

# 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

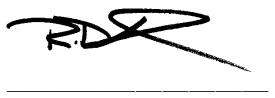
Fulfills the requirements of

## 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 <a href="https://www.anab.org">www.anab.org</a>.



R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 09 July 2024 Certificate Number: AC-3002





#### SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

### **TSI Instruments Limited**

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#### **CALIBRATION**

Valid to: July 9, 2024 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) <sup>1</sup>	Particle Size  10 nm 15 nm 23 nm 41 nm 55 nm  Particle Concentration Range  @ 55 nm  Particle Concentration Range  @ 55 nm 300 counts/cm³ 600 counts/cm³ 1 000 counts/cm³ 4 000 counts/cm³ 6 000 counts/cm³ 8 000 counts/cm³ 10 000 counts/cm³ 50 000 counts/cm³ 50 000 counts/cm³	_	-
	Linearity (Slope) for 55 nm particles (0.90 to 1.1) @ 10 000 cm <sup>-3</sup> @ 50 000 cm <sup>-3</sup>	0.032 0.035	





### **Chemical Quantities**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gas Analyzers <sup>2</sup>	0 parts in 10 <sup>-6</sup> (ppm) CO	1 part in 10 <sup>-6</sup> CO	
	35 parts in 10 <sup>-6</sup> (ppm) CO	1.3 parts in 10 <sup>-6</sup> CO	Reference Gasses Mass Flow Meter
	100 parts in 10 <sup>-6</sup> (ppm) CO	2 parts in 10 <sup>-6</sup> CO	
	200 parts in 10 <sup>-6</sup> (ppm) CO	2.3 parts in 10 <sup>-6</sup> CO	
Gas Analyzers <sup>2</sup>	0 parts in 10 <sup>-6</sup> (ppm) CO <sub>2</sub>	2.8 parts in 10 <sup>-6</sup> CO <sub>2</sub>	Reference Gasses Mass Flow Meter
	500 parts in 10 <sup>-6</sup> (ppm) CO <sub>2</sub>	13 parts in 10-6 CO <sub>2</sub>	
	1 000 parts in 10 <sup>-6</sup> (ppm) CO <sub>2</sub>	20 parts in 10 <sup>-6</sup> CO <sub>2</sub>	
	3 000 parts in 10 <sup>-6</sup> (ppm) CO <sub>2</sub>	50 parts in 10 <sup>-6</sup> CO <sub>2</sub>	
	5 000 parts in 10 <sup>-6</sup> (ppm) CO <sub>2</sub>	52 parts in 10 <sup>-6</sup> CO <sub>2</sub>	

#### **Mass and Mass Related**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
	Thermal Anemometers (0.2 to 1.25) m/s	0.47 % of reading + 0.016 m/s	Wind Tunnel, Barometer,
	(1.26 to 7.5) m/s	1.2 % of reading + 0.036 m/s	Manometers Manager
	(7.6 to 50) m/s Vane Anemometers	1.2 % of reading + 0.088 m/s	
Air Velocity	0.5 m/s	0.31 % of reading + 0.02 m/s	
	0.75 m/s	0.31 %  of reading + 0.024  m/s	Gold Standard Vane Anemometer
	1.0 m/s	0.31 % of reading + 0.03 m/s	
	2.5 m/s 5.0 m/s	0.31 % of reading + 0.061 m/s 0.31 % of reading + 0.085 m/s	
	7.5 m/s	0.31 % of reading + 0.003 m/s	
	15 m/s	0.31 % of reading + 0.2 m/s	
	30 m/s	0.31 % of reading + $0.4  m/s$	
Pressure – Gage	(-1 to 4) kPa (4 to 13.33) kPa	3.9 Pa 1.1 % of reading + 31 Pa	Pressure Transducer
Pressure – Absolute	(60 to 135) kPa	0.7 % of reading + 1.2 Pa	Barometer

### Thermodynamics

Version 002 Issued: June 02, 2022

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

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#### **Thermodynamics**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Relative Humidity	(10 to 90) % RH @ 25 °C	2.5 % RH	Thermohygrometer and Probe, 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.
- $2. \quad \text{Parts per million (ppm) refers parts in } 10^6.$
- 3. This scope is formatted as part of a single document including Certificate of Accreditation No. AC-3002.

