

Deutsche Akkreditierungsstelle

Annex to the Partial Accreditation Certificate D-K-18446-01-01 according to DIN EN ISO/IEC 17025:2018

Valid from: 09.02.2023

Date of issue: 09.02.2023

This annex is a part of the accreditation certificate D-K-18446-01-00.

Holder of partial accreditation certificate:

mg-sensor GmbH
Airport Boulevard B210, 77838 Rheinmünster

The calibration laboratory meets the minimal requirements of DIN EN ISO/IEC 17025:2018 and, if applicable, additional legal and normative requirements, including those in relevant sectoral schemes, in order to carry out the conformity assessment activities listed 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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Annex to the Partial Accreditation Certificate D-K-18446-01-01

with further location

Knorrstraße 147, EG-351, 80788 München

Calibration in the fields:

Mechanical quantities

- **Force**
- **Acceleration**
- **Pressure**

Thermodynamic quantities

Temperature quantities

- **Resistance thermometers**
- **Direct reading thermometers**
- **Temperature transmitters, data loggers**

Humidity quantities

- **Devices for relative humidity**

Within the measurands/calibration items marked with 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-18446-01-01
Permanent laboratory, Rheinmünster location
Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Force* Force sensors (safety-belt)	500 N to 25 kN	ISO/TS 17242:2014-05	1·10 ⁻²	Traction force reference standard measuring device with reference transducer Analogue and digital sensors
Force sensors	2 kN to 20 kN	DKD-R 3-3:2018	2·10 ⁻³	Compressive force reference standard measuring device with reference transducer Analogue and digital sensors
Multi-component force and moment Multi-component transducer (ATD)	0.05 kN to < 0.5 kN	KW-F05000:2021	2·10 ⁻²	
	0.5 kN to 25 kN		5·10 ⁻³	
	3 N·m to < 30 N·m		2·10 ⁻²	
30 N·m to 1200 N·m	5·10 ⁻³			
Force transducer	0.5 kN to 600 kN		5·10 ⁻³	
Angular velocity Angular velocity sensors	150°/s to 3500°/s	KW-AV0002:2021	0.5 %	Rotational via incremental encoder for left and right rotation Analogue and digital sensors
secondary, dynamic	8°/s to 5000°/s	KW-AV0005:2021 1 Hz to 200 Hz	1.5 % / 1.5°	Analogue and digital sensors Calibration result: complex transfer coefficient (analogue: amplitude/phase, digital: amplitude) and indication deviation

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Annex to the Partial Accreditation Certificate D-K-18446-01-01

Permanent laboratory, Rheinmünster location

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Acceleration* Acceleration sensors	200 m/s ² to 20000 m/s ²	Shock excitation DKD-R 3-1 page 2:2018	1.2 %	Analogue and digital sensors
	5 m/s ² to 200 m/s ²	Sinusoidal excitation DKD-R 3-1 page 3:2018 10 Hz to 5 kHz > 5 kHz to 10 kHz	1.2 % / 1.0 ° 2.5 % / 1.5 °	Analogue and digital sensors Calibration result: complex transfer coefficient (analogue: amplitude/phase, digital: amplitude) and indication deviation
Pressure* Positive pressure	0 bar to 6 bar	DKD-R 6-1:2014	1 %	
Absolute pressure	1 bar to 7 bar	DKD-R 6-1:2014	1 %	
Temperature* Resistance thermometers, direct reading thermometers, temperature transmitters and data loggers with resistance sensor	10 °C to 50 °C	DKD-R 5-1:2018 in temperature / humidity generator	0.15 K	Comparison with display of the temperature / humidity generator
Temperature indicators and simulators for base metal thermocouples	-50 °C to 500 °C	DKD-R 5-5:2018	0.2 K	Characteristic curve according to DIN EN 60584:2014
Relative humidity* Direct reading electric hygrometers, data loggers	10 % to 80 %	DKD-R 5-8:2019 in temperature / humidity generator Measurement in air Air temperature: 20 °C to 25 °C	3 %	Comparison with display of the temperature / humidity generator Measurement uncertainty expressed as absolute value of the relative humidity

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Annex to the Partial Accreditation Certificate D-K-18446-01-01

Permanent laboratory, München location

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Acceleration* Acceleration sensors, accelerometer measurement chains	200 m/s ² to 2000 m/s ²	Shock excitation DKD-R 3-1 page 2: 2018	1.5 %	Analogue and digital sensors
Force* Force sensors	2 kN to 20 kN	DKD-R 3-3:2018	2·10 ⁻³	Analogue and digital sensors
Multi-component force and moment Multi-component transducer (ATD)	0.05 kN to < 0.5 kN	KW-FO5000:2021	2·10 ⁻²	Compressive force reference standard measuring device with reference transducer
	0.5 kN to 25 kN		5·10 ⁻³	
	3 N·m to < 30 N·m		2·10 ⁻²	
	30 N·m to 1200 N·m		5·10 ⁻³	Analogue and digital sensors

Abbreviations used:

DKD-R Richtlinie des Deutschen Kalibrierdienstes (DKD),
herausgegeben von der Physikalisch-Technischen Bundesanstalt

KW- calibration procedure of the mg-sensor GmbH

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