Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-K-20681-02-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **09.02.2024**

Date of issue: 09.02.2024

Holder of accreditation certificate:

Weiss Technik GmbH
Greizer Straße 41-49, 35447 Reiskirchen

with the location

Weiss Technik GmbH
Beethovenstraße 34, 72336 Balingen

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 they conform to the principles of DIN EN ISO 9001.

Thermodynamic quantities

Temperature quantities

- **Resistance thermometers**
- **Direct reading thermometers**
- **Temperature tranmitters, data loggers**
- **Climatic chambers (temperature)** [a)]

Humidity quantites

- **Devices for absolute humidity**
- **Devices for relative humidity**
- **Climatic chambers (humidity)** [a)]

[a)] **also on-site calibration**

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.

Within the measurands/calibration items 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.

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Temperature	−80 °C to −40 °C	DKD-R 5-1:2018 in liquid baths	0.04 K	Comparison with reference thermometers
Resistance thermometers; direct reading thermometers, measuring transducers and data loggers with resistance sensor *)	> −40 °C to 0 °C		0.04 K	
	> 0 °C to 100 °C		0.04 K	
	> 100 °C to 200 °C		0.06 K	
	100 °C to 350 °C	DKD-R 5-1:2018 in dry block calibrators	0.15 K	
	−80 °C to −40 °C	DKD-R 5-1:2018 in climatic chambers (measurement in air)	0.12 K	
	> −40 °C to 0 °C		0.10 K	
	> 0 °C to 100 °C		0.08 K	
	> 100 °C to 150 °C		0.12 K	
	> 150 °C to 200 °C		0.18 K	
Direct reading thermometers, measuring transducers and data loggers with base metal thermo-couple sensor *)	−80 °C to 100 °C	DKD-R 5-3:2018 in liquid baths or in climatic chambers (measurement in air)	0.25 K	Comparison with reference thermometers
	> 100 °C to 200 °C		0.35 K	
	> 100 °C to 200 °C	DKD-R 5-3:2018 in dry block calibrators	0.35 K	
	> 200 °C to 350 °C		0.45 K	
Measuring locations in climatic chambers with air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method C measurement in air	0.15 K	Comparison with reference thermometers
	> −40 °C to 0 °C		0.12 K	
	> 0 °C to 100 °C		0.08 K	
	> 100 °C to 150 °C		0.13 K	
	> 150 °C to 200 °C		0.20 K	
	> 200 °C to 300 °C		0.33 K	
Climatic chambers with air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method A and B measurement in air	0.5 K	
	> −40 °C to 0 °C		0.4 K	
	> 0 °C to 100 °C		0.2 K	
	> 100 °C to 150 °C		0.4 K	
	> 150 °C to 200 °C		0.6 K	
	> 200 °C to 300 °C		1.7 K	
Measuring locations in climatic chambers without air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method C measurement in air	0.5 K	
	> −40 °C to 0 °C		0.4 K	
	> 0 °C to 100 °C		0.3 K	
	> 100 °C to 150 °C		0.4 K	
	> 150 °C to 200 °C		0.5 K	
	> 200 °C to 300 °C		0.8 K	
Climatic chambers without air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method A and B measurement in air	3.0 K	
	> −40 °C to 0 °C		2.0 K	
	> 0 °C to 100 °C		2.2 K	
	> 100 °C to 150 °C		3.0 K	
	> 150 °C to 200 °C		3.5 K	
	> 200 °C to 300 °C		5.0 K	

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Dew point temperature Dew point hygrometers	−30 °C to 95 °C	PB-D-000014, Rev. 8 in climatic chambers	0.1 K	Comparison with reference dew point hygrometers
Relative humidity Measuring devices for direct recording of the relative humidity, no psychrometers*)	5 % to 30 %	DKD-R 5-8:2019 in climatic chambers air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.4 %	The humidity reference value is calculated from the dew point and the air temperature, each measured with reference instruments. Measurement uncertainty expressed as the absolute value of the relative humidity
	> 30 % to 60 %		0.6 %	
	> 60 % to 98 %		0.8 %	
Electrical psychrometers	5 % to 30 %	PB-D-000015, Rev. 9 in climatic chambers air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.4 %	
	> 30 % to 60 %		0.6 %	
	> 60 % to 98 %		0.8 %	
Measuring locations in climatic chambers with air circulation *)	5 % to 30 %	DKD-R 5-7:2018 method C air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.4 %	The humidity reference value is calculated from the dew point and the air temperature, each measured with reference instruments. Measurement uncertainty expressed as the absolute value of the relative humidity
	> 30 % to 60 %		0.6 %	
	> 60 % to 98 %		0.8 %	
Climatic chambers with air circulation *)	5 % to 30 %	DKD-R 5-7:2018 method A and B air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.5 %	
	> 30 % to 60 %		0.7 %	
	> 60 % to 98 %		0.9 %	
Measuring locations in climatic chambers with air circulation *)	10 % to 30 %	DKD-R 5-7:2018 method C air temperature: 10 °C to 95 °C	1.0 %	Measurement with reference aspiration psychrometers. Measurement uncertainty expressed as the absolute value of the relative humidity
	> 30 % to 60 %		1.2 %	
	> 60 % to 98 %		1.4 %	
Climatic chambers with air circulation *)	10 % to 30 %	DKD-R 5-7:2018 method A and B air temperature: 10 °C to 95 °C	1.1 %	
	> 30 % to 60 %		1.3 %	
	> 60 % to 98 %		1.6 %	

DAkkS Deutsche Akkreditierungsstelle

On-site Calibration

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Temperature				
Measuring locations in climatic chambers with air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method C measurement in air	0.15 K	Comparison with reference thermometers
	> −40 °C to 0 °C		0.12 K	
	> 0 °C to 100 °C		0.08 K	
	> 100 °C to 150 °C		0.13 K	
	> 150 °C to 200 °C		0.20 K	
	> 200 °C to 300 °C		0.33 K	
Climatic chambers with air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method A and B measurement in air	0.5 K	
	> −40 °C to 0 °C		0.4 K	
	> 0 °C to 100 °C		0.2 K	
	> 100 °C to 150 °C		0.4 K	
	> 150 °C to 200 °C		0.6 K	
	> 200 °C to 300 °C		1.7 K	
Measuring locations in climatic chambers without air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method C measurement in air	0.5 K	
	> −40 °C to 0 °C		0.4 K	
	> 0 °C to 100 °C		0.3 K	
	> 100 °C to 150 °C		0.4 K	
	> 150 °C to 200 °C		0.5 K	
	> 200 °C to 300 °C		0.8 K	
Climatic chambers without air circulation *)	−80 °C to −40 °C	DKD-R 5-7:2018 method A and B measurement in air	3.0 K	
	> −40 °C to 0 °C		2.0 K	
	> 0 °C to 100 °C		2.2 K	
	> 100 °C to 150 °C		3.0 K	
	> 150 °C to 200 °C		3.5 K	
	> 200 °C to 300 °C		5.0 K	

On-site Calibration

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
Relative humidity				
Measuring locations in climatic chambers with air circulation *)	5 % to 30 %	DKD-R 5-7:2018 method C air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.4 %	The humidity reference value is calculated from the dew point and the air temperature, each measured with reference instruments. Measurement uncertainty expressed as the absolute value of the relative humidity
	> 30 % to 60 %		0.6 %	
	> 60 % to 98 %		0.8 %	
Climatic chambers with air circulation *)	5 % to 30 %	DKD-R 5-7:2018 method A and B air temperature: 5 °C to 140 °C (max 95 °C dew point temperature)	0.5 %	
	> 30 % to 60 %		0.7 %	
	> 60 % to 98 %		0.9 %	
Measuring locations in climatic chambers with air circulation *)	10 % to 30 %	DKD-R 5-7:2018 method C air temperature: 10 °C to 95 °C	1.0 %	Measurement with reference aspiration psychrometers. Measurement uncertainty expressed as the absolute value of the relative humidity
	> 30 % to 60 %		1.2 %	
	> 60 % to 98 %		1.4 %	
Climatic chambers with air circulation *)	10 % to 30 %	DKD-R 5-7:2018 method A and B air temperature: 10 °C to 95 °C	1.1 %	
	> 30 % to 60 %		1.3 %	
	> 60 % to 98 %		1.6 %	

Abbreviations used:

CMC	Calibration and measurement capabilities
DIN	Deutsches Institut für Normung e.V. – German institute for standardization
DKD-R	Calibration Guideline of Deutscher Kalibrierdienst (DKD), published by Physikalisch-Technische Bundesanstalt
EN	Europäische Norm – European Standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
PB-D	Process description of Weiss Technik GmbH