SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

AND

ANSI/NCSL Z540-1-1994 (R2002)

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CALIBRATION

Valid to: **May 22, 2024** Certificate Number: **AC-1328**

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
DC Voltage – Source [1]	Up to 220 mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V 220 V to 1.1 kV	8.6 µV/V + 0.4 µV 3.9 µ/V + 0.7 µV 2.7 µV/V + 2.5 µV 2.9 µV/V + 4 µV 3.8 µV/V+ 40 µV 4.8 µV/V+ 0.4 mV	Fluke 5730A Multiproduct Calibrator
DC Voltage – Measure [1]	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	15 µV/V + 0.3 µV 8.4 µV/V + 0.3 µV 4.2 µV/V + 0.5 µV 6.4 µV/V + 30 µV 20 µV/V + 0.1 mV	HP 3458A 8.5 Digit Multimeter
DC Voltage – Measure [1]	(1.02 to 120) kV	1.1 mV/V	Ross VD120-6.2Y-A Voltage Divider, HP 34401A 6.5 Digit Multimeter
DC Current – Source [1]	Up to 220 µA 220 µA to 2.2 mA (2.2 to 22) mA (22 to 220) mA 220 mA to 2.2 A	38 µA/A + 6 nA 35 µA/A + 7 nA 32 µA/A + 40 nA 41 µA/A + 0.7 µA 66 µA/A + 12 µA	Fluke 5730A Multiproduct Calibrator
DC Current – Source [1]	(2.2 to 3) A (3 to 11) A (11 to 20.5) A	0.41 mA/A + 40 µA 0.5 mA/A + 0.5 mA 1.1 mA/A + 0.75 mA	Fluke 5522A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
DC Current Clamps – Source [1]	(20 to 150) A (150 to 1 000) A	5.1 mA/A + 0.16 A 5.3 mA/A + 0.54A	Fluke 5522A Multiproduct Calibrator, Fluke 5500A/COIL
DC Current – Measure [1]	Up to 100 nA 100 nA to 1 µA (1 to 10) µA (10 to 100) µA 100 µA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	0.11 mA/A + 40 pA 64 µA/A + 40 pA 26 µA/A + 0.1 nA 25 µA/A + 0.8 nA 27 µA/A + 5 nA 23 µA/A + 50 nA 40 µA/A + 0.5 µA 0.13 mA/A + 10 µA	HP 3458A 8.5 Digit Multimeter
Resistance – Source [1] (Simulated-Fixed Values)	1 Ω 1.9 Ω 10 Ω 19 Ω 100 Ω 190 Ω 1 kΩ 1.9 kΩ 10 kΩ 19 kΩ 100 kΩ 190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	88 µΩ 0.16 mΩ 0.22 mΩ 0.41 mΩ 0.92 mΩ 1.9 mΩ 6 mΩ 12 mΩ 60 mΩ 0.11 Ω 0.79 Ω 1.6 Ω 13 Ω 29 Ω 0.32 kΩ 0.85 kΩ 11 kΩ	Fluke 5730A Multiproduct Calibrator
Resistance – Source [1] (Simulated)	(0 to 11) Ω (11 to 33) Ω (33 to 100) Ω (110 to 330) Ω (0.33 to 1.1) kΩ (1.1 to 3.3) kΩ (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	49 µΩ/Ω + 1 mΩ 40 µΩ/Ω + 1.5 mΩ 31 µΩ/Ω + 1.4 mΩ 29 µΩ/Ω + 2 mΩ 33 µΩ/Ω + 2 mΩ 29 µΩ/Ω + 20 mΩ 29 µΩ/Ω + 20 mΩ 29 µΩ/Ω + 0.2 Ω 29 µΩ/Ω + 0.2 Ω 37 µΩ/Ω + 2 Ω 35 µΩ/Ω + 2 Ω 87 µΩ/Ω + 30 Ω 0.14 mΩ/Ω + 50 Ω	Fluke 5522A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Resistance – Source [1] (Simulated)	(11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (330 to 1 100) MΩ	0.47 mΩ/Ω + 2.5 kΩ 0.66 mΩ/Ω + 3 kΩ 4.7 mΩ/Ω + 0.1 MΩ 16 mΩ/Ω + 0.5 MΩ	Fluke 5522A Multiproduct Calibrator
Resistance – Measure [1]	Up to 10 Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ 100 M Ω to 1 GΩ	20 μΩ/Ω + 50 μΩ 19 μΩ/Ω + 0.5 mΩ 11 μΩ/Ω + 0.5 mΩ 12 μΩ/Ω + 5 mΩ 11 μΩ/Ω + 50 mΩ 16 μΩ/Ω + 2 Ω 96 μΩ/Ω + 0.1 kΩ 0.5 mΩ/Ω + 1 kΩ 7 mΩ/Ω + 10 kΩ	HP 3458A 8.5 Digit Multimeter
AC Voltage – Source [1]	Up to 2.2 mV (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1MHz (2.2 to 22) mV (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1MHz (22 to 220) mV (10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1MHz	 0.42 mV/V + 4 μV 0.34 mV/V + 4 μV 0.35 mV/V + 4 μV 0.47 mV/V + 4 μV 0.76 mV/V + 5 μV 1.5 mV/V + 10 μV 1.9 mV/V + 20 μV 4.5 mV/V + 20 μV 0.25 mV/V + 4 μV 0.15 mV/V + 4 μV 0.13 mV/V + 4 μV 0.24 mV/V + 4 μV 0.58 mV/V + 5 μV 0.95 mV/V + 10 μV 1.3 mV/V + 20 μV 2.6 mV/V + 20 μV 0.23 mV/V + 12 μV 92 μV/V + 7 μV 61 μV/V + 7 μV 0.12 mV/V + 7 μV 0.31 mV/V + 17 μV 0.6 mV/V + 20 μV 1.3 mV/V + 25 μV 2.6 mV/V + 45 μV	Fluke 5730A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
AC Voltage – Source [1]	220 mV to 2.2 V		Fluke 5730A Multiproduct Calibrator
	(10 to 20) Hz	0.23 mV/V + 40 µV	
	(20 to 40) Hz	84 µV/V + 15 µV	
	40 Hz to 20 kHz	43 µV/V + 8 µV	
	(20 to 50) kHz	66 µV/V + 10 µV	
	(50 to 100) kHz	89 µV/V + 30 µV	
	(100 to 300) kHz	0.31 mV/V + 80 µV	
	(300 to 500) kHz	0.92 mV/V + 0.2 mV	
	500 kHz to 1MHz	1.6 mV/V + 0.3 mV	
	(2.2 to 22) V		
	(10 to 20) Hz	0.23 mV/V + 0.4 mV	
	(20 to 40) Hz	86 µV/V + 0.15 mV	
	40 Hz to 20 kHz	49 µV/V + 50 µV	
	(20 to 50) kHz	87 µV/V + 0.1 mV	
	(50 to 100) kHz	95 µV/V + 0.2 mV	
	(100 to 300) kHz	0.27 mV/V + 0.6 mV	
	(300 to 500) kHz	0.92 mV/V + 2 mV	
	500 kHz to 1MHz	1.5 mV/V + 3.2 mV	
	(22 to 220) V		
	(10 to 20) Hz	0.23 mV/V + 4 mV	
	(20 to 40) Hz	88 µV/V + 1.5 mV	
	40 Hz to 20 kHz	51 µV/V + 0.6 mV	
	(20 to 50) kHz	78 µV/V + 1 mV	
	(50 to 100) kHz	0.14 mV/V + 2.5 mV	
	(100 to 300) kHz	0.82 mV/V + 16 mV	
	(300 to 500) kHz	4.3 mV/V + 40 mV	
	500 kHz to 1MHz	9.3 mV/V + 80 mV	
	220 V to 1 kV		
	(15 to 50) Hz	0.27 mV/V + 16 mV	
	50 Hz to 1 kHz	66 µV /V + 3.5 mV	
AC Voltage – Measure [1]	Up to 10 mV		HP 3458A 8.5 Digit Multimeter
	(1 to 40) Hz	1.7 mV/V + 3 µV	
	40 Hz to 1kHz	1.4 mV/V + 1.1 µV	
	(1 to 20) kHz	2.1 mV/V + 1.1 µV	
	(20 to 50) kHz	2.8 mV/V + 1.1 µV	
	(50 to 100) kHz	13 mV/V + 1.1 µV	
	100 kHz to 1 MHz	15 mV/V + 5 µV	
	(1 to 4) MHz	70 mV/V + 7 µV	
	(4 to 8) MHz	0.2 V/V + 8 µV	

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
AC Voltage – Measure [1]	(10 to 100) mV		HP 3458A 8.5 Digit Multimeter
	(1 to 40) Hz	0.32 mV/V + 4 µV	
	40 Hz to 1 kHz	0.26 mV/V + 2 µV	
	(1 to 20) kHz	0.29 mV/V + 2 µV	
	(20 to 50) kHz	0.65 mV/V + 2 µV	
	(50 to 100) kHz	1.1 mV/V + 2 µV	
	(100 to 300) kHz	3.3 mV/V + 10 µV	
	300 kHz to 1 MHz	11 mV/V + 10 µV	
	(1 to 2) MHz	16 mV/V + 10 µV	
	(2 to 4) MHz	40 mV/V + 70 µV	
	(4 to 8) MHz	40 mV/V + 80 µV	
	(8 to 10) MHz	0.15 V/V + 0.1 mV	
	100 mV to 1 V		
	(1 to 40) Hz	0.16 mV/V + 40 µV	
	40 Hz to 1kHz	0.13 mV/V + 20 µV	
	(1 to 20) kHz	0.19 mV/V + 20 µV	
	(20 to 50) kHz	0.37 mV/V + 20 µV	
	(50 to 100) kHz	0.85 mV/V + 20 µV	
	(100 to 300) kHz	3.1 mV/V + 0.1 mV	
	300 kHz to 1 MHz	10 mV/V + 0.1 mV	
	(1 to 2) MHz	17 mV/V + 0.1 mV	
	(2 to 4) MHz	40 mV/V + 0.7 mV	
	(4 to 8) MHz	41 mV/V + 0.8 mV	
	(8 to 10) MHz	0.15 V/V + 1 mV	
	(1 to 10) V		
	(1 to 40) Hz	91 µV/V + 0.4 mV	
	40 Hz to 1 kHz	0.14 mV/V + 0.2 mV	
	(1 to 20) kHz	0.28 mV/V + 0.2 mV	
	(20 to 50) kHz	0.35 mV/V + 0.2 mV	
	(50 to 100) kHz	1 mV/V + 0.2 mV	
	(100 to 300) kHz	3.1 mV/V + 1 mV	
	300 kHz to 1 MHz	10 mV/V + 1 mV	
	(1 to 2) MHz	15 mV/V + 1 mV	
	(2 to 4) MHz	40 mV/V + 7 mV	
	(4 to 8) MHz	41 mV/V + 8 mV	
	(8 to 10) MHz	0.15 V/V + 10 mV	

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 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz 100 V to 1 kV (1 to 10) Hz (10 to 40) Hz 40 Hz to 10 kHz (10 to 30) kHz 30 to 100) kHz	 0.29 mV/V + 4 mV 0.23 mV/V + 2 mV 0.39 mV/V + 2 mV 1.2 mV/V + 2 mV 4.1 mV/V + 10 mV 15 mV/V + 10 mV 0.4 mV/V + 40 mV 0.5 mV/V + 20 mV 1 mV/V + 20 mV 1.5 mV/V + 20 mV 3 mV/V + 20 mV	HP 3458A 8.5 Digit Multimeter
AC High Voltage – Measure [1]	(1 to 84.84) kV 60 Hz	 11 mV/V	Ross VD120-6.2Y-A Voltage Divider, HP 34401A 6.5 Digit Multimeter
AC Current – Source [1]	Up to 220 µA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz 220 µA to 2.2 mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (2.2 to 22) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (22 to 220) mA (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	 0.26 mA/A + 16 nA 0.18 mA/A + 10 nA 0.12 mA/A + 8 nA 0.3 mA/A + 12 nA 1.1 mA/A + 65 nA 0.27 mA/A + 40 nA 0.17 mA/A + 35 nA 0.13 mA/A + 35 nA 0.2 mA/A + 0.11 µA 0.96 mA/A + 0.65 µA 0.26 mA/A + 0.4 µA 0.18 mA/A + 0.35 µA 0.11 mA/A + 0.35 µA 0.21 mA/A + 0.55 µA 1.1 mA/A + 5 µA 0.27 mA/A + 4 µA 0.17 mA/A + 3.5 µA 0.12 mA/A + 2.5 µA 0.21 mA/A + 3.5 µA 0.95 mA/A + 10 µA	Fluke 5730A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
AC Current – Source [1]	220 mA to 2.2 A 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	 0.26 mA/A + 35 µA 0.42 mA/A + 80 µA 6.1 mA/A + 0.16 mA	Fluke 5730A Multiproduct Calibrator
AC Current – Source [1]	(2.2 to 3) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (3 to 11) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz (11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	 1.8 mA/A + 0.1 mA 0.62 mA/A + 0.1 mA 6.2 mA/A + 1 mA 25 mA/A + 5 mA 0.64 mA/A + 2 mA 1.1 mA/A + 2 mA 30 mA/A + 2 mA 1.2 mA/A + 5 mA 1.5 mA/A + 5 mA 30 mA/A + 5 mA	Fluke 5522A Multiproduct Calibrator
AC Current Clamps – Source [1]	(20 to 150) A (45 to 65) Hz (65 to 440) Hz (150 to 1 000) A (45 to 65) Hz (65 to 440) Hz	 5.8 mA/A + 0.26 A 11 mA/A + 0.3 A 5.8 mA/A + 1 A 15 mA/A + 1.3 A	Fluke 5522A Multiproduct Calibrator, Fluke 5500A/COIL
AC Current – Measure [1]	Up to 100 µA (10 to 20) (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz 100 µA to 1 mA (10 to 20) (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	 4 mA/A + 30 nA 1.6 mA/A + 30 nA 0.66 mA/A + 30 nA 0.7 mA/A + 30 nA 4.1 mA/A + 0.2 µA 1.5 mA/A + 0.2 µA 0.61 mA/A + 0.2 µA 0.32 mA/A + 0.2 µA 0.65 mA/A + 0.2 µA 4 mA/A + 0.4 µA 5.5 mA/A + 1.5 µA	HP 3458A 8.5 Digit Multimeter

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
AC Current – Measure [1]	(1 to 10) mA		HP 3458A 8.5 Digit Multimeter
	(10 to 20)	4 mA/A + 2 µA	
	(20 to 45) Hz	1.5 mA/A + 2 µA	
	(45 to 100) Hz	0.61 mA/A + 2 µA	
	100 Hz to 5 kHz	0.31 mA/A + 2 µA	
	(5 to 20) kHz	0.63 mA/A + 2 µA	
	(20 to 50) kHz	4 mA/A + 4 µA	
	(50 to 100) kHz	5.5 mA/A + 15 µA	
	(10 to 100) mA		
	(10 to 20)	4 mA/A + 20 µA	
	(20 to 45) Hz	1.6 mA/A + 20 µA	
	(45 to 100) Hz	0.61 mA/A + 20 µA	
	100 Hz to 5 kHz	0.31 mA/A + 20 µA	
	(5 to 20) kHz	0.63 mA/A + 20 µA	
	(20 to 50) kHz	4 mA/A + 40 µA	
	(50 to 100) kHz	5.5 mA/A + 0.15 mA	
	100 mA to 1 A		
	(10 to 20)	4 mA/A + 0.2 mA	
	(20 to 45) Hz	1.7 mA/A + 0.2 mA	
	(45 to 100) Hz	0.81 mA/A + 0.2 mA	
	100 Hz to 5 kHz	1.1 mA/A + 0.2 mA	
	(5 to 20) kHz	3.2 mA/A + 0.2 mA	
	(20 to 50) kHz	12 mA/A + 0.4 mA	
Electrical Simulation of Thermocouple Indicating Devices – Source/Measure [1]	Type B		Fluke 5522A Multiproduct Calibrator
	(600 to 800) °C	0.45 °C	
	(800 to 1 000) °C	0.35 °C	
	(1 000 to 1 550) °C	0.31 °C	
	(1 550 to 1 820) °C	0.34 °C	
	Type C		
	(0 to 150) °C	0.31 °C	
	(150 to 650) °C	0.27 °C	
	(650 to 1 000) °C	0.32 °C	
	(1 000 to 1 800) °C	0.51 °C	
	(1 800 to 2 316) °C	0.85 °C	
	Type E		
	(-250 to -100) °C	0.52 °C	
	(-100 to -25) °C	0.18 °C	
	(-25 to 350) °C	0.16 °C	
	(350 to 650) °C	0.18 °C	
	(650 to 1 000) °C	0.22 °C	

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 5522A Multiproduct Calibrator
	(-210 to -100) °C	0.33 °C	
	(-100 to -30) °C	0.19 °C	
	(-30 to 150) °C	0.19 °C	
	(150 to 760) °C	0.20 °C	
	(760 to 1 200) °C	0.25 °C	
	Type K		
	(-200 to -100) °C	0.35 °C	
	(-100 to -25) °C	0.2 °C	
	(-25 to 120) °C	0.18 °C	
	(120 to 1 000) °C	0.27 °C	
	(1 000 to 1 372) °C	0.41 °C	
	Type L		
	(-200 to -100) °C	0.39 °C	
	(-100 to 800) °C	0.28 °C	
	(800 to 900) °C	0.19 °C	
	Type N		
	(-200 to -100) °C	0.41 °C	
	(-100 to -25) °C	0.24 °C	
	(-25 to 120) °C	0.21 °C	
	(120 to 410) °C	0.2 °C	
	(410 to 1 300) °C	0.28 °C	
	Type R		
	(0 to 250) °C	0.48 °C	
	(250 to 400) °C	0.37 °C	
	(400 to 1 000) °C	0.38 °C	
	(1 000 to 1 767) °C	0.47 °C	
	Type S		
	(0 to 250) °C	0.48 °C	
	(250 to 1 000) °C	0.37 °C	
	(1 000 to 1 400) °C	0.38 °C	
	(1 400 to 1 767) °C	0.47 °C	
	Type T		
	(-250 to -150) °C	0.67 °C	
	(-150 to 0) °C	0.28 °C	
	(0 to 120) °C	0.2 °C	
	(120 to 400) °C	0.17 °C	
	Type U		
	(-200 to 0) °C	0.57 °C	
	(0 to 600) °C	0.28 °C	

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Electrical Simulation of RTD Indicating Devices [1]	Pt 385, 100 Ω		Fluke 5522A Multiproduct Calibrator
	(-200 to -80) °C	0.11 °C	
	(-80 to 0) °C	0.11 °C	
	(0 to 100) °C	0.12 °C	
	(100 to 300) °C	0.14 °C	
	(300 to 400) °C	0.15 °C	
	(400 to 630) °C	0.17 °C	
	(630 to 800) °C	0.26 °C	
	Pt 3926, 100 Ω		
	(-200 to -80) °C	0.11 °C	
	(-80 to 0) °C	0.11 °C	
	(0 to 100) °C	0.12 °C	
	(100 to 300) °C	0.14 °C	
	(300 to 400) °C	0.15 °C	
	(400 to 630) °C	0.16 °C	
	Pt 3916, 100 Ω		
	(-200 to -190) °C	0.27 °C	
	(-190 to -80) °C	0.1 °C	
	(-80 to 0) °C	0.11 °C	
	(0 to 100) °C	0.12 °C	
	(100 to 260) °C	0.12 °C	
	(260 to 300) °C	0.13 °C	
	(300 to 400) °C	0.14 °C	
	(400 to 600) °C	0.15 °C	
	(600 to 630) °C	0.26 °C	
	Pt 385, 200 Ω		
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.07 °C	
	(0 to 100) °C	0.08 °C	
	(100 to 260) °C	0.09 °C	
	(260 to 300) °C	0.1 °C	
	(300 to 400) °C	0.11 °C	
	(400 to 600) °C	0.12 °C	
	(600 to 630) °C	0.24 °C	

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Electrical Simulation of RTD Indicating Devices [1]	Pt 385, 500 Ω		Fluke 5522A Multiproduct Calibrator
	(-200 to -80) °C	0.06 °C	
	(-80 to 0) °C	0.06 °C	
	(0 to 100) °C	0.06 °C	
	(100 to 260) °C	0.07 °C	
	(260 to 300) °C	0.14 °C	
	(300 to 400) °C	0.16 °C	
	(400 to 600) °C	0.17 °C	
	(600 to 630) °C	0.17 °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	0.05 °C	
	(260 to 300) °C	0.06 °C	
	(300 to 400) °C	0.07 °C	
	(400 to 600) °C	0.07 °C	
	(600 to 630) °C	0.23 °C	
	PtNi 385, 120 Ω (Ni 120)		
	(-80 to 0) °C	0.11 °C	
	(0 to 100) °C	0.09 °C	
	(100 to 260) °C	0.15 °C	
	Cu 427, 10 Ω		
	(-100 to 260) °C	0.96 °C	
Oscilloscopes [1]			Fluke 5522A/11 Multiproduct Calibrator with 1.1 GHz Scope Option
AC Voltage			
50 Ω	1 mVp-p to 6.6 Vp-p	2.9 mV/V + 40 µV	
1 MΩ	1 mVp-p to 130 Vp-p	1 mV/V + 40 µV	
DC Voltage			
50 Ω	(-6.6 to 6.6) V	3 mV/V + 40 µV	
1 MΩ	(-130 to 130) V	0.5 mV/V + 40 µV	
Leveled Sine Wave			
50 Ω	5 mVp-p to 2.5 Vp-p		
	50 kHz	22 mV/V + 0.2 mV	
	50 kHz to 100 MHz	18 mV/V + 0.1 mV	
	(100 to 300) MHz	24 mV/V + 0.1 mV	
	(300 to 600) MHz	42 mV/V + 0.1 mV	
	5 mVp-p to 3.5 Vp-p		
	600 MHz to 1.1 GHz	54 mV/V + 0.1 mV	

Electrical – DC/Low Frequency

Parameter / Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method and/or Equipment
Oscilloscopes [1,2]			Fluke 5522A/11 Multiproduct Calibrator with 1.1 GHz Scope Option
Time Markers			
Sinewave	(2 to 5) ns	2.8 µs/s	
Sine/Square-wave	10 ns	2.6 µs/s	
Spike/Square-wave	(20 to 50) ns	2.5 µs/s	
Spike. Square-wave, Pulse	100 ns to 20 ms	2.6 µs/s	
Spike, Square-wave	50 ms to 5 s	(25 + 1 000*T*) µs/s	
Capacitance – Source [1]			Fluke 5522A Multiproduct Calibrator
10 Hz to 10 kHz	(220 to 400) pF	6.7 mF/F + 10 pF	
10 Hz to 10 kHz	400 pF to 1.1 µF	5.7 mF/F + 10 pF	
10 Hz to 3 kHz	(1.1 to 3.3) nF	5.3 mF/F + 10 pF	
10 Hz to 1 kHz	(3.3 to 11) nF	3.4 mF/F + 10 pF	
10 Hz to 1 kHz	(11 to 33) nF	2.8 mF/F + 0.1 nF	
10 Hz to 1 kHz	(33 to 110) nF	3.4 mF/F + 0.1 nF	
10 Hz to 1 kHz	(110 to 330) nF	3.2 mF/F + 0.3 nF	
(10 to 600) Hz	330 nF to 1.1 µF	3.4 mF/F+ 1 nF	
(10 to 300) Hz	(1.1 to 3.3) µF	3.2 mF/F + 3 nF	
(10 to 150) Hz	(3.3 to 11) µF	3.4 mF/F+ 10 nF	
(10 to 120) Hz	(11 to 33) µF	4.7 mF/F + 30 nF	
(10 to 80) Hz	(33 to 110) µF	5 mF/F+ 0.1 µF	
(0 to 50) Hz	(110 to 330) µF	4.7 mF/F + 0.3 µF	
(0 to 20) Hz	330 µF to 1.1 mF	4.5 mF/F + 1 µF	
(0 to 6) Hz	(1.1 to 3.3) mF	4.7 mF/F + 3 µF	
(0 to 2) Hz	(3.3 to 11) mF	4.6 mF/F + 10 µF	
(0 to 0.6) Hz	(11 to 33) mF	7.7 mF/F + 30 µF	
(0 to 0.2) Hz	(33 to 110) mF	13 mF/F + 0.1 mF	

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Micrometers [1]	Up to 1 in (1 to 6) in (6 to 12) in	52 µin 89 µin 160 µin	Starrett - Weber B89 Grade 0 Gage Blocks, Long Block Set
Depth Micrometers [1]	Up to 12 in	160 µin	
Calipers [1]	Up to 6 in (6 to 12) in (12 to 24) in	70 µin 710 µin 750 µin	Starrett - Weber B89 Grade 0 Gage Blocks, Long Block Set
Test Indicators [1]	Up to 0.1 in	120 µin	Starrett - Weber B89

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dial Indicators [1]	Up to 2 in	80 µin	Grade 0 Gage Blocks, Long Block Set
Height Gages [1]	Up to 24 in	720 µin	Starrett Weber B89 Grade 0 Gage Blocks, Surface Plate
Ring Gages [2,3]	(0.25 to 1) in (1 to 12) in	(5*L* + 13) µin	Labmaster, Master Rings

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Indicating Devices [1]	(4 to 40) ozf·in (2 to 20) lbf·in (20 to 200) lbf·in (10 to 100) lbf·ft (100 to 1000) lbf·ft	2.2 % of reading + 0.005 ozf·in 0.19 % of reading + 0.002 lbf·in 0.19 % of reading + 0.02 lbf·in 0.29 % of reading + 0.01 lbf·ft 1.3 % of reading + 0.1 lbf·ft	AKO TSD 6500 Torque Calibrator
Pressure – Source [1]	(0 to 30) psig (30 to 100) psig (100 to 300) psig (300 to 1 000) psig	0.003 6 psi 0.018 % of reading 0.057 psi 0.018 % of reading	Fluke PPC4 Pressure Calibrator

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Measure [1]	(-20 to 140) °C	0.081 °C	Burns 18332 PRT, Agilent 3458A 8.5 Digit Multimeter

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency – Source [1]	10 mHz to 1.1 GHz	2.6 µHz/Hz + 5 µHz	Fluke 5522A/11 Multiproduct Calibrator with 1.1 GHz Scope Option

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 all parameters except as noted, 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; T = time in seconds.
3. This measurement capability is available in the laboratory only.
4. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-1328.

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