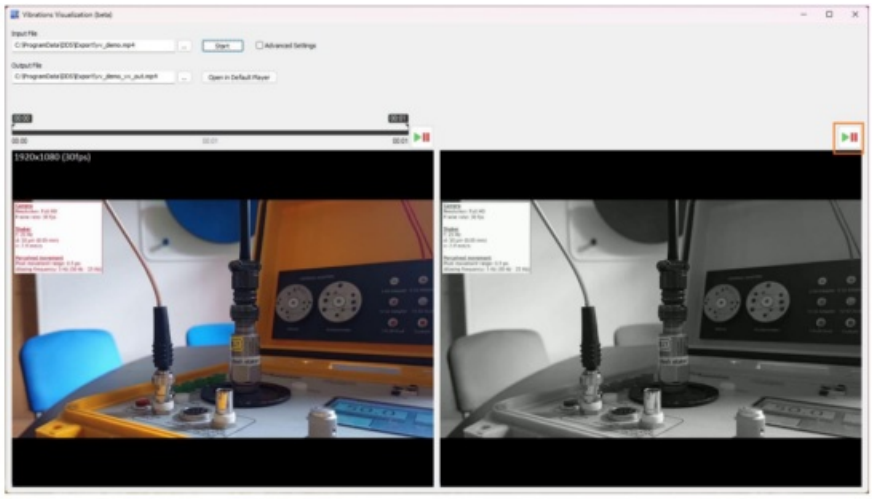
Adash DDS Software User Manual

USER MANUAL
Vibration visualization



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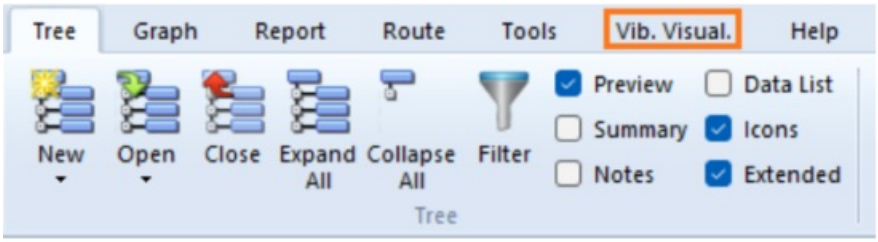
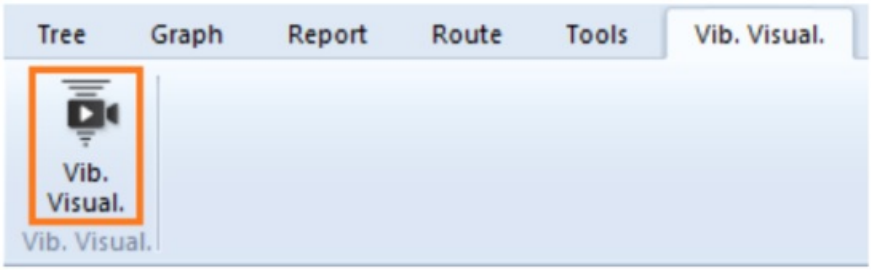
Vibration visualization

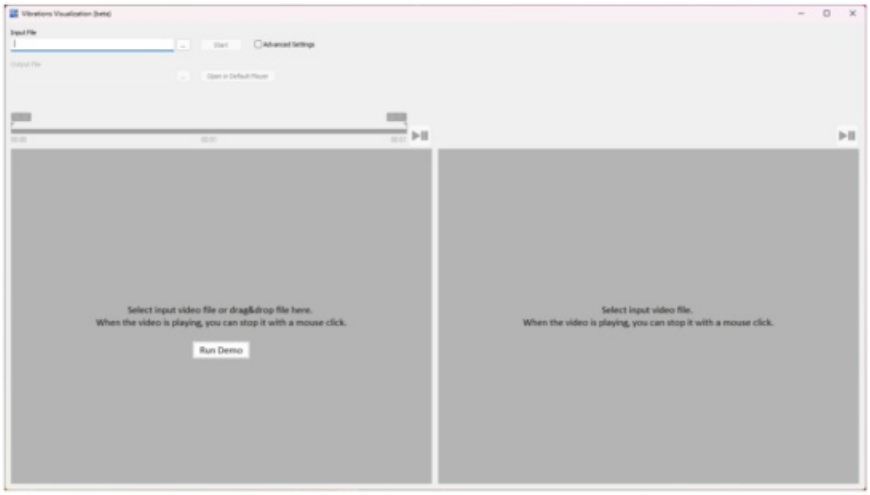
Vibration Visualization is used to show the vibrations of a machine in a video recording. The Vibration Visualization tab is located in the Main Menu.



Vib. Visual. section

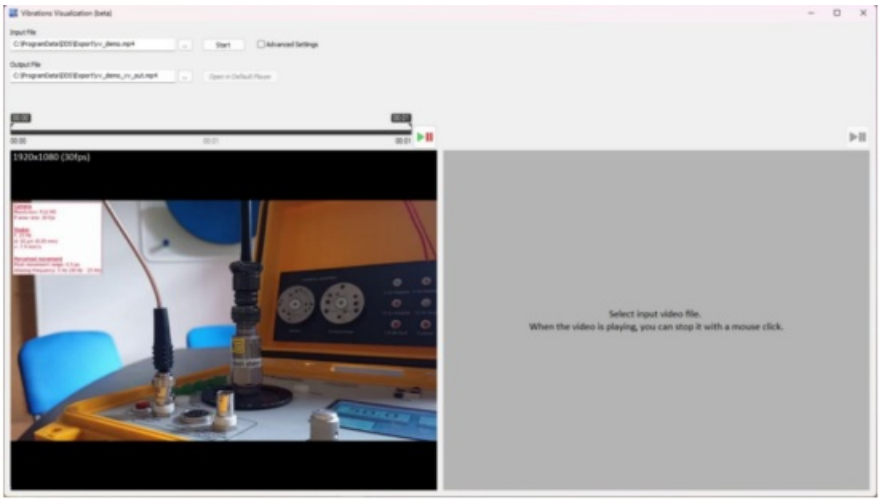


Click the Vib. Visualization icon in the section to open the Vibration Visualization window:

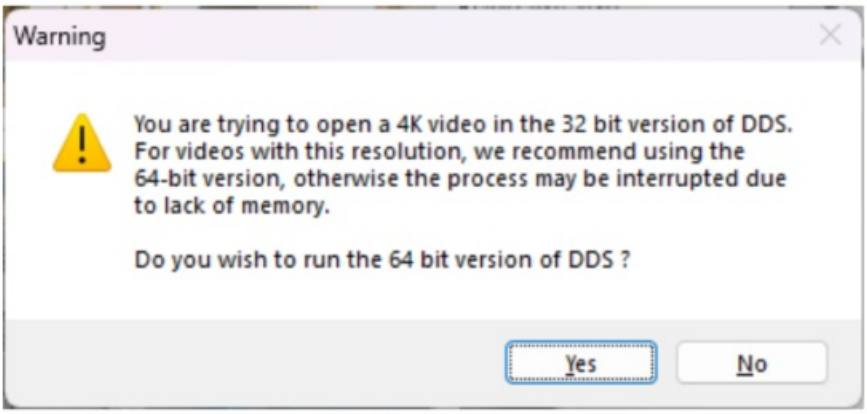


Drag and drop a video file anywhere in the left panel or enter a path to the file manually:

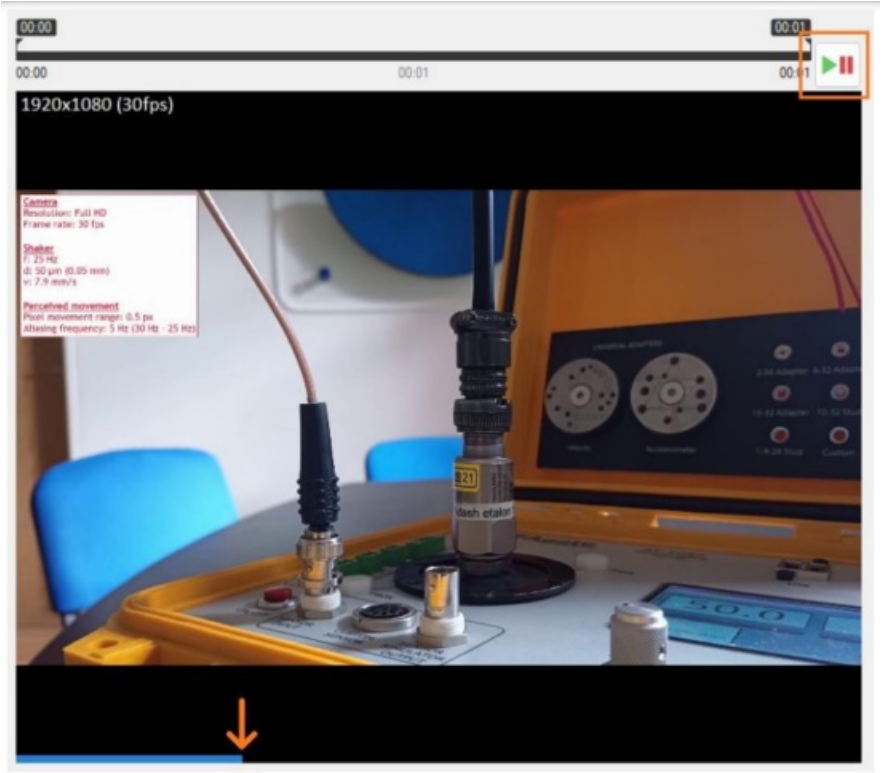
DDS includes a demo video for vibration visualization. The Run Demo button in the middle of the left panel opens it.



Selecting a video or opening the demo will display it in the left panel. If you are using the 32bit version of DDS and try to open a high-resolution video, this warning will appear:

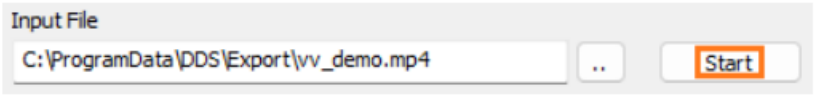


Just click Yes and run the 64-bit version of DDS.
The video is played or paused by clicking anywhere in the left panel or by clicking the Play/Stop button. The blue bar at the bottom indicates the video is playing. It will be played in a loop.

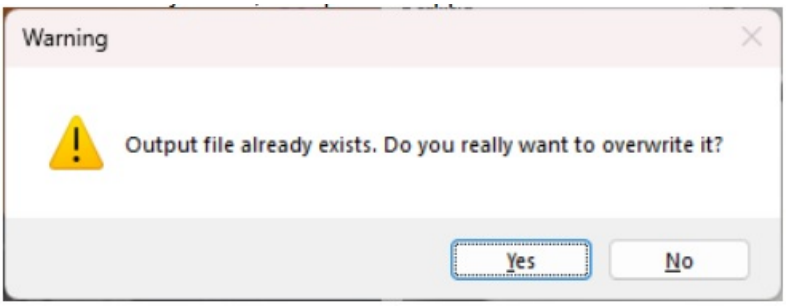


For longer videos, the length of the output video can be manually adjusted by dragging the markers to the desired position. They indicate which part of the input video will be used for vibration visualization.

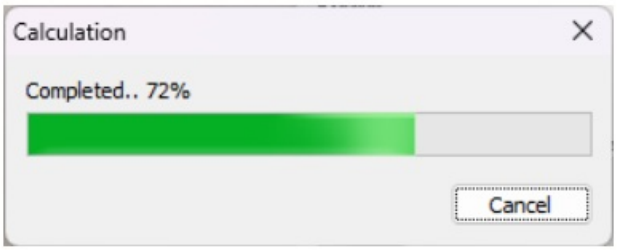
The Vibration Visualization process is then initialized by clicking the Start button in the upper part of the Vibration Visualization window.



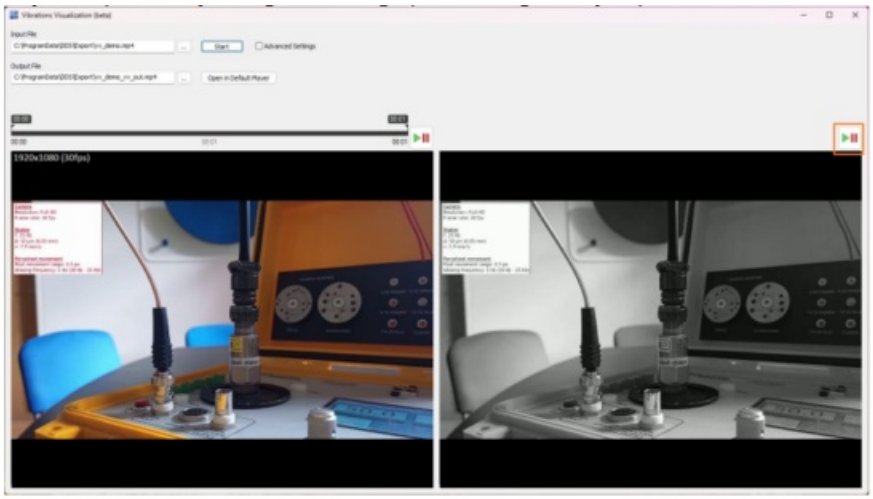
The output file has the suffix _vv_out in its filename. The default location is the same as for the input video. If the output video already exists, this question appears:



When started, a window will pop up showing the progress of the vibration visualization.



Play the output video by clicking at it in the right panel or using the Play/Stop button above it:



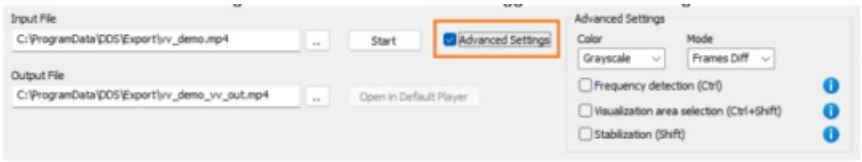
You can also play it in your system's default player:

Four steps for best results in vibration visualization:

1. Make sure the camera is stable (use a tripod or a stand that is placed on a solid, non-vibrating surface).
2. Provide adequate lighting: Reduces noise.
3. The better the recording device, the better the visualization result.
4. Additional image stabilization if needed (use DDS stabilization or third-party stabilization software before loading the video into Vibration Visualization).

Advanced settings

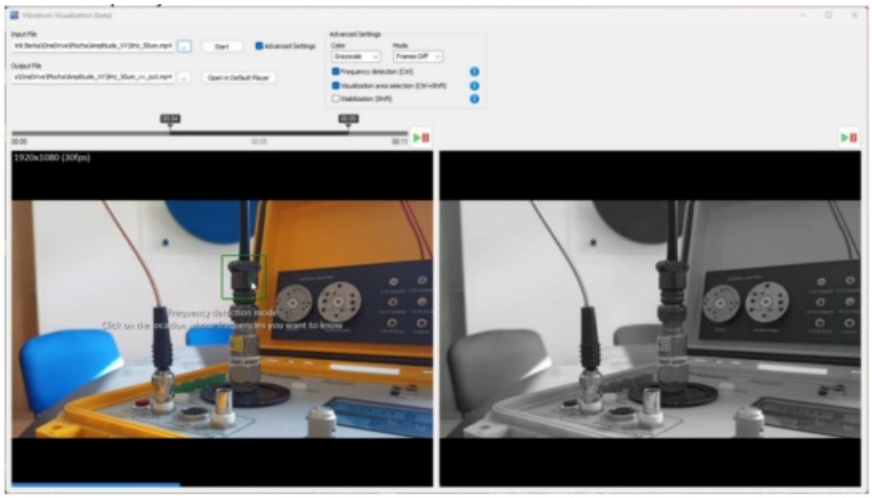
DDS offers additional settings for Vibration Visualization. Toggle Advanced Settings to show them:



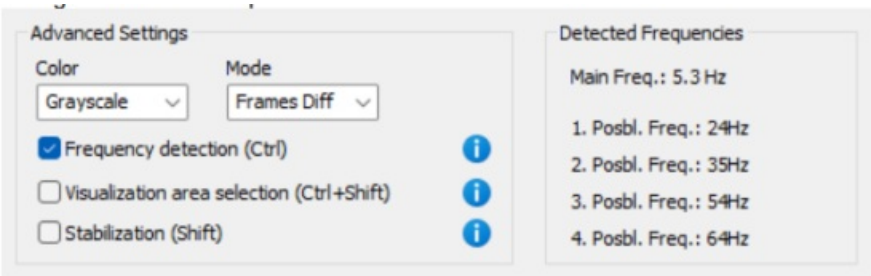
- The default colors of the output video are in grayscale. Vibration Visualization may produce a colored video if chosen.
- Mode defines how the vibrations are visualized. Frames Diff calculates difference between consecutive frames. Max Diff looks for two nearby frames with the highest difference between then.

Frequency detection

This option allows detection of vibration frequency from movement. Toggle it on, hold down Ctrl and click on the area where you want to detect the frequency. It should be an area with high vibrations.
The video must contain at least 64 frames for Frequency detection to work. Green square marks the area for Frequency detection.

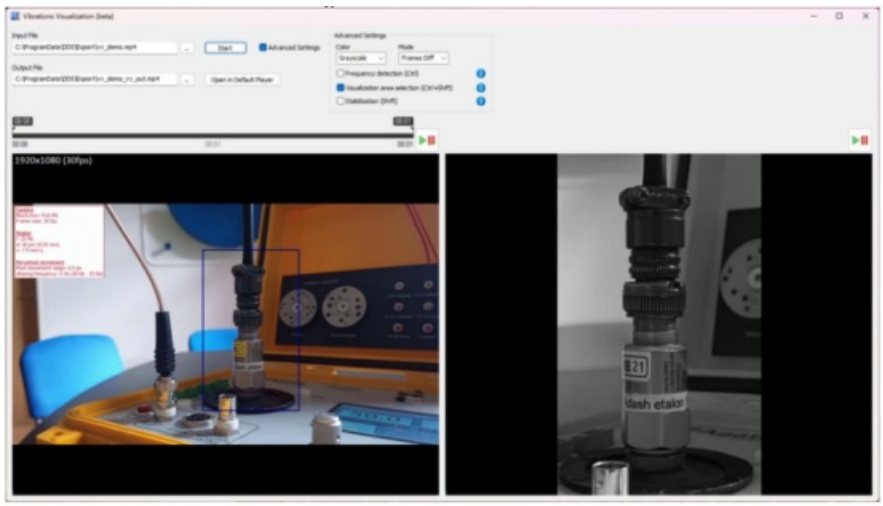


After processing, Detected Frequencies appear next to Advanced Settings. Main Freq. is found in the spectrum. Machine vibrations are often quicker than the usual video frame rate. Main Freq. may therefore be shown only due to aliasing. Actual vibration frequency may be a lot higher. It is listed below in a range of Possible Frequencies.



Visualization area selection

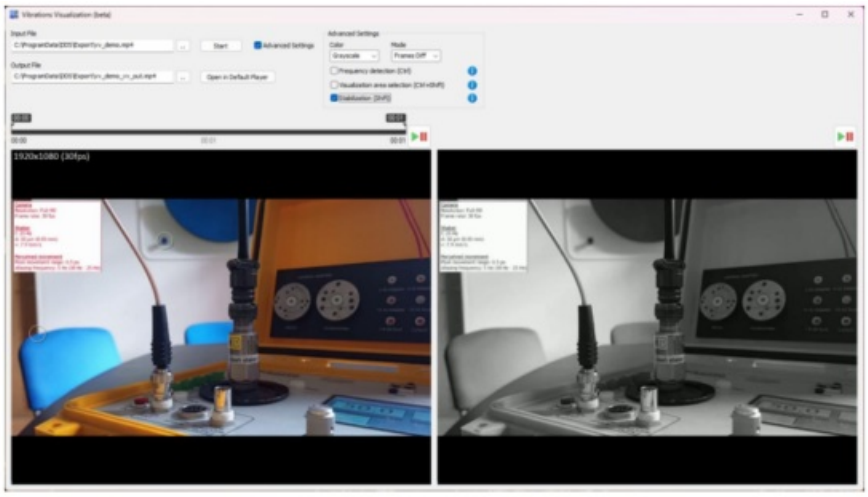
Only a small area of the video may be chosen for Vibration Visualization. This is advisable for long or high-resolution videos. Toggle Visualization area selection and hold down Ctrl and Shift. Then use the mouse to select the area. Blue rectangle marks it.



DDS Stabilization

If the provided input video is not stable enough, Vibration Visualization offers an optional built-in stabilizer. To stabilize the input video, toggle Stabilization on.
Hold down Shift and click on the input video to select a point. Click the same point again to deselect it.
Up to four points may be chosen. If no points are selected, no stabilization will be applied. The selected point(s) represent non-moving, non-vibrating objects in the real scene captured by the camera (usually walls, floor, roof,

windows, pillars…). Selected points are displayed as white circles:



Points can be selected while the video is playing, but they will be selected from the first frame. Stabilization finds where these points will be in every other frame and transforms next frames to keep the selected points in the same position. Stabilization applies a transformation to each frame of the video so that the selected points become motionless. If only one point is selected, Stabilization moves each video frame vertically and horizontally. If two points are selected, frames may also be rotated and zoomed. If three out of four points are selected, the frames may be more distorted.

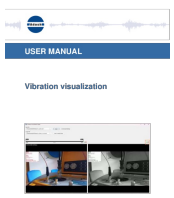
For these reasons, three conditions must be met for the Stabilizer to work:

1. The points must be in high-contrast areas, such as corners.
2. One point should be far away from another.
3. Three or more points must not be in a straight line.

Camera and computer hardware requirements

1. Camera fps rate must not be equal to the vibration frequency. If it was equal, vibrations would not be visible because the vibrating machine parts would be in the same position in every frame.
2. Resolution of the recording should be at least Full HD.
3. Processor speed at least 1.44 GHz. The higher the speed, the less time it takes Vibration Visualization to process the video. Slower processor will still work, but it will take long.

Documents / Resources

	Adash DDS Software [pdf] User Manual DDS Software, DDS, Software

References

- User Manual

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