


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <p>0149</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p align="center">Testo Industrial Services Ltd</p> <p align="center">Issue No: 039 Issue date: 30 May 2025</p>	
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<p align="center">Calibration performed at the above address only</p>		

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks
<p>Values and uncertainties listed below are applicable for the calibration of both measurement instruments and for instruments with an output. the method used is by direct comparison unless otherwise stated in the remarks column</p>			
<p>ELECTRICAL MEASUREMENTS</p> <p>DC RESISTANCE</p> <p>Specific values (sourcing)</p> <p>Specific values (measurement)</p>	<p>1 mΩ 10 mΩ 100 mΩ 1 Ω 10 Ω</p> <p>100 Ω 1 kΩ 10 kΩ 100 kΩ</p> <p>1 MΩ 10 MΩ 100 MΩ 1 GΩ 10 GΩ</p> <p>1 mΩ 10 mΩ 100 mΩ 1 Ω 10 Ω</p> <p>100 Ω 1 kΩ 10 kΩ 100 kΩ</p> <p>1 MΩ 10 MΩ 100 MΩ 1 GΩ 10 GΩ</p>	<p>35 μΩ/Ω 12 μΩ/Ω 8.0 μΩ/Ω 2.0 μΩ/Ω 2.5 μΩ/Ω</p> <p>3.0 μΩ/Ω 2.0 μΩ/Ω 1.5 μΩ/Ω 3.0 μΩ/Ω</p> <p>10 μΩ/Ω 20 μΩ/Ω 20 μΩ/Ω 250 μΩ/Ω 0.15 %</p> <p>40 μΩ/Ω 20 μΩ/Ω 20 μΩ/Ω 4.0 μΩ/Ω 5.0 μΩ/Ω</p> <p>3.0 μΩ/Ω 2.0 μΩ/Ω 2.0 μΩ/Ω 5.0 μΩ/Ω</p> <p>7.0 μΩ/Ω 15 μΩ/Ω 28 μΩ/Ω 220 μΩ/Ω 0.14 %</p>	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks
DC RESISTANCE (continued)			
Other values (measurement)	0 $\mu\Omega$ to 200 $\mu\Omega$ 200 $\mu\Omega$ to 2 m Ω 2 m Ω to 20 m Ω 20 m Ω to 200 m Ω 200 m Ω to 2 Ω 2 Ω to 20 Ω 20 Ω to 200 Ω 200 Ω to 2 k Ω 2 k Ω to 20 K Ω 20 K Ω to 200 k Ω 200 k Ω to 2 M Ω 2 M Ω to 20 M Ω 20 M Ω to 200 M Ω 200 M Ω to 2 G Ω 2 G Ω to 20 G Ω	40 n Ω 200 $\mu\Omega/\Omega$ 180 $\mu\Omega/\Omega$ 180 $\mu\Omega/\Omega$ 25 $\mu\Omega/\Omega$ 20 $\mu\Omega/\Omega$ 6.0 $\mu\Omega/\Omega$ 3.5 $\mu\Omega/\Omega$ 4.0 $\mu\Omega/\Omega$ 6.0 $\mu\Omega/\Omega$ 10 $\mu\Omega/\Omega$ 60 $\mu\Omega/\Omega$ 65 $\mu\Omega/\Omega$ 700 $\mu\Omega/\Omega$ 0.60 %	
DC VOLTAGE			
Specific values	100 mV 200 mV 1 V 2 V 10 V 20 V 100 V 200 V 1 kV	6.0 $\mu V/V$ 6.0 $\mu V/V$ 3.0 $\mu V/V$ 4.0 $\mu V/V$ 4.0 $\mu V/V$ 4.0 $\mu V/V$ 4.0 $\mu V/V$ 5.0 $\mu V/V$ 6.0 $\mu V/V$	
Other values	0 mV to 20 mV 20 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1 kV 1 kV to 30 kV 30 kV to 90 kV	0.60 μV 8.5 $\mu V/V$ 5.0 $\mu V/V$ 5.0 $\mu V/V$ 7.0 $\mu V/V$ 7.0 $\mu V/V$ 0.12 % 0.15 %	
DC VOLTAGE RATIO 100 mV to 10 V reference	0.1 to unity	0.5 $\mu V/V$	
DC Voltage linearity	0 V to 10 mV 0 V to 100 mV	0.40 μV 0.60 μV	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks
DC CURRENT	0 μ A to 1 μ A 1 μ A to 10 μ A 10 μ A to 100 μ A 100 μ A to 1 mA 1 mA and 10 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 10 A 10 A to 150 A	100 μ A/A + 80 pA 120 μ A/A 35 μ A/A 30 μ A/A 20 μ A/A 30 μ A/A 20 μ A/A 30 μ A/A 60 μ A/A 500 μ A/A	
DC Current linearity	0 A to 1 μ A 0 A to 10 μ A	7.5 pA 12 pA	
DC POWER	1 W to 20 kW	The arithmetic sum of the individual uncertainties of the corresponding voltages and current measurements	
AC VOLTAGE Specific values at specific frequencies	10 mV at 1 kHz 100 mV 20 Hz, 55 Hz 305 Hz, 1 kHz, 10 kHz 30 kHz 60 kHz 100 kHz 1 V 100 Hz 20 Hz, 55 Hz, 305 Hz 1 kHz 3 kHz, 10 kHz 30 kHz 60 kHz 100 kHz 500 kHz 1 MHz 10 V 20 Hz, 55 Hz, 100 Hz, 305 Hz, 1kHz 3 kHz, 10 kHz 30 kHz 60 kHz 100 kHz 500 kHz 1 MHz	100 μ V/V 100 μ V/V 90 μ V/V 100 μ V/V 180 μ V/V 190 μ V/V 55 μ V/V 50 μ V/V 40 μ V/V 50 μ V/V 60 μ V/V 65 μ V/V 160 μ V/V 0.135 % 0.30 % 50 μ V/V 60 μ V/V 80 μ V/V 180 μ V/V 190 μ V/V 0.135 % 0.30 %	



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AC VOLTAGE (continued) Specific values at specific Frequencies (continued)	100 V 20 Hz, 55 Hz, 305 Hz 100 Hz, 1 kHz 3 kHz, 10 kHz 30 kHz 60 kHz 100 kHz	60 μ V/V 55 μ V/V 60 μ V/V 80 μ V/V 180 μ V/V 200 μ V/V	
	500 V 55 Hz 100 Hz 305 Hz 1 kHz 3 kHz, 10 kHz 30 kHz 1 kV 55 Hz 305 Hz, 1 kHz, 3 kHz, 10 kHz 30 kHz	80 μ V/V 90 μ V/V 80 μ V/V 70 μ V/V 80 μ V/V 150 μ V/V 80 μ V/V 80 μ V/V 200 μ V/V	
Specific values at other frequencies	1 V 20 Hz to 30 kHz 30 kHz to 100 kHz 100 kHz to 1MHz	70 μ V/V 160 μ V/V 0.30 %	
	10 V 20 Hz to 30 kHz 30 kHz to 100 kHz 100 kHz to 1MHz	90 μ V/V 180 μ V/V 0.30 %	
Other values	100 V 20 Hz to 30 kHz 30 kHz to 100 kHz	85 μ V/V 150 μ V/V	
	1 kV 55 Hz to 10 kHz 10 kHz to 30 kHz	100 μ V/V 200 μ V/V	
Other values	50 Hz to 2 kHz 100 μ V to 1 mV 1 mV to 10 mV 10 mV to 100 mV	0.75 % 750 μ V/V 100 μ V/V	
	100 mV to 200 mV 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	150 μ V/V 360 μ V/V 850 μ V/V	
Other values	200 mV to 1 V 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	160 μ V/V 250 μ V/V 0.13 %	



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AC VOLTAGE (continued) Other values (continued)	1 V to 2 V 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 2 V to 10 V 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 10 V to 20 V 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 20 V to 200 V 40 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 200 V to 1000 V 40 Hz to 10 kHz 10 kHz to 30 kHz	120 $\mu\text{V/V}$ 250 $\mu\text{V/V}$ 650 $\mu\text{V/V}$ 160 $\mu\text{V/V}$ 350 $\mu\text{V/V}$ 0.13 % 160 $\mu\text{V/V}$ 300 $\mu\text{V/V}$ 300 $\mu\text{V/V}$ 150 $\mu\text{V/V}$ 150 $\mu\text{V/V}$ 150 $\mu\text{V/V}$ 200 $\mu\text{V/V}$ 700 $\mu\text{V/V}$	
Waveform analysis	3 μV to 300 V 20 Hz to 76 kHz	5.0 % of FSD*	* 15 ranges of 30 μV to 300 V FSD in 1-3-10 sequence
AC CURRENT Specific values and frequencies	100 μA 55 Hz, 305 Hz 1 kHz 5 kHz 1 mA 55 Hz, 305 Hz 1 kHz 5 kHz 10 kHz 10 mA 55 Hz, 305 Hz 1 kHz, 5 kHz, 10 kHz 100 mA 55 Hz, 305 Hz 1 kHz, 5 kHz, 10 kHz 1 A 55 Hz, 305 Hz, 1 kHz, 5 kHz 10 kHz	150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 200 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 160 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 150 $\mu\text{A/A}$ 260 $\mu\text{A/A}$	



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AC CURRENT (continued) Other Values (continued) Other Values	10 A 55 Hz, 305 Hz, 1 kHz 5 kHz, 10 kHz 20 μ A to 100 μ A 50 Hz to 5 kHz 100 μ A to 200 μ A 50 Hz to 5 kHz 200 μ A to 1 mA 55 Hz to 5 kHz 1 mA to 2 mA 50 Hz to 10 kHz 2 mA to 10 mA 50 Hz to 10 kHz 10 mA to 20 mA 50 Hz to 10 kHz 20 mA to 100 mA 50 Hz to 10 kHz 100 mA to 200 mA 40 Hz to 10 kHz 200 mA to 1 A 1 kHz to 10 kHz 1 A to 2 A 55 Hz, 305 Hz, 1 kHz 2 A to 10 A 50 Hz to 1 kHz 1 kHz to 10 kHz 10 A to 20 A 50 Hz to 1 kHz 1 kHz to 10 kHz 10 A to 150 A 50 Hz to 60 Hz	170 μ A/A 200 μ A/A 0.12 % 400 μ A/A 0.12 % 400 μ A/A 0.12 % 400 μ A/A 0.12 % 400 μ A/A 0.15 % 750 μ A/A 0.15 % 0.32 % 0.10 % 0.30 % 0.10 %	
AC RESISTANCE	At 40 Hz to 60 Hz 10 m Ω to 100 m Ω 100 m Ω to 1 Ω 1 Ω to 100 k Ω 100 k Ω to 10 M Ω	300 $\mu\Omega/\Omega$ 300 $\mu\Omega/\Omega$ 75 $\mu\Omega/\Omega$ 0.10 %	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks
FREQUENCY			
Generation			
Specific values	100 kHz, 1 MHz, 5 MHz and 10 MHz	2.0 in 10^{10}	Sine wave generation
	0.02 Hz to 10 MHz in 2-5-10 sequence	2.0 in 10^{10}	Square wave generation
Range values	1 Hz to 100 kHz 100 kHz to 10 MHz	2.0 in 10^{10} 5.0 in 10^{11}	Sine wave generation
	1 Hz to 10 kHz 10 kHz to 100 kHz 100 kHz to 100 MHz 100 MHz to 1 GHz	1.2 in 10^8 1.2 in 10^9 1.2 in 10^9 1.2 in 10^{10}	Measurement of sources These values may also be reported as the reciprocal; seconds, for repetitive signals.
TIME INTERVAL	0 s to 500s 0 s to 500s	1.0 us 50 ms	Electronically triggered devices Mechanically triggered devices
Pulse period	1 μ s to 1 s	5.0 ns	
Rise time	1 ns to 1 ms	3.0 ns	Into 50 Ω
RCD testers			
Trip time	10 ms to 5 s	0.25 ms	
Trip Current	3 mA to 3 A	1.0 %	
Earth Loop	8 m Ω to 330 m Ω 330 m Ω to 500 m Ω 500 m Ω 10 1.8 Ω 1.8 Ω to 5 Ω 5 Ω to 10 Ω 10 Ω to 18 Ω 18 Ω 50 Ω 50 Ω to 100 Ω 100 Ω to 180 Ω 180 Ω to 500 Ω 500 Ω to 1 k Ω 1 k Ω to 1.8 k Ω	8.0 m Ω 10 m Ω 12 m Ω 36 m Ω 70 m Ω 120 m Ω 350 m Ω 600 m Ω 1.2 Ω 3.0 Ω 6.0 Ω 12 Ω	



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Temperature indicators, calibration by electrical simulation			The claims below cover test items with a resolution of 10 m°C
ELECTRICAL SIMULATION OF TEMPERATURE Thermocouple capabilities listed below are given for type K Base and Type S Noble, using EMF sensitivity values as listed in BS EN 60584-1:2013. Other Thermocouple types can be calibrated, the uncertainties will correspond to the appropriate sensitivities listed. Calibrations which include the internal reference junction (CJC) are available for types: J, K, N, T, E, R, S, B & C			
Base Metal Thermocouples	-200 °C to -100 °C -100 °C to -50 °C -50 °C to 0 °C 0 °C to 100 °C 100 °C to 700 °C 700 °C to 900 °C 900 °C to 1370 °C	0.20 °C 0.15 °C 0.14 °C 0.14 °C 0.19 °C 0.18 °C 0.21 °C	Excluding automatic CJC
Noble Metal Thermocouples	0 °C to 1500 °C	0.35 °C	
Base Metal Thermocouples	-200 °C to -100 °C -100 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.40 °C 0.24 °C 0.31 °C 0.43 °C	Including automatic CJC
Noble Metal Thermocouples	0 °C to 1500 °C	0.50 °C	
Cold Junction Compensation	0 °C to 30 °C	0.10 °C	
Resistance thermometer (Pt 100)	- 200 °C to + 800 °C	0.020 °C	
Supporting temperature measurements for electrical simulation and cold junction verification	At Nominal 0 °C Nominal ambient between 17 °C to 23 °C	0.050 °C 0.30 °C	



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PRESSURE <u>Hydraulic pressure (gauge)</u> Calibration of pressure indicating instruments and gauges <u>Gas pressure (gauge)</u> Calibration of pressure indicating instruments and gauges <u>Gas pressure (absolute)</u> Calibration of pressure indicating instruments and gauges	 600 kPa to 120 MPa 120 MPa to 280 MPa -95 kPa to -70 kPa -70 kPa to 40 kPa 40 kPa to 27.5 MPa 3.5 kPa to 131 kPa	 0.010 % 340 kPa 23 Pa 12 Pa 0.0065 % 20 Pa	 Methods consistent with EURAMET CG17 Calibration of pressure measuring devices with an electrical output may be undertaken. Absolute pressure calibrations may be undertaken by associated barometric pressure measurement with an additional uncertainty of ± 20 Pa
END			



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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: $Q[a, b] = [a^2 + b^2]^{1/2}$