



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Wintronics, Inc.
50 Division Avenue
Millington, NJ 07946

Fulfills the requirements of

ISO/IEC 17025:2017

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.

Jason Stine, Vice President

Expiry Date: 26 April 2028

Certificate Number: AC-1656



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

Wintronics, Inc.

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CALIBRATION

ISO/IEC 17025 Accreditation Granted: **24 March 2026**

Certificate Number: **AC-1656**

Certificate Expiry Date: **26 April 2028**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage - Source	Up to 220 mV	9.1 $\mu\text{V/V} + 0.4 \mu\text{V}$	Comparison to Fluke 5720A Multiproduct Calibrator
	220 mV to 2.2 V	5.9 $\mu\text{V/V} + 0.7 \mu\text{V}$	
	(2 to 11) V	4.1 $\mu\text{V/V} + 2.5 \mu\text{V}$	
	(11 to 22) V	4.1 $\mu\text{V/V} + 4 \mu\text{V}$	
	(22 to 220) V	5.9 $\mu\text{V/V} + 40 \mu\text{V}$	
	220 V to 1.1 kV	8.5 $\mu\text{V/V} + 0.4 \text{mV}$	
DC Voltage - Measure	Up to 100 mV	6.2 $\mu\text{V/V} + 1 \mu\text{V}$	Comparison to Agilent 3458A Opt 002 Multimeter
	100 mV to 1 V	4.6 $\mu\text{V/V} + 1 \mu\text{V}$	
	(1 to 10) V	4.6 $\mu\text{V/V} + 2 \mu\text{V}$	
	(10 to 100) V	7.2 $\mu\text{V/V} + 30 \mu\text{V}$	
	100 V to 1.1 kV	19 $\mu\text{V/V} + 0.1 \text{mV}$	
DC Current - Source	Up to 220 μA	48 $\mu\text{A/A} + 6 \text{nA}$	Comparison to Fluke 5720A Multiproduct Calibrator
	220 μA to 2.2 mA	42 $\mu\text{A/A} + 7 \text{nA}$	
	(2.2 to 22) mA	42 $\mu\text{A/A} + 40 \text{nA}$	
	(22 to 100) mA	55 $\mu\text{A/A} + 0.7 \mu\text{A}$	
	(100 to 220) mA	65 $\mu\text{A/A} + 0.7 \mu\text{A}$	
	220 mA to 1A	0.14 mA/A + 1.2 μA	
	(1 to 2.2) A	0.15 mA/A + 1.2 μA	
	(2.2 to 11) A	7 mA/A + 0.33 mA	Comparison to Fluke 55XXA Multiproduct Calibrator



ANSI National Accreditation Board

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current - Measure	Up to 100 μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	23 μ A/A + 0.8 nA 23 μ A/A + 5 nA 23 μ A/A + 50 nA 41 μ A/A + 0.5 μ A 0.13 mA/A + 10 μ A	Comparison to Agilent 3458A Multimeter
DC Current - Measure	(1 to 10) A	0.15 mA/A	Comparison to Agilent 3458A Multimeter, Fluke Y5020 Shunt
AC Voltage - Source	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	1.1 mV/V + 4 μ V 0.89 mV/V + 4 μ V 0.91 mV/V + 4 μ V 0.94 mV/V + 4 μ V 1.6 mV/V + 5 μ V 2.5 mV/V + 10 μ V 3.6 mV/V + 20 μ V 6.3 mV/V + 20 μ V 0.33 mV/V + 4 μ V 0.21 mV/V + 4 μ V 0.21 mV/V + 4 μ V 0.27 mV/V + 4 μ V 0.55 mV/V + 5 μ V 1.3 mV/V + 10 μ V 1.7 mV/V + 20 μ V 3.2 mV/V + 20 μ V 0.28 mV/V + 12 μ V 0.12 mV/V + 7 μ V 99 μ V/V + 7 μ V 0.24 mV/V + 7 μ V 0.54 mV/V + 17 μ V 0.95 mV/V + 20 μ V 1.6 mV/V + 25 μ V 3.2 mV/V + 45 μ V	Comparison to Fluke 5720A Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Source	220 mV to 2.2 V		Comparison to Fluke 5720A Multiproduct Calibrator
	(10 to 20) Hz	0.28 mV/V + 40 μV	
	(20 to 40) Hz	0.11 mV/V + 15 μV	
	40 Hz to 20 kHz	59 μV/V + 8 μV	
	(20 to 50) kHz	91 μV/V + 10 μV	
	(50 to 100) kHz	0.13 mV/V + 30 μV	
	(100 to 300) kHz	0.49 mV/V + 80 μV	
	(300 to 500) kHz	1.2 mV/V + 0.2 mV	
	500 kHz to 1MHz	2 mV/V + 0.3 mV	
	(2.2 to 22) V		
	(10 to 20) Hz	0.28 mV/V + 0.4 mV	
	(20 to 40) Hz	0.11 mV/V + 0.15 mV	
	40 Hz to 20 kHz	59 μV/V + 50 μV	
	(20 to 50) kHz	92 μV/V + 0.1 mV	
	(50 to 100) kHz	0.12 mV/V + 0.2 mV	
	(100 to 300) kHz	0.32 mV/V + 0.6 mV	
	(300 to 500) kHz	1.2 mV/V + 2 mV	
	500 kHz to 1MHz	1.7 mV/V + 3.2 mV	
	(22 to 220) V		
	(10 to 20) Hz	0.28 mV/V + 4 mV	
	(20 to 40) Hz	0.11 mV/V + 1.5 mV	
	40 Hz to 20 kHz	67 μV/V + 0.6 mV	
	(20 to 50) kHz	96 μV/V + 1 mV	
	(50 to 100) kHz	0.18 mV/V + 2.5 mV	
(100 to 300) kHz	1 mV/V + 16 mV		
(300 to 500) kHz	5.1 mV/V + 40 mV		
500 kHz to 1MHz	8.4 mV/V + 80 mV		
(220 to 250) V			
(15 to 50) Hz	0.37 mV/V + 16 mV		
50 Hz to 1 kHz	96 μV/V + 3.5 mV		
250 V to 1.1 kV			
50 Hz to 1 kHz	96 μV/V + 3.5 mV		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Measure	(1 to 10) mV		Comparison to Agilent 3458A Multimeter
	(1 to 40) Hz	0.35 mV/V + 3 μ V	
	40 Hz to 1 kHz	0.25 mV/V + 1.1 μ V	
	(1 to 20) kHz	0.4 mV/V + 1.1 μ V	
	(20 to 50) kHz	1.2 mV/V + 1.1 μ V	
	(50 to 100) kHz	6.3 mV/V + 1.1 μ V	
	(100 to 300) kHz	50 mV/V + 2 μ V	
	(10 to 100) mV		
	(1 to 40) Hz	0.1 mV/V + 4 μ V	
	40 Hz to 1 kHz	0.1 mV/V + 2 μ V	
	(1 to 20) kHz	0.17 mV/V + 2 μ V	
	(20 to 50) kHz	0.35 mV/V + 2 μ V	
	(50 to 100) kHz	1.1 mV/V + 2 μ V	
	(100 to 300) kHz	4.6 mV/V + 10 μ V	
	300 kHz to 1 MHz	13 mV/V + 10 μ V	
	(1 to 2) MHz	18 mV/V + 10 μ V	
	100 mV to 1 V		
	(1 to 40) Hz	95 μ V/V + 40 μ V	
	40 Hz to 1 kHz	94 μ V/V + 20 μ V	
	(1 to 20) kHz	0.17 mV/V + 20 μ V	
	(20 to 50) kHz	0.35 mV/V + 20 μ V	
	(50 to 100) kHz	0.93 mV/V + 20 μ V	
	(100 to 300) kHz	3.6 mV/V + 0.1 mV	
	300 kHz to 1 MHz	12 mV/V + 0.1 mV	
(1 to 2) MHz	18 mV/V + 0.1 mV		
(1 to 10) V			
(1 to 40) Hz	95 μ V/V + 0.4 mV		
40 Hz to 1 kHz	95 μ V/V + 0.2 mV		
(1 to 20) kHz	0.17 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	4 mV/V + 1 mV		
300 kHz to 1 MHz	12 mV/V + 1 mV		
(1 to 2) MHz	18 mV/V + 1 mV		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Measure	(10 to 100) V		Comparison to Agilent 3458A Multimeter
	(1 to 40) Hz	0.24 mV/V + 4 mV	
	40 Hz to 1 kHz	0.24 mV/V + 2 mV	
	(1 to 20) kHz	0.23 mV/V + 2 mV	
	(20 to 50) kHz	0.41 mV/V + 2 mV	
	(50 to 100) kHz	1.4 mV/V + 2 mV	
	(100 to 300) kHz	4.6 mV/V + 10 mV	
	300 kHz to 1 MHz	17 mV/V + 10 mV	
	(100 to 700) V		
	(1 to 40) Hz	0.47 mV/V + 40 mV	
	40 Hz to 1 kHz	0.47 mV/V + 20 mV	
	(1 to 20) kHz	0.7 mV/V + 20 mV	
	(20 to 50) kHz	0.14 mV/V + 20 mV	
	(50 to 100) kHz	0.35 mV/V + 20 mV	
Electrical Simulation of Thermocouple Indicators	Type J		Comparison to Fluke 55XXA Multiproduct Calibrator
	(-210 to -100) °C	0.32 °C	
	(-100 to -30) °C	0.19 °C	
	(-30 to 150) °C	0.2 °C	
	(150 to 760) °C	0.23 °C	
	(760 to 1 200) °C	0.27 °C	
	Type K		
	(-200 to -100) °C	0.39 °C	
	(-100 to -25) °C	0.22 °C	
	(-25 to 120) °C	0.22 °C	
	(120 to 1 000) °C	0.31 °C	
	(1 000 to 1 372) °C	0.47 °C	
	Type T		
	(-250 to -150) °C	0.73 °C	
	(-150 to 0) °C	0.28 °C	
	(0 to 120) °C	0.19 °C	
	(120 to 400) °C	0.18 °C	
	Type R		
	(0 to 250) °C	0.88 °C	
	(250 to 400) °C	0.71 °C	
(400 to 1 000) °C	0.69 °C		
(1 000 to 1 767) °C	0.74 °C		

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators	Type S (0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C	0.79 °C 0.71 °C 0.7 °C 0.79 °C	Comparison to Fluke 55XXA Multiproduct Calibrator
AC Current - Source	(22 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 220 mA to 2.2 A 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.3 mA/A + 16 nA 0.19 mA/A + 10 nA 0.15 mA/A + 8 nA 0.38 mA/A + 12 nA 1.4 mA/A + 65 nA 0.35 mA/A + 50 nA 0.24 mA/A + 40 nA 0.17 mA/A + 40 nA 0.29 mA/A + 0.13 µA 1.5 mA/A + 0.8 µA 0.35 mA/A + 0.5 µA 0.24 mA/A + 0.4 µA 0.17 mA/A + 0.4 µA 0.29 mA/A + 0.7 µA 1.5 mA/A + 6 µA 0.35 mA/A + 5 µA 0.24 mA/A + 4 µA 0.17 mA/A + 3 µA 0.28 mA/A + 4 µA 1.5 mA/A + 12 µA 0.31 mA/A + 35 µA 0.6 mA/A + 0.1 mA 8.5 mA/A + 0.2 mA	Comparison to Fluke 5720A Multiproduct Calibrator
AC Current - Source	(2.2 to 11) A (45 to 65) Hz (65 to 500) Hz 500Hz-1kHz	0.72 mA/A + 2 mA 1.2 mA/A + 2 mA 3.8 mA/A + 2 mA	Comparison to Fluke 55XXA Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Measure	(10 to 100) μ A		Comparison to Agilent 3458A Multimeter
	(10 to 20) Hz	4.6 mA/A + 20 nA	
	(20 to 45) Hz	1.8 mA/A + 20 nA	
	45 Hz to 1 kHz	0.74 mA/A + 20 nA	
	100 μ A to 1 mA		
	(10 to 20) Hz	4.6 mA/A + 0.2 μ A	
	(20 to 45) Hz	1.7 mA/A + 0.2 μ A	
	(45 to 100) Hz	0.72 mA/A + 0.2 μ A	
	100 Hz to 5 kHz	0.41 mA/A + 0.2 μ A	
	(5 to 20) kHz	0.72 mA/A + 0.2 μ A	
	(1 to 10) mA		
	(10 to 20) Hz	4.6 mA/A + 2 μ A	
	(20 to 45) Hz	1.7 mA/A + 2 μ A	
	(45 to 100) Hz	0.72 mA/A + 2 μ A	
	100 Hz to 5 kHz	0.4 mA/A + 2 μ A	
	(5 to 20) kHz	0.72 mA/A + 2 μ A	
	(10 to 100) mA		
	(10 to 20) Hz	4.6 mA/A + 20 μ A	
	(20 to 45) Hz	1.7 mA/A + 20 μ A	
	(45 to 100) Hz	0.74 mA/A + 20 μ A	
100 Hz to 5 kHz	0.43 mA/A + 20 μ A		
(5 to 20) kHz	0.74 mA/A + 20 μ A		
100 mA to 1 A			
(10 to 20) Hz	4.6 mA/A + 0.2 mA		
(20 to 45) Hz	1.9 mA/A + 0.2 mA		
(45 to 100) Hz	0.94 mA/A + 0.2 mA		
100 Hz to 5 kHz	1.2 mA/A + 0.2 mA		
(5 to 20) kHz	3.5 mA/A + 0.2 mA		
Resistance - Source Fixed Values	1 Ω	0.12 m Ω / Ω	Comparison to Fluke 5720A Multiproduct Calibrator
	1.9 Ω	0.14 m Ω / Ω	
	10 Ω	31 $\mu\Omega$ / Ω	
	19 Ω	33 $\mu\Omega$ / Ω	
	100 Ω	13 $\mu\Omega$ / Ω	
	190 Ω	12 $\mu\Omega$ / Ω	
	1 k Ω	9.9 $\mu\Omega$ / Ω	
	1.9 k Ω	10 $\mu\Omega$ / Ω	
	10 k Ω	9.9 $\mu\Omega$ / Ω	
	19 k Ω	10 $\mu\Omega$ / Ω	
	100 k Ω	13 $\mu\Omega$ / Ω	

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance - Source Fixed Values	190 kΩ 1 MΩ 1.9 MΩ 10 MΩ 19 MΩ 100 MΩ	13 μΩ/Ω 23 μΩ/Ω 25 μΩ/Ω 49 μΩ/Ω 0.11 mΩ/Ω 0.13 mΩ/Ω	Comparison to Fluke 5720A Multiproduct Calibrator
Resistance - Source	Up to 11Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 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 330 to 1.1) MΩ (1.1 to 3.3) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	0.18 mΩ/Ω + 8 mΩ 0.14 mΩ/Ω + 15 mΩ 0.11 mΩ/Ω + 15 mΩ 0.1 mΩ/Ω + 15 mΩ 0.1 mΩ/Ω + 60 mΩ 0.11 mΩ/Ω + 60 mΩ 0.11 mΩ/Ω + 0.6 Ω 0.11 mΩ/Ω + 0.6 Ω 0.13 mΩ/Ω + 6 Ω 0.14 mΩ/Ω + 6 Ω 0.17 mΩ/Ω + 55 Ω 0.17 mΩ/Ω + 55 Ω 0.17 mΩ/Ω + 55 Ω 0.69 mΩ/Ω + 0.55 kΩ 1.2 mΩ/Ω + 0.55 kΩ 5.8 mΩ/Ω + 5.5 kΩ 5.8 mΩ/Ω + 17 kΩ	Comparison to Fluke 55XXA Multiproduct Calibrator
Resistance - Measure	100 mΩ to 10 Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1MΩ (1 to 10) MΩ (10 to 100) MΩ	17 μΩ/Ω + 50 μΩ 14 μΩ/Ω + 0.5 mΩ 12 μΩ/Ω + 0.5 mΩ 12 μΩ/Ω + 5 mΩ 12 μΩ/Ω + 50 mΩ 17 μΩ/Ω + 2 Ω 59 μΩ/Ω + 0.1 kΩ 0.59 mΩ/Ω + 1 kΩ	Comparison to Agilent 3458A Multimeter
Electrical Simulation of RTD Indicators	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 800) °C	0.08 °C 0.08 °C 0.1 °C 0.12 °C 0.13 °C 0.15 °C 0.27 °C	Comparison to Fluke 55XXA Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of RTD Indicators	Pt 3926, 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	0.08 °C 0.08 °C 0.1 °C 0.12 °C 0.12 °C 0.15 °C	Comparison to Fluke 55XXA Multiproduct Calibrator
Capacitance - Source	(330 to 500) pF 500 pF to 1.1 nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 μF (1.1 to 3.3) μF (3.3 to 11) μF (11 to 33) μF (33 to 110) μF (110 to 330) μF 330 μF to 1.1 mF	8.3 mF/F + 10 pF 6.5 mF/F + 10 pF 6.6 mF/F + 10 pF 6.3 mF/F + 10 pF 11 mF/F + 0.1 nF 3.7 mF/F + 0.1 nF 4.1 mF/F + 0.3 nF 3.7 mF/F + 1 nF 5 mF/F + 3 nF 4.8 mF/F + 10 nF 5.4 mF/F + 10 nF 6.2 mF/F + 0.1 μF 9 mF/F + 0.3 μF 13 mF/F + 0.3 μF	Comparison to Fluke 55XXA Multiproduct Calibrator
AC Watts - Source PF=1, (45 to 65) Hz	10.89 mW to 91.8 W 29.7 mW to 336.6 W 108.9 mW to 918 W 297 mW to 3.06 kW 990 mW to 4.59 kW 1 485 W to 11.220 kW	3.1 mW/W 1.8 mW/W 2.9 mW/W 1.7 mW/W 2.3 mW/W 1.7 mW/W	Comparison to Fluke 55XXA Multiproduct Calibrator
Oscilloscopes DC Signal, 50 Ω DC Signal, 1 MΩ Square Wave 50 Ω, 10 Hz to 10 kHz 1 MΩ, 10 Hz to 1 kHz 1 MΩ, 1 kHz to 10 kHz Time Marker ² (cardinal points)	± (0 to 6.6) V ± (0 to 130) V ± (1 mV to 6.6 V) p-p ± (1 mV to 130 V) p-p ± (1 mV to 130 V) p-p 2 ns to 20 ms 50 ms to 5 s	3.1 mV/V + 40 μV 1.3 mV/V + 40 μV 4.2 mV/V + 40 μV 1.6 mV/V + 40 μV 3 mV/V + 40 μV 12 μs/s 90 + 1 367 (t-0.05) μs/s	Comparison to Fluke 55XXA-SC600 Multiproduct Calibrator

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes			
Rise Time	(200 to 300) ps 10 kHz to 2 MHz	0.12 ns	Comparison to Fluke 55XXA-SC600 Multiproduct Calibrator
	(250 to 350) ps 2 MHz to 10 MHz	0.12 ns	
Leveled Sine Wave 50kHz Reference	(5 mV to 5.5 V) p-p	24 mV/V + 0.3 mV	
Flatness Amplitude (5 mV to 5.5 V) p-p relative to 50kHz	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz	20 mV/V + 0.1 mV 25 mV/V + 0.1 mV 47 mV/V + 0.1 mV	

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Micrometers ²	Up to 1 in	(60 + 4L) μin	Comparison to Grade 2 Gage Blocks
Calipers ²	Up to 6 in	(530 + 8L) μin	

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Pressure	(0 to 100) psia/g (100 to 1 000) psia/psig	0.009 5 psi 0.01 % of reading	Comparison to DHI PPC3/A700K & DHI PPC3/A7M Pressure Controller and transducers
Torque Wrenches	(4 to 50) lbf-in (30 to 400) lbf-in (80 to 1000) lbf-in (20 to 250) lbf-ft	0.35 % of reading 0.39 % of reading 0.65 % of reading 0.58 % of reading	Comparison to Torque transducer CDI 2000-400-02

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature - Source & Measure	(0 to 100) °C	0.01 °C	Comparison to Hart 7040 Bath, 5610 Probe, 2563 Display
	(100 to 300) °C	0.04 °C	Comparison to Hart 6330 Bath, 5615 Probe, 2560 Display
Infrared Temperature - Source & Measure	(-10 to 100) °C (>100 to 200) °C (>200 to 350) °C	0.26 °C 0.33 °C 0.52 °C	Comparison to Heitronics TRT3.82 Infrared Thermometer & ME20.02 Blackbody or ME30 Blackbody $\lambda = (8 \text{ to } 14) \mu\text{m}, \epsilon = 0.999 \text{ 4}$
Infrared Temperature - Source & Measure	(>350 to 800) °C (>800 to 1 000) °C	1.1 °C 1.3 °C	Comparison to Heitronics TRT3.82 Infrared Thermometers & SW11B Blackbody $\lambda = (8 \text{ to } 14) \mu\text{m}, \epsilon \geq 0.99$
Infrared Temperature - Source & Measure	(>200 to 1 000) °C	1.1 °C	Comparison to Heitronics CT18.04 Infrared Thermometer & SW11B Blackbody $\lambda = 1.6 \mu\text{m}, \epsilon \geq 0.99$
Infrared Temperature - Source & Measure	(>1 000 to 1 300) °C (>1 300 to 1 400) °C	1.6 °C 1.7 °C	Comparison to Heitronics CT18.04 Infrared Thermometer & Land R1500T Blackbody $\lambda = 1.6 \mu\text{m}, \epsilon = 0.99$

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency - Measure	Up to 100 MHz	1.5 x E ⁻¹⁰ Hz	Comparison to HP 53131A Counter, Fluke 910R Frequency Standard
Frequency - Source	10 MHz	2.8 x E ⁻¹² Hz	

Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency - Source	0.01 Hz to 2 MHz 2 MHz to 20 MHz	12 μ Hz/Hz + 14 μ Hz 12 μ Hz/Hz + 0.6R	Comparison to Fluke 55XXA Multiproduct Calibrator HP 3325B Function Generator, Fluke 910R Frequency Standard
Timers and Stop Watches	Up to 86 400 s	0.03 s	Comparison to HP 53131A Counter, Fluke 910R Frequency Standard HP 3325A Function Generator

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, t = time in seconds.



Jason Stine, Vice President

