SINGAPORE LABORATORY ACCREDITATION SCHEME

Accredited Laboratory SAC-SINGLAS

Schedule

Supertron Sensing Pte Ltd
Blk 16 Kallang Place
#07-04
Singapore 339156

Certificate No. : LA-2011-0485-C

Issue No. : 14

Date : 5 May 2026

Expiry of Certificate : 10 May 2030

FIELD OF TESTING : Calibration and Measurement

MEASURED QUANTITIES/ INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD OF CALIBRATION	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
1. Pressure Measuring Devices i. Calibrator ii. Transducer / Transmitter iii. Digital Indicator <u>Range of Measurement</u> a. (5 to 23) psi abs b. (23 to 50) psi abs c. (50 to 150) psi abs d. (150 to 300) psi abs	In-house Procedure CP-H, Rev 13	 0.005 psi abs 0.013 psi abs 0.025 psi abs 0.040 psi abs
2. On-Site Pressure Measurement i. Calibrator ii. Transducer / Transmitter iii. Digital Indicator <u>Range of Measurement</u> a. (10 to 50) psi abs b. (50 to 150) psi abs	In-House / Site Procedure CP-H, Rev 13	 0.03 psi abs 0.10 psi abs

MEASURED QUANTITIES/ INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD OF CALIBRATION	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
3. Humidity Measurement		
i. Dew/ Frost Point	In-house Procedure CP-N, Rev 6 CP-M, Rev 5	
Range of Measurement		
a. -95 °C to -90 °C Frost Point		0.90 °C
b. -90 °C to -85 °C Frost Point		0.60 °C
c. -85 °C to -75 °C Frost Point		0.35 °C
d. -75 °C to -60 °C Frost Point		0.20 °C
e. -60 °C to -30 °C Frost Point		0.13 °C
f. -30 °C to 0°C Frost/ Dew Point		0.05 °C
g. 0 °C to +70 °C Frost/ Dew Point		0.07 °C
h. +70 °C to +95 °C Frost/ Dew Point		0.09 °C
ii. Relative Humidity (Chilled Mirror Hygrometer with air temperature probe) iii. Relative Humidity Sensor/ Instrument iv. Thermo-hygrometer	In-house Procedure CP-N, Rev 6	Corresponding to above dew-point and temperature uncertainties
Range of Measurement	Comparison with 2-Pressure 2-Temperature Humidity generator rh = measured value	
a. At -10 °C to 0 °C (5 to 98) % relative humidity		0.1% + 0.011 · rh[#]
b. At 0 °C to 25 °C (2 to 98) % relative humidity		0.1% + 0.008 · rh
c. At 25 °C to 50 °C (1 to 98) % relative humidity		0.1% + 0.004 · rh
d. At 50 °C to 70 °C (1 to 98) % relative humidity		0.1% + 0.005 · rh
e. At 70 °C to 95 °C (1 to 98) % relative humidity		0.1% + 0.007 · rh [#] ratio multiply by rh e.g. 0.011 x rh

MEASURED QUANTITIES/ INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD OF CALIBRATION	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
Range of Measurement	Comparison with a chilled mirror hygrometer with a temperature probe	
a. At -10 °C to 0 °C (5 to 98) % relative humidity	rh = measured value	0.16% + 0.008 · rh
b. At 0 °C to 25 °C (2 to 98) % relative humidity		0.18% + 0.004 · rh
c. At 25 °C to 70 °C (1 to 98) % relative humidity		0.21% + 0.003 · rh
d. At 70 °C to 95 °C (1 to 98) % relative humidity		0.12% + 0.005 · rh
4. Lab/ On-Site Humidity Measurement		
i. Relative humidity generator	In-house / Site Procedure CP-N, Rev 6	
(-10 to 70) °C		0.08 °C
Range of Measurement	Comparison with a chilled mirror hygrometer with a temperature probe	
a. At -10 °C to 0 °C (10 to 95) % relative humidity	rh = measured value	0.16% + 0.008 · rh
b. At 0 °C to 23 °C (10 to 98) % relative humidity		0.18% + 0.004 · rh
c. At 23 °C to 50 °C (10 to 98) % relative humidity		0.21% + 0.003 · rh
d. At 50 °C to 70 °C (10 to 98) % relative humidity		0.15% + 0.003 · rh
ii. Relative Humidity Sensor / Instrument iii. Thermo-hygrometer iv. Hygrometers v. Temperature sensors incorporated in humidity instruments	In-house / Site Procedure CP-N, Rev 6	
(0 to 25) °C		0.21 °C
(45 to 60) °C		0.23 °C

MEASURED QUANTITIES/ INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD OF CALIBRATION	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
Range of Measurement	Comparison with a chilled mirror hygrometer with air temperature probe rh = measured value	
a. At 0 °C to 25 °C (10 to 85) % relative humidity		0.25% + 0.017 · rh
b. At 25 °C to 45 °C (10 to 95) % relative humidity		0.20% + 0.013 · rh
c. At 45 °C to 60 °C (10 to 90) % relative humidity		0.18 % + 0.012 · rh
5. Temperature		
A. Liquid bath method i. Temperature indicator and Recorders, with temperature sensor(s) ii. Industrial Platinum Resistance Thermometer iii. Thermistor	In-house Procedure CP-C, Rev 4	
Range of Measurement		
a. -196 °C		20 mK
b. (-100 to +5) °C		20 mK
c. (+5 to +250) °C		20 mK
d. Ice Point, 0 °C		10 mK
e. (0 to +30) °C	} Either by Fixed Point or } by comparison with } SPRT in liquid bath	10 mK
f. Water Triple Point		10 mK
g. Gallium Fixed Point		10 mK
B. Air chamber method i. Temperature sensors incorporated in humidity instruments ii. Thermistor iii. Chilled Mirror Hygrometer with air temperature probe iv. Temperature indicator with temperature sensor	In-house Procedure CP-N, Rev 6	

MEASURED QUANTITIES/ INSTRUMENTS / RANGE TO BE CALIBRATED	METHOD OF CALIBRATION	CALIBRATION AND MEASUREMENT CAPABILITY (CMC *)
Range of Measurement		
a. (-10 to 0) °C		0.06 °C
b. (0 to 50) °C		0.05 °C
c. (50 to 70) °C		0.08 °C
d. (70 to 95) °C		0.09 °C
6. On-Site Temperature Measurement Liquid bath method i. Temperature indicator and Recorders with temperature sensor (s), ii. Industrial Platinum Resistance Thermometer iii. Thermistor	In-House / Site Procedure CP-C, Rev 4	
Range of Measurement		
a. (-10 to 0) °C		0.06 °C
b. (0 to +70) °C		0.04 °C
7. Controlled Temperature & Humidity Enclosures (Lab/ On-Site)	In-house / Site Procedure CP-L, Rev 2	
Air Temperature i. Climatic Chamber (Dry Mode)	Comparison with thermometer	
a. At -90 °C to 0 °C		0.40 °C
b. At 0 °C to 95 °C		0.60 °C
c. At 95 °C to 180 °C		2.20 °C
ii. Climatic Chamber (Dry Mode) (Over reduced volume)		
a. At -90 °C to 0 °C		0.17 °C
b. At 5 °C to 95 °C		0.09 °C
c. At 95 °C to 180 °C		0.40 °C

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Relative Humidity	Comparison with a chilled mirror hygrometer with air temperature probe rh = measured value	
i. Climatic Chamber (Wet Mode)		
a. At 5 °C to 95 °C (1 to 98) % relative humidity		1.30 °C 0.23% + 0.027 · rh
ii. Climatic Chamber (Wet Mode) (Over reduced volume)		
a. At 5 °C to 95 °C (1 to 98) % relative humidity		0.09 °C 0.17% + 0.013 · rh

* CMC is expressed as an expanded uncertainty estimated at a level of confidence of approximately 95%.

Approved signatories:

Mr Tee Yee Chee @Mr Zheng Yiqi - All items

Ms Eva Marie Barrera - All items

Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.