



Digi Pas DWL3000XY 2-Axis High Precision Digital Machinist Level Installation Guide

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Digi-Pas®

Digi Pas DWL3000XY 2-Axis High Precision Digital Machinist Level



INTELLECTUAL PROPERTY

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The information in this manual was correct at the time of printing, stored in CD or upload-ed in the Company website. However, Digipas Technologies Inc. will continue to improve products and reserves the rights to change specification and maintenance procedures at any time without prior notice.

Digi-Pas ® Products were manufactured under ISO9001 & ISO14001 standards, tested to comply by the followings certification bodies:

DEVICE OVERVIEW



Figure 1. Overview of the Machinist Level

Technical Specification

	DWL-3000XY	DWL-3500XY
Measuring Range	0° ~ ±90.00° (Single-Axis) 0° ~ ±15.00° (Dual-Axis)	0° ~ ±20.000° (Single-Axis) 0° ~ ±10.000° (Dual-Axis)
Resolution & Repeat- ability		0.001° (20 µm/M) (0.0002 in/feet)
Accuracy	± 0.01° at 0° to 10.00° ± 0.03° at other angles	± 0.001° at 0° to 2.000° ± 0.003° at other angles
Display	Color TFT LCD	
Power Supply*	4 x AAA 1.5V Batteries / USB	
Connectivity	USB 2.0 Cable (≤ 5 metre) Bluetooth (≤30 metre) (Optional)	
Material	PC ABS / Aluminium	PC ABS / Cast Iron
Operating Temperature	-10°C to +50°C	
Dimension	188mm x 62mm x 37mm	
Weight (Approx.)	580g	1100g
Cross Axis Error	Negligible (± 0.0025°)	Negligible (± 0.00025°)
PC SYNC Software	Basic Edition Professional Edition (Optional)	
Vibrometer	2.0g	
User Self Calibration	Yes	

Table 1. Technical specification of DWL3000XY & DWL3500XY

Notes

- Product specification and appearance are subject to change for product improvement without prior notice.
- Alternative power can be obtained from External USB Power Source.
- Product performance to specification complies with accredited Calibration & Test Providers in USA, Japan, UK, and Germany to conform with NIST, JIS, UKAS & DIN under the International Laboratory Accreditation Cooperation (ILAC) and American Association for Laboratory Accreditation (A2LA). For more information, please visit "www.digipas.com".

Figure 1. Overview of the Machinist Level

1. Buzzer sound alert
2. LCD Colour graphic digital display
3. Battery Compartment of 4 x "AAA" size 1.5V bat-teries

4. Power / Exit Main Menu button
5. USB port
6. CAL button
7. HOLD / Right Scroll button
8. Base
9. UNIT / Left Scroll button
10. MODE / Select button

LCD Display Overview

Single Axis Mode

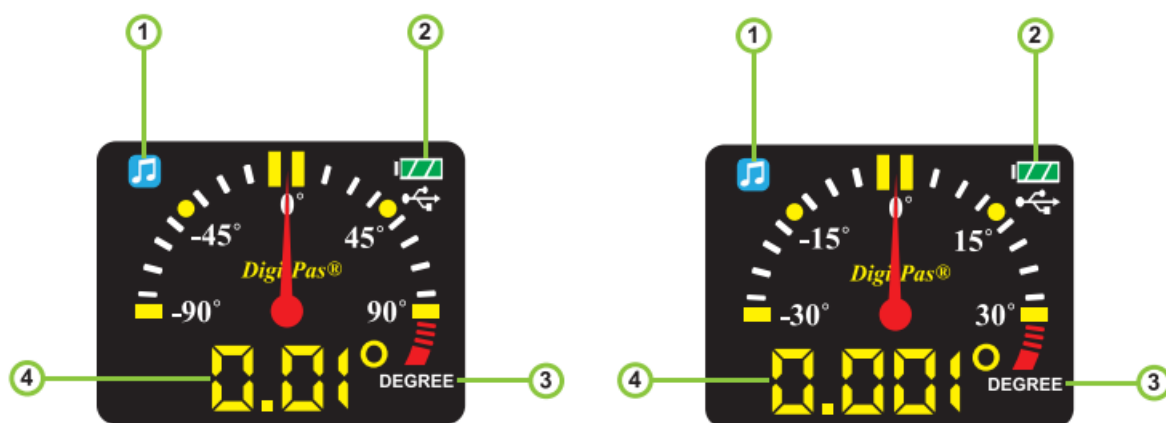


Figure 2. Single Axis Display DWL-3000XY & DWL-3500XY

Single Axis Display DWL-3000XY & DWL-3500XY

1. Sound Alert
2. Digital Reading
3. Battery Level
4. Measurement Unit

Dual Axis Mode

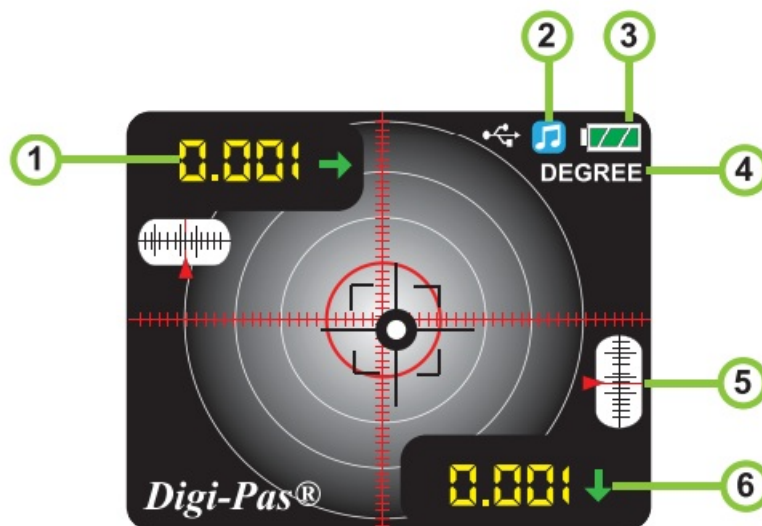


Figure 3. Dual Axis Display of DWL3500XY

Figure 3. Dual Axis Display of DWL3500XY

1. Horizontal (X) Axis Digital Reading
2. Sound Alert
3. Battery Level
4. Measurement Units
5. Micrometer
6. Vertical (Y) Axis Digital Reading

Dual Axis Mode

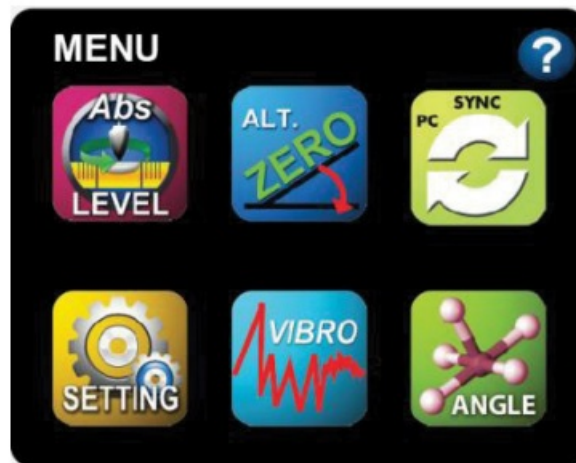


Figure 4. Main menu display DWL3000XY & DWL3500XY Bluetooth version

Main Menu Icon Features



- **ABSOLUTE LEVEL**

- Enable user to ensure each measurement reading is in accordance to maximum device accuracy specified.



- **ALTERNATE ZERO**

- Enable user to measure relative angles at a common plane with respect to a reference angle. Set any angle to 0.00° as a reference.



- **SETTING MENU**

- Enable user to modify various parameters of the device.



- **VIBRO METER**

- Enables user to obtain real-time continuous vibration measurements displayed in line graph.

- This feature is only applicable to Bluetooth device.



- **ANGLE METER**

- Enables user to obtain real-time continuous angle measurements displayed in line graph.

- This feature is only applicable to Bluetooth device.



- **SYNC MENU**

- Enables user to select the connectivity (USB/Bluetooth) with a computer installed with PC Sync Software.

- This feature is only applicable to Bluetooth device.



- **HELP MENU**

- Enable user to have a quick and easy reference on Device's button configuration.

- For Bluetooth device, the HELP icon is represented as instead.

List of Items

Item No.	Description	Quantity
1	DWL 3000XY Precision Digital Level	1 Unit
2	Certificate of calibration	1 Set
3	AAA batteries	4 Pcs
4	USB 2.0 cable (3 Meters)	1 Pc
5	Basic PC Sync Software	1 Pc
6	M5 Domed screw	3 Pcs

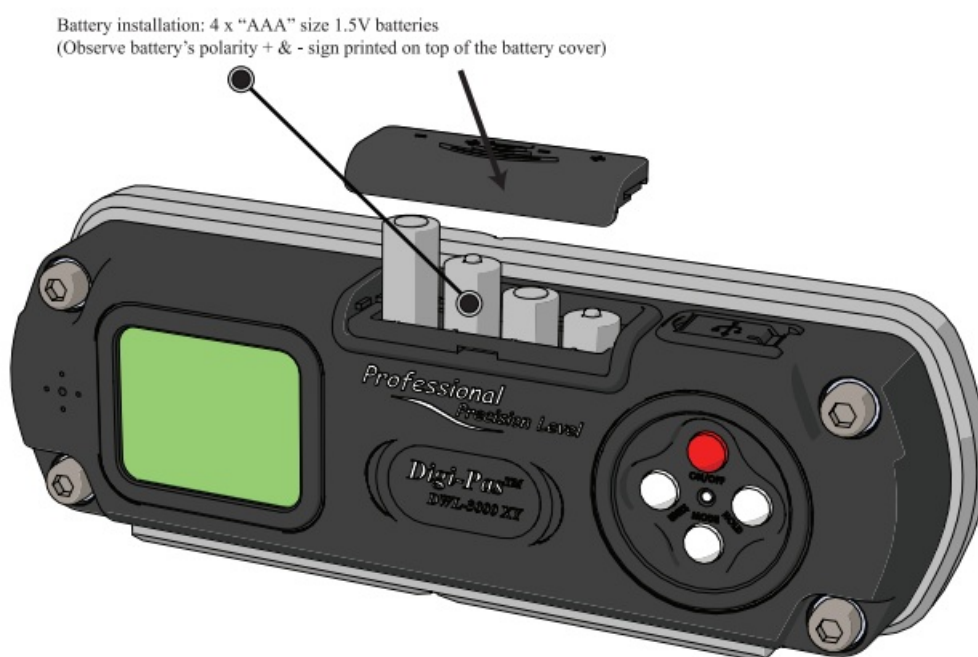
Table 2. List of items included in DWL-3000XY product package

Item No.	Description	Quantity
1	DWL 3500XY Precision Digital Level	1 Unit
2	Certificate of calibration	1 Set
3	AAA batteries	4 Pcs
4	USB 2.0 cable (3 Meters)	1 Pc
5	Basic PC Sync Software	1 Pc
6	M5 Domed screw	3 Pcs

OPERATION PROCEDURE

Initialization

1. Insert 4 pieces of “AAA” batteries into the battery compartment and press ON/OFF button. Alternatively, insert USB power source to the USB Port to power up the de-vice. Take note that the device performance might be affected when poorly regu-lated USB power source is used.



warning: Please ensure batteries are inserted incorrect polarity direction for a device to work.

2. Initial Setup screen pops up. Press ON/OFF button to scroll up or MODE button to scroll down for selecting “Default Units”. For DWL-3500XY it is required to select “Cur-rent Device Location”, Select the nearest option when your location is not avail-able in the default list. Scroll to select “Done” to continue.

Setting	
Units	DEGREE
Current Device Location	
Country..	USA
City.....	New York
AutoOff	10 Min.
Auto Dim	3 Min.
Buzzers	ON
Display Brightness	90%

3. Allow sufficient time for device to warm up and stabilise after turning on the device.
4. Device ready to use.

For maximum accuracy, perform calibration (refer to APPENDIX: User Calibration) or Absolute Level (refer to Chapter 4: Absolute Level for more details) before measurement. The calibration tutorial video is available on the Digipas website, please visit the following link: <https://www.digipas.com/support/video.php>

Mounting Device On Fixture or Work Piece

1. The two threaded holes are provided for mounting the device onto user-defined fixtures/machinery.

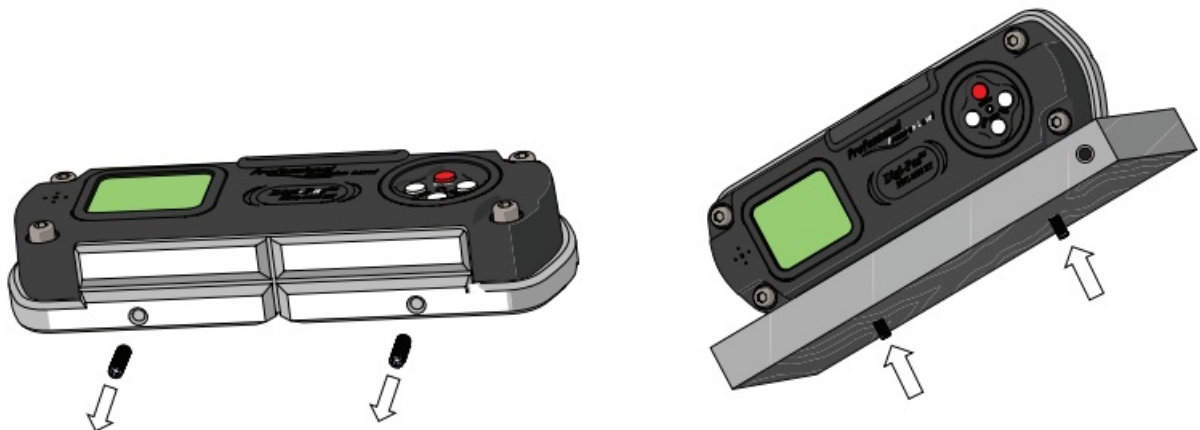


Figure 7. M5 screw location for mounting

2. To mount the device onto user's defined fixture or work piece. Remove both the set screw (M5), then replace with appropriate type of screws specified by user.

Single Axis & Dual Axis Mode Interface

To change display reading value from X to Y axis or vice versa. Turn the device vertically and the display screen will automatically change from metered into "Target Ball" or "Bull Eye"(refer to Sub-chapter 1.3: LED Display Overview for more details).

warning: Please ensure the contact surfaces of the device and measuring plane are clean and free from dust particles.

The device is able to auto detect its position is single axis position or dual-axis.

Absolute Level Mode

1. Place the device on the surface to be measured. Press “MODE” button to start the measurement and wait until the loading bar is full.

warning: Please ensure the contact surfaces of the device and measuring plane are clean and free from dust particles.



Figure 8. Absolute level setting position 1 display

2. Turn the device 180° and press MODE button again to start the measurement.



Figure 9. Absolute level setting position 2 display

3. Turn the device 180° and press MODE button again to start the measurement.



Figure 10. Absolute level display

Alternate Zero Mode

Place the digital level on the surface to be measured. Press “MODE” button to set the angle to 0° as a reference.

warning: Please ensure the contact surfaces of the device and measuring plane are clean and free from dust particles.

Single Axis Position: The ALT.Z logo is shown to indicate that the device is in Alternate Zero mode. A reference line is displayed to indicate the angle.

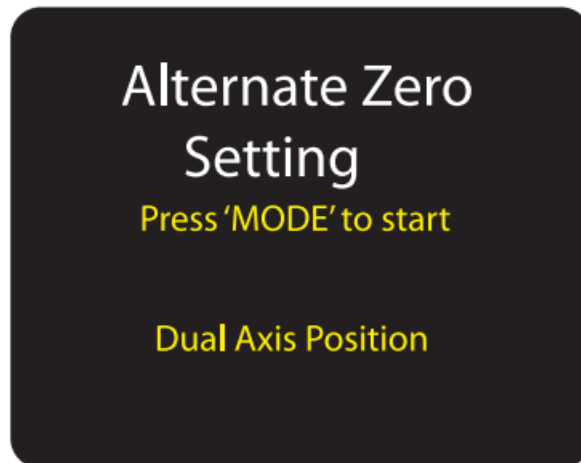


Figure 11. Alternate zero mode display

Dual Axis Position: The ALT.Z logo is shown to indicate the device is in the Alternate Zero mode. A reference crosshair is displayed to indicate the real angle.



Figure 13. Alternate zero mode of dual axis position

SYNC Menu Mod

1. The status bar indicates current selected mode as Bluetooth then press "MODE" button. To change to USB mode, scroll the 'Left' button.

WARNING: Bluetooth only available on DWL-3000 & DWL-3500 bluetooth version device.

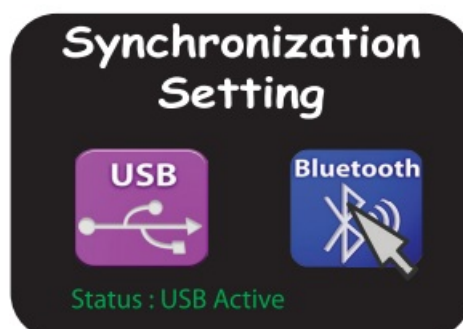


Figure 14. SYNC menu display

2. Reboot the device by turning off the device and then turn on the device again to activate the new setting.

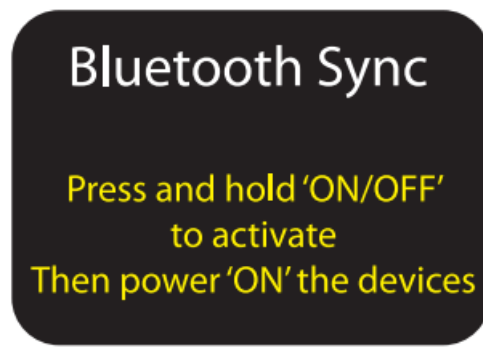


Figure 15. Bluetooth sync setting

3. Once Bluetooth mode is activated, the icon will display on the single and dual-axis mode screen display.



Figure 16. Bluetooth sync mode

Angle Meter Mode

Place the digital level on the surface to be measured.

WARNING: Please ensure the contact surfaces of the device and measuring plane are clean and free from dust particles.

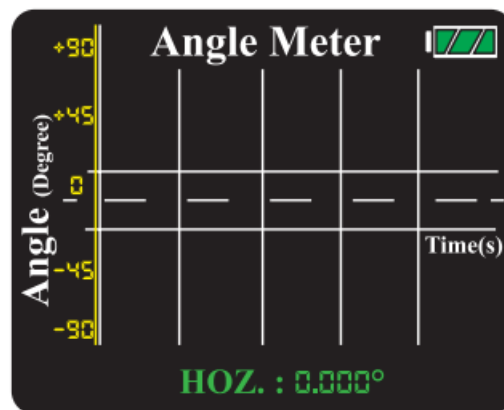


Figure 17. Operation of angle meter display

1. The Angle Meter displays real-time continuous angle measurements in line graph.

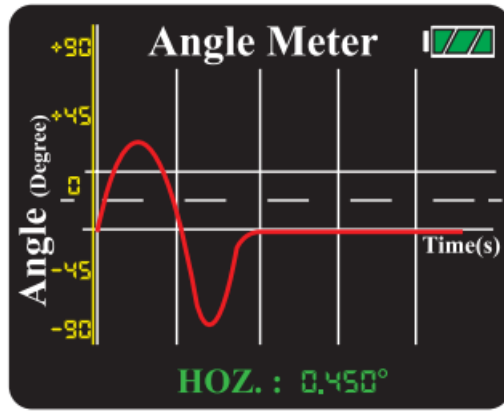


Figure 18. Freeze display of angle meter mode

2. User may “freeze” the screen by pressing the HOLD button. The the screen is paused. To resume operation, press the hold button once.

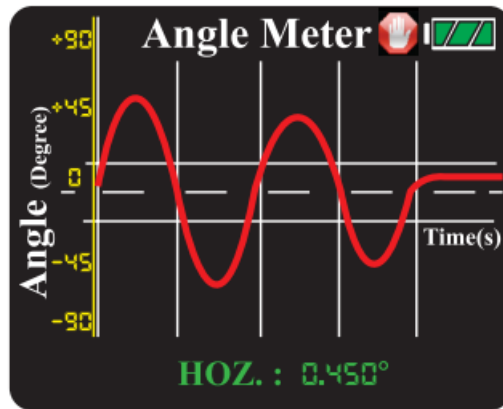


Figure 19. Angle meter mode

Vibro Meter Mode

- Place the device on the surface to be measured. Press Auto Set button to set the line graph to the centre of display.

WARNING: Please ensure the contact surfaces of the device and measuring plane are clean and free from dust particles.

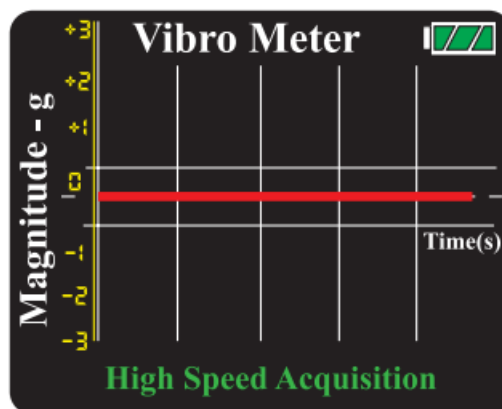


Figure 20. Operation of vibro meter mode

- When the device detect the vibration, the relative magnitude (g) is shown on the graph.

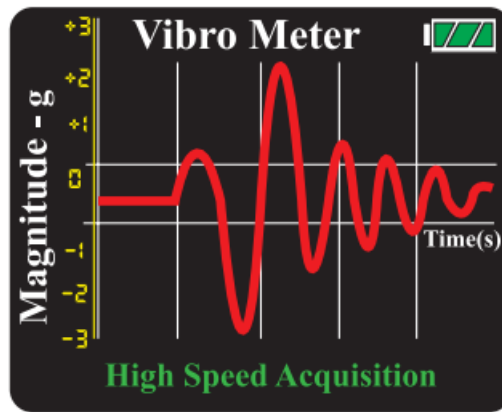


Figure 21. Freeze display of vibro meter mode

- To change the scale and speed of the line graph, press the scale selection button or the speed selection button accordingly.

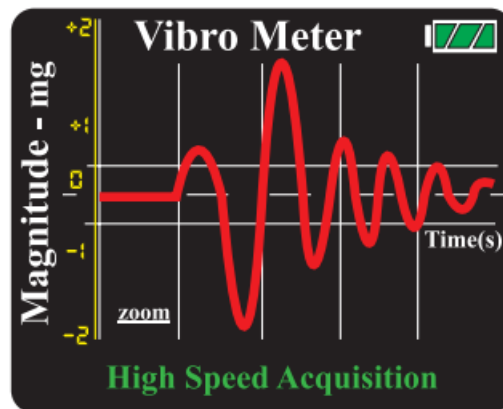


Figure 22. Vibro meter mode

Setting Menu

Setting	
AutoOff	10 Min.
Auto Dim	3 Min.
Units	DEGREE
Buzzers	ON
Display Brightness	90%

Setting	
Units	DEGREE
Current Device Location	
Country..	USA
City.....	New York
AutoOff	10 Min.
Auto Dim	3 Min.
Buzzers	ON
Display Brightness	90%

Figure 23. Setting menu display DWL3000XY & DWL3500XY

Menu	Description
Auto Off	To set automatic power off according to user defined time period.
Auto Dim	To set automatic dim according to user defined time period.
Units	To change the measuring unit (Degree, mm/M, In/FT).
Buzzer	To turn on/off the device buzzer.
Display Brightness	To set LCD brightness according to user defined level.

STORAGE AND CLEANING

Storage

- Keep the device in the equipment box and maintain the storage temperature within -20°C to 60°C or -4°F to 140°F.
- When the device is not in used, the batteries are to be removed from the device.

Cleaning

1. Keep the device dry and clean. Remove any moisture or dirt with a soft dry cloth before measurement to obtain the maximum accuracy. Do not use harsh chemicals, strong detergents or cleaning solvent to clean the device.
2. Do not submerge device in liquid while cleaning.

WARRANTY

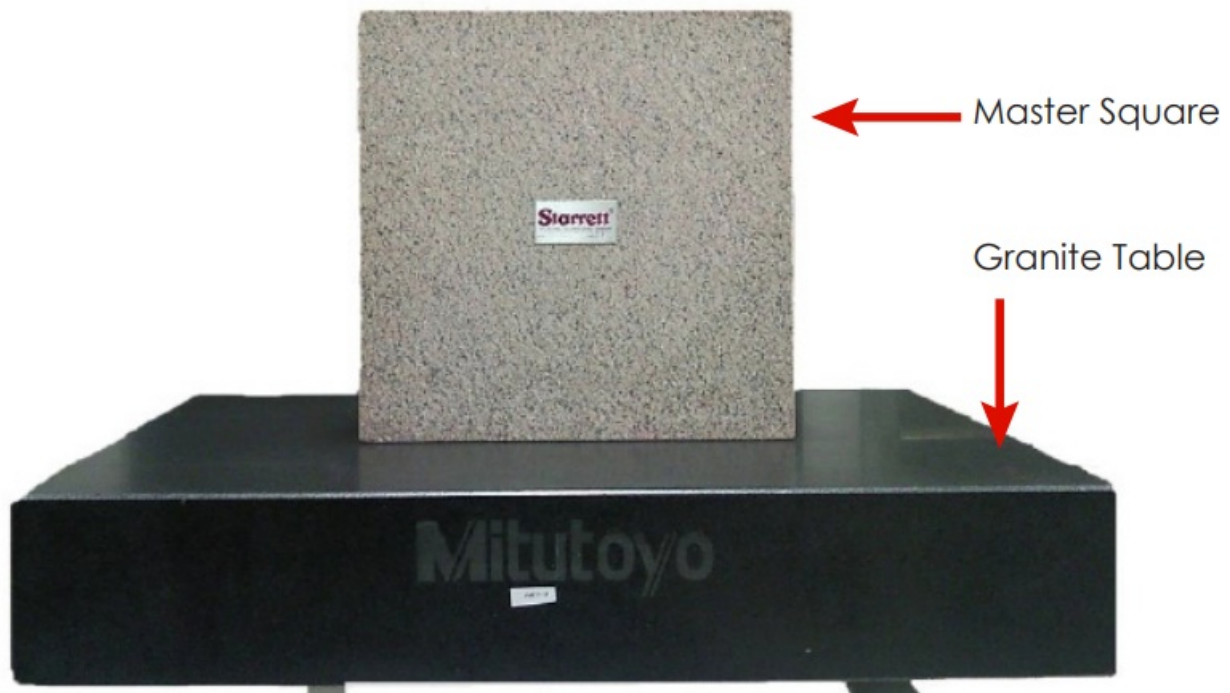
Digi-Pas® 2-Axis High Precision Digital level is warranted to the original purchaser to be free from defects in workmanship and material. JSB Tech will, at its option, repair or replace any defective part which may malfunction under normal and proper use within a period of 2 (two) years from the date of purchase. The forgoing warranty shall not apply to defects resulting from misuse, abuse, assignment, or transfer by the Buyer. Buyer-supplied software or interfacing, unauthorized modification or operation outside of environment specifications for the product. JSB Tech does not warrant that the operation of instrument software, or firmware, will be uninterrupted or error free. The exclusive remedy under any and all warrants and guarantees, expressed herein, and we shall not be liable for damages from loss or delay of equipment uses, consequential, or incidental damage. No other Warranty is expressed or implied. JSB Tech specifically dis-claims the implied warranties of merchantability and fitness for a particular purpose.

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APPENDIX: USER CALIBRATION

Calibration Instruments:



	DWL3000XY	DWL3500XY
Granite Table	Grade AA (Levelled to ≤ 10 arcsec)	Grade AA (Levelled to ≤ 1.0 arcsec)
Master Square	Flatness : $\leq 2.0\mu\text{m}$ Perpendicularity: $\leq 2.0\mu\text{m}$ Parallelism: $\leq 2.0\mu\text{m}$	Not Required
Number of Calibration Steps	8	4

- Allow sufficient time for device to warm up and stabilise after turning on the device.
- Hold the device firmly and do not move the device during calibration process.

DWL-3000XY Calibration Procedure

Calibration tutorial video available on Digipas website, please visit the following link:

<https://www.digipas.com/support/video.php>



Position 1

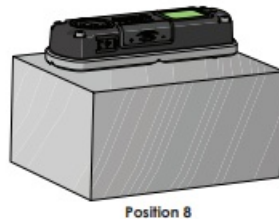
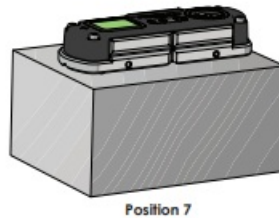
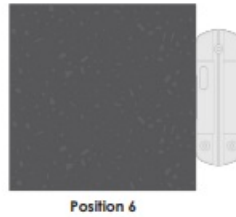
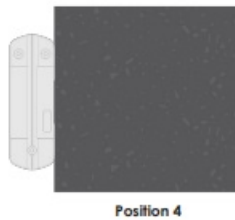


Position 2



Position 3

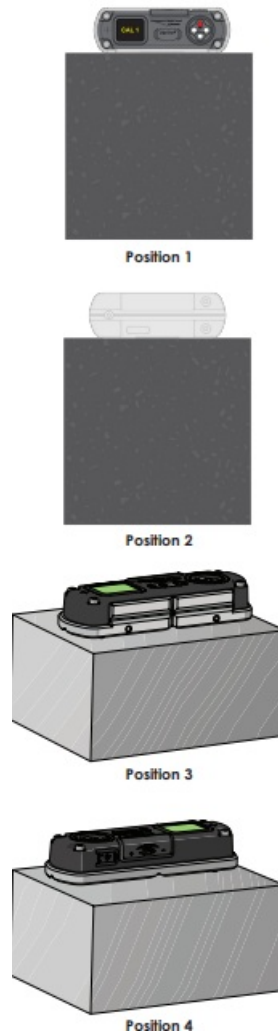
1. Power off the device. Press and hold the CAL button while concurrently press the ON/OFF button to get into calibration mode. "Calibration 1" will be shown on display screen.
Place the device to Position 1. Press the MODE button once and wait until the countdown reach "0", the LCD screen displays "Calibration 2".
2. Turn the device 180° to Position 2. Press the MODE button again to start the calibration at "Position 2" and wait until the countdown reach "0", the LCD screen displays "Calibration 3".
3. Place the device 90° on the side of Master Square as shown in Position 3. Hold the device firmly and do not move the device during each count down period. Press the MODE button again to start the calibration and wait until the countdown reach "0", the LCD screen displays "Calibration 4".



4. Turn the device 180° and place on the opposite side of the master square as shown in Position 4. Hold the device firmly and do not move the device during each count down period. Press the MODE button again to start the calibration and wait until the countdown reach "0", the LCD screen displays "Calibration 5".
5. Rotate the device 180° as shown Position 5. Hold the device firmly and do not move the device during each count down period. Press the MODE button again to start the calibration and wait until the countdown reach "0", the LCD screen displays "Calibration 6".
6. Turn the device 180° and place on the opposite side of the master square as shown in Position 6. Hold the device firmly and do not move the device during each count down period. Press the MODE button again to start the calibration and wait until the countdown reach "0", the LCD screen displays "Calibration 7".
7. Place the device to Position 7. Press the MODE but-ton once and wait until the countdown reach "0", the LCD screen displays "Calibration 8".
8. Turn the device 180° to Position 8. Press the MODE button again and wait until the countdown reach "0", the LCD screen will switch to measuring mode once calibration is completed.

Calibration tutorial video available on Digipas website, please visit the following link:

<https://www.digipas.com/support/video.php>



1. Power off the device. Press and hold the CAL button while concurrently press the ON/OFF button to get into calibration mode. "Calibration 1" will be shown on display screen.
Place the device to Position 1. Press the MODE button once and wait until the countdown reach "0", the LCD screen displays "Calibration 2".
2. Turn the device 180° to Position 2. Press the MODE button again to start the calibration at "Position 2" and wait until the countdown reach "0", the LCD screen displays "Calibration 3".
3. Place the device to Position 3. Press the MODE button once and wait until the countdown reach "0", the LCD screen displays "Calibration 4".
4. Turn the device 180° to Position 4. Press the MODE button again and wait until the countdown reach "0", the LCD screen will switch to measuring mode once calibration is completed.

Digi-Pas Mobile App

Digi-Pas Level App is a user-friendly application, easily installed in any smartphones or tablets running on Apple/Android operating system. Users can fully utilize the remote wireless Bluetooth mobile connectivity for various Digi-Pas® 2-Axis High Precision Digital Levelling Devices to gain high productivity and quality alignment work.

This app has a FREE version (Digi-Pas Level) and a PAID version (Digi-Pas Level PAID). It instantly empowers machine installer to perform remote 2-Axis simultaneous levelling task, angle measurement, & 2D concurrent alignment activities by HALF the time, pre-cision & 'one-man-operation' that traditional single-axis digital or 'bubble' levels are unable to match.

FREE Version





PAID Version



DWL-3000XY & DWL-3500XY Instruction Manual www.digipas.com

www.digipas.com

Documents / Resources

	<p>Digi Pas DWL3000XY 2-Axis High Precision Digital Machinist Level [pdf] Installation Guide DWL3000XY 2-Axis High Precision Digital Machinist Level, DWL3000XY, 2-Axis High Precision Digital Machinist Level, Precision Digital Machinist Level, Digital Machinist Level</p>
	<p>Digi-Pas DWL3000XY 2-Axis High Precision Digital Machinist Level [pdf] Installation Guide DWL3000XY 2-Axis High Precision Digital Machinist Level, DWL3000XY, 2-Axis High Precision Digital Machinist Level, Digital Machinist Level, Machinist Level</p>

References

-  [Digi-Pas Technologies](#)
-  [Digi-Pas Technologies](#)
-  [Videos on How to do Self-Calibration | Digi-Pas®](#)