



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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CALIBRATION

Valid to: May 27, 2011

Certificate Number: AC-1172

I. Dimensional

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Micrometers Outside	Up to 4 in (4 to 20) in (20 to 36) in	(44 + 16L) μin (32 + 22L) μin (32 + 22L) μin	Gage blocks & Optical Flats	Proprietary On file with AClass
Calipers Outside Jaws	Up to 6 in (6 to 40) in	(420 + 3.9L) μin (350 + 17L) μin	Gage blocks	Proprietary On file with AClass
Calipers Inside Jaws	Up to 24 in (24 to 40) in	(480 + 3.9L) μin (340 + 19L) μin	Reference bar and gauge Blocks	Proprietary On file with AClass
Calipers Depth	Up to 24 in	(530 + 1.7L) μin	Gauge blocks and surface plate.	Proprietary On file with AClass
Height Gauges	Up to 24 in (24 to 40) in	(490 + 10L) μin (260 + 19.2L) μin	Reference bar, surface plate and test indicator	Proprietary On file with AClass
Micrometers Inside Head Movement Only	Up to 1 in	(81 + 24L) μin	Gauge blocks and gauge holder	Proprietary On file with AClass
Micrometers Inside (resolution 0.0001 in) (Resolution 0.001 in)	Up to 6 in (6 to 24) in (24 to 40) in	(100 + 12L) μin (38 + 22L) μin (460 + 16.7L) μin	Reference bar and gauge blocks.	Proprietary On file with AClass
Micrometers Depth	Up to 12 in	(630 + 4.5L) μin	Gauge blocks and surface plate	Proprietary On file with AClass



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Bore Gauges (resolution 0.0001 in)	(0.1 to 0.5) in (0.5 to 3) in	(80 + 2L) μ m (150 + 19L) μ m	Master ring gauges	Proprietary On file with ACLASS
Indicators Test, Dial, Digital (resolution 0.0001 in)	Up to 2 in	(68 + 25L) μ m	Gauge blocks, calibration tester and surface plate	Proprietary On file with ACLASS
Flatness	Up to 4 in	5.5 μ m	Master Flat	Proprietary On file with ACLASS
Optical comparator Horizontal readout Vertical Readout	Up to 8 in Up to 8 in	(740 + 8.6L) μ m (760 + 8.7L) μ m	Reading Scale	Proprietary On file with ACLASS
Thickness (feeler) gauges	(0 to 0.05) in	125 μ m	Digital Micrometer	SOP-MC059R1 (GIDEP)

II. Electromagnetic DC/Low Frequency

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Volts Source	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1 000) V	1.2 μ V + 14 μ V/V 10 μ V + 6.3 μ V/V 81 μ V + 7.7 μ V/V 0.78 mV + 12 μ V/V 1.4 mV + 14 μ V/V	Multifunction Calibrator	Proprietary On file with ACLASS
DC Volts Measure	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1 000) V	1.1 μ V + 9.6 μ V/V 10 μ V + 3.8 μ V/V 3.3 μ V + 8.4 μ V/V 38 μ V + 10 μ V/V 130 μ V + 10 μ V/V	Long scale DMM	Proprietary On file with ACLASS
High DC Voltage Measure	Up to 6 kV (6 to 20) kV (20 to 35) kV	0.6 V + 0.01 V/V 2.4 V + 0.02 V/V 0.051 kV + 0.09 V/V	DMM and High Voltage Probe	SOP-MC043R2 (GIDEP)
DC Current Source	Up to 330 μ A 330 μ A to 3.3 mA (3.3 to 330) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A	61 nA + 59 μ A/A 57 nA + 73 μ A/A 0.21 μ A + 77 μ A/A 2.8 μ A + 75 μ A/A 31 μ A + 160 μ A/A 31 μ A + 290 μ A/A 31 μ A + 420 μ A/A	Multifunction Calibrator	Proprietary On file with ACLASS

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Current Measure	Up to 100 nA 100 nA to 1 μ A (1 to 10) μ A (10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	0.045 nA + 16 μ A/A 0.054 nA + 11 μ A/A 0.1 nA + 20 μ A/A 0.81 nA + 20 μ A/A 14 nA + 15 μ A/A 51 nA + 20 μ A/A 0.51 μ A + 35 μ A/A 5.5 μ A/A + 35 μ A/A	Long scale DMM	Proprietary On file with ACLASS
AC Volts Source	(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 330 mV 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	4.8 μ V + 0.62 mV/V 4.7 μ V + 0.12 mV/V 4.8 μ V + 0.15 mV/V 4.7 μ V + 0.78 mV/V 9.4 μ V + 2.7 mV/V 39 μ V + 6.2 mV/V 6.8 μ V + 0.39 mV/V 7.1 μ V + 0.11 mV/V 7.4 μ V + 0.12 mV/V 6.7 μ V + 0.27 mV/V 25 μ V + 0.62 mV/V 54 μ V + 1.6 mV/V 43 μ V + 0.23 mV/V 66 μ V + 0.11 mV/V 58 μ V + 0.14 mV/V 42 μ V + 0.23 mV/V 100 μ V + 0.54 mV/V 0.47 mV + 1.9 mV/V 0.53 mV + 0.23 mV/V 0.53 mV + 0.11 mV/V 0.49 mV + 0.19 mV/V 0.50 mV + 0.27 mV/V 1.30 mV + 0.70 mV/V 2.4 mV + 0.11 mV/V 5.5 mV + 0.15 mV/V 5.4 mV + 0.19 mV/V 5.3 mV + 0.23 mV/V 39 mV + 1.6 mV/V 8.1 mV + 0.23 mV/V 8.0 mV + 0.19 mV/V 8.2 mV + 0.23 mV/V	Multifunction Calibrator	Proprietary On file with ACLASS



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Volts Measure	<p>Up to 10 mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>(10 to 100) mV (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>100 mV to 1 V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>(1 to 10) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>(10 to 100) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p> <p>(100 to 1 000) V (1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz</p>	<p>4 μV + 0.47 mV/V 3 μV + 0.14 mV/V 3 μV + 0.22 mV/V 2.7 μV + 0.89 mV/V</p> <p>4.3 μV + 0.07 mV/V 2.1 μV + 0.07 mV/V 2.1 μV + 0.14 mV/V 2.1 μV + 0.3 mV/V</p> <p>40 μV + 0.07 mV/V 21 μV + 0.07 mV/V 21 μV + 0.14 mV/V 23 μV + 0.3 mV/V</p> <p>0.4 mV + 0.07 mV/V 0.22 mV + 0.07 mV/V 0.21 mV + 0.14 mV/V 0.21 mV + 0.3 mV/V</p> <p>4 mV + 0.2 mV/V 2 mV + 0.2 mV/V 2.1 mV + 0.2 mV/V 2.1 mV + 0.35 mV/V</p> <p>40 mV + 0.4 mV/V 20 mV + 0.4 mV/V 20 mV + 0.6 mV/V 79 mV + 1.1 mV/V</p>	Long Scale Multimeter Multifunction Calibrator	Proprietary On file with ACLASS
High AC Voltage Measure	Up to 6 kV @ 60 Hz (6 to 35) kV @ 60 Hz	0.005 kV + 0.01 V/V 0.009 kV + 0.051 V/V	DMM and High Voltage Probe	SOP-MC043R2 (GIDEP)
AC Current Source with Current Coil	<p>(10 to 16.5) A (45 to 65) Hz (65 to 440) Hz</p> <p>(16.5 to 150) A (45 to 65) Hz (65 to 440) Hz</p> <p>(150 to 1 000) A (45 to 65) Hz (65 to 440) Hz</p>	<p>33 mA + 5.5 mA/A 35 mA + 10 mA/A</p> <p>0.27 A + 5.6 mA/A 0.27 A + 10 mA/A</p> <p>1.7 A + 5.1 mA/A 1.1 A + 12 mA/A</p>	Multifunction Calibrator and Current Coil	Proprietary On file with ACLASS

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Current Source with Current Coil	(10 to 16.5) A (16.5 to 150) A (150 to 1 000) A	29 mA + 4.7 mA/A 0.21 A + 4.7 mA/A 0.99 A + 4.7 mA/A	Multifunction Calibrator and Current Coil	Proprietary On file with ACLASS
AC Current Source	(29 to 330) μA (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 330 μA 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 330 mA 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 (5 to 10) kHz	0.078 μ A + 1.6 μ A/mA 0.078 μ A + 1.2 μ A/mA 0.078 μ A + 0.97 μ A/mA 0.12 μ A + 2.3 μ A/mA 0.16 μ A + 6.2 μ A/mA 0.31 μ A + 12 μ A/mA 0.13 μ A + 1.6 μ A/mA 0.12 μ A + 0.97 μ A/mA 0.12 μ A + 0.78 μ A/mA 0.16 μ A + 1.6 μ A/mA 0.23 μ A + 3.9 μ A/mA 0.47 μ A + 7.8 μ A/mA 1.6 μ A + 1.4 mA/A 1.6 μ A + 0.7 mA/A 1.6 μ A + 0.31 mA/A 1.6 μ A + 0.62 mA/A 2.3 μ A + 1.6 mA/A 3.1 μ A + 3.1 mA/A 16 μ A + 1.4 mA/A 16 μ A + 0.7 mA/A 16 μ A + 0.31 mA/A 39 μ A + 0.78 mA/A 78 μ A + 1.6 mA/A 160 μ A + 3.1 mA/A 78 μ A + 1.4 mA/A 78 μ A + 0.47 mA/A 780 μ A + 4.7 mA/A 3.9 mA + 19 mA/A 1.9 mA + 0.45 mA/A 1.6 mA + 0.77 mA/A 1.6 mA + 23 mA/A	Multifunction Calibrator	Proprietary On file with ACLASS

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
AC Current Measure	100 μA to 1 mA (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (1 to 10) mA (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (10 to 100) mA (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz 100 mA to 1 A (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz	0.2 μ A + 1.5 mA/A 0.2 μ A + 0.6 mA/A 0.2 μ A + 0.3 mA/A 2 μ A + 4 mA/A 2 μ A + 1.5 mA/A 2 μ A + 0.6 mA/A 2 μ A + 0.3 mA/A 20 μ A + 4 mA/A 20 μ A + 1.5 mA/A 20 μ A + 0.6 mA/A 20 μ A + 0.3 μ A/A 0.2 mA + 4 mA/A 0.2 mA + 1.6 mA/A 0.2 mA + 0.6 mA/A 0.2 mA + 1 mA/A	Long Scale Multimeter	Proprietary On file with ACLASS
Resistance Source	Up to 11 Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1 k Ω (1.1 to 3.3) k Ω (3.3 to 11) k Ω (11 to 33) k Ω (33 to 110) k Ω (110 to 330) k Ω 330 k Ω to 1.1 M Ω (1.1 to 3.3) M Ω (3.3 to 11) M Ω (11 to 33) M Ω (33 to 110) M Ω (110 to 330) M Ω (330 to 1 100) M Ω	1.2 m Ω + 27 $\mu\Omega/\Omega$ 1.7 m Ω + 19 $\mu\Omega/\Omega$ 1.4 m Ω + 20 $\mu\Omega/\Omega$ 2 m Ω + 21 $\mu\Omega/\Omega$ 1.8 m Ω + 22 $\mu\Omega/\Omega$ 22 m Ω + 20 $\mu\Omega/\Omega$ 17 m Ω + 22 $\mu\Omega/\Omega$ 0.3 Ω + 19 $\mu\Omega/\Omega$ 0.52 Ω + 19 $\mu\Omega/\Omega$ 2.7 Ω + 24 $\mu\Omega/\Omega$ 3.8 Ω + 24 $\mu\Omega/\Omega$ 100 Ω + 24 $\mu\Omega/\Omega$ 0.12 k Ω + 95 $\mu\Omega/\Omega$ 3.1 k Ω + 170 $\mu\Omega/\Omega$ 3.7 k Ω + 380 $\mu\Omega/\Omega$ 81 k Ω + 2.3 m Ω/Ω 0.4 M Ω + 12 m Ω/Ω	Multifunction Calibrator	Proprietary On file with ACLASS
Resistance Measure	Up to 10 Ω (10 to 100) Ω 100 Ω to 1 k Ω (1 to 10) k Ω (10 to 100) k Ω 100 k Ω to 1 M Ω (1 to 10) M Ω (10 to 100) M Ω 100 M Ω to 1 G Ω	75 $\mu\Omega$ + 14 $\mu\Omega/\Omega$ 0.52 m Ω + 12 Ω/Ω 0.57 m Ω + 10 $\mu\Omega/\Omega$ 13 m Ω + 9.7 $\mu\Omega/\Omega$ 57 m Ω + 10 $\mu\Omega/\Omega$ 2.1 Ω + 15 $\mu\Omega/\Omega$ 120 Ω + 49 $\mu\Omega/\Omega$ 79 k Ω + 160 $\mu\Omega/\Omega$ 0.56 M Ω + 4.5 m Ω/Ω	Long Scale Multimeter	Proprietary On file with ACLASS

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Capacitance Source	10 Hz to 1 kHz Charge/Discharge rate (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF	11 pF + 1.8 pF/nF 95 pF + 1.7 pF/nF 130 pF + 1.7 pF/nF 570 pF + 1.4 pF/nF	Multifunction Calibrator	Proprietary On file with ACLASS
	10 Hz to 600 Hz Charge/Discharge rate (0.33 to 1.1) μ F	0.91 nF + 1.9 pF/nF		
	10 Hz to 300 Hz Charge/Discharge rate (1.1 to 3.3) μ F	5.7 nF + 1.4 pF/nF		
	10 Hz to 150 Hz Charge/Discharge rate (3.3 to 11) μ F	10 nF + 1.8 nF/ μ F		
	10 Hz to 120 Hz Charge/Discharge rate (11 to 33) μ F	52 nF + 2.6 nF/ μ F		
	10 Hz to 80 Hz Charge/Discharge rate (33 to 110) μ F	88 nF + 3.4 nF/ μ F		
	Up to 50 Hz Charge/Discharge rate (110 to 330) μ F Up to 50 Hz Charge/Discharge rate 330 μ F to 1 mF	0.51 μ F + 3 nF/ μ F 0.99 μ F + 3.4 nF/ μ F		



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Inductance Source Fixed	10 mH @ 100 Hz 10 mH @ 1 kHz	0.0065 mH 0.0065 mH	Standard Inductor	SOP-MC0124R1 (GIDEP)
Capacitance Source Fixed	1 nF @ 1 kHz 1µF @ 100 Hz 1µF @ 120 Hz 1µF @ 1kHz 10µF @ 100 Hz 10µF @ 120Hz 10µF @ 1kHz 100µF @ 100 Hz 100µF @ 120Hz 100µF @ 1kHz 1mF @ 100 Hz 1mF @ 120Hz 1mF @ 1kHz 10mF @ 100 Hz 10mF @ 120Hz 10mF @ 1kHz	0.28 nF 0.0015 µF 0.0015 µF 0.0015 µF 0.015 µF 0.015 µF 0.015 µF 0.15 µF 0.15 µF 0.15 µF 0.0019 mF 0.0021 mF 0.0021 mF 0.11 mF 0.11 mF 0.15 mF	Standard Capacitor	SOP-MC124R1 (GIDEP)
Resistors Source Fixed	24.9 Ω @ 1 kHz 375.6 Ω @ 1 kHz 5.97k Ω @ 1kHz 95.3 k Ω @ 1kHz	0.0069 Ω 0.051 Ω 0.00079 kΩ 0.012k Ω	Standard resistors kit	SOP-MC124R1 (GIDEP)
Frequency Source Using Calibrator's Normal Output	(0.01 to 120) Hz (120 to 1 200) Hz (1 200 to 12 000) Hz (12 to 120) kHz (120 to 1 200) kHz (1.2 to 2) MHz	0.11 mHz + 0.0012 mHz/Hz 0.48 mHz + 0.0016 mHz/Hz 0.4 mHz + 0.0019 mHz/Hz 1.2 mHz + 0.0019 mHz/Hz 1.2 mHz + 0.0019 mHz/Hz 14 mHz + 0.0019 mHz/Hz	Multifunction Calibrator	Proprietary On file with ACLASS
Frequency Source Using Calibrator's Oscilloscope Output	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz	5.1 Hz + 1.9 Hz/MHz 0.3 Hz + 1.9 Hz/MHz 0.07 Hz + 1.9 Hz/MHz		
Frequency Measure	1 Hz to 10 MHz	0.1 µHz + 0.5 mHz/Hz	Long Scale Multimeter	Proprietary On file with ACLASS
Oscilloscopes Bandwidth (Leveled Sine Wave)	50 kHz to 600 MHz	(4.8 + 0.0068 X ¹) %	Multifunction Calibrator	Proprietary On file with ACLASS



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Oscilloscopes DC Volts	0 V to 6.6 V , 50 Ω load	0.37 mV + 1.9 mV/V	Multifunction Calibrator	Proprietary On file with ACLASS
	0 V to 130 V, 1 M Ω load	0.5 mV + 0.46 mV/V		
Oscilloscopes Square Wave Amplitude	0 V to 6.6 V , 50 Ω load	0.46 mV + 0.19 mV/V	Multifunction Calibrator	Proprietary On file with ACLASS
	0 V to 130 V, 1 M Ω load	0.64 mV + 0.77 mV/V		
Oscilloscopes Rise time	3.5 ns pulse edge	40.85 ps	Multifunction calibrator	Proprietary On file with ACLASS
Oscilloscopes Time marker	(2 to 10) ns (10 to 100) ns (100 to 500) ns (1 to 20) ms (0 to 500) ms (1 to 5) s	7.8 ps + 2.9 ns/s 7.7 ps + 27 ns/s 7.7 ps + 150 ns/s 8.6 ns + 0.0046 ns/ms 44 ns + 0.0014 ns/ms 9 ms + 2.8 ms/s	Multifunction calibrator	Proprietary On file with ACLASS
Thermocouple Simulation and Measure				
J-type thermocouple	(63 to 1 473) K (-210 to 1 200) °C	0.24 K (0.24 °C)	Multifunction calibrator	Proprietary On file with ACLASS
K-type thermocouple	(73 to 1 645) K (-200 to 1 372) °C	0.25 K (0.25 °C)		
S-type thermocouple	(273 to 1 673) K (0 to 1 400) °C	0.52 K (0.52 °C)		
T-type thermocouple	(23 to 673) K (-250 to 400) °C	0.25 K (0.25 °C)		

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RTD Simulation				
Pt 385 (100 Ω)	(73 to 1 073) K (-200 to 800) °C	0.09 K (0.09 °C)	Multifunction calibrator	Proprietary On file with ACLASS
Pt 385 (1 000 Ω)	(73 to 903) K (-200 to 630) °C	0.10 K (0.10 °C)		
Pt 3916 (100 Ω)	(73 to 903) K (-200 to 630) °C	0.09 K (0.09 °C)		
Pt 3926 (100 Ω)	(73 to 903) K (-200 to 903) °C	0.09 K (0.09 °C)		
Ni 120 (120 Ω)	(193 to 533) K (-80 to 260) °C	0.13 K (0.13 °C)		
Pt 385 (200 Ω)	(73 to 903) K (-200 to 630) °C	0.10 K (0.10 °C)		
Pt 385 (500 Ω)	(73 to 903) K (-200 to 630) °C	0.10 K (0.10 °C)		

III. Thermodynamic

PARAMETER/ EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Temperature at ice point	273.15 K (0 °C)	0.033 K 0.033°C	Standard multimeter and Platinum Resistance Thermometer	Proprietary On file with ACLASS
Temperature Measurement	(73 to 933) K (-200 to 660) °C	(0.032 K + 0.000004 K/K) (0.032 °C + 0.000004 °C/°C)	Standard Multimeter and Platinum Resistance Thermometer	Proprietary On file with ACLASS
Humidity generation	(10 to 95) %RH	(0.81 %RH + 0.014 %RH/%RH)	Humidity Chamber and humidity meter	SOP-MC107R8 (GIDEP)
Humidity measure	(10 to 95) %RH	(0.7 %RH + 0.15 %RH/%RH)	Humidity chamber and humidity meter	

IV. Mechanical

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Hardness (Rockwell scale) B Scale C scale Superficial 30T scale	Low Mid High Low Mid High Low Mid High	2.0 HRB 1.6 HRB 1.8 HRB 1.3 HRC 1.3 HRC 1.1 HRC 1.6 HR 30T 1.3 HR 30T 1.4 HR 30T	Indirect comparison to hardness test blocks	Proprietary On file with ACLASS
Pressure Pneumatic	(-10 to 30) psi (30 to 50) psi (50 to 100) psi (100 to 300) psi (300 to 600) psi (600 to 1 000) psi	0.0065 psi + 0.43 µpsi/psi 0.0089 psi + 0.59 µpsi/psi 0.016 psi + 0.83 µpsi/psi 0.041 psi + 2.4 µpsi/psi 0.075 psi + 2.5 µpsi/psi 0.18 psi + 1.7 µpsi/psi	Precision Pressure Controller used as Standard Calibration Media – Nitrogen	Proprietary On file with ACLASS
Balances	Up to 410 g Up to 9 kg (20 lb)	1.6 mg + 0.016 mg/g 0.1 g + 0.092 mg/g (0.00022 lb + 0.000092 lb/lb)	Class 3 weights Class 6 weights	Proprietary On file with ACLASS
Scales	Up to 400 lb	(0.24 + 0.00021) lb/lb	Class 6 weights	Proprietary On file with ACLASS
Pressure Hydraulic Pressure cross floating	41.4 kPa to 16.5 MPa (6 to 2 400) psi 207 kPa to 82.7 MPa (30 to 12 000) psi 41.4 kPa to 16.5 MPa (6 to 2 400) psi 207 kPa to 82.7 MPa (30 to 12 000) psi 34.48 to 137.92 MPa (5 000 to 20 000) psi	220 Pa + 0.19 Pa/Pa (0.032 psi to 0.000028 psi/psi) 1.24 kPa + 0.19 Pa/Pa (0.18 psi + 0.000028 psi/psi) 282 Pa + 0.17 Pa/Pa (0.041 psi + 0.000025 psi/psi) 344 Pa + 0.25 Pa/Pa (0.05 psi + 0.000037 psi/psi) 76.8 kPa + 0.00055 Pa/kPa (11.2 psi + 0.00008 psi/psi)	Comparison to standard Dead Weight Tester Ruska 5155	Proprietary On file with ACLASS



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Torque measurements	(0.4 to 2) Nm (4 to 18) lbf in	(0.000034 Nm + 0.00056 Nm/Nm) (0.003 lbf in + 0.00056 lbf in/lbf in)	Torque Tester	Proprietary On file with ACLASS
	(2.26 to 11.29) Nm (20 to 100) lbf in	(0.0339 Nm + 0.00261 Nm/Nm) (0.3 lbf in + 0.00231 lbf in/lbf in)	Torque Transducer and torque display	
	(67 to 338.9) Nm (50 to 250) lbf ft	(0.22 Nm + 0.00727 Nm/Nm) (0.16 lbf ft + 0.005359 lbf ft/lbf)	Torque Transducer and torque display	
	(271.1 to 1355.8) Nm (200 to 1000) lbf ft	(0.46 Nm + 0.0781 Nm/Nm) (0.34 lbf ft + 0.00576 lbf ft/lbf ft)	Torque Transducer and torque display	
Tensiometers	(5 to 600) lb	(1.6 + 0.034 x ²) lb	Class 6 weights	Proprietary On file with ACLASS

Notes:

1. Best Measurement Uncertainties (Expanded Uncertainty) are based on approximately a 95% confidence interval, using a coverage of $k=2$
2. X^1 = measured value, X^2 = measured value in lbf, L represents length in inches.
3. Laboratory offers calibration services at the laboratory's own facilities and at the client or other agreed upon facilities
4. The uncertainty associated when calibrating a balance/scale is dependent on local conditions, such as the resolution of the unit being calibrated and the environment in which the balance/scale is operating. The uncertainty listed in the scope here represents the best uncertainty for a balance/scale which the organization typically calibrates in its lab. Since field (on-site) conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected in the field (on-site) than what is reported on the accredited scope.
5. y listed in the scope here represents the best uncertainty for a balance/scale which the organization typically calibrates in its lab.
6. This scope is part of and must be included with the Certificate of Accreditation No. AC-1172

Karl Greenway

Vice President

