CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

TSI Instruments Limited
Stirling Road, Cressex Business Park
High Wycombe, Buckinghamshire, UK HP12 3ST

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: 09 July 2026

Certificate Number: AC-3002

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

TSI Instruments Limited

Stirling Road, Cressex Business Park
High Wycombe, Buckinghamshire, UK HP12 3ST
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CALIBRATION

Valid to: **July 9, 2026** Certificate Number: **AC-3002**

Chemical Quantities

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Air-born particle size detection and concentration counting efficiencies/ Condensation Particle Counters (CPC/PNC) [1]	Particle Size 10 nm 15 nm 23 nm 41 nm 55 nm Particle Concentration Range @ 55 nm 300 counts/cm^3 600 counts/cm^3 1 000 counts/cm^3 2 000 counts/cm^3 4 000 counts/cm^3 6 000 counts/cm^3 8 000 counts/cm^3 10 000 counts/cm^3 25 000 counts/cm^3 50 000 counts/cm^3 Linearity (Slope) for 55 nm particles (0.90 to 1.1) @ 10 000 cm^{-3} @ 50 000 cm^{-3}	 0.09 0.074 0.15 0.1 0.12 0.12 0.12 0.12 0.12 0.068 0.12 0.082 0.12 0.062 0.076 0.032 0.035	Electrometer, 3068B CPC, 3750/3772 ISO 27891:2015
Gas Analyzers [2]	0 parts in 10^{-6} CO 35 parts in 10^{-6} CO 100 parts in 10^{-6} CO 200 parts in 10^{-6} CO	1 part in 10^{-6} CO 1.3 parts in 10^{-6} CO 2 parts in 10^{-6} CO 2.3 parts in 10^{-6} CO	Certified Reference Materials, Mass Flow Meter

Chemical Quantities

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gas Analyzers [2]	0 parts in 10^{-6} CO_2 500 parts in 10^{-6} CO_2 1 000 parts in 10^{-6} CO_2 3 000 parts in 10^{-6} CO_2 5 000 parts in 10^{-6} CO_2	2.8 parts in 10^{-6} CO_2 13 parts in 10^{-6} CO_2 20 parts in 10^{-6} CO_2 50 parts in 10^{-6} CO_2 52 parts in 10^{-6} CO_2	Certified Reference Materials, Mass Flow Meter

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Air Velocity	Thermal Anemometers (0.2 to 1.25) m/s (1.26 to 7.5) m/s (7.6 to 50) m/s	 0.48 % of reading + 0.015 m/s 1.2 % of reading + 0.038 m/s 1.2 % of reading + 0.1 m/s	Wind Tunnel, Barometer, Manometers
	Vane Anemometers 0.5 m/s 0.75 m/s 1.0 m/s 2.5 m/s 5.0 m/s 7.5 m/s 15 m/s 30 m/s	 0.31 % of reading + 0.02 m/s 0.31 % of reading + 0.024 m/s 0.31 % of reading + 0.03 m/s 0.31 % of reading + 0.061 m/s 0.31 % of reading + 0.085 m/s 0.31 % of reading + 0.12 m/s 0.31 % of reading + 0.2 m/s 0.31 % of reading + 0.4 m/s	Gold Standard Vane Anemometer
Pressure – Gage	(-1 to 4) kPa	3.4 Pa	Pressure Transducer
Pressure – Absolute	(60 to 135) kPa	0.7 % of reading + 1.2 Pa	Barometer
Pneumatic Differential Pressure (Low Flow Meter)	(-153 to 153) cmH_2O	0.33 cmH_2O	PPC4-ui A1.4 Ms/A200Kp Pressure Controller
Pneumatic Differential Pressure (High Flow Meter)	(-11 to 50) psig (50 to 152) psig	0.077 psig 0.45 psig	PPC4-ui A1.4 Ms/A200Kp Pressure Controller

Mass and Mass Related

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Volumetric Flowrate (Flow Meter; Gas Type: Air, CO_2, O_2, N_2)	(0.01 to 0.02) slpm (>0.02 to 0.05) slpm (>0.05 to 0.10) slpm (>0.10 to 0.20) slpm (>0.20 to 0.40) slpm (>0.40 to 0.80) slpm (>0.80 to 1.60) slpm (>1.60 to 3.00) slpm	6.1 % of reading 4.1 % of reading 2.4 % of reading 2 % of reading 1.5 % of reading 1.2 % of reading 1.1 % of reading 1 % of reading	Flow Calibrator w/Small Bronkhorst Pressure/Temperature Measurement System
	(>3 to 300) slpm	0.81 % of reading	Flow Calibrator w/Sonic Nozzle

Thermodynamics

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Temperature – Source	0 °C 60 °C	0.19 °C 0.19 °C	Calibration Baths
Relative Humidity – Measuring Equipment	(10 to 90) %RH @ 25 °C	2.5 %RH	Thunder Scientific 2500 Humidity Chamber

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. Unitless linear measure.
2. Parts per million (ppm) refers to parts in 10^6.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-3002.

Jason Stine, Vice President