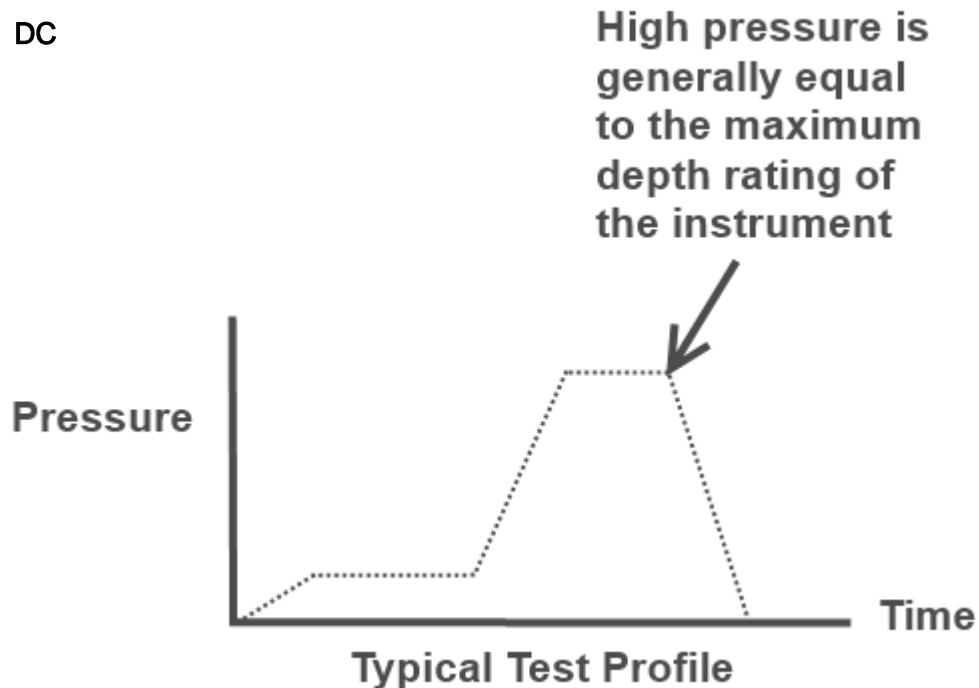
### Pressure Test Protocol:

Low Pressure Test: **40** PSI Held For: **15** Minutes

High Pressure Test: **2300** PSI Held For: **15** Minutes

Passed Test: **Yes**

Tested By: **DC**





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## SBE 56 ECO Temperature Logger

### Instrument Configuration

Instrument Serial Number: 56-04612

Instrument Firmware Version: 0.96

Communications Format: RS232

### Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A

Maximum Depth: 1500m

**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: 04612  
CALIBRATION DATE: 25-Jun-14

SBE 56 TEMPERATURE CALIBRATION DATA  
ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

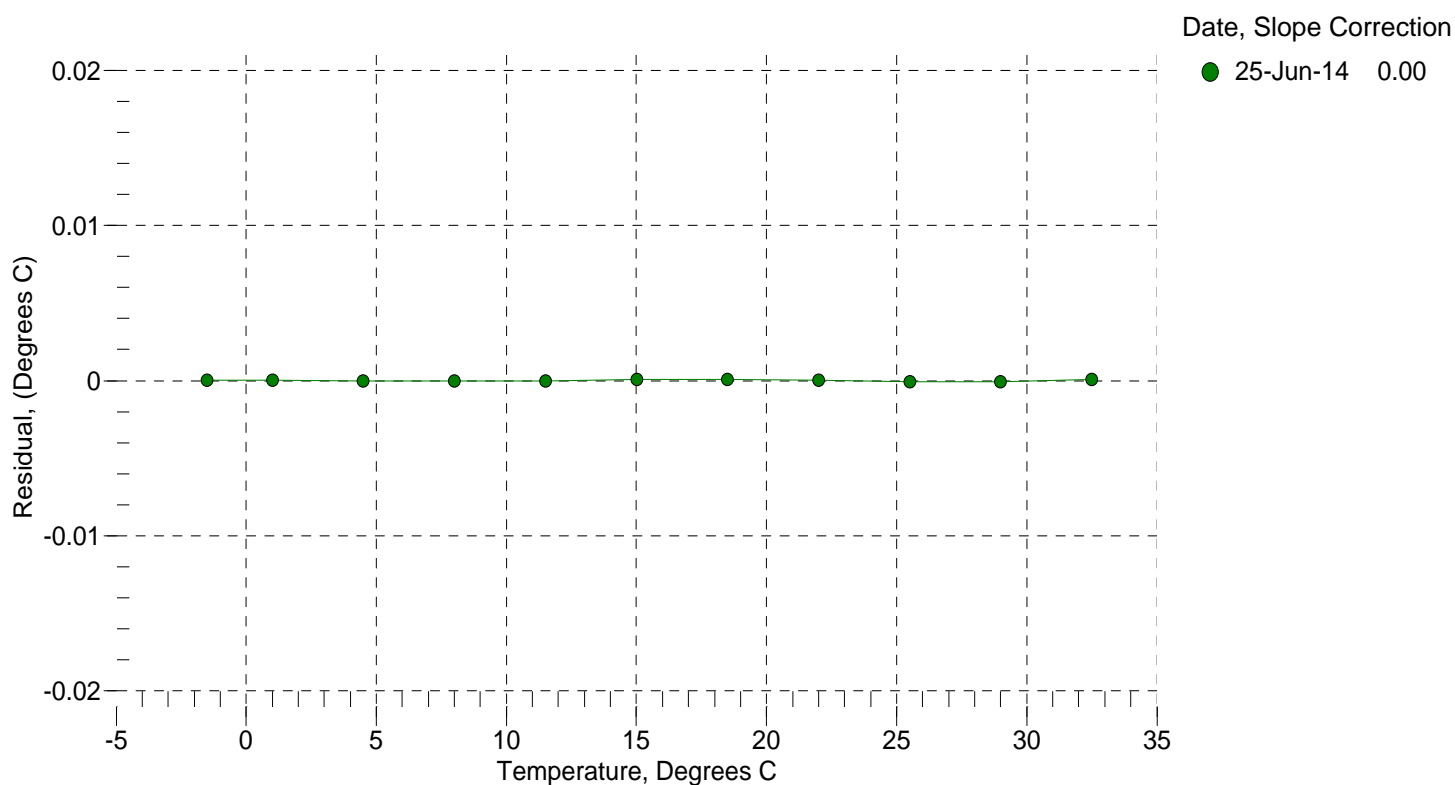
a0 = -1.174229e-003  
a1 = 3.335737e-004  
a2 = -5.822202e-006  
a3 = 1.876178e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	20115150.1	-1.5000	0.0000
1.0000	17962075.4	1.0000	0.0000
4.5000	15374199.3	4.5000	-0.0000
8.0000	13202923.7	8.0000	-0.0000
11.5000	11374893.2	11.5000	-0.0000
15.0000	9830680.3	15.0001	0.0001
18.5000	8522054.8	18.5001	0.0001
22.0000	7409537.5	22.0000	0.0000
25.5001	6460792.7	25.5000	-0.0001
29.0001	5649305.5	29.0000	-0.0001
32.5000	4953196.0	32.5001	0.0001

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

Residual = instrument temperature - bath temperature

n = instrument output





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## Pressure Test Certificate

Test Date: **06/14/14**

Description: **SBE-56 Temperature Sensor**

### Sensor Information:

Model Number: **56**

Serial Number: **04612**

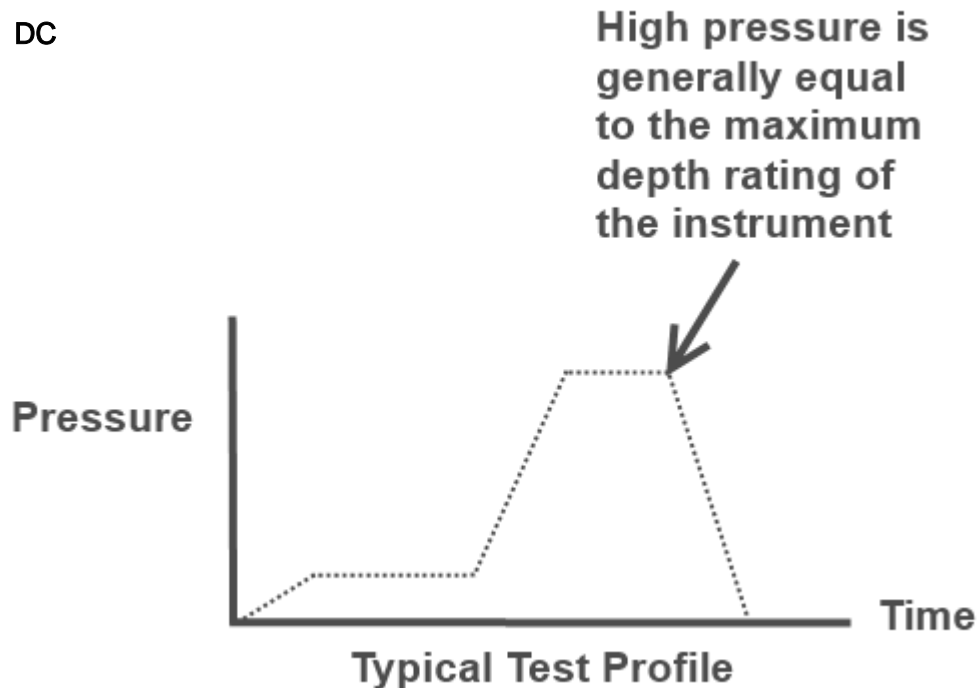
### Pressure Test Protocol:

Low Pressure Test: **40** PSI Held For: **15** Minutes

High Pressure Test: **2300** PSI Held For: **15** Minutes

Passed Test: **Yes**

Tested By: **DC**





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## SBE 56 ECO Temperature Logger

### Instrument Configuration

Instrument Serial Number: 56-04613  
Instrument Firmware Version: 0.96  
Communications Format: RS232

### Installed Devices/Sensors

<i>Data Format</i>	<i>Measurement</i>	<i>Sensor Type</i>	<i>Serial Number</i>	<i>Rating</i>
Count	Temperature	Internal	N/A	N/A

Maximum Depth: 1500m

**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: 04613

CALIBRATION DATE: 25-Jun-14

SBE 56 TEMPERATURE CALIBRATION DATA

ITS-90 TEMPERATURE SCALE

## COEFFICIENTS:

a0 = -1.176598e-003

a1 = 3.359748e-004

a2 = -6.025779e-006

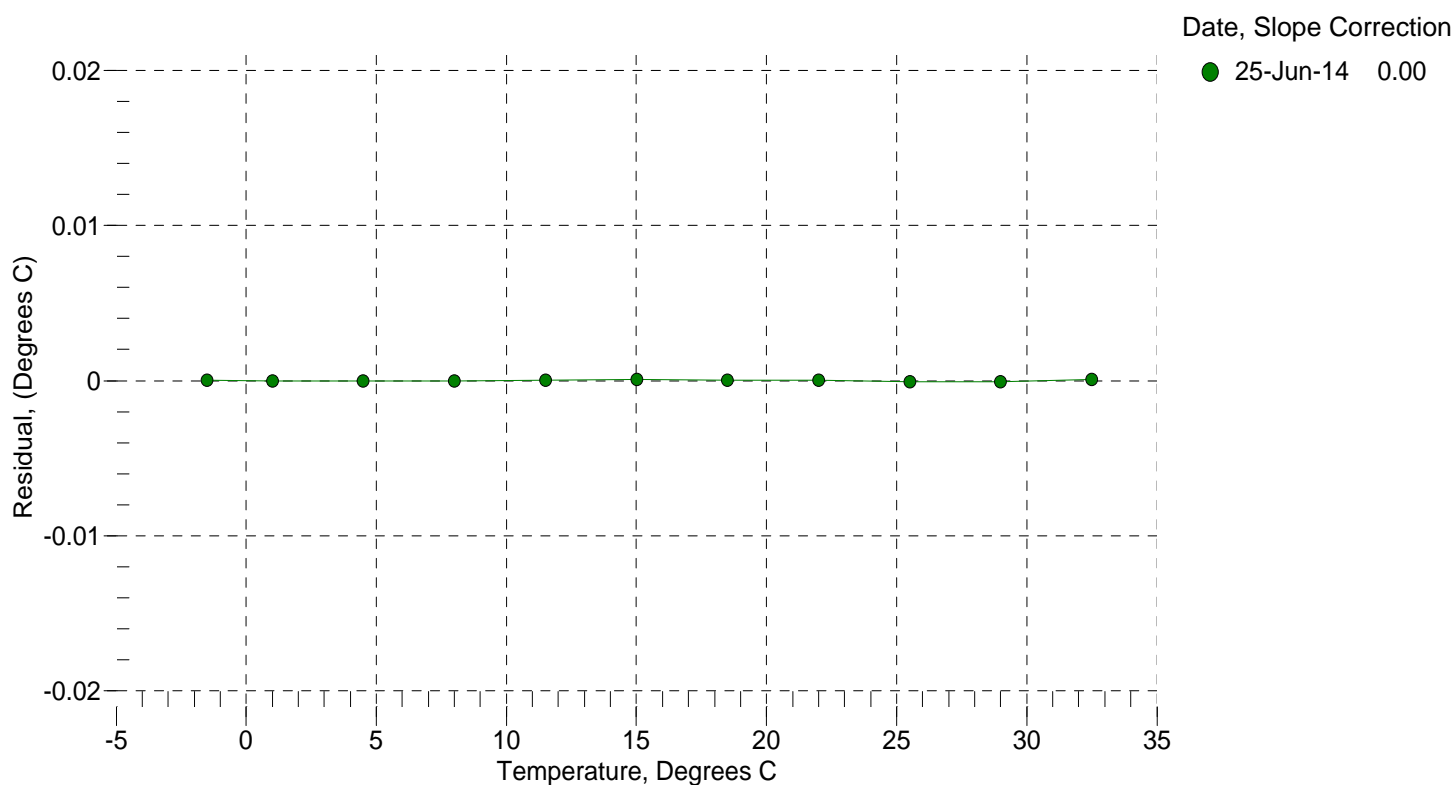
a3 = 1.900468e-007

BATH TEMP (ITS-90)	INSTRUMENT OUTPUT	INST TEMP (ITS-90)	RESIDUAL (ITS-90)
-1.5000	20669514.0	-1.5000	0.0000
1.0000	18441607.5	1.0000	-0.0000
4.5000	15766444.9	4.5000	-0.0000
8.0000	13524523.1	8.0000	-0.0000
11.5000	11639145.9	11.5000	0.0000
15.0000	10048297.9	15.0001	0.0001
18.5000	8701607.7	18.5000	0.0000
22.0000	7557916.0	22.0000	0.0000
25.5001	6583621.0	25.5000	-0.0001
29.0001	5751127.0	29.0000	-0.0001
32.5000	5037702.5	32.5001	0.0001

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

Residual = instrument temperature - bath temperature

n = instrument output







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## Pressure Test Certificate

Test Date: **06/14/14**

Description: **SBE-56 Temperature Sensor**

### Sensor Information:

Model Number: **56**

Serial Number: **04613**

### Pressure Test Protocol:

Low Pressure Test: **40** PSI Held For: **15** Minutes

High Pressure Test: **2300** PSI Held For: **15** Minutes

Passed Test: **Yes**

Tested By: **DC**

