



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Laboratorio de Precisión, S.A. de C.V.

***Horizonte #28 entre Astro Rey Sur y Nuevo Amanecer
Matamoros, Tamaulipas, México. C.P 87314***

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

ISO/IEC 17025:2017

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

***Dimensional, Mechanical, Electrical, Thermodynamic, Acoustic, Optical,
Chemical, Time and Frequency and Mass, Force and Weighing Devices
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

Initial Accreditation Date:

October 31, 2003

Issue Date:

August 27, 2022

Expiration Date:

November 30, 2024

Accreditation No.

40937

Certificate No.:

L22-583

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

*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

Laboratorio de Precisión, S.A. de C.V.

Horizonte #28 entre Astro Rey Sur y Amanecer
Matamoros, Tamaulipas, México C.P. 87314
Contact Name: Carlos Lucio Phone: 868-810-1140

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 (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Caliper Check ^F	0.001 mm to 1 100 mm	$(0.0041 + 1.7 \times 10^{-4}L)$ mm	Vision Meter System DI-08
Calipers ^F	Up to 300 mm	$(27.4 + 0.11L)$ μ m	Gage Blocks Universal Length Machine DI-01
	301 mm to 1 900 mm	$(42.2 + 0.15L)$ μ m	
CMM -Linearity ^O	750 mm to 2 250 mm	$(0.035 + 2.25 \times 10^{-3}L)$ mm	Block Gauge, Caliper Check, Square, Ball Bar Per ASME B89.4.1 DI-22
Depth Micrometer ^{FO}	0.01 mm to 500 mm	$(0.022 + 2.1 \times 10^{-4}L)$ mm	Block Gauge DI-05
Dial/ Digital Thickness Gage ^{FO}	0.001 mm to 500 mm	$(0.0081 + 8.3 \times 10^{-5}L)$ mm	Dial Gage Tester Block Gauge DI-12
Gage Blocks ^{FO}	0.5 mm to 100 mm	$(0.028 + 2.7 \times 10^{-4}L)$ mm	CMM, Blocks Comparator, Micrometer, Block Gauge DI-06
	100 mm to 500 mm	$(0.46 + 3.5 \times 10^{-4}L)$ mm	
	501 mm to 1 100 mm	$(0.0041 + 2.1 \times 10^{-4}L)$ mm	Vision Meter System DI-08
	1 101 mm to 3 000 mm	$(0.0041 + 3.4 \times 10^{-4}L)$ mm	ULM DI-08
Glass Ruler ^F	0.1 mm to 1 100 mm	$(4.2 \times 10^{-3} + 4.8 \times 10^{-3}L)$ mm	Vision Meter System DI-20
Height Gage ^{FO}	0.01 mm to 600 mm	$(0.003 + 3 \times 10^{-4}L)$ mm	Block Gauge, Caliper Check DI-07
Master Height Gage ^F	0.001 mm to 600 mm	$(0.002 + 1.4 \times 10^{-4}L)$ mm	CMM DI-08
Outside Micrometer ^F	0.001 mm to 500 mm	$(0.0056 + 1.7 \times 10^{-4}L)$ mm	Block Gauge DI-02
Micrometer Head ^F	0.001 mm to 50 mm	$(0.0056 + 1.7 \times 10^{-4}L)$ mm	
Bi-Directional Dial Indicators ^F	0.3 μ m to 100 mm	$(0.03 + 0.1L)$ μ m	Universal Dial Calibrator DI-12
Microscope-Reticule ^O	0.001 mm to 600 mm	$(0.0024 + 3.7 \times 10^{-4}L)$ mm	Glass Ruler and Palatine DI-16
Microscope-Magnification ^O	200 X Only	2.4 % of reading	
Optical Comparator – Linear ^O	150 mm to 600 mm	$(0.0024 + 3.7 \times 10^{-4}L)$ mm	Glass Ruler, Block Gauge, Angle Gauge DI-18
Optical Comparator – Angle ^O	0° to 360°	2°	
Optical Comparator – Magnification ^O	200 X Only	2.4 % of reading	



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Parallels ^F	25 mm to 600 mm	$(0.002\ 2 + 1.4 \times 10^{-3}L)$ mm	Optical Comparator, Touch Probe DI-11
Pin Gages ^F	0.5 mm to 100 mm	$(0.046 + 3.5 \times 10^{-4}D)$ mm	Micrometer DI-25
Surface Plate, Repeat Measurement Only ^O	150 mm to 2 250 mm Diagonal	1.7 μ m	Repeat Reading Gage with Electronic Indicator DI-10
Thickness Sensor (Electronic, Ultrasonic, & Magnetic) ^F	25 μ m to 2 000 μ m	$(0.005\ 8 + 9.8 \times 10^{-3}L)$ mm	Coatings Thickness Plates, Block Gages & Master Gage Plates DI-19
Pitch Diameter Thread Gage ^F	(M1.6 x 0.35 to M39 x 4)	$(0.07 + 0.011D)$ mm	Thread Wire, Super Micrometer DI-14
Rules ^F	150 mm to 5 000 mm	$(0.005\ 8 + 9.8 \times 10^{-3}L)$ mm	Steel Ruler, Flex Meter and Vision Meter DI-04
Angle Blocks ^F	0° to 90°	0.18°	Protractor, CMM and Optical Comparator DI-15
Angle Meter - Protractor ^F	0° to 180°	0.18°	Angle Gauge, CMM DI-13
Inside Micrometer ^{F,O}	20 mm to 300 mm	$(5.3 + 4.05 \times 10^{-2}L)$ μ m	Caliper Check DI-19
Measurement Tape Error of Indication ^F	1 m to 50 m	$(0.058 + 1.29 \times 10^{-4}L)$ mm	Flex Meter, Steel Ruler DI-04
Radius Gages ^F	0.5 mm to 1 000 mm	$(0.053 + 9.7 \times 10^{-4}L)$ mm	CMM, Optical Comparator DI-17, DI-03
Ring Gages ^F	5 mm to 1 000 mm	$(0.048 + 1.02 \times 10^{-3}L)$ mm	
Roughness Block Ra ^F	1.68 μ m to 6.3 μ m	0.56 μ m	Surface Roughness Tester DI-23
Roughness Block Rz ^F	2.76 μ m to 25 μ m	0.92 μ m	
Roughness Tester Ra ^F	0.49 μ m to 5.82 μ m	$(1.12 \times 10^{-1} + 7.69 \times 10^{-2}L)$ μ m	Roughness Master Block Set DI-23
Roughness Tester Rz ^F	0.5 μ m to 11.4 μ m	$(0.14 + 6.2 \times 10^{-3}L)$ μ m	
	11.4 μ m to 23.6 μ m	$(0.77 + 6.6 \times 10^{-3}L)$ μ m	
Sphere Gages ^F	1 mm to 100 mm	$(0.052 + 9.8 \times 10^{-4}L)$ mm	CMM DI-24
Thickness Foils ^F	0.1 μ m to 25 mm	$(0.25 + 0.08L)$ μ m	Universal Length Sensor DI-08/ JIS B 7524



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Laser Micrometers & Z Mike ^F	0.1 mm to 50 mm	$(0.05 + 0.01L) \mu\text{m}$	Master Pin Set DI-02
Thread Ring Gage Pitch Diameter ^F	M 1.6 x 0.35 to M 100 x 6 0-80 to 4-10	$(2.3 + 2 \times 10^{-3}D) \mu\text{m}$ $(87 + 2D) \mu\text{in}$	ULM DI-14

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 (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Weighing Devices	1 mg to 0.05 kg (Res.= 1 mg)	$(0.103 + 0.28Wt) \text{ mg}$	Class F Weights and Weight Set Handbook 44 MF-03
	0.05 kg to 1 kg (Res.= 1 g)	$(11.252 + 0.702Wt) \text{ mg}$	
	1 kg to 50 kg (Res.= 5 g)	$(0.832 + 0.513Wt) \text{ g}$	
	50 kg to 500 kg (Res.= 0.1 kg)	$(0.091 + 0.07Wt) \text{ kg}$	
Weighing Devices ^O	500 kg to 5 000 kg (Res.= 2 kg)	$(0.434 + 0.871Wt) \text{ kg}$	Class F Weights and Weight Set MF-03
	5 000 kg to 10 000 kg (Res.= 5 kg)	$(10.45 + 0.009Wt) \text{ kg}$	
Tension - Compression & Dynamometer Force Devices ^{FO}	100 N to 10 000 N	0.7 % of reading	Class F Weights & Force Gage MF-02
	1 kN to 100 kN	0.4 % of reading	
Mass Weight Class M1, M2 & M3 ^{FO}	2 mg	0.045 mg	Double Substitution with Air Buoyancy Correction. Class F Mass set and Analytic Balance MF-01
	5 mg	0.045 mg	
	10 mg	0.045 mg	
	20 mg	0.074 mg	
	50 mg	0.11 mg	
	100 mg	0.12 mg	
	200 mg	0.16 mg	
	500 mg	0.24 mg	
	1 g	0.28 mg	
	2 g	0.32 mg	
Mass Weight Class M1, M2 & M3 ^{FO}	5 g	0.32 mg	
	10 g	0.57 mg	



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Mass, Force and Weighing Devices

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Mass Weight Class M1, M2 & M3 ^{FO}	20 g	0.57 mg	Double Substitution with Air Buoyancy Correction. Class F Mass set and Analytic Balance MF-01
	50 g	0.75 mg	
	100 g	1.2 mg	
	500 g	6.3 mg	
	1 kg	13 mg	
	2 kg	29 mg	
	5 kg	200 mg	OIML Class F2 Mass Set Weight Scale ME-01
	10 Kg	200 mg	
	20 Kg	29 mg	
Tension - Compression & Dynamometer Force Devices ^{FO}	1 N to 10 N	0.2 % of reading	Class F Weights and Force Gage ME-03
	10 N to 100 N	0.2 % of reading	

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Durometer Hardness (Direct Verification Scale: A, B, E, O) Extension at Zero readings	2.46 mm to 2.54 mm	8.1 μ m	Load Cell, Force gauge & Balance & Gage Block The Dimensional Characteristics of the Indenter are Verified by Optical Projection ASTM D2240 ME-06
Diameter of the Base of the Frustum		5 μ m	
Diameter of the Top of the Frustum		5 μ m	
Cone Angle		0.03°	
Tip Radius		5 μ m	
Indenter Thickness		5 μ m	
Indenter Thickness ^{FO}		5 μ m	
Verification Durometer Spring ^{FO}	0.55 N to 8.05 N	62 m	The Durometer Spring is Verified with Dead Weights, ME-06
Leak Standards (Air Flow Devices) ^{FO}	0.1 cm ³ /s to 500 cm ³ /s	0.4 % of reading	Air Mass Flow Meter Aalborg GFM 17 NIST-SP250-38 ME-08



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Pressure Measurement Devices ^{FO}	1 k Pa to 700 kPa	0.62 kPa + 0.026 % of reading	Pressure Pump and Digital Pressure Gauge ME-02
	700 kPa to 67 000 kPa	4.2 kPa + 0.026 % of reading	
Vacuum Measurement Devices ^{FO}	-100 kPa to 0.1 kPa	0.015 kPa + 0.012 % of reading	Vacuum Pump and Gauge ME-02
Volume Containers ^{FO}	1 mL to 1 000 mL	0.1 mL	Analytical Balance Q1-01
Volume Measurement Devices ^{FO}	0.1 L to 10 L	20 mL	Analytical Balance & Flow Meter / Master Containers Q1-01
	10 L to 40 L	0.1 L	
	40 L to 200 L	0.5 L	
Viscosity Meters and Cups Ford ^{FO}	10 Centistokes 35 Centistokes 60 Centistokes	2 % of reading	Viscosity Solutions, StopWatch and Master Container Q1-03
Viscosity Meters and Cups Zahn ^{FO}	20 Centistokes 60 Centistokes 100 Centistokes	2 % of reading	
Torque Force Tools ^{FO}	1 N·m to 10 N·m	0.7 % of reading	Digital Torque Analyzer ME-04
	33.8 N·m to 100 N·m	1.2 % of reading	Electronic Torque Tester ME-04
	101 N·m to 338 N·m	1.2 % of reading	
	339 N·m to 1 355 N·m	0.3 % of reading	Torque Stand & Force Cell ME-04
Indirect Verification of Rockwell Hardness Tester HRA ^{FO}	20 HRA to 40 HRA	0.7 HRA	Indirect Method - Block Master Rockwell A, B, C ME-07
	45 HRA to 75 HRA	0.71 HRA	
	80 HRA to 88 HRA	0.6 HRA	
Indirect Verification of Rockwell Hardness Tester HRB ^{FO}	20 HRB to 50 HRB	0.95 HRB	Block Master Rockwell B ME-07
	60 HRB to 80 HRB	0.95 HRB	
	85 HRB to 100 HRB	0.95 HRB	
Indirect Verification of Rockwell Hardness Tester HRC ^{FO}	20 HRC to 30 HRC	0.42 HRC	Indirect Method - Block Master Rockwell A, B, C ME-07
	35 HRC to 55 HRC	0.41 HRC	
	60 HRC to 70 HRC	0.37 HRC	
Air Velocity Meters - Anemometer ^{FO}	Up to 2 000 cm/min	0.5 % of reading	Precision Anemometer ME-21



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

Acoustic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Sound Meters Devices ^{FO}	10 dB to 140 dB	0.76 dB + 0.032 % of reading	Sound Calibrator, Multi dB Generator and Multimeter SD-01
Sound Chambers (Generator) ^O	20 dB to 140 dB	2 dB	Sound Calibrator, Sound Meter and Frequency SD-01

Time and Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Clock ^{FO}	9 h: 59 min: 59 s	4 s	Digital Stopwatch EL-10
Chronometer ^{FO}	23 h: 59 min: 59 s	4 s	
Timers ^{FO}	23 h: 59 min: 59 s	4 s	
Tachometers ^{FO}	1.047 rad/s to 10 471.9 rad/s	0.1 % of reading + 1 Digit	Tachometer Master EL-04

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Glass Thermometers and Bimetallic Thermometers ^{FO}	-30 °C to 150 °C	1 °C	Temperature Bath and Agilent 34970A TC type J/K EL-11, EL-13
	150 °C to 400 °C	1 °C	
Thermal Chambers ^O	-40 °C to 200 °C	1 °C	Agilent 34970A - TC type J/K EL-13
Thermal Oven ^O	50 °C to 400 °C	1 °C	
Thermal Controllers ^O	40 °C to 1 760 °C	2 °C	Fluke 5100 & Agilent 34970A - TC type J/K EL-01
Hygrometers ^{FO}	10 % RH to 90 % RH	2 % RH	Temperature and Humidity Recorder & humidity chamber generator ASTM E104 TD-04
Humidity Tester ^{FO}	10 % RH to 90 % RH	2 % RH	
Humidity Chamber ^O	10 % RH to 90 % RH	2 % RH	
Infrared Temperature Medical / Industrial Meter ^F	20° to 400°C	(1.26 + 1 x 10 ⁻² T) °C	Black Body / IR Meter TD-01



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Chemical

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Conductivity Device Fixed Point ^{FO}	84 μ S	3 % of reading	Standard Solutions. NIST-NISTIR-6191 Q1-05
	1 413 μ S	3 % of reading	
	12 880 μ S	3 % of reading	
pH Meter ^{FO}	4 pH units	0.01 pH units	pH Buffer Solution Q1-02
	7 pH units	0.01 pH units	
	10 pH units	0.01 pH units	
Gas Detectors Oxygen (O ₂) ^{FO}	Up to 1 000 cmol	5 % of reading	Precision Gas Sensor QI-06
Gas Detectors Methane (CH ₄) ^{FO}	Up to 1 000 cmol	5 % of reading	
Gas Detectors Carbon Monoxide (CO) ^{FO}	Up to 1 000 cmol	5 % of reading	
Gas Detectors Hydrogen Sulfide (H ₂ S) ^{FO}	Up to 1 000 cmol	5 % of reading	

Electrical

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Capacitance Meter ^{FO}	1 nF	0.2 pF	General Radio Standard Capacitor, Model 1409-F- 0.001 μ F Model 1409-Y -1 μ F Decade Condenser 219-M 10 μ F to 10 000 μ F EL-09
	1 μ F	0.2 nF	
	10 μ F to 10 000 μ F	0.05 % of reading	
Resistors and Resistance Generator ^{FO}	1 Ω to 100 Ω	0.02 % of reading + 0.004 % of range	HP 34401A-Measuring EL-05
	100 Ω to 1 k Ω	0.02 % of reading + 0.001 % of range	
	1 k Ω to 10 k Ω	0.02 % of reading + 0.001 % of range	
	10 k Ω to 100 k Ω	0.02 % of reading + 0.001 % of range	
	100 k Ω to 1 M Ω	0.02 % of reading + 0.001 % of range	
	1 M Ω to 10 M Ω	0.08 % of reading + 0.001 % of range	
	10 M Ω to 100 M Ω	1 % of reading + 0.01 % of range	HP 34401A Measuring EL-03



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Equipment to Output DC Voltage ^{FO}	Up to 100mV	0.009 % of reading + 0.003 5 % of range	HP 34401A Measuring EL-03
	100 mV to 1V	0.008 % of reading + 0.000 7 % of range	
Equipment to Output DC Voltage ^{FO}	1 V to 10 V	0.007 5 % of reading + 0.000 5 % of range	HP 34401A – Measuring Fluke 376 FC I-Flex 2500 EL-03, EL-08, EL-02, EL-07
	10 V to 100 V	0.008 5 % of reading + 0.000 6 % of range	
	100 V to 1 000 V	0.008 5 % of reading + 0.001 % of range	
Equipment to Output DC Current ^{FO}	Up to 10 mA	0.09 % of reading + 0.02 % of range	
	10 mA to 100 mA	0.09 % of reading + 0.005 % of range	
	100 mA to 1 A	0.2 % of reading + 0.01 % of range	
	1 A to 3 A	0.22 % of reading + 0.02 % of range	
	3 A to 1 000 A	0.2 % of reading	
Equipment to Output AC Voltage At the listed frequencies ^{FO}			
3 Hz to 5 Hz	1 mV to 100 mV	2 % of reading + 0.04 % of range	
5 Hz to 10 Hz	1 mV to 100 mV	0.75 % of reading + 0.04 % of range	
10 Hz to 20 kHz	1 mV to 100 mV	0.09 % of reading + 0.04 % of range	
20 kHz to 50 kHz	1 mV to 100 mV	0.22 % of reading + 0.05 % of range	
50 kHz to 100 kHz	1 mV to 100 mV	0.9 % of reading + 0.08 % of range	
Equipment to Output AC Voltage At the listed frequencies ^{FO}			
3 Hz to 5 Hz	0.06 V to 750 V	2 % of reading + 0.03 % of range	
5 Hz to 10 Hz	0.06 V to 750 V	0.75 % of reading + 0.03 % of range	
10 Hz to 20 kHz	0.06 V to 750 V	0.09 % of reading + 0.03 % of range	



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Equipment to Output AC Voltage At the listed frequencies ^{FO}			HP 34401A – Measuring Fluke 376 FC I-Flex 2500 EL-03, EL-08, EL-02, EL-07
20 kHz to 50 kHz	0.06 V to 750 V	0.22 % of reading + 0.05 % of range	
50 kHz to 100 kHz	0.06 V to 750 V	0.9 % of reading + 0.08 % of range	
100 kHz to 300 kHz	0.06 V to 750 V	6 % of reading + 0.5 % of range	
Equipment to Output AC Current At the listed frequencies ^{FO}			HP 34401A – Measuring Fluke 376 FC I-Flex 2500 EL-07, EL-06
3 Hz to 5 Hz	1 mA to 1 A	2.1 % of reading + 0.04 % of range	
5 Hz to 10 Hz	1 mA to 1 A	0.6 % of reading + 0.04 % of range	
10 Hz to 5 kHz	1 mA to 1 A	0.2 % of reading + 0.04 % of range	
Equipment to Output AC Current At the listed frequencies ^{FO}			Fluke 5100 Source Multiplication Coil EL-03, EL-08
3 Hz to 5 Hz	1 A to 3 A	2 % of reading + 0.06 % of range	
5 Hz to 10 Hz	1 A to 3 A	0.75 % of reading + 0.06 % of range	
10 Hz to 5 kHz	Up to 2 500 A	0.2 % of reading	
Equipment to Output Frequency Generators ^{FO}	3 Hz to 5 Hz	0.2 % of reading	
	5 Hz to 10 Hz	0.1 % of reading	
	10 Hz to 40 Hz	0.06 % of reading	
	40 Hz to 300 kHz	0.02 % of reading	
Equipment to Output DC Voltage Meter ^{FO}	20 mV to 199.999 mV	0.008 % of reading + 0.001 % of range + 5 μ V	
	0.2 V to 1.999 99 V	0.008 % of reading + 0.001 % of range + 5 μ V	
Equipment to Output DC Voltage Meter ^{FO}	2 V to 19.999 9 V	0.008 % of reading + 0.001 % of range + 5 μ V	
Equipment to Output DC Voltage Meter ^{FO}	20 V to 199.999 V	0.008 % of reading + 0.001 % of range + 5 μ V	
	200 V to 1 100 V	0.008 % of reading + 0.001 % of range + 5 μ V	
Equipment to Output DC Current Meter ^{FO}	10 μ A to 199.999 μ A	0.025 % of output + 0.002 % of range + 0.02 μ A	
	0.2 mA to 1.999 99 mA	0.025 % of output + 0.002 % of range + 0.02 μ A	
	2 mA to 19.999 9 mA	0.025 % of output + 0.002 % of range + 0.02 μ A	



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Laboratorio de Precisión, S.A. de C.V.

Horizonte #28 entre Astro Rey Sur y Amanecer
Matamoros, Tamaulipas, México. C.P. 87314
Contact Name: Carlos Lucio Phone: 868-810-1140

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 (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output DC Current Meter ^{FO}	20 mA to 199.999 mA	0.025 % of output + 0.002 % of range + 0.02 μ A	Fluke 5100 Source Multiplication Coil EL-03, EL-08
	0.2 A to 1.999 99 A	0.025 % of output + 0.002 % of range + 0.02 μ A	
	1.999 99 A to 100 A	0.2 % of output	
Equipment to Output AC Voltage Meter At the listed frequencies ^{FO}			Fluke 5100 – Source Multiplication Coil EL-02, EL-07
10 kHz to 50 kHz	20 mV to 199.999 mV	0.09 % of reading + 0.008 % of range + 50 μ V	
50 Hz to 10 kHz	20 mV to 199.999 mV	0.065 % of reading + 0.005 % of range + 50 μ V	
Equipment to Output AC Voltage Meter At the listed frequencies ^{FO}			
10 kHz to 50 kHz	0.2 V to 1.999 9 V	0.09 % of reading + 0.008 % of range + 50 μ V	
50 Hz to 10 kHz	0.2 V to 1.999 99 V	0.065 % of reading + 0.005 % of range + 50 μ V	
Equipment to Output AC Voltage Meter At the listed frequencies ^{FO}			
10 kHz to 50 kHz	2 V to 19.999 V	0.09 % of reading + 0.008 % of range + 50 μ V	
50 Hz to 10 kHz	2 V to 19.999 V	0.065 % of reading + 0.005 % of range + 50 μ V	
Equipment to Output AC Voltage Meter At the listed frequencies ^{FO}			
10 kHz to 50 kHz	20 V to 199.999 V	0.09 % of reading + 0.008 % of range + 50 μ V	
50 Hz to 10 kHz	20 V to 199.999 V	0.065 % of reading + 0.005 % of range + 50 μ V	
Equipment to Output AC Voltage Meter At the listed frequencies ^{FO}			
10 kHz to 50 kHz	200 V to 1 100 V	0.09 % of reading + 0.008 % of range + 50 μ V	
50 Hz to 10 kHz	200 V to 1 100 V	0.065 % of reading + 0.005 % of range + 50 μ V	



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Equipment to Output AC Current Meter At the listed frequencies ^{FO}			Fluke 5100 – Source Multiplication Coil EL-02, EL-07
50 Hz to 1 kHz	0.2 A to 1.999 A	0.09 % of reading + 0.005 % of range + 0.02 μ A	
50 Hz to 1 kHz	2 mA to 19.999 mA	0.09 % of reading + 0.005 % of range + 0.02 μ A	
50 Hz to 1 kHz	19.999 mA to 100 A	0.2 % of reading	
50 Hz to 1 kHz	10 μ A to 199.999 μ A	0.09 % of reading + 0.005 % of range + 0.02 μ A	Fluke 5100 – Source EL-07, EL-05, EL-06
50 Hz to 1 kHz	20 mA to 199.999 mA	0.09 % of reading + 0.005 % of range + 0.02 μ A	
Equipment to Output Resistance Meters ^{FO}	Up to 1 Ω	0.025 % of reading	
	1 Ω to 10 Ω	0.02 % of reading	
	10 Ω to 100 Ω	0.006 % of reading	
	100 Ω to 1k Ω	0.006 % of reading	
	1k Ω to 10 k Ω	0.006 % of reading	
	10 k Ω to 100 k Ω	0.006 % of reading	
	100 k Ω to 1M Ω	0.02 % of reading	
	1 M Ω to 10 M Ω	0.06 % of reading	
Equipment to Output Frequency Meters ^{FO}	10 Hz to 30 Hz	0.6 % of reading	
	30 Hz to 1 MHz	0.45 % of reading	
	1M Hz to 5 MHz	0.9 % of reading	
	5 MHz to 10 MHz	0.9 % of reading	
Equipment to Output DC High Voltage (DC HI-POT) ^{FO}	Up to 20 kV	3 % of reading	Brandenburg 139 P HP/ Agilent EL-03
	20 kV to 40 kV		
Equipment to Output AC High Voltage (AC HI-POT) ^{FO}	Up to 40 kV	5 % of reading	HP 34401A Fluke 80K-40 EL-02
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type B ^{FO}	600 °C to 800 °C	2.2 °C	Fluke 5100 Electric Simulation of Thermocouple Output Agilent 34970A-TC Type J/K EL-01
	800 °C to 1 760 °C	2.2 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type E ^{FO}	-200 °C to 0 °C	0.75 °C	
	0 °C to 1 000 °C	0.71 °C	



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MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type J ^{FO}	-210 °C to 0 °C	0.52 °C	Fluke 5100 Electric Simulation of Thermocouple Output Agilent 34970A-TC Type J/K EL-01
	0 °C to 760 °C	0.52 °C	
	760 °C to 1 200 °C	0.52 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type K ^{FO}	-200 °C to 0 °C	0.62 °C	
	0 °C to 500 °C	0.62 °C	
	500 °C to 1 372 °C	0.62 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type N ^{FO}	-200 °C to 0 °C	0.61 °C	
	0 °C to 600 °C	0.61 °C	
	600 °C to 1 300 °C	0.61 °C	
Gauss-meter / Tesla- Meter / Magnetic Meter ^F	Up to 1 500 μ T (Up to 15 G)	2 % of reading	Multi-Function WK Meter EL-23
Metal Detectors Meters ^F	1 gr to 100 mm	(0.05 + 5L) mm	Mass Weight / Distance Stand EL-24

Optical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Photometers & Luminance Devices ^{FO}	10 Lux to 400 000 Lux	7 % of reading	Luxmeter and Light Chamber IL-01
Refractometers ^{FO}	0 °Bx to 60 °Bx	0.1 °Bx	R °Bx Standards IL-02-02

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



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

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.
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 O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^O would mean that the laboratory performs this calibration onsite at the customer's location.
5. 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.
6. 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.
7. The term D represents diameter in inches or millimeters as appropriate to the uncertainty statement.
8. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
9. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.
10. The term T represents temperature in °C or °F as appropriate to the uncertainty statement.