

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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



4338

Accredited to
ISO/IEC 17025:2017

Vacuum Furnace Engineering Ltd trading as Busch VFE Calibration Services

Issue No: 018 Issue date: 08 November 2023

Unit 22 Wessex Trade Centre
Ringwood Road
Poole
Dorset
BH12 3PQ

Contact: Mr I Jenner
Tel: +44 (0)1202 630033
Fax: +44 (0)1202 630022
E-Mail: Calibration@vfe.co.uk
Website: www.vfe.co.uk

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 Unit 22 Wessex Trade Centre Ringwood Road Poole Dorset BH12 3PQ Local contact Mr I Jenner Tel: +44 (0)1202 630033 Fax: +44 (0)1202 630022 Email: Calibration@vfe.co.uk Website: www.vfe.co.uk	Temperature Time Pressure Electrical	Lab

Site activities performed away from the locations listed above:

Location details	Activity	Location code
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 Local contact Mr I Jenner Tel: +44 (0)1202 630033 Fax: +44 (0)1202 630022 Email: Calibration@vfe.co.uk Website: www.vfe.co.uk	Temperature, Time Pressure Electrical	Site



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
TEMPERATURE				
Temperature controlled fridges, freezers, autoclaves, ovens, environmental chambers and water baths	-80 °C to -40 °C -40 °C to 0 °C 0 °C to 50 °C 50 °C to 250 °C 250 °C to 500 °C 500 °C to 1200 °C	0.85 °C 0.65 °C 0.50 °C 0.70 °C 1.6 °C 3.3 °C	Single or multiple point measurements	Site
Electronic thermometers with sensors	-80 °C to -40 °C -40 °C to 0 °C 0 °C to 50 °C 50 °C to 250 °C 250 °C to 500 °C 500 °C to 1200 °C	0.85 °C 0.65 °C 0.50 °C 0.70 °C 1.6 °C 3.3 °C	Calibration using customer chamber, oven etc. Calibrations of devices with an electrical output may be undertaken.	Lab & Site
Electronic thermometers with sensors	-40 °C to +20 °C 20 °C to 50 °C 50 °C to 250 °C	0.20 °C 0.40 °C 0.20 °C	Calibration in air and liquid.	Lab
PRESSURE				
Gas Pressure (Gauge)			Methods consistent with EURAMET CG17.	
Calibration of pressure indicating instruments and gauges	- 95 kPa to 100 kPa 100 kPa to 2 MPa	0.24 kPa 0.05% + 0.25 kPa	Including instruments integrated into pressure controlled enclosures	Lab & Site
Gas Pressure (Absolute)				
Calibration of pressure indicating instruments and gauges	3.5 kPa to 130 kPa	0.025 kPa	Calibrations can be carried out in altitude units such as feet above sea level	Lab & Site
ELECTRICAL				
Generation and measurement				
DC Voltage	0 mV to 100 mV 100 mV to 10 V	4.3 µV 1.0 mV		Lab
DC Resistance	0 Ω to 100 Ω 100 Ω to 1000 Ω	11 mΩ 31 mΩ		Lab
DC Current	0 mA to 20 mA	5.0 µA		



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL (cont'd)				
Electrical calibration of temperature indicators and simulators				
Resistance thermometers (Pt100)	-200 °C to 0 °C 0 °C to 850 °C	0.030 °C 0.080 °C		Lab
...Base metal thermocouples	-200 °C to 100 °C 100 °C to 1370 °C	0.20 °C to 0.080 °C 0.080 °C to 0.15 °C	Excluding cold junction compensation	Lab
...Noble metal thermocouples	0 °C to 500 °C 500 °C to 1768 °C	0.80 °C to 0.40 °C 0.40 °C	Excluding cold junction compensation	Lab
Cold junction compensation	Ambient temperature	0.11 °C		
DC Voltage	0 mV to 100 mV 100 mV to 10 V	0.025 mV 3.5 mV		Site
DC Resistance	0 Ω to 100 Ω 100 Ω to 1000 Ω	0.020 Ω 0.040 Ω		Site
DC Current	0 mA to 20 mA	0.010 mA		
Electrical calibration of temperature indicators, controllers and recorders for the following sensors:			Calibrations of devices with an electrical output may be undertaken.	
Noble metal thermocouples	0 °C to 1700 °C	0.75 °C	Including cold junction compensation	Site
Base metal thermocouples	- 190 °C to + 1370 °C	0.50 °C		
Resistance sensors				
4 wire	- 200 °C to + 850 °C	0.25 °C		
2 and 3 wire	- 200 °C to + 850 °C	0.50 °C		
TIME INTERVAL				
Timers	10 s to 2 hrs	0.50 s		Lab & Site
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: $Q[a, b] = [a^2 + b^2]^{1/2}$