SHINING 3D

OptimScan 5M Plus

V1.2.0.1

User Manual

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Overview

About the User Manual

This user manual (hereinafter referred to as "the Manual") introduces the hardware configuration, software installation and software usage process of OptimScan 5M Plus High-Precision 3D Inspection Scanner (hereinafter referred to as "the Scanner").

Symbol Convention

Symbol	Description
	Note: This symbol is used to inform you of the additional information of the product.
	Caution: This symbol is used to inform you of incorrect operations that may damage the device or result in data loss. Any damages resulting from misuse are not covered by the warranty.
	Warning: This symbol is used to inform you of the potential risks that may result in serious personal injury and other safety incidents.

Legal Disclaimer

This document is related to your safety, lawful rights, and responsibilities. Read it carefully before installing and using the product.

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- In the event of any ambiguity and/or any advice on the contents of the document, contact us by the contact information in this document.

Quick Guide

This chapter provides an overview guide for the hardware and the software of OptimScan 5M Plus High-Precision 3D Inspection Scanner, making it easy for you to find the corresponding instructions.

About the Hardware

You can learn about the hardware here, including the appearance of the scanner and its cable connection.

→ Introduction to the device

→ How to connect the device?

About the Software

You can learn about the software here, including its installation, activation and so on.

→ How to install the software?

→ How to activate my device?

→ How to upgrade the firmware or the software?

→ Introduction to the interface

After installation and activation, follow the steps below to use the scanner.

Calibrate the scanner

Calibration ensures the accuracy of the scanner and improves the scanning quality.
Calibrate the scanner if you first use it; when the calibration is completed, it will be skipped automatically next time you open the software.

→ How to prepare for calibration?

Create a project group

After you select a scan mode, choose a folder and create a project group.

→ How to create / open a project group?

→ How to create / open / delete a project in a project group?

The calibration sequence is:
Device Adjustment > Device Calibration.

3 Set scanning parameters

When a project group is created, you can set relevant parameters to get a better scan result.

→ How to set scanning parameters?

4 Scan and generate a point cloud

After you set scanning parameters, scan the object and generate a point cloud.

→ How to scan an object?

→ How to generate a point cloud?

5 Edit scanned data

You can edit the scanned data when the scanning is paused or completed to reduce noises and get accurate data.

→ How to edit scanned data?

→ How to align scanned data?

→ Other interactions

6 Post-process and measure scanned data

You can post-process and measure the scanned data.

→ How to generate and optimize a mesh?

→ How to edit mesh data?

→ How to create features for further interactions?

→ How to move the scanned data?

→ How to measure the scanned data?

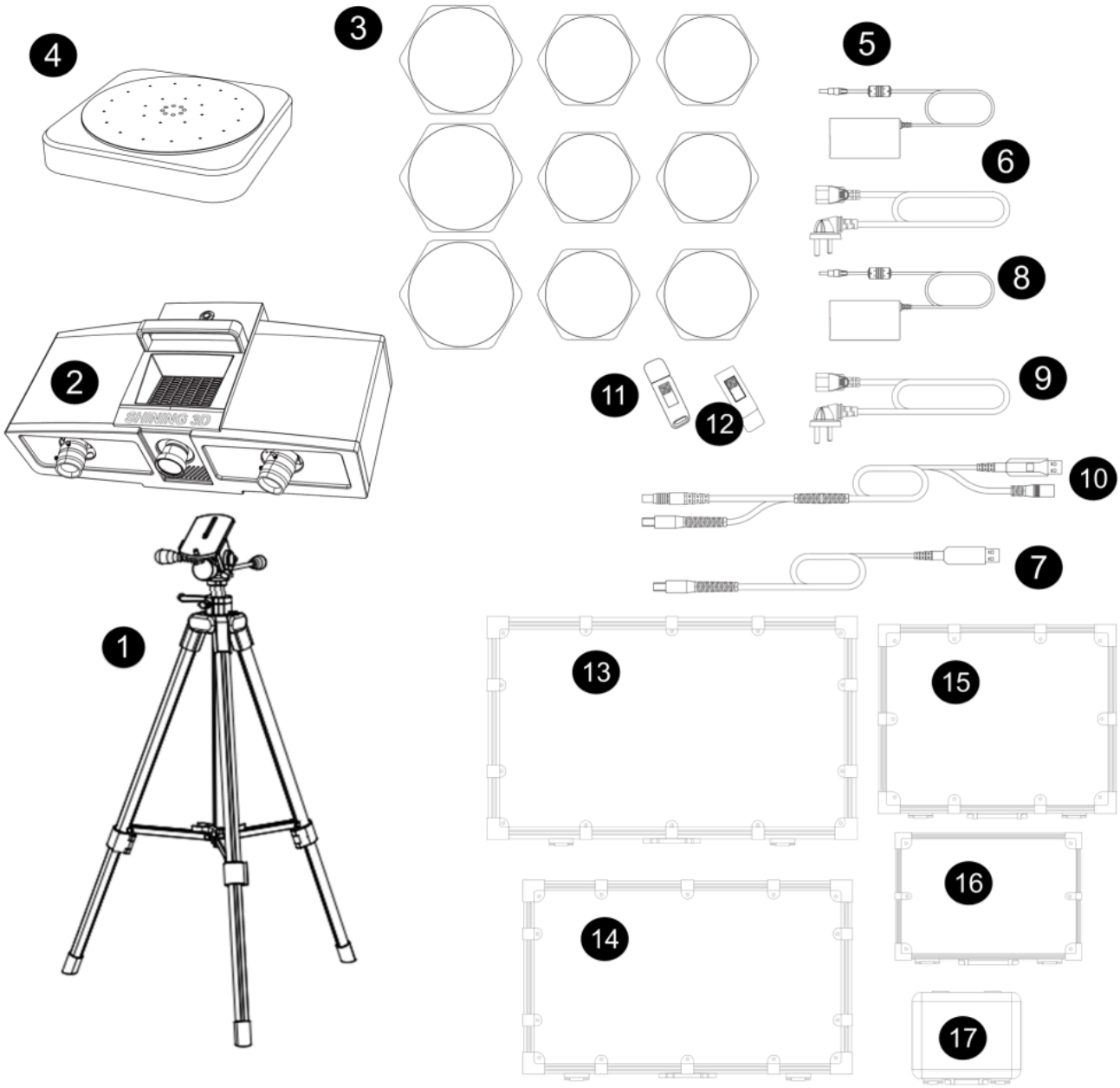
Hardware

Device

OptimScan 5M Plus adopts narrow-band blue light source and high-resolution industrial lens to ensure fine scanning effect and smooth data quality. The scanner provides three sets of high-resolution industrial lenses, which can be replaced according to different models, with stable precision and easy operation.

Appearance

Components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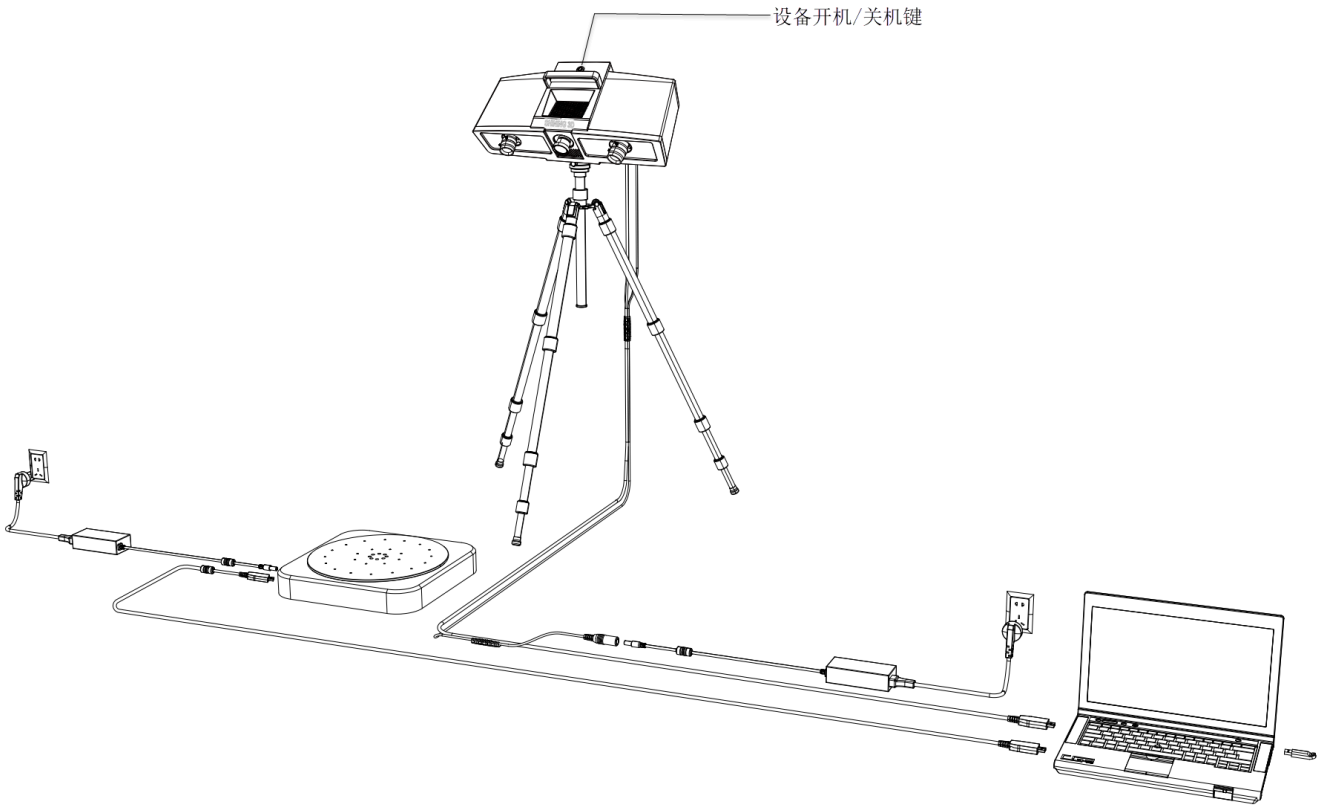
No.	Part
①	Tripod
②	Scanner head and lens
③	Lens (400 mm, 200 mm, 100 mm)
④	Turntable (optional)[1]
⑤	Power adapter (turntable)
⑥	Power cord (turntable)
⑦	Data cable (turntable)
⑧	Power adapter
⑨	Power cord
⑩	Data cable and power cord
⑪	Dongle
⑫	USB flash drive
⑬	Carrying case (tripod)
⑭	Carrying case (scanner head)
⑮	Calibration board (400 mm)
⑯	Calibration board (200 mm)
⑰	Calibration board (100 mm)

1. Please refer to the equipment you actually ordered and received. ↩

Device Connection

Overview:



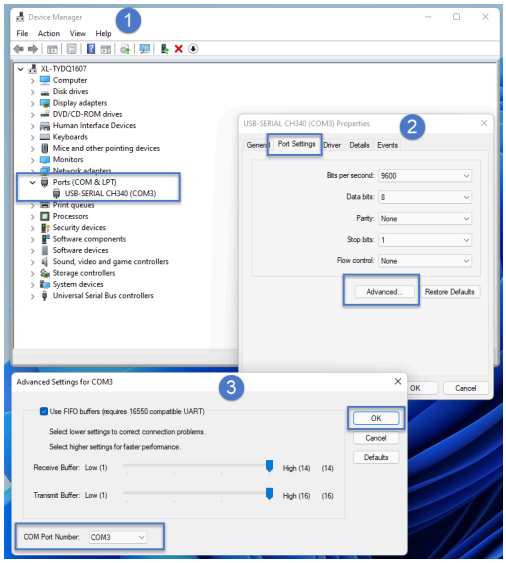
> **Caution**
>
> - Please make sure you are using the supplied power adapter.
> - Before opening the software, please start up the device first.

The steps to connect the device are as follows:

1. Take the scanner head out and install the lens.
2. Open the tripod and place it on the ground. The tripods can be retracted and fixed after adjusting the height.
3. Install the cradle head on the tripod.
4. Install the scanning head on the cradle head, adjust the direction, and tighten the bolts to fix it.
5. Adjust the height of the device as needed, and tighten the lock after the adjustment is complete.
6. Connect the data cable between the scanner and the computer.
7. After connecting the power cord and adapter, turn on the power.
8. Use the device power on/off key to start or shut down the device.

Note

If you use a turntable, you need to connect the turntable power and data cables separately; If you have connected a motorized heavy-duty turntable, please follow the steps as shown in the right figure: open **Device Manager** > **Ports (COM & LPT)** > **Advanced...**, and select a port number below 10 in the **COM Port Number** section.



Software

Software Installation

To use the scanner, you need to install the **OptimScan** software first (hereinafter referred to as the "Software").

Environmental Requirements

Recommended configuration:

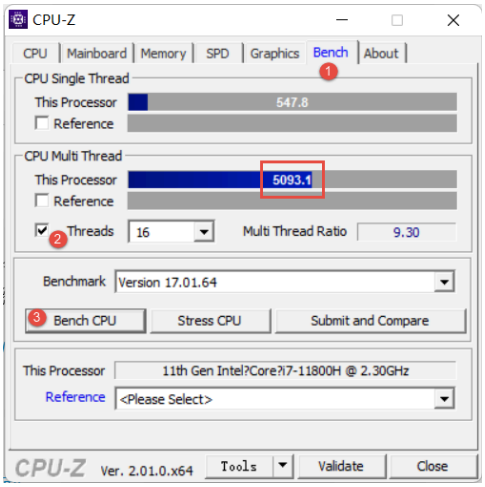
Configuration	Recommendation
Operating System	Window 10 (64-bit) and Window 11 (64-bit).
Processor	Intel® Core™ i7-11700 or above. **Note** Improper computer configuration or hardware issues will cause CPU performance degradation and affect the user experience, it is recommended that you use the CPU-Z tool to check CPU performance before starting scanning; for more, please see processor.
Graphics Card	NVIDIA GTX 3060 or above.
VRAM	6 GB or above.
RAM	32 GB or above.
Interface	USB 3.0.

Processor

Install and launch CPU-Z, follow the steps in the right figure to get a CPU multi thread performance score. A score of **4000** or more is required.

Note

The software package does not contain CPU-Z software. Please download it yourself.

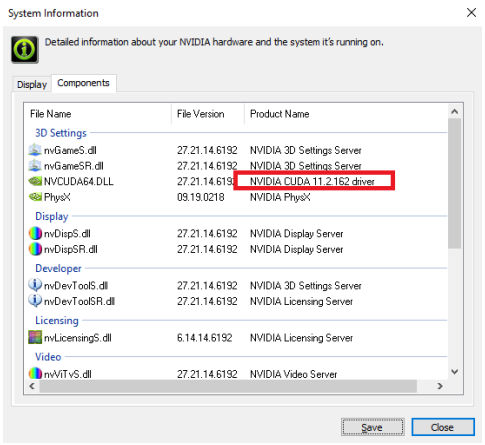


GPU

Please use a NVIDIA1[1] discrete graphics card for better and smoother scanning experience.

Note

● The graphics card should support **CUDA 10.2** or above. You can use **NVIDIA Control Panel** > **Help** > **System information** > **Components** to get the current CUDA version.

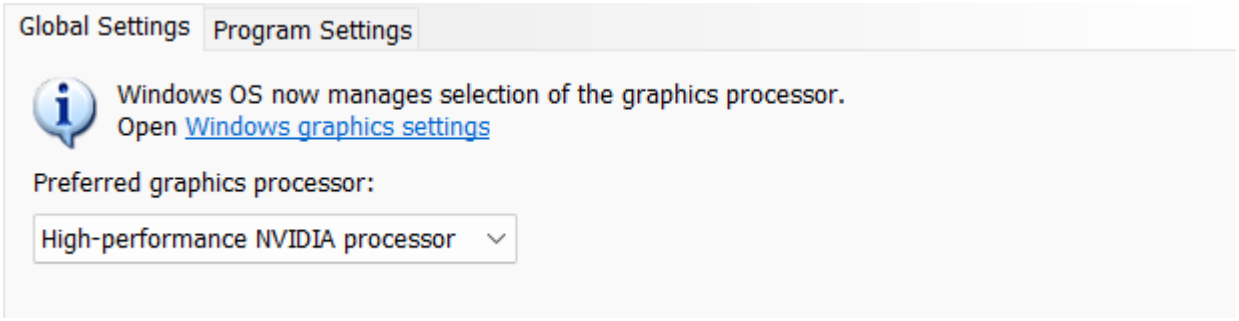


Use a discrete graphics card on desktop:

Connect your monitor to the port of discrete graphics card on the back of your computer, and OS will use the discrete graphics card automatically.

Use a discrete graphics card on laptop:

1. Launch **NVIDIA Control Panel** on your laptop.
2. Go to **3D Settings** > **Manage 3D Settings** > **Global Settings**, select **High-performance NVIDIA processor** and **Apply**.



Software Installation

Please use the software from the USB drive included in the device's packaging for installation.

> **Caution**
>
> - Administrator rights are required for the software installation. The initial installation environment may take a long time, please wait patiently.
> - Please do not install the software in "C:\Program Files" or "C:\Program Files (x86)". The software will not run when installed under these folders due to restricted rights.

---

1. We use CUDA from NVIDIA to get high scanning experience. ↩

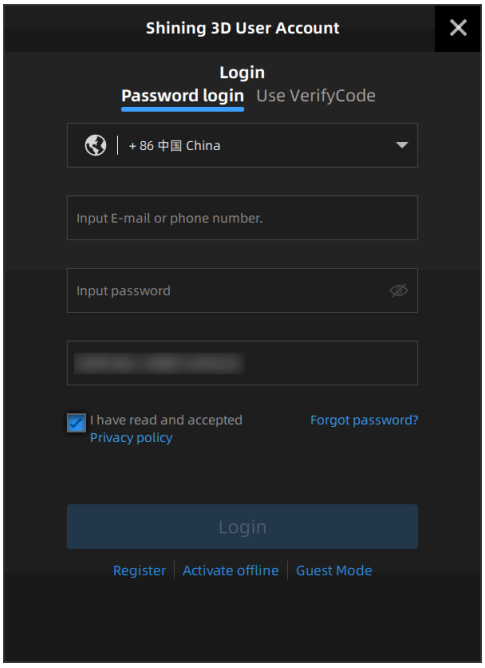
Device Activation

Before using the device, please activate it first, and you can choose online activation or offline activation.

> **Note**
>
> If you fail to activate the device in neither way, please contact your supplier or our support team.

Online Activation

Launch the software, then register a SHINING 3D user account. Login with your new account, and the device will be activated automatically.

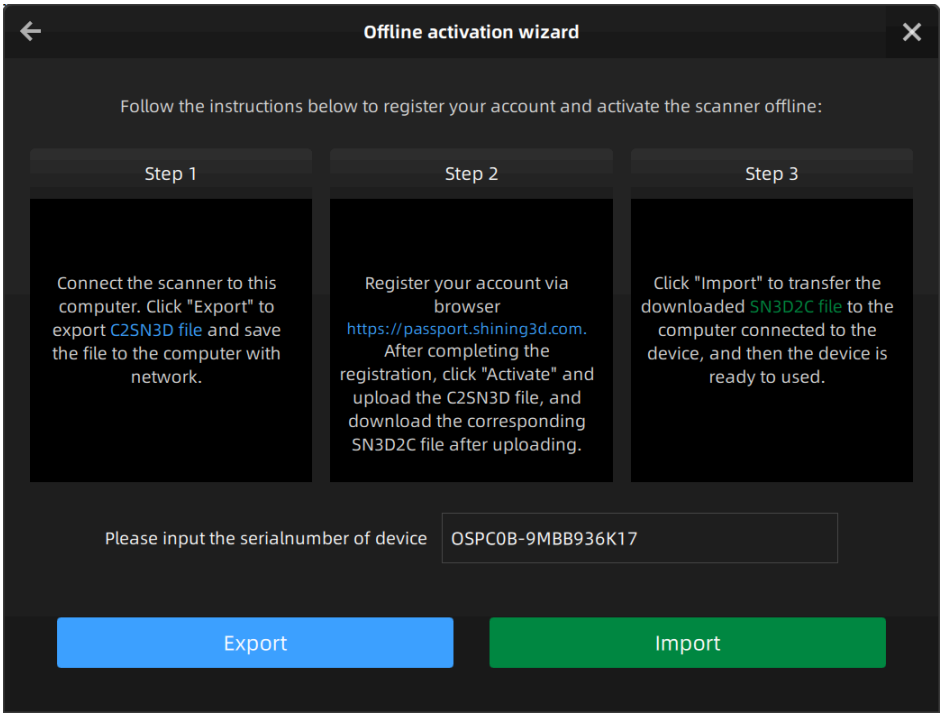


Note

- If you are a new user, please register a SHINING 3D Passport account first: you can click **Register** in the pop-up window after starting up the software, or click **Sign Up** in the SHINING 3D Passport official website.
- Please read and then check **Privacy Policy** and **Terms of use**.

Offline Activation

If your computer is unable to connect to the internet, please select the offline activation method.



Note

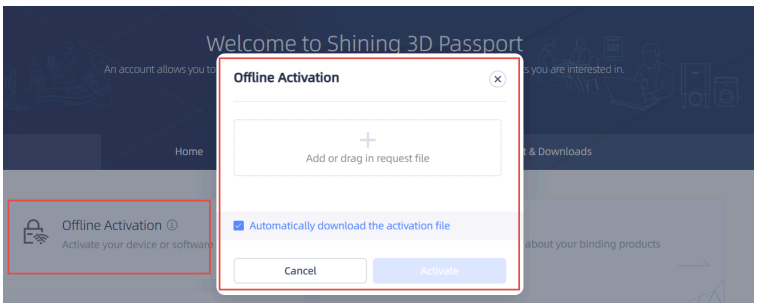
You still need another computer which is connected to the Internet to help you finish the offline activation.

The steps for offline activation are as follows:

1.Connect scanner to the computer without network and export C2SN3D file.

2.Copy the C2SN3D file to another computer connected to the Internet.

3.Log into SHINING 3D Passport official website
, upload your C2SN3D file in the **offline activation** page and complete the information of activation,
you can then download the SN3D2C file.



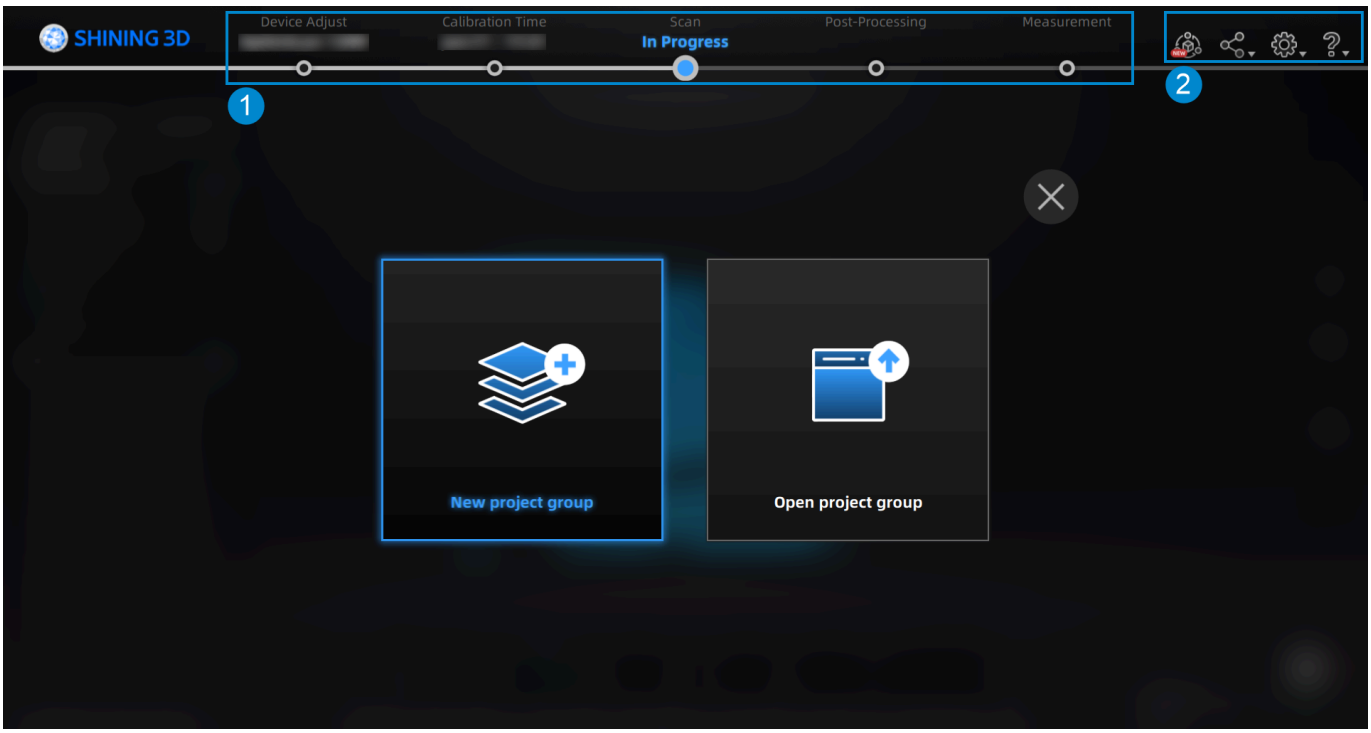
Note

If you are a new user, please register a SHINING 3D Passport account first: you can click **Register** in the pop-up window after starting up the software, or click **Sign Up** in the SHINING 3D Passport official website.

4.Copy the SN3D2C file to the computer without network and import the file into the software.

Software Interface

Interface Overview



① Navigation Bar

Step	Description
Device Adjust	Demonstrate the device status: • Display the device name when it is online. • Show "offline" when it is offline; or you can click to reconnect manually. Click to adjust the device.
Calibration	Click to calibrate the device to ensure its scanning accuracy.
Scan	Click to start scanning.
Post-Processing	Click to enter the post-processing step, including model mesh and mesh editing;
Measurement	Click to switch to the measurement step, where you can measure the cloud data and align the coordinates of the data.

② Settings and Help

Function	Description
Official Website	Open SHINING 3D Official Website to learn about our products and other information.
Official Account	Scan the QR code to follow the official account and get more information.

Function	Description
User Experience	Help us improve the user experience. We hope to be allowed to collect usage experience information and we wil protect your personal privacy.
Privacy Policy	View the privacy policy related to the software.
Advanced Mode	• Set up functions for synchronous adjustment of left and right cameras, laser projector, post-scan editing, real-time recognition and displaying markers alignment error. • Optimization Mode: Supports **Joint optimization** mode (default) and **Use markers only** mode. Please see Global Optimization for details.
Factory Default	All settings can be restored to the initial settings, and the software will restart automatically.
Language	Set the language displayed in the software.
About	View related software release information, contact information, etc.

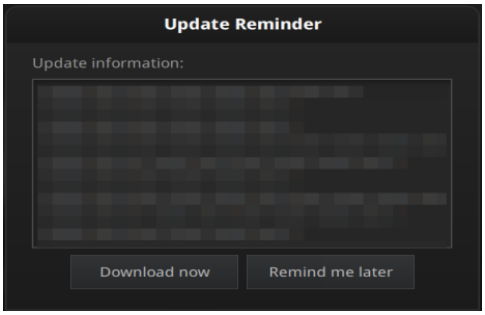
Function	Description
User Manual	Open the user manual.
Teamviewer	The quick access to remote assistance. Please send the ID and password in the pop-up window to the technical supporters for remote assistance.

Version Upgrade

When a new version of software is released, you will get prompted when launching the software; if the firmware in the software is newer than that in the scanner, you will get prompted as well.

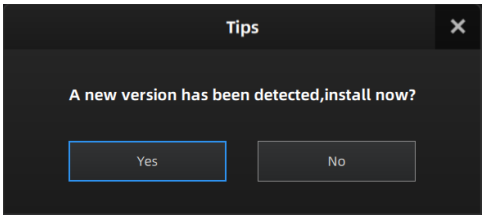
Software Upgrade

The software will be upgraded for releasing new features, fixing bugs or optimizing its performance, when a new version will be released, and you will be prompted with an **Update Reminder** when launching the software next time.



> **Note**
>
> It is recommended that you use the latest version of software, or you will be prompted with a reminder when launching the software every time.

Click **Download now** to download the new installation package in the background; once it finishes, a reminder will pop up as shown in the right figure.
Click **Yes** to start installation.



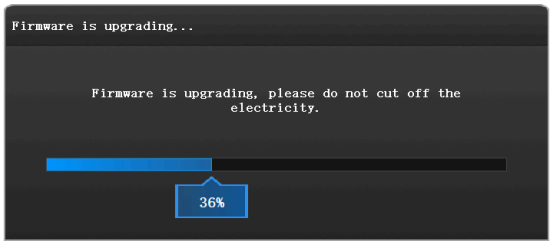
> **Caution**
>
> - During the downloading process, you can continue using the software; if you close the software before the process completes, the process will pause automatically and continue itself the next time you open it.
> - The software will be closed during upgrading, so **please save your projects properly before upgrading**.

Firmware Upgrade

The firmware[1] will be upgraded for fixing bugs or better scanning effects, when a new version will be released, and you will be prompted with a reminder when launching the software next time.

> **Caution**
>
> During the process of firmware upgrade, please do not power off the device to avoid potential damage caused by interruption during the upgrade process.

Click **Yes** to upgrade the firmware, as shown in the right figure.



1. Firmware is the software that runs on the scanner. ↩

3Dconnexion Mouse

This software is compatible with 3Dconnexion CadMouse. With the 3Dconnexion CadMouse, you can quickly rotate, pan, zoom, and perform other shortcut operations on models in a 3D scene.

For more operations, please refer to the 3Dconnexion user manual.

Mouse Connection

The steps to connect the 3Dconnexion CadMouse are as follows:

1. Take out the 3Dconnexion CadMouse from its packaging and insert the connecting cable into a USB port on your computer.
2. Open the official website for downloading the software.
3. Download and install the latest version of the 3Dconnexion software.
4. Run the software and click **Trainer** for quick training and guide.

Software Interface

Icon	Description
	Learn how to quickly use the 3Dconnexion SpaceMouse.
	Here you can find the manuals for all 3Dconnexion products.
	Open the settings panel to customize your 3Dconnexion devices.
	Use the 3Dconnexion Viewer to review 3D models. Supported formats(.stp, .step, .igs, .iges, .obj, .stl, .ply, .jt, .glTF).
	You can create high-resolution picture collages with SpaceMouse by 3Dconnexion Collage.
	Test and practice your skills by assembling the landing gear of an aircraft.
	Register your product after the installation to benefit from 3Dconnexion services.
	Find instructive videos for your 3Dconnexion devices.
	Provide feedback to the 3Dconnexion product team.

Button Description

Take the introduction to SpaceMouse as an example:

Main Panel

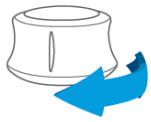
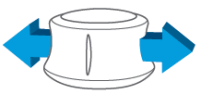
3Dconnexion Keys
Control Cap
Keyboard Modifiers
Menu Button
Color Display
CustomView Buttons
Rotation Toggle Button
QuickView Buttons
Fit Button
3Dconnexion
3D Designer - Modeling
Extrude
Hole
Round
Distance
Angle
Diameter
Sketch
Circle
Spline
Insert Part
Mate
Coincident
1
2
3
4
5
6
7
8
9
10
11
12
ESC
ENTER
DELETE
TAB
SHIFT
CTRL
ALT
SPACE
MENU
V1
V2
V3
FIT

Button	Description
Color Display	/
Number Buttons	12 additional programmable function buttons. You can customize their functions using the 3Dconnexion settings. Refer to **Number Buttons** for specific operations.
CustomView Buttons	In this scanning software, long press to save the current view of the model (angle, position, zoom, etc.), or single click to switch to the saved view.
Control Cap	Used to manipulate the 3D model through actions like pushing, pulling, and twisting. Refer to **Control Buttons** for specific operations.
Rotation Toggle Button	Press once to lock rotation around all axes.
Keyboard Modifiers	Eight keyboard modifier buttons that function similar to their counterparts on a regular keyboard.
QuickView Buttons	Five quick view buttons that help you switch the drawing or 3D model to desired views. These buttons also have secondary functions that can be accessed by long press. You can customize the long press and short press functions in the 3Dconnexion settings.
Menu Button	Quickly brings up the menu for customizing button functions.
Fit Button	Automatically fits the 3D model to the center of the screen.

3Dconnexion Keys

No.	Keyboard Shortcut	Description
1	^ Ctrl + M	Toggle selection of markers/point clouds (only works in **Scan**).
2	^ Ctrl + G	Toggle selection of penetration/non-penetration (only works in **Post-processing**).
3	^ Ctrl + T	Toggle selection mode for data. For more selection modes, please refer to Data Edit.
4	^ Ctrl + A	Select all.
5	^ Ctrl + C	Cancel selection.
6	^ Ctrl + R	Connected components.
7	^ Ctrl + I	Invert selection.
8	⌦ Del	Delete selection.
9	^ Ctrl + Z	Undo.
10	^ Ctrl + ⇧ Shift + Z	Cancel editing.
11	Enter ⏎	Confirm editing.
12	^ Ctrl + H	Show/hide texture.

Control Cap

Figure	Description
	Tilt cap left/right to rotate the model on its Z axis.
	Rotate the model on its Y axis.
	Tilt cap forwards/backwards to tumble the model on its X axis.
	Push forward or pull backward button to zoom in or out the model.
	Move the model up and down.
	Move the model left and right.

Calibration

Calibration Notice

With **calibration**, the scanner parameters are recalculated, which not only ensures the accuracy of the scanner, but also improves the quality of scanning. Please **adjust the device** first, then **calibrate the device**.

Calibration is required under the following conditions:

- When the scanner is used for the first time.
- The scanner has not been calibrated for more than 14 days.
- The optical lens and camera lens of the scanner have been replaced or the scanner has been reinstalled.
- The scanner was severely shaken or shocked, such as shocked during transportation.
- Severe accuracy reduction, such as frequent errors in alignment or unrecognized markers.
- Incomplete data is acquired during the scanning or serious deterioration of the quality of scanned data.

> ⚠ **Warning**
>
> - Please use the matched calibration board, or it will fail to generate good scan data or optimum accuracy.
> - Always make sure that both sides of the calibration board are clean and free of scratches.
> - Do not place heavy objects or sundries on the calibration board.
> - Keep the calibration board away from corrosives, metals and sharp objects to avoid corrosion or damage.
> - It is not recommended that you wipe the calibration board. When cleaning the board becomes very necessary, gently wipe it with a piece of a clean damp cloth. Do not use a cloth with chemicals or alcohols to wipe the calibration board.
> - After using the calibration board, put it safely in a box or flannel bag.

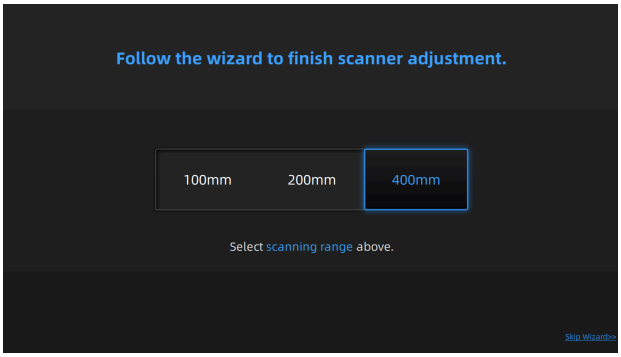
Device Adjustment

Before calibration, you need to adjust the device first, namely coarse adjustment, which includes setting the appropriate aperture, focal length, and working position, so as to make the calibration and scanning process more efficient.

> **Note**
>
> If it shows "offline" in the top navigation bar, please check if the device is not connected or connected abnormally, and click to reconnect.

The steps to adjust the device are as follows:

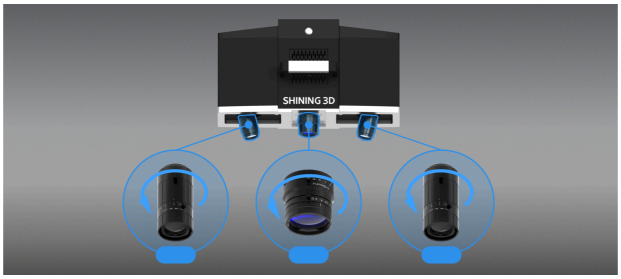
1.Select the scan range according to the size of the scanned object and the required data quality.



Note

The larger the size of the object to be scanned, the larger the scanning range is needed, and the scanning accuracy will be relatively low; on the contrary, the smaller the scanning range, the higher the scanning accuracy will be.

2.Replace the optical lens and camera lens that match the current scanning range.

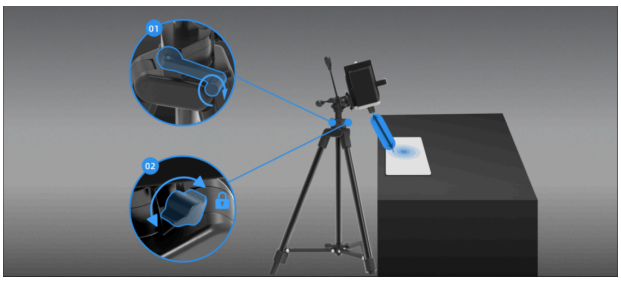


Caution

Please ensure that the camera is consistent with the scanning range, otherwise it will affect the calibration and scanning results.

3.Following the interface guide, adjust the aperture value of the optical lens to the recommended setting and tighten the screws.

4.Select a calibration board that matches the scanning range and place it with the white side facing up according to the interface guide. Use the two knobs on the adjustment lever (as shown in the right figure) to adjust the scanning head so that it is approximately vertical to the board, and adjust the vertical distance to the appropriate position to make the two laser points overlap.



5.Flip the board according to the interface guide (with the black background and white dots facing up), and ensure that the placement direction is consistent with the image; adjust the aperture and focal length of the left and right cameras as well as the optical focal length lens in sequence to complete the device adjustment, and then proceed to the calibration step.

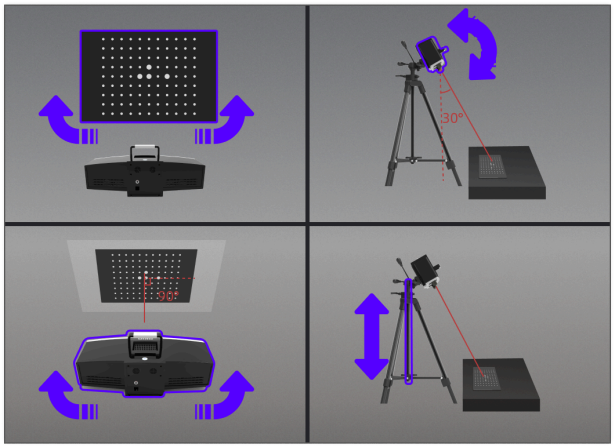
Device Calibration

After device adjustment, click to enter calibration.

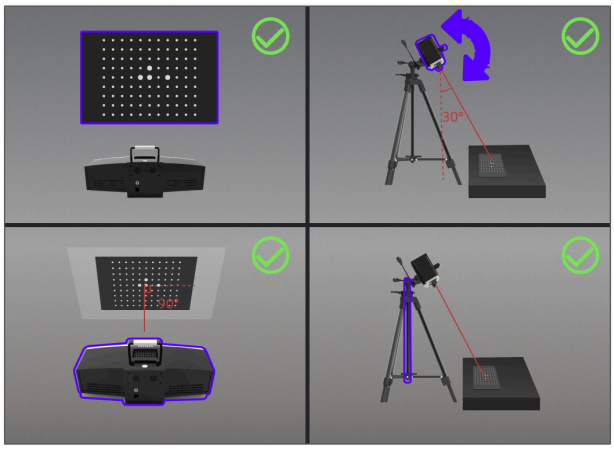
Steps

1.Enter the calibration interface, and you can check the information in the **Information** pop up window for calibration board model, scanning range, camera and optical machine lens and others.
2.Place the calibration board horizontally with white background and black dots facing up like in the image.

3.According to the interface guide, adjust the part in the purple wire frame according to the purple arrows in the four instruction images on the left side of the interface:
● Upper left image: Adjust the angle of the board.
● Upper right image: Adjust the pitch angle of the scanner (pitch angle relative to the horizontal plane).
● Bottom left image: Adjust the angle that the scanner need to rotate in the vertical direction.
● Bottom right image: Adjust the height of the scanner to ensure that the four large markers and as many small markers as possible are visible in the camera window (the position of the calibration board can be fine-tuned simultaneously).



All four positions with green check mark ✅, as shown on the right figure.

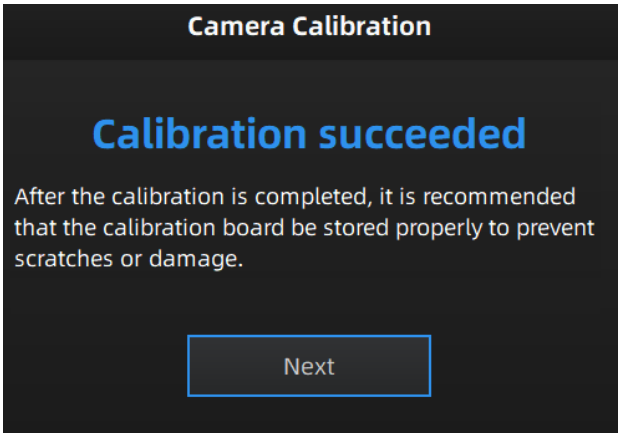


4.Click **Capture** to collect scanning data and proceed to the next step; click **Previous step** to return to the previous step and re-collect data.

> **Note**
>
> You can start the collection by using the `Space` shortcut key.

5.Repeat step 3-4 above to complete calibration in other directions.

6.Check the calibration result. Click **Next** to enter the Scanning step.



> **Note**
>
> - If the calibration fails, please try it again from step1.
> - If you cannot get the pass result anyway, please contact your supplier or our support team.

Scan

Preparation

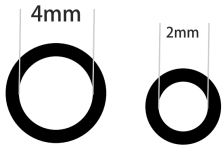
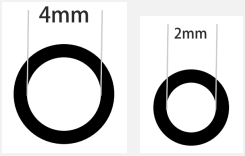
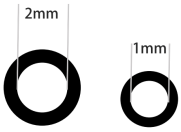
If the object to be scanned has rich geometric, the scanning speed and quality can be better guaranteed;
On the contrary, if the object to be scanned has fewer geometric or a high degree of feature repetition, you need to do some preparation work before scanning to enhance your scanning experience.

> **Note**
>
> Not recommend to scan following objects:
>
> - Objects prone to deformation.
> - Lattice structures with many small deep holes.
> - Moving or vibrating objects, frequent changes in the coordinates of such objects can lead to poor scanning quality.

Object	Preparation	Note
Transparent, shiny, reflective or black objects	Use washable or vanishing scanning spray.	Scan as normal after spraying.
Objects with less features or repetitive features	• Place markers on the surface of the object. • In **scanning settings**, select **Markers alignment** mode.	Scan as normal after preparations.
Thin wall objects	• Place markers on and around the objects. • In **scanning settings**, select **Global markers** mode.	For more please see scan for thin-wall objects.

Marker

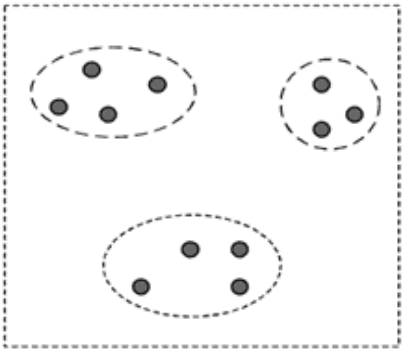
If the features of the scanned object are not rich enough, markers (4 mm / 2 mm / 1 mm) can be placed on the object for scanning alignment.

Scanning range	Markers
400mm	
200mm	
100mm	

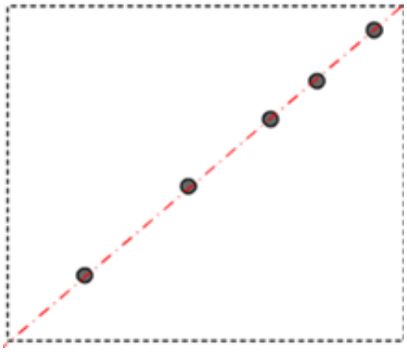
Please pay attention to the following details when placing the markers:

- Attach the markers evenly and randomly, avoid regularly place.
- Four markers are required for the alignment at communal areas.
- Ensure that the device's camera can scan at least 4 markers within the normal scanning range.
- Please attach small markers on the edges or at small facets of the model.
- Do not attach the markers on the surface with high curvature.
- Do not use damaged or incomplete markers.
- Do not use greasy, dusty, or dirty markers.

Placing the markers:



Wrong example 1: Group the markers manually



Wrong example 2: The markers are on a straight line

Correct example

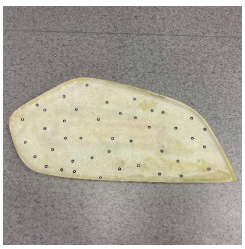
Scan for Thin-wall Objects

To scan thin-wall objects without distinct features, as shown in the follows:

Steps:

1. Prepare two auxiliary objects with markers placed on their upper and lateral sides.

2. Place different markers on lateral sides of the scanned object.



3. Place the scanned object side-upright and fixed, and place the auxiliary objects on both sides of the object (at a distance apart).

4.During the scanning process, the markers on both sides of the auxiliary objects should be scanned to complete the transition between the front and back side, then scan the lateral sides, and scan the left data after removing the auxiliary objects.

Interface

Illustration

> **Note**
>
> For the details of the top navigation bar and the button in the upper right corner, please refer to software interface.

① Camera window

View the actual scene during the scanning process through the left and right camera windows to facilitate accurate parameter adjustment.

> **Note**
>
> If the real-time recognition is enabled in the advanced mode, the number of recognized marker points can be viewed in the camera window.

② Marker diameter, brightness and background cutting

Set camera-related functions such as the marker diameter, brightness and background cutting. Please refer to camera window for details.

③ Project list and scan setting

Switch to project group and scan setting window.

④ Scanning parameters setting

To set scanning parameters such as align mode, turntable, HDR and so on. Please refer to scan settings.

⑤ Memory/CPU/GPU

- Remaining memory: Displays the percentage of remaining memory space.
- CPU: Indicates the amount of computer CPU resources being utilized by this software program.
- Video memory: Graphics card usage rate.

> **Note**
>
> If the program is utilizing an excessively high percentage of resources, it is recommended to close other non-scanner software and wait patiently.

⑥ Scanning window

Window for viewing the model.

⑦ Edit toolbar

Edit the scan data of the model and adjust the viewing angle. Please refer to data editing for details.

⑧ Shortcut

Adjust the angle of models, move models and select data quickly. Please refer to shortcuts.

⑨ Scanning and global optimization

Start scanning, perform global optimization, and generate a point cloud. Please refer to scanning for details.

⑩ Right panel

Import the project, alignment, delete and save data. Please refer to the right panel for specific instructions.

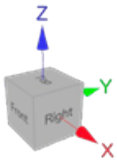
⑪ Mesh model

Convert point cloud data into triangular mesh data. Please refer to mesh model for details.

⑫ Other information

Display the number of slices, point clouds, and facets of the current project.
Click fitting view button can automatically adjust the size of the model view to fit the screen size.

In addition, a view controller is provided in the lower right corner for easy switching of perspectives, as shown in the right figure.



Project and project group

Please create a project group or open a project group before **scanning**.

Project group

Project group is the standard file structure of the software. Each project contains the scan data of its own. It contains one project or more. **Project group is mainly used in the following scenarios:**

> **Note**
>
> The **Scenario** mentioned below refers to the situation where all scanned objects are located within the same environment or setting.

Project Group	Scenario	Description
Only one project in the project group	It is applicable to most cases where there's no need for alignment. **Note** Multiple alignment modes can be used within one project, but the global alignment mode cannot be used simultaneously with other alignment modes.	Only one alignment mode can be used in the same project.
Multiple projects in the project group	• Multiple projects alignment is required. • It is necessary to use global markers alignment and other alignment modes simultaneously.	It is recommended to create multiple projects within one project group when scanning the large object and multiple objects as well as scanning with multiple alignment modes. After scanning, you can align these projects one by one.

Create a project group

Two ways to create a project group:

1. In the navigation bar, enter the **Scan** step and click on **New project group**. In the file dialog that appears, enter the **name** and **path** for the project group, then click **Confirm**. All data related to this project group will be saved to the specified path.
2. In the **Scan** step interface, click the **Project Group** button in the right sidebar. In the pop-up window, click **New project group**. The following steps are the same as mentioned above.

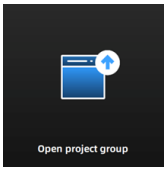
Note

- The default name for the project group is the content entered during the last creation of the project group, followed by a number (if it is the first time, the default name is ProjectGroup_1). The default save path is the path selected during the last creation of the project group (if it is the first time, it will be saved to the system default path).
- If the remaining disk space in the selected path is less than 50GB, it is recommended that you switch to another save path to avoid potential issues during subsequent scans.

Additionally, you can also **create an individual project within a project group**:

In the **Scan** step interface, click the **New Project** button in the left **Project List** panel. In the pop-up **New Project** window, configure the project settings and click **Confirm**. All data related to this project will be saved in the current project group's path.

> **Note**
>
> If the current project is still in the scanning status, please conduct this operation after global optimization.



Open a project group

> **Note**
>
> Current project group (if there is) will be saved automatically.

Two ways to open a project group:

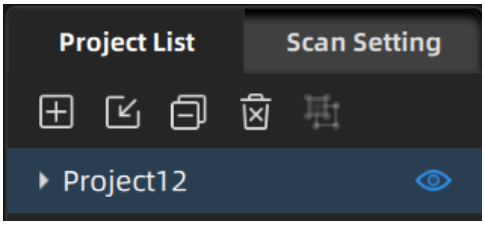
1. In the navigation bar, enter the **Scan Mode** step and click on **Open project group**. In the file dialog that appears, choose the specified project group or search for it, then click **Open**.
2. In the **Scan** step interface, click the **Project Group** button in the right sidebar. In the pop-up window, click **Open project group**. The following steps are the same as mentioned above.

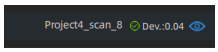
Additionally, you can also **open an individual project within a project group**:

In the **Scan** step interface, click the **Open Project** button in the left **Project List** panel. In the file dialog that appears, choose the specified project group or search for it, then click **Open**.

Project

Consider each **project** as a part of the **project group**. All operations of project can be done by the following buttons.



Icon	Function	Description	Notes
	New project	Click this button will create a new project within the current project group.	You can only create a new project when a device is connected. The last project in the project list is the current project, and only the current project can continue scanning.
	Open project	Click this button will open the selected project within the current project group.	
	Remove project	Click this button will remove the selected project from the current project group.	This operation will keep the data of the selected project and you can still open it again.
	Delete project	Click this button will delete the selected project and its data.	This operation will permanently delete the data of the selected project from your computer and cannot be recovered.
	Create or split group	Click this button to create or split a group in the project group.	/
	Project visibility	Click this button will hide/show the point cloud or markers of the current project.You can also double-click on different projects to switch their visibility.	/
	Alignment error	To display the average alignment deviation between the single piece data and the existed markers/global markers in the project.	You can enable/disable this function in > **Advanced mode**.

Start Scanning

Scan setting

After entering the **Scan** step interface, you can perform scan settings on the left side of the interface, including camera window, align mode and turnable setting.

Camera window

Preview the real-time image captured by the scanner camera. Previewing the effect through the camera window can assist in scanning data.

> ⚠ **Caution**
>
> Before starting the scan, please confirm through the preview effect of the camera window whether **the placement of the object to be scanned** is appropriate:
>
> It is recommended to enable the laser function in the advanced mode, allowing you to judge whether the distance is appropriate by checking whether the two projected laser points overlap.
>
> If you turn off this function, you can still adjust the placement of the object by checking the black cross projected onto it in the camera window until the cross is located within the red rectangular frame. If the cross appears to the left of the red rectangular frame in the camera window, it indicates that the distance is too far; conversely, it indicates that the distance is too close.

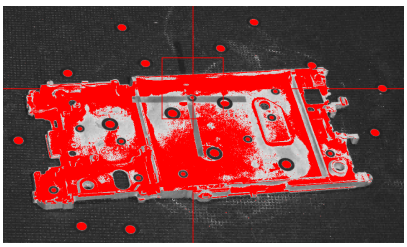
Marker diameter

After turning on the markers real-time recognition function, select the markers diameter you need to recognize (1 mm, 2 mm, 4 mm, or 6 mm) under the camera, and the corresponding markers will be displayed in the window according to the selected diameter.

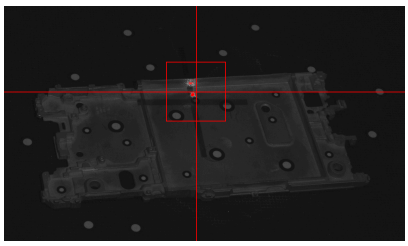
> 📋 **Note**
>
> Only the Markers / Global markers alignment supports recognition of the specified diameter markers.

Brightness

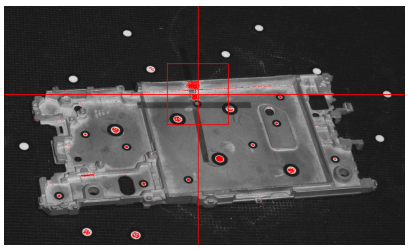
Drag the slider or use ▲/▼ to adjust the brightness for different material or color of the object to get better scanning data.



Brightness is too high



Brightness is too low



Brightness is normal

Background

Ticking ☑ to turn on background masking, the background of the scanned object will be automatically shielded. The larger the value is set, the larger the shielding range.

Advanced mode

In the ⚙ **Advanced mode**, you can enable more functions related to the camera window:

Synchronous adjustment of left and right cameras

Ticking ☑ to enable synchronous adjustment of left and right cameras allows for simultaneous adjustment of relevant settings for both the left and right cameras.

Laser

Ticking ☑ to activate the laser enables users to determine the appropriate positioning of the object to be scanned by observing whether the two projected laser points overlap. If overlap, it indicates that the distance of the object to be scanned is generally suitable; otherwise, adjustments are required.

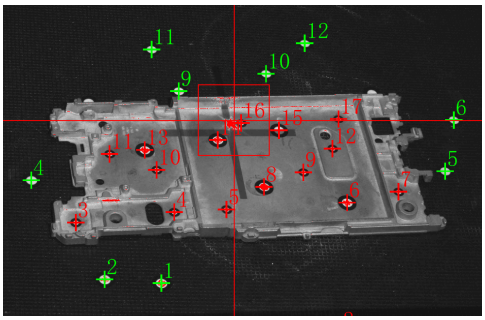
Real-time recognition

Ticking ☑ to enable real-time recognition allows you to view the number of recognized markers in the camera window, and supports selecting marker diameter.

Note

- This function is not supported after turning on the turntable.
- The recognition effect can be enhanced by adjusting the brightness, allowing for the recognition of more markers.

The markers scanned last time / the markers recognized by the left and right cameras in the first frame are displayed as green numbers, starting from "+1" and increasing by 1 in sequence;
This time (starting from the second frame), the markers newly recognized by the left and right cameras are displayed as red numbers, starting from "+1" and increasing by 1 in sequence;
Markers that are only recognized by the camera on one side or whose errors are too large do not display numbers.



Align mode

Align Mode	Description
Markers	It is suitable for objects with fewer features or symmetrical features, as well as objects requiring high scanning accuracy. It requires attaching markers on the surface of the object.
Hybrid Alignment	Supports the selection of one or multiple align modes among markers and features.
Features	Automatically complete the alignment by the surface geometric features of the object to be scanned. This mode is used for objects that cannot place markers and have rich surface features.
Global Markers	It is suitable for objects with fewer features or symmetrical features, as well as objects requiring high scanning accuracy. It requires attaching markers on the surface of the object, and it supports **loading global markers data**(.p3、.dgm、.txt、.asc) or **scan global markers** directly. After switching to **scan point cloud**, you can tick **add frame points** to automatically add the identified global markers during the scanning process. ⚠**Caution** The scanning method cannot be switched to scan global markers after scanning the point cloud data. If you need to scan global markers, please use the global markers mode first.
Manual Alignment	Manual alignment is completed by the geometric features on the surface of the object to be scanned.
Turntable	It is suitable for objects with rich surface features. After connecting to the turntable, the number of rotations, speed, and number of cycles can be set.

Caution

- In the markers align mode, during the scanning process, a few markers are attached to the turntable or the object being scanned, and the scanned object needs to be moved. Please note the following points:
  - When scanning different sides of the object, please create corresponding projects for each side, ensuring that the common area between different sides has more than 3 markers in common.
  - After scanning, please clean up the miscellaneous data and retain all scanned markers.
  - After scanning is complete, select the manual markers align to align.
- In the Hybrid, Features, and Manual align modes, the turntable is not allowed.
- In the global markers align mode, each project supports only one align mode and cannot be used simultaneously with other align modes.
- The turntable align mode can only be used after successfully connecting the turntable.

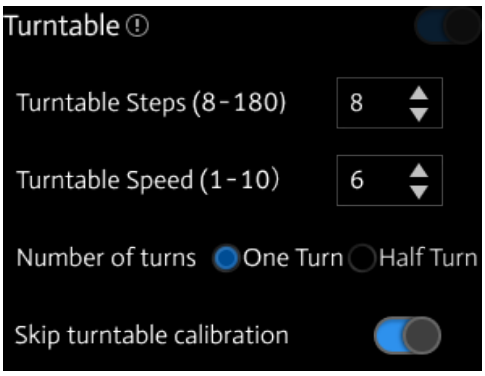
With turntable (optional)

When turn on, the connected turntable can be used for scanning.
Before using the turntable, please select a align mode first; after the turntable completes one full rotation, reselect the align mode.

Caution

Please enable the skip turntable calibration function without moving the object to be scanned or the turntable; otherwise, please turn off this function and recalibrate the turntable data.

- Scanning times: Set the number of scanning times (3~180) for one circle of the turntable, and the default value is 8.
- Turntable speed:Set the turntable speed (1~10), and the default value is 6.
- Turntable turns: Set the number of turntable turns to one circle or half a circle.
  Note
  When the number of scanning times is 3 or 4, the number of turntable turns is fixed to half a circle.
- Skip turntable calibration: After it is turned on, the existing axis data will be used for aligning directly, if not turned on, recalibration is required before scanning and aligning.



HDR

It is recommended to enable this function when scanning black and white objects. After it is turned on, the software scans with the preset brightness, and the scanning brightness cannot be manually adjusted at this time.

Scanning

After adjusting scanning settings, you can proceed with scanning the objects.

Switch scanning status

You can switch the scanning status by clicking the button in the right side bar.

Icon	Function	Description
	Scan	Scanned data will be stored. **Note** • When scanning, please ensure that the laser covers the object to be scanned. • Press `Space` to start scanning.
	Pause	After starting scanning, click this button to pause the scanning.
	Stop & Delete	In the **turntable mode**, click this button to end the current scanning and delete the scanned data.

Note

In the **turntable mode**, if data cannot be collected, please check the markers (at least 4 markers per scanning area) or change the align mode.

Global optimization

When you finish the scan, click **Global Optimization** in the right side bar to optimize and align the data, and generate the point cloud.

Support setting optimization mode in **Settings** > **Advanced mode**:

- Joint optimization (Default): Perform joint optimization of markers and point cloud to improve the quality of the generated point cloud data.
- Use markers only: Only perform markers optimization, please ensure that there are at least 4 markers in each scanning area.

Click to confirm the global optimization, and proceed with project alignment or model mesh; and you can also click to exit the current interface and continue scanning or re-optimize.

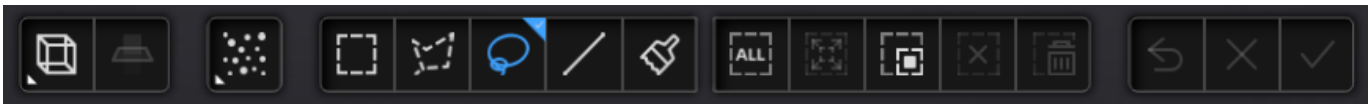
> **Note**
>
> - Edit the scan data before global optimization.
> - The larger the amount of scan data is and the lower the computer configuration is, the longer the global optimization will take.

Data editing

When you start Scanning, you can conduct Data Editing in **Scan** to generate accurate point clouds. You can also use other functions.

Bottom Panel

You can use following tools to edit data after the scanning paused or the point cloud is generated.



> **Note**
>
> - After editing the data, you can continue scanning to acquire more data.
> - If the necessary editing operations have been performed on the scan data, please apply the edits before generating the point cloud.

Icon	Function	Description
	Multi View	6 different view angles to choose. Top View, Bottom View, Front View, Rear View, Left Side View and Right Side View.
	Cutting Plane	Create a plane to do quick cut.
	Point Cloud Edit	In this mode, a point cloud is chosen. Click it again and you can switch to the edit markers mode.(This mode is enabled by default if there is a point cloud.) **Note** • After switching to this mode, the selected markers data (if any) will be retained to facilitate synchronized deletion and other editing operations. • Point cloud data under the cutting plane cannot be edited. • Multiple undo or redo operations are supported.
	Markers Edit	In this mode, the selection tool is used to only select markers data. Clicking this button again will switch to the Point Cloud Edit mode (assuming there is point cloud data available), and by default, this button is in Point Cloud Edit mode. **Note** • In the Hybrid Alignment (including Markers) mode or Global Markers Alignment mode, this function can be used. • After switching to this mode, the selected point cloud data (if any) will be retained to facilitate synchronized deletion and other editing operations. • It is necessary to retain at least 4 markers. • Markers data under the cutting plane cannot be edited. • Multiple undo or redo operations are supported.

Icon	Function	Description
	Rectangular	Select/Deselect a rectangular area.
	Polygon	Select/Deselect a polygon area.
	Lasso	Select/Deselect the area by using the Lasso tool.
	Line	Hold down **Shift and left mouse button(LMB)** and move the cursor to draw a straight line to select/deselect the area.
	Paint brush	Hold down `⇧ Shift` or `^ Ctrl` and a red circle will appear. At this time, roll the mouse wheel will zoom in and out of the circle. Move the red circle to select/deselect the area to be edited.
	Select all	Select all of the data.
	Connected domain	Click the button after selecting a patch of data and all connected region to the selected data will be picked.
	Invert	Revert the selection.
	Unselect	Cancel all selected areas.
	Delete selected data	Click this button or `⌦ Del` to delete selected data.

Icon	Function	Description
	Undo	The last deletion will be undone.
	Cancel edit	Undo all edits, and exit the edit mode.
	Apply edit	Click the button or space bar to apply the edit, and exit the edit mode.

Right Panel

You can use more functions on the right panel in Scanning.

Icon	Function	Description
	Global optimization	After completing scanning, optimize and generate the point cloud.
	Project group	Create / open a project group.
	Align	Align the data.
	Save data	Save the scanned data to the specified path in the specified format.
	Mesh	Will move to next step **Post-processing** to mesh model. **Note** Please do not click this button before the point cloud is generated.

Menu of the right mouse button

Function	Description
Select all/Invert/Unselect/Delete selected data	The function is the same as the function on editing bar, and can be operated by shortcut keys.
Fitting View	The data on the interface is displayed in the center according to the appropriate size, and it can be operated by shortcut keys.
Sampling Display	For data with a large number of point clouds, this function can be used to display the data according to the selected scale.
Set Rotate Center	The rotation center can be set on the data by the left mouse button, press `esc` to exit, and it can be operated by shortcut keys.
Reset Rotate Center	After reset, the center of rotation is at the data center.
Show/hide cutting plane	Click to hide or show the cutting plane (if has been set).

Shortcut

Shortcut	Function
Press and hold ^ Ctrl + D	Fit view
Scroll wheel	Zoom in/zoom out the data
Press and hold the Middle Button and move the cursor	Translate the data
Press and hold the Left Button and move the cursor	Rotate the data
Double click Left Button	Select data
Press and hold the ⇧ Shift + Left Button	Select the area of data
Press and hold the ^ Ctrl + Left Button	Deselect the area of data
Press and hold ^ Ctrl + A	Select all
Press and hold ^ Ctrl + C	Deselect all data
Press and hold ^ Ctrl + I	Switch selected/unselected data
⌦ Del	Delete the selected data

Cutting plane

If you need to remove the object's base data during the scanning process, the **Cutting Plane** can be a very effective tool.

By setting up a cutting plane, the data below the plane will not be captured.

> **Note**
>
> After opening the global markers file or scanning the global markers (before and after optimization), it supports creating a cutting plane, and the global markers can be saved together optionally.

Create a cutting plane

The three methods for creating the cutting plane are shown below.

Method	Description
Fitting Point Cloud	Press `⇧ Shift` + `Left Button` to select data, and then click **Generate Plane** to generate the cutting plane.
Creating Straight Line	Press `⇧ Shift` + `Left Button` to draw a line, and generate the cutting plane according to the line.
By Markers	Press `⇧ Shift` + `Left Button` to select at least 3 markers, and then click **Generate Plane** to generate the cutting plane.

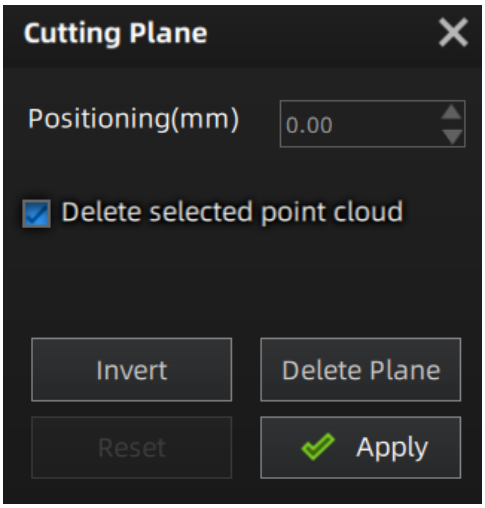
Set the cutting plane

● **Delete selected point cloud/markers**: When ticked, the selected point cloud data or markers will be highlighted in red. Apply the edit to delete the highlighted point cloud data or markers.

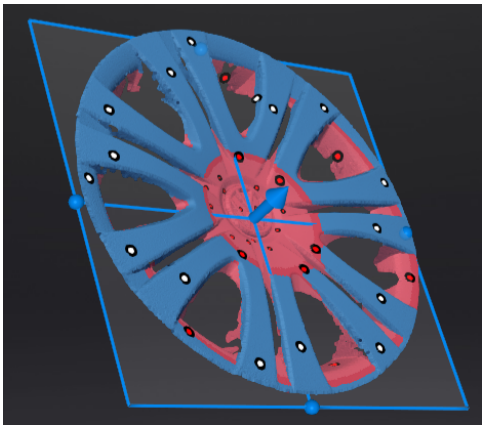
Note

It is not supported to deleted all point cloud data. At least four markers should be remained at the front appearance of the cutting plane.

● **Invert**: Use this button to reverse the selection of data by flipping the cutting plane.
● **Delete plane**: Clicking this button will delete the current cutting plane and return to the interface for creating a new cutting plane.
● **Reset**: Reset all the operations performed after creating the cutting plane.
● **Apply**: Apply all the edits made.



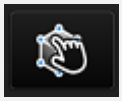
● **Translate the cutting plane**: After generating the plane, you can enter numbers in the editing box or drag the arrow of the cutting plane's normal to translate the cutting plane.
● **Rotate the cutting plane**: you can drag any of the four small balls on the edges of the cutting plane to rotate the cutting plane along a certain direction.



Alignment

If there are multiple projects in a project file, you need to align the data after Scanning and **Global optimization**

Click on the right panel of the **Scan** step interface and start project alignment.

Mode	Description	Note
Auto Feature Alignment	1.Choose **Auto Feature Alignment**. 2.Select the project which needs alignment in the fixed window and the floated window. 3.Click **Apply** to align.	Objects with repeated features, like a round or a ring, or that with small size are not suitable for this mode.
Manual Feature Alignment	1.Choose **Manual Feature Alignment**. 2.Manually choose at least 3 common points on the data in the fixed window and the floated window respectively. 3.Click **Apply** to align.	• The chosen points should not in a line.
By Markers	1.Choose **By Markers.**. 2.Select the project which needs alignment in the fixed window and the floated window. 3.Click **Apply** to align.	There are no less than 3 common markers in each project.
 **Manual Markers Alignment**	1.Choose **Manual Markers Alignment**. 2.Manually choose at least 3 common points on the data in the fixed window and the floated window respectively. 3.Click **Apply** to align.	The chosen markers should not be in a line.

Note

- Manual alignment serves as an alternative method of auto alignment, especially when automatic alignment fails, manual alignment can be selected.
- You can choose it when **Global optimization** fails.

Post Processing

Mesh Model

Meshing is to convert the point cloud into a triangular mesh surface. The data after mesh can be directly used for rendering, measurement or 3D printing.

Click in the right sidebar of **Scan** interface to enter **Post processing**.

Mesh Parameter

Function	Description
Unwatertight	Unclosed model stays the way it is scanned. Processing time is quicker than Watertight.
Watertight	All holes will be filled automatically. The data can directly be 3D printed. Only watertight mesh can set **model quality: High, Med (default), Low.**

Mesh Optimization

Optimization	Description	Note
Filter	Optimize the data and improve the clarity of the data. • None: No optimization • Low: Optimizes data slightly and preserves data characteristics • Med: Reduce the noise on the surface of the scan data • High: Reduce the noise on the surface of the scan data and sharpen it powerfully.	Setting the filter level high will lose some small details.
Smooth	Smooth the possible noise on the surface of the scan data. Three optimization options are available: Standard (default), Med, High.	/
Remove small floating parts	Remove small floating parts isolated from the main data. Set the isolated data ratio by dragging the slider or clicking the up/down arrow ▲/▼. Default value is 1, with a range of 0 to 100. The value 0 indicates not removing isolated data. **For a specific illustration of the effect, refer to the following images:** Original data Set value as 50 Set value as 100	/
Max triangles	Set max plate number to get mesh model's triangle plate number is within configured plate number (enabled by default).	Please input the value reasonably, avoiding entering too small values, as excessive simplification may result in lower data quality.
Fill small hole	Auto fill the small hole when mesh (enabled by default). The default value is 10 with a range of 0 to 100.	This function is unavailable for watertight models.

Optimization	Description	Note
Remove spike	Remove spike-like data on the image edge.	/
Marker hole fill	Fill in the surface of the object that is not scanned to the pasting marker.	For the align mode of **Markers**, this functions is enabled by default for watertight models; for other align modes, this function is unavailable.

> **Note**
>
> When turning on **Recommended Parameters**, it will automatically use the recommended parameters for meshing.

Mesh Generation

1. Click **Preview** to preview the mesh effects.

   > **Note**
   >
   > - If it prompts that "Out of memory", it is suggested that you release part of memory before mesh.
   > - If there exist texture model files that exceed the resolution limit in the project, please follow the prompts to choose whether to simplify the data.

2. After the mesh generates, click **Confirm** to confirm the mesh result.

   > **Note**
   >
   > Click to restore the mesh.

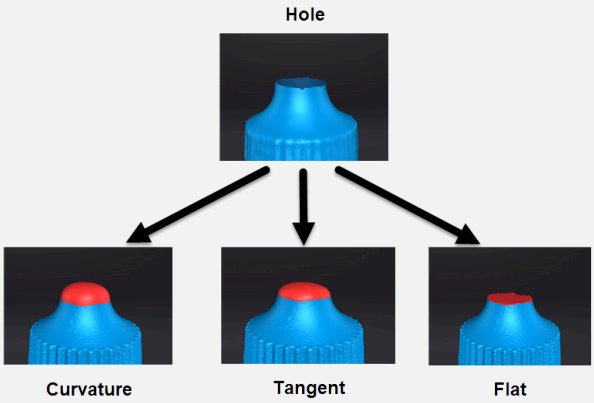
Mesh editing

After meshing model, you can perform mesh editing, data editing and use some other functions.

Left panel

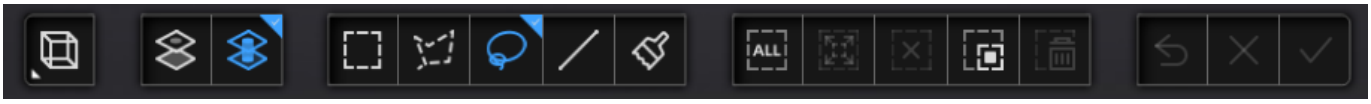
In the **Mesh Editing** window on the left side of the interface, click **+** to unfold the function panel.

Optimization options	Description	Note
Simplification	Simplify the model data as the triangular mesh generated from the scan is in a large size. Drag the slider or click the page up/down arrow ▲/▼ to set the ratio from 0 to 99. The default is 0, indicating no simplification.	• Over-simplification will result in the loss of data details, multiple simplifications are not superimposed, and are simplified on the original data. • Click ⟳ to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Mesh optimization	Restructure the mesh topology based on the mesh curvature and sharpen the surface features of scan data. Drag the slider or click the page up/down arrow ▲/▼ to set the ratio from 0 to 100. The default is 0, indicating no optimization.	• The optimization duration varies depending on the amount of data, multiple optimizations are not superimposed, and are optimized on the original data. • Click ⟳ to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Smooth	Smooth the possible noise on the surface of the scan data. Drag the slider or click the page up/down arrow ▲/▼ to set the ratio from 0 to 100. The default is 0, indicating no smooth.	• Multiple smooth is not superimposed, and are smoothed on the original data. • Click ⟳ to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.

Optimization options	Description	Note
Remove small floating parts	Remove small floating parts in the scan data. Drag the slider or click the page up/down arrow ▲/▼ to set the ratio from 0 to 100. The default is 0, indicating no removal.	• Click ⟳ to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Auto hole filling	After selecting the hole filling type and entering the perimeter, the holes within the specified perimeter will be filled automatically. The default value is 80, and the range is 10 ~ 100000. **Hole filling types**:  	• Click ⟳ to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Manual hole filling	After entering the manual hole filling mode, the hole edges are displayed green and get red after picking. The number of the holes and the number of holes filled will be displayed on the interface. Select filling types before picking a hole, including Curvature, Tangent or Flat, and then click the edges to perform filling actions.	• The post-processing data needs to be saved manually. • Click ⟳ to reset the value to default. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.

Optimization options	Description	Note
Flip normal	To redefine the front direction of the scanned data in reversal design. Hold `⇧ Shift` + `left mouse button` to select areas to be flipped.	• Default is to flip the entire dataset if no flip areas is selected. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Cutting plane tool	Define a plane to re-adjust the coordinate system of the scanned data. Hold `⇧ Shift` + `left mouse button` to select a plane by drawing a straight line, switch the selection area through the **anti -selection** button and then activate **Delete selection and close intersection** or **Delete selection**.	• Click **Preview** or **Orient Based On Plane** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Mirror	Take the front view plane of scan data as the working plane. Draw a straight line as the central axis and perform a symmetrical copy. Hold `⇧ Shift` + `left mouse button` to draw a straight line as the central axis and then the data will be reproduced axisymmetrically with this line; you can tick to **Keep the initial mesh**.	• Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.
Zoom	Adjust the scaling ratio of the model, but it will not reduce the number of triangular slices and the size of the data. The default is 100, indicating no zoom.	• Click to reset the value to default. • Click **Preview** to preview. • Click **Confirm** to confirm and save. This action is irreversible. • Click **Cancel** to restore and exit.

Bottom panel



Icon	Function	Description
	Select through	To select data all through.
	Select visible	To select data on the front view only.

> **Note**
>
> For other editing functions, please see scan data editing.

Right panel

Icon	Function	Description
	Open file	Open a file (STL, OBJ, PLY) for post processing.
	Save your scan	Save the scanned data in the specified format (ASC, STL, OBJ, PLY, 3MF) locally.
	Share your scan	Use your Sketchfab account to share the model.
	Third-party software	Save the data and open with third-party software.
	Model display	After enabling the model display by clicking the icon or pressing F12, the model will rotate at a specified speed (Click to adjust the rotate speed; press F12 or Esc again to exit). **Note** The model will only rotate and display from the current view after entering the model display interface. Exit and adjust the angles in the post-processing interface if other views are in need.

Menu of the right mouse button

Function	Description
Select through	To select data all through.
Select visible	To select visible data on the front view only.
Switching the display type	You can select different display types(triangles, wireframe, point cloud data as well as triangles and wireframes) and the data display mode of the 3D scene will change synchronously after switching. **Note** It is accessible after clicking **Preview** during meshing.

For the introduction to other functions, please see data editing.

Shortcuts

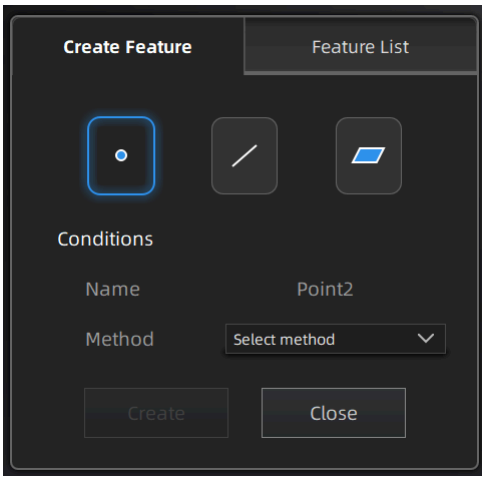
Please see data editing.

Measurement

Measurement

Create features

On the right panel of **measurement**, click , and a **Create Feature** window will pop up on the left.



> **Note**
>
> You can switch to **Feature List** to check the created features; You can also click to delete features.

Point

Creation Method	Description	Note
Selected Points	1. Click on the data to select a point. 2. Click **Create** to create a point.	/
Line-Plane Intersection	1. Click on the created line, or select it on the dropdown. 2. Click on the created plane, or select it on the dropdown. 3. Click **Create** to create feature points.	• The feature line can't be in the feature plane. • The line should not be parallel to the plane.

Line

Creation Method	Description	Note
Point-Point	1. Click the data to select a point. 2. Click **Create** to create a line. **Note** You can tick the checkbox before **From** or **to** and re-select the feature points.	/
Plane-Plane Intersection	1. Click on the plane previously created, or select it on the dropdown. 2. After selecting two planes, click **Create** to create an intersection of two non-parallel planes.	The planes should not be parallel to each other.

Plane

Creation Method	Description	Note
3 Points Fit	1. Click the data to select a point. 2. Click **Create** to create a plane. **Note** Tick the checkbox before the three points and re-select the point.	The 3 points can't be on the same line.
Point-Line Fit	1. Click on the line previously created, or select it on the dropdown. 2. Click the data to select a point. 3. Click **Create** to create a plane.	The point can't be in the line.
Best Fit	• When there are selected data, click **Create** to create a plane that has the smallest deviation from the selected area. **Note** • You can use editing tools or shortcuts to select the data.	/

Align

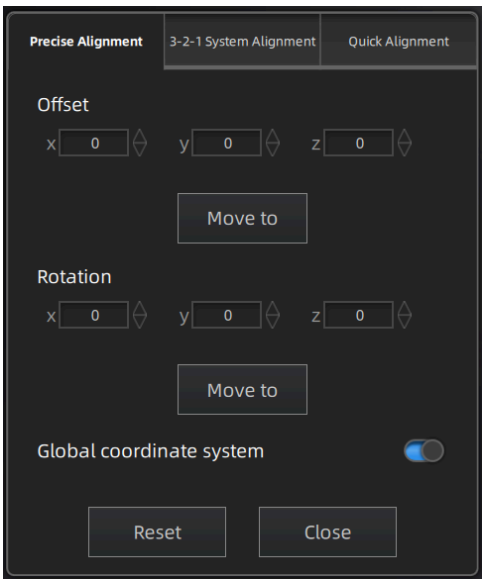
Use this mode to modify the alignment of the data to the global coordinate.

On the right panel of **Measurement**, click and a **Align window** will pop up on the left.

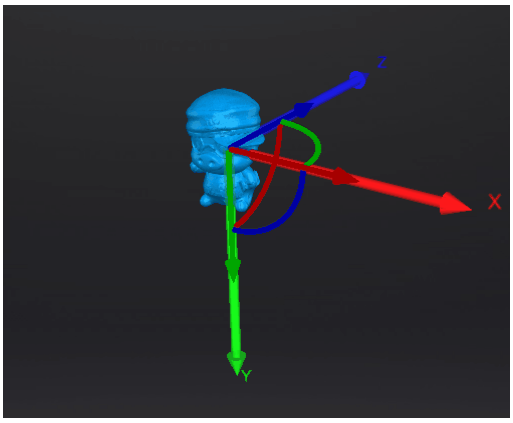
> **Caution**
>
> Alignment will not affect the shape or accuracy of the data.

Precise Alignment

Precise Alignment align data by choosing precise coordinates.



- **Input value and adjust coordinates**: Input values in **Offset** or **Rotation**, and click **Move to** to align model center with input coordinates and axis direction with rotation value.
- **Hover the cursor to the object mover**: When the object mover is highlighted, press and hold the **left mouse button** or the **scroll wheel** to adjust the position and angle of the model on the coordinate axis.



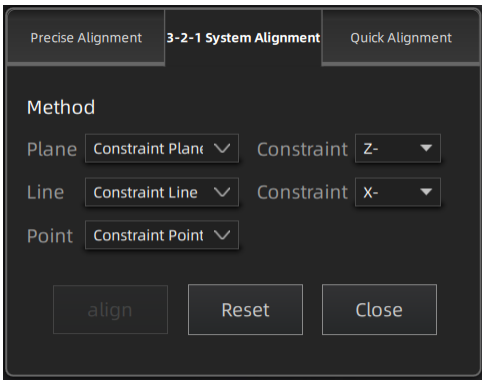
- Click **Reset** to cancel all the transformation in the exact movement interface.
- Click **Close** to save the results and exit.

> **Note**
>
> **Global coordinate system** (disabled by default and need to be enabled manually) is the coordinate system on the right, in which red points to positive X-axis, green points to positive Y-axis and blue points to positive Z-axis; if the global coordinate system does not appear on the interface, roll the mouse wheel to zoom out the model.

3-2-1 System Alignment

3-2-1 System Alignment (Plane-Line-Point Alignment) aligns data by selecting the point, line and plane.

> **Note**
>
> Before alignment, please create feature points, lines, and planes, in which the feature lines created are not perpendicular to the plane.



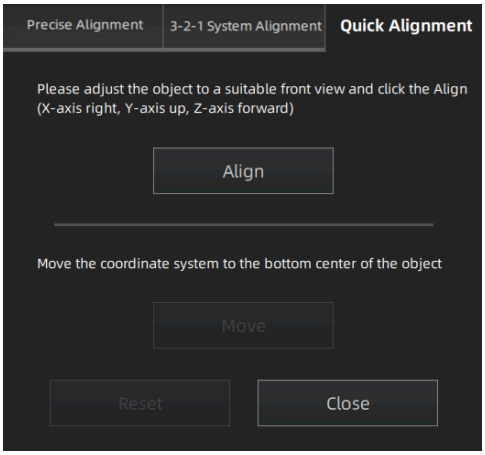
- **Plane**: Select a feature surface in the drop-down list, and select an axis in corresponding constraint drop-down list. The arrow on the plane corner indicates the positive direction of the plane, and the selected axis direction will be consistent with the plane direction.
- **Line**: Select a feature line in the drop-down list, and select an axis in corresponding **constraint** drop-down list. The arrow of the line indicates the positive direction of the line, and the direction of the selected axis will be consistent with that of the projection of the line on the selected plane.
- **Point**: Select a point in the drop-down list, of which the position is（0, 0, 0）.

- Click **Align** to start the coordinates transformation.
- Click **Reset** to cancel all the transformation in the 3-2-1 system alignment interface.
- Click **Close** to save the results and exit.

> **Note**
>
> **Global coordinate system** (disabled by default and need to be enabled manually) is the coordinate system on the right, in which red points to positive X-axis, green points to positive Y-axis and blue points to positive Z-axis; if the global coordinate system does not appear on the interface, roll the mouse wheel to zoom out the model.

Quick Alignment

Move the coordinate frame directly to align the scan data.



- Click **Align** and move the coordinate frame to the center of the object, with its X-axis perpendicular to the screen, Y-axis parallel to the screen and pointing rightward, and Z-axis parallel to the screen and pointing upward. The object remains its position.
- Click **Move** to move the coordinate frame to the bottom center of the object.
- Click **Reset** to cancel all the transformation in the quick alignment interface.
- Click **Close** to save the results and exit.

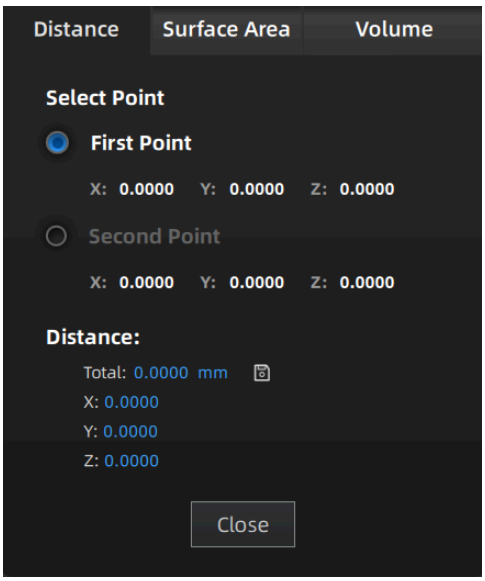
> **Note**
>
> **Global coordinate system** (disabled by default and need to be enabled manually) is the coordinate system on the right, in which red points to positive X-axis, green points to positive Y-axis and blue points to positive Z-axis; if the global coordinate system does not appear on the interface, roll the mouse wheel to zoom out the model.

Measurement

The measurement function can be used to calculate the distance on the surface of the model, the surface area and volume of meshed data.

On the right panel of **Measurement**, click and a **Measurement** window will pop up on the left.

Distance



Calculate the straight-line distance between two points or markers on the surface of the scanned model.

When you select two points of the model, the distance will show itself at once.

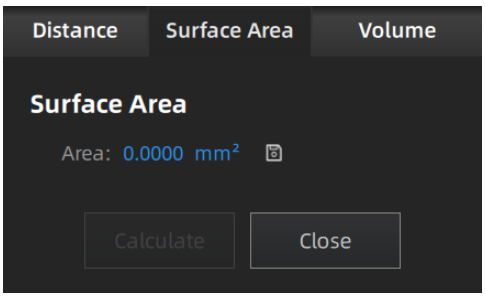
Click **Close** to close the front window.

Note

● You can tick the checkbox before **First Point** or **Second Point** and re-select the point.

● **Total** is the 3D distance; **X**, **Y**, and **Z** are the projection length of the segment to respective planes.

Surface Area

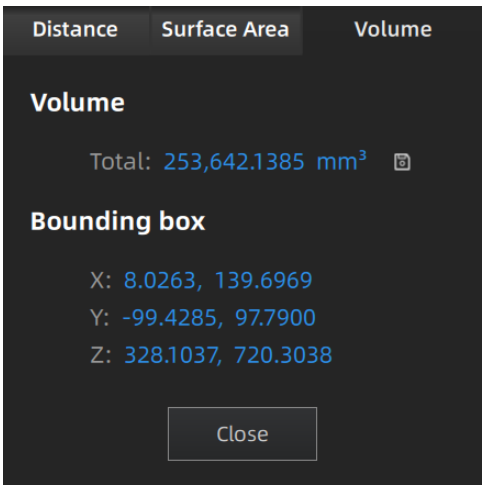


Calculate selected area of the scanned model.

You can use edit tools、menu of the right mouse button or shortcuts on the bottom panel to select the area. Click **Calculate** and the area will show itself with a unit of mm².

Click **Close** to close the front window.

Volume



Calculate the volume of **Meshed data** with a unit of mm³. When you switch to **Volume**, the volume of the scanned model and the coordinates of corresponding bounding box will show themselves.
Click **Close** to close the front window.

Click and export the measurement result to local.

> **Note**
>
> - You can save the file as TXT or CSV or both.
> - The storage path defaults to where you open the file last time, or to `C:\Users\shining3d` if you have not set the path.

Save and Export

Save data

You can save the scanned data.

In the interface of **Scan**, **Post Processing** or **Measurement**, click to select the save path and the file format, and fill in the file name.

Format	Data Type	Saved as	Application
ASC (whole piece)	Optimized cloud points	Scan.asc	• Data checking; • Quick export and no need for post-operation; • Use other software to post-possess the data.
STL	Mesh data	Scan.stl	• 3D printing and reverse designing; • Use other software to post-possess the data. **Note** Compatible with most post-processing software.
OBJ	Mesh data	Scan.obj Scan.jpg Scan.mtl	• Used for artworks; • 3D rendering. **Note** Compatible with most post-processing software.
PLY	Mesh data	Scan.ply	• Compact size; • Easy for texture editing.
3MF	Mesh data	Scan.3mf	• Compact size; • Compatible with Microsoft 3D printing software.
P3 DGM	Global markers	Scan.p3 Scan.dgm	• Can be quickly imported in the scanning interface. • Can also contain the cutting plane.

Date sharing

You can upload the encapsulated data to Sketchfab after mesh.

In the interface of **Post-processing** or **Measurement** step, click to upload the encapsulated data to Sketchfab, where the model name, username and password are required to be provided (you can enter the model description and tags as needed). You can register an account on the Sketchfab to view the shared models.

> **Caution**
>
> The files uploaded are in STL format.

Third-party software

You can import scanned mesh data into the third-party software after mesh.

In the interface of **Post Processing** or **Measurement**, click , select the third-party software to be imported.

Icon	Name	Application
	Geomagic Control X (2020)	3D test.
	Geomagic Design X (2020)	Reverse design.
	Geomagic Essentials (2.0.1.3000)	Mesh editing.
	Polyworks Metrology Suite (2022)	3D measurement.

> **Note**
>
> If the third-party software is installed, it will automatically be launched and the mesh data will be imported; if not, a prompt will appear saying "Failed to start, please confirm if it is installed."

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