Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0625

Accredited to ISO/IEC 17025:2017

Labcal Limited

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Calibration performed by the Organisation at the locations specified

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 Electrical calibration Flow calibration Humidity calibration Pressure calibration Temperature calibration	A
Address Saltmarsh Park 67 Gosport Street Lymington SO41 9EG	**Local contact** Mr C Clifford-Smith	Air velocity calibration	B

Calibration and Measurement Capability (CMC)

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

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
PRESSURE			Methods consistent with EURAMET CG17:	
<u>Hydraulic pressure (gauge)</u>				A
Calibration of pressure indicating instruments and gauges	500 kPa to 60 MPa 60 MPa to 140 MPa	0.010 % 0.014 %		
<u>Hydraulic pressure (absolute)</u>				A
Calibration of pressure indicating instruments and gauges	600 kPa to 60 MPa 60 MPa to 140 MPa	Q [0.010 %, 10 Pa] 0.014 %		
<u>Gas pressure (gauge)</u>				A
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 %, 30 Pa] Q [0.010 %, 320 Pa]		
"Pressure equivalent" Calibration of dead weight testers (Pressure balance supplied with associated mass set)	0 kPa to 40 kPa 40 kPa to 500 kPa 500 kPa to 8.2 MPa	Q [0.011 %, 3.4 Pa] Q [0.011 %, 30 Pa] Q [0.011 %, 320 Pa]		A
<u>Gas pressure (absolute)</u>				A
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	

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	Q [0.0070 %, 7.0 μV]		A
	120 mV to 1.2 V	Q [0.0060 %, 20 μV]		
	1.2 V to 12 V	Q [0.0050 %, 80 μV]		
	12. V to 120 V	Q [0.0060 %, 33 mV]		
DC Current	0 A to 12 mA	Q [0.080 %, 4.0 μA]		
	12 mA to 120 mA	Q [0.080 %, 14 μA]		
DC Resistance	10 Ω to 1.2 kΩ	Q [0.015 %, 30 mΩ]		
	1.2 kΩ to 12 kΩ	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:	
<u>Base Metal thermocouples</u>			Including reference junction compensation	A
Type T	- 200 °C to +400 °C	0.50 °C		
Type N	- 200 °C to +1300 °C	0.50 °C		
Type K	- 200 °C to +1372 °C	0.50 °C		
Type J	- 200 °C to +1200 °C	0.50 °C		
Type E	- 200 °C to +1000 °C	0.50 °C		
<u>Noble Metal thermocouples</u>			Including reference junction compensation	
Type S	0 °C to 1760 °C	0.90 °C		
Type R	0 °C to 1760 °C	0.90 °C		
<u>PRT simulation</u> (Pt 50 to 1000)	- 200 °C to 200 °C	0.16 °C		
	200 °C to 600 °C	0.26 °C		
	600 °C to 850 °C	0.36 °C		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
TEMPERATURE			Reference meter methods in block or fluid baths:	
Resistance thermometers	-30 °C to +140 °C	0.10 °C		A
Base Metal Thermocouples	-30 °C to +140 °C	0.25 °C		
Temperature indicators with probes				
Resistance thermometers	-30 °C to +70 °C 70 °C to +140 °C	0.10 °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 *10* °C *to 15* °C 10 %rh to 90 %rh *15* °C *to 40* °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

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: $Q[a, b] = [a^2 + b^2]^{1/2}$