

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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



0126

Accredited to
ISO/IEC 17025:2005

Electroservices Enterprises Ltd

Issue No: 28 Issue date: 16 July 2011

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Calibration performed at the above address only

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ($k = 2$)	Remarks
DC RESISTANCE			
Specific values	1 Ω 10 Ω 100 Ω 1.0 k Ω 10 k Ω 100 k Ω 1 M Ω 10 M Ω	5.0 ppm 5.0 ppm 5.0 ppm 5.0 ppm 5.0 ppm 5.0 ppm 6.9 ppm 6.9 ppm	
Other Values	0 Ω to 0.5 Ω 0.5 Ω to 5 Ω 5 Ω to 50 Ω 50 Ω to 500 Ω 500 Ω to 5 k Ω 5 k Ω to 50 k Ω 50 k Ω to 500 k Ω 500 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω 100 M Ω to 10 G Ω 10 G Ω to 100 G Ω 100 G Ω to 1 T Ω	7.5 ppm + 0.25 $\mu\Omega$ 7.4 ppm 5.4 ppm 5.4 ppm 5.4 ppm 5.4 ppm 5.4 ppm 5.4 ppm 5.4 ppm 7.2 ppm 410 ppm 0.18 % 0.23 % 0.45 %	
DC VOLTAGE	0 V to 11 V 11 V to 110 V 110 V to 1100 V	2.8 ppm + 0.30 μ V 2.8 ppm 3.2 ppm	
DC CURRENT	100 nA to 10 μ A 10 μ A to 2 A 2 A to 10 A 10 A to 1000 A	13 ppm + 5.0 pA 7.0 ppm 60 ppm 0.26 % + 0.60 A	For the calibration of clamp-on ammeters



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AC VOLTAGE Generation	1 mV to 3 mV 10 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.15 % 0.20 % 0.35 % 0.75 %	
	3 mV to 10 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.050 % 0.032 % 0.075 % 0.20 % 0.50 %	
	10 mV to 30 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.045 % 0.055 % 0.16 % 0.20 % 0.40 %	
	30 mV to 100 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.030 % 0.017 % 0.040 % 0.10 % 0.25 %	
	100 mV to 300 mV 10 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.0060 % 0.020 % 0.048 % 0.12 %	
	300 mV to 30 V 10 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1.0 MHz	0.0050 % 0.010 % 0.040 % 0.11 %	
	30 V to 100 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.0043 % 0.011 %	
	100 V to 300 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.0074 % 0.020 %	
	300 V to 1100 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.0082 % 0.020 %	



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AC VOLTAGE (cont'd) Measurement Specific Values	100 mV 1 kHz and 30 kHz 60 kHz and 100 kHz 500 kHz 1 MHz	0.0050 % 0.0075 % 0.036 % 0.088 %	
	300 mV 10 Hz 40 Hz 1 kHz and 30 kHz 50 kHz and 100 kHz 500 kHz 1 MHz	0.0035 % 0.0030 % 0.0035 % 0.0067 % 0.027 % 0.068 %	
	1 V 10 Hz 40 Hz, 1 kHz and 30 kHz 60 kHz and 100 kHz 500 kHz 1 MHz	0.0035 % 0.0030 % 0.0062 % 0.026 % 0.068 %	
	3 V 10 Hz 40 Hz, 1 kHz and 30 kHz 50 kHz and 100 kHz 500 kHz 1 MHz	0.0037 % 0.0030 % 0.0063 % 0.028 % 0.064 %	
	10 V 10 Hz 40 Hz 1 kHz and 30 kHz 60 kHz and 100 kHz 500 kHz 1 MHz	0.0035 % 0.0033 % 0.0030 % 0.0062 % 0.026 % 0.064 %	
	30 V 10 Hz 40 Hz 1 kHz and 30 kHz 50 kHz and 100 kHz 500 kHz 1 MHz	0.0035 % 0.0037 % 0.0032 % 0.0067 % 0.027 % 0.079 %	
	100 V 10 Hz 40 Hz 1 kHz and 30 kHz 60 kHz and 100 kHz	0.0040 % 0.0035 % 0.0032 % 0.0067 %	



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AC VOLTAGE (cont'd) Measurement (cont'd) Specific Values (cont'd)	300 V 45 Hz, 1 kHz, 5 kHz, 10 kHz, 15 kHz and 20 kHz 33 kHz, 50 kHz and 100 kHz	0.012 % 0.013 %	
	1000 V 45 Hz, 1 kHz, 5 kHz and 10 kHz 15 kHz and 20 kHz 30 kHz and 33 kHz 50 kHz and 100 kHz	0.013 % 0.013 % 0.014 % 0.016 %	
Other Values	1 mV to 3 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.16 % 0.14 % 0.20 % 0.36 % 0.72 %	
	3 mV to 10 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.050 % 0.035 % 0.080 % 0.21 % 0.50 %	
	10 mV to 30 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.040 % 0.025 % 0.060 % 0.16 % 0.38 %	
	30 mV to 100 mV 10 Hz to 100 Hz 100 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.030 % 0.015 % 0.030 % 0.10 % 0.25 %	
	100 mV to 300 mV 10 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.0050 % 0.011 % 0.050 % 0.13 %	
	300 mV to 30 V 10 Hz to 30 kHz 30 kHz to 200 kHz 200 kHz to 500 kHz 500 kHz to 1 MHz	0.0050 % 0.020 % 0.050 % 0.12 %	



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AC VOLTAGE (cont'd) Measurement (cont'd) Other Values (cont'd)	30 V to 100 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.0050 % 0.010 %	
	100 V to 300 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.013 % 0.017 %	
	300 V to 1100 V 10 Hz to 30 kHz 30 kHz to 200 kHz	0.013 % 0.021 %	
AC CURRENT	50 Hz to 100 Hz 25 μ A to 250 μ A	0.030 %	
	50 Hz to 1 kHz, 5 kHz 250 μ A to 2 A	0.030 %	
	50 Hz to 400 Hz, 5 kHz 2 A to 10 A	0.030 %	
	10 Hz to 50 Hz 10 A to 1000 A	0.26 % + 0.60 A	For the calibration of clamp-on ammeters
AC POWER	50 Hz to 60 Hz, 400 Hz, 5 kHz 50 mW to 4 kW 4 kW to 10 kW	0.052 % 0.20 %	At unity power factor. Measurements can be made at power factors of 0.9, 0.5, 0.1 and 0.01 but the quoted uncertainties will be increased.
FREQUENCY			
Specific value	10 MHz	1.0 in 10^{10}	
Other values	0.1 Hz to 1 Hz 1 Hz to 10 Hz 10 Hz to 100 Hz 100 Hz to 10 kHz	5.0 in 10^4 5.0 in 10^5 5.0 in 10^6 5.0 in 10^7	Multi-period measurement
	10 kHz to 100 kHz 100 kHz to 1.0 MHz 1.0 MHz to 10 MHz 10 MHz to 150 MHz 150 MHz to 1 GHz	1.0 in 10^6 1.0 in 10^7 1.0 in 10^8 1.0 in 10^9 1.0 Hz	Frequency measurement
PHASE ANGLE	50 Hz to 10 kHz 0° to 360°	0.050°	



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CAPACITANCE			
Specific values and frequencies	1 nF, 10 nF and 100 nF 100 Hz, 1 kHz and 10 kHz	0.030 %	
	1 μ F 100 Hz and 1 kHz 10 kHz	0.030 % 0.040 %	
	10 μ F and 100 μ F 100 Hz and 1 kHz	0.050 %	
Other Values and Frequencies	10 pF to 100 pF 1 kHz to 10 kHz	0.20 %	
	100 pF to 1 μ F 100 Hz to 10 kHz	0.10 %	
	1 μ F to 100 μ F 100 Hz to 1 kHz	0.10 %	
INDUCTANCE			
Specific values and frequencies	100 Hz 1 mH 100 mH 1 H	0.070 % 0.070 % 0.25 %	
	1 kHz 100 mH 1 H	0.050 % 0.050 %	
	1 kHz and 10 kHz 10 μ H 100 μ H 1 mH 10 mH	0.25 % 0.060 % 0.050 % 0.050 %	
Specific values, other frequencies	100 Hz to 1 kHz 1 H	0.25 %	
	1 kHz to 10 kHz 10 μ H 100 μ H 1 mH 10 mH 100 mH	0.25 % 0.10 % 0.10 % 0.10 % 0.10 %	
Other values, other frequencies	10 μ H to 1.0 mH 1 kHz to 10 kHz	0.25 %	
	1 mH to 100 mH 100 Hz to 10 kHz	0.15 %	
	100 mH to 1.0 H 100 Hz to 1 kHz	0.25 %	



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ELECTRICAL SIMULATION Temperature indicators, calibration by electrical simulation			
Base metal thermocouples	- 270 °C to 1370 °C	0.12 °C	Including cold junction compensation
Noble metal thermocouples	0 °C to 200 °C 200 °C to 800 °C 800 °C to 1760 °C	0.60 °C 0.50 °C 1.0 °C	Including cold junction compensation
END			