

Array Blocks

Instruction manual

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Chapter I Preface

3D scanner, is a high-tech product that integrates light, machine, electricity and computer technology. It is mainly used to obtain the three-dimensional coordinates of the outer surface of the object and the three-dimensional digital model of the object. The equipment can be used not only in reverse engineering, 3D inspection, etc., but also with the continuous development of 3D scanning technology, such as 3D film and television animation, digital exhibition hall, clothing tailoring, computer virtual reality simulation and visualization, etc. Many industries have also begun to use 3D scanners as a convenient means to create digital models of physical objects. Through the non-contact scanning physical model of the 3D scanner, the accurate 3D point cloud data of the physical surface is obtained, and finally the digital model of the real object is generated, which is not only fast but also high in precision, and can almost completely replicate any object in the real world to be digitalized. The form realistically reproduces the real world.

1.1 Product safety precaution

1.1.1 Please read and follow the safety precautions in this manual.

1.1.2 This device can only use the voltage of the standard power supply, 5V 2A interface, using incorrect voltage may cause malfunction or fire hazard.

1.1.3 Cables must be protected from damage and damaged cables can cause a short circuit or fire hazard.

1.1.4 The ambient temperature should be 5-40 ° C to avoid sharp changes in temperature.

1.1.5 The device should not be in contact with the liquid; to clean the device, a dry cloth can be used, but the power must be cut off before cleaning.

1.1.6 The device can only be used on a safe, stable surface, away from direct sunlight.

1.1.7 The scanner should be handled gently to avoid strong impact, otherwise it will cause hardware damage.

1.1.8 Non-professionals are not allowed to disassemble and repair the scanner. If there is any problem, please contact your dealer or service center.

Chapter II Equipment List and Precautions

2.1 Product check and inspection

Products and accessories:

Scan head	1st
Turntable	1st
Calibration plate	1st
Calibration plate bracket	1st
Power Adapter	1st
Adapter power cord	1st
Data line	1st
Certificate	1st
Warranty card	1st
Blue ding gum	1st
Marker	2st
U Disc	1st
Scanning object	1st

After getting the product, the first time is to check whether the product is complete and damaged. If there is any omission or damage, please contact the after-sales customer service as soon as possible. If the product is complete, please read the product manual carefully and follow the steps to use the product. If the product is faulty or has obvious defects, please contact the after-sales customer service in time to explain the specific problem. It is convenient for us to provide you with the solution as soon as possible, so that you can use our products more smoothly.

2.2 Precautions before use

2.2.1 Objects not suitable for scanning



Hollow



Occlusio



Large depth of field



Glossy



Black



Transpare

2.3.2 Computer recommended configuration

OS: Windows7 (64bit)

CPU: Intel i5

RAM: 4GB and above

GPU: NVIDIA GTX650 and above

2.3.3 Preparation before scanning

- a. Scanning environment requirements: When using the scanner, try not to place it under strong light sources (sunlight, spotlights, strobe lights, etc.). Avoid ambient light interference (including strong light, light changes (such as walking)), normal indoor LED light environment can be used normally. If the sun is strong, try to pull the curtains or place them on the back side of the backlight. Do not use them under the floor-to-ceiling windows.
- b. Scanning background requirements: calibration and scanning process, try to ensure that the scene of the scanner is stable, no people/objects move around, do not have

reflective highlights, and the black background is the best.

c. Scanning stability requirements: Please place the scanner and turntable on a stable platform to avoid platform shaking. The item should be placed in the center of the turntable. During the rotation of the turntable, it is necessary to ensure that the item does not shake or shift, otherwise it needs to be scanned again.

d. Calibration requirements: All the rotation of the turntable, the scanner, and the change of the angle of the scanner need to be recalibrated to continue scanning. At the time of calibration, the angle of the calibration plate and the calibration plate bracket is 68° ; the calibration plate is timed as far as possible in the middle of the turntable; during the calibration process, do not move the position of the calibration plate bracket, only flip the calibration plate; after the calibration is completed, cut Do not move the relative position between the turntable and the scanner, and the angle of the scanner cannot be changed.

e. Software operation requirements: the scanning process, calculation of calibration results, two model splicing, model packaging and other steps require a certain calculation processing time (the higher the CPU configuration, the shorter the waiting time), do not operate the software interface or Rotate the model and wait quietly

f. USB device requirements: Do not plug or unplug other USB devices (mouse, keyboard, USB flash drive, etc.) during the 3D scanner scanning process.

Note: For the desktop, please use the USB port on the back of the host.

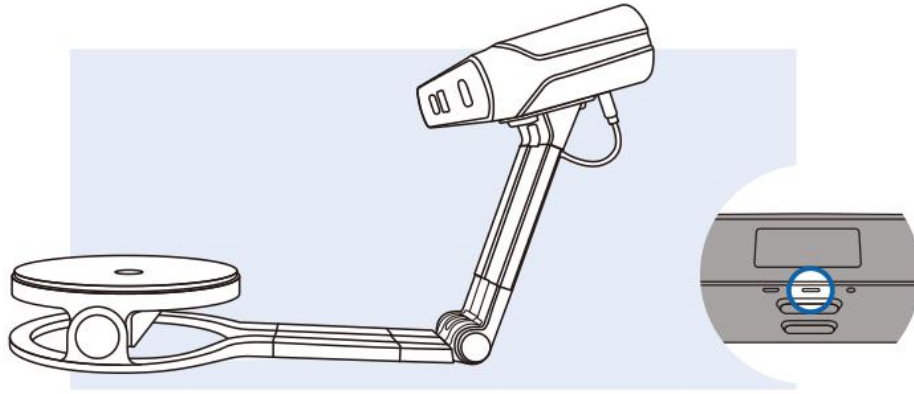
g. Before installing the scanning software, please turn off the desktop assistant, 360 security guard and other anti-virus software.

h. Please run the installation software as an administrator. After the software is shut down, please wait for about 30 seconds before restarting the software.

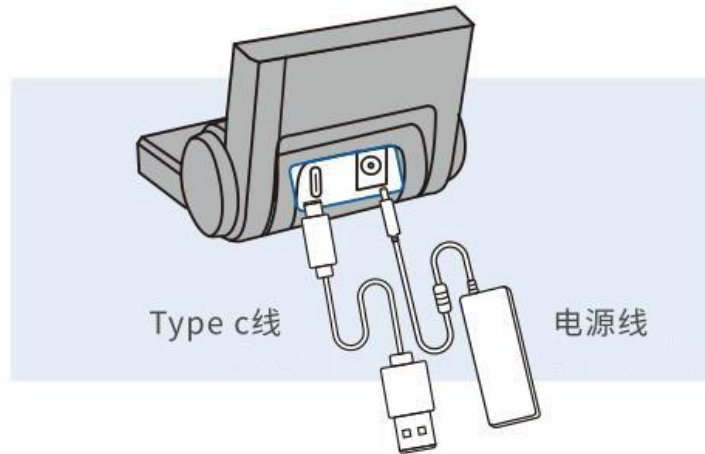
Chapter III Equipment Assembly and Scanning Operations

3.1 Equipment assembly

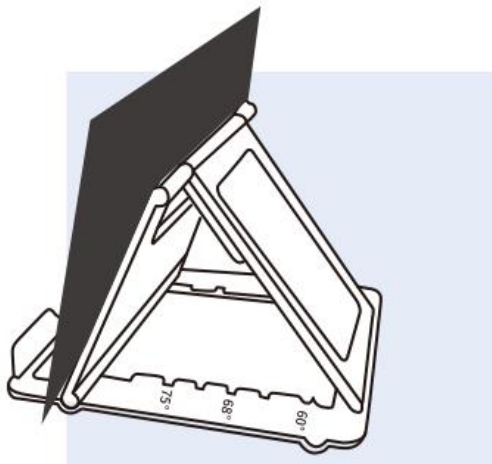
a. Place the scan head on the main body of the turntable, and connect the turntable to the scan head



b. Connect the type C cable to the turntable body and computer, and the power adapter to the turntable body



c. Place the calibration plate bracket in the middle of the main body of the turntable and place the calibration plate on the calibration plate bracket.

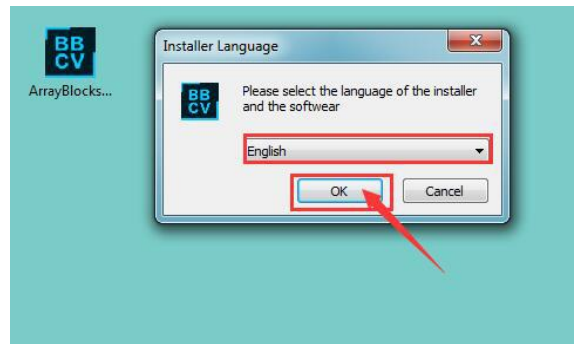
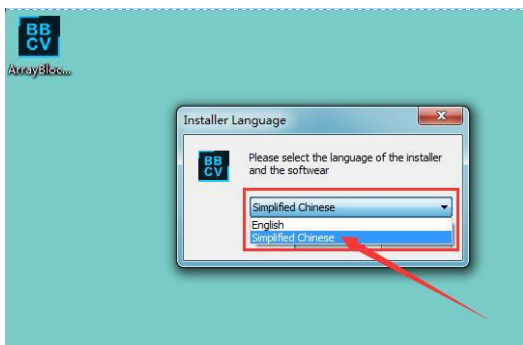


3.2 Software Installation

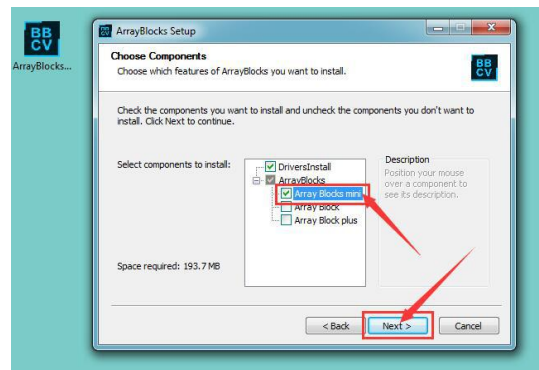
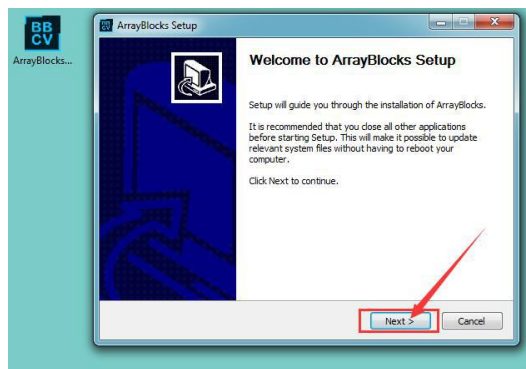
a. Download the device software to the computer, right click "Run as administrator" to install the device software



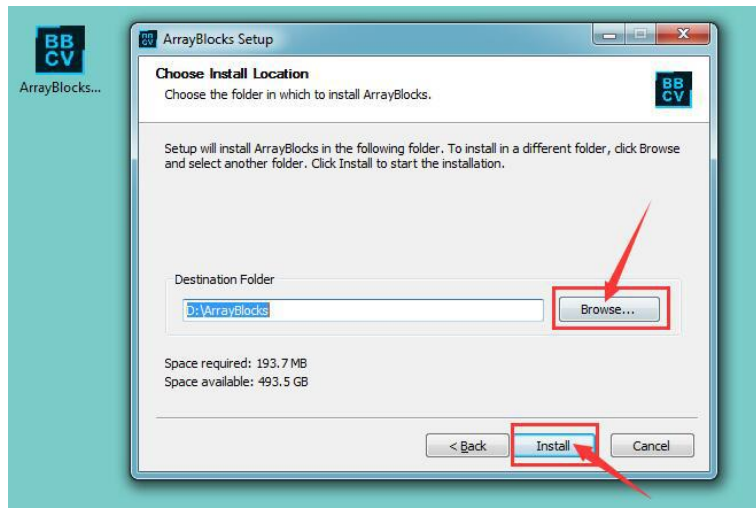
b. Select the language of the software operation and click "OK"



c. By default, click "Next", select the software package corresponding to the device, click "Next"



d. The software is installed on the D drive by default. You can click "Browse" to select the software installation location, and then click "Install".

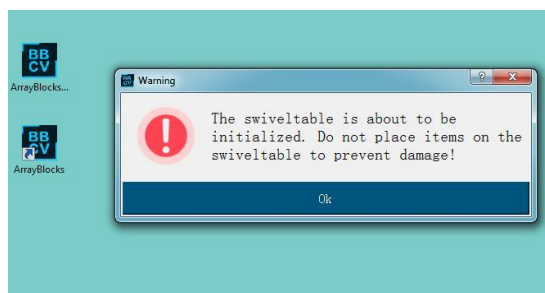
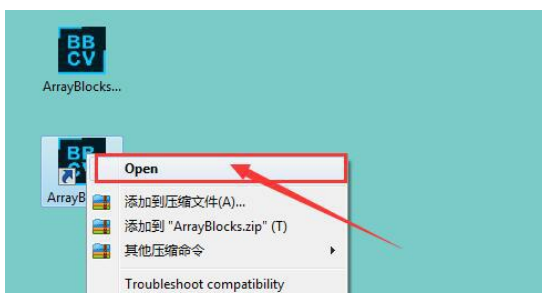


e. The software installation is complete and a shortcut to the device software is displayed on the desktop.



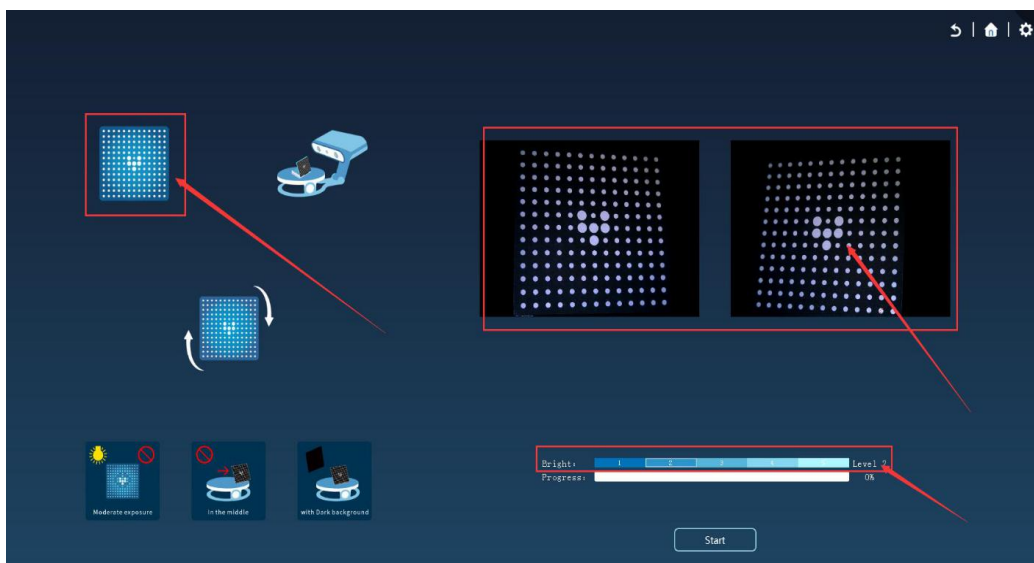
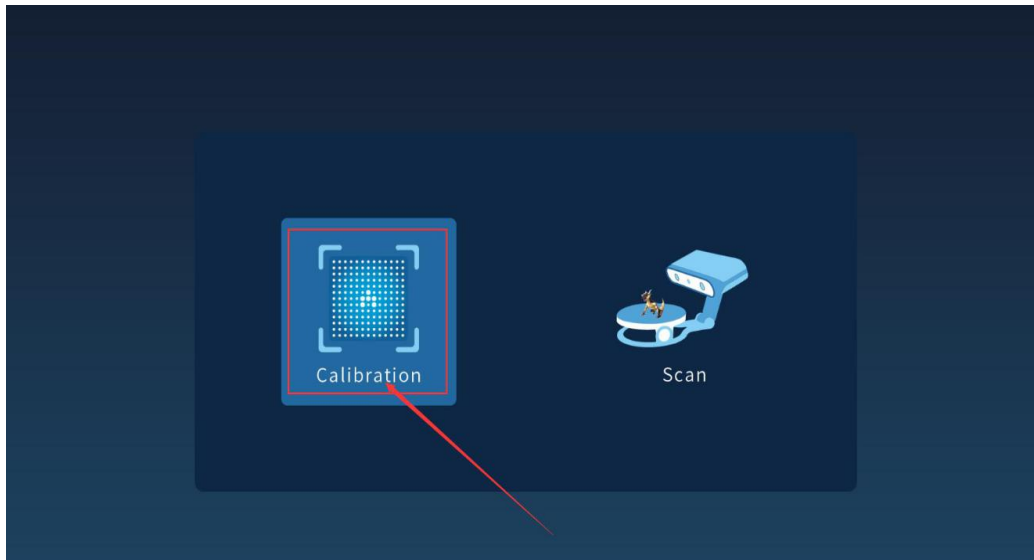
3.3 scanning operation

3.3.1 Power on the device and connect to the computer, double-click the desktop shortcut, or right-click "Open" to open the software.

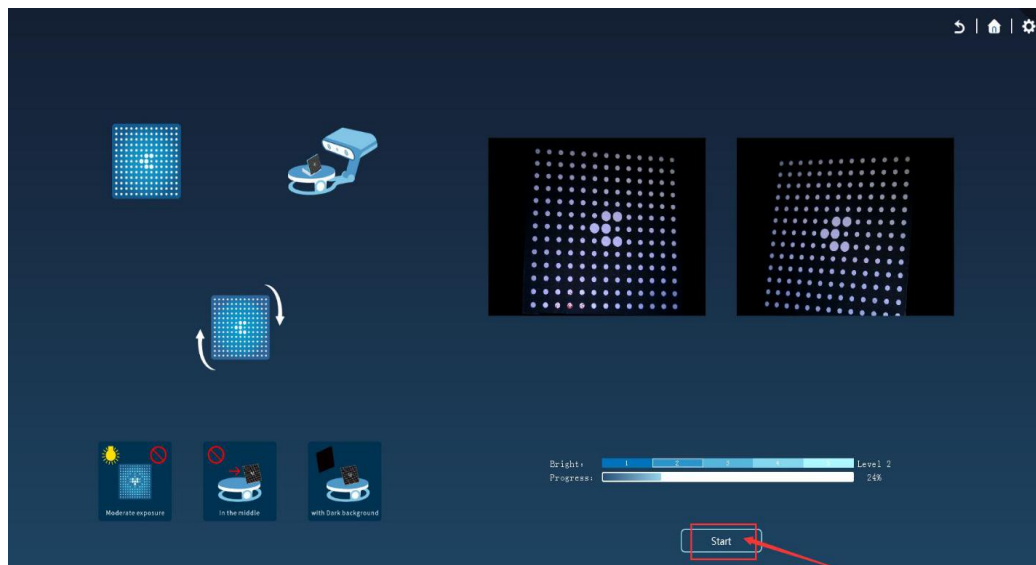
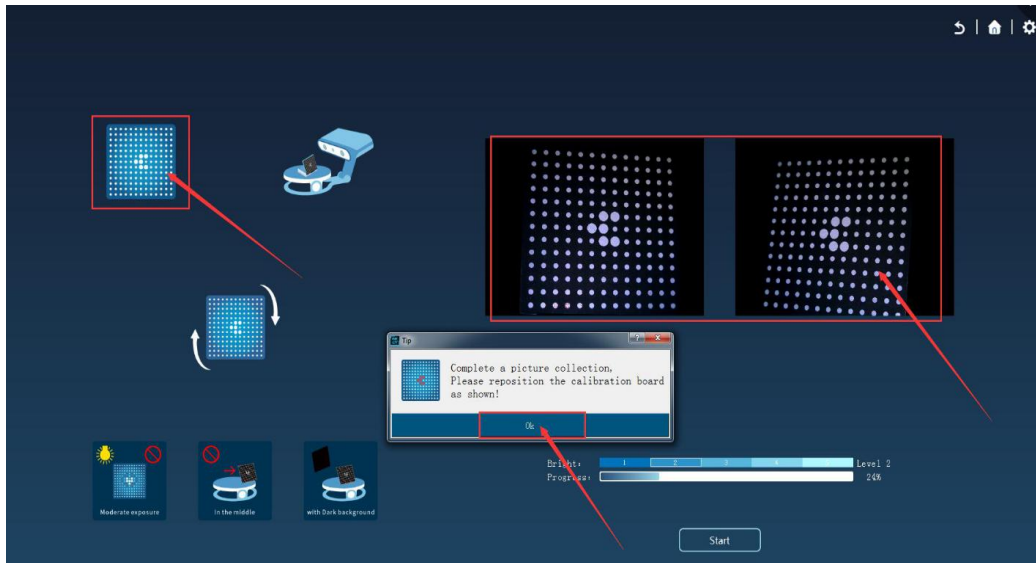


3.3.2 Calibration

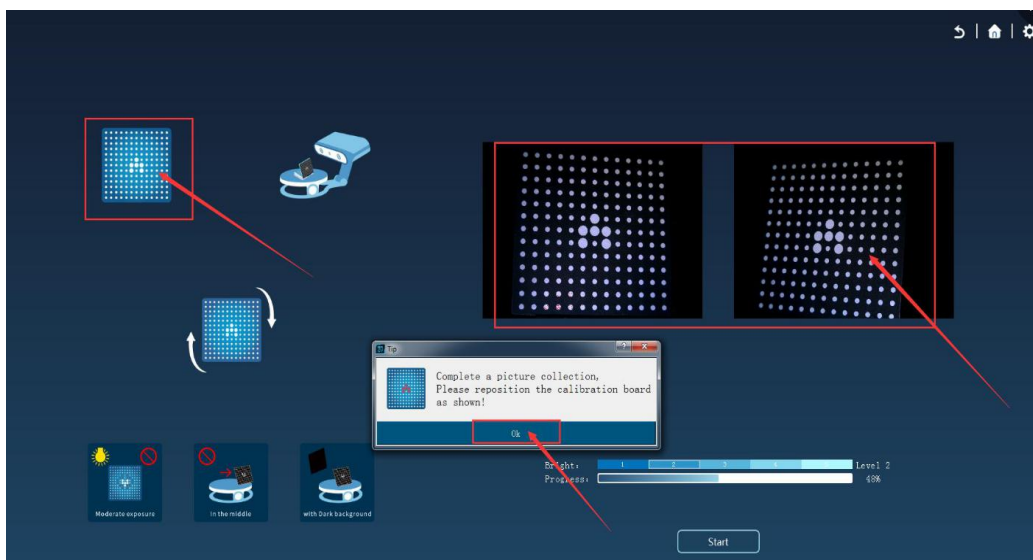
a. Place the calibration plate in the direction shown, click "Start" to calibrate the first direction

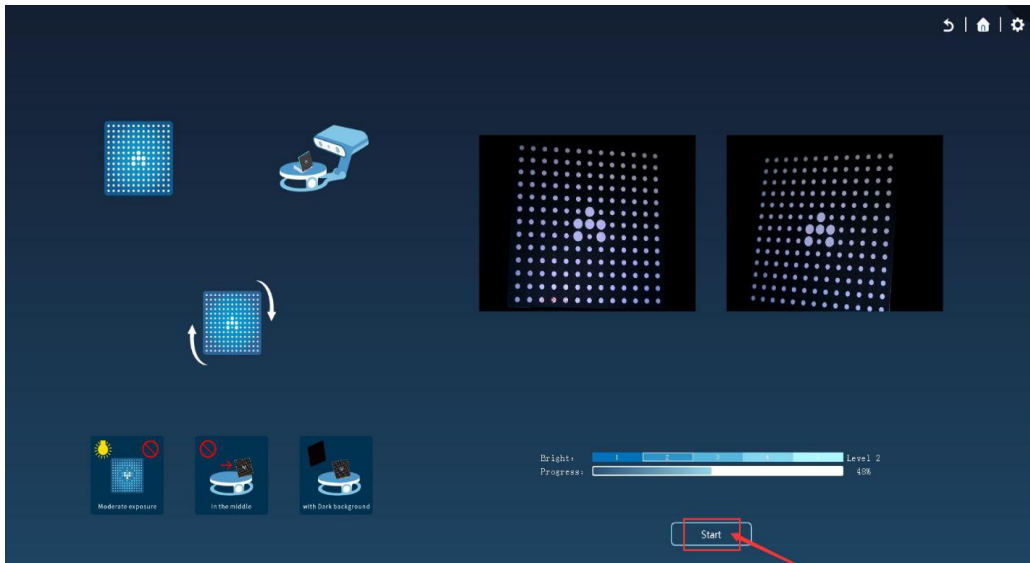


b. Place the calibration plate in the direction shown, click "OK", then click "Start" to calibrate the second direction

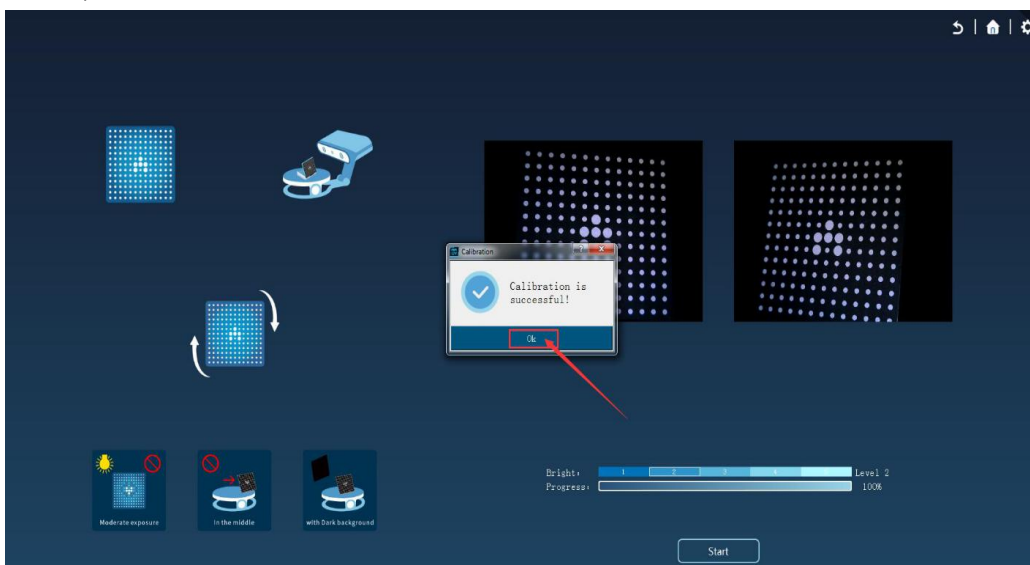


c. Place the calibration plate in the direction shown, click "OK", then click "Start" to calibrate the third direction



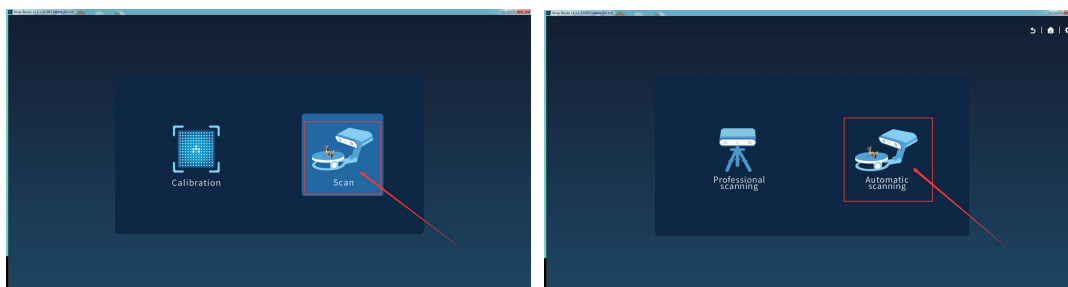


d. After the three directions have been calibrated, wait a few seconds. After the calibration is successful, click “OK”.

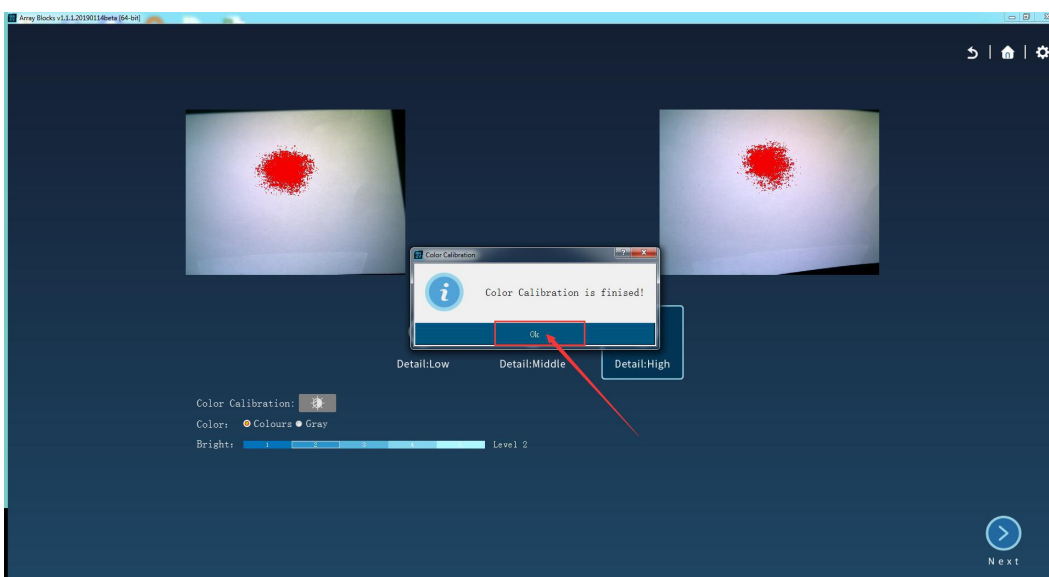
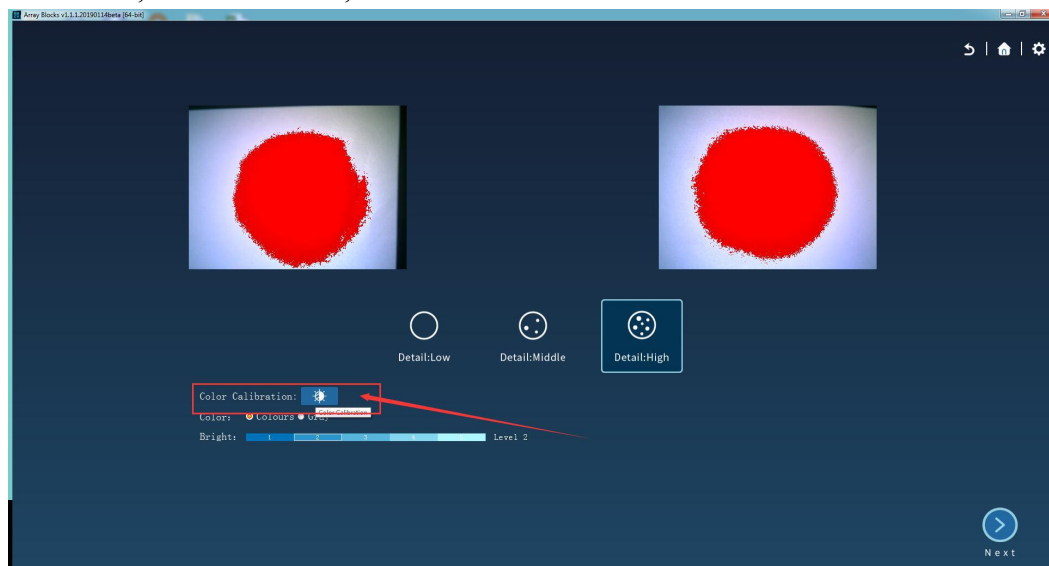


3.3.3 Turntable scanning

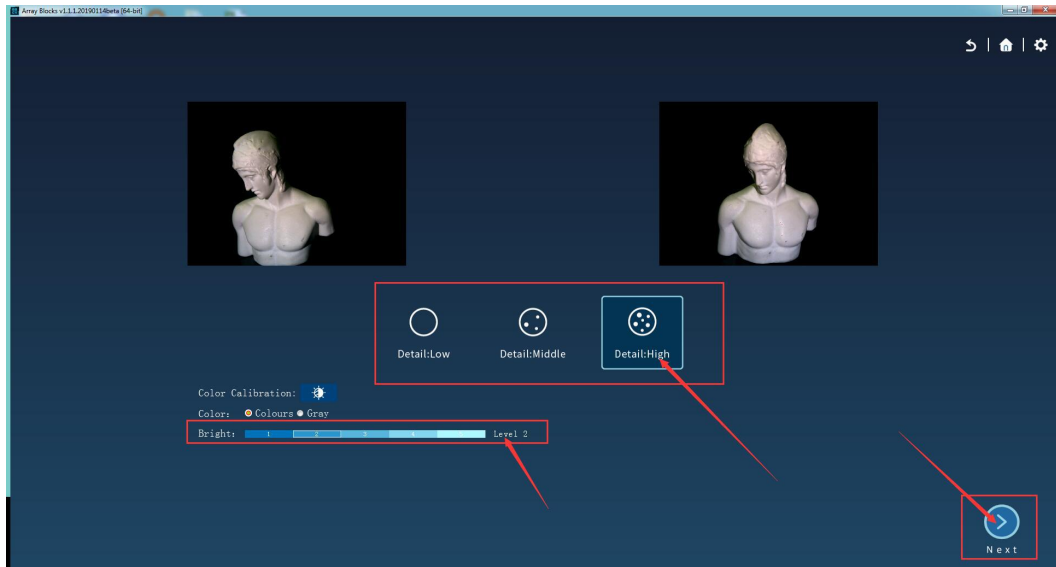
a. After the calibration is complete, select "Scan" and then select "Auto Scan"



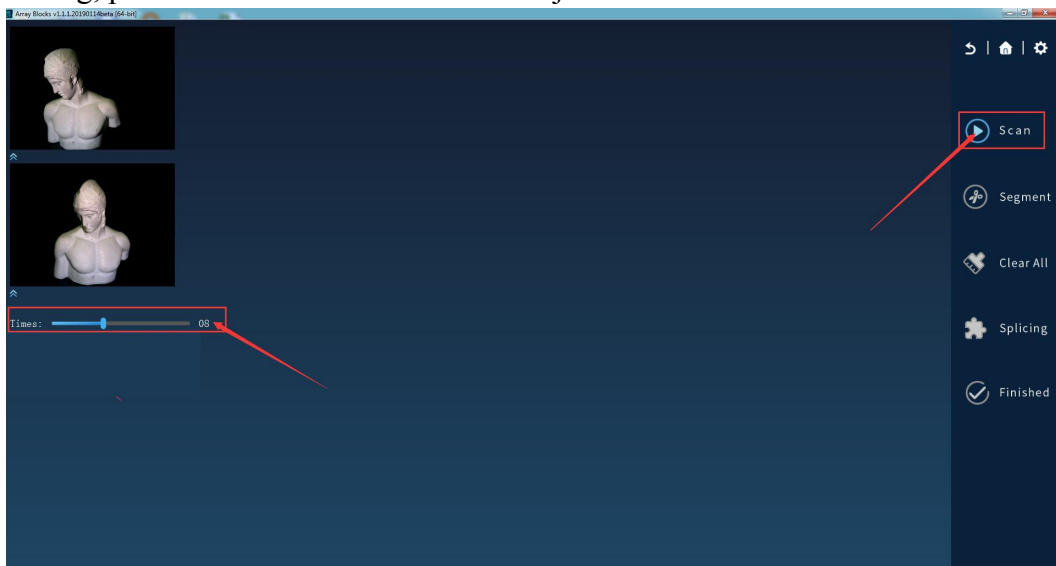
b. To scan for color texture data, select color scan and color calibration; the method is to place a blank sheet of paper in front of the scanned object, click on “Color Calibration”, wait a moment, click “OK” to finish the color calibration.



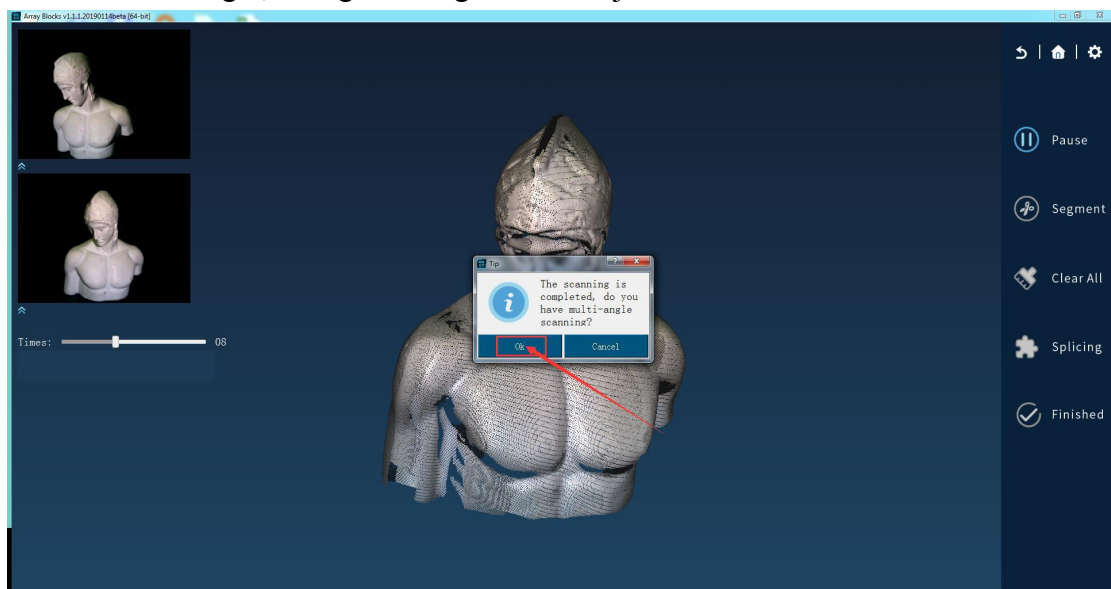
c. Place the object to be scanned on the turntable, select the “Low, Middle, High” details as needed, and select the appropriate brightness, click “Next”

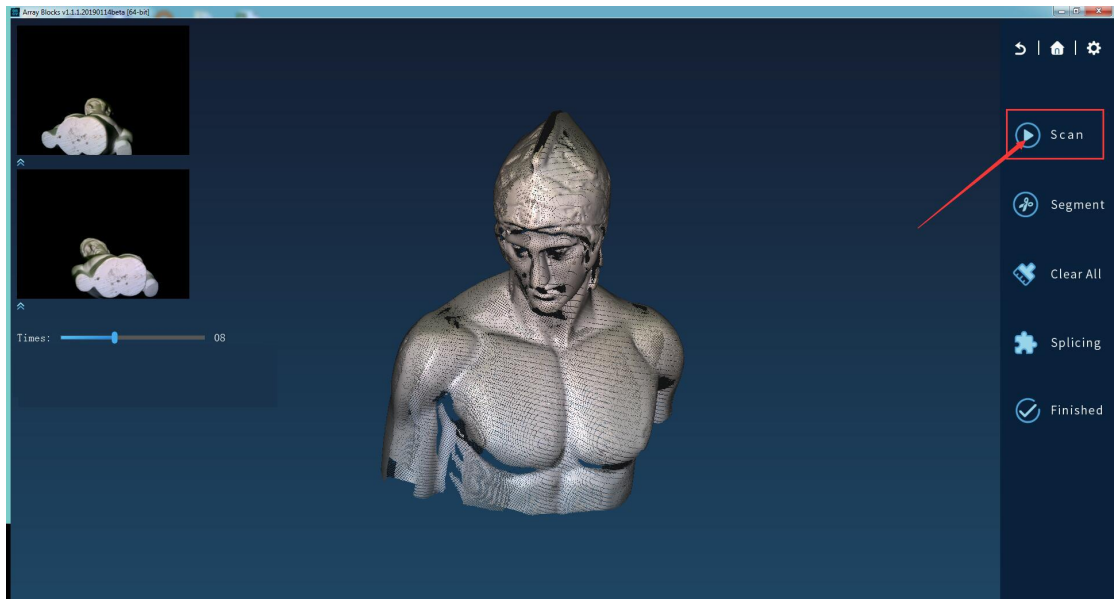


d. Select the number of scans and scan mode, then click "Scan", the object starts scanning, please do not move devices and objects

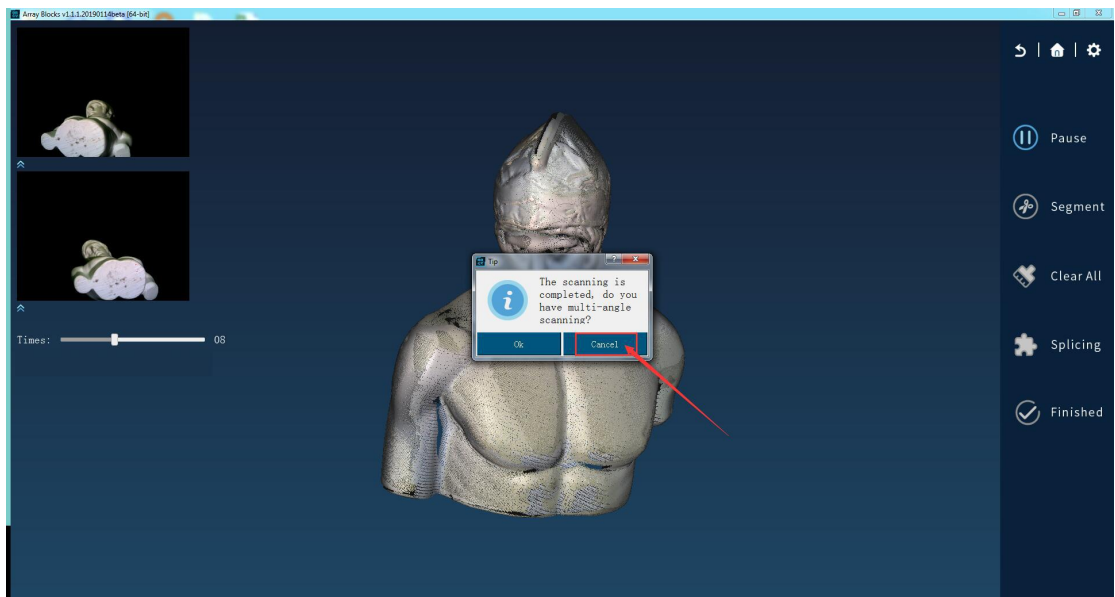


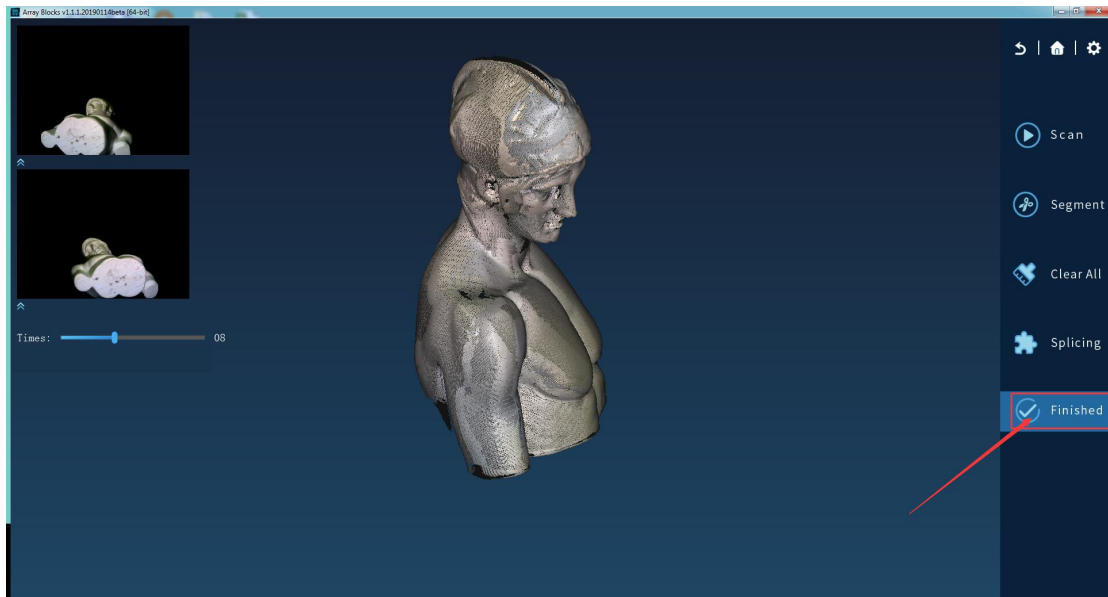
e. At the end of the scan, if some parts of the object are not scanned, click "OK" to scan the multi-angle; change the angle of the object and click "Scan"



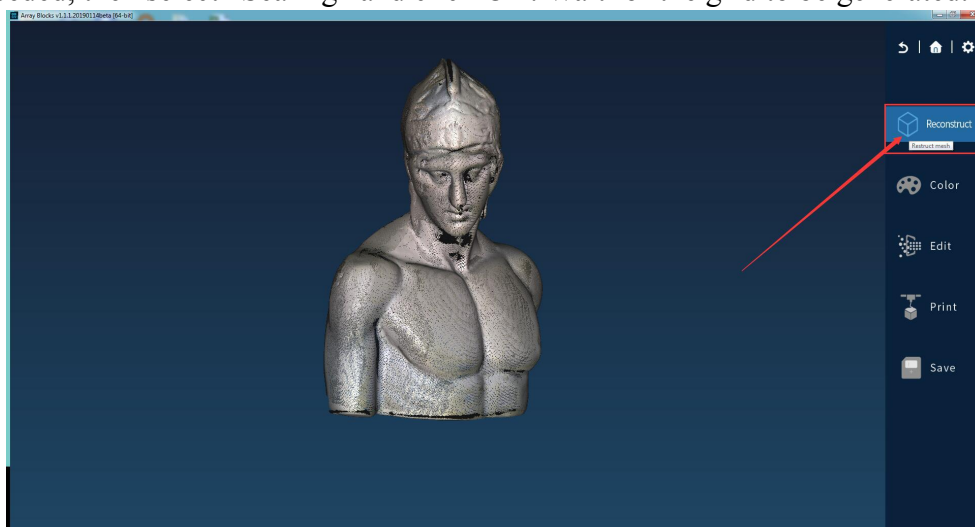


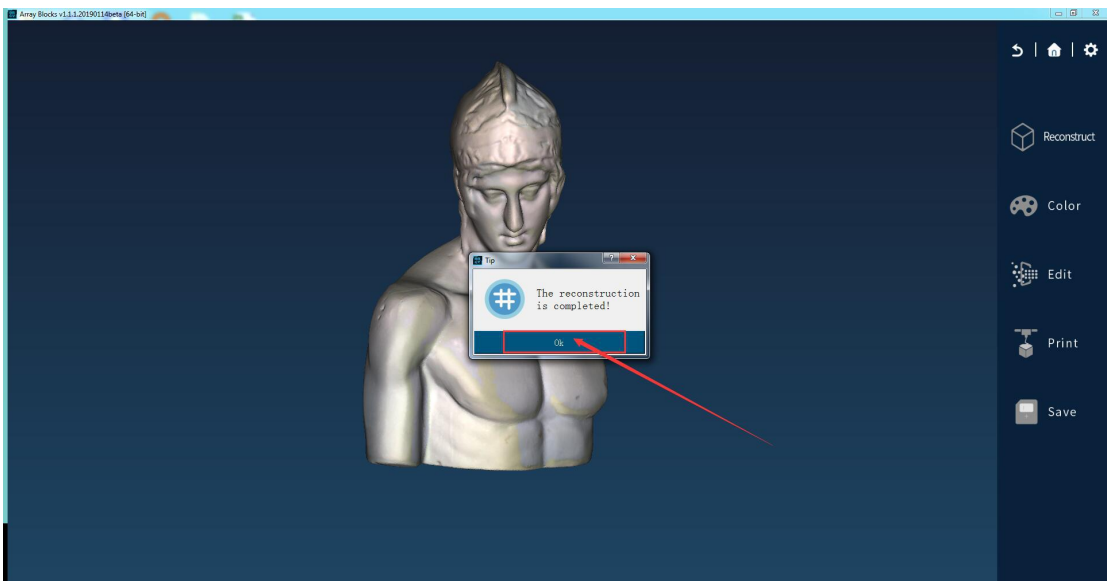
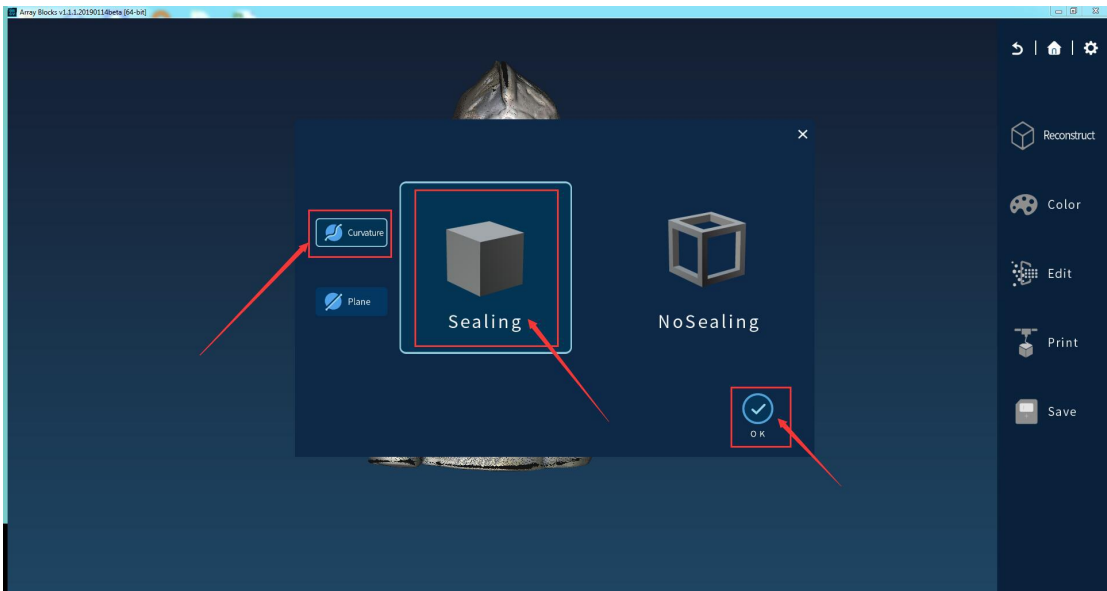
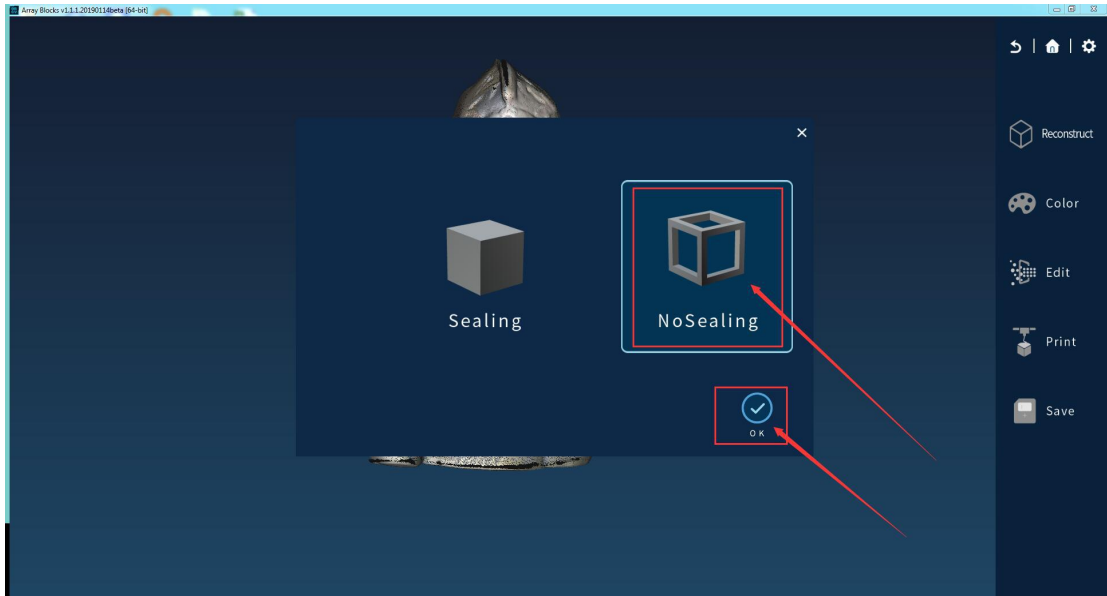
f. After the multi-angle scan ends, the data of each part of the object has been scanned. Click “Cancel”, do not scan the next time, click “Finish”



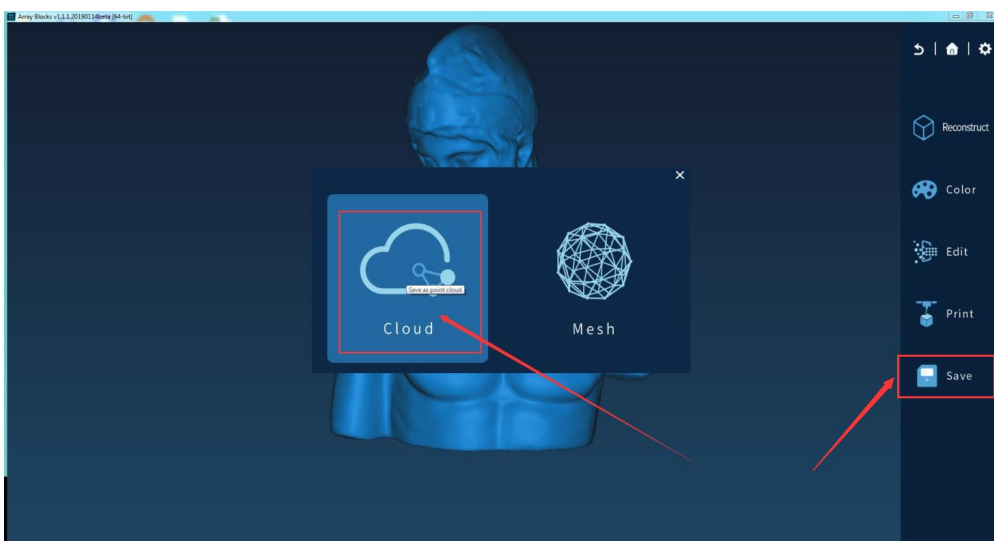
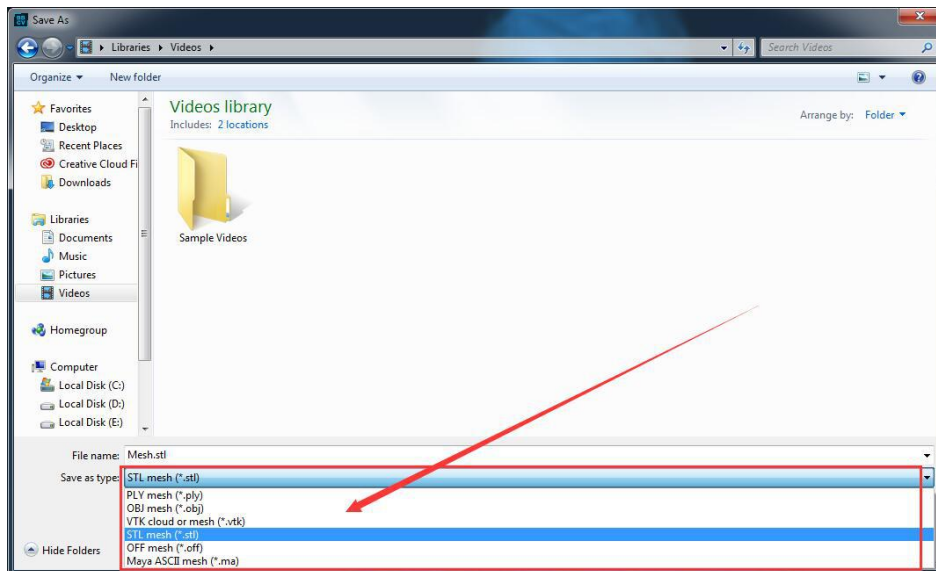
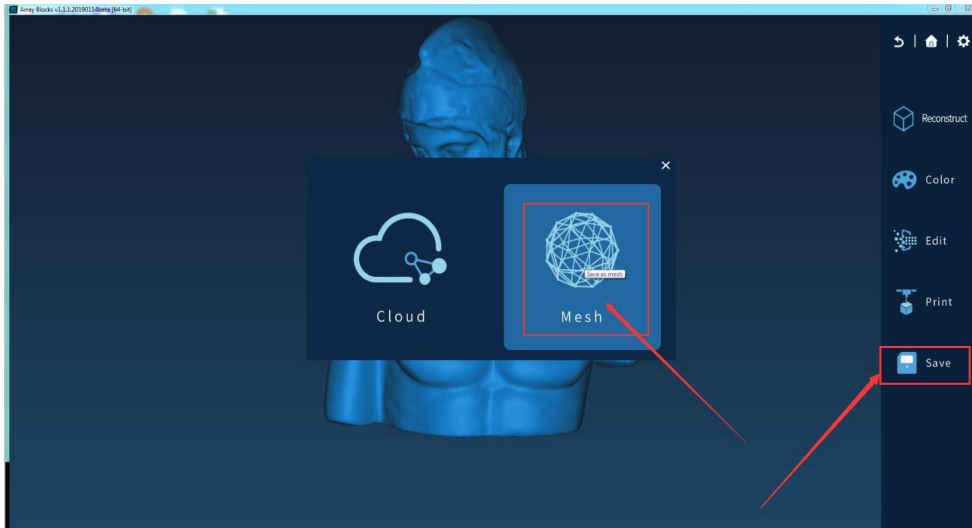


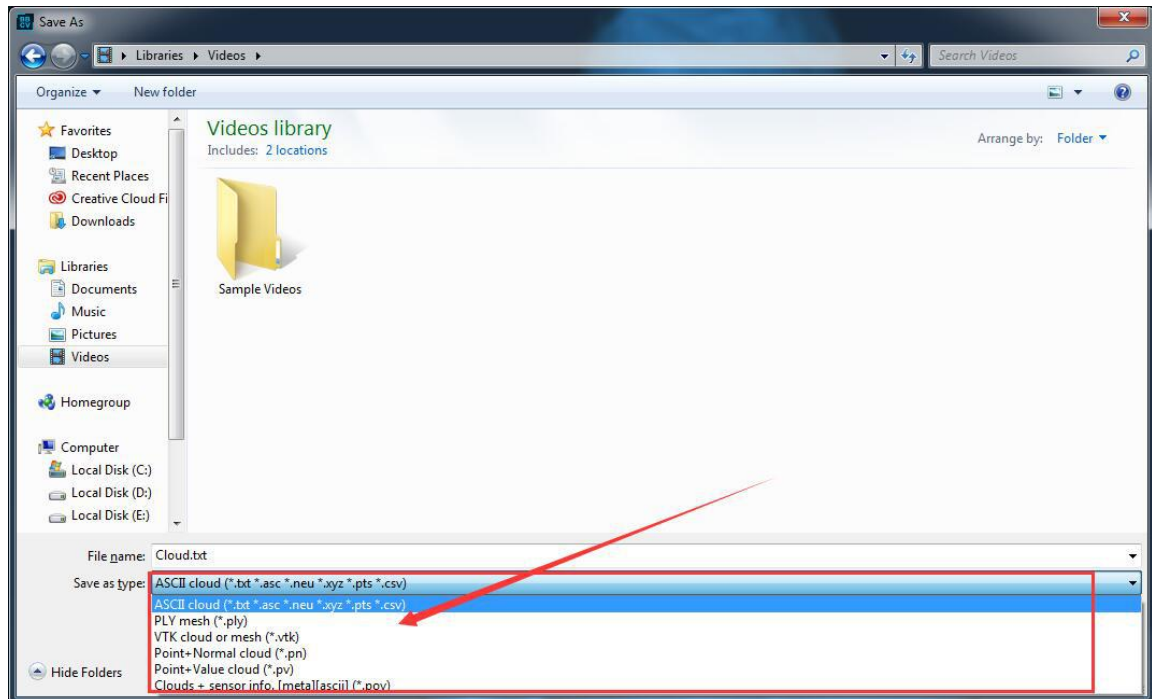
g. Click on the package. If you want to open the model, first select “NOSealing” and click OK. For example, if you need to scan 3D printing, select the curvature or plane as needed, then select “Sealing” and click OK. Wait for the grid to be generated.





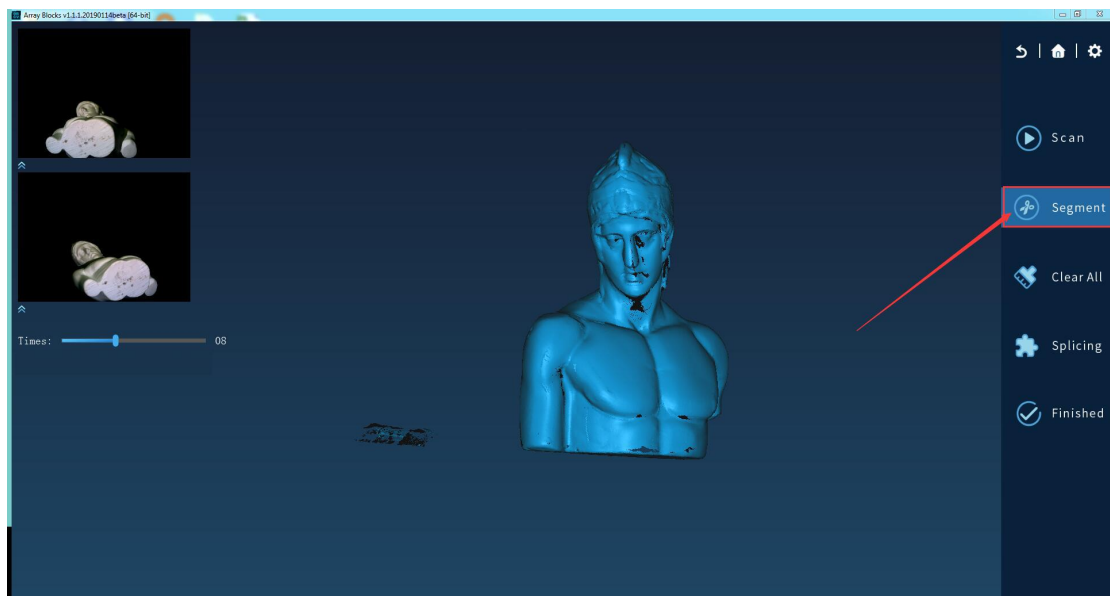
h. Click "Save" to export the desired format. For 3D printing, click "Mesh" and drop down to select STL format.





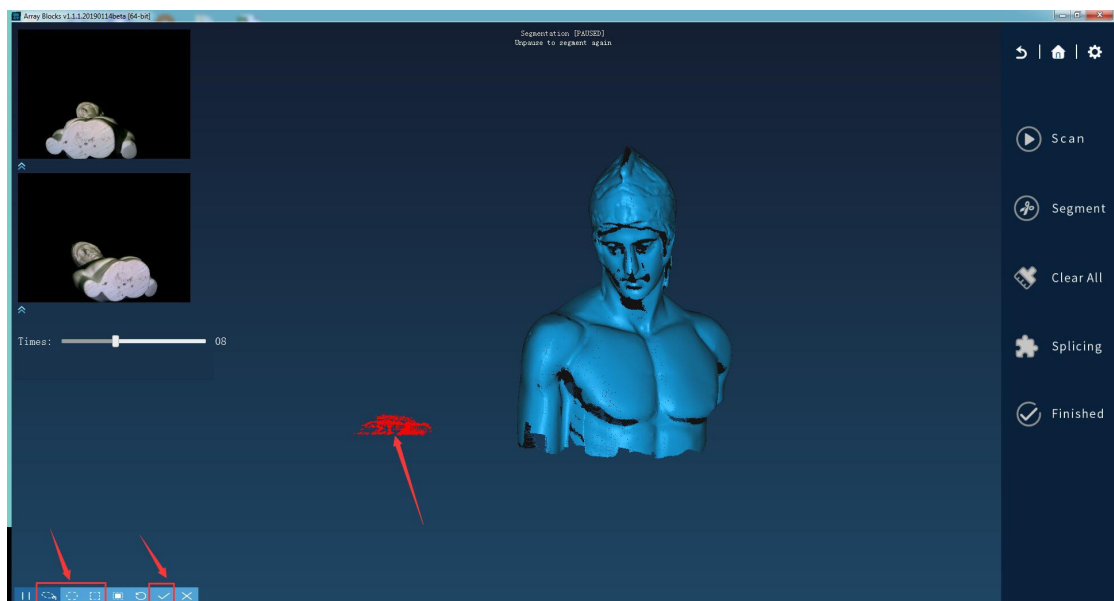
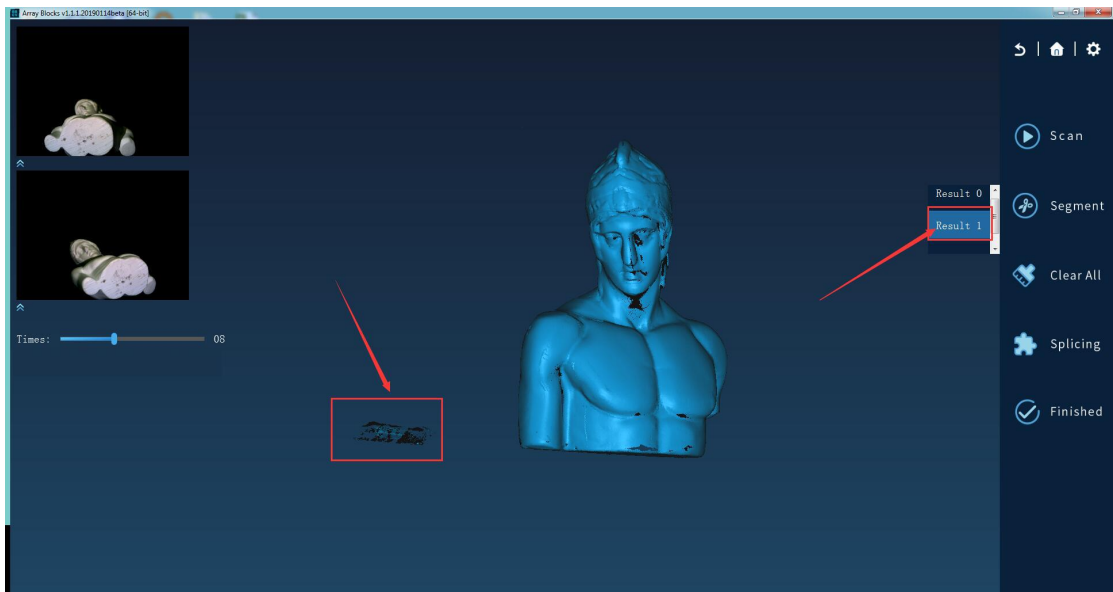
3.3.4 Other steps - Segment

a. Data scanning is completed. If you find that the scan has extra data, you can select the “Segment” function.

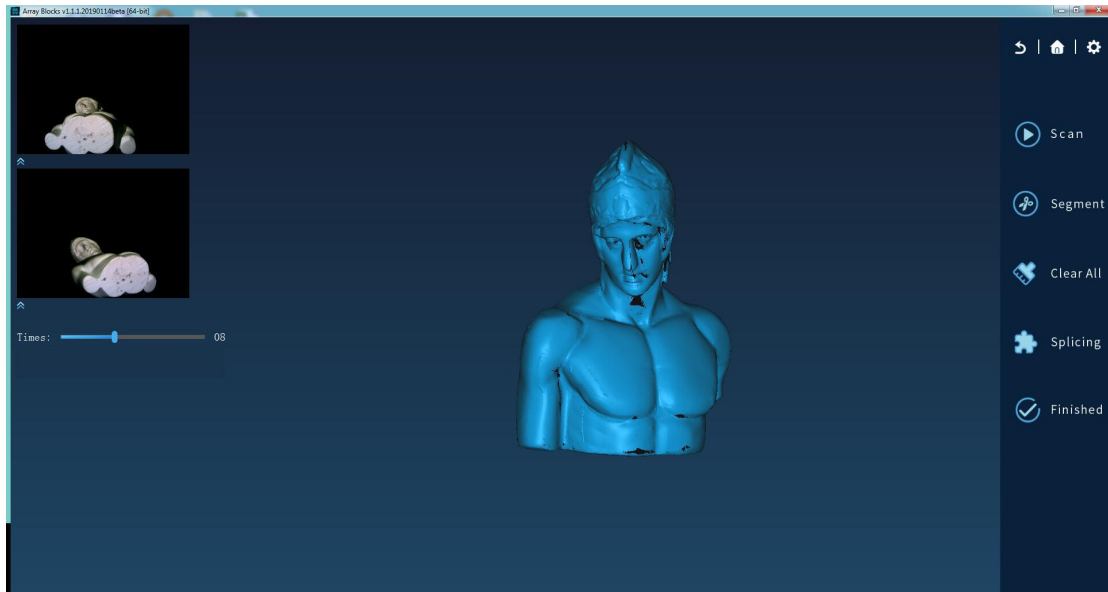


b. Select to scan the extra data, select the clipping method in the lower left corner, the left mouse button can select the part to be cropped, the right mouse button confirms the selection, the red color is selected to delete the part, click the lower left corner “√”

to confirm the red part.

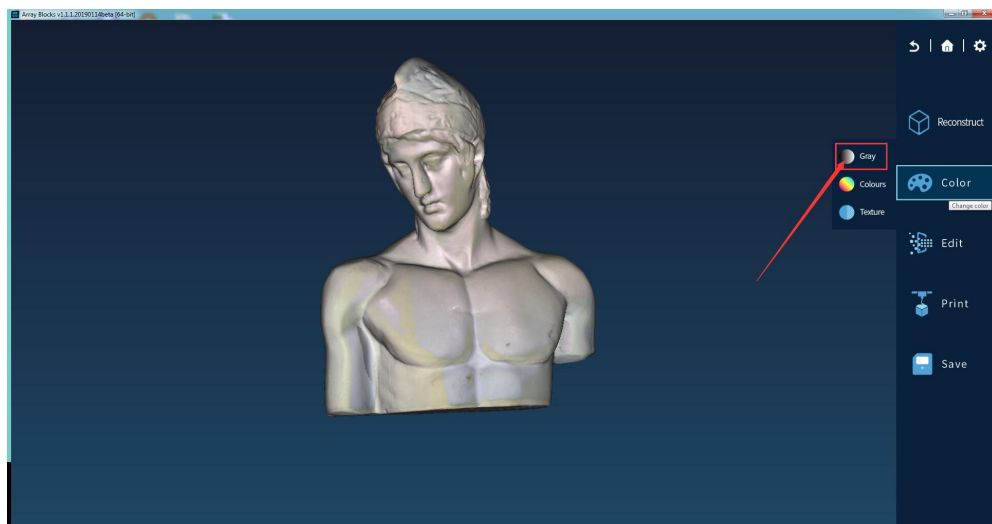
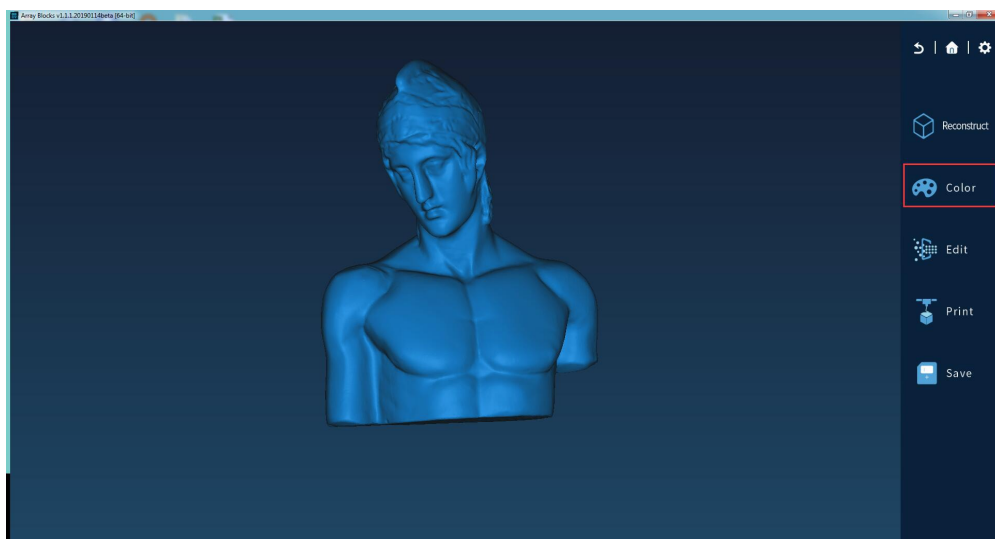


c. The cropping is completed and the redundant data has been deleted.



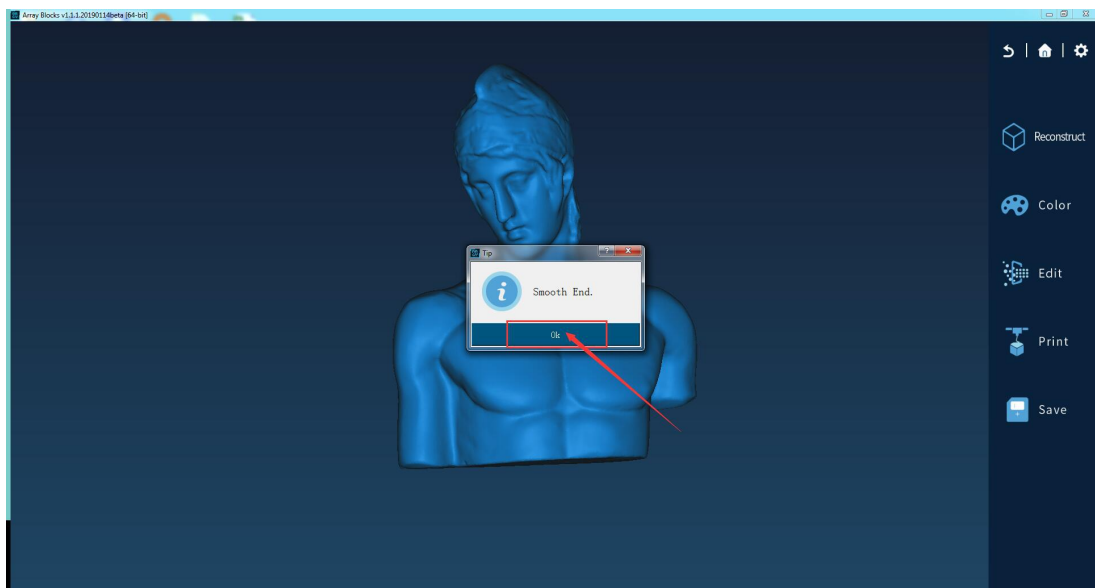
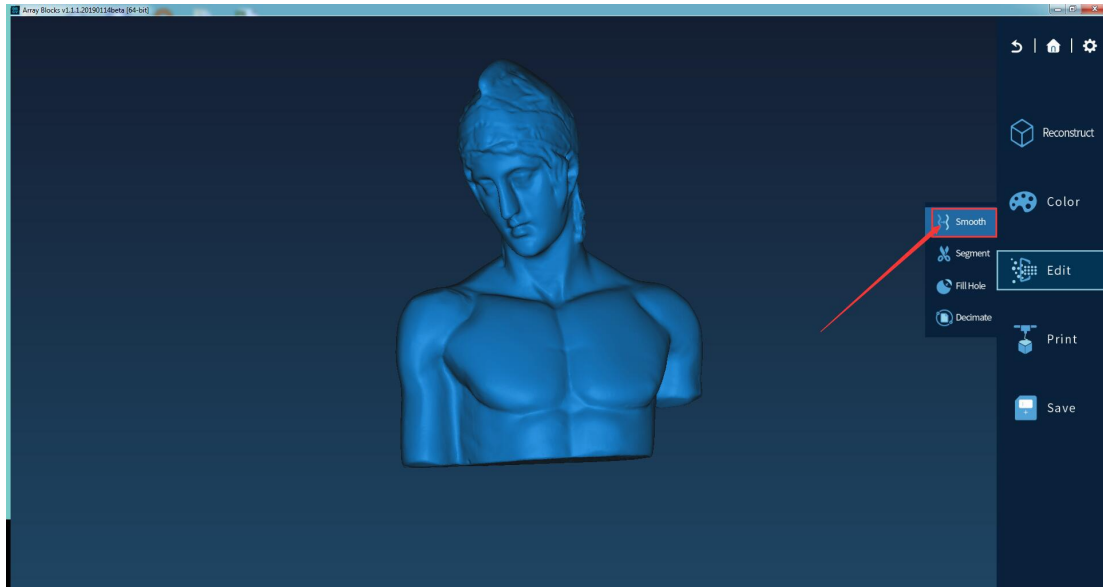
3.3.5 Other steps - color

Click “Color” to select “Gray, Colours and Texture” as needed. When exporting, the STL of the grid data is monochrome, the PLY of the grid data is color, and the OBJ of the grid data is the map of the corresponding object.



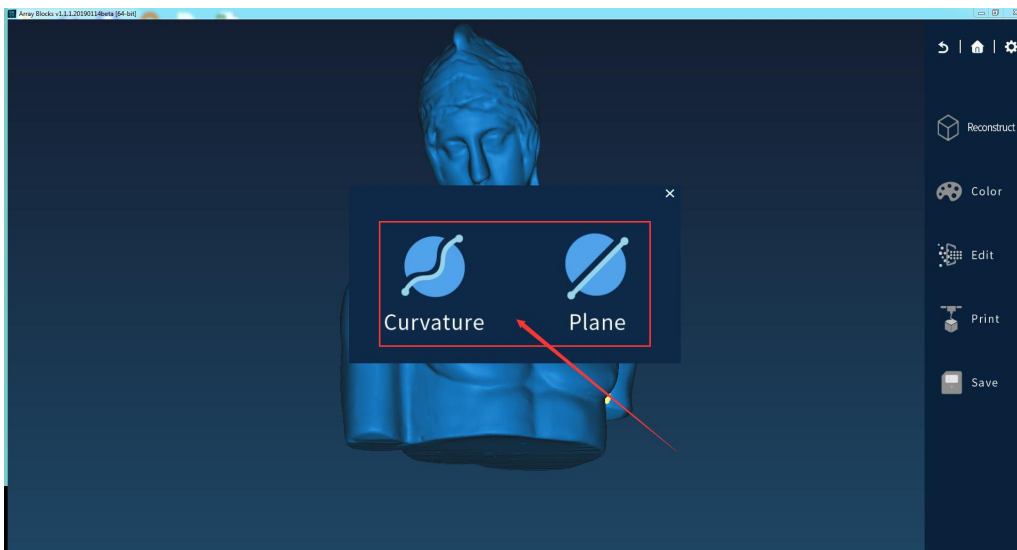
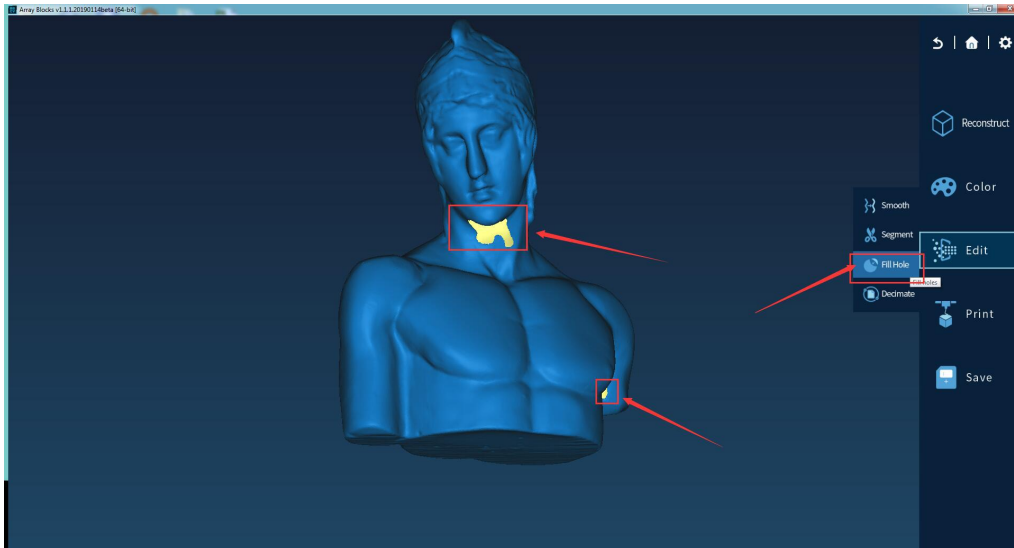
3.3.6 Other Operation Steps - Edit

a. Click "Edit", if the data is rough, you can select "Smooth";

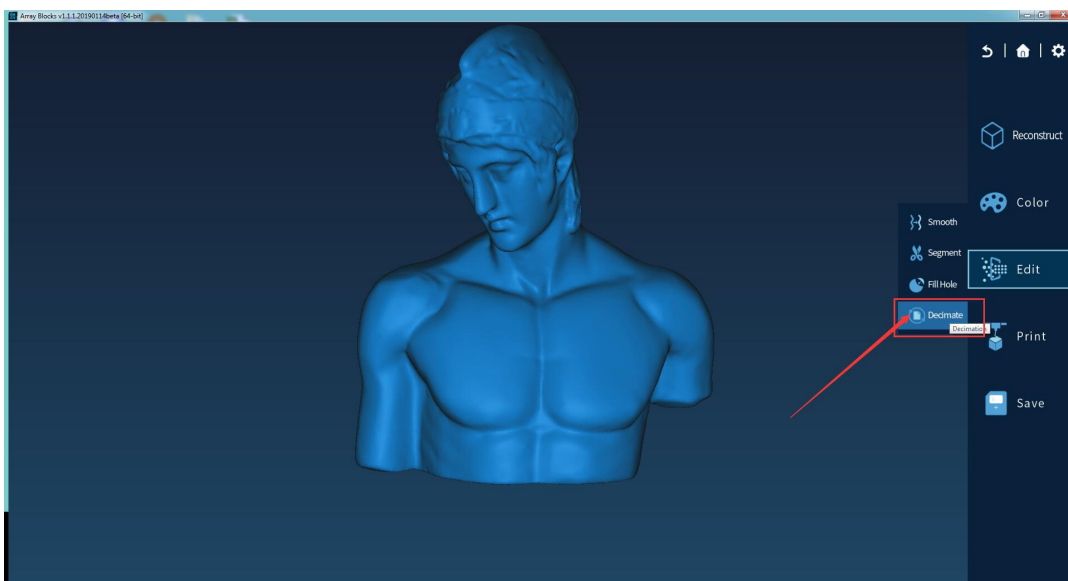


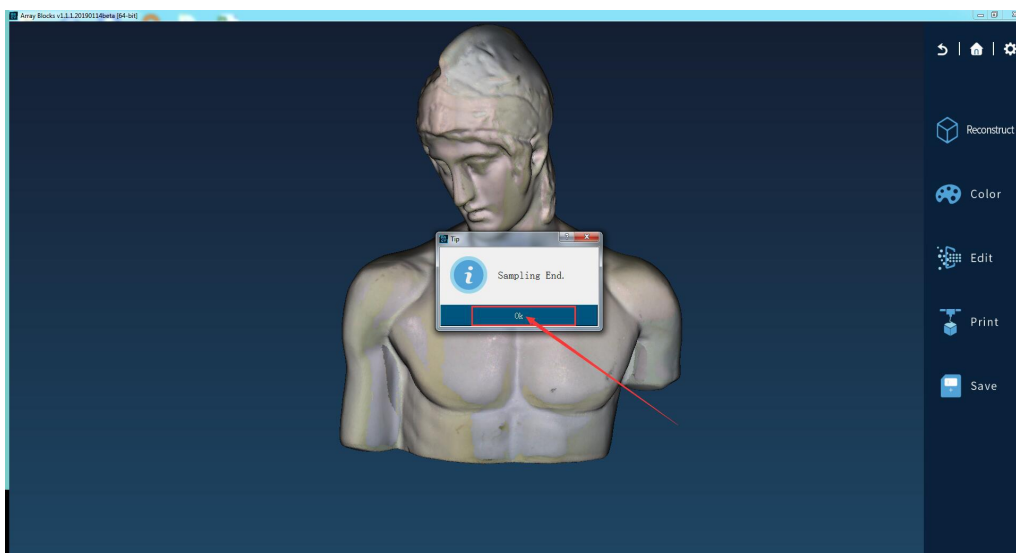
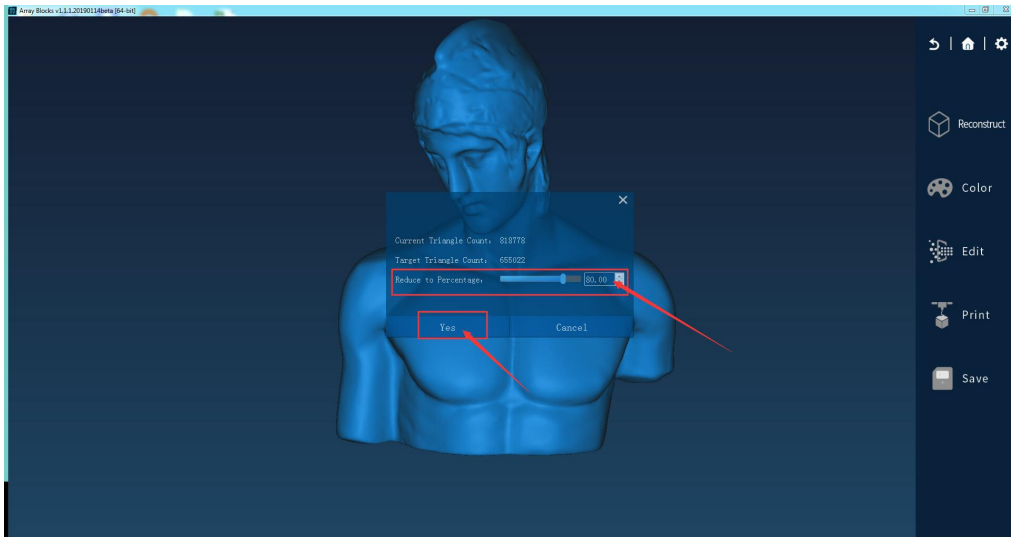
b. If the data has extra unwanted parts, you can select "Segment" to remove it; the operation steps are the same as "Segment";

c. If you select the "open model" for packaging, then you need 3D printing, you can choose "fill hole"; select the "curvature or plane" fill hole method as needed;



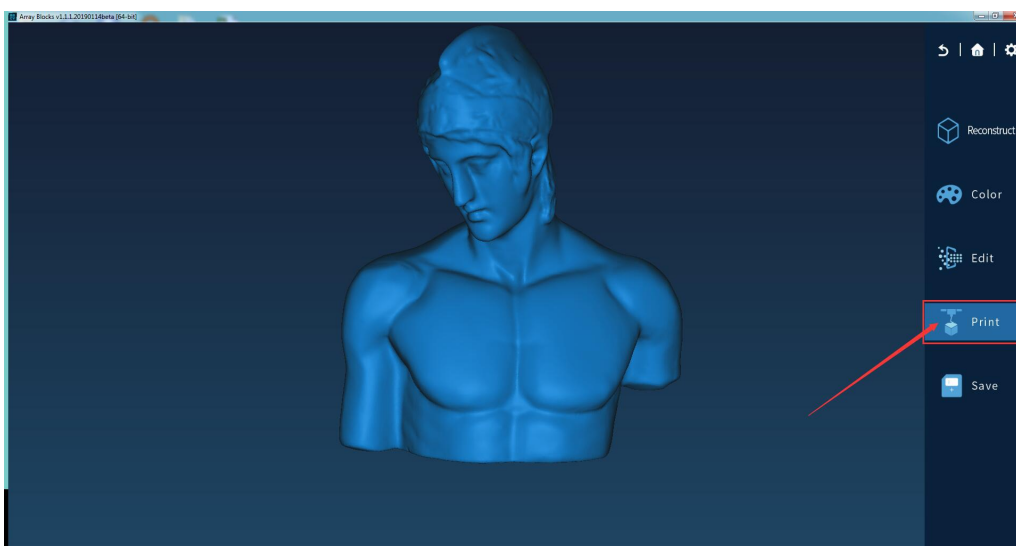
d. If the amount of data is too large, you can select “Decimate”, you can pull the progress bar as needed or manually input the ratio to simplify the model;



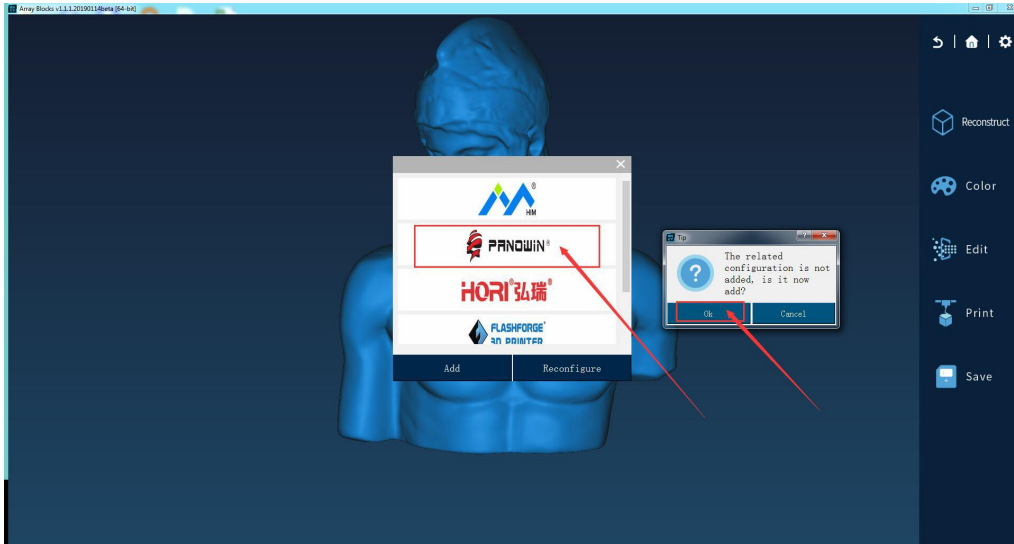


3.3.7 Other Operational Steps - Printing

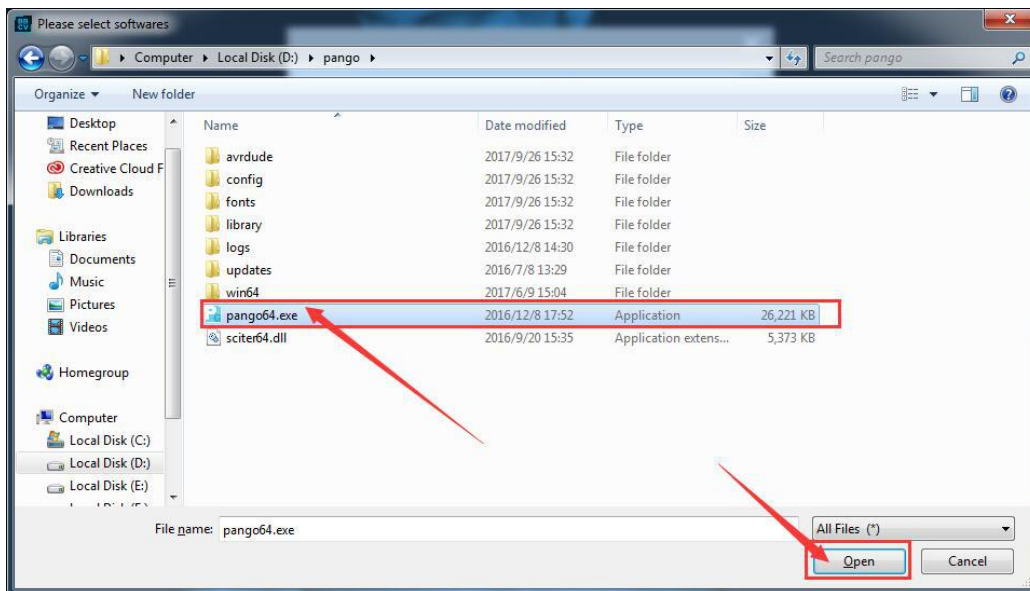
a. Click "Print"



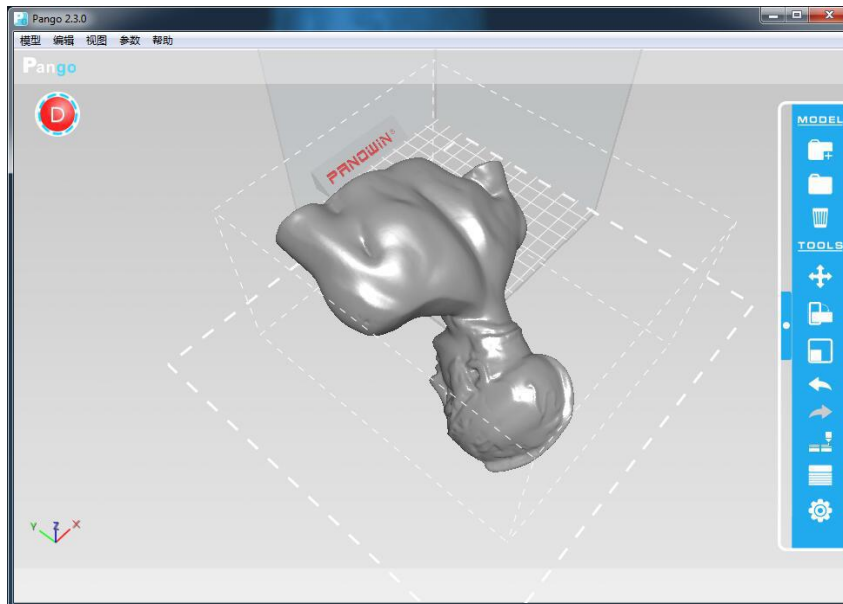
b. Here to illustrate the sliced software of "PRNOWIN", click "OK" to add the device profile



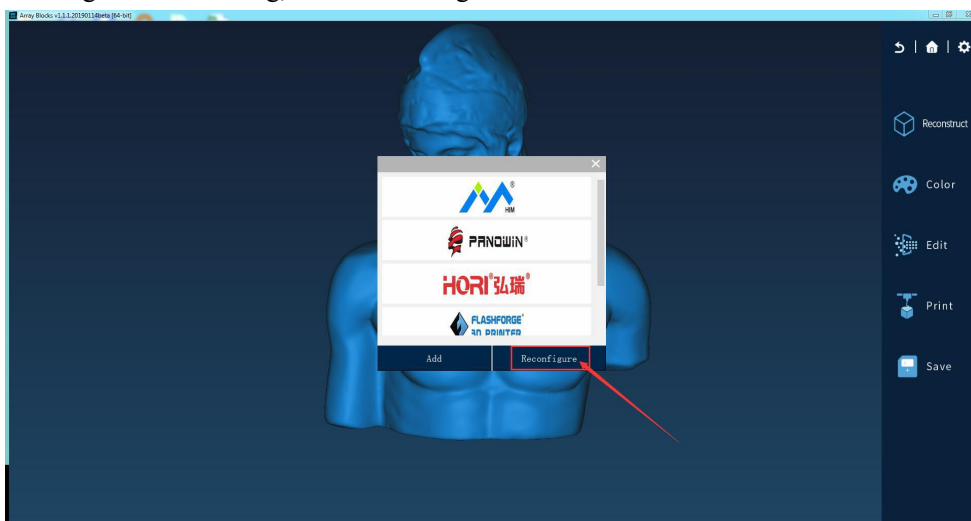
c. Find the installation location of the slice software, select the .exe file and click "Open" to complete the configuration.



d. After opening, click on the logo of the slice software, you can open the slice software with one click, and the data appears in the slice software.

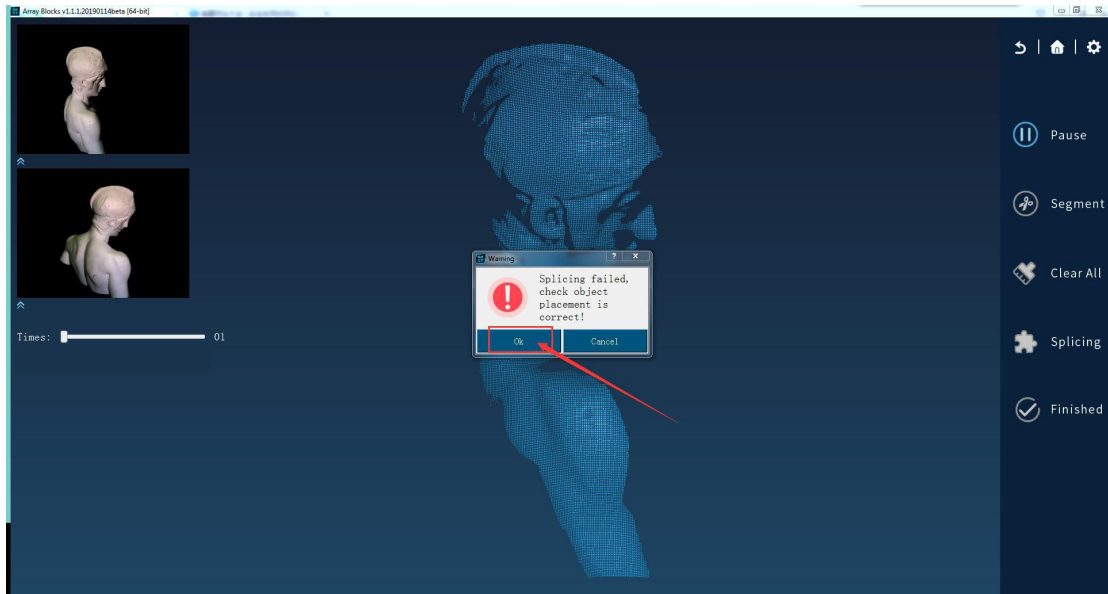


e. If the configuration is wrong, click "Reconfigure"

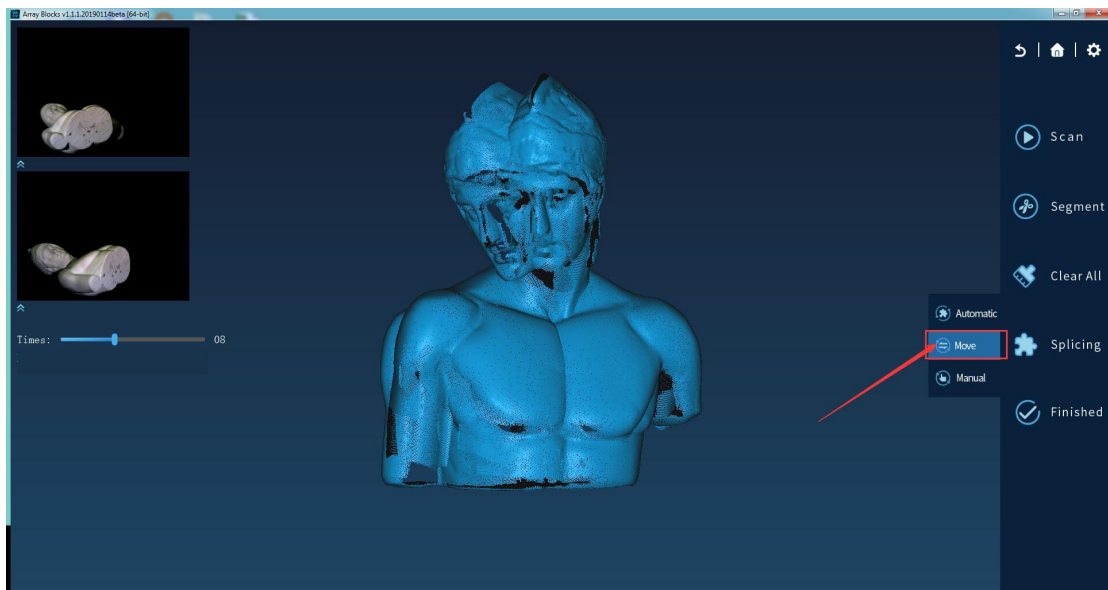


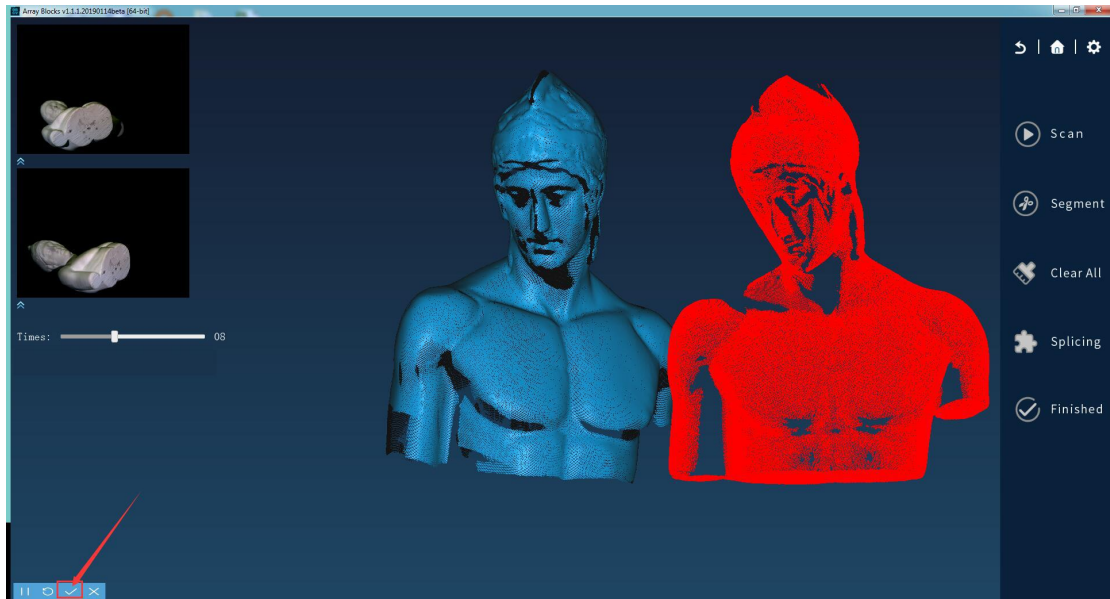
3.3.8 Other steps - manual stitching

a. After the multi-angle scan is completed, if the window prompts “splicing failed”, you can select “OK” to correctly integrate the data of the two scans.

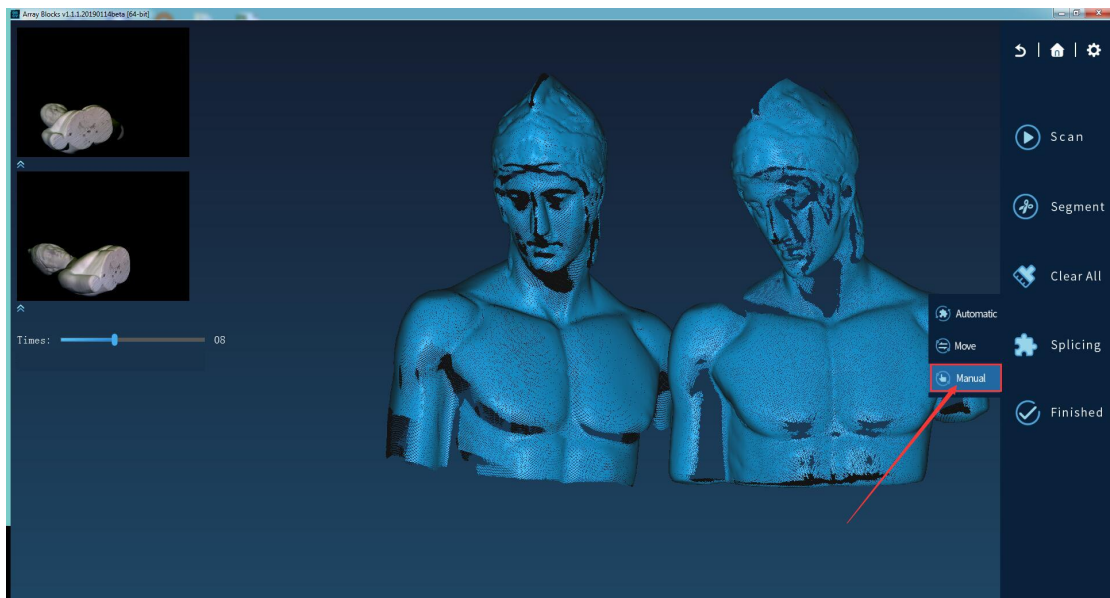


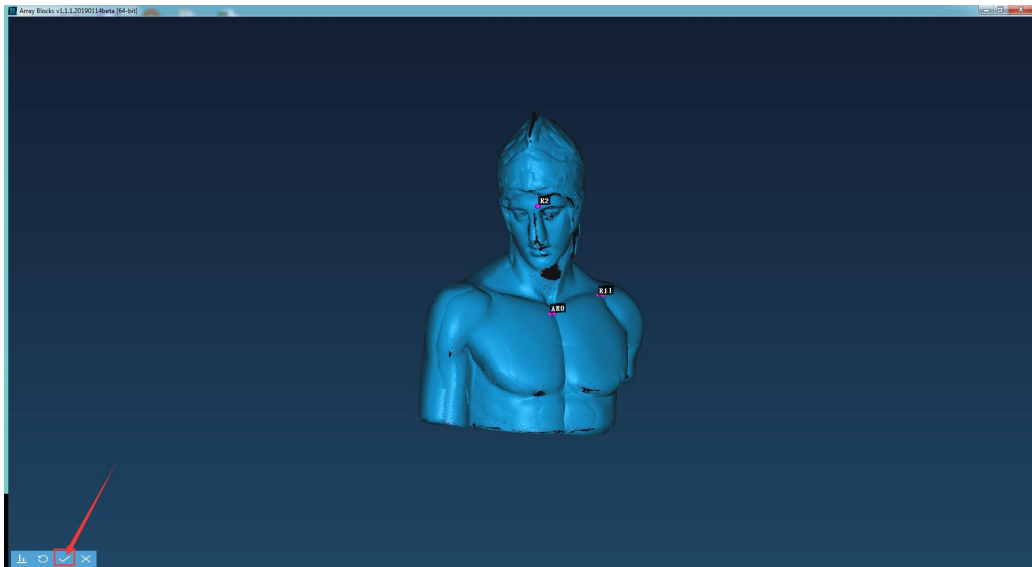
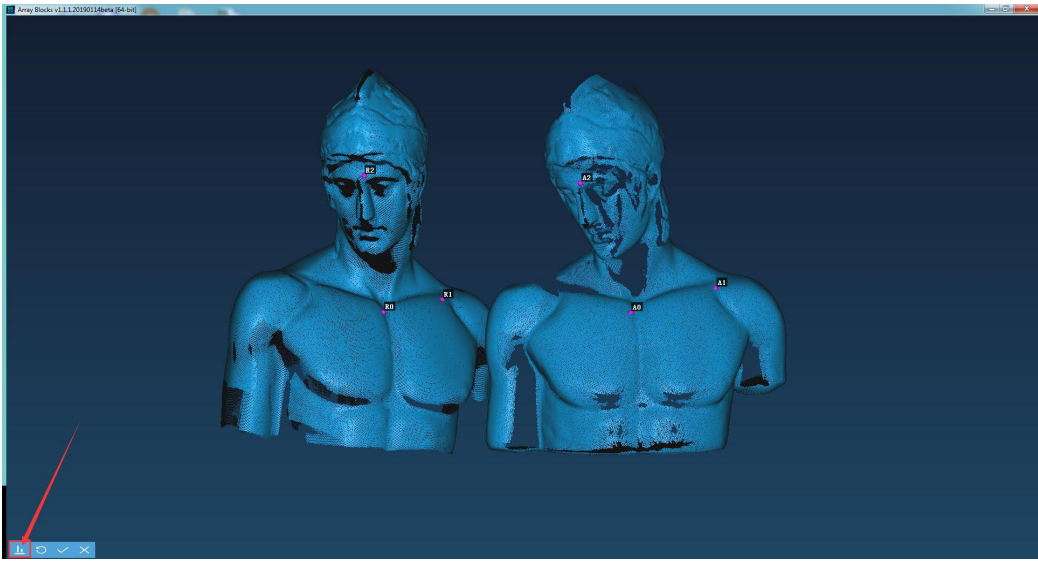
b. Click “Move” to separate the two data of the splicing error. Click “√” in the lower left corner to confirm that they have been separated.





c. Then click "manual", select 3 common points on the two data, as shown below, point A0 corresponds to point R0, point A1 corresponds to point R1, point A2 corresponds to point R2, click the stitch button in the lower left corner, the software selects according to Automatic stitching; if the stitching is correct, click “√” in the lower left corner to confirm the manual stitching is completed.





Chapter IV Frequently Asked Questions

4.1 Software problems and solutions

If you encounter the following problems, you can find out the cause and solve the problem yourself. If you still can't solve it, you can contact the manufacturer to solve it.

Common error messages:

a. Open the software prompt software to stop working?

Solution: Update the computer graphics card version, the graphics card version requires OpenGL2.0 and above.

b. No data after the scan is completed?

Solution:

1 Turn off 360 Security Guard and 360 Desktop Assistant;

2 Restart the computer resource manager (win7: start task manager → process → end process explorer.exe → file, create a new task → enter explorer.exe OK. win10: start task manager → process → Windows resource manager, restart) ;

3 Recalibration.

c. Open the software to prompt the camera to be abnormal?

Solution:

1 Re-plug the turntable cable, and the desktop computer uses the USB port on the back of the computer host;

2 Check the USB Camera driver in the device manager. If you do not have this driver, you should download the driver wizard to repair the computer's USB port driver.

d. Multi-angle scan data failed to be automatically stitched successfully?

Solution: Using the manual splicing function in the software, manually select 3 common points on the object, the software can achieve correct automatic splicing.

e. Transparent, reflective, black objects cannot be scanned?

Solution: Scanning the surface of the object after powder spraying treatment.