

Key Considerations When Selecting a Dashcam

Who switched lanes into who? Dashcam video shows the facts, rectifying conflicting statements.



Dash cameras (dashcams) have become a standard fleet management tool for larger fleets. In recent years the cost has become affordable for small fleets operating any type of vehicle. Dashcams were initially developed for documenting what happens during an accident, to protect an organization against false accusations. Video footage often leaves little dispute as to the facts.

More advanced telematics-based dashcam systems can identify unsafe driving behaviors such as harsh braking, distracted driving, following too close and rolling through stop signs. Proper implementation of these advanced systems can significantly reduce accident frequency. Several studies have found the use of a telematics-based dashcam systems, in combination with driver feedback and coaching, resulted in more than a 50% reduction in unsafe driving events.¹

Dashcams generally fall into two categories: stand-alone which provide accident documentation, and telematics-based systems which add a host of safety features. Quality stand-alone cameras range from \$100 to \$350. Telematics-based cameras range from \$300 to \$600 and have a \$20 to \$40 monthly monitoring fee per camera.



¹ National Surface Transportation Safety Center for Excellence, Virginia Tech Transportation Institute, Effective Use of Commercially Available Onboard Safety Monitoring Technologies: Guidance for Commercial Motor Vehicle Carriers. Report 15-UT-032. March 3, 2015



Cameras with AI can recognize unsafe behavior, such as rolling through a stop sign, following too close, or distracted driving.

Stand-Alone Dashcams

Stand-alone dashcams are connected to a power source in the vehicle but do not have any other connections. Forward facing cameras are standard and many have dual lens; forward and driver facing. More advanced systems have the ability to add remote side or rear facing cameras.

Stand-alone dashcams record and save video to a memory card within the unit in 30-60 second video clips. Once the memory card is full, depending on the size of the memory card, new video records over the older clips. This is referred to as loop recording. Better cameras have a built-in accelerometer which measures directional force to detect unsafe driving events such as hard braking or an accident. These event clips are typically saved within a protected folder on the memory card so they cannot be overwritten.

To view video(s) on a stand-alone camera the user/manager must plug the camera into a computer or remove the memory card and download the data to a computer. Some cameras will WIFI connect to a smartphone app for viewing on the phone.

A major limitation with stand-alone cameras is that managers are not notified of an event. Organizations must rely on the driver to tell them an event occurred that should be reviewed/saved. Other concerns include a driver turning off the camera, unplugging the power source, or removing the memory card.

Telematics-Based Dashcam Systems

Telematics-based dashcam systems combine the video camera with a telematics system. Video is saved to the cloud so it cannot be lost, and alerts are sent if the camera is not operating. Telematic data is generally available including vehicle location, trip histories, and unsafe driving events such as: speeding, harsh braking, sudden acceleration, and harsh cornering. Dashcams integrated with a telematics system can utilize both the video and the telematics data for managing driving behavior, providing driver feedback and training. Video provides management with a better understanding of the root cause and contributing factors related to the incident they're investigating.

More advanced "smart camera" systems incorporate artificial intelligence (AI) capabilities to their cameras. The AI can identify unsafe driving behavior such as distracted driving, fatigue, seatbelt use, following too close, rolling through stop signs, etc. These items are tracked/scored like other events for management review.

Limiting Monthly Subscription Costs

High monthly subscription costs are largely due to each camera having its own cell plan for transmitting video and data. To lower these costs, some telematics systems operate through an app on the driver's cell phone, utilizing the phones existing data plan. Some systems use WIFI to transfer data when the vehicle returns to its home location. The disadvantage to this is that there is no real-time transfer of data. Organizations need to determine if the delay in receiving information is acceptable.

Comparison Table			
Dashcam Type	Hardware Cost Per Vehicle	Monthly Monitoring Fee Per Vehicle	Comments
Advanced	<ul style="list-style-type: none"> ■ \$300 - \$600 ■ May require professional installation. 	<ul style="list-style-type: none"> ■ \$20 - \$40 ■ Multi-year contracts* 	<ul style="list-style-type: none"> ■ Driver management portal ■ Automatic video event recording. Video saved to cloud. ■ Additional vehicle monitoring: <ul style="list-style-type: none"> ■ Location ■ Trip Maps ■ Speeding, hard braking, etc. ■ Some systems have: <ul style="list-style-type: none"> ■ AI (smart camera) capabilities ■ Live video ■ Gamification and rewards ■ Coaching and counseling
Stand-Alone	<ul style="list-style-type: none"> ■ \$100 - \$300 ■ Self-installation 	<ul style="list-style-type: none"> ■ None 	<ul style="list-style-type: none"> ■ Inexpensive accident documentation ■ Manual downloading of video ■ Difficult to identify unsafe driving or use for driver coaching. ■ Drivers can disable without management knowledge.
WiFi Systems	<ul style="list-style-type: none"> ■ \$400-\$600 ■ \$800-\$1,200 WiFi router ■ May require professional installation. 	<ul style="list-style-type: none"> ■ None, or minimal** 	<ul style="list-style-type: none"> ■ Many of the benefits of a telematics-based system without the monthly fee. ■ Alerts and video downloaded when vehicle returns to office or terminal**. ■ Fewer of these systems exist
<p>*Monthly camera-related fees are generally less expensive if the camera is added to an existing telematics system.</p> <p>**Some WiFi download systems send alerts through the driver's phone and then download the video via WiFi. There may be a small monthly fee for this service.</p>			



Night vision capabilities are an important consideration if your vehicles regularly operate at night.

Key Considerations for Stand-alone Dashcams

- **A permanently connected power source.** Without a permanent power connection there is risk of the dashcam not working when unplugged from the “cigarette” power port. It is simply too easy for a driver to disconnect the camera, in which case an event could occur without a recording.
- **Video Quality.** Video quality has gotten very good with 1080p now being the standard. However, 720p is acceptable. Both are considered high definition (HD).
- **Viewing angle.** Generally, the wider the angle the better; however, as the angle increases the forward quality generally decreases. 155 to 170 degrees is common.
- **Night vision.** Most cameras manufactured today have acceptable night vision but if your vehicles operate primarily at night, high quality night recording is essential.
- **Audio.** Most cameras record audio but allow it to be shut off if desired.
- **Automatic event saving.** The camera should automatically save events to another folder so that the events are not copied over. Evaluate what types of events are saved: accidents, hard brakes, severe cornering, etc.
- **A quality memory card.** Dashcams need to use quality, class 10 memory cards. Because the card is constantly adding new trip footage and erasing the oldest trips, the card is stressed more than a typical memory application. Using a standard camera memory card is not recommended. Also, the memory card must stand up to the constant vibration of the vehicle and large swings in temperature. Quality cards of the storage capability needed generally range from \$40 to \$80.
- **Memory card size.** The size of card needed depends on the amount of driving done, how long you want video saved, and how the storage is set up. Generally, the camera website will provide guidance.
- **Memory card lock.** A memory card lock ensures the card is not removed or tampered with. The card should be in place to preserve data in every incident, including at-fault accidents.
- **Driver-facing lens.** Many cameras include a driver-facing lens which is good for identifying driver behavior when an event occurs, such as distractions or fatigue. It is also recommended for livery services to monitor passengers.
- **Multi-channel.** Channels generally refer to the number of cameras or lenses that can be linked together. For instance, a three-channel could include a front, back, and side camera all feeding a central storage device.
- **Other.**
 - Time of day and speed imprinted on the video are helpful features. Speed requires the camera to have a GPS component.
 - Some cameras have a small viewing screen, but these seem to be going away to reduce cost, size, and driver distraction.

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- Parking mode. This allows the camera to work when the ignition is turned off. Some systems detect motion, so vandalism or theft can be recorded.

Key considerations for Advanced Dashcam Systems

- Video quality, viewing angle, and night-time capabilities as described above.
- Due to their cost, warranties on cameras and other hardware should be examined.
- Is all video saved, or just video from triggered events? How long is the video available?
- Is there adequate memory on the camera to save video when the vehicle is in an area of poor cell service?
- What events trigger video capture? Speeding, harsh braking, sudden acceleration, harsh cornering, accidents, other?
- Does the system have AI capabilities? If so, what can it identify:
 - Interior camera: distracting activities, fatigue, seatbelt use
 - Exterior camera: following to close, not stopping at stop signs, traffic signs
- As features are added can the camera receive updates or does the camera need to be replaced? How are camera software updates handled?
- Any driver coaching or training tools available?
- A full evaluation should be made of the systems other telematic capabilities. Refer to our [Telematics Selection Guide - Advanced](#) for a checklist of key features to evaluate.

Testing and Trials

Stand-alone dashcams are inexpensive enough that we recommend purchasing five or six different models to test. The testing models can still be used after the trial as they do not have to match.

Most advanced telematics-based systems allow you to trial several cameras for a short period of time. Generally, they provide the hardware for free but may charge the monthly subscription rate. Due to the cost and length of contract period for these systems it is a best practice to conduct a trial.

Before committing to a system, it is important to test different dashcams to ensure that they meet your needs.

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