Certificate of Calibration

DISRUPTIVE TECHNOLOGIES

Disruptive Technologies Research AS
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Certificate ID:

Sensor ID	
Product	Wireless Temperature Sensor with Data Backfill EU
Product number	102407

Place of calibration	Lysaker, Norway
Date of calibration	Apr 12, 2023
Recommended date for next calibration	Apr 12, 2029

Calibration results

Target temperature of chamber	Reference temperature measurement	Temperature measured by sensor after correction	Expanded measurement uncertainty
°C	°C	°C	°C
-20	-19.606	-19.62	0.12
0	0.19	0.21	0.11
10	10.137	10.15	0.12
20	19.981	19.92	0.13
50	50.089	50.09	0.12

Measurement method

The sensor is placed inside a climate chamber with temperature control and forced airflow to minimize temperature gradients in the chamber. Calibrated reference sensors measure the actual temperatures inside the chamber. These reference values are compared with the corresponding readings from the sensors to calculate coefficients for a correction curve. At least ten sensor readings are used per temperature to calculate the error of a sensor.

The calibration setup and procedures are developed in collaboration with the governmental Norwegian Metrology Service, Justervesenet (https://www.justervesenet.no/en/).

Measurement uncertainty

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the International Guide to the Expression of Uncertainty in Measurement (JCGM 100:2008) and is inclusive of the unit under test. JCGM 100:2008 is maintained and promoted by The International Bureau of Weights and Measures (BIPM).

Equipment

Reference thermometer: MBW T12
Climate chamber: Vötsch Heraeus HC 4020

Traceability

On a yearly basis, our temperature references are calibrated against Justervesenet's realization of "The International Temperature Scale of 1990", ITS-90. This procedure meets the requirements of traceability stated in ISO 17025:2017.

Temperature Measurements

No uncorrected values will be presented to the user through the API or any other software.