


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: 028	Issue date: 16 September 2009
	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 & 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	Best Measurement Capability 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.	A
Inch (Steel)	As BS 4311-1:2007 Up to 0.4 in Above 0.4 in up to 1 in Size 2 in Size 3 in Size 4 in	C 3 4 5 6 7 } μ inches		
Millimetre (Steel)	As BS EN ISO 3650:1999 Up to 10 Above 10 up to 25 Sizes 30, 40, 50 60, 70, 75 80, 90, 100	C .08 .10 .12 .15 .18	1 All calibrations must be carried out in Accordance with procedures agreed by UKAS.	
Plain Plug Gauges (Parallel)	From 1 up to 50 diameter Above 50 up to 150 From 150 up to 200 Above 200 up to 300	0.8 1.0 3 5 } on diameter	2 All calibrations may be given in Metric or Imperial units.	A
Length Gauges, Flat and Spherical Ended (excluding Length Bars)	Up to 1 m	$1 + (8 \times \text{length in m})$	3 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.	
ANGLE				
Squares Blade Type	As BS 939 up to 450	3 on squareness See Note 3		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES				
Micrometers External Internal Depth	As BS 870 up to 1000 As BS 959 up to 900 As BS 6468 up to 300	Heads: 2.0 between any two points Setting and extension rods: $1 + (8 \times \text{length in m})$		A
Height Setting Micrometer	Up to 300	Heads: 1.2 Stepped Column: 2 Overall Performance: 2.5		A
Riser Blocks for above	150 300	1.0 2.0		A
Vernier Gauges Caliper Height Depth	As BS 887 up to 1000 As BS 1643 up to 1000 As BS 6365 up to 600	Overall performance: $10 + (30 \times \text{length inm})$		A
Dial Gauges and Dial Test Indicators	As BS 907 and BS 2795	1.0		A
Surface Plates Granite Cast Iron	As BS 817	$1.5 + (0.8 \times \text{diagonalin m})$ See Note 3		A & B
Feeler Gauges	As BS 957	3		A
Spirit Levels	As BS 958 and BS 3509	Mean sensitivity: 10% of nominal Minimum 0.5 seconds of arc		A



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ELECTRICAL RESISTANCE (Spot Values)	10 Ω 100 Ω 1 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω 100 M Ω 1 G Ω Up to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 k Ω 1 k Ω to 10 k Ω 10 k Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω 100 M Ω to 1 G Ω 1 G Ω to 2 G Ω	14 ppm 8 ppm 5 ppm 5 ppm 8 ppm 14 ppm 60 ppm 600 ppm 0.65% 200 $\mu\Omega$ 8 ppm 58 ppm 8 ppm 8 ppm 30 ppm 130 ppm 2100 ppm 0.29% 2%		A
DC VOLTAGE	Up to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	0.55 μ V 3 ppm 2 ppm 2.5 ppm 12 ppm		A
DC CURRENT	Up to 1 μ A 1 μ A to 10 μ A 10 μ A to 100 μ A 100 μ A 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	65 pA 20 ppm 18 ppm 14 ppm 16 ppm 32 ppm 120 ppm 70 ppm) Generate 350 ppm) only 0.2 A 1 A 2 A	Simulated current using a multi turn coil	A



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AC RESISTANCE Generation only All at a nominal 50 Hz Spot values	20 mΩ 50 mΩ 100 mΩ 200 mΩ 500 mΩ 1 Ω 2 Ω 4 Ω 9 Ω	0.17 % 0.82 % 0.27 % 0.53 % 0.52 % 0.82 % 0.20 % 0.13 % 0.14 %		A
Ranges	0.05 Ω 0.1 Ω 0.22 Ω 0.33 Ω 0.5 Ω 1 Ω 5 Ω 10 Ω 100 Ω 1 kΩ	6 mΩ 6 mΩ 6 mΩ 7 mΩ 7 mΩ 7 mΩ 12 mΩ 18 mΩ 135 mΩ 1.4 Ω	Earth Loop	
AC VOLTAGE				A
1 mV to 10 mV 10 mV to 100 mV 100 mV to 1 V 100 mV to 1 V 1 V to 10 V 1 V to 10 V 10 V to 100 V 10 V to 100 V 100 V to 700 V 700 V to 1 kV	40 Hz to 1 kHz 40 Hz to 1 kHz 40 Hz to 1 kHz 1 kHz to 100 kHz 40 Hz to 1 kHz 1 kHz to 100 kHz 40 Hz to 1 kHz 40 Hz to 1 kHz 1 kHz to 100 kHz 40 Hz to 1 kHz 40 Hz to 1 kHz	400 ppm 100 ppm 77 ppm 100 ppm 100 ppm 100 ppm 250 ppm 250 ppm 400 ppm 400 ppm 500 ppm	The product of 1*V may be reported as such in terms of VA. Generate only	
AC CURRENT				A
5 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	45 Hz to 1 kHz 45 Hz to 1 kHz 45 Hz to 5 kHz 45 Hz to 5 kHz 45 Hz to 5 kHz 40 Hz to 1 kHz 40 Hz to 1 kHz	500 ppm 450 ppm 300 ppm 300 ppm 360 ppm 0.27 %) Generate 330 ppm) only		
11 A to 200 A 200 A to 550 A	40 Hz to 1 kHz 40 Hz to 1 kHz	1 A 2 A	Simulated current using a multi turn coil	



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FREQUENCY	0.1 Hz to 10 Hz 10 Hz to 1 kHz 1 kHz to 2.1 GHz	30 in $10^8 + 40 \mu\text{Hz}$ 30 in $10^8 + 3 \mu\text{Hz}$ 30 in 10^8	May be reported as events per unit time, such as RPM	A
Elapsed time	Up to 390 ms 391 ms to 100 s	1.3 ms 8.5 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 % 0.8 % 0.8 % 0.7 % 0.25 % 1.5 %		
PAT Testers				
Earth bond current 50Hz	1 A to 50 A	2.3 % + 300 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	2.3 %		
High Voltage	1 KV to 35 kV DC 1 kV to 28 kV 50 Hz	0.25 % 1.5 %		
ELECTRICAL SIMULATION				
Temperature simulators, calibration by electrical simulation				
Resistance thermometer (Pt 100)	-200 °C to 800 °C	0.05 °C		A
Base metal thermocouples	-200 °C to 0 °C 0 °C to 1370 °C -200 °C to 0 °C 0 °C to 1370 °C	0.07 °C 0.02 °C 0.19 °C 0.17 °C	Excluding cold junction compensation Excluding cold junction compensation Including cold junction compensation Including cold junction compensation	A



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ELECTRICAL SIMULATION Noble metal thermocouples	-200 °C to 0 °C	0.08 °C	Excluding cold junction compensation	A
	0 °C to 1370 °C	0.02 °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	0.1 °C		A
Temperature indicators, calibration by electrical simulation			As per simulators	A
END				