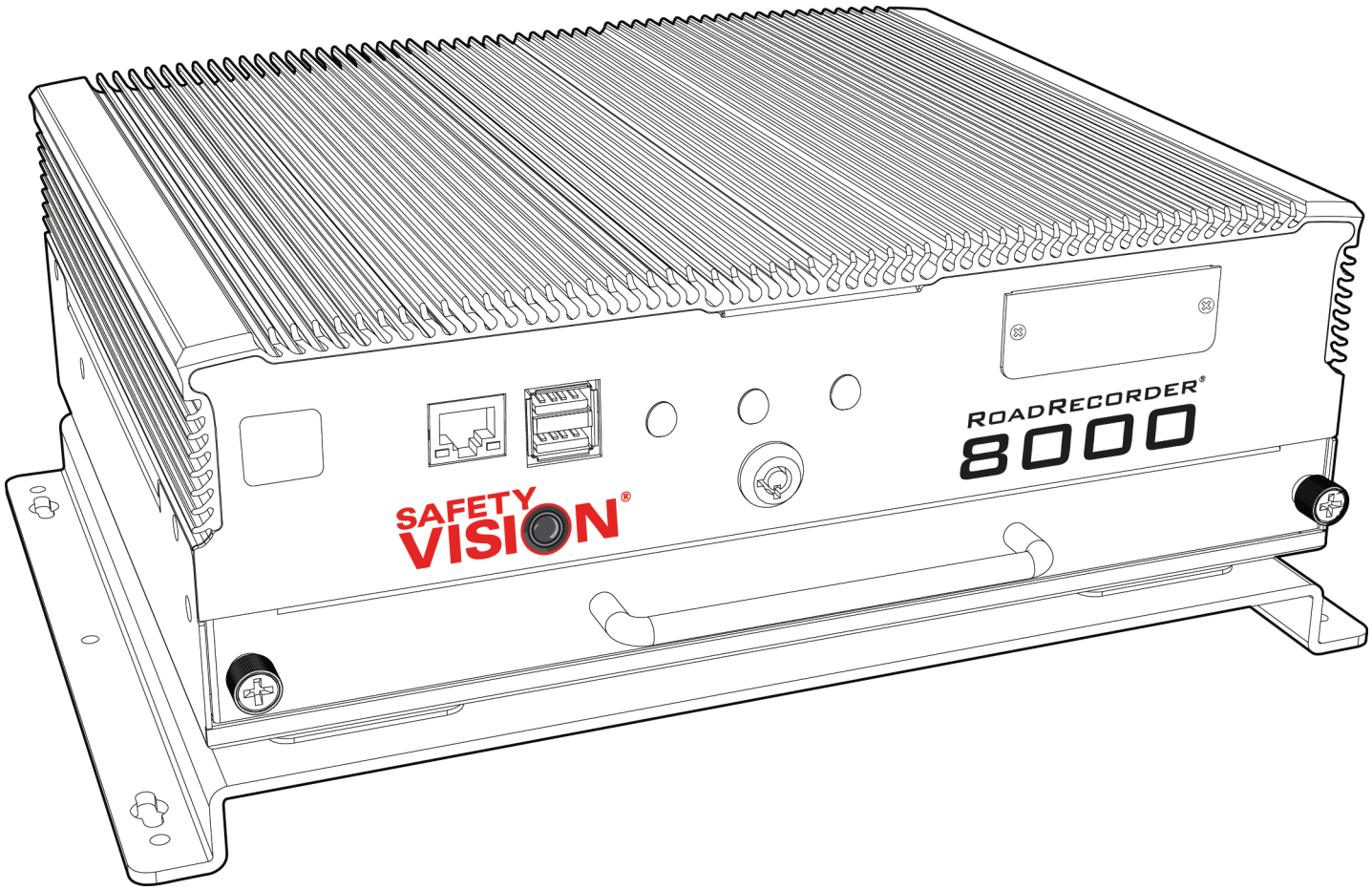


# ROADRECORDER® 8000 NVR
# USER GUIDE

SAFETY VISION®

## Important Notices

**Title:** RoadRecorder® 8000 NVR User Guide

**Firmware Version:** 5.0.9

**Document Version:** 1

**Revision:** 4

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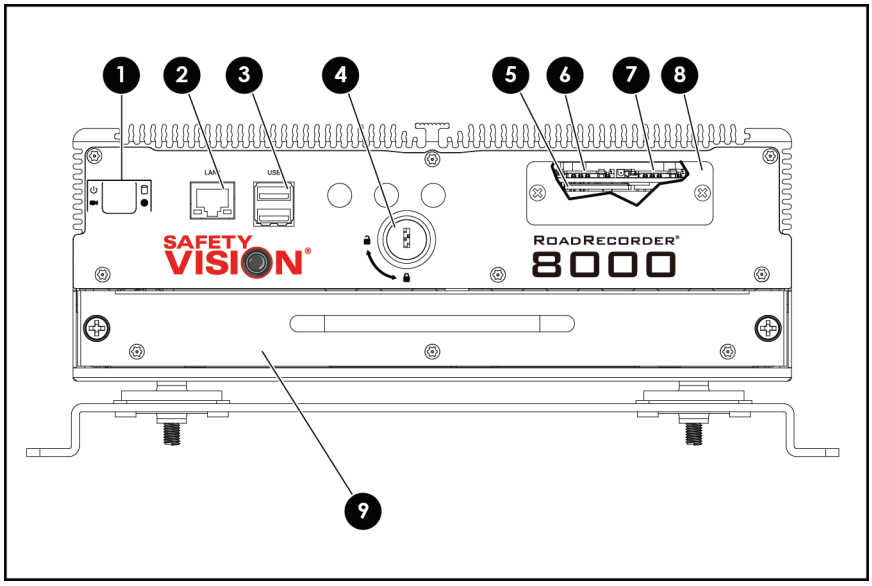
# Components

## Front Panel




**1 - LED Status Lights -** Displays the status of various NVR operations *(see table below)*.

**2 - LAN 1 Port -** Use an Ethernet cable to connect a computer to access the configuration web server. The IP address is 182.168.1.200.

**3 - USB Ports -** USB 3.0 ports for optional external accessories.

**4 - Hard Drive Lock -** Insert the supplied security key and turn 90 degrees left to unlock the hard drive. Turn the key 90 degrees right to lock the hard drive.

**5 - SD Card -** *Under development*

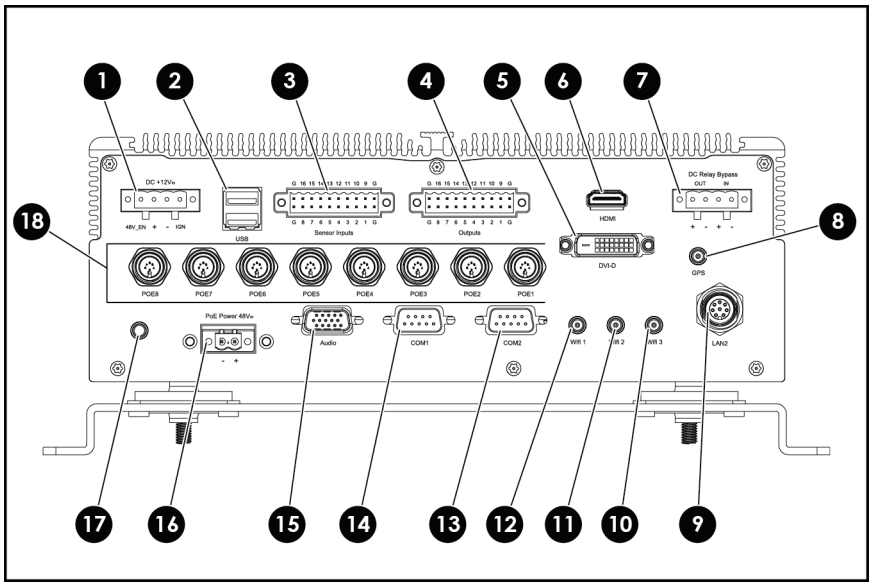
**6 and 7 - SIM Cards -** *Under development*

**8 - SIM and SD Cards Access Panel -** Remove the two screws to remove the panel and access the SIM and SD cards.

**9 - Hard Drive Bay -** Insert or remove the removable hard drive. *See the **Hard Drive Cannister** section for more information.*

| LED | Color | Status |
|---|---|---|
| ● | Green | **On:** NVR is ready to record |
| | | **Blink:** NVR Power on (startup) condition met |
| | Red | **On:** Vehicle power failure, in offload/shutdown sequence |
| | | **Blink:** Shutdown condition met, shutting down after offload |
| | Off | NVR shut down complete |
| 🎥 | Green | **On:** All cameras initialized correctly and have video |
| | | **Blink:** Camera initialization in progress |
| | Red | **On:** One or more cameras has video loss |
| | | **Blink:** One or more camera initializations failed |
| 🗄 | Green | **On:** Writing to Primary |
| | Red | **On:** Writing to Secondary |
| ⏻ | Green | **On:** NVR running and recording |
| | | **Blink:** NVR running, but not recording currently |
| | Red | **On:** One or more events have been recorded |
| | | **Blink:** NVR shutting down |
| | Off | NVR powered off |

## Rear Panel




**1 - Main Power Harness -** Supplies power to the NVR from the Power Supply.

**2 - USB Ports -** USB 3.0 ports for optional external accessories.

**3 - Sensor Inputs -** Inputs for 16 optional external sensors *(lights, brakes, optional equipment, etc)*.

**4 - Sensor Outputs -** Outputs 12V @ 100 mA to 16 optional sensor outputs.

**5 - DVI-D Port -** Connection for optional high resolution external display.

**6 - HDMI Port -** Connection for optional high resolution external display.

**7 - DC Relay Bypass -** [Battery voltage] at 9-36V DC, 10 A for powering external switches *(optional)*.

**8 - GPS Antenna Port -** Connection for external GPS antenna.

**9 - LAN2 Port -** M12 Ethernet connector for connection of an optional external Wi-Fi bridge.

**10, 11, 12 - Wi-Fi Module Antenna Ports -** Connect external antennas for the internal Wi-Fi module.

**13 and 14 - COM1 and COM2 -** For future expansion.

**15 - Audio Port -** Connection for optional external microphone.

**16 - PoE Port -** Supplies 48V for Power over Ethernet *(PoE)* from the power supply

**17 - Grounding Stud**

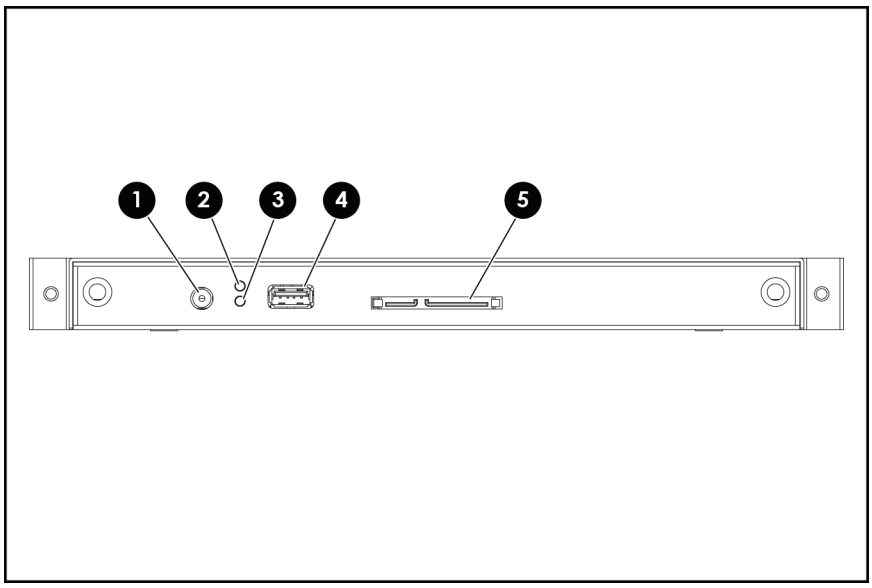
## Hard Drive Canister

**1 - Power Supply -** Connect and external power supply when removed and connected to a PC.

**2 and 3 - Status LED -** Displays power and activity status of the hard drive cannister when connected to a PC.

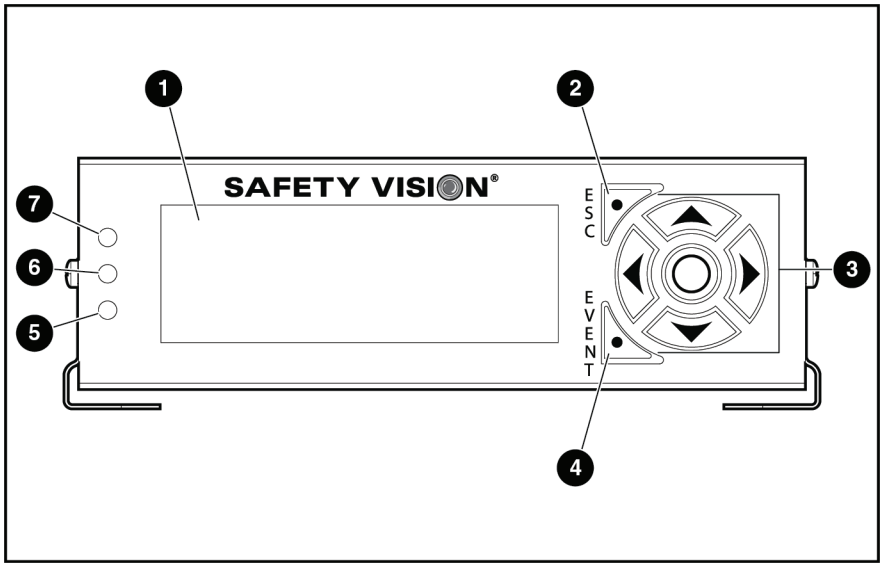
**4 - USB Port -** USB 3.0 port for connection to a PC.

**5 - Data Port -** Connects with the NVR when inserted intot he NVR's hard drive bay.



## LCD Control Panel (50-000001)

The 50-000001 LCD Control Panel is designed to provide advanced functionality with the RoadRecorder® 8000. See the 50-000001 LCD Control Panel Operation chapter for more information.




**1 - LCD Display -** Displays alerts and statuses.

**2 - Esc Button -** Press the Esc Button to cancel the current command a return to the display.

**3 - Navigation Keys -** Use the left, right, up, and down keys to navigate menus or move the cusor. Press the center key to enter a command.

**4 - Event Button -** Press the Event Button to save an event.

**5 - Error Status LED -** Displays solid red when an error has occured, such as a disconnected camera. The LED remains red until the error is corrected. Displays solid green when no errors are present.

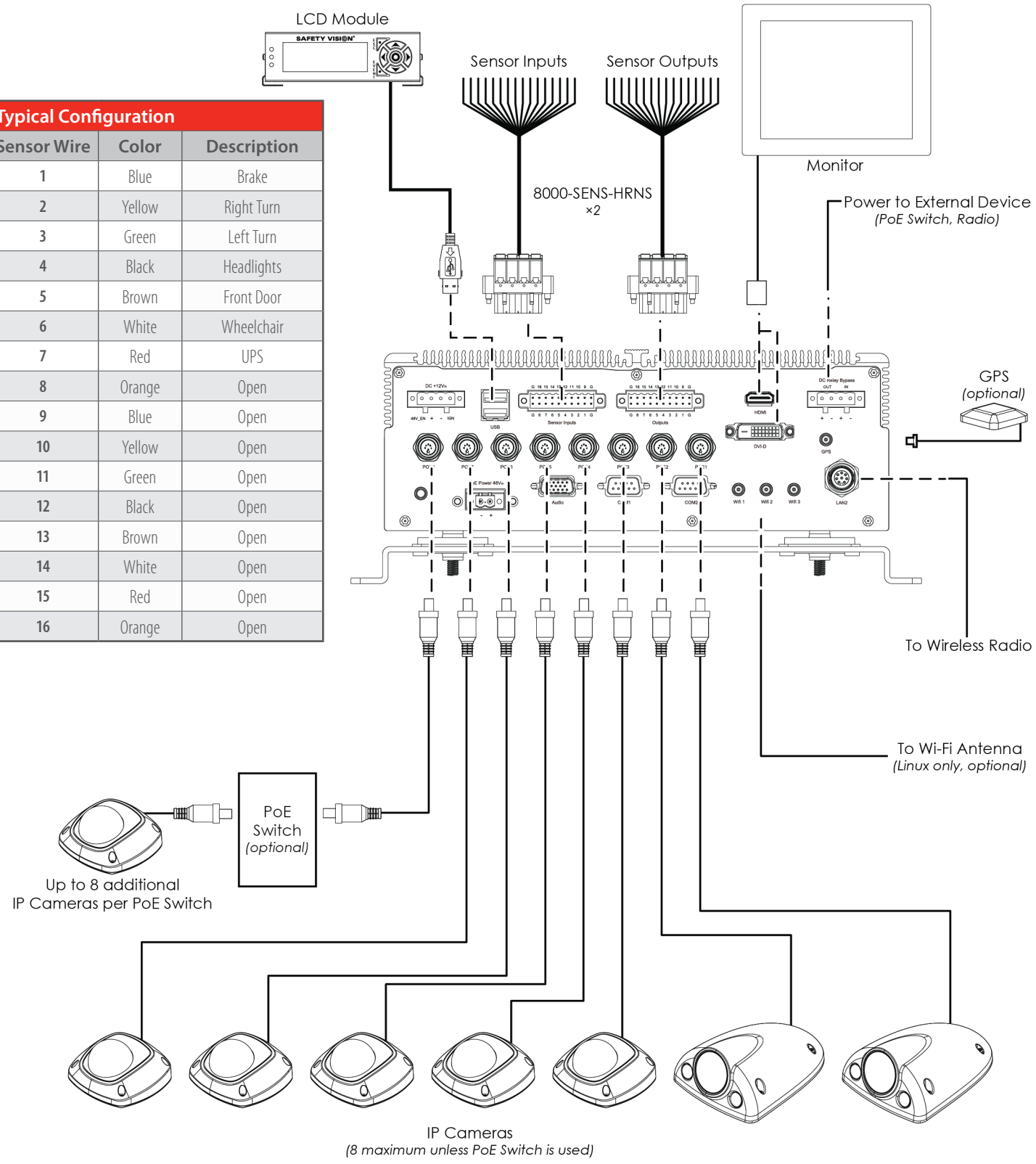
**6 - Event Status LED -** Displays solid red when an event is recording. The LED remains red until recording is finished. Displays solid green otherwise.

**7 - Offloading Status LED -** Displays solid red when recorded data is being offloaded to the SD card or HDD.

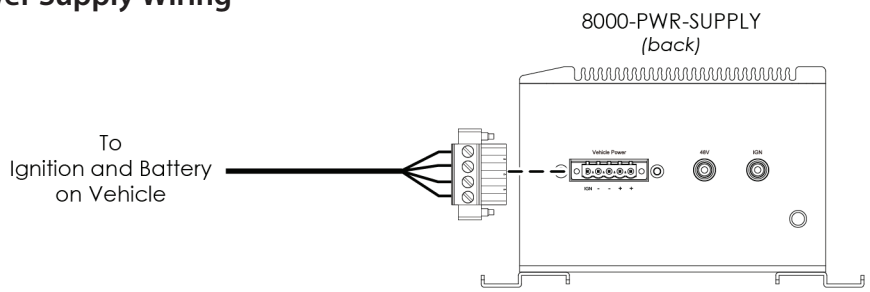
# Installation

## NVR Wiring

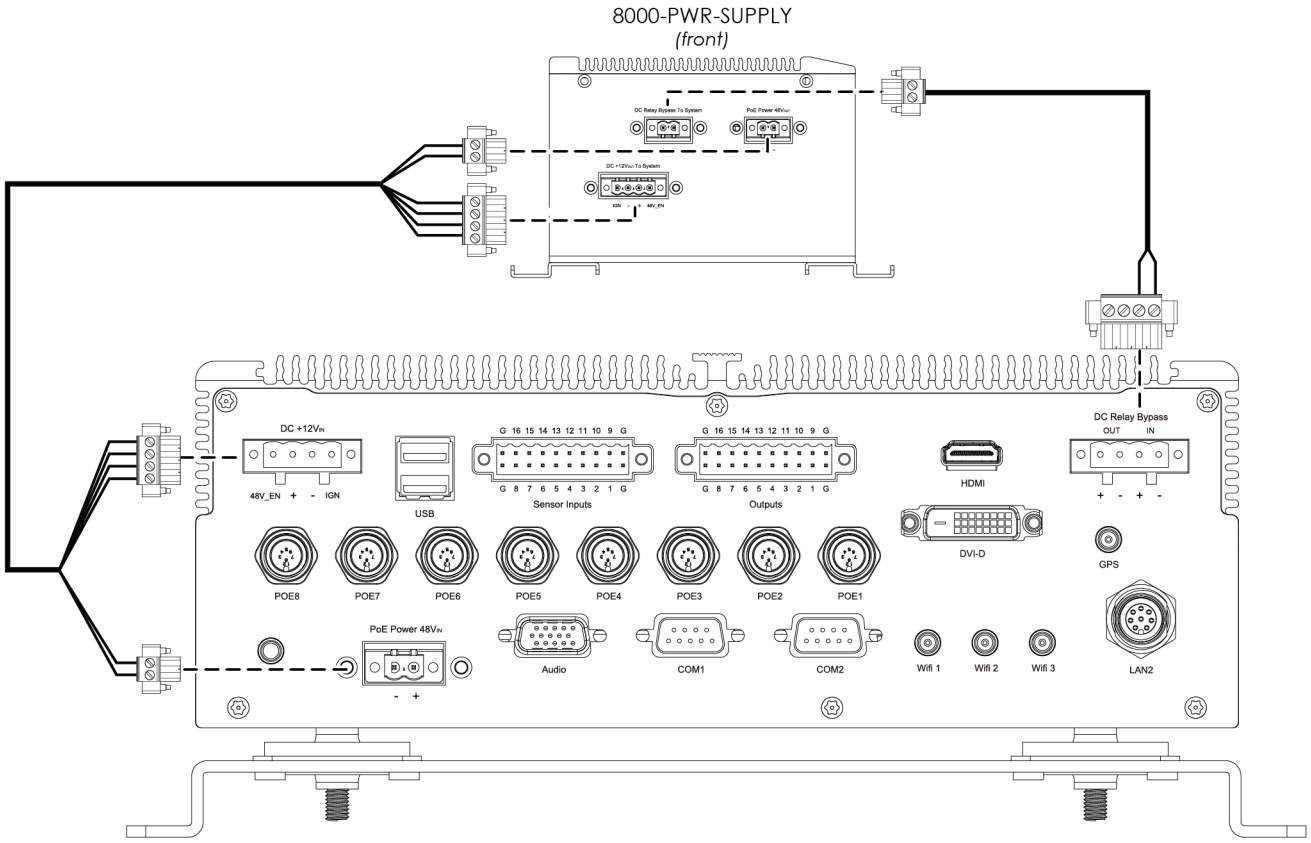
| Typical Configuration | | |
|---|---|---|
| Sensor Wire | Color | Description |
| 1 | Blue | Brake |
| 2 | Yellow | Right Turn |
| 3 | Green | Left Turn |
| 4 | Black | Headlights |
| 5 | Brown | Front Door |
| 6 | White | Wheelchair |
| 7 | Red | UPS |
| 8 | Orange | Open |
| 9 | Blue | Open |
| 10 | Yellow | Open |
| 11 | Green | Open |
| 12 | Black | Open |
| 13 | Brown | Open |
| 14 | White | Open |
| 15 | Red | Open |
| 16 | Orange | Open |



## Power Supply Wiring




| Fuse Requirements | | |
|---|---|---|
| P1 | Red | Main Power (10A) |
| B1 | Orange | Ignition (3A) |




**WARNING: REMOVING MAIN THE MAIN POWER SOURCE WHILE THE NVR IS RECORDING MAY RESULT IN CORRUPT DATA.**

Be aware that removing and reconnecting power to the NVR in short periods of time *(such as during some vehicle maintenance procedures)* may cause hard drive failure, leading to corrupt recorded video and other data. Safety Vision recommends properly shutting down the NVR before removing the main power harness when cycling of the vehicle's power is to occur:

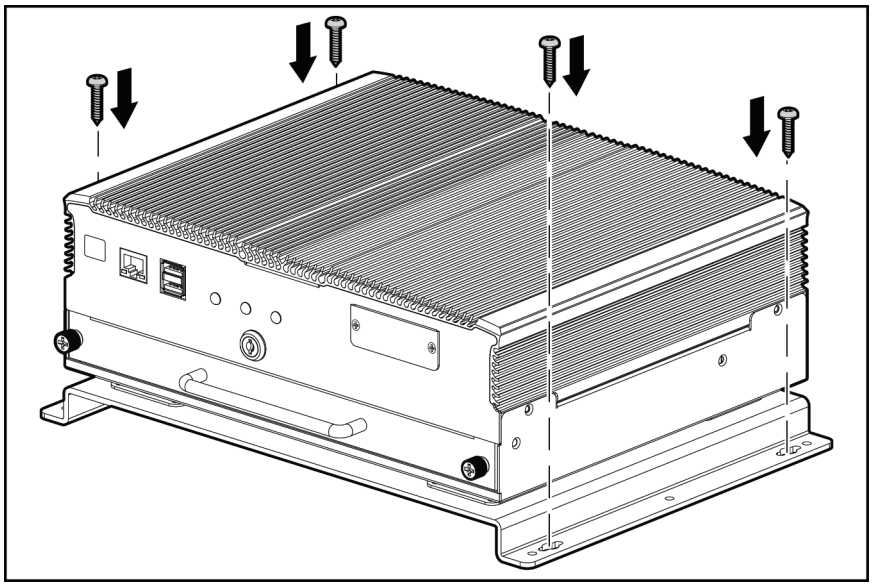
1. Remove the ignition source.
2. Wait for the NVR to completely power down. The NVR may be configured to record for a period after the ignition is turned off.
3. OBSERVE THAT ALL STATUS LEDS HAVE TURNED OFF.
4. Remove the main power harness.

**LITHIUM BATTERY CAUTION: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.**

# Flat Mount

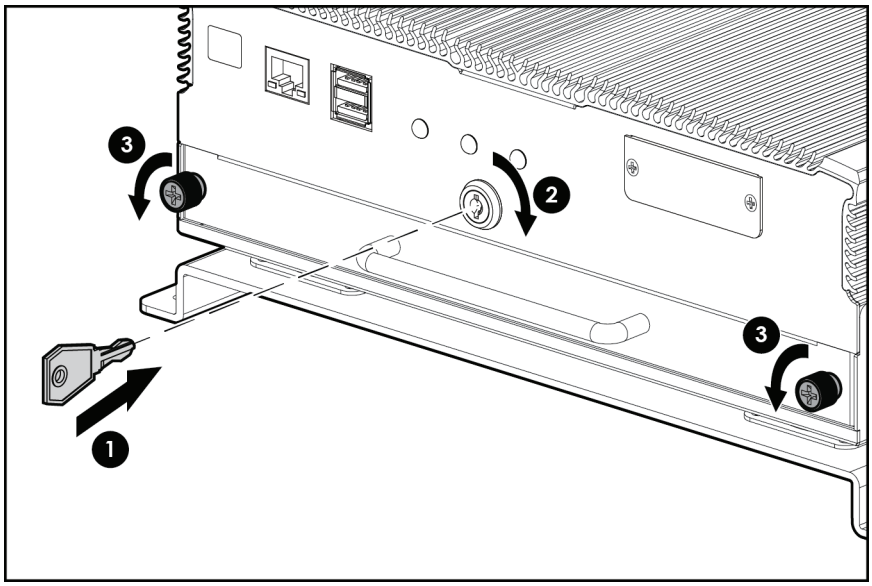
Secure the NVR to the mounting surface using four *(4)* #10-32 self-tapping fasteners with nyloc nuts or rivets.

Ensure that the front panel of the NVR remains accessible and there is a minimum 2.5 inches of clearance for cables. Do not install the NVR in an area of the vehicle cabin that could interfere with the safe operation of the vehicle.



# Hard Drive Canister

Use the following procedure to remove the hard drive.




To remove the hard drive from the NVR:

1. Ensure the NVR is powered off.
2. Insert the key into the hard drive lock and turn it clockwise.
3. Turn the two hard drive thumb screws counter-clockwise until they are loose.
4. Pull the hard drive firmly and straight out.

Once removed, the hard drive can be read with the hard drive reader connected to a PC. The computer recognizes the hard drive as an external storage device.

Use the following procedure to reinsert the hard drive.

1. Push the hard drive firmly all the way into the NVR.
2. Turn the two hard drive thumb screws clockwise until they are secure.

**Do not over-tighten the thumb screws. Use finger pressure only!**

3. Insert the key into the hard drive lock and turn it counter-clockwise.

# SIM and SD Cards

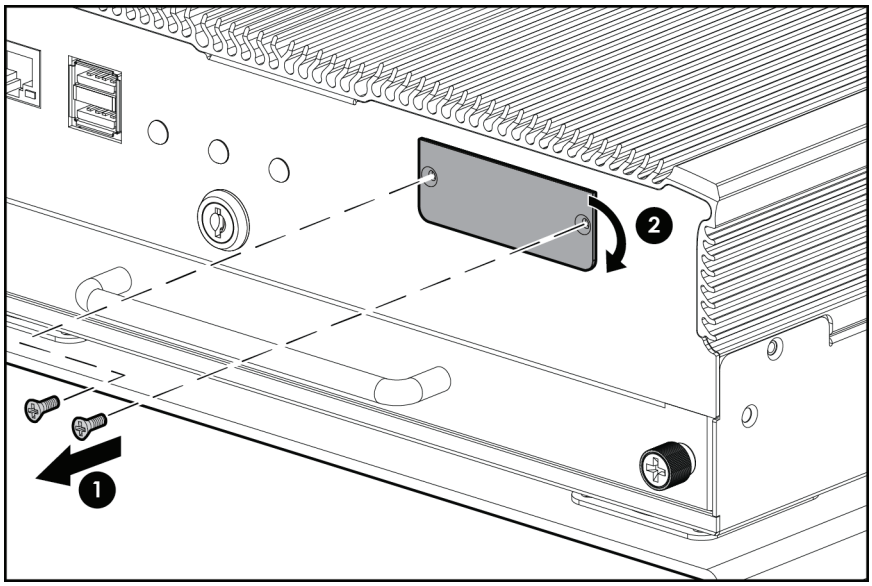
Use the following procedure to remove SIM or SD card.

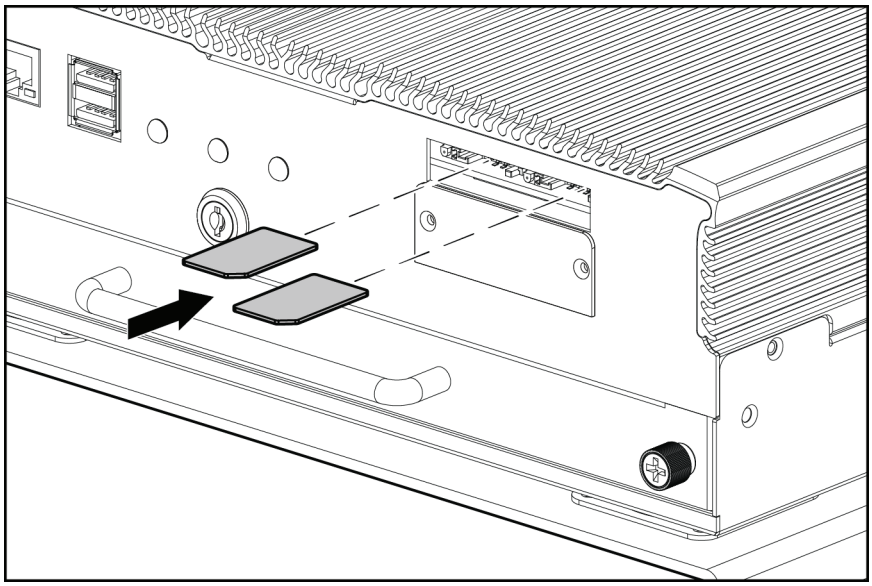
1. Remove the two screws on the SIM and SD card access panel and flip down the panel.
2. Lightly push down on the SIM or SD card until a “click” is felt, then allow it to spring out of the slot. The SD card partly ejects.
3. Pull the SD card straight out.

Use only SD cards obtained from Safety Vision.

Reinsert the SIM and SD cards in the same manner: push it straight in until a “click” is felt, then release.

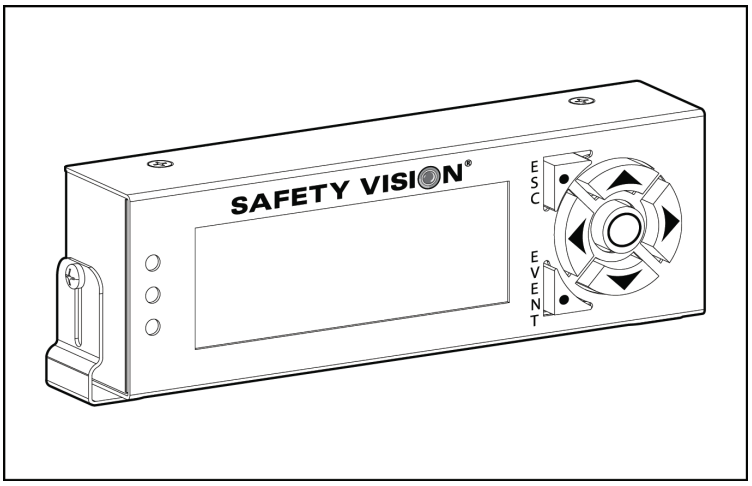
***WARNING:*** *Do not force SIM or SD cards into the RoadRecorder® 8000 upside down or backwards.*



# LCD Control Panel Operation

The 50-0000001 LCD Control Panel provides advanced functionality from a remote location.




Nominally, the LCD Control Panel displays the NVR's name, date, and time *(as entered in the Web Configuration)* in addition to any active alarms, such as recording events or errors.

## Creating Events

Press the **Event Button** to create an event. The LCD displays a confirmation and the Event status LED displays red until the event has finished recording. Events can be configured in the **Firmware Settings** page of the **Web Configuration** interface.

## Main Menu

Press the center navigation key to display the Main Menu. There are four options available: **System Details**, **System Logs**, **Manual Offload**, **Remove SSD** *(8000 only)*, and **Help**. Use the arrow keys to move the cursor and to scroll up and down through items. Press the center navigation key to confirm or enter a command, and the **Esc** key to back out of a menu, or cancel.

## System Details

Select **System Details** to display information about the firmware installed on the NVR. Firmware Version is the only available option.

### Firmware Version

Select **Firmware Version** to display the firmware version currently installed on the NVR. This information may be useful when speaking with Safety Vision Technical Support.

## System Logs

Select **System Logs** to display a list of current and past events or errors.

### Event Logs

Select **Event Logs** to display the most recent recorded event timestamps. Use the up and down navigation keys to scroll through the list of events.

### Error Logs

Select **Error Logs** to display the most recent errors. The nature of the error and the time at which it occured are displayed. Use the up and down navigation keys to scroll through the list of errors.

System Logs are stored in the LCD Control Panel's internal memory. Disconnecting the LCD Control Panel from the NVR will result in the loss of data. *(This data is still recorded by the NVR, but can no longer be displayed on the LCD.)*

## Manual Offload

Select the **Manual Offload** option to manually offload recorded events, either on to an inserted SD card or the HDD.

### To SD-Card

Press the center navigation key to select **To SD-Card**. Use the directional navigation keys to highlight the characters of the offload password *(as configured in the Change Password configuration screen)* and press the center navigation key to enter them.

Once finished, highlight **Done** and press the center navigation key to enter the password. Confirm event or continuous recording. When the offload is taking place, the bottom LED status light displays red. When the process it complete, the LED reverts to displaying green.

### To HDD

Press the center navigation key to select **To HDD**. Use the directional navigation keys to highlight the characters of the offload password *(as configured in the Change Password configuration screen)* and press the center navigation key to enter them.

Once finished, highlight Done and press the center navigation key to enter the password. Confirm event or continuous recording. When the offload is taking place, the bottom LED status light displays red. When the process it complete, the LED reverts to displaying green.

*(Manual Offload to the HDD is only available when the vehicle is not in motion.)*

## Remove SSD

Select the **Remove SSD** option from the main menu to remove the hard drive. Use the navigation key to highlight each character of the password and press the center navigation key to enter it. Wait for the "Insert Storage Media" prompt appears BEFORE removing the hard drive.

## Help

Select the **Help** option to display a help message regarding manual offloads.

# Configuration

The RoadRecorder® 8000 NVR can be configured through the on-board web interface, which must be accessed with a PC and web browser.

## Connecting to the NVR

Use the following procedure to access the configuration web server using the default IP address:

1. Connect the PC to the NVR's Ethernet LAN 1 RJ-45 port with a standard Ethernet cable.
2. Ensure the NVR and PC are receiving power and have started up.
3. Open the **Internet Protocol (TCP/IP) Properties** window for the LAN connection you are using.

   In Windows, open **Network Connections**. Right-click the LAN connection and select **Properties**. In the list of items, select **Internet Protocol (TCP/IP)** and click **Properties**.

   Select the **Use the following IP address** option.
4. Enter **182.168.1.80** in the IP address field.
5. Enter **255.255.0.0** in the Subnet mask field.

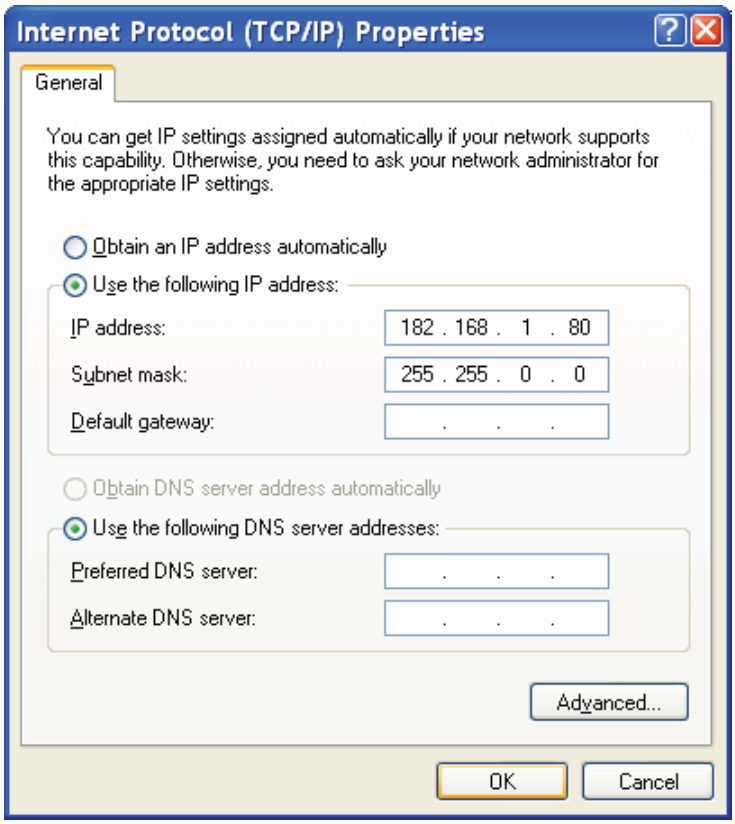
   This field normally defaults to **255.255.255.0**. Ensure the correct **255.255.0.0** subnet is entered.
6. Leave all other fields blank.
7. Click **OK** on the Internet Protocol *(TCP/IP)* Properties window and then click **OK** on the Local Area Connection Properties window.

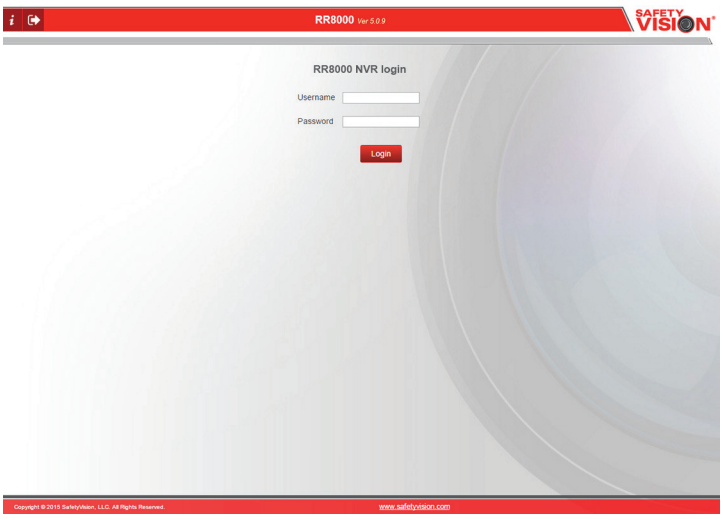
   Your PC's IP address and subnet mask are now configured.
8. On a web browser, navigate to **182.168.1.200**.

   The Login screen appears.

   The default user name and password are "admin". If this has been changed, contact your system administrator for your login information.
9. Enter the user name and password and click **Login**. The configuration web interface launches.

Access different pages of the web interface by clicking on the links on the left side of the screen.

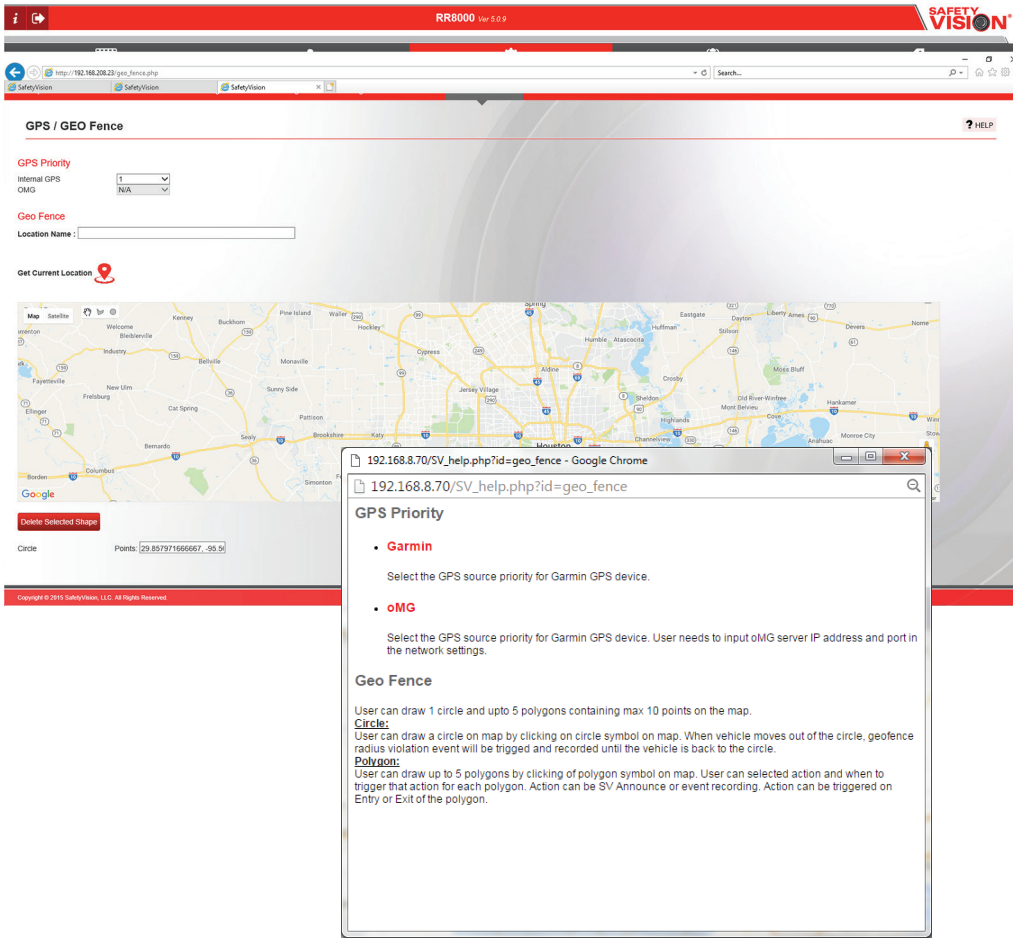


## Help Windows

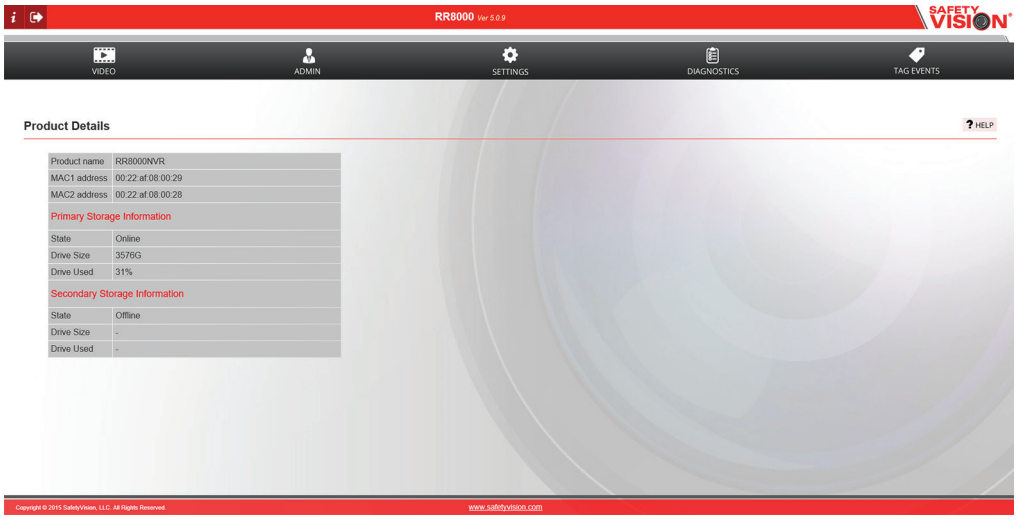
Each screen of the RoadRecorder® 8000 NVR configuration interface includes a comprehensive help menu. The help menus explain the functionality and parameters of each field.

To access the help menu for a screen, simply click the Help button at the top right of the screen. The help menu appears in a new window.



## Product Details

Select the **information** icon on the top left hand corner to view the Product Details page.




The Product Details page displays factory configured identification fields as well as the status of the removable hard drive *(primary)*, and secondary storage *(if present)*.

- **Product name:** Product name of the NVR.
- **MAC1 address:** MAC address of the device interface of the NVR.
- **MAC2 address:** MAC address of the wireless radio interface of the NVR.

### Primary Storage Information

- **State:** If Primary Storage is present and working then it shows “Online” state otherwise it shows “Offline” state.
- **Drive Size:** Total size of Primary Storage drive in GB unit if it is connected with NVR.
- **Drive Used:** Total size of Primary Storage drive used *(in percentage)* if it is connected with NVR.

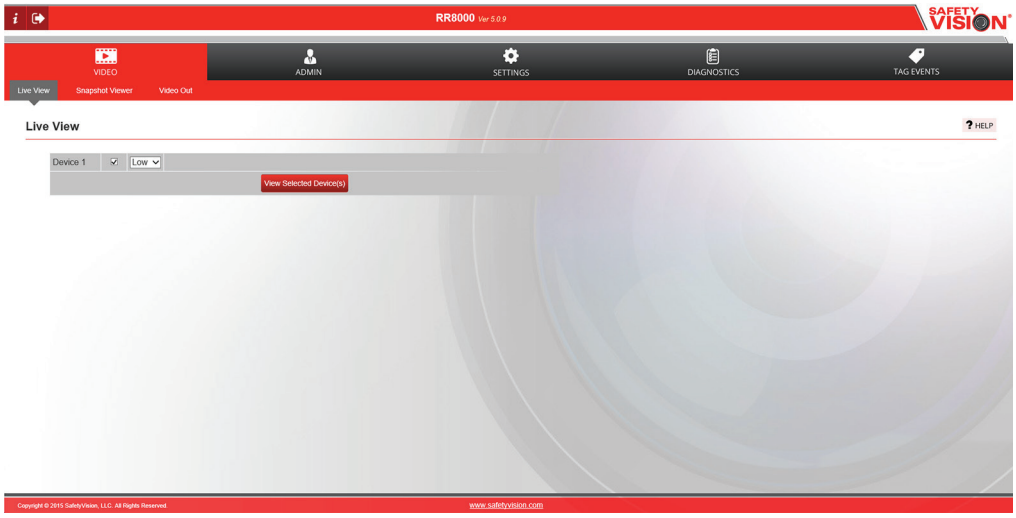
### Secondary Storage Information

*(If not using secondary storage, section will not be displayed)*

- **State:** If any secondary storage source is present and working then it shows “Online” state otherwise it shows “Offline” state.
- **Drive Size:** Total size of secondary storage drive in GB unit of it is connected with NVR.
- **Drive Used:** Total size of secondary storage drive used in percentage if it is connected with NVR.

## Live View

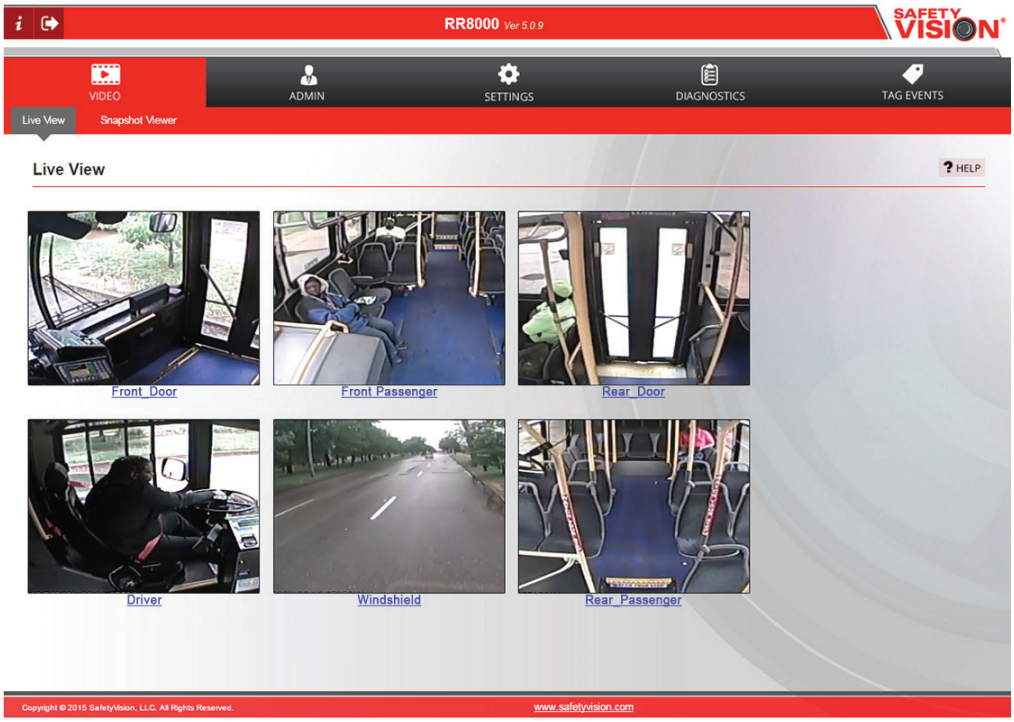
The Live View page allows you to see the field of view of any connected camera, allowing you to focus and properly adjust the image.




The Live View requires the installation of VLC Media Player, available free from the developer.

First, select the connected cameras that you want to view. By selecting "Low" or "High" from dropdown, user can select which stream to view. Then click **View Selected Device(s)**.

By clicking the **View Selected Device(s)** button, the webUI will display live feed from devices which were selected along with a link to view that particular device page under each video feed.




The web-based configurations pages for each camera can be accessed by clicking on the hyperlinked camera name below each image.

*The default user name and password for Axis cameras is both **root**.*

*The user name and password for SVC-2200 cameras is **Admin** and **1234**, respectively.*

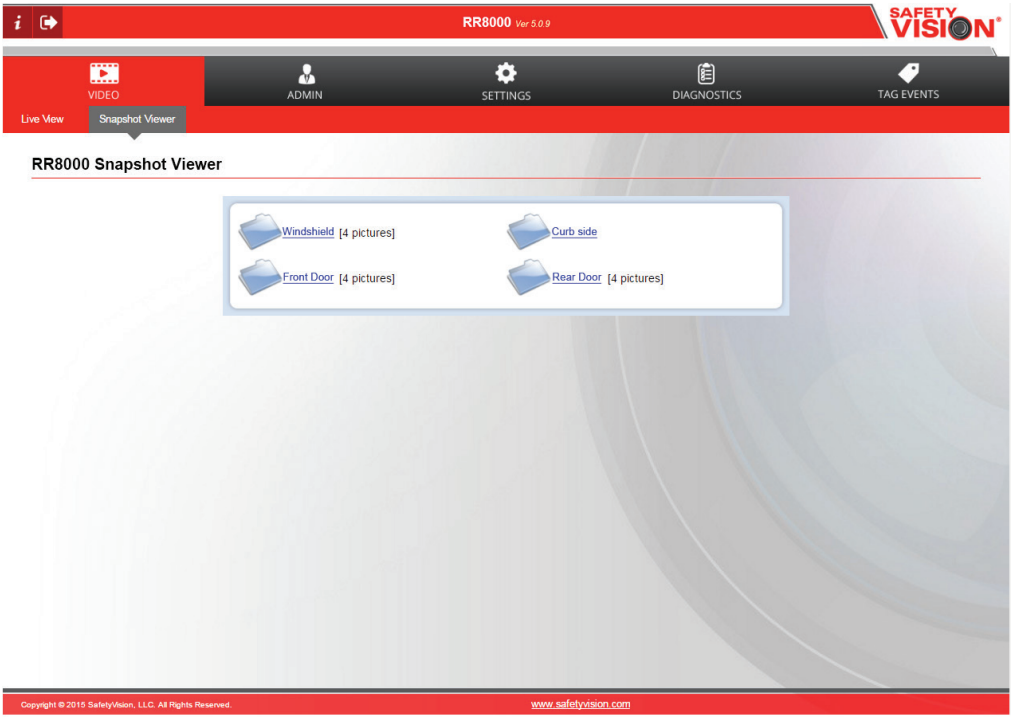
*The user name and password for the 45 and 46 Series cameras is **admin** and **SV123456**, respectively.*

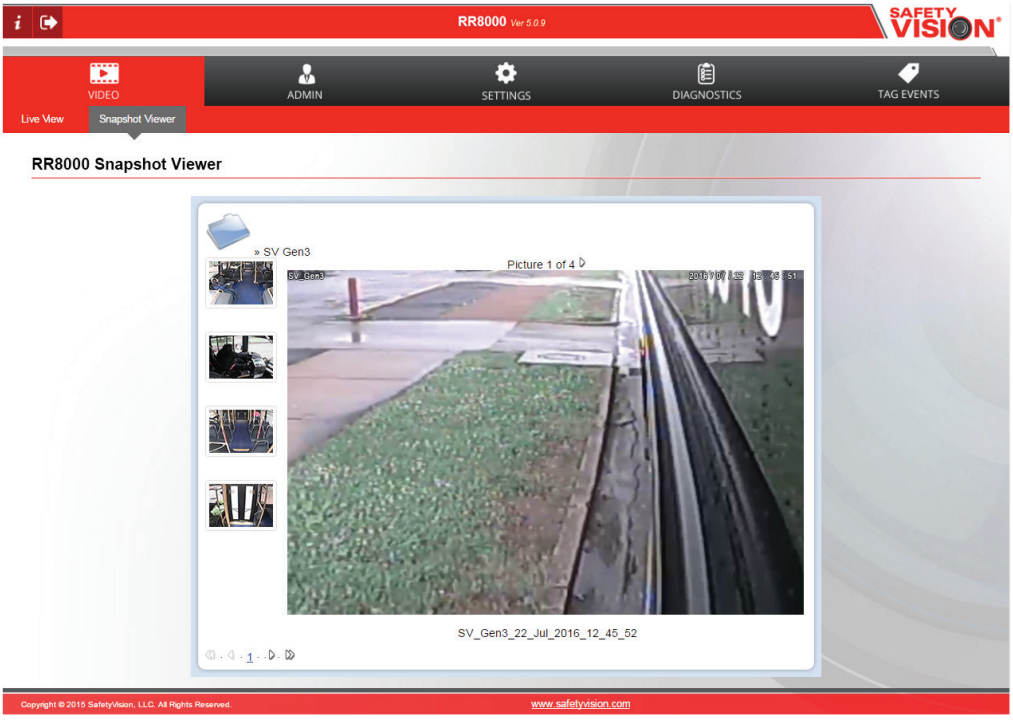
## Snapshot Viewer

The Snapshot Viewer allows you to see still images taken from camera configured to record MJPEG.

To view a camera's snapshots, first select the camera.

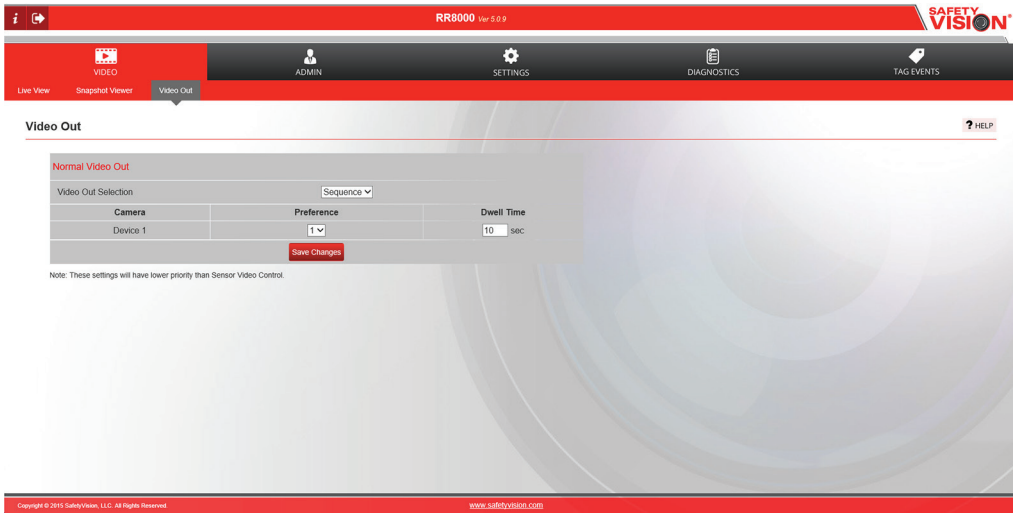
As the camera produces MJPEG still images, they will be available to view in sequential order. Click on the arrow buttons forward and backward to browse through available images.



## Video Out

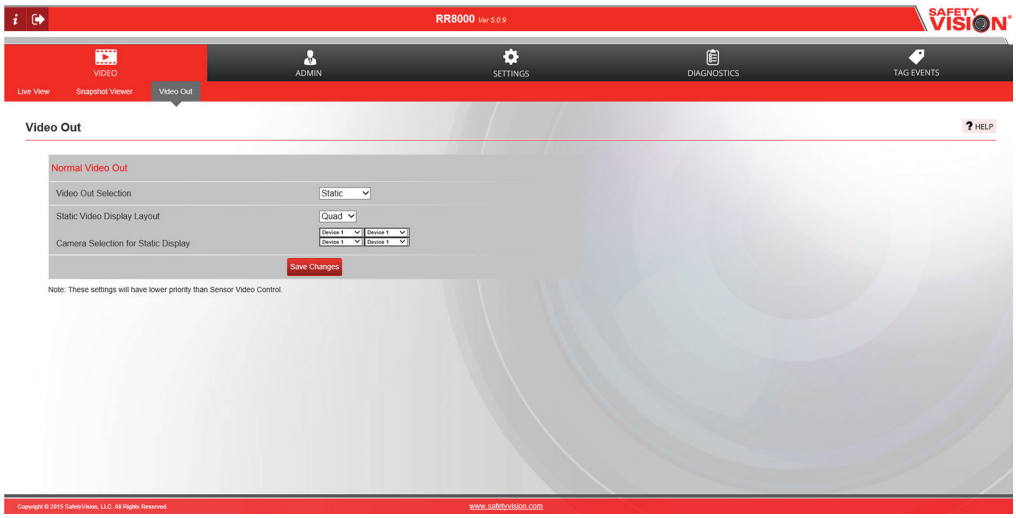
The Video Out page configures the behavior of the video output when an optional external monitor is connected.




First, select **Sequence** or **Static** in the **Video Out Selection** field.

### Sequence

Select **Sequence** to have the output cycle between camera views. Available cameras are listed in the **Camera** column. In the Preference column, select the order you want the camera view to appear in the sequence. In the **Dwell** column, enter the amount of time, in seconds, that you want that camera view to appear. Valid value for dwell time is 1-10 seconds.



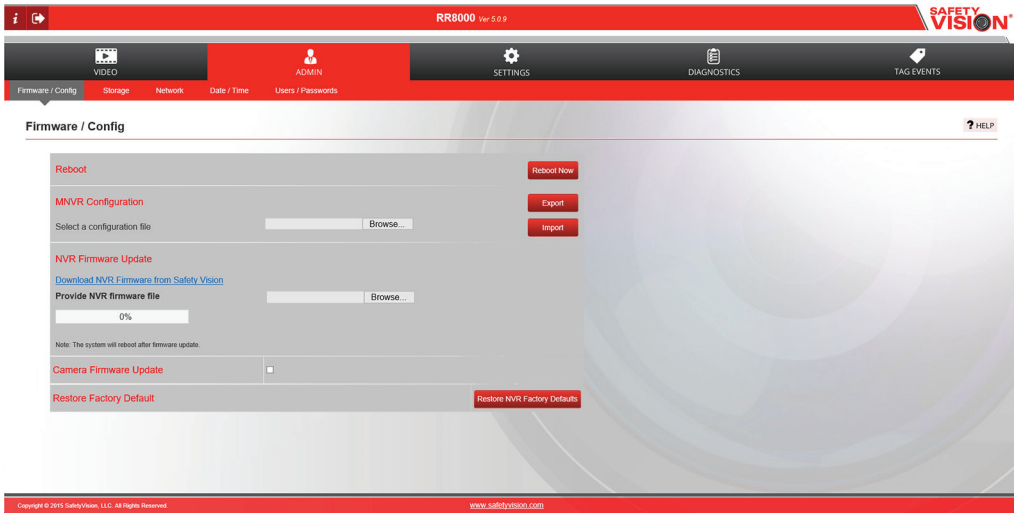

### Static

Select **Static** to have the output display up to four camera views full time. First, select the number of camera views that will appear on screen at once in the **Static Video Display Layout** field. Then select from available cameras to appear in the **Camera Selection for Static Display** field.

Click **Save Changes** to save changed entries.

## Firmware / Config

The Firmware / Config page allows you to save configurations, format devices, update the firmware, as well as reboot the NVR.




### Reboot

Click the Reboot Now button to immediately reboot the NVR and apply any saved changes.

*Changed configurations are not applied to the NVR until after it is rebooted.*

### MNVR Configuration

A backup file can be created that saves all of the NVR's configuration settings. The backup file can be applied in event these settings are lost or duplicated across multiple NVRs. To create a backup file, confirm all configuration settings are set appropriately and saved *(click the Save* **Changes** *button whenever a change is made)*, then click the **Export** button. Your web browser prompts you to save the file in the location of your choice. The backup file is saved in the following format:

RR8000_NVR_[Serial number]_MM_DD_YY.xml.

Backup files are interchangable between NVRs, however unique fields such as the bus name and network information should be updated for each individual NVR.

To import a saved backup file, click the **Browse...** button. Navigate to where the appropriate file is saved and click **Open**. Confirm the appropriate file is displayed and click **Import**. The backup file is uploaded automatically.

### NVR Firmware Update

The NVR Firmware Update function provides a convenient means of uploading a firmware file directly from an attached PC. Then upgrade the NVR's firmware:

1. Click the **Browse...** button.
2. A navigation prompt appears. Navigate to the location of the new firmware file *(.tgz file)*.

3. Click **Open**.

4. Click the **Upload** button. A status bar appears as the firmware update is automatically applied.

### Download NVR Firmware from Safety Vision

If the connected PC has internet access, click this link to be directed directly to Safety Vision's FTP site. Contact your Account Executive for login information.

### Camera Firmware Update

Select the Camera Firmware Update option to update camera firmware through the NVR. This feature is only available for SVC-2200 Gen 2 and Gen 3, and Axis cameras.

1. Click the **Browse...** button. A navigation prompt appears.

2. Navigate to the location of the new firmware file.

3. Click **Open**.

4. Click the **Upload** File button. A status bar appears as the firmware update is automatically uploaded.

5. Once the file has been uploaded, select the camera to which firmware will be applied.

6. Click the **Update** button. The firmware is automatically applied to the selected cameras The process will take approximately 10 minutes. Do not remove power from or unplug any cameras or the NVR.

   Once the firmware update is complete, the cameras will reboot automatically.

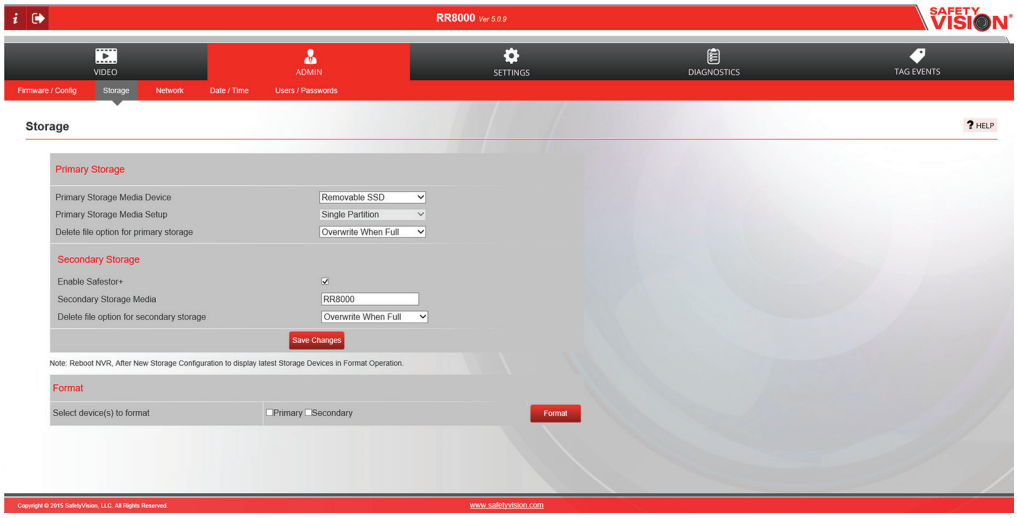
### Restore Factory Default

Click the Restore NVR Factory Defaults button to automatically set all configuration options to their factory default and immediately reboot the NVR.

***WARNING:*** *Selecting this option immediately changes any previously changed settings to the factory default.*

## Storage

The Storage page allows you to configure the storage device*(s)* of the NVR.




### Primary Storage

- **Primary Storage Media Device:** Select "Removable SSD" as the Primary storage device.
- **Primary Storage Media Setup:** Single Partition is by default enabled for Media Setup.
- **Delete file option for primary storage:** This option allows user to configure the setting for deleting files from storage media and create sufficient space for recording new data.
- **Overwrite When Full:** This option will allow user to delete older files when storage is full.
- **Overwrite Max Time:** This option will allows user to delete file if the timestamp on the file is older than specified time. The timestamp of all files will be regularly checked at an interval of 1 hour.
- **No Overwrite** *(Stop When Full)***:** This option will allow users to not delete any files from storage. Recording will be stopped.

### Secondary Storage

- **Enable Safestor+:** Select this option to enable SafeStor Plus. In case of Primary storage media failure, Firmware will check if secondary storage is connected. If secondary storage is connected, then recording will be done on secondary storage.

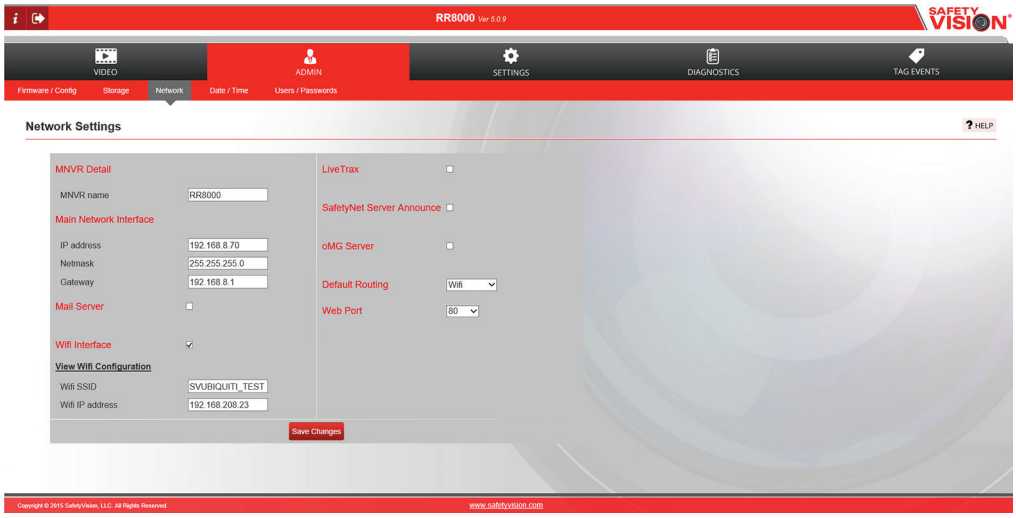
### Format

Select a device, then click the Format button to immediately format it. The NVR automatically reboots after formatting the device.

***WARNING:*** *Formatting a device completely erases any saved data, including recorded video.*

## Network Settings

The Network Settings page configures the WLAN interface and Mail server settings.




### NVR Detail

- **NVR name:** Enter the name of the NVR

***Restrictions:*** *Only alphanumeric characters are allowed with a maximum length of 15 characters. Names with "_" (underscore) are also accepted. No other special characters can be used for "NVR Name".*

### Main Network Interface

- **IP Address:** IP Address of the NVR for Main Network Interface connected to wireless access points.
- **Netmask:** Netmask of NVR for Main Network Interface connected to wireless access points.
- **Gateway:** Gateway IP Address of NVR for Main Network Interface connected to wireless access points.

### Show/Hide Network Information

User will have to click on particular checkbox to view configured network related information.

### Mail Server

If enabled, mail will be sent when event is triggered. If disabled, mail will not be sent on event.

- **Server IP Address:** Mail Server IP address which is used to send e-mails if any event generated on NVR.
- **Username:** Username which is used to login into Mail Server for sending emails regarding any event generated on NVR.
- **Password:** Password which is used to login into Mail Server for sending emails regarding event generated on NVR.
- **Port Number:** Contact your IT administrator for Mail Server Port Number
- **Mail to:** Email Address to which all emails will be sent regarding any event generated on NVR.
- **Mail from:** Email Address from which emails will be sent regarding any event generated on NVR.

### Wifi Interface

- **View Wifi Configuration:** Click on View WiFi Configuration to make changes on WiFi Configuration Page *(See Next Page For Details about WiFi Configuration).*
- **Wifi SSID:** Connected wireless access point.
- **Wifi IP address:** An IP address of wireless access point.

### LiveTrax

If enabled, LiveTrax Server will be able to receive and send packets to NVR. If disabled, LiveTrax Server Application will be stopped.

- **Server IP address:** IP Address of the LiveTrax Server.
- **Send Port:** Data packet is sent to LiveTrax server from this port to NVR. The valid port range is 1025 to 65535.
- **Receive Port:** Data packet is received from LiveTrax server to this port of the NVR. The valid port range is 1025 to 65535.
- **Gateway:** LAN IP address of router where the LiveTrax server is connected.
- **Netmask:** Netmask of LiveTrax server

### SafetyNet Server Announce

If enabled, SafetyNet Server will be able to accept Web Requests on specified server port. If disabled, SafetyNet Server Application will be stopped.

- **Server IP address:** IP Address of the SafetyNet Server.
- **Server Port:** Web Request is sent to SafetyNet server to this port. The valid port range is 1025 to 65535.
- **Gateway:** LAN IP address of router where SafetyNet server is connected.
- **Netmask:** Netmask of SafetyNet server.

### oMG Server

If enabled, oMG Server will connect with specified TCP port. If disabled, oMG Server Application will be stopped.

- **Server IP address:** IP address of the oMG Server
- **Server Port:** TCP port of the oMG server. The valid port range is 1 to 65535.
- Default Routing
- Option to configure default routing option.
- Web Port
- Option to configure NVR web port.

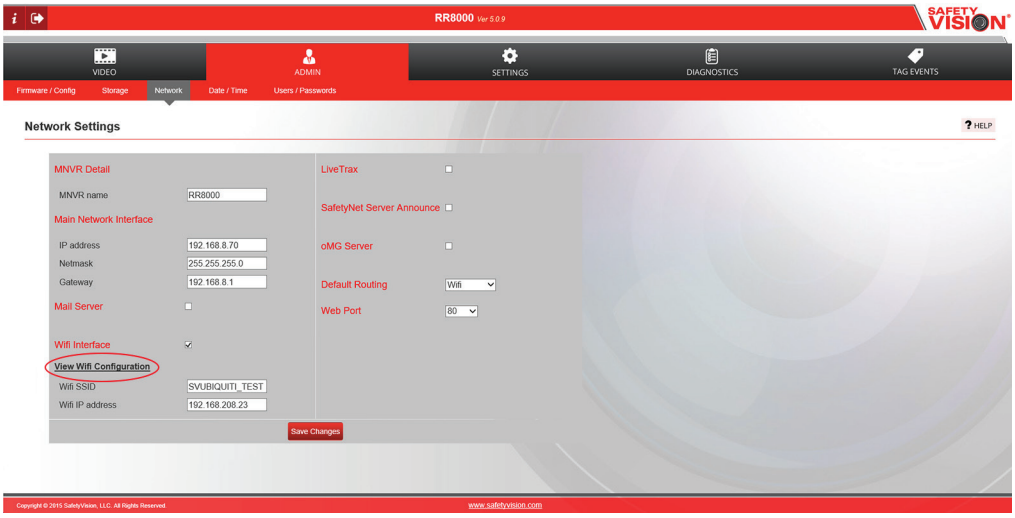
Click **Save Changes** to save changed entries.

## Wifi Configuration

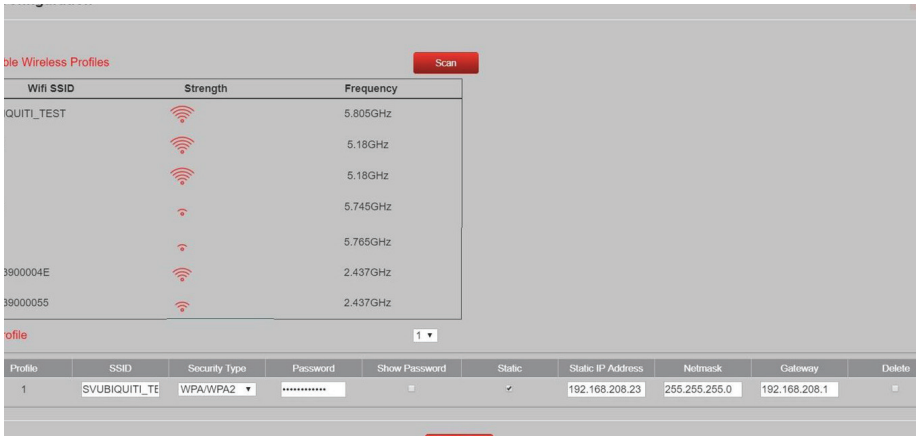
The Wifi Configuration page configures which Access Points to connect to the NVR.

From the Network Settings page, click on **View Wifi Configuration**.

The following Wifi Configuration page will appear:




- **Scan:** User can click on the "Scan" button to get all nearby wireless profiles *(access points)*, which can be seen in Available Wireless Profile section.
- **Available Wireless Profile:** User can select profile*(s)* by clicking on a particular WiFi SSID which will automatically get added to wifi profile section, and by double clicking outside the scan results of the Available Wireless profiles section, the Scan Values will disappear.
- **Wifi Profile:** User can select profile number between 1-5 from here to allow up to 5 profiles to be added to the wifi profile section.
  - **SSID:** Name of WiFi SSID.
  - **Security Type:** Option to choose WiFi security type.
  - **Password:** Password can be 8-63 characters.
  - **Show Password:** If enabled, password will be displayed.
  - **Static:** User can prefer wifi access point as static or dhcp by enabling/disabling this checkbox. If Static enabled then Static IP Address, Netmask, and Gateway boxes are to be filled by user.
  - **Delete:** Maximum 5 profiles will be saved to wifi configuration. If User wants to clear an older profile then "Delete" button will remove that profile.

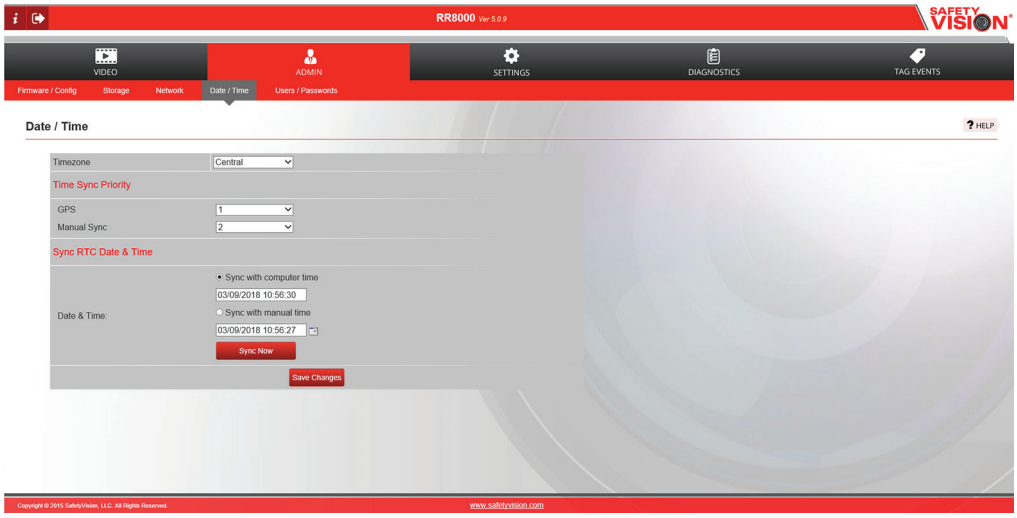



Click **Save Changes** to save changed entries.

To exit the Wifi Configuration page, click on the button on the top right hand corner of page

## Date / Time

The Date / Time settings page configures allows modification of the NVR's time zone.




### Timezone

Select the time zone the vehicle travels in most frequently.

### Time Sync Priority

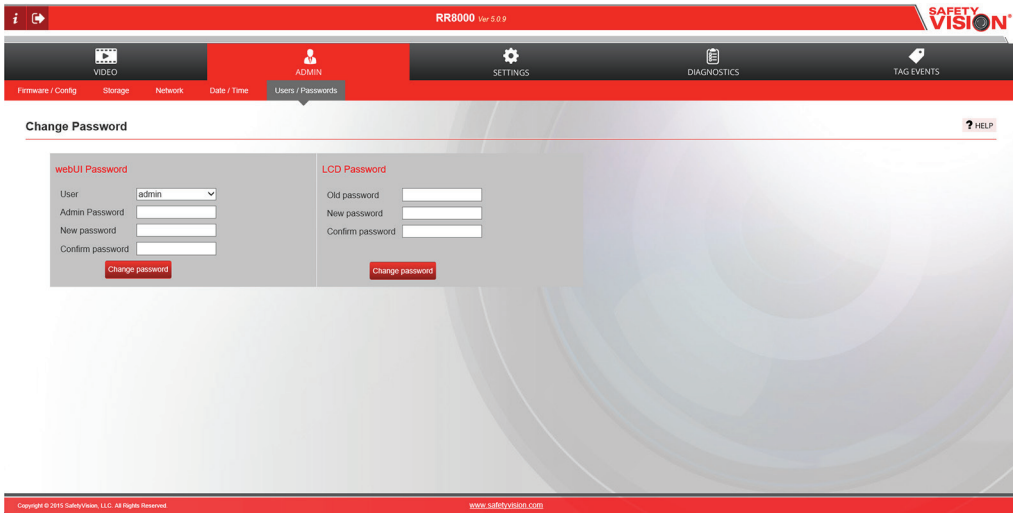
Use the Time Sync Priority fields to select which device has priority in providing the NVR with time stamp data. Select **1**, **2**, **3**, or **4** *(or N/A if the device is unavailable)* in the **GPS**, **Manual Sync**, **COSMOS**, and **J1939** fields.

### Sync RTC Date & Time

Select the **Sync with computer time** option to sync the time automatically with the connected computer, or select the **Sync with manual time** option, then click the calendar button to manually select a date and time. After confirming the time is correct, click the **Sync Now** button *(the NVR reboots automatically)*.

Click **Save Changes** to save changed entries.

## Change Password




### webUI Password

Change password for login into NVR system

- **User:** Select the user for which you want to change webUI password. Several different levels of user access can be selected in the User field:
  - admin *(default password: admin)*: Can access the entire web interface
  - user *(default password: user)*: Can access the entire web interface except the pages under the Administration tab
  - viewer *(default password: viewer)*: Can only access the Live View and Change Password pages.
- **Admin Password:** Provide current admin password in order to change password for any user
- **New password:** Provide new password to set for selected user. New password should be 3-25 characters long
- **Confirm password:** Provide new password for confirmation.
- **Change password:** Web Interface login password will be changed if you have specified correct password otherwise it will give an appropriate error message. Password will be changed runtime.

*These are all default passwords. It is highly recommended that the password be changed for security.*

### LCD Password

Change password required for initiating offload data manually or format SD Card from LCD.

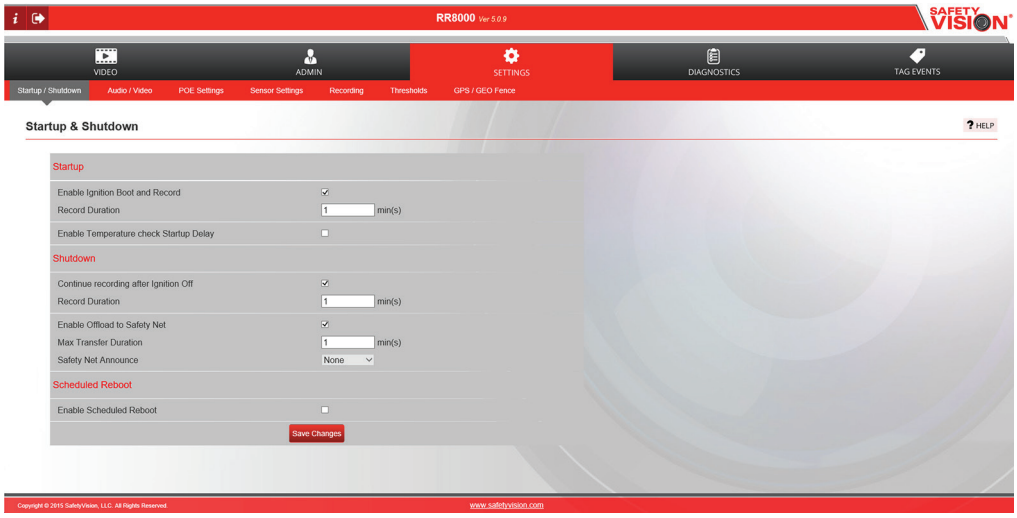
- **Old password:** Provide current password which a user needs to change.
- **New password:** Provide new password which a user needs to change. New password should be 6 alphanumeric characters long.
- **Confirm password:** Provide new password for confirmation.
- **Change password:** LCD password will be changed if a user has specified correct old password otherwise it will give an appropriate error message.

*The default password is "abc123". It is highly recommended that the password be changed for security.*

Click **Change Password** to save changed entries.

## Startup & Shutdown

The Startup & Shutdown page configures conditions when the NVR can automatically start and shut down.




### Startup

- **Enable Ignition Boot and Record:** If enabled, ignition above threshold value will be counted as a start-up condition and recording will be done for user-configurable duration.
- **Record Duration:** If NVR is started due to application of ignition, then recording will compulsorily done for specified amount of time. After the interval expires and ignition if ignition is not connected, the NVR will shutdown.
  ***Restriction:*** *Recording duration can be configured from 1 to 1440 minutes.*
- **Enable Temperature check Startup Delay:** If enabled, Firmware will read temperature before starting the NVR. If the NVR temperature rises to threshold temperature the firmware will start immediately.
- **Minimum Threshold Temperature:** The minimum temperature the NVR should contain for starting the NVR. If the temperature is below threshold, then the firmware will wait for some duration to allow temperature to rise.
- **Duration:** The NVR will wait maximum of configured time for the NVR temperature to rise. If temperature of NVR is still below threshold the firmware will still start.
  ***Restriction:*** *Recording duration can be configured from 1 to 1440 minutes.*

### Shutdown

- **Continue recording after Ignition Off:** If enabled, Recording continues for the specified period, even after the shutdown even is triggered, provided that vehicle power is available.
- **Record Duration:** Specified the time up to which Recording should be continued.
  ***Restriction:*** *Recording duration can be configured from 0 to 300 minutes.*

- **Enable Offload to Safety Net:** If this option is disabled then firmware will not send requests to SafetyNet™ server.
- **Max Transfer Duration:** After all the data is captured on Primary, Primary is kept mounted for user to retrieve data.
  ***Restriction:*** *Host offload time limit can be configured from 0 to 360 minutes. Decimal values are not allowed.*
- **Safety Net Announce:**
  - **None:** If this option is enabled, then web request will never be sent to SafetyNet™ server.
  - **Always:** If this option is enabled, then web requests will be sent to SafetyNet™ server after recording starts at interval of 60 seconds.
  - **Geo fence:** If this option is enabled, then web requests will be sent to SafetyNet™ server as per geo-fence configuration.

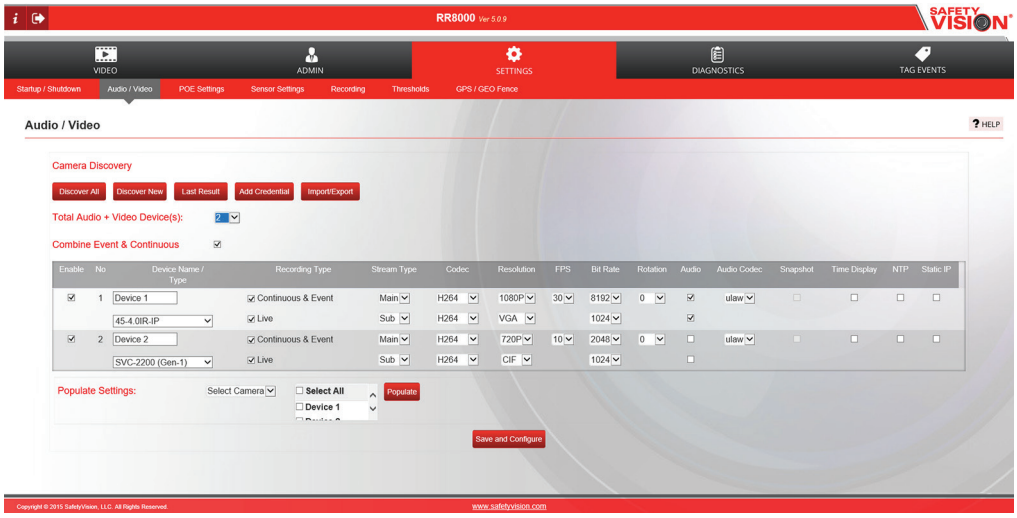
### Scheduled Reboot

- **Enable Scheduled Reboot:** If enabled, User can Schedule the NVR reboot time. NVR will reboot on the specified day and at a specified time.
- **Days:** User can select the days to schedule the time for NVR reboot.
- **Time:** User can specify a time for reboot *(in 24 hour format).*

Click Save Changes to save changed entries.

## Audio/Video Settings

The Audio/Video Settings page sets the number of cameras connected to the NVR in addition to their individual configurations.




### Camera Discovery

Click Discover All to search for all available connected cameras upon initial installation and setup of the NVR. Click Discover New to find new cameras after cameras have been added or replaced. Click Last Result to automatically recover the result from the last time Discover All was used.

### Add Credential

User can toggle the **Add Credential** button according to their need.

- **Add to List:** This will add camera credential to device configuration list. User can not add same credential again to device configuration list.

***Restriction:*** *Length of username and password should be less than 32 characters. Listed special characters may not be used: ‘ “ [ ] ~ { } ( ) , ! % ^ * ;*

### Import/Export Device Configuration

User can toggle the Import/Export button according to their need.

- **Import:** This button will import device configuration list to NVR.This will add new credentials to current device configuration list.
- **Export:** This button will export device configuration list.

### Combine Event & Continuous

When the checkbox is checked, all event streams will get disabled. User can configure Live video stream.

### Total Audio + Video Device(s) (1-16)

Select the number of devices you want to configure. This specifies the number of ports that must be used to connect devices to the NVR. These ports must be sequential. For example, if you select to connect 6 cameras, only ports 1 through 6 on the front panel can be used.

- **Enable/Disable Camera:** This tag will help user to enable and disable cameras and same will be reflected in populate camera setting.
- **Device Name:** Enter a unique name. A device can be uniquely identified by this name. Max allowed length for device name is 15 characters.
- **Type:** Camera model of selected device.
- **Recording Type:** If the **Combine Event & Continuous** checkbox is checked, user will get two options for stream selection:
  - **Continuous & Event:** Enable Continuous and Event stream. Even files can be generated from continuous data.
  - **Live:** Enable Live video stream to view video on web interface. Select Low resolution stream *(<1080p)* with bitrate below 2Mbps for live looking.
- If the **Combine Event & Continuous** checkbox is not checked, user will get two options for stream selection:
  - **Continuous:** Enable Continuous stream.
  - **Event:** Enable Event Stream

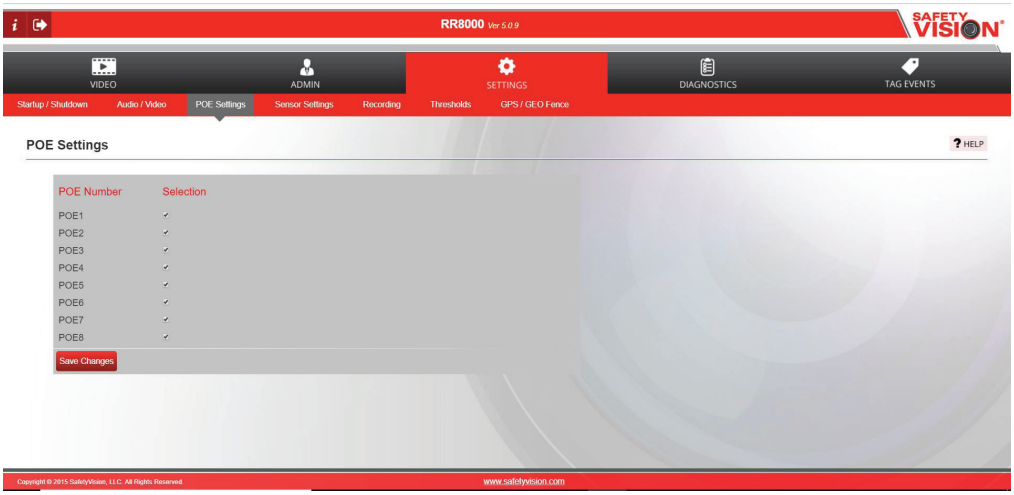
### Stream Type

- **Main:** Main stream is a high resolution stream.
- **Sub:** Sub stream is a low resolution stream.
- **Codec:** Set the codec format for the particular stream. Supported codec are mjpeg, h.264 and h.265.
- **Resolution:** Set the resolution for the particular stream. Supported resolution caries as per the selected codec.
- **FPS:** Set the frame speed for particular stream. Frames per second *(fps)* is same for both the streams. Supported FPS are 5, 10, 15, 30.
- **Bitrate:** Sets the maximum allowed bitrate for the particular stream. Supported bitrate are 256, 512, 1024, 2048, 4096 and 6144 Kbps for h.264 and h.265 stream and 20, 40, 60 for mjpeg stream.
- **Rotation:** Sets the video rotation of stream. Video Rotation is same for both the streams. Supported video rotation are 0 degrees, 90 degrees, 180 degrees, 270 degree.
- **Audio:** If audio is enabled for continuous/event recording stream then audio data is also captured and stored with video data.
- **Audio codec:** Supported audio codecs are ulaw and alaw for camera and ulaw for Audio IO device.
- **Snapshot:** Streams configured as mjpeg can be used for taking photos at regular intervals. To configure a stream for mjpeg codec, select mjpeg in the dropdown menu for Codec and enable the option for taking snapshots.
- **Time Display:** If this option is enabled, then time stamp will be displayed on the video data of the camera.
- **NTP:** If this option is enabled, then camera time will be synced with the NTP server. NVR is NTP server.
- **Static IP:** If the checkbox is checked, device will be considered as static device.
- **Static IP address:** Assign static IP address to the device. Valid range for static ip is *(182.168.1.100 to 182.168.1.149)*.
- **Populate Settings:** This feature allows users to populate device settings to another or multiple devices. Configuration of selected device from the first dropdown will be saved devices from the second multi selection box. This will save all camera configurations. Cameras will be reconfigured on next boot.

## PoE Settings

The PoE Settings page configures the PoE ports of the NVR.

If the checkbox is checked, PoE port is active and is receiving power. If not utilizing a PoE port, uncheck the checkbox to turn off power to selected port. By default all PoE boxes are checked.



## Sensor Settings

The Sensor Settings page configures settings for the sensors and fault statuses.

### Sensor Inputs

- **Name:** The NVR has trigger inputs, and for easy identification these trigger inputs can be configured to have user defined names which can be entered in this field for any particular trigger input.
  ***Restrictions:*** *The name can contain any alphanumeric value including a single space & "_". The trigger input name can only be 15 characters max.*
- **Action:** The Action configured here for a particular trigger input is used for recording various types of events as described below:
  - **Metadata:** The Metadata Action is ACTIVE HIGH. If Trigger input is configured as Metadata then Event will not be recorded for that input. Trigger status *(Active/Inactive)* entry will be found in Metadata Log only.
  - **Backup Power Event:** The Backup Power Event Action is ACTIVE LOW. Only Trigger seven input can be configured as Backup Power Event. Backup power event will not record audio/video streams. It will set timer for Backup power Duration *(1 to 15 Min)*. When time expires, NVR will shutdown. If trigger becomes active in between, timer will be aborted.
  - **Timed Event:** The Timed event Action is ACTIVE HIGH. If Trigger input is configured as Timed Event then Event will be recorded for *(Pre + Post)* Time duration for that input. Trigger status *(Active/Inactive)* entry will also be found in Metadata log.
  - **Event While Active:** The Event While Active Action is ACTIVE HIGH. If Trigger input is configured as Event While Active then Event will be recorded for *(Pre + Active + Post)* Time duration for that input. Trigger status *(Active/Inactive)* entry will also be found in Metadata Log.

- **Start Event:** The Start/Stop Event Action is ACTIVE HIGH. If Trigger input is configured as Start Event then Event will be recorded for *(Pre + Active)* till stop event is not triggered. Trigger status *(Active/Inactive)* entry will also be found in Metadata Log. If one Start Event is selected than on Stop Event should also be selected.
- **Stop Event:** The Stop Event Action is ACTIVE HIGH. If Trigger input is configured as Stop Event then all Start Event will stop recording. Trigger status *(Active/Inactive)* entry will also be found in Metadata Log. Stop Event can only be selected with Start Event.
- **Power Fail Event:** The Power Failed Event is ACTIVE HIGH. Only Trigger seven input can be configured as Power Fail Event. NVR will shutdown as soon as vehicle power is failed.

When each sensor triggers, an attached optional monitor can be configured to display specific camera views:

- **Display:** Select **Single** *(one camera full screen)*, **Split** *(two cameras)*, or **Quad** *(four cameras)*
- **Priority:** Select the priority this sensor triggering has over other sensors
- **Dwell Time:** Select the amount of time the configured camera view displays after the sensor is triggered
- **Cameras:** Select which available camera views appear in the displayed position; the number of fields changes depending on the entry in the Display field

- **Control Output:** Control outputs 1 to 16 of NVR will be configured as per the settings configured in Control out 1, Control out 2,....Control out 16 respectively. Currently, one can select between **Camera Ethernet Switch**, **Wireless Control**, **Fault Status** or **None**.

  Selecting **Camera Ethernet Switch** and/or **Wireless Control** will turn on that control output to switch on the external device connected to that control out, selecting **Fault Status** will enable functionality to support fault status interface on that control output. Selecting **None** will disable that control output.

  - By default, Control out 1 is selected as External Device & others are selected as None.

### Fault Status

For each fault status, select Off or On. If On is selected for any fault, then on occurrence of the fault the relay will be set to ON state. The relay will continue to be in this state till the fault is cleared.

- Camera Failure
- GEO Violation
- Vehicle High Speed
- Vehicle High Acceleration
- Temperature
- GPS Failure
- Removable Drive Failure
- Removable Drive 90% Full
- Offload Failure

### Relay Bypass

The relay bypass of the NVR will be configured as per the settings configured in **Relay Bypass 1**. Currently, one can select between **External Devices** or **None**.

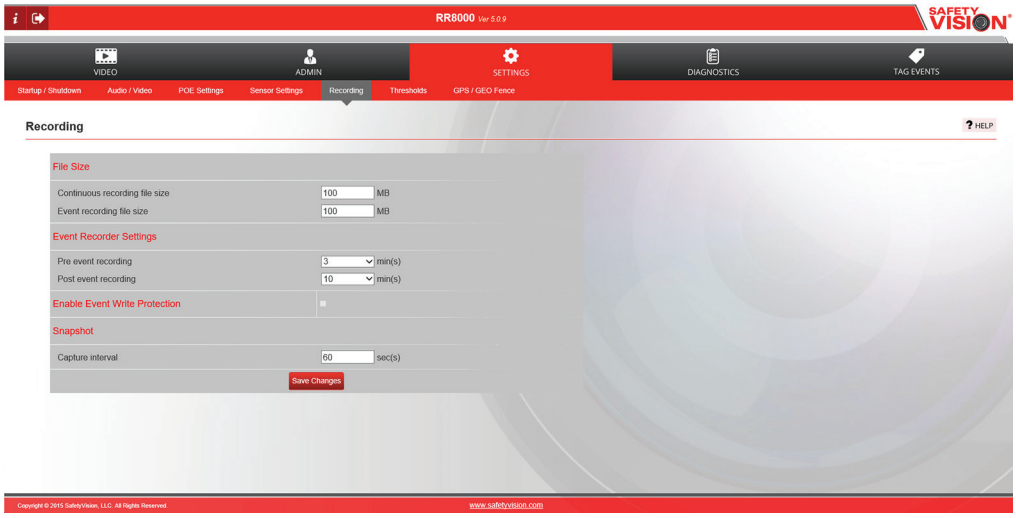
Selecting **External Device** will turn on that relay bypass to switch on the external device connected to that relay bypass. Selecting **None** will disable that relay bypass.

By default, Relay Bypass 1 is selected as External Device.

Click Save Changes to save changed entries.

## Recording

The Recording page configures file sizes and how the NVR records events.




### File Size

- **Continuous recording file size:** Size of file to be created for continuous recording.
  ***Restrictions:*** *File size can be configured from 50 MB to 1024 MB. Decimal values not allowed.*
- **Event recording file size:**
  Size of file to be created for event based recording.
  ***Restrictions:*** *File size can be configured from 50 MB to 1024 MB. Decimal values not allowed.*

  ***NOTE:*** *Safety Vision strongly recommends retaining the default settings of 100MB.*

### Event Recorder Settings

When any event is triggered, audio/video data of event interval is recorded in a different file which can be extracted later. Audio/video data specific to the event is thus obtained.

- **Pre event recording:** Audio/video data of specified minutes before the event starts are also copied to event file.
- **Post event recording:** Audio/video data of specified minutes after the event is triggered are also copied to event file.

### Enable Event Write Protection

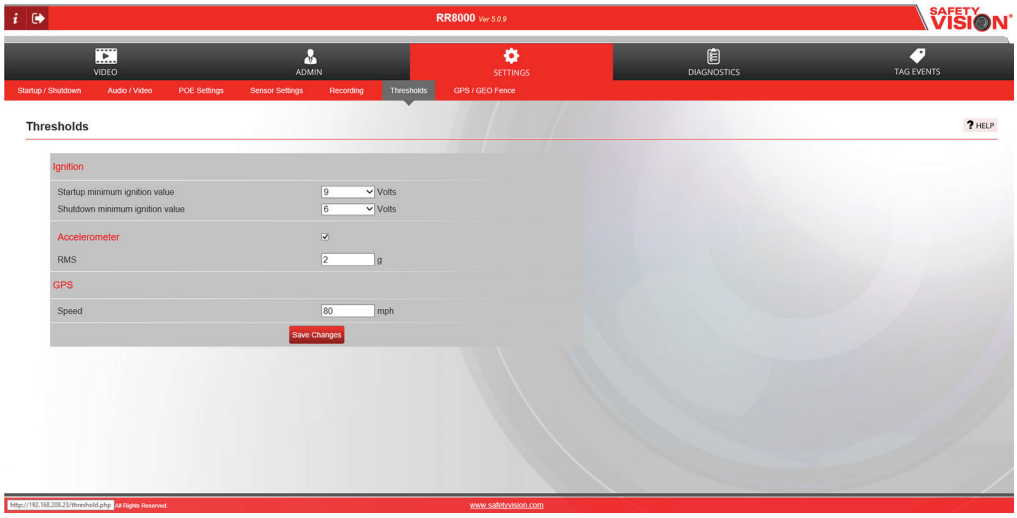
If this option is enabled, event files will not be deleted from the storage device in case of insufficient free space.

### Snapshot

- **Capture interval:** Camera enabled for snapshots capture data at specified intervals. To enable snapshot for a particular camera, enable **Take Snapshots** in individual camera configuration page.
  ***Restrictions:*** *Snapshot interval can be configured from 10 to 3600 sec. Decimal values are not allowed.*

## Thresholds

The thresholds page configures the minimum and maximum values of specific equipment before events are recorded.




### Ignition

- **Startup minimum ignition value:** Minimum ignition value to start NVR system. The value is given in Volts. Our NVR system will power on only if ignition power is greater than the configured ignition value.
  ***Restrictions:*** *Start-up ignition value should be always greater than shutdown ignition value.*
- **Shutdown minimum ignition value:** Minimum ignition value to shutdown NVR system. The value is given in Volts. Our NVR system will power down gracefully if ignition power is less than the configured ignition value.
  ***Restrictions:*** *Shutdown ignition value should be always smaller than start-up ignition value.*

### Accelerometer

- **RMS:** The NVR contains a 3-axis accelerometer. Event is triggered when RMS *(root, mean, square)* value of all the axes is greater than specified.
  ***Restrictions:*** *RMS value can be configured from 0.1g to 16g.*

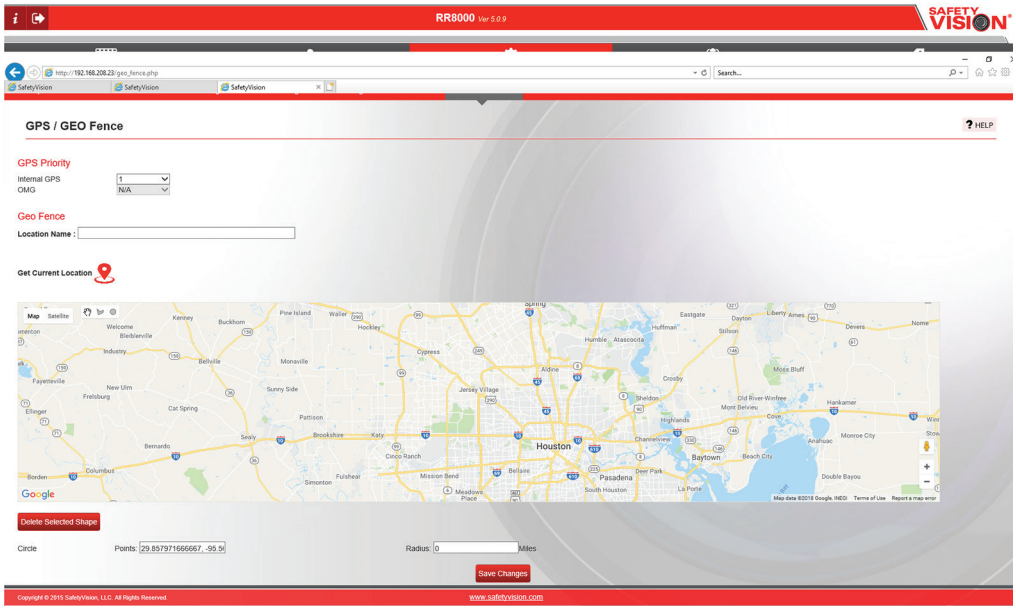
### GPS

- **Speed:** The NVR has GPS which will provide vehicle speed. Event is triggered when vehicle speed is greater than specified.
  ***Restrictions:*** *Speed value can be configured from 0mph to 100mph.*

Click Save Changes to save changed entries.

## GPS / GEO Fence

The GPS / GEO Fence page configures the GPS signal priority and sets up the Geo Fence feature.




### GPS Priority

Use the GPS Priority fields to select which device has priority in providing the NVR with GPS data. In the Garmin and OMG fields, select 1 to give that device priority, select 2 for the secondary device.

### Geo Fence

A geo fence is a defined area where a vehicle operates. When a vehicle crosses the fence, an event can be triggered or the NVR can announce itself to a SafetyNet CMS wireless network.

### Get Current Location

Click on Get Current Location Symbol, user can redirect to current location of NVR.

### Set up a geofence

Click the circle or polygon icon in the upper left of the map.

**To create a circular geo fence:**

- Click the circle icon
- Click the map in the location of the center of the circle. Drag the mouse to increase the radius, then click again. You can further adjust the circle radius by clicking and dragging the image “handles.”

**To create a free-form, polygonal geo fence:**

- Click the polygon icon.
- Click a location on the map, then a second. A line appears. Each click creates a geo fence “post.”
- Continue creating posts until you return to the original post, creating a complete fence. The fence can further be adjusted by clicking and dragging on the image “handles.”

Only one circular geo fence can be created at once, while multiple polygonal geo fences can be created. Circular geo fences can only trigger events when the vehicle exits the fence.

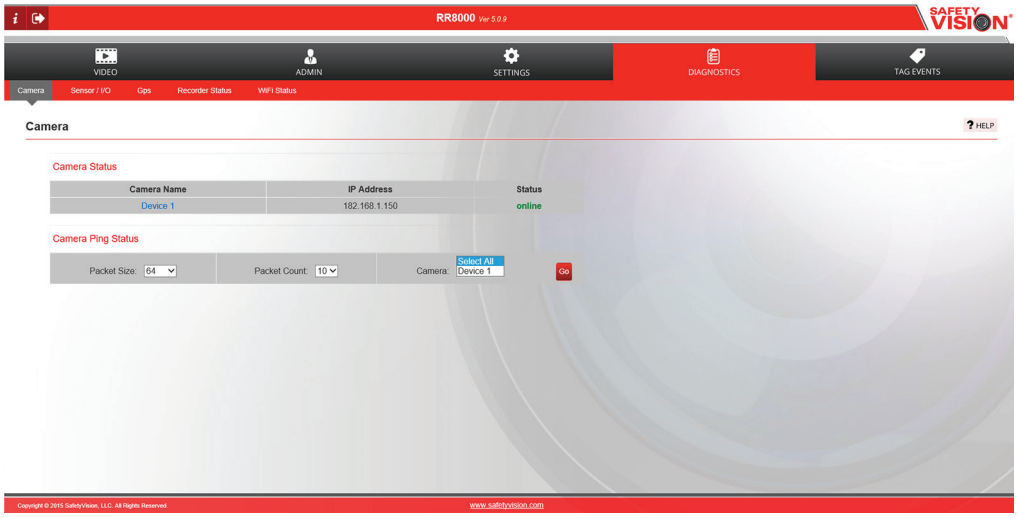
For each created geo fence, select Exit, to trigger the geo fence effect when a vehicle leaves the defined area, or Entry, to trigger the geo fence effect when a vehicle enters it. Then select Event to trigger an event, or SVAnnounce to trigger a ping to be sent to a SafetyNet CMS wireless network.

Select a shape and click Delete Selected Shape to delete a shape and start over.

Click Save Changes to save changed entries.

## Camera

The Camera diagnostics page provides comprehensive support for technicians installing and troubleshooting the NVR's camera installation.




### Camera Status

The Camera Status display shows the camera name, IP address, and operational status of each camera. Click on the camera's name or IP address *(depending on if you are connected through the **WAN** [top] or **LAN** [bottom] Ethernet port)* to automatically go to that camera's live view and configuration page.

### Camera Ping Status

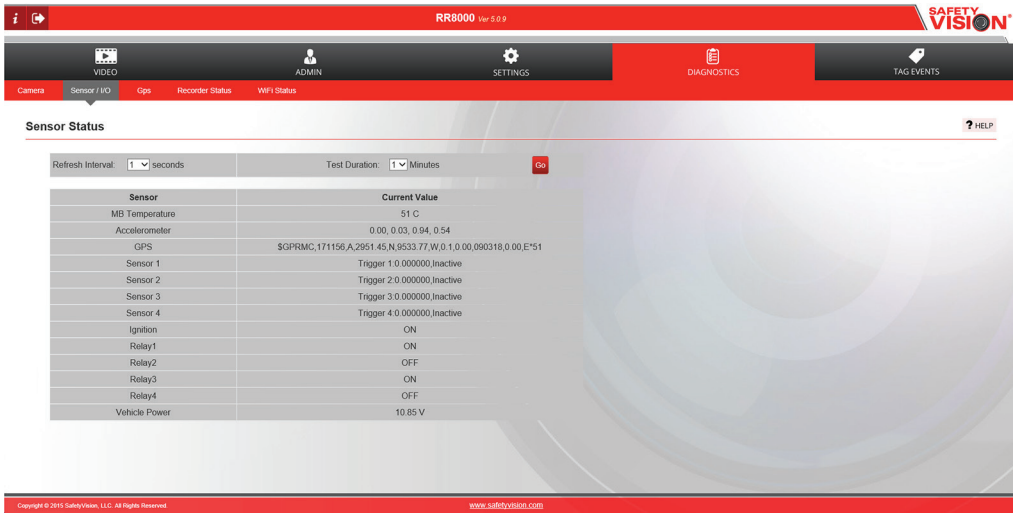
Select the packet size and packet count, then select an individual camera or click Select All, then click Go to perform a camera ping test. After the test is run, the results are displayed.

## Sensor Status

The sensor status diagnostics page provides assistance when installing or troubleshooting the NVR's sensors.

Select a refresh interval *(the frequency at which the web page will refresh)* and the test duration *(in minutes)*, then click **Go**.

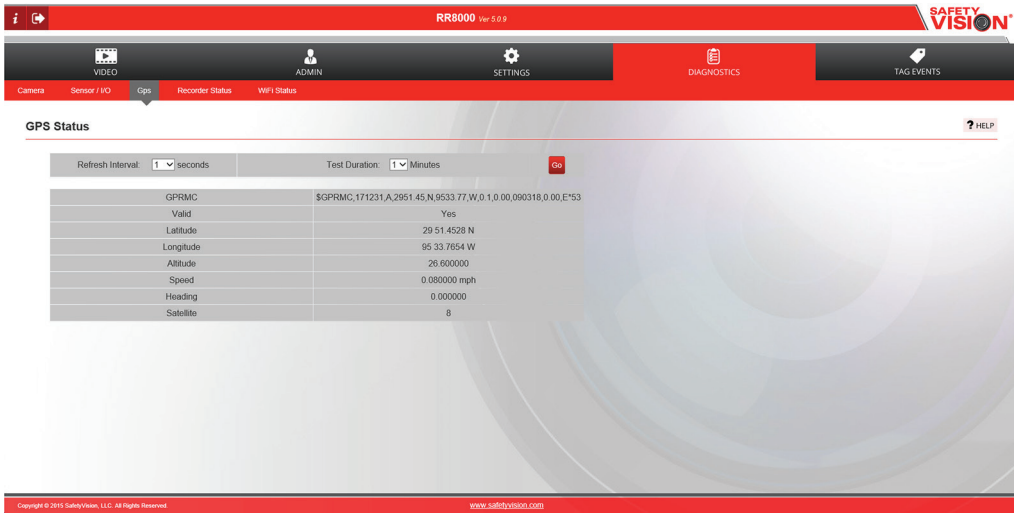
Sensor activation and their values can be observed in the display to the right.



## GPS Status

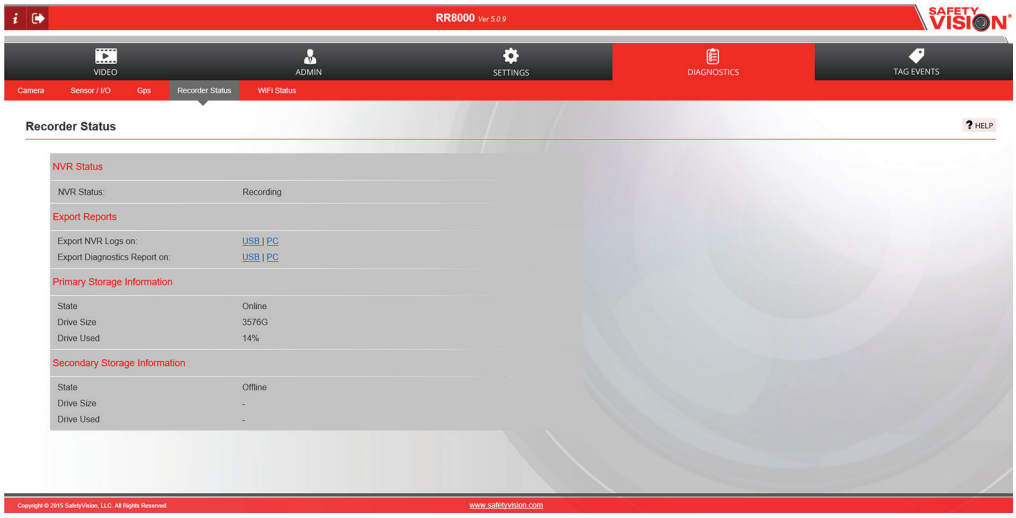
The GPS Status diagnostics page provides assistance when installing or troubleshooting the NVR's GPS.

Select a refresh interval *(the frequency at which the web page will refresh)* and the test duration *(in minutes)*, then click **Go**.



## Recorder Status

The Recorder Status page allows you to download NVR logs and diagnostic reports, as well as display the status of the removeable hard drive *(primary)* and SafeStor *(secondary)*.




### NVR Status

The status of the NVR is displayed as **Recording**, **Configuring**, **Offloading**, or **Safetynet Offloading**.

### Export Reports

To download the NVR's log or a diagnostic report, click on **USB** *(to download to a USB flash drive inserted into the front port of the NVR)* or **PC** *(to download to a location on an attached PC)*. These reports can be useful to technical support personnel when troubleshooting.

### Primary Storage Information

The state of the drive is displayed as "Online" or "Not online". The drive's total capacity is displayed in the Drive Size field and the percentage of that capacity used is displayed in the Drive Used field.

### Secondary Storage Information

*(If not using secondary storage, section will not be displayed)*

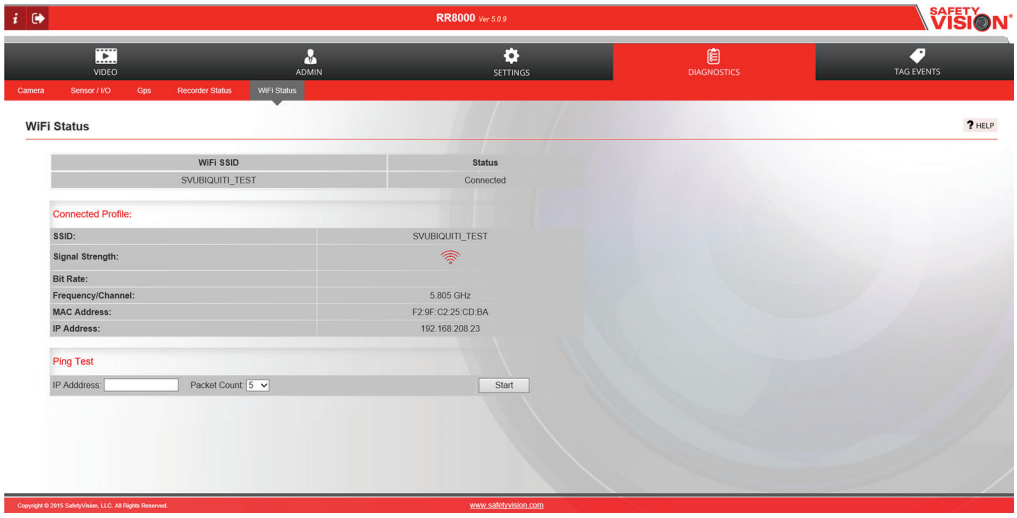
The State of the drive is displayed as "Online" or "Not online". The drive's total capacity is displayed in the Drive Size field and the percentage of that capacity used is displayed in the Drive Used field.

## WiFi Status

On page load, it shows configured WiFi-devices status information with WiFi SSID.

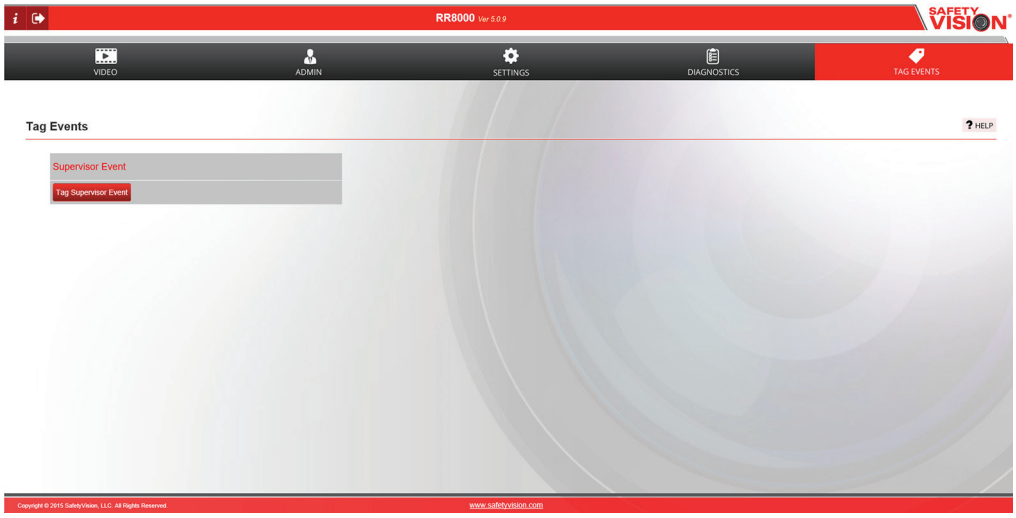
**Connected Profile:** It shows Connected Profile SSID, Signal Strength, Bit Rate, Frequency/ Channel, MAC Address, and IP Address.

**Ping Test:** Enter IP address of the device you want to ping.



## Tag Events

The Tag Events screen allows a supervisor or other authorized user to manually and immediately trigger an event by clicking **Tag Supervisor Event**. This feature is useful in emergency situations where the web interface can be accessed wirelessly by a supervisor vehicle. *(For more information regarding this feature, contact Safety Vision Technical Support.)*



# Appendix A: Specifications

### OS SUPPORT
**Linux:** Ubuntu 16.04 LTS

**Windows:** Hyper-V *(Windows 7, Windows 8.1, Windows 10)*

### CAMERAS SUPPORTED
Up to 36 via 8 × M12 with IEEE 802.3af PoE ports

### AUDIO/VIDEO OUTPUTS
2 *(HDMI and DVI-D)*, 1 × audio for mic-in, line-out by DB9 port

### FRAME RATE
30 fps *(all channels, all resolutions)*

### IMAGE QUALITY
512 KB/s - 12 MB/s

### STORAGE
2 × SATA II 2 TB HDD/SSD

1 × SDXC card

1 × 256 GB MSATA internal SSD

### RECORDING MODES
Continuous / scheduled / alarm

### PRE-EVENT RECORDING
Configurable up to 5 minutes

### POST-EVENT RECORDING
Configurable up to 10 minutes

### ETHERNET
Gigabit Ethernet

**Front:** 1 × RJ45

**Rear:** 8 × M12 with IEEE 802.3af PoE,
1 × M12 without PoE support

### GPS (BUILT-IN)
Location tracking, speed detection, and sync time

### ACCELEROMETER
3-Axis, 0.1G resolution

### INTERFACES
**Front:** 1 × double-stack USB 2.0
1 × RJ45 without PoE support

**Rear:** 1 × HDMI
1 × DVI-D
1 × double-stack USB 3.0
1 × M12 without PoE support

### SENSORS
16 inputs, 16 outputs

### POWER INPUT
9 ~ 36V DC *(18~75V DC +43~160V DC, optional)*

### OPERATING TEMPERATURE
-22° F ~ 140° F *(-30° C ~ 60° C)*

### DIMENSIONS (W × H × D)
12.12 × 4.86 × 10.5 in *(307.4 × 123.4 × 266.7 mm)*

### CERTIFICATIONS
FCC/CE Class A, E13, RoHS, EN-50155: 2007, EN-50121-3-2: 2006

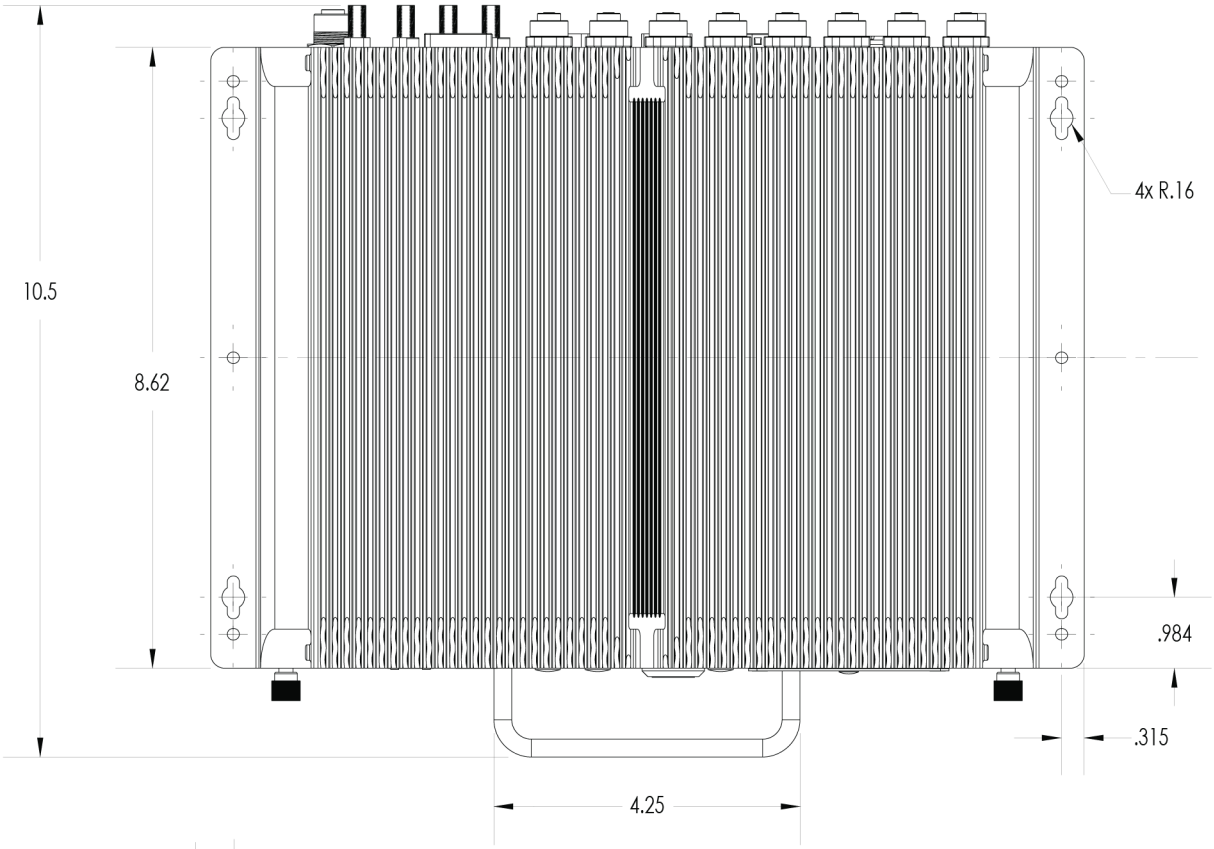
### COMPLIANCE
**Vibration:** MIL-STD-810G, Method 514.6

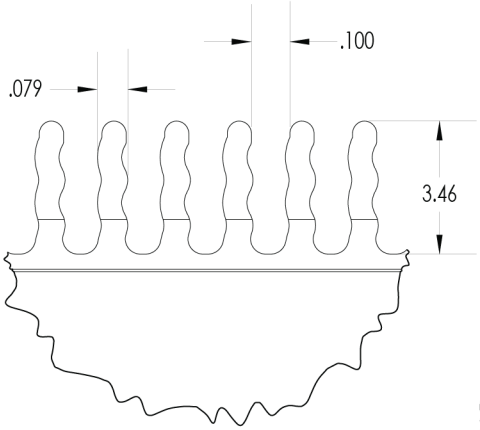
**Shock:** MIL-STD-810G, Method 516.6

### PART NUMBER
8000-NVR

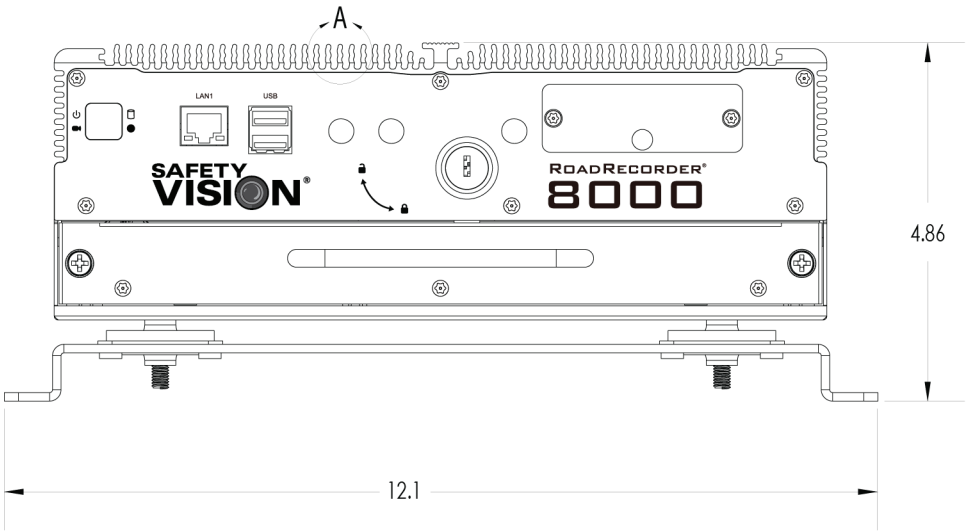
# Appendix B: Dimensions

## 8000-NVR

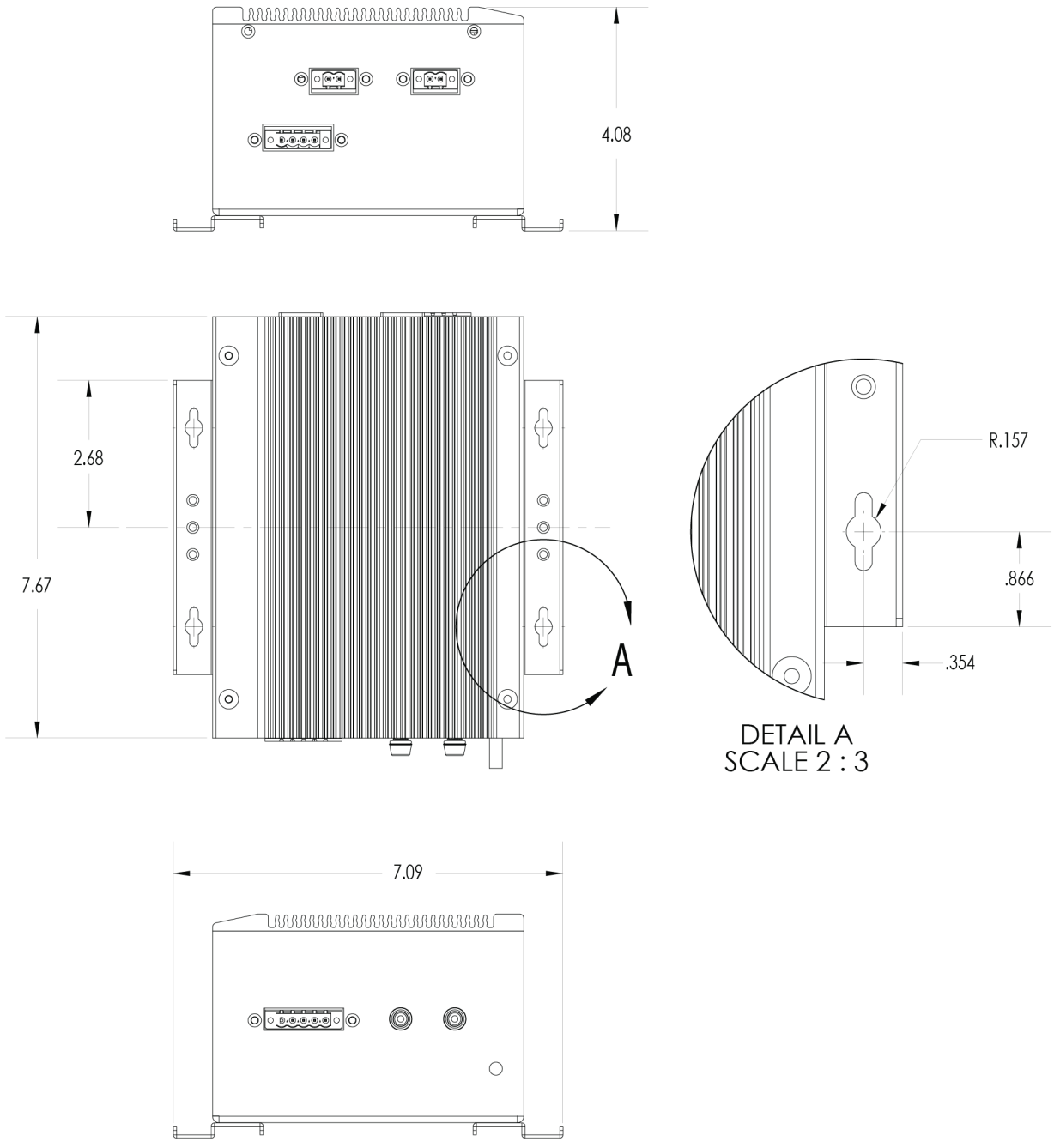



DETAIL A
SCALE 2 : 1



## Power Supply



# Appendix C: Axis Device Configuration

The RoadRecorder® 8000 supports both the Safety Vision SVC-2200 series cameras in addition to Axis network cameras. Configuration is identical except Axis cameras must be configured with the login and password both set to root. Use the following procedure to properly configure an Axis network camera:

1. Connect both a PC and the Axis device to a power over Ethernet *(PoE)* switch and ensure the PC is on and the PoE switch is receiving power. Allow the camera enough time to start up *(1 to 2 minutes)*.

2. Configure a static IP address on the PC to **192.168.0.100**.

   In Windows, open Network Connections. Right-click the LAN connection and select **Properties**. In the list of items, select **Internet Protocol** ***(TCP/IP)*** and then click **Properties**.

3. On the PC, in an internet browser, navigate to **192.168.0.90**. The camera's login screen appears.

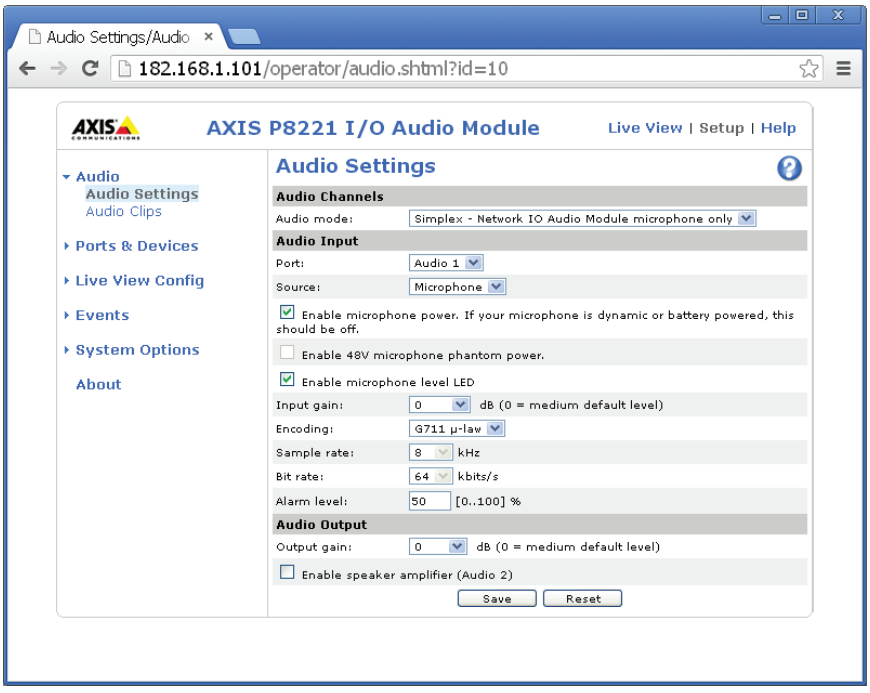
4. Enter **root** in the **Password** and **Confirm Password** fields.

5. Click **OK**.
   A prompt appears requesting a login with the newly set password.

6. Enter **root** for both the username and password.

7. Click **OK**.
   A prompt screen appears requesting the power line frequency in your area.

8. Ensure the appropriate Hz value is entered in the field and click **OK**.
   The Axis camera is now configured to operate with the RoadRecorder® 8000 NVR.




For Axis audio devices, follow the steps above, then additionally ensure that the **Encoding** field is set to **G711 µ-law** under **Audio Settings**, as shown in the screenshot.

# Appendix D: GPS Coordinate Conversion

The Threshold Settings page of the Web Configuration requires GPS coordinates be entered in degrees, minutes, and decimal minutes format. However, GPS coordinates are typically displayed in decimal degree format. Use the following procedure to determine the required GPS coordinates and convert them to the required format:

1. Enter the address of the required GPS location in Google Maps. Google Maps can be accessed at: www.google.com/maps

   Safety Vision's headquarters is used as an example.

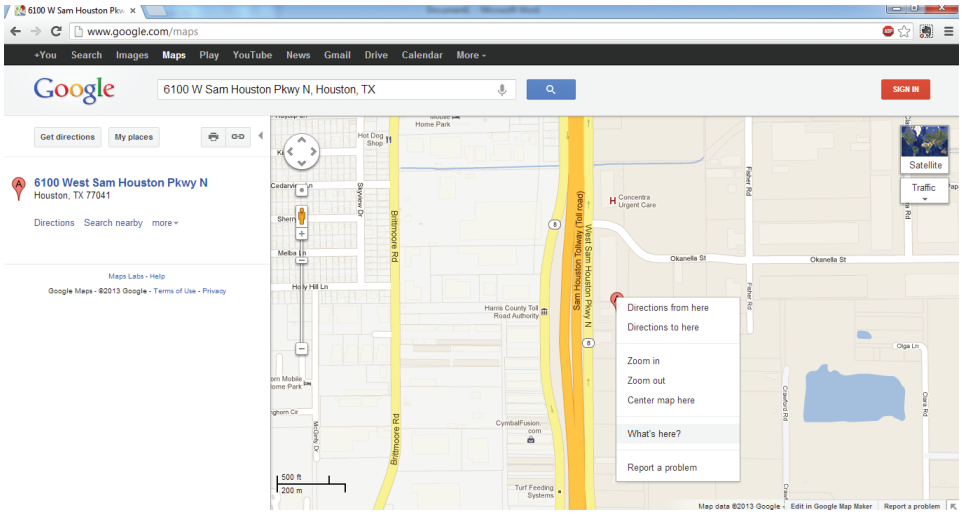
2. Confirm the appropriate address appears on the map as a red balloon marker.

3. Right click on the red balloon marker.

4. Select the **What's here?** option.

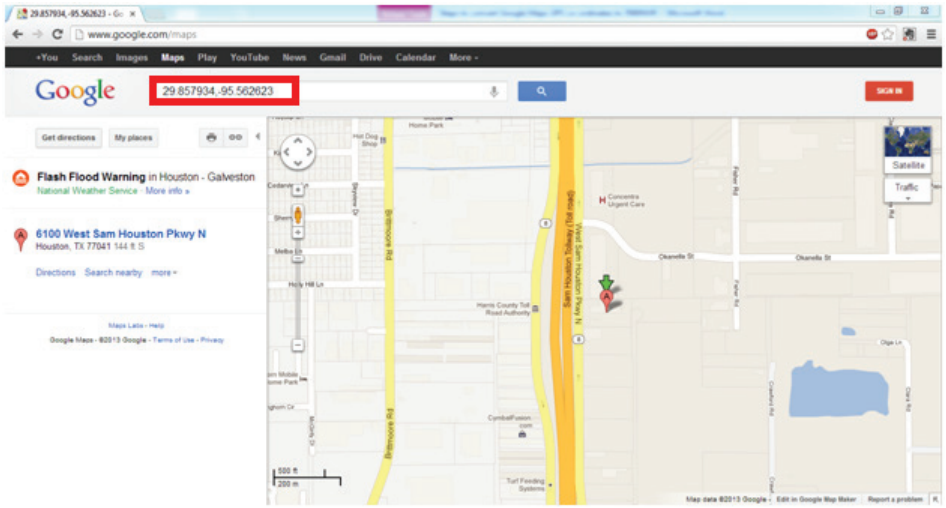
   The longitude and latitude appear, separated by a comma, in the Google Maps search bar.

   In the example, Safety Vision's coordinates are displayed as 29.857934,-95.562623.




5. Use the following formula to convert these decimal degree format coordinates to the degrees, minutes, and decimal minutes:

   ***(DD x 100) + (0.DDDDDD x 60)***
   In the example, the longitude 29.857934 is converted as follows:
   *(29 x 100) + (0.857934 x 60)*
   = 2900 + 51.47604
   = 2951.47604




6. Apply the calculated GPS coordinate to the appropriate field in the Threshold Settings page of the Web Configuration.

# FCC Compliance Statement

**NOTE**

This device 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 in which case the user will be required to correct the interference at his own expense.

**CAUTION**

Any changes or modifications in construction of this device which are not expressly approved by the party responsible for the compliance could void the user's authority to operate the equipment.

The device is to be connected only to PoE networks without routing to the outside plant.

**LITHIUM BATTERY CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

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