



**Professionally approved products.**

**Instruction Manual**

# **RS Plus 3D Printer**

EN



## 1) GENERAL

This instruction manual contains important information regarding the installation, operation, maintenance and storage for RS Plus 3D Printer. Please read these instructions carefully and save them for future reference.

## 2) WARNING

- Place RS Plus 3D Printer in a dry environment and keep a safe distance from other objects, fire or water.
- Place RS Plus 3D Printer on a stable horizontal platform.
- Please use RS Plus 3D Printer in a ventilated environment because of potential slight smell during printing, but keep away from the air vent.
- To avoid nozzle blocking, please do not heat up the extruder before feeding the filament.
- Do not touch or remove the power cord or USB cable, or pull out the USB Flash Drive during printing.
- Never touch the extruder or building plate by any parts of your body or anything which is easy on fire during printing, to avoid skin damage or fire.
- Gloves are required to remove the models from the building plate to avoid cutting, scratching or burning.
- During online printing, the computer cannot be in sleep mode.

## 3) WORKING CONDITIONS AND TECHNICAL DATA

Printer Size: 298×221×403mm

Printing Size: 150×150×140mm

Layer Thickness: 0.18~0.3mm (0.2mm recommended)

Speed: 30-150 cm<sup>3</sup>/h

Net Weight: 7.5kg

Material: PLA/ABS

Printing Temperature: PLA 220-230°C

Printing Temperature: ABS 230-240°C

Power Input: 100-240V AC, 1.5A, 50-60Hz

Output: 19V/DC 9.5A

Maximum Power: 180W

File format: STL/WTG/GCODE

Compatible system: Windows XP/Vista/Win7/Win8/Win 8.1

Operating software: DoraWare-P

Environment Temperature: 5°C~35°C

Relative Humidity: 30%~90%

## 4) ACCESSORIES

All of the following accessories are in the tool box.



Shovel



Chisel



Cut pliers



Tweezers



Allen wrench and screws



Clips



Power adapter and power cord



USBCable



Build plate



Acupuncture Needle



Teflon tube filament guide



Gloves



Filament tube guide



Spool holder

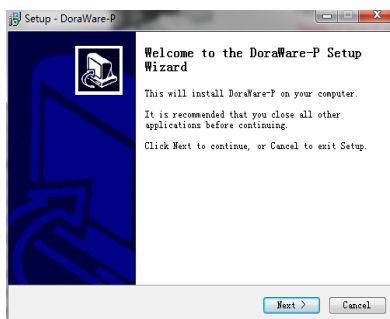


U disk

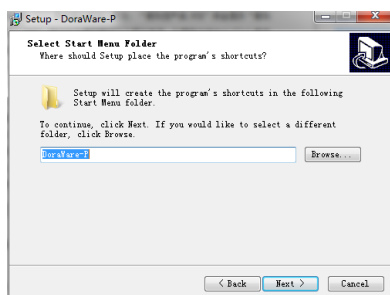
## 5) SOFTWARE INSTALLATION

- The following installation of drivers and software is for Windows XP, 7, 8 and 8.1 system. For Windows Vista or XP Lite, please consult your local retailer.
- The driver for software is in the USB Flash Drive. Please copy the driver to your computer.
- Please shutdown all firewalls or antivirus software before installing Doraware-P.

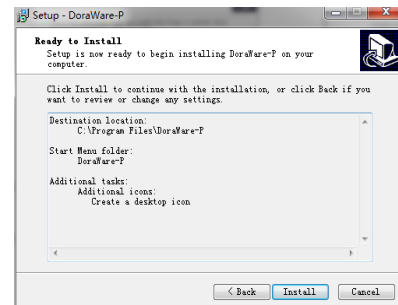
5.1 The driver is applicable for 32-bit and 64-bit operating systems. Please select the package according to your computer system.



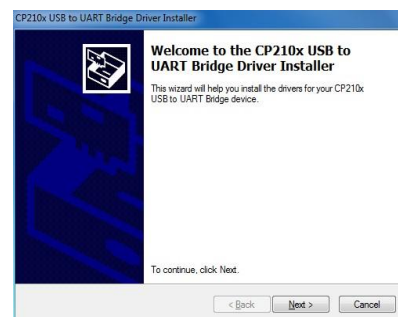
5.2 Click "Next" to continue.



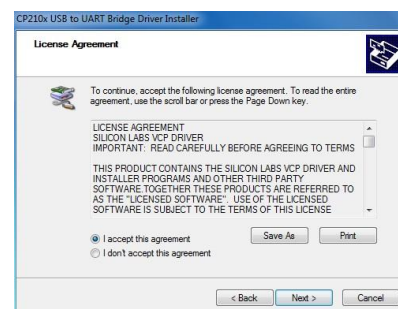
5.3 Click "Install".



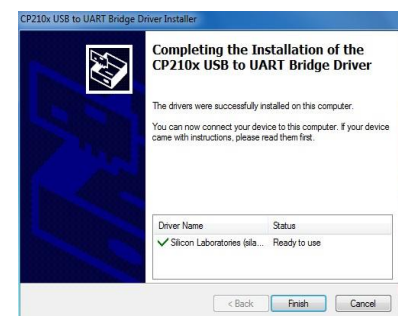
5.4 After the installation, click "Next" to continue.



5.5 Select "I accept this agreement (A)" and click "Next".



5.6 Click "Finish" to complete the driver installation.



## 6) PREPARATION FOR PRINTING

### 6.1 Out-of-box

- Please check the product after the box is open, and in case of any surface scratch or damage, please contact local dealer or after-sales service.
- Check the accessories in accordance with the product packing list, and in case of any missing, please contact local dealer or after-sales service.

## 6.2 Accessories assembly

6.2.1 Assembly of spool holder: take out the two screws in the middle of the right side of the RS Plus 3D Printer and fix the spool holder with the screws.

Note that the rib is on the upper side.



6.2.2 Take out the screw at the back of the upper right side of RS Plus 3D Printer and fix the filament tube guide with the screw.



6.2.3 Fix the hotbed panel on the build plate with four clamps.



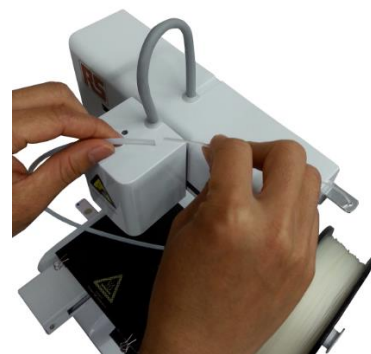
6.2.4 The filament free end must be cut to be flat. Please keep it straight as well.



6.2.5 Hang the feed disk on the spool holder and put the filament through the filament tube guide.



6.2.6 Pass the filament through Teflon tube



6.2.7 Plug the power adapter into RS Plus 3D Printer.



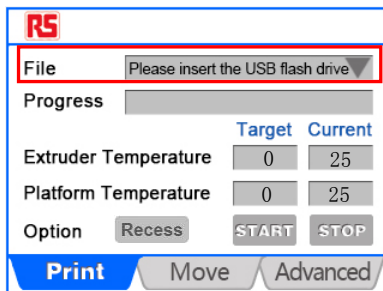
## 6.3. Offline printing

### 6.3.1 Touch screen

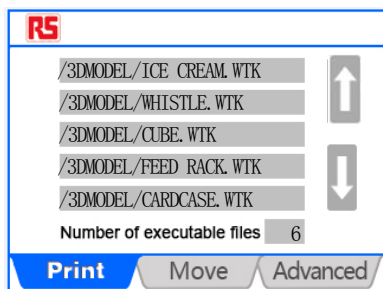
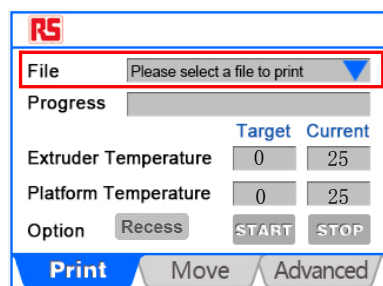
6.3.1.1 Power on, the touch screen brightens and the buzzer beeps.



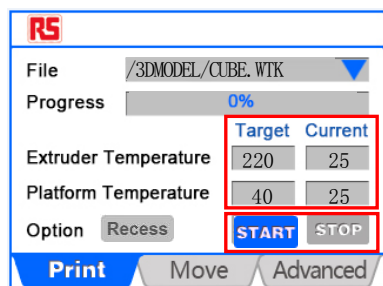
6.3.1.2 Click any position of the screen and enter the operation interface. In the menu of "Print", the column of "File" displays the name of the file to be printed. If the USB flash drive is not inserted, the inverted triangle is grey.



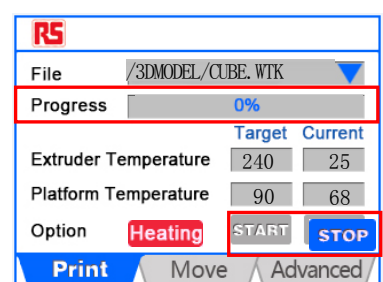
6.3.1.3 After the USB flash drive is inserted, the inverted triangle turns blue, and the pull-down menu displays the file to be printed.



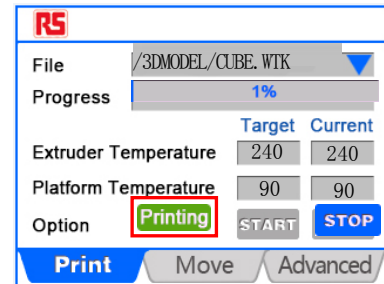
6.3.1.4 Choose the file to be printed such as "CUBE". The printing interface pops up and the button "START" turns blue from grey, which indicates that the printing can be started. Temperatures of the extruder and the build plate are set as shown in the figure.



6.3.1.5 Click "START" to begin printing.



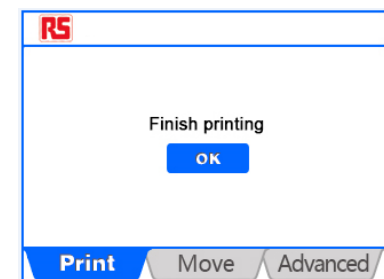
6.3.1.6 Printing will start once heating is completed. "Progress" displays progress of printing with the unit of 1%. "Option" is the current state of RS Plus 3D Printer, which is displayed as "Recess" when there is no print task,



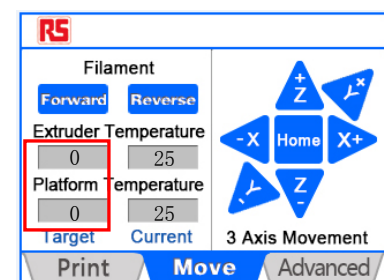
6.3.1.7 To cancel the printing, click "STOP".



6.3.1.8 After the model is printed, click "OK" to complete the printing.



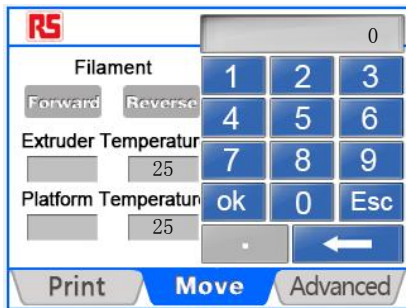
6.3.1.9 Click the "Move" menu to enter the movement and temperature interface. The left is for the temperature setting and the electromechanical control of the extruder, and the right for three-axis movement control. Press the button of X/Y/Z movement, RS Plus 3D Printer will move to the corresponding direction. Click "Home" and each moving part of RS Plus 3D Printer will go back to the original location.



6.3.1.10 Click "Target" for temperature setting, and set the temperature of the extruder and the platform. The setting range of the platform's temperature is

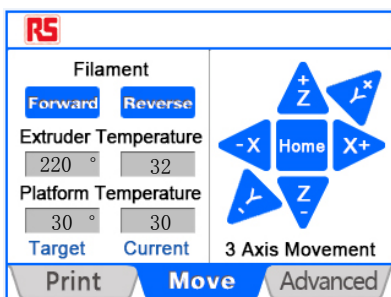


0-100 °C and that of the extruder is 190-280 °C. For PLA material, the platform temperature can remain unset, and the extruder temperature can be set at 220-230 °C; for ABS material, the platform temperature can be set at 80-100 °C according to the size of the model, and the extruder temperature can be set at 230-240 °C.

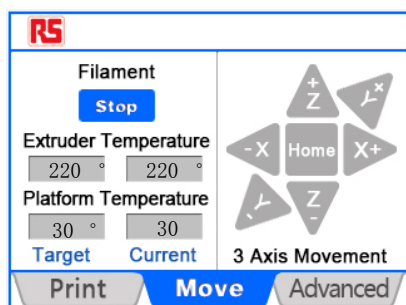


**⚠ Notice:** do not frantically click the touch screen!

6.3.1.11 If the temperature is not set at this moment, the default temperature of printing from USB Flash Drive is that set by GCODE, and if the temperature is set, the printing will proceed at the set temperature. This setting is only effective at this time, and if the parameter is used next time, it needs to be reset. The interface after temperature setting is shown as follows.



6.3.1.12 After the extruder temperature rises to the set value, click "Forward", and insert the prepared filament into the extruder's feed port till the extruder catch the filament. After a few seconds, you can see fine filament out of the nozzle. Click "Stop", and the extruder stops.

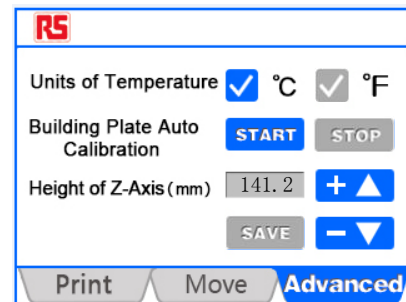


6.3.1.13 If the printing is suspended for a long time, to avoid clogging next time, take out the filament inside the extruder. After the extruder temperature rises to the set value, click "Reverse". After the filament returns completely, take it out,

and click "Stop".

**⚠ Notice:** only after the extruder temperature rises to the set value, the feeding and returning of the filament can be carried out, or else it is likely to cause extruder clogging.

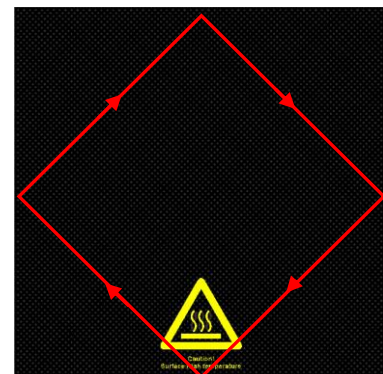
6.3.1.14 In "Advanced", "Units of Temperature" is the option of temperature unit. The default unit is "°C", and you can also select "°F".



6.3.1.15 "Building Plate Auto Calibration" is the automatic detection of the platform. Press "Z+" in the interface "Move", and raise the platform to about 1mm from the nozzle.



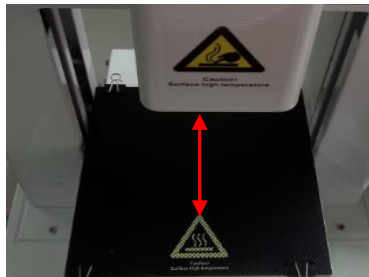
6.3.1.16 Click "START", the platform will move along the direction shown below. Observe the distance between the nozzle and the platform. If it is equal all the time, the platform has been leveled. Click "STOP" to stop the movement. If not, the platform needs to be debugged in accordance with the following steps.



6.3.1.17 Click "X-" or "X+" to move the extruder to the central axis of the platform.



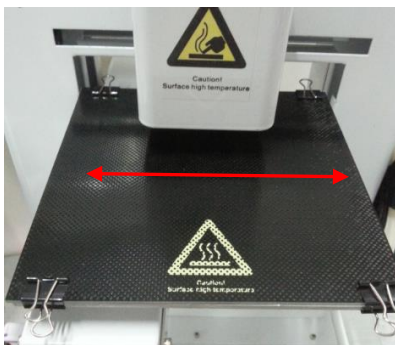
6.3.1.18 Click “Y-” or “Y+” to move the platform back and forth to observe whether the distance between the nozzle and the platform is equal all the time.



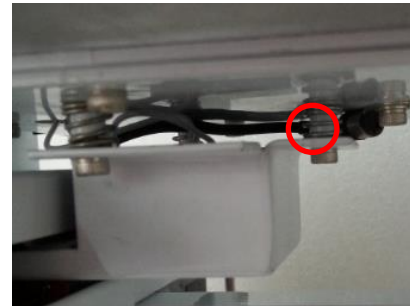
6.3.1.19 If the distance is equal, enter the next step. If not, adjust the screw fixing the platform till it is equal.



6.3.1.20 After determining the direction of Y-axis, move the platform to make the extruder in the center. Click “X-” or “X+” to move it left and right.



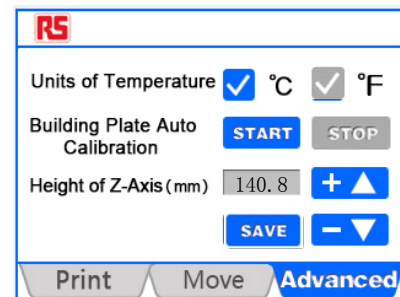
6.3.1.21 In the left and right movement, observe the distance between the nozzle and the platform. If it is equal all the time, enter the next step. If not, adjust the screw fixing the platform till it is equal.



⚠ Notice: the platform may be adjusted repeatedly from 3.1.15 to 3.1.21 to ensure equal distance between the nozzle and the platform. Once confirmed, it does not need frequent adjustment.

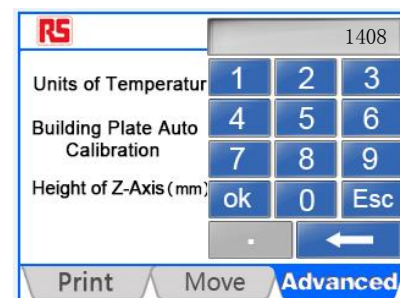
6.3.1.22 “Height of Z-Axis (mm)” is the distance from the lowest position to the highest position of the platform.

If the model sticks to the hotbed panel tightly and it is difficult to remove the model, you can click “-▼”, and the figure in the display frame will be reduced by 0.1mm. If the model sticks to the hotbed panel loosely, the model tends to have warping edge or fall off, click “+▲”, and the figure in the display frame will be increased by 0.1mm. After adjustment, click “SAVE”, and the model will be printed at this height next time.

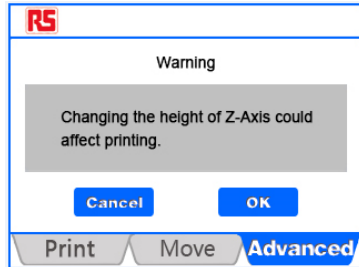


6.3.1.23 To modify Z-axis height, click the display frame, and a numeric keypad will pop up. Input the height value (mm) you want, click “OK” to return to the interface “Advanced”, and click “SAVE”.

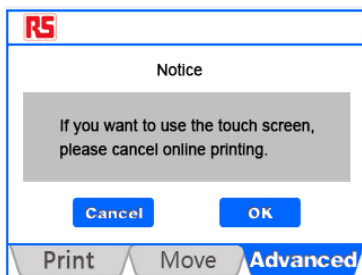
⚠ Notice: you need to input a four-digit figure (including the digit next to the decimal point, but no need to input the decimal point), and the system will automatically add a decimal point. If the height you want is 140mm, you need to input “1400” and click “SAVE”.



6.3.1.24 Click "SAVE" and "OK" to complete setting.

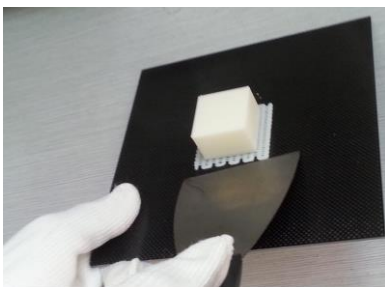


6.3.1.25 If RS Plus 3D Printer is successfully connected with computer software, the system will automatically switch to the offline state 10 seconds after the software and RS Plus 3D Printer are disconnected.

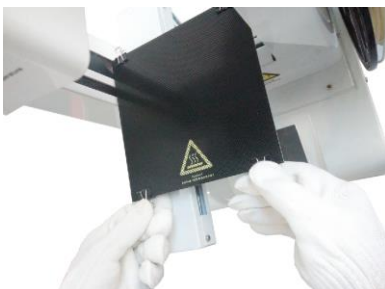


6.4 Remove the four clips, and take down the model with a shovel.

**⚠ Notice:** wear gloves when removing the model to prevent burn by the hot platform!



6.5 After removing the model, fix the hotbed panel again with four clips on the build plate.



6.6 Print from USB Flash Drive notes

6.6.1 The maximum memory of the USB flash drive model recognized by RS Plus 3D Printer is 32GB.

6.6.2 RS Plus 3D Printer can recognize up to 58 model files in the USB flash drive, and it is recommended to store no more than 20 model files.

6.6.3 If the USB flash drive has been inserted but RS Plus 3D Printer can not find the device, it is possible that the the USB flash drive is inserted before RS Plus 3D Printer is powered on, or it contains too many model files. You can pull it out and re-insert it.

If the computer can recognize the USB flash drive, but RS Plus 3D Printer can't, you can format it in the default mode of the operating system.

6.6.4 If the USB flash drive is formatted or a new USB flash drive is used for printing from USB Flash Drive, be sure to create a new folder named "3DMODEL" in the USB flash drive directory where offline print files are stored. If the folder is created in any other folder or the offline print files are stored elsewhere, RS Plus 3D Printer can not recognize.

6.6.5 The file name can be in Chinese or English. The length is not more than four Chinese characters or eight English letters, and if exceeded, the excessive part will be shown as "~ 1". For example: "High-Tech Product.WTK" will be shown as "High-Tech~1.WTK" and "PRINTMODEL.WTK" will be shown as "PRINTM ~ 1.WTK".

6.6.6 The file name shall contain no special character.

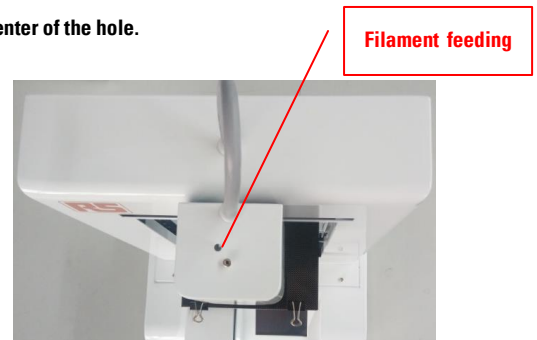
6.6.7 During the printing, the platform temperature can not be set below the room temperature, otherwise the extruder can not print properly.

6.6.8 ABS material has relatively high shrinkage, and the recommended ambient temperature is 20 °C-32 °C, because the low ambient temperature will affect the effect of model printing.

## 7) FILAMENT

7.1 Feed the filament

**Notice:** To avoid blocking the extruder, please make sure the filament is fed through the center of the hole.

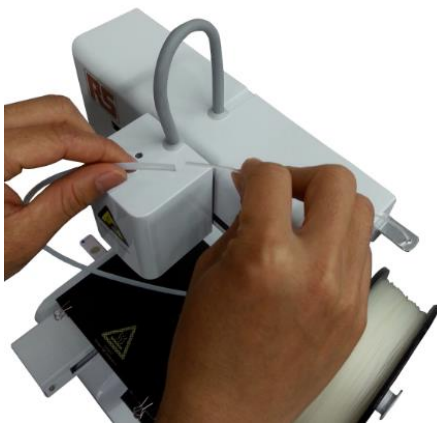


7.2 Load the filament spool on the spool holder, and install the filament tube guide in the tool box on RS 3D Printer by a screw.

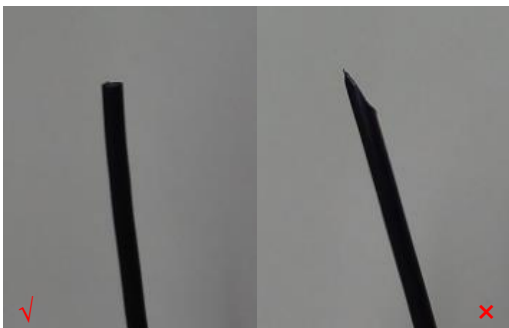




**7.3** Pass the filament through the filament tube guide and load the filament through the Teflon tube filament guide.



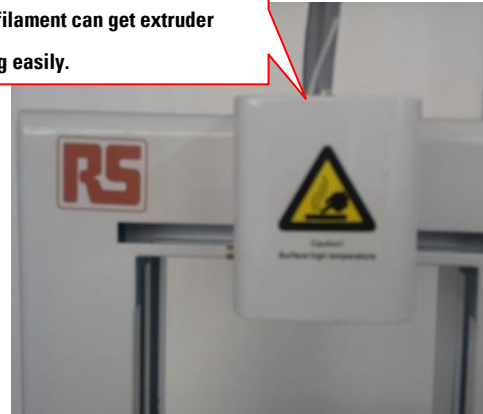
**7.4** Straighten the free end of the filament and cut the filament vertically with the Cut pliers. Put the free end of the filament into the hole in the middle of the extruder head, and feed the filament until it submerges into the hold.



**7.5** Change the filament

**7.5.1** The free end of the filament should be cut vertically and then feed the free end of the new filament until the new filament emerges from the nozzle.

1. Cut the end to be flat and hold the left filament straight.
2. Bend filament can get extruder blocking easily.

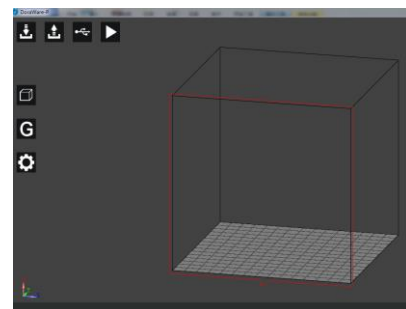


- Keeping pushing down the leftover filament and till the filament get stuck into the gear.

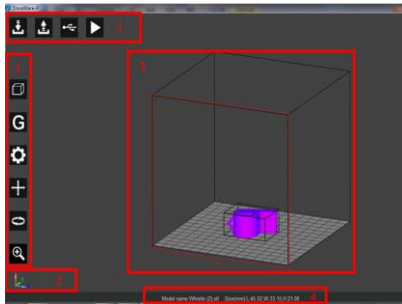


## 8) SOFTWARE

**8.1** Turn on the power switch, and double click "DoraWare-P" on the desktop to open software.



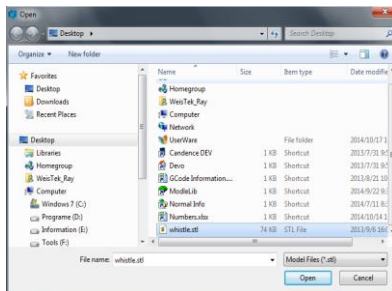
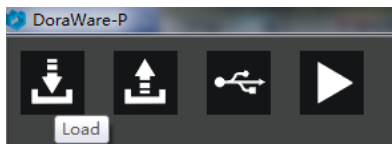
**8.2** In the software interface, the bar "1" at the top left corner is the function menu. The bar "2" at the lower left corner is schematic three-dimensional coordinates; the middle bar "3" is model display area, and the side with red lines faces the operator; the bottom bar "4" is for status display, indicating the temperature and model information.



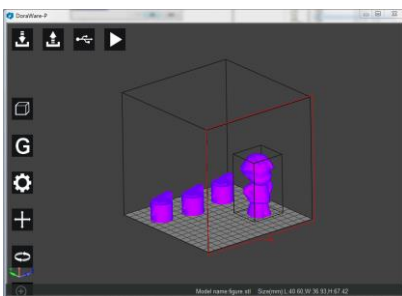
### 8.3 Import model

#### 8.3.1 Click the icon "Load" and "Open".

⚠ Notice: if you want to open a previously generated GCODE file, you need to store the STL file and the GCODE file in the same folder. Import the STL file to open the GCODE file, without a new GCODE.

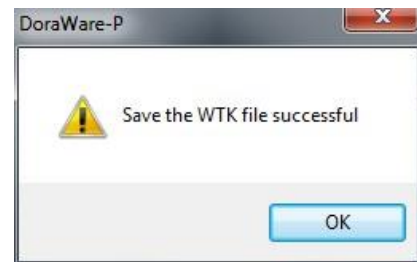
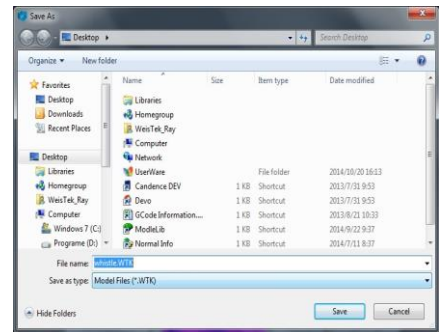
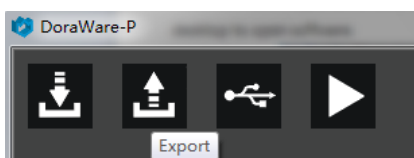


#### 8.3.2 Click "Load" again, and you can import multiple models.



### 8.4 Generate a file

8.4.1 Click the icon "Export", and the dialog box to save the file path pops out. Select the save path and click "Save", and software automatically generates the printing from USB Flash Drive file.

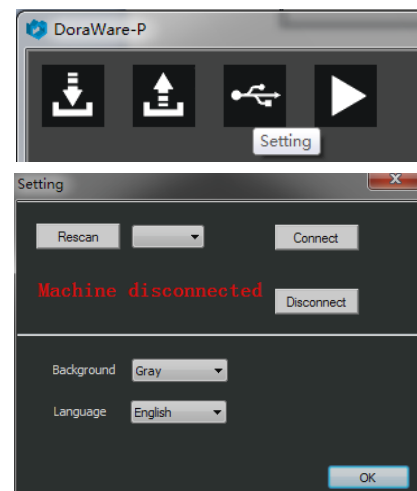


⚠ Notice: if the model does not generate GCODE, click "Export", it cannot generate a file, and the following message box will pop out.

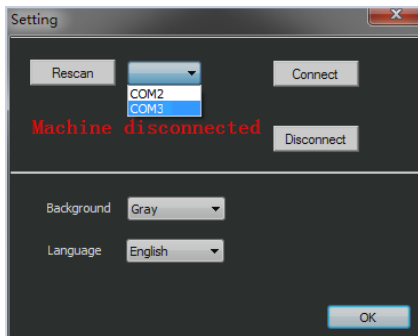


### 8.5 Print from computer

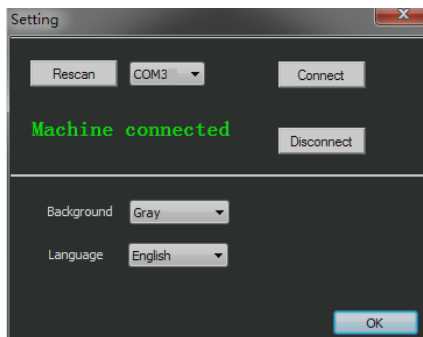
#### 8.5.1 Click the icon "Setting" to open RS Plus 3D Printer connection dialog.



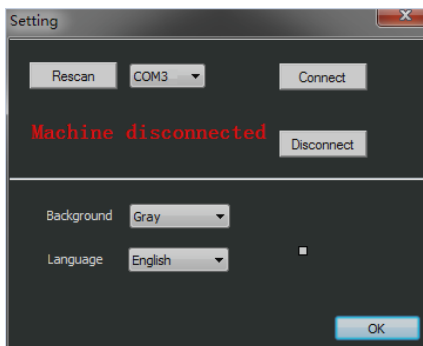
#### 8.5.2 Click "Rescan" and "▼", as shown below.



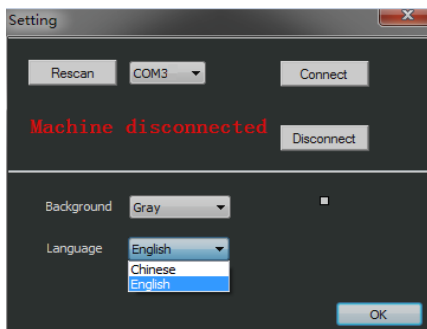
8.5.3 Select the corresponding port of RS Plus 3D Printer. Click "Connect".



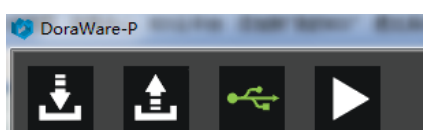
8.5.4 To disconnect RS Plus 3D Printer and software, click "Disconnect".



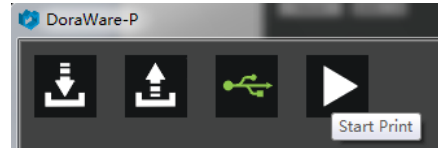
8.5.5 Click "Language" to choose Chinese or English.



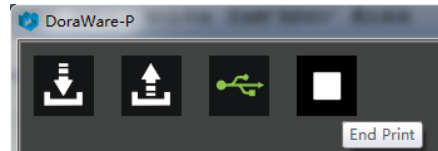
8.5.6 After successful connection, the connection icon turns in green.



8.5.7 After the GCODE file is generated or opened, click "Start Print".

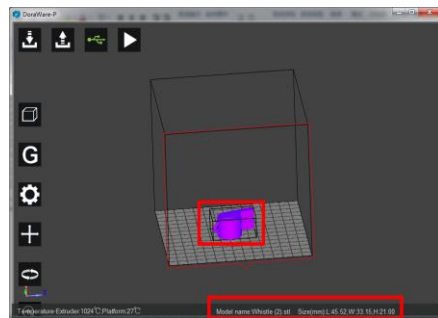


8.5.8 To stop printing, click "End Print".

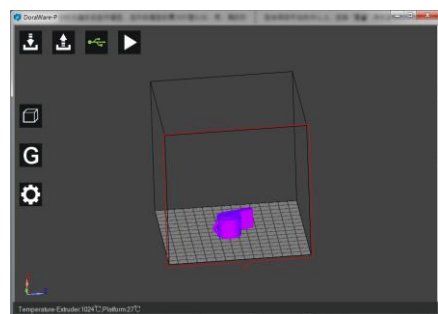


8.6 Control models with mouse

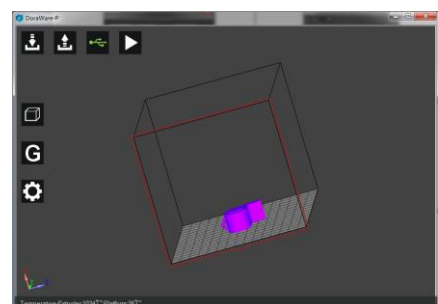
8.6.1 Click with the left mouse button to select the model, the size of the model is displayed in the status bar at the bottom in terms of the outer wall's length, width and height, and a transparent box will surround the model to show the selected status.



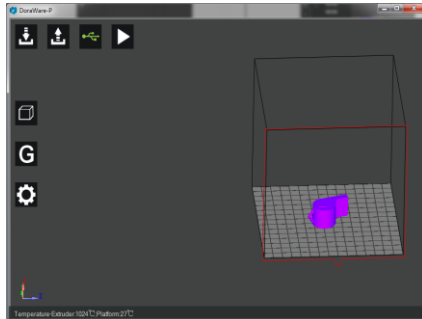
8.6.2 After the model is selected, the edit menu icons hidden on the left will appear.



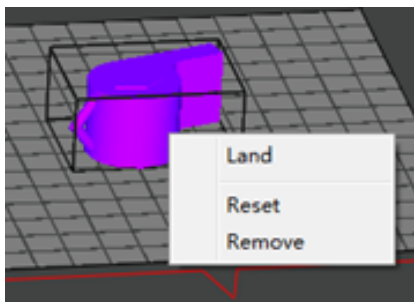
8.6.3 Click the right mouse button to move and rotate the model display frame.



8.6.4 Hold the middle mouse button, to move the overall model display frame.

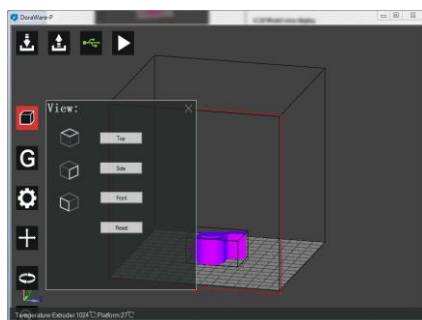


8.6.5 Click the model with the right mouse button. Select "Land" to descend the model in the center of the platform. Select "Reset" to restore the original status of the model. Select "Remove" to remove the model.



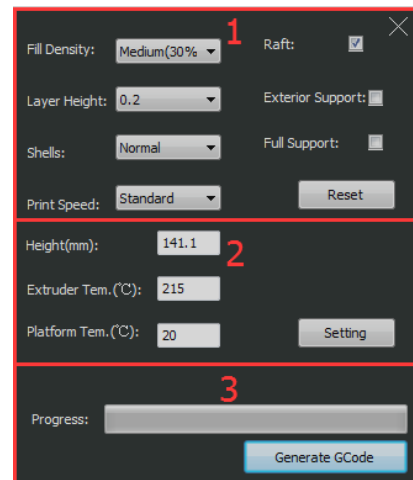
## 8.7 Model view display

8.7.1 Click the menu icon "View" to view the model from different sides or reset.

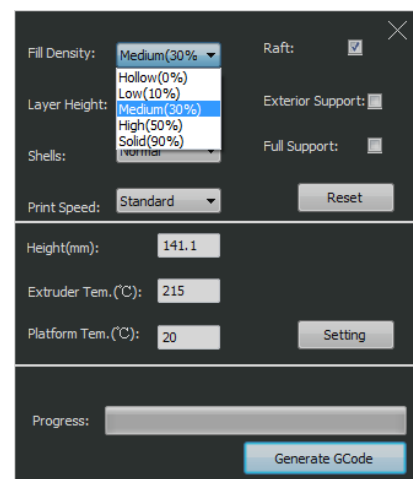


## 8.8 Printing settings

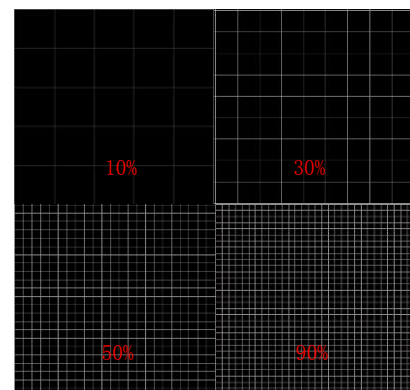
8.8.1 Click the icon "GCode" and the dialog to generate GCode is divided into three parts: the column "1" to set model parameters, the column "2" to set printing parameters and the column "3" to generate GCODE.



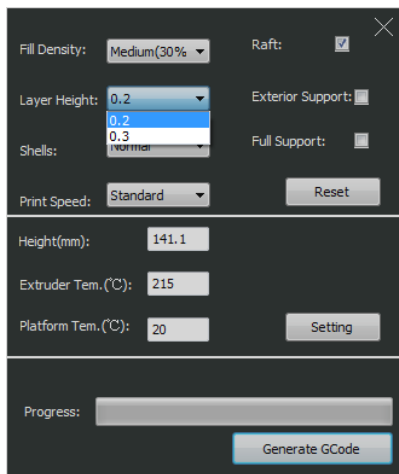
8.8.2 Model density refers to the filling density of the model, set by percentage. Click "▼" to select different densities.



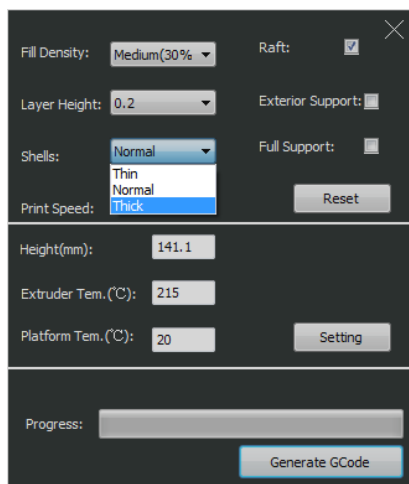
8.8.3 In the same model, the greater the density, the longer the duration of the printing, the more solid the model.



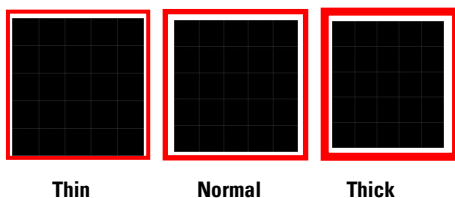
8.8.4 Layer thickness refers to the height of each layer of the model. Click "▼" to select 0.2 or 0.3mm, and the default is 0.2mm. The print time at the parameter of 0.3 will be shorter than 0.2, but the model's surface is less accurate.



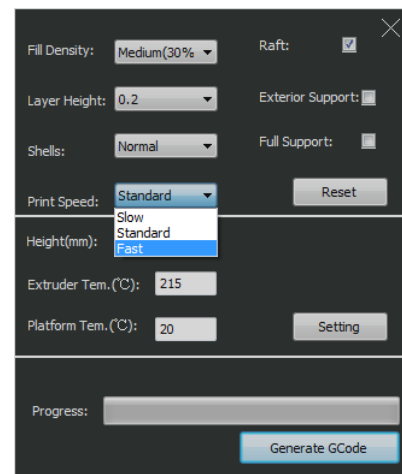
**8.8.5** Layer Height refer to the thickness of the model surface. Click “▼”to select.



**8.8.6** The thickness of the red frame represents different effect of “Thin, Normal or Thick”.

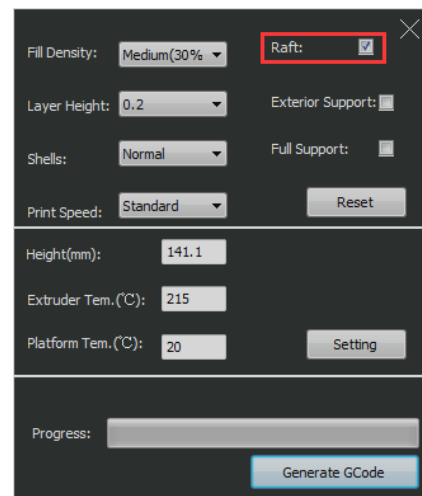


**8.8.7** The higher the print speed, the shorter the duration, the less accurate the model surface. Click “▼” to select.

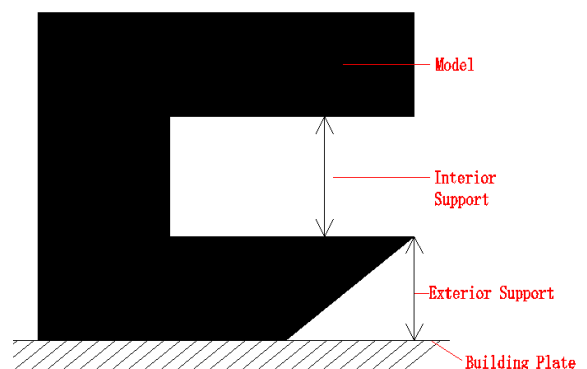


**8.8.8** In order to make the model better fixed on the build plate, it is recommended to select raft.

**⚠ Notice:** without the raft, only smaller models can be printed, the platform shall be well adjusted.

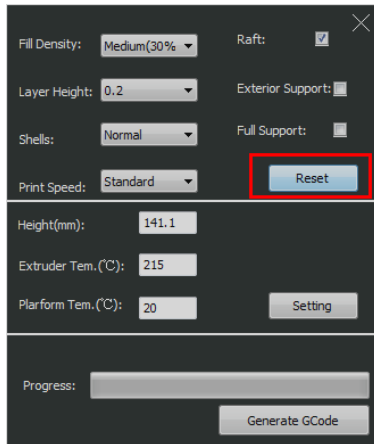


**8.8.9** Structure of internal and external support of the model. Full support has both interior and exterior support.



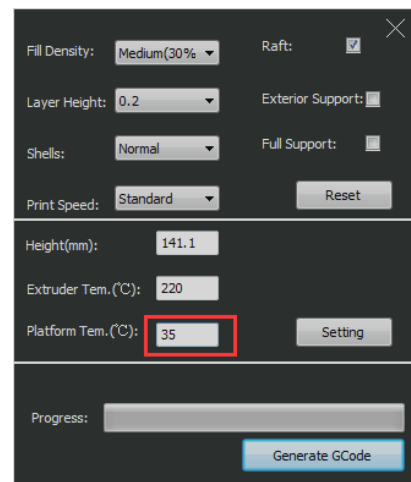
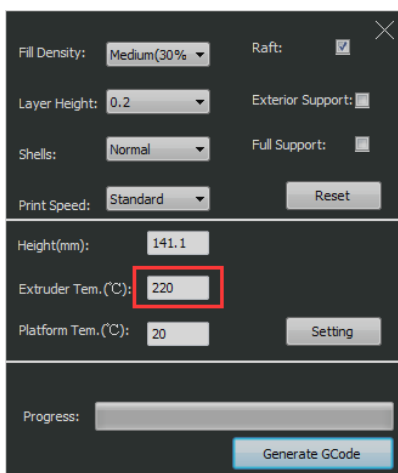
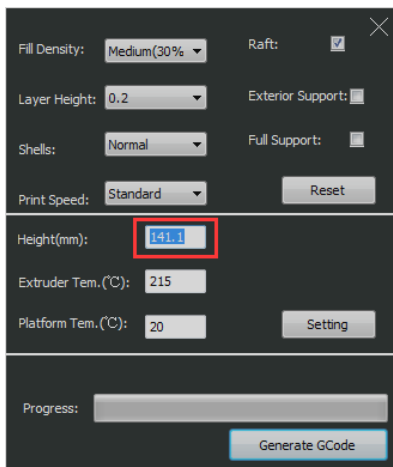


**8.8.10 Click "Reset" to restore the default settings.**

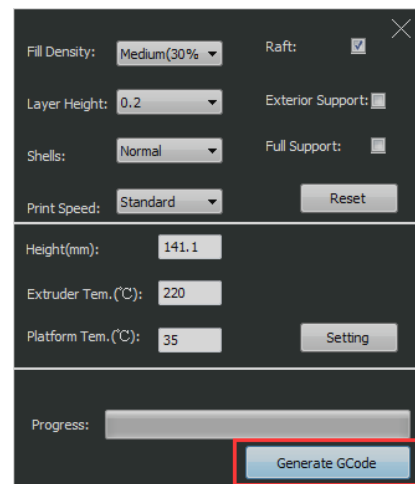


**8.8.11 Set the print height and the temperature: directly input Z-axis height or the temperature and click "Setting". This value is height of the generated printing file which can also be set before connection.**

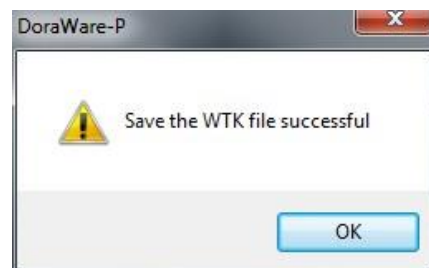
**⚠ Notice: the platform temperature cannot be set lower than the ambient temperature.**



**8.8.12 Click "Generate GCode".**

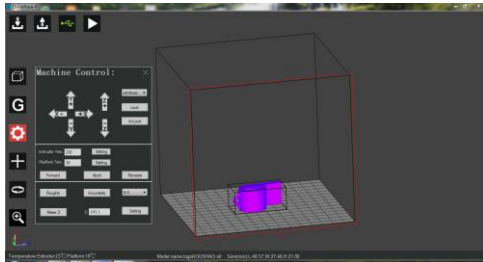


**8.8.13 After GCODE is generated, click "OK".**

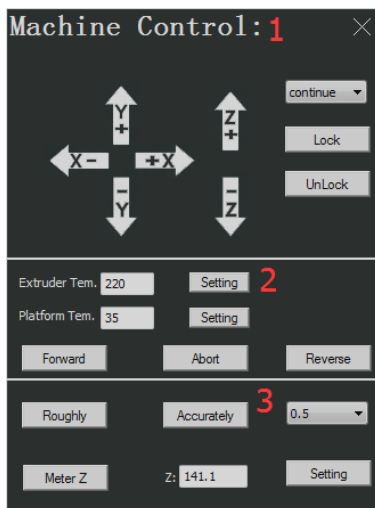


**8.9 Control the printer**

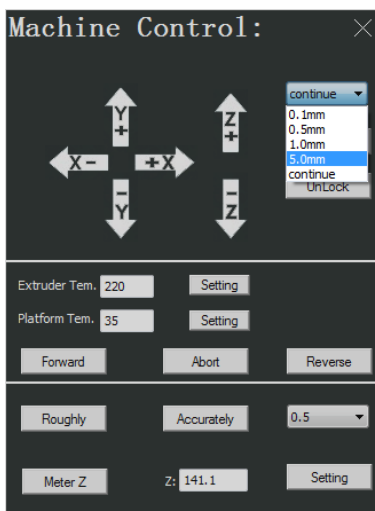
**8.9.1 Click the icon of control.**



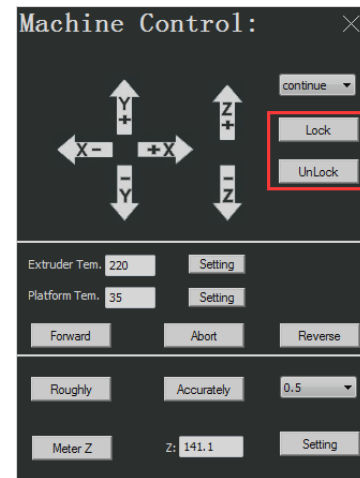
8.9.2 Control includes three parts: movement control "1", temperature control "2" and Z-axis height setting "3", as shown below.



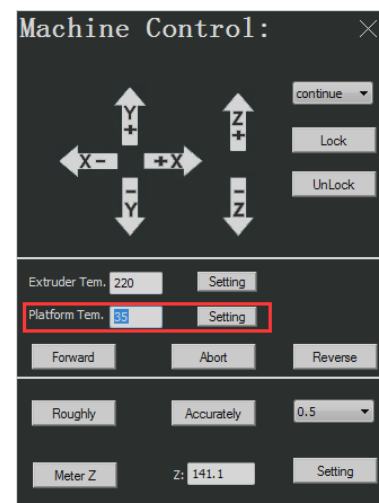
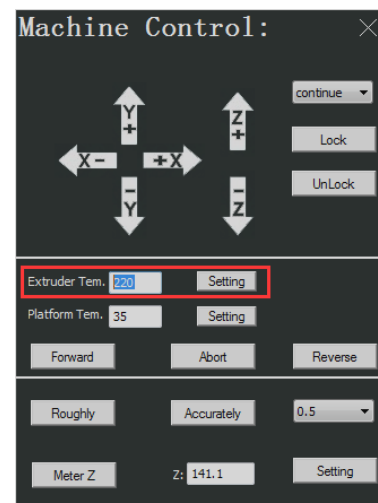
8.9.3 Click X/Y/Z, and the three axes will move along the corresponding direction. Click the pull-down window "continue ▼" to select the step length of single movement.



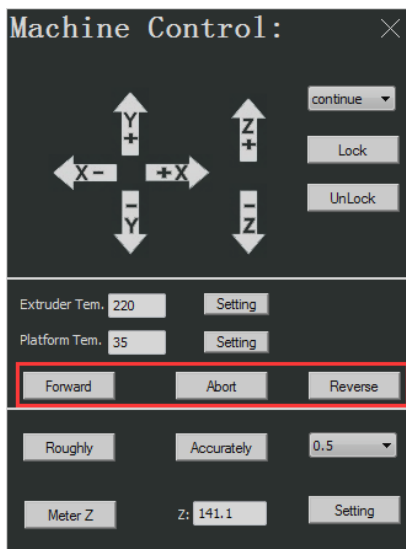
8.9.4 Click "Lock" or "UnLock" to lock or unlock the position.



8.9.5 Input target temperature and click "Setting" to set the nozzle temperature.



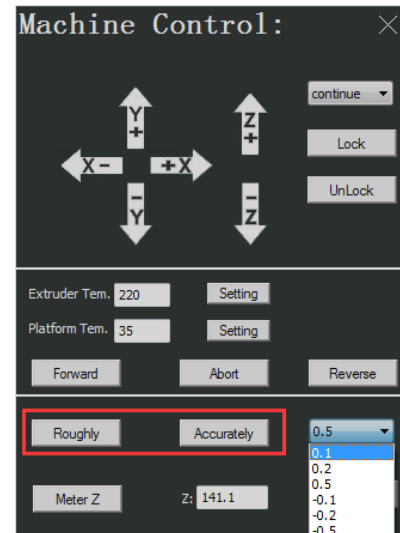
8.9.6 After the nozzle temperature reaches the set value, click "Forward/Abort/Reverse" to control the filament.



8.9.7 Before the nozzle temperature reaches the set value, do not feed or pull out the filament.

8.9.8 The temperature setting here is to set the temperature of RS Plus 3D Printer when software is connected to RS Plus 3D Printer. If the temperature is set at 220 °C as GCODE file is generated but the temperature before printing is set at 230 °C, the printing is carried out at 230 °C. It is the same with the platform temperature setting. The temperature setting in previous section is to set the temperature as GCODE file is generated, which can be set before software is connected to RS Plus 3D Printer.

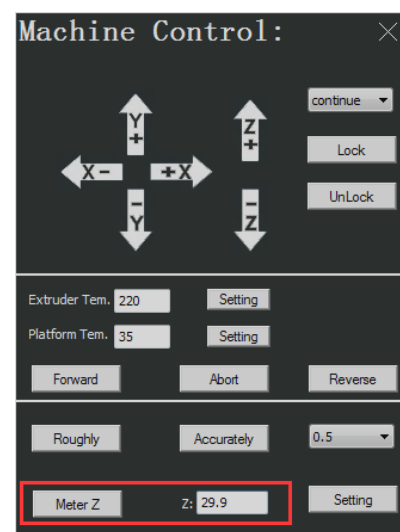
8.9.9 In the part of Z-axis height setting, click "Roughly", and Z-axis platform will automatically descend to the lowest point and then rise close the nozzle. At this time, according to the distance between the platform and the nozzle, click "▼" after "Accurately" to select the step length of single Z-axis movement. If "0.5" is selected for debugging, which is equal to clicking "Accurately", Z-axis moves 0.5mm upwards. The less the distance between the platform and the nozzle, the smaller the step length. If the platform touches the nozzle, choose a negative for the movement downwards.



8.9.10 The precise height of Z-axis platform is a card between the platform and the nozzle.



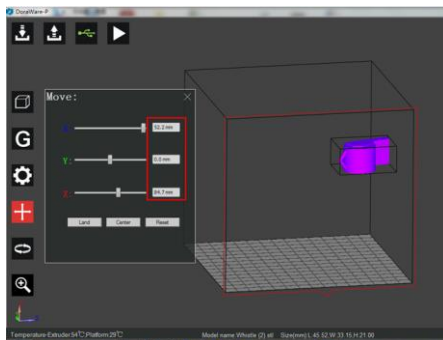
8.9.11 Click "Meter Z", and RS Plus 3D Printer automatically starts measuring. You can see the increase of the figure in the dialog after "Z:". After the measuring is complete, click "Setting".



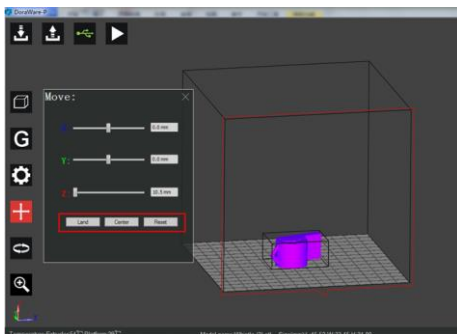
## 8.10 Model movement

8.10.1 The imported model will be automatically placed in the center of the platform. You can move the slider in "X/Y/Z" with the mouse to change its position, and the model will move on the platform according to the distance the slider moves. Or input the moving distance in the slider dialog of "X/Y/Z".

**⚠ Notice:** only after the model is selected, the menu icon of model movement can appear.

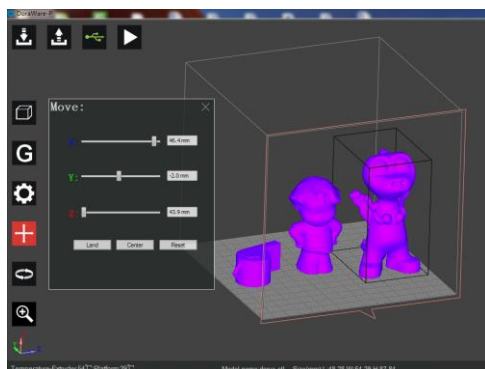


8.10.2 Click "Land" and "Center" or click "Reset" to return to the original status of model.



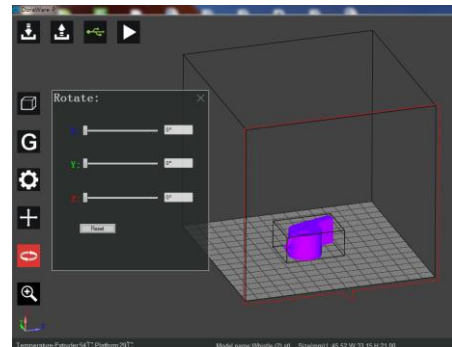
8.10.3 Select the model with the left mouse button and move to import multiple models or move.

**⚠ Notice:** each time, only one model can be selected.



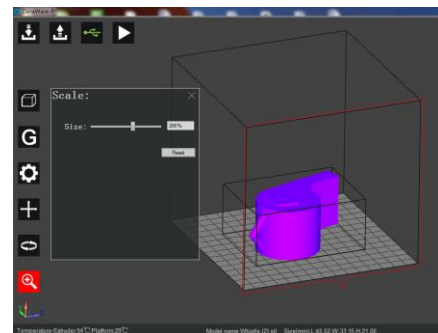
## 8.11 Model rotation

8.11.1 Select the model and click the left menu icon of model rotation to rotate the model by moving the slider on the axis with the mouse or inputting the rotation angle in the dialog, and click enter. Click "Reset" to restore the original angle of the model.



## 8.12 Model zooming

8.12.1 Select the model to be zoomed, click the "Scale" and move the slider with the mouse or input directly the zoom scale in the dialog.



## 9) MAINTENANCE INSTRUCTION

### Extruder Blocking

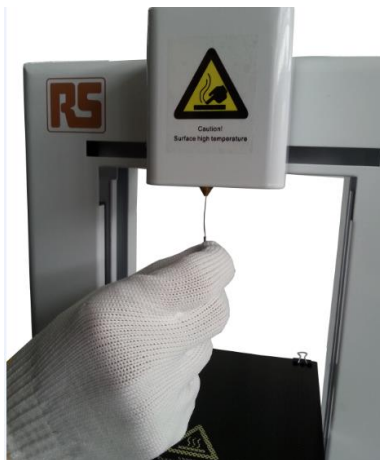
9.1 Connect RS Plus 3D Printer with your pc, increase the extruder temperature from 220°C by 5-10°C each time, click [Forward] and push the filament by hand to extrude the filament until the filament emerges from the nozzle.

9.2 If the nozzle is coated by filament, please heat up the extruder temperature at 220°C and clean up the nozzle by clean towel.



9.3 Heat up the extruder temperature to 220°C. Click [Forward] to extrude the filament, use the Acupuncture Needle in the tool box to insert into the hole of the nozzle to clean up the nozzle up and down.

**Notice: MUST wear gloves in the tool box.**



#### 9.4. Maintenance of the printing platform

9.4.1 Do not directly remove the model from the platform. First remove the heating panel and then separate the model from the panel, for the frequent separation of the model on the platform tends to cause uneven or deformed platform, affecting or voiding the printing.

9.4.2 After the model is removed, clean the aluminum plate fixing the panel and material residue to avoid uneven panel surface affecting the printing next time.

9.4.3 The panel after repeated use may have slight distortion. Fix the cleaned panel on the platform in time. If there is concave or convex in the middle of the panel, put the convex side to the contact surface of the aluminum plate, and fixed with clamps. In case of serious deformation, the platform can be appropriately heated, and it will restore the original state.

#### 9.5. Maintenance of the nozzle

9.5.1. After the printing, if the next model is not printed for a short period of time, it is recommended to return the filament in the nozzle and set the extruder temperature below room temperature.

9.5.2. Heat up the extruder at 220 °C and use forceps or diagonal pliers to hold a piece of clean cloth or soft paper towel to wipe repeatedly the place with residue till it is clean.

**⚠ Notice:** at this point, the temperature is high. Wear protective gloves to avoid burns!

#### 9.6. Maintenance of the touch screen

9.6.1 Turn off power before cleaning the touch screen. Use microfiber cloth or eyeglass cleaning cloth to gently wipe the screen. In case of severe stains, use clean cloth with distilled water to clean. Do not use much force.

9.6.2 A flat printing platform is one of key factors that affect success of model printing. For a larger model and deformation tend to occur, especially for ABS material that is more evident. It indicates uneven printing platform, which should be calibrated before printing.

9.6.3 After GCODE is generated, if the model is printed with PLA materials subject to the set parameters but you want to use ABS material, or the Z-axis height is modified, there are two ways for you to directly modify the print parameters without generating the GCODE file again: one is print from PC. Click the menu "Generate GCODE" to reset the nozzle temperature, the platform temperature and the printing height, and it will be printed according to new parameters; the other is print from USB Flash Drive. Tap the interface "Move" on the touch screen to reset the temperature of the nozzle and the platform.

9.6.4 **⚠ Notice:** the modified temperature value is only valid this time, which needs to be reset for the printing of the same model next time. Z-axis height can be reset in the interface "Advanced".

9.6.5 For ABS material, the bottom or the support should be removed as the model maintains a high temperature.

## 10) AFTER SALES SERVICE

Each device is labeled with a serial number (11 digits) at the back. In case of any unusual circumstance in the use, please take pictures or videos and send them together with the serial number for after sales service.