Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-K-17601-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **29.06.2023**

Date of issue: 29.06.2023

Holder of accreditation certificate:

H+H High Voltage Technology GmbH
Im Kurzen Busch 15, 58640 Iserlohn

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 confirm generally with the principles of DIN EN ISO 9001.

Calibration in the fields:

Electrical quantities
- **DC and low frequency quantities**
  - **High voltage quantities** *)
  - **High voltage impulse quantities** *)
  - **Impuls charge**

High frequency and radiation quantities
- **High frequency quantities**
  - **Rise time**
  - **Waveform quantities**

*) **also on site calibration**

Within the scope of accreditation marked 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.

[1] Unless otherwise specified, the unit of a variable corresponds to the unit of the measuring range

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range			Measurement conditions / procedure	Expanded uncertainty of measurement [1]	Remarks
DC voltage	-1 kV 1 kV	to to	-300 kV +300 kV	DIN EN 60060-2:2011-10	0.7 %	
AC voltage	 1 kV 50 kV	 to to	 100 kV 300 kV	DIN EN 60060-2:2011-10 50 Hz 50 Hz	 0.4 % 0.8 %	
Lightning impulse voltage (*LI*) Amplitude	 -10 kV 10 kV	 to to	 -500 kV 500 kV	DIN EN 60060-2:2011-10	0.8 %	*LI* = Lightning impulse
Time parameter T_1 T_2	 0.8 µs 40 µs	 to to	 1.6 µs 60 µs		2.2 %	T_1 = Front slope time T_2 = Back slope-Half lifetime
Switching impulse voltage *(SI)* Amplitude	-10 kV +10 kV	to to	-500 kV +500 kV	DIN EN 60060-2:2011-10	1.1 %	*SI* = Switching impulse
Time parameter T_P T_2	 200 µs 1000	 to to	 300 µs 4000 µs		2.0 %	T_P = Scheitelzeit T_2 = Back slope-Half lifetime
Impulse charge **)	1 pC	to	100 nC	DIN EN 60270-2:2011-10	0.03 · q + 0.5 pC	q: charge quantity
Rise time t_r	3 ns	to	1.0 µs		4,1 %	
Electrostatic discharge (ESD) **) Current pulse I_P	 1 A	 to	 35 A	DIN EN 61000-4-2:2009-12	 3.1 %	I_P = first burst current peak
Basic values Current pulse I_{30} Current pulse I_{60}	 1 A 1 A	 to to	 35 A 35 A		1.9 %	I_{30} = current at 30 ns I_{60} = current at 60 ns
Rise time t_r	0.6 ns	to	1 ns		3.9 %	U_L = free state-voltage
DC voltage U_L	1 kV	to	100 kV		0.7 %	
EFT/B Burst **) Voltage pulse	 100 V 100 V	 to to	 2200 V 4400 V	DIN EN 61000-4-4:2013-04	 1.7 % 2.1 %	R_L = load resistor on R_L = 50 Ω
Rise time and Impulse width	3 ns	to	1 µs		4.1 %	on R_L = 1000 Ω
Burst duration and burst periode	100 ns	to	1 s		2.0 %	
Surge **) DC amplitude	 500 V	 to	 12 kV	DIN EN 61000-4-5:2019-03	 1.9 %	
Current amplitude	1 A	to	120 kA		3.0 %	
Rise time and Impulse width	0.8 µs	to	1.0 ms		1.0 %	
Dips **) Voltage amplitude	 1 V	 to	 700 V	DIN EN 61000-4-11:2021-10 (16 2/3) Hz / 50 Hz / 60 Hz	 1.3 %	
Time interval	100 ns	to	1 s		0.6 %	

[1] Unless otherwise specified, the unit of a variable corresponds to the unit of the measuring range

On-site Calibration

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement [1]	Remarks
DC voltage	-1 kV to -300 kV 1 kV to +300 kV	DIN EN 60060-2:2011-10	0.7 %	
AC voltage	1 kV to 100 kV 50 kV to 300 kV	DIN EN 60060-2:2011-10 50 Hz 50 Hz	0.4 % 0.8 %	
Lightning impulse voltage (*LI*) Amplitude	-10 kV to -500 kV 10 kV to 500 kV	DIN EN 60060-2:2011-10	0.8 %	*LI* = Lightning impulse T_1 = Front slope time T_2 = Back slope-half lifetime
Time parameter T_1 T_2	0.8 µs to 1.6 µs 40 µs to 60 µs		2.2 %	
Switching impulse voltage *(SI)* Amplitude	-10 kV to -500 kV +10 kV to +500 kV	DIN EN 60060-2:2011-10	1.1 %	*SI* = Switching impulse T_P = Scheitelzeit T_2 = Back slope-Half lifetime
Time parameter T_P T_2	200 µs to 300 µs 1000 µs to 4000 µs		2.0 %	

Abbreviations used:

CMC	Calibration and measurement capabilities
DIN	Deutsches Institut für Normung e.V.
EN	Europäische Norm

[1] Unless otherwise specified, the unit of a variable corresponds to the unit of the measuring range