



CALIBRATION CERTIFICATE

Instrument Humidity and Temperature Transmitter HMT333
Order code HMT330-3F0A002BCAC100A04AABAA1
Serial number A4650017
Manufacturer Vaisala Oyj, Finland
Calibration date 29th January 2008
Test procedure Doc210426-A

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

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	18.005	+ 0.005	±0.010

Analog output channel 2 calibration results

Output forced to mA	Observed output mA	Difference mA	Permissible difference mA
2.000	2.001	+ 0.001	±0.010
10.000	10.004	+ 0.004	±0.010
18.000	18.009	+ 0.009	±0.010

Analog output channel 3 calibration results

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

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
HP34970A	EM 12794	2007-09-22	34970AMY44030938
Shunt Cable	J1 11929	2007-02-14	Q00492

Uncertainty (95 % confidence level, k=2)

Current ±0.00175mA

Ambient conditions / Humidity 24 ± 5%RH, Temperature 24 ± 2 °C, Pressure 1008 ± 20 hPa.

For Vaisala Oyj

Niklas Piironen



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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 Vaisala Measurement Standards Laboratory (MSL) by using a MSL working standard traceable to National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at 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. The temperature calibration at MSL has been accredited by the FINAS according to the ISO/IEC 17025.

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
+ 93.5	+ 22.19	+ 93.5	+ 22.19	-	0.0	± 1.7
+ 73.9	+ 22.18	+ 74.0	+ 22.17	-	+ 0.1	± 1.0
+ 53.4	+ 22.16	+ 53.5	+ 22.16	-	+ 0.1	± 1.0
+ 32.7	+ 22.17	+ 33.0	+ 22.16	-	+ 0.3	± 1.0
+ 12.4	+ 22.18	+ 12.2	+ 22.18	-	- 0.2	± 1.0
+ 0.1	+ 22.19	- 0.2	+ 22.18	-	- 0.3	± 1.0

Temperature calibration results

Reference temperature °C	Observed probe temperature °C	Temperature difference °C	Additional probe temperature °C	Temperature difference °C	Permissible difference °C
+ 22.18	+ 22.17	- 0.01	-	-	± 0.10

Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
373 LHX	06-0122	2007-08-03	M-07H053
Vaisala HMP233 / T	623073	2008-01-25	K008-R00190
Vaisala HMP233 / T	P1740020	2008-01-25	K008-R00191
HMP233 / RH	623073	2008-01-28	H33-08051001
HMP233 / RH	P1740020	2008-01-28	H33-08051002

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 33 ± 5%RH, Temperature 23 ± 1 °C, Pressure 1007 ± 1 hPa.

For Vaisala Oyj

Sari Kaitanen

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