


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

| | | |
|--|--|--|
|  <p>UKAS CALIBRATION 10039</p> <p>Accredited to ISO/IEC 17025:2017</p> | <h3>MCS Test Equipment Limited</h3> <p>Issue No: 006 Issue date: 09 April 2021</p> | |
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| <p>Calibration performed at the above address only</p> | | |

DETAIL OF ACCREDITATION

| Measured Quantity Instrument or Gauge | Range | Calibration and Measurement Capability (CMC) Expressed as an Expanded 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> | | | |
| ELECTRICAL | | | |
| DC Voltage | | | |
| Generation | 0 V to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V 330 V to 1020 V | 15 ppm + 3.2 μ V 10 ppm + 15 μ V 10 ppm + 180 μ V 15 ppm + 2.4 mV 15 ppm + 8.1 mV | These values can be generated for the calibration of measuring instruments |
| Measurement | 0 V to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V | 15 ppm + 0.78 μ V 15 ppm + 350 μ V 15 ppm + 2.5 mV 25 ppm + 45 mV 25 ppm + 0.5 V | Outputs of instruments within these values can be measured to the listed uncertainties |
| Resistance | | | |
| Generation | 0 Ω to 11 Ω 11 Ω to 33 Ω 33 Ω to 110 Ω 110 Ω to 330 Ω 330 Ω to 1.1 k Ω | 45 ppm + 5.6 m Ω 35 ppm + 3.1 m Ω 30 ppm + 3.7 m Ω 30 ppm + 3.7 m Ω 30 ppm + 470 m Ω | These values can be generated for the calibration of measuring instruments |
| | 1.1 k Ω to 3.3 k Ω 3.3 k Ω to 11 k Ω 11 k Ω to 33 k Ω 33 k Ω to 110 k Ω 110 k Ω to 330 k Ω | 30 ppm + 670 m Ω 30 ppm + 430 m Ω 30 ppm + 1.8 Ω 30 ppm + 1.7 Ω 35 ppm + 6.2 Ω | |
| | 330 k Ω to 1.1 M Ω 1.1 M Ω to 3.3 M Ω 3.3 M Ω to 11 M Ω 11 M Ω to 33 M Ω 33 M Ω to 110 M Ω | 35 ppm + 2.0 k Ω 65 ppm + 5.7 k Ω 150 ppm + 3.1 k Ω 280 ppm + 17 k Ω 550 ppm + 80 k Ω | |



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| Resistance (continued) Measurement | 0 Ω to 100 Ω 100 Ω to 1 k Ω 1 k Ω to 10 k Ω 10 k Ω to 100 k Ω 100 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 100 M Ω | 140 ppm + 2.0 m Ω 140 ppm + 600 m Ω 140 ppm + 6.0 Ω 140 ppm + 100 Ω 140 ppm + 1.0 k Ω 500 ppm + 10 k Ω 0.24 % + 300 k Ω | Outputs of instruments within these values can be measured to the listed uncertainties |
| DC Current Generation | 0 A to 330 μ A 330 μ A to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 3.3 A 3.3 A to 11 A | 100 ppm + 20 nA 70 ppm + 90 nA 100 ppm + 800 nA 75 ppm + 10 μ A 250 ppm + 255 μ A 300 ppm + 1.0 mA | These values can be generated for the calibration of measuring instruments |
| Measurement | 0 A to 20 mA 20 mA to 100 mA 100 mA to 1 A 1 A to 3 A | 250 ppm + 2.0 μ A 250 ppm + 45 μ A 0.04 % + 200 μ A 0.06 % + 0.40 mA | Outputs of instruments within these values can be measured to the listed uncertainties |
| AC Voltage Generation | <i>10 Hz to 45 Hz</i> 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V <i>45 Hz to 1 kHz</i> 30 μ V to 33 mV 33 V to 330 V 330 V to 1 kV <i>45 Hz to 10 kHz</i> 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V <i>1 kHz to 10 kHz</i> 33 V to 330 V | 0.020 % + 15 μ V 0.020 % + 110 μ V 0.020 % + 1.3 mV 0.010 % + 6.0 μ V 0.015 % + 12 mV 0.020 % + 30 mV 0.015 % + 15 μ V 0.015 % + 140 μ V 0.035 % + 1.5 mV 0.015 % + 11 mV | These values can be generated for the calibration of measuring instruments |



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| AC Voltage (continued) | <p><i>10 kHz to 20 kHz</i> 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V</p> <p><i>20 kHz to 50 kHz</i> 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V</p> <p><i>50 kHz to 100 kHz</i> 33 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V</p> <p><i>100 kHz to 500 kHz</i> 33 mV to 330 mV 330 mV to 3.3 V</p> | <p>0.015 % + 11 μV 0.015 % + 100 μV 0.020 % + 1.1 mV 0.020 % + 10 mV</p> <p>0.020 % + 11 μV 0.020 % + 100 μV 0.025 % + 1.0 mV 0.020 % + 10 mV</p> <p>0.050 % + 30 μV 0.050 % + 0.15 mV 0.060 % + 2.0 mV 0.15 % + 50 mV</p> <p>0.15 % + 60 μV 0.20 % + 0.55 mV</p> | <p>These values can be generated for the calibration of measuring instruments</p> |
| VRMS Measurement | <p><i>10 Hz to 20 kHz</i> 10 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V</p> <p><i>10 Hz to 1 kHz</i> 100 V to 750 V</p> <p><i>20 kHz to 50 kHz</i> 10 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V</p> <p><i>50 kHz to 100 kHz</i> 100 mV to 1 V 1 V to 10 V</p> <p><i>100 kHz to 300 kHz</i> 1 V to 10 V</p> | <p>0.10 % + 35 μV 0.10 % + 110 μV 0.10 % + 12 mV 0.10 % + 35 mV</p> <p>0.10 % + 87 mV</p> <p>0.20 % + 65 μV 0.20 % + 525 μV 0.20 % + 5.5mV 0.20 % + 60 mV</p> <p>0.85 % + 870 μV 0.95 % + 9.0 mV</p> <p>6.0 % + 55 mV</p> | <p>Outputs of instruments within these values can be measured to the listed uncertainties</p> |



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|--|---|--|---|
| AC Current Generation | <p><i>45 Hz to 1 kHz</i> 30 μA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A 1.1 A to 3.3 A</p> <p><i>1 kHz to 5 kHz</i> 30 μA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A 1.1 A to 3.3 A</p> <p><i>5 kHz to 10 kHz</i> 30 μA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A 1.1 A to 3.3 A</p> <p><i>10 kHz to 30 kHz</i> 30 μA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A</p> <p>3.3 A to 11 A <i>45 Hz to 1 Hz</i></p> <p><i>1 kHz to 5 kHz</i> <i>5 kHz to 10 kHz</i></p> <p>11 A to 20.5 A <i>45 Hz to 100 Hz</i> <i>100 Hz to 1 kHz</i> <i>1 kHz to 5 kHz</i></p> <p><i>10 Hz to 3 kHz</i> 100 mA to 1 A 1 A to 3 A</p> <p><i>3 kHz to 5 kHz</i> 1 A to 3 A</p> | <p>0.110 % + 700 nA 0.06 % + 2.5 μA 0.06 % + 25 μA 0.07 % + 0.12 mA 0.08 % + 0.20 mA</p> <p>0.50 % + 0.68 μA 0.15 % + 4.1 μA 0.25 % + 58 μA 0.85 % + 1.2 mA 0.85 % + 1.2 mA</p> <p>0.50 % + 0.68 μA 0.30 % + 5.0 μA 0.30 % + 0.12 mA 3.5 % + 6.0 mA 3.5 % + 6.0 mA</p> <p>1.0 % + 1.0 μA 0.60 % + 6.5 μA 0.60 % + 235 μA 3.5 % + 6.0 mA</p> <p>0.25 % + 2.5 mA</p> <p>2.0 % + 2.5 mA 0.20 % + 6.0 mA</p> <p>0.20 % + 7.0 mA 0.25 % + 7.0 mA 4.5 % + 7.5 mA</p> <p>0.08 % + 0.5 mA 0.15 % + 1.7 mA</p> <p>0.15 % + 1.5 mA</p> | <p>These values can be generated for the calibration of measuring instruments</p> <p>Outputs of instruments within these values can be measured to the listed uncertainties</p> |



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|--|---|--|--|
| AC Power Unity PF to 0.25 PF | 45 Hz to 65 Hz 10 mV to 1 kV 3.3 mA to 20.5 A | 0.50 % | These values can be simulated for the calibration of measuring instruments |
| Capacitance Sourcing by simulation | 1.1 nF to 3.3 nF 3.3 nF to 11 nF 11 nF to 33 nF 33 nF to 110 nF 110 nF to 330 nF 330 nF to 1.1 μ F 1.1 μ F to 3.3 μ F 3.3 μ F to 11 μ F 11 μ F to 33 μ F 33 μ F to 110 μ F 110 μ F to 330 μ F 330 μ F to 1.1 mF 1.1 mF to 3.3 mF 3.3 mF to 11 mF 11 mF to 33 mF | 0.65 % + 10 pF 0.35 % + 12 pF 0.35 % + 85 pF 0.35 % + 115 pF 0.35 % + 0.45 nF 0.35 % + 1.5 nF 0.35 % + 3.5 nF 0.35 % + 12 nF 0.55 % + 50 nF 0.60 % + 165 nF 0.60 % + 0.25 μ F 0.60 % + 0.85 μ F 0.60 % + 2.5 μ F 0.60 % + 8.5 μ F 1.1 % + 25 μ F | |



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|---|--|--|-------------------|
| Oscilloscope Calibration | | | |
| Vertical deflection as a Voltage | 0 V to 25 mV 25 mV to 110 mV 110 mV to 2.2 V 2.2 V to 11 V 11 V to 130 V | 0.040 % + 31 μ V 0.040 % + 31 μ V 0.040 % + 120 μ V 0.040 % + 200 μ V 0.040 % + 2.0 mV | Into 1 M Ω |
| Square wave peak to peak | 0 V to 25 mV 25 mV to 110 mV 110 mV to 2.2 V 2.2 V to 6 V | 0.19 % + 31 μ V 0.19 % + 33 μ V 0.19 % + 31 μ V 0.19 % + 31 mV | Into 50 Ω |
| Sine wave level flatness referenced to set point | Ref set point 5 mV to 5.5 V 50 kHz to 300 MHz 100 kHz to 600 MHz | 62 μ V 220 μ V 32 mV 33 mV | Into 50 Ω |
| Rise time | 250 ps 5 mV to 2.5 V peak | 3.9 % 3.9 % | |
| Resistance | 40 Ω to 60 Ω 500 k Ω to 1.5 M Ω | 80 ps | |
| Time markers | 2 ns to 20 ns 20 ns to 100 ns 100 ns to 1 s 1 s to 5 s | 0.080 % + 10 m Ω 0.080 % + 100 m Ω | |
| Capacitance | 5 pF to 50 pF | 5.0 fs 130 fs 13 ps 10 ms | |
| | | 4.0 % + 0.40 pF | |



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|---|---|---|--|
| Insulation Testers Continuity | 0 Ω to 100 m Ω 100 m Ω to 500 m Ω 0.5 Ω to 1 Ω 1 Ω to 5 Ω 5 Ω to 200 Ω 200 Ω to 10 k Ω | 4.5 m Ω 6.5 m Ω 8.0 m Ω 25 m Ω 0.80 Ω 8.0 Ω | |
| High Resistance | 10 k Ω to 1 M Ω 1 M Ω to 10 M Ω 10 M Ω to 1 G Ω 1 G Ω to 10 G Ω | 0.20 % 0.30 % 0.65 % 1.0 % | Uncertainty Increases by 0.10 % per 200 V above 500 V |
| Test Voltage Measurement | 0 V to 2 kV DC 10 k Ω to 1 M Ω 1 M Ω to 10 G Ω | 0.8 % + 2.6 V 0.8 % + 4.5 V | |
| Line / Loop Impedance Testers Resistance Nominal values | 25 m Ω 50 m Ω 100 m Ω 330 m Ω 500 m Ω 1 Ω 1.8 Ω 5 Ω 10 Ω 18 Ω 50 Ω 100 Ω 180 Ω 500 Ω 1 k Ω 1.8 k Ω 0.05 A 0.5 A 3.2 A 10 A 20 A | 4.0 m Ω 4.5 m Ω 4.0 m Ω 5.5 m Ω 6.5 m Ω 8.0 m Ω 15.5 m Ω 25 m Ω 50 m Ω 80 m Ω 0.25 Ω 0.40 Ω 0.80 Ω 2.0 Ω 4.0 Ω 8.0 Ω 1.2 % + 2.0 mA 1.2 % + 11 mA 1.2 % + 55 mA 1.2 % + 0.16 A 1.2 % + 0.30 A | Outputs of instruments within these values can be measured to the listed uncertainties |



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|--|---|---|---------|
| RCD Testers | | | |
| Timing | 10 ms to 5 s | 0.02 % + 2.7 ms | |
| Current | | | |
| 0.5 x I and 1 x I Mode | 3 mA to 30 mA 30 mA to 300 mA 300 mA to 3000 mA | 0.80 % + 60 μ A 0.80 % + 0.60 mA 0.80 % + 6.0 mA | |
| 1.4 x I and 2 x I Mode | 3 mA to 30 mA 30 mA to 300 mA 300 mA to 1500 mA | 1.6 % + 60 μ A 1.6 % + 0.60 mA 1.6 % + 6.0 mA | |
| 5 x I Mode | 3 mA to 30 mA 30 mA to 300 mA 300 mA to 600 mA | 4.0 % + 60 μ A 4.0 % + 0.60 mA 4.0 % + 6.0 mA | |
| Leakage Testers | | | |
| Current | | | |
| Passive/Differential/Substitute Modes | 0.1 mA to 30 mA | 0.30 % + 2 μ A (ac + dc) rms | |
| Active Mode | 0.1 mA to 30 mA | 0.30 % + 1.3 μ A (ac + dc) rms | |
| Touch Voltage | 250 V Range | 5.0 % + 3.0 V | |
| Portable Appliance Testers | | | |
| Earth / Ground Bond Resistance. Nominal values At 50 Hz to 60 Hz | 25 m Ω 50 m Ω 100 m Ω 330 m Ω 500 m Ω 1 Ω 1.8 Ω 5 Ω 10 Ω 18 Ω 50 Ω 100 Ω 180 Ω 500 Ω 1 k Ω 1.8 k Ω | 4.0 m Ω 4.5 m Ω 4.0 m Ω 5.5 m Ω 6.5 m Ω 8.0 m Ω 16 m Ω 25 m Ω 47 m Ω 80 m Ω 0.25 Ω 0.40 Ω 0.80 Ω 2.0 Ω 4.0 Ω 8.0 Ω | |



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| Earth / Ground Bonding Current At 50 Hz to 60 Hz | 0.05 A 0.5 A 3.2 A 10 A 20 A | 1.2 % + 1.7 mA 1.2 % + 11 mA 1.2 % + 55 mA 1.2 % + 0.12 A 1.2 % + 0.28 A | |
| Insulation Resistance | 10 kΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 1 GΩ 1 GΩ to 10 GΩ | 0.16 % 0.27 % 0.62 % 0.95 % | Uncertainty Increases by 0.10 % per 200 V above 500 V |
| Test Voltage | 0 V to 2 kV DC 10 kΩ to 1 MΩ 1 MΩ to 10 GΩ | 0.80 % + 2.6 V 0.80 % + 4.5 V | |
| Continuity | 100 mΩ to 500 mΩ 0.5 Ω to 1 Ω 1 Ω to 5 Ω 5 Ω to 200 Ω 200 Ω to 10 kΩ | 6.5 mΩ 8.0 mΩ 25 mΩ 0.78 Ω 7.8 Ω | |
| HIPOT/HV TESTERS | | | |
| HVDC Voltage | 0.1 kV to 1.0 kV | 0.23 % + 4.5 V | |
| HVAC Peak Voltage | 50 Hz to 60 Hz 0.1 kV to 1.0 kV | 0.40 % + 4 V | |
| DC Leakage Current | 0 A to 300 μA 0.3 mA to 3 mA 3 mA to 30 mA 30 mA to 300 mA | 0.23 % + 0.20 μA 0.16 % + 1.3 μA 0.16 % + 12 μA 0.16 % + 120 μA | |
| AC Leakage Current | 20 Hz to 400 Hz 0 A to 300 μA 0.3 mA to 3 mA 3 mA to 30 mA 30 mA to 300 mA | 0.23 % + 0.34 μA 0.16 % + 1.5 μA 0.16 % + 18 μA 0.16 % + 130 μA | |



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| RF MEASUREMENTS | | | |
| Voltage Reflection Coefficient | 1.0 to 0.1 <i>10 MHz to 6 GHz</i> <i>6 GHz to 15 GHz</i> <i>15 GHz to 18 GHz</i> | 0.020 0.030 0.040 | All RF measurements are for a well matched 50 Ω source or load unless otherwise stated. Uncertainties apply to precision connectors. |
| Frequency | 10 MHz 1 Hz to 10 Hz 10 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 160 MHz 160 MHz to 1.3 GHz 1.3 GHz to 10 GHz 10 GHz to 18 GHz 18 GHz to 26.5 GHz | 6.0 in 10^{12} 22 ppm 14 ppm 150 ppm 3.8 in 10^8 3.5 in 10^9 1.0 in 10^{10} 3.0 in 10^{10} 7.5 in 10^{10} 1.4 in 10^9 4.7 in 10^9 | May be reported as time (1/f) for repetitive events. |
| Power Ranges | <i>9 kHz to 6 GHz</i> 200 pW to 40 μ W 20 nW to 4 mW 2 μ W to 200 mW <i>10 MHz to 18 GHz</i> 2 nW to 40 μ W 200 nW to 40 mW 2 μ W to 2 W <i>10 MHz to 26.5 GHz</i> 316 nW to 100 mW | 1.5 % 1.4 % 1.4 % 5.3 % 2.2 % 2.4 % 3.5 % | |
| Attenuation | 0 dB to 90 dB <i>50 MHz to 18 GHz</i> | 0.10 dB | |
| Calibration Factor | 75 % to 110 % 9 kHz 18 GHz | 2.0 % (Cal Factor) | |



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| RF MEASUREMENTS Continued | | | |
| Amplitude Modulation (AM) | <i>10 Hz to 10 kHz</i> 150 kHz to 10 MHz | 2.4 % of reading | |
| AM Distortion | <i>50 Hz to 50 kHz</i> 10 MHz to 1300 MHz | 1.4 % of reading | |
| Frequency Modulation (FM) | <i>10 Hz to 50 kHz</i> 150 kHz to 1300 MHz | 0.50 % | |
| FM Distortion | <i>20 Hz to 10 kHz</i> 250 kHz to 10 MHz | 2.4 % + 40 Hz | Frequency Modulation - Carrier frequency range 10 MHz to 1300 MHz Modulation frequency range 10 Hz to 100 kHz |
| | <i>50 Hz to 100 kHz</i> 10 MHz to 1300 MHz | 1.2 % + 17 Hz | |
| | <i>20 Hz to 100 kHz</i> 150 kHz to 1300 MHz | 0.20 % | |
| Harmonic Content | Carrier Frequency 1 MHz to 13 GHz Harmonic Frequency 2 MHz to 26 GHz | 0.62 dB | Maximum CW amplitude +15 dBm; minimum harmonic level -80 dBc |
| 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 uncertainty of measurement 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 CIPM-ILAC definition of the CMC is as follows:

A CMC is a calibration and measurement capability available to customers under normal conditions:

- (a) as published in the BIPM key comparison database (KCDB) of the CIPM MRA; or
- (b) as described in the laboratory's scope of accreditation granted by a signatory to the ILAC Arrangement.

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 CMC is calculated according to the procedures given in M3003 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 CMC in certificates issued under its accreditation.

The CMC may be described using various methods in the Schedule of Accreditation:

As a single value that is valid throughout the range.

As an explicit function of the measurand or of a parameter (see below).

As a range of values. The range is stated such that the customer can make a reasonable estimate of the likely uncertainty at any point within the range.

As a matrix or table where the CMCs depend on the values of the measurand and a further quantity.

In graphical form, providing there is sufficient resolution on each axis to obtain at least two significant figures for the CMC.

Expression of CMCs - symbols and units

In general, only units of the SI and those units recognised for use with the SI are used to express the values of quantities and of the associated CMCs. Nevertheless, other commonly used units may be used where considered appropriate for the intended audience. For example, the term "ppm" (part per million) is frequently used by manufacturers of test and measurement equipment to specify the performance of their products. Terms like this may be used in Schedules of Accreditation where they are in common use and understood by the users of such equipment, providing their use does not introduce any ambiguity in the capability that is being described.

When the CMC is expressed as an explicit function of the measurand or of a parameter, this often comprises a relative term (e.g., percentage) and an absolute term, i.e. one expressed in the same units as those of the measurand. This form of expression is used to describe the capability that can be achieved over a range of values. Some examples are shown below. It should be noted that these expressions are *not* mathematical formulae but are instead written in a commonly used shorthand for expressing uncertainties - therefore, for purposes of clarity, an indication of how they are to be interpreted is also provided below.

DC voltage, 100 mV to 1 V: 0.0025 % + 5.0 μ V

Over the range 100 mV to 1 V, the CMC is 0.0025 %-V + 5.0 μ V, where V is the measured voltage.

Hydraulic pressure, 0.5 MPa to 140 MPa: 0.0036 % + 0.12 ppm/MPa + 4.0 Pa

Over the range 0.5 MPa to 140 MPa, the CMC is 0.0036 %·p + (0.12·10⁻⁶·p·10⁻⁶) + 4.0 Pa, where p is the measured pressure in Pa.

It should be noted that the percentage symbol (%) simply represents the number 0.01. In cases where the CMC is stated only as a percentage, this is to be interpreted as meaning percentage of the measured value or indication.

Thus, for example, a CMC of 1.5 % means 1.5 · 0.01 · i, where i is the instrument indication.