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OverLord 3D Printer User Manual



DFRobot
3DPrinting team
Dec.2014

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Statement

OverLord 3D Printer User Manual will be updated when necessary. Please notice our official website <http://www.DreamMaker.cc>, and download the latest version.

This manual helps users to master the basic operation skills of OverLord 3D Printer. All users must read this manual before operating OverLord 3D Printer. All users should follow the steps and act according to this manual. Any dangers or losses caused by improper use, or use beyond the range of OverLord 3D Printer, DFRobot does not assume any legal liability.

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Dec. 2014

Safety Precautions (Be sure to read)

Before operating OverLord, please read the following below. In order to avoid accidental injury and property damage, please do not do anything that has not been described in OverLord 3D Printer User Manual. Any dangers or losses caused by improper use, or use beyond the range of OverLord 3D Printer, DFRobot does not assume any legal liability, unless otherwise required by law, please understand.

Types and meanings of symbols



The “Forbidden” symbol indicates: The forbidden actions of using this equipment. Neglecting these indications or wrongly manipulating this product may cause serious injury or death to users or people surrounding.



The “Caution” symbol indicates: The actions you have to follow in order to use this equipment properly. Neglecting these indications or wrongly manipulating this product may cause people injury or death, print failure or product broken.



The warning symbol indicates: The part with this symbol generates high temperature when the machine is on. For your safety, please do not touch or draw near this part with your body parts or any flammable or explosive things.



The warning symbol indicates: The part with this symbol generates high temperature when the machine is on. For your safety and avoid injury, please do not touch or draw near this part with your body parts or any flammable or explosive things.



The warning symbol indicates: The part with this symbol has moving parts. For your safety and avoid injury, please do not touch or draw near this part with your body parts.



The sign indicates: The plug of the power adapter with this sign should be plugged in in right direction. Neglecting these indications or wrongly manipulating this product may cause people injury or death, print failure or product broken.

*****  **Forbidden** *****

- Avoid operating this product in forbidden places, on plane or other vehicles.
- Avoid operating the equipment without anyone who knows how to operate at site.
- Avoid placing the equipment near high heat source or flammable and explosive objects. Keep a 15~32°C thermal environment of the equipment when operating.
- Avoid placing the equipment near flammable, explosive object. Pay attention to the cooling and of the dry ambience around the equipment.
- Do not disassemble or refit the equipment in the way this manual does not describe, otherwise it may cause equipment failure or other serious accidents.
- Do not use power supply (input: AC 100~240V) other than the one provided with the equipment.
- Do not drag, stretch or distort wires of the equipment in order to avoid causing fire, electric shock or equipment failure.
- Do not plug or unplug the power when your hands are wet. The plug should be inserted into plug base completely when operate the equipment.
- During the printing or during 10 minutes after the printing is done, when the nozzle/buildplate is still above 40 °C, do not put any your body part inside the machine in order to avoid high temperature damage.
- Do not clean the equipment when the power supply is still on. Clean the dust and printing material that is stick on to the printer by dry cloth.

*****  **Caution** *****

- If the 3D Printer is in smoke or making abnormal noise, please turn off the power switch and stop printing immediately.
- Avoid placing the 3D Printer in high vibration or other unstable environment.
- Avoid accumulating heavy objects on the 3D Printer.
- When moving the equipment, act carefully and gently. Please avoid to touch the inside structure.
- The 3D Printer should be placed in a ventilated, cool, dry and less dust environment.
- Contact technical support: support@dreammaker.cc for technical solution.
- DreamMaker customer service QQ group: 323452686.

Chapter 1 OverLord and its menu

Brief:

1.1 OverLord 3D Printer Structure

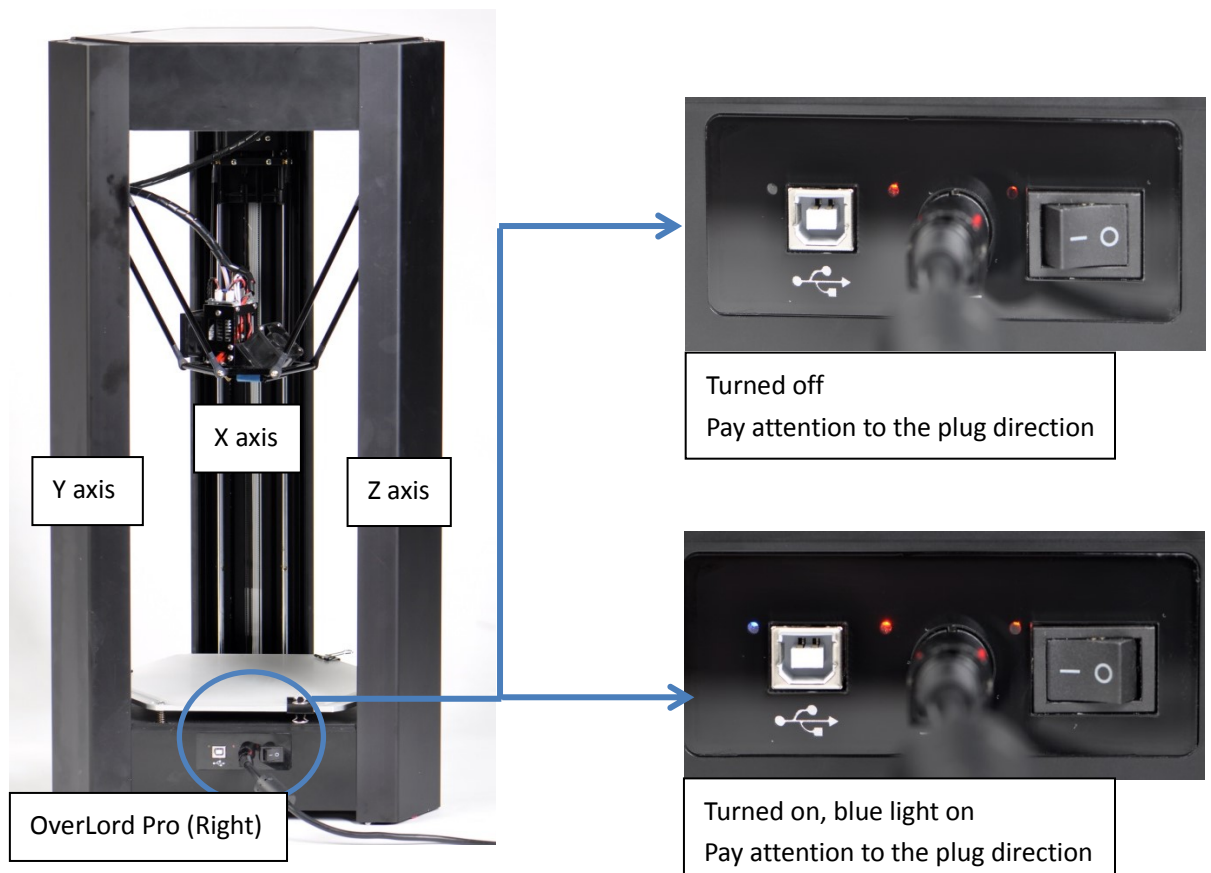
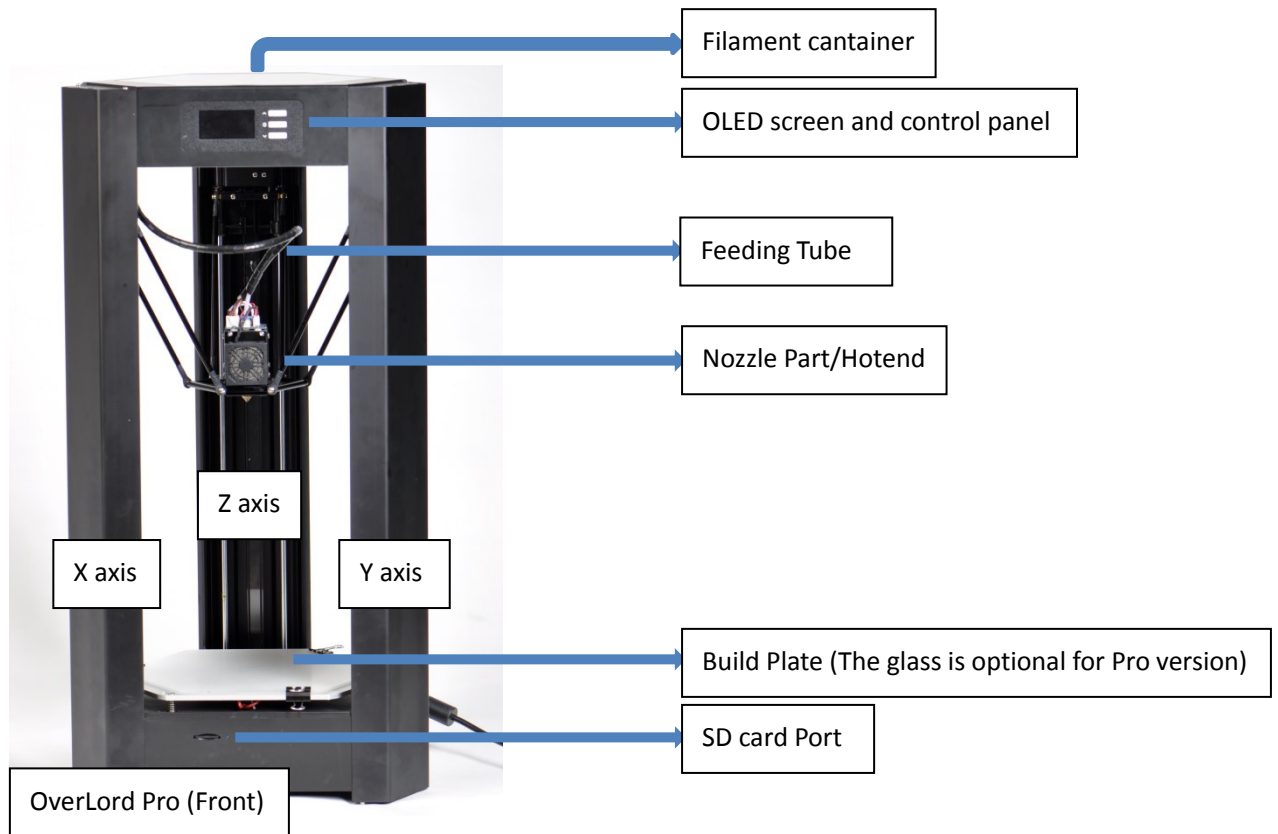
1.2 Specification

-- OverLord Pro

-- OverLord

1.3 Menu Introduction

1.1 OverLord 3D Printer Structure (Take Pro version for example)



1.2 Specification

● OverLord Pro

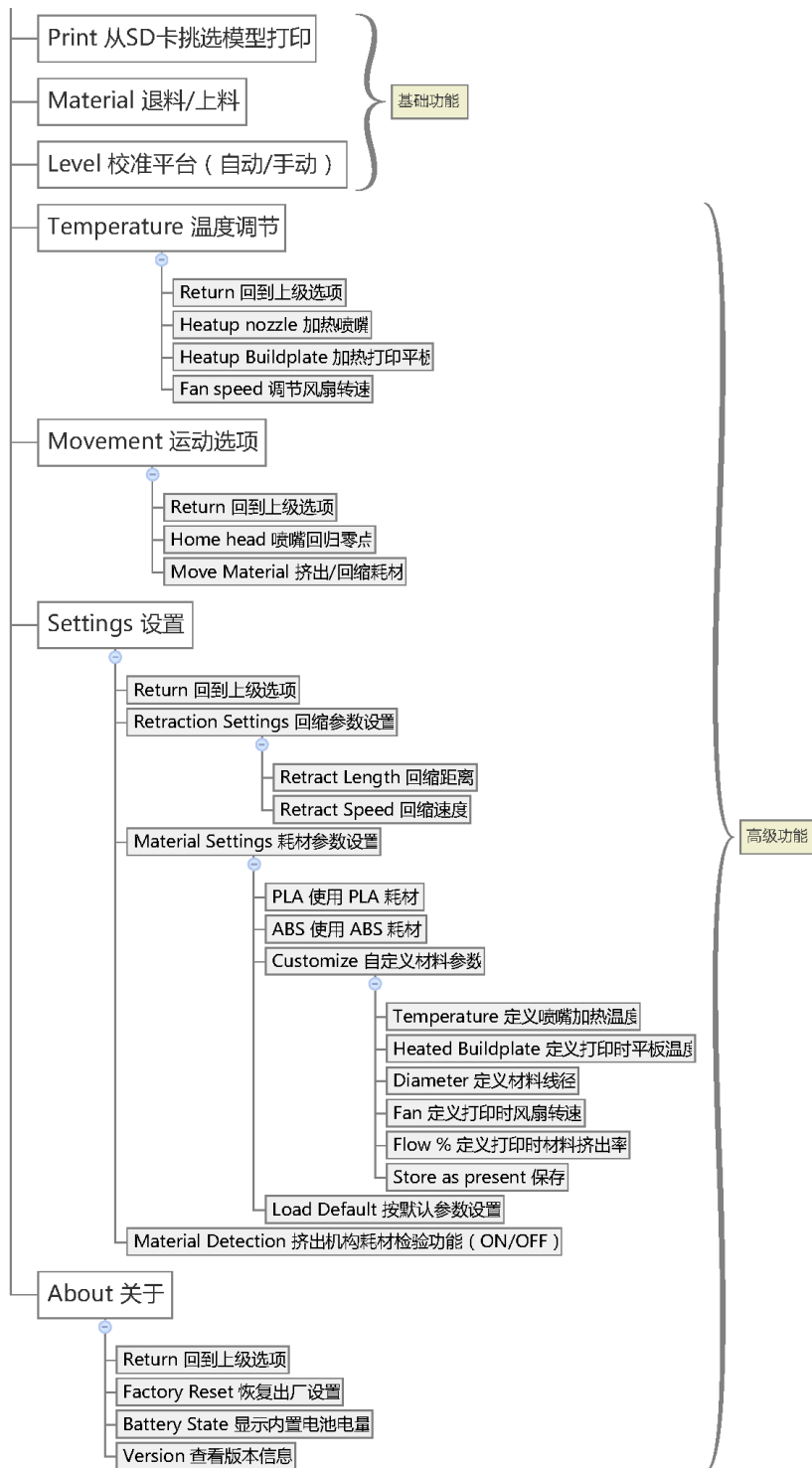
Machine Model	OverLord Pro
Printing Performance	
Print technology	FFF (Fused Filament Fabrication)
Build Volume	Cylinder : 170mm x 260mm Diameter x Height
Print Speed	100mm/s
Layer Resolution	20μm ~ 200μm
Nozzle Diameter	0.4mm
Operation Nozzle Temperature	200°C~250°C
Operation Heated Bed Temperature	50°C~100°C
Ambient Operation Temperature	15°C~32°C
Rating Power	221 W
Power Requirements	24V==9.2A
External Power Supply AC Input	100~240V 50/60Hz 4.0A
Software	
Included Software	Cura (Open Source)
Supported file types	*.stl; *.obj; *.dae; *.amf; *.bmp; *.jpg; *.jpeg; *.png; *.g; *.gcode
Operating systems	Windows; MAC OSX; Linux
Components	
Printing filament	PLA/1.75mm ABS/1.75mm
Connectivity	SD HC Class 4/ USB
Build Platform	Heated Glass Bed with Glue stick
Dimensions	
Product dimensions	370mm × 320mm × 725mm
Product Weight	12kg
Shipping dimensions	470mm × 450mm × 855mm
Shipping weight	15kg
Storage temperature	0°C~32°C

- **OverLord**

Machine Model	OverLord
Printing Performance	
Print technology	FFF (Fused Filament Fabrication)
Build Volume	Cylinder : 150mm x 160mm Diameter x Height
Print Speed	100mm/s
Layer Resolution	20μm ~ 200μm
Nozzle Diameter	0.4mm
Operation Nozzle Temperature	200°C~250°C
Operation Heated Bed Temperature	N/A
Ambient Operation Temperature	15°C~32°C
Rating Power	120 W
Power Requirements	24V === 5A
External Power Supply AC Input	100~240V 50/60Hz 4.0A
Software	
Included Software	Cura (Open Source)
Supported file types	*.stl; *.obj; *.dae; *.amf; *.bmp; *.jpg; *.jpeg; *.png; *.g; *.gcode
Operating systems	Windows; MAC OSX; Linux
Components	
Printing filament	PLA/1.75mm
Connectivity	SD HC Class 4/ USB
Build Platform	Acrylic Buildplate
Dimensions	
Product dimensions	370mm × 320mm × 625mm
Product Weight	12kg
Shipping dimensions	470mm × 450mm × 855mm
Shipping weight	15kg
Storage temperature	0°C~32°C

1.3 Menu Introduction (Take Pro version for example)

The optimized OverLord User interface simplified the operation of 3D printer. By just pushing down the button, OverLord is able to print, change material, and calibrate the buildplate all by itself. For normal users, the default settings are enough for them to do a good print. The advanced users, however, are able to re-set the printing parameters to satisfy their specific needs.



Chapter 2 How to Print

Brief:

2.1 Turn on OverLord 3D Printer

2.2 Startup

2.3 Prepare printable models files

2.4 Cura Installation and settings

- file location

- Cura Installation

- Cura Settings

2.5 Start using Cura

- Interface

- Your first print

- Full-setting

2.6 Printing

2.7 Auto-remove/feed printing material

2.8 Advanced functions

- Break point resume

- Auto/Manually calibrate buildplate

2.1 Turn on OverLord 3D Printer



Attention: Please mind plugging direction to avoid burning main PCB down!



2.2 Start-up

OverLord runs machine Start-up at the first time you open it. Please follow the instructions and enjoy the basic operating experience.



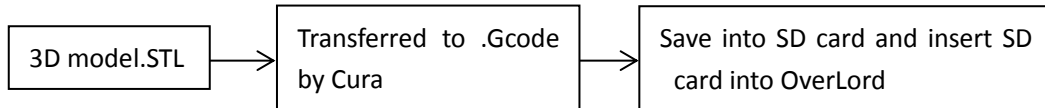
CAUTION: Before start-up, make sure there is nothing left on buildplate. During start-up, OverLord operates its high temperature (220°C) moving part. To protect your safety, please do not reach inside while OverLord is in operation.

2.3 Prepare printable models files

The first step of using 3D Printer is to make connections. Usually we build our 3D models in computers. How do we “import” it into a 3D Printer? We need something called “3D model slicing software”. Here is how it works. It first cuts the model into thousands slices, calculates nozzle’s moving trajectory on each slice, plans how much material to extrude out of nozzle

during every single second, then processes all the movement information into .gcode format that can be recognize by 3D Printers.

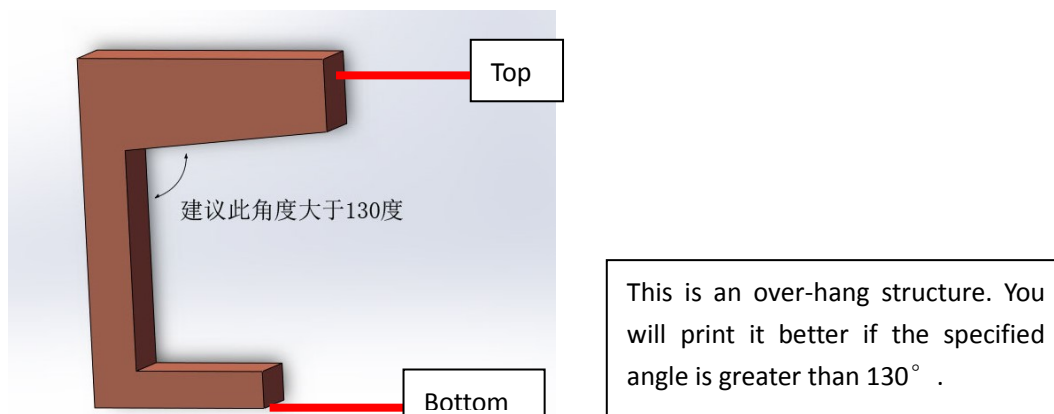
OverLord 3D Printer uses open source model slicing software Cura. You will find it already in the SD Card sent with the machine, or you can download it directly from our website: www.dreammaker.cc. (source: <http://wiki.ultimaker.com/Cura>).



NOTE:

1. Before using Cura, an electronic 3D model should be prepared. The following software: Solidworks, UG NX, ProE, 3DMax, Rhino, Google SketchUp, etc. can help you create a model. You can easily get a .stl format by “save as” or “export”. Besides, you can download existing 3D models on-line, or creating it by a 3D scanner.

2. If you want design your own 3D model, please keep in mind the fabrication principle of FFF 3D Printer and avoid going beyond its limitation. For example, try to avoid over-hangs without support structure during modeling to keep the print in good shape.



3. Some precautions when you export .stl format model files using different modeling software: (This part experience is from internet.)

- *Solidworks can directly “save as” .stl format.
- *In UG NX, the tolerance of Trigonometric should set to 0 before exporting.
- *Catia uses DTL Rapid Prototyping module, please set precision using Tessellation function.
- *In AutoCAD command line, input “Faceres -> 1~10 (10 fine, 1 coarse) -> STLOUT -> select entity -> Binary” to export .stl file.
- *The precision of exporting .stl in 3D Max and Maya should above 0.01, amount should below 1,000,000.

Then, let’s begin to install and set-up Cura.

2.4 Cura Installation and Settings

2.4.1 File location

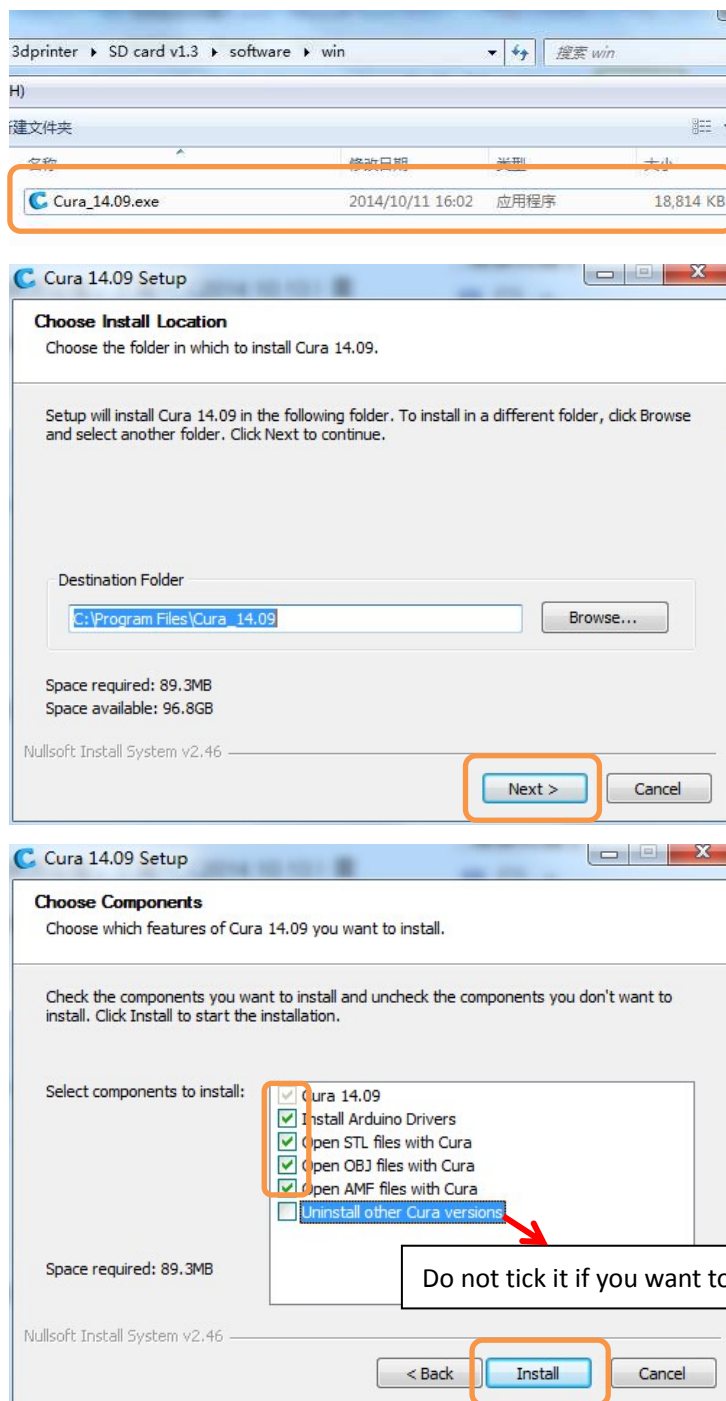
OverLord official website www.Dreammaker.cc provides free download of Cura installation file.

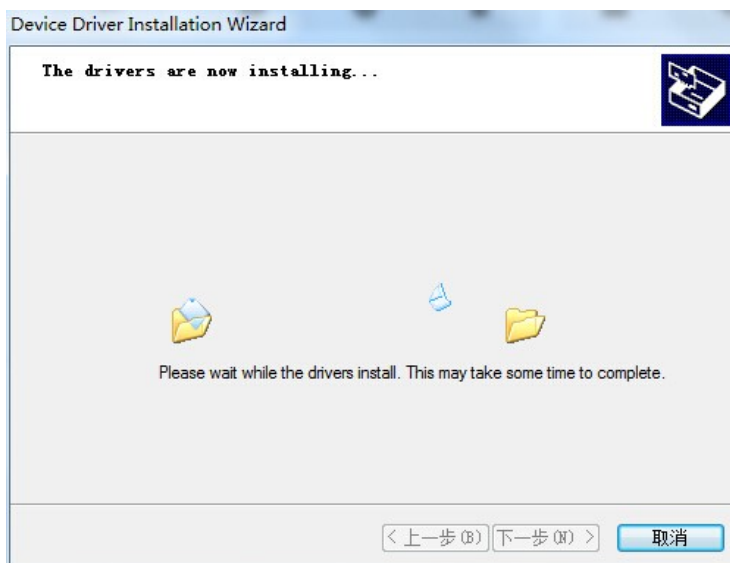
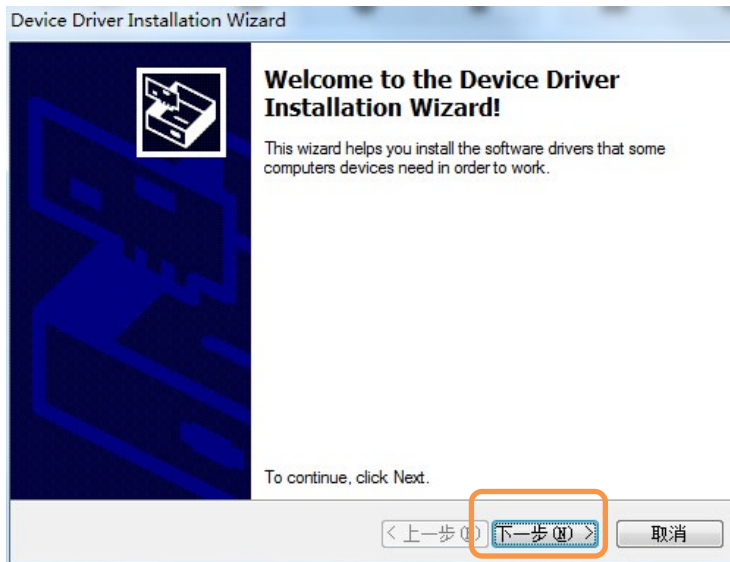
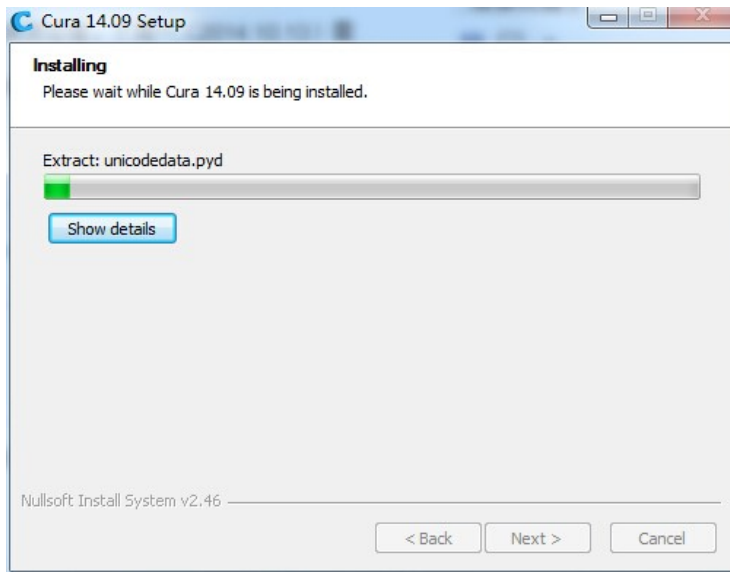
You can find the installation file in your SD card too.

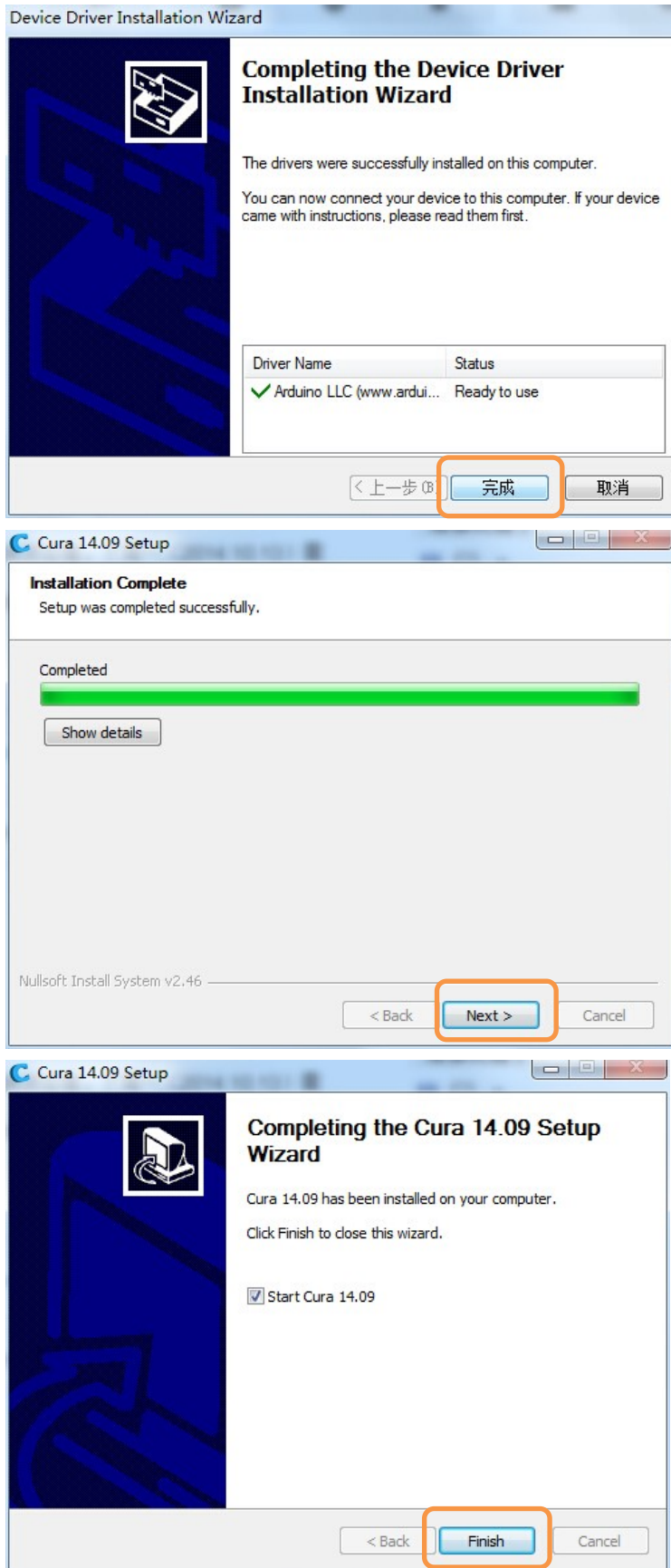
2.4.2 Cura Installation

The following tutorial is based on Windows system. If your system is MAC or Linux, please download the right version and install afterwards.

Find the installation file, run it by double click.

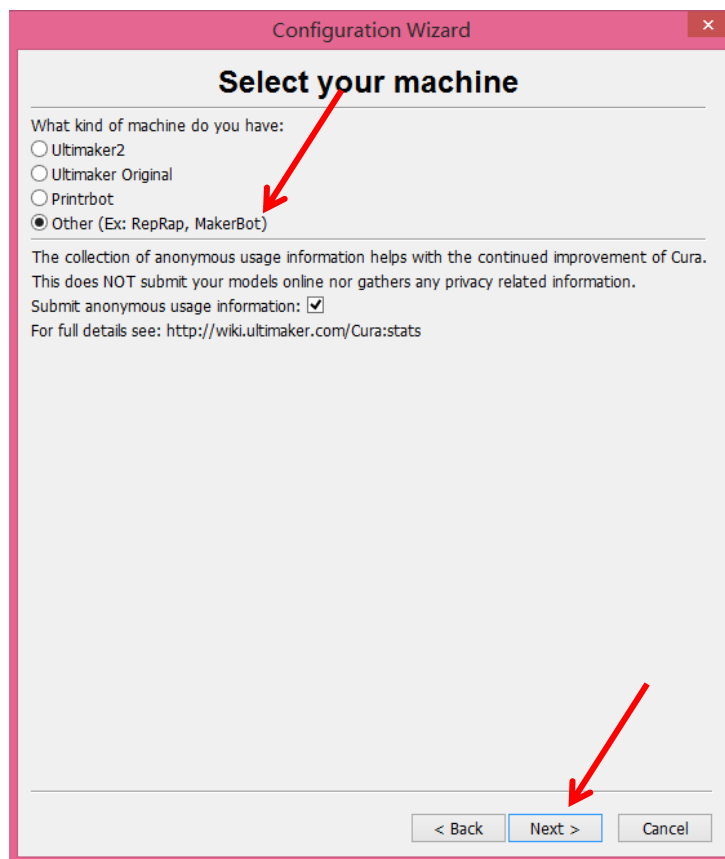


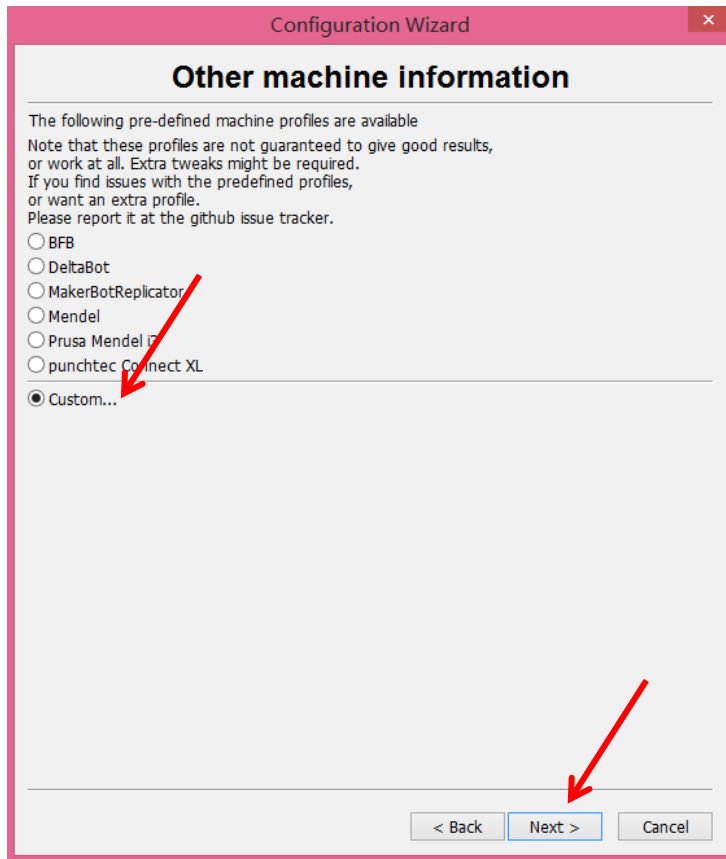




2.4.3 Cura settings

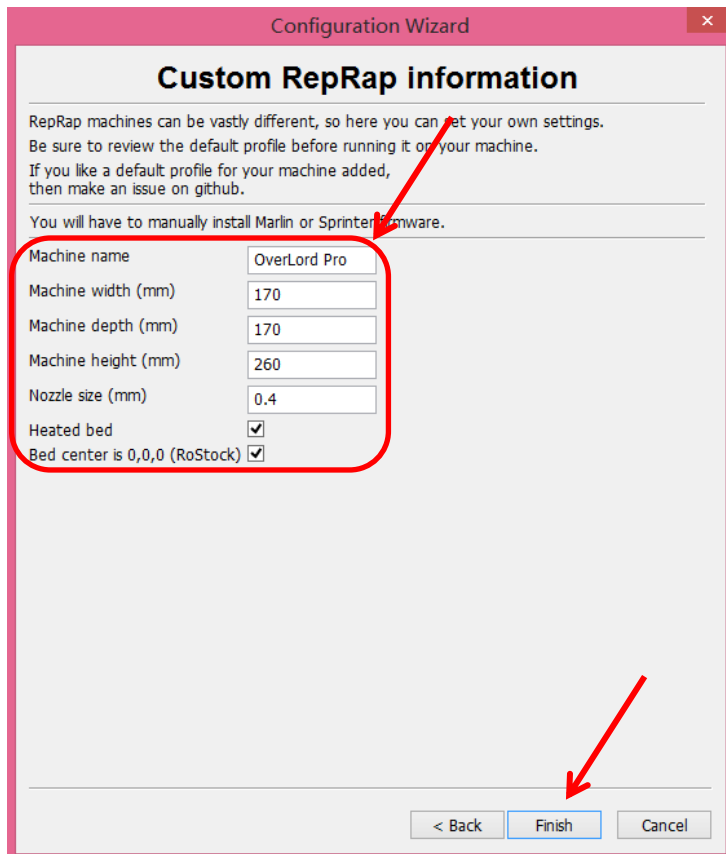
If this is your first time running Cura, “First time run wizard” will help you set the software.
(Former users can add new 3D Printers through” Machine setting--Add new machine”)



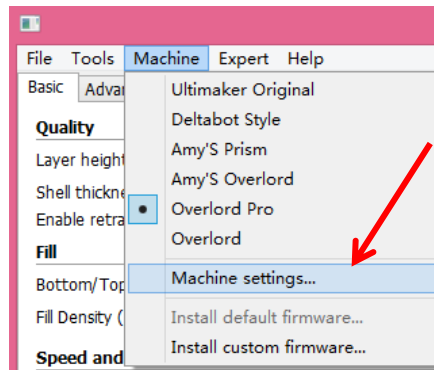


There are some difference between the settings of OverLord Pro and OverLord.

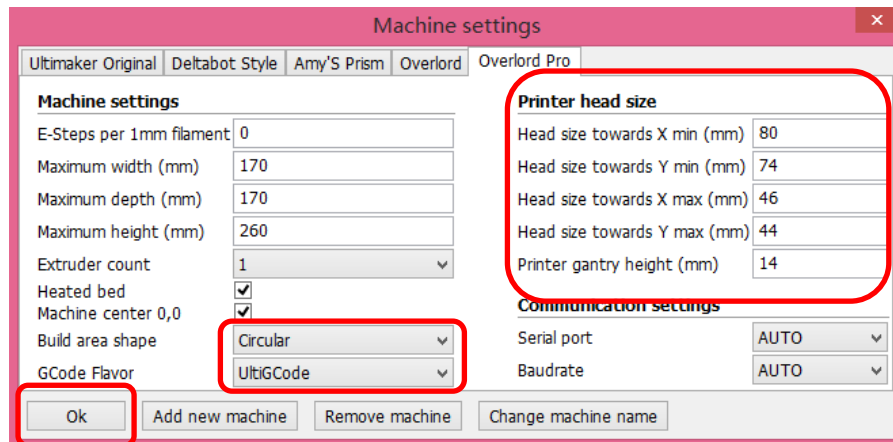
(1) OverLord Pro



Now appears the software UI, click “machine” in the menu and choose “Machine settings”.

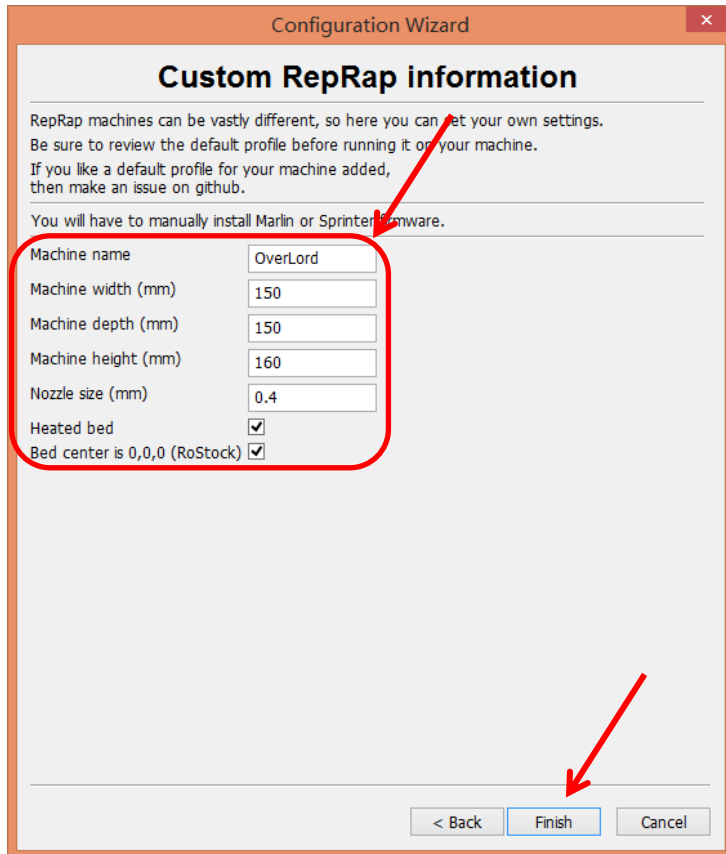


Set the parameters as shown in the picture. Take special care to those in orange circle. Click “OK” to finish.

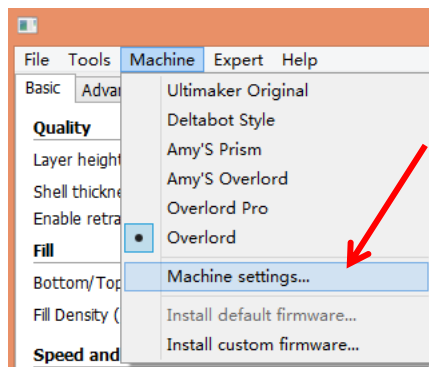


NOTE: You should choose “UltiGCode” for “GCode Flavor”.

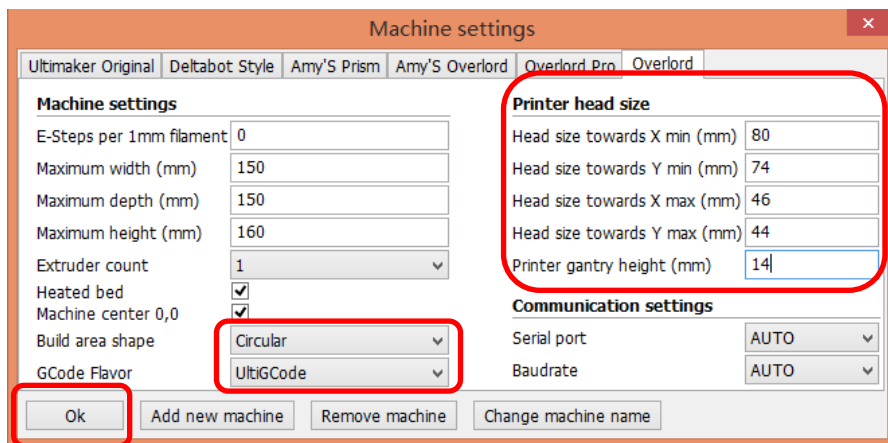
(2) OverLord



Click “machine” in the menu and choose “Machine settings”.



Set the parameters as shown in the picture. Take special care to those in orange circle. Click “OK” to finish.



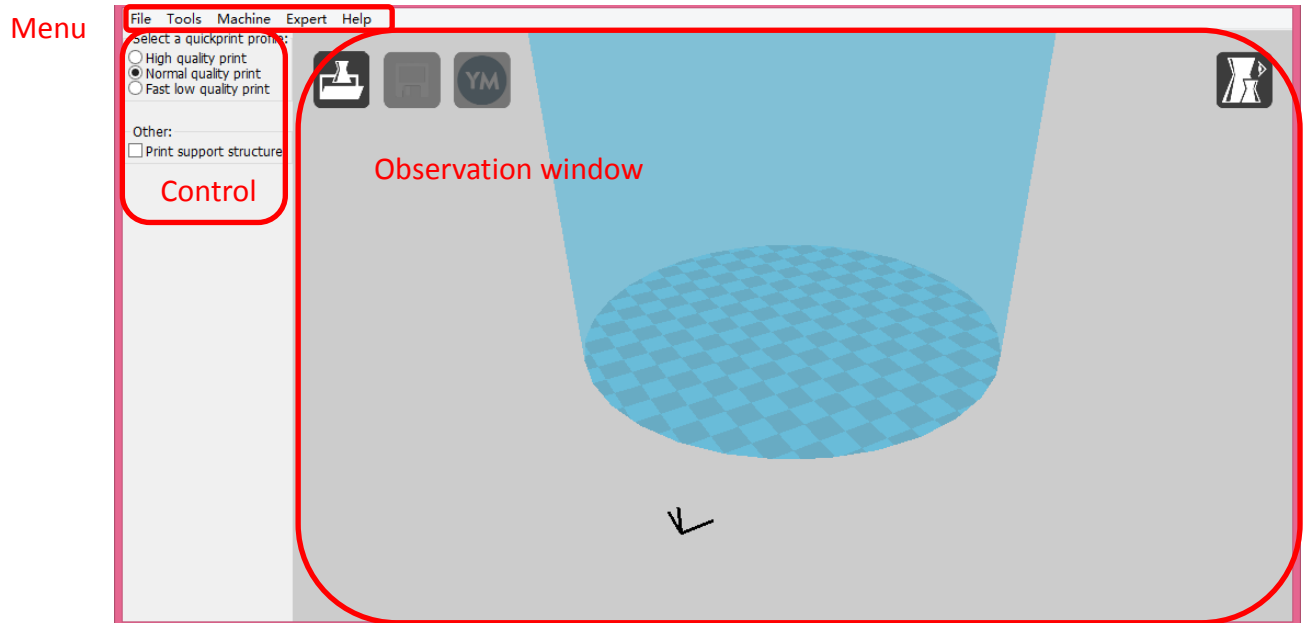


NOTE: You should choose “UltiGCode” for “GCode Flavor”.

2.5 Start using Cura

2.5.1 Interface

- Quick print



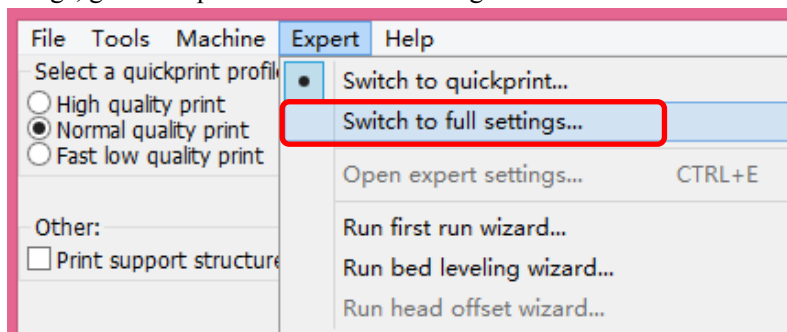
The main interface is consists of 3 parts: Menu, Control region, and Display region.

*Control Region: choose print quality and whether you need a support for your mode

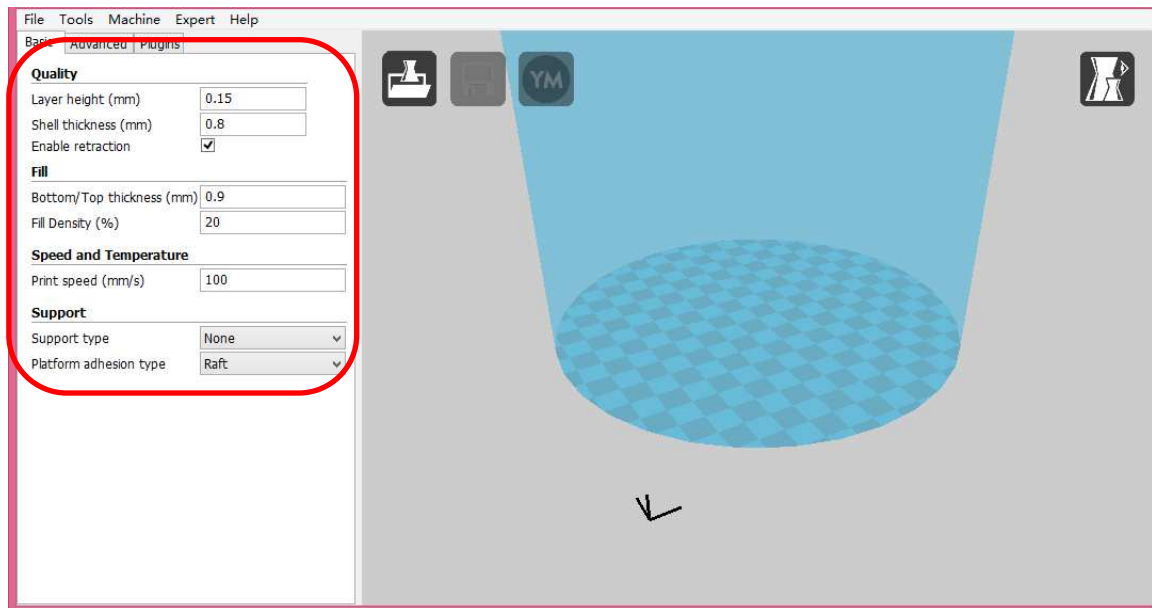
*Display Region: displays your model shape and printable region.

- Full settings

For full settings, go to “Expert-Switch to full settings”.

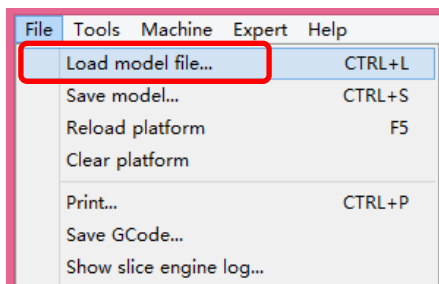


Full Settings Interface

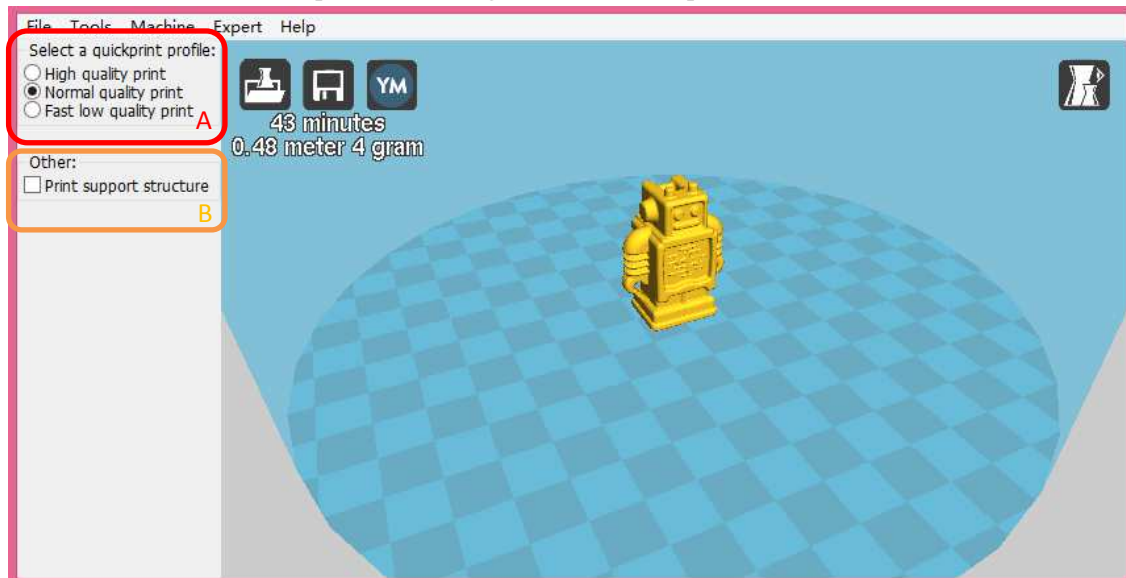


2.5.2 Your first print

Click “File—Load model file...” (Ctrl+L)



Usually 3D model files are in .stl format. You can also load .jpg/.bmp/.png file. Cura will transfer the file into 3D shape then create .gcode that can be printed.



Two regions, A and B, appear on the left side.

Region A provides 3 kinds of printing scheme, which are “High quality print”, “Normal quality print” and “Fast low quality print” respectively. Under “High quality print” option, it takes

a long time to create a high quality print. Under “Fast low quality print” option, the printing speed accelerates, however the quality of print goes down too. You would like to choose “Normal quality print” to balance the time and quality.

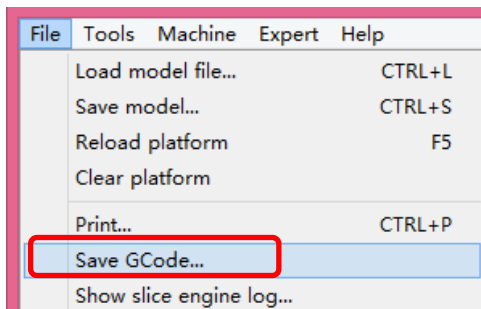
Region B enables you to choose whether the model need a support or not. If yes, then support is automatically generated under over-hang structure during printing.

Slicing and transferring work is done automatically after the model is uploaded. In the left corner of display region, it shows the estimated printing time and grams of material consuming.

For example, the picture below shows the model probably needs 0.48 meter 4gram material to print 45 minutes.



The next step is click “file—Save GCode...” and save GCode to your SD Card.

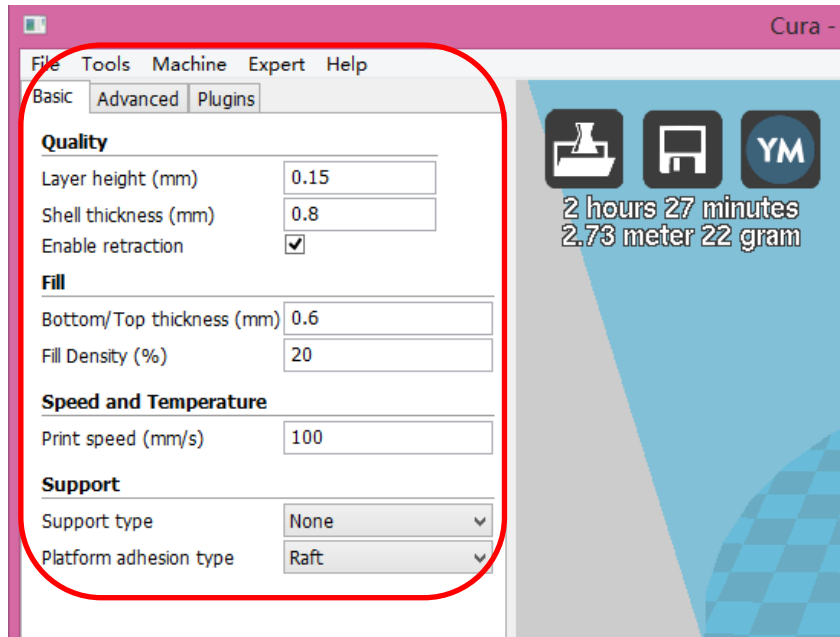


OverLord can print without connecting a computer. Copy the generated Gcode into a SD card, and then insert the SD card into OverLord. Now you can 3D print the model by touching the buttons on OverLord’s control menu.

2.5.3 full-settings

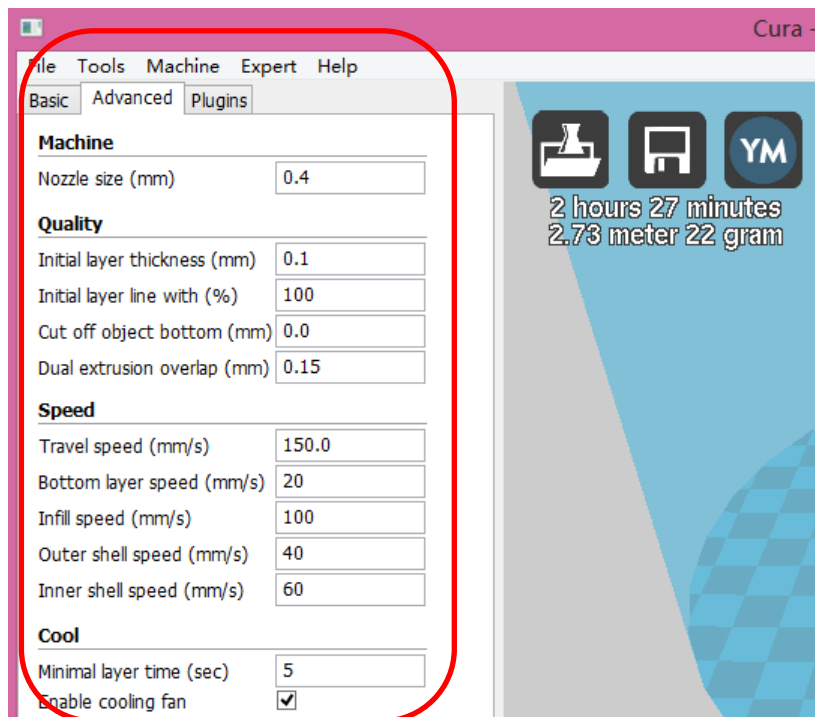
- Basic settings

In basic settings, users are able to adjust settings according to the model shape and their special needs. We recommend you the following settings shown in picture below. (There are no difference between OverLord and OverLord Pro in these settings.)



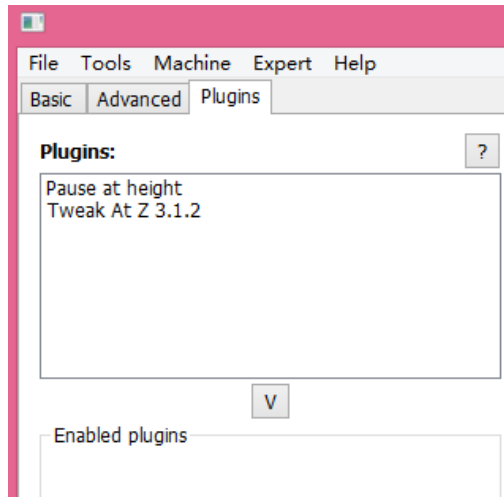
- **Advanced settings**

Advanced settings provide some setting of your specific machine, please do not change them if not necessary. Below are recommended settings.



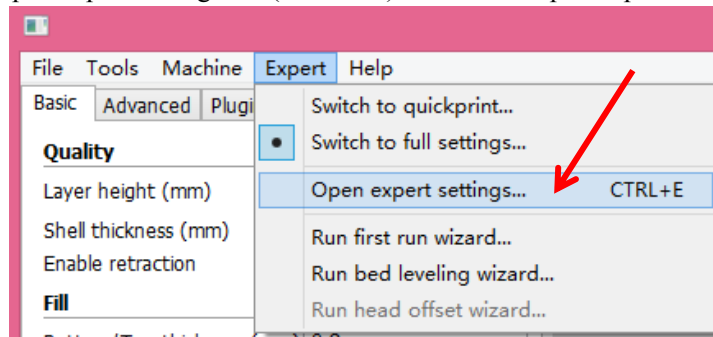
- **Plug-ins**

Cura provides plug-in interface. User can download or programme different plug-ins to achieve special function. The plug-in is written in Python language.



- Expert settings

Click “Expert-Open expert settings...” (or Ctrl+E) on menu to open expert settings window.



There are more professional settings in the Expert-config window. The following settings are recommended. We do not suggest changing these settings unless you know exactly what these parameters indicate.