





- User Manual -

#### X CAUTION X

This manual describes the application operation of the precision electronic machine. Please read and understand the user manual carefully. Failure to read the manual may lead to personal injury, or damage to the INFINITY3DP X2.

- 1. Unpacking the X2 out of the cardboard box before doing the rest of actions.
- 2.Keep the X2 in a clean, dust-free and dry environment that away from fire is essential for proper operation.
- 3.Keep the X2 with a clean and free of obstacles build plate as to ensure a successful leveling.
- 4.X2 generates high temperatures as the nozzle can reach up to 500°C (932°F), the build plate up to 130°C (266°F) that may cause injury. Never reach inside of the X2 while it is in operation.
- 5. Avoiding vibrate the components or open the cabinet door during printing by improper operation as to prevent any damages.
- 6.Leave the machine do certain action automatically should protect the mainboard caused by reverse current.
- 7.Remain the structural integrity of the X2 as to ensure the safety and the utility of authorized maintenance.
- 8.Please aware of the warning labels and operate the X2 carefully.



9.Always read the safety statements, and be aware of the following safety signs when you see them on the printer. Warnings and Cautions precede the paragraph to which they pertain.

If any errors in operating or specific problems, please contact our technical team via website or Facebook for timely support.

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### SPECIFICATIONS





Dimensions	W504 x D562 x H600 mm (W20" x D22" x H24" )
Build Volume	300 x 300 x 260mm (11.8" x 11.8" x 10.2" )
Language Support	Chinese, English, Japanese
Print Technology	FDM
Printer Structure	Enclosed Chamber
Layer Resolution	0.01mm
Nozzle Diameter	0.5mm (default)   0.4,0.6,0.8mm
Nozzle Temperature	350°C (default)   500°C
Extruder Type	Direct Extruder (One-clip Removable Hotend Module)
Build Plate Temperature	up to 130°C (266°F)
Build Plate Leveling	Pre-calibration
Fan Cooler	Dual / 45mm
Driver	Infinity3DP GT81
XY Axis	Japan, THK Caged Ball Linear Guide (Model SRS)
Z Axis	Japan, THK Ball Screws (Accuracy Grades C3)
	Japan, THK Caged Ball LM Guide (Model SHS) *2
Stepper Motor	57mm 0.9°
Electrical Controller	32bit MCU
Electrical Control	Germany, igus Chainflex® Flexible Cables
Precaution Mechanism	Filament Run-out Sensor
Filament Diameter	1.75 mm
Supported Filament	PLA/ABS/Nylon/Carbon-Nylon/PETG/PC/Flexible/
	Glass Wool Filled PP/ASA/PPS/PEKK/PEEK+CF/PEEK+GF
Flexible Material	Printable (Shore 50A)
Connectivity	SD card
Power Input	100-120 V; 50/60 Hz; 12A or 200-240 V; 50/60 Hz; 7.5A, 600W
Slicer	Cura Infinity3DP Edition
Net Weight 01	35kg / 77 lbs





Step 1: Pull out the tenons on the bottom of carton.

Step 2: Unboxing the X2.

Step 3: Pull out the X2 with side handles.

Step 4: Accessories Kit would be put underneath the build platform of the X2.(See page 3 for details)













The actions are limited to the cool-down (room temperature) build platform.

#### REMOVE

Step 1:Pull the board clip toward front as to loosen the build plate and platform.

Step 2:Pull slightly up the build plate and apart the clips behind.







The actions are limited to the cool-down (room temperature) build platform.

#### INSTALLATION

Step 1:Insert with build plate to the clean build platform and tighten with the clips behind.

Step 2:Buckle the board clips on the sides.







Step 1: Connect power cord to the side of X2. Step 2: Place filament on the rack (top) or holder (side).

% Top feeding suggest for flexible materials; Side feeding suggest for others.% Make sure to put the rack with the filament as the direction of below picture.





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Step 1: Turn on the printer using the power switches on the side of X2.







- Step 1: Select Build Plate Leveling icon, the build plate will automatically level to a designated height.
- Step 2: Select one corner of the nine-square grids, hotend module would move to the designated position.
- Step 3: Put a piece of standard paper (thickness of 100gsm) between the nozzle and the build plate after platform leveled.
- Step 4: Rotate the bottom knurled nut to roughly adjust the distance between the nozzle and the build plate until tighten the paper.
- Step 5: Repeat for all four corners with above procedures for completing the build plate leveling adjustment.







 Rotate the knurled nut in counterclockwise would increase the distance between the nozzle and the build plate.
 Rotate the knurled nut in clockwise would

decrease the distance between the nozzle and the build plate.



\* Please <u>DO NOT</u> randomly click the icons. The reaction and operating procedure would be more complex, please contact INFINITY3DP for further instruction if necessary.





Side Feeding

Step 1: Insert and push the sharp-pointed tip of filament gently into the side feeding, until it reaches the end of the hotend module. Wait for heated nozzle for continue.







#### Top Feeding (Suggest for flexible materials)

Step 1: A –Pull the tube (long) out of the hotend module and fix it on side corner of the inner printer (as picture). Insert the tube (short) on the hotend module.

B-Insert the sharped-pointed tip filament into the tube outside of X2.

C-Grab it from inner side, insert and push gently into the tube on hotend module until reach the end. Wait for heated nozzle for continue.



(Top Feeding)







#### **FILAMENT LOADING** $\odot$

- Step 2: Select "Calibration" icon on the menu for setting the assigned temperature of filament and wait for X2 to heat up the nozzle till the actual temperature reached as setting.
- Step 3: Press the clip on the hotend module till the Release Button up.
- Step 4: Push the filament gently until it comes out of the nozzle.
- Step 5: Press the Release Button and the clip would back to grab the filament for completing the loading.



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### FILAMENT UNLOADING/REPLACEMENT



Step 1: Heat up the nozzle until the filament melted with its target temperature.
Step 2: Press the clip on the hotend module till the Release Button up as to loosen the filament.
Step 3: (A) Pull out the existed filament firstly.
(B) Insert and push gently the sharp-pointed filament until it comes out of the nozzle.

Step 4: Press the Release Button and the clip would back to tighten the filament for completing the changing.



※ Temperature set-up procedure, see page 18.







Step 1: Insert SD card; select the "SD Card" icon. Step 2: Select one of the files (gcode) and confirm to print.

The default print files (gcode) on the SD card are ABS particular; Please loading ABS for your initial tested print.
 Print with filament-PLA: We suggest opening the front door and top cover while printing. Otherwise, keep it closing while printing.





The printing procedure would pause and alert a notice when sensor detected the condition of filament run-out.

Step 1: Replace the filament. <u>\* see page 12</u>.

Step 2: Select the **O** or **D** for completing the replacement.









When the print finished, wait for the build plate cooling down and back to home position; take the print and build plate out of X2 then grab the print from it.

X Once take apart the print from "heating build plate", there would be possible injure or print defect.



# 🔁 CALIBRATION(DURING PRINTING)



3dp file 02.gcode

During printing, select the "Menu" icon (in GREEN) for switching the calibration item.

Click the **E** once > Calibration of Nozzle Temperature

Continue click the **GREEN** icon, it will show as followed:

- **1.**Calibration of Build Plate Temperature
- 2.Calibration of Fan Speed
- **3.Calibration of Print Speed**
- 4. Calibration of Dynamic Z Offset



### CALIBRATION(DURING PRINTING)\_NOZZLE TEMPERATURE



Set the nozzle temperature with separate stages (as picture).

- 1) The page icon-Nozzle Temperature
- 2) Stop the action (increasing/decreasing the temperature)
- 3) Reduce the nozzle temperature
- 4) Increase the nozzle temperature
- 5) The unit of parameter for reducing or increasing the nozzle temperature
- 6) The unit of parameter is selected. (Triangle icon)
- 7) Current Nozzle Temperature
- 8) Target Nozzle Temperature
- 9) Back to the front page

Step 1: Continue click the GREEN icon > Calibration of Nozzle Temperature > select the unit of temperature



Step 2: Choose 🧖 or 🔂 adjusting the nozzle temperature. The current temperature would meet the target temperature.

3dp file 02.gcode

Nozzle : 215 °c

H. Bed: 102 °c

00d00b-19m44

Example: Current nozzle temperature 60°C, set 10 (the unit of temperature) and click 🔂 once. The current nozzle temperature would be 70°C, <u>one click for up 10 degree at a time</u>.





% It would be better take the median of suggested temperature when printing with unfamiliar material for the first time.

Above setting is particular for the prompt adjustment. We suggest setting the parameter via the slicing software.



### CALIBRATION(IDLE STATE)\_NOZZLE TEMPERATURE





Example: Current nozzle temperature 60°C, set 10 (the unit of temperature) and click 😳 once. The current nozzle temperature would be 70°C, <u>one click for up 10 degree at a time</u>.



% It would be better take the median of suggested temperature when printing with unfamiliar material for the first time.

### **CALIBRATION(DURING PRINTING)\_BUILD PLATE TEMPERATURE**



Set the build plate temperature with separate stages (as picture).

- 1) The page icon-Build Plate Temperature icon
- 2) Stop the action (increasing/decreasing the temperature)
- 3) Reduce the build plate temperature
- 4) Increase the build plate temperature
- 5) The unit of parameter for reducing or increasing the build plate temperature
- 6) The unit of parameter is selected. (Triangle icon)
- 7) Current Build Plate Temperature
- 8) Target Build Plate Temperature
- 9) Back to the front page

Step 1: Continue click the GREEN icon > Calibration of Build Plate Temperature > select the unit of temperature



Step 2: Choose 🗖 or 🚯 adjusting the build plate temperature. The current temperature would meet the target temperature.

Example: Current build plate temperature 90°C, set 10 (the unit of temperature) and click 🔂 once. The current build plate temperature would be 100°C, one click for up 10 degree at a time.







Above setting is particular for the prompt adjustment. We suggest setting the parameter via the slicing software.



### CALIBRATION(IDLE STATE)\_BUILD PLATE TEMPERATURE







### 🚼 CALIBRATION(DURING PRINTING)\_FAN SPEED



Set the fan speed with separate stages (as picture).

- 1) The page icon-Fan Speed
- 2) Stop the action
- 3) Reduce the fan speed
- 4) Increase the fan speed
- 5) The unit of parameter for reducing or increasing the fan speed
- 6) The unit of parameter is selected. (Triangle icon)
- 7) Current fan speed
- 8) Target fan speed
- 9) Back to the front page

Step 1: Continue click the GREEN icon > Calibration of Fan Speed > select the unit of speed



Step 2: Choose 🗖 or 🚯 adjusting the fan speed. The current fan speed would meet the target speed.

Example: Current fan speed 50%, set 10 (The unit of speed) and click 🔂 once. The current fan speed would be 60%, one click for up 10 at a time.







Above setting is particular for the prompt adjustment. We suggest setting the parameter via the slicing software.





9) Back to the front page





Step 2: Choose 🗖 or 🚯 adjusting the fan speed. The current fan speed would meet the target speed.

Example: Current fan speed 50%, set 10 (The unit of speed) and click 🔂 once. The current fan speed would be 60%, one click for up 10 at a time.





### **E** CALIBRATION(DURING PRINTING)\_PRINT SPEED



SPEED 7 Curr. : 100 %

8 Min.: 10 % G Max.: 250 %

Set the print speed with separate stages (as picture).

- 1) The page icon- Print Speed
- 2) Stop the action
- 3) Decrease the print speed
- 4) Increase the print speed
- 5) The unit of parameter for decreasing or increasing the Current Status (%)
- 6) The unit of parameter (triangle icon indicated) is selected
- 7) Current print speed
- 8) The minimum speed
- 9) The maximum speed
- 10)Back to the front page

Step 1: Continue click the GREEN icon > Calibration of Print Speed > select the unit of speed



Step 2: Choose 🧰 or 🔂 adjusting the print speed.

X The initial print speed on printer will show 100%; the current print speed would meet the target speed.

Example: Current print speed 100%, set 10 (the unit of speed) and click 逆 once. The current print speed would be 110%, one click for up 10 at a time.



3dp file 02.gcode

Nozzle: 215 °c

H. Bed: 90 \*

00d00b-19m44

Above setting is particular for the prompt adjustment. We suggest setting the parameter via the slicing software.

### CALIBRATION(DURING PRINTING)\_DYNAMIC Z OFFSET



Please do the adjustment after below conditions happened:

- 1. The thickness of first layer is too thin, or rough surface.
- 2. Gaps on layers.

\* The calibration setting would be saved for the continue printing.

Set the Dynamic Z Offset with separate stages (as picture).

- 1) The page icon: Dynamic Z Offset
- 2) Save the setting
- 3) Increase the distance between build plate and nozzle
- 4) Reduce the distance between build plate and nozzle
- 5) The base parameter for increasing or reducing the distance between build plate and nozzle
- 6) The base parameter (triangle icon indicated) is selected
- 7) Current distance between build plate and nozzle
- 8) The minimum calibration of Z-axis (Unit of height: mm)
- 9) The maximum calibration of Z-axis (Unit of height: mm)

10)Back to the front page

Step 1: Select one of the test files and print.

Step 2: Continue click the GREEN icon > Calibration of Dynamic Z Offset > select the unit of parameter

Step 3: Choose 🛃 or 🔛 adjusting the distance between the nozzle and build plate.

The current distance between the nozzle and build plate would meet the target setting.

Example: Current distance between nozzle and build plate is 9.76, set 0.06 (the unit of parameter) and click

The current distance between nozzle and build plate would be 9.82; one click for up 0.06 at a time.











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## CALIBRATION (IDLE STATE)\_Z-AXIS ZERO POSITION



Please do the "7-Axis Zero Position" after below actions:

- 1. Change hotend module
- 2. Change build plate
- 3. Update firmware



Step 2: The build plate will automatically level to a designated height.

Put a piece of standard paper (thickness of 100gsm) between the nozzle and build plate.

Step 3: Select the unit of parameter.

Choose 🎑 reducing or 🎑 increasing the distance between the nozzle and build plate.

#### (Set 0.02 initially as recommend to avoid exaggerated Z-Axis movement.)

The current distance between the nozzle and build plate would meet the target setting. Step 4: Adjust the distance between the nozzle and build plate until tighten the paper.

Step 5: Select 🖌 to save the setting.



CALIBRATION(IDLE STATE)\_MOVEMENT OF HOTEND MODULE (X, Y, Z, E)

> Select the axis as below listed Step 1:



Step 2: Select the unit of parameter.



. .



Please ensure unloading the filament before operating the process. **X** See page 33 for details instructions. Step 1: Click 📲 > Click 🔯 > Click 💐 > ок Nozzle Curr.:215 Targ.:215°c (If required unloading the filament, please click HEAT and see page 33 for instruction.) 5 10 25 50 Step 2: Hotend module would move to designated position and stop > Turn off the power switch. HEAT HEAT 1 Remind SD  $\bigcirc$ Unloading successfully? HEAT ОK **NFINITY3DP** INFINITY3DP INFINITY3DP Remind Continue with printer OFF 2 ΟK INFINITY3DP

### **CALIBRATION(IDLE STATE)\_HOTEND REPLACEMENT**



#### Please ensure having the cool-down hotend and power off the X2 before operating the process.

Step 3: Unplug the fan cable carefully and remove the fan module.

Step 4: (A) Unplug the hotend cable carefully; (B) press the <u>RED lever</u> and (C) grab the hotend bottom slightly pull out.

Step 5: Assemble the new hotend followed the above pattern procedure. % Finished the hotend assembling, make sure to do the Z-Axis Zero Position (See page 25).













《Failure to reach E major》

Step 3: Slowly move the Actuator to the center.

(Please DO NOT quickly push the Actuator. This will lead to damages by causing reverse current.)







Step 4: Use the 2.5 mm hex wrench to loosen the screws on sides of the Actuator and adjust the belts.

- \*Clockwise: Tighten the belt
- \*Counterclockwise: Loosen the belt
- \*A:Top-side screw of the Actuator: control the upper belt
- \*B:Bottom-side Screw of the Actuator: control the bottom belt.







Step 5: Slowly move the Actuator back to side and repeat the steps above until it reaches E major.



### MAINTENANCE\_EXTRUDER

#### FILAMENT UNLOADING

Step 1: Heat up the nozzle until the filament is being melted. **\*\* Temperature set-up procedure, see page 17**. Step 2: Press the clip on the hotend module till the Release Button up as to loosen the filament. Step 3: Insert gently with the existed filament (A), and pull it out (B); power off the X2.















Step 4: Clean the gears (in RED circle as picture) with steel brush, pin or utility knife as to pick out small filament particles.







#### DAILY MAINTAIN

Wipe the enclosure of X2 with dry towel. <u>DO NOT</u> clean the panel with alcohol. Remove dust or plastic particle on fan blades by tweezers.

#### **PRINT ISSUES**

3D Printer Stringing 1.Reduce the print speed. 2.Increase the travel speed. 3.Modify the retraction speed and distance.

#### Nozzle Jam

- 1. Heat up the nozzle until the filament melted with its target temperature.
- 2. Press the clip on the hotend module till the Release Button up as to loosen the filament.
- 3. Push gently with the filament until all the residue comes out of the nozzle.
- 4. Make sure the nozzle is clean and free of clogs.

#### **Under Extrusion**

Adjust the distance between the nozzle and build plate (Z-axis) with proper height as to ensure well adhesive of material.

