

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-19708-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 03.12.2019

Date of issue: 03.12.2019

Holder of certificate:

COMPRION GmbH
Prüf- und Kalibrierlabor
Lise-Meitner-Straße 3, 33104 Paderborn

Calibration in the fields:

Electrical quantities

DC and low frequency quantities

-DC voltage

-AC voltage

-DC current

High frequency quantities

-HF voltage

Time and frequency quantities

-Time interval

Abbreviations used: see last page

*The certificate together with its annex reflects the status at the time of the date of issue. The current status of the scope of accreditation can be found in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH.
<https://www.dakks.de/en/content/accredited-bodies-dakks>*

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Permanent laboratory

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Best measurement capability ¹⁾	Remarks
DC voltage voltage sources	0 V to 100 mV		2 μV	U = measured value
	> 0.10 V to 1 V		$3.8 \cdot 10^{-6} \cdot U + 0.29 \mu\text{V}$	
	> 1 V to 10 V		$3.8 \cdot 10^{-6} \cdot U + 0.48 \mu\text{V}$	
	> 10 V to 30 V		$5.7 \cdot 10^{-6} \cdot U + 29 \mu\text{V}$	
DC current current sources	0 A to 10 μA		2.1 nA	I = measured value
	> 10 μA to 100 μA		21 nA	
	> 0.1 mA to 1 mA		$28 \cdot 10^{-6} \cdot I + 57 \text{ nA}$	
	> 1 mA to 10 mA		$0.19 \cdot 10^{-3} \cdot I + 0.61 \mu\text{A}$	
	> 10 mA to 100 mA		$0.67 \cdot 10^{-3} \cdot I + 1.3 \mu\text{A}$	
	> 0.1 A to 1 A		$0.21 \cdot 10^{-3} \cdot I + 49 \mu\text{A}$	
AC voltage	1 mV to 10 mV	100 kHz	$5.0 \cdot 10^{-3} \cdot U + 1.1 \mu\text{V}$	U = measured value
	> 10 mV to 100 mV		$0.85 \cdot 10^{-3} \cdot U + 2.5 \mu\text{V}$	
	> 0.1 V to 1 V		$0.83 \cdot 10^{-3} \cdot U + 26 \mu\text{V}$	
	> 1 V to 3 V		$0.84 \cdot 10^{-3} \cdot U + 0.23 \text{ mV}$	
HF voltage U_{in} measuring instruments	1 mV to 10 mV	100 kHz to 30 MHz	$11 \cdot 10^{-3}$	$ r_x \leq 0.1$ U_{in} = incoming voltage in a 50 Ω system
	> 10 mV to 3 V		$9.0 \cdot 10^{-3}$	
HF voltage U_{z0} generators	1 mV to 10 mV		$9.6 \cdot 10^{-3}$	$ r_g \leq 0.1$ U_{z0} = output voltage in a 50 Ω system
	> 10 mV to 3 V		$7.1 \cdot 10^{-3}$	
Time interval Δt	0.5 ns to 1 μs		0.30 ns	k = 0.95 · √3 Δt = measured value k: coverage factor
	> 1 μs to 10 μs		$23 \cdot 10^{-6} \cdot \Delta t + 0.28 \text{ ns}$	
	> 10 μs to 10 ms		$41 \cdot 10^{-6} \cdot \Delta t + 0.1 \text{ ns}$	

Abbreviations used:

- CMC Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)
- $|r_x|$ Absolute value of the reflection factor at the 50 Ω input of the measuring instrument to be calibrated
- $|r_g|$ Absolute value of the reflection factor at the 50 Ω output of the generator to be calibrated

¹⁾ The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.