


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <b>0199</b>  Accredited to <b>ISO/IEC 17025:2017</b>	<b>Avon-Dynamic Calibration Limited</b>	
	Issue No: 054    Issue date: 06 September 2021	
	Unit 1 The Old Mill Chapel lane Warmley Bristol BS15 4NQ	Contact: Mr J Castree Tel: +44 (0)117-9477846 Fax: +44 (0)117-9477831 E-Mail: info@avon-dynamic.co.uk Website: www.avon-dynamic.co.uk
Calibration performed by the Organisations at the locations specified below		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code	
<b>Address</b> Unit 1 The Old Mill Chapel lane Warmley Bristol BS15 4 NQ	<b>Local contact</b> Mr J Castree	Dimensional	A
	Electrical	A	
	Pressure	A	
	Temperature	A	
	Torque	A	

#### Site activities performed away from the locations listed above:

Location details	Activity	Location code	
At customers premises	Mr J Castree	Dimensional	B
		Electrical	B



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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				
Gauge blocks		Class (see Notes)	NOTES	
Inch (steel - tungsten carbide)	As BS 4311:Part 1:2007  0.010 in to 0.4 in 0.4 in to 1 in Size 2 in Size 3 in Size 4 in	C  3.0 4.0 5.0 6.0 7.0	] μ inch	A
Millimetre (steel – tungsten carbide)	As BS EN ISO 3650:1999 0.5 to 10 10 to 25 Sizes 30, 40, 50, 60, 70, 75 80, 90, 100	0.080 0.10 0.12 0.15 0.18		A
Gauge blocks accessories	As BS 4311:Part 2: 2009 0.1 to 12.5	0.30	1 The uncertainty quoted is for the departure from either flatness, straightness, parallelism planes, which just enclose the surface under consideration.	A
Length bar accessories	As BS 1790:1961 and BS 5317:1976 10 to 25	0.30		A
Precision pins See Note 10	0.05 to 10 diameter	0.50	2. Single start, symmetrical thread forms only.	A
Thread measuring cylinders See Note 10	As BS 5590:1978 and specials 0.1 to 5	0.50 on diameter		
Plain plug gauges (parallel), cylindrical standards and rollers. See Note 10	1 to 50 diameter 50 to 100 diameter 100 to 150 diameter 150 to 200 diameter 200 to 300 diameter	0.80 1.0 1.5 2.0 2.5	4. Includes use of check plugs for screw rings from 1 mm to 6mm diameter	A
Plain ring gauges (parallel) and setting standards See Note 10	1 to 50 50 to 100 100 to 275	1.5 2.0 2.5		
Steel balls - steel See Note 10	1 to 50	1.0	6. Functional test of size using setting plugs calibrated	A
Plain gap gauges (parallel) See Note 10	0.5 to 100 100 to 200 200 to 300	3.0 5.0 8.0		



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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)			Notes (cont'd)	
Screw plug gauges (parallel) including check and setting plugs See Notes 3 and 10	1 to 100 diameter	3.0	7. Features and associated parts of these gauges can be measured to the uncertainties given	A
Screw plug gauges (taper) including check plugs See Notes 2 and 10	1 to 100 diameter	4.0		
Screw ring gauges (parallel) See Notes 3, 4 and 10	1 to 100 diameter	5.0 on pitch diameter		
Screw ring gauges (taper) See Notes 2, 5 and 10	5 to 150 diameter	7.0 on pitch diameter		
Screw pitch See Note 10	0.2 to 8	1.5	8. Simple height gauges - vernier, dial and digital instruments designed only for measuring distances parallel to the beam.	
Screw flank angle See Note 11	0° to 52°	5.0 minutes of arc		
Screw thread adjustable calliper gauges (parallel) See Note 3	3 to 50 diameter	See Note 6	9. Conformance statements cannot be made against specifications whose magnitudes are smaller than the specified CMC values	A
Length gauges, flat and spherical ended See Note 10	1 to 1000	1.0 + (8.0 x length in m)		
Engineers parallels	As BS 906:1972 5 to 50 x 100 x 400	1.5 to 5.0	10. Calibrated using length measuring machine and/or end standards.	A
Vee blocks	As BS 3731:1987 20 to 150	2.5 to 5.0		
Receiver, position and profile gauges, jigs and fixtures	0 to 1000 x 600 x 600 (using a coordinate measuring machine, when appropriate)	8.0 + 3.0 x length in m See also Note 7	11. Calibrated using a projector	A
ANGLE				
Squares Blade type	As BS 939:2007 50 to 300 300 to 600	3.0 5.0		A
Cylindrical	As BS 939:2007 75 to 300 300 to 600	2.0 5.0		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
ANGLE (cont'd)				
Block	As BS 939:2007 50 to 300 300 to 600	3.0 5.0 All on squareness See note 1		
Right angle and box angle plates	As BS 5535:1978 50 to 600	Squareness: 3.0 + (1.0 per 100 mm) Parallelism: 1.0 + (1.0 per 100 mm) See Note 1		A
Sine bars and tables	As BS 3064:1978 0 to 250 length	Linear dimensions 1.0 + (10 x length in m) Overall performance 3.0 seconds of arc		A
Electronic indicating levels	0 minutes of arc to 20 minutes of arc	1.0 % of range Minimum 0.50 seconds of arc	Calibrated using a small angle generator	A
Spirit levels	As BS 3509:1962 and BS 958:1968 5 seconds of arc to 60 minutes of arc nominal sensitivity	Mean sensitivity 10% of nominal Minimum 0.50 seconds of arc		A
Clinometers	0° to 360°	10 seconds of arc	Calibrated using a sine bar or table and gauge blocks	A
Thread measuring vee pieces (prisms)	As NPL Schedule MOY/SCMI/60 0 to 4.5	0.50		A
FORM				
Surface plates Granite Cast iron	As BS 817:2008 160 x 100 to 4000 x 3000	1.5 + (0.80 x diagonal in m) See Note 1		A, B
Straightedges Cast iron Steel Granite	As BS 5204:Part 1:1975 As BS 5204:Part 2:1977 Up to 1800	1.0 + (2.0 x length in m) See Note 1		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
<b>MEASURING INSTRUMENTS AND MACHINES</b>				
Micrometers External	As BS 870:2008 0 to 600	Heads: 2.0  Setting and extension rods 2.0 + (7.0 x length in m)		A
Internal	As BS 959:2008 0 to 900			
Depth	As BS 6468:2008 0 to 300			
Micrometer heads	As BS 1734:1951 0 to 100	1.0		A
Bore micrometers (three point)	0 to 150 diameter	5.0	By comparison with setting rings	A
Bench micrometers	As NPL MOY/SCMI 22 0 to 100	Overall performance 2.0		A
Height setting micrometer	0 to 300	Heads:1.2 Stepped column 2.0 Overall performance 2.5	By comparison with end standards.	A
Riser blocks for above	150 300	1.0 2.0	By comparison with end standards.	A
Vernier caliper, height and depth gauges	As BS 887:2008 0 to 1000 As BS 1643:2008 0 to 1000 As BS 6365:2008 0 to 600	Overall performance 10 + (30 x length in m)		A
Height gauges - (Simple) including vernier, dial and digital types (See note 8 and note 9)	As BS EN ISO 13225:2012 0 to 1000	Length measurement error (E): 10 + (30 x length in metres)		A
Comparators (external)	As BS 1054:1975 250 to 10 000 magnifications	1.0 % of range Minimum 0.20		A
Dial gauges and dial test indicators	As BS 907:2008 and BS 2795:1981 0 to 50	1.0		A
Bevel protractors	As BS 1685:2008 0° to 360°	6 0 minutes of arc		A
Thread diameter measuring	As NPL Schedules MOY/SCMI/1/ 9 and MOY/SCMI1 //12 0 to 200 capacity	Overall performance 1.5		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Steel Rules	As BS 4372:1968 0 to 1000	15 + (20 X length in m)		A
Feeler Gauges	As BS 975:Part 1:1941 BS 957:Part 2:1969 0.025 to 1	3.0		A
Coating thickness shims	0 to 10	1.5	By comparison with end standards	A
Linear displacement transducers	0 to 20 20 to 100	0.40 + resolution 0.65 + resolution	By comparison with end standards	A
Electronic Height Gauges with microprocessor control	0 to 1000	1.0 + (8.0 x length in m)	By comparison with end standards	A, B
Cartesian Coordinate measuring machines (CMM)	As ISO 10360-2:2009 and ISO 10360-5:2010 (section 6.2) 0 to 1500 (longest diagonal using end standards)	2.0 + (2.0 x length in m)		B
Articulated Arm Coordinate measuring machines (CMM)	As ISO 10360-12:2016  Length measurement - $E_{Bi}$ $E_{Uni}$ 0 to 2750 (diameter using end standards)  Probing measurement - $P_{Size.SPH.1x25}$ $P_{Form.SPH.1x25}$ Using a 10 mm to 51 mm diameter test sphere  Articulated location measurement - $L_{Dia.5x5:Art}$ Using a 10 mm to 51 mm diameter test sphere	4.5 + (1.9 x length in m) 6.1 + (1.9 x length in m)  5.5 5.5		A, B
Profile projectors	10 to 100 magnification Linear 0 to 300 Angular 0° to 360°	125 at the screen 5.0 3.0 minutes of arc	By comparison with length and angle standards	B



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL : Electrical values and uncertainties listed below are applicable for the calibration of both measuring instruments and for instruments with an output. The method used is by direct comparison against laboratory standards unless otherwise stated in the remarks column.				
DC VOLTAGE	0 $\mu$ V to 10 mV 10 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1.1 kV 1.1 kV to 30 kV	0.40 $\mu$ V 8.1 $\mu$ V/V + 0.35 $\mu$ V 5.8 $\mu$ V/V + 0.35 $\mu$ V 5.4 $\mu$ V/V + 0.65 $\mu$ V 8.5 $\mu$ V/V + 35 $\mu$ V 9.5 $\mu$ V/V + 200 $\mu$ V 0.15 %	These values can be measured	A
AC VOLTAGE	1 mV to 10 mV 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz	870 $\mu$ V/V + 5 $\mu$ V 580 $\mu$ V/V + 5 $\mu$ V 650 $\mu$ V/V + 5 $\mu$ V 0.14 % + 5 $\mu$ V 0.59 % + 6 $\mu$ V 5.8 %		A
	10 mV to 100 mV 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz	350 $\mu$ V/V + 14 $\mu$ V 160 $\mu$ V/V + 8.5 $\mu$ V 220 $\mu$ V/V + 8.5 $\mu$ V 440 $\mu$ V/V + 8.5 $\mu$ V 0.11 % + 8.5 $\mu$ V 0.38 % + 8.5 $\mu$ V 1.8 %		
	100 mV to 1 V 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz	320 $\mu$ V/V + 150 $\mu$ V 120 $\mu$ V/V + 140 $\mu$ V 190 $\mu$ V/V + 140 $\mu$ V 380 $\mu$ V/V + 140 $\mu$ V 960 $\mu$ V/V + 140 $\mu$ V 0.36 % + 170 $\mu$ V 1.6 %		
	1 V to 10 V 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 1 MHz	320 $\mu$ V/V + 1.5 mV 120 $\mu$ V/V + 1.4 mV 190 $\mu$ V/V + 1.4 mV 380 $\mu$ V/V + 1.4 mV 960 $\mu$ V/V + 1.4 mV 0.36 % + 1.6 mV 1.6 %		
	10 V to 100 V 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	400 $\mu$ V/V + 14.8 mV 260 $\mu$ V/V + 14 mV 260 $\mu$ V/V + 14 mV 440 $\mu$ V/V + 14 mV 0.14 % + 14 mV		



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AC VOLTAGE Measurement (cont'd)	100 to 1000 V 20 Hz to 10 kHz	310 $\mu$ V/V + 23 mV		A
	1 kV to 6 kV 50 Hz to 60 Hz	0.90 %		
DC CURRENT Measurement	0 A to 10 $\mu$ A 10 $\mu$ A to 100 $\mu$ A 100 $\mu$ A 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 50 A	1.3 nA 28 $\mu$ A/A + 1.2 nA 28 $\mu$ A/A + 7.4 nA 28 $\mu$ A/A + 74 nA 51 $\mu$ A/A + 0.74 $\mu$ A 170 $\mu$ A/A + 16 $\mu$ A 200 $\mu$ A/A 420 $\mu$ A/A		A
AC CURRENT Measurement	10 $\mu$ A to 100 $\mu$ A 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 100 Hz 100 Hz to 1 kHz	0.46 % + 120 nA 0.17 % + 120 nA 720 $\mu$ A/A + 120 nA 720 $\mu$ A/A + 120 nA		A
	100 $\mu$ A to 1 mA 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 100 Hz 100 Hz to 5 kHz	0.46 % + 260 nA 0.17 % + 260 nA 720 $\mu$ A/A + 260 nA 450 $\mu$ A/A + 260 nA		
	1 mA to 10 mA 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 100 Hz 100 Hz to 5 kHz	0.46 % + 2.4 $\mu$ A 0.17 % + 2.4 $\mu$ A 710 $\mu$ A/A + 2.4 $\mu$ A 420 $\mu$ A/A + 2.4 $\mu$ A		
	10 mA to 100 mA 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 100 Hz 100 Hz to 5 kHz	0.46 % + 24 $\mu$ A 0.17 % + 24 $\mu$ A 710 $\mu$ A/A + 24 $\mu$ A 420 $\mu$ A/A + 24 $\mu$ A		
	100 mA to 1 A 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 100 Hz 100 Hz to 5 kHz	0.46 % + 240 $\mu$ A 0.18 % + 240 $\mu$ A 760 $\mu$ A/A + 240 $\mu$ A 630 $\mu$ A/A + 250 $\mu$ A		
Measurement and Generation	1 A to 10 A 50 Hz to 400 Hz	0.050 %		A





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RESISTANCE Measurement	0 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ 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	20 μΩ/Ω + 70 μΩ 15 μΩ/Ω + 700 μΩ 13 μΩ/Ω + 700 μΩ 13 μΩ/Ω + 6.3 mΩ 13 μΩ/Ω + 70 mΩ 22 μΩ/Ω + 2.6 Ω 82 μΩ/Ω + 130 Ω 0.08 % 1.00 %		A
Current Shunts Measurement and Generation	250 μΩ at 10 A 1 mΩ at 10 A 3 mΩ at 10 A 5 mΩ at 10 A 10 mΩ at 1 A 100 mΩ at 1 A	0.15 μΩ 0.25 μΩ 0.75 μΩ 1.25 μΩ 1.5 μΩ 5.0 μΩ		A
DC VOLTAGE Generation	0 V to 220 mV 220 mV to 2.2 V 2.2 V to 11 V 11 V to 22 V 22 V to 220 V 220 V to 1.1 kV  1.1 kV to 30 kV	9.0 μV/V + 500 nV 6.0 μV/V + 810 nV 4.5 μV/V + 3.2 μV 4.5 μV/V + 4.8 μV 5.9 μV/V + 48 μV 7.6 μV/V + 480 μV  0.40 %		A
AC VOLTAGE Generation	10 μV to 2.2 mV 10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz  2.2 mV to 22 mV 10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	520 μV/V + 5.0 μV 460 μV/V + 5.0 μV 450 μV/V + 5.0 μV 500 μV/V + 5.0 μV 730 μV/V + 6.0 μV 0.13 % + 12 μV 0.17 % + 24 μV 0.33 % + 24 μV  300 μV/V + 5.0 μV 140 μV/V + 5.0 μV 130 μV/V + 5.0 μV 250 μV/V + 5.0 μV 590 μV/V + 6.0 μV 0.13 % + 12 μV 0.17 % + 24 μV 0.32 % + 24 μV		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC VOLTAGE Generation (cont'd)	22 mV to 220 mV	320 $\mu$ V/V + 14 $\mu$ V		
	10 Hz to 20 Hz	120 $\mu$ V/V + 8.5 $\mu$ V		
	20 Hz to 40 Hz	110 $\mu$ V/V + 8.5 $\mu$ V		
	40 Hz to 20 kHz	240 $\mu$ V/V + 8.5 $\mu$ V		
	20 kHz to 50 kHz	540 $\mu$ V/V + 20 $\mu$ V		
	50 kHz to 100 kHz	0.13 % + 12 $\mu$ V		
	100 kHz to 300 kHz	0.17 % + 29 $\mu$ V		
	300 kHz to 500 kHz	0.32 % + 52 $\mu$ V		
	500 kHz to 1 MHz			
	220 mV to 2.2 V	290 $\mu$ V/V + 47 $\mu$ V		
10 Hz to 20 Hz	120 $\mu$ V/V + 18 $\mu$ V			
20 Hz to 40 Hz	110 $\mu$ V/V + 9.5 $\mu$ V			
40 Hz to 20 kHz	240 $\mu$ V/V + 12 $\mu$ V			
20 kHz to 50 kHz	540 $\mu$ V/V + 35 $\mu$ V			
50 kHz to 100 kHz	500 $\mu$ V/V + 93 $\mu$ V			
100 kHz to 300 kHz	0.12 % + 240 $\mu$ V			
300 kHz to 500 kHz	0.20 % + 350 $\mu$ V			
500 kHz to 1 MHz				
2.2 V to 22 V	290 $\mu$ V/V + 470 $\mu$ V			
10 Hz to 20 Hz	110 $\mu$ V/V + 180 $\mu$ V			
20 Hz to 40 Hz	55 $\mu$ V/V + 58 $\mu$ V			
40 Hz to 20 kHz	90 $\mu$ V/V + 120 $\mu$ V			
20 kHz to 50 kHz	120 $\mu$ V/V + 240 $\mu$ V			
50 kHz to 100 kHz	330 $\mu$ V/V + 700 $\mu$ V			
100 kHz to 300 kHz	0.12 % + 2.3 mV			
300 kHz to 500 kHz	0.18 % + 3.5 mV			
500 kHz to 1 MHz				
22 V to 220 V	290 $\mu$ V/V + 5.0 mV			
10 Hz to 20 Hz	110 $\mu$ V/V + 1.8 mV			
20 Hz to 40 Hz	64 $\mu$ V/V + 700 $\mu$ V			
40 Hz to 20 kHz	97 $\mu$ V/V + 1.2 mV			
20 kHz to 50 kHz	180 $\mu$ V/V + 3.0 mV			
50 kHz to 100 kHz				
220 V to 1.1 kV	97 $\mu$ V/V + 4.3 mV			
50 Hz to 1 kHz				
1 kV to 6 kV	1.0 %			
50 Hz to 60 Hz				
DC CURRENT Generation	0 A to 220 $\mu$ A	47 $\mu$ V/V + 7.0 nA		A
220 $\mu$ A to 2.2 mA	41 $\mu$ V/V + 8.2 nA			
2.2 mA to 22 mA	41 $\mu$ V/V + 48 nA			
22 mA to 220 mA	53 $\mu$ V/V + 0.82 $\mu$ A			
220 mA to 2.2 A	93 $\mu$ V/V + 14 $\mu$ A			
2.2 A to 3 A	440 $\mu$ V/V + 1.2 mA			
3 A to 10 A	580 $\mu$ V/V + 12 mA			
10 A to 50 A	420 $\mu$ V/V			



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Simulated current	10 A to 100 A 100 A to 1000 A	500 $\mu$ V/V + 12 mA 0.14 % + 700 mA	For the calibration of clamp meters only	A
AC CURRENT Generation	10 nA to 220 $\mu$ A 40 Hz to 1kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	210 $\mu$ A/A + 9.4 nA 390 $\mu$ A/A + 14 nA 0.14 % + 75 nA		
	220 $\mu$ A to 2.2 mA 40 Hz to 1kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	180 $\mu$ A/A + 43 nA 280 $\mu$ A/A + 130 nA 0.14 % + 750 nA		
	2.2 mA to 22 mA 40 Hz to 1kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	140 $\mu$ A/A + 420 nA 230 $\mu$ A/A + 650 nA 0.13 % + 5.8 $\mu$ A		
	22 mA to 220 mA 40 Hz to 1kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	140 $\mu$ A/A + 3.2 $\mu$ A 230 $\mu$ A/A + 4.3 $\mu$ A 0.13 % + 12 $\mu$ A		
	220 mA to 2.2 A 40 Hz to 1kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	300 $\mu$ A/A + 43 $\mu$ A 520 $\mu$ A/A + 94 $\mu$ A 0.81 % + 190 $\mu$ A		
	2.2 A to 3 A 10 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	0.35 % + 1.2 mA 0.15 % + 0.70 mA 0.40 % + 4.9 mA 3.7 % + 24 mA		
	3 A to 11 A 45 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 5 kHz	0.25 % + 4.5 mA 0.17 % + 4.5 mA 3.6 % + 15 mA		
	11 A to 20.5 A 45 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 5 kHz	0.30 % + 8.5 mA 0.25 % + 8.5 mA 3.6 % + 17 mA		
Simulated AC Current	10 A to 100 A 40 Hz to 100 Hz 100 Hz to 440 Hz	0.10 % 0.50 %	Multi turn coil For the calibration of clamp meters only	
	100 A to 1000 A 40 Hz to 100 Hz	0.20 %		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
RESISTANCE Generation Spot Values	0 Ω 1 Ω 1.9 Ω 10 Ω 19 Ω  100 Ω 190 Ω 1 kΩ 1.9 kΩ  10 kΩ 19 kΩ 100 kΩ 190 kΩ  1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	50 μΩ 110 μΩ 213 μΩ 280 μΩ 551 μΩ  1.3 mΩ 2.7 mΩ 11 mΩ 21 mΩ  0.11 Ω 0.21 Ω 1.4 Ω 2.85 Ω  24 Ω 55 Ω 470 Ω 1.14 kΩ 12.4 kΩ		A
RESISTANCE Generation Range values	0 Ω 0 Ω to 11 Ω 11 Ω to 33 Ω 33 Ω to 110 Ω 100 Ω to 330 Ω  330 Ω to 1.1 kΩ 1.1 kΩ to 3.3 kΩ 3.3 kΩ to 11 kΩ 11 kΩ to 33 kΩ 33 kΩ to 110 kΩ  110 kΩ to 330 kΩ 330 kΩ to 1.1 MΩ 1.1 MΩ to 3.3 MΩ 3.3 MΩ to 11 MΩ 11 MΩ to 33 MΩ  33 MΩ to 110 MΩ 110 MΩ to 330 MΩ 330 MΩ to 1.1 GΩ	1.2 mΩ 47 μΩ/Ω + 1.2 mΩ 35 μΩ/Ω + 1.7 mΩ 33 μΩ/Ω + 1.8 mΩ 33 μΩ/Ω + 2.6 mΩ  33 μΩ/Ω + 5.2 mΩ 33 μΩ/Ω + 26 mΩ 33 μΩ/Ω + 60 mΩ 33 μΩ/Ω + 290 mΩ 33 μΩ/Ω + 520 mΩ  37 μΩ/Ω + 2.9 Ω 37 μΩ/Ω + 9.1 Ω 70 μΩ/Ω + 48 Ω 150 μΩ/Ω + 76 Ω 290 μΩ/Ω + 1.6 kΩ  580 μΩ/Ω + 19 kΩ 0.35 % + 140 kΩ 1.7 % + 1.3 MΩ		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
RESISTANCE Generation Range values (cont'd)				
Attenuation	1 kHz to 20 kHz Set ref nominal 5 V 0 dB to 80 dB	0.0067 dB		A
Distortion	20 Hz to 20 kHz 50 mV to 300 V	1.3 dB		A
Phase angle	20 kHz to 100 kHz 50 mV to 300 V	2.4 dB		A
Voltage Voltage and Voltage Current:	10 Hz to 65 Hz 65 Hz to 500 Hz 500 Hz to 1 kHz	0.13 ° 0.35 ° 0.60 °		A
AC Power				A
Unity PF to 0.25 PF	45 Hz to 65 Hz 330 mV to 1 kV 3.3 mA to 2.2 A 2.2 A to 20.5 A	0.35 % + 1.2 mW 0.45 % + 1.2 mW		A
DC Power	33 mV to 1 kV 330 µA to 3 A 3 A to 20.5 A	500 µA/A 0.12 %		A
OSCILLOSCOPE BANDWIDTH AND FREQUENCY RESPONSE Set points at 1 kHz				A
	20 µV to 1.1 mV 1.1 mV to 3 mV 3 mV to 11 mV 11 mV to 33 mV 33 mV to 110 mV 110 mV to 330 mV 330 mV to 1.1 V 1.1 V to 3.5 V	1.0 % + 2.4 µV 0.90 % + 3.5 µV 0.90 % + 9.3 µV 0.80 % + 19 µV 0.80 % + 46 µV 0.70 % + 120 µV 0.70 % + 460 µV 0.62 % + 580 µV		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Frequency Response Including set point	<p>20 <math>\mu</math>V to 1.1 mV 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>1.1 mV to 3 mV</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>3 mV to 11 mV</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>11 mV to 33 mV</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p>	<p>1.1 % + 2.4 <math>\mu</math>V 1.1 % + 2.4 <math>\mu</math>V 1.1 % + 2.4 <math>\mu</math>V 1.1 % + 2.4 <math>\mu</math>V 1.1 % + 2.4 <math>\mu</math>V 1.1 % + 4.2 <math>\mu</math>V 1.1 % + 4.2 <math>\mu</math>V 1.3 % + 4.2 <math>\mu</math>V 1.3 % + 4.2 <math>\mu</math>V 2.0% + 18 <math>\mu</math>V</p> <p>1.0 % + 3.5 <math>\mu</math>V 0.95 % + 3.5 <math>\mu</math>V 0.95 % + 3.5 <math>\mu</math>V 0.95 % + 3.5 <math>\mu</math>V 0.95 % + 5.0 <math>\mu</math>V 0.95 % + 5.0 <math>\mu</math>V 1.0 % + 5.0 <math>\mu</math>V 1.1 % + 5.0 <math>\mu</math>V 2.0 % + 5.0 <math>\mu</math>V</p> <p>1.0 % + 9.3 <math>\mu</math>V 0.95 % + 9.3 <math>\mu</math>V 0.95 % + 9.3 <math>\mu</math>V 0.95 % + 9.3 <math>\mu</math>V 0.95 % + 9.9 <math>\mu</math>V 0.95 % + 9.9 <math>\mu</math>V 0.95 % + 9.9 <math>\mu</math>V 1.1 % + 9.9 <math>\mu</math>V 1.5 % + 9.9 <math>\mu</math>V</p> <p>0.90 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.85 % + 19 <math>\mu</math>V 0.95% + 19 <math>\mu</math>V 1.4 % + 19 <math>\mu</math>V</p>		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Frequency Response Including set point (cont'd)	<p><i>33 mV to 110 mV</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>110 mV to 330 mV</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>330 mV to 1.1 V</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p> <p><i>1.1 V to 3.5 V</i> 10 Hz to 30 Hz 30 Hz to 120 Hz 120 Hz to 1.2 kHz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1.2 MHz 1.2 MHz to 2 MHz 2 MHz to 10 MHz 10 MHz to 20 MHz 20 MHz to 30 MHz</p>	<p>0.90 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.85 % + 47 <math>\mu</math>V 0.95 % + 47 <math>\mu</math>V 1.4 % + 47 <math>\mu</math>V</p> <p>0.80 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.75 % + 120 <math>\mu</math>V 0.85 % + 120 <math>\mu</math>V 1.4 % + 120 <math>\mu</math>V</p> <p>0.70 % + 460 <math>\mu</math>V 0.80 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.75 % + 460 <math>\mu</math>V 0.85 % + 460 <math>\mu</math>V 1.4 % + 460 <math>\mu</math>V</p> <p>0.75 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.65 % + 580 <math>\mu</math>V 0.70 % + 580 <math>\mu</math>V 0.80 % + 580 <math>\mu</math>V 1.3 % + 580 <math>\mu</math>V</p>		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Bandwidth (cont'd) with respect to set point Into 50 Ω	40 Hz to 600 MHz <i>100 mV to 3.5 V peak to peak</i>	2.0 %		A
	600 MHz to 1.1 GHz <i>Nominal 1.2 V peak to peak</i>	5.2 %		
Timebase accuracy	1 ns to 20 ms 20 ms to 2 s	3.0 μs/s 0.20 %		A
RISE TIME	Nominal 1 ns	120 ps		A
CAPACITANCE				A
Measure and Generate	1 pF to 1 μF <i>1 kHz</i>	54 μF/F		
Simulation	1 μF to 3.3 μF 3.3 μF to 11 μF	0.30 % + 4.1 nF 0.30 % + 14 nF		
FREQUENCY				A
	10 MHz	4.5 in 10 <sup>11</sup>	For stable oscillators by direct comparison	
	1 Hz to 18 GHz	4.6 in 10 <sup>11</sup> + 100 μHz		
TIME INTERVAL	1 s to 24 hours	2.0 ms 200 ms	Electronically triggered. Manual triggered	A





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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL SIMULATION OF TEMPERATURE MEASURING and READING INSTRUMENTS  Thermocouple displays <b>Including</b> Reference Junction compensation.	Ambient 20 °C ± 3 °C	0.054 °C	Support measurement suitable for measurement of reference junction compensation devices	A
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.36 °C 0.23 °C 0.22 °C 0.30 °C 0.43 °C		A
Type J	-210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.35 °C 0.25 °C 0.25 °C 0.25 °C 0.30 °C		
Type N	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 410 °C 410 °C to 1300 °C	0.50 °C 0.30 °C 0.30 °C 0.25 °C 0.35 °C		
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.76 °C 0.56 °C 0.55 °C 0.60 °C		
Type S	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.66 °C 0.56 °C 0.57 °C 0.65 °C		
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.75 °C 0.35 °C 0.25 °C 0.25 °C		
Type E	-250 °C to -100 °C -100 °C to -25 °C -25 °C to 350 °C 350 °C to 650 °C 650 °C to 1000 °C	0.60 °C 0.25 °C 0.25 °C 0.25 °C 0.30 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Thermocouple displays <b>Excluding</b> Reference Junction compensation.				A
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.35 °C 0.22 °C 0.21 °C 0.29 °C 0.43 °C		
Type J	-210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.34 °C 0.24 °C 0.24 °C 0.24 °C 0.29 °C		
Type N	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 410 °C 410 °C to 1300 °C	0.50 °C 0.29 °C 0.29 °C 0.24 °C 0.34 °C		
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.76 °C 0.56 °C 0.55 °C 0.60 °C		
Type S	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.66 °C 0.56 °C 0.57 °C 0.65 °C		
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.75 °C 0.34 °C 0.24 °C 0.24 °C		
Type E	-250 °C to -100 °C -100 °C to -25 °C -25 °C to 350 °C 350 °C to 650 °C 650 °C to 1000 °C	0.60 °C 0.24 °C 0.24 °C 0.24 °C 0.29 °C		
Resistance			(PT 100)	
Temperature simulators Temperature indicators	-200 °C to 800 °C -200 °C to 800 °C	0.050 °C 0.080 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
<b>ADDITIONAL MEASUREMENTS IN SUPPORT OF IEE 17<sup>TH</sup> EDITION TEST EQUIPMENT</b>				
<b>RCD</b>				
Trip current	3 mA to 10 mA 10 mA to 30 mA 30 mA to 100 mA 100 mA to 300 mA 300 mA to 2 A	400 µA 830 µA 2.2 mA 8.3 mA 45 mA		
Trip time	20 ms to 390 ms 390 ms to 900 ms	500 µs 2.0 ms		
AC RESISTANCE FOR LOOP 50 Hz Nominal Ranges	0.05 Ω to 0.1 Ω 0.1 Ω to 0.22 Ω 0.22 Ω to 0.33 Ω  0.33 Ω to 0.5 Ω 0.5 Ω to 1 Ω 1 Ω to 5 Ω  5 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 k Ω	1.7 mΩ 4.0 mΩ 4.0 mΩ  6.0 mΩ 7.0 mΩ 6.0 mΩ  8.0 mΩ 25 mΩ 480 m Ω	Laboratory loop nominally 0.46 Ω	
EARTH BOND RESISTANCE	0 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ	4.0 mΩ 15 mΩ 23 mΩ 170 mΩ		
EARTH BOND CURRENT 50 Hz	100 mA 100 mA to 8 A 8 A to 40 A	3.0 mA 21 mA 88 mA		
DC VOLTAGE	0 µV to 10 mV 10 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV	80 µV/V + 1µV 8.5 µV/V + 1µV 5.0 µV/V + 1µV 6.9 µV/V + 1µV 8.0 µV/V 7.5 µV/V	These values can be measured	B



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC VOLTAGE	1 mV to 20 mV 30 Hz to 10 kHz 10 kHz to 100 kHz	0.14 % 0.2 %		B
	20 mV to 200 mV 30 Hz to 10 kHz 10 kHz to 100 kHz	0.10 % 0.10 %		
	200 mV to 2 V 30 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % 0.05 %		
	2 V to 20 V 30 Hz to 10 kHz 10 kHz to 100 kHz 100 kHz to 330 kHz	0.03 % 0.05 % 0.15 %		
	20 V to 200 V 30 Hz to 10 kHz 10 kHz to 100 kHz	0.03 % 0.05 %		
	200 V to 1000 V 30 Hz to 10 kHz	0.04 %		
	DC CURRENT Measurement	10 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 50 A	80 µA/A 50 µA/A 50 µA/A 56 µA/A 150 µA/A 200 µA/A 420 µA/A	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC CURRENT Measurement	10 $\mu$ A to 100 $\mu$ A 40 Hz to 5 kHz	0.03 %		B
	100 $\mu$ A to 1 mA 40 Hz to 5 kHz	0.03 %		
	1m A to 10 mA 40 Hz to 5 kHz	0.03 %		
	10 mA to 100 mA 40 Hz to 5 kHz	0.03 %		
	100 mA to 1 A 40 Hz to 5 kHz	0.087 %		
Measurement and Generation	1 A to 10 A 50 Hz to 400 Hz	0.050 %		B
RESISTANCE Measurement	0 $\Omega$ to 10 $\Omega$	20 $\mu\Omega/\Omega$ + 70 $\mu\Omega$		B
	10 $\Omega$ to 100 $\Omega$	15 $\mu\Omega/\Omega$ + 700 $\mu\Omega$		
	100 $\Omega$ to 1 k $\Omega$	13 $\mu\Omega/\Omega$ + 700 $\mu\Omega$		
	1 k $\Omega$ 10 k $\Omega$	13 $\mu\Omega/\Omega$ + 6.3 m $\Omega$		
	10 k $\Omega$ to 100 k $\Omega$	13 $\mu\Omega/\Omega$ + 70 m $\Omega$		
	100 k $\Omega$ to 1 M $\Omega$	22 $\mu\Omega/\Omega$ + 2.6 $\Omega$		
	1 M $\Omega$ to 10 M $\Omega$	82 $\mu\Omega/\Omega$ + 130 $\Omega$		
	10 M $\Omega$ to 100 M $\Omega$	0.08 %		
	100 M $\Omega$ to 1 G $\Omega$	1.00 %		
DC VOLTAGE Generation	0 V to 220 mV	15 $\mu$ V/V		B
	220 mV to 2.2 V	10 $\mu$ V/V		
	2.2 V to 22 V	8.5 $\mu$ V/V		
	22 V to 220 V	13 $\mu$ V/V		
	220 V to 1.1 kV	16 $\mu$ V/V		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC VOLTAGE Generation	2 mV to 200 mV 10 Hz to 10 kHz 10 kHz to 100 kHz	0.07 % 0.15 %		B
	200 mV to 2 V 10 Hz to 10 kHz 10 kHz to 100 kHz	0.05 % 0.15 %		
	2 V to 20 V 10 Hz to 10 kHz 10 kHz to 100 kHz 100 kHz to 330 kHz	0.06 % 0.12 % 0.40 %		
	20 V to 200 V 10 Hz to 10 kHz 10 kHz to 100 kHz	0.05 % 0.16 %		
	200 V to 1000 V 50 Hz to 10 kHz 10 kHz to 100 kHz	0.07 % 0.16 %		
DC CURRENT Generation	0 A to 200 µA	85 µA/A		B
	200 µA to 2 mA	75 µA/A		
	2 mA to 20 mA	72 µA/A		
	20 mA to 200 mA	85 µA/A		
	200 mA to 2 A	230 µA/A		
	2.2 A to 3 A	440 µA/A + 1.2 mA		
	3 A to 10 A	580 µA/A + 12 mA		
10 A to 50 A	420 µA/A			
Simulated current	10 A to 100 A 100 A to 1000 A	500 µA/A + 12 mA 0.14 % + 700 mA	For the calibration of clamp meters only	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
AC CURRENT Generation	2 µA to 200 µA 10 Hz to 5kHz	0.08 %		B
	200 µA to 2 mA 10 Hz to 5kHz	0.03 %		
	2 mA to 20 mA 10 Hz to 5kHz	0.03 %		
	20 mA to 200 mA 10 Hz to 5kHz	0.03 %		
	200 mA to 2.A 10 Hz to 5kHz	0.06 %		
	2.2 A to 3 A 10 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	0.35 % + 1.2 mA 0.15 % + 0.70 mA 0.40 % + 4.9 mA 3.7 % + 24 mA		
	3 A to 11 A 45 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 5 kHz	0.25 % + 4.5 mA 0.17 % + 4.5 mA 3.6 % + 15 mA		
Simulated AC Current	10 A to 100 A 40 Hz to 100 Hz 100 Hz to 440 Hz	0.10 % 0.50 %	Multi turn coil For the calibration of clamp meters only	B
	100 A to 1000 A 40 Hz to 100 Hz	0.20 %		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
RESISTANCE Generation Spot Values	10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	0.32 mΩ 1.4 mΩ 19 mΩ 120 mΩ 3.8 Ω 40 Ω 0.60 kΩ 18 kΩ		B
OSCILLOSCOPE BANDWIDTH AND FREQUENCY RESPONSE Set points at 1 kHz	40 Hz to 600 MHz 100 mV to 3.5 V peak to peak	2.0 %		B
Timebase accuracy	1 ns to 20 ms 20 ms to 2 s	3.0 μs/s 0.20 %		B
RISE TIME	Nominal 1 ns	120 ps		B
ELECTRICAL SIMULATION OF TEMPERATURE MEASURING and READING INSTRUMENTS  Thermocouple displays <b>Including</b> Reference Junction compensation.				B
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.36 °C 0.23 °C 0.22 °C 0.30 °C 0.43 °C		
Type J	-210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.35 °C 0.25 °C 0.25 °C 0.25 °C 0.30 °C		





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

**Avon-Dynamic Calibration Limited**  
**Issue No: 054 Issue date: 06 September 2021**

**Calibration performed by the Organisation at the locations specified**

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.76 °C 0.56 °C 0.55 °C 0.60 °C		B
Type S	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.66 °C 0.56 °C 0.57 °C 0.65 °C		
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.75 °C 0.35 °C 0.25 °C 0.25 °C		
Thermocouple displays <b>Excluding</b> Reference Junction compensation.				
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.35 °C 0.22 °C 0.21 °C 0.29 °C 0.43 °C		
Type J	-210 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.34 °C 0.24 °C 0.24 °C 0.24 °C 0.29 °C		
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.76 °C 0.56 °C 0.55 °C 0.60 °C		
Type S	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.66 °C 0.56 °C 0.57 °C 0.65 °C		
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.75 °C 0.34 °C 0.24 °C 0.24 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
Resistance			(PT 100)	B
Temperature simulators	-200 °C to 800 °C	0.050 °C		
Temperature indicators	-200 °C to 800 °C	0.080 °C		
ADDITIONAL MEASUREMENTS IN SUPPORT OF IEE 17 <sup>TH</sup> EDITION TEST EQUIPMENT				B
RCD				
Trip current	3 mA to 10 mA 10 mA to 30 mA 30 mA to 100 mA 100 mA to 300 mA 300 mA to 2 A	400 µA 830 µA 2.2 mA 8.3 mA 45 mA		
Trip time	20 ms to 390 ms 390 ms to 900 ms	500 µs 2.0 ms		
AC RESISTANCE FOR LOOP 50 Hz Nominal Ranges	0.05 Ω to 0.1 Ω 0.1 Ω to 0.22 Ω 0.22 Ω to 0.33 Ω	1.7 mΩ 4.0 mΩ 4.0 mΩ		
	0.33 Ω to 0.5 Ω 0.5 Ω to 1 Ω 1 Ω to 5 Ω	6.0 mΩ 7.0 mΩ 6.0 mΩ		
	5 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 k Ω	8.0 mΩ 25 mΩ 480 mΩ		
EARTH BOND RESISTANCE	0 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 k Ω	4.0 mΩ 15 mΩ 23 mΩ 170 mΩ		
EARTH BOND CURRENT 50 Hz	100 mA 100 mA to 8 A 8 A to 40 A	3.0 mA 21 mA 88 mA		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
<b>PRESSURE</b>				A
Gas Pressure Gauge			Methods consistent with EURAMET CG17	
Calibration of pressure indicating instruments and gauges	-90 kPa to +400 kPa 400 kPa to 2 MPa	120 Pa 180 Pa	Calibrations of pressure devices with an electrical output may be undertaken.	
Hydraulic Pressure Gauge				
Calibration of pressure indicating instruments and gauges	500 kPa to 60 MPa 60 MPa to 140 MPa 140 MPa to 280 MPa	0.014 % + 1.0 kPa 60 kPa 90 kPa		
<b>TEMPERATURE</b>				A
Resistance thermometers	-20 °C to 200 °C	0.055 °C	Comparison in liquid bath.	
Temperature indicating instruments with probes	-20 °C to 200 °C	0.055 °C	Comparison in liquid bath.  Calibrations of temperature transmitters may be undertaken.	
<b>TORQUE</b>				A
Hand Torque Tools (Torque wrenches and Torque screwdrivers)	BS EN ISO 6789-2:2017 0.04 N·m to 1500 N·m	1.0 %	Calibration results may also be reported in units of lbf·in and lbf·ft. The uncertainty quoted is for both the application of the calibration torque and the characteristics of the device being calibrated.	
	BS EN ISO 6789:2003 (Withdrawn) 0.04 N·m to 1500 N·m	1.0 %		
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:  $Q[a, b] = [a^2 + b^2]^{1/2}$