



EA MLA Signatory  
Český institut pro akreditaci, o.p.s.  
Olšanská 54/3, 130 00 Praha 3

issues

according to section 16 of Act No. 22/1997 Coll., on technical requirements for products, as amended

# CERTIFICATE OF ACCREDITATION

No. 44/2022

**M & B Calibr, spol. s r.o.**  
with registered office Ke Karlovu 62/10, Němčice, 664 91 Ivančice, Company Registration  
No. 43389783

to the Calibration Laboratory No. **2301**  
Calibration Laboratory

Scope of accreditation:

Calibration of meters of length, plane angle, roughness, pressure, moment of force, force, temperature, humidity, hardness, mass and rotational speed to the extent as specified in the appendix to this Certificate.

This Certificate of Accreditation is a proof of Accreditation issued on the basis of assessment of fulfillment of the accreditation criteria in accordance with

ČSN EN ISO/IEC 17025:2018

In its activities performed within the scope and for the period of validity of this Certificate, the Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Body meets the specified accreditation requirements in accordance with the relevant regulations applicable to the activity of an accredited Conformity Assessment Body.

This Certificate of Accreditation replaces, to the full extent, Certificate No.: 506/2021 of 24. 9. 2021, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **19. 7. 2024**

Prague: 31. 1. 2022



**Lukáš Burda**  
Director of the Department  
of Testing and Calibration Laboratories  
Czech Accreditation Institute  
Public Service Company

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

**M & B Calibr, spol. s r.o.**  
Calibration Laboratory  
Ke Karlovu 62/10, Němčice, 664 91 Ivančice

**Calibration laboratory locations:**

1. **Calibration Laboratory** Ke Karlovu 62/10, Němčice, 664 91 Ivančice
2. **Calibration Laboratory** Strojírenská 259/16, Zličín, 155 21 Praha 5

**CMC for the field of measured quantity: Length**

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1	Steel parallels	0.5 mm	to	1,000 mm		(2 L + 0.2) μm	Comparative measurement using steel parallels	KP D1	1	
2*	Steel length gauges	0 m	to	2 m		60 μm	Comparative measurement using steel parallels	KP D2	1,2	
		2 m	to	5 m		180 μm				
	Steel tape measures	0 m	to	2 m		0.14 mm	Comparative measurement on a reference track			
		2 m	to	3 m		0.28 mm				
		3 m	to	5 m		0.42 mm				
		5 m	to	8 m		0.70 mm				
8 m		to	10 m		0.98 mm					
3	Tape measures	0 m	to	10 m		0.4 mm	Comparative measurement on a reference track	KP D3	1,2	
		10 m	to	20 m		0.6 mm				
		20 m	to	50 m		1.0 mm				
		50 m	to	100 m		2.2 mm				
	Laser distance meters	0 m	to	5 m		0.2 mm				
4	Limit and end measuring rings	1 mm	to	100 mm		(2 L + 0.5) μm	Direct and comparative measurement by a distance meter	KP D4	1	
		100 mm	to	500 mm		(2 L + 2.4) μm				
		1 mm	to	200 mm		(4 L + 1.3) μm			2	



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Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
	Limit snap gauges	1 mm	to	100 mm			(2 L + 0.5) μm			1,2
		100 mm	to	500 mm			(2 L + 2.4) μm			
	Feeler gauges	0.02 mm	to	100 mm			(2 L + 0.5) μm			
	Limit cylindrical gauges	100 mm	to	500 mm			(2 L + 2.4) μm			
5*	Feeler gauges, Limit cylindrical gauges.	1 mm	to	125 mm			(2 L + 2.4) μm	Direct measurement by a micropasameter	KP D4	1
6	Limit plug gauges	1 mm	to	200 mm			(3·L + 3) μm	Direct measurement by a distance meter	KP D5	1,2
	Threaded rings	1 mm	to	160 mm			+ 4) (1·L μm	Direct measurement on MasterScanner XP 16060		
		1 mm	to	3 mm			(3·L + 3) μm	Comparison by a wear pin gauge		
		2.5 mm	to	200 mm			(3·L + 3) μm	Comparative measurement by a distance meter		
		3 mm	to	160 mm			+ 4) (1·L μm	Direct measurement on MasterScanner XP 16060		
7*	Limit plug gauges	1 mm	to	125 mm			(3 L + 3.5) μm	Direct measurement by a micropasameter	KP D5	1
8*	Slide gauges: slide rules, depth gauges, height gauges	0 mm	to	1,000 mm			12 μm	Comparative measurement using steel parallels	KP D6	1,2
		1,000 mm	to	3,000 mm			20 μm			
9*	Micrometer gauges: micrometers, pasameters, micropasameters, micrometer heads, micrometer depth gauges	0 mm	to	25 mm			0.7 μm	Comparative measurement using steel parallels	KP D7	1,2
		0 mm	to	100 mm			1.4 μm			

Division

0.0001 mm



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		min.	unit	max.	unit					
		100 mm	to	1,000 mm			2.5 µm			
		1,000 mm	to	1,500 mm			4.1 µm			
10*	Inside micrometers Three-contact internal gauges	2 mm	to	100 mm			2.0 µm	Comparative measurement using setting rings	KP D8	1,2
		100 mm	to	300 mm			4.0 µm			1
		100 mm	to	200 mm			4.0 µm			2
11	Inside micrometer gauges	10 mm	to	3,000 mm			(3·L + 2.2) µm	Direct measurement by a distance meter	KP D9	1
		10 mm	to	1000 mm			(3·L + 2.2) µm			2
12*	Electromagnetic, ultrasonic thickness gauges	0 mm	to	1.5 mm			(1·L + 1.3) µm	Comparative measurement by a thickness reference standard	KP D10	1
		1.5 mm	to	500 mm			(1·L + 2.3) µm			
13	Direct and lever dial indicators	0 mm	to	100 mm			0.3 µm	Direct measurement by a special measuring device	KP D11	1,2
	Two-contact internal gauges	2 mm	to	205 mm			0.3 µm			2
		205 mm	to	1 000 mm			(3·L + 2,2) µm	Direct measurement by a length gauge		
14	Gauges, jigs, templates, meters of plane and angle	0 mm	to	2,000 mm			(4.5·L + 1.7) µm	Measurement by a 3D CMM	KP D12	1
15*	Profile projectors, measuring microscopes	0 mm	to	300 mm			(1·L + 2.6) µm	Comparative measurement using a rule	KP D13	1
16*	Measurement of straightness, linear sensing, measurement of flatness of engineering gauges	0 m	to	20 m			(1·L + 0.1) µm	Direct measurement by a laser interferometer	KP D14	1
		0 m	to	20 m			1.5 µm/m <sup>2</sup>			





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		min.	unit	max.	unit					
17	Gauges, jigs, templates, meters	0 mm	to	600 mm		(2.5 L + 1.2) μm	Measurement by a linear height gauge	KP D15	1	
18*	Linear height gauges	0 mm	to	600 mm		(0.8 L + 0.5) μm	Comparative measurement by a calibration comb	KP D16	1	
		600 mm	to	1,000 mm		(3.0 + 1 L) μm	Comparative measurement by a calibration comb and steel parallels			
19*	Contourographs	0 mm	to	100 mm		(1 L + 2.6) μm	Comparative measurement using end standards	KP D17	1	
20*	Length measuring instruments	0 mm	to	1,000 mm		(2 L + 0.2) μm	Direct measurement by a laser interferometer	KP D18	1	
21*	3D coordinate measuring machines	0 mm	to	600 mm		(2 L + 0.2) μm	Comparative measurement by a calibration comb	KP D19	1	
		600 mm	to	1,000 mm		(2 L + 0.2) μm	Comparative measurement by a calibration comb and steel parallels			
		0 mm	to	10,000 mm		(1 L + 0.1) μm	Direct measurement by a laser interferometer			
22	Gauges, meters, jigs, templates, rules	0 mm	to	330 mm		(2 L + 3.5) μm	Direct measurement by a 2D microscope	KP D20	1	
		0 mm	to	300 mm		(2 L + 3.5) μm			2	
23	Blade and surface rules	0 mm	to	2,000 mm		(5 L + 2) μm	Direct measurement on a plate	KP D21	1	
		2,000 mm	to	3,000 mm		(5 L + 12) μm	Measurement on a bed			
		0 mm	to	1,000 mm		(5 L + 2) μm	Direct measurement on a plate		2	
		1,000 mm	to	1,500 mm		(5 L + 12) μm				
24*	Roughness meters	0.01 μm	to	6,000 μm		5 %	Comparative measurement by a roughness reference standard	KP DR1	1	
25	Roughness standards	0.01 μm	to	6,000 μm		5 %	Direct measurement by a roughness meter	KP DR1	1	

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		min.	unit	max.	unit					
26	Angles	0 °	to	180 °		Length up to 3 m	(4.5 L + 2) µm	Direct measurement by a 3D CMM	KP R2	1
						Length up to 0.6 m	(20 L + 2) µm	Direct measurement on special equipment		2

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<sup>3</sup> 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).

Explanatory notes: CMM – coordinate measuring machine, L – nominal length in metres, CP – calibration procedure



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CMC for the field of measured quantity: Plane angle

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1	Levels – builder's, liquid, machine	-52 °	mm/m	to	52 °	mm/m	0.005 mm/m	Direct measurement by a small angle generator	KP R1	1,2
	Clinometers	-180 °		to	180 °	Division from 0.01 °	0.15 °			
2	Angle gauges	0 °		to	360 °		5 ′	Direct measurement using angle gauges	KP R2	1,2

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CMC for the field of measured quantity: Mass

Ord. num- ber <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work- place
		min.	unit	max.	unit					
1*	Electronic and mechanical scale with non-automatic	0.001 g	to	2,000 g			$2.7 \cdot 10^{-6}$	Comparative measurement using a reference weight	KP VA1	1
		2 kg	to	20 kg			$1.4 \cdot 10^{-5}$	E2 class weight		
		20 kg	to	1,000 kg			$5.0 \cdot 10^{-5}$	F2 class weight M1 class weight		

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Explanatory notes: The lowest expanded measurement uncertainty is stated without accounting for the effect of the calibrated meter.



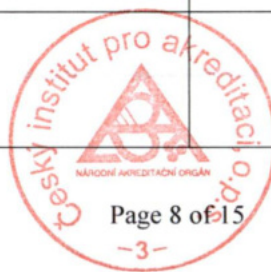


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CMC for the field of measured quantity: **Temperature**

Ord. num-ber <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1*	Direct-indicating thermometers	-30 °C	to	0 °C		0.06 °C	Comparison with a reference digital thermometer in a dry block calibrator	KP TE1	1	
		0 °C	to	100 °C		0.05 °C	Comparison with a reference digital thermometer in a liquid bath			
		100 °C	to	200 °C		0.06 °C	Comparison with a reference digital thermometer in a dry block calibrator			
		200 °C	to	300 °C		0.09 °C				
		300 °C	to	400 °C		0.4 °C				
		400 °C	to	500 °C		0.5 °C				
	500 °C	to	650 °C		0.6 °C					
		650 °C	to	1,100 °C		1.5 °C	Comparison with a reference digital thermometer in an air oven			
	Contactless thermometers	-10 °C	to	200 °C		3.0 °C	Comparison with a reference pyrometer on target-type or cavity-type black body			
		200 °C	to	500 °C		6.0 °C				
500 °C		to	800 °C		10.0 °C					
2*	Thermoelectric temperature sensors	-30 °C	to	0 °C		0.7 °C	Comparison with a reference digital thermometer in a dry block calibrator	KP TE2	1	
		0 °C	to	100 °C		0.7 °C	Comparison with a reference digital thermometer in a liquid bath			
		100 °C	to	550 °C		0.9 °C	Comparison with a reference digital thermometer in a dry block calibrator			
		550 °C	to	800 °C		2.3 °C	Comparison with a reference digital thermometer in an air oven			



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		min.	unit	max.	unit					
3*	Resistance temperature sensors	-30 °C		to	0 °C		0.15 °C	Comparison with a reference digital thermometer in an oven	KP TE3	1
		0 °C		to	100 °C		0.13 °C	Comparison with a reference digital thermometer in a liquid bath		
		100 °C		to	400 °C		0.45 °C	Comparison with a reference digital thermometer in an oven		

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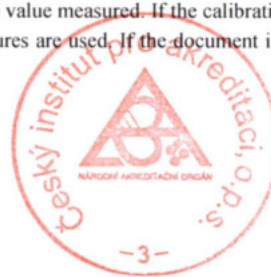
CMC for the field of measured quantity: Torque

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1*	Torque wrenches	0.1 Nm		to	1,100 Nm		0.65 %	Comparative measurement by a reference torque sensor	KP S1	1
		1,100 Nm		to	3,000 Nm		0.90 %			
	Torque measuring devices, torque drivers, torque sensors	0.1 Nm		to	500 Nm		0.40 %			

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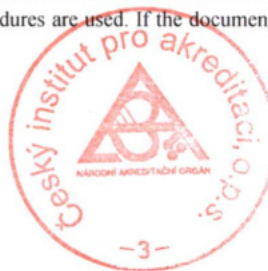
**CMC for the field of measured quantity: Force**

Ord. num- ber <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work- place
		min	unit.	max	unit.					
1	Force meters and extensometric sensors	0 N	to	5 kN			0.20 % 0.30 %	Comparative measurement by a reference force sensor	KP S2	1
2*	Force meters and extensometric sensors	0 N	to	5 kN			0.20 % 0.30 %	Comparative measurement by a reference force sensor		
		5 kN	to	20 kN						

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**CMC for the field of measured quantity: Hardness**

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min	unit.	max	unit.					
1	Rockwell hardness plates and samples	70 HRA	to	85 HRA			0.40 HRA	Direct measurement	KP TV1	1
		60 HRB	to	100 HRB			0.40 HRB			
		20 HRC	to	70 HRC			0.40 HRC			
	Shore A hardness plates	0 ShA	to	100 ShA			2.0 ShA			
	Shore D hardness plates	0 ShD	to	100 ShD			2.0 ShD			
2*	Brinell hardness plates	8 HBW	to	650 HBW			1.0 %	Direct measurement using reference hardness plates		
	Rockwell hardness meters for metals	70 HRA	to	85 HRA			0.50 HRA			
		60 HRB	to	100 HRB			0.50 HRB			
		20 HRC	to	70 HRC			0.50 HRC			
	Vickers hardness meters for metals	10 HV	to	2,000 HV			0.50%			
	Brinell hardness meters for metals	10 HBW	to	650 HBW			0.50%			
	Shore hardness meters, type A,D,E,C	1 Sh	to	100 Sh			0.50 Sh			

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**CMC for the field of measured quantity: Pressure**

Ord. num-ber <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place	
		min.	unit	max.	unit						
1*	Deformation manometers, tyre pressure gauges, electromechanical pressure gauges (digital pressure gauges, pressure transducers with digital output of the measured quantity)	-100 kPa	to	0 kPa		Gas	Overpressure/ underpressure	130 Pa	Comparative measurement by a pressure reference standard	KP T1, KP T2	1
		0 kPa	to	35 kPa				18 Pa			
		35 kPa	to	160 kPa				130 Pa			
		160 kPa	to	2,000 kPa				0.1%			
		25 kPa	to	600 kPa	Liquids	Overpressure	180 Pa				
		0.6 MPa	to	6 MPa			0.03 %				
		6 MPa	to	60 MPa			0.05 %				
		60 MPa	to	70 MPa			0.1 %				
		70 MPa	to	140 MPa			0.2 %				

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Ke Karlovu 62/10, Němčice, 664 91 Ivančice

**CMC for the field of measured quantity: Humidity**

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1*	Relative humidity meters except psychrometers	10 % RH		to	95 % RH		2.3 % RH	Comparative measurement by a reference hygrometer	KP VL1	1

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

<sup>2</sup> The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M, 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 value measured. If the calibration is carried out outside the laboratory premises, the measurement uncertainty may be affected.

<sup>3</sup> 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).



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

M & B Calibr, spol. s r.o.  
Calibration Laboratory  
Ke Karlovu 62/10, Němčice, 664 91 Ivančice

CMC for the field of measured quantity: Rotational speed

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified <sup>2</sup>	Calibration principle	Calibration procedure identification <sup>3</sup>	Work-place
		min.	unit	max.	unit					
1*	Speed gauges	30 min <sup>-1</sup>		to	40,000 min <sup>-1</sup>		(1.1 % + 0.5d)	Direct measurement by a revolution generator	KP OT1	1

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

<sup>2</sup> The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02 M, 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 value measured. If the calibration is carried out outside the laboratory premises, the measurement uncertainty may be affected.

<sup>3</sup> 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).

Explanatory notes: d - division of the scale of the calibrated gauge

