


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p style="text-align: center;"><b>0208</b></p> <p style="text-align: center;">Accredited to <b>ISO/IEC 17025:2005</b></p>	<h3 style="margin: 0;">Scotia Instrumentation Ltd</h3> <p style="margin: 0;">Issue No: 036    Issue date: 03 May 2012</p>	
	<p><b>Campus 1</b></p> <p><b>Aberdeen Science and Technology Park</b></p> <p><b>Balgownie Road</b></p> <p><b>Bridge of Don</b></p> <p><b>Aberdeen</b></p> <p><b>AB22 8GT</b></p>	<p><b>Contact: Mr B A McLaren</b></p> <p><b>Tel: +44 (0)1224 222888</b></p> <p><b>Fax: +44 (0)1224 826299</b></p> <p><b>E-Mail: info@Scotia-instrumentation.com</b></p> <p><b>Website: www.Scotia-instrumentation.com</b></p>
<p><b>Calibration performed at the above address only</b></p>		

### DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ( $k = 2$ )	Remarks
<u>Gas Pressure (Gauge)</u>			
Calibration of pressure indicating instruments and gauges	- 100 kPa to - 20 kPa - 20 kPa to - 10 kPa - 10 kPa to 3.5 kPa 3.5 kPa to 10 kPa 10 kPa to 100 kPa 100 kPa to 700 kPa 700 kPa to 7 MPa	0.30 % + 10 Pa 0.41 % + 1.0 Pa 0.62 % + 1.0 Pa 0.0080 % 0.0060 % 0.0070 % 0.010 %	The calibration of Instruments with an electrical output may be undertaken.
Pressure equivalent calibration of dead weight testers including ball/nozzle type instruments	3.5 kPa to 10 kPa 10 kPa to 100 kPa 100 kPa to 700 kPa 700 kPa to 7MPa	0.0080 % 0.0060 % 0.0070 % 0.010 %	
<u>Gas Pressure (Absolute)</u>			
Calibration of pressure indicating instruments and gauges	10 kPa to 80 kPa 80 kPa to 115 kPa 115 kPa to 800 kPa 800 kPa to 7.1 MPa	0.040 % + 10 Pa 0.030 % + 0.80 Pa 0.0070 % + 30 Pa 0.010 % + 30 Pa	
<u>Hydraulic Pressure (Gauge)</u>			
Calibration of pressure indicating instruments and gauges	600 kPa to 6 MPa 6 MPa to 120 MPa	0.0080 % + 40 Pa 0.013% + 40 Pa	
Pressure equivalent calibration of Dead Weight Testers	600 kPa to 6 MPa 6 MPa to 120 MPa	0.0080 % + 40 Pa 0.013% + 40 Pa	
<u>Gas Pressure (Differential)</u>			
Calibration of pressure indicating instruments and gauges	0.25 kPa to 420 kPa (line pressures 1.2 MPa to 2.1 MPa)	0.60 ppm of line pressure, + 0.0075 % of differential pressure + 11 Pa	Differential pressure cells may be calibrated using the digital communication protocol.
	0.25 kPa to 420 kPa (line pressures 2.1 MPa to 20 MPa)	0.60 ppm of line pressure, + 0.0060 % of differential pressure + 11 Pa	



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<b>TEMPERATURE</b>			
Liquid-in-glass thermometers	- 30 °C to 250 °C	0.070 °C	Liquid-in-glass thermometers can be examined for compliance with the published specification marked on them if requested.
Resistance thermometers	- 30 °C to 250 °C	0.045 °C	
Electronic thermometers with sensors	- 30 °C to 250 °C	0.040 °C plus: Analogue - Half scale division Digital - One least significant digit	
Block calibrators	- 30 °C to 250 °C	0.75 °C	
<b>ELECTRICAL MEASUREMENTS</b>			
<b>DC Resistance</b>			
Generation	10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	50 ppm 17 ppm 17 ppm 17 ppm 17 ppm 50 ppm 85 ppm 200 ppm	
Measurement	0 Ω to 20 Ω 20 Ω to 200 Ω 200 Ω to 2 kΩ 2 kΩ to 20 kΩ 20 kΩ to 200 kΩ 200 kΩ to 2 MΩ 2 MΩ to 20 MΩ 20 MΩ to 200 MΩ	50 ppm + 40 μΩ 17 ppm + 100 μΩ 17 ppm + 1.0 mΩ 17 ppm + 10 mΩ 17 ppm + 100 mΩ 50 ppm + 2.0 Ω 85 ppm + 100 Ω 200 ppm + 10 kΩ	
DC Voltage	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV	11 ppm + 1.0 μV 8.0 ppm + 1.5 μV 5.0 ppm + 3.5 μV 7.0 ppm + 50 μV 9.0 ppm + 500 μV	
DC Current	0 μA to 200 μA 200 μA to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A	150 ppm + 2.0 nA 60 ppm + 10 nA 60 ppm + 100 nA 60 ppm + 1.0 μA 150 ppm + 20 μA 350 ppm + 100 μA	
Generation only	10 A to 500 A	0.30 %	For the calibration of clamp-on meters only.



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Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ( $k = 2$ )	Remarks	
AC Voltage	2 mV to 20 mV 10 Hz to 30 Hz 30 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	350 ppm + 5.5 $\mu$ V 350 ppm + 5.5 $\mu$ V 350 ppm + 5.5 $\mu$ V 800 ppm + 5.5 $\mu$ V		
	20 mV to 200 mV 30 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz	200 ppm + 5.5 $\mu$ V 200 ppm + 5.5 $\mu$ V 500 ppm + 5.5 $\mu$ V		
	200 mV to 2 V 10 Hz to 300 Hz 300 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	120 ppm + 5.5 $\mu$ V 80 ppm + 5.5 $\mu$ V 50 ppm + 5.5 $\mu$ V 80 ppm + 5.5 $\mu$ V 220 ppm + 10 $\mu$ V		
	2 V to 20 V 10 Hz to 300 Hz 300 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	120 ppm + 50 $\mu$ V 60 ppm + 50 $\mu$ V 75 ppm + 50 $\mu$ V 90 ppm + 50 $\mu$ V 500 ppm + 100 $\mu$ V		
	20 V to 200 V 10 Hz to 300 Hz 300 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	120 ppm + 2.5 mV 60 ppm + 1.0 mV 75 ppm + 1.0 mV 90 ppm + 2.0 mV 500 ppm + 2.5 mV		
	200 V to 1 kV 40 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 30 kHz	180 ppm + 20 mV 180 ppm + 20 mV 300 ppm + 25 mV		
	AC Current	10 $\mu$ A to 200 $\mu$ A 10 Hz to 1 kHz 1 kHz to 5 kHz	300 ppm + 15 nA 0.16% + 20 nA	
		200 $\mu$ A to 2 mA 10 Hz to 1 kHz 1 kHz to 5 kHz	200 ppm + 0.15 $\mu$ A 350 ppm + 0.15 $\mu$ A	
		2 mA to 20 mA 10 Hz to 1 kHz 1 kHz to 5 kHz	200 ppm + 1.5 $\mu$ A 350 ppm + 1.5 $\mu$ A	



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AC Current (continued)	20 mA to 200 mA <i>10 Hz to 1 kHz</i> <i>1 kHz to 5 kHz</i>	250 ppm + 15 $\mu$ A 350 ppm + 15 $\mu$ A	
	200 mA to 2 A <i>10 Hz to 1 kHz</i> <i>1 kHz to 5 kHz</i>	500 ppm + 110 $\mu$ A 700 ppm + 150 $\mu$ A	
	2 A to 10 A <i>40 Hz to 100 Hz</i> <i>100 Hz to 1 kHz</i>	800 ppm 0.15 %	
Generation only	10 A to 500 A 50 Hz	0.30 %	For the calibration of clamp-on meters only.
Frequency	5 Hz to 1.0 GHz 1.0 GHz to 2.4 GHz	3.0 ppm 8.0 ppm	The capability shown is for generation of signals with known frequency.  The measurement of unknown frequencies may also be undertaken but there will be an additional uncertainty of 0.10 Hz.
Optical Tachometry	0 rpm to 60,000 rpm	2.6 rpm	
Temperature indicators and simulators, calibration by electrical simulation			
Base metal thermocouple	-250 °C to 1372 °C	0.70 °C	Including cold junction compensation
Noble metal thermocouple	0 °C to 1767 °C	0.70 °C	Including cold junction compensation

END