


Schedule of Accreditation

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United Kingdom Accreditation Service

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

 <p>UKAS CALIBRATION</p> <p>8239</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p>PASS Ltd</p> <p>Issue No: 018 Issue date: 06 May 2026</p>	
	<p>1 Wilson Street Thornaby Stockton-On-Tees TS17 7AR United Kingdom</p>	<p>Contact: Mr Ibrahim Ibrahim Tel: +44 (0) 1642 626148 Fax: +44 (0) 870 143 1869 E-Mail: ibrahim@calibrate.co.uk Website: www.calibrate.co.uk</p>
<p>Calibration performed by the Organisations at the locations specified below</p>		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
<p>Address 1 Wilson Street Thornaby Stockton-On-Tees TS17 7AR United Kingdom</p> <p>Local contact Ibrahim Ibrahim</p>	Temperature, Electrical and Pressure	A
<p>Address Parkburn Court Burnbank Hamilton Scotland ML3 0QQ</p> <p>Local contact Barry Atkins</p>	Dimensional and Electrical	B

Site activities performed away from the locations listed above:

Location details	Activity	Location code
<p>At customer's premises</p> <p>The customer's site or premises must be suitable for the nature of the particular calibrations undertaken and will be the subject of contract review arrangements between the laboratory and the customer.</p>	Dimensional	C



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL				A
DC RESISTANCE				
Generation / Sourcing Specific Values	0 Ω 1 m Ω 10 m Ω 100 m Ω	3.4 $\mu\Omega$ 3.1 $\mu\Omega$ 6.2 $\mu\Omega$ 13 $\mu\Omega$	All electrical calibrations are performed as a comparison against a reference standard Source values for the calibration of measuring Instruments.	
	1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 k Ω 1.9 Ω 10 k Ω 19 k Ω 100 k Ω 190 k Ω 1 M Ω 1.9 M Ω 10 M Ω 19 M Ω 100 M Ω 1 G Ω	110 $\mu\Omega$ 210 $\mu\Omega$ 270 $\mu\Omega$ 0.54 m Ω 1.2 m Ω 2.5 m Ω 8.7 m Ω 17 m Ω 81 m Ω 170 m Ω 1.1 Ω 2.4 Ω 16 Ω 48 Ω 0.46 k Ω 1.1 k Ω 12 k Ω 12 M Ω		
Measurement			For measuring a stimulus provided by the device being calibrated.	
	0 Ω to 10 Ω	17 $\mu\Omega/\Omega + 59 \mu\Omega$		
	10 Ω to 100 Ω	14 $\mu\Omega/\Omega + 590 \mu\Omega$	Also, for generating a stimulus that can be applied to measuring Instruments.	
	100 Ω to 1 k Ω	12 $\mu\Omega/\Omega + 620 \mu\Omega$		
	1 k Ω to 10 k Ω	12 $\mu\Omega/\Omega + 6.2 m\Omega$		
	10 k Ω to 100 k Ω 100 k Ω to 1M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω 100 M Ω to 1 G Ω	12 $\mu\Omega/\Omega + 63 m\Omega$ 17 $\mu\Omega/\Omega + 3.3 \Omega$ 58 $\mu\Omega/\Omega + 120 \Omega$ 580 $\mu\Omega/\Omega + 1.5 k\Omega$ 0.58 % + 80 k Ω		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
DC VOLTAGE				
Generation	0 mV to 220 mV 202 mV to 2.2 V 2.2 V to 11 V 11 V to 22 V 22 V to 220 V 220 V to 1100 V	9.2 $\mu\text{V/V} + 0.74 \mu\text{V}$ 5.8 $\mu\text{V/V} + 0.99 \mu\text{V}$ 4.2 $\mu\text{V/V} + 3.0 \mu\text{V}$ 4.1 $\mu\text{V/V} + 4.7 \mu\text{V}$ 5.8 $\mu\text{V/V} + 47 \mu\text{V}$ 7.5 $\mu\text{V/V} + 470 \mu\text{V}$	Values can be generated for the calibration of measuring Instruments	
Measurement	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	6.0 $\mu\text{V/V} + 380 \text{ nV}$ 4.6 $\mu\text{V/V} + 670 \text{ nV}$ 4.6 $\mu\text{V/V} + 1.2 \mu\text{V}$ 6.9 $\mu\text{V/V} + 39 \mu\text{V}$ 15 $\mu\text{V/V} + 0.58 \text{ mV}$	For measurement of instrument outputs	
DC CURRENT				A
Generation	0 μA to 220 μA 220 μA to 2.2 mA 2.2 mA to 22 mA 22 mA to 220 mA 220 mA to 2 A 2.2 A to 10 A 10 A to 20.2 A 20.2 A to 30 A 20 A to 1500 A	46 $\mu\text{A/A} + 6.9 \text{ nA}$ 41 $\mu\text{A/A} + 8.1 \text{ nA}$ 41 $\mu\text{A/A} + 87 \text{ nA}$ 52 $\mu\text{A/A} + 810 \text{ nA}$ 93 $\mu\text{A/A} + 14 \mu\text{A}$ 350 $\mu\text{A/A} + 590 \mu\text{A}$ 350 $\mu\text{A/A} + 760 \mu\text{A}$ 580 $\mu\text{A/A} + 4.4 \text{ mA}$ 0.26 % + 13 mA	Values can be generated for the calibration of measuring instruments Simulation with coil for the calibration of clampmeters	
Measurement	0 μA to 1 μA 1 μA to 10 μA 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 3 A 3 A to 5 A 5 A to 10 A	23 $\mu\text{A/A} + 48 \text{ pA}$ 23 $\mu\text{A/A} + 120 \text{ pA}$ 23 $\mu\text{A/A} + 930 \text{ pA}$ 23 $\mu\text{A/A} + 5.9 \text{ nA}$ 23 $\mu\text{A/A} + 59 \text{ nA}$ 40 $\mu\text{A/A} + 590 \text{ nA}$ 130 $\mu\text{A/A} + 12 \mu\text{A}$ 0.23 % + 750 μA 0.14 % + 2.1 mA 0.27 % + 3.4 mA	For measurement of Instrument outputs	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
AC VOLTAGE				A
Values can be generated for the calibration of measuring instruments	20 mV to 202 mV 10 Hz to 44 Hz 45 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 100 kHz 100 kHz to 500 kHz	920 μ V/V + 62 μ V 190 μ V/V + 38 μ V 230 μ V/V + 56 μ V 0.12 % + 84 μ V 0.46 % + 2.5 mV		
	202 mV to 2.02 V 10 Hz to 44 Hz 45 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 100 kHz	580 μ V/V + 320 μ V 180 μ V/V + 280 μ V 240 μ V/V + 450 μ V 750 μ V/V + 530 μ V		
	2.02 V to 20.2 V 10 Hz to 44 Hz 45 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 100 kHz	580 μ V/V + 3.0 mV 180 μ V/V + 2.7 mV 240 μ V/V + 4.4 mV 690 μ V/V + 6.9 mV		
	20.2 V to 202 V 30 Hz to 44 Hz 45 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 40 kHz	580 μ V/V + 33 mV 170 μ V/V + 28 mV 270 μ V/V + 30 mV 350 μ V/V + 53 mV		
	202 V to 1020 V 30 Hz to 44 Hz 45 Hz to 1 kHz 1 kHz to 10 kHz	640 μ V/V + 250 mV 230 μ V/V + 110 mV 290 μ V/V + 200 mV		A
Generation	0 mV 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	0.052 % + 4.6 μ V 0.045 % + 4.6 μ V 0.045 % + 4.6 μ V 0.050 % + 4.6 μ V 0.082 % + 5.8 μ V 0.13 % + 12 μ V 0.17 % + 23 μ V 0.32 % + 23 μ V	Values can be generated for the calibration of measuring instruments	
	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	0.030 % + 4.6 μ V 0.014 % + 4.6 μ V 0.093 % + 4.6 μ V 0.025 % + 4.6 μ V 0.059 % + 5.8 μ V 0.12 % + 12 μ V 0.16 % + 23 μ V 0.31 % + 23 μ V		



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ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
AC VOLTAGE				A
Generation	22 mV to 220 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 220 mV to 2.2 V 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 V to 22 V 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 22 V to 220 V 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 220 V to 1100 V 50 Hz to 1 kHz	0.032 % + 14 μ V 0.012 % + 8.1 μ V 0.0081 % + 8.1 μ V 0.015 % + 8.1 μ V 0.036 % + 20 μ V 0.077 % + 23 μ V 0.16 % + 29 μ V 0.31 % + 52 μ V 0.028 % + 46 μ V 0.011 % + 17 μ V 0.0050 % + 9.3 μ V 0.0079 % + 12 μ V 0.010 % + 35 μ V 0.039 % + 92 μ V 0.12 % + 230 μ V 0.20 % + 350 μ V 0.028 % + 460 μ V 0.011 % + 170 μ V 0.0052 % + 58 μ V 0.0079 % + 120 μ V 0.0097 % + 230 μ V 0.030 % + 690 μ V 0.12 % + 2.3 mV 0.17 % + 3.7 mV 0.028 % + 4.6 mV 0.011 % + 1.7 mV 0.0064 % + 0.70 mV 0.0096 % + 1.2 mV 0.018 % + 2.9 mV 0.012 % + 4.7 mV		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
AC VOLTAGE Measurement	10 μ V to 10 mV 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 100 kHz 10 mV to 100 mV 40 Hz to 1 kHz 1 kHz to 20 kHz 100 mV to 1 V 20 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 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 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 100 V to 700 V 10 Hz to 40 Hz 40 Hz to 1 kHz 1 kHz to 20 kHz	230 μ V/V + 2.6 μ V 350 μ V/V + 2.6 μ V 0.12 % + 2.6 μ V 82 μ V/V + 3.3 μ V 160 μ V/V + 3.2 μ V 82 μ V/V + 48 μ V 82 μ V/V + 26 μ V 160 μ V/V + 27 μ V 350 μ V/V + 29 μ V 920 μ V/V + 30 μ V 82 μ V/V + 550 μ V 82 μ V/V + 270 μ V 160 μ V/V + 270 μ V 350 μ V/V + 310 μ V 920 μ V/V + 320 μ V 0.35 % + 1.2 mV 1.2 % + 3.1 mV 230 μ V/V + 4.8 mV 230 μ V/V + 2.7 mV 230 μ V/V + 2.8 mV 400 μ V/V + 3.1 mV 0.14 % + 3.7 mV 460 μ V/V + 48 mV 460 μ V/V + 26 mV 690 μ V/V + 27 mV	For measurement of instrument outputs	A



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ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
AC CURRENT Measurement	50 nA to 100 μ A 100 Hz to 5 kHz	690 μ A/A + 36 nA	For measurement of instrument outputs	A
	100 μ A to 1 mA 100 Hz to 5 kHz	350 μ A/A + 230 nA		
	1 mA to 10 mA 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 5 kHz	0.46 % + 2.3 μ A 0.17 % + 2.3 μ A 690 μ A/A + 2.3 μ A		
	10 mA to 100 mA 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 5 kHz	0.46 % + 24 μ A 0.17 % + 23 μ A 690 μ A/A + 23 μ A		
	100 mA to 1 A 10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 5 kHz	0.46 % + 240 μ A 0.18 % + 240 μ A 0.12 % + 240 μ A		
	1 A to 3 A 10 Hz to 5 kHz	0.27 % + 540 μ A		
	3 A to 5 A 10 Hz to 5 kHz	0.27 % + 9.0 mA		
	5 A to 10 A 10 Hz to 5 kHz	0.29 % + 9.0 mA		



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ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
CAPACITANCE				A
Generation	<i>At 1 kHz:</i> 1 nF 10 nF 20 nF 50 nF 100 nF 1 μ F 10 μ F	3.5 pF 31 pF 64 pF 150 pF 290 pF 4.6 nF 70 nF	Values can be generated for the calibration of measuring instruments	
Measurement	<i>At 1 kHz:</i> 1 pF to 10 pF 10 pF to 100 pF 100 pF to 1 nF 1 nF to 10 nF 10 nF to 100 nF 0.1 μ F to 1 μ F 1 μ F to 10 μ F 10 μ F to 100 μ F 100 μ F to 1 mF	0.045 % + 2.1 fF 0.028 % + 21 fF 0.026 % + 210 fF 0.026 % + 2.1 pF 0.027 % + 21 pF 0.026 % + 210 pF 0.026 % + 2.1 nF 0.026 % + 21 nF 0.036 % + 210 nF	Comparison against LCR bridge	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (continued)			All electrical calibrations are performed as a comparison against a reference standard	A
INDUCTANCE	<i>At 1 kHz:</i>		Values can be generated for the calibration of measuring instruments	A
Generation	1 mH 10 mH 100 mH 1 H	5.8 μ H 58 μ H 580 μ H 5.8 mH		
Measurement	<i>At 1 kHz:</i> 0.1 mH to 1 mH 1 mH to 10 mH 10 mH to 100 mH 100 mH to 1 H	0.026 % + 0.21 μ H 0.026 % + 2.1 μ H 0.026 % + 21 μ H 0.026 % + 210 μ H	Comparison against LCR bridge	
FREQUENCY Value can be generated for the calibration of measuring instruments	10 MHz reference	1.0 part in to 10^{12}	Frequency may also be expressed as time; 1/f for repetitive signals, in terms of seconds or other units such as RPM.	A
For generating a stimulus that can be applied to measuring instruments also for measuring a stimulus provided by the device being calibrated	1 Hz to 30 MHz 30 MHz to 4 GHz	1.5 parts in to 10^{12} + 0.60 μ Hz 2.0 parts in to 10^{12}		
Rotational speed - Optical				
Measurement	10 RPM to 99.99 RPM 100 RPM to 999.9 RPM 1000 RPM to 99999 RPM	2.3 RPM 2.4 RPM 3.3 RPM		
Generation	60 RPM to 3000 RPM 3000 RPM to 60000 RPM	0.12 RPM 1.2 RPM		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
TEMPERATURE SIMULATION				A
PT 100	-200 °C to +800 °C	0.059 °C		
Ambient	17 °C to 23 °C	0.20 °C	Calibration of Cold Junction	
Reference (CJC) juncton compensation INCLUDED				
Base Thermocouples				
Type E	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1000 °C	0.15 °C 0.12 °C 0.13 °C		
Type J	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1200 °C	0.18 °C 0.12 °C 0.13 °C		
Type K	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1372 °C	0.20 °C 0.13 °C 0.16 °C		
Type N	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1300 °C	0.29 °C 0.16 °C 0.15 °C		
Type T	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 400 °C	0.20 °C 0.14 °C 0.12 °C		
Noble thermocouples				
Type B	600 °C to 1820 °C	0.44 °C		
Type R	-50 °C to 0 °C 0 °C to 400 °C 400 °C to 1767 °C	0.69 °C 0.49 °C 0.28 °C		
Type S	-50 °C to 0 °C 0 °C to 400 °C 400 °C to 1767 °C	0.64 °C 0.48 °C 0.32 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
Temperature indicators and calibrators by electrical simulation				A
Reference (CJC) junction compensation EXCLUDED				
Base Thermocouples				
Type E	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1000 °C	0.15 °C 0.11 °C 0.12 °C		
Type J	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1200 °C	0.17 °C 0.11 °C 0.12 °C		
Type K	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1372 °C	0.20 °C 0.12 °C 0.16 °C		
Type N	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 1300 °C	0.28 °C 0.14 °C 0.14 °C		
Type T	-200 °C to -100 °C -100 °C to 0 °C 0 °C to 400 °C	0.20 °C 0.13 °C 0.11 °C		
Noble thermocouples				
Type B	600 °C to 1820 °C	0.44 °C		
Type R	-50 °C to 0 °C 0 °C to 400 °C 400 °C to 1767 °C	0.69 °C 0.28 °C 0.28 °C		
Type S	-50 °C to 0 °C 0 °C to 400 °C 400 °C to 1767 °C	0.65 °C 0.55 °C 0.39 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
EQUIPMENT FOR IEE 17TH / 18TH EDITION WIRING TESTING				
LOOP TESTERS				
AC Resistance at 50 Hz	Nominal applied resistances			A
	0.05 Ω	4.7 m Ω		
	0.10 Ω	4.8 m Ω		
	0.21 Ω	4.9 m Ω		
	0.32 Ω	5.1 m Ω		
	0.5 Ω	5.6 m Ω		
	1 Ω	8.6 m Ω		
	5 Ω	31 m Ω		
	10 Ω	59 m Ω		
	100 Ω	580 m Ω		
	1 k Ω	5.9 Ω		
CONTINUITY TESTERS				
DC Resistance	20 m Ω	16 m Ω		A
	200 m Ω to 2 Ω	16 m Ω		
	4 Ω	16 m Ω		
	6 Ω	18 m Ω		
	8 Ω	19 m Ω		
	10 Ω	21 m Ω		
	20 Ω	33 m Ω		
	100 Ω	150 m Ω		
	1 k Ω	1.4 Ω		
Continuity Current Measurement	10 mA	0.54 mA		
	100 mA	0.92 mA		
	200 mA	1.6 mA		
	300 mA	2.4 mA		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
INSULATION TESTERS				A
DC Resistance	10 k Ω 20 k Ω 30 k Ω 40 k Ω 60 k Ω 100 k Ω 200 k Ω 400 k Ω 600 k Ω 1 M Ω 2 M Ω 3 M Ω 4 M Ω 5 M Ω 6 M Ω 7 M Ω 8 M Ω 9 M Ω 10 M Ω 20 M Ω 30 M Ω 40 M Ω 50 M Ω 60 M Ω 70 M Ω 80 M Ω 90 M Ω 100 M Ω 200 M Ω 400 M Ω 600 M Ω 800 M Ω 1 G Ω 10 G Ω	12 Ω 23 Ω 35 Ω 46 Ω 69 Ω 120 Ω 230 Ω 460 Ω 690 Ω 1.2 k Ω 2.3 k Ω 3.5 k Ω 4.6 k Ω 5.8 k Ω 69 k Ω 81 k Ω 92 k Ω 100 k Ω 120 k Ω 230 k Ω 350 k Ω 460 k Ω 580 k Ω 690 k Ω 810 k Ω 930 k Ω 1.0 M Ω 1.2 M Ω 2.8 M Ω 5.6 M Ω 8.5 M Ω 11 M Ω 14 M Ω 130 M Ω		
DC Voltage	50 V 100 V 150 V 200 V 250 V 500 V 1000 V	1.1 V 1.5 V 2.0 V 2.5 V 3.0 V 5.9 V 12 V		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
EARTH BOND TESTERS				A
AC Resistance at 50 Hz	Nominal applied resistance			
	0.04 Ω	4.7 m Ω		
	0.1 Ω	4.8 m Ω		
	0.15 Ω	4.8 m Ω		
	0.27 Ω	5.0 m Ω		
	0.38 Ω	5.2 m Ω		
	0.55 Ω	5.8 m Ω		
	1 Ω	7.8 m Ω		
	5 Ω	30 m Ω		
	10 Ω	59 m Ω		
	100 Ω	580 m Ω		
	1 k Ω	5.8 Ω		
AC Current at 50 Hz	100 mA	7.3 mA		
	200 mA	7.9 mA		
	400 mA	9.9 mA		
	4 A	100 mA		
	8 A	160 mA		
	10 A	190 mA		
	20 A	440 mA		
LEAKAGE TESTERS				A
DC Current	2 mA	36 μ A		
	5 mA	82 μ A		
	10 mA	130 μ A		
RCD TESTERS				A
RCD Trip Time	20 ms	650 μ s		
	30 ms	650 μ s		
	40 ms	650 μ s		
	100 ms	650 μ s		
	200 ms	650 μ s		
	390 ms	650 μ s		
	900 ms	650 μ s		
RCD Trip Current at 50 Hz	10 mA	300 μ A		
	30 mA	0.87 mA		
	90 mA	3.2 mA		
	100 mA	3.2 mA		
	110 mA	3.2 mA		
	150 mA	8.7 mA		
	300 mA	8.7 mA		
	1 A	29 mA		
	2 A	58 mA		
AC Voltage Source at 50 Hz	100 V	0.37 V		
	200 V	0.45 V		
	230 V	0.62 V		
	300 V	0.82 V		
	400 V	0.99 V		
Line Voltage Measurement	200 V to 260 V	2.4 V		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
PRESSURE				A
Gas Pressure (Gauge)			Methods consistent with EURAMET CG17. Calibration of devices with an electrical output may be undertaken.	
Calibration of pressure indicating instruments and gauges	-95 kPa to -3.5 kPa 3.5 kPa to 100 kPa 100 kPa to 2.5 MPa 2.5 MPa to 12 MPa	0.0073 % 0.0044 % 0.0044 % 0.0057 %	Calibration using deadweight testers. Absolute pressures can be generated over these ranges attracting an additional uncertainty of 7.5 Pa.	
Calibration of pressure indicating instruments and gauges	-2.4 kPa to +2.4 kPa 3.5 kPa to 100 kPa 100 kPa to 2.1 MPa -95 kPa to 0 Pa 0 Pa to 21 MPa	0.031 % + 1.3 Pa 0.004 6 % + 13 Pa 0.002 5 % + 90 Pa 0.018% + 1.9 kPa 0.014 % + 1.9 kPa	Calibration using pressure controllers.	
Gas Pressure (Absolute)				
Calibration of pressure indicating instruments and gauges	75 kPa to 115 kPa 3.5 kPa to 100 kPa 3.5 kPa to 200 kPa 3.5 kPa to 800 kPa 3.5 kPa to 2.1 MPa 3.5 kPa to 7 MPa 100 kPa to 41.4 MPa	7.5 Pa 0.0034 % + 9.5 Pa 0.0034 % + 10 Pa 0.0031 % + 140 Pa 0.0030 % + 77 Pa 0.0030 % + 840 Pa 0.0041 % + 4.8 kPa	Calibration using pressure controllers.	
Hydraulic Pressure (Gauge)				
Calibration of pressure indicating instruments and gauges	0.6 MPa to 6.0 MPa 6 MPa to 70 MPa 70 MPa to 138 MPa 138 MPa to 344 MPa	0.0062 % 0.0075 % 0.0074 % 0.0084 %	Calibration using deadweight testers. Absolute pressures can be generated over these ranges attracting an additional uncertainty of 7.5 Pa.	
TEMPERATURE				A
PRTs and Sensors with indicators				
	-95 °C to 140 °C 140 °C to 660 °C	0.056 °C 0.15 °C	Calibrations performed in a Metal block	
	140 °C to 660 °C	0.10 °C		
	-80 °C to 100 °C	0.019 °C	Calibrations performed in liquid bath	
	100 °C to 150 °C 150 °C to 250 °C	0.031 °C 0.040 °C		
	0 °C	0.010 °C	Ice point	
	0.01 °C	0.0050 °C	Triple point of water	
Metal block calibrators and portable liquid baths	-95 °C to +660 °C	Uncertainty as for sensor and indicator		



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Issue No: 018 Issue date: 06 May 2026

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
HUMIDITY				A
Dew point	-20 °C to 60 °C	0.20 °C	By comparison with a chilled mirror hygrometer	
Relative humidity	Example conditions	Corresponding to dew-point and temperature range and uncertainties	By comparison with a chilled mirror hygrometer and PRTs	
	At 0 °C 5 %rh 50 %rh 90 %rh	0.16 %rh 0.85 %rh 1.5 %rh		
	At 23 °C 5 %rh to 10 %rh 10 %rh to 50 %rh 50 %rh to 95 %rh	0.15 %rh 0.72 %rh 1.2 %rh		
Relative humidity	At 60 °C 5 %rh 50 %rh 90 %rh	0.14 %rh 0.61 %rh 1.0 %rh		
TEMPERATURE IN AIR	0 °C to 60 °C	0.15 °C		A



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
DIMENSIONAL CALIBRATIONS	RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED			
LENGTH			NOTES 1 All linear calibrations may be given in inch units.	
Plain Plug Gauges (Parallel)	1 to 50 diameter 50 to 100 100 to 200 200 to 300	0.80 1.5 2.0 3.0	on diameter.	B
Length Gauges, Flat and Spherical Ended (excluding Length Bars)	25 to 1000	1.0 + (8.0 x length in m)	Comparison to gauge blocks using a length measuring machine.	B
ANGLE			2 The uncertainty quoted 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.	
Squares Blade Type	50 to 300 300 to 450	3.0 on squareness 5.0 See Note 2	BS 939:2007 Comparison to master square.	B
MEASURING INSTRUMENTS AND MACHINES				
Micrometers			Comparison to length standards BS 870:2008	
External	0 to 1000	Heads 2.0 between any two points Setting and extension rods 1.0 + (8.0 x length in m)		B
	Flatness Parallelism	0.4 1.0		B
Internal Micrometers	0 to 900	Heads 2.0 between any two points Setting and extension rods 1.0 + (8.0 x length in m)	Comparison to length standards BS 959:2008	B
Depth Micrometers	0 to 300		BS 6468:2008	
Vernier, dial and digital type gauges			Comparison to length standards.	B
Calliper	0 to 1000	Overall performance 10 + (30 x length in m)	As BS 887:2008	
Height	0 to 1000	Overall performance 10 + (10 x length in m)	ISO13225:2012 and BS 1643:2008	
Depth	0 to 600	Overall performance 10 + (30 x length in m)	As BS 6365:2008	



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MEASURING INSTRUMENTS AND MACHINES (continued)				
Dial Gauges and Dial Test Indicators	0 to 50	1.0	BS 907:2008 and BS 2795:1981 using a length measuring machine.	B
Surface Plates Granite Cast Iron	160 x 100 to 1600 x 2500 Flatness of working surface: Local variation of working surface:	1.5 + (0.80 x diagonal in m) See Note 2 2.7	BS 817:2008 and above using an electronic level and variation gauge.	B and C
Feeler Gauges	0.025 to 1.0	2.0	BS 957:2008 using a length measuring machine.	B
ANCILLARY MEASUREMENT				
	Flatness	2.0		
	Parallelism	2.0		
	Straightness	2.0		
	Lateral Squareness	17		
ELECTRICAL CALIBRATION				
DC RESISTANCE				
Specific values				B
Measurement	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω 1 G Ω	14 $\mu\Omega/\Omega$ 9.6 $\mu\Omega/\Omega$ 8.0 $\mu\Omega/\Omega$ 8.8 $\mu\Omega/\Omega$ 9.6 $\mu\Omega/\Omega$ 24 $\mu\Omega/\Omega$ 110 $\mu\Omega/\Omega$ 440 $\mu\Omega/\Omega$ 0.40 %	Using digital multimeter.	
Other values 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	66 $\mu\Omega/\Omega + 2.0 \mu\Omega$ 73 $\mu\Omega/\Omega + 2.0 \mu\Omega$ 200 $\mu\Omega/\Omega + 2.0 \mu\Omega$ 13 $\mu\Omega/\Omega + 2.0 \mu\Omega$ 14 $\mu\Omega/\Omega$ 76 $\mu\Omega/\Omega$ 37 $\mu\Omega/\Omega$ 150 $\mu\Omega/\Omega$ 0.13 % 0.14 %	Using digital multimeter.	B



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Issue No: 018 Issue date: 06 May 2026

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
DC RESISTANCE (continued)				B
Generation				
Specific values	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω 1 G Ω 10 G Ω 100 G Ω 1 T Ω	6.2 m Ω 8.0 m Ω 28 m Ω 160 m Ω 2.9 Ω 45 Ω 1.3 k Ω 260 k Ω 0.40 % 0.59 % 2.0 % 1.4 %	Using multifunction calibrator or decade resistance box.	
DC VOLTAGE				B
Measurement				
Specific values	100 mV 1 V 10 V 100 V 1000 V	11 μ V/V 9.4 μ V/V 9.4 μ V/V 12 μ V/V 12 μ V/V	Using digital multimeter.	
Other values	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	72 μ V/V + 2.0 μ V 10 μ V/V + 2.0 μ V 9.5 μ V/V + 2.0 μ V 19 μ V/V 12 μ V/V	Using digital multimeter.	
	1 kV to 20 kV 20 kV to 30 kV	0.47 kV 0.35 %	Using high voltage divider.	
Generation	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1025 V	46 μ V/V + 3.0 μ V 11 μ V/V + 5.0 μ V 14 μ V/V + 50 μ V 40 μ V/V + 530 μ V 14 μ V/V + 4.0 mV	Using multifunction calibrator.	
DC CURRENT				B
Measurement				
Specific values	1 μ A 10 μ A 100 μ A 1 mA 10 mA 100 mA 1 A	45 μ A/A 25 μ A/A 24 μ A/A 24 μ A/A 24 μ A/A 41 μ A/A 87 μ A/A	Using digital multimeter.	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
DC CURRENT (continued) Measurement (continued) Other values	0 μ A to 1 μ A 1 μ A to 10 μ A 10 μ A to 100 μ A 100 μ A to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	470 pA 120 μ A/A 96 μ A/A 63 μ A/A 64 μ A/A 71 μ A/A 180 μ A/A	Using digital multimeter.	B
Generation	0 μ A to 200 μ A 200 μ A 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 30 to 1000 A	0.020 % + 12 nA 0.010 % + 1.2 μ A 0.010 % + 12 μ A 0.040 % + 3.3 μ A 0.020 % + 120 μ A 0.040 % + 2.0 mA 0.060 % + 2.0 mA 0.75 % + 1.4 mA	Using multifunction calibrator. Simulation using coil for the calibration of clampmeters	B



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PASS Ltd

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
AC VOLTAGE				B
Measurement Specific values	<i>At 1 kHz</i> 10 mV 100 mV <i>40 Hz to 1 kHz</i> 1 V 10 V 100 V 700 V <i>1 kHz to 100 kHz</i> 1 V 10 V 100 V	190 μ V/V 73 μ V/V 64 μ V/V 65 μ V/V 160 μ V/V 310 μ V/V 620 μ V/V 620 μ V/V 930 μ V/V	Using digital multimeter.	
Other values	<i>At 1 kHz</i> 1 mV to 10 mV 10 mV to 100 mV 100 mV to 1 V <i>40 Hz to 1 kHz</i> 1 mV 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 700 V <i>1 kHz to 100 kHz</i> 1 V to 10 V 10 V to 100 V	0.090 % 0.020 % 0.020 % 0.13 % 0.025 % 0.025 % 0.025 % 0.033 % 0.052 % 0.095 % 0.14 %	Using digital multimeter.	B



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
AC VOLTAGE (continued) Measurement (continued)	<i>At 50 Hz</i> 700 V to 20 kV 20 kV to 28 kV	1.2 kV 1.6 kV	Using high voltage divider.	B
Generation	<i>45 Hz to 20 kHz</i> 10 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1020 V	0.023 % + 20 μ V 0.024 % + 260 μ V 0.024 % + 2.2 mV 0.035 % + 37 mV 0.035 % + 250 mV	Using multifunction calibrator.	
AC CURRENT Measurement Specific Values	<i>At 1 kHz</i> 100 μ A 1 mA	0.056 % 0.051 %	Using digital multimeter.	B
	<i>45 Hz to 1 kHz</i> 10 mA 100 mA 1 A	0.050 % 0.050 % 0.080 %		
Other values	<i>At 1 kHz</i> 5 μ A to 100 μ A 100 μ A to 1 mA	0.24 % 0.16 %	Using digital multimeter.	
	<i>45 Hz to 1 kHz</i> 5 μ A to 100 μ A 100 μ A to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	0.36 % 0.25 % 0.24 % 0.24 % 0.26 %		
Generation	<i>45 Hz to 1 kHz</i> 20 μ A to 200 μ A 200 μ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 30 A 30 A to 1000 A	0.090 % + 180 nA 0.070 % + 490 nA 0.050 % + 4.0 μ A 0.050 % + 36 μ A 0.070 % + 340 μ A 0.35 % + 6.8 mA 0.83 % + 6.8 mA	Using multifunction calibrator. Simulation using coil for the calibration of clampmeters	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
FREQUENCY	1 Hz to 1 MHz 1 MHz to 2.1 GHz	21 in $10^8 + 2.0$ mHz 21 in 10^8	Using frequency counter.	B
Tachometer calibration	10 rpm to 50000 rpm	1.2 rpm	Using optical technique.	
Elapsed time	0 ms to 390 ms 391 ms to 100 s	1.0 ms 8.0 ms	Using counter timer.	B
17TH EDITION TYPE EQUIPMENT				
Earth Loop	0.05 Ω 0.1 Ω 0.22 Ω 0.33 Ω 0.5 Ω 1 Ω 5 Ω 10 Ω 100 Ω 1 k Ω	10 m Ω 11 m Ω 8.0 m Ω 8.0 m Ω 8.0 m Ω 10 m Ω 30 m Ω 59 m Ω 580 m Ω 5.8 m Ω	Using dedicated calibrator.	B
RCD testers				B
Trip current	<i>At 50 Hz</i> 3 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A	620 μ A 5.8 mA 59 mA 120 mA	Up to 5 seconds.	
Trip Time	<i>At 30 mA, 50 Hz</i> 10 ms to 390 ms 390 ms to 1 s	1.0 ms 8.1 ms		
Earth leakage current	0.2 mA to 7.7 mA	15 μ A		B
PAT Testers				
Earth bond current	<i>At 50 Hz</i> 100 mA 100 mA to 10 A 10 A to 30 A	8.0 mA 190 mA 520 mA		B
Earth Bond resistance Nominal values	0.05 Ω 0.1 Ω 0.22 Ω 0.33 Ω 0.5 Ω 1 Ω 5 Ω 10 Ω 100 Ω 1 k Ω	7.5 m Ω 7.5 m Ω 7.6 m Ω 7.7 m Ω 8.0 m Ω 9.5 m Ω 30 m Ω 58 m Ω 580 m Ω 5.8 Ω		B



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PASS Ltd

Issue No: 018 Issue date: 06 May 2026

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
17TH EDITION TYPE EQUIPMENT (continued)				
Insulation resistance Nominal source values	100 kΩ 500 kΩ 1 MΩ 5 MΩ 10 MΩ 20 MΩ 50 MΩ 100 MΩ	12 kΩ 12 kΩ 12 kΩ 21 kΩ 37 kΩ 72 kΩ 180 kΩ 350 kΩ		B
Load Tests	3 kVA	2.5 %		B
Flash tests	At 50 Hz 700 V to 1.9 kV	1.5 % + 5.0 V		
ELECTRICAL SIMULATION OF TEMPERATURE				
Ambient temperature CJC source CJC measurement	17 °C to 23 °C	0.11 °C 0.32 °C	In support of cold junction measurements.	B
Temperature simulators and indicators, calibration by electrical simulation				
Base metal thermocouples				
Type K	-200 °C to -100 °C -100 °C to +1300 °C	0.32 °C 0.30 °C	Excluding cold junction compensation.	
	-200 °C to -100 °C -100 °C to +1300 °C	0.39 °C 0.38 °C	Including cold junction compensation.	
Type J	-210 °C to -100 °C -100 °C to +1200 °C	0.32 °C 0.32 °C	Excluding cold junction compensation.	
	-210 °C to -100 °C -100 °C to +1200 °C	0.37 °C 0.39 °C	Including cold junction compensation.	
Type N	-200 °C to -100 °C -100 °C to +1300 °C	0.49 °C 0.29 °C	Excluding cold junction compensation.	
	-200 °C to -100 °C -100 °C to +1300 °C	0.54 °C 0.37 °C	Including cold junction compensation.	
Type T	-250 °C to -150 °C -150 °C to +400 °C	0.71 °C 0.14 °C	Excluding cold junction compensation.	
	-250 °C to -150 °C -150 °C to +400 °C	0.75 °C 0.27 °C	Including cold junction compensation.	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
Noble metal thermocouples Type B Type R, Type S	600 °C to 800 °C	0.85 °C	Excluding cold junction compensation.	
	800 °C to 1820 °C	0.76 °C		
	600 °C to 800 °C	0.88 °C	Including cold junction compensation.	
	800 °C to 1820 °C	0.79 °C		
	0 °C to 250 °C	0.93 °C	Excluding cold junction compensation.	
	250 °C to 1760 °C	0.60 °C		
	0 °C to 250 °C	0.96 °C	Including cold junction compensation.	
	250 °C to 1760 °C	0.64 °C		
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: $Q[a, b] = [a^2 + b^2]^{1/2}$