Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-20838-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: **27.01.2022**

Date of issue 27.01.2022

Holder of certificate:

inotech Meter Calibration Systems GmbH
Obere Hardt 15, 76467 Bietigheim

Calibration in the fields:

Thermodynamic quantities
Temperature measurements
- **Direct detecting thermometer** [a)]

Humidity quantities
- **Measurement equipment for relative humidity** [a)]

Mechanical quantities
- **Pressure** [a)]
- **Flow of gases** [a)]

Electric quantities
Time and frequency
- **Frequency** [a)]

[a)] on site-location-calibration

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of calibration laboratories. Laboratories that conform to the requirements of this standard, operate generally in accordance with the principles of DIN EN ISO 9001.

The certificate together with the annex reflects the status as indicated by the date of issue.
The current status of any given scope of accreditation may be found respectively in the database of accredited bodies of Deutsche Akkreditierungsstelle GmbH https://www.dakks.de/en/content/accredited-bodies-dakks.

Abbreviations used: see last page

DAkkS Deutsche Akkreditierungsstelle

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range			Measurement conditions / procedure	Expanded uncertainty of measurement [1)]	Remarks
Temperature quantities Direct reading thermometers with resistance sensors	-40 °C	to	80 °C	DKD-R 5-1:2018 In a water bath	0,05 K	Comparison with standard resistance thermometers
Relative humidity Direct reading electrical Hygrometers	10 %	to	70 %	DKD-R 5-8:2019 with temperature-humidity generator Measuring medium air air temperature: 20 °C to 30 °C	2 %	Comparison with capacitive humidity standard Uncertainty expressed as relative humidity
	> 70 %	to	90 %		3 %	
Pressure Absolut pressure p_{abs}	700 mbar	to	1100 mbar	DKD-R 6-1:2014	0,15 mbar	Pressure medium: gas
Negative and positive gauge pressure p_e	-1 bar	to	< -0,1 bar		0,2 mbar	
	- 0,1 bar	to	0,1 bar		0,1 mbar	
	> 0,1 bar	to	1 bar		0,2 mbar	
	> 1 bar	to	100 bar		$1 \cdot 10^{-3} \cdot p_e$	
Flow of gases Volume flow rate dV/dt of flowing gases	2 L/h	to	< 16 L/h	Standard: critical nozzle, drum gas meter, rotary piston gas meter, turbine gas meter AA-108.005 V. 1.3 AA-108.006 V. 1.4 AA-108.007 V. 1.1 AA-108.008 V. 1.0	0,28 %	Calibration medium atmospheric air Flow rates under operating conditions (from 2650 m3/h only systems with flow generation)
	16 L/h	to	< 200 L/h		0,20 %	
	0,2 m³/h	to	6500 m³/h		0,18 %	
Frequency	0,1 Hz	to	100 kHz	AA-108.004 V. 1.1	$1 \cdot 10^{-6} \cdot f$	f = respective measured value

[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.

Date of issue: 27.01.2022
Valid from: 27.01.2022

DAkkS Deutsche Akkreditierungsstelle

On-site Calibration

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement [1]	Remarks
Temperature quantities Direct reading thermometers with resistance sensors	-40 °C to 80 °C	DKD-R 5-1:2018 In a water bath	0,05 K	Comparison with standard resistance thermometers
Relative humidity Direct reading electrical Hygrometers	10 % to 70 %	DKD-R 5-8:2019 with temperature-humidity generator Measuring medium air air temperature: 20 °C to 30 °C	2 %	Comparison with capacitive humidity standard Uncertainty expressed as relative humidity
	> 70 % to 90 %		3 %	
Pressure Absolut pressure p_{abs}	700 mbar to 1100 mbar	DKD-R 6-1:2014	0,15 mbar	Pressure medium: gas
Negative and positive gauge pressure p_e	-1 bar to < -0,1 bar		0,2 mbar	
	- 0,1 bar to 0,1 bar		0,1 mbar	
	> 0,1 bar to 1 bar		0,2 mbar	
	> 1 bar to 100 bar		$1 \cdot 10^{-3} \cdot p_e$	
Flow of gases Volume flow rate *dV/dt* of flowing gases	2 L/h to < 16 L/h	Standard: critical nozzle, drum gas meter, rotary piston gas meter, turbine gas meter AA-108.005 V. 1.3 AA-108.006 V. 1.4 AA-108.007 V. 1.1 AA-108.008 V. 1.0	0,28 %	Calibration medium atmospheric air (under laboratory conditions) Flow rates under operating conditions
	16 L/h to < 200 L/h		0,20 %	
	0,2 m³/h to 6500 m³/h		0,18 %	
Frequency	0,1 Hz to 100 kHz	AA-108.004 V. 1.1	$1 \cdot 10^{-6} \cdot f$	f = respective measured value

Abbreviations used:

AA	In house calibration procedure of inotech Meter Calibration Systems GmbH
CMC	Calibration and measurement capabilities
DKD-R	Guideline of Deutscher Kalibrierdienst (DKD), published by Physikalisch-Technischen Bundesanstalt (PTB)

[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.

Date of issue: 27.01.2022
Valid from: 27.01.2022

- Translation -