Schedule of Accreditation

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Accredited to ISO/IEC 17025:2017

Micro Precision (Midlands) Ltd

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Calibration performed at the above address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
DIMENSIONAL CALIBRATION			
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED			
LENGTH			
Plain plug gauges (parallel)	1 to 50 diameter 50 to 100 100 to 150	0.80 1.5 on diameter 2.2	Laboratory procedure CP15.
Plain ring gauges (parallel) and setting standards	10 to 50 50 to 100 100 to 150	1.0 1.5 on diameter 2.0	Laboratory procedure CP20, CP22.
Screw plug gauges (parallel) including check and setting plugs	1 to 100 diameter 100 to 150	Major Pitch Minor 1.5 3.0 3.3 2.2 5.0 3.7	Laboratory procedure CP19. Single start, symmetrical thread forms only.
Screw ring gauges (parallel)	1 to 75 diameter 75 to 150	Major Pitch Minor 12 5.0 5.0 12 7.0 7.6	Laboratory procedure CP21. Single start, symmetrical thread forms only. 1 mm to 12 mm diameter range also relates to functional test of size using check plugs.
Screw pitch Screw flank angle	0.2 to 8 0° to 52°	1.5 7.0 minutes of arc	Laboratory procedure CP19, CP21.
Vee blocks	BS 3731:1987 20 to 150 diameter, vee capacity	2.5 to 5.0	
Length gauge, flat and spherical ended (excluding length bars)	BS 870: 2008 25 to 600 Measured length: Parallelism:	 1.0 + (8.0 x length in m) 1.1	
Plain gap gauges (parallel)	BS 969:2008 2 to 100 100 to 200	 3.0 5.0	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
DIMENSIONAL CALIBRATION (continued)			
LENGTH (continued)			
Feeler gauges	BS 957: 2008 0.02 to 1.00	2.0	
Parallels	BS 906:Part 1:1972 BS 906:Part 2:1972 5 x 10 x 100 to 50 x 100 x 400 Thickness / Width Parallelism Straightness Squareness	 3.9 3.9 3.9 5.0	
ANGLE			
Blade type squares	BS 939:2007 50 to 300	3.0 on squareness	The CMC is for the departure from flatness, straightness, parallelism, or squareness, i.e. the distance separating the two parallel planes which just enclose the surface under consideration.
Right angle and box angle plates	BS 5535:1878 50 to 300 Squareness: Parallelism: Flatness:	 3.0 + (1.0 per 100 mm) 1.0 + (1.0 per 100 mm) 1.0 + (1.0 per 100 mm)	
MEASURING INSTRUMENTS AND MACHINES			
Micrometers			
External	BS 870: 2008, 0 to 600 Heads: (Zero) Setting, 0 to 25: (Zero) Setting, 25 to 450: Flatness of anvils: Parallelism of anvils: Spindle alignment:	 2.0 between any two points 1.0 1.0 + (8.0 x length in m) 0.47 0.74 7.0	
Internal	BS 959: 2008, 0 to 600	Heads: 2.0 between any two points Setting and extension rods: 1.0 + (8.0 x length in m)	
Depth	BS 6468: 2008, 0 to 300	Heads: 2.0 between any two points Setting and extension rods: 1.0 + (8.0 x length in m)	
Three point bore	5 to 50 50 to 100 100 to 150	3.0 3.5 4.0	Laboratory procedure CP40.

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
DIMENSIONAL CALIBRATION (continued)			
Vernier, Digital, Dial gauges			
Caliper	BS EN ISO 13385-1:2019 0 to 1000		Calibration by comparison to length standards
	Partial Surface Contact Error (E) 0 to 50: 50 to 100: 100 to 200: 200 to 300: 300 to 1000: Shift Error (S) Internal Jaws 3 to 50: Shift Error (S) Depth & Step 3 to 50:	 2.1 2.5 3.5 5.2 9.5 2.3 4.0	The stated uncertainty has been calculated in accordance with ISO 14253-5 and relates to the test value uncertainty. The uncertainty quoted excludes contributions relating to the instrument under test.
Caliper	Based on BS 887:2008 0 to 1000 Overall performance: Flatness: Parallelism: Squareness: Width of internal jaws:	 10 + (30 x length in m) 1.0 1.0 6.0 4.0	
Height	ISO13225:2012 BS 1643:2008 0 to 1000	Overall performance 10 + (30 x length in m)	
Depth	BS 6365:2008 0 to 600 Overall performance: Flatness / Straightness: Parallelism:	 10 + (30 x length in m) 1.0 1.0	
Dial gauges and dial test indicators	BS 907: 2008 and BS 2795:1981 0 to 50 Scale interval measurements: Discrimination:	 2.0 0.55	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
TORQUE CALIBRATION			Calibration results may also be given in units of lbf.in and lbf.ft, or in the units of an electrical output signal. The uncertainty quoted is for both the application of the calibration torque and the characteristics of the device being calibrated.
Hand Torque Tools (not including torque screwdrivers)	BS EN ISO 6789:2003 (Withdrawn) 1.0 N·m to 1000 N·m	1.6 %	
	BS EN ISO 6789-2:2017 1.0 N·m to 1000 N·m to	1.0 %	
ELECTRICAL CALIBRATION			All electrical calibrations are performed as a direct comparison against a reference standard unless otherwise stated
DC VOLTAGE			For the calibration of voltage measuring instruments
Generation	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV	18 µV/V + 3.0 µV 10 µV/V + 7.7 µV 9.0 µV/V + 72 µV 14 µV/V + 0.72 mV 14 µV/V + 4.3 mV	
Measurement	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1 kV	13 µV/V + 1.7 µV 8.0 µV/V + 3.0 µV 9.0 µV/V + 30 µV 12 µV/V + 0.30 mV 12 µV/V + 3.5 mV	For measurement of instrument outputs
DC RESISTANCE			
Generation	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ	5.8 mΩ 6.1 mΩ 8.0mΩ 28 mΩ 0.11 Ω 2.2Ω 62Ω 3.3kΩ 315kΩ 12 MΩ	For the calibration of resistance measuring instruments
Measurement	0 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ 1 GΩ to 10 GΩ	35 µΩ/Ω + 2.3 µΩ 22 µΩ/Ω + 28 µΩ 18 µΩ/Ω + 0.16 mΩ 15 µΩ/Ω + 1.2 mΩ 18 µΩ/Ω + 6.8 mΩ 28 µΩ/Ω + 0.24 Ω 44 µΩ/Ω + 3.1 Ω 0.029 % + 71 Ω 0.045 % + 3.4 kΩ 0.053 % + 230 kΩ 0.23 % + 46 MΩ	For measurement of instrument outputs
DC CURRENT			
Generation	0 µA to 200 µA 200 µA to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 20 A 20 A to 30 A	120 µA/A + 12 nA 58 µA/A + 49 nA 58 µA/A + 450 nA 58 µA/A + 9.0 µA 0.015 % + 100 µA 0.035 % + 0.80 mA 0.058 % + 4.4 mA	For the calibration of current measuring instruments

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ELECTRICAL CALIBRATION (continued)			
DC CURRENT (continued)			
Generation	30 A to 60A 60 A to 300 A 300 A to 1500 A	580 µA/A + 120mA 580 µA/A + 580 mA 680 µA/A + 2.30 A	For the calibration of clampmeters only
Measurement	0 µA to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 10 A 10 A to 30 A	21 µA/A + 0.80 nA 21 µA/A + 8.0 nA 23 µA/A + 85 nA 61 µA/A + 0.80 µA 0.029 % + 11 µA 0.065 % + 1.7 mA 0.088 % + 5.0 mA	For measurement of instrument outputs
AC VOLTAGE			
Generation	20 mV to 200 mV *40 Hz to 1 kHz* *1 kHz to 20 kHz* *20 kHz to 100 kHz* 200 mV to 2 V *40 Hz to 1 kHz* *1 kHz to 20 kHz* *20 kHz to 50 kHz* 2 V to 20 V *40 Hz to 1 kHz* *1 kHz to 20 kHz* 20 V to 200 V *40 Hz to 1 kHz* *1 kHz to 10 kHz* *10 kHz to 20 kHz* 200 V to 1000 V *40 Hz to 1 kHz* 200 V to 700 V *1 kHz to 10 kHz*	 0.019% + 49 µV 0.023% + 77 µV 0.12 % + 2.5 mV 0.019 % + 280 µV 0.025 % + 450 µV 0.075 % + 530 µV 0.019 % + 2.7 mV 0.024 % + 4.4 mV 0.018 % + 28 mV 0.023 % + 44 mV 0.035 % + 53 mV 0.023 % + 150 mV 0.029 % + 200 mV	For the calibration of voltage measuring instruments
Measurement	13 mV to 100 mV *10 Hz to 40 Hz* *40 Hz to 200 Hz* *200 Hz to 2 kHz* *2 kHz to 20 kHz* *20 kHz to 100 kHz* 100 mV to 1 V *10 Hz to 40 Hz* *40 Hz to 200 Hz* *200 Hz to 1 kHz* *1 kHz to 2 kHz* *2 kHz to 20 kHz* *20 kHz to 100 kHz*	 0.075 % + 27 µV 0.045 % + 34 µV 0.044 % + 30 µV 0.047 % + 30 µV 0.16 % + 120 µV 0.087 % + 130 µV 0.042 % + 120 µV 0.030 % + 120 µV 0.030 % + 190 µV 0.058 % + 0.97 mV 0.16 % + 0.97 mV	For measurement of instrument outputs

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
ELECTRICAL CALIBRATION (continued)			
AC VOLTAGE (continued)			
Measurement (continued)	1 V to 10 V		
	10 Hz to 40 Hz	0.087 % + 1.3 mV	
	40 Hz to 200 Hz	0.042 % + 1.2 mV	
	200 Hz to 1 kHz	0.030 % + 1.2 mV	
	1 kHz to 2 kHz	0.030 % + 2.0 mV	
	2 kHz to 20 kHz	0.058 % + 9.7 mV	
	20 kHz to 100 kHz	0.016 % + 9.7 mV	
	10 V to 100 V		
	10 Hz to 40 Hz	0.11 % + 27 mV	
	40 Hz to 200 Hz	0.045 % + 27 mV	
	200 Hz to 1 kHz	0.043 % + 27 mV	
	1 kHz to 2 kHz	0.043 % + 27 mV	
	2 kHz to 20 kHz	0.035 % + 45 mV	
	100 V to 1000 V		
	40 Hz to 200 Hz	0.045 % + 0.35 V	
	200 Hz to 1 kHz	0.043 % + 0.52 V	
	1 kHz to 2 kHz	0.043 % + 0.52 V	
	2 kHz to 10 kHz	0.070 % + 0.73 V	
AC CURRENT			
Generation	*40 Hz to 1 kHz*		For the calibration of current measuring instruments
	20 µA to 200 µA	0.081 % + 0.18 µA	
	200 µA to 2 mA	0.069 % + 0.46 µA	
	2 mA to 20 mA	0.046 % + 4.6 µA	
	20 mA to 200 mA	0.046 % + 46 µA	
	200 mA to 2 A	0.069 % + 550 µA	
	40 Hz to 100 Hz		
	2 A to 30	0.092 % + 5.5 mA	
	30 A to 60 A	0.093 % + 120 mA	For the calibration of clampmeters only
	60 A to 300 A	0.10 % + 580 mA	
	300 A to 1500 A	0.25 % + 2.30 A	
Measurement	*40 Hz to 1 kHz*		For measurement of instrument outputs
	13 µA to 100 µA	0.072 % + 20 nA	
	100 µA to 1 mA	0.072 % + 190 nA	
	1 mA to 10 mA	0.072 % + 2.0 µA	
	10 mA to 100 mA	0.072 % + 20 µA	
	100 mA to 1 A	0.098 % + 200 µA	
	1 A to 10 A	0.17 % + 5.0 mA	
	10 A to 30 A	0.17 % + 13 mA	
FREQUENCY			
Generation	1 Hz to 10 MHz	5.0 parts in 10^6 + 2.0 mHz	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
CAPACITANCE Generation	*1 kHz* 1 nF 10 nF 100 nF 1 µF 10 µF	22 pF 98 pF 480 pF 5.5 nF 82 nF	For the calibration of capacitance measuring instruments
END			

Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand.
Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation Q[a, b] stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$