The Appendix is an integral part of
Certificate of Accreditation No. 509/2020 of 13/08/2020

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

ENERGIZE GROUP s.r.o.
CALIBRATION SERVICE CENTER
Tylova 2923, 316 00 Plzeň

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

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min. unit		Nominal range max. unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Workplace
1*	Relative (absolute[4]) pressure / Deformation and digital manometers and pressure transducers	-95 kPa	to	-2.5 kPa	medium air	60 Pa	Comparison with a digital manometer	92/75-15-1	
		-2.5 kPa	to	2.5 kPa	medium air	2 Pa	Comparison with a micromanometer	92/75-15-2	
		2.5 kPa	to	20 kPa	medium nitrogen	4 Pa	Comparison with a ball manometer	92/75-15-3	
		20 kPa	to	200 kPa		$2 \cdot 10^{-4}$			
		0.2 MPa	to	10 MPa		$25 \cdot 10^{-5}$			
2*	Relative (absolute[4]) pressure / Deformation and digital manometers and pressure transducers	0.025 MPa	to	0.6 MPa	medium oil	300 Pa	Comparison with a piston manometer	92/75-15-1, 92/75-15-2, 92/75-15-3	
		0.6 MPa	to	60 MPa		5.10^{-4}			
3*	Absolute pressure / Deformation and digital manometers and pressure transducers	0.2 kPa	to	200 kPa	medium air	52 Pa	Comparison with a digital manometer	92/75-15-1, 92/75-15-2, 92/75-15-3	

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[2] The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02, 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.

[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] In case of absolute pressure meters (the resulting pressure is the sum of barometric and relative pressure) the CMC measurement of absolute pressure ±52 Pa is one of the components of B type uncertainty.

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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 meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
		min.	unit	max.	unit					
1	Thermocouple – S	100 °C	to	400 °C			1.2 °C	Comparison with a standard resistance sensor in a calibrating oven	92/75-14-1	
		400 °C	to	1,100 °C			1.1 °C	Comparison with a standard thermoelectric sensor in a calibrating oven		
2	Thermocouple – base metals	0 °C	to	200 °C			0.35 °C	Comparison with a standard resistance sensor in a calibrating oven or oil bath	92/75-14-1	
		200 °C	to	500 °C			0.40 °C	Comparison with a standard resistance sensor in a calibrating oven		
		500 °C	to	1,100 °C			1.2 °C	Comparison with a standard thermoelectric sensor in a calibrating oven		
3	Resistance thermometer	-30 °C	to	0 °C			0.13 °C	Comparison with a standard resistance sensor in a calibrating oven	92/75-14-2	
		0 °C	to	200 °C			0.10 °C	Comparison with a standard resistance sensor in a calibrating oven or oil bath		
		200 °C	to	500 °C			0.52 °C	Comparison with a standard resistance sensor in a calibrating oven		
4	Glass thermometer	0 °C	to	200 °C			0.08 °C	Comparison with a standard resistance sensor in a Dewar flask or oil bath	92/75-14-3	
5	Analogue and digital thermometer	-30 °C	to	0 °C			0.23 °C	Comparison with a standard resistance sensor in a calibrating oven or thermal chamber	92/75-14-4	
		0 °C	to	200 °C			0.23 °C	Comparison with a standard resistance sensor in a calibrating oven, oil bath or thermal chamber		
		200 °C	to	500 °C			0.40 °C	Comparison with a standard resistance sensor in a calibrating oven		
		500 °C	to	1,100 °C			1.2 °C	Comparison with a standard thermoelectric sensor in a calibrating oven		

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		Nominal range max.	unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
6*	Direct indicating thermometers and measuring chains	-30	°C	to	200	°C		0.28 °C	Comparison with a standard resistance thermometer in a calibrating oven	92/75-14-5	
		200	°C	to	1,100	°C		1.9	Comparison with a standard thermoelectric sensor		
7*	Temperature calibrators and meters								Simulation and measurement of DC voltage of thermoelectric temperature sensors	92/75-17-7	
	Type R thermocouples	-50	°C	to	1,760	°C		2.1 °C			
	Type S thermocouples	-50	°C	to	1,760	°C		2.1 °C			
	Type B thermocouples	0	°C	to	1,820	°C		1.8 °C			
	Type J thermocouples	-210	°C	to	1,200	°C		0.7 °C			
	Type T thermocouples	-270	°C	to	400	°C		0.5 °C			
	Type E thermocouples	-270	°C	to	1,000	°C		0.5 °C			
	Type K thermocouples	-270	°C	to	1,370	°C		0.8 °C			
	Type N thermocouples	-270	°C	to	1,300	°C		0.8 °C			
	Pt100 resistance sensors	-200	°C	to	850	°C		0.4 °C	Simulation and measurement of DC resistance of resistance temperature sensors		
	Pt200 resistance sensors	-200	°C	to	850	°C		0.3 °C			
	Pt1000 resistance sensors	-200	°C	to	850	°C		0.5 °C			
	Ni100 resistance sensors	-60	°C	to	250	°C		0.2 °C			

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CMC for the field of measured quantity: Electrical quantities

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min. unit	Nominal range max. unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
1*	DC voltage / DC voltage meters (meters and sources)					Comparison with a calibrator or measurement with a multimeter	92/75-17-1, 92/75-17-6, 92/75-17-9	
		0 mV to	10 mV		0.0050 % + 0.3 µV			
		10 mV to	200 mV		0.0017 %			
		200 mV to	2 V		0.0010 %			
		2 V to	20 V		0.0009 %			
		20 V to	1,000 V		0.0014 %			
	Inspection equipment	1 kV to	5 kV		0.48 %	Direct measurement or generation by the FLUKE 5322A calibrator		
2*	DC current / DC current meters (meters and sources)					Comparison with a calibrator or direct measurement with a standard multimeter	92/75-17-1, 92/75-17-6, 92/75-17-9	
		1 µA to	10 µA		0.015 %			
		10 µA to	200 µA		0.012 %			
		200 µA to	20 mA		0.0082 %			
		20 mA to	10 A		0.0062 %	Measurement of voltage drop on a standard resistor		
		10 A to	100 A		0.013 %			
		100 A to	1,000 A		2.4 %			
	Clamp tester	1 mA to	1,000 A		0.35 %	Measurement of current simulated by a standard calibrator with current coil		

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min. unit	Nominal range max. unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
3*	AC voltage / AC voltage meters (meters and sources)	10 mV	200 mV	40 Hz to 100 Hz	0.020 % + 15 µV	Comparison with a calibrator or measurement with a multimeter	92/75-17-1, 92/75-17-6, 92/75-17-9	
				100 Hz to 2 kHz	0.015 % + 14 µV			
				2 kHz to 10 kHz	0.022 % + 15 µV			
				10 kHz to 30 kHz	0.040 % + 15 µV			
				30 kHz to 100 kHz	0.089 % + 15 µV			
		200 mV	2 V	40 Hz to 100 Hz	0.013 % + 32 µV			
				100 Hz to 2 kHz	0.012 % + 32 µV			
				2 kHz to 10 kHz	0.013 % + 32 µV			
				10 kHz to 30 kHz	0.025 % + 52 µV			
				30 kHz to 100 kHz	0.059 % + 0.24 mV			
		2 V	20 V	40 Hz to 100 Hz	0.013 % + 0.32 mV			
				100 Hz to 2 kHz	0.012 % + 0.32 mV			
				2 kHz to 10 kHz	0.013 % + 0.32 mV			
				10 kHz to 30 kHz	0.025 % + 0.52 mV			
				30 kHz to 100 kHz	0.059 % + 2.4 mV			
		20 V	200 V	40 Hz to 100 Hz	0.014 % + 3.2 mV			
				100 Hz to 2 kHz	0.012 % + 3.2 mV			
				2 kHz to 10 kHz	0.014 % + 3.2 mV			
				10 kHz to 30 kHz	0.026 % + 5.2 mV			
				30 kHz to 100 kHz	0.059 % + 24 mV			
		200 V	1,000 V	40 Hz to 10 kHz	0.015 % + 26 mV			
				10 kHz to 30 kHz	0.031 % + 58 mV			
	Inspection equipment	1 kV	5 kV	50 Hz, 60 Hz	0.48 %	Direct measurement or generation by the FLUKE 5322A calibrator		

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min. unit	Nominal range max. unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
4*	AC current / AC current meters (meters and sources)	10 µA	200 µA	40 Hz to 1 kHz 1 kHz to 5 kHz	0.035 % + 0.024 µA 0.048 % + 0.024 µA	Comparison with a calibrator or direct measurement with a standard multimeter	92/75-17-1, 92/75-17-6, 92/75-17-9	
		200 µA	2 mA	40 Hz to 1 kHz 1 kHz to 5 kHz	0.033 % + 0.24 µA 0.038 % + 0.24 µA			
		2 mA	20 mA	40 Hz to 1 kHz 1 kHz to 5 kHz	0.033 % + 2.4 µA 0.038 % + 2.4 µA			
		20 mA	200 mA	40 Hz to 1 kHz 1 kHz to 5 kHz	0.032 % + 24 µA 0.037 % + 24 µA			
		200 mA	2 A	40 Hz to 1 kHz 1 kHz to 5 kHz	0.075 % + 0.24 mA 0.086 % + 0.24 mA			
		2 A	10 A	50 Hz, 60 Hz 40 Hz to 1 kHz 1 kHz to 5 kHz	0.035 % + 0.16 mA 0.11 % + 1.2 mA 0.30 % + 1.2 mA	Measurement of voltage drop on a standard resistor		
		10 A	1,000 A	50 Hz, 60 Hz	0.33 %	Measurement using a current transformer		
	Clamp tester	0.1 A	1,000 A	50 Hz, 60 Hz	0.36 % + 0.12 A	Measurement of current simulated by a standard calibrator with current coil		

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		max.	unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
5*	Electrical resistance / DC resistance standards				0.000				Comparison with the resistance standard by the substitution method	92/75-17-5, 92/75-17-6, 92/75-17-9	
					1	Ω		0.012 %			
					0.001	Ω		0.0030 %			
					0.01	Ω		0.0015 %			
					0.1	Ω		0.0015 %			
					1	Ω		0.0015 %			
					10	Ω		0.0015 %			
					100	Ω		0.0015 %			
					1	kΩ		0.0015 %			
					10	kΩ		0.0015 %			
					100	kΩ		0.0015 %			
	DC resistance meters and generators								Direct measurement by a multimeter or by an indirect method by measuring voltage and current		
		0.01	Ω	to	0.1	Ω		0.015 %			
		0.1	Ω	to	1	Ω		0.011 %			
		1	Ω	to	20	Ω		0.0034 %			
		20	Ω	to	200	Ω		0.0022 %			
		200	Ω	to	20	kΩ		0.0018 %			
		20	kΩ	to	200	kΩ		0.0022 %			
		200	kΩ	to	2	MΩ		0.0040 %			
		2	MΩ	to	20	MΩ		0.0076 %			
		20	MΩ	to	100	MΩ		0.058 %			
		100	MΩ	to	1	GΩ		0.65 %			
		1	GΩ	to	10	GΩ		1.2 %			
		10	GΩ	to	100	GΩ		3.5 %	Generation with Fluke 5322A		

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min. unit	Nominal range max. unit	Parameter(s) of the meas. quantity		Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
6*	DC electrical power / DC wattmeters and DC power generators	0.11 mW	100 kW	0.1 V to 1,000 V	1 mA to 20 mA	0.0092 %	Direct measurement of voltage and current by multimeters	92/75-17-5, 92/75-17-6, 92/75-17-7, 92/75-17-9	
				0.1 V to 1,000 V	20 mA to 200 mA	0.0065 %	Measurement by standard multimeters with a standard shunt		
					200 mA to 10 A	0.0070 %			
					10 A to 100 A	0.013 %			
	Clamp tester	0.01 W	1,000 kW	0.1 V to 1,000 V	0.1 A to 1,000 A	0.36 %	Measurement of power simulated by a standard calibrator with current coil		
7*	AC power / AC wattmeters or AC power generators (50 Hz or 60 Hz; power factor 0.5 to 1.0 ind.)	0.2 W	12 kW	10 V to 60 V	20 mA to 10 A	0.080 %	Direct measurement with a standard wattmeter	92/75-17-6, 92/75-17-8	
					10 A to 20 A	0.13 %			
				60 V to 450 V	20 mA to 10 A	0.070 %			
					10 A to 20 A	0.12 %			
				450 V to 600 V	20 mA to 10 A	0.094 %			
					10 A to 20 A	0.17 %			
	Clamp tester	1 W	600 kW	10 V to 600 V	0.1 A to 1,000 A	0.58 %	Measurement of power simulated by a standard calibrator with current coil		

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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 meas. quantity	Lowest expanded measurement uncertainty specified [2]	Calibration principle	Calibration procedure identification [3]	Workplace
		min.	unit	max.	unit					
1*	Frequency / frequency generators	10 Hz	to	225 MHz		1 mV to 10 V	0.0014 %	Direct measurement by a standard counter	92/75-17-6	
	Frequency meters	1 Hz	to	10 MHz		1 mV to 10 V	0.0050 %	Generation with Meatest M-140 calibrator		

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CMC for the field of measured quantity: Physicochemical quantities

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range				Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Workplace
		min.	unit	max.	unit					
1	Analog and digital hygrometers, humidity transducers and humidity measuring chains, including humidity probes	10 % RH	to	90 % RH		18°C to 28°C	1.4 % RH	Comparison with a standard hygrometer in a conditioning chamber	92/75-14-6	

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