SWEDAC
Styrelsen för ackreditering och teknisk kontroll
Swedish Board for Accreditation and Conformity Assessment

Appendix 1

Date 2025-08-14

Reference 2024/1399

Scope of accreditation

Calibration according to SS-EN ISO/IEC 17025:2018

Intertek Semko AB Västerås Accreditation number 1003

A000426-003

Electricity and Magnetism

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Current	**Inhouse method; ACK 0008**	**AC**	**Current showing**	**2,2 A**	**3,0 x 10^{-4} x I A**	**Generate alternating current with a calibrator**	**Yes**	**2**	**No**	**20 Hz – 1 kHz**
		AC	**Current showing**	**2,2 mA**	**1,6 x 10^{-4} x I A**	**Generate alternating current with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 1 kHz**
		AC	**Current showing**	**22 mA**	**1,6 x 10^{-4} x I A**	**Generate alternating current with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 1 kHz**
		AC	**Current showing**	**220 µA**	**2,0 x 10^{-4} x I A**	**Generate alternating current with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 1 kHz**
		AC	**Current showing**	**220 mA**	**1,5 x 10^{-4} x I A**	**Generate alternating current with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 1 kHz**
		DC	**Current showing**	**2,2 A**	**9,2 x 10^{-5} x I A**	**Generate direct current with a calibrator**	**Yes**	**2**	**No**	
		DC	**Current showing**	**2,2 mA**	**4,2 x 10^{-5} x I A**	**Generate direct current with a calibrator**	**Yes**	**2**	**No**	
		DC	**Current showing**	**22 mA**	**3,9 x 10^{-5} x I A**	**Generate direct current with a calibrator**	**Yes**	**2**	**No**	

Electricity and Magnetism

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Current	Inhouse method; ACK 0008	DC	Current showing	220 µA	$1{,}0 \times 10^{-4}$ x I A	Generate direct current with a calibrator	Yes	2	No	
		DC	Current showing	220 mA	$5{,}2 \times 10^{-5}$ x I A	Generate direct current with a calibrator	Yes	2	No	
	Inhouse method; ACK 0009	AC	Power generating	2 A	$8{,}2 \times 10^{-4}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	10 Hz – 30 kHz
		AC	Power generating	20 A	$1{,}0 \times 10^{-3}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	10 Hz – 2 kHz
		AC	Power generating	20 mA	$5{,}0 \times 10^{-4}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	1 Hz – 100 kHz
		AC	Power generating	200 µA	$7{,}0 \times 10^{-4}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	1 Hz – 100 kHz
		AC	Power generating	200 mA	$4{,}9 \times 10^{-4}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	1 Hz – 100 kHz
		AC	Power generating	2mA	$5{,}0 \times 10^{-4}$ x I A	Measure alternating current with a reference multimeter	Yes	2	No	1 Hz – 100 kHz

Electricity and Magnetism

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Current	**Inhouse method; ACK 0009**	**DC**	**Power generating**	**± 2 mA**	**1,6 x 10^{-5} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Power generating**	**± 20 mA**	**1,8 x 10^{-5} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Power generating**	**± 200 µA**	**1,6 x 10^{-5} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Power generating**	**± 200 mA**	**5,6 x 10^{-5} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Power generating**	**±2 A**	**2,0 x 10^{-4} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Power generating**	**±20 A**	**4,4 x 10^{-4} x I A**	**Measure direct current with a reference multimeter**	**Yes**	**2**	**No**	
Resistance	**Inhouse method; ACK 0010**		**Resistance showing**	**1 kΩ**	**1,2 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	

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Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Resistance	**Inhouse method; ACK 0010**		**Resistance showing**	**1 MΩ**	**1,4 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**1 mΩ**	**1,6 x 10^{-4} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**1 Ω**	**8,0 x 10^{-6} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**10 kΩ**	**6,3 x 10^{-6} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**10 mΩ**	**2,5 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**10 MΩ**	**3,2 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**10 Ω**	**1,2 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	

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Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Resistance	**Inhouse method; ACK 0010**		**Resistance showing**	**100 kΩ**	**1,2 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**100 MΩ**	**1,0 x 10^{-4} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**100 mΩ**	**1,9 x 10^{-5} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**100 Ω**	**7,4 x 10^{-6} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
			Resistance showing	**1000 MΩ**	**1,2 x 10^{-2} x R Ω**	**Generate resistance using a resistance standard or calibrator**	**Yes**	**2**	**No**	
	Inhouse method; ACK 0011		**Resistance generating**	**2 GΩ**	**2,5 x 10^{-3} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**2 kΩ**	**8,5 x 10^{-6} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	

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Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Resistance	**Inhouse method; ACK 0011**		**Resistance generating**	**2 MΩ**	**1,0 x 10^{-5} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**2 Ω**	**2,1 x 10^{-5} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**20 kΩ**	**8,5 x 10^{-6} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**20 MΩ**	**3,0 x 10^{-5} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**20 Ω**	**1,1 x 10^{-5} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**200 kΩ**	**8,5 x 10^{-6} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
			Resistance generating	**200 MΩ**	**2,2 x 10^{-4} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	

Electricity and Magnetism

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Resistance	**Inhouse method; ACK 0011**		**Resistance generating**	**200 Ω**	**8,5 x 10^{-6} x R Ω**	**Measuring resistance with a reference-grade multimeter**	**Yes**	**2**	**No**	
Voltage	**Inhouse method; ACK 0006**	**AC**	**Voltage showing**	**1100 V**	**7,4 x 10^{-5} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**50 Hz – 1 kHz**
		AC	**Voltage showing**	**2,2 mV**	**4,1 x 10^{-3} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		AC	**Voltage showing**	**2,2 V**	**5,3 x 10^{-5} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		AC	**Voltage showing**	**22 mV**	**4,8 x 10^{-4} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		AC	**Voltage showing**	**22 V**	**5,0 x 10^{-5} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		AC	**Voltage showing**	**220 mV**	**1,5 x 10^{-4} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		AC	**Voltage showing**	**220 V**	**5,8 x 10^{-5} x U V**	**Generate alternating voltage with a calibrator**	**Yes**	**2**	**No**	**40 Hz – 20 kHz**
		DC	**Voltage showing**	**± 11 V**	**3,8 x 10^{-6} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	

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Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Voltage	**Inhouse method; ACK 0006**	**DC**	**Voltage showing**	**± 1100 V**	**6,9 x 10^{-6} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	
		DC	**Voltage showing**	**± 2,2 V**	**5,7 x 10^{-6} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	
		DC	**Voltage showing**	**± 22 V**	**3,9 x 10^{-6} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	
		DC	**Voltage showing**	**± 220 mV**	**1,2 x 10^{-5} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	
		DC	**Voltage showing**	**± 220 V**	**5,4 x 10^{-6} x U V**	**Generate direct voltage with a calibrator**	**Yes**	**2**	**No**	
	Inhouse method; ACK 0007	**AC**	**Voltage generating**	**1000 V**	**1,4 x 10^{-4} x U V**	**Measure alternating voltage with a reference multimeter**	**Yes**	**2**	**No**	**1 Hz – 100 kHz**
		AC	**Voltage generating**	**2 V**	**9,5 x 10^{-5} x U V**	**Measure alternating voltage with a reference multimeter**	**Yes**	**2**	**No**	**1 Hz – 1 MHz**
		AC	**Voltage generating**	**20 V**	**9,5 x 10^{-5} x U V**	**Measure alternating voltage with a reference multimeter**	**Yes**	**2**	**No**	**1 Hz – 1 MHz**

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Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Voltage	**Inhouse method; ACK 0007**	**AC**	**Voltage generating**	**200 mV**	**1,3 x 10^{-4} x U V**	**Measure alternating voltage with a reference multimeter**	**Yes**	**2**	**No**	**1 Hz – 100 kHz**
		AC	**Voltage generating**	**200 V**	**9,5 x 10^{-5} x U V**	**Measure alternating voltage with a reference multimeter**	**Yes**	**2**	**No**	**1 Hz – 1 MHz**
		DC	**Voltage generating**	**± 1000 V**	**6,0 x 10^{-6} x U V**	**Measure direct voltage with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Voltage generating**	**± 2 V**	**3,9 x 10^{-6} x U V**	**Measure direct voltage with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Voltage generating**	**± 20 V**	**3,9 x 10^{-6} x U V**	**Measure direct voltage with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Voltage generating**	**± 200 mV**	**6,0 x 10^{-6} x U V**	**Measure direct voltage with a reference multimeter**	**Yes**	**2**	**No**	
		DC	**Voltage generating**	**± 200 V**	**5,9 x 10^{-6} x U V**	**Measure direct voltage with a reference multimeter**	**Yes**	**2**	**No**	

Mass related quantities

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Torque	**Intern metod; ACK 0040**		**Torque wrench**	**0,1 – 3000 Nm**	**1,0 x 10^{-2} x F Nm**	**Comparison with torque sensors**	**Yes**	**2**	**No**	

Temperature

Technology area	*Method*	*Parameter*	*Material*	*Measuring range*	*Expanded measurement uncertainty ±*	*Technique*	*Flex*	*Type of flex*	*Field*	*Note*
Temperature	**Inhouse method; ACK 0004 (ACK 0001)**	**Generation of resistance**	**Temperature sensors**	**-200 °C – 800 °C**	**0,05 °C**	**Temperature simulated with calibrator**	**Yes**	**2**	**No**	**RTD (IEC 60751)**
		Generation of voltage	**Temperature sensors**	**-200 °C – 1372 °C**	**0,2 °C**	**Temperature simulated with calibrator**	**Yes**	**2**	**No**	**IEC 60584-1:2013**

The accreditation also applies to the corresponding version of the international EN and ISO standards.

The calibration and measurement capability (CMC) includes measureand (technology area), method, measurement range and expanded measurement uncertainty. The expanded measurement uncertainty corresponds to a coverage probability (confidence level) of ~95%.

The scope of accreditation is flexible as specified in this decision. The accredited body must always retain a current list of the scope for which it is accredited.

Type of flexible scope
1: - Introduce new version of standard method and make editorial changes to non-standard method
2: - Introduce new version of standard method and make editorial changes to non-standard method, - Introduce new version and modifications of non-standard method. The procedure must be equivalent.

The changes introduced through accreditation with flexible scope must not involve new measurement principles, changes in measurement range, CMC (best measurement capability), or new quantities other than those included in the accreditation decision for calibration laboratories.