



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. 102/2024

AVL Moravia s.r.o.
with registered office Tovární 605, Hranice I-Město, 753 01 Hranice,
Company Registration No. 64619842

for the Calibration Laboratory No. 2385
Calibration Laboratory

Scope of accreditation:

Calibration in the fields of length, mechanical motion, force, temperature, electrical quantities, time and frequency 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

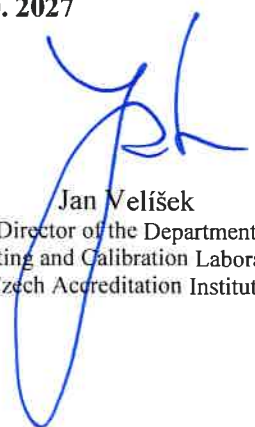
In its activities performed within the scope and for the period of validity of this Certificate, the Conformity Assessment Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Accredited Body meets the specified accreditation requirements in accordance 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.: 94/2023 of 1. 3. 2023, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **24. 10. 2027**

Prague: 1. 3. 2024




Jan Velíšek
Director of the Department
of Testing and Calibration Laboratories
Czech Accreditation Institute



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

AVL Moravia s.r.o.
 CAB number 2385, Calibration Laboratory
 Mostecká 992/26, Husovice, 614 00 Brno

Calibration laboratory locations:

1. **Workplace Brno** Mostecká 992/26, Husovice, 614 00 Brno
2. **Workplace Hranice** Tovární 605, Hranice I – Město, 753 01 Hranice

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	unit					
1*	Length / Roller diameter of dynamometers for vehicle testing	1.2 m		to	1.5 m	Diameter of roller determined from circumference length	0.09 mm	Direct measurement by diametrical tape	AW-02-1019	2

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: 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	unit					
1*	Velocity on the roller surface / Dynamometers for vehicle testing	1 km.h ⁻¹	to	300 km.h ⁻¹		891.2 Hz to 267.3 kHz	0.021 % + 0.0039 km.h ⁻¹	Calculation based on the specified reference speed and roller diameter	AW-02-1016	2
2*	Digital speed meters, speed sensors, stroboscopes - optically Pulsed (IRC sensor)	1 min ⁻¹ 10 min ⁻¹	to	100,000 min ⁻¹ 30,000 min ⁻¹		1 pulse per revolution 0.001 kHz to 100 kHz	0.006 % 0.006 %	Comparison with a standard speed meter	AW-02-1007	1
3*	Speed sensors with a high number of pulses per revolution / Dynamometers for vehicle testing	0 min ⁻¹ 500 min ⁻¹ 1,000 min ⁻¹ 1,500 min ⁻¹ 2,000 min ⁻¹	to	500 min ⁻¹ 1,000 min ⁻¹ 1,500 min ⁻¹ 2,000 min ⁻¹ 2,500 min ⁻¹		0.0 kHz to 102.4 kHz 102.4 kHz to 204.8 kHz 204.8 kHz to 307.2 kHz 307.2 kHz to 409.6 kHz 409.6 kHz to 512.0 kHz	0.000036 % + 0.0058 min ⁻¹ 0.00010 % + 0.0055 min ⁻¹ 0.00016 % + 0.0050 min ⁻¹ 0.00019 % + 0.0044 min ⁻¹ 0.00022 % + 0.0039 min ⁻¹	Comparison with a standard counter	AW-02-1007	2
4*	Air flow velocity/ Fan for motor vehicle tests	10 km.h ⁻¹	to	140 km.h ⁻¹			2.44 % + 0.82 km.h ⁻¹	Direct measurement by a standard anemometer	AW-02-1017	2

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CMC for the field of measured quantity: Force

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*	Force on the roller surface / Dynamometers for vehicle testing	500 N	to	25,000 N		0.023 % + 0.026 N	Calculation based on the specified reference torque and roller diameter	AW-02-1015	2	
2*	Torque / Dynamometers for rotating machines tests	0.01 Nm	to	10 Nm		0.2 %	Comparison using reference weights and calibration arms	AW-02-1011	1	
		10 Nm	to	20 Nm		0.1 %				
		20 Nm	to	100 Nm		0.075 %				
		100 Nm	to	10,000 Nm		0.05 %				
3*	Torque / Dynamometers for vehicle testing	300 Nm	to	15,000 Nm		0.031 % + 0.014 Nm	Comparison using reference weights and calibration lever arms	AW-02-1011	2	

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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	Location
		min	unit	max	unit					
1*	Resistance and thermoelectric temperature sensors	0 °C				Sensors with a diameter up to 9.5 mm and a length up to 102 mm	0.3 °C	Generation by crushed ice	AW-02-1010	1
		35 °C	to	100 °C	0.5 °C					
		100 °C	to	200 °C	0.7 °C					
		200 °C	to	350 °C		1 °C	Generation by standard calibration furnace			

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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	unit	max	unit					
1*	DC voltage / Voltmeters, multimeters and inspection devices	0 mV	to	200 mV		0.0044 % + 5.3 μV	Generation by a standard calibrator	AW-02-1003	1	
		0.2 V	to	2 V		0.0044 % + 7.5 μV				
		2 V	to	20 V		0.0036 % + 68 μV				
		20 V	to	200 V		0.0044 % + 750 μV				
		200 V	to	1025 V		0.0044 % + 7.5 mV				
1*	DC voltage / Sources and calibrators	0 mV	to	100 mV		0.0043 % + 4.8 μV	Direct measurement by a standard multimeter	AW-02-1003	1	
		100 mV	to	1,000 mV		0.0029 % + 11 μV				
		1 V	to	10 V		0.0028 % + 71 μV				
		10 V	to	100 V		0.0044 % + 920 μV				
		100 V	to	1,000 V		0.0048 % + 14 mV				
2*	DC current / Ammeters, multimeters, clamp meters and current sensors, current / current converters, current / voltage converters	0 μA	to	200 μA		0.014 % + 0.049 μA	Generation by a standard calibrator	AW-02-1004	1	
		0.2 mA	to	2 mA		0.012 % + 0.067 μA				
		2 mA	to	20 mA		0.0065 % + 0.51 μA				
		20 mA	to	200 mA		0.0081 % + 5.2 μA				
		0.2 A	to	2 A		0.013 % + 64 μA				
		2 A	to	30 A		0.049 % + 0.71 mA				
								Generation by a standard calibrator with a multi-threaded coil		
		30 A	to	1,500 A		0.35 %				



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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					
	DC current / Sources and calibrators	0 μ A	to 100 μ A		0.058 % + 31 nA	Direct measurement by a standard multimeter	AW-02-1004	
		0.1 mA	to 1 mA		0.058 % + 72 nA			
		1 mA	to 10 mA		0.058 % + 2.4 μ A			
		10 mA	to 100 mA		0.058 % + 7.8 μ A			
		100 mA	to 400 mA		0.058 % + 50 μ A			
		0.4 A	to 1 A		0.058 % + 0.26 mA			
		1 A	to 3 A		0.12 % + 1.8 mA			
		3 A	to 10 A		0.18 % + 4.2 mA			
3*	AC voltage / Voltmeters, multimeters and inspection devices	1 mV	to 200 mV	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 20 kHz 20 kHz to 100 kHz 100 kHz to 500 kHz	0.29 % + 84 μ V 0.049 % + 38 μ V 0.12 % + 59 μ V 0.46 % + 0.15 mV 0.97 % + 0.52 mV	Generation by a standard calibrator	AW-02-1003	I
		0.2 V	to 2 V	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 20 kHz 20 kHz to 100 kHz 100 kHz to 500 kHz	0.29 % + 0.6 mV 0.049 % + 0.19 mV 0.097 % + 0.24 mV 0.36 % + 3.4 mV 0.55 % + 6.5 mV			
		2 V	to 20 V	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 20 kHz 20 kHz to 100 kHz	0.29 % + 5.3 mV 0.046 % + 1.9 mV 0.081 % + 2.4 mV 0.29 % + 55 mV			



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		min unit	max unit						
		20 V	to 200 V	30 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 20 kHz	0.065 % + 35 mV 0.049 % + 17 mV 0.12 % + 68 mV				
		200 V	to 1,020 V	30 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 20 kHz	0.065 % + 0.36 V 0.049 % + 0.21 V 0.2 % + 0.73 V				
	AC voltage / Sources and calibrators		1 mV	to 100 mV	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	1.2 % + 0.059 mV 0.41 % + 0.059 mV 0.07 % + 0.049 mV 0.14 % + 0.064 mV 0.7 % + 0.12 mV 4.7 % + 0.72 mV	Direct measurement by a standard multimeter	AW-02-1003	
			0.1 V	to 1 V	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 20 kHz 20 kHz to 20 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	1.2 % + 0.45 mV 0.41 % + 0.45 mV 0.07 % + 0.35 mV 0.14 % + 0.59 mV 0.7 % + 0.94 mV 4.7 % + 0.77 mV			
			1 V	to 10 V	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	1.2 % + 4.5 mV 0.41 % + 4.5 mV 0.07 % + 3.5 mV 0.14 % + 5.9 mV 0.7 % + 9.4 mV 4.7 % + 58 mV			



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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 V	to 100 V	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	1.2 % + 45 mV 0.41 % + 45 mV 0.07 % + 36 mV 0.14 % + 59 mV 0.7 % + 95 mV 4.7 % + 0.77 V			
		100 V	to 1,000 V	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	1.2 % + 0.27V 0.41 % + 0.27 V 0.07 % + 0.56 V 0.14 % + 0.71 V 0.7 % + 0.92 V			
4*	AC current / Multimeters, ammeters and inspection devices, current / current converters, current / voltage converters	20 µA	to 200 µA	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 10 kHz	0.28 % + 0.41 µA 0.13 % + 0.41 µA 1.8 % + 0.41 µA	Generation by a standard calibrator	AW-02-1004	I
		0.2 mA	to 2 mA	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 10 kHz	0.28 % + 0.87 µA 0.12 % + 0.73 µA 0.97 % + 1.2 µA			
		2 mA	to 20 mA	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 10 kHz	0.28 % + 8.6 µA 0.12 % + 7.1 µA 0.65 % + 12 µA			
		20 mA	to 200 mA	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 10 kHz	0.28 % + 86 µA 0.12 % + 71 µA 0.65 % + 0.12 mA			

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		min unit	max unit							
		0.2 A	to	2 A	10 Hz to 45 Hz 45 Hz to 1,000 Hz 1 kHz to 5 kHz	0.28 % + 0.95 mA 0.13 % + 0.81 mA 0.81 % + 1.3 mA				
		2 A	to	30 A	30 Hz to 45 Hz 45 Hz to 100 Hz 0.1 kHz to 1 kHz	0.25 % + 9.7 mA 0.057 % + 6.6 mA 0.41 % + 9.0 mA				
		30 A	to	600 A	50 Hz to 400 Hz	0.12 %			Generation by a standard calibrator with a multi-threaded coil	AW-02-1004
		600 A	to	1,500 A	50 Hz to 60 Hz	0.35 %				
	AC current / Sources and calibrators	1 μA	to	100 μA	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 5 kHz 5 kHz to 10 kHz	1.3 % + 0.081 μA 0.41 % + 0.081 μA 0.18 % + 0.08 μA 0.41 % + 0.83 μA	Direct measurement by a standard multimeter	AW-02-1004		
		0.1 mA	to	1 mA	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 5 kHz 5 kHz to 10 kHz	1.2 % + 0.55 μA 0.35 % + 0.55 μA 0.12 % + 0.56 μA 0.23 % + 3.4 μA				
		1 mA	to	10 mA	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 5 kHz 5 kHz to 10 kHz	1.3 % + 7.6 μA 0.41 % + 7.6 μA 0.18 % + 7.4 μA 0.41 % + 83 μA				
		10 mA	to	100 mA	3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 5 kHz	1.2 % + 0.055 mA 0.35 % + 0.055 mA 0.12 % + 0.053 mA				

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		min unit	max unit					
		100 mA to 400 mA		5 kHz to 10 kHz	0.24 % + 0.32 mA			
				3 Hz to 5 Hz	1.2 % + 0.49 mA			
				5 Hz to 10 Hz	0.35 % + 0.49 mA			
				10 Hz to 5 kHz	0.12 % + 0.53 mA			
				5 kHz to 10 kHz	0.24 % + 4.4 mA			
		400 mA to 1 A		3 Hz to 5 Hz	1.2 % + 0.55 mA			
				5 Hz to 10 Hz	0.35 % + 0.55 mA			
				10 Hz to 5 kHz	0.12 % + 0.71 mA			
				5 kHz to 10 kHz	0.41 % + 11 mA			
		1 A to 3 A		3 Hz to 5 Hz	1.3 % + 2.7 mA			
				5 Hz to 10 Hz	0.41 % + 2.7 mA			
				10 Hz to 5 kHz	0.18 % + 3.9 mA			
				5 kHz to 10 kHz	0.41 % + 27 mA			
		3 A to 10 A		3 Hz to 5 Hz	1.3 % + 8.5 mA			
				5 Hz to 10 Hz	0.41 % + 8.5 mA			
				10 Hz to 5 kHz	0.18 % + 13 mA			
				5 kHz to 10 kHz	0.41 % + 89 mA			
5*	DC resistance / Multimeters, ohmmeters, inspection devices, resistance / voltage converters		100 μΩ 1 mΩ 10 mΩ 100 mΩ 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ		0.015 % 0.032 % 0.037 % 0.0050 % 0.0050 % 0.0060 % 0.0051 % 0.0051 % 0.0050 %	Direct measurement of a standard resistance	AW-02-1013, AW-02-1014	1



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		min	unit					
				100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ	0.0051 % 0.0080 % 0.0081 % 0.013 % 0.040 %			
	DC resistance / Decade resistance boxes, resistors and calibrators	0 Ω	to	10 Ω	0.012 % + 3.5 mΩ	Direct measurement by a standard multimeter	AW-02-1012	
		10 Ω	to	100 Ω	0.012 % + 4.8 mΩ			
		100 Ω	to	1 kΩ	0.012 % + 15 mΩ			
		1 kΩ	to	10 kΩ	0.012 % + 0.15 Ω			
		10 kΩ	to	100 kΩ	0.012 % + 1.6 Ω			
		100 kΩ	to	1 MΩ	0.012 % + 24 Ω			
		1 MΩ	to	10 MΩ	0.047 % + 0.42 kΩ			
		10 MΩ	to	100 MΩ	0.93 % + 16 kΩ			
		100 MΩ	to	1 GΩ	2.4 % + 0.2 MΩ			
		0 mΩ	to	0,1 mΩ	0,74 μΩ	Direct measurement by a standard calibrator and multimeter (voltampere method)	AW-02-1012	
		0,1 mΩ	to	1 mΩ	0,025 % + 0,74 μΩ			
		1 mΩ	to	10 mΩ	0,052 % + 045 μΩ			
		10 mΩ	to	100 mΩ	0,020 % + 3,6 μΩ			
		0,1 Ω	to	1 Ω	0,019 % + 4,3 μΩ			
		1 Ω	to	10 Ω	0,013 % + 61 μΩ			
		10 Ω	to	100 Ω	0,012 % + 170 μΩ			



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		min unit	max unit						
6*	Active electrical power / Wattmeters, network analyzers and inspection devices with ranges (1 to 1,000) V and (45 to 100) Hz	0.3 W	to 30 kW	(0.3 to 30) A	cos φ = 1 0.12 % cos φ = (0.8 to 0.99) 0.35 % cos φ = (0.5 to 0.8) 0.75 %	Generation by a standard calibrator	AW-02-1005	1	
		30 kW	to 600 kW	(30 to 600) A	cos φ = 1 0.13 % cos φ = (0.8 to 0.99) 0.35 % cos φ = (0.5 to 0.8) 0.75 %	Comparison with a standard wattmeter with a current sensor			
	Apparent electrical power / Wattmeters, network analyzers and inspection devices with ranges (1 to 1,000) V	0.3 VA	to 30 kVA	(0.3 to 30) A	(45 to 400) Hz	0.12 %	Generation by a standard calibrator		AW-02-1005
		30 kVA	to 600 kVA	(30 to 600) A	(45 to 150) Hz	0.12 %	Comparison with a standard wattmeter with a current sensor		

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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 unit					
1*	Time interval / Manually controlled stopwatches, time switches	1 s	to 3,600 s		0.42 s	Comparison with a standard counter	AW-02-1001	1
2*	Time Interval / Time base of dynamometers for vehicle testing		1,000 s 2,000 s		0.0015 s 0.0034 s	Comparison with a standard time interval generator	AW-02-1018	2
3*	Frequency / Frequency meters and frequency standards		1 Hz 10 Hz 100 Hz 1 kHz 10 kHz 100 kHz 1 MHz 10 MHz		0.0032 % 0.0032 % 0.0032 % 0.0032 % 0.0032 % 0.0032 % 0.0032 % 0.0032 %	Generation by a standard frequency generator	AW-02-1006	1
			3 Hz to 5 Hz 5 Hz to 10 Hz 10 Hz to 40 Hz 40 Hz to 1 MHz		0.050 % 0.010 % 0.010 % 0.0010 %			

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).

