Issue date: 6 March 2026
Valid until: 19 February 2030

NO: SAMM 912
(Issue 3, 6 March 2026 replacement
of SAMM 912 dated 24 July 2025)

LABORATORY LOCATION / CENTRAL OFFICE:	METCAL TECHNOLOGIES (M) SDN. BHD. (SELANGOR) 1, JALAN BAYU LAUT 1/KS09, KOTA BAYUEMAS, 41200 KLANG, SELANGOR, MALAYSIA
ACCREDITED SINCE:	19 FEBRUARY 2019
FIELD OF CALIBRATION:	ACOUSTIC & VIBRATION DIMENSIONAL FORCE MASS PRESSURE HEAT & TEMPERATURE TORQUE VISCOSITY VOLUME FLOW ELECTRICAL
FIELD(S) OF TESTING:	MECHANICAL

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	METCAL TECHNOLOGIES (M) SDN. BHD. (SELANGOR) 1, JALAN BAYU LAUT 1/KS09, KOTA BAYUEMAS, 41200 KLANG, SELANGOR, MALAYSIA
FIELD(S) OF CALIBRATION:	ACOUSTIC & VIBRATION, DIMENSIONAL, FORCE, MASS, PRESSURE, HEAT & TEMPERATURE, TORQUE, VISCOSITY, VOLUME, FLOW, ELECTRICAL

SCOPE OF CALIBRATION: ACOUSTIC & VIBRATION

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Sound Level Meter	Nominal SPL 94 dB at 1000 Hz 114 dB at 1000 Hz	 0.3 dB 0.3 dB	Generating using Sound Level Calibrator

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SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Caliper	0 mm to 150 mm 150 mm to 300 mm 300 mm to 609.6 mm (equivalent to inches)	5 µm 7 µm 10 µm	Comparison with Caliper Checker / Gauge Block based on JIS B 7507:2022
Height Gauge	0 mm to 600 mm	10 µm	Comparison with Caliper Checker based on JIS B 7517:2018
High Accuracy Micrometer External Micrometer	0 mm to 25 mm 0 mm to 25 mm	0.5 µm 1.0 µm	Comparison with Gauge Block based on JIS B 7502:2016
Indicator	0 mm to 50 mm	2.0 µm	Comparison with High Accuracy Indicator based on JIS B 7503:2017
Test Indicator	0 mm to 1.6 mm	1.1 µm	Comparison with High Accuracy Indicator based on JIS B 7533:2015
Feeler Gauge	0.01 mm to 3 mm	2.0 µm	Direct measurement with Micro Indicator based on JIS B 7524:2008
Plain Pin / Plug Gauge	0.1 mm to 25 mm	1.0 µm	Direct measurement with High Accuracy Micrometer based on JIS B 7420:1997
Thickness Gauge	0 mm to 25 mm	1.0 µm	Comparison with Gauge Block
Ultrasonic Thickness Gauge	0 mm to 100 mm 100 mm to 300 mm	8 µm 9 µm	Comparison with Gauge Block and Step Wedge

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SCOPE OF CALIBRATION: FORCE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Durometer Hardness Type A, B, C, D, DO, E, O	0 durometer point to 100 durometer point	0.32 durometer point	Durometer Calibrator based on ASTM D2240:2015
Force Indicating Devices	0 N to 10 N 10 N to 50 N 50 N to 500 N 500 N to 1000 N	0.0010 N 0.012 N 0.11 N 0.84 N	Dead Weight based on ISO 7500-1:2018
Compression	1 N to 10 kN 10 kN to 100 kN	4.5 N 0.31 kN	Calibrated using Load Cell based on ISO 7500-1:2018

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SCOPE OF CALIBRATION: MASS

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Standard Weight	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 20 kg 25 kg	0.009 mg 0.009 mg 0.009 mg 0.009 mg 0.009 mg 0.009 mg 0.010 mg 0.010 mg 0.010 mg 0.010 mg 0.011 mg 0.013 mg 0.014 mg 0.015 mg 0.035 mg 0.053 mg 0.065 mg 0.26 mg 0.36 mg 1.6 mg 2.4 mg 5.3 mg 0.015 g 0.017 g	Direct Comparison ABBA Method
Industrial Weight	250 kg	20 g	Mass Comparison with Reference Weights

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SCOPE OF CALIBRATION: PRESSURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Pressure Indicating Devices Absolute	0 Pa.a to 300 kPa.a 300 kPa.a to 600 kPa.a	0.14 kPa.a 0.14 kPa.a	Comparison with Pressure Calibrator
Pressure Indicating Devices Hydraulic	0 MPa to 25 MPa 25 MPa to 40 MPa 40 MPa to 70 MPa 70 MPa to 250 MPa	0.008 MPa 0.012 MPa 0.012 MPa 0.08 MPa	Comparison with Pressure Calibrator
	0.1 MPa to 120 MPa	0.01 % of reading	Using Dead Weight Tester (DWT)
Pressure Indicating Devices Manometer	0 Pa to 125 Pa 125 Pa to 500 Pa 500 Pa to 1250 Pa 1250 Pa to 2500 Pa 2.5 kPa to 40 kPa 40 kPa to 100 kPa 100 kPa to 250 kPa	0.90 Pa 0.90 Pa 0.9 Pa 1.1 Pa 0.04 kPa 0.07 kPa 0.09 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Pneumatic	0 Pa to 7 MPa 7 MPa to 20 MPa	0.0019 MPa 0.012 MPa	Comparison with Pressure Calibrator
	1.5 kPa to 5 kPa 5 kPa to 200 kPa	0.025 % of reading 0.007 % of reading	Using Dead Weight Tester (DWT)
Pressure Indicating Devices Vacuum	-0.09 MPa to 0 MPa	0.001 MPa	Comparison with Pressure Calibrator
	-100 kPa to -5 kPa -5 kPa to -1.5 kPa	0.01 % of reading 0.025 % of reading	Using Dead Weight Tester (DWT)

SCOPE OF CALIBRATION: PRESSURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Pressure Balances			Cross Float Method (Euramet cg-3 Version 2.1, 2025)
Pneumatic	1.5 kPa to 200 kPa	$6.3 \times 10^{-5} \times P_e$; but not less than 0.0015 kPa	Method A - Generated Pressure Method
		$8.1 \times 10^{-5} \times P_e$; but not less than 0.0016 kPa	Method B - Effective Area Determination Method
Pressure Balances			Cross Float Method (Euramet cg-3 Version 2.1, 2025)
Hydraulic	0.1 MPa to 6 MPa	$9.0 \times 10^{-5} \times P_e$; but not less than 0.072 kPa	Method A - Generated Pressure Method
		$9.5 \times 10^{-5} \times P_e$; but not less than 0.057 kPa	Method B - Effective Area Determination Method
	Above 6 MPa to 120 MPa	$7.0 \times 10^{-5} \times P_e$; but not less than 0.86 kPa	Method A - Generated Pressure Method
		$8.0 \times 10^{-5} \times P_e$; but not less than 0.87 kPa	Method B - Effective Area Determination Method

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SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Temperature Block Calibrator	-95 °C to -80 °C -80 °C to 100 °C 100 °C to 200 °C 200 °C to 650 °C 650 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1200 °C	0.053 °C 0.039 °C 0.27 °C 0.31 °C 1.9 °C 2.0 °C 3.1 °C	Comparison with PT100 based on EURAMET Calibration Guide No. 13 Version 4.0
Infrared Thermometer	-30 °C to 0 °C 0 °C to 100 °C 100 °C to 200 °C 200 °C to 300 °C 300 °C to 400 °C 400 °C to 500 °C 500 °C to 650 °C	0.72 °C 0.44 °C 0.77 °C 1.2 °C 1.7 °C 2.1 °C 2.7 °C	Comparison with PT100 and Type K in Blackbody Source
Liquid In Glass Total Immersion Partial Immersion	 -30 °C to 0 °C 0 °C to 250 °C -30 °C to 0 °C 0 °C to 250 °C	 0.02 °C 0.13 °C 0.02 °C 0.13 °C	Comparison with PT100 in Liquid Bath / Ice Point Bath
Temperature Sensor / Data Logger	-196 ºC to -150 ºC -150 ºC to -95 ºC -95 ºC to -80 ºC -80 ºC to -40 ºC -40 ºC to 0 ºC 0 ºC to 150 ºC 150 ºC to 300 ºC 300 ºC to 650 ºC 650 ºC to 800 ºC 800 ºC to 1000 ºC 1000 ºC to 1200 ºC	0.5 ºC 0.4 ºC 0.061 ºC 0.009 ºC 0.008 ºC 0.009 ºC 0.010 ºC 0.61 ºC 1.2 ºC 1.9 ºC 2.4 ºC	Comparison with PT100 in Metrology Well / Bath
Thermo-hygro Device / Data Logger Air Temperature Relative Humidity @ 25 °C	 15 ºC to 60 ºC 15 %RH to 25 %RH 25 %RH to 70 %RH 70 %RH to 90 %RH 90 %RH to 98 %RH	 0.20 ºC 1.4 %RH 1.6 %RH 1.9 %RH 2.1 %RH	Comparison with Temperature Humidity Transmitter in Temperature Humidity Chamber

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SCOPE OF CALIBRATION: TORQUE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Torque Tools	0 N.m to 1 N.m 1 N.m to 10 N.m 10 N.m to 100 N.m 100 N.m to 150 N.m 150 N.m to 500 N.m 500 N.m to 1000 N.m 1000 N.m to 1500 N.m	0.007 N.m 0.02 N.m 0.62 N.m 1.3 N.m 3.7 N.m 4.5 N.m 6.7 N.m	Torque Calibrator based on ISO 6789-1,2:2017

SCOPE OF CALIBRATION: VISCOSITY

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Dynamic Viscosity Rotational Viscometer	66 mPa.s to 1000 mPa.s 1000 mPa.s to 100000 mPa.s	1.0 % of reading 1.3 % of reading	Comparison with Certified Viscosity Reference Standard
Kinematic Viscosity Alfnor Cup, Dip Cup, DIN Flow Cup, Frikmar Cup, Ford Cup, ISO Cup, Zahn Cup	20 mm^2/s to 70 mm^2/s 70 mm^2/s to 123 mm^2/s 123 mm^2/s to 220 mm^2/s 220 mm^2/s to 410 mm^2/s	1.2 mm^2/s 2.5 mm^2/s 6.0 mm^2/s 8.6 mm^2/s	Comparison with Certified Viscosity Reference Standard

SCOPE OF CALIBRATION: VOLUME

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Micro Pipette Piston Operated Pipette Type A Volumetric Apparatus (To Deliver)	0.1 µl to 10 µl 10 µl to 20 µl 20 µl to 50 µl 50 µl to 100 µl 100 µl to 200 µl 200 µl to 250 µl 250 µl to 500 µl 500 µl to 1000 µl 1000 µl to 2500 µl 2500 µl to 5000 µl 5000 µl to 10000 µl	0.015 µl 0.019 µl 0.023 µl 0.032 µl 0.050 µl 0.058 µl 0.12 µl 0.25 µl 0.54 µl 1.1 µl 2.2 µl	Gravimetric Method based on ISO 8655-6: 2022

SCOPE OF CALIBRATION: FLOW

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Anemometer	0.15 m/s to 1.25 m/s 1.25 m/s to 6.50 m/s 6.50 m/s to 10.00 m/s 10.00 m/s to 20.00 m/s 20.00 m/s to 30.00 m/s 30.00 m/s to 45.00 m/s	0.065 m/s 0.18 m/s 0.23 m/s 0.34 m/s 0.48 m/s 0.67 m/s	Comparison with Wind Tunnel

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SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Measuring Instrument DC Voltage	-202 mV to 202 mV -2.02 V to 2.02 V -20.2 V to 20.2 V -202 V to 202 V -1000 V to 1000 V	36 µV/V + 4.6 µV 36 µV/V + 6.0 µV 30 µV/V + 47 µV 36 µV/V + 0.51 mV 36 µV/V + 4.9 mV	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument AC Voltage	0 V to 1000 V	See Appendix Matrix A	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument DC Current	-202 µA to 202 µA -2.02 mA to 2.02 mA -20.2 mA to 20.2 mA -202 mA to 202 mA -2.02 A to 2.02 A -30 A to 30 A	0.12 mA/A + 0.035 µA 0.094 mA/A + 0.050 µA 0.059 mA/A + 0.38 µA 0.094 mA/A + 3.7 µA 0.36 mA/A + 0.043 mA 0.66 mA/A + 0.44 mA	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument AC Current	0 A to 30 A	See Appendix Matrix B	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument Resistance	<u>Simulated Resistance</u> 10 Ω to 100 Ω 101 Ω to 1 kΩ 1.01 kΩ to 10 kΩ 10.1 kΩ to 100 kΩ 101 kΩ to 1 MΩ 1.01 MΩ to 10 MΩ <u>Fixed Resistance</u> 0 Ω 100 MΩ 0.9928 GΩ	 0.35 mΩ/Ω + 0.50 mΩ 0.35 mΩ/Ω + 0.059 Ω 0.35 mΩ/MΩ + 0.84 Ω 0.35 kΩ/MΩ + 8.3 Ω 0.35 kΩ/MΩ + 0.083 kΩ 0.35 kΩ/MΩ + 0.84 kΩ 0.12 mΩ/Ω + 0.012 mΩ 0.0065 MΩ/GΩ + 0.060 MΩ 0.013 MΩ/GΩ + 0.66 MΩ	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument Frequency	10 Hz to 100 Hz 0.1 kHz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 1 MHz 1 MHz to 10 MHz	0.0025 Hz 0.024 Hz 0.24 Hz 2.4 Hz 24 Hz 0.24 kHz	Generated using Precision Multi Product Calibrator Transmille 3041A

SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
DC Current Clamp Meter	2 Turn Coil 4 A to 60 A 10 Turn Coil 60 A to 300 A 50 Turn Coil 300 A to 500 A 500 A to 1500 A	 0.25 mA/A + 0.11 A 1.5 mA/A + 0.11 A 1.6 mA/A + 0.12 A 4.9 mA/A + 0.72 A	Generated using Precision Multi Product Calibrator Transmille 3041A with EA002 Current Coil
AC Current Clamp Meter	30 Hz to 60 Hz 2 Turn Coil 4 A to 60 A 10 Turn Coil 60 A to 300 A 50 Turn Coil 300 A to 500 A 500 A to 1500 A	 0.26 mA/A + 0.11 A 1.6 mA/A + 0.11 A 1.6 mA/A + 0.13 A 4.6 mA/A + 0.78 A	Generated using Precision Multi Product Calibrator Transmille 3041A with EA002 Current Coil
Insulation Tester Insulation Resistance	10 kΩ to 100 kΩ 0.1 MΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 0.1 GΩ to 1 GΩ	2.4 Ω/kΩ + 25 Ω 2.4 kΩ/MΩ + 30 Ω 2.4 kΩ/MΩ + 0.12 kΩ 7.1 kΩ/MΩ + 9.7 kΩ 36 MΩ/GΩ + 240 kΩ	Generated using Precision Multi Product Calibrator Transmille 3041A with EA015 Workstation
Insulation Tester Insulation Voltage	0 V to 1000 V	0.064 mV/V + 26 mV	Measured using Precision Multi Product Calibrator Transmille 3041A with EA015 Workstation / Agilent 34401A Multimeter

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SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Portable Gas Detector Carbon Monoxide, CO Hydrogen Sulphide, H_2S Methane, CH_4 Oxygen, O_2 Carbon Dioxide, CO_2	 100 ppm 25 ppm 2.5 % Vol (50 % LEL) 18 % Vol 20.9 % Vol 5 % Vol	 3 ppm 2 ppm 0.2 % Vol (4 % LEL) 0.6 % Vol 0.6 % Vol 0.16 % Vol	Direct measurement using Reference Gas.

SCOPE OF TESTING: MECHANICAL

Materials / Products Tested	**Type of Tests / Properties Measured / Range of Measurement**	**Standard Test Methods / Equipment / Techniques**
Pressure Relief Valves Spring-Loaded, Conventional, Pilot-Operated Pressure Safety Valves	Size: up to DN 100 Pressure: up to 100 bar Test medium: Air 1. "As Received" Pop Pressure Test 2. Seat Leakage Test 3. Set Pressure	API 527: 5th Edition, 2020 (Clause 2) API 576: 4th Edition, 2017 (Clause 6.2.9.1 & 6.2.9.8)

SITE LOCATION (HQ):	1
FIELD(S) OF CALIBRATION:	ELECTRICAL, FORCE, HEAT & TEMPERATURE, MASS, PRESSURE, TORQUE
FIELD (S) OF TESTING:	MECHANICAL

SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Sensor / Data Logger	-196 ºC to -150 ºC -150 ºC to -95 ºC -95 ºC to -80 ºC -80 ºC to -20 ºC -20 ºC to 140 ºC 140 ºC to 300 ºC 300 ºC to 650 ºC 650 ºC to 800 ºC 800 ºC to 1000 ºC 1000 ºC to 1200 ºC	0.5 ºC 0.4 ºC 0.087 ºC 0.064 ºC 0.051 ºC 0.053 ºC 0.61 ºC 1.2 ºC 1.9 ºC 2.4 ºC	Comparison with PT100 in Metrology Well / Bath
Temperature Liquid Bath	-30 °C to 0 °C 0 °C to 100 °C 100 °C to 150 °C 150 °C to 250 °C	0.15 °C 0.12 °C 0.18 °C 0.14 °C	Comparison with PT100 based on EURAMET Calibration Guide No. 13 Version 4.0
Thermo-hygro Device / Data Logger Air Temperature Relative Humidity @ 25 °C	 15 ºC to 25 ºC 25 ºC to 30 ºC 30 ºC to 45 ºC 15 %RH to 25 %RH 25 %RH to 70 %RH 70 %RH to 90 %RH	 0.19 ºC 0.18 ºC 0.20 ºC 1.4 %RH 1.6 %RH 1.9 %RH	Comparison with Temperature Humidity Transmitter in Temperature Humidity Chamber
Temperature Enclosure	-95 ºC to -20 ºC -20 ºC to 100 ºC 100 ºC to 250 ºC 250 ºC to 600 ºC	0.80 ºC 0.50 ºC 0.90 ºC 1.8 ºC	Temperature Sensor / Logger based on DKD-R 5-7, IEC 60068-3-5 Clause 4.5.4, 4.5.5, 4.5.6

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SCOPE OF CALIBRATION: MASS

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Weighing Balance Micro Balance, Analytical Balance, Mechanical Scale, Electronic Scale, Platform Scale, Pallet Scale	Up to 5 g 5 g to 50 g 50 g to 250 g 250 g to 1000 g 1000 g to 10 kg 10 kg to 30 kg 30 kg to 60 kg 60 kg to 100 kg 100 kg to 150 kg 150 kg to 300 kg 300 kg to 500 kg 500 kg to 1000 kg 1000 kg to 3000 kg 3000 kg to 5000 kg	0.018 mg 0.037 mg 0.18 mg 0.37 mg 5.4 mg 22 mg 7.5 g 15 g 29 g 72 g 0.15 kg 0.72 kg 0.74 kg 1.5 kg	Standard Weight based on ASTM E898
Industrial Weights	1 kg 2 kg 5 kg 10 kg 20 kg 25 kg 250 kg	0.01 g 0.01 g 0.01 g 0.1 g 0.1 g 0.1 g 20 g	Mass Comparison with Reference Weights Intermediate values can be calibrated with an uncertainty equal to that of the next higher nominal value

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SCOPE OF CALIBRATION: PRESSURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Pressure Indicating Devices Manometer	0 Pa to 125 Pa 125 Pa to 500 Pa 500 Pa to 1250 Pa 1250 Pa to 2500 Pa 2.5 kPa to 40 kPa 40 kPa to 100 kPa 100 kPa to 250 kPa	0.90 Pa 0.90 Pa 0.9 Pa 1.1 Pa 0.04 kPa 0.07 kPa 0.09 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Absolute	0 Pa.a to 300 kPa.a 300 kPa.a to 600 kPa.a	0.14 kPa.a 0.14 kPa.a	Comparison with Pressure Calibrator
Pressure Indicating Devices Vacuum	-0.09 MPa to 0 MPa	0.001 MPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Pneumatic	0 Pa to 7 MPa 7 MPa to 20 MPa	0.0019 MPa 0.012 MPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Hydraulic	0 MPa to 25 MPa 25 MPa to 40 MPa 40 MPa to 70 MPa 70 MPa to 250 MPa	0.008 MPa 0.012 MPa 0.012 MPa 0.08 MPa	Comparison with Pressure Calibrator

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SCOPE OF CALIBRATION: TORQUE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Torque Tools	0 N.m to 1 N.m 1 N.m to 10 N.m 10 N.m to 100 N.m 100 N.m to 150 N.m 150 N.m to 500 N.m 500 N.m to 1000 N.m 1000 N.m to 1500 N.m	0.007 N.m 0.02 N.m 0.62 N.m 1.3 N.m 3.7 N.m 4.5 N.m 6.7 N.m	Torque Calibrator based on ISO 6789-1,2:2017

SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Portable Gas Detector			Direct measurement using Reference Gas.
Carbon Monoxide, CO	100 ppm	3 ppm	
Hydrogen Sulphide, H_2S	25 ppm	2 ppm	
Methane, CH_4	2.5 % Vol (50 % LEL)	0.2 % Vol (4 % LEL)	
Oxygen, O_2	18 % Vol 20.9 % Vol	0.6 % Vol 0.6 % Vol	
Carbon Dioxide, CO_2	5 % Vol	0.16 % Vol	

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SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Measuring Instrument DC Voltage	-202 mV to 202 mV -2.02 V to 2.02 V -20.2 V to 20.2 V -202 V to 202 V -1000 V to 1000 V	48 µV/V + 6.0 µV 48 µV/V + 8.0 µV 41 µV/V + 64 µV 48 µV/V + 0.67 mV 48 µV/V + 6.5 mV	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument AC Voltage	0 V to 1000 V	See Appendix Matrix C	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument DC Current	-202 µA to 202 µA -2.02 mA to 2.02 mA -20.2 mA to 20.2 mA -202 mA to 202 mA -2.02 A to 2.02 A -30 A to 30 A	0.16 mA/A + 0.048 µA 0.13 mA/A + 18 µA 0.080 mA/A + 0.50 µA 0.13 mA/A + 4.9 µA 0.48 mA/A + 0.057 mA 0.66 mA/A + 0.70 mA	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument AC Current	0 A to 30 A	See Appendix Matrix D	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument Resistance	<u>Simulated Resistance</u> 10 Ω to 100 Ω 101 Ω to 1 kΩ 1.01 kΩ to 10 kΩ 10.1 kΩ to 100 kΩ 101 kΩ to 1 MΩ 1.01 MΩ to 10 MΩ <u>Fixed Resistance</u> 0 Ω 100 MΩ 0.9928 GΩ	 0.48 mΩ/Ω + 0.50 mΩ 0.48 mΩ/Ω + 0.080 Ω 0.48 mΩ/MΩ + 0.84 Ω 0.48 kΩ/MΩ + 8.3 Ω 0.48 kΩ/MΩ + 0.083 kΩ 0.48 kΩ/MΩ + 0.84 kΩ 0.16 mΩ/Ω + 0.013 mΩ 0.0088 MΩ/GΩ + 0.082 MΩ 0.017 MΩ/GΩ + 0.89 MΩ	Generated using Precision Multi Product Calibrator Transmille 3041A
Measuring Instrument Frequency	10 Hz to 100 Hz 0.1 kHz to 1 kHz 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 1 MHz 1 MHz to 10 MHz	0.0033 Hz 0.032 Hz 0.32 Hz 3.2 Hz 32 Hz 0.32 kHz	Generated using Precision Multi Product Calibrator Transmille 3041A

SCOPE OF CALIBRATION: ELECTRICAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
DC Current Clamp Meter	2 Turn Coil 4 A to 60 A 10 Turn Coil 60 A to 300 A 50 Turn Coil 300 A to 500 A 500 A to 1500 A	 0.26 mA/A + 0.67 A 1.5 mA/A + 0.67 A 1.6 mA/A + 0.71 A 4.9 mA/A + 1.0 A	Generated using Precision Multi Product Calibrator Transmille 3041A with EA002 Current Coil
AC Current Clamp Meter	30 Hz to 60 Hz 2 Turn Coil 4 A to 60 A 10 Turn Coil 60 A to 300 A 50 Turn Coil 300 A to 500 A 500 A to 1500 A	 0.26 mA/A + 0.67 A 1.6 mA/A + 0.67 A 1.6 mA/A + 0.71 A 4.6 mA/A + 1.1 A	Generated using Precision Multi Product Calibrator Transmille 3041A with EA002 Current Coil
Insulation Tester Insulation Resistance	10 kΩ to 100 kΩ 0.1 MΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ 0.1 GΩ to 1 GΩ	3.6 Ω/kΩ + 25 Ω 3.6 kΩ/MΩ + 30 Ω 3.6 kΩ/MΩ + 0.12 kΩ 0.54 MΩ/GΩ + 9.9 kΩ 54 MΩ/GΩ + 0.24 MΩ	Generated using Precision Multi Product Calibrator Transmille 3041A with EA015 Workstation
Insulation Tester Insulation Voltage	0 V to 1000 V	0.064 mV/V + 26 mV	Measured using Precision Multi Product Calibrator Transmille 3041A with EA015 Workstation / HP 34401A Multimeter

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SCOPE OF CALIBRATION: FORCE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Universal Testing Machine Tensile	0 kN to 10 kN 10 kN to 50 kN	4.5 N 45 N	Calibrated using Load Cell based on ISO 7500-1:2018
Universal Testing Machine Compression	0 kN to 10 kN 10 kN to 100 kN	4.5 N 0.31 kN	Calibrated using Load Cell based on ISO 7500-1:2018

SCOPE OF TESTING: MECHANICAL

Materials / Products Tested	**Type of Tests / Properties Measured / Range of Measurement**	**Standard Test Methods / Equipment / Techniques**
Pressure Relief Valves Spring-Loaded, Conventional, Pilot-Operated Pressure Safety Valves	Size: up to DN 100 Pressure: up to 100 bar Test medium: Air 1. "As Received" Pop Pressure Test 2. Seat Leakage Test 3. Set Pressure	API 527: 5th Edition, 2020 (Clause 2) API 576: 4th Edition, 2017 (Clause 6.2.9.1 & 6.2.9.8)

BRANCH LOCATION :	1. METCAL TECHNOLOGIES (M) SDN. BHD. (MELAKA) 26, JALAN CB 1, TAMAN CHENG BESTARI, 75250 MELAKA MALAYSIA
FIELD(S) OF CALIBRATION:	DIMENSIONAL

SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Caliper	0 mm to 600 mm	10 µm	Comparison with Caliper Checker / Gauge Block based on JIS B 7507:2022
External Micrometer	0 mm to 25 mm 25 mm to 50 mm 50 mm to 75 mm 75 mm to 100 mm 100 mm to 200 mm 200 mm to 300 mm	1.0 µm 1.0 µm 1.2 µm 1.3 µm 2.0 µm 2.8 µm	Comparison with Gauge Block based on JIS B 7502:2016
Height Gauge	0 mm to 600 mm	10 µm	Comparison with Caliper Checker based on JIS B 7517:2018
Indicator	0 mm to 50.8 mm	2.0 µm	Comparison with Gauge Tester based on JIS B 7503:2017
Test Indicator	0 mm to 1.6 mm	2.0 µm	Comparison with Gauge Tester based on JIS B 7533:2015

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BRANCH LOCATION:	2. METCAL TECHNOLOGIES (M) SDN. BHD. (JOHOR) 18, JALAN KEMPAS UTAMA 3/3, 81300 SKUDAI, JOHOR MALAYSIA
FIELD(S) OF CALIBRATION:	DIMENSIONAL, HEAT & TEMPERATURE, PRESSURE, TORQUE

SCOPE OF CALIBRATION: DIMENSIONAL

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Caliper	0 mm to 150 mm 150 mm to 600 mm	5.0 µm (6.7 + 8.2 *L*) µm '*L*' in metre	Comparison with Caliper Checker / Gauge Block based on JIS B 7507:2022
External Micrometer	0 mm to 25 mm 25 mm to 50 mm 50 mm to 75 mm 75 mm to 100 mm 100 mm to 200 mm 200 mm to 300 mm	1.0 µm 1.0 µm 1.1 µm 1.3 µm 1.9 µm 2.6 µm	Comparison with Gauge Block based on JIS B 7502:2016
Height Gauge	0 mm to 600 mm	(5.7 + 7.4 *L*) µm '*L*' in metre	Comparison with Caliper Checker based on JIS B 7517:2018
Indicator	0 mm to 50.8 mm	1.8 µm	Comparison with Gauge Tester based on JIS B 7503:2017
Test Indicator	0 mm to 0.8 mm 0.8 mm to 1.6 mm	1.8 µm 1.8 µm	Comparison with Gauge Tester based on JIS B 7533:2015

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SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Sensor / Data Logger	-30 ºC to 0 ºC 0 ºC to 50 ºC 50 ºC to 100 ºC 100 ºC to 150 ºC 150 ºC to 200 ºC 200 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 500 ºC 500 ºC to 600 ºC	0.095 ºC 0.044 ºC 0.048 ºC 0.086 ºC 0.58 ºC 0.76 ºC 0.92 ºC 1.1 ºC 1.2 ºC	Comparison with PT100 in Metrology Well / Bath with Reference to Euramet / cg-8 Version 3.1
Temperature Indicator K	-200 °C to 0 °C Above 0 °C to 1370 °C	0.24 °C 0.18 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator J	-200 °C to 0 °C Above 0 °C to 1200 °C	0.16 °C 0.29 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator T	-200 °C to 0 °C Above 0 °C to 400 °C	0.23 °C 0.15 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator E	-200 °C to 0 °C Above 0 °C to 950 °C	0.16 °C 0.15 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator N	-200 °C to 0 °C Above 0 °C to 1300 °C	0.23 °C 0.17 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0

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SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Temperature Indicator B	600 °C to 1000 °C Above 1000 °C to 1800 °C	0.82 °C 0.31 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator R	0 °C Above 0 °C to 1750 °C	0.52 °C 0.27 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator S	0 °C Above 0 °C to 1750 °C	0.52 °C 0.26 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator PT100	-200 °C to 800 °C	0.13 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator K	-200 °C to 0 °C Above 0 °C to 1370 °C	0.13 °C 0.19 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator J	-200 °C to 0 °C Above 0 °C to 1200 °C	0.16 °C 0.19 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator T	-200 °C to 0 °C Above 0 °C to 400 °C	0.33 °C 0.16 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0

SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Temperature Simulator E	-200 °C to 1000 °C	0.10 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator N	-200 °C to 0 °C Above 0 °C to 1300 °C	0.16 °C 0.11 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator B	600 °C to 1000 °C Above 1000 °C to 1800 °C	0.78 °C 0.42 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator R	0 °C Above 0 °C to 1750 °C	0.29 °C 0.19 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator S	0 °C to 600 °C Above 600 °C to 1750 °C	0.22 °C 0.15 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Simulator PT100	-200 °C to 800 °C	0.11 °C	Measurement using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Thermo-hygro Device / Data Logger Air Temperature Relative Humidity @ 25 °C	 15 ºC to 25 ºC 25 ºC to 60 ºC 15 %RH to 40 %RH 40 %RH to 70 %RH 70 %RH to 90 %RH	 0.33 ºC 0.36 ºC 1.2 %RH 1.4 %RH 1.7 %RH	Comparison with Temperature Humidity Transmitter in Temperature Humidity Chamber with Reference to JIS Z 8806:1995

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SCOPE OF CALIBRATION: PRESSURE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Pressure Indicating Devices Manometer / Differential Pressure Gauge	0 Pa to 250 Pa 0 kPa to 40 kPa -40 kPa to 0 kPa	0.94 Pa 0.012 kPa 0.071 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Absolute Pressure	0 kPa.a to 300 kPa.a 300 kPa.a to 600 kPa.a	0.13 kPa.a 0.20 kPa.a	Comparison with Pressure Calibrator
Pressure Indicating Devices Vacuum	-90 kPa to 0 kPa	0.32 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Pneumatic	0 MPa to 4 MPa	0.0031 MPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Hydraulic	0 MPa to 25 MPa 25 MPa to 70 MPa	0.024 MPa 0.034 MPa	Comparison with Pressure Calibrator

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SCOPE OF CALIBRATION: TORQUE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Torque Tools	0 N.m to 1 N.m 1.2 N.m to 15 N.m 15 N.m to 60 N.m 60 N.m to 150 N.m 150 N.m to 500 N.m 500 N.m to 1000 N.m 1000 N.m to 1500 N.m	0.014 N.m 0.14 N.m 0.60 N.m 1.4 N.m 3.3 N.m 5.6 N.m 7.4 N.m	Torque Calibrator based on ISO 6789-1,2:2017

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SITE LOCATION (BRANCH):	2
FIELD(S) OF CALIBRATION:	PRESSURE, HEAT & TEMPERATURE

SCOPE OF CALIBRATION: PRESSURE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Pressure Indicating Devices Manometer / Differential Pressure Gauge	0 Pa to 250 Pa 0 kPa to 40 kPa -40 kPa to 0 kPa	0.94 Pa 0.012 kPa 0.071 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Absolute Pressure	0 kPa.a to 300 kPa.a 300 kPa.a to 600 kPa.a	0.13 kPa.a 0.20 kPa.a	Comparison with Pressure Calibrator
Pressure Indicating Devices Vacuum	-90 kPa to 0 kPa	0.32 kPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Pneumatic	0 MPa to 4 MPa	0.0031 MPa	Comparison with Pressure Calibrator
Pressure Indicating Devices Hydraulic	0 MPa to 25 MPa 25 MPa to 70 MPa	0.024 MPa 0.034 MPa	Comparison with Pressure Calibrator

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SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Temperature Sensor / Data Logger	-30 ºC to 0 ºC 0 ºC to 50 ºC 50 ºC to 100 ºC 100 ºC to 150 ºC 150 ºC to 200 ºC 200 ºC to 300 ºC 300 ºC to 500 ºC 500 ºC to 600 ºC	0.15 ºC 0.082 ºC 0.088 ºC 0.13 ºC 0.61 ºC 0.80 ºC 1.5 ºC 2.8 ºC	Comparison with PT100 in Metrology Well / Bath with Reference to Euramet / cg-8 Version 3.1
Temperature Indicator K	-200 °C to 0 °C Above 0 °C to 1370 °C	0.28 °C 0.20 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator J	-200 °C to 0 °C Above 0 °C to 1200 °C	0.22 °C 0.37 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator T	-200 °C to 0 °C Above 0 °C to 400 °C	0.19 °C 0.21 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator E	-200 °C to 0 °C Above 0 °C to 950 °C	0.17 °C 0.41 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator N	-200 °C to 0 °C Above 0 °C to 1300 °C	0.30 °C 0.48 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0

SCOPE OF CALIBRATION: HEAT & TEMPERATURE

Instrument Calibrated / Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Temperature Indicator B	600 °C to 1000 °C Above 1000 °C to 1800 °C	0.82 °C 0.50 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator R	0 °C Above 0 °C to 1750 °C	0.56 °C 0.66 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator S	0 °C Above 0 °C to 1750 °C	0.55 °C 0.75 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0
Temperature Indicator PT100	-200 °C to 800 °C	0.25 °C	Electrical Simulation using Temperature Calibrator with Reference to Euramet / cg-11 Version 1.0

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APPENDIX

Matrix A (AC Voltage Measurement)

Voltage Range	Frequency				
	Hz		kHz		
	10 to 44	**45 to 999**	**1 to 19.999**	**20 to 99.999**	**100 to 500**
0 V to 202 mV	0.48 mV/V + 0.059 mV	0.14 mV/V + 0.024 mV	0.22 mV/V + 0.041 mV	0.71 mV/V + 0.082 mV	1.9 mV/V + 0.45 mV
0.2 V to 2.02 V	2.4 mV/V + 0.40 mV	0.47 mV/V + 0.11 mV	1.1 mV/V + 0.16 mV	2.9 mV/V + 2.4 mV	5.3 mV/V + 4.5 mV
2 V to 20.2 V	**Hz**		**kHz**		
	10 to 44	**45 to 999**	**1 to 19.999**	**20 to 99.999**	**100**
	2.4 mV/V + 3.5 mV	0.41 mV/V + 1.1 mV	0.82 mV/V + 1.6 mV	2.6 mV/V + 16 mV	2.6 mV/V + 39 mV
20 V to 202 V	**Hz**		**kHz**		
	30 to 44	**45 to 999**	**1 to 20**	-	-
	-	0.47 mV/V + 8.8 mV	1.1 mV/V + 47 mV	-	-
200 V to 1000 V	**Hz**		**kHz**		
	30 to 45	**45 to 999**	**1 to 10**	-	-
	-	0.47 mV/V + 87 mV	1.8 mV/V + 0.47 V	-	-

Matrix B (AC Current Measurement)

Current Range	Frequency		
	Hz		kHz
	10 to 44	**45 to 999**	**1 to 10**
20 µA to 202 µA	2.4 mA/A + 0.29 µA	0.83 mA/A + 0.29 µA	9.3 mA/A + 0.28 µA
0.2 mA to 2.02 mA	2.4 mA/A + 0.58 µA	0.71 mA/A + 0.47 µA	8.2 mA + 0.81 µA
2 mA to 20.2 mA	2.4 mA/A + 5.8 µA	0.71 mA/A + 4.7 µA	5.8 mA/A + 8.1 µA
20 mA to 202 mA	2.4 mA/A + 0.059 mA	0.70 mA/A + 0.047 mA	7.0 mA/A + 0.081 mA
0.2 A to 2.02 A	**Hz**		**kHz**
	10 to 44	**45 to 999**	**1 to 5**
	2.4 mA/A + 0.58 mA	1.1 mA/A + 0.46 mA	1.1 mA/A + 0.46 mA
2 A to 30 A	**Hz**		**kHz**
	30 to 44	**45 to 99**	**0.1 to 1**
	-	1.1 mA/A + 2.4 mA	3.5 mA/A + 4.7 mA

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Matrix C (AC Voltage Measurement)

Voltage Range	Frequency				
	Hz		kHz		
	10 to 44	45 to 999	1 to 19.999	20 to 99.999	100 to 500
0 V to 202 mV	0.64 mV/V + 0.079 mV	0.16 mV/V + 0.032 mV	0.29 mV/V + 0.056 mV	0.96 mV/V + 0.12 mV	2.6 mV/V + 0.60 mV
0.2 V to 2.02 V	3.2 mV/V + 0.57 mV	0.64 mV/V + 0.15 mV	1.5 mV/V + 0.22 mV	4.0 mV/V + 3.2 mV	7.1 mV/V + 6.0 mV
2 V to 20.2 V	Hz		kHz		
	10 to 44	45 to 999	1 to 19.999	20 to 99.999	100
	3.2 mV/V + 4.8 mV	0.56 mV/V + 1.5 mV	1.2 mV/V + 2.2 mV	3.5 mV/V + 22 mV	3.5 mV/V + 53 mV
20 V to 202 V	Hz		kHz		
	30 to 44	45 to 999	1 to 20	-	-
	-	0.64 mV/V + 12 mV	1.5 mV/V + 64 mV	-	-
200 V to 1000 V	Hz		kHz		
	30 to 45	45 to 999	1 to 10	-	-
	-	0.64 mV/V + 0.12 V	2.0 mV/V + 0.50 V	-	-

Matrix D (AC Current Measurement)

Current Range	Frequency		
	Hz		kHz
	10 to 44	45 to 999	1 to 10
20 µA to 202 µA	3.3 mA/A + 0.38 µA	1.2 mA/A + 0.40 µA	13 mA/A + 0.39 µA
0.2 mA to 2.02 mA	3.2 mA/A + 0.78 µA	0.96 mA/A + 0.64 µA	12 mA + 1.0 µA
2 mA to 20.2 mA	3.2 mA/A + 7.8 µA	0.96 mA/A + 6.4 µA	7.9 mA/A + 10 µA
20 mA to 202 mA	3.2 mA/A + 0.079 mA	0.95 mA/A + 0.064 mA	9.5 mA/A + 0.10 mA
0.2 A to 2.02 A	Hz		kHz
	10 to 44	45 to 999	1 to 5
	3.2 mA/A + 0.78 mA	1.5 mA/A + 0.63 mA	1.1 mA/A + 7.3 mA
2 A to 30 A	Hz		kHz
	30 to 44	45 to 99	0.1 to 1
	-	1.5 mA/A + 3.2 mA	4.8 mA/A + 6.2 mA