



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

**Davis Calibration**

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**CALIBRATION**

Valid to: May 24, 2013

Certificate Number: AC-1104

**I. Electromagnetic - DC/Low Frequency**

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
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	8 μV/V + 600 nV 7 μV/V + 1 μV 7 μV/V + 3.5 μV 7 μV/V + 6.5 μV 8 μV/V + 80 μV 9 μV/V + 500 μV	Fluke 5700A	OEM and GIDEP Sourced Calibration Procedures
DC Voltage - Measure	(10 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	HP 3458A Opt 002	
DC Current - Source	Up to 220 μA 220 μA to 2.2 mA (2.2 to 22) mA (22 to 100) mA (100 to 220) mA  220 mA to 1 A (1 to 2.2) A  (2.2 to 3) A (3 to 11) A (11 to 20.5) A	50 μA/A + 8 nA 50 μA/A + 8 nA 50 μA/A + 80 nA 60 μA/A + 800 nA 60 μA/A + 800 nA + (200 x I <sup>2</sup> ) μA/A 80 μA/A + 25 μA 80 μA/A + 25 μA + (10 x I <sup>2</sup> ) μA/A 380 μA/A + 40 μA 500 μA/A + 500 μA 1 mA/A + 750 μA	Fluke 5700A          5520A/SC1100	



PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Source	<p><b>Up to 2.2 mV</b></p> <p>(10 to 20) Hz</p> <p>(20 to 40) Hz</p> <p>40 Hz to 20 kHz</p> <p>(20 to 50) kHz</p> <p>(50 to 100) kHz</p> <p>(100 to 300) kHz</p> <p>(300 to 500) kHz</p> <p>500 kHz to 1 MHz</p> <p><b>(2.2 to 22) mV</b></p> <p>(10 to 20) Hz</p> <p>(20 to 40) Hz</p> <p>40 Hz to 20 kHz</p> <p>(20 to 50) kHz</p> <p>(50 to 100) kHz</p> <p>(100 to 300) kHz</p> <p>(300 to 500) kHz</p> <p>500 kHz to 1 MHz</p> <p><b>(22 to 220) mV</b></p> <p>(10 to 20) Hz</p> <p>(20 to 40) Hz</p> <p>40 Hz to 20 kHz</p> <p>(20 to 50) kHz</p> <p>(50 to 100) kHz</p> <p>(100 to 300) kHz</p> <p>(300 to 500) kHz</p> <p>500 kHz to 1 MHz</p> <p><b>220 mV to 2.2 V</b></p> <p>(10 to 20) Hz</p> <p>(20 to 40) Hz</p> <p>40 Hz to 20 kHz</p> <p>(20 to 50) kHz</p> <p>(50 to 100) kHz</p> <p>(100 to 300) kHz</p> <p>(300 to 500) kHz</p> <p>500 kHz to 1 MHz</p>	<p>550 μV/V + 4.5 μV</p> <p>210 μV/V + 4.5 μV</p> <p>105 μV/V + 4.5 μV</p> <p>370 μV/V + 4.5 μV</p> <p>850 μV/V + 7 μV</p> <p>1.1 mV/V + 13 μV</p> <p>1.7 mV/V + 25 μV</p> <p>3.4 mV/V + 25 μV</p> <p>550 μV/V + 5 μV</p> <p>210 μV/V + 5 μV</p> <p>105 μV/V + 5 μV</p> <p>370 μV/V + 5 μV</p> <p>850 μV/V + 7 μV</p> <p>1.1 mV/V + 12 μV</p> <p>1.7 mV/V + 25 μV</p> <p>3.4 mV/V + 25 μV</p> <p>550 μV/V + 13 μV</p> <p>210 μV/V + 8 μV</p> <p>105 μV/V + 8 μV</p> <p>320 μV/V + 8 μV</p> <p>850 μV/V + 25 μV</p> <p>1.1 mV/V + 25 μV</p> <p>1.7 mV/V + 35 μV</p> <p>3.4 mV/V + 80 μV</p> <p>500 μV/V + 80 μV</p> <p>160 μV/V + 25 μV</p> <p>75 μV/V + 6 μV</p> <p>120 μV/V + 16 μV</p> <p>250 μV/V + 70 μV</p> <p>430 μV/V + 130 μV</p> <p>1.05 mV/V + 350 μV</p> <p>2.2 mV/V + 850 μV</p>	Fluke 5700A	OEM and GIDEP Sourced Calibration Procedures

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Source (cont.)	<b>(2.2 to 22) V</b>		Fluke 5700A	OEM and GIDEP Sourced Calibration Procedures
	(10 to 20) Hz	500 μV/V + 800 μV		
	(20 to 40) Hz	160 μV/V + 250 μV		
	40 Hz to 20 kHz	75 μV/V + 60 μV		
	(20 to 50) kHz	120 μV/V + 160 μV		
	(50 to 100) kHz	250 μV/V + 350 μV		
	(100 to 300) kHz	500 μV/V + 1.5 mV		
	(300 to 500) kHz	1.25 mV/V + 4.3 mV		
	500 kHz to 1 MHz	2.7 mV/V + 8.5 mV		
	<b>(22 to 220) V</b>			
	(10 to 20) Hz	500 μV/V + 8 mV		
	(20 to 40) Hz	160 μV/V + 2.5 mV		
	40 Hz to 20 kHz	80 μV/V + 800 μV		
(20 to 50) kHz	220 μV/V + 3.5 mV			
(50 to 100) kHz	500 μV/V + 8 mV			
(100 to 300) kHz	1.5 mV/V + 90 mV			
(300 to 500) kHz	4.7 mV/V + 90 mV			
500 kHz to 1 MHz	11.5 mV/V + 190 mV			
<b>(220 to 250) V</b>				
(15 to 50) Hz	400 μV/V + 16 mV			
50 Hz to 1 kHz	80 μV/V + 3.5 mV			
<b>250 V to 1.1 kV</b>				
50 Hz to 1 kHz	80 μV/V + 3.5 mV			
AC Voltage - Measure	<b>Up to 10 mV</b>		HP 3458A Opt 002	
	(1 to 40) Hz	302 μV/V + 3 μV		
	40 Hz to 1 kHz	202 μV/V + 1.1 μV		
	(1 to 20) kHz	302 μV/V + 1.1 μV		
	(20 to 50) kHz	1 mV/V + 1.1 μV		
	(50 to 100) kHz	5 mV/V + 1.1 μV		
	(100 to 300) kHz	40 mV/V + 2 μV		
	300 kHz to 1MHz	12 mV/V + 5 μV		
	(1 to 4) MHz	70 mV/V + 7 μV		
(4 to 8) MHz	200 mV/V + 8 μV			

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure (cont.)	<p><b>(10 to 100) mV</b>  (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 2) MHz  (2 to 4) MHz  (4 to 8) MHz  (8 to 10) MHz</p> <p><b>100 mV to 1 V</b>  (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 2) MHz  (2 to 4) MHz  (4 to 8) MHz  (8 to 10) MHz</p> <p><b>(1 to 10) V</b>  (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 2) MHz  (2 to 4) MHz  (4 to 8) MHz  (8 to 10) MHz</p> <p><b>(10 to 100) V</b>  (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>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 + 40 µV  72 µV/V + 20 µV  142 µV/V + 20 µV  302 µV/V + 20 µV  802 µV/V + 20 µV  3 mV/V + 100 µV  10 mV/V + 100 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> <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>	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Voltage - Measure (cont.)	<b>100 V to 1 kV</b> (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	402 $\mu\text{V/V} + 40 \text{ mV}$ 402 $\mu\text{V/V} + 20 \text{ mV}$ 602 $\mu\text{V/V} + 20 \text{ mV}$ 1.2 $\text{mV/V} + 20 \text{ mV}$ 3 $\text{mV/V} + 20 \text{ mV}$	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures
DC Current - Measure	(10 to 100) $\mu\text{A}$ 100 $\mu\text{A}$ to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A (1 to 500) A	25 $\mu\text{A/A} + 800 \text{ pA}$ 25 $\mu\text{A/A} + 5 \text{ nA}$ 25 $\mu\text{A/A} + 50 \text{ nA}$ 40 $\mu\text{A/A} + 500 \text{ nA}$ 115 $\mu\text{A/A} + 10 \mu\text{A}$ 1.3 $\text{mA/A}$	HP 3458A Opt 002  Shunts and DMM	
AC Current - Source	<b>(9 to 220) <math>\mu\text{A}</math></b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>220 <math>\mu\text{A}</math> to 2.2 mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(2.2 to 22) mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(22 to 220) mA</b> (10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>220 mA to 2.2 A</b> 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	700 $\mu\text{A/A} + 25 \text{ nA}$ 350 $\mu\text{A/A} + 20 \text{ nA}$ 140 $\mu\text{A/A} + 16 \text{ nA}$ 600 $\mu\text{A/A} + 40 \text{ nA}$ 1.6 $\text{mA/A} + 80 \text{ nA}$  700 $\mu\text{A/A} + 40 \text{ nA}$ 350 $\mu\text{A/A} + 35 \text{ nA}$ 140 $\mu\text{A/A} + 35 \text{ nA}$ 600 $\mu\text{A/A} + 400 \text{ nA}$ 1.6 $\text{mA/A} + 800 \text{ nA}$  700 $\mu\text{A/A} + 400 \text{ nA}$ 350 $\mu\text{A/A} + 350 \text{ nA}$ 140 $\mu\text{A/A} + 350 \text{ nA}$ 600 $\mu\text{A/A} + 4 \mu\text{A}$ 1.6 $\text{mA/A} + 8 \mu\text{A}$  700 $\mu\text{A/A} + 4 \mu\text{A}$ 350 $\mu\text{A/A} + 3.5 \mu\text{A}$ 140 $\mu\text{A/A} + 3.5 \mu\text{A}$ 600 $\mu\text{A/A} + 40 \mu\text{A}$ 1.6 $\text{mA/A} + 80 \mu\text{A}$  650 $\mu\text{A/A} + 35 \mu\text{A}$ 750 $\mu\text{A/A} + 80 \mu\text{A}$ 8.5 $\text{mA/A} + 160 \mu\text{A}$	Fluke 5700A	

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current - Source (cont.)	<b>(2.2 to 3) A</b> (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(3 to 11) A</b> (45 to 100) Hz 100Hz to 1 kHz (1 to 5) kHz <b>(11 to 20.5) A</b> (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	1.8 mA/A + 100 $\mu$ A 600 $\mu$ A/A + 100 $\mu$ A 6 mA/A + 1 mA 25 mA/A + 5 mA  600 $\mu$ A/A + 2 mA 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 5520A/SC1100	
AC Current - Measure	<b>(5 to 100) <math>\mu</math>A</b> (10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz <b>100 <math>\mu</math>A to 1 mA</b> (10 to 20) Hz (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 <b>(1 to 10) mA</b> (10 to 20) Hz (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 <b>(10 to 100) mA</b> (10 to 20) Hz (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 1.5 mA/A + 30 nA 605 $\mu$ A/A + 30 nA 605 $\mu$ A/A + 30 nA  4 mA/A + 200 nA 1.5 mA/A + 200 nA 602 $\mu$ A/A + 200 nA 302 $\mu$ A/A + 200 nA 602 $\mu$ A/A + 200 nA 4 mA/A + 400 nA 5.5 mA/A + 1.5 $\mu$ A  4 mA/A + 2 $\mu$ A 1.5 mA/A + 2 $\mu$ A 602 $\mu$ A/A + 2 $\mu$ A 302 $\mu$ A/A + 2 $\mu$ A 602 $\mu$ A/A + 2 $\mu$ A 4 mA/A + 4 $\mu$ A 5.5 mA/A + 15 $\mu$ A  4 mA/A + 20 $\mu$ A 1.5 mA/A + 20 $\mu$ A 602 $\mu$ A/A + 20 $\mu$ A 302 $\mu$ A/A + 20 $\mu$ A 602 $\mu$ A/A + 20 $\mu$ A 4 mA/A + 40 $\mu$ A 5.5 mA/A + 150 $\mu$ A	HP 3458A Opt 002	OEM and GIDEP Sourced Calibration Procedures



PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Resistance - Measure Calibration of Resistors	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	OEM and GIDEP Sourced Calibration Procedures
Capacitance - Source 10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz (10 to 80) Hz (0 to 50) Hz (0 to 20) Hz (0 to 6) Hz (0 to 2) Hz (0 to 0.6) Hz (0 to 0.2) Hz	(190 to 400) pF 400 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 (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	5 mF/F + 10 pF 5 mF/F + 10 pF 5 mF/F + 10 pF 2.5 mF/F + 10 pF 2.5 mF/F + 100 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 4.5mF/F + 100 nF 4.5 mF/F + 300 nF 4.5 mF/F + 1 uF 4.5 mF/F + 3 uF 4.5 mF/F + 10 uF 7.5 mF/F + 30 uF 11 mF/F + 100 uF	5520A/SC1100	



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<b>Oscilloscopes</b> DC Signal into 50 Ω DC Signal into 1 MΩ  Amplitude - Square Wave 50 Ω Load  1 MΩ Load  Edge Specs into 50 Ω Rise Time Amplitude (P-P)	0 V to ± 6.6 V 0 V to ± 130 V  1 mV to 6.6 V p-p 10 Hz to 10 kHz 1 mV to 130 V p-p 10 Hz to 1 kHz (1 to 10) kHz  ≤ 300 ps 5 mV to 2.5 V	2.5 mV/V + 40 μV 500 μV/V + 40 μV  2.5 mV/V + 40 μV  1 mV/V + 40 μV  2.5 mV/V + 40 μV  +0 ps /-100 ps 20 mV/V + 200 μV	5520A/SC1100	OEM and GIDEP Sourced Calibration Procedures
Frequency of Test Signal	1 kHz to 10 MHz	2.5 μHz/Hz		
Leveled Sine Wave - Flatness Relative to 50 kHz [5 mV to 5.5 V]	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz 600 MHz to 1.1 GHz	15 mV/V + 100 μV 20 mV/V + 100 μV 40 mV/V + 100 μV 50 mV/V + 100 μV		
Time Marker into 50 Ω Spike or Square Wave Spike, Square, 20% Pulse Spike or Square Wave Square or Sine Wave Sine Wave	5 sec to 50 ms 20 ms to 100 ns  50 ns to 20 ns 10 ns 5 ns to 1 ns	(25 + 1000t) μs/s 2.5 μs/s  2.5 μs/s 2.5 μs/s 2.5 μs/s		
Wave Generator - Source Amplitude (10 Hz to 10 kHz) Square, Sine, Triangle into 1 MΩ into 50 Ω  Frequency	1.8 mV to 55 V p-p 1.8 mV to 2.5 V p-p  10 Hz to 100 kHz	30 mV/V + 100 μV 30 mV/V + 100 μV  25 μHz/Hz + 15 mHz		
Pulse Generator - Source Period (50 Hz to 5 MHz)	20 ms to 200 ns	2.5 μs/s		
DC Power - Source 33 mV to 1.02 kV	330 μA to 330 mA 330 mA to 3 A (3 to 20.5) A	230 μV/V of Watts Output 220 μV/V of Watts Output 700 μV/V of Watts Output		

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AC Power - Source PF = 1 (45 to 65) Hz	<b>(33 to 330) mV</b> (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) A 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 20.5) A <b>330 mV to 1.02 kV</b> (3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) A 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 20.5) A	1.4 mV/V of Watts Output 1 mV/V of Watts Output 1.4 mV/V of Watts Output 1 mV/V of Watts Output 1.3 mV/V of Watts Output 1.1 mV/V of Watts Output 1.3 mV/V of Watts Output 1.1 mV/V of Watts Output  1.2 mV/V of Watts Output 800 μV/V of Watts Output 1.2 mV/V of Watts Output 800 μV/V of Watts Output 1.1 mV/V of Watts Output 900 μV/V of Watts Output 1.2 mV/V of Watts Output 1 mV/V of Watts Output		
Electrical Simulation of Thermocouple Indicators Type B	(600 to 800) °C	0.44 °C	5520A/SC1100	OEM and GIDEP Sourced Calibration Procedures
	(800 to 1 000) °C	0.34 °C		
	(1 000 to 1 550) °C	0.3 °C		
	(1 550 to 1 820) °C	0.33 °C		
Type C	(0 to 150) °C	0.3 °C		
	(150 to 650) °C	0.26 °C		
	(650 to 1 000) °C	0.31 °C		
	(1 000 to 1 800) °C	0.5 °C		
	(1 800 to 2 316 ) °C	0.84 °C		
Type E	(-250 to -100) °C	0.5 °C		
	(-100 to -25) °C	0.16 °C		
	(-25 to 350) °C	0.14 °C		
	(350 to 650) °C	0.16 °C		
	(650 to 1 000) °C	0.21 °C		
Type J	(-210 to -100) °C	0.27 °C		
	(-100 to -30) °C	0.16 °C		
	(-30 to 150) °C	0.14 °C		
	(150 to 760) °C	0.17 °C		
	(760 to 1 200) °C	0.23 °C		
Type K	(-200 to -100) °C	0.33 °C		
	(-100 to -25) °C	0.18 °C		
	(-25 to 120) °C	0.16 °C		
	(120 to 1 000) °C	0.26 °C		
	(1 000 to 1 372) °C	0.4 °C		

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Type L	(-200 to -100) °C	0.37 °C	5520A/SC1100	OEM and GIDEP Sourced Calibration Procedures
Type N	(-100 to 800) °C	0.26 °C		
	(800 to 900) °C	0.17 °C		
	(-200 to -100) °C	0.4 °C		
Type R	(-100 to -25) °C	0.22 °C		
	(-25 to 120) °C	0.19 °C		
	(120 to 410) °C	0.18 °C		
	(410 to 1 300) °C	0.27 °C		
	(0 to 250) °C	0.57 °C		
Type S	(250 to 400) °C	0.35 °C		
	(400 to 1 000) °C	0.33 °C		
	(1 000 to 1 767) °C	0.4 °C		
Type T	(0 to 250) °C	0.47 °C		
	(250 to 1 000) °C	0.36 °C		
	(1 000 to 1 400) °C	0.37 °C		
Type U	(1 400 to 1 767) °C	0.46 °C		
	(-250 to -150) °C	0.63 °C		
	(-150 to 0) °C	0.24 °C		
Electrical Simulation of RTDs Pt 385 (100 Ω)	(0 to 120) °C	0.16 °C		
	(120 to 400) °C	0.14 °C		
	(-200 to 0) °C	0.56 °C		
	(0 to 600) °C	0.27 °C		
	(-200 to 0) °C	0.05 °C		
	(0 to 100) °C	0.07 °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		
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		



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Electrical Simulation of RTDs (cont.) Pt 385 (500 Ω)	(-200 to -80) °C (-80 to 100) °C (100 to 260) °C (260 to 400) °C (400 to 600) °C (600 to 630) °C	0.04 °C 0.05 °C 0.06 °C 0.08 °C 0.09 °C 0.11 °C	5520A/SC1100	OEM and GIDEP Sourced Calibration Procedures
Pt 385 (1 000 Ω)	(-200 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 600) °C (600 to 630) °C	0.03 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.23 °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	0.25 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.08 °C 0.09 °C 0.1 °C 0.23 °C		
Pt 3926 (100 Ω)	(-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		
PtNi 385 (120 Ω)	(-80 to 100) °C (100 to 260) °C	0.08 °C 0.14 °C		

## II. Time and Frequency\*

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
*Frequency Time Base	10 MHz	1 part in 10 <sup>-12</sup> Hz per day average	Zyfer 380-210 GPS Frequency Standard	OEM and GIDEP Sourced Calibration Procedures

### III. Thermodynamic

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature - Source	(-20 to 660) °C	0.062 °C	Hart 1502A w/ 5628 Probe Using Dry Well	OEM and GIDEP Sourced Calibration Procedures
Temperature - Measure	(-197 C to 660) °C	0.02 °C	Hart 1502A w/ 5628 Probe	
Humidity	(0 to 70) % RH (70 to 90) % RH (90 to 100) % RH	1.5 % 1.7 % 2.6 %	Vaisala HMP46	

### IV. Mechanical

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Pressure (High)	(10 to 16 000) psi	0.016 % of reading	Ruska S9260-4 Deadweight Tester	OEM and GIDEP Sourced Calibration Procedures
Pressure (Low)	(2 to 600) psi	0.012 % of reading	Ruska S6390-4 Deadweight Tester	
Vacuum	(-0.3 to -30) in Hg	0.02 % of reading	Ruska S6390-4 and S6410	
Torque Tools	(10 to 100) in-oz (5 to 50) in-lb (25 to 250) in-lb (100 to 1 000) in-lb (25 to 250) ft-lb (60 to 600) ft-lb	4 % of reading 0.7 % of reading 0.4 % of reading 0.5 % of reading 0.4 % of reading 1.7 % of reading	CDI Torque Tester w/transducers	
Scales and Balances	Up to 100 g (100 to 200) g (200 to 300) g (300 to 500) g (0.5 to 1) kg (1 to 2) kg (2 to 5) kg (5 to 10) kg	0.33 mg 0.46 mg 2.6 mg 2.6 mg 33 mg 33 mg 3 mg 238 mg	Class 1 Weights	

## V. Dimensional

PARAMETER/ EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Calipers Inside and Outside	Up to 20 in	(580 + 1.8L) μin	Grade 2 Gage Blocks	OEM and GIDEP Sourced Calibration Procedures
Micrometers Inside and Outside	Up to 20 in	(60 + 8L) μin		
Height Gages	Up to 26 in	25.6 μin/in	Webber 25 Reference Bar	

**Notes:**

1. Calibration and Measurement Capabilities (CMC) (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of  $k=2$ .
2. This laboratory offers calibration services at its laboratory and on-site 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 by an asterisk (\*) are laboratory-only, not available for on-site calibration activity.
4. CMC for Electromagnetic- DC/Low Frequency do not include possible contributions to uncertainty caused by a "best available" unit under test.
5. The use of (L) signifies an expression of Length in inches.
6. The use of (t) signifies an expression of Time in seconds.
7. This scope is part of and must be included with the Certificate of Accreditation No. AC-1104.




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Vice-President