

Digital Ally DVM-500 In-Car Camera System

By Steve Forgues

Posted at 11:30 AM

As all officers know, we don't seem to have enough room in the patrol car. As time goes on we continue to get more and more equipment in the front passenger compartment, some of which can interfere with the deployment of airbags, putting your safety at risk. When agencies are considering adding equipment to a vehicle, they must not look at just what benefits that equipment will provide to the officer, but also weigh it against any safety hazards it may pose.

Years ago vigilant officers felt the need to mount a standard camcorder in their patrol car for recording traffic stops and other incidents. From an evidence standpoint, this greatly increases the number of convictions, especially when it comes to DUI cases and pursuits. I guess we can all credit those officers for the sophisticated in-car camera systems we have available today.

There are a number of companies now days that produce in-car camera systems; some are very sophisticated whereas others look like a project gone wrong. I found a system on the market from [Digital Ally](#) that I believe is as sophisticated as they come. With the Digital Ally Digital Video Mirror (DVM) system, it only adds two pieces of equipment to the interior of your car, one of which replaces a factory installed piece, the rear view mirror. The Digital Ally mirror is a little larger than most factory mirrors which also increases the field of view to the rear. Although the mirror is larger, I didn't find it to be a safety hazard in regard to visibility to the front. The second being the forward facing color camera mounted nearby under the visor clip or can be glued to the windshield. I did the install of this system in one of my agency patrol cars and was surprised to find how easy it was to not only install, which took me about three hours, but the configuration and operation was just as simple. This was my first installation and Digital Ally claims that most installs are performed in an hour or less. The included instructions walk you through every step of the process.



There are a number of features that I find to be of great value.

- Each officer is assigned a user id and pass-code. This is good to not only show who was operating the equipment at the time, but also for evidence purposes.
- Audio and video is recorded to a solid state Compact Flash (CF) card, which is one of the most stable forms of media available. After the CF card is placed into the system, a sliding door is closed and automatically locks. A special key is supplied with the system for unlocking. This allows a department to only allow a supervisor or designated officer



to be in charge of changing out the CF card in order to maintain the chain of custody. More on this later.

- There is an interior color camera built into the system that is hidden behind the mirror glass at the top center. If you look really close and have the correct lighting you can see it, otherwise it is invisible. Along with the interior camera there is a microphone built into the mirror for obviously capturing audio within the car. Included with the system is an optional add-on microphone for running to the rear cage area.
- The systems monitor is also hidden behind the mirror glass on the left side and can easily be toggled on and off or set to automatically come on when record is activated. The system also has a covert mode for the monitor and all indicator lights so your subject in the car doesn't see what is being recorded.
- One belt worn transmitter is supplied with the system, but up to two belt worn transmitters can be used at one time. Both being able to activate recording. The transmitters not only can activate recording, but also transmits audio to the system for recording. Depending on the configuration settings, you may also stop recording audio via the transmitter. Generally there is a green LED that flashes every three seconds to show that the transmitter is powered on, but can be put into covert mode by rapidly pressing the record button twice, and again to de-activate covert mode. The transmitter will also indicate to the user if they are out of range of the system, along with an indicator showing the system is recording. The transmitter also has a plug for an external microphone that can be worn on the uniform. I tried the system with and without the external microphone, but didn't find it necessary for the external microphone. The built-in high-gain microphone was more than sufficient. The transmitter, although not waterproof, it is water resistant, more on that later.
- One of the best features in my mind was that it has approximately a 60 second pre-record or buffer. What that means to you, you may ask. Upon activating record mode, the system will also save the previous 60 seconds of video. More on this later.
- The system also has a Global Positioning System (GPS), which has a small antenna puck that is mounted via a magnet to the roof of the cruiser, with a small wire that plugs into the back of the mirror. The GPS is used for several things to include your position and speed.
- Another great feature that the system has is a "Mark" button. You're able to mark the video as things happen, such as during a pursuit as items are thrown out of the vehicle.
- You're able to zoom the forward facing camera manually or automatically. Typically the auto zoom is all that is needed. I liked to use the auto zoom on traffic stops prior to exiting the cruiser, for zooming in on the license plate. The camera will zoom in, and after about 4 seconds will automatically return to the default zoom setting for capturing the scene.
- There are a number of other features that I will try and cover below.



When the system is off, it is a matter of pressing and holding the "Mark" button for a couple of seconds to power the system on. Once it is on it will take a few seconds to read the CF card and initialize the system. Then comes logging in. In my case, I work for a small department, so it isn't a big deal to scroll through a few names, select my name and then enter my pass-code. With large departments though, you may have a couple hundred officers programmed in the system. In this case it is a matter of the officer entering their assigned log-in number and pass-code. Obviously for evidence purposes, the pass-codes should be kept confidential. In the event that the officer goes on duty and immediately dispatched to a call and doesn't have the time to log-in to the system, the system will still record. This recording can then be assigned to this officer later.

Once logged in, there isn't much for the officer to deal with. If an arrest is made and subject placed into the rear of car, the "CAM" button is pressed, which switches from the front camera to the interior camera and turns on the interior microphone. The officer can also activate the covert mode, which not only turns off the monitor, but also turns off all indicator lights on the mirror. To turn off covert mode, it is a matter of pressing any button on the mirror.

Depending upon how the system is configured, recording can be activated multiple ways. First is the record (REC) button on the mirror, second is via the remote belt worn transmitter, third is by activation of lights or siren, fourth is speed activation and fifth by g-force. In the cruiser that I installed the system in, the siren and light control are separate units. Our light controller has the typical four position switch (OFF, 1, 2, 3). I wired the system to activate on position 2. That allowed us to activate a reduced number of lights such as amber warning lights, without activating the camera system. In regards to the speed activation, this is a feature that I'm sure most officers wouldn't like, but administrators might. If the administrators choose to have speed activation turned on, it is a matter of setting a speed within the configuration. Upon exceeding this speed the system automatically starts to record. The same goes for the g-force activation. A g-force limit is set within the system and upon exceeding this limit due to an evasive maneuver or vehicle collision the system will start recording. The g-force feature I feel is a good feature when it comes to collisions, because you can then see just what did happen to include the previous 60 seconds.

For those departments that use radar for speed enforcement, your radar system can be linked into the camera system to show the targets speed. For evidence purposes this could be a good thing, especially in a pursuit situation.

As mentioned, when the system is activated to record it also saves the previous 60 seconds. In many cases I found that this wasn't necessarily needed, but it is good to have. For instance, your running speed enforcement and the target vehicle is increasing speed until they see you and then hits the brakes. As the subject vehicle passes by, you activate your emergency lights and siren and pull out to initiate the traffic

stop. Upon activating the lights & siren the system started to record including that previous 60 seconds that recorded the speed on screen.

Besides what happens on camera, there is much more that is being recorded, so long as the wires have been connected as instructed. The system is continuously monitoring the speed, GPS coordinates, and if the following are activated: brakes, reverse, left turn signal, right turn signal, emergency lights and siren (with additional module). I mentioned above that I installed this system to activate upon the lights control being in position 2. In this case the system wouldn't record the lights being on until position 2. With all of this being recorded, it could potentially save the department in the event of an accident if the officer showed due regard for other traffic. That being said, it could also be detrimental.

Police administrators have plenty of things to worry about without getting complaints of their officers speeding around town. We've all heard those complaints from friends and family about some "cop" that was flying down the road for no reason. Maybe there was a reason that the officer was driving fast with or without lights and siren. Now there is a way that administrators can deal with this, and that is through the use of Speed Activation. All the administrators have to do is decide on a speed that the system will start to activate. If the officer exceeds this speed the system starts to record. Yes the officer is able to stop the record, and depending on system setting probably won't be able to delete it. Nothing can be deleted from the unit, it requires authorized access and proper permissions from the back office software.

Another setting for activation is via g-force. I patrol a lake community that of course has roadways with a lot of curves. Between traffic enforcement and responses to emergency calls, there were many instances that I was driving at high speed and going around these curves that would be creating more g-force than just driving straight. During my testing, I never did have the system activate due to g-force. I did lower the setting at one point and still didn't get an activation. Thankfully I didn't have any accidents, but I'm pretty sure that if I had gotten into a collision at even normal speeds that the system would have activated, but I wasn't about to test this theory.

The "Mark" button is a great feature. During testing I did press the button so I could understand it completely, but never actually needed it for a pursuit or other incident. The "Mark" button is beneficial in two places, in the cruiser and in the office, let me explain. Lets say you get into a pursuit and during this pursuit the subject(s) toss an object out the window, whether it be drugs, gun, or whatever you can press the "Mark" button for future reference of where this occurred. Now once the pursuit has ended and subject(s) are in custody, you can review the video in the cruiser to identify the location of where objects were thrown so you can retrieve them. Also, once the video has been uploaded to the computer at the station, when you review the video there will be a little flag along the video progress bar that indicates a "Mark". You can also click on the flag to go directly to that portion of the video.

The transmitter which generally is going to be worn on the belt is quite compact. I did have a little adjusting to do on my duty belt to accommodate the transmitter, but it wasn't much. Included with the transmitter is a plastic clip for mounting the transmitter to your belt. The clip is large enough to fit a standard 2¼" duty belt. There is a round stud that locks into the rear of the transmitter and allows it to rotate. I previously mentioned that the transmitter wasn't waterproof and that I had a story about that. Knowing that the transmitter wasn't waterproof I didn't intend on submerging it or exposing it to anything more than a little rain. Here I was back at the station and nature called. As I'm standing there I look down and see that the belt clip with the transmitter attached is a fraction of an inch from falling off my belt. I quickly reached for the transmitter and before I could grab it, it went into the toilet. This happening was completely my fault; I didn't have the clip secured properly to my belt. I quickly donned the rubber gloves and retrieved the transmitter, and removed the batteries in an attempt to save the electronics within the transmitter. (A little trick I learned after drowning my new cell phone in the river). I cleaned the outside of the transmitter off the best I could. I opened up the transmitter case, dried it the best I could and reassembled. I installed the battery and tried turning it on, it was a no go. I put it in the charger for awhile. After about an hour on the charger, I pressed the power button and it was good to go. Although it isn't waterproof, after this experience I can say without a doubt that it is water resistant. Besides the plastic belt clip that comes with the transmitter, leather and nylon pouches are available as options.

When the system is configured, only an administrator will be able to change settings, which only allows the general user to review video in the cruiser.

Those are the main features of the system, at least for in the cruiser. Most of the settings that will be set will be done from within the DVM's menu system, but there are some settings that are done in the VideoManager software. The Video Manager software is what is installed on a computer at the station. When users are setup in the system, there are many options available as far as what permissions they have, to include:

- Viewing - own or all video
- Update - own or all video info
- Upload
- Move file location
- Burn media or export data – own or all video
- Archive – own or all video
- Delete – own or all video
- Logs – own or all video
- Manage Users
- Manage Events
- Manage Vehicles
- Manage System Settings
- Auto Delete
- Auto Archive
- Erase/Format CF Cards

- Activate CF Card
- DVM Settings Menu

When the VideoManager's system settings are set, the administrator has several options such as the source drive for the CF card, target directory for uploads, target directory for archives and target directory for system logs. There is also the option for automatically archiving video files after XX days and whether it is reviewed or unreviewed files that are archived. Just like with automatically archiving, you can set video files for automatic deletion. System logs can also be set to be automatically cleaned up after XX months. If users will be required to login using a User ID instead of selecting their name, the number of digits for the User ID is specified and all User ID's must be that size. For instance if 5 digits are specified, all User ID's must be 5 digits long.

With the special key that is supplied, the sliding door is unlocked and opened on the mirror. The CF card can then be removed and ready for upload into the computer. Depending upon how the software is configured determines who is allowed to do what with the system. Whichever user(s) that have been authorized will be able to upload the video to the computer where it will be stored and if enabled will automatically erase the CF upon successful upload.

After a video file has been uploaded, the video can be reviewed and data added for future reference such as incident number (Ref #), video description, notes at selected areas of video, and adding "Mark's" if needed. When reviewing video, the system will show the date and time the recording started and ended, which vehicle and user, duration of video, GPS data updates throughout video, vehicle data (brakes, lights, siren, in reverse, left turn signal, right turn signal and vehicle speed) and radar speeds (target, lock and patrol). Through the use of "Mark" points, the video can be segmented for burning to DVD, but doesn't delete anything from the original video. An image from the video can also be captured for printing. Besides video archiving to another directory, you can also archive to CD or DVD. When burning video to DVD, there is the option of having the metadata (background data) overlaid on the video. The DVD can be burned with the included software for playback on a PC and on a DVD player for in the court room. This means there is no need for bringing a computer with you or installing software on a court computer. The video also has a proprietary watermarking to insure data integrity and chain of custody.

During the evaluation period, I was advised of a software update. With the Digital Ally system, it is very easy to install updates. It is as simple as inserting the CF card into a card reader attached to a computer with internet access, then downloading the update file to the CF card. When download is complete, insert the CF card into the mirror, and turn on the system. The system will recognize that there is an update and will ask if you want to update the system. When I installed the update, once I inserted the card into the mirror it took less than a minute for the update process. With this particular update, there were several features that I felt were beneficial. Previously when you activated the lights, the system would start recording, but you had to press the "Stop" button to stop recording, now if that feature is enabled the system will stop recording when lights

are turned off. With the update there was also a post-record feature that can be enabled. With these noted new features, there were several others added. As you can see, when software updates are available, they are very easy to install.

As impressed with the system as I was, there were a few minor things that I would suggest changing. Recently I had a discussion with the Director of Sales & Marketing for Digital Ally about my findings. The first issue was the locking door and key for the CF card. Because of the design of the key, it was a little difficult to insert the key. There were several times that the small prongs on the key were bent during the process. The second issue kind of goes along with the first. When removing the CF card from the mirror, the system must be powered off; otherwise it can cause some minor issues. It is easy to get in a rush and just remove the card, causing you an error message when re-inserting the card. Digital Ally is resolving both these issues by changing to a digital locking device, making it easier to access the CF card but will also automatically power down the system when unlocking the CF card door. The third issue that I had was that during the day, even when shading the screen with my hand it was a little difficult to see the screen in some situations. This issue is also being resolved with a brighter screen that will be visible during daylight hours.

Besides being impressed with the system, the support was exceptional. There were very few things that I couldn't figure out for myself, but there were times that I did need some help. I was in contact with the [Coleman Marketing Group](#) (Manufacturer Representative) for all my questions and had every one resolved within minutes.

As you can see this DVM is feature packed when compared to other systems on the market. The DVM takes up the least amount of space and is comparable or lower priced than most systems. For more information on the DVM and other products, visit <http://www.digitalallyinc.com/>



End Note

In the short time since this review was written, an electronic locking door with pin code access, internal battery backup and brighter screen, along with many other new features, have been introduced into the Digital Ally DVM In-Car Systems.