

3D Scanner Badge: Level One

EinScan SP

Age: Grade 6-Adult

Objectives:

- To learn the basics of using the EinScan SP 3D Scanner.
 - To learn the basics of using the software.
 - To create your first completed 3D Scan.
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1 . Identify parts of the 3D scanner and their functions

1. **Turntable-** The turntable is where you'll place the object you wish to 3D scan. The turntable will turn 360 degrees to complete your scan.
2. **Scanner Stand-** The stand connects the turntable to the scanner head.
3. **Scanner Head-** The scanner head emits light to scan your object as it is rotated.



4. **ExScan Software-** ExScan is the software that controls the Einscan SP.

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2 . Operating Guidelines

- Turn on the Scanner by pressing and holding the power button on the back of the scanner head.
- Make sure that the scanner is pointed away from the user, and is pointed at a wall.
- Only operate the scanner on a flat and stable surface.
- Do not attempt to move or unplug the scanner. If you need to move it, ask a staff member to help you.
- Do not look directly into the scanner's light.

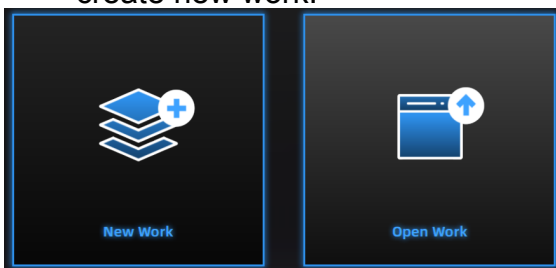
3. Your First Scan

3a. Getting Started

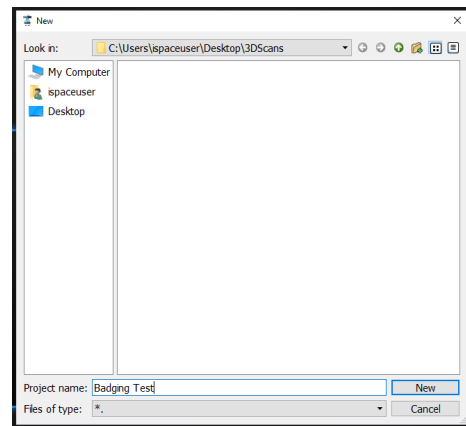
1. Make sure the 3d scanner is powered on.
2. Open the ExScan Software and select EinScan SP on startup.



3. After the scan initializes, you can choose to open an existing work, or create a new work. Select create new work.



4. Create a new folder in the 3D Scans Desktop folder.

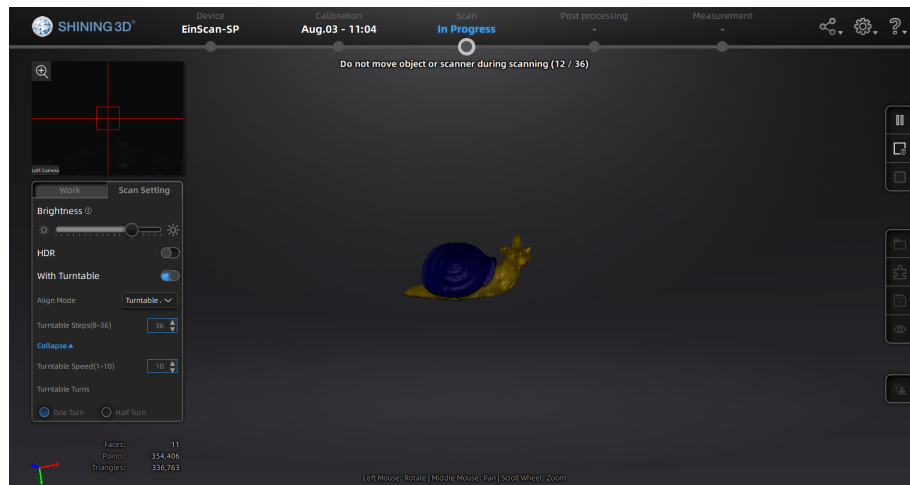


5. Choose texture scan or non texture scan, then click apply.

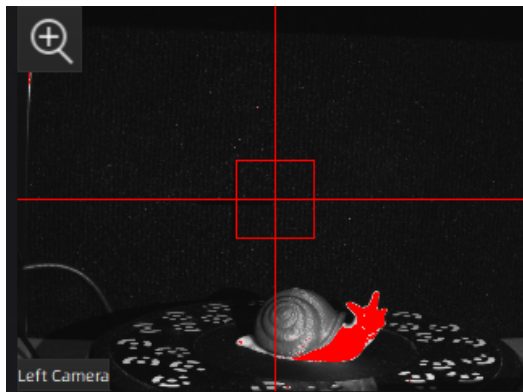
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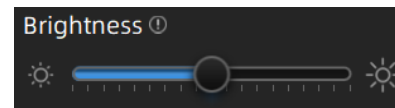
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3b. Scan Interface



1. **Camera Monitor-** The Camera Monitor allows you to see your object through the scanner head.



2. **Brightness-** Adjust the brightness slider until your object appears red in the Camera Monitor.

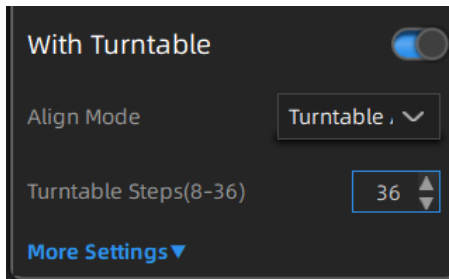


3. **HDR-** Turn HDR on to capture contrasting textures. Your scan will take longer if HDR is on.

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4. **With Turntable-** Make sure the turntable is turned on. Without it, your object will only scan from one angle.
 - a. **Turntable Align Mode-** Make sure this is set to Turntable Align.

- b. **Turntable Steps-** This setting adjusts how many rotations the turntable will make, up to a maximum of 36. More rotations will result in a higher quality scan, but will take longer.
- c. **More Settings-** Allows you to further adjust settings including speed and turns.

3c. Scanning Controls

These controls are available while the scanner is scanning.

1.  **Start Scan-** Press to begin your scan after placing your object on the turntable.
2.  **Pause Scan-** Pauses your scan
3.  **Stop and Delete-** Stops your scan and deletes the data.










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3d. Post Scan Controls

These controls are available for use after your scan is complete.

1.  **Deselect-** Deselects selection.
2.  **Revert-** Reverts your scan to the previous version. This is most useful when attempting to combine scans unsuccessfully.
3.  **Delete Selected Data-** Deletes your currently selected data.
4.  **Delete Data-** Deletes the data from your most recent scan.
5.  **Show/Hide Texture-** Toggles the texture of your scan on and off.
6.  **Apply Edit-** Applies the scan.
7.  **Cancel Edit-** Canceles the scan.




3e. Continue Scanning/Global Optimization Controls

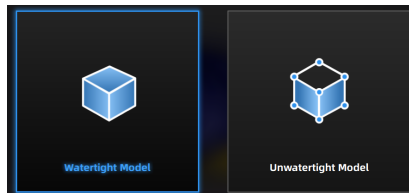
1.  **Global Optimization-** Before you scan can be meshed, it must first be globally optimized. Globally Optimizing your data cleans up and optimizes your scan.
2.  **Project-** Opens the project folder.
3.  **Align-** Allows you to combine data from multiple scans into a single mesh.

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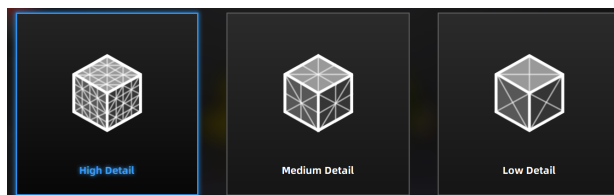
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4.  **Save-** Saves your scan.
5.  **Show/Hide Texture-** Toggles texture on and off.
6.  **Mesh Model-** Only available after globally optimizing your scan. Meshing the model completes your model by connecting the scanned points. There are two ways to mesh your model, watertight and unwatertight.



- a. **Watertight Model-** The Watertight model setting will fill in any blank spots in the data. **This is the model type to use for 3D printing.**
- b. **Unwatertight Model-** This model type leaves any blank holes in your scan.



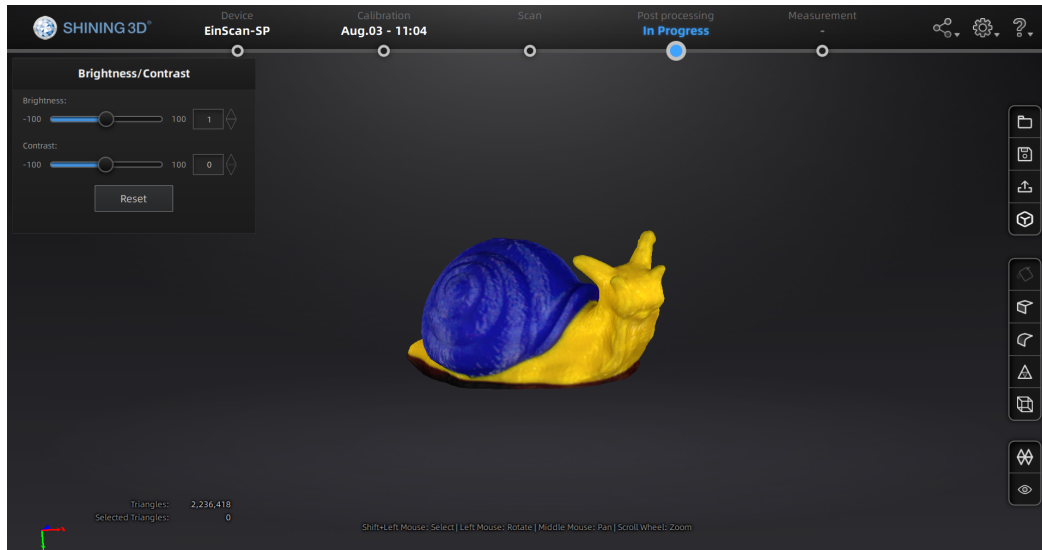
- c. **Choose Mesh Detail-** There are three types of mesh detail: high, medium and low. Choose whichever one best suits your project. The Software will then mesh your scan.

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

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3f. Post Processing Interface








1. Post Processing Controls

- a.  **Open File-** Opens a file of an existing 3D scan.
- b.  **Save-** Saves your meshed scan as an .stl, .obj, .ply, or .3mf.
- c.  **Share your Scan-** Press to upload your scan to sketchfab after logging into your account.
- d.  **Third Party Software-** Allows you to export to Geomagic or Solid Edge.
- e.  **Hole filling-** Hole filling will fill in the gaps in un watertight models.
- f.  **Sharpen-** Allows you to sharpen your scan, improving clarity.

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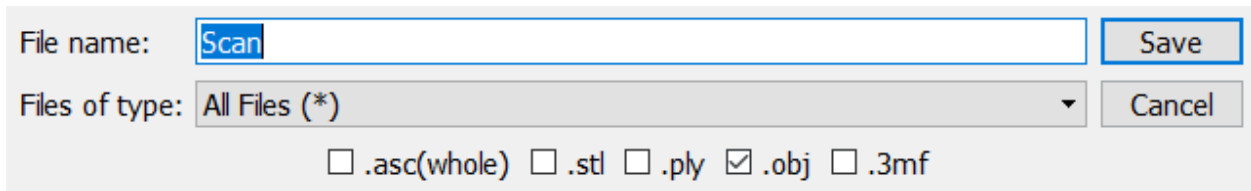
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- g.  **Smooth**- Smooths your scan.
- h.  **Simplification**- Simplifies the data, reducing the number of polygons and file size.
- i.  **Multiview**- Click to see viewing shortcuts
- j.  **Texture Remapping**- Allows you to optimize texture layout.
- k.  **Show/Hide Texture**- Toggle to turn texture on or off.

4. Exporting your Scan

To export your final scan, press the save button in the post processing interface. You'll be directed to save your scan, and you can select your file type at the bottom of the menu. Once your scan is saved you can import it to other 3D modeling and printing programs.



File name:

Files of type:

☐ .asc(whole) ☐ .stl ☐ .ply ☒ .obj ☐ .3mf

5. Sign the MakerLab Agreement

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6. Receive the 3D Scanner badge

Congratulations! You are now ready to operate the Einscan SP 3D Scanner independently and to demonstrate the functions of the scanner to MakerLab visitors!

Learn More on Your Own

3D SCANNER SOFTWARE

- Edit your model with Meshmixer: <https://www.meshmixer.com/>
- [How to scan your model with EinScan SP](#)
- [EinScan SP FAQ](#)
- [EinScan SP Community Page](#)