

Certificate #: 2022065-150902-PTU307-J1620010
Calibration Date: September 2, 2015
Type: Vaisala Pressure, RH & Temp. Transmitter
Model #: PTU307
Serial #: J1620010
SR #: 318824

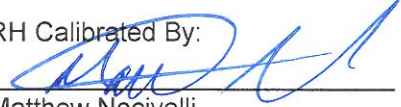
Customer: University of Alaska
Seward Marine Center/SFOS
201 Railway Ave
Attn: R/V SIKULIAQ
Seward, AK 99664

Condition: The instrument was operational upon receipt. The 'As Found' RH readings were out of tolerance. The RH sensor was contaminated.

Action Taken: The RH and temperature sensors and the filter were replaced. The instrument was adjusted and calibrated.

Due Date: * September 2, 2016

RH Calibrated By:


Matthew Nocivelli
Calibration Technician

Approved By:



The measurement results on the certificate are traceable to national or international standards. The results of this calibration relate only to the items being calibrated. This certificate may not be reproduced, except in full, without the prior written approval of the issuing laboratory. Vaisala is ISO 9001:2008 certified. Vaisala's calibration system complies with the requirements of ANSI/NCSL Z540-1-1994.

The calibration laboratory is controlled at 22 °C ± 3 °C and 40 %RH ± 20 %RH.

Special Limitations: None.

*Any due date given is based on a customer provided calibration interval. A number of factors may cause drift prior to the due date. Monitor all devices and calibrate when measurement error is suspected.

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Relative Humidity Calibration

Procedure #: PI213878 Rev. I
Instrument Range: 0 to 100 %RH
Lab Environment: Relative Humidity 49.0 %RH, Temperature 22.7 °C

As Found Data

Out Of Tolerance As Received: YES

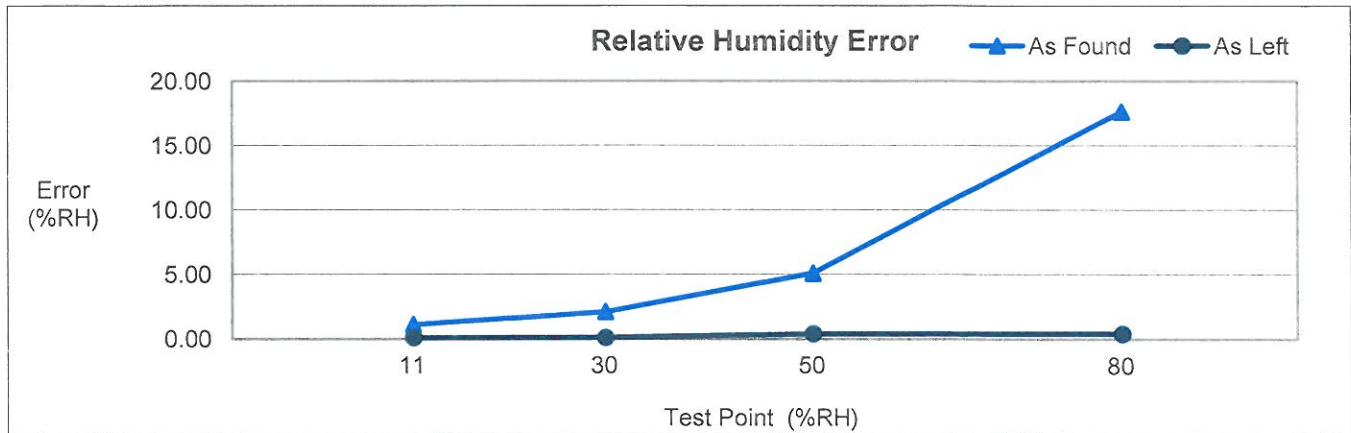
| Relative Humidity, %RH | | | | |
|------------------------|-----------------|-------|-------------|---------------|
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 11.49 | 12.60 | 1.11 | 1.00 | 0.42 |
| 30.09 | 32.20 | 2.11 | 1.00 | 0.60 |
| 50.10 | 55.20 | 5.10 | 1.00 | 0.77 |
| 80.08 | 97.70 | 17.62 | 1.00 | 0.79 |
| Temperature, °C | | | | |
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 21.83 | 21.80 | -0.03 | 0.20 | 0.13 |

As Left Data

| Relative Humidity, %RH | | | | |
|------------------------|-----------------|-------|-------------|---------------|
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 11.50 | 11.60 | 0.10 | 1.00 | 0.42 |
| 30.09 | 30.20 | 0.11 | 1.00 | 0.60 |
| 50.10 | 50.50 | 0.40 | 1.00 | 0.77 |
| 80.09 | 80.50 | 0.41 | 1.00 | 0.79 |
| Temperature, °C | | | | |
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 22.41 | 22.40 | -0.01 | 0.21 | 0.13 |

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Relative Humidity Calibration



| Reference Standards Calibration Information | | | | |
|---|---------------|--------------|------------------|---------------|
| Model | Serial Number | Asset Number | Calibration Date | Due Date |
| Thunder Scientific 2500 | 1311987 | 5011-0079 | Jun. 02, 2015 | Dec. 02, 2015 |

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Description

The calibration was performed in the Standard Laboratory of Vaisala, Inc. The instrument was first allowed to equilibrate to the laboratory environmental conditions for a period of at least 8 hours.

Relative Humidity Calibration: The sensor of the instrument was placed in the chamber of a Thunder Scientific 2500. The instrument was allowed to stabilize for at least 30 minutes at each testpoint.

References

The Thunder Scientific 1200/2500 Two-Pressure Humidity Generator saturates a continuous stream of air with water vapor at a controlled pressure and temperature. The saturated high-pressure air then passes through an expansion valve to generate a specific humidity at the chamber pressure and temperature. The generator is traceable to NIST via Thunder Scientific or an MBW 373LHX chilled mirror hygrometer.

In or Out of Tolerance Decision Rule

Out of tolerance conditions are determined by the product specification only. The calibration uncertainty is not tied in with the instrument's accuracy.

Uncertainty

The reported expanded uncertainty of the measurement is stated as the standard uncertainty of the measurement multiplied by the coverage factor of $k=2$, which corresponds to a coverage probability of approximately 95%. The standard uncertainty of the measurement has been determined in accordance with the ISO Guide to the Expression of Uncertainty in Measurement.

DOC228428 Rev. B

CALIBRATION CERTIFICATE

Before adjustment

Customer University of Alaska Seward Marine Center/SFOS
Instrument PTU300(500-1100) Digital Barometer
Serial number J1620010
Manufacturer Vaisala Oyj, Finland
Calibration date 2nd September 2015
Due date 2nd September 2016

The above instrument was calibrated by comparing the readings of the instrument to the factory working standard of Vaisala.

The pressure readings of the factory working standard have been calibrated at an ISO/IEC 17025 accredited calibration laboratory using working standards traceable to the SI through a recognized national measurement institute.

Calibration results

| Reference hPa | Observed hPa | Correction* hPa |
|------------------|-----------------|--------------------|
| 500.04 | 500.13 | -0.09 |
| 550.03 | 550.12 | -0.09 |
| 650.02 | 650.10 | -0.08 |
| 750.01 | 750.08 | -0.07 |
| 850.03 | 850.09 | -0.06 |
| 950.02 | 950.08 | -0.06 |
| 1000.01 | 1000.07 | -0.06 |
| 1050.01 | 1050.07 | -0.06 |
| 1100.03 | 1100.09 | -0.06 |

*To obtain the true pressure, add the correction to the barometer reading.

Interpolated corrections may be used at intermediate readings of the scale of the barometer.

Equipment used in calibration

| Type | Serial number | Calibration date | Certificate number |
|------|---------------|------------------|-----------------------|
| PPC4 | 439 | 2015-06-03 | 1500169247/1500169249 |

Uncertainty (95 % confidence level, k=2)

Pressure ± 0.07 hPa

Ambient Conditions

Humidity 45 %RH ± 5 %RH
 Temperature 23 °C ± 1 °C
 Pressure 1012 hPa ± 1 hPa

Approved By

Technical Operator

CALIBRATION CERTIFICATE

After adjustment

Customer University of Alaska Seward Marine Center/SFOS
Instrument PTU300(500-1100) Digital Barometer
Serial number J1620010
Manufacturer Vaisala Oyj, Finland
Calibration date 2nd September 2015
Due Date 2nd September 2016

The above instrument was calibrated by comparing the readings of the instrument to the factory working standard of Vaisala.

The pressure readings of the factory working standard have been calibrated at an ISO/IEC 17025 accredited calibration laboratory using working standards traceable to the SI through a recognized national measurement institute.

Calibration results

| Reference hPa | Observed hPa | Correction* hPa | Acceptance limit hPa |
|---------------|--------------|-----------------|----------------------|
| 500.05 | 500.05 | 0.00 | ± 0.05 |
| 550.04 | 550.04 | 0.00 | ± 0.05 |
| 650.05 | 650.05 | 0.00 | ± 0.05 |
| 750.03 | 750.03 | 0.00 | ± 0.05 |
| 850.02 | 850.02 | 0.00 | ± 0.05 |
| 950.01 | 950.01 | 0.00 | ± 0.05 |
| 1000.01 | 1000.01 | 0.00 | ± 0.05 |
| 1050.00 | 1050.00 | 0.00 | ± 0.05 |
| 1100.01 | 1100.01 | 0.00 | ± 0.05 |

*To obtain the true pressure, add the correction to the barometer reading.
 Interpolated corrections may be used at intermediate readings of the scale of the barometer.

Equipment used in calibration

| | | | |
|-------------|----------------------|-------------------------|---------------------------|
| Type | Serial number | Calibration date | Certificate number |
| PPC4 | 439 | 2015-06-03 | 1500169247/1500169249 |

Uncertainty (95 % confidence level, k=2)

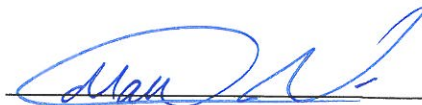
Pressure ± 0.07 hPa

Ambient Conditions

Humidity 40 %RH ± 5 %RH
 Temperature 23 °C ± 1 °C
 Pressure 1012 hPa ± 1 hPa



Approved By



Technical Operator

