

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Český metrologický institut
CAB number 2202, CMI Calibration Laboratory
Okružní 772/31, 638 00 Brno

Calibration laboratory locations:

- | | |
|--|--|
| 1. Regional Inspectorate Praha | Radiová 1136/3, 102 00 Praha 10 – Hostivař |
| 2. Regional Inspectorate České Budějovice | U Sirkámy 33/5, 370 04 České Budějovice 4 |
| 3. Regional Inspectorate Plzeň | Bendova 539/11, 301 00 Plzeň |
| 4. Regional Inspectorate Liberec | Slunečná 23, 460 01 Liberec |
| 5. Regional Inspectorate Most | Vladislava Vančury 1428/7, 434 01 Most |
| 6. Regional Inspectorate Pardubice | Průmyslová 455, 530 03 Pardubice |
| 7. Regional Inspectorate Brno | Okružní 31, 638 00 Brno |
| 8. Regional Inspectorate Jihlava | Romana Havelky 17, 586 01 Jihlava |
| 9. Regional Inspectorate Kroměříž | Kotojedy 73, 767 01 Kroměříž |
| 10. Regional Inspectorate Opava | Gudrichova 41, 746 01 Opava |
| 11. Regional Inspectorate Olomouc | I.P. Pavlova 671/141, 779 00 Olomouc |
| 12. Laboratories for Primary Metrology in Prague | V Botanice 4, 150 72 Praha 5 |
| 13. TESTCOM Praha | Hvoždánská 3, 148 00 Praha 4 |

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CMC for the field of measured quantity: Length

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
1*	Strain gauges for mechanical testing of materials	0 mm	to	25 mm		0.9 μm 1.3 μm 20 μm	ČSN EN ISO 9513	151-MP-C003	1, 4, 6, 10
		25 mm	to	50 mm					
		50 mm	to	1,000 mm					
2	Gauge blocks	0 mm	to	10 mm	2nd order 3rd order 4th order 5th order	0.9 μm 1.3 μm 20 μm	ASTM E83	151-MP-C005	4, 6, 7
		10 mm	to	50 mm					
		50 mm	to	1,000 mm					
3*	Mechanical comparators of nominal length (0.3 to 100) mm	0.1 mm	to	1,000 mm		(0.5L +0.05) μm (1L +0.1) μm (2L +0.2) μm (5L +0.5) μm	Mechanical comparison with a standard using a comparator or length gauge	614-MP-C033 (ČSN EN ISO 3650)	
4*	Length measuring instruments and gauges	-0.01 mm	to	+0.01 mm		0.032 μm	Comparison using gauge blocks	614-MP-C005	4, 7
5	Micrometers	0 m	to	20 m		(0.4L +0.02) μm	Direct measurement by a laser interferometer	614-MP-C006	7, 12
6	Calipers	0 mm	to	500 mm		(5L +1.5) μm	Comparison with gauge blocks and gauges	614-MP-C008	4, 6, 7
7	Length measuring instruments, meters and gauges	0 mm	to	1,000 mm		20 μm	Comparison with gauge blocks, gauges and rings	614-MP-C009	4, 6, 7
		0 mm	to	1,000 mm		(2L +0.2) μm	Direct measurement by a length gauge	614-MP-C029	4, 6, 7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit max.					
8	Test sieves	0.005 mm	to 150 mm		(4L + 1.5) µm	Calibration on a 2D optical instrument, using slide gauge or limit gauges	614-MP-C102	6, 7
9	Roundness / balls, rings, cylinders, cones (Maximum diameter 350 mm)	-2 mm	to +2 mm		Q[0.025;0.01R] µm	Direct measurement by a ring gauge	614-MP-C103	7
10	Straightness and parallelity / rings, cylinders, cones, straightness and parallelity standards (Maximum horizontal path: 200 mm Maximum vertical path: 300 mm)	-2 mm	to +2 mm		Q[0.2;0.01R] µm			
10	Diameter / thread limit gauges, plain limit gauges	1 mm	to 100 mm		2.5 µm	Calibration on IAC MasterScanner XP 10060 analyzer	614-MP-C106	7
11*	Gauges, standards, artefacts	0 mm	to 600 mm		(2.5L + 1.2) µm	Calibration on a linear height gauge	614-MP-C104	6
		0 mm	to 2,550 mm		Q[0.09; 0.4L] µm	Measurement on a coordinate measuring machine	815-MP-C503	7, 12
12*	Coordinate measuring machine / system	0 m	to 6 m		Q[0.01;0.2L] µm	Comparison with the standard	815-MP-C501	7, 12
	- tactile	0 m	to 3 m		Q[0.01;0.2L] µm			
	- optical	0 m	to 3 m		Q[0.01;0.2L] µm			
	- multisensor	0 m	to 3 m		Q[0.01;0.2L] µm			

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		min.	unit max.					
	- optical 3D - articulated arm - computer tomography - laser-trackers	0 m 0 m 0 m 0 m	to to to to		Q[0.3; 1L] µm Q[0.3; 1L] µm Q[0.3; 1L] µm Q[0.3; 1L] µm			
13	Tape measures, length and distance gauges	0.3 m 0 m	to to		Q[100; 3L] µm Q[20; 20L] µm	Comparison using a tape measure, micrometer head	815-MP-CS10	6, 12
14*	Machines with electronic measurement of cubic content of wooden logs - length - diameter	0 m 5 cm	to to				411-MP-C003	4
15*	Roughness / setting standard - geometrical standard type C - geometrical standard type D	0.01 µm 1 µm 0.01 µm 0.01 µm	to to to to	Pt Pt Ra, Rq, Rpm, Rk profiles, material ratios, Rsk, Rp3z, Rku, Rc, Rdq, Rðc Rmax, RzISO, Rp, Rv, Rz, Rt, Rz1, Rz2, Rz3, Rz4, Rz5 Ra, Rq, Rpm, Rk profiles, material ratios, Rsk, Rp3z, Rku, Rc, Rdq, Rðc	Q[20; 50Pt] nm Q[20; 20Pt] nm Q[10; 30Ra] nm Q[20; 40Rp] nm Q[10; 40Ra] nm	Contact measurement	813-MP-C306	12

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		min.	unit max.					
16*	- geometrical standard type C and D	0.01 µm	to 1 µm	Rmax, RzISO, Rp, Rv, Rz, Rt, Rz1, Rz2, Rz3, Rz4, Rz5 Horizontal characteristics	Q[20; 50Rp] nm Q[20; 50Sm] nm			
	Roughness meter for setting standards	0.01 µm	to 1 µm	All characteristics	3.4 % 1.2 %	Contact measurement	813-MP-C306	12
	Roughness meter for geometrical standards	1 µm	to 6,000 µm		3.4 %			
17	Counting efficiency / Optical counters of aerosol particles	0 η	to 5 η	Particle size (0 to 50) µm	9 %	Comparison with PSL particles	614-MP-C105 ISO 21501-4, cl. 6.2, 6.4, 6.6	7
18	Linear thermal expansion / gauge blocks to 100 mm	0.1 µm·m ⁻¹ ·K ⁻¹ to 100 µm·m ⁻¹ ·K ⁻¹		At a temperature difference of 4 °C or more	0.29 µm·m ⁻¹ ·K ⁻¹	Measurement of length change at a defined temperature change	411-MP-C010	12
				At a temperature difference of 3 °C or more	0.35 µm·m ⁻¹ ·K ⁻¹			
				At a temperature difference of 2 °C or more	0.49 µm·m ⁻¹ ·K ⁻¹			
				At a temperature difference of 1 °C or more	0.95 µm·m ⁻¹ ·K ⁻¹			
19*	Length gauges rolling, contactless					Comparison using a tape measure, non-contact length gauges or non- contact length gauge reference standard	620-MP-C002	9
20*	Length sensors, thickness sensors, indicators	0.1 m	to 10 ⁵ m		0.005 %	Comparison with parallel gauge blocks	411-MP-C011	4
		0 mm	to 150 mm		0.2 µm			

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		min.	unit max.					
21	Grating period	0 nm	to 200 µm		0,5 nm	Measurements using an atomic force microscope	614-MP-C002	7
22	Step height	0 nm	to 20 µm		1 nm	Measurements using an atomic force microscope	614-MP-C146	7

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L nominal length expressed in metres

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CMC for the field of measured quantity: Plane angle

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
1	Autocollimators	-4,000	"	to +4,000		$Q[0.01; 2 \cdot 10^{-5} \cdot \varphi; 6 \cdot 10^{-9} \cdot \varphi^2]$	Comparison with a small angle generator	411-MP-C004	4
2*	Levels, autocollimators, inclinometers	-180 °	to	180 °		0.05"	Comparison with a rotary table or autocollimator	411-MP-C004	4
3*	Index heads and tables, goniometers, instruments for checking angular divisions, angle encoders, torque wrench angle sensors, built-in angle sensors, polygons, angle gauges, optical prisms	0 °	to	360 °		0.03"	Comparison with an optical polygon, autocollimator or rotary table	411-MP-C006	4, 9
4	Polygons, optical prisms, angle gauges	0 °	to	360 °		0.05"	Measurement using two autocollimators	411-MP-C006	4
5	Angle gauges	0 °	to	360 °		60"	Comparison with angle gauges	411-MP-C006	4

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φ nominal angle of rotation in ["]

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CMC for the field of measured quantity: Volume, flow rate

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit	unit					
1	Static volume/ Measuring vessels	0.2 mL	to	21,000 mL	Distilled water	0.01 %	Gravimetric method	616-MP-C016 (ČSN EN ISO 4787, EURAMET cg-19)	6, 7
2*	Static volume/ metal measuring vessels – limit, scaled, with a graduation mark	2 L	to	1,000 L	Distilled water / water	0.01 %	Gravimetric method	615-MP-C151 (ČSN EN ISO 4787, EURAMET cg-19)	6, 7, 10
3	Static volume / Piston volume meters piston pipettes and syringes other piston gauges	0.5 µL 10 µL	to to	10,000 µL 200,000 µL	Distilled water	0.13 % + 0,01 µL 0.04 %.	Gravimetric method	616-MP-C017 (ČSN EN ISO 8655-6 EURAMET cg-19)	6, 7
4*	Static volume/ Stationary reservoirs and tanks	5 dm ³	to	500 dm ³		0.3 %	Volume method	551-MP-C401	6
		20 dm ³	to	100 m ³		0.3 %	Flow method		
5	Volume and velocity gas meters and flow meters for gas	0.06 m ³ ·h ⁻¹	to	1,200 m ³ ·h ⁻¹		0.25 %	Flow method	512-MP-C103, chap. 5.1	6
		8 m ³ ·h ⁻¹	to	10,000 m ³ ·h ⁻¹		0.19 %	Volume method	512-MP-C103, chap. 5.2	
		0.3 m ³ ·h ⁻¹ 0.016 m ³ ·h ⁻¹	to to	1,600 m ³ ·h ⁻¹ 16 m ³ ·h ⁻¹		0.20 % 0.65 % 0.28 %		512-MP-C103, chap. 5.3 512-MP-C103, chap. 5.4	

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Ord. num-ber ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca-tion
		min.	unit	max. unit					
		0.02 m ³ ·h ⁻¹	to	160 m ³ ·h ⁻¹	Q _{min} to 0.1Q _{max} 0.1Q _{max} to Q _{max}	0.70 % 0.50 %		512-MP-C103, chap. 5.5	
		9.5 dm ³ ·h ⁻¹	to	760 dm ³ ·h ⁻¹		0.16 %	Gravimetric method		
		0.5 m ³ ·h ⁻¹	to	280 m ³ ·h ⁻¹		0.07 %	Volume method	512-MP-C103, chap. 5.7	
		0.01 m ³ ·h ⁻¹	to	0.75 m ³ ·h ⁻¹		1 %	Volume method	512-MP-C104	
6	Float flow meters	0.75 m ³ ·h ⁻¹	to	1.3 m ³ ·h ⁻¹		1.3 %			6
		1.3 m ³ ·h ⁻¹	to	25 m ³ ·h ⁻¹		1 %			
7	Conversion number Z / Gas calculators	0.8	to	275	(-30 to +80) °C (0.8 to 135) bar	0.06 %	Temperature and pressure measurement by volume flow simulation	512-MP-C105	6
8	Flow velocity anemometers	0.3 m·s ⁻¹	to	5 m·s ⁻¹	Air	0.3 % + 0.01 m·s ⁻¹ 0.5 %	Comparison with a LDA standard	615-MP-C147	7
		5 m·s ⁻¹	to	50 m·s ⁻¹					
		0.5 m·s ⁻¹	to	5 m·s ⁻¹		0.5 % + 0.01 m·s ⁻¹ 0.7 %	Comparison with a standard – Pitot tube		
		5 m·s ⁻¹	to	50 m·s ⁻¹					
	anemometers in the traction line	0.05 m·s ⁻¹	to	0.5 m·s ⁻¹		0.5 % + 0.005 m·s ⁻¹		615-MP-C149	

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		min.	unit	max.						unit
9	Water flow meters (water meters), flow meters of heat meters and flow meters tested by water	volume or volume flow rate	0.05 m ³ ·h ⁻¹	to	150 m ³ ·h ⁻¹	Water (10 to 30) °C	0.10 %	615-MP-C142	7	
										mass or mass flow rate
		volume or volume flow rate	0.002 m ³ ·h ⁻¹	to	0.005 m ³ ·h ⁻¹	(10 to 90) °C	0.25 %			
	0.005 m ³ ·h ⁻¹		to	0.012 m ³ ·h ⁻¹	0.16 %					
10	Water flow meters (water meters), flow meters of heat meters and flow meters tested by water	volume or volume flow rate	0.012 m ³ ·h ⁻¹	to	0.025 m ³ ·h ⁻¹	0.09 %	615-MP-C143			7
			0.025 m ³ ·h ⁻¹	to	0.050 m ³ ·h ⁻¹	0.07 %				
		0.050 m ³ ·h ⁻¹	to	10 m ³ ·h ⁻¹	0.05 %					
	volume or volume flow rate	0.002 m ³ ·h ⁻¹	to	0.1 m ³ ·h ⁻¹	(10 to 30) °C (30 to 90) °C (10 to 30) °C (30 to 90) °C	0.10 %				
0.1 m ³ ·h ⁻¹		to	6 m ³ ·h ⁻¹	0.12 %						
						0.06 %				
volume or volume flow rate	0.07 m ³ ·h ⁻¹	to	60 m ³ ·h ⁻¹	(10 to 30) °C (30 to 90) °C	0.08 %					
	0.7 m ³ ·h ⁻¹	to	60 m ³ ·h ⁻¹		0.10 %					
0.12 %										
	Volume flow rate or volume / Flow meters	3 dm ³ ·min ⁻¹	to	1,000 dm ³ ·min ⁻¹	Hydrocarbons based liquids	0.10 %		Volume method with a piston		

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
	for liquids other than water								
11*	Mass flow rate or mass / meters and measuring systems for cryogenic liquids	70 kg·min ⁻¹		to 400 kg·min ⁻¹	Cryogenic liquids	0.50 %	Mass method with a measuring loop	615-MP-C148	7
12	Mass or mass flow rate / Micro-flow meters	1 g·h ⁻¹		to 50 g·h ⁻¹	Distilled water (20 to 30) °C	0.30 %	Gravimetric method	615-MP-C158	7
		50 g·h ⁻¹		to 6,000 g·h ⁻¹		0.16 %			
	Volume or volume flow rate / Micro-flow meters	1 ml·h ⁻¹		to 50 ml·h ⁻¹		0.30 %	Volumetric method with a flow meter or a piston		
		50 ml·h ⁻¹		to 6,000 ml·h ⁻¹		0.16 %			

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^v velocity in m·s⁻¹

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CMC for the field of measured quantity: Mass

Ord. number i	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max. unit					
1	Mass of weights	1 mg		to 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg 50 kg 100 kg 200 kg 500 kg 1,000 kg		0.0010 mg 0.0013 mg 0.0016 mg 0.0020 mg 0.0026 mg 0.003 mg 0.004 mg 0.005 mg 0.006 mg 0.008 mg 0.010 mg 0.016 mg 0.030 mg 0.080 mg 0.15 mg 0.30 mg 0.80 mg 1.5 mg 3.3 mg 8 mg 50 mg 100 mg 250 mg 500 mg	Comparison with a reference weight	612-MP-C131	1 to 11

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Ord. number 1	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max. unit					
2*	Balances with non- automatic and automatic function	0 g 20 kg 50 kg 600 kg	to to to to	20 kg 50 kg 600 kg 200,000 kg	Weight E ₂ F ₁ F ₂ M	5·10 ⁻⁷ 1.6·10 ⁻⁶ 5·10 ⁻⁶ 1.6·10 ⁻⁵	Loading using a reference weight	612-MP-C132	I-11

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CMC for the field of measured quantity: Mechanical motion

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
1*	Acceleration of linear harmonic mechanical vibrations / vibration sensors	0.01 m·s ⁻²		to 400 m·s ⁻²	0.1 Hz to 5 kHz 5 to 20 kHz	1.0 % 1.5 %	Comparison with a standard sensor	812-MP-C207	12
2*	Sensitivity of vibration sensors / vibration transducers ⁴⁾	0.01 pC/m·s ⁻²		to 1,000 pC/m·s ⁻²	0.1 Hz to 5 kHz 5 to 20 kHz	1.0 % 1.5 %	Comparison with a standard sensor	812-MP-C207	12
		0.01 mV/m·s ⁻²		to 10,000 mV/m·s ⁻²	0.1 Hz to 5 kHz 5 to 20 kHz	1.0 % 1.5 %			
		0.1 mV/m·s ⁻¹		to 10,000 mV/m·s ⁻¹	0.1 Hz to 5 kHz 5 to 20 kHz	1.0 % 1.5 %			
3*	Transmission / amplifiers and filters	10 ⁻⁷ V/V 0.001 mV/pC		to 10 ⁷ V/V to 1,000 mV/pC	0.1 Hz to 100 kHz	0.5 % or ⁶ 0.1 dB	By simulated electrical signal	812-MP-C207	12
4*	Acceleration / vibrometers without a sensor ⁴ Velocity / vibrometers without a sensor ⁴	0.01 m·s ⁻² 0.01 m·s ⁻¹		to 10,000 m·s ⁻² to 1,000 mm·s ⁻¹	0.1 Hz to 100 kHz 0.1 Hz to 100 kHz	0.5 % 0.5 %	By simulated electrical signal	812-MP-C207	12
5*	Maximum value of half-sine wave mechanical shock / acceleration sensors ⁴	1 m·s ⁻²		to 100,000 m·s ⁻²		1.2 %	Comparison with a standard sensor	812-MP-C208	12
6*	Vibration frequency	0.1 Hz		to 10 kHz		0.01 %	Measurement using a counter	812-MP-C207; 812-MP-C210	12

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		min.	unit max.					
7*	Velocity of transport vehicles and objects	1 km·h ⁻¹	to 999 km·h ⁻¹		0.2 km·h ⁻¹ 0.01 %	Comparison with a standard speedometer Measurement using an optoelectronic delay line	812-MP-C209	
		0.1 km·h ⁻¹	to 320 km·h ⁻¹					
8*	Revolution – impulse generators and meters ⁵	0.01 min ⁻¹	to 100,000 min ⁻¹		1 % 10 ⁻¹⁰	Contact method Contactless method	812-MP-C212	12
		0.01 s ⁻¹	to 10,000,000 s ⁻¹					
9*	Linear motion velocity / velocity meters for mechanical parts	0.01 mm·s ⁻¹	to 1,000 m·s ⁻¹		0.01 %	Measurement of time and distance using an electric, optoelectronic or electronic delay line	812-MP-C201	12
		-200 m·s ⁻²	to 200 m·s ⁻²					
10*	Linear motion acceleration / acceleration meters for mechanical parts				0.01 %	Measurement of time and distance using an electric, optoelectronic or electronic delay line	812-MP-C201	12

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02. It is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

⁴ Acceleration can be specified also in g, sensor sensitivity in pC/g, resp. mV/g units, where 1 g = 9.81 m.s⁻².

⁵ Revolutions - impulses can be specified also in Hz as the number of revolutions - impulses per 1 s.

⁶ Acc. To the type of transmission expression

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CMC for the field of measured quantity: Force, mechanical tests

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
1	Force / force-proving instruments	0,2 N 1 N 20 kN		to 1 N 20 kN to 1 MN		0.0002 0.00004 0.0002	Calibration using a standard instrument or by suspending weights (ČSN EN ISO 376)	811-MP-C101	12
2*	Force / force-proving instruments	0.02 N 5 N		to 5 N to 2 MN		0.002 0.001	Calibration by a force transmission standard (force-proving instrument) or by suspending weights	811-MP-C111	1, 4, 6, 9, 10
3*	Torque / torque measuring instruments	0.02 N·m 0.2 N·m 1 N·m 100 N·m 1 kN·m		to 0.2 N·m to 1 N·m to 100 N·m to 1 kN·m to 10 kN·m		0.001 0.00009 0.00008 0.0001 0.0004	Calibration by a standard torque measuring instrument, torque transmission standard (torque sensor) or using weights and torque arms	811-MP-C102	4, 9, 12
4*	Torque / torque wrenches	0.02 N·m		to 3 kN·m		0.005	Calibration by a torque transmission standard (torque sensor) (ČSN EN ISO 6789-1, ČSN EN ISO 6789-2)	811-MP-C103	4, 9, 12

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
5*	Torque / equipment for the calibration of torque wrenches	0.02 N·m 500 N·m	unit	to 500 N·m to 10 kN·m		0.001 0.0004	Calibration by reference torque wrench, torque transmission standard (torque sensor) or by means of weights and torque arms	811-MP-C104	9, 12
6*	Torque / tightening tools and systems					0.005	Calibration by a calibration device for torque wrenches, torque screwdrivers and tighteners	411-MP-C103	4, 9
7*	Machines for mechanical testing of materials						Calibration by a force transmission standard (force-proving instrument) or weights (ASTM E4, ČSN EN ISO 7500)	151-MP-C001; 151-MP-C004	1, 4, 6, 10
		0.02 N		to 5 MN	Pressure	0.20 %			
		0.02 N		to 2 MN	Tension	0.20 %			
		200 kN		to 2 MN	Self-setting of the upper pressure plate	0.20 %	ČSN EN 12390-4 Annex A	151-MP-C001	1, 4, 6, 10
8*	Pendulum hammers for notch impact strength testing of materials	0.01 kN/s		to 150 kN/s	Increase in force	0.7 %	Direct comparison with force and time standards, program AED PANEL32	151-MP-C006	6
		0.01 J		to 2.5 kJ		0.02 %	Calibration by a force transmission standard (force-proving instrument) and length standard (ČSN EN ISO 148-2,	151-MP-C002	1, 6, 10

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
9*	Hardness plates and products	10 HRA 10 HRB 10 HRC 10 HRD 10 HREW 10 HRFW 10 HRGW 10 HRHW 6 HRKW	to	100 HRA 110 HRB 80 HRC 90 HRD 110 HREW 110 HRFW 100 HRGW 110 HRHW 110 HRKW	Rockwell A Rockwell B Rockwell C Rockwell D Rockwell E Rockwell F Rockwell G Rockwell H Rockwell K	0.2 HR	ČSN EN ISO 13802, ASTM E23, BS 131-4) ČSN EN ISO 6508-3, ASTM E18	813-MP-C301	12
		10 HR15N 10 HR30N 10 HR45N 10 HR15TW 10 HR30TW 6 HR45TW	to	100 HR15N 100 HR30N 90 HR45N 100 HR15TW 90 HR30TW 80 HR45TW	Rockwell 15N Rockwell 30N Rockwell 45N Rockwell 15T Rockwell 30T Rockwell 45T	0.26 HR			
		20 HV	to	3,000 HV	Vickers HV0.01 to HV0.5 HV0.5 to HV1 HV1 to HV5 HV5 to HV10 HV10 to HV30 HV30 to HV50 HV50 and more	0.59 % 0.51 % 0.44 % 0.44 % 0.38 % 0.36 % 0.34 %	ČSN EN ISO 6507-3, ASTM E384	813-MP-C301	12

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
		20 HBW		to 650 HBW	Brinell scale with 2.5mm and 1mm balls Scale with a 5mm ball Scale with a 10 mm ball	0.24 % 0.20 % 0.20 %	ČSN EN ISO 6506-3, ASTM E10	813-MP-C301	12
		1 ShA		110 ShA	Shore	0.26 Sh			
		1 °IRHD		110 °IRHD	IRHD N, H, L	0.44 °IRHD			
		1 °IRHD		110 °IRHD	IRHD M	0.70 °IRHD			
10	Rockwell penetrating bodies - cone angle - radius of curvature	118 ° 100 µm		to 122 ° to 300 µm		0.04° 0.08 µm	ČSN EN ISO 6508-2	813-MP-C301	12
11	Vickers penetrating bodies - angle of opposite walls	134 °		to 138 °		0.04°	ČSN EN ISO 6507-2	813-MP-C301	12
12*	Hardness – hardness testers	10 HRA 10 HRBW 10 HRC 10 HRD 10 HREW 10 HRFW 10 HRGW 10 HRHW		to 100 HRA to 110 HRBW to 80 HRC to 90 HRD to 110 HREW to 100 HRFW to 100 HRGW to 110 HRHW	Rockwell A Rockwell B Rockwell C Rockwell D Rockwell E Rockwell F Rockwell G Rockwell H	0.38 HR	ČSN EN ISO 6508-2, ASTM E18	813-MP-C307	4, 10, 11

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max. unit					
		6 HRKW	to	110 HRKW	Rockwell K	0.57 HR			
		10 HR15N	to	100 HR15N	Rockwell 15N				
		10 HR30N	to	100 HR30N	Rockwell 30N				
		10 HR45N	to	90 HR45N	Rockwell 45N				
		10 HR15TW	to	100 HR15TW	Rockwell 15T				
		10 HR30TW	to	90 HR30TW	Rockwell 30T				
		6 HR45TW	to	80 HR45TW	Rockwell 45T	0.32 %	ČSN EN ISO 6507-2, ASTM E384		
		20 HV	to	225 HV	Vickers				
		225 HV	to	700 HV					
		700 HV	to	3,000 HV	Brinell	0.30 %	ČSN EN ISO 6506-2, ASTM E10		
		20 HBW		200 HBW					
		200 HBW		500 HBW					
		500 HBW		650 HBW	Combined measurement (force, hardness, penetration of the penetrating body)	813-MP-C308 (chap. 5.1.)	12		
1 ShA		110 ShA	Shore A	0.22 ShA					
1 ShB		110 ShB	Shore B	0.22 ShB					
1 ShC		110 ShC	Shore C	0.22 ShC					
1 ShD		110 ShD	Shore D	0.22 ShD					
1 ShD		110 ShD	Shore DO	0.22 ShDO					
1 ShDO		110 ShDO	IRHD M	0.42 °IRHD M					
1 °IRHD M		110 °IRHD M	IRHD N	0.22 °IRHD N					
1 °IRHD N		110 °IRHD N	IRHD H	0.22 °IRHD H					
1 °IRHD H		110 °IRHD H	IRHD L	0.22 °IRHD L					

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- ¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.
- ² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02. It is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.
- ³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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CMC for the field of measured quantity: Pressure, mechanical stress

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location		
		min. unit	max. unit							
1	Deformation pressure gauges; digital pressure gauges; piston pressure gauges	1 Pa	to 20 Pa	Absolute pressure	Gas	Cross-floating method, determination of the effective area of the pressure gauge and the mass of weights	133-MP-C007, 601-MP-C046, 601-MP-C047	1, 6, 10		
		20 Pa	to 5,000 Pa							
		5 kPa	to 18 kPa						Positive gauge pressure	Gas
		18 kPa	to 2,000 kPa							
		2 MPa	to 8 MPa							
		-100 kPa	to -10 kPa							
		-10 kPa	to -3.45 kPa							
		-3.45 kPa	to -2 kPa	Absolute pressure	Gas					
		-2,000 Pa	to -6 Pa							
		-6 Pa	to 6 Pa							
		6 Pa	to 2,000 Pa							
		2 kPa	to 3.45 kPa							
		3.45 kPa	to 10 kPa	Absolute pressure	Liquid					
		10 kPa	to 100 kPa							
		100 kPa	to 345 kPa							
		345 kPa	to 2,000 kPa							
		2 MPa	to 8 MPa							
		20 kPa	to 600 kPa	Absolute pressure	Liquid					
		0.6 MPa	to 40 MPa							
									$p = p_e + p_{amb}$	49 Pa

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
2*	Pressure sensors and transducers ⁴	40 MPa	to 100 MPa	Positive gauge pressure Liquid	8.7·10 ⁻⁵ ·p _e + 10 Pa	Comparison with a reference pressure gauge	601-MP-C049	1
		100 MPa	to 120 MPa		1.2·10 ⁻⁴ ·p _e + 10 Pa			
		20 kPa	to 600 kPa		48 Pa			
		0.6 MPa	to 40 MPa		8.2·10 ⁻⁵ ·p _e			
		40 MPa	to 100 MPa	Absolute Gas pressure	8.7·10 ⁻⁵ ·p _e	10 % 2·10 ⁻⁵ ·p + 3.5 Pa 2·10 ⁻⁵ ·p + 3.8 Pa 9·10 ⁻⁵ ·p 3·10 ⁻⁵ ·p + 56 Pa		
		100 MPa	to 120 MPa		1.2·10 ⁻⁴ ·p _e			
		1 Pa	to 20 Pa					
		20 Pa	to 5,000 Pa					
		5 kPa	to 18 kPa					
		18 kPa	to 2,000 kPa					
		2 MPa	to 8 MPa					
		-100 kPa	to -10 kPa	Positive gauge pressure Gas	8.6·10 ⁻⁵ · p _e	8.6·10 ⁻⁵ · p _e 9.4·10 ⁻⁵ · p _e 2·10 ⁻⁵ · p _e + 32 Pa 1.3·10 ⁻⁴ · p _e + 48 Pa 1.5 Pa 1.3·10 ⁻⁴ ·p _e + 48 Pa 2·10 ⁻⁵ ·p _e + 32 Pa 9.4·10 ⁻⁵ ·p _e 8.6·10 ⁻⁵ ·p _e 8.9·10 ⁻⁵ ·p _e 9·10 ⁻⁵ ·p _e + 1 Pa 3·10 ⁻⁵ ·p _e + 55 Pa		
		-10 kPa	to -3.45 kPa		9.4·10 ⁻⁵ · p _e			
		-3.45 kPa	to -2 kPa		2·10 ⁻⁵ · p _e + 32 Pa			
		-2,000 Pa	to -6 Pa		1.3·10 ⁻⁴ · p _e + 48 Pa			
		-6 Pa	to +6 Pa		1.5 Pa			
		6 Pa	to 2,000 Pa		1.3·10 ⁻⁴ ·p _e + 48 Pa			
		2 kPa	to 3.45 kPa		2·10 ⁻⁵ ·p _e + 32 Pa			
		3.45 kPa	to 10 kPa		9.4·10 ⁻⁵ ·p _e			
		10 kPa	to 100 kPa		8.6·10 ⁻⁵ ·p _e			
		100 kPa	to 345 kPa		8.9·10 ⁻⁵ ·p _e			
		345 kPa	to 2,000 kPa		9·10 ⁻⁵ ·p _e + 1 Pa			
		2 MPa	to 8 MPa		3·10 ⁻⁵ ·p _e + 55 Pa			

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
		20 kPa	to	Absolute pressure $p = p_e + p_{amb}$	$2 \cdot 10^{-5} \cdot p_e + 49 \text{ Pa}$			
		0.6 MPa	to		$8.3 \cdot 10^{-5} \cdot p_e + 10 \text{ Pa}$			
		40 MPa	to		$8.8 \cdot 10^{-5} \cdot p_e + 10 \text{ Pa}$			
		100 MPa	to		$1.2 \cdot 10^{-4} \cdot p_e + 10 \text{ Pa}$			
		20 kPa	to	Positive gauge pressure	$2 \cdot 10^{-5} \cdot p_e + 48 \text{ Pa}$			
		0.6 MPa	to		$8.3 \cdot 10^{-5} \cdot p_e$			
		40 MPa	to		$8.8 \cdot 10^{-5} \cdot p_e$			
		100 MPa	to		$1.2 \cdot 10^{-4} \cdot p_e$			

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02. It is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

⁴ The uncertainties stated apply to the measurement of analogue output signals of pressure sensors and transducers. For digital output, the uncertainties for digital pressure gauges apply.

p absolute pressure value

p_{amb} ambient pressure value

p_e gauge pressure value, $p_e = (p - p_{amb})$

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CMC for the field of measured quantity: Temperature

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion			
		min.	unit	max. unit								
1	Glass thermometers	-90 °C	to	100 °C	division < 0.1 °C	0.015 °C	Comparison with a reference resistance temperature sensor in liquid bath.	133-MP-C001	1, 6, 7			
		100 °C	to	150 °C		0.020 °C						
		150 °C	to	210 °C		0.040 °C						
		210 °C	to	360 °C		0.050 °C						
		360 °C	to	420 °C	0.1 °C ≤ division ≤ 1 °C	0.15 °C						
		420 °C	to	550 °C		0.20 °C						
2*	Resistance temperature sensors			0.01 °C		0.002 °C				Direct measurement at triple point of water	133-MP-C002	1, 7
				660.32 °C		0.05 °C				Comparison with a reference resistance temperature sensor at a fixed point		
				-196 °C		0.03 °C	Comparison with a reference resistance temperature sensor near the boiling point of nitrogen					
				-90 °C		0.2 °C	Comparison with a reference resistance temperature sensor in a vertical furnace					
				-80 °C		0.015 °C	Comparison with a reference resistance temperature sensor in liquid bath.					
				160 °C		0.01 °C						
				300 °C		0.02 °C						
				420 °C		0.03 °C						

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Ord. number ¹⁾	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²⁾	Calibration principle	Calibration procedure identification ³⁾	Loca- tion
		min.	unit	max.					
3	Thermocouple temperature sensors	420 °C	to	550 °C		0.05 °C	Comparison with a reference resistance temperature sensor in a vertical furnace		
		550 °C	to	660 °C		0.09 °C			
		0 °C	to	220 °C		0.4 °C			
		220 °C	to	550 °C		0.5 °C			
		550 °C	to	1,100 °C	Noble metals	0.8 °C	Comparison with a reference thermoelectric temperature sensor in a horizontal furnace	133-MP-C003	1, 7
		1,100 °C	to	1,300 °C		1.3 °C			
		1,300 °C	to	1,600 °C		2.1 °C			
		-100 °C	to	-90 °C	Base metals	0.3 °C	Comparison with a reference resistance temperature sensor near the boiling point of nitrogen		
		-90 °C	to	220 °C		0.3 °C	Comparison with a reference resistance temperature sensor in a vertical furnace		
		220 °C	to	550 °C		0.2 °C	Comparison with a reference resistance temperature sensor in liquid bath.		
		550 °C	to	1,100 °C		1.0 °C	Comparison with a reference thermoelectric temperature sensor in a calibration furnace		
		1,100 °C	to	1,300 °C		1.4 °C			

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion	
		min.	unit	max. unit						
4*	Indication thermometers including temperature measuring chains, their temperature probes and characterization of thermal chambers	550 °C	to	1,100 °C	Thermocouples made of precious metals	0.6 °C	Comparison with a reference thermoelectric temperature sensor in a calibration furnace	133-MP-C004	1, 6, 7	
		1,100 °C	to	1,324 °C		1.2 °C				
		1,324 °C	to	1,554 °C		1.7 °C				
							0.002 °C			Direct measurement at triple point of water
							0.05 °C			Comparison with a reference resistance temperature sensor at a fixed point
							0.03 °C			Comparison with a reference resistance temperature sensor near the boiling point of nitrogen
							0.3 °C			Comparison with a reference resistance temperature sensor on customer equipment
							0.2 °C			Comparison with a reference resistance temperature sensor in a vertical furnace
							0.015 °C 0.01 °C 0.02 °C 0.03 °C			Comparison with a reference resistance temperature sensor in liquid bath

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max. unit					
5*	Infrared non-contact thermometers and measuring chains of infrared non-contact thermometers	420 °C	to	550 °C	Measuring chains with range limited to (-15 to 500) °C	0.05 °C	Comparison with a reference resistance temperature sensor in a vertical furnace	133-MP-C005	1, 7
		550 °C	to	660 °C		0.09 °C			
		550 °C 1,100 °C 1,200 °C	to to to	1,100 °C 1,200 °C 1,600 °C		0.7 °C 1.3 °C 1.8 °C			
		-30 °C	to	-15 °C		2.2 °C			
		-15 °C	to	0 °C		1.6 °C			
		0 °C	to	20 °C		1.1 °C			
		20 °C	to	100 °C		0.8 °C			
		100 °C	to	200 °C		1.1 °C			
		200 °C	to	300 °C		1.4 °C			
		300 °C	to	400 °C		1.7 °C			
400 °C	to	500 °C	2.2 °C						
500 °C	to	600 °C	2.6 °C						
600 °C	to	700 °C	2.9 °C						
6*	Measuring chains	-200 °C	to	0 °C	“K” ⁴ type Thermoelectric temperature sensor	0.1 % + 0.1 °C 0.007 % + 0.1 °C 0.017 %	Simulation of sensor electrical input signal	133-MP-C006	1

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
		-200 °C	to	0 °C	“J” ⁴ type Thermoelectric temperature sensor	0.06 % + 0.08 °C			
		0 °C	to	1,200 °C		0.006 % + 0.08 °C			
		-200 °C	to	-100 °C	“N” ⁴ type Thermoelectric temperature sensor	0.2 %			
		-100 °C	to	0 °C		0.05 % + 0.15 °C			
		0 °C	to	800 °C		0.15 °C			
		800 °C	to	1 300 °C	“S” ⁴ type Thermoelectric temperature sensor	0.01 % + 0.07 °C			
		0 °C	to	100 °C		0.7 °C			
		100 °C	to	300 °C		0.55 °C			
		300 °C	to	1,768 °C	“T” ⁴ type Thermoelectric temperature sensor ⁴	0.45 °C			
		-200 °C	to	0 °C		0.1 % + 0.1 °C			
		0 °C	to	400 °C	“B” ⁴ type Thermoelectric temperature sensor ⁴	0.1 °C			
		200 °C	to	500 °C		2 °C			
		500 °C	to	800 °C		0.8 °C			
		800 °C	to	1,820 °C	“R” ⁴ type Thermoelectric temperature sensor ⁴	0.5 °C			
		0 °C	to	150 °C		0.7 °C			
		150 °C	to	400 °C		0.45 °C			
		400 °C	to	1,768 °C	Pt 100 Resistance temperature sensor	0.4 °C			
		-200 °C	to	0 °C		0.05 °C			
		0 °C	to	850 °C		0.014 % + 0.05 °C			1
									1

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
		-200 °C	to	-150 °C	Pt 1000 Resistance temperature sensor	0.011 °C			1
		-150 °C	to	-50 °C		0.03 °C			
		-50 °C	to	0 °C		0.043 °C			
		0 °C	to	850 °C		+ 0.043 0.019 % °C			
7	Reserved	-1 V	to	1 V	Voltage output of transducers	0.007 % + 4 µV			1
		1 V	to	24 V		0.007 % + 0.1 mV			
		0 mA	to	25 mA		0.01 % + 1 µA			
		25 mA	to	55 mA		0.01 % + 2 µA			
8	Thermocouple temperature sensors				In Sn Fe-C Co-C Pd		Direct measurement at a fixed point	112-MP-C002	1
		156.5985 °C				0.12 °C			
		231.928 °C				0.12 °C			
		1153 °C				1.0 °C			
9	Contactless thermometers (TC)	1324 °C			Measuring point diameter less than 5 mm	0.85 °C	Measurement by wire method	112-MP-C003	1
		1553.53 °C				1.5 °C			
		156.5985 °C	In			0.2 °C			
		231.928 °C	Sn			0.2 °C			
		660.323 °C	Al		Cu	0.15 °C	Direct measurement at a fixed point		
		1,084.62 °C				0.10 °C			

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Ord. number ¹⁾	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²⁾	Calibration principle	Calibration procedure identification ³⁾	Loca- tion
		min.	unit	max.					
		100 °C 300 °C 600 °C 1,000 °C 1,300 °C	to to to to to	300 °C 600 °C 1,000 °C 1,300 °C 1,800 °C		0.5 °C 0.7 °C 0.8 °C 1.0 °C 1.5 °C	Comparison with a reference standard		
10*	Black bodies	-30 °C 45 °C 230 °C	to to to	45 °C 230 °C 600 °C		0.2 °C 0.22 °C 0.21 °C	Direct comparison of two black bodies using a transfer thermometer	112-MP-C004	1
		600 °C 1,000 °C 1,300 °C	to to to	1,000 °C 1,300 °C 1,800 °C			Comparison with a reference standard		
11*	Thermal cameras	-30 °C 500 °C 1,000 °C 1,300 °C	to to to to	500 °C 1,000 °C 1,300 °C 1,800 °C		0.8 °C 1.0 °C 1.5 °C 2.0 °C	Comparison with the standard	112-MP-C005	1, 7
12	Temperature calibrators	-50 °C -50 °C 0 °C -210 °C -270 °C -270 °C	to to to to to to	1,760 °C 1,760 °C 1,820 °C 1,200 °C 400 °C 1,000 °C	TC - R TC - S TC - B TC - J TC - T TC - E	0.12 °C 0.16 °C 0.14 °C 0.04 °C 0.04 °C 0.04 °C	Comparison with a calibrator or electrical measurement with a multimeter	611-MP-C130	1, 7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
		-270 °C	to	1,370 °C	TC - K	0.05 °C			
		-270 °C	to	1,300 °C	TC - N	0.05 °C			
		-200 °C	to	100 °C	TC - M	0.03 °C			
		-200 °C	to	800 °C	TC - L	0.03 °C			
		0 °C	to	2,500 °C	TC - A	0.24 °C			
		-200 °C	to	900 °C	TC – Fe-ko	0.04 °C			
		-200 °C	to	850 °C	RTD - Pt100	0.02 °C			
		-200 °C	to	850 °C	RTD - Pt200	0.02 °C			
		-200 °C	to	850 °C	RTD - Pt500	0.03 °C			
		-200 °C	to	850 °C	RTD - Pt1000	0.02 °C			
		-60 °C	to	250 °C	RTD - Ni100	0.01 °C			
		-60 °C	to	250 °C	RTD - Ni1000	0.01 °C			

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M a part of CMC and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

⁴ Applies to the CJC temperature = 0 °C.

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CMC for the field of measured quantity: Air humidity

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
1*	Relative humidity / hygrometers and humidity measuring chains including humidity probes, characterization of climatic chambers	5 % RH 30 % RH 50 % RH 70 % RH 80 % RH 90 % RH	to to to to to to	Air temperature (10 to 90) °C	0.6 % RH 0.7 % RH 0.8 % RH 0.9 % RH 1.0 % RH 1.5 % RH	Comparison with a standard hygrometer	636-MP-C119	1, 7
2	Dew point temperature / hygrometers	-75 °C -65 °C -50 °C -30 °C 60 °C 80 °C	to to to to to to		0.24 °C 0.16 °C 0.10 °C 0.08 °C 0.10 °C 0.15 °C	Comparison with a standard thermometer	636-MP-C120	7
3	Dew point temperature at elevated pressure / hygrometers					Comparison with a standard	112-MP-C006	1

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
		-60 °C -10 °C	to to		0.08 °C 0.07 °C	thermometer		

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with IL AC-P14 and EA-4/02 M a part of CMC and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %.
If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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CMC for the field of measured quantity: Electrical quantities

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	max.					
1*	DC voltage / DC voltage sources and meters	0 mV 20 mV 200 mV 2 V 10 V 20 V	to to to to to to to 1,100 V		15 · 10 ⁻⁶ · U + 0.05 μV 5.0 · 10 ⁻⁶ · U 2.6 · 10 ⁻⁶ · U 2.1 · 10 ⁻⁶ · U 1.5 μV 2.9 · 10 ⁻⁶ · U	Direct comparison with a calibrator or direct measurement with a multimeter	611-MP-C097, 611-MP-C098	1,7
2	DC voltage / DC voltage sources and meters	0 V 2 V 20 V	to to to 1,100 V		1.5 · 10 ⁻⁶ · U + 0.05 μV 0.8 · 10 ⁻⁶ · U 1.6 · 10 ⁻⁶ · U	Comparison with a voltage reference using a resistor divider	611-MP-C005	7
3*	AC voltage / AC voltage sources and meters	0.9 mV 2 mV	to to 20 mV	10 Hz to 75 kHz 75 kHz to 400 kHz 400 kHz to 750 kHz 750 kHz to 1 MHz 10 Hz to 25 kHz 25 kHz to 75 kHz 75 kHz to 200 kHz 200 kHz to 400 kHz	0.20 % 0.31 % 0.33 % 0.35 % 360 · 10 ⁻⁶ · U 330 · 10 ⁻⁶ · U 530 · 10 ⁻⁶ · U 710 · 10 ⁻⁶ · U	Direct comparison with a calibrator or direct measurement with a multimeter	611-MP-C097 611-MP-C098	1,7

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
		20 mV	to 200 mV	400 kHz to 750 kHz	790·10 ⁻⁶ ·U			
				750 kHz to 1 MHz	1100·10 ⁻⁶ ·U			
				10 Hz to 25 kHz	98·10 ⁻⁶ ·U			
				25 kHz to 75 kHz	190·10 ⁻⁶ ·U			
				75 kHz to 200 kHz	370·10 ⁻⁶ ·U			
				200 kHz to 400 kHz	590·10 ⁻⁶ ·U			
				400 kHz to 750 kHz	650·10 ⁻⁶ ·U			
				750 kHz to 1 MHz	1,000·10 ⁻⁶ ·U			
		200 mV	to 2 V	10 Hz to 35 Hz	37·10 ⁻⁶ ·U			
				35 Hz to 40 kHz	26·10 ⁻⁶ ·U			
				40 kHz to 75 kHz	37·10 ⁻⁶ ·U			
				75 kHz to 200 kHz	48·10 ⁻⁶ ·U			
		2 V	to 20 V	200 kHz to 400 kHz	120·10 ⁻⁶ ·U			
				400 kHz to 750 kHz	230·10 ⁻⁶ ·U			
				750 kHz to 1 MHz	590·10 ⁻⁶ ·U			
				10 Hz to 35 Hz	37·10 ⁻⁶ ·U			
				35 Hz to 40 kHz	26·10 ⁻⁶ ·U			
				40 kHz to 75 kHz	33·10 ⁻⁶ ·U			
				75 kHz to 200 kHz	40·10 ⁻⁶ ·U			
				200 kHz to 400 kHz	110·10 ⁻⁶ ·U			
		20 V	to 200 V	400 kHz to 750 kHz	210·10 ⁻⁶ ·U			
				750 kHz to 1 MHz	560·10 ⁻⁶ ·U			
				10 Hz to 35 Hz	42·10 ⁻⁶ ·U			
				35 Hz to 175 Hz	37·10 ⁻⁶ ·U			
				175 Hz to 40 kHz	28·10 ⁻⁶ ·U			
				40 kHz to 75 kHz	40·10 ⁻⁶ ·U			

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
4	Low AC voltage / AC voltage meters	200 V	to 1,100 V	75 kHz to 150 kHz	71·10 ⁻⁶ ·U			
				150 kHz to 200 kHz	240·10 ⁻⁶ ·U			
				10 Hz to 5 kHz 5 kHz to 25 kHz 25 kHz to 40 kHz 40 kHz to 750 kHz Generation only to 750 V	40·10 ⁻⁶ ·U 45·10 ⁻⁶ ·U 76·10 ⁻⁶ ·U 120·10 ⁻⁶ ·U 350·10 ⁻⁶ ·U			
5	DC voltage / Low DC current generators	0.1 μV	to 1 μV	50 Hz to 200 Hz	0.50 %	Comparison or measurement using an impedance divider	611-MP-C061	7
				200 Hz to 10 kHz	0.20 %			
				10 kHz to 100 kHz	0.70 %			
5	DC voltage / Low DC current generators	1 μV	to 1 mV	50 Hz to 200 Hz	0.20 %	Direct measurement with a picoammeter	611-MP-C034	7
				200 Hz to 10 kHz	0.07 %			
				10 kHz to 100 kHz	0.30 %			
5	DC voltage / Low DC current generators	0 pA	to 1 pA		1 fA			
5	DC voltage / Low DC current generators	1 pA	to 20 pA		0.13 %			
5	DC voltage / Low DC current generators	20 pA	to 200 pA		0.11 %			
5	DC voltage / Low DC current generators	0.2 nA	to 2 nA		0.08 %			
5	DC voltage / Low DC current generators	2 nA	to 20 nA		0.06 %			
5	DC voltage / Low DC current generators	20 nA	to 200 nA		0.05 %			
5	DC voltage / Low DC current generators	0.2 μA	to 2 μA		0.04 %			

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
6*	DC current / Low DC current meters	0 pA 1 pA 20 pA 0.2 nA 2 nA 20 nA 0.2 µA	to to to to to to to		1 fA 0.11 % 0.06 % 0.03 % 0.025 % 0.020 % 0.008 %	Indirect generation using DC voltage source and reference resistors	611-MP-C034	
		0 µA 1 µA 100 µA 200 µA 2 A 20 A	to to to to to to		0.10 nA $21 \cdot 10^{-6} \cdot I$ $12 \cdot 10^{-6} \cdot I$ $6.0 \cdot 10^{-6} \cdot I$ $15 \cdot 10^{-6} \cdot I$ $20 \cdot 10^{-6} \cdot I$	Direct measurement with a multimeter or indirect measurement with a current shunt	611-MP-C097	1, 7
	DC current / DC current meters	0 µA 1 µA 100 µA 200 µA 20 mA 200 mA 2 A	to to to to to to to		0.10 nA $21 \cdot 10^{-6} \cdot I$ $15 \cdot 10^{-6} \cdot I$ $6.0 \cdot 10^{-6} \cdot I$ $8.0 \cdot 10^{-6} \cdot I$ $15 \cdot 10^{-6} \cdot I$ $30 \cdot 10^{-6} \cdot I$	Direct generation with a calibrator	611-MP-C098	1, 7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
7*	AC current / AC current generators	9 μA	to 2 mA	10 Hz to 20 Hz	100·10 ⁻⁶ ·I 90·10 ⁻⁶ ·I 70·10 ⁻⁶ ·I 80·10 ⁻⁶ ·I 300·10 ⁻⁶ ·I	Direct measurement with a multimeter or indirect measurement with current shunts	611-MP-C097	1, 7
				20 Hz to 40 Hz				
				40 Hz to 5 kHz				
				5 kHz to 10 kHz				
				10 kHz to 30 kHz				
		2 mA	to 20 mA	10 Hz to 20 Hz	90·10 ⁻⁶ ·I 75·10 ⁻⁶ ·I 65·10 ⁻⁶ ·I 70·10 ⁻⁶ ·I 300·10 ⁻⁶ ·I			
				20 Hz to 40 Hz				
				40 Hz to 1 kHz				
				1 kHz to 10 kHz				
				10 kHz to 30 kHz				
		20 mA	to 200 mA	10 Hz to 20 Hz	80·10 ⁻⁶ ·I 65·10 ⁻⁶ ·I 70·10 ⁻⁶ ·I 80·10 ⁻⁶ ·I 300·10 ⁻⁶ ·I			
				20 Hz to 1 kHz				
				1 kHz to 5 kHz				
				5 kHz to 10 kHz				
				10 kHz to 30 kHz				
		200 mA	to 2 A	10 Hz to 20 Hz	120·10 ⁻⁶ ·I 100·10 ⁻⁶ ·I 90·10 ⁻⁶ ·I 100·10 ⁻⁶ ·I 120·10 ⁻⁶ ·I 500·10 ⁻⁶ ·I			
				20 Hz to 40 Hz				
				40 Hz to 1 kHz				
				1 kHz to 5 kHz				
				5 kHz to 10 kHz				
		2 A	to 20 A	10 kHz to 30 kHz	180·10 ⁻⁶ ·I 160·10 ⁻⁶ ·I 110·10 ⁻⁶ ·I			
				10 Hz to 20 Hz				
				20 Hz to 40 Hz				
				40 Hz to 1 kHz				

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min. unit	max. unit					
AC current / AC current meters		20 A	to 100 A	1 kHz to 5 kHz	140 · 10 ⁻⁶ · I	Direct generation with a calibrator	611-MP-C098	1, 7
				5 kHz to 10 kHz	160 · 10 ⁻⁶ · I			
		9 µA	to 200 µA	10 Hz to 20 Hz	250 · 10 ⁻⁶ · I			
				20 Hz to 40 Hz	160 · 10 ⁻⁶ · I			
				40 Hz to 1 kHz	120 · 10 ⁻⁶ · I			
				1 kHz to 5 kHz	150 · 10 ⁻⁶ · I			
				5 kHz to 10 kHz	200 · 10 ⁻⁶ · I			
				10 Hz to 35 Hz	130 · 10 ⁻⁶ · I			
				35 Hz to 1 kHz	100 · 10 ⁻⁶ · I			
				1 kHz to 5 kHz	160 · 10 ⁻⁶ · I			
				5 kHz to 10 kHz	800 · 10 ⁻⁶ · I			
				10 kHz to 30 kHz	2,000 · 10 ⁻⁶ · I			
		200 µA	to 2 mA	10 Hz to 35 Hz	120 · 10 ⁻⁶ · I			
				35 Hz to 1 kHz	90 · 10 ⁻⁶ · I			
		2 mA	to 200 mA	1 kHz to 10 kHz	140 · 10 ⁻⁶ · I			
				10 kHz to 30 kHz	700 · 10 ⁻⁶ · I			
				10 Hz to 35 Hz	120 · 10 ⁻⁶ · I			
				35 Hz to 1 kHz	75 · 10 ⁻⁶ · I			
				1 kHz to 5 kHz	130 · 10 ⁻⁶ · I			
				5 kHz to 10 kHz	140 · 10 ⁻⁶ · I			
		200 mA	to 2 A	10 kHz to 30 kHz	700 · 10 ⁻⁶ · I			
				10 Hz to 35 Hz	170 · 10 ⁻⁶ · I			
				35 Hz to 1 kHz	120 · 10 ⁻⁶ · I			
				1 kHz to 10 kHz	220 · 10 ⁻⁶ · I			
				10 Hz to 35 Hz	310 · 10 ⁻⁶ · I			
				35 Hz to 1 kHz	200 · 10 ⁻⁶ · I			

Ord. num-ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca-tion
		min. unit	max. unit					
				1 kHz to 5 kHz 5 kHz to 10 kHz 10 Hz to 35 Hz 35 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	300·10 ⁻⁶ I 690·10 ⁻⁶ I 350·10 ⁻⁶ I 200·10 ⁻⁶ I 300·10 ⁻⁶ I 950·10 ⁻⁶ I			
8	DC resistance / DC resistance standards and electrical resistance meters					Comparison by the ratio method — measurement of voltage drops at constant measuring current or direct measurement of reference resistance	131-MP-C003, 131-MP-C005, 611-MP-C097, 611-MP-C098	1, 7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
			1 GΩ 10 GΩ 100 GΩ 1 TΩ		100 kΩ 5.0 MΩ 25 MΩ 200 MΩ			
9*	DC resistance / DC resistance standards and electrical resistance meters	0 μΩ 100 μΩ 200 μΩ 1 mΩ 2 mΩ 10 mΩ 20 mΩ 100 mΩ 200 mΩ 1 Ω 2 Ω 10 Ω 20 Ω 100 Ω 200 Ω 1 kΩ 2 kΩ	to to to to to to to to to to to to to to to to to to		3.5·10 ⁻⁶ ·R + 0.5 nΩ 7.2·10 ⁻⁶ ·R 6.0·10 ⁻⁶ ·R 3.5·10 ⁻⁶ ·R 5.6·10 ⁻⁶ ·R 2.6·10 ⁻⁶ ·R 1.6·10 ⁻⁶ ·R 0.86·10 ⁻⁶ ·R 1.6·10 ⁻⁶ ·R 0.73·10 ⁻⁶ ·R 1.6·10 ⁻⁶ ·R 0.71·10 ⁻⁶ ·R 1.2·10 ⁻⁶ ·R 0.35·10 ⁻⁶ ·R 0.93·10 ⁻⁶ ·R 0.35·10 ⁻⁶ ·R 1.2·10 ⁻⁶ ·R	Comparison by the ratio method – measurement of voltage drops at constant measuring current or direct measurement of reference resistance	131-MP-C003, 131-MP-C005, 611-MP-C097, 611-MP-C098	1.,7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
		10 kΩ 20 kΩ 100 kΩ 200 kΩ 1 MΩ 2 MΩ 10 MΩ 20 MΩ 200 MΩ 1 GΩ 2 GΩ 10 GΩ	to to to to to to to to to to to to		0.38·10 ⁻⁶ ·R 0.86·10 ⁻⁶ ·R 0.59·10 ⁻⁶ ·R 4.1·10 ⁻⁶ ·R 4.0·10 ⁻⁶ ·R 7.4·10 ⁻⁶ ·R 7.0·10 ⁻⁶ ·R 16·10 ⁻⁶ ·R 520·10 ⁻⁶ ·R 120·10 ⁻⁶ ·R 0.52 % 0.12 %			
10	Resistance ratio / Thermometer bridges 0 Hz to 400 Hz					Measurement with a set of reference resistors or a simulated resistance ratio generated by an inductive divider	611-MP-C045	1, 7
11	DC Power / DC Power Meters for 1 V to 1,000 V and 1 mA to 120 A					Measurement by a digital sampling wattmeter	611-MP-C042	7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	max.					
12	Single-phase and three- phase AC active power / Active electrical power meters for voltage 1 V to 1,000 V, current 1 mA to 200 A, power factor 0 to 1, frequency 15 Hz to 1,000 Hz	1 mW	to 600 kW		25 µW/VA	Measurement by a digital sampling wattmeter	611-MP-C042	7
13	Single-phase and three- phase AC reactive power / Reactive electrical power meters for voltage 1 V to 1,000 V, current 1 mA to 200 A, power factor 0 to 1, frequency 15 Hz to 1,000 Hz	1 mvar	to 600 kvar			Measurement by a digital sampling wattmeter	611-MP-C042	7
14	Phase angle / Phase angle meters	0 °	to 360 °	0.1 µV to 1 µV 1 µV to 100 µV 0.1 mV to 1 mV 1 mV to 10 mV 10 mV to 560 V 10 mV to 560 V 10 mV to 100 V	400 Hz to 1.592 kHz 1 Hz to 6 kHz 6 kHz to 50 kHz 50 kHz to 100 kHz	Measurement on a phase calibrator and impedance divider Digital signal sampling	611-MP-C061 611-MP-C060	7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand		Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	max.						
		unit	unit	10 mV to 1 V 10 mV to 1 V	100 kHz to 1 MHz 1 MHz to 10 MHz	0.050° 0.10°			
15	Electrical energy single-phase and three- phase / DC and AC power meters for voltage 1 V to 1,000 V, current 1 mA to 120 A, power factor 0 to 1, frequency 0 Hz and 15 Hz to 800 Hz, time 1 s to 3,600 s	1 Ws	to 1296 MWs			0.010 %	Comparison with a reference energy meter Measurement by a digital sampling wattmeter	611-MP-C042	7
16	Flicker / Flicker meters	0.5 Pst	to 10 Pst		50 Hz	0.003·Pst	Using digital sampling of a signal	611-MP-C043	7
17	pH / pH meters	0 pH	to 14 pH			0.001 pH	Comparison with a calibrator (electric method)	611-MP-C129	7
		-1,000 mV	to 1,000 mV			0.010 mV			
18	Capacity / Electrical capacity meters	1 pF	to 10 pF		1 kHz 1 kHz	0.015 % 0.0070 % 0.0015 % 0.0050 % 0.010 %	Comparison with a standard using impedance bridge	611-MP-C030, 611-MP-C041	7

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		min. unit	max. unit					
		10 pF	to 1 nF	1 MHz to 10 MHz	0.20 %			
				50 Hz to 1 kHz	0.0050 %			
				1 kHz	0.0007 %			
				1 kHz to 10 kHz	0.0050 %			
				10 kHz to 1 MHz	0.010 %			
				1 MHz to 10 MHz	0.20 %			
		1 nF	to 10 nF	50 Hz to 1 kHz	0.0070 %			
				1 kHz	0.0010 %			
				1 kHz to 10 kHz	0.0050 %			
				10 kHz to 1 MHz	0.010 %			
		10 nF	to 100 nF	1 MHz to 10 MHz	0.20 %			
				50 Hz to 200 Hz	0.010 %			
				200 Hz to 1 kHz	0.0030 %			
		100 nF	to 1 µF	1 kHz to 10 kHz	0.0070 %			
				10 kHz to 100 kHz	0.010 %			
				100 kHz to 1 MHz	0.030 %			
				50 Hz to 200 Hz	0.0070 %			
		1 µF	to 10 µF	200 Hz to 10 kHz	0.0050 %			
				10 kHz to 100 kHz	0.015 %			
				100 kHz to 1 MHz	0.050 %			
				20 Hz to 50 Hz	0.010 %			
				50 Hz to 1 kHz	0.0070 %			
		10 µF	to 100 µF	1 kHz	0.0050 %			
				1 kHz to 10 kHz	0.0060 %			
				10 kHz to 20 kHz	0.015 %			
				20 kHz to 100 kHz	0.050 %			
				20 Hz to 50 Hz	0.010 %			

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		min.	max.					
19	Loss factor D / Loss factor meters	-0.001	to 0.001	50 Hz to 1 kHz	0.0050 %	Comparison with a standard using impedance bridge	611-MP-C030 611-MP-C041	7
				1 kHz to 10 kHz	0.0060 %			
				10 kHz to 20 kHz	0.020 %			
				20 Hz to 200 Hz	0.010 %			
				200 Hz to 1 kHz	0.015 %			
				1 kHz to 5 kHz	0.020 %			
				20 Hz to 200 Hz	0.020 %			
				200 Hz to 1 kHz	0.025 %			
				20 Hz to 200 Hz	0.030 %			
				0.1 Hz	0.10 %			
19	Loss factor D / Loss factor meters	-0.001	to 0.001	1 pF to 10 pF	57·10 ⁻⁶ (abs.)	Comparison with a standard using impedance bridge	611-MP-C030 611-MP-C041	7
				50 Hz to 200 Hz	8·10 ⁻⁶ (abs.)			
				200 Hz to 1 kHz	3·10 ⁻⁶ (abs.)			
				1 kHz	17·10 ⁻⁶ (abs.)			
				1 kHz to 5 kHz	42·10 ⁻⁶ (abs.)			
				5 kHz to 10 kHz	120·10 ⁻⁶ (abs.)			
				10 kHz to 20 kHz	150·10 ⁻⁶ (abs.)			
				20 kHz to 100 kHz	300·10 ⁻⁶ (abs.)			
				100 kHz to 200 kHz	450·10 ⁻⁶ (abs.)			
				200 kHz to 500 kHz	900·10 ⁻⁶ (abs.)			
19	Loss factor D / Loss factor meters	-0.001	to 0.001	500 kHz to 1 MHz	13·10 ⁻⁶ (abs.)	Comparison with a standard using impedance bridge	611-MP-C030 611-MP-C041	7
				10 pF to 100 pF	4·10 ⁻⁶ (abs.)			
				50 Hz to 200 Hz	3·10 ⁻⁶ (abs.)			
				200 Hz to 1 kHz	9·10 ⁻⁶ (abs.)			

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		min.	unit	max.					
					5 kHz to 10 kHz	18·10 ⁻⁶ (abs.)			
					10 kHz to 20 kHz	39·10 ⁻⁶ (abs.)			
					20 kHz to 100 kHz	70·10 ⁻⁶ (abs.)			
					100 kHz to 200 kHz	150·10 ⁻⁶ (abs.)			
					200 kHz to 500 kHz	350·10 ⁻⁶ (abs.)			
					500 kHz to 1 MHz	700·10 ⁻⁶ (abs.)			
					100 pF to 1,000 pF	9·10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	4·10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	3·10 ⁻⁶ (abs.)			
					1 kHz	7·10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	12·10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	23·10 ⁻⁶ (abs.)			
					10 kHz to 20 kHz	70·10 ⁻⁶ (abs.)			
					20 kHz to 100 kHz	150·10 ⁻⁶ (abs.)			
					100 kHz to 200 kHz	350·10 ⁻⁶ (abs.)			
					200 kHz to 500 kHz	700·10 ⁻⁶ (abs.)			
					500 kHz to 1 MHz	79·10 ⁻⁶ (abs.)			
					1 nF to 10 nF	7·10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	9·10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	24·10 ⁻⁶ (abs.)			
					1 kHz	41·10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	79·10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	70·10 ⁻⁶ (abs.)			
					10 kHz to 20 kHz	150·10 ⁻⁶ (abs.)			
					20 kHz to 100 kHz	350·10 ⁻⁶ (abs.)			
					100 kHz to 200 kHz	700·10 ⁻⁶ (abs.)			
					200 kHz to 500 kHz	79·10 ⁻⁶ (abs.)			
					500 kHz to 1 MHz	7·10 ⁻⁶ (abs.)			
					1 nF to 10 nF	9·10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	24·10 ⁻⁶ (abs.)			

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		min.	unit	max.					
		0.001		to 0.01	1 pF to 10 pF	50 Hz to 200 Hz			
					200 Hz to 1 kHz	1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
		10 pF to 100 pF			50 Hz to 200 Hz	200 Hz to 1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
					50 Hz to 200 Hz	200 Hz to 1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
		100 pF to 1,000 pF			50 Hz to 200 Hz	200 Hz to 1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
					50 Hz to 200 Hz	200 Hz to 1 kHz			
		1 nF to 10 nF			50 Hz to 200 Hz	200 Hz to 1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
					50 Hz to 200 Hz	200 Hz to 1 kHz			
		0.01		to 0.1	50 Hz to 200 Hz	200 Hz to 1 kHz			
					1 kHz to 5 kHz	5 kHz to 10 kHz			
					10 kHz to 20 kHz	20 kHz to 50 kHz			
					50 Hz to 200 Hz	200 Hz to 1 kHz			

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		min.	unit	max.					
					1 kHz to 5 kHz	110 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	130 · 10 ⁻⁶ (abs.)			
					10 pF to 100 pF	61 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	52 · 10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	30 · 10 ⁻⁶ (abs.)			
					1 kHz	48 · 10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	58 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	140 · 10 ⁻⁶ (abs.)			
					100 pF to 1,000 pF	74 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	30 · 10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	70 · 10 ⁻⁶ (abs.)			
					1 kHz	61 · 10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	100 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	7 · 10 ⁻⁶ (abs.)			
					1 nF to 10 nF	9 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	24 · 10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	41 · 10 ⁻⁶ (abs.)			
					1 kHz	79 · 10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	300 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	100 · 10 ⁻⁶ (abs.)			
		0.1	to	1	1 pF to 1,000 pF	7 · 10 ⁻⁶ (abs.)			
					1 nF to 10 nF	9 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	24 · 10 ⁻⁶ (abs.)			
					200 Hz to 1 kHz	41 · 10 ⁻⁶ (abs.)			
					1 kHz	79 · 10 ⁻⁶ (abs.)			
					1 kHz to 5 kHz	300 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	100 · 10 ⁻⁶ (abs.)			
					10 kHz to 20 kHz	7 · 10 ⁻⁶ (abs.)			
					1 kHz	9 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	24 · 10 ⁻⁶ (abs.)			

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		min.	unit	max.					
		-1		1	10 nF to 100 nF	50 Hz to 200 Hz			
						200 Hz to 1 kHz			
						1 kHz			
						1 kHz to 5 kHz			
						5 kHz to 10 kHz			
						10 kHz to 20 kHz			
						20 kHz to 100 kHz			
						100 kHz to 200 kHz			
						200 kHz to 500 kHz			
						500 kHz to 1 MHz			
					100 nF to 1,000 nF	20 Hz to 50 Hz			
						50 Hz to 5 kHz			
						5 kHz to 10 kHz			
						10 kHz to 20 kHz			
						20 kHz to 100 kHz			
						100 kHz to 200 kHz			
						200 kHz to 500 kHz			
						500 kHz to 1 MHz			
					1 µF to 10 µF	20 Hz to 50 Hz			
						50 Hz to 5 kHz			
						5 kHz to 10 kHz			
						10 kHz to 20 kHz			
						20 kHz to 100 kHz			
					10 µF to 100 µF	20 Hz to 50 Hz			
						50 Hz to 200 Hz			
						200 Hz to 5 kHz			
						5 kHz to 10 kHz			

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		min.	unit	max.					
20	AC resistance / AC resistance meters	1 mΩ to 10 mΩ		10 mΩ	10 kHz to 20 kHz	220 · 10 ⁻⁶ (abs.)	Comparison with a standard using impedance bridge	611-MP-C040, 611-MP-C041	7
					20 kHz to 100 kHz	500 · 10 ⁻⁶ (abs.)			
					100 μF to 1,000 μF	100 · 10 ⁻⁶ (abs.)			
					50 Hz to 1 kHz	50 · 10 ⁻⁶ (abs.)			
		10 mΩ to 100 mΩ		100 mΩ	1 kHz to 5 kHz	100 · 10 ⁻⁶ (abs.)			
					5 kHz to 10 kHz	160 · 10 ⁻⁶ (abs.)			
					10 kHz to 20 kHz	350 · 10 ⁻⁶ (abs.)			
		1 Ω to 10 kΩ		1 Ω	1 mF to 3 mF	100 · 10 ⁻⁶ (abs.)			
					20 Hz to 50 Hz	50 · 10 ⁻⁶ (abs.)			
					50 Hz to 200 Hz	50 · 10 ⁻⁶ (abs.)			
		1 mΩ to 10 mΩ		10 mΩ	200 Hz to 5 kHz	100 · 10 ⁻⁶ (abs.)	Comparison with a standard using impedance bridge	611-MP-C040, 611-MP-C041	7
					3 mF to 10 mF	100 · 10 ⁻⁶ (abs.)			
					20 Hz to 1 kHz	100 · 10 ⁻⁶ (abs.)			
					1 mΩ to 10 mΩ				
		10 mΩ to 100 mΩ		100 mΩ	20 Hz to 50 Hz	0.015 %			
					50 Hz to 20 kHz	0.010 %			
					20 kHz to 100 kHz	0.015 %			
		100 mΩ to 1 Ω		1 Ω	20 Hz to 50 Hz	0.010 %			
					50 Hz to 100 kHz	0.0070 %			
					100 kHz to 1 MHz	0.10 %			
		1 Ω to 10 kΩ		10 kΩ	20 Hz to 50 Hz	0.0070 %	Comparison with a standard using impedance bridge	611-MP-C040, 611-MP-C041	7
					50 Hz to 100 kHz	0.0050 %			
					100 kHz to 200 kHz	0.0070 %			
					200 kHz to 500 kHz	0.015 %			
		1 Ω to 10 kΩ		10 kΩ	500 kHz to 1 MHz	0.025 %	Comparison with a standard using impedance bridge	611-MP-C040, 611-MP-C041	7
					20 Hz to 20 kHz	0.0020 %			
		1 Ω to 10 kΩ		10 kΩ	20 kHz to 200 kHz	0.0050 %	Comparison with a standard using impedance bridge	611-MP-C040, 611-MP-C041	7
					200 kHz to 500 kHz	0.015 %			

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		min. unit	max. unit						
				200 kHz to 500 kHz	0,010 %				
				500 kHz to 1 MHz	0,015 %				
				1 MHz to 10 MHz	0.20 %				
		10 kΩ to 100 kΩ		20 Hz to 50 Hz	0.0070 %				
				50 Hz to 20 kHz	0.0050 %				
				20 kHz to 100 kHz	0,0070 %				
				100 kHz to 200 kHz	0,010 %				
				200 kHz to 500 kHz	0,015 %				
				500 kHz to 1 MHz	0.025 %				
				1 MHz to 10 MHz	5.0 %				
		100 kΩ to 1 MΩ		20 Hz to 50 Hz	0.015 %				
				50 Hz to 20 kHz	0.0080 %				
				20 kHz to 100 kHz	0,020 %				
1 MΩ to 10 MΩ		100 kHz to 1 MHz	0.10 %						
		1 MHz to 10 MHz	5.0 %						
		20 Hz to 50 Hz	0.030 %						
10 MΩ to 100 MΩ		50 Hz to 20 kHz	0.015 %						
		20 kHz to 1 MHz	0.30 %						
		20 Hz to 50 Hz	0.070 %						
			50 Hz to 5 kHz	0.030 %					
			5 kHz to 10 kHz	0.050 %					
			10 kHz to 100 kHz	0.30 %					
21	Secondary component of impedance Z, expressed as phase angle φ / AC resistance meters	-π	to	+π	1 mΩ to 10 mΩ / 20 Hz to 200 Hz	3.5 μrad	Comparison with a standard using impedance bridge	611-MP-C040 611-MP-C041 611-MP-C099	7

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		min.	unit	max.					
					200 Hz to 1 kHz	17·f ⁴ μrad			
					1 kHz to 100 kHz	17·f μrad			
					10 mΩ to 100 mΩ	20 Hz to 1 kHz			
					1 kHz to 100 kHz	2,5 μrad			
					100 mΩ to 500 mΩ	4·f μrad			
					20 Hz to 1 kHz	1,5 μrad			
					1 kHz to 1 MHz	1,5·f μrad			
					500 mΩ to 1 Ω	20 Hz to 1 kHz			
					1 kHz to 1 MHz	1,0 μrad			
					1 Ω to 1 kΩ	0,9·f μrad			
					20 Hz to 1 kHz	0,7 μrad			
22	Inductance / Inductance meters	1 μH	to	10 mH 100 mH 10 μH	1 kHz	0,7·f μrad	Comparison with a standard using impedance bridge	611-MP-C099 611-MP-C041	7
					1 kHz to 1 MHz	0,9 μrad			
					20 Hz to 1 kHz	0,9·f μrad			
					1 kHz to 1 MHz	1,2 μrad			
					10 kΩ to 100 kΩ	1,2·f μrad			
					100 kΩ to 10 MΩ	50 μrad			
					50 Hz to 200 Hz	8,0 μrad			
					200 Hz to 5 kHz	20 μrad			
					5 kHz to 10 kHz	30 μrad			
					10 kHz to 20 kHz	1,2·f μrad			
					20 kHz to 100 kHz				
					1 kHz	0,15 μH			
					1 kHz	1,5 μH			
					1 kHz to 10 kHz	0,10 %			
					10 kHz to 20 kHz	0,050 %			
					20 kHz to 100 kHz	0,020 %			

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		min.	unit	max.					
		10 µH	to	100 µH	100 kHz to 1 MHz	0.050 %			
					50 Hz to 200 Hz	0.10 %			
					200 Hz to 1 kHz	0.015 %			
					1 kHz to 20 kHz	0.020 %			
					20 kHz to 100 kHz	0.015 %			
					100 kHz to 1 MHz	0.050 %			
		100 µH	to	1 mH	20 Hz to 50 Hz	0.30 %			
					50 Hz to 1 kHz	0.015 %			
					1 kHz to 100 kHz	0.010 %			
					100 kHz to 1 MHz	0.050 %			
		1 mH	to	10 mH	20 Hz to 50 Hz	0.30 %			
					50 Hz to 200 Hz	0.015 %			
					200 Hz to 1 kHz	0.0080 %			
					1 kHz	0.0050 %			
		10 mH	to	100 mH	1 kHz to 20 kHz	0.0080 %			
					20 kHz to 100 kHz	0.015 %			
					100 kHz to 1 MHz	0.050 %			
					20 Hz to 50 Hz	0.30 %			
		100 mH	to	1 H	50 Hz to 1 kHz	0.0080 %			
					1 kHz	0.0050 %			
					1 kHz to 10 kHz	0.020 %			
					10 kHz to 100 kHz	0.050 %			

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		min. unit	max. unit								
23	Digital electrical inspection equipment and associated standards / insulation resistance	1 H	to	10 H	20 Hz to 50 Hz 50 Hz to 1 kHz 1 kHz to 1 MHz	0.30 % 0.020 % 0.050 %	Indirect measurement using a voltage calibrator, reference resistor and voltmeter	131-MP-C006	1.7		
		10 H	to	100 H	20 Hz to 50 Hz 50 Hz to 1 kHz 1 kHz to 100 kHz	0.30 % 0.030 % 0.050 %					
		100 H	to	1 kHz	20 Hz to 50 Hz 50 Hz to 10 kHz	0.30 % 0.10 %					
		10 kΩ	to	10 MΩ	0.0012 % 0.0020 % 0.010 % 0.025 % 0.050 % $0.002 \cdot R^2 + 0.001 \cdot R$ ^{Note 5} 0.0017 % 0.0030 % 0.010 %					Direct generation of resistance with a calibrator of inspection	0.020 %
		10 MΩ	to	100 MΩ							
		100 MΩ	to	1 GΩ							
		1 GΩ	to	10 GΩ							
		10 GΩ	to	100 GΩ							
		100 GΩ	to	1 TΩ							
		100 MΩ		100 MΩ							
		1 GΩ		1 GΩ							
		10 GΩ		10 GΩ							

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		min.	unit	max.					
		1 GΩ	to	10 GΩ		1.0 %	instruments, resistance decade or resistance reference standards		
		10 GΩ	to	100 GΩ		1.5 %			
		100 GΩ	to	1 TΩ		2.5 %			
		1 TΩ	to	10 TΩ		4.0 %			
		100 MΩ				0.0030 %			
		1 GΩ				0.0050 %			
		10 GΩ				0.020 %			
		100 GΩ				0.10 %			
		1 TΩ				0.50 %			
	Digital electrical inspection equipment and associated standards / protective loop, network impedance and ground loop						Direct generation of resistance with a calibrator of inspection instruments, resistance decade or resistance reference standards		
		25 mΩ				5.0 mΩ			
		50 mΩ				5.0 mΩ			
		100 mΩ				5.0 mΩ			
		330 mΩ				7.0 mΩ			

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		min.	unit	max. unit						
		500 mΩ 1 Ω 1.8 Ω 5 Ω 10 Ω 18 Ω 50 Ω 100 Ω 180 Ω 500 Ω 1 kΩ 1.8 kΩ					8.0 mΩ 10 mΩ 18 mΩ 30 mΩ 60 mΩ 100 mΩ 300 mΩ 500 mΩ 1.0 Ω 2.5 Ω 5.0 Ω 10 Ω			
Digital electrical inspection equipment and associated standards / RCD tripping current								Simulation of a residual current device and direct measurement of tripping current by a calibrator of inspection instruments		
		3 mA	to	3 A	50 Hz		0.20 %			
		3 mA	to	3 A	50 Hz		1.0 %			
Digital electrical inspection equipment and associated standards / RCD tripping time								Simulation of a residual current device and direct measurement of tripping time by a calibrator of inspection instruments		
		10 ms	to	5 s	50 Hz		0.05 ms			

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		min.	unit	max.					
		10 ms	to	5 s	50 Hz	0.020 % + 0.25 ms			
	Digital electrical inspection equipment and associated standards / passive leak current	0.1 mA	to	30 mA	50 Hz	0.30 % + 2 µA	Direct comparison with a calibrator of inspection instruments		
	Digital electrical inspection equipment and associated standards / differential leak current	0.1 mA	to	30 mA	50 Hz	0.30 % + 2 µA			
	Digital electrical inspection equipment and associated standards / differential leak current	0.1 mA	to	30 mA	50 Hz	0.30 % + 2 µA			
	Digital electrical inspection equipment and associated standards / active leak current	0.1 mA	to	30 mA	50 Hz	0.30 % + 1 µA			
		0.1 mA	to	300 mA	DC + 20 Hz to 400 Hz	0.20 %			
	Digital electrical inspection equipment and associated standards / DC voltage	0 V	to	10 kV		0.30 % + 5 V	Direct measurement of high voltage with a calibrator of inspection instruments or a voltmeter and voltage probe		

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand		Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.						
	Digital electrical inspection equipment and associated standards / AC voltage	0 V		to 10 kV		50 Hz	0.50 % + 5 V			
	Digital electrical inspection equipment and associated standards / DC current	1 A		to 1 kA	Current clamp		0.80 %	Current simulation with a calibrator and current coil		
	Digital electrical inspection equipment and associated standards / AC current	1 A		to 1 kA	Current clamp	50 Hz	0.50 %			

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		min.	unit	max.	unit					
24	Oscilloscope vertical deflection coefficient	-222 V 1 mV 21 mV 556 mV	to to to to	222 V 21 mV 556 mV 210 V		0 Hz 10 Hz to 10 kHz	0.025 % + 25 µV 0.1 % + 15 µV 0.1 % + 1 µV 0.05 % + 1 µV	Direct voltage generation with an oscilloscope calibrator	113-MP-C008	1
25	Oscilloscope time base	1 ns	to	50 s			0.25 · 10 ⁻⁶	Direct generation by an oscilloscope calibrator	113-MP-C008	1
26	Oscilloscope bandwidth	0.1 Hz 300 MHz 550 MHz 1.1 GHz	to to to to	300 MHz 550 MHz 1.1 GHz 3.2 GHz		drop -3 dB	4 % 5 % 7 % 8 %	Measurement using oscilloscope calibrator	113-MP-C008	1
	Relative decrease of oscilloscope frequency response	-6 dB	to	6 dB		0.1 Hz to 300 MHz 300 MHz to 550 MHz 550 MHz to 1.1 GHz 1.1 GHz to 3.2 GHz	0.18 dB 0.22 dB 0.31 dB 0.35 dB			
27	Oscilloscope rise time	300 ps	to	1 s			12 ps	Calibrator signal measurement with an oscilloscope and correction	113-MP-C008	1

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		min. unit	max. unit	unit					
28	Input resistance / oscilloscopes, counters, etc.	800 k Ω 40 Ω	to to	1.2 M Ω 90 Ω		0.1 % 0.1 %	Measurement using an oscilloscope calibrator	113-MP-C008	1
29	Voltage/oscilloscopic probe split ratio				To 222 V 0 Hz to 10 kHz	0.5 %	Direct voltage generation with an oscilloscope calibrator	113-MP-C008	1
30*	RF power calibration factor / power sensors	0.05	to	1.1	0 GHz to 1 GHz 1 GHz to 18 GHz 18 GHz to 40 GHz 40 GHz to 50 GHz	0.9 % 1.5 % 2.0 % 3.0 %	Direct comparison of reference and calibrated meter reading	113-MP-C014	1
	RF power level L/level meters,	44 dB(mW) 20 dB(mW) 10 dB(mW)	to to to	55 dB(mW) 44 dB(mW) 20 dB(mW)	9 kHz to 2.5 GHz 9 kHz to 6 GHz 6 GHz to 18 GHz 9 kHz to 1 GHz 1 GHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 40 GHz 40 GHz to 50 GHz 9 kHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 40 GHz 40 GHz to 50 GHz	0.12 dB 0.09 dB 0.14 dB 0.06 dB 0.07 dB 0.1 dB 0.13 dB 0.15 dB 0.05 dB 0.09 dB 0.13 dB 0.15 dB			
		-10 dB(mW)	to	10 dB(mW)					

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		min. unit	to	max. unit					
		-30 dB(mW)	to	-10 dB(mW)	9 kHz to 1 GHz 1 GHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 40 GHz 40 GHz to 50 GHz 9 kHz to 1 GHz 1 GHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 40 GHz 40 GHz to 50 GHz 0.1 MHz to 1 GHz 1 GHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 26.5 GHz	0.06 dB 0.07 dB 0.1 dB 0.13 dB 0.15 dB 0.07 dB 0.09 dB 0.1 dB -0,001·(L+30) + 0.13 dB -0,001·(L+30) + 0.15 dB -0,001·(L+60) + 0.07 dB -0,001·(L+60) + 0.07 dB -0,0015·(L+60) + 0.11 dB -0,002·(L+60) + 0.15 dB			
		-60 dB(mW)	to	-30 dB(mW)					
		-100 dB(mW)	to	-60 dB(mW)					
	RF voltage at a defined location on the coaxial line/probes, transducers	1 mV 2 V	to	2 V 100 V	0 GHz to 2 GHz	1 % 1.7 %	Power measurements and recalculations with vector corrections		
RF current at a defined location on the coaxial line/probes, transducers	20 µA 40 mA	to	40 mA 2 A	0 GHz to 2 GHz	1 % 1.7 %				
ΔL level difference of power; voltage and current/amplifiers, attenuators, level	0 dB	to	65 dB	9 kHz to 1 MHz	0,0006ΔL + 0.02 dB	Power ratio measurement			

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		min.	unit	max. unit					
31	meters, signal sources and other test equipment	65 dB		to 75 dB	1 MHz to 13.2 GHz	0.14 dB			
		75 dB		to 85 dB		0.21 dB			
		0 dB		to 85 dB		0,0006/L + 0.02 dB			
		85 dB		to 95 dB		0.14 dB			
		95 dB		to 105 dB		0.21 dB			
		105 dB		to 110 dB		0.56 dB			
		0 dB		to 75 dB	13.2 GHz to 26.5 GHz	0,0006/L + 0.02 dB			
		75 dB		to 85 dB		0.14 dB			
		85 dB		to 95 dB		0.21 dB			
		95 dB		to 100 dB		0.56 dB			
	0 dB		to 40 dB	26.5 GHz to 50 GHz	0.1 dB				
31	Voltages / equipment used mainly in testing (EMC) Voltage/ESD simulators	0.5 mV		to 1,000 V	0 Hz 10 Hz to 100 kHz 10 Hz to 100 kHz 0 Hz	0.1 %	Measurement by a reference standard multimeter Direct measurement by a standard HV voltmeter	113-MP-C014 113-MP-C017	1
		1 mV		to 100 V		0.15 % +3 µV			
		100 V		to 500 V		0.32 %			
		500 V		to 35 kV		2 % +5 V			
32	Current / equipment for testing (EMC)	0.1 mA		to 1 A	0 Hz	0.1 %	Measurement by a reference standard multimeter	113-MP-C014	1
	Current / excitation of rectangular antenna	1 A		to 40 A	40 Hz to 60 Hz	1.5 %	Measurement using a shunt	113-MP-C017	

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		min.	unit	max.					
33	Current / current probes, shunts	40 A	to	400 A	40 Hz to 60 Hz	1.8 %			
		50 mA	to	1.9999 A	10 Hz to 5 kHz	0.5 %			
	Transfer impedance / current probes	-65 dB (Ω)	to	+35 dB (Ω)	10 Hz to 100 MHz 100 MHz to 300 MHz 300 MHz to 400 MHz	0.2 dB 0.35 dB 0.5 dB	Input current generation and output voltage measurement	113-MP-C017	1
34	Amplitude modulation depth <i>m</i> / signal sources, modulation meters				fc: 100 kHz to 10 MHz	0.0075 · <i>m</i>	Measurement by ref. modulation analyzer, direct comparison with a reference standard	113-MP-C014	1
		5 %	to	99 %	fmod: 50 Hz to 10 kHz				
35	Impedance/ coupling networks				fc: 10 MHz to 3 GHz	0.025 · <i>m</i> 0.005 · <i>m</i>	Measurement by a vector network analyzer and recalculations	113-MP-C017	1
		3 Ω	to	200 Ω	9 kHz to 400 MHz modulus phase				
36	Reflection coefficient modulus <i>r</i> / equipment used mainly in testing (EMC)				BNC connector 9 kHz to 1 GHz 1 GHz to 2 GHz 2 GHz to 3 GHz	6 % 4° 0.015 <i>r</i> ² + 0.01 0.025 <i>r</i> ² + 0.02 0.035 <i>r</i> ² + 0.03	Measurement by a vector network analyzer	113-MP-C017	1
		0	to	1					

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		min.	unit	max.					
					N connector 5 kHz to 2 GHz 2 GHz to 8 GHz 8 GHz to 18 GHz	0.07r ² + 0.015	Measurements with directional bridges or couplers		
						0.08r ² + 0.02			
						0.12r ² + 0.03			
37	Current/pulse generators, ESD simulators	1 A		to 130 A		4 %	Measurement using an oscilloscope with an ESD target	113-MP-C017	1
38	Short circuit current, peak value / pulse generators	1 A		to 3 kA	Rise time > 0.2 μs	4 %	Measurement with an oscilloscope with shunt or current transformer	113-MP-C017	1
39	Open circuit voltage, peak value / pulse generators	20 V		to 8 kV	Rise time > 0.2 μs	3.5 %	Measurement using an oscilloscope with a HV probe	113-MP-C017	1
40	Voltage to the load 2 Ω, 10 Ω, 20 Ω, 50 Ω, peak value / pulse generators	10 V		to 1 kV	Rise time > 0.2 μs	3.8 %	Measurement using an oscilloscope with a HV differential probe	113-MP-C017	1
41	Voltage, peak value/pulse generators EFT/burst, US defectoscopes,	10 V		to 4 kV	To 50 Ω load	3 %	Measurement with an oscilloscope with a HV divider or with attenuators	113-MP-C017	1
		200 V		to 6 kV	To 1 kΩ load	4 %			

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		min.	unit	max. unit					
42	Pulse area/pulse generators for EMI receiver calibration, ČSN EN 55016-1-1 ed.4	0.1 μVs	to	30 μVs	9 kHz to 150 kHz	2.8 %	Measurement with an oscilloscope with attenuators and subsequent calculations and corrections	113-MP-C017	1
		0.01 μVs	to	1 μVs	150 kHz to 30 MHz	2.8 %			
		1 nVs	to	100 nVs	30 MHz to 1 GHz	3 %			

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		min. unit	max. unit					
43	AC current ratio / Measuring current transformers	0.1	to 5,000	0.5 A to 5,000 A / 5 A and 1 A	50 Hz	Comparison with a measuring transformer	817-MP-C701	1, 12
	Current phase shift / Measuring current transformers	-600 ' to	600 ' to	0.5 A to 5,000 A / 5 A and 1 A	50 Hz	Comparison with a measuring transformer		
						0.07'		
44*	AC voltage ratio / Measuring current transformers		50 100 220	5 kV / 100 V 10 kV / 100 V 22 kV / 100 V	50 Hz	Comparison with a measuring transformer	817-MP-C701	1, 12
		0.4	to 80,000	100 V to 400 kV / 5 V to 250 V	50 Hz	Comparison with a HV divider		
	Measuring voltage transformers / Voltage phase shift	-600 ' to	600 ' to	5 kV; 10 kV and 22 kV / 100 V	50 Hz	Comparison with a measuring transformer		
45*				100 V to 400 kV / 5 V to 250 V	50 HZ	Comparison with a HV divider	817-MP-C705	12
		0 A	to 10 kA	1 thread		Comparison with a measuring current transformer		
	Rogowski coils / AC current				0.021 %			

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		min. unit	max. unit						
46	Antenna factor / antennas	-10 dB/m	to	+60 dB/m	3 m distance	30 MHz to 100 MHz	Three antenna method	851-MP-C004, chap. 5.1 (ANSI C63.5 chap. 5)	13
						100 MHz to 300 MHz			
						300 MHz to 1 GHz			
47	Antenna factor / antennas	-10 dB/m	to	+60 dB/m	3 m distance	1 GHz to 18,000 MHz	Substitution method	851-MP-C004, chap. 5.2 (ANSI C63.5 chap. 6)	13
						30 MHz to 100 MHz			
						100 MHz to 300 MHz			
						300 MHz to 1 GHz			
						1 GHz to 18 GHz			
					10 m distance	30 MHz to 100 MHz			
48	Antenna factor / antennas	-10 dB/m	to	+60 dB/m	3 m distance	100 MHz to 300 MHz	Measurement of transmission of two identical antennas	851-MP-C004, chap. 5.4 (SAE ARP 958, Rev.D, chap 3 and 4)	13
						300 MHz to 1 GHz			
						1 GHz to 18 GHz			
						30 MHz to 100 MHz			
						100 MHz to 300 MHz			
					1 m distance	30 MHz to 1 GHz			
						1 GHz to 18 GHz			

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		min. unit	max. unit					
49	Antenna factor / rectangular antennas	-10 dB/m	to +60 dB/m	1 m distance	2.2 dB	Measurement of the magnetic field intensity of a standard antenna	851-MP-C004, chap. 5.5 (SAE ARP 958, Rev.D, chap. 6 and 7)	13
50	Antenna factor / rod antennas	-10 dB/m	to +60 dB/m		2.1 dB	Adaptive circuit measurement	851-MP-C004, chap. 5.3 (ČSN EN 55016-1-4)	13
51	Minimum input signal level / electronic counters	1 mV	to 1 V			Voltage generation by a calibrator or conjunction with levelling meter	113-MP-C007	1
52	DC resistance / equipment used mainly in testing (EMC)	0.5 Ω	to 1.2 MΩ		5 % + 1 mV	Measurement with a standard multimeter	113-MP-C017	1
53	Transmission coefficient modulus T / equipment used mainly in testing (EMC)	0 dB	to -10 dB		0.1 % + 0.1 Ω	Vector network analyzer measurements	113-MP-C017	1
		-10 dB	to -70 dB		0.025 - 0.001 · T dB			
		-70 dB	to -90 dB	9 kHz to 4.5 GHz	0.0025 · (T+ 0.035 - I0) dB 0.015 · (T+7 - 0) dB			

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M a part of CMC and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies.

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

⁴ f is the frequency value in kHz

⁵ R is the resistance value in TΩ

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CMC for the field of measured quantity: Magnetic quantities

Ord. num-ber ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.	unit				
1	Magnetic induction / Reference magnets	0.3 mT		to	2 T	(0.21 to 1) %	Comparison with a standard teslameter	817-MP-C607	12

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

² The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M a part of CMC and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95 %. If not stated otherwise, the uncertainty values stated without a unit are relative to the measured value. The uncertainty value stated herein is based on the best conditions achievable by the laboratory; the uncertainty value of a specific calibration may be higher depending on the conditions of such a calibration. For identical extreme values of adjacent ranges, the lower uncertainty value always applies

³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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CMC for the field of measured quantity: Optical quantities

Ord. num-ber ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
1	Spectral reflection coefficient R Spectrophotometers	0 %	to 100 %	8°/t, 8°/d 380 nm to 460 nm	(0.1 + 0.010·R) % (abs.) (0.12 + 0.008·R) % (abs.) (0.17 + 0.014·R) % (abs.)	Comparison with a colorimetric standard	818-MP-C802	12
				465 nm to 780 nm		Measurement by a reference spectrophotometer		
	Colorimetric standard	0 %	to 100 %	8°/t, 8°/d 380 nm to 460 nm 465 nm to 780 nm 0°/45° 380 nm to 780 nm	(0.1 + 0.010·R) % (abs.) (0.12 + 0.008·R) % (abs.) (0.17 + 0.014·R) % (abs.)		818-MP-C802	12
2	Surface colour, colorimetric coordinates Spectrophotometers, colorimeters	2 -110 -110	to 99 to 110 to 110	8°/t, 8°/d, 0°/45°	0.35 (abs.) 0.25 (abs.) 0.25 (abs.)	Comparison with a colorimetric standard		
	Colorimetric standard	2 -110 -110	to 99 to 110 to 110	8°/t, 8°/d, 0°/45°	0.40 (abs.) 0.30 (abs.) 0.30 (abs.)	Measurement by a reference spectrophotometer		

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		min. unit	max. unit					
3	Surface colour, colorimetric coordinates						818-MP-C802	12
	Spectrophotometers, colorimeters							
	Y	0.3	to 100	8°/t, 8°/d, 0°/45	0.25 (abs.)	Comparison with a colorimetric standard		
	x	0.002	to 0.7		0.0005 (abs.)			
	y	0.002	to 0.8		0.0005 (abs.)			
4	Colorimetric standard					Measurement by a reference spectrophotometer	818-MP-C802	12
	Y	0.3	to 100	8°/t, 8°/d, 0°/45	0.35 (abs.)			
	x	0.002	to 0.7		0.0007 (abs.)			
	y	0.002	to 0.8		0.0007 (abs.)			
	Surface colour, colorimetric coordinates							
	Spectrophotometers, colorimeters							
	L	2	to 99	8°/t, 8°/d, 0°/45	0.35 (abs.)	Comparison with a colorimetric standard		
	u'	0.002	to 0.6		0.0005 (abs.)			
	v'	0.002	to 0.6		0.0005 (abs.)			
	Colorimetric standard					Measurement by a reference spectrophotometer		
	L	2	to 99	8°/t, 8°/d, 0°/45	0.40 (abs.)			
	u'	0.002	to 0.6		0.0008 (abs.)			

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		min. unit	max. unit					
		0.002	to 0.6		0.0008 (abs.)			
5	Gloss / Gloss meters, gloss standards	0.1 GU	to 150 GU	20°, 60°, 85°	1.8 GU	ISO 2813	818-MP-C808	12
6*	Illumination / Light sources	5 lx	to 50,000 lx		2.2 %	Measurement by a reference photometer	818-MP-C801	12
	Illumination / Luxmeters	1 lx	to 50,000 lx		0.8 %	Comparison with a reference photometer	818-MP-C811	12
7*	Irradiance / colorimetric boxes	$\mu\text{W} \cdot \text{cm}^{-2}$ 0.1	to 1,000	230 nm to 470 nm	5 %	Comparison with a reference photometer	818-MP-C801	12
8*	Replacement colour temperature / colorimetric (light) boxes	2,000 K	to 10,000 K		30 K	Measurement by a reference spectrophotometer	818-MP-C801	12
9*	Perpendicular spectral transmission / Transmission spectrophotometers, standard filters	0.1 0.001 0.6 0.3 0.3 0.3 0.02 0.02	to 1 to 0.1 to 1 to 0.6 to 0.6 to 0.6 to 0.3 to 0.3	(200 ≤ λ < 380) nm (200 ≤ λ < 380) nm (380 ≤ λ < 1,000) nm (380 ≤ λ < 400) nm (400 ≤ λ < 700) nm (700 ≤ λ ≤ 1,000) nm (380 ≤ λ < 400) nm (400 ≤ λ ≤ 1,000) nm	0.0012 (abs.) 0.0001 (abs.) 0.0008 (abs.) 0.0041 (abs.) 0.00056 (abs.) 0.0017 (abs.) 0.0015 (abs.) 0.00022 (abs.)	Comparison with a reference photometer	818-MP-C810	12

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		min. unit	max. unit					
10*	Perpendicular spectral absorbance / Transmission spectrophotometers, standard filters	0.001	to	(380 ≤ λ < 400) nm	0.0002 (abs.)	Comparison with a reference photometer	818-MP-C810	12
		0.001	to	(400 ≤ λ ≤ 1,000) nm	0.00008 (abs.)			
		0.00	to	(200 ≤ λ < 380) nm	0.0005 to 0.0052 (abs.)			
		1.00	to	(200 ≤ λ < 380) nm	0.0004 to 0.046 (abs.)			
		0.00	to	(380 ≤ λ < 1,000) nm	0.0003 to 0.0006 (abs.)			
		0.22	to	(380 ≤ λ < 400) nm	0.0030 to 0.0060 (abs.)			
		0.22	to	(400 ≤ λ < 700) nm	0.0004 to 0.0008 (abs.)			
		0.22	to	(700 ≤ λ ≤ 1,000) nm	0.0012 to 0.0025 (abs.)			
		0.52	to	(380 ≤ λ < 400) nm	0.0022 to 0.034 (abs.)			
		0.52	to	(400 ≤ λ ≤ 1,000) nm	0.0003 to 0.0048 (abs.)			
11*	Wavelength λ / Transmission spectrophotometers	1.70	to	(380 ≤ λ < 400) nm	0.0044 to 0.097 (abs.)	Comparison with a standard filter	818-MP-C810	12
		1.70	to	(400 ≤ λ ≤ 1,000) nm	0.0017 to 0.036 (abs.)			
12	Wavelength λ / Standard filters	200 nm	to	1,700 nm	0.2 nm	Measurement by a reference spectrophotometer	818-MP-C810	12
		200 nm	to	1,700 nm	0.2 nm	Comparison with an optical density standard	818-MP-C812	12
	Transmission optical density / Optical densitometers	0	to	4.5	0.0038 (abs.)	Measurement by a reference densitometer	818-MP-C812	12
	Transmission optical density D / Optical density standards	0	to	4.5	0.0038 (abs.)			

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Český metrologický institut
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Okružní 772/31, 638 00 Brno

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
13	Optical power / Optical radiometers, fiber power meters	1 · 10 ⁻⁹ W	to 10 W	800 nm to 920 nm 920 nm to 960 nm 960 nm to 1,000 nm 1,000 nm to 1,580 nm 1,580 nm to 1,650 nm	0.40 % 0.50 % 0.45 % 0.47 % 0.60 %	Comparison with a reference detector ⁴	818-MP-C813	12
14	Optical attenuation / Attenuators	0 dB	to 65 dB	800 nm to 1,650 nm	0.052 dB (abs.)	Comparison with a reference attenuators	818-MP-C813	12
15	Linearity / Fiber power meters	0 dB	to 0.5 dB	Power level 0 dBm to -65 dBm	0.004 dB	Comparison with a reference detector ⁴	818-MP-C813	12
16	Wavelength / Fiber spectrum analyzers	800 nm	to 1,650 nm			Comparison with a reference radiation source, spectrometer / wavemeter	818-MP-C813	12
17	Luminous intensity / Standard light sources	1 cd	to 20,000 cd		0.8 %	Measurement by a reference photometer	818-MP-C811	12
18	Brightness / Brightness meters	1 cd m ⁻²	to 30,000 cd m ⁻²		0.94 %	Primary realization of brightness / Comparison with a reference brightness meter	818-MP-C805	12
19	Luminous flux / Standard light sources	10 lm	to 20,000 lm		1.0 %	Comparison with a standard light source in the integration sphere or on a reference goniophotometer	818-MP-C807	12

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		min. unit	max. unit					
20	Spectral irradiance / Spectroradiometers	0.65 mW m ⁻² nm ⁻¹	to 300 mW m ⁻² nm ⁻¹	300 nm to 400 nm 400 nm to 1,700 nm 1,700 nm to 2,500 nm	3.4 % 3.0 % 4.5 %	Comparison with a standard source of optical radiation	818-MP-C806	12
21	Spectral radiance / Spectroradiometers	mW sr ⁻¹ m ⁻² nm ⁻¹ 1.12 ¹ mW sr ⁻¹ m ⁻² nm ⁻¹ 1.50 ¹	to 10.00 mW sr ⁻¹ m ⁻² nm ⁻¹ to 95.00 mW sr ⁻¹ m ⁻² nm ⁻¹	370 nm to 800 nm 800 nm to 1,000 nm 1,000 nm to 1,700 nm	3.2 % 3.6 % 3.0 %	Comparison with a standard source and standard of spectral reflectance	818-MP-C806	12
22	Wavelength λ / spectroradiometer	365 nm	to 923 nm		0.4 nm	Comparison with a standard source	818-MP-C806	12
23	Spectral integral parameters / Sources of optical radiation Replacement colour temperature T _c Colour rendering index R _a Light colour, colorimetric coordinates x y Light colour, colorimetric coordinates u' v'	2,000 K 1 0.002 0.002 0.002	10,000 K to 100 to 0.7 to 0.8 to 0.6		20 K 1.2 (abs.) 0.0025 (abs.) 0.0020 (abs.) 0.0017 (abs.)	Measurement by a reference spectrophotometer	818-MP-C806	12

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
	v'	0.002	to 0.6		0.0015 (abs.)			
	Spectral integral parameters / Spectrophotometers							
	Replacement colour temperature T _c	2,000 K	10,000 K		20 K			
	Colour rendering index R _a	1	to 100		0.7 (abs.)			
	Light colour, colorimetric coordinates							
	x	0.002	to 0.7		0.0014 (abs.)			
	y	0.002	to 0.8		0.0010 (abs.)			
	Light colour, colorimetric coordinates							
	u'	0.002	to 0.6		0.0009 (abs.)			
	v'	0.002	to 0.6		0.0006 (abs.)			

¹ Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

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³ If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

⁴ Expressed in dBm: $P[dBm] = 10 \cdot \log(P[W]/0,001)$; uncertainty $U[dB] = 10 \cdot \log(1/(1-U[\cdot]))$.

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CAB number 2202, CMI Calibration Laboratory
Okružní 772/31, 638 00 Brno

CMC for the field of measured quantity: Time and frequency quantities

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
1*	Frequency / signal sources, frequency meters	0.01 Hz 3 GHz 18 GHz		to to to		$1 \cdot 10^{-11}$ $1 \cdot 10^{-11}$ 3 Hz	Measurement by ref. counter, direct comparison with a reference standard alternatively using frequency dividers	113-MP-C007	1, 7 1
2*	Period / signal sources, time interval meters					$1 \cdot 10^{-11}$	Measurement by ref. counter, direct comparison with a reference standard	113-MP-C007	1, 7
3*	Time interval / signal sources, time interval meters	5 ns 0 s 0 s		to to to		$1 \cdot 10^{-11}$ $(1.1 \cdot 10^{-9} + 1 \cdot 10^{-11} \text{ t}) \text{ s}$ $(10 \cdot 10^{-12} + 2 \cdot 10^{-3} \text{ t}) \text{ s}$	Measurement using a counter Measurement by an oscilloscope	113-MP-C007	1, 7
4*	Simple pulse counting / pulse sources, pulse counters	0		to to		0 $1 \cdot 10^7$	Measurement by ref. counter, direct comparison with a reference standard	113-MP-C007	1, 7

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Český metrologický institut
CAB number 2202, CMI Calibration Laboratory
Okružní 772/31, 638 00 Brno

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location	
		min.	unit						max.
5	FM frequency deviation / signal sources, modulation meters	0.2 kHz	to	40 kHz	$f_c=250 \text{ kHz to } 10 \text{ MHz}$ $f_{\text{mod}}=20 \text{ Hz to } 10 \text{ kHz}$ $\Delta f/ f_{\text{mod}} > 0.2$	1.5 %	Measurement by ref. modulation meter, direct comparison with a reference standard	113-MP-C007	1
					$\Delta f/ f_{\text{mod}} \geq 1.2$	1 %			
		0.25 kHz	to	400 kHz	$f_c=10 \text{ MHz to } 6.6 \text{ GHz}$ $f_{\text{mod}}=50 \text{ Hz to } 200 \text{ kHz}$ $\Delta f/ f_{\text{mod}} > 0.2$	1.5 %			
					$\Delta f/ f_{\text{mod}} \geq 0.45$	1 %			
6	Time interval / mechanically operated stopwatch					Direct comparison with a reference standard	113-MP-C013	1, 2, 7	
7	Relative frequency error of time base / stopwatch with LCD	$-1 \cdot 10^{-3}$	to	$1 \cdot 10^{-3}$		Frequency measurement – capacitive coupling to LCD	113-MP-C013	1, 2, 7	

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Český metrologický institut
CAB number 2202, CMI Calibration Laboratory
Okružní 772/31, 638 00 Brno

CMC for the field of measured quantity: Acoustic quantities and mechanical vibration

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range		Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min. unit	max. unit					
1	Sound pressure level / Acoustic calibrators	60 dB	to 134 dB	re 20 · 10 ⁻⁶ Pa	0.09 dB	Comparison with a standard microphone in relation to frequency and total distortion (ČSN EN 60942)	812-MP-C211	12
2	Microphone sensitivity / Laboratory standard microphones	-40 dB	to -24 dB	re 1 V · Pa ⁻¹	0.05 dB	Reciprocal calibration method according to nominal sensitivity of 1 st standard microphone (ČSN EN 61094-1, ČSN EN 61094-2)	812-MP-C216	12

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Accredited entity according to ČSN EN ISO/IEC 17025:2018:

Český metrologický institut
CAB number 2202, CMI Calibration Laboratory
Okružní 772/31, 638 00 Brno

CMC for the field of measured quantity: Physicochemical quantities

Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
1*	Moisture of solids / relative moisture meters	4 %		to 50 %	Cereals, and oil seeds	0.25 %	Comparison with reference determination	511-MP-C001	6
		0.001 %		to 20 %					
		4 %		to 110 %					
2*	Moisture / Absolute / relative moisture meters				Plastics	0.005 %	Comparison with reference determination	511-MP-C009	6
3*	Multi-parameter analyzers – relative moisture content of N-substances oil content Zeleny test	4 %		to 50 %	Solids	0.31 %	Comparison with reference determination	511-MP-C003	6
		5 %		to 40 %					
		10 %		to 80 %					
		10 ml		to 75 ml					
4	Refractive index / refractometers	1.3		to 1.7		9·10 ⁻⁵	Comparison with reference determination	512-MP-C003	6
5	Kinematic viscosity / efflux time	30 s		to 100 s	Efflux cup with a nozzle		Comparison with a calibration liquid	616-MP-C001	7
					D4	0.91 s			
					C3	0.83 s			
					C4	0.72 s			
					C5	0.56 s			
					C6	0.84 s			
					A4	0.47 s			

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Ord. num- ber ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Loca- tion
		min.	unit	max.					
6	Kinematic viscosity / capillary viscometer constant			0.001 mm ² ·s ⁻² 0.003 mm ² ·s ⁻² 0.01 mm ² ·s ⁻² 0.03 mm ² ·s ⁻² 0.1 mm ² ·s ⁻² 0.3 mm ² ·s ⁻² 1 mm ² ·s ⁻² 3 mm ² ·s ⁻² 10 mm ² ·s ⁻² 30 mm ² ·s ⁻²		1.8·10 ⁻⁶ mm ² ·s ⁻¹ 7.6·10 ⁻⁶ mm ² ·s ⁻¹ 2.9·10 ⁻⁵ mm ² ·s ⁻¹ 9.7·10 ⁻⁵ mm ² ·s ⁻¹ 3.5·10 ⁻⁴ mm ² ·s ⁻¹ 1.1·10 ⁻³ mm ² ·s ⁻¹ 3.9·10 ⁻³ mm ² ·s ⁻¹ 1.7·10 ⁻² mm ² ·s ⁻¹ 5.0·10 ⁻² mm ² ·s ⁻¹ 1.6·10 ⁻¹ mm ² ·s ⁻¹	Comparison with a standard viscometer	616-MP-C002	7
7	Kinematic viscosity / calibration liquids	0.6 mm ² ·s ⁻¹ 6 mm ² ·s ⁻¹ 60 mm ² ·s ⁻¹ 600 mm ² ·s ⁻¹ 6,000 mm ² ·s ⁻¹		to to to to to		0.21 % 0.32 % 0.35 % 0.42 % 0.52 %	Direct measurement using a standard viscometer	616-MP-C002	7
8	Dynamic viscosity / calibration liquids	0.6 mPa·s 6 mPa·s 60 mPa·s 600 mPa·s 6,000 mPa·s		to to to to to		0.21 % 0.32 % 0.35 % 0.42 % 0.52 %	Direct measurement with standard viscometer and standard densimeter	616-MP-C002	7

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Ord. number ¹	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty ²	Calibration principle	Calibration procedure identification ³	Location
		min.	unit	max.					
9	Dynamic viscosity / rotary viscometers	10 mPa·s 150 mPa·s 400 mPa·s 1,300 mPa·s		to to to to	150 mPa·s 400 mPa·s 1,300 mPa·s 30,000 mPa·s	0.91 % 0.92 % 1.1 % 1.4 %	Comparison with a calibration liquid	616-MP-C003	7
10	Liquid density / glass density meters	620 kg·m ⁻³ 0 % vol. 0 % wt. 10 kg·hl ⁻¹		to to to to	1,850 kg·m ⁻³ 100 % vol. 90 % wt. 30 kg·hl ⁻¹	0.022 kg·m ⁻³ 0.019 % vol. 0.019 % wt. 0.019 kg·hl ⁻¹	Comparison with a standard density meter	616-MP-C004	7
11	Conductometers	0.005 S·m ⁻¹ 0.015 S·m ⁻¹ 0.15 S·m ⁻¹ 1.5 S·m ⁻¹		to to to to	0.015 S·m ⁻¹ 0.15 S·m ⁻¹ 1.5 S·m ⁻¹ 10 S·m ⁻¹	from 5.6 % to 0.64 % from 0.64 % to 0.19 % from 0.19 % to 1.5 % 1.5 %	Comparison with a standard conductometer	616-MP-C005	7
12	Ethanol concentration / breath alcohol analyzers	0 mg/l		to	1,400 mg/l		By dry gas	114-MP-C004, chap no. 5.3.1	1, 10
13	Ethanol concentration / breath alcohol analyzers	0 mg/l		to	0.480 mg/l		Simulation method	114-MP-C004, chap no. 5.3.2	1, 10

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"This document is an appendix to the certificate of accreditation. In case of any discrepancies between the English and Czech versions, the Czech version shall prevail, both for the certificate appendix and the certificate itself."

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Český metrologický institut

Datum vyhotovení ověřovací doložky: **19.02.2026**

Jméno a příjmení osoby, která změnu formátu dokumentu provedla:

Kamila Heřmanová