Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0767

Accredited to ISO/IEC 17025:2017

HORIBA UK Ltd

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Kyoto Close **Moulton Park Industrial Park** **Northampton** **NN3 6FL**	**Contact: Mr T Lowe** **Tel: +44 (0) 1604 542500** **E-Mail: tony.lowe@horiba.com**

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
Address Kyoto Close Moulton Park Industrial Park Northampton NN3 6FL **Local contact** Mr T Lowe	Pressure Temperature Flow Electrical	Permanent

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	Pressure Temperature Electrical Force	Site

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
PRESSURE			Methods consistent with EURAMET CG3	Perm and site
<u>Gas Pressure Gauge</u>				
Calibration of pressure indicating instruments and gauges	-95 kPa to 0 kPa 0 kPa 500 kPa 500 kPa to 1 MPa 1 MPa to 2 MPa	Q [0.038 %, 89 Pa] Q [0.038 %, 97 Pa] Q [0.038 %, 151 Pa] Q [0.038 %, 210 Pa]		
<u>Gas Pressure Differential</u>				
Calibration of pressure indicating instruments and gauges	± 3 kPa ± (3 to 12) kPa ± 2 kPa ± (2 to 20) kPa	Q [0.30 %, 0.84 Pa] Q [0.30 %, 0.89 Pa] Q [0.48 %, 0.86 Pa] Q [0.44 %, 6.8 Pa]		
<u>Gas Pressure Absolute</u>				
Calibration of pressure indicating instruments and gauges	30 kPa to 200 kPa	82 Pa		
TEMPERATURE				Perm and site
Temperature indicating instruments with resistance thermometer sensors	0 ºC to 100 ºC	0.11 ºC	Direct comparison with a reference probe	
FLOW				Perm only
<u>Gas Flow – volume</u>				
Calibration of Critical Flow Orifices	400 ml/min to 1.2 l/min	0.76 %	Calibration gas – propane (prover method)	
Calibration of gas dividers	5 ml/min to 50 ml/min 50 ml/min to 5 l/min	0.40 % 0.42 %	Calibration gas – nitrogen (mass flowmeter method)	
	5 l/min to 30 l/min 30 l/min to 60 l/min	0.56 % 1.03 %	Calibration gas – nitrogen (mass flowmeter method)	
Calibration of pitot tubes	100 l/min to 200 l/min 200 l/min to 1000 l/min 1000 l/min to 2000 l/min 2000 l/min to 10000 l/min 10000 l/min to 30000 l/min	2.8 % 2.8 % 2.8 % 2.8 % 2.8 %	Calibration gas – air (subsonic nozzle method)	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL			Calibration of measuring devices by direct comparison with a reference meter.	Perm and site
DC Voltage	0 V to 100 mV 100 mV to 200 mV 200 mV to 2 V 2 V to 20 V	15 µV Q [0.012 %, 28 µV] Q [0.011 %, 130 µV] Q [0.020 %, 1.6 mV]		
DC Current	0 A to 20 mA 20 mA to 55 mA	Q [0.014 %, 51 µA] Q [0.020 %, 51 µA]		
Resistance	0 Ω to 400 Ω 400 Ω to 4000 Ω	Q [0.010 %, 34 mΩ] Q [0.010 %, 150 mΩ]		
Frequency	40 mHz to 1 kHz 1 kHz to 50 kHz	40 mHz 290 mHz		
<u>Temperature simulation:</u> Temperature indicators, calibration by electrical simulation				
Base metal thermocouple	- 200 °C to 1370 °C	1.1 °C	Including cold junction compensation	
PRT Simulation (PT 100)	- 200 °C to 800 °C	0.16 °C		
FORCE				Site
Dynamometer load cells in tension and compression.	500 N to 7500 N	7.0 N	Calibration using masses and lever amplification	
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: $Q[a, b] = [a^2 + b^2]^{1/2}$