


# Schedule of Accreditation

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## United Kingdom Accreditation Service

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

 <b>0221</b>  Accredited to <b>ISO/IEC 17025:2017</b>	<b>Druck Limited</b>  <b>Issue No: 078   Issue date: 13 May 2025</b>	
	<b>Fir Tree Lane</b> <b>Groby</b> <b>Leicester</b> <b>LE6 0FH</b>	<b>Contact: Mr S Berdej</b> <b>Tel: +44 (0)116-231 7100</b> <b>Fax: +44 (0)116-231 7101</b> <b>E-Mail: <a href="mailto:sensing.grobyukas@bakerhughes.com">sensing.grobyukas@bakerhughes.com</a></b> <b>Website: <a href="http://www.druck.com">www.druck.com</a></b>

**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
<b>Address</b> Fir Tree Lane Groby Leicester LE6 0FH  <b>Contact:</b> Mr S Berdej  Tel: +44 (0)116-231 7100 Fax: +44 (0)116-231 7101 Email: <a href="mailto:sensing.grobyukas@bakerhughes.com">sensing.grobyukas@bakerhughes.com</a>	<a href="#">Electrical</a> <a href="#">Pressure</a> <a href="#">Temperature</a> <a href="#">Mass</a> <a href="#">Humidity</a>	UK

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

Location details	Activity	Location code
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	<a href="#">Pressure</a>	Site



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CALIBRATION AND MEASUREMENT CAPABILITY (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>PRESSURE</b>			Methods consistent with EURAMET CG3 and CG17	
<u>Gas pressure (absolute)</u>				
Calibration of pressure measuring instruments and gauges and "Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and Effective area calibration of Dead Weight Testers	0 kPa to 450 kPa 450 kPa kPa to 3.1 MPa 3.1 MPa to 21.1 MPa 21.1 MPa to 40.1 MPa	0.0020 % + 0.40 Pa 0.0020 % + 0.40 Pa 0.0030 % + 0.40 Pa 0.0039 % + 11 Pa	Calibration of pressure measuring devices with an electrical output may be undertaken.	UK and Site
<u>Gas pressure (gauge)</u>				
Calibration of pressure measuring instruments and gauges and "Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and Effective area calibration of Dead Weight Testers	-100 kPa to -3.5 kPa -3.5 kPa to 0 kPa 0 Pa to 2.5 Pa 2.5 Pa to 350 Pa 350 Pa to 1 kPa 1 kPa to 2 kPa 2 kPa to 2.5 kPa 2.5 kPa to 350 kPa 350 kPa to 3 MPa 3 MPa to 21 MPa 21 MPa to 40 MPa	0.0043 % + 0.60 Pa 0.75 Pa 0.15 Pa 0.10 Pa 0.11 Pa 0.12 Pa 0.14 Pa 0.0020 % 0.0020 % 0.0030 % 0.0039 %		UK and Site
<u>Hydraulic pressure (gauge)</u>				
Calibration of pressure measuring instruments and gauges. "Pressure equivalent" calibration of Dead Weight Testers (Pressure balance with associated mass set). Effective area calibration of Dead Weight Testers.	0.5 MPa to 140 MPa  140 MPa to 500 MPa	0.0036 % + $(0.12p \times 10^{-6})/\text{MPa}$  0.010 % + $(0.30p \times 10^{-6})/\text{MPa}$  $p = \text{measured pressure}$	Absolute pressure calibrations can be undertaken using gauge pressure generation and the associated barometric pressure with the additional uncertainty of 11 Pa	UK and Site



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b>			Calibration by comparison with a reference standard	UK
DC Resistance measurement (At low current)	0 $\Omega$ to 2 $\Omega$ 2 $\Omega$ to 20 $\Omega$ 20 $\Omega$ to 200 $\Omega$ 200 $\Omega$ to 2 k $\Omega$  2 k $\Omega$ to 20 k $\Omega$ 20 k $\Omega$ to 200 k $\Omega$ 200 k $\Omega$ to 2 M $\Omega$ 2 M $\Omega$ to 20 M $\Omega$  20 M $\Omega$ to 200 M $\Omega$ 200 M $\Omega$ to 2 G $\Omega$	16 $\mu\Omega/\Omega + 35 \mu\Omega$ 7.0 $\mu\Omega/\Omega + 30 \mu\Omega$ 6.5 $\mu\Omega/\Omega + 250 \mu\Omega$ 10.0 $\mu\Omega/\Omega + 2.0 \text{ m}\Omega$  10.0 $\mu\Omega/\Omega + 25 \text{ m}\Omega$ 5.0 $\mu\Omega/\Omega + 135 \text{ m}\Omega$ 13 $\mu\Omega/\Omega + 2.0 \Omega$ 72 $\mu\Omega/\Omega + 120 \Omega$  720 $\mu\Omega/\Omega + 120 \text{ k}\Omega$ 720 $\mu\Omega/\Omega + 1.2 \text{ M}\Omega$		
DC Resistance measurement (At higher current)	0 $\Omega$ to 2 $\Omega$ 2 $\Omega$ to 20 $\Omega$ 20 $\Omega$ to 200 $\Omega$ 200 $\Omega$ to 2 k $\Omega$  2 k $\Omega$ to 20 k $\Omega$ 20 k $\Omega$ to 200 k $\Omega$ 200 k $\Omega$ to 2 M $\Omega$ 2 M $\Omega$ to 20 M $\Omega$  20 M $\Omega$ to 200 M $\Omega$ 200 M $\Omega$ to 2 G $\Omega$	16 $\mu\Omega/\Omega + 36 \mu\Omega$ 7.0 $\mu\Omega/\Omega + 30 \mu\Omega$ 7.0 $\mu\Omega/\Omega + 70 \mu\Omega$ 3.4 $\mu\Omega/\Omega + 0.70 \text{ m}\Omega$  3.5 $\mu\Omega/\Omega + 5.0 \text{ m}\Omega$ 4.3 $\mu\Omega/\Omega + 75 \text{ m}\Omega$ 9.5 $\mu\Omega/\Omega + 1.5 \Omega$ 71 $\mu\Omega/\Omega + 120 \Omega$  700 $\mu\Omega/\Omega + 12 \text{ k}\Omega$ 720 $\mu\Omega/\Omega + 1.2 \text{ M}\Omega$		
DC Resistance Generation Specific values	1 m $\Omega$ 10 m $\Omega$ 100 m $\Omega$ 1 $\Omega$ 1.9 $\Omega$  10 $\Omega$ 19 $\Omega$ 25 $\Omega$ 50 $\Omega$ 100 $\Omega$ 190 $\Omega$  250 $\Omega$ 300 $\Omega$ 1 k $\Omega$ 1.9 k $\Omega$ 10 k $\Omega$ 19 k $\Omega$	0.15% 0.10 % 250 $\mu\Omega/\Omega$ 42 $\mu\Omega/\Omega$ 36 $\mu\Omega/\Omega$  7.0 $\mu\Omega/\Omega$ 20 $\mu\Omega/\Omega$ 6.0 $\mu\Omega/\Omega$ 3.0 $\mu\Omega/\Omega$ 3.0 $\mu\Omega/\Omega$ 15 $\mu\Omega/\Omega$  6.0 $\mu\Omega/\Omega$ 5.0 $\mu\Omega/\Omega$ 3.0 $\mu\Omega/\Omega$ 5.5 $\mu\Omega/\Omega$ 3.0 $\mu\Omega/\Omega$ 5.0 $\mu\Omega/\Omega$		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
DC Resistance Generation Specific values (continued)				
	100 k $\Omega$	6.0 $\mu\Omega/\Omega$		
	190 k $\Omega$	8.5 $\mu\Omega/\Omega$		
	1 M $\Omega$	8.5 $\mu\Omega/\Omega$		
	1.9 M $\Omega$	18 $\mu\Omega/\Omega$		
	10 M $\Omega$	12 $\mu\Omega/\Omega$		
	19 M $\Omega$	35 $\mu\Omega/\Omega$		
	100 M $\Omega$	50 $\mu\Omega/\Omega$		
	1 G $\Omega$	250 $\mu\Omega/\Omega$		
	1 k $\Omega$	0.25 %	With applied voltages of 50 V and 100 V	
	100 k $\Omega$	0.25 %		
	1 M $\Omega$	0.25 %		
	10 M $\Omega$	0.25 %		
	100 M $\Omega$	0.25 %		
	1 G $\Omega$	0.50 %		
	10 G $\Omega$	1.5 %		
	1.0 M $\Omega$	0.30 %	With applied voltages of 250 V and 500 V	
	10 M $\Omega$	0.30 %		
	100 M $\Omega$	0.30 %		
	1 G $\Omega$	0.40 %		
	10 G $\Omega$	1.20 %		
	100 G $\Omega$	2.0 %	With an applied voltage of 500 V	
	1 T $\Omega$	2.0 %		
	100 M $\Omega$	0.50 %	With an applied voltage of 1000 V	
	1.0 G $\Omega$	0.50 %		
	10 G $\Omega$	0.50 %		
	100 G $\Omega$	2.0 %		
	1 T $\Omega$	2.0 %		
	1.0 G $\Omega$	1.1 %	With an applied voltage of 5000 V	
	10 G $\Omega$	1.0 %		
	100 G $\Omega$	2.0 %		
	1 T $\Omega$	2.0 %		
Other values	0.1 $\Omega$ to 10 $\Omega$	1.0 m $\Omega$		
	10 $\Omega$ to 100 $\Omega$	18 $\mu\Omega/\Omega$		
	100 $\Omega$ to 1 k $\Omega$	25 $\mu\Omega/\Omega$		
	1 k $\Omega$ to 10 k $\Omega$	10 $\mu\Omega/\Omega$		
	10 k $\Omega$ to 100 k $\Omega$	10 $\mu\Omega/\Omega$		
	100 k $\Omega$ to 1 M $\Omega$	35 $\mu\Omega/\Omega$		
	1 M $\Omega$ to 10 M $\Omega$	0.05 %		
	10 M $\Omega$ to 100 M $\Omega$	0.08 %		
	100 M $\Omega$ to 1 G $\Omega$	0.60 %		



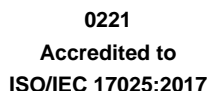
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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
DC Voltage				
Voltage Reference Values	1.018 V 10 V	2.0 $\mu\text{V/V}$ 1.0 $\mu\text{V/V}$		
Measurement	0 V to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	6.5 $\mu\text{V/V} + 1.3 \mu\text{V}$ 6.5 $\mu\text{V/V} + 1.4 \mu\text{V}$ 2.5 $\mu\text{V/V} + 5.5 \mu\text{V}$ 4.0 $\mu\text{V/V} + 59 \mu\text{V}$ 7.0 $\mu\text{V/V} + 650 \mu\text{V}$		
DC High Voltage Measurement	0 V to 5 kV 5 kV to 10 kV 10 kV to 15 kV 15 kV to 20 kV 20 kV to 25 kV 25 kV to 30 kV 30 kV to 35 kV 35 kV to 40 kV	1.4 % 0.75 % 0.50 % 0.95 % 0.96 % 0.95 % 0.75 % 0.75 %		
Generation	0 mV to 200 mV 0.2 V to 2 V 2 V to 11 V 11 V to 20 V 20 V to 200 V 200 V to 1100 V	10.0 $\mu\text{V/V} + 0.50 \mu\text{V}$ 3.0 $\mu\text{V/V} + 1.0 \mu\text{V}$ 1.5 $\mu\text{V/V} + 3.0 \mu\text{V}$ 1.5 $\mu\text{V/V} + 5.0 \mu\text{V}$ 2.5 $\mu\text{V/V} + 60 \mu\text{V}$ 2.5 $\mu\text{V/V} + 300 \mu\text{V}$		
DC Current				
Measurement	0 A to 20 $\mu\text{A}$ 20 $\mu\text{A}$ to 200 $\mu\text{A}$ 200 $\mu\text{A}$ to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A 10 A to 20 A 20 A to 30 A	70.0 $\mu\text{A/A} + 1.0 \text{ nA}$ 10.0 $\mu\text{A/A} + 1.0 \text{ nA}$ 10.5 $\mu\text{A/A} + 5.0 \text{ nA}$ 9.5 $\mu\text{A/A} + 50.0 \text{ nA}$ 23.0 $\mu\text{A/A} + 930 \text{ nA}$ 67.0 $\mu\text{A/A} + 19 \mu\text{A}$ 80.0 $\mu\text{A/A} + 463 \mu\text{A}$ 230.0 $\mu\text{A/A} + 6.0 \mu\text{A}$ 230.0 $\mu\text{A/A} + 6.0 \mu\text{A}$		
Generation	0 $\mu\text{A}$ to 200 $\mu\text{A}$ 200 $\mu\text{A}$ to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A 10 A to 20 A 20 A to 60 A	5.0 $\mu\text{A/A} + 0.7 \text{ nA}$ 7.0 $\mu\text{A/A} + 1.5 \text{ nA}$ 8.0 $\mu\text{A/A} + 20 \text{ nA}$ 8.0 $\mu\text{A/A} + 175 \text{ nA}$ 12 $\mu\text{A/A} + 2.0 \mu\text{A}$ 1.2 mA 10 mA 25 mA		



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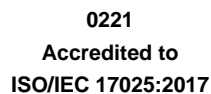
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Assessment Manager: GP



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<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
AC Voltage Measurement (continued)	20 V to 200 V 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 60 kHz 60 kHz to 100 kHz 100 kHz to 200 kHz At 200 kHz  200 V to 1 kV 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz At 30 kHz	6.0 mV 5.0 mV 5.0 mV 5.0 mV 8.0 mV 17 mV 25 mV 30 mV 90 mV 120 mV  60 mV 60 mV 65 mV 75 mV 130 mV 250 mV		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
High Voltage AC Measurement	<i>At 50 Hz:</i> 1 kV 5 kV 10 kV 15 kV 20 kV 25 kV 28 kV	6.5 % 3.0 % 3.0 % 3.0 % 3.5 % 3.5 % 5.0 %	Uncertainties for intermediate values more than 10 % away from the nominal value listed will be the highest of the adjacent points.	
AC Voltage Generation	<i>10 Hz to 40 Hz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V  <i>40 Hz to 500 Hz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V  <i>500 Hz to 1 kHz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V  <i>1 kHz to 10 kHz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V	7.0 $\mu$ V 11.0 $\mu$ V 26 $\mu$ V 100 $\mu$ V 2.4 mV 24 mV  7.0 $\mu$ V 10.0 $\mu$ V 14 $\mu$ V 50 $\mu$ V 700 $\mu$ V 7.0 mV  7.0 $\mu$ V 9.0 $\mu$ V 13 $\mu$ V 25 $\mu$ V 300 $\mu$ V 4.0 mV  7.0 $\mu$ V 10.0 $\mu$ V 11 $\mu$ V 21 $\mu$ V 230 $\mu$ V 3.5 mV		





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<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
AC Voltage Generation (continued)	10 kHz 2 mV 20 mV 100 mV 1 V 10 V 100 V  1000 V 55 Hz to 500 Hz 500 Hz to 1 kHz 1 kHz	7.0 $\mu$ V 9.0 $\mu$ V 13 $\mu$ V 21 $\mu$ V 230 $\mu$ V 3.5 mV  62 mV 75 mV 75 mV		
AC Current Measurement	30 nA to 10 $\mu$ A 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz At 10 kHz  10 $\mu$ A to 200 $\mu$ A 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz At 30 kHz  200 $\mu$ A to 2 mA 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz At 30 kHz  2 mA to 20 mA 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz At 30 kHz	8.0 nA 8.0 nA 8.0 nA 8.0 nA 8.0 nA 8.0 nA 8.0 nA  20.0 nA 20.0 nA 20.0 nA 20.0 nA 20.0 nA 40.0 nA 60.0 nA 90.0 nA  150 nA 120 nA 120 nA 120 nA 120 nA 250 nA 330 nA 390 nA  1.5 $\mu$ A 1.5 $\mu$ A 1.5 $\mu$ A 1.5 $\mu$ A 1.5 $\mu$ A 1.5 $\mu$ A 2.0 $\mu$ A 3.0 $\mu$ A		



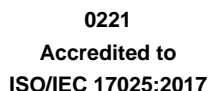
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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
AC Current Measurement (continued)	20 mA to 200 mA 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz At 30 kHz  200 mA to 2 A 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz At 30 kHz  2 A to 20 A 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz At 10 kHz  20 A to 30 A 10 Hz to 55 Hz 55 Hz to 305 Hz 305 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz At 10 kHz	15 $\mu$ A 12 $\mu$ A 12 $\mu$ A 12 $\mu$ A 12 $\mu$ A 22 $\mu$ A 30 $\mu$ A 30 $\mu$ A  220 $\mu$ A 175 $\mu$ A 175 $\mu$ A 300 $\mu$ A 450 $\mu$ A 850 $\mu$ A 630 $\mu$ A 230 $\mu$ A  20 mA 20 mA 20 mA 20 mA 20 mA 27 mA  20 mA 20 mA 20 mA 20 mA 20 mA 27 mA		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>ELECTRICAL</b> (continued)			Calibration by comparison with a reference standard	UK
AC Current Generation	<p><i>55 Hz to 400 Hz</i>  10 <math>\mu</math>A to 100 <math>\mu</math>A  100 <math>\mu</math>A to 1 mA  1 mA to 10 mA  10 mA to 100 mA  100 mA to 1 A</p> <p><i>60 Hz</i>  1 A to 2 A  2 A to 10 A  10 A to 20 A  20 A to 50 A</p> <p><i>400 Hz to 1 kHz</i>  10 <math>\mu</math>A to 100 <math>\mu</math>A  100 <math>\mu</math>A to 1 mA  1 mA to 10 mA  10 mA to 100 mA  200 mA to 1 A</p> <p><i>1 kHz to 5 kHz</i>  10 <math>\mu</math>A to 100 <math>\mu</math>A  100 <math>\mu</math>A to 1 mA  1 mA to 10 mA  10 mA to 100 mA  100 mA to 1 A</p> <p><i>5 kHz to 10 kHz</i>  10 <math>\mu</math>A to 100 <math>\mu</math>A  100 <math>\mu</math>A to 1 mA  1 mA to 10 mA  10 mA to 100 mA</p> <p><i>At 10 kHz</i>  10 <math>\mu</math>A to 100 <math>\mu</math>A  100 <math>\mu</math>A to 1 mA  1 mA to 10 mA  10 mA to 100 mA  100 mA to 1 A</p>	<p>20 nA  140 nA  580 nA  7.5 <math>\mu</math>A  85 <math>\mu</math>A</p> <p>0.15 %  0.30 %  0.5 %  0.5 %</p> <p>21 nA  135 nA  600 nA  7.5 <math>\mu</math>A  95 <math>\mu</math>A</p> <p>30 nA  200 nA  1.0 <math>\mu</math>A  12 <math>\mu</math>A  200 <math>\mu</math>A</p> <p>100 nA  1.0 <math>\mu</math>A  7.5 <math>\mu</math>A  22 <math>\mu</math>A</p> <p>120 nA  1.2 <math>\mu</math>A  7.5 <math>\mu</math>A  25 <math>\mu</math>A  320 <math>\mu</math>A</p>		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
Frequency	10 MHz 1 Hz to 2 GHz	7.0 in $10^{11}$ 0.20 $\mu\text{Hz/Hz}$	Measurement and generation of repetitive waveforms.	UK
Temperature indicators, calibration by electrical simulation				UK
Base metal thermocouples	Type E -210 °C to +0 °C 0 °C to +980 °C  Type J -190 °C to +0 °C 0 °C to +1170 °C  Type K -200 °C to -100 °C -100 °C to 900 °C  Type L -190 °C to +0 °C 0 °C to +880 °C  Type N -200 °C to +0 °C 0 °C to +1240 °C  Type T -200 °C to +0 °C 0 °C to +390 °C  Type U -170 °C to +0 °C 0 °C to +590 °C	0.030 °C 0.020 °C  0.030 °C 0.020 °C  0.050 °C 0.030 °C  0.030 °C 0.020 °C  0.070 °C 0.040 °C  0.050 °C 0.020 °C  0.075 °C 0.020 °C	Excluding cold junction compensation.	
Nobel metal thermocouples	Type B 250 °C to +900 °C 900 °C to 1790 °C  Type C 250 °C to +600 °C 600 °C to 2250 °C  Type D 200 °C to +600 °C 600 °C to +1790 °C  Type R -30 °C to +0 °C 0 °C to +1740 °C  Type S -30 °C to +0 °C 0 °C to 1740 °C	0.250 °C 0.015 °C  0.025 °C 0.015 °C  0.020 °C 0.025 °C  0.18 °C 0.08 °C  0.18 °C 0.08 °C	Excluding cold junction compensation.	



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Temperature simulators, calibration by electrical simulation (continued)			Excluding cold junction compensation.	UK
Cold junction compensation	At 0 °C	0.21 °C		
Resistance thermometers	PT1000 -190 °C to 0 °C 0 °C to 390 °C	0.010 °C 0.025 °C		
	PT500 -190 °C to 0 °C 0 °C to 830 °C	0.010 °C 0.030 °C		
	PT200 -190 °C to 0 °C 0 °C to 830 °C	0.010 °C 0.030 °C		
	PT100 -190 °C to 0 °C 0 °C to 830 °C	0.010 °C 0.030 °C		
	PT50 -190 °C to 0 °C 0 °C to 830 °C	0.020 °C 0.035 °C		
	Ni100 -50 °C to 230 °C	0.010 °C		
	Ni120 -70 °C to 250 °C	0.010 °C		
	Cu10 -190 °C to 0 °C 0 °C to 250 °C	0.025 °C 0.10 °C		
	D-100 -190 °C to 0 °C 0 °C to 490 °C	0.012 °C 0.020 °C		
Base metal thermocouples	Type E -200 °C to +0 °C 0 °C to +980 °C	0.055 °C 0.030 °C		
	Type J -190 °C to +0 °C 0 °C to +1170 °C	0.055 °C 0.035 °C		
	Type K -200 °C to -100 °C -100 °C to 900 °C 900 °C to 1300 °C	0.100 °C 0.050 °C 0.060 °C		
	Type L -190 °C to +0 °C 0 °C to +880 °C	0.050 °C 0.030 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
Temperature simulators, calibration by electrical simulation (continued)			Excluding cold junction compensation.	UK
Base metal thermocouples (continued)	Type N -200 °C to +0 °C 0 °C to +1240 °C	0.070 °C 0.060 °C		
	Type T -200 °C to +0 °C 0 °C to +390 °C	0.090 °C 0.040 °C		
	Type U -170 °C to +0 °C 0 °C to +590 °C	0.090 °C 0.040 °C		
Nobel metal thermocouples	Type B 250 °C to +900 °C 900 °C to 1790 °C	0.460 °C 0.180 °C		
	Type C 250 °C to +600 °C 600 °C to 2250 °C	0.100 °C 0.180 °C		
	Type D 200 °C to +600 °C 600 °C to +1790 °C	0.100 °C 0.120 °C		
	Type R -30 °C to +0 °C 0 °C to +1740 °C	0.350 °C 0.150 °C		
	Type S -30 °C to +0 °C 0 °C to 1740 °C	0.350 °C 0.150 °C		
Resistance thermometers	PT1000 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 850 °C	0.0012 °C 0.0035 °C 0.0068 °C		
	PT500 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 850 °C	0.0020 °C 0.0022 °C 0.0050 °C		
	PT200 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 850 °C	0.0020 °C 0.0022 °C 0.0050 °C		
	PT100 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 850 °C	0.0020 °C 0.0022 °C 0.0050 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
Temperature simulators, calibration by electrical simulation (continued)			Excluding cold junction compensation.	UK
Resistance thermometers (continued)	PT50 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 850 °C	0.0022 °C 0.0042 °C 0.0093 °C		
	Ni100 -60 °C to 0 °C 0 °C to 180 °C	0.0015 °C 0.0018 °C		
	Ni120 -80 °C to 0 °C 0 °C to 260 °C	0.0015 °C 0.0015 °C		
	Cu10 -200 °C to 0 °C 0 °C to 260 °C	0.0025 °C 0.0042 °C		
	D-100 -200 °C to 0 °C 0 °C to 300 °C 300 °C to 500 °C	0.0019 °C 0.0034 °C 0.0030 °C		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks	Location Code
<b>MASS</b>				UK
	Nominal value (grams)	(mg)		
	0.001 to 0.02	0.012	Intermediate values under 100g can be calibrated with an uncertainty equal to the uncertainty of the next higher nominal value.	
	0.05 to 0.2	0.015		
	0.5	0.018		
	1	0.020		
	2	0.024		
	5	0.030		
	10	0.040		
	20	0.050	Intermediate values over 100 g can be calibrated with an uncertainty of 1.0 mg/kg.	
	50	0.060		
	100	0.10		
	200	0.20		
	500	0.50		
	1 000	1.0	Substitution Method.	
	2 000	2.0		
	5 000	5.0		
	10 000	10		
	20 000	20		
	30 000	30		
<b>TEMPERATURE</b>				UK
Resistance thermometers and electronic thermometers with PRT, thermocouple or thermistor sensors	-75 °C to -40 °C	0.034 °C	Calibration performed in liquid baths.	
	-40 °C to -30 °C	0.028 °C		
	-30 °C to 0 °C	0.017 °C		
	0 °C (ice point)	0.018 °C		
	0.01 °C (Triple Point of Water)	0.002 0 °C		
	0 °C to 60 °C	0.012 °C		
	60 °C to 150 °C	0.020 °C		
	150 °C to 200 °C	0.026 °C		
	200 °C to 250 °C	0.033 °C		
<b>HUMIDITY</b>				UK
Relative humidity meters	11 %rh	2.2 %rh	Calibrations by comparison with dew-point hygrometer and Platinum Resistance Thermometers or against salt solutions.	
	33 %rh	2.2 %rh		
	54 %rh	2.2 %rh		
	75 %rh	2.2 %rh		
	90 %rh	2.2 %rh		
	For the temperature range 21 °C $\pm$ 3 °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:  $Q[a, b] = [a^2 + b^2]^{1/2}$