PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Ferycon Labs, S.A. de C.V. (Instrulab)

Blvd. Peña Flor, No. 1102, Novatec Busines Park Nave B8, Ciudad del Sol
Querétaro, Querétaro, México. C.P. 76116

(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, Mass, Force and Weighting Devices, Mechanical, Thermodynamic, Electrical and Time and Frequency 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:*
August 13, 2014	October 21, 2022	January 31, 2025
Revision Date:	*Accreditation No.:*	*Certificate No.:*
November 03, 2023	78970	L22-707-R1

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

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Blvd. Peña Flor, No. 1102, Novatec Busines Park Nave B8, Ciudad del Sol
Querétaro, Querétaro, México. C.P. 76116
Contact Name: Fernando Briseño Phone: 442-403-5892

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

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION OR MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Calipers[FO]	0.5 mm to 1 000 mm	(9.2 + 0.0069L) µm	Gage Blocks / Depth Gage / Check Master	CEM DI-008 CENAM Technical Guide
Depth Calipers[FO]	0.5 mm to 600 mm	5.8 µm	Gage Blocks/ Depth Gage	
Linear Scales[FO] External (Process) and Integrated Indicator	1 mm to 1 000 mm	(10 + 1 x 10^{-3}L) µm	Gage Blocks	
Outside Micrometers[FO]	0.5 mm to 500 mm	(0.65 + 0.001 6L) µm	Gage Blocks CEM DI-005 /	NMX-CH-099-IMNC CENAM Technical Guide
	0.5 mm to 25 mm (Res.= 0.000 1 mm)	0.39 µm		
Depth Micrometers[FO]	0.5 mm to 300 mm	(0.73 + 0.001 1L) µm	Gage Blocks/ Depth Gage Master	JIS B 7544 CENAM Technical Guide
Inside Micrometers Two Contacts [FO]	25 mm to 450 mm	(0.76 + 0.001 6L) µm	Universal Length Machine/ Standard Ring	NMX-CH-093-IMNC CENAM Technical Guide
Inside Micrometers Three Contacts[FO]	2 mm to 300 mm	(0.84 + 0.001 2L) µm	Standard Ring	NMX-CH-092-IMNC CENAM Technical Guide
Micrometer Head[F]	0.001 mm to 50 mm	0.86 µm	Universal Length Machine / Coordinate Measuring Machine	CENAM Technical Guide CEM DI-002 NMX-CH-099-IMNC
Laser Scan Micrometer[FO]	0.1 mm to 50 mm	(0.025 + 1.75 x 10^{-3}L) µm	Direct Comparison with Master Pin Gages	CENAM Technical Guide CEM DI-002 ISO 14638 Internal Procedure
Digital Indicators[F]	0.01mm to 100 mm (Res.= 0.000 1 mm)	(0.23 + 18L) µm	Universal Length Machine	CEM DI-010 CENAM Technical Guide
Bore Gage[F]	1.2 mm to 2 mm	0.64 µm	Universal Length Machine	JIS B 7515 / CEM DI-010 CENAM Technical Guide
	18 mm to 400 mm	(0.39 + 0.012L) µm		
Dial Indicator[FO]	0.01 mm to 5 mm (Res.= 0.001 mm)	(0.82 + 0.08L) µm	Dial Gage Tester / Universal Length Machine	CEM DI-010 CENAM Technical Guide
	0.02 mm to 100 mm (Res.= 0.01 mm)	(5.1 + 0.13L) µm		
Height Gages[FO]	0.5 mm to 1 000 mm (Res.= 0.000 1 mm)	(0.81 + 0.002L) µm	Gauge Set Blocks / Check Master / Dial Indicator	NMX-CH-141-IMNC CENAM Technical Guide
Rules[F]	0.01 m to 2 m	0.082 mm	Master Rule, Optical Reticle, Vision Measurement System	CEM DI-012

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Plain Plug Gages[F]	3 mm to 200 mm	(0.13 + 0.005 2L) µm	Universal Length Machine	CENAM Technical Guide ASME B89.1.5
Plain Plug Tapered[F]	3 mm to 150 mm	(0.36 + 0.03 1L) µm	Universal Length Machine	CENAM Technical Guide IS: 2251
Micrometer and Standard[F]	25 mm to 500 mm	(0.24 + 0.002 3L) µm	Universal Length Machine	CENAM Technical Guide NMX-CH-099-IMNC
Surface Plate Flatness[FO]	0.25 m to 3.5 m diagonal	1.3 µm	Electronic Levels NMX-CH-8512-2: IMNC	
Dial Thickness Gage[FO]	0.5 mm to 50 mm (Res.= 0.001 mm)	0.59 µm	Gage Blocks /	CENAM Technical Guide CEM DI-010
	0.5 mm to 50 mm (Res.= 0.01 mm)	5.8 µm		
	1 mm to 25 mm (Res.= 0.001 mm)	(0.6 + 4 x 10^{-3}L) µm	Gage Blocks	JIS7503
Roughness Ra[F]	Up to 800 µm	0.08 µm	Roughness Meter	JIS B 0601
Roughness Ry[F]	Up to 800 µm	0.067 µm		
Roughness Meter[FO]	Ra 2.92 µm	0.079 µm	Roughness Master Specimen	CEM Procedure DI-025
	Ry 11.3 µm	0.1 µm		
Measuring Tape[F]	0.1 m to 50 m	0.58 mm	Master Rule, Optical Reticle, Vision Measurement System,	CEM DI-011
Optical Comparators X Axis Linearity Y Axis Linearity[FO]	0.5 mm to 300 mm	29 µm	Glass Master, Gauge Set Block, Angular Gage Set	JIS B 7184, CEM DI-001 Internal Procedure
Optical Comparators Magnification[O]	5X	0.05 % of magnification	Glass Master, Gauge Set Block, Angular Gage Set	JIS B 7184, CEM DI-001 Internal Procedure
	10X	0.05 % of magnification		
	20X	0.05 % of magnification		
	30X	0.05 % of magnification		
Optical Comparator Axial Squareness[O]	76.2 mm of Y axis Travel or maximum Y axis Travel if maximum is less than 76.2 mm (76.2 mm of Y axis travel if maximum is less than 76.2 mm).	58 µm	Master Square	JIS B 7184 Internal Procedure
Optical Comparators Angularity[O]	0° 15’ to 360° 00’	1.1’	Glass Scale, Angle Gage Blocks	JIS B 7184, CEM DI-001 Internal Procedure

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Microscopes and vision measurement systems[FO] Length scales X Axis Y Axis	0.5 mm to 300 mm	1.3 µm	Glass Scale, Gauge Set Block	JIS B 7153, CEM DI-006 Internal Procedure
Plain Ring Gage (Diameter)[F]	3 mm to 250 mm	(0.44 + 0.002 4L) µm	Universal Length Machine	ANSI/ASME B89.1.6 CENAM Technical Guide
Ring Gage Tapered (Diameter)[F]	2 mm to 150 mm	(0.38 + 0.002 4L) µm	Universal Length Machine / Spherical Contacts	CENAM Technical Guide IS 2251
Thread Ring Gage (Pitch Diameter)[F]	(M 1.6 x 0.35 to M 100 x 2)	(0.36 + 0.006 7L) µm	Universal Length Machine / Spherical Contacts	ISO 1502, ANSI/ASME B1.2, ANSI/ASME B1.1, BS 919, ISO 5855, CENAM Technical Guide
Thread Ring Gage Tapered (Pitch Diameter)[F]	(M 1.6 x 0.35 to M 100 x 2)	(0.38 + 0.001 1L) µm	Universal Length Machine Wires set	CENAM Technical Guide ANSI/ASME B120.1 IS: 554 and IS: 8999 (NPT) Specific Gages
Thickness Gage[F]	0.1 mm to 5 mm	(0.7 + 0.005L) µm	Universal Length Machine	D70I Gage Blocks JIS7502
Thickness Foils[F] Metallic and Plastic	0.001 mm to 3 mm	(0.61 + 4 x 10^{-3}L) µm	Universal Length Machine Micrometer	JIS B7524
Thickness Meter[FO]	0.005 mm to 25 mm	(0.85 + 0.1L) µm	Blocks, Thickness Foil	ASTM-B499
Thread Plug Gage[F]	(M 1.6 x 0.35 to M 100 x 2)	(0.16 + 7 x 10^{-4}L) µm	EA-10/10 Wires Mitutoyo, Model: 313-101 Universal Length Machine	ANSI/ASME B89.1.5 ANSI/ASME B18.29.1 ISO 1502, ANSI/ASME B1.20.1 CENAM Technical Guide
Thread Plug Gage Tapered (Pitch Diameter)[F]	(M 1.6 x 0.35 to M 100 x 2)	(0.30 + 0.002 7L) µm	Universal Length Machine/ Spherical Contacts	ANSI/ASME B1.20.1 IS 554 and IS 8990 CENAM Technical Guide
Pin Gage[F]	0.01 mm to 25 mm	(0.15 + 3.3 x 10^{-3}L) µm	High Accuracy Micrometer / Universal Length Machine	ASME B89.1.5 CENAM Technical Guide
Spheres[F]	Up to 100 mm	(0.53 + 4 x 10^{-3}L) µm	Universal Length Machine	ISO 3290-1 ISO 3290-1 ASME B89.1.5 CENAM Technical Guide Internal procedure

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Steel Gage Block[F]	0.5 mm to 100 mm	(0.13 + 0.001 3L) µm	Gauge Block Grade K/1, Block Gage Comparator Aditya	JIS B 7506 CENAM Technical Guide
Ceramic Gage Block[F]	0.5 mm to 100 mm	(0.13 + 0.001 3L) µm		
Carbide Gage Block[F]	0.5 mm to 100 mm	(0.13 + 0.001 3L) µm		
CMM Performance Verification (Coordinate Measuring Machines) Linear Displacement (X, Y, and Z axis)[FO]	25 mm to 1 500 mm	(0.38 + 1.99L) µm	Gage Block and Check Master	ASME B89.4.10360.2 ISO10360-2 & ISO 10360-5
Sieve[F]	0.03 mm to 16 mm	2 µm	Vision System Machine	ISO 565, ASTM E 11
Angle Measure Instruments[FO]	360°	0.01°	Vision System Machine/ Angle Gage Blocks	NMX-CH-151-IMNC
Steel Rules[F]	0,3 mm to 500 mm	0.1 mm	Vision System Machine / Optical Reticle and Metallic Rule	CEM DI-012/ NOM-046-SCFI
Glass Rules[F]	0,1 mm to 500 mm	(2.3 + 0.01L) µm	Vision System Machine	CEM DI-013
Angle Gage Blocks[F]	1° to 90°	4.5 x 10^{-4}°h	CMM	CEM DI-017 CENAM Technical Guide
Angle Calibration of Precision Levels[F]	-1.4 mm/m to 1.4 mm/m	0.002 9 mm/m	Electronic Levels	JIS B 7510 DIN 2277 CENAM Technical Guide
Universal Length Machine[FO]	0.5 mm to 500 mm	(0.03 + 7.6 x 10^{-2}L) µm	Gage Blocks	ASME B89.1.9
Height Master[FO]	Up to 610 mm	(0.9 + 1 x 10^{-3}L) µm	Gage Blocks Electronic Probe	NMX-CH-3650

Mass, Force and Weighting Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION OR MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Balances[O]	0.001 g to 200 g (Res. 0.000 1 g)	(2.5 x 10^{-4} + 2 x 10^{-6}Wt) mg	Weight Set F1	Euramet_cg-18 SIM Guidelines
	0.003 g to 5 100 g (Res. 0.00 1 g)	(8.5 x 10^{-4} + 2 x 10^{-6}Wt) mg		

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Mass, Force and Weighting Devices

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Scales[FO]	5 kg to 200 kg (Res.= 0.001 kg)	$(0.76 \times 10^{-4} + 2 \times 10^{-5}Wt)$ g	Parallelepiped Weights Class M1, F1	Euramet_cg-18 SIM Guidelines
Dynamometers[FO]	0.01 kgf to 50 kgf	0.61 % of reading	Weight set F1, Weights Parallelepiped M1	NMX-CH-7500-1-IMNC

Mechanical

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Vacuum Meters[FO]	-30 psi to 1 psi	0.19 psi	Digital Manometer	Euramet_cg-17 / DKR-R 6-1
Pressure Gage[FO]	1 psi to 300 psi	0.19 psi	Digital Manometer	Euramet cg-17 NOM-013-SCFI, DKR-R 6-1
	301 psi to 500 psi	0.19 psi		
	501 psi to 2 000 psi	0.24 psi		
	2 001 psi to 3 000 psi	0.27 psi		
	3 001 psi to 10 000 psi	0.46 psi		
	10 001 psi to 15 000 psi	0.49 psi		
Pressure Transmitter[FO]	1 psi to 300 psi	0.19 psi		
	301 psi to 500 psi	0.2 psi		
	501 psi to 2 000 psi	0.33 psi		
	2 001 psi to 3 000 psi	0.42 psi		
	30 01 psi to 10 000 psi	1.2 psi		
	10 001 psi to 15 000 psi	1.8 psi		
Pressure Recorder[FO]	1 psi to 300 psi	0.61 psi		
	301 psi to 500 psi	0.61 psi		
	501 psi to 2 000 psi	1.5 psi		
	2 001 psi to 3 000 psi	1.5 psi		
	3 001 psi to 10 000 psi	2.9 psi		
	10 001 psi to 15 000 psi	2.9 psi		
Transducers[FO]	1 psi to 300 psi	0.19 psi		
	301 psi to 500 psi	0.2 psi		
	501 psi to 2 000 psi	0.33 psi		
	2 001 psi to 3 000 psi	0.43 psi		
	3 001 psi to 10 000 psi	1.3 psi		
	10 001 psi to 15 000 psi	1.8 psi		

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Pressure Switch[FO]	1 psi to 300 psi	0.61 psi	Digital Manometer	Euramet cg-17 NOM-013-SCFI, DKR-R 6-1
	301 psi to 500 psi	0.61 psi		
	501 psi to 2 000 psi	1.5 psi		
	2 001 psi to 3 000 psi	1.5 psi		
	3 001 psi to 10 000 psi	2.9 psi		
	10 001 psi to 15 000 psi	2.9 psi		
Differential Pressure, Pressure Switch[FO] Gauges, Transmitters, Transducers and Recorders[FO]	1 psi to 300 psi	0.19 psi	Digital Manometer	Euramet cg-17 NOM-013-SCFI DKR-R 6-1
	301 psi to 500 psi	0.19 psi		
	501 psi to 2 000 psi	0.24 psi		
	2 001 psi to 3 000 psi	0.27 psi		
	3 001 psi to 10 000 psi	0.46 psi		
Differential Pressure Gauges, Transmitters, Transducers and Recorders[FO]	0.1 in H_2O to 250 H_2O	0.063 in H_2O		
Indirect Verification of Brinell Hardness Tester HBW 10/3 000 [FO]	100 HBW to 650 HBW	2.1 HBW	Test Blocks ISO 6506-2 ASTM E10	
Indirect Verification of Rockwell Hardness Testers HRC [FO]	20 HRC to 35 HRC	0.4 HRC	Test Blocks	ISO 6508-2 ASTM E 18
	35 HRC to 60 HRC	0.35 HRC		
	60 HRC to 80 HRC	0.33 HRC		
Indirect Verification of Rockwell Hardness Testers HRBW[FO]	20 HRBW to 60 HRBW	0.51 HRBW		
	60 HRBW to 80 HRBW	0.37 HRBW		
	80 HRBW to 100 HRBW	0.43 HRBW		
Dial Torque Wrench, Click Torque Wrench, Digital Torque Wrench and Torque Screwdriver[FO]	1 N·m to 10 N·m	0.74 % of reading	Torque Transducers and Torque Analyzer	NMX-CH-6789-IMNC/ CEM
	6.7 N·m to 67 N·m	1.8 % of reading		
	34 N·m to 340 N·m	1.8 % of reading		
	250 N·m to 2 500 N·m	1.8 % of reading		

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Thermodynamic

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Contact Thermometry (RTD, Thermocouple, Bimetallic)[FO]	30 °C to 100 °C	0.19 °C	RTD Pt 100 and Multimeter Hewlett Packard, Drywell	NT VVS 103 Direct Method
	101 °C to 200 °C	0.21 °C		
	201 °C to 350 °C	0.26 °C		
	351 °C to 650 °C	0.34 °C		
	651 °C to 850 °C	0.63 °C		
	851 °C to 1 200 °C	0.93 °C		
Thermohygrometers-Temperature Only[F]	20 °C to 60 °C	0.13 °C	Thermohygromether Rotronic: Hygroclip2, Device Type: HC2-S	TH-007
Hygrometers, Humidity Tester[F]	10 % RH to 80 % RH	0.87 % RH	Humidity Chamber Rotronic: Hygroclip2 Device Type: HC2-S HygroPalm Model: HP23-A, Humidity CRM	CENAM Technical Guide
Humidity Chamber[O]	10 % RH to 80 % RH	1.2 % RH	Rotronic: Hygroclip2 Device type: HC2-S HygroPalm Model: HP23-A, Pt100 Class: A.	DKD-R-5-7 Euramet_cg-20
Oven[O]	20 °C to 1 000 °C	1.6 °C	Thermocouple Type S, RTD Pt 100 and Multimeter Keithley Uniformity Study	SAE AMS 2750 E
Muffles and Furnace[O]	20 °C to 1 000 °C	1.8°C		
Controlled Temperature Rooms[O]	20 °C to 100 °C	0.25 °C	Thermocouple Type S, RTD Pt 100 and Multimeter Keithley Uniformity Study	DKD-R-5-7 Euramet_cg-20

Electrical

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Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 5500A	EL-001
10 Hz to 45 Hz	1 mV to 32.999 mV	0.41 % of reading		

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Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 5500A	EL-001
45 Hz to 10 kHz	1 mV to 32.999 mV	0.41 % of reading		
10 kHz to 20 kHz	1 mV to 32.999 mV	0.24 % of reading		
20 kHz to 50 kHz	1 mV to 32.999 mV	0.3 % of reading		
50 kHz to 100 kHz	1 mV to 32.999 mV	0.42 % of reading		
100 kHz to 500 kHz	1 mV to 32.999 mV	1.2 % of reading		
Equipment to Measure AC Voltage At the listed frequencies[FO]				
10 Hz to 45 Hz	33 mV to 329.999 mV	0.41 % of reading		
45 Hz to 10 kHz	33 mV to 329.999 mV	0.41 % of reading		
10 kHz to 20 kHz	33 mV to 329.999 mV	0.24 % of reading		
20 kHz to 50 kHz	33 mV to 329.999 mV	0.3 % of reading		
50 kHz to 100 kHz	33 mV to 329.999 mV	0.42 % of reading		
100 kHz to 500 kHz	33 mV to 329.999 mV	1.2 % of reading		
Equipment to Measure AC Voltage or Multimeter At the listed frequencies[FO]				
10 Hz to 45 Hz	0.33 V to 3.299 99 V	0.18 % of reading		
45 Hz to 10 kHz	0.33 V to 3.299 99 V	0.18 % of reading		
10 kHz to 20 kHz	0.33 V to 3.299 99 V	0.095 % of reading		
20 kHz to 50 kHz	0.33 V to 3.299 99 V	0.17 % of reading		
50 kHz to 100 kHz	0.33 V to 3.299 99 V	0.29 % of reading		
100 kHz to 500 kHz	0.33 V to 3.299 99 V	0.7 % of reading		
Equipment to Measure AC Voltage At the listed frequencies[FO]				
10 Hz to 45 Hz	3.3 V to 32.999 9 V	0.18 % of reading		
45 Hz to 10 kHz	3.3 V to 32.999 9 V	0.18 % of reading		
10 kHz to 20 kHz	3.3 V to 32.999 9 V	0.1 % of reading		
20 kHz to 50 kHz	3.3 V to 32.999 9 V	0.24 % of reading		
50 kHz to 100 kHz	3.3 V to 32.999 9 V	0.58 % of reading		

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Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 5500A	EL-001
45 Hz to 1 kHz	33 V to 329.999 V	0.06 % of reading		
1 kHz to 10 kHz	33 V to 329.999 V	0.093 % of reading		
10 kHz to 20 kHz	33 V to 329.999 V	0.12 % of reading		
Equipment to Measure AC Voltage At the listed frequencies[FO]				
45 Hz to 1 kHz	330 V to 1 000 V	0.068 % of reading		
1 kHz to 10 kHz	330 V to 1 000 V	0.24 % of reading		
Equipment to Measure AC Current At the listed frequencies[FO]				
10 Hz to 20 Hz	0.029 mA to 0.329 99 mA	0.8 % of reading	Fluke 5500A Fluke 744	
20 Hz to 45 Hz	0.029 mA to 0.329 99 mA	0.66 % of reading		
45 Hz to 1 kHz	0.029 mA to 0.329 99 mA	1 % of reading		
1 kHz to 5 kHz	0.029 mA to 0.329 99 mA	1 % of reading		
5 kHz to 10 kHz	0.029 mA to 0.329 99 mA	1.9 % of reading		
Equipment to Measure AC Current At the listed frequencies[FO]				
10 Hz to 20 Hz	0.33 mA to 3.299 mA	0.34 % of reading		
20 Hz to 45 Hz	0.33 mA to 3.299 mA	0.2 % of reading		
45 Hz to 1 kHz	0.33 mA to 3.299 mA	0.22 % of reading		
1 kHz to 5 kHz	0.33 mA to 3.299 mA	0.33 % of reading		
5 kHz to 10 kHz	0.33 mA to 3.299 mA	0.79 % of reading		
Equipment to Measure AC Current At the listed frequencies[FO]				
10 Hz to 20 Hz	3.3 mA to 32.999 mA	0.33 % of reading		
20 Hz to 45 Hz	3.3 mA to 32.999 mA	0.13 % of reading		
45 Hz to 1 kHz	3.3 mA to 32.999 mA	0.21 % of reading		
1 kHz to 5 kHz	3.3 mA to 32.999 mA	0.33 % of reading		
5 kHz to 10 kHz	3.3 mA to 32.999 mA	0.18 % of reading		

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Contact Name: Fernando Briseño Phone: 442-403-5892

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION OR MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Equipment to Measure AC Current At the listed frequencies[FO]			Fluke 5500A Fluke 744	EL-001
10 Hz to 20 Hz	33 mA to 329.99 mA	0.23 % of reading		
20 Hz to 45 Hz	33 mA to 329.99 mA	0.23 % of reading		
45 Hz to 1 kHz	33 mA to 329.99 mA	0.12 % of reading		
1 kHz to 5 kHz	33 mA to 329.99 mA	0.23 % of reading		
5 kHz to 10 kHz	33 mA to 329.99 mA	0.68 % of reading		
Equipment to Measure AC Current At the listed frequencies[FO]				
10 Hz to 45 Hz	0.33 A to 2.199 99 A	0.23 % of reading		
45 Hz to 1 kHz	0.33 A to 2.199 99 A	0.11 % of reading		
1 kHz to 5 kHz	0.33 A to 2.199 99 A	0.85 % of reading		
Equipment to Measure AC Current At the listed frequencies[FO]				
45 Hz to 65 Hz	2.2 A to 11 A	0.79 % of reading		
65 Hz to 500 Hz	2.2 A to 11 A	0.22 % of reading		
500 Hz to 1 kHz	2.2 A to 11 A	0.48 % of reading		
60 Hz	10 A to 550 A	0.25 % of reading	5500A/COIL	SIT/Tec_014/06
Equipment to Measure DC Voltage[FO]	0 mV to 299.999 mV	0.007 9 % of reading	Fluke 5500A Fluke 754	EL-001 SIT/Tec_014/06
	0.33 V 3.299 9 V	0.007 9 % of reading		
	3.3 V to 32.999 V	0.006 4 % of reading		
	33 V to 329.999 V	0.059 % of reading		
	330 V to 1 020 V	0.092 % of reading		
Equipment to Measure DC Current[FO]	0.33 mA to 3.3 mA	0.012 % of reading		
	3.3 mA to 33 mA	0.012 % of reading		
	33 mA to 330 mA	0.013 % of reading		
	330 mA to 2.2 A	0.037 % of reading		
	2.2 A to 11 A	0.073 % of reading		
	1 A to 550 A	0.081 % of reading	Fluke 5500A	EL-001
Equipment to Measure Resistance[FO]	1 mΩ to 10.999 Ω	0.11 % of reading	Fluke 5500A Fluke 754	
	11 Ω to 32.9990 0 Ω	0.066 % of reading		
	33 Ω to 109.999 Ω	0.028 % of reading		

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Equipment to Measure Resistance[FO]	110 Ω to 329.999 Ω	0.016 % of reading	Fluke 5500A Fluke 754	EL-001
	330 Ω to 1 099.99 Ω	0.017 % of reading		
	1.1 kΩ to 3.299 99 kΩ	0.013 % of reading		
	3.3 kΩ to 10.999 9 kΩ	0.017 % of reading		
	11 kΩ to 32.999 99 kΩ	0.013 % of reading		
	33 kΩ to 109.999 kΩ	0.019 % of reading		
	110 kΩ to 329.999 kΩ	0.021 % of reading		
	330 kΩ to 1 099.99 kΩ	0.024 % of reading		
	1.1 MΩ to 10.999 9 MΩ	0.021 % of reading		
	11 MΩ to 32.999 MΩ	0.075 % of reading		
	33 MΩ to 109.99 MΩ	0.58 % of reading		
	110 MΩ to 330 MΩ	0.58 % of reading		
Equipment to Measure Capacitance[F]	0.33 nF to 0.499 9 nF	0.53 % of reading	Fluke 5500A	CENAM Technical Guide Direct Method EL-010
	0.5 nF to 1.099 9 nF	0.53 % of reading		
	1.1 nF to 3.299 9 nF	0.53 % of reading		
	3.3 nF to 10.999 nF	0.53 % of reading		
	11 nF to 32.999 nF	0.26 % of reading		
	33 nF to 109.99 nF	0.26 % of reading		
	110 nF to 329.99 nF	0.28 % of reading		
	0.33 µF to 1.099 9 µF	0.3 % of reading		
	1.1 µF to 3.299 9 µF	0.35 % of reading		
	3.3 µF to 10.999 µF	0.36 % of reading		
	11 µF to 32.999 µF	0.4 % of reading		
	33 µF to 109.99 µF	0.52 % of reading		
	110 µF to 329.99 µF	0.71 % of reading		
	0.33 mF to 1.1 mF	1.1 % of reading		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type B[FO]	600 °C to 800 °C	0.51 ºC	Fluke 5500A / Fluke 744 Electrical Simulation of Thermocouple Output	Euramet_11-cg EL-010
	800 °C to 1 000 °C	0.39 ºC		
	1 000 °C to 1 550 °C	0.35 ºC		
	1 550 °C to 1 820 °C	0.38 ºC		

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Temperature Calibration, Simulation, Indication, and Control Equipment used with Thermocouple Type C[FO]	0 °C to 150 °C	0.35 ºC	Fluke 5500A / Fluke 744 Electrical Simulation of Thermocouple Output	Euramet_11-cg EL-010
	150 °C to 650 °C	0.3 ºC		
	650 °C to 1 000 °C	0.36 ºC		
	1 000 °C to 1 800 °C	0.58 ºC		
	1 800 °C to 2 316 °C	0.97 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type E[FO]	-250 °C to -100 °C	0.58 ºC		
	-100 °C to -25 °C	0.18 ºC		
	-25 °C to 350 °C	0.16 ºC		
	350 °C to 650 °C	0.18 ºC		
	650 °C to 1 000 °C	0.24 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to -100 °C	0.31 ºC		
	-100 °C to -30 °C	0.18 ºC		
	-30 °C to 150 °C	0.16 ºC		
	150 °C to 760 °C	0.2 ºC		
	760 °C to 1 200 °C	0.27 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type K[FO]	-200 °C to -100°C	0.38 ºC		
	-100 °C to -25°C	0.21 ºC		
	-25 °C to 120°C	0.18 ºC		
	120 °C to 1 000 °C	0.3 ºC		
	1 000 °C to 1 372 °C	0.46 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type L[FO]	-200 °C to -100 °C	0.43 ºC		
	-100 °C to 800 °C	0.3 ºC		
	800 °C to 900 °C	0.2 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type N[FO]	-200 °C to -100 °C	0.46 ºC		
	-100 °C to -25 °C	0.25 ºC		
	-25 °C to 120 °C	0.22 ºC		
	120 °C to 410 °C	0.21 ºC		
	410 °C to 1 300 °C	0.31 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type R[FO]	0 °C to 250 °C	0.66 ºC		
	250 °C to 400 °C	0.4 ºC		
	400 °C to 1 000 °C	0.38 ºC		
	1 000 °C to 1 767 °C	0.46 ºC		

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Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type S^{FO}	0 °C to 250 °C	0.54 ºC	Fluke 5500A / Fluke 744 Electrical Simulation of Thermocouple Output	Euramet_11-cg EL-010
	250 °C to 1 000 °C	0.42 ºC		
	1 000 °C to 1 400 °C	0.43 ºC		
	1 400 °C to 1 767 °C	0.53 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type T^{FO}	-250 °C to -150 °C	0.73 ºC		
	-150 °C to 0 °C	0.28 ºC		
	0 °C to 120 °C	0.18 ºC		
	120 °C to 400 °C	0.16 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with Thermocouple Type U^{FO}	-200 °C to 0 °C	0.65 ºC		
	0 °C to 600 °C	0.31 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 385, 100 Ω^{FO}	-200 °C to -80 °C	0.058 ºC	Fluke 5500A / Fluke 754 Electrical Simulation of RTD Output	Euramet_cg-11 EL-010
	-80 °C to 0 °C	0.062 ºC		
	0 °C to 100 °C	0.084 ºC		
	100 °C to 300 °C	0.11 ºC		
	300 °C to 400 °C	0.12 ºC		
	400 °C to 630 °C	0.15 ºC		
	630 °C to 800 °C	0.23 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 3926, 100 Ω^{FO}	-200 °C to -80 °C	0.058 ºC		
	-80 °C to 0 °C	0.062 ºC		
	0 °C to 100 °C	0.084 ºC		
	100 °C to 300 °C	0.11 ºC		
	300 °C to 400 °C	0.12 ºC		
	400 °C to 630 °C	0.15 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 3916, 100 Ω^{FO}	-200 °C to -190 °C	0.25 ºC		
	-190 °C to -80 °C	0.04 ºC		
	-80 °C to 0 °C	0.05 ºC		
	0 °C to 100 °C	0.06 ºC		
	100 °C to 260 °C	0.07 ºC		
	260 °C to 300 °C	0.08 ºC		
	300 °C to 400 °C	0.09 ºC		
	400 °C to 600 °C	0.1 ºC		
	600 °C to 630 °C	0.23 ºC		

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Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 385, 200 Ω^{FO}	-200 °C to -80 °C	0.04 ºC	Fluke 5500A / Fluke 754 Electrical Simulation of RTD Output	Euramet_cg-11 EL-010
	-80°C to 0 °C	0.04 ºC		
	0 °C to 100 °C	0.04 ºC		
	100 °C to 260 °C	0.05 ºC		
	260 °C to 300 °C	0.12 ºC		
	300 °C to 400 °C	0.13 ºC		
	400 °C to 600 °C	0.14 ºC		
	600 °C to 630 °C	0.16 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 385, 500 Ω^{FO}	-200°C to -80°C	0.04 ºC		
	-80 °C to 0 °C	0.05 ºC		
	0 °C to 100 °C	0.05 ºC		
	100 °C to 260 °C	0.06 ºC		
	260 °C to 300 °C	0.08 ºC		
	300 °C to 400 °C	0.08 ºC		
	400 °C to 600 °C	0.09 ºC		
	600 °C to 630 °C	0.11 ºC		
Temperature Calibration, Simulation, Indication and Control Equipment used with RTD Pt 385, 1 000 Ω^{FO}	-200 °C to -80 °C	0.03 ºC		
	-80 °C to 0 °C	0.03 ºC		
	0 °C to 100 °C	0.04 ºC		
	100 °C to 260 °C	0.05 ºC		
	260 °C to 300 °C	0.06 ºC		
	300 °C to 400 °C	0.07 ºC		
	400 °C to 600 °C	0.07 ºC		
	600 °C to 630 °C	0.23 ºC		
Temperature Calibration, Simulation, Indication, and Control Equipment used with RTD Cu 427, 10 Ω^{FO}	0.0 °C to 200 °C	0.36 °C		
Temperature Calibration, Simulation, Indication, and Control Equipment used with RTD Ni 672, 120 Ω^{FO}	0.0 °C to 200 °C	0.16 °C		

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Equipment to Output AC Voltage At the listed frequencies[FO]			HP 3458A High Voltage Probe	EL-024 EL-010 PR-EL-01
20 Hz to 45 Hz	10 mV to 100 mV	0.38 % of reading		
45 Hz to 20 kHz	10 mV to 100 mV	0.15 % of reading		
20 kHz to 50 kHz	10 mV to 100 mV	0.17 % of reading		
50 kHz to 100 kHz	10 mV to 100 mV	0.25 % of reading		
Equipment to Output AC Voltage At the listed frequencies[FO]				
20 Hz to 45 Hz	100 mV to 10 V	0.054 % of reading		
45 Hz to 1 kHz	100 mV to 10 V	0.031 % of reading		
1 kHz to 20 kHz	100 mV to 10 V	0.039 % of reading		
20 kHz to 50 kHz	100 mV to 10 V	0.058 % of reading		
50 kHz to 100 kHz	100 mV to 10 V	0.12 % of reading		
Equipment to Output AC Voltage At the listed frequencies[FO]				
20 Hz to 45 Hz	10 V to 100 V	0.028 % of reading		
45 Hz to 1 kHz	10 V to 100 V	0.026 % of reading		
1 kHz to 20 kHz	10 V to 100 V	0.026 % of reading		
20 kHz to 50 kHz	10 V to 100 V	0.043 % of reading		
50 kHz to 100 kHz	10 V to 100 V	0.14 % of reading		
Equipment to Output AC Voltage At the listed frequencies[FO]				
20 Hz to 45 Hz	100 V to 750 V	0.051 % of reading		
45 Hz to 1 kHz	100 V to 750 V	0.049 % of reading		
1 kHz to 20 kHz	100 V to 750 V	0.072 % of reading		
20 kHz to 50 kHz	100 V to 750 V	0.14 % of reading		
50 kHz to 100 kHz	100 V to 750 V	0.35 % of reading		
Equipment to Output AC Voltage At the listed frequencies[FO]				
20 Hz to 45 Hz	750 V to 40 kV	5 % of reading		
45 Hz to 20 kHz	750 V to 40 kV	5 % of reading		
20 kHz to 50 kHz	750 V to 40 kV	5 % of reading		

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Equipment to Output AC Voltage At the listed frequencies[FO]			HP 3458A High Voltage Probe	EL-024 EL-010 PR-EL-01
50 kHz to 100 kHz	750 V to 40 kV	5 % of reading		
Equipment to Output DC Voltage[FO]	0 mV to 100 mV	0.000 51 % of reading	HP 3458A	EL-023 EL-010
	100 mV to 1 V	0.001 6 % of reading		
	1 V to 10 V	0.001 6 % of reading		
	10 V to 100 V	0.001 6 % of reading		
	100 V to 700 V	0.001 6 % of reading		
Equipment to Output DC Voltage[FO]	0.7 kV to 20 kV	2 % of reading	HP 3458A High Voltage probe Fluke 80K40	PR-EL-01
	20 kV to 35 kV	1 % of reading		
	35 kV to 40 kV	2 % of reading		
Equipment to Output AC Current[FO]	20 mA to 10 A	1.3 % of reading	HP 3458A	
	1µA to 10 A	0.08 % of reading		
	1A to 50 A	2 % of reading	Shunt 50 A HP 3458 A	EL-024, EL-010
Equipment to Output Frequency[FO]	20 Hz to 1 MHz	0.01 % of reading	HP 5334B / Fluke 754	PR-EL-01
Equipment to Output Resistance[FO]	1µΩ to 199.999 kΩ	0.025 % of reading	HP 3458A / Fluke 754	EL-025, EL-010
	199.999 KΩ to 19.999 9 MΩ	0.25 % of reading		
	19.999 9 MΩ to 100 MΩ	1.8 % of reading		
Equipment to Output DC Voltage[FO]	25 mV to 90 mV	0.009 7 mV	HP 3458A	EL-023 EL-010
	1 V to 2.5 V	0.000 15 V		
	10 V to 25 V	0.001 5 V		
	100 V to 250 V	0.015 V		
Equipment to Measure AC Current At the listed frequencies 60 Hz[FO]	1 V to 2.5 V	0.001 6 V		
	10 V to 25 V	0.018 V		
	100 V to 250 V	0.19 V		
Equipment to Measure DC Current[FO]	10 mA to 25 mA	0.003 3 A		
	35 mA to 90 mA	0.018 mA		
Equipment to Measure Resistance[FO]	2 Ω to 9 Ω	0.01 Ω		
	20 Ω to 90 Ω	0.029 Ω		
	200 Ω to 900 Ω	0.19 Ω		
	2 kΩ to 9 kΩ	0.002 1 kΩ		

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Equipment to Measure Frequency[FO]	25 Hz to 100 Hz	0.012 Hz	HP 3458A	EL-023 EL-010
	250 Hz to 1 000 Hz	0.11 Hz		
	2.5 kHz to 10 kHz	0.001 1 kHz		
	20 kHz to 45 kHz	0.011 kHz		
Equipment to Output DC Voltage[FO]	20 mV to 90 mV	0.008 9 mV		
	0.2 V to 0.9 V	0.000 05 V		
	2.5 V to 13 V	0.000 78 V		
Equipment to Output DC Current[FO]	1 mA to 20 mA	0.003 2 mA		
Equipment to Output Resistance[FO]	1 Ω to 9 Ω	0.001 8 Ω		
	20 Ω to 90 Ω	0.018 Ω		
	0.2 kΩ to 0.9 kΩ	0.000 16 Ω		

Time and Frequency

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Low Frequency Generator Photo-Tachometer[FO] Contact Tachometers	6 rpm to 600 000 rpm	6×10^{-5} rpm	Universal Counter HP Fluke 5500A, Time	CENAM Technical Guide
Stopwatch[FO]	10 s to 1×10^{7} s	1×10^{-8} s/s	Universal Counter GPS	
Function Generator Signal Generator[FO]	0.1 Hz to 1.3 GHz	2×10^{-10} Hz/Hz		
Standard Oscillator[FO]	10 MHz	2×10^{-10} Hz/Hz		
Function Generator Signal Generator / Period[FO]	10 ns to 10 s	2×10^{-9} Hz/Hz		
Time Interval Counter Universal Counter[FO]	10 s to 86 400 s	2×10^{-10} s/s		

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

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.

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

8. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.