

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p style="text-align: center;">0807</p> <p style="text-align: center;">Accredited to ISO/IEC 17025:2005</p>	<h3 style="margin: 0;">BSRIA Instrument Solutions</h3> <p style="margin: 0;">Issue No: 010 Issue date: 05 March 2010</p>	
	<p>Old Bracknell Lane West Bracknell Berkshire RG12 7AH</p>	<p>Contact: Mr M Trotter Tel: +44 (0)1344 459314 Fax: +44 (0)1344 465556 E-Mail: mtrotter@bis.fm Website: www.bis.fm</p>
<p>Calibration performed at the above address only</p>		

DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks
TEMPERATURE			
Resistance thermometers	-20 °C up to 80 °C 80 °C to 250 °C	0.015 °C 0.02 °C	
Digital thermometers with Thermocouple sensors	-20 °C up to 80 °C 80 °C to 250 °C	0.25 °C + 1 lsd 0.25 °C + 1 lsd	
Digital thermometers with PRT sensors	-20 °C up to 80 °C 80 °C to 250 °C	0.015 °C + 1 lsd 0.02 °C + 1 lsd	
Air Temperature data loggers	-20 to 0 °C 0 to 70 °C	0.2 °C 0.06 °C	Calibrations with an electrical output may be undertaken and any equivalent recorder that can be calibrated in a chamber.
PRESSURE			
<u>Gas pressure (absolute)</u>			
Calibration of pressure indicating instruments and gauges	80 kPa to 115 kPa	25 Pa	
<u>Gas pressure (gauge)</u>			
Calibration of pressure indicating instruments and gauges	0.1 Pa to 1.8 kPa 1.8 kPa to 3 kPa 3 kPa to 6 kPa 6 kPa to 10 kPa 10 kPa to 20 kPa	0.025 % + 0.09 Pa 0.025 % + 0.18 Pa 0.025 % + 0.7 Pa 0.025 % + 0.8 Pa 0.025 %	Calibration of pressure devices with an electrical output may be undertaken
Volume Flow - Air			
Calibration of fans including blower doors and domestic air tightness fans	50 l/s to 4000 l/s at fan pressures of 15 Pa to 1000Pa	0.6 l/s + 3 % of flow and 2 Pa + 2.6 % of pressure	Calibrated in pressurising mode over the static pressure range of 0 to 60 Pa
	50 l/s to 4000 l/s at fan pressures of 15 Pa to 1000Pa	1.2 l/s + 3 % of flow and 2 Pa + 2.6 % of pressure	Calibrated in pressurising mode over the static pressure range of 60 Pa to 100 Pa



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ELECTRICAL			
DC Voltage	Up to 10 mV 10 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV	25 ppm + 0.5 μ V 25 ppm + 1 μ V 20 ppm + 1 μ V 20 ppm + 10 μ V 20 ppm + 200 μ V 30 ppm + 2 mV	
AC Voltage (Wider Frequency coverage)	40 Hz to 1 kHz 10 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 500 V 500 V to 1 kV	380 ppm + 14 μ V 280 ppm + 100 μ V 260 ppm + 1 mV 260 ppm + 10 mV 380 ppm + 70 mV 1400 ppm + 70 mV	
AC Current (Wider Frequency coverage)	40 Hz to 1 kHz 200 μ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A	350 ppm + 200 nA 350 ppm + 2 μ A 350 ppm + 20 μ A 800 ppm + 500 μ A	
AC VOLTAGE (Narrow Frequency coverage) (Overlapping ranges)	45 Hz to 450 Hz 1 V to 16 V 2.5 V to 33 V 6 V to 78 V 11 V to 168 V 23 V to 336 V 70 V to 1008 V	200 ppm + 9 mV 200 ppm + 12 mV 200 ppm + 22 mV 200 ppm + 32 mV 200 ppm + 180 mV 250 ppm + 1V	
AC CURRENT (Narrow Frequency coverage) (Overlapping ranges)	45 Hz to 450 Hz 10 mA to 250 mA 50 mA to 500 mA 100 mA to 1 A 200 mA to 2 A 500 mA to 5 A 1 A to 10 A 2A to 21 A	250 ppm + 18 μ A 250 ppm + 34 μ A 250 ppm + 68 μ A 250 ppm + 140 μ A 250 ppm + 340 μ A 250 ppm + 680 μ A 320 ppm + 2 mA	
POWER Single or polyphase			Lead and Lag are defined here as current phase shift reference to the voltage.
Unity power factor 1 (1_{PF})	45 Hz to 420Hz: Voltages up to 1 kV Current range: up to 250 mA Maximum power 250 W	0.4 %	
	Current range: 250 mA to 500 mA Maximum power 500 W	0.17 %	
	Current range: 500 mA to 1 A Maximum power 1 kW	0.17 %	
	Current range: 1 A to 2 A Maximum power 2 kW	0.14 %	



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POWER Single or polyphase			Lead and Lag are defined here as current phase shift reference to the voltage.
Unity power factor 1 (1 _{Pf}) (cont'd)	Current range: 2 A to 5 A Maximum power 5 kW	0.14 %	
	Current range: 5 A to 10 A Maximum power 10 kW	0.4%	
	Current range: 10 A to 21 A Maximum power 12.6 kW	0.4 %	
Power factor 1 _{Pf} to 0.75 _{Pf}	45 Hz to 420Hz: Voltages up to 1 kV		
	Current range: up to 250 mA Maximum power 250 W	0.4 %	
	Current range: 250 mA to 500 mA Maximum power 500 W	0.17 %	
	Current range: 500 mA to 1 A Maximum power 1 kW	0.17 %	
	Current range: 1 A to 2 A Maximum power 2 kW	0.14 %	
	Current range: 2 A to 5 A Maximum power 5 kW	0.14 %	
	Current range: 5 A to 10 A Maximum power 10 kW	0.4 %	
	Current range: 10 A to 21 A Maximum power 12.6 kW	0.4 %	
Power factor 0.75 _{Pf} to 0.5 _{Pf}	45 Hz to 420Hz: Voltages up to 1 kV		
	Current range: up to 250 mA Maximum power 250 W	0.4 %	
	Current range: 250 mA to 500 mA Maximum power 500 W	0.18 %	
	Current range: 500 mA to 1 A Maximum power 1 kW	0.18 %	
	Current range: 1 A to 2 A Maximum power 2 kW	0.15 %	
	Current range: 2 A to 5 A Maximum power 5 kW	0.15 %	
	Current range: 5 A to 10 A Maximum power 10 kW	0.4 %	
	Current range: 10 A to 21 A Maximum power 12.6 kW	0.4 %	



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Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks
POWER Single or polyphase (cont'd)			Lead and Lag are defined here as current phase shift reference to the voltage.
Power factor 0.5_{PF} to 0.25_{PF}	45 Hz to 420Hz: Voltages up to 1 kV Current range: up to 250 mA Maximum power 250 W Current range: 250 mA to 500 mA Maximum power 500 W Current range: 500 mA to 1 A Maximum power 1 kW Current range: 1 A to 2 A Maximum power 2 kW Current range: 2 A to 5 A Maximum power 5 kW Current range: 5 A to 10 A Maximum power 10 kW Current range: 10 A to 21 A Maximum power 12.6 kW	0.4 % 0.21 % 0.21 % 0.20 % 0.20 % 0.42 % 0.42 %	
Power factor $<0.25_{PF}$	45 Hz to 420Hz: Voltages up to 1 kV Current up to 21 A	1.1 % of applied VA	
Power Factor Zero	45 Hz to 65 Hz All V and A combinations up to 21,1 kW 180 Hz to 450 Hz All V and A combinations up to 21,1 kW	0.3 % of rated power 0.4 % of rated power	
Current transformer type devices.			Combinations of the above VA ranges can be achieved at increased uncertainties.
Clamp type inputs			Currents up to 1000 A can be simulated using multi turn coils at increased uncertainties.



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FREQUENCY			
Frequency measurement	40 Hz to 1.9 kHz 1.9 kHz to 19 kHz 19 kHz to 190 kHz 190 kHz to 400 kHz	6 ppm + 1 mHz 6 ppm + 10 mHz 6 ppm + 100 mHz 6 ppm + 1 Hz	
Tachometer Calibration			
Mechanical contact	6 to 6,000 RPM	150 ppm + 1 Lsd	
Optical	6 to 600,000 RPM	60 ppm + 1 Lsd	
END			