

# Deutsche Akkreditierungsstelle

## Annex to the Accreditation Certificate D-K-11134-03-00 according to DIN EN ISO/IEC 17025:2018

**Valid from:** 19.03.2024

**Date of issue:** 19.03.2024

Holder of accreditation certificate:

**DNV Energy Systems Germany GmbH  
Brooktorkai 18, 20457 Hamburg**

with the location

**DNV Energy Systems Germany GmbH  
Sommerdeich 14 b, 25709 Kaiser-Wilhelm-Koog**

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.

Calibration in the fields:

### **Electrical quantities**

#### **DC and low frequency quantities**

- **DC voltage**
- **DC current**
- **AC voltage**
- **AC current**
- **Current ratio**

*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>.*

**Annex to the Accreditation Certificate D-K-11134-03-00**

**Permanent Laboratory**

**Calibration and Measurement Capabilities (CMC)**

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks	
<b>Electrical quantities</b>					
DC voltage Measuring instruments	100 mV 1 V 10 V 100 V 300 V		0.83 $\mu$ V 1.9 $\mu$ V 16 $\mu$ V 0.15 mV 1.9 mV	Difference-measurement method	
AC voltage Measuring instruments	100 mV 1 V 10 V 100 V 1000 V	50 Hz to 60 Hz	6.6 $\mu$ V 38 $\mu$ V 0.9 mV 7.2 mV 92 mV		
	100 mV 1 V 10 V 100 V 1000 V	250 Hz to 1 kHz	6.6 $\mu$ V 38 $\mu$ V 0.66 mV 6.7 mV 64 mV		
	100 mV 1 V > 1 V to 7 V	> 1 kHz to 10 kHz	8 $\mu$ V 49 $\mu$ V 0.73 mV		
DC current Measuring instruments	1 mA 10 mA 100 mA 400 mA 1 A 3 A 10 A		22 nA 2.0 $\mu$ A 3.6 $\mu$ A 7.6 $\mu$ A 94 $\mu$ A 55 $\mu$ A 0.25 mA		

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**Permanent Laboratory**

**Calibration and Measurement Capabilities (CMC)**

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks
AC current Measuring instruments	1 mA 10 mA 100 mA 400 mA 1 A 3 A 10 A	50 Hz to 60 Hz	0.11 µA 0.3 µA 4.4 µA 36 µA 0.13 mA 0.4 mA 1.3 mA	Difference-measurement method
	10mA 100 mA 400 mA 1 A	250 Hz to 1 kHz	25 µA 4.1 µA 37 µA 0.12 mA	
Current ratio Current transformers	<u>10 A to 25 A (primary)</u> to 5 mA to 15 A (secondary) to 25 mV to 15 V (secondary)	Comparison measurement 50 Hz to 60 Hz	0.03 %	Measurement uncertainty of magnitude deviation, related to the primary quantity.
			0.03 crad	Measurement uncertainty of the phase angle.
	<u>10 A to 100 A (primary)</u> to 50 mA to 1 A (secondary) to 25 mV to 1 V (secondary)	Comparison measurement 250 Hz to 9 kHz	0.01 %	Measurement uncertainty of magnitude deviation, related to the primary quantity.
			0.19 crad	Measurement uncertainty of the phase angle.
	<u>&gt; 25 A to 5 kA (primary)</u> to 5 mA to 15 A (secondary) to 25 mV to 1 V (secondary)	Comparison measurement 50 Hz; 60 Hz	0.03 %	Measurement uncertainty of magnitude deviation, related to the primary quantity.
			0.03 crad	Measurement uncertainty of the phase angle.
	<u>&gt; 5 kA to 10 kA (primary)</u> to 5 mA to 15 A (secondary) to 25 mV to 15 V (secondary)	Comparison measurement 50 Hz; 60 Hz	0.03 %	Measurement uncertainty of magnitude deviation, related to the primary quantity.
			0.03 crad	Measurement uncertainty of the phase angle.

**Abbreviations used:**

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CMC	Calibration and measurement capabilities
DIN	Deutsches Institut für Normung e.V. – German institute for standardization
EN	Europäische Norm – European Standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardisation