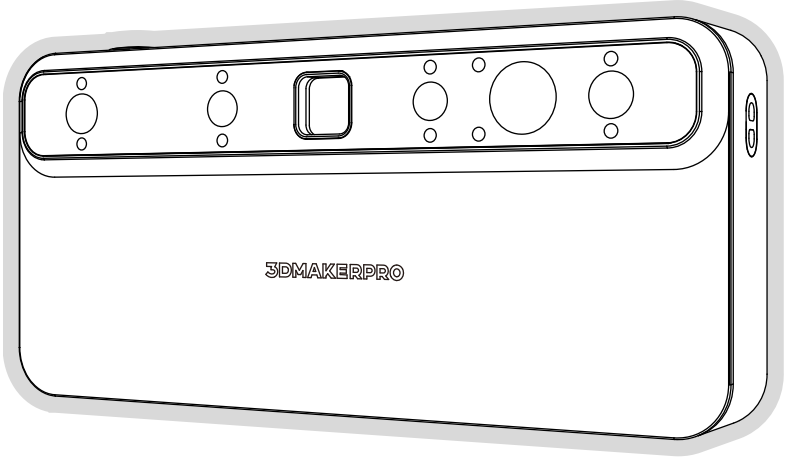
V1.2

MANUAL

3DMAKERPRO
store.3dmakerpro.com



TOUCAN

3D Scanner

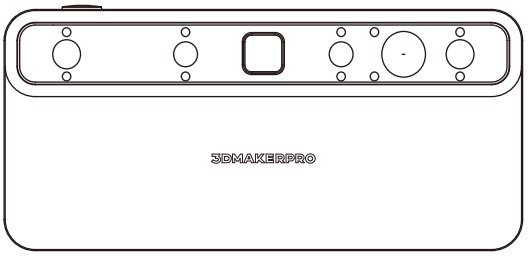
3DMAKERPRO
@3DMakerProCares
@official3DMakerPro
@3DMakerPro
https://store.3dmakerpro.com/
service@3dmakerpro.com

JimuMeta
@JimuMeta
@JimuMeta
https://www.jimumeta.com/
service@jimumeta.com

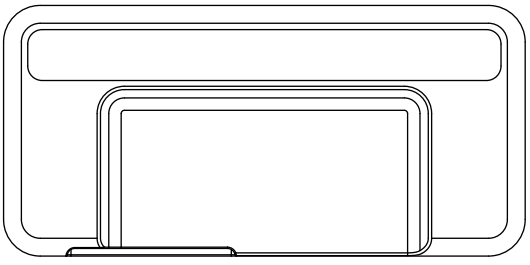
Software	**JMStudio**
Supported OS	**Windows | MAC**
	Android | iOS

3D MAKERPRO LIMITED

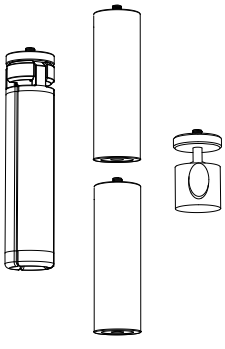
P1 PACKING LIST



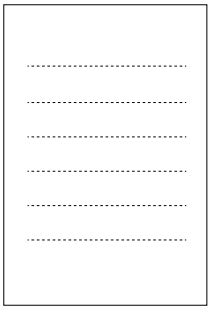
Scanner Body



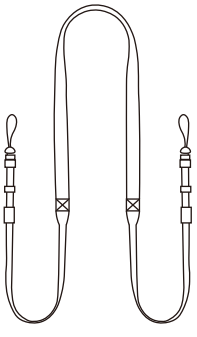
Silicone Protective Cover



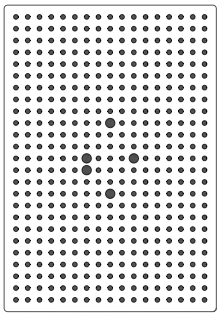
Tripod[1]



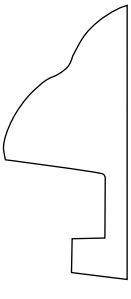
Manual



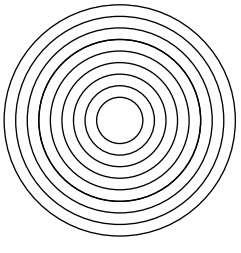
Lanyard



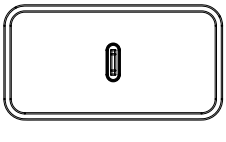
Calibration Board



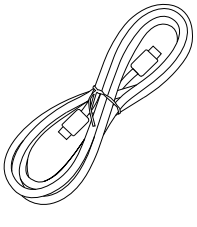
Calibration Board Holder*2



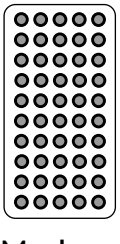
Manual Turntable



Power Adapter



Power Cable



Markers

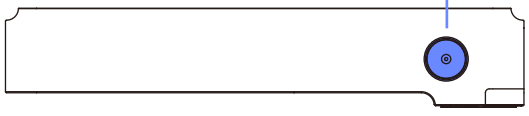
* [1]Not inclouded in the Standard Combo.

* Product images are for illustrative purposes only! The actual product may vary.

P2 Scanner Components

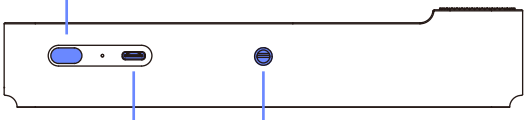
Top View

Camera Control Button
(Photos can be manually taken in fixed point scanning mode.)



Bottom View

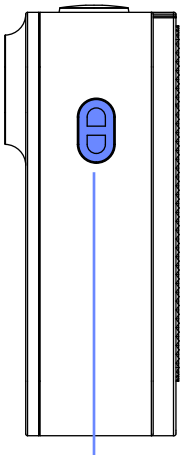
Power Button
(Click once to turn it on; long-press for 6s to turn it off.)



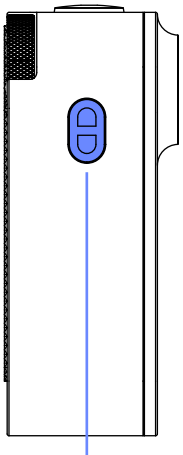
Charging Port

Handle Screw Slot

Left View

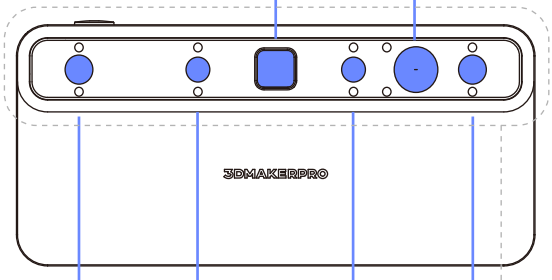


Right View



Lanyard Hole

Front View



Texture Camera

Projector

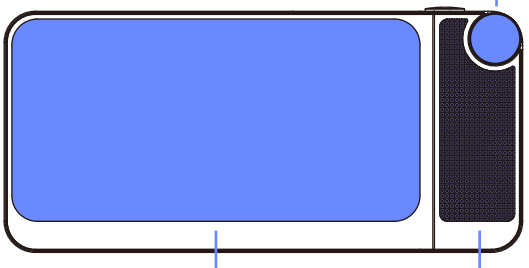
Short Range Camera

Long Range Camera

White Fill Light

Blue Fill Light

Back View



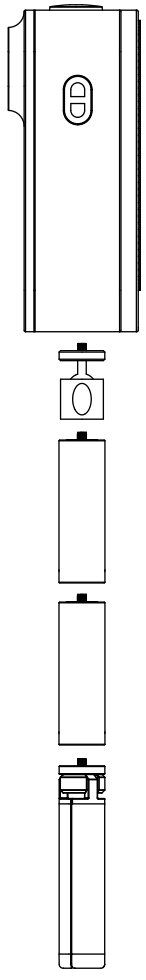
Brightness Control Knob

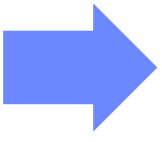
Anti-slip Pad

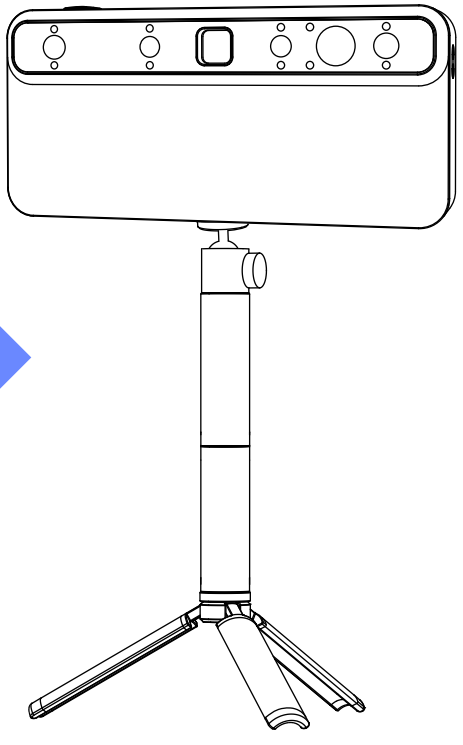
Display Screen

P4 Hardware Assembly

Follow the image below to assemble the tripod when scanning in fixed point mode.

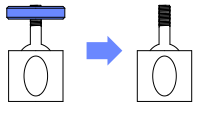


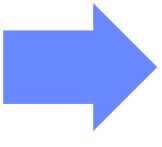


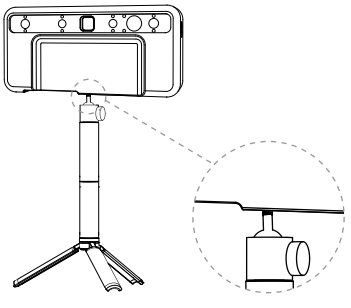


When the scanner is wearing the protective cover, the plate above the ball head needs to be detached from it first before connecting the triopd to the scanner.

Silicone Protective Cover





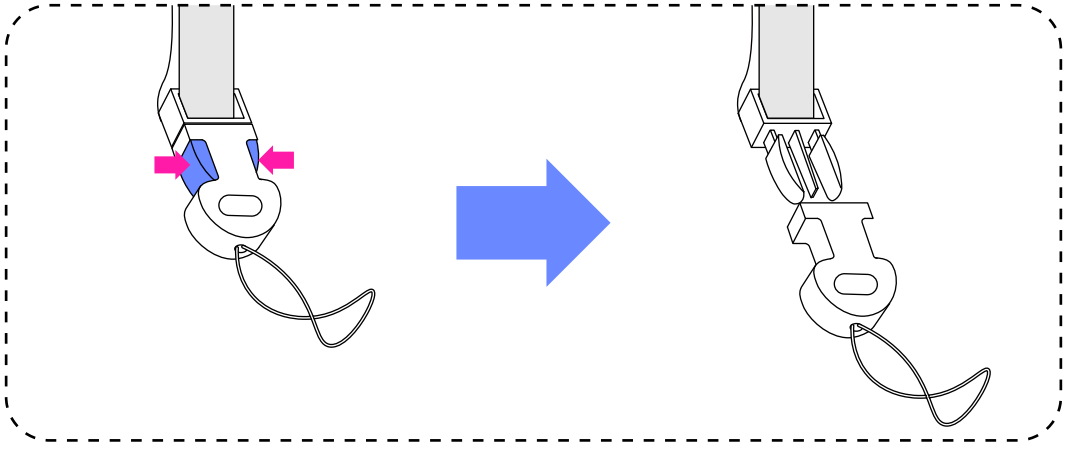


*Please connect the accessories according to the actual use!

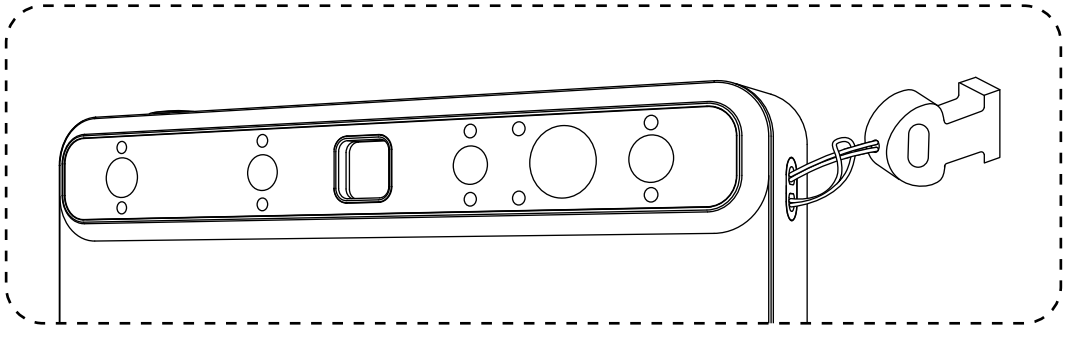
When doing handheld scanning, it is recommended to attach the lanyard to the scanner in case it drops and gets damaged.

*The images below only display one side. Both sides of scanner should be attached to the lanyard.

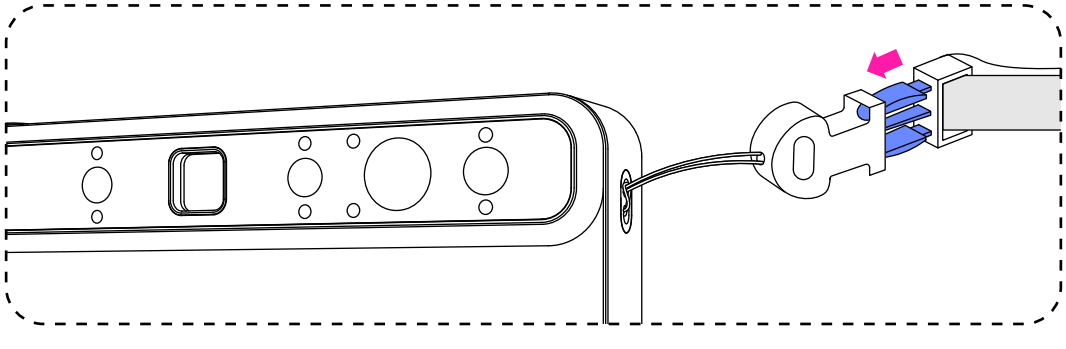
①Detach the fixtures from both sides of the lanyard.



②Put the loop through the lanyard hole, stretch the loop with your fingers, put the fixture through the loop, then pull tight.



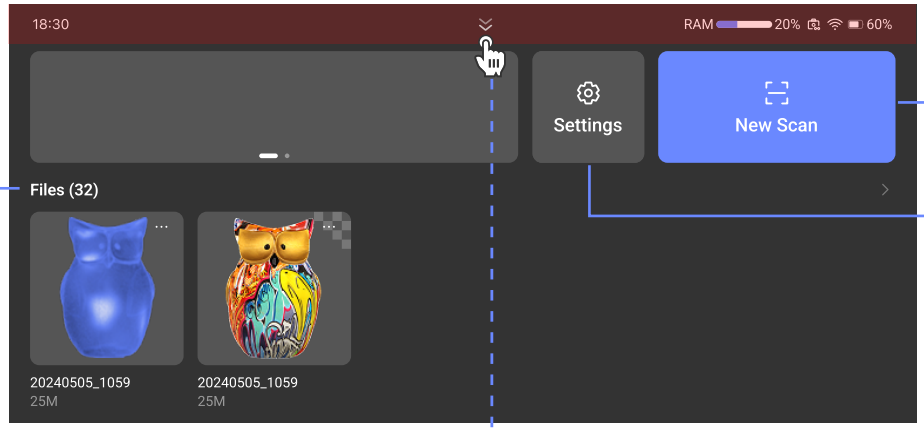
③Refer to step ① to connect the fixture with the lanyard.



P6 Homepage

① Press the button at the bottom of the device to turn it on.

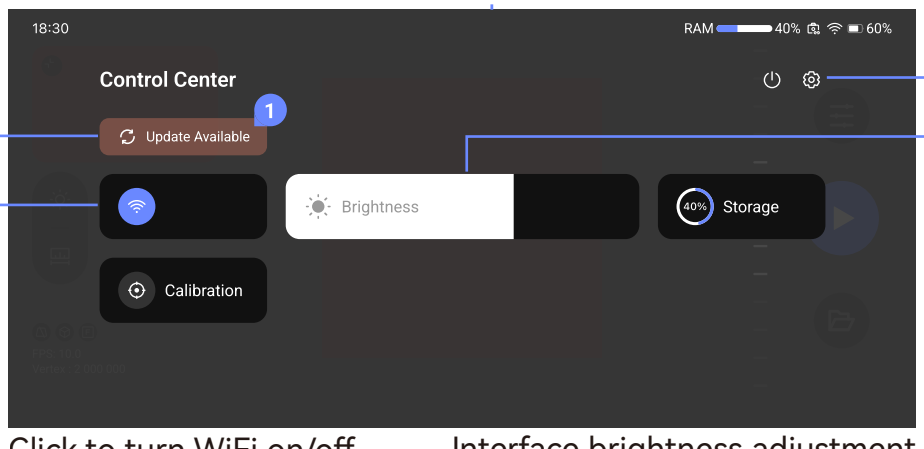
② On the homepage, you can create new projects, view the project list, and more. Swipe down from the top of the screen to access the control center.



Project List

Settings

New Scan

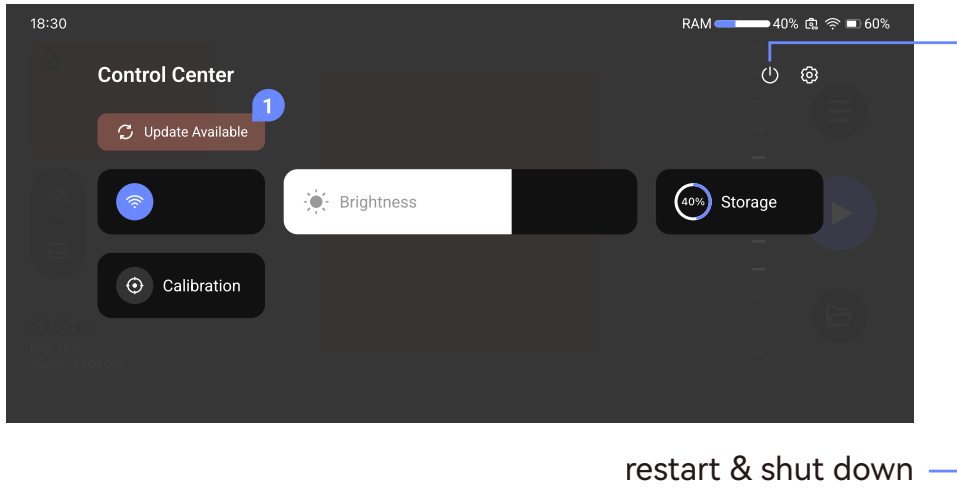


Click to turn WiFi on/off

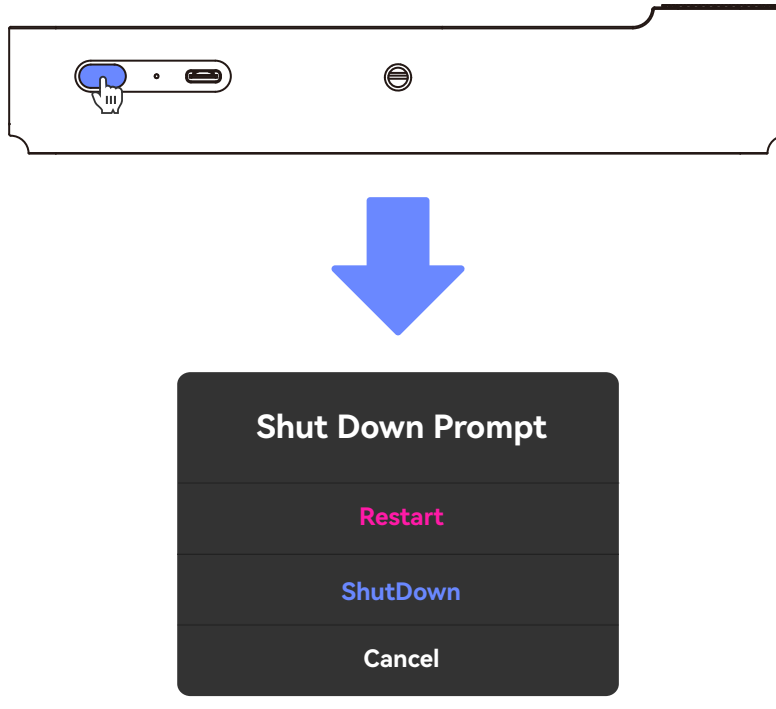
Interface brightness adjustment

When there is an available update, a reminder notification will appear in the top-right corner.

Settings

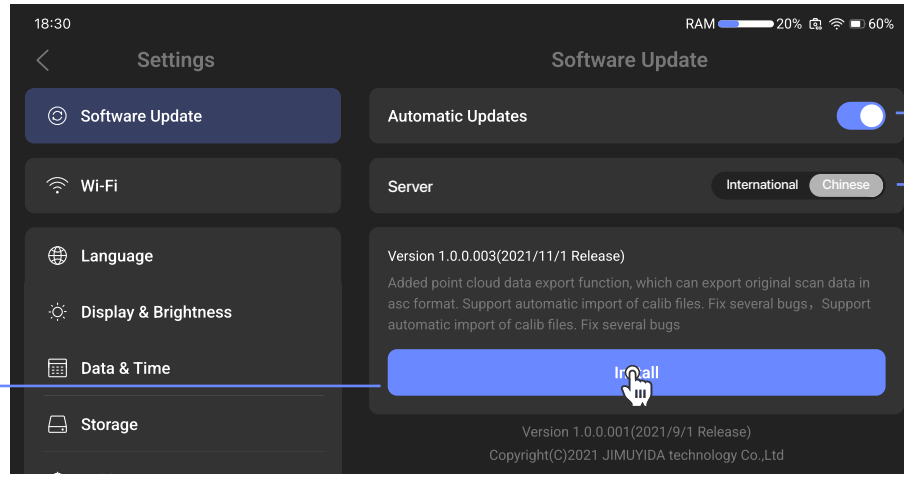


*Press the power button at the bottom of the device to choose restart or shutdown, or long-press for 6 seconds to force the device to shut down.



P8 Settings

Software Update

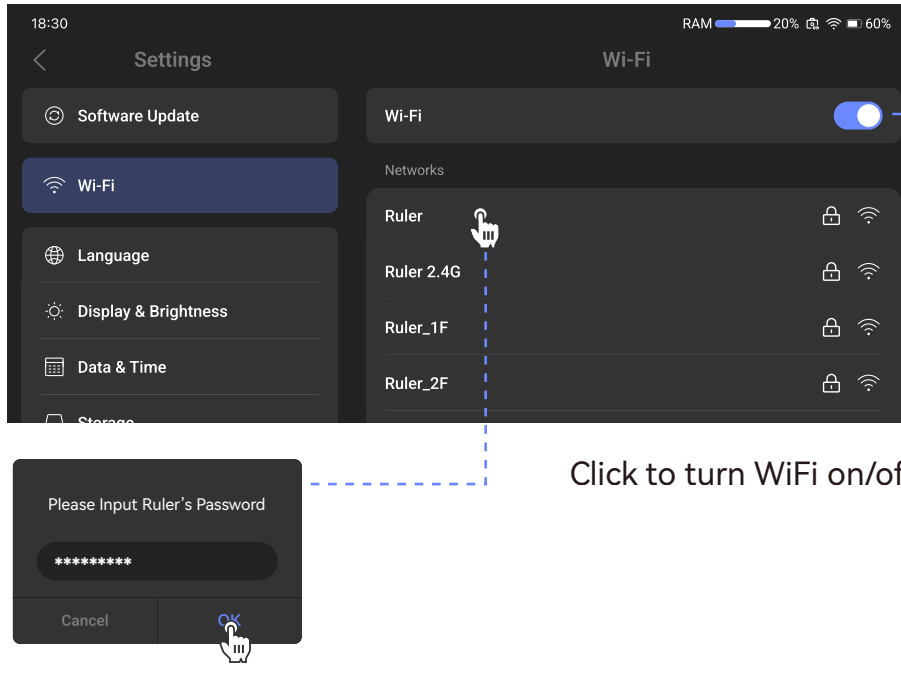


Select the server address to download

Enable to automatically download the update installation package.

Tap 'Install' to install the downloaded installation package. The system will automatically restart after completing installation.

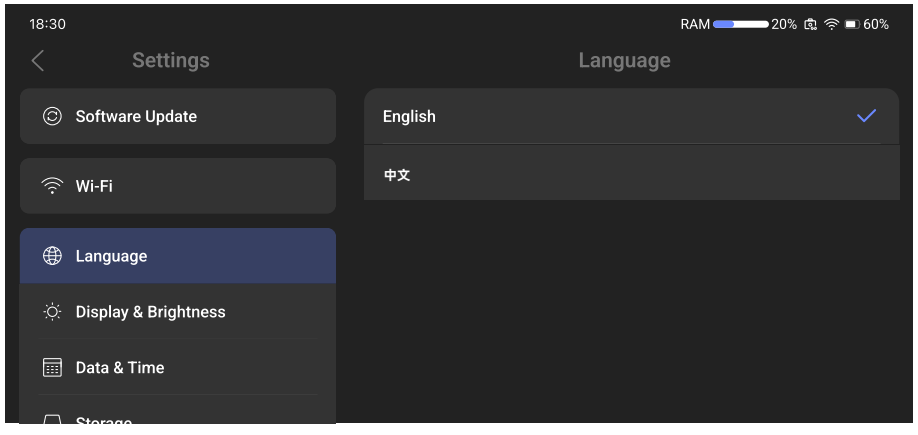
WiFi



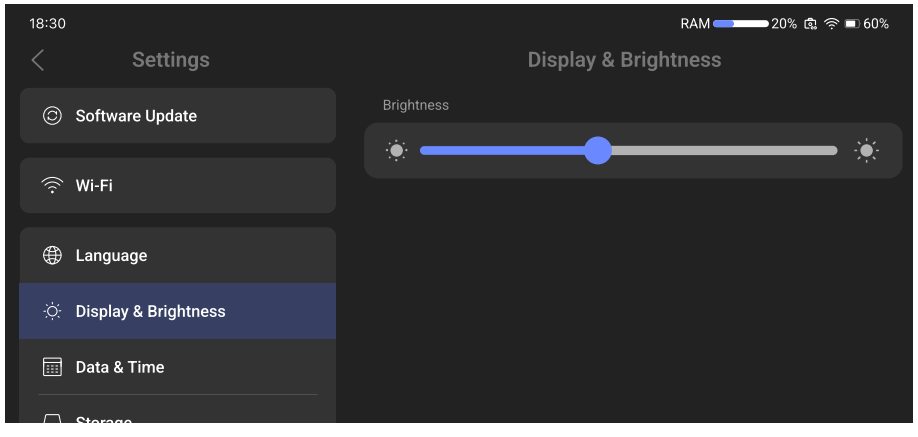
Click to turn WiFi on/off

*When transferring data to a PC, TOUCAN and the PC need to be connected to the same Wifi network.

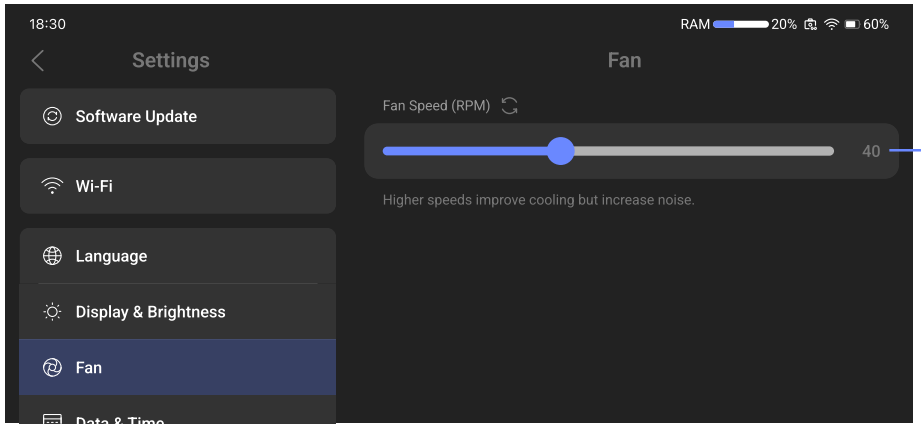
Language



Display & Brightness

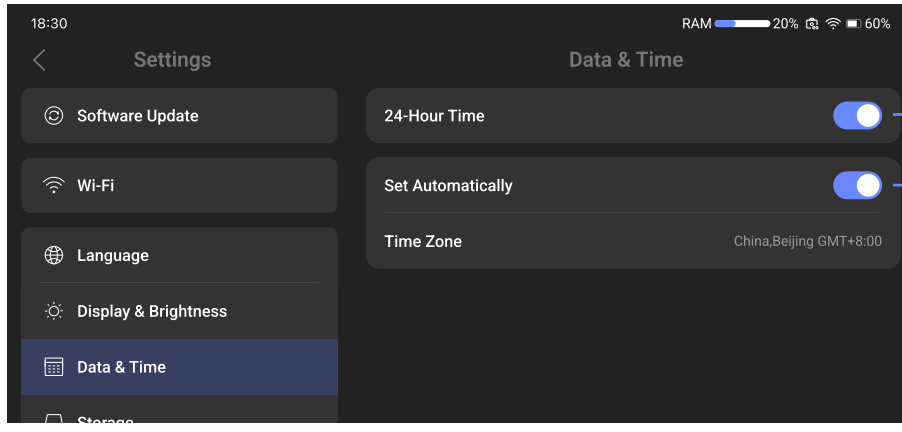


Fan



Adjust the fan speed: the higher the speed, the better the device cooling, but the louder the noise.

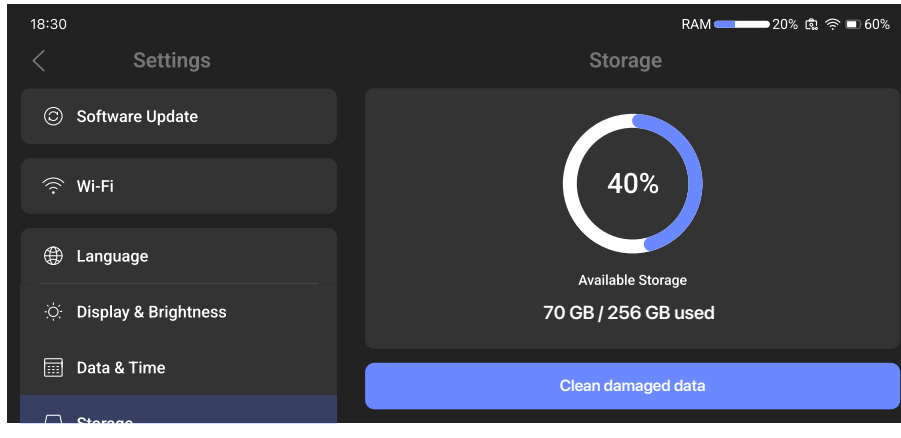
Date & Time



Enable to let TOUCAN automatically adjust the time zone based on the current location; Once it's disabled, you need to select it manually.

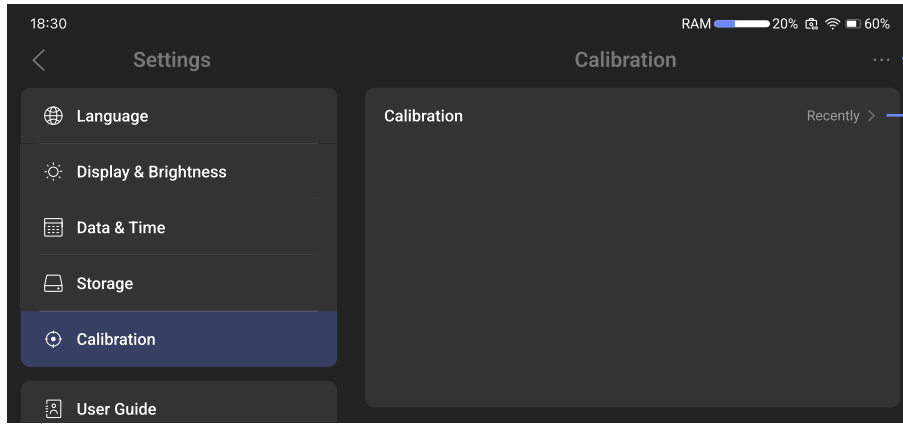
Enable to let TOUCAN use a 24-hour format for the time shown in the menu bar; Once it's disabled, it'll use a 24-hour format.

Storage



Clear invalid data

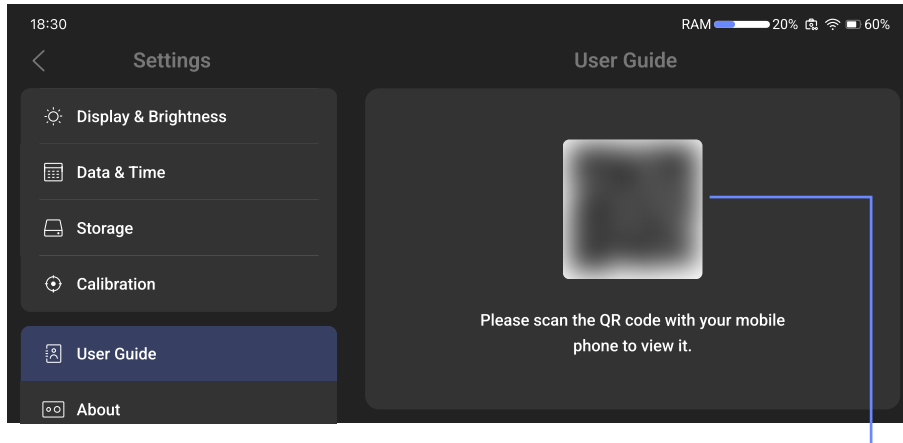
Calibration



Recalibrate the equipment

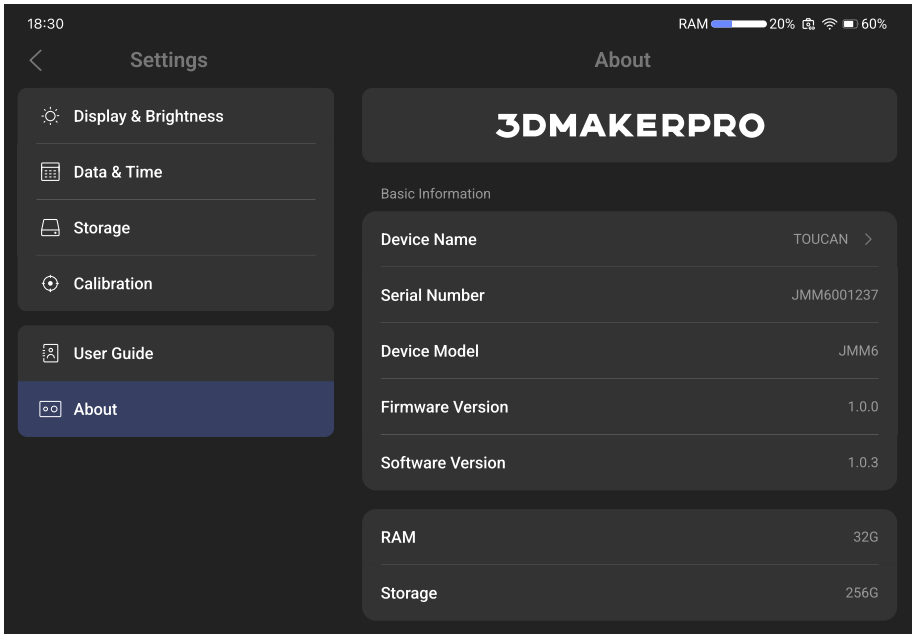
Restore to factory calib file

User Guide



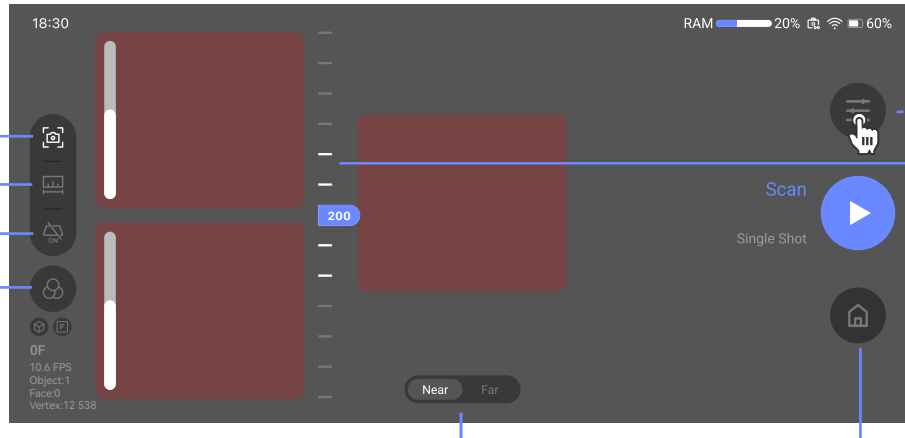
Scan the QR code to view the latest operating manual.

About


18:30
RAM 20%
60%
Settings
About
Display & Brightness
Data & Time
Storage
Calibration
User Guide
About
3DMAKERPRO
Basic Information
Device Name
TOUCAN
Serial Number
JMM6001237
Device Model
JMM6
Firmware Version
1.0.0
Software Version
1.0.3
RAM
32G
Storage
256G

P13 Preparation before scanning

Adjust the scan settings in the scan preview interface



Point cloud coloring: on/off
(Only available when color scanning mode is enabled)

Plane removal: on/off

Depth of field adjustment
Close-up mode: 100-300mm
Telephoto mode: 350-1000mm

Open/Hide Camera Window
(Enabled by default. If manually turned off, both the texture camera and the point cloud camera windows will be hidden)

File Management List

Start/Pause Scanning
(Switch between continuous scanning mode and single-frame capturing mode. Continuous scanning mode is on by default.)

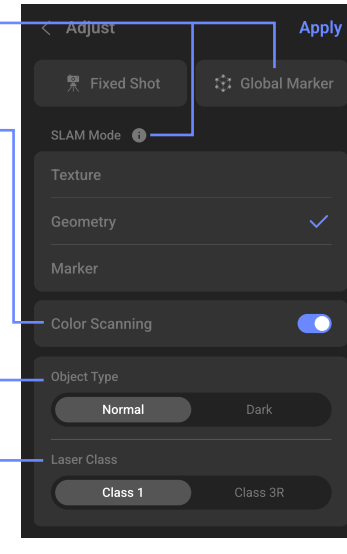
Distance to the monitor
Check the working distance for scanning the current object

Toggle between far/near modes. Near mode is on by default.

SLAM mode: for specific usage scenarios, please refer to the manual about SLAM mode.

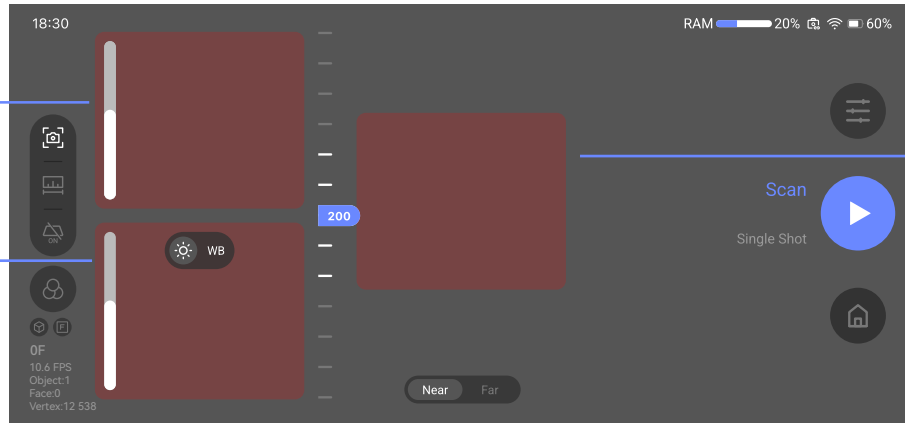
Enable to collect the model's color information and show the texture camera window during scanning.

Dark option is preferred if the scanned object is in dark color.



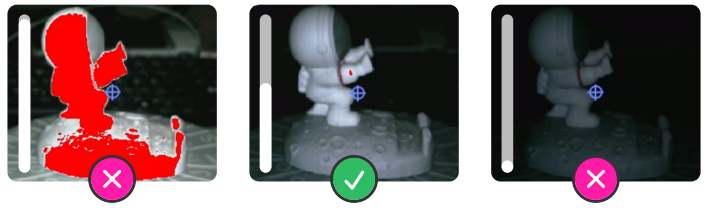
⚠ Power mode switch, this mode will enable high-power Class 3R laser:

- The laser beam is dangerous if viewed directly, may cause permanent eye injury within a short exposure
- Do not point the scanner at people or reflective surfaces
- Recommended for professional / controlled environments only



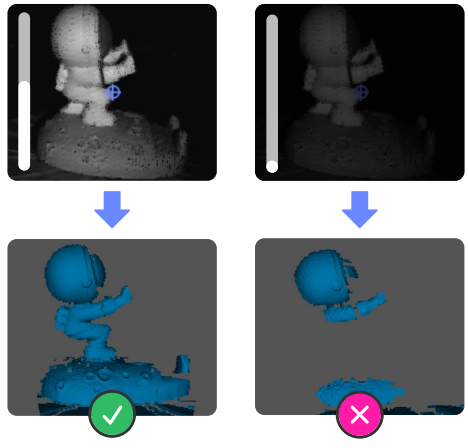
Texture camera, used to capture texture images of the model, displaying the model's original colors. The texture images will be used in texture mapping.

You can adjust the brightness with the slider tool on the left side of the window. If it is too dark or overexposed (overexposure is shown in red), it will affect the effect of texture mapping. An example is shown below:



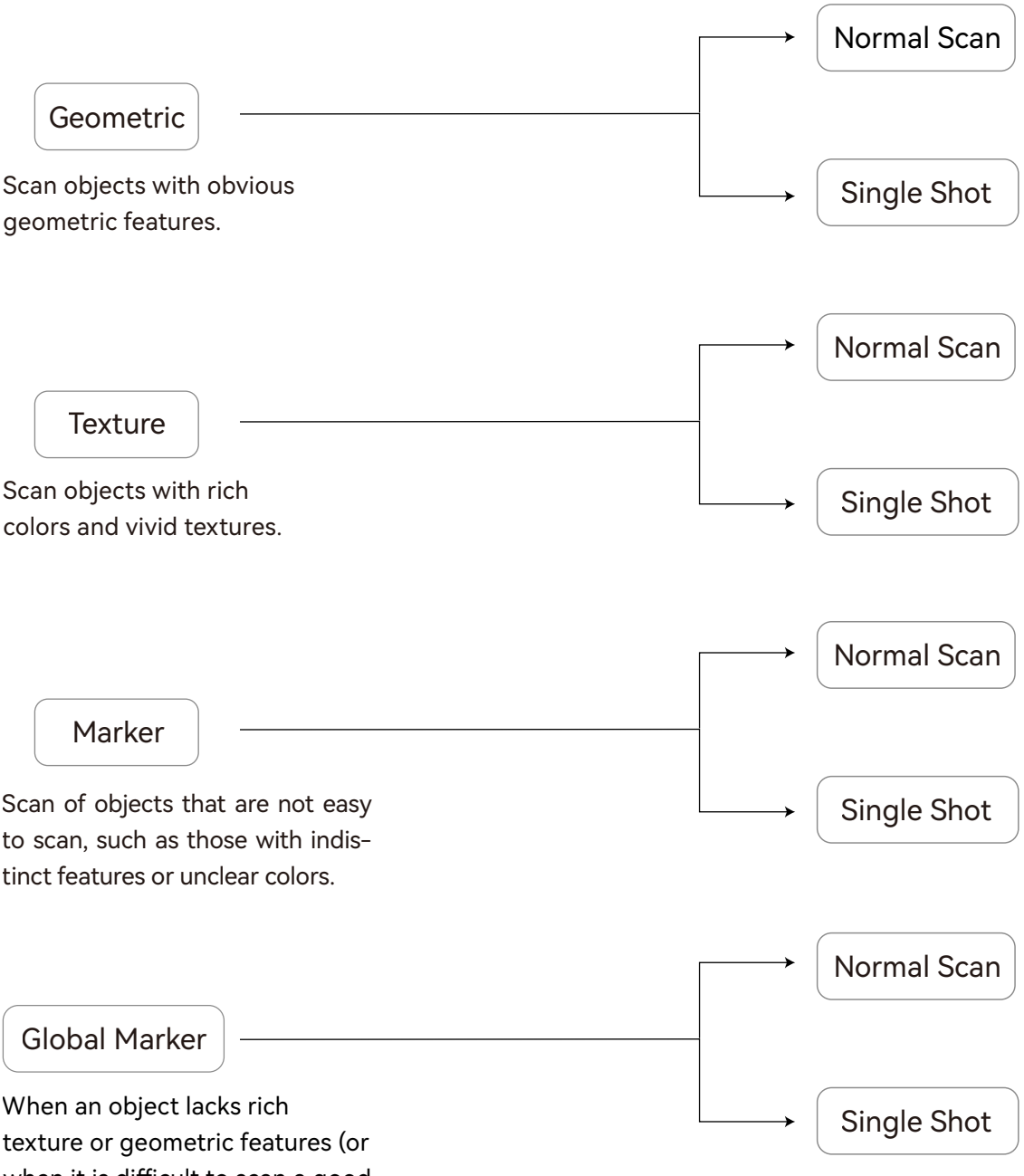
A point cloud camera is mainly used to generate point clouds and for stitching.

Brightness can be adjusted by sliding on the left side of the window or using the knob at the top right of the device. When adjusting the brightness, it is necessary to observe the current point cloud scanning effect. If it is too dark or overexposed, it can result in incomplete or layered point cloud scans (taking too dark as an example). The illustration is as follows:



3D viewer, to view the collected point cloud or mesh model

SLAM Mode Description



Scan objects with obvious geometric features.

Scan objects with rich colors and vivid textures.

Scan of objects that are not easy to scan, such as those with indistinct features or unclear colors.

When an object lacks rich texture or geometric features (or when it is difficult to scan a good model through texture and geometric alignment), it is also difficult to stitch using marker points, so attempting global marker points is recommended.

Control the number of frames of photo capturing. For areas that haven't been well scanned, you can scan in single-shot mode to capture the details.

P16 Scan

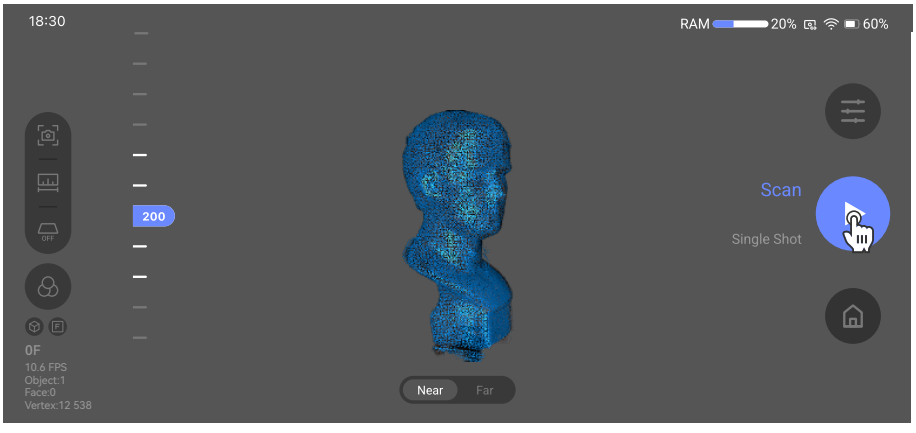
General SLAM Mode

The general SLAM modes are divided into geometric mode, texture mode, and marker point mode (all of which only require a single scan). All three SLAM modes can use either Nornal Scan or Single Shot; for example, the geometric mode.

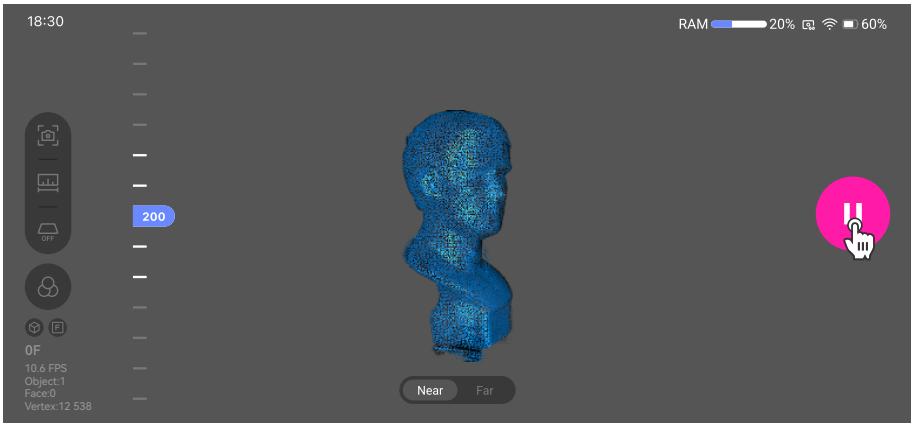
Note: The marker point mode requires attaching marker points to the object before scanning to enhance the object's scanning features.

Normal Scan

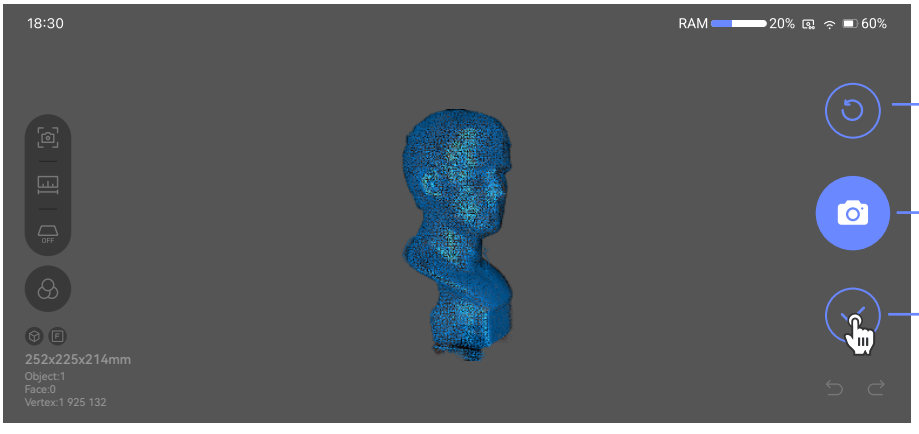
① Click to start scanning



② After the scan is complete, tap to pause the scan.



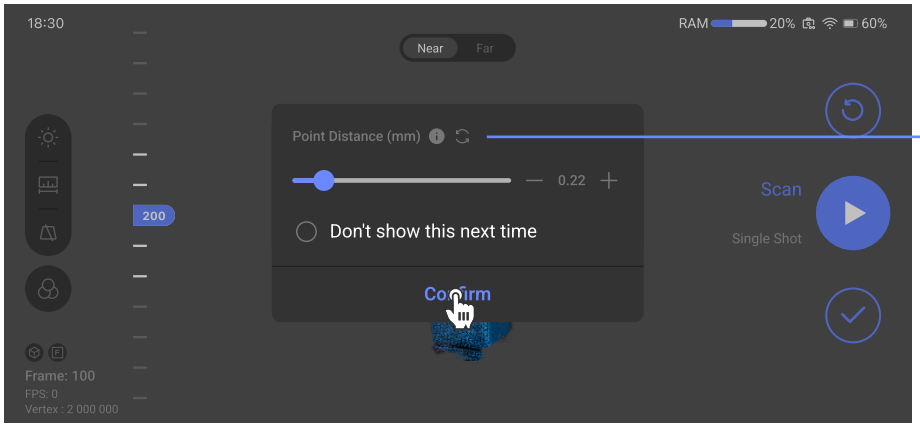
③ You can swipe to rotate or use two fingers to zoom the model to observe the current scan. It supports continuing the scan or rescanning. After the scan is complete, click confirm to automatically perform offline stitching, which will optimize the model as a whole.



Confirm the current scan results and proceed with global registration optimization

If the scan is incomplete, continue scanning the current object

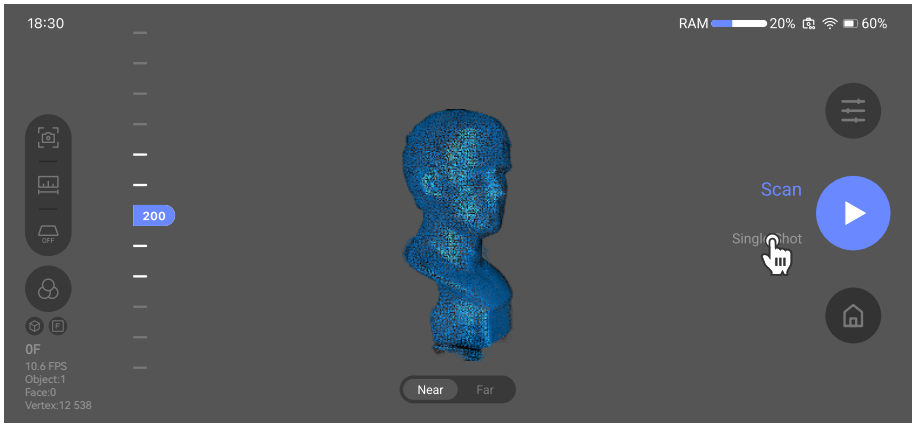
Clear the data that has been collected and return to preview mode to start collection again.



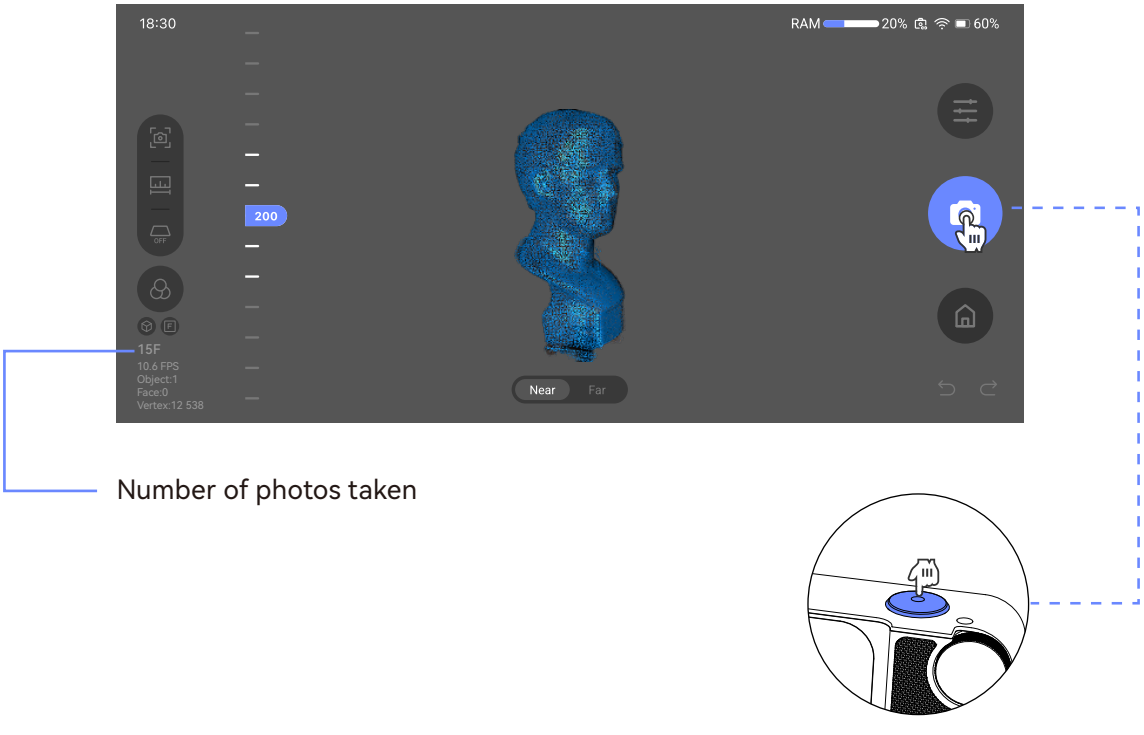
The smaller the value, the denser the point cloud and the more points there are.

Single Shot

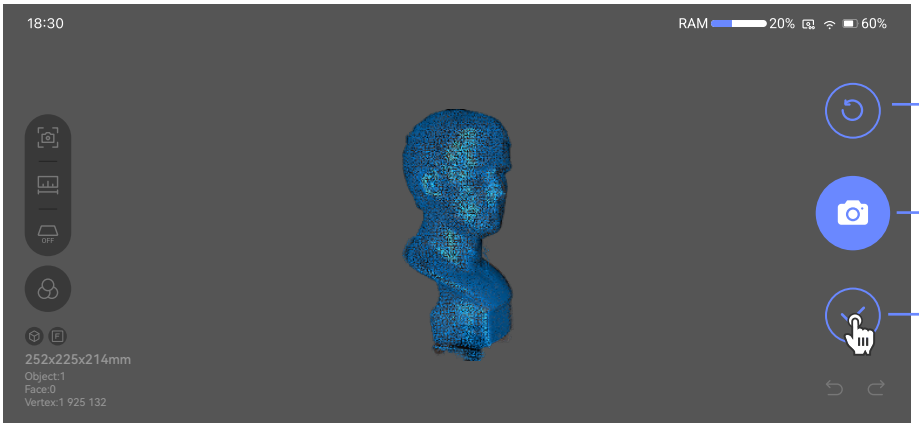
① Click Single Shot



② Tap the on-screen camera button or the camera button at the top right of the device to take a photo scan of the object. It is recommended to tap the button once every second.



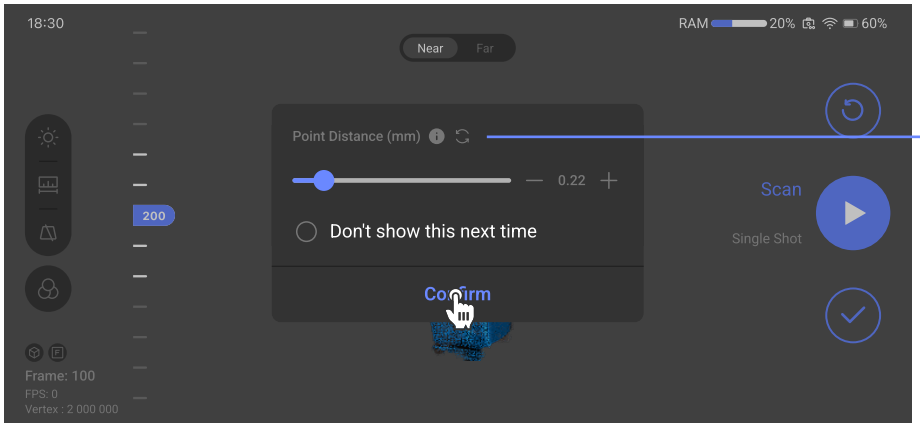
③ You can swipe to rotate or use two fingers to zoom the model to observe the current scan. It supports continuing the scan or rescanning. After the scan is complete, click confirm to automatically perform offline stitching, which will optimize the model as a whole.



Confirm the current scan results and proceed with global registration optimization

If the scan is incomplete, continue scanning the current object

Clear the data that has been collected and return to preview mode to start collection again.



The smaller the value, the denser the point cloud and the more points there are.

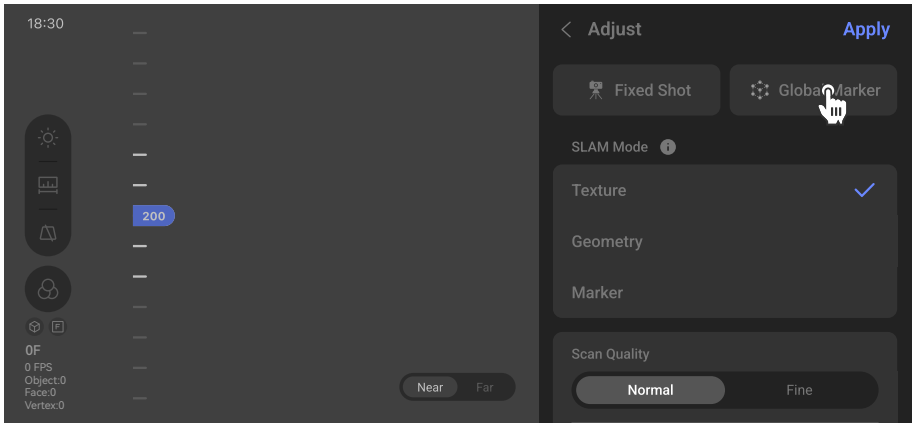
Global Marker

Before starting the scan, markers need to be attached to the surface of the model. It is recommended to use the factory-supplied marker stickers (10mm outside, 6mm inside) for the first scan (marker point scanning). This stage will collect and record the position information of the markers on the model. Once the marker point scan is completed, the model can then be scanned. When scanning the model, the marker points collected in the first stage will help align the model data collected during this stage.

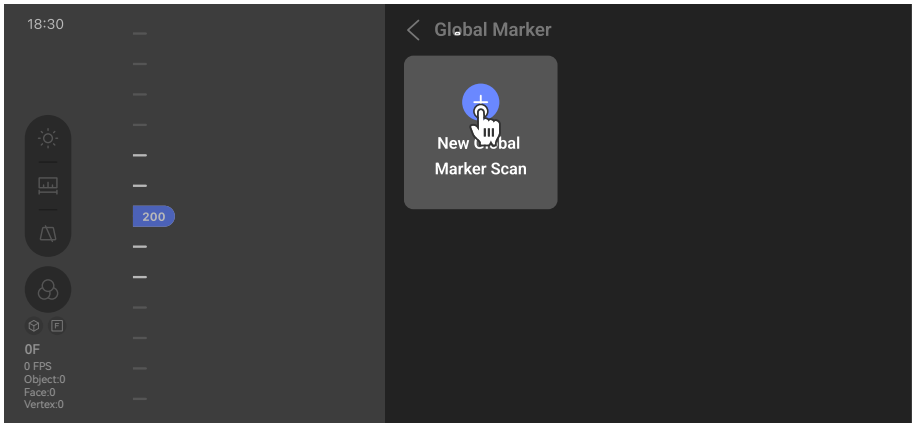
Note: 1. When scanning global markers, only continuous scanning mode can be used. 2. When scanning the model, the near and far view cannot be adjusted; the default is to use the distance selected when scanning global markers.

It is recommended that when scanning large objects, a marker point should be placed every 10 cm. For small objects, the spacing can be adjusted according to actual use. During scanning, it is important to ensure that at least 4 points are recognizable within a single frame; the more recognizable marker points there are, the less likely the scan will miss details.

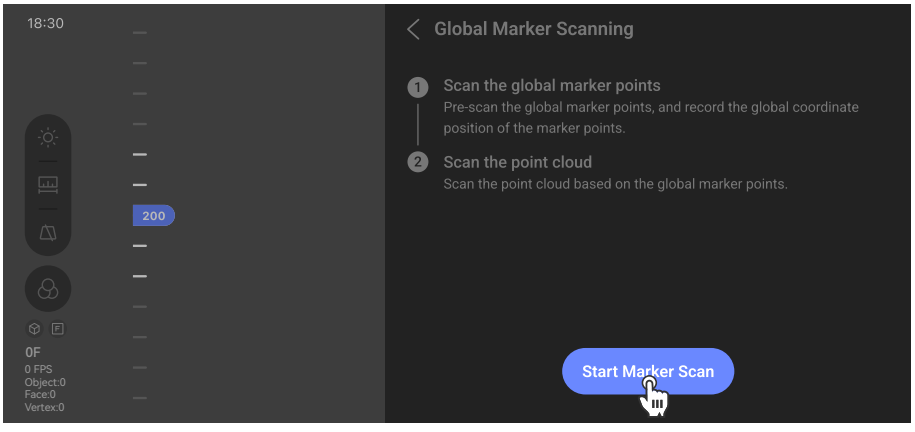
① Select global marker mode



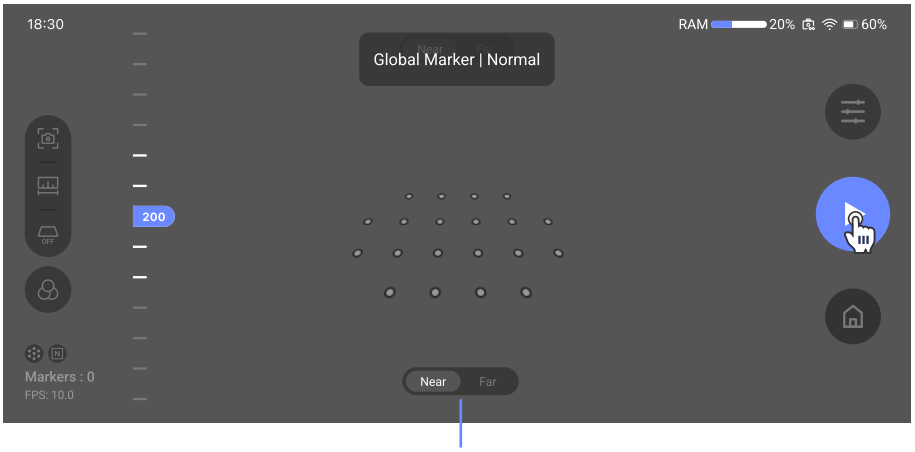
② Add a new global marker



③ Start the first scan (record the marker points)



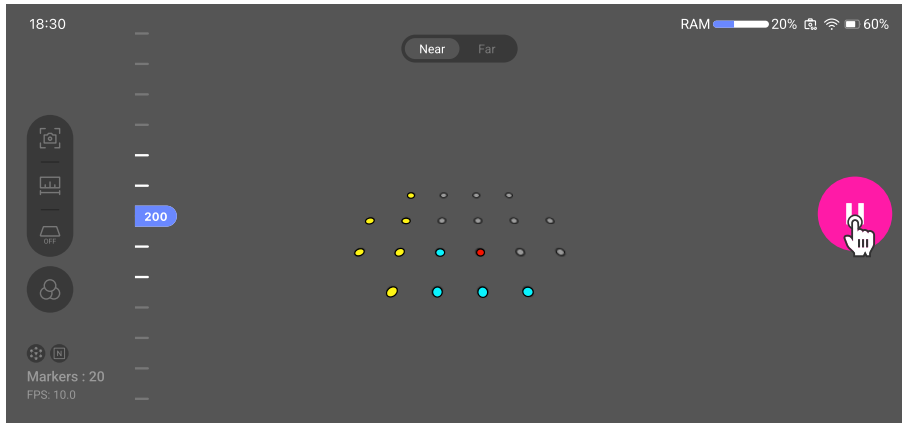
④ Click to start marker point scanning (supports continuous scanning only)



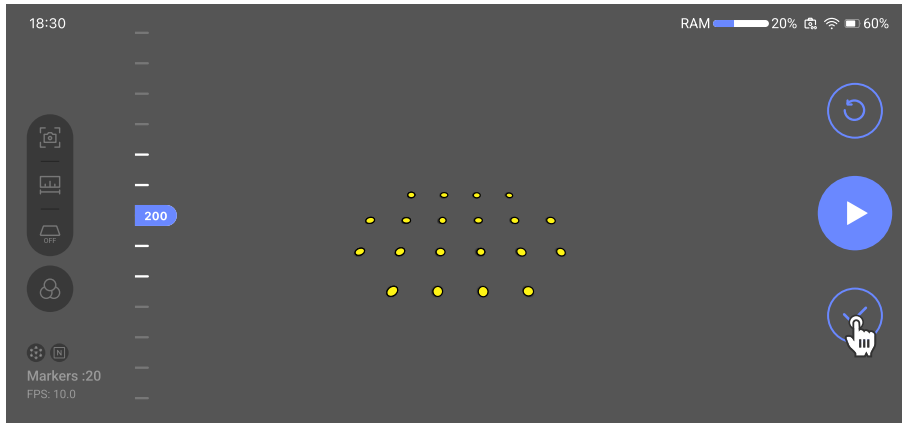
When scanning an object for the second time, the scanning distance from the first scan is used by default and cannot be changed.

⑤ After the scan is complete, tap to pause the scan.

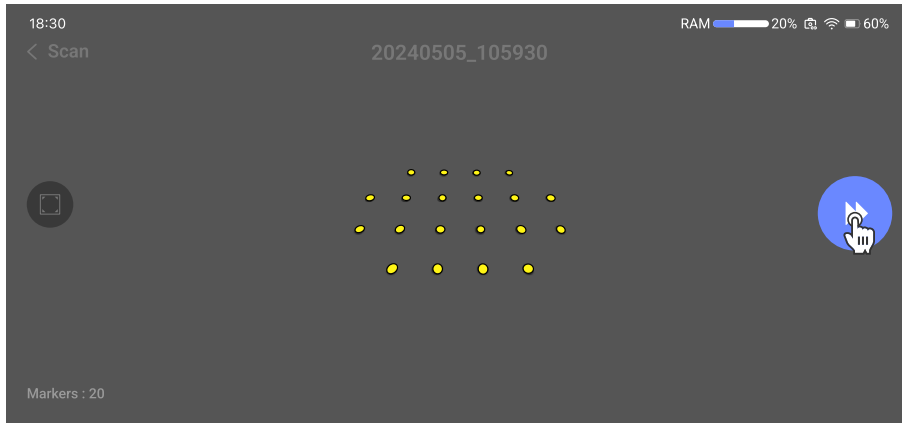
Yellow indicates recognized markers, green indicates markers that are currently being recognized, and red indicates lost markers.



⑥ You can swipe to rotate or use two fingers to zoom the view to observe the global marker point collection status. It supports continuous scanning or re-scanning. If the marker point collection is complete, you can click confirm to proceed to the next step.

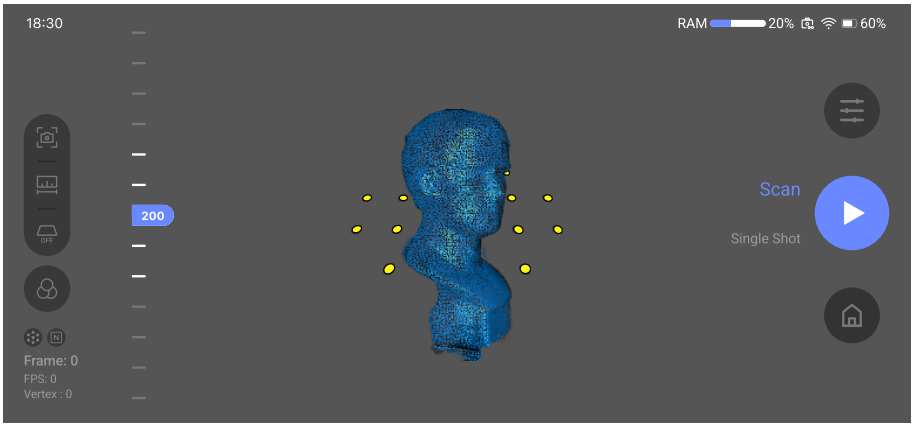


⑦ Click to perform a second scan (scan the object)



⑧ Objects can be scanned according to actual needs, and specific operations can be found in the manual about Normal Scan and Single Shot.

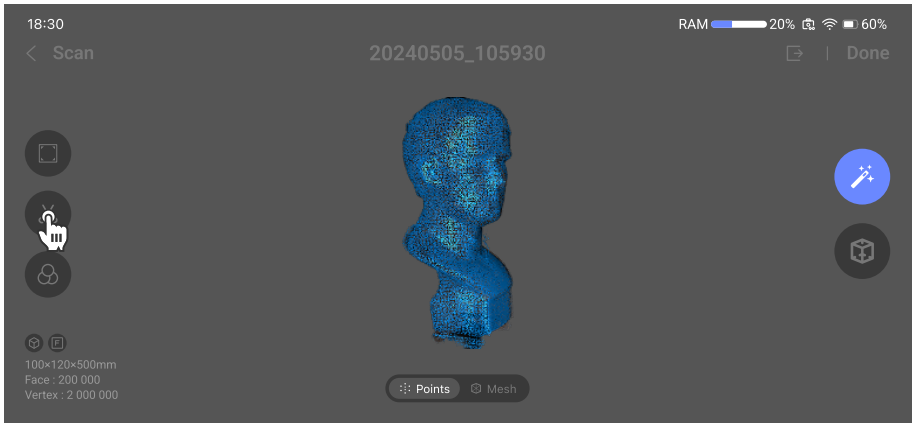
When scanning a model, you cannot switch between long-range and close-up views. The configuration used will default to the one selected during the first marked point scan. To change it, you need to exit the current scanning process and rescan the marked points after setting the scanning parameters.



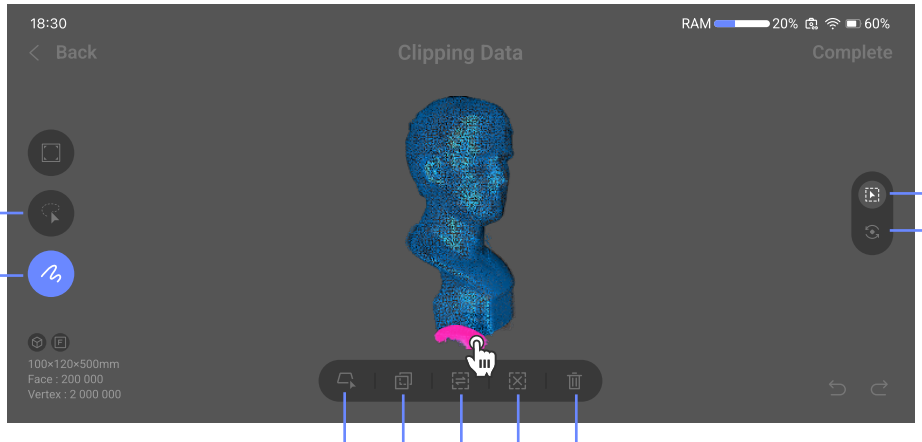
P24 Clipping

Clip the data accroding to your needs.

① Tap to enter the clipping interface



② Start the data clipping



Plane Selection

Connectivity Selection (displayed in grid mode)

Reverse Selection

Delete Selection

Clear Selection

Brush

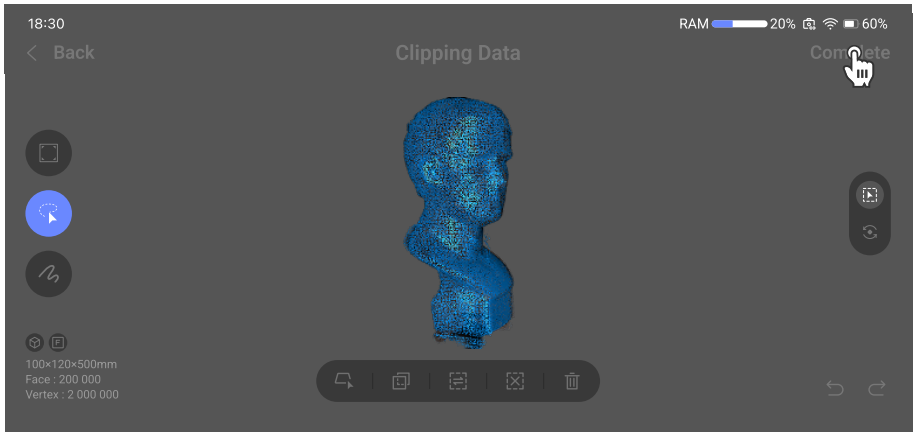
After selecting the brush, you can set the brush thickness, then drag it over the model to make a selection.

Lasso

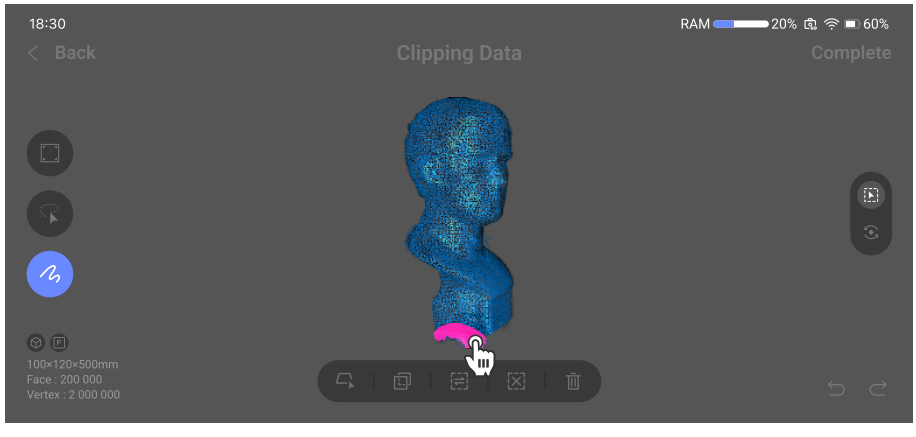
Rotate Tool

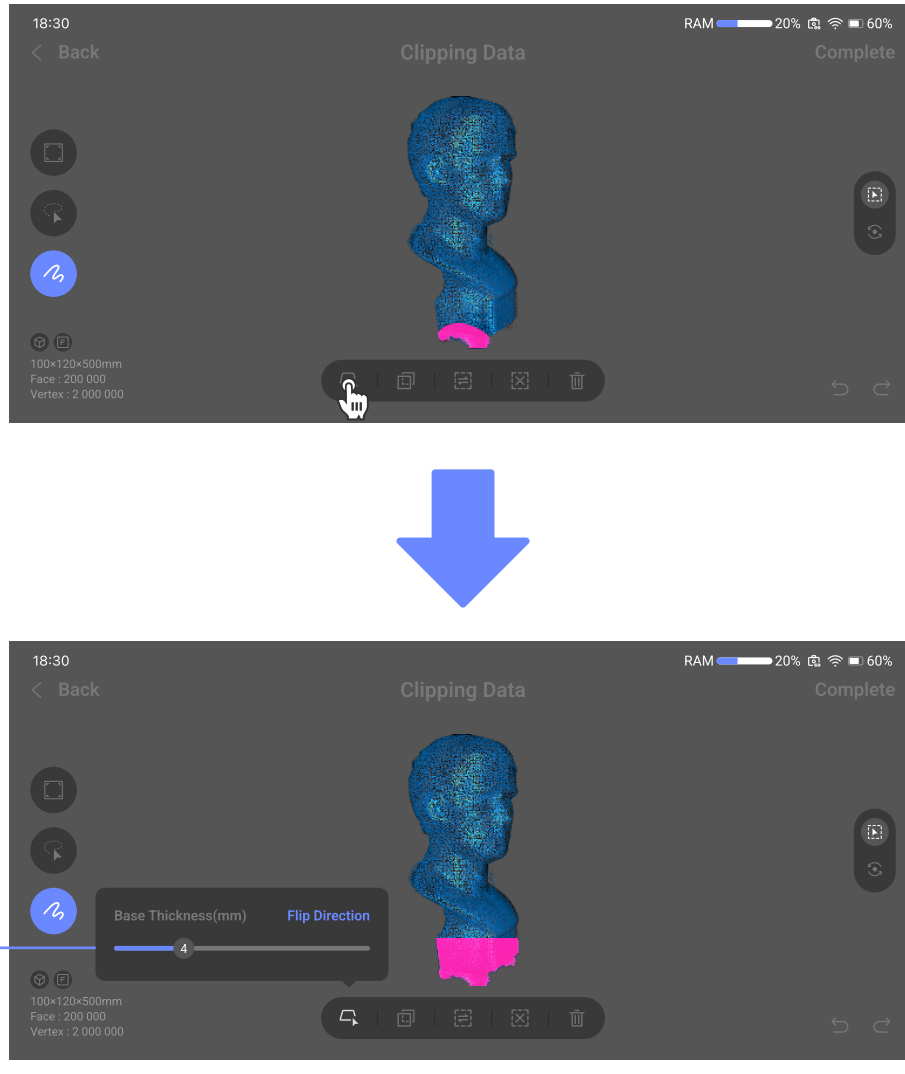
Selection Tool

③ Check the processed data and confirm by clicking 'Complete'; if unsatisfied, you can click 'Back' to not save the current operation.



* Plane Selection: Manually select a portion of the data using Brush or Lasso. The plane data corresponding to the selected data is automatically calculated, which can be used to select and delete planar areas such as table surfaces or the ground.



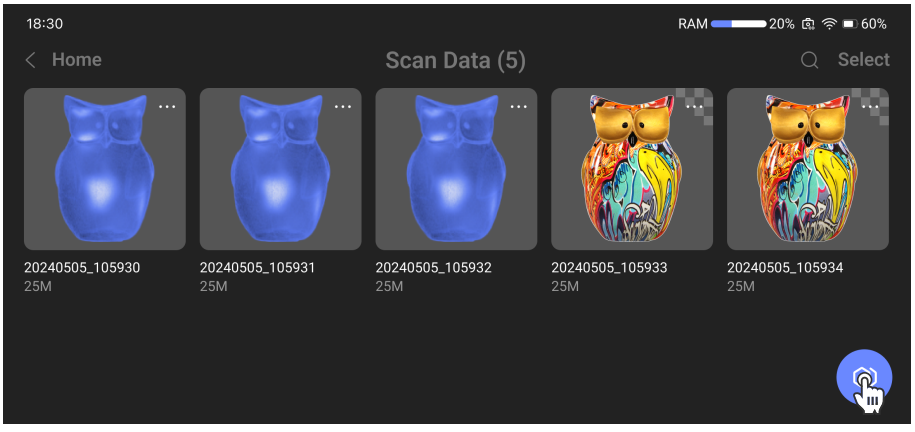


Adjust the thickness of the base

P27 Align

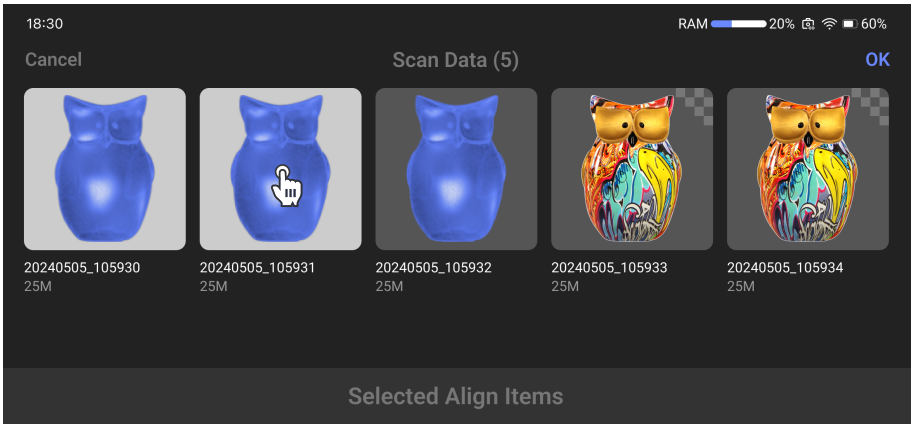
It is possible to scan a model in multiple poses, then align the data from these poses to obtain a more complete model.

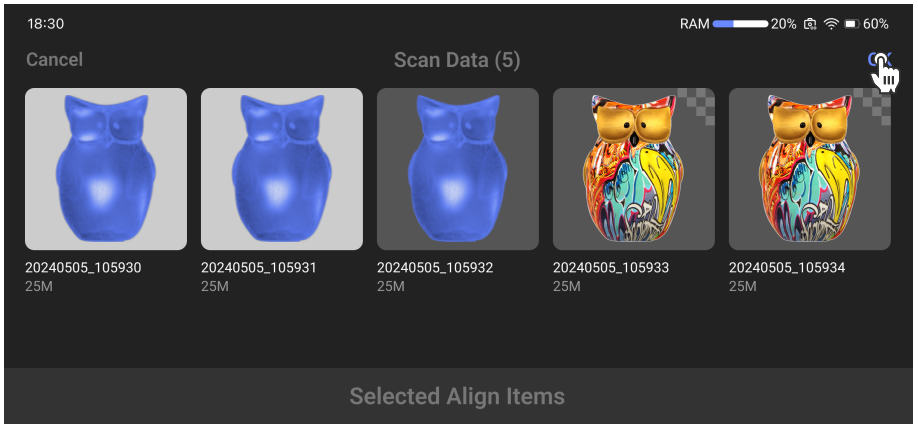
① Enter the alignment interface in file management



② Select the data that needs to be aligned and click confirm.

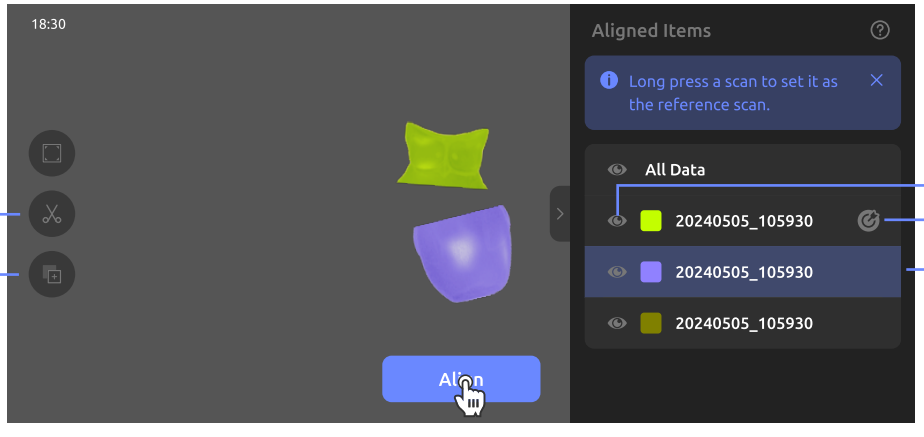
The first selected data will default as the reference alignment object. It is recommended to use the more complete scanned model data as the reference alignment object. The reference alignment object can be modified later in the data list.





③ Configure alignment parameters according to the requirements, then tap Align.

If the data to be aligned to still has noise before alignment, you can tap the corresponding file to clip out the noise. (Please note that the selected point cloud will turn red and won't be aligned to.) You can also tap the configuration button next to the Align button to configure the alignment parameters.



Click on a single piece of data to set it to active. Activated data can be cropped and transformed using the operation panel on the left.

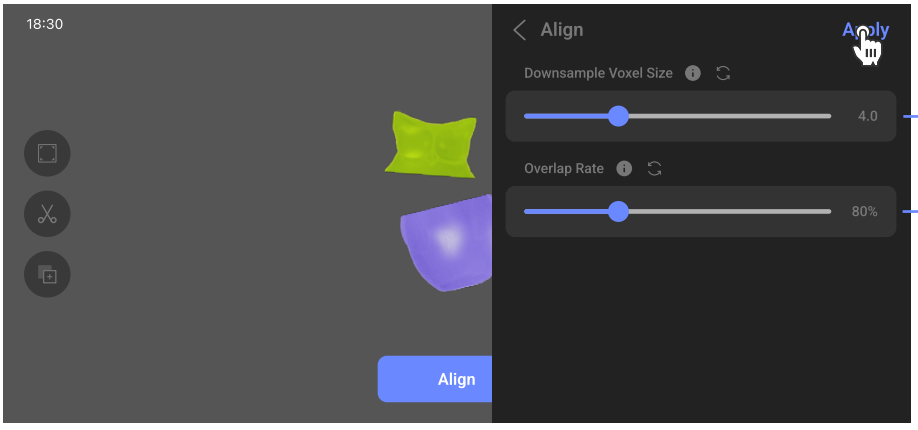
Reference alignment object identification. Long press other data to switch the reference alignment object.

Tap to cross out the "eye" icon to hide the scan.

Transform manipulator: when there are multiple sets of data during scanning, you can switch to view the activated single data. Use one finger to slide and rotate the model, and two fingers to slide and translate the model.

When a single file is selected, the scanned file can be cropped and edited.

④ After configuring the alignment parameters according to your needs, tap "Apply".

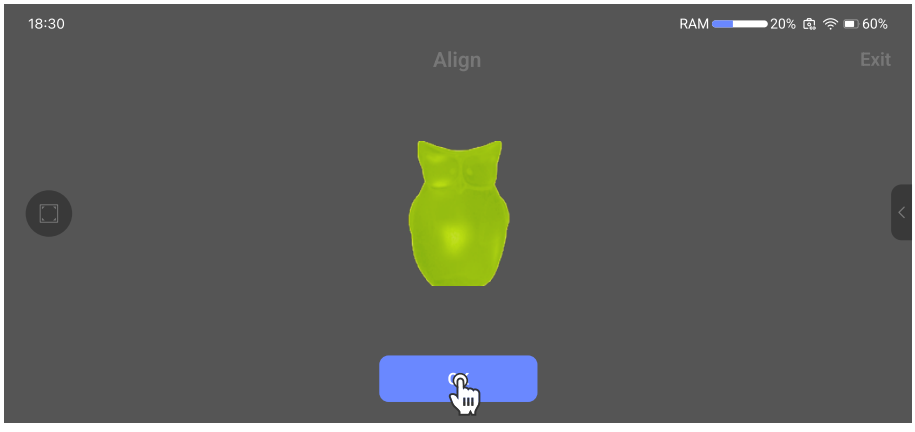


Reduce point cloud data to improve processing efficiency. A larger voxel size increases speed but loses detail, while a smaller voxel size preserves detail but slows down processing.

Determine alignment accuracy. A higher overlap rate provides better accuracy but slower processing speed, while a lower overlap rate in faster processing but reduced accuracy.

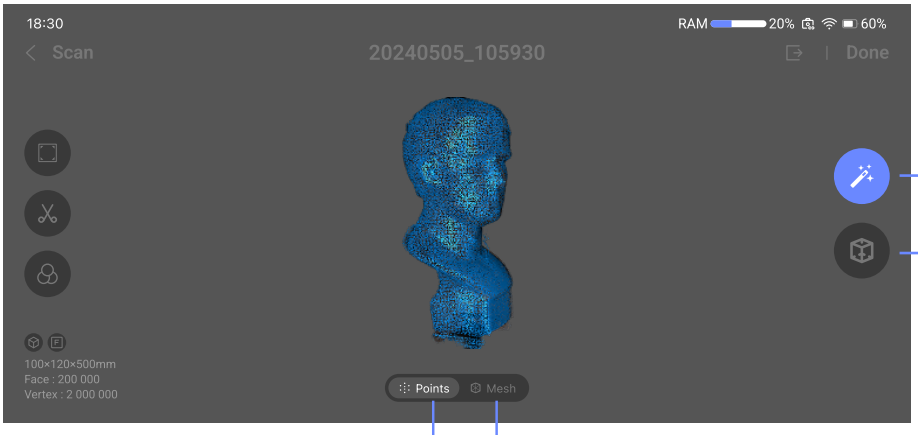
⑤ View the alignment results, tap "OK" to save the alignment results and generate a new data file; if the alignment is unsatisfactory, you can tap exit.

*If the alignment result is unsatisfactory, you can go back and manually adjust all the scanned data to the same angle before trying the alignment again.



P31 Process

The scanned point cloud data can be denoised to remove redundant noise, and be converted into a mesh with the fusion function. Finally, you can edit the mesh by removing floating parts, repairing gaps, simplifing grids, and excuting texture mapping.



Point Cloud Interface

Mesh interface

One-Click Processing: The system has 3 built-in processing modes; you only need to select the corresponding mode. (It performs three steps: meshing, removing isolated items, and simplifying. For other operations, you can choose manual processing)

Low-quality processing: fast speed but average results

Standard processing: suitable for most scenarios, relatively fast, good results

High-quality processing: slow speed but excellent results

Manual processing: You can choose the steps you need to handle (for example, whether simplification is required) and configure each processing step in detail.

Statistical Noise Removal —— clean up the isolated points in the cloud.

Fusion —— mesh the point cloud data by connecting the dots to produce a complete model.

Remove Floating Parts —— clean up the mesh by removing the floating noises from the scans.

Repair gaps —— fill the holes on the mesh to produce a watertight model.

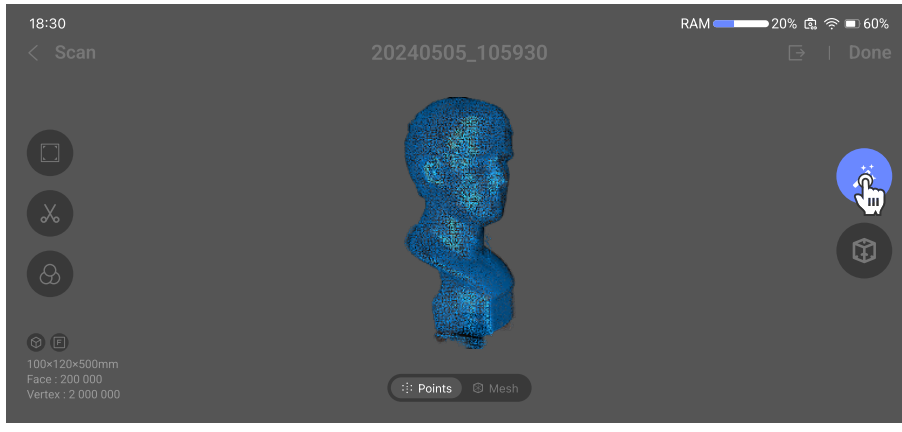
Simplify —— narrow down the amount of mesh faces to reduce the data size. The higher the processing level, the greater the reduction in quantity.

Mesh Denoising —— smooth the mesh by flattening the surface. The larger thevalue is, the smoother the mesh will be. The higher the processing level, the smoother the mesh.

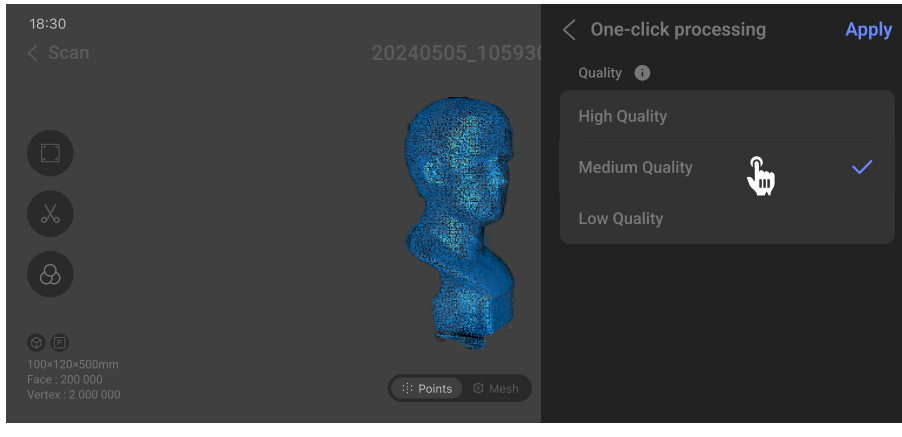
Texture Mapping —— apply the texture or color information onto the mesh surface.(Colors only available for some of 3DMakerpro models.) Note: The "texture mapping" here refers to applying a texture image to the surface of a model. Texture mapping can only be performed if the ColorScanning data was enabled when scanning the model.

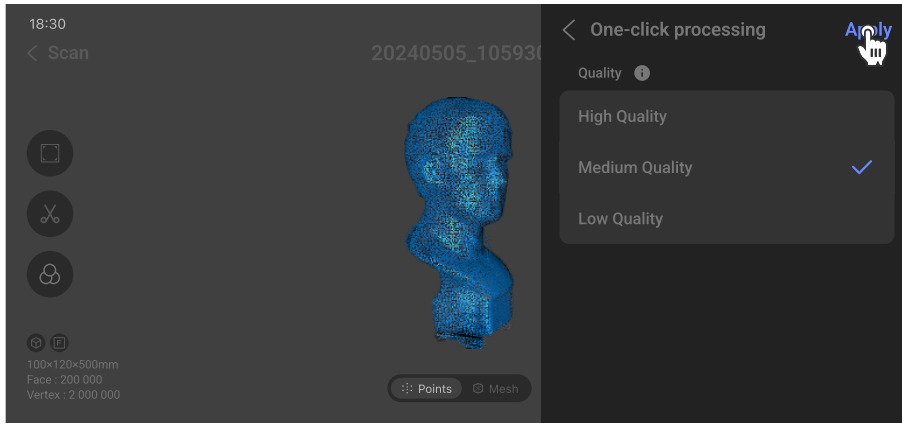
One-click processing

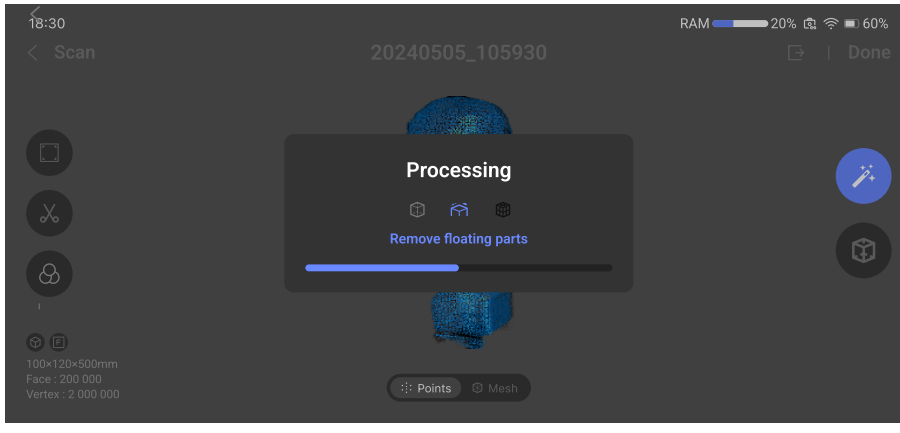
① Select one-click processing



② Select the processing quality according to actual needs, then tap Apply.



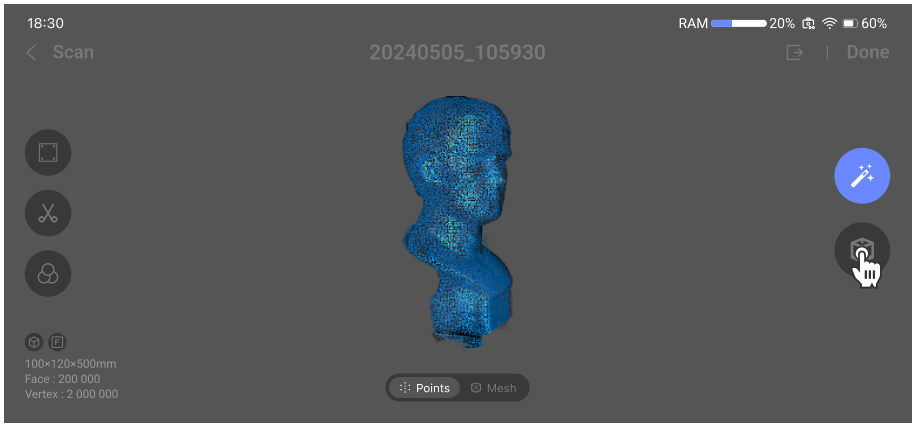




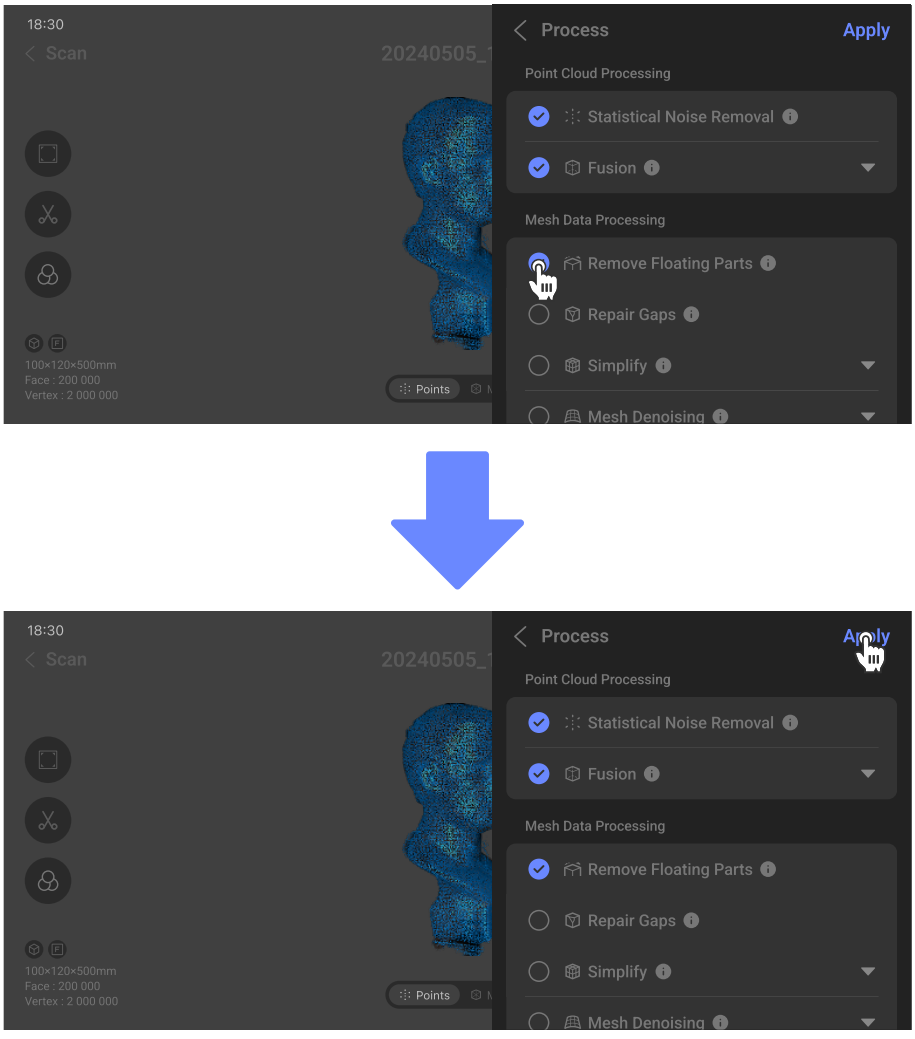
③ After the processing is complete, tap 'Done' to save the project; if the results are not satisfactory, you can process it again.

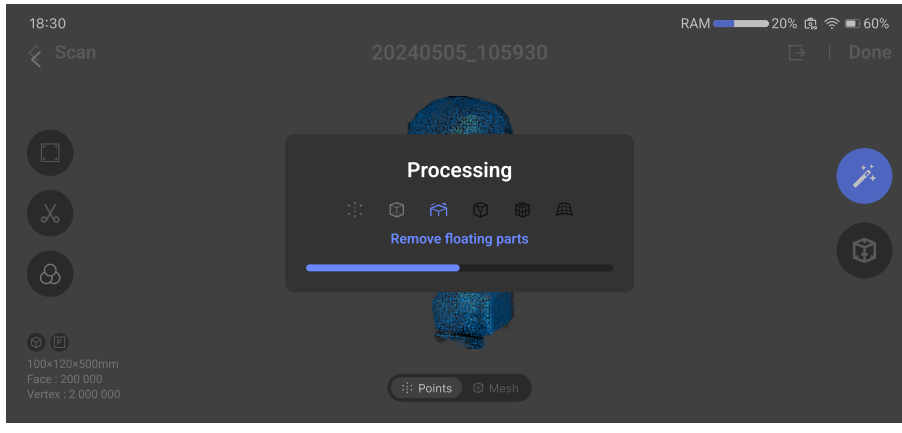
Manual processing

① Choose manual processing

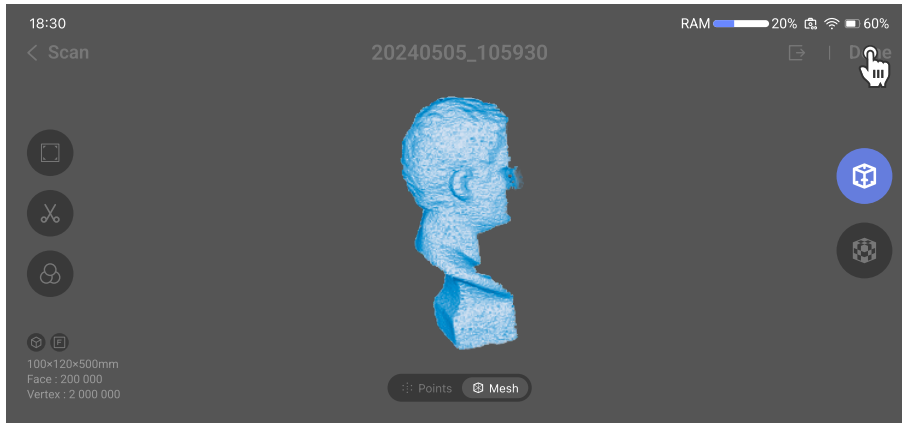


② Configure the processing workflow according to actual needs, then tap Apply.



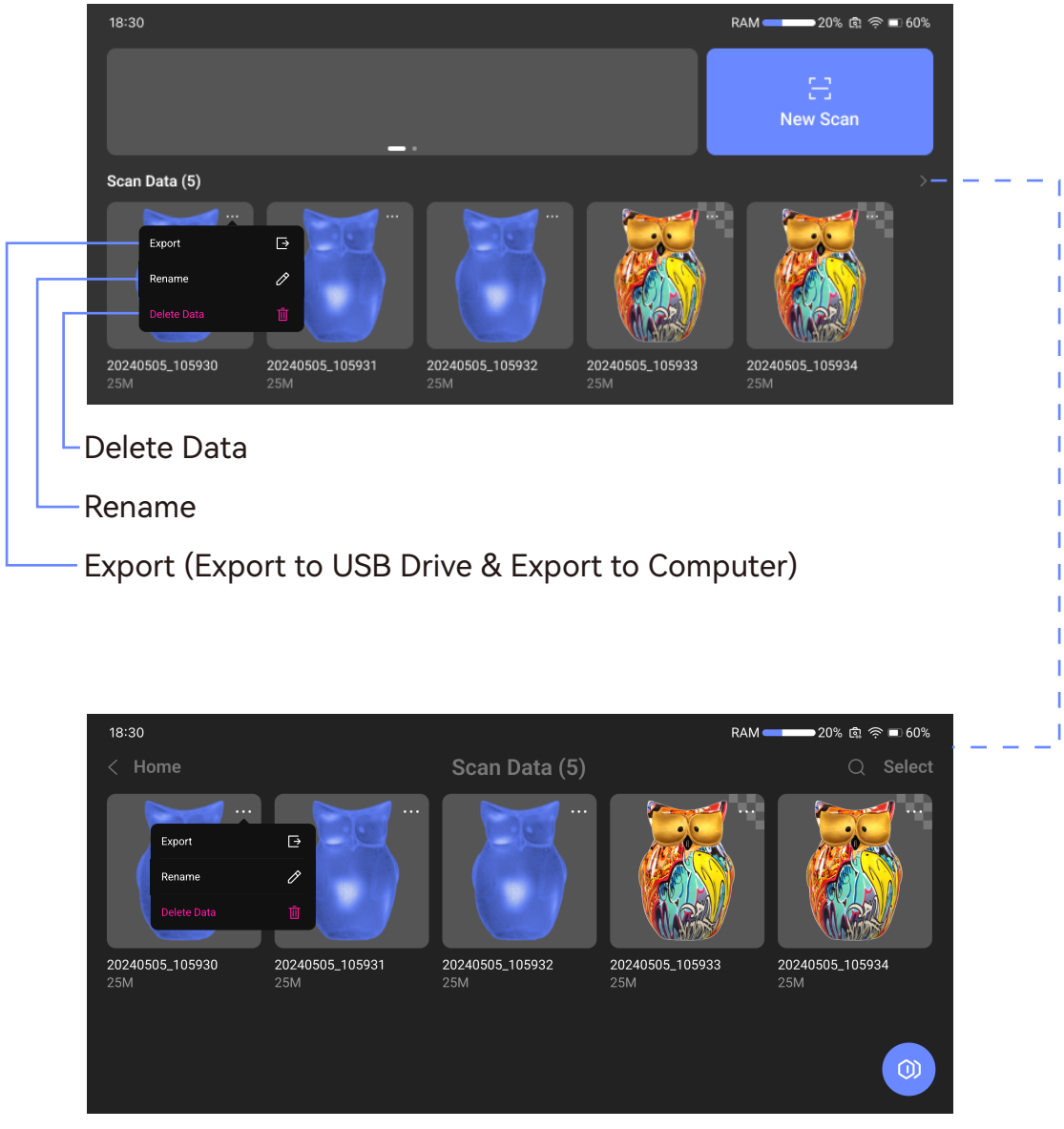


③ After the processing is complete, tap 'Done' to save the project; if the results are not satisfactory, you can process it again.



P36 Project Management

Support exporting, renaming, and deleting files on the project homepage or the project management interface.



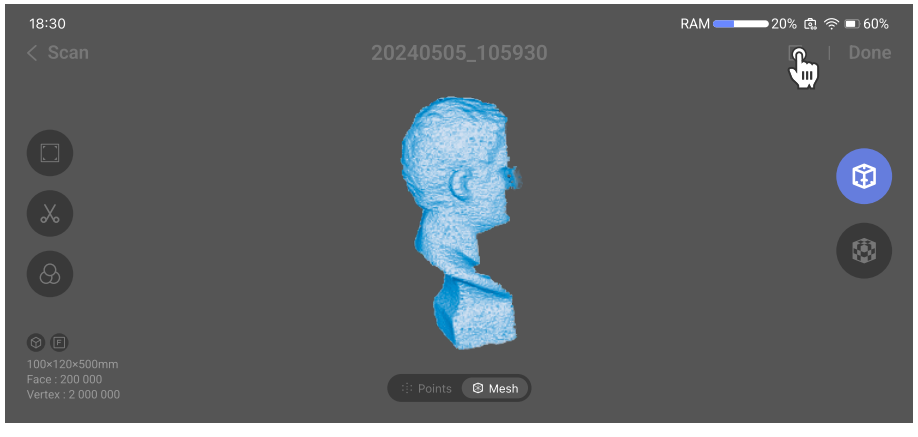
Export

The export function supports exporting a single project (single export) or multiple projects (batch export) at a time. For single exports, you can export from the project's homepage or the processing interface; for batch exports, you need to enter the project list management interface, select the projects to be exported one by one, and then proceed with the export.

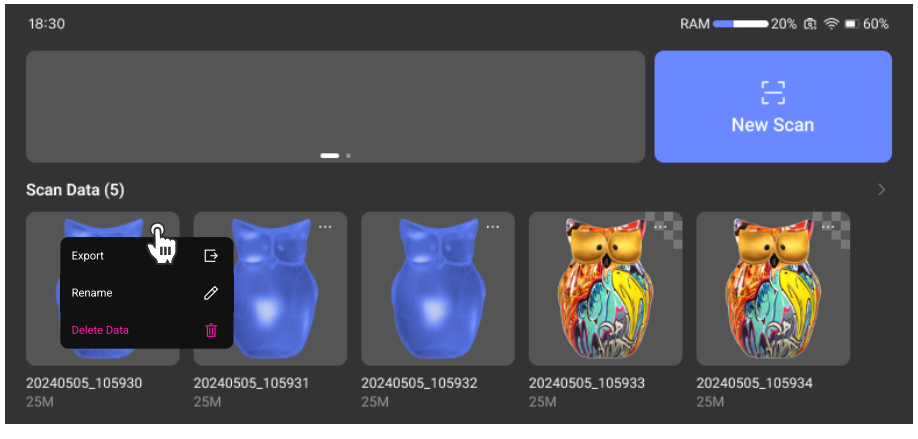
Export Method

Single Export

- In the processing interface (point cloud or mesh data), it supports directly exporting the current project

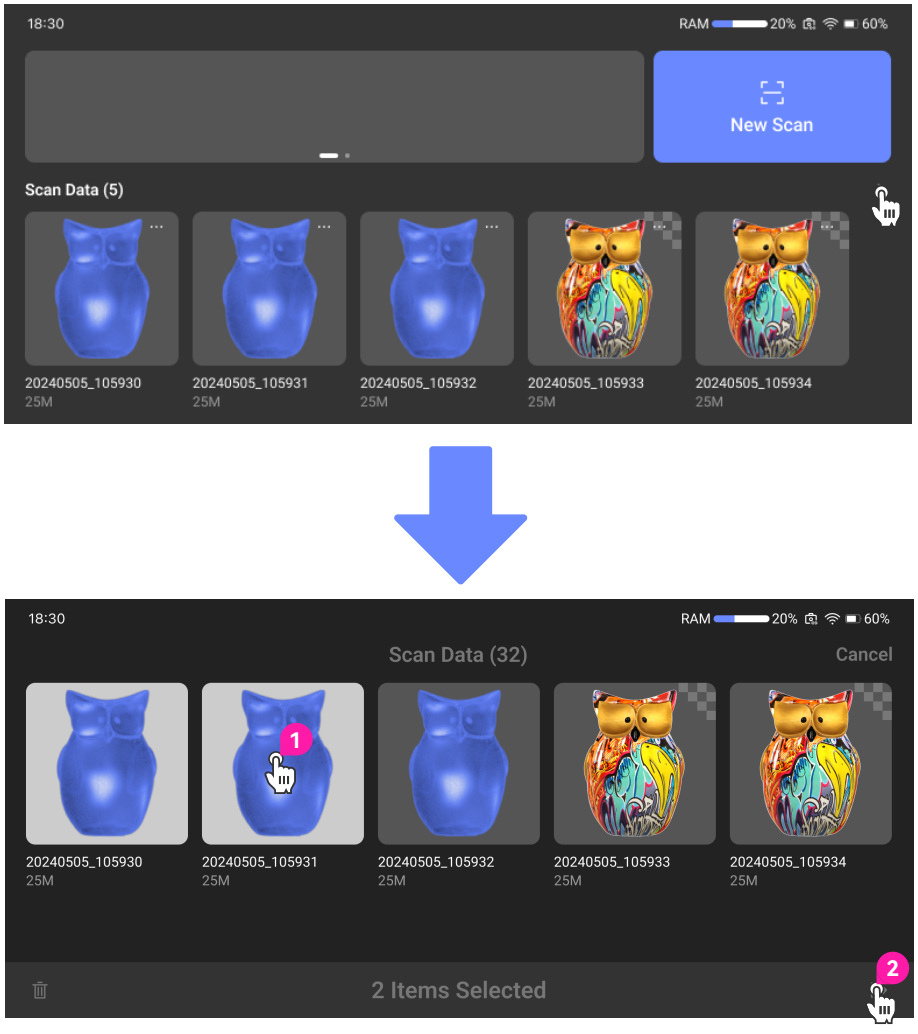


- On the homepage, it supports directly exporting a single project

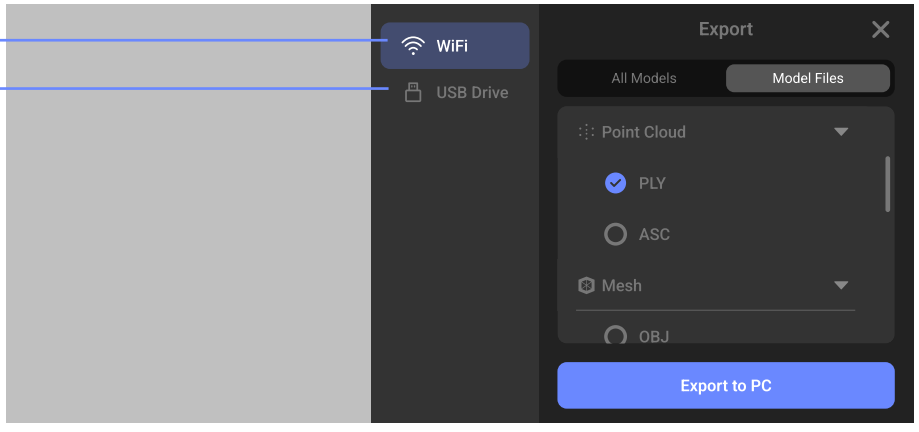


Batch Export

Enter the project management interface, select multiple projects to export, and click Export.

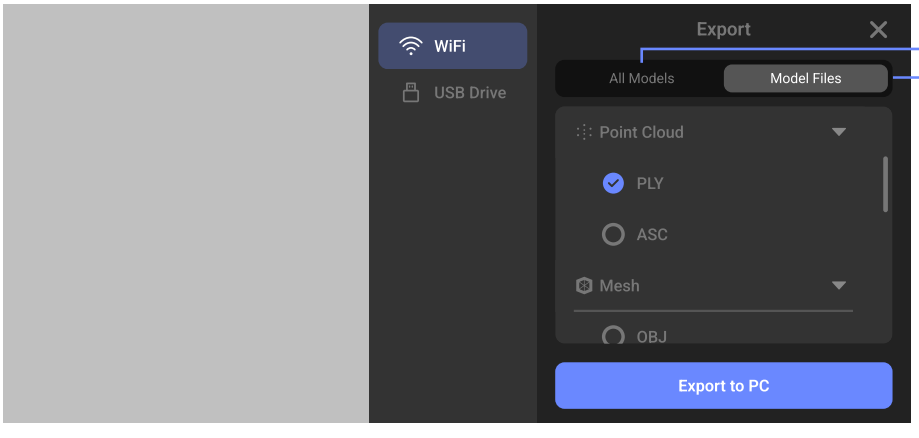


Export Instructions



To export to a USB drive, you need to plug the USB drive and the hub into the charging port at the bottom of the device.

To export to a computer, make sure the device and the computer are connected to the same network.



You can choose to export in either point cloud or mesh model format.

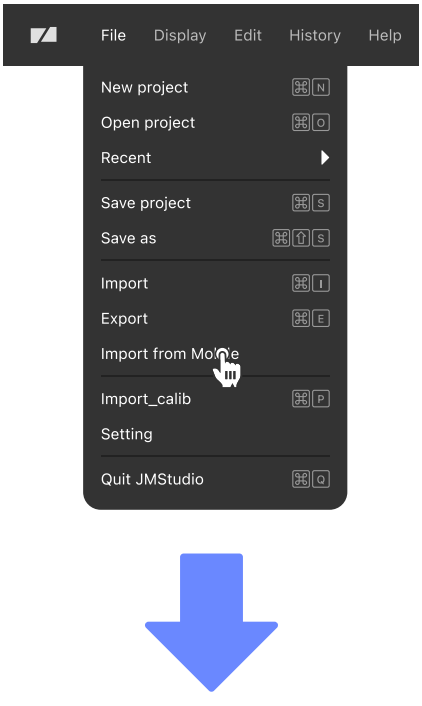
Automatically compress all data and then export it; the compressed file format is pha.

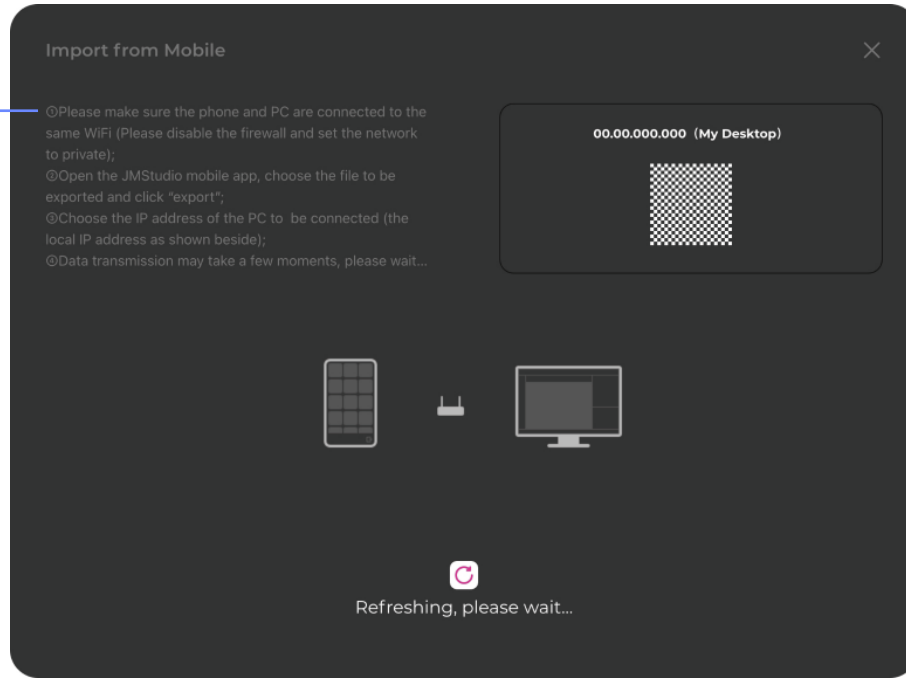
Procedure

Export to Computer

To export to a computer, make sure the device and the computer are connected to the same network.

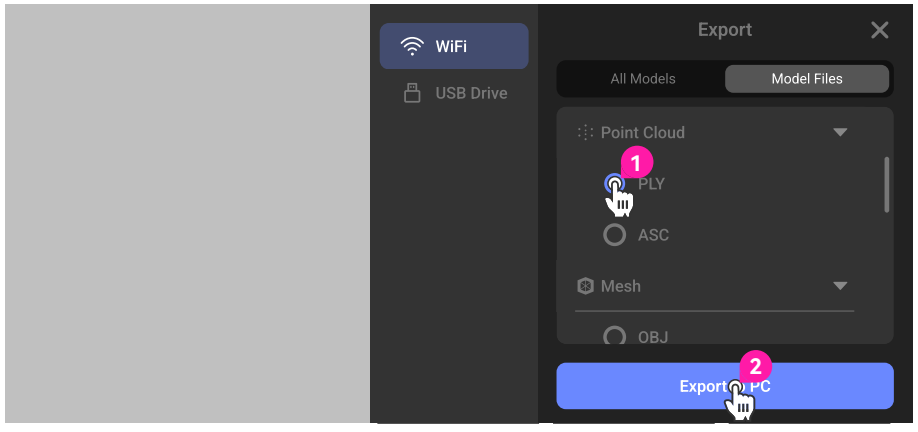
① On the computer, click 'File_Import from Mobile' in the 'Menu Bar' at the top of the interface to open the mobile import window. Your computer's IP address will be displayed on the right side of the interface.

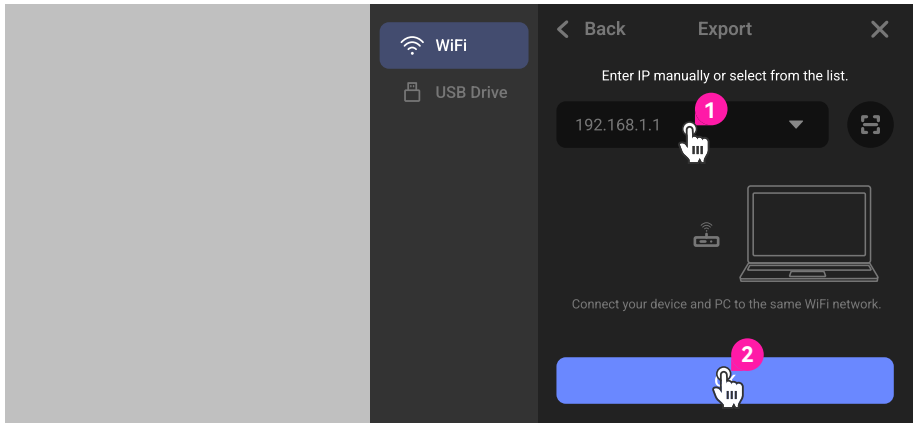




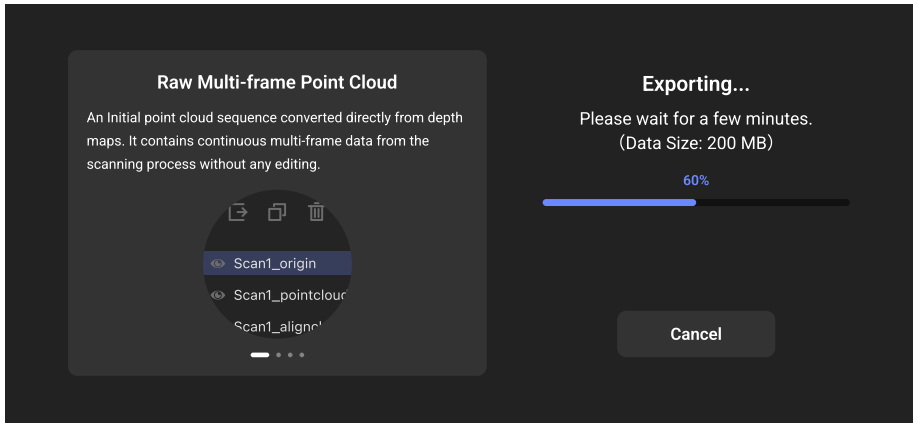
①Please make sure the device (mobile app or scanner) and PC are connected to the same WiFi (⚠ Important: Please disable the firewall and set the network to private);
②On your device (mobile app or scanner) , choose the file to be exported and click "export";
③Choose or Enter the IP address of the PC to be connected (the local IP address as shown beside);
④Data transmission may take a few moments, please wait…

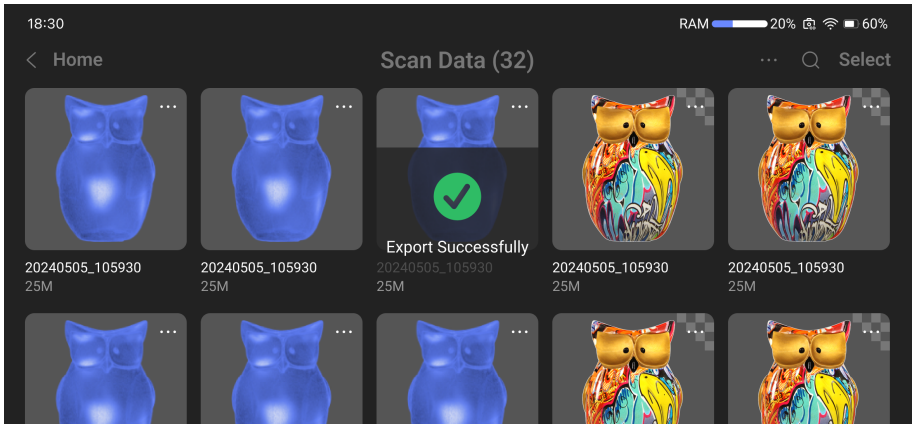
② View the various exportable modes supported by the current model, and select the required data model according to your needs (supporting export of a single model or packaging the current project files). On the device, click 'Export to PC,' enter the IP obtained from the PC, and connect.





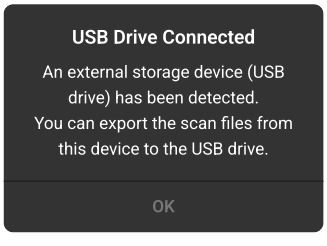
③ After a successful connection, the device will transfer data to the PC.
(If exporting a project file, the data will be automatically compressed and transferred to the PC)





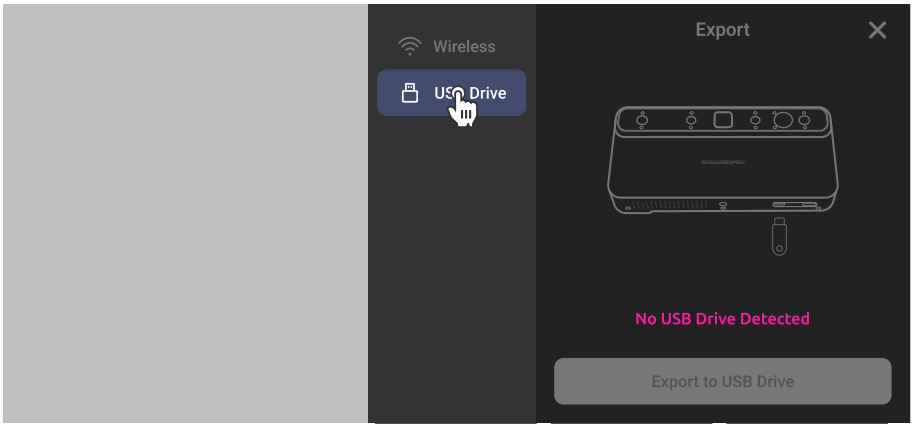
Export to USB Drive

To export to a USB drive, you need to provide your own hub and USB drive. Connect the hub and USB drive (ThinkPlus TPU301 recommended), and insert them into the device's bottom charging port. A pop-up notification will indicate that the device has successfully connected to the USB drive:

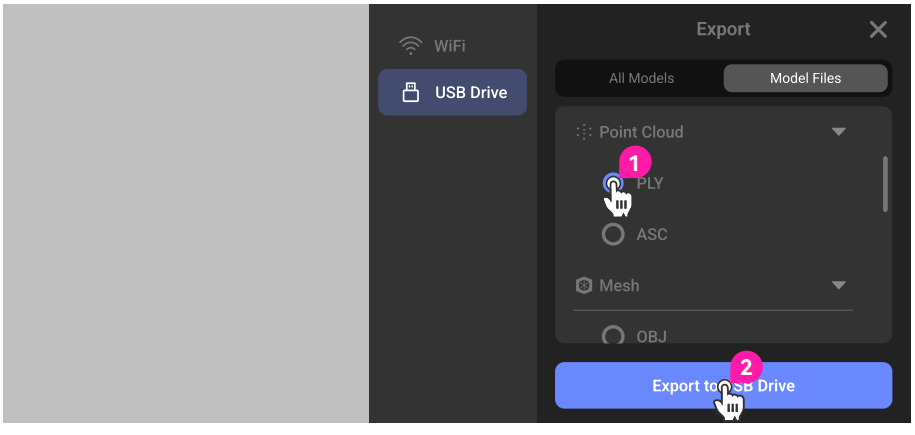


① Select 'USB Drive' on the export interface

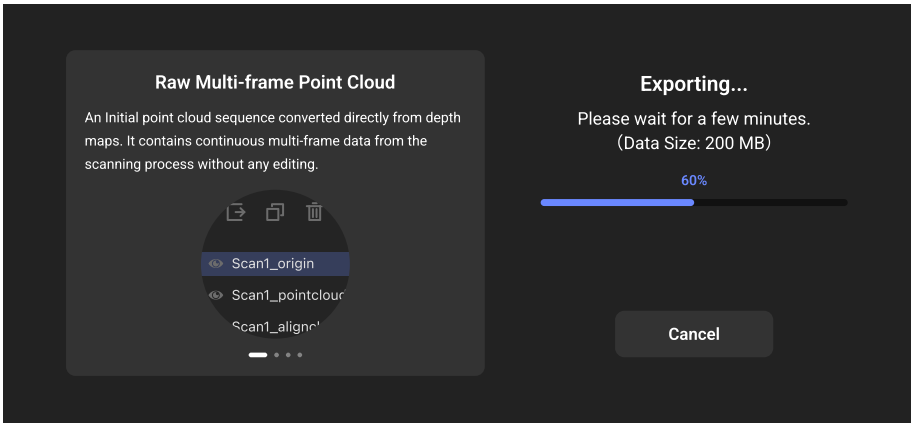
• If the prompt indicates that the USB drive is not recognized, you need to check whether the USB drive is properly inserted.

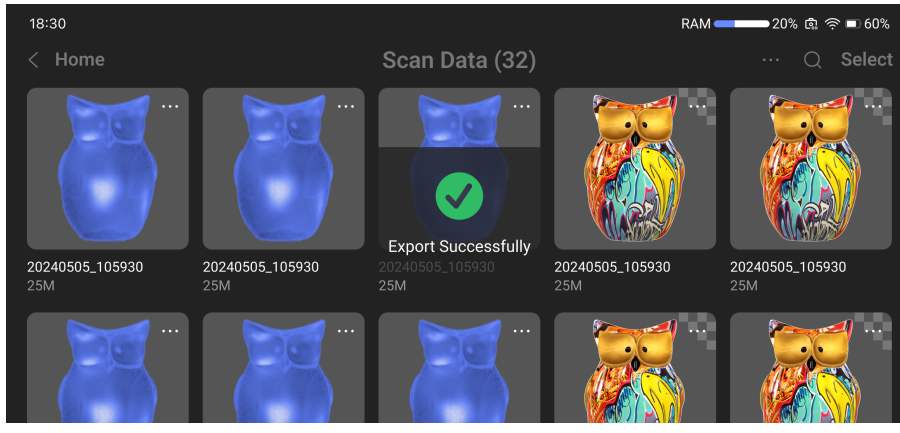


• After successful recognition, you can view the various export modes supported by the current model and select the required data model according to your needs (supports exporting a single model or packaging the current project file). Then, click 'Export to USB' on the device.



② After a successful connection, the device will transfer data to the PC. (If exporting a project file, the data will be automatically compressed and transferred to the PC)

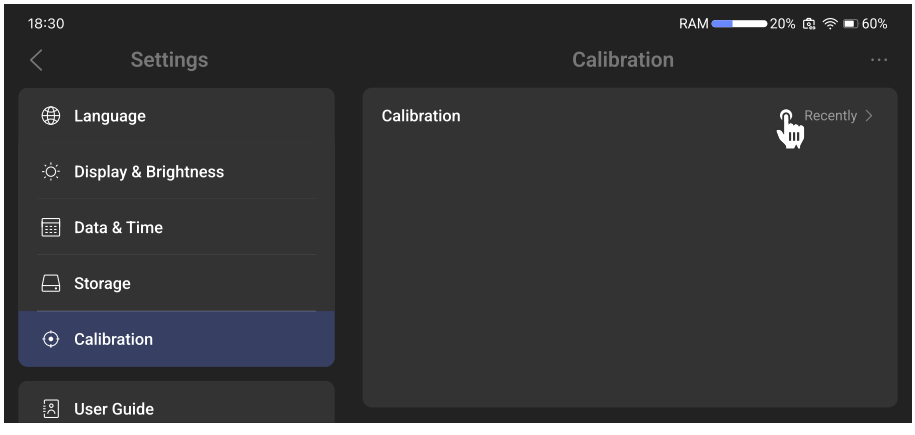



18:30
RAM 20% 60%
Home
Scan Data (32)
Select
Export Successfully
20240505_105930
25M
20240505_105930
25M
20240505_105930
25M
20240505_105930
25M
20240505_105930
25M

P46 Calibration

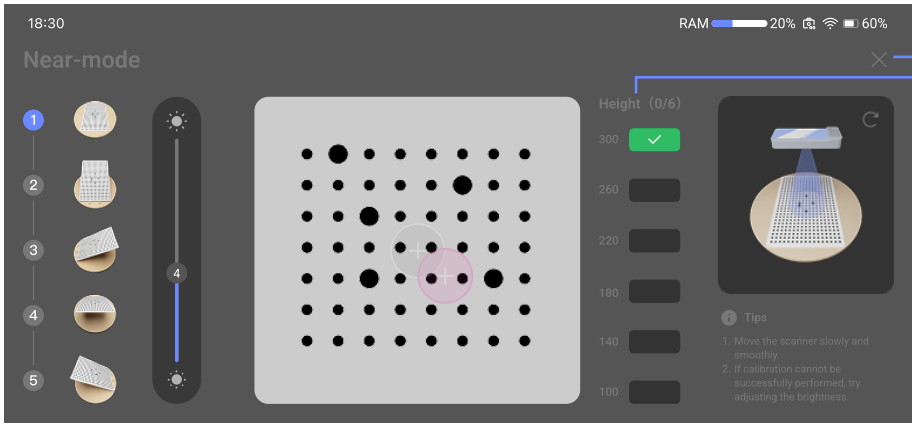
Toucan can be recalibrated, but if not necessary, please do not recalibrate it. It'll involve far and near mode calibration, and each calibration requires five scans.

① Enter the calibration interface in settings.



② Follow the instructions on the left, place the calibraion board according-ly(move it leftward or rightward, forward or backward), and collect the data from the calibration board.

After scanning in near mode, the system will automatically switch into far mode scanning. Please pay attention to the progress indicators on the left. During scanning, ensure the scanner center is aligned with the center of the calibration board, and reduce the brightness setting to a proper level. Placing the calibration board against a black background will make scanning easier.



How to place the board

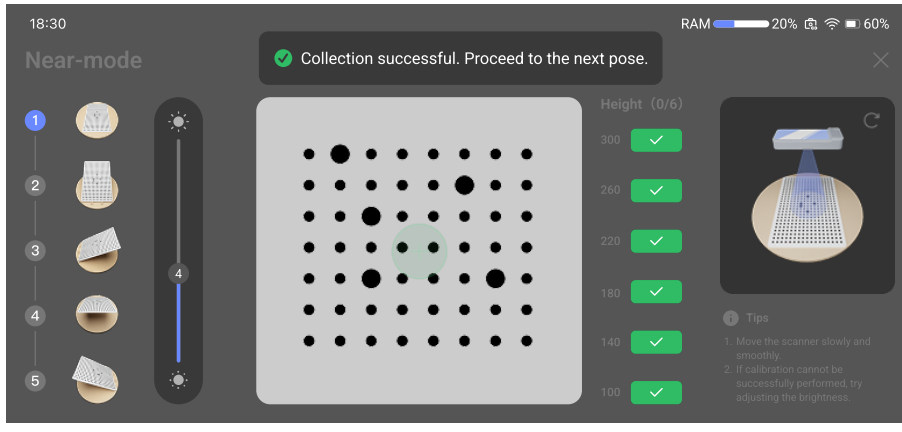
Near Mode / Far Mode

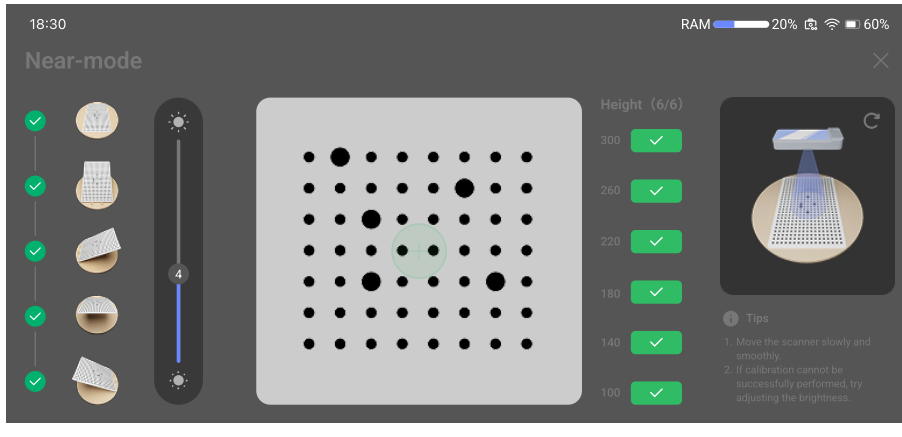
Switch into near mode, place the board in the five different ways and scan it in turn. After it's completed, it'll switch into far mode automatically.

Scan Height

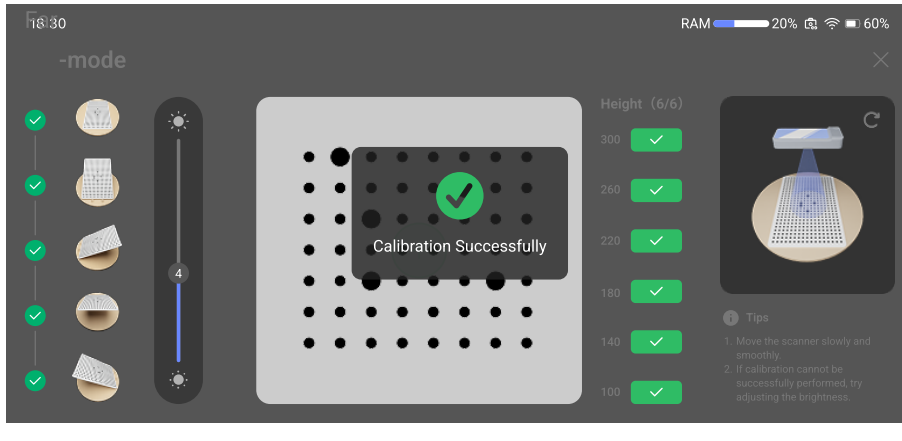
Follow the instructions on the screen, and scan the board in all mentioned heights one by one.

Exit Calibration





③ Similar to the scanning operation in near mode, perform another 5 scans in far mode.



P48

* TOUCAN has a built-in calibration file inside. You can reset it to factory settings.