

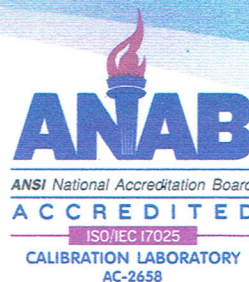


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Certificate of Calibration

Customer : Primus Company Limited.
119 Soi Srimuang-Anusorn, Sutthisarnvinijchai Road,
Ratchadaphisek Sub-District, Dindaeng Bangkok 10400 Thailand.

Description of Equipment : Temperature & Humidity Transmitter
Model Number : RHM-005-00-3-H
Manufacturer : Primus
Serial Number : PM2565001
Control Number : ---
Receipt Date : 22-May-22
Calibration Date : 02-Jun-22
Work Order Number : TMU221700
Certificate No. : TMU221700
Page Number : 1 of 3

We certify that the above mentioned measuring instrument was calibrated in accordance with our quality control system as the ISO/IEC 17025 : 2017 and all the standard equipments used for calibration were traceable to the International of System Units (SI Units) maintained at the National Institute of Metrology (NIMT), Thailand and/or other associated foreign national standards.

Issued Date : 09-Jun-22
Calibrated by : Mr. Peerapong Khowdee
Checked by : Mr. Theerapong Yuenhan

Approved by : Mr. Theerapong Yuenhan / Calibration Manager
 Mr. Mongkhon Asawaolan / ISO & QA Manager
 Mr. Yanyong Pithong / Laboratory Manager


Approved Signatory



Calibration Report

Certificate No.: TMU221700

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Environment Conditions

Ambient Temperature : (23 ± 3) °C
Ambient Relative Humidity : (55 ± 15) %rh
Calibration Place : Permanent Calibration Laboratory

Standard Equipment Used

<u>Equip. No.</u>	<u>Equipment Name</u>	<u>Maker / Model</u>	<u>Serial No.</u>	<u>Certificate</u>	<u>Due Date</u>
ST-09082	RTD Sensor	TMC / Pt100	4430	TMU212693	13-Aug-22
ST-03030/1	Black Stack Thermometer	Hart / 1560	A39261	TMU213092	21-Oct-22
ST-03030/2	PRT Scanner Module	Hart / 2562	A39537	TMU213092	21-Oct-22
ST-21167	Chilled Mirror Hygrometer	Edgetech / DewMaster	53788	TH-0063-22	30-Apr-23
SE-06230	Digital Multimeter 6.5 Digit	Agilent / 34411A	MY46000701	EIU221612	19-Apr-23

Traceability

This certificate is traceable to International System of Unit (SI Unit) maintained at;
- National Institute of Metrology (NIMT), Thailand for temperature standard.
- National Institute of Metrology (NIMT), Thailand for relative humidity standard.

Uncertainty of Measurement

The uncertainty of measurement evaluation has been carried out by using the methodology in the "Expression of Uncertainty and Confidence in Measurement (M3003)". These uncertainties are based on a standard uncertainty multiplied by a coverage factor, k=2 corresponds to a coverage probability of approximately 95%.

Calibration Method

The measuring equipment (Unit Under Calibration = UUC) has been calibrated in accordance with the in-house methods of the laboratory as the calibration work instruction no. T-0026-GE Temperature and Humidity Transmitter with Electrical Output by comparison with standard PRT sensor and standard humidity sensor in the Temperature and Humidity chamber.

The calibration points were defined by the customer.

Calibration Results

The following results were the measurement results and applied on the calibrated item and found accurate as show on date and place of calibration only. The results in "As Found" column are the measurement recorded before any adjustment or repair. The results in "As Left" are the equipment reading taken after the necessary repairs and adjustments. In case the equipment dose not be adjusted or repaired, the column of "As Left" would be reported wording "Same".



Calibration Report

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Calibration Results (Continued)

Appearance and Function of Use Inspection : Good

A transmitter has been calibrated with the following conditions;

- Sensor Detail: Temperature & Humidity Transmitter
- Transmitter ranges: 0.00~150.00 °C / 0.0~100.0 %RH
- Output signal: 4 ~ 20 mA.
- Model : RHM-005-00-3-H
- Maker : Primus
- Serial No. : PM256500

Temperature Measurement Accuracy

Standard Value (°C)	UUC Measured Value				UUC Error		Uncertainty (± °C)	Tolerance (± °C)
	As found		As Left		As Found (°C)	As Left (°C)		
	Measured Output (mA)	Calculated Temp.(°C)	Measured Output (mA)	Calculated Temp.(°C)				
0.01	3.977	-0.22	Same	Same	-0.23	Same	0.16	1.00
10.01	5.052	9.86	Same	Same	-0.15	Same	0.16	1.00
20.01	6.119	19.87	Same	Same	-0.14	Same	0.16	1.00
30.02	7.192	29.93	Same	Same	-0.09	Same	0.17	1.00
40.02	8.262	39.96	Same	Same	-0.06	Same	0.17	1.00
50.01	9.355	50.20	Same	Same	0.19	Same	0.18	1.00
60.02	10.435	60.33	Same	Same	0.31	Same	0.23	1.00
70.01	11.507	70.38	Same	Same	0.37	Same	0.24	1.00
79.98	12.574	80.38	Same	Same	0.40	Same	0.24	1.00
90.01	13.648	90.45	Same	Same	0.44	Same	0.24	1.00
99.99	14.720	100.50	Same	Same	0.51	Same	0.25	1.00

Humidity Measurement Accuracy

Standard Value (%RH)	UUC Measured Value				UUC Error		Uncertainty (± %RH)	Tolerance (± %RH)
	As found		As Left		As Found (%RH)	As Left (%RH)		
	Measured Output (mA)	Calculated Hum.(%RH)	Measured Output (mA)	Calculated Hum.(%RH)				
30.01	9.200	32.5	Same	Same	2.5	Same	0.51	3.0
39.97	10.664	41.7	Same	Same	1.7	Same	0.51	3.0
50.04	12.195	51.2	Same	Same	1.2	Same	0.51	3.0
60.06	13.712	60.7	Same	Same	0.6	Same	0.62	3.0
70.04	15.232	70.2	Same	Same	0.2	Same	0.62	3.0
80.09	16.768	79.8	Same	Same	-0.3	Same	0.62	3.0

Note: The tolerance values are based on the customer's specification.