PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

PreciseCal Services, Inc.

3044 Scherer Drive North, St. Petersburg, FL 33716

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017
& Meets the Requirements of ANSI/NCSI Z540.1-1994
& ANSI/NCSI Z540.3-2006 subclause 5.3

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué April 2017):

Dimensional, Electrical, Mass, Force and Weighing Devices, Mechanical and Thermodynamic Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
March 08, 2008	December 01, 2022	January 31, 2025

Accreditation No.:	*Certificate No.:*
59403	L22-829

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

PreciseCal Services, Inc.
3044 Scherer Drive North, St. Petersburg, FL 33716
Contact Name: Julio Cuevas Phone: 727-573-5063

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Gage Blocks[F]	1.27 mm to 101.6 mm (0.05 in to 4.0 in)	(0.139 7 µm + 0.002 68L) µm [(5.5 µin + 2.68L) µin]	Grade 0 & Grade 2 Federal 130B-24 1-PSCP-047
Outside Micrometers[FO] (50 µin resolution)	1.27 mm to 101.6 mm (0.05 in to 4 in)	(1.6 µm + 0.008 74L) µm [(63 µin + 8.74L) µin]	Gage Blocks 1-PSCP-009
Outside Micrometers[FO] (0.000 1 in resolution)	1.27 mm to 101.6 mm (0.05 in to 4 in)	(1.905 µm + 0.008 35L) µm [(75 µin + 8.35L) µin]	
	101.85 mm to 304.8 mm (4.01 in to 12 in)	(1.04 µm + 0.016 9L) µm [(41 µin + 16.9L) µin]	
Outside Micrometers[FO] (0.001 in resolution)	1.27 mm to 101.6 mm (0.05 in to 4 in)	(19.304 µm + 0.001L) µm [(760 µin + 1.02L) µin]	
	101.85 mm to 304.8 mm (4.01 in to 12 in)	(14.22 µm+ 0.021 4L) µm [(560 µin + 21.4L) µin]	
Height Gages[FO] (0.000 1 in resolution)	1.27 mm to 609.6 mm (0.05 in to 24 in)	(3.048 µm + 0.015L) µm [(120 µin + 14.7L) µin]	Gage Blocks 1-PSCP-007
Height Gages[FO] (0.001 in resolution)	1.27 mm to 609.6 mm (0.05 in to 24 in)	(14.732 µm + 0.006 8L) µm [(580 µin + 6.78L) µin]	
Calipers[FO] (0.000 5 in resolution)	1.27 mm to 1 016 mm (0.05 in to 40 in)	(15.24 µm + 0.009L) µm [(600 µin + 8.96L) µin]	Gage Blocks 1-PSCP-001
Calipers[FO] (0.001 in resolution)	1.27 mm to 1 016 mm (0.05 in to 40 in)	(17.78 µm + 0.008 4L) µm [(700 µin + 8.38L) µin]	
Indicators[FO] (20 µin resolution)	0.508 µm to 50.8 µm (20 µin to 2 000 µin)	(0.33 µm + 0.000 005L) µm [(13 µin + 0.004 81L) µin]	Gage Blocks 1-PSCP-005
Indicators[FO] (50 µin resolution)	2.5 µm to 101.6 mm (0.000 1 in to 4 in)	(1.60 µm + 0.008 7L) µm [(63 µin + 8.74L) µin]	
Indicators[FO] (0.000 1 in resolution)	2.5 µm to 101.6 mm (0.000 1 in to 4 in)	(2.057 µm + 0.007 9L) µm [(81 µin + 7.93L) µin]	
Indicators[FO] (0.000 5 in resolution)	12.7 µm to 101.6 mm (0.000 5 in to 4 in)	(16.002 µm + 0.000 8L) µm [(630 µin + 0.763L) µin]	
Indicators[FO] (0.001 in resolution)	25.4 µm to 101.6 mm (0.001 in to 4 in)	(14.73 µm + 0.001 3L) µm [(580 µin + 1.33L) µin]	
Intramics[FO] (0.000 1 in resolution)	6.985 mm to 177.8 mm (0.275 in to 7 in)	(1.75 µm + 0.021L) µm [(69 µin + 21.4L) µin]	SIP Master Rings 305M No 1508 1-PSCP-033
Pin Gages[FO]	0.254 mm to 25.4 mm (0.01 in to 1 in)	(6.096 µm + 0.003 3L) µm [(240 µin + 3.27L) µin)]	Micrometer (50µin) 1-PSCP-012
Surface Plates, Repeat[FO]	0.508 µm to 0.050 8 mm (20 µin to 0.002 in)	0.58 µm (23 µin)	Repeat-O-Meter 1-PSCP-018
Surface Plates, Flatness[FO]	304.8 mm to 2 438.4 mm (12 in to 96 in)	(0.843 µm + 0.000 8L) µm (33.19 µin + 0.792L) µin	Planekator, Mahr Indicator 1-PSCP-018
Squares[FO]	50.8 mm to 304.8 mm (2 in to 12 in)	3.3 µm (130 µin)	Standridge SQ 6x12x2 Taft-Piert 9146 SP48x72A 1-PSCP-017

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Dimensional

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OD Measurements[FO]	1.27 µm to 25.4 mm (50 µin to 1 in)	(0.74 µm + 0.000 1L) µm [(29 µin + 0.097 8L) µin]	Micrometer Mitutoyo 293-765-30 1-PSCP-034
	508.0 µm to 101.6 mm (20.0 µin to 4 in)	(0.33 µm + 0.001 3L) µm [(13 µin + 1.32L) µin]	Bench Micrometer Mitutoyo 162-102 1-PSCP-034
OD Measurements[F]	1.27 µm to 254 mm (50 µin to 10 in)	(0.31 µm + 0.003 2L) µm [(12 µin + 3.24L) µin]	Societe Genovoise 305M No 1508 1-PSCP-034
ID Measurements[F]	9.525 mm to 177.8 mm (0.375 in to 7 in)s	(0.31 µm + 0.003 2L) µm [(12 µin + 3.24L) µin]	Societe Genovoise 305M No 1508 1-PSCP-045
Dimensional Inspection Length[F]	254 µm to 914.4 mm (10 µin to 36 in)	(0.33 µm + 0.001 8L) µm [(13 µin + 1.82L) µin]	Southern Gage 90025 Amplifer 1-PSCP-034
Rulers, Steel[FO]	0.01 in to 24 in by 0.01" (1/100th) division	0.005 8 in	Gage Blocks 1-PSCP-015
	0.015 625 in to 24 in by 0.015 625" (1/64th) division	0.009 in	
	0.02 in to 24 in by 0.02" (1/50th) division	0.012 in	
	0.031 25 in to 24 in by 0.031 25" (1/32nd) division	0.018 in	
	0.062 5 in to 24 in by 0.062 5" (1/16th) division	0.036 in	
	0.1 in to 24 in by 0.1" (1/10th)	0.058 in	
	0.125 in to 24 in by 0.125 (1/8th)	0.072 in	
	0.1 mm to 300 mm by 0.1 mm	(0.051 mm + 0.000 493L) mm	
	0.5 mm to 300 mm by 0.5 mm	(0.28 mm + 0.000 203L) mm	
	1 mm to 300.0 mm by 1 mm	(0.58 mm + 0.000 109L) mm	
Visual Measuring Machines - X/Y Axis[FO]	Up to 200 mm	0.001 8 µm / mm + 1.4 µm	Glass Scale / 1-PSCP-051
Visual Measuring Machines - Z Axis[FO]	Up to 250 mm	0.002 8 µm / mm + 110 µm	Ceramic Gage Blocks / 1-PSCP-051
Dimensional Inspection - X/Y Axis[FO]	0.000 1 mm to 150 mm	0.007 1 µm / mm + 5 µm	Vision Engineering Falcon / 1-PSCP-052
	150 mm to 200 mm	0.008 1 µm / mm + 8.3 µm	Vision Engineering Swift-Duo / 1-PSCP-052
Dimensional Inspection - Z Axis[FO]	0.000 1 mm to 100 mm	0.000 75 µm / mm + 49 µm	Vision Engineering Falcon / 1-PSCP-052

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Equipment to Measure DC Voltage[FO]	5 µV to 329.999 9 mV	0.002 % of reading + 1 µV	Fluke 5522A 8-SCP-001/8-SCP-002
	330 mV to 3.299 9 V	0.001 1 % of reading + 2 µV	
	3.3 V to 32.999 9 V	0.001 2 % of reading + 20 µV	
	33 V to 329.999 V	0.001 8 % of reading + 150 µV	
	100 V to 1 000 V	0.001 8 % of reading + 1 500 µV	
Equipment to Output DC Voltage[FO]	0.5 µV to 199.99 mV	0.000 5 % of reading + 0.1 µV	Fluke 8508A 8-SCP-001/8-SCP-002
	2 µV to 1.999 9 V	0.000 35 % of reading + 0.4 µV	
	20 µV to 19.999 V	0.000 3 % of reading + 4 µV	
	200 µV to 199.99 V	0.000 45 % of reading + 40 µV	
	2 mV to 1 000 V	0.000 45 % of reading + 500 µV	
Equipment to Measure DC Current[FO]	0.3 µA to 329.999 µA	0.015 % of reading + 0.02 µA	Fluke 5522A 8-SCP-001/8-SCP-002
	330 µA to 3.299 99 mA	0.01 % of reading + 0.05 µA	
	3.30 mA to 32.999 9 mA	0.01% of reading + 0.25 µA	
	33.0 mA to 329.999 mA	0.01 % of reading + 2.5 µA	
	330 mA to 1.099 99 A	0.02 % of reading + 40 µA	
	1.1 A to 2.999 99 A	0.038 % of reading + 40 µA	
	3 A to 10.999 9 A	0.05 % of reading + 500 µA	
	11 A to 20.5 A	0.1 % of reading + 750 µA	
Equipment to Output DC Current[FO]	2 nA to 200 µA	0.001 2 % of reading + 0.4 nA	Fluke 8508A 8-SCP-001/8-SCP-002
	20 nA to 2 mA	0.001 2 % of reading + 4 nA	
	200 nA to 20 mA	0.001 4 % of reading + 40 nA	
	4 µA to 200 mA	0.004 8 % of reading + 0.8 µA	
	8 µA to 2 A	0.018 5 % of reading + 1.6 µA	
	2 mA to 20 A	0.04 % of reading + 400 µA	
Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
10 Hz to 45 Hz	1 mV to 32.999 mV	0.08 % of reading + 6 µV	
45 Hz to 10 kHz	1 mV to 32.999 mV	0.015 % of reading + 6 µV	
10 kHz to 20 kHz	1 mV to 32.999 mV	0.02 % of reading + 6 µV	
20 kHz to 50 kHz	1 mV to 32.999 mV	0.1 % of reading + 6 µV	
50 kHz to 100 kHz	1 mV to 32.999 mV	0.35 % of reading + 12 µV	
100 kHz to 500 kHz	1 mV to 32.999 mV	0.8 % of reading + 50 µV	

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Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
10 Hz to 45 Hz	33 mV to 329.999 mV	0.03 % of reading + 8 µV	
45 Hz to 10 kHz	33 mV to 329.999 mV	0.015 % of reading + 8 µV	
10 kHz to 20 kHz	33 mV to 329.999 mV	0.016 % of reading + 8 µV	
20 kHz to 50 kHz	33 mV to 329.999 mV	0.035 % of reading + 8 µV	
50 kHz to 100 kHz	33 mV to 329.999 mV	0.08 % of reading + 32 µV	
100 kHz to 500 kHz	33 mV to 329.999 mV	0.2 % of reading + 70 µV	
Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies)[FO]			
10 Hz to 45 Hz	0.33 V to 3.299 99 V	0.03 % of reading + 50 µV	
45 Hz to 10 kHz	0.33 V to 3.299 99 V	0.015 % of reading + 60 µV	
10 kHz to 20 kHz	0.33 V to 3.299 99 V	0.019 % of reading + 60 µV	
20 kHz to 50 kHz	0.33 V to 3.299 99 V	0.03 % of reading + 50 µV	
50 kHz to 100 kHz	0.33 V to 3.299 99 V	0.07 % of reading + 125 µV	
100 kHz to 500 kHz	0.33 V to 3.299 99 V	0.24 % of reading + 600 µV	
Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies)[FO]			
10 Hz to 45 Hz	3.3 V to 32.999 9 V	0.03 % of reading + 650 µV	
45 Hz to 10 kHz	3.3 V to 32.999 9 V	0.015 % of reading + 600 µV	
10 kHz to 20 kHz	3.3 V to 32.999 9 V	0.024 % of reading + 600 µV	
20 kHz to 50 kHz	3.3 V to 32.999 9 V	0.035 % of reading + 600 µV	
50 kHz to 100 kHz	3.3 V to 32.999 9 V	0.09 % of reading + 1.6 mV	
Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies) [FO]			
45 Hz to 1 kHz	33 V to 329.999 V	0.019 % of reading + 2 mV	
1 kHz to 10 kHz	33 V to 329.999 V	0.02 % of reading + 6 mV	
10 kHz to 20 kHz	33 V to 329.999 V	0.025 % of reading + 6 mV	
20 kHz to 50 kHz	33 V to 329.999 V	0.03 % of reading + 6 mV	
50 kHz to 100 kHz	33 V to 329.999 V	0.2 % of reading + 50 mV	
Equipment to Measure AC Voltage – Sine Wave (at the listed frequencies)[FO]			
45 Hz to 1 kHz	330 V to 1 020 V	0.03 % of reading + 10 mV	
1 kHz to 5 kHz	330 V to 1 020 V	0.025 % of reading + 10 mV	
5 kHz to 10 kHz	330 V to 1 020 V	0.03 % of reading + 10 mV	

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Equipment to Measure AC Voltage (Sine Wave) Extended Bandwidth (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
0.01 Hz to 9.99 Hz	1 mV to 33 mV	5 % of reading + 0.165 mV	
0.01 Hz to 9.99 Hz	34 mV to 330 mV	5 % of reading + 1.65 mV	
0.01 Hz to 9.99 Hz	0.4 V to 33 V	5 % of reading + 0.165 V	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			Fluke 8508A 8-SCP-001/8-SCP-002
1 Hz to 10 Hz	0.1 µV to 199.99 mV	0.017 % of reading + 14 µV	
10 Hz to 40 Hz	0.1 µV to 199.99 mV	0.014 % of reading + 4 µV	
40 Hz to 100 Hz	0.1 µV to 199.99 mV	0.012 % of reading + 4 µV	
100 Hz to 2 kHz	0.1 µV to 199.99 mV	0.011 % of reading + 2 µV	
2 kHz to 10 kHz	0.1 µV to 199.99 mV	0.014 % of reading + 4 µV	
10 kHz to 30 kHz	0.1 µV to 199.99 mV	0.034 % of reading + 8 µV	
30 kHz to 100 kHz	0.1 µV to 199.99 mV	0.077 % of reading + 20 µV	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			
1 Hz to 10 Hz	1 µV to 1.999 9 V	0.015 % of reading + 0.1 mV	
10 Hz to 40 Hz	1 µV to 1.999 9 V	0.012 % of reading + 20 µV	
40 Hz to 2 kHz	1 µV to 1.999 9 V	0.009 % of reading + 20 µV	
2 kHz to 10 kHz	1 µV to 1.999 9 V	0.011 % of reading + 20 µV	
10 kHz to 30 kHz	1 µV to 1.999 9 V	0.022 % of reading + 40 µV	
30 kHz to 100 kHz	1 µV to 1.999 9 V	0.057 % of reading + 0.2 mV	
100 kHz to 300 kHz	1 µV to 1.999 9 V	0.3 % of reading + 2 mV	
300 kHz to 1 MHz	1 µV to 1.999 9 V	1 % of reading + 20 mV	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			
1 Hz to 10 Hz	10 µV to 19.999 V	0.015 % of reading + 1.2 mV	
10 Hz to 40 Hz	10 µV to 19.999 V	0.012 % of reading + 0.2 mV	
40 Hz to 2 kHz	10 µV to 19.999 V	0.009 % of reading + 0.2 mV	
2 kHz to 10 kHz	10 µV to 19.999 V	0.011 % of reading + 0.2 mV	
10 kHz to 30 kHz	10 µV to 19.999 V	0.022 % of reading + 0.4 mV	
30 kHz to 100 kHz	10 µV to 19.999 V	0.057 % of reading + 2 mV	
100 kHz to 300 kHz	10 µV to 19.999 V	0.3 % of reading + 20 mV	
300 kHz to 1 MHz	10 µV to 19.999 V	1 % of reading + 200 mV	

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Equipment to Output AC Voltage (at the listed frequencies)[FO]			Fluke 8508A 8-SCP-001/8-SCP-002
1 Hz to 10 Hz	100 µV to 199.99 V	0.015 % of reading + 12 mV	
10 Hz to 40 Hz	100 µV to 199.99 V	0.012 % of reading + 2 mV	
40 Hz to 2 kHz	100 µV to 199.99 V	0.009 % of reading + 2 mV	
2 kHz to 10 kHz	100 µV to 199.99 V	0.011 % of reading + 2 mV	
10 kHz to 30 kHz	100 µV to 199.99 V	0.022 % of reading + 4 mV	
30 kHz to 100 kHz	100 µV to 199.99 V	0.057 % of reading + 20 mV	
100 kHz to 300 kHz	100 µV to 199.99 V	0.3 % of reading + 200 mV	
300 kHz to 1 MHz	100 µV to 199.99 V	1 % of reading + 2 V	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			
1 Hz to 10 Hz	1 mV to 300 V	0.015 % of reading + 70 mV	
1 Hz to 10 Hz	301 V to 1 050 V	0.015 % of reading + 89.6 mV	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			
10 Hz to 10 kHz	1 mV to 300 V	0.012 % of reading + 20 mV	
10 Hz to 10 kHz	301 V to 1 050 V	0.012 % of reading + 39.6 mV	
10 kHz to 30 kHz	1 mV to 300 V	0.023 % of reading + 40 mV	
10 kHz to 30 kHz	301 V to 1 050 V	0.023 % of reading + 10.04 V	
Equipment to Output AC Voltage (at the listed frequencies)[FO]			
30 kHz to 100 kHz	1 mV to 300 V	0.058 % of reading + 200 mV	
30 kHz to 100 kHz	301 V to 1 050 V	0.058 % of reading + 1.38 V	
Equipment to Measure AC Current – Sine Wave (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
10 Hz to 20 Hz	29 µA to 329.999 µA	0.2 % of reading + 0.1 µA	
20 Hz to 45 Hz	29 µA to 329.999 µA	0.15 % of reading + 0.1 µA	
45 Hz to 1 kHz	29 µA to 329.999 µA	0.13 % of reading + 0.1 µA	
1 kHz to 5 kHz	29 µA to 329.999 µA	0.3 % of reading + 0.15 µA	
5 kHz to 10 kHz	29 µA to 329.999 µA	0.8 % of reading + 0.2 µA	
10 kHz to 30 kHz	29 µA to 329.999 µA	1.6 % of reading + 0.4 µA	

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Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
10 Hz to 100 Hz	29 µA to 329.999 µA	0.25 % of reading + 0.2 µA	
100 Hz to 1 kHz	29 µA to 329.999 µA	0.6 % of reading + 0.5 µA	
Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies)[FO]			
10 Hz to 100 Hz	0.33 mA to 3.299 99 mA	0.25 % of reading + 0.3 µA	
100 Hz to 1 kHz	0.33 mA to 3.299 99 mA	0.6 % of Reading + 0.8 µA	
Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies) [FO]			
10 Hz to 100 Hz	3.3 mA to 32.999 9 mA	0.08 % of reading + 4 µA	
100 Hz to 1 kHz	3.3 mA to 32.999 9 mA	0.2 % of reading + 10 µA	
Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies)[FO]			
10 Hz to 100 Hz	33 mA to 329.999 mA	0.08 % of reading + 40 µA	
100 Hz to 1 kHz	33 mA to 329.999 mA	0.2 % of reading + 100 µA	
Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies)[FO]			
10 Hz to 100 Hz	0.33 A to 2.999 99 A	0.12 % of reading + 200 µA	
100 Hz to 400 Hz	0.33 A to 2.999 99 A	0.3 % of reading + 1 mA	
Equipment to Measure AC Current- Sine Wave (LCOMP) (at the listed frequencies)[FO]			
10 Hz to 100 Hz	3 A to 20.5 A	0.12 % of reading + 2 mA	
100 Hz to 1 kHz	3 A to 20.5 A	1 % of reading + 5 mA	
Equipment to Measure AC Current (at the listed frequencies)[FO]			
10 Hz to 20 Hz	0.33 mA to 3.299 99 mA	0.2 % of reading + 0.15 µA	
20 Hz to 45 Hz	0.33 mA to 3.299 99 mA	0.13 % of reading + 0.15 µA	
45 Hz to 1 kHz	0.33 mA to 3.299 99 mA	0.1 % of reading + 0.15 µA	
1 kHz to 5 kHz	0.33 mA to 3.299 99 mA	0.2 % of reading + 0.2 µA	
5 kHz to 10 kHz	0.33 mA to 3.299 99 mA	0.5 % of reading + 0.3 µA	
10 kHz to 30 kHz	0.33 mA to 3.299 99 mA	1 % of reading + 0.6 µA	

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Equipment to Measure AC Current (at the listed frequencies)[FO]			Fluke 5522A 8-SCP-001/8-SCP-002
10 Hz to 20 Hz	3.3 mA to 32.999 9 mA	0.18 % of reading + 2 µA	
20 Hz to 45 Hz	3.3 mA to 32.999 9 mA	0.09 % of reading + 2 µA	
45 Hz to 1 kHz	3.3 mA to 32.999 9 mA	0.04 % of reading + 2 µA	
1 kHz to 5 kHz	3.3 mA to 32.999 9 mA	0.08 % of reading + 2 µA	
5 kHz to 10 kHz	3.3 mA to 32.999 9 mA	0.2 % of reading + 3 µA	
10 kHz to 30 kHz	3.3 mA to 32.999 9 mA	0.4 % of reading + 4 µA	
Equipment to Measure AC Current (at the listed frequencies)[FO]			
10 Hz to 20 Hz	33 mA to 329.999 mA	0.18 % of reading + 20 µA	
20 Hz to 45 Hz	33 mA to 329.999 mA	0.09 % of reading + 20 µA	
45 Hz to 1 kHz	33 mA to 329.999 mA	0.04 % of reading + 20 µA	
1 kHz to 5 kHz	33 mA to 329.999 mA	0.1 % of reading + 50 µA	
5 kHz to 10 kHz	33 mA to 329.999 mA	0.2 % of reading + 100 µA	
10 kHz to 30 kHz	33 mA to 329.999 mA	0.4 % of reading + 200 µA	
Equipment to Measure AC Current (at the listed frequencies)[FO]			
10 Hz to 45 Hz	0.33 A to 1.099 99 A	0.18 % of reading + 100 µA	
45 Hz to 1 kHz	0.33 A to 1.099 99 A	0.05 % of reading + 100 µA	
1 kHz to 5 kHz	0.33 A to 1.099 99 A	0.6 % of reading + 1 mA	
5 kHz to 10 kHz	0.33 A to 1.099 99 A	2.5 % of reading + 5 mA	
Equipment to Measure AC Current (at the listed frequencies)[FO]			
10 Hz to 45 Hz	1.1 A to 2.999 99 A	0.18 % of reading + 100 µA	
45 Hz to 1 kHz	1.1 A to 2.999 99 A	0.06 % of reading + 100 µA	
1 kHz to 5 kHz	1.1 A to 2.999 99 A	0.6 % of reading + 1 mA	
5 kHz to 10 kHz	1.1 A to 2.999 99 A	2.5 % of reading + 5 mA	
Equipment to Measure AC Current (at the listed frequencies) [FO]			
45 Hz to 100 Hz	3 A to 10.999 9 A	0.06 % of reading + 2 mA	
100 Hz to 1 kHz	3 A to 10.999 9 A	0.1 % of reading + 2 mA	
1 kHz to 5 kHz	3 A to 10.999 9 A	3 % of reading + 2 mA	
Equipment to Measure AC Current (at the listed frequencies) [FO]			
45 Hz to 100 Hz	11 A to 20.5 A	0.12 % of reading + 5 mA	
100 Hz to 1 kHz	11 A to 20.5 A	0.15 % of reading + 5 mA	
1 kHz to 5 kHz	11 A to 20.5 A	3 % of reading + 5 mA	

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PreciseCal Services, Inc.
3044 Scherer Drive North, St. Petersburg, FL 33716
Contact Name: Julio Cuevas Phone: 727-573-5063

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output AC Current (at the listed frequencies)[FO]			Fluke 8508A 8-SCP-001/8-SCP-002
1 Hz to 10 kHz	0.1 nA to 199.99 µA	0.05 % of reading + 20 nA	
10 kHz to 30 kHz	0.1 nA to 199.99 µA	0.071 % of reading + 20 nA	
30 kHz to 100 kHz	0.1 nA to 199.99 µA	0.4 % of reading + 20 nA	
1 Hz to 10 kHz	1 nA to 1.999 9 mA	0.031 % of reading + 200 nA	
10 kHz to 30 kHz	1 nA to 1.999 9 mA	0.071 % of reading + 200 nA	
30 kHz to 100 kHz	1 nA to 1.999 9 mA	0.4 % of reading + 200 nA	
1 Hz to 10 kHz	1 nA to 19.999 mA	0.031 % of reading + 2 µA	
10 kHz to 30 kHz	1 nA to 19.999 mA	0.071 % of reading + 2 µA	
30 kHz to 100 kHz	1 nA to 19.999 mA	0.4 % of reading + 2 µA	
Equipment to Output AC Current (at the listed frequencies)[FO]			
10 Hz to 10 kHz	0.1 µA to 199.99 mA	0.031 % of reading + 20 µA	
10 kHz to 30 kHz	0.1 µA to 199.99 mA	0.029 % of reading + 20 µA	
30 kHz to 100 kHz	0.1 µA to 199.99 mA	0.063 % of reading + 20 µA	
Equipment to Output AC Current (at the listed frequencies) [FO]			
10 Hz to 2 kHz	1 µA to 1.999 9 A	0.062 % of reading + 200 µA	
2 kHz to 10 kHz	1 µA to 1.999 9 A	0.074 % of reading + 200 µA	
10 kHz to 30 kHz	1 µA to 1.999 9 A	0.3 % of reading + 200 µA	
Equipment to Output AC Current (at the listed frequencies)[FO]			
10 Hz to 2 kHz	10 µA to 19.999 A	0.082 % of reading + 2 mA	
2 kHz to 10 kHz	10 µA to 19.999 A	0.25 % of reading + 2 mA	
Equipment to Measure Resistance[FO]	0.1 mΩ to 10.999 9 Ω	0.004 % of reading + 0.001 Ω	Fluke 5522A 8-SCP-001/8-SCP-002
	11 Ω to 32.999 9 Ω	0.003 % of reading + 0.001 5 Ω	
	33 Ω to 109.999 9 Ω	0.002 8 % of reading + 0.001 4 Ω	
	110 Ω to 329.999 9 Ω	0.002 8 % of reading + 0.002 Ω	
	0.33 kΩ to 1.099 999 kΩ	0.002 8 % of reading + 0.002 Ω	
	1.1 kΩ to 3.299 999 9 kΩ	0.002 8 % of reading + 0.02 Ω	
	3.3 kΩ to 10.999 99 kΩ	0.002 8 % of reading + 0.02 Ω	
	11 kΩ to 32.999 99 kΩ	0.002 8 % of reading + 0.2 Ω	
	33 kΩ to 109.999 9 kΩ	0.002 8 % of reading + 0.2 Ω	
	110 kΩ to 329.999 9 kΩ	0.003 2 % of reading + 2 Ω	

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Equipment to Measure Resistance[FO]	0.33 MΩ to 1.099 999 MΩ	0.003 2 % of reading + 2 Ω	Fluke 5522A 8-SCP-001/ 8-SCP-002
	1.1 MΩ to 3.299 99 MΩ	0.006 % of reading + 30 Ω	
	3.3 MΩ to 10.999 99 MΩ	0.013 % of reading + 50 Ω	
	11 MΩ to 32.999 99 MΩ	0.025 % of reading + 2 500 Ω	
	33 MΩ to 109.999 9 MΩ	0.05 % of reading + 3 000 Ω	
	110 MΩ to 329.999 9 MΩ	0.3 % of reading + 0.1 MΩ	
	330 MΩ to 1 100 MΩ	1.5 % of reading + 0.5 MΩ	
Equipment to Output Resistance[FO]	20 µΩ to 1.999 9 Ω	0.001 7 % of reading + 4 µΩ	Fluke 8508A 8-SCP-001/ 8-SCP-002
	70 µΩ to 19.999 Ω	0.001 % of reading + 1.4 µΩ	
	0.3 mΩ to 199.99 Ω	0.000 8 % of reading + 60 µΩ	
	3 mΩ to 1.999 9 kΩ	0.000 8 % of reading + 0.6 mΩ	
	30 mΩ to 19.999 kΩ	0.000 8 % of reading + 6 mΩ	
	300 mΩ to 199.99 kΩ	0.000 8 % of reading + 60 mΩ	
	5 Ω to 1.999 9 MΩ	0.000 9 % of reading + 1 Ω	
	500 Ω to 19.999 MΩ	0.002 % of reading + 100 Ω	
	50 kΩ to 199.99 MΩ	0.012 % of reading + 10 kΩ	
	5 MΩ to 1.999 9 GΩ	0.151 % of reading + 1 MΩ	
Equipment to Output Resistance High Voltage[FO]	50 Ω to 19.999 MΩ	0.001 7 % of reading + 10 Ω	
	5 kΩ to 199.99 MΩ	0.006 5 % of reading + 1 kΩ	
	500 kΩ to 1.999 9 GΩ	0.018 % of reading + 100 kΩ	
	50 MΩ to 19.999 GΩ	0.151 % of reading + 10 MΩ	

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Equipment to Measure Capacitance[FO]	0.19 nF to 3.299 9 nF	0.5 % of reading + 0.01 nF	Fluke 5522A 8-SCP-001/ 8-SCP-002
	3.3 nF to 10.999 9 nF	0.25 % of reading + 0.01 nF	
	11 nF to 32.999 9 nF	0.25 % of reading + 0.1 nF	
	33 nF to 109.999 nF	0.25 % of reading + 0.1 nF	
	110 nF to 329.999 nF	0.25 % of reading + 0.3 nF	
	0.33 µF to 1.099 99 µF	0.25 % of reading + 1 nF	
	1.1 µF to 3.299 99 µF	0.25 % of reading + 3 nF	
	3.3 µF to 10.999 9 µF	0.25 % of reading + 10 nF	
	11 µF to 32.999 9 µF	0.4 % of reading + 30 nF	
	33 µF to 109.999 µF	0.45 % of reading + 100 nF	
	110 µF to 329.999 µF	0.45 % of reading + 300 nF	
	0.33 mF to 1.099 99 mF	0.45 % of reading + 1 µF	
	1.1 mF to 3.299 99 mF	0.45 % of reading + 3 µF	
	3.3 mF to 10.999 9 mF	0.45 % of reading + 10 µF	
	11 mF to 32.999 9 mF	0.75 % of reading + 30 µF	
	33 mF to 110 mF	1.1 % of reading + 100 µF	
Temperature calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	-250 °C to -100 °C	0.5 °C	Electrical Simulation of Thermocouple Output Fluke 5522A 3-PSCP-001
	-100 °C to -25 °C	0.16 °C	
	-25 °C to 350 °C	0.14 °C	
	350 °C to 650 °C	0.16 °C	
	650 °C to 1 000 °C	0.21 °C	
Temperature calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to -100 °C	0.27 °C	
	-100 °C to -30 °C	0.16 °C	
	-30 °C to 150 °C	0.14 °C	
	150 °C to 760 °C	0.17 °C	
	760 °C to 1 200 °C	0.23 °C	
Temperature calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-200 °C to -100 °C	0.33 °C	
	-100 °C to -25 °C	0.18 °C	
	-25 °C to 120 °C	0.16 °C	
	120 °C to 1 000 °C	0.26 °C	
	1 000 °C to 1 372 °C	0.4 °C	

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Temperature calibration, Indication and Control Equipment used with Thermocouple Type R^{FO}	0 °C to 250 °C	0.57 °C	Electrical Simulation of Thermocouple Output Fluke 5522A 3-PSCP-001
	250 °C to 400 °C	0.35 °C	
	400 °C to 1 000 °C	0.33 °C	
	1 000 °C to 1 767 °C	0.4 °C	
Temperature calibration, Indication and Control Equipment used with Thermocouple Type S^{FO}	0 °C to 250 °C	0.47 °C	
	250 °C to 1 000 °C	0.36 °C	
	1 000 °C to 1 400 °C	0.37 °C	
	1 400 °C to 1 767 °C	0.46 °C	
Temperature calibration, Indication and Control Equipment used with Thermocouple Type T^{FO}	-250 °C to -150 °C	0.63 °C	
	-150 °C to 0 °C	0.24 °C	
	0 °C to 120 °C	0.16 °C	
	120 °C to 400 °C	0.14 °C	
Temperature calibration, Indication and Control Equipment used with RTD Type Pt 3926, 100 Ω^{FO}	-200 °C to -80 °C	0.05 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
Temperature calibration, Indication and Control Equipment used with RTD Type Pt 385, 100 Ω^{FO}	-200 °C to -80 °C	0.05 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	

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Temperature calibration, Indication and Control Equipment used with RTD Type Pt 3916, 100 Ω[FO]	-200 °C to -190 °C	0.25 °C	Electrical Simulation of RTD output Fluke 5522A 3-PSCP-001
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.06 °C	
	100 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.09 °C	
	400 °C to 600 °C	0.1 °C	
	600 °C to 630 °C	0.23 °C	
	400 °C to 600 °C	0.14 °C	
	600 °C to 630 °C	0.16 °C	
Equipment to Measure DC Power (At the listed voltages and current ranges)[FO]			Fluke 5522A 8-SCP-001
33 mV to 1 020 V 0.33 mA to 329.99 mA	0.011 mW to 336.59 W	0.023 % of reading	
33 mV to 1 020 V 0.33 A to 2.999 9 A	0.011 W to 3 059.9 W	0.022 % of reading	
33 mV to 1 020 V 3 A to 20.5 A	0.099 W to 20 910 W	0.07 % of reading	
Equipment to Measure AC Power (At the listed voltages, current ranges, and frequencies)[FO]			
33 mV to 329.999 mV 3.3 mA to 8.999 mA 45 Hz to 65 Hz	0.11 mW to 2.97 mW	0.14 % of reading	
33 mV to 329.999 mV 9 mA to 32.999 mA 45 Hz to 65 Hz	0.297 mW to 10.9 mW	0.1 % of reading	
33 mV to 329.999 mV 33 mA to 89.99 mA 45 Hz to 65 Hz	1.1 mW to 29.7 mW	0.14 % of reading	
33 mV to 329.999 mV 90 mA to 329.99 mA 45 Hz to 65 Hz	2.97 mW to 108.9 mW	0.1 % of reading	
33 mV to 329.999 mV 0.33 A to 0.899 9 A 45 Hz to 65 Hz	10.9 mW to 296.97 mW	0.13 % of reading	
33 mV to 329.999 mV 0.9 A to 2.189 99 A 45 Hz to 65 Hz	29.7 mW to 722.7 mW	0.11 % of reading	

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Equipment to Measure AC Power (At the listed voltages, current ranges, and frequencies)[FO]			Fluke 5522A 8-SCP-001
33 mV to 329.999 mV 2.2 A to 4.499 99 A 45 Hz to 65 Hz	72.6 mW to 1.49 W	0.13 % of reading	
33 mV to 329.999 mV 4.5 A to 20.5 A 45 Hz to 65 Hz	148.5 mW to 6.77 W	0.11 % of reading	
Equipment to Measure AC Power (at the listed frequencies)[FO]			
330 mV to 1 020 V 3.3 mA to 8.999 mA 45 Hz to 65 Hz	1.09 mW to 9.18 W	0.12 % of reading	
330 mV to 1 020 V 9 mA to 32.999 mA 45 Hz to 65 Hz	2.97 mW to 33.66 W	0.08 % of reading	
330 mV to 1 020 V 33 mA to 89.99 mA 45 Hz to 65 Hz	10.9 mW to 91.8 W	0.12 % of reading	
330 mV to 1 020 V 90 mA to 329.99 mA 45 Hz to 65 Hz	29.7 mW to 336.6 W	0.08 % of reading	
Equipment to Measure AC Power (at the listed frequencies)[FO]			
330 mV to 1 020 V 0.33 A to 0.899 9 A 45 Hz to 65 Hz	0.11 mW to 917.9 W	0.11 % of reading	
330 mV to 1 020 V 0.9 A to 2.189 99 A 45 Hz to 65 Hz	297 mW to 2 234 W	0.09 % of reading	
330 mV to 1 020 V 2.2 A to 4.499 99 A 45 Hz to 65 Hz	726 mW to 4 590 W	0.12 % of reading	
330 mV to 1 020 V 4.5 A to 20.5 A 45 Hz to 65 Hz	1.49 W to 20910 W	0.1 % of reading	
Equipment to Measure Frequency FO	0.01 Hz to 2 MHz	5 µHz + 0.000 25 % of reading	

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Accreditation is granted to the facility to perform the following calibrations:

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Scales[FO]	0.001 g to 10 g	2.4 µg / g + 65 µg	Weights, Class 1 / 4-PSCP-002
	10 g to 50 g	2.5 µg / g + 64 µg	
	50 g to 200 g	3.6 µg / g + 9.6 µg	
	200 g to 2 000 g	3.6 µg / g + 46 µg	
	2 000 g to 2 770 g	3.6 µg / g + 3.8 µg	
	2 770 g to 4 630 g	3.6 µg / g + 20 µg	Weights, Class 1&2 / 4-PSCP-002
	4.63 kg to 11.8 kg	0.005 2 mg / g + 5.9 mg	Weights, Class 2&F1 / 4-PSCP-002
	11.8 kg to 21 kg	0.005 6 mg / g + 4.8 mg	
	21 kg to 45 kg	6 µg / g + 94 µg	
	50 lb to 1 000 lb	54 mg / lb + 3.8 mg	Weights, Class F / 4-PSCP-002
Force Gages[FO]	1 g to 200 g	0.023 g + 0.002 4 g/g	Class 1, 4-PSCP-001
Compression[FO]	2 N to 889.64 N	(0.62 + 2.45 x 10^{-3}F) N	Class F / Load Cell, 4-PSCP-006
Mass Weights[F]	0.05 mg to 220 000 mg	(0.036 + 0.000 001 03W) mg	A&D Balance GH-2020 4-SCP-003
	0.001 g to 1 212 g	(2.5 + 0.000 000 018 8W) mg	A&D Balance MC-100 4-SCP-003
	0.1 g to 10 100 g	(0.066 + 0.000 000 009 38W) mg	Mettler Toldeo XP10002S 4-SCP-003
	0.002 lb to 50 lb	(0.34 + 0.000 012 9W) mg	A&D Balance HP-30K 4-SCP-003
Class F Weights[F]	1 mg	0.024 mg	Rice Lake/ A&D Balance Class 1 Weight Set 4-SCP-003
	2 mg	0.023 mg	
	3 mg	0.023 mg	
	5 mg	0.023 mg	
	10 mg	0.023 mg	
	20 mg	0.023 mg	
	30 mg	0.023 mg	
	50 mg	0.023 mg	
	100 mg	0.023 mg	
	200 mg	0.023 mg	Rice Lake/ A&D Balance Class 1 Weight Set 4-SCP-003
	300 mg	0.023 mg	
	500 mg	0.023 mg	

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Class F Weights[F]	1 g	0.024 mg	Rice Lake/ A&D Balance Class 1 Weight Set GH-202, 4-SCP-003
	2 g	0.023 mg	Rice Lake/ A&D Balance Class 1 Weight Set 4-SCP-003
	3 g	0.024 mg	
	5 g	0.024 mg	
	10 g	0.026 mg	
	20 g	0.029 mg	
	30 g	0.029 mg	
	50 g	0.039 mg	
	100 g	0.063 mg	
	200 g	0.075 mg	
	300 g	1.5 mg	A&D Balance MC-100 Class 1 Weight Set, 4-SCP-003
	500 g	1.5 mg	A&D Balance MC100 Troemner Class 2 Weight Set 4-SCP-003
Mass, Class F Weights[F]	1 kg	1.6 mg	A&D Balance GH-202 Troemner Class 2 Weight 4-SCP-003
	2 kg	52 mg	Mettler Toledo XP10002S Tromener Class 2 Weight Set and Class 1 Weight Set 4-SCP-003
	3 kg	52 mg	Mettler Toledo XP10002S Rice Lake Class 1 and 4 Weight Set Troemner Class 2 Weight Set 4-SCP-003
	5 kg	52 mg	Mettler Toledo XP10002S Rice Lake Class 3 Weight Set 4-SCP-003
	10 kg	0.34 g	Troemner Class 2 Weight Set A&D Balance HP-30k Class 1 and 2 Weight Set 4-SCP-003
	20 kg	0.34 g	A&D Balance HP-30K Class 1 Weight Set, 4-SCP-003
	22 679.62 g	0.35 g	A&D Balance HP-30K Rice Lake Class 4 Weight Set 4-SCP-003

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Mechanical

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Tachometer, Contact[FO]	Up to 25 000 rpm	(1.2 + 0.000 028M) rpm	Extech 461920 9-SCP-002
Pressure[FO]	-100.663 5 to 0.1 kPa	0.058 kPa	Ruska 1132, 6-PSCP-001
	0 kPa to 248.21 kPa	0.039 kPa + 4.86 x 10^{-4} kPa/kPa	Crystal Engineering IS33-16/36 6-PSCP-001
	0 kPa to 2 068.43 kPa	0.14 kPa + 5.66 x 10^{-4} kPa/kPa	Crystal Engineering IS33-300 6-PSCP-001
	0 kPa to 20 684 kPa	1.9 kPa + 5.75 x 10^{-4} kPa/kPa	Crystal Engineering IS33-3000 6-PSCP-001
	20 684 kPa to 68 947.57 kPa	1.2 kPa + 1.15 10^{-3} kPa/kPa	Crystal Engineering 10KPSIXP21
Torque[FO]	0.5 ozf·in to 215 ozf·in	(0.06 7 + 0.013 4Q) ozf·in	Waters Mfr 6500-T4 4-PSCP-004
	4 in·lb to 50 in·lb	(0.007 3 + 0.001 94Q) in·lb	CDI 2000-40-02/5000ST 4-PSCP-004
	40 in·lb to 400 in·lb	(0.058 + 0.002 49Q) in·lb	
	100 in·lb to 1 000 in·lb	(0.003 58Q) in·lb	
	25 ft·lb to 250 ft·lb	(0.002 83Q) ft·lb	
Torque Measuring Instruments[FO]	1.25 lbf-in to 12.5 lbf-in	0.000 29 lbf-in / lbf-in + 0.003 6 lbf-in	Torque Wheel, 2.5 in / Weights, Class F / 4-PSCP-005
	8 lbf-in to 260 lbf-in	0.000 057 lbf-in / lbf-in + 0.22 lbf-in	Torque Wheel, 4 in / Weights, Class F / 4-PSCP-005
	5 lbf-in to 250 lbf-ft	0.000 31 lbf-ft / lbf-ft + 0.046 lbf-ft	Torque Wheel, 10 in / Weights, Class F / 4-PSCP-005

Thermodynamic

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Temperature Measurement Thermocouple Type J[F]	-10 °C to 110 °C	1.1°C	Hart Scientific 1502A Hart Scientific 5615-9-D Hart Scientific 6300 3-PSCP-004
	110 °C to 305 °C	(2.2 + 0.000 438T) °C	
Temperature Measurement Thermocouple Type K[F]	-195.79 °C to -10 °C	(1.3 + 0.001 12T) °C	
	-10 °C to 110 °C	1.1°C	
	110 °C to 305 °C	(2.2 + 0.000 438T) °C	
Temperature Measurement Thermocouple Type T[F]	-195.79 °C to -10 °C	(0.87 + 0.000 447T) °C	
	-10 °C to 110 °C	0.5 °C	
	110 °C to 305 °C	(0.12 + 0.003 6T) °C	

Certificate of Accreditation: Supplement

PreciseCal Services, Inc.
3044 Scherer Drive North, St. Petersburg, FL 33716
Contact Name: Julio Cuevas Phone: 727-573-5063

Accreditation is granted to the facility to perform the following calibrations:

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Thermometers[FO]	-195.8 ºC	77°mC	LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.004 4 °mC / °C + 72 °mC	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.099 °mC / °C + 82 °mC	Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.81 °mC / °C + 69 °mC	Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Probes, Thermocouple, Type T[FO]	-195.8 ºC	0.47 °C	Ametek RTC-159B, LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.39 °C	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.37 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 400 °C	0.000 14 °C / °C + 0.36 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Probes, Thermocouple, Type K[FO]	-195.8 °C	0.47°C	Ametek RTC-159B, LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.39 °C	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.38 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.000 6 °C / °C + 0.32 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Probes, Thermocouple, Type J[FO]	-195.8 °C	0.44 °C	Ametek RTC-159B, LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.37 °C	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.38 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.000 6 °C / °C + 0.31 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Probes, Thermocouple, Type E[FO]	-195.8 °C	0.41 °C	Ametek RTC-159B LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.38 °C	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.37 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.000 61 °C / °C + 0.3 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004

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Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Probes, RTD, Pt 1000(385)^{FO}	-195.8 °C	96 °mC	Ametek RTC-159B LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.000 072 °C / °C + 0.11 °C	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.000 055 °C / °C + 0.12 °C	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.89 °mC / °C + 38 °mC	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Probes, RTD, Pt100(385)^{FO}	-195.8 °C	81 °mC	Ametek RTC-159B LN2, Hart 1502A, Hart 5615 / 3-PSCP-004
	-100 °C to 155 °C	0.011 °mC / °C + 78 °mC	Ametek RTC-159B, Reference Sensor / 3-PSCP-004
	155 °C to 300 °C	0.011 °mC / °C + 98 °mC	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 6330 / 3-PSCP-004
	300 °C to 650 °C	0.92 °mC / °C + 6.8 °mC	Ametek RTC-159B, Hart 1502A, Hart 5615, Hart 9141 / 3-PSCP-004
Ovens, Dynamic Cal^{O}	1 °F to 1 800 °F	(1.6 + 0.000 113T) °F	Fluke 744 GeoCorp Inc Spool GK50212-2-5B, 3-SCP-007
Relative Humidity^{FO}	5 %RH to 95 %RH	0.35%RH + 0.035%RH/%RH	Rotronic HF53W/HC2-S / 3-PSCP-003
IR Temperature^{FO}	30 °C to 500 °C	(0.07 + 0.008 2T) °C	Fluke 9132 3-PSCP-004

Time & Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Stopwatches/Timer^{FO}	Up to 90 000 s	0.19 s	WWV / 9-PSCP-001

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.

2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.

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Accreditation is granted to the facility to perform the following calibrations:

3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration at its fixed location.

4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.

5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.

6. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.

7. The term W represents weight in milligrams as appropriate to the uncertainty statement.

8. The term T represents temperature value in ºC or ºF as appropriate to the uncertainty statement.

9. The term R represents % RH as appropriate to the uncertainty statement.

10. The term M represents revolutions per minute as appropriate to the uncertainty statement

11. The term Q represents torque ozf·in, in·lb, ft·lb as appropriate to the uncertainty statement