



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

The Calibration Solution Inc.
9865 North Alpine Road
Machesney Park, IL 61115

Fulfills the requirements of

ISO/IEC 17025:2017

and national standard

ANSI/NCSL Z540-1-1994 (R2002)

In the field of

CALIBRATION

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.

A handwritten signature in black ink, appearing to read 'R. Douglas Leonard Jr.', is positioned above a horizontal line.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 20 May 2025
Certificate Number: L1002-1



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

AND

ANSI/NCSL Z540-1-1994 (R2002)

The Calibration Solution Inc.

9865 North Alpine Road
Machesney Park, IL 61115
Brian Foltz 815-877-0880

CALIBRATION

Valid to: **May 20, 2025**

Certificate Number: **L1002-1**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Capacitance – Source ¹	(0.19 to 0.4) nF	15 pF	Fluke 5520A/SC1100 Multiproduct Calibrator
	(0.4 to 1.1) nF	18 pF	
	(1.1 to 3.3) nF	27 pF	
	(3.3 to 11) nF	37 pF	
	(11 to 33) nF	0.18 nF	
	(33 to 110) nF	1.1 nF	
	(110 to 330) nF	10 nF	
	(0.33 to 1.1) μF	11 nF	
	(1.1 to 3.3) μF	15 nF	
	(3.3 to 11) μF	38 nF	
	(11 to 33) μF	160 nF	
	(33 to 110) μF	570 nF	
	(110 to 330) μF	1.8 μF	
	(0.33 to 1.1) mF	5.7 μF	
	(1.1 to 3.3) mF	7.6 μF	
	(3.3 to 11) mF	55 μF	
(11 to 33) mF	0.26 mF		
(33 to 110) mF	1.2 mF		



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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) μ A (0.3 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) A	89 pA/ μ A + 27 nA 76 nA/mA + 0.18 μ A 73 nA/mA + 1.7 μ A 70 nA/mA + 18 μ A 0.2 mA/A + 45 μ A 0.23 mA/A + 0.84 mA 0.18 mA/A + 9.6 mA 0.85 mA/A + 6.1 mA	Fluke 5520A/SC1100 Multiproduct Calibrator
DC Current Clamp-on Meters ¹	(20 to 50) A (50 to 150) A (150 to 550) A (550 to 1 000) A	4.5 mA/A + 0.24 A 6.6 mA/A + 0.14 A 7.2 mA/A + 52 mA 7.2 mA/A + 26 mA	Fluke 5520A/SC1100 Multiproduct Calibrator, 50-turn Coil
AC Current – Source ¹	(29 to 330) μ A (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 3.3) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (3.3 to 33) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (33 to 330) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	2.1 nA/ μ A + 0.42 μ A 1.5 nA/ μ A + 0.43 μ A 1 nA/ μ A + 0.43 μ A 1.3 nA/ μ A + 5.2 μ A 5.2 nA/ μ A + 5 μ A 2.3 nA/ μ A + 35 μ A 2.3 μ A/mA+ 0.98 μ A 1.3 μ A/mA+ 0.98 μ A 0.89 μ A/mA+ 0.93 μ A 4 μ A/mA + 3.8 μ A 9.2 μ A/mA + 2.8 μ A 8.7 μ A/mA + 29 μ A 2.2 μ A/mA + 4.6 μ A 0.96 μ A/mA + 4.8 μ A 0.68 μ A/mA + 5.6 μ A 2.6 μ A/mA + 5.2 μ A 6.1 μ A/mA + 5.2 μ A 9 μ A/mA + 6.7 μ A 2.2 μ A/mA + 45 μ A 0.97 μ A/mA + 46 μ A 0.42 μ A/mA + 41 μ A 1 μ A/mA + 68 μ A 2.2 μ A/mA + 0.11 mA 6.3 μ A/mA + 0.17 mA	Fluke 5520A/SC1100 Multiproduct Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Source ¹	(0.33 to 1.1) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.15 μ A/A + 0.44 mA 0.15 μ A/A + 0.44 mA 1.1 μ A/A + 4.1 mA 0.5 μ A/A + 0.13 mA	Fluke 5520A/SC1100 Multiproduct Calibrator
	(1.1 to 3) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	2.6 mA/A + 0.18 μ A 0.58 mA/A + 1.7 mA 10 mA/A + 0.6 mA 30 mA/A + 6.1 mA	
AC Current – Source ¹	(3 to 11) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	1.7 mA/A + 3.2 mA 1.3 mA/A + 3.3 mA 31 mA/A + 2.5 mA	Fluke 5520A/SC1100 Multiproduct Calibrator
	(11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	2 mA/A + 5.5 mA 1.7 mA/A + 6 mA 31 mA/A + 6.6 mA	
AC Current Clamp-on Meters ¹	(20 to 50) A (45 to 65) Hz (65 to 440) Hz	18 mA/A 17 mA/A + 19 mA	Fluke 5520A/SC1100 Multiproduct Calibrator, 50-turn Coil
	(50 to 150) A 45 Hz to 1 kHz (150 to 550) A (45 to 100) Hz 100 Hz to 1 kHz (550 to 1 000) A (45 to 100) Hz 100 Hz to 1 kHz	7.5 mA/A + 44 mA 2.9 mA/A + 1 A 7.1 mA/A + 37 mA 7.2 mA/A 20 mA/A + 1.8 A	
DC Current – Measure ¹	(0 to 10) μ A (10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	7.1 pA/ μ A + 0.67 nA 19 pA/ μ A + 0.99 nA 19 pA/ μ A + 7.5 nA 18 nA/mA + 76 nA 34 nA/mA + 0.69 μ A 0.11 μ A/mA + 16 μ A	Agilent 3458A 8.5 Digit Multimeter
	(1 to 5) A (5 to 10) A (10 to 50) A (50 to 100) A (100 to 150) A	1 mA 2.4 mA 10 mA 20 mA 30 mA	Agilent 3458A 8.5 Digit Multimeter, Current Shunt



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	Up to 100 μ A		Agilent 3458A 8.5 Digit Multimeter
	(10 to 20) Hz	4 nA/ μ A + 31 nA	
	(20 to 45) Hz	1.5 nA/ μ A + 31 nA	
	(45 to 100) Hz	0.59 nA/ μ A + 32 nA	
	100 Hz to 5 kHz	0.59 nA/ μ A + 32 nA	
	(0.1 to 1) mA		
	(10 to 20) Hz	4 μ A/mA + 0.2 μ A	
	(20 to 45) Hz	1.5 μ A/mA + 0.2 μ A	
	(45 to 100) Hz	0.6 μ A/mA + 0.2 μ A	
	100 Hz to 5 kHz	0.3 μ A/mA + 0.21 μ A	
	(5 to 20) kHz	0.6 μ A/mA + 0.2 μ A	
	(20 to 50) kHz	4 μ A/mA + 0.4 μ A	
	(50 to 100) kHz	5.5 μ A/mA + 1.5 μ A	
	(1 to 10) mA		
	(10 to 20) Hz	4 μ A/mA + 2 μ A	
	(20 to 45) Hz	1.5 μ A/mA + 2 μ A	
	(45 to 100) Hz	0.6 μ A/mA + 2.1 μ A	
	100 Hz to 5 kHz	0.3 μ A/mA + 2.1 μ A	
	(5 to 20) kHz	0.6 μ A/mA + 2.1 μ A	
	(20 to 50) kHz	4 μ A/mA + 4 μ A	
	(50 to 100) kHz	5.5 μ A/mA + 15 μ A	
	(10 to 100) mA		
	(10 to 20) Hz	4 μ A/mA + 20 μ A	
	(20 to 45) Hz	1.5 μ A/mA + 21 μ A	
	(45 to 100) Hz	0.6 μ A/mA + 21 μ A	
	100 Hz to 5 kHz	0.3 μ A/mA + 21 μ A	
	(5 to 20) kHz	0.6 μ A/mA + 21 μ A	
	(20 to 50) kHz	4 μ A/mA + 40 μ A	
	(50 to 100) kHz	5.5 μ A/mA + 0.15 A	
	(0.1 to 1) A		
(10 to 20) Hz	4 μ A/mA + 0.2 mA		
(20 to 45) Hz	1.6 μ A/mA + 0.21 mA		
(45 to 100) Hz	0.8 μ A/mA + 0.21 mA		
100 Hz to 5 kHz	1 μ A/mA + 0.21 mA		
(5 to 20) kHz	3 μ A/mA + 0.2 mA		
(20 to 50) kHz	10 μ A/mA + 0.4 mA		



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current – Measure ¹	(1 to 5) A (45 to 400) Hz	1.2 mA	Agilent 3458A 8.5 Digit Multimeter, Current Shunt
	(5 to 10) A (45 to 400) Hz	2.4 mA	
	(10 to 50) A (45 to 400) Hz	12 mA	
	(50 to 100) A (45 to 400) Hz	24 mA	
	(100 to 150) A (45 to 400) Hz	36 mA	
DC Power – Source ¹	Up to 336 W	0.14 W	Fluke 5520A/SC1100 Multiproduct Calibrator
	336 W to 3.06 kW (3.06 to 20.91) kW	0.054 % of reading 0.13 % of reading	
AC Power – Source ¹ (45 to 65) Hz	(0.11 to 3) mW	0.19 % of reading	Fluke 5520A/SC1100 Multiproduct Calibrator
	(3 to 11) mW	0.14 % of reading	
	(11 to 30) mW	0.17 % of reading	
	(30 to 110) mW	0.12 % of reading	
	(110 to 300) mW	0.29 % of reading	
	(0.3 to 0.73) W	0.18 % of reading	
	(0.73 to 1.5) W	0.28 % of reading	
	(1.5 to 6.8) W	0.26 % of reading	
	(6.8 to 9.2) W	0.19 % of reading	
	(9.2 to 34) W	0.14 % of reading	
	(34 to 92) W	0.17 % of reading	
	(92 to 337) W	0.12 % of reading	
	(337 to 918) W	0.29 % of reading	
	(918 to 2 244) W	0.18 % of reading	
2 244 W to 4.59 kW (4.59 to 20.91) kW	0.28 % of reading 0.26 % of reading		
Resistance – Source ¹	Up to 11 Ω	9.9 mΩ/Ω + 0.99 Ω	Fluke 5520A/SC1100 Multiproduct Calibrator
	(11 to 33) Ω	16 μΩ/Ω + 1.4 mΩ	
	(33 to 110) Ω	21 μΩ/Ω + 1.1 mΩ	
	(110 to 330) Ω	25 μΩ/Ω + 1.3 mΩ	
	(0.33 to 1.1) kΩ	27 μΩ/Ω + 2.2 mΩ	
	(1.1 to 3.3) kΩ	27 μΩ/Ω + 7.5 mΩ	



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance – Source ¹	(3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (0.33 to 1.1) GΩ	25 μΩ/Ω + 50 mΩ 23 μΩ/Ω + 0.24 Ω 25 μΩ/Ω + 0.5 Ω 27 μΩ/Ω + 2.3 Ω 36 μΩ/Ω + 0.2 Ω 75 μΩ/Ω + 9.4 Ω 0.14 mΩ/Ω + 51 Ω 0.25 mΩ/Ω + 1.5 kΩ 0.53 mΩ/Ω + 0.97 kΩ 3.1 mΩ/Ω + 3.8 kΩ 15 mΩ/Ω + 15 kΩ	Fluke 5520A/SC1100 Multiproduct Calibrator
Resistance – Measure ¹	Up to 10 Ω (10 to 100) Ω (0.1 to 1) kΩ (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	13 μΩ/Ω + 79 μΩ 11 μΩ/Ω + 0.7 mΩ 9.7 μΩ/Ω + 0.95 mΩ 9.7 μΩ/Ω + 9.6 mΩ 9.5 μΩ/Ω + 0.13 Ω 15 Ω/MΩ + 3.6 Ω 79 Ω/MΩ + 75 Ω 0.5 kΩ/MΩ + 1.5 kΩ 5 kΩ/MΩ + 14 kΩ	Agilent 3458A 8.5 Digit Multimeter
Electrical Simulation of RTD Indicating Devices – Source ¹	Cu 427, 10 Ω (-100 to 260) °C PtNi 385, 120 Ω (-80 to 0) °C (0 to 100) °C (100 to 260) °C Pt 3916, 100 Ω (-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.3 °C 0.081 °C 0.081 °C 0.14 °C 0.25 °C 0.041 °C 0.051 °C 0.061 °C 0.071 °C 0.08 °C 0.09 °C 0.1 °C 0.23 °C	Fluke 5520A/SC1100 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicating Devices – Source ¹	Pt 3926, 100 Ω		Fluke 5520A/SC1100 Multiproduct Calibrator
	(-200 to -80) °C	0.051 °C	
	(-80 to 0) °C	0.051 °C	
	(0 to 100) °C	0.071 °C	
	(100 to 300) °C	0.09 °C	
	(300 to 400) °C	0.1 °C	
	(400 to 630) °C	0.12 °C	
	Pt 385, 200 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	0.12 °C	
	(300 to 400) °C	0.13 °C	
	(400 to 600) °C	0.14 °C	
	(600 to 630) °C	0.16 °C	
	Pt 385, 500 Ω		
	(-200 to -80) °C	0.043 °C	
	(-80 to 0) °C	0.052 °C	
	(0 to 100) °C	0.052 °C	
	(100 to 260) °C	0.062 °C	
	(260 to 300) °C	0.081 °C	
	(300 to 400) °C	0.081 °C	
	(400 to 600) °C	0.091 °C	
	(600 to 630) °C	0.11 °C	
	Pt 385, 1 000 Ω		
	(-200 to -80) °C	0.08 °C	
	(-80 to 0) °C	0.08 °C	
	(0 to 100) °C	0.084 °C	
	(100 to 260) °C	0.089 °C	
(260 to 300) °C	0.095 °C		
(300 to 400) °C	0.1 °C		
(400 to 600) °C	0.1 °C		
(600 to 630) °C	0.24 °C		
Pt 385, 100 Ω			
(-200 to -80) °C	0.051 °C		
(-80 to 0) °C	0.051 °C		
(0 to 100) °C	0.071 °C		
(100 to 300) °C	0.09 °C		
(300 to 400) °C	0.1 °C		
(400 to 630) °C	0.12 °C		
(630 to 800) °C	0.23 °C		



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Source ¹	Up to 330 mV (0.3 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1 000) V	18 nV/mV + 2.4 μV 12 μV/V + 2.7 μV 11 μV/V + 64 μV 18 μV/V + 0.47 mV 21 μV/V + 4.7 mV	Fluke 5520A/SC1100 Multiproduct Calibrator
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 (0.33 to 3.3) V (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 (3.3 to 33) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (33 to 330) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (330 to 1 000) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.88 μV/mV + 37 μV 0.17 μV/mV + 37 μV 0.29 μV/mV + 37 μV 1 μV/mV + 36 μV 3.4 μV/mV + 33 μV 8 μV/mV + 61 μV 0.65 μV/mV + 51 μV 0.2 μV/mV + 37 μV 0.29 μV/mV + 38 μV 0.7 μV/mV + 38 μV 1.2 μV/mV + 50 μV 2.1 μV/mV + 92 μV 0.64 mV/V + 0.27 mV 0.21 mV/V + 0.11 mV 0.31 mV/V + 0.11 mV 0.68 mV/V + 0.11 mV 1.1 mV/V + 0.17 mV 2.5 mV/V + 0.78 mV 0.64 mV/V + 2.7 mV 0.21 mV/V + 1.1 mV 0.41 mV/V + 1.1 mV 0.89 mV/V + 1.1 mV 2.2 mV/V + 1.6 mV 0.64 mV/V + 5.4 mV 0.28 mV/V + 8.8 mV 2.5 mV/V + 5 mV 2.5 mV/V + 7.1 mV 4.5 mV/V + 48 mV 0.68 mV/V + 18 mV 0.38 mV/V + 19 mV 0.41 mV/V + 19 mV	Fluke 5520A/SC1100 Multiproduct Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage – Measure ¹	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1 000) V	3.5 nV/mV + 2.1 μV 7 μV/V + 1.8 μV 7.9 μV/V + 2.7 μV 9.7 μV/V + 72 μV 22 μV/V + 0.24 mV	Agilent 3458A 8.5 Digit Multimeter
DC High Voltage – Measure ¹	(10 to 6 000) V	20 mV/V + 1.7 V	Greenlee 4.5 Digit Multimeter, Fluke 80k-40 HV Probe
AC Voltage – Measure ¹	(1 to 100) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz (0.1 to 1) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz (1 to 10) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (0.3 to 1) MHz (1 to 4) MHz (4 to 8) MHz (8 to 10) MHz	66 nV/mV + 4.9 μV 59 nV/mV + 4 μV 0.13 μV/mV + 3.4 μV 0.29 μV/mV + 3.3 μV 0.77 μV/mV + 6.7 μV 3 μV/mV + 12 μV 20 μV/mV + 64 μV 40 μV/mV + 77 μV 40 μV/mV + 87 μV 0.15 mV/mV + 0.1 mV 69 μV/V + 44 μV 69 μV/V + 23 μV 0.14 mV/V + 21 μV 0.3 mV/V + 24 μV 0.8 mV/V + 20 μV 3 mV/V + 0.1 mV 20 mV/V + 0.5 mV 40 mV/V + 0.7 mV 40 mV/V + 0.8 mV 0.15 V/V + 1 mV 63 μV/V + 0.56 mV 70 μV/V + 0.21 mV 0.14 mV/V + 0.21 mV 0.3 mV/V + 0.21 mV 0.8 mV/V + 0.21 mV 3 mV/V + 1 mV 20 mV/V + 5 mV 40 mV/V + 7 mV 40 mV/V + 8 mV 0.15 V/V + 10 mV	Agilent 3458A 8.5 Digit Multimeter



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage – Measure ¹	(10 to 100) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (0.3 to 1) MHz (100 to 1 000) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.2 mV/V + 4.3 mV 0.2 mV/V + 2.2 mV 0.2 mV/V + 2.1 mV 0.35 mV/V + 2.9 mV 1.2 mV/V + 2.1 mV 4 mV/V + 10 mV 15 mV/V + 10 mV 0.4 mV/V + 41 mV 0.4 mV/V + 22 mV 0.6 mV/V + 21 mV 1.2 mV/V + 21 mV 3 mV/V + 20 mV	Agilent 3458A 8.5 Digit Multimeter
AC High Voltage – Measure ¹	10 V to 5 kV (45 to 500) Hz	1.9 mV/V + 59 V	Greenlee 4.5 Digit Multimeter, Fluke 80k-40 HV Probe
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure ¹	Type B (600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C Type C (0 to 150) °C (150 to 650) °C (650 to 1 000) °C (1 000 to 1 800) °C (1 800 to 2 316) °C Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.47 °C 0.38 °C 0.34 °C 0.37 °C 0.34 °C 0.31 °C 0.35 °C 0.53 °C 0.86 °C 0.53 °C 0.23 °C 0.21 °C 0.23 °C 0.26 °C	Fluke 5520A/SC1100 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 Indicating Devices – Source/Measure ¹	Type J		Fluke 5520A/SC1100 Multiproduct Calibrator
	(-210 to -100) °C	0.31 °C	
	(-100 to -30) °C	0.23 °C	
	(-30 to 150) °C	0.21 °C	
	(150 to 760) °C	0.23 °C	
	(760 to 1 200) °C	0.28 °C	
	Type K		
	(-200 to -100) °C	0.37 °C	
	(-100 to -25) °C	0.24 °C	
	(-25 to 120) °C	0.23 °C	
	(120 to 1 000) °C	0.31 °C	
	(1 000 to 1 372) °C	0.43 °C	
	Type N		
	(-200 to -100) °C	0.43 °C	
	(-100 to -25) °C	0.27 °C	
	(-25 to 120) °C	0.25 °C	
	(120 to 410) °C	0.24 °C	
	(410 to 1 300) °C	0.31 °C	
	Type R		
	(0 to 250) °C	0.59 °C	
(250 to 400) °C	0.38 °C		
(400 to 1 000) °C	0.37 °C		
(1 000 to 1 767) °C	0.43 °C		
Type S			
(0 to 250) °C	0.5 °C		
(250 to 400) °C	0.39 °C		
(400 to 1 000) °C	0.4 °C		
(1 000 to 1 767) °C	0.49 °C		
Type T			
(-250 to -150) °C	0.65 °C		
(-150 to 0) °C	0.29 °C		
(0 to 120) °C	0.23 °C		
(120 to 400) °C	0.21 °C		
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure ¹	Type K (-25 to 120) °C	0.019 % of reading + 0.34 °C	Fluke 726 Process Calibrator



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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes ¹			
Amplitude – DC Voltage into 50 Ω load	Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 6.6) V	0.1 mV 0.33 mV 5.5 mV 17 mV	
into 1 MΩ load	Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 11) V (11 to 130) V	54 μV 54 μV 1.2 mV 5.7 mV 90 mV	
Amplitude – Square Wave into 50 Ω load	10 Hz to 100 kHz Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 6.6) V	0.1 mV 0.33 mV 5.5 mV 17 mV	
into 1 MΩ load	10 Hz to 1 kHz Up to 25 mV (25 to 110) mV (0.11 to 2.2) V (2.2 to 11) V (11 to 130) V	61 μV 0.17 mV 2.1 mV 11 mV 0.14 V	Fluke 5520A/SC1100 Multiproduct Calibrator
Amplitude – Leveled Sine Wave into 50 Ω load	5 mVp-p to 5.5 Vp-p 50 kHz (reference) 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 600 MHz to 1.1 GHz	23 mV/V + 21 μV 41 mV/V + 0.3 μV 41 mV/V + 11 μV 61 mV/V + 7.8 μV 71 mV/V + 6.7 μV	
Leveled Sine Wave Flatness (Relative to 50 kHz) into 50 Ω load	5 mVp-p to 5.5 Vp-p 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 600 MHz to 1.1 GHz	20 mV/V + 2.6 μV 24 mV/V + 2.1 μV 43 mV/V + 1.2 μV 52 mV/V + 2.9 μV	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscope ¹ Leveled Sine Wave – Frequency into 50 Ω load	50 kHz 1 100 MHz	2.7 Hz 1 MHz	Fluke 5520A/SC1100 Multiproduct Calibrator
Leading Edge Risetime into 50 Ω load 1 kHz to 10 MHz	5 mVp-p to 2.5 Vp-p (200 to 350) ps	320 ps	
Time Markers into 50 Ω load	1 ns to 20 ms 50 ms 0.1 s 0.2 s 0.5 s 1 s 2 s 5 s	2.7 μs/s 3.8 μs 13 μs 45 μs 260 μs 1 ms 4.1 ms 25 ms	

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Caliper Checker ²	Up to 72 in	$(42 + 3.3L) \mu\text{in}$	Gage Blocks, Electronic Amp
Geometric References (Flatness, Parallelism, Straightness)	(1 to 36) in (36 to 60) in	58 μin 87 μin	Gage Blocks, Electronic Amp
Grade 1 Gage Blocks, Steel ²	(0.01 to 4) in	$(3.8 + 0.28L) \mu\text{in}$	Gage Block Comparator
All other Grade Gage Blocks, Steel ²	(0.01 to 4) in	$(4 + 1.6L) \mu\text{in}$	Gage Block Comparator
Gage Blocks, Steel ²	(5 to 20) in	$(6.3 + 0.24L) \mu\text{in}$	Johansson Comparator, Surface Plate
Gage Blocks, TC/CC/Ceramic ²	(0.01 to 4) in	$(3.9 + 4.2L) \mu\text{in}$	Gage Block Comparator
Gage Block Comparator	0.01 in	4 μin	Master Gage Blocks
Kalmaster ²	Up to 12 in	$(42 + 3.3L) \mu\text{in}$	Gage Blocks, Electronic Amp

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Length Standards ^{1,2}	Up to 20 in	$(42 + 3.3L) \mu\text{in}$	Gage Blocks, Electronic Amp
Micrometer Master ² Depth	Up to 12 in	$(42 + 3.3L) \mu\text{in}$	Gage Blocks, Electronic Amp
Outside Diameter	Up to 12 in	$(42 + 3.3L) \mu\text{in}$	
Optical Flats and Parallels ² Flatness	(1 to 6) in <i>D</i>	3.3 μin	Master Optical Flat, Gage Block Comparator
Parallelism	Up to 1 in	6 μin	
Parallels	Up to 36 in (36 to 60) in	58 μin 87 μin	Electronic Amp, Surface Plate
Pitch Gages (1 to 100) TPI ²	Up to 0.1 in	$(430 + 17L) \mu\text{in}$	Optical Comparator
Cylindrical Plug Gage ^{1,2}	Up to 14 in	$(22 + 1.9D) \mu\text{in}$	Labmaster Universal
Cylindrical Ring Gage ^{1,2} (Inside Diameter)	(0.05 to 0.5) in	8.1 μin	Labmaster Universal
	(0.5 to 14) in	$(7.7 + 3D) \mu\text{in}$	
Steel Ball ² (Size Only)	(0.05 to 1) in	$(22 + 1.9D) \mu\text{in}$	Supermicrometer, Gage Blocks
Steel Rule ^{1,2}	(1 to 48) in (48 to 144) in	$(5\,700 + 2.3L) \mu\text{in}$ $(5\,700 + 1.5L) \mu\text{in}$	Gage Blocks
Straight Edge	(1 to 36) in (36 to 60) in	58 μin 87 μin	Elec Amp, Surface Plate
Thickness Gages, Feeler Gages, Pin Gages ^{1,2}	(0.001 to 1) in	$(22 + 1.9D) \mu\text{in}$	Supermicrometer
Thread Measuring Wires	Up to 0.25 in	31 μin	Supermicrometer
1-2-3 Blocks ²	(1 to 3) in	$(42 + 3.3L) \mu\text{in}$	Electronic Amp, Gage Blocks
Angle Gage Blocks ²	Up to 45°	6.4"	Sine Bar, Electronic Amp
Arbors	Up to 14 in	58 μin	Supermic / Bench Center / Amp
Fixtures/Functional Gages ²	Up to 6 in	$(610 + 1.8L) \mu\text{in}$	Optical Comparator
	Up to 360°	0.065°	
Protractors ^{1,2}	Up to 360°	0.065°	Optical Comparator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Protractors ^{1,2}	Up to 45 °	6.4"	Sine Bar, Gage Blocks
Radius Gage ²	(0.015 6 to 2) in	(610 + 1.8L) μin	Optical Comparator
Sine Plates, Sine Bars ²	(5 to 20) in	(68 + 12L) μin	Electronic Amp, Surface Plate, Gage Blocks
Squares ^{1,2}	(1 to 24) in	(48 + 3.5L) μin	Granite Square, Electronic Amp
V-Blocks	Up to 12 in ³	150 μin	Elec Amp, Arbor, Surface Plate, Square
NPT Thread Ring ²	(0.062 5 to 2.5) in	(190 + 1.5D) μin	NPT Plugs
NPTF Taper Plugs ²	(0.062 5 to 6) in	(55 + 2.3D) μin	Supermicrometer, Sine Block
Surface Finish Standard ^{1,2}	(12 to 120) μin Ra	Cal High: 2.6 μin Cal Low: 2.9 μin Stylus Cal: 1.4 μin	Profilometer
Thread Plugs ^{1,2} (6 to 80) TPI	Up to 14 in	(130 + 2PD) μin	Supermicrometer, Thread Wires
Surface Plates ^{1,2}			In accordance with Fed Spec GGG-P-463 using Autocollimator
Overall Flatness	(24 to 144) in	(48 + 0.091L) μin	
Local Area Flatness (Repeat Readings)	0.002 in	(34 + 0.1L) μin	Repeat-o-Meter
Thread Plug Gage, Tapered ²	(0.125 to 6) in	(130 + 2D) μin	Supermicrometer, Thread Wires, Sine Block
Thread Ring Gage ^{1,2} (6 to 80) TPI	(0.1 to 1.5) in	(190 + 1.5PD) μin	Set Plugs
	(0.2 to 5) in	(200 + 1.1PD) μin	Zeiss ULM
Fixtures / Functional Gages	X Axis to 28 in Y Axis to 28 in Z Axis to 24 in	430 μin 430 μin 440 μin	CMM incorporated into the Measurement Process.
Plain Taper Arbor	Up to 20 in	430 μin	CMM
Bench Micrometer ^{1,2}	Up to 2 in	(48 + 11L) μin	Gage Blocks

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Calipers ^{1,2} Resolution: 0.000 5 in 0.001 in 0.001 in	Up to 24 in Up to 24 in (24 to 72) in	(450 + 6L) μin (670 + 4L) μin (350 + 15L) μin	Gage Blocks, Ring Gages
Dial Bore Gage ¹	(1 to 10) in	41 μin	Supermicrometer
Dial Indicator Calibrator ²	Up to 1 in	(16 + 1.1L) μin	Gage Blocks, Electronic Amp
Dial/Test/Elect Indicators ^{1,2} Resolution: 0.000 04 in 0.000 05 in 0.000 08 in 0.000 1 in 0.000 4 in 0.000 5 in 0.001 in	Up to 4 in Up to 4 in Up to 4 in Up to 4 in Up to 4 in Up to 4 in Up to 4 in	(50 + 8L) μin (53 + 8L) μin (64 + 7L) μin (230 + 10L) μin (230 + 10L) μin (290 + 2L) μin (580 + 1L) μin	Gage Blocks
Electronic Amp ²	Up to 0.008 in	(75 + 110L) μin	Gage Blocks
	Up to 0.008 in	(9.9 + 3.5L) μin	Zeiss ULM
Height Gage ^{1,2}	Up to 48 in	(44 + 6.4L) μin	Gage Blocks
Height Master ^{1,2}	Up to 48 in	(42 + 3.3L) μin	Gage Blocks, Electronic Amp
Intramic/Bore Micrometer ²	(0.2 to 6) in	(150 + 27D) μin	Ring Gages
High Precision Indicators	0.002 in	3.5 μin	Grade 1 Gage Blocks
Inside Micrometers ^{1,2}	Up to 12 in	(21 + 2.5L) μin	Supermicrometer
	(12 to 60) in	(42 + 3.3L) μin	Gage Blocks, Electronic Amp
Outside Micrometer ^{1,2} Resolution: 0.000 05 in 0.000 1 in 0.001 in 0.001 in	Up to 24 in Up to 24 in Up to 24 in (25 to 72) in	(50 + 14L) μin (70 + 13L) μin (120 + 11L) μin (47 + 11L) μin	Gage Blocks
Depth Micrometers ^{1,2}	Up to 24 in	(110 + 8L) μin	Gage Blocks
Micrometer Heads	Up to 2 in	24 μin	Zeiss ULM

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Supermicrometer ² Outside Diameter	Up to 1 in (1 to 3) in (3 to 6) in (6 to 12) in (12 to 18) in	(19 + 5L) μin (12 + 1.7L) μin (5.2 + 4L) μin (5.5 + 4L) μin (2.5 + 4.2L) μin	Gage Blocks
Laser Micrometers ²	Up to 1 in	(36 + 14L) μin	Master Pins
Bench Centers ¹	Up to 48 in	140 μin	Arbor, Electronic Amp
Dial Sink, Counter Bore Gages	Up to 2 in	130 μin	Ring Gage
Levels	0.000 5 in per 12 in	290 μin	Surface Plate
Optical Comparators ^{1,2} Linearity	Up to 6 in	(430 + 17L) μin	Glass Scale
Angularity	Up to 360°	0.02°	
Profilometers ^{1,5} Calibration Linearity Stylus	Ra: 120 μin Ra: 17 μin Ra: (12 to 20) μin	3.7 μin 2.2 μin 1.7 μin	3-patch Surface Finish Standard

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Force Gages	(0 to 6 000) gf	20 μg/g + 5.6 μg	ASTM E617 Class 7 Weights
	(0.5 to 220) lbf	0.003 5 % of reading	NIST Class F Weights
Durometers Spring Force Only Type A Type D Type M	(0 to 90) Duro (0 to 90) Duro (0 to 90) Duro	1.3 Duro 1.4 Duro 0.6 Duro	Comparison to Balance



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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Microhardness Testers ¹ 500 gf load Knoop Vickers	Low Middle High Middle	5.3 HK 18 HK 12 HK 19 HV	Indirect Verification per ASTM E384 using hardness test blocks.
Brinell Hardness Testers ¹	500 kgf Load Low Middle High 1 500 kgf Load Low Middle High 3 000 kgf Load Low Middle High	4.5 HB 4.9 HB 5.3 HB 4.7 HB 5.3 HB 5.4 HB 7.4 HB 6.4 HB 6.4 HB	Indirect Verification per ASTM E10 using hardness test blocks.
Rockwell Hardness Testers ¹	HRA Low Middle High HRBW Low Middle High HRC Low Middle High	0.71 HRA 0.56 HRA 0.47 HRA 1.1 HRBW 0.94 HRBW 0.71 HRBW 0.74 HRC 0.53 HRC 0.47 HRC	Indirect Verification per ASTM E18 using hardness test blocks.



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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment	
Rockwell Superficial Hardness Testers ¹	HR15TW		Indirect Verification per ASTM E18 using hardness test blocks.	
	Low	1 HR15TW		
	Middle	1 HR15TW		
	High	0.8 HR15TW		
	HR30TW			
	Low	0.9 HR30TW		
	Middle	1 HR30TW		
	High	0.86 HR30TW		
	HR45TW			
	Low	0.64 HR45TW		
	Middle	0.87 HR45TW		
	High	0.7 HR45TW		
	HR15N			
	Low	0.73 HR15N		
	Middle	0.84 HR15N		
High	0.74 HR15N			
Rockwell Superficial Hardness Testers ¹	HR30N		Indirect Verification per ASTM E18 using hardness test blocks.	
	Low	0.85 HR30N		
	Middle	0.9 HR30N		
	High	0.79 HR30N		
	HR45N			
	Low	0.79 HR45N		
Middle	0.76 HR45N			
High	0.8 HR45N			
Pressure Devices			Deadweight Tester	
	1 psi resolution	(5 to 1 000) psi (1 000 to 10 000) psi		1.7 psi 12 psi
	2 psi resolution	(5 to 1 000) psi		2 psi
	5 psi resolution	(5 to 1 000) psi		3.3 psi
	10 psi resolution	(5 to 1 000) psi (1 000 to 10 000) psi		6 psi 13 psi
	20 psi resolution	(1 000 to 10 000) psi		16 psi
	50 psi resolution	(1 000 to 10 000) psi		31 psi
100 psi resolution	(1 000 to 10 000) psi	59 psi		



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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pneumatic Pressure Devices ²	(-12.3 to 300) psi (-5 to 5) psi	(0.025 + 0.002 8X) psi 0.005 8 psi	Pneumatic Pressure Calibrator, Low Pressure Cell
Weighing System ¹ 0.001 g resolution 0.001 lb resolution	Up to 6 000 g Up to 12 lb	20 µg/g + 5.6 µg 0.001 5 lb	ASTM E617 Class 7 weights and NIST HB 44 utilized in the calibration of the weighing system.
Weighing System ¹ 0.001 lb resolution 0.01 lb resolution 0.1 lb resolution 1 lb resolution 2 lb resolution	Up to 220 lb Up to 220 lb Up to 220 lb Up to 220 lb Up to 220 lb	0.01 % of reading 0.011 % of reading + 0.037 lb 0.001 % of reading + 0.06 lb 0.001 % of reading + 0.6 lb 0.000 6 % of reading + 1.2 lb	ASTM E617 Class 7 weights and NIST HB 44 utilized in the calibration of the weighing system.
Weighing System ^{1,3} Floor Scales	Up to 3 000 lb	0.11 % of reading	ASTM E617 Class 6 weights and NIST HB 44 utilized in the calibration of the weighing system.
Weighing System Lab Balances Resolution: 0.000 1 g	(1 to 1000) g (1 to 2) kg (2 to 3) kg (3 to 5) kg (5 to 13) kg	0.2 mg 0.23 mg 0.27 mg 0.39 mg 0.47 mg	ASTM E617 Class 1 weights and NIST HB 44 utilized in the calibration of the weighing system.
0.001 g	(1 to 2 000) g (2 to 13) kg	2.1 mg 2.2 mg	
0.01 g	1 g to 13 kg	8.4 mg	
0.1 g	1 g to 13 kg	58 mg	
Torque Watches ²	(1 to 80) ozf·in	(0.11 + 0.002 4X) ozf·in	Torque Wheels, NIST Class F Weights



ANSI National Accreditation Board

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Transducers, Torque Calibrators ²	(5 to 50) ozf·in (15 to 200) ozf·in (4 to 50) lbf·in (30 to 400) lbf·in (80 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft (100 to 1 000) lbf·ft (200 to 2 000) lbf·ft	0.006 ozf·in/ozf·in (0.001 9 + 0.005 7X) ozf·in (0.008 6 + 0.005 6X) lbf·in (0.001 2 + 0.005 3X) lbf·in (0.005 6 + 0.006 2X) lbf·in (0.002 5 + 0.001 3X) lbf·ft (0.011 + 0.008 3X) lbf·ft (0.008 9 + 0.008 3X) lbf·ft (0.021 + 0.008 3X) lbf·ft	Torque Wheels, Torque Arms, NIST Class F Weights
Torque Tools ^{1,2,4}	(5 to 50) ozf·in (15 to 200) ozf·in (4 to 50) lbf·in (30 to 400) lbf·in (80 to 1 000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft (100 to 1 000) lbf·ft (200 to 2 000) lbf·ft	(0.033 + 0.018X) ozf·in (0.61 + 0.006 3X) ozf·in (0.052 + 0.007 1X) lbf·in (0.69 + 0.001 2X) lbf·in (1.7 + 0.012X) lbf·in (0.61 + 0.007 9X) lbf·ft (4 + 0.002 1X) lbf·ft (1.2 + 0.013X) lbf·ft (17 + 0.001 5X) lbf·ft	CDI Torque Tester

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Humidity – Source	(11, 35, 75) %RH Within ± 5 %RH	0.047 % of reading + 1.3 %RH	Saturated Salts & Thermohygrometer
Humidity – Measure ¹	(5 to 90) %RH	1.5 %RH	Thermohygrometer
Temperature – Source	(-40 to 250) °C	0.12 °C	Temperature Bath, SPRT
	(50 to 250) °C	0.047 % of reading + 0.046 °C	Drywell calibrator, SPRT
Temperature – Measure	(20 to 25) °C	0.42 °C	Thermohygrometer
	(0 to 200) °C	0.013 % of reading + 0.074 °C	Process Calibrator, Type K TC probe
	(-40 to 250) °C	0.049 °C	Instrulab Indicator, PRT

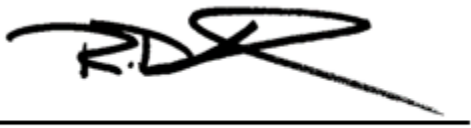
Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Stopwatches and Timers	Up to 3 h	40 ms	Frequency Counter
Tachometers ¹ (Non-Contact)	Up to 120 rpm (> 120 to 1 000) rpm (> 1 000 to 1 200) rpm (> 1 200 to 12 000) rpm (> 12 000 to 99 999) rpm	0.9 rpm 4 rpm 4.1 rpm 39 rpm 390 rpm	Fluke 5520A Multifunction Calibrator
Frequency – Source ¹	10 Hz to 12 kHz (12 to 500) kHz	0.38 μHz/Hz + 5.7 mHz 2.7 μHz/Hz + 34 mHz	Fluke 5520A/SC1100 Multiproduct Calibrator
Frequency – Source	10 MHz	4.6 Hz	HP 5335A Counter
Frequency – Measure ¹	(1 to 40) Hz 40 Hz to 10 kHz (10 to 100) kHz 100 kHz to 1 MHz	0.52 mHz/Hz + 1.3 nHz 0.17 Hz/kHz 0.17 Hz/kHz 0.17 Hz/MHz + 34 nHz	Agilent 3458A Multimeter

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%.

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. L = Length in inches; D = Diameter in inches; PD = Pitch Diameter in inches; X = Value of reading; $"$ = arc-second.
3. The CMC for scales and balances is highly dependent upon the resolution of the unit under test. The CMC presented here does not include the resolution of the unit under test. The resolution will be included in the reported measurement uncertainty at the time of calibration.
4. $0.6R$ will be added to the Measurement Uncertainty at the time of calibration, where R = resolution of the device.
5. These values are approximate values and may vary ± 5 . Actual values will be utilized at the time of calibration.
6. This scope is formatted as part of a single document including Certificate of Accreditation No. L-1002-1.



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