

Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-K-15086-01-02 according to DIN EN ISO/IEC 17025:2018

Valid from: 09.06.2023

Date of issue: 20.07.2023

This annex is a part of the accreditation certificate D-K-15086-01-00.

Holder of partial accreditation certificate:

MeßTechnikNord GmbH
Industriestraße 29, 22880 Wedel

The calibration laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The calibration laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of calibration laboratories and confirm generally with the principles of DIN EN ISO 9001.

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

Abbreviations used: see last page

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Calibration in the fields:

Mechanical quantities

- Pressure
- Torque
- Weighing instruments ^{a)}

Thermodynamic quantities

Temperature quantities

- Direct reading thermometers
- Climatic chambers (temperature) ^{a)}

Humidity quantities

- Devices for relative humidity
- Climatic chambers (humidity) ^{a)}

^{a)} only on-site calibration

Within the measurands/calibration items marked with *) the calibration laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, to use calibration standards or equivalent calibration procedures listed here with different issue dates.

The calibration laboratory maintains a current list of all calibration standards / equivalent calibration procedures within the flexible scope of accreditation.

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Annex to the Partial Accreditation Certificate D-K-15086-01-02
Permanent Laboratory
Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Pressure absolute pressure p_{abs}^*	0,014 bar to 3,5 bar	DKD-R 6-1:2014	$3,5 \cdot 10^{-5} \cdot p_{abs}$, but not $< 4,0 \mu\text{bar}$	Pressure medium: gas The uncertainty of the measured residual pressure has to be taken into account.
	$> 3,5 \text{ bar}$ to 70 bar		$4,0 \cdot 10^{-5} \cdot p_{abs}$	
	$> 1 \text{ bar}$ to 61 bar	DKD-R 6-1:2014	$2,0 \cdot 10^{-4} \cdot p_{abs}$, but not $< 0,2 \text{ mbar}$	Pressure medium: oil The uncertainty of the barometer has to be taken into account.
	$> 61 \text{ bar}$ to 601 bar		$1,0 \cdot 10^{-4} \cdot p_{abs}$	
negative and positive gauge pressure p_e^*	-1,0 bar to -0,014 bar	DKD-R 6-1:2014	$5,0 \cdot 10^{-5} \cdot p_e$, but not $< 6,0 \mu\text{bar}$	Pressure medium: gas
	0,014 bar to 3,5 bar		$3,5 \cdot 10^{-5} \cdot p_e$, but not $< 4,0 \mu\text{bar}$	
	$> 3,5 \text{ bar}$ to 70 bar		$4,0 \cdot 10^{-5} \cdot p_e$	
positive gauge pressure p_e^*	0 bar; to 60 bar 1 bar	DKD-R 6-1:2014	$2,0 \cdot 10^{-4} \cdot p_e$, but not $< 0,2 \text{ mbar}$	Pressure medium: oil
	$> 60 \text{ bar}$ to 600 bar		$1,0 \cdot 10^{-4} \cdot p_e$	
Torque Hand torque tools *	0,5 N · m to 10 N · m	DIN EN ISO 6789-2:2017	$5 \cdot 10^{-3}$	
manually operated torque wrenches *	10 N · m to 1 kN · m		$10 \cdot 10^{-3}$	
Temperature quantities direct reading thermometers with resistance sensors *	0,010 °C	DKD-R 5-1:2018 Triple point of water	5 mK	Calibration at fixed point temperatures
	-39 °C to 250 °C	DKD-R 5-1:2018 In a liquid bath	0,03 K	Comparison with standard resistance thermometers
	$> 250 \text{ °C}$ to 300 °C		0,07 K	
Humidity quantities Hygrometer *	10 % to 95 %	DKD-R 5-8:2019 within two-pressure humidity generator measuring temperature ca. 25 °C	$0,25 \% + 5 \cdot 10^{-3} \cdot rH$	rH = measuring value Uncertainty of measurement expressed as absolute value of relative humidity

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On site Calibration

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Weighing instruments Nonautomatic weighing instruments *	to 10 kg	EURAMET Calibration Guide No. 18 Version 4.0 (11/2015)	$2 \cdot 10^{-6}$	with weights for OIML R 111-1:2004 according to class E ₂
Temperature quantities Climatic chambers with air circulation *	-39 °C to 0 °C	DKD-R 5-7:2018 method A and B measuring medium: air	0,8 K	Comparison with resistance thermometers
	> 0 °C to 70 °C		0,5 K	
	> 70 °C to 100 °C		0,9 K	
	> 100 °C to 135 °C		1,4 K	
	> 135 °C to 170 °C		2,0 K	
	> 170 °C to 300 °C		2,8 K	
Climatic chambers without air circulation *	-39 °C to 0 °C		0,9 K	
	> 0 °C to 70 °C		0,5 K	
	> 70 °C to 100 °C		1,0 K	
	> 100 °C to 135 °C		1,4 K	
	> 135 °C to 170 °C		2,1 K	
	> 170 °C to 300 °C		3,4 K	
Measuring locations in climatic chambers with air circulation *	-39 °C to 0 °C	DKD-R 5-7:2018 method C measuring medium: air	0,5 K	
	> 0 °C to 70 °C		0,5 K	
	> 70 °C to 100 °C		0,5 K	
	> 100 °C to 135 °C		0,5 K	
	> 135 °C to 170 °C		0,6 K	
	> 170 °C to 300 °C		1,6 K	
Measuring locations in climatic chambers without air circulation *	-39 °C to 0 °C		0,6 K	
	> 0 °C to 70 °C		0,5 K	
	> 70 °C to 100 °C		0,6 K	
	> 100 °C to 135 °C		0,6 K	
	> 135 °C to 170 °C		0,8 K	
	> 170 °C to 300 °C		2,5 K	

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On site Calibration

Calibration and Measurement Capabilities (CMC)				
Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Humidity quantities Climatic chambers with air circulation *	10 % to 30 %	DKD-R 5-7:2018 method A and B measuring medium: air air temperature 5 °C to 95 °C	1,0 %	Comparison with capacitive humidity sensor and resistance thermometers
	> 30 % to 60 %		1,4 %	
	> 60 % to 95 %		1,9 %	
Measuring locations in climatic chambers with air circulation *	10 % to 30 %	DKD-R 5-7:2018 method C measuring medium: air air temperature 5 °C to 95 °C	1,0 %	Uncertainty of measurement expressed in absolute value of relative humidity
	> 30 % to 60 %		1,4 %	
	> 60 % to 95 %		1,9 %	

Abbreviations used:

CMC	Calibration and measurement capabilities
DIN	Deutsches Institut für Normung e.V.
DKD-R	Guideline of Deutscher Kalibrierdienst (DKD), published by Physikalisch-Technische Bundesanstalt
EURAMET	European Association of National Metrology Institutes (EURAMET e.V.)

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