CIPM MRA

A*STAR National Metrology Centre

CALIBRATION REPORT

Report No. : **LL000069**

Customer : JSB Tech Pte Ltd
20 Science Park Road
Teletech Park, Unit 02-03A
Singapore 117674

Subject Details

Subject	:	A Digital Level
Manufacturer	:	JSB Tech Pte Ltd
Model	:	Digi Pas DWL-3500XY
Serial Number	:	11A20571
Range	:	Single Axis - 0.000° to ± 20.000° Dual Axis - 0.000° to ± 10.000°

Sales Order No.	:	2028006872
Calibration Date	:	02 March 2012

Ambient Conditions

Temperature	:	(20 ± 1) °C
Relative Humidity	:	(50 ± 10) % relative humidity

Rahman Ibrahim
Calibration Officer

Chao Zhixia (Dr)
Approving Officer
Optical Metrology

For further enquiries, please contact the calibration officer at Tel: +65 6279 1944, Fax: +65 6279 1994 or Email: rahman_ibrahim@nmc.a-star.edu.sg

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1 Science Park Drive Singapore 118221
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Science and Engineering Institutes (Co.Reg.No. 200720829Z)

Method of Calibration

This digital level has been calibrated at the National Metrology Centre under the stated ambient conditions following calibration procedure LS/NR/001.

The calibration was carried out using a precision small angle generator (serial no.: 137/1918 - LE6003), a sine bar (serial no.: CO-1276018) and a gauge block set (serial no.: 765024) traceable to national reference standards maintained at the National Metrology Centre.

The absolute level setting was carried out for the digital level before each measurement for all the checked angles.

Results of Calibration

The results of calibration are shown on page 2 to 4 of this report.

SINGLE AXIS

Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
(+) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.011
	0.020	0.019	0.021	0.021
	0.030	0.029	0.031	0.031
	0.040	0.039	0.041	0.041
	0.050	0.049	0.051	0.051
	1.000	0.999	1.001	1.001
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.008
	5.020	5.017	5.023	5.022
	9.933	9.930	9.936	9.935
	14.478	14.475	14.481	14.481
	19.877	19.874	19.880	19.880
Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
(-) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.011
	0.020	0.019	0.021	0.021
	0.030	0.029	0.031	0.031
	0.040	0.039	0.041	0.041
	0.050	0.049	0.051	0.051
	1.000	0.999	1.001	1.001
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.009
	5.020	5.017	5.023	5.021
	9.933	9.930	9.936	9.935
	14.478	14.475	14.481	14.480
	19.877	19.874	19.880	19.880

Calibration Officer

Results of Calibration

DUAL AXIS

Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
X- AXIS (+) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.010
	0.020	0.019	0.021	0.020
	0.030	0.029	0.031	0.030
	0.040	0.039	0.041	0.040
	0.050	0.049	0.051	0.050
	1.000	0.999	1.001	1.000
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.010
	5.020	5.017	5.023	5.022
	9.933	9.930	9.936	9.935

Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
X_AXIS (-) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.010
	0.020	0.019	0.021	0.020
	0.030	0.029	0.031	0.030
	0.040	0.039	0.041	0.040
	0.050	0.049	0.051	0.050
	1.000	0.999	1.001	1.000
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.010
	5.020	5.017	5.023	5.022
	9.933	9.930	9.936	9.935

Calibration Officer

Results of Calibration

DUAL AXIS

Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
Y- AXIS (+) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.011
	0.020	0.019	0.021	0.020
	0.030	0.029	0.031	0.030
	0.040	0.039	0.041	0.040
	0.050	0.049	0.051	0.050
	1.000	0.999	1.001	1.001
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.010
	5.020	5.017	5.023	5.021
	9.933	9.930	9.936	9.935

Description	Set Standard (°)	Lower Limit (°)	Upper Limit (°)	Level Reading (°)
Y_AXIS (-) Slope	0.000	0.000	0.001	0.000
	0.010	0.009	0.011	0.011
	0.020	0.019	0.021	0.020
	0.030	0.029	0.031	0.030
	0.040	0.039	0.041	0.040
	0.050	0.049	0.051	0.050
	1.000	0.999	1.001	1.001
	2.006	2.003	2.009	2.007
	3.009	3.006	3.012	3.010
	5.020	5.017	5.023	5.021
	9.933	9.930	9.936	9.936

The expanded measurement uncertainties for the digital level readings estimated at a level of confidence of approximately 95% are as follows:

Checked angle	Expanded measurement uncertainty	Coverage factor, k
Up to and including 1°	0.001 °	2.08
Above 1° to 20°	0.001 °	2

The user should determine the suitability of this digital level for its intended use.

Calibration Officer