

# Deutsche Akkreditierungsstelle

## Annex to the Accreditation Certificate D-K-20681-01-00 according to DIN EN ISO/IEC 17025:2018

**Valid from:** 23.11.2022

**Date of issue:** 23.11.2022

Holder of accreditation certificate:

**Weiss Technik GmbH**  
**Greizer Straße 41-49, 35447 Reiskirchen**

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:

### **Thermodynamic quantities**

#### **Temperature quantities**

- **Climatic chambers (temperature) <sup>a)</sup>**
- **Direct reading thermometers <sup>a)</sup>**

#### **Humidity quantities**

- **Climatic chambers (humidity) <sup>a)</sup>**
- **Devices for relative humidity <sup>a)</sup>**

**<sup>a)</sup> only on-site calibration**

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.

*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

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**This document is a translation. The definitive version is the original German annex to the accreditation certificate.**

**Annex to the Accreditation Certificate D-K-20681-01-00**

**On-site Calibration**

**Calibration and Measurement Capabilities (CMC)**

| Measurement quantity / Calibration item   | Range              | Measurement conditions / procedure                            | Expanded uncertainty of measurement | Remarks   |
|---|--------------------|---|-------------------------------------|---|
| <b>Temperature</b><br>Measuring locations in climatic chambers with air circulation | -80 °C to -40 °C   | Measurement in air<br>DKD-R 5-7:2018<br>method C              | 0,15 K                              | Comparison with reference thermometer           |
|   | > -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   | Measurement in air<br>DKD-R 5-7:2018<br>method A and B        | 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   | Measurement in air<br>DKD-R 5-7:2018<br>method C              | 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   | Measurement in air<br>DKD-R 5-7:2018<br>method A and B        | 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                               |   |
| Direct-indicating thermometers with resistance sensor                               | -40 °C to 100 °C   | in metal block calibrator<br>DKD-R 5-1:2018                   | 0,16 K                              | Comparison with standard resistance thermometer |
|   | > 100 °C to 350 °C |   | 0,25 K                              |   |
|   | -80 °C to 100 °C   | in climatic chamber (measurement in air)<br>DKD-R 5-1:2018    | 0,17 K                              |   |
|   | > 100 °C to 180 °C |   | 0,32 K                              |   |
|   | 5 °C to 60 °C      | in mixed gas generator (measurement in air)<br>DKD-R 5-1:2018 | 0,2 K                               |   |
| Direct-indicating thermometers with base metal thermocouple sensor                  | -40 °C to 100 °C   | in metal block calibrator<br>DKD-R 5-3:2018                   | 0,5 K                               |   |
|   | > 100 °C to 350 °C |   | 0,9 K                               |   |
|   | -80 °C to 100 °C   | in climatic chamber (measurement in air)<br>DKD-R 5-3:2018    | 0,5 K                               |   |
|   | > 100 °C to 180 °C |   | 0,7 K                               |   |

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**Calibration and Measurement Capabilities (CMC)**

| Measurement quantity / Calibration item  | Range          | Measurement conditions / procedure   | Expanded uncertainty of measurement | Remarks  |
|--|----------------|--|-------------------------------------|--|
| <b>Humidity</b><br>Measuring locations in climatic chambers with air circulation | 5 % to 30 %    | air temperature:<br>5 °C to 140 °C (max. 95 °C<br>dew point temperature)<br><br>DKD-R 5-7:2018<br>method C                   | 0,4 %                               | The humidity reference is calculated from the dew point and air temperature, each measured with reference instruments.   |
|  | > 30 % to 60 % |  | 0,6 %                               |  |
|  | > 60 % to 98 % |  | 0,8 %                               |  |
| Climatic chambers with air circulation   | 5 % to 30 %    | air temperature:<br>5 °C to 140 °C (max. 95 °C<br>dew point temperature)<br><br>DKD-R 5-7:2018<br>method A and B             | 0,8 %                               | The measurement uncertainty is an absolute value of relative humidity.   |
|  | > 30 % to 60 % |  | 1,2 %                               |  |
|  | > 60 % to 98 % |  | 1,6 %                               |  |
| Measuring locations in climatic chambers with air circulation                    | 10 % to 30 %   | air temperature:<br>10 °C to 95 °C<br><br>DKD-R 5-7:2018<br>method C   | 1,0 %                               | Measurement with reference aspiration psychrometer.<br><br>The measurement uncertainty is an absolute value of relative humidity.  |
|  | > 30 % to 60 % |  | 1,2 %                               |  |
|  | > 60 % to 98 % |  | 1,4 %                               |  |
| Climatic chambers with air circulation   | 10 % to 30 %   | air temperature:<br>10 °C to 95 °C<br><br>DKD-R 5-7:2018<br>method A and B   | 1,6 %                               |  |
|  | > 30 % to 60 % |  | 2,0 %                               |  |
|  | > 60 % to 98 % |  | 2,4 %                               |  |
| Electrical hygrometric sensors,<br>no psychrometers                              | 5 % to 30 %    | in climatic chamber<br>air temperature:<br>5 °C to 98 °C (max. 95 °C<br>dew point temperature)<br>DKD-R 5-8:2019             | 0,6 %                               | Comparison with reference dew point hygrometer<br><br>The humidity reference is calculated from the dew point and air temperature, each measured with reference instruments. |
|  | > 30 % to 60 % |  | 0,9 %                               |  |
|  | > 60 % to 98 % |  | 1,3 %                               |  |
|  | 10 % to 30 %   | in mixed gas generator<br>air temperature:<br>5 °C to < 10 °C<br>(min. -20 °C frost point<br>temperature)<br>DKD-R 5-8:2019  | 0,5 %                               | The measurement uncertainty is an absolute value of relative humidity.   |
|  | > 30 % to 60 % |  | 0,8 %                               |  |
|  | > 60 % to 90 % |  | 1,2 %                               |  |
|  | 5 % to 30 %    | in mixed gas generator<br>air temperature:<br>10 °C to < 45 °C<br>(min. -20 °C frost point<br>temperature)<br>DKD-R 5-8:2019 | 0,5 %                               |  |
|  | > 30 % to 60 % |  | 0,7 %                               |  |
|  | > 60 % to 98 % |  | 1,1 %                               |  |
|  | 5 % to 30 %    | in mixed gas generator<br>air temperature:<br>45 °C to 60 °C<br>DKD-R 5-8:2019   | 0,4 %                               |  |
|  | > 30 % to 60 % |  | 0,7 %                               |  |
|  | > 60 % to 90 % |  | 0,9 %                               |  |

**Abbreviations used:**

CMC Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)  
 DKD-R Calibration Guideline of Deutscher Kalibrierdienst (DKD), published by Physikalisch-Technische Bundesanstalt

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