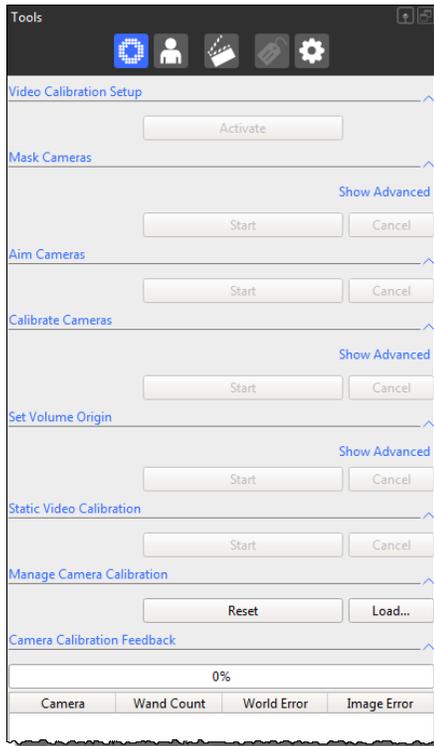


# Calibrate Vicon cameras

To calibrate Vicon cameras, you use the relevant sections of the **System Preparation Tools** pane.



To perform a camera calibration, you need a Vicon calibration device, which is supplied with your Vicon system. Note that, to use the following process to calibrate supported digital video cameras, as well as optical cameras, you must use an Active Wand, which must be set to Strobe mode. (If you are not using an Active Wand, you can calibrate any supported video cameras using the legacy **Static Video Calibration** section of the **System Preparation Tools** pane. For more information, contact Vicon Support.)

Camera calibration describes the capture volume to the system, enabling Nexus to produce accurate 3D data. During camera calibration, Vicon Nexus creates a calibration parameters (.xcp) file. This file contains the calibration settings and threshold data specified for the Vicon cameras (as well as any supported video cameras) in your Nexus system and is used when data from these cameras is processed.



## Important

Vicon recommends that you calibrate your Vicon cameras each day before you capture any data. This ensures that any unexpected changes in your setup that may have occurred when the system was unsupervised (such as someone accidentally knocking a camera slightly out of position) will not influence the quality of your data. You can perform the level of camera calibration that suits your requirements: a full camera calibration or a calibration refinement.

## To calibrate Vicon cameras in Nexus:

1. Ensure you have aimed and masked the cameras (see [Aim Vicon cameras](#) and [Mask unwanted reflections](#)).
2. Remove from the capture volume all markers and the sources of any unwanted reflections that have not been accounted for by camera masks previously created in a **Camera** view.
3. In the **Resources** pane, ensure Nexus is in Live mode.
4. Display a **Camera** view.
5. In the **System Resources** tree, expand the **Vicon Cameras** node and select all Vicon cameras.
6. In the **System Preparation Tools** pane , expand **Calibrate Cameras** and from the **Wand** list, select the calibration device that you are using.
7. If your Vicon system includes video cameras, in the **Video Calibration Setup** section, click **Activate** to start video calibration mode. If your system does not include video cameras, go straight to the next step.  
If you have not already saved the current configuration, you will be prompted to save it. Ensure its name is recognizable as a calibration and then choose whether it will be **Shared** or **Private** (see [Manage configurations in Vicon Nexus](#)).



## Tip

The settings for some video camera properties may differ in video calibration setup mode from those in live capture mode. For these properties, any changes made after you click **Activate** only apply during video calibration setup mode. The properties revert to their live capture settings after you click **Deactivate**.

8. In the **Calibrate Cameras** section, view or change settings for the required parameters:
  - a. Select the appropriate **Calibration Type: Full Calibration** or **Calibration Refinement**.

**Tip**

If you have not already calibrated all cameras, you cannot perform a calibration with the **Calibration Refinement** option. For more information on calibration refinement, see [Understand camera calibration refinement](#) in the *Vicon Nexus Reference Guide*.

- b. To automatically stop calibration when sufficient information has been acquired, ensure **Auto Stop** is selected.
9. In the **Calibrate Cameras** section, click **Start**. The camera calibration process starts, and the **Start** button switches to its **Stop** setting.
10. In the capture volume, wave the calibration wand throughout the area where you intend to capture 3D data, ensuring that the markers on the calibration object are visible to the cameras. Vicon Nexus begins to capture wand wave data.
11. Monitor the calibration progress and status:
  - In each **Camera** view, ensuring that the colored lines that identify wand frames indicate that sufficient wand frames are spread across the intended 3D capture volume. Also check the colored triangle in the lower right of each view pane. The triangles change from red to green as the collection of calibration information progresses, and then vanish when the cameras are calibrated.

**Tip**

If no cameras are visible in the **Camera** view, ensure that the **Show Uncalibrated Cameras** option is selected in the **Camera Positions** section of the **Options** dialog box (press F7). Also, if you are not using the Vicon Control app, you may find it helpful to display the Nexus window on a large screen where the person in the capture volume can see the feedback in the **Camera** view while they are waving the calibration wand, so they can see the area that they have covered.

- In the **System Preparation Tools** pane, under the **Camera Calibration Feedback** section check **Wand Count** values returned for each camera.
  - On the strobe unit on the front of each camera, the status light flashes while the camera registers valid frames where the whole wand is visible. When the status light turns a solid green, the camera has collected enough data to be calibrated successfully, usually 1,000 frames of valid wand data.
12. If **Auto Stop** was not selected, in the **Calibrate Cameras** section, click **Stop**. Nexus starts processing the calibration information. If you selected the **Auto Stop** option, Nexus automatically stops collecting calibration information and starts processing it when sufficient calibration information has been acquired.

Note that, for a system that includes video cameras, calibration is done in two passes, so the **Camera Calibration Feedback** bar progresses from 0% to 100% twice.
  13. In the **Camera Calibration Feedback** section, monitor the progress bar until the camera calibration process is complete and review the **Wand Count** and **Image Error** data. As a general guideline, Nexus typically takes 15–60 seconds to complete its calculations for a typical Vicon system setup, but this can take longer for a very large system or low-specification PC. When the camera calibration has successfully completed, it is automatically saved to an *.xcp* file. For more information on the controls in this section, see [Camera Calibration Feedback section](#) in the *Vicon Nexus Reference Guide*.

**Tip**

Because calibration feedback values are based on factors such as the size of the capture volume and the camera lens type, it is not possible to provide general guidelines on typical or acceptable ranges. Therefore, to determine the optimal values for your Vicon system, shortly after the system is installed, establish a baseline against which you can compare future daily calibration values.

14. If you have calibrated video cameras, to exit video calibration mode and return to your settings for live captures, click **Deactivate** in the **Video Calibration Setup** section.

When you have finished calibrating the Vicon cameras, you are ready to [Set the volume origin](#).