PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Unitek Instruments, Inc.

865 Cleveland Avenue, Columbus, OH 43201

(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):

Electrical, Thermodynamic, Time & 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:

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
September 13, 2011	October 12, 2017	December 30, 2019

Accreditation No.:	*Certificate No.:*
48246	L17-443

Tracy Szerszen
President/Operations Manager

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.pjlabs.com

Certificate of Accreditation: Supplement

Unitek Instruments, Inc.
865 Cleveland Avenue, Columbus, OH 43201
Contact Name: Robert Bolton Phone: 614-291-9909

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Measure DC Voltage[F]	1 mV to 220 mV	8 µV/V + 0.6 µV	Fluke 5700A/WDB
	220 mV to 2.2 V	7 µV/V + 1 µV	
	2.2 V to 11 V	7 µV/V + 3.5 µV	
	11 V to 22 V	7 µV/V + 6.5 µV	
	22 V to 220 V	8 µV/V + 80 µV	
	220 V to 1 100 V	9 µV/V + 500 µV	
Equipment to Measure DC Voltage[F]	1 V	12 µV	Fluke 732A
	1.018 V	12 µV	
	10 V	60 µV	
Equipment to Output DC Voltage[F]	10 mV to 100 mV	14 µV/V + 0.45 µV	HP 3458A
	0.1 V to 1 V	12 µV/V + 0.45 µV	
	1 V to 10 V	12 µV/V + 0.75 µV	
	10 V to 100 V	15 µV/V + 45 µV	
	100 V to 1 000 V	27 µV/V + 150 µV	
Equipment to Measure DC Current[F]	1 µA to 220 µA	50 µA/A + 0.008 µA	Fluke 5700A/WDB
	0.22 mA to 2.2 mA	50 µA/A + 0.008 µA	
	2.2 mA to 22 mA	50 µA/A + 0.08 µA	
	22 mA to 220 mA	60 µA/A + 0.8 µA	
	0.22 A to 2.2 A	80 µA/A + 25 µA	
Equipment to Measure DC Current[F]	2.2 A to 11 A	0.6 mA/A + 330 µA	Fluke 5500A
Equipment to Measure DC Current[F]	5 A	0.1 mA	Fluke A40B-5A
Equipment to Measure DC Current[F]	20 ADC	520 µA	Fluke A40B-20A/HP 3458A
Equipment to Output DC Current[F]	10 nA to 100 nA	45 µA/A + 0.06 nA	HP 3458A
	0.1 µA to 1 µA	30 µA/A + 0.06 nA	
	1 µA to 10 µA	30 µA/A + 0.15 nA	
	10 µA to 100 µA	30 µA/A + 1.2 nA	
	100 µA to 1 mA	30 µA/A + 7.5 nA	
	1 mA to 10 mA	30 µA/A + 75 nA	
	10 mA to 100 mA	53 µA/A + 0.75 µA	
	100 mA to 1 A	0.17 mA/A + 1.5 µA	

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Equipment to Measure Resistance - Fixed Values[F]	1 Ω	95 µΩ	Fluke 5700A/WDB
	1.9 Ω	0.18 mΩ	
	10 Ω	0.28 mΩ	
	19 Ω	0.52 mΩ	
	100 Ω	1.7 mΩ	
	190 Ω	3.2 mΩ	
	1 kΩ	13 mΩ	
	1.9 kΩ	25 mΩ	
	10 kΩ	0.12 Ω	
Equipment to Measure Resistance[F]	19 kΩ	0.23 Ω	
	100 kΩ	1.4 Ω	
	190 kΩ	2.7 Ω	
	1 MΩ	20 Ω	
	1.9 MΩ	40 Ω	
	10 MΩ	400 Ω	
	19 MΩ	890 Ω	
	100 MΩ	11 kΩ	
Equipment to Output Resistance (Sourcing Devices)[F]	0.1 Ω to 10 Ω	27 µΩ/Ω + 75 µΩ	HP 3458A
	10 Ω to 100 Ω	23 µΩ/Ω + 750 µΩ	
	0.1 kΩ to 1 kΩ	20 µΩ/Ω + 750 µΩ	
	1 kΩ to 10 kΩ	20 µΩ/Ω + 7.5 mΩ	
	10 kΩ to 100 kΩ	20 µΩ/Ω + 75 mΩ	
	0.1MΩ to 1 MΩ	27 µΩ/Ω + 3 Ω	
	1 MΩ to 10 MΩ	80 µΩ/Ω + 150 Ω	
	10 MΩ to 100 MΩ	0.75 mΩ/Ω + 1.5 kΩ	
	100 MΩ to 1 GΩ	7.5 mΩ/Ω + 15 kΩ	
Equipment to Measure AC Voltage At the listed frequencies[F]			Fluke 5700A/WDB
10 Hz to 20 Hz	0.1 mV to 2.2 mV	0.55 mV/V + 4.5 µV	
20 Hz to 40 Hz	0.1 mV to 2.2 mV	0.21 mV/V + 4.5 µV	
40 Hz to 20 kHz	0.1 mV to 2.2 mV	0.11 mV/V + 4.5 µV	
20 kHz to 50 kHz	0.1 mV to 2.2 mV	0.37 mV/V + 4.5 µV	

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Equipment to Measure AC Voltage At the listed frequencies[F]			Fluke 5700A/WDB
50 kHz to 100 kHz	0.1 mV to 2.2 mV	0.85 mV/V + 7 µV	
100 kHz to 300 kHz	0.1 mV to 2.2 mV	1.1 mV/V + 13 µV	
300 kHz to 500 kHz	0.1 mV to 2.2 mV	1.7 mV/V + 25 µV	
500 kHz to 1 MHz	0.1 mV to 2.2 mV	3.4 mV/V + 25 µV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
10 Hz to 20 Hz	2.2 mV to 22 mV	0.55 mV/V + 5 µV	
20 Hz to 40 Hz	2.2 mV to 22 mV	0.21 mV/V + 5 µV	
40 Hz to 20 kHz	2.2 mV to 22 mV	0.11 mV/V + 5 µV	
20 kHz to 50 kHz	2.2 mV to 22 mV	0.37 mV/V + 5 µV	
50 kHz to 100 kHz	2.2 mV to 22 mV	0.85 mV/V + 7 µV	
100 kHz to 300 kHz	2.2 mV to 22 mV	1.1 mV/V + 12 µV	
300 kHz to 500 kHz	2.2 mV to 22 mV	1.7 mV/V + 25 µV	
500 kHz to 1 MHz	2.2 mV to 22 mV	3.4 mV/V + 25 µV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
10 Hz to 20 Hz	22 mV to 220 mV	0.55 mV/V + 13 µV	
20 Hz to 40 Hz	22 mV to 220 mV	0.21 mV/V + 8 µV	
40 Hz to 20 kHz	22 mV to 220 mV	0.11 mV/V + 8 µV	
20 kHz to 50 kHz	22 mV to 220 mV	0.32 mV/V + 8 µV	
50 kHz to 100 kHz	22 mV to 220 mV	0.85 mV/V + 25 µV	
100 kHz to 300 kHz	22 mV to 220 mV	1.1 mV/V + 25 µV	
300 kHz to 500 kHz	22 mV to 220 mV	1.7 mV/V + 35 µV	
500 kHz to 1 MHz	22 mV to 220 mV	3.4 mV/V + 80 µV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
10 Hz to 20 Hz	0.22 V to 2.2 V	0.5 mV/V + 80 µV	
20 Hz to 40 Hz	0.22 V to 2.2 V	0.16 mV/V + 25 µV	
40 Hz to 20 kHz	0.22 V to 2.2 V	0.75 mV/V + 6 µV	
20 kHz to 50 kHz	0.22 V to 2.2 V	0.12 mV/V + 16 µV	
50 kHz to 100 kHz	0.22 V to 2.2 V	0.25 mV/V + 70 µV	

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Equipment to Measure AC Voltage At the listed frequencies[F]			Fluke 5700A/WDB
100 kHz to 300 kHz	0.22 V to 2.2 V	0.43 mV/V + 130 µV	
300 kHz to 500 kHz	0.22 V to 2.2 V	1.1 mV/V + 350 µV	
500 kHz to 1 MHz	0.22 V to 2.2 V	2.2 mV/V + 850 µV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
10 Hz to 20 Hz	2.2 V to 22 V	0.5 mV/V + 800 µV	
20 Hz to 40 Hz	2.2 V to 22 V	0.16 mV/V + 250 µV	
40 Hz to 20 kHz	2.2 V to 22 V	0.75 mV/V + 60 µV	
20 kHz to 50 kHz	2.2 V to 22 V	0.12 mV/V + 160 µV	
50 kHz to 100 kHz	2.2 V to 22 V	0.25 mV/V + 350 µV	
100 kHz to 300 kHz	2.2 V to 22 V	0.5 mV/V + 1 500 µV	
300 kHz to 500 kHz	2.2 V to 22 V	1.3 mV/V + 4 300 µV	
500 kHz to 1 MHz	2.2 V to 22 V	2.7 mV/V + 8 500 µV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
10 Hz to 20 Hz	22 V to 220 V	0.5 mV/V + 8 mV	
20 Hz to 40 Hz	22 V to 220 V	0.16 mV/V + 2.5 mV	
40 Hz to 20 kHz	22 V to 220 V	80 µV/V + 0.8 mV	
20 kHz to 50 kHz	22 V to 220 V	0.22 mV/V + 3.5 mV	
50 kHz to 100 kHz	22 V to 220 V	0.5 mV/V + 8 mV	
100 kHz to 300 kHz	22 V to 220 V	1.5 mV/V + 90 mV	
300 kHz to 500 kHz	22 V to 220 V	4.7 mV/V + 90 mV	
500 kHz to 1 MHz	22 V to 220 V	12 mV/V + 190 mV	
Equipment to Measure AC Voltage At the listed frequencies[F]			
15 Hz to 50 Hz	220 V to 250 V	0.4 mV/V + 16 mV	
50 Hz to 1 kHz	220 V to 1 100 V	80 µV/V + 3.5 mV	

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Equipment to Output AC Voltage At the listed frequencies[F]			Agilent 3458A
1 Hz to 40 Hz	10 mV to 100 mV	0.11 mV/V + 60 µV	
40 Hz to 1 kHz	10 mV to 100 mV	0.11 mV/V + 30 µV	
1 kHz to 20 kHz	10 mV to 100 mV	0.21 mV/V + 30 µV	
20 kHz to 50 kHz	10 mV to 100 mV	0.45 mV/V + 30 µV	
50 kHz to 100 kHz	10 mV to 100 mV	1.2 mV/V + 30 µV	
100 kHz to 300 kHz	10 mV to 100 mV	4.5 mV/V + 150 µV	
0.3 MHz to 1 MHz	10 mV to 100 mV	15 mV/V + 150 µV	
1 MHz to 2 MHz	10 mV to 100 mV	23 mV/V + 150 µV	
Equipment to Output AC Voltage At the listed frequencies[F]			
1 Hz to 40 Hz	0.1 V to 1 V	0.11 mV/V + 60 µV	
40 Hz to 1 kHz	0.1 V to 1 V	0.11 mV/V + 30 µV	
1 kHz to 20 kHz	0.1 V to 1 V	0.21 mV/V + 30 µV	
20 kHz to 50 kHz	0.1 V to 1 V	0.45 mV/V + 30 µV	
50 kHz to 100 kHz	0.1 V to 1 V	1.2 mV/V + 30 µV	
100 kHz to 300 kHz	0.1 V to 1 V	4.5 mV/V + 150 µV	
0.3 MHz to 1 MHz	0.1 V to 1 V	15 mV/V + 150 µV	
1 MHz to 2 MHz	0.1 V to 1 V	23 mV/V + 150 µV	
Equipment to Output AC Voltage At the listed frequencies[F]			
1 Hz to 40 Hz	1 V to 10 V	0.11 mV/V + 600 µV	
40 Hz to 1 kHz	1 V to 10 V	0.11 mV/V + 300 µV	
1 kHz to 20 kHz	1 V to 10 V	0.21 mV/V + 300 µV	
20 kHz to 50 kHz	1 V to 10 V	0.45 mV/V + 300 µV	
50 kHz to 100 kHz	1 V to 10 V	1.2 mV/V + 300 µV	
100 kHz to 300 kHz	1 V to 10 V	4.5 mV/V + 1 500 µV	
0.3 MHz to 1 MHz	1 V to 10 V	15 mV/V + 1 500 µV	
1 MHz to 2 MHz	1 V to 10 V	23 mV/V + 1 500 µV	

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Equipment to Output AC Voltage At the listed frequencies[F]			Agilent 3458A
1 Hz to 40 Hz	10 V to 100 V	0.3 mV/V + 6 mV	
40 Hz to 1 kHz	10 V to 100 V	0.3 mV/V + 3 mV	
1 kHz to 20 kHz	10 V to 100 V	0.3 mV/V + 3 mV	
20 kHz to 50 kHz	10 V to 100 V	0.53 mV/V + 3 mV	
50 kHz to 100 kHz	10 V to 100 V	1.8 mV/V + 3 mV	
100 kHz to 300 kHz	10 V to 100 V	60 mV/V + 15 mV	
0.3 MHz to 1 MHz	10 V to 100 V	23 mV/V + 15 mV	
Equipment to Output AC Voltage At the listed frequencies[F]			
1 Hz to 40 Hz	100 V to 700 V	0.6 mV/V + 60 mV	
40 Hz to 1 kHz	100 V to 700 V	0.6 mV/V + 30 mV	
1 kHz to 20 kHz	100 V to 700 V	0.9 mV/V + 30 mV	
20 kHz to 50 kHz	100 V to 700 V	1.8 mV/V + 30 mV	
50 kHz to 100 kHz	100 V to 700 V	4.5 mV/V + 30 mV	
Equipment to Output AC Voltage At the listed frequencies[F]			Fluke 5700A
1 Hz to 40 Hz	1 mV to 10 mV	0.45 mV/V + 45 µV	
40 Hz to 1 kHz	1 mV to 10 mV	0.3 mV/V + 16.5 µV	
1 kHz to 20 kHz	1 mV to 10 mV	0.45 mV/V + 16.5 µV	
20 kHz to 50 kHz	1 mV to 10 mV	1.5 mV/V + 16.5 µV	
50 kHz to 100 kHz	1 mV to 10 mV	7.5 mV/V + 16.5 µV	
100 kHz to 300 kHz	1 mV to 10 mV	60 mV/V + 30 µV	
Equipment to Measure AC Current At the listed frequencies[F]			Agilent 3458A
10 Hz to 20 Hz	1 µA to 220 µA	0.7 mA/A + 0.025 µA	
20 Hz to 40 Hz	1 µA to 220 µA	0.35 mA/A + 0.02 µA	
40 Hz to 1 kHz	1 µA to 220 µA	0.14 mA/A + 0.016 µA	
1 kHz to 5 kHz	1 µA to 220 µA	0.6 mA/A + 0.04 µA	
5 kHz to 10 kHz	1 µA to 220 µA	1.6 mA/A + 0.08 µA	

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Equipment to Measure AC Current At the listed frequencies[F]			Fluke 5700A
10 Hz to 20 Hz	200 µA to 2.2 mA	0.7 mA/A + 0.04 µA	
20 Hz to 40 Hz	200 µA to 2.2 mA	0.35 mA/A + 0.035 µA	
40 Hz to 1 kHz	200 µA to 2.2 mA	0.14 mA/A + 0.035 µA	
1 kHz to 5 kHz	200 µA to 2.2 mA	0.6 mA/A + 0.4 µA	
5 kHz to 10 kHz	200 µA to 2.2 mA	1.6 mA/A + 0.8 µA	
Equipment to Measure AC Current At the listed frequencies[F]			
10 Hz to 20 Hz	2.2 mA to 22 mA	0.7 mA/A + 0.4 µA	
20 Hz to 40 Hz	2.2 mA to 22 mA	0.35 mA/A + 0.35 µA	
40 Hz to 1 kHz	2.2 mA to 22 mA	0.14 mA/A + 0.35 µA	
1 kHz to 5 kHz	2.2 mA to 22 mA	0.6 mA/A + 4 µA	
5 kHz to 10 kHz	2.2 mA to 22 mA	1.6 mA/A + 8 µA	
Equipment to Measure AC Current At the listed frequencies[F]			
10 Hz to 20 Hz	22 mA to 220 mA	0.7 mA/A + 4 µA	
20 Hz to 40 Hz	22 mA to 220 mA	0.35 mA/A + 3.5 µA	
40 Hz to 1 kHz	22 mA to 220 mA	0.14 mA/A + 3.5 µA	
1 kHz to 5 kHz	22 mA to 220 mA	0.6 mA/A + 40 µA	
5 kHz to 10 kHz	22 mA to 220 mA	1.6 mA/A + 80 µA	
Equipment to Measure AC Current At the listed frequencies[F]			
10 Hz to 20 Hz	22 mA to 220 mA	0.7 mA/A + 4 µA	
20 Hz to 40 Hz	22 mA to 220 mA	0.35 mA/A + 3.5 µA	
40 Hz to 1 kHz	22 mA to 220 mA	0.14 mA/A + 3.5 µA	
1 kHz to 5 kHz	22 mA to 220 mA	0.6 mA/A + 40 µA	
5 kHz to 10 kHz	22 mA to 220 mA	1.6 mA/A + 80 µA	

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Equipment to Measure AC Current At the listed frequencies[F]			Fluke 5500A
20 Hz to 1 kHz	220 mA to 2.2 A	0.65 mA/A + 35 µA	
1 kHz to 5 kHz	220 mA to 2.2 A	0.75 mA/A + 80 µA	
5 kHz to 10 kHz	220 mA to 2.2 A	8.5 mA/A + 160 µA	
Equipment to Measure AC Current At the listed frequencies[F]			
45 Hz to 65 Hz	2.2 A to 11 A	0.6 mA/A + 2 mA	
65 Hz to 500 Hz	2.2 A to 11 A	1 mA/A + 2 mA	
500 Hz to 1 kHz	2.2 A to 11 A	3.3 mA/A + 2 mA	
Equipment to Measure Capacitance[F]	0.33 nF to 0.49 nF	0.14 nF/nF + 59 pF	
	0.5 nF to 1.09 nF	0.16 nF/nF + 59 pF	
	1.1 nF to 3.29 nF	0.22 nF/µF + 59 pF	
	3.3nF to 10.9 nF	1.4 nF/µF + 53 pF	
	11 nF to 32.9 nF	2.8 nF/µF + 130 pF	
	33 nF to 109.9 nF	1.4 nF/µF + 570 pF	
	110 nF to 329.9 nF	0.5 nF/µF + 5.8 nF	
	0.33 nF to 1.09 µF	1.4 nF/µF + 5.7 nF	
	1.1 nF to 3.29 µF	8 nF/µF + 58 nF	
	3.3 nF to 10.9 µF	23 nF/µF + 56 nF	
	11 nF to 32.9 µF	11 nF/µF + 580 nF	
	33 nF to 109.9 µF	38 nF/µF + 530 nF	
	110 nF to 329.9 µF	28 nF/µF + 5.6 µF	
	330 nF to 1.1 nF	17 nF/µF + 58 µF	
	0.33 nF to 0.49 nF	0.14 nF/nF + 59 pF	
Equipment to Measure AC Current At the listed frequencies[F]			Fluke A40B
60 Hz	20 AAC, Fixed Point	2.8 mAAC	
1 kHz	20 AAC, Fixed Point	2.8 mAAC	
5 kHz	20 AAC, Fixed Point	3.7 mAAC	

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Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385 100 Ω^F	-200 °C to -80 °C	0.05 °C	Electrical Simulation of Thermocouple Output Fluke 5500A
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 3926 100 Ω^F	-200 °C to -80 °C	0.05 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.07 °C	
	100 °C to 300 °C	0.09 °C	
	300 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 3916 100 Ω^F	-200 °C to -190 °C	0.25 °C	
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.06 °C	
	100 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.09 °C	
	400 °C to 600 °C	0.1 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385 200 Ω^F	-200 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.04 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.12 °C	
	300 °C to 400 °C	0.13 °C	
	400 °C to 600 °C	0.14 °C	
	600 °C to 630 °C	0.16 °C	

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Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385 500 Ω[F]	-200 °C to -80 °C	0.04 °C	Electrical Simulation of Thermocouple Output Fluke 5500A
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.05 °C	
	100 °C to 260 °C	0.06 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.08 °C	
	400 °C to 600 °C	0.09 °C	
	600 °C to 630 °C	0.11 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD Pt 385 1000 Ω[F]	-200 °C to -80 °C	0.03 °C	
	-80 °C to 0 °C	0.03 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.06 °C	
	300 °C to 400 °C	0.07 °C	
	400 °C to 600 °C	0.07 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD PtNi385 120 Ω (Ni120)[F]	-80 °C to 0 °C	0.08 °C	
	0 °C to 100 °C	0.08 °C	
	100 °C to 260 °C	0.14 °C	
Temperature Calibration, Indication, and Control Equipment used with RTD Cu427 10 Ω[F]	-100 °C to 260 °C	0.3 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type B[F]	600 °C to 800 °C	0.44 °C	
	800 °C to 1 000 °C	0.34 °C	
	1 000 °C to 1 550 °C	0.3 °C	
	1 550 °C to 1 820 °C	0.33 °C	

Certificate of Accreditation: Supplement

Unitek Instruments, Inc.
865 Cleveland Avenue, Columbus, OH 43201
Contact Name: Robert Bolton Phone: 614-291-9909

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

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type C[F]	0 °C to 150 °C	0.3 °C	Electrical Simulation of Thermocouple Output Fluke 5500A
	150 °C to 650 °C	0.26 °C	
	650 °C to 1 000 °C	0.31 °C	
	1 000 °C to 1 800 °C	0.5 °C	
	1 800 °C to 2 316 °C	0.84 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type E[F]	-250 °C to -100 °C	0.5 °C	
	-100 °C to -25 °C	0.16 °C	
	-25 °C to 350 °C	0.14 °C	
	350 °C to 650 °C	0.16 °C	
	650 °C to 1 000 °C	0.21 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type J[F]	-210 °C to -100 °C	0.27 °C	
	-100 °C to -30 °C	0.16 °C	
	-30 °C to 150 °C	0.14 °C	
	150 °C to 760 °C	0.17 °C	
	760 °C to 1 200 °C	0.23 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type K[F]	-200 °C to -100 °C	0.33 °C	
	-100 °C to -25 °C	0.18 °C	
	-25 °C to 120 °C	0.16 °C	
	120 °C to 1 000 °C	0.26 °C	
	1 000 °C to 1 372 °C	0.4 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type L[F]	-200 °C to -100 °C	0.37 °C	
	-100 °C to 800 °C	0.26 °C	
	800 °C to 900 °C	0.17 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type N[F]	-200 °C to -100 °C	0.4 °C	
	-100 °C to -25 °C	0.22 °C	
	-25 °C to 120 °C	0.19 °C	
	120 °C to 410 °C	0.18 °C	
	410 °C to 1 300 °C	0.27 °C	

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Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type R[F]	0 °C to 250 °C	0.57 °C	Electrical Simulation of Thermocouple Output Fluke 5500A
	250 °C to 400 °C	0.35 °C	
	400 °C to 1 000 °C	0.33 °C	
	1 000 °C to 1 767 °C	0.4 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type S[F]	0 °C to 250 °C	0.47 °C	
	250 °C to 1 000 °C	0.36 °C	
	1 000 °C to 1 400 °C	0.37 °C	
	1 400 °C to 1 767 °C	0.46 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type T[F]	-250 °C to -150 °C	0.63 °C	
	-150 °C to 0 °C	0.24 °C	
	0 °C to 120 °C	0.16 °C	
	120 °C to 400 °C	0.14 °C	
Temperature Calibration, Indication, and Control Equipment used with Thermocouple Type U[F]	-200 °C to 0 °C	0.56 °C	
	0 °C to 600 °C	0.27 °C	

Time and Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Timers & Stopwatches [F]	1 min to 24 hr	6 ms/hr	Fluke 1953A/GPS
Frequency Counters [F]	10 MHz reference	7 parts in 10^{-12} Hz	Symmetricon XL-GPS
Tachometers[F]	10 RPM to 29 999 RPM	± 0.61 rpm	Fluke 1953 A

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Sensors & Probes [F]	-196 °C to 0 °C	0.012 °C	Fluke 1523 / 5615 Liquid Bath Nitrogen-Stirred Alumina Sand Bath
	0 °C to 100 °C	0.005 8 °C	
	100 °C to 300 °C	0.038 °C	
	300 °C to 420 °C	0.051 °C	
Equipment to Measure Humidity[F]	33 % RH	± 2 % RH	Saturated Salts - MgCl
	75 % RH	± 2 % RH	Saturated Salts – NaCl

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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.