



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Automation Systems & Diagnostics, Inc (ASD, Inc)
1021 Davis Drive Apex, NC 27523

*(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):

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

Initial Accreditation Date:

October 18, 2023

Issue Date:

October 18, 2023

Expiration Date:

December 31, 2025

Accreditation No.:

118851

Certificate No.:

L23-765

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*



Certificate of Accreditation: Supplement

Automation Systems & Diagnostics, Inc (ASD, Inc)

1021 Davis Drive, Apex, NC 27523

Contact Name: Ms. Pauline Merhi Phone: 919-746-2051

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 Generate DC Voltage ^{FO}	Up to 329.9 mV	0.006 % + 3.1 μ V	Multi-Function Calibrator SOPM-1.2
	0.33 V to 3.29 V	0.005 % + 5.5 μ V	
	3.3 V to 32.99 V	0.005 3 % + 55 μ V	
	33 V to 329.9 V	0.005 6 % + 500 μ V	
	330 V to 1020 V	0.005 6 % + 1 600 μ V	
Equipment to Measure DC Voltage ^{FO}	Up to 100 mV	0.002 8 % + 8.2 μ v	Digital Multimeter SOPM-1.2
	100 mV to 1 V	0.005 % + 8 μ v	
	1 V to 10 V	0.005 4 % + 56 μ v	
	10 V to 100 V	0.005 9 % + 480 μ v	
	100 V to 1000 V	0.006 5 % + 1mv	
Equipment to Generate DC Current ^{FO}	Up to 3.3 mA	0.013 % + 0.053 μ A	Multi-Function Calibrator SOPM-1.2
	3.3 mA to 33 mA	0.011 % + 0.28 μ A	
	33 mA to 330 mA	0.01 % + 3.5 μ A	
	330 mA to 2.2 A	0.031 % + 46 μ A	
	2.2 A to 11 A	0.06 % + 360 μ A	
Equipment to Measure DC Current ^{FO}	1 mA to 10 mA	0.004 4 % + 1.2 μ A	Digital Multimeter SOPM-1.2
	10 mA to 100 mA	0.014 % + 3.3 μ A	
	0.1 mA to 1 A	0.031 % + 48 μ A	Digital Power Meter
	1 mA to 3 A	0.072 % + 250 μ A	
	Up to 20 A	0.6 % + 1mA	
Equipment to Generate AC Voltage ^{FO} @ 45 Hz to 10 kHz	1 mV to 32.999 mV	0.14 % + 20 μ v	Multi-Function Calibrator SOPM-1.2
	33 mV to 329.999 mV	0.047 % + 20 μ v	
	0.33 V to 3.299 99 V	0.023 % + 61 μ v	
	3.3 V to 32.9999 V	0.035 % + 610 μ v	
	33 V to 329.999 V	0.048 % + 6.7 mv	
	330 V to 1020 V	0.049 % + 81 mv	
Equipment to Measure AC Voltage ^{FO} @ 10 Hz to 20 kHz	10 mV to 100 mV	0.075 % + 23 μ v	Digital Multimeter SOPM-1.2
	0.1 V to 1 V	0.078 % + 32 μ v	
	1 V to 10 V	0.08 % + 0.43 mv	
	10 V to 100 V	0.083 % + 5.3 mv	
	100 V to 750 V	0.088 % + 18 mv	



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High Voltage RMS Equipment @ 60Hz ^{FO}	20 KV	1.5 KV	HV Divider Digital Multimeter SOPM-1.2
	40 KV	1.5 KV	
	60 KV	1.1 KV	
	80 KV	1.6 KV	
	100 KV	1.2 KV	
Equipment to Generate AC Current ^{FO} @ 45 Hz to 1 kHz	0.029 mA to 0.329 99 mA	0.1 % + 0.25 μ A	Multi-Function Calibrator SOPM-1.2
	0.33 mA to 3.299 9 mA	0.094 % + 0.31 μ A	
	3.3 mA to 32.999 mA	0.079 % + 4 μ A	
	33 mA to 329.99 mA	0.086 % + 27 μ A	
	0.33 A to 2.199 99 A	0.094 % + 340 μ A	
Equipment to Generate AC Current ^{FO} @ (45 to 65) Hz	2.2 A to 11 A	0.06 % + 3100 μ A	
Equipment to Measure AC Current ^{FO} @ 10 Hz to 5 kHz	0.1 A to 1 A	0.096 % + 0.34 mA	Digital Multimeter SOPM-1.2 Digital Power Meter
	1 A to 3 A	0.14 % + 2.3 mA	
	Up to 20 A	0.27 % + 1 mA	
Equipment to Generate Resistance ^{FO}	Up to 11 Ω	0.012 % + 0.0081 Ω	Multi-function Calibrator SOPM-1.2
	11 Ω to 33 Ω	0.014 % + 0.015 Ω	
	33 Ω to 110 Ω	0.009 2 % + 0.015 Ω	
	110 Ω to 330 Ω	0.009 % + 0.015 Ω	
	330 Ω to 1.1 k Ω	0.009 2 % + 0.06 Ω	
	1.19 k Ω to 3.3 k Ω	0.009 % + 0.061 Ω	
	3.3 k Ω to 11 k Ω	0.009 1 % + 0.61 Ω	
	11 k Ω to 33 k Ω	0.009 % + 0.63 Ω	
	33 k Ω to 110 k Ω	0.011 % + 6.1 Ω	
	110 k Ω to 330 k Ω	0.012 % + 5.7 Ω	
	330 k Ω to 1.1 M Ω	0.015 % + 56 Ω	
	1.1 k Ω to 3.3 M Ω	0.015 % + 58 Ω	
	3.3 M Ω to 11 M Ω	0.059 % + 650 Ω	
	11 M Ω to 33 M Ω	0.12 % + 720 Ω	
	33 M Ω to 110 M Ω	0.5 % + 5600 Ω	
	110 M Ω to 330 M Ω	0.51 % + 19 000 Ω	
	10 M Ω	0.003 M Ω	Decade Box SOPM-1.2
	20 M Ω	0.005 M Ω	
	30 M Ω	0.008 M Ω	
	40 M Ω	0.01 M Ω	



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Equipment to Generate Resistance ^{FO}	50 M Ω	0.01 M Ω	Decade Box SOPM-1.2
	60 M Ω	0.01 M Ω	
	70 M Ω	0.02 M Ω	
	80 M Ω	0.02 M Ω	
	90 M Ω	0.02 M Ω	
	100 M Ω	0.02 M Ω	
	200 M Ω	0.27 M Ω	
	300 M Ω	0.29 M Ω	
	400 M Ω	0.3 M Ω	
	500 M Ω	0.32 M Ω	
	600 M Ω	0.34 M Ω	
	700 M Ω	0.36 M Ω	
	800 M Ω	0.37 M Ω	
	900 M Ω	0.39 M Ω	
	1 000 M Ω	0.41 M Ω	
Equipment to Measure Resistance ^{FO}	1 Ω to 100 Ω	0.045%	Digital Multimeter SOPM-1.2
	100 Ω to 1 k Ω	0.016%	
	1 k Ω to 10 k Ω	0.016%	
	10 k Ω to 100 k Ω	0.017%	
	100 k Ω to 1 M Ω	0.021%	
	1 M Ω to 10 M Ω	0.068%	
	10 M Ω to 100 M Ω	0.71%	
	Up to 1 m Ω	0.001 m Ω	Standard Shunts SOPM – 1.2C
	Up to 1 Ω	0.001 Ω	
Equipment to Generate Power- ^{FO} AC @ 100V, 1A	PF = 1	0.11 %	Digital Multimeter SOPM-1.2
	PF = 0.9	0.17 %	
	PF = 0.8	0.23 %	
	PF = 0.7	0.29 %	
	PF = 0.6	0.37 %	



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AC @ 100V, 1A ^{FO}	PF = 0.5	0.47 %	Multi-Function Calibrator SOPM-1.2
	PF = 0.4	0.61 %	
	PF = 0.3	0.84 %	
	PF = 0.2	1.29 %	
	PF = 0.1	2.61 %	
	PF = 0.08	3.26 %	
	PF = 0.05	5.22 %	
Equipment to Measure Power ^{FO} AC @ 100V, 1A	PF = 1	0.42 W	Digital Power Meter SOPM-1.2
	PF = 0.9	0.53 W	
	PF = 0.8	0.57 W	
	PF = 0.7	0.59 W	
	PF = 0.6	0.6 W	
	PF = 0.5	0.6 W	
	PF = 0.4	0.6 W	
	PF = 0.3	0.59 W	
	PF = 0.2	0.58 W	
	PF = 0.1	0.57 W	
	PF = 0.01	0.56 W	
Lightning Impulse ^{FO}			HV Divider High-Definition Scope SOPM-1.2
Positive and Negative Polarity	50 KV to 500 KV	1.3 %	
Time Parameters Front Time (T1) Time to Half Value (T2)	1.2 μ S 50 μ S	4.4 % 4.4%	
Temperature - Simulation RTD ^{FO} Pt 385, 100 Ω	20 °C to 100 °C	0.08 °C	Muti-function Calibrator SOPM-1.2
	100 °C to 300 °C	0.005 % + 0.086 °C	
Temperature - Simulate Thermocouple ^{FO} Type K	-25 °C to 120 °C	0.01 % + 0.18 °C	Muti-function Calibrator SOPM-1.2
	120 °C to 1 000 °C	0.002 % + 0.25 °C	



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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 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.