PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

MDQ Calibration Lab

29 Pembroke Road, Concord, NH 03301

and hereby declares that the Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

Whereby, technical competence has been confirmed for the associated scope supplement, in the fields of:

Electrical and Thermodynamic Calibration

(As detailed in the supplement)

Accreditation claims for conformity assessment activities shall only be made from the addresses referenced within this certificate and shall apply solely to those activities identified in the related scope. This Accreditation is granted subject to the Accreditation Body rules governing the Accreditation referred to above, and the Organization hereby commits to observing and complying with those rules in their entirety.

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 30, 2013	December 20, 2025	December 31, 2027

Accreditation No.:	*Certificate No.:*
76289	L25-987

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

MDQ Calibration Lab

29 Pembroke Road, Concord, NH 03301
Contact Name: Amanda Preston Phone: 603-746-5524

Accreditation is granted to the facility to perform the following conformity assessment activities:

FIELD OF CALIBRATION	MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	EXPANDED MEASUREMENT UNCERTAINTY (±) [1]	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED	FLEX CODE	LOCATION OF ACTIVITY
Electrical	Equipment to Measure DC Current	0.006 mA to 3.3 mA	26 µA	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Current	3.3 mA to 33 mA	2.6 µA	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Current	33 mA to 330 mA	22 µA	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Current	330 mA to 2.2 A	0.37 mA	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Current	2.2 A to 11 A	5.3 mA	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Voltage	0.8 mV to 330 mV	14 µV	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Voltage	330 mV to 3.3 V	43 µV	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Voltage	3.3 V to 33 V	0.44 mV	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Voltage	33 V to 330 V	4.4 mV	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Equipment to Measure DC Voltage	330 V to 1 020 V	19 mV	Fluke 5500A Fluke 7526A	MDQ WI-006	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	-250 °C to -200 ºC	0.63 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	-200 °C to -100 °C	0.51 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F

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Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	-100 °C to -25 °C	0.39 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	-25 °C to 120 °C	0.38 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	120 °C to 1 000 °C	0.45 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K	1 000 °C to 1 372 °C	0.57 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J	-210 °C to -100 °C	0.46 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J	-100 °C to -30 °C	0.38 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J	-30 °C to 150 °C	0.37 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F

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Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J	150 °C to 760 °C	0.39 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J	760 °C to 1 200 °C	0.43 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T	-250 °C to -150 °C	0.8 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T	-150 °C to 0 °C	0.43 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T	0 °C to 120 °C	0.38 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Electrical	Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T	120 °C to 400 °C	0.37 °C	Electrical Simulation of Thermocouple Output Fluke 5500A Fluke 7526A	MDQ WI-004	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-70 °C to 0 °C	0.034 °C	Kaye Instrument IRTD-400 w/Software Test Equity 115 Test Equity 115A	MDQ WI-005	F1, F3	F

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Thermodynamic	Equipment to Measure Temperature	0 °C to 100 °C	0.032 °C	Kaye Instrument IRTD-400 w/Software Test Equity 115 Test Equity 115A	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	100 °C to 170 °C	0.047 °C	Kaye Instrument IRTD-400 w/Software Test Equity 115 Test Equity 115A	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-70 °C to -39 °C	0.033 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-39 °C to 0 °C	0.043 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	0 °C to 157 °C	0.044 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	157 °C to 170 °C	0.053 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F

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Thermodynamic	Equipment to Measure Temperature	-70 °C to -39 °C	0.045 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-39 °C to 0 °C	0.052 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	0 °C to 157 °C	0.043 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	157 °C to 170 °C	0.065 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Test Equity 115 Test Equity 115A Test Equity 123C	MDQ WI-005	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	50 °C to 232 °C	0.03 °C	Fluke 5609 PRT w/ Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	232 °C to 420 °C	0.065 °C	Fluke 5609 PRT w/ Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	420 °C to 660 °C	0.13 °C	Fluke 5609 PRT w/ Fluke 9144	MDQ WI-001	F1, F3	F

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Thermodynamic	Equipment to Measure Temperature	-25 °C to 0 °C	0.052 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Ametek-Jofra CTC155A	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	0 °C to 157 °C	0.043 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Ametek-Jofra CTC155A Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	157 °C to 300 °C	0.065 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-25 °C to 0 °C	0.043 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Ametek-Jofra CTC155A	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	0 °C to 157 °C	0.044 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Ametek-Jofra CTC155A Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	157 °C to 300 °C	0.053 °C	Fluke 1502A w/ Hart Scientific 5615 PRT Fluke 9144	MDQ WI-001	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-30 °C to 0 °C	0.052 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT PolyScience PP15R-40-A11B	MDQ WI-002	F1, F3	F

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Thermodynamic	Equipment to Measure Temperature	0 °C to 60 °C	0.043 °C	Accumac AM8040 Thermometer w/ AM1730-9 PRT PolyScience PP15R-40-A11B	MDQ WI-002	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	-30 °C to 0 °C	0.043 °C	Fluke 1502A w/ Hart Scientific 5615 PRT PolyScience PP15R-40-A11B	MDQ WI-002	F1, F3	F
Thermodynamic	Equipment to Measure Temperature	0 °C to 60 °C	0.044 °C	Fluke 1502A w/ Hart Scientific 5615 PRT PolyScience PP15R-40-A1B	MDQ WI-002	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	10 % RH to 50 % RH	0.76 % RH	Edgetech DS2 Dew Point Hygrometer AES LH-1.5	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	50 % RH to 75 % RH	1.5 % RH	Edgetech DS2 Dew Point Hygrometer AES LH-1.5	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	75 % RH to 95 % RH	2.2 % RH	Edgetech DS2 Dew Point Hygrometer AES LH-1.5	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	10 % RH to 20 % RH	0.45 % RH	Thunder Scientific 2500ST	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	20 % RH to 50 % RH	0.47 % RH	Thunder Scientific 2500ST	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	50 % RH to 80 % RH	0.54 % RH	Thunder Scientific 2500ST	MDQ WI-003	F1, F3	F
Thermodynamic	Equipment to Measure Relative Humidity	80 % RH to 95 % RH	0.66 % RH	Thunder Scientific 2500ST	MDQ WI-003	F1, F3	F

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Accreditation is granted to the facility to perform the following conformity assessment activities:

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. Location of activity:

Location Code	Location
F	Conformity assessment activity is performed at the CABs fixed facility

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.

5. MDQ Calibration Lab is a Trade name owned by MicroDAQ LLC.