Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

LABORATORY LOCATION/ CENTRAL OFFICE:	Obsnap Calibration Sdn. Bhd. No. A-7-3 Floor, Jalan Serai Wangi F 16/F, Alam Avenue, Seksyen 16, , 40200, SELANGOR MALAYSIA
ACCREDITED SINCE :	29 JANUARY 2018
FIELD(S) OF CALIBRATION:	DIMENSIONAL FORCE HEAT AND TEMPERATURE PRESSURE TIME AND FREQUENCY

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.**

CENTRAL LOCATION	Obsnap Calibration Sdn. Bhd. No. A-7-3 Floor, Jalan Serai Wangi F 16/F, Alam Avenue, Seksyen 16, , 40200, Selangor
FIELD(S) OF CALIBRATION :	DIMENSIONAL, FORCE, HEAT & TEMPERATURE, PRESSURE, ELECTRICAL

SCOPE OF CALIBRATION : DIMENSIONAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Thickness Gauge (dial/ Digimatic)	0 mm to 25 mm	0.002 mm	Calibrated by using gauge block based on in house method
Coating Thickness Gauge	0 um to 3000 um	3.3 um	Calibrated by using thickness foil

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Non-metallic Thickness Foil	0 um to 3000 um	0.37 um	Calibrated by using MU checker with reference to BS EN ISO 2178:2016
Caliper	0 um to 150 mm	0.01 mm	Calibrated by using gauge block with reference to BS EN ISO 13385- 1:2011
Ultrasonic Thickness Gauge	0mm to 100 mm	0.01mm	Calibrated by using gauge block based on in house method
Temperature Controlled Enclosures	-80 ?C to 250 ?C 250 ?C to 1200 ?C	1.0 ?C 3.8 ?C	Calibrate by using temperature recorder with sensor base on BS IFC 60068.3-6:2018 & EURAMET cg 20 Version 5.0 (09/2017)
Temperature Measuring Device (by Electrical Simulation) A) Type R B) Type K C) Type E D) Type J E) Type T F) Type S G) Type N H) Type B I) Pt (rtd)	0 ?C to 1700 ?C -100 ?C to 1300 ?C -100 ?C to 850 ?C -100 ?C to 1050 ?C -100 ?C to 390 ?C 0 ?C to 1700 ?C -200 ?C to 1200 ?C 600 ?C to 1800 ?C -200 ?C to 650 ?C	1.3 ?C 0.42 ?C 0.42 ?C 0.33 ?C 0.52 ?C 1.3 ?C 0.42 ?C 0.52 ?C 0.25 ?C	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg-11_v.01 Temperature Indicator and stimulation.
Dc Current (temperature Transducer)	0 mA to 20 mA	0.005 mA	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg-11_v.01 Temperature Indicator and stimulation.
Temperature Block Calibrator	30 ?C to 400 ?C 400 ?C to 640 ?C	0.3 ?C 0.3 ?C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015
Liquid Bath	-80 ?C to 50 ?C	0.2 ?C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Humidity Chamber @25?c	90 %RH to 95 %RH	5.5 %RH	Calibrate by using wet & dry method referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
	10 %RH to 25 %RH	1.8 %RH	Calibrate by using wet & dry method referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
	25 %RH to 90 %RH	3.7 %RH	Calibrate by using humidity measuring device referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
Pressure Measuring Device Vacuum Pneumatic Hydraulic	-0.95 bar to 1 bar 1 bar to 2 bar 2 bar to 20 bar 0 bar to 100 bar 100 bar to 300 bar 300 bar to 700 bar	0.0014 bar 0.008 bar 0.016 bar 0.66 bar 0.71 bar 0.77 bar	Calibrate by using pressure calibrator or pressure meter Based On AS 1349(1986), DKD-R 6-1

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

SCOPE OF CALIBRATION : FORCE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Force Proving Instruments (compression)	0.5 kN 10 kN	25N	Calibrated by using load cell generally based on ISO 376:2011
	0 N to 50 N 50 N to 500 N	0.002 N 0.02 N	Calibrated by using standard weights generally based on ISO 376:2011

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

SCOPE OF CALIBRATION : HEAT AND TEMPERATURE

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Temperature Calibrator I) Simulation A) Type R B) Type K C) Type E D) Type J E) Type T F) Type S G) Type N H) Type B I) Pt(rtd) Ii) Measurement A) Type R B) Type K C) Type E D) Type J E) Type T F) Type S G) Type N H) Type B I) Pt(rtd)	0 ?C to 1700 ?C -100 ?C to 1300 ?C -100 ?C to 850 ?C -100 ?C to 1050 ?C -100 ?C to 390 ?C 0 ?C to 1700 ?C -200 ?C to 1300 ?C 600 ?C to 1800 ?C -200 ?C to 650 ?C 0 ?C to 1700 ?C -100 ?C to 1300 ?C -100 ?C to 850 ?C -100 ?C to 1050 ?C -100 ?C to 390 ?C 0 ?C to 1700 ?C -200 ?C to 1200 ?C 600 ?C to 1800 ?C -200 ?C to 650 ?C	1.3?C 0.42 ?C 0.42 ?C 0.33 ?C 0.52 ?C 1.3?C 0.8 ?C 1.6 ?C 0.33 ?C 1.3?C 0.42 ?C 0.42 ?C 0.33 ?C 0.52 ?C 1.3?C 0.42 ?C 0.52 ?C 0.25 ?C	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg-11_v.01 Temperature_Indicator and stimulation.
Liquid-in-glass Thermometer (total Immersion)	-80 ?C to 50 ?C 50 ?C to 350 ?C 350 ?C to 400 ?C	0.31 ?C 0.44 ?C 0.52 ?C	Comparison with PRT Sensor and thermocouple in liquid bath / dry block Based on ASTM E77- 14
Liquid-in-glass Thermometer (partial Immersion)	0?c 30 ?C to 200 ?C 200 ?C to 400 ?C	0.62 ?C 0.64 ?C 2.0 ?C	Comparison with PRT sensor and thermocouple in liquid bath / dry block Based on ASTM E77-14
	-80 ?C to 50 ?C 50 ?C to 350 ?C 350 ?C to 400 ?C	0.31 ?C 0.44 ?C 0.52 ?C	Comparison with PRT Sensor and thermocouple in liquid bath / dry block Based on ASTM E77- 14
Temperature Sensor With Indicator	0?c 30 ?C to 200 ?C 199.9 ?C to 400 ?C	0.62 ?C 0.9 ?C 2.0 ?C	Comparison with PRT Sensor and thermocouple in liquid bath / dry block / chamber Based on JIS C1602-1995, JIS C1603-1983, JIS C1604- 1997

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	-80 ?C to 50 ?C 50 ?C to 350 ?C 350 ?C to 650 ?C	0.31 ?C 0.44 ?C 0.52 ?C	Comparison with PRT sensor and thermocouple in liquid bath / dry block / chamber Based on JIS C1602-1995, JIS C1603-1983, JIS C1604-1997.
Thermohygro Measuring Device I) Temperature	-40 ?C to -20 ?C -20 ?C to 50 ?C	0.63 ?C 0.45 ?C	Comparison with PRT sensor in Chamber
Ii) Humidity @ 25 ?c	25 %RH to 30 %RH 90 %RH to 95 %RH	3.3 %RH 5.1 %RH	Comparison with wet & dry method in chamber Based On 1339-3:2004, ISO 4677/1, & ISO 4677/2.
	30 %RH to 60 %RH 60 %RH to 90 %RH	2.8 %RH 3.3 %RH	Comparison with thermohygrometer Based On 1339-3:2004, ISO 4677/1, & ISO 4677/2.
Dc Voltage (temperature Transmitter)	0 to 10 V	0.002 V	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET _cg-11_v.01 Temperature Indicator and stimulation.
	0 to 10 V	0.002 V	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg-11_v.01 Temperature _Indicator and stimulation
Dc Current (temperature Transducer)	0 mA to 20 mA	0.005 mA	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg-11_v.01 Temperature _Indicator and stimulation

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Block Calibrator (portable)	30 ?C to 400 ?C 400 ?C to 640 ?C	0.3 ?C 0.3 ?C	Comparison with PRT Sensor / Thermocouple Based on EUROMET / cg ? 13/ Version 3.0: 2015
Liquid Bath (portable)	-80 ?C to 50 ?C 50 ?C to 90 ?C	0.2 ?C 0.3 ?C	Comparison with PRT Sensor / Thermocouple Based on EUROMET / cg ? 13/ Version 3.0: 2015

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

SCOPE OF CALIBRATION : PRESSURE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Pressure Measuring Device Vacuum Pneumatic Hydraulic	-0.95 bar to 1 bar 1 bar to 2 bar 2 bar to 20 bar 0 bar to 100 bar 100 bar to 300 bar 300 bar to 700 bar	0.002 bar 0.008 bar 0.02 bar 0.7 bar 0.8 bar 0.8 bar	Calibrate by using pressure calibrator or pressure meter

SCOPE OF CALIBRATION : TIME AND FREQUENCY

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Tachometer Non-contact	0 rpm to 1000 rpm 1000 rpm to 20000 rpm	1.5 rpm 4.6 rpm	Calibrate by stroboscope and tachometer Based on ASTM F2046(Reapproved 2017)
Stopwatch / Timer	0 s to 60 s 60 s to300 s 300 s to 600 s 600 s to 900s 900 s to 1800 s 1800 s to 3600 s 3600 s to 10800 s	0.087 s 0.11 s 0.11 s 0.12 s 0.13 s 0.13 s 0.14 s	Calibrate using stopwatch by direct comparison

SITE LOCATION (HQ)	1. Obsnap Calibration Sdn. Bhd. 29A, Jalan SS15/4C 47500 Subang Jaya, Selangor,MALAYSIA
FIELD(S) OF CALIBRATION :	FORCE,HEAT AND TEMPERATURE,MASS,PRESSURE,TIME AND FREQUENCY

SCOPE OF CALIBRATION : MASS

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**

SCOPE OF CALIBRATION : TIME AND FREQUENCY

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Rpm Instrument	0 rpm to 1000 rpm 1000 rpm to 20000 rpm	1.7 rpm 2.3 rpm	Calibrate using tachometer with reference to ASTM F2046

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Stopwatch / Timer	0 s to 60 s 60 s to 300 s 300 s to 600 s 600 s to 900s 900 s to 1800 s 1800 s to 3600 s 3600 s to 10800 s	0.087 s 0.11 s 0.11 s 0.12 s 0.13 s 0.13 s 0.14 s	Calibrate using stopwatch by direct comparison

SCOPE OF CALIBRATION : FORCE

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks

SCOPE OF CALIBRATION : PRESSURE

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Pressure Measuring Device Vacuum Pneumatic Hydraulic	-0.95 bar to 1 bar 1 bar to 2 bar 2 bar to 20 bar 0 bar to 100 bar 100 bar to 300 bar 300 bar to 700 bar	0.002 bar 0.008 bar 0.02 bar 0.7 bar 0.8 bar 0.8 bar	Calibrate by using pressure calibrator or pressure meter

SCOPE OF CALIBRATION : HEAT AND TEMPERATURE

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Temperature Controlled Enclosures	-80 °C to 250 °C 250 °C to 1200 °C	1.0 °C 3.8 °C	Calibrate by using temperature recorder with sensor based on BS IEC 60068.3-6:2018 & EURAMET cg 20 Version 5.0 (09/2017)

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Temperature Measuring Device (by Electrical Simulation) A) Type R B) Type K C) Type E D) Type J E) Type T F) Type S G) Type N H) Type B I) Pt(rtd)	0 °C to 1700 °C -100 °C to 1300 °C -100 °C to 850 °C -100 °C to 1050 °C -100 °C to 390 °C 0 °C to 1700 °C -200 °C to 1200 °C 600 °C to 1800 °C -199.9 °C to 650 °C	1.3 °C 0.42 °C 0.42 °C 0.33 °C 0.52 °C 1.3 °C 0.42 °C 0.52 °C 0.25 °C	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET _cg-11_v.01 Temperature Indicator and stimulation.
Liquid-in-glass Thermometer (partial Immersion)	0 °C 30 °C to 200 °C 200 °C to 400 °C	0.62 °C 0.64 °C 2.0 °C	Comparison with PRT sensor and thermocouple in liquid bath / dry block Based on ASTM E77-14 Temperature Sensor with indicator 0 °C 30 °C to 200 °C 199.9 °C to 400 °C 0.62 °C 0.9 °C 2.0 °C Comparison with
Dc Voltage (temperature Transmitter)	0 to 10 V	0.002 V	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET _cg-11_v.01 Temperature Indicator and stimulation.
Dc Current(temperature Transducer)	0 mA to 20 mA	0.005 mA	By electrical simulation using calibrator and reference table ITS 90 Based On EURAMET_cg11_v.01 Temperature Indicator and stimulation
	0 °C 30 °C to 200 °C 199.9 °C to 400 °C	0.62 °C 0.9 °C 2.0 °C	Comparison with PRT Sensor and thermocouple in liquid bath / dry block / chamber Based on JIS C1602-1995, JIS C1603-1983, JIS C1604- 1997.

Issue date: 25 October 2024
Valid Until: 25 October 2029

NO: SAMM 861
(Issue 4, 25 October 2024 replacement
of SAMM 861 dated 06 August 2025)

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Temperature Block Calibrator	30 °C to 400 °C 400 °C to 640 °C	0.3 °C 0.3 °C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015
Liquid Bath	-80 °C to 50 °C	0.2 °C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015
Humidity Chamber @25°c	25 %RH to 90 %RH	3.7 %RH	Calibrate by using humidity measuring device referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
	10 %RH to 25 %RH	1.8 %RH	Calibrate by using wet & dry method referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
	90 %RH to 95 %RH	5.5 %RH	Calibrate by using wet & dry method referring to BS EN IEC 60068-3-6:2018 & EURAMET cg 20. Version 5.0 (09/2017)
	30 °C to 400 °C 400 °C to 640 °C	0.3 °C 0.3 °C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015
	30 °C to 400 °C 400 °C to 640 °C	0.3 °C 0.3 °C	Comparison with PRT Sensor / Thermocouple Based on EUROMET/cg-13/ Version 3.0:2015