M1 Ultra User Manual - 2026/10/26

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Precautions

- The M1 Ultra is a Class 2M laser product. Personal protective equipment is not required during normal use. Avoid direct eye exposure to the blue laser beam.
- Operate the device within the temperature and humidity ranges specified in the technical specifications.
- Scanning accuracy may be affected by temperature changes and prolonged use. Calibration before use is recommended.
- Avoid strong impacts or vibrations. Dropping or striking the device may affect its performance or cause it to malfunction.
- Calibrate the scanner using the included calibration board before use if it has been transported, left unused for more than 30 days, or exposed to significant temperature changes.
- Do not disassemble the scanner's lenses or laser modules. Doing so may compromise laser safety and damage precision optical components.
- Stop using or charging the battery immediately if it becomes swollen or damaged. For long-term storage, keep the battery at approximately 50% charge.
- Store the device in a clean, dry, well-ventilated area away from dust, oil, and corrosive gases. Return it to its protective case after use.

Specifications

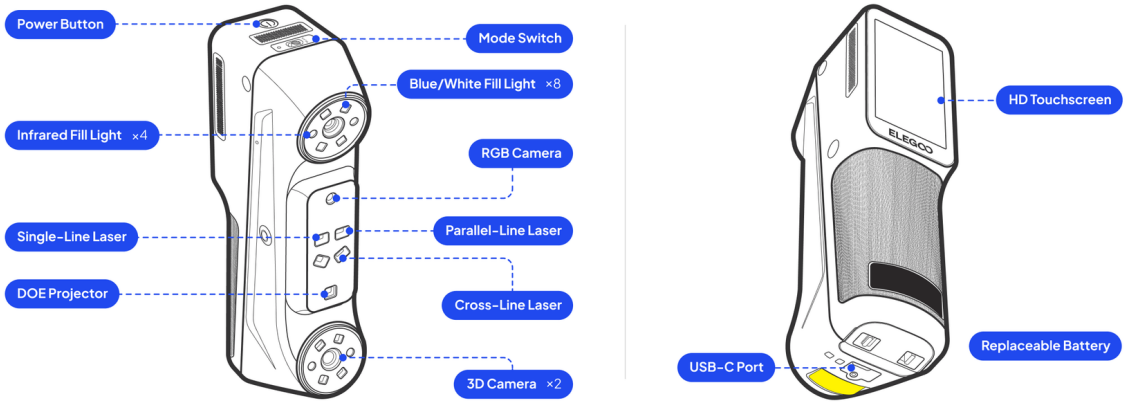
M1 Ultra				
Scanning Mode	**High-Speed Scanning**	**Detailed Scanning**	**Deep-Hole Scanning**	**NIR Markerless Scanning**
Light Source	34 Blue Crossed Laser Lines	7 Blue Parallel Laser Lines	Single Blue Laser Line	NIR (Infrared Binocular Structured Light)
Accuracy[1]	Up to 0.02 mm			Up to 0.05 mm
Volumetric Accuracy	0.02 mm + 0.06 mm/m × L	/	/	0.05 mm + 0.1 mm/m
Scanning Rate	2,040,000 points/s	840,000 points/s	120,000 points/s	6,451,200 points/s
Scanning Speed (Wired PC Connection)	Up to 80 fps (1920 × 1200) Up to 100 fps (1520 × 1200)			Up to 30 fps
Scanning Speed (Wireless PC Connection)	Up to 50 fps (1920 × 1200) Up to 60 fps (1520 × 1200)			
3D Resolution	0.05-2 mm			0.1-2 mm
Minimum Scan Volume	5 × 5 × 5 mm			150 × 150 × 150 mm
Single Scan Range	219 × 160 mm at 200 mm 452 × 320 mm at 400 mm 621 × 480 mm at 600 mm	144 × 128 mm at 160 mm 219 × 160 mm at 200 mm 452 × 320 mm at 400 mm	219 × 160 mm at 200 mm 452 × 320 mm at 400 mm 621 × 480 mm at 600 mm	162 × 136 mm at 170 mm 955 × 800 mm at 1000 mm 1121 × 960 mm at 1200 mm
Working Distance	200–600 mm	160–400 mm	200–600 mm	170–1200 mm
Color Mapping	Supported			
Tracking Method	Marker / Global Marker / Marker-free			Geometry / Texture
RGB Fill Light	8 White LEDs			
Outdoor Scanning	≤110,000 lux	≤110,000 lux	≤100,000 lux	≤80,000 lux (with filter)
Marker Recognition Enhancement	8 Blue/White LEDs + 4 Infrared LEDs			
Laser Safety	Class II (eye safe)	Class I (eye safe)	Class II (eye safe)	Class I (eye safe)

Specifications

M1 Ultra				
Scanning Mode	**High-Speed Scanning**	**Detailed Scanning**	**Deep-Hole Scanning**	**NIR Markerless Scanning**
Calibration Board	High-Precision Glass Calibration Board			
NIR Filter	/			Yes
Processor	8-Core CPU (2.0 GHz)			
Display	3-inch HD Touchscreen			
Battery Capacity	4,800 mAh (includes a backup battery) Approx. 1 hr 30 min to charge to 80% Approx. 2 hr to charge to 100%			
Interface	USB Type-C / USB 3.1			
Input Voltage/Current	5 V / 3 A			
Wireless Scanning	Supported			
Wi-Fi	Wi-Fi 6			
Operating System	Windows / macOS			
Recommended PC Requirement	Windows	Windows 10/11 (64-bit) CPU: Intel Core i7 (13th Gen) or higher Dedicated GPU: NVIDIA GeForce RTX 4060 or higher (8 GB VRAM) RAM: ≥32 GB		
	macOS	macOS 14 or later CPU: Apple M4 or later RAM: ≥32 GB		
Minimum PC Requirement	Windows	Windows 10/11 (64-bit) CPU: Intel Core i7 (7th Gen) Dedicated GPU: NVIDIA GPU (6 GB VRAM) RAM: ≥16 GB		
	macOS	macOS 14 or later CPU: Apple M2 RAM: ≥16 GB		
Device Weight	511 g (battery included)			
Dimensions	191 × 50 × 76 mm			

Product Overview

Component Introduction



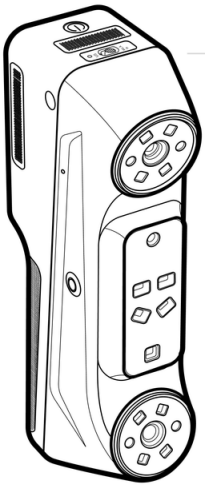
Button Functions

Button	Icon	Function
USB/Wi-Fi Switch		Slide to USB for wired mode or WLAN for wireless mode. Takes effect after restart.
Power Button		Press and hold (≥2s): Power on/off Short press: Wake or turn off the screen
Start/Stop Button		Short press: Preview, start, or pause a scan Press and hold (≥2s): End the scan Double press: Switch between the 34 Cross Lines, 7 Parallel Lines, and Single Line scanning modes

Power Indicator Light

Light Status	Description
Solid Blue	Connected to power
Pulsing Green	Powered on and operating normally; not in preview mode
Solid Red	Power or hardware fault (e.g., camera malfunction)
Solid Yellow	Sleep mode
Flashing Yellow	Update in progress

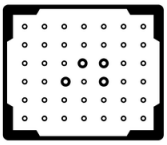
Package Contents



M1 Ultra 3D Scanner



USB 3.0 Data&Power Cable (2 m)



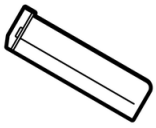
High-Precision Glass Calibration Board



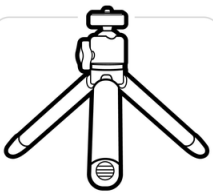
Reflective Marker (Ø6mm × 10 + Ø3mm ×10)



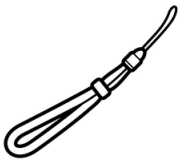
NIR Filter × 2



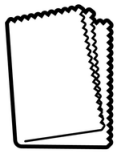
Spare Battery



Tripod



Lanyard



Cleaning Cloth

Getting Started

PC System Requirements

Windows – Recommended	Windows – Minimum	macOS – Recommended	macOS – Minimum
Windows 10/11 (64-bit) CPU: Intel Core i7 (13th Gen) or higher Dedicated GPU: NVIDIA GeForce RTX 4060 or higher (8 GB VRAM) RAM: ≥32 GB	Windows 10/11 (64-bit) CPU: Intel Core i7 (7th Gen) Dedicated GPU: NVIDIA GPU (6 GB VRAM) RAM: ≥16 GB	macOS 14 or later CPU: Apple M4 or later RAM: ≥32 GB	macOS 14 or later CPU: Apple M2 RAM: ≥16 GB

Preparation

Software Installation

- **Download:** Visit the ELEGOO Wiki software download page to find and download ELEGOO Scan.

● **Install:**

Windows: Double-click the installer and follow the on-screen instructions to complete the installation.

macOS: After installation, allow ELEGOO Scan to read and write files. These permissions are required for point cloud optimization and 3D model generation.

Initial Battery Charging

> **Important – Before First Use:** Due to shipping safety regulations, the battery is shipped with a low charge and may lose additional charge during transit. The scanner may therefore not turn on when you first receive it. Charge the battery for at least 30 minutes before first use.

> **Note:** You can charge the battery separately by connecting the charging cable directly to the battery's charging port. You can also charge it while it is installed in the scanner by connecting the cable to the scanner's charging port.

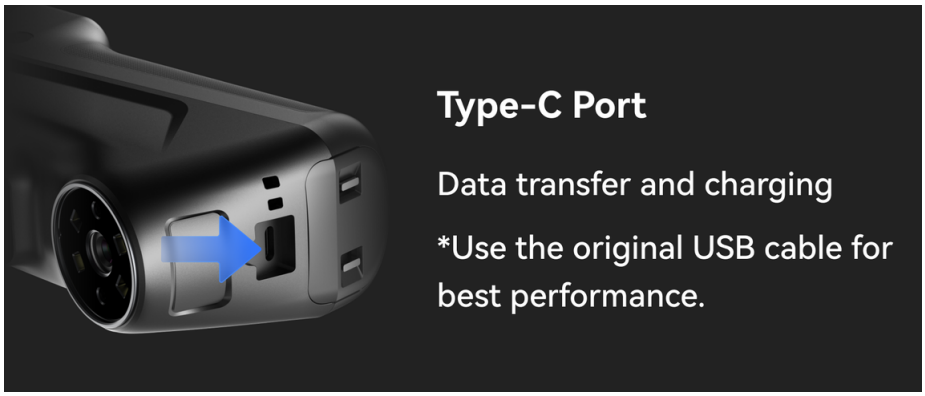
Connecting the Scanner to a PC

Wired Connection (USB)

- Slide the USB/Wi-Fi switch on top of the scanner to the USB position. Press and hold the **Power** button for 2 seconds and wait for the screen to turn on.



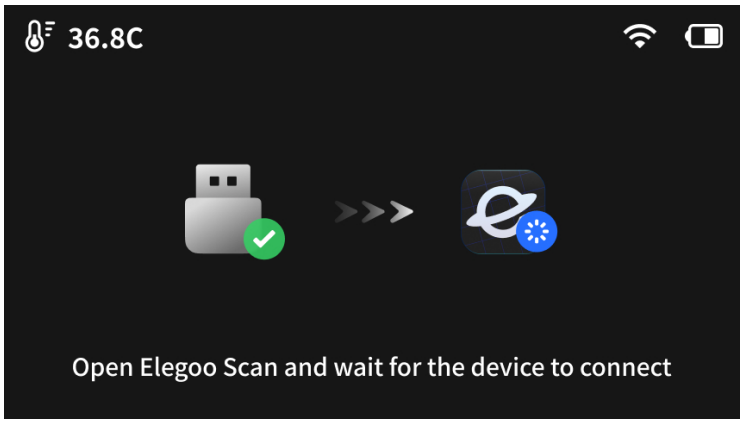
- Connect one end of the included high-speed USB cable to the scanner's USB Type-C port and tighten the locking screw.

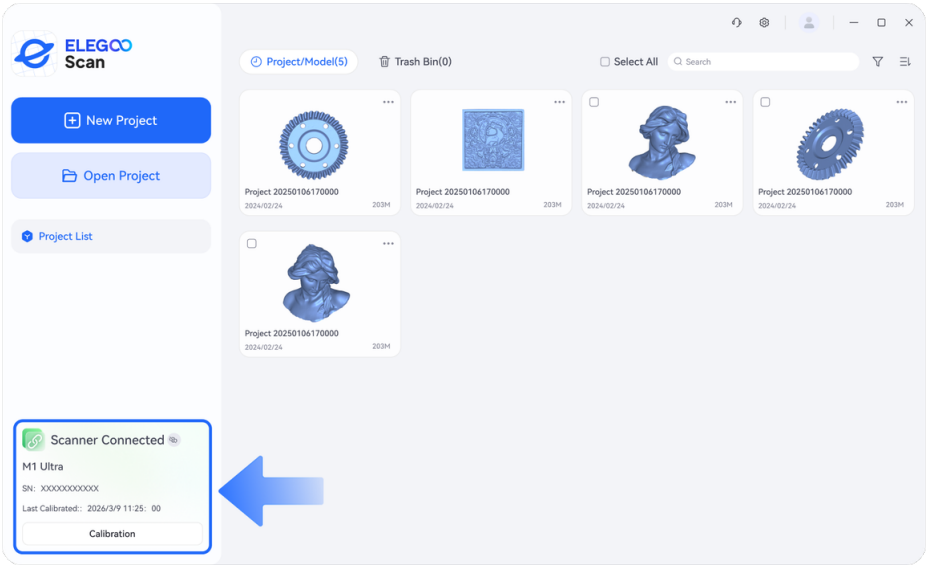


- Connect the other end to a USB port on your PC that supports USB 3.0 or higher for stable data transfer.

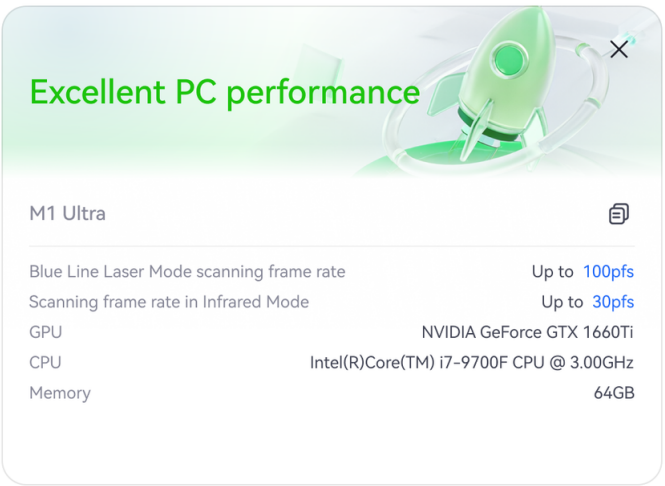


- Launch ELEGOO Scan on your PC. The software will automatically detect and connect to the scanner. Once connected, both the scanner's screen and the lower-left corner of ELEGOO Scan will indicate a successful connection.





- When you connect the scanner for the first time, ELEGOO Scan automatically opens the Performance Check panel. We recommend completing the check before you start scanning.



Wireless Connection (Wi-Fi)

Step 1: Switch to Wi-Fi Mode

- Slide the USB/Wi-Fi switch on top of the scanner to the WLAN position. Press and hold the **Power** button for 2 seconds and wait for the screen to turn on.



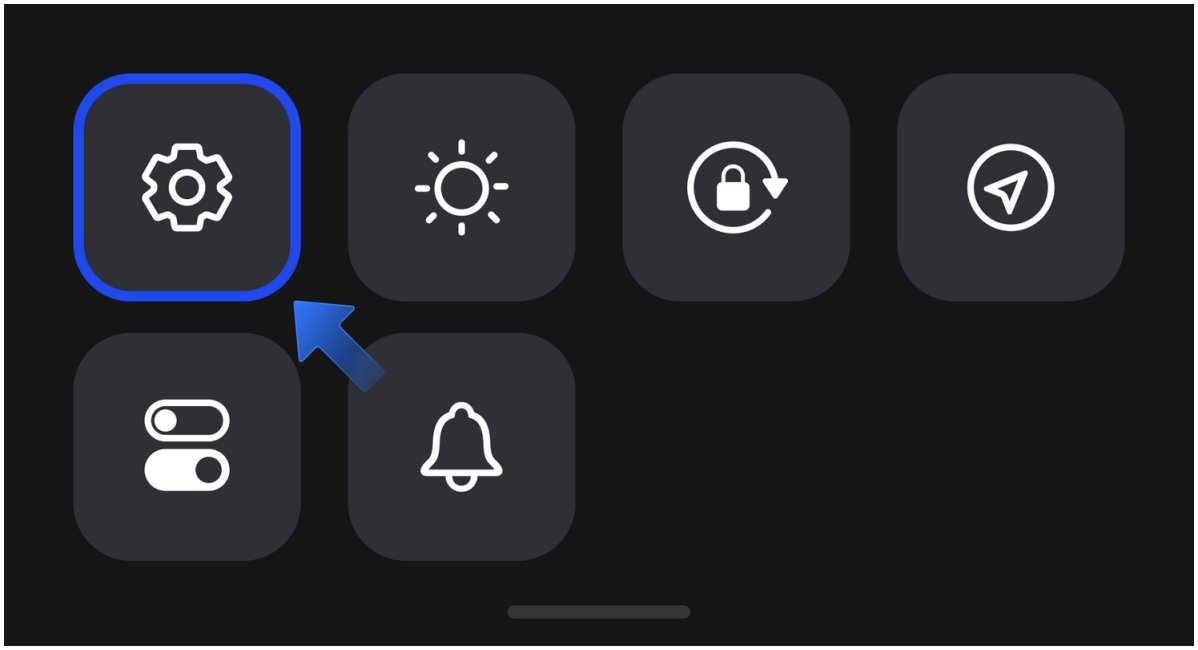
Step 2: Select a Language

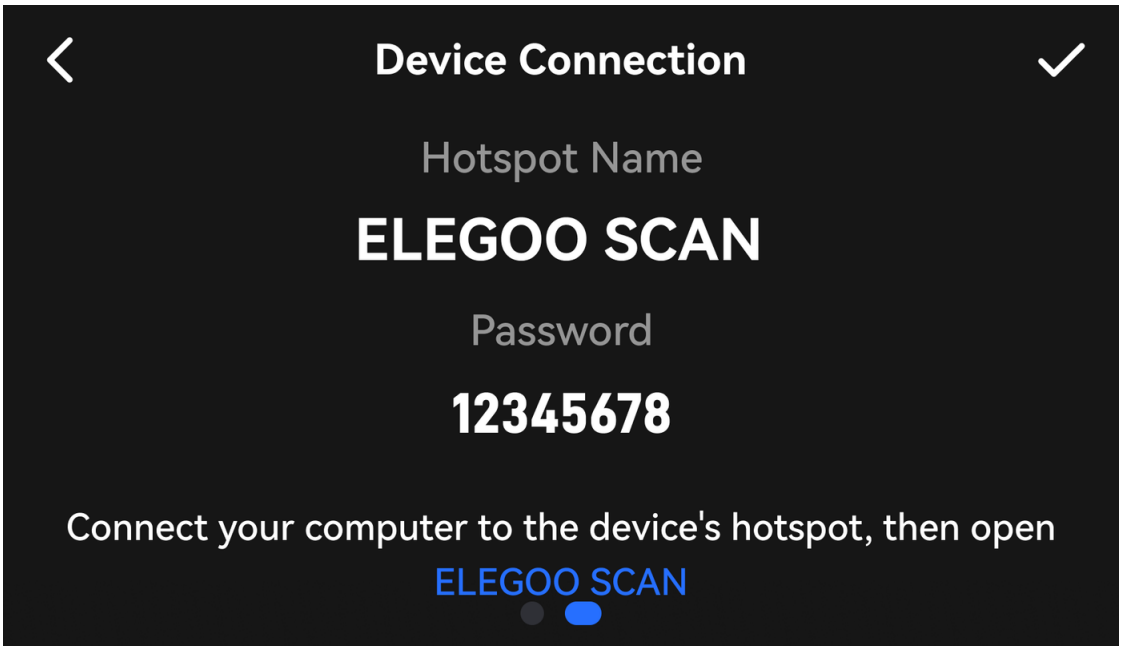
- Once the scanner starts up, swipe on the touchscreen to select your preferred language.



Step 3: View Hotspot Details

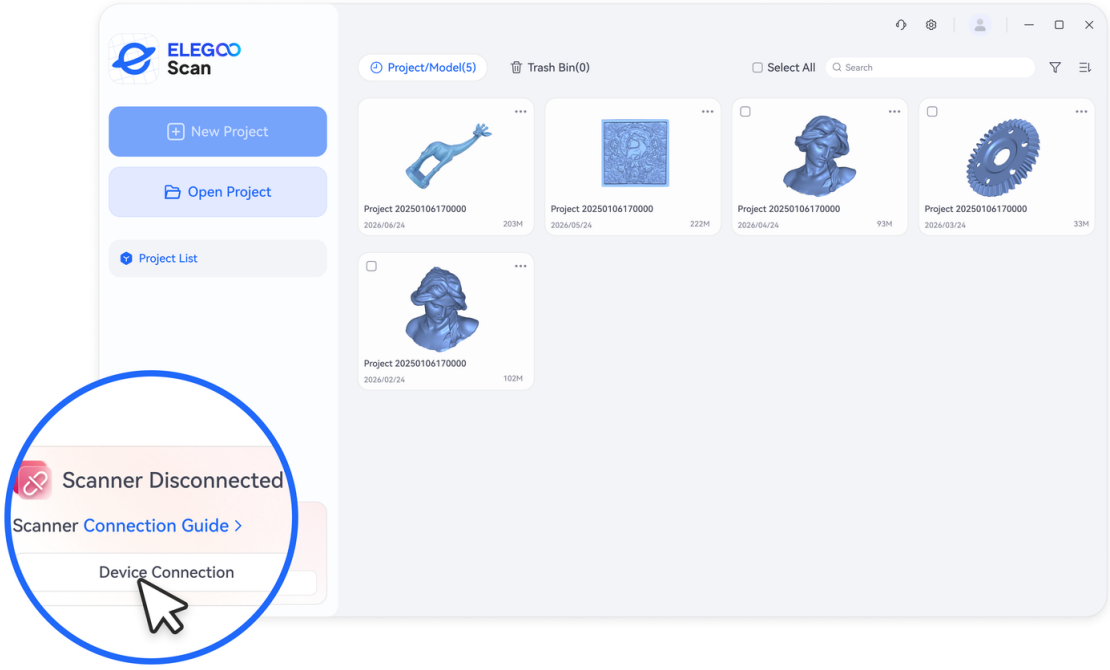
- Swipe down from the top of the scanner's touchscreen to open the quick settings panel. Tap Settings to view the hotspot name and password.



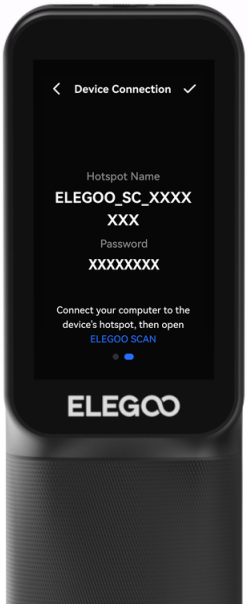


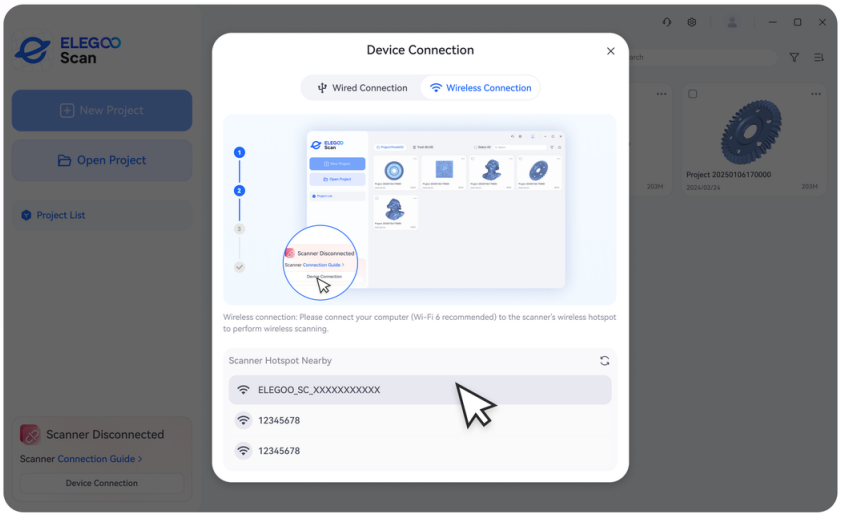
Step 4: Connect via ELEGOO Scan

- Launch ELEGOO Scan on your PC and click **Device Connection** in the lower-left corner.



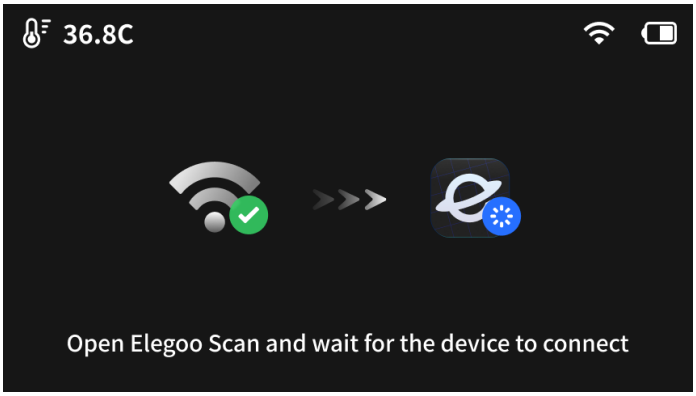
- Select the M1 Ultra's Wi-Fi hotspot from the list to connect.

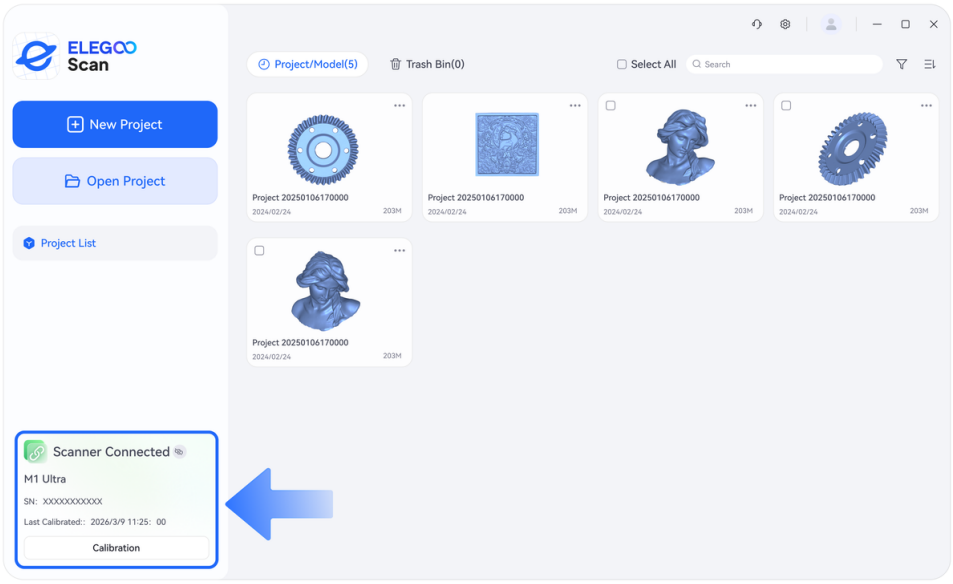




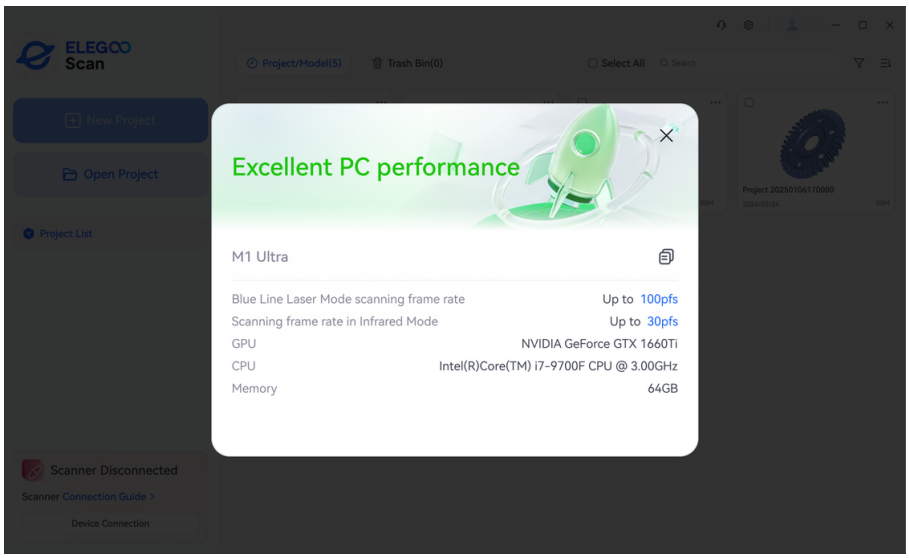
Step 5: Confirm Connection

- Once connected, both the scanner's screen and the lower-left corner of ELEGOO Scan will indicate a successful connection.



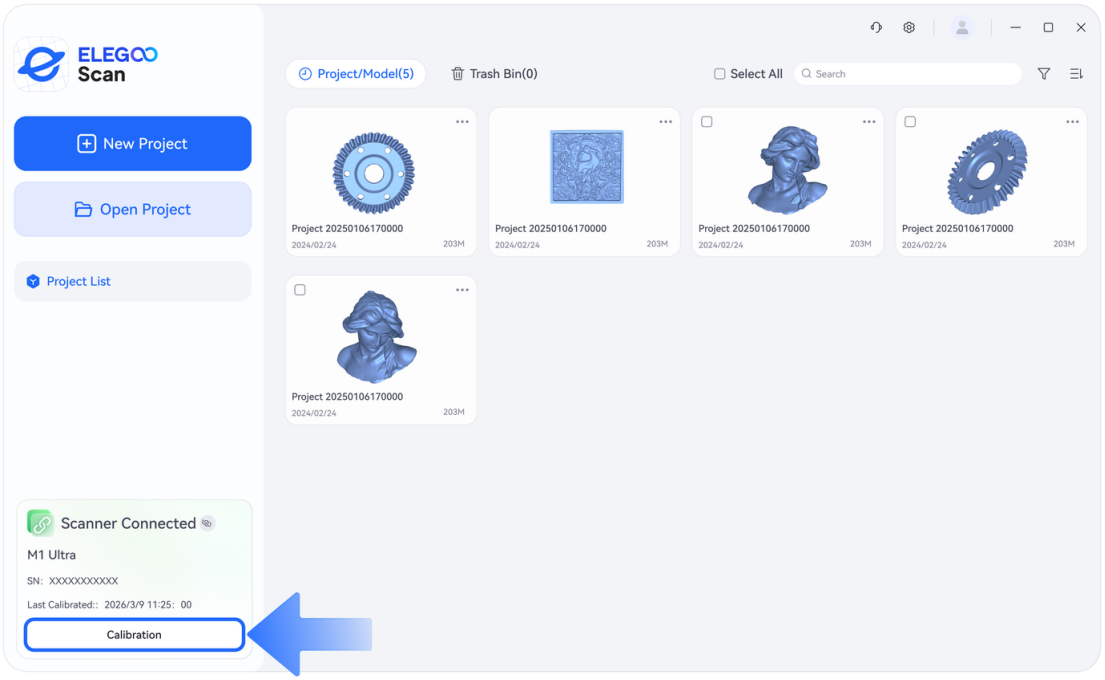


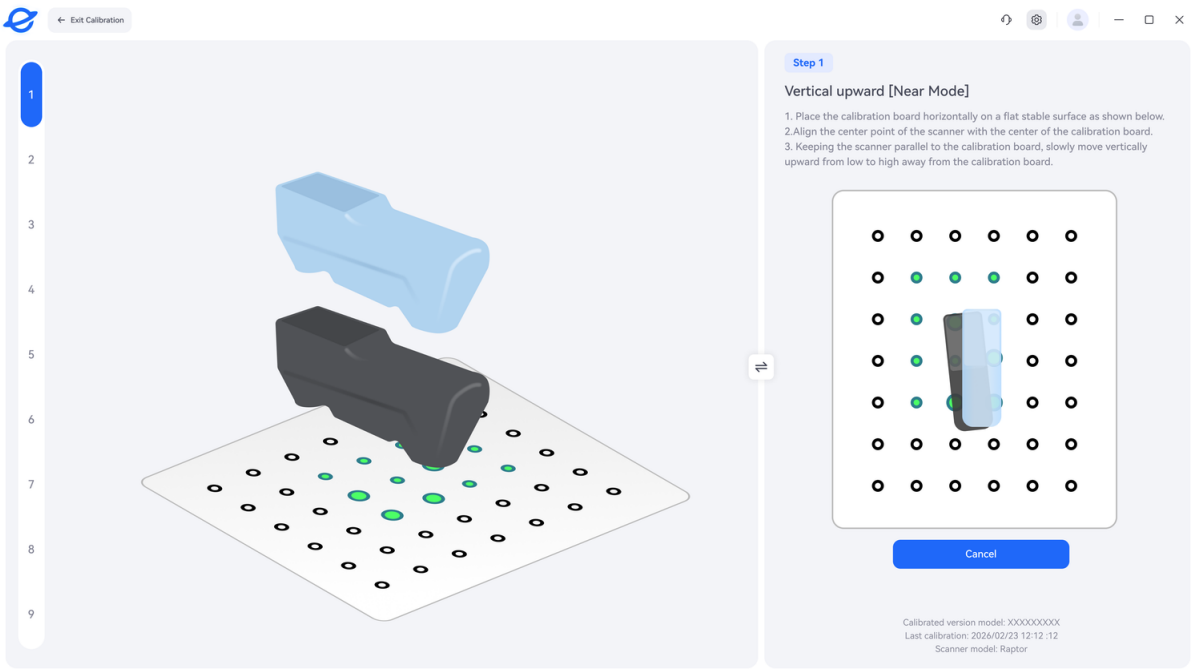
- When you connect the scanner for the first time, ELEGOO Scan automatically opens the Performance Check panel. We recommend completing the check before you start scanning.



Calibration

Calibration is recommended before first use, after an extended period of inactivity, or if scanning accuracy decreases. Connect the scanner to your PC using a USB cable. Remove the high-precision glass calibration board from the bottom of the protective case, then follow the calibration instructions in ELEGOO Scan to restore the scanner's factory-calibrated accuracy.



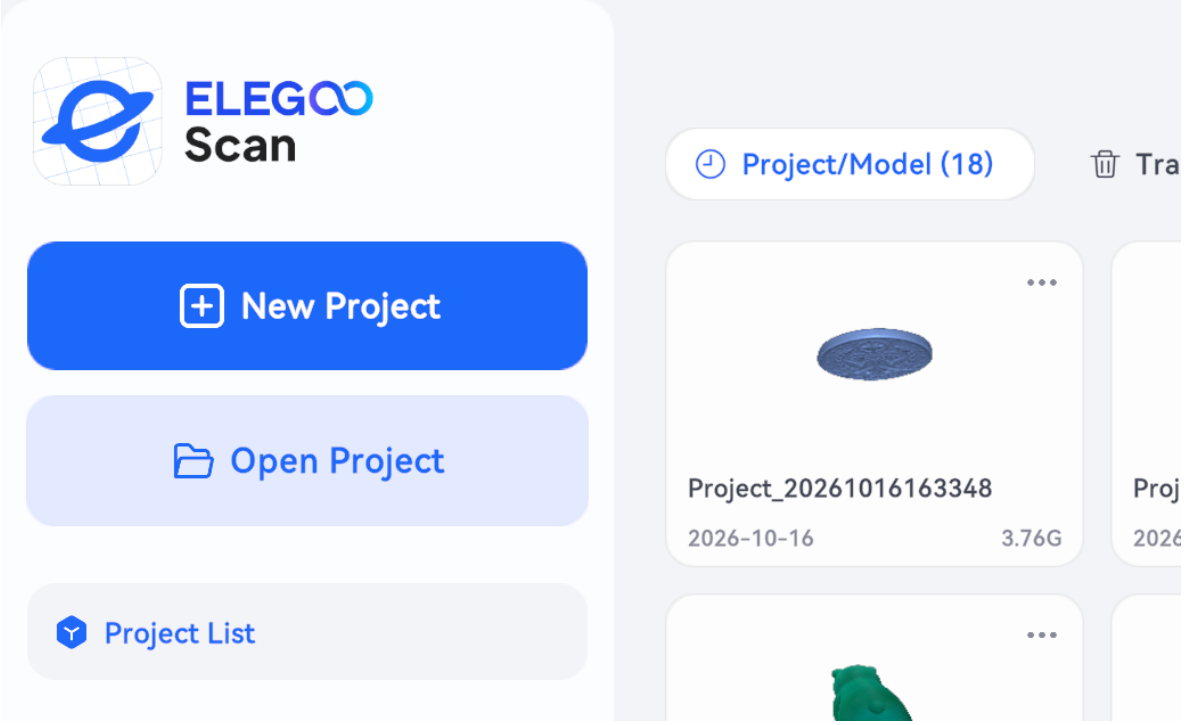


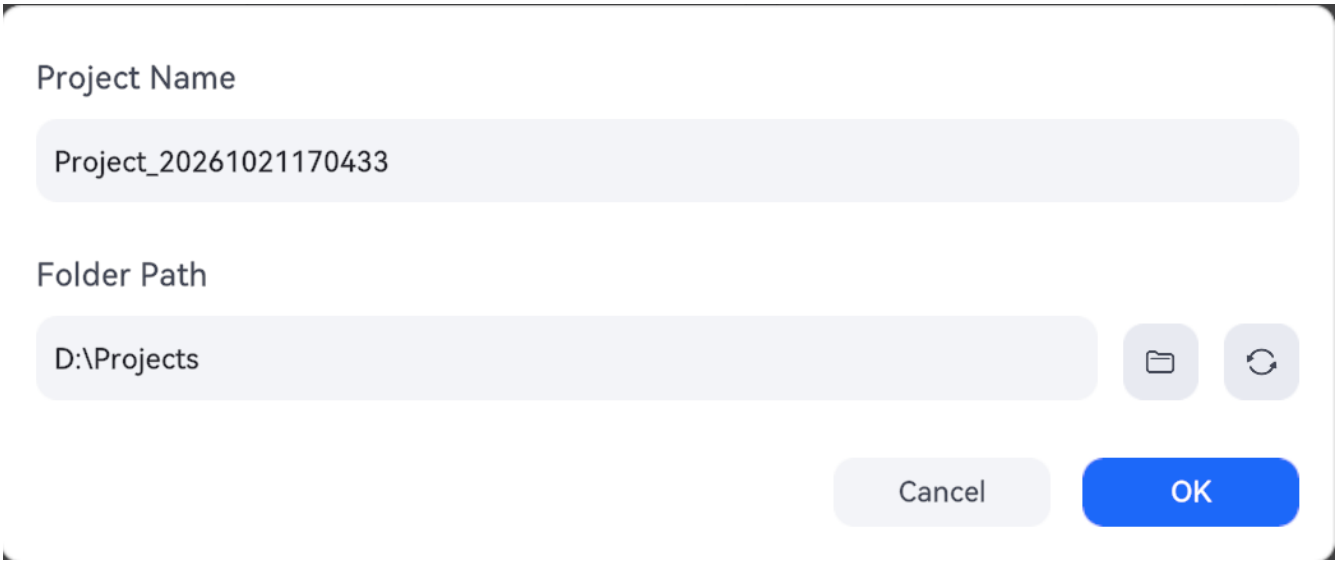
Start Scanning

01 Wired Connection to a PC (USB)

Step 1: Create a New Project

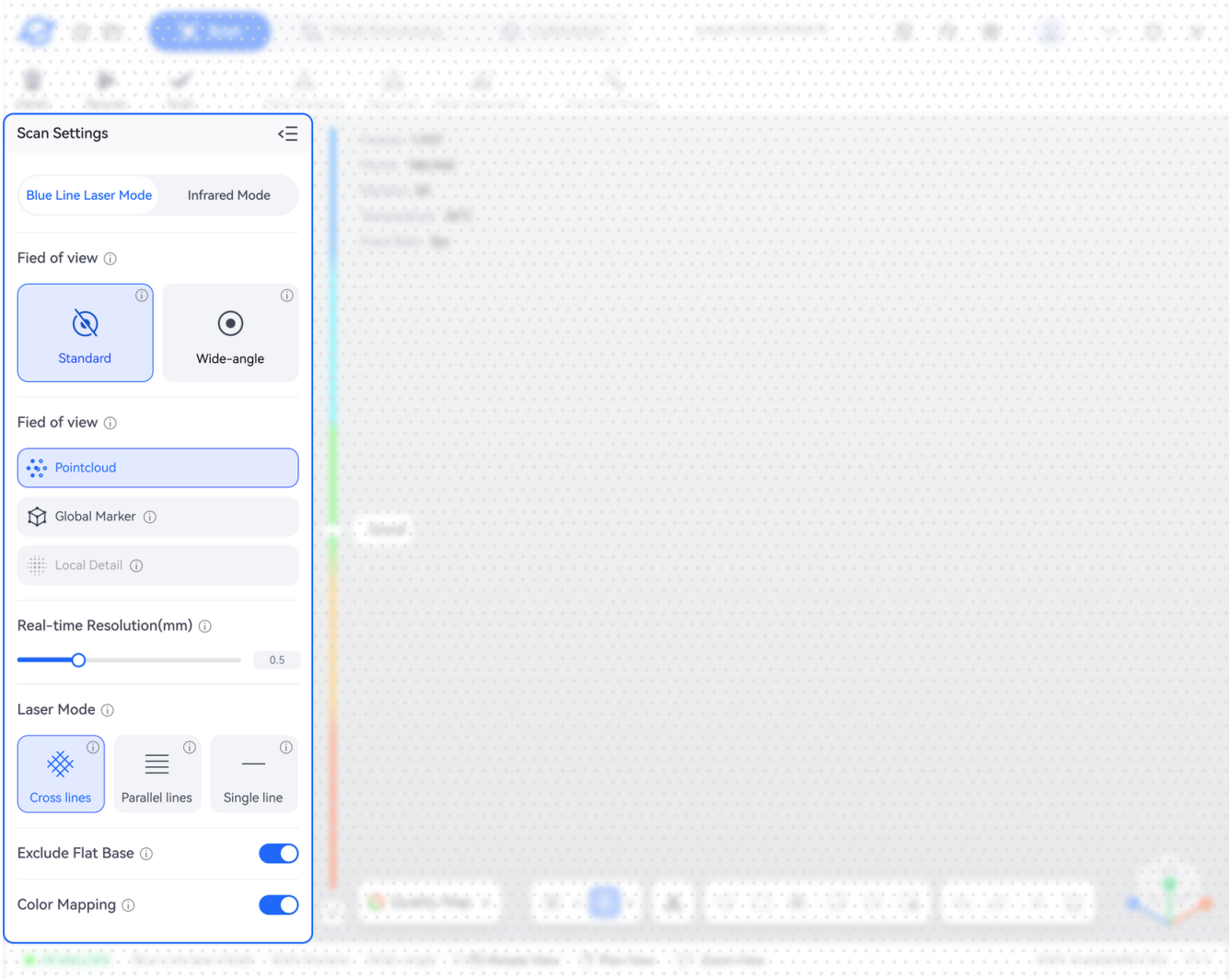
- In ELEGOO Scan, click **New Project**. Enter a project name, select a folder to save the project in, and click **OK**.



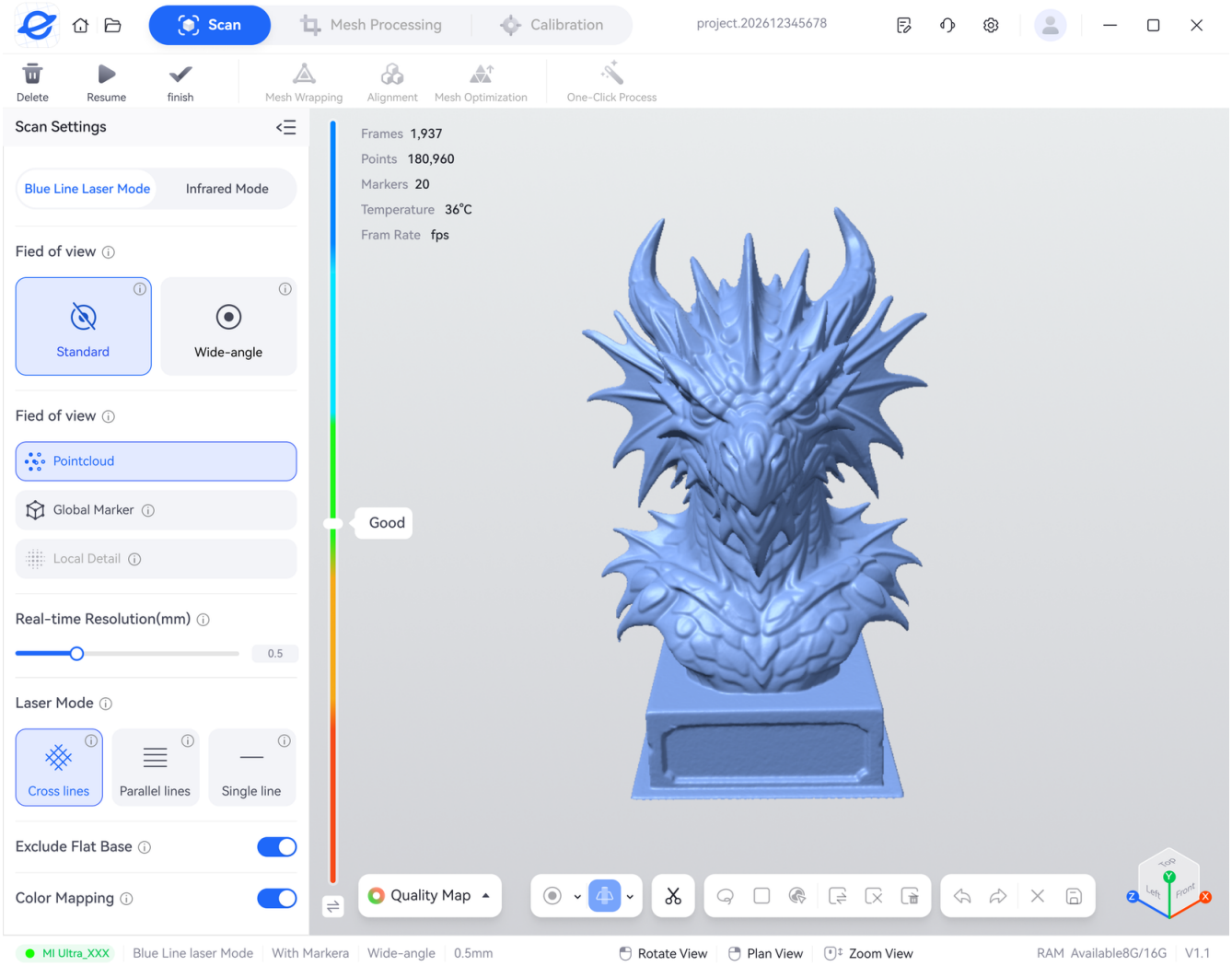


Step 2: Configure Scan Settings

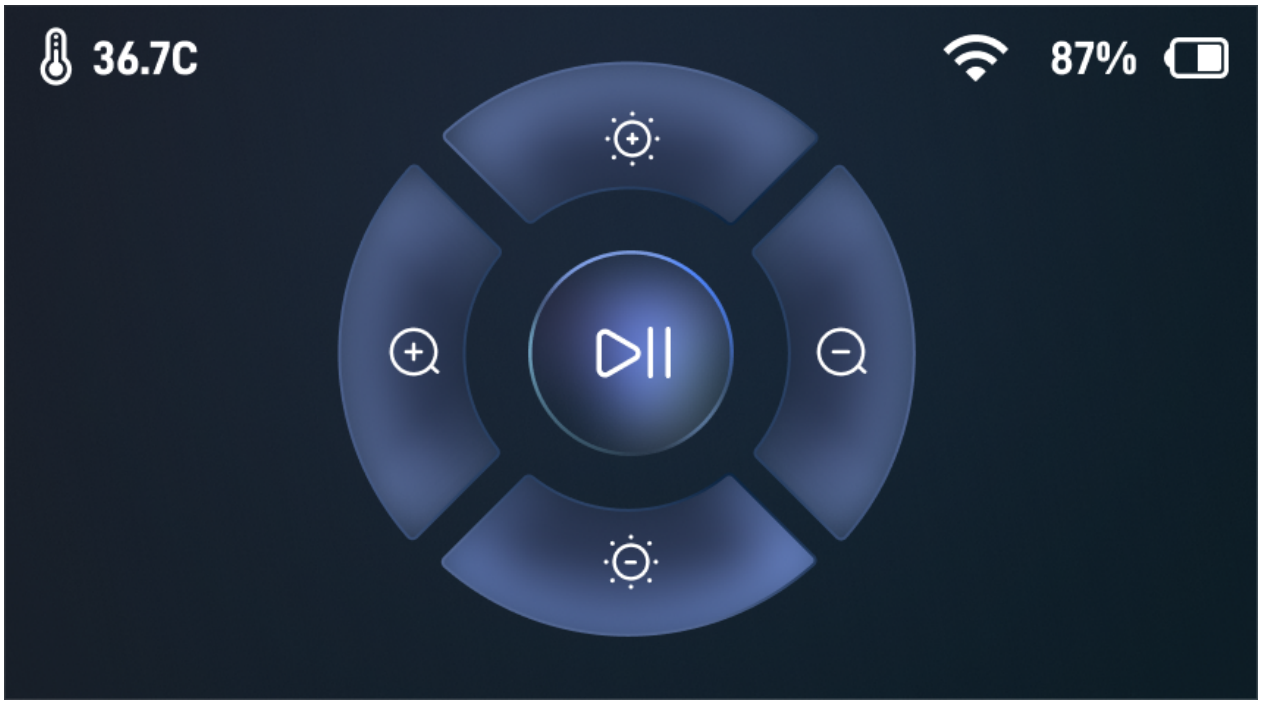
- Choose the appropriate scanning mode and settings for the object you're scanning.



- Press the **Start/Stop** button on the side of the scanner or click **Start** in ELEGOO Scan to preview the scan. When you're ready, use the same control again to begin scanning.
- During scanning, monitor the distance indicator on your PC or scanner screen and adjust the scanner's position and angle as needed. Keep the indicator in the green zone for the optimal scanning distance.



- In USB mode, the scanner's touchscreen does not display the live scan view, but the scan control buttons remain available on the screen.



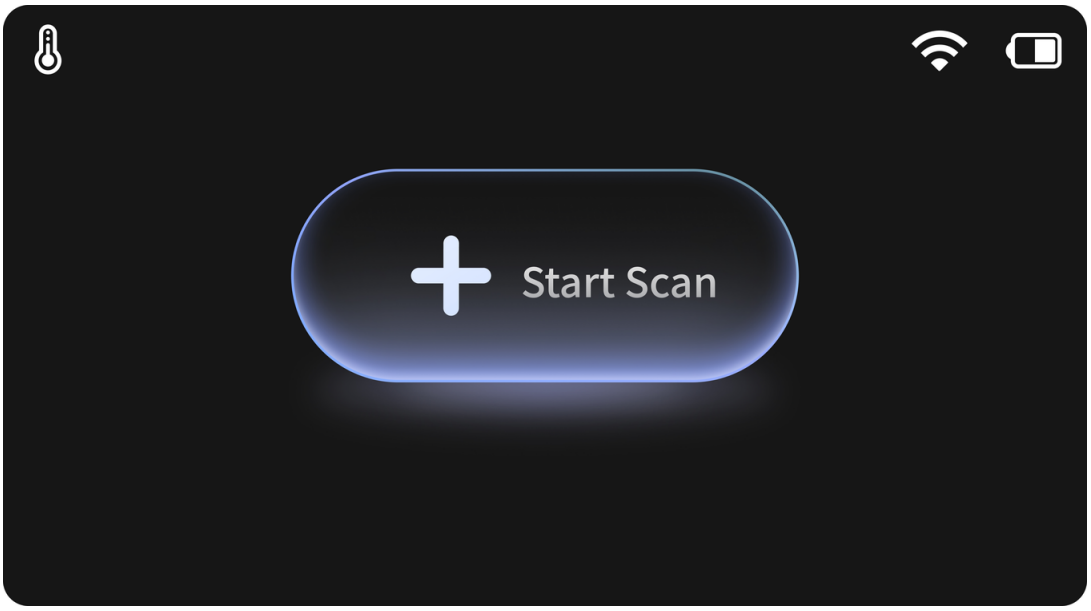
Button	Icon	Function
Start/Stop Button		Short press: Preview, start, or pause a scan Press and hold (≥2s): End the scan Double press: Switch between the 34 Cross Lines, 7 Parallel Lines, and Single Line scanning modes
Exposure +/−		Tap **+** or **−** to increase or decrease exposure by one level
Zoom +/−		Tap **+** or **−** to zoom in or out by one level

02 Wireless Connection to a PC (Wi-Fi)

The steps below show how to scan using the scanner's touchscreen.

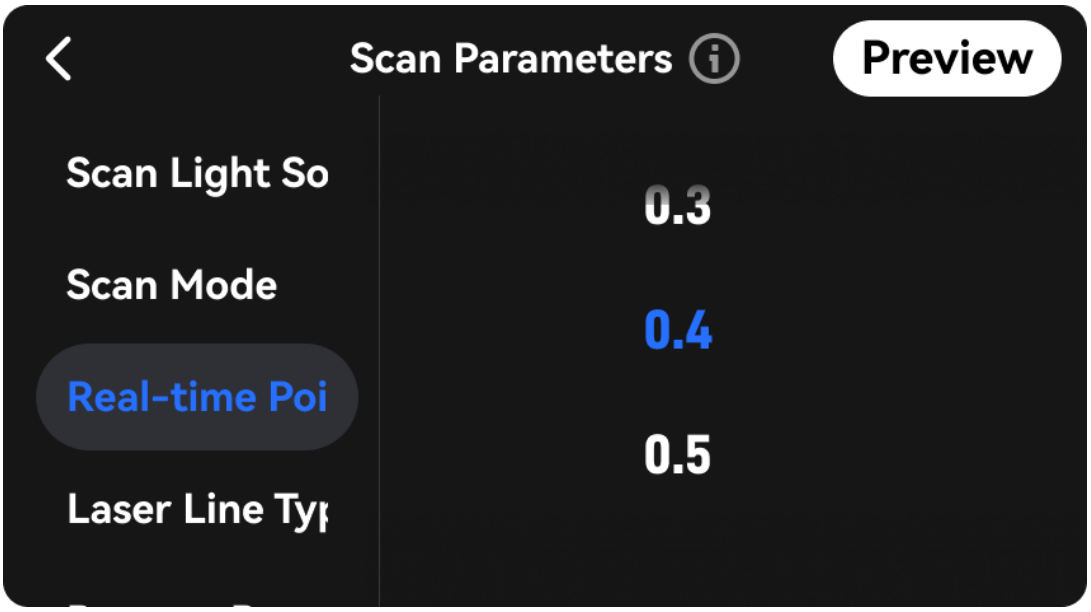
Step 1: Create a New Project

- Create a new project on the scanner or in ELEGOO Scan on your PC.



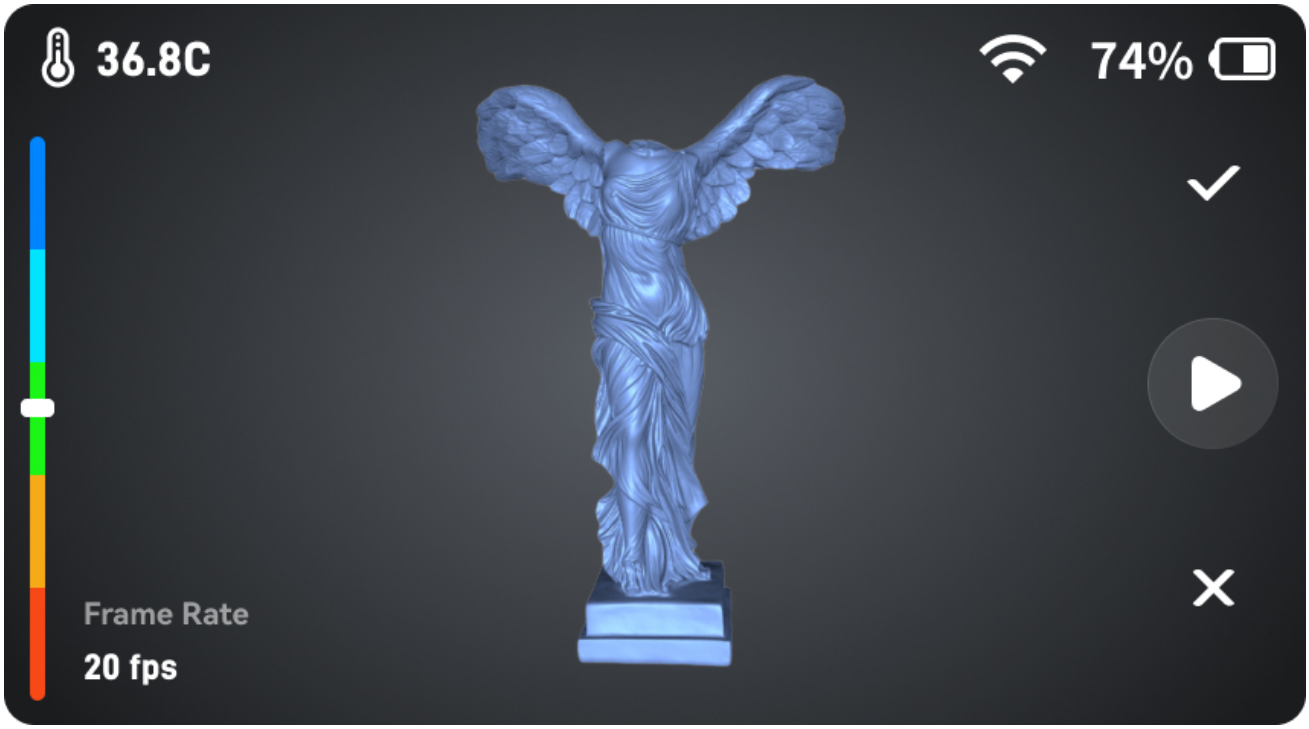
Step 2: Configure Scan Settings

On the scanner’s touchscreen or in ELEGOO Scan, choose the appropriate scanning mode and settings for the object you're scanning. Once you've completed the setup, tap **Preview** in the upper-right corner of the touchscreen to preview the scan before starting.

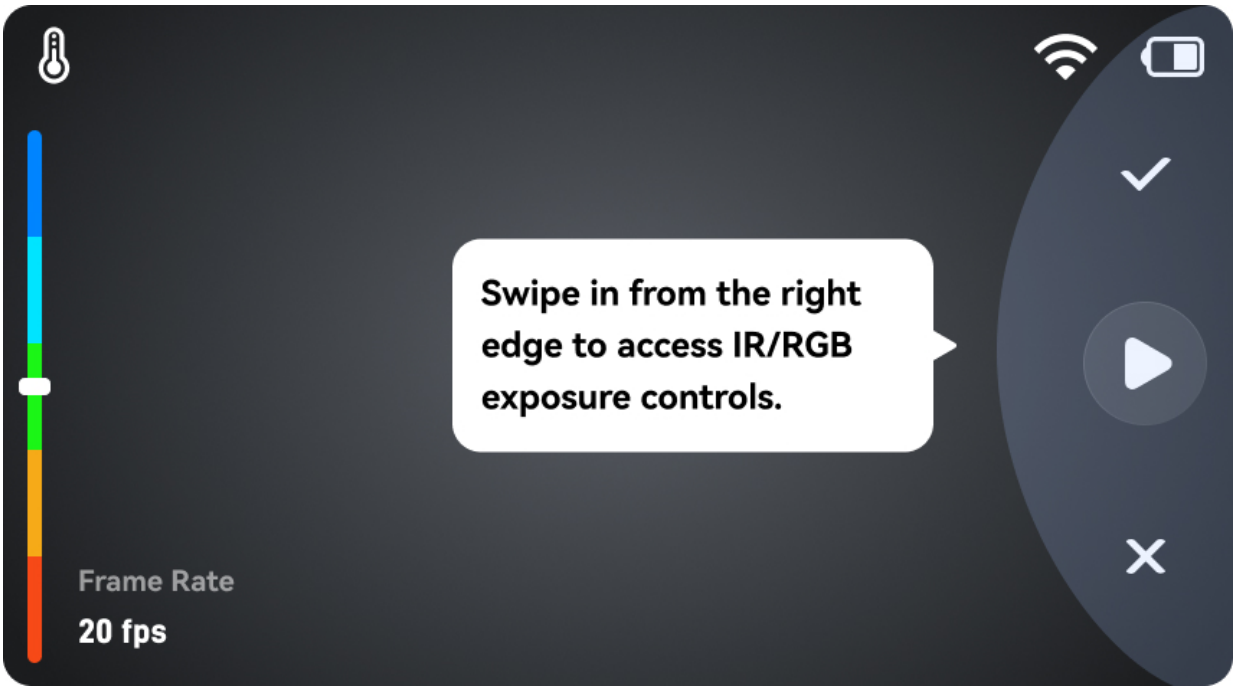


Step 3: Start Scanning

- Press the **Start/Stop** button on the side of the scanner or tap **Start** on the screen to preview the scan. When you're ready, use the same control again to begin scanning.
- During scanning, monitor the distance indicator on the scanner or PC screen and adjust the scanner's position and angle as needed. Keep the indicator in the green zone for the optimal scanning distance.



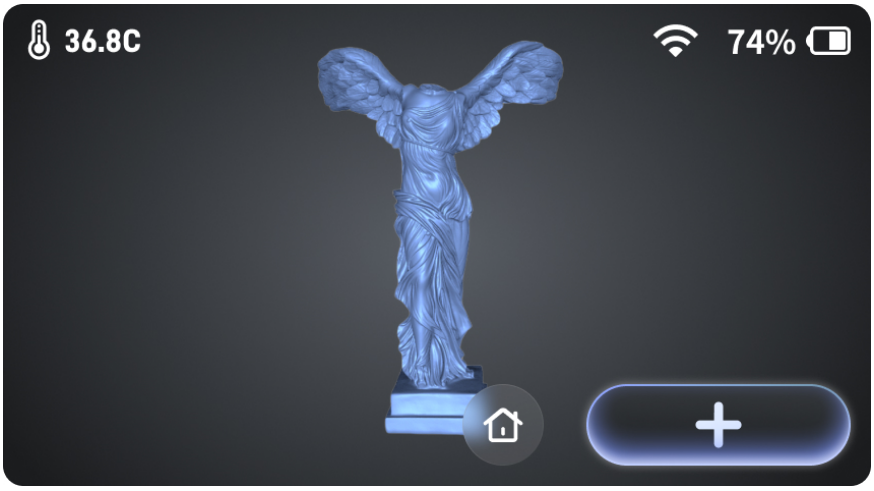
- You can also swipe right on the scanner's screen to view IR/RGB images and adjust the exposure manually during scanning.





Finishing a Scan

Once you've captured all the necessary scan data, press and hold the **Start/Stop** button on the side of the scanner for more than 2 seconds. Alternatively, tap the ✓ icon on the scanner's screen or click **Finish** in ELEGOO Scan. The captured point cloud will automatically appear in ELEGOO Scan.



Model Processing

After scanning, use the post-processing tools in ELEGOO Scan to convert point cloud data into a 3D model.

One-Click Processing: Ideal for beginners, this feature automatically performs meshing, mesh optimization, and color mapping (if applicable).

Manual Processing (Recommended):

1. **Meshing:** Convert point cloud data into a triangular mesh to generate a 3D model.
2. **Alignment:** Align and merge multiple scans into a single 3D model to preview the result.
3. **Mesh Optimization:** Refine the mesh to improve the model's overall quality.
4. **Color Mapping (if applicable):** Apply captured color and texture information to the model's surface.

For detailed instructions, scan the QR code below to visit the official ELEGOO Wiki.