Trescal
| CALIBRATION SOLUTIONS TO IMPROVE YOUR PERFORMANCE |

ilac-MRA STANDARDS MALAYSIA ACCREDITED
SAMM 011

Certificate of Calibration

Cert. No. PSYP- 23042974

Reference No	R123106148
Date of Issue	16 Jun 2023
Customer	PRO LAB ENGINEERING SERVICES SDN BHD No.21-g
ID: 039228	Jalan Bidara 8 saujana utama 3 47000 Sungai Buloh Selangor
Instrument	Liquid In Glass Thermometer
Model	ZEAL
Serial No	210403
Control No	CA8869J
Equipment ID	N/A
Capacity/Range	-10 °C to 250 °C
Date of Receipt	15 Jun 2023
Date of Calibration	16 Jun 2023
Recalibration Date (Specified by Customer)	Customer to Determine The User should be aware there are many factors may cause this instrument to drift out of calibration limits prior to the stated recalibration date.
Condition of Instrument	
Before Calibration	Good Physical Condition
After Calibration	Calibrated and Serviceable
Location of Calibration	Trescal Laboratory
Calibration Environment	(23 ± 2) °C, (55 ± 15) %rh
Calibration Method	LCP 01101

Reference Standard Used

Reference Instrument	Equipment ID	Control No	Certificate No	Traceable to	Due Date
Temperature Liquid Bath	PH-T-LB2	CI6300	PSYP-23010704	NMIM,NMIA	09 Feb 2024
Temperature Indicator With PRT Sensor	PH-T-PT14	CI6300S	PSYP-23004859	NMIM,NMIA	18 Jan 2024

Calibrated By

Muhammad Azlan Bin Zakaria

Approved Signatory

Jag Oh Joo Kiat

The reported expanded measurement uncertainty is stated as the standard measurement uncertainty multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95%

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Certificate of Calibration

Control No. CA8869J

Cert. No. PSYP-23042974

Instrument Calibrated

Resolution	1.0	°C
Readability	0.5	
Type	Mercury	
Immersion	76 mm	

Specification
± 1.0 °C

EMERGENT STEM TEMPERATURE	ACCURACY TEST			
	REFERENCE READ	UUT READ	CORRECTION	SPECIFICATION ±
23	0.0	0.0	0.0	
24	50.0	50.5	-0.5	
25	100.0	101.0	-1.0	1.0
26	150.0	151.0	-1.0	
28	200.0	201.0	-1.0	
Measurement Uncertainty ±	**0.5**	**°C**		***k* =** **2**

Info 1 : True Read = UUT Read + Correction

Info 2 : UUT - Unit Under Test

Info 3 : If the correction is out of user specification, in order to meet the specification the user shall apply correction to derive true value.

Info 4 : Calibration Curve can be derive by interpolation the calibration point, the interpolation point is valid through the linearity of curve.

Info 5 : Uncertainty ~ Parameter, associated with the result of measurement, that characterises the dispersion of the value that reasonably be attributed to the measurand.

Note 6 : Emergent Stem Temperature (EST) = Air temperature surrounding the part of the mercury column which are not immersed during calibration.

Note 7 : For more precision measurement, EST Correction shall added to 'Correction' where EST in use is not being same as calibrated EST.

Note 8 : Emergent Stem Temperature Correction = K N (tc - tu)

where *K : Coefficient of expansion of liquid; mercury K=0.00016 °C^-1 ; spirit K = 0.00096 °C^-1;*

N : is the number of degrees exposed in air;

tc : Emergent stem temperature in calibration;

tu : Emergent stem temperature in use.

ACCEPTABLE TO USE

Izatul Azira
Lab Manager
Pro Lab Engineering Services Sdn Bhd

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