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.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 09 July 2024
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

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High Wycombe, Buckinghamshire, UK HP12 3ST
Miles Wallis +44 (0)1494 459200

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) [1]	Particle Size		Electrometer, 3068B CPC, 3750/3772 ISO 27891:2015
	10 nm	0.09	
	15 nm	0.074	
	23 nm	0.15	
	41 nm	0.1	
	55 nm	0.12	
	Particle Concentration Range @ 55 nm		
	300 counts/cm^3	0.12	
	600 counts/cm^3	0.12	
	1 000 counts/cm^3	0.12	
	2 000 counts/cm^3	0.12	
	4 000 counts/cm^3	0.068	
	6 000 counts/cm^3	0.12	
	8 000 counts/cm^3	0.082	
	10 000 counts/cm^3	0.12	
	25 000 counts/cm^3	0.062	
	50 000 counts/cm^3	0.076	
	Linearity (Slope) for 55 nm particles		
	(0.90 to 1.1)		
	@ 10 000 cm^{-3}	0.032	
	@ 50 000 cm^{-3}	0.035	

Chemical Quantities

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Gas Analyzers [2]	0 parts in 10^{-6}(ppm) CO 35 parts in 10^{-6}(ppm) CO 100 parts in 10^{-6}(ppm) CO 200 parts in 10^{-6}(ppm) 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	Reference Gasses Mass Flow Meter
Gas Analyzers [2]	0 parts in 10^{-6}(ppm) CO_2 500 parts in 10^{-6}(ppm) CO_2 1 000 parts in 10^{-6}(ppm) CO_2 3 000 parts in 10^{-6}(ppm) CO_2 5 000 parts in 10^{-6}(ppm) 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	Reference Gasses 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	 0.47 % of reading + 0.016 m/s 1.2 % of reading + 0.036 m/s 1.2 % of reading + 0.088 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 (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

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

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. 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.

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