

ENG



XYZPRINTING

XYZprint User Manual



Declaration

Limitation of Liability Clause

Although we try to ensure that the manual and product functions are correct and stable, in no event shall XYZprinting be liable for any direct, special, indirect, incidental, or consequential damage to computer data or operational activities. It is strongly recommended that important data be backed up or moved before using this software to prevent data loss and corruption due to contingent or unavoidable factors.

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Print History

New editions of this manual incorporate new and changed material different from previous editions. Minor corrections and updates may be incorporated into reprints of the current edition without releasing additional announcements or documentation regarding the updated version. The User Manual is for user reference only. If you need to obtain the latest information, you are welcomed to visit the XYZprinting website: www.xyzprinting.com

Announcement

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XYZprinting online resources : <http://www.xyzprinting.com>

Edition	Month	Year	Software
1	6	2018	Beta

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1. System requirements

Before using the product, please check to see if the following recommended requirements are in line with the operating environment of the system:

Operating System	Windows	Microsoft® Windows® 7, 8.1, 10, 64 bit
	Mac	<ul style="list-style-type: none"> - OS® X 10.10 Yosemite ,64 bit - OS® X 10.11 El Capitan ,64 bit - OS® X 10.12 Sierra ,64 bit - OS® X 10.13 High Sierra ,64 bit
Hardware Requirements	Minimum system requirements CPU: Intel 4th generation CPU i5 8GB/ Hard disk or more Storage : 1G above (Recommended 20G) 1GB free storage for installation.	

Other firmware and third party programs

Graphics card driver must be able to support OpenGL 2.1 and above.

Note: The standard VGA driver in the operating system or a graphics card that cannot support OpenGL 2.1 and above may cause XYZscan Color to generate unknown errors during operation.

- .NET Framework 4.0 or higher C+ redistribution (2010, 2012 and 2013, 2015)
- Microsoft C/C++ redistribution (2010, 2012 and 2013, 2015)

2. Brief introduction to XYZprint

[XYZPrint] is the XYZprinting using the 3D space operation concept to promote the application software, except using the importing file method, it can directly convert the file (*.stl) and visually simulate the finish good.

It also match the XYZ printing for promotion of 3D printer output physical product, and also significantly reduce the product producing technical threshold. It makes your original [Digital Life] environment injecting more plenty [Creation]. This manual will allow you more quickly to understand [XYZprint], and also apply different output files type such as *.stl, *.amf, *.obj, *.ply, *.3mf, *NKG & *.3CP, etc.

3. Installation instructions

Before working with your printer, please first install XYZprint. You can find the installer with the bundled disc or USB.

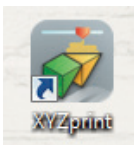
XYZprint Setup Wizard will then appear on your screen. Please follow the on screen instruction to finish the installation.

You can also setup the program manually. Open the file explorer and search Setup.exe shown below in your disc drive.

Double click Setup.exe.



Congratulations! Your installation is complete! You can now launch XYZprint from the desktop and start creating and printing.



Online Registration

XYZware software will request that you register your da Vinci 3D Printer series when it is first connected to the PC. We recommend that you take the time to register your product. Periodic updates are made available through the XYZware software and the internet. Registration will permit any updates to complete automatically.

Step 1. On XYZprint, press "Register Now"

Step 2. On the registration page in XYZprint, fill in all required information to complete the process.

Register Printer

Serial Number

da Vinci Jr. 1.0 : 3F1J0XXXXXXXXXXXXXXXX

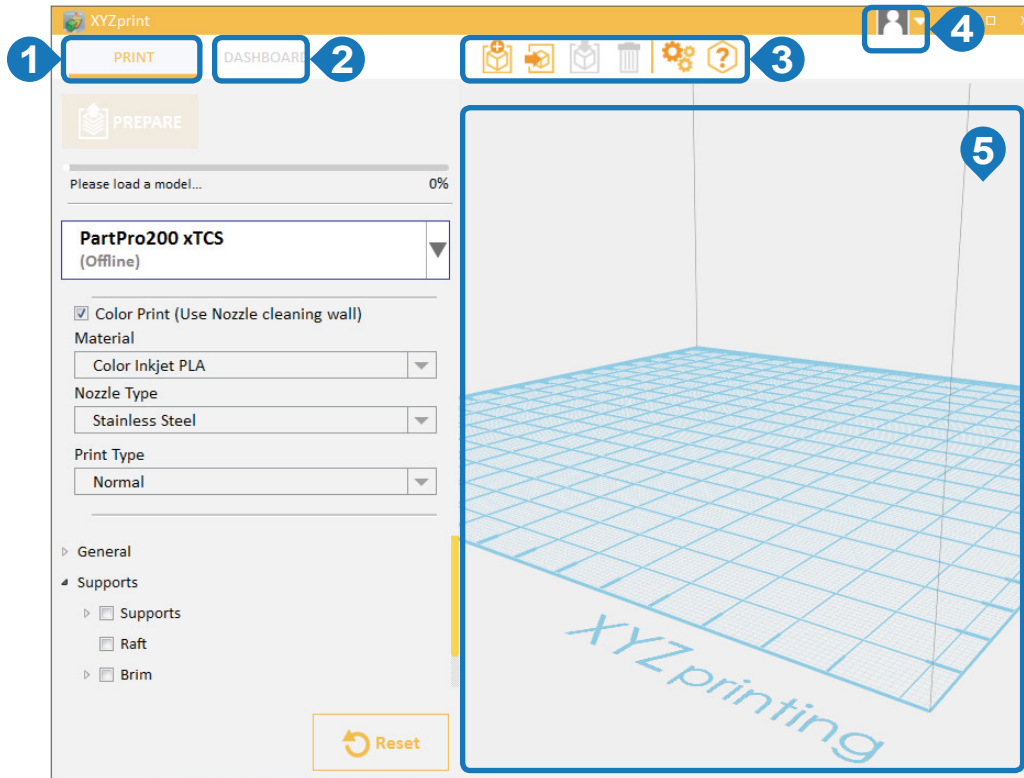
Registration Status

Printer not registered. Take a minute to finish the registration, and enjoy the benefit with us!

LaterRegister Now

4. Functions

XYZprint's main window includes five functional areas, including: 1) Print, 2) Dashboard, 3) Toolbar, 4) Login, 5) View area. Each function can be started by clicking on it.



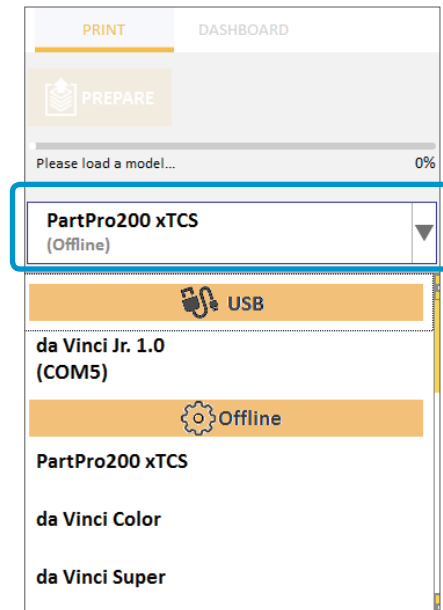
Items	Function	Description
1	PRINT	Select the printing parameter, and the basic print setting
2	DASHBOARD	Check the printer status, and renew any software version
3	TOOL BAR	3D cache drawing gallery, click and immediately using; language setting
4	LOGIN	Sign in your register account
5	VIEW AREA	Can switch the view angle, allow to view the object each angle; setup the object side, position, etc

5. Print

Select the printing machine in the [Print Area], successful connect and open the function in [Control Panel].

Before printing the object, user can through the changing of setting value to achieve the multi printing effect. It is such as the high detail printing quality and can further use the printing speed to adjust and printing support.

Through the changing of related setting value to satisfy the printing speed and the adjusting effect. The detail can study below the [Print Function]. After editing, it can use the [Print Ready] function to perform the object slicing. After finish the slicing, it starts the print.



5.1 Features and settings

Material

(Base on the printer model for selection)

Your using printer can support the material, please select your current using consumable material.

Nozzle Diameter

(Base on the printer model for selection)

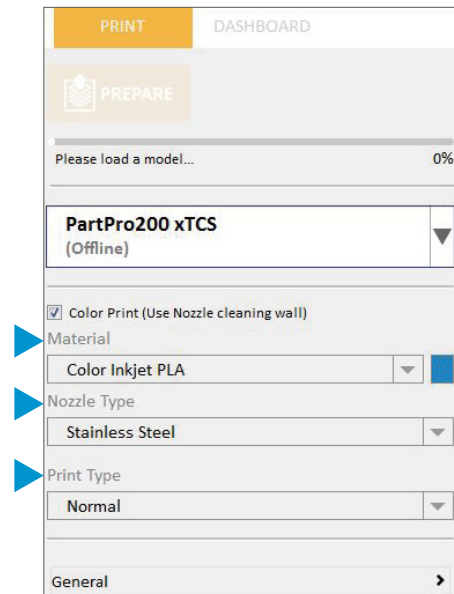
Your using printer can support the nozzle diameter, please select your current nozzle specification.

Nozzle Type

(Base on the printer model for selection)

Stainless Steel/ High Carbon Steel

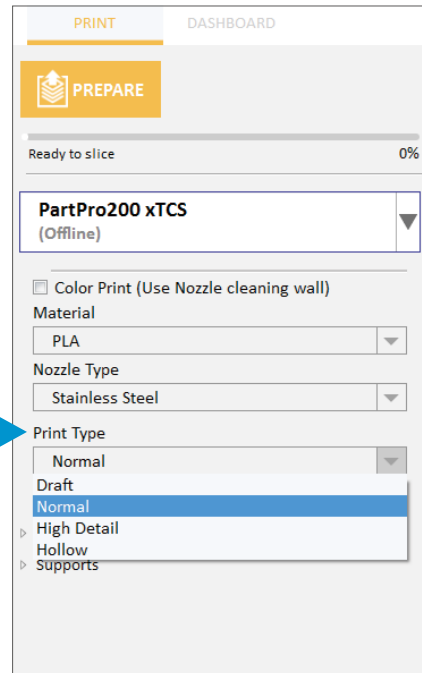
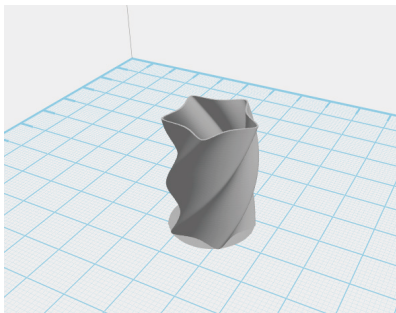
Your using printer can support the nozzle type, please select your current nozzle specification.



Print Type

Select your suitable printing product style, the printing quality can affect the printing estimated time. For example, high detail printing spend more time than the draft printing. It is because each layer must print more fine to achieve the more fine of surface treatment.

Hollow : Suitable for printing hollow objects. (Available only in monochrome printing)



General

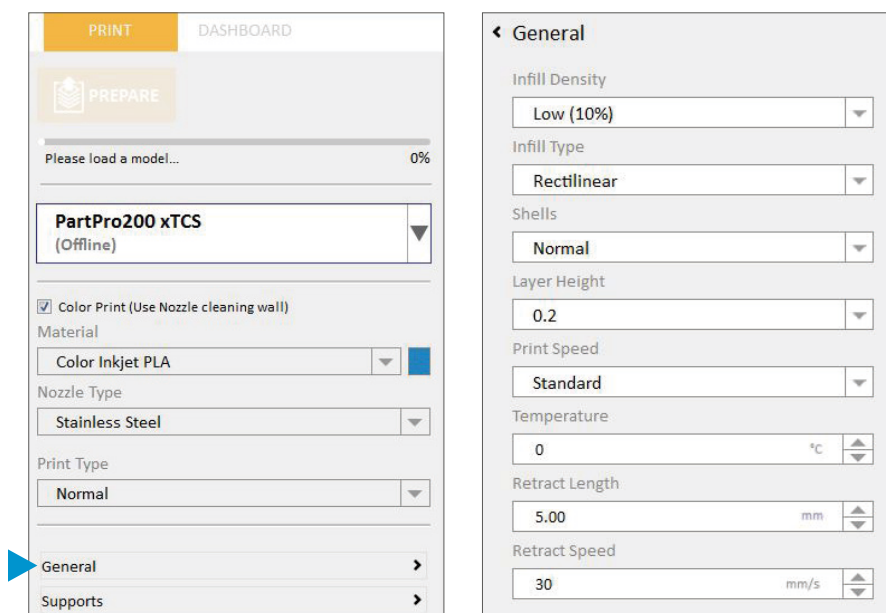
(Base on the printer model for selection)

- **Nozzle1 Temperature:**

It specifies in advanced setting of the printer (good for da Vinci Super and Pro series).

- **Heated Bed Temperature:**

It specifies in advanced setting of the printer (good for da Vinci Super and Pro).



• Infill Density:

It can adjust from 0%~100%

Before printing, users may use this function to adjust the print density of the object(s). The default printer setting on the da Vinci 3D printer will create the internal structure of the object(s) based on honeycomb structures. Using the 3D density pull-down menu, you can adjust the honeycomb structure density from hollow to high to create desired strength requirements.

* The durability of the printed sample will be affected by its 3D density setting. When setting the 3D density, please consider the purpose of the printed sample.

< General

Infill Density

Infill Type

Shells

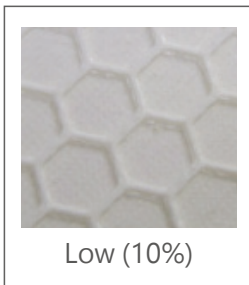
Layer Height

Print Speed

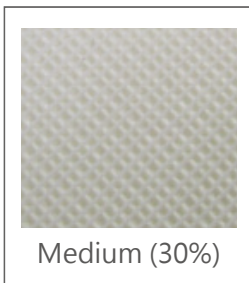
Temperature
 °C

Retract Length
 mm

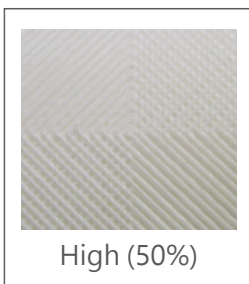
Retract Speed
 mm/s



Low (10%) - this setting requires shorter printing time, but the structure is relatively weak. The setting is suitable for decorative objects.



Medium (30%) - The selection gives higher strength to the structure than low density. To print an object for mechanical purpose, it is advised to set the density to 30% or above.

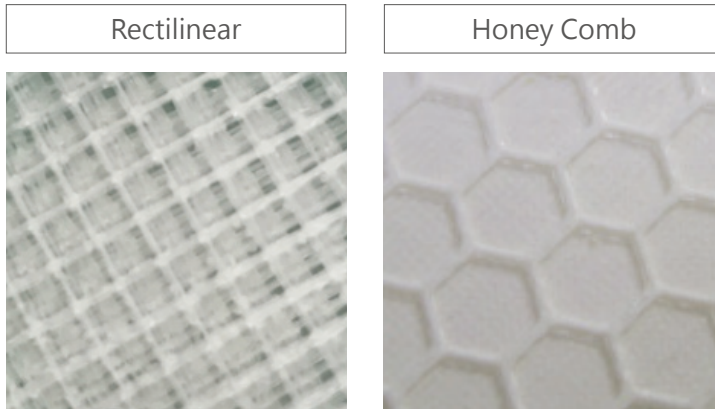


High (50%) - For the object which should be durable or will be used as functional mechanical part, it is suggested to select higher density.



Solid (90%) - High dense object is more durable. However it takes longer and need more filament for printing.

• Infill Type: Rectilinear/ Honey Comb

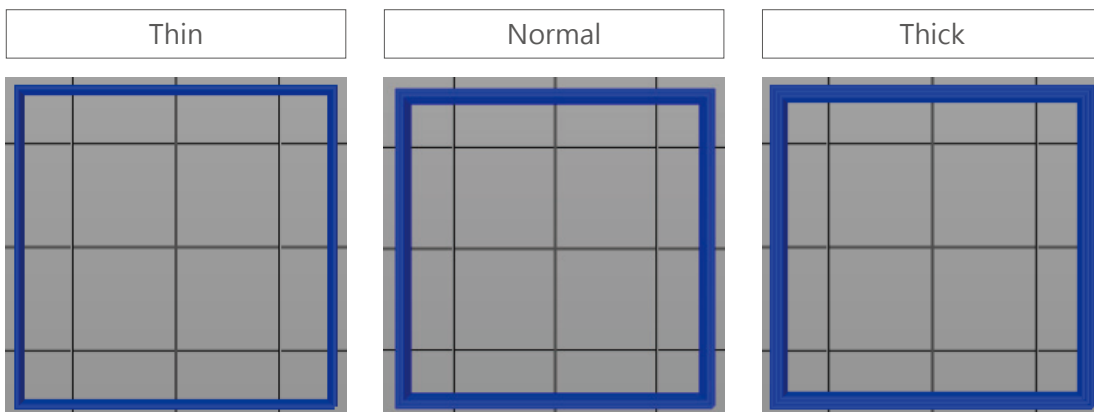


• Shells: Thin/ Normal /Thick

Shells are the outer layer of the object. Thick shells end in better printing quality but take longer for printing.

Thin shells shorten the duration of printing but may be vulnerable to break.

The strength of the object is affected by the setting of 3D density and shell. To ensure the sustainability of objects of different size, shape and purpose, different density and shell settings will be required.



Single layer is outlined under the setting.

The outer structure is consisted of 2 layers. Extra layer strengthens objects.

Thick shell is made up of 3 layers. The strengthened structure is more sustain, but it takes longer for output.

Here are some suggestion on density and shell settings:

3D Density / Shell	Hollow(0%)	Low (10%)	Medium (30%)	High (50%)	Solid (90%)
Thin	Smaller, hollow display	Smaller, flat detailed display	Smaller, flat detailed, durable parts		
Normal					
Thick	Larger, hollow display	Large, taller display	Larger, durable parts		

• **Layer Height:**

By setting different layer heights, you can alter the thickness of each layer that your printer creates.

Users may select smaller layer height to obtain finer print effect, or may select larger layer height to print the object quickly. Fine print effect takes longer.

The printed layer thickness can be adjusted between 0.1mm – 0.4mm or 0.02 – 0.4mm (depending on the specifications you use for the model support) .

For best results, we recommend 0.2-0.3mm layer printing.

• **Print Speed:**

Printing speed settings: Slow/ Standard/ Fast

Use the printing speed adjustment to change the settings based on the size and precision of the object. In general a better object quality is accompanied with a lower printing speed.

• **Temperature : -10~10° C**

• **Retract Length : 0~10mm**

• **Retract Speed : 10~120 mm/s**

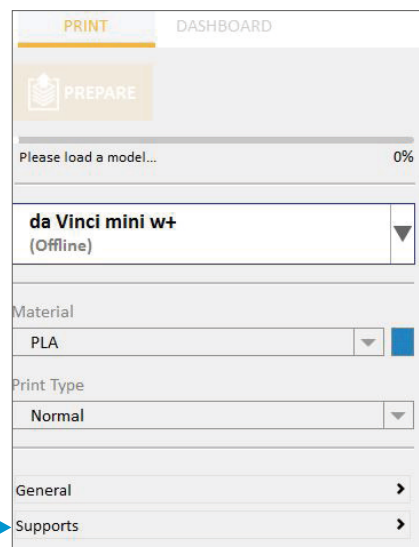
Supports

(Base on the printer model for selection)

The supportive structures are printed according to the objects features. Support is used to create structural strength and ensure that your model does not collapse during the printing process.

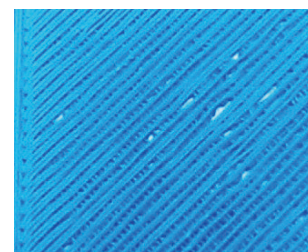
• **Support: On/ Off**

The support pillar structure printed in response to object characteristics is usually used to support suspended object and object without force bearing area on bottom, and may be removed after print.



• **Raft: On/ Off**

Printing thinner and longer objects require more attention due to the shapes physical instability, the object may buckle or twist under its own weight. When printing long thin objects consider increasing the area of contact between your object and the print bed by checking the “Raft” box.



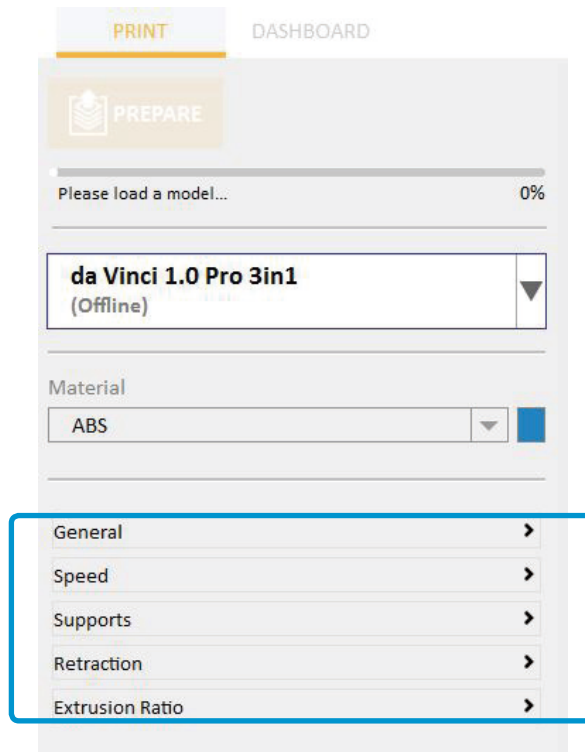
▸ Rafts create stability and can be removed after your object has been printed.

• **Brim: On/ Off**

Brim width:5~50 mm

5.2 Printer advanced settings

This function can support the printing object structure adjustment, and also let the structure density and the shell printing of setting item, to produce difference effect. Pro series and supporting open style of filament model, it has below parameter item for setting.



General

- **Temperature:**

Adjust the operating temperature for the Print bed and Print Module.

- Too low printing head temperature can cause the filament unsmoothly feeding, and also cause the Extruder unable extrusion. Please adjust the printing head temperature firstly.
- If the print bed temperature too low, it can cause the object unstable on the print bed during printing process. Please stick the print-bed tape before printing. If it still not improves, please raise up the print bed working temperature.

Heating component	Temperature range	Remarks
Nozzle Temperature	170° C ~260° C	good for da Vinci Super and Pro series
Heated Bed Temperature	41 ° C ~90° C	Heatable print bed models

- **Shell Thickness Normal: 1 ~ 10 layer**

The printing speed of object body, this value is the major key for printing finish good and the quality. Most of the printing object if using the lowest printing speed and suitable layer height, it also achieve the best effect.

- **Shell Thickness Top Surface: 0 ~ 20 layer**

- **Shell Thickness Bottom Surface: 1 ~ 20 layer**

Speed

- **Surface thickness / General shell layer: 5~250 mm/s**

The printing speed of the main object, this value is the main key for the printing product time and quality. Most of the printing object if using slow printing speed and suitable layer height for adjustment, it also get the best effect.

- **Surface / External surface: 5~250 mm/s**

Object surface printing speed.

By using outbound printing speed adjust, it can directly change the surface printing quality and also has a separation to the internal infill structure of printing speed. It promotes object printing quality and optimize the entire printing time.

- **Surface / Small radius (radius <6.5mm): 5~250 mm/s**

When small outline printing, the printing module travel length is small. The adjusting of speed to allow the printing material become stable stacking.

Tip : • Ultra fast printing speed may lead to unstable extrusion. For a stable performance, it is advisable to set the printing speed between 15 to 60 mm/s. The printing quality may vary depending on materials.

- If using the 5mm/s lowest speed for printing, it takes more time to print.

- When increase the printing speed, it must pay attention the printing head whether need to increase the working temperature. It avoids the printing head not enough time feeding the material and causes no material output status.

- **Infill / General: 5~250 mm/s**

The large part of infill structure for the object.

- **Infill / The top layer shell: 5~250 mm/s**

When the object start to print the top seal layer structure, the system will take the last three structure layers to perform the top layer printing.

- **Solid Infill: 5~250 mm/s**

Before printing the infill structure for the object bottom surface, it will completely print the object bottom and also the compact surface. Usually, it uses three layers printing to get the completely no gap bottom surface.

- **Bridge printing speed: 5~250 mm/s**

When the object perform the similar "□" printing, if both end point interval is short, it won't produce the printing support structure and immediately start the printing. It is so call Print Bridge. The quick print bridge speed can avoid object producing drooping status.

- **Non-printing movement speed: 5~250 mm/s**

The printing module under the non-printing area cannot perform the material movement speed.

- **Lower layer speed: 10~250 mm/s**

The printing speed of the most lower layer, the lower layer the better adhesion.

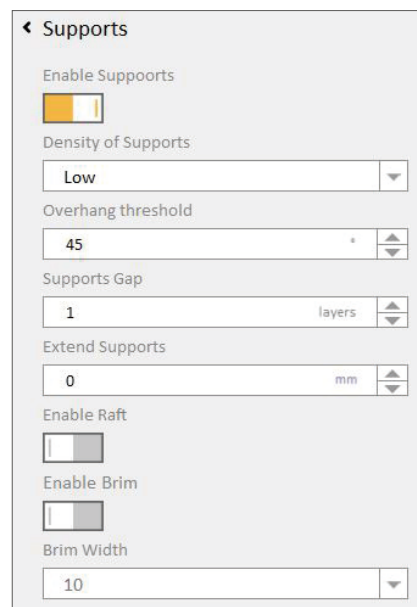
- **The speed for retraction of filameter: 10~200 mm/s**

For the backward retraction speed of filament, it has more information introduction. Please refer the [Retraction] function introduction as below.

Tip : If match the retract speed with other printing speed, it directly affect the stability of material supply during printing. When printing speed is slightly quicker than the retract speed, it will more easily keep the material extrusion not disconnected.

Supports

- **Enable Supports: On/Off**
- **Density of Supports: Low/Medium/ High**
- **Overhang threshold: 0~90°**
- **Supports Gap: 0~3 layers**
- **Extend Supports: 0~5 mm**



◀ Supports
 Enable Supports
 Density of Supports: Low
 Overhang threshold: 45
 Supports Gap: 1 layers
 Extend Supports: 0 mm
 Enable Raft
 Enable Brim
 Brim Width: 10

Retraction

- **Retract Length: 0~10 mm**

In printing object, before large movement of print module, print filament will be drawn back, such that slight negative pressure occurs in print nozzle, preventing material from adhering to the object while moving, improving surface quality of print object.

- **Activate Threshold: 0~100 mm**

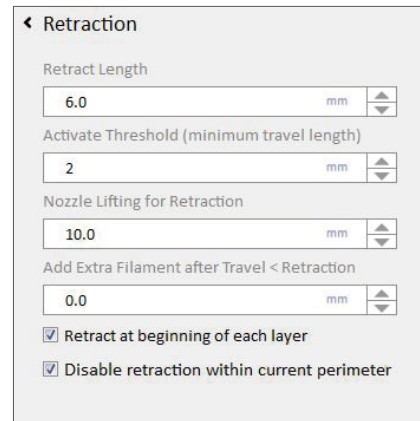
Such setting will allow users to set up retraction mechanism activation style. For setup mode, users usually specify the minimal print module movement distance for retraction mechanism activation.

- **Nozzle Lifting for Retraction: 0~10 mm**

After retraction, the print module will be elevated slightly with such setup value. Such action prevents material from adhering to the object, and makes a more orderly final print stop point. However, it should be noted that excessively large elevation will extend print preparation time for the next print layer, and portions of angles may results cooling and difficult to bond conditions between layers.

- **Add Extra Filament after Travel < Retraction: 0~5 mm**

Material compensation may be used to improve upon holes or poor extrusion due to excessive extruder.



The screenshot shows a settings panel titled "Retraction" with the following options:

- Retract Length:** A numeric input field set to 6.0 mm.
- Activate Threshold (minimum travel length):** A numeric input field set to 2 mm.
- Nozzle Lifting for Retraction:** A numeric input field set to 10.0 mm.
- Add Extra Filament after Travel < Retraction:** A numeric input field set to 0.0 mm.
- Retract at beginning of each layer
- Disable retraction within current perimeter

Extrusion Ratio

Extrusion volume can be adjusted for the shell or infill. This value can be reduced to reduce the amount of extruded filament which result in thinner lines. Raising the setting would increase the amount of extruded material, the level of saturation, and thicker lines.

- **Shell Extrusion Ratio: Extrusion range: 80% to 200%**

Increasing shell extrusion will result in a thicker shell, while reduced shell extrusion will generate a thinner shell.

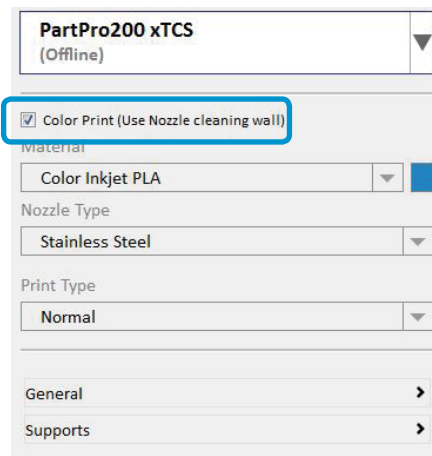
To obtain a thicker shell, the user may adjust layer height and engraving layers, the percentage of shell extrusion ratio can be reduced to reduce sample redundancy.

- **Infill Extrusion Ratio: Extrusion range: 80% to 200%**

Increasing infill extrusion ratio will cause the infill lines to be more compact, while reducing infill extrusion ratio would generate thinner lines.

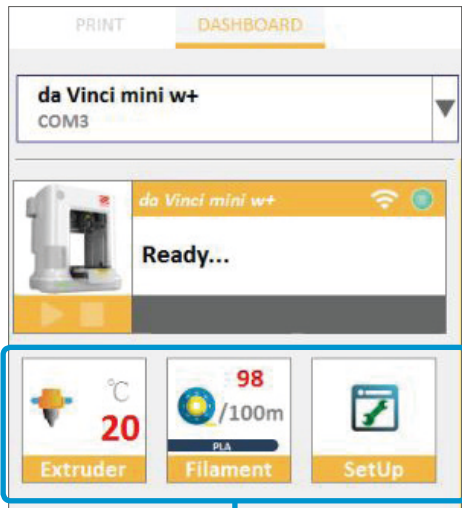
To create a better-stuffed and sturdier product, the user may adjust layer height and shell thickness as well as reduce the percentage of infill extrusion ratio to improve the quality of the finished product.

* The function selection will have little different due to your 3D printer selection, e.g. using color printer model, the software will automatically kick (Color Printing). For open filament machine model, it will have more parameter setting items.



6. Dashboard

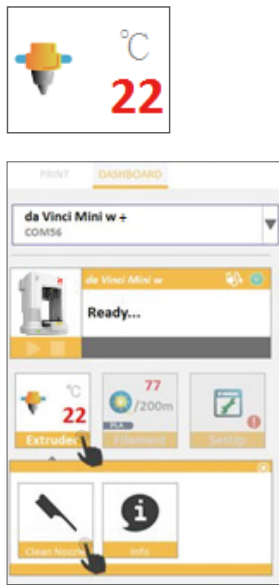
It provides user to operate the printer or understand the printer and object detail printing information.



Models with LCM screens, such as PartPro200 xTCS, da Vinci Color, Super, 1.0Pro, 1.0Pro 3in1, Jr.1.0 Pro, Jr. 1.0 3in1, Jr.1.0A, Jr.1.0, Jr.1.0w, you can view the printer's extruder, filament information, update firmware in the setting function and set Wireless mode(with WiFi function machine type).

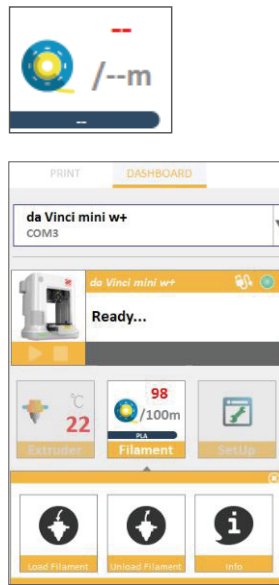
Models without a screen control, such as da Vinci mini w, mini w+, miniMaker, nano, nano w, can be operated through the "Dashboard". The following is an example of da Vinci mini w+.

Extruder



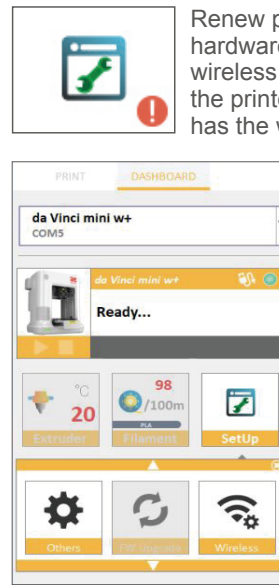
The Extruder control panel shows a temperature of 22°C. It includes buttons for 'Clean nozzle' and 'Info'.

Filament



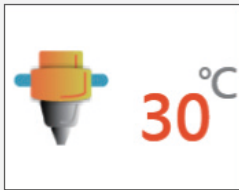
The Filament control panel shows a filament level of 98/100m. It includes buttons for 'Load Filament', 'Unload Filament', and 'Info'.

SetUp



The SetUp control panel features a warning icon and buttons for 'Others', 'Firmware', and 'Wireless'. A text note states: 'Renew printer hardware or set to wireless mode if the printer model has the wifi function'.

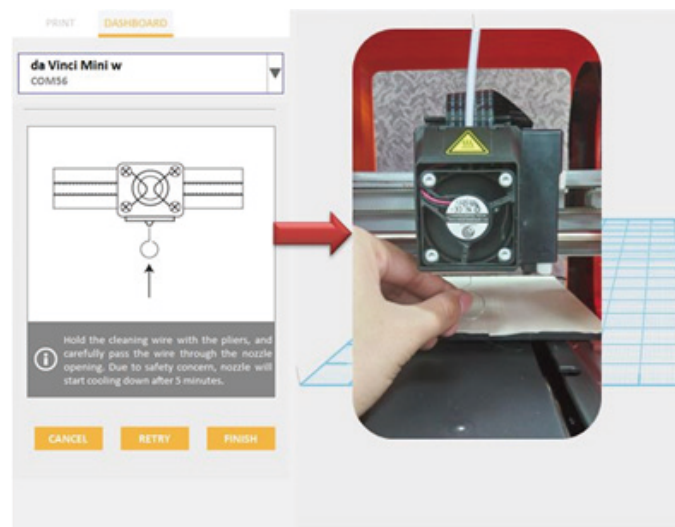
6.1 Extruder



There are two options in this function, one is to clean the nozzles and the other is the extruder module information.

Clean Nozzle

Once this function is selected, the nozzle will heat up automatically and move the nozzle to a proper location where you can easily clear away all residual filaments in the nozzle.



Info

The extruder module information, including Temperature, Nozzle Diameter, Total Print Time, and Serial Number.

Type
Extruder

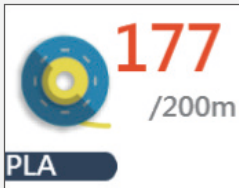
Temperature
22°C

Nozzle Diameter
0.4mm

Total Print Time
469h:33m

Serial Number
GB00020002TT52B00XX

6.2 Filament



Use XYZprint to load filament more easily into printers that are not LCM panels

Load Filament

The printing module will automatically move to the working position. The nozzle will then heat up to the operating temperature. Please wait for the extrusion process to finish.

Verify that the nozzle is capable of extruding the filaments to demonstrate proper loading of the filaments. If not, please repeat the filament loading process.

Unload Filament

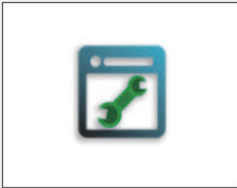
The printing module will automatically move to the working position. The nozzle will then heat up to the operating temperature. Please wait for the unload filament process to finish.

Info

Information related to filament use.

Filament	
Printing Material	PLA
Color	Gold
Remaining Material	100 m/100 m (100 %)
Serial Number	GBP3OCC64N10XX

6.3 Setting



The basic settings of the machine, functions, selection and adjustment of printing values, including: Jog Mode, Calibrate, Z-Offset, Wireless Communication and others. You will learn how to use different settings to help you maintain your printer performance.

Jog Mode

Manually adjust the movement of X/Y/Z Axis for printer maintenance.

First click on [Home Axes]. The printing device will be returned to the initial axis position at the lower left corner of the printing area.

Then adjust the positions of the printing module (X-AXIS), printing platform (Y-AXIS), and printing axes (Z-AXIS).

Select “X-AXIS” to move extruder rightwards and leftwards.

Select “Y-AXIS” to move print bed forwards and backwards.

Select “Z-AXIS” to move the print axis (Z-AXIS) upwards and downwards.

The user may manually enter the adjustment value:

Range: 1 to 150; step: 1 mm

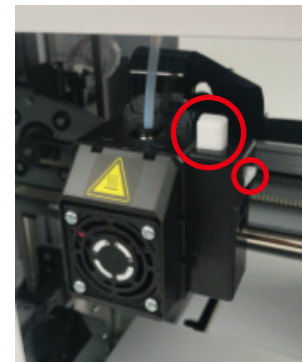
Calibrate

Platform calibration may be implemented before the printing process.

The printing device may move to the lower left corner of the printing area. Please refer to the platform calibration instructions provided in the software.

Before calibration, press Button A of the printing module. After calibration, press Button B on the printing module in order to retract the sensor device.

If calibration was failed, please make sure that Button A (detector) has been pressed before restarting the calibration process.



Z-Offset

Upwards and downwards to adjust the printing distance between the bed and printing module.

Each adjust has a step of 0.05 mm.

If the first layer distance is too high (too large) or too low (too close), we recommend you using z-offset to adjust the printing distance.

Others

• Automatic horizontal calibration

Automatic horizontal calibration may either be ON or OFF. Default: ON. The software would automatically implement horizontal calibration and compensation accordingly. Printing speed may be improved if automatic horizontal calibration has been switched OFF. However, this may affect printing quality.

• Buzzer

Buzzer is turned on by default, you can select "OFF" to change the setting. When the buzzer is turned on, the printer will output an audible signal when a button is pressed, receiving data, print job is finished, or issue is detected.

• Restore Default

Clicks "Restore Default" all settings will be reset to factory default.

Firmware upgrade

To achieve the best 3D Printing experience, please keep renew the software and / hardware. The renew process is simple, only press the file > print > da Vinci Printer > printer plugin. Select the print inside the pull down list, press the dashboard > Setup > Firmware upgrade.

Remark: Please make sure computer has connected to internet before upgrade the hardware or XYZprint software. Do not turn off the power or interfere with the printer during the upgrade.

Info

Printer information is in setup.

Information under checking, it will display all the printer information, connection and calibration information. All those information will show in this page.

Printer Info	Connection Info	Calibrate Info
Printer Name and Printer Type	Connection Type	Calibrate Value
Serial Number	Printer IP	
Firmware Version	WiFi MAC Address	
Total Print Time	SSID	
Last Time	WiFi Signal Stregth	

Wireless Communication

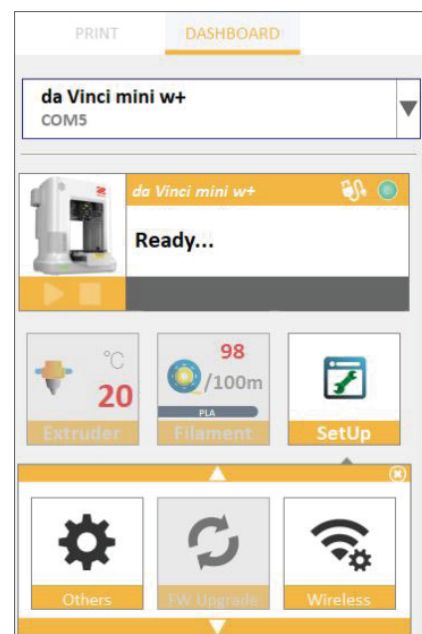
Internet printing function is only in printer and computer, both need to connect to the same wifi of using. Please set the internet function on PC, and connect to those having wireless transmission function printer.

Press Setup → (Wireless). Choose the wifi internet.

Input password, press Start Wi-Fi. Start internet connection.

Once connect to internet, Stop Wireless Connection/ Change Setting.

No touch screen model, e.g da Vinci mini w, mini w+, miniMaker, nano, nano w, it can use (control panel), below is the da Vinci mini w for sample.



7. Tool bar

Tool bar locate under the menu



1. New File

Restart the software. Once need to reload the object, it can use this function and start the new object editing.

2. Import

Click (Import) and loading the file. It can import many files. If your workspace has a object and you want to add a new file, you only need to click (Import) icon, and choose our new file to import.

3. Save

It can save your job for the final upgrade file version, and match your correction on the screen.

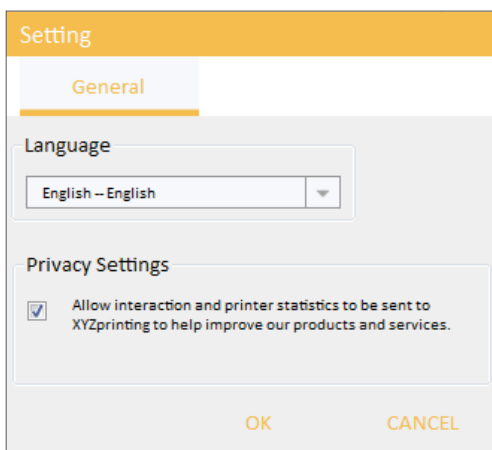
Click (Save) to display another new save as window. Input the other file name and press (save).

4. Remove

This function can remove the import object from your job.

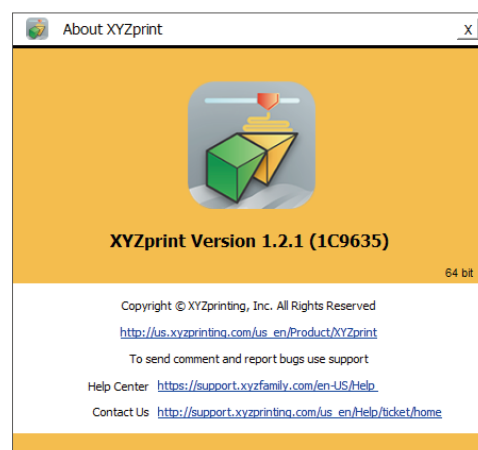
Select deleting object, then press the delete icon. The object will be deleted.

5. Setting



User can select your language inside the multi-language and also the privacy setting.

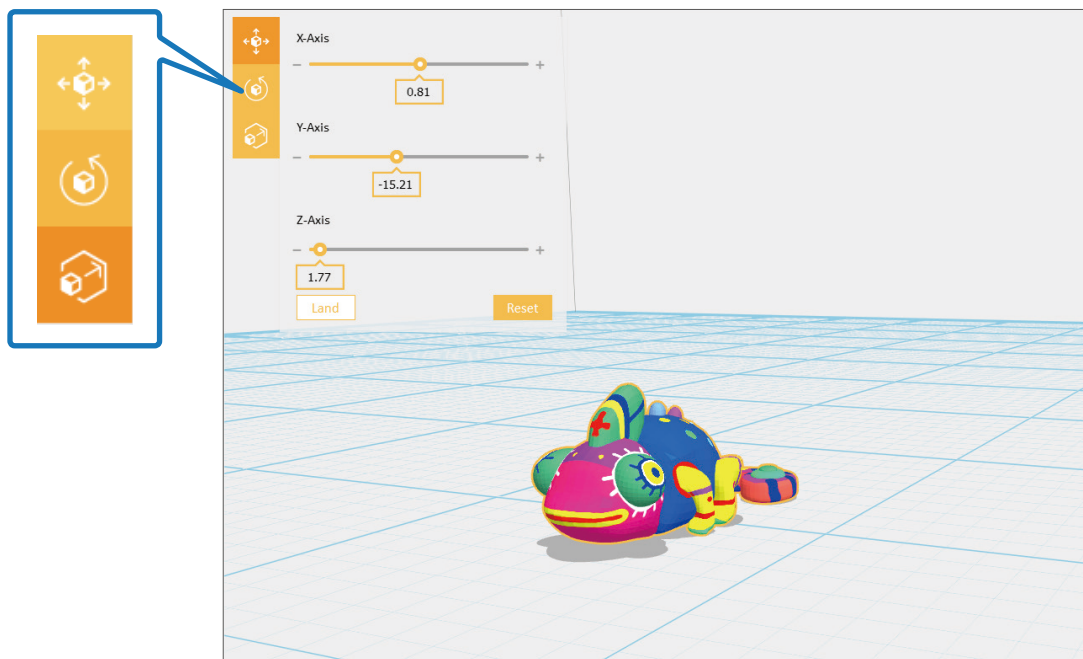
6. About XYZprinting



8. 3D View tool

Press the mouse left key to rotate the screen angle, switch view angle to allow view the object each angle and perform the editing and adjusting.

Press the mouse left key to drag the object position. Press the object and the left side will display the toolbar for editing function including move, rotate and zoom. It can also adjust the object size, position and direction.



Move:

Adjust the value of the X, Y and Z axis to change the printing position of the object on the print bed.

Move the 3D object by holding and drag the left mouse button .



Rotate:

You may want to improve the quality of printing and the strength of the object.

This can be done by increasing the contact area between the object and the build plate.

Therefore, consider rotating and enlarging your object in order to achieve a better result.



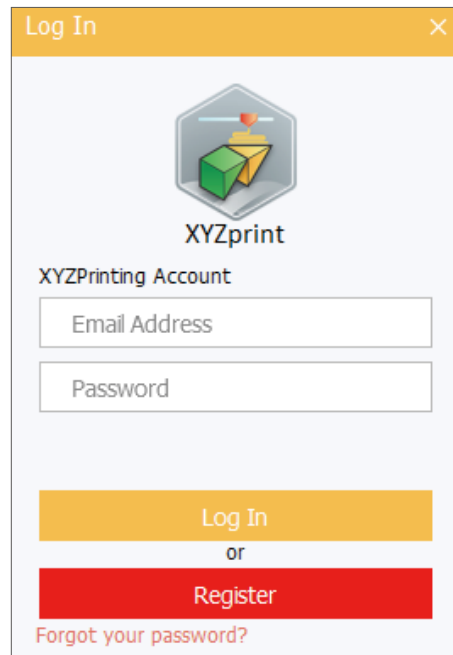
Scale:

The scale function allows you to enlarge or reduce the printing proportionally without affecting the original file.

9. Login

Suggest login / register before using, it can achieve the best effect.

After register, the XYZprint can through the internet connection to automatically download and also provide the latest version to the user.



10. Print model(s)

After check the object and also setup the printing, press (Print Preparing) to start the object slicing. After finish the slicing and press the (Print) to wait for the 3D creation.

