Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-K-15089-01-02 according to DIN EN ISO/IEC 17025:2018

Valid from: **09.08.2023**

Date of issue: 27.05.2024

This annex is a part of the accreditation certificate D-K-15089-01-00.

Holder of partial accreditation certificate:

Perschmann Calibration GmbH
Hauptstr. 46d, 38110 Braunschweig

with the location

Perschmann Calibration GmbH
Hauptstr. 46d, 38110 Braunschweig

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 they conform to the principles of DIN EN ISO 9001.

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Calibration in the areas:

Thermodynamic quantities

- **Temperature quantities**
- **Temperature indicators and simulators**
- **Resistance thermometers**
- **Radiation thermometers**
- **Temperature transmitters, data loggers**
- **Thermal pairs and thermal elements**
- **Direct reading thermometers**

Humidity quantities

- **Devices for relative humidity**

Mechanical quantities

- **Torque** [b)]
- **Pressure**
- **Weighing instruments** [a)]

Material Testing Machines (MTM)

- **Hardness (MTM)**

[a)] also on-site calibration
[b)] also on-site calibration and calibration in the mobile laboratory

Within the accreditation areas marked with the *, 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.

Permanent Laboratory

Calibration- and Measurement Capabilities (CMC)

Measurement quantity/ Calibration item	Range			Measurement conditions/procedure	Expanded uncertainty of measurement	Remarks
Torque *						
Hand torque assembly tools	1 N·m	to	1000 N·m	DIN EN ISO 6789-2:2017	$5 \cdot 10^{-3}$	Only operated torque tools
Torque wrench calibration devices	4 N·m	to	1000 N·m	DKD-R 3-8:2018	$2 \cdot 10^{-3}$	
Pressure *						
Gauge pressure p_e	1 bar ≥ 700 bar	to	700 bar 800 bar	DKD-R 6-1:2014	0.2 bar 0.5 bar	Pressure medium oil
Gauge pressure p_e	1 bar	to	30 bar		0.01 bar	Pressure medium gas
Weighing instruments *						
Nonautomatic weighing instruments		to	≤ 50 kg	EURAMET Calibration Guide No. 18 Version 4.0 (11/2015)	$1.2 \cdot 10^{-5}$	With weights OIML R 111-1:2004 according to the class F1
Hardness (MTM)						
Hardness testers according to hardness scales Shore A, AO and D *	0 Shore	to	100 Shore	DIN ISO 48-4:2021 DIN ISO 48-9:2021	1 Shore	Direct measurement with reference standards for travel and power. Optical calibration of the geometrical measurements with optical and tactile coordinate measuring machines.
Measuring range		to	2,5 mm		6 µm	
diameter, radii, lengths		to	27 mm		3.5 µm	
Area		to	600 mm²		5 µm²	
Angle	28°	to	37°		0.1°	
Elastic force	0 N	to	44,5 N		0.5 % of final value	
Shore A, AO and D Measuring path standard	0.5 mm	to	2.5 mm	Annex F/34 V5:2021-09	0.8 µm	
Temperature quantities						
Temperature indicators for thermocouples *	-200 °C	to	1300 °C	DKD-R 5-5:2018	0.5 K	Simulation of the thermo-electric voltage with multifunction generator (input in temperature units (°C) Electric consideration of the reference junction
Temperature indicators for resistance thermometers with sensor type PT100 *	-100 °C	to	800 °C		0.2 K	Simulation of the resistance value on multifunction calibrator (input in temperature units (°C))
Resistance thermometers and direct reading thermometers with resistance sensor *	-25 °C > 140 °C > 300 °C > 400 °C	to	140 °C 300 °C 400 °C 500 °C	DKD-R 5-1:2018 in temperature block calibrator	0.2 K 0.4 K 0.6 K 0.8 K	Comparison with resistance thermometers
	0 °C			DKD-R 5-1:2018 Ice point	50 mK	

Permanent Laboratory

Calibration- and Measurement Capabilities (CMC)

Measurement quantity/ Calibration item	Range	Measurement conditions/procedure	Expanded uncertainty of measurement	Remarks
Radiation thermometers *	5 °C to 120 °C > 120 °C to 500 °C	Black body radiator VDI/VDE 3511 part 4.4:2005	1.5 K 3 K	Calibration with plate radiators
Thermometers for air temperature (Data loggers)	10 °C to 50 °C	Annex F/22-BS:2019-10 in climatic chambers	0.3 K	Comparison with resistance thermometers
Thermocouples *	-25 °C to 140 °C > 140 °C to 500 °C	DKD-R 5-3:2018 in temperature block calibrator	1 K 2.2 K	Comparison with resistance thermometers
Humidity quantities *				
Devices for relative humidity in air No psychrometer	10 % to 90 %	DKD-R 5-8:2019 in humidity generator temperature: 23 °C	1.5 %	Comparison with reference humidity sensor Measurement uncertainty given in percent 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 [1]	Remarks
Weighing instruments *				
Nonautomatic weighing instruments	to ≤ 50 kg	EURAMET Calibration Guide No. 18 Version 4.0 (11/2015)	$1 \cdot 10^{-5}$	With weights OIML R 111-1:2004 according to the class F1
Torque *				
Hand torque assembly tools	1 N·m to 1000 N·m	DIN EN ISO 6789-2:2017	$5 \cdot 10^{-3}$	Only operated torque tools

Mobile Laboratory

Calibration- and Measurement Capabilities (CMC)

Measurement quantity/ calibration item	Range	Measurement conditions/procedure	Expanded uncertainty of measurement [1]	Remarks
Torque *				
Hand torque assembly tools	1 N·m to 1000 N·m	DIN EN ISO 6789-2:2017	$5 \cdot 10^{-3}$	Only operated torque tools

Abbreviations used:

Annex F	Calibration Guide of Perschmann Calibration GmbH
CMC	Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)
DIN	Deutsches Institut für Normung e.V.
DKD	Deutscher Kalibrierdienst
DKD-R	Guideline of Deutsche Kalibrierdienst, published by Physikalisch-Technischen Bundesanstalt
EURAMET	European Association of National Metrology Institutes
VDE	Verband der Elektrotechnik, Elektronik und Informationstechnik e.V.