



# PERRY JOHNSON LABORATORY ACCREDITATION, INC.

## Certificate of Accreditation

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

### ***P&P Calibration Lab***

***International Business Park, Blvd. Panama Pacifico Bldg. 3815 Off. 204, Panamá Pacifico,  
Republic of Panama***

*(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 January 2009):

***Dimensional, Electrical, Mechanical, Mass, Force & Weighing, and Time and  
Frequency***  
*(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:*

December 05, 2014

*Issue Date:*

May 31, 2023

*Expiration Date:*

August 31, 2025

*Accreditation No.:*

75260

*Certificate No.:*

L23-424

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.pjllabs.com](http://www.pjllabs.com)*



# Certificate of Accreditation: Supplement

## P&P Calibration Lab

International Business Park, Blvd. Panama Pacifico Bldg. 3815 Off. 204,  
Panamá Pacifico, Republic of Panama  
Contact Name: Gabriel Parra Phone: 507-342-9484

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
Indicator <sup>FO</sup>	0.001 mm to 508 mm (0.000 05 in to 20 in)	(0.78 + 0.06 L) $\mu$ m [(31+ 2.5 L) $\mu$ in]	Gage Block Set – Grade 0 Surface Plate, CP-002
Caliper <sup>FO</sup>	0.001 mm to 1 040 mm (0.000 5 in to 41in)	(12.39 + 0.06 L) $\mu$ m [(488 + 2.5 L) $\mu$ in]	Gage Block Set – Grade 0 Surface Plate CP-003
Micrometer <sup>FO</sup>	0.001 mm to 1 040 mm (0.000 5 in to 41in)	(0.64 + 0.06 L) $\mu$ m [(25.19 + 2.5 L) $\mu$ in]	Gage Block Set – Grade 0 Optical Flat CP-006
Crimping Tools - Crimping Chamber <sup>FO</sup>	0.279 mm to 15.875 mm (0.011 in to 0.625in)	1.6 $\mu$ m 62 $\mu$ m	Pin Gage Sets - Class ZZ CP-004
Angle Measuring Devices <sup>FO</sup>	Up to 10 °	0.026°	Angle Gauge Blocks CP-016
	11° to 360 °	0.062°	
Flexible Tape <sup>FO</sup>	Up to 30 m	0.83 mm	Digital Tape Measure CP-015
Rigid Rule <sup>FO</sup>	Up to 1 m	0.66 mm	
Profilometers <sup>FO</sup>	16 uin RA	2.1 uin	Reference specimen Blocks CP022
	119 uin RA	2.1 uin	
Feeler gauge <sup>FO</sup> Dimensional Gage	Up to 25 mm	2.2 $\mu$ m	Digital Micrometer/Caliper CP024
	25 mm to 300 mm	12 $\mu$ m	

### 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
Torque Wrench <sup>FO</sup>	0.33 lbf•ft to 1 000 lbf•ft	0.4 % of reading	CDI Multitest 2000-1 CP-005
	4 lbf•ft to 12 000 lbf•in		
Force - Tensiometer <sup>FO</sup>	20 lbf • in to 250 lbf • ft Torque transducers	0.58 % of reading	Dead weight Class F CDI Multitest 2000-1 CP-007
	201 lb to 1 000 lb	0.64 % of reading	CDI Multitest 2000-1 CP-007
Force - Gauge <sup>FO</sup>	0.5 lb to 200 lb	0.16 % of reading	Dead weight Class F CDI Multitest 2000-1 CP-023
	200.1 lb to 1 000 lb	0.47 % of reading	CDI Multitest 2000-1 CP-023
Pressure Gage <sup>FO</sup>	-13.5 psi to 0.001 psi	0.14 psig	Fluke 2700G-BG700K CP-008
	Up to 100 psi	0.082 psig	Fluke 2700G-BG700K CP-008
	101 psi to 500 psi	0.091 psig	Fluke 2700G-BG3.5M CP-008
	501 psi to 1 000 psi	0.19 psig	Fluke 2700G-BG7M CP-008



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Pressure Gage <sup>FO</sup>	1 001 psi to 10 000 psi	1.6 psig	Additel ADT681/GP10K CP-008
Torque Tester/ Torque Transducers <sup>FO</sup>	20 in·lbf to 250 ft·lbf	0.19 % Reading	Class F weights Torque Arm CP-020
Equipment to Measure Rockwell Hardness <sup>FO</sup>	53.10 HRBW	0.50 HRBW	Rockwell Test Blocks CP025
	77.38 HRBW	0.59 HRBW	
	94.05 HRBW	0.62 HRBW	
	64.61 HRC	0.35 HRC	

### Mass, Force and Weighing Device

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
Bench and Floor Scales <sup>FO</sup>	Up to 1 100 g	0.000 6 g	NIST Class F,OILM Class F1 Weights CP026
	Up to 300 lb	0.005 8 lb	

### 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 measure DC Voltage <sup>FO</sup>	Up to 104 mV	$8 \times 10^{-5} \text{ V/V} + 1.1 \times 10^{-5} \text{ V}$	Transmille 1000 CP-009
	0.104 V to 1.04 V	$8 \times 10^{-5} \text{ V/V} + 6.6 \times 10^{-5} \text{ V}$	
	1.04 V to 10.4 V	$8 \times 10^{-5} \text{ V/V} + 6.6 \times 10^{-4} \text{ V}$	
	10.4 V to 104 V	$8 \times 10^{-5} \text{ V/V} + 6.6 \times 10^{-3} \text{ V}$	
	104 V to 1 000 V	$8 \times 10^{-5} \text{ V/V} + 6.6 \times 10^{-2} \text{ V}$	
Equipment to measure DC Current <sup>FO</sup>	Up to 104 uA	$3.0 \times 10^{-4} \text{ A/A} + 3.1 \times 10^{-8} \text{ A}$	Transmille 1000 CP-009
	0.104 mA to 1.04 mA	$3.0 \times 10^{-4} \text{ A/A} + 5.9 \times 10^{-7} \text{ A}$	
	1.04 mA to 10.4 mA	$3.0 \times 10^{-4} \text{ A/A} + 1.7 \times 10^{-6} \text{ A}$	
	10.4 mA to 104 mA	$3.0 \times 10^{-4} \text{ A/A} + 1.3 \times 10^{-5} \text{ A}$	
	0.104 A to 1.04 A	$3.0 \times 10^{-4} \text{ A/A} + 2.5 \times 10^{-4} \text{ A}$	
	1.04 A to 10.4 A	$5.0 \times 10^{-4} \text{ A/A} + 3.0 \times 10^{-3} \text{ A}$	



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Equipment to measure AC Voltage <sup>FO</sup> (at the listed frequencies)			Transmille 1000 CP-009
2 000 Hz	104 mV	$8.0 \times 10^{-4} \text{ V/V} + 5.6 \times 10^{-5} \text{ V}$	
20 kHz	104 mV	$1.5 \times 10^{-3} \text{ V/V} + 8.5 \times 10^{-5} \text{ V}$	
Equipment to measure AC Voltage <sup>FO</sup> (at the listed frequencies)			
2 000 Hz	1.04 V	$8.0 \times 10^{-4} \text{ V/V} + 3.3 \times 10^{-4} \text{ V}$	
20 kHz	1.04 V	$1.5 \times 10^{-3} \text{ V/V} + 7.2 \times 10^{-4} \text{ V}$	
Equipment to measure AC Voltage <sup>FO</sup> (at the listed frequencies)			
2 000 Hz	10.4 V	$8.0 \times 10^{-4} \text{ V/V} + 3.3 \times 10^{-3} \text{ V}$	
20 kHz	10.4 V	$1.5 \times 10^{-3} \text{ V/V} + 7.1 \times 10^{-3} \text{ V}$	
Equipment to measure AC Voltage <sup>FO</sup> @ 1 kHz	104 V	$8.0 \times 10^{-4} \text{ V/V} + 3.3 \times 10^{-2} \text{ V}$	
	1 020 V	$8.0 \times 10^{-4} \text{ V/V} + 3.3 \times 10^{-1} \text{ V}$	
Equipment to measure AC Current <sup>FO</sup> 10 Hz to 2kHz	Up to 104 uA	$1.0 \times 10^{-3} \text{ A/A} + 4.6 \times 10^{-7} \text{ A}$	
	0.104 mA to 1.04 mA	$1.0 \times 10^{-3} \text{ A/A} + 1.2 \times 10^{-6} \text{ A}$	
	1.04 mA to 10.4 mA	$1.0 \times 10^{-3} \text{ A/A} + 8.4 \times 10^{-6} \text{ A}$	
	10.4 mA to 104 mA	$1.0 \times 10^{-3} \text{ A/A} + 1.1 \times 10^{-4} \text{ A}$	
	0.104 A to 1.04 A	$1.0 \times 10^{-3} \text{ A/A} + 1.9 \times 10^{-3} \text{ A}$	
	1.04 A to 10.4 A	$1.0 \times 10^{-3} \text{ A/A} + 2.4 \times 10^{-2} \text{ A}$	
Equipment to measure Resistance <sup>FO</sup>	Up to 100 $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 3.4 \times 10^{-2} \Omega$	Transmille 1000 CP-009
	100 $\Omega$ to 1.0 k $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 6.8 \times 10^{-2} \Omega$	
	1.01 k $\Omega$ to 10 k $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 6.0 \times 10^{-1} \Omega$	
	10.1 k $\Omega$ to 100 k $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 6 \Omega$	
	101 k $\Omega$ to 1.0 M $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 6.1 \times 10^1 \Omega$	
	1.01 M $\Omega$ to 10 M $\Omega$	$1.3 \times 10^{-4} \Omega/\Omega + 6.5 \times 10^2 \Omega$	
	10M $\Omega$ to 100 M $\Omega$	$3.3 \times 10^{-4} \Omega/\Omega + 6.1 \times 10^4 \Omega$	



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Equipment to measure Resistance <sup>FO</sup> Insulation	250 k $\Omega$ to 100 M $\Omega$ 100 V	$8.0 \times 10^{-5} \Omega/\Omega + 1.2 \times 10^{-2} M\Omega$	Transmille 1000 Megger CB101 CP-010
	250 k $\Omega$ to 250 M $\Omega$ 250V	$8.0 \times 10^{-5} \Omega/\Omega + 1.3 \times 10^{-2} M\Omega$	
	500 k $\Omega$ to 500 M $\Omega$ 500 V	$8.0 \times 10^{-5} \Omega/\Omega + 1.3 \times 10^{-2} M\Omega$	
	1 M $\Omega$ to 1 000 M $\Omega$ 1 000 V	$8.0 \times 10^{-5} \Omega/\Omega + 2.8 \times 10^{-2} M\Omega$	
	1 M $\Omega$ to 1 G $\Omega$ 1 000 V to 5 000 V	$8.0 \times 10^{-3} \Omega/\Omega + 1.2 \times 10^{-1} M\Omega$	
	1 G $\Omega$ to 10 G $\Omega$ 1 000 V to 5 000 V	$2.0 \times 10^{-2} M\Omega$	
Equipment to measure Capacitance <sup>FO</sup>	Up to 1 nF	0.009 8 nF	Transmille 1000 Fluke 8846A/ Decade Capacitor CP-009
	1 nF to 10 nF	0.061 nF	
	10 nF to 100 nF	0.084 nF	
	0.1 uF to 1 uF	0.006 1 uF	
	1 uF to 10 uF	0.061 uF	
	10 uF to 100 uF	0.61 uF	
	100 uF to 1 000 uF 1 mF to 10 mF	6.1 uF 0.008 4 mF	
Electrical Temperature Calibration Of Thermocouple Type K <sup>FO</sup>	-200 °C to -100 °C	0.21 °C	Transmille 1000 CP-013
	-100 °C to 120 °C	0.20 °C	
	120 °C to -1 370 °C	0.21 °C	
Electrical Temperature Calibration Of Thermocouple Type J <sup>FO</sup>	-210 °C to -100 °C	0.17 °C	Transmille 1000 CP-013
	-100 °C to 150 °C	0.17 °C	
	150 °C to -760 °C	0.17 °C	
	760 °C to 1 200 °C	0.17 °C	
Electrical Temperature Calibration Of Thermocouple Type T <sup>FO</sup>	-250 °C to -150 °C	0.19 °C	Transmille 1000 CP-013
	-150 °C to 400 °C	0.1 °C	
Electrical Temperature Calibration Of Simulated PRT <sup>FO</sup>	-200 °C to 0.01 °C	0.17 °C	Transmille 1000 CP-013
	0.01 °C to 800 °C	0.17 °C	Transmille 1000 CP-013
DC Current <sup>FO</sup> Clamp Coil	Up to 500 A	$2.6 \times 10^{-3} A/A + 0.23 A$	Transmille EA002 CP-011



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### Electrical

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AC Current <sup>FO</sup> Clamp Coil	Up to 500 A	$3.3 \times 10^{-3}$ A/A + 0.48A	Transmille EA002 CP-011
Equipment to Output DC Voltage <sup>FO</sup>	Up to 100 mV	$3.7 \times 10^{-5}$ V/V + $3.6 \times 10^{-6}$ V	Fluke 8846A/Fluke 80K-40, Ductor Cal 5070 CP-017
	0.1 V to 1 V	$2.5 \times 10^{-5}$ V/V + $5.9 \times 10^{-5}$ V	
	1 V to 10 V	$2.4 \times 10^{-5}$ V/V + $5.8 \times 10^{-4}$ V	
	10 V to 100 V	$3.8 \times 10^{-5}$ V/V + $5.9 \times 10^{-3}$ V	
	100 V to 1 000 V	$4.1 \times 10^{-5}$ V/V + $5.9 \times 10^{-2}$ V	
	1 kV to 5 kV	$1.39 \times 10^{-5}$ V/V + 0.015 kV	
	5 kV to 40 kV	$1.39 \times 10^{-5}$ V/V + 0.059 kV	
Equipment to Output DC Current <sup>FO</sup>	Up to 100 uA	$5.0 \times 10^{-11}$ A/A + $2.5 \times 10^{-9}$ A	Ammeter & Timer Calibration Meter CP027
	0.1 mA to 1 mA	$5.0 \times 10^{-11}$ A/A + $5.2 \times 10^{-9}$ A	
	1 mA to 10 mA	$5.0 \times 10^{-11}$ A/A + $2.0 \times 10^{-7}$ A	
	10 mA to 100 mA	$5.0 \times 10^{-11}$ A/A + $5.2 \times 10^{-7}$ A	
	100 mA to 400 mA	$5.0 \times 10^{-11}$ A/A + $4. \times 10^{-5}$ A	
	0.4 A to 1 A	$5.0 \times 10^{-11}$ A/A + $2.0 \times 10^{-4}$ A	
	1 A to 3 A	$1.0 \times 10^{-10}$ A/A + $7.6 \times 10^{-4}$ A	
	3 A to 10 A	$1.5 \times 10^{-10}$ A/A + $6.0 \times 10^{-3}$ A	
	10 A to 100 A	1.9 mA/A + 0.32 A	
	100 A to 1 000 A	$1.2 \times 10^0$ A/A + 1.9 A	
	1 000 A to 5 000 A	$1.2 \times 10^{+1}$ A/A + 8.7 A	
Equipment to Output AC Current AT 60 Hz <sup>FO</sup>	100 A to 1 kA	$1.2 \times 10^0$ A/A + 3.3 A	Ammeter & Timer Calibration Meter CP027
	1 kA to 5 kA	$1.2 \times 10^{+1}$ A/A + 17 A	
Equipment to Measure Resistance WRIST STRAP TESTER <sup>FO</sup>	675 k $\Omega$ to 750 k $\Omega$	20 k $\Omega$	Desco 07010/Trasmille 1000A CP-009
	825 k $\Omega$ to 900 k $\Omega$	24 k $\Omega$	
	8.5 M $\Omega$ to 9 M $\Omega$	0.25 M $\Omega$	
	11 M $\Omega$ to 11.5 M $\Omega$	0.33 M $\Omega$	
	80 M $\Omega$	2.4 M $\Omega$	
	120 M $\Omega$	3.5 M $\Omega$	
Equipment to Measure Resistance Milli and Micro Ohmmeters <sup>FO</sup>	50 $\mu\Omega$ to 2 $\Omega$	$1.0 \times 10^{-3}$ $\Omega/\Omega$ + $4.6 \times 10^{-8}$ $\Omega$	Ductor Cal 5070, Resistance decade box CP-009



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### Thermodynamic

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Equipment to Measure Humidity Indicators <sup>FO</sup>	10 % RH to 95 % RH	1.51 % RH	Vaisala HM45/HMP113, CP-018
Equipment to Measure Temperature Sensor <sup>FO</sup>	Up to 37 °C	0.18 °C	Traceable 4244/HMP113 CP-019

### Time & 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
Equipment to Measure Frequency <sup>FO</sup>	Up to 999 Hz	0.58 Hz	Transmille 1000 CP-009
	1 kHz to 10 kHz	0.000 63 kHz	
	11 kHz to 100 kHz	0.002 5 kHz	
	1 kHz to 999 kHz	$5.8 \times 10^{-3}$ kHz / kHz + 1.2 kHz	
Equipment to Source Frequency <sup>FO</sup>	Up to 999 Hz	$5.8 \times 10^{-3}$ Hz/Hz + 1.2 Hz	Fluke 123B, Gain text box CP-012
	1 kHz to 10 kHz	$5.8 \times 10^{-3}$ kHz / kHz + 0.25 kHz	
	10 kHz to 999 kHz	$5.8 \times 10^{-3}$ kHz / kHz + 1.2 kHz	
	1 kHz to 10 MHz	$1.2 \times 10^{-2}$ MHz / MHz + 0.58 MHz	
	11 kHz to 40 MHz	$2.9 \times 10^{-2}$ MHz / MHz + 0.58 MHz	
Equipment to Source Time Interval <sup>FO</sup>	Up to 24 hr	0.26 s	Stopwatch & Timer Calibration Meter CP027

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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3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer<sup>F</sup> 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<sup>FO</sup> 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.

