


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 0316 Accredited to ISO/IEC 17025:2005	Cuthbertson Laird Group	
	Issue No: 031 Issue date: 16 January 2012	
	Parkburn Court Burnbank Hamilton Scotland ML3 0QQ	Contact: Mr G A Vallance Tel: +44 (0)1698-829711 Fax: +44 (0)1698-828363 E-Mail: hamilton@cuthbertsonlaird.co.uk Website: www.cuthbertsonlaird.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 Parkburn Court Burnbank Hamilton Scotland ML3 0QQ	Local contact Mr G A Vallance	Dimensional and Electrical A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customers premises	Dimensional	B



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DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ($k = 2$)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH			NOTES	
Gauge Blocks		Class (See Notes)	Class C uncertainties apply to the measurement of length of gauges by comparison with grade K standards of length of a similar material. Class C uncertainties apply to new and used grade 0, 1 and 2 gauges to BS 4311-1:2007 and BS EN ISO 3650:1999. 1 All linear calibrations may be given in inch units. 2 The uncertainty quoted is for the departure from flatness, straightness, parallelism or squareness, ie the distance separating the two parallel planes which just enclose the surface under consideration.	A
Inch (Steel)	As BS 4311-1:2007 0.05 inch to 0.4 inch. 0.4 inch to 1 inch 2 inch 3 inch 4 inch	C 3.0 4.0 5.0 6.0 7.0 } μ inches		
Millimetre (Steel)	As BS EN ISO 3650:1999 0.5 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	C 0.080 0.10 0.12 0.15 0.18		
Plain Plug Gauges (Parallel)	1 to 50 diameter 50 to 200 200 to 300	0.80 2.3 3.0 } on diameter		
Length Gauges, Flat and Spherical Ended (excluding Length Bars)	25 to 1000	$1.0 + (8.0 \times \text{length in m})$		
ANGLE				
Squares Blade Type	As BS 939:2007 50 to 300 300 to 450	3.0 on squareness 5.0 See Note 2		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES				
Micrometers				A
External	As BS 870:2008 0 to 1000	Heads: 2.0 between any two points Setting and extension rods: 1.0 + (8.0 x length in m)		
Internal	As BS 959:2008 0 to 900			
Depth	As BS 6468:2008 0 to 300			
Height Setting Micrometer	0 to 300	Heads: 1.2 Stepped Column: 2.0 Overall Performance: 2.5		A
Riser Blocks for above	150 300	1.0 2.0		A
Vernier Gauges				A
Caliper	As BS 887:2008 0 to 1000	Overall performance: 10 + (30 x length in m)		
Height	As BS 1643:2008 0 to 1000			
Depth	As BS 6365:2008 0 to 600			
Dial Gauges and Dial Test Indicators	As BS 907:2008 and BS 2795:1981 0 to 50	1.0		A
Surface Plates				A & B
Granite	As BS 817:2008 and above 160 x 100 to 4000 x 4000	1.5 + (0.80 x diagonal in m) See Note 2		
Cast Iron				
Feeler Gauges	As BS 957:2008 0.025 to 1.00	3.0		A
Spirit Levels	As BS 3509:1962 and BS 958:1968 5 seconds of arc to 60 minutes of arc nominal sensitivity	Mean sensitivity 10% of nominal Minimum of 0.50 seconds of arc		A



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Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty (k = 2)	Remarks	Location Code
ELECTRICAL				
RESISTANCE (Spot Values)	10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ 0 GΩ 100 GΩ 1 T Ω 0 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 100 MΩ to 1 GΩ 1 GΩ to 2 GΩ	14 ppm 8.0 ppm 5.0 ppm 3.0 ppm 5.0 ppm 14 ppm 60 ppm 600 ppm 0.30 % 1.0 % 1.0 % 1.5 % 200 μΩ 7.0 ppm 5.0 ppm 5.0 ppm 6.0 ppm 7.0 ppm 20 ppm 100 ppm 0.29 % 2.0 %		A
DC VOLTAGE	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	0.60 μ 3.0 ppm 2.0 ppm 2.5 ppm 18 ppm		A
DC CURRENT	0 μA to 1 μA 1 μA to 10 μA 10 μA to 100 μA 100 μA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 2.2 A 2.2 A to 11 A 11 A to 200 A 200 to 550 A 550 to 1000 A	90 pA 25 ppm 18 ppm 15 ppm 16 ppm 40 ppm 120 ppm 70 ppm) Generate 350 ppm) only 0.20 A 1.0 A 1.0 A	Simulated current using a multi turn coil	A



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AC RESISTANCE				A
Generation only	20 mΩ	0.12 %		
All at a nominal 50 Hz	50 mΩ	0.11 %		
Spot values	100 mΩ	0.15 %		
	200 mΩ	0.11 %		
	500 mΩ	0.14 %		
	1 Ω	0.15 %		
	2 Ω	0.12 %		
	4 Ω	0.10 %		
	9 Ω	0.10 %		
Earth Loop	0.05 Ω	6.0 mΩ		
	0.1 Ω	6.0 mΩ		
	0.22 Ω	7.0 mΩ		
	0.33 Ω	7.0 mΩ		
	0.5 Ω	7.0 mΩ		
	1 Ω	8.0 mΩ		
	5 Ω	12 mΩ		
	10 Ω	25 mΩ		
	100 Ω	35 mΩ		
	1 kΩ	1.70 Ω		
AC VOLTAGE	1 mV to 10 mV 40 Hz to 1 kHz	4.0 μV	The product of I*V may be reported as VA, the uncertainty will be arithmetic sum of the 2 associated uncertainties.	A
	10 mV to 100 mV 40 Hz to 1 kHz	100 ppm		
	100 mV to 1 V 40 Hz to 1 kHz	100 ppm		
	100 mV to 1 V 1 kHz to 100 kHz	100 ppm		
	1 V to 10 V 40 Hz to 1 kHz	100 ppm		
	1 V to 10 V 1 kHz to 100 kHz	130 ppm		
	10 V to 100 V 40 Hz to 1 kHz	100 ppm		
	10 V to 100 V 1 kHz to 100 kHz	100 ppm		
	100 V to 700 V 40 Hz to 1 kHz	250 ppm		
	700 V to 1 kV 40 Hz to 1 kHz	500 ppm	Generate only	



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AC CURRENT	5 µA to 100 µA 45 Hz to 1 kHz 100 µA to 1 mA 45 Hz to 1 kHz 1 mA to 10 mA 45 Hz to 5 kHz 10 mA to 100 mA 45 Hz to 5 kHz 100 mA to 1 A 45 Hz to 5 kHz 1 A to 2.2 A 40 Hz to 1 kHz 2.2 A to 11 A 40 Hz to 1 kHz 11 A to 200 A 40 Hz to 1 kHz 200 A to 550 A 40 Hz to 1 kHz	400 ppm 450 ppm 300 ppm 300 ppm 400 ppm 200 ppm 330 pp 1.0 A 1.5 A) Generate)) only Simulated current using a multi turn coil	A
FREQUENCY	0.1 Hz to 10 Hz 10 Hz to 1 kHz 1 kHz to 2.1 GHz	30 in 10 ⁸ + 40 µHz 30 in 10 ⁸ + 3.0 µHz 30 in 10 ⁸	May be reported as events per unit time, such as RPM	A
Elapsed time	0 ms to 390 ms 391 ms to 100 s	1.0 ms 8.0 ms	Suitable for RCD trip times	
RCD testers				
Trip current (all at 50 Hz)	10 mA 30 mA 100 mA 300 mA 1 A 2 A	1.0 % 1.0 % 1.0 % 1.0 % 1.0 % 1.0 %		
PAT Testers				
Earth bond current 50Hz	1 A to 50 A	1.0 % + 450 mA		
Load Tests	3 kVA	2.5 %	Note, this sum of Current and Voltage uncertainties for volt-amperes.	
Flash tests	700 V to 1.9 kV @ 50 Hz	1.5 % + 5 V		
High Voltage	1 KV to 35 kV DC 1 kV to 28 kV 50 Hz	0.30 % 1.5 %		



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ELECTRICAL SIMULATION Temperature simulators and indicators, calibration by electrical simulation				
Resistance thermometer (Pt 100)	- 200 °C to + 800 °C	0.050 °C		A
Base metal thermocouples	- 200 °C to 0 °C	0.070 °C	Excluding cold junction compensation	A
	0 °C to + 1370 °C	0.020 °C	Excluding cold junction compensation	
	- 200 °C to 0 °C	0.19 °C	Including cold junction compensation	
	0 °C to + 1370 °C	0.17 °C	Including cold junction compensation	
ELECTRICAL SIMULATION Noble metal thermocouples				
Noble metal thermocouples	- 200 °C to 0 °C	0.080 °C	Excluding cold junction compensation	A
	0 °C to + 1370 °C	0.020 °C	Excluding cold junction compensation	
	- 200 °C to 0 °C	0.22 °C	Including cold junction compensation	
	0 °C to + 1370 °C	0.20 °C	Including cold junction compensation	
Temperature of reference junction/Cold junction compensation	At ambient temperature of 20 °C ± 3 °C Or Nominal 0 °C	0.10 °C		A
END				