# **Schedule of Accreditation**

issued by

**United Kingdom Accreditation Service** 

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



# Locations covered by the organisation and their relevant activities

### Laboratory locations:

Location details		Activity	Location code
Address Labcal Limited Unit 265 Ricardo Way Ampress Park Lymington Hampshire SO41 8JU	Local contact Mr C Clifford-Smith	Air velocity calibration <u>Electrical calibration</u> <u>Flow calibration</u> <u>Humidity calibration</u> <u>Pressure calibration</u> <u>Temperature calibration</u>	A
Address Saltmarsh Park 67 Gosport Street Lymington SO41 9EG	Local contact Mr C Clifford-Smith	Air velocity calibration	В

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	Labcal Limited Issue No: 050 Issue date: 12 September 2024
Accredited to ISO/IEC 17025:2017	
Cali	bration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
FLOW Gas - Flow-rate and Quantity passed Water Mass, Volume, Flow rate and Quantity	0.024 ml/min to 0.5 ml/min 5 ml /min to 600 ml/min 5 ml /min to 10 l/min 0.5 l/min to 250 l/min 1 l/min to 2000 l/min 500 l/min to 12983 l/min 0.5 ml/min to 500 ml/min	Q [1.4 %, 0.0016 ml/min] 0.18 % 0.15 % 0.18 % 0.17 % 0.30 %	Prover and reference meter methods: Calibrations of pressure and flow devices with an electrical output may be undertaken. Calibration medium Air Other gases may be used up to 300 l/min Gravimetric method:	A
passed	2 l/min to 500 l/min	0.14 %		
AIR VELOCITY Calibration of Anemometers: Pitot Tubes	2 m/s to 5 m/s 5 m/s to 38 m/s	Q [0.18 %, 0.030 m/s] Q [0.18 %, 0.030 m/s]	Laser doppler and reference meter methods: Anemometer up to 125 mm diameter can be	A
Thermal anemometers Vane anemometers	0.1 m/s to 5 m/s 5 m/s to 38 m/s 0.3 m/s to 5 m/s 5 m/s to 38 m/s	Q [0.18 %, 0.030 m/s] Q [0.18 %, 0.030 m/s] Q [0.23 %, 0.030 m/s] Q [0.22 %, 0.040 m/s]	calibrated. Uncertainty is dependent on instrument under test Calibration using laser Doppler anemometer or by comparison	
Calibration of anemometers and Pitot tubes (including ultrasonic anemometers)	5 m/s to 32 m/s 32 m/s to 50 m/s 50 m/s to 80 m/s	Q [1.2 %, 0.20 m/s] Q [1.2 %, 0.40 m/s] Q [1.3 %, 0.40 m/s]	Large anemometers can be calibrated	в

# Calibration and Measurement Capability (CMC)

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PRESSURE			Methods consistent with	
Hydraulic pressure (gauge)			EURAMET CG17:	А
Calibration of pressure indicating instruments and gauges	500 kPa to 60 MPa 60 MPa to 140 MPa	0.010 % 0.014 %		
Hydraulic pressure (absolute)				
Calibration of pressure indicating instruments and gauges	600 kPa to 60 MPa 60 MPa to 140 MPa	Q [0.010 %, 10 Pa] 0.014 %		A
Gas pressure (gauge)				
Calibration of pressure indicating instruments and gauges	-100 kPa to 0 Pa 0 Pa to 3 kPa 3 kPa to 9 kPa 9 kPa to 40 kPa 40 kPa to 500 kPa 500 kPa to 8.2 MPa	Q [0.010 %, 30 Pa] Q [0.016 %, 0.070 Pa] Q [0.016 %, 0.31 Pa] Q [0.010 %, 3.4 Pa] Q [0.010 %, 41 Pa] Q [0.010 %, 710 Pa]		A
Gas pressure (absolute)				
Calibration of pressure indicating instruments and gauges	80 kPa to 115 kPa	0.010 %	Absolute pressure calibrations can be undertaken using associated barometric pressure measurement correction. The uncertainties quoted will be increased by 10 Pa	A
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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL			Reference meter methods:	
DC Voltage	0 V to 120 mV 120 mV to 1.2 V 1.2 V to 12 V 12. V to 120 V	Q [0.0070 %, 7.0 μV] Q [0.0060 %, 20 μV] Q [0.0050 %, 80 μV] Q [0.0060 %, 33 mV]		A
DC Current	0 A to 12 mA 12 mA to 120 mA	Q [0.080 %, 4.0 μA] Q [0.080 %, 14 μA]		
DC Resistance	10 Ω to 1.2 kΩ 1.2 kΩ to 12 kΩ	Q [0.015 %, 30 mΩ] Q [0.015 %, 160 mΩ]		
FREQUENCY	1 Hz to 50 kHz	Q [0.0020 %, 10 µHz]		
TIME INTERVAL				
Elapsed time, single event Stop watches and timers	5 s to 24 Hours	20 ms		
ELECTRICAL CALIBRATION OF TEMPERATURE INDICATORS AND SIMULATORS			Reference meter methods:	
Base Metal thermocouples			Including reference	А
Type T Type N Type K Type J Type E	- 200 °C to +400 °C - 200 °C to +1300 °C - 200 °C to +1372 °C - 200 °C to +1200 °C - 200 °C to +1200 °C	0.50 °C 0.50 °C 0.50 °C 0.50 °C 0.50 °C	junction compensation	
Noble Metal thermocouples			Including reference	
Type S Type R	0 °C to 1760 °C 0 °C to 1760 °C	0.90 °C 0.90 °C	junction compensation	
PRT simulation (Pt 50 to 1000)	- 200 °C to 200 °C 200 °C to 600 °C 600 °C to 850 °C	0.16 °C 0.26 °C 0.36 °C		

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
TEMPERATURE			Reference meter methods	
Resistance thermometers	-30 °C to +140 °C	0.10 °C	In block of fluid baths.	А
Base Metal Thermocouples	-30 °C to +140 °C	0.25 °C		
Temperature indicators with probes				
Resistance thermometers	-30 °C to +70 °C	0.10 °C		
	70 °C to +140 °C	0.15 °C		
Base Metal Thermocouples	-30 °C to +140 °C	0.25 °C		
Temperature probes in air	10 °C to 50 °C -5 °C to 10 °C	0.15 °C 0.22 °C	Reference meter method in environmental chamber:	
HUMIDITY			Reference meter methods: in environmental chamber	
Relative humidity measuring instruments	15 %rh to 90 %rh <i>10</i> °C <i>to 15</i> °C 10 %rh to 90 %rh <i>15</i> °C <i>to 40</i> °C	1.5 %rh	Dependant on probe length	A
Temperature probes built into humidity meters	10 °C to 40 °C -5 °C to 10 °C	0.15 °C 0.22 °C	Dependant on probe length	
Dew Point	-15 °C to 0 °C 0 °C to 20 °C 20 °C to 40 °C	0.35 °C 0.18 °C 0.21 °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 × 0.01 × 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<sup>2</sup> + b<sup>2</sup>]<sup>1/2</sup>