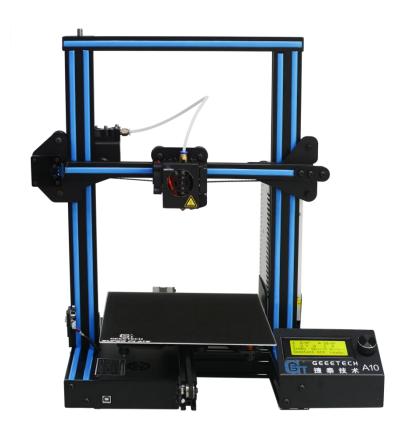
Geeetech A10

Desktop 3D Printer ——USER MANUAL——



Terms

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All information in this Manual is subject to change at any time without notice and is provided for convenience purposes only. Geeetech reserves the right to modify or revise this Manual in its sole discretion and at any time. You agree to be bound by any modifications and/or revisions. Contact the Geeetech Support Team for up-to-date information.

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Safety Instruction

Do read all the instructions and cautionary markings in this manual before operating your A10 3D printer.

A10 3D printer contains heated moving parts. Never reach inside the printer while it is in operation or before it has cooled down.

Never leave your A10 3D printer unattended while powered on or printing.

Disconnect your A10 3D printer from the power supply and computer when not in use.

Do not print using materials that have not been approved by GEEETECH for use with the A10 3D printer.

Only operate your A10 3D printer in a well-ventilated space away from moisture and heat sources with a working smoke/fire alarm.

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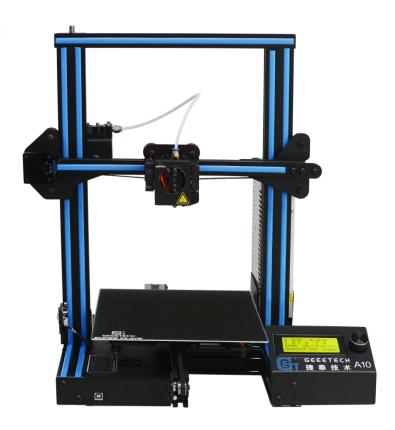


About A10 3D Printer

Geeetech A10 3D printer is designed to be reliable, cost-effective and easy-to-assemble. Running stably, it aims to provide users with quality printout and satisfactory printing experience. The modularized design provides you with an easier assembly experience.

Keeping Prusa I3 3D printers' gantry structure and with its build volume as 220*220*260mm³, A10 makes the best of the building platform and gives you a full view of the printing details. Its well-designed extruder greatly reduces the risk of clogging or leaking. The V-shaped wheels and rails on each axis, made from wear-resistant aluminum profile, could, in a large measure, reduce the printing noise and offer you a quiet 3D printing environment.

Featuring printing accuracy of 0.1 mm, A10 delivers exquisite prints with delicate texture, sleek contour and stable structure. A10 comes with OPEN SOURCE GT2560 control board, providing limitless space for you to modify the firmware and tinker with your printer.





Preparation

Step1. Open the box, taking out the foam box containing your A10.



Step 2. Remove A10 3D printer from foam box and set it down on a stable surface.

Note:

You will see a printing residue on the printing platform, which indicates your A10 has already gone through the 24 hours aging test, you can feel free to use.

Step 3. Checking accessories

Please check the accessories based on the items in the assembly paper.



1. Check Power Supply

The power supply unit and control board of A10 are installed in the bottom of the printer, saving space, as well as lowering the gravity center of the printer to provide stable support for printing. The printer uses DC24V, 15A power supply.

2. Software Resources

2.1 Repetier-Host

The Repetier-Host is a simple to use host software, which is be compatible with most firmware. You can add and position your STL files on the simulated print bed and slice them all together. For slicing you can use the built-in Slic3r slicer. Just call "Slice & Load" and the job gets delegated to the current slicer, showing its output in the log window.

Download the Repetier host V 2.1.2 here.

For detailed information of Repetier Host please refer to our wiki.

For detailed using methods of the slicing software, slic3r, which comes with Repetier Host, please also refer to our wiki.

2.2 Arduino IDE

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.

This software can be used with any Arduino board.

Download Arduino-1.0.1- here.

2.3 Firmware

A10 uses GT2560 RevB control board; you can download the corresponding firmware here.

To know how to upload the firmware, please refer to FAQ.

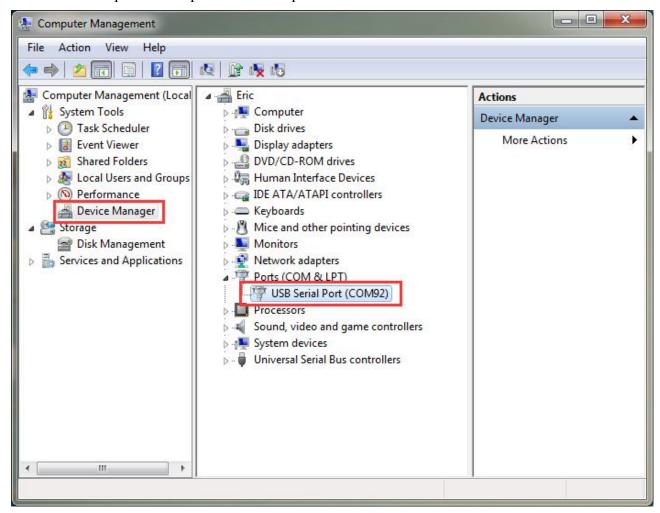




3. USB Driver Installation

3.1 USB Driver Installation for Win7 OS

Power the A10 up and connect it to computer with the USB cable, the driver will be installed automatically. After installation, please enter Device manager and find the USB Serial Port which is the communication port for the printer and computer.



If the driver can not be automatically installed, please download the <u>USB driver here</u> and manually install it.

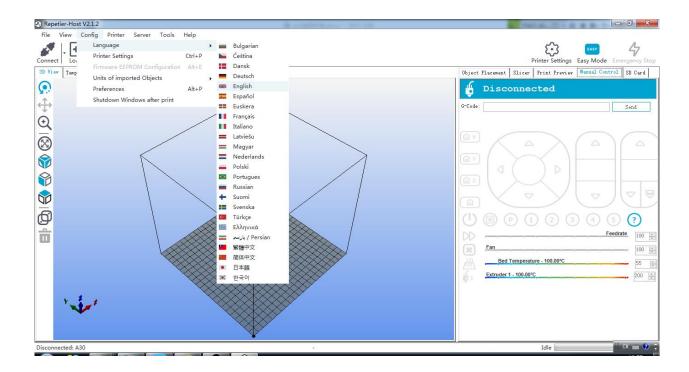
3.2 USB Driver Installation for Mac OS

For installing the driver and uploading the firmware in Mac OS, please refer to FAQ.



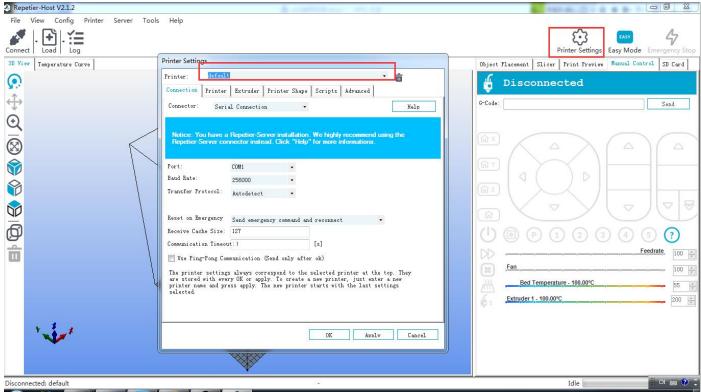
4. Set up Repetier Host

The next step should be, to configure your printer so you can connect your computer with the host. Open Repetier Host. Choose the language as English.



When you start Repetier Host for the first time, you need to set up parameters for A10. Click the Printer Settings on the top right corner, you will be presented with the following window.

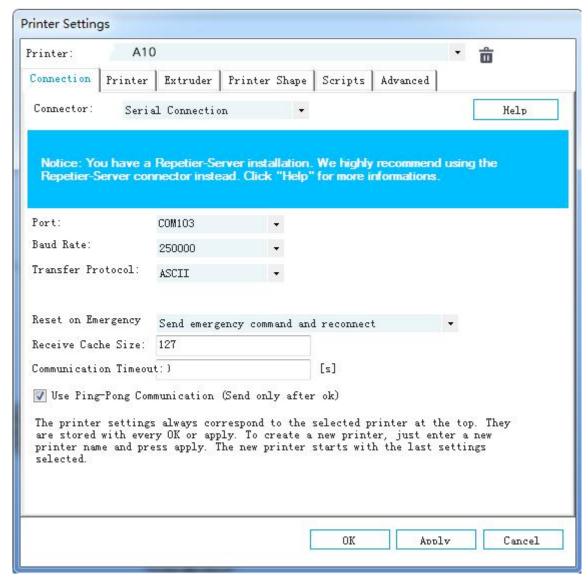




4.1 Create New Printer

Click "Printer Setting" and you see a drop down box, with the currently selected printer. At the start you have only the default printer. To create a new printer you only need to change the printer name and press "Apply". The new printer will start with the same settings as the last selected printer.





There are six tags in Printer settings in total. Detailed configurations of the 4 relevant tags are as follow.

4.2 Connection

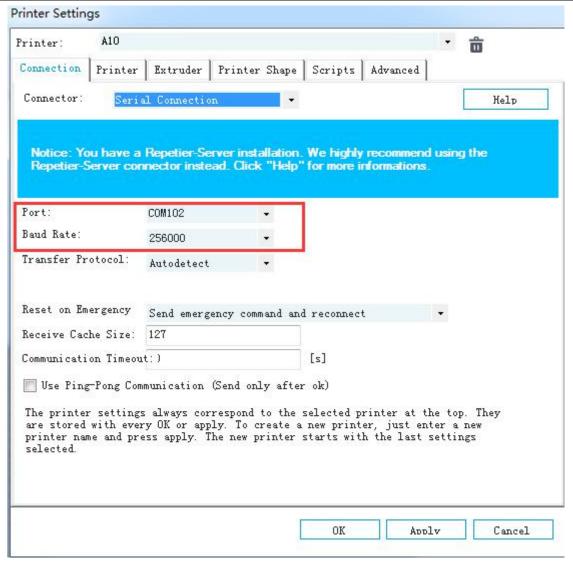
In this first tab, we will introduce how to connect your printer with the software.

Port: Get the printer connected to the port of computer, which is corresponding to the USB Serial Port in the Device manager.

Baud Rate: Corresponding to the Baud Rate in firmware. Generally it is set as 256000.

For other parameters please leave them as default, and click Apply.



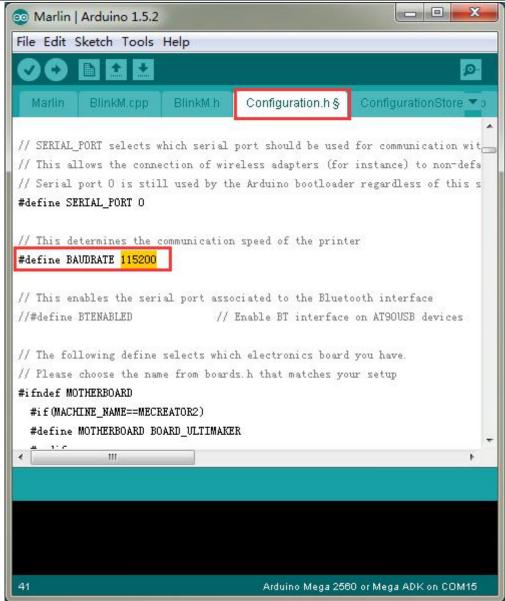


Note: If the operating system is Mac OS, please set the baud rate of the firmware and Repetier Host as 115200.

Open the firmware in Arduino, and modify the baud rate to 115200 in *Configuration.h.* Shown as following picture.

After modification, re-upload the firmware:





After successfully modifying the baud rate in firmware, change the baud rate in Repetier-Host to 115200 as well.

About how to upload the firmware, <u>please refer to FAQ</u>.

Note: After re-uploading the firmware, you may need readjust the motor direction of the printer. For detailed methods please refer to following motor testing part.

4.3 Printer

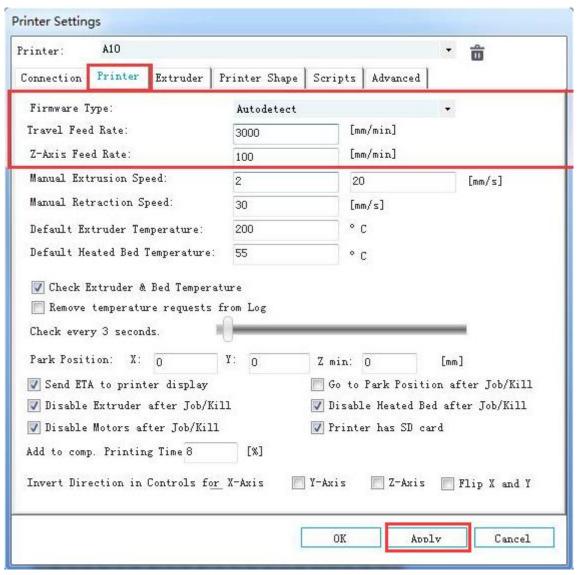
The second tab defines important behavior you want. The Travel feed rate and Z-axis feed rate are used, when you move the extruder with the manual controls. The temperatures are set in the manual controls as start values. You can change them there any time.



Set the parameters as shown in the picture

Travel Feed Rate: 3000 mm/min

Z-axis Feed Rate: 100mm/min



We suggest you to cancel the option of **Go to Park Position after Job/Kill**, or it may cause that the print head impacts the printed model when it moves to starting position after finishing printing.

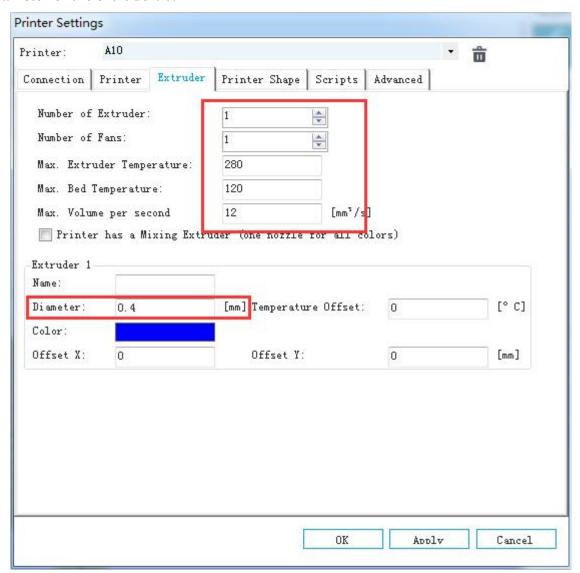
4.4 Extruder

In the "Extruder" tab you can define the numbers of extruder, the max temperatures, that are shown in the manual control. The max volume per second defines the maximum amount of filament in mm³, the extruder can melt per second.



Number of the extruder: 1

Diameter of the extruder: 0.4mm



4.5 Printer shape

The "Printer Shape" tab defines your printer shape, or to be more exact the shape of your build area. The host will use this to limit your moves and to check, if your models fit onto the print bed. You can also define the position of the x and y end stop.

Recommended settings:

Printer type: Classical printer

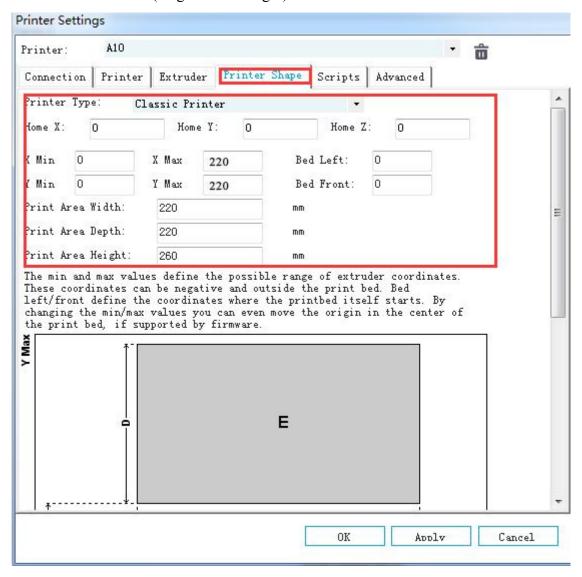
Home X: Max **Home Y:** Max **Home Z:** Min



X Min: 0 **X Max**: 220 **Bed Left:** 0

Y Min: 0 Y Max: 220 Bed Front: 0

Printing Area: 220 x 220 x 260 (length/width/height)

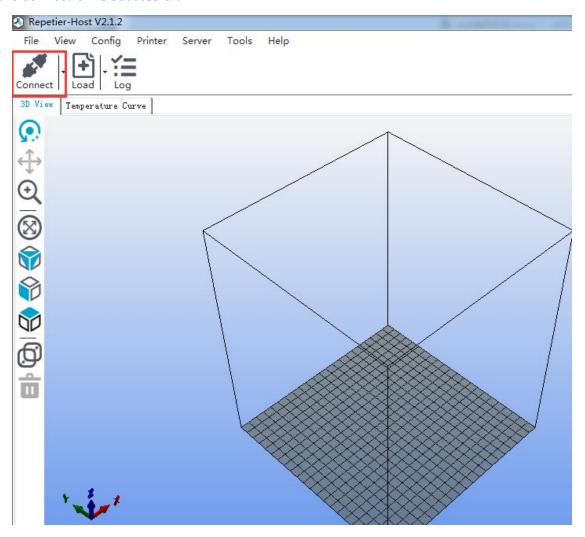


So far the setting of A10 is finished.

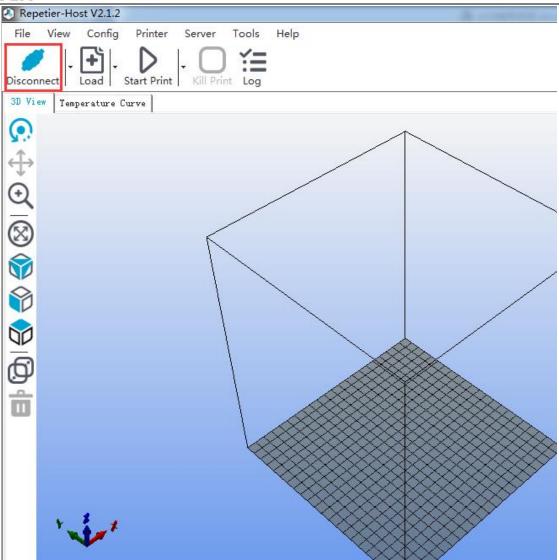


4.6 Connect the Printer

After setting, click the connect button on the top left corner of main interface. When the button turns green, the connection is successful.







5. Function Testing

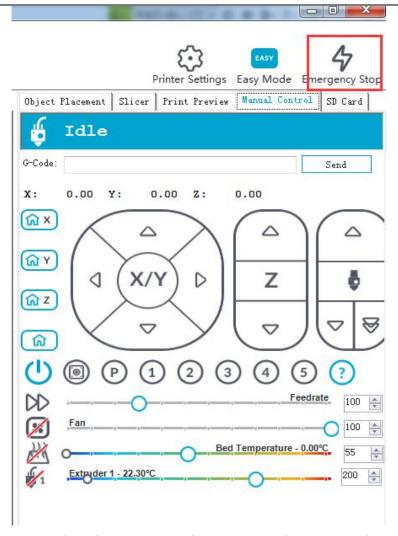
The firmware of A10 is already uploaded based on Windows 7 operating system, and we have done debugging to make sure that every part of it can work normally. However, there may be unpredictable factors during transportation. Please do the following simple test before using it.

5.1 Repetier-Host Test

5.1.1 Motor Test

Before the test, manually set the motors of X / Y / Z axis at the intermediate position of each axis to avoid accidental collision occurring during the test. There is emergency stop button on the top right corner , or you can cut off the power directly if anything went wrong. Be prepared for emergency stop.

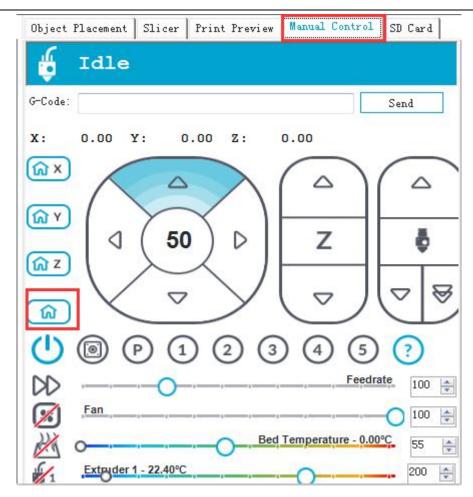




Open Repetier host and connect the printer. Turn on the power supply. Connect the printer.

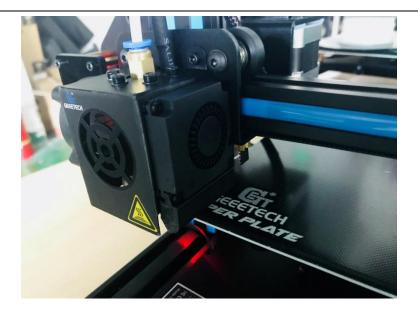
Click Home button , then the three axes will move towards the endstop in turn. After they touch the endstop they will move back for a short distance and then stop the movement.



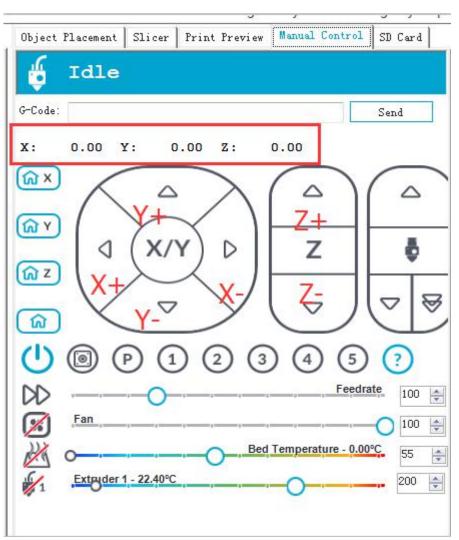


Home position is in the left front corner of the printing platform.





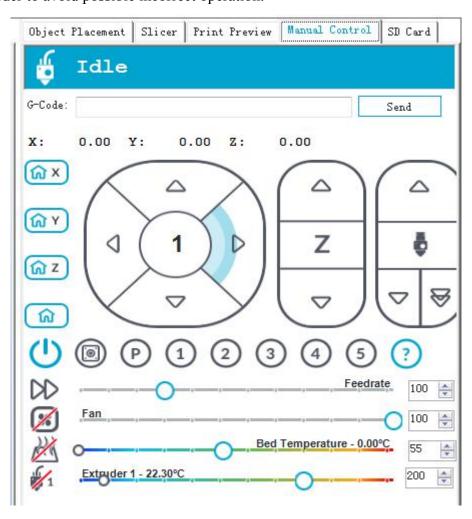
Note: The origin point is the left front corner of the platform when printing. So when the printer is at home position, the coordinates of X/Y/Z axis are: X=0mm, Y=0mm, Z=0mm. As a result:



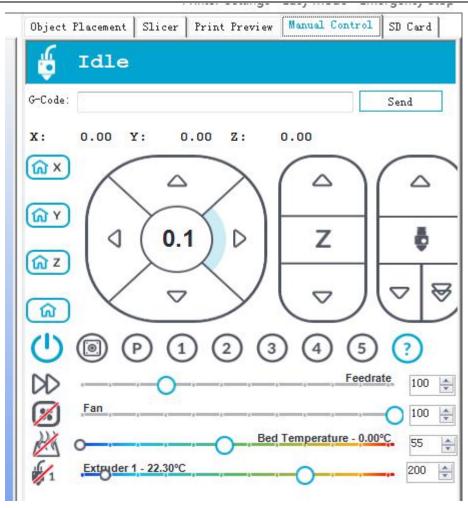


If the moving direction is reverse, you can alter the direction in the firmware. Please refer to FAQ.

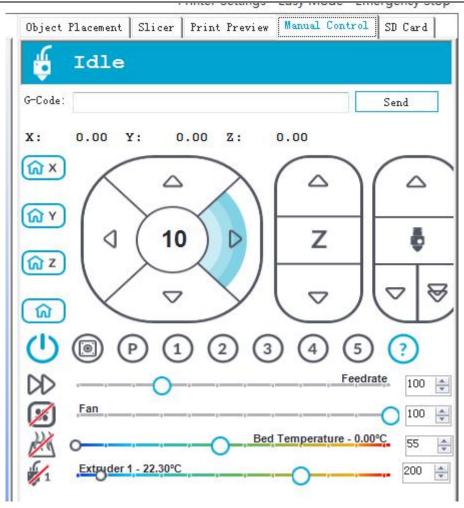
Tips: In manual control, the high-light part of the panel stands for the current selected direction, and it moves 1mm every click. You can also choose to move 0.1mm, 10mm or 50mm every click, but here we choose 1mm in order to avoid possible incorrect operation.



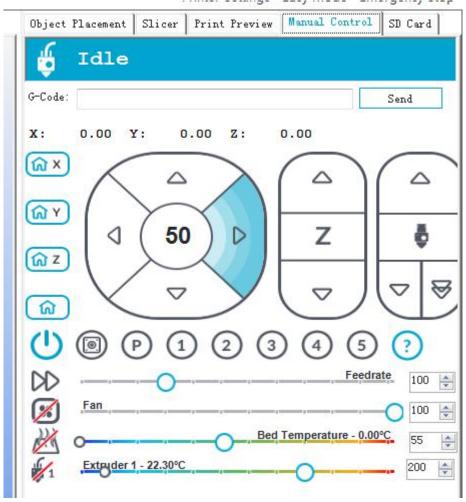








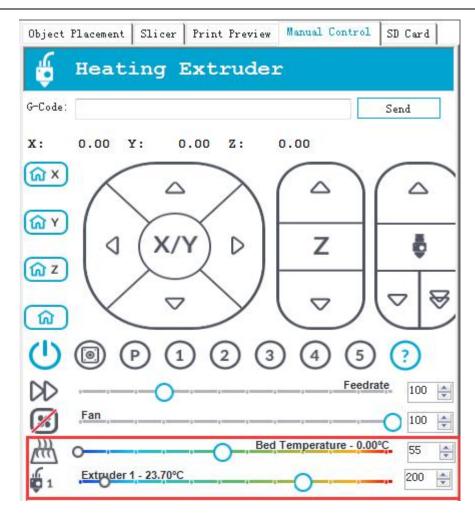




5.1.2 Heating Test

Click the heating button of the hot bed and the extruder. When the slash disappeared as shown below, it indicates the heating is ongoing and you can see the value rise up.





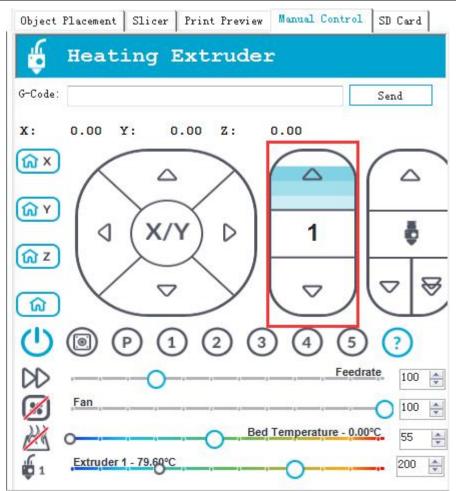
Meanwhile you can see the temperature at the bottom status bar of Repetier Host.

5.1.3 Extruder test

Now we are to test if the extruder could extruder filamnet smoothly. Since the printer was homed just now, the nozzle is close to the building platform. To avoid jamming the nozzle, we suggest moving the Z axis upward.

Choose the moving distance and click the Z moving button to raise Z axis, as shown in the following picture.





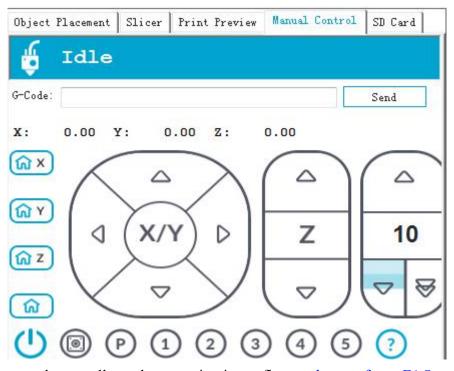
- 1. Heat up the extruder.
- 2. While waiting for the extruder to heat, cut the end of your filament to create a clean edge.
- 3. When the extruder is fully heated, insert the free end of filament into the loading tube. Keep pushing the filament and click the loading filament arrow on manual control until you feel the extruder pulling it in.
- 4. Wait until you see plastic emerging from the extruder nozzle.
- 5. Wait a moment for the extruded plastic to cool, and then pull it away from the extruder. Do not touch the nozzle; it may still be hot.

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You can also click the button to manually test if the extruder works normally. The button on the right is for rapid feeding filament. It is seldom used.



If the extruder cannot work normally or the extrusion is not fluent, please refer to FAQ.

5.2 LCD Controller Test

5.2.1 LCD Menu Introduction

Functions of LCD rotary knob:

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- 1. Press the knob: confirm or enter sub-menu
- 2. Rotate the knob: roll to choose options or change parameters

LCD homepage:

- 1. Extruder temperature: current temperature/target temperature
- 2. Hotbed temperature: current temperature/target temperature
- 3. Current coordinates of X/Y/Z
- 4. Feed rate: current printing rate
- 5. Current rate of printing process

Note: Rotate the knob during printing will change the feedrate in real time.



Press the knob to enter the next level menu:

- 1. Prepare: Preparing work before printing
- 2. Control: Setting of temperature and motion parameters of the printer
- 3. Status display of SD card



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Main functions of Prepare menu:

- 1. Disable steppers: unlock the motor so that you can move them freely.
- 2. Auto home: automatically homing of each axis
- 3. Preheat PLA: manually preheat the hotbed and the extruder before printing PLA
- 4. Preheat ABS: manually preheat the hotbed and the extruder before printing ABS
- 5. Move axis: manually move each axis and each extruder







Main functions of Control menu:

- 1. Temperature: You can change the temperature of the hotbed and the extruder in real time in printing process. Meanwhile you can set the temperature of Preheat PLA and Preheat ABS.
- 2. Motion: setting of the motion parameters in the firmware. You need choose store memory to save after altering the setting.
- 3. Store memory: to save the altered parameters.





For other detailed functions please read the following introduction of function tests.

5.2.2 Use LCD for Motor Test

After understanding the functions of LCD, press the knob on LCD to enter the sub-menu, and choose **Prepare:**



Choose **Auto home** in menu to do home operation:



If you want to move the motor, choose Move axis:



Choose Move 1mm:

Note: only 10mm and 1mm are available for the printer, and 0.1mm invalid. We recommend you to use





move 1mm to test each axis.



Choose the axis you need to move: Move X/Y/Z/E. Rotating the knob can make each axis move.



After testing each axis, if you want to unlock the motors, choose **Prepare>Disable steppers**:

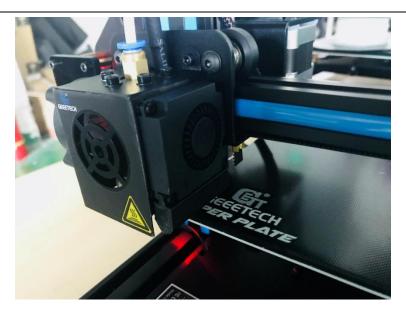


6. Build platform leveling

Before printing, please check whether the moving path of the extruder is parallel with the heatbed or not, which is called leveling. We need make sure the distances from the nozzle of the extruder to the four cornered of the heatbed are the same, and only in this way can we get good printing quality.

a. Home the printer.





b. Disable the motors. Use a piece of A4 paper to measure the distance between the nozzle and the building platform. Move the printing head to the first corner and slide the paper back and forth. When the nozzle grabs the paper a little, it indicates the distance is proper. Or you should adjust the wing nut under the heat bed to get the proper distance.



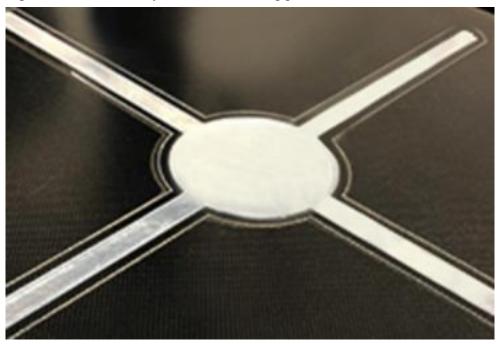
If the distance is too far, the first layer could not be attached well to the building platform. If the distance is too small, the nozzle is prone to jamming.

c. Following the above step to complete the leveling job on the rest three corners. You may need to adjust the distance several times to get the satisfying results.

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The proper printing effect of the first layer is like following picture:



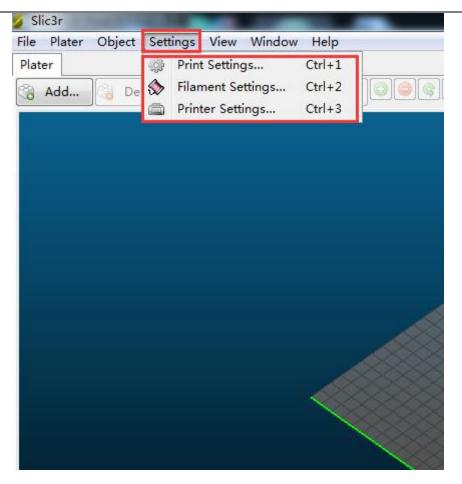
7. Slic3r Setting

So far we can begin printing. But in order to achieve better effect, we need set the slicing parameters such as the diameter of the filament, speed, layer height. Open the slicing software, slic3r, which comes with Repetier host. Shown as below:



The following interface will appear:

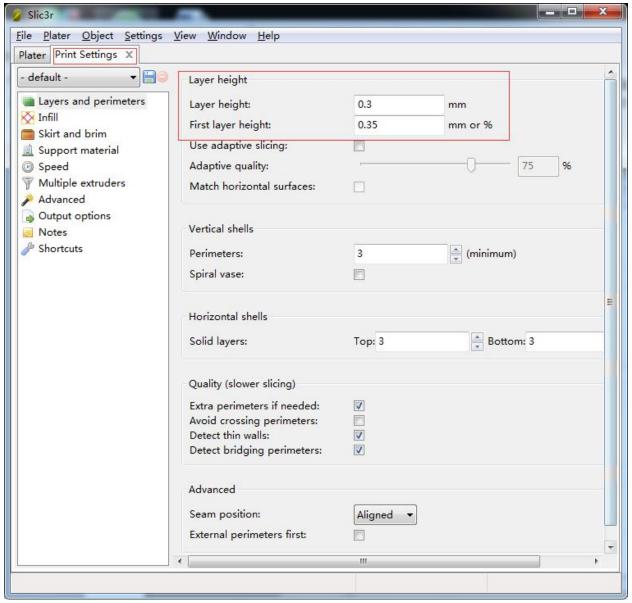




7.1 Printing Setting

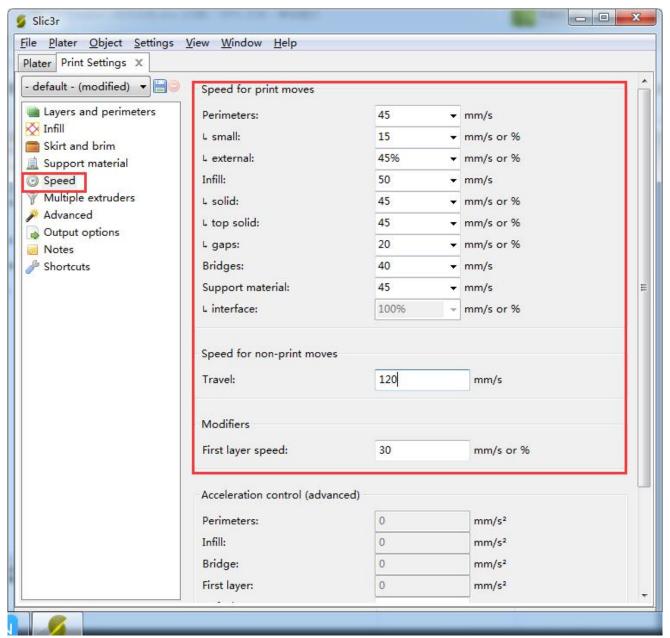
Set the layer height and height of the first layer in the option of Print settings. The layer height of A10 can be between 0.05-0.3mm. Considering of precision and speed, 0.2mm is the most appropriate. Set the first layer height as 0.35mm by default.





You can set the printing speed here:

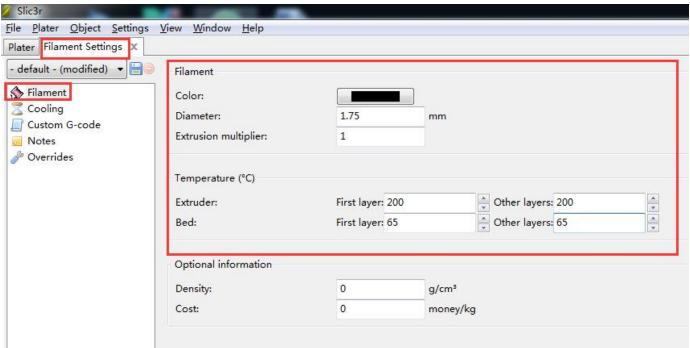




7.2 Filament Setting

Set the filament diameter and printing temperature in the tab of Filament settings. Here we use 1.75mm PLA. Usually the temperature of the print head is $195\text{-}210\,^{\circ}\text{C}$, the hot bed is $60\text{-}70\,^{\circ}\text{C}$. Here we set them as $200\,^{\circ}\text{C}$ and $65\,^{\circ}\text{C}$. If you use ABS filament, the recommended temperature of the print head is $230\text{-}240\,^{\circ}\text{C}$ (for the actual temperature please refer to the data from manufacture of filament) and $90\text{-}110\,^{\circ}\text{C}$ for the hot bed.

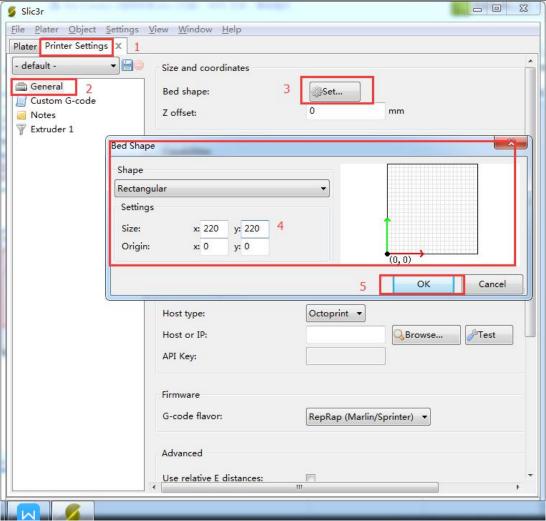




7.3 Printer Setting

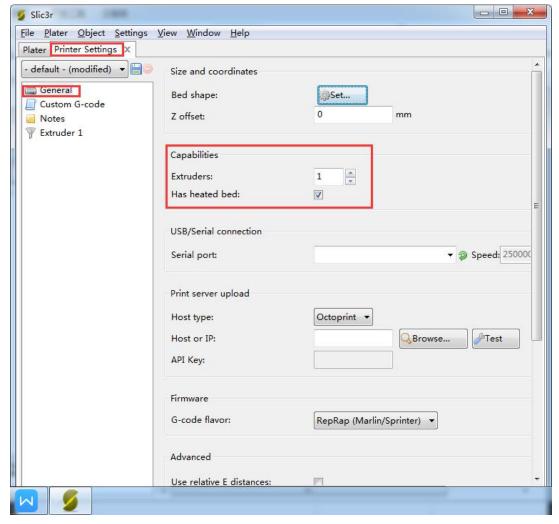
Set the shape and size of the hot bed and the number of extruder in the option of *Printer settings> General*. Hot bed shape:





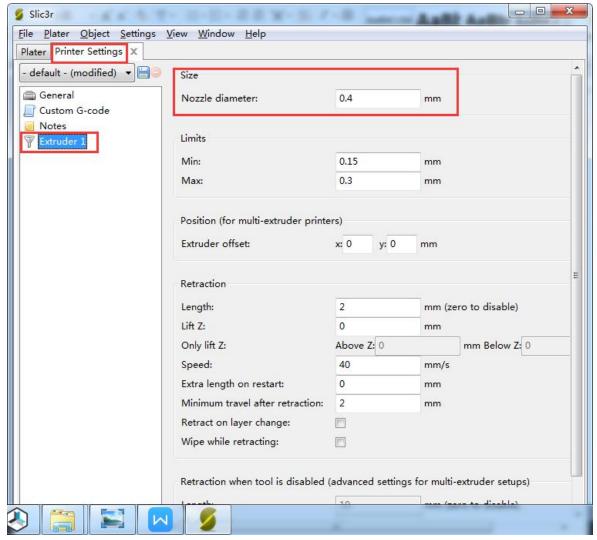
Number of extruder: 1





At the same time, set the diameter of the print head as 0.4mm. (Input the actual diameter of your printer)





Note: The three setting steps should all be saved.

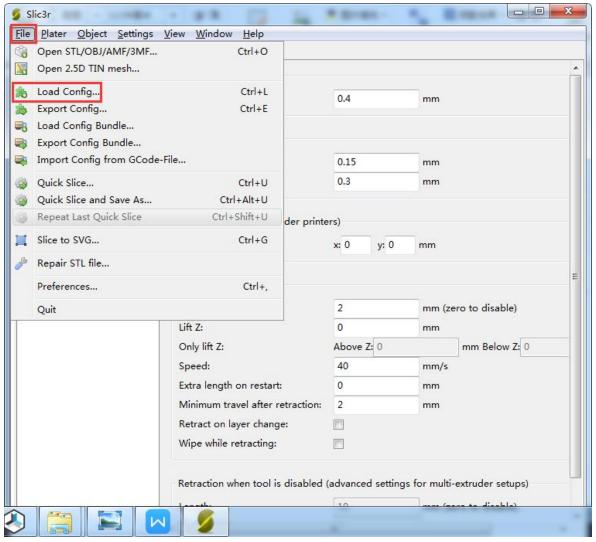
7.4 Other parameters

Except for above settings, parameters like speed are also important to the printing effect, which requires your long time using experience of 3D printing. Here we give you a reference setting, please download the attachment <u>config.ini.</u> You can import it into slic3r according to the following steps.

Note: The configuration uses 1.75mm PLA filament and 0.4mm nozzle diameter, and it slices with slic3r engine which is built-in in Repetier host 2.1.2.

Open slic3r>File>Load Config:





Direct to the file A10 PLA config.ini and open it.



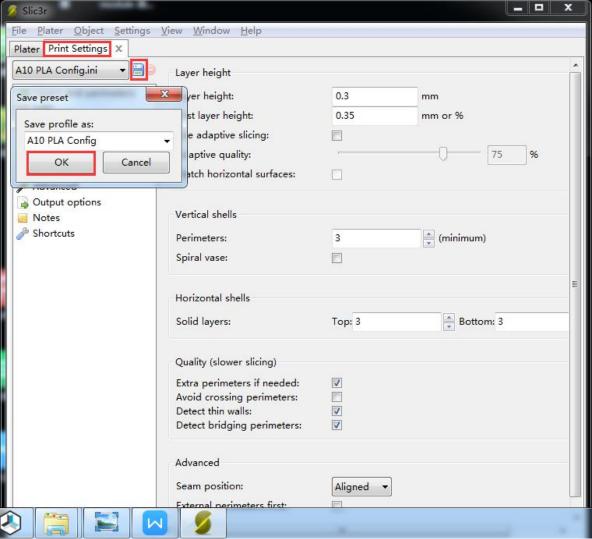


After you imported the config.ini file, click the save button to rename and save.

Click to save in the tab of **Print Settings:**

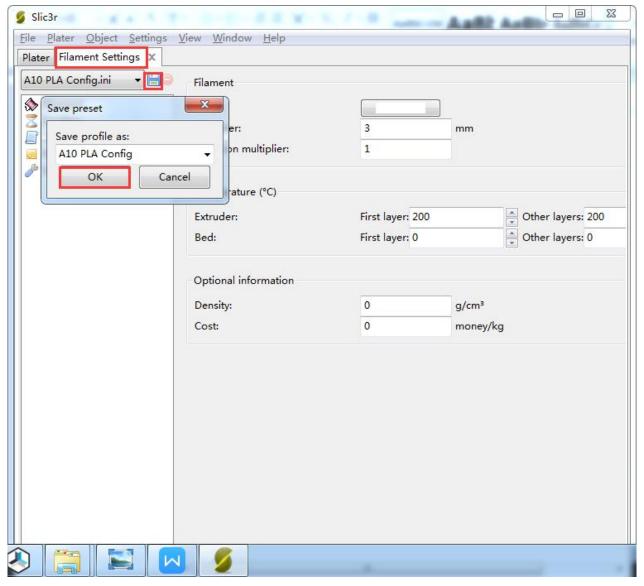
Note: All the three settings need to be saved in turn!





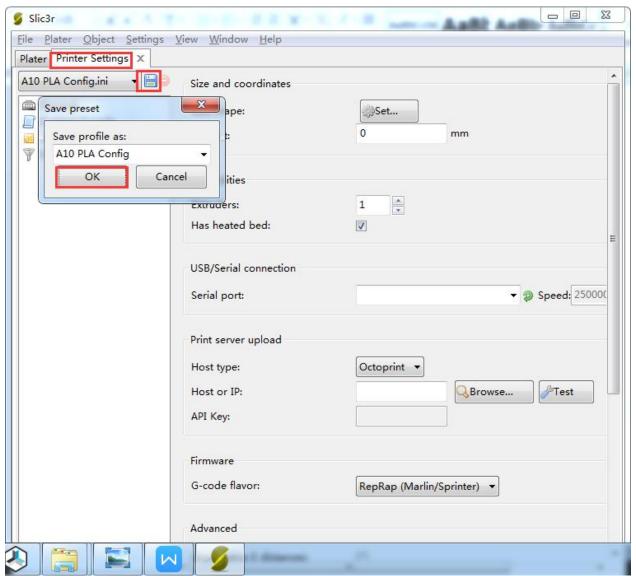
Click to save in the tab of **Filament Settings**:





Click to save in the tab of **Printer Settings:**





8. Start Printing

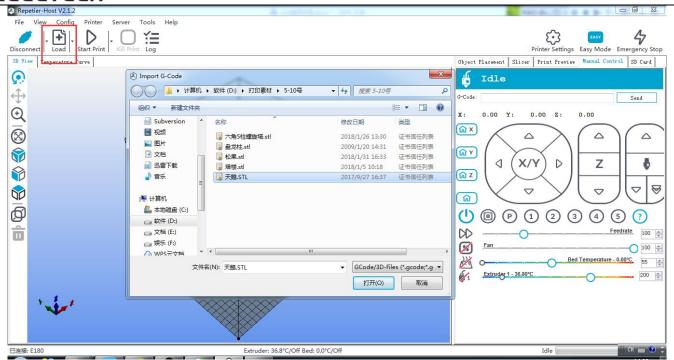
So far the preparation work is finished. Next step is to load model, slicing and printing.

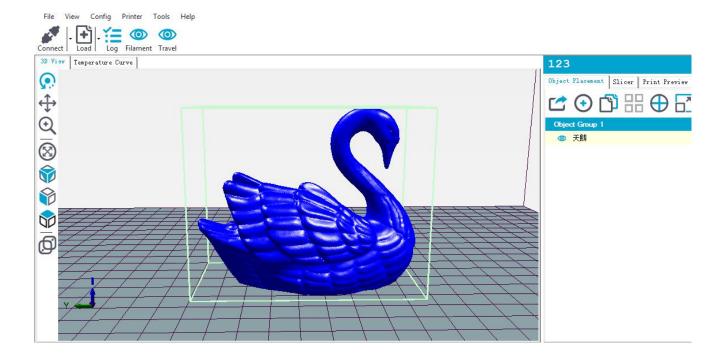
The file format of the model file for 3D printer is usually .stl. A10 supports following file formats: **STL**, **3ds**, **obj**, **mf**, **dae**, **G-code**. You can download models on the internet for printing, for instance, <u>thingiverse</u>. Of course you can also design your own creative models for printing. Here we print a small elephant phone holder. You can find the .stl file in the folder you download before: Elephant_Phone_Holder_Solid.stl

8.1 Load the Printing Model

Click Load button in the main interface of Repetier host, choose the file and open it.



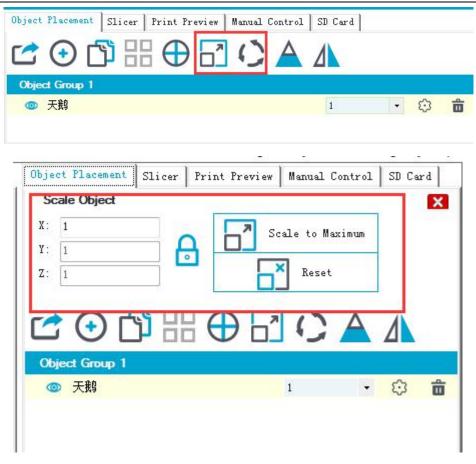




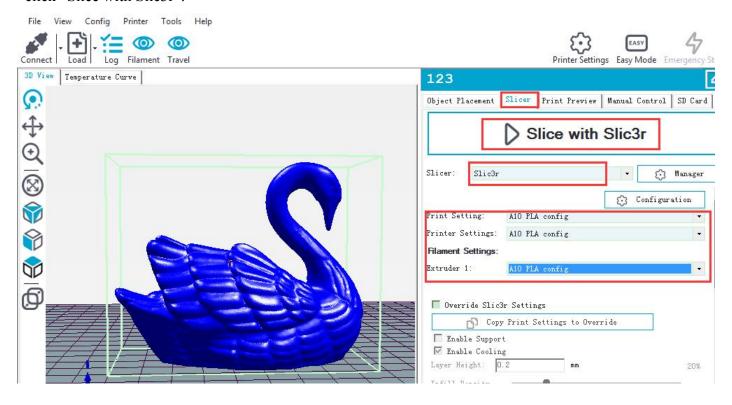
8.2 Slicing

You can use the following button to enlarge, shrink or rotate it.



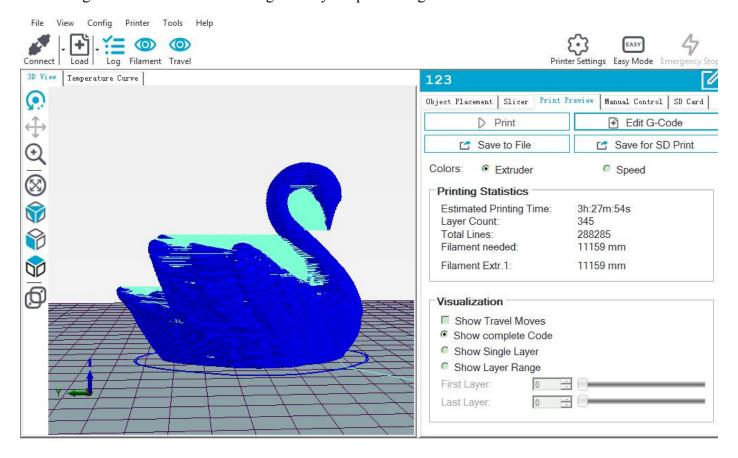


After setting the size, choose the slicing parameters which were imported before in the **slicer** window, and click "Slice with Slic3r".



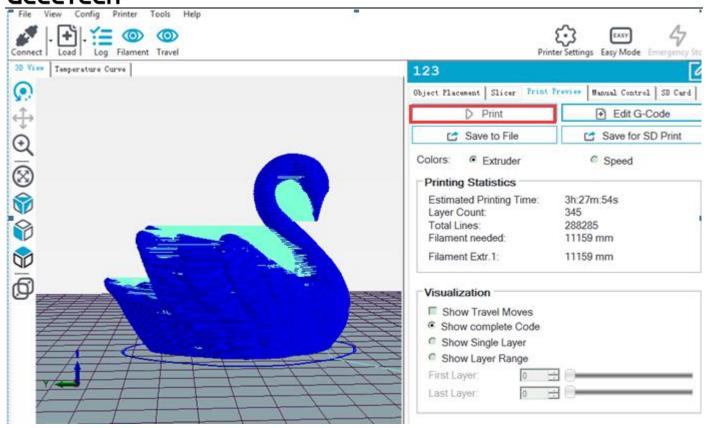


Now the .gcode file which can be recognized by the printer is generated.



Click "Print" button to start printing.





8.3 Stand-alone Printing with SD card

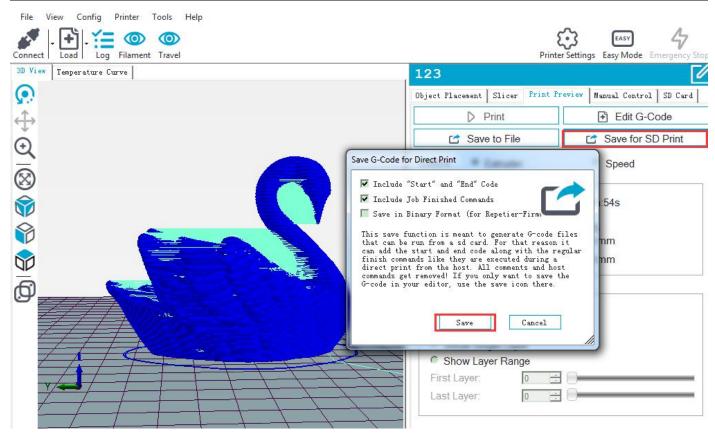
If you want to use SD card to print, we can save g.code file into SD card for printing.

Note: the printer can only recognize .gcode file, and it can not be put in any folder!

8.3.1 Save

Click **Save for SD Print**, and choose save button in the dialog. Choose the saving path, and produce g.code file which can be used for printing with SD card.





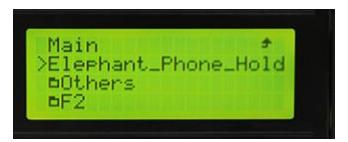
8.3.2 Printing

Insert the SD card into the printer, choose corresponding .gcode file to print.

Press the knob on LCD, enter the main menu, and choose the **Print from SD**.



Choose corresponding g.code file to begin printing.



Heating





It will automatically print after heating is finished.



9.FAQ

If you have any problem when you use the printer, you can visit our forum http://www.geeetech.com/forum/ There are detailed solutions on the forum. FAQ are as follows.

9.1 How to upload the firmware?

9.1.1 Upload the firmware in Win7 OS

To upload the firmware, we need following tools:

1.Arduino IDE

Arduino 1.0.1 is recommended, and you can download it here:

http://www.geeetech.com/wiki/images/a/a2/Arduino-1.0.1-windows.zip

2. The firmware for the printer

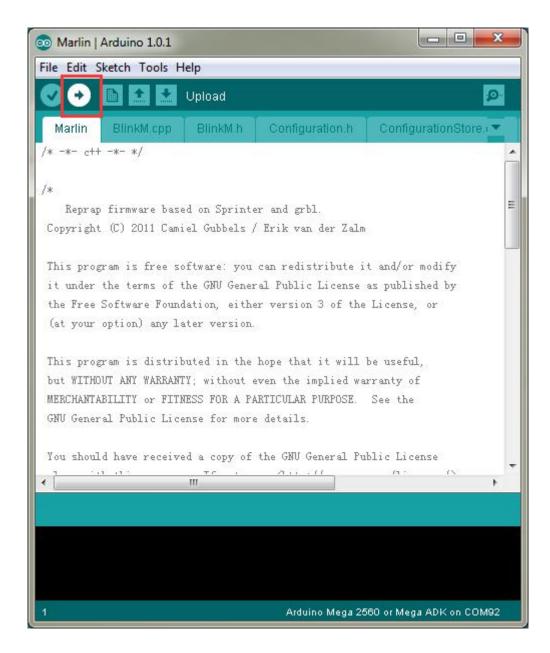
A10 uses GT2560 control board. Download the firmware of A10 here:

http://www.geeetech.com/forum/viewtopic.php?f=20&t=17046

After Arduino and firmware are downloaded, you can upload the firmware. First please connect the printer



and computer with USB cable, then open arduino1.0.1 software to upload the firmware. Choose corresponding control board and COM port, and click upload button to upload the firmware.



For detailed uploading process, please refer to: http://www.geeetech.com/forum/viewtopic.php?f=13&t=17181

9.1.2 Upload the firmware in Mac OS

The way of installing driver and uploading firmware in Mac OS is similar with that in Win 7 OS. For detailed method please refer to this link:



http://www.geeetech.com/forum/viewtopic.php?f=21&p=27952#p27952

9.2 Change the motor direction

In the configuration.h tab of firmware, find the following codes. Change the true of corresponding axis into false or false into true, and save the firmware and upload it into the printer. (Because you don't know the firmware which has been uploaded by the control board is true or false, it may be necessary to upload both of the two parameters.)

```
#define INVERT_X_DIR true

#define INVERT_Y_DIR false

#define INVERT_Z_DIR true

#define INVERT_E0_DIR false
```



For detailed method, please refer to:

http://www.geeetech.com/forum/viewtopic.php?f=13&t=17037

9.3 Motors can't work

When your are testing the motors, if the motor of an axis has no response or can not work normally (the

extruder can work when it is above 170 °C), you need check whether the motor, motor driven board or

voltage of this axis can work normally or not. Meanwhile you need make sure whether the bearing is

damaged or not, whether the smooth rod/screw rod is bent or not, whether the tension of belt is normal or

not, whether each axis is installed correctly or not. For detailed solutions, please refer to:

http://www.geeetech.com/forum/viewtopic.php?f=17&t=17038

9.4 Extruder can't work/ extrusion not fluent

When you are testing the extruder, make sure the temperature is over 170°C. If you find that the extruder

doesn't work or the extrusion is not fluent, or there is click noise, you need check the motor or clean the

nozzle ofthe extruder. For detailed method barrel and please refer to

http://www.geeetech.com/forum/viewtopic.php?f=19&t=17097

9.5 Printing quality optimization

If there are problems such as stringing, warped edge, the first layer not sticking to the bed, and poor surface

quality, you can refer to following link to do adjustment for parameters:

http://www.geeetech.com/forum/viewtopic.php?f=26&t=17183

10. Specifications

Printing parameters

Printing technology: FDM

Build volume: 220*220*260 mm³

Printing accuracy: 0.1mm

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Positioning precision: X/Y: 0.011mm. Z: 0.0025mm

Printing speed: 180 mm/s (max)

Filament diameter: 1.75mm

Nozzle diameter: 0.4mm

Filament: ABS / PLA /flexible PLA/wood-polymer/PVA/HIPS/PETG, etc.

Temp:

Max temp for hotbed: 100°C

Max temp for extruder: 250°C

Software resources

Operating system: Windows, MAC, Linux

Control software: EasyPrint 3D, Repetier-Host, Simplify 3D, Cura, Slic3r, etc.

Remote App: EasyPrint 3D App (with an optional 3D WiFi module)

File format: .STL, G.code

Electrical

Power supply: Input: 115V/230V

Output: DC 24V, 360W

Connectivity: Wi-Fi (with an optional 3D WiFi module), USB cable,

SD card (support stand-alone printing)

Display screen: LCD 2004

Mechanical:

Frame: Aluminum profile

Build Platform: Aluminum heatbed+ silicon carbide glass

XY Rods: Wear-resistant aluminum profile

Z axis: Lead screw

Stepper Motors: 1.8°step angle with 1/16 micro-stepping



Physical Dimensions & Weight

Machine Dimension: 478 x 413 x 485mm³

Shipping box Dimension: 500 x 470 x310 mm³

Machine Net weight: 7.6kg

Machine Gross weight: 9.45 kg

11. Contact us

Technical support	1. There are lots of documents and troubleshooting
	for A10 on our website. They are good resources if
	you would like to quickly solve problems by
	yourself.
	2.If you still can not solve problems yourself even
	with the help of above files, you can send e-mail to
	technical@geeetech.com,we will reply to you within
	24 hours.
Sales	For more products of Geeetech, please visit
	www.geeetech.com or send e-mail to
	sales@geeetech.com
Feedback	In order to improve our products to provide better
	user experience, please send your comments and
	suggestions to marketing@geeetech.cn. We will
	appreciate to hear your valuable suggestions.



