OdinViewer v0.1.1

Windows Host Software User Manual

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Chapter 1: What You Need Before You Start

Before using OdinViewer, please confirm the following items and conditions are ready:

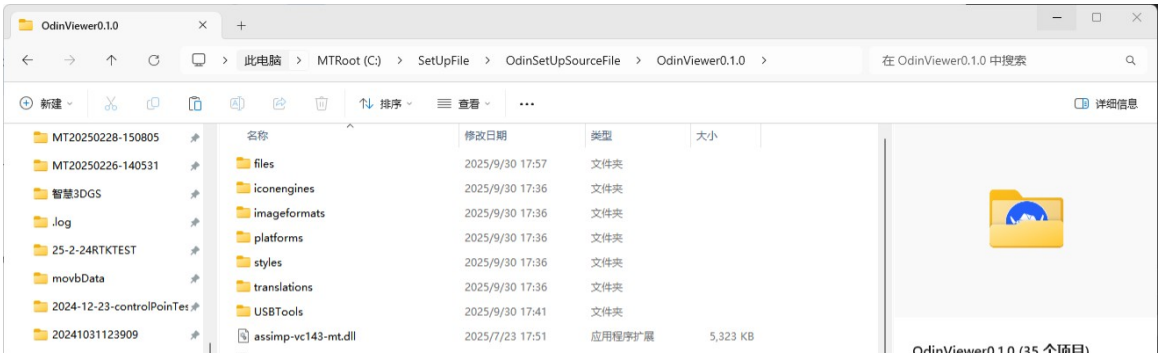
Hardware Checklist

No.	Item	Description
1	Odin1 Main Unit	
2	USB Data Cable	USB 3.0 data cable included with the device
3	Power Cable + Adapter	Aviation connector power cable (included) + DC adapter (not included; DC5521/5524, 12V 2A or above)
4	Windows PC	Windows 10 or Windows 11; discrete GPU recommended; 8 GB RAM or more

[Note] Odin1 does not include a power adapter. Please purchase one separately. Requirements: DC5521 or DC5524 connector, 12V output, 2A or above. The device supports 9~24V wide voltage input.

Software Preparation

OdinViewer does not require installation — just unzip and run. Make sure you have the OdinViewer package and have extracted it to any location on your PC.



Chapter 2: First-Time Setup: Install USB Driver (One-time only)

Odin1 communicates with the PC via USB. The first time you use it on a PC, you need to install a driver using a tool called Zadig. You will not need to repeat this on the same PC.

Full steps:

Step 1: Power on Odin1

- Connect the aviation connector end of the power cable to the power port on the back of Odin1.
- Connect the other end to your DC power adapter, then plug it into a power outlet.
- After powering on, Odin1's indicator light will turn on, indicating the device is booted.

Step 2: Connect Odin1 to PC via USB

- Insert one end of the USB cable into the USB port on Odin1.
- Insert the other end into the USB port on your PC.

[Tip] A USB 3.0 port (usually blue) is recommended. USB 2.0 also works.

Step 3: Open the Zadig Driver Installation Tool

- Navigate to your extracted OdinViewer folder.
- Find and open the USBTools folder.
- Double-click to run zadig-2.9.exe.

Step 4: Find the Odin1 Device in Zadig

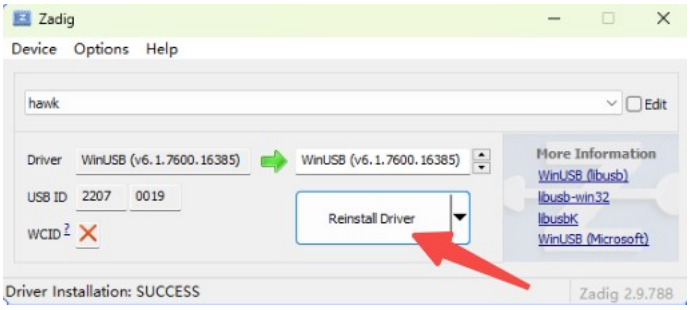
- After Zadig opens, you will see a drop-down menu.
- Find the device named hawk in the drop-down list (this is Odin1).

[Note] If you cannot find hawk, check: (1) Is Odin1 powered on? (2) Is the USB cable connected? (3) Try a different USB port.

Step 5: Confirm Driver Info and Install

- After selecting hawk, confirm the following:
- USB ID shows: 2207 0019 (this is Odin1's device ID).
- Click Install Driver or Reinstall Driver.
- Wait for installation to complete. The bottom will show: Driver Installation: SUCCESS.

[Tip] Installation takes about 10~30 seconds. Once done, close Zadig. You will not need to repeat this on this PC.



Chapter 3: Launch OdinViewer

Step 1: Find OdinViewer.exe

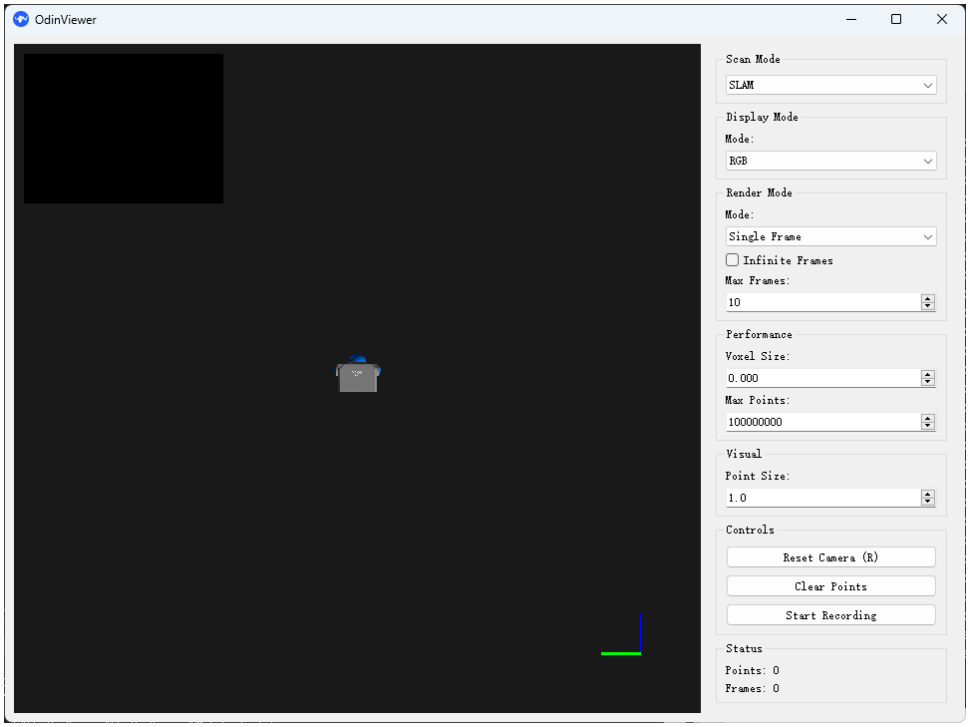
- Navigate to your extracted OdinViewer folder.
- Find OdinViewer.exe.
- Double-click to run it.

OdinViewer.exe

Step 2: The software interface after launch

Once the software opens, you will see the following layout:

- Top-left: Live camera preview.
- Center: Black background — the 3D point cloud display area.
- Bottom-right: Coordinate axis indicator — helps you orient the 3D view.
- Right panel: Parameter controls — the core control area (see Chapter 5).
- Bottom status bar: Shows Points (current point count) and Frames (current frame count).



[Tip] The small top-left preview window can be clicked to expand to the main view, and clicked again to switch back.

Chapter 4: Connecting Odin1

Ensure all the following conditions are met; the device will connect automatically:

Check Item	Status
Odin1 is powered on	Device indicator light is on
USB cable is connected	USB cable firmly connected on both ends (device + PC)
USB driver is installed	Zadig driver installed as described in Chapter 2

Once all conditions are met, OdinViewer will automatically detect Odin1. Please wait a moment; you will see:

- The top-left camera preview window shows a live image.
- The center 3D area begins displaying colored point cloud data.
- The Points counter at the bottom starts increasing.

[Tip] If no image appears after a long wait, refer to Chapter 7 'Troubleshooting'.

Chapter 5: Software Interface Overview

The OdinViewer right panel has 11 controls from top to bottom, explained below.

1. Scan Mode

Item	Description
What it does	Selects the sensor data source mode.
SLAM	接收并显示彩色点云（适合环境重建、彩色可视化）
DTOF	接收并显示强度点云（适合仅看强度信息）

[Tip] After switching modes, it is recommended to pair it with the corresponding Display Mode (SLAM -> RGB, DTOF -> Intensity).

2. Display Mode

Item	Description
What it does	Determines how the point cloud is colored
RGB	使用图像颜色渲染点云（彩色）
Intensity	使用雷达强度渲染（灰度）
Label	按帧或类别着色（调试/分帧观察）

3. Render Mode

Item	Description
What it does	Determines how many frames are displayed
Single Frame	Displays only the latest frame
Accumulated	Accumulates multiple frames

[Tip] For real-time preview, choose Single Frame; to build a map and see the full scene, choose Accumulated.

4. Infinite Frames

This is a checkbox. It only applies in Accumulated mode.

- Checked: Accumulate frames indefinitely without limit. New frames will keep being added to the scene.

- Unchecked: Stop accumulating when the Max Frames limit is reached (see Max Frames below).

[Note] With Infinite Frames enabled, memory and VRAM usage will grow over time.

5. Max Frames

In Accumulated mode with Infinite Frames unchecked, this sets the maximum number of frames to accumulate.

- Smaller value: Sparser 3D scene, lower PC load.
- Larger value: More complete 3D scene, higher PC load.

[Tip] Recommended: 110~200, adjust based on the scene.

6. Voxel Size

Voxel grid downsampling size (meters)

- Set to 0.000: No downsampling, all points retained.
- Larger value: More downsampling applied.

Use Case	Recommended Value
General indoor browsing	0.01 ~ 0.03
Outdoor or large scenes	0.02 ~ 0.05

7. Max Points

Limits the maximum number of points displayed on screen. New points will not be added once this limit is reached.

- Smaller value: Saves resources, but sparser display.
- Larger value: More complete display, but higher memory/VRAM usage.

8. Point Size

Controls the display size (in pixels) of each point.

- 1.0: Default.
- 2.0~3.0: Larger points, clearer at long distances.
- Too small: Hard to see; too large: Obscures details.

[Tip] Recommended: 1.0~3.0.

9. Reset Camera (R)

Click this button (or press R on keyboard) to reset the 3D view to the default position.

10. Clear Points

Click to clear all accumulated point cloud data. The display becomes empty and starts fresh.

- Use this when switching to a new scene.
- Use this after adjusting parameters to see the result from scratch.

11. Start Recording

Click to start recording data; click again to stop.

- Start: Creates a new session directory and writes data.
- Stop: Ends writing and converts <exe>/files/recv/calib.yaml to <record root>/image/cam_in_ex.txt (for post-processing).
- Storage path (default): <program directory>/recordData/<timestamp>/

[Tip] Recording increases disk and CPU load. Set Scan Mode to SLAM before recording.

[Note] Scan Mode MUST be set to SLAM before Start Recording. Other panel buttons and values do not affect stored data quality.

3D View Mouse Controls

Action	Effect
Hold left mouse button and drag	Rotate 3D view
Scroll mouse wheel	Zoom in/out the 3D scene
Hold right mouse button and drag	Pan view (move left/right/up/down)

六、Chapter 6: Common Workflow Suggestions

1. Single Frame Browsing (view details)

- Render Mode: Single Frame
- Display Mode: Match to data source (SLAM -> RGB, DTOF -> Intensity)
- Voxel Size: 0.0 or 0.01
- Max Points: Moderate (e.g. 2,000,000)

2. Accumulated Mapping (view full scene)

- Render Mode: Accumulated
- Infinite Frames: Enable as needed; or set Max Frames = 50~200
- Voxel Size: 0.02~0.05 (improves frame rate)
- Max Points: 5,000,000~10,000,000 (depends on GPU)
- Clear Points: Clear and re-accumulate when changing scenes or parameters

3. Recording and Playback Preparation

- Click Start Recording after confirming settings
- Click Stop when done; cam_in_ex.txt will be generated automatically
- If lagging during recording: increase Voxel Size, decrease Max Points, or disable Infinite Frames

Chapter 7: Troubleshooting

Issue 1: Black screen after opening software, no point cloud

Check the following in order:

Check Item	Solution
Is the device powered on?	Check power cable; confirm indicator light is on
Is the USB cable connected?	Check both ends; try a different USB port
Is the USB driver installed?	Refer to Chapter 2 to reinstall the Zadig driver
Check if Scan Mode matches the data source	(SLAM/DTOF)
Check if Display Mode matches the data	(RGB/Intensity)

Issue 2: Laggy display / low frame rate

Try the following adjustments in order:

- Increase Voxel Size
- Decrease Max Points
- Decrease Max Frames
- Switch to Single Frame mode.
- Stop Recording

Issue 3: Pressing R key does not reset the camera

This is because keyboard focus is not on the 3D view. Solution:

- First click on the central 3D black area with your mouse.
- Then press R on the keyboard.

Issue 4: Cannot find hawk device in Zadig

- Confirm Odin1 is powered on and connected via USB.
- In Zadig menu bar, click Options > List All Devices.
- Look for hawk in the drop-down menu again.
- If still not found, try a different USB port or re-plug the USB cable.
- Try restarting the PC and try again.

Issue 5: Insufficient power causing USB speed downgrade

If Odin1 is connected via USB 3.0 but operating at USB 2.0 speed, it may be due to insufficient power.

- Use a higher-wattage power adapter (12V 2A or above recommended).
- Avoid using USB hubs; connect directly to a motherboard USB port.
- Try a different USB cable.

Appendix: Glossary

Term	Plain Explanation
Voxel	The 3D equivalent of a pixel. Voxel downsampling keeps one representative point per cube.
Frame	One complete scan snapshot. Odin1 generates multiple frames per second.
Accumulated	Overlays multiple frames. Like stitching multiple photos into a panorama.

Technical Support

If you encounter issues not covered in this manual, please contact MANIFOLD Technology support and provide:

- Device S/N (found on the label at the bottom of the device).
- Detailed description and screenshots of the issue.