

**Certificate #:** 2022065-190103-PTU307-J1620010  
**Calibration Date:** January 3, 2019  
**Type:** Vaisala Pressure, RH & Temp. Transmitter  
**Model #:** PTU307  
**Serial #:** J1620010  
**Case #:** 20046

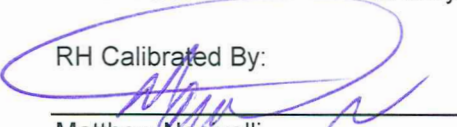
**Customer:** University of Alaska  
Seward Marine Center/SFOS  
201 Railway Ave  
Seward, AK 99664

**Condition:** The instrument was operational upon receipt. The 'As Found' RH readings were out of tolerance. There was no RH sensor damage or visible contamination.

**Action Taken:** The filter was replaced. The instrument was adjusted and calibrated.

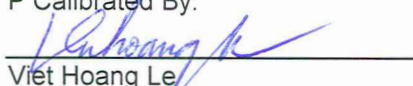
**Due Date: \*** January 3, 2020

RH Calibrated By:

  
Matthew Nocivelli  
Calibration Technician

Approved By:

P Calibrated By:

  
Viet Hoang Le  
Calibration Technician

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The measurement results on the certificate are traceable to the SI via NIST or another National Metrology Institute. 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. J  
**Instrument Range:** 0 to 100 %RH  
**Lab Environment:** Relative Humidity 30.0 %RH, Temperature 21.9 °C

### As Found Data

Out Of Tolerance As Received: YES

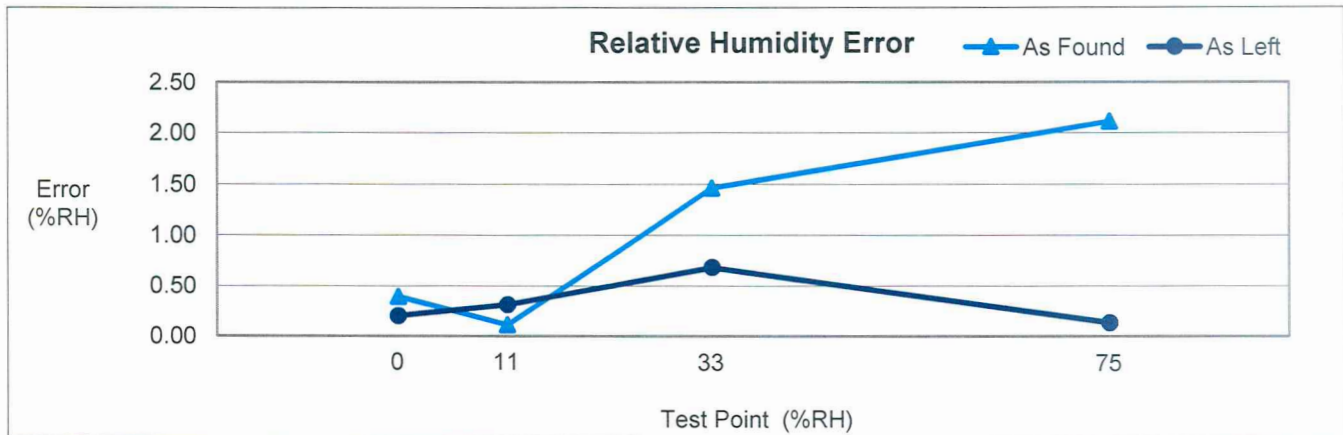
Relative Humidity, %RH				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
0.01	0.40	0.39	1.00	0.50
11.49	11.60	0.11	1.00	0.42
33.10	34.56	1.46	1.00	0.60
75.10	77.21	2.11	1.00	0.79
Temperature, °C				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
21.99	22.02	0.03	0.20	0.13

### As Left Data

Relative Humidity, %RH				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
0.01	0.21	0.20	1.00	0.50
11.50	11.81	0.31	1.00	0.42
33.11	33.79	0.68	1.00	0.60
75.10	75.23	0.13	1.00	0.79
Temperature, °C				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
21.99	22.02	0.03	0.20	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	0408452	5011-0019	Aug. 28, 2018	Feb. 28, 2019
Vaisala DMT348	J2020115	3011-0364	Jul. 20, 2017	Jan. 20, 2019

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## Pressure Calibration

**Procedure #:** PI215589 Rev. B  
**Instrument Range:** 500 to 1100 hPa  
**Lab Environment:** Relative Humidity 34.0 %RH, Temperature 22.0 °C

### As Found Data Out Of Tolerance As Received: NO

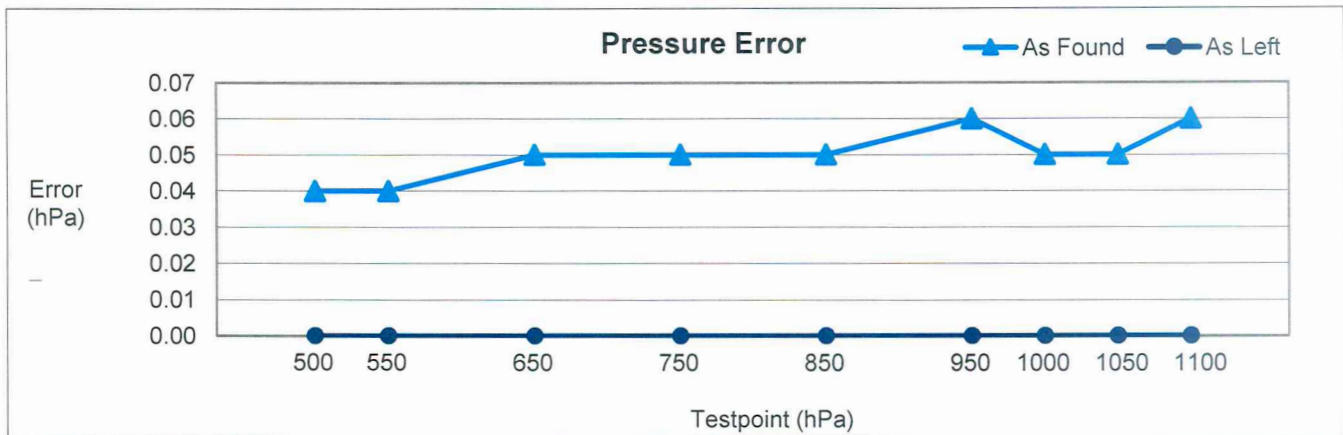
Pressure, hPa				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
500.01	500.05	0.04	0.14	0.066
550.01	550.05	0.04	0.14	0.066
650.00	650.05	0.05	0.14	0.066
750.01	750.06	0.05	0.14	0.066
850.01	850.06	0.05	0.14	0.066
950.00	950.06	0.06	0.14	0.066
1000.01	1000.06	0.05	0.14	0.066
1050.00	1050.05	0.05	0.14	0.066
1100.02	1100.08	0.06	0.14	0.066

### As Left Data

Pressure, hPa				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
500.01	500.01	0.00	0.05	0.066
549.99	549.99	0.00	0.05	0.066
650.01	650.01	0.00	0.05	0.066
750.01	750.01	0.00	0.05	0.066
850.02	850.02	0.00	0.05	0.066
949.99	949.99	0.00	0.05	0.066
999.99	999.99	0.00	0.05	0.066
1050.03	1050.03	0.00	0.05	0.066
1099.99	1099.99	0.00	0.05	0.066

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## Pressure Calibration



Reference Standards and Measurement Equipment				
Model	Serial Number	Asset Number	Calibration Date	Due Date
Fluke PPC4 A100Kp	439	PA-13451	Aug. 27, 2018	Aug. 27, 2019
Vaisala Shunt Resistor	N/A	ES-14288	Mar. 29, 2018	Mar. 29, 2019
Agilent 34970A	MY44019479	EM-12795	Sep. 24, 2018	Sep. 24, 2019

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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 at each testpoint. A dry air line monitored by a Vaisala DMT348 was used to test 0 %RH.

Chemical Purge: If the instrument has the chemical purge option, the purge function was run before As Found data was collected.

Pressure Calibration: The instrument was allowed to warm up for at least 2 hours before the calibration. The instrument's input port was connected to the output of a Fluke PPC4 Pressure Controller/Calibrator and the connection was tested for leaks. The testpoints are measured from high to low then again from low to high. The instruments were allowed to stabilize for at least 2 minutes after each testpoint was reached. The reported readings are the average of the readings from the high to low cycle and the readings from the low to high cycle.

### 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 Vaisala DMT348 measures dewpoint using a capacitive polymer sensor and temperature using an RTD. It calculates RH from the dewpoint and temperature readings.

The Fluke PPC4 Pressure Controller/Calibrator digitally controls the pneumatic pressure output using solenoid valves and differential pressure regulators. It measures the pressure with a quartz reference pressure transducer (Q-RPT).

### 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. D