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. **47/2024**

TÜV SÜD Czech s.r.o.
with registered office Novodvorská 994, 142 21 Praha 4,
Company Registration No. 63987121

for the Calibration Laboratory No. **2405**
Calibration Laboratory

Scope of accreditation:

Calibration in the field of length, plane angle, mechanical motion, pressure, frequency and time 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.: 663/2022 of 27. 12. 2022, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **5. 2. 2029**

Prague: 5. 2. 2024

Český institut pro akreditaci, o.p.s.

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

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

TÜV SÜD Czech s.r.o.
CAB number 2405, Calibration Laboratory
Novodvorská 994, 142 21 Praha 4

Calibration laboratory locations:

1. UNO TECHNOLOGY PARK Bezděčín, Hala H1a, č.p. 108, 293 01 Mladá Boleslav, Czech Republic

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*	Sensors of displacement, distance and position	0 mm	to	300 mm			0.04 mm	comparison with a height gauge	I540 – 068 – 10	
		300 mm	to	1,500 mm			0.20 mm			
2	Belt motion sensors	-400 mm	to	400 mm			(0.2·L + 0.40) mm	comparison with a calibration jig	I540 – 068 – 10	

[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).

Explanatory notes:
L – measured length in metres

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CMC for the field of measured quantity: Plane angle

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*	Sensors of position and inclinometers	0 °	to	360 °			0.02°	comparison with a digital inclinometer or rotary index table	I540 – 068 – 10	

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CMC for the field of measured quantity: Mechanical motion

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		max.	unit	Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty[2]	Calibration principle	Calibration procedure identification[3]	Location
1*	Meters and sensors of half-sine wave mechanical shock acceleration	100	$m \cdot s^{-2}$	to	1,471	$m \cdot s^{-2}$		1.0 %	comparison with a standard acceleration sensor	I 540 – 068 – 43	
		1,471	$m \cdot s^{-2}$	to	2,000	$m \cdot s^{-2}$		1.5 %			
		2,000	$m \cdot s^{-2}$	to	40,000	$m \cdot s^{-2}$		1.8 %			
2	Acceleration of linear mechanical vibrations of harmonic wave form[4 5]/ Vibration sensors, vibrometers, vibration calibrators, vibration generators[4 5]	0.1	$m \cdot s^{-2}$	to	295	$m \cdot s^{-2}$	5 Hz up to 10 Hz	2.0 %	comparison with a standard acceleration sensor	I 540 – 068 – 45	
							10 Hz up to 20 Hz	1.0 %			
							20 Hz up to 80 Hz	0.75 %			
							80 Hz	0.5 %			
							80 Hz up to 1,000 Hz	0.75 %			
							1,000 Hz up to 5,000 Hz	1.0 %			
							5,000 Hz up to 10,000 Hz	2.0 %			
3	Sensitivity of vibration sensors and vibrometers[4 5]	0.01	$mV/(m \cdot s^{-2})$	to	10,000	$mV/(m \cdot s^{-2})$	5 Hz up to 10 Hz	2.0 %	comparison with a vibration standard	I 540 – 068 – 45	
		0.01	$pC/(m \cdot s^{-2})$	to	1,000	$pC/(m \cdot s^{-2})$	10 Hz up to 20 Hz	1.0 %			
		0.01	$mV/(m \cdot s^{-1})$	to	10,000	$mV/(m \cdot s^{-1})$	20 Hz up to 80 Hz	0.75 %			
		0.01	mV/m	to	10,000	mV/m	80 Hz	0.5 %			
							80 Hz up to 1,000 Hz	0.75 %			
							1,000 Hz up to 5,000 Hz	1.0 %			
							5,000 Hz up to 10,000 Hz	2.0 %			

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		Nominal range max.	unit	Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty[2]	Calibration principle	Calibration procedure identification[3]	Location
4	Transmission of amplifiers, filters and vibrometers	0.001	mV/pC	to	10,000	mV/pC	0.2 Hz up to 1 Hz	0.5 %	direct measurement	I 540 – 068 – 45	
							1 Hz up to 5,000 Hz	0.4 %			
							5,000 Hz up to 10,000 Hz	0.4 %			
							10,000 Hz up to 20,000 Hz	0.6 %			
							20,000 Hz up to 50,000 Hz	1.0 %			
		0.001	V/V	to	1,000	V/V	0.2 Hz up to 1 Hz	0.4 %			
							1 Hz up to 20,000 Hz	0.3 %			
							20,000 Hz up to 50,000 Hz	1.0 %			
5	Vibration measurement [4 5]/ Vibration generators	0.1	$m \cdot s^{-2}$	to	295	$m \cdot s^{-2}$	5 Hz up to 10 Hz	2.0 %	direct measurement	I 540 – 068 – 45	
							10 Hz up to 20 Hz	1.0 %			
							20 Hz up to 80 Hz	0.75 %			
							80 Hz	0.5 %			
							80 Hz up to 1,000 Hz	0.75 %			
							1,000 Hz up to 5,000 Hz	1.0 %			
							5,000 Hz up to 10,000 Hz	2.0 %			
6*	Speedometers, GPS and radar speedometers, speed sensors	5	$km \cdot h^{-1}$		180	$km \cdot h^{-1}$	distance standard	0.02 %	comparison with distance and time standard	I 540 – 068 – 29	
		20	$km \cdot h^{-1}$		130	$km \cdot h^{-1}$	measured distance	0.04 %			
7*	Speedometers with a rolling wheel	2	$m \cdot min^{-1}$		100	$m \cdot min^{-1}$		0.1 % + 0.01 $m \cdot min^{-1}$	direct generation of circumferential velocity	I 540 – 068 – 05	

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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					
8*	Revolution counters, rpm sensors, stroboscopes	500 10,000	min^{-1} min^{-1}	to to	10,000 min^{-1} 100,000 min^{-1}		0.006 min^{-1} 0.06 min^{-1}	direct measurement of an optical or electrical signal	I 540 – 068 – 05	

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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] The measured quantity can also be velocity and displacement, assuming that a vibrational signal of the harmonic waveform is generated at a known frequency.

[5] It can also be given in the units g, pC/g or mV/g, where 1 g = 9.807 $m \cdot s^{-2}$

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

Ord. num-ber[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		max.	unit	Parameter(s) of the measurand	Lowest stated expanded measurement uncertainty[2]	Calibration principle	Calibration procedure identification[3]	Location
1	Deformation and electromechanical manometers	-95	kPa	to	0	kPa	gas	0.1 kPa	comparison with a digital pressure gauge	I540 – 068 – 3 (ČSN EN 837– 1, ČSN EN 837– 3, EURAMET cg-17)	
		0	MPa	to	0.7	MPa	gas/ liquid	0.03 % + 0.08 kPa			
		0.7	MPa	to	3.5	MPa		0.03 % + 0.4 kPa			
		3.5	MPa	to	7	MPa		0.03 % + 0.8 kPa			
		7	MPa	to	20	MPa		0.03 % + 2.3 kPa			
		0	MPa	to	6	MPa	oil	3.5 kPa	comparison with a piston pressure gauge		
		6	MPa	to	60	MPa		0.06 %			

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CMC for the field of measured quantity: Time, frequency

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*	Digital speed cameras			1,000	Hz		$2.1 \cdot 10^{-4}$ Hz	direct measurement with a standard counter	I 540 – 068 – 44	
2*	Time interval / stopwatches, timers and other chronometers	1 1	ms s	to 1,000 to 10,800	ms s		$1.0 \cdot 10^{-5}$ s $6.0 \cdot 10^{-4}$ s	comparison with a standard counter	I 540 – 068 – 02	

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