



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

Caltronix, Inc.

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CALIBRATION

Valid to: January 14, 2014

Certificate Number: AC-1183

I. Electromagnetic - DC/Low Frequency

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Voltage - Measure	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V 100 V to 1 kV	7 μV/V + 300 nV 6 μV/V + 300 nV 6 μV/V + 500 nV 8 μV/V + 30 μV 8 μV/V + 100 μV + [(12 μV/V)(Vin/1 000) ²]	HP 3458A Opt 002	OEM and GIDEP Sourced Procedures
	(1 to 20) kV (20 to 70) kV	520 μV/V + 600 mV 520 μV/V + 6 V	Vitretek 4670A	
DC Voltage - Source	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	7.5 μV/V + 400 nV 5 μV/V + 700 nV 3.5 μV/V + 2.5 μV 3.5 μV/V + 4 μV 5 μV/V + 40 μV 6.5 μV/V + 400 μV	Fluke 5720A	
DC Current - Measure	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	35 μA/A + 40 pA 25 μA/A + 40 pA 25 μA/A + 100 pA 25 μA/A + 800 pA 25 μA/A + 5 nA 25 μA/A + 50 nA 40 μA/A + 500 nA 115 μA/A + 10 μA	HP 3458A Opt 002	
DC Current - Source	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 2.2 A to 11 A 11 A to 20.5 A	40 μA/A + 6 nA 35 μA/A + 7 nA 35 μA/A + 40 nA 45 μA/A + 700 nA 80 μA/A + 12 μA 360 μA/A + 480 μA 1000 μA/A + 750 μA	Fluke 5720A Fluke 5725A Fluke 5520A	



PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure	<p>(1 to 10) 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 300 kHz to 1 MHz (1 to 4) MHz (4 to 8) MHz</p> <p>(10 to 100) mV (1 to 40) Hz 40 Hz to 1kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz (2 to 4) MHz (4 to 8) MHz (8 to 10) MHz</p> <p>100 mV to 1 V (1 to 40) Hz 40 Hz to 1kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz (2 to 4) MHz (4 to 8) MHz (8 to 10) MHz</p> <p>(1 to 10) V (1 to 40) Hz 40 Hz to 1kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz (2 to 4) MHz (4 to 8) MHz (8 to 10) MHz</p>	<p>302 μV/V + 3 μV 202 μV/V + 1.1 μV 300 μV/V + 1.1 μV 1 mV/V + 1.1 μV 5 mV/V + 1.1 μV 40 mV/V + 2 μV 12 mV/V + 5 μV 70 mV/V + 7 μV 200 mV/V + 8 μV</p> <p>72 μV/V + 4 μV 72 μV/V + 2 μV 142 μV/V + 2 μV 302 μV/V + 2 μV 802 μV/V + 2 μV 3 mV/V + 10 μV 10 mV/V + 10 μV 15 mV/V + 10 μV 40 mV/V + 70 μV 40 mV/V + 80 μV 150 mV/V + 100 μV</p> <p>72 μV/V + 4 μV 72 μV/V + 2 μV 142 μV/V + 2 μV 302 μV/V + 2 μV 802 μV/V + 2 μV 3 mV/V + 10 μV 10 mV/V + 10 μV 15 mV/V + 100 μV 40 mV/V + 700 μV 40 mV/V + 800 μV 150 mV/V + 1 mV</p> <p>72 μV/V + 400 μV 72 μV/V + 200 μV 142 μV/V + 200 μV 302 μV/V + 200 μV 802 μV/V + 200 μV 3 mV/V + 1 mV 10 mV/V + 1 mV 15 mV/V + 1 mV 40 mV/V + 7 mV 40 mV/V + 8 mV 150 mV/V + 10 mV</p>	HP 3458A Opt 002	OEM and GIDEP Sourced Procedures

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure (cont.)	<p>(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 300 kHz to 1 MHz</p> <p>100 V to 1 kV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz</p> <p>(1.1 to 20) kV (20 to 100) Hz</p> <p>(20 to 70) kV (50 to 60) Hz</p>	<p>202 μV/V + 4 mV 202 μV/V + 2 mV 202 μV/V + 2 mV 352 μV/V + 2 mV 1.2 mV/V + 2 mV 4 mV/V + 10 mV 15 mV/V + 10 mV</p> <p>400 μV/V + 4 mV 400 μV/V + 20 mV 600 μV/V + 2 mV 1.2 mV/V + 20 mV 3 mV/V + 20 mV</p> <p>5.2 mV/V + 600 mV</p> <p>6.2 mV/V + 6 V</p>	<p>HP 3458A Opt 002</p> <p>Vitrek 4670A</p>	
AC Voltage - Source	<p>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 1 MHz</p> <p>(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 1 MHz</p> <p>(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 1 MHz</p>	<p>240 μV/V + 4 μV 90 μV/V + 4 μV 80 μV/V + 4 μV 200 μV/V + 4 μV 500 μV/V + 5 μV 1.05 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV</p> <p>240 μV/V + 4 μV 90 μV/V + 4 μV 80 μV/V + 4 μV 200 μV/V + 4 μV 500 μV/V + 5 μV 1.05 mV/V + 10 μV 1.4 mV/V + 20 μV 2.7 mV/V + 20 μV</p> <p>240 μV/V + 12 μV 90 μV/V + 7 μV 80 μV/V + 7 μV 200 μV/V + 7 μV 460 μV/V + 17 μV 900 μV/V + 20 μV 1.4 mV/V + 25 μV 2.7 mV/V + 45 μV</p>	<p>Fluke 5720A</p>	<p>OEM and GIDEP Sourced Procedures</p>



PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Source (cont.)	220 mV to 2.2 V (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 1 MHz	240 µV/V + 40 µV 90 µV/V + 15 µV 45 µV/V + 8 µV 75 µV/V + 10 µV 110 µV/V + 30 µV 420 µV/V + 80 µV 1 mV/V + 200 µV 1.7 mV/V + 300 µV	Fluke 5720A	OEM and GIDEP Sourced Procedures
	(2.2 to 22) V (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 1 MHz (22 to 220) V (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 1 MHz (22 to 220) V (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 1 MHz 220 V to 1.1 kV (15 to 50) Hz 50 Hz to 1 kHz 40 Hz to 1 kHz (1 to 20) kHz (20 to 30) kHz 750 V (30 to 50) kHz 750 V (50 to 100) kHz	240 µV/V + 400 µV 90 µV/V + 150 µV 45 µV/V + 50 µV 75 µV/V + 100 µV 100 µV/V + 200 µV 275 µV/V + 600 µV 1 mV/V + 2 mV 1.5 mV/V + 3.2 mV 240 µV/V + 4 mV 90 µV/V + 1.5 mV 52 µV/V + 600 µV 80 µV/V + 1 mV 150 µV/V + 2.5 mV 900 µV/V + 16 mV 4.4 mV/V + 40 mV 8 mV/V + 80 mV 240 µV/V + 400 µV 90 µV/V + 150 µV 90 µV/V + 4 mV 165 µV/V + 6 mV 600 µV/V + 11 mV 600 µV/V + 11 mV 2.3 mV/V + 45 mV	with Fluke 5725A	
AC Current - Measure	Up to 100 µA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz (10 to 100) mA (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	4 mA/A + 30 nA 1.5 mA/A + 30 nA 600 µA/A + 30 nA 600 µA/A + 30 nA 4 mA/A + 20 µA 1.5 mA/A + 20 µA 600 µA/A + 20 µA 300 µA/A + 20 µA	HP 3458A Opt 002	

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Resistance – Source	0 Ω 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	40 μΩ 95 μΩ/Ω 95 μΩ/Ω 23 μΩ/Ω 23 μΩ/Ω 10 μΩ/Ω 10 μΩ/Ω 8.5 μΩ/Ω 8.5 μΩ/Ω 8.5 μΩ/Ω 8.5 μΩ/Ω 11 μΩ/Ω 11 μΩ/Ω 20 μΩ/Ω 21 μΩ/Ω 40 μΩ/Ω 50 μΩ/Ω 100 μΩ/Ω	Fluke 5720A	OEM and GIDEP Sourced Procedures
Resistance - Source Fixed Values	10 m Ω 100 m Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ	6.19 μΩ/Ω 2.4 μΩ/Ω 1.26 μΩ/Ω 3.65 μΩ/Ω 2.16 μΩ/Ω 1.03 μΩ/Ω 810 nΩ/Ω 740 nΩ/Ω 117.8 μΩ/Ω	L&N 4222 L&N 4015-B L&N 4020-B L&N 8070/10 L&N 100 Gray 1000 Gray 10000 JRL MRS-106 JRL MRS-106	
Resistance – Measure	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 MΩ to 1 GΩ	18 μΩ/Ω + 50 μΩ 15 μΩ/Ω + 500 μΩ 13 μΩ/Ω + 500 μΩ 13 μΩ/Ω + 5 mΩ 13 μΩ/Ω + 50 mΩ 18 μΩ/Ω + 2 Ω 53 μΩ/Ω + 100 Ω 503 μΩ/Ω + 1 kΩ 5 mΩ/Ω + 10 kΩ	HP 3458A Opt 002	
Capacitance - Measure*	0.01 pF to 10 μF	116 μF/F	General Radio 1616 System	

<p>Capacitance - Source (10 to 1k) Hz (10 to 1k) Hz (10 to 1k) Hz (10 to 1k) Hz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz</p> <p>@ 1 kHz</p>	<p>190 pF to 3.3 nF (3.3 to 11) nF (11 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</p> <p>100 pF 1 nF 100 pF to 1.11 μF</p>	<p>5 mF/F + 10 pF 2.5 mF/F + 10 pF 2.5 mF/F + 100 pF 2.5 mF/F + 300 pF 2.5 mF/F + 1 nF 2.5 mF/F + 3 nF 2.5 mF/F + 10 nF 4 mF/F + 30 nF</p> <p>0.0006 pF 0.007 pF 580 μF/F</p>	<p>Fluke 5520A</p> <p>General Radio 1404-B General Radio 1404-A General Radio 1423A</p>	
<p>Inductance - Measure*</p>	<p>Up to 100 μH 100 μH to 10 H</p>	<p>12.1 mH/H 2.3 mH/H</p>	<p>General Radio 1632A</p>	
<p>Inductance – Source Fixed Points @ 100 Hz and 1 kHz</p>	<p>100 μH 1 mH 10 mH 100 mH 1 H</p>	<p>320 nH 1.23 μH 17.2 μH 123 μH 1.34 mH</p>	<p>General Radio 1482B General Radio 1482E General Radio 1482H General Radio 1482L General Radio 1482P</p>	

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Oscilloscopes Leveled Sine Wave 50 kHz reference (50 kHz reference) 10 Hz to 100 kHz Into 1 MΩ Into 50 Ω Pulse Rise Time 4 mV to 2.5 V p-p Time Marker into 50 Ω	5 mV to 5 V p-p 5 mV to 5.5 V p-p (50 to 100) kHz (100 to 300) kHz 300 kHz to 600 MHz (0 to 33) V p-p (0 to 6.5) V p-p 1 kHz to 10 MHz 2 ns to 20 ms 50 ms to 5 s	20 mV/V + 300 μV 15 mV/V + 100 μV 20 mV/V + 100 μV 40 mV/V + 100 μV 500 μV/V 500 μV/V 300 ns 2.5 μs/s (25 + 1 000t) μs/s	Fluke 5520A/SC600	OEM and GIDEP Sourced Procedures
Phase Angle - Source 500 mV to 3 V	65 Hz 400 Hz 1 kHz 10 kHz 30 kHz	0.1 ° 0.25 ° 0.5 ° 5 ° 10 °		
Electrical Simulation of Thermocouple Indicators				
Type B	(600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C	0.44 °C 0.34 °C 0.3 °C 0.33 °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	0.3 °C 0.26 °C 0.31 °C 0.5 °C 0.84 °C		
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C	0.5 °C 0.16 °C 0.14 °C 0.16 °C 0.21 °C		

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Electrical Simulation of Thermocouple Indicators (cont.) Type J Type K Type R Type S Type T	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Up to 250 °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C Up to 250 °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C (-250 to -150) °C (-150 to 0) °C Up to 120 °C (120 to 400) °C	0.27 °C 0.16 °C 0.14 °C 0.17 °C 0.23 °C 0.33 °C 0.18 °C 0.16 °C 0.26 °C 0.4 °C 0.57 °C 0.35 °C 0.33 °C 0.4 °C 0.47 °C 0.36 °C 0.37 °C 0.46 °C 0.63 °C 0.24 °C 0.16 °C 0.14 °C	Fluke 5520A	OEM and GIDEP Sourced Procedures
Electrical Simulation of RTD Indicators Pt 385, 100 Ω Pt 3926, 100 Ω	(-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C (-200 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.05 °C 0.07 °C 0.09 °C 0.1 °C 0.12 °C 0.23 °C 0.05 °C 0.07 °C 0.09 °C 0.1 °C 0.12 °C		



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Electrical Simulation of RTD Indicators (cont.)	Pt 3916, 100 Ω	(-200 to -190) °C	0.25 °C	Fluke 5520A OEM and GIDEP Sourced Procedures
		(-190 to -80) °C	0.04 °C	
		(-80 to 0) °C	0.05 °C	
		(0 to 100) °C	0.06 °C	
		(100 to 260) °C	0.07 °C	
		(260 to 300) °C	0.08 °C	
		(300 to 400) °C	0.09 °C	
		(400 to 600) °C	0.1 °C	
		(600 to 630) °C	0.23 °C	
	Pt 385, 200 Ω	(-200 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	0.04 °C	
		(-80 to 100) °C	0.05 °C	
		(100 to 260) °C	0.06 °C	
		(260 to 400) °C	0.08 °C	
		(400 to 600) °C	0.09 °C	
		(600 to 630) °C	0.11 °C	
Pt 385, 1000 Ω	(-200 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 600) °C	0.07 °C		
	(600 to 630) °C	0.23 °C		
PtNi 385, 120 Ω	(-80 to 100) °C	0.08 °C		
	(100 to 260) °C	0.14 °C		
Cu 427, 10 Ω	(-100 to 260) °C	0.3 °C		

II. Time and Frequency

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Frequency - Measure *	1 Hz to 10 MHz	5 X 10 ⁻¹² per 24 hours	Datum 9390-6000, ExacTime GPS	OEM and GIDEP Sourced Procedures
Frequency -Source *	10 MHz	5 X 10 ⁻¹² per 24 hours		

III. Thermodynamic

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature - Measure	Ice Point (-50 to 350) °C (350 to 600) °C	0.09 °C 0.08 °C 0.75 °C	Kaye Ice Point Reference Rosemont 162C SPRT Fluke 2625A w / RTD	OEM and GIDEP Sourced Procedures

IV. Mechanical

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Force - Compression	Up to 60 lbf (60 to 500) lbf (500 to 2 000) lbf (2 000 to 5 000) lbf (5 000 to 20 000) lbf	0.01 lbf + 0.6R 0.06 % + 0.6R 0.06 % + 0.6R 0.07 % + 0.6R 0.07 % + 0.6R	Class F Weights Tovey SSC-500 Cooper LFS230-2K Sensotec 41/0572 Lebow 3194-20K	OEM and GIDEP Sourced Procedures
Force - Tension	Up to 60 lbf (60 to 600) lbf (600 to 2 000) lbf	0.01 lbf + 0.6R 0.06 % + 0.6R 0.06 % + 0.6R	Class F Weights Lebow 3136-600 Lebow 3185-2K	
Torque Transducers	(1 to 500) ozf·in (30 to 2 000) lbf·in (150 to 1 000) lbf·ft	0.1 ozf·in + 0.6R 0.03 lbf·in + 0.6R 0.05 lbf·ft + 0.6R	Torque Wheel w/Weights Torque Arm w/Weights	
Torque Wrenches	(0.5 to 215) in·oz (1 to 5) ft·lb (5 to 100) ft·lb (100 to 1 000) ft·lb	1.17% of reading 1.18% of reading 1.21% of reading 1.16% of reading	Lebow 2120-200 ASG DTT-100 Futek TRD-305 Lebow 2133-106	

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Scales and Balances	(5 to 150) lb (150 to 500) lb	0.068 lb 0.15 lb	Class F Weights	OEM and GIDEP Sourced Procedures
	(0.001 to 500) g 500 g to 2 kg (2 to 6) kg (6 to 12) kg	0.1 mg 13 mg 25.9 mg 129 mg	Class S Weights	
Pressure - Source	(0.001 to 150) psia (4 to 204) in H ₂ O (5 to 10 000) psig	0.017 psi 0.06 % of reading 0.02 % of reading	Mensor 2101 Ametek PK104WC Pressurements Deadweight Tester	
Mass	(0.002 to 200) g 200 g to 2.1 kg (2.1 to 6.1) kg	0.58 mg 17 mg 200 mg	Class 1 Weights, Mettler B-5, Ohaus GT2100, Sartorius QT6100	

V. Dimensional

PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Gage Blocks	Up to 1 in (2 to 4) in (5 to 6) in	(3.7 + 2.3L) μin (4.7 + 2.3L) μin (11.7 + 2.3L) μin	Heidenhain ND281, Grade 0.5 Gage Blocks	OEM and GIDEP Sourced Procedures
Length Standards	Up to 6 in (7 to 12) in (13 to 18) in (19 to 24) in (25 to 30) in (31 to 36) in (37 to 42) in (43 to 48) in	(19.5 + 2.3L) μin (82.9 + 2.3L) μin (117 + 2.3L) μin (153 + 2.3L) μin (189 + 2.3L) μin (225 + 2.3L) μin (261 + 2.3L) μin (298 + 2.3L) μin	Heidenhain ND281, Grade 2 Gage Blocks w/ Gage Head / Amp, Surface Plate	
Calipers	Up to 80 in	(11.4L + 0.6R) μin	Grade 2 Gage Blocks	
Micrometers*	Up to 54 in	(11.4L + 0.6R) μin		
Cylindrical O.D.*	Up to 1 in (1 to 4) in (4 to 6) in (6 to 12) in	(6.4 + 2.3L) μin (7 + 2.3L) μin (12.5 + 2.3L) μin (17 + 2.3L) μin	Heidenhain ND281, Grades 0.5 and 1 Gage Blocks, Federal Comparator	
Cylindrical I.D.	(0.06 to 12) in	(21.3 + 2.3L) μin	Federal Comparator, Grade 1 Gage Blocks	

Thread O.D. Simple Pitch Diameter	Up to 10 in (6 to 120) TPI	$(57.9 + 2.3L) \mu\text{in}$	Bench Micrometer, Gage Blocks, Thread Wires	
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Indicators*	Up to 2 in	(11.4L+ 0.6R) μin	Grade 2 Gage Blocks	OEM and GIDEP Sourced Procedures
Height Gages*	Up to 48 in	(119 + 11.4L) μin		

Notes:

1. Calibration and Measurement Capabilities (CMCs) (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of $k=2$.
2. This laboratory's capabilities include in-laboratory and on-site calibration services at customer-designated locations. 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.
3. Capabilities denoted with an asterisk (*) cannot be performed in the field.
4. This scope of accreditation also applies to the laboratory's satellite facility at 1090 Industrial Park Road, Hornell, NY 14843 (same POC and contact phone number).
5. The CMCs listed for Electromagnetic – DC/Low Frequency and Time & Frequency do not include estimations of contributions to uncertainty caused by a "best available" unit under test.
6. The use of (L) signifies an expression of Length in inches.
7. The use of (R) refers to the Resolution of the unit under test.
8. The use of (t) signifies an expression of Time in seconds.
9. This scope is part of and must be included with the Certificate of Accreditation No. AC-1183.



Vice President