

Deutsche Akkreditierungsstelle GmbH
German Accreditation Body

Annex to the Accreditation Certificate D-K-15202-01-00
according to DIN EN ISO/IEC 17025:2018

Valid from: 2020-07-29

Date of issue: 2020-07-29

Holder of certificate:

G. LUFFT Mess- und Regeltechnik GmbH
Gutenbergstraße 20, 70736 Fellbach

Calibrations in the fields:

Thermodynamic quantities

- Temperature quantities**
- Resistance thermometers
- Thermocouples
- Direct-reading thermometers
- Temperature transmitters, data loggers
- Mechanical thermometers

Humidity quantities

- Devices for relative humidity

Mechanical quantities

- Pressure

Fluid quantities

- Velocity of gases

Within the marked with *) accreditation areas is the calibration laboratory, without the prior information and consent of the DAkkS needs, allows the use of here listed standardized calibration methods/calibration directives with different versions.

The calibration laboratory has current list of all standardized calibration methods/calibration directives in the flexible range of application.

Permanent laboratory**Calibration and measurement capabilities**

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
Temperature Resistance thermometers Direct reading thermometers and transmitters with resistance sensors *)	0.01 °C	Triple point of water	5 mK	Calibration at temperature fix points
	0.0 °C	ice point	10 mK	
	-40 °C to 200 °C	stirred liquid bath DKD-R 5-1:2018	15 mK	Comparison with standard resistance thermometers
	-40 °C to 100 °C	calibration test chamber DKD-R 5-1:2018	0.1 K	
	-10 °C to 70 °C	humidity generator with temperature control DKD-R 5-1:2018	0.05 K	
	18 °C to 28 °C	humidity generator without temperature control DKD-R 5-1:2018	0.1 K	
Non-precious metal thermocouples Direct reading thermometers and transmitters with non-precious metal thermocouple sensors *)	-40 °C to 200 °C	stirred liquid bath DKD-R 5-3:2018	0,2 K	Comparison with standard resistance thermometers
	-40 °C to 100 °C	calibration test chamber DKD-R 5-3:2018	0.3 K	
Mechanical thermometers Thermographs	-40 °C to 200 °C	stirred liquid bath AA N9104_V01:2019	0.2 K	Comparison with standard resistance thermometers
	-40 °C to 100 °C	calibration test chamber AA N9104_V01:2019	0.3 K	
	-10 °C to 70 °C	humidity generator AA N9104_V01:2019	0.3 K	

¹⁾ The best measurement capabilities are stated according to DKD-3 (EA-4/02). These are expanded uncertainties of measurement with a coverage probability of 95% and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
relative humidity Hygrometers Hygrographs Transmitters	10 % to 95 %	humidity generator air temperatur: -10 °C to 70 °C AA N9004_V04:2015	$0.1 \% + 0.0065 \cdot rH$	Comparison with reference thermometer and dew point mirror rH = measured value The measurement uncertainty is an absolute value of relative humidity.
Hygrometers Hygrographs Transmitters Psychrometers	5 % to 98 %	calibration test chamber air temperatur: 5 °C to 95 °C AA N9004_V04:2015	$0.2 \% + 0.008 \cdot rH$	
Hygrometers Transmitters	10 % to 95 %	humidity generator air temperatur: ca 23 °C AA N9004_V04:2015	$0.5 \% + 0.006 \cdot rH$	Comparison with humidity generator rH = measured value The measurement uncertainty is an absolute value of relative humidity.
Absolute pressure Absolute pressure gauges Barometers Transmitters *)	300 mbar to 1200 mbar	Pressure medium: Gas DKD-R 6-1:2014 EURAMET cg-17 Version 3.0	0.10 mbar	Comparison with reference pressure gauge
Velocity of gases Anemometers Pitot tubes	0.1 m/s to 55 m/s	Comparison with LDA AA N9007_V07:2019	$0.007 \cdot \text{value}$, at least 0,02 m/s	Wind tunnel: Göttingen type Nozzle \varnothing 255 mm

Used abbreviations:

AA	Inhouse Methods of the G. Lufft Mess- und Regeltechnik GmbH
DKD-R	Calibration Guideline of the German Calibration Service
EURAMET	European Association of National Metrology Institutes
LDA	Laser-Doppler-Anemometer

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