CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Calyx, LLC
2330 Commercial Boulevard Suite 500
State College, PA 16801

Fulfills the requirements of

ISO/IEC 17025:2017

In the field of

Calibration

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 04 March 2028

Certificate Number: AC-3468

This laboratory 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 (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Calyx, LLC
2330 Commercial Boulevard Suite 500
State College, PA 16801
Stephen English
814-234-6906

CALIBRATION

ISO/IEC 17025 Accreditation Granted: **04 March 2026**

Certificate Number: **AC-3468** Certificate Expiry Date: **04 March 2028**

Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Voltage - Source	(0 to 330) mV (0 to 3.3) V (0 to 33) V (30 to 330) V (100 to 1 020) V	0.004 7% of rdg + 0.002 3 mV 0.003 9% of rdg + 0.000 003 9 V 0.003 9% of rdg + 0.000 039 V 0.004 3% of rdg + 0.000 39 V 0.004 4% of rdg + 0.001 2 V	Direct comparison to Multiproduct Calibrator
DC Current - Source	(0 to 330) µA (0 to 3.3) mA (0 to 33) mA (0 to 330) mA (0 to 3) A (0 to 11) A (11 to 20.5) A	0.012% of rdg + 0.016 µA 0.014% of rdg + 0.000 039 mA 0.007 9% of rdg + 0.000 20 mA 0.008 7% of rdg + 0.001 9 mA 0.030% of rdg + 0.000 035 A 0.047% of rdg + 0.000 39 A 0.079% of rdg + 0.000 59 A	Direct comparison to Multiproduct Calibrator
DC Resistance - Source	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 to 1.1) kΩ (1.1 to 3.3) kΩ	0.59% of rdg + 0.008 3 Ω 0.067% of rdg + 0.013 Ω 0.007 8% of rdg + 0.012 Ω 0.007 5% of rdg + 0.007 8 Ω 0.017% of rdg + 0.000 016 kΩ 0.011% of rdg + 0.000 16 kΩ	Direct comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Resistance - Source	(3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (330 to 1 100) MΩ	0.007 1% of rdg + 0.000 078 kΩ 0.007 1% of rdg + 0.000 78 kΩ 0.008 6% of rdg + 0.000 78 kΩ 0.010% of rdg + 0.007 8 kΩ 0.014% of rdg + 0.000 007 9 MΩ 0.013% of rdg + 0.000 12 MΩ 0.047% of rdg + 0.000 19 MΩ 0.092% of rdg + 0.001 9 MΩ 0.41% of rdg + 0.002 3 MΩ 0.49% of rdg + 0.078 MΩ 4.1% of rdg + 0.39 GΩ	Direct comparison to Multiproduct Calibrator
Electrical Simulation of RTD Indicating Systems Source / Measure	Pt 385, 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C Pt 3926, 100 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C Pt 3916, 100 Ω (-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	 0.040 °C 0.040 °C 0.040 °C 0.071 °C 0.078 °C 0.094 °C 0.18 °C 0.040 °C 0.040 °C 0.055 °C 0.070 °C 0.078 °C 0.094 °C 0.20 °C 0.032 °C 0.040 °C 0.048 °C 0.055 °C 0.063 °C 0.071 °C 0.078 °C 0.18 °C	Direct comparison to Multiproduct Calibrator

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Electrical Simulation of RTD Indicating Systems Source / Measure	Pt 385, 200 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C Pt 385, 500 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C Pt 385, 1000 Ω (-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C Ni120 (-80 to 0) °C (0 to 100) °C (100 to 260) °C Cu 427, 10 Ω (-100 to 260) °C	 0.032 °C 0.032 °C 0.032 °C 0.041 °C 0.094 °C 0.10 °C 0.11 °C 0.12 °C 0.032 °C 0.040 °C 0.040 °C 0.048 °C 0.065 °C 0.063 °C 0.071 °C 0.086 °C 0.025 °C 0.025 °C 0.77 °C 0.040 °C 0.048 °C 0.055 °C 0.056 °C 0.18 °C 0.063 °C 0.063 °C 0.040 °C 0.24 °C	Direct comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators Source / Measure	Type B (600 to 800) °C (800 to 1 000) °C (1 000 to 1 550) °C (1 550 to 1 820) °C Type E (-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1 000) °C Type J (-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1 200) °C Type K (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1 000) °C (1 000 to 1 372) °C Type N (-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1 300) °C Type R (0 to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C Type S (0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C	 0.39 °C 0.31 °C 0.29 °C 0.31 °C 0.40 °C 0.17 °C 0.16 °C 0.17 °C 0.20 °C 0.25 °C 0.17 °C 0.15 °C 0.17 °C 0.21 °C 0.29 °C 0.18 °C 0.18 °C 0.23 °C 0.33 °C 0.34 °C 0.21 °C 0.19 °C 0.19 °C 0.24 °C 0.47 °C 0.31 °C 0.31 °C 0.35 °C 0.41 °C 0.32 °C 0.34 °C 0.40 °C	Direct comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Electrical Simulation of Thermocouple Indicators Source / Measure	Type T (-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	 0.51 °C 0.22 °C 0.17 °C 0.16 °C	Direct comparison to Multiproduct Calibrator
AC Voltage - Source	(1 to 33) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz (33 to 330) mV (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz (0.33 to 3.3) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz (3.3 to 33) V (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (33 to 330) V 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	 0.12% of rdg + 0.016 mV 0.11% of rdg + 0.016 mV 0.12% of rdg + 0.016 mV 0.16% of rdg + 0.016 mV 0.27% of rdg + 0.026 mV 7.1% of rdg + 0.054 mV 0.042% of rdg + 0.016 mV 0.023% of rdg + 0.016 mV 0.12% of rdg + 0.016 mV 0.079% of rdg + 0.031 mV 0.18% of rdg + 0.13 mV 0.39% of rdg + 0.26 mV 0.080% of rdg + 0.000 047 V 0.023% of rdg + 0.000 047 V 0.055% of rdg + 0.000 047 V 0.079% of rdg + 0.000 047 V 0.18% of rdg + 0.000 16 V 0.39% of rdg + 0.000 70 V 0.080% of rdg + 0.000 62 V 0.023% of rdg + 0.000 47 V 0.055% of rdg + 0.000 47 V 0.079% of rdg + 0.000 47 V 0.18% of rdg + 0.001 6 V 0.039% of rdg + 0.002 3 V 0.063% of rdg + 0.007 1 V 0.071% of rdg + 0.007 1 V 0.093% of rdg + 0.007 0 V 0.19% of rdg + 0.063 V	Direct comparison to Multiproduct Calibrator

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Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage - Source	(330 to 1 020) V 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	 0.039% of rdg + 0.016 V 0.063% of rdg + 0.016 V 0.071% of rdg + 0.016 V	Direct comparison to Multiproduct Calibrator
AC Current - Source	(29 to 330) µA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 3.3) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (3.3 to 33) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (33 to 330) mA (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz (0.33 to 1.1) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	 0.16% of rdg + 0.078 µA 0.12% of rdg + 0.078 µA 0.097% of rdg + 0.078 µA 0.24% of rdg + 0.12 µA 0.63% of rdg + 0.16 µA 1.3% of rdg + 0.31 µA 0.16% of rdg + 0.000 12 mA 0.098% of rdg + 0.000 12 mA 0.097% of rdg + 0.078 µA 0.16% of rdg + 0.000 16 mA 0.39% of rdg + 0.000 24 mA 0.79% of rdg + 0.000 47 mA 0.14% of rdg + 0.001 6 mA 0.072% of rdg + 0.001 6 mA 0.031% of rdg + 0.001 6 mA 0.062% of rdg + 0.001 6 mA 0.16% of rdg + 0.002 4 mA 0.31% of rdg + 0.003 1 mA 0.14% of rdg + 0.016 mA 0.070% of rdg + 0.016 mA 0.032% of rdg + 0.016 mA 0.078% of rdg + 0.039 mA 0.16% of rdg + 0.079 mA 0.31% of rdg + 0.16 mA 0.14% of rdg + 0.000 078 A 0.039% of rdg + 0.000 078 A 0.47% of rdg + 0.000 79 A 2.0% of rdg + 0.003 9 A	Direct comparison to Multiproduct Calibrator

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Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Current - Source	(1.1 to 3) A (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (3 to 11) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz (11 to 20.5) A (45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	 0.14% of rdg + 0.000 078 A 0.047% of rdg + 0.000 078 A 0.47% of rdg + 0.000 79 A 2.0% of rdg + 0.003 9 A 0.048% of rdg + 0.001 6 A 0.078% of rdg + 0.001 6 A 2.4% of rdg + 0.001 6 A 0.093% of rdg + 0.003 9 A 0.12% of rdg + 0.003 9 A 2.4% of rdg + 0.003 9 A	Direct comparison to Multiproduct Calibrator
Capacitance - Source	(220 to 400) pF (0.4 to 1.1) nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF (0.33 to 1.1) µF (1.1 to 3.3) µF (3.3 to 11) µF (11 to 33) µF (33 to 110) µF (110 to 330) µF (0.33 to 1.1) mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	0.45% of rdg + 7.8 pF 0.39% of rdg + 0.007 9 nF 0.43% of rdg + 0.007 8 nF 0.34% of rdg + 0.007 8 nF 0.23% of rdg + 0.078 nF 0.29% of rdg + 0.078 nF 0.27% of rdg + 0.23 nF 0.30% of rdg + 0.000 78 µF 0.43% of rdg + 0.007 8 nF 0.29% of rdg + 0.007 8 µF 0.37% of rdg + 0.023 µF 0.41% of rdg + 0.078 µF 0.39% of rdg + 0.23 µF 2.2% of rdg + 0.000 84 mF 5.4% of rdg + 0.002 5 mF 0.36% of rdg + 0.007 8 mF 0.59% of rdg + 0.023 mF 0.86% of rdg + 0.078 mF	Direct comparison to Multiproduct Calibrator

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Electrical – DC/Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Oscilloscopes [1]			
Amplitude DC Output			
into 50 Ω	(-2.2 to 2.2) V	0.20% of rdg + 78 µV	
into 1 MΩ	(-33 to 33) V	0.20% of rdg + 78 µV	
Square Wave Output			
into 50 Ω	10 Hz to 10 kHz 1.8 mVp-p to 2.2 Vp-p	1.4% of rdg + 83 µV	
into 1 MΩ	10 Hz to 10 kHz 1.8 mVp-p to 105 Vp-p	1.3% of rdg + 92 µV	
Leveled Sine Wave Output			
into 50 Ω	5 mVp-p to 5.5 Vp-p		
	50 kHz	1.6% of rdg + 0.16 mV	
	50 kHz to 50 MHz	3.3% of rdg + 0.23 mV	
	(50 to 300) MHz	3.7% of rdg + 0.23 mV	Direct comparison to Multiproduct Calibrator
Level Sine Wave Flatness (relative to 50 kHz)			
into 50 Ω	5 mVp-p to 5.5 Vp-p		
	50 kHz to 50 MHz	2.5% of rdg + 79 µV	
	(50 to 300) MHz	3.5% of rdg + 78 µV	
Time Marker Output[2]			
into 50 Ω	2 ns to 50 µs	0.093%	
	10 ms	0.093%	
	20 ms	0.047%	
	50 ms	0.048%	
	2 s	0.16%	
	5 s	0.40%	
Pulse Rise Time 4.5 mVp-p to 2.75 Vp-p	< 400 ps	67 ps	

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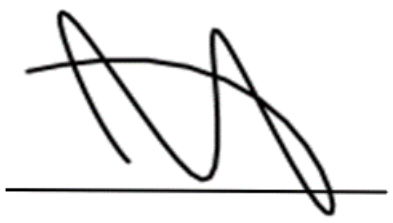
Time and Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Frequency Source	0.01 Hz to 12 kHz	0.002 5% of rdg + 1 mHz	Direct comparison to Multiproduct Calibrator
	12 kHz to 2 MHz	0.002 5% of rdg + 15 mHz	

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. Resolution of the device under test is included at the time of calibration.



Jason Stine, Vice President

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