Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-K-19158-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **09.02.2023**

Date of issue: 09.02.2023

Holder of accreditation certificate:

ETAS GmbH
Borsigstraße 24, 70469 Stuttgart

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.

Calibration in the fields:

Electrical quantities

DC and low frequency quantities

- **DC voltage**
- **DC current**
- **DC resistance**

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

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
DC voltage				
sources and measuring	0 mV to 100 mV		$50 \cdot 10^{-6} \cdot U + 3.0\ \mu V$	U: Measured value
devices	> 100 mV to 10 V		$60 \cdot 10^{-6} \cdot U + 0.1$ mV	
	> 10 V to 60 V		$65 \cdot 10^{-6} \cdot U + 1.0$ mV	
DC current				
sources and measuring	0 µA to 100 µA		$0.15 \cdot 10^{-3} \cdot I + 0.3\ \mu A$	I: Measured value
devices	> 100 µA to 1 mA		$0.20 \cdot 10^{-3} \cdot I + 0.3\ \mu A$	
	> 1 mA to 10 mA		$0.17 \cdot 10^{-3} \cdot I + 0.3\ \mu A$	
only sources	> 10 mA to 100 mA		$1 \cdot 10^{-3} \cdot I + 1.4$ mA	
	> 100 mA to 1 A		$1 \cdot 10^{-3} \cdot I + 14$ mA	
	> 1 A to 3 A		$1 \cdot 10^{-3} \cdot I + 25$ mA	
	> 3 A to 10 A		$1 \cdot 10^{-3} \cdot I + 30$ mA	
DC resistance				
sources and measuring	1 Ω to 10 Ω		$1 \cdot 10^{-3} \cdot R + 75\ m\Omega$	R: Measured value
devices	> 10 Ω to 100 Ω		$0.10 \cdot 10^{-3} \cdot R + 80\ m\Omega$	
	> 100 Ω to 1 kΩ		$10 \cdot 10^{-6} \cdot R + 90\ m\Omega$	
	> 1 kΩ to 10 kΩ		$10 \cdot 10^{-6} \cdot R + 0.9\ \Omega$	
	> 10 kΩ to 100 kΩ		$10 \cdot 10^{-6} \cdot R + 9.0\ \Omega$	
	> 100 kΩ to 1 MΩ		$10 \cdot 10^{-6} \cdot R + 90\ \Omega$	

Abbreviations used:

CMC	Calibration and measurement capabilities
DIN	Deutsches Institut für Normung e.V. – German institute for standardization