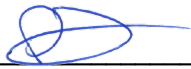


## CERTIFICATE OF CALIBRATION no K008-SAMPLED

<b>Customer</b>	Sample Sample Sample Sample
<b>Item</b>	Dewpoint Probe
<b>Manufacturer</b>	Vaisala Oyj
<b>Model</b>	DMP74B
<b>Serial number</b>	K27XXXXXX
<b>Instrument number</b>	-
<b>Calibration performed</b>	From January 20 to February 1, 2017
<b>Date</b>	February 3, 2017
<b>Signature</b>	 _____ Antti Leivonen Technical Manager
<b>Page 1 ( 4 )</b>	
<b>Documents attached</b>	
<b>NOTES</b>	Adjusted.
<b>Conditions when received</b>	Reported in Service Report.

This Certificate may only be reproduced in full, except with the prior written permission by the issuing Laboratory. The measurements carried out and the Certificates of Calibration issued by an Accredited Calibration Laboratory comply with the measurement ranges and uncertainties approved by FINAS Finnish Accreditation Service. The measurement results issued by the Laboratory are traceable to national or international measurement standards. Measurement Standards Laboratory of Vaisala Oyj is a calibration laboratory K008 accredited by FINAS Finnish Accreditation Service, accreditation requirement ISO/IEC 17025. The accreditation is included in the Multilateral Agreement (EA MLA) of the European co-operation for Accreditation (EA).

## CONFIGURATION

The probe's configuration, settings and coefficients were read from the probe's memory.

Before measurements the probe was allowed to stabilize to the conditions of the laboratory for at least 1 hour with +24,0 VDC  $\pm$  0,3 VDC power supply switched on.

The calibration is valid only with configuration and settings:

Autocalibration ON

## REFERENCES USED DURING TEMPERATURE CALIBRATION

Vaisala DMT347 Dewpoint and Temperature Transmitter, serial number F4630128

## REFERENCES USED DURING DEW POINT CALIBRATION

Vaisala DMT347 Dewpoint and Temperature Transmitter, serial number F4630127

Thunder 3900 Humidity Generator, serial number 212040

Vaisala PTB220 Pressure Transmitter, serial number U5220003

## TRACEABILITY

The measurement results are traceable to the international system of units (SI) through national metrology institutes (NIST in USA or equivalent) or accredited calibration laboratories.

## UNCERTAINTY

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.

The measurement uncertainty represents the situation at the time and conditions of calibration. When using the UUC at different conditions and at different time the effect of the conditions and stability of the UUC shall be evaluated separately.

The measurement results and uncertainty are representing the measurement points only.

## CALIBRATION CONDITIONS

Temperature 23 °C  $\pm$  3 °C

Humidity 35 %rh  $\pm$  25 %rh

## TEMPERATURE CALIBRATION

The temperature calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj from January 20 to 30, 2017.

The temperature readings of the probe were compared to the values of the reference thermometer in a calibration chamber. The probe was allowed to stabilize to each temperature for at least 30 minutes before the readings were read.

The readings were read via serial port with resolution of 0,01 °C.

Temperature values are given according to the International Temperature Scale of 1990, ITS-90.

### Measurement results

The reference and the reading values are averages of ten independent observations.

Table 1. Final results, temperature

Reference [ °C ]	As found			Reference [ °C ]	As left		
	Reading [ °C ]	Correction [ °C ]	Uncertainty [ °C ]		Reading [ °C ]	Correction [ °C ]	Uncertainty [ °C ]
23,20	23,16	0,04	± 0,26	23,29	23,33	- 0,04	± 0,26

The correction shall be added algebraically to the reading.

## DEW POINT CALIBRATION

The dew point calibration was done in the Measurement Standards Laboratory (MSL) of Vaisala Oyj from January 20 to February 1, 2017.

The dew point temperature readings of the probe were compared to the reference dew point temperature values in a calibration chamber. The readings were read via serial port with resolution of 0,01 °C.

The probe was allowed to stabilize to each dew point for at least 3 hours before the readings were read.

Chemical purge was done at least 3 hours before the dew point measurements.

The readings are frost point temperature readings when dew point is below 0 °C.

### Measurement results

The reference and the reading values are averages of ten independent observations.

Table 2. Final results, dew / frost point temperature

Reference [ °C ]	As found			Reference [ °C ]	As left		
	Reading [ °C ]	Correction [ °C ]	Uncertainty [ °C ]		Reading [ °C ]	Correction [ °C ]	Uncertainty [ °C ]
- 56,9	- 59,1	2,2	± 1,1	- 56,8	- 56,3	- 0,5	± 1,1
- 39,9	- 41,1	1,2	± 0,7	- 39,8	- 39,3	- 0,5	± 0,7
- 30,0	- 30,6	0,6	± 0,7	- 29,9	- 29,5	- 0,4	± 0,7
- 10,0	- 11,6	1,6	± 0,7	- 9,9	- 9,3	- 0,6	± 0,7

The correction shall be added algebraically to the reading.

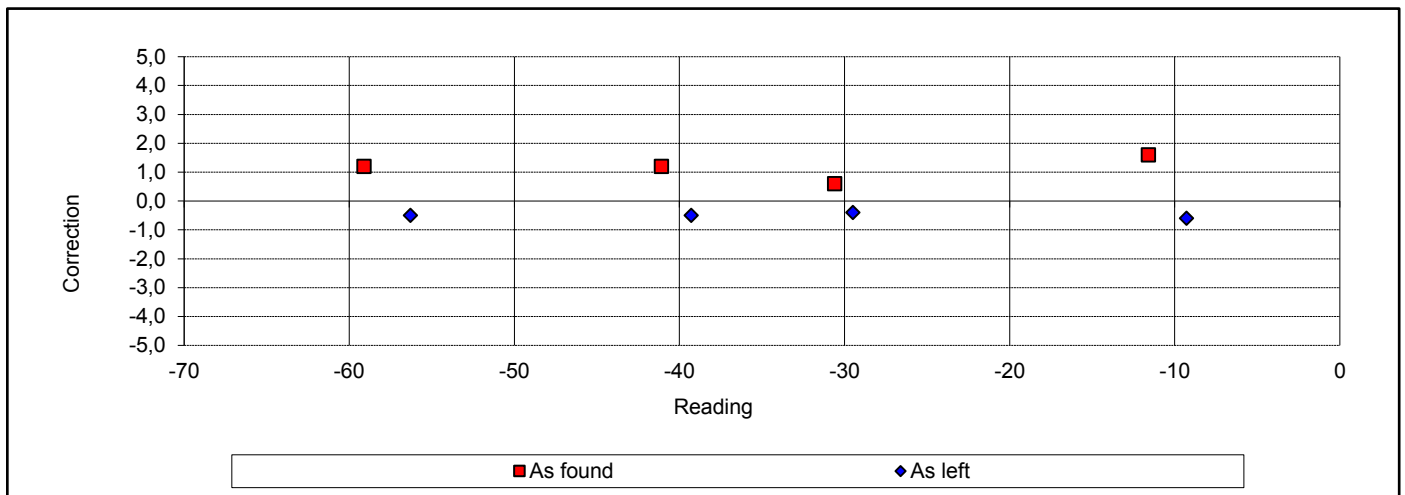


Figure 1. Final results, dew / frost point temperature [ °C ]