

CERTIFICATE OF COMPLIANCE
with the metrological requirements of
EN 13485 standards

Client: **Oy Danfoss Ab**

Address: **Kivenlahdentie 7, FI-02360 ESPOO, Finland**

Sort of Equipment: **Electronic controls for measuring the air and product temperature**

Marketing Name: **ADAP-KOOL® Product family**

Type: **AK1 & AK-NG with AKS sensors (Pt 1000)
See appendix 1**

Serial Numbers: **See appendix 1**

Manufacturer: **Danfoss A/S
Refrigeration & Air Conditioning Division**

Conclusion of Examination: **ADAP-KOOL® with Pt 1000 temperature sensors fulfil the requirements of standard EN 13485:2001 clause 4.8.1 Class 1 accuracy for measuring the air temperature value - 30°C ... + 20°C.**

Certificate Issue Date: **December 14, 2009**

Signed:

A handwritten signature in blue ink, appearing to read 'Janne Nyman', is written over a horizontal line. Below the line, the name and title are printed in a small, black, sans-serif font.

Janne Nyman, Compliance Specialist

Nemko Oy is testing laboratory T017 accredited by the Centre for Metrology and Accreditation (FINAS).

Sample models in the test.

Sample 1. Sensor ID 084N0005

- AKS Pt1000 5.5 m, P/N: 084N0005, EN13485 air, S,C,1, -30°C +20°C (Pt 1000 temperature sensor) with AK-SM 720, P/N: 080Z8511 (registration device).

Sample 2. Sensor ID 084N0001

- AKS Pt1000 3.5 m, P/N: 084N0001, EN13485 air, S,C,1, -30°C +20°C (Pt 1000 temperature sensor) with AK-SM 720, P/N: 080Z8511 (registration device).

Measured values: +20°C -5.0°C... -30°C

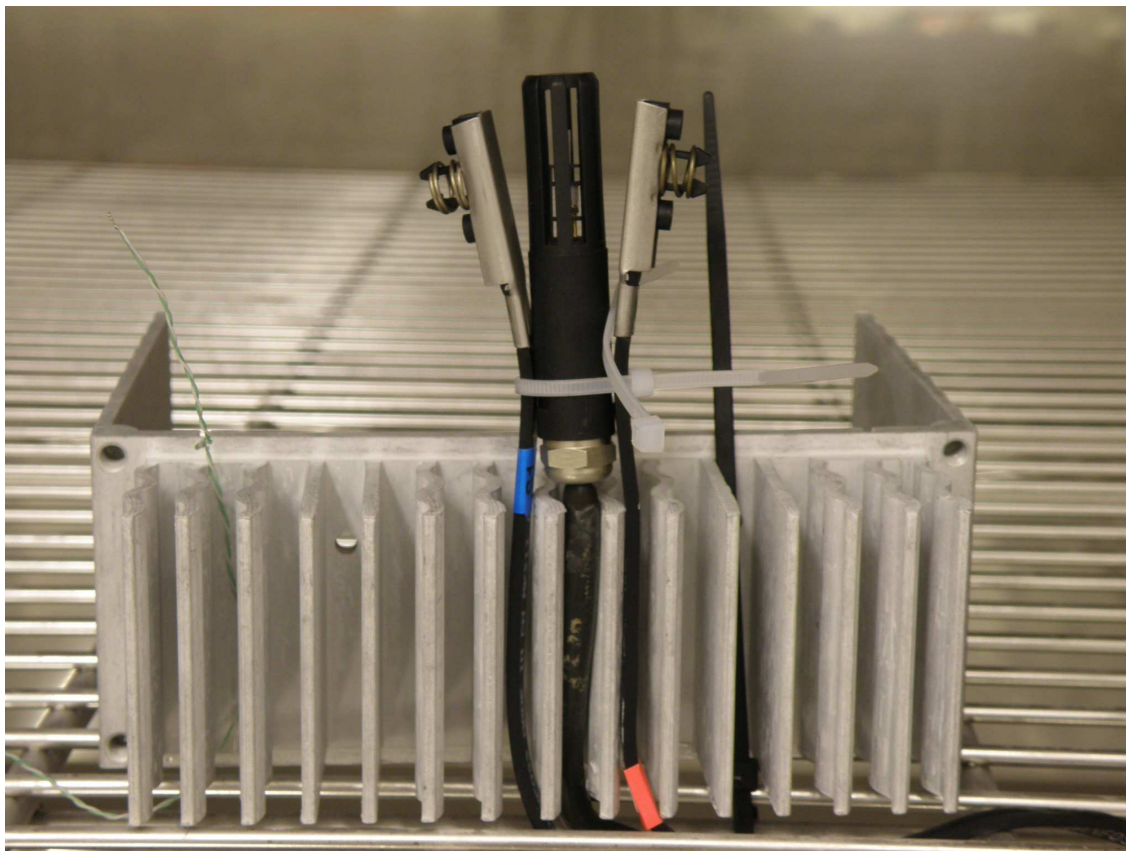
Sample 1. ID 084N0005	Deviation	VAISALA HMP233	Sample 2. ID 084N0001	Deviation
-29.7	-0.3	-30.0	-30.0	0.0
-4.5	-0.5	-5.0	-5.0	0.0
20.3	+0.3	+20.0	19.9	-0.1
-4.4	-0.5	-4.9	-4.8	-0.1
-29.6	-0.4	-30.0	-30.0	0.0
Measuring uncertainty: ±0.5°C				

**Accuracy class of thermometers for measuring the air temperature
EN 13485:2001 Clause 4.8.1**

Class	1
Maximum permissible errors	± 1°C
Resolution	≤ 0.5°

List of test equipment used:

Testing / measuring equipment	Range used	Calibration date
VAISALA type: HMP233 ID: 626	+20°C -5.0°C... -30°C	04.12.2009
Heating chamber ID: 586	+20°C -5.0°C... -30°C	30.11.2009
Data acquisition by Danfoss system: ADAP-KOOL® system		



Photograph 1: *Test setup for measuring the accuracy of the temperature measurement system - 30°C ... + 20°C.*