CREALITY CR-SCAN RAPTOR 3D Scanner User Manual

CREALITY CR-SCAN RAPTOR 3D Scanner

Contents

About the Scanner

CR-Scan Raptor is a 3D scanner with metrology-grade accuracy, with a maximum accuracy of 0.02mm. Using a blue parallel 7-line laser and a 2.3-megapixel high-resolution camera for scanning, it produces richer details, sharper edges, and restores the 3D shape of the object accurately. Using all-glass lenses with large depth of field and low distortion, from coins or bolts to large objects (5mm-2000mm) can be scanned easily. All-metal lens barrel and lens base bring better mechanical stability and thermal stability In addition, it also incorporates infrared structured light technology, which can achieve marker-free point scanning and can scan faces, human bodies, cultural relics and other objects.

It has high precision, wide adaptability, low dependence on powder spraying, and can directly scan many black and metal objects. Unlike other industrial-grade line laser 3D scanners, it can also obtain the full-color texture of the object surface. With 12 white LED supplemental lights, it can obtain clear textures even in dark light environments.

Optimized grip and lightweight design (372g) can effectively reduce fatigue during long-term scanning. Mechanical buttons avoid accidental touch. Friendly interactive indicator lights make operation easier.
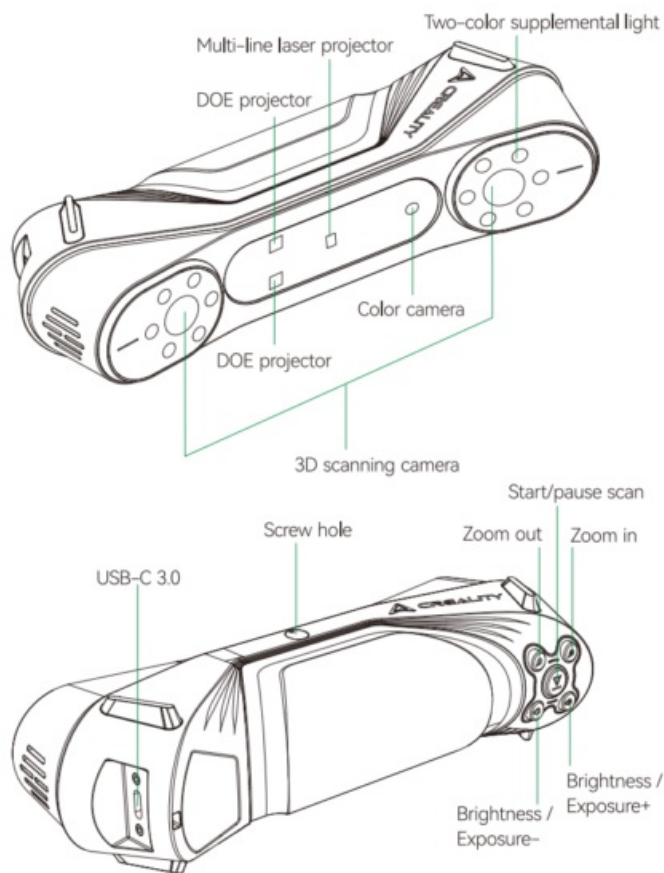
⚠️ Since the 3D scanner is a high-precision device, please handle it with care and store it properly. Avoid collisions or drops to prevent a decrease in accuracy or damage.

Product Specifications

Scanning Mode	CR-Scan Raptor		3D imaging camera resolution	1920×1200	Data interface		USB-C/USB3.
Technical Principle	Blue Light (Blue 7-line laser)	NIR (infrared binocular structured light)	Device Dimensions	215mm x 50mm x 74mm	Calibration board		High-precision glass calibration board
Accuracy	Up to 0.02mm @ 100mm [1]	Up to 0.1mm	Device Weight	372g	Wireless Scanning		Supported in conjunction with future wireless scanning accessories
3D Resection	0.02-2mm	0.1-2mm	Color Supplemental Light	12 white LEDs			
Scanning Speed	Up to 6Dfps	Up to 20fps	Market Recognition Enhancement	12 Blue LEDs	System Support		Windows/macOS
Min. s:anning volume	5mm x 5mm x 5mm	150mm x 150mm x 150mm	Laser Safety	Class I (eye safe)	Operating temperature		-1 0″C to 40°C
Single Capture Range	270mm x 170mm@300mm	930mmx580mm@1000mm	Button	Mechanical	Operating humidity		0-90%RH
Wooing distance	150mm-400mm	170mm-1000mm	IMU	Yes	1. Accuracy is evaluated in laboratory conditions (measurement object is 100mm sphere pair) and actual results may be affected by operating environments such as temperature. vibration, and other factors.		
Color Mapprig	Yes	Yes	Output format	OBJ/STL/PLY			
Alignment mode	Marker	Marker / geometry / texture	Input Power	12V=2A			

Product Information

Equipment overview

Multi-line laser projector
DOE projector
Two-color supplemental light
Color camera
DOE projector
3D scanning camera

USB-C 3.0
Screw hole
Zoom out
Start/pause scan
Zoom in
Brightness / Exposure+
Brightness / Exposure-

Button instructions

Button	Scanner feedback	LED indicator feedback
▷|	Press once to start scanning; press again to pause scanning; press and hold for at least 3 seconds to end scanning.	The middle LED indicator flashes once
(light +)	Short press once to increase the Brightness/ exposure time of the 3D scanning camera by one level;	/
(light -)	Short press once, the 3D scanning camera Brightness/ exposure time will be reduced by one level;	/
(zoom +)	Short press once, the 3D model will zoom in one level;	/
(zoom -)	Short press once to zoom out the 3D model by one level;	/

LED indicator instructions

| LED indicator color	Status or meaning	Reference color
Green always on	The device is operating normally or the scanning distance is moderate	
Red and flashing	The device is in an abnormal status	
Yellow and flashing	The device is in an upgrading status	
Orange-red always on	The scanning distance is too close	
Orange always on	The scanning distance is close	
Light blue always on	The scanning distance is far	
Dark blue always on	The scanning distance is too far	

- When the distance LED indicator starts flashing during scanning, it indicates that scan tracking is lost. The scanner needs to return to the previously scanned area to backtrack and continue scanning.
- When the device is on standby, the LED indicator will enter a breathing state to save power.

Packing List

- CR-Scan Raptor 3D scanner
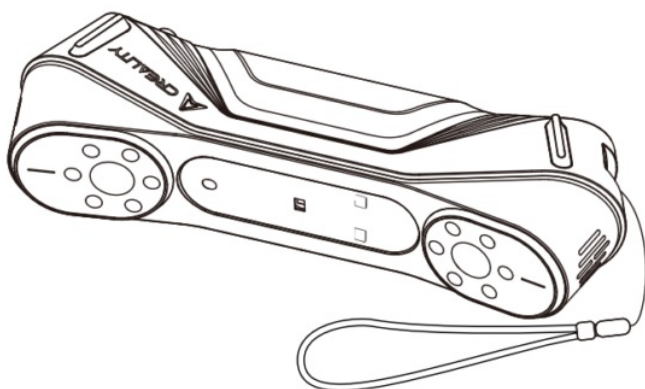
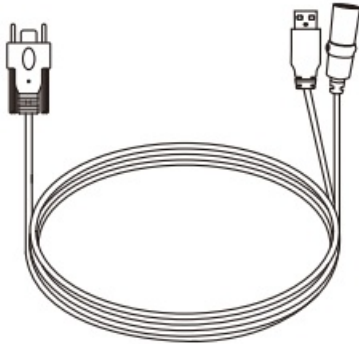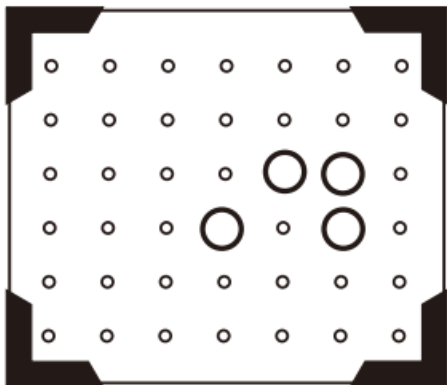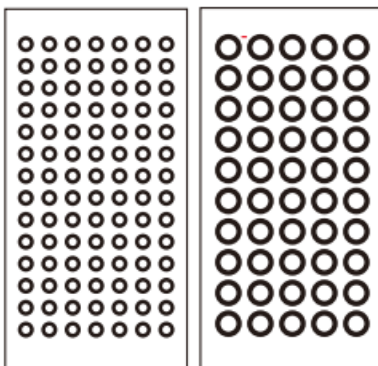- Power adaptor with international converter
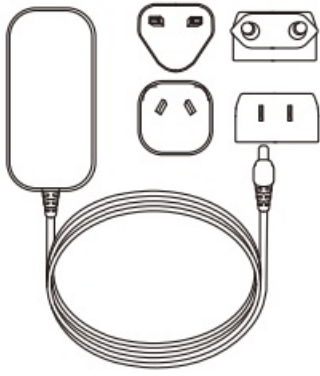
- USB3.0 data cable (USB-C/USB-A)

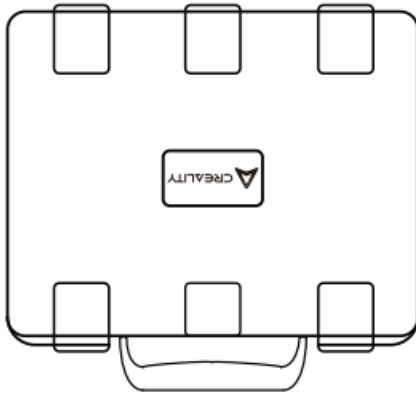- High-precision glass calibration board

- Reflective marker points (D6mm*2, D3mm*5)
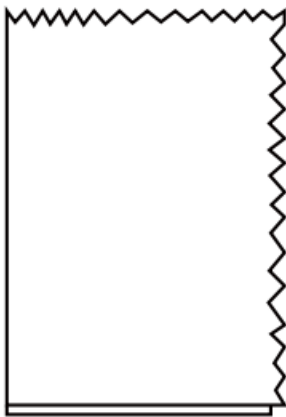

- Scanning pad (requires random application of 3mm markers for use)

- Portable case

- Type-C converter

- Cleaning cloth

Product Manual
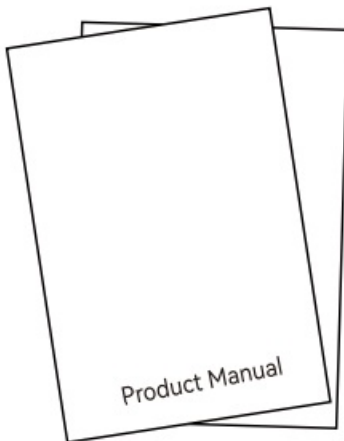
- Quick Operation Guide, Compliance Certificate & Warranty Card

Device Connection

Adapter installation and connection

Users can select the appropriate converter according to their location standards, then press the converter lock and push the selected converter upward until a click is heard. The specific operation is as shown below:
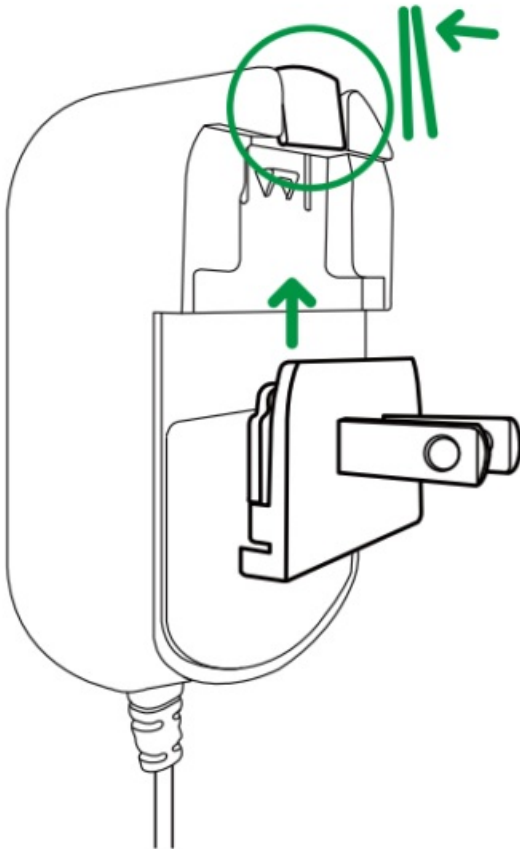
Device connection

1. Insert the USB-C interface of the data cable into the device and tighten the thumb screws;
2. Connect the DC power cord female end of the data cable to the DC male end of the adapter;
3. Plug the adapter into the power outlet;
4. Plug the USB-A interface of the data cable into the USB3.0 interface of the computer; The specific operations are as shown below:
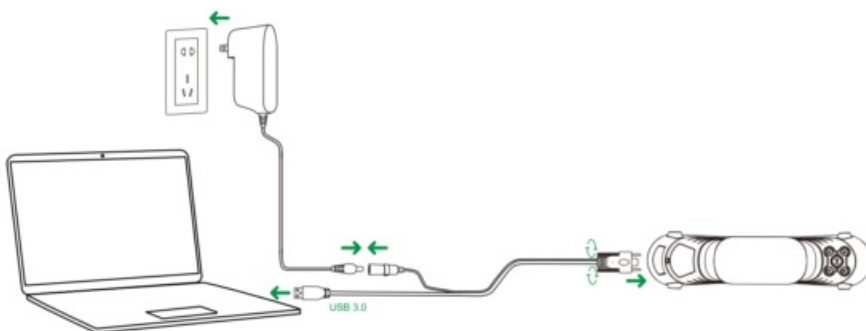
Note on use

When using the device, wear the lanyard around your wrist (as shown on the right) to prevent the device from falling and causing damage as shown right.
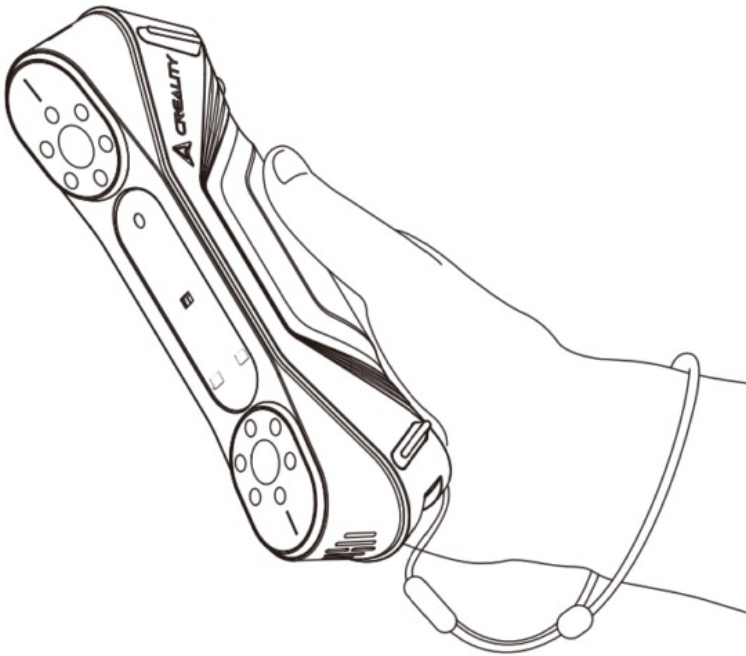
Creality Scan Software System Operation

Requirements of Creality Scan Software System

System requirements: Windows 10/11 (64 bit) Configuration requirements
Recommended configuration: i7-Gen7 CPU. Nvidia graphics card (6GB VRAM), 16GB memory or higher
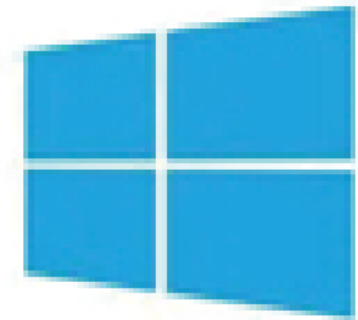
Recommended configuration

macOS: 11.7.7 and above (Big Sur/Monterey Nentura)
CPU: Apple M1/M2/M3 series processors;
RAM: 16GB or higher

Creality Scan software download and installation

Download link for Creality 3D Scanner Software: **wiki.creality.com** Go to **wiki.creality.com** . click on [Software] -> [Creality Scan] to download the Creality scanning software and install it. Please ensure that the software version is 3.1.6 or higher to ensure the normal operation of the scanner.
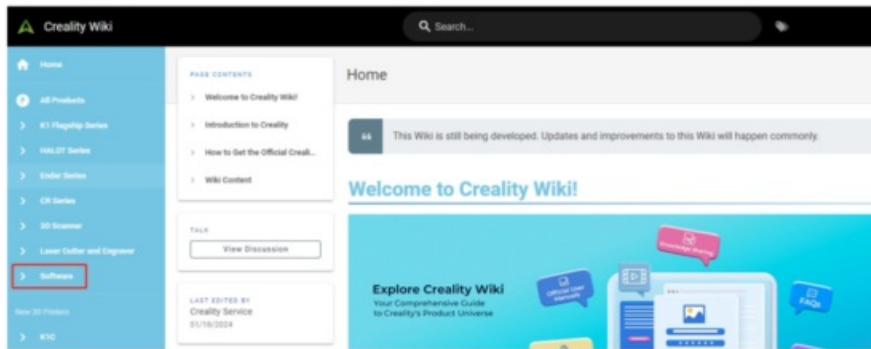
Note: After installing the Creality Scan software on MAC, please authorize the software to read and write files to optimize point clouds and generate models when using the software.

First Scan

1. Connect the device and launch Creality Scan software.

2. Click [New Scan] in the Creality Scan, as shown on the right:
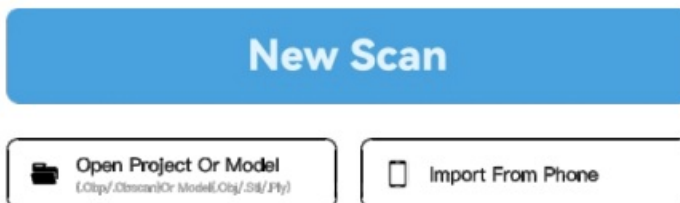
3. Enter the project name in the pop-up bar, select the folder path, and then click the [OK] button, as shown on the right

4. Enter "Model name", select "Folder path", and select the scanning mode and related configuration items according to the characteristics of the scanning object. Finally, click the [Scan] button to enter the scan preview interface, as shown on the right:

CONFIGURATION

Model name : Project 20240311100057

Folder path : E:\Project\PCl3.1.3\CrealityScan\projects

Blue–light | Infrared

The smaller the resolution setting, the better the scanning details, but it requires more memory.
Please attach reflective markers on the surface.

- **Size** ⊕ ——————————————— 0.15
- **Color Mapping** ⊕ ☐ Yes ☑ No
- **Turntable** ☐ Yes ☑ No

Scan

⚠️ **Caution**

1. If you need to scan objects with high precision, please select blue light mode (multi-line laser). In this case, marker point assistance is needed.
   When the object is small, reflective marker points can be attached to the desktop or scanning pad, and there is no need to attach marker points to the surface of the object. If you want to scan the other side of the object, please use the multi-project stitching function of Creality Scan software to stitch the point clouds of multiple scans into a complete model.
   When the object is large, the marker points need to be attached to the surface of the object.
2. Select "No" in blue light mode, the fineness will be higher than "Yes".
3. The smaller the point distance, the more refined the scanned model will be, but it will consume more memory and may also affect the scanning frame rate.
4. Infrared mode can be used to scan faces, human bodies and other objects without marker points. Infrared scanning also supports texture mode and marker point mode scanning.
   To learn more about the CR-Scan Raptor, please visit: **https://wiki.creality.com/3d-scanner**
   The reference configuration of blue light mode is as follows:

CONFIGURATION

Model name : Project 20240311100057

Folder path : E:\Project\PCI3.1.3\CrealityScan\projects

| Blue-light | Infrared |

The smaller the resolution setting, the better the scanning details, but it requires more memory.
Please attach reflective markers on the surface.

⬢ Size ⓘ   ▬──────────── 0.15

🌢 Color Mapping ⓘ   ☐ Yes   ☑ No

◉ Turntable   ☐ Yes   ☑ No

Scan

The reference configuration of infrared mode is as follows:

CONFIGURATION

Model name : Project 20240311100057

Folder path : E:\Project\PCI3.1.3\CrealityScan\projects

| Blue-light | Infrared |

◈ Object ⓘ   ☑ Normal   ☐ Face   ☐ Body

⬢ Size ⓘ   ☐ Large   ☑ Middle   ☐ Small

◖ Feature ⓘ   ☑ Geometry   ☐ Texture

H Accuracy ⓘ   ☑ Hi-Quality

🌢 Color Mapping ⓘ   ☑ Yes

◉ Turntable   ☐ Yes   ☑ No

Scan

5. Adjust the scanner and the scanned test piece to the appropriate distance, that is, when the scanner LED indicator is green (as shown on the right), or when the distance indicator bar on the software interface is optimal, it means the best scanning distance.

   Adjust the camera exposure time and laser brightness to an appropriate level, ensuring that the markers and laser are bright enough but not overexposed.

   For beginners, the software's automatic mode can be used. As users become more proficient, we recommend manual adjustment.
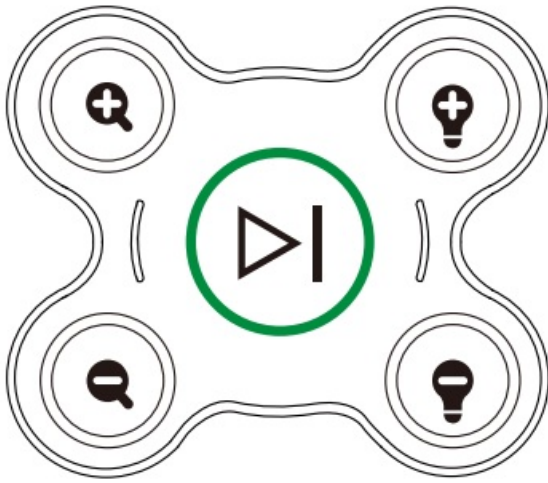
6. Press the ⊳| button on the scanner, or click the ▶ button on the software interface, keep the scanner pointed at the object to be scanned and start scanning.
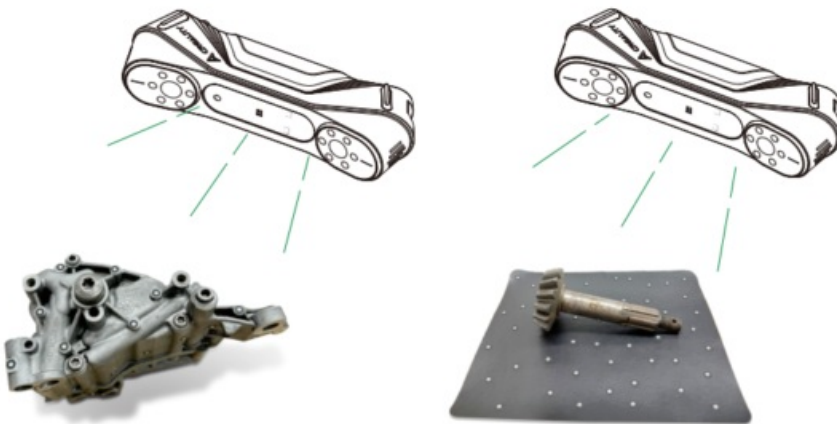
7. Use the scanner to scan the object 360°. When the scan is completed, press and hold ⊳| on the scanner for more than 3 seconds, or click ■ on the software interface to complete the scan and perform post-processing in the Creality Scan software to obtain a complete 3D model (it is recommended that the point distance be set to 0.1 mm). The result is as shown on the right:

Note: The above key operations can also be operated in the Creality Scan software. For specific software operations, please visit: **https://wiki.creality.com/en/3d-scanner**

FAQs

1. **How to achieve better model details?**
    1. The blue light mode is more precise than the infrared mode;
    2. Adjust the exposure time of the IR camera during scanning to ensure moderate exposure. Overexposure is shown as red, while underexposure is shown as blue. in blue light mode, you also need to adjust the

appropriate laser intensity;

3. Try to maintain the optimal scanning distance. Generally, the closer the scanner is to the object without losing tracking, the better the details.

4. During point cloud optimization, use a smaller point distance; when the object size is small, the point distance can be set to 0.1 mm;

5. When meshing, ensure that the number of model faces is sufficiently large.

   For more scanning tips, please visit **https://wiki.creality.com/en/3d-scanner**

2. **How to scan the bottom of an object?**

   1. Creality Scan software provides a multi-project merging feature, allowing you to obtain the complete model of an object through multiple scans and merging;

   2. First scan the visible part to obtain a partial model, then flip the object and continue scanning by backtracking to obtain a complete model (this method is only applicable when the marker points are attached to the surface of the object).

3. **When do I need a scanning pad?**

   When scanning smaller objects (such as small parts, small figures, etc.), you can put marker points on the scanning pad and scan in marker point mode.

4. **When do I need to use marker point mode?**

   Blue light mode requires reflective marker points;

   Infrared mode: When the surface of the object does not have rich geometric features, you can stick reflective marker points on the surface of the object and scan in marker point mode.

5. **When do I need to use texture mode?**

   When the surface of an object does not have rich geometric features but has rich textures (such as a vase), you can scan it directly in texture mode.

6. **When calibration is required?**

   It needs to be calibrated when it is not being used for a long time (such as 3 months) or when the device experiences a collision.

7. **Can I use calibration boards from other models of scanners?**

   Each calibration card is unique and corresponds to each scanner They cannot be swapped. When using a calibration board for the first time, it needs to be scanned once to bind to the scanner using the QR code on the back. Otherwise, it may affect calibration accuracy.

8. **What should be noted when storing calibration boards?**

   After each use, please carefully return the calibration board to its box for proper storage. Avoid contamination, scratching, or heavy pressure on the calibration board to prevent loss or damage.

9. **How to perform calibration?**

   Connect the scanner to the computer, open the Creality Scan software, go to the [Device] interface, click on [Calibration], and perform calibration by following the animated instructions.

Troubleshooting

- **Windows system computer cannot connect to the scanner;**

  If using a desktop computer, it is recommended to connect to the USB 3.0 port on the back of the main unit (USB 3.0 and above ports are usually blue or red);

  Confirm that the system used is Windows 10/11 64-bit;

  The entire installation path for the scanner software Creality Scan must be in English.

- **What to do if the preview video stream is not visible in the application on the Windows system;**

  Check whether the computer configuration meets the minimum configuration requirements of the scanner;

  Please make sure to use the provided power adapter and make sure it is connected properly;

  Open the Windows Device Manager and check if there is a "CR-Scan Raptor. .. " under "Cameras";

  Open Windows Settings-Privacy-Camera, confirm whether the system camera permission is enabled, and ensure that desktop applications have permission to access the camera.

- **What to do if the preview video is not visible in the application on the Mac system?**

  Check whether the computer configuration meets the minimum configuration requirements of the scanner;

  Please make sure to use the provided power adapter and make sure it is connected properly;

  Update the scanner to the latest firmware version;

  Use a separate USB Type A to Thunderbolt or USB3 adapter. Avoid using multi-functional, multi-device USB-C adapter;

  Install CrealityScan directly in the App directory. Do not install it in a subdirectory under the App directory.

- **How to deal with USB 3.0 interface being recognized as USB 2.0 in the Windows system?**

  You can try to quickly re-insert the USB cable, or first connect the USB cable to the USB 3.0 interface on the PC, and then connect it to the USB-C interface of the scanner.

For more questions, please refer to the Creality wiki: **https://wiki.creality.com/en/3d-scanner**

CUSTOMER SUPPORT

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Company Address: 18th Floor, JinXiuHongDu Building, Mei long Road,
Xinniu Community, Minzhi Street, Longhua District, Shenzhen City, China.
Facebook Community Discussion, sharing, and troubleshooting

Creality wiki The step-by-step guide to help you get started

Documents / Resources

CREALITY CR-SCAN RAPTOR 3D Scanner [pdf] User Manual
CR-SCAN RAPTOR 3D Scanner, CR-SCAN RAPTOR, 3D Scanner, Scanner

References

- **User Manual**