Schedule of Accreditation

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United Kingdom Accreditation Service

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4085

Accredited to ISO/IEC 17025:2017

UK Grid Solutions Limited

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Calibration performed at the above address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
Values and uncertainties listed below are applicable for the calibration of both measureing instruments and for instruments with an output. The method used is by direct comparison unless otherwise stated in the remarks column.			
ELECTRICAL			
DC Resistance	Specific values as shunts		The value of a 4-terminal shunt may be expressed as a terminal voltage at a specific current
			Supplies up to 1 kA are available to the laboratory
	1 mΩ	56 μΩ/Ω	Test current 70 A
	10 mΩ	26 μΩ/Ω	Test current 14 A
	100 mΩ	24 μΩ/Ω	
	at negligible power		
	1 mΩ	30 μΩ/Ω	Resistors of modest dimensions, suitable for oil immersion, can be measured over the temperature range 15 °C to 30 °C
	10 mΩ	23 μΩ/Ω	
	100 mΩ	10 μΩ/Ω	
	1 Ω	7.0 μΩ/Ω	
	10 Ω	3.0 μΩ/Ω	
	100 Ω	2.0 μΩ/Ω	
	1 kΩ	2.0 μΩ/Ω	
	10 kΩ	4.0 μΩ/Ω	
	100 kΩ	8.0 μΩ/Ω	
	1 MΩ	14 μΩ/Ω	
	10 MΩ	19 μΩ/Ω	
	100 MΩ	38 μΩ/Ω	
Other values	10 Ω to 100 MΩ	200 μΩ/Ω	
ELECTRICAL (continued)			

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
DC Voltage			
	1 V, 10 V	0.80 μV/V	
	0 V to 10 V	1.0 μV/V + 0.60 μV	
	10 V to 200 V	5.0 μV/V	
	200 V to 1500 V	8.0 μV/V	
	1.5 kV to 5 kV	0.050 % + 0.60 V	
DC Current	0 A to 200 μA	8.0 μA/A + 0.50 nA	
	200 μA to 2 mA	11 μA/A + 2.5 nA	
	2 mA to 20 mA	11 μA/A + 25 nA	
	20 mA to 200 mA	12 μA/A + 0.25 μA	
	200 mA to 1 A	25μA/A + 2.5 μA	
	1 A to 14 A	20 μA/A	
	14 A to 100 A	41 μA/A	Supplies available up to 100 A
DC Power	0 W to 150 kW	The power uncertainty will be the sum of the individual uncertainties for the corresponding voltage and current measurements as they are correlated terms	Limiting voltage 1.5 kV Limiting current 100 A
AC Voltage	10 mV to 210 mV		
	40 Hz to 20 kHz	300 μV/V + 12 μV	
	20 kHz to 100 kHz	500 μV/V + 12 μV	
	210 mV to 2.1 V		
	40 Hz to 20 kHz	51 μV/V + 12 μV	
	20 kHz to 100 kHz	150 μV/V + 12 μV	
	2.1 V to 21 V		
	40 Hz to 20 kHz	32 μV/V + 120 μV	
	20 kHz to 100 kHz	56 μV/V + 120 μV	
	21 V to 210 V		
	40 Hz to 20 kHz	42 μV/V + 1.2 mV	
	20 kHz to 100 kHz	72 μV/V + 1.2 mV	
	210 V to 300 V		
	10 kHz to 100 kHz	95 μV/V + 12 mV	
	210 V to 1010 V		
	40 Hz to 10 kHz	45 μV/V + 12 mV	
	50 Hz to 60 Hz		
	1010 V to 10 kV	0.90 % + 5.8 V	
	1 kV to 5 kV	0.16 % + 0.30 V	
ELECTRICAL (continued)			

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
AC Current	*40 Hz to 1 kHz*		
	30 μA to 210 μA	200 μA/A	
	210 μA to 2.1 mA	60 μA/A + 100 nA	
	2.1 mA to 21 mA	63 μA/A + 240 nA	
	21 mA to 210 mA	75 μA/A + 2.4 μA	
	210 mA to 2.1 A	120 μA/A + 26 μA	
	45 Hz to 60 Hz		
	2.5 A to 1000 A	0.030 %	Supplies available up to 500 A
AC Current Ratio			
Primary Currents	*50 Hz*		
	0.25, 0.5, 1, 2.5, 5, 10, 25, 50, 100, 250, 500, and 1000 A	0.0150 % ratio 0.75 minutes of phase (for CTs of accuracy class 0.5 or better)	For calibration of current transformers with resistive burdens up to 10 VA
	Secondary Current 5A only	0.080 % ratio 2.5 minutes of phase	Supplies available up to 500 A For CTs of accuracy classes 0.5 to 5)
AC Power			
at unity power factor	*50 Hz to 60 Hz* Maximum voltage 1 kV		
	2.5 W to 6 kW	0.0080 %	Maximum current 6 A
	6 kW to 100 kW	0.014 %	Maximum current 100 A The maximum current and voltage are for a single-phase system. For a three-phase system they will be reduced to 25 A and 500 V respectively.
Phase Angle	0° to 360°		
	50 Hz to 5 kHz	0.020°	Equal amplitudes in the range 50 mV to 120 V. Current range 0.5 A to 5 A at 50 to 60 Hz. Increased uncertainties will apply for unequal amplitudes. The uncertainties relate to the calibration of a phase meter of suitable resolution and stability.
	5 kHz to 50 kHz	0.040°	
	50 kHz to 100 kHz	0.060°	
Frequency			
Specific values	1 Hz, 10 Hz, 50 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz, 5 MHz and 10 MHz	8.1 in 10^{12}	
Time Interval	100 μs to 10 minutes	8.0 in 10^{12} + 1.0 ns	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
Capacitance	100 pF to 1 nF		Fixed capacitors are available within this range for the calibration of bridges and capacitance meters.
	100 Hz	0.22 %	
	1 kHz to 10 kHz	0.080 %	
	1 nF to 10 nF		
	50/60 Hz	0.28 %	
	100 Hz to 10 kHz	0.031 %	
	10 nF to 100 nF		
	50/60 Hz	0.066 %	
	100 Hz to 10 kHz	0.034 %	
	100 nF to 1 µF		
	50 Hz to 10 kHz	0.058 %	
	1 µF to 10 µF		
	50 Hz to 1 kHz	0.066 %	
Temperature indicators, calibration by electrical simulation			
Thermocouple Indicators			Including unit under test Reference junction compensation
Type K	-200 °C to 0 °C	0.40 °C	
	0 °C to 1300 °C	0.44 °C	
Type T	-200 °C to 0 °C	0.40 °C	
	0 °C to 400 °C	0.44 °C	
Reference junction measurement	Ambient range 18 °C to 22 °C	0.10 °C	

END

Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand.
Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation Q[a, b] stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$