

CALIBRATION CERTIFICATE

Instrument Humidity and Temperature Transmitter HMT333
Order code HMT330 3F0A002BCAC100A04AABAA1
Serial number A4650017
Manufacturer Vaisala Oyj, Finland
Calibration date 5th February 2014

The analog outputs of the above instrument were measured by using working standards of the manufacturer. The outputs were forced by digital input signals to three output values. The observed values were determined by measuring the voltage over a calibrated precision resistor. All results are traceable in terms of voltage and resistance to NIST.

Analog output channel 1 calibration results

Channel 1 scaling: RH 0...100 %RH

Output forced to mA	Observed output mA	Difference mA	Permissible difference mA
2.000	1.999	- 0.001	±0.010
10.000	10.002	+ 0.002	±0.010
18.000	18.008	+ 0.008	±0.010

Analog output channel 2 calibration results

Channel 2 scaling: T -40...80 °C

Output forced to mA	Observed output mA	Difference mA	Permissible difference mA
2.000	2	0	±0.010
10.000	10.002	+ 0.002	±0.010
18.000	18.007	+ 0.007	±0.010

Analog output channel 3 calibration results

Channel 3 scaling: No analog 999.999...999.999

Output forced to mA	Observed output mA	Difference mA	Permissible difference mA
-	-	-	-
-	-	-	-
-	-	-	-

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
HP34970A	US37032650	2014-01-20	1250-307053981
Shunt Cable	ES 13616	2013-02-13	W00241

Uncertainty (95 % confidence level, k=2)

Current ±0.00175mA

Ambient conditions / Humidity 49 ± 5%RH, Temperature 22 ± 2 °C, Pressure 1011 ± 20 hPa.



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before adjustment

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Manufacturer Vaisala Oyj, Finland
Calibration date 4th February 2014

The above instrument was calibrated by comparing the readings of the instrument to working standards of the manufacturer. The reference humidity was calculated from dewpoint temperature and temperature readings with the exception of the driest condition that was measured as relative humidity. Dewpoint temperature was measured with a 373 LHX dewpoint meter. Temperature and relative humidity were measured with two factory working standards. The calibration results below were measured before any adjustments were made to the instrument.

The 373 LHX dewpoint meter has been calibrated at National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at an ISO/IEC 17025 accredited calibration laboratory (FINAS), Vaisala Measurement Standards Laboratory (MSL) by using MSL working standards traceable to NIST. The relative humidity readings of the factory working standards have been calibrated at the Vaisala factory by using a 373 LHX dewpoint meter.

Humidity calibration results

Reference humidity %RH	Reference temperature °C	Observed humidity %RH	Observed probe temperature °C	Additional probe temperature °C	Humidity difference %RH	Permissible difference %RH
+ 0.1	+ 22.06	- 0.3	+ 22.23	-	- 0.4	±1.0
+ 12.7	+ 22.16	+ 12.1	+ 22.31	-	- 0.6	± 1.0
+ 32.9	+ 22.16	+ 32.4	+ 22.29	-	- 0.5	± 1.0
+ 53.6	+ 22.11	+ 53.2	+ 22.24	-	- 0.4	± 1.0
+ 74.4	+ 22.10	+ 74.0	+ 22.24	-	- 0.4	± 1.0
+ 94.0	+ 22.12	+ 93.7	+ 22.35	-	- 0.3	± 1.7

Temperature calibration results

Reference temperature °C	Observed probe temperature °C	Temperature difference °C	Additional probe temperature °C	Temperature difference °C	Permissible difference °C
+ 22.10	+ 22.24	+ 0.14	-	-	± 0.10

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
373 LHX	03-1218	2013-05-23	M-13H032
PTU303 / T	H0730003	2013-05-21	K008-W00844
HMT337 / T	D2350025	2013-05-20	K008-W00845
PTU303 / RH	H0730003	2013-11-07	H35-13451001
HMT337 / RH	D2350025	2013-11-07	H35-13451002

Uncertainties (95 % confidence level, k=2)

Humidity ± 0.6%RH @ 0...40%RH, ± 1.0%RH @ 40...97%RH

Temperature ± 0.10 °C.

Ambient conditions / Humidity 46 ± 5%RH, Temperature + 23 ± 1 °C, Pressure 1011 ± 1 hPa.



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Serial number A4650017
Manufacturer Vaisala Oyj, Finland
Calibration date 5th February 2014

The above instrument was calibrated by comparing the readings of the instrument to working standards of the manufacturer. The reference humidity was calculated from dewpoint temperature and temperature readings with the exception of the driest condition that was measured as relative humidity. Dewpoint temperature was measured with a 373 LHX dewpoint meter. Temperature and relative humidity were measured with two factory working standards. At the time of shipment, the instrument described above met its operating specifications.

The 373 LHX dewpoint meter has been calibrated at National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at an ISO/IEC 17025 accredited calibration laboratory (FINAS), Vaisala Measurement Standards Laboratory (MSL) by using MSL working standards traceable to NIST. The relative humidity readings of the factory working standards have been calibrated at the Vaisala factory by using a 373 LHX dewpoint meter.

Humidity calibration results

Reference humidity %RH	Reference temperature °C	Observed humidity %RH	Observed probe temperature °C	Additional probe temperature °C	Humidity difference %RH	Permissible difference %RH
+ 0.1	+ 22.09	0.0	+ 22.10	-	- 0.1	±1.0
+ 13.1	+ 22.14	+ 12.9	+ 22.14	-	- 0.2	± 1.0
+ 32.8	+ 22.18	+ 32.8	+ 22.19	-	0.0	± 1.0
+ 53.4	+ 22.17	+ 53.4	+ 22.16	-	0.0	± 1.0
+ 74.1	+ 22.16	+ 74.0	+ 22.16	-	- 0.1	± 1.0
+ 93.9	+ 22.15	+ 94.0	+ 22.16	-	+ 0.1	± 1.7

Temperature calibration results

Reference temperature °C	Observed probe temperature °C	Temperature difference °C	Additional probe temperature °C	Temperature difference °C	Permissible difference °C
+ 22.16	+ 22.16	0.00	-	-	± 0.10

Equipment used in calibration

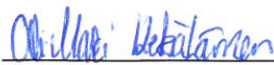
Type	Serial number	Calibration date	Certificate number
373 LHX	03-1218	2013-05-23	M-13H032
PTU303 / T	H0730003	2013-05-21	K008-W00844
HMT337 / T	D2350025	2013-05-20	K008-W00845
PTU303 / RH	H0730003	2013-11-07	H35-13451001
HMT337 / RH	D2350025	2013-11-07	H35-13451002

Uncertainties (95 % confidence level, k=2)

Humidity ± 0.6%RH @ 0...40%RH, ± 1.0%RH @ 40...97%RH

Temperature ± 0.10 °C.

Ambient conditions / Humidity 48 ± 5%RH, Temperature + 22 ± 1 °C, Pressure 1008 ± 1 hPa.



 Technician