

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-19516-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 08.06.2020

Date of issue: 08.06.2020

Holder of certificate:

Diehl Metering GmbH
Industriestraße 13, 91522 Ansbach

Calibration in the fields:

Fluid quantities

- **Volume of flowing liquids**

Thermodynamic quantities

- Thermal energy**
- **Heat meters**

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>*

Annex to the accreditation certificate D-K-19516-01-00

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
Volume of flowing liquids Water meters DN 15 – 40 mm	0,006 m ³ /h to 20 m ³ /h	VA V01-1 Ver. 14.4 Static or dynamic weighing method Conversion via density in function of temperature	20 °C: 0,25 % 50 °C: 0,30 %	Temperature range: (20 °C resp. 50 °C) ± 5 °C Weighing range : 0,001 m ³ to 0,35 m ³ (0,8 kg to 350 kg)
Water meters DN 40 – 100 mm	0,04 m ³ /h to 180 m ³ /h		20 °C: 0,25 % 50 °C: 0,30 %	Temperature range: (20 °C resp. 50 °C) ± 5 °C Weighing range 0,001 m ³ to 6,0 m ³ (0,8 kg to 6000 kg)
Water meters DN 50 – 200 mm	0,04 m ³ /h to 180 m ³ /h		20 °C: 0,35 % 50 °C: 0,40 %	Temperature range: (20 °C resp. 50 °C) ± 5 °C Weighing range: 0,001 m ³ to 10,0 m ³ (0,8 kg to 10.000 kg)
Heat meters Flow meters DN 15 – 40 mm	0,006 m ³ /h to 20 m ³ /h	VA V01-1 Ver. 14.4 Static or dynamic weighing method Conversion via density in function of temperature	20 °C: 0,25 % 50 °C: 0,30 % 90 °C: 1,00 %	Temperature range: (20 °C, 50 °C resp. 90 °C) ± 5 °C Weighing range: 0,001 m ³ to 0,35 m ³ (0,8 kg to 350 kg)
Flow meters DN 40 – 100 mm	0,04 m ³ /h to 180 m ³ /h		20 °C: 0,25 % 50 °C: 0,30 % 90 °C: 1,00 %	Temperature range: (20 °C, 50 °C resp. 90 °C) ± 5 °C Weighing range: 0,01 m ³ to 6,0 m ³ (0,8 kg to 6.000 kg)
Flow meters DN 50 – 200 mm	0,04 m ³ /h to 180 m ³ /h		20 °C: 0,35 % 50 °C: 0,40 %	Temperature range: (20 °C to 50 °C) ± 5 °C Weighing range: 0,01 m ³ to 10,0 m ³ (0,8 kg to 10.000 kg)
Energy meter	3 K 10 K 50 K > 100 K to 195 K	VA-E01-1 Ver. 14.2 Simulation of temperature difference and volume	0,30 % 0,16 % 0,11 % 0,10 %	Simulation of temperature - difference by resistance Uncertainty of measurement affected by resistances of temperature simulation without EUT. Temperature range for determining the thermal energy: 1 °C to 200 °

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.

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Calibration and Measurement Capabilities (CMC)				
Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
Heat meters Temperature sensor, absolute measurement	10 °C	VA T01-1 Ver. 14.3 Measurement in thermostatic baths	14 mK	Calibration of the single sensors in thermostatic baths
	40 °C		16 mK	
	80 °C		31 mK	Combination of sensors in the flow and return Uncertainty of measurement affected by measuring system without EUT
	120 °C		51 mK	
	150 °C		74 mK	
Temperature sensor, differential measurement	3 K	VA T01-1 Ver. 14.3 Temperature difference	23 mK	
	50 K		35 mK	
	80 K		54 mK	

Abbreviations used:

- DN Nominal diameter
- EUT Equipment under Test
- VA Calibration instruction of Diehl Metering GmbH

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