

Scope of Accreditation

Accredited person: CHIRANALAB, s.r.o.

Nám. Dr. A. Schweitzera 194, 916 01 Stará Turá

The organisational unit carrying out the activities of an accredited person:

Calibration Laboratory

Place of activity of the accredited person:

Nám. Dr. A. Schweitzera 194, 916 01 Stará Turá

Identification number of the accredited person: 039/K-052

Laboratory with fixed scope of accreditation.

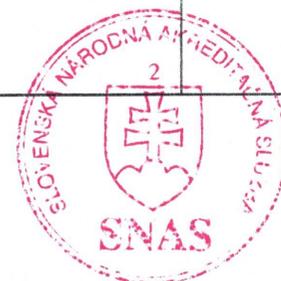
Item	Kind of measuring instrument, measuring means	Measured quantity	Measurement range	Expanded uncertainty U ($k=2$)	Established methods		Other specifications
					Kind/Principle	Identification	
1.1	End scales	Length	(0.5 to 100) mm 4th order	$(0.2 + 2.0 \cdot L) \mu\text{m}$	Comparative method with end scales parallel	ISO 3650	Calibration performed in the laboratory
			(0.5 to 100) mm 5th order	$(0.5 + 5.0 \cdot L) \mu\text{m}$		KALAB D1/2017	
1.2	Micrometers		(0 to 100) mm	$(0.9 + 3.1 \cdot L) \mu\text{m}$ (caliper micrometers)	Comparative method with end scales parallel	STN 25 1400 EN ISO 3611 STN 25 1430 STN 25 1435 STN 25 1442	
			(0 to 250) mm	$(1.8 + 3.1 \cdot L) \mu\text{m}$ (two-touch, three-touch cavity gauges)			
		(0 to 500) mm	$(1.4 + 3.1 \cdot L) \mu\text{m}$ (passameters, micropassameters, micrometric depth gauges)	Comparative method with end scales parallel	KALAB D2/2017		
1.3	Calipers	(0 to 1000) mm	$(16 + 0.54 \cdot L) \mu\text{m}$ (calipers, thickness gauges, depth gauges and altimeters with scale divisions of 0.01 and 0.02 mm)	Comparative method with end scales of parallel and control rings	STN 25 1202 STN 99 0652		
			$(32 + 0.54 \cdot L) \mu\text{m}$ (calipers, depth gauges and altimeters with scale divisions of 0.05 and 0.1 mm)			KALAB D3/2017	
1.4	Dial and digital deviation meters	(0 to 50) mm	1.5 μm	Direct measurement with length gauge and I-Checker	EN ISO 463 STN 25 1816 EN ISO 9493 KALAB D4/2017		
		(0 to 300) mm	2.0 μm (lever deflection gauges, two-touch cavity gauges)			Direct measurement with altimeter	
		(0 to 300) mm	2.0 μm (two-touch cavity gauges, subits, measuring heads)	Direct measurement with length gauge			



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1.5	Roller and flat gauges, joint gauges, measuring wires for threads	Length	(0.05 to 100) mm	$(1.9 + 0.8 \cdot L) \mu\text{m}$	Direct measurement with micrometer	EN 20286 1-2 STN 25 3102 KALAB D5/2017	Calibration performed in the laboratory
			(0.05 to 300) mm	$(1.1 + 0.8 \cdot L) \mu\text{m}$	Direct measurement with length gauge		
	Adjusting scales		(0.1 to 300) mm	$(1.9 + 0.8 \cdot L) \mu\text{m}$	Direct measurement with length gauge		
	Micrometer heads, punches		(0 to 300) mm	$(1.4 + 3.1 \cdot L) \mu\text{m}$	Direct measurement with length gauge		
1.6	Calipers		(0.1 to 500) mm	$(2.0 + 1.3 \cdot L) \mu\text{m}$	Comparative method with end scales parallel	EN 20286 1-2 STN 25 3102 KALAB D6/2017	
				$(2.5 + 1.0 \cdot L) \mu\text{m}$	Direct measurement with microscope		
1.7	Threaded mandrels		(3 to 100) mm	$(2.5 + 1.0 \cdot L) \mu\text{m}$	Direct measurement with micrometer	ISO 1502 ISO 965 1-5 EN ISO 228 1-2 EN 20226 1-3 KALAB D7/2017	
			(3 to 200) mm	$(2.1 + 1.0 \cdot L) \mu\text{m}$	Direct measurement with length gauge		
	Threaded rings		(3 to 200) mm	$(2.3 + 0.7 \cdot L) \mu\text{m}$			
	Smooth rings		(2 to 200) mm	$(1.6 + 0.7 \cdot L) \mu\text{m}$			
1.8	Special measuring instruments: Gauges made according to technical standards and drawings, length measures, knife rulers	(0 to 200) mm	$(2.5 + 1.0 \cdot L) \mu\text{m}$	Direct measurement with microscope	EN ISO 1101 STN 25 1101 STN 25 3741 STN 25 3816 STN 99 1031 STN 25 5103 KALAB D8/2020		
		(0 to 1000) mm	$(200 + 26 \cdot L) \mu\text{m}$	Direct measurement with linear fixed gauge			
		0° to 360°	$2''$	Direct measurement with microscope			
1.9	Angles	Plane angle	0° to 360°	$2''$ with division up to $2''$ $3''$ with division up to $5''$ $5''$ with division up to $10''$ and more	Direct measurement with microscope	EN ISO 1101 STN 25 1101 STN 25 3741 STN 25 3816 STN 99 1031 STN 25 5103 KALAB D8/2020	
1.10	Angles		$\alpha = 90^\circ$ Arm length (50 to 600) mm	$10''$	Direct measurement with altimeter		



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2.1	Digital voltmeters DC	Electrical voltages	(0.01 to 2) mV (2 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1100) V (100 to 6000) V	($2.6 \cdot 10^{-6} + 2.5 \cdot 10^{-4} \cdot MH$) V ($2.6 \cdot 10^{-6} + 1.2 \cdot 10^{-5} \cdot MH$) V ($2.5 \cdot 10^{-6} + 1.4 \cdot 10^{-5} \cdot MH$) V ($9.2 \cdot 10^{-6} + 5.8 \cdot 10^{-6} \cdot MH$) V ($8.2 \cdot 10^{-5} + 4.5 \cdot 10^{-6} \cdot MH$) V ($8.7 \cdot 10^{-4} + 6.0 \cdot 10^{-6} \cdot MH$) V ($5.8 \cdot 10^{-3} + 7.2 \cdot 10^{-6} \cdot MH$) V ($10 + 6.0 \cdot 10^{-3} \cdot MH$) V	Voltage measurement with a calibrator, or comparison with a multimeter	KALAB E1/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	Calibration performed in the laboratory
2.2	Analogue voltmeters DC		(0.01 to 2) mV (2 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1100) V (100 to 6000) V	($3.5 \cdot 10^{-5} + 2.5 \cdot 10^{-4} \cdot MH$) V ($2.6 \cdot 10^{-5} + 5.2 \cdot 10^{-7} \cdot MH$) V ($2.6 \cdot 10^{-5} + 5.2 \cdot 10^{-7} \cdot MH$) V ($3.0 \cdot 10^{-4} + 2.9 \cdot 10^{-7} \cdot MH$) V ($2.3 \cdot 10^{-3} + 2.5 \cdot 10^{-7} \cdot MH$) V ($2.7 \cdot 10^{-2} + 3.4 \cdot 10^{-7} \cdot MH$) V ($2.9 \cdot 10^{-1} + 2.4 \cdot 10^{-7} \cdot MH$) V ($10 + 6.0 \cdot 10^{-3} \cdot MH$) V	Voltage measurement with a calibrator, or comparison with a multimeter	KALAB E2/2002 (EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	
2.3	Digital ammeters DC	Electric current	(10 to 200) μ A (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 3) A (3 to 7.5) A (7.5 to 15) A (15 to 20) A	($5.0 \cdot 10^{-9} + 9.4 \cdot 10^{-5} \cdot MH$) A ($5.0 \cdot 10^{-8} + 5.5 \cdot 10^{-5} \cdot MH$) A ($5.0 \cdot 10^{-7} + 5.5 \cdot 10^{-5} \cdot MH$) A ($5.0 \cdot 10^{-6} + 5.5 \cdot 10^{-5} \cdot MH$) A ($1.1 \cdot 10^{-4} + 9.9 \cdot 10^{-5} \cdot MH$) A 8.9 $\cdot 10^{-3}$ A 2.1 $\cdot 10^{-2}$ A 4.2 $\cdot 10^{-2}$ A 8.9 $\cdot 10^{-2}$ A	Measuring current with a calibrator, or comparing with an ammeter	KALAB E1/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	
2.4	Analogue ammeters DC		(10 to 200) μ A (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 3) A (3 to 7.5) A (7.5 to 15) A (15 to 20) A	($2.0 \cdot 10^{-8} + 5.4 \cdot 10^{-5} \cdot MH$) A ($2.4 \cdot 10^{-7} + 2.2 \cdot 10^{-5} \cdot MH$) A ($2.1 \cdot 10^{-6} + 2.4 \cdot 10^{-5} \cdot MH$) A ($2.4 \cdot 10^{-5} + 2.2 \cdot 10^{-5} \cdot MH$) A ($2.3 \cdot 10^{-4} + 7.0 \cdot 10^{-5} \cdot MH$) A A 8.9 $\cdot 10^{-3}$ A 2.1 $\cdot 10^{-2}$ A 4.2 $\cdot 10^{-2}$ A 8.9 $\cdot 10^{-2}$ A	Measuring current with a calibrator, or comparing with an ammeter	KALAB E2/2002 (EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	
2.5	Digital AC voltmeters ($f = 40 \text{ Hz} - 1 \text{ kHz}$)	Electrical voltages	(0.1 to 2) mV (2 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1100) V (100 to 6000) V	($1.2 \cdot 10^{-5} + 6.0 \cdot 10^{-6} \cdot MH$) V ($1.2 \cdot 10^{-5} + 5.6 \cdot 10^{-5} \cdot MH$) V ($1.8 \cdot 10^{-5} + 1.9 \cdot 10^{-4} \cdot MH$) V ($8.3 \cdot 10^{-5} + 1.5 \cdot 10^{-4} \cdot MH$) V ($8.3 \cdot 10^{-4} + 1.5 \cdot 10^{-4} \cdot MH$) V ($7.1 \cdot 10^{-3} + 1.6 \cdot 10^{-4} \cdot MH$) V ($1.2 \cdot 10^{-1} + 2.0 \cdot 10^{-4} \cdot MH$) V ($10 + 6.0 \cdot 10^{-3} \cdot MH$) V	Voltage measurement with a calibrator, or comparison with a multimeter	KALAB E1/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	
2.6	Analogue voltmeters ($f = 50 \text{ Hz}$) AC		(0.1 to 2) mV (2 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1100) V (100 to 6000) V	($1.2 \cdot 10^{-5} + 6.0 \cdot 10^{-6} \cdot MH$) V ($1.2 \cdot 10^{-5} + 5.4 \cdot 10^{-5} \cdot MH$) V ($4.4 \cdot 10^{-5} + 1.2 \cdot 10^{-4} \cdot MH$) V ($5.3 \cdot 10^{-4} + 6.1 \cdot 10^{-5} \cdot MH$) V ($5.0 \cdot 10^{-3} + 6.4 \cdot 10^{-5} \cdot MH$) V ($5.0 \cdot 10^{-2} + 6.7 \cdot 10^{-5} \cdot MH$) V ($4.6 \cdot 10^{-1} + 7.9 \cdot 10^{-5} \cdot MH$) V ($10 + 6.0 \cdot 10^{-3} \cdot MH$) V	Voltage measurement with a calibrator, or comparison with a multimeter	KALAB E2/2002 (EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	



Annex to Certificate of Accreditation No. K-052 dated 06.04.2024.

The Annex is an integral part of
the certificate

Item	Kind of measuring instrument, measuring means	Measured quantity	Measurement range	Expanded uncertainty U ($k=2$)	Established methods		Other specifications
					Kind/Principle	Identification	
2.7	Digital AC ammeters ($f = 40\text{Hz} - 1\text{kHz}$)	Electric current	(10 to 200) μA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A	($1.5 \cdot 10^{-8} + 1.2 \cdot 10^{-4} \cdot MH$) A ($1.6 \cdot 10^{-7} + 6.5 \cdot 10^{-5} \cdot MH$) A ($1.6 \cdot 10^{-6} + 2 \cdot 10^{-4} \cdot MH$) A ($2.7 \cdot 10^{-5} + 4.6 \cdot 10^{-5} \cdot MH$) A ($2.6 \cdot 10^{-4} + 2.5 \cdot 10^{-4} \cdot MH$) A	Measuring current with a calibrator, or comparing with an ammeter	KALAB E1/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	Calibration performed in the laboratory
	Digital AC ammeters ($f = 50\text{Hz}$)		(2 to 5) A (5 to 20) A	$8.9 \cdot 10^{-3} \text{ A}$ $3.1 \cdot 10^{-2} \text{ A}$			
2.8	Analogue AC ammeters ($f = 50\text{Hz}$)		(10 to 200) μA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 5) A (5 to 20) A	($2.8 \cdot 10^{-8} + 8.9 \cdot 10^{-5} \cdot MH$) A ($4.8 \cdot 10^{-7} + 2.9 \cdot 10^{-5} \cdot MH$) A ($4.1 \cdot 10^{-6} + 3.3 \cdot 10^{-5} \cdot MH$) A ($5.5 \cdot 10^{-5} + 2.5 \cdot 10^{-5} \cdot MH$) A ($4.8 \cdot 10^{-4} + 1.9 \cdot 10^{-4} \cdot MH$) A $8.9 \cdot 10^{-3} \text{ A}$ $3.1 \cdot 10^{-2} \text{ A}$	Measuring current with a calibrator, or comparing with an ammeter	KALAB E2/2002 (EN 60051-9 EN 60051-1 EN 60051-2 EN 60051-7)	
2.9	Resistance decades	Electrical resistance	(1 to 100) Ω (100 to 1000) Ω (1 to 10) k Ω (10 to 100) k Ω (0.1 to 1) M Ω (1 to 10) M Ω (10 to 100) M Ω	($5.6 \cdot 10^{-3} + 4.3 \cdot 10^{-7} \cdot MH$) Ω ($4.2 \cdot 10^{-2} + 6.3 \cdot 10^{-7} \cdot MH$) Ω ($4.2 \cdot 10^{-1} + 6.3 \cdot 10^{-7} \cdot MH$) Ω ($5.2 + 5.1 \cdot 10^{-7} \cdot MH$) Ω ($1.1 \cdot 10^2 + 6.7 \cdot 10^{-7} \cdot MH$) Ω ($2.3 \cdot 10^3 + 2.9 \cdot 10^{-6} \cdot MH$) Ω ($3.5 \cdot 10^4 + 1.4 \cdot 10^{-3} \cdot MH$) Ω	Measuring DC resistance with multimeter	KALAB E3/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-6)	
2.10	Digital electrical resistance gauges (DC)	Electrical resistance	0.001 Ω	$9.5 \cdot 10^{-7} \Omega$	DC resistance measurement with calibrator, or resistance decade, or resistance normal	KALAB E1/2002 (EURAMET cg -15, version 3 EN 60051-9 EN 60051-1 EN 60051-6 EN 60051-7)	
			0.01 Ω	$7.5 \cdot 10^{-7} \Omega$			
			0.1 Ω	$5.4 \cdot 10^{-5} \Omega$			
			1 Ω	$1.5 \cdot 10^{-4} \Omega$			
			10 Ω	$4.4 \cdot 10^{-4} \Omega$			
			100 Ω	$4.0 \cdot 10^{-3} \Omega$			
			1 k Ω	$1.9 \cdot 10^{-2} \Omega$			
			10 k Ω	$1.9 \cdot 10^{-1} \Omega$			
			100 k Ω	2.4 Ω			
			1 M Ω	$5.0 \cdot 10^1 \Omega$			
10 M Ω	$1.1 \cdot 10^3 \Omega$						
100 M Ω	$2.2 \cdot 10^4 \Omega$						
2.11	Analogue electrical resistance gauges (DC)	Electrical resistance	0.001 Ω	$9.5 \cdot 10^{-7} \Omega$	DC resistance measurement with calibrator, or resistance decade, or resistance normal	KALAB E2/2002 (EN 60051-9 EN 60051-1 EN 60051-6 EN 60051-7)	
			0.01 Ω	$7.5 \cdot 10^{-6} \Omega$			
			0.1 Ω	$6.0 \cdot 10^{-5} \Omega$			
			1 Ω	$1.5 \cdot 10^{-4} \Omega$			
			10 Ω	$3.9 \cdot 10^{-3} \Omega$			
			100 Ω	$3.7 \cdot 10^{-2} \Omega$			
			1 k Ω	$3.9 \cdot 10^{-1} \Omega$			
			10 k Ω	4.1 Ω			
			100 k Ω	$4.1 \cdot 10^2 \Omega$			
			1 M Ω	$4.2 \cdot 10^2 \Omega$			
10 M Ω	$6.1 \cdot 10^3 \Omega$						
100 M Ω	$6.7 \cdot 10^4 \Omega$						



Item	Kind of measuring instrument, measuring means	Measured quantity	Measurement range	Expanded uncertainty U ($k=2$)	Established methods		Other specifications
					Kind/Principle	Identification	
3.1	Direct-indicating pressure gauges	Pressure	(-2500 to 0 to 2500) Pa (-95 to 0 to 100) kPa (10 to 700) kPa (0.1 to 3.5) MPa (-100 to 0 to 200) kPa (0.1 to 3000) kPa (0.1 to 1) MPa (1 to 10) MPa (10 to 100) MPa (3 to 30000) kPa	(1.1 + 1.6.10 ⁻³ . MH) Pa (1.5 + 1.4.10 ⁻⁴ . MH) Pa (0.01 + 8.6.10 ⁻⁴ . MH) kPa (0.18 + 4.7.10 ⁻⁴ . MH) kPa (0.001 + 1.2.10 ⁻³ .MH) kPa (0.01 + 0.001. MH) kPa (0.21 + 4.5.10 ⁻⁵ . MH) kPa (2.9.10 ⁻⁴ . MH) MPa (4.5. 10 ⁻⁴ . MH) MPa (0.1 kPa + 0.001. MH) kPa	Direct comparison of the reference value with the value on the calibrated instrument	KALAB T1/2002 KALAB T2/2002 EN 837-1 EN 837-2 EN 837-3	Calibration performed in the laboratory and at the customer's site.
3.2	Not available						
3.3	Pressure transducers	Pressure	(-2500 to 0 to 2500) Pa (-95 to 0 to 100) kPa (10 to 700) kPa (0.1 to 3.5) MPa (-100 to 0 to 200) kPa (0.1 to 3000) kPa (0.1 to 1) MPa (1 to 10) MPa (10 to 100) MPa (3 to 30000) kPa	(1.1 + 1.6.10 ⁻³ . MH) Pa (1.5 + 1.4.10 ⁻⁴ . MH) Pa (0.01 + 8.6.10 ⁻⁴ . MH) kPa (0.18 + 4.7.10 ⁻⁴ . MH) kPa (0.001 + 1.2.10 ⁻³ .MH) kPa (0.01 + 0.001. MH) kPa (0.21 + 4.5.10 ⁻⁵ . MH) kPa (2.9.10 ⁻⁴ . MH) MPa (4.5. 10 ⁻⁴ . MH) MPa (0.1 kPa + 0.001. MH) kPa	Indirect pressure measurement via output signal by calibrated transducer	KALAB T3/2002 EN 60770-1 EN 60770-3 STN 25 7018 EURAMET CG-3	Calibration performed in the laboratory and at the customer's site.
4.1	Load cells (thrust and pressure)	Strength	(2 to 1000) N	(0.2 + 0.00036 . F) N	Direct comparison with reference load cells	KALAB F1/2024	Calibration performed in the laboratory
5.1	Gas flow meters	Gas flow	(0.02 to 40) m ³ h ⁻¹ (0.02 to 8) m ³ h ⁻¹ (40 to 100) m ³ h ⁻¹	0.44 % (connection to gas meter) 0.76 % (connection to gas meter) 0.76 % (connection to gas meter)	Direct comparison by volume method	KALAB P1/2016 ČSN 25 7830	Calibration performed in the laboratory
6.1	Glass thermometers and direct indicating thermometers	Temperature	(-40 to 300) °C	(0.044 °C + 1.6.10 ⁻⁴ . t) °C	Direct comparison with the benchmark	ČSN 25 8010 STN 25 8102 ČSN 25 8130÷25 8134 KALAB TH1/2017	Calibration performed in the laboratory
			(-20 to 250) °C	(0.124 °C + 1.6.10 ⁻⁴ . t) °C			Calibration performed at the customer's site
6.2	Resistance thermometers and temperature transducers		(-40 to 300) °C	(0.044 °C + 2.0.10 ⁻⁴ . t) °C	Direct comparison with the benchmark	EN 60751 KALAB TH2/2017	Calibration performed in the laboratory
6.3	Infrared thermometers		(-10 to 50) °C (50.1 to 200) °C (200.1 to 300) °C	2.8 °C 3.2 °C 3.8 °C	Direct comparison with a reference thermometer in a black body	KALAB TH3/2020	Calibration performed in the laboratory



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					Kind/Principle	Identification	
7.1	Relative humidity meters	Relative air humidity	(20 to 90) %	2.9 %	Direct comparison with the benchmark	KALAB V1/2019	Calibration performed in the laboratory and at the customer's site

Legend: L = length in metres, t = temperature in °C, KM - end scales, F = force in N
 MH = measured value given in SI base units.
 KALAB – calibration procedures

