



J. J. Keller & Associates, Inc.

Dashcam Viewer

USER'S MANUAL

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Welcome to Dashcam Viewer!

Dashcam Viewer is a Windows application for viewing movies, GPS data, and G-force data recorded by your **HD Dash Cam 50106** dashboard camera. With Dashcam Viewer you can play your videos on the main screen while watching your vehicle's speed, distance, position, bearing, and G-sensor data update on graphs, data displays, and maps. You can geotag key points in your route for later review, and export your route to common file formats such as comma-separated value (CSV) and GPS-exchange (GPX), or Google Earth (KML), for further data analysis. Read on to learn more of Dashcam Viewer's extensive capabilities.



Dashcam Viewer's player window, dashboard display, speed graph, map route, and control panel

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FEATURES

- Resizable main viewing screen.
- Zoomable and translatable movie view.
- Heads-up display of current date, time, speed, distance, position, and bearing.
- Geotag key points in your route, title them, and jump to these points instantly.
- Save geotags to a text file. Import geotags back into Dashcam Viewer.
- See a listing of all movie files you load and hide files that are not of interest.
- “Real time” display of vehicle’s location, speed, and route on a Google/Mapquest Map.
- Map pans automatically to keep vehicle centered, or you can keep map fixed.
- Click on vehicle’s map route to jump to that position in movie.
- Click on vehicle’s Graph trace to jump to that position in movie.
- Graphical displays of speed, distance, bearing, and X, Y, Z shock sensor data.
- Auto-scaling of graph data.
- Graph’s data traces are color-coded based on vehicle speed.
- Compass display of vehicle’s direction.
- Weather display widget for retrieving weather conditions at the location and date of the currently-playing movie.
- Automatic transition between sequential movie files.
- Optionally skip the first n seconds of consecutive movies during playback.
- Variable playback speed control.
- Jump to fastest part of route, or to any loaded movie file instantly.
- Slider controls for direct access to any movie file or any position in a movie file.
- User-configurable instant replay button
- Navigation buttons to jump ahead or back by one or ten movie files.
- Display of current movie file name, duration, frame rate, and file size.
- Drag and drop loading of movie directories.
- Export movie segments of user-selectable duration.
- GPS data export to CSV, GPX, and KML file formats.
- Export current movie window to PNG or JPG file.
- Merge multiple sequential movies into a single large video.
- Support for per-movie display settings and graph units.
- Click to reveal currently-playing movie in Explorer.
- Support for km/h or mph units.
- Support for timezone biasing to sync movies and data.
- Keyboard and mouse shortcuts.
- Controls for movie brightness and contrast.
- Support for internet connection via proxy server.
- Multiple language support. Choose from: English, Chinese, Dutch, French, German, Hungarian, Italian, Spanish, Russian, and Turkish.

DASHCAM COMPATIBILITY

Dashcam Viewer is compatible with the J. J. Keller & Associates, Inc. model 50106 dashcam.

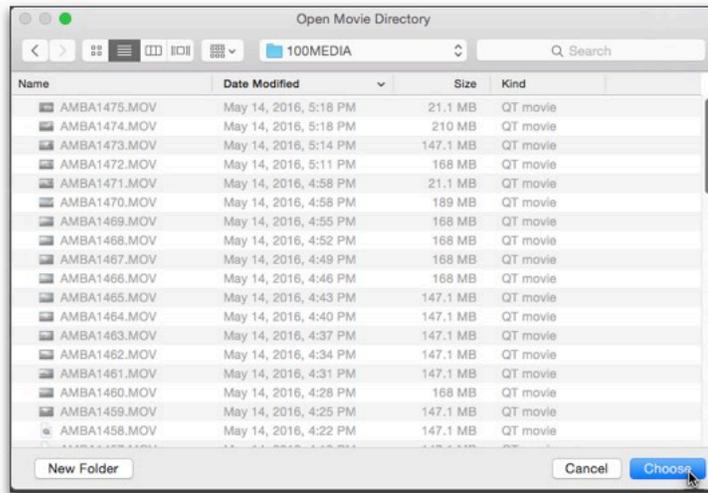
SYSTEM REQUIREMENTS

- Windows 10 recommended but Dashcam Viewer may also work under Windows 7 and 8 but these are not recommended.
- Intel i7 processor with nVidia or AMD graphics card recommended, although it may run on lower-end systems
- 1600x1200 or higher screen resolution recommended
- Internet connection for Mapquest/Google Maps functionality

QUICK START GUIDE

Running Dashcam Viewer takes just a few simple steps:

1. Be sure your dashcam's internal clock is set to the correct time zone for your area. DV relies on the file creation timestamps to sync the movie to the GPS data so this setting is important. If your camera's time zone has not been set correctly or if you are viewing videos and GPS data from someone outside your time zone, the time bias can be compensated for. See the Preferences and FAQ sections below on time zone biasing.
2. For best performance, copy the contents of your dashcam's SD card to your computer's hard drive. Alternatively, if your PC has a built-in SD card slot, insert your SD card directly into your computer. As a fallback you can insert your dashcam's SD card into a USB card reader attached to your PC, but this may result in video stuttering or poor performance if your USB bus is not fast enough.
3. Run Dashcam Viewer and load your movie files. You load movies by either selecting individual movie files or by selecting the movie files' parent folder. You can load them in three ways:
 - a. Select the *Open Movie Folder...* option from the menu or toolbar. Navigate to your SD card's movie folder. On the 50106's SD card the movie folder is called NORMAL.



Choosing the media folder

- b. Drag and drop your SD card's movie folder or individual movie files into a gray area of the Dashcam Viewer's main window.
 - c. Select the *Open Movie Files...* from the menu or toolbar. Navigate to your movie folder and select the individual movie files you want to play.
4. **That's it!** Dashcam Viewer will begin playing the first movie in the folder or in the list of movies that was selected. By default files are loaded according to file modification date (this can be changed to *name ordering* in the Preferences). When Dashcam Viewer reaches the end of the movie it will jump to the next movie in the list and continue playing. It will do this until all movies have been played. Keep reading to learn more about Dashcam Viewer's features and options.



Dashcam Viewer running under Windows 10

FEATURES AND CONTROLS

After loading a series of movies, there are a number of features you can use. These are described below.

MAIN VIEWER WINDOW



1. SELECT MOVIE FOLDER

Click this button to load a new folder of movies into Dashcam Viewer.

Tip: You can drag a movie folder into the gray area of the window to load the movie folder.

2. SELECT MOVIE FILES

Use this button to load one or more individual movie files from a folder.

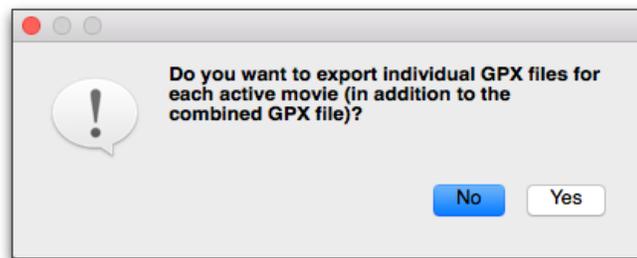
Tip: You can drag a movie files into the gray area of the window to load them.

3. EXPORT ALL GPS TRACK DATA TO CSV FILE

Select this option to export all of the GPS track data to a comma-separated-value file. You can then load this file into Excel or a text editor for further examination.

4. EXPORT GPS TRACK DATA TO GPX FILE(S)

Select this option to export your dashcam's navigation data to GPX files. Dashcam Viewer will export the entire route as a single GPX file. You will also have the option to export each movie's individual GPS data to separate GPX files. The files will be named based on the movie names.



Click Yes to create individual GPX files for each movie segment, as well as a large GPX file for the entire route. Click No to create just the large GPX file for the entire route.

Since Dashcam Viewer *reads* GPX files too, the single-file export feature can be used to load the GPS data back *into* Dashcam Viewer. Since GPX files placed inside the movie directory are loaded ahead of the embedded GPS data in the movie, you can use this method to 'override' the GPS data for a given movie. This allows you to filter out bad data or insert corrected GPS information into Dashcam Viewer.

GPX files are not just for use in Dashcam Viewer. They are a formal data-exchange format and used by a number of software programs and [websites](#)¹.

5. EXPORT ALL GPS TRACK DATA TO GOOGLE EARTH KML FILE

Select this option to export all of the track information to a Google Earth KML file. You can then load this file into Google Earth to see your vehicle's position over time.

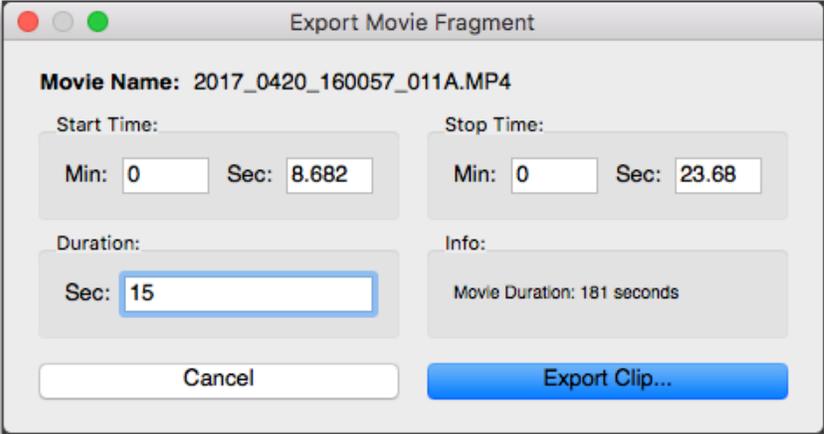
6. EXPORT VIEWER WINDOW TO JPG OR PNG IMAGE FILE ON DESKTOP

Click this button to take a screenshot of the main window. The image file will be written to the desktop with the movie filename, latitude, longitude, and time-of-movie embedded in the filename. For example, "AMBA1412.MOV_33.639860,-117.973782@0m1.25s.png".

¹ Example: <http://gpsvisualizer.com>

7. EXPORT A PORTION OF THE CURRENT MOVIE TO A SEPARATE MOVIE FILE.

Use this feature to export a fragment of a movie to a separate movie file. When you click this button you will be asked to enter the start time, duration, and/or stop time for the movie fragment. By default, the start time is the current point in the movie. You cannot extend the duration beyond the end of the current clip. Note that the GPS data will not be preserved.

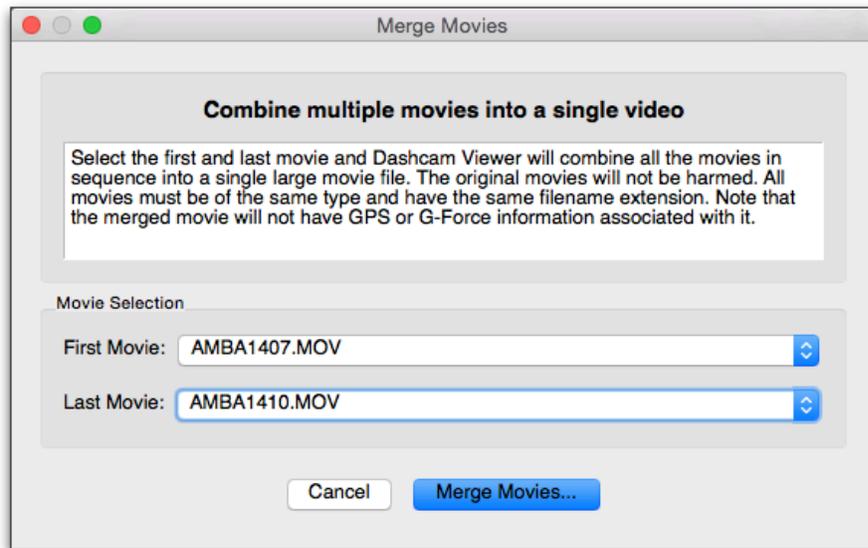


The screenshot shows a dialog box titled "Export Movie Fragment". At the top, it displays the "Movie Name: 2017_0420_160057_011A.MP4". Below this, there are two columns of input fields. The left column is for "Start Time:" with "Min:" set to 0 and "Sec:" set to 8.682. The right column is for "Stop Time:" with "Min:" set to 0 and "Sec:" set to 23.68. Below the start time fields is a "Duration:" section with a "Sec:" input field containing the value 15. To the right of the duration field is an "Info:" section that displays "Movie Duration: 181 seconds". At the bottom of the dialog, there are two buttons: a white "Cancel" button on the left and a blue "Export Clip..." button on the right.

After clicking the Export Movie button you enter the start time and duration for the new movie.

8. MERGE MULTIPLE MOVIES INTO A SINGLE LARGE VIDEO

By clicking the Merge button you can combine multiple movies into a single large movie file. In addition, Dashcam Viewer will create a GPX file containing the GPS data from the selected movies. Since the GPX file will have the same base name as the combined movie file, you can load the movie file back into Dashcam Viewer and the GPX file will be detected and loaded as well. This can be useful for consolidating or organizing routes.

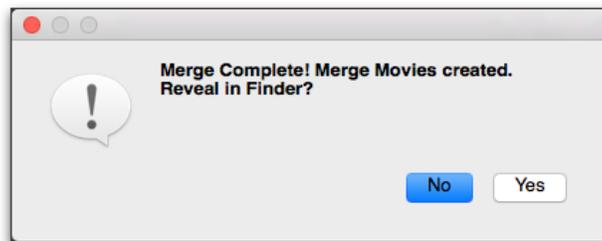


Merge Movies window

Select the first movie and the last movie. Only movies that are *enabled* in the Control Center Window will be available for merging. Movies that are disabled will not be a part of the merged movie, nor will their GPS data be exported.

Click the **Merge Movies...** button and enter the destination for the combined movie.

Dashcam Viewer will use ffmpeg to combine all the movies between your first and last selections into a single big movie. There will be no loss in video quality so make sure your movie destination has enough space to hold the entire merged video. Also, make sure there are no quotes or commas in the source movie files' path. Upon completion the following window will appear:



All done!

Click **Yes** to go see your movie file and GPX file.

9. [SYNC WINDOW MOVEMENT](#)

If this option is toggled ON, all the windows will move together if any one of them is moved. If the option is OFF, then the windows can be repositioned independently. The idea is to first position the windows independently the way you like, then “lock” them into position by toggling this option on.

10. RE-CENTER MOVIE(S)

This option re-centers the movie in the window. This is useful if you had previously zoomed or panned the movie and now want to return to the nominal state.

Tip: On the PC version, clicking this button may clear the “black screen” issue seen sometimes when animation is paused.

11. MODIFY PREFERENCES

This toolbar button opens the Preferences window. See the section on the Preferences Window for more details.

12. CURRENT SPEED

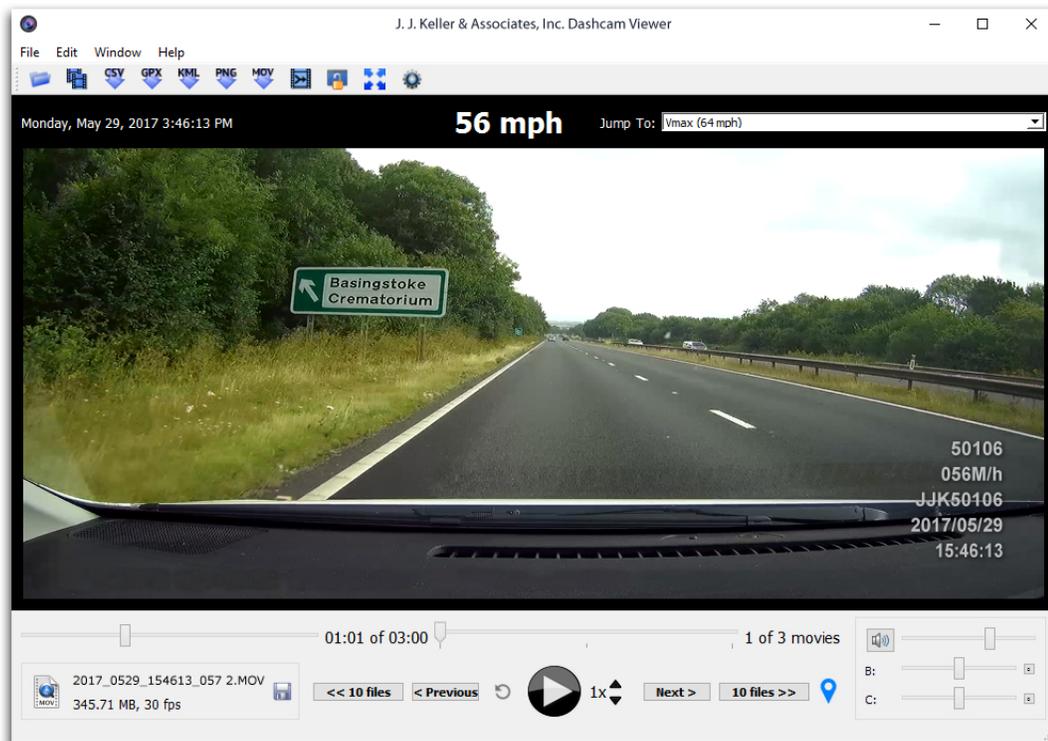
The current vehicle speed is displayed in the top-center of the Main Window. The units of speed can be changed in the *Preferences*.

13. CURRENT DATE/TIME

The date and time are shown in the top-left of the Main Window. DV uses the modification date of the movie to determine the time since GPS data may not be available at all times. Sometimes the modification date/time of a movie can change if the file is copied. Use the Clock Bias setting to compensate for this.

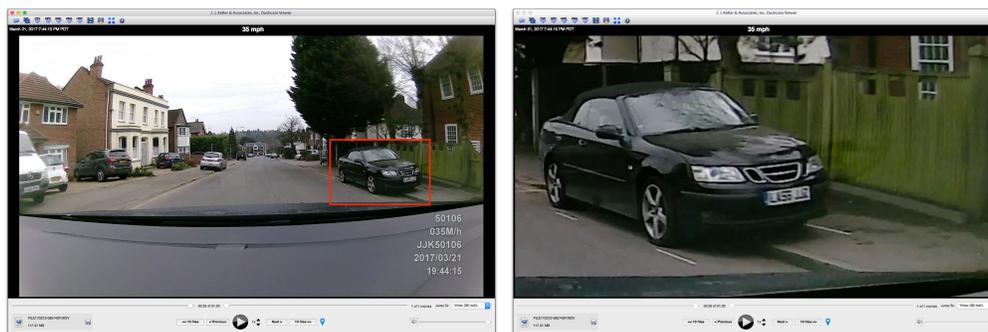
14. MAIN WINDOW

The Main Windows displays the dashcam’s movies in sequence.



Dashcam Viewer Main Window

Tip: You can zoom in/out of the movie using the mouse wheel.



Use the mouse scroll wheel to zoom in to see detail

Tip: You can pan the movie by click-dragging it in the Main Window.

Tip: Use the Re-center toolbar button to reset the zoom/translation settings

15. CURRENT MOVIE SCRUBBER

This slider bar is used to scrub through the currently playing movie. The graphs, map, and dashboard displays dynamically update as the movie is scrubbed.

16. MOVIE FILE SELECTOR

This slider allows you to jump to a specific movie in the sequence.

17. JUMP TO PULLDOWN MENU

Use this menu to instantly jump to a specific movie, or to jump to the fastest point in the movie sequence. The lists shows the movie filename, start date, and duration.

18. REVEAL BUTTON

Click this button to reveal the current movie file in the Explorer.

19. CURRENT MOVIE FILENAME, FILE SIZE, AND FRAME RATE

This box displays the current movie filename, file size, and frame rate.

20. SAVE OR DELETE SETTINGS

Note: This feature was specifically designed for situations where the camera and GPS data are separate. As a model 50106 owner, it is unlikely you will need this feature.

SAVE SETTINGS FEATURE EXPLAINED IN DETAIL:

If the *Save Settings* button is clicked, then whenever this movie is played the settings that were saved will be recalled and used. This is useful when playing a deck of movies that have widely varying speed ranges, altitude ranges, or time offsets and the user would like to sync and customize playback for each movie independently.

Note: The Settings feature is an advanced capability and will generally not be necessary for movies created with a dashcam. This is because dashcams automatically sync the movie file timestamp to the GPS data.

21. PLAY PREVIOUS MOVIE

Use these buttons to jump back either 1 or 10 movies in the sequence.

22. INSTANT REPLAY

Click this button to quickly replay the last few seconds of the movie. This is useful to review key events, such as a collision. The replay time can be set in the Preferences.

23. PLAY/PAUSE MOVIE

Toggle the play/pause button to start/stop the movie(s).

24. INCREASE/DECREASE PLAYBACK RATE

Increase or decrease the movie playback rate. Playback rates of 1/16x to 5x are supported. Note that some stuttering may occur if the playback rate is too fast for the computer.

25.PLAY NEXT MOVIE

Use these buttons to jump ahead 1 or 10 movies in the sequence.

26.CREATE GEOTAG

Clicking this button adds a new Geotag to the Control Center Window Geotag list. A Geotag is a bookmark that allows you to quickly jump to a particular point in the movie sequence. Geotags are shown as numbered markers in the Map Window. You can double-click on a Geotag within the Geotag list to instantly jump to that particular time in the movie sequence. The free version of Dashcam Viewer is limited to creating 2 Geotags. See the section on the Control Center Window for more information.

27.VOLUME AND MUTE CONTROLS (WINDOWS VERSION HAS ADDITIONAL COLOR CONTROLS)

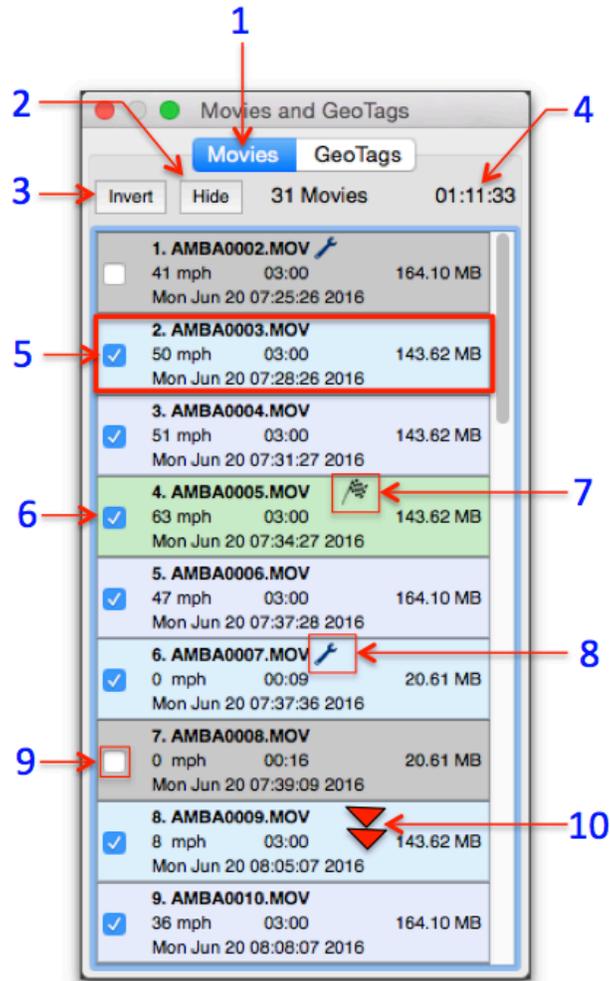
Click the speaker to mute the volume, or adjust the slider to change the volume. On the Windows version there are additional controls to adjust the brightness, and contrast.

CONTROL CENTER WINDOW

The Control Center provides instant access to your movies and geotags. The features and capabilities of each list are explained below.

MOVIES

The Movies list populates itself immediately after loading a series of dashcam movies. Each movie is analyzed upon loading and summary information for each movie is displayed. This information includes the filename, movie duration, file size, file start date, and maximum speed. The currently-playing movie has a green background. Movies can be started by double-clicking a movie list item.



The Control Center's Movie List. In the list above, movies #1 and #7 are inactive and the currently-playing movie is #4.

A wrench  icon to the right of the filename indicates that post-processing was performed on the movie's GPS data due to some problem with the data. Hover the mouse over the wrench icon to learn more information about the type of problem encountered. The possible problems encountered are:

- 1) Bad GPS position detected. At least one point has lat/lon of 0,0 deg.
- 2) Bad GPS time value detected in at least one point. Applying a fix.
- 3) At least one point has a speed value out of range. Applying a fix.
- 4) Found fewer GPS points than expected for this movie. Attempting workaround.
- 5) Some GPS data points out of chronological order. Applying a fix.

Dashcam Viewer does its best to patch the problem but you may still notice data issues with these particular files.

The checked flag  is displayed to the right of the movie filename having the fastest speed in the series.

You can remove a movie from the series by clicking off its checkbox. When you do this, its background will turn grey, it will not be double-clickable, its data will be removed from the Map and Graphs, and, if it was the high-speed movie, the checkered flag will find a new home. Click the *Hide* button to remove these inactive movies from the list. Click the *Show* button to bring these items back. The *Invert* button inverts the selection of inactive and active movies.

Features of the Movies list are itemized below:

1. MOVIES LIST.

Click this tag to toggle between the Movies and Geotags lists

2. HIDE/SHOW BUTTON

Clicking the Hide button will remove the inactive movies from the list. Click it again to reveal the inactive movies.

3. INVERT BUTTON

Invert will make the inactive movies active, and the active movies inactive.

4. MOVIE COUNT AND DURATION

The information line shows the number of active movies and their total duration.

5. MOVIE INFORMATION

Each item in the list shows the movie filename, movie duration, file size, file date, and maximum vehicle speed. Note that the file date is retrieved from the file system so if the file was modified in any way the date displayed here may not correspond to the actual date/time of the recording.

6. CURRENTLY-PLAYING MOVIE

The currently playing movie has a green background. Double-click on any *active* (non-gray) movie to make it the currently playing movie.

7. CHECKERED FLAG

The checkered flag is awarded to the movie with the fastest speeds. Sorry, no prizes are given.

8. WRENCH ICON

The wrench icon appears next to movies whose GPS data needed some kind of post-processing. Hover the mouse on top of the icon to see a short explanation. Possible reasons for seeing the wrench icon include:

- 1) Bad GPS position detected. At least one point has lat/lon of 0,0 deg.
- 2) Bad GPS time value detected in at least one point. Applying a fix.
- 3) At least one point has a speed value out of range. Applying a fix.

- 4) Found fewer GPS points than expected for this movie. Attempting workaround.
- 5) Some GPS data points out of chronological order. Applying a fix.

9. ACTIVE/INACTIVE CHECKBOX

Clicking the checkbox *off* makes the movie inactive. Inactive movies are removed from the playback sequence and are shown with a gray background in the list. Their GPS data is also removed from the Map route and Graphs. Use this feature to remove uninteresting movies from the playback sequence. Click the checkbox on to make the movie active again.

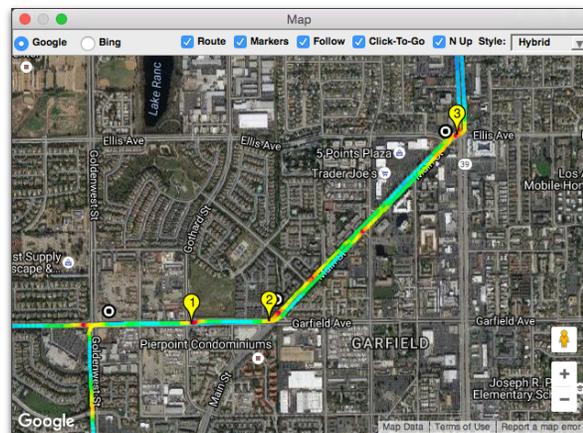
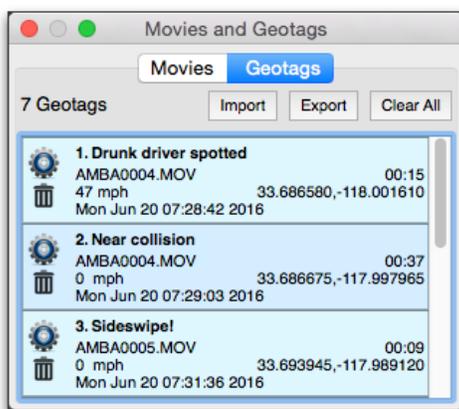
10. DOUBLE-CLICK MOVIE ITEM

You can double-click an active movie item in the list to jump to it. If playback was previously on, the movie will start playing immediately.

GEOTAGS

Geotags are key points in the movie sequence that you can highlight and return to instantly. They can represent important points in your journey, such as the location of a good restaurant, a clear view of a drunk-driver's license plate, the location of a deep pothole in the road, or your awesome pass on the racetrack. Of course these are just examples. The use for geotags is limited only by your imagination.

To create a geotag you simply click the  icon in the Main Window at the point of interest. Alternatively you can tap the 'g' key on the keyboard. This will add an item to the Geotag list. A marker will also be added to the Map. For reference, the movie name, date/time, vehicle speed, location, and movie time will be shown in the list item.



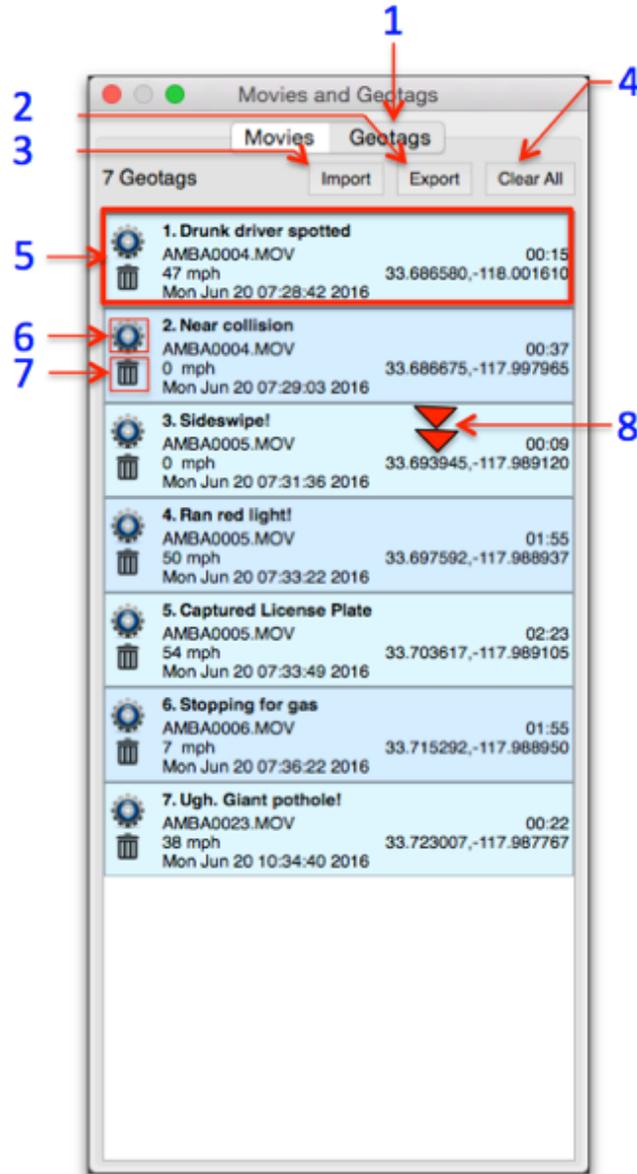
(Left) Geotag list, (Right) Geotags in the Map window

Double-click on a geotag in the list to jump to that point in the movie sequence. You can give each geotag a custom title by clicking on the gear  icon. To delete a geotag, click the trashcan  icon. To delete all the geotags in the list, click the *Clear All* button.

You can export your geotag data to a tab-delimited text file for external processing in Excel or another program. To do this, click the *Export* button and a .text file will be produced. You can also load the geotag .text file back into Dashcam Viewer to see your saved geotags. **When exporting, it is important to save the geotag file to the same directory as the movie files if you want to reload it later.** Be sure to load the movies first before loading the geotag file. Geotags that refer to a movie that is not loaded will have a gray background and will not be selectable.

You can create up to 10 geotags at a time.

The Geotag functions are itemized below:



Geotags List

1. [GEOTAGS LIST](#)

Click this tag to toggle between the Movies and Geotags lists.

2. [EXPORT BUTTON](#)

Export the geotags to a tab-delimited file. If you plan to import these geotags back into Dashcam Viewer be sure to save the geotags file to the same directory as your dashcam movies.

3. [IMPORT BUTTON](#)

Click this button to load a geotag file back into Dashcam Viewer. Be sure to load your movies that are referenced by the geotag file first, then load the geotag file. If the geotag file references movies that are not loaded they will appear in the list with a gray background.

4. CLEAR ALL BUTTON

The *Clear All* button will delete all geotags in the list.

5. GEOTAG INFORMATION

The geotag list item displays meta information about the event including title, movie filename, time in movie, vehicle speed, date/time, and latitude and longitude.

6. CHANGE TITLE

You can edit the default title of a geotag by clicking the gear icon.

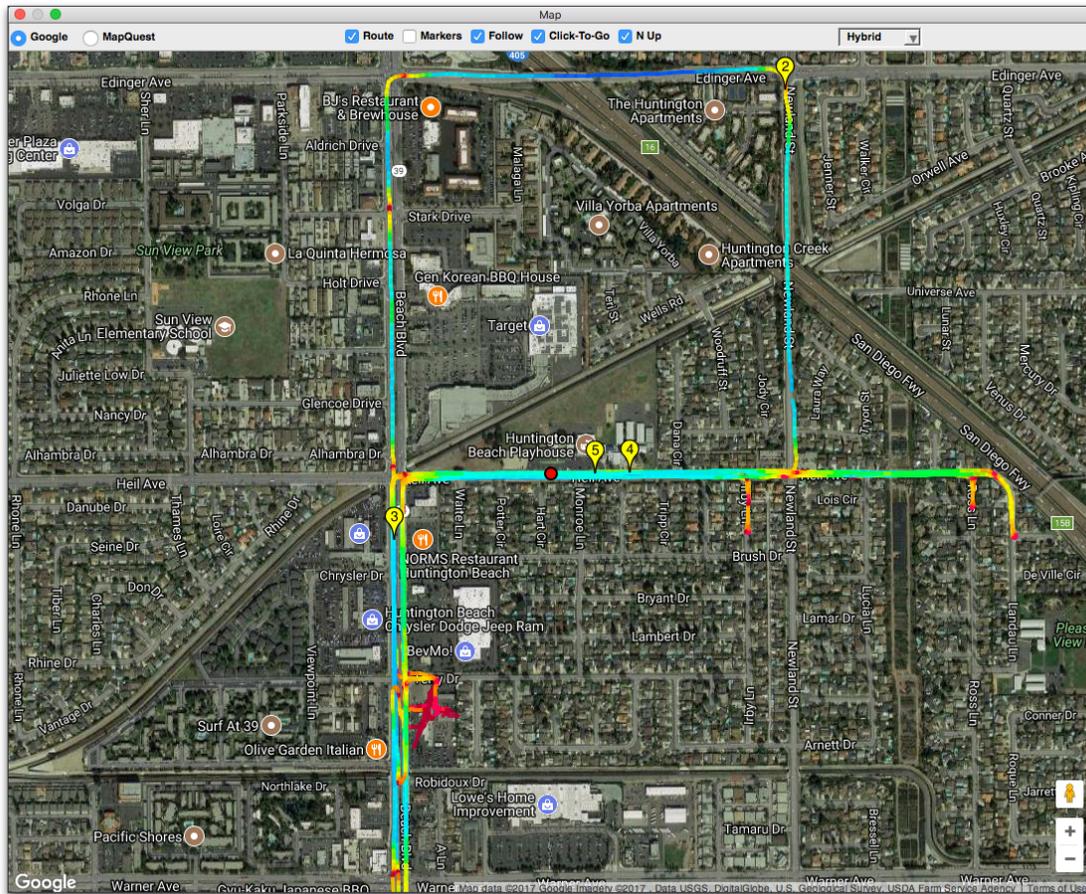
7. DELETE GEOTAG

Delete a geotag by clicking the trashcan icon.

8. GO TO A GEOTAG

Double-click a geotag to jump to that point in the movie sequence.

MAP WINDOW



Google hybrid map showing vehicle position, speed, route, and geotags

The Map view displays the time-history of vehicle's route as well as its current position. The *Route* line and movie start *Markers* can be individually toggled on or off in the view using the checkboxes at the top of the window.

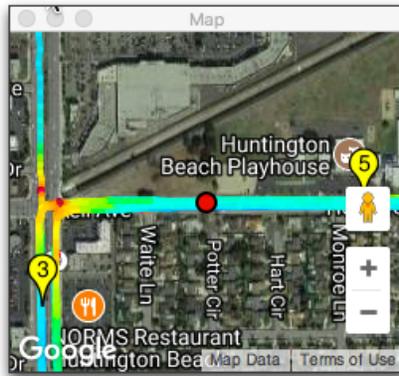
Selecting the *Follow* checkbox will automatically pan the map to follow the vehicle. Unselecting this checkbox will freeze the map and the placemark point will move with the vehicle.

When the *Click To Go* button is checked, clicking on the map near vehicle's route line will make Dashcam Viewer jump to that time in the movie sequence. This way you can quickly jump to any point in the movie sequence by simply clicking your position on the map. Deselect the *Click To Go* button to disable this feature.

The *N Up* button controls whether the map is oriented in the North Up direction (the default) or is oriented dynamically based on the vehicle's direction. This feature only

applies to Google Maps and only for certain regions that have high-resolution 3D imagery available. Regular “road” maps and “satellite” maps don’t support rotation. Zoom-in deep to see if “3D imagery” mode appears for your region.

The Map window can be shrunk to a small size. If the window width is smaller than the minimum size for the control bar, then the controls will hide themselves. You can access the controls by simply increasing the width of the map.



Small map with controls hidden.

The vehicle’s speed throughout its journey is reflected in the color of the route line. Faster speeds are bluish and slower speeds are reddish. The color scale can be adjusted in the Map Preferences (see above).



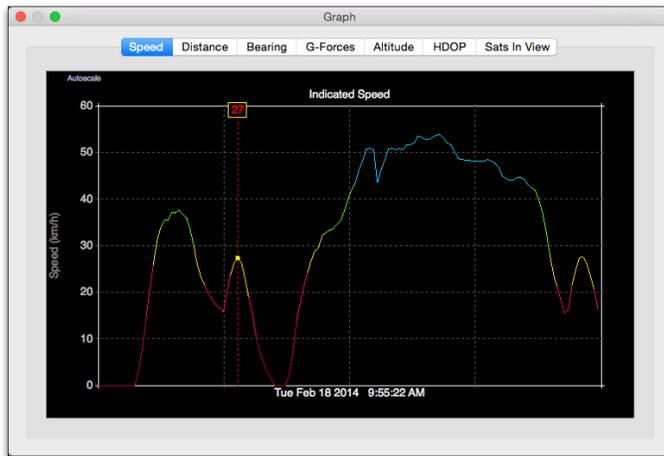
Map preferences for the route color scale

Choices include the number of colors in the scale and whether the maximum speed of the scale is based on a fixed speed or the fastest speed in the current journey.

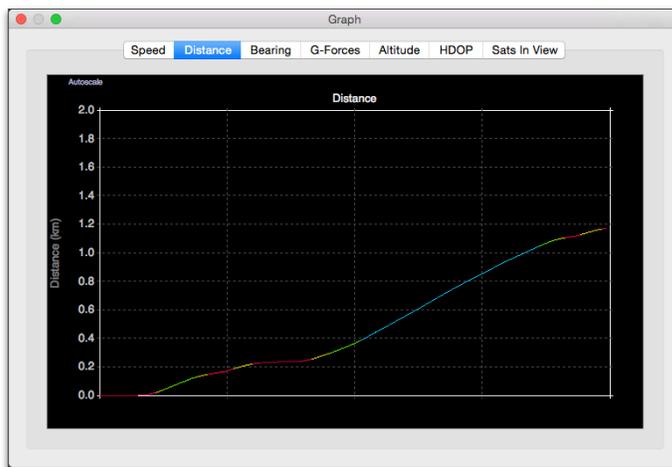
Standard Map controls apply (zoom in/out, switch from map to satellite layers). You can choose between Google and Mapquest map APIs. If you change the map type, please reload your dashcam files to refresh the routes and markers.

GRAPHICAL DATA DISPLAYS

Tip: You can click in the Graph view to jump to a specific time in the movie sequence (on the Windows version, two clicks are required)



The **Speed** graph displays the combined time-history of the vehicle's speed over all of the data in the movie folder.



The **Distance** graph displays the distance covered by integrating the vehicle's speed over time. The color-coding indicates vehicle speed at the time.



The **Bearing** graph shows the history of direction for the vehicle. North is 0 or 360-deg, East is 90-deg, South is 180-deg, and West is 270-deg.

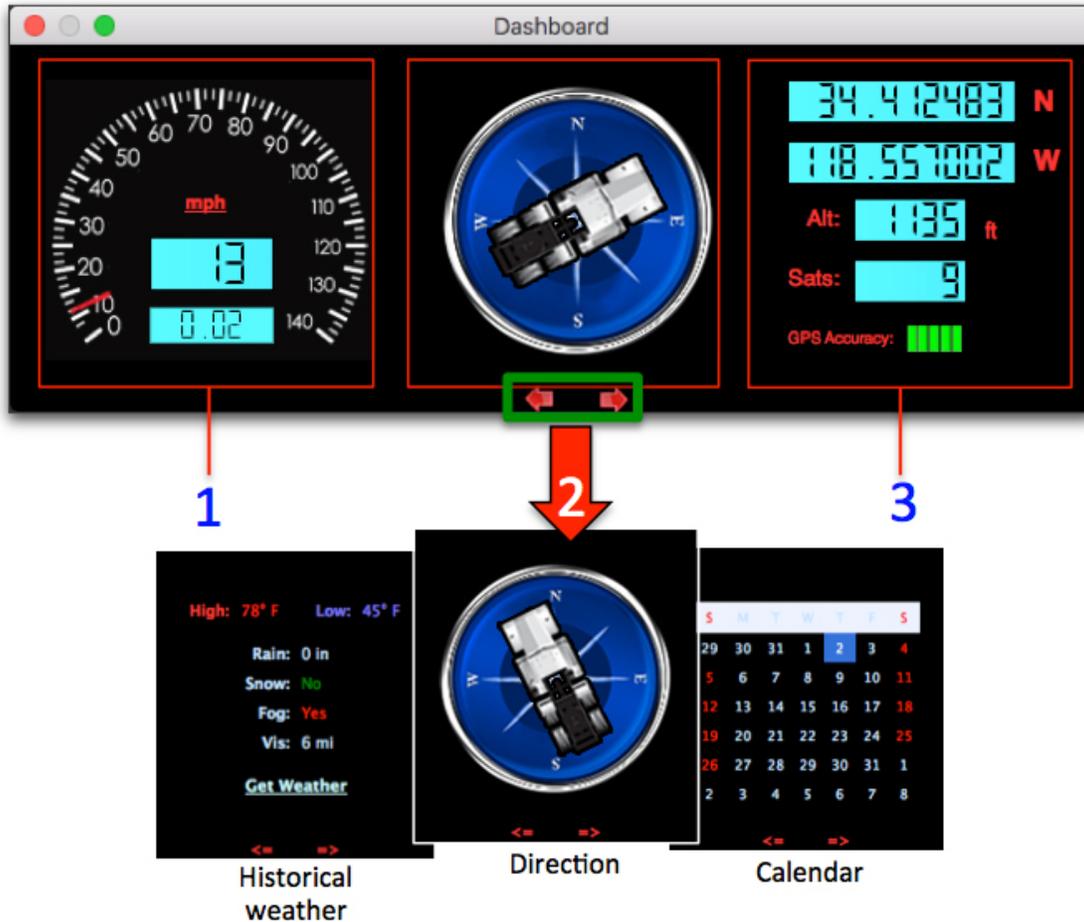


The **G-Forces** graph displays the X, Y, and Z components of acceleration from the dashcam's shock sensor. The G units vary from manufacturer to manufacturer so the plots should be considered relative G-force. The X and Y components are horizontal force and the Z component is vertical. The 1-g effect of gravity is subtracted from the Z component in the graph

The data in the Speed and Distance graphs can be automatically scaled by clicking the *Autoscale* button in the top left of the graph. You can click in the graphs to jump to that time in the movie sequence (two clicks are required in the Windows version).

DASHBOARD WINDOW

The Dashboard displays current information about the vehicle's position, speed, and distance. In addition, the Dashboard can be used to switch speed units, show the weather at the time and place of the drive, and show the driving day on a calendar.

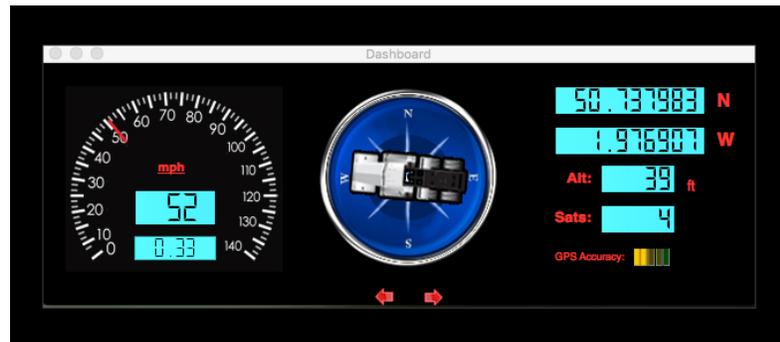
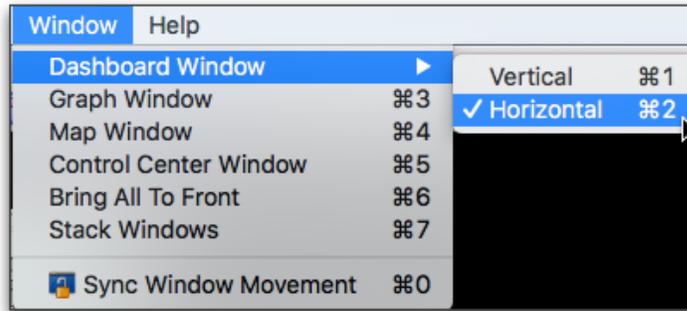


1. Computed speed, total elapsed distance, current date/time, mph/kph toggle
2. Current vehicle direction (bearing). Click the **arrows** to change this widget to weather or calendar views.

If the "Get Weather" button is clicked, DV will attempt to retrieve the historical weather conditions at the vehicle's latitude/longitude (#3) for the given date displayed (#1). DV uses <http://wunderground.com> for the weather data.

3. Current vehicle position (latitude/longitude).

Note that bearing is only updated when vehicle speed is greater than 3 mph (or km/h) to avoid jitter.



Use the Windows menu to orient the Dashboard horizontally or vertically.

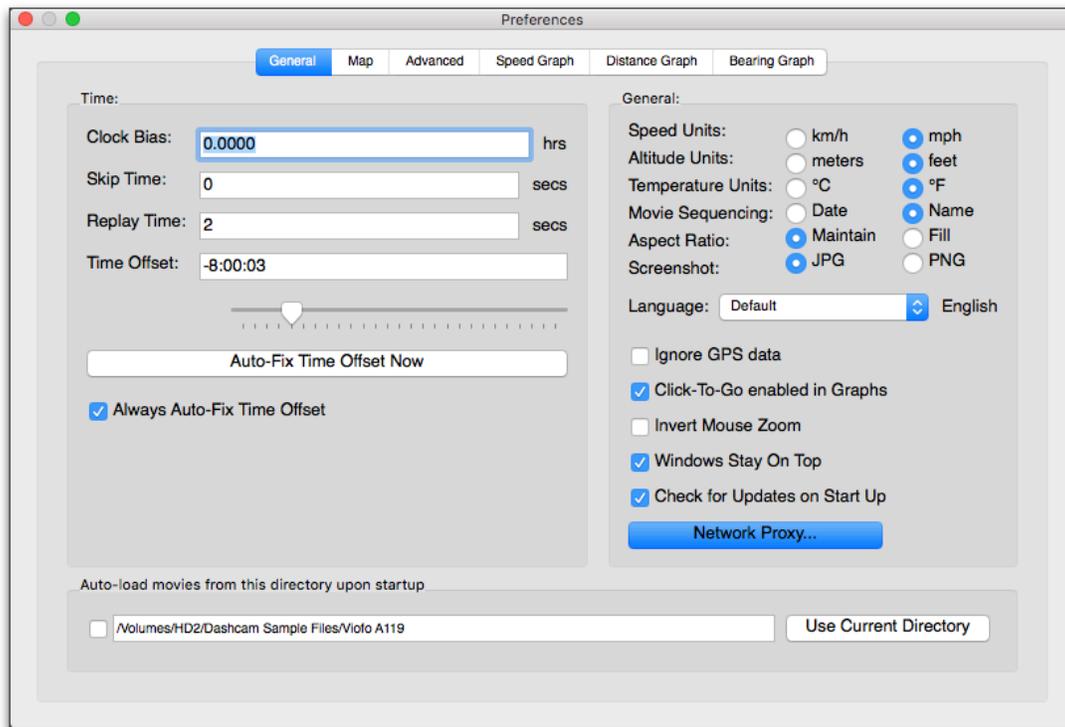
Don't like the horizontal orientation of the Dashboard? You can orient the Dashboard vertically by choosing "Vertical" from the *Windows* menu.

You can reduce the width of the Dashboard widget until only the speedometer is shown. This minimalist size may be preferable for small displays.



Dashboard resized to only show the speedometer.

PREFERENCES WINDOW



The Preferences window

TIME PREFERENCES:

- *Clock Bias* – bias used to synchronize the embedded movie timestamp with the displayed time. Use this setting to match the embedded movie timestamp to the timestamp displayed by DV. This setting does not affect the time biasing between the movie and the GPS data. For that, use the *Time Offset*.
- *Skip Time* – this setting tells Dashcam Viewer to skip the first n seconds of each movie during playback. Some dashcams have a built-in overlap of a second or so between consecutive movies. Enter the overlap time for (near) seamless playback between consecutive movies.
- *Replay Time* – enter the amount seconds that the Instant Replay feature goes back in time.
- *Time Offset* – optionally offset the timestamps by the indicated number of hours/mins/secs. This is useful if the dashcam movie is out-of-sync with the Map, or the timezone is incorrectly set for your timezone, or if you are viewing movies created by someone in a different timezone. If you manually enter a value here, be sure to uncheck *Always Auto-Fix Time Offset* checkbox or else DV

will recompute the *Time Offset* value at the beginning of each movie.

Tip: If the Graph view is selected, you can use the “,” and “.” keys to adjust the Time Offset plus or minus 1-second. Similarly, you can use the “m” or “/” keys to adjust the Time Offset by 10-seconds.

- *Auto-Fix Time Offset Now* – When this button is clicked DV attempts to synchronize the GPS data to the video by applying time bias such that the first GPS time in the data segment matches the start time of the video. Use this button if the movie is playing and plots are seen in the Graph windows, but the graph cursor is not moving. Note that if there is no GPS data associated with a movie the Auto-Fix button will have no effect.
- *Always Auto-Fix Time Offset* – This button always synchronizes the GPS data to the video by applying time bias such that the first GPS time in the data segment matches the start time of the video. This will occur at the start of each movie so the *Time Offset* value will be determined internally (the value inputted is ignored). **It is recommended to keep this button checked** unless you want to apply a custom *Time Offset* setting or are using the *Save Settings* feature mentioned later.

GENERAL PREFERENCES:

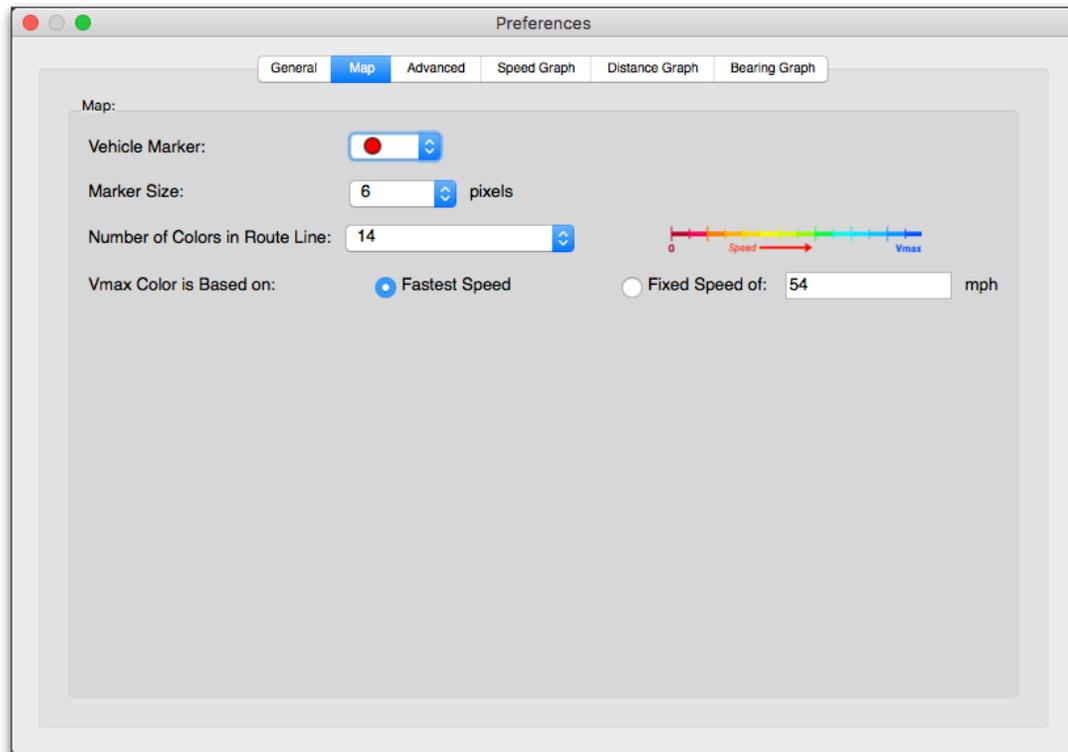
- *Speed Units* – select the units for the speed and distance displays.
- *Altitude Units* – select the units for the altitude graph and data display.
- *Temperature Units* – select the desired units for the temperature display in the historical weather widget.
- *Movie Sequencing* – This setting controls the play order of the movies. “By Date” is a better option for dashcams that write movie files in a continuous loop (i.e, new files overwrite older files as the SD card fills up). “By Name” is a better option for viewing a series of miscellaneous movies in a folder.
- *Aspect Ratio* – You can choose to have the movie fill the viewer window or maintain its native aspect ratio. In the latter case you will see black bars filling the unused space.
- *Screenshot* – Chose the desired image type for screenshots (invoked from toolbar in Main window). PNGs are lossless but take up about 8x the disk space. To the naked eye, JPG is almost identical to PNG and much smaller file size.
- *Language* – This setting allows you to change the language of the text and phrases used in Dashcam Viewer. After making a change, restart Dashcam Viewer to see the change. The *Default* setting will attempt pick a translation based on your

- computer's system setting. If a default translation is not available, then English will be used. Currently, English, Dutch, Chinese, German, Hungarian, Italian, Spanish, Russian, Turkish, and Vietnamese are available. Special thanks to the dashcam community for providing the translations (see Thanks section below).
- *Ignore GPS Data* - Use this option to load movies without attempting to load their GPS data. This will allow you to quickly load movies for viewing, but will not show their GPS data. The message "NO GPS LOADED" will appear at the top of the player window when this option is invoked. To prevent use, this option is set to OFF each time Dashcam Viewer is run.
 - *Click-To-Go Enabled in Graphs* - If this option is selected then clicking the mouse button in the Graph window will make DV jump to that point in the movie sequence (approximately). This is useful for immediately jumping to a point of interest in movie sequence, such as a sudden stop.
 - *Invert Mouse Zoom* - This checkbox inverts the direction of zoom when using the scroll wheel to zoom in/out of the video window.
 - *Network Proxy Settings* - If you connect to the internet via a proxy server, you can enter the server settings here. Restart Dashcam Viewer after making changes for them to take effect.
 - *Windows Stay On Top* - This option controls whether the ancillary windows (Map, Dashboard, etc.) float on top of the Main Window. When the ancillary windows float on top of the Main window, you have more control of the window configuration. However on some computers (Windows Surface) this feature may not be advantageous. If you deselect this checkbox, the Main Window can be placed on top of the ancillary windows. You must restart Dashcam Viewer to make this change take effect.

AUTOLOAD MOVIE DIRECTORY UPON START-UP PREFERENCES:

- It can be useful to have Dashcam Viewer load a specific directory of movies upon startup. This can be achieved by typing the movie directory in the *Autoload Directory* field. Alternatively you can click the *Use Current Directory* to automatically input the current movie directory into the field. To enable this feature make sure the checkbox to the left of the field is checked.

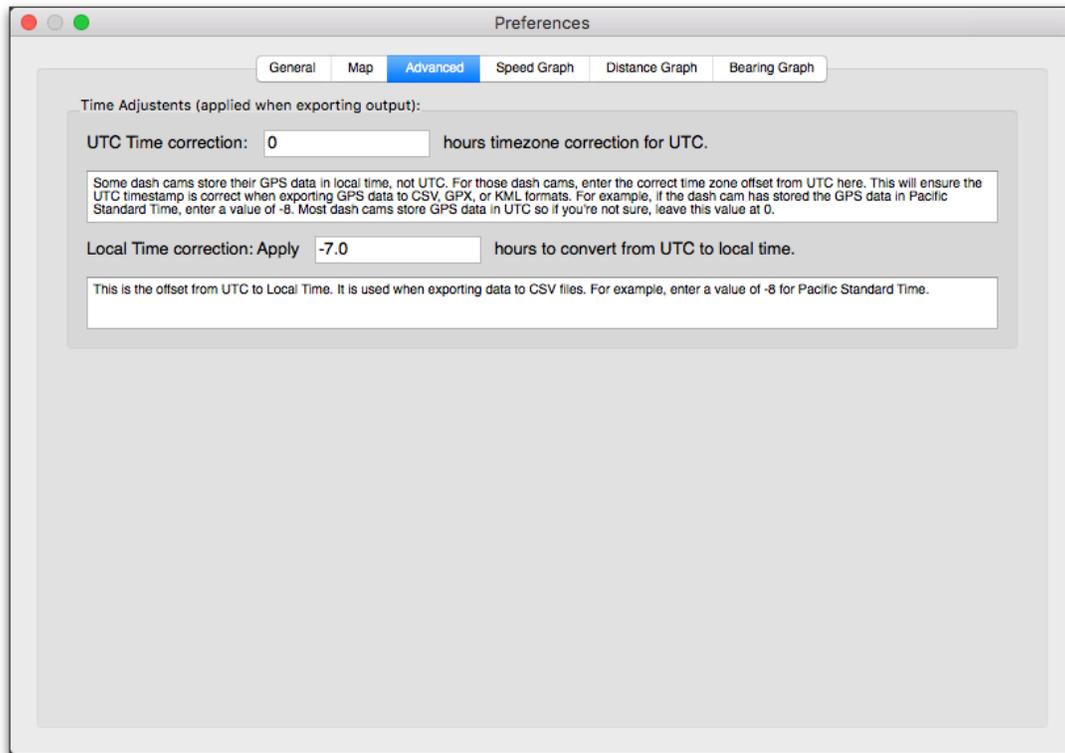
MAP PREFERENCES:



Map Preferences Window

- *Vehicle Marker* – choose either a colored round marker or default map placemark for the vehicle location.
- *Marker Size* – select a size for the round vehicle marker.
- *Number of Colors in Route Line* – choose between 1, 5, 10 or 14 colors in the color scale used to indicate vehicle speed. A key of the colors used is shown to the right of the selection combo box. The scale ranges from a speed of 0 (red) to the maximum speed (blue, defined below)
- *Vmax Color is Based on* – In the color scale, blue indicates the fastest speeds in the vehicle's route. You can define the speed the blue color represents, either by a fixed value or the maximum speed achieved for the entire journey. The fixed value method is useful for comparing the speeds of one journey against the speeds of another journey.

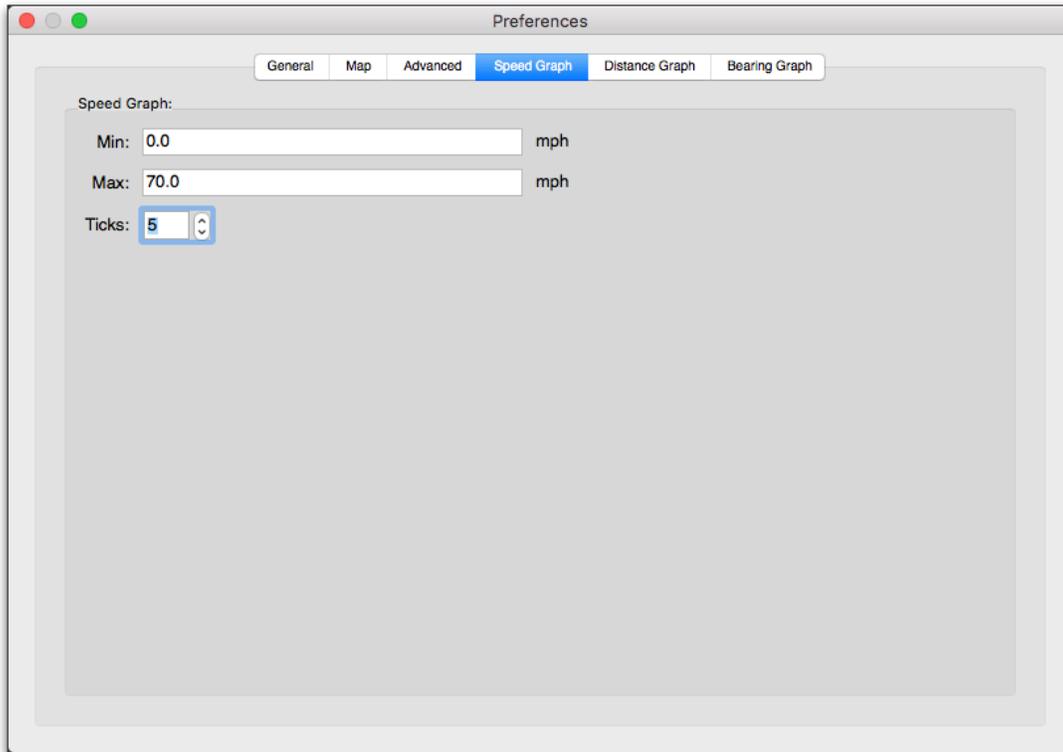
ADVANCED PREFERENCES:



Advanced Preferences Window

- *UTC Time correction* – Although most dashcams store their GPS data relative to UTC time, some store their GPS data in local time. For those dashcams, enter the correct time zone offset from UTC here. This will ensure the UTC timestamp is correct when exporting GPS data to CSV, GPX, or KML formats. **For most dash cams this preferences should be left at 0.** But if your dashcam records GPS data in local time, say Pacific Standard Time, you would enter a value of -8 . This setting is applied when exporting data to CSV, GPX, and KML files.
- *Local Time correction* – Enter your timezone offset from UTC here. For example, if you were in the Pacific Standard Time zone you would enter a value of -8 . Dashcam Viewer will enter a default value based on your current timezone. This value is used when exporting data to a CSV file.

GRAPH PREFERENCES:



Graph Window settings

The y-axis scale and number of tick marks can be controlled independently for each graph. By default you will have settings for the Speed Graph, Distance Graph, and Bearing Graph.

Min – choose the minimum value for the plot

Max – choose the maximum value for the plot

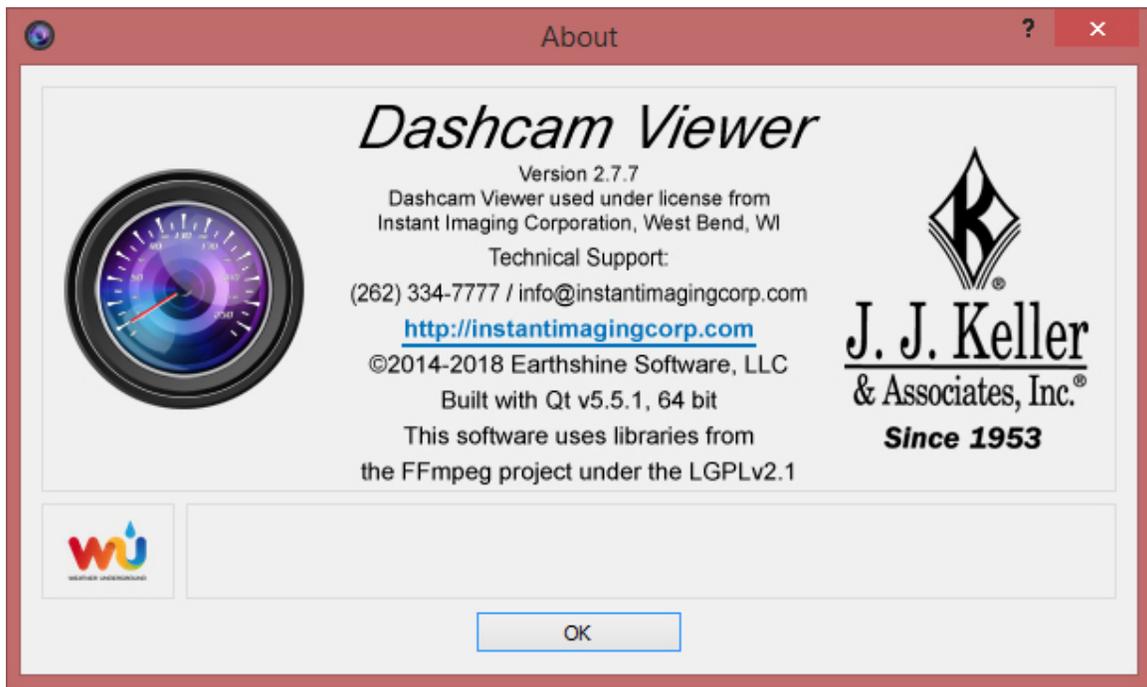
Ticks – select the number of gridlines/ticks for the plot

Tip: When a graph view is selected, the “1” and “2” keyboard keys will decrease/increase the Max value of the plot. The “3” and “4” will decrease/increase the number of gridlines.

Tip: You can click in a graph to jump to that point in the movie sequence. See the *Click-To-Go Enabled in Graphs* option above.

Note: Settings are preserved from run to run of Dashcam Viewer.

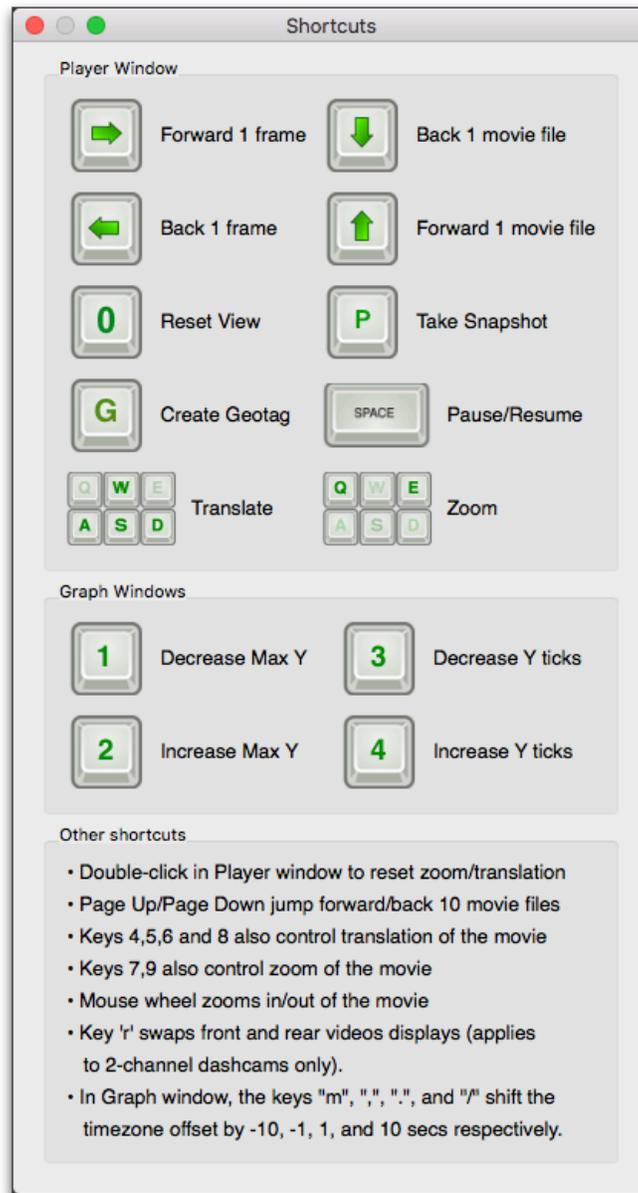
ABOUT DASHCAM VIEWER



The About window displays the Dashcam Viewer version, contact info, and registration status

SHORTCUTS

A number of shortcuts have been added to facilitate use of the program. These include buttons to move forward frame-by-frame, take a screenshot, pause/resume, and more. Please see the list below:



Shortcuts window

PLAYER WINDOW:

- When the Main Window is selected, the spacebar will start/stop the video player and the arrow keys will jump 1 or 10 files forward or reverse as indicated above. The P key will take a snapshot of the viewer window and save it to the Desktop. The A,S,W,D (and 4,5,6,8) keys will translate the movie in the movie frame. The Q and E (and 7 and 9) keys will zoom out/in of the movie. The 0 key resets the zoom and translation to default values.

- Click the “g” key to create a Geotag at the current location.

GRAPH WINDOW:

- When in a graph view, the “1” and “2” keyboard keys will decrease/increase the Max value of the plot. The “3” and “4” will decrease/increase the number of gridlines.
- The “m”, “,”, “.”, and “/” adjust the Time Offset by -10, -1, +1, and +10 seconds, respectively. This is useful for graphically synchronizing the video to the cursor in the graphs.
- Click anywhere in the data portion of the graph to jump to that point in the movie sequence. This feature can be turned off in the Preferences.
- Click the “g” key to create a Geotag at the current location.

EXPORTING GPS DATA

Your vehicle’s latitude, longitude, speed, bearing, and XYZ shock sensor data (if available) for all the tracks can be exported to a text file. Two file formats are supported: comma-separated value (CSV) and GPS Exchange format (GPX).

EXPORTING TO CSV

Select *Export to CSV File* from either the File menu or the toolbar button, give the file a name, and choose *Save*. A CSV file will be produced from the GPS data and include the following fields as columns:

- **Movie filename**
- **Date (Local)**
- **Time (Local)**
- **Date (UTC)**
- **Time (UTC)**
- **Latitude (Degrees)**
- **Longitude (Degrees)**
- **Speed (from Dashcam, in output units)**
- **Distance (Computed from waypoints)**
- **Bearing**
- **Shock sensor X [horizontal] (some dashcam models)**
- **Shock sensor Y [horizontal] (some dashcam models)**
- **Shock sensor Z [vertical] (some dashcam models)**

CSV files can be imported into Microsoft Excel and other programs for further data analysis.

Note: If the UTC date and/or time is not correct in the CSV file, you can apply an offset using the *UTC Offset* setting in the Advanced Preferences.

EXPORTING AND USING GPX FILES

Select *Export to GPX File* from either the File menu or the toolbar button, give the file a

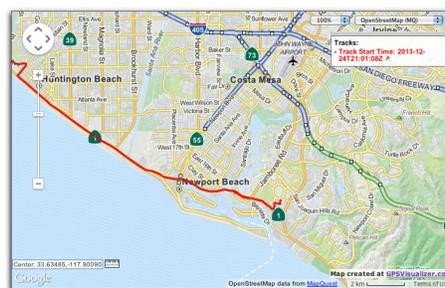
name, and choose *Save*. Dashcam Viewer will export the entire route as a single GPX file. You will also have the option to export each movie's individual GPS data to separate GPX files. The files will be named based on the movie names.



Click Yes to create individual GPX files for each movie segment, as well as a large GPX file for the entire route. Click No to create just the large GPX file for the entire route.

Since Dashcam Viewer reads GPX files too, the per-file export feature can be used to load the GPS data back *into* Dashcam Viewer. GPX files placed inside the movie directory are loaded *ahead* of the embedded GPS data in the movie, so you can use this method to 'override' the GPS data for a given movie. This allows you to filter out bad data or insert corrected GPS information into Dashcam Viewer.

The GPX file format is widely supported in the commercial GPS receiver market. There are a number of interesting websites that can analyze your data. One of my favorites is [GPS Visualizer²](http://www.gpsvisualizer.com/), which has a plethora of GPS data analysis tools, maps, and plots.



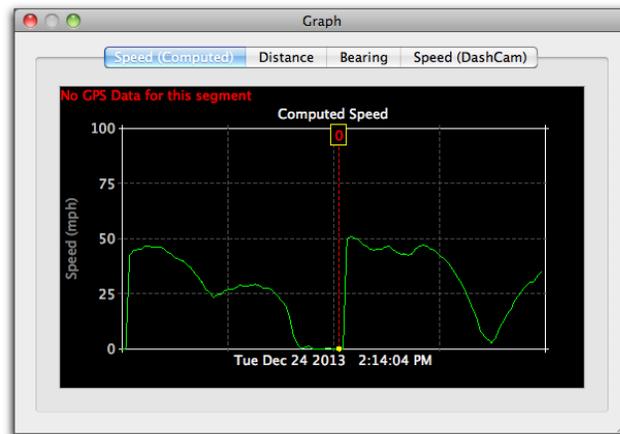
Vehicle's track exported to GPX file and viewed into [GPS Visualizer](http://www.gpsvisualizer.com/).

Note: If the UTC date and/or time is not correct in the GPX file, you can apply an offset using the *UTC Offset* setting in the Advanced Preferences.

² <http://www.gpsvisualizer.com/>

FAQ

Q: I'm seeing the message "No GPS Data for this segment" on the Graph display. What does it mean?



A: The "No GPS Data" error message will be shown if Dashcam Viewer cannot find a corresponding GPS log file for the currently playing movie. If this happens the speed, latitude, longitude, etc, readouts will indicate 0. It can also happen if the first movie file loaded has no GPS data associated with it. Try removing the first movie file from the folder and reloading the folder. Although infrequent, this can happen under normal dashcam operation.

Q: Movies will not play on my Windows machine. The player window appears black after loading the movies.

A: On some Windows machines, movies with resolutions greater than 1920x1080 will not play correctly in Dashcam Viewer. All you will see is a black player window. The workaround is to go into your dashcam's settings and reduce the resolution to 1920x1080 or less. This seems to be a problem related to older Windows hardware (or hardware with lower-end video cards) and the 3rd party movie library used in Dashcam Viewer. Also, try clicking the Reset View button or start animation if you see a black screen. This may correct it.

Q: When I merge movies nothing happens.

A: Be sure that the file directory path to the source movies does not have quotes or commas in it.

Q: In the movie window the player shows my vehicle moving but my speed is indicated as 0 mph.

Q: I see data plotted in the graphs but the cursor isn't moving.

A: Could be a couple of things. When the dashcam unit is first powered up after being off for a long period of time, it requires a minute or so to acquire signals from the GPS satellites. During this time the vehicle's latitude, longitude, and speed are unknown and are displayed as "0" in Dashcam Viewer.

This could also happen if the dashcam's timezone is set incorrectly. DV relies on the accuracy of the movie file's timestamp to sync the movie with the GPS data. The dashcam's timezone should be set to the computer's timezone. If not, the difference in timezones should be entered in the Preferences. Use the "Auto Fix" button to compensate for the difference.

A third possibility is that the movie's original timestamps have been altered. This can happen if the files were copied from the SD card to another location. In some cases the copy process changes the file modification date. If this happens, use the "Auto Fix" button in the Preferences window to compensate for the difference in time. To avoid this issue, open the original SD card's movie folder in DV rather than opening a copy of the folder on a hard drive. The downside is that this may affect playback performance if the SD card is connected via a slow USB reader.

Another possibility is that DV is confused by extraneous files in the movie directory. Be sure not to add any files to the dashcam's movie directory.

Lastly, if nothing seems to fix the issue, try loading the set of movies files again but this time skip the first movie file. In other words, load all the movie files except the first one.

Q: The timing between the movie and the vehicle's position on the map is slightly off. How do I fix it?

This can happen if the dashcam's clock is slightly off. To compensate for it, go to the Preferences and disable the *Always Auto-Fix Timezone Offset* option. Then bring the Graph window to the foreground. Use the ',' and '.' keys to dynamically adjust the time cursor position until the Map position of the vehicle and the movie match. To compensate plus or minus 10-seconds at a time instead of 1 second at a time, use the 'm' and '/' keys. When the vehicle's position on the Map matches its position in the video, you can click the Save Settings in the Movie window so that when this video is played again the same adjustments will be applied.

Q: [Windows version] I get an error when I run Dashcam Viewer, "The ordinal 4369 could not be located in the dynamic link library LIBEAY32.dll". What is causing it?

This problem seems to be related to multiple versions of LIBEAY32.dll on your system. Please see <http://superuser.com/questions/272752/intelligence-server-configuration-and-libeay32-dll-registration-error-microstr> for a solution.

Q: [Windows] Movies appear to stutter during playback.

A: This occurs on some Windows PCs, usually the lower-end models or older models. It is due a technical issue with the 3rd party video library used in Dashcam Viewer. The ideal PC system is an i7 processor running Win10 and an nVidia or AMD processor.

Q: *The Map shows me driving on the sidewalk. What's up with that?*

A: Could be a number of things. For starters, obscuration of the sky by buildings and terrain can block line of sight to the GPS satellites. Fewer GPS satellites translates to higher dilution of precision (DOP) and less positional accuracy at the dashcam. Also, the GPS receivers and antennas in these cameras are commercial units are not designed for high accuracy. Lastly, you may actually be driving on the sidewalk. Please watch out for pedestrians.

DISCLAIMER

Dashcam Viewer is supplied “as is” and all use is at your own risk. This document is not intended to express or imply any warranty that the operation of the software will be uninterrupted, timely, or error-free. Under no circumstances shall Earthshine Software or Instant Imaging Inc. be liable to any user for direct, indirect, incidental, consequential, special, or exemplary damages, arising from or relating to this agreement or the software.

CONTACT

For technical support or questions, please call (262) 334-7777 or email info@instantimagingcorp.com. For all requests, please allow up to 72 hours.