Transit Solutions Nexus-HVR / NexView

Hardware and Software Installation Guide

This manual has been created by TSI for Transit Agencies that are a part of the Pennsylvania FR-ITS Project . It is intended for maintenance personnel that may be installing or troubleshooting a Nexus-HVR, and for users that have administrator level access to the NexView software. For information on reviewing video and general useage of NexView please use the "TSI PA FR-ITS NexView User Manual".

Table of Contents

1 Introduction

Dear Customer,

By selecting a product of TSI, you have chosen a professional device that ensures the highest quality and reliability.We would like to thank you here again for putting your trust in us and ask that you carefully read the following information prior to operating the device so that you can fully enjoy all the advantages of this product.

In presenting this document, TSI does not make any guarantee regarding the correctness or completeness of its contents and reserves the right to alter this document at any time without notice.

1.1 Safety Information

Please follow all safety precautions to ensure proper functionality of the hardware and software

1. Always pack the device in the original box for transportation.
2. Never place the device near heaters, ovens or any other sources of heat.
3. Avoid contact with direct sunlight.
4. Always allow the device to acclimatise before putting it into operation.
5. Install the device in dry areas only and do not allow moisture to enter the equipment.
6. Always contact a trained specialist before attempting any repairs on the device. You can report any problems to support@mytransitsolutions.com

1.2 Areas of application

The NEXUS-HVR is intended for use in the public transit marketplace.

Warning: *The use of video and audio surveillance systems is subject to strict conditions. Establish which laws apply specifically to your state or province and, if necessary, inform your customers of these conditions before any installation is performed.*

1.3 Scope of Delivery

7. NEXUS-HVR Hybrid Video Recorder
8. NEXUS-HVR Mounting Bracket
9. Seven (7) Euroblock (Phoenix) Connectors
10. Two (2) sets of keys for unlocking hard drives and turning the NEXUS-HVR on and off
11. NEXUS-HVR Mounting Bracket Template

1.4 NexView System Requirements

Analog Video Requirements:
Intel Core i5 or Equivalent
4GB DDR3 Memory or Higher
HDD space is on an as needed basis, but a minimum of 50GB

HD Video (IP Camera) Requirements:
Intel Core i5 or Equivalent
8GB DDR3 Memory or Higher
HDD space is on an as needed basis, but a minimum of 50GB

HD Video (IP Camera) Recommended:
Intel Core i7 or Equivalent
8GB DDR3 Memory or Higher
HDD space is on an as needed basis, but a minimum of 50GB

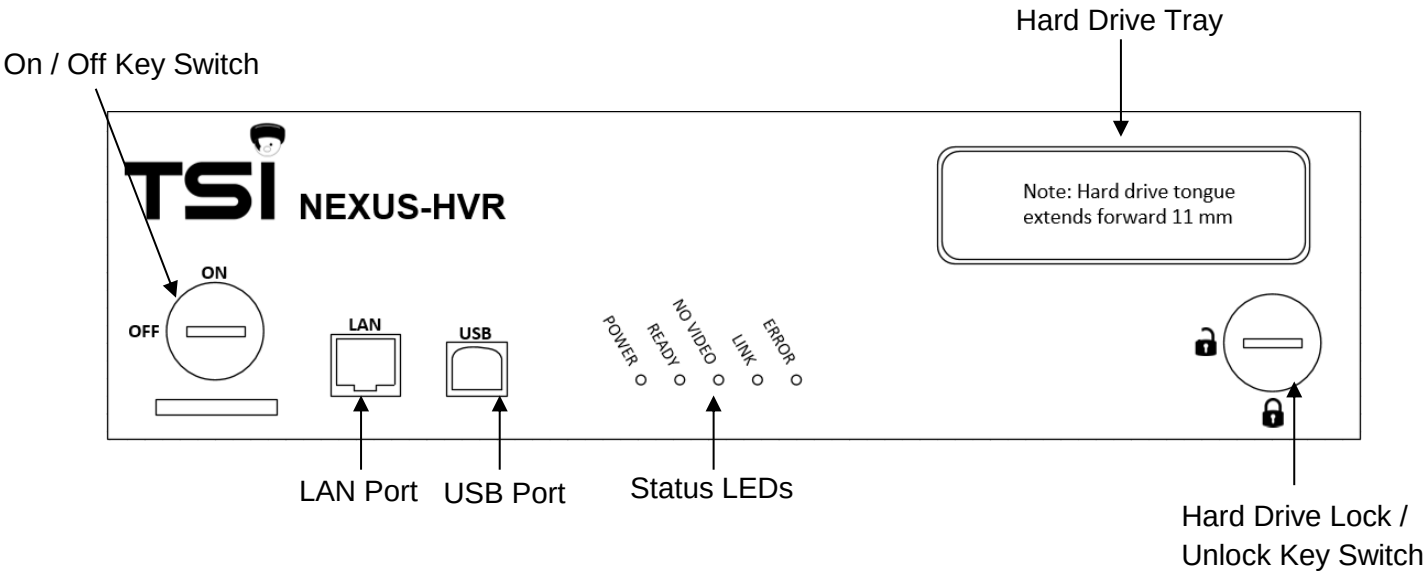
2 Technical Information

2.1 Nexus HVR Features and Capabilities

Resolution	• HD/IP Settings: Up to 1920x1080. Resolution configurable via IP camera configuration • Analog(D1): 720H x 480V NT SC, 720H x 576v PAL
Video Standard	• IP Camera standards for HD • CCIR/ PAL & EIA/ NTSC (Analog)
Programmable Frame Rate (Full Motion):	• HD/IP: Up to 60fps/camera • Analog(NTSC): Up to 30fps/camera@D1 • Analog(PAL): Up to 25fps/camera@D1
Power Supply	• 9-30V DC
Power Output	• 2 Outputs @ 12VDC: 2 amp each output
Video Compression	• H.264 High Profile
Video Inputs	• HD/IP: Up to 32 HD/IP cameras via optional TSI network switches. • Analog: 12 x BNC for up to 12 analog video inputs • Hybrid: Supports any combination of HD/IP and analog cameras
Audio Inputs	• With HD/IP Cameras: Up to 32 [1 per HD/IP camera] • With Analog Cameras: Up to 8 thru independent microphone inputs
Interfaces	• 2 x RJ45 10/100/1000Mbps • USB (1) • GPS (1) • SD (1) • 12x Alarm Inputs • 2x Relay Output • 4x Digital Output
Recording Media / Capacity	• 2 x 2.5” SATA HDD or SSD (up to 2TB each, 4TB total) • Drives configurable in failover, mirrored or extended mode
G-Force Sensor	• Integrated 3-axis accelerometer, with configuration capability via NexView software
Cooling	• Passive
Operating System	• Embedded Linux
Viewing, Export and Management Software:	• TSI NexView Software

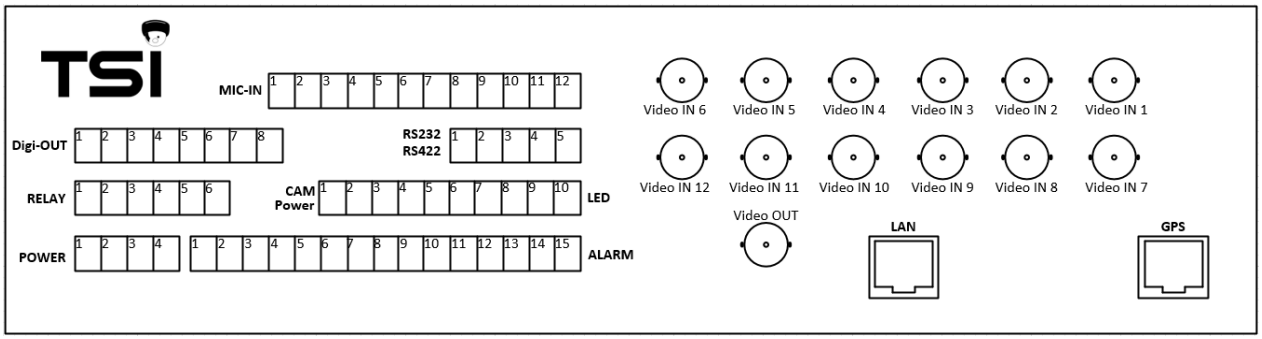
3 Connectors and Pin-Out

3.1 Front of NEXUS-HVR



3.2 Back of NEXUS-HVR

The NEXUS-HVR uses Euroblock style connectors. Included with each unit should be 7 total connectors.



MIC-IN
Pin1 = Audio1 Signal
Pin2 = Audio GND
Pin3 = Audio2 Signal
Pin4 = Audio3 Signal
Pin5 = Audio GND
Pin6 = Audio4 Signal
Pin7 = Audio5 Signal
Pin8 = Audio GND
Pin9 = Audio6 Signal
Pin10 = Audio7 Signal
Pin11 = Audio GND
Pin12 = Audio8 Signal

Digi-OUT
Pin1 = Digital Out 1+
Pin2 = Digital Out 1-
Pin3 = Digital Out 2
Pin4 = GND
Pin5 = Digital Out 3
Pin6 = GND
Pin7 = Digital Out 4
Pin8 = GND

RS232, RS422
Pin1 = TX+ 422 or RTS 232
Pin2 = TX- 422 or TX 232
Pin3 = RX+ 422 or RX 232
Pin4 = RX- 422 or CTS 232
Pin5 = GND

RELAY
Pin1 = Relay 1 NC
Pin2 = Relay 1 NO
Pin3 = Relay 1 Common
Pin4 = Relay 2 NC
Pin5 = Relay 2 NO
Pin6 = Relay 2 Common

ALARM
Pin1 = Alarm IN 1
Pin2 = Alarm IN 2
Pin3 = GND
Pin4 = Alarm IN 3
Pin5 = Alarm IN 4
Pin6 = Alarm IN 5
Pin7 = Alarm IN 6
Pin8 = GND
Pin9 = Alarm IN 7
Pin10 = Alarm IN 8
Pin11 = Alarm IN 9
Pin12 = Alarm IN 10
Pin13 = GND
Pin14 = Alarm IN 11
Pin15 = Alarm IN 12

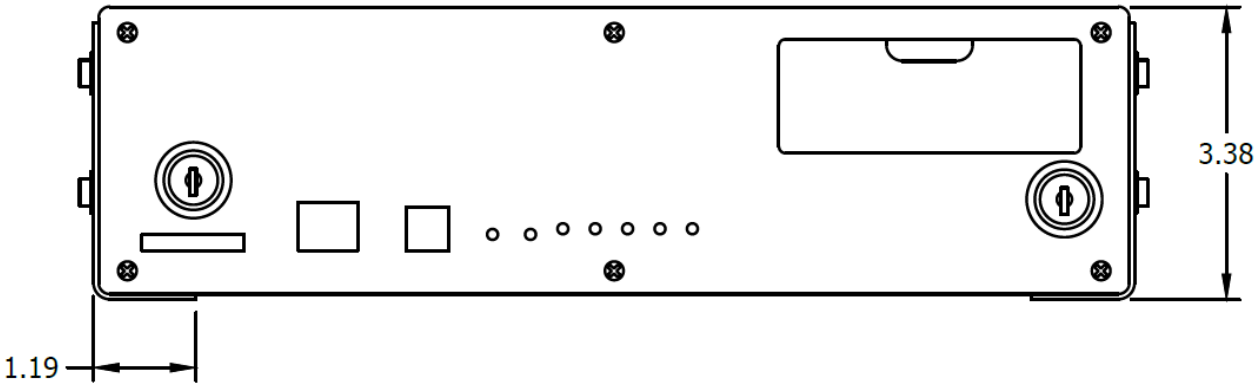
CAM Power, LED
Pin1 = Power Out 1 +12V
Pin2 = GND
Pin3 = GND
Pin4 = Power Out 2 +12V
Pin5 = LED 1
Pin6 = LED 2
Pin7 = LED 3
Pin8 = LED 4
Pin9 = LED 5
Pin10 = GND

POWER
Pin1 = Power In (9-36V)
Pin2 = GND
Pin3 = Ignition (9-36V)
Pin4 =

4 NEXUS-HVR Dimensions

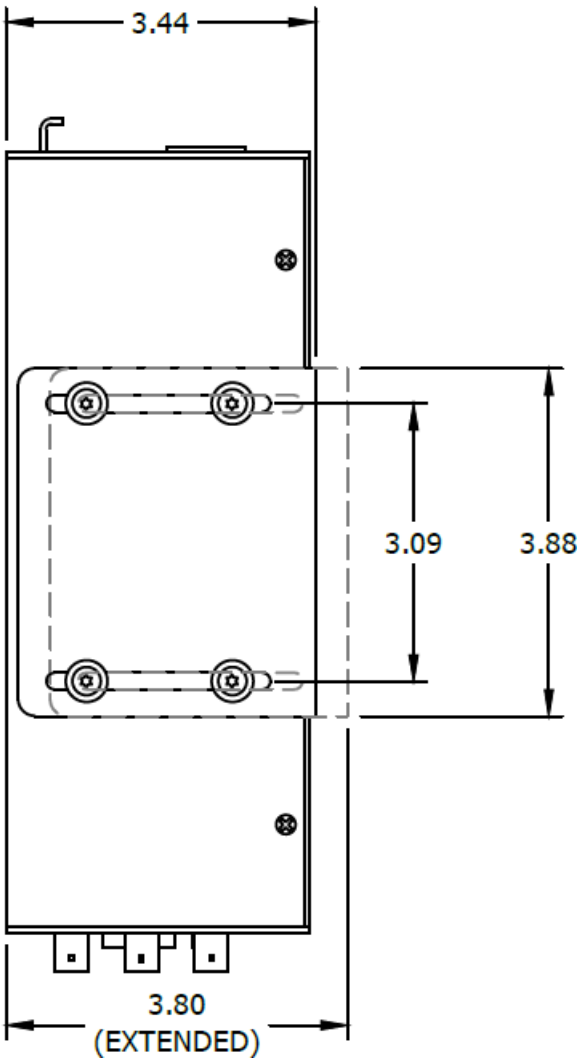
4.1 Front

Note: All measurements shown are in inches



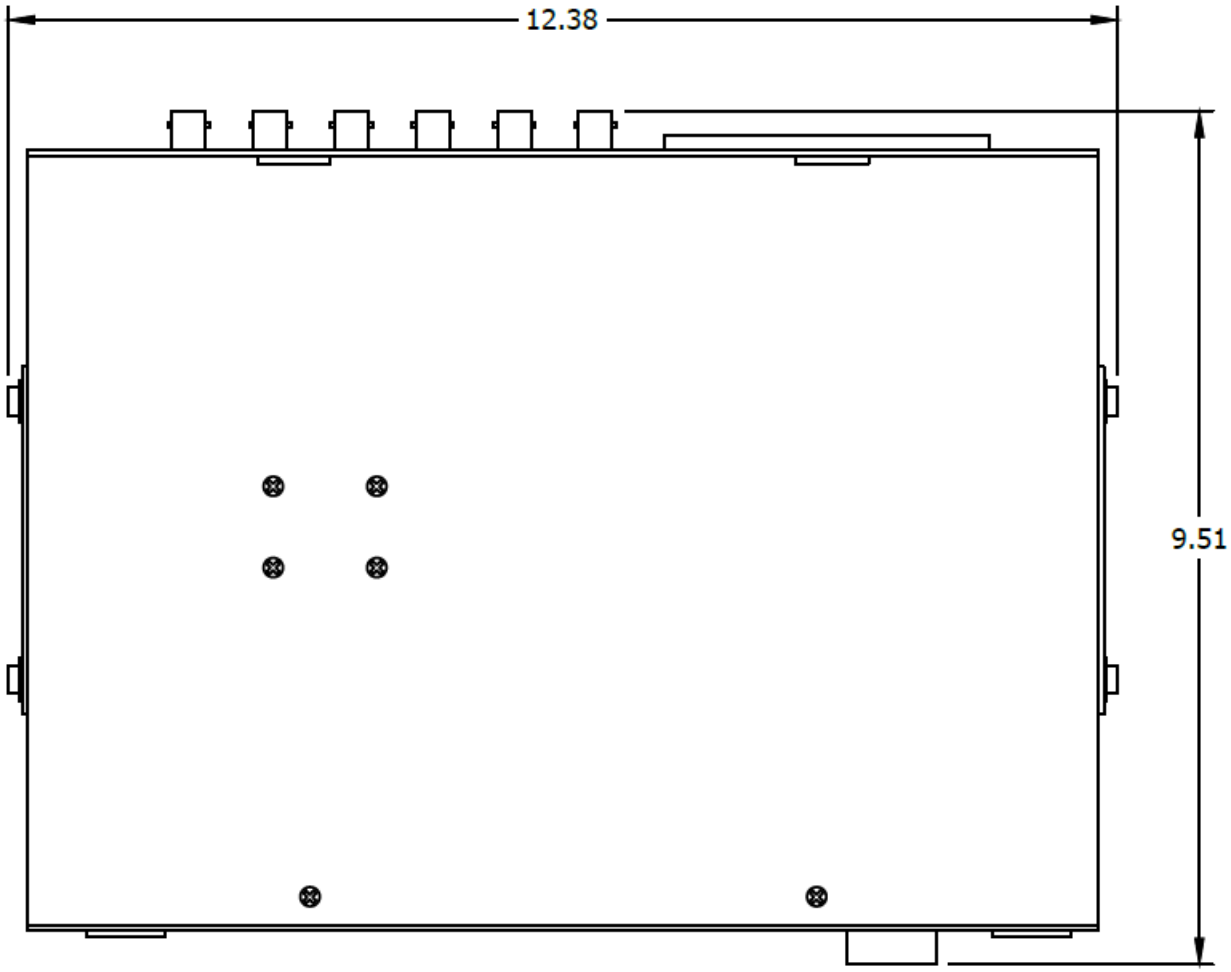
4.2 Side

Note: All measurements shown are in inches



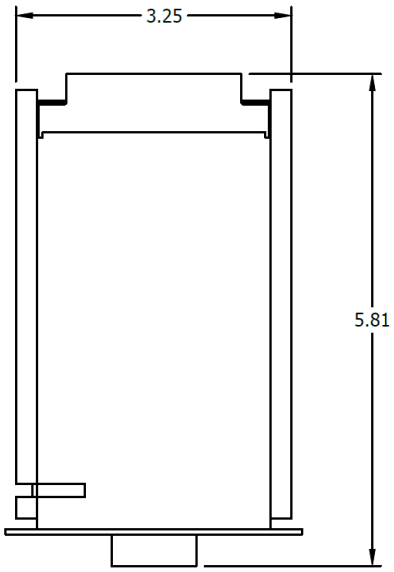
4.3 Top (same as bottom)

Note: All measurements shown are in inches

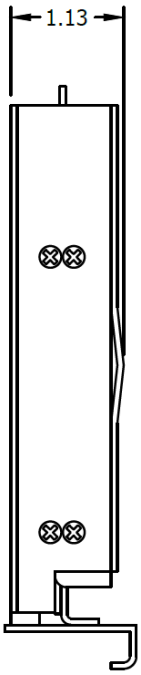


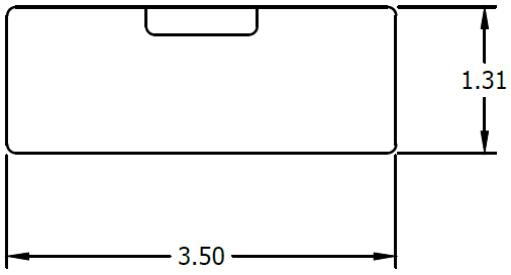
4.4 Hard Drive

4.4.1 Bottom



4.4.2 Side and Front





Note: Make sure that wherever you mount your NEXUS-HVR you leave enough room to fully extend the hard drive from its tray, this allows for easy removal of the hard drive.

5 NEXUS-HVR LED Information

There are Five (5) Status LEDs located on the front of the Nexus-HVR. You can use them in conjunction with the table below to determine the state of your unit.

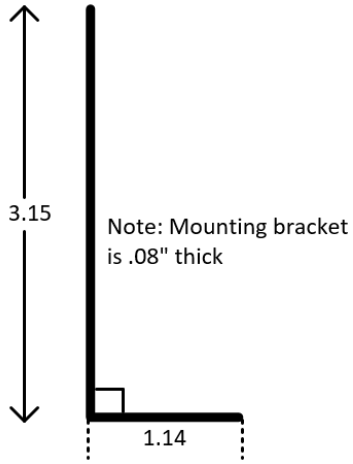
5.1 Table

Status LED State	NEXUS-HVR State
All LEDs Off	Device Off, No Power Connected to the Device
Dim White Constant	Device Off, Power Connected to the Device
Scrolling - Left to Right Loop (Blue, Yellow, Green, Red, Blue, Yellow…)	Device Booting
Scroll Side to Side (Blue, Yellow, Green, Red, Green, Yellow, Blue…..)	Firmware Update in Progress
White On, Red Blinking (Slow Blink), All Others Off	HDD Formatting
All LEDs Blinking (Fast Blink)	Short on Both Power Out 1 & 2
Alternating (Blue On, then Green and Red On, Blue On, Green and Red On…..)	Short on Power Out 1
Alternating (Blue and Green On, then Red On, Blue and Green On, then Red On…..)	Short on Power Out 2
Blue Blinking (Slow Blink), Red Solid	HDD Problem
Blue Blinking (Slow Blink), Red Blinking (Fast Blink)	HDD Mounting
Blue and Red Blinking at the Same Time, (Slow Blink)	Device On, Not Recording
Yellow On Constant	Camera Out
Blue and Green Blinking (Fast Blink)	DVR not Recording, Device in Shutdown Timer/Offload Mode, Connected to Server
Green Blinking (Slow Blink)	Device in Shutdown Timer
Green Blinking (Fast Blink)	Device Recording, Device in Shutdown Timer and Connected to Server or Application
Green On Constant	Device Connected to Server or Application
Blue on Constant	DVR Recording

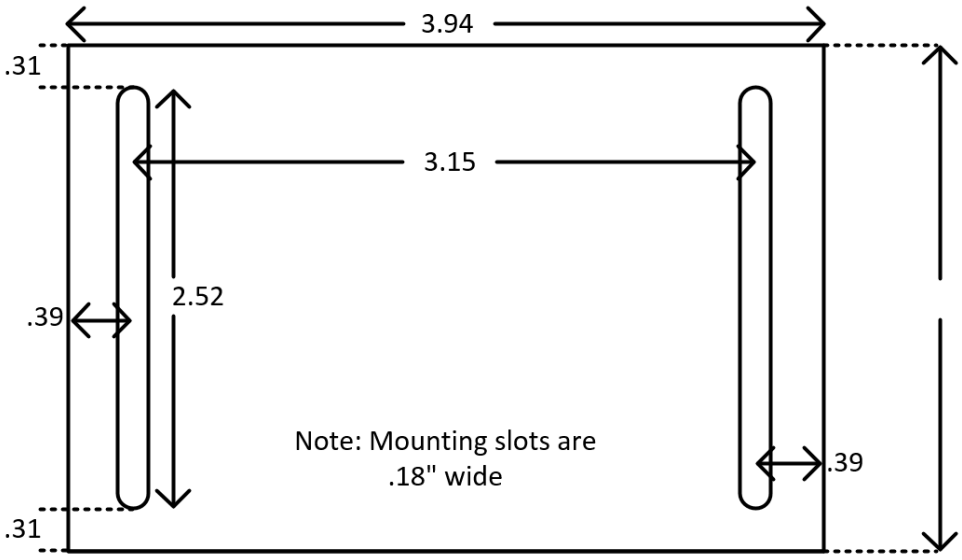
6 Mounting Information

6.1 Mounting Bracket Dimensions

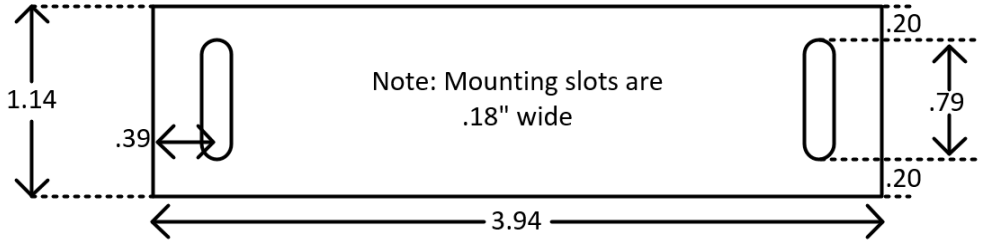
6.1.1 Side



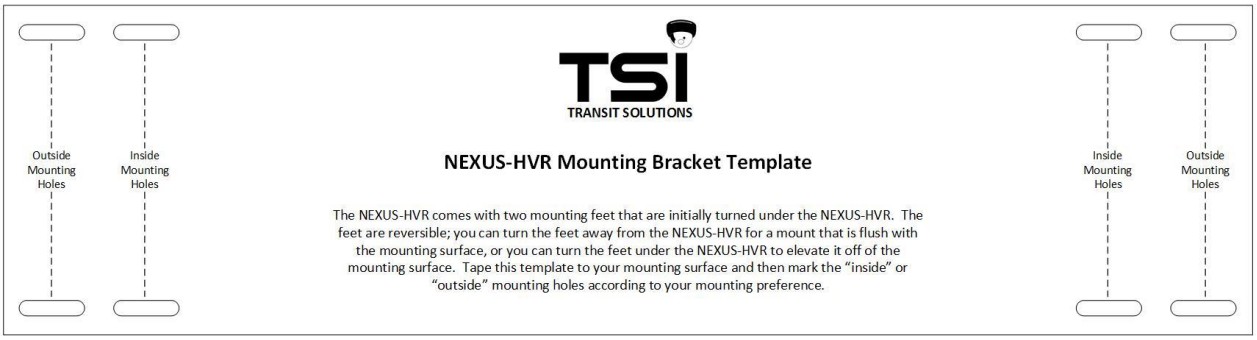
6.1.2 Front



6.1.3 Bottom



6.2 Mounting Bracket Template



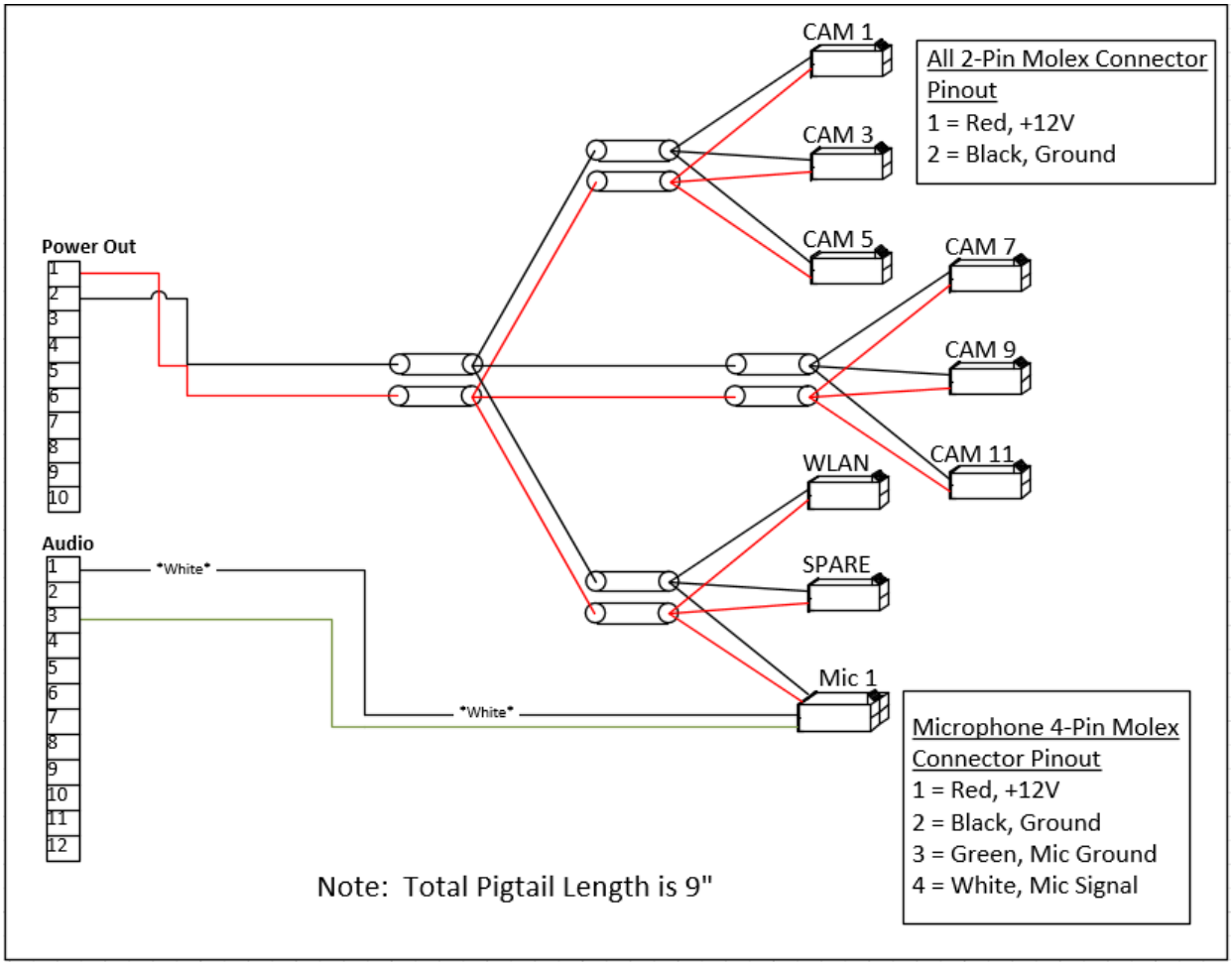
The TSI NEXUS-HVR Mounting Bracket Template is included with every NEXUS-HVR purchase. To use the template, you should tape it to the surface that you will be mounting your NEXUS-HVR on. You can then mark the mounting holes and removed the template, or just drill your holes while the template is taped down.

Each NEXUS-HVR comes with screws to connect the HVR to the mounting bracket. After you have attached the brackets to the mounting surface you can slide the HVR between the brackets and use these screws to attach the HVR.

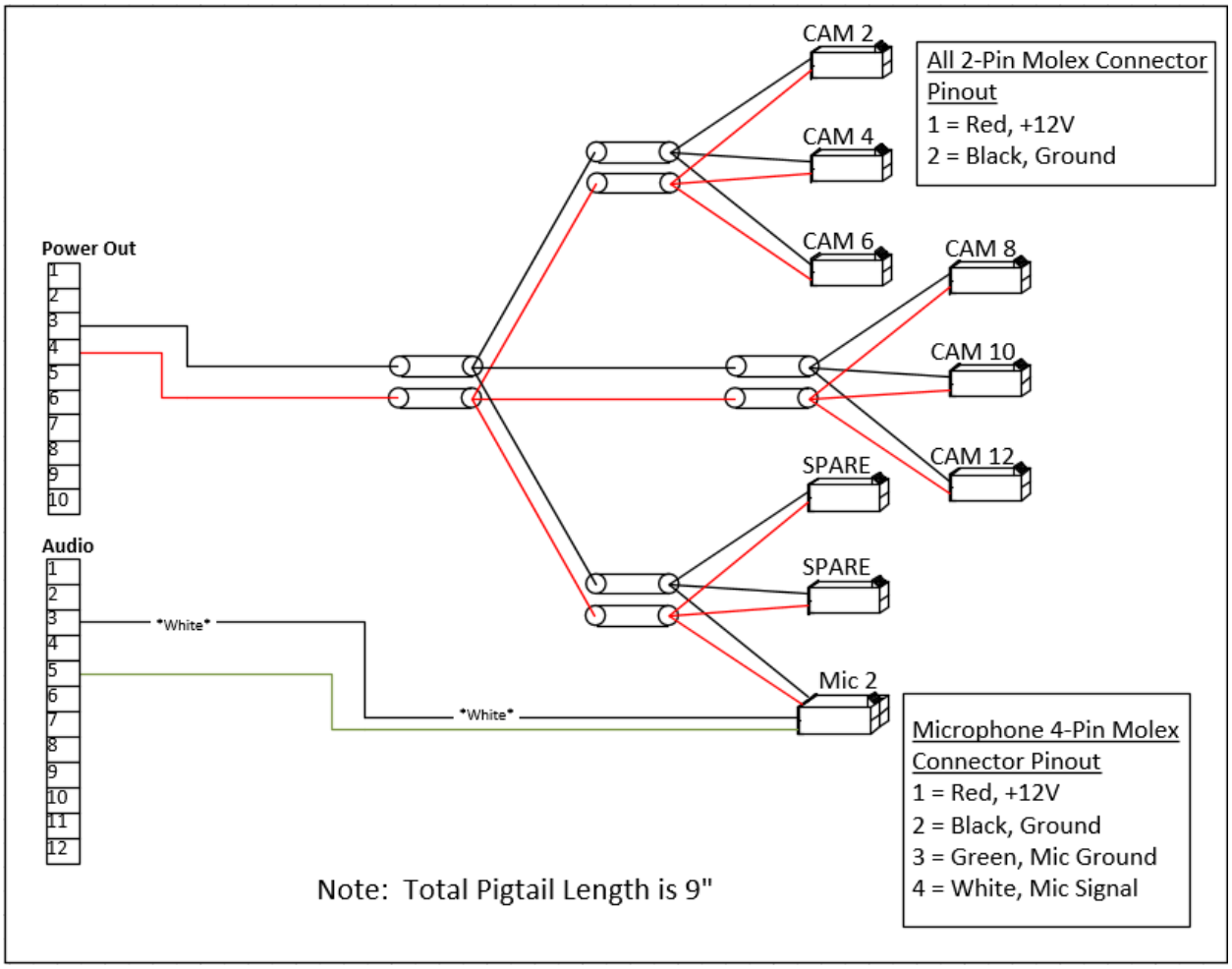
7 Pigtail Information

7.1 Analog Power Distribution Pigtail (NEX-PWR-DIS-001)

7.1.1 Section 1



7.1.2 Section 2



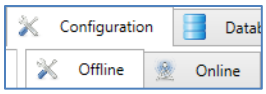
8 NEXUS-HVR Configuration Settings

Use the 

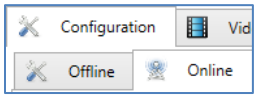
tab to edit configuration settings on a Nexus-HVR.

8.1 Offline Tab

The Configuration Tab contains both "Online" and "Offline" Tabs. The Offline Tab is used in conjunction with the Configuration Sync Job. When the Configuration Sync Job runs on a vehicle it will fill the Offline Tab with that Nexus-HVRs configuration settings. This tab is only used to view configuration settings, or save configuration files, no changes can be made to a Nexus-HVR recorder while on the Offline Tab.



8.2 How to Save or Load a Configuration File



Once you have succesfully logged into a Nexus-HVR it is easy to save or load a configuration file. First make sure that you are on the Online Tab, under Configuration.

Export to file Click this button to browse to the folder on your computer where you want to save the configuration file. This option is also featured in the Offline Tab, once the configuration settings have been saved to server, see below.

Import from file Click this button to browse to a saved configuration file, click the open button to load the configuration file.

Apply If you have loaded a new configuration file or made any changes, you must click this button to save those changes.

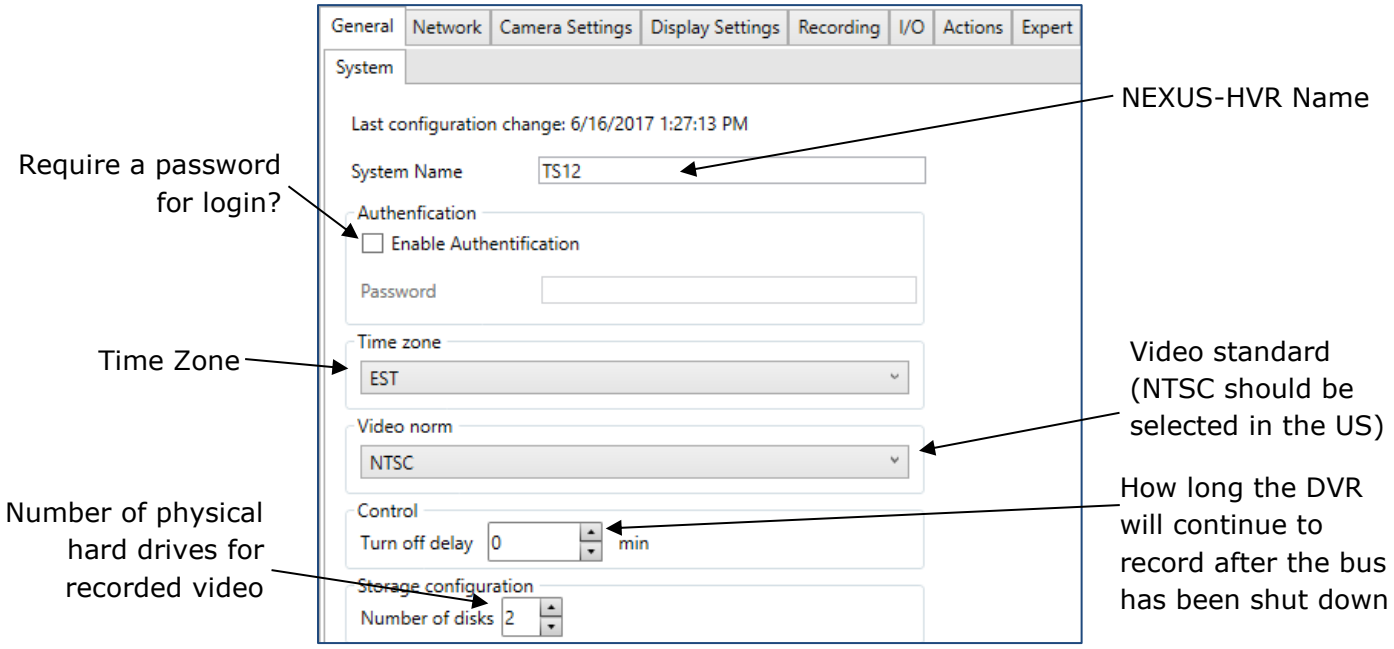
Reboot device If you have made a configuration change that requires a reboot, you will see a prompt that tells you the device must be rebooted, you should then see this button appear, it will allow you to quickly reboot the device.

Save config to server Click this button to save the configuration settings to the offline tab, this will allow you to see configurations for devices that are not currently online.

NOTE: When loading a Nexus-HVR Configuration File all settings will be updated except for those on the Network – Interfaces tab. Recorder IP Address information must be updated manually.

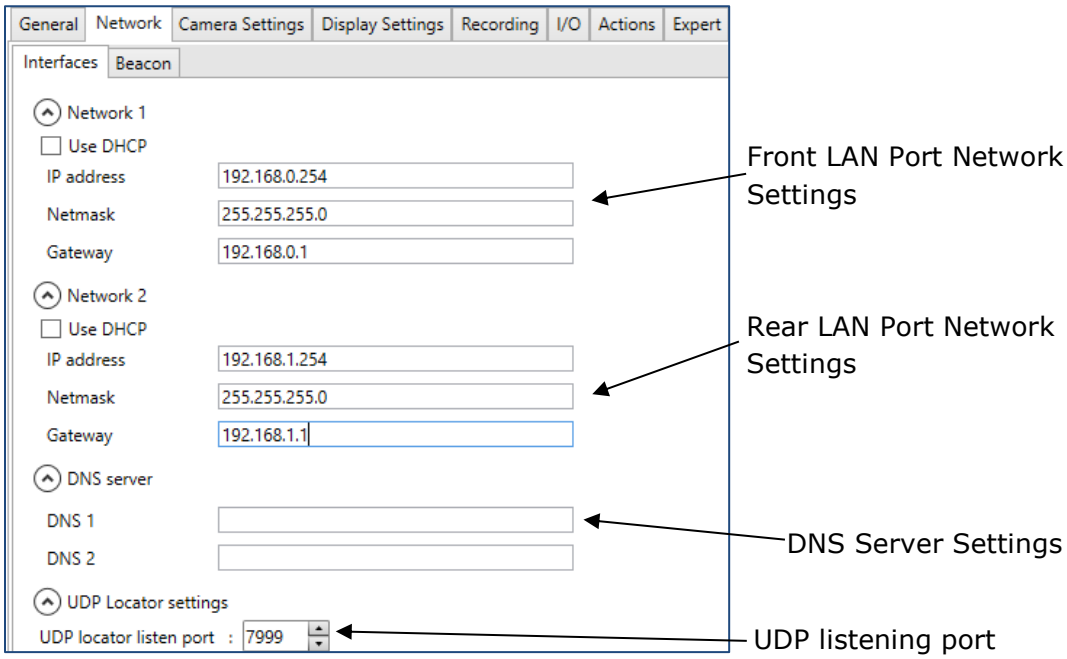
8.3 Nexus-HVR Configuration Pages

8.3.1 General



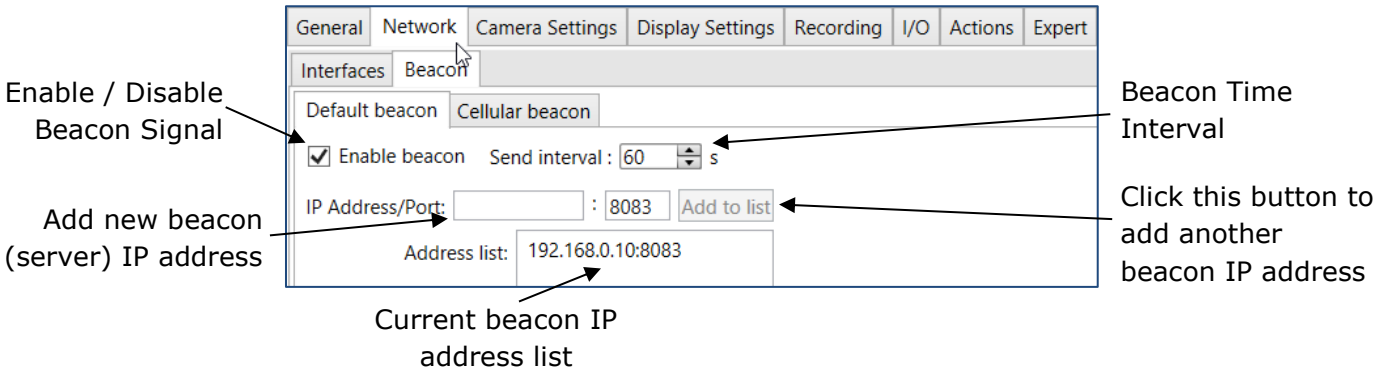
8.3.2 Network (Interfaces)

Use this page to setup your recorders IP address(es)



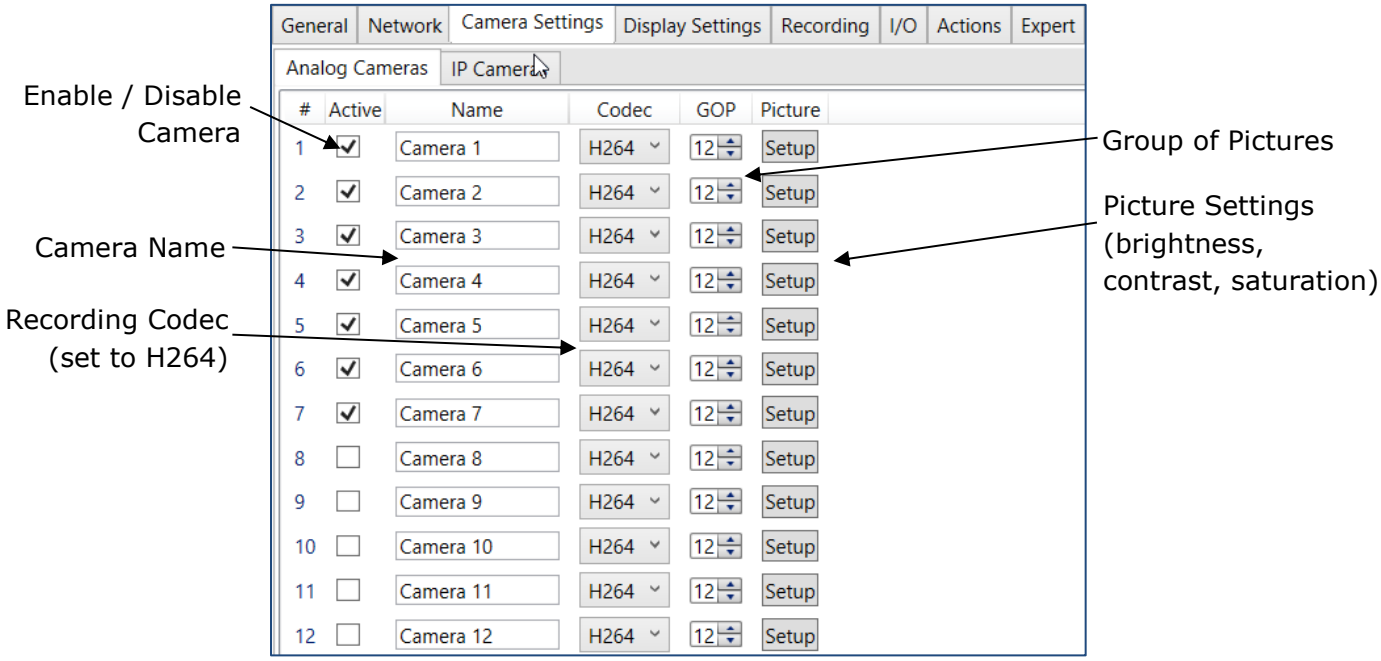
8.3.3 Network (Beacon)

The Beacon IP address should be set to the server that the NexView service is running on. This address is necessary for the Nexus-HVR to communicate with the NexView Server.



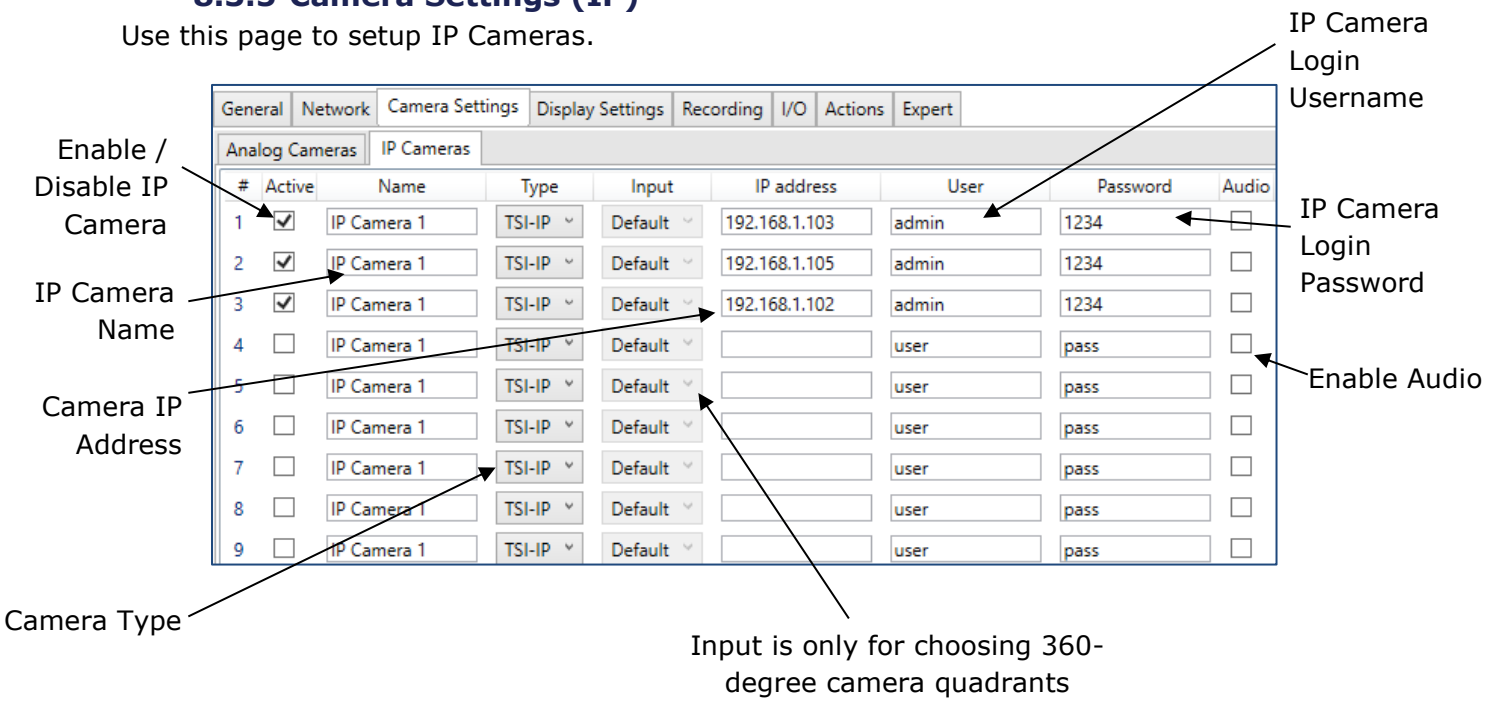
8.3.4 Camera Settings (Analog Cameras)

Use this page to setup analog cameras.



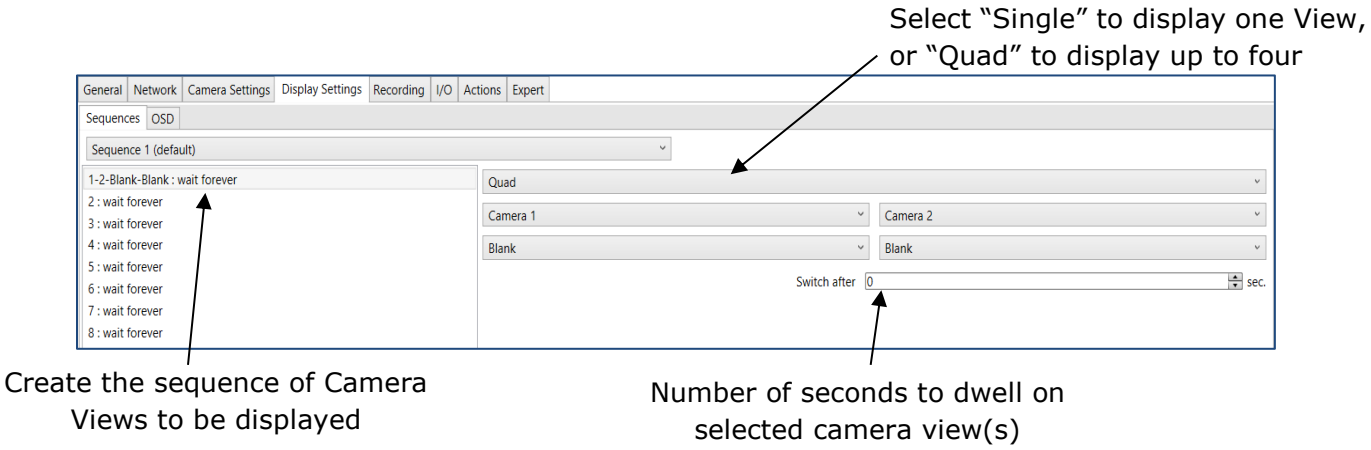
8.3.5 Camera Settings (IP)

Use this page to setup IP Cameras.



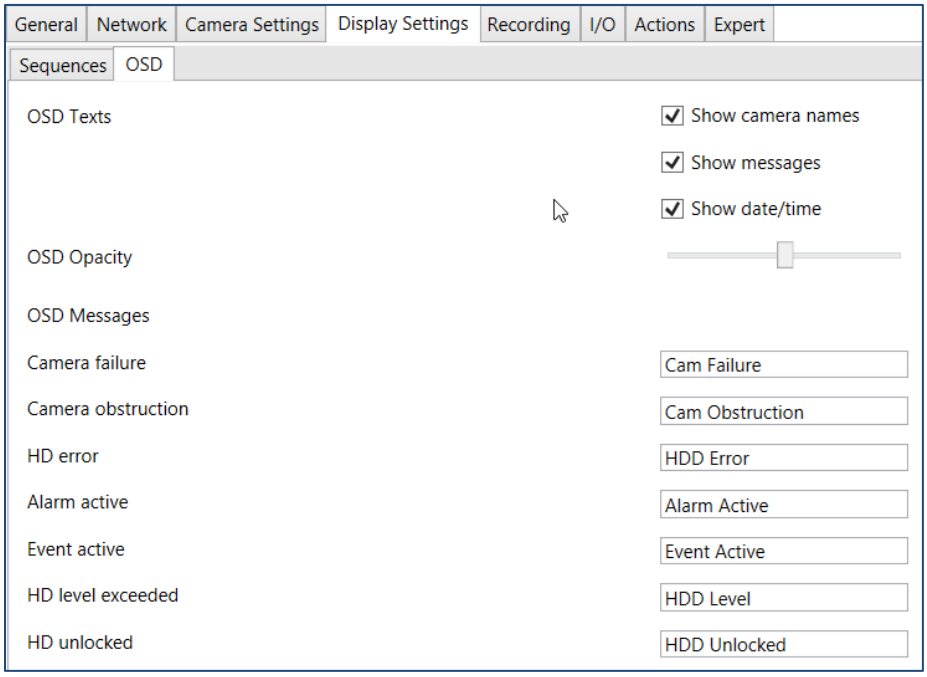
8.3.6 Display Settings (Sequences)

This page is used to determine which camera views to display on a monitor.



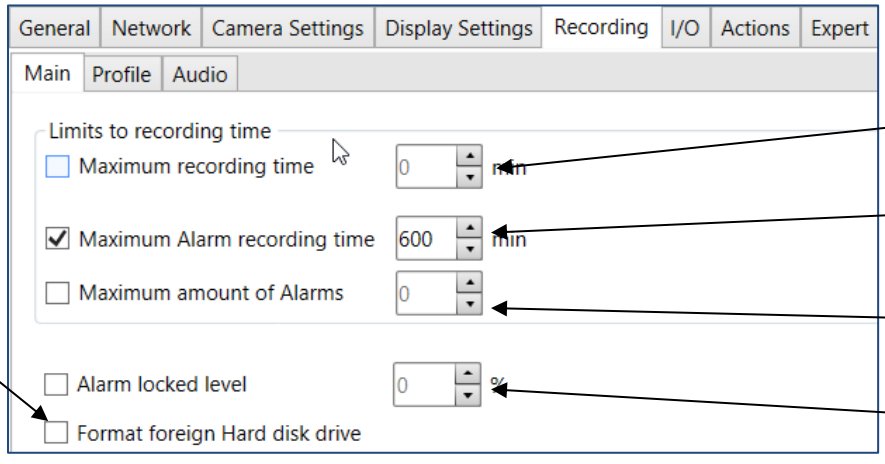
8.3.7 Display Settings (OSD)

This page is used to determine error messages that the DVR can display on a monitor.



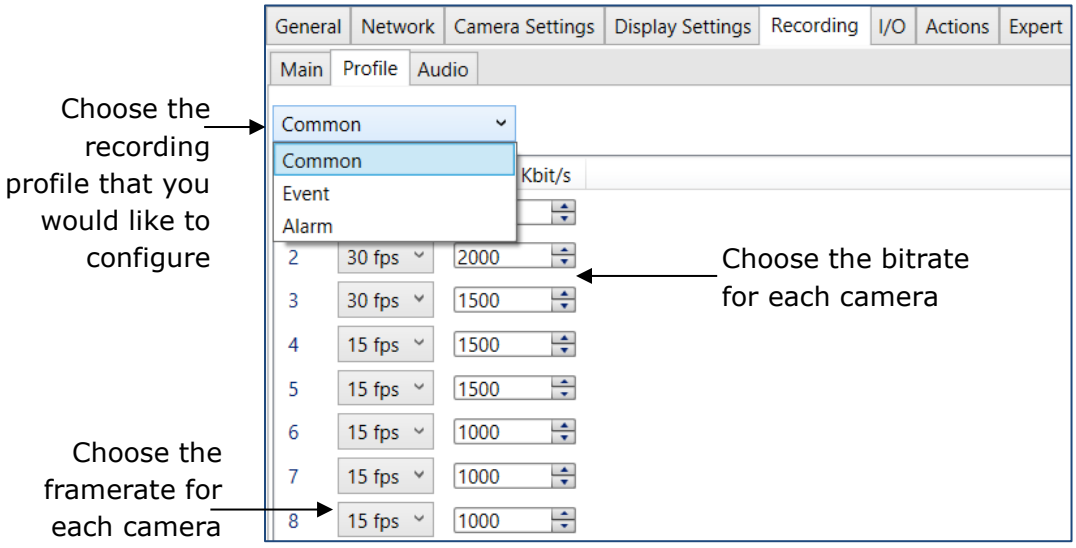
8.3.8 Recording (Main)

This page allows you to partition the Nexus-HVR Hard Drive between normal recorded video and alarm/event recorded video.



8.3.9 Recording (Profile)

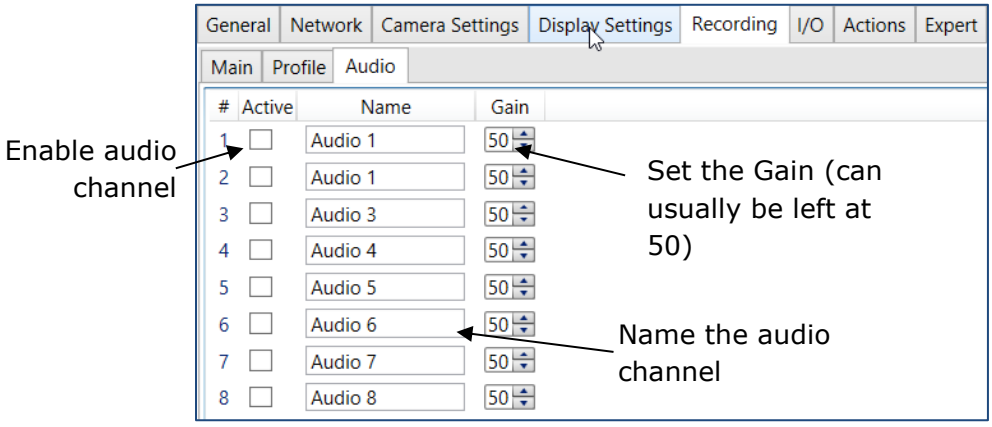
This page allows you to set a different framerate and bitrate for each analog camera based on the type of recording. TSI recommends a bitrate between 500 Kbs and 2000 Kbs; A higher bitrate will yield better quality recording, but will also result in less recording time.



The purpose of having multiple recording profiles, is to allow the cusomization of a camera's framerate and bitrate depending on the state of recording. Generally you will set some cameras to a higher framerate during alarm or event recording.

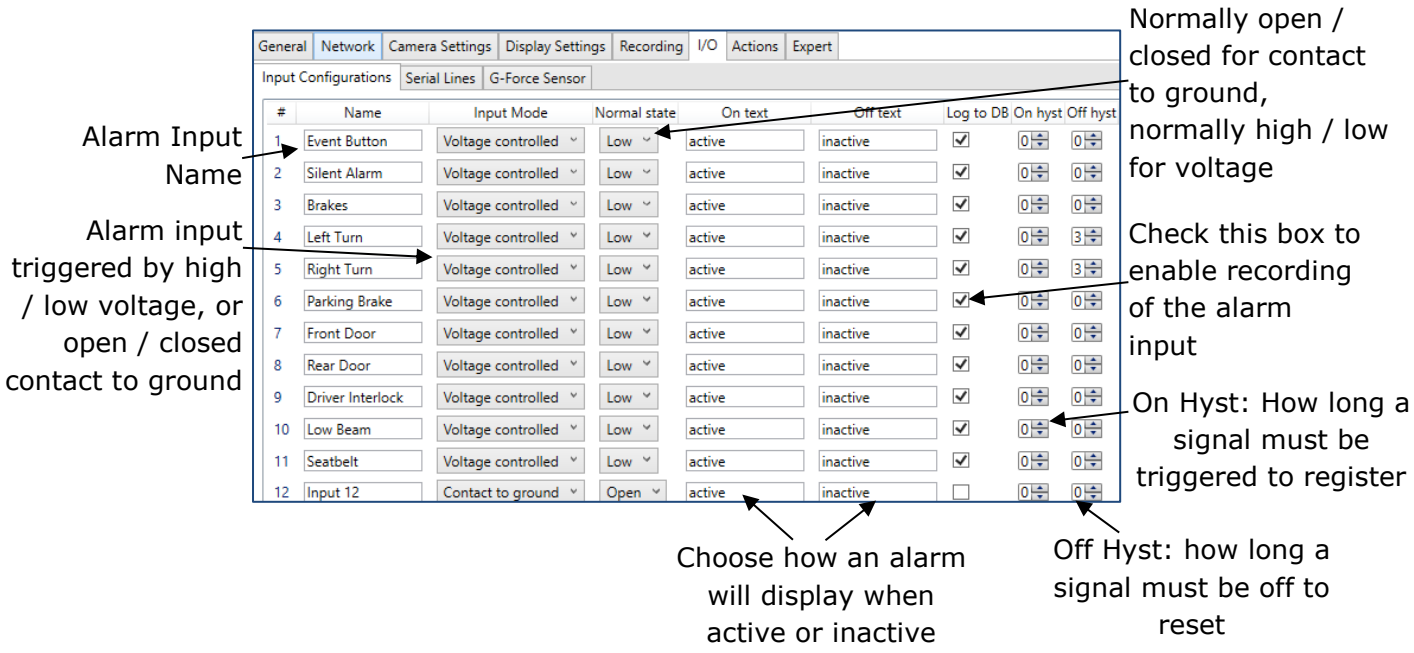
8.3.10 Recording (Audio)

This page is where you will enable your analog microphones.



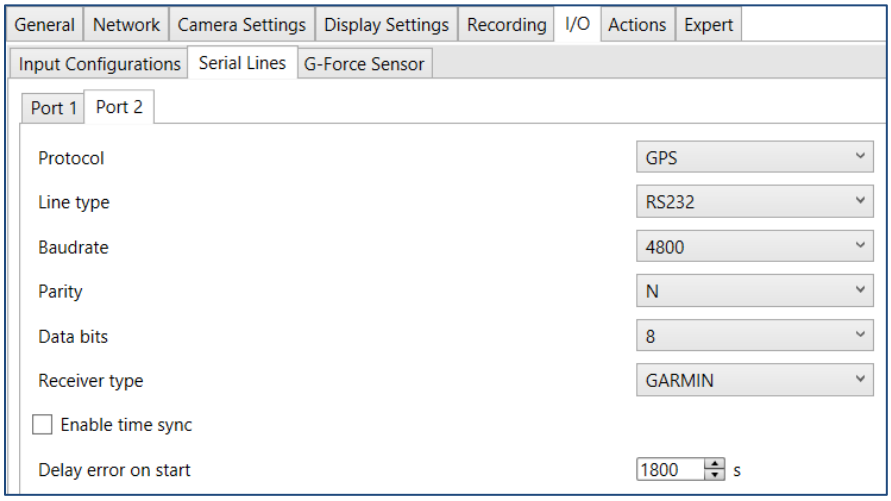
8.3.11 I/O (Input Configurations)

Use this page to program any alarm inputs into the Nexus-HVR. The alarm inputs that you are programming here must be correctly wired into the alarm inputs euro-block on the back of the NEXUS-HVR.



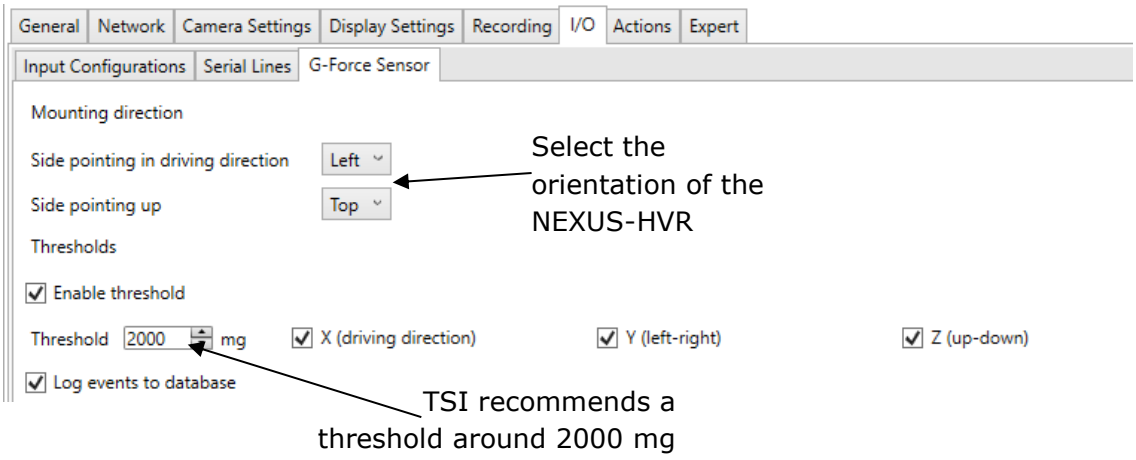
8.3.12 I/O (Serial Lines)

Use this page to setup your a GPS Antenna. If using a Garmin unit that has been provided by TSI, it should be setup as shown below.



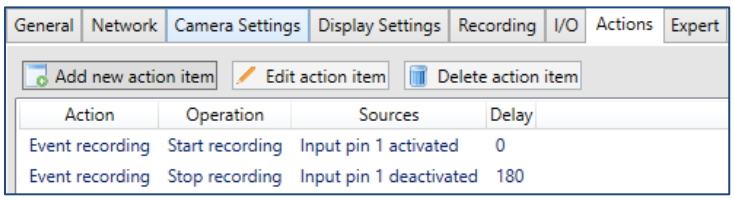
8.3.13 I/O (G-Force Sensor)

The NEXUS-HVR has a built in G-Force sensor, this page allows you to choose which Axis(s) you would like to record, and to set a threshold for when you should see a G-Force alarm.

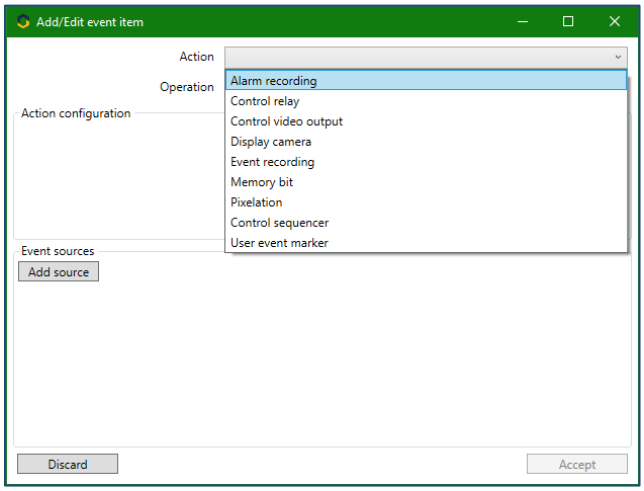


8.3.14 Actions

The actions page is used to determine when to start alarm or event recording. It can also be used to set other rules for the NEXUS-HVR, usually based on the alarm inputs.



If you click the Add new action item button you can use the page below to create a new Action.

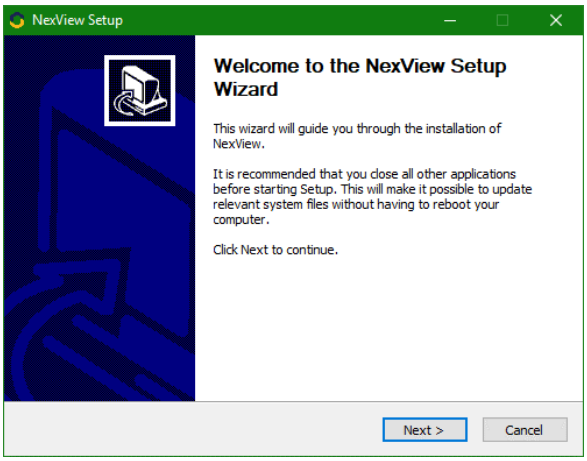


9 Software Installation Guide

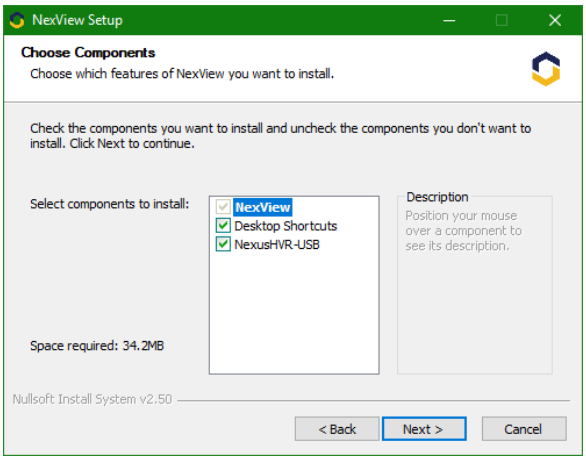
9.1 Installing NexView Software

This section will walk you through the installation of the NexView software. To use all the functions of NexView you will need to have the NexView - Server service installed and running (on a server). Please contact TSI support if you are not sure if this service has been installed at your site.

To start the NexView software installation, double-click the "NexView 1.7.5 Setup x64" file (or whatever version your site is using). There is also a 32-bit installer available. Contact your IT administrator if you are not sure what version of the installer to use.

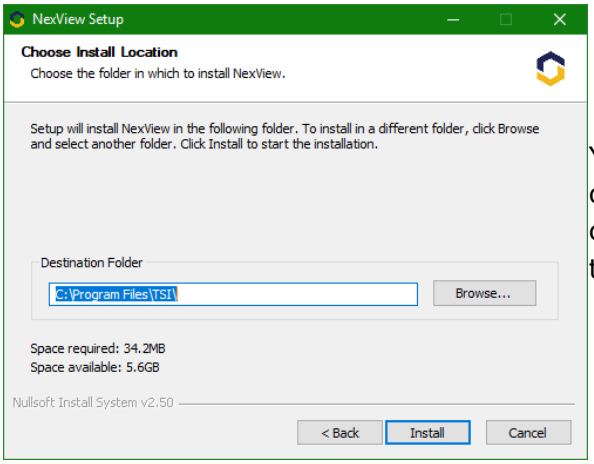


Click the "Next" button to start the installation process.

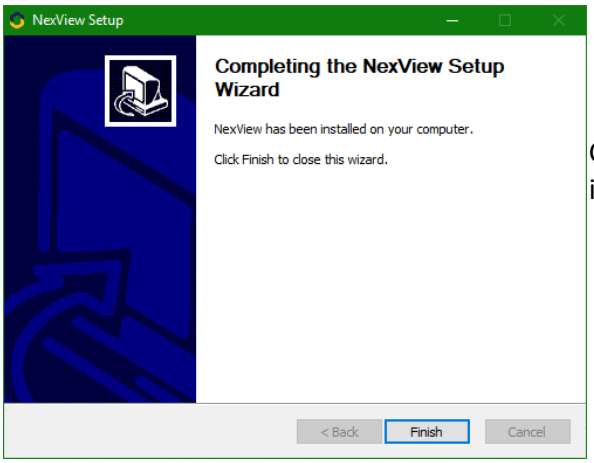


Select the components you would like to install and click the "Next" button to continue

Installing the "NexusHVR-USB" driver will allow you to connect to a NEXUS-HVR through the USB port on the front of the unit. This option should not be needed on a desktop computer.



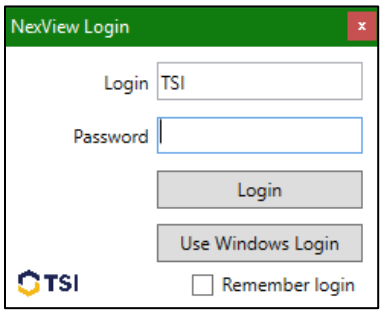
You may leave the default installation folder or select the installation folder of your choice and click the "Install" button to start the installation process.



Click the "Finish" button to complete the installation process.

9.1 Logging in to the NexView Software

Double-click the TSI-NexView Icon to open the program



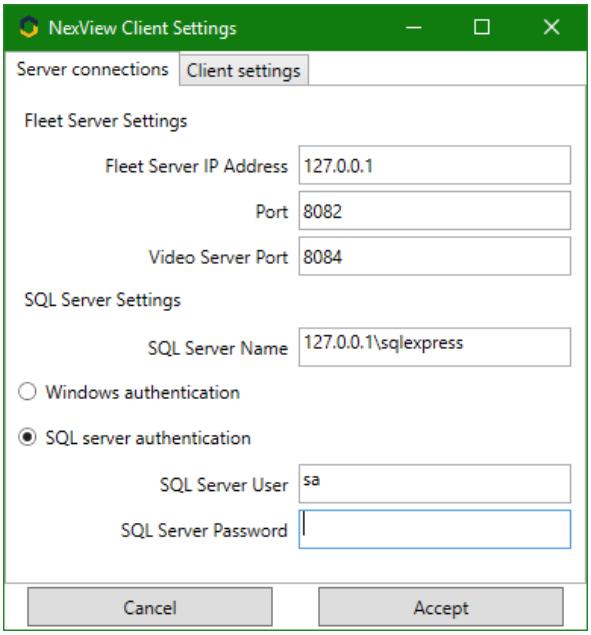
The initial login username is "TSI" and the initial password is also "TSI"

If you check the "Remember login" box, you will not be prompted for a username or password in the future.

If you are not able to log on with the initial login and password of "TSI" then your site has enabled user permissions and you should contact your IT administrator for the appropriate username and password. You can also log in using your Windows login if active directory has been integrated.

9.2 Configuring NexView Database Information

After installing NexView you must make sure that it is properly pointed to the NexView Server SQL database. Check with your administrator or TSI Support if you do not know this information.



IP Address of Machine with NexView Server service

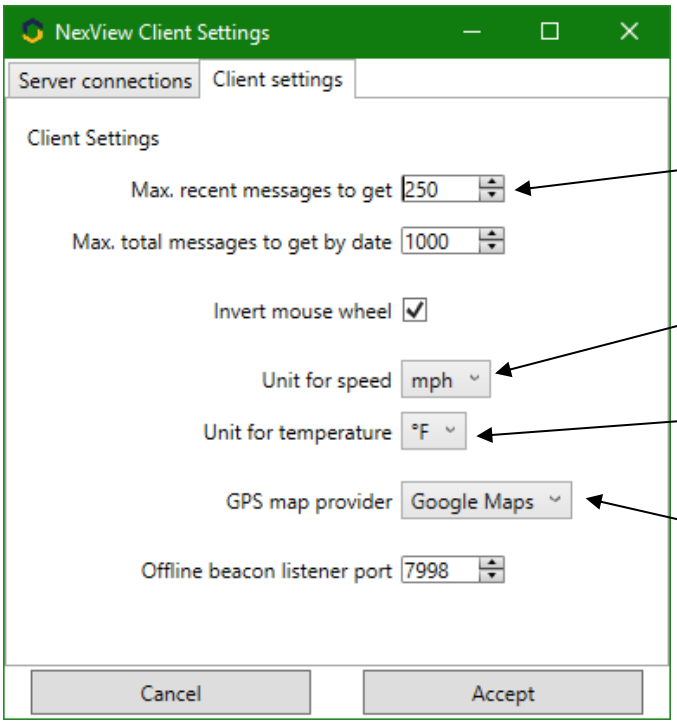
Leave both ports on the default

IP Address of SQL server, and SQL instance name

SQL username and password

9.2.1 NexView Client Settings

This tab allows the user to Change some NexView preferences for whichever machine they are logged in to.



Messages are seen in the Nexus-HVR Logbook

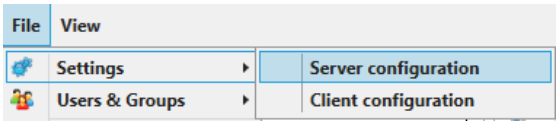
Speed is shown with GPS Data

Hard Drive temperatures will be shown on the Fleet Tab

4 Options available:

1. Disable Maps
2. Google Maps
3. Open Street Maps
4. Bing Maps

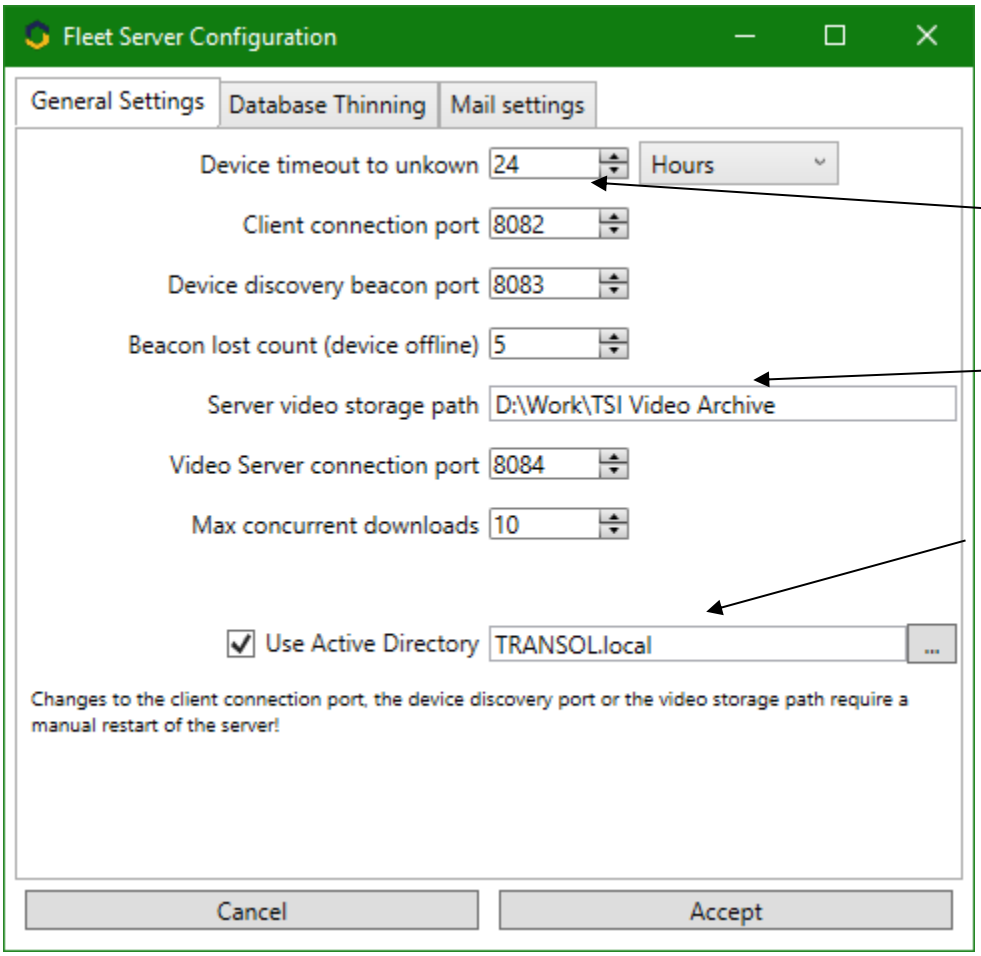
10 Server Configuration Settings

Click 

to edit settings for the NexView Server Service.

10.1 General Settings

This tab will display basic communication settings and video storage.



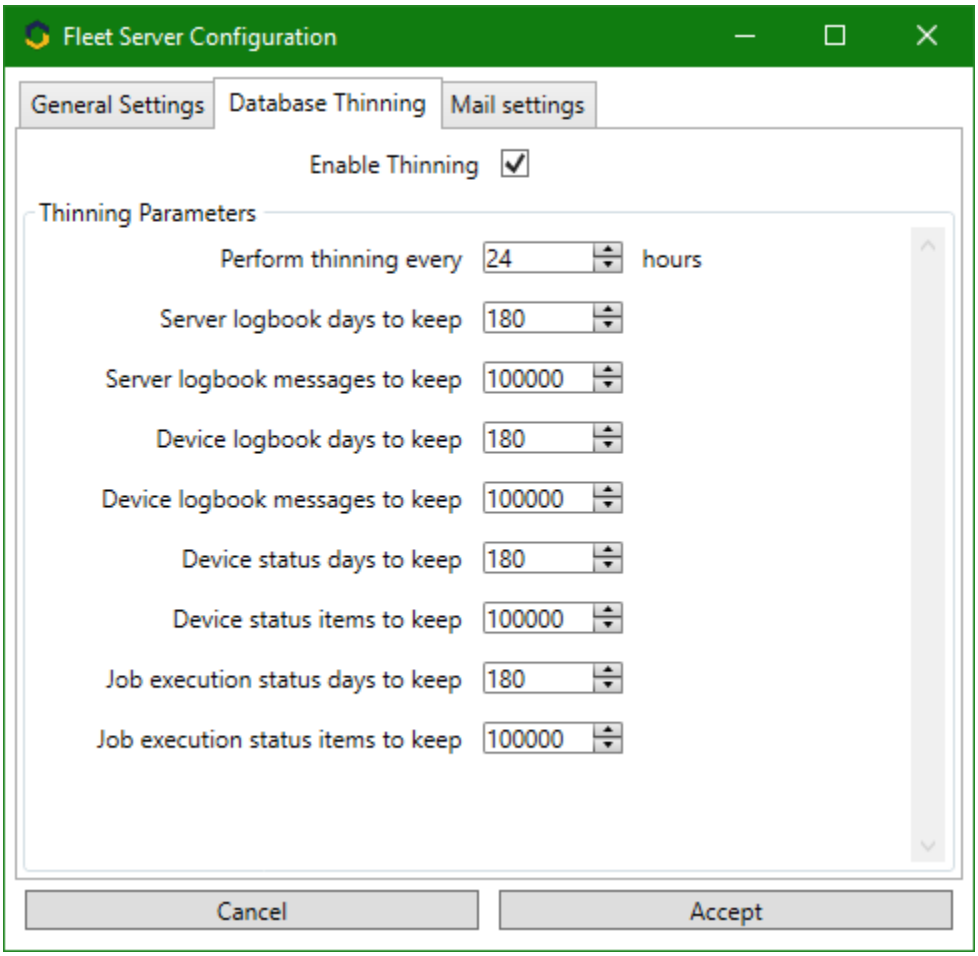
Time interval until a Nexus-HVR shows as unknown in the Fleet Tab

Video Archive storage location

Active directory domain

10.2 Database Thinning

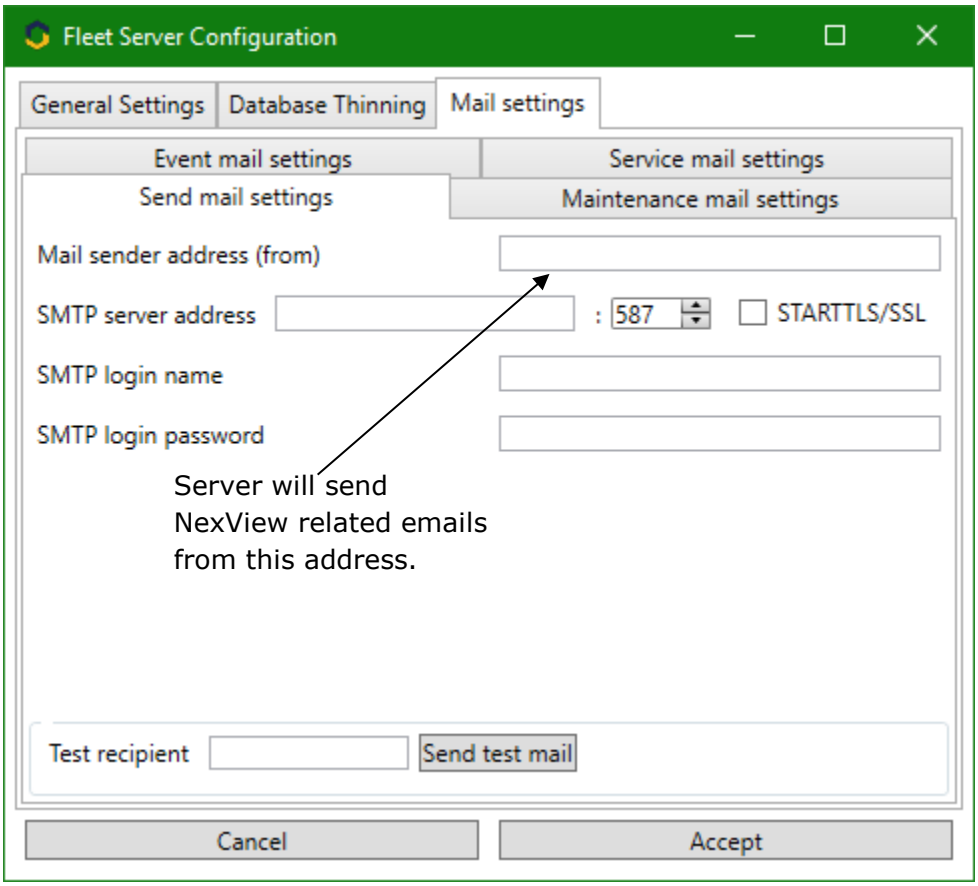
The Database Thinning tab will clear out outdated data that is still being stored in the NexView SQL Database. Database thinning can be enabled and set to perform at a configurable number of hours.



10.3 Mail Settings

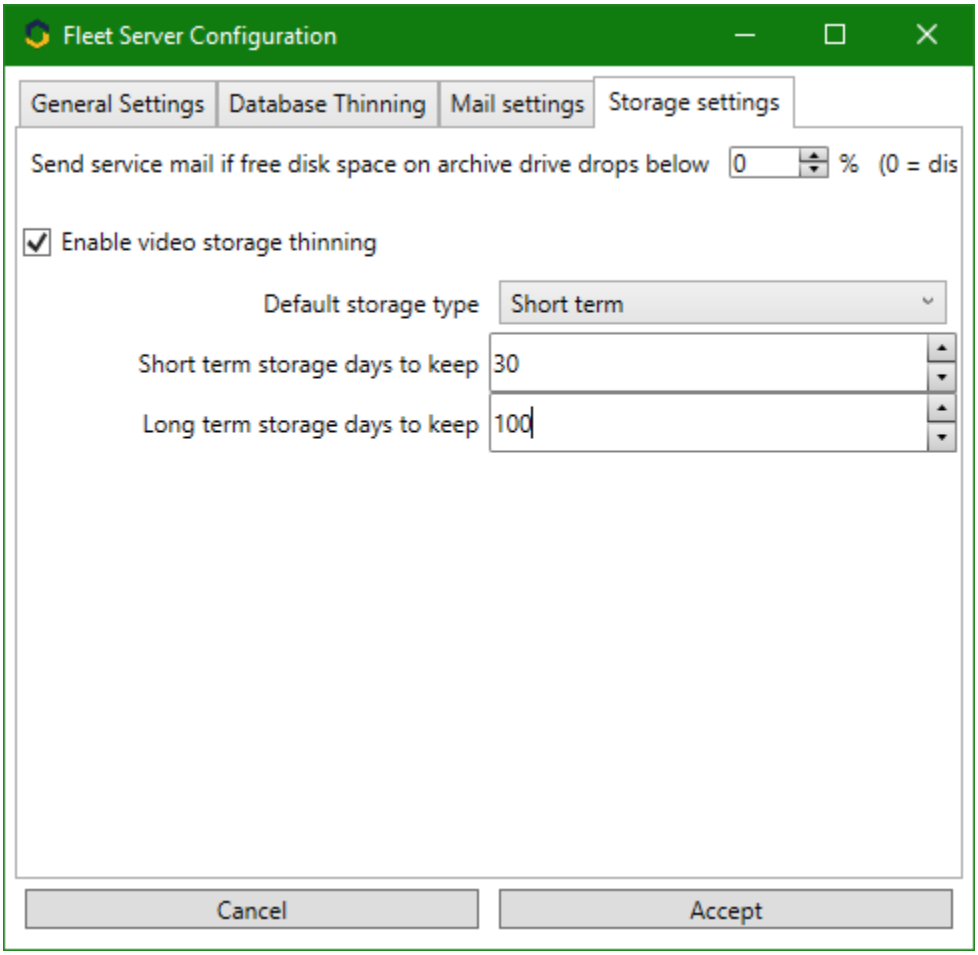
NexView provides the ability to send automated emails to groups of email addresses. There are three different types of NexView Emails.

Emailing List	Function
Event Mail	Send recipients a list of which Nexus-HVR units triggered an event since the previous Event Email.
Maintenance Mail	Send recipients a list of which Nexus-HVR units are reporting errors and/or warnings. These warnings include: hard drive errors, cameras not recording, and communication issues.
Service Mail	Send recipients the status of the TSI Server

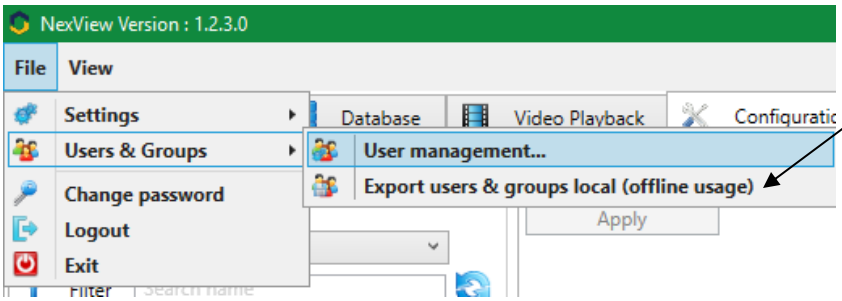


10.4 Storage Settings

NexView provides the ability to automatically delete videos stored in the video archive based on retention periods. The default storage term will mark any newly downloaded video queries with either short term, long term, or unlimited retention. Unlimited storage type video downloads will never be deleted without a user manually deleting them from the archive. Short and long term time periods are configurable, as shown in the screen below.



11 User Management

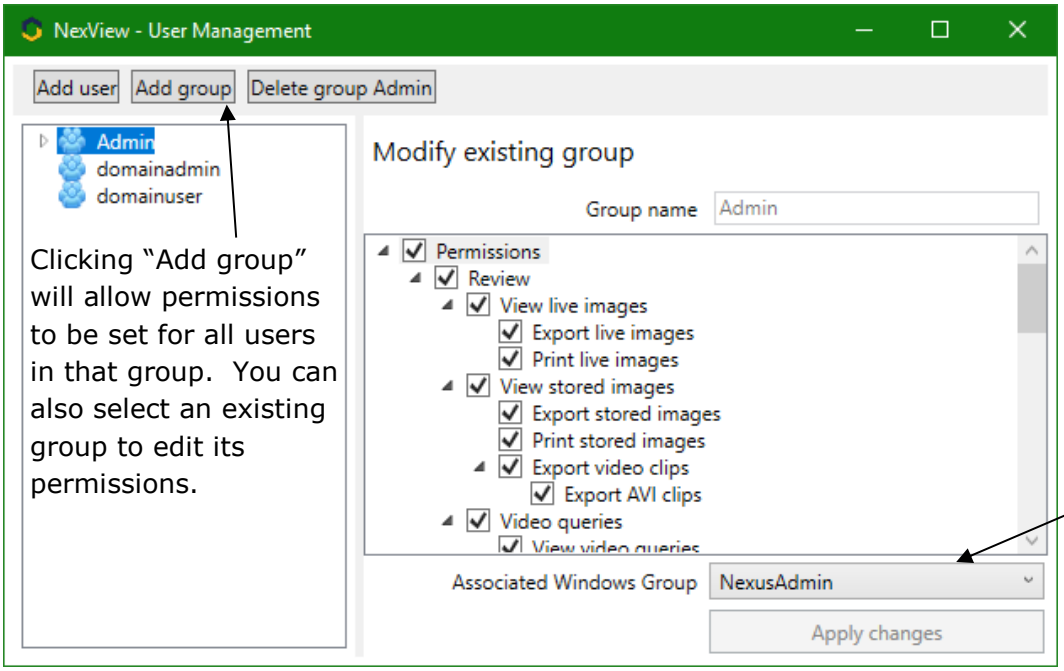


Selecting this option will download user login information to the local machine. This will allow NexView to run in "Offline" mode, which is necessary when a connection to the NexView Server cannot be made

The User Management page allows for the creation of NexView users and groups. Groups will be created with specific permissions in the NexView software, and then users will be assigned to those groups. TSI recommends making separate groups for IT Administrators, Operations Personnel, and Maintenance Personnel.

11.1 Adding User Groups

Linking Windows Active Directory to NexView will allow users to login to NexView with their Windows account (bypassing the need for a separate NexView username and password). If your site has integrated Active Directory with NexView, you will have the option to assign Active Directory user groups to groups created in NexView. When choosing this option, you must first create user groups in Active Directory (based on the desired NexView permissions for these users), and then create corresponding groups with the appropriate permissions in NexView. Once you have done this, you will be able to link your Active Directory groups to the associated NexView groups as shown below.



Clicking "Add group" will allow permissions to be set for all users in that group. You can also select an existing group to edit its permissions.

Windows Active Directory Group Associated with NexView Group

11.2 User Permissions

This Section provides a short explanation for each selectable user permission.

1. ***REVIEW*** - Allows user to view live video and stored video on the Nexus-HVR hard drive, as well as download images and videos locally to the machine.
   - 1.1. ***View Live Images*** - Ability to view live footage of cameras and capture an image from the live video.
     - 1.1.1. ***Export Live Images*** - Allows user to save images from live view and export as .jpeg/.png.
     - 1.1.2. ***Print Live Images*** - Allows live images to be printed.
   - 1.2. ***View Stored Images*** - Gives user ability to view stored video on the Nexus HVR hard drives, as well as video queries downloaded to the server.
     - 1.2.1. ***Export Stored Images*** - Allows the user to save an image from recorded video and export it as .jpeg/.png.
     - 1.2.2. ***Print Stored Images*** - Allows user to print images from recorded video.
     - 1.2.3. ***Export Video Clips*** – The ability to take segments of recorded video and export saved video clips.
       - 1.2.3.1. ***Export AVI Clips*** - Allows user to export video segments in AVI format.
   - 1.3. ***Video Queries*** - Allows user to request video downloads from the Nexus-HVR and view those downloads.
     - 1.3.1. ***View Video Queries*** - Allows the user to view downloaded video queries on the server.
     - 1.3.2. ***Request Video Queries*** - Permits the user to download video from the Nexus-HVR to be stored on the server.
     - 1.3.3. ***Delete Video Queries*** - Allows user to delete video queries from the Video Archive.
     - 1.3.4. ***Manage Video Storage*** - Allows user to set short and long term video retention periods.

2. ***VIEW DEVICE SERVICE*** - Allows user to view detailed information regarding the Nexus-HVR including log and status information.
   - 2.1. ***Format Hard Disk*** - User will be able to format the hard drive on any Nexus-HVR, this will erase all videos currently saved on that hard drive.
   - 2.2. ***Reboot Device*** - Allows the user to remotely reboot the Nexus-HVR. No settings will be altered or changed.
   - 2.3. ***Sync Device Time*** - Adjust the internal clock of the Nexus-HVR to match the time used on the server.
   - 2.4. ***Update Firmware*** - Allows user to install firmware to the currently selected Nexus-HVR unit.
   - 2.5. ***View Diagnostics*** – Allows for viewing of device diagnostic logs.
   - 2.6. ***View Device Logbook*** - Allows the user to view operations performed by the HVR.
   - 2.7. ***View Device Status*** – Shows the operation health of all devices.
   - 2.8. ***View Software Log*** – Provides user with the ability to view device serial numbers and health status of devices.

2.9. ***Show Debug Information*** – Allows users to perform advance diagnostics.

3. ***CONFIGURE DEVICE*** - Gives user ability to access the configuration tab. The configuration tab will show setup information on the Nexus-HVR including camera settings, network settings, input and output settings, general settings and display settings.
   3.1. ***Import Configuration*** - Gives the user permission to import saved configuration files, this will overwrite all current Nexus-HVR settings once applied.
   3.2. ***Export Device Configuration*** - Grants the user exporting rights of a Nexus-HVR configuration file. All settings used by that Nexus-HVR will be saved to a destination location of the users choice.
   3.3. ***Apply Configuration*** - This allows a user to make and apply any changes to a Nexus-HVR.
   3.4. ***Expert Mode Configuration*** - Gives user root level access to change settings on the Nexus-HVR.

4. ***CHANGE PASSWORD*** - Allows the user to change their password.

5. ***USER MANAGEMENT*** - Allows user to view the current list of users and groups
   5.1. ***Edit Users*** - Allows user to make changes to all users under user management. This includes user names and logins, email address and passwords.
   5.2. ***Edit Groups*** - Gives user ability to change group privileges. Group privileges will grant or take rights away from all users in that group.

6. ***FLEET MANAGEMENT*** - Allows user to view all Nexus-HVR units and their information in the fleet tab.
   6.1. ***View Fleet Status*** - Gives user the ability to see the fleet status tab. This tab shows the status of each Nexus-HVR unit. The status shows the health of each unit and if any maintenance is needed.
   6.2. ***View Fleet Database*** - Allows the user to see the database tab. This shows each Nexus-HVR and its assigned IP address.
      6.2.1. ***Add/Edit Device*** - Allows the user to add a Nexus-HVR to the fleet or edit existing Nexus-HVR connection information.
      6.2.2. ***Remove Device*** - Allows user to remove Nexus-HVRs from the database.
      6.2.3. ***Manage Template Configurations*** – Allows users to manage template configurations for push configuration jobs.
   6.3. ***Configure Client/Server Settings*** - This will allow the user to change the settings of the NexView software to make communication with the server.
   6.4. ***Set Reference Image*** – Allows users to decide on a reference image used for camera verification.
   6.5. ***Accept & Reject Verification Image*** – Allows user to approve or deny camera images downloaded via camera verification.

7. ***VIEW JOBS*** - Allows user to see jobs under the jobs tab. This will show what the job does and its schedule.
   7.1. ***Add/Edit Jobs*** - Allows user to add new jobs and edit previously created jobs. Jobs include status updates, logbook updates, event downloads, and time synchronization.
   7.2. ***Delete Jobs*** - Allows user to remove any jobs created underneath the jobs tab.

8. ***ASSET MANAGEMENT*** - Allows user to track serial numbers for devices in their fleet.
   8.1. ***View Assets*** - Gives user the ability to see the serial numbers for each device on vehicles in their fleet.
      8.1.1. ***Edit Assets*** - Gives ability to edit the serial numbers for devices on each vehicle.
   8.2. ***Manage Templates*** – Permits user to manage templates to be used to track serial numbers within the fleet.

11.3 Adding Users