

German Accreditation Body

Annex to accreditation certificate D-K-15070-02-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 13.12.2022

Date of issue: 13.12.2022

Holder of the accreditation certificate:

**Testo Industrial Services GmbH
Eckweg 1, 78048 Villingen-Schwenningen**

**The German original version
„Anlage zur Akkreditierungsurkunde D-K-15070-02-00 nach DIN EN ISO/IEC 17025:2018“
is valid.**

The calibration laboratory meets the requirements according to DIN EN ISO/IEC 17025:2018 to perform the conformity assessment activities listed in this annex. The calibration laboratory shall comply with additional legal and normative requirements, where applicable, including those in relevant sectoral programs, provided that they are explicitly confirmed below.

The requirements for the management system in DIN EN ISO/IEC 17025 are written in a language relevant for calibration laboratories and are overall in accordance with the principles of DIN EN ISO 9001.

Calibrations in the fields:

Dimensional measurands

Coordinate metrology

- **Application coordinate measuring machines**
- **Coordinate measuring machines ^{a)}**

a) also on-site calibration

This deed annex is valid only together with the deed issued in writing and reflects the status at the date of issue. The current status of valid and monitored accreditation can be found in the database of accredited bodies of the German Accreditation Body (www.dakks.de)

Annex to accreditation certificate D-K-15070-02-00

Permanent laboratory

Calibration and measurement options (CMC)

Measured variable / calibration object	Measuring range / Measuring span	Measuring conditions / method	Extended measurement uncertainty	Comments
<p>Coordinate measuring technology Prismatic, conical and spherical workpieces</p>	<p>Coordinate measuring machine with a calibrated measuring volume of: X = 3000 mm Y = 1200 mm Z = 900 mm</p>	<p>VA 19.1:2021-02</p> <p>Tactile measurement in the form of single point probing with a coordinate measuring machine and determination of control geometries determined by geometric parameters (single points, straight lines, planes, circles, spheres, cylinders, tori) with the evaluation software of the CMM. Single-point probing is performed with a fixed, predefined measuring force or with extrapolation to zero measuring force. Single point fantasies as "Self-centering probing" is not used within the scope of accreditation. To ensure traceability, calibration of a comparable standard is performed. In addition, the following restrictions must be observed:</p> <ul style="list-style-type: none"> - It must be possible to distribute measuring points evenly over form elements; - Covering at least 50% of the surface of molded elements; - Evaluation of medium form elements 	<p>The measurement uncertainty is determined by a measurement uncertainty balance based on the guideline VDI/VDE 2617 Sheet 11:2011. It is task-specific and is specified for a coverage probability of 95 % (extension factor $k = 2$). Example of measurement uncertainty for a measurement task: Parallel gauge block with two Nominal dimensions, a laterally projecting probe with a length of 150 mm was used, the expanded measurement uncertainty of the test characteristic "distance" was determined: $L = 50 \text{ mm}, U = 1.8 \mu\text{m}$ $L = 3000 \text{ mm}, U = 26 \mu\text{m}$</p>	<p>The determined measurement uncertainty can differ significantly from the uncertainty given as an example for simple measurement tasks.</p>

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Permanent laboratory and on-site calibration

Calibration and measurement options (CMC)

Measured variable / calibration object	Measuring range / Measuring span	Measuring conditions / method	Extended measurement uncertainty	Comments
Coordinate measuring technology Coordinate measuring machines with tactile probing and control software: Quindos the Hexagon Metrology GmbH, Wetzlar	Coordinate measuring machines with a measuring volume with a room diagonal from: ≤ 939 mm	Calibration of the metrological properties according to Guideline: DKD-R 4-3 Sheet 18.1:2018 as well as the below mentioned Standards DIN EN ISO 10360 The contact deviation P and the Length measurement deviation E for tactile single point palpation		$L = \text{measured Length}$
		Determination of length measurement deviations E_0 and E_{150} by means of step end dimensions made of steel according to DIN EN ISO 10360-2:2010	Without displacement of the measuring standard $0.25 \mu\text{m} \cdot 3 \cdot 10^5 \cdot L$	
		Determination of the antastabsoftening- $P_{\text{Form.Sph.1x25:55:Tact}}$ On a Ball standard according to DIN EN ISO 10360-5:2020	$0.2 \mu\text{m}$	

Abbreviations used:

- CMC Calibration and measurement capabilities
- DIN German Institute for Standardization R.A.
- DKD-R Guideline of the German Calibration Service (DKD), published by the Federal Institute of Physics and Technology (PTB)
- VA Self-developed calibration method of the calibration laboratory Testo Industrial Services GmbH