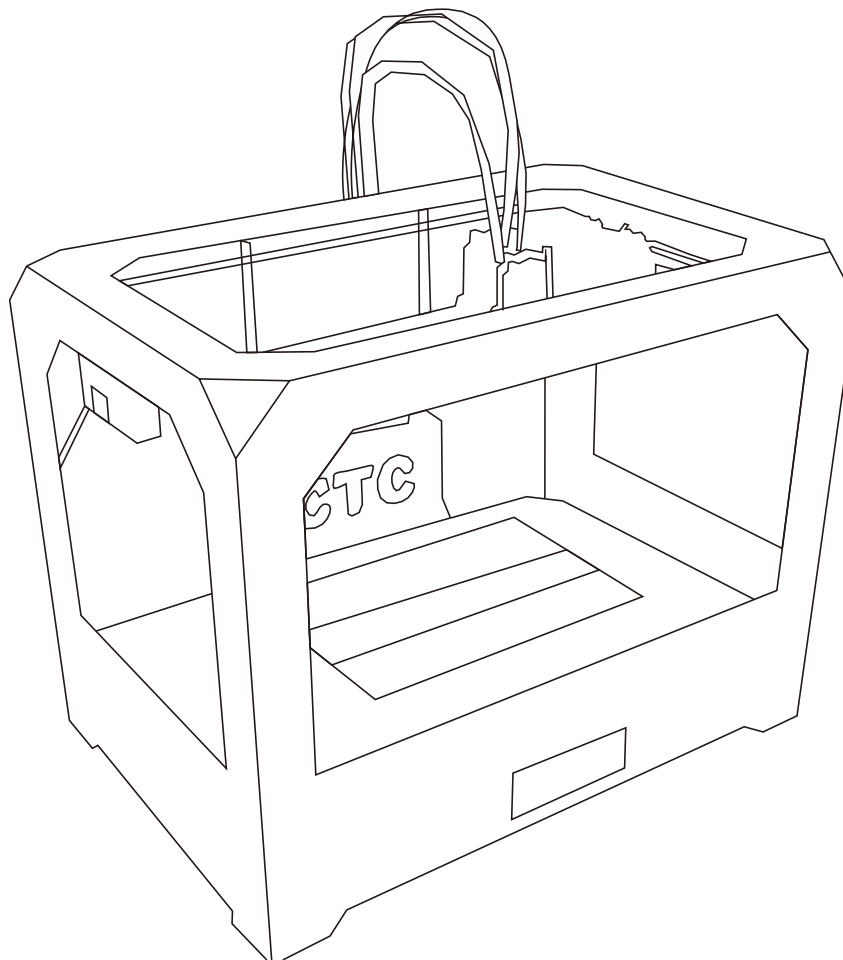


Manual of FDM 3D Printer



ZHUHAI CTC ELECTRONIC CO, LTD

Company Links: www.ctc4color.com

www.ctcprinter.com

CONTENTS

1. Description Matters

- 1.1 Manual Introduction.....
- 1.2 Precautions
- Safety Precautions.....
- Contact us.....
- 1.3 Accessories List.....

2.Product Description

- 2.1 Product Categories.....
- 2.2 Appearance.....
- 2.3 Product Specifications.....
- Technical parameters.....
- Environmental Specifications.....

3. Operation Instructions

- 3.1 Prepare for printing.....
- 3.2 Computer preparations.....
- Replicatorg installment.....
- Software functions.....
- Makerware installment (compatible with this software).....
- Software function.....
- 3.3 LCD screen function keys / the key functions comment.....

4. Take the model

5. Maintenance

5.1 Clean the printhead.....

5.2 Tighten belts.....

5.3 Maintenance the screw axis

6. Troubleshooting

7. Warranty statements and license agreement

8. Operations Guide

Let's go!

1. Description matters

1.1 Manual Introduction

This manual includes product description, operating instructions, printing a test model, printer maintenance, troubleshooting, and several other parts. Please read it carefully, and use the 3D printer according to the manual.

1.2 Precautions

The voltages of each region are different, so please confirm the voltage of your area before you use the printer (generally 110V and 230V).

This product requires the customer's maintenance after using a period of time, it can extend the life of the printer with regular proper maintenance.

1.3 Safety Precautions

Our company don't recommend using other company's supplies, in order to get the best 3D printing results, please use our special supplies. The maintenance and repairing caused by using other supplies is not included in our company's warranty.

When the printer is printing or just finished printing, please do not touch the model, the head of printer, the platform or the internal body because of the high temperature.

1.4 Contact Us

If you need to contact the after-sale service, you can contact us through our company's website. About 3D printer's using and troubleshooting information, it is available on the manual, and you also can contact us through our website for online technical support.

You can add our company's sina micro blog, it contains our company's new technology and software upgrades. Adding sina micro blog may have chance to obtain "tablet computer". Go into the sina micro blog and search "CTC 3D printing in the future". More attention and reprinted, more chances to win the rewards.

1.5 Accessories List

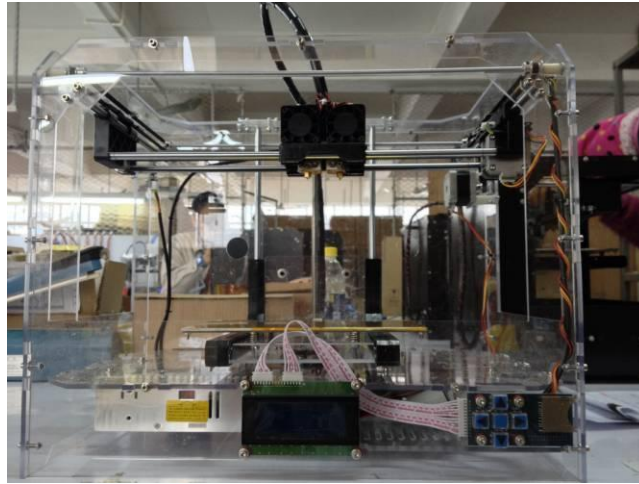
NO.	Name	Quantity
1	3D printer	1
2	Power line	1
3	USB cable	1
4	Toolkit	1
5	CD	1
6	Printing supplies	1

2 Product Description

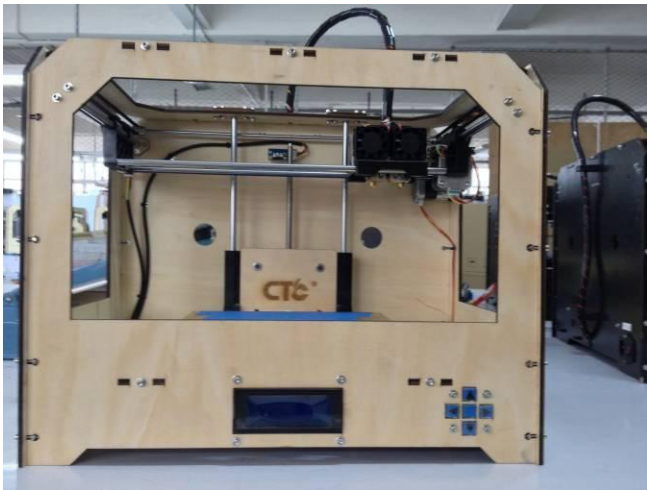
2.1 Product Categories

3D printing is based on the fuse deposition manufacturing process (FDM). CTC 3D printer is a rapid prototyping device that connected to the computer via the USB or worked with an SD card offline. An ordinary computer can finish printing. As long as you have STL format 3D file, you can complete a variety of complex three-dimensional solid model printing job. This device is easy to use, even if you have never used 3D printer. You can easily print all kinds of 3D models through 3D printer.

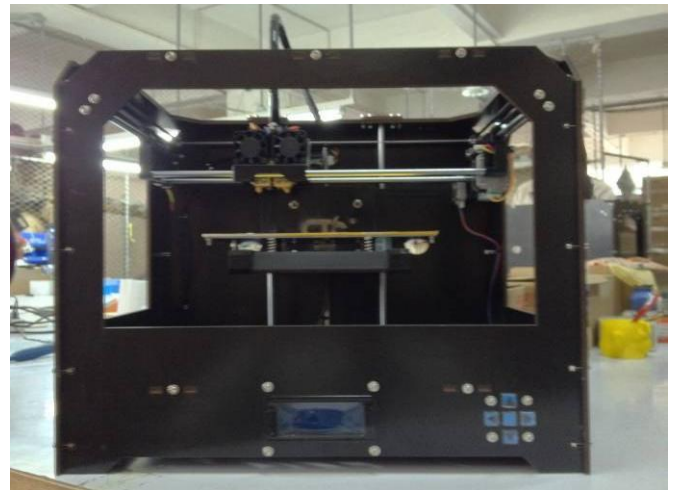
2.2 Appearance



(Third Generation)



(First Generation)



(Second Generation)

2.3 Product Specifications

2.3.1 Product parameters

The total volume of printer: 320*467*381mm

Package size: 565*430*535mm

Weight (with package): 15kg

Construction size: 225*145*150mm

Input voltage: 220V

Power: 210W

Construct platform temperature: About 110°C (higher in winter, lower in summer)

Extrusion nozzle flow: About 24cc/h

Supported operating systems: Windows XP Windows7/8 (32byte / 64byte)

Software: ReplicatorG or CTC Chinese version (Software is compatible with MakerWare)

Printing materials: ABS, PLA

Material properties: Special ABS and PLA for 3D printing (only produced by our special process)

Layer precision: 0.1-0.5mm

Positioning precision: XY axis 0.011mm

Z axis precision: 0.0025mm

Nozzle diameter: 0.4mm

Speed of moving shaft: 30-100mm/s

Recommended speed of moving nozzle: 35-40 mm/s

Input file types: stl, gcode

2.3.2 Recommended environment

Operation environment: Installed in well-ventilated, dust-free area. Temperature: 15-35 ° C,

Humidity: 20-80% (non-condensing)

Storage environment : Temperature: 0-40 ° C, Humidity: 10-80% (non-condensing).

Non-corrosive gas and cleaning applications.

3. Operation Instructions

3.1 Prepare for printing

(1) Check the appearance of 3D printers outside the box, if there is scratch or other defects.



Check the box's edges and corners to see if there is deformation or rupture.

(2) Open the box. Cut the tie fixed on the printer nozzle after taking out the printer. (The tie is in the front left side of the Z-axis X-axis Y-axis)

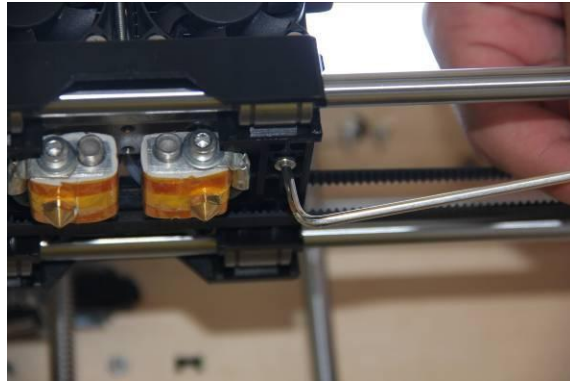


Cut the tie fixed on the printer nozzle

(3) Open the foam plastic on print head surface (Note: Try not to use the knife surface to avoid damaging the connecting lines). Install the print head on the X-axis bracket (refer to the pictures). Then tighten the two screws.



(Pic 1)



(Pic 2)

(4) Take out the spool holder and put it on the tripod. Then put printing supplies on the holder and pull out printing supplies, insert it into circular hole on the print head. (Insert it into the left print head when using left print head. Insert it into the right print head when using right print head)



(5) Check the limit switches' connecting line on the printer's surface to see if loose or fall off.



(Z-axis)



(Y-axis)



(X-axis)

(6) Check whether the voltage is matching with the voltage printer required.(110V or 220V)

(7) Take out the CD card to read the printer driver and install the driver.

(8) Turn on the printer and manipulate to control panel , make Z axis up to the top of the printer, check if the distance between the nozzle and platform can meet the criteria (The best distance test method: Put a A4 paper on the platform’s surface and make Z axis up to the top through control panel. Then pull the A4 paper, it can be pulled out, but with a little strength, and the paper has no scratch)

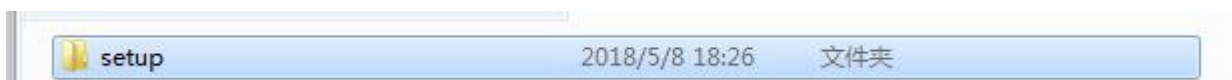
Note: The blue paper on the platform’s surface can’t be torn off. Otherwise it will affect the print quality

(9) Prepare STL format file and open it through the software installed on the printer. Adjust the parameters, then start printing

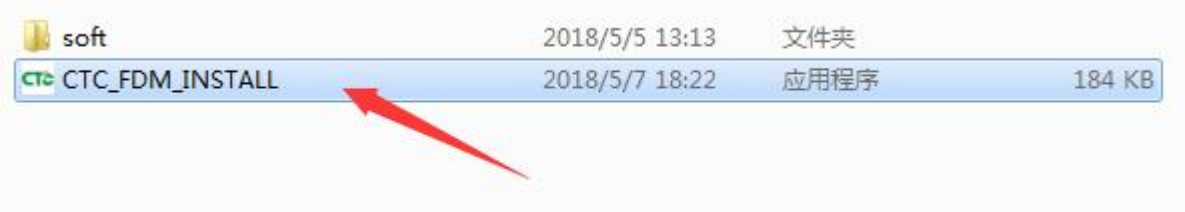
3.2 Preparations for computer

3.2.1 Installing ReplicatorG driver software

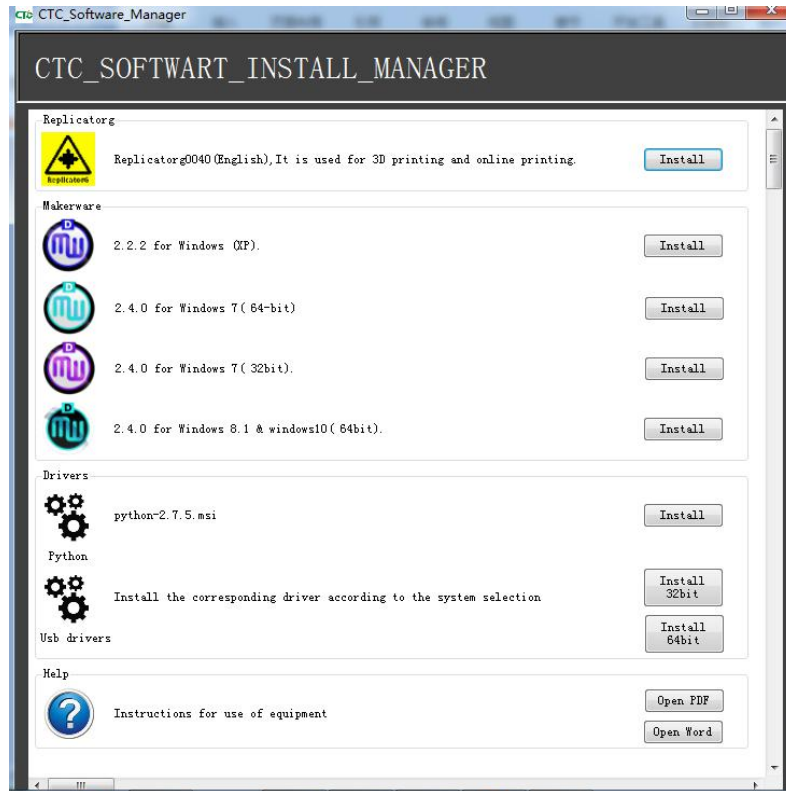
(1) Taking out CD card to read the printer driver, and look for 3dsetup folder



(2) Open 3dsetup file folder and look for “software” file



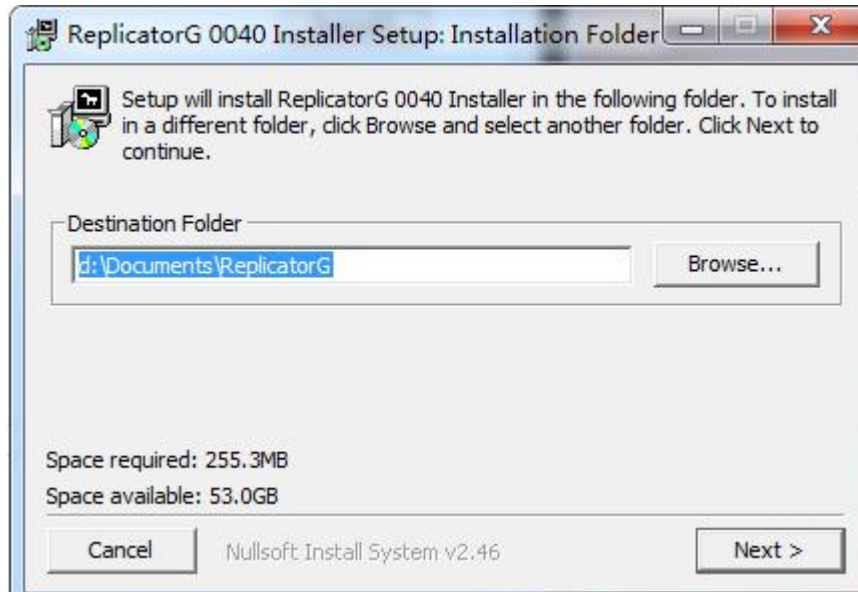
(3) Right-click the file to open the software and go into the software installation manager



(4) Click Replicatorg software installation (you can choose to install English or Chinese version)



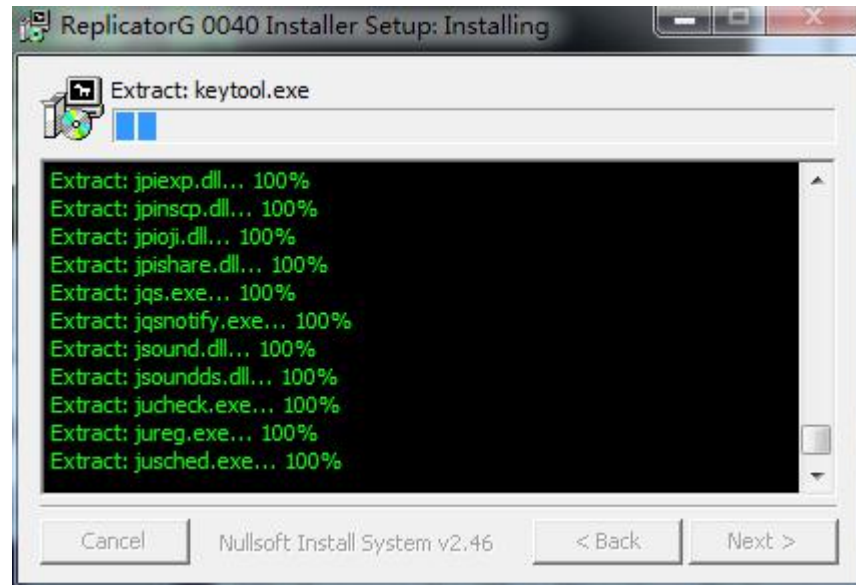
(5) Click “automatically install” in the Replicatorg software, there will appear the icon as follow and then click the Next button.



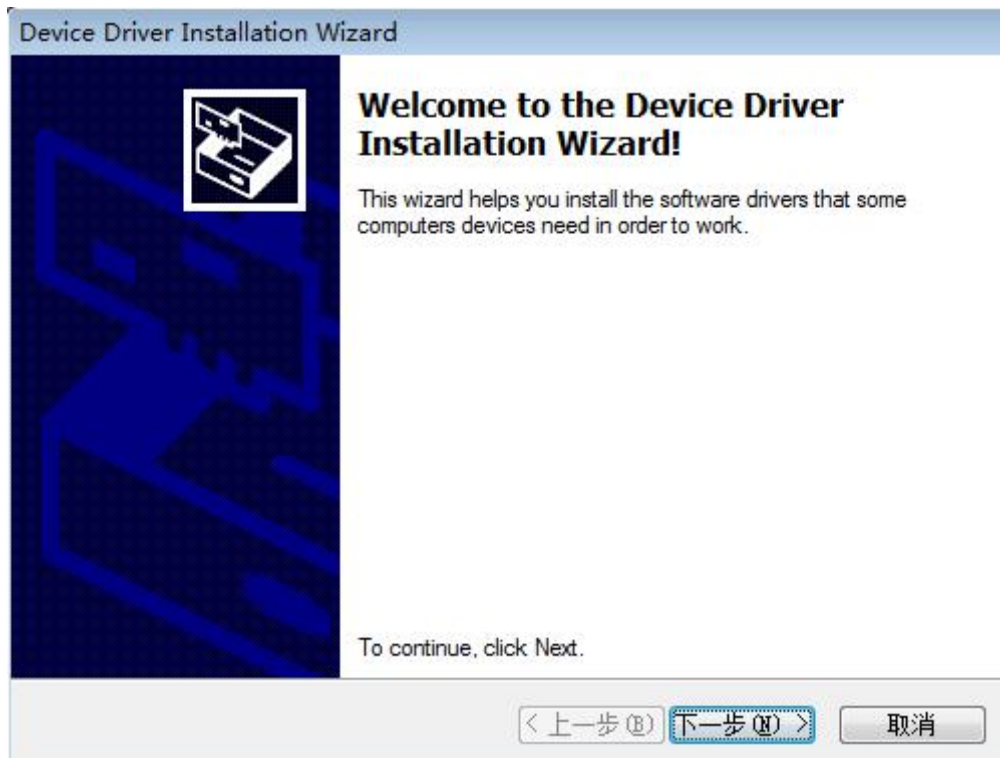
(6) Click "Next", there will appear the icon as follow, click "Install"



(7) Click "Install", there will appear the window as follow, wait a moment



(8) After Clicked the Install button, there will appear the dialog box as follow, click “Next”



(9) After clicked “Next”, the prompt will continuously appear five times, click "Always install this driver software"

(10) Click five times "Install this driver software" button to complete the installation. At the same time, the computer will appear the dialog box as follow to check if the program is successfully installed. (Check method: View the "Driver Name" in the dialog box, all "√" indicates that the software is installed successfully; if "X" or "!" exists, the software has not been successfully installed). Click "Finish" after checking please.

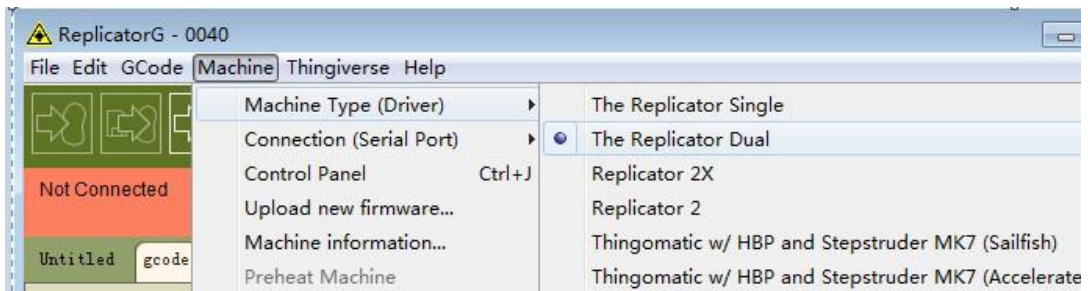


(11) After Clicked "Finish", the "Next" button turns to light, then left-click "Next" button, the computer Replicatorg print software installation completed.

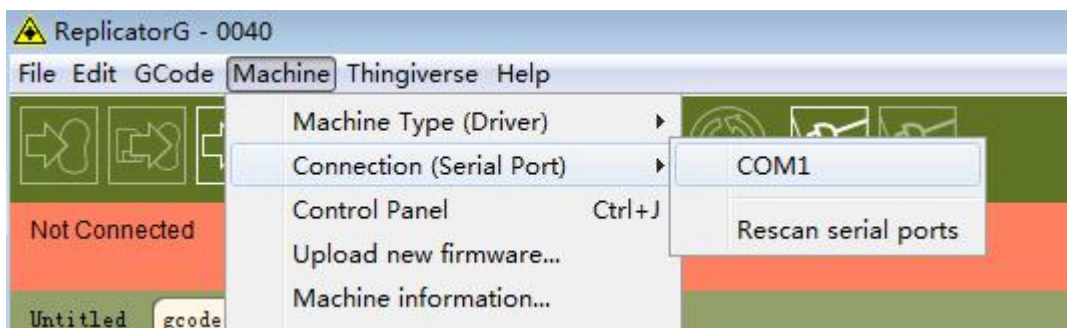


3.2.2 Software Functions

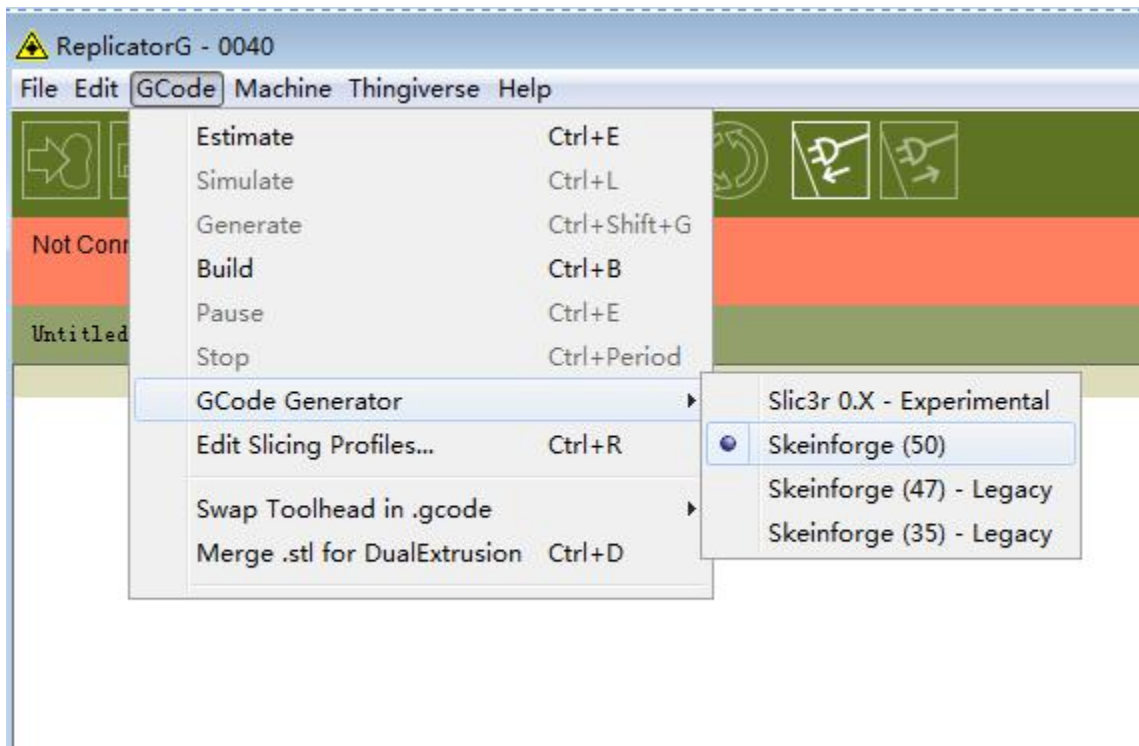
(1) Turn on the power supply, connect USB, open replicator, (Double nozzle need to choose “The Replicator Dual” , single nozzle choose “The Replicator Single”)



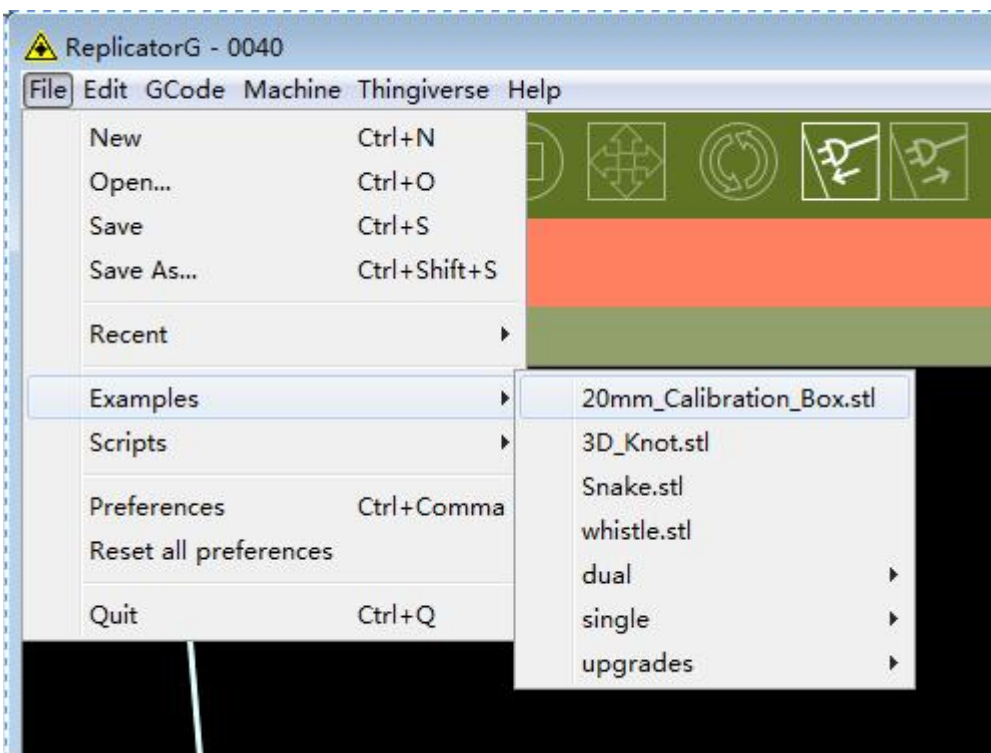
(2) Then select the correct serial port(Please note: the serial port number of the machine usually is not com1)



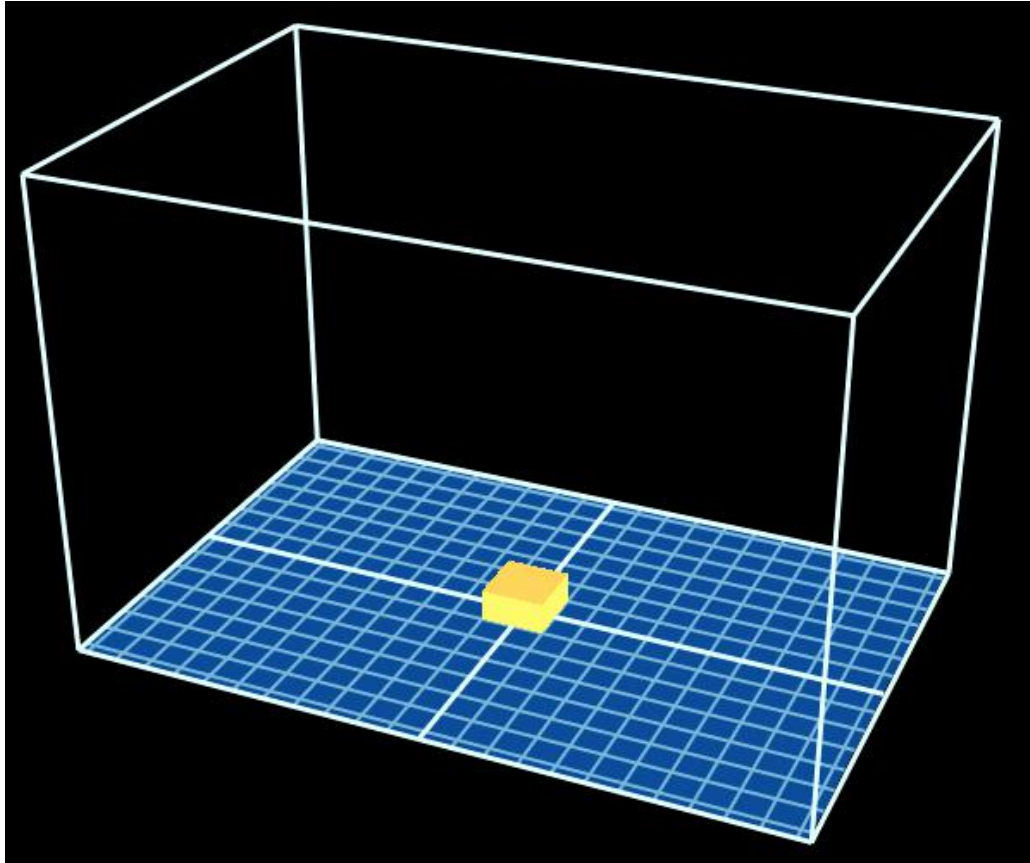
(3) Click 



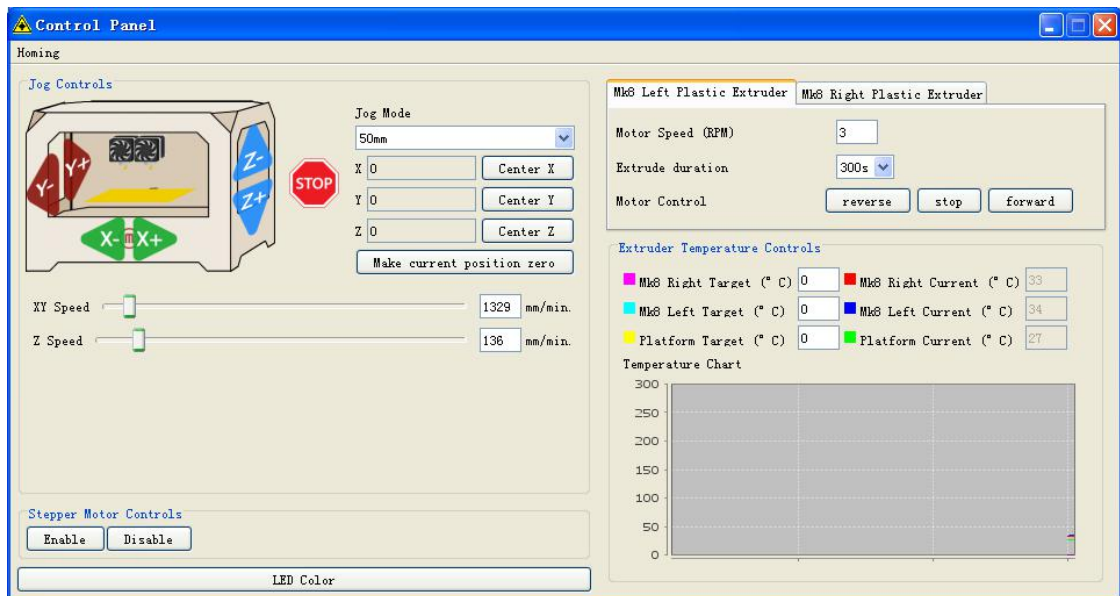
(4) Then select the file you want to print



Then appears the file as follow:



(5) Open the control panel



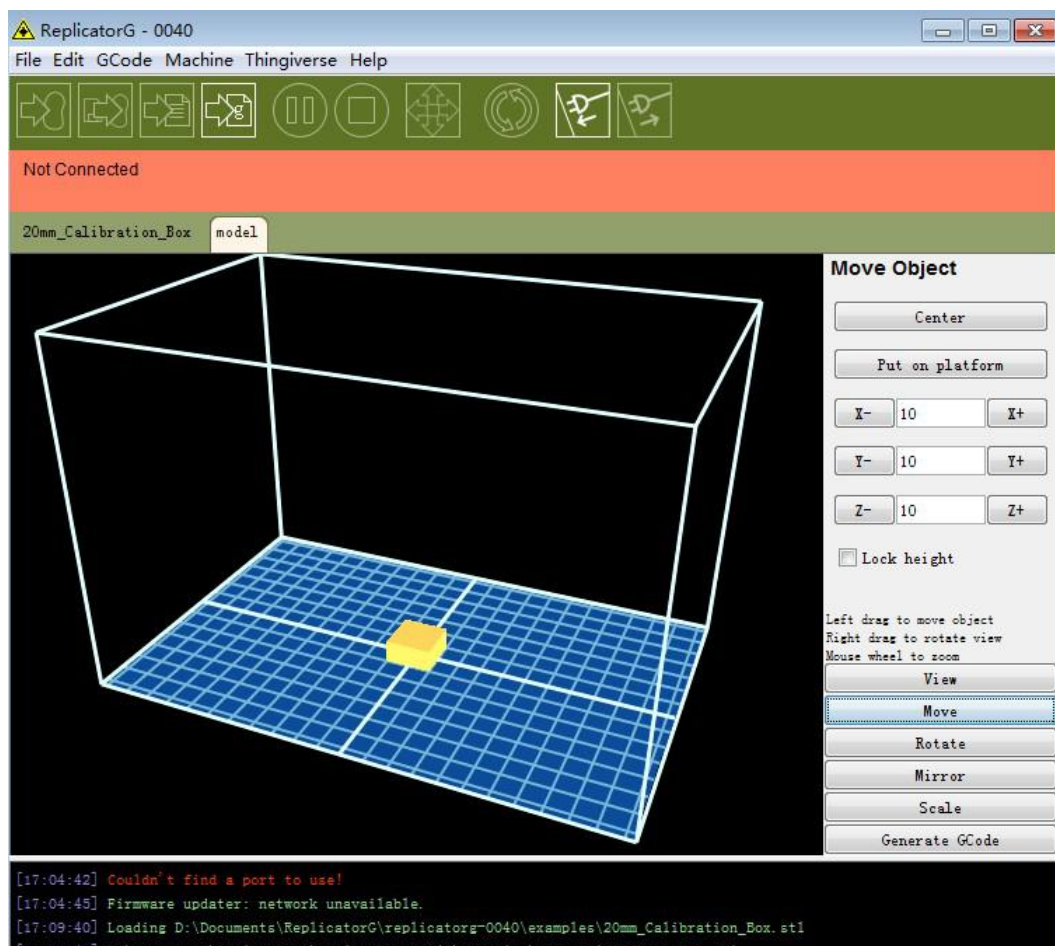
Set the nozzle temperature: “Target Temperature” frame, press “Enter” key after finished setting

Different machines have different temperatures due to differences in temperature conductivity. It is better to start from 215 degrees , try to extrude filament. The temperature rises fast to 190

degrees, indicating larger heating allowance. If slow, indicating smaller heating allowance. If filament jammed, maybe the temperature is not enough. If there is bubble's sound, temperature is high. From low to high, set a suitable temperature according to the actual situation. If you click "reverse", the extrusion head motor reversal, the material will be sent back. Cut the new material smooth, put it into the hole, click stop, then click forward, extrusion head motor is transferred, insert a little tight, the material is bitten and fed into the nozzle, until spinning. Please note: When temperature reaches a predetermined value, printing nozzle will continue down to reach the bottom surface.

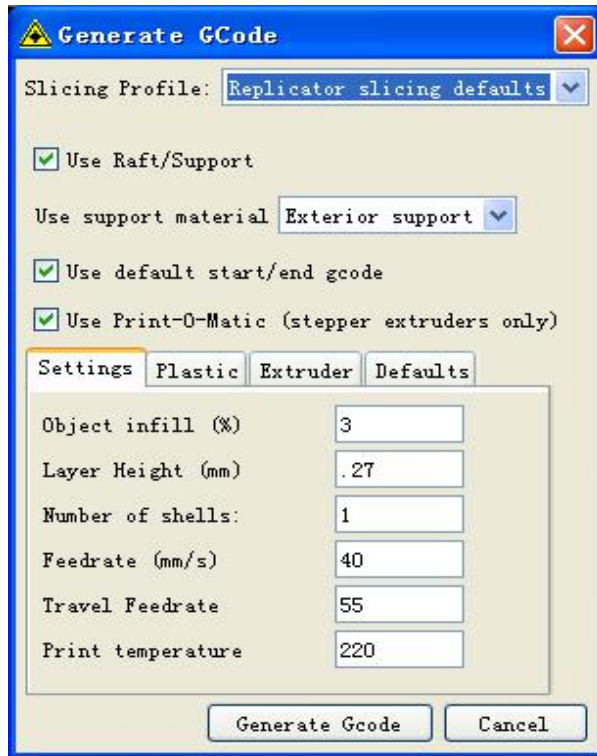
How to start printing:

Move the picture to the appropriate location, click the following button



Choose:

Please note the options above, click "Generate Gcode" can generate Gcode. After generating gcode, move the print head to the center position,

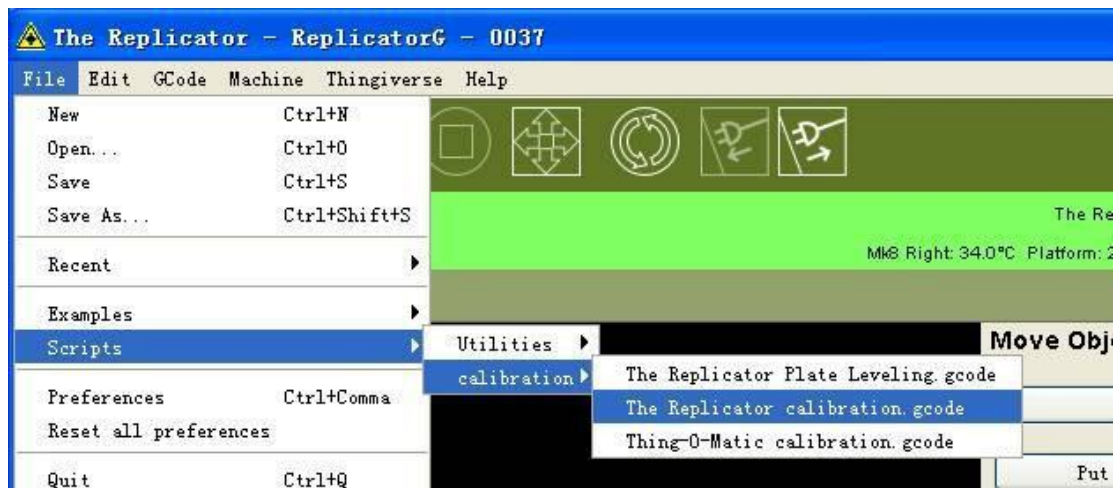


You can modify Feedrate (mm / s) to 20/Tralvel Feedrate to 20 to obtain higher printing accurate.

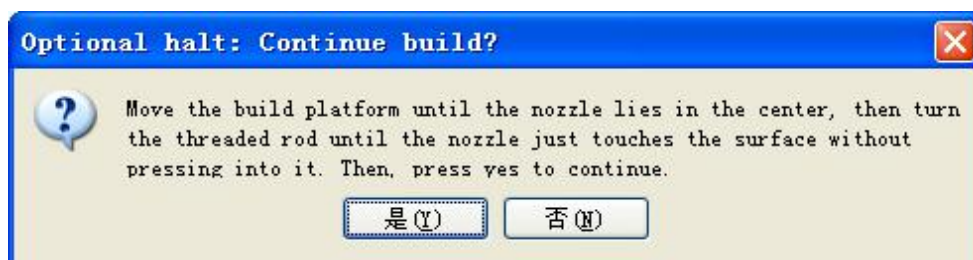
How to calibrate (Normally calibration is not necessary):



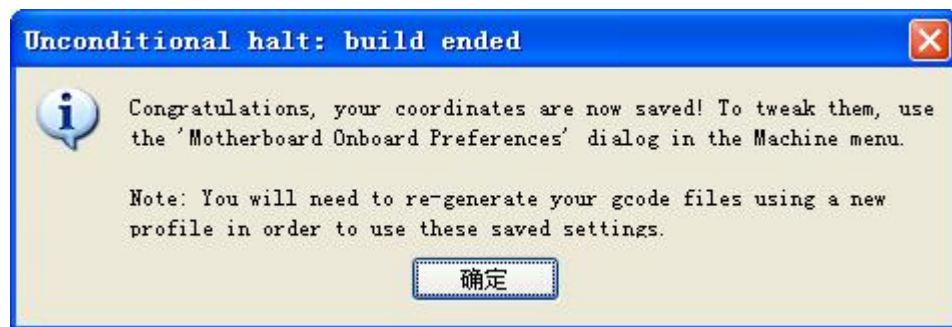
Move the print head to the platform through the control



Tips after running



Click “Confirm” and then the machine can run calibration program automatically



Click “Confirm”, and then cut off the , reconnect. The calibration is completed.

Generate Gcode and print:

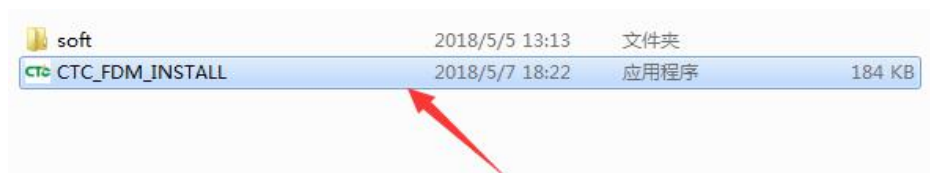


Click , printer start to print

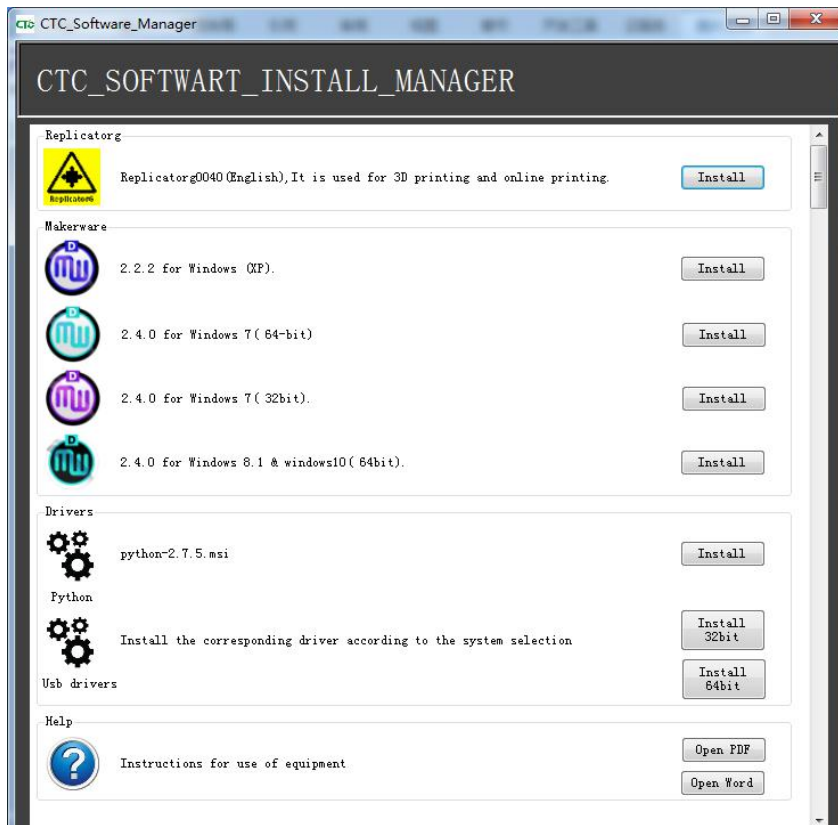
Please note: Printing nozzle waits at 10mm height. When temperature reaches a predetermined value, printing nozzle will continue down to reach the bottom surface.

3.2.3 Install Makerware driver software

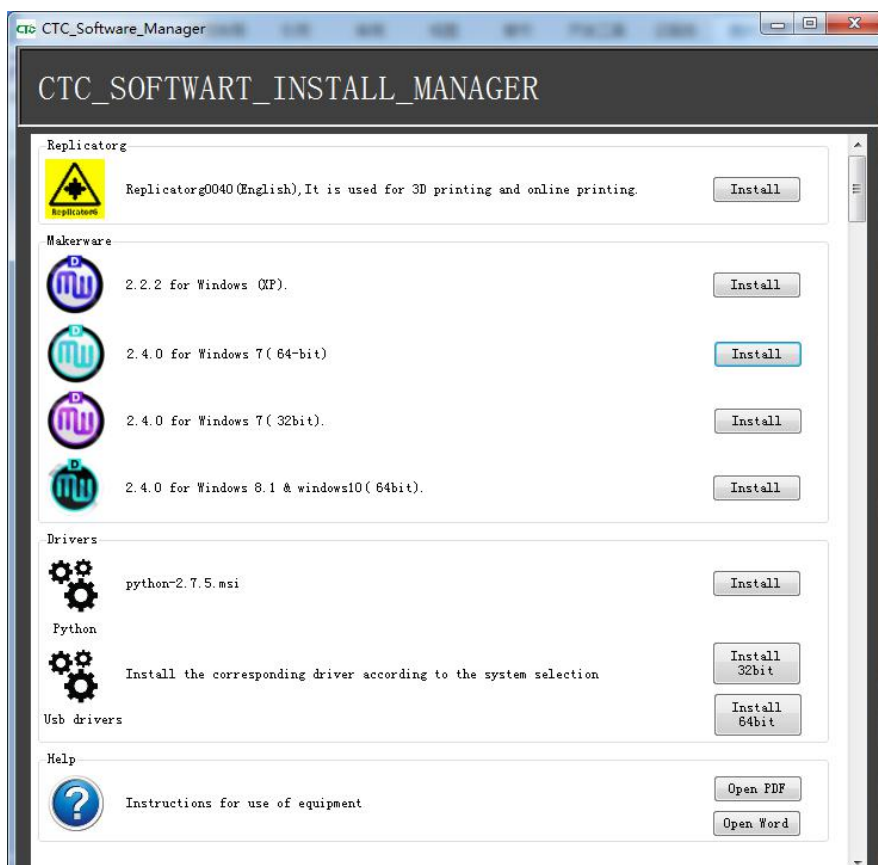
(1) Taking out CD card to read the printer driver, and look for 3dsetup folder



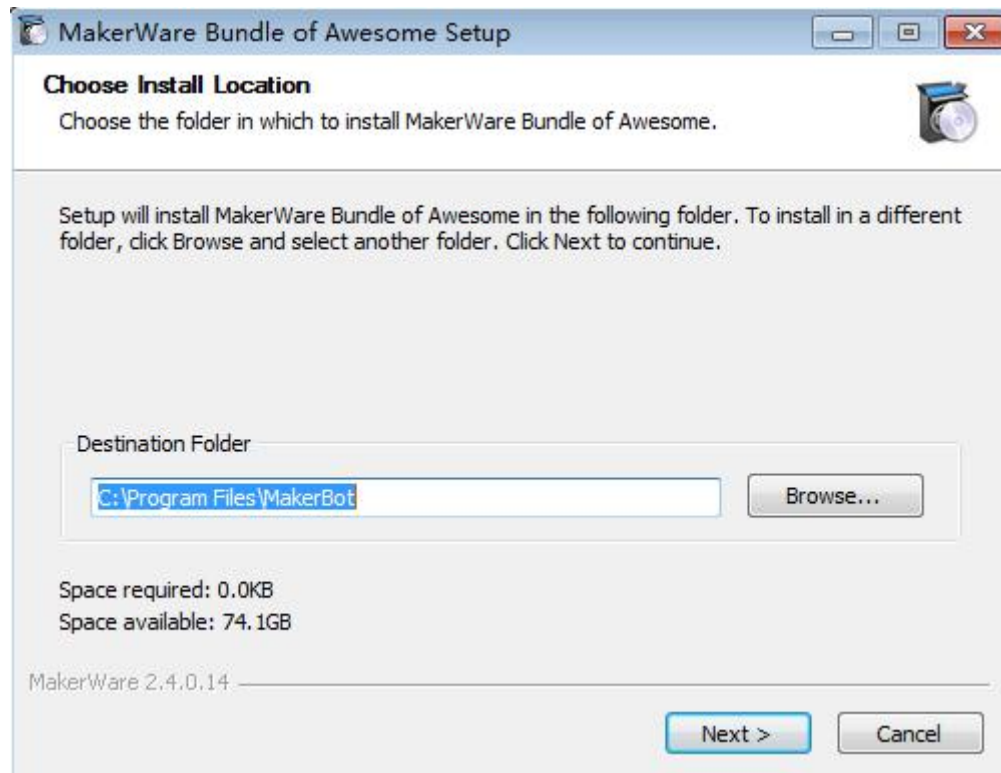
(2) Right-click the file to open the software and go into the software installation manager.



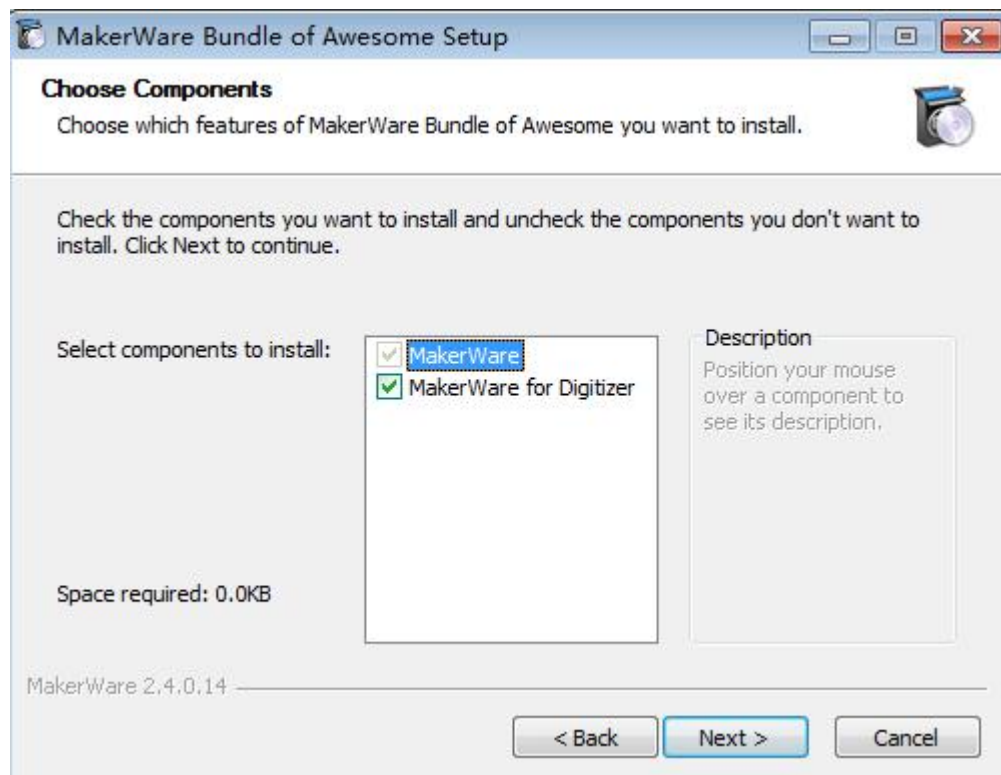
(3) Click Makerware, there will appear software drivers for different computer systems. Select correct printer drivers for your own computer system, then click “Automatically install”.



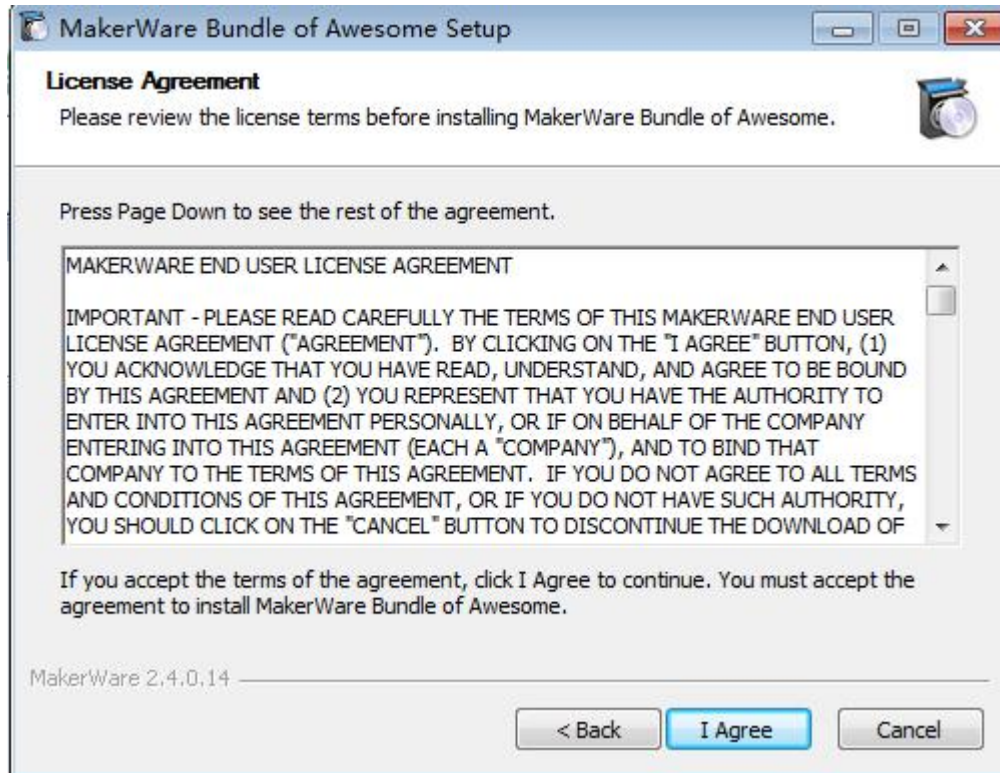
(4) Click “automatically install” in the Makerware software, there will appear the icon as follow and then click the Next button.



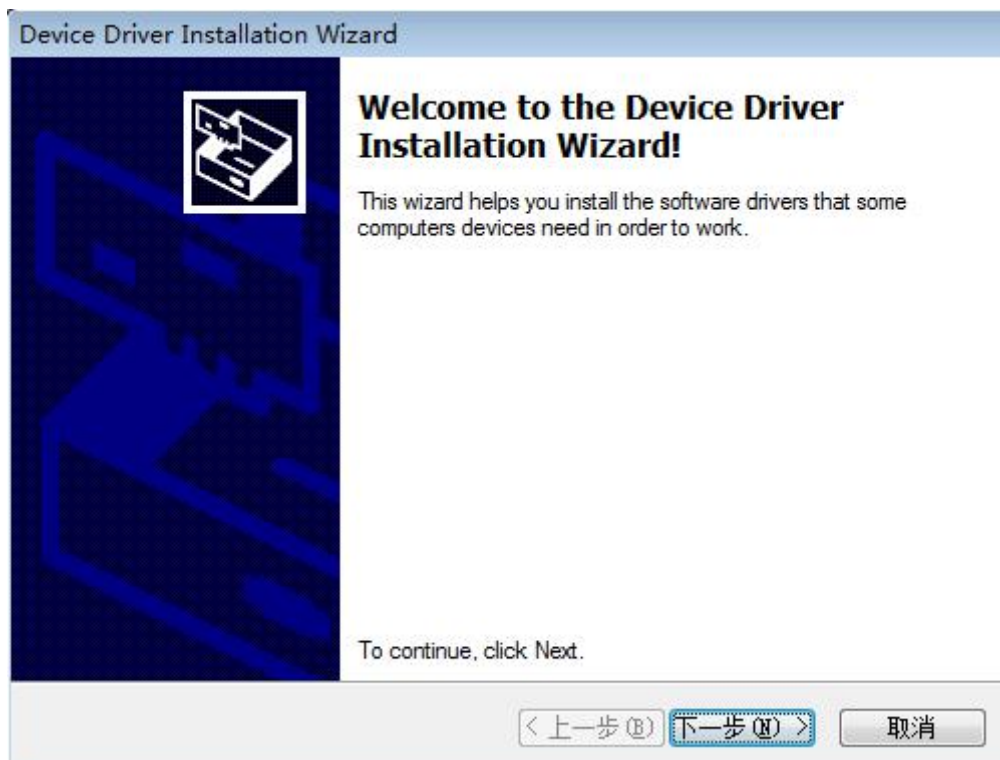
(5) Click “Next”

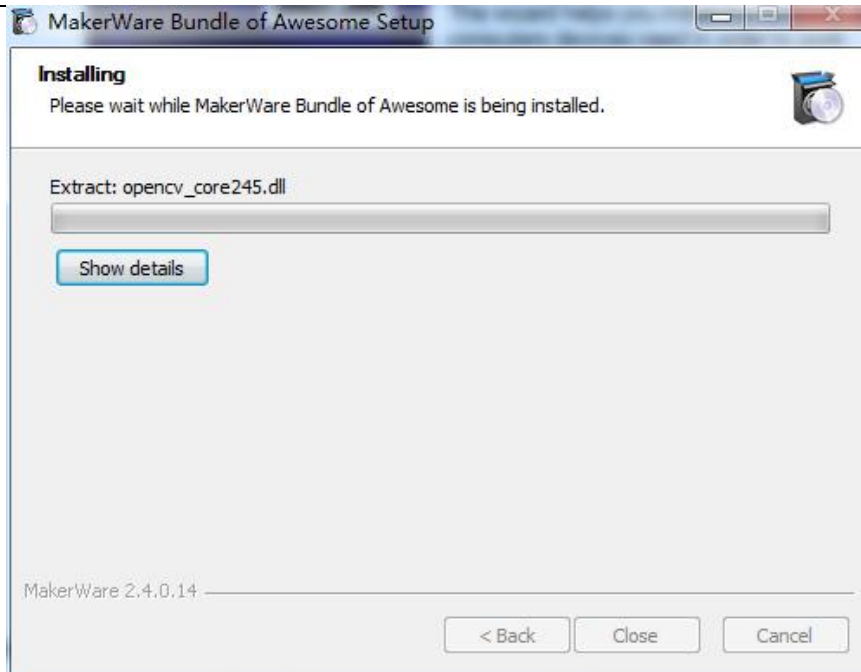


(6) Click “I agree”



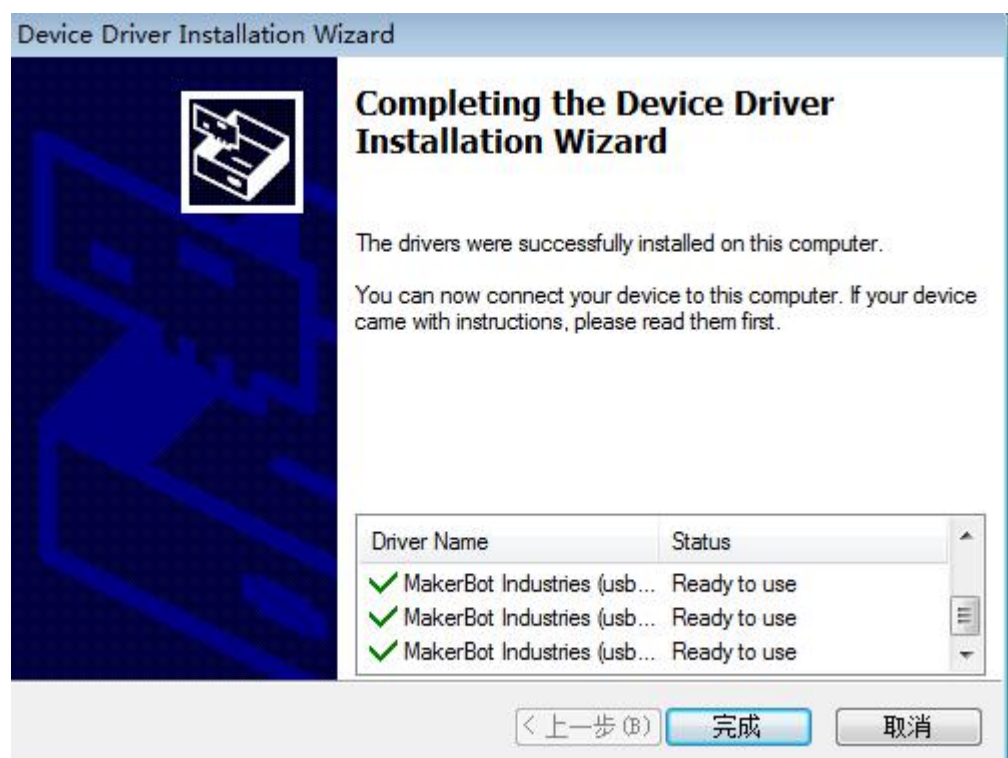
(7) After Clicked “I agree”, wait a moment, there will appear the dialog box as follow, click “Next”



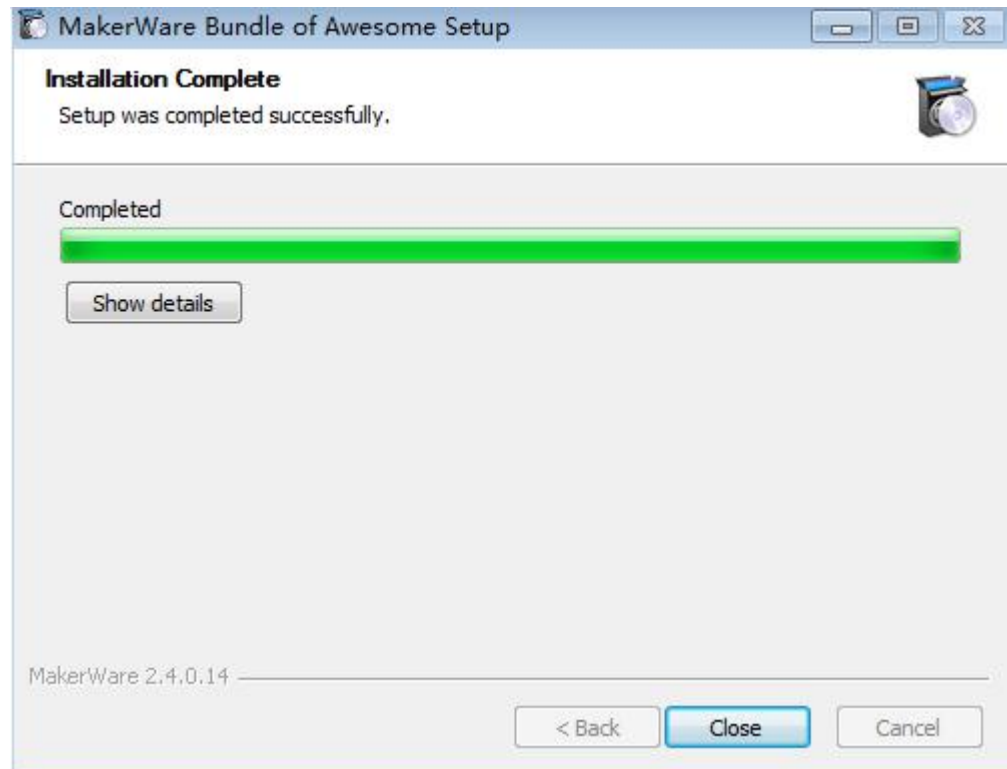


(8) After clicked “Next”, the prompt will continuously appear five times, click "Always install this driver software"

(9) Click five times "Always install this driver software" button to complete the installation. At the same time, the computer will appear the dialog box as follow to check if the program is successfully installed. (Check method: View the “Driver Name“ in the dialog box, all “√” indicates that the software is installed successfully; if “X” or “!” exists, the software has not been successfully installed). Click "Finish" after checking please.

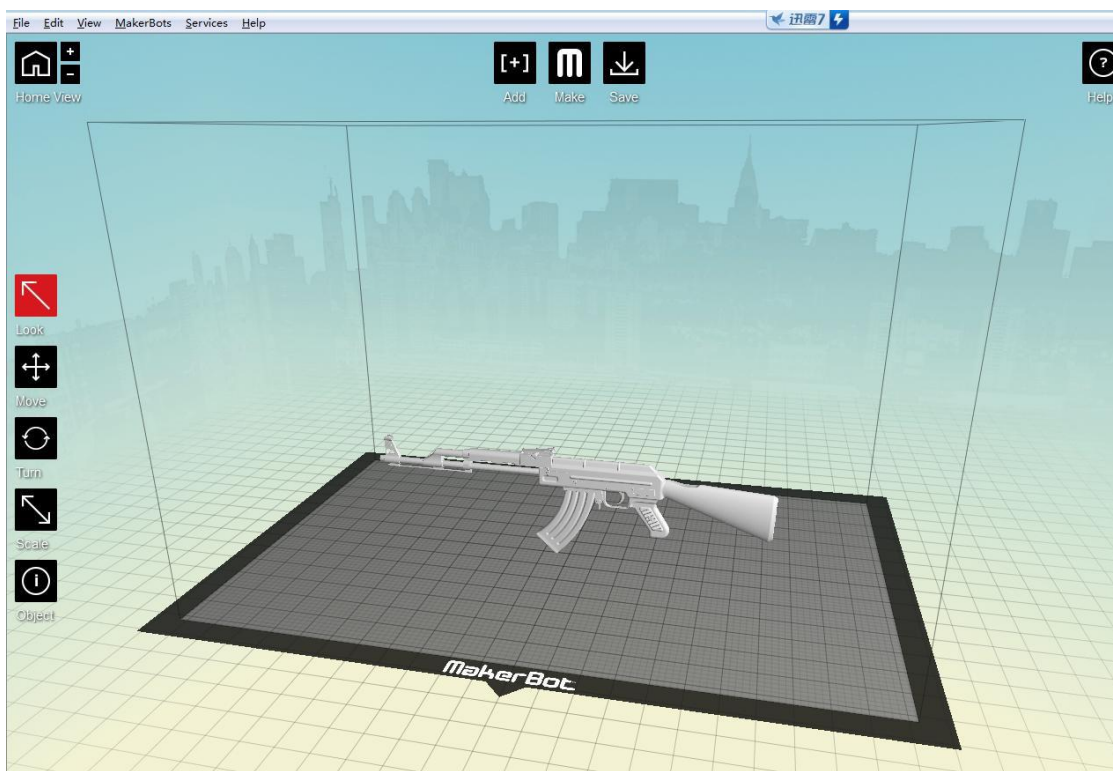


(10) After Clicked "Finish", the "Close" button turns to light, then left-click "Close" button, the computer Makerware print software installation completed.













3.2.4 Software Function

(1) Makerware function interface.



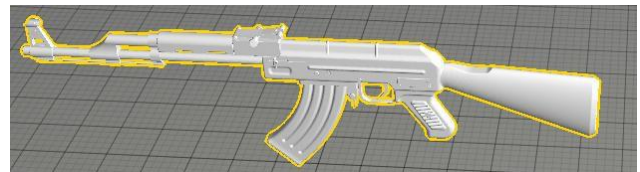
(2) Function keys instruction

	View the file		Place the file
	Turn the file		Adjust the file ratio
	Choose print head(R/L)		Add the file
	Generate file slice		Save the file
	View zoom tool		Instruct the function

Note: All tools can be used normally after the mouse left-click the file to make its frame changed color. For examples: Pic 2 is correct.







Pic 1 Opened but not selected





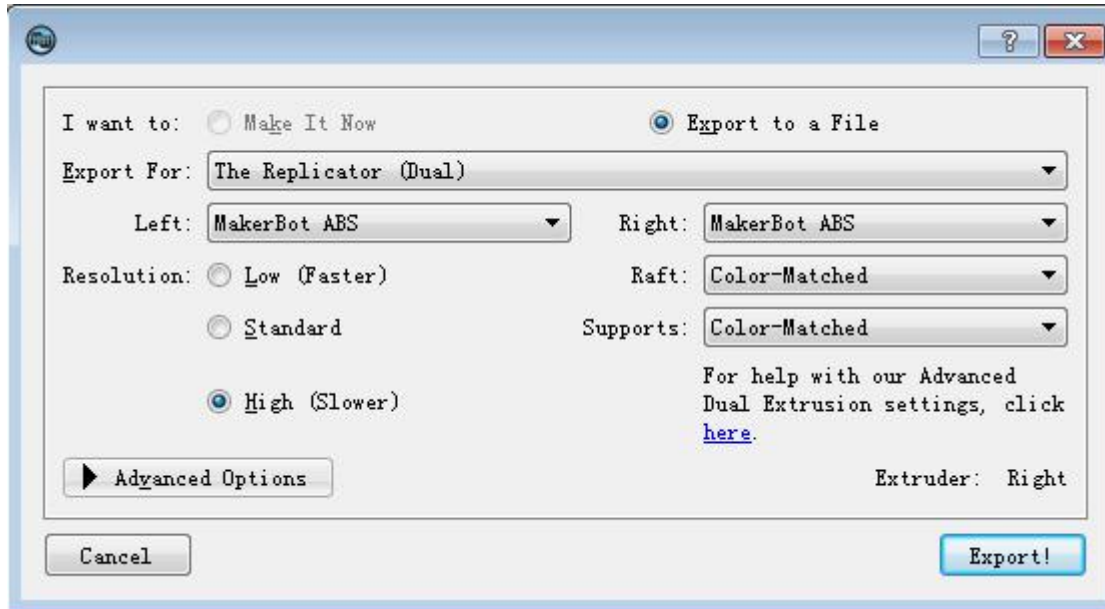
Pic 2 Opened and selected

(3) Slice generation parameters,

Use the tool  to open the STL file. Then use the tool  to put the file on the horizontal panel. Then use the tool  to adjust the file to the best printing view. The file exceed the maximum print size can't be put, it can be zoomed through the tool .



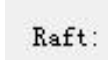
Click the tool  to select print head (right/left). Then click the tool , there will appear detailed parameter settings. Reference pictures as follow



In this interface, you must select Export for 'The Replicator (Dual)' (printer model).

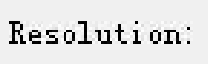
Below Left and Right: Select different options depending on the materials you use.

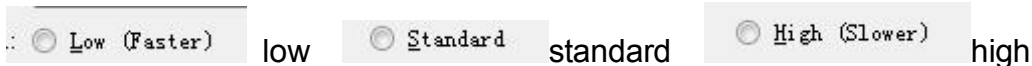


※ Raft tool is used to make the foundation before 

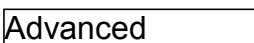
※ Support Tool is used to automatically add support material for the hanging figure by software

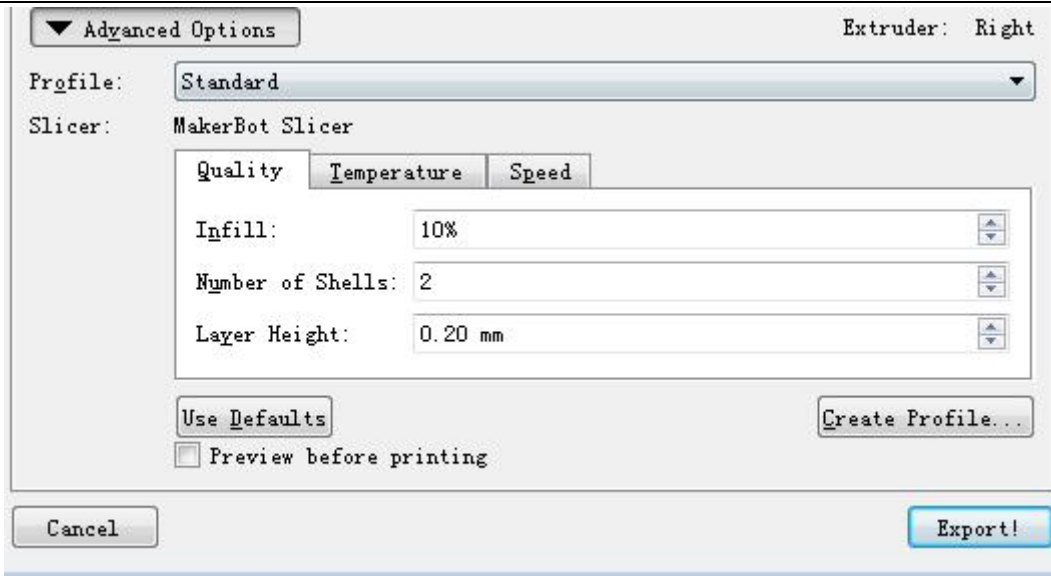


Resolution  has three options. According to individual requirements, you can select different print precision.



The Official recommended standard print.

Click  and go into the print parameter settings



※ **Profile:** There has three options: low, standard, high. Select according to the individual requirements , The Official recommended standard print.

※ **Slicer:** There has three **Quality** and **Temperature** and **Speed**.

Quality (**Quality**) is detailed precision parameter.

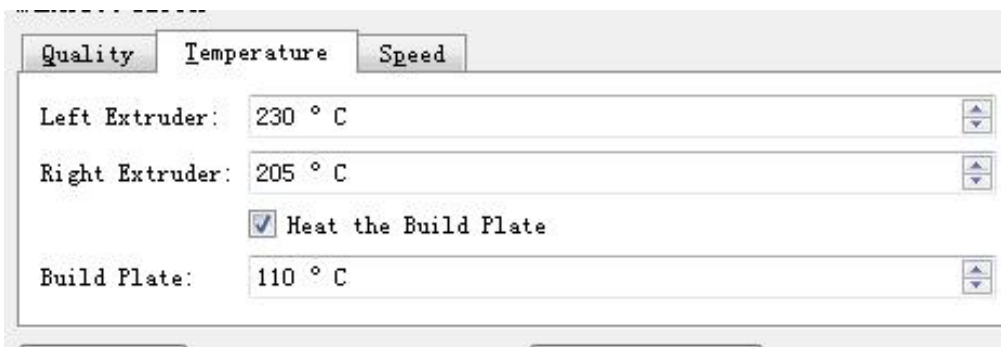
Infill: Filling ratio

Number of Shells: Shell thickness

Layer Height: Accuracy

Each option can be adjusted according to individual requirements, the official suggested parameters as below.

Temperature Temperature Options.

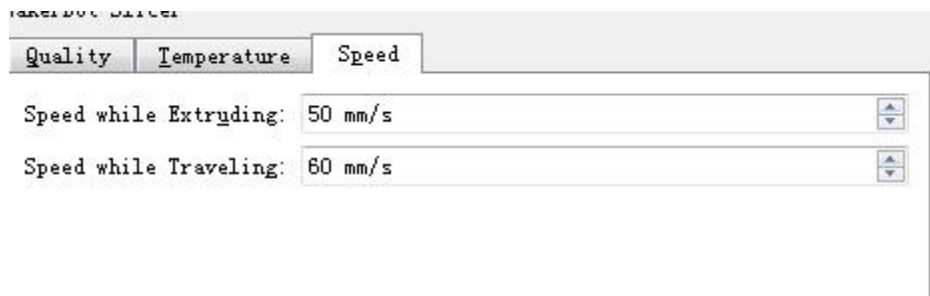


Left Extruder: **Right Extruder:** **Build Plate:** Select different temperature depending on the material you chose.

The official recommendation:

ABS material Extruder 220-230°C plate 110°C
 PLA material Extruder 205-210°C plate 40-60°C

Speed The maximum speed options do not exceed 80

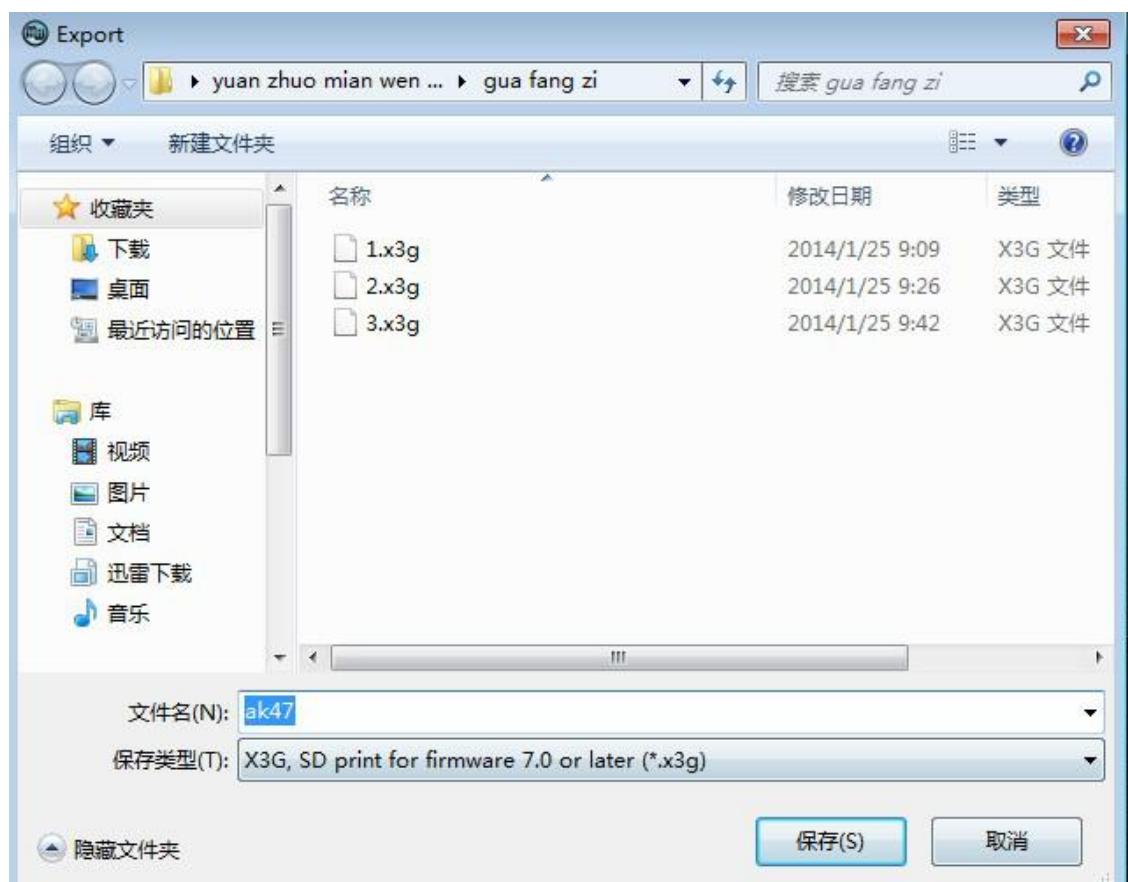


The official recommendation speed:

ABS speed: Extruding 30-70 Traveling 90-150

PLA speed: Extruding 30-90 Traveling 90-150

After finished above settings, **Export!**, there will appear a dialog box. Please select an address to save the file.



After pressed the save key, the right corner of software will appear a progress bar



. After the progress bar disappeared, use a SD card to copy the X3G format file from where it was saved. Then turn on the printer to print.

3.3 LCD screen function keys instruction

"▲": move the cursor up; "▶": move the cursor to the right; "▼": move the cursor down; "◀": move the cursor to the left and turn to the previous menu; "M" (middle button): used to confirm the project, selecting and setting.

Menu Item Function

Menu Options	Functions	Descriptions
Build from SD	SD card printing	Select .s3g or.x3g files to print from SD card
Preheat	Preheating	Start Preheat
Utilities	Instrument	Enter aids submenu
Monitor Mode	Monitoring Mode	Go into the control interface, monitor the temperature of the nozzle and the bottom
Change Filament	Filament replacement	Change filament according to the on-screen prompts
Lever Build Plate	Print platform leveling	Print platform leveling according to the on-screen prompts
Home Axes	Return home	Nozzle runs to X, Y, Z axis origin position
Jog mode	Jog mode	Jog control X, Y, Z axis motor
Run Startup Script	Run Wizard	Run your first boot wizard
Enable Steppers	Enable motor	Enable / disable all motor

	Blink LEDs	LED switch	LED switch (not used)
	Exit menu	Return to main menu	Return to main menu
Info and Settings		Parameters and settings	Go into parameters and settings menu
	Bot Statistics	Device Information	View device's running time
	General Settings	General parameter settings	General parameter settings
	Preheat Settings	Preheat parameter settings	Preheat parameter settings
	Version Number	Version number	Version number
	Restore Default	Restore default settings	Restore default settings
	Exit menu	Return to main menu	Return to main menu

Main Menu

After turn on the machine, display the main menu interface, as Picture1 shows. You can use "▲" and "▼" keys to move the cursor, press the "M" key to enter the selected item.

Picture 1: Main menu



※ **Print with SD card**

Select "Build from SD" to go into the file browser (Picture 2), use the "▲" and "▼" keys to move the cursor, press the "M" button to select the file you want to print. Start printing.

Picture 2: SD card file selection



※ **Preheat**

Select "Preheat" to enter warm-up operation (Picture 3). Move the cursor to select the nozzle or bottom through "▲" and "▼" keys, press "M" button to turn on / off the warm-up operation, and finally move the cursor to "Start Preheat !", press the "M" button, the machine starts to warm up.

Picture 3: Start preheat



※ **Accessibility submenu**

Select "Utilities" to enter the accessibility submenu (Picture 4, 5). Move the cursor to select the tool item through "▲" and "▼" keys, press "M" button to confirm the selection.

Picture 4: Accessibility submenu 1



Picture 5: Accessibility submenu 2

**※ Monitor mode**

Select "Monitor Mode" to enter the monitoring interface (Picture 6), monitor the current temperature of nozzle and platform.

Picture 6: Monitoring interface

**※ Filament change**

Select "Change Filament" to change the filament. Take out the old filament and then insert the new filament according to the screen prompts.

※ Print platform adjustment

Select "Level Build Plate" to level print platform, following the screen prompts.

※ Home axes

Select "Home Axes" to control nozzle return to mechanical origin coordinates.

※ Jog mode

Select "Jog mode" to enter the jog control interface (Picture 7). Use the "◀" and "▶" keys to select the X, Y, Z axis. Use "▲" and "▼" keys to control the forward/back direction of the selected axis.

Picture 7 Jog control Interface



※ **Run Wizard**

Select "Run Startup Strip", the printer runs wizard program automatically

※ **Enable motor**

Select "Enable Steppers", the three axes' motors are enable

※ **Parameters and settings submenu**

Select "Info and Settings" to enter the parameters and settings submenu (Picture 8), Use the "▲" and "▼" keys to move the cursor and select the tools item, press the "M" button to confirm the selection.

Picture 8 Parameters and settings submenu



※ **Device Information**

Select "Bot Statistics" to go into the device information interface (Picture 9), check the total printing time and the last printing time.

Picture 9 Device Information Interface



※ General Settings

Select "General Settings" to enter the general parameters setting interface (Picture 10), use the "▲" and "▼" keys to move the cursor to select the parameters, press the "M" key to modify the parameters.

Picture 10 General parameter setting interface



※ Preheat parameter settings

Select "Preheat Settings" to enter the warm-up parameter setting interface (Picture 11), use the "▲" and "▼" keys to move the cursor to select the parameters, press the "M" key to modify the parameters.

Picture 11 Preheat settings



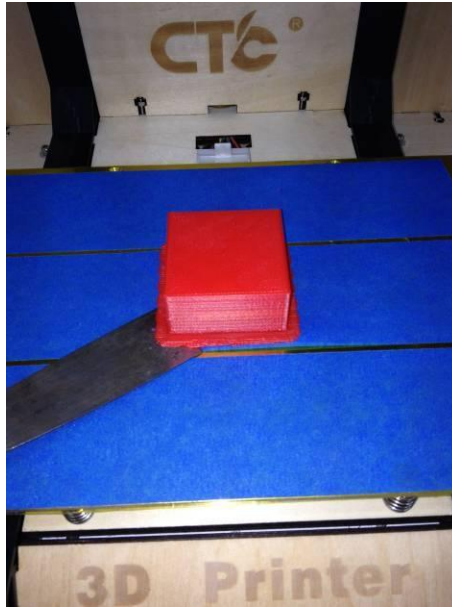
※ Version number

Select "Version Number". You can see the software version number.

※ Restore Default Settings

Select "Restore Default". You can restore the factory parameter settings.

4. Take the model



Use the rasp to tilt the bottom of the object gently, take the printed article away from the heated platform slowly. Don't take it away by hand directly under force.

5. Maintenance

5.1 Clean the printhead

Clean the print head after using a period of time

Printhead appearance. (Picture 1)

You can see two white screws at the bottom of the printhead. At both ends of printhead. (Picture 2)

Take out the two screws, and then take out printhead. (Picture 3)

Remove the 2 black screws (Hexagon 2.5) which lies in front of the printhead and under the fan. (Picture 4)

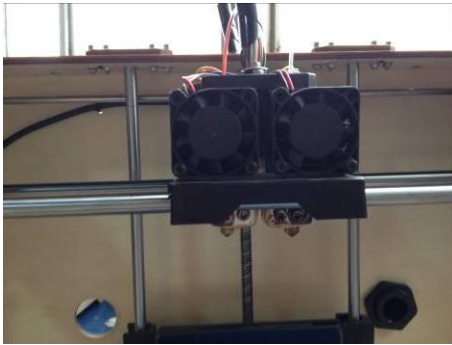
After removed the fan heat sink and motor, you can see a piece of aluminum. (Picture 5)

After removed the fan and stepper motor, you can see the extruded gears of the print head.

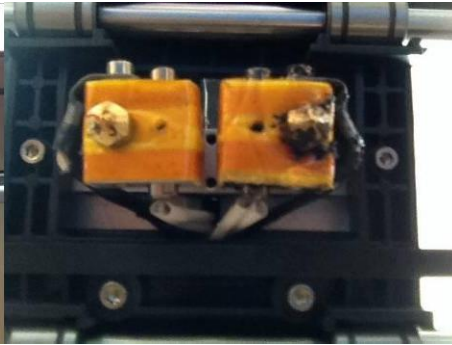
(Picture 6)

Disassemble it to clean the extruded gears. Clean up all the plastic in the extruded gears, then

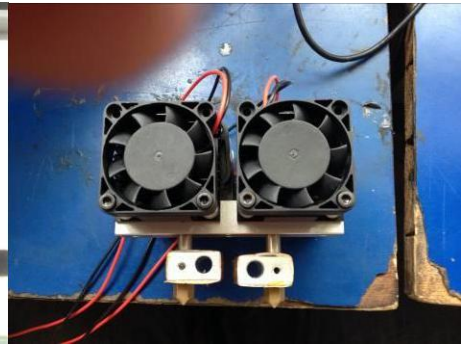
install and use it.



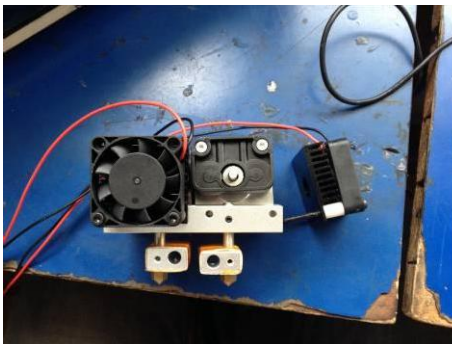
(Picture 1)



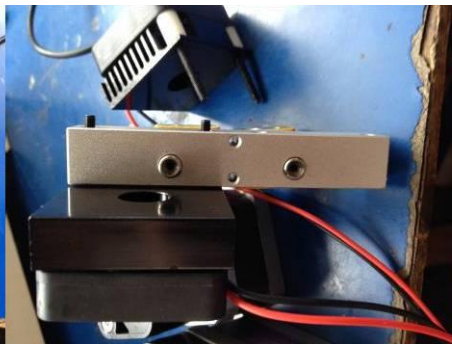
(Picture 2)



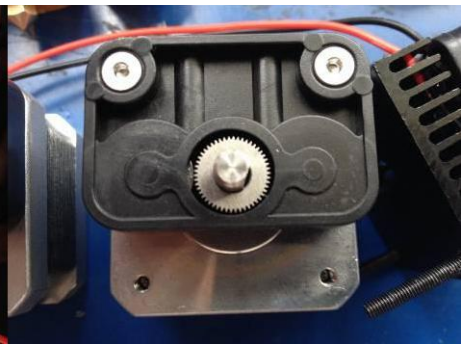
(Picture 3)



(Picture 4)



(Picture 5)



(Picture 6)

5.2 Tighten belts

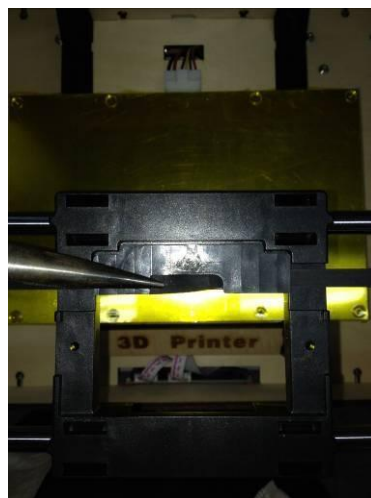
NOTE: 1 The belt should be in seamless contact with the pulley.

2 Need the same pull strength at Y axis belt's left and right.

3 X-axis and Y-axis must be at right angles.



(Belt on Y-axis' right)



(X-axis belt)



(Belt on Y-axis' left)

5.3 Lubricate the threaded rod and the X-Axis idler pulley

Spread the lubricant on X, Y, Z axis' bearing steel. Apply measure should not be excessive, a little lubricant on the surface is OK.



(Picture 1)



(Picture 2)



(Picture 3)



(Picture 4)



(Picture 5)

6. Troubleshooting

1 Printing offset: There is still printing offset after tightened the screws, please check the printer's pulley, check whether the pulley is on a parallel line.

2 Temperature is not normal, it shows 0-1024: Check the thermocouple's connection, if the connection is normal, you need to replace the thermocouple.

3 Temperature shows NA: Check the thermocouple's connection, if the connection is normal,

you need to replace the thermocouple.

4 X-axis moves unusually and shakes: X-axis motor line may have a problem and need to change the X-axis motor line.

5 LCD shows blue screen or no shows. Suddenly restart after boot. Don't stop after touching limit switch of the motor: Check the sensing line, if sensing line is connected properly, the sensing line may have a problem.

6 The fan cannot run: First, make sure the temperature is above 50 degrees, then use hand help to turn the fan to see if it can work. If it still can't run, check the connection with a screwdriver and reconnection. Or check the fan with batteries, if it still can't run, you need to replace the fan.

7 The motor can't run: Replace the motor driver board

8 Filament was jammed – filament is too thick - disassemble nozzle

9 Slip - filament is too thin – cut some filament

10 Nozzle blocking – filament blocked in the heating pipes – disassemble the heating parts and heat to 220 degrees, then use tweezers to remove the silk material

11 Temperature anomaly - thermocouple damaged - replace thermocouple

12 Printing dislocation - screw loose - Check the screws and tighten the screws

13 Printing sample edge warp - platform is too high – adjustment platform's height

14 G code can't be turned – models/ nozzles' number did not choose, the storage path is incorrect - Select and change

15 Filament stuck on the nozzle - support material is pulled by nozzle - Re-set parameters

16 No filament out - model has problem – repair the model, turn the code and set the parameters

17 Driver or software can't be installed - system configuration has problem - reinstall the system

18 Printing sample can't stick to platform - the distance between the nozzle and the platform is too far - re-adjust platform

19 Hard to take off the blue tape – heat platform to 20-30 degrees, it is easy to take off the tape.

7. Warranty affirms and license agreement

7.1 Quality Assurance

CTC can give you a good commitment for every product. We have strict parts machining standard and assembly testing process to ensure that every product is qualified and high-quality.

7.2 After-sales support

1. Within seven days from receipt of product, if the product has problems, we will replace or repair the product for free and bear the return shipping costs.
2. Within 7-30 days from receipt of product, if the product has problems, we will replace or repair the product for free and bear half of the return shipping costs.
3. Within 30-90 days from receipt of product, if the product has problems, we will replace or repair the product for free, but the customer should bear the return shipping costs.
4. After 90 days from receipt of product, customer can ask for advice for free. If the parts need to replace, we will charge for the cost and return shipping cost.

7.3 Shipping & Returns

1. Basic conditions for returns: Product packaging, accessories, instructions are complete, and the product keeps the same appearance with previous, it has no effect on the secondary sales. If lacks one item, we will not accept returns. If replacement, please keep gifts; if returns, please return it along with the gifts.
2. Quality problem returns: Please check the product carefully from receipt of product. If find quality problem, please take photos and contact us within 5 days.
3. Notice that we will not provide return service for these situations: (1) Product packaging, accessories, instructions are complete. If lacks one item, we will not accept returns. (2)The product has obvious stains or destroyed by human, we will not accept returns. (3) Gifts has no right to share after-sales service. (4)It is not covered by the warranty if nozzle blocked because of you used a non-CTC-brand supplies. (5) Invoices issued products will not be returned. If it has quality problem, you can get a replacement.
4. Product maintenance: (1) After finished printing, try to clean up the residual printing supplies in

the extruder and nozzle to avoid nozzle blocked next time. It is the basic maintenance for 3D printer. Note: It is not covered by the warranty if nozzle blocked because of you used a non-CTC-brand supplies. (2) Please lubricate the threaded rod and the X-Axis idler pulley per month. (3) Don't cut off the power or use metal object to contact the conductor assembly of the printer when it is printing.

8. Operations Guide

Adjust the print platform: Prepare a piece of A4 paper. On the printer screen, select “Utilities” (tool) and then select “Level Build Plate”, select the central button to confirm. According to the screen’s prompts, continuously press central button five times to confirm. Printhead will move to the front of platform, then use your both hands to rotate the butterfly nut under the platform in one direction, so that the distance between the nozzle and the platform is just a A4 paper’s thickness. A4 paper can be pulled by hand, then press the confirm button in central, the print head will move to the back of the platform, then use your both hands to rotate the butterfly nut under the platform in one direction, so that the distance between the nozzle and the platform is just a A4 paper’s thickness. As mentioned above, adjust the five positions’ height to the A4 paper’s thickness.

