



TECHNOLOGY PROMOTION ASSOCIATION (THAILAND-JAPAN)
CORPORATE SERVICES 3 : EQUIPMENT CALIBRATION AND TESTING SERVICES

534/4 PATTANAKARN ROAD SOI 18, SUANLUANG, SUANLUANG BANGKOK 10250

TEL. 0-2717-3000-29 FAX. 0-2719-9484

Cert. No.: 23MD780

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Certificate of Calibration

Equipment : Flow Meter Tester

Model : Defender 510-H

Serial No. : 118211

ID No. : FLOT002

Manufacturer : Bios International Corp.

Submitted by : National Healthcare Systems Co.,Ltd.
2301/2 New Petchburi Soi 47 (Soonvijai),
Bangkapi, Huaykwang, Bangkok 10310

Place of calibration : TPA Medical Equipment Calibration Lab.


Ambient temperature : (23 ± 2) °C

Relative humidity : (50 ± 15) %

Atmospheric pressure : (1010 ± 13) mbar

Calibrated by : Kanda Traisin

Approved by :



Approved signatory

- () Malee Butkruea
(☒) Surin Yenprasert
() Nattachai Sawangkunnopchai

Issue date : 19 June 2023

The Uncertainties are for a confidence probability of approximately 95%.

This certificate may not be reproduced other than in full, except with the prior written approval of the head of Calibration and Testing Equipment Services.

A 0011295



Received order : 6 June 2023
Condition as-received : Used item
Calibration date : 15 June 2023
Reference : 2306-0124WSC-11

Cert. No.: 23MD780

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Procedure used :-

Calibration was conducted using in-house calibration procedure : CP-MD11, according to comparison method, using dry air as gas media.

Conditions of this result of calibration

1. Reference standard instrument :-

<u>Instrument</u>	<u>Model</u>	<u>Serial No.</u>	<u>Cert. No.</u>	<u>Due date</u>
1) Drum-Type Gas Meter	TG10/3	0.53D.3CD	MW-0075-22	7 Oct 2025
2) Digital Pressure Gauge	681	211H16340004	23P815	15 Mar 2024
3) Thermometer	HH376	140808579	23I279	10 Mar 2024

2. The certificate is valid only to the item calibrated on date and place of calibration.

3. This result of calibration was made on requested at the point specified by customer.

4. This certification is traceable to the International System of Units, through :-

- National Institute of Metrology (Thailand)

- National Institute of Metrology (Thailand), through Technology Promotion Association (Thailand-Japan)



Result of calibration

Cert. No.: 23MD780

Condition of UUC* :-

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Reading : Volumetric flow

Gas type : Dry air

Warm-up : Power on at least 30 minutes before calibration

Function : Flow measurement

Mode : Single measurement

UUC* Gas Temperature (°C)	Applied Gas flow (L/min)	UUC* Reading Without adjust (L/min)	UUC* Error		Uncertainty (± L/min)
			Before adjust (L/min)	Without adjust (L/min)	
23.41	16.641	17.130	-	0.489	0.17
23.28	14.632	15.073	-	0.441	0.15
23.19	11.650	12.066	-	0.416	0.12
23.19	9.746	10.070	-	0.324	0.10
23.08	6.951	7.2041	-	0.2531	0.067
23.19	4.885	5.0694	-	0.1844	0.047
23.11	2.096	2.1764	-	0.0804	0.019

UUC* : Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor ($k = 2$), providing a level of confidence of approximately 95 %.

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