**Issue date: 24 June 2025**
**Valid Until: -**

**NO: SAMM 599**
(Issue 2, 24 June 2025 replacement
of SAMM 599 dated 14 November 2023)



| | |
|---|---|
| **LABORATORY LOCATION/ CENTRAL OFFICE:** | Excel Test Sdn. Bhd.<br>Unit C717, 7th Floor, Block C, Kelana Square No. 17, Jalan SS 7/26<br>47301 Petaling Jaya, Selangor , 47301,<br>SELANGOR<br>MALAYSIA |
| **ACCREDITED SINCE :** | 24 JUNE 2025 |
| **FIELD(S) OF CALIBRATION:** | HEAT & TEMPERATURE |

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

*** The uncertainty covered by the CMC is expressed as the expanded uncertainty corresponding to a coverage probability of approximately 95 % and have a coverage factor of k=2 unless stated otherwise.**

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|---|---|
| **CENTRAL LOCATION** | Excel Test Sdn. Bhd.<br>Unit C717, 7th Floor, Block C, Kelana Square No. 17, Jalan SS 7/26<br>47301 Petaling Jaya, Selangor , 47301,<br>Selangor |
| **FIELD(S) OF CALIBRATION :** | HEAT & TEMPERATURE, |

**SCOPE OF CALIBRATION : HEAT & TEMPERATURE**

| **Instrument Calibrated/Measurement Parameter** | **Range** | **Calibration and Measurement Capability Expressed as an Uncertainty (±)*** | **Remarks** |
|---|---|---|---|
| **Temperature Sensor With Indicator**<br>-rtd | -80 °C to -20 °C<br>-20 °C to 5 °C<br>5° C to 50 °C<br>50 °C to 100 °C<br>100 °C to 140 °C | 0.07 °C<br>0.07 °C<br>0.07 °C<br>0.07°C<br>0.07°C | Comparison with Resistance Thermometer reference in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |

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| **Instrument Calibrated/Measurement Parameter** | **Range** | **Calibration and Measurement Capability Expressed as an Uncertainty (±)*** | **Remarks** |
|---|---|---|---|
| **Temperature Sensor With Indicator**<br>-thermistor | -20 °C to 140 °C | 0.2°C | Comparison with Resistance Thermometer reference in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |
| **Temperature Sensor With Indicator**<br>-thermocouple | -80°C to 140°C | 0.2°C | Comparison with Resistance Thermometer reference in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |
| **Temperature Sensor With Indicator**<br>-bimetallic & Capillary Thermometer | 0°C to 90°C | 1.2°C | Comparison with Resistance Thermometer reference in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |
| **Temperature Sensor Without Indicator**<br>-rtd | -80 °C to -20 °C<br>-20 °C to 140 °C | 0.2°C<br>0.1°C | Calibrated with Resistance Thermometer reference, with sensor connected to calibrated display indicator in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |

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| **Instrument Calibrated/Measurement Parameter** | **Range** | **Calibration and Measurement Capability Expressed as an Uncertainty (±)*** | **Remarks** |
|---|---|---|---|
| **Temperature Sensor Without Indicator**<br>-thermocouple | -80 °C to -20°C<br>-20°C to 140°C | 0.2°C<br>0.1°C | Calibrated with Resistance Thermometer reference, with sensor connected to calibrated display indicator in: Liquid Bath Dry Block Climatic Chamber with reference to: ASTM E644-11 ASTM E220-19 |
| **Temperature Datalogger/ Indicator/ Controller**<br>-rtd Pt-100 2-wires, 3- Wires And 4-wires | -100 °C to 800 °C | 0.2°C | By simulation using calibrator and reference table to ITS-90 with reference to: EURAMET cg-11 v2.0 |
| **Temperature Datalogger/ Indicator/ Controller**<br>-thermocouple Type-j | -100°C to 1200°C | 0.5 °C | By simulation using calibrator and reference table to ITS-90 with reference to: EURAMET cg-11 v2.0 |
| **Temperature Datalogger/ Indicator/ Controller**<br>- Thermocouple Type-k | -100 °C to 1300 °C | 0.5 °C | By simulation using calibrator and reference table to ITS-90 with reference to: EURAMET cg-11 v2.0 |
| **Temperature Datalogger/ Indicator/ Controller**<br>-thermocouple Type-t | -100 °C to 400 °C | 0.6 °C | By simulation using calibrator and reference table to ITS-90 with reference to: EURAMET cg-11 v2.0 |
| **R. Humidity Sensor With Indicator**<br>-thermo-hygrometer/ R. Humidity Datalogger | 30 %rh to 90 %rh at 23 °C | 1.3 %rh | Comparison with Chilled Mirror Hygrometer (CMH) / Dewpoint Meter in Climatic Chamber with reference to: DKD R 5-7e EURAMET cg-20 ver. 5.0 |

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|---|---|
| **SITE LOCATION** (HQ) | 1. |
| **FIELD(S) OF CALIBRATION :** | HEAT & TEMPERATURE |

**SCOPE OF CALIBRATION : HEAT & TEMPERATURE**

| Material / Product Tested | Type Of Test / Properties Measured / Range Of Measurement | Standard Test Methods / Equipment / Techniques | Remarks |
|---|---|---|---|
| **Temperature Sensor With Indicator**<br>-rtd | -10 °C to 110 °C | 0.3 °C<br>0.2 °C<br>0.5 °C<br>1.2 °C | Comparison with Resistance Thermometer reference in: Dry Block |
| **Temperature Sensor With Indicator**<br>-thermistor | -10 °C to 110 °C | 0.3 °C<br>0.2 °C<br>0.5 °C<br>1.2 °C | Comparison with Resistance Thermometer reference in: Dry Block |
| **Temperature Sensor With Indicator**<br>-thermocouple | -10 °C to 110 °C | 0.3 °C<br>0.2 °C<br>0.5 °C<br>1.2 °C | Comparison with Resistance Thermometer reference in: Dry Block |
| **Temperature Sensor With Indicator**<br>-bimetallic Capillary Type | -10 °C to 110 °C | 0.3 °C<br>0.2 °C<br>0.5 °C<br>1.2 °C | Comparison with Resistance Thermometer reference in: Dry Block |
| **Temperature Sensor Without Indicator**<br>-rtd | -10 °C to 110 °C | 0.1°C | Comparison with Resistance Thermometer reference, with sensor connected to calibrated indicator in: Dry Block |
| **Temperature Sensor Without Indicator**<br>-thermocouple | -10 °C to 110 °C | 0.1°C | Comparison with Resistance Thermometer reference, with sensor connected to calibrated indicator in: Dry Block |
| **Temperature Datalogger/ Indicator/ Controller**<br>-rtd Pt-100 2-wires, 3- Wires And 4-wires | -100 °C to 800 °C | 0.2°C | By simulation using calibrator and reference table to ITS-90 |

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| Material / Product Tested | Type Of Test / Properties Measured / Range Of Measurement | Standard Test Methods / Equipment / Techniques | Remarks |
|---|---|---|---|
| **Temperature Datalogger/ Indicator/ Controller** -thermocouple Type-j | -100 °C to 1200 °C | 0.5°C | By simulation using calibrator and reference table to ITS-90 |
| **Temperature Datalogger/ Indicator/ Controller** - Thermocouple Type-k | -100 °C to 1300 °C | 0.5°C | By simulation using calibrator and reference table to ITS-90 |
| **Temperature Datalogger/ Indicator/ Controller** -thermocouple Type-t | -100 °C to 400 °C | 0.6°C | By simulation using calibrator and reference table to ITS-90 |
| Controlled Temperature Enclosure | -20 °C to 140 °C | 1.3°C | Based on DKD-R 5-7 method Calibration methods A or B or C. |
| Controlled Relative Humidity Enclosure | 30 %rh to 90 %rh | 3.0 %rh (Method A or B)<br>2.4 %rh (Method C) | Based on DKD-R 5-7 method Calibration methods A or B or C. |