## HOLAB, spol. s r.o. CAB number 2358, Calibration Laboratory Gellhornova 2231/4, 678 01 Blansko

### CMC for the field of measured quantity: Mechanical motion

Ord.	Calibrated quantity / Subject of calibration	Nominal range					Parameter(s) of the	Lowest stated expanded	a	Calibration procedure	Work-
number 1		min	unit		max	unit	measurand	mesurement uncertainty <sup>2</sup>	Canoration principle	identification <sup>3</sup>	place
1*	Acceleration of rectilinear mechanical vibrations of harmonic run/vibration standards and vibration testing								Comparison with a reference sensor	KP 2.22 (ČSN ISO 16063-21)	
	systems, vibrometers with a sensor <sup>4</sup>	0.10 m	s <sup>-2</sup>	to	200 m	s <sup>-2</sup>	7 Hz to 10 Hz	2.0 %			
							10 Hz to 100 Hz	1.4 %			
							100 Hz	1.0 %			
							100 Hz to 920 Hz	1.2 %			
							920 Hz to 5 kHz	1.6 %			
							5 kHz to 10 kHz	2.0 %			
	Sensitivity of vibration sensor(s) <sup>4</sup>								Comparison with	KP 2.22	
		0.10 m	V/ms <sup>-2</sup>	to	3,000 m	V/ms <sup>-2</sup>	7 Hz to 10 Hz	2.0 %	a reference sensor	(ČSN ISO 16063-21)	
		0.10 pC	C/ms <sup>-2</sup>	to	100 p <b>(</b>	C/ms <sup>-2</sup>	10 Hz to 100 Hz	1.4 %			
							100 Hz	1.0 %			
							100 Hz to 920 Hz	1.2 %			
							920 Hz to 5 kHz	1.6 %			
							5 kHz to 10 kHz	2.2 %			

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. The uncertainty value given here is based on the best laboratory conditions achievable; the uncertainty value of a particular calibration may be higher depending on the conditions of that calibration. For identical limit values of adjacent ranges, the lower uncertainty value always applies.

<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).

<sup>4)</sup> Acceleration can be specified also in g units (gravitational acceleration), sensitivity of the sensors pC/g or mV/g, for 1g = 9,80665 ms<sup>-2</sup>.

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

Ord. number		Nominal range				Paramotor(s) of	Lowest stated		Calibration procedure	Work
	Calibrated quantity / Subject of calibration	min	unit		max unit	the measurand	mesurement uncertainty <sup>2</sup>	Calibration principle	identification <sup>3</sup>	place
1*	Thermometers of thermal and climatic chambers and enclosures,							Comparison with a reference digital	KP 1.09 (DKD-R 5-7 method)	
	measurement of temperature in equipment with							thermometer	A. B. C)	
	temperature and humidity control	- 70	°C	to	0 °C		0.5 °C		· · · ·	
		0	°C	to	100 °C		0.4 °C			
		100	°C	to	200 °C		0.5 °C			
		200	°C	to	250 °C		1.0 °C			
		250	°C	to	350 °C		1.4 °C			

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#### CMC for the field of measured quantity: Electrical quantities

Ord.	Calibrated quantity / Subject of calibration	Nominal range			Parameter(s) of the	Lowest stated expanded	Calibration principle	Calibration procedure	Work-
number-		min unit		max unit	measuranu	measurement uncertainty-		identification <sup>3</sup>	place
1*	DC Voltage / Signal analyzers, vibrometers, controllers for vibration						Comparison with a reference multimeter	KP 3.23	
	test systems	0 mV	to	100 mV		0.0025 % + 0.00017 mV			
		100 mV	to	1 V		$0.00090 \ \% + 0.0006 \ mV$			
		1 V	to	10 V		0.00070~% + 0.006~mV			
2*	AC Voltage - Peak value / Signal analyzers, vibrometers, controllers for						Comparison with a reference multimeter	KP 3.23	
	vibration test systems	1 mV	to	100 mV	10 Hz to 40 Hz	$0.08 \ \% + 0.015 \ mV$			
					40 Hz to 200 Hz	$0.03 \ \% + 0.009 \ mV$			
					200 Hz to 2000 Hz	$0.03 \ \% + 0.008 \ mV$			
					2 kHz to 20 kHz	$0.04 \ \% + 0.010 \ mV$			
		100 mV	to	1 V	10 Hz to 40 Hz	$0.06 \ \% \ + \ 0.10 \ mV$			
					40 Hz to 200 Hz	$0.03 \ \% + 0.15 \ mV$			
					200 Hz to 2,000 Hz	$0.02 \ \% + 0.06 \ mV$			
					2 kHz to 20 kHz	$0.04 \ \% + 0.10 \ mV$			
		1 V	to	10 V	10 Hz to 40 Hz	$0.06 \ \% + 0.10 \ mV$			
					40 Hz to 200 Hz	$0.03 \ \% + 0.15 \ mV$			
					200 Hz to 2,000 Hz	$0.02 \ \% + 0.06 \ mV$			
					2 kHz to 20 kHz	$0.04 \ \% + 0.10 \ mV$			

<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 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.

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### CMC for the field of measured quantity: Frequency

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration	Ν	omina	l range	Parameter(s) of the	Lowest stated expanded	Calibration principle	Calibration procedure identification <sup>3</sup>	Work- place
		min unit		max unit	measurand	measurement uncertainty <sup>2</sup>			
1*	Frequency meters - Signal analyzers, vibrometers, counters, controllers for vibration test						Comparison with a reference multimeter	KP 3.23	
	systems	1 Hz	to	100 Hz	100 mV to 10 V	0.001 % + 0.020 mHz			
		100 Hz	to	1,000 Hz	100 mV to 10 V	0.001 % + 0.20 mHz			
		1 kHz	to	10 kHz	100 mV to 10 V	0.001 % + 2.0 mHz			

<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 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.

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

Ord. number <sup>1</sup>	Calibrated quantity / Subject of calibration		Nominal ra	nge	Paramatar(s) of the	Lowest stated	Calibration principle	Calibration procedure identification <sup>3</sup>	Work- place
		min ur	nit	max uni	measurand	mesurement uncertainty <sup>2</sup>			
1*	Hygrometers of thermal and climatic chambers and enclosures, measurement of humidity in equipment with temperature and humidity control	10 % R 30 % R 60 % R	V to V to V to	30 % R 60 % R 95 % R	(18 to 32) °C	1.6 % RV 1.9 % RV 2.2 % RV	Comparison with a reference digital hygrometer	KP 1.09 (DKD-R 5-7, method A, B, C)	

<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. The uncertainty value given here is based on the best laboratory conditions achievable; the uncertainty value of a particular calibration may be higher depending on the conditions of that calibration. For identical limit values of adjacent ranges, the lower uncertainty value always applies.