

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p><b>UKAS</b> CALIBRATION 0221</p> <p>Accredited to <b>ISO/IEC 17025:2005</b></p>	<p><b>GE Druck Holdings Ltd</b></p> <p>Issue No: 048 Issue date: 19 August 2011</p>	
	<p>Fir Tree Lane Groby Leicester LE6 0FH</p>	<p>Contact: Mr N Buckeridge Tel: +44 (0)116-231 7100 Fax: +44 (0)116-231 7101 E-Mail: <a href="mailto:sensing.grobyukas@ge.com">sensing.grobyukas@ge.com</a> Website: <a href="http://www.druck.com">www.druck.com</a></p>
<p>Calibration performed by the Organisations at the locations specified below</p>		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code
<p><b>Address</b></p> <p>Fir Tree Lane Groby Leicester LE6 0FH</p> <p>Contact: Mr N Buckeridge Tel: +44 (0)116-231 7100 Fax: +44 (0)116-231 7101 E-Mail: <a href="mailto:sensing.grobyukas@ge.com">sensing.grobyukas@ge.com</a></p>	<p><a href="#">Electrical</a> <a href="#">Pressure</a> <a href="#">Temperature</a> <a href="#">Mass</a> <a href="#">Humidity</a></p>	<p>UK</p>

#### Site activities performed away from the locations listed above:

Location details	Activity	Location code
<p>The customer's site or premises must be suitable for the nature of the particular calibrations undertaken and will be the subject of contract review arrangements between the laboratory and the customer</p>	<p><a href="#">Pressure</a></p>	<p>Site</p>



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DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ( $k = 2$ )	Remarks	Location Code
<p><b>PRESSURE</b></p> <p><u>Gas pressure (absolute)</u></p> <p>Calibration of pressure measuring instruments and gauges and "Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and Effective area calibration of Dead Weight Testers</p>	<p>3.5 kPa to 4 MPa 4 MPa to 7 MPa 7 MPa to 40 MPa</p>	<p>0.0032 % + 0.70 Pa 0.0040 % + 0.70 Pa 0.0050 % + 11 Pa</p>	<p>Calibration of pressure measuring devices with an electrical output may be undertaken.</p>	<p>UK and Site</p>
<p><u>Gas pressure (gauge)</u></p> <p>Calibration of pressure measuring instruments and gauges and "Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and Effective area calibration of Dead Weight Testers</p>	<p>- 100 kPa to - 3.5 kPa - 3.5 kPa to 3.5 kPa  3.5 kPa to 4 MPa 4 MPa to 40 MPa</p>	<p>0.0032 % + 0.60 Pa 0.62 Pa  0.0032 % 0.0050 %</p>		<p>UK and Site</p>
<p><u>Hydraulic pressure (gauge)</u></p> <p>Calibration of pressure measuring instruments and gauges. "Pressure equivalent" calibration of Dead Weight Testers (Pressure balance with associated mass set). Effective area calibration of Dead Weight Testers.</p>	<p>0.5 MPa to 140 MPa  140 MPa to 500 MPa</p>	<p>0.0036 % + 0.12 ppm/MPa + 4.0 Pa  0.010 % + 0.030 ppm/MPa</p>	<p>Absolute pressure calibrations can be undertaken using gauge pressure generation and the associated barometric pressure with the additional uncertainty of 11 Pa</p>	<p>UK and Site</p>



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Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ( $k = 2$ )	Remarks	Location Code
ELECTRICAL				
DC Resistance				
Generation				
Specific values	1 mΩ 10 mΩ Ω 100 mΩ 1 Ω 1.9 Ω 10 Ω 19 Ω 50 Ω 100 Ω 250 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	1.7 % 0.17 %  170 ppm 39 ppm 9.3 ppm 17 ppm 35 ppm 8.0 ppm 16 ppm 18 ppm 31 ppm 9.0 ppm 18 ppm 7.9 ppm 17 ppm 8.7 ppm 21 ppm 11 ppm 32 ppm 19 ppm 70 ppm 62 ppm		UK
Other values	0.1 Ω to 20 Ω 20 Ω to 10 kΩ	3 mΩ 110 ppm		
Measurement	0 Ω to 2 Ω 2 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 2 GΩ	30 ppm + 1.9 μΩ 4.8 ppm + 13 μΩ 3.5 ppm + 60 μΩ 4.0 ppm + 0.60 mΩ 3.7 ppm + 5.0 mΩ 4.2 ppm + 53 mΩ 6.7 ppm + 0.50 Ω 14 ppm + 6.6 Ω 85 ppm + 480 Ω 710 ppm + 4.8 kΩ		UK
DC Voltage				
Measurement	0 V to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	7.0 ppm + 1.2 μV 7.0 ppm + 1.2 μV 3.0 ppm + 3.5 μV 3.0 ppm + 33 μV 7.0 ppm + 0.35 V		UK



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DC Voltage (continued)				
Generation	0 mV to 200 mV 0.2 V to 2 V 2 V to 11 V 11 V to 20 V 20 V to 200 V 200 V to 1100 V	11 ppm + 2.0 $\mu$ V 3.3 ppm 1.9 ppm 1.9 ppm 3.6 ppm 4.2 ppm		UK
DC Current				
Measurement	1 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A	8.9 ppm + 1.3 nA 8.6 ppm + 2.7 nA 5.5 ppm + 24 nA 23 ppm + 0.23 $\mu$ A 130 ppm + 2.4 $\mu$ A 80 ppm + 37 $\mu$ A		UK
Generation	0 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A	1.9 ppm + 1.9 nA 13 ppm 13 ppm 39 ppm 68 ppm		UK
AC Voltage				
Measurement	<i>20 Hz to 55 Hz</i> 1 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	0.050 % 0.025 % 0.025 % 0.025 % 0.025 %		
	<i>55 Hz to 305 Hz</i> 1 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	0.050 % 0.025 % 0.025 % 0.025 % 0.025 %		
	<i>305 Hz to 1 kHz</i> 1 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	0.025 % 0.025 % 0.025 % 0.025 % 0.026 %		
	<i>1 kHz to 10 kHz</i> 1 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	0.050 % 0.030 % 0.025 % 0.026 % 0.030 %		



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AC Voltage (continued) Generation	<p><i>10 Hz to 40 Hz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V</p> <p><i>40 Hz to 500 Hz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V</p> <p><i>500 Hz to 1 kHz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V</p> <p><i>1 kHz to 10 kHz</i> 0.1 mV to 2 mV 2 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V</p> <p><i>10 kHz</i> 2 mV 20 mV 100 mV 1 V 10 V 100 V</p> <p><i>1000 V</i> <i>55 Hz to 500 Hz</i> <i>500 Hz to 1 kHz</i> <i>1 kHz</i></p>	<p>3.0 % 0.30 % 0.12 % 160 ppm 250 ppm 250 ppm</p> <p>3.0 % 0.30 % 0.12 % 120 ppm 110 ppm 110 ppm</p> <p>3.0 % 0.30 % 0.12 % 120 ppm 90 ppm 90 ppm</p> <p>3.0 % 0.30 % 0.12 % 120 ppm 90 ppm 90 ppm</p> <p>3.0 % 0.30 % 0.12 % 120 ppm 90 ppm 90 ppm</p> <p>75 ppm 75 ppm 75 ppm</p>		UK



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AC Current Measurement	<i>55 Hz to 305 Hz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A  <i>305 Hz to 1 kHz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A  <i>1 kHz to 5 kHz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 10 A	0.25 % 0.25 % 0.25 % 0.25 % 0.25 % 0.30 %  0.25 % 0.25 % 0.25 % 0.25 % 0.25 % 0.30 %  0.25 % 0.25 % 0.25 % 0.25 % 0.25 % 0.35 %		UK
Generation	<i>55 Hz to 400 Hz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 1 A  <i>400 Hz to 1 kHz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 1 A  <i>1 kHz to 5 kHz</i> 10 $\mu$ A to 200 $\mu$ A 200 $\mu$ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 1 A	0.20 % 0.052 % 0.050 % 0.050 % 0.050 %  0.20 % 0.050 % 0.050 % 0.050 % 0.050 %  0.20 % 0.16 % 0.090 % 0.050 % 0.15 %		
Frequency	1 MHz, 5 MHz and 10 MHz 1 Hz to 1 GHz	7.0 in $10^{11}$ 0.20 ppm	Measurement and generation of repetitive waveforms.	UK



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Temperature indicators, calibration by electrical simulation				UK
Base metal thermocouples	- 210 °C to + 1360 °C	0.10 °C	Excluding cold junction compensation	
Nobel metal thermocouples	- 50 °C to + 2300 °C	0.23 °C	Excluding cold junction compensation	
Cold junction compensation	Ambient temperature 18 °C to 30 °C	0.40 °C		
Resistance thermometers	- 200 °C to + 840 °C	0.20 °C		
Temperature simulators, calibration by electrical simulation				
Base metal thermocouples	- 210 °C to + 1360 °C	0.070 °C	Excluding cold junction compensation	
Nobel metal thermocouples	- 50 °C to + 2300 °C	0.15 °C	Excluding cold junction compensation	
Cold junction compensation	Ambient temperature 18 °C to 30 °C	0.40 °C		
	At zero °C	0.30 °C		
Resistance thermometers	- 200 °C to + 840 °C	0.055 °C		
MASS	0 g to 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg	0.040 mg 0.060 mg 0.060 mg 0.070 mg 0.070 mg 0.10 mg 0.10 mg 2.0 mg 2.0 mg 2.5 mg 5.0 mg 10 mg	Intermediate values can be calibrated with an uncertainty equal to the uncertainty of the next higher nominal value.	UK
TEMPERATURE				
Resistance thermometers and electronic thermometers with PRT, thermocouple or thermistor sensors	-60 °C to -40 °C -40 °C to 0 °C 0.01 °C (Triple Point of Water) 0 °C to 60 °C 60 °C to 150 °C 150 °C to 250 °C	0.048 °C 0.022 °C 0.0070 °C 0.018 °C 0.023 °C 0.039 °C	Calibration by comparison	UK



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HUMIDITY Relative humidity meters	11 %rh 33 %rh 54 %rh 75 %rh 90 %rh For the temperature range 21 °C ± 3 °C	2.2 %rh 2.2 %rh 2.7 %rh 2.7 %rh 2.9 %rh		UK
END				