

# CALIBRATION CERTIFICATE

**Instrument** Humidity and Temperature Transmitter HMT333  
**Order code** HMT330-3E0A002BCAC100A04AABAA1  
**Serial number** G3140102  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 04th August 2011

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	2	0	±0.010
10.000	10.001	+ 0.001	±0.010
18.000	18.004	+ 0.004	±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	9.999	- 0.001	±0.010
18.000	18	0	±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	MY41016758	2010-09-22	K004-10S505
Shunt Cable	J1 12827	2010-08-04	T01369

**Uncertainty ( 95 % confidence level, k=2)**

Current ±0.00175mA  
**Ambient conditions** / Humidity 43.00 ± 5%RH, Temperature 23.00 ± 2 °C, Pressure 1015.40 ± 20 hPa.

Technician 

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**Serial number** G3140102  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 5th August 2011

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 Centre for metrology and accreditation (MIKES) by using a MIKES working standard traceable to National Institute of Standards and Technology (NIST). The temperature readings of the factory working standards have been calibrated at 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. 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
+ 0.3	+ 22.04	+ 0.1	+ 22.04	-	- 0.2	±1.0
+ 12.5	+ 22.03	+ 12.2	+ 22.03	-	- 0.3	± 1.0
+ 33.0	+ 22.01	+ 32.9	+ 22.01	-	- 0.1	± 1.0
+ 53.8	+ 22.02	+ 53.7	+ 22.01	-	- 0.1	± 1.0
+ 74.6	+ 22.01	+ 74.6	+ 22.01	-	0.0	± 1.0
+ 94.2	+ 22.03	+ 94.5	+ 22.03	-	+ 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
+ 22.01	+ 22.01	0.00	-	-	± 0.10

**Equipment used in calibration**

Type	Serial number	Calibration date	Certificate number
373 LHX	05-0217	2011-01-21	M-10H083
HMT337 / T	B2850023	2010-12-20	K008-T02548
HMT337 / T	B2850022	2010-12-22	K008-T02550
HMT337 / RH	B2850023	2011-06-17	H33-11251002
HMT337 / RH	B2850022	2011-06-17	H33-11251001

**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 45 ± 5%RH, Temperature + 22 ± 1 °C, Pressure 1012 ± 1 hPa.

Technician 

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