


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 0143 Accredited to ISO/IEC 17025:2005	Calmet Laboratory Services	
	Issue No:024 Issue date: 24 March 2010	
	Hampton House 1 Vicarage Road Hampton Wick Kingston-upon-Thames Surrey KT1 4EB	Contact: Mr R Griffiths Tel: +44 (0)20 8977 8455 Fax: +44 (0)20 8614 8048 E-Mail: sales@calmet.co.uk Website: www.calmet.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 Hampton House 1 Vicarage Road Hampton Wick Kingston-upon-Thames Surrey KT1 4EB	Contact: Mr R Griffiths Tel: +44 (0)20 8977 8455 Fax: +44 (0)20 8614 8048 E-Mail: sales@calmet.co.uk	Dimensional, Electrical, Pressure and Torque. A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customers premises Mr R Griffiths	Dimensional and Electrical	B



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DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks	Location Code
LENGTH			NOTES	
Plain plug gauges (parallel) cylindrical setting standards and rollers	From 1 up to 50 diameter Above 50 up to 100 100 up to 200 200 up to 300	1 2 3 4	<p>1 All calibrations must be carried out in accordance with procedures agreed by UKAS.</p> <p>2 In addition to the above, other similar items, including parts of measuring and machines, may be calibrated (See Note 1) to the uncertainties stated. Where the item or part calibrated is lower quality due to wear, errors in geometry or form, poor surface texture or any other factor that adversely affects the measurement capability, greater uncertainties must be quoted.</p> <p>3 The uncertainty quoted is for the departure from flatness, straightness, parallelism or squareness, ie the distance separating the parallel planes which just enclose the surface under consideration.</p> <p>4 The uncertainty quoted is for the application of the calibrating torque and does not take into account the characteristics of the device being calibrated.</p> <p>5 Calibration results may also be given in units of lbf.in and lbf.ft.</p> <p>6 Single and multi-start, symmetrical thread forms only.</p>	A
Plain ring gauges (parallel)	From 1 up to 10 diameter Above 10 up to 50 50 up to 100 100 up to 200 200 up to 300	2 1.5 2 3.5 5		A
Screw plug gauges (parallel) including check and setting plugs See Note 6	Up to 100 100 up to 200 200 up to 300	3 4 5		A
Screw ring gauges (parallel) See Note 6	From 1 up to 6 Above 12 up to 50 Above 50 up to 150 Above 150 up to 300	By check plugs 5 6 8 pitch: 1.5 flank angle: $2+(800/(M \times P))$ minutes of arc where M is projector magnification and P is pitch in mm		A
Length gauges, flat and spherical ended	Up to 600	$1 + (8 \times \text{length in m})$		A
Plain gap gauges (parallel)	From 0.5 up to 100 Above 100 up to 200	3 5		A
Parallels	As BS 906:Part 1:1972 up to 50 x 100 x 400	Dependent on size and grade From 1.5 up to 5		A
Vee blocks	As BS 3731:1987 up to 150	Dependent on size and grade From 2.5 up to 7		A



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ANGLE				
Square Blade type	As BS 939:2007 up to 600	3 on squareness (See Note 3)		A
Angle plates and box angle plates	As BS 5535:1978	Squareness 3 + (1 per 100 mm) Parallelism 1 + (1 per 100 mm)		A
FORM				
Straight edges Cast iron Steel Granite	As BS 5204:Part 1:1975 up to As BS 5204:Part 2:1977 2000	1+(2 x length in m) See note 3		A
Surface plates Granite Cast iron	As BS 817:2008	1.5 + (0.8 x diagonal in m) See Note 2		A & B
MEASURING INSTRUMENTS AND MACHINES				
Micrometers External Internal Depth	As BS 870:2008 As BS 959:2008 As BS 6468:2008 and up to 300	Heads 2.0 between any two points Setting and extension rods 1 + (8 x length in m)		A
Micrometer heads	As BS 1734:1951	1.0		A
Vernier gauges Caliper Height Depth Dial gauge type	As BS 887:2008 As BS 1643:2008 As BS 6365:2008 Up to 1000	Overall performance 10 + (30 x length in m)		A
Dial gauges and dial test indicators	As BS 907:2008 and BS 2795:1981	1.0		A
Electronic height gauges	Up to 1000	1 + (5 x length in m)		A
Profile projectors	Up to 100 magnification	125 at the screen 5 linear 3 min. of arc angle		A & B
Feeler gauges	As BS 957:2008	3		A



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TORQUE Hand torque tools	As BS EN ISO 6789:2003 From 1 to 1350 N.m	1.0% See Notes 1, 4 and 5		A
ELECTRICAL DC Resistance Sourcing	100 $\mu\Omega$ 1 m Ω 10 m Ω 100 m Ω 1 Ω 10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω	70 ppm 35 ppm 15 ppm 12 ppm 6 ppm 5 ppm 4 ppm 4 ppm 3 ppm 3 ppm 6 ppm 10 ppm		A
Measurement	Up to 100 Ω 100 Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω	10 ppm + 0.2 m Ω 10 ppm 15 ppm 20 ppm		A
Generation	Up to 10 Ω 10 Ω to 100 Ω 100 Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω	25 ppm + 1 m Ω 15 ppm 10 ppm 45 ppm 60 ppm		B
DC Voltage Standard Cell Values	Up to 10 Ω 10 Ω to 10 k Ω 10 k Ω to 1 M Ω 1 M Ω to 10 M Ω	100 ppm + 1 m Ω 25 ppm 120 ppm 250 ppm		B
Other Values	1 μV to 1.1 V 1.1 V to 11 V 11 V to 100 V 100 V to 1 kV 1 kV to 12 kV	0.8 μV 0.8 ppm + 0.2 μV 2.4 ppm + 0.2 μV 2.5 ppm 2.5 ppm 0.5%	The stated uncertainty can be realised with cells only if they have their own temperature controlled enclosure of appropriate thermal stability	A



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DC Voltage (cont'd)				
Measurement	Up to 100 mV 100 mV to 100 V 100 V to 1000 V	25 ppm + 2 μ V 20 ppm 20 ppm		B
Generation	Up to 1 V 1 V to 1000 V	25 ppm 35 ppm		B
DC Voltage Ratio	Up to unity	0.1 ppm of input + 0.4 μ V	For input voltages in the range 1 to 100 V	A
DC Current				A
Measurement and sourcing	1 μ A to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A 3 A to 10 A 20 A 50 A and 100 A	15 ppm 20 ppm 25 ppm 25 ppm 45 ppm 80 ppm 0.02%		
Generation	Up to 100 mA 100 mA to 10 A	0.01% 0.035%		B
AC Voltage	10 mV to 250 mV 40 Hz to 20 kHz	0.014%		A
	250 mV to 16 V 20 Hz to 50 kHz 50 kHz 100 kHz	40 ppm 30 ppm 35 ppm		
	16 V to 125 V 20 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz 100 kHz	30 ppm 25 ppm 25 ppm 25 ppm		
	125 V to 1000 V 20 Hz to 10 kHz 50 kHz	60 ppm 50 ppm		
	250 V 50 kHz	40 ppm		
	1 kV to 10 kV 50 Hz to 60 Hz	1%		
Generation	40 Hz to 100 kHz 10 mV to 10 V 10 V to 1000 V	0.02% 0.03%		B



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Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks	Location Code
AC Current				A
Specific Values	<i>40 Hz to 1 kHz</i> 1 μ A and 10 μ A 100 μ A 1 mA 10 mA 100 mA 200 mA, 500 mA and 1 A 2 A 5 A 10 A 20 A <i>1 kHz to 5 kHz</i> 1 μ A and 10 μ A 100 μ A <i>5 kHz to 10 kHz</i> 100 μ A <i>1 kHz to 10 kHz</i> 1 mA 10 mA 100 mA 200 mA, 500 mA and 1 A 2 A 5 A 10 A 20 A	40 ppm 20 ppm 10 ppm 15 ppm 10 ppm 55 ppm 60 ppm 65 ppm 75 ppm 100 ppm 130 ppm 25 ppm 30 ppm 20 ppm 15 ppm 10 ppm 65 ppm 80 ppm 80 ppm 70 ppm 120 ppm		
Other Values	<i>40 Hz to 1 kHz</i> 1 μ A to 10 μ A 10 μ A to 100 mA 100 mA to 10 A 10 A to 20 A <i>1 kHz to 5 kHz</i> 1 μ A to 10 μ A <i>1 kHz to 10 kHz</i> 10 μ A to 100 mA 100 mA to 10 A 10 A to 20 A <i>45 Hz to 60 Hz</i> 50 A to 100 A	40 ppm 20 ppm 75 ppm 100 ppm 130 ppm 30 ppm 80 ppm 120 ppm 150 ppm		
Generation	<i>40 Hz to 10 kHz</i> Up to 10 A	0.03%		B



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AC Resistance	40 Hz to 1 kHz			A
	0.05 Ω	120 ppm		
	0.1 Ω	90 ppm		
	0.2 Ω	80 ppm		
	0.5 Ω	75 ppm		
	1 Ω	70 ppm		
	2 Ω	70 ppm		
	5 Ω	70 ppm		
	10 Ω	45 ppm		
	100 Ω	45 ppm		
	1 k Ω	45 ppm		
	10 k Ω	50 ppm		
100 k Ω	65 ppm			
AC/DC Voltage Transfer	250 mV to 16 V			A
	20 Hz to 20 kHz	40 ppm		
	20 kHz to 50 kHz	40 ppm		
	50 kHz	30 ppm		
	100 kHz	35 ppm		
	16 V to 125 V			
	20 Hz to 20 kHz	35 ppm		
	20 kHz to 50 kHz	25 ppm		
	50 kHz	25 ppm		
	100 kHz	25 ppm		
	250 V			
	20 Hz to 10 kHz	60 ppm		
20 kHz	35 ppm			
50 kHz	40 ppm			
500 V to 1 kV				
20 Hz to 10 kHz	85 ppm			
20 kHz	120 ppm			
AC Power	47 Hz to 63 Hz			A
	Voltages 60 V to 240 V Currents 0.5 A to 5 A 15 W to 1200 W	90 ppm	Unity to 0.5 power factor lagging or leading	
	Voltages 60 V to 240 V Currents 5 A to 100 A 150 W to 24 kW	150 ppm		
	Combination of specific voltage and current values: V = 75, 100, 150, 300 V I = 0.5, 1, 2, 5, 10, 20 A	0.035%	Unity to 0.5 power factor lagging or leading. Calibrations at lower power factors can be carried out to greater uncertainties.	



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AC Power (cont'd)				
Frequency	0.2 Hz to 1 kHz 1 kHz to 500 MHz	2 in 10^6 2 in 10^8	Multi-period measurement Frequency measurement	A
Rise/Fall Time	160 ps to 500 ns	5% + 20 ps		A
PRESSURE				
Gas pressure (gauge)				A
Calibration of pressure indicators and gauges	-90 kPa to 0 0 to 250 KPa 250 kPa to 2 MPa	390 Pa 600 Pa 940 Pa	Absolute pressure calibration can be carried out using associated barometric pressure measurement. The uncertainty will increase by 200 Pa.	A
Hydraulic pressure (gauge)				A
Calibration of pressure indicators and gauges	690 kPa to 69 MPa	0.037%	Calibration of devices with an electrical output may be undertaken.	A
For Calibrations undertaken on Water	0 to 70 MPa	60 kPa		A
END				