

Certificate #: 112012-B-G0820116
Calibration Date: November 20, 2012
Type: Vaisala Humidity & Temperature Transmitter
Model #: HMT337
Serial #: G0820116
SR #: 112239

Customer: Oregon State University
Corvallis, OR

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

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

Analog Outputs: CH1: 0...5 V 0...100 %RH
CH2: 0...5 V -40...180 °C, T

Due Date: * November 20, 2013

RH Calibrated By:

Approved By:


Jhonson François
Calibration Technician



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 23 °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.

Certificate #: 112012-B-G0820116
Calibration Date: November 20, 2012
Type: Vaisala Humidity & Temperature Transmitter
Model #: HMT337
Serial #: G0820116
SR #: 112239

Relative Humidity Calibration

Procedure #: 11603105
Instrument Range: 0 to 100 %RH
Lab Environment: Relative Humidity 49.0 %RH, Temperature 22.0 °C

As Found Data

Out Of Tolerance As Received: YES

Relative Humidity, %RH				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
0.03	0.60	0.57	1.00	0.50
11.09	11.70	0.61	1.00	0.43
33.13	34.30	1.17	1.00	0.60
75.10	77.20	2.10	1.00	0.79
95.07	97.70	2.63	1.70	0.72
Temperature, °C				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
22.14	22.00	-0.14	0.21	0.12

After Chemical Purge

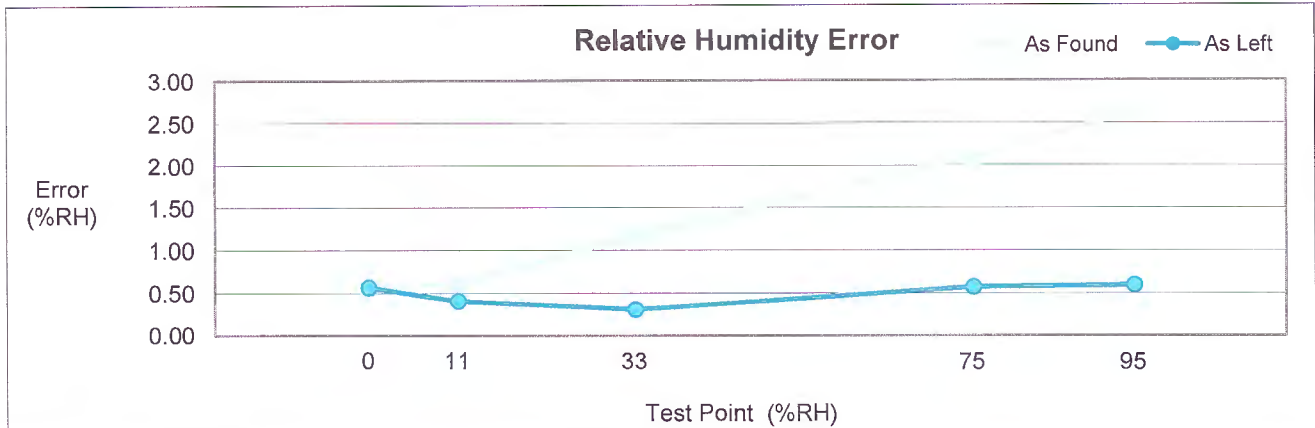
Relative Humidity, %RH				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
75.09	77.40	2.31	1.00	0.79

As Left Data

Relative Humidity, %RH				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
0.03	0.60	0.57	1.00	0.50
11.09	11.50	0.41	1.00	0.43
33.09	33.40	0.31	1.00	0.60
75.12	75.70	0.58	1.00	0.79
95.10	95.70	0.60	1.70	0.72
Temperature, °C				
Reference	Unit Under Test	Error	± Tolerance	± Uncertainty
22.09	22.10	0.01	0.21	0.12

Certificate #: 112012-B-G0820116
Calibration Date: November 20, 2012
Type: Vaisala Humidity & Temperature Transmitter
Model #: HMT337
Serial #: G0820116
SR #: 112239

Relative Humidity Calibration



Reference Standards Calibration Information				
Model	Serial Number	Asset Number	Calibration Date	Due Date
Thunder Scientific 2500	0105299	5011-0064	Aug. 17, 2012	Feb. 17, 2013
Vaisala DMP248	Z3230008	3011-0341	Feb. 06, 2012	Feb. 06, 2013

Certificate #: 112012-B-G0820116
Calibration Date: November 20, 2012
Type: Vaisala Humidity & Temperature Transmitter
Model #: HMT337
Serial #: G0820116
SR #: 112239

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 in the path of the outlet air stream. The instrument was allowed to stabilize for at least 30 minutes at each testpoint. A dry air line monitored by a Vaisala DMP248 was used to test 0 %RH.

Chemical Purge: A chemical purge was performed on the RH sensor before the instrument was adjusted or "As Left" data was taken. This was done to drive off any interfering chemicals that may have been absorbed by the sensor. Contamination most often causes a decrease in sensor gain. An interfering chemical may have been present on the sensor if the "After Purge" readings were higher than the "As Found" readings.

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.

The Vaisala DMP248 measures dewpoint using a capacitive polymer sensor and temperature using an RTD. It calculates RH from the dewpoint and temperature 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 U.S. Guide to the Expression of Uncertainty in Measurement.