CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

APTITECH CALIBRATION CO., LTD.
50/40 Moo 5 T.Lat Sawai, A. Lamlukka
Pathumthani 12150 Thailand

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

CALIBRATION AND DIMENSIONAL MEASUREMENT

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 11 September 2026
Certificate Number: ACDM-2906

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION AND DIMENSIONAL MEASUREMENT

ISO/IEC 17025 Accreditation Granted: **11 September 2024**

Certificate Number: **ACDM-2906** Certificate Expiry Date: **11 September 2026**

CALIBRATION

Acoustics and Vibration

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
[1] Vibration Meter Acceleration (80 to 640) Hz	Up to 10 m/s² (> 10 to 20) m/s² (> 20 to 50) m/s² (> 50 to 100) m/s²	0.2 m/s^2 0.2 m/s^2 0.3 m/s^2 3.9 m/s^2	Comparison to Vibration Calibrator
[1] Vibration Meter Velocity (80 to 640) Hz	Up to 10 mm/s (> 10 to 20) mm/s (> 20 to 50) mm/s (> 50 to 100) mm/s	0.2 mm/s 0.2 mm/s 0.5 mm/s 1 mm/s	Comparison to Vibration Calibrator
[1] Vibration Meter Displacement (80 to 320) Hz	Up to 10 µm (> 10 to 20) µm (> 20 to 50) µm (> 50 to 100) µm	0.2 µm 1 µm 3.8 µm 8.8 µm	Comparison to Vibration Calibrator
[1] Acceleration (80 to 640) Hz	Up to 10 m/s² (> 10 to 20) m/s² (> 20 to 30) m/s² (> 30 to 50) m/s² (> 50 to 100) m/s²	0.2 m/s^2 0.9 m/s^2 1.6 m/s^2 4.2 m/s^2 8.4 m/s^2	Comparison to Vibration Calibrator
[1] Sound Level Meter	1 kHz 94 dB 114 dB	 0.6 dB 0.6 dB	Comparison to Sound Level Calibrator

Chemical Quantities

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
pH Meter[1,4]	4 pH 7 pH 10 pH	0.01 pH 0.012 pH 0.015 pH	Comparison to Accredited pH solutions
Conductivity Meter[1,4]	84 µS/cm 1 413 µS/cm 12 880 µS/cm	0.8 µS/cm 16 µS/cm 100 µS/cm	Comparison to Accredited Conductivity solutions
Refractometer[1]	5 %Brix 10 %Brix 20 %Brix 30 %Brix 50 %Brix 60 %Brix	0.03 %Brix 0.03 %Brix 0.04 %Brix 0.04 %Brix 0.05 %Brix 0.06 %Brix	Comparison to Source Solution, Standard Refractometer
Turbidity Meter[1,4]	10 NTU 100 NTU 500 NTU 1 000 NTU	0.085 NTU 0.85 NTU 5 NTU 10 NTU	Comparison to Accredited Turbidity Solution
TDS Meter[1,4]	10 mg/l 100 mg/l 500 mg/l 1 000 mg/l 2 000 mg/l	0.063 mg/l 0.62 mg/l 3.1 mg/l 6.2 mg/l 12 mg/l	Comparison to Accredited TDS Buffer Solution
DO Meter[4]	5.9 mg/l 31.1 mg/l	0.2 mg/l 0.2 mg/l	Comparison to Accredited DO Buffer Solution
Gas Detector/Analyzer[4]	100 parts in 10^6 CO 18% O_2 50 %LEL CH_4 25 parts in 10^6 H_2S	2.2 parts in 10^6 CO 0.38 % O_2 1.3 %LEL 1.5 parts in 10^6 H_2S	Comparison to Accredited Gases

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source[1]	(> 0 to 330) mV (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1 020) V	48 µV/V + 6.5 µV 40 µV/V + 10 µV 40 µV/V + 0.1 mV 44 µV/V + 1 mV 44 µV/V + 2 mV	Comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current – Source[1]	(> 0 to 330) µA (0.33 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 1.1) A (1.1 to 3) A (3 to 11) A (11 to 20.5) A	0.12 mA/A + 20 nA 80 µA/A + 50 nA 80 µA/A + 0.25 µA 80 µA/A + 2.5 µA 0.3 mA/A + 40 µA 0.3 mA/A + 40 µA 0.48 mA/A + 0.4 mA 0.8 mA/A + 1 mA	Comparison to Multiproduct Calibrator
DC Current – Source[1] Clamp-On Ammeter	(10 to 16.5) A (16.5 to 55) A (55 to 150) A (150 to 550) A (550 to 1 000) A	3 mA/A + 50 mA 3 mA/A + 75 mA 3 mA/A + 75 mA 3 mA/A + 85 mA 3 mA/A + 85 mA	Comparison to Multiproduct Calibrator with Coil
AC Current – Source[1] Clamp-On Ammeter	(10 to 16.5) A (45 to 65) Hz (65 to 440) Hz (16.5 to 55) A (45 to 65) Hz (65 to 440) Hz (55 to 150) A (45 to 65) Hz (65 to 440) Hz (150 to 550) A (45 to 65) Hz (550 to 1 000) A (45 to 65) Hz	 3 mA/A + 7 mA 3 mA/A + 7 mA 3 mA/A + 70 mA 3 mA/A + 70 mA 3 mA/A + 70 mA 3 mA/A + 70 mA 3 mA/A + 0.15 A 3 mA/A + 0.25 A	Comparison to Multiproduct Calibrator with Coil
AC Voltage – Source[1]	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz (33 to 330) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	 1.4 mV/V + 18 µV 1 mV/V + 18 µV 1.4 mV/V + 16 µV 1.7 mV/V + 16 µV 2.8 mV/V + 26 µV 7.8 mV/V + 48 µV 0.4 mV/V + 18 µV 0.25 mV/V + 18 µV 0.6 mV/V + 18 µV 0.8 mV/V + 34 µV 1.9 mV/V + 0.14 mV 4 mV/V + 0.28 mV	Comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

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AC Voltage – Source[1]	330 mV to 3.3 V		Comparison to Multiproduct Calibrator
	(10 to 45) Hz	0.4 mV/V + 50 µV	
	45 Hz to 10 kHz	0.24 mV/V + 50 µV	
	(10 to 20) kHz	0.56 mV/V + 50 µV	
	(20 to 50) kHz	0.8 mV/V + 50 µV	
	(50 to 100) kHz	1.9 mV/V + 0.2 mV	
	(100 to 500) kHz	4 mV/V + 0.8 mV	
	(3.3 to 33) V		
	(10 to 45) Hz	0.4 mV/V + 2 mV	
	45 Hz to 10 kHz	0.25 mV/V + 0.8 mV	
	(10 to 20) kHz	0.56 mV/V + 0.8 mV	
	(20 to 50) kHz	0.85 mV/V + 0.8 mV	
	(50 to 100) kHz	1.9 mV/V + 1.8 mV	
	(33 to 330) V		
	45 Hz to 1 kHz	0.4 mV/V + 4 mV	
	(1 to 10) kHz	0.65 mV/V + 9 mV	
	(10 to 20) kHz	0.8 mV/V + 9 mV	
	(20 to 50) kHz	1 mV/V + 9 mV	
	(50 to 100) kHz	2 mV/V + 70 mV	
	(330 to 1 020) V		
	45 Hz to 1 kHz	0.4 mV/V + 18 mV	
	(1 to 5) kHz	0.65 mV/V + 18 mV	
	(5 to 10) kHz	0.75 mV/V + 18 mV	
AC Current – Source[1]	(30 to 330) µA		Comparison to Multiproduct Calibrator
	(10 to 20) Hz	1.7 mA/A + 90 nA	
	(20 to 45) Hz	1.3 mA/A + 90 nA	
	45 Hz to 1 kHz	1.1 mA/A + 90 nA	
	(1 to 5) kHz	2.4 mA/A + 0.2 µA	
	(5 to 10) kHz	6.3 mA/A + 0.2 µA	
	(10 to 30) kHz	13 mA/A + 0.4 µA	
	330 µA to 3.3 mA		
	(10 to 20) Hz	1.7 mA/A + 0.2 µA	
	(20 to 45) Hz	1 mA/A + 0.2 µA	
	45 Hz to 1 kHz	0.9 mA/A + 0.2 µA	
	(1 to 5) kHz	1.7 mA/A + 0.2 µA	
	(5 to 10) kHz	4 mA/A + 0.3 µA	
	(10 to 30) kHz	8 mA/A + 0.5 µA	

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Electrical – DC/Low Frequency

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AC Voltage – Source[1]	(3.3 to 33) mA		Comparison to Multiproduct Calibrator
	(10 to 20) Hz	1.5 mA/A + 3 µA	
	(20 to 45) Hz	0.8 mA/A + 3 µA	
	45 Hz to 1 kHz	0.34 mA /A + 3 µA	
	(1 to 5) kHz	0.65 mA/A + 3 µA	
	(5 to 10) kHz	1.6 mA/A + 3 µA	
	(10 to 30) kHz	3.2 mA/A + 4 µA	
	(33 to 330) mA		
	(10 to 20) Hz	1.5 mA/A + 30 µA	
	(20 to 45) Hz	0.8 mA/A + 30 µA	
	45 Hz to 1 kHz	0.35 mA /A + 20 µA	
	(1 to 5) kHz	0.9 mA/A + 50 µA	
	(5 to 10) kHz	1.7 mA/A + 90 µA	
	(10 to 30) kHz	3.2 mA/A + 0.17 mA	
	330 mA to 1.1 A		
	(10 to 45) Hz	1.5 mA/A + 80 µA	
	45 Hz to 1 kHz	0.4 mA/A + 80 µA	
	(1 to 5) kHz	4.8 mA/A + 0.9 mA	
	(5 to 10) kHz	20 mA/A + 5 mA	
	(1.1 to 3) A		
	(10 to 45) Hz	1.5 mA/A + 90 µA	
	45 Hz to 1 kHz	0.5 mA/A + 90 µA	
	(1 to 5) kHz	4.8 mA/A + 0.9 mA	
	(5 to 10) kHz	20 mA/A + 5 mA	
	(3 to 11) A		
	(45 to 100) Hz	0.5 mA/A + 2 mA	
	100 Hz to 1 kHz	0.9 mA/A + 2 mA	
	(1 to 5) kHz	24 mA/A + 2 mA	
	(11 to 20.5) A		
	(45 to 100) Hz	1 mA/A + 5 mA	
	100 Hz to 1 kHz	1.3 mA/A + 5 mA	
	(1 to 5) kHz	24 mA/A + 5 mA	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance - Source[1]	(> 0 to 11) Ω	93 μΩ/Ω + 0.9 mΩ	Comparison to Multiproduct Calibrator
	(11 to 33) Ω	93 μΩ/Ω + 1.3 mΩ	
	(33 to 110) Ω	70 μΩ/Ω + 1.2 mΩ	
	(110 to < 330) Ω	70 μΩ/Ω + 1.8 mΩ	
	(0.33 to < 1.1) kΩ	70 μΩ/Ω + 1.8 mΩ	
	(1.1 to < 3.3) kΩ	70 μΩ/Ω + 18 mΩ	
	(3.3 to < 11) kΩ	70 μΩ/Ω + 18 mΩ	
	(11 to < 33) kΩ	70 μΩ/Ω + 0.18 Ω	
	(33 to < 110) kΩ	86 μΩ/Ω + 0.18 Ω	
	(110 to < 330) kΩ	94 μΩ/Ω + 1.8 Ω	
	(0.33 to < 1.1) MΩ	0.12 mΩ/Ω + 2.3 Ω	
	(1.1 to < 3.3) MΩ	0.12 mΩ/Ω + 45 Ω	
	(3.3 to < 11) MΩ	0.5 mΩ/Ω + 58 Ω	
	(11 to < 33) MΩ	0.8 mΩ/Ω + 2 kΩ	
	(33 to < 110) MΩ	0.39 mΩ/Ω + 3 kΩ	
	(110 to 330) MΩ	3.9 mΩ/Ω + 85 kΩ	
	(330 to 1 000) MΩ	12 mΩ/Ω + 0.4 MΩ	
DC Power – Source[1]			Comparison to Multiproduct Calibrator
33 mV to 1 020 V	0.33mA to 20.5 A		
	(0.010 89 to < 3.366) W	0.21 mW/W	
	(3.366 to < 33.66) W	0.15 mW/W	
	(33.66 to < 336.6) W	0.15 mW/W	
	(336.6 to < 1 122) W	0.41 mW/W	
	(1.122 to < 3.06) kW	0.33 mW/W	
	(3.06 to < 11.22) kW	0.6 mW/W	
	(11.22 to < 20.91) kW	0.86 mW/W	
AC Power – Source[1]			Comparison to Multiproduct Calibrator
(45 to 65) Hz			
PF = 1			
33 mV to 1 020 V	3.3 mA to 20.5 A		
	(0.010 89 to < 33.66) W	0.9 mW/W	
	(33.66 to < 336.6) W	0.6 mW/W	
	(336.6 to < 1 122) W	0.7 mW/W	
	(1.122 to < 3.06) kW	0.7 mW/W	
	(3.06 to < 11.22) kW	1.1 mW/W	
	(11.22 to < 20.91) kW	1.4 mW/W	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source[1]	10 Hz to 10 kHz (0.22 to 0.4) nF (0.4 to 1.1) nF 10 Hz to 3 kHz (1.1 to 3.3) nF 10 Hz to 1 kHz (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF (10 to 600) Hz 330 nF to 1.1 µF (10 to 300) Hz (1.1 to 3.3) µF (10 to 150) Hz (3.3 to 11) µF (10 to 120) Hz (11 to 33) µF (10 to 80) Hz (33 to 110) µF DC to 50 Hz (110 to 330) µF DC to 20 Hz 330 µF to 1.1 mF DC to 6 Hz (1.1 to 3.3) mF DC to 2 Hz (3.3 to 11) mF DC to 0.6 Hz (11 to 3.3) mF DC to 0.2 Hz (33 to 110) mF	 3.9 mF/F + 9 pF 3.9 mF/F + 10 pF 3.9 mF/F + 12 pF 2 mF/F + 12 pF 2 mF/F + 0.12 nF 2 mF/F + 0.12 nF 2 mF/F + 0.65 nF 2 mF/F + 1 nF 2 mF/F + 6.5 nF 2 mF/F + 10 nF 3.2 mF/F + 65 nF 3.5 mF/F + 0.1 µF 3.5 mF/F + 0.65 µF 3.5 mF/F + 1 µF 3.5 mF/F + 6.5 µF 3.5 mF/F + 10 µF 6 mF/F + 65 µF 8.6 mF/F + 0.1 µF	Comparison to Multiproduct Calibrator
Electrical Simulation of Thermocouple Indicators – Source[1]	Type B (600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C	 0.35 °C 0.27 °C 0.24 °C 0.26 °C	Millivolt/Resistance Simulation using Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators – Source[1]	Type C		Millivolt/Resistance Simulation using Multiproduct Calibrator
	(0 to 150) °C	0.24 °C	
	(150 to 650) °C	0.21 °C	
	(650 to 1 000) °C	0.25 °C	
	(1 000 to 1 800) °C	0.4 °C	
	(1 800 to 2 316) °C	0.66 °C	
	Type E		
	(-250 to -100) °C	0.4 °C	
	(-100 to -25) °C	0.14 °C	
	(-25 to 350) °C	0.12 °C	
	(350 to 650) °C	0.14 °C	
	(650 to 1 000) °C	0.18 °C	
	Type J		
	(-210 to -100) ºC	0.22 °C	
	(-100 to -30) ºC	0.14 °C	
	(-30 to 150) ºC	0.12 °C	
	(150 to 760) ºC	0.14 °C	
	(760 to 1 200) ºC	0.19 °C	
	Type K		
	(-200 to -100) °C	0.26 °C	
	(-100 to -25) °C	0.15 °C	
	(-25 to 120) °C	0.14 °C	
	(120 to 1 000) °C	0.22 °C	
	(1 000 to 1 372) °C	0.32 °C	
	Type L		
	(-200 to -100) °C	0.3 °C	
	(-100 to 800) °C	0.22 °C	
	(800 to 900) °C	0.14 °C	
	Type N		
	(-200 to -100) °C	0.32 °C	
	(-100 to -25) °C	0.18 °C	
	(-25 to 120) °C	0.15 °C	
	(120 to 410) °C	0.15 °C	
	(410 to 1 300) °C	0.22 °C	
	Type R		
	(0 to 250) °C	0.45 °C	
	(250 to 400) °C	0.28 °C	
	(400 to 1 000) °C	0.26 °C	
	(1 000 to 1 767) °C	0.32 °C	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators – Source[1]	Type S		Millivolt/Resistance Simulation using Multiproduct Calibrator
	(0 to 250) °C	0.38 °C	
	(250 to 1 000) °C	0.29 °C	
	(1 000 to 1 400) °C	0.3 °C	
	(1 400 to 1 767) °C	0.37 °C	
	Type T		
	(-250 to -150) °C	0.5 °C	
	(-150 to 0) °C	0.2 °C	
	(0 to 120) °C	0.14 °C	
	(120 to 400) °C	0.12 °C	
	Type U		
	(-200 to 0) °C	0.45 °C	
	(0 to 600) °C	0.22 °C	
Electrical Simulation of RTD Indicators – Source[1]	Pt 385, 100 Ω		Millivolt/Resistance Simulation using Multiproduct Calibrator
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.06 °C	
	(100 to 300) °C	0.07 °C	
	(300 to 400) °C	0.08 °C	
	(400 to 630) °C	0.1 °C	
	(630 to 850) °C	0.18 °C	
	Pt 3916, 100 Ω		
	(-200 to -190) °C	0.22 °C	
	(-190 to -80) °C	0.07 °C	
	(-80 to 0) °C	0.07 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 260) °C	0.08 °C	
	(260 to 300) °C	0.09 °C	
	(300 to 400) °C	0.01 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.2 °C	
	Pt 3926, 100 Ω		
	(-200 to -80) °C	0.08 °C	
	(-80 to 0) °C	0.08 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 300) °C	0.1 °C	
	(300 to 400) °C	0.1 °C	
	(400 to 630) °C	0.12 °C	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators – Source[1]	Pt 385, 200 Ω		Millivolt/Resistance Simulation using Multiproduct Calibrator
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 260) °C	0.04 °C	
	(260 to 300) °C	0.10 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.11 °C	
	(600 to 630) °C	0.13 °C	
	Pt 385, 500 Ω		
	(-200 to -80) °C	0.04 °C	
	(-80 to 0) °C	0.04 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 260) °C	0.05 °C	
	(260 to 300) °C	0.07 °C	
	(300 to 400) °C	0.07 °C	
	(400 to 600) °C	0.08 °C	
	(600 to 630) °C	0.09 °C	
	Pt 385, 1 000 Ω		
	(-200 to -80) °C	0.03 °C	
	(-80 to 0) °C	0.03 °C	
	(0 to 100) °C	0.04 °C	
	(100 to 260) °C	0.04 °C	
	(260 to 300) °C	0.05 °C	
	(300 to 400) °C	0.04 °C	
	(400 to 600) °C	0.05 °C	
	(600 to 630) °C	0.06 °C	
	Ni 385, 120 Ω		
	(-80 to 0) °C	0.07 °C	
	(0 to 100) °C	0.07 °C	
	(100 to 260) °C	0.11 °C	
	Cu 427, 10 Ω		
	(-100 to 260) °C	0.25 °C	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators – Measure[1]	Type B		Millivolt/Resistance Simulation using 8.5 Digit Multimeter; ITS-90
	(600 to 800) °C	0.38 °C	
	(800 to 1 000) °C	0.32 °C	
	(1 000 to 1 550) °C	0.27 °C	
	(1 550 to 1 820) °C	0.26 °C	
	Type E		
	(-250 to -100) °C	0.3 °C	
	(-100 to -25) °C	0.14 °C	
	(-25 to 350) °C	0.13 °C	
	(350 to 650) °C	0.13 °C	
	(650 to 1 000) °C	0.13 °C	
	Type J		
	(-210 to -100) ºC	0.16 °C	
	(-100 to -30) ºC	0.15 °C	
	(-30 to 150) ºC	0.14 °C	
	(150 to 760) ºC	0.14 °C	
	(760 to 1 200) ºC	0.14 °C	
	Type K		
	(-200 to -100) °C	0.23 °C	
	(-100 to -25) °C	0.17 °C	
	(-25 to 120) °C	0.16 °C	
	(120 to 1 000) °C	0.15 °C	
	(1 000 to 1 372) °C	0.16 °C	
	Type N		
	(-200 to -100) °C	0.18 °C	
	(-100 to -25) °C	0.17 °C	
	(-25 to 120) °C	0.16 °C	
	(120 to 410) °C	0.15 °C	
	(410 to 1 300) °C	0.15 °C	
	Type R		
	(0 to 250) °C	0.53 °C	
	(250 to 400) °C	0.32 °C	
	(400 to 1 000) °C	0.29 °C	
	(1 000 to 1 767) °C	0.25 °C	

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators – Measure[1]	Type S (0 to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	 0.52 °C 0.33 °C 0.31 °C 0.29 °C 0.44 °C 0.18 °C 0.15 °C 0.14 °C	Millivolt/Resistance Simulation using 8.5 Digit Multimeter; ITS-90
Electrical Simulation of RTD Indicators – Measure	Pt 385, 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 850) °C	 0.0068 °C 0.0068 °C 0.033 °C 0.035 °C 0.036 °C 0.039 °C 0.041 °C	Millivolt/Resistance Simulation using 8.5 Digit Multimeter
DC Voltage – Measure[1]	(0 to 100) mV (> 0.1 to 1) V (> 1 to 10) V (> 10 to 100) V (> 100 to 1 000) V	18 µV/V + 0.36 µV 14 µV/V + 0.4 µV 14 µV/V + 0.7 µV 17 µV/V + 35 µV 28 µV/V + 0.12 mV	Comparison to 8.5 Digit Multimeter
AC Voltage – Measure[1]	1 Hz to 40 Hz (1 to 10) mV (> 10 to 100) mV > 0.1 V to 1 V (> 1 to 10) V (> 10 to 100) V (> 100 to 1 000) V	 0.35 mV/V + 3.5 µV 0.09 mV/V + 23.1 µV 0.09 mV/V + 47 µV 0.09 mV/V + 4.7 mV 0.24 mV/V + 4.7 mV 0.47 mV/V + 47 mV	Comparison to 8.5 Digit Multimeter

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Electrical – DC/Low Frequency

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AC Voltage – Measure[1]	> 40 Hz to 1 kHz		Comparison to 8.5 Digit Multimeter
	(1 to 10) mV	0.24 mV/V + 1.3 µV	
	(> 10 to 100) mV	0.09 mV/V + 2.4 µV	
	> 0.1 mV to 1 V	0.09 mV/V + 24 µV	
	(> 1 to 10) V	0.09 mV/V + 0.24 mV	
	(> 10 to 100) V	0.24 mV/V + 2.4 mV	
	(> 100 to 1 000) V	0.47 mV/V + 24 mV	
	> 1 kHz to 20 kHz		
	(1 to 10) mV	0.35 mV/V + 1.3 µV	
	(> 10 to 100) mV	0.17 mV/V + 2.4 µV	
	(> 0.1 to 1) V	0.17 mV/V + 24 µV	
	(> 1 to 10) V	0.17 mV/V + 0.24 mV	
	(> 10 to 100) V	0.24 mV/V + 2.4 mV	
	(> 100 to 1 000) V	0.7 mV/V + 24 mV	
	> 20 kHz to 50 kHz		
	(1 to 10) mV	11.6 mV/V + 1.3 µV	
	(> 10 to 100) mV	0.35 mV/V + 2.4 µV	
	(> 0.1 to 1) V	0.35 mV/V + 24 µV	
	(> 1 to 10) V	0.35 mV/V + 0.24 mV	
	(> 10 to 100) V	0.41 mV/V + 2.4 mV	
	(> 100 to 1 000) V	1.4 mV/V + 24 mV	
	> 50 kHz to 100 kHz		
	(1 to 10) mV	5.8 mV/V + 1.3 µV	
	(> 10 to 100) mV	0.93 mV/V + 2.4 µV	
	(> 0.1 to 1) V	0.93 mV/V + 24 µV	
	(> 1 to 10) V	0.93 mV/V + 0.24 mV	
	(> 10 to 100) V	1.4 mV/V + 2.4 mV	
	(> 100 to 1 000) V	3.5 mV/V + 24 mV	
	> 100 kHz to 300 kHz		
	(1 to 10) mV	47 mV/V + 2.4 µV	
	(> 10 to 100) mV	0.35 mV/V + 12 µV	
	(> 0.1 to 1) V	3.5 mV/V + 0.12 mV	
	(> 1 to 10) V	3.5 mV/V + 1.2 mV	
	(> 10 to 100) V	4.7 mV/V + 12 mV	
	> 300 kHz to 1 MHz		
	(10 to 100) mV	12 mV/V + 12 µV	
	(> 0.1 to 1) V	12 mV/V + 0.12 mV	
	(> 1 to 10) V	12 mV/V + 1.2 mV	
	(> 10 to 100) V	18 mV/V + 12 mV	

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AC Voltage – Measure[1]	> 1 kHz to 2 MHz (10 to 100) mV (> 0.1 to 1) V (> 1 to 10) V (> 10 to 100) V	 18 mV/V + 12 µV 15 mV/V + 0.12 mV 18 mV/V + 1.2 mV 18 mV/V + 12 mV	Comparison to 8.5 Digit Multimeter
DC High Voltage – Measure[1]	(1 to 10) kV	5.8 mV/V + 0.004 kV	Comparison to High Voltage Meter
DC High Voltage – Measure[1]	(1 to 10) kV	5.8 mV/V + 0.11 V	Comparison to Oscilloscope, High Voltage Probe
AC High Voltage – Measure[1]	(1 to 10) kV 50 Hz	 12 mV/V + 0.006 kV	Comparison to High Voltage Meter
AC High Voltage – Measure[1]	(1 to 10) kV 50 Hz	 5.8 mV/V + 0.11 V	Comparison to Oscilloscope, High Voltage Probe
DC Current – Measure[1]	(0 to 100) µA (> 0.1 to 1) mA (> 1 to 10) mA (> 10 to 100) mA (> 0.1 to 1) A	0.03 µA/A + 0.12 pA 0.04 nA/A + 8.2 nA 0.04 mA/A + 82 nA 0.06 mA/A + 0.9 µA 0.17 mA/A + 12 µA	Comparison to 8.5 Digit Multimeter
DC Current – Measure[1]	(> 1 to 3) A (> 3 to 10) A (> 10 to 20) A (> 20 to 30) A (> 30 to 50) A (> 50 to 100) A (> 100 to 200) A	50 µA/A + 0.12 mA 55 µA/A + 1.2 mA 55 µA/A + 1.2 mA 3.5 mA/A 2.4 mA/A 2.4 mA/A 2.4 mA/A	Comparison to 8.5 Digit Multimeter, Standard Shunt
AC Current – Measure[1]	10 Hz to 20 Hz (10 to 100) µA (> 0.1 to 1) mA (> 1 to 10) mA (> 10 to 100) mA (> 0.1 to 1) A	 4.7 mA/A + 35 nA 4.7 mA/A + 0.25 µA 4.7 mA/A + 2.5 µA 4.7 mA/A + 25 µA 4.7 mA/A + 0.25 mA	Comparison to 8.5 Digit Multimeter

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AC Current – Measure[1]	> 20 Hz to 45 Hz		Comparison to 8.5 Digit Multimeter
	(10 to 100) µA	1.8 mA/A + 35 nA	
	(> 0.1 to 1) mA	1.8 mA/A + 0.25 µA	
	(> 1 to 10) mA	1.8 mA/A + 2.5 µA	
	(> 10 to 100) mA	1.8 mA/A + 25 µA	
	(> 0.1 to 1) A	1.9 mA/A + 0.25 mA	
	> 45 Hz to 100 Hz		
	(10 to 100) µA	0.7 mA/A + 35 nA	
	(> 0.1 to 1) mA	0.7 mA/A + 0.25 µA	
	(> 1 to 10) mA	0.7 mA/A + 2.5 µA	
	(> 10 to 100) mA	0.7 mA/A + 25 µA	
	(> 0.1 to 1) A	0.95 mA/A + 0.25 mA	
	> 100 Hz to 1 kHz		
	(10 to 100) µA	0.7 mA/A + 35 nA	
	> 100 Hz to 5 kHz		
	(> 0.1 to 1) mA	0.36 mA/A + 0.3 µA	
	(> 1 to 10) mA	0.36 mA/A + 2.4 µA	
	(> 10 to 100) mA	0.36 mA/A + 24 µA	
	(> 0.1 to 1) A	1.2 mA/A + 0.24 mA	
	> 5 kHz to 20 kHz		
	(> 0.1 to 1) mA	0.7 mA/A + 0.3 µA	
	(> 1 to 10) mA	0.7 mA/A + 2.4 µA	
	(> 10 to 100) mA	0.7 mA/A + 24 µA	
	(> 0.1 to 1) A	3.5 mA/A + 0.24 mA	
	> 20 kHz to 50 kHz		
	(> 0.1 to 1) mA	4.7 mA/A + 0.5 µA	
	(> 1 to 10) mA	4.7 mA/A + 4.7 µA	
	(> 10 to 100) mA	4.7 mA/A + 47 µA	
	(> 0.1 to 1) A	12 mA/A + 0.47 mA	
	> 50 kHz to 100 kHz		
	(> 0.1 to 1) mA	6.4 mA/A + 1.8 µA	
	(> 1 to 10) mA	6.4 mA/A + 17.4 µA	
	(> 10 to 100) mA	6.4 mA/A + 0.18 mA	
AC Current – Measure[1]	(1 to 3) A, 50 Hz	0.012 A	Comparison to 8.5 Digit Multimeter, Current Shunt
	(3 to 10) A, 50/60 Hz	0.041 A	
	(3 to 10) A, (0.3 to 1) kHz	0.039 A	

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AC Current – Measure[1]	(3 to 10) A, (1 to 5) kHz (10 to 20) A, 50 Hz (20 to 30) A, 50 Hz	 0.043 A 0.077 A 0.112 A	Comparison to 8.5 Digit Multimeter, Current Shunt
Resistance – Measure[1]	(> 0 to 10) Ω (> 10 to 100) Ω (> 100 to 1 000) Ω (> 1 to 10) kΩ (> 10 to 100) kΩ (> 0.1 to 1) MΩ (> 1 to 10) MΩ (> 10 to 100) MΩ (> 0.1 to 1) GΩ	25 μΩ/Ω + 59 μΩ 22 μΩ/Ω + 0.59 mΩ 20 μΩ/Ω + 0.6 mΩ 20 μΩ/Ω + 7 mΩ 20 μΩ/Ω + 0.07 Ω 25 μΩ/Ω + 2.4 Ω 66 μΩ/Ω + 0.12 kΩ 0.59 mΩ/Ω + 1.2 kΩ 5.8 mΩ/Ω + 112 kΩ	Comparison to 8.5 Digit Multimeter
Insulation Resistance – Measure[1] 100 V to 1 kV	1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	0.58 kΩ 0.6 kΩ 6 kΩ 58 kΩ 0.06 MΩ 0.59 MΩ	Comparison to High Voltage Resistors
Resistance – Source[1]	(0.1 to 1) Ω (1 to 10) Ω (10 to 100) Ω (100 to 1 000) Ω (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	24 mΩ 27 mΩ 13 mΩ 1.2 Ω 12 Ω 120 Ω 1.2 kΩ 13 kΩ 0.18 MΩ	Comparison to Decade Resistors
Inductance- Source[1] 1 kHz	(1 to 10) μH (10 to 100) μH (0.1 to 1) mH (1 to 10) mH (10 to 100) mH (0.1 to 1) H (1 to 10) H	0.59 μH 5.9 μH 59 μH 0.59 mH 5.9 mH 59 mH 0.59 H	Comparison to Inductor Box

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Electrical – DC/Low Frequency

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Capacitance- Source[1] @ 1 kHz	(100 to 1 000) pF (>1 to 10) nF (>10 to 100) nF (>100 to 1 000) nF (>1 to 10) µF	0.058 pF 0.058 nF 0.058 nF 5.8 nF 0.058 µF	Comparison to Capacitor Box
DC Magnetic Flux Density Tesla Meter, Gauss Meter[1]	Up to 50 G (> 50 to 200) G (> 200 to 500) G (> 500 to 1 000) G (> 1 000 to 3 000) G (> 3 000 to 5 000) G (> 5 000 to 10 000) G	1 G 1 G 1 G 6.9 G 7.8 G 16 G 18 G	Comparison to Standard Magnet, Tesla Meter
Magnets DC Magnetic Flux Density[1]	Up to 50 G (> 50 to 200) G (> 200 to 500) G (> 500 to 1 000) G (> 1 000 to 3 000) G (> 3 000 to 5 000) G (> 5 000 to 10 000) G	0.69 G 0.69 G 1.7 G 5.7 G 5.7 G 12 G 12 G	Comparison to Tesla Meter
Oscilloscope [1] Vertical Amplitude: (DC) DC Signal: Impedance 50 Ω / 1 M Ω Deflection – Source	 (0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 150) V	 70 µV/V + 0.006 8 µV 58 µV/V + 0.058 µV 58 µV/V + 0.58 µV 64 µV/V + 5.8 µV	Comparison to 8.5 Digit Multimeter, Multiproduct Calibrator

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Electrical – DC/Low Frequency

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Oscilloscope Horizontal Deflection: Time Mark – Source[1]	1 s 0.5 s 0.2 s 0.1 s 50 ms 20 ms 10 ms 5 ms 2 ms 1 ms 0.5 ms 0.2 ms 0.1 ms 50 µs 20 µs 10 µs 5 µs 2 µs 1 µs 0.5 µs 0.2 µs 0.1 µs	5.8 µs/s + 0.8 ms 5.8 µs/s + 0.8 ms 5.8 µs/s + 0.8 ms 5.8 µs/s + 0.8 ms 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.77 µs 5.8 µs/s + 0.75 µs 5.8 µs/s + 0.75 µs 5.8 µs/s + 0.75 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns 5.8 µs/s + 0.69 ns	Comparison to Synthesizer Function Generator

Electrical - RF/Microwave

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Amplitude – Source[1]	2.5 MHz to 6 GHz (-100 to 10) dBm	0.18 dB	Comparison to Signal Generator

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Calipers[1]	Up to 150 mm (> 150 to 200) mm (> 200 to 300) mm (> 300 to 450) mm (> 450 to 600) mm (> 600 to 1000 mm	0.007 mm 0.007 mm 0.007 mm 0.007 mm 0.008 mm 0.01 mm	Comparison to Gauge Blocks, Caliper Checker
Dial & Digital Indicator[1]	Up to 1 mm (> 1 to 12.7) mm (> 12.7 to 25) mm (> 25 to 50) mm (> 50 to 100) mm	0.000 5 mm 0.000 65 mm 0.000 75 mm 0.000 85 mm 0.000 95 mm	Comparison to Calibration Tester, Gauge Blocks
Dial & Digital Indicator[1, 2]	Up to 100 mm	(0.37 + 0.002 5*L*) µm	Comparison to Universal Length Measuring Machine
Dial Test Indicator[1]	Up to 0.14 mm (> 0.14 to 0.6) mm (> 0.8 to 1) mm (> 1 to 1.5) mm	0.000 5 mm 0.000 75 mm 0.000 8 mm 0.001 6 mm	Comparison to Calibration Tester, Gauge Blocks
Dial Test Indicator[1]	Up to 1 mm (> 1 to 2) mm	0.000 5 mm 0.001 1 mm	Comparison to Universal Length Measuring Machine
Electrical Comparator/ Mu Checker[1]	(0 to 0.5) mm (> 0.5 to 1) mm (> 1 to 5) mm (> 5 to 10) mm	0.000 09 mm 0.000 13 mm 0.000 13 mm 0.000 15 mm	Comparison to Calibration Tester, Gauge Blocks
Inside Micrometer[1]	(5 to 30) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm (> 100 to 125) mm (> 125 to 200) mm (> 200 to 300) mm (> 300 to 500) mm (> 500 to 600) mm	0.000 6 mm 0.000 7 mm 0.000 7 mm 0.000 8 mm 0.001 mm 0.002 mm 0.003 mm 0.004 mm 0.005 mm	Comparison to Gauge Blocks
Inside Micrometer[1,2]	Up to 600 mm	(0.68 + 0.002 5*L*) µm	Comparison to Universal Length Measuring Machine

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Length – Dimensional Metrology

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Outside Micrometer[1]	(0 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm (> 100 to 125) mm (> 125 to 200) mm (> 200 to 300) mm (> 300 to 500) mm (> 500 to 600) mm (> 600 to 700) mm (> 700 to 825) mm (> 825 to 1 000) mm	0.000 6 mm 0.000 7 mm 0.000 7 mm 0.000 8 mm 0.001 mm 0.002 mm 0.003 mm 0.004 mm 0.005 mm 0.006 mm 0.007 mm 0.008 mm	Comparison to Gauge Blocks
Indicating Micrometer[1]	(0 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm	0.000 75 mm 0.000 75 mm 0.000 8 mm 0.000 85 mm	Comparison to Gauge Blocks
Depth Micrometer[1]	(0 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm (> 100 to 125) mm (> 125 to 150) mm (> 150 to 175) mm (> 175 to 200) mm (> 200 to 225) mm (> 225 to 250) mm (> 250 to 275) mm (> 275 to 300) mm	0.001 3 mm 0.001 3 mm 0.001 3 mm 0.001 4 mm 0.001 5 mm 0.001 9 mm 0.002 mm 0.002 1 mm 0.002 2 mm 0.002 4 mm 0.002 6 mm 0.002 7 mm	Comparison to Gauge Blocks
Height Gauge[1] Linear Height	Up to 75 mm (> 750 to 100) mm (> 100 to 200) mm (> 200 to 300) mm (> 300 to 450) mm (> 450 to 600) mm (> 600 to 1 000) mm	0.001 1 mm 0.001 5 mm 0.002 mm 0.002 5 mm 0.003 5 mm 0.004 5 mm 0.007 mm	Comparison to Gauge Blocks, Surface Plate
Depth Gauge[1]	Up to 300 mm (> 300 to 600) mm (> 600 to 1 000) mm (>1 000 to 1 200) mm	0.000 7 mm 0.000 8 mm 0.001 mm 0.001 3 mm	Comparison to Gauge Blocks, Surface Plate

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Feeler Gauge, Thickness Plate[1]	(0.01 to 10) mm	0.001 1 mm	Comparison to Digital Linear Gauge, Gauge Blocks
Feeler Gauge, Thickness Plate[1]	Up to 10 mm	0.000 4 mm	Comparison to Universal Length Measuring Machine
Thickness Gauge[1]	Up to 12 mm (> 12 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm	0.000 2 mm 0.000 3 mm 0.000 4 mm 0.000 6 mm 0.000 8 mm	Comparison to Gauge Blocks
Holtest, Three-points internal micrometer[1]	(3 to 16) mm (> 16 to 35) mm (> 35 to 75) mm (> 75 to 100) mm (> 100 to 125) mm	0.000 7 mm 0.001 mm 0.001 5 mm 0.002 mm 0.002 3 mm	Comparison to Ring Gauges
Holtest, Three-points internal micrometer[1,2]	(3 to 300) mm	(0.9 + 0.001 8*L*) µm	Comparison to Universal Length Measuring Machine
Caliper Checker Height Master	Up to 100 mm (> 100 to 300) mm (> 300 to 600) mm (> 600 to 800) mm (> 800 to 1 000) mm	0.001 5 mm 0.002 mm 0.002 5 mm 0.003 mm 0.003 5 mm	Comparison to Gauge Blocks
Setting Rod, Length Bar[1]	(0 to 100) mm (> 100 to 300) mm (> 300 to 425) mm (> 425 to 500) mm	0.001 5 mm 0.002 mm 0.003 mm 0.003 5 mm	Comparison to Gauge Blocks
Setting Rod, Length Bar[1,2]	Up to 600 mm	(0.36 + 0.002 5*L*) µm	Comparison to Universal Length Measuring Machine
Micrometer Head, Dial Gauge Tester, Calibration Tester[1]	Up to 1 mm (> 1 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm	0.000 6 mm 0.000 8 mm 0.000 9 mm 0.001 mm 0.001 1 mm	Comparison to Digital Linear Gauge
Micrometer Head, Dial Gauge Tester, Calibration Tester[1]	Up to 100 mm	(0.38 + 0.002 2*L*) µm	Comparison to Universal Length Measuring Machine

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Length – Dimensional Metrology

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Vision Measuring Machine[1] Length Angle	 Up to 50 mm (> 50 to 100) mm (> 100 to 150) mm (> 150 to 200) mm (> 200 to 250) mm (> 250 to 300) mm (0 to 360)°	 0.001 2 mm 0.001 3 mm 0.001 5 mm 0.001 8 mm 0.002 mm 0.002 3 mm 0.007°	Comparison to Glass Scales
Digital Microscope, Shop Microscope, Scale Lupe[1]	Up to 1.00 mm (> 1.00 to 50.00) mm	0.00 08 mm 0.001 mm	Comparison to Glass Scales
Profile Projector[1] Linear of Axis (X and Y) Angle Accuracy Magnification	 Up to 50 mm (> 50 to 100) mm (> 100 to 150) mm (> 150 to 200) mm (> 200 to 250) mm (> 250 to 300) mm (0 to 360)° (5 to 100) X	 0.6 µm 0.65 µm 0.71 µm 0.81 µm 0.73 µm 0.81 µm 0.008 5° 0.06 % of reading	Comparison to Glass Scales, Reticle 360 ° Comparator, and JIS B 7184-1999 utilized as the method for the calibration of this device.
Thread Plug Gauge[1] Pitch Diameter	 Up to 10 mm (> 10 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm	 0.001 7 mm 0.001 7 mm 0.001 7 mm 0.001 8 mm 0.001 8 mm	Comparison to Thread Micrometer, Thread Wires
Pin Gauge, Plain Plug Gauge, Ball Gauge[1]	Up to 30 mm	0.000 7 mm	Comparison to Laserscan Micrometer
Pin Gauge, Plain Plug Gauge, Ball Gauge[1,2]	Up to 400 mm	(0.36 + 0.003*L*) µm	Comparison to Universal Length Measuring Machine
Laser Scan Micrometer[1]	Up to 60 mm	0.000 6 mm	Comparison to Standard Pin Gauge, Gauge Blocks
Surface Roughness Tester Roughness Accuracy[1]	3 µm Ra 10 µm Rz	0.15 µm Ra 0.25 µm Rz	Comparison to Surface Roughness Specimen

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Roughness Specimen	Up to 100 µm Ra	0.15 µm Ra	Comparison to Roughness Tester
Flatness Measurement	Up to 900 cm²	1.5 µm	Comparison to Granite Surface Plate, Electrical Comparator
Surface Plate[1,2] Overall Flatness Only	Up to 424 D*L* mm (> 424 to 540 D*L*) mm (> 540 to 849 D*L*) mm (> 849 to 901 D*L*) mm (> 901 to 1 250 D*L*) mm (> 1 250 to 1 414 D*L*) mm (> 1 414 to 1 803 D*L*) mm (> 1 803 to 2 823 D*L*) mm (> 2 823to 3 606 D*L*) mm	0.7 µm 1 µm 1.3 µm 1.6 µm 2.1 µm 2.3 µm 3.5 µm 4.3 µm 6.3 µm	Comparison to Electronic Level
Pitch Gauge	Up to 6 mm	0.002 5 mm	Comparison to Video Measuring System
Radius Gauge Taper Gauge	Up to 50 mm	0.002 5 mm	Comparison to Video Measuring System
Angle Gauge/ Bevel Protractor	Up to 360°	0.001 5°	Comparison to Video Measuring System
Precision Square Outer Length Inner Length	 Up to 200 mm Up to 100 mm	 0.001 5 mm 0.001 5 mm	Comparison to Video Measuring System
Glass Scale	Up to 50 mm (> 50 to 100) mm (> 100 to 150) mm (> 150 to 200) mm	0.001 5 mm 0.001 7 mm 0.001 8 mm 0.002 2 mm	Comparison to Video Measuring System
Glass Scale[2]	Up to 100 mm	(0.36 + 0.002*L*) µm	Comparison to Universal Length Measuring Machine
Air Micrometer[1]	Up to 10 µm (> 10 to 20) µm (> 20 to 50) µm (> 50 to 100) µm (> 100 to 200) µm (> 200 to 500) µm (> 500 to 1 000) µm	0.15 µm 0.2 µm 0.35 µm 0.65 µm 1.5 µm 3 µm 5.8 µm	Comparison to Calibration Tester

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Precision Level, Electronic Level[1]	Up to 0.5 mm/m (> 0.51 to 1) mm/m (> 1 to 1.5) mm/m (> 1.5 to 1.9) mm/m	0.001 6 mm/m 0.001 7 mm/m 0.001 8 mm/m 0.002 mm/m	Comparison to Angle Generator, Digital Indicator
Coating Thickness Gauge[1]	(Up to 99) µm (> 99 to 2 845) µm	0.51 µm 0.71 µm	Comparison to Calibration Foil
Steel Tape Textile Tape	Up to 1 m (> 1 to 2) m (> 2 to 3) m (> 3 to 4) m (> 4 to 5) m (> 5 to 6) m (> 6 to 7) m (> 7 to 8) m (> 8 to 9) m (> 9 to 10) m (> 10 to 15) m (> 15 to 20) m (> 20 to 25) m (> 25 to 30) m (> 30 to 35) m (> 35 to 40) m (> 40 to 45) m (> 45 to 50) m	0.015 mm 0.024 mm 0.036 mm 0.048 mm 0.06 mm 0.072 mm 0.084 mm 0.096 mm 0.11 mm 0.12 mm 0.18 mm 0.25 mm 0.3 mm 0.36 mm 0.42 mm 0.48 mm 0.55 mm 0.6 mm	Comparison to Scale Calibrator
Steel Ruler[1]	Up to 200 mm (> 200 to 500) mm (> 500 to 1 000) mm (> 1 000 to 1 500) mm (> 1 500 to 2 000) mm	0.005 mm 0.02 mm 0.025 mm 0.04 mm 0.045 mm	Comparison to Scale Calibrator, Video Measuring System, Standard Rule
Contour Measuring Machine[1] Radius Length Measurement	Up to 30 mm Up to 25 mm (> 25 to 100) mm (> 100 to 150) mm	0.85 µm 0.6 µm 0.9 µm 1.2 µm	Comparison to Standard Gauge Blocks, Pin Gauge

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Coordinate Measuring Machine, Layout Machine[1]	Up to 50 mm (> 50 to 100) mm (> 100 to 200) mm (> 200 to 300) mm (> 300 to 400) mm (> 400 to 500) mm (> 500 to 600) mm (> 600 to 700) mm (> 700 to 800) mm (> 800 to 900) mm (> 900 to 1 000) mm (> 1 000 to 1 200) mm	0.5 µm 1 µm 1.5 µm 2.5 µm 3 µm 3.6 µm 4.5 µm 5 µm 5.7 µm 6.5 µm 7 µm 8.5 µm	Comparison to ISO 10360-2 Standard Gauge Block
Ultrasonic Thickness Gauge[1]	Up to 100 mm (>100 to 220) mm	0.000 1 mm 0.003 2 mm	Comparison to Gauge Blocks
Plain Ring Gauge	(0.5 to 10) mm (> 10 to 20) mm (> 20 to 30) mm (> 30 to 50) mm (> 50 to 100) mm (> 100 to 150) mm (> 150 to 200) mm	0.4 µm 0.53 µm 0.56 µm 0.8 µm 1.5 µm 1.8 µm 2 µm	Comparison to Ring Gauge, Master Height
Plain Ring Gauge[2]	(0.1 to 400) mm	(0.36 + 0.004 5*L*) µm	Comparison to Universal Length Measuring Machine
Angle Measurement[1]	Up to 180°	0.002 2°	Comparison to Angle Blocks
Gauge Blocks	Up to 0.5 mm (> 0.5 to 10) mm (> 10 to 25) mm (> 25 to 50) mm (> 50 to 75) mm (> 75 to 100) mm (> 100 to 125) mm (> 125 to 150) mm (> 150 to 175) mm (> 175 to 200) mm (> 200 to 250) mm (> 250 to 300) mm	0.09 µm 0.09 µm 0.094 µm 0.11 µm 0.13 µm 0.15 µm 0.17 µm 0.19 µm 0.22 µm 0.25 µm 0.3 µm 0.35 µm	Comparison to JIS B 7506, Gauge Blocks, Gauge Block Comparator

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gauge Blocks	(> 100 to 125) mm (> 125 to 150) mm (> 150 to 175) mm (> 175 to 200) mm (> 200 to 250) mm (> 250 to 300) mm (> 300 to 400) mm (> 4000 to 500) mm	0.23 µm 0.23 µm 0.27 µm 0.28 µm 0.33 µm 0.39 µm 0.60 µm 0.72 µm	Comparison to Universal Length Measuring Machine, Gauge Blocks
Universal Length Measuring Machine[2]	Up to 100 mm (> 100 to 600) mm	(0.09 + 0.002 1*L*) µm (0.11 + 0.003 3*L*) µm	Comparison to Master Gauge Blocks
Taper Plug Gauge[2] Diameter Half Angle Thickness/Step	 Up to 300 mm Up to 45° Up to 100 mm	 (0.88 + 0.003 2*L*) µm 0.01° (0.35 + 0.003 3*L*) µm	Comparison to Universal Length Measuring Machine, Standard Pin Gauges, Gauge Blocks
Thread Plug Gauge[2] Pitch Diameter Major Diameter	 Up to 150 mm Up to 150 mm	 (0.79 + 0.003*L*) µm (0.36 + 0.003*L*) µm	Comparison to Universal Length Measuring Machine, Thread Wires
Taper Thread Plug Gauge[2] Pitch Diameter Major Diameter Thickness/Step	 Up to 150 mm Up to 150 mm Up to 100 mm	 (0.94 + 0.005 5*L*) µm (0.36 + 0.002 5*L*) µm (0.36 + 0.002 5*L*) µm	Comparison to Universal Length Measuring Machine, Thread Wires, Gauge Blocks
Taper Ring Gauge[2] Diameter Half Angle Thickness/Step	 Up to 300 mm Up to 45° Up to 100 mm	 (0.62 + 0.003 3*L*) µm 0.005° (0.62 + 0.003 3*L*) µm	Comparison to Universal Length Measuring Machine, Master Ring Gauge
Thread Ring Gauge[2] Pitch Diameter Minor Diameter	 Up to 150 mm Up to 150 mm	 (0.62 + 0.005*L*) µm (3.5 + 0.005 8*L*) µm	Comparison to Universal Length Measuring Machine, Master Ring Gauges, 3D Vision Measuring System

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Taper Thread Ring Gauge[2] Pitch Diameter	Up to 150 mm	(0.94 + 0.003*L*) µm	Comparison to Universal Length Measuring Machine, Master Ring Gauge
Taper	Up to 15°	0.01°	
Thickness/Step	Up to 100 mm	(0.36 + 0.003*L*) µm	
Snap Gauge, Gap Gauge (Internal & External) [2]	Up to 400 mm	(0.62 + 0.006*L*) µm	Comparison to Universal Length Measuring Machine, Master Ring Gauges, Gauge Blocks
Cylinder Gauge, Bore Gauge[1,2] Indication Error	Up to 12.7 mm	(0.43 + 0.003 8*L*) µm	Comparison to Universal Length Measuring Machine, Calibration Tester, Master Ring Gauges, Gauge Blocks
Repeatability	Up to 600 mm	(0.43 + 0.003 5*L*) µm	

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Scales and Balances[1,3]	Up to 500 mg (> 0.5 to 100) g (> 100 to 220) g (> 220 to 500) g (> 500 to 600) g (> 600 to 1 000) g (> 1 000 to 1 200) g (> 1 200 to 1 500) g (> 1 500 to 2 000) g (> 2 000 to 3 000) g (> 3 000 to 5 000) g (> 5 000 to 6 000) g (> 6 to 10) kg (> 10 to 20) kg (> 20 to 30) kg (> 30 to 60) kg (> 60 to 100) kg (> 100 to 150) kg (> 150 to 300) kg (> 300 to 500) kg (> 500 to 1 000) kg (> 1 000 to 2 000) kg	11 µg 16 µg 0.29 mg 1.4 mg 1.9 mg 2.8 mg 8.8 mg 12 mg 13 mg 14 mg 18 mg 84 mg 84 mg 0.17 g 0.25 g 0.84 g 0.88 g 4.1 g 8.2 g 8.3 g 82 g 95 g	Direct Verification per OIML Class E2, F1 or F2 Weights and UKAS Publication Reference LAB 14, Edition 7 utilized for the calibration of the weighing system.
Hand Torque Tools[1]	0.01 cN·m to 1 500 N·m	1 % of reading	Comparison to Torque Analyzer
Rockwell Hardness Tester[1]	(10 to 30) HRC (> 30 to 50) HRC (> 50 to 90) HRC (10 to 30) HRB (> 30 to 50) HRB (> 50 to 90) HRB (10 to 30) HRA (> 30 to 50) HRA (> 50 to 90) HRA	0.38 HRC 0.38 HRC 0.46 HRC 0.9 HRBW 0.9 HRBW 0.9 HRBW 0.68 HRA 0.68 HRA 0.68 HRA	Indirect Verification using Hardness Test Blocks
Brinell Hardness Tester[1]	(> 95 to 250) HBW (> 250 to 450) HBW (> 450 to 650) HBW	0.71 HBW 1.8 HBW 2.9 HBW	Indirect Verification using Hardness Test Block
Vickers Micro Hardness Tester[1]	279 HV 700 HV	11 HV 37 HV	Indirect Verification using Hardness Test Block

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Leeb Hardness Tester[1]	545 HLD 785 HLD	6.4 HLD 4.8 HLD	Indirect Verification using Hardness Test Block
Torque Tester/ Torque Gauge[1]	0.01 cN·m to 1 N·m (> 1 to 10) N·m (> 10 to 200) N·m (> 200 to 500) N·m	0.4 % of reading 0.2 % of reading 0.13 % of reading 0.1 % of reading	Comparison to Standard Weight, Torque Arm
Vacuum Gauge[1]	(-15 to 0) psi	0.03 psi	Comparison to Pressure Calibrator
Pressure Measuring[1] (Pneumatic & Hydraulic)	(0 to 300) psig (> 120 to 240) psig (> 240 to 300) psig (> 300 to 10 000) psig	0.05 psi 0.15 psi 0.19 psi 1.5 psi	Comparison to Pressure Calibrator
Differential Pressure[1]	(-120 to 120) mbar	1 mbar	Comparison to Pressure Calibrator
Mass[1] (None-OIML Specification)	Up to 200 g (> 200 to 500) g (> 500 to 1 000) g (> 1 000 to 2 000) g (> 2 000 to 5 000) g (> 5 to 10) kg (> 10 to 20) kg (> 20 to 30) kg	0.16 mg 1.5 mg 3 mg 15 mg 18 mg 160 mg 210 mg 290 mg	Comparison to Standard Weights, Electronic Balance
Mass (OIML-Specification)	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	58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 58 µg 0.58 mg	Direct Verification per Standard Weights and OIML R-111 utilized as the method of calibration for mass.

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Mass (OIML Specification)	1 kg 2 kg 5 kg 10 kg 20 kg	0.58 mg 5.8 mg 5.8 mg 58 mg 58 mg	Direct Verification per Standard Weights and OIML R-111 utilized as the method of calibration for mass.
Force Measuring[1]	Up to 5 N (> 5 to 10) N (> 10 to 500) N (> 500 to 1 000) N	0.000 6 N 0.000 65 N 0.006 N 0.58 N	Comparison to Standard Weights
Viscometer / Visco Cup[1] 20 °C to 50 °C	Dynamic Viscosity Up to 100 000 mPa·s Kinematic Viscosity Up to 100 000 mPa·s	 0.5% of reading + 0.01 mPa·s 0.5% of reading + 0.01 mPa·s	Comparison to Standard Reference Viscosity
Volumetric Glass Ware and Operated Volumetric Apparatus – Burette, Volumetric Pipette, Measuring Pipette, Volumetric Flask, Graduated Cylinder, Beaker, Single channel Piston Pipette, Multichannel Piston Pipette, Positive-displacement Pipette, Piston Burette, Dilutor, Dispenser	Up to 200) µL (> 200 to 1 000) µL (> 1 to 200) mL (> 200 to 1 000) mL (> 1 000 to 30 000) mL	0.25 µL 0.65 µL 0.3 µL 1.6 µL 0.29 mL	Direct Verification per Electronic Balance, ASTM E542-01 and ISO 8655-6 utilized as the methods in the calibration of these devices.
Hydrometer	(0.6 to 2) g/cm³	50 µg/cm³	Comparison to Electronic Balance, Cuckow's Method
Flow Meter (Air Flow) [1]	Up to 50 L/min (> 50 to 100) L/min (> 100 to 200) L/min (> 200 to 300) L/min	0.47 L/min 0.45 L/min 0.93 L/min 1.1 L/min	Comparison to Master Flow Meter
Screen Tension Meter	Up to 20 N/cm (> 20 to 50) N/cm	0.15 N/cm 0.25 N/cm	Comparison to Standard Tension Meter, Screen Tension Calibration Set
Universal Testing Machine[1] – Tension and Compression	(5 to 50) N (50 to 500) N (2 to 20) kN (20 to 200) kN	0.1 % of reading 0.18% of Reading 0.18% of Reading 0.23% of Reading	Comparison to Force Transducers

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Durometer[1]			Direct Verification using
Spring Force			
Types A, B, E, & O	(10 to 90) Duro	0.2 Duro	Force Transducer
Types C, D, & DO	(10 to 90) Duro	0.2 Duro	
Types OO & OOO	(10 to 90) Duro	0.2 Duro	
Type OOO-S	(10 to 90) Duro	0.2 Duro	
Type M	(10 to 90) Duro	0.2 Duro	
Indenter Extension & Shape			
Diameter	(0 to 25) mm	0.003 7 mm	Video Measuring System
Radius	(0 to 25) mm	0.003 7 mm	
Angle	(0 to 90)°	0.009°	
Extension	(0 to 25) mm	0.003 7 mm	
[1] Air Velocity	(Up to 15) m/s	0.32 m/s	Comparison to Standard Anemometer

Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gloss Meter[1,2]	103.5 GU @ 20º 101.2 GU @ 60º 100.1 GU @ 85º	0.7 GU 0.7 GU 0.7 GU	Comparison to Standard Gloss Meter
UV-A Meter	(10 to 500) mW/cm² 365 nm	3.5 % of reading	Comparison to UV Light Source, Standard UV Meter
UV Light Source[1]	(10 to 500) mW/cm² 365 nm	3.6 % of reading	Comparison to Standard UV Meter
Lux Meter	(Up to 5 000) lx	1.8 % of reading	Comparison to Standard Lux Meter
Color Meter, Color Reader[1,2] Illuminant C, D65	White Color L* a* b* Y x y	 0.25 0.28 0.22 0.28 0.15 0.15	Comparison to Chroma Meter, Glossy Tile

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Photometry and Radiometry

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Color Meter Color Reader[1,2] Illuminant C, D65	Black Color L* a* b* Y x y	 0.015 0.015 0.015 0.015 0.015 0.015	Comparison to Chroma Meter, Glossy Tile

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Digital and Mechanical Thermometry Systems[1]	(-30 to 100) °C (> 100 to 125) °C	0.075 °C 0.075 °C	Comparison to Reference PRT, 8.5 Digit Multimeter, Micro Bath
Digital and Mechanical Thermometry Systems[1]	(> 125 to 400) °C (> 400 to 600) °C	0.1 °C 0.1 °C	Comparison to Reference PRT, 8.5 Digit Multimeter, Dry Block Calibrator
Digital and Mechanical Thermometry Systems[1]	(> 600 to 800) °C (> 800 to 1 000) °C (> 1 000 to 1 200) °C	2.8 °C 2.8 °C 2.8 °C	Comparison to Reference Thermocouple, Dry Block Calibrator
Hygrometers Relative Humidity Temperature	 (1 to 20) %RH (> 20 to 70) %RH (> 70 to 90) %RH (20 to 60) °C	 1.5 %RH 1.5 %RH 1.9 %RH 0.35 °C	Comparison to Humidity Chamber, Reference Hygrometer
Chambers Relative Humidity	 (1 to 70) %RH (> 70 to 90) %RH	 1.5 %RH 1.9 %RH	Comparison to Reference Hygrometer
Liquid-in-Glass Thermometers	(-30 to 100) °C (> 100 to 200) °C	0.075 °C 0.1 °C	Comparison to Thermometer, Oil Bath

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Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature Controlled Chamber & Oven[1]	(-30 to 100) °C (> 100 to 200) °C (> 200 to 300) °C	0.41 °C 0.41 °C 0.41 °C	Comparison to Datalogger with Sensor
Incubator	(10 to 100) °C	0.41 °C	
Refrigerator & Freezer	(-30 to 0) °C	0.41 °C	
Temperature Controlled Furnace[1]	(300 to 600) °C (> 600 to 1 200) °C	0.4 °C 2.7 °C	Comparison to Temperature Indicator with Reference PRT, Reference Thermocouple
Autoclave[1]	(50 to 125) °C	0.4 °C	Comparison to High Temperature Datalogger
Infrared Thermometer[1]	(-30 to 0) °C (> 0 to 30) °C (> 30 to 100) °C	0.95 °C 0.55 °C 0.8 °C	Comparison to Blackbody Source (Cavity), Temperature Sensor λ = (8 to 14) µm, ε = 0.95
Infrared Thermometer[1]	(50 to 100) °C (> 100 to 200) °C (> 200 to 300) °C (> 300 to 400) °C (> 400 to 500) °C	0.8 °C 1.4 °C 2.1 °C 2.7 °C 3.4 °C	Comparison to Blackbody Source (Flat Point), Temperature Sensor λ = (8 to 14) µm, ε = 0.95

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source[1]	(0.12 to 1 199.9) Hz (1.2 to 11.999) kHz (12 to 119.99) kHz (120 to 1 199.9) kHz (1.2 to 2) MHz	0.2 % of reading + 7.1 µHz 0.2 % of reading + 7.1 µHz 0.2 % of reading + 7.1 µHz 0.2 % of reading + 7.1 µHz 0.2 % of reading + 7.1 µHz	Comparison to Multiproduct Calibrator

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Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source[1]	300 kHz (> 300 to 500) kHz > 500 kHz to 1 MHz (> 1 to 100) MHz (> 100 to 500) MHz > 500 MHz to 1 GHz (> 1 to 2) GHz (>2 to 3) GHz (> 3 to 4) GHz (> 4 to 5) GHz (> 5 to 6) GHz	0.49 Hz 0.82 Hz 1.7 Hz 0.16 kHz 0.82 kHz 1.6 kHz 3.3 kHz 4.9 kHz 6.5 kHz 8.2 kHz 9.8 kHz	Comparison to Signal Generator
Frequency – Measure[1]	(1 to 40) Hz 40 Hz to 10 MHz	0.58 mHz + 19 µHz 0.12 mHz + 60 mHz	Comparison to 8.5 Digit Multimeter (30 min)
Frequency – Measure[1]	(> 10 to 225) MHz > 225 MHz to 12.4 GHz	10 mHz 10 µHz	Comparison to Universal Counter (24 hr)
Non-contact Tachometer[1,2]	Up to 100 rpm (> 100 to 1 000) rpm (> 1 000 to 10 000) rpm (> 10 000 to 99 999) rpm	0.1 rpm 0.12 rpm 0.38 rpm 3 rpm	Comparison to Multiproduct Calibrator
Stopwatches, Timers[1]	Up to 60 s (60 to 600) s (600 to 1 200) s (1 200 to 1 800) s (1 800 to 3 600) s	48 µs 48 µs 50 µs 51 µs 60 µs	Comparison to Universal Counter – Totalize Method
Rotation Speed[1,2] (Total Revolutions)	(0.1 to 30) rpm (> 30 to 1 000) rpm (> 1 000 to 10 000) rpm (> 10 000 to 90 000) rpm	0.5 % of Reading 0.2 % of Reading 0.07 % of Reading 0.07 % of Reading	Comparison to Comparison to Master Non-contact Tachometer

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DIMENSIONAL MEASUREMENT

1 Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Geometric Measurements of CF Jigs, Fixtures, and Mold/Die	Up to 25 mm (> 25 to 50) mm (> 50 to 100) mm (> 100 to 200) mm (> 200 to 300) mm (> 300 to 450) mm (> 450 to 600) mm (> 600 to 1 000) mm	2.5 µm 2.6 µm 2.8 µm 3.3 µm 3.9 µm 4.8 µm 5.8 µm 9.2 µm	Comparison to Scale Calibrator, Height Master
Geometric Measurements of CF Jigs, Fixtures, and Mold/Die[2]	Up to 600 mm	(0.36 + 0.002 5*L*) µm	Comparison to Universal Length Measuring Machine, Master Ring Gauges, Gauge Blocks

2 Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Geometric Measurements of CF Jigs, Fixtures, and Mold/Die[1]	X = Up to 400 mm Y = Up to 300 mm	(2.5 + 0.002 5L) µm (2.5 + 0.002 5L) µm	Comparison to Video Measuring System

3 Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
CF Jigs, Fixtures, and Mold/Die[1]	X = Up to 3 000 mm Y = Up to 3 000 mm Z = Up to 1 500 mm	50 µm 50 µm 50 µm	Comparison to Articulating Arm CMM (Portable)

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

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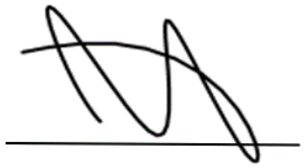
Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. *DL* = diagonal length; *L* = length in mm; GU = gloss unit; rpm = revolutions per minute.
3. This parameter is a unitless parameter.
4. The value in the Range column is the Nominal value. The certified value will be utilized at the time of calibration with the associated measurement uncertainty.
5. This scope is formatted as part of a single document including Certificate of Accreditation No. ACDM-2906.



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