PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

METROLOGIA MESSTECHNIK, S.A. DE C.V.

Calzada México Tacuba No. 1186, Col. Argentina Antigua,
Delegación Miguel Hidalgo, Ciudad de México, C.P. 11270

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

ISO/IEC 17025:2005

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):

Mechanical, Thermodynamic and Electrical 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/Operations Manager

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

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
August 30, 2016	August 30, 2016	November 30, 2018
Revision Date:	*Accreditation No.:*	*Certificate No.:*
October 13, 2017	82612	L16-354-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

Metrología Messtechnik, S.A. de C.V.
Calzada México Tacuba No. 1186, Col. Argentina Antigua,
Delegación Miguel Hidalgo, Ciudad de México, C.P. 11270
Contact Name: Ing. Raúl Galindo Nolasco   Phone: 5399-5576

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

Mechanical

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
Pressure Gages and Transducers[FO]	6.844 Pa to 68.947 MPa	9.2 Pa	Balance of Pressure Fluke Mod: P3124
	6.849 Pa to 35.15 KPa	4.9 Pa	Pressure Gage Digital Fluke Mod: 718 y Pressure Transducer Fluke 700P08 and Fluke 700 P05
Vacuum[FO]	-68.947 KPa	42 Pa	Digital Pressure Gage Fluke Mod: 718

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
Glass Liquid Thermometer[FO]	0 °C to 400 °C	0.18 °C	Thermometer of Platinum Resistance Accumac PT25 by Hart Scientific Liquid Bath Mod: 6331 and Dry Block Ametek CTC-650A NOM-011-SCFI-2004 and ASTM-E-1-2014
Bimetalic Thermometer and Digital thermometers	0 °C to 500 °C	0.12 °C	Thermometer of Platinum Resistance with PT25 Accumac and Hart Scientific Liquid Bath and Dry Block Ametek CTC-650A NMX-CH-070-1993-SCFI
Environmental Thermometer[FO]	20 °C to 50 °C	0.14 °C	Thermometer of Platinum Resistance with PT-25 Accumac and Environmental Chamber Metmess NMX-CH-070-1993-SCFI
Platinum Resistance Thermometer[FO]	0 °C to 1 200 °C	0.014 °C	Thermometer of Platinum Resistance PT25 Accumac and Liquid Bath and Hart Scientific 6331 and Dry Block Ametek CTC-650A ASTM-E-1137-2014
Infrared Thermometers[FO]	25 ºC to 500 ºC	0.24 º C	Black Body Calibrator Hart Scientific Mod: 9132 OIML-D-24-1996

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Contact Name: Ing. Raúl Galindo Nolasco Phone: 5399-5576

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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
Temperature Measurement Thermocouple Type B[FO]	0 °C to 1 200 °C	0.06 °C	Thermometer of Platinum Resistance PT-25 Accumac and Hart Scientific Liquid Bath and Dry Block Ametek CTC-650A and Dry Block Isotech Model: Jupier 650B (Res. = 0.01 ºC) Isotech Dry Well Pegassus 4853 Thermocouple Type S
Temperature Measurement Thermocouple Type C[FO]	0 °C to 1 200 °C	0.06 °C	
Temperature Measurement Thermocouple Type E[FO]	0 °C to 900 °C	0.06 °C	
Temperature Measurement Thermocouple Type J[FO]	0 °C to 1200 °C	0.06 °C	
Temperature Measurement Thermocouple Type K[FO]	0 °C to 1 200 °C	0.06 °C	
Temperature Measurement Thermocouple Type N[FO]	0 °C to 1 200 °C	0.06 °C	
Temperature Measurement Thermocouple Type R[FO]	0 °C to 1 200 °C	0.06 °C	
Temperature Measurement Thermocouple Type S[FO]	0 °C to 1 200 °C	0.06 °C	
Temperature Measurement Thermocouple Type T[FO]	0 °C to 400 °C	0.06 °C	

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
Electrical Simulation of Thermocouple Type B[FO]	0ºC to 1 820 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (0 mV to 13.82 mV)
Electrical Simulation of Thermocouple Type C[FO]	0 ºC to 2 315 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (0 mV to 37.07 mV)
Electrical Simulation of Thermocouple Type E[FO]	-270 ºC to 1 000 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-9.838 mV to 76.373 mV)
Electrical Simulation of Thermocouple Type J[FO]	-210 ºC to 1 200 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-8.095 mV to 69.553 mV)

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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
Electrical Simulation of Thermocouple Type K[FO]	-270 ºC to 1 372 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-6.458 mV to 54.886 mV)
Electrical Simulation of Thermocouple Type N[FO]	-270 ºC to 1 300 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-4.345 mV to 47.513 1 mV)
Electrical Simulation of Thermocouple Type R[FO]	-50 ºC to 1 768 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-0.226 mV to 21.101 mV)
Electrical Simulation of Thermocouple Type S[FO]	-50 ºC to 1 768 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-0.236 mV to 18.693 mV)
Electrical Simulation of Thermocouple Type T[FO]	-270 ºC to 400 ºC	0.01 ºC	8 ½ Digits Multimeter Agilent Model: 3458A and Fluke 5500A (-6.258 mV to 20.872 mV)

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 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.

4. 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.