# VAISALA Certificate of Calibration

| | |
|---|---|
| **Certificate #:** | 2028904-190226-PTB330-G1520003 |
| **Calibration Date:** | February 26, 2019 |
| **Type:** | Vaisala Pressure Transmitter |
| **Model #:** | PTB330 |
| **Serial #:** | G1520003 |
| **Case #:** | 32387 |
| **Asset #:** | 012/493-01-0005-007 |

ACCREDITED

Calibration - Certificate No: 2083.01

**Customer:** US Dept of Commerce NOAA
8901 La Jolla Shores Dr
NOAAS Rueben Lasker Chief ET
La Jolla, CA 92037

**Condition:** "As Found" readings were out of tolerance. The unit was not adjusting properly.

**Action Taken:** One pressure module was replaced. The instrument was adjusted and calibrated.

**Analog Output:** CH1: 4...20 mA 500...1100 hPa, Pressure

**Date Received:** February 19, 2019
**Due Date: *** February 26, 2020

P Calibrated By:
Matthew Nocivelli
Calibration Technician

Approved By:
Levyn Palao
Deputy CRS Manager

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 Pressure Calibration

**Procedure #:** PI215589 Rev. B
**Instrument Range:** 500 to 1100 hPa
**Lab Environment:** Relative Humidity 30.0 %RH, Temperature 22.0 °C

### As Found Data

**Out Of Tolerance As Received: YES**

| Pressure, hPa | | | | |
|---|---|---|---|---|
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 509.98 | 510.13 | 0.15 | 0.14 | 0.066 |
| 550.00 | 550.14 | 0.14 | 0.14 | 0.066 |
| 650.00 | 650.12 | 0.12 | 0.14 | 0.066 |
| 750.00 | 750.11 | 0.11 | 0.14 | 0.066 |
| 849.99 | 850.09 | 0.10 | 0.14 | 0.066 |
| 950.00 | 950.09 | 0.09 | 0.14 | 0.066 |
| 1000.01 | 1000.09 | 0.08 | 0.14 | 0.066 |
| 1050.00 | 1050.07 | 0.07 | 0.14 | 0.066 |
| 1100.01 | 1100.08 | 0.07 | 0.14 | 0.066 |

### As Left Data

| Pressure, hPa | | | | |
|---|---|---|---|---|
| Reference | Unit Under Test | Error | ± Tolerance | ± Uncertainty |
| 510.02 | 510.02 | 0.00 | 0.05 | 0.066 |
| 550.02 | 550.02 | 0.00 | 0.05 | 0.066 |
| 650.01 | 650.00 | -0.01 | 0.05 | 0.066 |
| 750.01 | 750.00 | -0.01 | 0.05 | 0.066 |
| 850.01 | 850.00 | -0.01 | 0.05 | 0.066 |
| 949.99 | 949.99 | 0.00 | 0.05 | 0.066 |
| 999.98 | 999.98 | 0.00 | 0.05 | 0.066 |
| 1049.99 | 1049.99 | 0.00 | 0.05 | 0.066 |
| 1099.98 | 1099.98 | 0.00 | 0.05 | 0.066 |

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A2LA ACCREDITED

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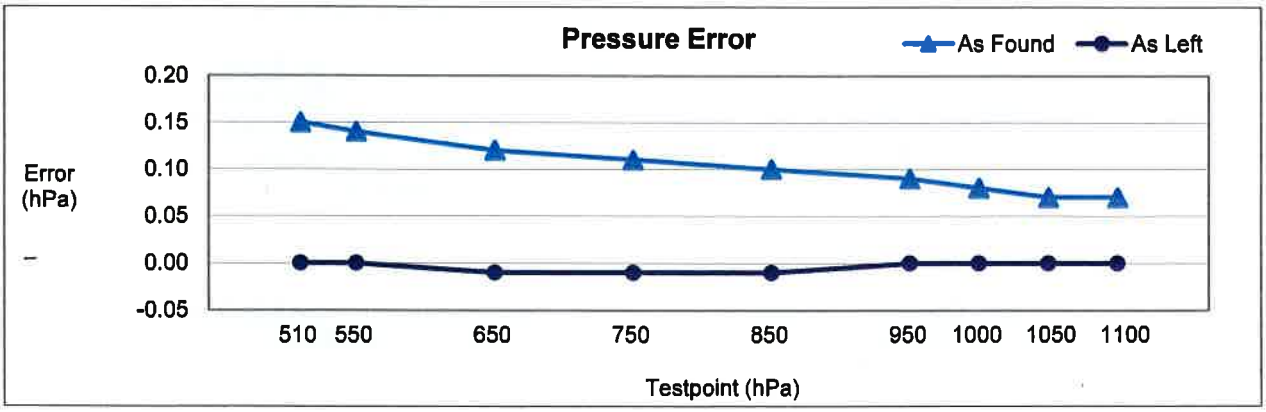
## Accredited Pressure Calibration




| Reference Standards and Measurement Equipment | | | | |
|---|---|---|---|---|
| **Model** | **Serial Number** | **Asset Number** | **Calibration Date** | **Due Date** |
| Fluke PPC4 A100Kp | 439 | PA-13451 | 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 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.

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 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 transducter (Q-RPT).

**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.

DOC228428 Rev. D