


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>0654</p> <p>Accredited to ISO/IEC 17025:2005</p>	<h3>Calibration, Maintenance and Repair Ltd</h3> <p>Issue No: 019 Issue date: 1 February 2011</p>	
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<p>Calibration performed at the above address only</p>		

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ($k = 2$)	Remarks
ELECTRICAL MEASUREMENTS			
DC VOLTAGE			
Generation	0 mV to 320 mV 320 mV to 3.2 V 3.2 V to 32 V 32 V to 320 V 320 V to 1050 V	70 ppm + 6.0 μ V 79 ppm + 50 μ V 85 ppm + 0.49 mV 85 ppm + 5.0 mV 70 ppm + 26 mV	
Measurement	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	82 ppm + 7.0 μ V 84 ppm + 50 μ V 89 ppm + 0.50 mV 96 ppm + 5.0 mV 85 ppm + 29 mV	
DC RESISTANCE			
Generation	0 Ω to 40 Ω 40 Ω to 400 Ω 400 Ω to 4 k Ω 4 k Ω to 40 k Ω 40 k Ω to 400 k Ω 400 k Ω to 4 M Ω 4 M Ω to 40 M Ω 40 M Ω to 400 M Ω	580 ppm + 0.023 Ω 180 ppm + 0.023 Ω 180 ppm + 0.082 Ω 180 ppm + 0.81 Ω 210 ppm + 8.1 Ω 240 ppm + 100 Ω 630 ppm + 2 k Ω 710 ppm + 40 k Ω	
Measurement	0 Ω to 20 Ω 20 Ω to 200 Ω 200 Ω to 2 k Ω 2 k Ω to 20 k Ω 20 k Ω to 200 k Ω 200 k Ω to 2 M Ω 2 M Ω to 20 M Ω 20 M Ω to 100 M Ω	590 ppm + 26 m Ω 71 ppm + 12 m Ω 58 ppm + 14 m Ω 190 ppm + 0.81 Ω 230 ppm + 8.1 Ω 300 ppm + 100 Ω 0.12 % + 2.0 k Ω 2.3 % + 45 k Ω	



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DC CURRENT			
Generation	0 μ A to 320 μ A 320 μ A to 3.2 mA 3.2 mA to 32 mA 32 mA to 320 mA 320 mA to 3.2 A 3.2 A to 10.5 A 10.5 A to 20 A	180 ppm + 14 nA 180 ppm + 97 nA 240 ppm + 1.0 μ A 300 ppm + 11 μ A 780 ppm + 0.14 mA 650 ppm + 1.1 mA 640 ppm + 5.2 mA	
Measurement	0 μ A to 200 μ A 200 μ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A	600 ppm + 15 nA 500 ppm + 110 nA 520 ppm + 0.47 μ A 650 ppm + 12 μ A 0.13 % + 150 μ A 0.24 % + 8.0 mA	
AC VOLTAGE			
Generation	1 Hz to 10 Hz: 40 mV to 200 mV 200 mV to 10 V	1.2 % + 1.2 mV 1.2 % + 1.7 mV	
	0 mV to 10 mV 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	480 ppm + 0.44 mV 470 ppm + 0.59 mV 700 ppm + 1.1 mV 0.10 % + 2.2 mV 0.23 % + 5.9 mV	
	10 mV to 32 mV 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	480 ppm + 0.11 mV 470 ppm + 0.15 mV 700 ppm + 0.28 mV 0.10 % + 0.55 mV 0.23 % + 1.5 mV	
	32 mV to 320 mV 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	480 ppm + 22 μ V 470 ppm + 30 μ V 700 ppm + 55 μ V 0.10 % + 0.11 mV 0.23 % + 0.30 mV	
	320 mV to 3.2 V 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	490 ppm + 0.22 mV 470 ppm + 0.30 mV 700 ppm + 0.55 mV 0.11 % + 1.1 mV 0.23 % + 3.0 mV	



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AC VOLTAGE (continued)			
Generation	3.2 V to 32 V 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	480 ppm + 2.2 mV 700 ppm + 3.0 mV 930 ppm + 5.5 mV 0.17 % + 11 mV 0.40 % + 37 mV	
	32 V to 105 V 10 Hz to 3 kHz 3 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	470 ppm + 7.4 mV 700 ppm + 9.8 mV 930 ppm + 18 mV 0.17 % + 36 mV 0.40 % + 120 mV	
	105 V to 320 V 40 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 3 kHz 3 kHz to 10 kHz 10 kHz to 20 kHz 20 kHz to 30 kHz	590 ppm + 22 mV 590 ppm + 22 mV 930 ppm + 22 mV 930 ppm + 37 mV 0.14 % + 56 mV 0.17 % + 74 mV	
	320 V to 800 V 40 Hz to 3 kHz 3 kHz to 10 kHz	930 ppm + 74 mV 930 ppm + 120 mV	
	800 V to 1050 V 40 Hz to 3 kHz 3 kHz to 10 kHz	930 ppm + 0.15 V 930 ppm + 0.24 V	
Measurement	2 mV to 200 mV 1 Hz to 10 Hz 10 Hz to 50 Hz 50 Hz to 10 kHz 10 kHz to 50 kHz 50 kHz to 100 kHz	0.17 % + 35 μ V 840 ppm + 41 μ V 750 ppm + 46 μ V 0.12 % + 1.1 mV 0.30 % + 0.30 mV	
	200 mV to 2 V 1 Hz to 10 Hz 10 Hz to 50 Hz 50 Hz to 10 kHz 10 kHz to 50 kHz 50 kHz to 100 kHz	0.18 % + 0.35 mV 850 ppm + 0.41 mV 840 ppm + 0.46 mV 0.13 % + 1.2 mV 0.30 % + 3.0 mV	
	2 V to 20 V 1 Hz to 10 Hz 10 Hz to 50 Hz 50 Hz to 10 kHz 10 kHz to 50 kHz 50 kHz to 100 kHz	0.19 % + 3.5 mV 0.094 % + 4.0 mV 0.12 % + 4.6 mV 0.23 % + 12 mV 0.45 % + 37 mV	



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AC VOLTAGE (continued)			
Measurement	20 V to 200 V 40 Hz to 10 kHz 10 kHz to 30 kHz	0.14 % + 51 mV 0.22 % + 82 mV	
	200 V to 750 V 40 Hz to 2 kHz 2 kHz to 10 kHz	0.15 % + 350 mV 0.17 % + 370 mV	
AC CURRENT			
Generation	10 Hz to 3 kHz: Up to 32 μ A 32 μ A to 320 μ A 320 μ A to 3.2 mA 3.2 mA to 32 mA 32 mA to 320 mA	850 ppm + 1.0 μ A 850 ppm + 0.35 μ A 850 ppm + 0.35 μ A 850 ppm + 3.7 μ A 970 ppm + 37 μ A	
	40 Hz to 3 kHz: 320 mA to 3.2 A 3.2 A to 10.5 A	0.12 % + 0.55 mA 0.23 % + 3.5 mA	
	3.2 A to 32 A 10 Hz to 100 Hz 100 Hz to 440 Hz	0.31 % + 6.4 mA 0.92 % + 31 mA	For current clamp calibration using multi-turn coil.
	32 A to 160 A 10 Hz to 100 Hz	0.31 % + 32 mA	For current clamp calibration using multi-turn coil.
	160 A to 1000 A 10 Hz to 100 Hz	0.32 % + 0.52 A	For current clamp calibration using multi-turn coil.
Measurement	2 μ A to 200 μ A 50 Hz to 1 kHz	0.25 % + 0.35 μ A	
	200 μ A to 2 mA 50 Hz to 1 kHz	0.19 % + 0.49 μ A	
	2 mA to 20 mA 50 Hz to 1 kHz	0.19 % + 5.1 μ A	
	20 mA to 200 mA 50 Hz to 1 kHz	0.20 % + 51 μ A	
	200 mA to 2 A 50 Hz to 1 kHz	0.26 % + 0.65 mA	
	2 A to 10 A 50 Hz to 100 Hz	2.3 % + 12 mA	



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FREQUENCY	0.5 Hz to 10 MHz	29 ppm	
CAPACITANCE		1 kHz 1 MHz	For the measurement of four terminal pair capacitors. For other terminal configurations the uncertainties may be increased.
	0 pF to 1 pF	910 ppm + 0.0020 pF	
	1 pF to 10 pF	610 ppm + 0.0040 pF	
	10 pF to 100 pF	610 ppm + 0.030 pF	
	100 pF to 1000 pF	730 ppm + 0.35 pF	
	500 pF to 4 nF	0.69 % + 30 pF	For the calibration of the capacitance ranges of digital multimeters and similar instruments.
	4 nF to 40 nF	0.69 % + 60 pF	
	40 nF to 400 nF	0.69 % + 320 pF	
	400 nF to 4 μ F	0.93 % + 3.2 nF	
	4 μ F to 40 μ F	1.2 % + 32 nF	
	40 μ F to 400 μ F	1.2 % + 320 nF	
	400 μ F to 4 mF	1.2 % + 3.2 μ F	
	4 mF to 40 mF	2.3 % + 120 μ F	
ACCELEROMETRY			
Accelerometer calibration	2 Hz to 5 Hz	1.7 %	Nominal acceleration ms ⁻² : 2 Hz: 0.10 3 Hz: 0.20 4 Hz to 10 kHz: 0.31 to 1.0
	5 Hz to 5 kHz	1.4 %	
	5 kHz to 8 kHz	1.7 %	
	8 kHz to 10 kHz	2.2 %	
Charge (pC/g)	Sensitivity range: 0.3 pC/g to 1000 pC/g Minimum 2 Hz to 10 kHz: 0.03 pC/m ² .		
With integral electronics	0.03 mV/ms ² to 1000 mV/ms ²		Nominal acceleration ms ⁻² : 2 Hz: 0.10 3 Hz: 0.20 4 Hz to 10 kHz: 0.31 to 1.0
	2 Hz to 5 Hz	1.7 %	
	5 Hz to 5 kHz	1.4 %	
	5 kHz to 8 kHz	1.7 %	
Voltage (mV/g)	8 kHz to 10 kHz	2.2 %	
Resistive	0.05 mV/ms ² to 100 mV/ms ²		Nominal acceleration ms ⁻² : 2 Hz: 0.10 3 Hz: 0.20 4 Hz to 10 kHz: 0.31 to 1.0
	2 Hz to 5 Hz	1.7 %	
	5 Hz to 5 kHz	1.4 %	
	5 kHz to 8 kHz	1.7 %	
	8 kHz to 10 kHz	2.2 %	



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Portable calibrators	Frequency 160 Hz Range 0.1 ms ² to 1 ms ²	3.0 %	
Vibration meters and analysers	Frequency 10 Hz to 1 kHz Range 0.1 ms ² to 1 ms ²	5.0 %	
Shock and Impulse hammers	Half Sine Wave Frequency 500 Hz to 20 kHz Applied Force 0.2 N to 450 N	4.0 %	
END			