

Certificate No. : WB23062779

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Certificate of Calibration

Equipment : WATER BATH
Manufacturer : AMETEX
Model : ATC-140 A
Serial No. : 561460-00403
ID No. : TEMC001
Customer : National Healthcare Systems Co., Ltd.
Biomedical Engineering
2301/2 New Petchburi Road., Soi 47, Bangkapi, Huaykwang, Bangkok 10310
Location of Calibration : N Health Calibration Laboratory
Condition as Received : UUC is in good condition
Received Date : 12 June 2023
Calibration Date : 12 June 2023
Environment Conditions : Temperature (15-35) °C
Relative Humidity (30-80) %RH
Calibration Procedure : WI-BME-NHS-CP-049, calibration was using in-house method base on ASTM:E715-80
Standard specification for Gravity-Convection and Forced-Circulation water bath.
Temperature scales in used of this calibration is the international temperature scale of 1990 (ITS-90).
Calibrated by : Thippayawaree Khowong
Approved by : Ruethairat
Ruethairat Chairak
Issued Date : 4 July 2023

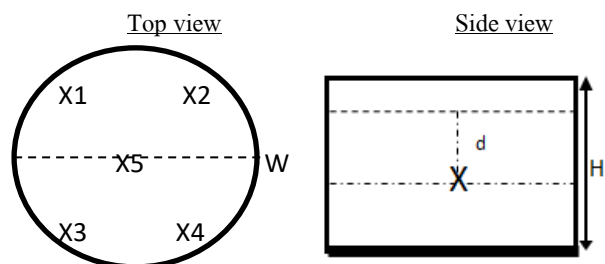
The expanded uncertainty of measurement in this report was calculated from combined standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%. This result only relates to the calibrated item.

The certificate may not be reproduced except in full, without the written approval of the laboratory.

MEASUREMENT RESULTS

Equipment : WATER BATH
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Sensor Installation



Environment during calibration	Min	Max
Temperature (°C)	22.5	23.2
Relative Humidity (%RH)	61.3	64.9
AC Supply (V)	222.0	223.0

UUC Specification H (m) : 0.15 W (m) : 0.05 D (m) : 0.03
 d : 5 cm

Capacity 0.42 L

Result of Calibration : (*) Without Adjustment

Calibration Point (°C)	UUC Setting (°C)	UUC* Reading (°C)	Temp. Max (°C)	Temp. Min (°C)	Average Temperature (°C)				
					Sensor Location				
					1	2	3	4	5 (Ref.)
0.0	0.0	0.0	0.08	-0.25	-0.07	-0.21	0.06	-0.21	0.07
10.0	10.0	10.0	10.04	9.80	9.89	9.81	10.04	9.80	9.98
37.0	37.0	37.0	37.00	36.56	36.57	36.87	37.00	36.87	36.60
50.0	50.0	50.0	50.00	49.28	49.29	49.82	49.99	49.62	49.33

Temperature Stability (°C)	Temperature Uniformity (°C)	Overall Variation (°C)	Uncertainty of Measurement (°C)
± 0.04	0.69	0.72	± 0.31

Temperature Stability, Temperature Uniformity and Overall Variation at 50 °C

UUC* : Unit Under Calibration

Condition of this Result

1. Reference Standard :

Instrument	Model	Serial No.	Cert No.	Due Date
Standard thermometer with RTD sensors	Agilent 34972A	MY49018457/MY41229634	T22-410	8 Sep 23
Thermo-Hygro meter	MHB-382SD	AK.26552	22H2312/22P4054	6 Nov 23

2. This Certificate is traceable to the International System of Unit (SI) through :

- UniThai Group
- Technology Promotion Association (Thailand-Japan)

3. This result of calibration was found accurate as shown on date and place of calibration only.

4. This result of calibration was based on specified by customer.

End of Report