


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <b>4021</b>  Accredited to <b>ISO/IEC 17025:2017</b>	<b>ABLE Calibration Services Limited</b>	
	<b>Issue No:</b> 026 <b>Issue date:</b> 12 August 2024	
	<b>19 Iris Road Rogerstone Newport NP10 9LE</b>	<b>Contact: Mr R Bale Tel: +44 (0)1633 897225 Fax: +44 (0)1633 897225 E-Mail: <a href="mailto:info@able-calibration.co.uk">info@able-calibration.co.uk</a> Website: <a href="http://www.able-calibration.co.uk">www.able-calibration.co.uk</a></b>
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> 19 Iris Road Rogerstone South Wales NP10 9LE  <b>Local contact</b> Mr Richard Bale  Tel: +44 (0)1633 897225 Fax: +44 (0)1633 897225 Email: <a href="mailto:info@able-calibration.co.uk">info@able-calibration.co.uk</a> Website: <a href="http://www.able-calibration.co.uk">www.able-calibration.co.uk</a>	Electrical Temperature Pressure Humidity	P

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

Location details	Activity	Location code
<b>Customers' sites or premises</b>  The customers' 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.  Contact as above	Electrical Temperature Pressure Humidity	S



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
<b>ELECTRICAL</b>			Electrical calibrations are performed as a comparison against a reference standard	
DC VOLTAGE	0 mV to 100 mV 0.1 V to 1000 V	5.0 $\mu$ V 40 $\mu$ V/V	These values can be generated or measured	P & S
DC HIGH VOLTAGE Measurement only	1 kV to 3 kV 3 kV to 30 kV	1.7 % + 20 V 0.43 % + 20 V	For the calibration of high voltage sources	
DC CURRENT	1.0 $\mu$ 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 3 A 3 A to 10 A 10 A to 20 A	500 $\mu$ A/A + 10 nA 500 $\mu$ A/A  200 $\mu$ A/A 200 $\mu$ A/A 300 $\mu$ A/A 300 $\mu$ A/A 0.050 % 0.25 % + 6 mA	These values can be generated or measured	P & S
DC CURRENT Simulation	10 A to 1000 A	0.40 % + 6 mA	50 turn coil – for the calibration of clampmeters	
DC RESISTANCE	0 m $\Omega$ 1 m $\Omega$ 10 m $\Omega$ 100 m $\Omega$ 100 m $\Omega$ to 100 $\Omega$ 100 $\Omega$ to 1 M $\Omega$ 1 M $\Omega$ to 10 M $\Omega$ 10 M $\Omega$ to 100 M $\Omega$	0.03 m $\Omega$ 0.03 m $\Omega$ 0.02 m $\Omega$ 0.2 m $\Omega$ 50 $\mu$ $\Omega$ / $\Omega$ + 1 m $\Omega$ 50 $\mu$ $\Omega$ / $\Omega$ 130 $\mu$ $\Omega$ / $\Omega$ 0.40 %	These values can be generated or measured, except where stated	P & S
(Specific Value) Generation only	100 $\Omega$	24 $\mu$ $\Omega$ / $\Omega$		
AC RESISTANCE	1 kHz 1 $\Omega$ to 1 k $\Omega$	0.40 %		P & S
AC VOLTAGE	1 mV to 100 mV 40 Hz to 1 kHz  0.1 V to 1 V 40 Hz to 1 kHz 1 kHz to 50 kHz	500 $\mu$ V/V  400 $\mu$ V/V 600 $\mu$ V/V	These values can be generated or measured	P & S



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
<b>ELECTRICAL</b> (continued)				
AC VOLTAGE (continued)	1 V to 10 V 40 Hz to 1 kHz 1 kHz to 50 kHz	400 $\mu$ V/V 600 $\mu$ V/V		P & S
	10 V to 100 V 40 Hz to 1 kHz 1 kHz to 50 kHz	400 $\mu$ V/V 600 $\mu$ V/V		
	100 V to 750 V 40 Hz to 1 kHz	500 $\mu$ V/V		
AC HIGH VOLTAGE Measurement only	50 Hz 750 V to 10 kV	1.2 % + 20 V	For the calibration of high voltage sources	P & S
AC CURRENT	40 Hz to 1 kHz 1 $\mu$ 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 3 A	0.16 % 0.11 % 0.11 % 0.11 % 0.10 % 0.14 %	These values can be generated or measured	P & S
	40 Hz to 100 Hz 3 A to 10 A 10 A to 20 A	0.10 % 0.43 % + 10 mA		
Simulation	40 to 50 Hz 10 A to 1000 A	0.50 % + 10 mA	50 turn coil – for the calibration of clampmeters	P & S
FREQUENCY				P & S
Measurement	5 Hz to 25 MHz 25 MHz to 1.3 GHz	2.8 $\mu$ Hz/Hz + 16 $\mu$ Hz 2.8 $\mu$ Hz/Hz + 160 mHz	Generation up to 15 MHz May be expressed as events per unit time for devices such as Tachometers and 1/f for oscilloscope period calibration	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
TIME INTERVAL	1.0 s to 6 Hours	70 ms	For the calibration of stopwatches and timing devices	P & S
Revolutions Per Minute	3 RPM to 90 000 RPM	1.0 RPM	For the calibration of Optical Tachometers	
CAPACITANCE	1 kHz 100 pF to 10 nF 10 nF to 10 µF	0.60 % 0.40 %		
<b>SIMULATION</b>  Thermocouple simulators and indicators, calibration by electrical simulation  Noble metal thermocouples Type R & S  Base metal thermocouples Type K, J, T & N  Cold junction compensation  Resistance thermometers (PT100)	  -50 °C to +1768 °C  -50 °C to +200 °C 200 °C to 1768 °C  -200 °C to +1372 °C  -200 °C to 0 °C 0 °C 1372 °C  At ambient temperature  -200 °C to +800 °C	  1.0 °C  1.0 °C 0.50 °C  0.70 °C  0.30 °C 0.15 °C  0.32 °C  0.10 °C	  With cold junction compensation Without cold junction compensation  With cold junction compensation Without cold junction compensation	P & S
<b>PRESSURE</b>  Gas pressure (gauge)  Calibration of pressure indicating instruments and gauges  Gas pressure (absolute)  Calibration of pressure indicating instruments and gauges	  -90 kPa to 200 kPa 200 kPa to 700 kPa 700 kPa to 3.5 MPa  10 kPa to 200 kPa	  0.24 kPa 0.60 kPa 2.3 kPa  0.33 kPa	  Methods consistent with EURAMET CG3.  Instruments with an electrical output can be calibrated. Absolute pressures can be generated across these gauge ranges which will attract an additional uncertainty of 0.33 kPa.  Instruments with an electrical output can be calibrated.	P & S  P & S



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<b>PRESSURE</b> (continued)  Hydraulic pressure (gauge)  Calibration of pressure indicating instruments and gauges	0 MPa to 40 MPa	46 kPa	Instruments with an electrical output can be calibrated. Absolute pressures can be generated across this gauge range which will attract an additional uncertainty of 0.33 kPa.	P & S
<b>TEMPERATURE</b>  Temperature indicators and recorders, with temperature sensor(s)	-90 °C to -70 °C -70 °C to -50 °C -50 °C to +140 °C 140 °C to 200 °C 200 °C to 400 °C 400 °C to 600 °C	0.31 °C 0.15 °C 0.080 °C 0.15 °C 0.80 °C 0.90 °C	Instruments with an electrical output can be calibrated. Calibrations performed within Dry media	P & S
Resistance thermometers	-90 °C to -50 °C -50 °C to +140 °C 140 °C to 200 °C 200 °C to 400 °C 400 °C to 600 °C	0.32 °C 0.13 °C 0.15 °C 0.80 °C 0.90 °C	Calibrations performed within dry media	
Calibration in ambient air	10 °C to 30 °C	0.40 °C		
Temperature controlled chambers, fridges, freezers, ovens, furnaces and liquid baths (inclusive of associated indicators, controllers and recorders, all with sensors, within the specified parameters and ranges)	-90 °C to -70 °C -70 °C to -50 °C -50 °C to +200 °C 200 °C to 400 °C 400 °C to 600 °C  -80 °C to -50 °C -50 °C to +200 °C 200 °C to 400 °C 400 °C to 600 °C	0.30 °C 0.15 °C 0.050 °C 0.80 °C 1.5 °C  1.3 °C 1.2 °C 1.4 °C 1.8 °C	Single or dual monitoring probes. Time dependent temperature profiling, also referred to as spatial temperature surveying or mapping  Multipoint monitoring probes. Time dependent temperature profiling, also referred to as spatial temperature surveying or mapping	S
Temperature block calibrators	-90 °C to -70 °C -70 °C to -50 °C -50 °C to +200 °C 200 °C to 400 °C 400 °C to 600 °C	0.30 °C 0.15 °C 0.040 °C 0.50 °C 0.60 °C	Method consistent with Euramet CG13	P & S



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
<b>HUMIDITY</b>				P & S
Relative humidity instruments in ambient air	10 %rh to 50 %rh 50 %rh to 95 %rh at 18 °C to 25 °C	1.0 %rh 1.9 %rh	Single point calibration in prevailing conditions using reference instrument.	
Relative humidity instruments at ambient temperature	11 %rh 35 %rh 50 %rh 80 %rh at 15 °C to 30 °C	0.36 %rh 0.44 %rh 0.63 %rh 0.73 %rh	Calibration using reference salts.	
Temperature probes built into humidity instruments	15 °C to 30 °C	0.40 °C	Comparison with reference device.	
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:  $Q[a, b] = [a^2 + b^2]^{1/2}$