

Deutsche Akkreditierungsstelle GmbH

Entrusted according to Section 8 subsection 1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV

Signatory to the Multilateral Agreements of EA, ILAC and IAF for Mutual Recognition

Accreditation



The Deutsche Akkreditierungsstelle GmbH attests that the calibration laboratory

Isabellenhütte Heusler GmbH & Co. KG
Eibacher Weg 3-5, 35683 Dillenburg

is competent under the terms of DIN EN ISO/IEC 17025:2018 to carry out calibrations in the following fields:

Electrical quantities

DC and low frequency quantities

- DC voltage
- DC current
- DC resistance

Thermodynamic quantities

Temperature quantities

- Resistance thermometers
- Thermocouples
- Direct reading thermometers

The accreditation certificate shall only apply in connection with the notice of accreditation of 30.04.2019 with the accreditation number D-K-19500-01. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 3 pages.

Registration number of the certificate: **D-K-19500-01-00**

Braunschweig,
30.04.2019

Dr. Heike Manke
Head of Division

Translation issued:
30.04.2019



Head of Division

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>

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

See notes overleaf.

Deutsche Akkreditierungsstelle GmbH

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The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkKS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkKS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkKS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:

EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.nu

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-K-19500-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 30.04.2019

Date of issue: 30.04.2019

Holder of certificate:

Isabellenhütte Heusler GmbH & Co. KG
Eibacher Weg 3-5, 35683 Dillenburg

Calibration in the fields:

Electrical quantities

DC and low frequency quantities

- DC voltage
- DC current
- DC resistance

Thermodynamic quantities

Temperature quantities

- Resistance thermometers
- Thermocouples
- Direct reading thermometers

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>*

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks	
DC and low frequency quantities DC voltage	1 μ V to < 10 mV	direct measuring with reference digital voltmeter and reversing polarity	$0.1 \cdot 10^{-3} \cdot U + 0.2 \mu\text{V}$	U: measured value	
	10 mV to < 1 V		$20 \cdot 10^{-6} \cdot U$		
	1 V to 10 V		$3.0 \cdot 10^{-6} \cdot U$		
	> 10 V to 1000 V		$5.0 \cdot 10^{-6} \cdot U$		
DC current	1 μ A to < 1 mA	reference resistor	$30 \cdot 10^{-6} \cdot I$	I: measured value	
	1 mA to < 10 A		$15 \cdot 10^{-6} \cdot I$		
	10 A to < 100 A		$30 \cdot 10^{-6} \cdot I$		
	100 A to 2000 A	transducer	$50 \cdot 10^{-6} \cdot I$		
DC resistance Resistors	1 Ω , 10 k Ω	direct comparison with standard resistors of same magnitude	$3.0 \cdot 10^{-6} \cdot R$	R: measured value	
	10 $\mu\Omega$		$0.1 \cdot 10^{-3} \cdot R$		
	0.1 m Ω , 1 m Ω , 10 m Ω		$50 \cdot 10^{-6} \cdot R$		
	0.1 Ω , 10 Ω , 100 Ω , 1 k Ω		$10 \cdot 10^{-6} \cdot R$		
Ranges	10 $\mu\Omega$ to < 100 $\mu\Omega$	comparison with standard resistors by use of digital voltmeter	$0.1 \cdot 10^{-3} \cdot R$		
	0.1 m Ω to < 1 m Ω		$0.1 \cdot 10^{-3} \cdot R$		
	1 m Ω to < 10 m Ω		$50 \cdot 10^{-6} \cdot R$		
	10 m Ω to < 100 m Ω		$20 \cdot 10^{-6} \cdot R$		
	0,1 Ω to 100 k Ω		$10 \cdot 10^{-6} \cdot R$		
Temperature Resistance thermometers and Direct reading thermometers with resistance sensor	-40 $^{\circ}$ C to < 0 $^{\circ}$ C	in liquid bath	0.10 K	Comparison with standard platinum resistance thermometer	
	0 $^{\circ}$ C to 250 $^{\circ}$ C	DKD-R 5-1:2018	0.05 K		
	> 250 $^{\circ}$ C to 630 $^{\circ}$ C	in fluidizing solid bath DKD-R 5-1:2018	0.25 K		
Direct reading thermometers with thermocouple sensor	-40 $^{\circ}$ C to < 0 $^{\circ}$ C	in liquid bath	0.5 K		
	0 $^{\circ}$ C to 250 $^{\circ}$ C	DKD-R 5-3:2018	0.3 K		
	> 250 $^{\circ}$ C to 630 $^{\circ}$ C	in fluidizing solid bath DKD-R 5-3:2018	0.5 K		
	> 630 $^{\circ}$ C to 1100 $^{\circ}$ C	in tube furnaces	1.0 K		Comparison with standard thermocouples type S
	> 1100 $^{\circ}$ C to 1200 $^{\circ}$ C	DKD-R 5-3:2018	1.5 K		

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.

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾	Remarks
Noble metal thermocouples	0 °C to 1100 °C	in liquid bath or tube furnaces	1.0 K	Comparison with standard thermocouples type S
	> 1100 °C to 1200 °C	DKD-R 5-3:2018	1.5 K	
Base metal thermocouples Type K, Type N	-40 °C to 0 °C	in liquid bath DKD-R 5-3:2018	1.8 K	Comparison with standard platinum resistance thermometer
	> 0 °C to 300 °C	in liquid bath or tube furnaces DKD-R 5-3:2018	1,8 K	Comparison with standard thermocouples type S
	> 300 °C to 1000 °C		3,0 K	
	> 1000 °C to 1200 °C		4,0 K	
Type J	0 °C to 300 °C	in liquid bath or tube furnaces DKD-R 5-3:2018	1.1 K	
	> 300 °C to 500 °C		2.0 K	
	> 500 °C to 760 °C		3.0 K	
Type T	-40 °C to 0 °C	in liquid bath DKD-R 5-3:2018	1.5 K	Comparison with standard platinum resistance thermometer
	> 0 °C to 400 °C	in liquid bath or tube furnaces DKD-R 5-3:2018	1,5 K	Comparison with standard thermocouples type S

Abbreviations used:

DKD-R Calibration Guide of Deutscher Kalibrierdienst (DKD), published by the Physikalisch-Technischen Bundesanstalt

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