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1.1 Overview of Features

DVM-800 Video System Features:

- Two cameras built into the rear view mirror (One forward road facing, and one passenger facing with IR illumination)
- 12XC external front facing variable zoom camera
- Back seat camera
- Optional backup camera available
- Capable of recording full D1 (720x480, H.264) on two channels simultaneously
- Integrated 3.5” color monitor – can be invisible when not in use
- Wireless Microphone with 3000 foot range
- Two in-car covert microphones
- Recordings can be started by any of the following:
  1. Automatically by the G-Force sensor (cornering, braking, and collision), GPS coordinates, Vehicle Speed, IF Box sensors (sirens, lights, covert switch, etc.)
  2. Manually by using the Record Button
  3. Wireless Microphone
- Recordings end:
  1. When active input sensor trigger becomes inactive
  2. Manually by using the Record Button
- Pre-Event recording will capture up to 30 seconds prior to activating record. Pre-Event Record time is adjustable in 6 second increments
- Records metadata with the audio and video, including device serial number, vehicle speed, date, time, sensors, radar, and GPS coordinates
- Automated wireless 802.11(n) upload of video events to your configured back office server
- Configuration and device update files can be wirelessly downloaded to each vehicle
- Easy to use with minimal or no driver interaction required
- Secure user login to the DVM
- User may add traffic stop profile information at time of event
- Integrated playback controls for in-vehicle viewing
- LED and LCD status indicators
- Configurable LCD monitor integrated behind the one-way rear-view mirror glass
- Configurable LCD brightness for day and night modes
- Compact interface box to allow more automatic record trigger options
- Output Alarm that can turn on/off a device when an event recording begins
- VuVault back office software available for organizing and viewing video event files, and advanced device configuration
- …and more!
**1.2 DVM Features Diagram**

1. **LCD Display**: Used for viewing video
2. **Internal microphone**: Records audio from the passenger compartment
3. **Manual Record button**: This button is used to start/stop a manual event recording
4. **LED Status Indicators** (Passenger facing & Road facing): These visible indicators give the operator feedback on the operational status of the DVM
5. **Infrared Illuminators**: Automatically provides Infrared illumination for the passenger facing camera during low light conditions
6. **Passenger facing camera**: Records video of the vehicle passenger area
7. **Ambient Light Sensor**: Senses ambient light to automatically adjust LCD brightness
8. **Menu and Playback Buttons**: Used to navigate the DVM menus, play back videos, and log into the system
9. **External SD Card**: The external SD card is installed behind the external SD door. The SD card is installed at a slight angle and positioned with the connector pads as shown above
10. **External SD door**: Provides access to the external SD card. The included security screw kit can also be installed
11. **External Camera 1 Port**: An external camera can be connected to the DVM with this port
12. **USB Port**: For data transfer and Wi-Fi download module
13. **External Camera 2 Port**: A 2nd external camera can be connected here
14. **External GPS Port**: The supplied GPS antenna is connected here
15. **Power port**: This port is used to provide power to the DVM or can be used to attach the optional Interface Box to the system
16. **Reset Button**: Used to perform a hard reset of the system
17. **Integrated road facing camera**: Records the view in front of the vehicle
18. **External Audio Input**: The DWM Wireless Microphone audio cable is connected here
Section - 2: DVM Configuration Overview

Many customizable features are available for the DVM-800. The file that is used to update the DVM configuration is named “deviceconfig”. This file contains all of the necessary wireless settings, operational settings, and user logins. Section 3 will guide you through the process of creating the configuration file using the Settings tab within the VuVault™ back office software. You will then save the file using the Media Card Admin Tab within VuVault™ (Refer to Section 3-11 for details).

Once the configuration file has been created within VuVault, use one of the following methods to update the DVM:

**NOTE** The DVM must be initially be configured for wireless communication using the SD card method before Wireless Updates can be utilized.

- **Using your External SD Card**
  a. Copy the “deviceconfig” file to a SD card.
  b. Install the SD card into the external card slot of the DVM.
  c. The DVM will reboot and load the settings from the new configuration file. The old configuration settings will be overwritten and discarded.

  **Once the update process has started:**
  - **Do not** remove power
  - **Do not** turn the ignition off
  - **Do not** remove the external SD card

- **Wireless Updates**
  a) Once the new configuration is saved in VuVault, go to “Media Card Admin” and click “Save to Folder”. Navigate to the local hard drive folder to which you wish to save the “deviceconfig” file.
  b) Open the WTM-Lite™ program and click the “Update Devices” button, then the “Deploy Update Files” button. *(See the VuVault Wireless Server Setup Guide for details).*
  c) Navigate to the hard drive location for “deviceconfig”, click on the file then press OK.
  d) Select the device or devices to update and press “Done”.
  e) When the DVM reconnects to the FTP server, it will use settings from the new configuration file. The old configuration settings will be overwritten and discarded.

  **NOTE** If the Recording Mode of the DVM is set to ECA (Evidence Capture Assurance), the DVM will not make any attempts to wirelessly connect to the FTP server unless there is at least one Event Recording present on the DVM to be uploaded. In this case, you may make a quick recording on the DVM to enable WiFi to connect. This will allow a new configuration or firmware file to transfer from the server to the DVM.
Section - 3: Device Configuration

The DVM-800 is shipped with a default configuration so it can be used immediately after installation. However, many parameters can be configured and saved as an activation file. The activation file is saved to a local hard drive or external SD card. The DVM-800 is activated and configured using Digital Ally’s VuVault™ back-office software. Use the VuVault Installation Guide to install the VuVault software. Once installed, follow the instructions in this section to configure and activate your DVM.

ONCE THE DESIRED SETTINGS HAVE BEEN ENTERED, CLICK AND PROCEED TO SECTION 3.11 TO ACTIVATE YOUR SD CARD.

3.1 Default Configuration

If the unit has never been activated, it will use the following default settings preset from the factory.

- User Name/Password login entry
- English language
- Central Standard Time
- Date format: mm/dd/yy
- Time format: 12 hour time
- Daylight saving time (DST) enabled
- STANDBY mode, 30 second pre-event recording turned on.
- External triggers: emergency lights and wireless microphone
- Audio is off for pre-event, audio is on during event
- 60 second entry timeout
- Recording resolution is D1 (720x480) @ 30 frames per second
- Single Channel Recording
- Record Mode is ECA (Evidence Capture Assurance)
- All profiling screens disabled
- Accelerometer disabled
- 30 minute ignition timer
- Record external front road facing camera and internal passenger facing camera at 30fps resolution

3.2 Using VuVault to Configure your DVM-800

VuVault is used to manage DVM-800 settings as well as activate a DVM device or an external memory card for use in a DVM-800.

Before you can configure your device for use within VuVault, the DVM serial number must be added into the system. Add your device into VuVault by selecting Admin > Devices > Advanced > Add Device. Type in your device serial number and assign it a name within the system (the serial number is located on the back of the DVM). When done, press Save (for more information consult the VuVault Administrator Guide “Adding Devices” section).
Go to the Admin>Devices Tab. A separate configuration field will be available once a valid serial number for the device has been added into the system. These settings will define how all users will interface with the DVM (see below). Click on each sub-heading to reveal the available configuration options. When done, press Save.

The Default button in the lower part of the main screen can be used to reset all configurations for this device to the factory settings. This will not have any effect on the WTM Settings for wireless connectivity located in the Data Transfer screen.
3.3 General

Location
Below are the configuration items for localization which are provided to address Date/Time settings and display formats.

Local Time Zone
The local time zone is used to adjust the device when synchronizing to the Greenwich Mean Time through the DVM-800 GPS antenna. Choose the time zone for your location.

Date Format
The date format displayed on the event recordings is selected through this setting.
Settings: mm/dd/yy [default]; yy/mm/dd; dd/mm/yy

Clock Source
Choose to receive the time setting automatically through the GPS signal or manually through the DVM menu.
Settings: Manual, GPS [default]

Daylight Saving
Enable Daylight Saving setting and the time will be automatically adjusted for Daylight Saving for the configured Local Time Zone. If this is disabled, time will not be adjusted for Daylight Saving.
Settings: No, Yes [default]

Time Format
This time format allows the DVM-800 to be configured in a 12-hour format or a 24-hour format.
Settings: 24 Hour, 12 Hour [default]
Display

LCD Brightness
The LCD brightness is separately adjustable for day and night modes. To use this setting, choose the desired brightness setting for day and night modes. A light sensor located on the front of the DVM automatically places the system in the correct mode (day or night). This sensor uses a sampling filter to sense changes in ambient light; therefore some delay will be present when switching between the two modes. This is designed to prevent the DVM from switching unnecessarily when the dome light or car door is opened, for example.

Settings: Day Mode 1-7 [Default = 5]
          Night Mode 1-7 [Default = 5]

The LCD brightness setting can be temporarily overridden by the DVM operator. See page 5-5 for more information.

Record LED Behavior
The Red Record LED behavior is adjustable to accommodate your desired operation when the DVM is in record mode.

Settings: Off (Stealth Mode), Slow, Medium, Fast, Solid [default]

LCD Mode
This parameter defines how the LCD screen will operate during pre-event and during recorded events. Consult the table below.

Settings: Off, On, Auto [default]

Table 4-4: Choosing your LCD display behavior

<table>
<thead>
<tr>
<th>Setting</th>
<th>LCD Behavior</th>
</tr>
</thead>
</table>
| ON      | • LCD will always be ON during pre-event & event recording.  
          • User cannot turn off the LCD unless using **covert mode**. |
| OFF     | • LCD is ON as mirror boots-up to allow user login.  
          • LCD is OFF during pre-event.  
          • LCD is OFF during recorded events.  
          • LCD can be forced to stay ON by holding the DOWN key for 3 seconds.  
          • As soon as a recording completes, the LCD will remain ON for the duration of the Entry Timeout as configured in VuVault to allow user input **profiling** screens (if profiling screens are enabled). |
| AUTO    | • LCD is ON as mirror boots-up to allow user login.  
          • LCD is OFF during pre-event.  
          • LCD is ON during recorded events.  
          • LCD can be forced to stay ON by holding the DOWN key for 3 seconds.  
          • As soon as a recording completes, the LCD will remain ON for the duration of the Entry Timeout as configured in VuVault to allow use of **profiling** screens (if profiling screens are enabled). |

This LCD behavior can be overridden for external sensors such as the light bar or reverse gear. LCD overrides for connected external sensors are configured separately in the **IF box input sensors** section.
Power

The Power operation is configurable and specifies how the DVM will operate when the vehicle ignition is turned to the ON or OFF positions. Two parameters control the power operation in order as follows:

Ignition Shutdown Timer

The Ignition Shutdown Timer specifies the amount of time the DVM remains fully powered when the vehicle ignition goes from ON to OFF. If set to zero (0), the Ignition Shutdown Timer is not used and the DVM will then follow the operation for the Days in LPS configuration.

*Settings:* 0 to 50 minutes, 1 hr, 2 hrs, 4 hrs, 8 hrs, 12 hrs, 24 hrs, and unlimited [default = 30 minutes]

During the Ignition Shutdown Time:

1. The DVM is fully powered and operational, including all high power consumption devices, such as; cameras (including Pre-Event), recorded audio, GPS, IF Box, LCD monitor, and the pre-event buffer.

2. The DVM will remain fully powered until the ignition shutdown timer expires. When the timer expires, the DVM will then follow the operation for the Days in LPS configuration.

3. If the vehicle ignition switches on before the timer expires, the Ignition Shutdown Timer is cancelled and will start over again when the ignition is turned off.

Days in LPS (Low Power Standby)

When the vehicle ignition goes from ON to OFF the DVM will first follow the operation for Ignition Shutdown timer and then the operation for Days in LPS configuration. The Days in LPS configuration specifies the number of consecutive days the DVM will remain in Low Power Standby before completely powering off.

*Settings:* 0 to 10 days [default = 0 days]

Using a low power standby configuration ensures the DVM is fully powered on and ready to record within a few seconds of the vehicle ignition switching on. During LPS:

1. All high power consumption devices will be turned off, such as; cameras (including Pre-Event), GPS, LCD monitor, ECA recording, and the pre-event buffer. If configured, Accelerometer, External Triggers, and the Manual Record button events will trigger an event record. All other triggers are unavailable during low power standby.

2. The DVM will remain in low power standby until the number of days expires. When the number of days expires, the DVM will completely power off.

3. If the vehicle ignition switches to the ON position before the number of days in low power standby expires, the DVM will wake up to the full power state and be ready to record within a few seconds.

*NOTE:* When in LPS, “Sensor Only” type IF Box sensors will not turn on the LCD.

The DVM will draw a maximum of 170mA of current during Low Power Standby. Typically, a new or strong vehicle battery will provide enough current to power the DVM in Low Power Standby for 5 days without discharging the battery. The vehicle’s battery current rating, battery age, and other equipment that remains powered on when the vehicle ignition is off will affect the maximum consecutive days the DVM should remain in Low Power Standby. The following table
can be used as a general guideline for determining the Days in LPS setting; actual results may vary:

**Table 4-6: Number of days a vehicle can remain in Low Power Standby before draining a vehicle battery.**

<table>
<thead>
<tr>
<th>Battery C20 Rating (Ah)</th>
<th>No Additional or Minimal Load (days)</th>
<th>Additional Load (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>6 – 8</td>
<td>3 - 5</td>
</tr>
<tr>
<td>80</td>
<td>10</td>
<td>7 - 10</td>
</tr>
<tr>
<td>100 and greater</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Complete Vehicle Power Loss**

During an event record, if vehicle power is completely lost to the DVM system, the DVM will switch to the internal battery to end the event record, close any open files to prevent data corruption, and then power off after 60 seconds. If the DVM is not recording when vehicle power is completely lost, the DVM will power down after 60 seconds using the internal backup battery.

*NOTE* External cameras on the DVM-800 rely on the vehicle power supply. Thus, during a complete vehicle power loss to the DVM system, no video can be captured from the external cameras.

**Settings**

**Audio Mute**

Choose whether to allow or not allow the DVM user to mute the audio while the DVM is recording.

*Settings*: Disabled, Enabled [default]

**Login Mode**

Choose how the user will log into the DVM system. User device logins are configured in the VuVault Admin>Users tab. Users may log in using their User Name or Device sign on ID. If set to none, no DVM login will be required (not recommended).

*Settings*: None, User ID; User Name [default]

**Entry Timeout**

Enter the number of seconds when LCD menu items timeout from no user input. This timer applies to the Main Menu and Profile screens. When the timer has expired, the DVM will return to standby mode.

*Settings*: 0 to 600 seconds [default = 60 seconds]
3.4 Profile

Choose whether the DVM user, at the end of each recorded event, will be prompted to choose from the following list of criteria. Profile entries will become part of the event metadata. The menu will be displayed until the user enters relevant data or the Entry Timeout expires.

![Profile Menu](image)

**Event Id Enable**

Event ID’s are defined by an administrator in VuVault™ back office software. To configure this parameter, go to the Admin > Events tab. If enabled, the DVM user will be prompted to choose from a list of defined events at the completion of a video recording. See the VuVault Administrator Guide to learn how to create or edit events.

*Settings:* Enabled, Disabled [default]

**Incident Enable**

Incident ID parameters are predetermined and can be enabled or disabled.

*Settings:* Enabled, Disabled [default]

**Ethnicity Profile**

Ethnicity parameters are predetermined and can be enabled or disabled.

*Settings:* Enabled, Disabled [default]

**Age Profile**

Age parameters are predetermined and can be enabled or disabled.

*Settings:* Enabled, Disabled [default]

**Gender Profile**

Gender parameters are predetermined and can be enabled or disabled.

*Settings:* Enabled, Disabled [default]

*Figure 3-7: DVM Device User prompts if Profile setting is “Enable”*
3.5 Record

This section defines how the DVM will record audio and video events to the storage media.

**Recording Details**

Your DVM-800 includes an external 32GB SD card which is normally used as the primary memory storage. Use the following options in this section to configure your record settings.

**Record Quality**

The Record Quality parameter allows the video compression bit rate to be adjusted. Digital video is compressed by taking out data that remains constant from each frame, and only storing data that actually changes. This allows the file size of videos with still backgrounds to be much smaller than they would be if the background had to be present in every single frame. The bit rate is the amount of bits that can be used in one second of video.

The higher the record quality, the higher the bit rate and the size of the event files. The default setting is “very high” for maximum video quality, but can be lowered to “standard” or “high” to increase the compression rate and reduce the required storage space (*see figure 3-9*).

*Settings:* Standard (512Kbps), High (1Mbps), and **Very High (2Mbps)** [default]
Record Frames Per Second (FPS)

Sets the number of frames per second the DVM will record. The higher the setting, the better the video quality, and the larger the size of the event files (see figure 3-9).

Settings: 5FPS, 10FPS, 15FPS, 30FPS [default]

**Figure 3-9: Estimating your storage requirements**

<table>
<thead>
<tr>
<th>Record Quality</th>
<th>Record Frames Per Second</th>
<th>Storage Needed (MB per Event Minute)</th>
<th>Available hours of video using a 32GB SD card (Single Channel Recording)</th>
<th>Available hours of video using a 32GB SD card (Dual Channel Recording)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>30fps</td>
<td>30MB</td>
<td>15.8 hours</td>
<td>7.9 hours</td>
</tr>
<tr>
<td>Very High</td>
<td>15fps</td>
<td>17MB</td>
<td>29.2 hours</td>
<td>14.6 hours</td>
</tr>
<tr>
<td>Very High</td>
<td>10fps</td>
<td>12MB</td>
<td>40.4 hours</td>
<td>20.2 hours</td>
</tr>
<tr>
<td>Very High</td>
<td>5fps</td>
<td>7MB</td>
<td>70.2 hours</td>
<td>35.1 hours</td>
</tr>
<tr>
<td>High</td>
<td>30fps</td>
<td>16MB</td>
<td>31.0 hours</td>
<td>15.5 hours</td>
</tr>
<tr>
<td>High</td>
<td>15fps</td>
<td>9MB</td>
<td>54.6 hours</td>
<td>27.3 hours</td>
</tr>
<tr>
<td>High</td>
<td>10fps</td>
<td>7MB</td>
<td>70.8 hours</td>
<td>35.4 hours</td>
</tr>
<tr>
<td>High</td>
<td>5fps</td>
<td>5MB</td>
<td>98.2 hours</td>
<td>49.1 hours</td>
</tr>
<tr>
<td>Standard</td>
<td>30fps</td>
<td>9MB</td>
<td>55.2 hours</td>
<td>27.6 hours</td>
</tr>
<tr>
<td>Standard</td>
<td>15fps</td>
<td>6MB</td>
<td>82.8 hours</td>
<td>41.4 hours</td>
</tr>
<tr>
<td>Standard</td>
<td>10fps</td>
<td>4MB</td>
<td>124.0 hours</td>
<td>62 hours</td>
</tr>
<tr>
<td>Standard</td>
<td>5fps</td>
<td>3MB</td>
<td>164.4 hours</td>
<td>82.2 hours</td>
</tr>
</tbody>
</table>

File size varies with the Record Quality, FPS settings, and video content. Consult the table above to determine which settings are best for your application. The data above was extrapolated from 1 minute video file samples, and were focused on a stationary background. The storage column represents both channels of video combined together. This is intended as a general guideline and actual compressed video size will vary based on subject matter.

Event Audio

The Event Audio setting determines how audio will be recorded to your DVM. If “Enabled”, audio information is recorded both during the recorded event and during the configured pre-event buffer time. If “Enabled (w/o Pre-Event)”, audio will be recorded during the event but not recorded during pre-event. If “Disabled”, no audio will be recorded. If the Pre-Event Buffer Time is set for 0, Pre-Event Audio is turned off.

Settings: Enabled, Disabled, Enabled (w/o Pre-Event) [default]

Pre-Event Buffer Time

This option allows you to set the amount of time for the pre-event buffer, in 6 second increments. The DVM will buffer the last 6-30 seconds of video prior to the start of the recorded event so it can be recorded as part of the event. A setting of “0 second” disables the pre-event function and removes the pre-event audio setting from the Event Audio dropdown menu.

Settings: 6, 12, 18, 24, 30 seconds [default]
Record Mode
In addition to the external SD Card, the DVM-800 has 32GB of internal memory which is permanently installed in the unit. Select one of the following three modes to determine how the storage memory is utilized.

1. **Internal**
   - All triggered and manual recordings will be saved to the mirror’s **Internal Memory**. These recordings will only be accessible by wireless upload to VuVault or by using the USB cable to connect the DVM to a PC and uploading to VuVault. In this mode, an external SD card does not need to be present in the DVM.

2. **External**
   - All triggered and manual recordings will be saved to the **External SD Card**. These recordings will be accessible by wireless upload to VuVault or by manual transfer by removing the external SD Card and using an SD Card reader with a PC.

3. **ECA (Evidence Capture Assurance)**
   - All triggered and manual recordings will be saved to the **External SD Card** as above, but, the DVM will also continuously record from the default cameras (Source 1 and Source 2 as configured in the **Record** tab) to the **Internal memory**.
   - ECA recording will be temporarily suspended during any of the following:
     - A triggered or manual event is recording.
     - When the DVM is wirelessly transferring files.
     - The video playback screen is on or video is being played on the DVR.
   - ECA will always record in “Loop” mode: *When the internal memory is completely filled, the earliest recording will always be deleted to free up memory for new recordings.*

   **Settings:** Internal, External, **ECA [default]**

Retrieving ECA Recordings from Internal Memory
Using the supplied USB cable, connect a PC to the USB/WiFi Port on the back of the DVM and restart the system. Recordings can be selected and uploaded to VuVault using the **Upload** feature. Alternatively, the files can be copied to the PC using **Windows Explorer**.

*If the decision is ever made to switch from ECA mode to Internal Memory mode after having already used ECA, be sure to upload or manually delete the existing ECA recordings from the internal memory via USB cable connection to a PC. Failure to do so will cause the DVM to wirelessly upload all of the existing ECA recordings, which would take many hours to complete.*

Event Loop
Use this setting to determine how the External SD Card memory is handled.

1. **Select Off** (Default setting) to allow the DVM to make triggered and manual recordings only until the External SD Card is full. No further recording will be possible until existing recordings are uploaded to VuVault or the full SD card is replaced.

2. **Select On** for the DVM to operate in “loop” mode. When the external SD Card memory is full, the DVM will delete the earliest recording to free up memory for new recordings. In this mode, the DVM will always be able to make new recordings, but will risk the possible overwriting of an important recording if it has not been uploaded by the time the SD card becomes full.

   **Settings:** On, **Off [default]**
**Number of Channels**

1. Select **Dual** to configure the DVM to record two camera sources simultaneously when a recording starts. Both record status icons on the DVM display will be activated when recording.

2. Select **Single** for triggered and manual recordings to initially record from only one camera (indicated by the upper record status icon on the DVM display). The second channel recording can then be manually started by pressing the Play/Stop button on the DVM (Channel 2 recording is indicated by the lower record status icon).

   *Settings: Single, Dual [default]*

   **NOTE** Pressing the REC button while 2 channels are recording will stop both channel recordings.

**Cameras**

The DVM contains two internal cameras and also supports two external cameras. The DVM can record two video sources simultaneously. You may choose one of the four camera inputs to assign to each source. The selection you make here will become the default camera selections for all recorded events.

IF Box Input Sensors and the optional backup camera may have their own separate camera configuration if desired. Consult section 3.8 to review your IF box input sensor configuration.

**Source 1**

This is the main video channel available for display on the LCD during a recorded event, and is typically reserved for the 12XC external front facing camera attached to the External #1 (CAM 1) port on the back of the DVM. Choose one of four available camera inputs for this source.

*Settings: Internal Passenger, Internal Road Facing, External #2, External #1 [default]*

**Source 2**

This is the secondary video channel and is not displayed on the LCD during the recorded event. If a backup camera is **not** utilized, choose **External #2** to record the external back seat camera attached to the CAM 2 port on the back of the DVM. If a backup camera is utilized, choose either the **Internal Passenger** or **Internal Road Facing** camera so that the backup camera image will be switched correctly. Choose one of the three remaining camera inputs for this source. For more information on backup camera configuration, see **how to configure a backup camera**.

*Settings: Internal Passenger, Internal Road Facing, External #1, External #2 [default]*

**IR LED**

Choose whether to enable the infrared LED’s on the DVM front panel to aid in the illumination of the internal passenger facing camera. If set to **AUTO**, an ambient light sensor located on the front of the DVM automatically turns on the IR LED’s during low light conditions. Choose **OFF** to disable the IR LED’s.

*Settings: Off, Auto [default]*
3.6 Radar

The DVM-800 has the ability to display and record radar information in a video recording. Use the Radar section to configure the settings for the specific type of radar that is used.

**Radar Type**
Select the model of the radar being used.

**Radar Baud Rate**
Select the Baud Rate of the radar being used.

**Radar On Screen Display**
Select what you want to have displayed on the DVM.
3.7 Motion

Accelerometer
The DVM-800 has a built-in accelerometer which can be used to trigger an Event Record when the set G-Force levels are exceeded. The accelerometer can be used to activate an event recording based on the independent G-force levels for acceleration, braking, cornering, collision, and vertical movements.

Accelerometer event triggers can be disabled by setting the G-force levels to zero (0) in the configuration of the DVM. Setting the G-force level greater than zero (0) will set the event trigger threshold. When the event trigger threshold is met or exceeded, an event trigger will occur and the DVM will begin an event record. The accelerometer duration parameters determine the amount of time the G-Force level must be present before triggering an event.

Settings: Low, Normal, High, Disabled [default], Custom

Figure 4-11: Accelerometer axis orientation for the DVM-800.
**Vehicle Speed**

**Speed Source**

The vehicle speed can be used to trigger an event record. Vehicle speed can be calculated through the use of the supplied GPS antenna, or by utilizing the Vehicle Speed Sensor (VSS) signal. The Vehicle Speed Limit can then be adjusted to the speed at which an event record should occur. Select None if an event record is not required when the vehicle exceeds the speed limit.

*Settings: None [default], Sensor 4 VSS, GPS*

*NOTES*  
When Sensor 4 VSS is selected as the Speed Source, the Sensor #4 settings will automatically be configured as an Event Trigger as shown in the IF Box Input Sensors screen below. The IF Box Sensor 4 input wire must be connected to the Vehicle Speed Sensor output to utilize VSS.

*NOTES*  
When the Speed Source is set to None, no event trigger will occur when the Vehicle Speed Limit is exceeded, however the vehicle speed is still calculated using GPS and is logged into the metadata for all events that are recorded.

**VSS Pulses per Mile**

Input the number of VSS pulses that are generated during one mile of vehicle travel. This varies by the make and model of the vehicle.

### 3.8 Sensor

The Interface Box (IF Box) is an external module that allows connection to vehicle sensors and triggers. The IF Box provides the DVM system with the capability to add common event record triggers such as emergency lights, reverse, vehicle speed sensor (VSS), brakes, or other sensors. In addition, the IF Box provides connectivity from the vehicle power system to the mirror, communicates with the mirror using a CAN bus interface, and provides external connection for extending the CAN bus to other Digital Ally devices.

When adding a new DVM or IF Box, or when either is replaced, always perform a firmware update. The firmware update will ensure that the IF Box has the correct version installed. Refer to Section 10 for firmware update instructions.
**IF Box Input Sensors**

The Interface Box has six multi-purpose input sensors which must be configured in the DVM for proper operation. The input sensors can be connected to various devices to trigger an event recording or can simply be used as a notification in the video information file.

> The first input sensor is generally used for the Reverse Gear signal of the vehicle. Refer to the Backup Camera section on for details. Sensors 2, 3, and 6 are reserved for the Lights, Brake, and Wireless Microphone. Consult the DVM-800 Installation Guide for wiring instructions.

Below are the parameters which must be configured for each attached sensor. Press the Edit button to make your selections. When you are finished, press Done.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Detection</th>
<th>Threshold</th>
<th>Record Ends By</th>
<th>Event Camera</th>
<th>LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lights</td>
<td>Event Trigger</td>
<td>Low to High</td>
<td>High</td>
<td>Record Button</td>
<td>Use Default Camera</td>
<td>Off</td>
</tr>
</tbody>
</table>

**Name**

Each input sensor may be given a unique name that will be used to identify the sensor for event recording, playback and metadata reporting. By default, Sensors 1, 2, 3, and 6 are initially reserved for the Reverse Gear, Lights, Brakes, and Wireless Microphone respectively.

**Type**

For each input sensor, select the desired operation. “Event Trigger” will start a DVM record event, and its data will be logged into the metadata file for that event. “Sensor Only” will not start a recorded event, but its data will be logged into the metadata file when the DVM is recording.

“Sensor Only” type sensors follow the Event Priority list (see page 3-18) for camera switching, LCD control, and output alarm control. Additionally, “Sensor Only” sensors do not extend the recording time for another event trigger. “Triggered Sensor” is reserved exclusively for the Wireless Microphone (#6) input sensor.

*Settings: Event Trigger, Sensor Only, Triggered Sensor, Disabled [default]*

**Detection**

Select the type of signal that should trigger an event record for the corresponding input sensor. This setting is the condition of the attached device going from a non-trigger state to the trigger activated state *(Refer to figure 3-17b for more information).*

*Settings: Low to High [default] – Attached device is triggered by going from low voltage to high voltage. High to Low – Attached device is triggered by going from high voltage to low voltage.*

**Threshold**

This input sensor threshold setting specifies the level to sense that a trigger has been activated. When the input sensors are not connected, a voltage level appears on this input which is normal operation.

The threshold setting of ‘Standard’ or ‘High’ should be determined by using the “Input Sensor Device Detection, Threshold, and Wiring Guide” chart *(Refer to figure 3-17b for more information).*

*Settings: Standard [default], High*

**Record Ends By**

For each IF box input sensor, select how the event recording will end when the sensor is the primary trigger. Choose Sensor to end the recording when the triggered sensor becomes inactive, or Record Button to end the recording by pressing the Record Button.

*Settings: Sensor, Record Button [default]*
**Event Cameras**

Choose which two cameras will be active when the sensor becomes active. The “Use Default Cameras” selection will use your configured default camera setting. To override the default camera setting, choose “Use different cameras during this trigger”.

You will then be provided options for your Source 1 and Source 2 camera overrides whenever the sensor becomes active. This operation will follow Event Priority rules (see page 3-18).

*Settings:* Use different cameras during this trigger, *Use Default Cameras* [default]

**LCD**

Select how the LCD display will operate when a connected IF Box sensor (such as emergency lights, siren, wireless microphone) becomes active. If “No Action” is chosen, the LCD will follow the LCD Mode setting as configured on page 3-4. Consult table 3-16 below to choose your desired operation.

*Settings:* On, Off, *No Action* [default]

*Table 3-16: LCD behavior during an active external sensor*

<table>
<thead>
<tr>
<th>Setting</th>
<th>LCD Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON</strong></td>
<td>• LCD remains ON while the input sensor is active.</td>
</tr>
<tr>
<td><strong>OFF</strong></td>
<td>• LCD remains OFF while the input sensor is active.</td>
</tr>
<tr>
<td></td>
<td>• After completion of event recording LCD will become ON for the duration of</td>
</tr>
<tr>
<td></td>
<td>the configured Entry Timeout for profiling screens (if profiling screens are</td>
</tr>
<tr>
<td></td>
<td>enabled).</td>
</tr>
<tr>
<td><strong>NO ACTION</strong></td>
<td>• The LCD will follow the LCD Mode rules as configured on page 3-4.</td>
</tr>
<tr>
<td>(default)</td>
<td>• After completion of event recording LCD will become ON for the duration of</td>
</tr>
<tr>
<td></td>
<td>the configured Entry Timeout for profiling screens (if profiling screens are</td>
</tr>
<tr>
<td></td>
<td>enabled).</td>
</tr>
</tbody>
</table>
Input Sensor Device Detection, Threshold, and Wiring Guide

To configure an input sensor, the signaling of the device must be known. To determine the signaling, measure the voltage for the normal or inactive state of the device and the voltage for the triggered or active state. Use the input sensor worksheet located in your installation guide to record measurements. When configuring sensors, first determine the Trigger Operation; second, the direction for the Detection Type; then select the Threshold setting nearest to the triggered state. The figure below illustrates these steps:

Figure 3-17a: Detection and Threshold parameters for input sensors.

<table>
<thead>
<tr>
<th>Signal from Trigger Device</th>
<th>Configuration Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal or Inactive State</td>
<td>Trigged or Active State</td>
</tr>
<tr>
<td>5V</td>
<td>GND</td>
</tr>
<tr>
<td>12V</td>
<td>GND</td>
</tr>
<tr>
<td>28v</td>
<td>GND</td>
</tr>
<tr>
<td>GND</td>
<td>OPEN</td>
</tr>
<tr>
<td>GND</td>
<td>5V</td>
</tr>
<tr>
<td>GND</td>
<td>12V</td>
</tr>
<tr>
<td>GND</td>
<td>28V</td>
</tr>
<tr>
<td>OPEN</td>
<td>GND</td>
</tr>
</tbody>
</table>

Default Setting

Figure 3-17b: Interface box input cable wiring color code

<table>
<thead>
<tr>
<th>RJ45 Pin#</th>
<th>Sensor Number</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sensor #1</td>
<td>RED</td>
</tr>
<tr>
<td>2</td>
<td>Sensor #2</td>
<td>ORANGE</td>
</tr>
<tr>
<td>3</td>
<td>Sensor #3</td>
<td>BLUE</td>
</tr>
<tr>
<td>4</td>
<td>Sensor #4</td>
<td>YELLOW</td>
</tr>
<tr>
<td>5</td>
<td>Sensor #5</td>
<td>WHITE</td>
</tr>
<tr>
<td>6</td>
<td>Sensor #6</td>
<td>GREEN</td>
</tr>
<tr>
<td>7</td>
<td>Output #1</td>
<td>BROWN</td>
</tr>
<tr>
<td>8</td>
<td>GND</td>
<td>BLACK</td>
</tr>
</tbody>
</table>

How to Configure a Backup Camera

The DVM-800 can provide a backup camera image on the LCD when the vehicle is shifted into reverse gear. In addition, the DVM-800 can be configured to record the backup event. An optional backup camera or license plate camera kit is required.

The backup camera is connected to the DVM CAM2 input. The vehicle’s reverse gear signal must be connected to Sensor Input #1 of the IF Box (consult the DVM-800 Installation Guide for more information).

The example below illustrates a typical backup camera configuration. Using this example, your DVM-800 will display the backup camera image on the LCD whenever the reverse gear is active, but will not start a recorded event. When recording the Backup Camera Event is not required, configure the Type for Sensor #1 as “Sensor Only”. If recording the backup camera event is required, configure the Type for Sensor #1 as “Event Trigger”. The LCD can be configured to be ON or OFF in either mode. Note that
Source 1 (the video source displayed on the LCD) is configured for External #2, and LCD is configured On. After you’ve made your selections, select Done.

![Figure 3-18: Sample Reverse Gear Configuration](image)

The Detection & Threshold parameters displayed above assumes your reverse gear signal is 0v (non-active) and 12VDC (active). If the reverse gear signal for your vehicle is different, you will need to configure the DVM for proper operation in your vehicle using the “Detection & Threshold parameter” table on the previous page.

Reverse Record Override

By default, the reverse gear camera selections will take priority over other sensors and record triggers whenever the vehicle is in reverse. The reverse camera source will override the default Source 1 camera selection configured in the Record > Cameras Menu. Once the reverse trigger is inactive, the original camera image source configured in the Record > Cameras menu will be displayed once again. If the reverse trigger is active when the recording ends, the backup camera image will continue to display. To change this behavior, move the reverse sensor down on the event priority list. See Event Priority below.

Event Priority

The Event Priority list defines the LCD control, camera switching, and Output Alarm control when multiple triggers and/or sensors are simultaneously active. There are eight categories for prioritization which include: IF Box Sensors 1 through 6, Internal Events, and Pre-event. Using the VuVault software, drag and drop your named sensor blocks to set the camera, LCD, and output alarm priority. The Event Priority rules are defined as highest to lowest from left to right.

- **Sensors 1 through 6** as configured in the Sensor tab of the VuVault software.

- The **Internal Events** box consists of all the configured internal DVM sensors. These consist of the manual record button, GPS, and accelerometer sensors. These events must be higher in priority than Pre-Event.

- The **Pre-Event** box is the Record Mode as defined in the Record Tab. This box must be lower in priority than “Event Trigger” Type sensors (#1 through #6).

**Example 1: Reverse Camera Override Active**

If multiple sensors are active, the Example 1 configuration above page tells us that the Reverse Gear has event priority (LCD, camera switching, and Output Alarm) over all other sensors. The Lights camera
settings will have event priority (LCD, camera switching, and Output Alarm) over all other sensors except the reverse gear if both are simultaneously active.

**Example 2: Reverse Camera Override Not Active**

In Example 2 above, the reverse gear backup camera will be displayed on the LCD only if the emergency lights and other record triggers are inactive. “Sensor Only” sensors should be given lesser priority to avoid a situation where “Sensor Only” sensors could override the Camera switching, LCD control, and Output Alarm control for an “Event Trigger” type sensor.

**Output Alarm**

This IF box output signal is used to control the operation of the supplied DWM Wireless Microphone, or other optional equipment. When the output alarm is active, a 0VDC signal is output to the BROWN wire IF box cable harness. When not active, it is an open circuit. The output alarm can also be utilized to switch auxiliary cameras using optional equipment.

**Output Alarm Name**

By default the Output Alarm name is reserved for the Wireless Microphone and is named as such. ‘Wireless Microphone” can be changed by editing the name field. The name is used to identify the output for event recording playback and back office storage.

**Output Enable**

Select which event or events will activate the Wireless Microphone using the drop down arrows. The Output Alarm operation will follow Event Priority rules for the Wireless Microphone. All external and internal sensors are listed and individually configurable. By default, the output alarm is enabled for sensor 2 (Lights), sensor 6 (Wireless Microphone), and the Record Button.

*Ignore:* The microphone/output alarm will not be activated

*Trigger:* Enables the DVM to activate the output alarm when the selected sensor is active.
3.9 Data Transfer

Network
The DVM is capable of automatically uploading event files via Wi-Fi to the VuVault™ back office. The DVM must have the Wi-Fi adapter connected and configured for Wi-Fi uploading. The back office network must have at minimum a wireless access point (WAP), and a computer running FTP server software and VuVault software.
Once configured, the DVM will search for an authorized access point. If an authorized access point is identified, the DVM will automatically connect and begin uploading the event files to the back office FTP server. For more information see the "VuVault Wireless Server Setup Guide".

Mode
This selection determines whether the wireless function is enabled or disabled. When enabled, the mirror will automatically connect to Authorized Wi-Fi access points defined in the WTM Settings and automatically upload event recordings and files. To enable the wireless function, choose either Basic or Advanced. Choose None if you will not be using any wireless functions.

Basic
During ‘Basic Wi-Fi’ operation, after the event files have been uploaded to the server the DVM will delete the files from DVM’s primary memory storage. For most wireless installations, this is the most commonly used setting.

Advanced
‘Advanced Wi-Fi’ configuration will only delete the files from the DVM’s primary memory after VuVault has imported and validated the files.

Secure Video Uploads
If enabled, the DVM will provide a proprietary encryption technique before uploading to the back office through a Cell-Network or Public IP. To use this feature, the WtmLite™ service MUST also be configured. WtmLite™ is needed to decrypt the file set after the wireless transfer. Please refer to the “VuVault Wireless Server Setup Guide” for instructions on how to install and configure WtmLite™. Enabling this function may decrease upload speed.
Settings: Enabled, Disabled [default]
**Wtm Settings**

Once a WtmLite Server Access Point SSID has been configured via the VuVault Admin > VuVault Settings > WtmLite tab (see the “VuVault Wireless Server Setup Guide”), the Wtm Settings field is used to associate your DVM-800 to the WtmLite server. To begin, click the Add / Remove button to add your DVM to the wireless server. The SSID associated with your configured WtmLite server will then appear in the Wtm Settings box when finished. You may add multiple SSID’s to this list, and prioritize how your DVM will attempt to connect by selecting an SSID and using the Up or Down buttons. The DVM will search for the access point on the top of the list first.

*If you do not select a wireless server in this field, your DVM cannot perform a wireless file transfer.*

**USB**

**USB Port**

The DVM has a built in USB port which can be used for various administrative purposes, or can be used with the Wi-Fi adapter for wireless functionality. This parameter determines if the DVM USB port for data connections to a PC is enabled or disabled. Wi-Fi adapter connectivity is not affected by this parameter.

*Settings:* Disabled, **Enabled** [default]

**3.10 GPS**

The GPS information displays the route traveled during the course of a recording on an interactive map. It includes path traveled, current position of the vehicle during playback, location and details of the starting and stopping points and any marks in the video. It can also display the heading and any unauthorized zones that are setup. Below are configuration items which can be enabled for a GPS location to trigger an Event Record.

**GPS Locations**

If a Home Base Location has been configured, the DVM will begin recording when the defined distance from home base has been exceeded. Once the duration of the event ends, subsequent record events will be triggered as long as the vehicle remains outside the home base radius. The coordinates can be manually entered, or use the “Edit with Map” button to use Google Maps to easily create the home base radius.
**Latitude**
The vehicle home base latitude coordinate in an integer decimal format (i.e.; $\text{lat} = 38.89171$).

**Longitude**
The vehicle home base longitude coordinate in an integer decimal format (i.e.; $\text{long} = -94.670956$).

**Max Distance**
This is the distance in miles that the vehicle can travel from the home base. If the vehicle travels beyond the specified distance, an event record will be triggered. A value of zero (0) disables this event trigger.

**Locations of Interest**
Locations of interest are geographical areas identified by latitude, longitude and a radius using the GPS antenna. These areas are generally considered restricted or off limits. If the vehicle enters, or remains in a location of interest for a configurable amount of time, the DVM will automatically start a recorded event. Up to 21 different Locations of Interest can be configured. Below are the configurable items:

**Time in Location**
Enter the allowable time in this location before an event recording is triggered (days, hours and minutes). The minimum time in a location of interest before an event is triggered is 1 minute. To disable all unauthorized zones set the time to 0 days, 0 minutes, and 0 seconds.

**Latitude**
Enter the location(s) latitude in an integer decimal format (i.e.; $38.89171$). To disable a location, the latitude, longitude, and radius parameters must all be zero (0).

**Longitude**
Enter the location(s) longitude in an integer decimal format (i.e.; $-94.670956$). To disable a location, the latitude, longitude, and radius parameters must all be zero (0).

**Radius (miles)**
Enter the radius of the unauthorized location in miles. To disable an unauthorized location, the latitude, longitude, and radius parameters must all be zero (0).

---

**ONCE THE DESIRED SETTINGS HAVE BEEN ENTERED, CLICK AND PROCEED TO NEXT PAGE TO ACTIVATE YOUR DVM-800 SD CARD.**
3.11 Activating your SD card within VuVault

The Media Card Administration function is used to erase, format, and activate a SD card to be ready for use with VuVault and the DVM-800. During activation, the file “deviceconfig” will be written to the SD card. This file contains all VuVault user ID’s, vehicle ID’s, and event ID’s. This file also contains all DVM configuration data.

An approved SD card reader must be connected to the computer.
1. Select Media Card Admin from the Admin navigation bar.
2. Select the Device Type from the available options. It is very important to select the correct device type.
3. Click the button to detect the SD card from the available removable drives.
4. Select the drive letter assigned to the SD card.
5. Note the Card Volume Name field. If there is a current volume name, it will show up automatically. If not, it will default to DA_DEVICE. This can be changed according to customer preference to whatever is deemed most appropriate.
6. Choose from one of four options to activate the card:
   - **Activate Device (Leave Data Intact)** – this option simply activates the card for use with a Digital Ally device.
   - **Clear Data and Activate Device** – this option erases any data on the card and activates it.
   - **Format Media and Activate Device** – this option erases data, formats the card (quick format), and activates it for use with a Digital Ally device.
   - **Secure Format Media and Activate Device (Slower)** – this option overwrites data with zeroes for a secure erase, formats the card, and activates it for use with a Digital Ally device.
7. Click the button. The Status pane will indicate when the process has completed.

The SD card can then be placed inside the **DVM-800**. The DVM will load the configuration files automatically into internal memory (process may take a few minutes). During this process the red, blue, and green LED’s will flash sequentially and the system may reboot. For more information consult the **VuVault Administrator Guide “Media Card Administration”** section.
Section - 4: DVM Operation

4.1 Buttons for Operation

Function Keys

- REC: Record Start/Stop
- M: Mark

Navigation Buttons

- Play/Pause
- Cursor Up/Down
- Rewind/Fast Forward
- Ms: Menu/Select/Audio Mute

4.2 Display and On Screen Information

<table>
<thead>
<tr>
<th>Example</th>
<th>LCD Location</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top left of LCD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper=Channel 1</td>
<td>Recording in Progress</td>
</tr>
<tr>
<td></td>
<td>Lower=Channel 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper=Channel 1</td>
<td>Standby (Pre-Event Enabled)</td>
</tr>
<tr>
<td></td>
<td>Lower=Channel 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper=Channel 1</td>
<td>Standby (Pre-event Disabled)</td>
</tr>
<tr>
<td></td>
<td>Lower=Channel 2</td>
<td></td>
</tr>
<tr>
<td>01/27/15</td>
<td>Lower left</td>
<td>Date (mm/dd/yy)</td>
</tr>
<tr>
<td>08:47:55</td>
<td>Lower left</td>
<td>Time of Day</td>
</tr>
<tr>
<td>SD</td>
<td>Lower right</td>
<td>Primary memory source</td>
</tr>
<tr>
<td>13:08</td>
<td>Lower right</td>
<td>Record Time Remaining (hh:mm)</td>
</tr>
</tbody>
</table>

- Wireless File Transfer Indicator
  - Gray: Wi-Fi adapter is connected to DVM but not WAP
  - Yellow: Wi-Fi adapter is searching for a WAP
  - Green: Wi-Fi adapter is actively transferring data

- LCD forced-on mode (see next page)

- Microphone indicator. Muted when it has a red line.
**LCD Forced On Mode**

Press and hold the ▼ button for 3 seconds to turn the LCD monitor on. A monitor icon graphic is displayed on the top of the LCD. This will keep the display on and turn backlighting on. To exit this mode, the ▼ button is depressed again for 3 seconds.

When enabled, The DVM will remember this setting and return to forced-on mode when resuming from low power standby. The DVM display will revert to the configured LCD Mode (Off, On, or Auto) whenever it is powered on or reset.

4.3 DVM Connectors

The following connectors are located on the back of the DVM. See section 1.2 for more information.

**USB Port**

The USB port is available for file management or wireless file transfer.

**External Microphone**

The External Microphone port is used in conjunction with the Digital Ally DVM Wireless Microphone system and covert rear microphone.

**Camera 1 Port**

An external camera can be connected to the DVM with this port. This is typically reserved for:
- 12XC front zoom camera OR
- 12XC front zoom camera + back seat camera connected through a Y cable when a backup camera is utilized.

**Camera 2 Port**

A 2nd external camera can be connected to the DVM with this port. This is typically reserved for:
- Back seat camera OR
- Backup camera

**Power Port**

Primary power is sourced to the DVM through the power port for continuous operation. Secondary power is provided by an internal battery which is capable of powering the DVM for up to 30 minutes.

4.4 Charging Information

The DVM-800 internal battery is charging when ignition power is supplied to the system.
4.5 Memory Card Installation & Removal

To insert the SD card, position as pictured to the right. The memory card should slide in easily with slight resistance as the card seats into the card slot. **Do Not Force the memory card into the slot.** If the card is difficult to insert, first check the card slot for obstructions and ensure that the memory card orientation is correctly positioned; then try inserting the memory card again.

The memory card may be removed when the DVM is powered Off or in Standby mode. To remove the memory card, press the card in slightly and it will release and partially eject. You can then remove it from the unit.

**WARNING:** Do not remove the memory card while the unit is recording! Only use Class 10 or higher commercial grade external 8/16/32GB byte memory cards purchased from Digital Ally.

4.6 Powering On and Off

Your DVM-800 uses the vehicle’s ignition to automatically power itself on and off. The power operation is configurable and specifies how the DVM will operate when the vehicle ignition is turned to the ON or OFF positions.

During the boot process, the splash screen to the right is displayed and contains the unit serial number and firmware version. Once powered on the blue status indicator remains on.

To power the unit off, turn off the vehicle’s ignition. If configured, the Ignition Shutdown Timer will begin and the unit will either power off or enter **Low Power Standby**.

To configure your DVM-800 power options, consult **Section 3**.

4.7 DVM Menu Functions

The **Setup Main** menu screen provides access to DVM-800 user configurable settings. Press the Menu/Select (Ms) button to bring up the menu screen. If a button is not pressed before the configured **Entry Timeout** expires, the unit will return to Standby mode and the display will turn off.

- While navigating the menu screen, the current or active menu item will be highlighted.
- Menu screen navigation is done using the navigation buttons (↑, ↓, ←, →).
- The Menu/Select button (Ms) is used as a select while navigating the main menu and sub-menus.
- The device version and serial number are reported in the lower left corner of the Setup Main Menu screen.
Viewing Current Configuration

Press the Ms button to access the Setup Main menu screen, then navigate to highlight the Serial# and Version section. Press the Ms button to view the current device configuration settings. Change screens by pressing the § or ¶ buttons. These settings are not editable from the device and can only be changed in the VuVault settings.

Logging into the DVM

DVM login options are configured by your VuVault system administrator. When the login is configured for Username or User ID, the appropriate Login screen will be displayed after the unit has finished powering on.

When Login is required, the password entry screen will be displayed after the Username or User ID has been entered. This is the same password you will use to log into VuVault.

Navigate to your selection using the arrow buttons (▲, ▼, ◄, ►) pressing the Ms button to enter each digit, then use the checkmark button to continue.

Setting the Date and Time

To adjust the date or time, select the button from the setup main menu using the navigation button and press the Ms button which opens the screen to adjust the setting. Press the Ms button after the time or date have been adjusted to the desired setting. After the date and time have been set or changed, the DVM will reboot to apply the changes.

The date and time cannot be manually changed if “clock source” is configured for “GPS” in the VuVault Admin > Devices > DVM-800 Settings > General > Location Menu.
**Adjusting LCD Brightness**

The global default LCD brightness settings are configured using the VuVault > Devices > DVM-800 Settings > Display menu. These settings can also be configured for each user individually by the Administrator using the VuVault software.

To temporarily override the day/night brightness values configured in VuVault, select the ¦ icon from the Setup Main menu screen. Use the arrow keys on the front of the DVM to change the brightness settings for both day and night mode. A sensor on the front of the DVM automatically detects the ambient light level and places the LCD display in the correct mode.

![LCD Brightness 1 - 7]

*Individual user settings can be adjusted by your VuVault system administrator*

*Note: Brightness settings will remain in effect until the next power cycle. We recommend that each user experiment with the brightness settings and decide which work best, then relay this information to the VuVault system administrator. The administrator can then configure the default brightness settings for each user.*

**Logging out of the DVM**

Press the Ms button to access the Setup Main menu screen, then select the icon option to log out of the system. You will then be presented with the log in screen for you or another user to log back into the system.

When logging out, the default configuration and parameters will be loaded until the next user logs into the system.
4.8 External Camera Control Buttons

The external front facing 12XC camera is enabled when Ext1 is selected as a camera source in the Camera Configuration Menu within VuVault. An auxiliary camera can also be connected to this channel and be manually toggled using the front camera controls.

Camera Select

1. Selects external front camera for recording/viewing (12XC camera.)

2. Selects the external back seat camera for recording/viewing (when the front 12XC camera and back seat camera are connected together through a Y-cable).

NOTE: The camera selection can be changed at any time. Please note that the DVM records whichever camera is selected, making it possible to switch cameras in the middle of an event record.

Focus

Near Focus button is used to move the focal point closer to the camera.

Far Focus button is used to move the focal point away from the camera.

It is recommended that Auto Focus be set to OFF. This will prevent the camera from focusing on items on the windshield such as bug splatter, rain drops, wiper blades, etc.

Zoom

Each quick press and release of the ZOOM IN button will increase the zoom magnification level by 1x. Press and hold to zoom in faster.

Each quick press and release of the ZOOM OUT button will decrease the zoom magnification level by 1X. Press and hold to zoom out faster.

Pressing the AUTO ZOOM button will cause the camera to zoom in to a pre-defined zoom level for 5 seconds, then return to a wide angle view.

4.9 Video Recording

Start a Recording

To start a recording, press and release the Record Start Button, activate a connected input sensor, or press the record button on the Wireless Microphone. The display will turn on for the duration of the recording, and the red status indicator will be lit continuously. If the unit is configured with Pre-Event enabled, the unit will automatically include up to 30 seconds of video prior to the record button press.

If the DVM is configured to initially record a single channel, only the upper recording status indicator will be active while recording. During the single channel recording, a second channel recording can be started by pressing the Play/Pause button 🎁.
Stop a Recording
Press and release the record button to stop an active recording. The red led will turn off and the unit will return to Standby mode.

When the unit is configured to collect Event Profile information from the user, the unit will display the data entry screens. If no buttons are pressed within 60 seconds, the unit will return to Standby mode.

Place Mark(s) in a Recording
Once a recording has been initiated, markers can be placed in the recording to indicate when important events take place. This is done by momentarily pressing the mark button (M) on the left side of the DVM. Additional marks can be placed at any time during the recording.

Audio
The DVM-800 contains a microphone built into the front panel, and an external audio input which is reserved for the DWM Wireless Microphone System. When audio recording is enabled, the DVM-800 will record two stereo audio channels.

During a recording, the left and right audio channels are recorded separately. The L&R audio channels will be saved to the AVI files as follows:
- Internal DVM microphone audio is the Left Audio track on both .AVI files.
- DWM Wireless Microphone audio is the Right Audio track on both .AVI files.

Muting the Audio
During an Event Recording, the audio can be muted or un-muted by momentarily pressing and releasing the (Menu/Select) button. The Event Recording is always started with audio un-muted when the DVM is configured to record event audio.

If the DVM is configured to always mute (not record) event audio, the audio cannot be un-muted. The ability to record (or not record) pre-event audio is exclusively controlled by the device configuration.

The green status indicator LED on the DVM displays the current audio setting.

4.10 Video Playback
The most recent video recording can be played back by pressing the button while in Standby. Other videos can be viewed by using the Playback List or Slide View. The playback list menu is only accessible when videos are present on the DVM Playback List:
- To display the Playback List from Standby; momentarily press and release the ↑ or ↓ button.
- When the list appears, use the ↑ or ↓ button to highlight the desired event and press the button to begin playback.
- Return to the playback list during playback by pressing the button.
- Playback list information:
  - The DVM-800 can record two channels simultaneously. “1” represents the front channel and “2” represents the rear channel.
DATE = 8-characters in length, representing the date of the event (yyyyymmdd).

TIME = 6-characters in length, representing the time of the event in a 24hr format (hhmmss).

INCIDENT ID = Up to the first 15-characters of the Incident ID can be displayed; the actual number of the Incident ID is variable per event. Nothing will be displayed if no Incident ID is assigned to the event by the user. If the Incident ID is less than 16 characters the entire Incident ID can be displayed.

- Press and release the **Ms** button to exit the playback list.

**Slide View:**
Using slide view, you may quickly skip through a snapshot image of your recorded video events for playback and/or editing of profiling data.

1. From Standby, press the **‹‹** or **››** button to enter Slide View mode. This displays the first image of the oldest event video on the device along with any event data that was recorded from user input.
2. Press the **‹‹** or **››** button again to step through other event videos.
3. While in slide view, press the **Ms** button to enter the profiling screens & change the assigned profile data.
4. Press the **➡** button to begin playback of the event video represented by the image on the display.
5. To exit playback press and release the **Ms** button. This will return back to slide view.
6. To exit slide view, press the **▲** or **▼** button.

**Playback Control:**
- During playback, audio is played through the built in speaker and volume is adjusted by pressing the **▲** or **▼** button.
- Pressing the **››** button increases the speed of forward playback and the **‹‹** button will reverse playback of the video. Pressing either of these multiple times increases the playback speed.
- To pause a video during playback by pressing the **➡** button once. To resume playback press Play/pause again.
- While a recording is paused, add a mark by pressing the mark button momentarily.
- To skip to the next mark in the recording press the Mark button.
- During playback on the DVM, the L & R audio channels will be mixed by software when output to the DVM external speaker.

**4.11 Covert Operation**
To enter or exit COVERT operation the unit must be either in the STANDBY or RECORD mode. To place the unit in covert operation, press the **Ms** Button for 3 seconds which turns the LCD display and status indicators off. To exit covert mode, press the **Ms** Button again for 3 seconds. While in COVERT operation, the menu and playback screens cannot be activated or navigated.

The IR LED’s will continue to function when the DVM is in covert mode. For example when in COVERT mode, the IR LEDs will turn ON if there is insufficient light. If there is sufficient light the IR LEDs will turn OFF.
4.12 Uploading Files into VuVault

Option 1: SD Card
The SD card can be removed from the DVM-800 and inserted into an appropriate memory card adapter. When the DVM is powered off or in standby, remove the external SD card and replace it with a new external SD card, or upload the event files from the original external SD card into VuVault and re-install the card when finished.

Do not remove the SD card while the DVM is recording. Please consult the VuVault User’s Guide for upload instructions. If the DVM is powered on, All 3 LED’s will flash rapidly whenever the SD card is removed.

Option 2: Wi-Fi
A properly configured USB Wi-Fi dongle provides automated file transfer via 802.11(n) through your wireless access point and network. After successfully uploading recorded events from the SD card, the DVM will automatically delete the files. A green status indicator can be seen on the LCD screen while the DVM is actively transferring video files to your computer.

A VuVault Wireless Server must be configured to use the wireless transfer feature (see Section 7 and the “VuVault Wireless Server Setup Guide” for setup instructions).

4.13 Event Id Information Entry
The default setting on your new DVM-800 is not to prompt the user to input any event ID information screens after a recorded event. You may choose to enable profiling input data using the VuVault back-office software device configuration.

The following Profile screens are available: Event ID Type, Ethnicity, Gender, Age, and Incident Number. The Event ID Type selection criteria is configured by your VuVault system administrator, while the other profiling screens have predetermined selection criteria. For help creating Event ID’s, consult the VuVault Administrator Guide.

When the entry screens appear, use the ▲ and ▼ buttons to scroll through the list to highlight the desired selection and press the Ms to make the selection. Press the Ms again to save the setting. When SAVE is selected, the next input screen will appear or exit if it is the last screen being displayed.
Section - 5: Wireless Microphone Operation

The DWM Wireless Microphone can be worn on a duty belt and uses the built in microphone. Alternatively, a lapel microphone can be attached to the input port located on the side of the transmitter for storage flexibility during use. The charging station receives power directly from your vehicle battery.

5.1 Syncing a Transmitter to a Charging Station

**NOTE** Up to two microphones can be synchronized and used with a single cradle.

1. Verify power to the cradle is on; turn the Transmitter power switch to the ‘ON’ position and the notification switch to the ‘BEEP’ position.
2. Place the Transmitter in to the Cradle. The BATT status indicator on the Cradle will light RED if charging is in process or GREEN if the unit is fully charged.
3. The In-Use indicator on the front of the Cradle will light up Green for several seconds, then it will turn off. This Transmitter and Cradle are now synchronized together. If the Transmitter was paired to another Cradle it will no longer respond to previous Cradle pairing.

**NOTE** The pairing operation only needs to be performed the first time a system is used, or a new Transmitter is used with a Cradle previously paired to another Transmitter.

5.2 Basic Operation

1. Remove the Transmitter from the Cradle, plug in the lapel microphone if being used; turn the Transmitter on and place it on your belt.
2. To start the recording, press the REC button; the Status indicator will light a constant green and you will hear a short Beep or Vibration (unless in Covert mode).
3. To end a recording, press the REC button on the DVM-800. The Transmitter cannot be used to stop a recording.
4. At the end of your shift, turn the Transmitter off and place it in the charging Cradle.

5.3 Using the Microphone

Your Transmitter has a built-in microphone located on the top of the unit adjacent to the microphone jack. However, for best audio performance we recommend using the supplied external lapel microphone which will reduce unwanted ambient noise.
5.4 Notification Alert Switch

The switch position determines the notification method provided to the user:

- Visible Indicators with audible beep notifications (‘BEEP’)
- Visible Indicators with vibratory notifications (‘VIB’)
- Covert operation is achieved by putting the switch in the ‘OFF’ position. All notification methods are disabled.

5.5 Out of Range

1. Depending on the position of the Notification Alert Switch, the Transmitter will alert you with two audible beeps or two vibrations and the Status indicator will blink in red.
2. Move closer to the receiver base (Cradle) and the link will be re-established once you return to normal range. The Status indicator will light constant green when link is back to normal operation.
3. If the link is not re-established within 30 seconds, the Transmitter and Receiver will return to standby mode.
4. If you went out of range in Standby mode, or the unit reverted to standby mode, re-enter normal range and press the REC button. Operation will return to normal.
5. If you will be out of range for a long period of time, turn the Transmitter off.

5.6 Charging Information

The Transmitter must be fully charged before initial use and should be done using the in-car Cradle or optional desktop charging cradle. Typical charge time from a full discharge is approximately 4 hours. To minimize charge time the Transmitter should be powered off.

\[\text{Note: In some vehicles, the 12VDC receptacle may be controlled by the position of the ignition switch. In such cases, the Transmitter will only charge when the ignition switch is in the “On” position.}\]

The Lithium-Ion battery built in to the Transmitter will work at full capacity for over 500 charge cycles. If you notice lower than usual battery life over time, it may be time to replace. Please contact our Technical Support team for details.
5.7 Status Indicators

Visual indicators and vibration pulses are used to indicate the operational status of the Wireless Microphone system. The visual indicators are located on the front of the Cradle and on the top of the Transmitter.

<table>
<thead>
<tr>
<th>Status</th>
<th>Transmitter</th>
<th>Cradle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Recording</td>
<td>Green: Blinking</td>
<td>Green: Blinking</td>
</tr>
<tr>
<td>Standby &amp; Standby Pre-Event</td>
<td>Green: On</td>
<td>Green: On</td>
</tr>
<tr>
<td>Out of Range</td>
<td>Red: Blinking</td>
<td>Green: Off</td>
</tr>
<tr>
<td>Low Battery</td>
<td>Red: Blinking</td>
<td>Red: Charging, Green: Fully Charged</td>
</tr>
<tr>
<td>Transmitter Charging</td>
<td>Red: Charging, Green: Fully Charged</td>
<td>Green: On</td>
</tr>
</tbody>
</table>

5.8 Low Battery Warning

- If the Transmitter ‘low battery’ visual indicator (Red) starts flashing and/or you hear warning beeps, return the transmitter to its cradle so it can be charged.
- The BATT visual indicator will light constant green when the unit is fully charged.

5.9 Remote Record Button

The Remote Record Button is used to start an event recording when the REC button is pressed and released on the transmitter. The entire system must be powered on and in Standby mode to use this feature.

5.10 Remote Accessory Control

(Optional wiring is required. Consult the DVM-800 Installation Guide for more information)

1. The Remote Accessory can be used to toggle the Remote Accessory Output on and off.
2. Press the Remote Accessory button on the top of the transmitter (next to the Low Batt indicator), a beep will sound and the Remote Accessory output will activate.
3. Press the Remote Accessory button again on the transmitter, a beep will sound and the Remote Accessory output will deactivate.
4. Pressing the remote accessory button will NOT trigger an event recording.
5.11 Mutting the Wireless Microphone Audio

To mute the wireless microphone audio, turn the Power switch to OFF on the side of the wireless microphone after a recording has started. Turn the switch back on to resume audio recording.

*NOTE* This action does not stop video recordings. If the audio is muted then unmuted, or if the microphone power switch is turned on after a recorded event has begun, the Green LED on the wireless microphone will remain solid although audio is being recorded on the DVM.

5.12 Mutting the Audio for the In-Car Microphone

The In-Car Microphone input jack can be muted by using the switch located on the side of the Receiver Cradle as shown to the right. This switch does not affect the wireless microphone audio.
Section - 6: Event Recording Management

6.1 Video Playback and Management

The Digital Ally VuVault back office software is a user friendly software package which allows the organization and playback of DVM-800 video, audio and metadata files. It also offers many advanced features such as GPS mapping, security groups, generating reports, printing or saving snapshots, editing, archiving to local storage or DVD’s, and much more. For more information on how to use the features of this software, please consult the VuVault Administrator Guide.
Section - 7: Wireless File Transfer

The DVM-800 is capable of automatically transmitting video events to your VuVault Server when within range of an authorized wireless access point, and can wirelessly receive firmware & configuration file updates. Any authorized user may then playback and analyze video using the VuVault client software (consult the VuVault Administrator Guide for more information). There are two ways to set up the DVM-800 wireless transfer: Basic mode and Advanced mode. Decide from the description below which mode works best for your application. Make sure your wireless access point is powered on and connected to your network. The included Wi-Fi dongle is required for wireless file transfer.

**Basic**

During ‘Basic Wi-Fi’ operation, after the event files have been uploaded to the server the DVM will delete the files from DVM’s primary memory storage. This mode provides no extra file verification. Once the file has been uploaded to the FTP server, file is deleted from the DVM. This is the common method for most wireless installations.

**Advanced**

‘Advanced Wi-Fi’ configuration will only delete the files from the DVM’s primary memory after VuVault has imported and validated the files.

The wireless transfer operation is configured using the VuVault Admin>Devices>DVM-800 Settings tab, and the Admin>VuVault Settings>WtmLite tab. Refer to Section 3.9 for DVM configuration instructions, and the VuVault Wireless Server Setup Guide for instructions on how to configure your VuVault server to support the wireless file transfer feature. A Wi-Fi dongle for the DVM-800 is required.
## Section - 8: Status Indicators

The status indicators are located next to the Record button and two on the side opposite the mirror glass. Visual indicators and vibration pulses are also used to indicate the operational status of the system.

<table>
<thead>
<tr>
<th>Powering ‘ON’</th>
<th>Red, Blue, Green status indicators flash in sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event Recording</td>
<td>On (configurable) On</td>
</tr>
<tr>
<td>Covert Mode</td>
<td>Off Off Off</td>
</tr>
<tr>
<td>Standby or Standby Pre-Event</td>
<td>Off On</td>
</tr>
<tr>
<td>Audio Record enabled</td>
<td>On</td>
</tr>
<tr>
<td>(Event Record or Pre-event)</td>
<td>Red, Blue, Green status indicators flash rapidly in unison</td>
</tr>
<tr>
<td>SD card has been removed</td>
<td>Reflects the state of video recording Slow Flash Reflects the state of audio recording</td>
</tr>
<tr>
<td>Battery/Memory Alert</td>
<td>Reflects the state of video recording Red, Blue, Green status indicators flash in unison and LCD will remain on</td>
</tr>
<tr>
<td>30 Minutes remaining or 9000 events have been reached</td>
<td>Low Power Standby Off Off Off</td>
</tr>
<tr>
<td>0 minutes remaining or 10000 events have been reached (maximum)</td>
<td>Power ‘OFF’ Off Off Off</td>
</tr>
</tbody>
</table>
### Section - 9: Specifications

#### Power

<table>
<thead>
<tr>
<th></th>
<th>Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING VOLTAGE</td>
<td>13.8VDC</td>
</tr>
<tr>
<td>ON</td>
<td>360mA @ 13.8VDC</td>
</tr>
<tr>
<td>OFF</td>
<td>260uA @ 13.8VDC</td>
</tr>
<tr>
<td>LOW POWER STANDBY</td>
<td>170mA @ 13.8VDC</td>
</tr>
<tr>
<td>BACKUP BATTERY</td>
<td>3.7v, 1150mA, Rechargeable Lithium Ion Polymer Battery</td>
</tr>
</tbody>
</table>

#### Environmental/Mechanical

<table>
<thead>
<tr>
<th></th>
<th>Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING TEMPERATURE</td>
<td>-20° to +70° C</td>
</tr>
<tr>
<td>STORAGE TEMPERATURE</td>
<td>-40° to +80° C</td>
</tr>
<tr>
<td>DIMENSIONS</td>
<td>48mm (1.9in)(D) x 279mm (11in)(W) x 106mm (4.7in)(H)</td>
</tr>
<tr>
<td>WEIGHT</td>
<td>733g (1.62lbs)</td>
</tr>
</tbody>
</table>

#### Internal Components

<table>
<thead>
<tr>
<th></th>
<th>Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD MONITOR</td>
<td>3.5&quot; Color Ultra Bright. 640x480 resolution</td>
</tr>
<tr>
<td>REAL TIME CLOCK</td>
<td>On board, used when GPS signal is lost</td>
</tr>
<tr>
<td>ACCELEROMETER</td>
<td>3-axis, ±8g</td>
</tr>
<tr>
<td>WIFI</td>
<td>802.11(n) wireless adapter included. Secure FTP transfer through WAP or cellular modem</td>
</tr>
<tr>
<td>MICROPHONE</td>
<td>Internal (max. input SPL 110dB, sensitivity -30dB)</td>
</tr>
<tr>
<td>GPS RECEIVER</td>
<td>4Hz position update rate, 2.5m position accuracy</td>
</tr>
<tr>
<td>VIDEO</td>
<td>2-recording channels @ 30fps(max), D1, 720x480, H.264, AVI container</td>
</tr>
<tr>
<td>AUDIO</td>
<td>Stereo (internal to one channel, external on other)</td>
</tr>
</tbody>
</table>

#### Cameras

<table>
<thead>
<tr>
<th>Camera Type</th>
<th>FOV: 76° (V) x 102° (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL 12X FRONT CAMERA</td>
<td>Shutter Speed: 1/60 second</td>
</tr>
<tr>
<td></td>
<td>Resolution: 640x480, 500TVL minimum (color)</td>
</tr>
<tr>
<td></td>
<td>1/4&quot; Super HAD CCD imager, 1/4inch CCD</td>
</tr>
<tr>
<td></td>
<td>Zoom magnification 12X ( f=3.8 \sim 38.0\text{mm}(F2.8) ), Practical H.angle 51.2° (Wide) \sim 5.58° (Tele), Auto / Manual focus</td>
</tr>
<tr>
<td></td>
<td>Auto / Manual Iris</td>
</tr>
<tr>
<td></td>
<td>Auto White Balance</td>
</tr>
<tr>
<td></td>
<td>0.7 Lux</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Camera Type</th>
<th>FOV: 76° (V) x 102° (H) x 115° (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL REAR SEAT CAMERA</td>
<td>Shutter Speed: 1/60 second</td>
</tr>
<tr>
<td></td>
<td>Resolution: 640x480, 600TVL</td>
</tr>
<tr>
<td></td>
<td>1/3&quot; Super HAD CCD imager</td>
</tr>
<tr>
<td></td>
<td>Auto focus &amp; Auto White Balance</td>
</tr>
<tr>
<td></td>
<td>IR LED assisted for low light conditions</td>
</tr>
<tr>
<td></td>
<td>0.5 Lux with IR LEDs OFF</td>
</tr>
<tr>
<td></td>
<td>0.0 Lux with IR LED’s ON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Camera Type</th>
<th>FOV: 96°(V) X 119°(H) X 141°(D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNAL PASSENGER FACING CAMERA</td>
<td>Fixed focus lens</td>
</tr>
<tr>
<td></td>
<td>IR LED assisted for low light conditions</td>
</tr>
<tr>
<td></td>
<td>0.5 Lux with IR LEDs OFF</td>
</tr>
<tr>
<td></td>
<td>0.0 Lux with IR LED’s ON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Camera Type</th>
<th>FOV: 57.9'(V) X 79.2'(H) X 103.4'(D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERNAL ROAD FACING CAMERA</td>
<td>Fixed focus lens</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>LICENSE PLATE BACKUP CAMERA (OPTIONAL)</td>
<td>FOV: 95° (V) x 125.8° (H) x 155.4° (D)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>DWM Wireless Microphone</td>
<td>SYSTEM RANGE: 3000 feet typical LOS</td>
</tr>
<tr>
<td></td>
<td>MICROPHONE SENSITIVITY: -30dB, Maximum Input SPL 110dB</td>
</tr>
<tr>
<td></td>
<td>SIZE: DWM Cradle 2.75in x 2.99in x 3.15in (70mm x 76mm x 80mm) DWM Microphone 2.5in x 1.8in x 0.94in (64 mm x 46 mm x 24 mm)</td>
</tr>
<tr>
<td></td>
<td>BATTERY: Internal Li-ion 3.7V/1800mAh cell</td>
</tr>
<tr>
<td></td>
<td>FREQUENCY RESPONSE: 200 ~ 4000Hz +/- 3 dB Audio</td>
</tr>
<tr>
<td>Media Storage</td>
<td>CAPACITY: External SD Card Support: 8/16/32 GB, Class-10, commercial grade 80 R MB/s, 50 W MB/s</td>
</tr>
<tr>
<td></td>
<td>SECURE MEDIA ACCESS: Optional tamper resistant screw can be installed in the access door, requiring the corresponding security key to unlock the access door. (included with the DVM)</td>
</tr>
<tr>
<td></td>
<td>PRE-EVENT BUFFER: Up to 30 seconds for each of the two recording channels, adjustable in 6 second increments</td>
</tr>
<tr>
<td>Interface Box</td>
<td>DIMENSIONS: 57mm (2.24in)(D) x 29mm (1.14in)(H) x 110mm (4.33in)(L)</td>
</tr>
<tr>
<td></td>
<td>INPUT SENSORS: Six customizable multi-purpose input sensors.</td>
</tr>
<tr>
<td></td>
<td>OPERATING VOLTAGE: 13.8VDC</td>
</tr>
<tr>
<td></td>
<td>OUTPUT ALARM: One (1) normally open, active low output trigger, 2A maximum current</td>
</tr>
<tr>
<td></td>
<td>OPERATING TEMPERATURE: -20° to +70° C</td>
</tr>
<tr>
<td></td>
<td>STORAGE TEMPERATURE: -40° to +80° C</td>
</tr>
<tr>
<td></td>
<td>RADAR SUPPORT: 9 Pin Serial Female (additional cables required)</td>
</tr>
</tbody>
</table>

*Specifications subject to change without notice*
Section - 10: Support & Troubleshooting

10.1 Firmware Updates

Log on to http://www.digitalallyinc.com/login.cfm and Register for an Account to be an Authorized User. By registering you will be able to download all the latest firmware/software updates and will be notified of future updates.

10.2 Firmware Update Instructions

The DVM requires a specific filename to perform a firmware update. If the firmware file is not found, the DVM will not perform the update. The firmware is available from the Digital Ally Technical Support web site mentioned above. Place the firmware file in your computer desktop.

<table>
<thead>
<tr>
<th>DVM Model</th>
<th>Download Filename</th>
<th>Filename For Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVM-800</td>
<td>DVM800_VersionXXX.zip</td>
<td>firmware.l</td>
</tr>
</tbody>
</table>

Manual Method

1. The DVM should be powered on and in STANDBY (no red LED status indicator, only the solid BLUE status indicator) before proceeding.

2. Open the external SD card slot access door on the DVM and remove the SD card. Place it in a card reader connected to your computer.

3. Copy the “firmware.l” image file from your computer to the SD Card. Note: filename must not be changed from “firmware.l”.

4. Using the removable media features of the computer system, safely remove the SD card from the computer.

CAUTION: BEFORE PROCEEDING PLEASE NOTE THE FOLLOWING, ONCE THE EXTERNAL CARD HAS BEEN INSTALLED, DO NOT REMOVE POWER TO THE DVM AND DO NOT REMOVE THE EXTERNAL SD CARD UNTIL THE PROCESS IS COMPLETE AS NOTED IN THE FOLLOWING INSTRUCTIONS

5. Open the external SD card slot access door on the DVM.

6. Install the external SD card into the external SD card slot of the DVM.

7. The DVM will begin performing the firmware update.

8. During the firmware update, an on-screen status bar will illustrate the firmware update status. The progress bar will represent the percentage complete, for example:

   | 0% Complete |
   | 50% Complete |
   | 100% Complete |

9. The DVM will reboot. Once the mirror goes back to Standby condition (solid Blue status indicator) the DVM has been updated and is ready. The firmware file will be automatically deleted from the SD card.
**Wireless Method**

1. Your DVM must be configured for wireless file transfer operation and already be successfully uploading videos to the VuVault back office. Consult the VuVault Wireless Server Setup Guide for more information.

2. Open the WTMLite Configuration software (Start menu>Programs>Digital Ally>WTM Lite).

3. Click Update Devices.

4. Select the Deploy Update Files button.

5. Using the navigation window, point to the location where the “firmware.l” file is located. Select Open.

6. Place a green checkmark next to the vehicle(s) you wish to update. By default, all vehicles are selected. When finished, press Done.

7. The firmware file will be wirelessly transferred to the DVM the next time it connects to the wireless access point. The DVM will first upload any video, then transfer the update files automatically, and then reboot itself.

*NOTE* If the Recording Mode of the DVM is set to ECA (Evidence Capture Assurance), the DVM will not make any attempts to wirelessly connect to the FTP server unless there is at least one Event Recording present on the DVM to be uploaded. In this case, you may make a quick recording on the DVM to enable WiFi to connect. This will allow a new configuration or firmware file to transfer from the server to the DVM.
10.3 External SD Card Maintenance

It is recommended that the external SD cards be periodically defragmented or formatted. The frequency is dependent on usage, with a recommendation of every 2 to 3 months for typical usage. With high usage, more frequent maintenance may be required.

SD Card Requirements

The DVM supports 8GB, 16GB, 32GB, Minimum Class 10, commercial grade SDHC cards purchased from Digital Ally.

Formatting Requirements

External SD Cards used in the DVM-800 should be formatted as a FAT32 file system with allocation block size of 64k bytes.

10.4 Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>System will not power up.</td>
<td>• Verify the power cable connector is connected to the back of the DVM.</td>
</tr>
<tr>
<td></td>
<td>• Check the power cable fuse located in the in-line fuse housing on the power cable.</td>
</tr>
<tr>
<td></td>
<td>• Verify there are no breaks, pinches, or cuts in the wiring or cable harness.</td>
</tr>
<tr>
<td></td>
<td>• Check the wiring and voltage levels to the vehicle power and ignition switch wiring.</td>
</tr>
<tr>
<td>Blue LED</td>
<td>Fast Flash = out of memory</td>
</tr>
<tr>
<td>Slow Flash = memory is critically low</td>
<td>Upload event files from the DVM memory storage or replace the SD Card as soon as possible (see Section 5 for details).</td>
</tr>
<tr>
<td>DVM powers up but doesn’t record</td>
<td>• Check the LED status indicators and clear accordingly</td>
</tr>
<tr>
<td>DVM powers up and goes directly to an event record (Red LED Flashes)</td>
<td>Reset the system.</td>
</tr>
<tr>
<td>Backup Camera not visible on the LCD when the vehicle is in Reverse gear</td>
<td>• Verify the DVM is powered ON and operational.  <strong>Note:</strong> Backup camera operation will only occur when vehicle ignition is on and running.</td>
</tr>
<tr>
<td></td>
<td>• Verify the reverse gear wiring is connected to corresponding input sensor as defined in the device configuration.</td>
</tr>
<tr>
<td></td>
<td>• Verify the Reverse Gear signal voltages.</td>
</tr>
<tr>
<td></td>
<td>• Verify there are no breaks, pinches, or cuts in any of the wiring or cable harnesses for the backup camera, IF Box, reverse gear wiring, vehicle power and ignition wiring.</td>
</tr>
<tr>
<td></td>
<td>• Verify the IF Box is connected to the DVM.</td>
</tr>
<tr>
<td></td>
<td>• Verify the camera cable connector is connected to the DVM.</td>
</tr>
<tr>
<td></td>
<td>• Verify the camera cable from the DVM is connected to the connector on the hard-wired harness from the camera.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Resolution</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Verify the firmware versions installed using the “dvminfo.log” file. If the versions are not current, perform a firmware update with the IF Box connected. <strong>Note</strong>, it is always recommended that a firmware update be performed when adding a new IF Box, or when an IF Box is replaced.</td>
<td></td>
</tr>
<tr>
<td>Backup Camera is displayed when the vehicle is in Park</td>
<td>• The default operation for the IF Box reverse gear signal is from Low to High (0VDC to +12VDC). Measure the reverse gear signal voltage at the interface box in the active and non-active state. If the reverse gear signal is different than the default value, the DVM will need to be reconfigured using the VuVault software.</td>
</tr>
<tr>
<td>All status LED’s blink rapidly in unison</td>
<td>• The external SD card is missing or has corrupted files. Replace or reformat the SD card.</td>
</tr>
<tr>
<td></td>
<td>• The external SD card does not have enough free available storage. Replace the external SD card with a blank SD card.</td>
</tr>
<tr>
<td></td>
<td>• An internal error has occurred. Try resetting the DVM, if problem continues, call tech support.</td>
</tr>
<tr>
<td>No wireless download</td>
<td>• Check Wi-Fi antenna is plugged into DVM USB port</td>
</tr>
<tr>
<td></td>
<td>• Check DVM configuration and manually place a fresh deviceconfig file from VuVault to the SD card</td>
</tr>
<tr>
<td></td>
<td>• Does problem affect more than one vehicle? If so, check WAP, server, and network connections</td>
</tr>
<tr>
<td></td>
<td>• Call Digital Ally tech support for assistance.</td>
</tr>
<tr>
<td>Wireless Download is slow</td>
<td>• LCD display is in Forced On mode. Press the down arrow button for 3 seconds to turn off display.</td>
</tr>
<tr>
<td>Backup Camera video is garbled or not intelligible</td>
<td>• Verify backup camera, cabling, and connectors.</td>
</tr>
<tr>
<td></td>
<td>• IF Box may be defective</td>
</tr>
<tr>
<td>DVM is sluggish or unresponsive</td>
<td>• Verify the cables and cable connections.</td>
</tr>
<tr>
<td></td>
<td>• Verify vehicle power.</td>
</tr>
<tr>
<td></td>
<td>• Remove and reformat the SD card within VuVault.</td>
</tr>
<tr>
<td></td>
<td>• Press the reset button.</td>
</tr>
<tr>
<td>False Triggering of Event Recordings</td>
<td>• Determine which trigger is causing the false trigger by viewing the event recording within VuVault.</td>
</tr>
<tr>
<td></td>
<td>• The unit can be reconfigured to default settings and enable each trigger to determine which one is causing the false trigger.</td>
</tr>
<tr>
<td></td>
<td>• If a G-Force Accelerometer event is causing false triggering, verify the mirror is in the normal rearview mirror orientation, or raise the accelerometer trigger level value.</td>
</tr>
<tr>
<td></td>
<td>• Verify external sensor configuration is correct for actual external device connected. Improper wiring or improper configurations may cause false triggers.</td>
</tr>
<tr>
<td></td>
<td>• Verify the firmware versions installed using the “dvminfo.log” file. If the versions are not current, perform a firmware update with the IF Box connected. <strong>Note</strong>, it is always recommended that a firmware update be performed when adding a new IF Box, or when an IF Box is replaced.</td>
</tr>
<tr>
<td>DVM randomly reboots</td>
<td>• Verify all cables and cable connections.</td>
</tr>
<tr>
<td></td>
<td>• A firmware update may be required. Call <strong>tech support</strong> for assistance.</td>
</tr>
<tr>
<td>IF Box Hardware Was Replaced and Now System is Not Working Properly</td>
<td>• Each time an IF Box is replaced or paired with a new DVM, a DVM firmware update is required. This ensures that the IF Box firmware is updated and is the correct version for the firmware version installed on the DVM.</td>
</tr>
<tr>
<td>Determining the versions of the firmware components installed</td>
<td>• Open the test file ‘dvminfo.log’ that is installed on the primary memory storage. This file will provide the serial number of the DVM, the firmware, MICOM, Bootloader version installed on the DVM, and the firmware and Bootloader version installed on the IF Box.</td>
</tr>
</tbody>
</table>

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10.5 DVM Error Messages

Some error conditions will display as text messages on the LCD display for user correction. The table below illustrates the available error messages. If an error condition occurs and continues uninterrupted for 3 minutes, the following behavior is observed on the LCD. If the error condition is corrected before the 3 minute timeframe, the DVM will reboot.

**Figure 11-3: DVM Error Messages**

<table>
<thead>
<tr>
<th>DISPLAY TEXT</th>
<th>ERROR CONDITION</th>
<th>EXPECTED BEHAVIOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Memory Not Found</td>
<td>SD card not found during boot up, or SD card</td>
<td>- blank screen with error text, then DVM</td>
</tr>
<tr>
<td></td>
<td>has been removed</td>
<td>shuts off</td>
</tr>
<tr>
<td>Internal Memory Not Found</td>
<td>Internal memory failed to mount.</td>
<td>- blank screen with error text, then DVM</td>
</tr>
<tr>
<td></td>
<td>Reset the DVM.</td>
<td>shuts off</td>
</tr>
<tr>
<td>Failed to Mount Primary Memory</td>
<td>Failed to mount primary memory before</td>
<td>- blank screen with error text, then DVM</td>
</tr>
<tr>
<td></td>
<td>starting recording</td>
<td>shuts off</td>
</tr>
</tbody>
</table>

10.6 Performing a Reset

Using a small device such as a paper clip or eye-glass screwdriver, press the recessed reset button that is located on the lower driver’s side of the road facing housing. Reference the illustration for the reset button location.

10.7 Product Repair

The DVM-800 Digital Video Mirror should be returned to Digital Ally Inc. for service. The warranty may be voided if the device is opened by any unauthorized individual. Please contact Digital Ally to obtain an authorized Return Materials Authorization (RMA). It is helpful and will expedite the process if you have your unit’s serial number available at the time of your call.

All In-Warranty and Out-of-Warranty service must be performed by Digital Ally, Inc. There are no user serviceable parts inside of the DVM, Camera(s), or IF Box. Any user serviceable items can be purchased directly through Digital Ally.
10.8 Warranty Information

We warranty that our In-Car Digital Video System, Model DVM-800, will be free from defects in workmanship and material for a period of 24 months from the date of purchase by the original purchaser. An optional 60 Month Extended Warranty is also available for purchase. If any defect is discovered through normal and proper use of the unit during this period, the defect will be repaired or the unit will be replaced at our factory or at one of our authorized service centers at no cost to the purchaser. The purchaser must return the defective unit to the factory or one of our authorized service centers, freight prepaid. We will pay for shipping charges for the return of the unit.

This warranty applies only to defects in a unit’s internal electronic components and circuitry, and is void as to units that have been opened without prior authorization, have experienced unauthorized repairs, or have had unauthorized modifications. This warranty does not cover the following:

- Normal wear and tear on the unit such as batteries, frayed cables or wires, broken connectors, or scratched or broken cases.

- Damage caused by incorrect use of the unit, carelessness, unauthorized alterations to the unit, improper storage of the unit or unauthorized service, installation or repairs made to the unit.

- Damage caused by fire, flood, lightning, vandalism, collision, Acts of God, or other events beyond the reasonable control of Digital Ally, Inc. or the purchaser.

- Damage to external parts of the unit such as buttons, microphones, wires, and cables, etc.

- Damage from use of the unit in hostile operating environments.

We reserve the right to charge for repairs to a unit during the warranty period made necessary because of any of the foregoing causes at our standard rates for repair of units not under warranty.

The purchaser assumes all risk of use from its purchase and use of the unit. Harmful personal contact with a unit might occur in the event of violent maneuvers, collisions, or similar circumstances, even if the unit was properly installed and used. We are not responsible for, and we specifically disclaim any liability for injury caused by a unit in such circumstances.

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THIS STATEMENT. ALL IMPLIED WARRANTIES ARE DISCLAIMED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, FITNESS FOR A PARTICULAR PURPOSE, AND WARRANTIES IMPLIED FROM A COURSE OF DEALING, COURSE OF PERFORMANCE OR USAGE OF TRADE. THE PURCHASER’S SOLE AND EXCLUSIVE REMEDY FOR A WARRANTY CLAIM WILL BE THE REPAIR OR REPLACEMENT OF A UNIT.
10.9 FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.

Changes or modifications not expressly approved by Digital Ally, Inc. could void the user's authority to operate the equipment.
Section - 11: Contact Information

Digital-Ally™

9705 Loiret Blvd
Lenexa, KS 66219

Website: www.digitalallyinc.com

Support E-Mail: support@digitalallyinc.com

Sales E-Mail: sales@digitalallyinc.com

Phone: 913-814-7774

Fax: 913-814-7775

Sales / Support Toll Free: 1-800-440-4947  8am-5pm CST