

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 0373 Accredited to ISO/IEC 17025:2017	Metrology and Quality Services Ltd Issue No: 056 Issue date: 25 April 2025	
	23 Brindley Road Bayton Road Ind Estate Exhall Coventry West Midlands CV7 9EP	Contact: Mr Luke Purkiss Tel: +44 (0) 2476 644661 E-Mail: enquiries@mqs.co.uk Website: www.mqs-shop.co.uk

Calibration performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address 23 Brindley Road Bayton Road Ind Estate Exhall Coventry West Midlands Local contact Mr Luke Purkiss Tel: 02476 644661	Dimensional Electrical Force Torque Pressure	A
Address 37 Western Parkway Business Centre Lower Ballymount Road Dublin 12 Ireland Local contact Mr P Roche Tel: +353 [0] 1 4502 666	Dimensional	B

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customer's premises UK Local contact Mr Luke Purkiss Tel: 02476 644661	Dimensional	C
At customer's premises Ireland Local contact Mr Paul Roche Tel: +353 (0) 1 4502 666	Dimensional	D



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH			NOTES	
Gauge blocks Inch (Steel, Ceramic and tungsten carbide)	As BS 4311:Part 1 2007 0.05 Inch to 0.4 inch 0.4 Inch to 1 inch 2 inch 3 inch 4 inch	Class (see Notes) C 3.0 4.0 5.0 6.0 7.0 μ inch	Class C uncertainties apply to the measurement of steel, ceramic and tungsten carbide gauges by comparison with grade K standards of length of a similar material. Class C uncertainties apply to grade 0, 1 and 2 gauges to BS EN ISO 3650:1999 and BS 4311:Part 1:2007	A
Millimetre (Steel, Ceramic and tungsten carbide)	As BS EN ISO 3650: 1999 0.5 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	C 0.080 0.10 0.12 0.15 0.18	All linear calibrations may be given in inch units.	A
Thread measuring cylinders	0.1 to 5.0 diameter	0.25	As BS 16239:2013, or BS 5590:1978 or BS3777:1964 and specials. Calibration performed using a length measuring machine and length standards	A & B
Precision pin gauges (parallel)	0.1 to 10 diameter	0.25	Calibration performed using a length measuring machine and length standards	A & B
Plain plug gauges (parallel)	1 to 50 diameter 50 to 100 100 to 150 150 to 200 200 to 300	0.50 0.80 1.0 1.2 2.0	Calibration performed using a length measuring machine and length standards	A & B
Plain plug gauges (taper) including check plugs				
Taper up to 1 in 8 on diameter	5 to 50 diameter 50 to 100 100 to 200	3.0 on diameter 4.0 10	Calibration performed using a length measuring machine and length standards	A & B A A
Tapers above 1 in 8	5 to 50 diameter 50 to 100 100 to 200	5.0 on diameter 6.0 12	Calibration performed using a length measuring machine and length standards	A & B A A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (cont'd)				
Plain ring gauges (parallel) and setting standards	1 to 10 diameter	0.80	Calibration performed using a length measuring machine and length standards	A
	10 to 25	0.50		
	25 to 50	0.80		
	50 to 100	1.0		
	100 to 150	1.5		
	150 to 250	2.5		
Plain ring gauges (parallel) and setting standards	2 to 10 diameter	1.2	Calibration performed using a length measuring machine and length standards	B
	10 to 25	1.0		
	25 to 50	1.2		
	50 to 100	1.5		
	100 to 150	2.0		
Plain ring gauges (taper)				
Taper up to 1 in 8 on diameter	2 to 5 diameter	4.0 on diameter	Calibration performed using a length measuring machine and length standards	A A & B A A
	5 to 50	4.0		
	50 to 100	5.0		
	100 to 200	6.0		
Tapers above 1 in 8 on diameter	5 to 50 diameter	6.0 on diameter	Calibration performed using a length measuring machine and length standards	A & B A A
	50 to 100	7.0		
	100 to 200	8.0		
Length gauges, flat and spherical ended	25 to 1000	1.0 + (8.0 x length in m)	Calibration performed by comparison to length standards	A & B
Plain gap gauges (parallel)	0.5 to 100	3.0	Calibration performed by comparison to length standards	A & B
	100 to 200	5.0		
	200 to 300	8.0		
Parallels	0 to 50 x 100 x 400	1.5 to 5.0	Calibration as BS 906:1972	A & B
Vee blocks	20 to 150 diameter, vee capacity	1.5 to 5.0	Calibration as BS 3731:1987	A & B
Screw plug gauges (parallel) including check and setting plugs diameter, pitch and flank angle See Note 2	1 to 100	2.5 on pitch diameter	Note 2. Single & multi-start, symmetrical thread forms only. Calibration performed using screw thread diameter machine and thread measuring cylinders	A & B A A
	100 to 150	5.0 on pitch diameter		
	150 to 300	8.0 on pitch diameter		
		1.5 on pitch		
		5.0 minutes of arc on flank angle		



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (cont'd)				
Screw plug gauges (taper) including check plugs but excluding API gauges See Note 10	5 to 100 diameter	5.0 on pitch diameter	Note 10. Single start, symmetrical thread forms only. Calibration performed using screw thread diameter machine and thread measuring cylinders	A
Screw ring gauges (parallel) See Note 2	1 to 12 10 to 100 100 to 150 150 to 250	See note 3 5.0 on pitch diameter 6.0 on pitch diameter 10.0 on pitch diameter 1.5 on pitch 5.0 minutes of arc on flank angle	Note 3. Functional test of size using check plugs. Note 2. Single & multi-start, symmetrical thread forms only. Calibration performed using length measuring machine and styli	A
	1 to 12	See note 3	Note 3. Functional test of size using check plugs.	B
	5 to 100	5.0 on pitch diameter	Note 2. Single & multi-start, symmetrical thread forms only. Calibration performed using length measuring machine and styli	B
Screw ring gauges (taper) - Ground Threads only and excluding API gauges See Note 10	6 to 75 diameter 75 to 150 diameter	5.0 on 7.0 pitch diameter	Note 10. Single start, symmetrical thread forms only. Calibration performed using length measuring machine and styli	A
Screw thread adjustable caliper gauges (parallel)	1 to 100 diameter	See note 11	Note 11. Functional test of size using setting plugs calibrated with a CMC of 2.5 μ m	A
Receiver, position and profile gauges, jigs and fixtures	0 to 1000 x 750 x 500	3.0 + (10 x length in m) See note 7	Note 7. Features and associated parts of these gauges / fixtures can be measured to the uncertainties given for equivalent items and methods listed in this schedule.	A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (cont'd)				
Orifice Plates	BS EN ISO 5167-1:2003		BS EN ISO 5167-1:2003 Calibration performed by comparison to length standards	A
	Bore diameter (d) 12.5 to 200 200 to 500	7.0 10		
	Perpendicularity of bore Plate thickness (E) Edge thickness (e) Surface roughness - Ra Flatness of face Bevel angle (α) Edge radius (G) Plate eccentricity Drain hole diameter	0.050 degrees of arc 10 40 10 % of tolerance 5.0 1.0 degree of arc 20 20 5.0		
ANGLE			Note 1. The uncertainty quoted is for the departure from flatness, straightness, parallelism or squareness, i.e. the distance separating the parallel planes which just enclose the surface under consideration.	
Squares				
Blade type	50 to 300 300 to 600 600 to 900	3.0 On 5.0 squareness 8.0 See Note 1	Calibration performed as BS 939:2007	A & B A A
Cylindrical type	0 to 300 300 to 600	2.0 On 4.0 squareness See Note 1	Calibration performed as BS 939:2007	A
Block type	0 to 600	3.0 On squareness See Note 1	Calibration performed as BS 939:2007	A
Angle plates and box angle plates	50 to 600	Squareness 3.0 + (1.0 per 100 mm) Parallelism 1.0 + (1.0 per 100 mm) See Note 1	Calibration performed as BS 5535:1978	A & B
Bevel protractors	0° to 360°	6.0 minutes of arc	Calibration performed as BS 1685:2008	A & B



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (cont'd)				
Sine bars	100 to 300	1.0 + (10 x length in m) 3.0 Seconds of arc	Calibration performed as BS 3064:1978	A
Sine tables	100 to 500	1.0 + (10 x length in m) 3.0 Seconds of arc	Calibration performed as BS 3064:1978	A
FORM			Note 1. The uncertainty quoted is for the departure from flatness, straightness, parallelism or squareness, i.e. the distance separating the parallel planes which just enclose the surface under consideration.	
Surface plates Granite / Cast iron	160 x 100 to 4000 x 4000	1.5 + (0.80 x diagonal in m) See Note 1	Calibration performed as BS 817:2008	A & B & C & D
Straightedges Cast iron	200 to 4000	1.0 + (2.0 x length in m) See Note 1	Calibration performed as BS 5204:Part 1:1975	A
Steel / Granite	200 to 2000	1.0 + (2.0 x length in m) See Note 1	Calibration performed as BS 5204:Part 2:1977	
Straightedges Cast iron	200 to 1000	2.0 + (2.0 x length in m) See Note 1	Calibration performed as BS 5204:Part 1:1975	B
Steel / Granite	200 to 1000	2.0 + (2.0 x length in m) See Note 1	Calibration performed as BS 5204:Part 2:1977	
Precision balls- various materials	1 to 50 diameter	0.80 on diameter	Calibration performed using a length measuring machine and length standards	A
Roundness External Internal	1 to 350 diameter 3 to 350	0.050 on radius	Calibration performed as BS 3730 using a roundness machine	A
Surface texture (excluding measurement standards and roughness comparison specimens)	Ra 0.02 μ m to 80 μ m	10 % of measured value	Calibration performed as BS 1134:Part 1:1988 using a surface texture measuring instrument	A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES				
Micrometers				
External micrometer	0 to 1500 0 to 150	Heads 2.0 between any two points.	Calibrated as BS 870:2008	A B
Internal micrometer	0 to 900	Setting and extension rods	Calibrated as BS 959:2008	A & B
Depth	0 to 300	1.0 + (8.0 x length in m)	Calibrated as BS 6468:2008	A & B
Indicating micrometers	0 to 100	Indicators 0.50 Overall performance 1.5	Calibration performed using length standards	A & B
Bore micrometers (three- point)	1 to 5 5 to 100 100 to 250	3.0 3.0 8.0	Calibration performed by comparison to master setting ring gauges	A A & B A
Bench micrometer	0 to 100	Overall performance 2.0	Calibration as NPL MOY/SCMI 22	A
Combination sets	0° to 360° (Protractor) 0 to 500 (Rule)	30 minutes of arc 5.0 + (10 x length in m)	Calibration performed by comparison to length measuring machine and angle gauges	A
Calliper gauges including vernier, dial and digital types	ISO 13385-1 2019 Partial surface contact error (E) 0 to 50mm 50 to 200mm 200 to 400mm 400 to 600mm 600 to 800mm 800 to 1000mm Shift Error (S) Internal Jaws 3 to 50 mm Shift Error (S) Step/Depth 3 to 50 mm	1.0 2.0 4.0 4.0 6.0 7.0 3.0 3.0	By comparison to length standards The stated uncertainty has been calculated in accordance With ISO 14253-5 and relates to the test value uncertainty.	A
Height gauges - (Simple) including vernier, dial and digital types (See note 8 and note 9)	0 to 1000	Length measurement error (E): 5.0 + (10 x length in m)	Calibration as BS EN ISO 13225:2012 Note 8. Simple height gauges - vernier, dial and digital instruments designed only for measuring distances parallel to the beam	A & B



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MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Vernier type gauges including dial and digital				
Caliper	0 to 1000 1000 to 2000	Overall performance $10 + (30 \times \text{length in m})$	Calibration as BS 887:2008	A & B
Height	0 to 1000	Overall performance $10 + (30 \times \text{length in m})$	Calibration as BS 1643:2008 withdrawn	A & B
Depth	0 to 600	Overall performance $10 + (30 \times \text{length in m})$	Calibration as BS 6365:2008	A & B
Dial gauges and dial test indicators	0 to 50	1.0	Calibration as BS 907:2008 and BS 2795:1981	A & B
Comparators (external)	250 to 20 000 magnifications	1.0 % of range Minimum 0.10	Calibration as BS 1054:1975	A & B
Displacement transducers	0 to 100	$0.30 + (4.0 \times \text{length in m})$	Calibration performed by comparison to length standards	A & B
Thread diameter measuring	0 to 300 capacity	Overall performance 1.5	Calibration as NPL MOY/SCMI/9	A
Plain taper diameter measuring	0 to 100	Overall performance on diameter 1.5	Calibration as NPL MOY/SCMI/48	A
Toolmakers Microscopes	Linear 0 to 150 x 150 Angular 0 to 360°	3.0 3 minutes of arc	Calibration as NPL MOY/SCMI/2	A & C
Universal microscopes	Linear 0 to 300 x 300 Angular 0 to 360°	3.0 3 minutes of arc	Calibration by comparison to reference scale	A & C
Air gauging units (See Note 5)	0 to 5000 magnifications	0.50 % of range	5. Brown & Sharpe PMI Ltd products only. Calibrated using length transducer	A
Radius Gauges	0 to 300 mm	10	By optical projection	A
Feeler Gauges	0.03 to 1.00	3.0	Calibration as BS 957:2008	A & B
Internal and External Caliper Gauges	0 to 150	1.0	Calibration performed by comparison to length standards	A & B



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MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Clinometers	0 to 360 degrees	10 seconds of arc	Calibration performed by comparison to a rotary table	A
Electronic indicating levels	0 to 20 minutes of arc	1.0 % of range Minimum 0.50 seconds of arc	Calibration performed by comparison to known angle deflection	A & B
Spirit levels	5 seconds of arc to 60 minutes of arc nominal sensitivity	Mean sensitivity: 10 % of nominal Minimum 0.50 seconds of arc	Calibration as BS 3509:1962 and BS 958:1968	A & B
Micrometer heads	0 to 100	1.0	Calibration as BS 1734:1951	A & B
Height setting micrometer	300	Heads 1.20 Stepped column 2.0 Overall performance 2.5	Calibration performed by comparison to length standards	A
Riser blocks for above	150 300	2.0 4.0	Calibration performed by comparison to length standards	A
Precision scales (linear)	0 to 300	1.5 + (3.0 x length in m)	Calibration performed by comparison to length measuring machine	A
Graticules	0 to 300	1.5 + (3.0 x length in m)	Calibration performed by comparison to length measuring machine	A
Steel rules	0 to 500 500 to 1000	5.0 + (10 x length in m) 10 + (10 x length in m)	Calibration as BS 4372:1968 performed by comparison to length measuring machine	A
Dividing heads	100 to 450 capacity	Overall angular performance	Calibration performed by comparison to reference polygon	A & C
Rotary tables	100 to 450	3.0 seconds of arc		A & C
Inclinable rotary tables	100 to 450			A & C
Profile projectors	10 to 100 magnifications	125 at the screen 2.5 linear scales 1.5 minutes of arc	Calibrated using reference scales	A & B & C & D



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MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Height gauges – (Complex) (See note 9)	0 to 1 m	Length measurement error (E): $1.0 + (5.0 \times \text{length in m})$ Length measurement error (B): $1.0 + (5.0 \times \text{length in m})$	Calibration as BS EN ISO 13225:2012 performed by comparison to length standards	A & C
Electronic microprocessor controlled height gauges	0 to 1 m	$1.0 + (5.0 \times \text{length in m})$	Calibration performed by comparison to length standards	A & B & C & D
Horizontal & vertical measuring machines	0 to 100	0.30	Calibration performed by comparison to end standards	A & C
Horizontal & vertical measuring machines	0 to 3 m	$0.20 + (1.0 \times \text{length in m})$	Calibration performed using a laser measuring system and environmental compensation unit	A & C
Evaluation of electrical contact unit for internal measurement		Overall performance 1.0 on diameter.		A & C
<u>ANCILLERY MEASUREMENTS</u>				
Flatness Parallelism Squareness Straightness Angular		0.3 1.0 2.2 $1.3 + (0.8 \times \text{length in m})$ 5 seconds of arc	Ancillary measurements made for completeness of calibration. Best CMC's are dependent on methodology and range.	A



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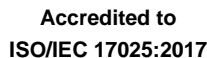
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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL			All electrical calibrations are performed as a direct comparison against a reference standard unless otherwise stated	
DC Voltage Generation	0 V to 300 mV 300 mV to 3 V 3 V to 30 V 30 V to 300 V 300 V to 1000 V	17 $\mu\text{V/V} + 1.7 \mu\text{V}$ 16 $\mu\text{V/V} + 2.9 \mu\text{V}$ 16 $\mu\text{V/V} + 26 \mu\text{V}$ 17 $\mu\text{V/V} + 210 \mu\text{V}$ 18 $\mu\text{V/V} + 2.1 \text{ mV}$	These values can be generated for the calibration of measuring instruments	A
Measurement	0 V to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	25 $\mu\text{V/V} + 1.5 \mu\text{V}$ 10 $\mu\text{V/V} + 2.6 \mu\text{V}$ 10 $\mu\text{V/V} + 12 \mu\text{V}$ 10 $\mu\text{V/V} + 230 \mu\text{V}$ 10 $\mu\text{V/V} + 2.4 \mu\text{V}$	Outputs of instruments within these values can be measured to the stated uncertainties	A
DC Current Generation	0 μA to 300 μA 300 μA to 3 mA 3 mA to 30 mA 30 mA to 300 mA 300 mA to 1 A 1 A to 3 A 3 A to 11 A 11 A to 20 A	58 $\mu\text{A/A} + 24 \text{ nA}$ 37 $\mu\text{A/A} + 59 \text{ nA}$ 33 $\mu\text{A/A} + 320 \text{ nA}$ 42 $\mu\text{A/A} + 3.2 \mu\text{A}$ 120 $\mu\text{A/A} + 48 \mu\text{A}$ 220 $\mu\text{A/A} + 48 \mu\text{A}$ 200 $\mu\text{A/A} + 590 \mu\text{A}$ 390 $\mu\text{A/A} + 1.8 \text{ mA}$	These values can be generated for the calibration of measuring instruments	A
Measurement	20 A to 100 A 100 A to 550 A	0.15 % 0.18 %	Simulated current using multi turn coil, for the calibration of clamp-on ammeters.	A
	10 μA to 100 μA 100 μA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 2 A 2 A to 10 A	130 $\mu\text{A/A} + 2.4 \text{ nA}$ 100 $\mu\text{A/A} + 0.024 \mu\text{A}$ 70 $\mu\text{A/A} + 0.24 \mu\text{A}$ 80 $\mu\text{A/A} + 2.4 \mu\text{A}$ 100 $\mu\text{A/A} + 47 \mu\text{A}$ 0.05 % + 2 mA	Outputs of instruments within these values can be measured to the stated uncertainties	A
AC Voltage Generation	10 mV to 300 mV 45 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	0.012 % + 9.4 μV 0.012 % + 9.4 μV 0.033 % + 58 μV	These values can be generated for the calibration of measuring instruments	A
	300 mV to 3 V 45 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	0.0097 % + 71 μV 0.0099 % + 71 μV 0.094 % + 97 μV		
	3 V to 30 V 45 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	0.019 % + 0.71 mV 0.016 % + 0.71 mV 0.017 % + 1.9 mV		
	30 V to 300 V 45 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	0.013 % + 2.6 mV 0.013 % + 7.1 mV 0.066 % + 58 mV		



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ELECTRICAL (cont'd)				
AC Current Generation (cont'd)	3 A to 11 A 45 Hz to 1 kHz 1 kHz to 5 kHz	0.074 % + 2.4 mA 0.83 % + 2.4 mA		A
	11 A to 20 A 45 Hz to 1 kHz 1 kHz to 5 kHz	0.091 % + 5.8 mA 0.70 % + 5.8 mA		
	20 A to 100 A 45 Hz to 1 kHz	0.30 %	Simulated current using multi turn coil, for the calibration of clamp-on ammeters.	
	100 A to 550 A 45 Hz to 65 Hz 65 Hz to 500 Hz	0.30 % 0.50 %		
Measurement	10 μ A to 100 μ A 55 Hz to 1 kHz 1 kHz to 5 kHz	0.050 % + 0.012 μ A 0.10 % + 0.012 μ A	Outputs of instruments within these values can be measured to the stated uncertainties	A
	100 μ A to 1 mA 55 Hz to 1 kHz 1 kHz to 5 kHz	0.045 % + 0.12 μ A 0.080 % + 0.12 μ A		
	1 mA to 10 mA 55 Hz to 1 kHz 1 kHz to 5 kHz	0.050 % + 1.2 μ A 0.090 % + 1.2 μ A		
	10 mA to 100 mA 55 Hz to 1 kHz 1 kHz to 5 kHz	0.050 % + 12 μ A 0.090 % + 12 μ A		
	100 mA to 2 A 55 Hz to 1 kHz 1 kHz to 5 kHz	0.085 % + 0.47 mA 0.35 % + 1.2 mA		
DC Resistance Generation	2 A to 10 A 40 Hz to 400 Hz	0.40 % + 20 mA		
	0 Ω to 1 Ω 1 Ω to 11 Ω 11 Ω to 33 Ω 33 Ω to 110 Ω 110 Ω to 330 Ω 330 Ω to 1.1 k Ω	0.076 % + 12 m Ω 89 $\mu\Omega/\Omega$ + 1.2 m Ω 140 $\mu\Omega/\Omega$ + 1.8 m Ω 85 $\mu\Omega/\Omega$ + 1.7 m Ω 39 $\mu\Omega/\Omega$ + 2.4 m Ω 20 $\mu\Omega/\Omega$ + 1.2 m Ω	These values can be generated for the calibration of measuring instruments	A
	1.1 k Ω to 3.3 k Ω 3.3 k Ω to 11 k Ω 11 k Ω to 33 k Ω 33 k Ω to 110 k Ω 110 k Ω to 330 k Ω 330 k Ω to 1.1 M Ω	29 $\mu\Omega/\Omega$ + 24 m Ω 22 $\mu\Omega/\Omega$ + 26 m Ω 20 $\mu\Omega/\Omega$ + 0.26 Ω 17 $\mu\Omega/\Omega$ + 0.26 Ω 24 $\mu\Omega/\Omega$ + 2.4 Ω 71 $\mu\Omega/\Omega$ + 2.6 Ω		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
DC Resistance Generation (contd.)	1.1 M Ω to 3.3 M Ω 3.3 M Ω to 11 M Ω 11 M Ω to 33 M Ω 33 M Ω to 110 M Ω 110 M Ω to 330 M Ω 330 M Ω to 1.100 G Ω	97 $\mu\Omega/\Omega$ + 35 Ω 220 $\mu\Omega/\Omega$ + 59 Ω 240 $\mu\Omega/\Omega$ + 2.9 k Ω 390 $\mu\Omega/\Omega$ + 3.5 k Ω 0.11% + 120 k Ω 0.43 % + 580 k Ω		A
DC Resistance Measurement	0 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 k Ω 1 k Ω to 10 k Ω 10 k Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω 100 M Ω to 1 G Ω	20 $\mu\Omega/\Omega$ + 26 $\mu\Omega$ 40 $\mu\Omega/\Omega$ + 26 $\mu\Omega$ 20 $\mu\Omega/\Omega$ + 42 $\mu\Omega$ 20 $\mu\Omega/\Omega$ + 350 $\mu\Omega$ 20 $\mu\Omega/\Omega$ + 3.5 m Ω 20 $\mu\Omega/\Omega$ + 35 m Ω 30 $\mu\Omega/\Omega$ + 810 m Ω 40 $\mu\Omega/\Omega$ + 120 m Ω 200 $\mu\Omega/\Omega$ + 5.2 Ω 950 $\mu\Omega/\Omega$ + 520 k Ω	Outputs of instruments within these values can be measured to the stated uncertainties	A
Temperature indicators, calibration by electrical simulation				A
Base metal thermocouple K Type	-200 $^{\circ}\text{C}$ to -100 $^{\circ}\text{C}$ -100 $^{\circ}\text{C}$ to -25 $^{\circ}\text{C}$ -25 $^{\circ}\text{C}$ to 0 $^{\circ}\text{C}$ 0 $^{\circ}\text{C}$ 0 $^{\circ}\text{C}$ to +120 $^{\circ}\text{C}$ 120 $^{\circ}\text{C}$ to 1000 $^{\circ}\text{C}$ 1000 $^{\circ}\text{C}$ to 1370 $^{\circ}\text{C}$	0.53 $^{\circ}\text{C}$ 0.24 $^{\circ}\text{C}$ 0.20 $^{\circ}\text{C}$ 0.19 $^{\circ}\text{C}$ 0.30 $^{\circ}\text{C}$ 0.90 $^{\circ}\text{C}$ 1.4 $^{\circ}\text{C}$	excluding cold junction compensation	
J Type	100 $^{\circ}\text{C}$ -200 $^{\circ}\text{C}$ to +1200 $^{\circ}\text{C}$	0.19 $^{\circ}\text{C}$ 1.2 $^{\circ}\text{C}$		
N Type	200 $^{\circ}\text{C}$ -200 $^{\circ}\text{C}$ to +1300 $^{\circ}\text{C}$	0.28 $^{\circ}\text{C}$ 1.4 $^{\circ}\text{C}$		
E Type	200 $^{\circ}\text{C}$ -250 $^{\circ}\text{C}$ to +1000 $^{\circ}\text{C}$	0.22 $^{\circ}\text{C}$ 1.2 $^{\circ}\text{C}$		
T Type	200 $^{\circ}\text{C}$ -250 $^{\circ}\text{C}$ to +400 $^{\circ}\text{C}$	0.23 $^{\circ}\text{C}$ 1.1 $^{\circ}\text{C}$		
Noble metal thermocouple				
B Type	1750 $^{\circ}\text{C}$ 600 $^{\circ}\text{C}$ to 1800 $^{\circ}\text{C}$	0.98 $^{\circ}\text{C}$ 1.3 $^{\circ}\text{C}$	excluding cold junction compensation	
R Type	500 $^{\circ}\text{C}$ 0 $^{\circ}\text{C}$ to 1760 $^{\circ}\text{C}$	0.57 $^{\circ}\text{C}$ 1.9 $^{\circ}\text{C}$		
S Type	1200 $^{\circ}\text{C}$ 0 $^{\circ}\text{C}$ to 1760 $^{\circ}\text{C}$	0.9 $^{\circ}\text{C}$ 1.7 $^{\circ}\text{C}$		



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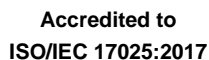
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Schedule of Accreditation
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United Kingdom Accreditation Service
2 Pine Trees , Chertsey Lane, Staines-upon-Thames , TW18 3HR, UK

Metrology and Quality Services Ltd
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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (cont'd)				
Cold junction compensation	At ambient temperature of 20 °C	0.20 °C		A
Temperature indicators, calibration by electrical simulation (contd.)				
Resistance sensors	-200 °C to 0 °C 0 °C to 850 °C	0.25 °C 0.250 °C		
Frequency	1 Hz to 1.35 GHz	5.0 in 10^8	Calibrated using a time counter	A
Time Interval	0.05 s to 60 min	0.10 s	Calibrated using an oscilloscope	
Tachometers (Optical)	100 rpm to 50000 rpm	2.0 rpm	Calibrated using a time counter	
Capacitance	1 kHz 1 nF 3 nF 10 nF 30 nF 100 nF 300 nF 100 Hz 1 µF 3 µF 10 µF 30 µF 50 Hz 100 µF	0.70 % + 13 pF 0.28 % + 14 pF 0.15 % + 15 pF 0.11 % + 21 pF 0.16 % + 41 pF 0.09 % + 130 pF 0.15 % + 1.5 nF 0.13 % + 4.4 nF 0.19 % + 15 nF 0.26 % + 49 nF 0.15 % + 170 nF		
Equipment For IEC 17 th /18 th Edition Wiring Testing				A
Insulation resistance	100 kΩ, 1 MΩ, 2 MΩ 5 MΩ 10 MΩ 20 MΩ, 50 MΩ 100 MΩ 200 MΩ, 400 MΩ, 600 MΩ, 800 MΩ 1 GΩ, 2 GΩ 4 GΩ, 6 GΩ, 8 GΩ, 10 GΩ	0.25 % + 0.10 kΩ 0.50 % + 0.10 kΩ 0.60 % + 0.10 kΩ 0.50 % + 0.10 kΩ 0.50 % + 1.2 kΩ 1.0 % + 1.2 kΩ 1.0 % + 0.20 MΩ 1.5 % + 2.0 MΩ	At 1 kV	
Insulation voltage	50 V to 1000 V	0.6 %		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
FORCE Calibration of force push pull devices in tension and compression	Compression 1 N to 500 N Tension 1 N to 500 N	0.41% 0.41% see note 12	12 The calibration may be performed in the following units: Newton (N) or other force units 13 Calibrations may also be given in units of electrical signal output 14 Calibration results may also be given in units of lbf in and lbf ft 15 The uncertainty quoted is for both the application of the calibration torque and the characteristics of the device being calibrated	A
TORQUE Torque Wrenches (Including Drivers) Hand Torque Tools	0.1 N·m to 1000 N·m 1 N·m to 1000 N·m	0.40% See Note 13, 14 and 15 1.6 % of maximum reading See Notes 14 and 15	BS EN ISO 6789-2:2017 BS EN ISO 6789:2003 (withdrawn)	A A
PRESSURE <u>Gas Pressure Gauge</u> Calibration of pressure indicating instruments and gauges	-95 kPa to 0 Pa 0 Pa to 700 kPa 700 kPa to 7 MPa	66 Pa 1.9 kPa 1.7 kPa	By comparison with a pressure calibrator	A
END				



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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: $Q[a, b] = [a^2 + b^2]^{1/2}$