

Certificate #: 161130-PTU303-M1234567
Calibration Date: November 30, 2016
Type: Vaisala Pressure, RH & Temp. Transmitter
Model #: PTU303
Serial #: M1234567
SR #: NA
Asset #: 123



Calibration - Certificate No: 2083.01

Customer: Sample Inc.
123 Sample Rd.
Sample, MA 01234

Condition: The instrument was operational upon receipt.

Action Taken: The instrument was adjusted and calibrated.

Date Received: November 29, 2016

Due Date: * November 30, 2017

RH Calibrated By:

Approved By:

Dan Soave
Quality Manager

T, P Calibrated By:

Hun Khun
Calibration Technician

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. The certificate and all measurements (unless otherwise specified) comply with the requirements of ISO/IEC 17025:2005.

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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Accredited Relative Humidity Calibration

Procedure #: PI213878 Rev. I
Instrument Range: 0 to 100 %RH
Lab Environment: Relative Humidity 36.6 %RH, Temperature 22.4 °C

As Found Data

Out Of Tolerance As Received: NO

Relative Humidity, %RH				
Reference Mean	Unit Under Test Mean	Error	± Tolerance	± Uncertainty
11.50	11.53	0.03	1.00	0.42
30.14	29.99	-0.15	1.00	0.60
50.15	49.94	-0.21	1.00	0.77
80.11	79.42	-0.69	1.00	0.79
Temperature, °C				
Reference Mean	Unit Under Test Mean	Error	± Tolerance	± Uncertainty
22.03	21.97	-0.06	0.21	0.13

As Left Data

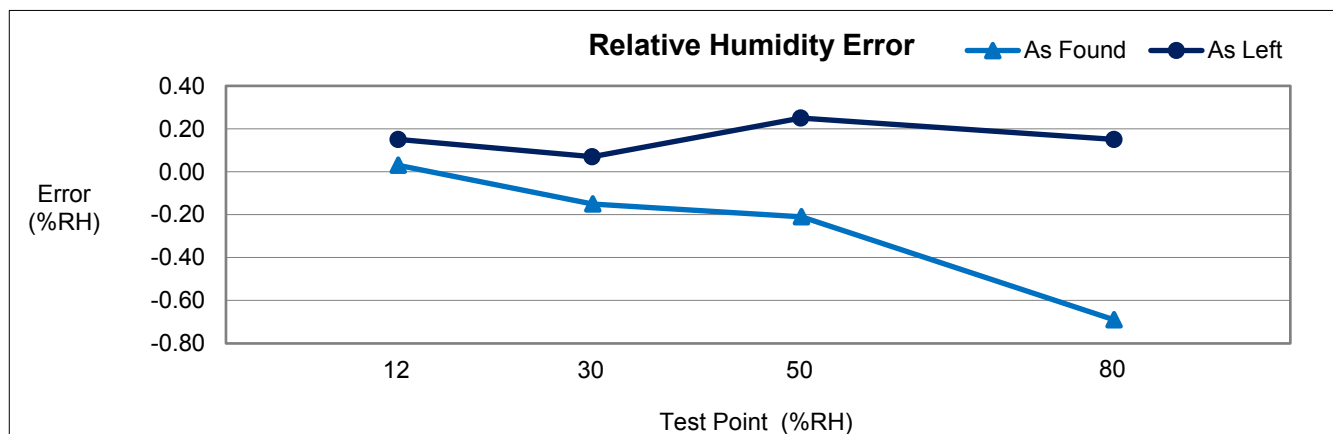
Relative Humidity, %RH				
Reference Mean	Unit Under Test Mean	Error	± Tolerance	± Uncertainty
11.50	11.65	0.15	1.00	0.42
30.10	30.17	0.07	1.00	0.60
50.10	50.35	0.25	1.00	0.77
80.10	80.25	0.15	1.00	0.79
Temperature, °C				
Reference Mean	Unit Under Test Mean	Error	± Tolerance	± Uncertainty
22.05	22.02	-0.03	0.21	0.13

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Accredited Relative Humidity Calibration



Reference Standards Calibration Information				
Model	Serial Number	Asset Number	Calibration Date	Due Date
Thunder Scientific 2500	1007799	5011-0089	Jun. 02, 2016	Jun. 02, 2017
Agilent 34970A	MY44081004	3011-0377	Jun. 01, 2016	Jun. 01, 2017

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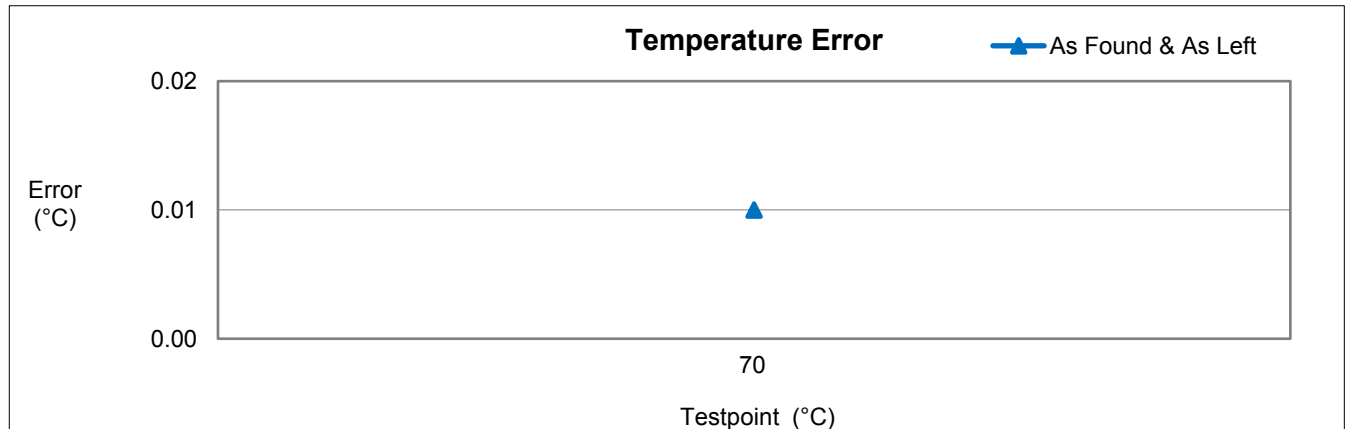
Calibration - Certificate No: 2083.01

Accredited Temperature Calibration

Procedure #: 11603135 Rev. A
Instrument Range: -40 to 60 °C
Lab Environment: Relative Humidity 35.0 %RH, Temperature 22.0 °C

As Found & As Left Data Out Of Tolerance As Received: NO

Temperature, °C				
Reference Mean	Unit Under Test Mean	Error	± Tolerance	± Uncertainty
70.00	70.01	0.01	0.33	0.05



Reference Standards and Measurement Equipment				
Model	Serial Number	Asset Number	Calibration Date	Due Date
Fluke 1560/2560/5615-12	A34186 / A34691 / 624556	1011-0270-1	Jun. 24, 2016	Dec. 24, 2016
Fluke 6331	A53056	6011-0001	N/A	N/A

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Calibration - Certificate No: 2083.01

Accredited Pressure Calibration

Procedure #: 11603172 Rev. A
Instrument Range: 500 to 1100 hPa
Lab Environment: Relative Humidity 37.0 %RH, Temperature 21.0 °C

As Found Data

Out Of Tolerance As Received: NO

Pressure, hPa				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
610.00	610.30	0.30	0.32	0.066
700.00	700.30	0.30	0.32	0.066
810.00	810.20	0.20	0.32	0.066
850.00	850.20	0.20	0.32	0.066
910.00	910.20	0.20	0.32	0.066
950.00	950.20	0.20	0.32	0.066
1000.00	1000.20	0.20	0.32	0.066
1060.00	1060.20	0.20	0.32	0.066

As Left Data

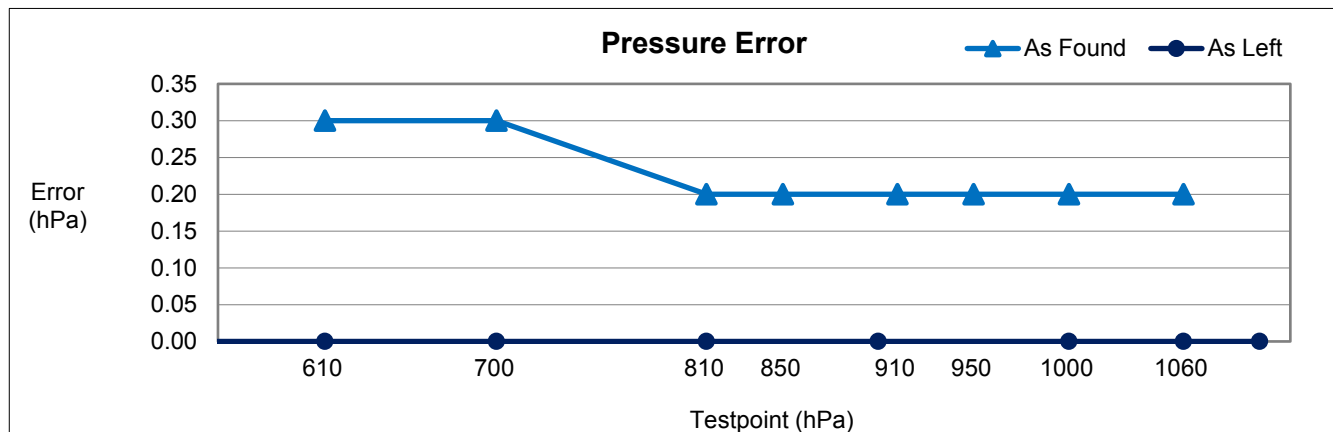
Pressure, hPa				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
510.00	510.00	0.00	0.10	0.066
610.00	610.00	0.00	0.10	0.066
700.00	700.00	0.00	0.10	0.066
810.00	810.00	0.00	0.10	0.066
900.00	900.00	0.00	0.10	0.066
1000.00	1000.00	0.00	0.10	0.066
1060.00	1060.00	0.00	0.10	0.066
1100.00	1100.00	0.00	0.10	0.066

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Accredited Pressure Calibration



Reference Standards and Measurement Equipment				
Model	Serial Number	Asset Number	Calibration Date	Due Date
Fluke PPC4 A100Kp	439	PA-13451	May. 26, 2016	Feb. 26, 2017
Vaisala Shunt Resistor	N/A	ES-11112	May. 25, 2016	May. 25, 2017
Agilent 34970A	MY44081004	3011-0377	Jun. 01, 2016	Jun. 01, 2017

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Description

The calibration was performed in the Calibration Standards 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.

Temperature Calibration: The sensor of the instrument was put in a protective tube and immersed in a Fluke liquid bath. The reference probe was placed in the bath next to the unit under test. The instrument was allowed to stabilize for at least 30 minutes at each testpoint.

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.

Fluke liquid baths are stable and uniform systems that use digital control to maintain setpoint conditions. The reference probe is a Fluke platinum resistance thermometer. The Fluke Black Stack is a digital, high resolution, graphical indicator.

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).

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Measurement results

At least ten consecutive pairs of reference and unit under test measurements were recorded at each testpoint. Each measurement result on the certificate is the average of this set of readings.

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.

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