

## CALIBRATION CERTIFICATE

**Instrument** Humidity and Temperature Transmitter HMT333  
**Order code** HMT330-3E0A002BCAC100A04AABAA1  
**Serial number** A4650018  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 21st July 2009  
**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	2.001	+ 0.001	±0.010
10.000	10.004	+ 0.004	±0.010
18.000	18.009	+ 0.009	±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	18.01	+ 0.01	±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 10781	2008-08-12	K004-08S527
Shunt Cable	ES 12779	2008-12-19	R02724

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

Current ±0.00175mA

Ambient conditions / Humidity 29 ± 5%RH, Temperature 23 ± 2 °C, Pressure 1025 ± 20 hPa.

For Vaisala Oyj

Jari Laaksonen

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Doc211861-B



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### before adjustment

**Instrument** Humidity and Temperature Transmitter HMT333  
**Order code** HMT330 3E0A002BCAC100A04AABAA1  
**Serial number** A4650018  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 18th July 2009  
**Test procedure** doc210426-a

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 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	Reference temperature	Observed humidity	Observed probe temperature	Additional probe temperature	Humidity difference	Permissible difference
%RH	°C	%RH	°C	°C	%RH	%RH
+ 94.0	+ 22.11	+ 93.9	+ 21.98	-	- 0.1	± 1.7
+ 74.6	+ 22.10	+ 74.2	+ 21.99	-	- 0.4	± 1.0
+ 53.8	+ 22.08	+ 53.5	+ 21.98	-	- 0.3	± 1.0
+ 32.9	+ 22.10	+ 32.9	+ 21.98	-	0.0	± 1.0
+ 12.5	+ 22.09	+ 12.3	+ 21.99	-	- 0.2	± 1.0
- 0.1	+ 22.09	- 0.3	+ 21.99	-	- 0.2	± 1.0

#### Temperature calibration results

Reference temperature	Observed probe temperature	Temperature difference	Additional probe temperature	Temperature difference	Permissible difference
°C	°C	°C	°C	°C	°C
+ 22.10	+ 21.99	- 0.11	-	-	± 0.10

#### Equipment used in calibration


Type	Serial number	Calibration date	Certificate number
MBW 373LHX	07-1115	2008-10-08	M-08H058
HMT337 / T	B2850022	2008-11-27	K008-R02555
HMT337 / T	B2850023	2008-11-27	K008-R02556
HMT337 / RH	B2850022	2009-04-22	H35-09171001
HMT337 / RH	B2850023	2009-04-22	H35-09171002

#### 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 43 ± 5%RH, Temperature 22 ± 1 °C, Pressure 1011 ± 1 hPa.

For Vaisala Oyj

  
 Kimmö Auvineh

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Vaisala Oyj  
 Vanha Nurmijärventie 21  
 FIN-01670 Vantaa, Finland

Tel. (+ 358 9) 8949 2658  
 Fax (+ 358 9) 8949 2295  
<http://www.vaisala.com>

Domicile Vantaa, Finland  
 Trade Reg. No. 96.607



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**Serial number** A4650018  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 21st July 2009  
**Test procedure** doc210426-a

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
+ 94.3	+ 22.12	+ 94.7	+ 22.12	-	+ 0.4	± 1.7
+ 74.5	+ 22.14	+ 74.8	+ 22.15	-	+ 0.3	± 1.0
+ 53.7	+ 22.16	+ 53.9	+ 22.17	-	+ 0.2	± 1.0
+ 32.9	+ 22.16	+ 33.2	+ 22.19	-	+ 0.3	± 1.0
+ 12.5	+ 22.17	+ 12.6	+ 22.19	-	+ 0.1	± 1.0
+ 0.1	+ 22.17	- 0.2	+ 22.19	-	- 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
+ 22.14	+ 22.15	+ 0.01	-	-	± 0.10

### Equipment used in calibration

Type	Serial number	Calibration date	Certificate number
373 LHX	03-1218	2009-06-17	M-09H034
HMT337 / T	E0840009	2009-03-02	K008-S00485
HMT337 / T	E0840011	2009-03-04	K008-S00487
HMT337 / RH	E0840009	2009-07-07	H33-09281003
HMT337 / RH	E0840011	2009-07-07	H33-09281004

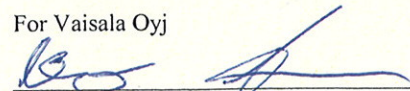
### Uncertainties ( 95 % confidence level, k=2)

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

Temperature ± 0.10 °C.

Ambient conditions / Humidity 42 ± 5%RH, Temperature 24 ± 1 °C, Pressure 997 ± 1 hPa.

For Vaisala Oyj

  
 Kimmo Auvinen

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Vaisala Oyj  
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