CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Antibus Scales & Systems, Inc.
705 W. Newton Rd.
Bowling Green, OH 43402

Fulfills the requirements of

ISO/IEC 17025:2017

In the fields of

CALIBRATION and **DIMENSIONAL MEASUREMENT**

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: 11 May 2028

Certificate Number: L2253.02

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

Antibus Scales & Systems, Inc.

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Bowling Green, OH 43402

Bob Bennett 419-872-8628

CALIBRATION & DIMENSIONAL MEASUREMENT

ISO/IEC 17025 Accreditation Granted: **08 May 2026**

Certificate Number: **L2253.02** Certificate Expiry Date: **11 May 2028**

Electrical – DC/Low

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
DC Current Measure and Source [1]	0 to 4 mA 4.1 to 10 mA 10.1 to 20 mA	0.006 mA 0.009 mA 0.009 mA	Comparison to Fluke Series Process Calibrator
DC Voltage – Source	(0 to 10) mV (11 to 100) mV (0 to 0.15) V (0.16 to 1.0) V (0 to 1.5) V (1.6 to 10) V (11 to 15) V	0.006 2 mV 0.015 mV 0.000 067 V 0.000 15 V 0.000 87 V 0.001 6 V 0.002 1 V	Comparison to Fluke Series Process Calibrator
DC Voltage - Measure	(0.0) mV (0.1 to 100) mV (0.0) V (0.1 to 1.0) V (1.1 to 2.0) V (2.1 to 3.0) V (0.0) V (0.1 to 10) V (11 to 30) V (0.0) V (0.1 to 100) V (101 to 300) V	0.006 7 mV 0.026 mV 0.000 070 V 0.000 25 V 0.000 45 V 0.000 65 V 0.000 57 V 0.002 5 V 0.006 5 V 0.051 V 0.10 V 0.21 V	Comparison to Fluke Series Process Calibrator

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Electrical – DC/Low

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Resistance Source & Measure [1]	(0 to 55) Ω (55 to 250) Ω (250 to 680) Ω	0.11 Ω 0.74 Ω 1 Ω	Comparison to Fluke Series Process Calibrator
Electrical Simulation of RTD Indicating Devices [1] Pt 385 100 Ω	(-180 to 750) °C	0.67°C	Comparison to Fluke Series Process Calibrator
Electrical Simulation of Thermocouple Indicating Devices [1]	Type K (-195 to 1 260) °C Type J (0 to 760) °C Type T (-195to 370) °C Types R & S (300 to 1 480) °C	0.87°C 0.87°C 0.87°C 1.1°C	Comparison to Fluke Series Process Calibrator

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
End Standards	Up to 24 in	$(21 + 1.7L)$ µin	Comparison to Gage Blocks using ULM
Rules and Scales [1]	(0 to 72) in	0.016 in	Comparison to Gage Blocks, Ruler, and Magnifier
Pin Gages [1]	Up to 1 in	31 µin	Measurement using Micrometer
Thread Wires (80 to 6) TPI	(0.007 to 0.097) in	19 µin	Comparison to Setting Masters using ULM
Gage Blocks	(0.005 to 4) in (0 to 24) in	$(2.7 + 1.6L)$ µin $(5.5 + 1.4L)$ µin	Comparison to Gage Blocks using Comparator and ULM
OD Cylinder/Plug Gages	(0 to 12) in (12 to 23) in	$(13.5 + 2.1D)$ µin $(7.3 + 4.8D)$ µin	Comparison to Setting Disks using ULM
Plain Ring (ID) Gages	(0.02 to 0.75) in (0.65 to 4) in (4 to 17) in	$(7.3 + 0.62D)$ µin $(8.5 + 4D)$ µin $(20 + 2D)$ µin	Comparison to Master Rings using Probe/ULM

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
End Standards	Up to 24 in	(21 + 1.7*L*) µin	Comparison to Gage Blocks using ULM
Custom Gages (Width, Feeler, Height, Depth)	Up to 24 in Up to 24 in	(40 + 6.7L)µin (115 + 1.7L)µin	Comparison to Gage Blocks/Setting Disks using ULM/Indicator
Spheres and Precision Balls Diameter	(0 to 2) in	(30 + 2.1*D*) µin	Comparison to Setting Masters using ULM
Thread Plugs Pitch Diameter (80 to 6) TPI Major Diameter	 (0.007 to 0.097) in Up to 22 in	 (106 + 2.7*D*) µin (59 + 1.9*D*) µin	Comparison to Setting Masters and Thread Wires using ULM
Adjustable Thread Rings Functional Fit	(0 to 9) in	587 µin	Comparison to Setting Thread Plugs
Height Gages [1] 0.000 01 in resolution 0.000 5 in resolution 0.001 in resolution	(0 to 40) in	(63 +2.1L) µin (295 + 0.37*L*) µin (581 + 0.36*L*) µin	Comparison to Gage Blocks
Indicators [1] 0.000 05 in resolution 0.000 5 in resolution 0.000 1 in resolution 0.001 in resolution	 (0 to 2) in (0 to 2) in (0 to 2) in (0 to 6) in	 65 µin 310 µin 100 µin 590 µin	Comparison to Gage Blocks and Indicator Stand Indicator Calibrator
Calipers [1] 0.000 5 in resolution 0.001 in resolution	(0 to 60) in	(291 + 1.1*L*) µin (580 + 0.6 *L*) µin	Comparison to Gage Blocks and Ring Gages
OD Micrometers [1] 0.000 005 in resolution 0.000 05 in resolution 0.000 1 in resolution 0.001 in resolution	 (0 to 1) in (0 to 4) in (0 to 12) in (0 to 24) in	 (34 + 0.05*L*) µin (70 + 0.07*L*) µin (84 + 0.83*L*) µin (581 + 0.22*L*) µin	Comparison to Gage Blocks
ID Micrometers [1] 0.001 in resolution	(0 to 23) in	(638 + 1.13*L*) µin	Comparison to PLM, Gage Blocks & Plain Rings
Depth Gages [1] 0.000 1 in resolution 0.000 5 in resolution 0.001 in resolution	(0 to 12) in	(104 + 0.86*L*) µin (373 + 6.5*L*) µin (570 + 0.14*L*) µin	Comparison to Gage Blocks

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Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
End Standards	Up to 24 in	(21 + 1.7*L*) µin	Comparison to Gage Blocks using ULM
Micrometer Head 0.000 05 in resolution 0.000 1 in resolution 0.001 in resolution	(0 to 1) in	 72 µin 85 µin 581 µin	Comparison to Gage Blocks
Bore Gages [1] 0.000 5 in resolution 0.001 in resolution	 (0.25 to 4) in (0.25 to 4) in	 (373 + 39*L*) µin 578 µin	Comparison to Master Rings and Gage Blocks
Profilometers [1]	(16 to 120) µin Ra	4.7 µin Ra	Comparison to Master surface finish roughness specimen
Surface Roughness Specimen [1]	(2 to 500) µin Ra	2.5 µin Ra	Measurement using Surface Finish Analyzer
Protractors Angle Angle	 (0 to 90) ° (0 to 90) °	 0.10 ° 0.81 °	Comparison to Gage Blocks and Sine Bar Measurement using Optical Comparator

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Force – Tension and Compression [1,6]	(0 to 100 000) lbf	1d + 0.20% load	Comparison to Load Cells
Force Gages & Cells: UUTs with accuracies <= 0.1% [1,6]	(0 to 10 000) lbf	1d + 0.033% load	Comparison to Class F/6 Weights
Force Gages & Cells: UUTs with accuracies > 0.1% [1,6]	(0 to 30 000) lbf	1d + 0.10% load	Comparison to Class F/6 Weights

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Class F/6 and lower Mass Standards	25 lb 50 lb 500 lb 1 000 lb 10 kg 20 kg 25 kg	0.000 52 lb 0.001 0 lb 0.011 lb 0.021 lb 0.23 g 0.41 g 0.51 g	Modified Substitution
Lab Balances [1,6] (Five & Six Place Balances) (Four Place and Class 1 Equivalent Balances) (Class 2 & High Precision Scales)	(0 to 500) g (0 to 4 100) g (0 to 4 100) g	1d + 0.004 1% of load 1d + 0.000 3% of load 0.6d + 0.000 07% of load	Class 1 Weights and NIST Handbook 44 utilized for the Calibration of Weighing Systems
Lab Balances and High Precision Scales [1,6]	(0 to 35) kg	1d + 0.001 2% of load	Class 2 & 3 Weights and NIST Handbook 44 utilized for the Calibration of Weighing Systems
Lab Balances and High Precision Scales [1,6]	(0 to 150) kg	1d + 0.000 7% of load	Comparison to Class 1 and Class 2 Weights with Substitution to range of use
High Resolution Unmarked Scales [1,6]	(0 to 5 000) kg (0 to 50 000) lb	1d + 0.012% of load 1d + 0.012% of load	Comparison to Class F,6 Weights with Substitution to range of use
Industrial and Commercial Scales [1,4,6]	(0 to 5 000) kg (0 to 200 000) lb	1d + 0.004% of load 1d + 0.004% of load	Comparison to Class F,6 Weights with Substitution to range of use

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Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Torque Analyzers – Fixed Points [1]	(4 to 50) lbf·in (30 to 400) lbf·in (80 to 1 000) lbf·in (20 to 250) lbf·ft	0.076 % of reading 0.062 % of reading 0.071 % of reading 0.062 % of reading	Comparison to Torque Arm and Class F/6 Weights
Torque Wrench [1] With Accuracies of 0 to 1.5% With Accuracies > 1.5%	 (4 lbf·in to 250 lbf·ft) (4 lbf·in to 250 lbf·ft)	 1.2 % of reading 2.6 % of reading	Comparison to Torque Analyzer

Thermodynamic

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Humidity Indicators [1]	(20 to 90) %RH	1.1 %RH	Comparison to Rotrotronic Hygropalm [1]
Temp Indicators	(0 to 80) °C	0.7 °C	Rotrotronic Hygropalm [1]
Temperature Indicators and probe systems[1] (UUTs reading by 0.1 °C) (UUTs reading by 1.0 °C)	 (35 to 375) °C (35 to 375) °C	 0.53 °C 0.78 °C	Comparison to Fluke Drywell and Temperature Calibrator
Temperature – Measure[1] (Ovens and Freezers)	(-195 to 1 300) °C	1.3 °C	Comparison to Fluke Series Process Calibrator

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DIMENSIONAL MEASUREMENT

1 Dimensional

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Dimensional Measurement 1D [1]	(0 to 24) in	(40 + 6.7*L*) µin	Comparison to PLM, Gage Blocks, Setting Masters, Master Rings
	(0 to 24) in	(115 + 1.7L)µin	Height Gage with Precision Indicator
	(0 to 24) in	121 µin	Indicator and Gage Blocks
	(0 to 4) in	198 µin	Micrometers
	(0 to 18) in	1 275 µin	Calipers and Height Gages

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. L = Length in inches, D = Diameter in inches
3. High Resolution Unmarked Scales include high resolution scales not complying with the accuracy class parameters of Table 3 of NIST Handbook 44.
4. Industrial Scales include but are not limited to lab balances, bench scales, floor scales, tank and hopper scales, and vehicle scales.
5. This scope is formatted as part of a single document including Certificate of Accreditation No. L2253.02.
6. When the uncertainty of measurement is significantly impacted by the UUT's resolution, then the uncertainty may be expressed as a formula using the UUT's resolution, represented by "d" above.

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