Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

LABORATORY LOCATION/ CENTRAL OFFICE:	One Gasmaster Sdn Bhd No 18, Jalan PJU 3/48, Sunway Damansara Technology Park, 47810 Petaling Jaya, Selangor. , 47810, SELANGOR MALAYSIA
ACCREDITED SINCE :	18 MARCH 2025
FIELD(S) OF CALIBRATION:	ACOUSTIC & VIBRATION ELECTRICAL PRESSURE 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.**

CENTRAL LOCATION	One Gasmaster Sdn Bhd No 18, Jalan PJU 3/48, Sunway Damansara Technology Park, 47810 Petaling Jaya, Selangor. , 47810, Selangor
FIELD(S) OF CALIBRATION :	ACOUSTIC & VIBRATION, ELECTRICAL, PRESSURE, HEAT & TEMPERATURE

SCOPE OF CALIBRATION : ACOUSTIC & VIBRATION

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Sound Calibrator Sound Pressure Level (spl)	94 dB at 250 Hz & 1000 Hz	0.28 dB	Comparison method with reference calibrator. OGCLCP-SC/ reference to IEC 60942:2017 clause 5.2.2

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	114 dB at 250 Hz & 1000 Hz	0.28 dB	Comparison method with reference calibrator. OGCLCP-SC/ reference to IEC 60942:2017 clause 5.2.2
	110 dB at 1000 Hz	0.37 dB	Comparison method with reference calibrator. OGCLCP-SC/ reference to IEC 60942:2017 clause 5.2.2
Sound Level Meter Sound Pressure Level (spl)	40 dB to 140 dB 31.5 Hz to 12.5 kHz	0.29 dB	Electrical signal injection from signal generator, resistance attenuator. OGCL-CP-SLM/ reference to IEC 61672-3: 2013 Clause 11, 12, 14 & 15
Noise Dosimeter Sound Pressure Level (spl)	40 dB to 140 dB 31.5 Hz to 12.5 kHz	0.29 dB	Electrical signal injection from signal generator, resistance attenuator. OGCL-CP-ND/ reference to IEC 61252: Amd 2017 Clause 6 & 7
Audiometer Sound Pressure Level (spl)	70 dB HL at 125 Hz to 8 kHz	3.3 dB	Calibration procedure: OGCL-CP-AC with reference to ISO 389-1:2017, ISO 389-2:1994, ISO 389-3:2016 & IEC 60645- 1:2017

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

SCOPE OF CALIBRATION : ELECTRICAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Portable Gas Detector Reference Gases: Carbon Monoxide, Co	100 ppm	3.1 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	400 ppm	3.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Methane, Ch4	33% LEL	3.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	50.0% vol.	2.5 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	500 ppm	2.7 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Hydrogen Sulphide, H2s	25 ppm	4.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	100ppm	3.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Nitrogen Dioxide, No2	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	200ppm	4.5 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Nitric Oxide, No	800 ppm	3.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Chlorine, Cl2	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Carbon Dioxide, Co2	0.5% Vol	2.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	9% Vol	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Ethylene Oxide (eto), C2h4o	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Hydrogen, H2	0.1% Vol	2.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Oxygen, O2	18.0% Vol	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	20.9% Vol	3.6 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Ammonia, Nh3	50 ppm	5.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Sulphur Dioxide, So2	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Isobutylene, I-c4h8	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	100 ppm	2.6 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Pentane, C5h12	33% LEL	3.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Iso-butane, C4h10	33% LEL	3.7 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Benzene, C6h6	5 ppm	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Gas Analyzer System Reference Gases: Methane, Ch4	89.6 % Vol	3.9 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	86.5 % Vol	3.9 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System propane, C5h12	70 mg/m3	0.77% of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Oxygen, O2	80 PPM	5.8% of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
	1.0% Vol	5.7% of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

SCOPE OF CALIBRATION : PRESSURE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Pneumatic Pressure Measuring Devices	0 bar to 20 bar Above 20 bar to 70 bar	14 mbar 41 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Hydraulic Pressure Measuring Devices	0 bar to 350 bar Above 350 bar to 700 bar	0.22 bar 0.79 bar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Vacuum Measuring Devices	-0.9 bar to 0 bar	14 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Differential Pressure Measuring Devices	75 mbar to 75 mbar	3 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

SCOPE OF CALIBRATION : HEAT & TEMPERATURE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Indicating Instrument (electrical Simulation)	-200 ~ 1200 °C	0.13 °C	By electrical simulation with reference to EURAMET cg-11 Version 2.0
	-200 ~ -100 °C	1.3 °C	
Source	-100 ~ 1370 °C	0.13 °C	
type J			
type K	-200 ~ -100 °C	1.2 °C	
type N	-100 ~ 1300 °C	0.13 °C	
type T			
type E	-200 ~ -100 °C	0.59 °C	
Type R	-100 ~ 400 °C	0.13 °C	
type S			
type B	-200 ~ -100 °C	0.70 °C	
Rtd	-100 ~ 1000 °C	0.13 °C	
	0 ~ 600 °C	0.36 °C	
	600 ~ 1760 °C	0.13 °C	
	0 ~ 600 °C	0.36 °C	
	600 ~ 1760 °C	0.13 °C	
	600 ~ 1000 °C	0.36 °C	
	-200 ~ 850 °C	0.13 °C	

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Indicating Instrument (electrical Simulation) Measure type J type K type N type T type E Type R type S type B Rtd	-200 ~ -100 °C -100 ~ 1200 °C -200 ~ -100 °C -100 ~ 1000 °C 1000 ~ 1370 °C -200 ~ -100 °C -100 ~ 0 °C 0 ~ 1300 °C -200 ~ -100 °C -100 ~ 400 °C -200 ~ -100 °C -100 ~ 1000 °C 0 ~ 200 °C 200 ~ 600 °C 600 ~ 1000 °C 1000 ~ 1760 °C 0 ~ 200 °C 200 ~ 600 °C 600 ~ 1000 °C 1000 ~ 1760 °C 600 ~ 1000 °C -200 ~ 850 °C	0.24 °C 0.13 °C 1.3 °C 0.13 °C 0.24 °C 1.9 °C 0.7 °C 0.59 °C 0.70 °C 0.13 °C 0.70 °C 0.13 °C 0.47 °C 0.36 °C 0.24 °C 1.4 °C 0.47 °C 0.36 °C 0.24 °C 1.4 °C 1.4 °C 0.13 °C	By electrical simulation with reference to EURAMET cg-11 Version 2.0
Temperature Sensor Type J, K, N, T, E	-40 ~ 155 °C	0.17 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Sensor Type R, S	40 ~ 155 °C	0.37 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Sensor Rtd	-40 ~ 155 °C	0.17 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Indicator With Sensor	-40 ~ 155 °C	0.12 °C	Comparison with thermocouple and dry block E563-02 & E644- 11

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Thermohygrometer Device Air Temperature	-20 ~ 140 °C	0.9 °C	Comparison with Thermohygro device with reference to BS 1339-3:2004
Thermohygrometer Device Relative Humidity	20 ~ 95% r.h. (at 25 °C)	3.1 % r.h.	Comparison with Thermohygro device with reference to BS 1339-3:2004

SITE LOCATION (HQ)	1. CATEGORY I
FIELD(S) OF CALIBRATION :	ACOUSTIC & VIBRATION,ELECTRICAL,HEAT & TEMPERATURE,MASS,PRESSURE

SCOPE OF CALIBRATION : ACOUSTIC & VIBRATION

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Audiometric Booth Sound Pressure Level (spl)	0 dB to 90 dB at 500 Hz to 8000 Hz	0.7 dB	Calibration procedure OGCL-CP-AB with reference to ISO 8253- 1:2010 and meets requirement by Industry Code of Practice for Management of Occupational Noise Exposure and Hearing Conservation, 2019
Audiometer Sound Pressure Level (spl)	70 dB HL at 125 Hz to 8 kHz	3.3 dB	Calibration procedure: OGCL-CP-AC with reference to ISO 389-1:2017, ISO 389-2:1994, ISO 389-3:2016 & IEC 60645- 1:2017

SCOPE OF CALIBRATION : ELECTRICAL

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Portable Gas Detector Reference Gases: Carbon Monoxide, Co	100 ppm	3.1 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	400 ppm	3.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Methane, Ch4	33% LEL	3.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	50.0% Vol	2.5 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	500 ppm	2.7 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Hydrogen Sulphide, H2s	25 ppm	4.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	100 ppm	3.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Nitrogen Dioxide, No2	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	200 ppm	4.5 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Nitrogen Oxide, No	800 ppm	3.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Chlorine, Cl2	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Carbon Dioxide, Co2	0.5% Vol	2.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	9% Vol	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Ethylene Oxide (eto), C2h4o	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Hydrogen, H2	0.1% Vol	2.3 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Oxygen, O2	18.0% Vol	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	20.9% Vol	3.6 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Ammonia, Nh3	50 ppm	5.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Sulphur Dioxide, So2	5 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
	800 ppm	3.4 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Isobutylene, I-c4h8	10 ppm	9.9 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
	100 ppm	2.6 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Pentane, C5h12	33% LEL	3.2 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Iso-butane, C4h10	33% LEL	3.7 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Benzene, C6h6	5 ppm	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-1: 2016
Gas Analyzer System Reference Gases: Methane, Ch4	60.0 % Vol	3.9 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
	86.5 % Vol	3.9 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
	89.6 % Vol	3.9 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
	99.9 % Vol	5.0 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Carbon Monoxide, Co	3023 ppm 1.0% Vol	4.4 % of reading 3.8 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Propane, C5h12	70 mg/m3	0.77 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Fixed Gas Detection System Methane, Ch4	33% LEL 44% LEL	2.0 % of reading 3.9 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Hydrogen Chloride, Hcl	10 ppm 20 ppm	9.8 % of reading 10.0% of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Hydrogen Sulfide, H2s	5 ppm 10 ppm 20 ppm 25 ppm 50 ppm	6.0% of reading 6.0% of reading 10.4% of reading 4.9 % of reading 6.0% of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Hydrogen Cyanide, Hcn	10 ppm	9.8 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Methanol, Ch3oh	1,000 ppm	2.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Sulphur Dioxide, So2	10 ppm	9.8 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases

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Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Fixed Gas Detection System Oxygen, O2	0.5 % of vol 18.0 % of vol 20.9 % of vol	2.0 % of reading 5.0 % of reading 5.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Carbon Dioxide, Co2	5.0 % of vol	2.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Hydrogen, H2	1,000 ppm	2.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Ammonia, Nh3	50 ppm 100 ppm	5.4 % of reading 4.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Pentane, C5h12	50 % LEL	3.9 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Carbon Monoxide, Co	100 ppm 200 ppm 400 ppm 500 ppm	6.6 % of reading 4.0 % of reading 3.6 % of reading 3.9 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Fixed Gas Detection System Chlorine, Cl2	5 ppm 10 ppm 25 ppm	9.8 % of reading 9.8 % of reading 12.4 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Ethylene Oxide (eto), C2h4o	5 ppm	9.8 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Nitric Oxide, No	25 ppm	2.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Nitrogen Dioxide, No2	10 ppm	3.0 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Phosphine, Ph3	0.5 ppm	9.8 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases
Fixed Gas Detection System Isobutylene, I-c4h8	10 ppm 100 ppm	9.8 % of reading 2.6 % of reading	Calibration using reference gas based on IEC 60079-29-2:2015 and ISO/IEC 80079- 20-1-2017 for Methane's surrogate calibration gases

Scan this QR Code or visit https://accreditation.jsm.gov.my/public/listing/cab/samm-ct/3003528 for the current scope of accreditation

Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Gas Analyzer System Pentane, C5h12	0.5 % Vol	4.4 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Sulphur Dioxide, So2	500 ppm 560 ppm	4.2 % of reading 6.6 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Oxygen, O2	18.0 % of Vol 3.0 % of Vol 1.0% of Vol 80 ppm 200 ppm	3.8 % of reading 3.8 % of reading 5.7 % of reading 5.8 % of reading 4.0 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Carbon Dioxide, Co2	40.0 % of Vol 2.0 % of Vol	3.8 % of reading 3.8 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

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Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Gas Analyzer System Nitrogen Oxide, No	505 ppm	4.5 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Nitrogen Dioxide, No2	800 ppm	4.2 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration
Gas Analyzer System Hydrogen, H2	0.1% Vol	4.4 % of reading	Calibration using reference gas with reference to IEC 60079-29-2: 2015 1) All calibration points based on actual value of SPAN gas concentration 2) All registered gas used for in-house and field calibration

SCOPE OF CALIBRATION : PRESSURE

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Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Pneumatic Pressure Measuring Devices	0 bar to 20 bar Above 20 bar to 70 bar	14 mbar 41 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Hydraulic Pressure Measuring Devices	0 bar to 350 bar Above 350 bar to 700 bar	0.22 bar 0.79 bar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Vacuum Measuring Devices	0 bar to 350 bar Above 350 bar to 700 bar	14 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.
Differential Pressure Measuring Devices	-75 mbar to 75 mbar	3 mbar	Comparison against reference digital pressure gauges. Measurements in gauge pressure. Calibration can be given in other pressure units when required.

SCOPE OF CALIBRATION : MASS

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Issue date: 05 October 2023
Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Balance: Weighing Scale	Up to 20 g Up to 50 g Up to 100 g Up to 200 g Up to 250 g Up to 300 g Up to 500 g Up to 1 kg Up to 2 kg Up to 5 kg Up to 10 kg Up to 20 kg Up to 50 kg Up to 100 kg Up to 200 kg Up to 250 kg Up to 300 kg	0.00078 g 0.0012 g 0.0022 g 0.0071 g 0.0077 g 0.0083 g 0.012 g 0.021 g 0.07 g 0.012 g 0.21 g 0.7 g 9.5 g 61 g 69 g 74 g 80 g	Calibrated using standard weight with reference to EURAMET cg. 18 & LAB 14

SCOPE OF CALIBRATION : HEAT & TEMPERATURE

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Valid Until: 18 April 2028

NO: SAMM 394

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Temperature Indicating Instrument (electrical Simulation)	-200 ~ 1200 °C	0.13°C	By electrical simulation with reference to EURAMET cg-11 Version 2.0
Source	-200 ~ -100 °C	1.3 °C	
type J	-100 ~ 1370 °C	0.13 °C	
type K	-200 ~ -100 °C	1.2 °C	
type N	-100 ~ 1300 °C	0.13 °C	
type T	-200 ~ -100 °C	0.59 °C	
Type E	-100 ~ 400 °C	0.13 °C	
type R	-200 ~ -100 °C	0.70 °C	
type S	-100 ~ 1000 °C	0.13 °C	
type B	0 ~ 600 °C	0.36 °C	
rtd	600 ~ 1760 °C	0.13 °C	
	0 ~ 600°C	0.36 °C	
	600 ~ 1760 °C	0.13 °C	
	600 ~ 1000 °C	0.36 °C	
	-200 ~ 850 °C	0.13 °C	

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Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Temperature Indicating Instrument (electrical Simulation) Measure type J type K type N type T Type E type R type S type B rtd	-200 ~ -100 °C -100 ~ 1200 °C -200 ~ -100 °C -100 ~ 1000 °C 1000 ~ 1370 °C -200 ~ -100 °C -100 ~ 0 °C 0 ~ 1300 °C -200 ~ -100 °C -100 ~ 400 °C -200 ~ -100 °C -100 ~ 1000 °C 0 ~ 200 °C 200 ~ 600 °C 600 ~ 1000 °C 1000 ~ 1760 °C 0 ~ 200 °C 200 ~ 600 °C 600 ~ 1000 °C 1000 ~ 1760 °C 600 ~ 1000 °C -200 ~ 850 °C	0.24 °C 0.13 °C 1.3 °C 0.13 °C 0.24 °C 1.9 °C 0.7 °C 0.59 C 0.70 °C 0.13 °C 0.70 °C 0.13 °C 0.47 °C 0.36 °C 0.24 °C 1.4 °C 0.47 °C 0.36 °C 0.24 °C 1.4 °C 1.4 °C 0.13 °C	By electrical simulation with reference to EURAMET cg-11 Version 2.0
Temperature Sensor Type J, K, N, T, E	-40 ~ 155 °C	0.17 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Sensor Type R, S	-40 ~ 155 °C	0.37 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Sensor Rtd	-40 ~ 155 °C	0.17 °C	Comparison with thermocouple and dry block E563-02 & E644- 11
Temperature Indicator With Sensor	-40 ~ 155 °C	0.12 °C	Comparison with thermocouple and dry block E563-02 & E644- 11

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Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Heat Enclosure	-40 ~ 200 °C	0.7 °C	Calibrated by using reference sensors and data logging device with reference to DKD-R-5-7
Humidity Chamber	25 ~ 95 % r.h. (at 23 °C)	3.4 % r.h.	Calibrated by using reference sensors and data logging device with reference to DKD-R-5-7

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